



UNIVERSITAS INDONESIA

**STUDI TENTANG SENSOR KOROSI
DI DALAM *BODY ASSEMBLY VALVE* UNTUK
MENGETAHUI KERUSAKAN *SEAT RING***

DISERTASI

**NAMA : BASKORO ABIE PANDOWO
NPM : 0606037582**

**FAKULTAS TEKNIK
PROGRAM STUDI TEKNIK ELEKTRO
DEPOK
24 FEBRUARI 2009**



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DISERTASI

Diajukan sebagai salah satu syarat untuk memperoleh gelar Doktor

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**FAKULTAS TEKNIK
PROGRAM STUDI TEKNIK ELEKTRO
KEKHUSUSAN ELEKTRONIK SENSOR DEVAIS
DEPOK
24 FEBRUARI 2009**

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dan semua sumber baik yang dikutip maupun dirujuk
telah saya nyatakan dengan benar**

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Judul Disertasi : Studi Tentang Sensor Korosi Di Dalam *Body Assembly Valve*
Untuk Mengetahui Kerusakan *Seat Ring*

Telah berhasil dipertahankan di hadapan Dewan Penguji dan diterima sebagai bagian persyaratan yang diperlukan untuk memperoleh gelar Doktor pada Program Studi Teknik Elektro, Fakultas Teknik, Universitas Indonesia.

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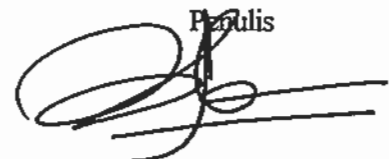
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Depok, 24 Februari 2009

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Baskoro Abie Pandowo

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ABSTRAK

Nama : Baskoro Abie Pandowo
Program Studi : Teknik Elektro
Judul : Studi Tentang Sensor Korosi Di Dalam *Body Assembly Valve*
Untuk Mengetahui Kerusakan *Seat Ring*

Fungsi *control valve* sangat penting di dalam *industrial process loop*, karena berpengaruh langsung dengan hasil akhir *process loop* yang akhirnya ke mutu produk yang dihasilkan. *Control valve* bekerja berdasarkan *service condition* yang menentukan besaran *output* berupa *Opening Valve Percentage (OVP)*. Besar-kecilnya *OVP* dikendalikan oleh *controller*. Jika *output* tadi tidak sesuai dengan *set-point*nya, maka *control valve* mengalami kebocoran pada *downstream pipe*. Kebocoran ini disebabkan oleh kerusakan *seat ring* karena terjadi masalah *cavitation*.

Pada riset ini ditentukan *service condition* yang akan melewati *control valve*, kemudian dirancang diagram pipa dan *instrument (P&ID)* untuk membuat prototip *industrial control loop*. Ada enam sampel *seat ring* termasuk sebuah *seat ring* normal dan lima *seat ring* rusak. Setiap *seat ring* dipasang ke dalam prototip dan diukur *sound pressure level* oleh *sound pressure level meter* dan *software Cool Edit Pro* versi 2.0. *Software* ini menghasilkan spektrum frekuensi lalu dianalisa oleh *software Excel* versi 2007 untuk mendapatkan nilai frekuensi.

Hasil riset ini adalah suatu desain sensor korosi pada *control valve* yang merupakan *device* yang sangat penting untuk mengetahui secara dini kerusakan *seat ring* dengan metoda kapasitansi. Sensor korosi ini diletakkan di dalam *body assembly valve* yang merupakan perbaikan yang signifikan dari hasil riset terkini. Sensor korosi yang setiap waktu dapat menunjukkan perubahan intensitas suara sebagai fungsi korosi *seat ring*.

Kata kunci :

Control Valve, Service Condition, Cavitation, Kapasitansi, Sensor Korosi

ABSTRACT

Name : Baskoro Abie Pandowo
Study Program : Electrical Engineering Department
Title : Study of corrosion sensor in body assembly vale for detecting
seat ring corrosion

The control valve function is the important device in industrial process loop, because it has direct relationship the quality of end product. Control valve works based on service condition what defines the output as opening valve percentage (OVP) and OVP is controlled by a controller. If the output does not match with the set-point of controller, control valve has the leakage in the downstream pipe. The leakage is caused by the corrosion seat ring because there is cavitation problem.

This research defines service condition through control valve, then designed the piping and instrument diagram (P&ID) for making the prototype of industrial control loop. There are six seat ring samples include a normal seat ring and five corroded seat rings. Every seat ring installed in the prototype and measured sound pressure level (SPL) by sound pressure level meter with Cool Edit Pro 2.0 software. The software results frequency spectrum and it is analyzed by Excel version 2007 software to get frequency value.

This research result is corrosion sensor design in the control valve what is the important device for early detecting the corroded seat ring with capacitance method application. Corrosion sensor is placed inside the body assembly valve which improved the latest researches. Corrosion sensor can read sound intensity as the damaged seat ring function.

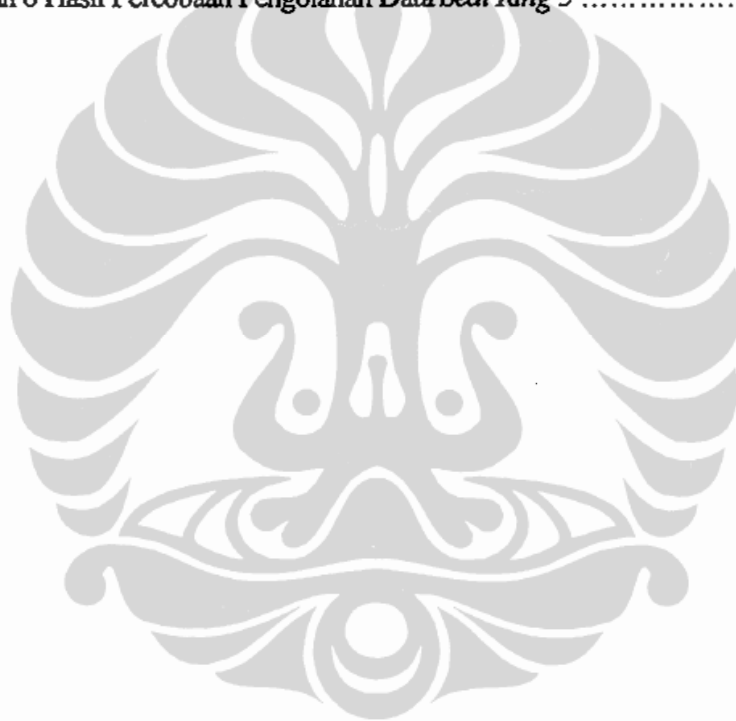
Key words :

Control Valve, Service Condition, Cavitation, Capacitance, Corrosion Sensor

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ANSI	<i>American National Standards Institute</i>	2
FCI	<i>Fluid Control Institute</i>	3
IA	<i>Iowa</i>	3
TX	<i>Texas</i>	3
RF	<i>Raised Flange</i>	4
PDTO	<i>Push Down To Open</i>	4
HART	<i>Highway Addressable Remote Transducer</i>	4
AC	<i>Alternating Current</i>	4
OVP	<i>Opening Valve Percentage</i>	6
PTFE	<i>Teflon</i>	6
ISA	<i>Instrument Society of America</i>	9
IEC	<i>International Electrotechnical Commission</i>	9
OSHA	<i>Occupational Safety and Health Act</i>	9
PID	<i>Proportional–Integral–Derivative controller</i>	17
DCS	<i>Distributed Control System</i>	23
PLC	<i>Programmable Logic Controller</i>	23
P&ID	<i>Piping and Instrument Diagram</i>	24
SPL	<i>Sound Pressure Level</i>	35
CBS	<i>Center Boss Sensor</i>	92

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X_{max}	<i>Perpindahan stem maximum stem dari posisi tertutup [m]</i>	19
x	<i>Friksi perpindahan stem</i>	19
α	<i>Capillary constant [N/m]</i>	20
p_i	<i>Inlet pressure [N/m²]</i>	26
C_F	<i>Sound velocity in the fluid [m/s]</i>	26
ρ_F	<i>Fluid density [kg/m³]</i>	26
U_R	<i>Centripetal velocity [m/s]</i>	26
p_o	<i>Pressure of indefinite distance [m]</i>	26
R_o	<i>Initial radius of cavitation bubble [m]</i>	26
p_{i max}	<i>Maximal inlet pressure [N/m²]</i>	26
p_N	<i>Standard pressure [N/m²]</i>	26
Y	<i>Ratio partial pressure of gas</i>	26
p_G	<i>Partial pressure of the gas [N/m²]</i>	26
X_F	<i>Pressure ratio</i>	26
X_{FZ}	<i>Valve-specific cavitation coefficient</i>	26
Δm	<i>Material erosion</i>	27
v	<i>Jet velocity [N/m²]</i>	27
P(r,t)	<i>Field sound pressure</i>	28

r	<i>Distance between sound pressure and point observation [m]</i>	28
$V(t)$	<i>The rate of change in bubble volume [kg/m³]</i>	28
f	<i>Frekuensi [Hz]</i>	28
E_{total}	<i>Number of bubble collapse</i>	28
n	<i>Unit of the time</i>	28
$E(f)$	<i>Spectral energy of individual event</i>	28
Q	<i>Flow rate [kg/h]</i>	30
C_v	<i>Valve sizing coefficient</i>	30
ΔP	<i>Differential pressure [psid]</i>	30
G	<i>Specific gravity</i>	30
ΔP_{allow}	<i>Allowable sizing pressure drop [psid]</i>	31
k_m	<i>Valve recovery coefficient</i>	31
r_c	<i>Critical pressure ratio</i>	31
P_v	<i>Vapor pressure [psid]</i>	31
P_1	<i>Inlet pressure</i>	31
C	<i>Kapasitansi [Farad]</i>	37
d	<i>Jarak antar penampang [m]</i>	37
v_o	<i>Defleksi [m]</i>	41
E_e	<i>Modulus young equivalent</i>	41
a	<i>Radius diaphragm [m]</i>	41
b	<i>Perbedaan antara radius center boss [m]</i>	41
h	<i>Tebal diaphragm [m]</i>	41
k_s	<i>Stiffenes coefficient, 2×10^9</i>	41
ϵ_r	<i>Relative permittivity</i>	42
ϵ	<i>Permittivitas</i>	42

A	Luas penampang [m^2]	42
L	Induktansi	42
a_1	coefficient, $2\pi \cdot \sqrt{L}$	42
a_2	coefficient, a_1^2	42
ϵ_0	Permitifitas hampa udara, $8,854 \times 10^{12} F/m$	42
E	Medan listrik	42
V	Volume	42
ϵ_w	Permitifitas <i>body valve assembly</i>	66
ϵ_s	Permitifitas <i>seat ring</i>	66
ϵ_f	Permitifitas fluida	66
r_a	Jarak dari titik pusat ke fluida	66
r_b	Jarak dari titik pusat ke <i>seat ring</i>	66
r_c	Jarak dari titik pusat ke <i>body valve assembly</i>	66
C_f	Kapasitansi fluida [Farad]	66
C_s	Kapasitansi <i>seat ring</i> [Farad]	66
C_w	Kapasitansi <i>body valve assembly</i> [Farad]	66
θ_a	Sudut dari titik pusat ke fluida	66
θ_b	Sudut dari titik pusat ke <i>seat ring</i>	66
θ_c	Sudut dari titik pusat ke <i>body valve assembly</i>	66
t	Diameter sensor korosi [m]	66
C_T	Kapasitansi total	67
C_{abt}	Kapasitansi total <i>seat ring</i> yang berkorosi	68
x	Panjang korosi	68
r_a	Jarak dari titik pusat ke permukaan luar <i>body assembly valve</i> [m]	67
r_b	Jarak dari titik pusat ke permukaan luar <i>seat ring</i> [m]	67

r_c	Jarak dari titik pusat ke permukaan luar fluida dengan <i>seat ring</i> [m]	67
θ_a	Sudut dari titik pusat ke permukaan luar <i>body assembly valve</i> [m]	67
θ_b	Sudut dari titik pusat ke permukaan luar <i>seat ring</i> [m]	67
θ_c	Sudut dari titik pusat ke permukaan luar fluida dengan <i>seat ring</i> [m]	67
a_k	Panjang korosi <i>seat ring</i> [m]	89



BAB 1

PENDAHULUAN

1.1 Latar Belakang

Suatu *industrial process control* terdiri dari ratusan atau ribuan *process loop* yang saling berhubungan satu sama lainnya guna memproduksi suatu produk untuk dijual. Setiap *process loop* dirancang untuk menjaga *process variable* seperti *pressure, liquid level, flow* dan *temperature*.

Process variable yang didapat dari *sensor, transmitter, disturbance* digabung dan disesuaikan dengan nilai *set-point* tertentu oleh suatu *controller*. *Controller* akan mengukur, membandingkan dan menghitung dan kemudian hasilnya akan dikirimkan ke *final control element*.

Kebanyakan *final control element* pada *industrial process loop* adalah *control valve* [1]. Definisi *control valve* yang dipakai oleh *Scientific Apparatus Makers Association (SAMA)* [2] adalah sebuah valve dengan *pneumatic, hydraulic, electric* atau jenis *actuator* lain yang secara otomatis sepenuhnya atau sebagian membuka atau menutup valve ke posisi tertentu sesuai dengan signal yang diterima dari *controller*.

Control valve terdiri dari *valve body, actuator* dan *valve positioner, booster* atau asesori lainnya (seperti *transducer, limit switch, regulator*) [2].

Penentuan Control Valve di dalam Aplikasinya [2]

Pemilihan suatu *control valve* ditentukan dengan mempertimbangkan parameter fluida di bawah ini :

- a. jenis fluida yang akan dikontrol,
- b. *temperature*,
- c. *viscosity*,
- d. *specific gravity*,
- e. *flow capacity* yang dikehendaki pada posisi *maximal*, normal dan minimal,
- f. *inlet pressure* pada *control valve* (*maximal*, normal dan minimal),
- g. *outlet pressure* (*maximal*, normal dan minimal),

- h. *pressure drop* pada kondisi *shut-off*,
- i. *maximal noise level* (standard industri adalah ≤ 85 dBA),
- j. *flow rate*,
- k. *instrument signal* yang dipakai.

Parameter di atas biasanya disebut *service condition*. Beberapa *manufacturer control valve* umumnya mempunyai cara penentuan *control valve* secara cepat yang telah disesuaikan dengan aplikasinya dengan menggunakan *sizing calculation software*.

Cavitation yang terjadi di suatu *control valve* dapat diketahui dari (a) hasil *sizing calculation software* pada awal, (b) akibat perubahan *service condition*, sehingga *existing control valve* yang tadinya berfungsi baik menjadi jelek fungsinya.

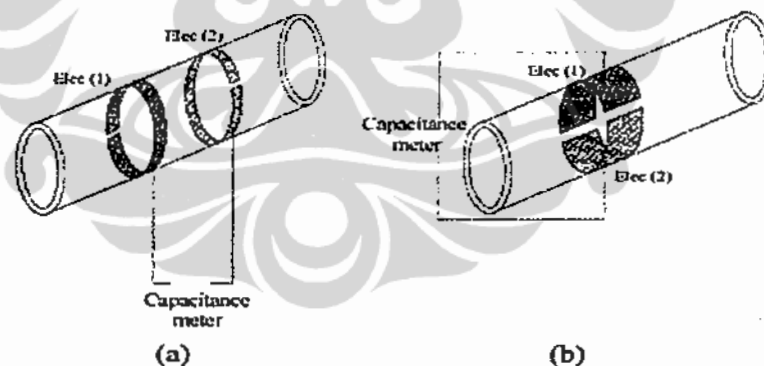
Pada riset ini dibahas *cavitation* akan mengakibatkan perubahan *service condition* pada point (b). Kinerja *control valve* menjadi rusak disebabkan oleh timbulnya *cavitation*. Akibat dari *cavitation* ini akan terjadi kerusakan *seat ring* seperti yang ditunjukkan pada Gambar 1.1.



Gambar 1.1. Bentuk kerusakan *seat ring*

Kerusakan *seat ring* seperti pada Gambar 1.1 dapat berdampak kepada tingkat kebocoran *control valve* yang akan melebihi tingkat kebocoran yang telah ditentukan dari *standard leakage classification ANSI/FCA 70-2 197 (R1982)* yang ditunjukkan pada Tabel 1.1.

Cara yang dipergunakan untuk mencegah masalah *cavitation* yang dikemukakan dalam beberapa riset sebelumnya yaitu pada tanggal 14 Januari 1988 Goode, William B dari Dallas menemukan *desain valve* untuk mengurangi *cavitation* adalah dengan mencegah formasi *vena contracta* pada *seat ring* [3]. Lalu tanggal 20 Mei 2003 Hamblin, Nathan J. dari Marshalltown dan Long, Ted A dari Sugarland dari Texas untuk mengurangi *cavitation* adalah dengan meminimalkan *unbalance area* [4] yaitu *control valve plug* dan *seat ring* dibuat dengan radius 0,03 inch dengan pertemuan *valve plug* dan *seat ring* dibuat sudut 75° dan mengatasi masalah *cavitation* agar *seat ring* tidak rusak adalah pemasangan sensor *device* untuk mengukur aliran fluida di sisi *downstream pipe*. Pada bulan Juni 1993 Cristina N. Strizzolo dan Jose Converti menjelaskan pengukuran aliran fluida dua fasa pada pipa di sisi *downstream pipe* dengan membuat *emergency line* dimana pada *emergency line* telah dipasang sensor *device*. Pada bulan Oktober 2006 Wael H. Ahmed [5] melakukan pengukuran aliran fluida dengan sensor kapasitansi (*capacitance meter*). Elektroda-elektroda dipasang di sisi *downstream pipe*, struktur yang dikemukakan adalah struktur cincin (*ring*) dan struktur cekung (*concave*) seperti yang ditunjukkan pada Gambar 1.2.



Gambar 1.2. Struktur sensor kapasitansi [5]

Kedua struktur pada Gambar 1.2 memakai metode kapasitansi untuk menganalisa aliran fluida di *downstream pipe*. Dari kedua struktur tersebut, struktur *ring* mempunyai kepekaan yang lebih tinggi dibandingkan struktur cekung.

Tabel 1.1 *Leakage Classification* berdasarkan ANSI/FCI 70-2 197 (R1982) [2]

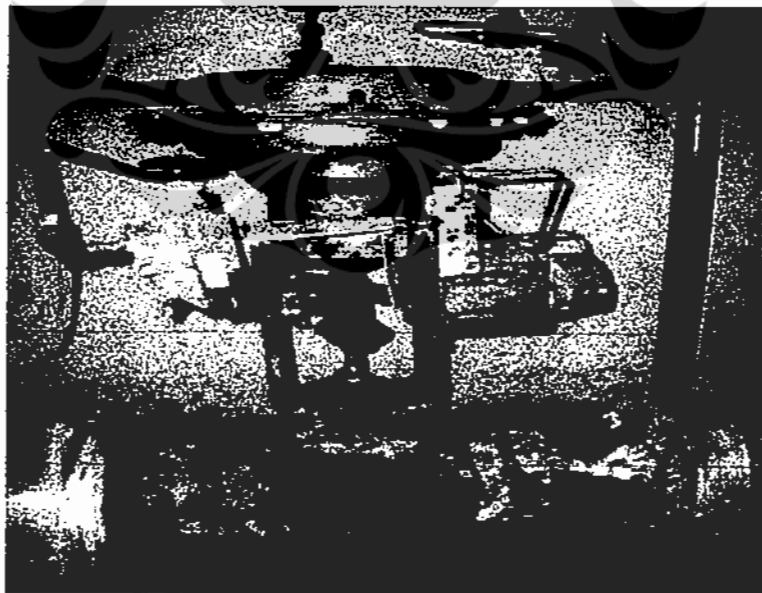
<i>Leakage Class Designation</i>	<i>Maximum Leakage Allowable</i>	<i>Test Medium</i>	<i>Test Pressure</i>	<i>Testing Procedures Required for Establishing Rating</i>
I	x	x	x	No test required
II	0,5% of rated capacity	Air or water at 50 - 125°F (10 - 52°C)	45 - 60 psig or maximum operating differential whichever is lower	45 - 60 psig or maximum operating differential whichever is lower
III	0,1% of rated capacity	As above	As above	As above
IV	0,01% of rated capacity	As above	As above	As above
V	0,0005 ml per minute of water per inch of port diameter/psi differential	Water at 50 to 125°F (10 to 52°C)	Maximum service pressure drop across valve plug not to exceed ANSI body rating	Maximum service pressure drop across valve plug not to exceed ANSI body rating
VI	Not to exceed amounts shown in the table above	Air or nitrogen at 50 to 125°F (10 to 52°C)	50 psig or max rated differential pressure across valve plug whichever is lower	Actuator should be adjusted to operating conditions specified with full normal closing thrust applied to valve plug seat

Kerusakan *seat ring* sedini mungkin ini sangat diperlukan bagi industri agar tidak mengganggu mutu produk industri tersebut. Saat ini kerusakan *seat ring* baru diketahui setelah *control valve* dilepaskan dari *piping system* saat waktu *shutdown plant*. Waktu *shutdown plant* biasanya satu tahun sekali, bahkan ada industri belum tentu melakukan *shutdown plant* dalam satu tahun akibat dikejar-kejar target produksi. Ketika *control valve* yang telah dilepaskan dari *piping system* tadi setelah dibongkar-pasang ternyata belum tentu *internal part*-nya rusak, namun biaya perbaikan *control valve* tersebut sudah mulai

dihitung ditambah dengan *gasket set*, *repair kit* dan *packing set* (biasanya disebut *commissioning spare part*) sudah harus dibeli karena *control valve* telah dilepas dan dibongkar-pasang tadi membutuhkan *commissioning spare-part* agar dapat dipergunakan lagi di *piping system* untuk proses fabrikasi. Dapat dibayangkan setiap industri memiliki jumlah *control valve* lebih dari 500 unit. Jika kenyataan ini terjadi minimal 20% saja maka dapat dibayangkan nilai komersial pemborosan yang terjadi di sana. Data yang ada sekarang bongkar-pasang satu unit *control valve* USD 15-25 dan *commissioning spare part* USD 75-250.

Hasil kunjungan ke industri-industri yang dilakukan dalam tahun 2007 dan awal 2008 ini di Indonesia diperoleh foto-foto *control valve* yang beroperasi. *Performance control valve* (baik atau tidaknya) ditentukan secara *visual*.

Performance control valve yang telah berkarat di sekitar *body assembly valve*, *actuator* dan asesorinya ditunjukkan pada Gambar 1.3. Mulanya terjadi kebocoran di sekitar *bonnet*, sehingga fluidanya bocor keluar disekitar selah-selah *o-ring* secara terus-menerus. Kerja *control valve* yang seperti ini perlu dilakukan *overhaul* untuk memperbaiki kerja *control valve*, namun karena pabrik sedang mengejar target produksi, sehingga sudah lebih dari satu tahun tidak dilakukan *overhaul*.



Gambar 1.3. *Performance control valve* yang berkarat di industri kimia

Ada kasus lain, yaitu *performance control valve* yang secara fisik masih baik namun setiap tahun wajib diganti *internal part (trim parts)*. Hal ini disebabkan *internal part* akan mengalami kerusakan dalam setahun tanpa mengetahui seberapa besar kerusakan tersebut dan jika lebih dari satu tahun, maka pemakaian bahan baku fluidanya akan lebih besar, sehingga secara komersial tidak menguntungkan seperti yang ditunjukkan pada Gambar 1.4 (aplikasi *control valve* di *urea plant*). Bahan baku (*Benfield*) harganya mahal dan bahan baku ini dipergunakan untuk menghasilkan produk pupuk urea dan pupuk urea ini dipakai untuk petani menanam padi.



Gambar 1.4. Secara fisik *control valve* masih baik di industri pupuk

Pada Gambar 1.5 aplikasi *control valve* di industri karbon hitam, *cavitation* yang terjadi selain merusak *internal part* lalu membangkitkan *noise* yang semakin tinggi. Akibat *noise* yang tinggi ini terjadi pergerakan *internal part*, sehingga menyebabkan kerusakan *V-packing PTFE*, akibatnya terjadi kebocoran di *bonnet*.

Ketiga contoh kasus di atas juga terjadi di industri minyak dan gas dengan jumlah *control valve* yang ada di sana jauh lebih besar jumlahnya.



Gambar 1.5. *Control valve* di industri karbon hitam

Pada riset ini diarahkan untuk mengetahui kerusakan *seat ring* sedini mungkin berdasarkan *corrosion sensor device* yang diletakkan di dalam *body assembly valve*. Metode yang dipakai pada *corrosion sensor device* adalah kapasitansi. Ketika *noise* mulai timbul pada suatu *sound level* tertentu, maka akan terjadi perubahan nilai kapasitansi. Nilai kapasitansi saat *seat ring* kondisi normal dan saat *seat ring* kondisi rusak akan berbeda besarnya. Agar perhitungan kapasitansi mendekati dengan besarnya kerusakan *seat ring*, maka dibuat *sample seat ring* yang dilubangi sesuai dengan *volume* yang berbeda. Pengukuran terhadap *sample seat ring* tadi dilakukan secara bertahap dimulai *seat ring 0* kemudian ke *seat ring 1* dengan sebelumnya dilakukan penggantian *seat ring* dahulu dan dilakukan kalibrasi. Cara yang sama berlaku untuk *seat ring 2*, *seat ring 3*, *seat ring 4* dan *seat ring 5*.

Hasil riset ini diharapkan merupakan salah satu solusi bagi industri agar dapat menjaga mutu hasil produk dengan mengetahui secara dini kerusakan *seat ring*, sehingga tingkat kebocoran *control valve* dapat diketahui lebih dini dan dapat ditentukan langkah-langkah perbaikan selanjutnya.

1.2 Perumusan Masalah

Dalam suatu *Industrial Process Loop* selalu terjadi masalah kualitas produk yang diakibatkan terjadinya korosi pada *seat ring*. Pada suatu kondisi tertentu, fluida yang mengalir ke *control valve* akan melewati titik *vena contracta*, yaitu aliran fluida (*flow*) dan tekanan (*pressure*) menjadi minimum, sedangkan kecepatan (*velocity*) *maximum*. Jika setelah melewati titik *vena contracta* tadi tekanan keluaran (*downstream pressure*) lebih kecil dari tekanan uap (*vapour pressure*) fluidanya, maka akan terjadi masalah *cavitation*. *Cavitation* ini akan menciptakan *bubble* udara yang akan membentur ke dinding bagian dalam (*internal part*) *control valve*. Bagian dalam ini antara lain *seat ring*, tempat kedudukan dari *plug* yang bergerak secara vertikal (*sliding stem*).

Akibat benturan yang terus-menerus terjadi, lama-kelamaan *seat ring* tadi menjadi rusak (korosi) sehingga terjadilah kebocoran yang melebihi dari ketentuan kebocoran yang masih diperbolehkan. Tentunya hal ini tidak boleh terjadi karena akan mempengaruhi mutu produk industri tersebut.

Pada riset ini akan dirancang suatu prototip berdasarkan suatu *service condition*. Kelayakan prototip ini diuji dengan *control valve sizing calculation software Firstvue* versi 1.0ab. Kerusakan *seat ring* akan menimbulkan *noise* pada suatu *sound level* tertentu (*Sound Pressure Level = SPL*) sesuai dengan besar-kecilnya kerusakan *seat ring* tadi. SPL ini akan dideteksi oleh *microphone* pada *sound pressure level meter* dan direkam oleh *software Cool Edit Pro* dalam bentuk spektrum frekuensi setiap *seat ring* dan *software Excel* versi 2007 untuk menganalisa data yang berupa angka-angka sebagai konversi dari spektrum frekuensi tadi.

Hasil analisa data dengan menggunakan *software Excel* versi 2007 akan diperoleh rumus hubungan antara SPL dengan frekuensi. Nantinya rumus ini dipergunakan untuk mencari nilai frekuensi untuk setiap *seat ring* pada tingkatan *opening valve percentage* (OVP) tertentu, sehingga akan diperoleh nilai kapasitansi.

Dengan diperoleh besarnya frekuensi setiap *seat ring* dengan OVP 0% hingga OVP 100%, maka akan diperoleh batasan nilai frekuensi. Nilai frekuensi akan menentukan besaran nilai kapasitansi dan inilah akan yang akan menjadi dasar penentuan sensor korosi yang sesuai dengan prototip.

1.3 Tujuan Penelitian

Tujuan dari riset ini dapat dirumuskan seperti di bawah ini.

- a. Mengangkat masalah nyata tentang korosi yang terjadi di *control valve* di industri khususnya industri perminyakan dan gas.
- b. Memberikan solusi akademik atas masalah tersebut, dengan fenomena sensor korosi
- c. Sensor korosi pada *control valve* yang diletakkan di dalam *body assembly valve* yang merupakan keterbaruan dalam riset ini, karena pada riset sebelumnya sensor korosi diletakkan di pipa *downstream*. Letak sensor korosi tersebut diharapkan dapat mendeteksi dini kerusakan *seat ring*.

1.4 Manfaat Penelitian

Manfaat dari riset ini diuraikan sebagai berikut.

- a. Riset baru mengenai kerusakan *seat ring* yang berada di dalam *body assembly valve* yang diakibatkan oleh *cavitation*.
- b. Pembuktian secara *experimental* penerapan *sound pressure level meter* dengan menempelkan *microphone* ke permukaan *body assembly valve* pada suatu prototip yang dibuat merupakan metode yang inovatif.
- c. Formula kapasitansi *seat ring* yang dihasilkan pada kondisi normal dan kapasitansi *seat ring* kondisi korosi yang beragam dapat berguna sebagai acuan untuk perhitungan hal yang terkait dengan sensor kapasitansi.
- d. Membuat studi sensor korosi pada *body assembly valve* guna mendeteksi sedini mungkin tingkat korosi *seat ring*. Letak sensor korosi nantinya berada di dalam *body assembly valve* agar lebih aman dari gangguan di sekitar *body assembly valve* tersebut dan gangguan dari manusia (*operator*).
- e. Diharapkan hasil riset ini dapat diterapkan di industri-industri dan dapat berguna bagi perkembangan ilmu pengetahuan di Indonesia.

1.5 Batasan Penelitian

Dalam riset ini akan dibatasi kepada kemampuan sensor korosi pada *seat ring* suatu *Industrial Process Loop* pada suatu sistem, sehingga dapat memonitor kerusakan *seat ring* sedini mungkin. Untuk pembuktian hasil riset digunakan peralatan dan alat ukur dengan spesifikasi seperti di bawah ini.

- a. *Control valve* yang dipakai adalah jenis *globe control valve* dengan spesifikasi teknis :
 - i. ukuran *body valve* 1/2 inch,
 - ii. material *body valve* dan *bonnet* 316 stainless steel,
 - iii. material *trim valve* 316 stainless steel,
 - iv. *end connection* ANSI 150#RF,
 - v. jenis karakteristik *valve* equal percentage,
 - vi. tingkat kebocoran (*class shut-off*) IV,
 - vii. jenis *actuator* Push Down To Open (PDTO) atau Failure Close,
 - viii. jenis *positioner* adalah electro-pneumatic, input 4-20 mA HART protocol,
 - ix. *pneumatic actuator*, Fail close, size 32,
 - x. asesori adalah air filter regulator, tubing dan fitting.

- b. Peralatan yang dipakai :
 - i. pompa : daya 125 watt, tegangan 220 VAC, frekuensi 50 Hz,
 - ii. kompresor udara,
 - iii. *running tool kit*.

- c. Alat ukur yang dipakai :
 - i. HART communicator,
 - ii. multi tester,
 - iii. valvelink software,
 - iv. sound pressure level meter,
 - v. loop validator.

1.6 Model Operasional Penelitian

Kegiatan riset ini merupakan sebuah studi deteksi dini korosi *seat ring* pada *Industrial Process Control*, dilihat suatu prototip dengan 5 buah *sample seat ring* yang bervariasi kerusakannya.

Besarnya kapasitansi pada suatu sensor korosi dianalogikan dengan frekuensi yang terjadi diakibatkan oleh besarnya perubahan kapasitansi pada *seat ring* [7]. Pengukuran *sound level* dideteksi dengan alat ukur *sound pressure level meter* dan direkam oleh *software Cool Edit Pro* yang dipasang di suatu laptop dalam bentuk spektrum frekuensi. Pengukuran *sound level* dilakukan di setiap *sample seat ring* dan direkam oleh *software Cool Edit Pro* versi 2.0 berupa spektrum frekuensi sebanyak tiga kali pada OVP tertentu, sehingga hasil pengukuran seluruhnya sebanyak 90 data pengukuran (dapat dilihat pada Lampiran 1). *Software Excel* versi 2007 dipergunakan untuk menganalisa spektrum frekuensi, sehingga akan didapat rumus hubungan antara SPL dengan frekuensi.

Langkah riset yang dilakukan diuraikan di bawah ini.

1. Studi jurnal yang sudah ada/dipublikasi dan menentukan beberapa jurnal yang mendekati dengan topik riset ini.
2. Mendalami fenomena fisik dari aplikasi *control valve* di industri khususnya industri minyak dan gas.
3. Mencari dan menentukan problematika *control valve* di industri minyak dan gas. Dalam riset ini problematika *control valve* yang dibahas adalah kerusakan *seat ring* yang disebabkan oleh *cavitation*. Hal ini menarik dibahas karena jumlah *control valve* di industri minyak dan gas sangat banyak, yaitu lebih dari 2000 unit. Saat masa pemeliharaan yang umumnya dilakukan sekali dalam satu tahun, terkadang *control valve* yang dilepas dari *piping system* belum tentu rusak, namun sudah menjadi faktor biaya pemeliharaan karena pelepasan *control valve* tadi membutuhkan biaya teknisi dan *commissioning spare-part* untuk dapat kembali dipasang di *piping system*. Saat ini kerusakan *control valve* di industri hanya dilihat secara *visual operator*, masih belum adanya sensor *device* yang dipergunakan untuk mendeteksi sedini mungkin kerusakan *seat ring* suatu *control valve*.
4. Melakukan studi banding ke beberapa industri minyak dan gas bahkan industri kimia dengan mengunjungi secara langsung industri-industri tersebut. Industri-industri yang

telah dikunjungi adalah a). industri minyak dan gas; b). industri pupuk (*fertilizer*) dan c). industri kimia.

5. Menentukan topik yang tepat atas point ke 3 dan 4 di atas.
6. Mempelajari lebih detail *control valve* beserta segala problematikanya secara *text book* dan jurnal-jurnal.
7. Membuat perurutan rumusan kapasitansi dari *seat ring* kondisi normal dan korosi dengan tingkat yang bervariasi
8. Merancang prototip dengan membuat P&ID (*Piping & Instrument Diagram*).
9. Menguji layak-tidaknya prototip dengan menggunakan *control valve sizing calculation software Firstvue* versi 1.0ab yang *download* dari suatu *control valve manufacturer*. Ketika prototip dinyatakan layak, maka akan dilakukan proses pengukuran terhadap beberapa *sample seat ring*.
10. Membuat beberapa *sample seat ring*, yaitu *seat ring 0* atau *seat ring* kondisi normal, *seat ring 1* atau *seat ring* diberi lubang satu, dengan setiap lubang mempunyai diameter 1,5 mm, *seat ring 2*, *seat ring 3*, *seat ring 4* dan *seat ring 5*.
11. Merakit semua peralatan yang dibutuhkan termasuk asesorisnya sesuai dengan rancangan P&ID.
12. Melakukan proses kalibrasi setiap pergantian *seat ring* agar diperoleh hasil pengukuran yang akurat.
13. Mengambil data pengukuran di setiap *seat ring* dengan OVP 0%, 25%, 50%, 75% dan 100% sebanyak 3 kali setiap *seat ring* dengan OVP tertentu.
14. Data pengukuran yang berupa SPL direkam dengan *software Cool Edit Pro* versi 2.0 untuk mendapatkan spektrum frekuensi.
15. Mencari hubungan SPL dengan frekuensi dengan *software Excel* versi 2007.
16. Menentukan sensor korosi yang tepat untuk studi rancangan sensor korosi *control valve*.
17. Studi desain sensor korosi menggunakan spesifikasi teknis sensor yang telah dibahas pada riset sebelumnya, lalu dalam riset ini diubah besarnya nilai ketebalan *diaphragm* karena disesuaikan dengan karakteristik analisa hasil pengukuran yang telah dilakukan pada prototip yang dibuat.

1.7 Sistematika Penelitian

Dalam bab pertama berisi pendahuluan umum. Pada Bab kedua berisi teori dasar yang terkait dengan area riset. Bab ketiga berisi desain & pembuatan prototip, serta percobaan dan pengukuran. Pada Bab keempat berisi analisa dan diskusi serta pada Bab kelima disampaikan kesimpulan dari analisis.



BAB 2 TEORI DASAR

2.1 Control Valve

Pada *industrial process control* terdiri dari ratusan atau ribuan *process control loop* yang saling berhubungan satu sama lainnya dan diintegrasikan dalam satu sistem control biasanya berupa *Distributed Control System (DCS)* atau *Programmable Logic Controller (PLC)* guna memproduksi suatu produk untuk dijual. Setiap *process control loop* dirancang untuk menjaga *process variable* seperti *pressure, liquid level, flow* dan *temperature*.

Process variable yang didapat dari *sensor, transmitter, disturbance* digabung dan disesuaikan dengan nilai *set-point* tertentu oleh suatu *controller*. *Controller* akan mengukur, membandingkan dan menghitung dan kemudian hasilnya akan dikirimkan ke *final control element*.

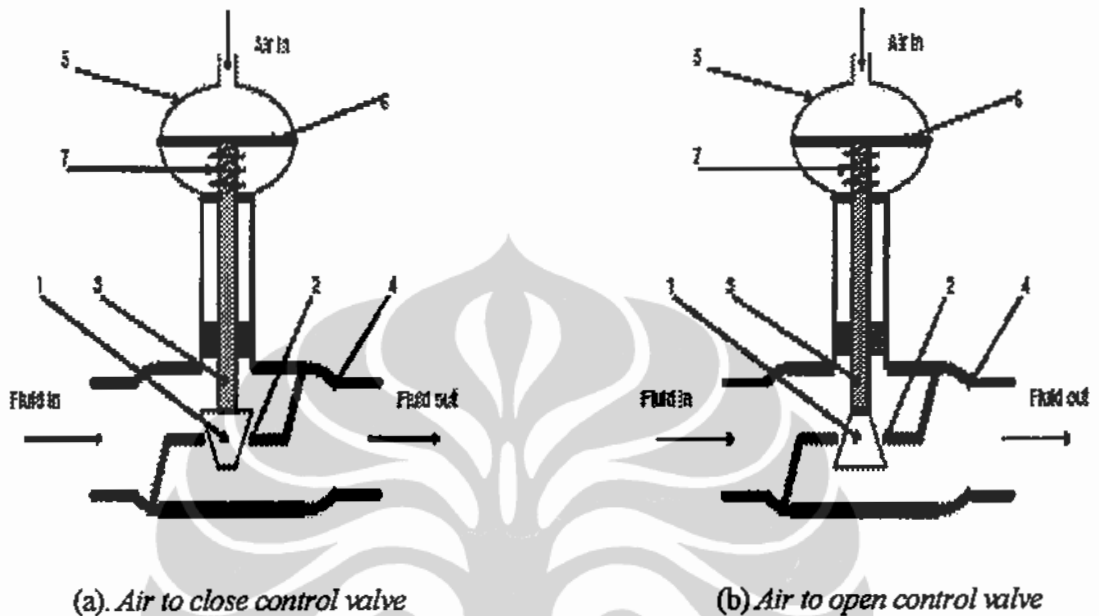
Kebanyakan *final control element* pada *industrial process control* adalah *control valve* [1]. Definisi *control valve* yang dipakai oleh *Scientific Apparatus Makers Association (SAMA)* [2] [8] adalah sebuah valve dengan *pneumatic, hydraulic, electric* atau jenis *actuator* lain yang secara otomatis sepenuhnya atau sebagian membuka atau menutup valve ke posisi tertentu sesuai dengan signal yang diterima dari *controller*.

Control valve biasanya dipakai untuk *throttle energy* dan bukan hanya untuk tujuan *shut-off*, sehingga penentuan *internal parts* dirancang dapat mengatasi *high fluid velocity* dan *turbulence* untuk masa kerja/operasi yang lama tanpa sering mengalami perbaikan-perbaikan. *Control valve* terdiri dari 1) *plug valve*; 2) *seat ring*; 3) *stem*; 4) *body assembly valve*; 5) *actuator casing*; 6) *diaphragm*; 7) *actuator spring* seperti yang ditunjukkan pada Gambar 2.1. *Plug valve* dan *seat ring* merupakan bagian dalam dari *body assembly valve* sedangkan *actuator casing, diaphragm* dan *actuator spring* merupakan bagian dalam dari *actuator*. Jenis *actuator* bermacam-macam, yaitu *pneumatic actuator, piston actuator, electrical actuator* dan *hydraulic actuator*. Namun dalam riset ini menggunakan *actuator* berjenis *pneumatic actuator*. Daya dorong atau *force actuator* harus lebih besar dari *body assembly valve force* agar *control valve* tidak bocor supaya *actuator* mampu untuk membuka dan menutup *plug valve* secara *sliding stem*. Jika daya dorong *actuator* lebih kecil dari *body assembly valve force*, maka akan terjadi kebocoran yang disebabkan

actuator tidak cukup kuat untuk menutup *valve plug*. *Body assembly valve* berjenis *unbalance guiding* mempunyai ukuran *pneumatic actuator* yang lebih besar daripada *body assembly valve* berjenis *balance guiding* karena dibutuhkan *force* lebih besar pada jenis *unbalance guiding* agar *pneumatic actuator* cukup untuk bekerja sesuai dengan *service condition* yang ada. Pada *body assembly valve* berjenis *unbalance guiding* aliran fluida yang melalui *upstream pipe* langsung mengenai *valve plug*, sedangkan pada *balance guiding* aliran fluida akan mengenai *cage* sebelum *valve plug*. *Body assembly valve* berjenis *balance guiding* lebih stabil dan mempunyai umur (*life time*) pemakaian yang lebih lama dibandingkan dengan *body assembly valve* berjenis *unbalance guiding*. Bila *service condition* suatu *process control loop* berpotensi mengalami masalah *cavitation*, maka *body assembly valve* berjenis *balance guiding* ini yang banyak dipilih dalam aplikasi seperti ini, sehingga jenis *cage* tadi diubah menjadi *recovery cavitation cage* untuk mengatasi masalah *cavitation* ini. Jika *body assembly valve* dipilih untuk mengatasi *cavitation*, maka diperlukan *device* tambahan di luar *control valve*, seperti *diffuser* atau *silencer* yang dipasang di sisi *downstream pipe*. Cara di atas dapat dilakukan untuk *control valve* yang baru akan dibeli. *Control valve* merupakan suatu *engineering product*, sehingga sebelum dibeli harus dilakukan tahapan *engineering* berupa *control valve sizing calculation*. Dalam tahapan *engineering* ini akan dapat diketahui apakah *control valve* tersebut akan mengalami ada tidaknya *cavitation*. Dasar tahapan *engineering* ini adalah melalui *service condition*nya, sehingga akan memperoleh hasil akhir tahapan *engineering* berupa *control valve sizing calculation* sebagai dasar pemilihan jenis (*product selection*) *control valve* yang sesuai dengan *service condition*. Dalam tahap *product selection* ini setiap *manufacture* mempunyai cara tersendiri disesuaikan dengan data *sizing coefficient* dari setiap jenis *control valve* yang diproduksinya.

Dalam aplikasi *failure-nya control valve* dibagi menjadi dua, yaitu *air to close (fail open) control valve* dan *air to open (fail close) control valve* lihat pada Gambar 2.1. *Air to close* artinya ketika diberi *air supply* di *air-in*, maka *plug valve* akan bergerak ke bawah (mendekati *seat ring*) dan *opening valve percentage (OVP)* semakin kecil yang akhirnya *plug valve* menekan rapat-rapat *seat ring* sehingga tidak ada aliran fluida dapat mengalir. *Air to open (fail close) control valve* artinya ketika diberi *air supply* pada *air-in* maka *plug valve* akan bergerak menjauhi *seat ring* dan *OVP* akan semakin besar sehingga aliran fluida

akan mengalir semakin besar. Pemilihan jenis *control valve* ini ditentukan oleh desain sistem kontrol oleh *process licenser*.



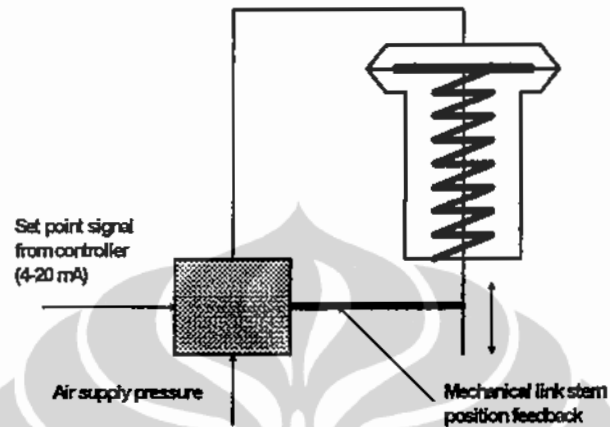
Gambar 2.1. Skematik *control valve* [8]

Pada dasarnya *body assembly valve* mempunyai beberapa jenis yaitu a) *globe valve*; b) *gate valve*; c) *plug valve*; d) *ball valve* dan e) *butterfly valve*.

Actuator merupakan suatu perangkat mekanik yang secara fisik membuka dan menutup *body assembly valve*. *Actuator* harus dapat memberikan posisi keluaran yang akurat secara proposional dengan input yang diterimanya. *Actuator* harus mempunyai tenaga (*force*) yang lebih besar dari a) tenaga kelembaman; b) tenaga fiksi *static* dan c) tenaga dorong yang disebabkan oleh berat dan *unbalance fluid pressure*.

Perangkat utama lain dari *control valve* adalah *positioner*. Jenis *positioner* bermacam-macam yang dibahas dalam riset ini adalah *pneumatic positioner*. Skematik *pneumatic positioner* dijelaskan pada Gambar 2.2. Posisi stem tergantung dari a) luas *diaphragm*; b) tekanan pada *diaphragm*; c) tenaga *spring*; d) *pressure drop* pada *seat ring*; e) *hysteresis* disebabkan oleh *packing* dan f) berat dari *internal trim part*. *Pneumatic positioner* mempunyai *acting direct* dan *acting reverse*. *Acting direct* adalah *set point* signal 4-20 mA mewakili OVP 0% - 100%, sedangkan *acting reverse* adalah *set point*

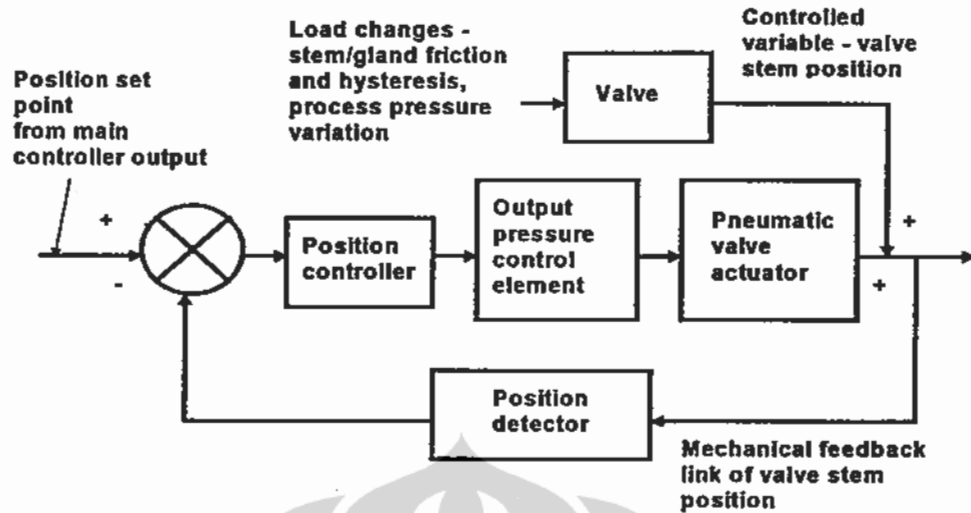
signal 4-20 mA mewakili OVP 0% - 100%, sedangkan *acting reverse* adalah *set point* signal 4-20 mA mewakili OVP 100% - 0%. Dalam perkembangan teknologi *pneumatic positioner*, *set point* signal tidak hanya 4-20 mA namun sudah dapat menerima *set point* signal 4-20 mA HART protocol, *digital foundation fieldbus* dan *digital profibus*.



Gambar 2.2. *Pneumatic positioner* [8]

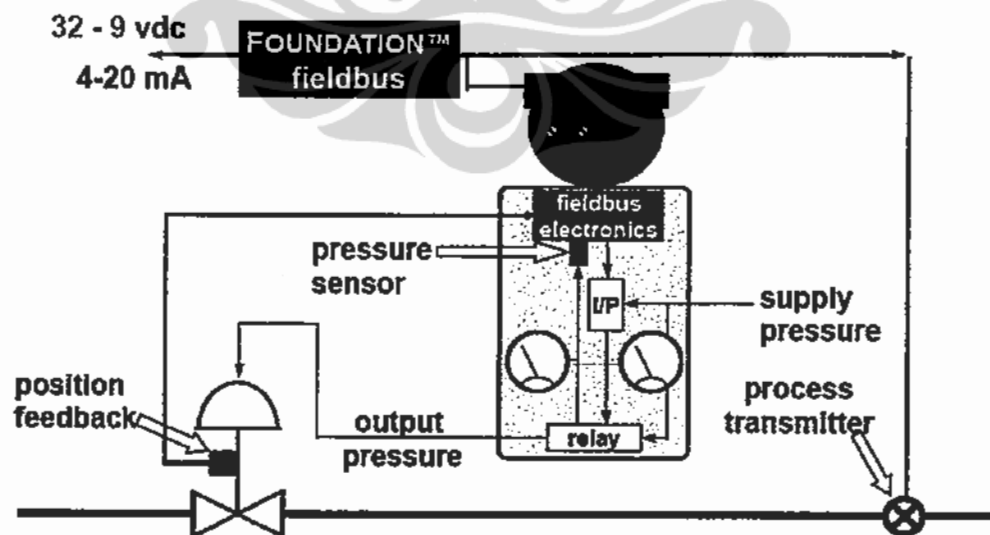
Pneumatic positioner menerima udara dari *air supply* umumnya besarnya sekitar 250 psig kemudian besar-kecilnya udara yang ke *actuator* umumnya psig 0-18 psig atau 0-33 psig [2] diatur oleh *set point* signal yang diterimanya dari *controller*, biasanya bentuk *controller* saat ini di industri adalah DCS (*Distributed Control System*) atau PLC (*Programmable Logic Controller*). *Set point* signal 4-20 mA mewakili OVP 0% - 100%. *Pneumatic positioner* akan mengkonversikan *set point* signal ke *pneumatic* signal, *pneumatic* signal ini yang akan menggerakkan *actuator* sesuai dengan besarnya *pneumatic* signal tadi. *Mounting bracket* berupa *mechanical link stem* yang berfungsi sebagai posisi *feedback*.

Ketiga perangkat utama *control valve*, yaitu *body assembly valve*, *actuator* dan *pneumatic positioner* bekerja bersama-sama sehingga *set point* signal yang diterima dari *controller* kemudian besarnya OVP sesuai dengan *set point* signal, sistem kerja *control valve* dapat diilustrasikan dalam blok diagram *control valve* seperti Gambar 2.3 dan bentuk fisik operasi kerja *control valve* seperti Gambar 2.4.



Gambar 2.3. Blok diagram kerja *control valve* [8]

Gambar 2.3 menjelaskan set point yang telah dirancang dan diprogramkan oleh suatu controller dan controller memerintahkan control element untuk membuka-menutup dengan posisi tertentu. Setiap pergerakan stem dideteksi oleh *position detector* yang berupa *mechanical feedback* yang dihubungkan dengan stem tadi. Informasi yang dideteksi akan dibaca dan dibandingkan oleh komparator. Dengan demikian *opening valve percentage* dapat dikendalikan oleh *controller* agar tetap membuka-menutup sesuai dengan *set point* yang diberikan.

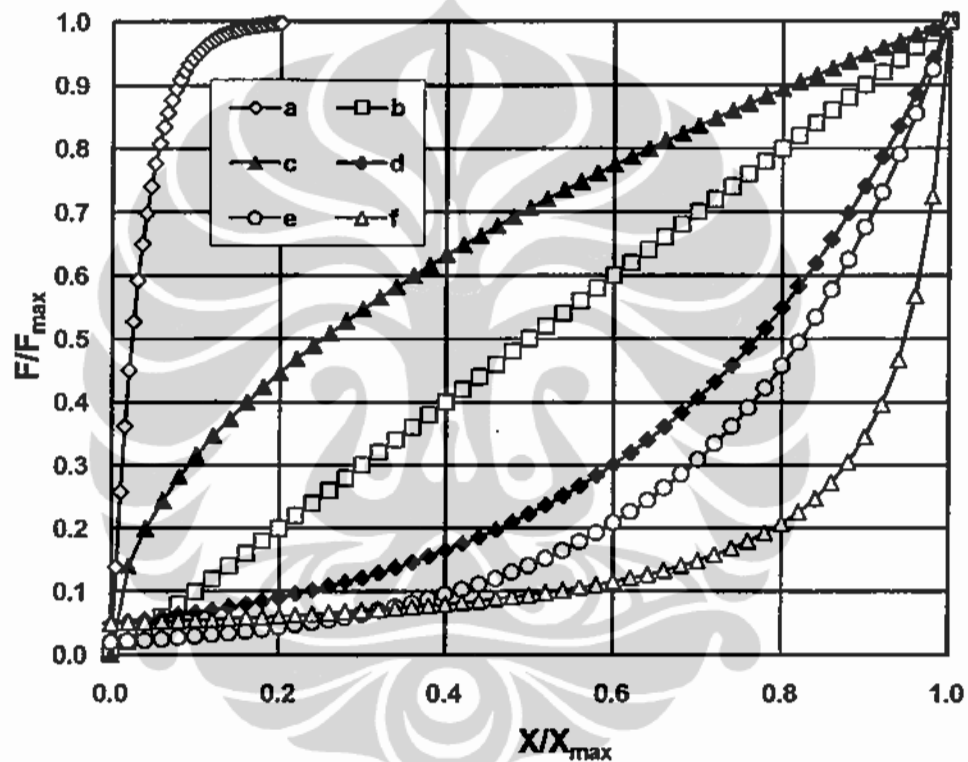


Gambar 2.4. Bentuk fisik operasi kerja *control valve* [9]

Karakteristik *control valve* adalah hubungan antara *valve position* dengan *flowrate* yang dirumuskan mengikuti Persamaan 2.1.

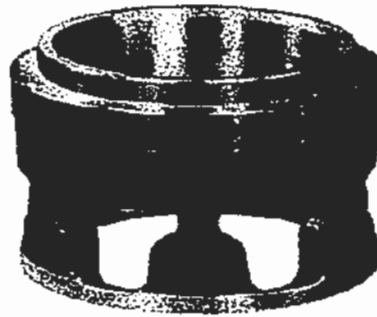
$$\frac{F}{F_{max}} = f\left(\frac{x}{x_{max}}\right) = f(x) \quad (2.1)$$

Ada 3 macam karakteristik *body assembly valve*, yaitu a) *quick opening*, b) *linear* dan c) *equal percentage* seperti yang ditunjukkan pada Gambar 2.5.



Gambar 2.5. Karakteristik *body assembly valve* [10].

Karakteristik *quick opening* memberikan perubahan *flowrate* yang besar pada OVP kecil. Karakteristik jenis ini banyak dipergunakan untuk aplikasi *on/off* karena *control valve* harus bekerja dengan cepat dari posisi tutup ke buka atau dari posisi buka ke tutup. Bentuk fisik karakteristik *quick opening* seperti pada Gambar 2.6.



Gambar 2.6. Bentuk fisik *quick opening body assembly valve* [2]

Karakteristik linear memberikan perubahan secara linear antara OVP dengan *flowrate*, hubungan ini dapat diuraikan dalam Persamaan 2.2.

$$\frac{F}{F_{max}} = \frac{X}{X_{max}} \quad (2.2)$$

Bentuk fisik karakteristik linear seperti pada Gambar 2.7.



Gambar 2.7. Bentuk fisik linear *body assembly valve* [2]

Karakteristik *equal percentage* memberikan perubahan secara *equal percentage* antara OVP dengan *flowrate* dan perubahan ini ditentukan daerah *equal percentage* α dengan Persamaan 2.3.

$$\alpha = \frac{F_{max}}{F_{min}} \quad (2.3)$$

sehingga karakteristik *equal percentage* mengikuti Persamaan 2.4. Bentuk fisik karakteristik linear seperti pada Gambar 2.8.

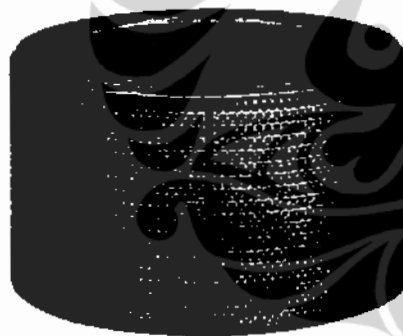
$$\frac{F}{F_{max}} = \alpha^{(x-1)} \quad (2.4)$$

Nilai batasan α berada di antara $20 < \alpha < 50$.



Gambar 2.8. Bentuk fisik *equal percentage body assembly valve* [2]

Bentuk karakteristik *cage* seperti Gambar 2.6, Gambar 2.7 dan Gambar 2.8 hanya ada pada *body assembly valve* jenis *balance guiding*. Sebagaimana disebutkan sebelumnya, jika diprediksi akan terjadi *cavitation* atas *service condition* yang diberikan, maka harus diberikan *recovery cavitation cage* biasanya berbentuk karakteristik *cage* seperti pada Gambar 2.9.



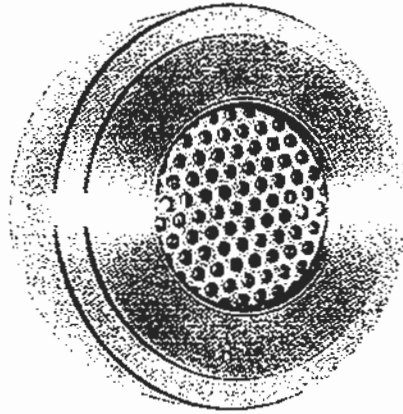
(a) Bentuk total *recovery cavitation cage*



(b). Struktur *recovery cavitation cage*

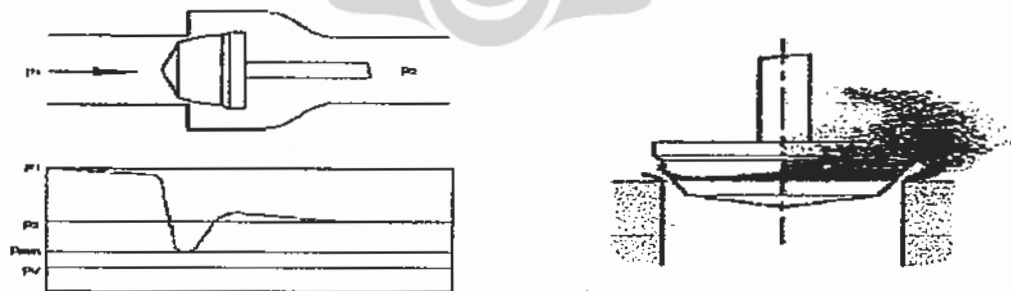
Gambar 2.9. Bentuk karakteristik *recovery cavitation cage* [9]

Berbeda dengan *body assembly valve* berjenis *unbalance guiding* mempunyai bentuk karakteristiknya terjadi di *plug valve*. Bila diprediksi akan terjadi *cavitation* pada *service condition*nya maka di sisi *downstream pipe* ditambahkan *silencer/diffuser* berbentuk seperti pada Gambar 2.10.

(a). Bentuk *silencer*(b). Bentuk *diffuser*Gambar 2.10. Bentuk *recovery cavitation* pada *unbalance guiding* [9]

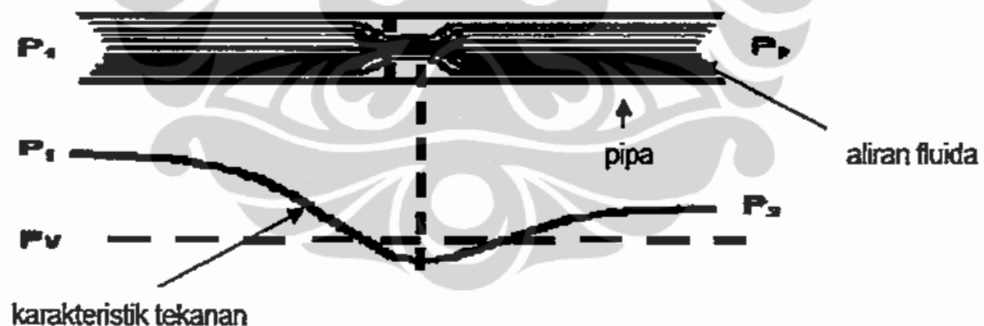
2.2 Cavitation

Cavitation yang dimaksud dalam riset ini adalah *cavitation* yang terjadi di *control valve*. Umumnya *cavitation* dipahami sebagai proses dinamik dari suatu formasi fluida. *Cavitation* terjadi ketika kecepatan *flow* yang tinggi menyebabkan *local hydrostatic pressure* jatuh pada *critical value* (*vapor pressure*) [10]. Hal ini yang akan menimbulkan gelembung kecil (*bubbles*). Pada akhirnya gelembung tersebut akan mengakibatkan *vibrasi*, *noise* dan erosi pada permukaan *internal trim part*. Pada umumnya formasi *cavitation* terlihat pada Gambar 2.11.

Gambar 2.11. Formasi *Cavitation* [2]

Gambar 2.11 menjelaskan bahwa aliran fluida yang akan melewati *upstream pipe control valve* dengan tekanan masukan (*inlet pressure*) p_1 tertentu akan menyentuh dengan *plug valve* (bagian dari *internal trim*). *Plug valve* ini akan bergerak ke atas dan ke bawah sesuai perintah yang diterima dari *controller*. Dinding metal yang bersentuhan langsung dengan *plug valve* adalah *seat ring*, pergerakan *plug valve* yang menjauhi *seat ring* akan semakin memperbesar bukaan valve (*opening valve percentage* disingkat *OVP*), sebaliknya pergerakan *plug valve* yang mendekati *seat ring* akan semakin memperkecil *OVP*. Pergerakan *plug valve* ini akan menimbulkan perubahan besarnya beda tekanan (*pressure drop*). Beda tekanan adalah selisih antara tekanan keluaran (*downstream pressure*) p_2 dengan tekanan masukan.

Peristiwa *cavitation* yang ditunjukkan pada Gambar 2.12 akan terjadi jika tekanan masukan yang akan melewati *control valve* akan mengalami suatu kondisi *vena contracta* yaitu *flow* dan *pressure* minimal sedangkan kecepatannya *maximal*, setelah *pressure* melewati *control valve* yang nilainya melebihi *vapor pressure* fluida. Peristiwa seperti ini disebut *cavitation*. Pada keadaan *cavitation*, kontinuitas aliran fluida terganggu akibat terbentuknya *bubble* yang terlihat Gambar 2.13 dengan P_1 *inlet pressure*, P_2 *outlet pressure* dan P_v *vapor pressure*.

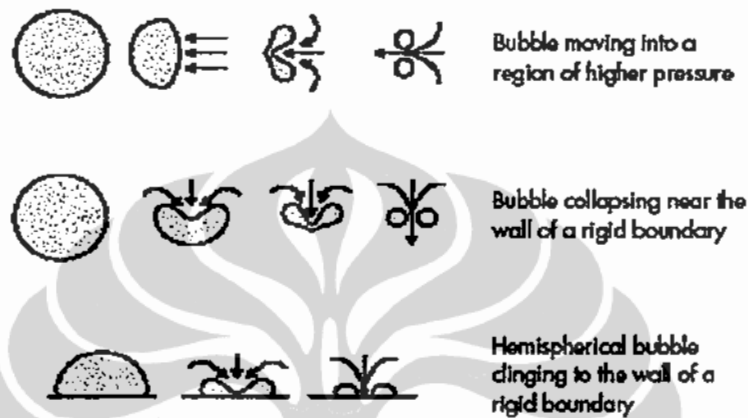


Gambar 2.12. Peristiwa *Cavitation* [5]

Untuk menjaga aliran fluida yang melewati *control valve* tersebut tetap, maka kecepatan (atau energi kinetik) harus berada di nilai tertinggi pada *vena contracta* [5]. Penambahan kecepatan harus diikuti dengan penurunan tekanan (atau energi potensial) pada *vena contracta*. Selanjutnya di sisi *downstream* jumlah fluida membesar, kecepatan menurun dan tekanan meninggi, tentunya besarnya tekanan tidak mungkin sama dengan

tekanan pada sisi *upstream*. Perbedaan tekanan (*pressure differential ΔP*) yang terjadi merupakan sebuah ukuran dari besarnya energi yang hilang pada *control valve* itu.

Differential pressure ini merupakan dasar terjadinya kerusakan pada *internal trim* (*seat ring & plug valve*). Apabila *pressure* pada *vena contracta* jatuh di bawah *vapor pressure* suatu fluida, maka akan terbentuk *bubble* seperti terlihat pada Gambar 2.13.



Gambar 2.13. Proses Terbentuk *Bubble* [5]

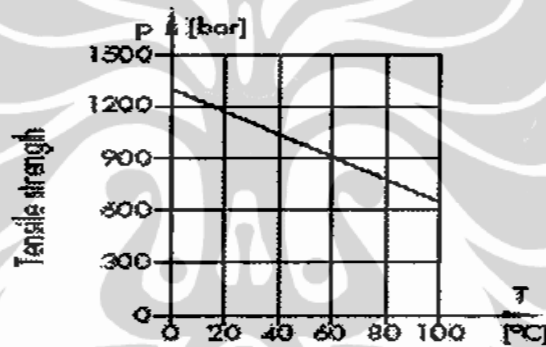
Bila *downstream pressure recovery* cukup untuk menaikkan *downstream pressure* di atas *vapor pressure* fluida, maka *bubble* akan *collapse* atau meledak sehingga akan menghasilkan *cavitation* dan *collapsing* akibat *bubble* itu akan menimbulkan *noise*. Hal ini dapat diperhatikan pada Gambar 2.14.



Gambar 2.14. Ilustrasi *Collapse* sebuah *Bubble* [10]

Implosion bubble yang terjadi sepanjang waktu, akan mengakibatkan dinding *seat ring* suatu *control valve* menjadi rusak, sehingga kerusakan *seat ring* itu memberikan dampak negatif berupa penambahan tingkat kebocoran *control valve* yang melebihi dari *allowable leakage classification*.

Untuk menciptakan *bubble* pada fluida, pertama fluida dikembangkan dan dipecah dan secara teori fluida dapat menyerap daya rentang yang tinggi (*high tensile strength*) seperti pada Gambar 2.15 atau tekanan negatif. Ackeret memperkirakan tekanan negatif menyebabkan *cavitation* pada air murni di suhu 20°C dengan mengikuti kurva Van Der Waal serta menerima teori daya rentang 10^4 bar yang dapat memadatkan air secara bolak-balik [11]. Gangguan (*disturbance*) pada struktur *quasi-crystalline* air dapat mengurangi daya rentang dengan minimum *one order of magnitude* [10].



Gambar 2.15. *Tensile strength value* untuk air murni [10]

Bubble yang terbentuk tadi merupakan kombinasi dari *pressure* bertekanan tinggi, sehingga hal ini akan mempengaruhi besar-kecilnya intensitas *cavitation* itu.

Tiga parameter yang harus dipertimbangkan untuk memprediksi *cavitation* pada *control valve* adalah : a) *valve inlet pressure* p_1 ; b) *valve outlet pressure* p_2 dan c) *vapor pressure* p_v . Intensitas *cavitation* yang akan timbul bergantung seberapa besar hubungan antara ketiga parameter tersebut yaitu *pressure drop* yang semakin besar (*pressure* melewati valve dari p_1 ke p_2 yang semakin besar) dan besar *vapor pressure* p_v yang mendekati *outlet pressure* p_2 . Semakin besar nilai kedua parameter di atas akan menghasilkan intensitas *cavitation* yang besar. Awal tahun 1917 Rayleigh membuat perhitungan *single bubble*

dengan mengabaikan kerenggangan permukaan (*surface tension*) dan viskositas [13] seperti yang ditunjukkan pada Persamaan 2.5 [10].

$$p_i = c_F \cdot \rho_F \cdot U_R = c_F \cdot \sqrt{\frac{2}{3}} \cdot p_0 \cdot \rho_F \cdot \left(\frac{R_0^3}{R_E^3} - 1 \right) \quad (2.5)$$

Untuk muatan gas, Guth menemukan perhitungan maximum tekanan *implosion* dengan asumsi *adiabatic compression* adalah konstan $p \cdot V^\gamma$ [14] seperti Persamaan 2.6 [10].

$$p_{i \max} = p_N \cdot (\gamma - 1)^{\frac{\gamma}{\gamma-1}} \cdot \left(\frac{p_G}{p_N} \right)^{\frac{1}{\gamma-1}} \quad (2.6)$$

Dengan mengabaikan *thermal conduction* karena nilainya sangat kecil dan waktu *implosion* yang singkat, maka *temperature maximum* terjadi menjadi Persamaan 2.7 [10]

$$T_{i \max} = T \cdot (\gamma - 1) \cdot \left(\frac{p_G}{p_N} \right) - \frac{1}{\gamma} \quad (2.7)$$

Hasil pengukuran ratio tekanan gas di dalam *bubble* p_G dengan tekanan standar p_N , akan menghasilkan muatan gas pada *bubble* seperti ditunjukkan pada Tabel 2.1.

Tabel 2.1. Nilai maximum muatan gas [10]

$\frac{p_G}{p_N} [-]$	$p_{i \max} \left[\frac{N}{mm^2} \right]$	$T_{i \max} [K]$
0.1	1.3	610
0.05	7.2	990
0.01	405	3140
0.005	2290	5160

Intensitas *cavitation* dipengaruhi oleh beberapa parameter, yaitu a) Nilai *valve-specific* (X_{FZ}) dari *control valve*; b) operasi dari rasio tekanan (X_F); c) perbedaan tekanan antara p_2 dengan p_v ; d) sifat geometris dari *control valve downstream* pada *restriction*; e) gas dari fluida; f) viskositas dari fluida; g) tegangan permukaan pada fluida; h) massa jenis fluida.

Perbedaan antara tekanan dalam *bubble* dan tekanan pada tempat ledakan berperan sebagai pengendali gaya disaat *bubble collapse*. Zona *cavitation* semakin meluas dan jumlah dari *cavitation bubble* bertambah sebagai perbedaan antara rasio tekanan X_F dan *valve-specific* X_{FZ} untuk mengawali penambahan *cavitation*. Pada satu sisi, hal ini membawa penambahan efek merusak. Di sisi yang lain sebagai perbedaan antara X_F dan X_{FZ} yang bertambah, durasi pada fase peningkatan *bubble* juga bertambah. Konsekuensinya, jumlah yang lebih besar gas dilarutkan dalam fluida yang terdifusi pada *bubble*.

Gas yang terdifusi dibawa oleh *bubble* pada zona *cavitation* dan dibebaskan ketika *bubble collapse*, sehingga kompresibilitas K dari fluida bertambah dalam area yang *collapse*, dan kepadatan berkurang. Konsekuensinya, kecepatan suara (C_F) menjadi turun seperti pada Persamaan 2.8 [10].

$$C_F = \frac{1}{\sqrt{K \cdot \rho_F}} \quad (2.8)$$

Awal dari *cavitation* terjadi ketika rasio tekanan lebih besar dari X_{FZ} dan intensitas yang lebih kecil akibat kurangnya *cavitation*, mengakibatkan energi *bubble* yang meledak lebih besar dan gradien tekanan yang lebih besar pula pada *downstream restriction*.

Pengurangan viskositas menyebabkan bertambah jumlah ukuran dan *bubble*. Ditambah *kinematic impuls* dari *micro-jet* pada viskositas cairan yang rendah lebih besar daripada viskositas yang tinggi. Jika kondisi aliran lapisan diasumsikan disebabkan oleh kecilnya ukuran untuk *micro-jet*, maka kecepatan *jet* adalah berkebalikan dari viskositas secara *proportional*. Hubungan eksponensial yang diberikan antara erosi material Δm , dan kecepatan jet v ditunjukkan pada Persamaan 2.9 [10]

$$\frac{\Delta m_1}{\Delta m_2} = \left(\frac{v_1}{v_2}\right)^k \quad (2.9)$$

Dengan nilai $k = 1 \dots 8$ dan untuk pengaruh yang berbeda dari viscositas operasi pada erosi material dirumuskan pada Persamaan 2.10 [10]

$$\frac{\Delta m_1}{\Delta m_2} = \left(\frac{v_2}{v_1}\right)^k \quad (2.10)$$

Tekanan akan terjadi ketika *bubble* meledak proporsional. Tegangan permukaan atau kapilaritas membuat tekanan pada *bubble* meningkat.

Pada *cavitation noise*, tekanan puncak yang diinduksikan oleh ledakan *bubble* menyebabkan erosi pada material. Pendekatan secara teori yang menjelaskan bagaimana *noise* terbentuk didasarkan pada *bubble* meledak secara terkonsentrasi dalam sebuah fluida yang diperluas secara tidak tentu dan tanpa mempengaruhi satu sama lain. Persamaan *cavitation noise* dirumuskan pada Persamaan 2.11 [10].

$$p(r, t) = \frac{\rho_F}{4\pi r} \cdot \frac{d^2}{dt^2} \cdot V(t) \cdot \left(t - \frac{r}{c_F} \right) \quad (2.11)$$

Dengan $V(t)$ adalah tingkat perubahan volume *bubble* yang dapat ditentukan dengan pendekatan persamaan differensial "Rayleigh-Plesset" dan r merupakan jarak antara sumber suara dan titik observasi. Distribusi *spectral* dari energi $E(f)$ pada Persamaan 2.12 dari *noise* yang tercipta oleh *bubble* didapat dari *squared Fourier transform* dari *pressure over time* di dalam *far field* [10].

$$E(f) = \left(\int_{-\infty}^{+\infty} p(t) \cdot e^{-2\pi i f t} dt \right)^2 \quad (2.12)$$

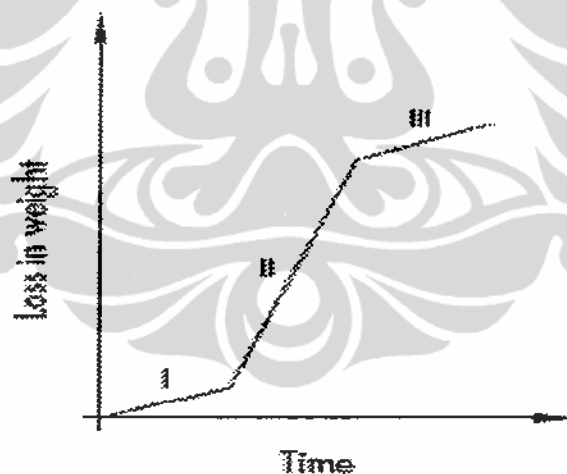
Energi *spectral* meningkat pertama kali dengan frekuensi f yang dinaikkan ke pangkat 4 dan mencapai maksimum pada frekuensi yang memiliki rasio *inverse* yang kira-kira sama dengan waktu pecah *bubble*. Sebagai akibat dari berbanding lurusnya antara waktu *bubble* pecah dengan radius *bubble*, nilai maksimum *noise* digeser ke frekuensi-frekuensi yang lebih rendah, sehingga radius *bubble* naik. Pada nilai frekuensi di atas nilai maksimum, energi *spectral* turun pada $f^{-2/5}$. Jika *bubble* yang pecah dianggap sebagai kejadian-kejadian acak yang tidak berhubungan satu sama lain, yang memiliki frekuensi mengikuti distribusi *Poisson*. Hal ini memungkinkan untuk memperoleh energi suara *spectral* total atau $E_{total}(f)$ dari energi *spectral* dari kejadian tunggal $E(f)$ dan jumlah rata-rata *bubble* yang pecah per unit waktu n dirumuskan pada Persamaan 2.13 [10].

$$E_{total}(f) = n \cdot E(f) \quad (2.13)$$

Pertimbangan teoritis ini dibuat untuk aplikasi *bubble* tunggal ketika *cavitation* baru terbentuk. Perbedaan bentuk zona *cavitation* saat efek dari *bubble* tunggal bertindihan satu sama lain, dan kontribusi dari tiap *bubble* pada seluruh *noise* tergantung pada *history of*

the neighboring bubble. Penyelidikan lebih luas dengan meneliti fluida yang mengcavitation sebagai *quasi continuum* dari kepadatan. *Lyamshev* menemukan pada basis ini bahwa intensitas suara dari zona *cavitation* sama dengan kecepatan aliran yang dinaikan sampai pangkat 4 atau berbanding lurus dengan kuadrat tekanan diferensial [10, 15]. Menurut German VDMA 24422 untuk memperkirakan emisi *noise* dari aliran *cavitation* pada *control valve* tidak didasarkan pada model hidrodinamik dan termodinamika, tapi malah menggambarkan aliran tingkat daya suara internal pada dasar pengukuran-pengukuran yang berkaitan dengan x_F , ρ_F , dan Δp . Pengaruh dari tekanan kepadatan dan diferensial penting untuk pola ledakan *bubble* juga hanya dihasilkan secara tidak pasti dalam persamaan VDMA empiris yang didasarkan pada pengukuran dengan air beku.

Pada *cavitation erosion*, permukaan bahan bergantung pada strukturnya, dibentuk dilonggarkan dan dierosikan menjadi partikel-partikel dalam berbagai macam cara yang disebabkan oleh peregangan frekuensi dari gelombang tekanan yang diciptakan oleh *mikro jet* yang terjadi ketika *bubble* pecah (*collapse*) seperti yang ditunjukkan pada Gambar 2.16.



Gambar 2.16. Fase terjadinya *collapse* [10].

Pada Gambar 2.16 di atas area pertama (I) merupakan perioda inkubasi saat pengurangan berat bahan belum dapat diketahui. Pada area kedua (II), menggambarkan tingkat erosi yang hampir konstan. Dan pada area ketiga (III), permukaan telah rusak. Selama perioda inkubasi, permukaan bahan hanya mengalami deformasi (perubahan

bentuk) secara elastis dan kemudian plastis. Setelah material yang terdeformasi sampai pada akhir periode inkubasi, kerusakan terjadi dan partikel-partikel bahan mulai hancur dan lepas. Patahan dan pecahan yang terjadi menyebabkan hilangnya konsentrasi material bahan secara monoton. Pada semua jenis bahan, tingkat kekasaran permukaan bahan saat *bubble* meledak membawa peningkatan erosi bahan yang dapat diperhatikan karena "*machining notches*" membantu *bubble* meledak. Energi tinggi dan tonjolan-tonjolan permukaan yang kasar tersebut menahan *bubble* yang meledak lebih kecil dari yang seharusnya.

Berbagai cara dilakukan dalam memilih *control valve* yang sesuai dengan *service conditionnya* setiap *manufacturer* mempunyai *sizing calculation software* sendiri. Penentuan ukuran *control valve* yang sesuai dengan *service condition* yang ada, dapat menggunakan persamaan dasar *liquid sizing*. *Liquid sizing* menggunakan prinsip konservasi energi yang ditemukan oleh Daniel Bernoulli yang menyatakan aliran fluida yang melewati sebuah *orifice*. Kuadrat aliran fluida adalah berbanding langsung dengan beda tekanan dan berbanding terbalik dengan *specific gravity G* seperti pada Persamaan 2.14 [2, 10].

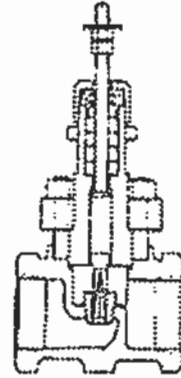
$$Q = C_v \cdot \sqrt{\frac{\Delta P}{G}} \quad (2.14)$$

Semakin besar beda tekanan maka akan semakin besar kecepatan aliran fluida. Juga semakin besar *density* akan memperkecil kecepatannya. Persamaan 2.14 ini merupakan dasar perhitungan *liquid sizing*. *Valve sizing coefficient* C_v , ditentukan dari percobaan yang dibuat dan diumumkan oleh manufaktur *control valve* seperti yang ditunjukkan pada Tabel 2.2.

Tabel 2.2. Valve sizing coefficient C_v [9]

FLOW COEFFICIENTS (ANSI/ISA/IEC)

24000S SERIES STAINLESS STEEL CONTROL VALVES

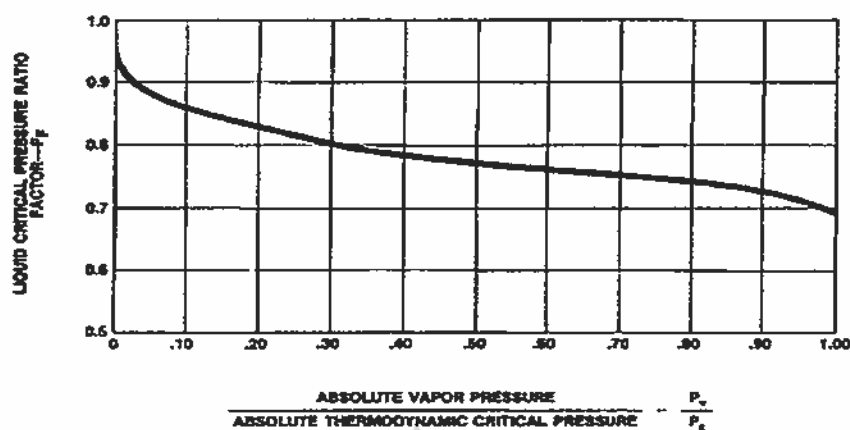


MODEL 24588S EQUAL PERCENTAGE (METAL SEAT)																
BODY SIZE	PORT DIA.	PLUG TRAVEL	C_v at VALVE OPENING - PERCENT OF PLUG TRAVEL											F_i	F_o	
			5	10	20	30	40	50	60	70	80	90	100			
1/2"	.250	.50	.0008	.0012	.0024	.036	.012	.016	.024	.04	.068	.10	.20	0.99	0.28	
	.250	.50	.002	.003	.006	.015	.036	.040	.060	.10	.170	.250	.50			0.28
	.250	.50	.006	.01	.02	.04	.06	.12	.20	.35	.50	.82	1.0			0.46
	.375	.50	.008	.015	.03	.05	.07	.14	.25	.41	.65	1.0	1.5			0.46
1"	.375	.50	.015	.03	.06	.10	.20	.35	.60	.90	1.3	1.8	2.5	0.90	0.46	
	.813	.50	.10	.15	.39	.60	.88	1.20	1.60	2.10	2.71	3.25	4			
1 1/2"	.813	.50	.18	.24	.38	0.7	1.1	1.7	2.6	3.8	5.7	8.5	9.5	0.90	0.46	
	1.25	.75	.25	.50	.70	1.0	1.4	2.0	2.8	3.6	5.0	7.0	8.0			
2"	1.25	.75	.25	.90	1.7	2.6	3.7	5.3	7.5	11	13.5	16	17.5	0.90	0.46	
	1.50	.75	0.30	0.5	1.1	1.5	2.2	2.8	3.6	4.7	6.4	8.1	10			
	1.50	.75	0.40	1.1	1.7	2.7	4.1	6.1	8.9	11	14	16	17.5			
3"	1.50	.75	0.40	1.0	1.9	3.0	5.0	7.7	11	15	20	24	30.5	0.90	0.46	
	2.00	.75	0.72	1.4	3.8	7.5	12.8	18.7	23	27	30	33.6	35			
3"	2.00	.75	0.60	1.25	3.2	6.0	12	19	30	38	48	52	61	0.90	0.46	

Untuk menentukan maximum *allowable pressure drop* digunakan Persamaan 2.15 [2, 10].

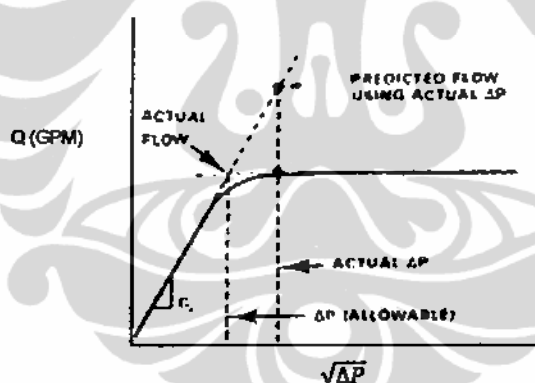
$$\Delta P_{allow} = k_m (P_1 - \tau_c P_v) \quad (2.15)$$

Di-mana ΔP_{allow} merupakan beda tekanan yang diijinkan untuk usulan *sizing*, k_m *valve recovery coefficient* yang dibuat oleh setiap manufaktur *control valve*, τ_c *critical pressure ratio* seperti yang ditunjukkan pada Gambar 2.17.



Gambar 2.17. Kurva *Critical Pressure Ratio* [2]

Jika ΔP aktual lebih kecil dari ΔP_{allow} maka ΔP aktual yang dipakai dalam proses perhitungan *valve sizing* selanjutnya. Hubungan antara beda tekanan yang diijinkan dengan beda tekanan aktual dijelaskan pada Gambar 2.18 [2, 9, 10].



Gambar 2.18. Hubungan ΔP aktual dengan ΔP yang diijinkan

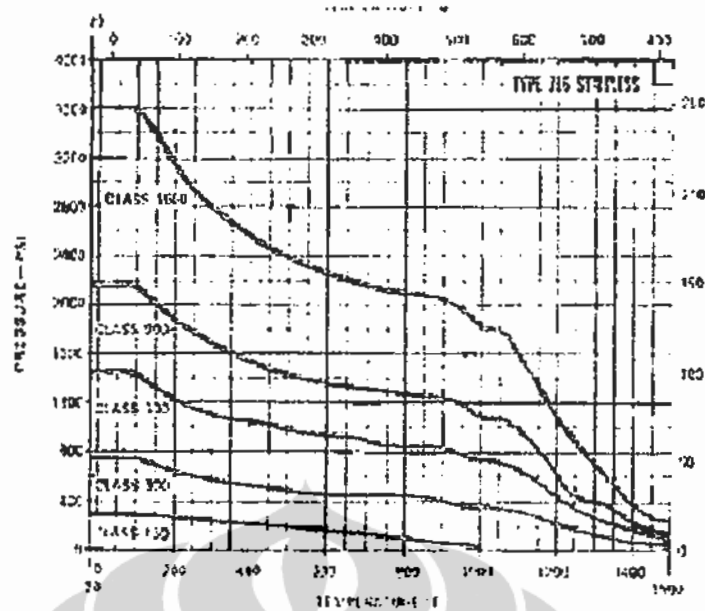
Beda tekanan yang diijinkan dapat dipergunakan untuk menghitung beda tekanan pada *body valve*. Setiap *body valve* mempunyai beda tekanan maksimum tertentu, sehingga dalam pemilihan *body valve* yang sesuai dengan beda tekanan aktualnya harus memperhatikan beda tekanan yang diijinkan pada *body valve*. Pada tahapan *sizing calculation* untuk *control valve* baru, penentuan jenis *control valve* dapat dengan mudah

dilakukan, sehingga jika ada indikasi *cavitation* akan dapat dilakukan penambahan *recovery cavitation trim* pada *control valve*. Namun akan menjadi masalah di lapangan, jika *control valve* yang dibeli dan beberapa waktu kemudian terjadi *cavitation* akibat perubahan *service condition*. Masalah inilah yang seringkali terjadi di lapangan sedangkan *control valve* tadi tidak dapat dibongkar-pasang saat masa operasi kerja. Operasi kerja *control valve* adalah 24 jam selama satu tahun atau menyesuaikan jadwal *shut-down plant* yang umumnya dilakukan setahun sekali, namun ada industri yang tidak punya waktu untuk melakukan *shut-down plant* akibat target produksi.

Pemilihan *control valve* [2] di suatu aplikasi mempertimbangkan *service condition* berikut a) jenis fluida yang akan dikontrol; b) *temperature*; c) *viscosity*; d) *specific gravity*; e) *flow capacity* saat kondisi *maximum*, normal dan minimal; f) *inlet pressure* saat kondisi kondisi *maximum*, normal dan minimal; g) *outlet pressure* saat kondisi *maximum*, normal dan minimal; h) *pressure drop* saat kondisi normal; i) *pressure drop* saat *shutoff* dan j) *inlet* dan *outlet pipeline size* dan *schedule*. Ada beberapa informasi teknik lain yang diperlukan yaitu a) material *body assembly valve*; b) *end connection* dan *rating*; c) *valve plug guiding*; d) *valve plug action*; e) *port size*; f) material *valve trim*; g) *action* yang dikehendaki ketika *air failure*; h) *flow action*; i) *actuator size*; j) *instrument air supply*; k) *bonnet style* (*plain* atau *extension*); l) material *packing* dan m) *instrument signal*.

Khusus untuk material *packing*, jika suhu fluida masih di bawah 400°F maka material *packing* dipakai *teflon* (PTFE) dan bila di atas 400°F maka dipergunakan material *grafoil*. Masih berhubungan dengan suhu fluida, bila suhu fluida di atas 300°C atau di bawah 0°C jenis *bonnet* yang dipergunakan adalah jenis *extension* atau *cryogenic* agar kinerja *control valve* masih tetap baik.

Pemilihan *body material* didasarkan kepada *pressure* seperti yang ditunjukkan pada Gambar 2.19, sehingga akan menentukan klasifikasi *end connection*nya, yaitu *class 150*, *class 300*, *class 600*, *class 900* dan *class 1500*. Batasan *temperature* seperti Tabel 2.3 dan sifat korosi dan erosi fluida seperti yang ditunjukkan pada Tabel 2.4 untuk *body material stainless steel*.



Gambar 2.19. Material *body* dan *trim stainless steel* [2]

Tabel 2.3. Batasan *temperature* [2]

ASTM Designations and Tradenames	Generic Description	Temperature Range
CR	Chloroprene	-40 to 180°F, -40 to 82°C
EPDM	Ethylene propylene terpolymer	-40 to 275°F, -40 to 135°C
FFKM, Kalrez ⁽¹⁾ , Chemraz ⁽²⁾	Perfluoroelastomer	0 to 500°F, -18 to 260°C
FKM, Viton ⁽¹⁾	Fluoroelastomer	0 to 400°F, -18 to 204°C
FVMQ	Fluorosilicone	-100 to 300°F, -73 to 149°C
NBR	Nitrile	-65 to 180°F, -54 to 82°C
NR	Natural rubber	-20 to 200°F, -29 to 93°C
PUR	Polyurethane	-20 to 200°F, -29 to 93°C
VMQ	Silicone	-80 to 450°F, -62 to 232°C
PEEK	Polyetheretherketone	-100 to 480°F, -73 to 250°C
PTFE	Polytetrafluoroethylene	-100 to 400°F, -73 to 204°C
PTFE, Carbon Filled	Polytetrafluoroethylene, Carbon Filled	-100 to 450°F, -73 to 232°C
PTFE, Glass Filled	Polytetrafluoroethylene, Carbon Filled	-100 to 450°F, -73 to 232°C
TCM Plus ⁽³⁾	Mineral and MoS ₂ filled PTFE	-100 to 450°F, -73 to 232°C
TCM Ultra ⁽³⁾	PEEK and MoS ₂ filled PTFE	-100 to 500°F, -73 to 260°C
Composition Gasket		-60 to 300°F, -51 to 150°C
Flexible Graphite, Grafoil ⁽⁴⁾		-300 to 1000°F, -185 to 540°C

Tabel 2.4. Sifat korosi dan erosi fluida vs material *body* dan *trim* [2]

Fluid	Alum	Brass	Cast Iron & Steel	416 & 440C	17-4 SST	304 SST	316 SST	Duplex SST	254 SMO	Alloy 20	Alloy 400	Alloy C276	Alloy B2	Alloy 6	Titanium	Zirconium
Stearic Acid	C	B	B	B	B	A	A	A	A	A	A	A	A	B	A	A
Sulfate Liquor (Black)	C	C	A	C	C	B	A	A	A	A	A	A	A	A	A	A
Sulfur	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Sulfur Dioxide, Dry	C	C	C	C	C	C	B	A	A	A	C	A	A	B	A	A
Sulfur Trioxide, Dry	C	C	C	C	C	C	B	A	A	A	B	A	A	B	A	A
Sulfuric Acid (Aerated)	C	C	C	C	C	C	C	A	A	A	C	A	C	B	C	A
Sulfuric Acid (Air Free)	C	C	C	C	C	C	C	A	A	A	B	A	A	B	C	A
Sulfurous Acid	C	C	C	C	C	B	B	A	A	A	C	A	A	B	A	A
Tar	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Trichloroethylene	B	B	B	B	B	B	A	A	A	A	A	A	A	A	A	A
Turpentine	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A
Vinegar	B	B	C	C	A	A	A	A	A	A	A	A	A	A	A	A
Water, Boiler Feed, Amine Treated	A	A	A	A	A	A	A	A	A	A	A	A	A	C	A	A
Water, Distilled	A	A	C	C	A	A	A	A	A	A	A	A	A	A	A	A
Water, Sea	C	A	C	C	C	C	B	A	A	A	A	A	A	A	A	A
Whiskey and Wines	A	A	C	C	A	A	A	A	A	A	A	A	A	A	A	A
Zinc Chloride	C	C	C	C	C	C	C	B	B	B	A	A	A	B	A	A
Zinc Sulfate	C	C	C	C	A	A	A	A	A	A	A	A	A	A	A	A

Catatan : A adalah direkomendasikan, B adalah cukup dan C adalah tidak direkomendasikan untuk diaplikasikan.

2.3 Sound Pressure Level (SPL)

Sound pressure level adalah suatu deviasi suara dari tekanan rata-rata atau equilibrium yang disebabkan oleh gelombang suara. Suara yang dimaksud dalam pembahasan riset ini adalah *noise* (kebisingan).

Tingkat kebisingan (*noise*) yang dipakai di industri mengikuti *The U.S Occupational Safety and Health Act (OSHA)* tahun 1970 [4] seperti ditunjukkan pada Tabel 2.5.

Tabel 2.5. Tingkat *Noise* [2]

Durasi Per Hari [Jam]	<i>Sound Level</i> [dBA]
8	90
6	92
4	95
3	97
2	100
1-1/2	102
1	105
1/2	110
¼ atau lebih kecil	115

Sejak dahulu *control valve* diakui sebagai sumber utama *noise* di dalam *fluid process and transmission systems* [1]. Sumber utama *noise* di *control valve* adalah *cavitation* (atau biasa disebut *hydrodynamic noise*). Jenis *noise* ini disebabkan oleh *bubble implosion* yang dibentuk di dalam proses *cavitation*.

Untuk memprediksi *noise* menggunakan *Sound Pressure Level (SPL)* dengan satuan decibel-A (dBA) perlu mempertimbangkan beberapa *flow parameter*, yaitu *pressure differential* yang melewati *control valve (A)*, *flow coefficient (B)*, *ratio pressure differential* pada *upstream pressure (C)* dan ukuran pipa (D). Persamaan SPL ini ditunjukkan dalam Persamaan 2.16.

$$\text{SPL} = A + B + C + D \quad (2.16)$$

Kebanyakan besarnya nilai A, B, C dan D diperoleh atas hasil pengukuran laboratorium dan setiap manufaktur *control valve* mempunyai data yang berbeda. Biasanya untuk mempercepat mendapatkan besarnya nilai parameter di atas dengan menggunakan *control valve sizing program* yang dikeluarkan oleh setiap *manufacturer control valve*.

2.4 Kapasitansi dan Sensor Tekanan Kapasitif

Kapasitansi adalah sifat dari penghantar listrik yang ditandai dengan kemampuannya untuk menyimpan muatan listrik. Kapasitor dirancang untuk

menyediakan kapasitansi pada rangkaian listrik untuk menyimpan energi dalam medan listrik antar dua konduktor yang dipisahkan oleh media dielektrik. Bahan dielektrik pada suatu kapasitor menghambat aliran arus antar plat nya. Berbagai bahan digunakan untuk dielektrik seperti ditunjukkan di pada Tabel 2.6.

Tabel 2.6. Permittivitas Bahan ϵ_r [16]

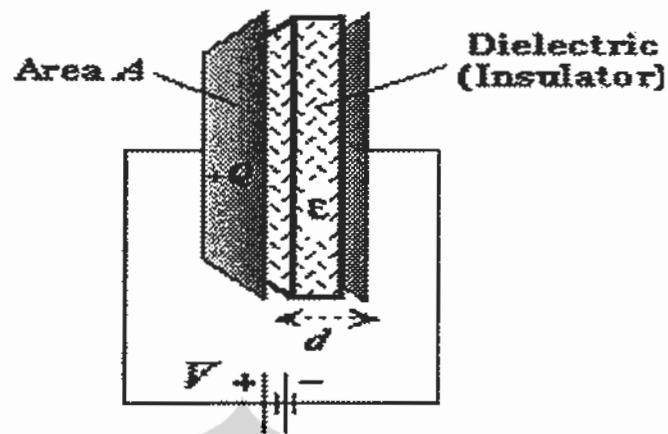
Bahan	Dielectric Constanta ϵ_r
Vacuum	1
Air	1,00054
Barium Titanate	90 nc – 1.250 – 10,000 (20-120°C)
(La,Nb):(Zr,Ti)PbO3	500 – 6.000
Conjugate Polymers	6 – 100.000
$\mu m - nm$ heterostructures	1.000 – 100.000 ($10^6 - 10^8$ at 100 Hz)

Muatan kapasitor sebanding dengan beda potential antara dua permukaan pelat sejajar dan kapasitansi C dirumuskan berbanding lurus dengan muatan yang disimpan Q dan berbanding terbalik dengan beda potential. Kapasitansi diukur dalam farad, yang diambil dari nama *Michael Faraday* (1791-1867). 1 coulomb sama dengan muatan $6,25 \times 10^{18}$ elektron. 1 Farad adalah kuantitas terbesar dari kapasitansi. Persamaan matematikanya kapasitansi dapat ditulis:

$$C = \frac{Q}{V} = \epsilon \frac{A}{d} \quad (2.17)$$

C adalah kapasitansi dalam farad, Q adalah kuantitas muatan listrik dengan satuan coulomb, dan V adalah perbedaan potensial dalam volt. Satuan kapasitor yang diukur dengan ukuran yang sangat kecil yaitu mikro farad (μF), nano Farad (nF) dan piko Farad (pF).

Kapasitansi dari suatu kapasitor dipengaruhi oleh tiga faktor, yaitu 1). luas area plat, 2). jarak antar plat dan 3). tetapan dielektrik dari bahan antar plat seperti yang ditunjukkan pada Gambar 2.20.



Gambar 2.20. Struktur kapasitor [16]

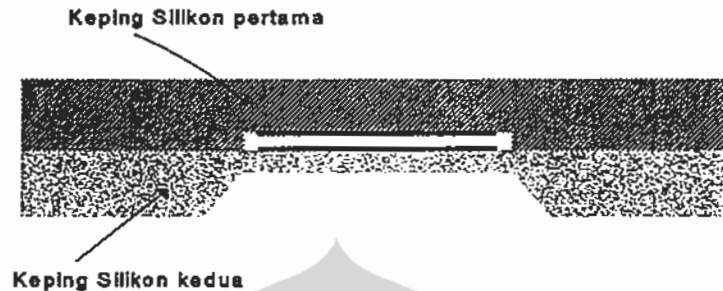
Ketika luas area plat meningkat, maka kapasitansi akan meningkat. Ketika jarak antar plat besar, maka nilai kapasitansi berkurang. Ketika bahan dielektrik besar, maka kapasitansi akan meningkat.

Sensor tekanan kapasitif secara umum mengukur perubahan nilai kapasitansi antara dua atau lebih konduktor dengan media dielektrik. Perubahan nilai kapasitansi yang terjadi disebabkan adanya perubahan tekanan, sehingga nilai kapasitansinya akan berubah. Sensor kapasitif pada kapasitor pelat sejajar dapat dilakukan dengan mendeteksi perubahan luas pelat, perubahan jarak antar pelat atau perubahan nilai permitivitas media antar pelat. Perubahan kapasitansi disebabkan perubahan jarak antar pelat, yaitu bila terjadi perubahan tekanan maka nilai d akan berubah, sehingga nilai kapasitansi juga berubah.

Struktur sensor tekanan menjadi dua jenis, yaitu struktur *center boss* dan struktur konvensional. Struktur *center boss* menggunakan *center boss* pada *diaphragm*-nya sedangkan struktur konvensional tidak. Kesamaan kedua jenis struktur adalah memiliki *diaphragm*, dua buah elektroda dan terdiri dari dua keping silikon.

Struktur sensor tekanan konvensional terdiri dari dua keping silikon yang *dibonding* satu sama lain. Keping pertama dietsa pada bagian tertentu dari permukaannya. Hal ini dilakukan untuk membentuk jarak antara keping pertama dan

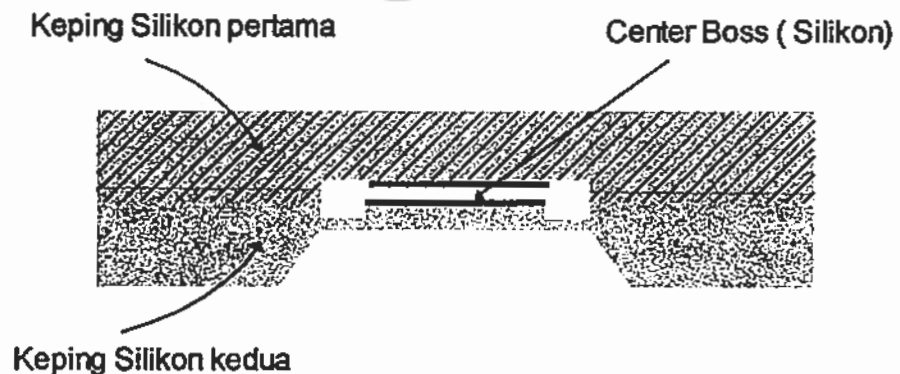
keping kedua. Pada keping kedua dilakukan etsa yang bertujuan untuk membuat suatu *diaphragm* seperti yang ditunjukkan pada Gambar 2.21.



Gambar 2.21. Penampang lintang sensor tekanan konvensional [17]

Diaphragm dapat dianggap sebagai pelat tipis yang disekelilingnya dijepit oleh penyangga. Sebagai elektroda, kapasitor pelat sejajar dibutuhkan konduktor yang berbahan metal. Jumlah elektroda ada dua buah, elektroda pertama diletakkan di atas permukaan keping silikon pertama, elektroda bersifat statis sedangkan elektroda kedua diletakkan di atas *diaphragm* dan bersifat dinamis karena akan bergerak sesuai dengan pergerakan *diaphragm*.

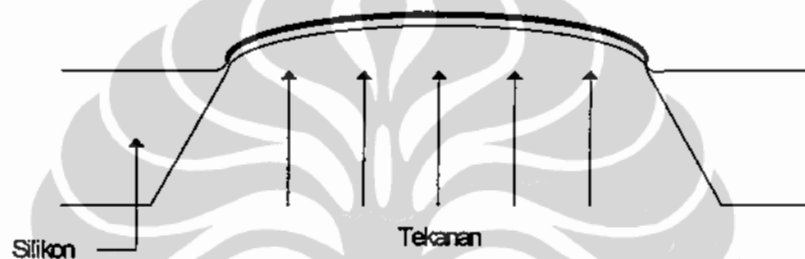
Struktur center boss memiliki perbedaan dengan struktur sensor tekanan konvensional. Pada center boss, bagian tengah *diaphragm* dibuat lebih tebal dibandingkan dengan bagian pinggirnya. Elektrodanya diletakkan pada bagian tebal tersebut seperti yang ditunjukkan pada Gambar 2.22.



Gambar 2.22. Penampang lintang *diaphragm* center boss [18]

Cara kerja kedua sensor tekanan ini memiliki persamaan, yaitu memanfaatkan defleksi yang terjadi pada *diaphragm* dan perbedaannya defleksi yang terjadi pada kedua jenis *diaphragm*.

Jika tekanan diberikan pada sensor tekanan konvensional, semua permukaan sensor akan mengalami tekanan. *Diaphragm* yang lebih tipis dibandingkan dengan penyangga akan terdeteksi sesuai dengan besarnya tekanan. Gerakan *diaphragm* ini menyebabkan pelat elektroda kapasitor yang berada di atasnya ikut bergerak. Pergerakan *diaphragm* diperlihatkan pada Gambar 2.23.



Gambar 2.23. Defleksi diaphragm sensor tekanan konvensional [18]

Defleksi pada jari-jari r ditentukan oleh Persamaan 2.18 [18].

$$d(r) = \frac{3}{16} \cdot P \cdot \frac{1-\nu^2}{E \cdot h^3} \cdot R^4 \cdot \left(1 - \left[\frac{r}{R}\right]^2\right)^2 \quad (2.18)$$

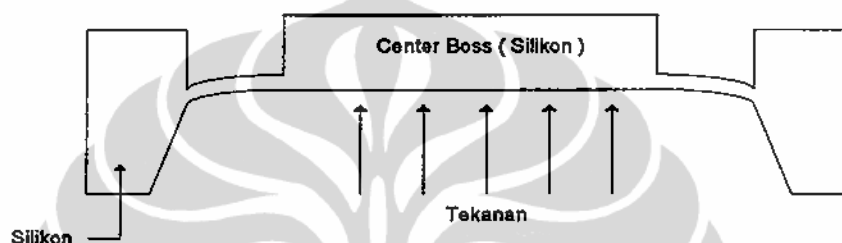
dengan P adalah tekanan, E adalah modulus young silicon, h adalah tebal *diaphragm*, ν adalah ratio poisson's dan R adalah jari-jari *diaphragm*.

Defleksi *diaphragm* yang terjadi akan mengubah jarak antara kedua pelat, yang pada akhirnya mengubah nilai kapasitansi sensor. Fenomena inilah yang dipergunakan sebagai dasar bagi cara kerja sensor.

Kapasitansi C diukur dengan menggunakan Persamaan 2.19 [18].

$$C = \epsilon_o \cdot \epsilon_r \cdot \int_0^R \frac{2\pi \cdot r}{d_o - d(r)} dr \quad (2.19)$$

Sensor tegangan *center boss*, sama seperti *diaphragm* konvensional, jika terjadi tekanan pada permukaannya maka akan terjadi defleksi. Kemudian defleksi pada *diaphragm* akan diikuti oleh elektroda di atasnya. Pada *center boss* terdapat sebuah perbedaan yaitu defleksi hanya terjadi pada bagian pinggir *diaphragm*. Hal ini dikarenakan bagian tengah *diaphragm* jauh lebih tebal dibandingkan dengan bagian pinggirnya, yang mengakibatkan bagian tengah *diaphragm* lebih sulit terdefleksi dan hanya bagian pinggir yang terdefleksi. Gambar 2.24 memperlihatkan defleksi yang terjadi pada *diaphragm center boss*.



Gambar 2.24. Defleksi pada *diaphragm center boss* [19]

Defleksi *diaphragm center boss* dapat dimodelkan pada Persamaan 2.20, Persamaan 2.21 dan Persamaan 2.22 [19]

$$v_0 = \frac{a_e^2 \cdot b^3}{E_e \cdot a \cdot h^3} P - \frac{3 \cdot b \cdot k_s}{4h[(b \cdot k_s) + (E_e \cdot h)]} v_0^3 \quad (2.20)$$

$$a_E = a - b \cdot f \quad (2.21)$$

$$E_e = \frac{E}{(1 - \nu^2)} \quad (2.22)$$

dengan a_e adalah radius *diaphragm* ekuivalen, a adalah radius *diaphragm*, b adalah perbedaan antara radius *center boss*, f adalah *ratio* radius ekuivalen, E_e adalah *modulus young* ekuivalen dan k_s adalah *stieffenes* pendukung.

Kemudian defleksi yang terjadi pada *diaphragm center boss* digunakan untuk mengubah jarak antar elektroda kapasitor. Nilai kapasitor diukur dengan Persamaan 2.23.

$$C = \epsilon_0 \cdot \epsilon_r \frac{\pi(a-b)^2}{d_0 - v} \quad (2.23)$$

Frekuensi adalah ukuran jumlah putaran ulang per peristiwa dalam selang waktu yang diberikan. Hasil perhitungan ini dinyatakan dalam satuan hertz (Hz) yaitu nama pakar fisika Jerman Heinrich Rudolf Hertz yang menemukan fenomena ini pertama kali.

Frekuensi f yang terkait dengan kapasitansi dapat dihitung dengan Persamaan 2.24 dengan induktor L dan kapasitor C .

$$f = \frac{1}{2\pi \sqrt{LC}} \quad (2.24)$$

Asumsi parameter *temperature* dan induktor L adalah tetap, sehingga korelasi Persamaan 2.24 menjadi :

$$f \approx \frac{1}{a_1 \sqrt{C}} \quad (2.25)$$

atau

$$f^2 \approx \frac{1}{a_2 C} \quad (2.26)$$

dengan a_1 dan a_2 adalah konstanta.

2.5 Teorema Divergensi Gauss

Suatu permukaan tertutup A dengan volume V akan mempunyai medan \vec{E} dan muatan Q , maka integral permukaan \vec{E} pada luas permukaan A dinyatakan :

$$\epsilon_0 \epsilon_r \oiint \vec{E} \cdot d\vec{A} = Q \quad (2.27)$$

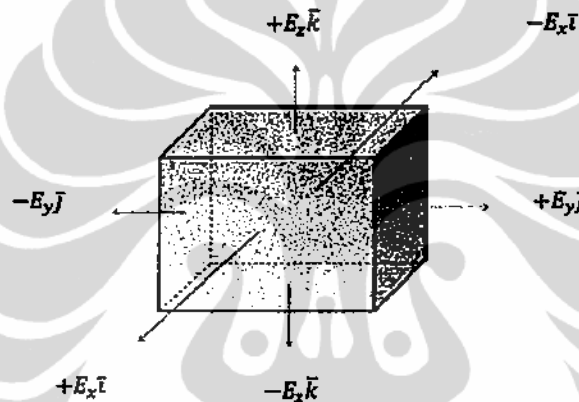
di mana ϵ_0 permitifitas hampa udara $8,854 \times 10^{-12}$ F/m dan ϵ_r permitifitas statis relatif (disebut juga konstanta dielektrik). Integral permukaan tertutup ini sama dengan integral volume dari divergensi \vec{E} .

$$\epsilon_0 \epsilon_r \iiint_V \nabla \cdot \vec{E} dV = Q \quad (2.28)$$

Substitusi Persamaan 2.27 dengan Persamaan 2.28 akan menjadi :

$$\epsilon_0 \epsilon_r \oiint \vec{E} \cdot d\vec{A} = \epsilon_0 \epsilon_r \iiint_V \nabla \cdot \vec{E} dV = Q \quad (2.29)$$

Jika medan \vec{E} berada dalam vektor ruang seperti ditunjukkan Gambar 2.25.



Gambar 2.25. Vektor ruang medan \vec{E}

$$\vec{E} = E_x \vec{i} + E_y \vec{j} + E_z \vec{k} \quad (2.30)$$

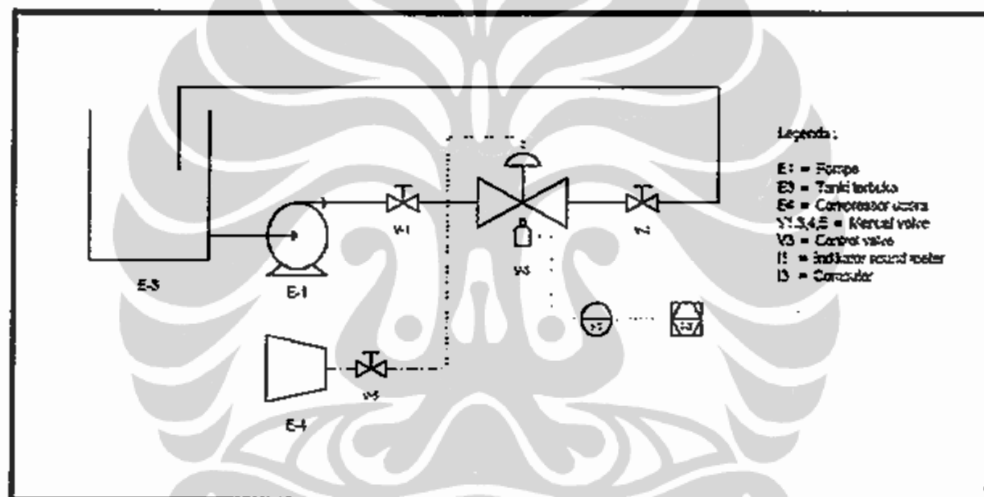
$$\begin{aligned} \oiint \vec{E} \cdot d\vec{A} &= \iint E_x \vec{i} \cdot \vec{i} dy dz + \iint E_x \vec{i} \cdot (-\vec{i} dy dz) + \\ &\iint E_y \vec{j} \cdot \vec{j} dx dz + \iint E_y \vec{j} \cdot (-\vec{j} dx dz) + \\ &\iint E_z \vec{k} \cdot \vec{k} dx dy + \iint E_z \vec{k} \cdot (-\vec{k} dx dy) \end{aligned} \quad (2.31)$$

BAB 3

DESAIN DAN PEMBUATAN PROTOTIP, PERCOBAAN SERTA METODE PEGUKURANNYA

3.1 Desain dan kalibrasi prototip

Sebelum membuat konstruksi prototip, dilakukan desain prototip. Tahap desain prototip ini mempertimbangkan ketiga parameter, yaitu *piping system*, *field instrument* dan semua *process equipment*. Ketiga parameter tersebut dirancang di dalam suatu *Piping and Instrument Diagram* (P & ID). P&ID adalah simbol-simbol yang mewakili sebuah *plant* dan merupakan dasar melakukan *detail engineering work* [20]. Pada riset ini melakukan desain prototip seperti pada Gambar 3.1.



Gambar 3.1. Desain *Piping and Instrument Diagram* (P&ID) prototip

Pertama-tama air yang berada di dalam tangki E-3 disedot dan disalurkan oleh pompa listrik E-1 menuju ke *control valve* V-3 melalui *upstream pipe*. Di *upstream pipe* terdapat *gate valve* yang berfungsi untuk membuka atau menutup *flow line*. Air tadi keluar dari *control valve* melalui *downstream pipe* menuju ke tangki lagi. Di *downstream pipe* terdapat *gate valve* V-4 yang berguna untuk membuka atau menutup *flow line*. *Control valve* membutuhkan *air-supply* dari *air-compressor* E-4 untuk dapat menggerakkan *pneumatic actuator* dan *instrument signal* dari *current source* untuk menggerakkan *smart electro-pneumatic positioner*.

Di *body valve* direkatkan sensor suara berupa *microphone* yang merupakan bagian dari *sound pressure level meter I-1*. Alat ukur suara ini akan mendeteksi intensitas suara pada perioda waktu tertentu kemudian komputer I-3 akan mencatat dan merekam setiap perubahan suara tersebut. Untuk mencatat dan merekam intensitas suara yang terjadi, komputer I-3 dipasang *software Cool Edit Pro 2.0*. Dari *software* ini akan memberikan *output* berupa spektrum frekuensi. Bentuk fisik *piping and instrumentation diagram* dapat dilihat pada Gambar 3.2.



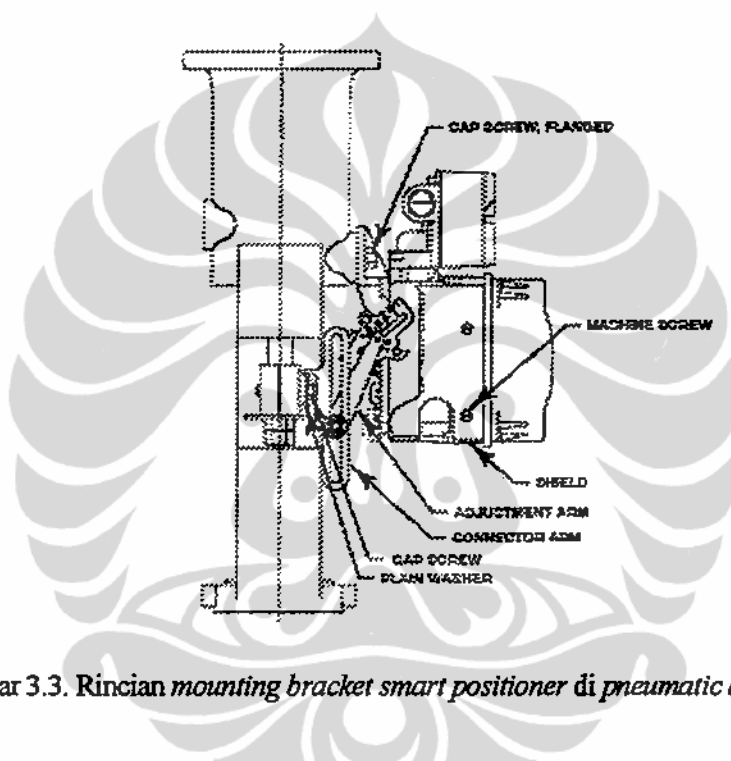
Gambar 3.2. Bentuk fisik prototip

Tempat pompa listrik dan tangki air berada sekitar 15 meter dari tempat *control valve*, kedua perangkat tadi dihubungkan melalui *flowline* ukuran 1 inch PVC pipe. Letak kedua perangkat tadi yang ditempatkan berjauhan disebabkan untuk menghilangkan suara yang dihasilkan oleh pompa listrik, sehingga suara tadi tidak masuk ke *microphone*.

Setelah proses instalasi perangkat-perangkat yang ada, sebelum dilakukan percobaan-percobaan, maka *control valve* tersebut harus dikalibrasi. Kalibrasi merupakan tahapan yang wajib dilakukan agar ketelitian hasil pengukuran tetap tinggi dan baik. Setiap melakukan percobaan pada suatu *seat ring* harus dilakukan tahapan-tahapan kalibrasi yang akan dijelaskan lebih rinci dibawah ini.

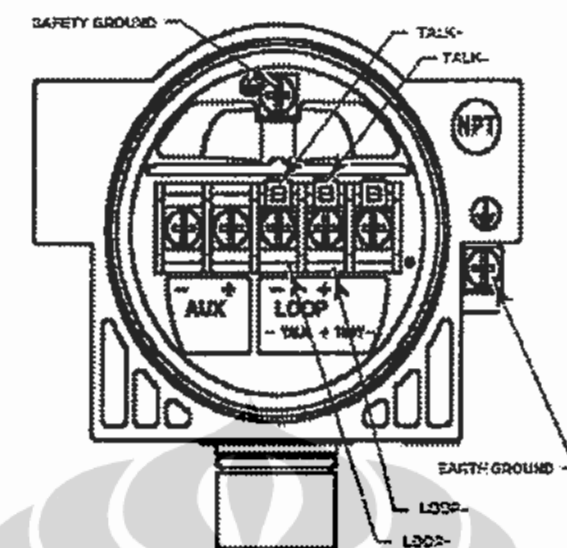
Adapun tahap-tahapan kalibrasi adalah : a) instalasi *smart positioner* dengan *pneumatic actuator*; b) *detail setup* dan c) kalibrasi. Tahap instalasi *smart positioner* dengan *pneumatic actuator* dapat diperhatikan pada Gambar 3.3, dimulai dengan memberhentikan *process flow* dengan menutup *gate valve V1*, sehingga tekanan di *upstream* dan *downstream body*

assembly valve benar-benar nol (tidak ada) dan menutup *gate valve V6* agar *air-supply* ke *pneumatic actuator* sudah tidak ada tekanan. Pasang *connector arm* di *yoke pneumatic actuator* dan *mounting bracket* di *smart positioner housing*. Setelah keduanya terpasang, maka pasang *feedback arm* ditempat sesuai dengan *air to open* atau *air to close*. Jika jenis *failure pneumatic actuator air to open*, maka *adjustment pin* diletakkan pada posisi "A", untuk jenis *failure pneumatic actuator air to close*, maka *adjustment pin* diletakkan pada posisi "B". Posisi *adjustment arm* disesuaikan dari besar-kecilnya *travel body assembly valve*.



Gambar 3.3. Rincian *mounting bracket smart positioner* di *pneumatic actuator* [21]

Instalasi kabel *instrument (wiring)* dilakukan dengan memahami modul *input/output* seperti pada Gambar 3.4.



Gambar 3.4. Modul input/output pada smart positioner [21]

Terminal positif (+) *loop* dihubungkan ke terminal positif (+) *current source/loop validator*, begitu pula dengan terminal negatif (-) *loop* dihubungkan ke terminal negatif (-) *current source*. Untuk terminal positif (+) *talk* dihubungkan ke terminal positif (+) *HART communicator*, begitu pula dengan terminal negatif (-) *talk* dihubungkan ke terminal negatif (-) *HART communicator* dengan memasang resistor 10 k Ω . Terminal *safety ground* dan terminal *earth ground* dihubungkan ke sistem keamanan yang dipergunakan oleh plant bersangkutan. Dalam riset ini hanya terminal *earth ground* yang disambungkan ke *bracket control valve*.

Tahap instalasi selesai lalu dilakukan tahap *detail setup*. *Detail setup* merupakan meletakkan *feedback arm* ditempat yang tegak-lurus dengan posisi *stem valve*. Hal ini dapat dilakukan, jika *air-supply* sudah dialirkan ke *pneumatic actuator*. *Air supply* dibangkitkan oleh kompresor listrik kemudian membuka *gate valve V6*. Dalam tahapan *detail setup* ini dapat dikonfigurasi secara lebih rinci seperti memasukkan nomor tag, *analog in*, ukuran *travel* dan lain-lain.

Bila kedua tahap sebelumnya telah dilakukan, maka selanjutnya dilakukan kalibrasi. Tahap kalibrasi ada dua macam, yaitu *auto calibration* dan *manual calibration*. Dalam riset ini dipilih *auto calibration* karena lebih mempersingkat waktu penelitian. Waktu yang diperlukan dalam satu *auto calibration* sekitar tiga puluh sampai enam puluh

menit, sedangkan dengan *manual calibration* dibutuhkan waktu sekitar lebih kurang seratus dua puluh menit. *Sample seat ring* yang akan diteliti ada enam *seat ring*. Pada *HART communicator* dipilih menu *auto calibration*, dengan mengikuti setiap petunjuk pada layar, maka proses kalibrasi dapat selesai dilakukan.

3.2 Konstruksi prototip dan pemilihan *service condition*

Penentuan perangkat yang akan dipergunakan disesuaikan dengan kebutuhan riset, sehingga dapat dilakukan *detail engineering* rinci untuk menghasilkan *material take off* (MTO) seperti yang ditunjukkan pada Tabel 3.1.

Cara kerja prototip

Seperti telah diuraikan di sub bab 3.1, sistem kerja prototip tersebut adalah tangki E3 yang berisi air bersih dipompa oleh mesin pompa E1 menuju *upstream control valve*. Air tadi keluar dari *control valve* melalui *downstream pipe* menuju ke tangki air kembali.

- a. Bila saklar *ON* pada pompa dan manual valve V1 dibuka, maka air akan mulai mengalir menuju *control valve* melalui *upstream line*.
- b. Bila manual valve V4 masih tertutup, maka sistem otomatis pompa akan memutuskan aliran listrik.
- c. Bila manual valve V4 dibuka, maka air akan keluar melalui *downstream line* menuju ke tangki E3 lagi.
- d. *Sound level meter* diletakkan menempel tepat pada *body valve* yang dimaksud. Hal ini untuk memonitor langsung *sound level* setiap saat. *Sound pressure level* sensor ini mempunyai *local indicator* II dan *remote monitoring* oleh komputer.
- e. *Control valve* V3 akan bekerja bila terdapat *air supply* dalam hal ini adalah *air compressor* E4. Juga *control valve* ini membutuhkan *analog signal 4-20 mA* untuk mengatur *opening valve percentage*. Signal analog ini diwakili oleh *current source* dengan *detail technical specification* telah dijelaskan dalam Bab 1.

Tabel 3.1. Material *take off* konstruksi prototip

Item	Uraian	Jumlah
1	Tangki air terbuka kapasitas 10 liter	1 <i>each</i>
2	Pipa, ukuran 1 <i>inch</i> , material PVC, merek Rucika	2 batang
3	Pompa listrik, kapasitas 23 liter/menit, tegangan 220 VAC dan frekuensi 50 Hz	1 set
4	<i>Nipple</i> , ukuran 1" NPT-M x 1" NPT-M, material <i>brass</i>	2 <i>each</i>
5	<i>Valve socket</i> , ukuran 1" NPT-M x <i>Pipe</i>	3 <i>each</i>
6	<i>Elbow</i> , ukuran 1" NPT-F x 1" NPT-F, material PVC	20 <i>each</i>
7	<i>Gate valve</i> , ukuran 1", material <i>brass</i> , merek Kitz	3 unit
8	<i>Union socket</i> , ukuran 1" <i>pipe</i> , material PVC	2 <i>each</i>
9	<i>Reducer</i> , ukuran 1" NPT-F x 1/2" NPT-F, material <i>brass</i>	2 <i>each</i>
10	<i>Nipple</i> , ukuran 1/2" NPT-M x 1/2" NPT-M, material <i>brass</i>	2 <i>each</i>
11	<i>Flange</i> , ukuran 1/2" ANSI 150#RF x <i>Treaded</i> 1/2", material <i>carbon steel</i>	2 <i>each</i>
12	<i>Gasket pipe</i> , material <i>teflon</i>	2 set
13	Mur dan baut 8 mm, material <i>steel</i>	8 set
14	<i>Control valve</i> , material <i>body assembly valve</i> dan <i>trim</i> 316 sst, ANSI 150#RF <i>connection</i> , karakteristik <i>equal percentage</i> , <i>pneumatic actuator</i> ukuran 32, jenis <i>failure close</i> , <i>smart positioner</i> dengan <i>input signal</i> 4-20 mA HART <i>protocol</i> , <i>airset</i> jenis 67CFR, <i>pressure gauge</i> 0-30 psig merek <i>Baumann valve</i>	1 set
15	<i>Cable gland</i> , material <i>stainless steel</i>	2 unit
16	Kabel <i>instrument</i> , ukuran 1 pair	2 meter
17	Kompresor udara, tegangan 220 VAC, frekuensi 50 Hz, kapasitas udara 10 bar, merek <i>Shimizu</i>	1 set
18	HART <i>Communicator</i> , jenis 275, merek <i>Rosemount</i>	1 set
19	<i>Current source</i> atau <i>loop validator</i> , jenis 282, merek <i>Rosemount</i>	1 set
20	<i>Drilling tool kit</i> , merek <i>Sharp Tool Co Ltd</i>	1 set
21	<i>Digital caliper</i> , ukuran 150mm x 6" / 0.01 mm, jenis KW06-358, merek <i>Krisbow</i>	1 set
22	<i>High quality clamp-on multimeter</i> , ACA/DCV/ACV/ <i>Resistance/ Capacitance/Diode</i> dan <i>continuity check</i> , <i>Large 4000 count LCD display</i> , merek <i>Krisbow</i>	1 set
23	<i>Sound pressure level meter</i> , akurasi ± 1.5 dB, IEC651 <i>type II standard</i> , A and C <i>weighting</i> , <i>High</i> (65-130 dB) dan <i>low</i> (350100 dB) <i>measuring range</i> , <i>Large 3-1/2 digital LCD display</i> , merek <i>Krisbow</i>	1 set
24	<i>Flexible tubing</i> , ukuran 1/2"	1 set
25	<i>Socket listrik</i> , material <i>kuningan</i>	1 set

Service condition pada riset ini dipilih, dipergunakan sebagai dasar pembuatan prototip ini.

- | | | |
|-----------------------------|---|--|
| a. Jenis fluida | : | air |
| b. <i>Temperature</i> | : | 27°C |
| c. <i>Viscosity</i> | : | 17.4×10^{-6} Pa.s |
| d. <i>Specific gravity</i> | : | 0.999 |
| e. <i>Flow capacity</i> | : | 23 liter/minutes |
| f. <i>Inlet pressure</i> | : | 1.6 kg/cm ² |
| g. <i>Pressure drop</i> | : | 1 kg/cm ² |
| h. <i>Noise</i> | : | < 85 dBA |
| i. <i>Flow action</i> | : | <i>unbalance guiding</i> |
| j. <i>Instrument signal</i> | : | 4-20 mA, <i>Direct acting</i> , HART <i>protocol</i> |

Dalam kenyataannya, *service condition* ini dibuat berdasarkan *industrial process type* masing-masing yang mengikuti petunjuk dari *process licencer* yang telah berpengalaman. Pemilihan *service condition* didasari atas sasaran percobaan, spesifikasi teknis peralatan dan kemampuan alat ukur yang digunakan. Sebagaimana telah diuraikan dalam Bab 2 sebelumnya, dalam tahapan *engineering* untuk menentukan jenis *control valve* yang sesuai dengan *service condition*, dilakukan *sizing calculation control valve* agar *control valve* yang dipakai tidak salah aplikasinya, sehingga akan berakibat tidak akurat data hasil percobaan nantinya. Pemilihan *control valve* yang salah dalam aplikasinya akan menyebabkan *undersize* atau *oversize actuator/body valve* dan akan mengakibatkan : a) kebocoran karena *pneumatic actuator* tidak dapat menahan jumlah aliran fluida yang melewatinya, masalah seperti ini lazim disebut *undersize pneumatic actuator*; b) kontrol yang tidak baik karena aliran fluida dengan bukaan *valve* yang kecil dapat mengeluarkan aliran fluida yang besar, masalah seperti ini lazim disebut *undersize body valve* begitu pula sebaliknya bukaan *valve* yang besar tetapi aliran fluida kecil, masalah ini lazim disebut *oversize body valve*.

Besarnya nilai *temperature*, *viscosity* dan *specific gravity* diperoleh dari jenis fluida yang dipakai, yaitu air. Sedangkan ukuran-ukuran seperti *flow capacity*, *inlet pressure* dan *pressure drop* didapat dari kemampuan pompa listrik yang dipakai dalam riset ini.

Flow action adalah *unbalance guiding* karena *control valve* yang dipakai pada riset ini, aliran fluida yang melewati *control valve* langsung bertemu dengan *plug valve*. Sedangkan jika aliran fluida yang melewati *control valve* bertemu dengan *cage* disebut

balance guiding. Umumnya *control valve* jenis *unbalance guiding* ini dipakai untuk aliran fluida dan tekanan yang kecil dan sedang. Begitu pula sebaliknya *control valve* jenis *balance guiding* dipakai untuk aliran fluida dan tekanan yang besar. Hal ini bertujuan agar waktu pemakaian (*life-time*) *control valve* tadi menjadi lebih lama, sedangkan dari segi ekonomis, *control valve* jenis *unbalance guiding* relatif lebih murah dari *control valve* jenis *balance guiding*.

Instrument signal merupakan sinyal yang dipakai untuk menggerakkan suatu alat *instrument* yaitu *smart electro-pneumatic positioner*. *Electro-pneumatic positioner* dikatakan "smart" karena *positioner* tersebut dilengkapi oleh sebuah *microprocessor* yang mengatur secara otomatis sinyal masukan, *process variable* dan *set-point*. *Electro-pneumatic* artinya sinyal masukan berupa sinyal analog 4-20 mA yang dilengkapi dengan *HART protocol*, sedangkan sinyal keluarannya berupa *pneumatic* 0-18 psig atau 0-30 psig. Kemajuan teknologi suatu *control valve* saat ini ditentukan dari kemajuan teknologi pada *positioner*. *Smart electro-pneumatic positioner* mempunyai beberapa keunggulan dibandingkan dengan *conventional positioner* diuraikan dibawah ini.

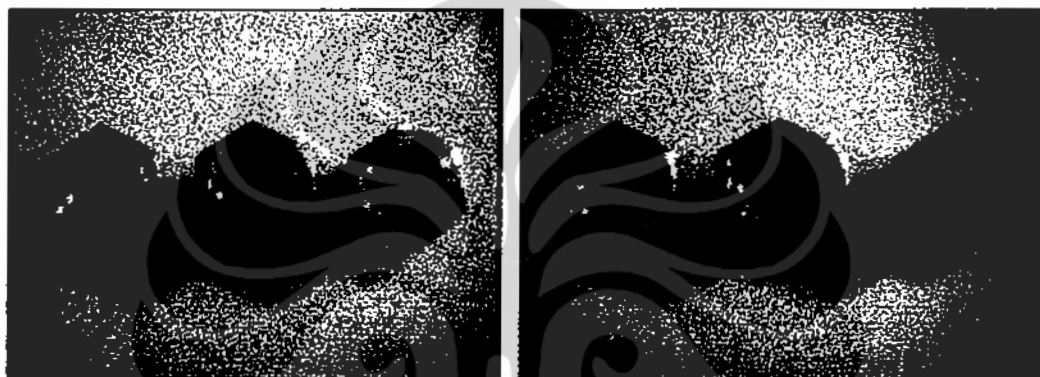
- a. *Auto-calibration* yang artinya *control valve* dapat dilakukan kalibrasi di *control room*, tanpa harus dibongkar-pasang di *workshop*, sehingga dapat mempercepat waktu kalibrasi jauh lebih cepat. Biasanya *conventional positioner* membutuhkan waktu 2-3 jam kerja jika tidak ada masalah di *internal spare part positioner* tadi sedangkan *smart electro-pneumatic positioner* hanya membutuhkan waktu 10-15 menit saja,
- b. *Valve signature*, artinya *control valve* yang dipasang dapat diketahui kondisi keseluruhan pada suatu waktu. Keunggulan ini penting jika industri tersebut telah menerapkan sistem manajemen terpadu seperti ISO 9001:2000 dan lain sebagainya,
- c. *Dynamic error band*, artinya seberapa jauh tingkat kesalahan setelah *control valve* itu bekerja. Keunggulan ini dapat mengetahui kerusakan dari *packing gland* yang terletak di bagian *stem* dengan *bonnet*,
- d. *Online calibration*, artinya *control valve* dapat dilakukan kalibrasi secara *online* dengan *industrial proces* tanpa harus mematikan kerja manufaktur (*shut-down plant*),
- e. *Controller*, artinya *positioner* dapat bertindak sebagai *controller PID*. Keunggulan ini sangat berguna dalam aplikasi *remote area*.

Saat ini harga *smart electro-pneumatic positioner* tanpa kelima unggulan di atas relatif lebih murah dibandingkan dengan *conventional positioner*, karena beberapa manufaktur akan menghentikan proses pembuatan *conventional positioner* sebagai

akibat pihak industri telah beralih-teknologi dari *pneumatic control system* menjadi *Distributed Control System (DCS)* atau *Programmable Logic Controller (PLC)*.

3.3. Percobaan dan Metode Pengukuran

Dalam riset ini disediakan 6 buah *seat ring* (1 buah yang bagus dan 5 buah *sample* bervariasi kerusakannya), yang selanjutnya disebut *sample*. Seperti yang ditunjukkan pada Gambar 3.5.



a). *Seat Ring 0, Seat Ring 1, Seat Ring 2* (b). *Seat Ring 3, Seat Ring 4, Seat Ring 5*

Gambar 3.5. Bentuk fisik keenam *sample seat ring*

Setiap *sample* dirusak sesuai dengan tingkat kerusakan tertentu, seperti yang dijelaskan pada Tabel 3.2. Proses pengambilan sebuah data hasil satu kali percobaan membutuhkan waktu 3-4 jam kondisi normal. Jika ditemukan ada suatu perbedaan, maka dibutuhkan rata-rata 5 jam untuk satu kali percobaan.

Proses pengambilan satu percobaan adalah *actuator* berikut *positioner* harus dilepas dahulu dari *body assembly valve* lalu dibuka *internal part control valve* kemudian *seat ring* diganti dengan *seat ring* dengan tingkat kerusakan tertentu. Proses ini disebut instalasi. Jika proses instalasi selesai, maka dilakukan proses pengecekan ulang apakah instalasi tadi sudah benar. Proses seperti ini dinamakan proses *commissioning*. Setelah proses *commissioning* ini selesai, maka semua *power* yang ada diaktifkan dan yakinkan semua proses berjalan baik. Proses ini dinamakan *start-up*. Bilamana proses *start-up* ternyata berjalan dengan baik, kemudian dilakukan proses kalibrasi sesuai dengan *set-point* yang diberikan oleh *current source*.

Dalam melakukan proses kalibrasi, diyakinkan bahwa *opening valve percentage (OPV)* telah disetting dengan konfigurasi 0%, 25%, 50%, 75% dan 100%. OPV ini mengikuti *industrial calibration standard*. Kemudian proses pengambilan data *sound level* harus mengikuti konfigurasi tersebut, lalu dicatat nilai *sound level* pada konfigurasi 0%, 25%, 50%, 75% dan 100%.

Tabel 3.2. Sample *seat ring* dalam tingkat kerusakan tertentu

<i>Seat Ring</i>	Tingkat Kerusakan
0 (normal)	Tidak ada lubang
1	1 lubang
2	2 lubang
3	3 lubang
4	4 lubang
5	5 lubang

Catatan : lubang berupa separuh bola dengan diameter 1,5 mm

Metode pengukuran setiap percobaan mulai dari *seat ring* 0 hingga *seat ring* 5, sebelumnya dilakukan kalibrasi dan hasil percobaan dalam kondisi *seat ring* 0 atau *seat ring* tidak ada kerusakan. Fluida dialirkan ke *control valve* dengan diambil data percobaan saat OVP 0%, OVP 25%, OVP 50%, OVP 75% dan OVP 100%, setelah data percobaan *seat ring* 0 diperoleh, maka dilakukan percobaan-percobaan selanjutnya seperti dibawah ini

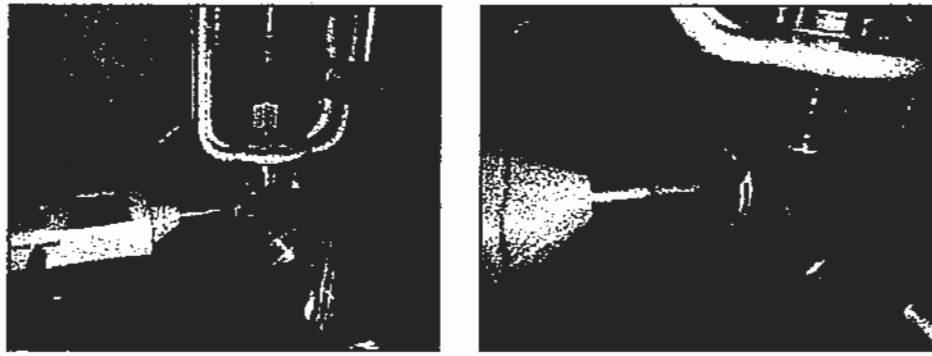
1. Percobaan *seat ring* 1, dilakukan setelah *seat ring* 0 digantikan dengan *seat ring* 1, kemudian harus dilakukan kalibrasi dengan mode *auto-calibration* pada alat kalibrasi *HART communicator* hingga selesai tahap demi tahap kalibrasi tersebut lalu dilakukan pengambilan data hasil percobaan *seat ring* 1.
2. Percobaan *seat ring* 2, dilakukan setelah *seat ring* 1 digantikan dengan *seat ring* 2, kemudian harus dilakukan kalibrasi dengan mode *auto-calibration* pada alat kalibrasi *HART communicator* hingga selesai tahap demi tahap kalibrasi tersebut lalu dilakukan pengambilan data hasil percobaan *seat ring* 2.
3. Percobaan *seat ring* 3, dilakukan setelah *seat ring* 2 digantikan dengan *seat ring* 3, kemudian harus dilakukan kalibrasi dengan mode *auto-calibration* pada alat kalibrasi *HART communicator* hingga selesai tahap demi tahap kalibrasi tersebut lalu dilakukan pengambilan data hasil percobaan *seat ring* 3.

4. Percobaan *seat ring 4*, dilakukan setelah *seat ring 3* digantikan dengan *seat ring 4*, kemudian harus dilakukan kalibrasi dengan mode *auto-calibration* pada alat kalibrasi *HART communicator* hingga selesai tahap demi tahap kalibrasi tersebut lalu dilakukan pengambilan data hasil percobaan *seat ring 4*.
5. Percobaan *seat ring 5*, dilakukan setelah *seat ring 4* digantikan dengan *seat ring 5*, kemudian harus dilakukan kalibrasi dengan mode *auto-calibration* pada alat kalibrasi *HART communicator* hingga selesai tahap demi tahap kalibrasi tersebut lalu dilakukan pengambilan data hasil percobaan *seat ring 5*.

Pada riset ini dipergunakan *positioner* yang merupakan alat pelengkap dari control valve berjenis *smart electro-pneumatic positioner*. Jenis *positioner* ini dilengkapi dengan *microprocessor* yang letaknya di dalam *casing positioner*. Dengan kemajuan teknologi *digital control*, jenis *positioner* ini berfungsi ganda, yaitu sebagai *positioner* dan sebagai *controller PID (Proporsional Integral Derivative)*. Populasi *positioner* jenis ini sangat tepat dipergunakan di *remote area* seperti pada *well head control system application*. Alasan pemakaian *positioner* jenis ini agar lebih cepat dalam mendapatkan hasil percobaan. Jika menggunakan *convensional positioner* membutuhkan waktu kalibrasi minimal 2-3 jam, jika tidak ada masalah dalam proses kalibrasinya sendiri, namun akan menjadi lebih rumit dan lebih lama proses kalibrasi, jika ada masalah mekanis pada *convensional positioner* sehingga akan berdampak kepada akurasi hasil percobaan itu sendiri. *Smart positioner* ini dilengkapi juga dengan *airset filter regulator* yang berfungsi untuk menurunkan *air-supply* dari 250 psig (umumnya tekanan keluaran dari *air-compressor* pada *utility plant*) mejadi tekanan 0-18 psig atau 0-30 psig. Kedua *pressure range* ini yang dipakai *manufacturer control valve* untuk jenis *pneumatic actuator*. Dan untuk *piston actuator* dipakai tekanan mulai dari 60 psig, 80 psig, 100 psig dan 120 psig [2].

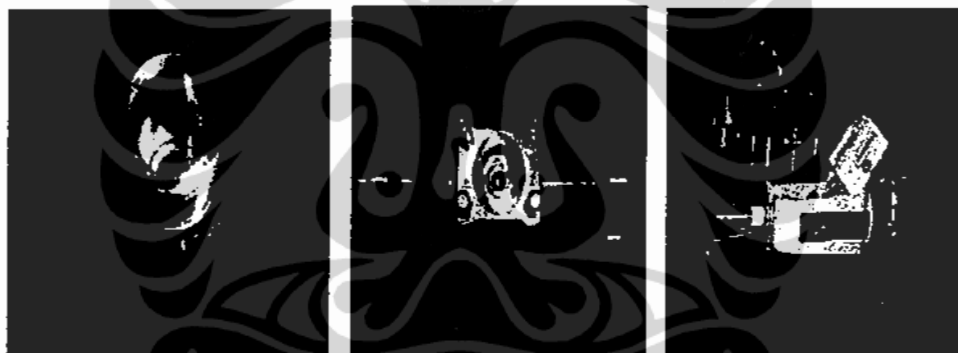
3.4. Hasil percobaan berupa intensitas suara atau *sound pressure level (SPL)*

Percobaan yang dilakukan terhadap *seat ring 0*, *seat ring 1*, *seat ring 2*, *seat ring 3*, *seat ring 4* dan *seat ring 5* akan menghasilkan spektrum frekuensi tiap-tiap *seat ring* tersebut seperti yang dilampirkan dalam Lampiran 1. *Control valve* yang direkatkan *microphone* oleh bahan perekat seperti yang diperlihatkan oleh Gambar 3.6.



Gambar 3.6. *Control valve* yang direkatkan dengan microphone

Pergantian *seat ring* satu ke *seat ring* lainnya, yaitu *seat ring* dengan bermacam tingkat korosi seperti yang ditunjukkan pada Gambar 3.5 ke *body assembly valve* pada Gambar 3.7.



(a). *Seat Ring*

(b) *Body Assembly*

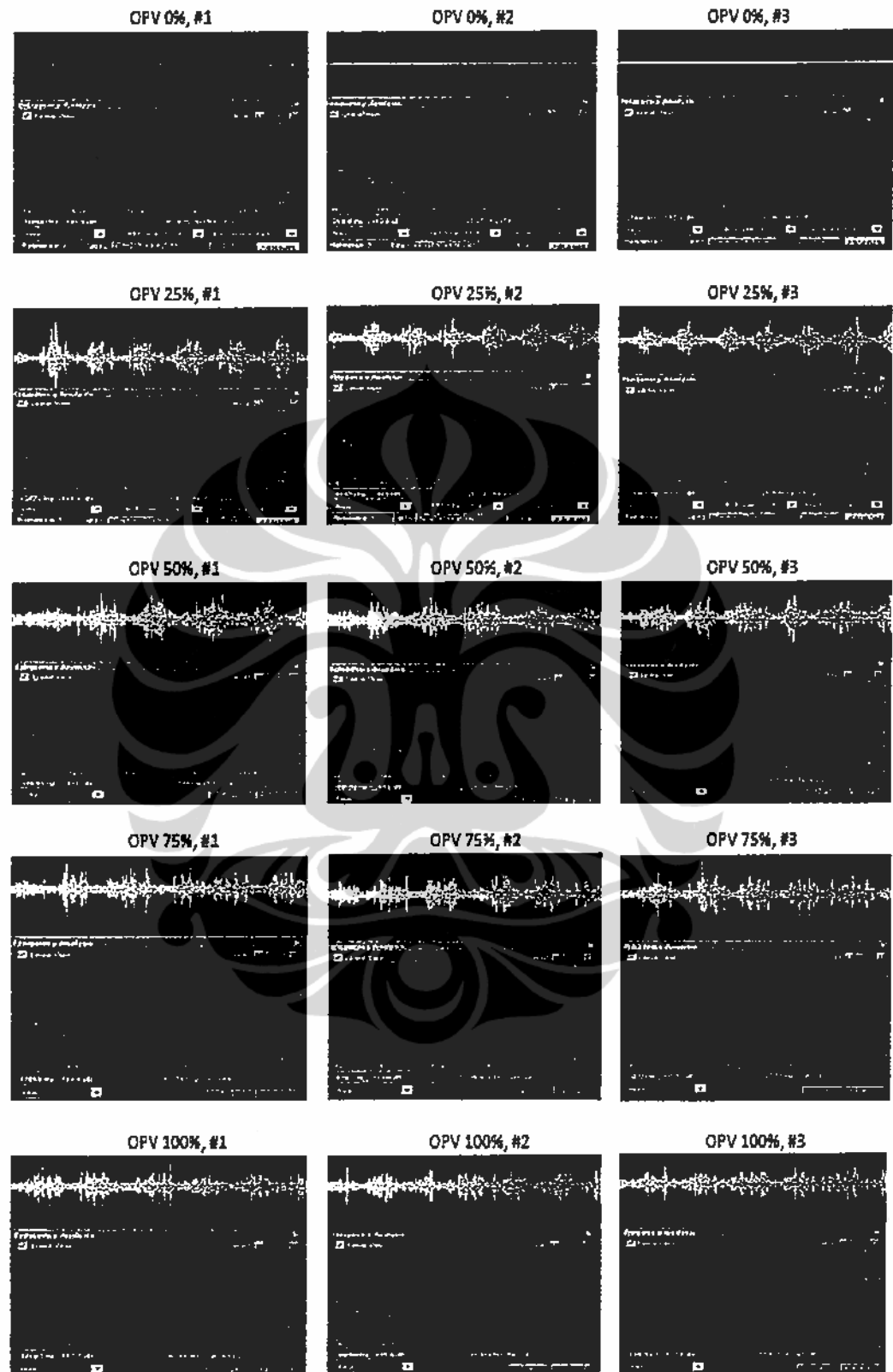
(c). *Actuator*

Gambar 3.7. *Internal Part Control Valve*

Dengan mengikuti metode pengukuran yang dijelaskan pada Bab 3, pengukuran yang dilakukan terhadap prototip dengan membuat besarnya kerusakan *seat ring* bervariasi mulai dari kerusakan *seat ring* 0 (kondisi normal dan tidak ada kerusakan) hingga *seat ring* 5. Setiap lubang *seat ring* dibuat tertentu yaitu dengan diameter kerusakan 1,5 mm berukuran setengah lingkaran. *Seat ring* 1 berarti kerusakan *seat ring* dengan 1 lubang, *seat ring* 2 berarti kerusakan *seat ring* dengan 2 lubang dan seterusnya hingga *seat ring* 5 yang berarti kerusakan *seat ring* dengan 5 lubang.

Percobaan pertama pada *seat ring* 0 (*seat ring* kondisi normal)

1. Menyalakan suplai listrik pompa air dan kompresor udara.
2. Mematikan *flowline* dengan menutup *gate valve* V1, sehingga pompa air akan mati secara otomatis karena di pompa air dilengkapi dengan *automatic pressure switch*.
3. Membuka *air-supply* dengan membuka *gate valve* V5, udara akan masuk ke *pneumatic actuator* melalui *fitting* di *pneumatic actuator*.
4. Menghidupkan *HART communicator* melalui saklar *ON/OFF* yang ada di perangkat tersebut.
5. Menghidupkan *loop validator* melalui saklar *ON/OFF* yang ada di perangkat tersebut.
6. Melakukan *detail setup*.
7. Melakukan kalibrasi.
8. Komputer (laptop) yang sudah dipasang *software cool edit pro* disambungkan ke *sound pressure level meter* melalui terminal *mic* pada laptop.
9. Pada *software cool edit pro* dikonfigurasi 60 detik setiap merekam intensitas suara yang terjadi selama percobaan ini.
10. Menyalakan *flowline* dengan membuka *gate valve* V1, sehingga air akan mengalir dan melewati *control valve*.
11. Setiap percobaan dilakukan perekaman sebanyak tiga kali.
12. Percobaan ini dilakukan saat OVP 0%, 25%, 50%, 75% dan 100%. Dengan demikian gambar spektrum frekuensi yang dihasilkan pada percobaan *seat ring* 0 adalah sebanyak 15 spektrum yang dapat dilihat pada Gambar 3.8.

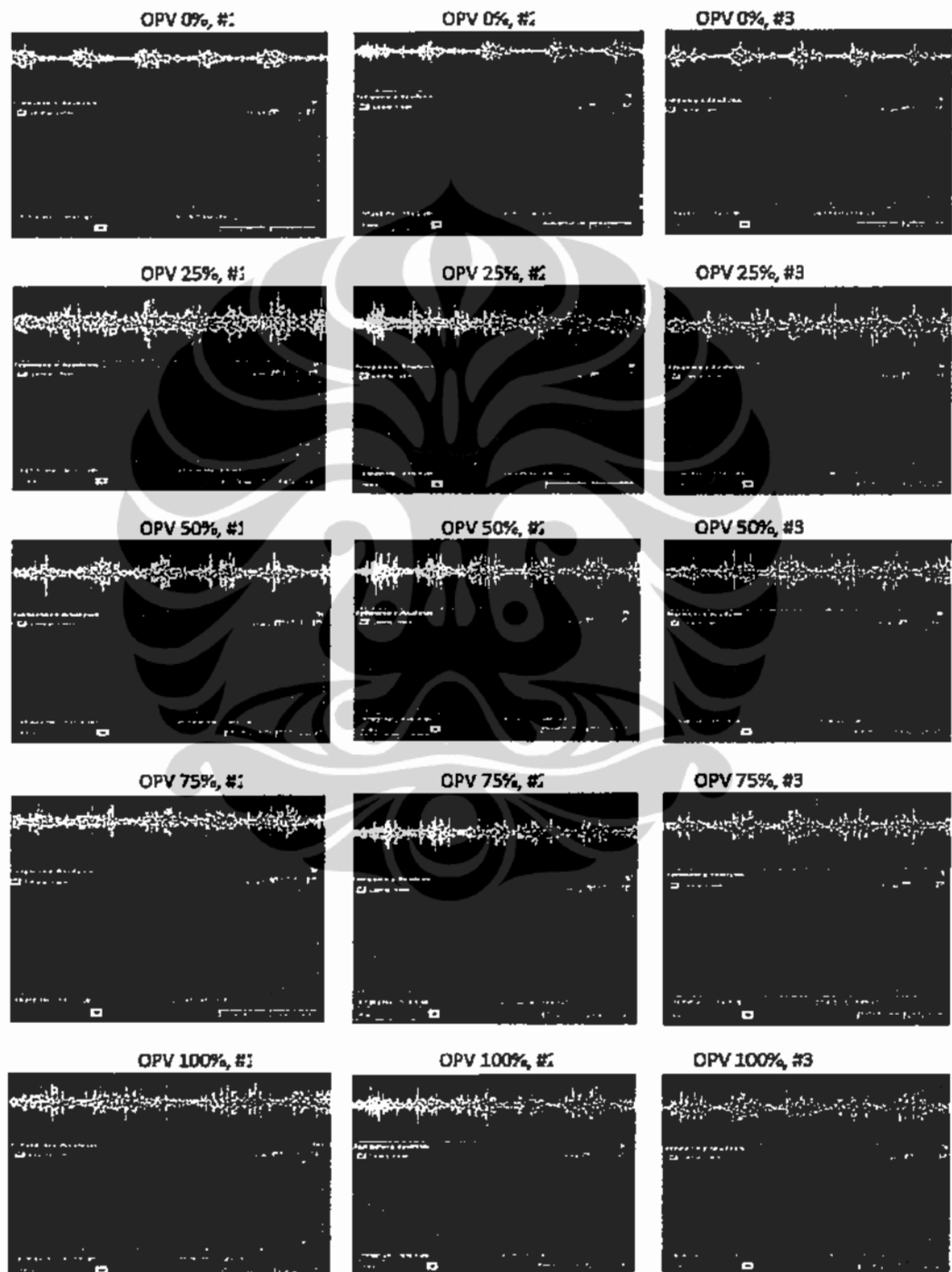


Gambar 3.8. Spektrum frekuensi *seat ring 0*

Percobaan kedua pada seat ring 1

1. Mematikan *flowline* dengan menutup *gate valve* V1, sehingga pompa air akan mati secara otomatis karena di pompa air dilengkapi dengan *automatic pressure switch*.
2. Menutup *air-supply* dengan menutup *gate valve* V5, sehingga tidak ada udara yang akan masuk ke *pneumatic actuator* melalui *fitting* di *pneumatic actuator*.
3. Mematikan *HART communicator* melalui saklar *ON/OFF* yang ada di perangkat tersebut
4. Mematikan *loop validator* melalui saklar *ON/OFF* yang ada di perangkat tersebut
5. Posisi *body assembly valve* tetap direkatkan dengan *microphone* dan *sound pressure level* tetap terhubung ke laptop.
6. Membuka empat buah mur di *bonnet*, sehingga *pneumatic actuator* dapat dilepaskan dari *body assembly valve*, tentunya dengan membuka *ring-drat* yang terdapat di *pneumatic actuator*.
7. Mengangkat *bonnet* dari *body assembly valve*.
8. Membuka *seat ring* 0 dan menggantikannya dengan *seat ring* 1.
9. Memasang kembali *bonnet* ke *body assembly valve*.
10. Memasang kembali *pneumatic actuator* ke *body assembly valve* dan mengeraskan keempat buah mur pada *body assembly valve*.
11. Mengeraskan kembali mur-drat di *pneumatic actuator*.
12. Melakukan pemasangan kembali *mounting bracket* ke *pneumatic actuator*.
13. Melakukan *detail setup*
14. Melakukan kalibrasi
15. Membuka *air-supply* dengan membuka *gate valve* V5, udara akan masuk ke *pneumatic actuator* melalui *fitting* di *pneumatic actuator*.
16. Menghidupkan *HART communicator* melalui saklar *ON/OFF* yang ada di perangkat tersebut
17. Menghidupkan *loop validator* melalui saklar *ON/OFF* yang ada di perangkat tersebut
18. Menyalakan *flowline* dengan membuka *gate valve* V1 sehingga air akan mengalir dan melewati *control valve*.
19. Komputer (laptop) yang sudah dipasang *software cool edit pro* disambungkan ke *sound pressure level meter* melalui terminal *mic* pada laptop.
20. Pada *software cool edit pro* dikonfiguasi 60 detik setiap merekam intensitas suara yang terjadi selama percobaan ini.

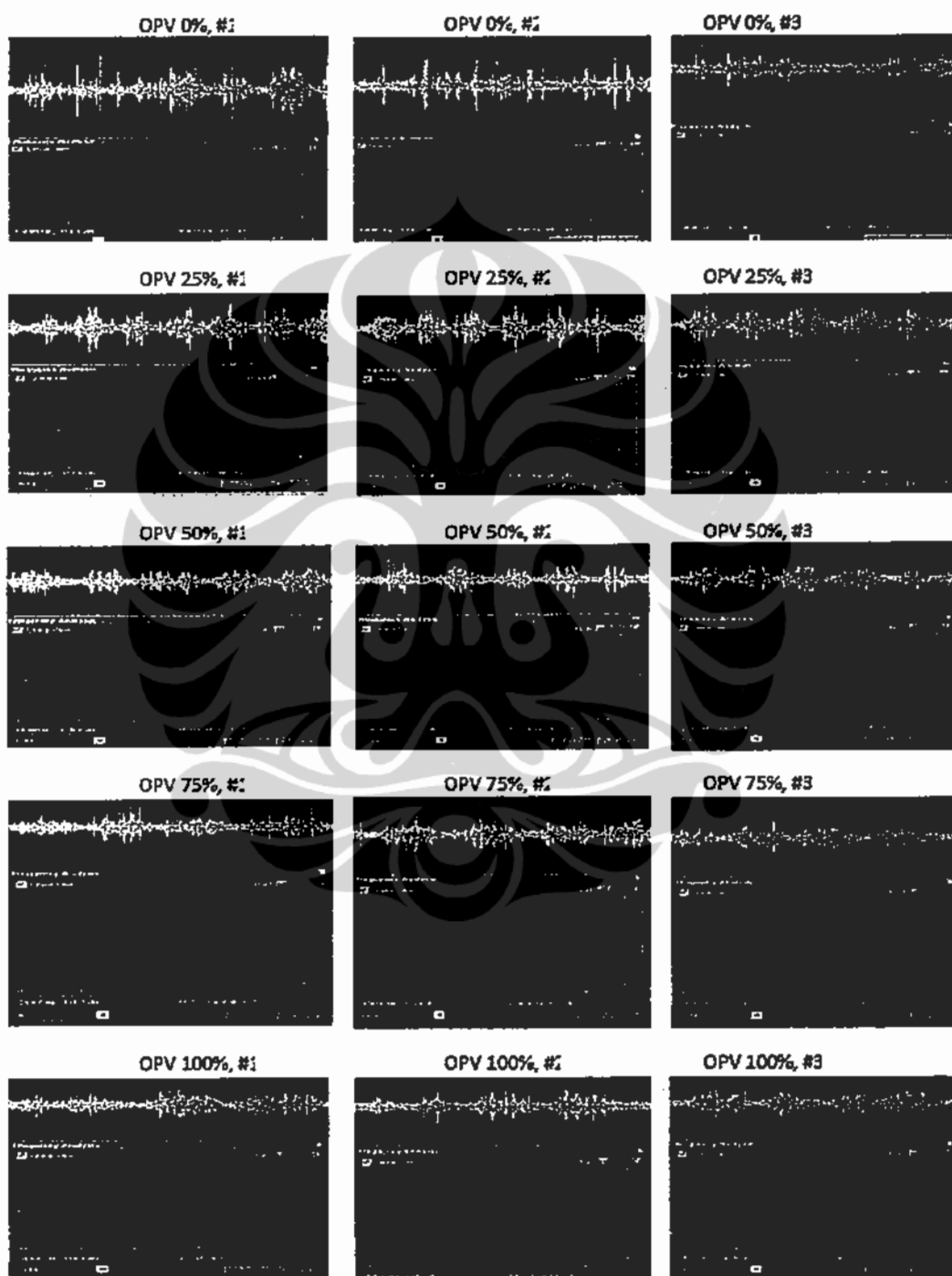
21. Setiap percobaan dilakukan perekaman sebanyak tiga kali.
22. Percobaan ini dilakukan saat OVP 0%, 25%, 50%, 75% dan 100%. Dengan demikian gambar spektrum frekuensi yang dihasilkan pada percobaan *seat ring* 1 adalah sebanyak 15 spektrum yang dapat dilihat pada Gambar 3.9.



Gambar 3.9. Spektrum frekuensi *seat ring* 1

Percobaan ketiga pada *seat ring 2*

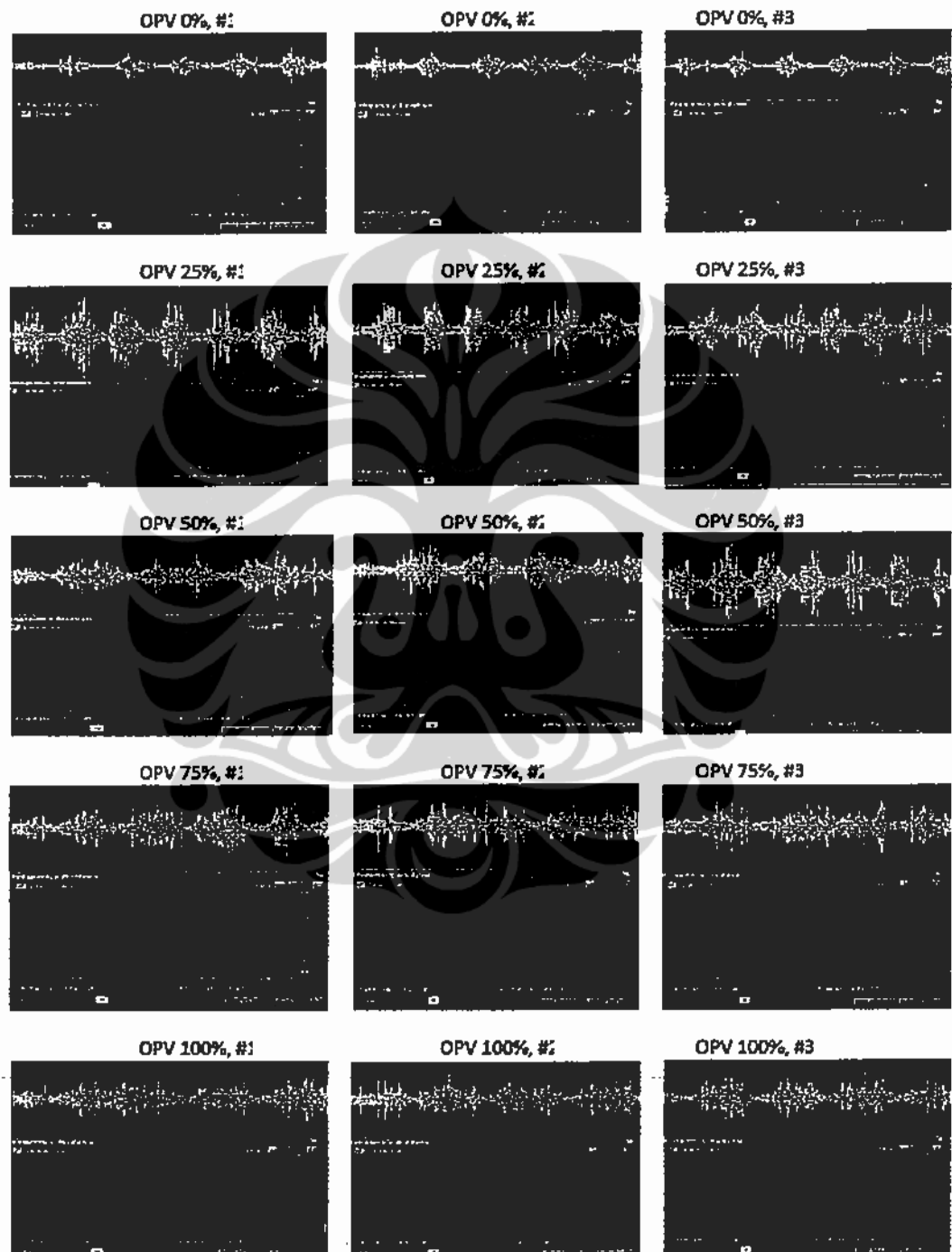
Prosedur percobaan ketiga ini sama seperti percobaan kedua, dan hasil spektrum frekuensi dapat ditunjukkan pada Gambar 3.10.



Gambar 3.10. Spektrum frekuensi *seat ring 2*

Percobaan keempat pada *seat ring 3*

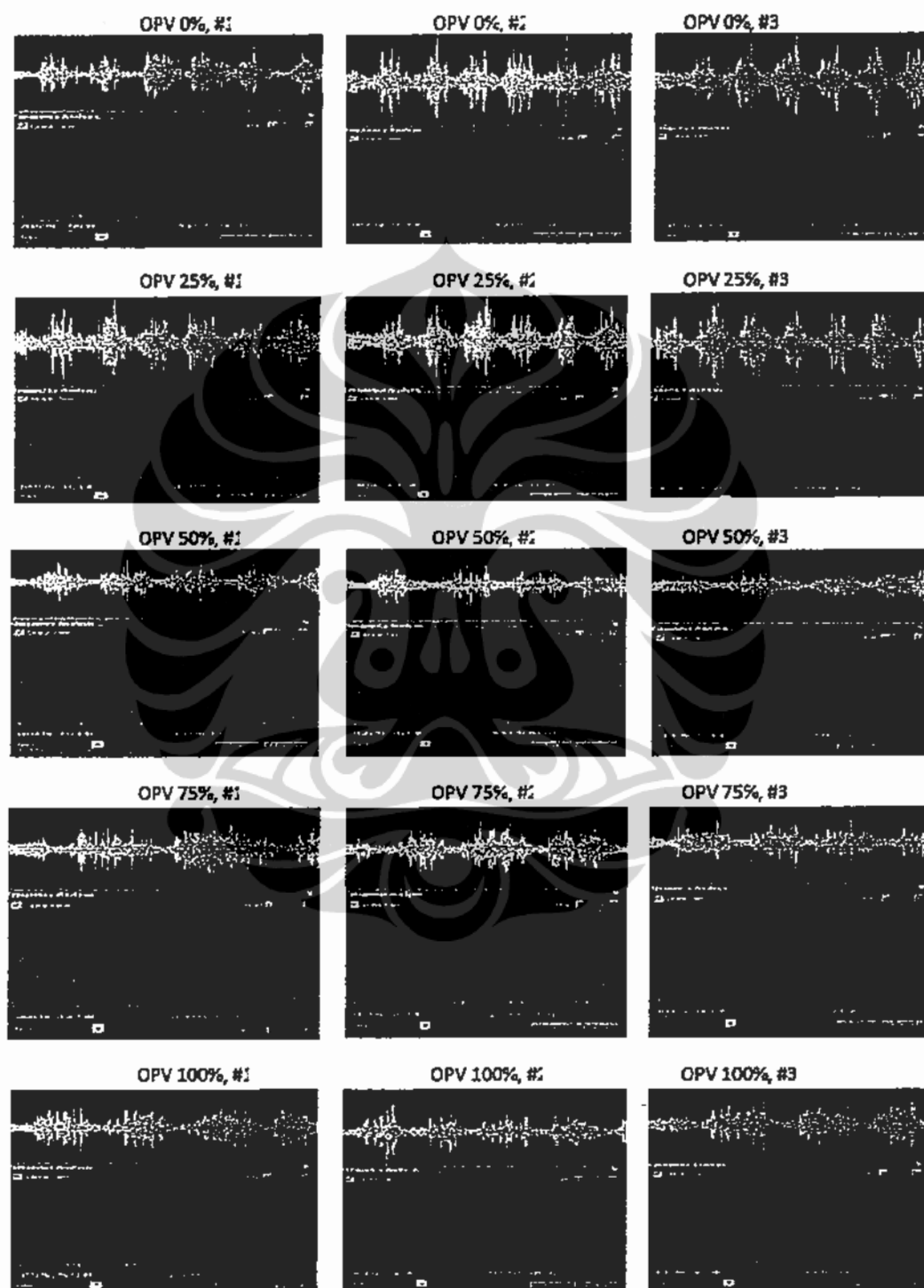
Prosedur percobaan keempat ini sama seperti percobaan ketiga, dan hasil spektrum frekuensi dapat ditunjukkan pada Gambar 3.11.



Gambar 3.11. Spektrum frekuensi *seat ring 3*

Percobaan kelima pada *seat ring 4*

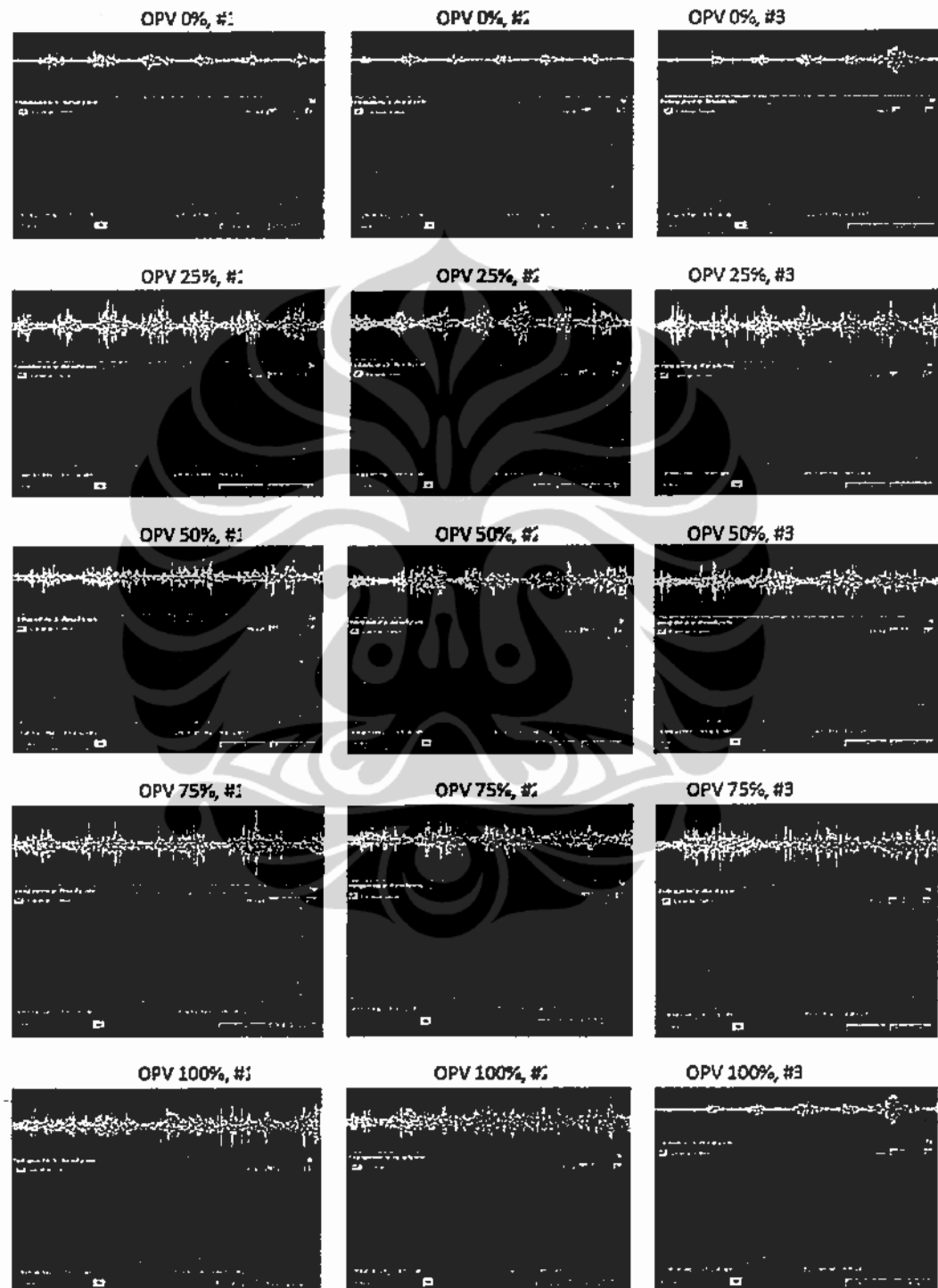
Prosedur percobaan kelima ini sama seperti percobaan keempat, dan hasil spektrum frekuensi dapat ditunjukkan pada Gambar 3.12.



Gambar 3.12. Spektrum frekuensi *seat ring 4*

Percobaan keenam pada *seat ring 5*

Prosedur percobaan keenam ini sama seperti percobaan kelima, dan hasil spektrum frekuensi dapat ditunjukkan pada Gambar 3.13.



Gambar 3.13. Spektrum frekuensi *seat ring 5*

Spektrum-spektrum frekuensi yang dihasilkan dari setiap percobaan di atas seperti yang ditunjukkan pada Gambar 3.8, Gambar 3.9, Gambar 3.10, Gambar 3.11, Gambar 3.12 dan Gambar 3.12 akan konversikan ke dalam bentuk angka-angka melalui fasilitas yang ada pada *software cool edit pro* agar lebih mudah di dalam melakukan analisa spektrum frekuensi tersebut. Angka-angka tersebut diimport ke *software excel* versi 2007. Angka-angka setiap percobaan akan dicari nilai rata-rata melalui fungsi *average* pada *software excel*. Jadi setiap *seat ring* mempunyai nilai rata-rata sebanyak tiga nilai rata-rata. Dari ketiga nilai rata-rata tersebut akan diambil nilai rata-rata yang mendekati kondisi yang ada seperti dapat dilihat pada Lampiran 1, Lampiran 2, Lampiran 3, Lampiran 4, Lampiran 5 dan Lampiran 6. Dari hasil keseluruhan percobaan dengan prototip dapat disarikan hasil seperti yang dirangkum pada Tabel 3.3. Pada riset ini dibatasi pembahasan SPL saat OVP 0% dan SPL saat OVP 25% karena riset ini bertujuan mendeteksi sedini mungkin korosi yang mulai terjadi di *seat ring* pada *body assembly valve*.

Tabel 3.3. Rangkuman hasil pengukuran *seat ring* kondisi normal dan rusak [21]

Kondisi <i>Seat Ring</i>	SPL [dBA] saat OVP 0%	SPL [dBA] saat OVP 25%
0	-109.3948	-106.5825
1	-104.1420	-102.4579
2	-102.7623	-104.4011
3	-103.5872	-106.1227
4	-104.0907	-106.4301
5	-106.4679	-107.4680

Bila diperhatikan Tabel 3.3 saat OVP 0% (saat tidak ada bukaan *valve* atau posisi *plug valve* dengan *seat ring* tertutup rapat) *seat ring* 0 mempunyai SPL terendah -109.3948 dBA. Ketika korosi mulai terjadi di *seat ring*, *noise* mulai terjadi, sehingga SPL menjadi -104.1420 dBA dan *noise* tertinggi terjadi di *seat ring* 2 dengan SPL -102.7623 dBA. *Noise* mulai menurun pada *seat ring* 3, *seat ring* 4 dan *seat ring* 5, sehingga nilai SPL masing-masing semakin rendah.

Saat OVP 25% artinya bukaan *valve* dibuka sebesar 25% dari *travel sizenya*. SPL terendah terjadi pada *seat ring* 5, sedangkan pada *seat ring* 0 *noise* sudah mulai terjadi, sehingga SPL menjadi SPL -106.5825 dBA. Kemudian *noise* akan semakin menurun di *seat ring* 2, *seat ring* 3, *seat ring* 4 dan *seat ring* 5 yang ditunjukkan nilai SPL yang semakin rendah.

3.5. Penurunan rumus kapasitansi *seat ring*

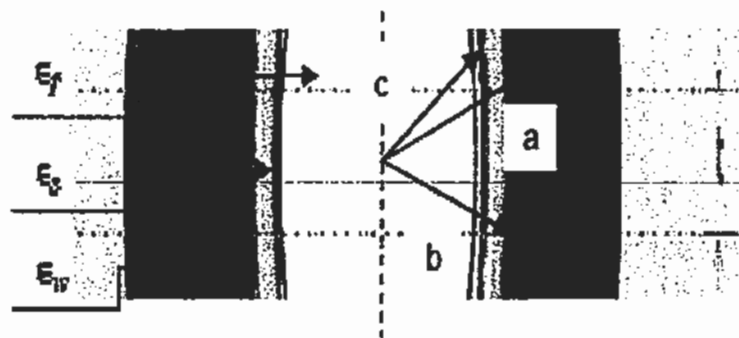
Penurunan rumusan kapasitansi dapat dimulai dengan mempresentasikan fisik *body assembly valve* yang ditunjukkan pada Gambar 3.6 menjadi skema bagian dalam *control valve* pada Gambar 3.14. Adapun letak *microphone* tersebut harus satu garis dengan letak/posisi *seat ring*. *Microphone* ini yang akan menangkap suara kebisingan mulai dari *seat ring* kondisi normal/baik (tidak terdapat lubang) lalu *seat ring* berlubang satu hingga *seat ring* berlubang lima. Ukuran lubang yang tertentu ini dimaksudkan untuk memperoleh kepastian besarnya volume kerusakan di setiap *seat ring*.

Dari Gambar 3.6 dapat dirumuskan suatu sketsa yang mewakili susunan bagian seperti yang ditunjukkan pada Gambar 3.14.



Gambar 3.14. Sketsa susunan bagian dalam *control valve* [22]

Bila Gambar 3.14 dilengkapi dengan bagan penampang, maka sketsa lebih terperinci dapat diwakilkan dalam Gambar 3.15.



Gambar 3.15. Sketsa bagian dalam *control valve* dilengkapi dengan *variable* [22]

ϵ_w adalah permitifitas bahan *body valve assembly*, ϵ_s adalah permitifitas bahan *seat ring* dan ϵ_f adalah permitifitas fluida yang melewati *control valve*, sedangkan $a = r_a$ adalah jarak titik pusat ke lingkaran luar *body valve assembly* bersentuhan langsung dengan *corrosion sensor*; $b = r_b$ adalah jarak titik pusat ke lingkaran luar *seat ring* yang bersentuhan langsung dengan *body valve assembly*; $c = r_c$ adalah jarak titik pusat ke lingkaran dalam *seat ring* yang bersentuhan langsung dengan fluida; t adalah diameter *corrosion sensor*.

Berlaku pula dengan sudut, θ_a adalah sudut titik pusat ke lingkaran luar *body valve assembly* bersentuhan langsung dengan *corrosion sensor*; θ_b adalah sudut titik pusat ke lingkaran luar *seat ring* yang bersentuhan langsung dengan *body valve assembly*; θ_c adalah sudut titik pusat ke lingkaran dalam *seat ring* yang bersentuhan langsung dengan fluida; t adalah diameter *corrosion sensor*.

Untuk menghitung besarnya nilai kapasitansi *control valve* yang ditunjukkan pada Gambar 3.5, melalui Pers.2.31 dengan diasumsikan $E_x=0$ dan $E_z=0$, maka Pers.2.31 akan menjadi,

$$\oiint \bar{E} \cdot d\bar{A} = \iint E_y \bar{j} \cdot \bar{j} dx dz + \iint E_y \bar{j} \cdot (-\bar{j} dx dz) \text{ atau} \\ \iint E_y(x, y_1, z) dx dz - \iint E_y(x, y_2, z) dx dz \quad (3.1)$$

Kapasitansi fluida dapat dirumuskan [22] :

$$C_f = \frac{\epsilon_0 \cdot \epsilon_f \cdot \theta_c \cdot r_c \cdot t}{2 \cdot r_c} \quad (3.2)$$

Kapasitansi *seat ring* dapat dirumuskan [22] :

$$C_s = \frac{\epsilon_0 \cdot \epsilon_s \cdot [\theta_b \cdot r_b - \theta_c \cdot r_c] \cdot t}{2(r_b - r_c)} \quad (3.3)$$

Kapasitansi *body valve assembly* dapat dirumuskan [22] :

$$C_w = \frac{\epsilon_0 \cdot \epsilon_b \cdot [\theta_a \cdot r_a - \theta_b \cdot r_b] \cdot t}{2(r_a - r_b)} \quad (3.4)$$

Perhitungan kapasitansi keseluruhan merupakan seri dari kapasitansi fluida, kapasitansi *seat ring* dan kapasitansi *body valve assembly*, dapat dirumuskan seperti Persamaan 3.5.

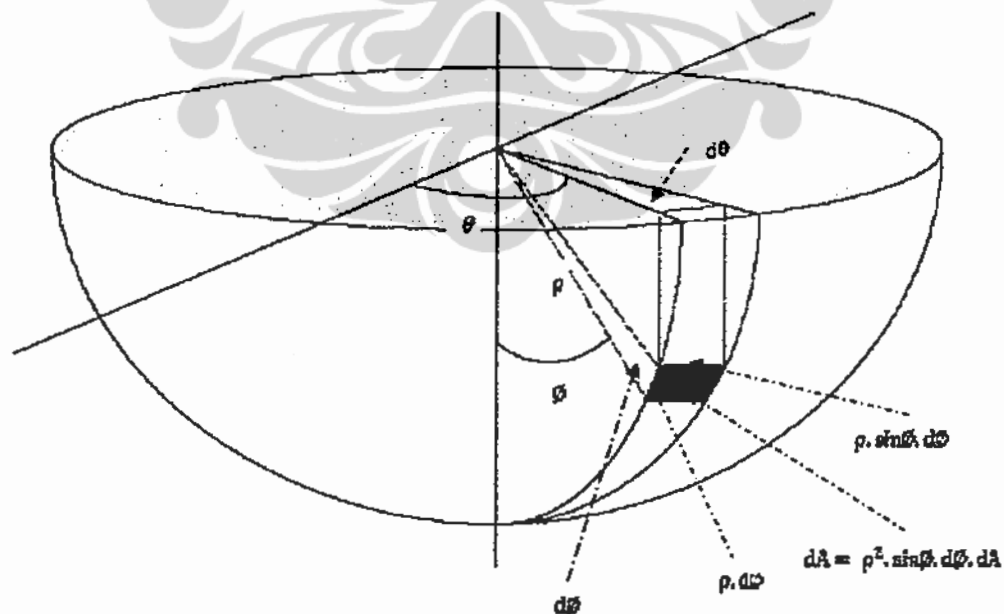
$$C_T = \left[\frac{1}{C_f} + \frac{1}{C_s} + \frac{1}{C_w} \right]^{-1} \quad (3.5)$$

Jadi hasil substitusi Pers.3.2, Pers. 3.3 dan Pers. 3.4 ke dalam Pers.3.5 akan didapat kapasitansi keseluruhan saat *seat ring* kondisi normal adalah [22] :

$$C_t = \left[\frac{1}{C_t} \right]^{-1} = \left[\frac{2.(r_a-r_b)}{\epsilon_o.\epsilon_b[\theta_a.r_a-\theta_b.r_b].t} + \frac{2.(r_b-r_c)}{\epsilon_o.\epsilon_s[\theta_b.r_b-\theta_c.r_c].t} + \frac{2.r_c}{\epsilon_o.\epsilon_f.\theta_c.r_c} \right]^{-1} \quad (3.6)$$

Persamaan 3.6 merupakan nilai kapasitansi *seat ring* pada kondisi normal, artinya *seat ring* belum rusak/korosi akibat adanya *cavitation*. Gambar 3.15 menunjukkan besarnya jarak r_a akan selalu lebih besar dari nilai r_b dan nilai r_b akan selalu lebih besar dari nilai r_c . Begitupula dengan sudut-sudutnya, besarnya sudut θ_a akan selalu lebih besar dari nilai θ_b dan nilai θ_b akan selalu lebih besar dari nilai θ_c .

Untuk dapat menghitung penurunan rumus kapasitansi *seat ring* kondisi rusak, maka dapat diperhatikan Gambar 3.16.



Gambar 3.16. Sketsa setengah bola [22]

Dari Persamaan 2.31 tadi, akan diperoleh penurunan rumus kapasitansi C_{ab_1} adalah [22] :

$$C_{ab_1} = \epsilon_o \cdot \epsilon_r [(r_b + x)^2 \theta_{r_b} \cdot \sin \theta_l - r_a \theta_{r_a}] \quad (3.7)$$

$$C_{ab_1} = \epsilon_o \cdot \epsilon_s [r_b \theta_b - r_a \theta_a] \cdot [t - t_l] \quad (3.8)$$

Perhitungan kapasitansi kondisi *seat ring* rusak/korosi adalah parallel antara kapasitansi

C_{ab_1} dengan kapasitansi C_{ab_1} , sehingga menjadi [22] :

$$C_{ab_t} = \epsilon_o \cdot \epsilon_r [\theta_{r_b} \{r_b (t - t_l) + (r_b + x)^2 \sin \theta_l\} - r_a \theta_{r_a} \cdot t] \quad (3.9)$$



BAB 4 DISKUSI DAN ANALISA

4.1. *Sizing calculation control valve* yang dipakai pada prototip

Pengujian kelayakan *control valve* yang akan dipakai pada prototip perlu dilakukan karena *control valve* merupakan *engineering product*. Hal ini diperlukan agar *control valve* yang akan dipakai telah sesuai dengan aplikasinya. Dalam riset ini dipergunakan *control valve sizing calculation software Firstvue* versi 1.0ab yang diproduksi oleh *Emerson Process Management Solution* [23]. *Software* ini mudah didapat, yaitu dengan *download* secara gratis di alamat *websitenya* termasuk dengan *manual booknya*. Setelah meng-*unzip download file*, maka proses instalasi *software* dilakukan dengan mengikuti petunjuk-petunjuk yang ada didalamnya.

Proses selanjutnya adalah memasukkan *service condition* ke *sizing tab*. Di dalam *sizing tab*, dipilih *condition* di mana dalam riset ini dipakai *normal condition* kemudian menuju ke menu *spreadsheet* untuk memasukkan nilai-nilai *service condition*. Dengan menekan tombol *calculate*, maka akan didapat nilai *calculated sizing coefficient* C_v . Pilih jenis *sizing liquid/water fluid*. Cek ulang satuan-satuan yang dipergunakan lalu tekan *calculate*. Ada dua *variable input* yang perlu diperhatikan selain data-data pada *service condition* seperti yang telah diuraikan pada Bab 2, untuk menghitung *body assembly valve*, yaitu : a) nilai konstanta k_m dan b) nilai konstanta k_c .

Nilai konstanta k_m dapat diinput untuk *liquid* selalu dibuat 0.7 [24], nilai konstanta k_m ini akan berubah secara otomatis setelah pemilihan jenis *control valve* telah dilakukan melalui menu *flow coeff's*. Dalam menu *flow coeff's* ini meminta penentuan karakteristik yang akan dipergunakan dan jenis *body assembly valve* yang dipilih dan nilai konstanta k_c diperoleh melalui Tabel 4.1. Konstanta k_c harus dimasukkan agar dapat diketahui ada tidaknya *cavitation* atas jenis *control valve* yang dipilih.

Setelah menekan tombol *calculate* proses perhitungan *service condition*, pengisian nilai konstanta k_m dan k_c dengan benar, maka akan didapat nilai *calculated* C_v . Dengan memperhatikan nilai *rated* C_v pada jenis *control valve* seperti pada Tabel 4.2, maka akan didapat besarnya *opening valve percentage (OVP)* pada kondisi normal. Sebagaimana diketahui bahwa setiap *manufacturer control valve* mengembangkan suatu *standard test*

pipng arrangement, yang kemudian menghasilkan rated C_v pada setiap jenis *control valve* yang diproduksinya.

Hasil *sizing calculation* terhadap *control valve* yang ada di prototip tersebut diuraikan pada Tabel 4.3. Hasil *sizing control valve* dengan menggunakan *software firstvue* diperoleh *sizing coefficient* C_v 1.610. Nilai C_v ini merupakan perhitungan secara komputer dari Persamaan 2.14 yang dijelaskan pada Bab 2. Nilai C_v ini adalah nilai *calculation sizing coefficient* artinya nilai C_v yang diperoleh dari hasil perhitungan terhadap *service condition* yang ada. Spesifikasi teknik *control valve* yang dipakai di prototip disampaikan pada Tabel 4.4.

Tabel 4.1. Nilai konstanta k_c [25]

Kc Values for Globe/Angle Valves without Cavitrol Trim

Select Trim Category 1 or Category 2 from the pop-up data table.

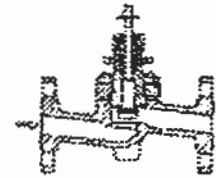
Then, refer to the Kc values table and select the appropriate Kc value.

Trim <u>Category 1 or Category 2 ?</u>	Body Size	Pressure Drop	Kc
Cage Characterized Category 1	1" - 12"	less than 100 psid	Kc = 1.0
		greater than 100 psid	Kc = (F1 * F1)
Cage Characterized Category 2	1" - 2"	less than 300 psid	Kc = 1.0
		greater than 300 psid	Kc = (F1 * F1)
	3" - 4"	less than 200 psid	Kc = 1.0
		greater than 200 psid	Kc = (F1 * F1)
6" - 12"	less than 100 psid	Kc = 1.0	
	greater than 100 psid	Kc = (F1 * F1)	
Plug Characterized Category 1, 2 (For example: Micro-Form, Micro-Flute, OE, GL, EZ)	All	less than 75 psid	Kc = 1.0
		75 - 100 psid	Kc = (F1 * F1)
		greater than 100 psid	Kc = 0.85 (F1 * F1)

$Km = (F1 * F1)$

Tabel 4.2. Nilai *rated Cv* [25]

FLOW COEFFICIENTS (ANSI/ISA/IEC)

24000SF SERIES STAINLESS STEEL
INTEGRAL FLANGED BODY CONTROL VALVES

MODEL 24500SF EQUAL PERCENTAGE (METAL SEAT)															
BODY SIZE	PORT DIA.	PLUG TRAVEL	Cv at VALVE OPENING - PERCENT OF PLUG TRAVEL											F _r	F _s
			5	10	20	30	40	50	60	70	80	90	100		
1/2" & 1"	250	50	.0008	.0012	.0024	.006	.012	.018	.024	.04	.068	.10	.20	0.90	0.28
	250	50	.002	.003	.006	.015	.030	.040	.060	.10	.170	.250	.50		
	250	50	.006	.01	.02	.04	.06	.12	.20	.35	.50	.82	1.0		
	375	50	.008	.015	.03	.05	.07	.14	.25	.41	.65	1.0	1.5		
1"	375	50	.015	.03	.06	.10	.20	.35	.50	.90	1.3	1.8	2.5	0.90	0.46
	813	50	.10	.15	.30	.50	.80	1.20	1.80	2.10	2.71	3.25	4		
1-1/2"	813	50	.16	.24	.38	.57	1.1	1.7	2.6	3.5	5.7	8.5	9.5	0.90	0.46
	1.25	.75	.25	.50	.70	1.0	1.4	2.0	2.8	3.5	5.0	7.9	9.0		
	1.25	.75	.26	.50	1.7	2.6	3.7	5.3	7.5	11	13.5	18	17.5		

MODEL 24577SF EQUAL PERCENTAGE (PTFE SEAT)															
BODY SIZE	PORT DIA.	PLUG TRAVEL	Cv at VALVE OPENING - PERCENT OF PLUG TRAVEL											F _r	F _s
			5	10	20	30	40	50	60	70	80	90	100		
1/2" & 1"	250	50	.006	.01	.02	.04	.06	.12	.20	.35	.50	.82	1.0	0.90	0.42
	250	50	.008	.015	.03	.05	.07	.14	.25	.41	.66	1.0	1.5		
1"	375	50	.03	.09	.14	.25	.38	.55	.70	1.0	1.3	1.7	2.5	0.90	0.46
	813	50	.18	.22	.28	.40	.75	1.3	2.1	2.7	3.1	3.6	4		
1-1/2"	813	50	.18	.24	.28	.50	.95	1.5	2.4	3.7	5.3	7.5	8.5	0.90	0.46
	1.25	.75	.31	1.0	1.7	2.6	3.7	5.3	7.5	11	13.5	18	17.5		

MODEL 24688SF LINEAR (METAL SEAT)															
BODY SIZE	PORT DIA.	PLUG TRAVEL	Cv at VALVE OPENING - PERCENT OF PLUG TRAVEL											F _r	F _s
			5	10	20	30	40	50	60	70	80	90	100		
1/2" & 1"	250	50	.01	.14	.23	.34	.45	.55	.64	.73	.82	.90	1.0	0.90	0.46
	375	50	0.1	0.2	0.3	0.5	0.6	.73	.87	1.02	1.15	1.3	1.5		
1"	375	50	.20	.50	.75	1.0	1.3	1.5	1.7	1.9	2.1	2.3	2.5	0.90	0.46
	813	50	.20	.40	.55	.70	1.02	1.31	1.60	2.10	2.65	3.30	4		
1-1/2"	813	50	.52	1.0	1.9	2.8	3.9	4.8	5.7	6.7	7.8	8.6	9.5	0.90	0.46
	1.25	.75	.52	2.2	3.0	5.5	7.9	8.5	19	13.6	13.5	15.5	17.5		

MODEL 24677SF LINEAR (PTFE SEAT)															
BODY SIZE	PORT DIA.	PLUG TRAVEL	Cv at VALVE OPENING - PERCENT OF PLUG TRAVEL											F _r	F _s
			5	10	20	30	40	50	60	70	80	90	100		
1/2" & 1"	375	50	.004	.010	.020	.030	.040	.050	.060	.070	.080	.090	.10	0.90	0.38
	375	50	.009	.020	.040	.060	.080	.100	.120	.140	.160	.180	.20		
1"	375	50	.03	.030	.100	.15	.20	.25	.30	.35	.40	.45	.50	0.90	0.19
	375	50	.05	.100	.200	.300	.400	.500	.600	.700	.800	.900	1.0		
1"	813	50	.22	.45	.82	1.2	1.8	2.0	2.4	2.8	3.2	3.6	4	0.90	0.48

F_r = Pressure Recovery Factor
F_s = Valve Style Modifier

Tabel 4.3. Hasil sizing *calculation control valve* [21]

SIZING CALCULATION			
Contact:		Project: UI	Rev: 00
Customer:			Date: 09 AUG 08
Loc:			
Item: 001 - VALVE/REGULATOR SIZING CALCULATION: Fisher Water			
Item Desc: 24000S, 1/2 Inch			
Tags: PERCOBAAN			
SERVICE & SIZING		Normal	
Inlet Pressure (kg/cm ^{2a})			1.600
Pressure Drop (kg/cm ²)			1.000
Atm. Pressure (psia)			14.696
Specific Gravity			0.899
Vapor Pressure (kg/cm ^{2a})			0.036
Temperature (deg C)			27.000
Liquid Flow Rate (l/m)			23.000
Recovery Coefficient, Km			0.809
Cavitation Index, Kc			1.000
Sizing Coefficient, Cv			1.610
dP Allowable (kg/cm ²)			1.267
dP Cavitation (kg/cm ²)			1.564
Cavital Trim Application Ratio, Ar			0.639
Rc			0.956
Notes:			
NOISE CALCULATION		STANDARD	
Fisher Valve/Reg Trim Type			1.000
Downstream Pipe Size (in)			STD
Downstream Pipe Schedule			< 50
Valve/Reg LpA (SPL) (dB(A))			
LpA vs Q TABLE FOR CASE: Normal			
Q%	Q(l/m)	Cv	Valve/Reg LpA
10	2.30	0.161	<50
20	4.60	0.322	<50
30	6.90	0.483	<50
40	9.20	0.644	<50
50	11.50	0.805	<50
60	13.80	0.966	<50
70	16.10	1.127	<50
80	18.40	1.288	<50
90	20.70	1.449	<50
100	23.00	1.610	<50
J. Uap		09 AUG 08	

Tabel 4.4. Spesifikasi teknik *control valve* yang dipakai di prototip [21]

SLIDING STEM CONTROL VALVE SPECIFICATION				
Rep Percobaan Riset		Project: UI	Rev: 00	09 AUG 08
Item: 001	Rev.	Qty: 1	Data Sheet: Pada Tabel 4.3	Revised: Baskoro
Service: Water	Positioner Type: Smart Positioner Fieldvue	Input Signal: 4-20 mA, HART Protocol	Access: Airset	Gauges: Inst:Out:Supp
Tag: PERCOBAAN	Body Style: Baumann	Action: Direct	Certification: FM Explosion Proof	
Size and Type: 1/2 Inch 2400S	Design Temp:	Controller Type: None	Action:	Measure Element:
End Connect: ANSI Class 150	Design Press:	Range:	Output:	Mounting:
In: RF Flange	End Connect: In: RF Flange	Output:	Mounting:	
Out: RF Flange	Material: 316 SST Cast	Mounting:		
Material: 316 SST Cast	Ports: Single Port	Transducer: None	Input Signal:	Output Signal:
Ports: Single Port	Flow Directn: Up	Action:	Mounting:	Airset:
Trim Number: 589	Cage Mat: None	Certifications:		
Cage Mat: None	Retainer Mat: None	Line In: 1.000 in, STD	Line Out: 1.000 in, STD	
Retainer Mat: None	Bushing Mat: None	Insulation:	Service Cond: Throttling	Process Fluid: Water
Seal Ring Mat: 316 SST	VALVE PLUG	Minimum	Normal	Maximum
Material: 316 SST	Material: 316 SST	SG	0.999	
Guiding: Top	Guiding: Top	T deg C	27.000	
Balance: Unbalanced	Balance: Unbalanced	P1 kg/cm ² a	1.600	
Shutoff Class: ANSI Class IV	Shutoff Class: ANSI Class IV	dP kg/cm ²	1.000	
Port Size: 3/8 inch	Port Size: 3/8 inch	O in	23.000	
Characteristic: Equal %	Characteristic: Equal %	Vlv Lpa dB(A)	< 50	
Stem Material: 316L SST	Stem Material: 316L SST	Cv	1.610	
Stem Size: standard	Stem Size: standard	Kv	0.809	0.809
Bonnet Style: standard	Bonnet Style: standard	% Open		86
Boss Size: standard	Boss Size: standard	Maximum Rated Flow Coefficient: 2.50 Cv		
Packing: Single TFE	Packing: Single TFE			
Access: None	Access: None			
Botl. Bonnet: B7 Alloy STL Bolt	Botl. Bonnet: B7 Alloy STL Bolt			
Pack Fig/5lg: B7 Alloy STL Bolt	Pack Fig/5lg: B7 Alloy STL Bolt			
Actuator: Spring & Diaphragm	Actuator: Spring & Diaphragm			
Type/Size: 32	Type/Size: 32			
Travel: 1/2 inch	Travel: 1/2 inch			
bench Set: 0-18 psig	bench Set: 0-18 psig			
Push Down To: Close	Push Down To: Close			
Supply: Air	Supply: Air			
To Actuator: 0-18 psig	To Actuator: 0-18 psig			
Fails Valve: Close	Fails Valve: Close			
Handwheel: None	Handwheel: None			
Fieldvue: Advance Diagnostic	Fieldvue: Advance Diagnostic			
1.0ab				01 JAN 09

Setiap jenis *control valve* mempunyai *maximum rated flow coefficient* C_v . Pada riset ini *control valve* mempunyai *rated* C_v 2,50. *Opening valve percentage* (OVP) yang didapat merupakan perbandingan antara *calculation sizing coefficient* C_v dengan *maximum rated flow coefficient* C_v secara polinomial sehingga diperoleh OVP 86%.

Hasil *sizing calculation* di atas juga menunjukkan tingkat *noise* < 50 dBA, tingkat *noise* ini masih dibawah tingkat *noise* yang diijinkan di industri sesuai dengan peraturan Menteri Kesehatan no. 718/Men.Kes/Per/XI/1987 tentang kebisingan yang berhubungan dengan kesehatan pada zona D yaitu 70 dBA [26]. Daerah/zona dibagi sesuai dengan titik kebisingan yang diijinkan seperti yang ditunjukkan pada Tabel 4.5. Dan besarnya tingkat *noise* yang diijinkan ditunjukkan pada Tabel 4.6.

Tabel 4.5. Zona *noise* yang diijinkan [26]

Zona	Titik kebisingan yang diijinkan
Zona A	Zona yang diperuntukkan bagi tempat riset, Rumah Sakit, tempat perawatan kesehatan/social dan sejenisnya
Zona B	Zona yang diperuntukkan bagi perumahan, tempat pendidikan, rekreasi dan sejenisnya.
Zona C	Zona yang diperuntukkan bagi perkantoran, perdagangan, pasar dan sejenisnya
Zona D	Zona yang diperuntukkan bagi industri, pabrik, station KA, terminal bus dan sejenisnya

Tabel 4.6. Tingkat *noise* yang diijinkan [26]

No	Zona	Tingkat kebisingan (dBA)	
		Normal	Max yang dianjurkan
1	A	35	45
2	B	45	55
3	C	50	60
4	D	60	70

Tingkat *noise* ini perlu pengaturan yang selektif karena dampak *noise* terhadap manusia adalah a) gangguan peredaran darah; b) otot-otot menjadi tegang; c) gangguan tidur; d) gangguan pendengaran; e) gangguan pencernaan dan f) gangguan pada sistem saraf.

Hasil *sizing calculation* juga menunjukkan tidak adanya masalah *cavitation* karena *dP allowable* 1,267 kg/cm² lebih masih *lebih* kecil dari *dP cavitation* 1,564 kg/cm².

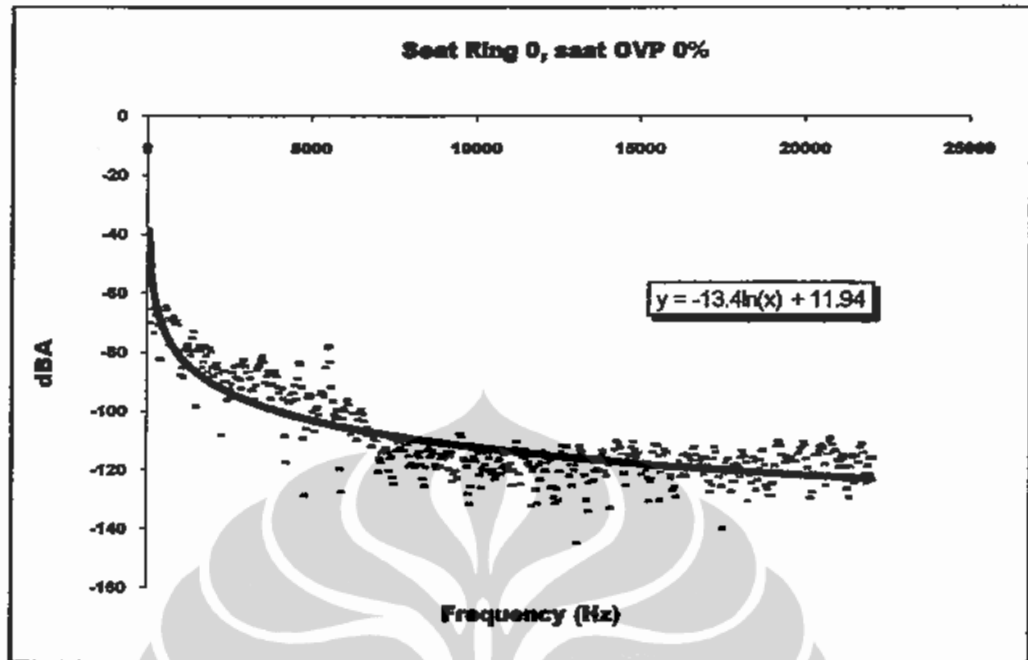
Setelah dilakukan *sizing calculation control valve*, maka baru didapat spesifikasi teknis *control valve* secara lebih rinci yang ditunjukkan pada Tabel 4.4 di atas.

4.2. Hasil percobaan di setiap *seat ring*

Melanjuti penjelesaian dari Bab 3, spektrum frekuensi yang berupa angka-angka (secara lebih rinci dapat dilihat pada Lampiran 1), dengan melakukan analisa statistik yang dibantu oleh *software excel* versi 2007, maka diperoleh besarnya masing-masing frekuensi di setiap *seat ring*.

Frekuensi untuk *seat ring* 0

Tabel 3.3 di Bab 3 saat OVP 0% diperoleh besarnya SPL -109,3948 dBA, hubungan antara SPL dengan frekuensi didapat dari analisa statistik dengan *software excel* versi 2007 yang ditunjukkan pada Gambar 4.1.



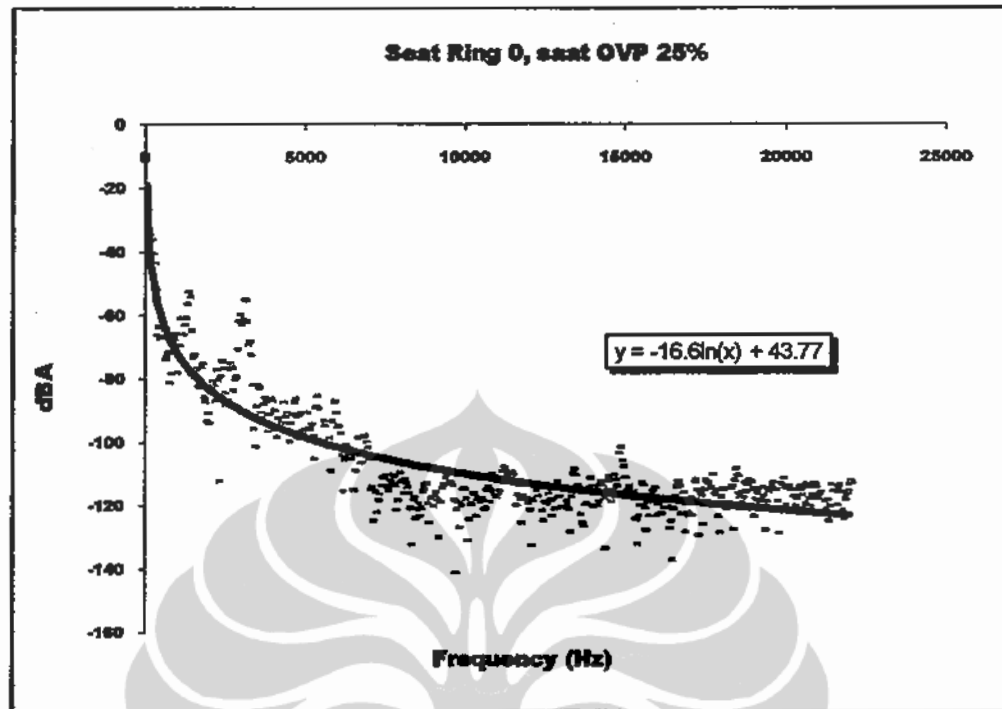
Gambar 4.1. Hubungan SPL vs frekuensi *seat ring 0* saat OVP 0%

Dari Gambar 4.1 di atas hubungan antara SPL dengan frekuensi *seat ring 0* saat OVP 0% adalah logaritmik dengan Persamaan 4.1.

$$y = -13.4 \ln(x) + 11.94 \quad (4.1)$$

Bersama frekuensi *seat ring 0* saat OVP 0% dengan memasukkan nilai SPL -109.3948 dBA adalah 8560 Hz.

Tabel 3.3 di Bab 3 saat OVP 25% diperoleh besarnya SPL -106.5825 dBA, hubungan antara SPL dengan frekuensi didapat dari analisa statistik dengan *software excel* versi 2007 yang ditunjukkan pada Gambar 4.2.



Gambar 4.2. Hubungan SPL vs frekuensi *seat ring* 0 saat OVP 25%

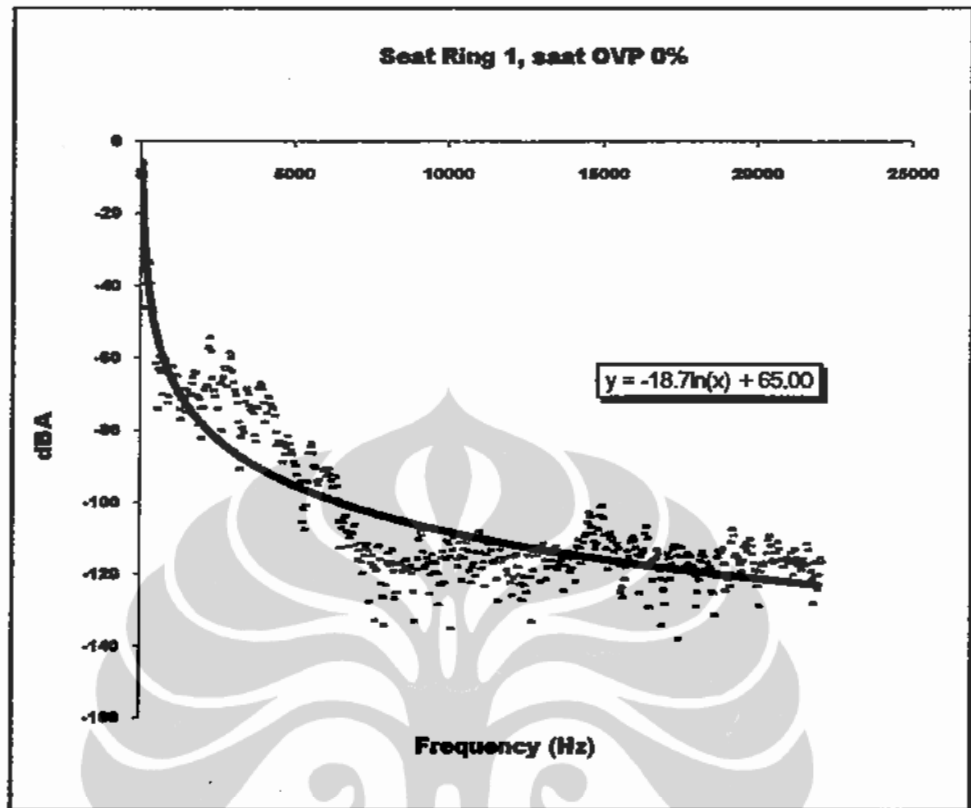
Dari Gambar 4.2 di atas hubungan antara SPL dengan frekuensi *seat ring* 0 saat OVP 25% adalah logaritmik dengan Persamaan 4.2.

$$y = -16.6 \ln(x) + 43.77 \quad (4.2)$$

Bersama frekuensi *seat ring* 0 saat OVP 25% dengan memasukkan nilai SPL -106.5825 dBA adalah 8582 Hz.

Frekuensi untuk *seat ring* 1

Tabel 3.3 di Bab 3 saat OVP 0% diperoleh besarnya SPL -104.1420 dBA, hubungan antara SPL dengan frekuensi didapat dari analisa statistik dengan *software excel* versi 2007 yang ditunjukkan pada Gambar 4.3.



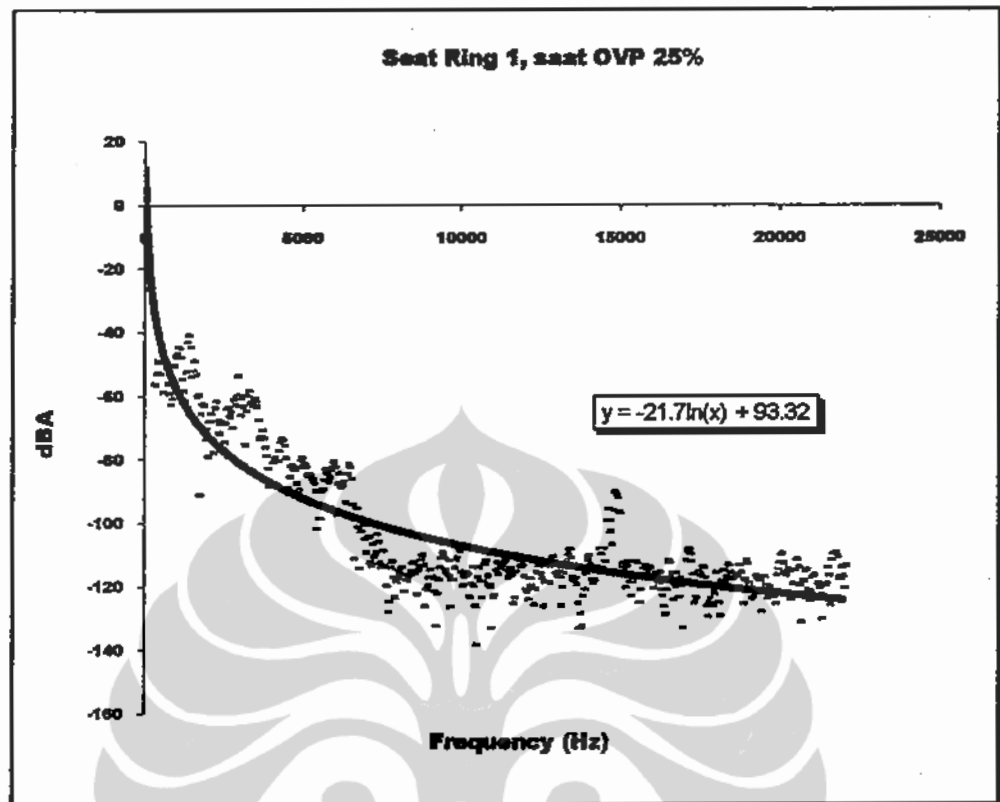
Gambar 4.3. Hubungan SPL vs frekuensi *seat ring* 1 saat OVP 0%

Dari Gambar 4.3 di atas hubungan antara SPL dengan frekuensi *seat ring* 1 saat OVP 0% adalah logaritmik dengan Persamaan 4.3.

$$y = -18.7 \ln(x) + 65.00 \quad (4.3)$$

Besarnya frekuensi *seat ring* 1 saat OVP 0% dengan memasukkan nilai SPL -104.1420 dBA adalah 8476 Hz.

Tabel 3.3 di Bab 3 saat OVP 25% diperoleh besarnya SPL -102.4579 dBA, hubungan antara SPL dengan frekuensi didapat dari analisa statistik dengan *software excel* versi 2007 yang ditunjukkan pada Gambar 4.4.



Gambar 4.4. Hubungan SPL vs frekuensi *seat ring 1* saat OVP 25%

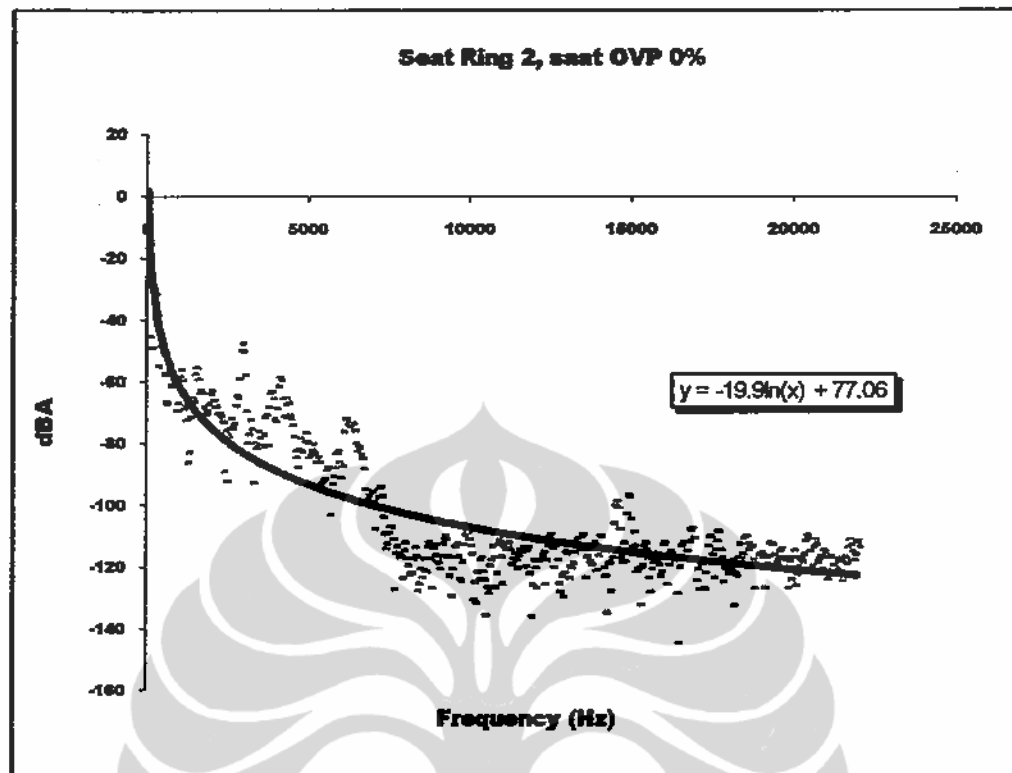
Dari Gambar 4.4 di atas hubungan antara SPL dengan frekuensi *seat ring 1* saat OVP 25% adalah logaritmik dengan Persamaan 4.4.

$$y = -21.70 \ln(x) + 93.32 \quad (4.4)$$

Bersama frekuensi *seat ring 1* saat OVP 25% dengan memasukkan nilai SPL -102.4579 dBA adalah 8284 Hz.

Frekuensi untuk *seat ring 2*

Tabel 3.3 di Bab 3 saat OVP 0% diperoleh besarnya SPL -102.7623 dBA, hubungan antara SPL dengan frekuensi didapat dari analisa statistik dengan *software excel* versi 2007 yang ditunjukkan pada Gambar 4.5.



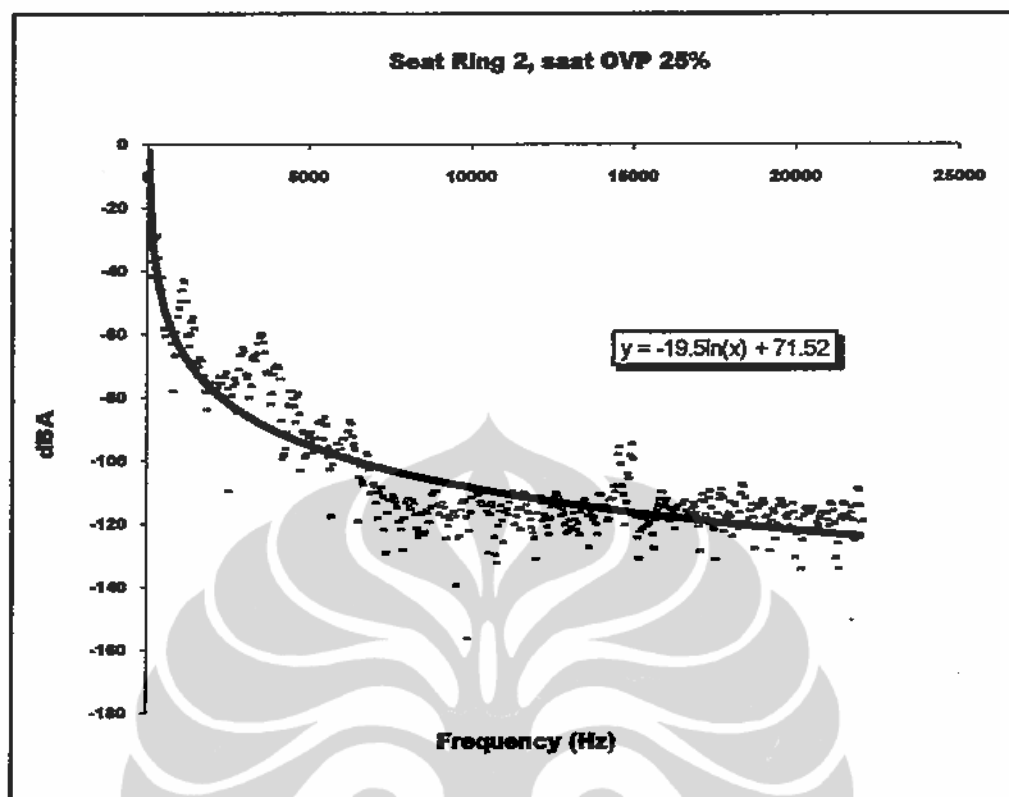
Gambar 4.5. Hubungan SPL vs frekuensi *seat ring 2* saat OVP 0%

Dari Gambar 4.5 di atas hubungan antara SPL dengan frekuensi *seat ring 2* saat OVP 0% adalah logaritmik dengan Persamaan 4.5.

$$y = -19.9 \ln(x) + 77.06 \quad (4.5)$$

Bersama frekuensi *seat ring 2* saat OVP 0% dengan memasukkan nilai SPL -102.7623 dBA adalah 8403 Hz.

Tabel 3.3 di Bab 3 saat OVP 25% diperoleh besarnya SPL -104.4011 dBA, hubungan antara SPL dengan frekuensi didapat dari analisa statistik dengan *software excel* versi 2007 yang ditunjukkan pada Gambar 4.6.



Gambar 4.6. Hubungan SPL vs frekuensi *seat ring 2* saat OVP 25%

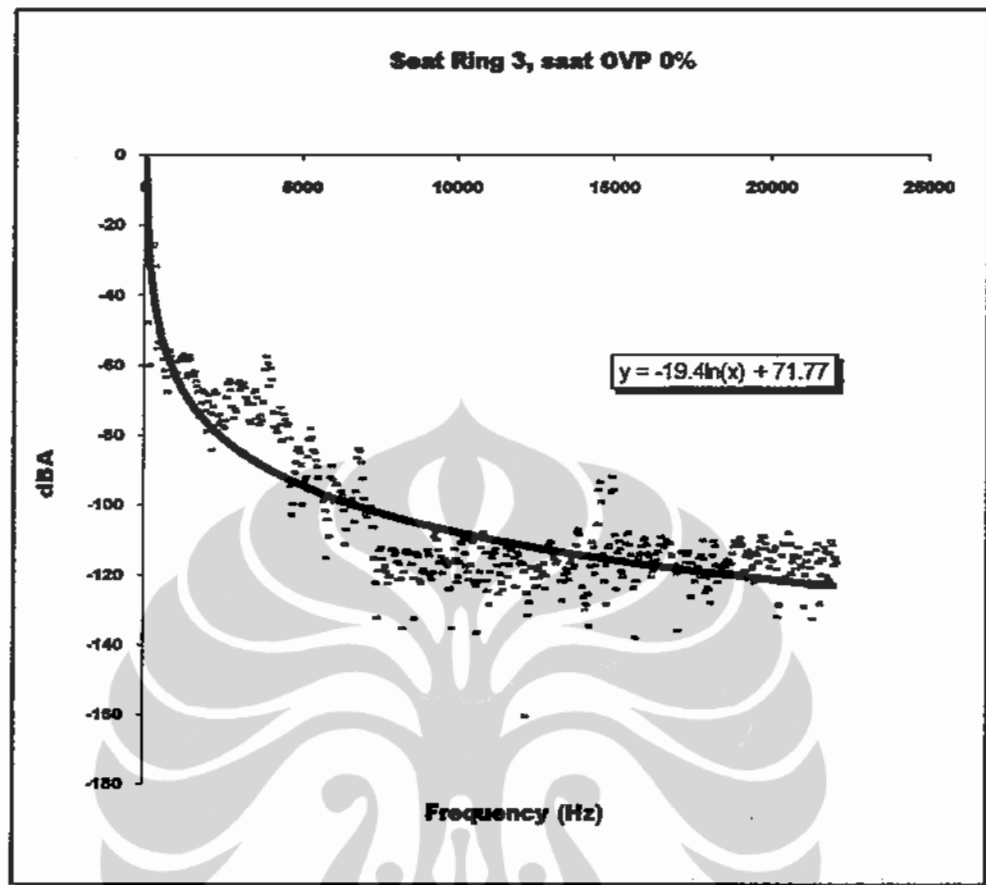
Dari Gambar 4.6 di atas hubungan antara SPL dengan frekuensi *seat ring 2* saat OVP 25% adalah logaritmik dengan Persamaan 4.6.

$$y = -19.50 \ln(x) + 71.52 \quad (4.6)$$

Bersama frekuensi *seat ring 2* saat OVP 25% dengan memasukkan nilai SPL -104.4011 dBA adalah 8280 Hz.

Frekuensi untuk *seat ring 3*

Tabel 3.3 di Bab 3 saat OVP 0% diperoleh besarnya SPL -103.5872 dBA, hubungan antara SPL dengan frekuensi didapat dari analisa statistik dengan *software excel* versi 2007 yang ditunjukkan pada Gambar 4.7.



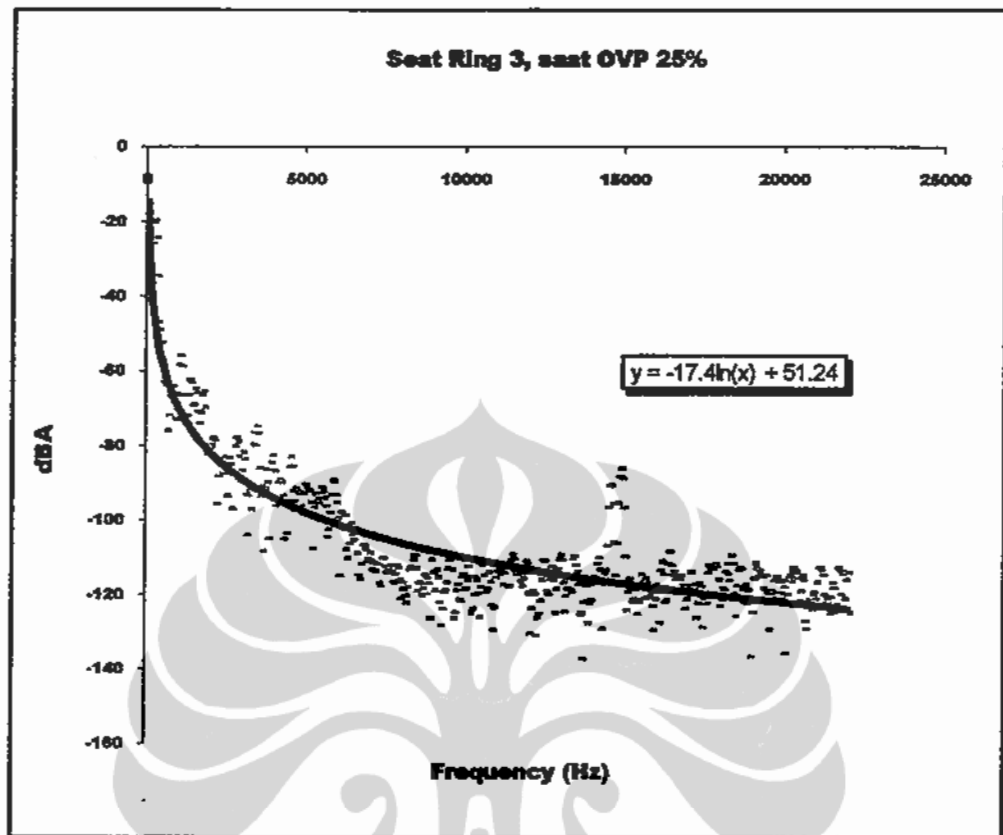
Gambar 4.7. Hubungan SPL vs frekuensi *seat ring 3* saat OVP 0%

Dari Gambar 4.7 di atas hubungan antara SPL dengan frekuensi *seat ring 3* saat OVP 0% adalah logaritmik dengan Persamaan 4.7.

$$y = -19.4 \ln(x) + 71.77 \quad (4.7)$$

Bersama frekuensi *seat ring 3* saat OVP 0% dengan memasukkan nilai SPL -103.5872 dBA adalah 8426 Hz.

Tabel 3.3 di Bab 3 saat OVP 25% diperoleh besarnya SPL -106.1227 dBA, hubungan antara SPL dengan frekuensi didapat dari analisa statistik dengan *software excel* versi 2007 yang ditunjukkan pada Gambar 4.8.



Gambar 4.8. Hubungan SPL vs frekuensi *seat ring* 3 saat OVP 25%

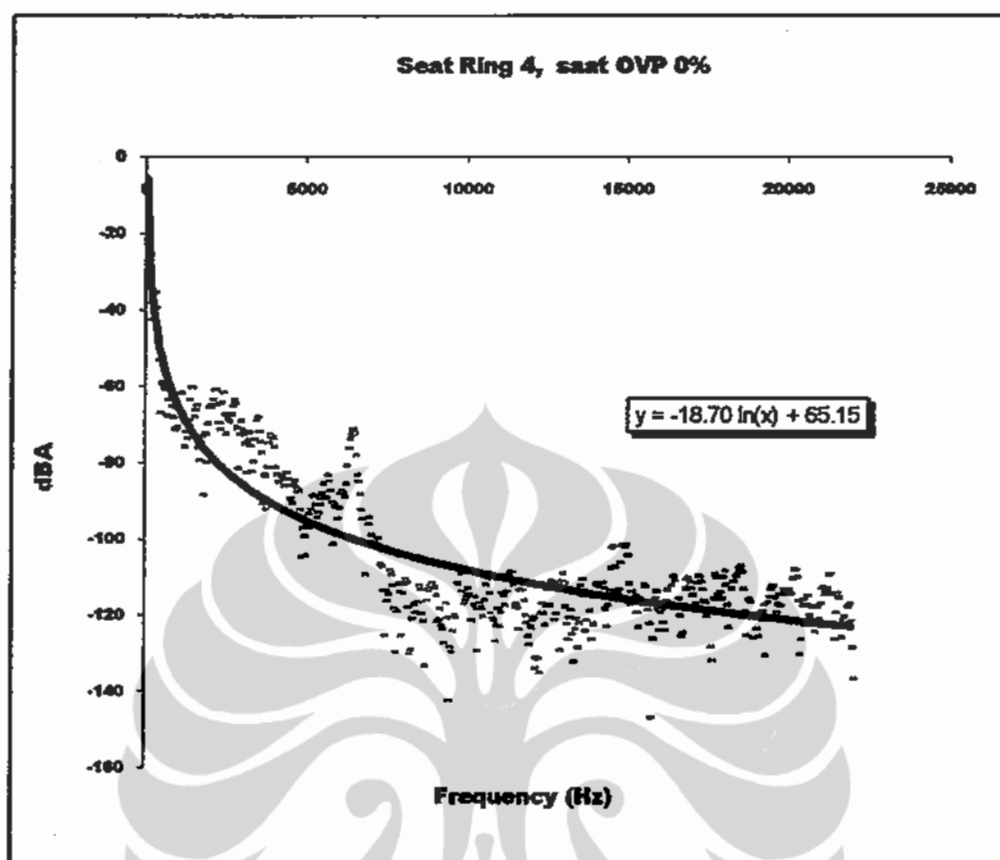
Dari Gambar 4.8 di atas hubungan antara SPL dengan frekuensi *seat ring* 3 saat OVP 25% adalah logaritmik dengan Persamaan 4.8.

$$y = -17.40 \ln(x) + 51.24 \quad (4.8)$$

Bersama frekuensi *seat ring* 3 saat OVP 25% dengan memasukkan nilai SPL -106.1227 dBA adalah 9044 Hz.

Frekuensi untuk *seat ring* 4

Tabel 3.3 di Bab 3 saat OVP 0% diperoleh bersama SPL -104.0907 dBA, hubungan antara SPL dengan frekuensi didapat dari analisa statistik dengan *software excel* versi 2007 yang ditunjukkan pada Gambar 4.9.



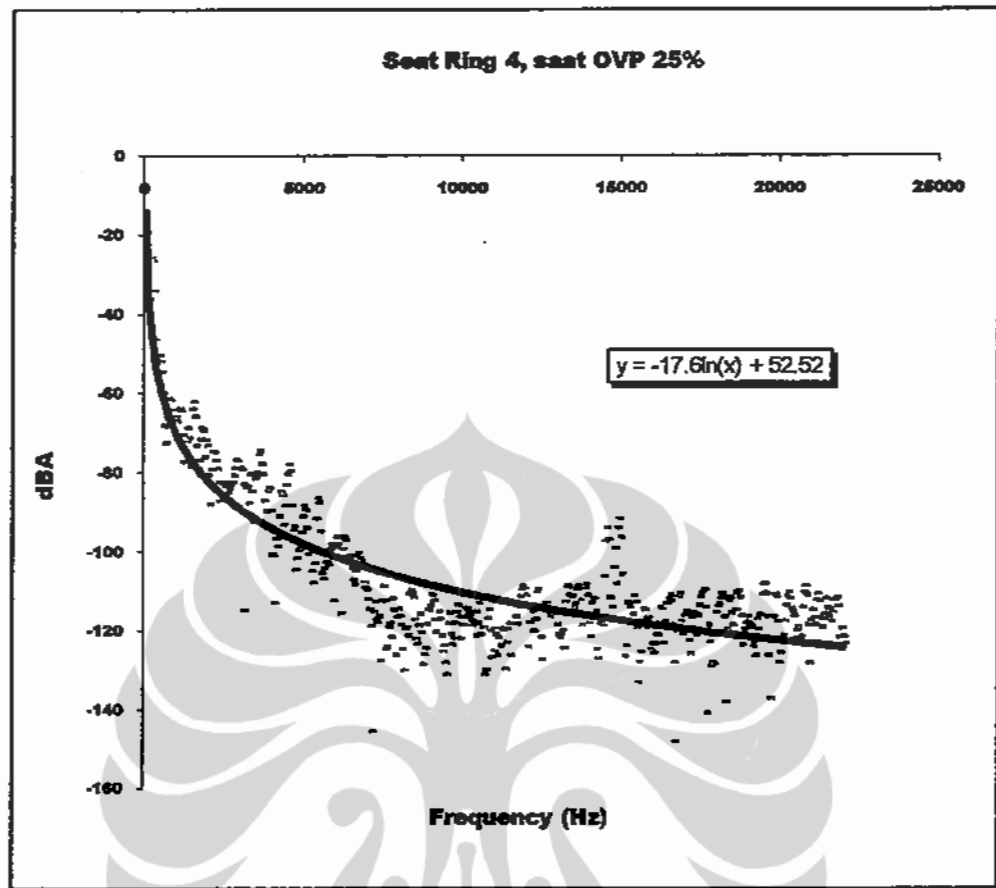
Gambar 4.9. Hubungan SPL vs frekuensi *seat ring* 4 saat OVP 0%

Dari Gambar 4.9 di atas hubungan antara SPL dengan frekuensi *seat ring* 4 saat OVP 0% adalah logaritmik dengan Persamaan 4.9.

$$y = -18.70 \ln(x) + 65.15 \quad (4.9)$$

Bersama frekuensi *seat ring* 4 saat OVP 0% dengan memasukkan nilai SPL -104.0907 dBA adalah 8521 Hz.

Tabel 3.3 di Bab 3 saat OVP 25% diperoleh besarnya SPL -106.4301 dBA, hubungan antara SPL dengan frekuensi didapat dari analisa statistik dengan *software excel* versi 2007 yang ditunjukkan pada Gambar 4.10.



Gambar 4.10. Hubungan SPL vs frekuensi *seat ring 4* saat OVP 25%

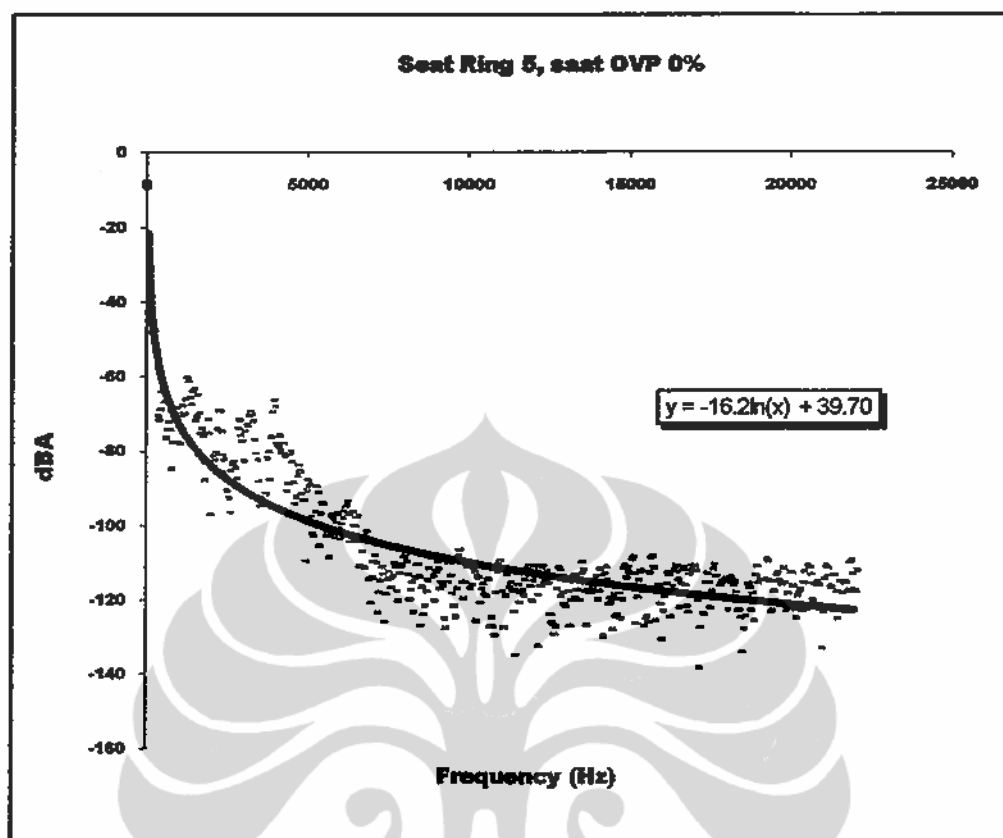
Dari Gambar 4.10 di atas hubungan antara SPL dengan frekuensi *seat ring 4* saat OVP 25% adalah logaritmik dengan Persamaan 4.10.

$$y = -17.60 \ln(x) + 52.52 \quad (4.10)$$

Bersama frekuensi *seat ring 4* saat OVP 25% dengan memasukkan nilai SPL -106.4301 dBA adalah 8360 Hz.

Frekuensi untuk *seat ring 5*

Tabel 3.3 di Bab 3 saat OVP 0% diperoleh besarnya SPL -106.4679 dBA, hubungan antara SPL dengan frekuensi didapat dari analisa statistik dengan *software excel* versi 2007 yang ditunjukkan pada Gambar 4.11.



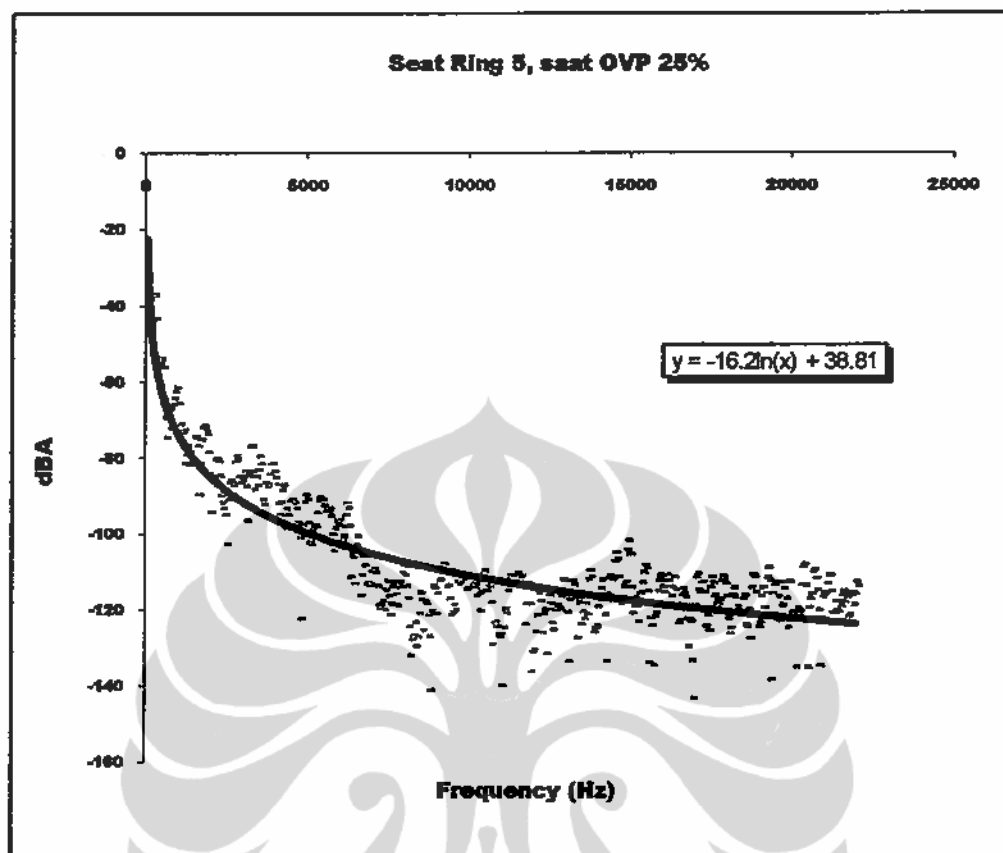
Gambar 4.11. Hubungan SPL vs frekuensi *seat ring 5* saat OVP 0%

Dari Gambar 4.11 di atas hubungan antara SPL dengan frekuensi *seat ring 5* saat OVP 0% adalah logaritmik dengan Persamaan 4.11.

$$y = -16.20 \ln(x) + 39.70 \quad (4.11)$$

Bersama frekuensi *seat ring 5* saat OVP 0% dengan memasukkan nilai SPL -106.4679 dBA adalah 8289 Hz.

Tabel 3.3 di Bab 3 saat OVP 25% diperoleh bersama SPL -107.4680 dBA, hubungan antara SPL dengan frekuensi didapat dari analisa statistik dengan *software excel* versi 2007 yang ditunjukkan pada Gambar 4.12.



Gambar 4.12. Hubungan SPL vs frekuensi *seat ring 5* saat OVP 25%

Dari Gambar 4.12 di atas hubungan antara SPL dengan frekuensi *seat ring 5* saat OVP 25% adalah logaritmik dengan Persamaan 4.12.

$$y = -16.20 \ln(x) + 38.81 \quad (4.12)$$

Bersama frekuensi *seat ring 5* saat OVP 25% dengan memasukkan nilai SPL -107.4680 dBA adalah 8346 Hz.

Perhitungan besaran frekuensi yang terjadi mulai *seat ring 0* hingga *seat ring 5* menghasilkan perioda frekuensi antara 8284 Hz sampai dengan 9044 Hz.

4.3. Menentukan nilai kapasitansi pada *seat ring*

Studi desain sensor korosi dalam riset ini, dimulai dengan menentukan besarnya nilai kapasitansi yang diperoleh dari hasil pengukuran *sound pressure level (SPL)*. Hasil SPL ini awalnya berupa spektrum frekuensi. Spektrum frekuensi ini kemudian dikonversikan dengan *software cool edit pro* menjadi angka-angka seperti pada Lampiran 1. Nilai SPL (dBA) ini mewakili *sound level* pada *seat ring 0, seat ring 1, seat ring 2, seat ring 3, seat ring 4* dan *seat ring 5*. Nilai SPL dianalisa dengan *software excel* versi 2007 akan menghasilkan bentuk kurva dan formula hubungan antara SPL dengan frekuensi.

Untuk dapat menentukan kapasitansi pada *seat ring*, digunakan dua formula pada Persamaan 4.4 dan Persamaan 4.5. Dengan memasukkan nilai-nilai SPL pada Tabel 3.3 ke dalam formula-formula maka akan diperoleh besarnya frekuensi seperti pada Tabel 4.8.

Tabel 3.3 memperlihatkan saat OVP 0% SPL tertinggi -102,7623 dBA terjadi pada *seat ring 2*, sedangkan saat OVP 25% SPL tertinggi -102,4579 dBA terjadi pada *seat ring 1*. Untuk mencari frekuensi saat OVP 0%, maka data spektrum frekuensi pada Lampiran 1, Lampiran 2, Lampiran 3, Lampiran 4, Lampiran 5 dan Lampiran 6 dimasukkan satu demi satu nilainya ke Persamaan 4.4, sehingga diperoleh hasil frekuensi seperti pada Tabel 4.7.

Tabel 4.7. Hasil perhitungan frekuensi *seat ring* kondisi normal dan rusak [32]

Kondisi <i>Seat Ring</i>	Frekuensi [Hz] saat OVP 0%	Frekuensi [Hz] saat OVP 25%
0	13848	13548
1	12248	12834
2	12185	13151
3	12420	13292
4	12448	13888
5	12770	14141

Perhitungan nilai-nilai kapasitansi hasil pengukuran menggunakan Persamaan 2.26 yaitu kapasitansi berbanding terbalik dengan kuadrat frekuensinya. Dalam riset [28] menguraikan bahwa perhitungan kapasitansi sebuah *device* dimulai dari informasi frekuensinya. Pada riset ini konstanta $\alpha_2 (= 4\pi^2L)$ dalam Persamaan 2.26 mempunyai nilai yang sangat kecil sekali sehingga dapat diabaikan karena gesekan yang terjadi antara fluida dengan permukaan *seat ring* sangat kecil. Hasil perhitungan nilai-nilai kapasitansi di setiap *seat ring* dapat dilihat pada Tabel 4.8.

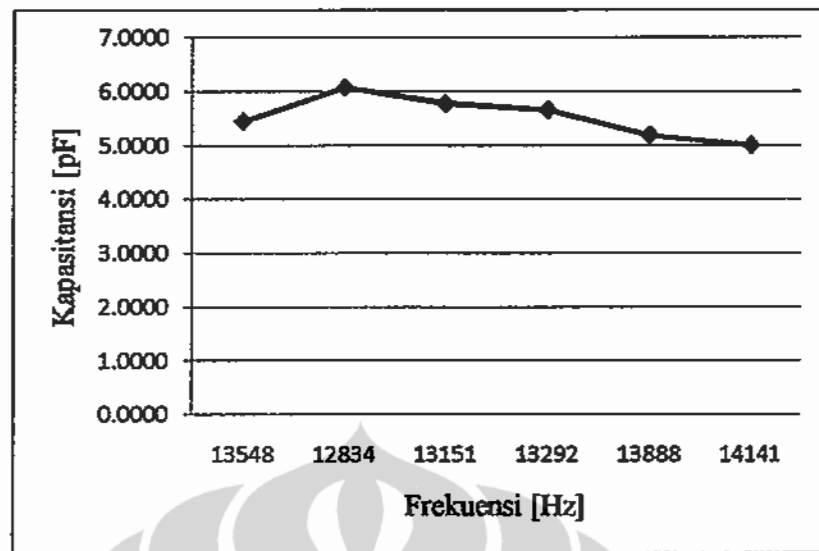
Tabel 4.8. Nilai kapasitansi saat OVP 0% dan OVP 25% [33]

Frekuensi [Hz] saat OVP 0%	Kapasitansi [Farad] saat OVP 0%	Frekuensi [Hz] saat OVP 25%	Kapasitansi [Farad] saat OVP 25%
13848	$5,2147 \times 10^{-9}$	13548	$5,4482 \times 10^{-9}$
12248	$6,6661 \times 10^{-9}$	12834	$6,0712 \times 10^{-9}$
12185	$6,7352 \times 10^{-9}$	13151	$5,7821 \times 10^{-9}$
12420	$6,4827 \times 10^{-9}$	13292	$5,6600 \times 10^{-9}$
12448	$6,4536 \times 10^{-9}$	13888	$5,1847 \times 10^{-9}$
12770	$6,1322 \times 10^{-9}$	14141	$5,0008 \times 10^{-9}$

Tabel 4.8 menunjukkan bahwa saat OVP 0% frekuensi tertinggi terjadi di *seat ring* 0 dan frekuensi terendah terjadi pada *seat ring* 2. Nilai kapasitansi tertinggi pada *seat ring* 2 sebesar $6,7352 \times 10^{-9}$ Farad dan nilai kapasitansi terendah pada *seat ring* 0 sebesar $5,2147 \times 10^{-9}$ Farad. Sedangkan saat OVP 25% frekuensi tertinggi terjadi di *seat ring* 5 dan frekuensi terendah terjadi pada *seat ring* 1. Nilai kapasitansi tertinggi pada *seat ring* 1 sebesar $6,0712 \times 10^{-9}$ Farad dan nilai kapasitansi terendah pada *seat ring* 5 sebesar $5,0008 \times 10^{-9}$ Farad. Kondisi ini sesuai dengan Persamaan 2.17 dengan adanya korosi *seat ring* besarnya nilai A semakin kecil, sehingga besarnya nilai kapasitansi C akan semakin kecil. Luas *seat ring* A berbanding lurus besarnya nilai kapasitansi C . Hubungan tersebut dapat diwakilkan dengan Persamaan 4.13, dapat digambarkan seperti tampak pada Gambar 4.13 [17].

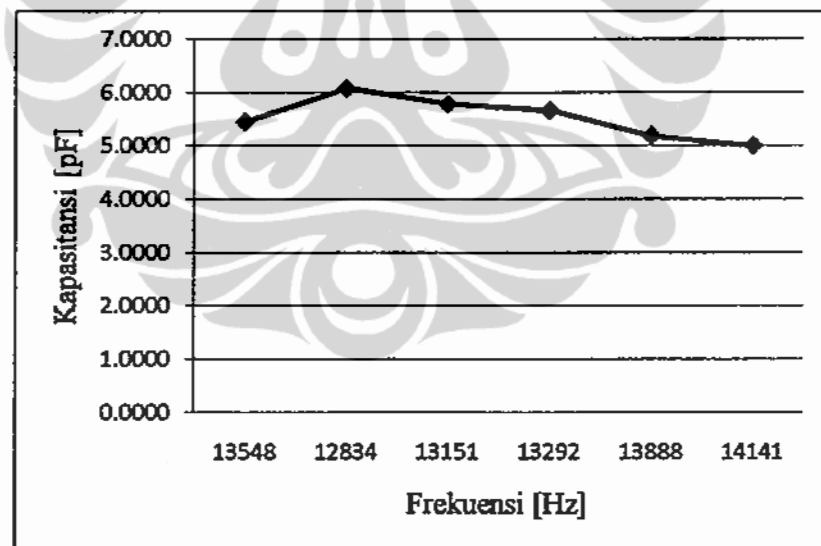
$$a_k = 1 - \frac{C \cdot d}{\epsilon \cdot A} \quad (4.13)$$

a_k adalah luas korosi *seat ring*.



Gambar 4.13. Kurva hubungan kapasitansi dengan frekuensi saat OVP 0%

Persamaan 4.13 di atas berlaku saat OVP 0%, sedangkan untuk OVP 25% dapat digambarkan seperti pada Gambar 4.14.



Gambar 4.14. Kurva hubungan kapasitansi dengan frekuensi saat OVP 25%

Bila diperhatikan bentuk kedua kurva pada Gambar 4.13 dan Gambar 4.14 hampir sama.

4.4. Studi sensor korosi pada *body assembly valve*

Sensor korosi dirancang untuk ditempatkan pada bagian dalam *body valve assembly* dengan kedalaman setengah dari ketebalan *body valve assembly* (dalam riset ini kedalaman *body valve assembly* pada prototip 12 mm, sehingga letak sensor pada kedalaman 6 mm seperti yang ditunjukkan pada Gambar 4.15. Rancangan sensor korosi seperti ini dimaksudkan agar lebih stabil karena tidak mudah lepas sambungannya dan lebih aman dari pengaruh luar yang berada di sekitarnya.



Gambar 4.15. Rancangan letak sensor korosi di dalam *Body Valve Assembly*

Letak sensor korosi segaris dengan letak *seat ring* dengan tebal keseluruhan sensor korosi minimal sama dengan ketebalan *seat ring*. Adapun pemasangan sensor korosi diperlukan adaptor dengan permukaan luar polos dan permukaan dalam yang sudah didrat dengan ukuran sesuai dengan ketebalan sensor korosi tadi. Kemudian adaptor tersebut dilas dengan metal (*permanent*) atau dilem (*removable*).

Gambar 4.15 memperlihatkan bahwa sensor korosi dipasang di dalam *body assembly valve*. Tujuan utamanya adalah letak sensor korosi dipasang didalam *body assembly valve* lebih stabil dan aman dari gangguan di sekitarnya serta dapat mengurangi suara luar yang tidak diinginkan dengan dipasang zat perekat (karet *seal*). Adapun letak sensor korosi harus satu garis dengan letak/posisi *seat ring* dan titik pusat fluida. Sensor

korosi ini yang akan menangkap *sound level* mulai dari *seat ring* kondisi normal/baik (tidak terdapat lubang) sampai *seat ring* mengalami korosi.

Studi sensor korosi pada *body assembly valve* dalam riset ini akan membahas desain sensor yang dikemukakan dalam riset [17, 18, 19 dan 30]. Se jauh mungkin menggunakan spesifikasi teknis sensor yang telah dipergunakan dalam riset-riset tersebut yang disesuaikan dengan karakteristik SPL dari hasil pengukuran intensitas frekuensi.

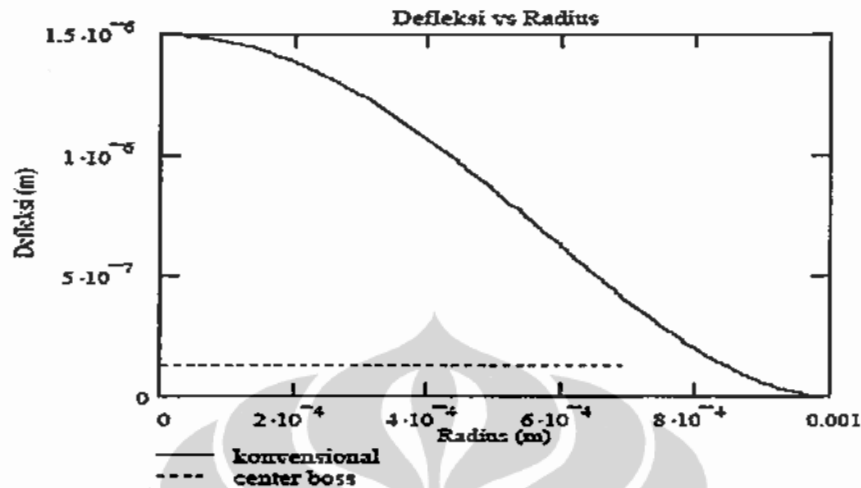
Desain sensor yang telah dibahas dalam riset-riset tersebut yaitu sensor konvensional yang diuraikan secara rinci dalam riset [17 dan 30] dan sensor *center boss* [17 dan 18]. Dengan membandingkan hasil sensitivitas sensor konvensional dan sensor *center boss* (CBS), maka dapat ditentukan salah satu sensor dari 2 kemungkinan sensor tersebut.

Perbedaan sensor konvensional dengan sensor *center boss* dapat dilihat dari struktur desain kedua sensor tersebut. Struktur *center boss* menggunakan *center boss* pada *diaphragm*nya sedangkan struktur konvensional tidak ada. Persamaan kedua jenis struktur sensor tersebut adalah sama-sama mempunyai *diaphragm*, elektroda dua buah dan terdiri dari dua buah keping silikon [17] seperti yang ditunjukkan pada Gambar 2.21. Desain CBS yang dilakukan dalam riset [17] dimulai antara lain dengan penentuan spesifikasi teknik CBS seperti yang ditunjukkan pada Tabel 4.9. dan penjelasan singkat mengenai perencanaan langkah-langkah fabrikasi secara berurutan.

Tabel 4.9. Spesifikasi *Center Boss Sensor* [19]

Item	Deskripsi	Spesifikasi CBS
1	Radius <i>diaphragm</i>	1 mm
2	Tebal <i>diaphragm</i>	22 μm
3	Tebal <i>center boss</i>	110 μm
4	Radius <i>center boss</i>	700 μm
5	Bentuk <i>diaphragm</i>	Lingkaran
6	Jari-jari elektroda	700 μm
7	Bahan elektroda	Aluminium
8	Tebal elektroda	1000 Å
9	Jarak antar elektroda	2,5 μm
10	Bahan <i>pad</i>	Aluminium
11	Tebal <i>pad</i>	1000 Å
12	Lebar <i>pad</i>	10 μm
13	Luas daerah <i>pad</i>	1000 x 1000 μm^2
14	Orientasi <i>silicon</i>	(100)
15	Type <i>silicon</i>	n
16	Tebal <i>substrate silicon</i>	400 μm

Pada CBS, defleksi dibatasi sampai jari-jari $700 \mu\text{m}$ karena elektroda CBS hanya berada pada daerah tersebut seperti yang ditunjukkan pada Gambar 4.16.



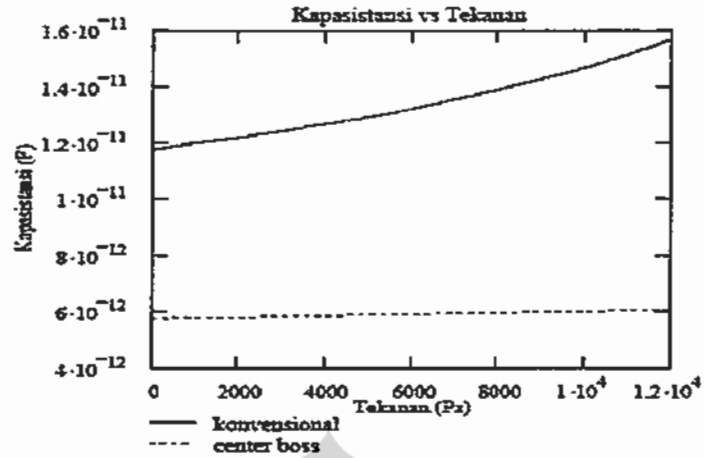
Gambar 4.16. Simulasi defleksi dengan *software* Matlab [17]

Dari Gambar 4.16 menjelaskan bahwa sensor konvensional memiliki defleksi rata-rata yang lebih besar dibandingkan dengan CBS. Defleksi maksimal untuk sensor konvensional adalah $1.49 \mu\text{m}$, sedangkan defleksi maksimal untuk CBS adalah $0.12 \mu\text{m}$. Hal ini disebabkan pada CBS defleksi hanya terjadi pada bagian pinggir diaphragm, sedangkan sensor konvensional defleksi terjadi di seluruh diaphragm.

Penjelasan mengenai perbedaan sensitivitas dan non sensitivitas dapat diterangkan pada Persamaan 2.19 dan Persamaan 2.23 dapat dilihat bahwa nilai C adalah fungsi dari d jarak antara pelat yaitu jarak awal d_0 dikurangi dengan besarnya defleksi $[d(r) \text{ dan } v]$ akibat adanya tekanan P . Karena itu fungsi kapasitansi terhadap defleksi akibat adanya tekanan dapat disederhanakan menjadi Persamaan 4.14 [17].

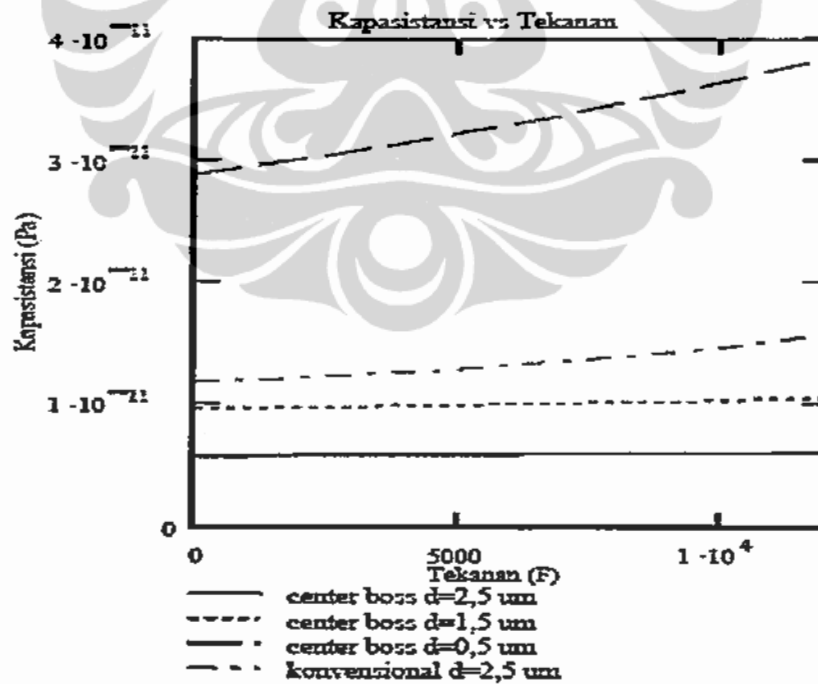
$$C \approx \frac{1}{d(P)} \quad (4.14)$$

Perubahan nilai C yang terjadi terhadap perubahan $f(d)$ tidak akan linear apabila perubahan nilai $f(d)$ linear. Semakin besar perubahan $f(d)$ maka perubahan C akan semakin tidak linear. Besarnya perubahan defleksi yang terjadi pada sensor konvensional lebih besar dibandingkan dengan CBS maka non linear yang terjadi juga lebih besar. Sebaliknya dengan sensitivitas, nilai sensitivitas sensor konvensional lebih besar dibandingkan dengan CBS seperti yang ditunjukkan pada Gambar 4.17.



Gambar 4.17. Sensitivitas sensor konvensional dan CBS [17, 19]

Pada CBS sensitivitas dapat diperbesar yaitu dengan mengubah nilai awal d_o , semakin kecil d_o maka nilai sensitivitas akan semakin besar. Akan tetapi non linearitas sensor akan bertambah. Jika nilai d_o CBS diubah dengan nilai $2.5 \mu m$, $1.5 \mu m$ dan $0.5 \mu m$. Hasil perubahan nilai d_o dapat dilihat Gambar 4.18.



Gambar 4.18. Sensitivitas CBS dengan d_o bervariasi [17, 19]

Pada center boss sensor, sensitivitas dapat diperbesar yaitu dengan mengubah-ubah nilai awal jarak antara elektroda satu dan elektroda dua (d_o). Semakin kecil nilai d_o , maka nilai sensitivitas akan semakin besar [17].

Pada riset ini akan mengulas kedua jenis sensor di atas yang paling sesuai diaplikasikan dalam mendeteksi sedini mungkin korosi *seat ring* dalam *body assembly valve*. Studi sensor korosi pada *body assembly valve* sebanyak mungkin mengambil spesifikasi teknis pada Tabel 4.10 yang diuraikan dalam riset [17].

Langkah selanjutnya dalam penguraian riset ini adalah menentukan daerah kerja sensorkorosi dimulai dengan menghitung tekanan kerja sensor korosi berdasarkan *sound pressure level* yang terjadi. Perhitungan tekanan kerja sensor ini menggunakan Persamaan 2.15 dan besarnya nilai rekanan $2,2 \times 10^{-3}$ Pa [31].

$$SPL = 20 \text{ Log } \frac{P}{P_{ref}} \quad (2.15)$$

Nilai SPL diketahui dari Tabel 4.7, maka besarnya perhitungan tekanan kerja sensor korosi dapat dilihat pada Tabel 4.10.

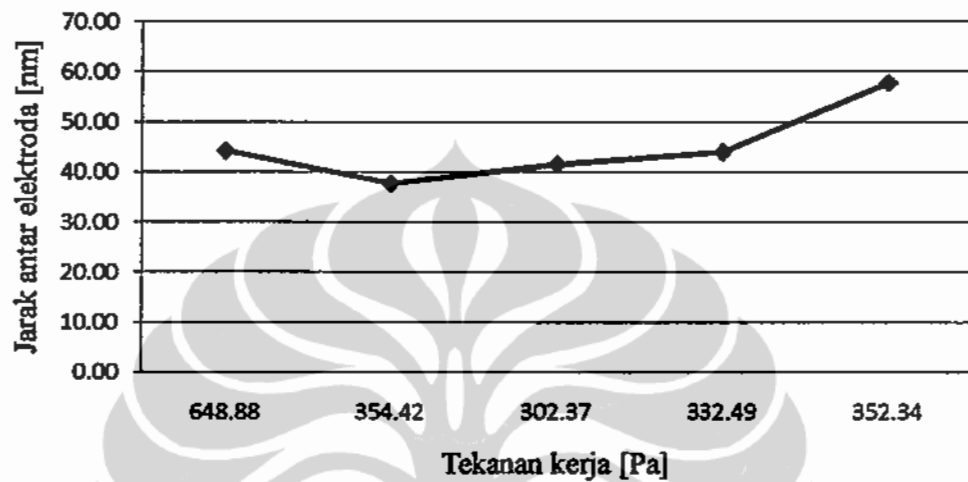
Tabel 4.10. Perhitungan tekanan kerja sensor korosi

Kondisi <i>Seat Ring</i>	Tekanan Kerja [Pa] saat OVP 0%	Tekanan Kerja [Pa] saat OVP 25%
0	648,88	469,40
1	354,42	291,96
2	302,37	365,16
3	332,49	445,20
4	352,34	461,24
5	463,25	519,78

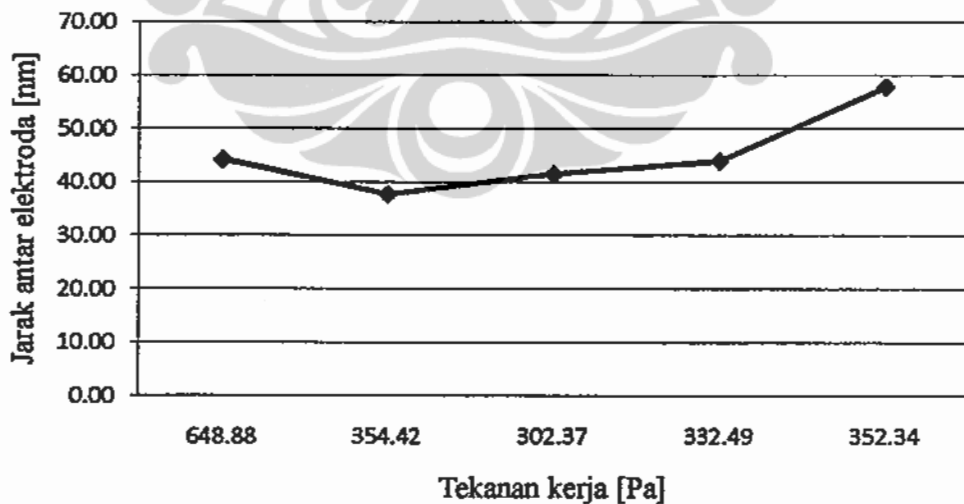
Dari Tabel 4.10 ini dapat dilihat daerah tekanan kerja sensor korosi berada di antara terendah 291,96 Pa hingga tekanan tertinggi 648,88 Pa.

Ada beberapa jenis sensor korosi yang yang dapat dipergunakan dalam aplikasi ini, namun pada riset ini dipergunakan sensor korosi dengan metode kapasitansi berdasarkan tekanan. Dalam riset ini mengambil desain sensor kapasitif yang diuraikan pada riset [17, 18, 19 dan 30] dengan spesifikasi teknis sensor seperti pada Tabel 4.9. Ada beberapa kemungkinan yang dapat diambil agar desain sensor sebelumnya dapat diaplikasikan dalam karakteristik korosi *seat ring* pada *body assembly valve* seperti yang telah dilakukan dalam riset ini. Kemungkinan-kemungkinan yang ada adalah mengubah jarak antar kedua

elektroda d_o atau ketebalan diaphragm h . Perubahan-perubahan tersebut dimaksud untuk menyesuaikan dengan karakteristik korosi yang terjadi di *seat ring* pada *body assembly valve*. Jika tebal diaphragm h tetap seperti Tabel 4.10 dan dihitung besarnya jarak antar elektroda d_o . Hasil perhitungan jarak antar elektroda dengan menggunakan *software Excel* versi 2007 dapat dilihat pada Gambar 4.19 saat OVP 0% dan Gambar 4.20 saat OVP 25%.

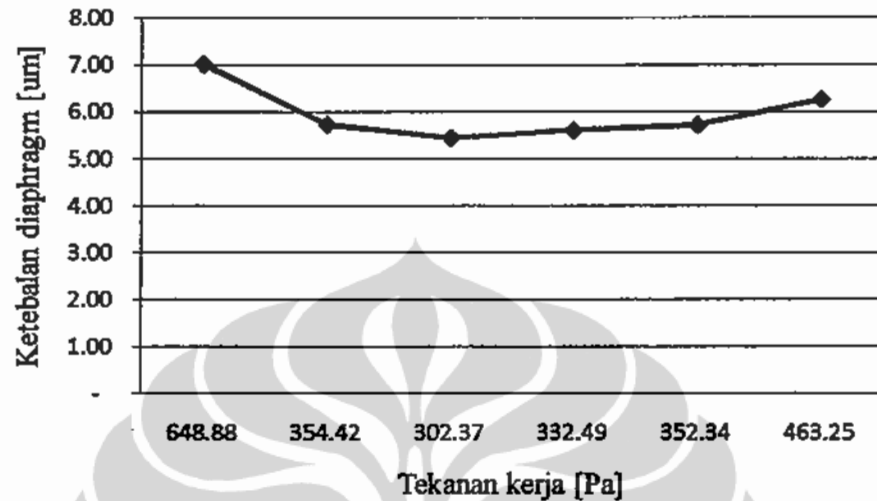


Gambar 4.19. Perhitungan jarak antar elektroda d_o dimana tebal diaphragm h tetap saat OVP 0%

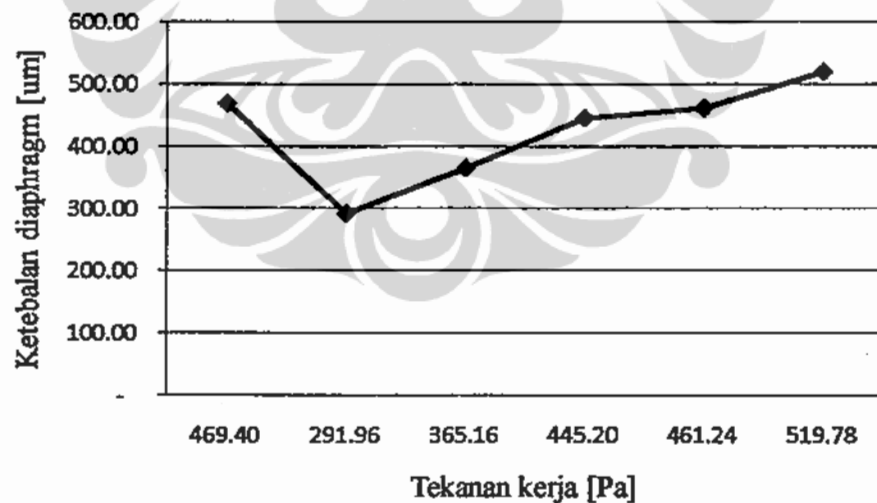


Gambar 4.20. Perhitungan jarak antar elektroda d_o dimana tebal diaphragm h tetap saat OVP 25%.

Jika jarak antar kedua elektroda d_o tetap seperti Tabel 4.10 dan dihitung besarnya tebal diaphragm h . Hasil perhitungan tebal diaphragm h dapat dilihat pada Gambar 4.21 saat OVP 0% dan Gambar 4.22 saat OVP 25%.



Gambar 4.21. Perhitungan ketebalan diaphragm h dimana jarak antar elektroda d_o tetap saat OVP 0%



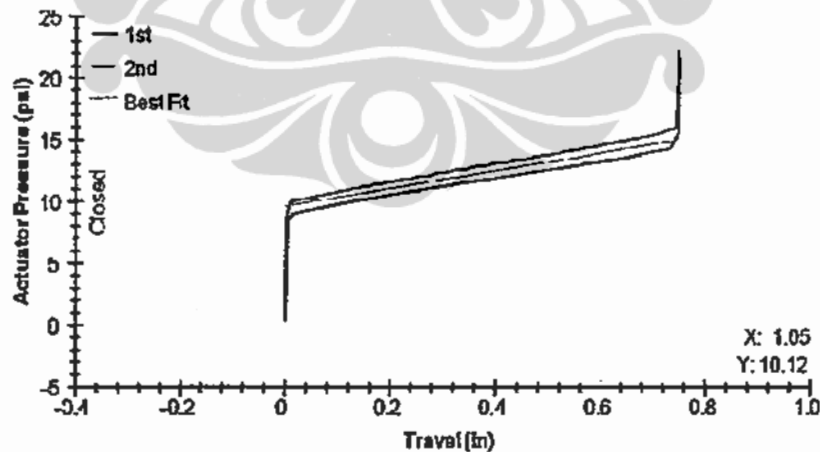
Gambar 4.22. Perhitungan ketebalan diaphragm h dimana jarak antar elektroda d_o tetap saat OVP 25%

Perhitungan-perhitungan yang ditampilkan dalam bentuk kurva pada Gambar 4.19, Gambar 4.20, Gambar 4.21 dan Gambar 2.22 diperoleh dengan mencari nilai *sound pressure* (Pascal). *Sound pressure* didapat melalui formula pada Persamaan 4.16.

$$SPL = 20 \log \frac{P_f}{P_{atm}} \quad (4.16)$$

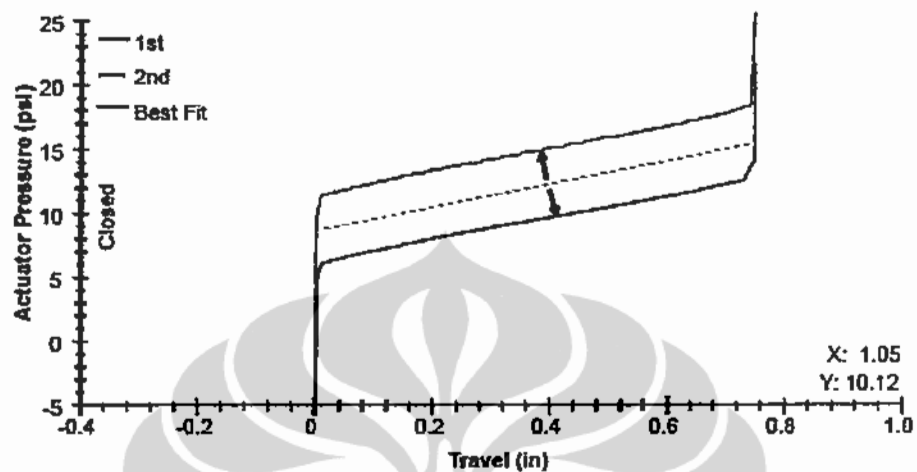
Tekanan suara yang didapat selanjutnya dimasukkan ke dalam Persamaan 2.18 sehingga akan diperoleh nilai-nilai ketebalan *diaphragm* yang mungkin dapat dipergunakan. Dengan pertimbangan sejauh mungkin spesifikasi teknis sensor yang telah dikemukakan dalam riset [17, 18, 19 dan 30] tidak berbeda jauh, maka ketebalan *diaphragm* yang dipilih untuk diaplikasikan dalam riset ini adalah 6.02 μm yang merupakan nilai rata-rata atas 12 kemungkinan ketebalan *diaphragm*. Besarnya ketebalan *diaphragm* ini yang digunakan di dalam desain sensor korosi.

Pada riset [23, 25, 34] menguraikan *beginning record* (rekam awal) untuk mengetahui kondisi *control valve* dalam kondisi baru (belum pernah dipergunakan). *V-packing* yang merupakan salah satu *internal part* pada *body assembly valve* yang menghubungkan antara *bonnet* dengan *stem valve*, agar *control valve* tidak bocor di sisi *bonnet* maka harus dipergunakan *V-packing* ini. Riset *V-packing* sebelumnya mengambil acuan dari *valve signature* saat kondisi baru seperti yang ditunjukkan pada Gambar 4.23.



Gambar 4.23. *Valve signature* kondisi *V-packing* kondisi baru [23, 25]

Dan ketika *V-packing* mulai rusak, maka terjadi friksi yang cukup mengganggu kinerja *control valve* yang ditunjukkan pada Gambar 4.24.



Gambar 4.24. *Valve signature* kondisi *V-packing* kondisi rusak [23, 25]

Gambar 4.24 dibandingkan dengan Gambar 4.23 adalah terjadi *gab* lebih besar pada *valve signature graph V-packing* yang sudah besar dibandingkan dengan *valve signature graph* pada *V-packing* kondisi normal.

Dengan metode *signature* yang diuraikan pada riset [23, 25, 34], maka pada riset ini akan mengambil acuan pada *signature seat ring* pada kondisi normal, yang nantinya sebagai acuan dalam menentukan kondisi *seat ring* yang mulai mengalami kerusakan tersebut.

BAB 5 KESIMPULAN

Berdasarkan pengukuran intensitas suara pada prototip serta analisa hasil pengukuran dapat dibuat kesimpulan-kesimpulan di bawah ini ni.

1. Hasil percobaan membuktikan bahwa prototip yang dipakai dalam riset ini layak untuk dipergunakan karena *control valve* prototip mampu mengendalikan *service condition* yang melaluinya.
2. Besarnya kapasitansi dari prototip adalah 5.0008 nF sampai dengan 6.7352 nF. Saat OVP 0% nilai kapasitansi terbesar terjadi pada *seat ring* 5 dan saat OVP 25% nilai kapasitansi terbesar terjadi pada *seat ring* 1 di mana *seat ring* 1 saat OVP 25% ini terjadi SPL tertinggi.
3. Parameter desain sensor korosi menggunakan hasil pengukuran karakteristik hasil pengukuran intensitas frekuensi yang pada akhirnya menunjukkan juga tingkat korosi *seat ring* secara logaritmis.
4. Studi yang dilakukan dalam riset ini membuktikan bahwa sensor korosi jenis konvensional lebih cocok diaplikasikan di dalam *body assembly valve* karena sensor korosi jenis konvensional lebih sensitif dibandingkan dengan sensor korosi jenis *center boss* dengan ketebalan *diaphragm* 6.02 μm .
5. Hasil studi sensor korosi ini menunjukkan *beginning record/signature* (rekam awal) sangat penting sebagai acuan dalam menentukan mulai terjadinya korosi *seat ring* atau disebut *seat ring signature*. Saat OVP 0% dan OVP 25% merupakan acuan penting di dalam riset ini, karena deteksi dini korosi sensor terjadi pada batasan *opening valve percentage* 0%-25%. *Seat ring signature* diperoleh pada saat kondisi *control valve* masih baru atau setelah *control valve* diperbaiki dengan penggantian *internal parts* saat *shutdown plant*.
6. Sensor korosi jenis konvensional ini diharapkan akan mengetahui secara dini kerusakan *seat ring* sehingga produk yang dihasilkan akan tetap terjamin kualitasnya.

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Freq	0.1.0	0.2.0	0.3.0	0.1.125	0.2.25	0.3.25	0.1.150	0.2.50	0.3.50	0.1.175	0.2.75	0.3.75	0.1.100	0.2.100	0.3.100
43.0660	-70.0395	-63.3710	-66.8544	-33.8632	-39.6439	-41.2795	-49.2075	-39.7760	-39.3310	-33.3311	-27.9867	-35.9208	-47.3924	-51.4497	-49.6070
86.1320	-65.4075	-60.0622	-61.1948	-29.5841	-34.5027	-36.4213	-37.3937	-31.1355	-33.5680	-29.0782	-20.3371	-31.8708	-44.5940	-47.9302	-38.3265
129.1990	-73.5780	-61.3354	-59.5393	-29.2087	-36.0343	-36.7274	-29.7261	-25.9438	-33.5865	-27.5660	-17.6866	-35.9078	-44.2264	-40.0134	-31.2502
172.2650	-67.5136	-59.7532	-59.4158	-29.8943	-40.3538	-42.4873	-26.8640	-24.3035	-38.5332	-25.8632	-19.7056	-44.2215	-42.2042	-35.9224	-29.7200
215.3320	-65.1122	-61.5888	-60.2078	-31.8916	-43.3715	-49.6744	-28.9371	-27.2038	-47.7425	-30.1092	-26.2502	-49.0366	-42.6560	-38.0940	-33.4878
258.3980	-70.8445	-69.2362	-62.2892	-38.5130	-51.5648	-55.7356	-36.7393	-35.8830	-67.4477	-42.1664	-37.0932	-54.3535	-49.6539	-46.7858	-42.2907
301.4640	-82.3727	-71.0441	-66.0444	-51.3601	-65.9500	-69.8111	-52.0869	-54.9760	-60.1563	-68.3368	-48.6008	-53.5973	-64.6189	-57.6990	-56.7426
344.5310	-82.4764	-70.5142	-57.2523	-55.6070	-63.5370	-70.2429	-59.2788	-52.4957	-56.1693	-53.2770	-59.8654	-67.4263	-73.4406	-55.6013	-63.1914
387.5970	-71.8824	-67.3014	-53.5164	-53.1893	-67.0069	-69.1392	-59.2788	-47.4294	-57.8085	-53.4928	-57.6163	-54.6879	-65.0432	-58.9128	-58.6334
430.6640	-65.5283	-69.5681	-56.5778	-53.9427	-66.6134	-66.4912	-66.2668	-48.4803	-70.4531	-60.6428	-55.9209	-54.3870	-65.0890	-68.7693	-59.6820
473.7300	-64.5566	-70.6535	-67.0668	-54.6359	-62.8418	-66.0723	-62.4924	-52.4352	-68.6137	-70.5083	-61.5319	-54.3870	-70.1009	-75.6552	-65.0494
516.7960	-65.4164	-72.6624	-82.3709	-57.9845	-64.2408	-69.5221	-67.2831	-57.2687	-69.3008	-79.0838	-62.6981	-54.3870	-76.8504	-73.8492	-75.1329
559.8630	-68.9123	-75.7369	-86.4691	-64.8776	-73.5652	-75.9089	-72.7369	-64.1483	-79.8131	-68.9282	-61.1279	-54.3870	-79.5607	-73.8055	-78.7905
602.9290	-77.3714	-73.4487	-79.0212	-71.2135	-72.8124	-83.3311	-68.9870	-67.5354	-76.6251	-64.1460	-60.1672	-54.3870	-71.7849	-74.7036	-77.4859
645.9960	-76.5556	-72.8479	-72.1598	-70.4383	-71.4508	-87.0472	-69.3142	-67.8888	-73.1572	-66.5709	-61.7966	-54.3870	-70.6010	-93.6487	-85.8043
689.0620	-69.4418	-75.3338	-69.9707	-69.1213	-81.2226	-87.6306	-78.5285	-72.8127	-90.1501	-85.3003	-81.1262	-54.3870	-75.0943	-75.5386	-76.0381
732.1280	-68.3305	-84.8796	-69.7165	-67.1553	-78.2591	-77.3495	-82.5285	-72.8127	-90.1501	-80.4293	-80.3338	-54.3870	-75.3284	-78.3096	-77.5961
775.1950	-70.4492	-97.3366	-68.6577	-67.5537	-71.6078	-70.7403	-79.8520	-77.2646	-81.1022	-72.0922	-79.0180	-54.3870	-71.7942	-67.2104	-69.3526
818.2610	-69.4265	-75.6653	-69.3871	-67.8387	-67.2424	-66.2378	-76.8032	-78.5300	-74.5947	-72.9237	-79.3804	-54.3870	-68.3985	-57.2682	-65.7562
861.3280	-70.6084	-72.1038	-76.4539	-66.6473	-65.7247	-66.7756	-70.9187	-70.3322	-68.2858	-67.7089	-76.6616	-54.3870	-66.0068	-55.9069	-69.3834
904.3940	-79.8780	-76.9481	-73.9363	-68.6256	-78.0261	-82.7701	-70.1067	-68.8186	-66.3794	-69.6683	-73.2198	-54.3870	-65.5928	-61.4315	-79.6357
947.4600	-87.7889	-81.5872	-73.9363	-68.6256	-78.0261	-82.7701	-70.1067	-68.8186	-66.3794	-69.6683	-73.2198	-54.3870	-65.5928	-61.4315	-79.6357
990.5270	-85.3838	-75.2027	-71.7804	-78.5099	-69.4791	-66.2386	-69.1075	-76.6982	-67.3260	-73.7425	-73.3926	-54.3870	-66.9471	-78.0871	-75.3234
1033.5930	-88.3695	-76.2519	-75.6069	-73.4793	-60.8742	-63.0106	-68.4942	-71.4849	-81.2879	-70.1320	-67.6626	-54.3870	-69.8140	-72.9757	-70.4570
1076.6600	-79.1459	-73.6073	-74.2405	-66.6363	-60.7977	-69.1041	-70.0724	-67.9208	-75.9629	-62.6861	-66.9676	-54.3870	-70.6395	-67.3106	-68.1925
1119.7260	-77.7579	-73.0184	-70.2541	-57.9213	-65.8858	-84.2296	-75.0962	-75.9679	-72.9954	-62.6783	-69.2179	-54.3870	-71.6423	-68.5920	-69.2621
1162.7920	-77.6432	-75.1506	-71.1022	-54.8935	-62.7425	-79.6840	-83.6186	-76.4540	-79.1266	-68.0424	-75.5898	-54.3870	-74.4114	-76.6211	-72.9572
1205.8590	-79.2866	-79.2125	-75.3805	-55.7985	-60.7513	-84.8016	-82.8165	-77.7305	-76.9238	-84.7166	-89.7948	-54.3870	-85.6481	-88.5224	-76.0321
1248.9250	-81.1011	-82.7852	-80.6591	-55.9698	-56.2165	-80.2616	-87.7088	-77.2634	-75.7603	-84.7166	-89.7948	-54.3870	-85.6481	-88.5224	-76.0321
1291.9920	-75.0760	-87.6805	-79.6167	-51.4425	-52.5587	-66.0772	-84.2400	-81.8418	-84.9908	-84.4909	-81.4945	-54.3870	-88.7175	-81.0916	-83.5360
1335.0580	-73.1028	-88.5903	-85.0759	-49.8861	-54.1112	-62.5997	-75.5766	-84.9160	-79.5175	-87.5476	-78.8622	-54.3870	-79.9682	-84.0334	-78.6540
1378.1250	-79.4525	-83.7873	-82.4202	-52.3428	-64.5742	-66.7696	-73.1388	-84.5438	-78.8400	-84.6009	-79.3499	-54.3870	-77.1226	-82.3363	-73.1440
1421.1910	-98.4318	-82.4935	-77.3271	-57.1888	-73.1145	-65.6394	-74.3324	-83.6821	-82.0084	-80.9699	-81.4733	-54.3870	-79.2754	-78.2229	-73.6146
1464.2570	-86.5144	-86.7045	-75.0455	-62.5170	-72.1286	-64.6985	-76.8194	-87.9845	-83.1274	-74.8318	-79.5743	-54.3870	-83.5894	-79.0976	-75.2264
1507.3240	-77.9673	-81.9354	-73.5288	-65.8150	-76.7339	-68.4921	-79.0108	-87.2320	-81.7132	-70.4887	-76.8459	-54.3870	-77.5188	-79.0528	-77.7455
1550.3900	-79.3903	-76.9120	-75.0093	-65.8731	-79.7369	-79.0523	-81.7169	-84.8903	-79.4889	-70.5753	-76.7966	-54.3870	-77.7825	-76.4818	-81.8965
1593.4570	-85.2863	-78.2338	-76.4439	-66.5456	-82.0977	-94.4574	-80.8673	-82.8248	-90.0174	-73.4277	-77.3440	-54.3870	-77.9094	-75.9031	-74.3130
1636.5230	-83.2577	-81.8572	-74.5088	-66.8254	-82.7213	-75.2017	-76.0678	-82.9349	-73.6520	-79.0525	-70.4184	-54.3870	-74.0162	-77.2968	-70.3252
1679.5890	-77.9769	-78.4128	-74.9352	-66.0270	-76.1473	-67.1158	-73.2382	-78.7637	-69.5791	-81.2255	-63.4621	-54.3870	-69.9423	-77.5799	-71.6668
1722.6560	-81.3658	-76.7073	-83.8765	-67.5280	-75.1329	-66.7639	-73.2672	-74.6082	-72.9188	-73.5707	-64.2170	-54.3870	-69.7175	-72.9960	-75.7343
1765.7220	-86.8619	-77.5293	-83.6829	-72.7897	-85.8403	-72.0390	-75.9560	-73.2770	-78.3111	-74.0502	-73.6454	-54.3870	-75.4086	-72.8630	-77.9138
1808.7890	-78.6234	-81.5733	-85.5464	-84.4465	-87.0672	-79.7979	-79.6805	-75.6416	-76.3738	-85.1365	-74.5626	-54.3870	-109.1349	-76.1034	-79.6592
1851.8550	-79.8454	-87.8791	-84.7943	-82.2832	-93.3121	-68.1703	-82.9869	-80.4251	-75.0505	-93.0516	-71.6705	-54.3870	-82.7535	-81.4558	-78.2316
1894.9210	-85.4070	-86.7047	-91.4186	-78.7314	-90.7299	-64.5636	-84.2901	-79.9135	-79.0045	-92.9799	-72.7082	-54.3870	-86.4273	-85.2630	-78.1334
1937.9880	-88.3070	-86.1369	-95.2635	-75.1622	-93.8772	-67.0953	-81.8823	-78.2318	-86.9033	-83.2195	-79.4008	-54.3870	-86.2053	-87.2129	-78.3429
1981.0540	-84.7111	-87.5120	-85.5838	-75.1132	-82.9192	-70.6336	-80.0149	-76.7324	-87.8139	-88.9512	-91.9075	-54.3870	-90.2664	-86.1149	-78.3068
2024.1210	-84.0237	-86.4658	-82.0343	-69.9820	-80.6785	-69.7442	-82.3598	-79.9644	-81.3598	-84.5878	-82.5628	-54.3870	-78.4523	-79.4843	-75.0312

(lanjutan)
 Hasil Percobaan : Pengolahan Data *Seal Rbtg* No. 0

Freq	0.10	0.20	0.30	0.1.125	0.2.125	0.3.125	0.1.150	0.2.150	0.3.150	0.1.175	0.2.175	0.3.175	0.1.100	0.2.100	0.3.100
2067.1870	-85.5778	-86.8385	-80.6779	-68.5249	-81.9148	-73.7738	-88.7636	-90.3249	-81.9450	-78.2637	-76.4278	-54.3870	-72.4146	-82.6189	-73.3520
2110.2530	-87.2282	-93.0688	-77.4767	-69.7769	-86.7421	-76.3559	-83.3619	-89.1425	-86.5874	-85.6028	-74.7565	-54.3870	-66.9445	-75.3702	-72.8090
2153.3200	-91.3853	-83.2210	-75.0982	-73.2424	-77.0061	-73.6698	-75.5381	-85.6976	-79.4543	-76.1428	-73.7453	-54.3870	-59.4643	-66.8571	-70.9925
2196.3860	-108.2977	-84.0735	-76.4977	-80.1953	-80.1953	-75.6343	-75.7552	-82.7556	-78.5189	-71.5975	-74.7044	-54.3870	-57.8608	-66.4596	-69.3706
2239.4530	-89.8320	-87.1289	-81.4178	-77.7811	-112.0919	-78.7041	-79.6655	-82.6853	-83.0458	-75.4872	-81.8133	-54.3870	-61.3208	-71.2797	-70.7016
2282.5190	-86.4184	-87.4916	-89.5726	-72.1505	-79.0110	-78.9787	-88.4667	-88.3038	-97.7136	-83.4100	-85.5049	-54.3870	-70.5523	-75.3296	-75.8306
2325.5850	-89.4582	-84.1582	-99.4665	-71.4045	-74.2639	-82.1752	-88.1099	-97.7337	-91.8883	-83.3976	-85.5173	-54.3870	-92.2689	-82.2512	-82.3994
2368.6520	-96.4465	-84.8561	-98.4688	-75.1854	-76.5308	-87.4567	-96.9256	-89.4190	-93.2643	-83.0159	-93.2636	-54.3870	-90.5422	-94.4652	-86.9563
2411.7180	-95.7591	-93.5705	-93.0802	-77.1601	-84.3737	-82.5920	-89.2297	-92.3122	-92.4676	-82.6774	-91.9186	-54.3870	-88.6700	-100.7386	-92.1276
2454.7850	-92.4118	-89.3450	-86.8280	-72.5716	-88.2282	-78.1956	-87.4261	-103.8427	-95.7525	-83.2221	-87.7163	-54.3870	-92.7394	-111.8567	-87.7407
2497.8510	-90.6202	-86.9156	-84.3333	-68.1502	-86.6304	-75.8720	-90.5543	-97.1038	-89.0463	-90.7111	-89.6275	-54.3870	-103.2898	-97.0270	-86.1526
2540.9170	-86.8968	-86.9271	-84.4285	-66.7153	-76.6752	-75.4939	-93.1225	-93.9887	-87.1456	-103.7001	-95.2467	-54.3870	-95.2738	-93.5993	-90.5214
2583.9840	-84.9187	-82.4041	-84.1058	-66.2327	-74.9090	-74.4714	-88.6621	-97.8714	-93.6672	-103.7001	-95.2467	-54.3870	-91.2268	-94.4669	-97.7485
2627.0500	-88.6636	-80.7616	-83.8866	-58.1736	-76.4261	-77.6308	-88.5438	-93.5605	-93.7216	-99.6502	-87.9073	-54.3870	-92.1061	-92.8745	-91.6540
2670.1170	-88.8191	-80.9126	-85.6819	-53.1304	-83.4777	-75.9572	-91.7561	-93.8709	-92.9403	-92.2749	-89.7629	-54.3870	-94.1640	-96.7409	-91.6540
2713.1830	-84.5799	-86.9295	-89.6492	-50.8438	-80.0573	-69.0788	-95.5678	-92.1268	-106.2638	-91.4892	-98.6937	-54.3870	-88.6604	-94.1712	-97.6179
2756.2500	-89.2075	-91.3937	-89.5943	-50.2514	-79.3334	-65.9207	-95.4963	-89.6391	-92.5511	-90.3174	-100.1475	-54.3870	-84.8514	-96.8605	-92.9693
2799.3160	-92.3334	-83.3602	-89.6810	-51.1866	-70.4956	-92.7992	-105.1946	-92.3801	-87.4794	-90.1435	-91.7310	-54.3870	-83.8196	-103.5103	-90.6740
2842.3820	-82.4457	-87.8339	-89.8272	-55.0322	-59.5826	-57.0943	-87.0849	-97.0217	-89.2677	-89.7421	-90.6487	-54.3870	-87.3227	-94.1057	-92.7405
2928.5150	-84.9749	-97.6950	-92.1046	-60.9256	-62.7719	-61.1148	-84.4017	-96.9367	-86.7405	-84.6474	-92.0247	-54.3870	-102.6551	-91.7734	-92.4609
2971.5820	-86.8629	-89.6572	-86.7684	-61.6631	-61.0383	-77.7641	-84.4663	-92.3942	-83.8697	-91.2006	-98.6027	-54.3870	-90.0248	-94.0786	-85.4633
3014.6480	-86.7460	-82.0110	-84.6129	-56.8647	-54.9061	-68.8097	-86.0974	-89.2208	-83.9184	-90.8516	-87.4206	-54.3870	-91.1362	-89.2747	-85.7102
3057.7140	-88.8069	-81.3077	-85.3337	-56.0138	-55.0781	-67.7159	-87.3407	-90.7291	-89.7549	-99.5055	-90.0218	-54.3870	-94.3651	-88.9135	-88.7291
3100.7810	-92.9360	-81.2383	-88.8881	-62.0491	-61.8865	-68.2019	-87.6366	-88.0493	-91.5284	-99.6243	-96.7673	-54.3870	-100.3584	-90.7858	-91.0666
3143.8470	-92.7558	-79.8451	-92.9900	-69.9541	-71.5988	-71.5988	-85.7668	-92.2936	-85.3398	-95.1496	-100.4517	-54.3870	-93.6978	-92.4769	-90.4626
3186.9140	-95.9957	-82.2898	-91.3126	-84.1933	-68.1931	-73.7358	-85.4090	-85.8140	-86.1852	-92.5581	-103.1339	-54.3870	-92.0537	-94.4047	-88.4153
3229.9800	-91.3438	-87.7237	-88.3026	-79.9805	-72.2565	-69.2719	-87.6521	-88.1781	-91.7741	-92.5532	-103.2344	-54.3870	-93.7103	-94.6391	-86.0065
3273.0460	-85.9970	-88.7713	-87.1620	-78.8642	-81.7470	-70.9190	-93.0043	-95.2220	-99.6415	-96.0164	-98.4850	-54.3870	-96.6681	-94.3639	-83.4196
3316.1130	-85.0347	-92.5412	-89.1276	-78.9540	-95.5469	-79.4412	-90.2788	-92.1702	-95.8043	-103.4242	-93.9451	-54.3870	-95.9525	-89.7502	-85.5599
3359.1790	-84.4383	-93.1683	-92.4233	-73.3430	-101.3195	-86.5253	-94.1229	-88.9829	-92.3229	-99.9045	-95.2489	-54.3870	-88.3902	-86.2113	-86.2661
3402.2460	-82.4554	-87.9020	-92.4852	-72.6671	-88.6090	-97.8671	-101.0435	-88.6291	-92.4316	-112.9580	-102.3023	-54.3870	-85.6767	-86.2931	-86.2429
3445.3120	-81.4183	-85.2623	-94.8249	-73.9330	-81.8695	-84.9331	-94.9119	-93.3679	-95.3823	-93.9346	-121.7012	-54.3870	-86.6059	-90.9683	-92.4832
3488.3780	-83.2882	-88.8787	-100.1448	-75.7117	-82.7211	-80.1614	-99.2772	-97.7205	-108.1611	-91.1495	-97.1212	-54.3870	-88.8284	-99.6662	-94.0039
3531.4450	-90.3221	-93.7609	-97.7340	-79.5124	-90.5610	-82.6851	-95.4938	-98.0169	-107.0468	-89.6135	-92.9165	-54.3870	-106.0600	-98.3043	-94.3043
3574.5110	-88.0606	-85.9031	-103.2102	-85.8725	-92.2810	-86.4457	-93.6652	-108.1257	-96.7100	-88.5514	-100.0749	-54.3870	-90.4068	-115.4141	-104.8182
3617.5780	-86.4489	-85.2351	-100.7515	-87.2138	-87.7540	-87.5487	-92.9139	-96.5179	-92.5049	-89.5782	-99.0163	-54.3870	-93.9102	-98.1087	-103.3059
3660.6440	-91.1514	-87.5054	-95.9562	-85.9835	-85.9432	-87.5710	-90.2819	-91.3036	-96.9915	-92.5773	-94.4197	-54.3870	-96.0658	-91.9280	-100.4234
3703.7100	-95.7181	-87.4264	-102.6481	-85.0982	-86.9431	-87.2914	-87.0118	-90.5239	-103.0638	-99.0004	-96.8428	-54.3870	-97.8870	-89.3794	-101.1213
3746.7770	-90.9352	-96.2109	-97.5105	-84.7399	-91.0487	-89.8099	-86.0738	-97.9843	-92.6219	-102.4605	-113.0423	-54.3870	-97.4872	-87.8317	-102.2171
3789.8430	-87.5177	-95.8491	-92.1246	-83.6632	-96.2054	-92.9967	-91.4538	-96.4645	-92.6608	-97.4818	-95.9407	-54.3870	-96.8914	-89.1856	-90.7101
3832.9100	-86.5739	-100.0050	-88.9678	-86.1610	-90.8962	-93.7399	-90.8241	-94.6039	-88.8094	-93.1532	-88.0850	-54.3870	-81.8023	-94.4404	-82.0588
3875.9760	-88.2439	-99.0972	-89.1036	-90.7670	-86.0946	-95.0395	-85.2484	-92.9559	-89.8326	-89.1569	-85.5079	-54.3870	-82.0767	-94.6425	-80.5640
3919.0420	-91.8801	-89.7346	-95.2926	-97.4199	-86.6524	-96.1340	-87.9552	-86.0598	-107.4253	-92.8717	-89.1766	-54.3870	-86.0808	-96.3318	-87.8745
3962.1090	-93.6984	-87.7105	-96.7815	-99.5820	-89.7854	-93.9159	-94.4636	-86.4691	-92.6162	-111.4511	-98.2322	-54.3870	-89.4425	-94.2401	-94.4902
4005.1750	-99.4272	-89.6972	-97.5084	-93.5756	-95.1485	-94.2315	-93.6022	-99.4850	-87.5097	-100.1972	-100.4302	-54.3870	-89.6065	-98.8355	-89.9490

(lanjutan)
 Hasil Percobaan : Pengolahan Data Seat Ring No. 0

Freq	0.1.0	0.2.0	0.3.0	0.1.125	0.2.125	0.3.125	0.1.150	0.2.150	0.3.150	0.1.175	0.2.175	0.3.175	0.1.100	0.2.100	0.3.100
4048.2420	-92.3088	-95.6897	-101.0668	-91.1433	-98.2751	-96.8023	-94.2463	-91.6108	-88.9194	-100.9850	-96.9399	-54.3870	-88.2407	-110.7514	-94.5288
4091.3080	-95.7473	-92.3538	-98.2599	-87.4390	-92.2261	-93.6993	-94.8671	-87.1499	-100.0430	-97.5353	-100.8361	-54.3870	-89.9073	-92.0566	-91.2264
4134.3750	-108.4343	-86.4985	-102.0818	-83.4523	-94.4187	-88.7902	-92.4425	-87.1785	-100.8582	-87.4184	-98.4545	-54.3870	-90.2372	-90.4862	-85.3771
4177.4410	-117.3085	-84.5529	-95.2485	-84.9940	-93.6643	-86.5132	-92.5350	-88.2821	-113.4781	-81.6369	-92.0222	-54.3870	-79.3596	-88.2822	-82.4806
4220.5070	-100.6893	-86.0583	-89.3640	-92.7187	-87.1947	-85.4638	-92.5165	-89.4929	-94.7098	-81.7297	-88.3035	-54.3870	-76.8672	-87.1655	-85.6866
4263.5740	-96.9786	-90.8061	-91.0559	-99.1242	-87.2613	-88.4106	-93.2816	-93.6027	-88.9538	-86.8135	-91.9796	-54.3870	-79.7474	-92.8736	-99.0800
4306.6400	-94.3396	-99.4122	-99.0388	-98.8876	-91.7760	-97.3529	-95.3453	-98.0111	-90.0322	-89.0998	-101.7607	-54.3870	-85.2849	-96.2923	-94.9945
4349.7070	-96.2256	-109.3096	-93.6949	-96.1190	-90.7587	-92.4490	-93.5973	-101.6449	-101.6449	-86.7040	-89.9298	-54.3870	-89.1834	-87.1646	-94.8251
4392.7730	-93.7485	-96.6500	-90.9496	-91.0852	-93.8444	-94.5863	-92.7882	-100.6782	-91.7500	-85.1700	-86.5920	-54.3870	-90.5482	-87.4951	-94.9147
4435.8390	-91.2076	-89.7666	-95.2617	-85.7141	-99.5496	-95.9962	-95.1617	-91.4720	-88.5021	-81.6986	-88.4399	-54.3870	-86.3986	-84.7590	-91.7487
4478.9060	-95.9218	-88.4100	-105.8599	-80.6090	-93.9379	-87.1054	-101.0795	-85.1426	-95.4202	-85.5042	-77.6292	-54.3870	-80.4067	-72.2206	-79.6970
4521.9720	-89.0883	-90.1790	-93.6834	-79.1859	-91.0752	-83.5555	-95.0094	-83.8669	-90.2442	-87.1445	-83.4193	-54.3870	-81.4753	-88.8971	-86.1927
4565.0390	-83.5224	-90.5273	-84.7875	-83.8446	-87.5295	-85.3083	-89.3315	-93.9813	-91.7688	-112.7062	-85.7046	-54.3870	-93.0110	-96.8300	-94.4985
4608.1050	-84.2708	-89.8832	-83.2698	-93.4956	-86.2158	-92.7698	-102.8261	-83.6690	-85.4990	-82.6825	-83.4126	-54.3870	-85.3658	-98.8450	-86.5329
4651.1710	-91.8069	-92.2356	-87.3380	-93.0784	-91.5432	-96.0171	-88.8872	-81.7664	-85.0899	-87.1445	-83.4193	-54.3870	-81.4753	-88.8971	-86.1927
4694.2380	-109.1469	-93.6577	-93.4919	-93.1205	-98.6466	-93.5808	-89.2020	-83.5201	-87.8654	-93.4444	-95.2652	-54.3870	-88.8286	-92.7948	-95.3746
4737.3040	-128.6601	-96.5762	-96.0769	-92.5516	-91.3235	-89.6972	-88.1790	-87.8892	-90.1219	-89.9991	-82.3511	-54.3870	-85.3658	-98.8450	-86.5329
4780.3710	-105.9190	-110.9605	-108.1537	-92.1284	-90.7126	-86.4833	-88.2622	-90.7565	-87.0579	-82.6825	-83.4126	-54.3870	-81.1121	-87.4217	-84.9879
4823.4370	-95.4304	-96.1083	-100.9570	-92.1094	-96.1984	-86.3126	-87.0445	-87.7418	-87.6277	-82.5128	-83.9573	-54.3870	-80.8395	-85.5857	-84.7035
4866.5030	-94.4107	-96.6227	-100.1152	-87.7942	-97.3525	-89.3838	-85.7770	-90.0433	-90.5402	-90.6206	-84.5587	-54.3870	-83.3268	-83.3268	-82.6961
4909.5700	-95.2489	-100.9949	-96.6065	-88.4216	-96.0070	-92.8322	-88.1014	-92.4436	-85.4182	-86.1494	-85.5974	-54.3870	-87.1738	-83.3886	-82.6961
4952.6360	-94.6916	-99.7586	-94.0834	-93.1958	-95.8776	-94.5032	-91.1568	-89.4692	-86.0162	-82.8651	-85.7521	-54.3870	-90.3704	-88.8936	-85.1687
4995.7030	-100.3219	-97.7587	-95.5641	-102.7751	-90.4378	-97.1600	-94.5337	-87.6682	-93.6042	-83.2976	-86.0309	-54.3870	-89.8316	-98.0234	-87.8870
5038.7690	-106.7949	-99.7257	-97.1468	-90.7725	-95.5734	-93.7639	-101.2364	-87.9258	-95.4963	-88.1070	-89.4872	-54.3870	-92.6720	-96.1358	-87.7672
5081.8350	-99.4919	-105.5010	-93.9578	-86.2957	-95.6509	-93.5644	-112.5748	-90.5568	-101.9147	-107.0823	-95.1528	-54.3870	-93.1983	-90.3046	-91.9415
5124.9020	-98.5675	-98.5865	-93.0897	-86.2522	-94.0743	-98.5211	-102.4664	-95.4072	-103.9887	-96.9084	-90.5158	-54.3870	-83.9558	-86.2000	-90.6106
5167.9680	-101.3356	-100.2299	-98.5201	-85.0634	-97.7726	-102.5437	-105.9938	-110.9538	-115.1260	-93.2286	-87.1700	-54.3870	-84.9911	-85.1797	-90.3008
5211.0350	-94.3658	-93.3404	-99.6109	-86.5587	-105.0694	-114.2189	-105.9938	-110.9538	-115.1260	-90.9216	-86.7370	-54.3870	-90.6944	-85.7628	-86.4349
5254.1010	-93.3061	-92.3315	-94.4779	-82.7640	-88.7227	-95.8223	-112.5439	-92.0885	-97.5521	-91.2057	-91.6083	-54.3870	-90.1470	-88.5672	-84.4077
5297.1670	-93.6579	-91.9362	-96.0526	-81.8436	-85.2967	-90.8104	-103.6725	-81.9875	-93.4751	-100.9463	-90.3202	-54.3870	-93.8320	-89.2368	-82.6072
5340.2340	-84.9213	-90.4581	-111.9742	-90.6533	-89.0563	-91.4135	-99.1653	-78.8032	-93.4576	-89.3406	-86.2007	-54.3870	-88.1592	-84.2087	-85.9889
5383.3000	-95.1786	-91.1587	-89.4591	-78.8127	-100.3675	-86.8650	-92.9582	-80.9548	-92.0158	-81.8531	-82.8364	-54.3870	-81.0290	-81.2602	-84.5438
5426.3670	-78.5878	-89.0434	-87.0443	-74.2939	-100.1821	-81.3723	-98.6266	-81.3587	-91.9029	-82.0337	-83.8488	-54.3870	-84.4241	-81.7166	-78.1592
5469.4330	-78.1308	-87.3083	-89.3793	-77.5229	-99.6173	-82.0177	-93.1450	-82.8501	-93.5137	-87.5412	-93.8110	-54.3870	-98.1934	-87.1437	-80.9609
5512.5000	-83.2561	-90.0913	-91.2105	-90.9101	-93.0984	-86.2863	-97.3789	-87.2060	-97.1246	-86.9595	-103.0699	-54.3870	-87.0490	-109.0763	-86.4921
5555.5660	-91.9245	-97.7073	-98.4979	-99.2236	-94.6674	-90.5842	-107.3354	-90.0026	-91.3667	-84.5514	-97.0339	-54.3870	-88.2099	-93.1234	-88.3264
5598.6320	-96.7066	-99.3256	-100.5989	-99.4062	-99.9910	-95.0578	-102.7751	-96.5794	-89.2173	-88.3047	-96.3172	-54.3870	-89.9542	-88.8515	-86.8492
5641.6990	-101.0408	-95.8537	-97.9558	-100.2546	-98.3396	-105.3727	-106.8095	-96.7970	-119.8387	-107.4113	-101.5275	-54.3870	-93.4178	-97.3027	-90.0535
5684.7650	-102.5695	-93.9877	-98.2752	-97.8729	-98.5818	-99.2313	-106.8095	-96.7970	-119.8387	-87.1628	-96.4259	-54.3870	-99.7829	-90.4914	-97.5683
5727.8320	-99.7731	-99.2403	-98.0886	-92.7704	-108.8216	-99.6860	-96.5978	-93.6772	-99.1721	-97.1628	-96.4259	-54.3870	-97.3635	-93.2550	-89.1578
5770.8980	-101.9259	-105.0601	-98.1726	-91.1421	-93.2618	-95.8594	-91.7848	-90.9950	-105.7777	-95.2914	-97.8114	-54.3870	-88.9992	-94.3546	-84.9625
5813.9640	-119.5489	-100.9342	-98.8497	-92.6849	-87.4061	-89.9956	-94.4282	-89.3373	-93.0438	-91.7414	-95.8578	-54.3870	-88.2547	-110.0501	-86.3063
5857.0310	-127.4798	-107.1307	-100.9827	-91.1867	-86.8226	-88.4872	-102.4559	-89.5401	-90.8503	-89.9424	-89.6308	-54.3870	-98.0492	-87.3344	-97.0925
5900.0970	-102.4751	-112.8595	-108.4929	-96.8831	-90.5938	-90.0160	-96.4146	-90.5084	-93.7408	-90.8006	-86.6386	-54.3870	-98.0492	-87.3344	-97.0925
5943.1640	-99.0035	-112.4615	-112.6932	-90.4722	-94.9595	-94.9856	-93.4626	-91.1642	-90.1294	-85.4169	-87.9036	-54.3870	-90.8515	-82.8213	-82.5843
5986.2300	-100.0029	-112.3635	-102.5662	-88.7847	-94.8863	-106.9985	-94.4324	-94.0886	-87.1803	-82.7531	-89.9986	-54.3870	-99.2204	-86.5645	-78.7854
6029.2960	-96.1168	-100.1485	-101.1378	-90.7073	-97.1882	-94.4525	-97.8791	-107.6249	-87.3102	-85.3474	-98.4976	-54.3870	-94.2809	-91.8645	-82.9230

Freq	0.1.0	0.2.0	0.3.0	0.1.25	0.2.25	0.3.25	0.1.50	0.2.50	0.3.50	0.1.75	0.2.75	0.3.75	0.1.100	0.2.100	0.3.100
6072.3630	-97.5981	-94.8507	-102.8391	-93.7212	-104.0257	-95.0672	-97.0199	-105.8398	-88.8346	-90.9293	-103.7382	-54.3870	-88.2404	-85.0549	-96.4366
6115.4290	-105.9498	-96.7022	-105.8048	-101.5320	-115.4337	-97.7760	-99.5726	-96.6224	-92.2154	-94.9244	-100.6784	-54.3870	-87.1397	-85.7604	-88.5123
6158.4960	-107.8048	-124.6023	-115.6734	-103.2470	-105.2272	-92.0193	-101.5749	-93.2456	-93.8535	-97.8922	-110.3031	-54.3870	-89.1199	-92.3429	-94.4878
6201.5620	-106.5375	-102.6318	-121.0566	-95.3422	-100.7320	-92.1991	-111.7961	-96.6997	-92.3883	-113.3614	-96.6202	-54.3870	-93.4941	-120.2419	-114.4324
6244.6280	-100.6469	-102.1721	-119.7607	-94.8581	-101.4114	-96.2275	-103.0573	-123.4989	-97.4886	-98.0223	-93.4267	-54.3870	-99.3711	-100.9856	-113.3999
6287.6950	-106.6416	-98.8427	-119.1308	-97.9990	-104.1703	-108.0008	-107.8500	-101.8363	-112.6331	-95.9342	-95.0547	-54.3870	-97.5231	-107.8111	-98.1705
6330.7610	-109.7777	-98.6737	-115.4261	-103.1528	-101.9369	-95.9013	-99.0369	-102.5793	-104.7461	-100.8660	-100.2058	-54.3870	-94.8096	-102.0831	-96.8628
6373.8280	-102.7475	-108.2390	-112.7135	-111.9665	-104.9529	-93.2430	-97.9856	-116.4372	-109.0909	-111.2437	-110.7795	-54.3870	-97.2932	-99.9128	-106.2094
6416.8940	-100.2436	-112.3015	-106.6621	-111.1402	-115.0658	-97.2879	-105.2270	-101.5489	-111.6394	-101.2331	-103.2070	-54.3870	-99.6758	-102.3818	-137.5140
6459.9600	-99.4060	-118.7369	-103.0628	-107.7482	-114.9558	-108.7184	-115.9554	-99.3480	-112.7801	-104.4180	-104.7212	-54.3870	-101.2345	-107.6346	-107.3056
6503.0270	-100.8378	-110.9390	-102.2673	-106.4956	-108.8594	-118.1958	-108.7516	-102.8955	-105.6920	-101.2033	-109.3891	-54.3870	-102.6297	-110.7818	-104.9871
6546.0930	-103.3417	-109.8607	-100.5153	-106.2384	-103.0326	-106.3863	-106.1128	-105.2471	-102.4578	-98.6823	-114.0366	-54.3870	-104.7862	-106.4386	-116.8305
6589.1600	-105.8643	-112.9508	-100.0722	-106.6528	-98.3836	-103.1557	-104.4901	-102.5925	-100.5825	-99.9450	-102.2877	-54.3870	-109.8055	-106.0373	-116.2642
6632.2260	-105.5141	-111.9325	-103.5826	-110.2673	-98.4805	-105.1212	-104.3069	-101.8013	-100.6818	-102.4893	-98.3127	-54.3870	-99.7451	-112.7761	-102.0266
6675.2920	-107.9811	-115.2074	-114.3375	-105.8142	-106.3378	-107.2492	-106.3085	-100.9231	-102.7861	-104.2987	-98.1039	-54.3870	-95.2016	-108.9665	-97.3738
6718.3590	-107.5266	-112.6800	-112.0146	-105.8197	-106.2404	-105.4214	-104.8143	-101.6085	-106.0496	-108.3760	-101.2770	-54.3870	-93.0393	-114.1842	-97.2874
6761.4250	-111.9029	-110.3930	-106.7152	-105.9049	-98.2592	-103.5203	-102.3893	-100.4048	-110.9238	-117.6168	-107.4931	-54.3870	-97.4356	-109.9854	-99.6358
6804.4920	-112.0032	-112.2021	-110.4348	-107.8003	-97.7854	-106.8068	-109.0563	-102.6347	-116.1405	-117.1245	-110.6712	-54.3870	-101.3508	-111.5827	-101.4726
6847.5580	-109.1388	-117.1773	-116.2047	-129.4298	-99.7361	-128.9447	-110.7210	-109.5774	-109.6544	-109.2827	-109.4808	-54.3870	-92.9265	-122.6474	-99.7954
6890.6250	-107.9375	-111.4940	-111.8042	-109.6904	-101.6265	-116.9406	-106.1435	-119.0209	-108.4883	-109.8365	-113.7541	-54.3870	-94.5852	-120.2327	-99.1727
6933.6910	-110.0473	-105.9304	-110.2971	-106.0614	-105.0932	-120.6582	-108.1983	-114.4679	-105.9226	-109.3267	-116.1670	-54.3870	-100.6834	-117.8445	-101.0598
6976.7570	-120.5869	-105.3217	-110.6598	-106.0890	-114.8068	-115.1525	-119.3059	-111.7048	-107.6648	-111.7683	-119.4420	-54.3870	-110.9468	-124.3684	-104.3125
7019.8240	-116.0963	-108.6461	-112.5443	-109.0719	-114.1287	-113.0285	-111.0736	-115.6050	-117.5730	-118.2365	-112.4657	-54.3870	-116.4478	-120.3383	-108.1421
7062.8900	-117.2283	-112.2699	-126.9051	-114.5987	-124.6767	-112.4068	-110.2065	-121.7838	-114.5893	-125.1636	-109.7724	-54.3870	-114.3819	-122.5135	-112.2453
7105.9570	-114.2070	-114.7886	-117.4813	-118.8610	-115.0147	-119.8793	-118.4703	-114.5721	-107.2649	-113.3155	-110.5590	-54.3870	-113.9561	-112.0805	-114.9164
7149.0230	-113.3984	-112.0804	-116.9841	-119.6789	-115.7148	-114.7998	-121.0330	-121.9600	-105.7942	-111.8822	-114.3472	-54.3870	-125.3270	-111.2795	-114.5883
7192.0890	-112.4858	-110.0156	-124.7527	-126.8960	-121.9454	-111.8802	-119.2509	-121.4295	-107.2802	-118.0139	-120.9611	-54.3870	-120.2629	-113.7679	-119.8087
7235.1560	-113.9112	-110.3994	-130.9941	-118.3385	-118.2605	-115.3168	-122.9256	-113.3736	-114.7904	-113.9773	-122.0337	-54.3870	-118.1724	-113.0963	-119.9644
7278.2220	-120.2251	-112.9849	-121.5908	-124.1088	-116.3169	-120.3046	-121.4394	-108.9945	-110.1906	-118.3841	-116.8219	-54.3870	-117.1519	-121.2583	-114.2617
7364.3550	-115.3647	-116.1836	-113.7650	-121.9464	-111.0546	-113.5746	-111.2853	-116.5148	-114.6256	-118.3841	-113.9159	-54.3870	-115.8634	-113.5879	-118.4055
7407.4210	-122.4749	-117.9888	-112.0416	-121.0679	-111.1437	-112.4721	-112.3712	-117.1180	-118.9477	-124.5129	-120.5331	-54.3870	-111.4461	-109.0116	-115.2092
7450.4880	-124.5953	-124.8383	-116.4402	-117.2885	-110.4606	-114.1979	-114.7745	-109.2326	-121.0681	-127.7498	-124.1205	-54.3870	-109.5821	-108.8026	-115.4715
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7536.6210	-110.0630	-111.0455	-115.3554	-110.8679	-114.9714	-126.6139	-118.2700	-109.9399	-115.1846	-119.0700	-116.5238	-54.3870	-108.3693	-133.4331	-121.5039
7579.6870	-110.5685	-113.4436	-120.1026	-108.7896	-113.5867	-119.1804	-117.7410	-110.6606	-113.4263	-119.0700	-116.5238	-54.3870	-109.5929	-120.4708	-124.1214
7622.7530	-112.4911	-115.4929	-124.8264	-109.3645	-112.0475	-116.1619	-116.0255	-112.7877	-112.9684	-117.7969	-113.5190	-54.3870	-114.7716	-116.2579	-119.3425
7665.8200	-113.1697	-113.9793	-117.2753	-109.9883	-110.2571	-119.4828	-118.1683	-119.0844	-116.2505	-118.7791	-112.1641	-54.3870	-118.0443	-114.4114	-118.3434
7708.8860	-113.1730	-113.6940	-112.4897	-109.8735	-110.6077	-133.5390	-121.4606	-146.9822	-119.4106	-120.7888	-115.2188	-54.3870	-112.7005	-116.0850	-116.1596
7751.9530	-113.1748	-115.8777	-112.4317	-110.9823	-113.5604	-116.1619	-129.5570	-111.2933	-111.6467	-116.1445	-117.1206	-54.3870	-110.8161	-124.4153	-117.3699
7795.0190	-110.9727	-119.0722	-116.8777	-112.6221	-121.2048	-112.8668	-118.0524	-132.4545	-111.5821	-111.8706	-112.8104	-54.3870	-115.0380	-119.1780	-123.2549
7838.0850	-111.3553	-120.6338	-123.1142	-113.9681	-118.2275	-112.7518	-114.9947	-117.4109	-115.8363	-111.3289	-112.0370	-54.3870	-126.6420	-110.8133	-123.0150
7881.1520	-115.2072	-122.9133	-124.3088	-113.5710	-112.4356	-115.5614	-114.4304	-120.8084	-122.9375	-115.6950	-112.4963	-54.3870	-121.7886	-108.8038	-114.5455
7924.2180	-118.6874	-122.1279	-119.9911	-116.8590	-109.4302	-117.3494	-114.0382	-148.5124	-115.2238	-132.5857	-113.9583	-54.3870	-116.6604	-110.4885	-114.6977
7967.2850	-118.0824	-116.2891	-109.9560	-130.9753	-112.0891	-116.2490	-118.5876	-119.0526	-115.0294	-116.6197	-116.2222	-54.3870	-115.5619	-112.2579	-129.6779
8010.3510	-117.6705	-116.7738	-106.9666	-128.9176	-116.2005	-113.8249	-123.8670	-123.3905	-121.9484	-132.5703	-121.4418	-54.3870	-119.7256	-112.4950	-116.0282
8053.4170	-118.5278	-117.0731	-108.4036	-116.1637	-111.5812	-116.2427	-140.2090	-127.4810	-119.5952	-111.9232	-124.5565	-54.3870	-115.8054	-115.7713	-111.2050

Freq	0.1.0	0.2.0	0.3.0	0.1.25	0.2.25	0.3.25	0.1.50	0.2.50	0.3.50	0.1.75	0.2.75	0.3.75	0.1.100	0.2.100	0.3.100
8096.4840	-118.8102	-114.6883	-113.6002	-112.8837	-112.6605	-122.1245	-119.8923	-117.6578	-121.0390	-116.5303	-119.4492	-54.3870	-113.7199	-127.4308	-111.4027
8139.5500	-114.8475	-113.9383	-122.8354	-114.5612	-114.2155	-123.9075	-113.6259	-110.7342	-127.5609	-117.5848	-121.5598	-54.3870	-117.2099	-121.5900	-113.7425
8182.6170	-113.9113	-116.5959	-122.1100	-116.0163	-116.0327	-117.9925	-114.0129	-109.9911	-121.2458	-114.9442	-118.7469	-54.3870	-119.9636	-118.1112	-116.4542
8225.6830	-115.6301	-124.3161	-138.0608	-113.8210	-120.7705	-112.8346	-123.0725	-111.8066	-135.9223	-115.8041	-112.3712	-54.3870	-111.6942	-121.8590	-123.6582
8268.7500	-118.0627	-125.5023	-119.8718	-111.1831	-132.2628	-111.0648	-121.0906	-114.9168	-119.5918	-114.2300	-111.8442	-54.3870	-110.4092	-121.0336	-119.2919
8311.8160	-122.9457	-117.3671	-120.1950	-109.0777	-117.8376	-113.0402	-115.9970	-121.4587	-113.5798	-111.7085	-115.8435	-54.3870	-116.1742	-122.8996	-112.9811
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8441.0150	-113.5676	-124.0355	-114.2214	-116.3888	-120.9636	-115.9348	-123.4364	-119.7955	-116.7104	-124.5538	-113.9857	-54.3870	-115.6853	-117.5911	-117.9564
8484.0820	-112.5576	-111.7201	-125.4567	-123.8787	-119.2177	-113.7077	-118.1904	-114.6285	-114.4908	-117.2700	-116.5687	-54.3870	-113.3042	-120.2161	-115.5902
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8570.2140	-115.3966	-110.4739	-117.9077	-118.5187	-120.7834	-115.9664	-112.1740	-114.0480	-115.6550	-112.1066	-118.6306	-54.3870	-117.3280	-124.8178	-110.0926
8613.2810	-113.3006	-113.9058	-117.7317	-117.3740	-115.2600	-112.2641	-113.5878	-121.8631	-114.5593	-112.0962	-114.4717	-54.3870	-116.7472	-119.8218	-110.0877
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8699.4140	-118.5412	-108.6158	-114.4747	-113.3186	-113.1283	-112.5351	-124.4571	-116.2336	-109.7604	-113.1636	-119.9715	-54.3870	-114.6720	-115.2391	-114.0893
8785.5460	-118.6346	-114.4528	-113.4612	-118.0056	-119.1311	-117.4420	-117.5486	-116.0680	-109.3701	-116.0554	-118.7222	-54.3870	-113.0329	-130.8815	-115.8595
8828.6130	-118.8073	-116.4538	-119.6708	-119.7619	-125.3191	-121.5236	-118.4662	-117.9288	-112.2628	-115.9794	-119.5575	-54.3870	-117.6483	-114.6970	-115.2774
8871.6790	-116.0585	-118.5350	-121.3899	-118.6264	-117.5674	-119.2314	-117.4724	-120.5701	-112.9005	-112.8484	-122.4414	-54.3870	-120.5162	-114.3412	-117.2299
8914.7460	-114.6776	-116.0771	-116.8872	-117.0406	-117.2455	-118.1416	-116.8858	-116.6717	-111.1323	-113.7900	-116.0402	-54.3870	-115.4253	-114.4314	-136.9659
8957.8120	-115.9531	-116.7018	-119.8381	-128.2491	-120.0958	-115.5074	-119.8584	-117.0149	-113.4182	-112.8132	-113.4843	-54.3870	-117.9953	-116.6713	-116.1848
9000.8780	-114.7474	-119.2375	-121.3048	-115.4533	-117.2588	-113.8062	-113.8485	-127.4319	-125.8899	-112.8880	-122.3899	-54.3870	-130.3743	-126.0360	-111.0961
9043.9490	-113.6966	-114.1023	-116.9634	-111.8329	-115.7495	-113.5051	-109.1060	-114.6353	-121.1467	-112.8132	-113.4843	-54.3870	-117.4091	-120.5559	-113.2827
9087.0110	-119.7421	-109.1933	-117.8727	-114.9507	-118.1690	-113.4942	-111.6007	-113.7988	-115.6784	-113.2544	-113.2690	-54.3870	-118.5039	-115.4602	-123.7169
9130.0780	-115.1878	-107.6144	-115.0409	-129.3763	-129.9339	-113.9145	-123.0802	-115.7208	-114.0199	-113.7822	-116.0839	-54.3870	-122.2092	-115.5355	-116.1694
9173.1440	-113.9090	-110.0416	-113.6529	-117.9556	-118.8723	-113.2934	-127.7542	-114.3638	-115.1724	-111.9646	-115.2747	-54.3870	-122.3813	-115.7983	-116.2137
9216.2100	-123.7015	-111.7533	-115.1879	-112.8629	-114.4925	-112.6428	-128.9169	-113.6802	-120.2634	-111.5038	-113.4939	-54.3870	-119.4316	-115.2212	-114.5119
9259.2770	-121.3475	-109.5538	-113.3079	-108.5071	-113.7519	-109.7815	-122.5609	-113.9324	-118.7459	-118.0659	-113.4939	-54.3870	-117.6706	-112.2360	-118.3493
9302.3430	-120.2561	-111.9169	-118.2431	-107.6250	-113.0994	-109.5072	-125.5752	-113.3693	-118.3216	-121.0675	-114.2212	-54.3870	-119.4316	-115.2212	-114.5119
9345.4100	-122.7437	-117.7533	-118.2683	-110.9180	-111.0100	-114.2522	-125.8134	-115.7162	-119.3994	-121.8685	-119.0984	-54.3870	-112.3012	-113.7814	-114.2050
9388.4760	-111.2163	-128.3965	-113.4566	-119.3148	-109.3332	-121.4705	-115.9867	-123.2300	-122.2063	-119.2267	-120.4053	-54.3870	-112.5450	-115.9211	-112.3772
9431.5420	-107.6552	-112.3572	-114.1756	-114.2507	-110.0565	-120.3731	-115.3806	-125.3387	-123.5526	-112.6624	-114.8511	-54.3870	-122.8557	-115.4634	-115.0103
9474.6090	-108.6192	-108.7899	-126.6339	-112.1492	-112.5208	-117.5884	-112.5146	-118.2418	-113.1840	-114.6138	-112.5834	-54.3870	-116.1460	-115.4674	-115.9438
9517.6750	-112.3983	-109.2441	-118.3847	-114.7012	-112.8745	-114.7670	-110.5916	-117.2975	-113.6171	-113.3028	-114.4134	-54.3870	-112.1496	-115.6452	-114.4320
9560.7420	-116.1371	-113.2075	-118.1666	-117.8998	-113.4060	-114.1327	-111.9297	-130.4277	-118.1053	-112.9341	-121.3157	-54.3870	-113.9214	-117.4203	-114.4903
9603.8080	-116.8290	-119.8287	-119.4015	-122.4768	-118.1828	-118.9272	-114.6797	-117.2411	-113.5835	-112.6938	-122.2219	-54.3870	-122.6938	-120.8536	-114.7237
9646.8750	-118.9368	-112.7594	-124.2102	-121.6080	-141.1730	-141.6652	-113.8124	-112.8412	-112.1833	-110.9265	-119.5874	-54.3870	-118.1720	-116.6938	-116.9610
9689.9410	-128.0083	-108.4895	-127.4048	-128.6072	-121.0160	-117.8817	-110.2918	-114.9198	-120.6440	-112.1162	-120.6739	-54.3870	-116.0040	-114.0293	-125.7766
9733.0070	-131.5015	-106.1115	-130.0280	-124.0986	-118.9131	-112.4151	-108.8931	-120.4778	-115.6279	-119.6814	-128.4452	-54.3870	-116.7027	-112.3997	-122.2032
9776.0740	-125.5900	-110.7984	-126.6108	-125.0573	-126.8962	-110.2160	-111.4653	-120.9333	-113.4198	-126.6139	-116.5664	-54.3870	-117.5861	-110.9583	-120.2922
9819.1400	-116.9556	-118.2333	-118.9798	-125.4806	-119.8309	-111.4931	-122.8652	-118.5657	-117.3203	-116.3951	-110.3293	-54.3870	-119.0485	-112.6939	-121.4328
9862.2070	-115.6014	-132.3750	-122.1634	-117.5888	-114.7946	-116.9901	-112.9141	-117.6929	-115.1251	-112.8810	-107.7346	-54.3870	-121.2422	-117.8223	-118.6316
9905.2730	-116.6995	-119.8697	-123.4976	-117.4960	-114.6020	-133.1911	-113.9150	-122.6031	-122.1553	-113.6787	-107.6633	-54.3870	-121.1058	-112.5468	-114.4084
9948.3390	-113.2461	-115.1837	-117.8456	-117.6631	-114.8302	-131.1871	-118.7681	-116.1245	-114.6145	-118.3956	-108.5263	-54.3870	-126.0135	-109.9988	-113.9941
9991.4060	-121.4350	-112.3824	-120.5272	-119.7436	-117.8337	-127.8795	-118.2891	-112.6826	-114.9746	-116.8994	-108.5168	-54.3870	-140.6345	-109.8460	-117.3698
10034.4720	-121.6628	-113.0492	-126.7685	-124.1483	-130.9084	-118.0610	-112.0899	-115.1339	-121.0508	-115.9056	-109.5312	-54.3870	-128.6395	-110.9109	-129.9796
10077.5390	-126.0559	-113.7804	-134.0591	-121.5427	-124.2962	-117.2224	-109.9186	-121.8250	-129.8629	-120.6743	-113.7730	-54.3870	-146.0512	-112.4476	-118.7643

Freq	0.1.0	0.2.0	0.3.0	0.1.25	0.2.25	0.3.25	0.1.50	0.2.50	0.3.50	0.1.75	0.2.75	0.3.75	0.1.100	0.2.100	0.3.100
10120.6050	-119.4586	-111.7420	-115.6930	-118.4904	-119.4503	-117.6477	-111.2810	-119.5192	-120.8624	-126.9205	-118.7497	-54.3870	-119.5721	-114.1260	-116.2701
10163.6710	-120.0934	-111.7469	-111.9766	-117.1156	-119.5354	-113.4433	-114.4510	-113.6491	-126.6916	-120.8379	-115.7755	-54.3870	-113.9419	-115.5944	-118.7901
10206.7380	-118.2557	-115.2275	-114.7438	-113.6780	-115.8862	-112.5632	-113.5440	-115.0433	-118.7649	-113.4170	-111.6742	-54.3870	-110.2292	-109.1670	-119.0786
10249.8040	-114.2291	-118.2685	-118.9131	-110.9546	-116.5067	-113.3978	-112.3204	-119.5293	-115.6780	-110.3854	-110.6274	-54.3870	-112.1500	-109.6907	-113.8173
10292.8710	-114.2820	-122.1754	-119.2658	-114.4626	-123.1555	-114.7717	-113.9741	-115.2535	-122.4314	-110.3969	-112.3279	-54.3870	-118.3547	-117.6167	-114.3417
10335.9370	-115.9487	-126.8149	-119.8616	-120.2411	-118.0267	-118.2887	-121.8942	-120.6241	-120.6087	-111.9948	-114.8515	-54.3870	-113.8315	-142.4362	-129.3167
10379.0030	-119.8802	-115.8002	-119.8229	-117.2529	-117.6144	-118.1883	-121.8942	-123.5103	-117.5126	-113.2236	-116.2340	-54.3870	-114.2686	-115.2968	-119.6902
10422.0700	-121.0247	-114.4728	-125.7948	-115.0916	-118.6716	-115.2365	-127.5036	-126.5141	-121.3726	-117.8122	-118.7317	-54.3870	-115.9369	-113.0642	-121.2808
10465.1360	-119.9380	-115.1056	-127.0021	-112.8368	-117.6970	-117.2533	-125.1542	-138.3360	-124.6377	-123.3804	-111.1231	-54.3870	-113.5097	-115.3966	-120.2227
10508.2030	-122.9883	-115.2698	-128.0385	-116.8336	-118.4592	-125.1805	-118.3926	-114.0565	-121.0302	-118.9353	-111.1231	-54.3870	-112.3715	-112.8512	-117.4409
10551.2690	-121.5264	-113.9231	-121.0842	-116.0195	-121.0247	-116.0633	-115.9756	-110.1115	-124.9759	-119.2288	-108.9937	-54.3870	-114.8962	-112.5825	-117.7529
10594.3350	-116.9346	-111.9691	-114.1539	-116.9754	-120.5900	-115.7933	-118.6064	-108.0881	-119.7991	-137.7177	-111.5346	-54.3870	-118.7135	-114.8528	-116.6722
10637.4020	-116.1845	-110.2430	-114.8882	-122.5758	-114.9507	-116.0990	-122.2581	-110.1903	-111.6241	-138.1803	-116.8048	-54.3870	-120.7640	-113.9439	-118.1948
10680.4680	-121.2800	-109.8301	-116.5432	-116.2516	-113.9977	-116.2361	-139.3996	-117.3104	-108.0813	-122.7759	-116.4052	-54.3870	-138.9498	-111.8438	-119.0663
10723.5350	-119.0243	-111.6491	-116.9329	-116.4572	-118.7495	-118.0701	-115.3544	-116.7521	-107.6223	-116.6705	-115.4954	-54.3870	-120.2935	-114.7046	-112.6011
10766.6010	-114.5158	-118.4892	-115.7505	-118.7473	-115.2293	-120.4407	-114.0586	-114.4394	-109.4827	-111.1285	-112.1448	-54.3870	-119.5800	-121.3495	-110.5013
10809.6670	-118.0608	-118.3798	-115.2187	-115.1227	-109.9595	-120.3445	-117.1706	-111.5870	-110.0968	-109.7620	-113.5500	-54.3870	-116.7391	-111.9439	-112.6145
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10895.8000	-118.9256	-113.5485	-118.2280	-108.3791	-116.2457	-120.4290	-114.5131	-112.4559	-112.7433	-115.4008	-113.9945	-54.3870	-111.5036	-113.1451	-130.8972
10938.8670	-114.2000	-113.3221	-122.0531	-109.6734	-117.2013	-121.7698	-118.9182	-111.8916	-115.6413	-121.6663	-113.5304	-54.3870	-113.5067	-122.3028	-119.3775
10981.9330	-117.8920	-113.4368	-120.1896	-114.8183	-116.0880	-122.7655	-117.2423	-109.9965	-115.0199	-132.2008	-112.8652	-54.3870	-121.4163	-116.2977	-116.0718
11025.0000	-125.2602	-114.0513	-114.1145	-119.5067	-115.3477	-128.3134	-113.4493	-108.3292	-113.5240	-122.3949	-112.7370	-54.3870	-124.3030	-115.2316	-114.4753
11068.0660	-119.9786	-115.5210	-114.6189	-113.4752	-112.2296	-116.4835	-114.0895	-108.9347	-115.3804	-119.0504	-115.1357	-54.3870	-125.0326	-114.9030	-113.7403
11111.1320	-112.5543	-116.3314	-115.9002	-113.6780	-109.3599	-113.9321	-112.6611	-112.4793	-132.8493	-134.1591	-119.2559	-54.3870	-121.7233	-112.6025	-116.4210
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11197.2650	-113.1951	-126.3329	-116.1074	-109.7698	-107.9292	-114.1585	-115.4639	-114.1945	-116.4655	-113.0050	-112.7881	-54.3870	-119.3482	-122.8780	-119.2194
11240.3320	-121.1814	-119.7186	-124.5823	-110.1748	-110.3730	-118.9771	-119.9945	-118.9735	-118.3689	-112.9636	-117.1962	-54.3870	-119.8571	-120.1300	-115.9117
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11455.6640	-115.7226	-110.3843	-111.0320	-124.0185	-110.2228	-118.8519	-117.1992	-124.8274	-127.2773	-123.2394	-113.3519	-54.3870	-112.3951	-128.9004	-113.3182
11498.7300	-117.7293	-118.2016	-110.1318	-131.1615	-113.1682	-114.2512	-123.0438	-117.5040	-125.2589	-120.8078	-113.1298	-54.3870	-111.0314	-119.6250	-114.0139
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11670.9960	-119.9907	-110.4175	-119.9763	-115.2254	-117.7630	-118.6296	-115.8949	-119.8989	-115.2973	-117.5718	-121.1194	-54.3870	-110.6541	-114.1630	-115.7374
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11757.1280	-126.5539	-125.6312	-118.5202	-128.3461	-116.6941	-113.6327	-118.4097	-115.4332	-118.0980	-120.5884	-114.8895	-54.3870	-110.6053	-124.3140	-120.4767
11800.1950	-131.2443	-116.3801	-115.3330	-122.5443	-113.1474	-115.3340	-115.2312	-117.9946	-115.7477	-117.7547	-113.0404	-54.3870	-113.5443	-127.0897	-121.2253
11843.2610	-118.1347	-115.7277	-113.4725	-117.4659	-113.3984	-115.3408	-114.7945	-117.5543	-114.0446	-116.2075	-110.4008	-54.3870	-122.5775	-118.1519	-119.5147
11886.3280	-123.1656	-117.3755	-113.9819	-117.8772	-117.9216	-119.0484	-116.9329	-119.0306	-112.7335	-117.8579	-113.1361	-54.3870	-117.6236	-113.3835	-120.7513
11929.3940	-117.2859	-120.3182	-115.5414	-114.0377	-119.1246	-119.7087	-118.8783	-117.0903	-112.6960	-121.1097	-126.8944	-54.3870	-116.6467	-113.1711	-128.2896
11972.4600	-113.5664	-126.5385	-114.6920	-110.9528	-121.3214	-113.9169	-118.6974	-116.8165	-118.6396	-118.4401	-120.8951	-54.3870	-118.5891	-115.6493	-115.9834
12015.5270	-120.0142	-117.0589	-114.4825	-112.9647	-132.4985	-113.8591	-115.7075	-119.0709	-123.7410	-114.0009	-120.3371	-54.3870	-117.5289	-115.5936	-113.1847
12058.5930	-120.3087	-120.4996	-116.4437	-123.9239	-118.2461	-113.9646	-112.4158	-117.0934	-117.1718	-115.8032	-126.1259	-54.3870	-124.4658	-114.8204	-114.7655
12101.6600	-117.4881	-120.9971	-121.8758	-115.6411	-113.3319	-114.4132	-114.7292	-117.2819	-112.0526	-122.0129	-115.8196	-54.3870	-119.9620	-118.6804	-121.1567

Freq	0.1.0	0.2.0	0.3.0	0.1.25	0.2.25	0.3.25	0.1.50	0.2.50	0.3.50	0.1.75	0.2.75	0.3.75	0.1.100	0.2.100	0.3.100
12144.7260	-116.4742	-111.0029	-133.6835	-114.8698	-113.6783	-115.7819	-119.9336	-117.7418	-109.1257	-118.4699	-113.2332	-54.3870	-120.8718	-119.7005	-126.9788
12187.7920	-116.3428	-109.6541	-126.5088	-124.0296	-114.8788	-112.1912	-120.6131	-117.4151	-109.5512	-116.3027	-115.9914	-54.3870	-134.6356	-118.1024	-119.8700
12230.8590	-125.7813	-112.1326	-115.3307	-120.9657	-116.9345	-112.4348	-121.9835	-122.8071	-112.9839	-110.8617	-118.2497	-54.3870	-121.5254	-120.8376	-119.3027
12273.9250	-125.8155	-114.2794	-112.4791	-118.8734	-113.5118	-117.6366	-120.0698	-127.4838	-118.8347	-110.7920	-113.0026	-54.3870	-114.2899	-117.4737	-124.0080
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12446.4910	-130.1586	-120.7856	-119.6043	-116.6652	-118.7635	-118.2950	-115.2949	-122.1180	-114.0854	-125.1132	-118.2957	-54.3870	-119.7956	-118.9829	-116.2467
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12575.3900	-111.7870	-110.8064	-117.4007	-109.6522	-118.7600	-110.7708	-112.5718	-117.9978	-116.6890	-116.2440	-110.5283	-54.3870	-110.6862	-121.4769	-111.2445
12618.4570	-111.7544	-114.2269	-122.9906	-109.9264	-118.2400	-108.4080	-110.4691	-118.3763	-115.5497	-111.4118	-113.0460	-54.3870	-109.4872	-117.3159	-109.3047
12661.5230	-111.9030	-125.8037	-117.3239	-113.2167	-123.2188	-106.3004	-111.7618	-122.9858	-117.2723	-113.5386	-122.7730	-54.3870	-113.0061	-116.6362	-111.4591
12704.5890	-111.7183	-130.9005	-111.9324	-121.0760	-117.7849	-108.1531	-114.8787	-135.8730	-116.4473	-122.2893	-118.8384	-54.3870	-121.7254	-119.4472	-112.7511
12747.6560	-115.1377	-128.0410	-111.8357	-114.0867	-120.8268	-114.6351	-120.3874	-116.2673	-113.1556	-122.2893	-118.8384	-54.3870	-117.5199	-119.4577	-116.6256
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12833.7890	-118.0474	-125.7040	-120.0452	-116.1026	-112.3770	-131.3539	-117.9767	-120.9926	-121.0234	-116.7705	-115.7444	-54.3870	-114.3068	-121.6000	-120.7094
12876.8550	-125.0977	-118.9935	-117.0044	-119.7389	-116.9821	-124.8600	-118.2422	-124.1266	-119.2379	-116.7705	-115.7444	-54.3870	-128.0537	-120.0509	-115.6572
12919.9210	-119.8538	-115.2674	-128.9017	-118.6074	-120.4252	-119.0589	-115.7330	-121.7075	-124.7253	-116.8384	-115.6352	-54.3870	-137.3760	-124.0489	-116.7888
12962.9880	-117.9169	-115.0806	-117.6666	-116.4743	-113.6831	-118.3457	-112.4809	-121.6578	-124.4065	-115.7979	-116.8710	-54.3870	-127.2165	-122.6875	-120.9252
13006.0540	-144.7673	-120.3125	-113.1981	-116.6742	-114.1666	-121.6941	-114.9421	-124.3675	-117.2844	-114.9284	-121.8948	-54.3870	-116.9087	-123.0987	-118.0158
13049.1210	-115.0771	-122.2190	-111.0101	-114.5114	-114.2475	-119.8678	-120.7596	-128.7776	-113.2742	-114.3443	-115.5765	-54.3870	-113.8314	-115.0124	-114.0343
13092.1870	-111.7459	-115.5903	-110.0837	-114.0204	-119.7776	-116.9279	-117.9754	-134.4666	-120.0663	-115.3524	-111.4524	-54.3870	-114.8235	-115.8025	-115.3974
13135.2530	-113.0570	-113.6599	-110.4659	-114.1030	-121.0390	-113.5236	-115.2340	-127.1055	-116.5706	-120.1772	-112.4758	-54.3870	-116.3365	-122.0667	-124.5180
13178.3200	-114.1661	-113.3680	-111.3481	-111.6931	-128.1640	-119.3302	-113.6868	-117.0118	-114.1027	-116.5733	-114.7359	-54.3870	-113.7326	-122.0567	-119.0307
13221.3860	-115.3979	-117.5028	-117.1924	-111.6931	-128.1640	-119.3302	-113.6868	-117.0118	-114.1027	-116.5733	-114.7359	-54.3870	-111.9403	-114.8405	-121.3221
13264.4530	-121.6175	-140.4945	-116.3061	-111.0642	-116.9758	-123.3771	-116.8261	-113.7611	-115.6800	-110.5930	-118.4335	-54.3870	-113.0746	-112.3416	-118.7923
13307.5190	-130.1079	-121.8266	-114.0151	-113.0385	-109.9057	-113.0525	-124.7040	-113.0161	-114.8229	-110.9760	-121.8166	-54.3870	-118.3094	-120.5082	-118.7740
13350.5850	-133.8333	-124.7518	-128.3271	-116.2015	-108.2817	-110.7134	-119.5622	-114.8932	-109.6335	-124.0835	-138.8179	-54.3870	-116.4514	-117.0236	-117.0749
13393.6520	-123.9588	-143.3955	-119.6908	-121.8401	-110.1581	-111.8843	-114.5989	-116.2242	-108.3524	-111.0689	-124.0342	-54.3870	-118.0967	-112.5214	-122.2387
13436.7180	-146.6565	-127.4768	-117.0894	-121.0621	-113.4538	-113.5435	-117.5517	-118.9217	-110.2116	-107.5410	-120.8618	-54.3870	-118.0967	-112.5214	-122.2387
13479.7850	-146.9231	-121.9818	-114.7497	-111.4057	-113.3192	-115.3182	-120.6338	-119.8325	-111.6257	-111.1576	-122.2543	-54.3870	-123.8792	-114.1329	-120.9546
13522.8510	-123.3874	-111.8913	-113.5164	-108.5319	-115.3769	-118.5974	-112.6292	-116.5864	-112.3196	-122.3677	-123.8294	-54.3870	-117.4267	-120.2800	-117.3959
13565.9170	-120.3461	-108.3208	-117.3278	-109.8793	-122.6642	-118.3713	-115.8810	-113.6684	-115.9347	-116.5091	-117.0552	-54.3870	-116.6097	-125.7000	-116.4170
13608.9840	-119.7108	-109.3328	-128.3936	-116.4416	-125.3515	-118.4962	-122.0966	-112.5976	-124.5654	-112.1222	-112.4051	-54.3870	-120.2289	-117.2409	-114.5076
13652.0500	-120.3323	-112.1337	-120.0181	-121.4448	-126.3269	-120.8151	-124.8478	-111.0805	-119.5659	-109.2264	-110.7128	-54.3870	-133.7032	-117.0449	-114.4122
13695.1170	-119.8922	-113.8332	-117.2304	-129.3663	-119.4731	-116.5471	-117.2793	-113.5469	-117.4308	-114.3733	-123.3246	-54.3870	-125.1306	-120.2762	-114.5708
13738.1830	-115.2101	-111.4575	-118.0269	-125.5659	-119.1713	-112.8745	-111.0738	-113.5469	-117.4308	-114.3733	-123.3246	-54.3870	-125.1306	-120.2762	-114.5708
13781.2500	-113.1532	-111.3950	-118.7935	-121.5473	-119.5563	-112.8720	-109.1762	-111.2583	-113.9725	-117.8150	-114.5556	-54.3870	-111.4559	-111.7408	-127.1565
13824.3160	-143.8562	-117.1238	-116.2284	-119.6144	-114.3697	-118.9159	-111.8643	-112.9354	-115.6062	-121.3910	-115.5945	-54.3870	-111.2288	-112.3177	-123.5169
13867.3820	-120.3417	-125.7543	-115.1401	-116.2411	-111.2706	-114.3842	-117.4730	-116.9638	-117.0246	-121.3053	-123.8611	-54.3870	-116.7159	-113.3671	-116.8905
13910.4490	-121.8244	-118.3615	-121.8671	-114.0467	-113.8429	-111.7243	-118.9767	-114.9567	-113.5602	-121.5523	-115.2564	-54.3870	-122.0235	-112.7813	-114.9311
13953.5150	-116.3052	-115.4520	-120.8758	-120.1032	-120.0780	-112.2013	-118.1270	-115.1346	-112.7531	-123.8710	-114.5094	-54.3870	-113.1439	-113.0285	-124.7633
13996.5820	-118.0292	-112.4851	-114.9313	-119.9308	-114.1908	-116.2628	-122.1407	-116.1677	-115.3800	-120.1935	-119.3531	-54.3870	-113.6298	-118.1148	-116.3741
14039.6480	-132.7939	-112.8256	-115.8755	-114.9499	-114.2991	-120.8252	-118.8459	-114.0212	-134.0651	-119.4632	-130.3181	-54.3870	-113.5235	-118.4189	-113.1512
14082.7140	-117.6319	-110.9852	-122.7922	-122.0325	-119.9243	-120.4227	-117.0519	-111.5916	-114.1556	-124.3669	-132.0697	-54.3870	-117.3066	-113.2978	-117.9730
14125.7810	-116.8066	-110.4486	-122.1646	-115.1795	-118.5521	-121.0408	-119.0285	-113.4104	-122.3046	-123.8807	-121.3512	-54.3870	-119.0214	-113.0888	-115.5121

Freq	0.10	0.20	0.30	0.1.25	0.2.25	0.3.25	0.1.50	0.2.50	0.3.50	0.1.75	0.2.75	0.3.75	0.1.100	0.2.100	0.3.100
14168.8470	-112.8861	-112.3261	-119.2853	-112.3523	-113.1441	-128.5369	-123.6764	-115.5985	-122.9478	-115.3420	-118.6366	-54.3870	-114.9870	-117.2797	-114.7307
14211.9140	-110.1287	-112.5186	-115.0826	-110.8429	-112.2618	-128.2171	-126.7672	-111.5460	-116.3687	-114.2349	-119.3262	-54.3870	-111.1909	-125.4809	-121.5689
14254.9800	-110.3564	-110.7957	-110.7355	-110.4139	-113.7324	-128.9740	-112.3305	-108.7242	-113.4759	-117.6973	-121.6414	-54.3870	-112.4370	-115.4376	-124.9898
14298.0460	-111.4763	-112.8647	-112.7234	-112.8026	-117.7098	-116.4818	-108.6212	-111.1148	-112.9192	-116.8505	-121.1410	-54.3870	-119.0212	-112.9566	-117.6623
14341.1130	-112.3478	-114.9654	-126.2584	-119.7314	-133.4951	-113.6494	-112.2423	-117.8255	-115.7849	-114.3970	-116.8792	-54.3870	-119.0496	-114.6450	-117.1108
14384.1790	-114.4375	-114.1974	-119.2487	-120.6621	-115.0577	-115.9632	-120.5254	-108.5940	-120.4546	-117.3999	-114.7623	-54.3870	-126.7643	-117.2739	-119.6483
14427.2460	-116.8470	-112.7137	-121.6949	-110.8215	-110.8643	-134.8857	-98.0172	-98.0546	-114.0150	-101.7988	-98.4596	-54.3870	-116.8709	-108.8414	-106.7839
14470.3120	-120.9941	-113.0338	-137.3934	-103.1951	-111.9659	-114.3020	-95.3565	-94.1567	-108.2081	-95.4598	-91.7602	-54.3870	-112.1801	-105.9801	-100.6968
14516.4450	-116.6500	-127.0160	-138.9533	-104.5121	-115.0605	-108.6010	-97.7070	-95.3697	-105.8709	-95.8985	-89.6794	-54.3870	-114.3805	-109.1699	-100.9631
14599.5110	-115.0657	-119.9841	-119.0791	-111.6194	-110.2247	-109.0302	-104.8762	-101.1345	-105.6548	-103.4625	-92.6687	-54.3870	-116.7948	-118.3830	-109.1050
14642.5780	-114.3435	-118.2124	-113.7576	-117.0600	-111.7841	-114.2099	-114.3139	-108.5509	-107.6742	-107.3626	-100.7777	-54.3870	-118.0967	-112.9183	-120.1878
14685.6440	-112.1349	-115.7260	-109.9687	-116.4239	-113.5486	-113.7975	-113.6126	-112.0415	-113.5372	-109.7996	-106.8742	-54.3870	-120.5292	-112.6576	-117.6515
14728.7100	-110.3876	-118.2928	-108.9610	-104.0742	-113.9552	-110.7532	-111.8513	-109.1217	-116.1789	-105.6640	-98.3948	-54.3870	-109.5997	-110.7472	-119.8167
14771.7770	-112.9887	-121.5744	-111.8110	-98.0802	-103.4189	-105.0174	-108.5635	-99.5655	-103.3656	-98.6491	-89.4281	-54.3870	-105.5502	-109.5231	-98.9124
14814.8430	-115.3262	-116.0694	-118.4754	-96.4861	-101.5676	-104.0455	-98.4341	-93.2403	-100.7497	-95.4629	-84.9848	-54.3870	-104.9094	-109.1633	-98.9148
14857.9100	-114.2003	-116.3724	-128.2435	-96.1792	-105.6348	-110.6108	-93.7952	-90.2329	-102.9909	-92.1839	-85.1941	-54.3870	-106.0763	-103.4532	-95.3250
14900.9760	-113.8998	-114.2398	-115.4756	-96.3433	-107.5011	-113.9466	-94.3964	-91.4706	-106.8909	-94.4042	-90.1132	-54.3870	-110.9289	-103.2182	-96.8456
14944.0420	-118.3468	-114.5361	-113.1731	-99.7903	-110.9464	-113.4298	-100.4027	-97.8760	-110.0244	-104.9242	-100.7400	-54.3870	-146.1865	-106.4374	-102.9955
14987.1050	-121.3092	-118.3762	-114.3206	-108.0830	-115.5965	-116.3604	-112.5016	-108.5558	-112.9798	-113.5500	-111.9218	-54.3870	-116.4138	-110.0720	-121.3002
15030.1750	-118.3382	-122.4775	-118.7760	-118.2418	-114.8899	-115.9805	-133.2463	-113.7026	-118.3363	-118.6055	-111.9218	-54.3870	-114.3725	-112.0997	-116.6107
15116.5080	-119.7302	-119.7540	-123.2646	-114.2581	-115.5830	-125.7618	-113.8923	-112.2994	-115.6656	-120.4396	-114.0429	-54.3870	-112.7089	-121.1604	-112.4083
15159.3750	-122.5791	-114.3042	-117.2193	-115.3552	-117.4807	-118.9698	-112.4416	-112.2496	-116.2487	-116.9081	-112.1126	-54.3870	-113.1784	-125.6032	-113.3194
15202.4410	-130.5408	-135.8708	-112.6583	-118.0220	-115.3770	-116.5508	-114.5274	-112.9259	-117.7353	-114.7474	-112.8550	-54.3870	-114.1902	-119.4706	-111.4817
15248.5070	-123.6310	-120.2602	-110.7904	-116.6735	-117.7591	-120.1053	-116.1636	-111.9622	-117.1246	-116.6291	-118.2454	-54.3870	-113.1933	-118.7876	-110.6807
15288.5740	-122.9766	-119.8096	-112.1673	-116.8363	-124.2045	-129.2461	-114.6580	-112.6768	-114.3976	-117.3285	-120.8645	-54.3870	-109.2546	-126.9083	-116.3840
15331.6400	-113.6750	-116.1710	-113.0128	-116.9182	-131.9704	-114.8697	-115.1131	-113.0564	-113.2050	-114.9475	-117.2192	-54.3870	-108.2266	-116.4019	-121.9211
15374.7070	-111.0797	-116.1135	-113.6028	-120.0861	-123.2214	-114.6874	-118.8331	-112.5294	-115.2941	-114.3075	-114.4140	-54.3870	-108.2266	-116.4019	-121.9211
15417.7730	-111.0557	-116.2731	-124.7444	-135.2057	-119.7721	-114.6167	-115.8115	-117.1159	-117.2394	-115.5770	-114.4140	-54.3870	-108.1160	-110.2422	-110.7398
15460.8390	-111.4666	-114.7124	-119.5311	-127.4530	-112.7004	-115.5117	-116.2282	-124.2297	-118.4955	-119.3784	-117.2284	-54.3870	-108.5739	-109.8903	-108.1569
15503.9060	-114.7551	-117.4912	-122.9555	-123.3338	-113.3777	-113.4049	-115.4546	-128.9223	-121.5478	-124.0354	-120.2075	-54.3870	-113.7756	-115.5586	-108.5405
15546.9720	-130.1144	-117.6086	-120.6767	-125.5386	-120.5019	-113.6080	-114.4924	-122.0687	-122.4489	-123.6274	-123.9767	-54.3870	-122.9803	-117.4534	-109.2577
15590.0390	-120.4630	-112.5327	-116.7963	-115.5930	-127.7622	-116.6063	-113.2662	-117.5072	-118.5736	-117.8708	-118.7119	-54.3870	-116.8832	-117.2902	-111.6318
15633.1050	-114.6812	-110.2951	-117.9870	-109.8522	-118.9675	-112.8528	-111.7286	-115.1922	-114.8363	-117.3932	-116.4344	-54.3870	-111.7792	-122.3486	-117.0004
15676.1710	-112.9873	-111.7780	-116.4390	-109.7517	-123.2135	-113.8097	-111.1272	-114.2992	-120.4151	-116.1381	-122.6692	-54.3870	-112.5327	-115.4041	-115.9205
15719.2380	-113.6772	-120.0529	-115.8175	-112.0927	-118.7898	-118.5967	-111.7238	-118.9268	-134.0575	-118.9800	-119.9227	-54.3870	-114.0935	-112.1232	-115.7949
15762.3040	-113.8832	-123.3250	-114.0561	-114.7887	-116.5678	-117.5293	-112.1715	-123.9810	-133.1758	-127.3144	-112.7626	-54.3870	-111.9639	-114.2372	-113.9410
15805.3710	-119.2749	-118.3082	-111.4367	-116.9724	-115.1980	-115.9562	-111.9969	-115.6530	-129.3366	-113.2845	-108.9139	-54.3870	-114.8010	-126.2029	-114.9895
15848.4370	-121.3817	-119.2340	-114.5170	-116.1667	-114.2897	-112.0994	-117.2609	-114.9290	-126.4177	-127.3144	-112.7626	-54.3870	-110.6837	-124.7935	-120.2975
15891.5030	-122.5656	-117.9692	-127.8461	-115.2403	-117.3648	-110.3656	-125.4380	-117.2330	-121.5301	-110.4578	-110.2771	-54.3870	-110.6837	-124.7935	-120.2975
15934.5700	-126.5794	-118.0181	-118.4811	-123.0737	-123.0114	-113.0334	-120.3230	-122.4774	-112.3084	-113.7681	-108.5786	-54.3870	-116.7623	-124.8720	-122.2886
15977.6360	-125.5595	-120.0205	-113.8262	-116.3698	-119.4705	-117.9899	-124.6532	-119.5915	-112.2131	-121.8336	-109.6832	-54.3870	-112.5524	-115.9695	-123.6616
16020.7030	-128.7861	-115.1682	-112.4306	-110.1096	-122.5314	-117.8860	-120.6779	-113.7521	-118.0747	-114.1951	-110.1050	-54.3870	-119.7396	-120.1236	-117.6601
16063.7690	-118.0520	-112.7038	-111.6923	-110.9867	-122.4144	-114.7513	-120.7362	-113.1181	-116.2978	-110.4653	-109.0548	-54.3870	-120.7243	-115.6514	-116.1353
16106.8350	-117.1083	-116.0568	-114.3274	-122.1066	-118.9918	-116.1962	-120.1401	-117.0805	-116.3741	-110.7457	-109.8263	-54.3870	-114.9057	-121.4774	-115.9668
16149.9020	-122.1448	-121.8386	-119.8717	-120.1804	-120.7613	-119.7463	-128.8786	-120.0313	-113.7463	-113.9202	-115.1216	-54.3870	-111.7628	-125.4875	-120.6756

Freq	0.10	0.20	0.30	0.125	0.225	0.325	0.150	0.250	0.350	0.175	0.275	0.375	0.100	0.2100	0.3100
16192.9680	-119.0849	-121.4436	-121.2126	-121.1040	-120.4494	-127.7778	-123.7604	-119.3434	-111.3143	-118.2975	-122.5022	-54.3870	-109.2030	-120.1966	-120.3382
16236.0350	-114.8264	-113.3307	-117.9141	-130.5955	-118.2048	-120.5627	-114.7338	-122.4263	-113.6162	-122.5276	-116.8280	-54.3870	-110.0739	-116.2886	-116.8041
16279.1010	-120.9657	-111.6724	-114.8528	-125.9463	-120.5809	-115.9462	-114.0772	-122.7736	-127.4078	-120.1957	-111.8629	-54.3870	-120.7986	-119.8579	-116.1936
16322.1670	-121.9910	-112.0650	-114.3383	-116.6030	-127.1993	-115.6877	-121.3885	-117.5755	-116.4298	-114.4610	-111.1597	-54.3870	-116.2738	-124.4841	-115.6256
16365.2340	-114.3772	-114.0068	-118.4112	-118.1460	-124.9176	-115.3885	-119.8191	-124.6933	-121.3113	-111.8226	-113.9627	-54.3870	-111.4968	-123.2592	-117.1238
16408.3000	-115.2697	-116.0324	-123.4732	-133.3223	-137.1161	-116.7327	-118.0532	-112.0394	-119.3123	-111.9630	-116.6960	-54.3870	-114.8484	-123.1524	-119.5027
16451.3670	-119.0161	-117.6406	-125.7994	-116.7137	-120.8988	-123.9334	-123.4340	-108.5839	-113.3782	-117.4801	-112.0760	-54.3870	-126.6645	-121.3102	-115.3722
16494.4330	-116.5054	-123.0099	-120.5992	-114.1443	-117.0809	-124.6171	-127.0896	-110.7746	-111.1750	-125.0323	-111.2099	-54.3870	-115.5496	-116.6757	-116.2501
16537.5000	-112.4955	-122.0401	-116.0109	-115.4110	-114.0592	-119.0045	-113.0329	-117.4011	-117.4181	-121.9054	-113.3430	-54.3870	-121.3745	-113.3910	-135.5407
16580.5660	-112.1197	-120.9619	-116.1657	-119.2122	-113.2945	-118.0846	-108.8948	-121.9694	-128.2054	-119.1438	-121.1105	-54.3870	-119.4076	-112.2290	-116.0678
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Freq	0.1.0	0.2.0	0.3.0	0.1.25	0.2.25	0.3.25	0.1.50	0.2.50	0.3.50	0.1.75	0.2.75	0.3.75	0.1.100	0.2.100	0.3.100
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20068.9450	-122.5653	-123.8889	-113.5066	-115.7317	-114.7723	-120.1183	-117.7060	-111.6733	-120.3063	-115.7629	-133.0212	-54.3870	-123.4864	-118.9014	-119.9686
20112.0110	-129.3450	-116.4132	-116.8926	-116.5959	-115.0403	-131.6088	-118.1252	-133.8392	-115.7075	-117.5688	-122.8297	-54.3870	-118.6692	-126.2913	-113.8369
20155.0780	-127.4905	-113.9487	-121.1047	-125.8403	-115.0000	-125.9585	-117.7939	-124.757	-113.4607	-128.7966	-116.0846	-54.3870	-122.6981	-123.1798	-110.0569
20198.1440	-120.8455	-117.4685	-126.5787	-124.5899	-117.1276	-115.6348	-114.9108	-127.0201	-119.6097	-119.0810	-115.2496	-54.3870	-122.2442	-130.8610	-108.5804

(lanjutan)
 Hasil Percobaan : Pengolahan Data Seat Ring No. 0

Freq	0.10	0.20	0.30	0.125	0.225	0.325	0.150	0.250	0.350	0.175	0.275	0.375	0.100	0.200	0.300
20241.2100	-114.7810	-123.7842	-122.3820	-121.2026	-119.9338	-114.2114	-114.0419	-122.7209	-119.5751	-119.7667	-125.7046	-54.3870	-121.0500	-116.4120	-113.6538
20284.2770	-114.5342	-117.4244	-114.8197	-127.1955	-117.7836	-124.3822	-116.1182	-115.9863	-112.7745	-128.4184	-125.4403	-54.3870	-116.5682	-114.0775	-120.1752
20327.3430	-114.5504	-115.7232	-111.1363	-122.9998	-114.6780	-112.5176	-122.7309	-113.1350	-111.3028	-121.4034	-119.7330	-54.3870	-112.8406	-118.5583	-116.4593
20370.4100	-113.4701	-116.8787	-111.9737	-116.1504	-113.7531	-108.6969	-128.1937	-110.7182	-111.7385	-117.5122	-114.4097	-54.3870	-113.1126	-119.8338	-114.5626
20413.4760	-111.9916	-117.4319	-118.0363	-115.7498	-114.9827	-109.9390	-128.8759	-111.2741	-113.8897	-116.4273	-115.0579	-54.3870	-116.8791	-116.5985	-112.9457
20456.5420	-111.2524	-116.3904	-122.9742	-117.1331	-116.7156	-113.1478	-119.2876	-116.1663	-115.7741	-118.3839	-115.4589	-54.3870	-118.2674	-115.3986	-113.7822
20499.6090	-112.3626	-116.5122	-120.5448	-115.9480	-120.4979	-122.8449	-114.7843	-123.2303	-113.3618	-123.7210	-119.1374	-54.3870	-114.0404	-116.6901	-114.5725
20542.6720	-117.7657	-114.2238	-122.5280	-114.9341	-119.1664	-116.5699	-113.6914	-133.2711	-110.7282	-133.4040	-126.5224	-54.3870	-114.8062	-114.7564	-114.4097
20585.7420	-124.9366	-110.1859	-116.3580	-114.0688	-113.1566	-112.0199	-117.1390	-117.7328	-110.9266	-127.3316	-119.9738	-54.3870	-114.9924	-115.7671	-115.1709
20628.8080	-114.3815	-111.0334	-117.5735	-114.3080	-114.0666	-113.0649	-120.8182	-114.3193	-117.7281	-133.3504	-118.1811	-54.3870	-113.6120	-118.9447	-115.1305
20671.8750	-110.0401	-121.4962	-115.8821	-115.9233	-117.8761	-114.6900	-112.9506	-113.6522	-117.8582	-116.9001	-119.5092	-54.3870	-114.6216	-120.2009	-112.3280
20714.9410	-108.9167	-123.2585	-111.4925	-114.4530	-120.4906	-116.1688	-112.4333	-115.3399	-115.9815	-111.5519	-122.1986	-54.3870	-118.9746	-120.3220	-115.3063
20759.0070	-111.0820	-124.9533	-114.3785	-116.3678	-116.4330	-113.8462	-117.3763	-111.6067	-120.4023	-117.2751	-120.8021	-54.3870	-119.7283	-120.5772	-120.5653
20803.0740	-113.3084	-123.9229	-122.2912	-121.2567	-113.1988	-110.2391	-129.5907	-111.6067	-120.4023	-117.2751	-120.8021	-54.3870	-114.6216	-120.2009	-112.3280
20844.1400	-113.1579	-119.2915	-116.5963	-123.8483	-112.9546	-111.3500	-130.7576	-109.4382	-115.1872	-122.4847	-121.2343	-54.3870	-113.5525	-120.1506	-130.9366
20887.2070	-113.3239	-120.3611	-114.0217	-125.1242	-114.0343	-118.6497	-124.4622	-111.3175	-111.8088	-114.9054	-115.1603	-54.3870	-113.8177	-118.2602	-114.0334
20930.2730	-116.6538	-121.0659	-114.1001	-118.8048	-117.6830	-131.0224	-114.5436	-132.5305	-112.1652	-110.8847	-112.1330	-54.3870	-129.9018	-123.8284	-110.9281
20973.3390	-118.9442	-119.6144	-113.2179	-119.6291	-116.5674	-120.5446	-112.0723	-111.2952	-113.6958	-110.9777	-110.5978	-54.3870	-114.2416	-126.0139	-112.4939
21016.4060	-117.0443	-115.3199	-112.0559	-123.5526	-115.7215	-116.7612	-109.9694	-111.7492	-114.9503	-114.0608	-109.2599	-54.3870	-113.3293	-134.0669	-121.4932
21059.4720	-115.2015	-112.9936	-116.1732	-116.2369	-122.3851	-116.5744	-110.0688	-115.9647	-117.2121	-115.0305	-111.9303	-54.3870	-115.1866	-117.3476	-117.2343
21145.6050	-115.8996	-123.3699	-116.5943	-117.5222	-118.6974	-152.2884	-117.7936	-114.7033	-122.4351	-121.0169	-112.6908	-54.3870	-122.0447	-112.5158	-116.6502
21188.6710	-118.7527	-118.2037	-113.3002	-122.8555	-121.1305	-117.0726	-119.5361	-113.4632	-124.1295	-118.0429	-111.1058	-54.3870	-121.7256	-118.9150	-119.0776
21231.7380	-126.3024	-119.3731	-112.5083	-130.3029	-118.2633	-115.9566	-117.9779	-114.6438	-119.7163	-114.3746	-117.6478	-54.3870	-133.4260	-124.5582	-127.3562
21274.8040	-129.3187	-117.9638	-115.1862	-118.3302	-124.7693	-116.9573	-111.8285	-118.5456	-112.5932	-115.0777	-118.4368	-54.3870	-125.5049	-119.4270	-118.1247
21317.8710	-118.6159	-113.8429	-118.6934	-110.5751	-120.1240	-116.1990	-110.0999	-116.9972	-109.4384	-117.4487	-113.6021	-54.3870	-137.3503	-114.3828	-113.4438
21360.9370	-114.7713	-113.7871	-115.4732	-108.2821	-113.4751	-112.3096	-111.5292	-116.2302	-109.6374	-119.8082	-114.4052	-54.3870	-119.2053	-110.3743	-112.0551
21404.0030	-115.5650	-112.7624	-117.0665	-109.1836	-115.3338	-109.2984	-114.1235	-121.4876	-113.2160	-116.9010	-121.0947	-54.3870	-114.9926	-111.4398	-111.5506
21447.0700	-124.1053	-112.4301	-124.0433	-112.1501	-115.2312	-111.1485	-120.2928	-112.4230	-116.1777	-118.3178	-143.1583	-54.3870	-114.9343	-118.0037	-113.4272
21490.1360	-115.2018	-114.2241	-122.0993	-122.1473	-115.1908	-117.5852	-118.5219	-114.4924	-115.6597	-116.5917	-130.9100	-54.3870	-112.1607	-121.1153	-114.5906
21533.2030	-117.2002	-114.3607	-116.5717	-118.5571	-119.8560	-117.9142	-119.9985	-129.3563	-122.4461	-115.1657	-156.6364	-54.3870	-110.0816	-118.2871	-114.7068
21576.2690	-117.2076	-114.0041	-118.4277	-114.5685	-114.3999	-111.8872	-134.1957	-132.3906	-119.1927	-118.3754	-122.6437	-54.3870	-112.3834	-118.0019	-114.6363
21619.3350	-112.0489	-114.7328	-120.3238	-116.1250	-113.4694	-109.3077	-119.1514	-131.3405	-115.4552	-118.6272	-116.2793	-54.3870	-120.6631	-117.2600	-113.6224
21662.4020	-110.8168	-119.3010	-117.2438	-117.3772	-121.5622	-109.4995	-115.7766	-121.3180	-116.8273	-118.0007	-118.4542	-54.3870	-126.5916	-114.0754	-113.0428
21705.4680	-114.0336	-122.2157	-124.2514	-112.6503	-121.5632	-111.4441	-114.1643	-115.1764	-116.4211	-136.7299	-118.0525	-54.3870	-119.6193	-112.2400	-115.9522
21748.5350	-121.4027	-120.7391	-114.6974	-112.6631	-124.2503	-111.1441	-112.8075	-114.1602	-116.8523	-136.8788	-114.5442	-54.3870	-124.5120	-109.3239	-126.6705
21791.6010	-124.3165	-117.8618	-109.8302	-118.8010	-118.0509	-112.1454	-111.8300	-116.6878	-122.2768	-117.5293	-114.9900	-54.3870	-111.2927	-107.6102	-124.3330
21834.6670	-118.3267	-117.1280	-109.2023	-125.1238	-116.4757	-118.1281	-136.4440	-124.6541	-144.4113	-112.6694	-117.2137	-54.3870	-111.0795	-108.9162	-128.4222
21877.7340	-115.8963	-119.1602	-110.3873	-117.5379	-115.3877	-117.8479	-120.7646	-124.4579	-143.4509	-110.6473	-113.7264	-54.3870	-113.2875	-114.5043	-115.3409
21920.8000	-121.3980	-123.8558	-112.5593	-116.9577	-113.1845	-114.9716	-118.1478	-123.3690	-118.4259	-111.2981	-112.8651	-54.3870	-118.7408	-117.7171	-114.2665
21963.8670	-123.1569	-132.3081	-115.6263	-117.6904	-112.4151	-114.3598	-118.9920	-129.4745	-113.4100	-113.1708	-113.7727	-54.3870	-121.2656	-110.8517	-118.3999
22006.9330	-115.7760	-125.2791	-121.3157	-117.1639	-112.8057	-112.2757	-125.4761	-128.8427	-116.6693	-116.5661	-118.0424	-54.3870	-115.3687	-108.8588	-122.0800
-109.3948	-108.6886	-108.9821	-104.7701	-106.5825	-106.5466	-107.8572	-107.0675	-107.7405	-106.8454	-106.9233	-106.9394	-107.9251	-106.9394	-107.9251	-102.6399

Freq	1.1.0	1.2.0	1.3.0	1.1.25	1.2.25	1.3.25	1.1.50	1.2.50	1.3.50	1.1.75	1.2.75	1.3.75	1.1.100	1.2.100	1.3.100
43.0560	-46.5871	-43.8647	-46.0059	-40.9545	-46.9002	-26.3118	-34.4382	-36.5848	-38.8391	-46.6292	-52.4644	-38.6337	-39.9392	-56.7833	-26.7903
86.1320	-44.5973	-40.0343	-39.3835	-35.6535	-36.0885	-22.4451	-27.6921	-29.8784	-33.3579	-35.9045	-50.1759	-30.9280	-32.3697	-29.3887	-20.5792
129.1990	-46.1082	-39.9284	-35.4048	-34.5054	-29.1957	-24.1133	-26.4412	-27.7946	-30.7486	-33.0025	-48.7080	-28.7074	-29.9637	-27.3970	-18.8785
172.2650	-34.7027	-39.0270	-33.0367	-35.8238	-25.8791	-25.8564	-30.3765	-29.8671	-30.8955	-38.7314	-40.9210	-33.5849	-31.9796	-29.6116	-20.1876
215.3320	-34.4345	-39.4310	-33.6861	-38.8465	-26.6245	-33.5035	-40.1423	-33.9436	-35.8710	-52.0749	-43.7603	-33.8891	-38.6475	-34.8303	-24.3858
258.3980	-41.1984	-45.1262	-39.1480	-45.7822	-32.3030	-56.2165	-47.8688	-39.8606	-49.2934	-49.0861	-57.4784	-37.0193	-51.5309	-42.9732	-32.9456
301.4640	-56.3646	-55.2780	-47.9518	-55.7643	-40.8772	-52.9151	-52.4932	-48.3613	-64.5076	-66.4055	-59.9896	-49.3782	-56.0488	-49.7099	-49.7176
344.5310	-57.7940	-56.5943	-47.1439	-51.6284	-44.4424	-49.0279	-55.5391	-41.9377	-65.4683	-60.6899	-57.8575	-54.8704	-52.1251	-50.9067	-58.7316
387.5970	-53.0721	-55.1476	-50.3589	-50.3115	-45.5044	-49.2166	-56.8007	-50.7904	-60.8237	-59.2830	-59.1647	-51.4457	-55.6365	-52.4869	-56.9544
430.6640	-48.7191	-54.2895	-61.3646	-52.0346	-47.0567	-52.9758	-62.0896	-54.5087	-58.3060	-62.6920	-63.3294	-54.3918	-63.2830	-59.6381	-60.9959
473.7300	-47.9758	-53.1061	-73.9739	-57.7034	-48.1471	-45.3832	-76.0247	-54.5027	-59.8634	-68.1379	-69.6796	-64.1306	-63.2340	-71.3909	-63.6689
516.7960	-51.0336	-55.0988	-62.8919	-59.2913	-51.1102	-58.7402	-71.3535	-66.8351	-64.7777	-79.2394	-74.0904	-82.9279	-71.0145	-74.4380	-67.3264
559.8630	-54.9515	-60.0311	-59.3964	-61.2598	-55.2127	-48.8192	-70.3463	-76.0456	-68.3696	-82.3937	-76.0509	-71.4023	-72.0831	-80.1415	-70.2194
602.9290	-56.5723	-63.5208	-63.8622	-70.6779	-59.8321	-48.5609	-67.1159	-79.3315	-67.6966	-75.9182	-78.2809	-69.5221	-71.2283	-71.3537	-68.0188
645.9960	-61.3667	-65.7329	-69.8770	-72.0765	-69.0203	-51.2265	-66.5447	-66.5558	-70.0165	-72.3079	-85.2211	-75.2733	-71.7870	-68.3391	-67.6020
689.0620	-71.1996	-69.8708	-60.8140	-73.4406	-77.7977	-56.0334	-69.8651	-63.3100	-79.9605	-70.5202	-77.4492	-70.2697	-69.4509	-68.6976	-74.0695
732.1280	-63.0490	-67.2019	-60.2333	-68.4106	-71.5375	-59.1952	-73.7824	-65.5203	-72.8413	-73.2190	-77.7289	-72.6292	-69.6373	-75.7981	-72.0404
775.1950	-59.3736	-55.8745	-63.1550	-62.7737	-67.9024	-62.4955	-80.3634	-69.5973	-68.4560	-70.5225	-85.8729	-61.9394	-77.5317	-75.3616	-67.5299
818.2610	-58.6315	-52.9446	-72.3305	-58.1325	-54.0943	-60.6113	-81.2898	-61.9700	-68.9380	-68.6552	-73.6264	-61.2140	-65.1581	-65.3185	-65.7837
861.3280	-59.4495	-54.3730	-70.6069	-57.0043	-52.3263	-50.3442	-88.4921	-61.9921	-70.3295	-67.4277	-69.2127	-62.1503	-65.2509	-60.7660	-63.8845
904.3940	-61.0685	-60.1128	-62.4939	-62.7858	-60.7883	-44.7724	-62.1289	-73.0858	-67.6646	-68.2255	-70.6339	-64.5100	-65.9727	-66.4921	-64.9699
947.4600	-58.9466	-76.8525	-62.2611	-56.9777	-51.4555	-46.6384	-61.7792	-70.2299	-77.3193	-70.7308	-68.6145	-67.2379	-65.9727	-66.4921	-71.4634
990.5270	-60.0646	-73.3577	-65.1911	-56.8617	-48.8480	-44.6659	-67.8644	-68.8562	-68.9979	-70.3531	-73.0593	-74.9040	-63.4021	-76.6069	-79.7332
1033.5930	-72.6983	-71.4555	-67.1797	-56.9822	-49.9444	-44.7724	-62.1289	-73.0858	-67.6646	-78.6360	-71.5661	-72.4023	-65.5782	-76.2860	-79.6754
1076.6600	-62.8674	-69.8805	-64.5295	-60.5695	-53.3912	-47.7832	-58.8861	-76.5612	-70.1847	-83.3537	-71.9422	-66.3710	-69.6448	-69.0968	-69.7768
1119.7260	-62.2401	-68.9102	-64.7132	-62.9506	-58.2021	-54.6563	-61.2433	-72.8683	-71.5750	-86.3407	-67.6325	-67.9658	-70.5702	-68.6415	-67.2147
1205.8590	-71.5314	-72.9003	-69.7117	-62.4054	-55.2966	-58.3246	-65.4803	-77.8223	-73.9518	-84.4556	-67.5393	-73.7955	-71.1041	-70.4823	-69.5060
1248.9250	-66.6136	-80.6329	-76.9628	-64.1240	-55.3872	-61.5623	-69.9797	-78.9849	-77.5416	-81.4736	-79.4333	-82.2409	-75.1984	-74.9574	-87.0479
1291.9920	-70.5010	-72.8130	-71.3270	-63.5550	-59.0754	-42.8790	-81.7570	-70.5155	-79.7676	-86.9504	-77.9479	-84.4712	-76.8745	-80.8197	-78.0303
1335.0580	-73.3000	-73.6547	-68.4831	-65.6709	-52.0936	-40.8182	-85.2654	-69.9158	-94.8267	-79.8265	-78.0583	-81.1142	-69.1075	-85.9277	-78.0007
1378.1250	-73.6025	-78.1912	-71.4534	-71.9684	-53.7334	-44.5164	-76.5238	-73.3394	-78.3769	-78.2803	-80.5605	-79.6091	-76.8106	-78.5305	-79.1691
1421.1910	-65.8952	-85.6105	-74.9617	-78.7320	-60.7865	-53.8151	-73.0095	-74.7382	-74.8267	-78.9556	-85.1446	-77.7942	-76.8611	-75.2732	-83.4650
1464.2570	-66.2206	-68.8485	-68.7366	-74.9623	-66.4273	-51.9393	-73.4875	-73.8118	-75.7056	-78.9556	-80.5605	-79.6091	-76.8106	-78.5305	-79.1691
1507.3240	-72.8811	-64.3965	-70.3457	-71.8303	-62.4657	-48.9081	-81.4856	-76.1233	-79.3536	-81.5373	-87.1812	-77.2033	-78.1923	-71.3532	-85.3384
1550.3900	-68.4143	-66.7077	-69.8076	-70.5383	-58.4064	-53.0896	-90.0855	-80.3552	-83.9393	-85.3574	-86.8821	-76.2659	-82.9654	-70.4855	-80.3156
1593.4570	-65.0886	-73.0241	-66.9491	-75.9978	-57.9168	-59.9561	-87.5555	-84.6538	-92.4931	-72.6484	-75.4372	-74.9215	-80.7604	-70.8496	-75.9243
1636.5230	-68.4858	-74.5831	-65.3329	-77.2253	-59.1732	-59.4691	-84.8932	-85.9592	-80.4889	-78.2803	-80.5605	-79.6091	-76.8106	-78.5305	-79.1691
1679.5890	-75.2593	-74.2521	-63.7638	-75.2957	-60.8244	-60.8340	-74.3022	-74.5702	-77.4203	-79.7011	-63.2243	-79.7480	-66.7115	-79.1858	-72.4219
1722.6560	-75.4359	-84.6880	-64.0149	-83.4424	-63.5564	-62.6317	-69.2716	-72.5113	-83.1703	-59.0082	-64.6352	-79.4238	-65.5986	-80.3104	-72.1611
1765.7220	-73.6812	-79.3192	-70.3474	-78.4551	-68.8234	-62.6035	-69.3274	-75.7753	-84.8189	-66.5042	-69.8275	-79.7142	-69.8246	-73.0874	-71.1843
1808.7890	-74.5931	-80.7221	-78.4920	-85.2542	-81.8418	-62.7377	-73.9181	-80.5847	-86.0792	-72.3232	-79.2486	-86.0266	-76.3244	-72.8010	-70.3125
1851.8550	-82.8130	-80.0018	-71.0968	-76.8314	-65.6370	-73.5254	-77.5730	-82.3583	-84.5100	-72.5555	-86.2649	-88.4676	-79.2304	-76.0432	-72.5666
1894.9210	-80.3638	-76.7798	-73.7654	-73.1107	-63.4732	-70.3194	-80.7265	-83.9065	-79.1536	-76.8100	-75.4609	-83.0663	-78.9859	-74.5588	-73.2976

Freq	1.1.0	1.2.0	1.3.0	1.1.25	1.2.25	1.3.25	1.1.50	1.2.50	1.3.50	1.1.75	1.2.75	1.3.75	1.1.100	1.2.100	1.3.100
1937.9880	-69.4863	-79.5885	-82.1041	-75.3902	-66.1597	-78.9349	-78.8884	-83.1508	-78.1208	-83.7938	-73.2607	-81.5253	-78.0382	-70.8537	-71.3748
1981.0540	-62.8534	-78.4330	-73.6267	-88.2099	-65.1424	-67.8440	-74.4207	-82.6254	-78.9772	-83.8279	-74.7350	-82.2732	-78.5663	-72.0355	-72.6512
2024.1210	-62.5820	-70.8696	-68.6622	-77.3402	-68.1753	-65.3858	-75.0952	-79.1797	-78.9587	-82.3643	-78.6373	-90.5298	-83.1873	-75.3046	-71.8477
2067.1870	-67.5847	-66.8493	-67.9987	-70.4902	-77.8485	-65.4218	-77.8764	-74.3803	-77.8822	-84.2742	-85.6890	-82.6522	-83.6814	-78.4419	-75.3674
2110.2530	-59.7287	-62.3870	-67.5124	-68.8830	-81.7607	-77.6817	-78.4726	-70.2796	-75.6297	-88.6649	-102.0541	-75.5152	-74.4992	-77.3168	-86.7794
2153.3200	-55.1284	-65.0340	-57.1228	-71.4489	-69.7399	-63.6073	-79.9945	-68.0407	-73.9224	-76.9381	-99.0665	-74.2808	-71.2956	-73.0458	-78.3856
2196.3860	-56.4888	-78.7652	-54.2743	-76.2554	-66.7471	-61.6657	-83.2330	-69.6723	-75.7132	-78.3388	-91.3742	-74.0895	-73.9265	-71.4081	-77.0124
2239.4530	-62.8545	-67.5891	-57.9375	-74.4010	-66.7471	-67.5009	-84.4146	-74.7088	-80.5111	-86.5677	-86.4643	-72.0715	-81.5567	-74.6950	-80.7777
2282.5190	-71.9009	-74.0170	-65.5199	-74.1762	-65.3523	-71.5429	-83.0119	-82.2552	-83.1981	-90.4814	-87.1154	-75.9000	-80.3375	-85.6501	-88.7590
2325.5850	-78.6270	-79.1324	-68.8629	-74.8699	-62.5218	-68.5553	-92.3372	-92.3407	-87.4377	-87.4758	-86.9327	-85.4904	-81.3073	-108.8145	-113.9963
2368.6520	-75.3556	-72.0277	-70.6238	-76.7203	-62.5808	-67.7042	-97.3561	-102.0122	-91.4046	-90.0402	-86.4237	-90.9954	-86.7198	-91.2586	-91.1968
2411.7180	-75.0926	-63.8371	-82.5809	-80.0420	-64.1360	-76.3073	-102.9517	-93.4397	-89.7745	-90.8252	-86.0561	-93.0540	-90.6055	-93.4057	-89.4552
2454.7850	-77.4475	-57.7538	-73.8663	-84.5604	-65.7893	-74.4329	-90.5946	-99.4731	-87.4966	-86.7563	-85.5203	-92.7789	-89.4142	-93.5550	-89.2362
2497.8510	-86.0219	-56.6304	-67.0599	-88.2000	-67.3483	-68.4747	-92.8606	-98.3244	-88.1759	-88.2048	-86.9759	-89.2099	-94.3354	-88.3508	-85.0247
2540.9170	-70.4561	-58.7588	-66.7844	-76.5634	-66.5438	-63.8633	-92.3072	-92.4191	-90.9837	-98.0391	-93.7306	-93.4983	-98.8427	-89.0947	-84.0011
2583.9840	-63.3969	-62.8376	-80.0114	-72.9763	-62.9475	-63.5603	-84.7293	-91.9182	-91.0983	-94.1750	-106.2957	-104.2158	-88.9428	-87.5315	-85.9762
2627.0500	-64.9778	-67.2880	-65.3496	-76.9194	-62.8551	-66.2368	-84.0881	-95.2183	-97.2394	-90.5951	-96.3884	-88.5131	-88.0187	-85.8176	-91.7157
2670.1170	-73.3358	-71.3728	-62.5933	-83.7338	-63.5805	-64.8919	-88.7766	-91.8206	-100.7053	-91.2355	-92.9187	-82.4501	-93.2622	-87.9433	-92.5587
2713.1830	-86.2643	-79.1447	-63.1490	-79.7370	-63.5738	-69.9448	-91.6990	-90.5185	-92.5566	-88.4022	-89.8270	-84.4181	-92.6354	-95.8671	-92.7124
2756.2500	-79.7839	-75.6866	-67.6277	-74.7979	-59.2872	-61.0858	-89.8775	-93.5965	-91.6923	-87.2023	-87.8273	-94.5957	-94.8416	-99.6983	-96.2462
2799.3160	-79.7113	-77.4277	-62.8413	-77.0861	-57.0182	-62.7625	-92.1599	-112.0191	-93.7600	-89.2528	-86.2495	-97.0552	-98.1628	-94.6347	-95.6840
2842.3820	-79.1552	-82.2407	-58.4394	-78.1010	-59.7084	-60.1198	-96.3519	-95.2894	-103.6951	-91.6693	-85.1643	-97.8256	-98.4818	-112.5857	-90.0085
2885.4490	-78.3066	-71.7654	-59.7363	-70.4993	-70.7589	-53.4794	-99.1540	-95.9838	-96.8494	-90.8059	-86.6850	-94.1908	-94.3629	-96.2971	-92.5273
2928.5150	-71.6506	-69.9154	-63.6868	-68.5464	-74.0806	-59.6707	-102.7042	-97.5117	-94.8119	-95.4393	-94.2699	-92.7897	-93.6205	-89.1516	-99.9048
2971.5820	-69.3974	-70.5909	-66.6141	-70.5408	-74.2534	-65.7262	-104.7556	-87.2352	-92.7401	-95.4393	-94.2699	-92.7897	-93.6205	-89.1516	-99.9048
3014.6480	-68.2578	-73.3420	-68.9054	-81.3708	-72.7157	-60.7067	-107.3947	-84.1503	-92.3414	-95.5636	-104.3211	-93.3190	-90.1111	-89.8742	-96.6993
3057.7140	-68.9838	-78.0626	-70.3178	-83.8599	-68.3017	-63.1717	-95.3205	-86.7022	-96.2559	-103.4563	-92.7614	-94.9222	-92.0846	-101.9303	-91.1939
3100.7810	-71.4838	-82.6220	-72.2419	-83.8599	-68.6342	-75.1480	-99.3326	-99.7340	-94.0693	-108.2538	-91.4389	-98.8897	-98.7466	-96.1528	-88.4019
3143.8470	-78.5875	-85.8813	-77.6326	-84.4712	-70.2607	-64.3806	-96.2486	-85.1984	-91.2743	-98.8871	-92.0276	-110.6330	-93.4891	-97.0067	-87.1480
3186.9140	-81.6185	-89.7201	-90.6439	-85.3671	-68.8467	-59.6812	-88.3801	-82.4347	-97.6579	-95.7304	-91.8065	-97.8941	-96.7716	-105.7828	-87.2716
3229.9800	-81.2153	-99.3089	-81.8826	-82.7030	-68.4106	-58.1872	-87.3434	-82.3591	-100.7077	-98.7214	-89.1524	-97.8378	-91.0400	-92.1533	-90.0179
3273.0460	-86.1847	-88.4418	-79.3264	-79.1292	-64.3505	-61.8094	-87.2352	-81.7772	-103.9725	-101.8106	-88.0988	-95.1258	-88.7241	-93.6286	-95.8656
3316.1130	-78.3529	-79.8360	-80.3591	-84.3683	-58.1572	-83.3815	-86.8326	-81.3519	-98.3103	-103.2825	-91.9679	-94.0304	-88.9784	-100.5364	-98.3782
3359.1790	-72.3315	-77.3836	-72.1341	-76.7029	-55.0793	-62.8332	-93.6820	-82.3336	-106.6073	-107.9965	-94.2171	-99.3220	-88.8161	-93.2234	-93.1795
3402.2460	-70.2535	-79.1424	-68.5220	-72.1148	-56.5865	-60.5510	-95.1062	-83.0148	-100.9639	-112.7449	-90.9511	-107.6224	-93.7218	-88.2183	-89.2755
3445.3120	-71.1089	-86.4066	-69.7321	-75.0596	-62.6093	-61.4881	-89.8271	-83.4493	-105.9725	-101.2777	-91.0142	-96.2680	-103.7897	-89.7922	-88.3337
3488.3780	-73.7822	-92.8131	-72.9130	-78.5820	-68.8008	-63.2263	-90.7199	-86.4882	-105.9756	-97.0803	-93.5093	-92.8123	-99.1642	-97.6260	-88.3478
3531.4450	-80.9516	-83.4602	-74.3446	-80.9389	-69.0063	-67.2710	-94.7385	-92.4758	-97.7098	-100.8474	-94.9689	-93.9392	-91.1494	-107.8126	-87.8951
3574.5110	-86.7619	-80.1009	-74.4899	-91.8703	-70.2110	-73.2308	-104.8048	-92.3965	-98.7292	-100.9924	-94.7093	-95.6444	-88.8567	-96.0231	-88.1436
3617.5780	-82.6682	-80.4567	-75.0664	-88.0897	-72.6884	-72.5437	-99.3602	-91.5990	-91.2702	-94.1989	-92.6971	-96.6536	-92.0304	-93.5796	-90.8227
3660.6440	-80.0318	-85.4953	-81.2762	-89.7828	-72.2536	-70.5974	-92.1795	-90.3942	-88.3506	-91.4076	-89.0919	-96.3032	-87.2370	-96.2904	-98.7510
3703.7100	-74.3529	-85.5826	-83.0933	-94.5277	-66.9751	-73.0536	-88.1021	-87.4531	-91.4655	-90.6528	-86.6619	-94.0428	-83.5368	-93.7532	-92.5742
3746.7770	-70.2464	-82.0028	-73.6029	-88.3615	-67.4537	-76.0297	-88.7583	-85.5301	-93.0742	-90.8511	-85.7844	-92.7046	-83.6516	-91.3540	-84.5259

Freq	1.1.0	1.2.0	1.3.0	1.1.25	1.2.25	1.3.25	1.1.50	1.2.50	1.3.50	1.1.75	1.2.75	1.3.75	1.1.100	1.2.100	1.3.100
3789.8430	-69.1457	-85.3852	-68.2639	-88.4526	-78.5738	-78.6124	-94.7729	-87.7698	-88.0596	-91.0357	-84.2064	-97.7626	-87.7868	-99.3557	-82.8217
3832.9100	-68.4221	-84.5292	-67.0162	-87.3472	-84.2179	-82.6859	-92.8646	-95.7285	-87.4621	-91.8749	-83.3576	-91.1288	-88.6755	-85.1558	-85.9937
3875.9760	-68.4837	-87.9485	-67.4244	-91.3752	-77.1399	-88.0697	-97.7267	-97.3420	-92.9083	-95.4829	-85.9381	-85.9253	-89.7974	-85.5691	-94.3903
3919.0420	-71.2886	-85.1925	-68.3800	-85.5561	-72.2677	-88.5560	-100.3764	-93.8619	-93.4341	-101.0033	-91.7742	-87.9918	-127.2555	-99.5203	-94.4988
3962.1090	-77.5153	-84.5351	-72.2477	-83.3806	-75.7599	-87.1535	-98.7367	-93.5690	-94.1671	-93.8474	-103.4368	-92.0759	-94.7043	-95.9701	-92.1180
4005.1750	-84.1198	-92.7272	-77.6381	-84.9720	-90.9315	-80.7803	-96.6149	-90.2379	-101.1446	-88.7478	-104.3846	-100.3063	-101.5653	-94.7472	-86.7743
4048.2420	-86.2991	-93.9259	-75.0760	-92.0339	-79.0405	-79.2444	-89.8909	-91.5551	-105.2040	-89.5428	-102.0014	-105.0064	-100.9595	-91.3619	-82.5451
4091.3080	-80.5754	-89.2346	-70.7606	-107.4811	-77.8243	-79.9371	-89.8864	-97.3670	-104.9720	-86.8468	-93.1028	-88.8660	-102.5660	-87.2618	-81.1059
4134.3750	-78.0851	-82.5091	-70.9077	-93.3380	-77.3021	-80.1204	-92.5159	-101.9166	-104.7638	-86.8468	-93.1028	-88.8660	-90.3429	-86.5647	-82.4237
4177.4410	-80.8354	-75.9070	-72.8040	-87.0570	-76.7820	-77.2010	-95.5041	-101.4938	-103.4901	-88.9814	-91.0316	-85.6595	-85.8616	-90.5027	-86.9172
4220.5070	-84.4630	-73.2451	-73.9316	-85.0990	-80.0748	-74.3231	-99.1951	-100.1965	-99.4252	-96.6045	-93.1030	-88.6193	-89.1519	-95.7184	-95.0922
4263.5740	-80.7362	-76.4781	-73.7649	-85.8701	-84.2423	-73.1093	-113.2311	-97.0458	-93.9385	-107.6505	-122.3184	-93.5364	-119.0587	-96.1844	-104.3656
4306.6400	-80.4017	-89.0199	-75.9490	-86.2554	-82.4565	-73.6704	-104.6450	-94.3556	-91.5981	-94.9998	-93.6039	-95.0872	-95.8219	-98.2710	-102.9937
4349.7070	-81.6305	-87.1282	-80.4542	-90.8878	-81.8924	-75.3876	-97.7777	-91.5124	-92.7504	-94.0295	-94.1826	-100.9235	-105.0214	-109.9257	-100.9340
4392.7730	-81.9470	-86.9360	-84.1935	-94.7940	-80.6304	-79.2852	-101.1605	-90.6601	-98.5469	-92.4192	-106.4839	-105.6155	-85.3410	-94.0411	-94.7096
4435.8390	-83.1025	-85.2821	-83.0978	-88.2639	-81.2475	-89.3585	-88.2645	-88.9893	-93.8911	-83.4404	-98.0343	-94.4452	-77.3470	-87.5862	-86.3402
4478.9060	-87.4528	-85.3332	-83.1071	-86.3245	-86.1610	-88.8819	-85.6904	-91.3515	-89.2764	-77.0546	-92.3050	-93.0664	-75.5403	-82.4665	-80.7539
4521.9720	-84.9644	-89.9066	-84.0797	-87.9240	-80.6517	-85.2411	-88.2448	-83.0825	-86.0553	-74.1607	-85.6172	-79.3901	-76.3002	-84.9189	-78.7582
4565.0390	-80.5545	-82.3175	-88.5986	-90.2409	-75.9288	-81.8445	-82.7784	-76.3749	-86.4467	-75.3922	-82.2280	-75.3944	-76.8790	-84.6040	-79.0767
4608.1050	-77.7810	-80.0110	-83.5676	-91.8841	-77.5153	-81.7523	-84.6505	-78.2924	-90.5272	-83.5151	-81.9664	-78.8686	-88.6310	-78.0603	-79.3498
4651.1710	-86.0938	-86.0004	-84.8198	-95.3983	-82.4208	-83.0291	-87.8219	-88.0066	-98.6923	-87.4441	-99.3957	-90.4232	-83.0264	-99.1540	-91.3929
4694.2380	-83.8913	-82.6828	-81.4494	-91.1551	-78.2122	-87.2393	-82.8871	-88.6737	-94.0113	-88.9576	-97.4991	-84.8282	-81.8125	-84.6929	-90.7555
4737.3040	-86.9004	-80.1752	-83.8351	-89.0711	-79.5320	-89.3421	-83.9178	-93.7991	-92.6459	-95.4427	-98.5984	-83.9015	-84.8240	-81.4536	-91.8039
4780.3710	-95.9061	-83.0264	-86.3679	-88.6998	-84.5310	-82.2765	-92.4919	-96.8685	-93.8860	-92.7857	-112.5824	-86.2346	-91.2331	-83.4384	-98.5629
4823.4370	-95.9061	-83.0264	-86.3679	-88.6998	-84.5310	-82.2765	-92.4919	-96.8685	-93.8860	-92.7857	-112.5824	-86.2346	-91.2331	-83.4384	-98.5629
4866.5030	-94.1881	-91.5583	-85.4120	-87.6447	-91.8787	-79.9449	-100.3699	-93.9277	-99.6169	-119.2193	-86.4645	-95.5048	-90.6673	-89.9169	-90.2848
4909.5700	-95.7385	-101.8312	-88.7391	-86.3308	-90.9652	-79.2699	-97.2869	-93.2984	-97.2711	-119.2193	-86.4645	-95.5048	-90.6673	-89.9169	-90.2848
4952.6360	-99.1661	-95.8839	-88.7391	-85.6308	-85.1974	-81.5534	-100.9249	-95.6070	-94.5480	-91.0517	-88.2042	-100.4777	-75.7085	-102.2574	-83.4240
4995.7030	-89.6697	-96.7179	-89.6279	-86.2150	-83.0438	-81.0740	-98.8225	-97.3223	-97.7810	-91.5821	-90.1709	-94.9432	-78.6971	-88.4273	-85.7057
5038.7690	-89.3858	-97.0583	-92.3197	-89.5001	-84.9519	-81.9743	-97.4106	-95.6750	-105.8952	-91.5821	-90.1709	-94.9432	-85.4868	-87.4454	-93.7029
5081.8350	-95.9343	-92.9320	-95.3444	-96.3879	-85.6549	-84.6049	-100.5938	-96.3012	-102.3546	-94.4504	-92.9510	-106.4407	-92.3318	-88.2125	-87.9141
5124.9020	-90.9791	-92.3548	-95.2300	-100.9799	-87.1466	-84.4154	-97.9887	-96.8079	-96.2941	-92.8186	-98.7321	-97.3512	-101.1883	-89.9462	-95.8039
5167.9680	-88.3532	-102.1884	-94.2270	-123.6635	-95.2996	-84.5910	-96.6873	-97.2737	-95.8829	-93.6443	-96.5215	-94.3356	-104.7248	-99.0441	-96.2159
5211.0350	-93.0918	-97.4992	-105.3131	-99.2783	-107.1788	-85.2518	-101.5641	-94.8167	-96.6207	-92.5537	-98.4496	-92.2527	-97.1477	-97.4872	-92.2916
5254.1010	-100.9221	-95.7578	-101.7391	-96.0245	-102.6101	-86.1017	-106.0202	-92.6190	-92.1873	-90.9312	-98.4496	-92.1152	-96.4649	-90.0537	-88.3018
5297.1670	-99.2708	-106.1141	-107.5380	-94.0817	-95.8737	-87.1821	-91.9492	-95.4409	-87.9821	-90.4547	-90.2637	-91.4509	-100.1311	-92.1245	-85.6671
5340.2340	-96.7614	-94.8001	-100.6718	-90.0255	-93.0078	-89.8637	-87.8501	-92.5239	-88.3067	-89.0220	-90.6770	-91.6071	-100.3474	-93.8152	-84.5876
5383.3000	-90.2256	-88.7042	-94.2250	-85.4811	-89.8266	-101.5345	-90.1283	-87.3130	-105.2380	-88.1739	-90.4202	-94.3837	-94.5572	-87.2338	-85.3299
5426.3670	-86.1286	-87.6192	-86.2879	-84.9447	-85.2799	-89.6697	-98.1319	-83.4130	-85.7486	-86.7668	-88.9370	-100.4195	-91.1419	-89.5276	-86.9791
5469.4330	-89.1053	-88.2012	-84.4870	-91.0409	-96.0027	-88.2947	-101.6100	-83.8479	-86.0717	-86.9702	-90.5017	-94.0587	-91.8531	-98.0846	-89.8748
5512.5000	-102.9060	-88.5962	-83.5491	-104.0395	-98.0812	-89.5148	-93.5180	-83.4235	-86.4527	-90.7638	-90.8723	-91.9590	-97.7839	-93.0243	-87.3599
5555.5660	-103.7654	-89.7810	-86.3727	-94.1399	-91.0896	-89.1390	-87.8585	-87.1859	-93.2223	-94.1393	-90.7131	-93.6460	-91.5523	-97.6495	-86.6044
5598.6320	-96.9604	-92.5360	-89.7542	-93.6649	-85.3977	-86.2450	-90.0785	-87.5178	-97.0999	-94.5236	-95.8641	-90.2428	-95.0515	-89.4042	-86.4512

Freq	1.1.0	1.2.0	1.3.0	1.1.25	1.2.25	1.3.25	1.1.50	1.2.50	1.3.50	1.1.75	1.2.75	1.3.75	1.1.100	1.2.100	1.3.100
5641.6990	-93.9476	-107.8029	-90.2675	-95.2606	-83.9790	-82.7836	-94.8321	-85.1293	-95.9061	-97.5579	-105.8640	-97.3473	-85.8309	-97.7665	-87.0513
5684.7650	-95.5673	-90.9083	-94.0908	-94.8346	-86.6923	-83.9980	-99.6573	-87.2890	-101.3403	-100.7429	-104.0943	-90.6097	-86.2055	-89.3187	-94.0610
5727.8320	-92.7563	-87.8646	-95.1772	-89.0331	-91.2358	-86.8548	-101.2376	-96.0089	-104.8481	-104.4796	-96.9132	-102.9767	-91.9910	-91.6857	-102.1425
5770.8980	-91.3172	-91.3100	-93.6569	-86.5304	-99.7418	-85.3718	-94.5426	-100.3814	-99.4922	-115.5942	-86.8838	-93.6056	-90.1970	-94.6750	-95.7607
5813.9640	-93.3959	-95.2503	-97.6523	-87.1192	-111.5735	-83.0052	-103.4596	-92.6121	-92.4351	-89.3201	-80.6422	-83.0355	-86.2176	-85.6157	-82.3824
5857.0370	-96.6723	-94.4409	-98.4515	-89.3680	-100.2932	-82.2495	-82.8136	-90.6794	-86.1241	-81.2241	-78.6445	-79.6582	-87.8782	-80.8541	-76.6688
5900.0970	-99.6039	-93.5750	-90.9775	-93.0433	-90.2995	-80.4561	-76.1700	-93.4286	-87.3210	-89.6168	-80.0195	-84.2600	-77.9211	-83.9340	-75.0186
5943.1640	-90.2850	-96.4468	-90.4292	-100.8467	-86.9063	-82.0745	-74.7617	-96.8008	-100.6130	-84.7500	-80.0416	-79.9632	-81.1491	-83.9509	-76.0410
5986.2300	-86.5423	-92.8511	-92.7153	-90.4101	-88.3668	-87.1435	-78.0893	-97.8067	-90.6424	-84.7500	-80.0416	-79.9632	-81.1491	-83.9509	-76.0410
6029.2960	-86.8820	-89.9878	-91.2803	-97.3074	-90.3154	-87.2485	-82.9657	-93.6730	-101.0836	-81.3641	-82.0370	-82.9223	-88.7092	-76.9466	-77.9581
6072.3630	-88.5100	-93.3482	-90.4631	-92.8491	-90.0956	-84.1178	-84.9859	-93.3753	-91.2805	-80.6417	-84.0180	-88.7379	-91.4148	-80.0396	-80.3935
6115.4290	-87.1156	-106.1498	-92.1836	-90.6004	-90.0669	-88.1812	-88.6662	-98.0516	-89.7855	-82.3846	-87.9197	-95.2944	-85.9834	-81.7897	-83.2748
6158.4960	-85.7713	-103.6677	-93.8169	-93.7327	-84.9113	-87.6845	-103.0051	-90.8263	-94.9254	-86.5033	-93.7256	-93.6897	-83.0267	-86.6300	-84.9123
6201.5620	-86.3090	-104.3507	-95.7096	-96.7621	-77.5490	-86.7426	-95.1562	-89.0792	-101.2813	-94.1441	-90.3076	-92.8864	-83.1613	-87.9893	-89.3832
6244.6280	-87.5183	-99.1132	-92.4473	-101.6811	-72.6067	-97.0262	-97.9912	-90.0931	-99.4501	-105.2257	-90.4969	-93.3361	-88.6692	-82.9180	-92.2166
6287.6950	-88.6003	-95.2938	-92.9579	-102.4214	-71.8910	-93.1999	-107.2665	-93.9147	-107.2504	-100.2366	-94.8785	-105.9732	-101.8886	-92.9180	-91.6113
6330.7610	-90.6126	-94.5860	-95.3877	-96.4348	-74.0423	-84.3564	-108.2321	-97.7229	-106.4587	-114.5028	-97.2409	-102.5652	-100.0742	-104.5173	-95.9116
6373.8280	-94.7498	-97.2026	-99.2028	-92.0637	-77.1321	-81.3910	-103.5554	-97.4045	-99.6872	-108.9984	-97.6201	-100.9025	-111.0290	-103.9044	-96.5436
6416.8940	-101.0730	-103.0095	-105.1021	-92.6342	-83.0307	-82.1459	-100.9195	-95.3106	-97.8416	-105.8622	-96.1928	-100.8624	-101.6445	-99.2515	-98.2321
6459.9600	-95.0980	-104.0362	-112.5340	-99.6070	-90.6433	-85.7393	-100.3121	-95.1895	-100.6412	-100.3309	-94.8549	-102.0825	-101.5731	-98.2086	-101.3630
6503.0270	-94.7313	-119.0039	-107.0254	-99.0370	-104.0970	-93.9612	-101.4901	-95.8900	-111.8626	-96.3277	-95.4502	-103.4320	-102.2054	-102.9713	-104.3002
6546.0930	-98.8357	-107.7376	-105.3807	-103.7600	-93.8115	-111.0791	-101.6655	-95.3360	-103.5311	-95.4770	-98.4885	-107.4137	-102.2054	-102.9713	-104.3002
6589.1600	-101.2161	-101.1543	-103.9646	-117.9925	-91.4310	-98.4206	-103.1390	-94.8855	-104.4314	-102.9696	-104.3589	-101.8711	-103.2626	-111.4898	-107.3538
6632.2260	-100.7738	-102.6337	-103.6960	-107.7243	-95.7356	-95.0320	-99.9216	-96.8806	-113.8970	-102.4586	-112.7196	-103.4747	-98.5557	-103.5896	-106.2165
6675.2920	-106.8211	-107.9182	-107.9774	-109.1925	-94.1190	-100.9996	-103.6041	-100.5772	-132.2066	-99.5706	-104.2357	-108.5279	-93.7951	-104.7977	-104.8704
6718.3590	-114.6302	-103.0490	-112.2433	-110.7872	-91.3495	-114.0294	-110.9663	-104.6089	-117.8217	-102.2038	-104.9579	-108.6622	-94.8542	-103.1743	-113.7933
6761.4350	-105.5683	-99.7799	-109.6693	-103.8129	-93.3195	-102.1871	-112.5931	-114.6661	-110.4396	-107.5798	-106.4108	-103.6428	-117.8157	-108.8602	-105.9529
6804.4920	-110.6015	-103.1736	-108.5442	-105.1117	-95.8035	-99.2626	-117.5508	-131.7343	-110.9920	-112.1763	-109.6763	-104.9361	-117.8157	-108.8602	-105.9529
6847.5580	-104.0351	-116.7862	-108.4604	-111.9448	-98.1699	-100.2339	-119.9319	-114.3975	-110.7770	-110.9888	-107.1527	-108.0531	-106.6268	-107.3364	-104.1201
6890.6250	-100.7439	-107.0626	-106.5236	-106.7633	-99.7418	-104.7160	-113.0021	-107.6584	-105.7683	-111.8281	-104.5086	-108.4063	-106.2908	-106.3589	-106.5665
6933.6910	-104.9292	-106.0111	-106.0157	-104.6813	-100.6591	-109.0711	-109.0323	-108.3984	-106.4556	-117.2632	-105.1005	-111.0345	-107.2674	-108.3560	-112.0026
6976.7570	-113.5076	-110.5809	-111.7575	-105.6854	-102.3811	-104.1112	-113.5027	-112.4157	-112.2804	-119.0919	-107.9231	-112.8604	-109.7536	-111.8707	-119.1041
7019.8240	-119.0425	-113.6700	-115.8502	-108.1444	-109.7114	-104.1369	-133.2020	-115.9444	-122.7395	-117.4295	-109.6109	-109.7289	-115.2244	-114.1413	-118.7985
7062.9570	-117.2059	-118.8499	-111.3453	-111.1015	-104.2422	-112.1646	-118.5888	-109.9373	-110.8687	-112.1203	-109.5285	-108.7397	-116.2805	-118.2012	-112.4743
7149.0230	-118.1266	-126.1041	-116.3182	-113.6282	-104.5007	-106.2891	-114.3849	-109.2860	-112.1523	-116.7818	-106.2096	-115.3357	-118.2229	-117.7337	-110.1419
7192.0890	-116.2911	-124.1502	-119.6039	-119.0180	-107.8001	-110.5065	-113.3083	-113.8440	-112.9755	-115.5678	-109.4504	-119.1650	-118.2229	-117.7337	-110.1419
7235.1560	-113.0530	-115.5075	-114.7020	-123.4210	-113.3630	-109.0696	-113.6666	-121.9298	-112.0984	-111.1334	-114.1541	-118.2108	-113.1924	-111.3619	-113.8618
7278.2220	-110.8817	-115.1592	-112.3846	-125.6496	-110.5851	-103.1936	-117.0448	-111.7554	-114.1474	-112.3670	-120.4462	-116.3767	-113.5341	-118.8545	-117.1573
7321.2890	-110.4970	-118.6584	-111.3900	-137.9879	-113.2127	-105.6388	-119.5655	-112.5870	-114.0327	-117.7504	-120.7945	-113.5222	-117.1283	-122.3466	-116.1242
7364.3450	-113.3455	-126.9822	-113.3485	-120.4522	-117.8215	-112.4212	-119.1078	-116.2257	-113.1494	-116.3323	-120.8700	-110.5940	-126.4105	-118.3476	-113.7305
7407.4210	-115.6531	-120.3168	-127.4830	-111.9195	-115.3949	-113.8977	-120.8997	-116.7218	-117.2215	-115.9892	-119.4598	-110.8754	-118.9583	-114.5700	-116.7647
7450.4880	-115.3478	-115.2363	-116.6897	-110.4077	-124.1183	-108.3218	-116.9294	-114.2160	-120.4192	-119.1421	-131.9652	-110.0084	-116.2176	-111.9872	-135.6000

Freq	1.1.0	1.2.0	1.3.0	1.1.25	1.2.25	1.3.25	1.1.50	1.2.50	1.3.50	1.1.75	1.2.75	1.3.75	1.1.100	1.2.100	1.3.100
7493.5540	-116.7279	-111.0625	-114.6910	-114.3755	-122.1993	-108.5334	-116.3130	-112.7457	-114.7324	-123.9847	-126.1927	-107.0892	-113.3412	-111.2660	-119.0848
7536.6210	-114.3249	-110.5102	-117.7521	-122.5693	-115.6917	-113.1573	-118.4664	-118.5144	-111.4189	-117.5076	-123.2313	-108.0602	-111.9872	-111.3441	-114.8045
7579.6870	-112.9734	-115.5794	-132.6901	-132.5234	-114.4767	-119.5174	-116.0299	-131.5282	-110.3286	-120.2025	-121.0190	-114.3349	-112.1355	-112.1812	-117.5795
7622.7530	-116.4828	-124.5596	-118.6261	-119.1345	-117.9838	-127.9092	-113.2531	-124.1763	-111.3824	-132.5921	-120.3488	-127.6041	-113.1630	-114.1487	-120.8388
7665.8200	-118.4007	-119.3626	-112.1308	-114.2840	-123.4752	-124.4741	-113.6598	-124.9693	-111.6266	-119.2199	-122.6091	-135.8320	-115.1527	-117.2490	-123.0943
7708.8860	-115.5210	-131.4289	-111.9351	-115.5020	-112.8140	-113.7379	-113.3813	-120.7936	-111.9692	-116.0736	-126.9629	-127.8944	-118.7593	-119.8138	-121.8893
7751.9530	-115.5023	-115.2309	-115.6937	-119.9426	-111.3861	-111.8420	-116.3569	-123.4548	-111.2180	-117.5275	-114.3707	-120.5537	-113.6467	-123.5108	-126.5302
7795.0190	-115.6665	-115.9398	-122.3792	-123.1484	-112.7798	-116.9390	-120.2540	-131.9235	-113.4774	-124.7866	-111.0234	-119.4029	-115.5250	-127.7346	-121.2152
7838.0850	-118.4503	-125.0782	-126.2801	-118.9929	-113.9320	-123.1224	-125.8818	-120.0673	-121.6858	-122.9506	-111.9056	-125.9450	-133.6772	-130.0986	-113.7010
7881.1520	-118.6993	-118.9613	-134.0010	-114.3695	-114.4290	-118.1721	-121.2711	-114.2866	-130.1956	-120.1596	-120.1483	-124.5310	-120.3778	-119.7009	-112.2684
7924.2180	-114.9749	-115.2656	-122.8422	-113.4328	-116.2864	-117.1467	-113.2004	-117.2075	-116.5814	-129.1554	-119.1896	-119.9876	-116.7316	-118.6948	-113.5282
7967.2850	-113.0581	-116.5617	-116.6432	-117.6035	-116.5744	-114.5863	-110.6707	-122.8557	-114.6371	-117.1305	-108.8922	-112.0673	-128.8617	-115.4544	-127.4118
8010.3510	-109.7280	-115.2686	-114.0798	-124.5165	-113.4971	-115.8732	-112.7884	-121.6222	-121.6083	-113.8712	-112.4122	-111.5102	-115.3496	-111.4730	-132.2425
8053.4170	-108.1010	-112.3990	-117.4278	-119.2633	-110.3132	-113.8971	-112.7884	-121.6222	-121.6083	-113.8712	-112.4122	-111.5102	-113.2365	-111.8513	-122.6385
8096.4840	-110.1545	-114.5454	-116.3987	-118.4291	-109.6778	-116.1841	-117.1746	-119.6011	-117.4627	-119.9189	-113.0256	-124.9097	-117.3795	-115.8970	-122.9076
8139.5500	-116.6321	-116.6605	-113.1209	-119.3760	-110.2097	-121.2441	-118.8014	-137.1206	-118.0277	-125.6319	-110.1477	-121.0417	-133.2342	-124.1263	-120.3557
8182.6170	-125.7485	-114.6387	-118.9812	-120.5565	-110.3965	-117.6824	-118.8014	-137.1206	-118.0277	-125.6319	-110.1477	-121.0417	-126.2903	-122.7859	-117.1003
8225.6830	-115.9203	-125.2308	-126.5564	-130.4006	-114.8651	-117.8870	-117.2918	-117.9141	-114.7546	-124.2104	-109.8850	-114.1634	-121.8319	-116.0339	-119.8788
8268.7500	-110.6902	-121.4473	-125.0837	-135.0854	-131.4971	-116.4273	-126.1229	-115.6672	-114.4230	-116.4078	-112.4458	-114.5495	-121.3856	-111.3955	-136.5657
8311.8160	-111.9979	-124.6793	-124.8504	-124.4282	-117.9127	-116.0031	-118.0423	-115.6945	-115.6400	-116.4078	-112.4458	-114.5495	-121.6263	-108.7562	-119.9589
8354.8820	-117.2427	-118.6691	-116.9603	-119.5417	-128.7720	-114.7824	-112.7083	-121.2775	-126.7418	-114.6965	-115.8675	-117.1931	-121.6263	-108.7562	-119.9589
8397.9490	-121.1265	-111.2422	-116.9257	-118.3206	-118.8919	-112.2920	-115.8138	-127.7558	-122.3838	-114.8930	-113.5816	-116.5475	-115.5338	-107.4284	-118.4016
8441.0150	-124.1743	-108.8522	-117.2160	-117.6697	-120.0426	-112.2163	-127.4943	-132.5759	-123.4839	-114.8998	-113.5519	-120.7296	-113.8169	-110.3497	-114.2532
8484.0820	-138.7527	-108.5371	-118.9763	-122.6819	-129.3546	-115.4444	-115.4144	-116.3499	-119.0545	-121.8465	-115.3772	-121.2624	-115.3931	-119.7449	-112.1625
8527.1480	-124.1422	-110.2418	-115.9831	-119.2560	-117.2881	-122.1777	-110.1385	-116.0357	-114.8934	-123.7862	-113.3119	-120.4437	-115.3251	-118.2042	-119.3179
8570.2140	-115.4061	-116.3481	-117.7665	-118.1681	-116.2569	-114.5066	-111.2801	-116.9126	-118.6394	-114.9506	-111.3556	-117.9648	-112.3499	-115.5803	-117.6555
8613.2810	-113.8055	-125.8610	-115.8807	-125.7533	-116.7533	-113.3729	-116.0100	-120.1884	-125.1592	-113.0704	-112.4828	-117.2492	-112.9761	-116.4322	-112.8663
8656.3470	-116.5122	-113.9704	-117.7273	-120.6009	-118.4487	-111.4490	-121.7392	-119.2133	-122.1282	-114.5576	-113.6003	-118.9213	-127.4732	-116.7225	-112.8739
8699.4140	-116.5705	-113.3597	-118.9284	-113.6022	-123.5360	-109.8624	-148.9797	-120.7031	-121.2377	-112.8230	-113.6496	-134.2940	-115.8361	-120.2303	-112.6139
8742.4800	-109.0758	-118.5061	-117.3280	-108.6727	-112.4620	-113.0652	-121.8116	-117.2126	-124.1553	-111.8030	-117.2355	-134.3203	-112.3404	-115.3771	-112.1200
8785.5460	-107.2536	-117.0258	-119.7298	-109.3651	-114.0765	-125.9547	-115.8445	-111.7568	-118.6486	-114.0624	-116.9787	-117.7594	-111.0401	-115.2849	-112.8187
8828.6130	-112.1228	-111.3364	-124.6469	-118.1812	-122.3183	-120.6102	-112.9630	-112.3507	-115.8303	-115.7073	-113.0291	-123.4331	-108.9136	-121.2440	-113.1327
8871.6790	-130.0137	-108.7302	-132.9357	-116.3010	-121.1496	-119.4924	-112.6718	-120.8533	-120.2443	-115.6673	-114.0939	-127.6839	-109.1632	-121.5356	-112.9091
8914.7460	-117.2446	-110.2731	-118.5493	-112.3901	-114.7956	-116.9576	-112.2663	-130.7269	-141.5668	-120.6238	-118.9447	-119.1848	-109.1632	-121.5356	-112.9091
8957.8120	-117.8507	-114.7838	-115.5407	-112.9299	-115.1020	-114.5142	-111.3571	-123.5217	-126.7503	-127.3093	-126.5310	-123.4741	-112.8689	-124.9417	-116.1811
9000.8780	-121.5829	-119.4814	-110.2073	-115.6775	-118.4131	-116.6553	-116.6128	-120.4784	-115.9487	-119.2594	-142.7729	-121.3907	-118.2959	-113.7287	-116.7046
9043.9450	-118.7893	-122.8077	-108.0057	-119.9358	-115.5629	-117.1016	-123.2873	-116.7634	-113.1645	-125.2906	-125.9028	-122.7944	-122.2900	-111.2428	-116.8180
9087.0110	-119.5907	-115.5235	-109.0453	-119.9984	-113.6939	-121.1870	-116.1600	-121.4652	-113.0924	-121.5092	-120.8316	-136.2725	-114.2764	-109.8461	-125.3210
9130.0780	-118.6630	-109.5078	-113.6806	-119.1256	-115.1334	-132.2532	-114.2002	-122.4139	-114.3963	-115.5664	-122.7804	-128.7413	-114.2872	-109.2733	-121.6029
9173.1440	-118.9578	-108.9812	-118.0259	-124.1616	-116.0355	-121.9225	-116.3408	-114.7507	-116.1046	-113.5818	-122.6690	-118.6568	-117.9353	-111.2449	-121.8398
9216.2100	-116.9367	-113.2089	-117.5053	-118.5396	-121.2507	-117.9457	-120.1153	-115.9199	-114.8207	-112.3877	-121.8377	-115.2678	-118.7050	-112.4520	-119.1212
9259.2770	-113.6656	-117.4223	-115.3394	-115.5039	-130.2172	-113.8289	-117.2833	-122.1611	-117.5645	-113.2646	-119.3912	-112.7395	-116.3922	-113.8225	-113.6356
9302.3430	-114.2761	-114.2185	-116.7940	-116.3098	-126.8619	-110.8704	-115.3219	-123.9847	-132.7089	-118.0910	-124.4524	-112.2935	-115.6278	-119.2845	-113.0018

Freq	1.1.0	1.2.0	1.3.0	1.1.25	1.2.25	1.3.25	1.1.50	1.2.50	1.3.50	1.1.75	1.2.75	1.3.75	1.1.100	1.2.100	1.3.100
9345.4100	-118.0614	-109.8494	-125.3956	-134.4713	-114.5954	-109.2172	-117.4616	-116.7632	-119.4358	-119.7299	-129.8136	-114.8109	-115.1754	-117.7461	-123.2622
9388.4760	-133.5127	-109.6942	-119.8892	-116.2287	-113.8440	-110.0319	-127.1666	-113.1789	-114.6245	-118.7688	-115.1032	-120.7383	-121.8309	-113.0225	-115.3037
9431.5420	-125.1407	-112.4194	-114.4004	-113.4564	-119.8977	-114.4681	-125.0333	-114.8005	-116.4250	-115.6655	-110.5558	-126.9233	-116.2605	-112.0890	-109.8581
9474.6090	-121.2199	-114.2205	-116.3817	-115.1066	-123.7425	-115.3182	-115.1677	-120.2691	-130.7754	-116.7928	-110.4265	-123.1384	-114.7008	-115.6137	-109.7253
9517.6750	-120.7398	-116.6993	-119.1791	-118.5907	-120.6148	-111.3817	-114.1529	-114.9366	-118.1848	-116.9151	-112.3263	-126.9563	-124.9554	-118.1974	-113.6975
9560.7420	-124.3761	-130.5004	-116.6563	-121.6981	-122.4942	-116.4137	-123.7443	-112.0086	-114.5164	-121.8719	-114.5880	-121.4412	-111.2284	-114.4581	-114.8417
9603.8080	-130.6698	-117.1818	-119.6241	-126.3464	-125.3764	-126.2310	-123.5480	-112.6578	-115.3679	-113.5958	-115.9889	-122.9692	-115.3878	-111.6788	-112.5140
9646.8750	-118.0885	-120.3744	-128.1781	-123.7696	-134.1479	-117.6044	-119.4509	-119.5864	-121.3753	-109.2417	-118.6575	-120.1716	-118.8024	-111.6788	-117.4940
9689.9410	-114.6253	-120.8450	-122.6437	-119.5069	-115.3852	-117.6218	-121.3291	-125.0424	-123.7241	-110.4456	-122.7251	-116.6244	-109.5431	-109.9841	-120.3535
9733.0070	-112.5981	-116.0245	-115.3031	-128.3178	-115.6467	-113.9480	-119.4403	-116.2738	-116.9570	-113.2624	-119.1597	-114.8793	-108.4867	-110.1762	-120.1791
9776.0740	-112.0747	-112.6867	-113.5853	-116.2905	-120.6966	-111.4511	-120.4139	-117.8213	-117.6571	-114.2250	-115.3375	-114.8112	-113.0711	-112.6510	-122.8422
9819.1400	-114.5130	-110.3184	-122.0448	-112.7606	-119.5953	-110.6115	-119.7112	-122.4790	-129.7610	-115.8355	-115.1612	-115.8839	-117.6436	-116.4910	-133.4958
9862.2070	-119.6063	-108.9369	-115.6235	-117.4882	-120.1489	-107.6894	-122.3817	-112.8191	-121.7952	-117.8710	-116.7942	-128.1625	-118.2641	-115.5699	-119.5652
9905.2730	-121.7915	-107.4014	-110.5720	-124.7896	-114.1894	-108.6807	-121.5307	-112.4368	-119.2513	-116.0652	-125.8621	-117.1072	-139.4431	-113.0441	-118.7528
9948.3390	-113.4061	-106.5891	-111.4161	-113.8670	-116.0873	-115.1126	-117.7958	-117.6165	-120.6517	-118.6256	-120.0205	-113.9263	-131.4173	-112.9245	-123.4306
9991.4060	-110.9865	-108.6334	-114.9202	-113.4161	-118.2247	-119.4953	-118.5275	-120.9890	-118.6611	-117.9778	-120.8279	-111.5038	-121.6959	-115.7849	-125.0384
10034.4720	-111.7670	-112.8758	-134.9416	-113.5612	-118.4109	-116.3841	-124.3089	-112.1101	-115.6521	-112.3022	-122.2572	-110.8417	-118.4708	-124.6602	-120.7225
10077.5390	-112.6329	-112.7389	-112.9887	-111.5371	-122.1119	-116.3059	-136.6182	-109.4959	-119.5241	-113.0917	-111.6384	-111.0303	-120.7060	-123.5065	-117.8338
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10163.6710	-110.4406	-122.2845	-109.5669	-120.6597	-117.4837	-115.8802	-118.1061	-116.7788	-128.9093	-118.2237	-113.7261	-115.1592	-113.6607	-114.4561	-118.9582
10206.7380	-110.4671	-117.1700	-115.5161	-120.5993	-119.7738	-123.1721	-115.5927	-115.8034	-122.2168	-113.3200	-116.4671	-116.0040	-110.8164	-112.3779	-114.8662
10249.8040	-113.4543	-120.9023	-117.6420	-118.8696	-124.5159	-119.0003	-116.9361	-122.4348	-112.8577	-115.5554	-114.5845	-114.6749	-112.1654	-115.8975	-116.5234
10292.8710	-122.1876	-126.3823	-111.0500	-118.9368	-119.0798	-113.7908	-119.2519	-115.3624	-130.6313	-117.2992	-114.6732	-119.3759	-118.2889	-128.6325	-119.4256
10335.9370	-119.7341	-117.9479	-114.7963	-122.8818	-120.2643	-119.4582	-116.7146	-115.8176	-113.4211	-110.8747	-120.4062	-119.1758	-117.0183	-119.3204	-121.0318
10379.0030	-114.3417	-112.8564	-121.4725	-126.1965	-123.2685	-125.9435	-115.2865	-119.6754	-119.5038	-110.2127	-117.7131	-114.2058	-115.1313	-118.1869	-132.3763
10422.0700	-112.9259	-115.5060	-112.9224	-119.4321	-125.4587	-138.2404	-112.5821	-120.1568	-119.3462	-112.0680	-112.0616	-114.5899	-114.1370	-119.1824	-118.9648
10465.1360	-114.2581	-116.6474	-115.4187	-126.3385	-120.9843	-116.8547	-111.6411	-124.9514	-115.1313	-113.8828	-111.7971	-115.2030	-113.5607	-118.7185	-115.9244
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10551.2690	-114.3860	-114.5610	-109.9207	-119.4175	-112.7695	-118.0064	-112.8884	-120.5159	-116.9104	-115.0168	-138.5278	-116.6622	-117.4120	-117.7044	-119.3913
10594.3350	-113.3083	-121.5143	-113.4388	-113.0002	-120.3002	-123.3104	-136.9468	-114.7725	-120.6059	-116.6537	-120.5374	-114.7748	-116.2174	-120.9973	-114.9512
10637.4020	-115.1658	-124.1634	-118.9425	-112.5931	-128.1098	-117.9767	-116.6976	-113.7530	-126.0326	-124.4395	-116.5508	-111.4943	-114.3929	-133.1833	-116.8015
10680.4680	-126.9314	-117.1349	-122.1805	-110.0225	-121.9517	-112.5611	-110.5333	-113.6721	-124.6381	-123.2595	-119.6547	-112.2666	-114.3830	-122.8729	-121.6054
10723.5350	-118.4122	-112.2989	-117.8673	-108.4825	-117.8286	-111.4058	-109.7234	-111.9219	-123.3963	-113.2192	-121.2166	-118.3034	-118.1017	-118.6535	-121.4287
10766.6010	-116.2986	-115.3559	-116.8160	-111.6768	-150.0615	-116.3857	-112.1379	-112.6898	-116.9342	-111.1341	-115.5797	-133.2132	-121.5799	-118.8800	-118.0372
10809.6670	-123.7325	-136.8156	-120.2675	-119.5709	-120.7457	-119.2440	-115.2447	-119.0937	-116.4284	-114.4945	-113.0528	-126.7118	-111.3148	-116.1377	-116.6033
10852.7340	-123.6720	-132.1413	-113.8060	-119.7554	-123.7590	-119.6117	-118.3546	-125.2380	-117.0368	-125.5781	-112.0375	-127.0246	-108.5390	-113.9641	-125.8871
10895.8000	-132.7027	-120.2964	-108.2667	-111.8357	-113.3188	-132.9043	-134.9332	-125.5205	-117.5917	-118.9937	-113.7083	-116.8782	-108.4221	-120.7724	-120.4697
10938.8670	-119.8662	-114.0877	-107.9445	-110.3058	-117.3148	-123.1355	-119.1212	-117.6398	-125.6129	-116.7082	-122.0707	-113.1171	-109.4086	-122.8071	-117.6881
10981.9330	-115.7242	-114.8039	-113.7067	-111.2532	-122.5055	-122.6049	-115.5663	-117.5669	-120.3775	-117.6479	-127.0865	-112.9592	-110.8073	-114.2632	-116.6062
11025.0000	-122.3392	-119.5243	-118.2613	-114.5176	-114.7273	-114.6534	-119.5328	-116.6131	-119.1528	-124.3179	-124.4730	-111.1669	-115.0994	-110.6018	-117.2976
11068.0660	-119.7846	-119.0294	-116.5764	-118.3447	-117.4016	-112.1978	-124.5602	-112.0712	-132.2007	-121.7255	-116.1011	-120.1244	-128.2923	-111.7449	-121.1375
11111.1320	-119.1020	-111.7623	-123.0870	-117.9047	-118.0238	-115.7850	-113.7644	-112.5522	-119.6863	-118.4060	-116.5645	-110.7911	-120.8905	-122.6592	-122.7252
11154.1990	-119.5193	-113.2825	-114.1660	-116.2394	-112.7757	-114.0675	-110.8448	-115.0665	-125.2576	-113.0991	-113.9384	-111.4267	-115.6022	-118.0614	-118.6045

Freq	1.1.0	1.2.0	1.3.0	1.1.25	1.2.25	1.3.25	1.1.50	1.2.50	1.3.50	1.1.75	1.2.75	1.3.75	1.1.100	1.2.100	1.3.100
11197.2650	-117.5285	-118.2381	-111.4630	-113.0022	-114.2879	-112.7356	-109.6943	-116.1805	-124.7425	-113.9458	-115.4780	-116.2695	-115.4789	-118.5930	-115.9179
11240.3320	-116.8677	-116.2814	-111.2197	-113.9616	-115.4018	-112.8285	-110.3387	-123.2984	-123.2433	-118.6651	-114.1945	-128.7530	-118.5627	-118.6740	-112.5045
11283.3980	-119.6405	-114.4072	-111.3515	-124.3077	-115.5861	-112.0227	-114.9251	-124.9485	-118.4188	-119.1557	-110.8090	-119.4101	-122.4886	-118.8245	-114.1115
11326.4640	-133.1490	-112.8450	-113.0221	-114.9953	-117.2321	-111.4496	-121.5059	-131.9771	-118.0035	-117.2783	-111.5455	-125.0302	-125.7589	-122.0500	-125.6079
11369.5310	-126.9758	-120.3561	-116.3745	-114.7608	-119.7814	-114.5680	-116.6138	-119.5753	-118.2828	-119.2776	-120.9828	-135.1155	-123.6050	-119.5855	-118.4038
11412.5970	-117.4515	-119.6169	-116.9025	-115.8011	-123.8238	-117.0328	-113.2122	-116.1028	-116.2238	-143.4256	-116.3412	-118.8008	-119.0556	-120.2874	-113.6833
11455.6640	-114.3328	-113.0332	-116.0981	-127.1366	-124.9906	-115.6625	-112.8860	-115.3683	-110.9909	-118.6330	-118.5666	-111.9698	-117.2231	-119.3063	-112.4416
11498.7300	-118.5719	-112.4196	-121.2281	-114.7928	-116.9320	-114.0764	-120.3237	-118.6806	-110.0279	-118.7086	-112.3897	-111.6973	-115.9675	-121.3466	-115.4279
11541.7960	-123.5611	-118.1424	-127.2420	-111.5882	-111.9095	-116.0883	-125.6099	-135.5549	-116.8574	-124.8500	-116.0029	-122.0423	-113.0174	-117.4606	-120.4140
11584.8630	-117.0291	-124.3231	-115.5992	-114.7164	-109.9397	-125.2128	-119.4414	-118.9885	-133.4289	-128.8708	-112.1854	-116.7229	-115.6116	-116.8253	-126.9152
11627.9290	-123.2539	-118.4335	-112.8030	-116.4712	-111.8844	-123.4053	-118.8243	-113.0604	-123.1502	-115.9599	-110.1887	-115.2673	-126.5913	-118.1947	-121.1869
11670.9960	-115.5568	-119.1091	-116.3452	-114.8305	-114.3540	-114.8997	-118.1564	-111.3362	-114.2035	-113.7845	-109.7815	-117.4311	-120.8890	-115.0580	-115.0213
11714.0620	-113.2558	-119.6920	-115.4464	-116.5887	-112.3939	-111.3966	-123.0129	-114.2993	-115.2072	-115.4819	-111.1586	-126.1767	-116.6562	-115.3075	-114.1088
11757.1280	-118.8601	-116.4131	-111.5865	-136.3971	-110.4954	-110.7086	-125.5270	-119.3509	-121.8272	-116.1742	-115.6876	-122.2433	-119.4775	-124.0375	-115.4662
11800.1950	-125.7395	-116.2582	-111.2309	-118.1243	-112.9115	-113.4228	-125.2297	-121.6884	-122.0622	-116.8663	-137.2437	-117.3626	-119.0446	-124.4254	-116.4415
11843.2610	-120.3482	-116.8381	-118.7535	-138.4758	-114.8318	-112.6320	-121.7533	-122.2603	-117.4027	-117.4641	-117.2716	-118.2120	-117.5367	-121.2699	-121.4863
11886.3280	-117.4212	-114.4350	-120.0862	-123.8495	-113.0954	-113.0183	-114.9352	-120.4326	-110.9666	-118.6516	-116.5426	-119.6139	-118.2740	-116.3502	-122.8856
11929.3940	-117.2259	-114.9731	-115.0388	-120.7019	-116.1153	-116.4204	-113.2329	-119.5604	-107.9282	-119.1380	-117.3785	-120.1741	-113.1680	-116.4796	-116.5927
11972.4600	-127.8579	-115.7605	-122.1596	-115.5118	-121.5710	-120.6629	-112.2664	-116.4323	-108.8823	-119.6181	-120.8141	-121.4008	-113.2434	-123.2139	-115.6126
12015.5270	-120.9263	-117.4060	-125.6866	-114.4112	-128.3646	-121.4159	-111.9088	-110.0795	-111.4961	-114.5321	-116.9599	-125.3779	-116.9665	-122.2435	-112.0788
12058.5930	-121.9237	-117.3291	-120.8988	-112.4053	-129.9841	-123.8202	-113.3833	-110.7100	-117.2385	-117.1119	-114.1987	-115.6045	-115.0200	-115.2806	-110.6170
12101.6600	-117.9073	-111.7884	-134.6683	-111.1233	-132.3628	-117.3024	-114.8676	-114.5331	-114.4500	-119.6154	-118.8633	-113.2269	-110.0959	-114.6240	-112.8086
12144.7260	-112.4250	-110.6440	-114.2879	-114.2905	-118.7972	-119.6088	-112.9861	-114.9426	-112.7560	-120.6689	-120.4152	-113.3192	-108.0918	-114.8329	-117.3882
12187.7920	-112.4625	-109.2691	-117.7854	-124.3947	-117.6726	-120.4717	-112.4872	-110.5681	-116.9733	-116.0838	-114.5417	-115.3200	-109.6770	-113.5774	-124.0611
12230.8590	-115.8357	-108.7704	-120.0779	-117.7219	-128.5038	-125.5107	-113.8049	-109.5748	-124.6052	-113.7659	-113.6998	-118.5918	-113.5502	-113.9993	-116.8528
12273.9250	-114.4589	-112.4090	-122.4808	-118.0719	-121.2594	-120.5724	-118.8718	-114.3399	-118.8094	-115.1101	-119.9144	-126.4328	-116.2461	-116.2228	-112.3159
12316.9580	-111.5103	-116.5581	-126.8803	-115.7051	-119.0445	-115.3573	-126.1958	-122.9992	-117.2240	-117.3229	-123.7362	-121.3311	-117.9662	-118.1672	-112.9645
12360.0580	-112.6509	-113.9720	-120.4520	-111.9366	-124.9744	-112.9851	-119.4743	-134.0532	-128.1923	-122.8813	-126.9831	-116.9039	-117.5635	-124.1631	-118.8406
12403.1250	-113.3519	-115.1474	-122.8452	-114.2880	-120.9070	-113.1885	-132.6908	-121.4885	-118.9963	-115.9296	-120.5250	-117.5132	-115.6493	-124.5297	-121.1884
12446.1910	-113.2950	-124.3675	-124.8233	-122.1728	-116.2053	-115.7991	-123.8299	-117.4304	-115.9543	-115.5187	-119.5098	-118.0467	-115.9540	-116.8357	-116.3347
12489.2570	-112.4808	-123.1979	-114.4443	-125.9824	-116.3037	-117.2996	-124.2216	-120.1100	-117.7306	-116.3701	-127.0863	-118.5955	-119.0089	-113.0742	-113.7016
12532.3240	-112.4917	-121.7477	-114.7734	-116.3024	-116.6224	-126.0405	-123.5762	-139.6763	-119.4865	-121.1549	-124.2415	-116.9188	-121.2579	-113.5725	-111.3861
12575.3900	-113.3036	-119.3990	-120.6242	-112.5256	-117.2665	-118.4707	-127.0161	-122.9487	-120.8901	-122.2395	-118.9544	-113.9227	-127.4479	-113.5184	-111.0189
12618.4570	-114.6136	-119.9570	-132.9620	-113.5015	-119.5173	-112.1103	-115.1480	-122.0502	-114.2321	-117.4054	-118.8521	-111.6383	-120.3728	-111.9240	-113.3575
12661.6230	-117.9207	-123.5847	-118.7265	-117.9733	-129.0344	-113.0746	-112.5040	-118.2344	-111.2885	-119.3256	-115.3314	-111.8784	-114.7975	-113.5777	-114.8690
12704.5890	-114.8217	-126.2124	-113.3187	-128.5608	-135.5921	-118.4698	-114.6595	-111.8768	-112.6612	-115.3805	-113.9814	-117.3481	-113.3429	-119.6226	-113.9505
12747.6560	-114.3662	-129.3404	-113.0630	-119.1045	-125.7265	-113.4695	-115.0725	-112.3802	-116.2792	-114.1063	-113.7653	-131.8099	-112.4921	-123.7260	-115.3603
12790.7220	-118.7454	-114.9886	-114.4542	-114.6781	-119.5625	-110.4570	-113.1377	-119.9934	-123.1392	-116.3772	-117.1018	-120.6960	-114.3383	-125.0841	-119.2486
12833.7890	-130.9986	-111.1333	-112.7402	-116.8053	-121.7688	-110.2055	-111.3464	-123.0736	-118.7301	-114.4882	-115.4909	-116.2672	-118.1913	-115.1657	-112.5506
12876.8550	-126.9942	-113.1000	-113.9407	-122.1926	-121.8987	-112.2993	-111.8157	-119.1178	-118.6786	-111.5991	-112.0351	-113.9401	-117.7947	-112.2071	-112.9590
12919.9210	-125.1885	-118.7297	-121.7470	-124.8613	-112.3014	-115.5708	-115.9529	-126.0320	-138.5518	-112.0934	-110.0978	-113.0005	-116.9369	-111.3096	-117.3545
12962.9880	-122.6846	-119.8937	-111.8843	-127.1367	-134.2217	-116.8070	-118.6174	-121.7572	-126.6174	-119.2280	-112.1694	-116.7007	-117.4103	-110.1892	-122.9552
13006.0540	-118.9323	-115.3556	-111.1592	-121.4661	-119.7278	-114.8693	-119.8320	-120.4171	-116.9836	-124.6135	-116.1224	-127.5557	-118.4568	-109.2549	-123.0067

Freq	1.1.0	1.2.0	1.3.0	1.1.25	1.2.25	1.3.25	1.1.50	1.2.50	1.3.50	1.1.75	1.2.75	1.3.75	1.1.100	1.2.100	1.3.100
13049.1210	-113.8086	-113.6186	-115.9388	-113.9306	-119.7016	-116.8768	-116.8151	-125.3726	-117.0331	-121.3750	-118.5385	-119.1914	-121.3236	-111.6286	-120.0862
13092.1870	-113.6825	-118.3407	-121.2610	-110.7206	-129.0249	-125.8665	-116.6921	-117.1350	-115.2801	-122.1763	-116.3861	-119.6893	-115.4277	-119.1296	-123.6504
13135.2530	-118.7575	-129.6691	-117.9271	-113.8400	-115.1360	-120.0107	-120.3808	-114.9255	-125.5772	-129.8525	-115.6938	-115.4009	-111.7427	-116.4879	-119.9457
13178.3200	-123.6874	-119.1664	-114.3828	-126.4076	-113.6811	-115.3182	-122.0543	-115.7824	-115.7927	-119.3988	-117.5886	-114.3428	-113.0415	-118.7059	-113.9820
13221.3860	-119.5146	-119.1909	-113.2555	-118.8025	-113.4526	-113.6482	-118.9921	-116.6244	-114.4858	-111.7647	-119.1455	-111.3306	-115.0681	-131.8932	-111.6030
13264.4530	-115.9333	-134.8448	-116.0992	-127.0123	-114.6478	-111.6484	-117.2029	-115.0784	-115.5757	-108.9022	-116.4400	-109.9956	-115.5251	-118.9744	-114.1496
13307.5190	-114.3267	-124.8721	-117.8378	-126.8780	-115.2661	-109.9444	-115.9389	-117.4796	-118.2797	-108.9083	-117.1010	-113.6387	-115.4309	-119.7626	-118.3198
13350.5850	-114.3528	-126.2495	-113.4011	-124.6126	-112.2649	-107.9351	-112.8153	-122.1542	-117.0043	-110.9133	-129.0988	-115.8089	-116.7596	-124.4957	-125.3599
13393.6520	-114.2817	-117.2342	-112.2727	-125.0818	-111.3131	-110.6376	-115.3365	-108.8265	-114.1725	-113.6423	-115.7679	-113.9143	-117.7699	-136.7660	-118.5347
13436.7180	-114.4668	-113.4494	-118.4359	-120.6902	-113.7756	-116.9626	-121.1020	-107.3702	-115.4539	-116.7163	-113.2567	-117.0928	-116.1833	-126.6877	-115.3292
13479.7850	-115.5923	-111.8256	-117.4305	-115.8713	-118.7909	-117.9372	-126.4636	-112.4023	-121.3580	-119.4487	-111.3187	-128.3572	-111.5054	-117.7204	-116.0523
13522.8510	-117.9443	-110.0496	-116.2593	-117.1118	-119.9231	-117.0589	-123.8059	-121.0928	-128.3518	-121.6550	-108.7894	-119.7212	-111.4469	-116.9655	-119.4227
13565.9170	-117.8701	-110.1973	-115.9555	-125.5718	-111.6730	-119.0521	-119.2218	-122.3044	-117.4414	-138.9452	-107.7830	-116.4387	-118.8693	-119.1109	-142.6451
13608.9840	-127.4708	-116.9683	-115.2596	-120.6362	-108.7032	-125.0620	-126.1351	-120.6295	-112.2247	-118.3374	-109.2467	-118.8578	-126.0396	-115.5984	-116.9971
13652.0500	-116.6876	-118.4736	-124.4090	-119.6868	-110.3180	-132.9503	-123.9823	-121.5308	-111.9733	-114.2217	-113.5799	-133.2945	-119.9811	-114.0097	-114.4419
13695.1170	-118.3466	-121.5912	-117.4491	-114.6199	-120.3482	-128.4749	-119.9723	-126.3913	-114.5294	-114.0848	-118.6972	-127.3255	-134.4524	-112.7389	-116.4557
13738.1830	-122.4251	-126.0420	-114.4291	-110.8733	-123.3165	-132.2624	-118.2674	-122.5463	-118.4763	-116.8185	-115.3295	-126.5922	-126.7544	-116.5894	-120.7136
13781.2500	-112.2041	-113.2195	-114.1549	-112.5361	-121.2784	-122.7838	-119.2948	-114.9474	-132.3036	-118.1500	-109.6683	-124.4941	-127.6564	-144.6949	-126.9577
13824.3160	-113.2817	-110.5908	-115.3752	-115.8020	-117.6762	-120.6272	-118.7174	-116.3148	-118.2129	-116.8905	-107.4889	-130.7078	-123.0409	-117.9793	-130.9934
13867.3820	-123.1935	-111.5914	-118.7955	-120.9973	-113.5890	-115.7531	-113.5413	-124.5982	-113.1665	-116.8667	-109.1975	-122.8851	-120.5425	-113.8113	-115.8182
13910.4450	-122.2388	-111.7560	-118.0159	-122.3824	-115.0862	-111.2746	-113.9184	-118.8466	-114.3133	-115.8297	-112.2913	-119.7954	-117.6528	-111.8913	-110.2615
13953.5190	-115.2703	-113.4161	-113.7716	-117.5604	-120.4950	-110.0082	-121.9567	-118.8599	-118.1729	-114.3038	-116.0746	-119.2240	-115.7240	-111.0681	-114.3880
13996.5820	-114.5728	-116.8218	-115.0040	-115.1590	-114.9296	-112.9242	-117.6672	-116.4037	-119.2003	-116.2645	-124.4719	-115.8056	-115.0288	-113.0849	-121.2439
14039.6480	-119.0114	-116.5221	-121.7584	-112.9935	-114.5138	-117.3726	-113.1835	-113.3937	-114.2613	-121.9886	-115.5842	-115.2755	-117.3033	-117.6611	-116.3109
14082.7140	-120.9411	-114.7464	-112.1725	-112.8240	-118.8460	-118.7270	-116.4626	-114.9446	-113.3665	-120.3901	-113.1043	-117.1130	-122.3913	-114.4578	-120.0668
14125.7810	-114.1486	-120.8207	-110.1613	-116.4350	-129.5026	-117.6951	-119.3321	-124.9413	-119.6466	-124.3731	-113.3699	-114.5301	-123.4841	-119.8857	-113.7772
14168.8470	-112.9592	-110.0290	-112.4760	-117.5789	-115.5843	-114.7412	-114.4242	-117.9810	-126.7262	-124.4240	-114.3907	-113.8478	-123.9493	-147.9200	-114.4048
14211.9140	-113.0503	-109.4481	-116.6828	-119.8760	-109.1691	-115.1889	-118.2565	-119.5391	-121.3379	-124.4240	-115.1831	-116.4544	-120.8379	-122.3301	-125.3401
14254.9800	-115.4184	-108.5680	-115.2748	-113.9765	-106.3897	-113.5377	-127.6199	-123.2713	-124.2158	-115.9424	-113.9791	-119.9745	-115.1689	-114.7250	-125.0403
14298.0460	-118.9292	-111.0041	-110.8595	-110.8914	-106.1492	-107.7870	-123.0506	-117.3259	-123.5113	-113.3080	-116.5760	-127.3270	-114.0099	-115.9852	-124.1815
14341.1130	-113.8988	-114.4690	-109.1201	-111.6640	-109.3297	-109.4502	-118.8061	-106.4575	-119.2698	-111.7284	-130.8194	-111.4104	-117.0069	-113.3016	-118.9095
14384.1790	-112.9019	-113.0822	-108.6134	-111.7978	-116.3612	-113.8377	-113.1527	-105.8027	-119.8249	-112.6554	-120.6170	-109.4604	-117.4789	-115.4489	-113.3349
14427.2460	-119.8661	-107.6124	-105.4047	-110.7189	-106.2323	-107.7516	-107.8846	-108.1736	-123.9511	-113.6536	-118.8505	-103.6361	-121.9357	-114.7107	-104.1952
14470.3120	-103.5623	-104.0593	-102.7622	-110.2836	-96.2207	-111.7410	-107.5471	-101.1907	-108.2710	-111.9067	-112.7990	-98.3044	-112.4619	-108.0729	-95.2309
14513.3780	-100.4785	-104.7878	-103.8459	-107.9114	-93.7353	-99.0361	-104.4397	-99.6518	-102.4661	-116.0529	-108.0129	-101.9163	-103.9680	-101.4050	-91.1365
14556.4450	-102.9105	-111.4760	-106.7503	-107.9547	-96.7107	-95.2652	-99.4836	-99.9648	-102.4291	-107.1283	-108.4767	-104.4064	-101.3815	-99.0151	-91.1842
14599.5110	-109.4309	-115.9611	-108.4682	-111.4701	-104.7332	-98.9281	-100.5972	-103.8960	-107.8900	-105.4718	-115.7105	-102.6102	-103.0084	-100.9598	-94.5636
14642.5780	-114.5649	-113.9959	-110.7667	-115.9385	-118.9361	-102.5009	-107.2667	-113.7810	-114.6644	-109.9990	-115.4702	-110.3549	-108.0428	-106.2145	-101.0040
14685.6440	-117.0158	-114.4474	-112.4921	-127.5458	-136.1203	-106.4646	-120.1685	-118.4455	-129.4806	-117.2855	-111.7958	-130.0887	-116.4647	-113.4201	-105.6920
14728.7100	-117.6596	-112.8395	-111.3710	-111.3615	-126.0967	-95.6205	-104.0720	-105.3656	-109.6532	-114.8738	-113.3743	-108.1119	-115.8876	-106.7013	-96.9295
14771.7770	-109.7554	-108.7530	-107.4312	-103.2996	-106.1808	-90.6708	-95.5054	-97.4543	-101.8565	-104.8271	-116.4271	-98.5326	-101.9896	-97.5827	-89.3582
14814.8430	-124.6974	-106.7259	-103.5438	-100.0228	-97.0738	-90.6954	-92.7837	-94.0620	-97.9689	-99.7616	-119.2798	-93.9726	-97.5089	-94.0692	-86.1353
14857.9100	-103.5180	-105.8010	-100.9541	-99.5745	-92.9406	-91.6560	-95.1701	-94.9433	-96.7725	-102.0819	-106.8354	-95.6093	-98.2933	-95.6534	-86.0056

Freq	1.1.0	1.2.0	1.3.0	1.1.25	1.2.25	1.3.25	1.1.50	1.2.50	1.3.50	1.1.75	1.2.75	1.3.75	1.1.100	1.2.100	1.3.100
14900.9760	-100.5529	-106.1684	-100.7444	-100.5637	-92.5948	-96.4346	-103.6196	-99.9173	-99.8120	-117.8802	-104.7826	-100.3818	-104.1750	-101.5211	-88.5178
14944.0420	-105.7272	-110.9276	-104.1828	-106.0064	-96.9220	-116.0246	-114.1038	-105.7201	-108.5636	-110.0585	-108.9954	-100.7026	-116.4380	-112.0193	-94.6979
14987.1090	-120.6747	-118.1388	-108.7696	-118.7192	-108.3530	-113.4162	-113.6306	-117.2465	-123.9649	-114.0149	-113.4074	-107.3401	-112.3211	-130.4967	-106.3334
15030.1750	-122.9211	-120.3998	-112.7065	-111.6707	-120.4193	-112.3843	-114.3716	-117.9377	-115.3366	-120.5846	-114.4027	-111.5455	-113.8622	-123.5994	-111.8170
15073.2420	-119.2450	-116.6514	-118.3599	-111.4040	-114.7750	-113.7255	-121.1607	-113.3155	-114.9502	-112.2359	-113.5144	-113.4209	-113.9693	-116.8060	-110.8609
15116.3080	-123.9083	-116.6226	-108.7103	-112.2216	-115.2068	-120.0966	-117.2074	-113.5662	-122.2893	-113.5877	-114.8810	-112.0443	-109.9153	-111.8668	-114.4368
15159.3750	-121.7115	-120.9184	-108.4512	-118.8813	-120.6567	-112.9925	-119.4582	-119.5302	-130.3131	-112.1700	-121.2030	-111.4493	-111.0228	-115.2127	-118.4994
15202.4410	-116.5768	-114.2706	-109.7537	-123.1006	-120.2784	-111.7101	-117.9500	-128.6194	-123.3774	-108.3768	-129.8245	-111.3884	-115.2988	-127.5066	-114.4056
15245.5070	-114.7704	-114.2097	-110.3728	-116.9116	-119.2308	-118.4349	-114.5803	-128.5923	-117.0602	-109.1921	-119.2251	-112.0740	-112.6164	-129.2910	-111.7367
15288.5740	-112.3649	-117.4237	-113.5120	-112.3643	-120.6389	-122.7129	-114.5830	-125.5646	-117.0980	-109.1921	-119.2251	-112.0740	-116.8376	-120.3161	-109.6058
15331.6400	-109.8886	-123.8866	-115.8598	-110.4944	-114.4146	-118.1774	-115.2307	-117.9729	-117.2268	-113.0386	-120.4069	-115.2480	-126.8747	-117.5673	-110.3145
15374.7070	-108.4593	-125.0453	-111.4465	-112.5476	-111.6561	-117.2771	-114.3379	-114.9689	-114.7878	-116.8355	-127.2335	-119.6891	-119.9188	-124.9192	-116.9863
15417.7730	-109.2810	-118.5374	-112.5497	-118.1454	-112.2804	-111.8107	-115.1119	-117.1424	-115.4100	-117.2355	-119.0729	-122.2776	-113.0487	-123.2301	-112.2816
15460.8390	-110.7755	-120.0975	-117.3612	-123.6410	-114.3170	-112.0362	-119.0707	-129.5534	-117.7420	-122.6592	-116.0894	-122.3348	-111.0487	-124.9192	-116.9863
15503.9060	-110.7421	-129.4132	-124.6613	-123.3044	-116.9020	-116.7992	-123.7210	-125.9573	-114.7507	-116.9507	-114.1063	-117.1412	-111.8772	-123.2479	-109.2355
15546.9720	-112.7828	-118.9709	-123.3374	-114.1094	-118.6492	-124.8397	-121.8220	-125.5869	-114.1805	-112.1658	-115.2490	-112.4196	-112.9911	-116.7776	-112.1432
15590.0390	-119.1580	-113.1891	-126.2105	-110.6269	-115.1324	-120.7275	-122.7379	-117.7930	-121.1889	-111.7191	-123.9698	-130.3075	-114.7739	-111.5746	-113.4540
15633.1050	-118.8440	-114.3459	-121.1923	-111.4025	-114.9989	-117.0486	-124.0247	-114.3870	-117.7144	-112.6223	-118.2480	-130.5927	-113.5528	-112.4884	-111.0081
15676.1710	-116.5541	-118.0804	-117.8258	-112.0830	-124.5114	-114.3167	-123.5932	-113.4319	-113.9585	-112.6739	-113.3336	-114.3398	-113.0026	-122.2733	-130.0147
15719.2380	-119.8844	-118.3630	-113.4153	-111.0231	-119.4745	-114.9885	-117.6343	-114.8940	-116.6684	-114.3818	-113.7262	-119.1944	-115.6405	-115.0964	-111.9965
15762.3040	-122.8732	-116.3634	-115.1307	-113.6750	-113.0716	-114.9875	-116.5669	-117.4811	-116.4241	-123.7649	-115.9698	-129.3236	-124.4781	-116.7212	-116.9171
15805.3710	-117.7946	-119.4671	-116.2539	-118.3797	-112.5220	-115.2039	-115.8135	-116.6180	-115.5144	-124.4167	-113.7976	-120.3997	-129.7189	-116.7212	-116.2429
15848.4370	-121.4079	-115.4504	-110.7325	-117.0849	-118.5015	-113.7105	-113.4602	-114.5875	-118.9200	-125.2789	-114.0132	-114.9125	-123.1185	-129.9269	-114.3052
15891.5030	-116.6255	-108.0900	-109.5248	-124.8133	-130.6537	-113.9184	-113.0136	-116.5338	-120.2491	-119.7896	-120.7503	-115.1187	-112.4463	-117.0308	-114.3706
15934.5700	-113.4985	-106.9192	-110.2837	-130.7432	-123.6111	-115.5579	-117.3972	-119.6059	-116.1935	-119.3134	-120.2775	-119.5500	-109.5743	-112.9688	-115.8529
15977.6360	-116.4259	-110.0768	-112.4609	-117.2130	-124.8656	-120.2014	-127.4624	-117.1526	-114.0474	-123.6711	-122.8055	-116.1790	-111.3069	-112.3683	-112.9171
16020.7030	-122.6065	-118.4534	-117.2757	-112.8330	-123.5918	-120.5229	-114.9059	-119.9014	-115.3004	-124.2625	-111.7029	-111.6323	-115.0923	-114.7790	-108.2971
16063.7690	-127.3423	-132.1265	-114.3760	-112.9551	-117.5124	-116.7970	-115.8563	-127.5646	-120.3209	-123.6087	-111.3644	-112.7148	-111.2189	-115.3787	-109.7951
16106.8350	-125.8405	-118.0275	-124.9852	-117.7474	-114.6269	-118.1705	-126.7215	-126.4427	-113.5931	-123.2265	-113.9210	-115.9044	-109.4871	-112.5475	-115.2857
16149.9020	-114.4611	-114.9761	-115.0867	-118.4969	-117.9470	-118.9871	-115.0501	-111.5496	-114.6152	-115.6158	-128.5743	-120.7932	-110.6774	-113.6762	-121.0905
16192.9680	-109.9020	-116.2071	-113.6475	-114.9154	-125.6723	-115.3950	-120.3291	-115.7337	-115.7464	-112.3943	-117.6031	-126.4258	-116.6294	-122.0296	-118.5113
16236.0350	-110.3901	-118.7680	-113.1394	-113.1667	-114.2208	-120.8596	-120.3815	-123.2525	-113.2579	-111.5102	-119.2478	-117.8954	-129.7410	-126.3386	-125.1050
16279.1010	-118.8524	-116.8154	-108.4638	-115.8454	-110.2439	-122.7047	-120.2815	-123.2525	-113.2244	-114.1331	-114.5662	-115.7403	-117.7278	-126.0782	-128.1727
16365.2340	-118.6500	-115.0827	-109.8762	-129.3646	-111.8308	-128.5014	-111.2816	-118.8740	-117.8137	-116.2224	-114.7126	-117.3079	-116.4378	-117.4095	-123.7493
16408.3000	-118.6018	-118.4170	-128.8412	-119.5305	-112.4135	-120.5775	-110.2852	-118.3287	-114.1105	-129.6302	-110.7896	-114.9420	-121.9167	-115.5018	-113.4642
16451.3670	-117.3799	-135.5996	-116.6430	-112.7285	-112.5978	-111.3416	-112.7323	-133.7274	-112.4845	-124.3581	-110.3194	-117.5705	-120.8119	-115.6829	-109.7789
16494.4330	-115.6226	-123.0073	-115.9604	-110.1179	-118.3798	-112.1969	-116.1027	-114.9153	-114.7216	-124.8142	-113.9758	-126.7900	-115.1091	-115.1368	-108.8937
16537.5000	-115.5831	-118.9381	-121.4060	-111.0574	-125.7672	-117.2233	-116.7445	-111.5443	-113.8860	-126.6111	-122.9878	-123.7421	-111.9097	-114.8215	-111.0503
16580.5660	-119.5519	-113.5598	-117.5748	-113.3807	-118.5556	-115.8104	-116.1428	-112.5126	-110.9143	-115.4707	-115.6531	-116.0019	-111.6556	-116.8443	-111.9374
16623.6320	-122.3671	-110.2036	-113.3796	-117.3591	-115.9530	-123.8512	-117.6549	-112.5126	-111.1206	-114.1434	-110.6154	-113.6956	-113.9974	-120.5398	-108.9834
16666.6990	-112.3924	-111.7837	-113.0695	-124.0345	-114.4208	-119.6893	-122.1011	-124.8655	-115.3261	-118.2507	-109.2207	-113.0565	-117.8674	-120.5627	-108.9212
16709.7650	-109.6233	-117.5638	-114.2328	-124.7411	-119.3482	-115.5023	-124.7718	-117.5479	-119.4681	-130.7077	-110.2537	-113.0699	-115.8977	-119.9384	-111.5440

Freq	1.1.0	1.2.0	1.3.0	1.1.25	1.2.25	1.3.25	1.1.50	1.2.50	1.3.50	1.1.75	1.2.75	1.3.75	1.1.100	1.2.100	1.3.100
16752.8320	-110.1224	-115.5408	-118.7045	-129.3536	-115.9545	-138.1726	-114.9037	-117.4118	-116.2948	-122.5505	-111.2827	-115.9744	-114.5240	-121.3632	-113.2906
16795.8980	-112.0599	-114.6393	-121.1014	-117.8274	-112.9385	-123.1205	-115.0811	-121.0770	-115.4323	-116.5413	-109.2395	-118.2051	-118.5917	-124.8250	-113.2887
16838.9640	-111.7303	-115.6178	-133.9475	-114.8738	-116.1277	-117.0996	-119.1334	-125.0362	-111.7417	-115.5098	-107.3654	-115.6642	-118.5481	-124.3553	-113.4786
16881.0310	-111.5454	-116.6745	-124.1552	-116.1502	-116.7268	-139.5623	-117.5426	-124.5348	-109.8539	-123.1333	-109.0483	-114.9222	-117.3179	-122.3187	-114.2370
16925.0970	-115.3807	-118.1975	-128.0833	-115.9645	-116.4111	-132.3614	-118.4123	-116.7085	-109.2502	-121.9412	-117.6669	-117.7359	-123.3905	-119.6941	-120.3733
16968.1640	-134.3971	-120.7568	-121.4060	-113.4119	-117.4407	-118.1422	-118.8677	-114.0756	-111.1227	-117.2501	-125.0689	-120.7472	-127.7369	-124.7887	-120.3759
17011.2300	-116.2991	-121.1307	-114.0095	-116.8577	-115.2548	-111.4744	-129.4794	-112.3397	-116.0158	-117.8154	-118.7963	-120.0838	-115.3957	-127.7477	-122.7125
17054.2960	-112.6967	-121.8757	-115.4282	-111.9697	-112.2468	-108.4825	-119.7770	-113.1273	-120.0203	-115.7277	-120.9918	-121.2138	-114.1677	-131.3731	-131.4482
17097.3630	-110.4710	-125.4973	-121.1384	-112.4374	-111.8622	-108.0356	-114.3241	-124.4314	-125.3408	-118.4581	-125.0365	-126.6628	-118.9747	-124.6843	-125.5070
17140.4290	-111.2647	-125.8331	-116.9080	-127.2758	-112.3506	-109.4992	-112.5160	-114.5266	-130.3751	-121.6344	-117.1056	-121.7289	-125.9189	-119.5155	-117.6177
17183.4960	-118.5477	-118.4165	-112.8400	-117.1970	-114.0448	-111.8229	-113.8311	-115.4920	-122.8042	-114.1010	-127.1130	-117.9297	-119.0238	-113.3664	-113.5693
17226.5620	-128.3985	-115.9141	-111.7635	-115.9116	-114.8482	-115.9813	-122.1912	-114.0430	-117.3490	-110.8194	-116.7753	-113.2800	-114.6196	-114.9157	-112.2323
17269.6280	-120.6558	-120.5035	-111.9385	-120.4633	-113.9260	-124.8640	-130.3757	-110.4756	-117.9468	-112.7458	-117.5489	-111.1571	-115.4880	-112.3039	-113.8622
17312.6950	-116.8973	-125.3605	-114.7609	-124.8208	-118.5885	-123.3776	-119.7059	-110.3788	-124.1574	-113.2898	-124.8947	-112.3999	-119.5050	-113.8170	-115.3265
17355.7610	-114.3511	-115.4186	-137.7530	-121.6906	-116.3635	-119.5670	-116.7613	-112.9905	-130.7662	-109.9031	-122.4106	-113.2301	-138.5818	-114.6560	-119.6748
17398.8280	-114.4223	-118.0064	-114.6751	-115.2758	-114.0127	-115.2657	-117.9896	-114.0537	-122.4602	-110.7458	-117.4587	-113.6234	-121.1663	-109.8108	-122.3958
17441.8940	-119.1461	-116.9688	-114.7952	-114.7141	-115.4619	-116.4354	-114.8845	-116.3268	-115.9963	-121.8611	-115.2500	-117.4390	-118.3426	-114.9448	-126.2950
17484.9600	-117.5877	-115.3958	-118.3304	-115.4586	-122.4338	-113.4297	-113.1315	-113.7306	-120.5134	-120.4496	-111.3609	-116.5619	-117.8719	-123.9815	-127.1523
17528.0270	-132.6951	-112.0720	-117.5615	-132.2617	-131.7814	-113.6310	-116.4935	-119.3907	-113.2260	-124.6662	-110.2960	-118.9615	-120.0887	-112.8301	-121.1918
17571.0930	-114.4262	-114.3269	-114.5745	-113.8516	-124.7981	-117.0359	-122.8333	-122.1177	-109.9520	-113.8468	-120.9697	-140.6088	-124.5217	-115.2430	-119.1096
17614.1600	-126.2038	-121.7299	-114.0028	-120.2090	-121.4473	-125.9254	-123.5778	-117.3457	-112.3231	-115.4903	-113.7807	-122.7503	-121.5417	-118.4559	-117.5515
17657.2260	-115.3364	-125.0719	-116.9148	-115.8896	-115.9598	-129.1577	-141.8766	-119.5383	-117.5795	-118.8551	-119.4227	-119.2187	-120.6458	-114.8974	-112.9759
17700.2920	-120.0828	-117.8476	-114.8290	-115.3508	-115.2795	-125.0570	-116.5670	-119.6737	-122.8825	-118.5515	-119.4227	-119.2187	-120.6458	-114.8974	-112.9759
17743.3590	-136.2312	-118.7426	-114.7589	-119.0280	-116.5282	-123.5604	-112.5175	-122.0052	-116.1625	-124.1217	-130.4424	-136.2457	-121.2070	-114.0610	-113.7727
17786.4250	-123.0816	-125.9804	-117.5024	-117.2940	-115.9280	-125.3751	-113.2973	-118.4819	-118.3710	-132.3522	-124.1812	-117.8736	-128.5159	-112.2224	-130.5154
17829.4920	-119.3850	-117.6191	-117.9847	-128.2776	-112.0639	-125.7131	-120.0937	-116.3012	-120.9897	-122.7699	-116.6616	-116.5728	-118.5098	-110.4654	-114.2393
17872.5580	-111.7036	-115.3497	-120.2776	-114.7504	-113.2253	-121.8802	-116.2711	-117.4641	-111.4216	-116.9053	-118.3770	-115.3783	-113.6066	-111.4297	-108.9240
17915.6250	-114.4511	-114.5317	-128.7728	-110.8055	-113.6891	-115.3028	-110.6816	-124.2982	-110.2065	-117.3936	-151.1539	-116.4682	-112.3424	-115.0573	-107.6693
17958.6910	-121.4465	-113.9776	-124.7396	-112.9698	-112.9925	-120.1223	-110.0786	-124.6141	-111.1998	-117.5231	-130.5024	-116.8443	-114.1144	-115.5375	-110.0358
18001.7570	-116.9086	-112.9281	-121.3193	-118.3482	-115.4556	-124.8005	-113.1375	-119.0323	-112.6228	-112.8340	-119.4548	-115.0678	-122.0270	-114.7279	-114.9514
18044.8240	-117.3279	-112.9216	-116.0261	-116.3030	-117.8790	-128.9797	-116.2119	-119.4636	-114.4720	-122.7112	-113.8948	-117.5359	-130.9191	-115.2246	-122.5649
18087.8900	-119.4695	-113.0275	-114.4616	-138.8098	-118.6848	-118.0749	-114.6166	-129.0351	-112.9520	-122.9557	-114.6971	-117.0338	-130.5838	-122.3048	-125.5733
18130.9570	-127.2887	-114.0427	-113.5123	-115.3762	-117.5805	-134.7667	-117.8809	-124.6240	-110.9938	-120.3004	-122.7742	-115.1258	-117.5023	-113.9584	-114.5553
18174.0230	-122.3967	-114.7286	-114.8128	-114.1781	-114.8038	-114.6453	-120.7920	-118.9989	-111.3335	-115.0934	-122.0528	-119.8020	-110.1221	-131.1060	-112.7670
18217.0890	-112.5589	-115.2513	-118.3947	-116.9754	-113.3614	-128.1671	-120.5888	-119.6158	-113.9868	-114.3305	-120.3239	-129.4649	-107.7432	-115.0002	-117.4008
18260.1560	-108.8735	-121.1469	-116.5001	-115.3432	-115.4879	-116.6705	-118.3323	-116.6909	-117.8597	-112.8020	-156.5533	-123.3893	-107.6682	-125.3410	-128.0130
18303.2220	-108.2475	-120.1648	-118.3134	-117.6584	-121.2104	-112.9892	-121.8171	-119.9105	-117.9782	-109.2651	-122.0810	-117.4907	-107.9625	-120.3967	-122.0440
18346.2890	-108.8823	-112.0198	-117.6932	-115.9775	-126.1444	-113.0762	-122.7407	-117.9377	-118.1357	-108.6576	-120.1442	-118.8173	-108.4222	-121.0872	-112.3768
18389.3550	-110.2473	-112.0198	-117.6932	-112.3012	-117.1870	-115.2898	-119.0408	-115.3947	-129.1254	-115.2249	-123.6013	-117.2841	-111.4855	-123.6867	-108.6341
18432.4210	-112.0054	-107.5779	-118.1677	-112.3012	-117.1870	-115.2898	-115.7869	-120.5738	-120.0884	-119.6789	-122.7973	-113.2594	-111.9353	-125.3022	-110.2816
18475.4880	-114.8307	-108.9712	-124.6068	-110.7471	-118.8577	-117.1013	-115.7869	-120.5738	-120.0884	-111.7350	-126.3339	-110.2784	-123.5874	-116.9071	-119.0972
18518.5540	-116.1889	-117.8471	-125.0370	-109.8588	-120.1467	-117.2762	-115.6107	-127.3402	-115.2507	-111.7350	-126.3339	-110.2784	-123.5874	-116.9071	-119.0972
18561.6210	-117.7632	-114.2221	-131.1598	-110.8204	-113.8781	-116.1451	-120.0418	-119.0367	-111.6488	-112.1575	-122.9833	-110.4386	-121.8519	-111.2274	-123.8551

Freq	1.10	1.20	1.30	1.1.25	1.2.25	1.3.25	1.1.50	1.2.50	1.3.50	1.1.75	1.2.75	1.3.75	1.1.100	1.2.100	1.3.100
18504.6870	-114.6497	-109.4841	-120.5267	-113.8284	-111.1922	-120.5789	-113.8943	-116.0718	-111.6847	-114.0881	-121.9062	-110.8786	-121.4233	-110.1377	-120.0517
18547.7530	-109.2707	-109.1837	-114.9862	-117.8661	-112.3381	-116.4587	-111.9744	-116.2920	-116.7591	-117.5143	-116.3957	-111.2254	-124.5413	-115.2835	-114.9027
18690.8200	-109.0025	-109.1618	-113.3699	-122.4890	-115.2522	-113.1121	-114.4209	-118.5195	-116.7101	-123.3658	-113.7202	-112.5465	-113.1213	-118.3347	-113.9822
18733.8860	-108.2546	-111.0649	-113.8244	-113.5077	-116.4347	-115.3257	-119.6245	-120.3542	-115.1704	-113.2548	-114.6904	-112.2204	-108.6832	-114.6789	-117.0288
18776.9530	-106.9296	-117.5161	-113.2620	-112.7441	-115.7323	-120.3505	-119.4803	-114.9520	-116.5380	-112.2723	-118.7043	-113.6111	-111.0005	-113.8722	-111.8430
18820.0190	-106.5186	-118.0384	-112.7578	-116.1138	-118.0975	-125.2308	-114.2143	-111.8977	-119.0666	-113.6005	-125.7771	-127.7142	-113.1232	-114.6400	-111.3528
18863.0850	-107.5515	-112.0328	-116.9769	-121.5555	-122.2239	-117.5281	-110.9070	-112.8660	-119.1892	-115.7586	-113.2280	-119.2127	-112.3668	-118.4188	-114.4707
18906.1520	-113.5575	-110.8468	-124.3754	-121.6962	-113.7721	-111.5657	-110.4101	-117.7666	-118.0308	-117.3726	-110.5694	-115.1431	-110.9356	-116.0957	-127.4168
18949.2180	-124.0454	-112.3763	-121.2861	-117.4274	-113.8412	-112.5529	-112.6115	-116.6614	-120.1413	-118.9165	-110.6355	-115.7483	-110.8281	-116.0326	-119.3568
18992.2850	-115.0797	-113.9447	-121.3643	-115.8400	-120.2661	-118.7566	-113.7197	-118.1495	-125.1906	-117.0844	-112.4104	-114.7703	-118.1452	-116.6848	-114.9042
19035.3510	-120.4138	-114.5005	-123.0222	-117.9284	-111.4260	-120.0450	-115.1448	-113.3366	-125.3751	-115.1670	-118.8722	-115.8504	-125.5896	-116.6280	-118.0200
19078.4170	-133.3338	-115.7899	-130.8969	-125.8803	-109.7463	-123.6355	-116.5754	-117.2546	-114.1142	-119.1480	-124.6234	-121.7464	-116.7656	-118.6832	-119.2322
19121.4840	-121.5432	-118.2999	-107.3623	-133.1036	-112.5885	-123.2737	-112.7481	-120.4024	-111.3094	-122.8808	-117.1670	-115.0274	-113.9210	-117.2727	-115.7642
19164.5500	-120.3191	-118.8178	-109.0684	-127.0960	-127.1003	-121.2951	-111.5536	-119.2375	-114.6923	-116.7395	-115.6581	-118.2041	-112.6518	-119.9578	-122.9294
19250.6830	-114.3955	-117.0666	-114.2948	-114.1268	-113.0668	-117.3695	-126.1567	-126.4326	-114.7131	-117.5131	-124.4950	-121.7927	-116.3838	-123.7135	-132.6327
19293.7500	-114.9327	-121.5370	-115.2184	-117.4793	-113.2454	-117.2604	-116.8089	-121.4396	-113.9421	-114.6481	-119.6419	-113.9745	-112.9918	-117.6034	-131.8621
19336.8160	-115.8609	-118.4997	-115.8770	-120.6462	-113.8186	-118.0695	-110.8472	-116.7185	-118.8476	-117.0488	-117.2927	-111.7123	-109.9361	-114.4235	-134.3284
19379.8820	-117.3564	-113.0690	-117.0688	-118.3403	-117.2083	-127.6890	-111.9373	-118.2991	-152.0111	-118.9238	-117.7008	-112.9728	-113.9068	-116.4929	-128.4514
19422.9490	-129.7539	-113.0049	-119.1146	-114.2784	-123.3046	-120.8273	-122.2148	-119.4846	-119.9164	-118.1188	-117.9889	-113.7031	-127.4286	-125.3377	-121.2835
19466.0150	-123.3322	-120.9931	-116.0511	-109.6942	-118.6668	-116.8127	-120.2595	-123.1302	-115.6864	-117.6614	-115.0475	-116.2552	-123.4882	-124.4860	-121.9902
19509.0820	-124.2184	-118.6439	-112.1545	-108.1870	-113.8683	-119.5555	-122.8942	-140.9748	-117.3762	-112.0102	-114.9319	-117.3135	-120.1708	-123.0623	-120.5914
19552.1480	-124.0909	-116.0686	-111.1615	-108.9731	-115.0999	-123.4941	-128.8614	-125.4581	-126.2834	-114.0821	-117.3281	-118.5059	-116.5222	-114.6298	-116.6893
19595.2140	-118.5173	-113.3882	-113.3990	-110.8612	-114.8649	-119.8368	-122.9777	-136.2898	-115.5201	-132.4342	-118.1131	-122.6276	-116.5222	-114.6298	-116.9637
19638.2810	-118.4092	-110.5470	-111.8979	-113.5240	-115.9465	-121.4361	-116.3975	-120.4589	-115.2894	-112.7128	-120.0370	-131.3047	-112.2385	-113.0517	-134.8929
19681.3470	-115.6063	-111.3364	-110.2383	-113.6170	-128.2940	-122.8703	-114.3844	-120.7796	-117.2859	-110.5520	-121.8140	-126.3419	-116.6721	-116.1187	-109.6917
19724.4140	-114.9640	-115.7509	-111.8497	-112.3702	-121.6445	-122.4903	-118.6353	-120.8134	-121.5875	-113.2026	-117.5901	-119.2628	-125.9122	-115.2721	-109.8442
19767.4800	-116.2487	-116.1696	-114.2129	-113.4036	-122.6045	-123.2283	-137.6322	-126.8079	-117.2954	-114.6581	-116.6436	-118.2711	-120.7842	-113.0907	-112.4594
19810.5460	-117.1333	-119.5055	-116.7115	-116.1415	-116.2072	-125.1928	-120.4376	-116.6833	-121.3115	-118.0143	-117.0839	-124.5560	-119.2678	-115.6978	-118.7522
19853.6130	-118.6597	-134.3992	-118.7371	-118.1986	-110.9899	-116.0973	-116.5602	-114.5648	-123.7179	-119.2998	-118.5414	-119.6491	-116.3467	-116.7318	-131.0172
19896.6790	-117.4092	-119.5473	-118.8590	-117.2477	-112.7415	-114.3448	-114.7296	-116.2264	-122.7343	-118.3352	-118.8359	-120.4676	-114.3380	-116.5930	-119.3410
19939.7460	-119.5827	-115.1126	-123.0670	-123.2242	-122.0437	-112.2846	-117.4098	-122.1581	-118.3865	-119.6253	-120.7514	-122.7260	-111.0115	-113.5837	-118.2595
19982.8120	-115.5535	-111.3796	-128.5346	-119.2173	-116.1729	-109.6833	-139.2491	-121.1498	-111.7406	-116.2109	-115.4471	-116.8398	-110.8056	-111.0333	-122.4665
20025.8780	-114.9104	-112.5488	-119.0026	-114.2859	-111.7659	-109.3668	-128.5546	-111.7034	-113.0521	-113.2593	-111.7918	-111.5100	-112.7763	-109.2253	-116.7016
20068.9450	-120.0740	-122.9755	-117.3761	-120.3913	-113.3618	-112.6141	-121.3165	-110.8882	-116.8600	-111.1344	-111.6760	-110.0928	-119.1999	-109.8954	-113.8864
20112.0110	-119.3965	-123.7047	-116.7899	-113.4003	-120.5729	-115.6305	-114.7981	-113.8488	-117.2283	-115.4240	-112.8336	-111.7712	-136.2781	-134.4574	-112.8086
20155.0780	-116.2504	-123.4961	-117.3246	-114.3492	-122.7408	-116.1959	-113.9685	-112.6899	-117.0811	-120.7290	-112.0076	-113.3734	-127.6941	-115.0358	-114.7807
20198.1440	-116.7069	-116.9336	-116.5969	-127.7579	-115.7300	-114.1438	-115.6827	-111.1172	-113.7715	-119.3524	-110.6686	-114.9647	-121.5458	-114.5953	-114.1288
20241.2100	-111.1736	-124.7226	-114.0770	-118.8793	-120.4006	-114.8915	-120.0541	-112.3019	-111.9815	-118.0055	-112.8801	-116.5474	-120.6982	-112.8713	-110.8701
20284.2770	-108.4340	-118.0734	-110.2450	-116.5030	-119.5535	-123.9131	-127.0238	-113.5154	-112.1421	-114.9477	-118.7033	-119.7268	-118.1048	-110.5190	-109.9012
20327.3430	-110.8574	-110.7243	-109.0871	-116.0359	-120.7811	-112.9361	-120.9202	-114.0151	-122.9949	-116.4445	-113.7588	-128.8486	-118.9398	-110.7755	-111.6616
20370.4100	-115.2183	-108.9701	-111.7835	-118.0659	-118.3227	-119.0289	-116.8988	-115.3633	-121.1641	-129.4708	-112.5642	-121.8897	-113.6250	-114.7215	-115.6243
20413.4760	-112.9521	-113.3778	-115.8387	-116.8872	-109.0396	-114.6269	-121.6490	-114.5390	-121.4194	-120.2535	-112.5679	-115.9396	-115.0854	-122.7150	-123.9121

Freq	2.1.0	2.2.0	2.3.0	2.1.25	2.2.25	2.3.25	2.1.50	2.2.50	2.3.50	2.1.75	2.2.75	2.3.75	2.1.100	2.2.100	2.3.100
43.0660	-45.0198	-40.1553	-40.2027	-41.5593	-34.6279	-31.2651	-42.0504	-43.7432	-53.0971	-46.9300	-39.3859	-48.2287	-33.9550	-34.1917	-44.1661
86.1320	-48.9453	-33.0873	-34.5222	-36.8762	-32.6291	-25.7435	-37.7965	-40.5917	-44.0674	-41.4880	-31.9369	-43.4017	-26.0658	-29.0032	-38.0997
129.1990	-33.9119	-30.7419	-31.6051	-38.8345	-25.4212	-22.7428	-34.8090	-45.4173	-39.9940	-40.4533	-29.3230	-45.6047	-21.3363	-34.8891	-37.7508
172.2650	-29.8130	-31.0467	-29.9557	-29.6379	-18.8604	-22.9691	-34.3343	-40.3656	-40.4683	-46.0206	-29.2687	-64.3702	-20.8101	-35.0645	-42.1622
215.3320	-31.3992	-32.1738	-31.8414	-28.7710	-19.9451	-27.7972	-39.7541	-37.9286	-45.7247	-63.3945	-29.7237	-49.8194	-25.5198	-33.0251	-47.5108
258.3980	-38.0289	-37.9472	-39.0367	-35.7142	-27.5138	-38.7251	-48.2592	-42.8755	-54.0743	-57.7975	-35.3495	-54.0966	-36.7043	-39.4699	-54.3221
301.4640	-48.6962	-54.3718	-47.9797	-44.8882	-49.1017	-47.9027	-54.7827	-50.0565	-57.4522	-65.7134	-45.9979	-60.0632	-64.1748	-44.9770	-56.7834
387.5970	-46.5259	-53.3298	-49.9179	-45.7809	-51.0913	-55.4060	-61.9216	-57.0336	-68.9235	-68.2760	-47.0675	-58.9910	-77.1958	-51.0147	-56.7030
430.6640	-50.1763	-54.3835	-55.1083	-58.1725	-54.9034	-57.4913	-66.0277	-64.5464	-61.7546	-74.9749	-50.0575	-65.8525	-75.2258	-58.6826	-61.5379
473.7300	-57.5156	-59.7691	-62.7118	-60.4876	-59.9266	-57.2928	-59.1473	-71.7992	-65.7708	-76.0435	-54.6203	-78.2791	-77.6252	-69.5844	-73.3619
516.7960	-66.4174	-71.8917	-60.7311	-58.6184	-58.7393	-57.7722	-61.8457	-71.6618	-70.3932	-74.3349	-62.2487	-76.3927	-77.8469	-68.5901	-90.2552
559.8630	-66.7732	-71.8875	-56.7426	-57.8838	-57.8928	-59.4335	-67.8984	-72.1753	-69.2466	-75.5233	-70.7503	-82.8680	-79.1487	-75.4355	-76.8639
602.9290	-56.8605	-64.1228	-58.1756	-56.3159	-62.4845	-62.2548	-67.9754	-78.8429	-69.9510	-77.7324	-72.8454	-98.8980	-71.4117	-73.0468	-71.1329
645.9960	-56.9710	-64.3182	-63.5617	-57.3651	-68.8921	-68.5166	-65.7969	-81.0800	-75.0762	-79.6733	-75.6000	-80.2958	-71.7371	-68.7994	-71.2482
689.0620	-61.1074	-66.9276	-62.1743	-62.8588	-69.7505	-80.4877	-66.2178	-79.1450	-72.6453	-74.3896	-74.9136	-75.7912	-72.6363	-66.0846	-85.6476
732.1280	-61.2051	-63.7803	-60.4070	-77.9518	-69.3650	-73.2463	-68.6218	-72.6140	-68.2961	-72.2061	-80.5406	-79.9180	-70.1805	-67.4262	-73.1120
775.1950	-59.4816	-60.1573	-66.3712	-66.6503	-70.3452	-73.1242	-71.9204	-65.9038	-66.4278	-74.7272	-83.0396	-75.5345	-69.4084	-62.9726	-67.4876
818.2610	-59.8344	-57.6505	-67.0328	-59.2883	-74.5861	-69.8378	-75.1944	-70.8626	-65.2490	-81.2478	-76.3490	-68.5638	-64.9509	-60.9038	-59.1538
861.3280	-66.1664	-55.9915	-60.2495	-54.3910	-64.1335	-63.3393	-80.4614	-81.1563	-64.4326	-82.3553	-78.2005	-66.8846	-62.5404	-65.1209	-55.2671
904.4600	-66.8434	-54.2404	-62.5160	-51.6343	-60.9254	-61.3541	-72.0370	-73.1705	-67.8711	-81.6610	-72.2845	-70.8918	-65.4604	-68.0742	-55.7623
947.4600	-58.3444	-52.4950	-67.9141	-49.7047	-61.1516	-61.3039	-66.7088	-66.0117	-69.5771	-76.6410	-75.4458	-70.8918	-62.3755	-78.0742	-55.7623
990.5270	-55.9304	-53.2897	-66.2608	-46.0185	-62.4478	-58.9173	-65.2598	-64.2770	-61.2003	-68.2901	-68.9681	-68.0465	-62.3598	-66.2567	-62.9786
1033.5930	-59.2508	-58.2475	-64.6408	-42.7983	-64.7798	-59.2189	-66.3858	-62.1199	-62.6801	-71.2893	-65.3709	-74.6012	-68.6891	-70.0612	-68.8914
1076.6600	-68.6141	-68.5782	-70.5162	-43.4564	-63.2890	-69.6376	-71.6220	-62.1893	-68.8096	-75.0110	-66.4079	-78.6215	-74.9914	-70.1145	-80.2338
1119.7260	-67.5690	-71.3399	-64.4918	-49.3943	-62.8453	-65.1976	-75.0039	-66.4101	-72.2828	-68.9211	-68.9591	-81.5984	-73.1414	-68.3267	-80.9789
1162.7920	-72.2872	-83.7991	-63.2813	-60.3814	-65.3195	-62.9730	-74.0026	-73.9416	-70.7096	-71.7574	-70.2731	-73.9817	-76.7450	-70.8607	-78.8586
1205.8590	-85.9668	-63.2895	-67.4308	-63.6865	-72.1693	-64.1420	-79.4530	-81.3856	-71.8374	-74.1939	-73.0657	-76.9763	-83.9132	-77.8324	-77.5508
1248.9250	-82.5894	-61.9511	-71.1891	-59.8158	-64.6272	-62.5969	-83.1462	-83.6013	-73.9564	-75.3601	-79.3584	-78.2444	-85.8982	-80.3759	-79.0813
1291.9920	-71.3461	-63.5226	-62.4223	-55.8570	-58.3416	-58.1241	-86.7936	-82.6538	-76.1949	-78.7412	-78.7502	-76.4685	-77.0150	-88.6070	-85.0817
1335.0580	-65.0805	-52.6135	-55.5759	-54.6760	-56.4223	-55.5741	-86.1163	-82.2087	-78.7605	-77.1106	-87.5831	-76.5542	-73.5598	-94.5121	-79.1042
1378.1250	-66.3495	-51.2209	-52.3383	-58.0780	-59.9056	-56.1043	-88.6681	-82.8244	-92.5289	-75.6354	-77.4098	-80.3279	-73.4022	-78.5177	-85.3284
1421.1910	-57.2655	-53.5453	-51.8470	-68.4992	-63.9766	-54.9925	-91.8431	-79.0388	-76.6409	-83.9779	-76.3313	-78.3231	-76.7033	-74.6638	-81.3114
1507.3240	-59.0273	-65.9527	-64.1151	-70.0775	-60.2831	-54.9577	-82.4915	-81.0566	-75.4499	-73.6935	-83.3821	-77.7192	-89.5582	-76.0955	-75.0538
1550.3900	-63.4917	-56.8882	-57.6885	-67.5058	-69.7969	-62.2075	-78.6966	-86.7833	-83.9907	-80.5905	-86.2610	-80.7282	-75.7085	-74.0664	-79.5035
1593.4570	-62.6323	-53.5198	-57.2944	-68.2222	-76.3624	-62.3475	-74.7597	-82.5128	-87.7086	-73.6488	-78.6201	-85.0965	-74.3740	-75.5595	-74.0539
1636.5230	-63.5516	-56.4694	-54.3993	-74.0917	-74.8929	-67.6491	-66.6081	-72.6123	-77.9600	-72.8561	-69.5360	-77.2055	-79.5603	-70.5074	-66.3024
1679.5890	-68.0338	-61.0489	-52.8982	-73.1410	-87.7886	-82.9813	-63.3004	-68.4529	-71.8789	-71.9291	-63.6291	-73.1567	-69.8812	-67.9204	-62.4121
1722.6560	-70.6039	-58.4726	-56.5552	-78.1183	-79.9804	-85.1116	-67.0826	-69.6444	-72.0638	-71.0766	-63.7793	-72.4274	-66.8080	-67.5260	-63.8611
1765.7220	-69.0393	-58.5431	-62.6180	-83.7527	-78.7375	-89.0037	-79.8978	-75.7851	-76.3138	-77.4077	-70.7072	-75.1868	-71.3810	-68.8726	-70.5091
1808.7890	-70.0567	-57.0574	-56.7249	-78.2441	-80.2016	-88.1183	-78.4200	-81.6983	-79.4809	-77.9720	-80.8882	-83.5920	-86.7370	-74.0648	-76.7936
1851.8550	-66.9961	-53.1416	-53.7487	-76.1189	-79.8096	-81.6150	-103.6822	-84.1261	-80.6154	-87.7483	-89.1085	-91.4841	-78.5441	-76.0484	-76.7155
1894.9210	-63.6476	-53.1933	-53.9247	-75.3006	-83.0869	-80.1665	-85.7268	-82.4705	-80.9245	-83.9382	-89.4886	-83.6618	-70.9884	-77.3702	-76.5512

Freq	2.1.0	2.2.0	2.3.0	2.1.25	2.2.25	2.3.25	2.1.50	2.2.50	2.3.50	2.1.75	2.2.75	2.3.75	2.1.100	2.2.100	2.3.100
1937.9880	-62.7263	-51.6815	-53.9509	-75.5890	-87.1627	-85.9848	-86.7689	-81.7905	-79.3587	-77.3293	-81.6651	-81.7896	-84.8106	-84.4583	-78.0627
1981.0540	-65.9866	-54.7741	-56.1135	-78.5812	-85.5214	-89.9551	-86.5537	-83.9697	-78.8717	-74.0372	-79.9220	-84.3532	-87.4196	-87.4956	-79.2937
2024.1210	-68.1494	-64.2580	-61.2152	-76.7444	-86.4821	-79.1235	-86.8014	-95.9895	-82.2175	-73.8663	-79.2468	-87.4665	-76.8702	-88.7696	-82.5958
2067.1870	-67.8514	-56.7434	-59.0833	-77.7502	-87.4709	-79.4211	-87.2373	-93.8957	-85.0834	-74.1699	-84.1494	-85.9616	-78.1485	-84.5328	-78.6749
2110.2590	-70.1023	-62.9462	-59.1978	-76.6427	-82.8297	-75.5762	-79.8678	-85.2733	-82.3294	-78.8700	-87.0375	-80.7554	-86.6247	-87.5424	-68.7633
2153.3200	-70.1355	-62.9292	-61.2152	-73.3523	-76.8911	-73.6666	-81.4755	-76.8019	-80.5396	-79.2132	-79.4785	-73.7847	-74.2376	-81.0474	-67.0035
2196.3860	-70.5630	-57.2975	-63.9708	-75.3990	-74.4030	-75.1477	-102.0439	-75.4453	-79.7407	-75.1050	-80.0638	-73.4515	-69.1674	-74.7936	-72.7690
2239.4530	-71.0970	-59.0156	-69.0787	-79.9212	-76.0031	-75.9355	-87.6571	-78.2556	-82.8051	-80.7071	-85.2185	-79.7422	-70.8818	-78.0933	-72.7029
2282.5190	-72.9789	-62.4607	-75.0197	-79.4812	-82.1783	-80.3690	-86.8044	-82.1588	-88.8719	-97.1986	-90.1174	-89.1754	-77.0289	-88.4173	-72.4648
2325.5850	-88.9908	-67.7115	-77.6008	-73.4360	-86.4293	-82.1772	-84.4374	-85.7775	-96.2213	-97.9973	-95.4873	-90.5666	-81.9805	-87.8124	-76.9469
2368.6520	-75.7621	-75.3573	-71.4734	-71.9743	-82.9947	-89.8558	-85.2754	-91.6310	-95.6634	-109.8287	-102.5036	-92.5049	-83.4549	-83.9809	-82.1183
2411.7180	-92.2821	-70.4507	-61.1057	-77.1930	-83.6805	-87.8449	-87.5914	-95.0597	-101.9731	-102.3182	-101.1911	-96.4667	-84.2831	-83.4476	-87.3827
2454.7850	-77.4535	-72.3456	-58.6035	-109.6067	-82.0184	-83.1145	-88.4682	-91.8308	-100.0390	-95.6034	-110.3870	-94.3878	-82.5527	-84.5986	-94.6116
2497.8510	-74.8599	-70.5647	-61.1252	-81.9684	-80.9384	-80.3402	-89.6137	-91.4776	-93.2012	-91.3007	-96.3407	-90.3151	-82.3915	-85.5700	-92.8841
2540.9170	-71.7562	-60.1008	-68.3293	-79.4912	-89.6834	-76.7039	-97.8006	-90.5783	-94.9076	-89.9889	-93.1281	-92.8685	-87.3961	-85.6982	-90.8799
2583.9840	-74.9772	-56.3506	-69.7761	-76.1503	-85.4765	-74.9339	-98.1383	-93.5600	-96.2706	-93.6312	-93.0336	-96.6927	-96.3246	-85.0458	-90.7344
2627.0500	-73.7488	-61.2375	-75.7141	-73.9328	-81.0679	-73.8108	-100.4918	-105.4817	-95.1051	-99.4051	-93.5303	-94.5465	-95.2181	-85.2038	-90.9199
2670.1170	-67.6952	-73.2798	-76.1466	-75.4059	-85.5863	-72.1018	-101.7400	-96.3171	-94.7552	-97.6799	-95.8355	-93.5303	-96.9765	-88.6410	-91.3404
2713.1830	-64.5935	-65.7216	-78.6527	-84.7492	-96.7621	-74.7610	-99.5381	-94.8502	-88.8692	-101.0741	-93.6800	-92.9111	-98.7222	-98.1043	-89.0032
2756.2500	-65.6533	-67.8336	-71.4724	-71.0561	-90.1723	-70.2402	-93.0437	-96.1320	-86.4633	-97.7303	-90.1213	-96.3509	-99.1126	-98.6858	-87.8550
2799.3160	-58.9289	-59.8193	-74.3800	-66.5456	-78.4060	-64.1839	-91.8995	-109.7533	-87.1295	-93.6538	-92.7504	-99.9389	-96.7275	-111.8961	-88.7341
2842.3820	-49.9680	-54.7175	-67.2939	-66.3739	-72.0232	-59.8592	-93.8635	-104.4225	-89.2749	-97.3108	-96.3098	-94.9983	-103.2145	-115.5785	-89.2308
2885.4490	-47.5093	-54.6894	-62.8455	-64.3487	-70.8909	-60.5858	-109.3143	-123.0080	-89.6702	-97.8667	-97.4235	-93.4327	-95.2617	-98.2696	-89.0508
2928.5150	-50.1574	-61.6506	-70.4746	-65.3991	-76.2910	-66.0882	-94.3697	-114.1860	-90.0532	-90.1808	-102.2093	-90.5569	-89.6173	-91.4569	-89.6297
2971.5820	-57.6886	-61.6381	-61.7475	-72.6006	-80.9540	-74.4456	-93.4503	-101.0475	-90.8089	-89.9787	-96.2099	-90.5704	-89.3772	-91.9050	-92.2405
3014.6480	-69.4216	-59.9247	-62.6377	-73.7702	-69.6624	-103.6363	-100.5010	-94.2818	-91.1861	-94.8135	-95.0392	-93.3069	-89.3697	-98.0563	-91.5600
3057.7140	-79.6725	-61.1289	-65.3851	-72.7859	-68.4991	-78.6237	-91.7087	-92.2871	-90.6557	-105.1669	-91.3033	-93.2820	-89.4062	-101.6399	-89.5854
3100.7810	-76.7602	-66.5907	-69.2832	-79.9678	-71.0317	-81.0692	-91.8116	-87.4044	-91.9909	-99.3046	-88.0967	-94.5854	-91.6249	-95.8327	-89.4564
3143.8470	-72.2809	-63.0207	-73.5408	-76.2176	-73.1840	-83.1864	-90.6895	-89.2286	-104.1429	-107.5236	-88.8269	-101.3248	-96.0026	-93.5193	-90.9606
3186.9140	-75.2489	-63.5925	-65.9763	-67.4881	-72.2460	-72.0618	-87.3327	-104.5052	-101.4239	-97.8116	-92.0516	-97.0519	-92.0519	-94.5328	-91.9843
3229.9800	-92.5748	-72.7245	-66.8018	-66.8921	-84.1086	-68.8657	-85.9841	-96.0300	-108.2252	-94.7621	-93.2754	-96.2742	-88.1111	-101.7364	-90.4761
3273.0460	-79.6887	-74.6161	-73.7865	-68.2198	-73.1757	-70.0940	-88.9787	-97.8638	-96.1133	-92.6762	-98.4276	-97.3639	-90.2180	-103.7158	-90.4508
3316.1130	-80.3241	-74.3498	-80.4788	-66.1324	-72.9553	-73.5704	-93.7902	-97.2973	-94.9764	-91.4416	-103.4446	-95.2728	-94.4356	-95.2361	-92.2066
3359.1790	-80.3241	-71.4719	-83.9159	-62.7503	-83.2435	-78.5335	-94.1774	-94.3486	-98.2556	-91.9140	-90.8364	-93.8164	-93.8847	-90.1965	-92.6153
3402.2460	-75.9984	-70.5785	-74.1735	-61.0767	-79.2164	-85.2158	-91.6530	-89.5932	-96.2577	-94.4301	-90.8286	-91.5320	-94.2343	-85.7997	-89.70317
3445.3120	-77.9566	-70.3131	-76.9016	-59.9240	-72.8631	-70.9409	-91.1570	-89.9296	-92.2332	-100.9302	-90.0938	-91.5582	-97.9576	-84.6623	-89.2011
3488.3780	-80.9399	-69.1457	-83.0519	-60.1104	-73.3814	-65.8165	-93.9170	-94.7318	-91.9195	-103.7425	-93.2625	-96.3233	-103.2202	-87.5119	-89.3566
3531.4450	-76.8992	-69.0865	-78.8847	-62.6225	-77.0973	-68.7067	-94.4775	-93.7209	-92.5776	-106.6474	-100.0248	-100.9872	-97.3642	-93.2443	-89.4416
3574.5110	-71.1638	-70.7033	-76.8779	-65.6220	-81.4097	-87.5318	-89.8528	-89.9385	-96.5579	-106.1084	-116.2035	-94.5866	-94.2190	-96.3754	-90.0689
3617.5780	-70.7691	-66.2746	-71.9149	-71.8306	-85.8379	-73.0912	-87.0714	-90.2944	-97.1863	-107.8495	-95.0987	-91.6126	-93.8471	-95.2699	-94.0585
3660.6440	-80.5877	-62.7904	-64.9275	-71.4387	-79.5089	-72.0521	-87.4996	-90.2372	-104.1610	-106.4772	-93.9015	-96.7497	-93.8719	-96.6267	-95.5211
3703.7100	-67.9898	-64.1563	-63.0466	-71.6249	-76.2195	-75.8091	-89.9763	-91.6646	-94.7129	-96.2398	-101.8689	-109.9713	-96.2559	-110.6132	-92.8656
3746.7770	-63.5506	-61.4583	-73.5723	-82.1112	-76.7601	-88.4558	-91.2705	-93.5436	-94.6335	-94.4237	-103.7366	-99.1467	-99.3602	-99.3602	-93.9363

Freq	2.1.0	2.2.0	2.3.0	2.1.25	2.2.25	2.3.25	2.1.50	2.2.50	2.3.50	2.1.75	2.2.75	2.3.75	2.1.100	2.2.100	2.3.100
3789.8430	-63.1061	-56.0555	-62.9626	-78.5924	-76.4935	-94.8638	-90.7682	-93.3142	-109.3070	-97.9476	-99.2771	-95.2794	-95.2265	-95.1544	-97.3460
3832.9100	-65.3738	-55.0130	-59.8528	-72.5516	-75.8253	-93.2109	-91.1746	-91.6161	-94.7622	-130.2129	-105.8270	-91.2749	-89.3330	-93.2269	-100.5812
3875.9760	-71.8325	-59.0294	-60.5427	-70.4644	-80.3604	-81.2207	-98.5842	-91.0125	-92.1418	-90.0738	-88.0378	-91.7949	-89.0784	-90.0671	-109.9460
3919.0420	-72.5934	-62.5836	-61.2907	-69.8642	-87.1291	-76.2872	-100.0773	-92.1981	-93.1774	-86.5042	-84.8289	-93.6259	-93.7361	-86.7622	-111.7838
3962.1090	-68.3628	-59.9209	-66.5813	-70.0955	-82.5983	-75.0249	-97.6418	-94.9987	-97.5306	-91.3920	-88.8139	-90.1802	-94.4300	-85.9686	-104.6852
4005.1750	-61.2026	-56.8397	-65.8091	-70.4308	-81.5455	-77.6151	-99.7852	-93.8069	-91.7639	-95.4543	-94.7291	-91.0251	-101.6859	-85.6434	-98.6076
4048.2420	-58.5346	-57.5139	-70.1892	-74.0835	-81.6325	-84.1362	-87.9851	-93.6288	-85.8365	-89.8261	-88.5345	-98.4157	-102.9969	-83.6195	-88.3408
4091.3080	-59.3800	-58.6730	-72.7300	-87.1732	-79.9437	-96.4311	-87.3057	-99.9527	-85.4953	-93.4381	-86.4738	-92.5236	-101.8886	-85.6451	-85.4441
4134.3750	-65.2330	-57.3253	-67.5241	-99.2683	-78.7687	-87.7001	-87.1031	-91.8007	-90.8403	-97.7632	-86.9611	-89.3193	-93.8296	-105.3269	-89.4622
4177.4410	-71.2683	-56.8690	-62.6422	-98.0756	-78.8664	-82.0396	-91.5131	-85.5665	-89.8403	-88.4052	-87.3456	-90.8262	-84.8843	-86.8079	-92.5666
4220.5070	-67.1967	-59.9639	-61.5010	-96.2057	-79.3690	-82.5799	-90.1159	-86.0369	-86.8586	-88.4052	-91.4242	-94.2177	-81.6327	-94.1983	-87.1172
4263.5740	-65.0408	-67.1815	-62.8105	-91.2469	-79.2921	-87.4589	-87.7086	-86.7031	-85.0235	-94.9495	-97.7388	-86.3546	-85.4795	-81.3933	-88.2540
4306.6400	-66.7363	-71.3854	-67.7006	-82.4071	-80.4873	-94.2991	-88.6977	-90.0329	-85.8840	-104.6300	-89.2714	-85.9262	-103.2233	-82.8459	-93.6212
4349.7070	-70.8131	-65.3708	-68.0139	-77.8618	-83.2397	-91.5151	-89.1056	-95.4089	-89.5243	-97.1534	-93.2769	-89.7577	-90.0927	-94.5189	-93.2141
4392.7730	-71.9731	-68.8120	-66.9101	-77.8665	-85.6464	-92.1644	-87.8953	-90.1227	-84.2705	-91.9594	-103.7170	-88.2727	-89.0775	-93.9944	-85.7670
4435.8390	-73.9252	-76.9467	-69.3188	-80.4090	-87.7880	-103.7776	-86.2026	-85.5862	-85.6125	-90.8715	-94.1598	-89.7079	-89.0133	-85.0300	-80.2243
4478.9060	-77.7726	-67.3331	-77.9750	-82.7876	-90.2936	-82.2582	-76.8249	-81.0497	-79.7097	-90.2682	-88.2805	-96.1756	-89.9256	-80.5416	-81.8803
4521.9720	-82.2415	-67.6841	-82.4956	-87.7031	-88.1507	-77.7849	-74.5432	-77.5088	-79.0772	-84.6736	-88.1736	-87.8728	-80.6061	-79.8131	-88.2451
4565.0390	-84.4593	-70.7449	-79.6968	-79.6949	-84.8004	-80.0886	-78.9645	-75.9111	-81.4014	-83.0583	-91.2508	-79.3754	-79.3357	-82.4166	-78.0093
4608.1050	-87.5016	-77.7629	-88.1942	-78.5886	-83.3233	-87.0947	-83.3307	-78.2307	-84.2451	-85.3291	-96.6036	-76.9253	-83.1837	-88.1508	-75.8647
4651.1710	-81.8035	-83.0456	-91.6556	-85.0846	-84.5923	-96.0755	-85.5355	-86.5421	-88.9676	-94.3979	-95.0363	-80.9239	-90.0000	-94.1369	-77.3844
4694.2380	-78.1655	-86.0999	-86.6559	-103.0730	-88.0000	-99.0146	-91.5746	-95.0164	-94.2082	-100.4854	-91.3588	-91.5006	-98.6110	-101.3024	-81.4461
4737.3040	-82.4762	-75.0674	-87.8488	-90.5981	-92.5773	-96.4878	-97.9491	-100.6900	-97.3382	-98.3315	-92.1627	-85.4266	-86.7054	-99.3212	-85.3536
4780.3710	-92.1352	-76.3902	-86.5152	-91.1938	-94.2245	-96.4972	-98.9054	-104.6193	-108.2037	-107.0682	-93.7437	-88.9807	-85.0659	-102.6514	-89.4859
4823.4370	-79.1658	-85.5337	-82.8966	-98.7652	-93.2783	-89.6971	-93.3604	-98.8752	-95.5543	-96.5242	-104.3424	-91.2933	-85.5302	-110.4165	-91.9527
4866.5030	-76.3439	-80.9196	-79.5749	-97.9086	-91.2939	-86.1405	-93.7320	-97.6034	-89.3699	-90.3778	-96.4035	-86.9590	-83.2221	-94.5868	-82.2406
4909.5700	-79.4812	-82.4882	-78.0592	-92.7582	-86.2866	-87.9310	-98.4358	-98.6786	-86.2803	-90.7134	-94.1152	-89.6196	-79.8283	-85.1611	-83.2941
4952.6360	-84.3824	-83.5142	-80.4650	-91.8713	-84.7683	-92.9746	-91.1740	-96.4231	-86.9310	-95.8036	-92.4085	-104.5701	-79.0245	-83.3962	-91.0161
4995.7030	-83.3599	-83.0676	-87.5440	-90.8391	-85.5265	-97.5490	-91.3422	-89.2892	-91.5151	-93.8889	-87.7399	-113.1796	-81.5967	-85.2309	-100.4998
5038.7690	-81.8233	-80.2405	-85.7181	-93.6724	-88.8054	-97.4185	-93.5780	-86.3071	-95.0209	-90.1040	-86.9771	-112.7335	-85.1575	-87.3062	-94.1413
5081.8350	-79.9576	-78.7265	-83.8927	-97.2633	-94.3973	-91.3645	-93.5841	-87.9959	-95.7209	-88.5095	-90.5976	-114.6749	-88.0424	-89.7887	-93.9788
5124.9020	-82.8080	-81.8199	-85.9722	-92.7417	-97.0291	-91.6829	-93.7454	-92.5274	-95.0749	-91.4005	-95.0787	-105.4466	-93.0604	-97.1849	-93.9788
5167.9680	-85.9892	-89.0751	-86.4636	-95.6600	-95.3605	-95.1888	-98.3018	-100.1471	-96.4424	-99.5143	-99.1802	-97.6803	-100.0127	-113.0078	-101.8472
5211.0350	-85.7313	-88.1073	-81.7074	-92.9209	-97.1170	-108.1402	-102.0408	-108.6558	-101.7120	-100.9699	-102.7302	-93.6995	-93.4280	-92.6902	-100.6934
5254.1010	-84.2963	-88.0003	-78.8062	-87.8540	-99.4394	-90.6886	-92.8806	-95.3030	-113.8260	-94.5498	-106.5686	-95.2610	-88.0815	-87.5173	-94.8273
5297.1670	-85.9479	-82.8879	-78.1932	-87.3514	-96.1956	-87.0693	-87.0863	-90.0011	-112.7237	-89.0698	-98.2453	-106.2309	-88.6762	-88.1593	-99.8639
5340.2340	-92.7334	-84.3863	-81.3625	-88.1731	-91.8049	-91.1348	-88.4385	-88.6608	-111.4553	-84.7652	-90.9174	-90.0448	-91.7039	-92.3108	-91.5175
5383.3000	-92.4160	-81.4994	-90.9685	-93.1994	-89.8608	-103.2553	-88.7980	-91.4547	-95.4922	-84.9699	-91.3427	-84.6378	-90.3877	-92.6289	-89.6487
5426.3670	-91.6894	-82.8815	-91.6656	-86.3728	-91.0145	-92.3300	-85.0844	-95.3738	-88.6961	-88.3177	-101.1022	-81.5054	-87.8669	-95.3898	-88.8864
5469.4330	-91.2011	-84.1286	-87.8993	-88.6588	-94.4109	-89.5288	-97.0622	-91.6610	-91.5873	-91.6625	-96.1209	-82.9423	-87.0600	-97.5505	-87.9029
5512.5000	-88.2533	-72.6742	-95.4859	-98.5231	-103.2930	-91.3945	-95.4789	-92.1117	-107.9112	-91.5003	-96.4371	-90.5227	-81.6022	-95.8374	-91.3322
5555.5660	-87.5192	-68.7353	-84.5407	-95.6564	-112.3405	-98.1448	-109.8164	-93.1755	-94.8369	-92.2009	-101.8962	-101.7497	-106.7035	-92.9794	-100.0879
5598.6320	-96.0007	-70.0909	-79.8962	-102.7078	-106.3473	-99.9690	-105.3877	-99.7925	-91.5030	-100.6638	-100.7592	-101.1483	-88.6248	-90.7585	-93.0681

Freq	2.1.0	2.2.0	2.3.0	2.1.25	2.2.25	2.3.25	2.1.50	2.2.50	2.3.50	2.1.75	2.2.75	2.3.75	2.1.100	2.2.100	2.3.100
5641.6990	-103.0174	-74.1497	-80.3393	-117.5163	-96.1717	-101.4247	-100.2047	-96.8116	-91.1257	-108.2175	-106.1845	-97.2323	-85.6819	-94.9331	-92.8403
5684.7650	-92.8463	-76.0222	-85.2239	-101.1575	-93.1929	-98.9289	-100.8168	-94.3312	-93.1545	-103.3571	-105.1987	-96.5215	-87.3997	-102.5277	-96.1677
5727.8320	-90.5232	-77.2408	-89.7115	-98.6256	-93.4301	-97.7012	-104.9489	-99.1457	-96.3079	-97.4106	-100.0467	-94.8595	-92.7784	-91.7581	-95.7056
5770.8980	-87.6987	-75.5826	-75.0600	-96.6622	-96.3764	-100.3171	-91.2504	-96.9983	-99.2176	-93.9147	-90.3018	-89.6620	-88.0641	-91.6204	-98.8130
5813.9640	-82.7982	-74.5726	-70.6915	-94.5303	-99.4780	-103.9462	-87.7178	-93.1140	-100.2840	-92.2153	-83.3071	-88.4703	-80.9641	-94.7627	-91.4337
5857.0310	-82.5684	-67.9611	-70.3759	-94.7113	-94.2624	-102.8576	-88.2446	-89.5546	-97.8242	-87.8598	-81.6084	-95.1375	-83.8317	-93.7713	-90.9314
5900.0970	-85.9084	-67.8393	-73.1388	-96.3272	-89.7326	-101.1088	-87.3500	-87.4474	-94.4329	-86.3252	-84.3264	-91.0460	-80.5700	-91.6653	-91.0278
5943.1640	-90.8211	-70.0867	-74.0699	-96.4209	-89.9228	-98.5354	-96.5635	-87.7211	-95.0211	-90.0923	-83.4823	-88.2682	-74.8921	-86.4951	-86.8561
5986.2300	-86.9313	-66.9109	-72.5502	-93.1108	-91.3800	-101.1885	-90.8854	-92.9007	-97.0656	-94.9395	-82.9310	-89.6923	-76.8020	-85.0106	-84.7002
6029.2960	-75.9241	-68.2264	-71.4130	-92.9059	-94.9409	-105.2264	-89.1239	-95.6040	-98.4314	-91.6421	-88.6041	-91.7496	-81.9437	-89.8204	-83.0074
6072.3630	-71.8611	-73.3578	-72.6570	-98.5636	-100.7598	-99.9895	-95.2772	-94.2307	-100.4100	-90.8474	-96.3610	-92.7367	-86.1863	-89.3071	-84.0340
6115.4290	-71.6973	-82.3331	-79.0263	-98.5217	-115.5550	-101.3412	-100.9924	-99.9818	-99.8689	-94.4442	-94.3147	-92.5758	-87.9116	-90.0102	-93.8629
6158.4960	-73.3710	-78.9242	-77.4975	-90.5450	-100.2504	-111.2886	-101.1756	-107.2774	-99.1664	-100.8733	-93.5515	-94.6202	-87.9017	-91.4116	-92.3916
6201.5620	-74.0636	-77.9573	-74.3191	-87.2869	-92.9270	-102.7537	-108.3387	-111.4583	-100.6415	-108.1410	-94.7472	-101.7380	-91.3291	-95.6052	-93.5867
6244.6280	-73.8208	-67.9043	-73.3976	-88.1055	-88.9004	-97.0309	-103.7479	-112.9147	-105.0193	-102.8758	-101.7014	-109.9840	-96.8387	-109.4775	-98.7548
6287.6950	-73.3552	-63.5585	-76.1400	-92.1084	-90.4403	-93.4030	-99.6395	-102.1562	-104.4542	-98.6134	-111.6991	-100.1159	-99.4700	-98.7918	-99.1383
6330.7610	-73.4565	-64.5595	-92.5148	-94.7249	-91.9485	-92.1005	-99.7185	-101.0239	-109.9831	-107.1268	-106.7997	-96.3524	-103.6273	-101.4768	-99.5591
6373.8280	-75.5606	-66.8679	-74.0717	-96.1802	-89.4941	-93.5514	-102.1665	-103.5180	-109.7992	-100.5016	-115.9888	-97.0927	-103.7819	-111.8650	-103.2402
6416.8940	-79.7261	-65.3158	-67.1265	-100.7130	-94.7606	-95.1045	-104.2813	-104.8852	-112.6089	-98.4299	-105.5832	-102.5359	-101.2602	-100.5043	-108.5095
6459.9600	-82.2095	-65.7816	-68.6791	-119.0318	-94.8990	-98.7662	-106.9747	-110.8852	-108.0252	-100.5544	-104.6899	-110.1039	-103.4941	-98.2184	-108.7040
6503.0270	-80.9903	-68.9593	-76.8034	-105.0829	-94.4513	-105.7866	-105.6587	-111.6132	-103.8153	-105.9059	-110.5264	-109.6787	-102.6793	-98.6854	-104.6023
6546.0930	-81.1387	-71.4885	-74.1876	-101.5899	-100.0099	-107.6210	-101.2971	-108.8019	-103.5604	-104.8289	-102.3960	-113.2938	-105.8197	-96.9228	-103.1474
6589.1600	-83.5180	-74.3501	-76.0479	-106.4933	-113.2318	-104.5034	-101.0257	-112.7849	-105.2300	-102.8292	-103.0164	-104.9257	-108.9407	-93.7535	-103.1052
6632.2260	-84.5865	-76.0187	-79.4483	-107.5965	-111.1717	-108.0410	-101.2770	-115.9166	-104.5296	-113.6200	-108.8932	-101.8767	-106.2167	-93.0379	-101.5383
6675.2920	-87.9765	-75.6463	-77.7337	-100.7761	-105.8419	-118.6479	-100.3382	-116.9165	-103.0243	-105.2913	-108.3727	-102.6376	-115.8360	-95.7166	-100.8644
6718.3590	-94.6278	-75.5972	-79.5989	-97.3453	-104.5458	-106.6693	-99.9817	-115.8849	-104.1618	-104.8034	-110.8942	-110.2848	-101.9103	-99.1613	-96.5337
6761.4250	-98.4036	-73.6296	-84.6138	-98.1522	-106.0514	-108.6833	-100.7432	-109.9057	-106.6311	-116.9025	-105.8119	-116.0846	-99.7804	-102.6995	-93.6348
6804.4920	-97.8385	-72.0283	-84.7312	-102.8736	-109.4770	-119.3488	-103.4098	-108.0940	-105.8236	-113.5613	-102.4717	-109.9402	-104.2985	-101.4678	-95.9021
6847.5580	-96.7823	-71.0254	-81.0736	-110.1641	-114.9315	-106.0053	-107.9376	-109.0615	-104.1812	-112.5911	-107.1189	-108.2843	-120.5989	-99.7909	-102.8428
6890.6250	-100.2148	-72.2685	-81.2654	-109.9786	-121.1519	-103.6247	-111.6424	-111.4200	-105.9002	-116.1900	-119.4450	-107.0858	-107.8773	-104.4035	-109.6037
6933.6910	-95.4449	-79.1546	-83.5542	-107.1918	-117.4061	-104.8693	-110.2881	-113.3399	-115.3304	-114.5306	-114.9732	-112.2175	-108.9117	-111.7607	-107.7737
6976.7570	-98.4096	-85.6542	-87.5995	-108.1009	-116.2432	-109.9893	-110.2493	-122.3036	-115.7257	-114.8788	-113.6939	-115.7279	-112.4635	-116.7454	-105.0588
7019.8240	-107.5417	-82.0397	-88.0124	-113.2129	-114.5254	-116.7566	-115.1718	-124.5400	-112.4467	-125.1504	-115.4717	-116.0659	-111.4025	-108.8309	-106.1014
7062.8900	-100.1327	-93.8159	-83.6972	-118.0704	-113.1114	-110.2789	-117.4173	-119.2975	-128.5063	-120.1383	-110.6942	-107.9440	-110.8448	-106.7433	-109.9246
7105.9570	-97.1462	-87.4444	-82.9204	-109.8254	-111.5184	-111.3492	-113.2867	-115.6376	-115.1122	-113.3459	-115.4618	-106.6072	-114.0247	-107.2157	-113.2737
7149.0230	-94.4058	-87.5006	-84.5482	-108.2468	-109.6251	-118.6303	-114.4324	-119.7467	-113.8837	-115.7057	-123.6100	-110.7524	-116.1257	-111.1389	-117.5008
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7235.1560	-96.9125	-97.1177	-98.2826	-111.3984	-112.6851	-106.2812	-113.2236	-120.5733	-113.8028	-118.5987	-119.8674	-116.0082	-111.4485	-117.4390	-116.5211
7278.2220	-103.5106	-102.2223	-104.8652	-121.8685	-115.1212	-110.6738	-111.0201	-112.3717	-114.7505	-115.7075	-114.4099	-114.3636	-119.7355	-115.8107	-115.1479
7321.2890	-109.1074	-101.6550	-105.9446	-129.1351	-124.7084	-119.6758	-111.1526	-108.3220	-119.6450	-115.5489	-110.2374	-120.5705	-120.5152	-118.3616	-114.2018
7364.3550	-113.8093	-102.2098	-105.6133	-116.3896	-116.8190	-117.1087	-113.3205	-108.9430	-129.2133	-112.4712	-111.5257	-120.9710	-122.3793	-127.4294	-112.4589
7407.4210	-112.3168	-110.6672	-106.4802	-112.4133	-113.8466	-123.4723	-118.2642	-115.1205	-120.5040	-112.4019	-117.8757	-114.5147	-118.2991	-123.3967	-114.1851
7450.4880	-108.9049	-106.1568	-110.1151	-112.5300	-117.5580	-119.7572	-131.5815	-116.6476	-124.5278	-119.1761	-119.1761	-110.9075	-111.0427	-119.2047	-121.2674

Freq	2.1.0	2.2.0	2.3.0	2.1.25	2.2.25	2.3.25	2.1.50	2.2.50	2.3.50	2.1.75	2.2.75	2.3.75	2.1.100	2.2.100	2.3.100
7493.5540	-106.8088	-106.3549	-109.7067	-111.9581	-128.2797	-115.5575	-130.3706	-116.3619	-129.8817	-114.5446	-111.5413	-108.9080	-111.1459	-118.4958	-139.2165
7536.6230	-106.7502	-107.0300	-103.9399	-111.0520	-116.2267	-134.1901	-122.5488	-125.3853	-122.6160	-111.2969	-112.1619	-113.0636	-121.8356	-117.9921	-122.5917
7579.6870	-110.8376	-103.2697	-102.9033	-111.8271	-115.6010	-114.7739	-124.8622	-115.4540	-115.9165	-119.4711	-112.4409	-125.0073	-116.8688	-113.2236	-114.7211
7622.7590	-127.2015	-106.8872	-105.5344	-112.8843	-118.7068	-121.7454	-122.8288	-114.9214	-131.9858	-116.6079	-110.1351	-114.5934	-112.8710	-111.0068	-113.5150
7665.8200	-115.1727	-124.2097	-113.4470	-114.4833	-122.3661	-121.3055	-111.5207	-114.1049	-112.7136	-119.4503	-109.0395	-113.6859	-113.6789	-113.5947	-117.6905
7708.8860	-113.1545	-126.4966	-116.7739	-119.1531	-139.8400	-127.2377	-110.2014	-115.5487	-119.3119	-125.1525	-113.0489	-115.1572	-113.6233	-123.9903	-120.5722
7751.9530	-115.5225	-124.8376	-110.6748	-118.9085	-118.4488	-118.1909	-114.1085	-117.1966	-117.9333	-117.9984	-122.4379	-117.4850	-113.7232	-113.3204	-120.7962
7795.0190	-116.6111	-140.7015	-110.9310	-121.5448	-114.9519	-112.4117	-114.6020	-126.4350	-113.9616	-117.7326	-120.0525	-116.4803	-114.3643	-112.2221	-127.6520
7838.0850	-116.2215	-116.3411	-110.4433	-128.2683	-115.2771	-130.7275	-114.8857	-118.0127	-128.0412	-112.4861	-116.8746	-121.3592	-114.4444	-120.5290	-123.7532
7881.1520	-123.5109	-116.8725	-110.4521	-118.0436	-115.4553	-111.3612	-113.9667	-111.1874	-122.6546	-111.2499	-117.3554	-136.6801	-122.4033	-123.0424	-113.8440
7924.2180	-114.3650	-121.1851	-114.6897	-113.2027	-117.1431	-111.2794	-114.1544	-108.8197	-128.6142	-116.6736	-126.9244	-123.0677	-120.4204	-115.1206	-122.7956
7967.2850	-112.0140	-116.5088	-123.9322	-112.2498	-133.3216	-111.7938	-118.0029	-110.0827	-135.8032	-121.8587	-112.2127	-116.0480	-120.2421	-111.4656	-115.7097
8010.3510	-116.9373	-111.3457	-130.5289	-114.6137	-112.1608	-120.7674	-123.2942	-117.0381	-125.5437	-114.3333	-112.4779	-110.8525	-122.5038	-113.4604	-113.2201
8053.4170	-119.3773	-108.7664	-119.8709	-115.1774	-115.0450	-117.7044	-122.6247	-125.5084	-120.7712	-115.5041	-122.9190	-109.3754	-122.1395	-116.2025	-112.4344
8096.4840	-122.4087	-109.5578	-115.2663	-113.2465	-125.5680	-120.5309	-137.1994	-116.3203	-119.5159	-120.2348	-116.6127	-111.2369	-116.6843	-119.3222	-111.6926
8139.5500	-121.7585	-112.4558	-113.3346	-113.2066	-117.3533	-130.1210	-120.7085	-117.3551	-117.2609	-144.3396	-117.2639	-115.6061	-115.0518	-119.7906	-135.5008
8182.6170	-121.8045	-113.2088	-110.2096	-116.8121	-113.8518	-127.782	-113.7399	-126.3755	-116.0939	-119.7642	-121.9054	-122.5143	-115.3590	-119.8130	-116.1834
8225.6830	-117.1885	-113.6412	-110.6609	-121.1560	-111.5365	-120.0490	-112.3012	-123.5142	-114.7529	-121.4207	-116.2004	-126.6973	-114.2678	-120.3497	-116.1897
8268.7500	-116.4523	-117.0217	-124.8199	-123.9687	-110.3214	-116.0992	-115.1415	-116.3383	-115.8797	-116.2062	-114.7201	-114.8834	-114.8558	-124.1286	-118.8488
8311.8160	-127.5495	-122.9815	-113.2920	-122.5658	-108.2439	-113.9789	-122.0981	-116.6496	-120.6779	-114.5568	-122.3966	-109.9653	-114.9371	-131.1857	-122.9302
8354.8820	-125.2774	-126.2514	-110.8844	-116.5293	-109.3163	-113.1716	-122.9930	-128.6958	-114.5977	-115.8933	-117.3489	-110.6096	-115.4770	-125.0589	-122.0988
8441.0150	-120.4743	-118.3638	-112.4347	-116.7475	-114.4919	-113.6688	-121.1997	-116.7141	-113.1548	-117.8810	-111.0608	-117.3289	-117.3584	-118.6889	-121.0616
8484.0820	-123.2361	-115.1586	-117.1255	-123.2291	-117.4942	-116.0139	-120.1904	-111.5774	-116.0951	-120.7252	-110.6066	-120.5836	-120.4588	-115.7577	-123.2682
8527.1480	-117.0955	-118.6841	-122.9177	-122.4447	-117.1416	-112.9319	-118.0751	-110.8590	-132.9027	-117.6424	-112.4730	-121.8345	-119.0111	-112.6977	-115.8474
8570.2140	-120.8701	-123.9851	-136.3954	-115.6084	-119.5221	-110.8263	-139.3596	-112.6605	-111.2743	-116.5503	-112.8669	-123.6309	-113.3080	-131.9584	-113.1297
8613.2810	-121.2980	-117.3349	-119.7648	-116.4088	-120.1600	-111.5905	-122.7387	-119.5689	-114.4212	-119.8640	-110.9880	-120.3966	-113.1308	-131.9584	-113.1177
8656.3470	-113.0250	-113.6085	-118.0059	-119.3966	-117.1006	-112.4170	-116.8026	-121.6537	-136.1035	-131.1426	-111.6608	-121.4301	-112.0101	-115.4857	-113.8022
8699.4140	-112.0003	-113.4103	-130.3348	-114.5203	-120.8874	-130.8818	-111.7947	-116.7897	-117.4190	-126.5852	-115.1732	-121.5743	-110.9814	-111.9737	-115.4946
8742.4800	-117.2769	-116.8573	-119.1140	-110.5944	-120.3514	-130.0016	-109.7639	-112.9105	-121.4251	-116.8850	-116.2888	-129.4689	-109.6965	-114.4384	-115.4776
8785.5460	-126.6953	-119.7455	-114.2996	-109.9246	-116.8106	-113.5227	-111.0789	-112.2716	-119.3038	-118.4049	-115.4762	-128.8408	-109.6334	-119.3555	-115.8783
8828.6130	-113.8259	-119.6126	-114.3916	-109.4063	-114.1075	-122.6452	-119.0893	-117.6191	-116.4747	-131.3995	-119.5699	-126.6337	-114.3458	-115.5264	-117.5904
8871.6790	-112.6796	-116.6479	-128.3787	-109.7123	-115.3609	-115.9069	-129.0521	-122.5973	-121.1199	-125.2028	-121.4521	-137.4227	-121.9945	-115.5244	-118.4047
8914.7460	-115.9641	-115.6534	-115.6608	-113.8574	-123.1239	-113.7370	-115.1543	-128.3580	-113.4869	-115.3927	-119.1714	-124.6000	-121.9822	-113.5472	-118.3500
8957.8120	-117.9921	-115.3846	-112.5981	-116.5902	-123.9147	-113.9336	-115.1543	-128.3580	-113.4869	-114.7700	-123.1901	-124.3030	-121.1940	-110.7588	-119.5373
9000.8780	-118.5463	-112.4152	-113.3464	-114.3766	-122.9304	-132.8043	-111.4803	-126.1710	-112.0194	-116.6822	-122.6889	-119.4379	-123.1479	-111.1303	-120.6264
9043.9450	-120.5820	-108.3690	-115.4336	-113.3186	-112.5496	-111.2977	-114.3545	-118.6998	-111.9215	-117.3967	-121.9999	-114.7189	-116.1437	-114.0569	-129.4036
9087.0110	-116.4166	-107.9281	-122.3761	-114.7898	-109.5199	-112.6848	-128.6301	-117.9959	-113.5346	-116.9667	-118.4968	-116.1280	-114.1152	-114.2511	-116.5721
9130.0780	-112.2793	-111.9171	-126.5292	-117.5344	-112.8408	-117.1609	-115.6476	-124.9221	-112.8076	-114.7346	-119.0850	-121.0205	-116.3196	-115.9099	-110.5179
9173.1440	-110.8059	-120.8551	-123.7777	-124.4174	-116.8343	-123.4590	-112.9763	-133.1300	-111.6257	-112.0637	-120.1762	-125.8779	-119.2799	-139.7404	-130.6056
9216.2100	-109.6025	-122.3944	-119.5894	-120.4259	-114.9948	-113.8328	-111.5131	-120.3133	-111.8891	-111.0154	-115.2666	-115.1624	-119.9964	-124.3524	-133.9510
9259.2700	-110.9773	-118.2743	-115.7516	-118.6187	-114.7242	-113.6923	-114.3410	-114.7054	-111.0054	-113.8269	-113.4743	-110.6115	-118.4458	-128.7916	-116.9791
9302.3430	-116.4157	-118.9451	-118.0905	-117.6024	-115.3044	-117.2698	-121.2068	-114.3053	-109.3248	-121.1079	-112.1802	-112.1802	-112.0543	-125.3138	-118.5482

Freq	2.1.0	2.2.0	2.3.0	2.1.25	2.2.25	2.3.25	2.1.50	2.2.50	2.3.50	2.1.75	2.2.75	2.3.75	2.1.100	2.2.100	2.3.100
9345.4100	-122.7495	-116.7854	-124.1381	-117.2372	-113.1943	-119.3353	-118.1557	-114.0365	-108.9017	-121.1748	-120.9474	-118.1643	-110.0936	-118.2036	-115.9455
9388.4760	-129.3440	-115.4550	-118.8882	-116.2010	-111.3192	-126.0885	-117.4585	-116.5573	-110.0652	-117.5472	-117.0205	-126.0724	-111.7413	-119.1365	-110.0781
9431.5420	-120.3401	-116.8734	-115.3038	-117.5619	-111.2823	-134.3471	-121.5895	-124.1286	-111.2220	-115.4971	-117.9205	-133.3439	-117.6395	-127.3355	-108.3907
9474.6090	-116.5577	-117.4930	-125.8081	-139.3632	-113.4953	-113.8984	-113.5061	-117.0006	-112.1608	-112.8103	-121.3547	-117.9634	-127.2995	-129.0086	-110.5721
9517.6750	-113.1227	-116.6546	-118.2933	-124.2303	-117.6227	-119.8451	-114.7445	-114.2900	-112.0195	-111.5393	-113.9943	-111.8091	-120.7240	-125.6320	-113.7478
9560.7420	-112.4377	-116.4828	-115.1628	-123.9235	-126.3673	-134.5973	-120.7622	-116.0507	-110.4348	-112.7953	-111.0827	-112.1962	-119.2630	-118.6191	-116.5519
9603.8080	-116.3641	-116.2849	-112.3222	-115.6057	-113.8793	-123.3425	-123.1183	-122.2820	-111.9730	-115.3376	-113.5873	-117.1828	-129.7399	-113.3943	-124.2588
9646.8750	-123.5955	-123.0695	-111.4016	-113.1451	-111.2516	-125.4198	-113.8056	-135.1273	-116.2038	-116.0717	-119.7272	-116.4209	-118.1804	-112.3316	-115.2907
9689.9410	-124.4745	-117.9422	-112.2248	-112.3822	-112.4900	-122.3386	-110.4122	-121.2201	-120.9904	-116.8136	-121.4468	-113.5677	-112.7653	-113.5434	-111.9805
9733.0070	-118.1116	-111.9889	-117.4544	-132.7772	-113.9694	-117.6864	-109.8810	-116.8667	-123.4306	-118.8114	-126.7666	-118.6506	-114.1446	-118.8880	-110.5690
9776.0740	-112.4589	-111.4456	-118.9843	-117.7778	-117.1307	-117.4416	-112.7675	-116.6589	-124.0165	-119.5909	-116.7535	-118.7379	-123.1688	-123.5474	-113.2800
9819.1400	-109.5519	-113.0562	-117.9174	-156.3343	-127.2300	-122.0232	-113.9259	-117.7558	-123.1228	-114.2291	-117.8532	-112.7630	-117.7094	-119.1235	-127.9147
9862.2070	-108.0234	-113.3377	-120.7133	-122.1615	-128.2213	-117.1620	-110.2574	-115.7852	-118.2717	-113.7671	-122.9806	-116.8410	-112.7795	-118.3824	-119.8554
9905.2730	-108.6315	-111.2328	-120.4520	-116.1924	-117.8144	-119.7380	-110.6964	-113.8269	-115.8229	-117.5173	-123.8060	-122.1131	-109.2410	-121.9777	-114.6189
9948.3390	-110.9083	-109.9336	-114.3251	-111.5366	-118.7041	-128.0857	-113.0518	-111.3290	-119.9364	-115.7838	-122.4774	-112.9661	-109.6624	-125.3354	-114.3196
9991.4060	-112.9545	-110.6019	-116.9892	-109.3256	-119.0559	-125.8137	-113.5632	-111.1227	-132.5589	-114.0066	-121.6862	-114.2650	-115.4592	-114.6497	-118.0189
10034.4720	-115.6413	-116.4654	-119.1891	-108.9446	-114.4103	-117.5767	-113.7181	-113.3824	-119.9231	-115.2033	-116.5873	-122.9299	-119.5582	-111.4695	-116.4421
10077.5390	-130.5194	-122.4665	-120.8068	-109.7630	-115.3034	-113.8732	-116.8619	-114.7846	-119.6217	-113.7800	-114.3356	-127.2666	-121.3199	-112.5438	-111.9038
10120.6050	-124.8538	-116.2865	-131.1069	-110.3337	-116.0293	-115.1540	-123.4289	-117.0650	-131.9370	-111.9067	-120.9444	-127.9520	-123.8292	-120.2041	-111.8920
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10249.8040	-123.9159	-121.9722	-110.1641	-113.7516	-114.7185	-116.9069	-116.3255	-118.5632	-123.0182	-116.8547	-127.6182	-122.4037	-124.7589	-115.6129	-121.1033
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10335.9370	-116.7881	-114.9425	-113.1352	-114.1820	-118.8510	-115.9722	-118.6847	-110.3554	-115.2773	-116.5826	-112.3889	-113.6516	-116.9575	-118.9298	-109.5131
10379.0030	-121.1700	-115.9984	-121.6433	-113.9919	-114.7054	-114.0563	-123.8854	-112.0901	-121.1097	-119.9705	-111.2230	-121.1504	-116.4411	-124.0241	-111.0249
10422.0700	-123.9345	-117.1773	-123.3623	-115.8487	-116.4152	-112.5746	-120.0105	-124.8969	-113.3085	-109.5024	-120.2230	-139.8641	-117.7337	-122.4918	-111.8931
10465.1360	-135.4958	-122.0846	-121.6716	-129.1605	-118.4152	-112.5746	-120.0105	-124.8969	-113.3085	-109.5024	-120.2230	-139.8641	-117.7337	-122.4918	-111.8931
10508.2030	-126.3753	-110.3406	-117.1340	-116.9319	-121.5144	-120.3839	-115.9491	-121.2132	-109.3693	-110.2322	-119.1699	-120.2078	-125.2837	-116.8342	-110.7097
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10637.4020	-117.6631	-117.5877	-116.8694	-124.0517	-118.2099	-121.7723	-112.7371	-128.6990	-117.3155	-126.0393	-119.0778	-114.4828	-129.3652	-107.9891	-109.2916
10680.4680	-113.1189	-118.5433	-124.5296	-129.8279	-120.5982	-121.3601	-116.7455	-120.6231	-115.8295	-118.8227	-116.9456	-121.7133	-111.6223	-106.3035	-112.3144
10723.5350	-116.7769	-115.6967	-121.7648	-132.4532	-121.8892	-117.7999	-114.9529	-114.2535	-115.1627	-114.5764	-113.2180	-120.0161	-108.1805	-108.2806	-114.9898
10766.6010	-126.4195	-115.9459	-117.7156	-120.4426	-113.7094	-115.1425	-114.7282	-111.7638	-115.4571	-113.1108	-112.1680	-120.9150	-110.1588	-111.8540	-114.3500
10809.6670	-121.8521	-120.0200	-113.7192	-115.9437	-113.1433	-117.8725	-115.8331	-113.5072	-112.9329	-111.7763	-112.3386	-118.9016	-115.0406	-111.8045	-113.8500
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10895.8000	-111.0219	-120.1238	-119.4743	-118.8930	-115.0163	-114.3587	-116.1180	-140.7283	-111.2212	-120.5817	-123.9984	-116.0732	-121.2133	-112.6759	-128.9686
10938.8670	-116.3713	-117.9196	-125.0683	-125.6931	-117.5285	-113.8995	-111.6836	-123.3486	-114.2144	-115.2890	-118.5813	-113.7264	-123.3423	-115.6486	-124.5828
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11025.0000	-113.0315	-111.9431	-109.7137	-115.2999	-117.4825	-114.5607	-109.3993	-124.8207	-120.6448	-116.8634	-115.3013	-112.1676	-115.2594	-136.2185	-118.6165
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11111.1320	-114.2806	-130.2494	-117.5054	-113.1030	-122.4977	-110.9985	-120.2134	-111.5859	-118.7222	-117.9824	-121.1303	-109.1388	-117.2508	-113.5476	-117.2456
11154.1990	-113.1907	-116.9215	-134.8816	-110.1539	-116.8064	-110.4820	-117.4518	-115.0090	-116.9413	-118.7933	-113.5153	-109.2608	-115.9220	-114.4282	-123.9453

Freq	2.1.0	2.2.0	2.3.0	2.1.25	2.2.25	2.3.25	2.1.50	2.2.50	2.3.50	2.1.75	2.2.75	2.3.75	2.1.100	2.2.100	2.3.100
11197.2650	-111.6370	-119.0779	-116.1344	-109.6037	-115.1517	-114.4938	-118.4705	-123.6048	-115.8774	-124.7709	-113.8307	-110.9153	-113.5058	-128.0536	-119.2104
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11283.3980	-118.9948	-117.3074	-109.8151	-120.0725	-116.5293	-111.6723	-122.6196	-113.7452	-114.4661	-116.7271	-111.0195	-126.1034	-110.8275	-111.1874	-119.7354
11326.4640	-117.2539	-116.7560	-111.2766	-117.4413	-117.4215	-111.6554	-115.6204	-111.0432	-115.6986	-118.7454	-109.3391	-121.2533	-113.7875	-112.4224	-118.6642
11369.5310	-115.4549	-130.5067	-117.5236	-115.3002	-126.4811	-116.3935	-120.0039	-113.1501	-116.0534	-114.0671	-109.7676	-119.9084	-113.6337	-112.7631	-118.8100
11412.5970	-117.5862	-120.3597	-121.4452	-114.9511	-124.3194	-122.1137	-123.8020	-115.3370	-118.9362	-115.3328	-111.5586	-120.2798	-111.8700	-113.1065	-116.7734
11455.6640	-120.2195	-116.7878	-111.4315	-121.6914	-131.7456	-111.8383	-121.5478	-113.4336	-122.1011	-116.0755	-112.6677	-109.5063	-114.6441	-112.7155	-113.8150
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11541.7960	-114.1559	-109.3178	-120.3641	-109.8004	-113.9021	-111.6054	-125.0778	-115.5273	-123.6000	-118.1554	-112.7794	-114.0310	-118.8088	-115.6875	-114.0639
11584.8630	-115.0719	-111.2523	-115.5804	-110.6174	-115.5321	-117.3970	-122.0576	-114.5126	-121.5479	-118.3966	-114.6551	-118.7825	-120.5103	-119.2441	-113.9064
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11714.0620	-119.7466	-118.6909	-117.9623	-116.6523	-117.0514	-115.1008	-130.8832	-126.1985	-110.7841	-138.1737	-113.9699	-120.3690	-124.6592	-118.5630	-123.5894
11800.1950	-113.5239	-116.8944	-122.6687	-121.3009	-122.0442	-118.6767	-109.6726	-126.6347	-115.5878	-114.7059	-117.4028	-122.2198	-114.7106	-122.6823	-126.0336
11843.2610	-121.9924	-118.4178	-119.2282	-122.7723	-117.1437	-121.1100	-120.3019	-110.6756	-115.8945	-114.7980	-131.0958	-114.7205	-111.9388	-121.5550	-131.0356
11886.3280	-135.9081	-123.8684	-117.6136	-124.3689	-123.4141	-124.4040	-126.4112	-108.0429	-115.3782	-110.1631	-121.1047	-112.5282	-111.7038	-123.1900	-119.6800
11929.3940	-125.5415	-117.1584	-122.8588	-131.1036	-115.3543	-116.3419	-119.7113	-112.5067	-116.8905	-114.1717	-116.9476	-111.3127	-110.7847	-116.3094	-121.9059
11972.4600	-120.6288	-114.7279	-118.2301	-111.9507	-109.3776	-112.7708	-124.4466	-132.9976	-119.8483	-132.1554	-118.3857	-110.3309	-110.6014	-112.2695	-119.7335
12058.5930	-126.5729	-121.9931	-118.3130	-111.4181	-111.6601	-125.2463	-121.4430	-116.1536	-119.4764	-128.8826	-128.0202	-112.7649	-112.7447	-115.8763	-111.1109
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12187.7970	-111.2517	-110.0023	-121.2686	-117.0673	-108.7020	-112.6135	-113.1566	-118.6699	-113.4272	-110.8749	-119.0272	-119.0738	-112.6258	-116.6965	-110.7751
12230.8590	-116.5051	-112.1504	-118.0668	-117.8982	-110.2870	-116.0551	-114.6192	-137.4169	-118.1788	-108.6915	-122.0217	-115.3430	-111.9027	-121.7472	-109.2953
12273.9250	-115.1174	-122.4817	-113.7754	-120.8766	-114.0099	-130.7838	-118.6077	-122.7666	-138.2703	-110.8247	-114.6662	-115.5230	-113.6991	-117.5366	-110.6900
12316.9920	-125.3600	-125.6569	-114.7260	-123.1875	-117.6574	-120.1109	-121.6629	-116.7397	-118.2470	-109.6373	-114.5662	-125.4927	-119.9267	-124.8092	-114.2918
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12403.1250	-112.8365	-124.2286	-111.2220	-114.3317	-116.2804	-108.7808	-121.0724	-112.1744	-116.8538	-111.8837	-121.1764	-114.8529	-115.4281	-115.4299	-113.2175
12446.1910	-109.7763	-134.2970	-111.1473	-112.9419	-135.0406	-109.0133	-144.6716	-112.1699	-121.9726	-110.3213	-117.7129	-115.3088	-118.6028	-124.6235	-114.9986
12489.2570	-109.1378	-120.2057	-114.1698	-111.7766	-118.6491	-117.8765	-117.9694	-116.2248	-118.4302	-109.4257	-117.5129	-115.2724	-112.3798	-118.7844	-119.3193
12532.3240	-113.7332	-128.8778	-109.7944	-110.2643	-117.9884	-126.8856	-117.3044	-127.3736	-114.5167	-113.1654	-114.4842	-114.2002	-111.3505	-114.6609	-129.3385
12575.3900	-119.9956	-115.3394	-109.8107	-110.5578	-114.0665	-122.4465	-117.9462	-118.5552	-114.8931	-120.8431	-111.3007	-115.6428	-111.6142	-111.9807	-123.5751
12618.4570	-111.9699	-111.6564	-111.8400	-111.6963	-112.8234	-119.1777	-111.1602	-120.0488	-114.5159	-120.4011	-112.9468	-122.9604	-111.0382	-111.6396	-118.2463
12661.5230	-112.6957	-113.0682	-111.9251	-114.5125	-116.3584	-117.5407	-112.3981	-119.1652	-113.6874	-115.1513	-118.1746	-121.7074	-113.7645	-112.9378	-118.7791
12704.5890	-117.3477	-119.0535	-113.2475	-117.2889	-119.9294	-118.0365	-116.5012	-115.4751	-115.5800	-110.9291	-121.0217	-121.0281	-114.5586	-113.7790	-121.0240
12747.6560	-125.2344	-131.1745	-116.3635	-115.3174	-118.6668	-113.2819	-110.1975	-112.8878	-121.1243	-109.6845	-121.1361	-125.7594	-118.6708	-117.5820	-129.2498
12790.7220	-127.9531	-123.9097	-122.7675	-116.7899	-120.1068	-116.5906	-110.0562	-113.6230	-119.5977	-111.4650	-117.2783	-127.5578	-123.7254	-124.0330	-117.8114
12833.7890	-122.6692	-123.5917	-118.7960	-120.1694	-121.1369	-124.3566	-110.7362	-119.5062	-118.0905	-116.4133	-120.3162	-122.4853	-121.6291	-127.4547	-117.7714
12876.8550	-129.4916	-124.7756	-115.1353	-122.6466	-121.7363	-114.7935	-112.9034	-118.8585	-114.9040	-120.5851	-117.1917	-121.4536	-119.1522	-115.7125	-119.3021
12919.9210	-121.6720	-117.4468	-114.9725	-122.1950	-121.4629	-118.3683	-116.5250	-114.4046	-115.1535	-124.2461	-112.3028	-131.3569	-115.6044	-110.1640	-116.5136
12962.9880	-114.8062	-117.1200	-117.5965	-118.8545	-121.4492	-130.3596	-115.9994	-111.5093	-117.3059	-122.5174	-111.1903	-124.2749	-112.3788	-110.6726	-116.2302
13006.0540	-115.4279	-125.2449	-117.4439	-121.8906	-122.4719	-118.8427	-112.8688	-112.5745	-118.9852	-116.9019	-115.0454	-122.8743	-112.0132	-117.2488	-117.8494

Freq	2.1.0	2.2.0	2.3.0	2.1.25	2.2.25	2.3.25	2.1.50	2.2.50	2.3.50	2.1.75	2.2.75	2.3.75	2.1.100	2.2.100	2.3.100
13049.1210	-123.3289	-123.4882	-115.2578	-120.7966	-116.3106	-119.6150	-115.4591	-113.4575	-122.5271	-118.7725	-117.5498	-146.0060	-115.2857	-130.3946	-123.4888
13092.1870	-119.6721	-118.5514	-117.8130	-116.4737	-114.3455	-122.5238	-125.5214	-115.1738	-117.2597	-122.4970	-114.1997	-116.3941	-116.0779	-114.9043	-121.6177
13135.2530	-120.0963	-113.4398	-122.2161	-118.5452	-121.2683	-129.9509	-119.0593	-125.4807	-112.3324	-113.8231	-115.7579	-114.1546	-116.3050	-112.0958	-116.2822
13178.3200	-118.6351	-112.6008	-124.1883	-121.8993	-119.6480	-119.0802	-114.1279	-115.5146	-113.0568	-111.7793	-121.1376	-115.3790	-113.4782	-116.2365	-114.3314
13221.3860	-114.9811	-119.9779	-119.6034	-119.6830	-118.2168	-114.4150	-111.1595	-113.6592	-117.8431	-118.1895	-118.2154	-115.5882	-112.5586	-126.9889	-119.5360
13264.4530	-111.8811	-114.4122	-117.7222	-123.2191	-127.2388	-112.4220	-110.7790	-115.2004	-122.3079	-122.4768	-120.1367	-116.2442	-116.1631	-129.3865	-126.3384
13350.5850	-113.1567	-142.0196	-121.8952	-114.7441	-119.8217	-115.3033	-121.7159	-124.7765	-119.9652	-115.8498	-124.8658	-117.3971	-120.7495	-124.3033	-131.0639
13393.5520	-114.1978	-112.2307	-121.3482	-112.6302	-117.1636	-114.6541	-120.3682	-119.6787	-116.2400	-115.4108	-124.8558	-130.5238	-118.9898	-118.1724	-134.7387
13436.7180	-109.9014	-119.2320	-119.5900	-112.2859	-120.1679	-115.8036	-117.5171	-116.7810	-115.7106	-114.3646	-114.3548	-113.5191	-117.1527	-129.9319	-112.4280
13479.7850	-109.1606	-126.9710	-116.2005	-114.6245	-131.2457	-117.2952	-117.4110	-119.7887	-122.9455	-127.0557	-114.7640	-114.4681	-118.4204	-117.7951	-110.0133
13522.8510	-112.5475	-113.4266	-120.9752	-117.4459	-118.8585	-118.3242	-137.8557	-120.8078	-121.7711	-121.5778	-115.7586	-120.4744	-118.0685	-114.8302	-110.6246
13565.9170	-123.1973	-112.0183	-114.6649	-127.3657	-114.3053	-118.1244	-121.7275	-111.4752	-116.1055	-121.0328	-114.1295	-119.0595	-116.9415	-118.8735	-117.5696
13608.9840	-116.4311	-115.4932	-110.6408	-117.0281	-110.4006	-126.5457	-124.7739	-108.4760	-118.6144	-114.2699	-114.8059	-116.2368	-118.5352	-118.3418	-119.3546
13652.0500	-114.2206	-118.7626	-113.7016	-115.8169	-109.1614	-118.3227	-117.0428	-109.4706	-128.6646	-114.7050	-124.2779	-111.9125	-121.0117	-114.9874	-118.5195
13695.1170	-117.9507	-112.8010	-121.7385	-118.5486	-110.9487	-112.6108	-113.6107	-115.6159	-129.1120	-118.0136	-127.0313	-111.5099	-114.9341	-119.3124	-125.7669
13738.1830	-118.8947	-111.0553	-138.3022	-117.5432	-114.3985	-114.2544	-112.3876	-114.6266	-119.1730	-113.9505	-123.3764	-119.7452	-111.7971	-118.7302	-115.1136
13781.2500	-111.5371	-112.3882	-133.5854	-123.0571	-110.9820	-120.0298	-117.5766	-113.0765	-117.7711	-111.4634	-121.8742	-117.6493	-116.4268	-114.3511	-117.2593
13824.3160	-111.9566	-118.2272	-120.8912	-135.3072	-110.1736	-117.9520	-113.9864	-123.0475	-114.2750	-112.7632	-119.0117	-114.6085	-117.8836	-117.2741	-119.0842
13867.3820	-113.8897	-125.4875	-114.7979	-145.3052	-110.1276	-116.1047	-112.6255	-127.9912	-108.5692	-116.4007	-119.0440	-118.1075	-119.0588	-111.9372	-115.3160
13910.4490	-120.8972	-118.8524	-113.3181	-110.5161	-111.4276	-116.1047	-112.6255	-127.9912	-108.5692	-116.4007	-119.0440	-118.1075	-119.0588	-111.9372	-115.3160
13953.5150	-116.0139	-119.1328	-116.4933	-110.7647	-112.7472	-129.3110	-116.6483	-120.5480	-107.7814	-124.8396	-115.4300	-117.6642	-114.5991	-113.9254	-111.8934
13996.5820	-109.6123	-119.2764	-115.8721	-114.2883	-111.8158	-120.4380	-111.5182	-117.5230	-110.5018	-112.4521	-114.6200	-117.5028	-112.6065	-122.8491	-111.8113
14039.6480	-109.8084	-115.9956	-109.0559	-114.0001	-112.1236	-123.2760	-110.2118	-123.1323	-112.2606	-112.5327	-118.1456	-121.4447	-113.0092	-131.3572	-114.5554
14082.7140	-114.0983	-118.5150	-109.1318	-114.4289	-118.8095	-114.5905	-113.0411	-119.4248	-111.6804	-119.3268	-122.3802	-114.3301	-110.3451	-119.3878	-118.4471
14125.7810	-120.0591	-131.8537	-114.4085	-118.8688	-115.9207	-114.6891	-123.0654	-114.9447	-114.9292	-121.5984	-113.2475	-115.6196	-108.2309	-114.3793	-122.0665
14168.8470	-122.5903	-117.1615	-126.4971	-138.4824	-113.5911	-119.6574	-119.1167	-117.3705	-124.1287	-115.8915	-112.6917	-119.9775	-108.3241	-112.3895	-118.7598
14211.9140	-134.6641	-115.6954	-132.4907	-112.3594	-114.7952	-117.1038	-111.9347	-111.8320	-117.7936	-119.3779	-118.0504	-122.7873	-108.9033	-114.9638	-120.8118
14254.9800	-118.8038	-114.9221	-116.8637	-111.8515	-115.2971	-124.8352	-111.9508	-108.4120	-114.3745	-121.7830	-116.7708	-120.3784	-108.7307	-119.6469	-117.9517
14298.0460	-118.4008	-111.7603	-109.6488	-112.1395	-113.1639	-128.0560	-114.0366	-109.3765	-117.8840	-121.2346	-113.9467	-118.9703	-108.0252	-118.8598	-117.4635
14341.1130	-127.6482	-111.3167	-107.9446	-108.1602	-109.6968	-117.2934	-115.5470	-112.7543	-126.2883	-122.0252	-120.8651	-115.1665	-108.3912	-113.7365	-121.7078
14384.1790	-115.5861	-118.7213	-108.8795	-109.8989	-105.8593	-111.5327	-116.6067	-112.9550	-129.4018	-122.8892	-128.0932	-111.8691	-111.1880	-109.8394	-113.9400
14427.2460	-105.6552	-112.4311	-107.7887	-107.8787	-98.2249	-109.4074	-126.9616	-108.0099	-116.5044	-119.5102	-108.3166	-117.3006	-115.4241	-108.6889	-115.8314
14470.3120	-100.0436	-102.2129	-101.5316	-97.8488	-89.9169	-99.2574	-114.3880	-102.4899	-108.4512	-116.3409	-98.9153	-124.6110	-97.9755	-103.6431	-125.3072
14513.3780	-98.3967	-99.4979	-98.8713	-95.5433	-86.7468	-93.3158	-106.3598	-101.0488	-105.5732	-114.7416	-97.6918	-117.9176	-91.2263	-98.7449	-115.0069
14556.4450	-100.6213	-100.1764	-101.7044	-100.8942	-89.7538	-93.4270	-105.1948	-104.1529	-106.2414	-110.6847	-100.2539	-113.0879	-90.8741	-101.0228	-107.6343
14599.5110	-117.3827	-102.2420	-108.7753	-107.9228	-101.2822	-99.1937	-112.5563	-107.8102	-111.2784	-111.2760	-103.1509	-110.2442	-96.6799	-109.3046	-104.7872
14642.5780	-116.5194	-106.4399	-113.8672	-110.7209	-111.8007	-114.0411	-128.0336	-109.5009	-137.7905	-116.1390	-110.6920	-118.8757	-110.3842	-109.7197	-105.4962
14685.6440	-118.1266	-111.0794	-116.3108	-120.2543	-115.9977	-111.1711	-116.4137	-113.3585	-113.5368	-114.9896	-117.3153	-119.1186	-114.5053	-117.3793	-108.0734
14728.7100	-111.9228	-109.1711	-112.3833	-113.1646	-107.8294	-101.3841	-110.4197	-122.9723	-112.0427	-111.4340	-109.3025	-131.9911	-105.3717	-106.2867	-118.0760
14771.7770	-117.9449	-109.0650	-104.6256	-104.1270	-100.7894	-94.5644	-105.1886	-110.9778	-114.9132	-108.9537	-101.2851	-114.2502	-95.6940	-97.2138	-106.5751
14814.8430	-102.5456	-98.5595	-100.4572	-105.3919	-95.9615	-90.3007	-101.0348	-113.9276	-113.0240	-108.5915	-96.9099	-110.4251	-89.1706	-98.2404	-102.2362
14857.9100	-96.4588	-98.1091	-96.6091	-98.3151	-86.5540	-89.0998	-98.9190	-109.7616	-109.4065	-112.1245	-95.7850	-110.6779	-87.0348	-106.4823	-105.2180

Freq	2.1.0	2.2.0	2.3.0	2.1.25	2.2.25	2.3.25	2.1.50	2.2.50	2.3.50	2.1.75	2.2.75	2.3.75	2.1.100	2.2.100	2.3.100
14900.9760	-96.9461	-97.9859	-95.8186	-94.6881	-85.4763	-92.4485	-102.3833	-102.7563	-114.5308	-116.8457	-95.5194	-108.9964	-89.9583	-99.3099	-110.3613
14944.0420	-104.1234	-100.9510	-99.7135	-99.2642	-91.0469	-102.3158	-108.7610	-104.2010	-135.5177	-119.0157	-99.2800	-107.5344	-99.0608	-104.8289	-108.7180
14987.1090	-113.3158	-110.9134	-108.4272	-116.3643	-102.2686	-112.5969	-113.6270	-109.6575	-122.9494	-115.2270	-109.5489	-108.7524	-113.7511	-111.7583	-107.7867
15030.1750	-108.3936	-128.1283	-122.1348	-117.6830	-110.5213	-117.1756	-117.9599	-113.0142	-117.7437	-117.7700	-123.1032	-115.3092	-121.7310	-111.5283	-109.5722
15073.2420	-112.8829	-120.9600	-127.3387	-124.2394	-116.8266	-116.8291	-120.0839	-116.1584	-113.2842	-115.2901	-115.6762	-114.7226	-120.4662	-112.9439	-112.6313
15116.3080	-121.2789	-130.8562	-121.7637	-130.7967	-118.6474	-116.6019	-113.0891	-129.6726	-113.2048	-110.6616	-113.7951	-112.8279	-115.7651	-118.1655	-115.8141
15159.3750	-120.3936	-120.7242	-116.7134	-122.4204	-113.7367	-116.1494	-110.6404	-121.5495	-118.1838	-111.3379	-115.3252	-121.3838	-126.4424	-113.9658	-119.4999
15202.4410	-120.1703	-114.6040	-122.1388	-118.3327	-114.5289	-114.0651	-110.8214	-119.3340	-120.8046	-113.2448	-119.1472	-121.3195	-115.8047	-110.7588	-121.4213
15245.5070	-132.0268	-112.5748	-119.2665	-124.1820	-120.5531	-116.3015	-115.9509	-116.4907	-114.7794	-115.8917	-120.3017	-116.9617	-112.7306	-110.5314	-113.1552
15288.5740	-119.4576	-112.1912	-116.8155	-118.4100	-116.6657	-133.5696	-127.6743	-114.8619	-115.6995	-113.9406	-119.3176	-113.8410	-112.3733	-116.8003	-110.9785
15331.6400	-113.0732	-115.0583	-123.3733	-117.3347	-113.6911	-116.3282	-118.7549	-114.8216	-122.3379	-113.8555	-113.9422	-110.7123	-114.0603	-126.1586	-115.1807
15374.7070	-112.0254	-119.1595	-117.0421	-120.4660	-119.9010	-115.6192	-116.8497	-115.9907	-110.8244	-118.3356	-112.3669	-110.3923	-122.2178	-119.6985	-119.4006
15417.7730	-114.1757	-121.4433	-112.1674	-119.7905	-119.1626	-119.0616	-116.7373	-110.4402	-109.1015	-112.4302	-114.1968	-116.4140	-117.3580	-113.3329	-116.2761
15460.8390	-117.0070	-125.9853	-114.4029	-117.2864	-113.7673	-125.9885	-121.9848	-112.4695	-110.0880	-113.1285	-118.1292	-124.4029	-112.5396	-111.4679	-115.5393
15503.9060	-123.2856	-122.4263	-116.8046	-118.7514	-113.2891	-136.8121	-121.0185	-127.9223	-109.3967	-117.3868	-118.8511	-118.7665	-112.2827	-114.4797	-124.1645
15546.9720	-127.9396	-116.6527	-114.2643	-123.2168	-113.9007	-123.1809	-116.2900	-114.8636	-108.4687	-114.5113	-115.9274	-116.3542	-114.9506	-121.0350	-121.3210
15590.0390	-120.3250	-115.2537	-114.3560	-127.5690	-114.9286	-120.7752	-115.8327	-116.7974	-110.8304	-115.8539	-115.0620	-112.4147	-121.8768	-122.5111	-120.2959
15633.1050	-118.1825	-114.1942	-118.1885	-118.6104	-114.9377	-126.5032	-120.0061	-123.9898	-117.0962	-121.8886	-118.5286	-111.2469	-120.3796	-119.6972	-132.7345
15676.1710	-118.0369	-112.1979	-118.1123	-115.5823	-113.0915	-123.8792	-119.8862	-112.0174	-120.7299	-131.7670	-124.7390	-111.6379	-121.5810	-130.5134	-127.9276
15719.2380	-116.9621	-112.2546	-115.9940	-113.9150	-112.4637	-113.3516	-111.9760	-110.0154	-114.6787	-120.1333	-130.0380	-112.6298	-117.8300	-128.0064	-126.5027
15762.3040	-117.5282	-111.8483	-118.2263	-112.9664	-112.9200	-109.1828	-110.3207	-112.1236	-113.7541	-117.5676	-119.0728	-112.5840	-113.7015	-131.1082	-121.0882
15805.3710	-119.0095	-112.2265	-123.1073	-109.7462	-115.2859	-110.4559	-111.6168	-116.0583	-117.8092	-123.5098	-113.8253	-111.8022	-114.7839	-125.2180	-132.8061
15848.4370	-122.6854	-118.7664	-124.7711	-109.7549	-116.7433	-134.3272	-112.4574	-119.6662	-128.4522	-128.8848	-114.6925	-113.3289	-118.5095	-125.1764	-115.0778
15891.5030	-121.0974	-127.1887	-119.0814	-114.6402	-114.4762	-116.9909	-111.2060	-126.7902	-125.5611	-119.9201	-121.1875	-117.5536	-117.8931	-120.1825	-114.7354
15934.5700	-112.2574	-119.3111	-120.4384	-113.5504	-119.0299	-131.3116	-113.4399	-118.3550	-124.2378	-119.9580	-122.4671	-119.8642	-118.2559	-116.5396	-120.2099
15977.6360	-111.6669	-119.3521	-114.9049	-112.2140	-121.5653	-130.2726	-120.4509	-114.6192	-122.9579	-131.2868	-119.5227	-114.7088	-120.1339	-116.6249	-115.8098
16020.7030	-115.8650	-114.7804	-114.2210	-118.4113	-115.3493	-122.1243	-121.9376	-111.6497	-112.9077	-121.3752	-120.9739	-117.9733	-114.1995	-117.6788	-115.4506
16063.7690	-125.3788	-113.4886	-118.8590	-119.1769	-111.4118	-116.1396	-120.4607	-110.4519	-117.8100	-116.1393	-115.0669	-113.2148	-116.2783	-113.4853	-114.4551
16106.8350	-118.9369	-114.7953	-117.1322	-115.1732	-109.8081	-117.3168	-123.9592	-111.9747	-117.8100	-116.1393	-115.0669	-113.2148	-116.2783	-113.4853	-114.4551
16149.9020	-114.5778	-120.2474	-118.1435	-114.8948	-112.7273	-121.5972	-120.8086	-117.1967	-128.2362	-128.7176	-118.5260	-113.4337	-115.7452	-120.0472	-114.7306
16192.9680	-115.2634	-128.0230	-123.3271	-116.3327	-120.1054	-115.4936	-121.3106	-118.3507	-118.2249	-112.8858	-123.8268	-118.0110	-114.2627	-115.3766	-112.8283
16236.0350	-117.0170	-126.8737	-122.6772	-121.5831	-115.9880	-110.0718	-128.6580	-115.8917	-113.3195	-110.3577	-123.4888	-120.6985	-124.8987	-118.0705	-112.8283
16279.1010	-116.1933	-121.0101	-117.9329	-114.3917	-116.3915	-107.8144	-124.6853	-117.2039	-110.9356	-112.0614	-115.9758	-113.2486	-122.4420	-117.4152	-111.2153
16322.1670	-117.7879	-113.7896	-113.9506	-114.1573	-116.0684	-108.4254	-129.0595	-130.8428	-114.9449	-115.9189	-113.7829	-111.3612	-124.1526	-117.6018	-114.5180
16365.2340	-128.3785	-111.7393	-113.2871	-118.3515	-116.4483	-115.5353	-116.4596	-108.8665	-116.5317	-120.0280	-119.5820	-112.0828	-133.2605	-116.2057	-118.1813
16408.3000	-144.4949	-114.7633	-113.9692	-118.0961	-113.9947	-113.4394	-115.0677	-109.8663	-109.7823	-122.3424	-127.7604	-112.8038	-120.4517	-117.5600	-116.3612
16451.3670	-119.7638	-119.8572	-114.0823	-117.8806	-113.3098	-113.7174	-116.6171	-116.3716	-111.1540	-113.6298	-119.1713	-112.3457	-115.8611	-121.2800	-112.6680
16494.4330	-112.9442	-120.8428	-114.4750	-113.5254	-115.0177	-117.8415	-119.3043	-123.7640	-113.2757	-109.8270	-116.6444	-112.8437	-116.7157	-120.5318	-112.8897
16537.5000	-111.8697	-133.4750	-118.4189	-112.7565	-119.4999	-121.8823	-120.3763	-122.0279	-114.1591	-111.1267	-118.5497	-114.6095	-127.9905	-120.8576	-118.5714
16580.5660	-116.8671	-117.4519	-118.9708	-115.6496	-119.3358	-118.3637	-116.1658	-114.7355	-114.7496	-125.5289	-123.2470	-121.8814	-118.1103	-118.5368	-118.4824
16623.6320	-116.8841	-112.4519	-111.9410	-116.5535	-119.5327	-115.3677	-113.7574	-113.2121	-121.3404	-113.1351	-117.9188	-121.0913	-113.5270	-118.3850	-114.1661
16666.6990	-114.3888	-112.1705	-109.6037	-116.6474	-115.8173	-112.5745	-121.6177	-117.5575	-113.6833	-108.5924	-114.8667	-117.7463	-116.1959	-114.2034	-114.0725
16709.7650	-116.6407	-117.7118	-115.9716	-116.9053	-112.6386	-110.8535	-114.3039	-119.0681	-111.5075	-108.2888	-114.0172	-124.2439	-114.7875	-114.3861	-117.3367

Freq	2.1.0	2.2.0	2.3.0	2.1.25	2.2.25	2.3.25	2.1.50	2.2.50	2.3.50	2.1.75	2.2.75	2.3.75	2.1.100	2.2.100	2.3.100
16752.8320	-111.4571	-120.9818	-118.0580	-114.9609	-115.7416	-113.7189	-109.3509	-115.6879	-116.8062	-109.3722	-115.0870	-125.2080	-114.7483	-114.4498	-117.8881
16795.8980	-107.7428	-119.9657	-111.9925	-113.2540	-117.6828	-113.6772	-111.7987	-119.1879	-124.2553	-110.8090	-118.8337	-122.2062	-128.9943	-110.4179	-111.9832
16836.9640	-107.2754	-116.0246	-114.2147	-134.2926	-117.2655	-114.4674	-122.2310	-127.1778	-114.1060	-111.6571	-118.7199	-121.8787	-119.3911	-111.2904	-111.3258
16882.0310	-110.3959	-116.7462	-118.6671	-116.3139	-127.3494	-113.1228	-129.9404	-121.8656	-110.7927	-113.3711	-117.1420	-136.2228	-125.1476	-116.0765	-110.5139
16925.0970	-117.6283	-119.7084	-122.1559	-117.5879	-113.4927	-122.1120	-129.9723	-119.0724	-111.3405	-115.7486	-114.1595	-123.5910	-117.9580	-118.9107	-111.9520
16968.1640	-124.2916	-122.9209	-117.7867	-120.6674	-116.4874	-128.1271	-120.1393	-119.7596	-113.1384	-114.0128	-114.3586	-118.2390	-112.6210	-118.2439	-113.8388
17011.2300	-127.5174	-116.0094	-112.4988	-128.5394	-138.2370	-123.0426	-117.2149	-116.3390	-111.4371	-112.0444	-116.2909	-115.3171	-114.5345	-118.2990	-115.6601
17054.2960	-127.1991	-115.4697	-110.2015	-112.7119	-128.7314	-118.5489	-114.2307	-119.7665	-110.7782	-111.6538	-116.6172	-136.5083	-124.1882	-114.4045	-117.6545
17097.3630	-118.8811	-114.5719	-111.3420	-110.8262	-115.4256	-113.0531	-112.0755	-125.1327	-112.9437	-112.5002	-119.0442	-121.1970	-122.7863	-114.8787	-115.8751
17140.4290	-118.4651	-109.3027	-112.6008	-113.0209	-110.6163	-111.0271	-115.2288	-125.7127	-114.5494	-115.9030	-118.2712	-122.8675	-121.3203	-114.6943	-113.9021
17183.4960	-126.8611	-108.4308	-113.7978	-117.2437	-110.3030	-113.2341	-123.2250	-122.5094	-112.7517	-119.9338	-120.5088	-122.1307	-122.9217	-118.2396	-115.4149
17226.5620	-121.7595	-112.3279	-114.5905	-118.1337	-113.2254	-132.7903	-118.9202	-121.2477	-110.9813	-122.3384	-122.8951	-117.9711	-120.5672	-132.7864	-118.6913
17269.6280	-117.3651	-113.8652	-116.8095	-111.6818	-115.6310	-115.7921	-113.4398	-117.3956	-114.7035	-122.3561	-117.3162	-118.2651	-117.8516	-119.4768	-119.2110
17312.6950	-112.8998	-114.3060	-124.1911	-109.5343	-118.4472	-115.4544	-112.9926	-115.3297	-130.8027	-121.9437	-114.4155	-131.8399	-118.1276	-121.9831	-117.8047
17355.7610	-109.9117	-116.2452	-120.8662	-114.7577	-120.4522	-118.0523	-113.9528	-114.5134	-129.9314	-124.7300	-113.9818	-125.0913	-122.7156	-127.2226	-121.4071
17398.8280	-109.8341	-120.0251	-118.3113	-121.2819	-123.9523	-117.9374	-115.3749	-114.8855	-119.5821	-119.4245	-117.2976	-126.1109	-118.9515	-130.8305	-122.3978
17441.8940	-115.8721	-122.1950	-114.9481	-121.6912	-119.6288	-115.2424	-119.7271	-113.7162	-120.6562	-114.2889	-125.4912	-116.8308	-115.9215	-125.6592	-118.8683
17484.9600	-123.2384	-121.3179	-113.1347	-131.2439	-115.7154	-117.9694	-124.0228	-113.1262	-132.8324	-113.3018	-118.2826	-114.5031	-120.0331	-123.8039	-118.4871
17528.0270	-114.2707	-121.4632	-116.3186	-116.6949	-116.1123	-119.1731	-115.9825	-115.6403	-122.3979	-113.7571	-112.5328	-113.6609	-126.3007	-118.0227	-121.8435
17571.0930	-111.3239	-129.0567	-118.1719	-112.1473	-121.9939	-115.4455	-113.1277	-123.6223	-116.5344	-115.6450	-112.0280	-110.1559	-131.1753	-120.0020	-118.1265
17614.1600	-108.0738	-123.9015	-117.8838	-110.5751	-142.7177	-117.6356	-117.1695	-124.7707	-113.7583	-119.5159	-120.8331	-109.2480	-137.1161	-120.3045	-113.0490
17657.2260	-108.2438	-116.5498	-122.6514	-108.9905	-126.2528	-125.9831	-115.9283	-118.7699	-120.1842	-123.5119	-115.3821	-114.1144	-127.5865	-124.8351	-112.2337
17700.2920	-113.9971	-114.2996	-122.5903	-111.7072	-123.7253	-121.6565	-119.6980	-114.9859	-122.7954	-117.9572	-110.4310	-125.9913	-120.2057	-126.6198	-113.6141
17743.3590	-116.8679	-114.4130	-118.2568	-122.3604	-131.1239	-117.1454	-124.7407	-113.1018	-124.0126	-118.3725	-110.3904	-132.3466	-124.2463	-115.1380	-118.5231
17786.4250	-124.6818	-113.1093	-114.6070	-117.7012	-128.5867	-117.3249	-125.9778	-116.0093	-118.7671	-124.6068	-110.2817	-117.7421	-121.2756	-111.7913	-125.2766
17829.4920	-119.9699	-115.9960	-118.7330	-118.1897	-116.3684	-121.0406	-114.0042	-112.4717	-114.2302	-126.3655	-114.7702	-112.2805	-120.8703	-111.8716	-119.3428
17872.5580	-119.2802	-120.4972	-139.9848	-116.7474	-111.9920	-126.8506	-109.5799	-110.7795	-123.4687	-121.5236	-119.7599	-112.1845	-119.7166	-111.4638	-117.1367
17915.6250	-120.6243	-118.0512	-128.1487	-113.0821	-114.2374	-129.5209	-112.0433	-109.7120	-113.7129	-117.1281	-122.8111	-116.7383	-118.6521	-111.4554	-117.6766
17958.6910	-121.8885	-119.9044	-127.2988	-117.8709	-119.1870	-121.0827	-121.3711	-110.9951	-111.2570	-116.6204	-127.1478	-122.2368	-122.1138	-111.5289	-115.6152
18001.7570	-119.5338	-122.5591	-120.8001	-123.8143	-120.8939	-123.9492	-120.4868	-113.9939	-112.9902	-133.4817	-116.7488	-122.5046	-126.7014	-112.5782	-113.3350
18044.8240	-117.6356	-120.3107	-119.2325	-113.3805	-122.5749	-123.7670	-117.6118	-118.0684	-117.2075	-124.5433	-115.1572	-125.0394	-136.5864	-113.2554	-113.4775
18087.8900	-120.9432	-117.5055	-130.2639	-114.0795	-116.6503	-116.5421	-120.2869	-117.8151	-124.1651	-129.0566	-115.1001	-131.2603	-115.1041	-115.9986	-117.3929
18130.9570	-132.1477	-123.1764	-117.1328	-119.5233	-114.2910	-115.7930	-121.1350	-118.2975	-120.0681	-133.0368	-122.2848	-124.3723	-111.4179	-122.8909	-127.7995
18174.0230	-121.6314	-126.5018	-113.4267	-121.3460	-116.1873	-119.1842	-112.3708	-127.9486	-116.0668	-124.9959	-116.9201	-118.3702	-115.9528	-125.9952	-127.9054
18217.0890	-122.6157	-118.7932	-116.5319	-116.2405	-115.6358	-118.5670	-109.9003	-119.2545	-116.3555	-115.6275	-116.4225	-117.1178	-128.9518	-136.9726	-120.0708
18260.1560	-116.8127	-117.3597	-122.3960	-110.4472	-114.6003	-120.8733	-111.1652	-111.7072	-113.7775	-112.3877	-118.2707	-125.0603	-117.2986	-124.9003	-110.0796
18303.2220	-112.2673	-119.6244	-122.9109	-107.4447	-116.5441	-123.7767	-114.1224	-112.1659	-111.5149	-110.5280	-117.9175	-120.3477	-111.1746	-115.3766	-106.9050
18346.2890	-116.9838	-122.0018	-121.1991	-107.9175	-118.3999	-123.7295	-117.1198	-118.7715	-112.5009	-108.3967	-123.6182	-115.5865	-113.8030	-110.3768	-107.4104
18389.3550	-115.3620	-124.7745	-127.6223	-111.7938	-121.3282	-120.7144	-120.3032	-110.3825	-114.8261	-108.1719	-114.8342	-120.5750	-114.7007	-108.0913	-112.6128
18432.4210	-110.3060	-123.7218	-123.2473	-119.8644	-121.6778	-118.2823	-124.6065	-107.9318	-114.2879	-110.8550	-110.2800	-127.0720	-112.6459	-108.5896	-123.5511
18475.4880	-109.6389	-114.7800	-121.7169	-119.5111	-114.9134	-115.1758	-126.0314	-112.1751	-112.7338	-117.0980	-108.5064	-121.3447	-118.1988	-109.6704	-120.5021
18518.5540	-109.8479	-113.5365	-131.7705	-118.1763	-112.5884	-112.8604	-121.0889	-119.8389	-110.9893	-118.2916	-110.0407	-120.3047	-113.7722	-110.1321	-124.4200
18561.6210	-112.0865	-112.7604	-130.5968	-115.7298	-114.9859	-112.7500	-116.3399	-117.7537	-114.4268	-114.4268	-118.5786	-116.7219	-111.0902	-112.6462	-137.4536

Freq	2.1.0	2.2.0	2.3.0	2.1.25	2.2.25	2.3.25	2.1.50	2.2.50	2.3.50	2.1.75	2.2.75	2.3.75	2.1.100	2.2.100	2.3.100
18604.6870	-114.1369	-114.0949	-130.6443	-113.7764	-115.7584	-121.1672	-114.6391	-117.1970	-115.6610	-114.5555	-124.0132	-114.1129	-111.9678	-120.5446	-113.9556
18647.7530	-132.9824	-118.5201	-119.9132	-117.9520	-115.0870	-120.4987	-115.8963	-122.5258	-117.6425	-116.5026	-119.9182	-115.3858	-113.4142	-116.9776	-109.1270
18690.8200	-113.1641	-116.3031	-113.0581	-127.8472	-115.3283	-116.0242	-113.8559	-128.3167	-117.4668	-122.0447	-119.0806	-120.7555	-114.2171	-115.0533	-108.9141
18733.8860	-117.4549	-109.9439	-109.7306	-121.6312	-111.5134	-112.7697	-115.3113	-126.0479	-119.8052	-122.8221	-112.9588	-120.0735	-115.6965	-121.8789	-112.2582
18776.9530	-126.7568	-108.7404	-109.9313	-115.0294	-107.1442	-116.4739	-117.7594	-124.9348	-132.5712	-118.1566	-112.5038	-122.2000	-119.7406	-123.0768	-120.8048
18820.0190	-120.0572	-113.5077	-112.1810	-114.1190	-106.3479	-133.9746	-117.5321	-120.8658	-121.2129	-119.4758	-117.0272	-122.2736	-114.0252	-115.4016	-128.7834
18863.0850	-119.9744	-125.0083	-115.1212	-114.0856	-107.7909	-125.8071	-120.0837	-123.0279	-115.6367	-125.5861	-116.1039	-113.9832	-111.5770	-115.9622	-128.6482
18906.1520	-115.7336	-117.9065	-115.6380	-112.7797	-109.7859	-119.9563	-116.1241	-117.4923	-113.9121	-143.2829	-110.9703	-111.6068	-113.3448	-118.8118	-138.2845
18949.2180	-119.1209	-110.9306	-112.8051	-112.4059	-111.9874	-117.1491	-117.4904	-120.3075	-114.1615	-131.3278	-110.5217	-111.0125	-115.5354	-124.5061	-121.1002
18992.2850	-115.2984	-111.7213	-112.9241	-113.6729	-116.9855	-115.0518	-133.9133	-123.4884	-114.5688	-124.4255	-114.7399	-115.1668	-111.6226	-144.5748	-120.7271
19035.3510	-116.7141	-113.8798	-118.7375	-117.8838	-120.8824	-111.6184	-118.9596	-114.4762	-117.7611	-119.3264	-119.0716	-128.1698	-110.7576	-129.4636	-128.1187
19078.4170	-126.5913	-117.9271	-119.9136	-117.4715	-117.8505	-109.9576	-115.1266	-114.4972	-121.0487	-114.7846	-116.7442	-121.3831	-114.6949	-129.8501	-118.8691
19121.4840	-116.5707	-118.9086	-113.9434	-120.1535	-114.9487	-113.9142	-119.0357	-117.6831	-117.0389	-113.2648	-116.0202	-125.3811	-121.0422	-118.2843	-115.0270
19164.5500	-118.8330	-119.7195	-113.1754	-128.4742	-113.5411	-122.3663	-117.2086	-112.7826	-123.5038	-113.7808	-118.3857	-127.3471	-113.7024	-118.0579	-113.7746
19207.6170	-116.1626	-123.3084	-112.2967	-118.8842	-114.4289	-109.9271	-112.1041	-115.7510	-117.2849	-115.7317	-117.7754	-119.7540	-109.5645	-124.0061	-115.8332
19250.6830	-112.1595	-125.0370	-120.8543	-115.4034	-113.0449	-108.3892	-110.8133	-115.4797	-114.3594	-116.2237	-116.3904	-123.6232	-110.5238	-115.4547	-132.4737
19293.7500	-112.1590	-118.3576	-115.4558	-116.4749	-111.2123	-110.8251	-112.0827	-113.7350	-114.7450	-113.0568	-117.2116	-123.6124	-114.0005	-116.0067	-118.6501
19336.8160	-112.5135	-116.8704	-113.4700	-124.8982	-115.3996	-109.6818	-115.1302	-115.3824	-116.2849	-113.1432	-118.6026	-115.8380	-115.3923	-118.7177	-115.6242
19379.8820	-115.8231	-114.4010	-117.7050	-120.1012	-121.9715	-108.0373	-121.6032	-117.2829	-122.1142	-115.5204	-122.3577	-115.1787	-115.4304	-122.4167	-116.1549
19422.9490	-119.4010	-112.4018	-115.5690	-114.2731	-123.0582	-109.6209	-121.8235	-118.4492	-125.7485	-120.5917	-119.0311	-114.0315	-121.9814	-119.3163	-120.0638
19466.0150	-118.2700	-110.5235	-112.5637	-112.3898	-125.4309	-115.1397	-113.1402	-124.5646	-119.9304	-117.5843	-119.6159	-111.4167	-129.8078	-112.3230	-115.4838
19509.0820	-116.8925	-110.0587	-113.4535	-112.7160	-117.0420	-121.2904	-115.4722	-129.2053	-121.5998	-118.8455	-126.0052	-111.5299	-117.0928	-111.7939	-113.5146
19552.1480	-114.7022	-114.9969	-116.2788	-113.2832	-114.9627	-117.1146	-124.2545	-126.0122	-125.2094	-118.0235	-121.2290	-116.2504	-113.3651	-111.9123	-113.7536
19595.2140	-113.9246	-123.6454	-118.1210	-114.4575	-114.9550	-114.9345	-124.7382	-120.6310	-121.2713	-117.1922	-117.3633	-124.4542	-118.6202	-113.8808	-116.2396
19638.2810	-117.4049	-122.2355	-120.3585	-117.4718	-114.1491	-114.1129	-126.7063	-116.6809	-119.2757	-115.2056	-115.6894	-129.1753	-120.9254	-128.3732	-129.3701
19681.3470	-119.9490	-139.3922	-118.0133	-118.2463	-112.7460	-112.9958	-121.9347	-115.8042	-114.8022	-115.1773	-122.7786	-118.4016	-114.7652	-118.0000	-118.6131
19724.4140	-116.8000	-117.1615	-116.3839	-116.8188	-112.7672	-114.9696	-121.8532	-113.4645	-115.0004	-115.9548	-118.9562	-120.7730	-117.6251	-115.4372	-116.5219
19767.4800	-119.9648	-110.0883	-118.3445	-120.7277	-118.3050	-115.6849	-130.8577	-114.2032	-120.9015	-114.7381	-118.2146	-118.4464	-120.2239	-115.0078	-127.8802
19810.5460	-126.5712	-107.5824	-118.2912	-121.3804	-128.7460	-115.8439	-127.6776	-125.5729	-128.7109	-116.2724	-120.7876	-113.0397	-120.3012	-113.3571	-129.7509
19853.6130	-118.2300	-107.6114	-131.3411	-113.6722	-126.2832	-115.7439	-125.5677	-115.0616	-132.5362	-128.2240	-122.9699	-114.0202	-125.7699	-112.7500	-115.4333
19896.6790	-123.9343	-109.0641	-113.4313	-116.3618	-121.2368	-114.3634	-119.6438	-107.8965	-122.4103	-115.3611	-116.2835	-125.7907	-116.5301	-111.6767	-109.8317
19939.7460	-116.5485	-110.8745	-111.7403	-130.5819	-118.4967	-118.3041	-120.1350	-106.4690	-113.8896	-107.8411	-117.3237	-113.7182	-110.1131	-111.0286	-109.5907
19982.8120	-114.4619	-113.1576	-116.1171	-123.0523	-116.1393	-135.4660	-117.0302	-108.7900	-112.0746	-107.5022	-120.5293	-110.5836	-110.6002	-111.4279	-113.9677
20025.8780	-125.7076	-116.4604	-113.4563	-118.6413	-114.4150	-133.1232	-118.2840	-113.1465	-113.9980	-113.0262	-127.6375	-110.8371	-116.0433	-112.7359	-122.7596
20068.9450	-122.2598	-117.7597	-114.6278	-122.5024	-115.2905	-112.0847	-117.2337	-116.5664	-120.9537	-116.0130	-127.0566	-110.6435	-124.8514	-115.3696	-124.9494
20112.0110	-119.5369	-116.4884	-118.5795	-134.3859	-119.4632	-120.6847	-118.3829	-114.9349	-119.1976	-121.6079	-116.1846	-111.4461	-128.1943	-118.1229	-123.2736
20155.0780	-117.3633	-116.7468	-114.1491	-125.0747	-118.2402	-123.3610	-119.9620	-115.7889	-114.2200	-116.1791	-116.0882	-114.7175	-119.1780	-114.1940	-123.5541
20198.1440	-116.7965	-118.6803	-110.8462	-117.2325	-124.8189	-127.3799	-116.0705	-128.5725	-113.1329	-111.7265	-126.3361	-118.8293	-113.4783	-114.0031	-120.6005
20241.2100	-118.1783	-117.4095	-106.6082	-114.9290	-127.5844	-113.9195	-120.1192	-117.3219	-113.2371	-111.9060	-115.3126	-119.1041	-111.6695	-113.8357	-114.3644
20284.2770	-115.6950	-121.2428	-106.1747	-116.2064	-117.2908	-109.0281	-125.4863	-115.7281	-111.8318	-112.5191	-110.7326	-115.1828	-115.4552	-116.6409	-114.7616
20327.3430	-111.1068	-116.7418	-110.1267	-115.8782	-113.1784	-109.0179	-122.6563	-116.4331	-111.0178	-113.9381	-112.7333	-113.8974	-121.7002	-122.1150	-129.9180
20370.4100	-109.3798	-114.4831	-116.8486	-116.4698	-112.2724	-114.8932	-150.5568	-114.9932	-112.1399	-115.0282	-116.4140	-113.7941	-112.5706	-113.8558	-120.3769
20413.4760	-110.5076	-118.7656	-124.0306	-115.9418	-114.1515	-120.6029	-117.3227	-113.1036	-113.7577	-115.7513	-113.8696	-114.4498	-108.8622	-110.9058	-117.9470

Freq	2.1.0	2.2.0	2.3.0	2.1.25	2.2.25	2.3.25	2.1.50	2.2.50	2.3.50	2.1.75	2.2.75	2.3.75	2.1.100	2.2.100	2.3.100
20456.5420	-114.6024	-125.9363	-128.3268	-114.8174	-115.0198	-119.7349	-111.1128	-116.7143	-113.9804	-123.4509	-113.5490	-121.9454	-109.3494	-132.8925	-122.4604
20499.6090	-121.2247	-115.1028	-118.0056	-122.9422	-114.3671	-110.8886	-111.2609	-125.0566	-116.6841	-118.7656	-116.0173	-127.3841	-114.4906	-115.8894	-124.6073
20542.6750	-119.5709	-114.0901	-118.6895	-121.1529	-112.9307	-107.7759	-120.0257	-119.1638	-117.4012	-111.3738	-119.0695	-128.9298	-123.8030	-117.5079	-121.0561
20585.7420	-113.3568	-114.3054	-120.4089	-119.5268	-113.6295	-107.9801	-126.7232	-114.4419	-113.0770	-111.4871	-122.8744	-121.2174	-117.9824	-118.4047	-120.0613
20628.8080	-110.8393	-112.8600	-113.6911	-120.6091	-113.5551	-110.1990	-124.4993	-111.9362	-118.6305	-114.2638	-129.0744	-118.5623	-119.1640	-117.7951	-121.7774
20671.8750	-112.4052	-113.2781	-116.4190	-118.0959	-113.7437	-117.8928	-125.1719	-114.0434	-121.3580	-118.0468	-130.0621	-118.1639	-128.0954	-118.3924	-122.4206
20714.9410	-118.4727	-116.2007	-120.2540	-116.5034	-111.4511	-127.2480	-126.3656	-116.5617	-115.0144	-120.1893	-116.7814	-118.4681	-124.7451	-120.1617	-123.2429
20758.0070	-117.1192	-123.5346	-116.1110	-116.4882	-110.7456	-120.6073	-120.3831	-118.5612	-115.8726	-119.5911	-114.0447	-120.1198	-119.8450	-117.3194	-130.3767
20801.0740	-116.4397	-115.8215	-117.4573	-116.2505	-114.9569	-113.2299	-116.1479	-125.2544	-117.7512	-119.4938	-118.1292	-125.1579	-122.1501	-114.0049	-121.4849
20844.1400	-120.2686	-113.2723	-115.2743	-116.6822	-117.4767	-130.9950	-113.6077	-118.4985	-115.8305	-122.8871	-117.5633	-121.4455	-122.2487	-112.8375	-123.2632
20887.2070	-114.1956	-114.4521	-112.3572	-116.7507	-117.3391	-113.3617	-111.9078	-118.7911	-113.5094	-126.2620	-114.7330	-120.0945	-116.1966	-110.9322	-118.6273
20930.2730	-114.7612	-114.6664	-112.8370	-118.6894	-117.2124	-113.1901	-111.7493	-122.5111	-109.4164	-120.6604	-110.6282	-120.5300	-115.6270	-110.0256	-121.8009
20973.3390	-116.6647	-115.7114	-113.9932	-120.5992	-116.1420	-113.1150	-115.6977	-117.4122	-107.8099	-118.0716	-110.1886	-115.1715	-117.9454	-112.1273	-122.5117
21016.4060	-123.8321	-121.6629	-114.3901	-113.3625	-117.4377	-117.3609	-117.7576	-114.3176	-109.6261	-117.3255	-118.6829	-111.5952	-121.0636	-119.5986	-115.3452
21059.4720	-121.3696	-116.4709	-115.3692	-115.8130	-127.7111	-125.1268	-112.8828	-117.1888	-113.8839	-112.2754	-125.7752	-110.6517	-114.3073	-130.6496	-111.4113
21102.5390	-116.4574	-112.9879	-112.2179	-119.6668	-122.0084	-132.9836	-112.7579	-122.3090	-118.4358	-115.4245	-129.5544	-109.8446	-114.2063	-126.4389	-111.7120
21145.6050	-117.0385	-113.1837	-112.4667	-130.6845	-118.9574	-124.2962	-116.2780	-127.4372	-130.6460	-117.5364	-121.8807	-110.8558	-113.7678	-124.2681	-119.0146
21188.6710	-119.3183	-115.0044	-122.7675	-125.9843	-115.7990	-119.8607	-125.9118	-121.1794	-122.6390	-117.3049	-112.9842	-116.4825	-114.6089	-117.8526	-123.8107
21231.7380	-119.2764	-114.6176	-116.6462	-134.2297	-120.9592	-119.4325	-115.1231	-115.9382	-115.8153	-122.6706	-110.0296	-123.8177	-112.9614	-117.6986	-126.0534
21274.8040	-120.3055	-116.7654	-114.1183	-118.6025	-126.8957	-112.7849	-114.4233	-116.3169	-115.0578	-116.7695	-108.8475	-112.6573	-117.2711	-122.9350	-127.3165
21317.8710	-120.7162	-119.6998	-114.8304	-117.4816	-127.5814	-110.8470	-117.4197	-116.3169	-118.2207	-114.4965	-111.5613	-110.0298	-120.0935	-116.1986	-124.4562
21360.9370	-118.2372	-113.5308	-114.9821	-113.4171	-130.1221	-112.1170	-121.4748	-119.3680	-126.1897	-112.7732	-128.1147	-114.2341	-120.2169	-112.9810	-118.8629
21404.0030	-117.0546	-123.1959	-113.2722	-117.4816	-127.5814	-110.8470	-121.4748	-119.3680	-126.1897	-112.7732	-128.1147	-114.2341	-120.2169	-112.9810	-118.8629
21447.0700	-118.0887	-114.3007	-115.8417	-113.7896	-125.9463	-117.3378	-118.2588	-130.0877	-122.6591	-113.7372	-118.0173	-141.8649	-122.0760	-116.5701	-113.0330
21490.1360	-124.2116	-111.4898	-116.3101	-117.1587	-129.9199	-119.5654	-118.1576	-124.8359	-116.6339	-119.9091	-119.3156	-118.7236	-123.8740	-124.1175	-112.5746
21533.2030	-121.7295	-116.2642	-116.8828	-118.3632	-127.9408	-114.0891	-121.5776	-119.5034	-119.1316	-125.4926	-116.1303	-118.0437	-129.2071	-132.1261	-116.3576
21576.2690	-116.6303	-120.1574	-113.5057	-118.2107	-124.8896	-117.1744	-126.7834	-115.7606	-122.1586	-121.1604	-115.4500	-122.7780	-120.8669	-117.2049	-118.0746
21619.3350	-118.4522	-118.8808	-107.4021	-116.5362	-128.4161	-130.8916	-124.7115	-113.9950	-116.2465	-117.1790	-113.6687	-128.7786	-119.0499	-113.6184	-115.1615
21662.4020	-113.5505	-117.4697	-105.7158	-114.6808	-119.6398	-120.6345	-118.1994	-115.8275	-116.2465	-117.1549	-113.9838	-119.8859	-121.5454	-113.0955	-113.9447
21705.4680	-110.9341	-117.5328	-108.8080	-118.7175	-113.3182	-135.5092	-116.6063	-114.3677	-117.1035	-112.4322	-115.3761	-118.5532	-120.1992	-115.2266	-112.7973
21748.5390	-112.7389	-119.2847	-115.7941	-125.2723	-113.5106	-118.6574	-119.0478	-117.2903	-123.1310	-111.0419	-113.9688	-117.7736	-117.6194	-119.3380	-114.2085
21791.6010	-114.9365	-119.0791	-119.8303	-114.0039	-118.8207	-113.0556	-127.3231	-120.5672	-111.1310	-112.8228	-118.3705	-120.0261	-123.7194	-112.9588	-124.7610
21834.6670	-117.5252	-117.2299	-112.7741	-108.9515	-125.7877	-111.7826	-132.8965	-126.1315	-107.5334	-116.4816	-120.7515	-114.2689	-116.1894	-112.3404	-123.0471
21877.7340	-115.7235	-112.6031	-112.8709	-109.3513	-121.4146	-114.0262	-128.5601	-134.1551	-106.5277	-129.7893	-114.7112	-111.6187	-115.7585	-116.2010	-118.6507
21920.8000	-112.0001	-112.5719	-118.8159	-114.1260	-120.9716	-116.5707	-124.6345	-115.3191	-106.6166	-117.2709	-113.0912	-110.5788	-119.5077	-117.2580	-117.5562
21963.8670	-111.3442	-122.7487	-123.9718	-119.2607	-120.2474	-111.3647	-123.6942	-112.5917	-110.0124	-117.6640	-108.3698	-109.2553	-128.7710	-114.0873	-122.2594
22006.9330	-113.2804	-118.9703	-119.0373	-118.8758	-114.9591	-110.3781	-120.9167	-115.8367	-117.4351	-123.3153	-108.3013	-109.9831	-114.6546	-115.4198	-117.0528
	-102.7623	-100.2701	-101.3158	-104.4011	-105.2051	-105.6366	-108.0488	-108.2178	-107.9988	-108.4352	-107.7929	-108.8703	-106.6272	-107.2736	-102.2602
		-101.4494			-105.0809		-108.8885			-108.3661				-105.3870	

Freq	3.1.0	3.2.0	3.3.0	3.1.25	3.2.25	3.3.25	3.1.50	3.2.50	3.3.50	3.1.75	3.2.75	3.3.75	3.1.100	3.2.100	3.3.100
43.0660	-46.0733	-47.8461	-63.6840	-43.9402	-37.5178	-44.5187	-51.2063	-37.6910	-38.4610	-51.1942	-43.0952	-56.2071	-46.2800	-36.8163	-48.2582
86.1320	-37.6768	-59.9891	-59.0502	-33.4061	-35.7382	-37.8244	-46.5171	-23.8263	-23.8806	-36.1211	-34.8903	-45.3939	-37.0302	-30.2911	-46.4527
129.1990	-33.0079	-35.0634	-47.6788	-26.9201	-20.0520	-30.4180	-36.5962	-18.0941	-23.8606	-29.9359	-33.8385	-33.5707	-30.9127	-29.3585	-29.8401
172.2650	-31.7293	-26.2645	-42.8690	-25.2329	-19.5820	-25.6354	-35.6754	-17.8348	-21.2296	-30.0642	-36.8053	-29.4373	-30.0037	-30.3204	-20.2381
215.3320	-34.8912	-25.4399	-44.1643	-29.1185	-24.2522	-27.2107	-39.9469	-21.4483	-22.5212	-34.5141	-34.3657	-31.8532	-35.5650	-29.2474	-19.6825
258.3980	-43.6474	-31.8227	-50.9133	-39.7926	-34.4715	-35.3201	-46.2299	-25.5978	-29.1400	-42.8611	-40.0189	-39.9026	-50.2381	-34.6238	-26.6123
301.4640	-60.6842	-44.8650	-59.7503	-56.3040	-46.9097	-50.9052	-51.7116	-44.2911	-40.9074	-61.6107	-54.2282	-46.9247	-67.0948	-56.3883	-49.2513
344.5310	-67.6941	-55.2094	-62.8759	-51.6185	-48.7639	-71.7877	-51.1661	-58.2836	-48.4002	-58.0006	-54.6815	-48.6799	-72.0688	-45.9263	-41.4271
387.5970	-71.9605	-53.5868	-58.2858	-53.7913	-52.2037	-60.3642	-53.1889	-61.7268	-57.7927	-56.0190	-53.7721	-59.1386	-67.2680	-46.3642	-43.6305
430.6640	-69.9029	-51.2189	-57.2247	-61.4241	-58.2603	-60.3422	-58.1074	-62.2909	-55.1368	-57.7173	-64.8810	-62.7573	-65.7061	-49.8139	-52.3303
473.7300	-69.0148	-53.8067	-60.4012	-62.3218	-62.8964	-64.8646	-64.9948	-69.5210	-56.9261	-63.4337	-66.5959	-65.3721	-69.0411	-56.4271	-59.4352
516.7960	-68.5217	-58.3484	-67.1991	-60.7848	-61.6152	-66.3217	-74.7976	-71.5351	-73.4132	-70.8142	-76.5245	-72.8957	-74.4274	-64.1383	-62.0979
559.8630	-68.1188	-61.5506	-67.0223	-63.2472	-63.6801	-66.8032	-78.6138	-70.8911	-65.6556	-74.8399	-70.6375	-72.2734	-75.4068	-70.7682	-65.8213
602.9290	-68.5733	-63.5252	-66.4441	-68.0452	-75.7582	-67.3084	-79.2862	-67.9077	-67.0420	-78.5324	-65.4917	-71.2929	-75.9828	-73.7616	-67.7639
645.9960	-71.2681	-67.6718	-68.1995	-62.7118	-71.7206	-70.9592	-88.1037	-76.7385	-71.6595	-67.9285	-65.1954	-63.2885	-96.6456	-68.3113	-69.8091
689.0620	-76.1824	-57.5556	-70.1352	-60.6917	-66.5284	-76.8086	-73.2998	-84.7173	-70.9850	-68.8572	-66.0050	-62.8868	-77.3137	-69.3121	-71.6222
732.1280	-71.7508	-55.9956	-74.9126	-67.2180	-66.8627	-72.1121	-71.3926	-82.9573	-67.1239	-70.1620	-68.2170	-69.6280	-79.8171	-74.8673	-72.2392
775.1950	-70.1922	-57.5205	-70.1844	-59.0669	-64.0367	-65.6397	-78.6681	-68.5699	-66.0302	-67.0999	-73.2239	-76.4080	-75.2406	-81.8749	-73.0106
818.2610	-76.0186	-61.0546	-69.5710	-59.1391	-65.9580	-61.5976	-80.7064	-65.5010	-67.8038	-68.6537	-78.5203	-68.8243	-72.3362	-71.2216	-94.8473
861.3280	-78.3454	-61.8426	-73.2001	-63.8451	-72.7009	-62.0463	-71.7953	-68.2441	-76.0971	-71.2905	-73.5583	-71.5393	-76.6377	-68.0470	-69.7908
904.3940	-72.2421	-59.0138	-67.2452	-54.5868	-66.2628	-67.0417	-79.9411	-78.8063	-73.6561	-74.8417	-69.4255	-68.2420	-79.8925	-68.9677	-67.9899
947.4600	-72.2193	-62.2614	-62.8003	-53.6116	-58.1626	-63.6737	-80.9177	-80.4886	-67.0374	-74.9369	-67.3724	-62.9150	-74.2426	-65.9995	-66.3243
990.5270	-72.7625	-64.3524	-62.0088	-57.3519	-55.7519	-70.9141	-71.4078	-83.1867	-67.0024	-80.5582	-67.0627	-60.9940	-91.3818	-68.2428	-63.9597
1035.5930	-93.0089	-58.5956	-65.5945	-63.7520	-58.5057	-80.5875	-64.1511	-67.1335	-81.1325	-67.2490	-68.9876	-63.5201	-74.6436	-74.4827	-69.3113
1076.6600	-70.1071	-58.0308	-73.1345	-67.3922	-66.3992	-72.6292	-63.8448	-66.9745	-71.6858	-64.7359	-71.7782	-69.2179	-69.9267	-68.2504	-83.1373
1119.7260	-67.4524	-57.7017	-75.6111	-71.6656	-73.5361	-74.8750	-67.1745	-72.6758	-73.4110	-66.6634	-72.2507	-78.9520	-71.3781	-68.4113	-95.3307
1162.7920	-68.9793	-57.1954	-82.7063	-67.5589	-72.0825	-70.7560	-71.6908	-73.9035	-90.8121	-72.2503	-74.7057	-70.7731	-78.8256	-72.4382	-89.2869
1205.8590	-74.9967	-58.7341	-85.4137	-69.8691	-71.7724	-71.4714	-74.8597	-75.7213	-78.9490	-78.3073	-79.6708	-76.0895	-83.2267	-81.0192	-84.8262
1248.9250	-97.6555	-63.6600	-94.3100	-66.7184	-66.2958	-76.1458	-74.5720	-83.9777	-78.7988	-76.9428	-75.2934	-73.9038	-77.2399	-81.0192	-84.8262
1291.9920	-78.6191	-62.6609	-95.9739	-65.0038	-62.2232	-65.3746	-76.2386	-90.1342	-80.9026	-79.7748	-74.4632	-72.5207	-79.7076	-77.0338	-81.2098
1335.0580	-74.6268	-57.3494	-89.1380	-61.5314	-62.8766	-61.1307	-81.0951	-81.1440	-90.4860	-77.9340	-77.8699	-78.5839	-77.5035	-82.6200	-82.4636
1378.1250	-75.6099	-58.4927	-78.9377	-61.8771	-68.9106	-62.8222	-79.0280	-77.1253	-91.6046	-80.8540	-81.5242	-85.1375	-78.7508	-83.2776	-83.2822
1421.1910	-83.0470	-70.6734	-74.2108	-81.2841	-68.7747	-73.9466	-76.3268	-75.3084	-83.2992	-82.2607	-77.9370	-82.9749	-76.7009	-77.3276	-81.6591
1464.2570	-90.8803	-62.8905	-70.0511	-62.6324	-64.6367	-70.1156	-77.4180	-72.2584	-77.3113	-78.1072	-74.3972	-91.6079	-79.6250	-80.1569	-83.0996
1507.3240	-82.6517	-61.9015	-67.2834	-58.2677	-65.7089	-68.1491	-79.8524	-82.6050	-76.5774	-79.1040	-75.0723	-94.3663	-90.5974	-80.5208	-76.0658
1550.3900	-83.9465	-64.6594	-68.9733	-58.0670	-70.7589	-72.0101	-84.9745	-86.5074	-79.2381	-83.6101	-78.1532	-77.3544	-86.8375	-77.7827	-74.5270
1593.4570	-92.9041	-66.0971	-76.7781	-61.7502	-73.8856	-78.8610	-80.0929	-79.5421	-80.8819	-79.4454	-71.8272	-76.2881	-79.6699	-79.6699	-74.8671
1636.5230	-86.3796	-67.6511	-90.3568	-71.4732	-71.0013	-86.3388	-70.6938	-74.1302	-83.5535	-75.3771	-78.1143	-69.0103	-68.8978	-70.9115	-64.5183
1679.5890	-87.1558	-74.7902	-76.5948	-82.3674	-66.2463	-86.5211	-64.5296	-75.4710	-81.4450	-73.0811	-77.3138	-67.1145	-68.0818	-66.9211	-60.6274
1722.6560	-87.3759	-70.8898	-74.7392	-76.9675	-65.2265	-80.1709	-63.4601	-85.3292	-75.6639	-72.6169	-76.5425	-68.2375	-71.4011	-67.4227	-63.4748
1765.7220	-83.4773	-67.1099	-76.4029	-80.5256	-69.5899	-76.5056	-77.5683	-75.3012	-76.4265	-75.2349	-84.4688	-74.1835	-69.3908	-70.3576	-67.8405
1808.7890	-81.0280	-67.8242	-80.4755	-77.5511	-79.8301	-79.6108	-71.4526	-75.1796	-77.6313	-84.9627	-90.9958	-87.6735	-76.9293	-74.9957	-75.1871
1851.8550	-85.2522	-73.1503	-85.9435	-78.0745	-82.2209	-90.9919	-73.4798	-78.8216	-79.8250	-88.5266	-86.9490	-82.4143	-75.2603	-82.7803	-94.7341
1894.9210	-85.4718	-78.9530	-78.7955	-83.4913	-80.5132	-87.7647	-75.6592	-86.9411	-89.9898	-83.7545	-96.8797	-74.7012	-70.9353	-82.9728	-87.4308

Freq	3.1.0	3.2.0	3.3.0	3.1.25	3.2.25	3.3.25	3.1.50	3.2.50	3.3.50	3.1.75	3.2.75	3.3.75	3.1.100	3.2.100	3.3.100
1937.9880	-83.2085	-70.4151	-78.2764	-100.7857	-80.3567	-81.3939	-78.0736	-86.3215	-95.7759	-82.0277	-85.1489	-75.0002	-88.8024	-76.6964	-82.1499
1981.0540	-81.2412	-68.4682	-87.4830	-86.1691	-79.7180	-81.7371	-82.6000	-80.5256	-81.7455	-81.5972	-79.0448	-76.5898	-72.6050	-74.5743	-85.7138
2024.1210	-80.4473	-73.8737	-83.2826	-82.5611	-77.7920	-86.0708	-88.8338	-79.2390	-77.8639	-79.5259	-79.8132	-75.1513	-77.3585	-74.8368	-87.4493
2067.1870	-78.5968	-84.0985	-82.1114	-89.9125	-78.3141	-84.7707	-81.4142	-77.2620	-80.8368	-81.5629	-82.4446	-76.2023	-76.9970	-76.3373	-79.5783
2110.2530	-80.1439	-71.7965	-82.3780	-90.7985	-83.0075	-80.2264	-85.5484	-76.4753	-101.2845	-91.8854	-82.1755	-77.6247	-79.7790	-86.4114	-82.5831
2153.3200	-88.1637	-67.4482	-82.8935	-88.8003	-95.5318	-78.4620	-90.0060	-79.5595	-87.9235	-91.2186	-79.1318	-83.9235	-78.4604	-72.0681	-79.0364
2196.3860	-106.8126	-97.9254	-90.3637	-92.2162	-88.0073	-80.3007	-81.2795	-87.7944	-81.1260	-90.4675	-84.4618	-86.9897	-74.3338	-66.7818	-76.7560
2239.4530	-101.1493	-74.2689	-98.4240	-88.6919	-83.5135	-77.1915	-81.8220	-88.1398	-80.2257	-88.1841	-90.7913	-81.0076	-74.1800	-68.9524	-81.1856
2282.5190	-85.0910	-77.0182	-90.2272	-89.2165	-84.8982	-75.6983	-83.8987	-87.0605	-84.7104	-93.1427	-87.1446	-81.2492	-77.9135	-78.2500	-83.2694
2325.5850	-81.7164	-74.2237	-86.2804	-84.9380	-87.3442	-79.3208	-85.5861	-86.7877	-89.6236	-86.9457	-91.0491	-85.1946	-81.4400	-90.7036	-96.2051
2368.6520	-84.6981	-75.6825	-89.5118	-81.6089	-84.4271	-86.3036	-87.7713	-85.8190	-90.0966	-84.1938	-96.1230	-99.0493	-83.8887	-89.2018	-84.5359
2411.7180	-84.2450	-77.3478	-94.2698	-81.7290	-82.9781	-93.9135	-89.3868	-88.9721	-93.0105	-87.8500	-99.3961	-95.8920	-90.9823	-86.9054	-85.4840
2454.7890	-79.5816	-78.0512	-86.1381	-78.9676	-87.3633	-95.2549	-91.7468	-98.6047	-94.6014	-92.9941	-100.4685	-91.1016	-87.3152	-85.0118	-92.8816
2497.8510	-78.0539	-75.7953	-82.1824	-76.9087	-93.2868	-84.9492	-94.5526	-91.4380	-95.3599	-90.8169	-88.8264	-87.7759	-83.1756	-86.9025	-95.5424
2540.9170	-78.8594	-69.2275	-80.5014	-78.0379	-83.1190	-87.9307	-90.0971	-92.6408	-99.1608	-90.7742	-86.0714	-93.0165	-84.7545	-93.9606	-90.9891
2583.9840	-84.9043	-65.1290	-76.2373	-80.9329	-84.7972	-83.2543	-86.8133	-95.9330	-99.6504	-89.0194	-95.4129	-87.7548	-88.3550	-95.8025	-86.1889
2627.0500	-89.5703	-64.4241	-75.0248	-97.4427	-96.7060	-87.2960	-88.1890	-94.8753	-96.2599	-87.9767	-97.9167	-93.9423	-93.1523	-90.4576	-88.7032
2670.1170	-80.2403	-67.0339	-75.9766	-84.8638	-87.3911	-81.9190	-91.8504	-103.1897	-90.5150	-87.9215	-98.6214	-101.4524	-95.5962	-89.5732	-92.3375
2713.1830	-76.5233	-71.9297	-79.8243	-85.6342	-79.9937	-88.0158	-85.1151	-97.9905	-89.2369	-87.5779	-97.7812	-92.3016	-92.6362	-89.8610	-89.7165
2756.2500	-75.7938	-75.2220	-82.0143	-85.5856	-78.7589	-83.6863	-82.7340	-89.0175	-95.7155	-85.6014	-95.6093	-88.0688	-91.6658	-89.6401	-89.3780
2799.3160	-78.8705	-72.6294	-80.4674	-85.5856	-78.7589	-83.6863	-86.1217	-96.5386	-100.3409	-90.2374	-100.8781	-90.6163	-96.7482	-99.3868	-88.2349
2842.3820	-82.4257	-73.0953	-81.3374	-79.2495	-82.7644	-82.8473	-89.4666	-88.3972	-121.3334	-98.7461	-101.9509	-101.4296	-118.1443	-91.2886	-84.2711
2885.4490	-80.9755	-65.2252	-86.9406	-75.7668	-89.1379	-77.6315	-93.6993	-101.6396	-97.3027	-95.1697	-100.7636	-104.2237	-97.8515	-87.7758	-82.1388
2928.5150	-80.5010	-64.7130	-105.5324	-75.1527	-86.6211	-78.7931	-89.4666	-88.3972	-121.3334	-94.4690	-102.4236	-101.6674	-92.6734	-87.8771	-82.6492
2971.5820	-85.0591	-66.9943	-100.9536	-78.2543	-81.5283	-81.9877	-93.8896	-83.2048	-96.9745	-94.4690	-102.4236	-101.6674	-92.6734	-87.8771	-82.6492
3014.6480	-95.0910	-66.0629	-97.7675	-79.4937	-83.3345	-81.4476	-110.1472	-81.0828	-91.3803	-93.9421	-101.9418	-95.6611	-94.7477	-95.9850	-87.8613
3057.7140	-96.1276	-65.2589	-88.3990	-79.5558	-92.8335	-80.7780	-97.4783	-79.8799	-89.8232	-94.1212	-98.1905	-98.3116	-100.9020	-86.2345	-100.9700
3100.7810	-91.9005	-66.3882	-84.2191	-82.2858	-103.8010	-83.2358	-93.9631	-80.8476	-91.1104	-93.1857	-96.7183	-92.9598	-100.7888	-82.0721	-92.7969
3143.8470	-98.7368	-69.1290	-85.9280	-81.7121	-93.2574	-88.8323	-97.0711	-89.5200	-92.4086	-93.4727	-96.3636	-91.0955	-92.5424	-81.2910	-90.5421
3186.9140	-83.1479	-70.1051	-88.5596	-78.1933	-91.7191	-81.4792	-102.4803	-86.6939	-95.1723	-103.8885	-104.9377	-91.0494	-91.3562	-80.8711	-90.4650
3229.9800	-81.4926	-71.1265	-88.8773	-75.8353	-96.9302	-78.4308	-97.5384	-92.3593	-100.1213	-107.5222	-107.8675	-90.5951	-91.4390	-83.7187	-94.3889
3273.0460	-85.4138	-75.8487	-90.9399	-74.2883	-79.4461	-80.4964	-100.8496	-102.0455	-105.2215	-91.2676	-104.7113	-92.0576	-98.4679	-93.7938	-110.8914
3316.1130	-86.5033	-76.5305	-97.0690	-71.7639	-76.4690	-80.5416	-100.1127	-93.1401	-100.2823	-98.2299	-97.2560	-93.9558	-92.5282	-100.9277	-101.1527
3359.1790	-86.6509	-71.0139	-92.1888	-70.8013	-79.8199	-76.6311	-94.7407	-88.6456	-98.5983	-96.0695	-97.3240	-93.9150	-92.5282	-100.9277	-101.1527
3402.2460	-90.9463	-67.6342	-86.4925	-76.0523	-74.5922	-72.4468	-93.6789	-89.1708	-99.8931	-90.4166	-97.4815	-92.3486	-93.8756	-101.3636	-98.4823
3445.3120	-94.2608	-67.2730	-85.6874	-72.6183	-76.5325	-70.9721	-93.5602	-99.6812	-91.5394	-92.0376	-96.2694	-90.1385	-106.4859	-106.6482	-93.9987
3488.3780	-84.9321	-69.1312	-89.9411	-72.6406	-85.9498	-71.7381	-93.2095	-95.9809	-89.2657	-102.2253	-100.9258	-89.7461	-89.7866	-98.2656	-89.2485
3531.4450	-79.1735	-75.3040	-113.6990	-82.6349	-93.3248	-74.1409	-94.6222	-93.4561	-92.5339	-95.7134	-98.7953	-93.6700	-87.9725	-91.1846	-90.0575
3574.5110	-78.6596	-76.7003	-87.4082	-72.6404	-90.5788	-77.2832	-101.2994	-99.9242	-89.9567	-100.4389	-91.2862	-98.9646	-90.0418	-90.6962	-94.3810
3617.5780	-79.9255	-74.3282	-80.7686	-71.0172	-108.0901	-80.4236	-106.1715	-98.3465	-88.0062	-112.1637	-98.4781	-106.4212	-96.2336	-97.5575	-88.7148
3660.6440	-82.8300	-75.6615	-79.3537	-74.0683	-91.1816	-84.1075	-99.2386	-93.3624	-87.2612	-105.3358	-91.4906	-100.3781	-106.8257	-91.0757	-82.6003
3703.7100	-102.6876	-70.6447	-79.4617	-75.0874	-86.2184	-94.8906	-92.6435	-91.6946	-87.6871	-102.2482	-91.8115	-96.0666	-95.8223	-91.0636	-80.3018
3746.7770	-84.5691	-61.0247	-78.1313	-75.4444	-89.7020	-86.9691	-86.1363	-93.9439	-87.8533	-96.0662	-92.3133	-87.6320	-93.1744	-102.3075	-82.5299

(lanjutan)
 Hasil Percobaan : Pengolahan Data Seat Ring No. 3

Freq	3.1.0	3.2.0	3.3.0	3.1.25	3.2.25	3.3.25	3.1.50	3.2.50	3.3.50	3.1.75	3.2.75	3.3.75	3.1.100	3.2.100	3.3.100
3789.8430	-80.9838	-57.4210	-77.0307	-79.2562	-104.6459	-81.0807	-82.6344	-93.3185	-88.6060	-86.9450	-88.0355	-83.5106	-84.0605	-97.3632	-79.2237
3832.9100	-77.4420	-59.5552	-77.6764	-85.7383	-93.5537	-86.3609	-80.5724	-92.1082	-97.6454	-80.9090	-83.1290	-87.6099	-79.9747	-92.5371	-73.6065
3875.9760	-74.6701	-65.8469	-77.9178	-95.8281	-84.3639	-87.6356	-81.3200	-87.3534	-97.3330	-80.4043	-87.4544	-84.7976	-81.5858	-90.4062	-73.7631
3919.0420	-75.2574	-60.9237	-81.2465	-90.5880	-82.3198	-84.3527	-87.7481	-87.6051	-92.9088	-83.1728	-87.9021	-83.4482	-88.6931	-89.2499	-78.2573
3962.1090	-82.1700	-63.9776	-112.9297	-106.1514	-86.6181	-90.0191	-91.4813	-90.4950	-94.2870	-83.7299	-83.6641	-91.8634	-91.6039	-90.8296	-87.1069
4005.1750	-88.1451	-73.5322	-84.3613	-92.0548	-96.0045	-92.4271	-89.5771	-95.0315	-106.6868	-84.1025	-98.2567	-95.9374	-91.2949	-95.1554	-99.6374
4048.2420	-81.1248	-77.6679	-84.9429	-94.4535	-89.7412	-92.6853	-90.1641	-97.3749	-93.9981	-87.7254	-92.9850	-99.0579	-89.8806	-102.8711	-107.7500
4091.3080	-79.1982	-77.7091	-89.7718	-98.3651	-89.7412	-92.0174	-90.1641	-97.3749	-93.9981	-87.7254	-92.9850	-99.0579	-89.8806	-102.8711	-107.7500
4134.3750	-78.4030	-79.0205	-96.8220	-95.5790	-88.9918	-97.8784	-92.6084	-105.2143	-92.2397	-100.9602	-89.4077	-91.8953	-80.8132	-111.4904	-94.1923
4177.4410	-79.3228	-73.6636	-90.2325	-93.5151	-89.6279	-93.6164	-95.0188	-88.3863	-97.0652	-100.9945	-86.6031	-103.3901	-73.2026	-83.4138	-92.3051
4220.5070	-84.7905	-72.1169	-84.7639	-90.1914	-93.2591	-89.5751	-94.7732	-84.6884	-91.5772	-103.2901	-91.5157	-92.6486	-72.7425	-79.6521	-91.1575
4263.5740	-96.7435	-76.8967	-84.2162	-89.9894	-104.8165	-93.6660	-96.0379	-84.8918	-87.4560	-113.1860	-102.1755	-90.1046	-78.7905	-84.4473	-89.6262
4306.6400	-107.2443	-81.5531	-86.8837	-92.2132	-94.9456	-95.2554	-97.2968	-87.0848	-88.9898	-108.6210	-92.3711	-91.8729	-94.7119	-96.1840	-89.7389
4349.7070	-101.7600	-74.0556	-93.5612	-96.7601	-103.3766	-91.8665	-92.5496	-83.8772	-98.9494	-104.5784	-91.0128	-104.3411	-103.2149	-97.2730	-92.0592
4392.7730	-95.7199	-75.5248	-105.5411	-103.9568	-94.8944	-102.0773	-92.0792	-89.4147	-97.8306	-89.8431	-89.9024	-103.6746	-100.5292	-89.5371	-92.2206
4435.8390	-96.8160	-77.0606	-90.8663	-100.8514	-88.4734	-91.8020	-88.6482	-88.8150	-87.7083	-83.5738	-86.4206	-84.3953	-82.6341	-84.3048	-86.7768
4478.9060	-93.4090	-76.7737	-87.5487	-97.5953	-82.8490	-82.3146	-81.7149	-94.0746	-81.7801	-83.8909	-92.0423	-76.3381	-75.7660	-82.2582	-85.4425
4521.9720	-87.8910	-80.8153	-89.7841	-94.0456	-85.3000	-79.9934	-80.6142	-91.7965	-83.9420	-87.8457	-74.4468	-75.9907	-74.5165	-79.5861	-98.0784
4565.0390	-86.0836	-94.6669	-114.1060	-91.7374	-91.9267	-85.5092	-79.9330	-84.4306	-88.7016	-81.5484	-72.2163	-85.2112	-76.4704	-80.1636	-82.4738
4608.1050	-86.5575	-102.7894	-93.2173	-91.8644	-94.7966	-90.2108	-79.9419	-87.6503	-81.4749	-84.2525	-77.1389	-85.6969	-80.3269	-84.6260	-79.5575
4651.1710	-89.6948	-99.6282	-98.8197	-92.7704	-91.3105	-88.1128	-82.7819	-93.7504	-85.4901	-90.6524	-87.0415	-88.5176	-89.3307	-87.9248	-83.0441
4694.2380	-97.9204	-90.6977	-102.6297	-93.0522	-92.1196	-90.3471	-89.1581	-100.4172	-101.7017	-89.9361	-98.0507	-101.4502	-101.6055	-97.1300	-91.4322
4737.3040	-95.1917	-87.8168	-104.3444	-90.3389	-92.6310	-94.5379	-91.4130	-102.7544	-90.5255	-87.2490	-99.6941	-94.3717	-94.7530	-100.9628	-90.8130
4780.3710	-89.8691	-84.3032	-110.7343	-90.9750	-92.1432	-105.4581	-94.8009	-94.8513	-95.3539	-85.5233	-98.7058	-94.3327	-98.4133	-93.9290	-95.9130
4823.4370	-91.6494	-83.4350	-99.3674	-97.9695	-95.8765	-98.9486	-96.4188	-91.5590	-95.2419	-86.2142	-95.7904	-102.1172	-92.3601	-87.9707	-98.9627
4866.5030	-96.7707	-84.8584	-93.0208	-96.3304	-96.2384	-91.6081	-93.8344	-93.4975	-98.1205	-84.3227	-89.1856	-98.6555	-88.3010	-88.3293	-88.2701
4909.5700	-91.5944	-88.3818	-89.9939	-94.0472	-92.7081	-88.3107	-94.3060	-100.2986	-89.4937	-80.5767	-86.3920	-107.0751	-92.3265	-96.1767	-86.0155
4952.6360	-90.5428	-99.8554	-89.5821	-96.5679	-90.1161	-85.8923	-95.4897	-83.3337	-88.5169	-80.9939	-83.7016	-95.1590	-97.3545	-86.2864	-86.3243
4995.7030	-94.7562	-93.3059	-92.3261	-96.1469	-90.7312	-84.7464	-93.4799	-88.4763	-90.4479	-88.3537	-83.7126	-92.2429	-90.3301	-80.9256	-89.2550
5038.7690	-98.1210	-92.4108	-94.5413	-92.5960	-91.6625	-86.6044	-93.3521	-89.3622	-91.7020	-96.1292	-86.0586	-91.7808	-112.6764	-81.0724	-92.3778
5081.8350	-95.4475	-91.9721	-97.2270	-102.2944	-91.8661	-94.7674	-95.9486	-87.4936	-96.2100	-91.8140	-90.9326	-92.3450	-88.7341	-83.7691	-91.4413
5124.9020	-95.0004	-86.2913	-98.1668	-93.6988	-95.0269	-98.2556	-96.2910	-87.4634	-98.2861	-95.7311	-102.5445	-95.2772	-87.2173	-87.0905	-94.7731
5167.9680	-96.7791	-81.1489	-93.1203	-91.0301	-107.3416	-89.7606	-93.3302	-87.3141	-93.1764	-97.5754	-96.8537	-91.4891	-90.2951	-96.6462	-108.0408
5211.0350	-91.3295	-77.9045	-95.4219	-91.9037	-96.3204	-90.1742	-91.0878	-88.6247	-93.5054	-94.9132	-89.3387	-90.8677	-99.0843	-93.7282	-97.4363
5254.1010	-86.3915	-80.5342	-100.5691	-92.8014	-92.9233	-96.9240	-91.5604	-93.2915	-97.6887	-92.7397	-87.1959	-92.7759	-99.4374	-89.6090	-97.3431
5297.1670	-88.4555	-84.1095	-102.4456	-92.0907	-92.6507	-104.4891	-97.8327	-96.7772	-98.2342	-93.9421	-87.3944	-95.3008	-96.1485	-88.3493	-101.2380
5340.2340	-91.8596	-84.8883	-105.0944	-93.7197	-94.1647	-97.0074	-101.4929	-98.6997	-96.0878	-101.8283	-90.7188	-99.5006	-93.2286	-84.3511	-97.6771
5383.3000	-98.3540	-87.0977	-108.0374	-91.9706	-95.4621	-99.2175	-105.3640	-102.8613	-93.7425	-97.3502	-96.5315	-101.8422	-97.6346	-84.3599	-97.8665
5426.3670	-99.7107	-88.8042	-123.9281	-87.4596	-93.6133	-107.0719	-104.3367	-105.8934	-95.8495	-95.5106	-94.0285	-96.9946	-110.5715	-90.1619	-95.9592
5469.4330	-105.3443	-92.1657	-107.0374	-87.0021	-90.8925	-96.8119	-98.6602	-101.1705	-99.1645	-94.9866	-91.2133	-106.5721	-110.2589	-97.4840	-92.4150
5512.5000	-112.5907	-96.4752	-107.7477	-91.8509	-92.0268	-94.8697	-93.6038	-96.7335	-97.4522	-98.0616	-95.4705	-106.5721	-92.8289	-97.5122	-92.6124
5555.5660	-103.3871	-97.1170	-106.4288	-104.7786	-93.7990	-98.0800	-89.8687	-99.5515	-98.2912	-99.0105	-93.5672	-109.3501	-88.6099	-91.9982	-102.9274
5598.6320	-105.9668	-96.8925	-95.2670	-116.5872	-95.9291	-102.7532	-88.3630	-99.8961	-98.6349	-96.6196	-90.3995	-100.5507	-89.3893	-93.3343	-96.4489

Freq	3.1.0	3.2.0	3.3.0	3.1.25	3.2.25	3.3.25	3.1.50	3.2.50	3.3.50	3.1.75	3.2.75	3.3.75	3.1.100	3.2.100	3.3.100
5641.6990	-111.0132	-98.8444	-93.7345	-103.7476	-104.2234	-97.1230	-91.6520	-99.2374	-100.0001	-96.4315	-92.0564	-91.1829	-90.0506	-97.5401	-94.8230
5694.7650	-112.7927	-101.5173	-95.3943	-99.0246	-102.0823	-95.2445	-100.4688	-104.6726	-104.9217	-96.4615	-96.6789	-89.5041	-90.8436	-112.4187	-89.8989
5727.8320	-102.4705	-115.1585	-95.9497	-97.4829	-97.7869	-96.6989	-99.5668	-104.8928	-95.0579	-98.1464	-103.3473	-90.7232	-91.2068	-88.9766	-86.7987
5770.8980	-103.2739	-104.0606	-95.7773	-91.7978	-93.0290	-104.3818	-98.2246	-96.7247	-87.7093	-101.5831	-94.1240	-86.9548	-82.7173	-80.2411	-87.0320
5813.9640	-100.7221	-108.9339	-99.2852	-90.0606	-88.8983	-107.4873	-96.7394	-97.1147	-86.2091	-101.1576	-95.3006	-82.9416	-81.2455	-76.8965	-86.0910
5857.0310	-98.1032	-92.0471	-108.0657	-94.0503	-89.4575	-102.4168	-90.6840	-102.0948	-87.1927	-96.4558	-99.7313	-86.4829	-90.2938	-78.9603	-83.0657
5900.0970	-91.5546	-88.5700	-96.4235	-104.3194	-93.0725	-100.1220	-87.8231	-96.5928	-90.2855	-95.9289	-89.4867	-103.3084	-86.0276	-84.7696	-81.0312
5943.1640	-89.7050	-92.5471	-91.7994	-95.4398	-94.9673	-88.4610	-88.2215	-94.7088	-98.5401	-96.9875	-87.3309	-95.4091	-82.0667	-82.0111	-79.0819
5986.2300	-87.7636	-99.1810	-93.9665	-96.1437	-99.4248	-87.6707	-89.4211	-98.2111	-105.1201	-101.4583	-88.2568	-108.4810	-85.7334	-82.6919	-79.4797
6029.2960	-85.0589	-94.0625	-97.0939	-98.5446	-114.5785	-90.2536	-88.6084	-97.5636	-111.0141	-98.7751	-91.7493	-92.2754	-96.6907	-88.9080	-82.6517
6072.3630	-84.8381	-93.9218	-100.5043	-96.4218	-97.5222	-88.2904	-86.7282	-100.8867	-101.1612	-92.5401	-91.1684	-91.0414	-95.7095	-107.2217	-88.5751
6115.4290	-87.3456	-99.0059	-126.1903	-96.2070	-97.9918	-87.9760	-88.5047	-123.7871	-105.0329	-91.3939	-90.1170	-96.1566	-88.4783	-93.9224	-92.7926
6158.4960	-89.2899	-99.0851	-100.5077	-98.6892	-101.2499	-94.5665	-96.5658	-103.6944	-99.5001	-95.2554	-94.4130	-101.6498	-87.7432	-93.2499	-90.0281
6201.5620	-92.2452	-96.0003	-96.6947	-94.4212	-98.3552	-106.9422	-104.4781	-98.3849	-92.5355	-100.4819	-97.9373	-93.4490	-92.6828	-99.3566	-98.6423
6244.6280	-97.2409	-97.2962	-96.4749	-92.1133	-107.6414	-99.3268	-106.4194	-98.6029	-91.4457	-97.2719	-98.8155	-94.1104	-100.9453	-94.3069	-99.6445
6287.6950	-99.1111	-101.4106	-97.5166	-94.5765	-109.9451	-98.0363	-104.3231	-103.1204	-91.8671	-104.4101	-104.0514	-105.6591	-96.5242	-105.7564	-103.3254
6330.7610	-98.5842	-111.1255	-98.5152	-100.3695	-106.0643	-96.5473	-103.0465	-103.0240	-94.1372	-104.9923	-102.8923	-107.3739	-95.5242	-107.2142	-102.1063
6373.8280	-100.0792	-106.8482	-103.7573	-101.4230	-100.6341	-98.7811	-101.4503	-101.2499	-98.1588	-106.2379	-102.8722	-104.0408	-97.0317	-107.2142	-102.1063
6416.8940	-103.9506	-98.7037	-114.3502	-99.3041	-103.4499	-103.1948	-102.3839	-102.7290	-101.8124	-110.0765	-109.7921	-104.9821	-100.2675	-103.0669	-100.9665
6459.9600	-103.8059	-98.4053	-103.8306	-99.2083	-105.0616	-102.7325	-103.2693	-108.1109	-103.8251	-110.0765	-109.7921	-104.9821	-100.2675	-103.0669	-100.9665
6503.0270	-100.3027	-100.3827	-102.9084	-99.9400	-102.1708	-106.7467	-100.1077	-107.0343	-104.4118	-107.2719	-109.2848	-107.1834	-100.4323	-96.7529	-99.8470
6546.0930	-97.9959	-98.3344	-106.2902	-95.5182	-103.1951	-102.8010	-97.4071	-107.0343	-104.4118	-99.9928	-112.2603	-105.6052	-102.4018	-97.2102	-100.2722
6589.1600	-98.0096	-99.0409	-103.2024	-96.7572	-108.6282	-100.7214	-96.7024	-103.9787	-107.2479	-102.0047	-103.3218	-102.3294	-104.4662	-104.1519	-104.0209
6632.2260	-99.5834	-104.8749	-100.4246	-99.6698	-114.5359	-100.5605	-97.8088	-100.9344	-112.0873	-102.7086	-101.6804	-104.2694	-106.4460	-110.9669	-110.0549
6675.2920	-101.3976	-96.0249	-99.8893	-99.6762	-115.6246	-103.3065	-100.7986	-99.0655	-109.0587	-102.9193	-106.7562	-109.6751	-110.8704	-101.1196	-106.7815
6718.3590	-104.9667	-86.6350	-103.0373	-99.2622	-111.5690	-113.1439	-104.8657	-98.9099	-103.2421	-104.4297	-103.4246	-123.0387	-103.4660	-99.6395	-104.0877
6761.4250	-110.1202	-83.8383	-113.3848	-100.2795	-106.4476	-105.7228	-107.7940	-102.6282	-99.9009	-107.3639	-105.2018	-119.8508	-105.8716	-103.0270	-108.9906
6804.4920	-108.9239	-84.5722	-108.7930	-100.2795	-106.4385	-110.1296	-110.7131	-108.7531	-100.9815	-108.3316	-116.2297	-113.1455	-119.4815	-108.9161	-122.1612
6847.5580	-112.6108	-87.6279	-105.8545	-101.1764	-107.5016	-114.7074	-113.0968	-111.2608	-105.8552	-106.0719	-117.8066	-110.1371	-111.8702	-102.9183	-110.5466
6890.6250	-132.9395	-92.4738	-106.7066	-103.7065	-110.7974	-107.9729	-120.3856	-115.8127	-111.6109	-105.4225	-116.2499	-112.1447	-113.4494	-102.4754	-108.8572
6933.6910	-115.6431	-98.1738	-110.0101	-111.1263	-110.1938	-111.9477	-124.1309	-114.3792	-110.7379	-107.2705	-108.4022	-119.8414	-110.3063	-105.7443	-108.5028
6976.7570	-117.9109	-102.3600	-116.6417	-129.6287	-108.6082	-126.3271	-118.8440	-112.4668	-112.0838	-113.4179	-107.1285	-115.4993	-109.4422	-110.6592	-111.3948
7019.8240	-121.8180	-103.4727	-119.5214	-118.7441	-110.4668	-125.0195	-117.4934	-112.7285	-112.6928	-114.0636	-109.0670	-120.5471	-113.1052	-110.4614	-128.8439
7062.8900	-116.7098	-101.9557	-118.4272	-109.6660	-111.1983	-113.6290	-128.1133	-110.5608	-113.3553	-112.5645	-116.8823	-110.1787	-113.5320	-116.8951	-114.7993
7105.9570	-118.2187	-100.7764	-115.1458	-108.8004	-113.4064	-109.4048	-115.8517	-107.5766	-113.8036	-119.2164	-125.5687	-116.4092	-118.5912	-113.4321	-119.2445
7149.0230	-115.8624	-100.3531	-113.8962	-121.9869	-113.4590	-113.5179	-117.2055	-108.0407	-113.3066	-126.5922	-119.6898	-117.2005	-109.1510	-109.8102	-113.3055
7192.0890	-126.5163	-101.8957	-124.9292	-121.9869	-113.4590	-113.5179	-124.4860	-111.3899	-111.8732	-122.0072	-127.2655	-113.5030	-107.5692	-118.1241	-108.4241
7235.1560	-117.4089	-106.2778	-118.0494	-112.8072	-111.5594	-127.4077	-116.4809	-116.0611	-113.7882	-130.1941	-120.5176	-115.9480	-109.0119	-125.8635	-111.2697
7278.2220	-112.0118	-115.2373	-121.2328	-115.3901	-116.6180	-112.9260	-120.9813	-117.4200	-119.6539	-119.5934	-121.9804	-117.1648	-108.4946	-135.4288	-126.1496
7321.2890	-112.2109	-122.2755	-116.0764	-115.5025	-117.4235	-111.5655	-122.9813	-116.7297	-128.5247	-112.6767	-122.8394	-118.0090	-108.4254	-126.5000	-111.0880
7364.3530	-113.4047	-132.3012	-115.1417	-115.5395	-109.9357	-116.6428	-114.2275	-117.1516	-138.9378	-112.3932	-113.9552	-139.0017	-111.8536	-119.6200	-111.6016
7407.4210	-118.3442	-118.7161	-116.6414	-117.7232	-109.8545	-118.3579	-114.2728	-117.1516	-138.9378	-112.3932	-113.9552	-139.0017	-111.8536	-119.6200	-111.6016
7450.4880	-122.4062	-112.8892	-116.0372	-117.8007	-112.0434	-113.5228	-114.4278	-120.5938	-121.4012	-114.5987	-113.7486	-119.2826	-121.1655	-114.9348	-125.3534

Freq	3.1.0	3.2.0	3.3.0	3.1.25	3.2.25	3.3.25	3.1.50	3.2.50	3.3.50	3.1.75	3.2.75	3.3.75	3.1.100	3.2.100	3.3.100
7493.5540	-122.6825	-112.0299	-113.1306	-120.4789	-113.7007	-118.2563	-118.5091	-135.7085	-116.3287	-116.3886	-120.9736	-132.0542	-128.9125	-116.3621	-119.1691
7536.6210	-137.4286	-115.5110	-114.6005	-118.6395	-113.6141	-126.5014	-117.9855	-125.9227	-118.0399	-116.2619	-126.6154	-124.8278	-127.2536	-114.1198	-124.2917
7579.6870	-151.0229	-118.6662	-117.4411	-120.0734	-112.4696	-121.5344	-121.2505	-121.3971	-119.8240	-117.1551	-117.2931	-119.7689	-121.0488	-113.2291	-124.6373
7622.7530	-117.7887	-117.3260	-121.8984	-123.0534	-111.9499	-125.4014	-132.3161	-120.7663	-117.6255	-121.7718	-115.6116	-112.7356	-118.3259	-120.4083	-117.0798
7665.8200	-134.3911	-119.0443	-125.8036	-120.2195	-113.5764	-117.5097	-126.3102	-110.3696	-116.5750	-120.3801	-115.6603	-111.4197	-123.6415	-123.8393	-112.4492
7708.8860	-114.8113	-122.3523	-127.6345	-121.0657	-116.2499	-117.1907	-117.5014	-107.3942	-117.9213	-115.4923	-115.7070	-109.9513	-138.6743	-128.2900	-113.1464
7751.9530	-115.2234	-120.3078	-115.9232	-121.6322	-116.4075	-120.3341	-109.4852	-116.6117	-111.4564	-134.6510	-118.3689	-108.4900	-125.2361	-116.8695	-114.4888
7795.0190	-113.8329	-120.0942	-110.0756	-115.1726	-134.1281	-118.5904	-111.0929	-126.9541	-117.2666	-138.0251	-126.2981	-113.7318	-114.5807	-112.2386	-123.1214
7838.0850	-114.0176	-112.7125	-109.7199	-132.0309	-111.9580	-132.2201	-113.0423	-121.9635	-118.6820	-117.8693	-116.5581	-112.9525	-115.9807	-113.7173	-125.1841
7881.1520	-112.4601	-112.5028	-113.4117	-112.4766	-112.3806	-113.5369	-116.7513	-122.5938	-113.2615	-118.3774	-114.3700	-109.7007	-123.8604	-118.1344	-122.8292
7924.2180	-110.0814	-114.0573	-122.6796	-113.9422	-115.7765	-120.8961	-129.2204	-125.9440	-116.3157	-114.0178	-112.9170	-108.9694	-121.6235	-124.2577	-124.9446
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Freq	3.1.0	3.2.0	3.3.0	3.1.25	3.2.25	3.3.25	3.1.50	3.2.50	3.3.50	3.1.75	3.2.75	3.3.75	3.1.100	3.2.100	3.3.100
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11455.6640	-113.3407	-116.9182	-117.9138	-118.0063	-108.7944	-118.5571	-118.3838	-110.8175	-117.7218	-117.2201	-121.1672	-110.3647	-111.9889	-122.6218	-107.5528
11498.7300	-115.0828	-112.1505	-112.0213	-115.3467	-109.9976	-117.0425	-126.1750	-133.8213	-119.5572	-117.4772	-121.2947	-110.8642	-110.0077	-116.4342	-112.1828
11541.7960	-111.6416	-114.2866	-113.0785	-118.1785	-113.2806	-112.1817	-127.9704	-114.9239	-132.8444	-115.2759	-116.2835	-139.1202	-110.5061	-118.4766	-115.5785
11584.8630	-109.2081	-120.4506	-116.9351	-121.0636	-114.2216	-112.3282	-118.8160	-115.1502	-119.4944	-117.3966	-116.2727	-121.4420	-114.6135	-119.9357	-125.2175
11627.9290	-109.1353	-116.9562	-117.2684	-129.7512	-111.9062	-117.2099	-144.5443	-116.8936	-113.5685	-121.1326	-123.2114	-111.3569	-123.5023	-118.3904	-117.8098
11670.9960	-109.8968	-112.9262	-117.9988	-115.6238	-112.1130	-129.5831	-112.9885	-117.7178	-113.2129	-114.5246	-123.1466	-109.3257	-133.2226	-119.4593	-111.6714
11714.0620	-111.4357	-112.1428	-119.4576	-114.6178	-116.1672	-123.6487	-114.6390	-118.8266	-113.9732	-111.7543	-114.3380	-112.2509	-132.5176	-122.5230	-110.4047
11757.1280	-116.0588	-111.8579	-117.2046	-113.5680	-117.4923	-124.7261	-117.8721	-121.7806	-112.9763	-111.4631	-109.9377	-116.4940	-132.6176	-122.5230	-110.4047
11800.1950	-122.6801	-115.0573	-115.2754	-119.3541	-115.3289	-139.4512	-117.9572	-116.3856	-116.4615	-111.6255	-111.3315	-116.7026	-121.9671	-121.7512	-113.2106
11843.2610	-113.2024	-123.2346	-115.2770	-131.5225	-114.0211	-112.1884	-118.3321	-112.7225	-125.7003	-109.9677	-113.5537	-116.9087	-118.4960	-117.2157	-118.1519
11886.3280	-115.3894	-113.4996	-116.3492	-122.0506	-110.6423	-108.6902	-121.1265	-113.6185	-124.8137	-109.7098	-115.4512	-116.7778	-118.8654	-115.7293	-120.9207
11929.3940	-126.9382	-114.2706	-120.3024	-116.0412	-111.2731	-130.4717	-132.7077	-119.5833	-119.1842	-113.5873	-119.4457	-121.8093	-117.6418	-116.8423	-132.4784
11972.4600	-116.9723	-116.3965	-119.9142	-122.7278	-119.2684	-126.8670	-115.9311	-119.3896	-116.9684	-127.7124	-114.5157	-112.1608	-118.3401	-116.3167	-122.5347
12015.5270	-118.9663	-116.7908	-117.1909	-120.8900	-130.1155	-112.2478	-116.2442	-119.3937	-116.7129	-122.8948	-114.4157	-112.1608	-117.5773	-118.6867	-124.0306
12058.5930	-118.7780	-116.6410	-114.9679	-117.5375	-123.4265	-111.7271	-124.7402	-119.3937	-116.7129	-123.4687	-121.0023	-113.3806	-116.1756	-120.6232	-125.9603
12101.6600	-134.1886	-118.9949	-119.3958	-127.4229	-118.7672	-114.4516	-129.0225	-117.3954	-115.1530	-121.4002	-130.7786	-115.5331	-120.2241	-121.9045	-112.7904
12144.7260	-111.8430	-160.4355	-123.4082	-121.2038	-119.5850	-120.3373	-116.5926	-120.2261	-119.5803	-122.8363	-130.3365	-113.4670	-122.6093	-125.1416	-110.1365
12187.7920	-112.7936	-125.0591	-118.7803	-119.5688	-130.6422	-117.3540	-112.8521	-123.7057	-130.2333	-128.0342	-124.4496	-113.4305	-114.8985	-133.2454	-112.7651
12230.8590	-114.1335	-131.5038	-117.2413	-119.8830	-125.9165	-112.1737	-114.3104	-127.4797	-118.3659	-120.4675	-116.2929	-116.3269	-115.8425	-126.3985	-122.0210
12273.9250	-121.4881	-127.6873	-114.1201	-128.7170	-124.8185	-115.6038	-119.7875	-123.8727	-117.2544	-115.6116	-117.9289	-113.4953	-119.8713	-128.2799	-123.5770
12360.0580	-130.7005	-117.5337	-116.4216	-110.7081	-115.7110	-114.6380	-127.4754	-142.8243	-134.6946	-114.5249	-113.9948	-116.0992	-128.3274	-116.1371	-113.0445
12403.1250	-118.1587	-120.8526	-117.7964	-112.9688	-110.4624	-121.9011	-119.2859	-133.4540	-118.7460	-129.1300	-114.6141	-110.8179	-114.9043	-124.8631	-110.6473
12446.1910	-121.8325	-123.4661	-111.2787	-117.1751	-110.4148	-113.6226	-118.3569	-120.3060	-118.6410	-121.1744	-118.8860	-110.5030	-110.4513	-114.3573	-113.3152
12489.2570	-121.1140	-123.0663	-110.8674	-118.3098	-114.3975	-108.3821	-123.9222	-117.2258	-116.6168	-119.4812	-125.0349	-113.3267	-110.9953	-111.0107	-121.9880
12532.3240	-112.7525	-117.3064	-112.9354	-117.7475	-118.7411	-109.8803	-124.5937	-116.9167	-116.1604	-126.2054	-125.0349	-126.5828	-113.7478	-114.0641	-116.8789
12575.3900	-110.7525	-117.3064	-112.9354	-120.1470	-119.6035	-120.4634	-123.6640	-114.0138	-114.8887	-126.5878	-116.1847	-122.3222	-117.8543	-111.6505	-114.4058
12618.4570	-111.1657	-120.6058	-115.9678	-118.8949	-115.5032	-120.0516	-113.2430	-115.1338	-113.6956	-120.4727	-123.4954	-126.5828	-117.2772	-110.4249	-113.0990
12661.5230	-113.4669	-119.1468	-121.2800	-118.1777	-112.2965	-119.5963	-114.1095	-118.4375	-111.7262	-126.2054	-125.0349	-119.0448	-114.9462	-111.0583	-115.7264
12704.5890	-117.0199	-116.6341	-123.9806	-123.3033	-112.1521	-120.6375	-114.0956	-122.4010	-113.9003	-120.4727	-123.4954	-119.0448	-117.0228	-112.3426	-126.2994
12747.6560	-120.3466	-123.7402	-123.2508	-130.9477	-115.5507	-119.1614	-121.3375	-113.2088	-109.9294	-115.6719	-108.3369	-116.2790	-129.2421	-115.3725	-113.9048
12790.7220	-115.7835	-119.9594	-119.4943	-131.4287	-124.5372	-117.9692	-122.8317	-111.6640	-110.2503	-115.5940	-111.7561	-118.3434	-118.4189	-120.3733	-116.7032
12833.7890	-115.9429	-112.3958	-119.4926	-115.7543	-118.2139	-118.5155	-118.8713	-113.4914	-109.5568	-120.0807	-123.9664	-129.2438	-113.7433	-125.0046	-128.0741
12876.8550	-118.4445	-111.2190	-125.7445	-112.9751	-112.8925	-117.4149	-118.3011	-115.8517	-109.5000	-118.9172	-133.0696	-116.5725	-112.0552	-115.2886	-117.3190
12919.9210	-112.8156	-110.5135	-136.7365	-116.3643	-110.0793	-117.2139	-115.7885	-116.2408	-111.6897	-118.8635	-129.5978	-113.1742	-112.1809	-114.1617	-114.7519
12962.9880	-115.8401	-110.6288	-120.9224	-118.3604	-108.9493	-132.0657	-124.4908	-114.7253	-115.6886	-116.8157	-122.6317	-134.9727	-115.8555	-115.6356	-113.5303
13006.0640	-135.3383	-113.9074	-117.8737	-119.4846	-110.2929	-115.2896	-111.2379	-113.5215	-116.1319	-119.0225	-123.0563	-120.4120	-120.3986	-117.2496	-114.5348

Freq	3.1.0	3.2.0	3.3.0	3.1.25	3.2.25	3.3.25	3.1.50	3.2.50	3.3.50	3.1.75	3.2.75	3.3.75	3.1.100	3.2.100	3.3.100
13049.1210	-124.5896	-115.0782	-121.2429	-121.1108	-116.2578	-111.3107	-113.4616	-118.6741	-115.5566	-120.6390	-112.8802	-114.1800	-114.8056	-120.6019	-125.3973
13092.1870	-126.2804	-116.5272	-114.2724	-119.8603	-124.1480	-113.4365	-120.4038	-120.1003	-113.9975	-118.6731	-111.1006	-110.7257	-113.3312	-123.3484	-124.1704
13135.2530	-126.7166	-115.8834	-113.4818	-129.2555	-119.9461	-117.5361	-119.6223	-112.2843	-112.9911	-120.7987	-111.5721	-111.1078	-116.0750	-123.1761	-128.8698
13178.3200	-136.2470	-113.2213	-118.3969	-119.2151	-118.0520	-113.1363	-112.1730	-110.9499	-116.0536	-121.1468	-111.8061	-111.9054	-122.9910	-118.9272	-124.0452
13221.3860	-120.2655	-113.5172	-129.7164	-111.7261	-114.7020	-116.1771	-118.1399	-111.5191	-126.6364	-115.1765	-118.7425	-115.2067	-126.6078	-111.7415	-119.0441
13264.4530	-116.8801	-121.6091	-121.9680	-108.6944	-118.2346	-121.6496	-116.3962	-112.6186	-131.0716	-116.5982	-134.7614	-113.5080	-114.9080	-111.0571	-119.5104
13307.5190	-114.9552	-127.1873	-117.8349	-108.0094	-118.7783	-114.7991	-112.0883	-114.3326	-118.2237	-117.5801	-118.3451	-112.4187	-114.8332	-116.9744	-123.2273
13350.5850	-116.6382	-121.6947	-120.8842	-110.5845	-109.9742	-116.9259	-122.6483	-116.9743	-118.7604	-119.8772	-113.8008	-111.9625	-118.9381	-123.7180	-120.7047
13393.6520	-119.7137	-119.6465	-128.4487	-115.1948	-109.2125	-119.0575	-118.7130	-119.6825	-114.3299	-118.2514	-115.7873	-113.1557	-119.0407	-118.3227	-118.7365
13436.7180	-121.4113	-118.0060	-121.4836	-116.0426	-113.5217	-114.3644	-114.5506	-118.8880	-111.1318	-113.6416	-119.0822	-115.2592	-114.3569	-117.0026	-121.8797
13479.7850	-119.2985	-119.0960	-117.3630	-116.5264	-116.8141	-139.5842	-114.3912	-123.9872	-111.1139	-114.3643	-113.9813	-121.1291	-117.0525	-120.0158	-125.8412
13522.8510	-116.1153	-121.0836	-111.8927	-122.7846	-125.0694	-115.1632	-112.3501	-119.9519	-113.0191	-118.7205	-112.9988	-134.7048	-136.8589	-122.3938	-122.4355
13565.9170	-117.0058	-116.4233	-111.0375	-126.7684	-124.6099	-111.4941	-113.1805	-117.7955	-117.1633	-114.7474	-118.9498	-126.3072	-121.7250	-114.3452	-118.6381
13608.9840	-136.6489	-115.3085	-114.1416	-127.1881	-136.9409	-110.9003	-117.4212	-118.2693	-123.6549	-116.0239	-123.3238	-121.1102	-116.4782	-112.2236	-118.5291
13652.0500	-117.5434	-117.8626	-116.3046	-120.7434	-121.6714	-113.3779	-116.2908	-118.6368	-118.6539	-125.5170	-113.8869	-117.7673	-113.8191	-112.2803	-115.9379
13695.1170	-115.3478	-117.2263	-117.2991	-130.3803	-116.3979	-121.9743	-134.0568	-114.4071	-123.4449	-136.8320	-110.7316	-119.7369	-111.1081	-115.1539	-116.2800
13738.1830	-119.7719	-111.3799	-118.3880	-114.7651	-117.0325	-119.2026	-113.1825	-112.7912	-132.5808	-124.7632	-110.7920	-113.1522	-110.4864	-119.7418	-118.4545
13781.2500	-120.3656	-107.7602	-118.3076	-112.7563	-127.3199	-117.9289	-112.2188	-112.2146	-131.8529	-117.0347	-115.0028	-108.4252	-113.6258	-124.5238	-115.9201
13824.3160	-120.2577	-106.6620	-122.9942	-111.8045	-121.9663	-118.7269	-115.4462	-114.3506	-121.5970	-114.2482	-120.0143	-109.6250	-117.8523	-125.7044	-115.4743
13867.3820	-114.9233	-108.2651	-122.9002	-111.8705	-121.0793	-112.5414	-124.6579	-120.2293	-118.2221	-114.5774	-117.6155	-115.2747	-116.2919	-112.3723	-122.0154
13910.4490	-110.1524	-114.1808	-124.6774	-119.4408	-115.5418	-114.4200	-135.7794	-132.4464	-116.3384	-114.5945	-117.6678	-115.0529	-112.2919	-112.3723	-122.0154
13953.5150	-109.3369	-123.2503	-120.5526	-119.4408	-115.5418	-114.4200	-129.3800	-116.9946	-114.6804	-130.9869	-117.6836	-112.7874	-117.5156	-110.4665	-125.4695
13996.5820	-112.4859	-126.1603	-121.3593	-134.7463	-114.9036	-114.3541	-123.9005	-112.6935	-113.2391	-114.2238	-110.8886	-116.0798	-114.7596	-113.6791	-125.4067
14039.6480	-114.8774	-129.8497	-125.6307	-123.1813	-115.8771	-111.9580	-114.8701	-113.3883	-115.3654	-113.8843	-111.5858	-112.7106	-118.5868	-111.5473	-120.8285
14082.7140	-117.1628	-128.3759	-114.1900	-112.8640	-109.6579	-111.5572	-113.7076	-114.9688	-121.5308	-110.2794	-117.1641	-113.2348	-116.9632	-111.1857	-116.9561
14125.7810	-123.4234	-134.4571	-114.1855	-116.4252	-112.8408	-113.4715	-115.5363	-116.4524	-134.1140	-112.1525	-120.0722	-123.7625	-115.9089	-116.2335	-116.6465
14168.8470	-115.9506	-117.4651	-116.1109	-120.8208	-128.9031	-122.3134	-115.9219	-123.8900	-112.7824	-118.2455	-115.1976	-117.2568	-119.5241	-118.3904	-115.5683
14211.9140	-118.7956	-111.9204	-116.9247	-133.6013	-116.6007	-115.4008	-113.6438	-130.0575	-113.8118	-114.4033	-116.4529	-111.8283	-123.9836	-111.6320	-111.9923
14254.9800	-113.7495	-110.5589	-116.3873	-120.7952	-113.9378	-113.8258	-111.6481	-119.1315	-111.2453	-110.3785	-126.3430	-107.4900	-113.2727	-108.3915	-110.2225
14298.0460	-118.7956	-111.9204	-116.9247	-117.2185	-113.0465	-117.1036	-111.9367	-120.5537	-110.4276	-113.7896	-118.0981	-107.4572	-114.3487	-112.0016	-128.6608
14341.1130	-120.8880	-119.4702	-123.3445	-115.5119	-106.4861	-108.5847	-112.9361	-101.5546	-100.9749	-119.5003	-108.9696	-107.5609	-120.7640	-108.0831	-97.8157
14384.1790	-115.0112	-116.9448	-112.5269	-101.9335	-96.0878	-97.6917	-108.0847	-91.5119	-92.4544	-105.3816	-102.7855	-101.9860	-106.8569	-97.3020	-88.7109
14427.2460	-110.5198	-105.3870	-110.3960	-110.1935	-96.0878	-97.6917	-105.4467	-87.8428	-89.9615	-101.1002	-103.8221	-98.8525	-99.5504	-96.6284	-86.8910
14470.3120	-105.4725	-95.4856	-116.6887	-94.2844	-90.4888	-93.5646	-105.4467	-87.8428	-89.9615	-100.6123	-108.6958	-101.6137	-99.1561	-101.9023	-92.4549
14513.3780	-101.0613	-93.3087	-116.9521	-94.7873	-90.1813	-95.7822	-103.9152	-88.2946	-92.9921	-100.6123	-108.6958	-101.6137	-99.1561	-101.9023	-92.4549
14556.4450	-102.1025	-98.9381	-116.3774	-101.4594	-95.1067	-103.9086	-105.2592	-92.4800	-100.3329	-104.5680	-106.2044	-108.9104	-105.1259	-104.6181	-113.8228
14599.5110	-110.5012	-113.9406	-118.1296	-113.8620	-105.7020	-112.3670	-109.1849	-101.2276	-109.3215	-115.2749	-110.2525	-124.2136	-110.5306	-109.8563	-113.2835
14642.5780	-115.2683	-121.6402	-112.4748	-112.7279	-114.5081	-113.4627	-111.3565	-114.0081	-113.6761	-126.2934	-115.9324	-122.4842	-116.8315	-114.8037	-118.2403
14685.6440	-112.0266	-116.8977	-111.1771	-112.9286	-105.8985	-116.8259	-109.2477	-114.5229	-124.0695	-122.7891	-113.9956	-134.5744	-122.4928	-107.5335	-109.8342
14728.7100	-108.8279	-128.2867	-118.1192	-112.9286	-105.8985	-116.8259	-109.2477	-114.5229	-124.0695	-107.2461	-104.6535	-108.7471	-105.8046	-99.3362	-106.0189
14771.7770	-105.6593	-112.0531	-124.6881	-102.2722	-94.9094	-107.6932	-102.7403	-85.7814	-93.1376	-96.9980	-100.1899	-106.3462	-97.8376	-96.1594	-104.0647
14814.8430	-101.4392	-111.5263	-126.0518	-94.7505	-87.9155	-99.5150	-102.7403	-85.7814	-93.1376	-94.8424	-102.1380	-97.3423	-95.1558	-97.3128	-88.4148
14857.9100	-98.9177	-96.1094	-116.5190	-91.6157	-85.6967	-92.3822	-101.7115	-83.9029	-88.7080	-94.8424	-102.1380	-97.3423	-95.1558	-97.3128	-88.4148

Freq	3.1.0	3.2.0	3.3.0	3.1.25	3.2.25	3.3.25	3.1.50	3.2.50	3.3.50	3.1.75	3.2.75	3.3.75	3.1.100	3.2.100	3.3.100
14900.9760	-100.6145	-91.7276	-115.2442	-93.8018	-88.4124	-91.7968	-106.8839	-85.4841	-88.1344	-98.5540	-101.6664	-96.9660	-98.4869	-96.3614	-85.2861
14944.0420	-107.9991	-95.5789	-118.0646	-101.6645	-96.1909	-97.7997	-116.5029	-93.2596	-92.5673	-108.5611	-105.0953	-103.8635	-111.2361	-99.6591	-89.7282
14987.1090	-118.5135	-108.3964	-123.4820	-113.8320	-109.3295	-111.3535	-118.6031	-106.9395	-103.1159	-124.6272	-111.9027	-120.0891	-117.0309	-120.7554	-104.5184
15030.1750	-121.9736	-123.9077	-119.4447	-124.0114	-123.9327	-118.2893	-120.0656	-125.0371	-110.6265	-119.4891	-113.5568	-117.3353	-115.4186	-110.0429	-111.0366
15073.2420	-131.7601	-113.4246	-118.1184	-115.8890	-118.8378	-114.8029	-126.0637	-126.5698	-109.6205	-115.0689	-122.5216	-113.2765	-116.2077	-109.8235	-114.7932
15116.3080	-115.6478	-110.3960	-121.1046	-114.3476	-115.4885	-115.6126	-114.7414	-119.6572	-115.5377	-113.8961	-121.2939	-113.9182	-116.9443	-109.9424	-131.4587
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15202.4410	-116.5349	-118.8521	-115.9607	-111.7137	-121.5091	-126.0585	-119.5282	-115.9549	-123.2133	-112.0517	-120.6691	-113.0273	-113.2781	-115.8036	-114.8274
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15417.7730	-118.7230	-107.8180	-114.3869	-118.1089	-121.5423	-110.9857	-116.1264	-111.8398	-123.1575	-112.6803	-117.1221	-113.9849	-131.2322	-113.2834	-117.5270
15460.8390	-114.9457	-111.1386	-114.9847	-121.8822	-117.5593	-112.5346	-120.0126	-113.7622	-117.6683	-111.6142	-121.3728	-119.7950	-119.2983	-115.6246	-122.8556
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15546.9720	-111.3023	-116.6207	-113.5039	-116.3456	-116.2944	-116.9629	-114.2092	-114.6695	-123.1696	-117.7857	-123.1648	-120.2864	-109.0923	-111.5612	-116.3867
15590.0390	-113.1895	-123.5591	-112.5239	-114.1860	-120.6332	-118.0254	-112.4313	-119.2383	-119.4211	-122.0574	-118.8156	-117.2662	-110.3259	-112.5721	-114.4246
15633.1050	-113.4229	-137.9471	-111.5178	-117.0589	-115.3030	-115.2842	-112.9912	-126.7890	-114.8375	-117.2570	-114.0975	-114.0716	-113.7117	-113.7618	-114.2115
15676.1710	-130.6781	-121.4801	-110.6382	-122.1171	-116.9376	-112.3943	-119.5036	-127.3207	-112.2047	-112.4736	-113.0710	-125.0689	-117.4878	-114.9047	-115.7105
15719.2380	-114.1978	-115.8757	-111.8936	-118.9341	-120.2382	-114.8999	-118.3520	-125.8161	-110.7323	-114.6175	-112.1626	-119.7778	-119.5832	-114.0826	-116.0990
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15977.6360	-124.3728	-111.1326	-110.2981	-114.2338	-116.9025	-115.8387	-112.9878	-124.0369	-109.5284	-118.2262	-121.8242	-124.6087	-139.5461	-114.0045	-107.9507
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16106.8350	-110.7454	-116.2785	-118.1236	-113.6445	-113.1147	-119.4562	-114.3363	-112.4791	-122.4344	-117.2897	-123.6243	-119.6522	-109.9580	-115.9597	-116.6153
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16580.5660	-117.7490	-110.8645	-113.7764	-122.3309	-115.4455	-113.4207	-110.7474	-110.6409	-109.5165	-125.3769	-112.8544	-113.9210	-110.0441	-119.1154	-115.4489
16623.6320	-120.6002	-109.7558	-114.4077	-120.3206	-115.2859	-116.5829	-110.7274	-110.4471	-111.9357	-131.6588	-112.8544	-113.9210	-112.4681	-119.4951	-120.5445
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16709.7650	-121.0835	-110.7135	-113.3383	-112.6691	-115.2854	-120.0980	-108.3524	-112.0497	-109.8029	-113.6278	-115.7499	-113.7213	-120.4460	-128.8701	-118.3457

Freq	3.1.0	3.2.0	3.3.0	3.1.25	3.2.25	3.3.25	3.1.50	3.2.50	3.3.50	3.1.75	3.2.75	3.3.75	3.1.100	3.2.100	3.3.100
16752.8320	-119.4930	-110.9035	-116.5474	-114.6648	-114.5375	-123.4242	-109.0322	-110.9684	-111.6315	-111.3431	-115.7592	-113.0661	-118.9491	-123.5178	-124.3082
16795.8980	-124.6181	-114.2083	-120.8406	-116.3623	-117.1020	-124.3208	-112.4718	-114.8572	-110.8529	-111.6366	-116.9285	-115.0975	-115.8054	-119.0489	-130.0355
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17097.3630	-118.1491	-113.2029	-112.6837	-110.2694	-117.1213	-115.8156	-121.6405	-114.3483	-115.3087	-110.7422	-114.2715	-120.0814	-116.3437	-111.9839	-116.3066
17140.4290	-118.9001	-113.2696	-113.7140	-109.4175	-119.4554	-118.8680	-130.7679	-124.6068	-117.7086	-135.4577	-109.6121	-124.2253	-124.4315	-108.1890	-116.7977
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17355.7610	-114.9556	-116.5616	-112.1133	-113.8259	-117.4285	-112.0718	-122.8130	-115.5403	-117.1402	-116.2252	-115.3748	-127.5196	-128.5099	-117.6268	-114.4883
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17484.9600	-128.3198	-119.2582	-113.3597	-116.4280	-120.6017	-112.0257	-115.5974	-111.3423	-110.0215	-120.0424	-114.5840	-111.8521	-112.6692	-122.9037	-115.4462
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17829.4920	-118.1682	-115.3743	-120.9126	-112.3189	-111.3374	-115.2798	-118.6121	-121.5962	-118.1757	-134.3732	-118.6491	-112.9796	-116.7652	-114.7048	-112.0736
17872.5580	-134.6722	-124.7720	-121.1297	-109.8173	-112.0948	-114.4712	-114.0221	-121.0415	-114.4050	-114.9033	-112.1901	-110.2209	-116.8276	-109.6273	-114.0857
17915.6250	-117.6010	-120.5951	-128.2649	-109.5835	-115.5922	-116.7522	-110.1671	-124.0551	-117.1206	-114.8078	-110.4011	-110.7708	-114.4309	-109.4200	-116.5249
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18001.7570	-118.5431	-124.1799	-119.1698	-118.7799	-120.9630	-117.5932	-120.9319	-122.3929	-129.0312	-111.7823	-126.6918	-131.1505	-111.2134	-117.3724	-115.4044
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18260.1560	-112.7042	-121.8555	-112.1413	-110.6445	-115.7965	-114.6937	-115.0833	-111.3290	-116.9677	-118.4858	-115.5397	-124.7428	-124.3190	-112.9875	-119.8638
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18389.3550	-119.6203	-118.7676	-121.7365	-113.4774	-111.5081	-114.7912	-119.9878	-111.2488	-119.7594	-114.2720	-110.5045	-123.4155	-109.5998	-135.6945	-117.6900
18432.4210	-117.5860	-117.8422	-116.1892	-118.9707	-119.3119	-114.9032	-128.4054	-115.1336	-128.8010	-114.4845	-112.4542	-115.5604	-110.5919	-122.1334	-121.2743
18475.4880	-116.7802	-116.7920	-117.4719	-117.4372	-125.5493	-114.3567	-126.0341	-114.7330	-125.4999	-116.0308	-122.7705	-118.9857	-117.2353	-116.4160	-134.0520
18518.5540	-116.9655	-117.7060	-120.7345	-115.5061	-117.2983	-113.2110	-120.1775	-113.7504	-119.4484	-116.1089	-117.1538	-116.4312	-124.8011	-113.6518	-132.9505
18561.6210	-113.7130	-115.6157	-118.7628	-133.8584	-112.8149	-114.3255	-111.8843	-114.3666	-111.2049	-118.6384	-115.7725	-115.7022	-119.5887	-113.0905	-120.3705

Freq	3.1.0	3.2.0	3.3.0	3.3.25	3.1.50	3.2.50	3.3.50	3.1.75	3.2.75	3.3.75	3.1.100	3.2.100	3.3.100
18604.6870	-112.8628	-115.4834	-115.1408	-110.1034	-112.4098	-120.2000	-107.5620	-119.2229	-108.4487	-140.0802	-121.1774	-118.0543	-118.7486
18647.7530	-115.3445	-119.0833	-115.5135	-107.6441	-112.5401	-113.3366	-106.9342	-129.6637	-110.8379	-115.7122	-118.7239	-116.5941	-118.4262
18690.8200	-123.8547	-116.6805	-120.0032	-113.7541	-118.2350	-130.0030	-109.7557	-120.2037	-117.6429	-111.0740	-122.1684	-113.6817	-118.9031
18733.8860	-124.1483	-113.7535	-130.1001	-113.6258	-121.5452	-111.4429	-113.2486	-120.1013	-120.5422	-111.3281	-125.9732	-115.4002	-124.8509
18776.9550	-137.3918	-111.8805	-129.5959	-110.6358	-117.0216	-114.4557	-117.4992	-127.2354	-118.0665	-116.3267	-126.0075	-127.8994	-116.0920
18820.0490	-118.9315	-110.3911	-125.1014	-113.0474	-122.0648	-113.9503	-120.5797	-141.0172	-115.0595	-116.1682	-117.4963	-117.6676	-113.4011
18863.0850	-116.2139	-110.8147	-119.6700	-117.0994	-118.3442	-111.3368	-120.5110	-124.6418	-118.7176	-112.1273	-116.0112	-119.9250	-115.5876
18906.1520	-118.4825	-111.9249	-115.9936	-121.2596	-121.4283	-109.1293	-119.5859	-118.3317	-124.1960	-111.8368	-117.1064	-122.8031	-117.0642
18949.2180	-122.9978	-110.2081	-112.8846	-119.7037	-136.2457	-109.0455	-122.0525	-118.7414	-118.0058	-114.9435	-120.1801	-123.6920	-116.1588
18992.2850	-123.4507	-109.3376	-111.9261	-118.1370	-124.3055	-111.3470	-129.2104	-116.6283	-118.5790	-116.7612	-114.7629	-120.8754	-120.8196
19035.3510	-121.3677	-111.2658	-112.3951	-114.5603	-115.3336	-114.5214	-129.2104	-116.6283	-118.5790	-116.5565	-116.9839	-124.4633	-116.6463
19078.4170	-119.1133	-118.8825	-113.3829	-115.3742	-111.0439	-114.5111	-121.7000	-115.4074	-129.1173	-117.6756	-118.1891	-125.1030	-116.5893
19121.4840	-116.3355	-119.0169	-114.3616	-118.7343	-112.5017	-108.1496	-120.6156	-115.6629	-131.1066	-117.6756	-118.1891	-125.1030	-116.5893
19164.5500	-112.1000	-114.3561	-116.8490	-118.2835	-114.6693	-108.7749	-111.1338	-118.7001	-127.3096	-122.2093	-114.2109	-121.3292	-115.7981
19207.6170	-110.8339	-112.9736	-117.2379	-117.1966	-113.0844	-116.3500	-112.0043	-117.7312	-116.3455	-120.2003	-112.5234	-131.5349	-115.4511
19250.6830	-113.0761	-113.1706	-115.8786	-119.0338	-113.7294	-122.9757	-122.1729	-113.3602	-112.7534	-119.3446	-112.4201	-116.1627	-116.5037
19293.7500	-117.4186	-114.5888	-115.8061	-120.2835	-114.8067	-113.2693	-121.9129	-113.7410	-114.3972	-113.9786	-113.2295	-113.4796	-115.7922
19336.8160	-119.0836	-118.4517	-121.5418	-113.0682	-117.8577	-110.7865	-114.1083	-127.0832	-111.8184	-114.5399	-115.0036	-118.2462	-115.3190
19379.8820	-118.4024	-117.3708	-121.7343	-112.2409	-118.3828	-110.6502	-112.5964	-118.2163	-110.5271	-118.6684	-119.8567	-123.0114	-120.5793
19422.9490	-115.6588	-122.1087	-128.1692	-115.1501	-114.5540	-111.4893	-113.8670	-113.8223	-111.3630	-118.3811	-128.9096	-115.5115	-126.0762
19466.0150	-114.7427	-113.6921	-121.8893	-119.1921	-119.1175	-114.7714	-117.3855	-112.0221	-110.4476	-114.4545	-115.3794	-116.6376	-124.7774
19509.0820	-120.0460	-114.1362	-118.3504	-119.4739	-129.0550	-123.9622	-131.5905	-111.3055	-110.2334	-113.1575	-113.8928	-117.4367	-115.7073
19552.1480	-126.3100	-116.2754	-116.7018	-121.6495	-119.2836	-114.3090	-126.8265	-111.4757	-113.4379	-114.4195	-113.4699	-113.1141	-113.0858
19595.2140	-118.7987	-112.3132	-111.5037	-134.7691	-118.6813	-111.4521	-127.9636	-111.1917	-113.1839	-120.4620	-113.8063	-111.5826	-117.7411
19638.2810	-116.6998	-110.1507	-110.7459	-117.1609	-120.1862	-115.7795	-129.3946	-110.5148	-114.1402	-122.4271	-110.2865	-111.2597	-117.5115
19681.3470	-114.8172	-108.7553	-114.2272	-111.4415	-115.7929	-122.8741	-123.7311	-110.6649	-119.7369	-121.7538	-107.6719	-111.1911	-116.1285
19724.4140	-115.5813	-109.0703	-122.7232	-112.0889	-114.6247	-119.0099	-113.5267	-110.6114	-129.1082	-126.5431	-109.4694	-114.7790	-118.6543
19767.4800	-122.6797	-110.8846	-125.1548	-123.8281	-115.1194	-117.1287	-109.8910	-111.3974	-117.2267	-136.1643	-116.7999	-123.4771	-122.6721
19810.5460	-121.2778	-112.4540	-117.0130	-123.1582	-116.0489	-116.0938	-110.0561	-112.2954	-118.6011	-126.8941	-133.7469	-114.0234	-125.0345
19853.6130	-122.7455	-115.2675	-116.9132	-128.4359	-119.2215	-114.7283	-113.5257	-112.9609	-124.8213	-119.7161	-119.6454	-112.9170	-116.2959
19896.6790	-123.4220	-117.5306	-114.8634	-117.2703	-120.8621	-112.9474	-131.4062	-114.0792	-114.7197	-121.4945	-114.0187	-115.2193	-112.6597
19939.7460	-122.0882	-112.9527	-111.2043	-117.6012	-115.8735	-111.5290	-116.5168	-113.5516	-111.7772	-130.6769	-108.9784	-118.4265	-113.2843
19982.8120	-119.4462	-116.0200	-111.3984	-121.6648	-117.5786	-112.1484	-117.3958	-113.0753	-111.1143	-129.0871	-109.3121	-120.6088	-113.8969
20025.8780	-121.1891	-112.8697	-119.5082	-113.1534	-135.4435	-120.2223	-122.0764	-114.8555	-112.9986	-117.4121	-113.5158	-120.5639	-113.0011
20068.9450	-120.1993	-111.8820	-119.1458	-111.2368	-119.6018	-116.6188	-126.4644	-118.0516	-121.4085	-112.8136	-108.9824	-116.5396	-116.3530
20112.0110	-118.4779	-118.2347	-112.8402	-114.8087	-115.3663	-112.3398	-123.2826	-119.0381	-117.5517	-112.8136	-108.9824	-116.5396	-113.4851
20155.0780	-122.9084	-131.9797	-111.6008	-125.4261	-114.6042	-114.4679	-122.1206	-117.9550	-114.9101	-114.7295	-107.0638	-116.8057	-116.3530
20198.1440	-118.8341	-128.5111	-113.0537	-122.5951	-115.9403	-114.3928	-120.8873	-116.1969	-114.8648	-117.8759	-107.6314	-116.4639	-118.0794
20241.2100	-111.3362	-121.9841	-115.2150	-124.8558	-113.2993	-115.6213	-119.5307	-114.7782	-116.3787	-118.9278	-112.2758	-116.8770	-120.9961
20284.2770	-109.8027	-114.3460	-112.5350	-130.1581	-112.1853	-121.3574	-119.4781	-116.6822	-116.2164	-115.0185	-128.1221	-120.8022	-116.8178
20327.3430	-111.0276	-110.7886	-112.9737	-121.8543	-113.0329	-117.2465	-119.2942	-124.4989	-115.6889	-117.8577	-118.5136	-116.9074	-111.4189
20370.4100	-113.8401	-111.2430	-120.5021	-116.0639	-113.4537	-123.5393	-120.5347	-114.7863	-129.1300	-121.2476	-116.1697	-124.9606	-112.0086
20413.4760	-115.6406	-120.5515	-127.8141	-112.2290	-115.1714	-121.1707	-118.8048	-116.2468	-116.1751	-115.7860	-121.3226	-116.1447	-118.6494

Freq	3.1.0	3.2.0	3.3.0	3.1.25	3.2.25	3.3.25	3.1.50	3.2.50	3.3.50	3.1.75	3.2.75	3.3.75	3.1.100	3.2.100	3.3.100
20456.5420	-119.7737	-110.9631	-146.4039	-114.1182	-121.3727	-118.0259	-117.9527	-118.8716	-111.3124	-115.8746	-125.3319	-113.7206	-118.3453	-114.0171	-116.8805
20499.6090	-115.4530	-107.8886	-121.8284	-128.2684	-118.7504	-116.2301	-115.3142	-123.5779	-107.7703	-118.0881	-116.4538	-115.8832	-112.3605	-112.8505	-121.1342
20542.6750	-111.2246	-111.1175	-118.0882	-118.6452	-114.4296	-115.0885	-111.1791	-125.3631	-107.1103	-118.8232	-114.8162	-117.2586	-114.0191	-114.1104	-113.8285
20585.7420	-110.2026	-119.5326	-114.9228	-123.0742	-115.5681	-115.1008	-110.5650	-116.0675	-108.7700	-116.8690	-120.5850	-117.9407	-114.0830	-115.9652	-109.8366
20628.8080	-111.0505	-116.2456	-113.4792	-124.5784	-126.7156	-119.5761	-112.8219	-115.1001	-109.4474	-122.4381	-123.5300	-122.5918	-112.0653	-121.5797	-109.8131
20671.8750	-110.4992	-114.5591	-115.3383	-128.2841	-128.9439	-119.8430	-118.1567	-119.7933	-109.4351	-122.6490	-119.7397	-120.7595	-108.8413	-128.6210	-116.1391
20714.9410	-109.0956	-118.0712	-121.1292	-119.3445	-121.5730	-116.0346	-121.4890	-117.9938	-112.2684	-118.5891	-120.1915	-116.0844	-108.1919	-126.7845	-115.9351
20758.0070	-109.1236	-114.4051	-117.7249	-114.8951	-121.2199	-114.6002	-125.8775	-118.6738	-117.1850	-116.5922	-114.2129	-116.9730	-113.9860	-120.6427	-109.6128
20801.0740	-113.4366	-112.0815	-114.1902	-112.0586	-121.7664	-111.7904	-119.8743	-133.4626	-133.2523	-116.5487	-110.4830	-118.5185	-115.1703	-115.0872	-109.9098
20844.1400	-123.6542	-114.7680	-116.5866	-112.5506	-123.7703	-111.3397	-119.8743	-133.4626	-133.2523	-122.0978	-109.8261	-117.3545	-111.7407	-112.3970	-112.2319
20887.2070	-123.1790	-117.1265	-130.7749	-117.5406	-119.5751	-111.2286	-112.1276	-120.3388	-115.7263	-123.4826	-110.3868	-113.9526	-113.7166	-113.3875	-112.2807
20930.2730	-130.0923	-117.6091	-120.8179	-131.1115	-119.0288	-110.8120	-112.9358	-142.6356	-112.4279	-115.4127	-112.2184	-112.0743	-117.7779	-119.4670	-116.8396
20973.3390	-122.4646	-128.9436	-114.1966	-132.7948	-120.8653	-113.6637	-115.8159	-118.4623	-112.9287	-114.1551	-114.5047	-114.5194	-119.6758	-124.6649	-120.3956
21016.4060	-118.9825	-119.8791	-112.1669	-119.3727	-116.3771	-114.7936	-126.1003	-123.9822	-117.0254	-122.4571	-115.4446	-119.6775	-122.7499	-118.7058	-115.2014
21059.4720	-115.4333	-116.0694	-116.2192	-120.2132	-112.4673	-114.0102	-125.2211	-126.2254	-113.2104	-121.9640	-117.4506	-121.6608	-133.7400	-116.4763	-113.7953
21102.5390	-115.4859	-113.5439	-127.7024	-123.8869	-112.2250	-116.2853	-120.7284	-130.0378	-111.2829	-119.4549	-122.5825	-114.9195	-119.2051	-116.7036	-114.1572
21145.6050	-116.5107	-113.8295	-123.9088	-118.0463	-113.0273	-120.5172	-119.7041	-121.6813	-115.8264	-125.3445	-131.4053	-114.5456	-115.9845	-118.6267	-114.9286
21188.6710	-117.1990	-117.6974	-119.0737	-117.7773	-114.4017	-121.7430	-117.7716	-120.0483	-138.0860	-124.8206	-126.7406	-116.1116	-117.2606	-112.5303	-118.1758
21231.7380	-117.7045	-123.3151	-115.9098	-116.3746	-119.6313	-122.5680	-114.3350	-118.2812	-117.8304	-122.8812	-118.9034	-123.3659	-116.0822	-108.3514	-119.2182
21274.8040	-114.0495	-132.6078	-117.2648	-118.5229	-121.7202	-120.9283	-113.2690	-116.1931	-114.9800	-112.1432	-113.1903	-125.1421	-113.5293	-110.0019	-119.4568
21317.8710	-111.9519	-122.9550	-122.8860	-118.4733	-120.3994	-116.4515	-114.1904	-114.9921	-115.0439	-108.7358	-111.5101	-120.9138	-114.5241	-117.6261	-121.0848
21360.9370	-112.0659	-112.7696	-125.1219	-118.2401	-121.9857	-116.6824	-115.7566	-119.8353	-119.8259	-108.5724	-112.3791	-128.9620	-119.1388	-114.6462	-114.3562
21404.0030	-114.4503	-111.0112	-127.9372	-119.5553	-124.5984	-114.5004	-115.7416	-123.0827	-130.8810	-108.5724	-112.3791	-128.9620	-135.1660	-116.6625	-114.5347
21447.0700	-114.5919	-116.3522	-134.6000	-120.5626	-120.3354	-111.8856	-115.9507	-122.2801	-122.5413	-112.5378	-112.6605	-121.6082	-120.3052	-121.0572	-121.4421
21490.1360	-114.8248	-128.1508	-119.9118	-121.4404	-116.4132	-112.2228	-118.1170	-125.0312	-116.4824	-113.5639	-114.2762	-117.7347	-135.1660	-116.6625	-114.5347
21533.2030	-115.0545	-120.0187	-119.8449	-119.0969	-117.9328	-117.0959	-118.4409	-118.4679	-121.9334	-114.7338	-120.7411	-122.2782	-115.5852	-113.0282	-114.5886
21576.2690	-117.9617	-115.4011	-123.4257	-117.3955	-124.3846	-124.6893	-119.9985	-115.7650	-135.4984	-116.5675	-122.9691	-124.4158	-111.8770	-112.2541	-112.7952
21619.3350	-119.5721	-112.1139	-118.7848	-120.3463	-122.2609	-119.3077	-117.9910	-117.5039	-123.8668	-113.3444	-116.1436	-123.1511	-111.7082	-112.6231	-114.6320
21662.4020	-117.8847	-113.2546	-116.8727	-119.4306	-112.2992	-114.3018	-114.2967	-118.7517	-116.1222	-112.6233	-111.3704	-123.5153	-116.4376	-111.0967	-113.8366
21705.4680	-117.6731	-120.3617	-121.2511	-115.6857	-113.0572	-114.2357	-115.2874	-121.3220	-115.8517	-112.4638	-109.3555	-116.8344	-112.0861	-113.0207	-113.1598
21748.5350	-119.3573	-121.3375	-117.2394	-113.7053	-119.7214	-118.7141	-117.9891	-120.0743	-115.5262	-111.1380	-112.9461	-114.3741	-110.9832	-119.3567	-115.2099
21791.6010	-121.6665	-113.7821	-112.9736	-112.7810	-113.9030	-117.6503	-122.4492	-116.2517	-113.9799	-113.4447	-126.2442	-114.0176	-112.7782	-122.9474	-111.7040
21834.6670	-113.1400	-110.2388	-112.9909	-112.8385	-113.5894	-117.4375	-124.9524	-116.0536	-112.7787	-120.0742	-113.0810	-113.7467	-113.7436	-116.4931	-111.8672
21877.7340	-108.1681	-111.2131	-114.9271	-113.6885	-120.8517	-119.1506	-117.6062	-123.7891	-112.5782	-115.4627	-118.3312	-115.2376	-112.0405	-113.5353	-116.5960
21920.8000	-108.4250	-117.0175	-117.3785	-115.6091	-115.5879	-118.6581	-116.0197	-117.4542	-113.4521	-110.4688	-121.7632	-116.2425	-113.6213	-115.4214	-121.4228
21963.8670	-114.6689	-115.0705	-124.8362	-119.8620	-113.7321	-118.3381	-120.7685	-112.0405	-118.3195	-109.4470	-113.6113	-116.6932	-122.8837	-119.7844	-124.7575
22006.9330	-123.0788	-116.3690	-114.8327	-121.3614	-124.4387	-118.8419	-129.3249	-111.6630	-123.6247	-111.8597	-108.8533	-117.7485	-122.3298	-122.8611	-125.9382
	-107.4742	-103.5872	-108.1417	-106.3686	-106.2389	-106.1227	-107.7262	-107.8628	-107.5543	-107.7189	-107.6297	-107.6587	-107.0524	-106.6493	-101.7217
	-106.4011			-106.2434			-107.7144			-107.6691					-105.1412

Freq	4.1.0	4.2.0	4.3.0	4.1.25	4.2.25	4.3.25	4.1.50	4.2.50	4.3.50	4.1.75	4.2.75	4.3.75	4.1.100	4.2.100	4.3.100
43.0660	-49.3145	-46.7218	-42.4138	-35.9567	-34.7701	-32.9899	-33.4500	-49.1555	-52.0809	-31.0718	-43.6278	-34.0459	-43.7422	-32.4714	-31.9098
86.1320	-38.9488	-36.0053	-37.8738	-28.4687	-33.9159	-32.0784	-29.9065	-42.4823	-33.2378	-27.0675	-40.6961	-27.5432	-32.8373	-30.1979	-29.5511
129.1990	-30.2112	-29.1879	-37.1729	-23.4607	-35.9081	-27.9969	-30.3412	-36.5442	-22.9546	-27.7154	-41.3488	-28.0213	-28.0267	-31.1248	-34.2699
172.2650	-28.2693	-26.7312	-35.4071	-21.3386	-25.5956	-21.4236	-30.8243	-32.9976	-20.8520	-28.0379	-41.7325	-45.4648	-29.1424	-20.8588	-28.9794
215.3320	-30.8188	-28.9391	-35.1687	-24.2942	-26.3493	-20.8045	-35.1900	-35.4857	-24.9404	-29.8706	-44.8414	-32.9706	-34.3313	-20.7657	-29.1206
258.3980	-38.5769	-35.3581	-39.2810	-46.5886	-46.0818	-39.0768	-59.3573	-62.4972	-48.5648	-40.5492	-61.4737	-45.0659	-55.3599	-42.4887	-45.3242
301.4640	-56.7779	-42.7249	-46.6225	-42.6550	-51.8304	-45.7927	-54.8154	-64.2345	-55.0137	-40.4429	-68.9630	-48.1908	-50.4787	-58.5112	-50.5335
344.5310	-50.7940	-49.3109	-53.0200	-47.6804	-51.4971	-46.5090	-55.1067	-66.3801	-68.3813	-43.4542	-62.3681	-50.6581	-56.4586	-55.7276	-56.5647
387.5970	-47.1543	-58.2194	-66.8779	-52.6235	-50.2402	-48.1665	-59.7449	-67.8625	-67.4773	-50.3635	-58.3755	-53.9588	-67.5199	-61.5921	-63.5220
430.6640	-50.7934	-68.1563	-58.9259	-51.2353	-51.5481	-48.1070	-73.8118	-69.5872	-64.8554	-57.7415	-59.2326	-58.0479	-69.6027	-60.4690	-73.2871
473.7300	-65.9503	-70.3045	-59.5734	-53.9558	-54.1913	-46.0272	-65.4448	-71.1494	-65.5095	-63.5985	-61.8499	-71.6617	-70.5605	-59.0722	-71.0495
516.7960	-58.8886	-79.2740	-60.3375	-54.5012	-59.7054	-45.6735	-61.1003	-74.5990	-65.6946	-61.0175	-61.9593	-65.9863	-76.3807	-63.4835	-66.4952
559.8630	-72.1699	-70.8762	-60.8792	-57.3326	-67.9618	-48.1897	-59.4863	-86.1842	-64.7513	-62.6760	-60.7900	-64.1228	-72.6441	-68.0038	-67.3110
645.9960	-60.3241	-77.6132	-63.4394	-64.4429	-72.3158	-54.3750	-59.8050	-84.7616	-67.7234	-78.8666	-61.7878	-69.5155	-70.5025	-70.1164	-70.1057
689.0620	-53.9304	-75.9825	-63.2132	-71.7101	-65.8010	-69.9786	-61.6873	-90.4506	-76.8491	-71.3941	-62.9004	-71.7555	-74.9730	-74.3359	-71.6931
732.1280	-53.6330	-91.1982	-65.1035	-61.7878	-61.0355	-73.6672	-64.1396	-74.0095	-78.9412	-69.7064	-65.9655	-62.8711	-81.4151	-81.6846	-69.6795
775.1950	-59.1219	-72.7950	-68.0415	-58.9881	-61.3795	-69.8713	-65.3244	-66.3803	-73.1274	-60.4081	-72.1898	-60.9842	-70.4338	-78.0540	-70.4415
818.2610	-56.3559	-69.9950	-71.0272	-57.9293	-67.0608	-59.6556	-67.0328	-66.1466	-68.6981	-57.5494	-67.9492	-62.9398	-66.1048	-79.3687	-75.2389
861.3280	-52.8798	-73.1059	-71.2554	-58.3933	-63.9190	-55.7584	-71.3746	-72.1114	-63.0935	-59.0115	-66.5388	-68.7070	-69.9469	-75.6965	-69.7776
904.3940	-53.7212	-70.2711	-70.6989	-56.9780	-65.6841	-79.1411	-70.5394	-75.2232	-65.9972	-83.9907	-68.2971	-75.2380	-90.0447	-67.4375	-68.8201
947.4600	-56.2020	-72.6607	-65.6388	-62.7857	-70.2696	-61.1806	-71.8658	-91.0621	-63.6450	-65.2005	-65.2570	-75.2380	-70.9869	-63.8038	-67.7294
990.5270	-58.3284	-81.9051	-61.5079	-60.3047	-66.8484	-65.0373	-67.4771	-69.9561	-59.9092	-73.5380	-69.4187	-78.8708	-64.9316	-67.2241	-69.0098
1033.5930	-61.6281	-76.2754	-61.6452	-61.9120	-71.4266	-80.1766	-64.4208	-67.9120	-67.9289	-70.3279	-65.3318	-70.7225	-64.3764	-81.5581	-72.9886
1076.6600	-67.0637	-71.8881	-68.1889	-58.3560	-63.5980	-61.5849	-63.5244	-68.8494	-79.3353	-69.9361	-64.1896	-67.8560	-65.6883	-74.1388	-70.5794
1119.7260	-83.6908	-76.6012	-75.6442	-58.7977	-64.0788	-58.9639	-66.0231	-71.9872	-74.3098	-70.8253	-66.7039	-68.2228	-70.5737	-73.7034	-68.8824
1162.7920	-70.6256	-87.2997	-71.7952	-62.7857	-70.2696	-61.1806	-71.6269	-79.2228	-71.4229	-71.2009	-77.3913	-71.2471	-71.7577	-74.5327	-70.7613
1205.8590	-86.2928	-79.1561	-73.5366	-68.1559	-77.0855	-63.9917	-81.5452	-84.3980	-78.9337	-74.2524	-76.6026	-74.6071	-66.9769	-75.0101	-79.8325
1248.9250	-63.8968	-76.6180	-68.8053	-79.5903	-77.1400	-58.5203	-90.2143	-77.9546	-80.2010	-72.3730	-74.6435	-75.4155	-70.8210	-73.2496	-83.9860
1291.9920	-57.4795	-76.6625	-63.4439	-74.1818	-71.8891	-55.0947	-79.1265	-76.4782	-75.1484	-71.2865	-83.6787	-75.0671	-78.8562	-74.7251	-83.6174
1335.0580	-55.7585	-72.2142	-60.1233	-67.5289	-68.5341	-57.2293	-76.1456	-77.0001	-75.4183	-74.1412	-77.9908	-77.2193	-74.5705	-74.7938	-81.2521
1378.1250	-58.1209	-71.0836	-60.0701	-66.9166	-71.0790	-64.5360	-77.0554	-79.4547	-75.6155	-80.0545	-75.8049	-80.2197	-67.1938	-72.8778	-78.2238
1421.1910	-62.0570	-73.5410	-67.8559	-70.9109	-78.2913	-60.6930	-82.4936	-81.7264	-77.2513	-86.4819	-77.6642	-76.1247	-65.1779	-79.1598	-74.9150
1464.2570	-64.6121	-73.7357	-66.0181	-73.1185	-63.7004	-55.0376	-98.5526	-84.6384	-79.5904	-73.6007	-77.7659	-76.0715	-69.1796	-77.2264	-74.7764
1507.3240	-78.8953	-70.2559	-64.8431	-69.2235	-61.7588	-57.9534	-86.0574	-82.2761	-77.8647	-70.8327	-77.1096	-80.1256	-79.8353	-70.9043	-78.9114
1550.3900	-64.4340	-68.5689	-75.8849	-66.5568	-65.5431	-59.1461	-80.6945	-76.7586	-79.2992	-72.2317	-79.7361	-90.4574	-80.4065	-71.9413	-79.2562
1593.4570	-65.6569	-71.8041	-79.3438	-65.6297	-72.9289	-58.7887	-81.4400	-76.1671	-83.0481	-76.9560	-89.6958	-77.2717	-76.3131	-76.4934	-77.5327
1636.5230	-76.6148	-84.6886	-74.7794	-66.7153	-78.7223	-63.6983	-81.2457	-77.8946	-74.2578	-82.4099	-80.8896	-74.3622	-77.5545	-83.3620	-71.7733
1679.5890	-76.0883	-79.0626	-73.0488	-70.1680	-76.7202	-68.8187	-85.3671	-76.4987	-68.0713	-75.7927	-74.3193	-78.3506	-68.3535	-73.6918	-69.6995
1722.6560	-79.6551	-77.6711	-88.3640	-77.8654	-71.4358	-60.7361	-78.0717	-74.8358	-68.4906	-76.0182	-74.3193	-73.0144	-65.0309	-69.6882	-75.3858
1765.7220	-70.9771	-80.9523	-72.3588	-91.6987	-68.4583	-68.7749	-77.8922	-77.6343	-68.5341	-82.9317	-75.7523	-73.7550	-67.0896	-75.6068	-77.8109
1808.7890	-62.4857	-79.8596	-79.7301	-80.3407	-69.0855	-68.1585	-83.8419	-78.7565	-79.8642	-85.3114	-75.1784	-82.6675	-71.7007	-80.9942	-76.0478
1851.8550	-61.0425	-75.0869	-69.7314	-79.5148	-75.8175	-66.3832	-97.4618	-76.7744	-77.8715	-79.1258	-73.2366	-77.8758	-74.4562	-77.5079	-82.9262
1894.9210	-64.7567	-75.8123	-65.2361	-81.6196	-71.4600	-68.9378	-89.5013	-80.5268	-84.4597	-80.1507	-72.3255	-76.3972	-77.1040	-82.9245	-77.5310

Freq	4.1.0	4.2.0	4.3.0	4.1.25	4.2.25	4.3.25	4.1.50	4.2.50	4.3.50	4.1.75	4.2.75	4.3.75	4.1.100	4.2.100	4.3.100
1937.9880	-65.1516	-74.3063	-64.9022	-80.5352	-72.8827	-74.3845	-87.9666	-81.9515	-92.0315	-83.9433	-75.5702	-79.7245	-79.1824	-84.0753	-76.3416
1981.0540	-63.0539	-75.7323	-65.0738	-80.9263	-80.4584	-68.8615	-84.8816	-83.7292	-83.4295	-83.7851	-79.1888	-86.3662	-82.5028	-79.9729	-80.3414
2024.1210	-64.8455	-80.6839	-63.4263	-82.0767	-87.8042	-66.8344	-85.1978	-87.2393	-82.1215	-88.4249	-80.5272	-93.9899	-87.5359	-78.1643	-86.2591
2067.1870	-70.4727	-88.1780	-60.8391	-97.5872	-79.0184	-71.7469	-85.3680	-87.5558	-84.9268	-95.8837	-79.9492	-97.4325	-84.0314	-78.0297	-82.8218
2110.2530	-70.3907	-90.4085	-60.7396	-79.8296	-74.3906	-72.7215	-85.5096	-88.1175	-83.4290	-95.5683	-79.5948	-91.6583	-81.0192	-80.3241	-81.1679
2153.3200	-67.5564	-83.5923	-64.5402	-75.0225	-74.6309	-73.3223	-85.0920	-84.9873	-79.0484	-91.5722	-82.7425	-91.4498	-81.1741	-77.2725	-80.9784
2196.3860	-69.3068	-83.1140	-69.4251	-75.8106	-76.7269	-78.8130	-86.1189	-80.2197	-79.6197	-85.4437	-78.2352	-86.9342	-80.0466	-72.3712	-76.2726
2239.4530	-88.5656	-87.2532	-71.2072	-82.8142	-78.8810	-82.0864	-94.8779	-80.7980	-84.9763	-85.4816	-77.7698	-84.9782	-82.1480	-72.9887	-78.1996
2282.5190	-65.4784	-84.0288	-64.1538	-92.7343	-82.3168	-80.9952	-98.2563	-87.7946	-89.6572	-84.1142	-81.7170	-88.3518	-87.5649	-81.0056	-91.6465
2325.5850	-60.7225	-81.2737	-61.4754	-84.9913	-86.8725	-72.6955	-92.2207	-96.2036	-93.2492	-85.3535	-91.9158	-88.7094	-94.8017	-91.4752	-92.2843
2368.6520	-62.5794	-82.7753	-67.2782	-87.6364	-82.2987	-70.2956	-87.3006	-90.8383	-104.6993	-97.6182	-103.2813	-89.7903	-98.9300	-84.5994	-89.5206
2411.7180	-64.1561	-87.8199	-72.4561	-91.7525	-82.5756	-76.8481	-89.4106	-90.7681	-96.8575	-93.1698	-101.5342	-87.9317	-100.7564	-87.1301	-87.5864
2454.7850	-63.6194	-87.2268	-68.4001	-90.4290	-82.1658	-74.7466	-94.1053	-89.6258	-95.2371	-94.0577	-96.8885	-86.7595	-101.8521	-94.8175	-87.6612
2497.8510	-64.3113	-84.0366	-68.5456	-83.1409	-83.2108	-69.6499	-90.0754	-92.4365	-97.2054	-97.1667	-93.6632	-84.2478	-93.8211	-90.0567	-91.4392
2540.9170	-62.1694	-79.2226	-69.2176	-77.6668	-82.9949	-71.9365	-90.6644	-91.6853	-97.1528	-88.6100	-91.7263	-83.5689	-91.1585	-90.1776	-96.7068
2583.9840	-60.9482	-77.4226	-67.2521	-75.8165	-84.8357	-98.2912	-93.6747	-87.9398	-104.0564	-88.1781	-99.7987	-88.6711	-94.6059	-93.4717	-101.9695
2627.0500	-62.8052	-77.3395	-64.9539	-75.9618	-83.5173	-75.5224	-94.5653	-85.3636	-94.1448	-88.8546	-96.4415	-100.4986	-111.1250	-94.8038	-97.7652
2670.1170	-66.3441	-77.4715	-63.5097	-76.6401	-82.6111	-76.4801	-89.0322	-85.5399	-89.2403	-86.6532	-91.2506	-103.9397	-100.7885	-100.3875	-93.3668
2713.1830	-66.5457	-79.9224	-64.3569	-79.7344	-82.1989	-84.9459	-89.1478	-89.6974	-89.9279	-96.4269	-93.0253	-97.9697	-101.5375	-111.7928	-93.0461
2756.2500	-66.5177	-89.6000	-70.7464	-89.5067	-80.4826	-81.8294	-94.8817	-91.1289	-95.2686	-95.1716	-90.3357	-95.1659	-99.7220	-111.5265	-94.2440
2799.3160	-66.4513	-81.2313	-81.4659	-86.3589	-78.5578	-79.7081	-99.9731	-91.0984	-95.2693	-105.3146	-88.0770	-96.1933	-99.0381	-103.1100	-95.3022
2842.3820	-63.1801	-73.1000	-72.4264	-88.1434	-76.6283	-76.5485	-91.7929	-91.5812	-98.9698	-99.2299	-89.0577	-104.6034	-92.9639	-94.6265	-91.2962
2885.4490	-63.8989	-74.1095	-69.0016	-82.3934	-76.9197	-73.7640	-88.1701	-98.7152	-95.6834	-99.2349	-91.2865	-95.8047	-88.2591	-91.9533	-90.5315
2928.5150	-72.1611	-79.2753	-71.2614	-76.1402	-78.6026	-73.4288	-91.5298	-104.4436	-92.1506	-92.3490	-91.2865	-95.8047	-89.6970	-98.3256	-94.4670
2971.5820	-67.0873	-80.9335	-72.5390	-74.8926	-78.6788	-75.7285	-117.4355	-96.9162	-94.3930	-92.0833	-91.7362	-95.4845	-88.4175	-95.3072	-101.0200
3014.6480	-68.4556	-82.9448	-74.9063	-76.6984	-79.0646	-81.2947	-95.5465	-93.6255	-100.4098	-94.4286	-93.1930	-97.1157	-88.8108	-88.9879	-101.4749
3057.7140	-76.2243	-83.3170	-82.5136	-77.9083	-82.6331	-83.2214	-93.5359	-90.9868	-89.8018	-94.1324	-96.1836	-97.3816	-88.108	-87.7855	-101.1533
3100.7810	-91.3342	-85.2984	-74.0392	-78.7650	-114.6635	-73.7383	-90.7125	-92.8669	-86.5453	-92.9072	-104.8593	-91.6938	-88.1695	-87.4483	-102.9465
3143.8470	-80.2305	-87.2357	-72.0257	-74.6863	-83.2281	-73.9728	-91.2313	-98.8522	-88.9061	-91.3446	-102.0199	-89.5889	-92.7853	-84.2028	-97.6549
3186.9140	-70.6220	-81.1884	-75.3510	-68.7248	-83.3728	-72.3220	-97.3763	-89.0098	-93.7553	-92.3404	-98.3211	-88.7825	-94.8351	-80.1857	-111.3523
3229.9800	-65.6997	-76.2827	-82.1891	-65.8908	-87.5719	-68.7630	-91.9997	-88.9309	-93.9554	-92.0948	-93.8212	-91.1148	-89.4732	-79.6233	-100.3564
3273.0460	-64.4156	-76.7553	-79.6958	-64.8301	-80.2778	-70.6918	-89.8101	-95.3144	-98.0542	-96.4359	-93.1223	-90.4051	-90.4091	-84.0987	-89.4665
3316.1130	-66.8755	-79.9789	-73.7880	-66.0017	-84.4337	-67.1384	-95.4924	-103.8070	-97.4522	-98.4837	-104.7647	-90.4463	-93.6858	-99.1668	-88.6362
3359.1790	-73.4670	-82.3157	-68.8003	-72.2531	-92.3700	-65.5075	-95.3421	-112.5868	-98.4596	-95.3302	-94.3728	-91.4338	-92.7708	-97.4093	-95.9212
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3445.3120	-76.5722	-84.1248	-71.7276	-65.0781	-80.9251	-70.8833	-95.3288	-96.4244	-98.9999	-97.1517	-95.2861	-103.4408	-86.0745	-90.7581	-98.2139
3488.3780	-81.6732	-88.6610	-74.3674	-64.7146	-79.9593	-66.6728	-92.7954	-92.4526	-90.6796	-94.8669	-103.3954	-96.4255	-85.5570	-101.5458	-92.3484
3531.4450	-77.5187	-91.0319	-77.1951	-66.9849	-75.1923	-67.8191	-90.4477	-92.4807	-87.6350	-105.9874	-95.6320	-95.4891	-89.8377	-94.3296	-90.5496
3574.5180	-75.0607	-89.0589	-90.6566	-66.8724	-74.3720	-78.7698	-88.4589	-90.8445	-89.8955	-104.6180	-92.7076	-95.6410	-98.9319	-91.5804	-93.0780
3617.5780	-75.9193	-90.4041	-83.1892	-67.6829	-77.6434	-79.6903	-87.3488	-90.1958	-104.3435	-108.1856	-90.8603	-99.9694	-95.2470	-94.3633	-96.2240
3660.6440	-80.4982	-91.9443	-92.0122	-71.4876	-80.2682	-74.9087	-87.5637	-96.5965	-91.0477	-97.4886	-90.7504	-91.5471	-92.8591	-102.5770	-103.2558
3703.7100	-86.4787	-93.2652	-81.0815	-78.4842	-86.8907	-74.7221	-91.8907	-106.3513	-91.5426	-97.9637	-97.7433	-91.9122	-88.9590	-114.6844	-96.0121
3746.7770	-86.7747	-87.9483	-74.6264	-87.1885	-92.8806	-76.5866	-106.3447	-95.7575	-93.0584	-90.6073	-104.7007	-98.6762	-86.1661	-116.9158	-94.9918

Freq	4.1.0	4.2.0	4.3.0	4.1.25	4.2.25	4.3.25	4.1.50	4.2.50	4.3.50	4.1.75	4.2.75	4.3.75	4.1.100	4.2.100	4.3.100
3789.8430	-81.3513	-82.7349	-72.5835	-88.3224	-89.5790	-77.8134	-101.9523	-92.8873	-98.4350	-94.1912	-94.1258	-111.7080	-85.8920	-104.3994	-100.0754
3832.9100	-75.0944	-80.7245	-73.1462	-93.8023	-84.5426	-75.1940	-93.9249	-99.9126	-102.7100	-98.2794	-91.8562	-103.2706	-90.4671	-107.7643	-100.0424
3875.9760	-74.3869	-81.8258	-73.2696	-92.5723	-83.6976	-75.5951	-92.9498	-98.6610	-105.2614	-93.4661	-95.2344	-93.5863	-117.1156	-97.2936	-105.2957
3919.0420	-77.9220	-85.2803	-75.6882	-87.3738	-89.4945	-80.4867	-96.7824	-93.2745	-110.3940	-90.7212	-106.8408	-86.9866	-95.0088	-92.2289	-98.5068
3962.1090	-77.5984	-87.0314	-81.1306	-82.8138	-100.6116	-85.7109	-100.2240	-93.8295	-97.3439	-90.5143	-95.7149	-84.3003	-96.8774	-91.9384	-92.6305
4005.1750	-74.9886	-87.2886	-82.9962	-82.6399	-100.8243	-87.3199	-101.4082	-96.6375	-96.3802	-93.7913	-92.3799	-86.3147	-100.0513	-94.2660	-92.8527
4048.2420	-76.6157	-88.2154	-84.8391	-86.6084	-112.8370	-89.3349	-95.6356	-91.4013	-101.0853	-93.9518	-93.6281	-93.0697	-93.0968	-93.4109	-94.7723
4091.3080	-82.4644	-90.6833	-85.0699	-102.4155	-96.4752	-102.8666	-92.5556	-91.1095	-92.8887	-96.4196	-94.0397	-95.8908	-87.7781	-85.5141	-92.0105
4134.3750	-85.3712	-98.5400	-83.0867	-84.8123	-98.4669	-86.9026	-105.1139	-100.7550	-88.7266	-95.9825	-88.7386	-84.2263	-83.4962	-85.9392	-83.1096
4177.4410	-84.9126	-100.8034	-83.5284	-87.0854	-90.8384	-86.6133	-86.4178	-90.2703	-86.1306	-97.3567	-85.3551	-81.9034	-80.3752	-95.5439	-77.3613
4220.5070	-85.8809	-95.0650	-86.0189	-92.4670	-84.6605	-95.4888	-81.2083	-85.0907	-85.6600	-86.5642	-87.4974	-83.4013	-79.6351	-87.9707	-78.4818
4263.5740	-84.7808	-94.6811	-84.2269	-92.6398	-85.4800	-93.8488	-82.9615	-85.3082	-89.9561	-85.0200	-96.1344	-85.3960	-83.5540	-96.2334	-85.3663
4306.6400	-85.0320	-96.2226	-82.5773	-88.6569	-93.0063	-90.5474	-103.8673	-97.9812	-86.2201	-86.3155	-85.4273	-86.1875	-91.4992	-90.8204	-87.9182
4349.7070	-84.5774	-112.3952	-84.0559	-85.8771	-88.0986	-87.1944	-89.1105	-89.3473	-95.2217	-88.0179	-84.5777	-86.9567	-80.4163	-85.0527	-86.8839
4392.7730	-85.5089	-95.4757	-85.7938	-89.7482	-82.9560	-86.2946	-99.2965	-108.4370	-87.7311	-90.6555	-89.3899	-88.0803	-75.8062	-84.5357	-90.3405
4435.8390	-87.3189	-96.9026	-89.2121	-92.8071	-77.7607	-83.3642	-76.5192	-93.4505	-98.6035	-86.2343	-84.2616	-80.3498	-75.7730	-76.8911	-79.1175
4478.9060	-87.1155	-90.9238	-90.5774	-81.1688	-79.3869	-85.7556	-76.3754	-84.6229	-98.1205	-79.3694	-76.5901	-75.6082	-95.3832	-74.3200	-76.8611
4521.9720	-85.3297	-91.9247	-85.3484	-81.1688	-79.3869	-85.7556	-81.1309	-80.8434	-91.2031	-79.5846	-76.4152	-72.9693	-74.6162	-77.5179	-81.4158
4565.0390	-84.7935	-96.9153	-84.5692	-76.5254	-88.0911	-101.9967	-88.5419	-86.2846	-102.4524	-82.0032	-80.3369	-73.6791	-72.9314	-80.1072	-75.9673
4608.1050	-86.3076	-95.7192	-86.2820	-78.3023	-94.4328	-87.7708	-88.5419	-86.2846	-102.4524	-87.5324	-88.5126	-88.7510	-78.8863	-75.5256	-74.8803
4651.1710	-87.6676	-96.3669	-87.1497	-85.1968	-93.4857	-89.7768	-90.2206	-96.0471	-90.5484	-97.9375	-88.5126	-88.5126	-91.9699	-78.3008	-77.7974
4694.2380	-87.2573	-96.4118	-87.3434	-95.1129	-104.4445	-98.8445	-91.1596	-90.7861	-90.7623	-85.9324	-88.5126	-88.5126	-95.5956	-86.4908	-83.2148
4737.3040	-88.0994	-108.3617	-92.2173	-99.2413	-101.5792	-99.6402	-101.3178	-91.2870	-99.4495	-94.9794	-98.6734	-105.3366	-95.5956	-86.4908	-83.2148
4780.3710	-90.9123	-96.1951	-104.6195	-100.1260	-99.4040	-106.3608	-112.6561	-89.8540	-102.6908	-97.4047	-105.2658	-107.8912	-93.1152	-92.5157	-88.6592
4823.4370	-94.3159	-90.5861	-97.0550	-107.3916	-98.9237	-99.7987	-107.4421	-88.5413	-108.0871	-92.9718	-100.1356	-103.3681	-99.6371	-90.6702	-87.5477
4866.5030	-94.8557	-89.7676	-99.1745	-94.6511	-94.8054	-98.5650	-98.3845	-88.6020	-97.8695	-84.3335	-88.8429	-99.5591	-105.3805	-87.8582	-81.4146
4909.5700	-99.0414	-92.0539	-104.2221	-90.6873	-90.8190	-94.8740	-93.1786	-89.9508	-95.0697	-81.1779	-85.2799	-90.4695	-93.8460	-89.8043	-77.1863
4952.6360	-88.8828	-95.7418	-96.2290	-92.6226	-88.3188	-95.2367	-90.5592	-90.1644	-94.3872	-84.7931	-88.4024	-88.7954	-83.8753	-98.5196	-76.6900
4995.7030	-84.2773	-110.2795	-93.2054	-92.9050	-89.3830	-99.5590	-89.3413	-89.4624	-94.1690	-86.8780	-88.4652	-89.1362	-84.5163	-95.6292	-79.3076
5038.7690	-85.1375	-100.8367	-96.7705	-91.1409	-93.7261	-94.1863	-88.9464	-90.5309	-91.0508	-86.8780	-88.4652	-89.1362	-84.5163	-94.0369	-81.6252
5081.8350	-91.1771	-98.7962	-92.1105	-93.4039	-100.4430	-94.1070	-89.6140	-95.2135	-90.4922	-89.1962	-89.5737	-90.5012	-92.2025	-98.3816	-84.9561
5124.9020	-97.3728	-93.3859	-88.4709	-102.5098	-98.4177	-98.0136	-95.3519	-111.2384	-94.6175	-94.3196	-96.3703	-99.3999	-97.2533	-100.8092	-97.4981
5167.9680	-95.2675	-89.2926	-88.6126	-108.9423	-99.3034	-106.6221	-101.3095	-95.5452	-105.2872	-114.3774	-112.1735	-92.8650	-97.4596	-93.6703	-98.2893
5211.0350	-94.3780	-88.3845	-90.8652	-96.6363	-104.6887	-96.7390	-96.5474	-91.2066	-105.5392	-101.8547	-105.5895	-89.0054	-94.7479	-91.1233	-91.8430
5254.1010	-95.4396	-88.7930	-94.1033	-96.1732	-107.5622	-96.7644	-94.4631	-90.0347	-100.1970	-97.7372	-103.1167	-89.1005	-95.8510	-92.6072	-88.3153
5297.1670	-92.7626	-90.3156	-92.9161	-101.3566	-102.7116	-97.9159	-96.7557	-88.5077	-102.9251	-87.5777	-103.0864	-90.4971	-104.4051	-87.6831	-90.8252
5340.2340	-91.6027	-92.8007	-89.4803	-101.9724	-91.4244	-91.6542	-96.9067	-89.1464	-100.3100	-84.4741	-84.6687	-87.5103	-89.2816	-85.2514	-99.0072
5383.3000	-94.0183	-94.4199	-90.8152	-89.6228	-86.2941	-88.6580	-97.9091	-95.6588	-89.8124	-85.3732	-85.1271	-91.6965	-87.1418	-84.4572	-88.1737
5426.3670	-93.4046	-98.9037	-88.0883	-83.6615	-87.4216	-87.8833	-89.2450	-91.3524	-87.4714	-88.1905	-92.4128	-89.3443	-94.9680	-84.0190	-85.5575
5469.4330	-90.8184	-105.6908	-85.3828	-85.0183	-94.6933	-91.0794	-88.2176	-88.0567	-90.2193	-89.9762	-88.7540	-86.0420	-87.7747	-87.6138	-85.5255
5512.5000	-86.8252	-103.0957	-89.0967	-96.6702	-105.2286	-95.4149	-91.9466	-90.6371	-96.7227	-92.4033	-88.6680	-87.5681	-87.2431	-102.1610	-87.6134
5555.5660	-84.6708	-97.6501	-88.9052	-100.4759	-106.6972	-95.2411	-106.1531	-98.1371	-99.6140	-95.6613	-88.1348	-92.2547	-89.2000	-94.3911	-91.4699
5598.6320	-84.1128	-94.8856	-83.1527	-96.3047	-104.0165	-100.6715	-96.5873	-103.7723	-98.0283	-96.8487	-86.0518	-95.3096	-104.7919	-90.8986	-90.0846

Freq	4.1.0	4.2.0	4.3.0	4.1.25	4.2.25	4.3.25	4.1.50	4.2.50	4.3.50	4.1.75	4.2.75	4.3.75	4.1.100	4.2.100	4.3.100
5641.6990	-84.6831	-97.6346	-84.7454	-100.5812	-102.5316	-111.4163	-94.3187	-101.3125	-101.4094	-94.3187	-85.6393	-92.5625	-85.4369	-95.2541	-87.1092
5684.7650	-86.8705	-94.8072	-87.1596	-117.5133	-102.4867	-107.8622	-96.0291	-96.1648	-100.9045	-94.0059	-88.6071	-90.5227	-82.3792	-95.2634	-91.9844
5727.8320	-87.4884	-93.1771	-90.2322	-105.2687	-103.0778	-105.3516	-100.5580	-96.2317	-98.7157	-99.6034	-94.8384	-89.5510	-84.8594	-95.2529	-98.0997
5770.8980	-86.3210	-94.3074	-101.2434	-114.0944	-99.3216	-99.7530	-100.5802	-105.7220	-101.6280	-94.8962	-90.7600	-86.9965	-86.7521	-96.1989	-90.5737
5813.9640	-85.7965	-100.2658	-90.8288	-97.0459	-97.9748	-105.7368	-95.6246	-95.7442	-97.3176	-88.7391	-87.1422	-82.6303	-86.1997	-98.0888	-86.6719
5857.0310	-86.3335	-103.4860	-91.3494	-93.5525	-101.2939	-96.3044	-100.6898	-93.2562	-99.7264	-90.4036	-87.7567	-78.6108	-89.2903	-90.1852	-88.7233
5900.0970	-86.9702	-95.1860	-94.4304	-93.3918	-112.1946	-91.6528	-104.1702	-96.7075	-100.3710	-112.6804	-90.9735	-77.8449	-88.4149	-85.7636	-91.0205
5943.1640	-88.5096	-91.6643	-91.6898	-95.8223	-98.6107	-92.4491	-116.5304	-99.2841	-95.0991	-97.3697	-95.9992	-81.3041	-85.0014	-85.5793	-92.3317
5986.2300	-86.2634	-91.2809	-87.9203	-109.0664	-95.9850	-94.8034	-92.3629	-93.8821	-98.6559	-97.3712	-105.0513	-88.8408	-85.7782	-84.8366	-101.9620
6029.2960	-80.8626	-95.2738	-87.1434	-112.1864	-97.8846	-98.4693	-88.4876	-90.5723	-94.7594	-94.8883	-93.9185	-94.0112	-92.4653	-85.1994	-92.3212
6072.3630	-79.0469	-103.9256	-87.9185	-102.7201	-101.7218	-104.3437	-87.6084	-95.2218	-94.8800	-95.5969	-96.4353	-88.4228	-94.8368	-85.8467	-90.6100
6115.4290	-80.0534	-105.9467	-88.6702	-96.0904	-115.3933	-107.8461	-88.2550	-98.2742	-102.3157	-93.9615	-100.0579	-89.9755	-89.1000	-88.4281	-99.3021
6158.4960	-84.1936	-101.6009	-85.5050	-101.0801	-99.1413	-100.4209	-92.1528	-90.8661	-101.8104	-95.0813	-90.0560	-93.1156	-85.1932	-92.0000	-87.0568
6201.5620	-82.9080	-100.6811	-80.6222	-108.7693	-95.9815	-97.6095	-100.4620	-92.5981	-99.0494	-97.7254	-88.7749	-90.0468	-84.2050	-97.1600	-82.7130
6244.6280	-80.5129	-99.4710	-76.0788	-100.1420	-96.7424	-93.2194	-106.8813	-97.3723	-98.7815	-97.4916	-92.4757	-90.5885	-87.4300	-91.2412	-83.6627
6287.6950	-85.0291	-96.9546	-73.6631	-97.7980	-101.0558	-91.3152	-102.9805	-103.0062	-104.3620	-96.7679	-98.4017	-95.4487	-95.8542	-87.6574	-89.3819
6330.7610	-81.5411	-95.1233	-72.4765	-99.3551	-101.1504	-93.3830	-100.1224	-103.1612	-98.1250	-100.6754	-101.1895	-107.5593	-109.9745	-90.7731	-99.9958
6373.8280	-78.6924	-94.8078	-71.0524	-110.0509	-100.7382	-102.0860	-99.0420	-100.5966	-102.7066	-116.6820	-103.9207	-103.0254	-103.2385	-97.7196	-107.4041
6416.8940	-85.0830	-93.1639	-72.1585	-113.4891	-101.5515	-100.9485	-96.9730	-101.1404	-114.3890	-115.7181	-113.5639	-102.2271	-121.0330	-101.7488	-102.4517
6459.9600	-94.2341	-92.8820	-77.9751	-117.1493	-103.8138	-97.7335	-95.7285	-105.7042	-112.0467	-105.0763	-107.0948	-105.8715	-102.9188	-101.6740	-104.9392
6503.0270	-95.5024	-97.2960	-83.1489	-100.0826	-106.9360	-99.0047	-95.1292	-111.5432	-102.8545	-99.3093	-104.9115	-100.9481	-103.1968	-106.4596	-109.9137
6546.0930	-99.6080	-108.2886	-84.7380	-107.9631	-108.0524	-104.7011	-95.9681	-106.6484	-102.3262	-98.9088	-121.3091	-104.3355	-104.0155	-105.1111	-100.7935
6589.1600	-110.6796	-102.8237	-88.1314	-107.0145	-104.6514	-106.0892	-106.4311	-107.0775	-103.2186	-105.0874	-101.4060	-103.6038	-106.5687	-111.5085	-97.5733
6632.2260	-94.6854	-104.6422	-92.2476	-102.7854	-100.7104	-103.1917	-101.6672	-115.5926	-98.3053	-107.2221	-98.2161	-99.4009	-120.1198	-104.5768	-98.8034
6675.2920	-89.9190	-109.7024	-94.6340	-100.5170	-99.9805	-104.6288	-101.9246	-108.8043	-99.8793	-108.0858	-100.6294	-98.8387	-118.3112	-99.5524	-102.1410
6718.3590	-89.3271	-115.4230	-100.5876	-101.4927	-101.5752	-113.1544	-106.7043	-104.2967	-104.6410	-107.8831	-104.2135	-102.5098	-119.2992	-99.9356	-108.5209
6761.4250	-93.3298	-112.7571	-109.1202	-103.0938	-102.4572	-118.0000	-117.0670	-104.2842	-105.8708	-112.8336	-103.0462	-104.3852	-109.1406	-100.7911	-103.2703
6804.4920	-94.0742	-110.4071	-100.5507	-102.5359	-104.1482	-111.0239	-115.1345	-104.2842	-104.8548	-112.8336	-103.0462	-104.3852	-104.5382	-103.4281	-100.2273
6847.5580	-93.5719	-105.6414	-95.8829	-104.1159	-107.4827	-108.1670	-113.4412	-102.1382	-104.5612	-104.9220	-109.7985	-103.9313	-104.8641	-106.4803	-99.8069
6890.6250	-98.3819	-103.2997	-94.2293	-110.1116	-108.8251	-112.5414	-109.7205	-103.5611	-107.2051	-101.4515	-114.7728	-107.9234	-111.1174	-103.9594	-103.1400
6933.6910	-112.8144	-104.6959	-98.9395	-114.6715	-109.4402	-116.6798	-106.6252	-106.6814	-110.4635	-102.7716	-110.4160	-113.2212	-136.6452	-106.5715	-115.5509
6976.7570	-99.3640	-113.6962	-101.2015	-114.8136	-111.7058	-119.2867	-105.1768	-111.6168	-115.4592	-106.8367	-111.1628	-117.7492	-125.3973	-114.5610	-112.7259
7019.8240	-99.2292	-119.0739	-100.5163	-118.3267	-114.3887	-118.8918	-107.8924	-112.4108	-114.2124	-110.4716	-109.3140	-118.4689	-115.7441	-113.6070	-108.5702
7062.8900	-102.2860	-116.0858	-101.6501	-115.5766	-118.6136	-113.0632	-114.9433	-114.1030	-114.4639	-116.3361	-109.1405	-118.6124	-113.1829	-118.0441	-108.0963
7105.9570	-102.4511	-115.9432	-101.0303	-112.7065	-145.4171	-113.8512	-112.3174	-120.0760	-115.2183	-116.3768	-112.0627	-115.0403	-113.1877	-112.2946	-109.2725
7149.0230	-98.4961	-116.5045	-99.7067	-111.0418	-114.9839	-123.5730	-115.4803	-134.2690	-115.1555	-114.2464	-120.8107	-112.9394	-115.3145	-113.9942	-111.9674
7192.0890	-102.9968	-124.0269	-101.4137	-110.2373	-112.3210	-118.1721	-124.0701	-125.3454	-120.9975	-121.6028	-115.9913	-116.9364	-118.0670	-123.3683	-115.9252
7235.1560	-108.4073	-110.8354	-106.6855	-110.9991	-117.0914	-123.7284	-127.8190	-118.6359	-120.3353	-113.9485	-109.5181	-131.4779	-111.5839	-130.2469	-118.8916
7278.2220	-104.1639	-109.9868	-107.0726	-113.5997	-117.5931	-120.2386	-116.5818	-115.1940	-121.4044	-108.0911	-110.9694	-117.8388	-109.0599	-126.2677	-119.1867
7321.2890	-112.9766	-113.2228	-113.3742	-118.9537	-116.1621	-115.6801	-111.9532	-119.4815	-117.7307	-106.4729	-114.9827	-110.5978	-109.3672	-124.0383	-118.9293
7364.3550	-114.5403	-119.2278	-125.2147	-130.0532	-127.4618	-115.8950	-113.9718	-121.3526	-112.6411	-107.7272	-117.1163	-108.2246	-112.0264	-124.0113	-110.1893
7407.4210	-109.6165	-118.8468	-113.4406	-125.3654	-112.2669	-121.1895	-119.1627	-115.0432	-119.7920	-110.4161	-118.2240	-110.7684	-121.6191	-119.5269	-107.0034
7450.4880	-110.4678	-119.2787	-116.1184	-119.1188	-108.5323	-121.4377	-115.6213	-112.2848	-118.0783	-112.9778	-114.4963	-116.2417	-115.5316	-116.5183	-108.8028

Freq	4.1.0	4.2.0	4.3.0	4.1.25	4.2.25	4.3.25	4.1.50	4.2.50	4.3.50	4.1.75	4.2.75	4.3.75	4.1.100	4.2.100	4.3.100
7493.5540	-125.4459	-117.2944	-114.4004	-116.4923	-112.3802	-123.3725	-118.9327	-111.0264	-112.7779	-123.8604	-111.5218	-117.0434	-112.1989	-121.0412	-114.0516
7536.6210	-116.3978	-118.5935	-108.0052	-122.9492	-124.5324	-127.3208	-124.1123	-113.1241	-112.0201	-114.6411	-111.6198	-126.2905	-111.4608	-118.2095	-117.5534
7579.6870	-117.3021	-129.1660	-109.2051	-120.3714	-123.9023	-122.3162	-134.3563	-124.0447	-112.7636	-114.2240	-115.0721	-115.8011	-112.7044	-118.9779	-119.6290
7622.7530	-115.6265	-121.9759	-112.1915	-118.1095	-118.8741	-113.1609	-128.2782	-125.8151	-112.7093	-119.8263	-119.0959	-109.2850	-116.9029	-125.1961	-114.1376
7665.8200	-116.5560	-118.8470	-118.0445	-114.7885	-117.9023	-111.5481	-117.9419	-128.7888	-111.8400	-123.5450	-113.4442	-109.1953	-111.0294	-117.3501	-114.4980
7708.8860	-116.0309	-119.8329	-129.5258	-112.7410	-121.3846	-115.1817	-112.3351	-120.7205	-112.0685	-116.4602	-111.9185	-114.2588	-108.3676	-126.0049	-118.5729
7751.9530	-111.5277	-119.7637	-118.7369	-114.7019	-111.6524	-122.1591	-109.9330	-120.7457	-118.5676	-112.9416	-117.3114	-118.0292	-110.2472	-114.6235	-131.9212
7795.0190	-113.6198	-116.7105	-111.6483	-118.6306	-114.5454	-118.7408	-121.7755	-115.7608	-114.1324	-113.0971	-113.8534	-119.8500	-115.6798	-116.0556	-117.1503
7838.0850	-116.1772	-112.5415	-113.7340	-117.0191	-125.9480	-118.5650	-120.4578	-116.2962	-110.0809	-113.5702	-113.2091	-120.8839	-112.7199	-119.2672	-117.7069
7881.1570	-115.0642	-111.5815	-125.2279	-117.0499	-116.3105	-121.9279	-124.8163	-116.1162	-111.1668	-111.5663	-116.6741	-116.5649	-110.5029	-120.7578	-123.2768
7924.2380	-112.1886	-116.6197	-113.8487	-119.1315	-114.2381	-124.0421	-115.4891	-119.3190	-117.0327	-112.0138	-124.4802	-111.6873	-109.1408	-124.3868	-116.9743
7967.2850	-112.3301	-124.4337	-111.5608	-124.8741	-115.9736	-132.7196	-113.3205	-117.3426	-138.7488	-114.7584	-118.6704	-112.7894	-110.7777	-122.3523	-115.4192
8010.3510	-111.8561	-125.8095	-110.3568	-126.7932	-118.4128	-120.0829	-114.0439	-116.4829	-123.1665	-114.6108	-115.7799	-119.9228	-114.9965	-122.8230	-132.2221
8053.4170	-110.5754	-116.5044	-111.2163	-116.1669	-124.5694	-118.3977	-118.9236	-118.7794	-117.5997	-115.4750	-114.3791	-130.7227	-119.5163	-115.7234	-116.0046
8096.4840	-114.5646	-112.0144	-117.8476	-117.8354	-129.8570	-125.9969	-118.9236	-118.7794	-117.5997	-120.3469	-111.2221	-136.5612	-115.5682	-117.5583	-115.0294
8139.5500	-122.5269	-113.7051	-129.7771	-117.2924	-119.2424	-118.8116	-128.4332	-119.0123	-115.1568	-121.8248	-110.7215	-120.6350	-115.8206	-122.7242	-115.0539
8182.6170	-114.9437	-115.4148	-128.8241	-112.9343	-118.8706	-119.3670	-129.2915	-118.1310	-116.9551	-119.2921	-111.8963	-115.9435	-120.9096	-114.6020	-120.3363
8225.6830	-113.8871	-113.4971	-120.7634	-115.1332	-120.9934	-120.9401	-120.6452	-117.5731	-112.2719	-129.1125	-111.1395	-111.1739	-126.6062	-116.2992	-115.9451
8268.7500	-112.8727	-112.5335	-117.0704	-118.2558	-110.5122	-110.7162	-117.6722	-118.5223	-110.5779	-125.0371	-113.0638	-109.5199	-117.9215	-123.1818	-111.0152
8311.8160	-114.9437	-115.4148	-128.8241	-112.9343	-118.8706	-119.3670	-116.0635	-114.0352	-125.6532	-123.6721	-125.5377	-115.8447	-114.0176	-120.9516	-111.5969
8354.8820	-117.3071	-115.4394	-119.1590	-118.6608	-110.1860	-109.8829	-118.1939	-112.8223	-114.9034	-120.1964	-125.3772	-119.9001	-112.6369	-121.3206	-114.7688
8397.9490	-122.9785	-117.5092	-116.4609	-112.2510	-111.3265	-113.3477	-118.1939	-112.8223	-114.9034	-120.1964	-125.3772	-119.9001	-112.6369	-121.3206	-114.7688
8441.0150	-117.3399	-116.3923	-112.1855	-108.8863	-116.9165	-115.7447	-120.0520	-112.2648	-119.4334	-119.6724	-115.9136	-115.1272	-134.6536	-116.4890	-111.0268
8484.0820	-113.6776	-117.5287	-113.0959	-109.2417	-121.8493	-126.7399	-125.6418	-113.7553	-119.0350	-120.3184	-114.0318	-116.0748	-125.8139	-121.2260	-113.1188
8527.1480	-111.8252	-122.3788	-119.5583	-110.6330	-123.1779	-119.6329	-125.2977	-112.0053	-114.2499	-123.1227	-116.3970	-122.4756	-123.1939	-119.9745	-116.3581
8570.2140	-112.1372	-119.9607	-121.3900	-111.6136	-118.3768	-117.4875	-115.5570	-111.5369	-114.0992	-115.6572	-127.8889	-115.1605	-125.4603	-117.4894	-118.1665
8613.2810	-112.3025	-121.4030	-133.1660	-112.4591	-115.4599	-117.7020	-112.2077	-121.4761	-117.9555	-113.5017	-116.6889	-112.1391	-119.1618	-119.7279	-119.9133
8656.3470	-116.1727	-119.8657	-115.9094	-112.2008	-128.3560	-114.6993	-114.8694	-120.8696	-124.6216	-112.1002	-112.2597	-114.8626	-125.3600	-116.4154	-130.6610
8699.4140	-121.3199	-113.3953	-113.0391	-114.6545	-125.6798	-112.6727	-122.0399	-128.0893	-113.6451	-111.5970	-113.4862	-136.9818	-122.4027	-114.3311	-127.3901
8742.4800	-128.5854	-113.7256	-113.4045	-117.7814	-124.1362	-112.2059	-127.8875	-123.0872	-112.1673	-113.3522	-117.8213	-116.5210	-115.6721	-114.8082	-117.1779
8785.5460	-124.4723	-123.3832	-112.0169	-116.6205	-118.1253	-115.7097	-116.4029	-116.1728	-116.5264	-117.4112	-117.8952	-111.9569	-115.7121	-118.3375	-113.0889
8828.6130	-122.8548	-129.5909	-111.5523	-111.0302	-114.5277	-119.5038	-110.8860	-115.3387	-119.5245	-122.4754	-117.7597	-111.1198	-115.7543	-111.6347	-112.1425
8871.6790	-111.5803	-116.4434	-112.2827	-109.5338	-114.6004	-118.4853	-109.7821	-113.4254	-114.5873	-124.7088	-121.4279	-111.6960	-112.8941	-109.1987	-113.0818
8914.7460	-110.9927	-115.4075	-112.6932	-110.5538	-114.6004	-118.4853	-110.7857	-112.3626	-116.5250	-116.3132	-121.4217	-111.1422	-111.1427	-113.2202	-113.3500
8957.8120	-115.0896	-118.0769	-114.6367	-111.3548	-113.3595	-130.9075	-110.6470	-114.9840	-114.5957	-114.3974	-119.4882	-110.5651	-111.0739	-120.7445	-111.7836
9000.8780	-117.8336	-115.8505	-121.4267	-111.5607	-110.6885	-114.0065	-111.0904	-117.0715	-111.3847	-115.2785	-119.6551	-112.7613	-112.2325	-122.3278	-112.6896
9043.9450	-117.7455	-122.6339	-121.0643	-111.6233	-112.0973	-113.3688	-117.2755	-113.1344	-111.8812	-117.9219	-116.0710	-117.7968	-117.2077	-119.6266	-120.4658
9087.0110	-115.8564	-114.9435	-118.2020	-112.3820	-117.0210	-119.6497	-118.2691	-113.0122	-111.8044	-119.9524	-116.1651	-115.7100	-118.5445	-119.2357	-127.1016
9130.0780	-114.9607	-109.1754	-122.5094	-115.2586	-120.0072	-119.9225	-118.2691	-113.0122	-111.8044	-119.9524	-116.1651	-115.7100	-118.5445	-119.2357	-127.1016
9173.1440	-116.6286	-110.5894	-123.3185	-120.2223	-117.0064	-115.5573	-117.4366	-110.6109	-117.1139	-114.9563	-143.2765	-114.5950	-114.8560	-124.5275	-116.5651
9216.2100	-117.5444	-115.2980	-127.1593	-119.9251	-114.8873	-116.5966	-117.4366	-110.6109	-117.1139	-115.1979	-120.9961	-115.3232	-115.2994	-123.8079	-112.9370
9259.2770	-111.7895	-114.8062	-116.7863	-120.2478	-116.7606	-114.7561	-114.8847	-109.0640	-122.2511	-117.4755	-115.7147	-118.5171	-111.0049	-118.5014	-111.4744
9302.3430	-110.6569	-114.7226	-120.6292	-137.1806	-120.9869	-116.7768	-113.3801	-112.0779	-124.6949	-114.5564	-112.8024	-128.0596	-109.9028	-115.3092	-110.3652

Freq	4.1.0	4.2.0	4.3.0	4.1.25	4.2.25	4.3.25	4.1.50	4.2.50	4.3.50	4.1.75	4.2.75	4.3.75	4.1.100	4.2.100	4.3.100
9345.4100	-113.0419	-114.0706	-142.2530	-116.3687	-125.0143	-127.9279	-120.3152	-117.0389	-114.1208	-111.7527	-112.9286	-122.7132	-113.5618	-110.9160	-108.9715
9388.4760	-116.7246	-112.2816	-128.2415	-113.7598	-123.6017	-120.1995	-119.2322	-115.6586	-112.2691	-110.9448	-111.8981	-122.4822	-119.1264	-108.1644	-109.3870
9431.5420	-116.1807	-111.1733	-129.5093	-114.6389	-127.9146	-124.6689	-118.5756	-111.9311	-116.1218	-114.0658	-112.3423	-120.2951	-116.6300	-108.8218	-110.9591
9474.6090	-119.9013	-111.5649	-123.9891	-114.1405	-130.9326	-123.6527	-118.4640	-109.8616	-117.4156	-120.1739	-118.3396	-121.3273	-112.7018	-110.8237	-114.6356
9517.6750	-126.1583	-112.4040	-119.8248	-112.9460	-117.9041	-117.5706	-116.6947	-109.3172	-114.9262	-119.6089	-122.2087	-122.4605	-111.5047	-113.1680	-117.5743
9560.7420	-119.2268	-112.3654	-120.3061	-113.3375	-115.4314	-115.3731	-118.1271	-108.9165	-118.4467	-112.8659	-113.9342	-122.6034	-112.0115	-115.4235	-121.3229
9603.8080	-120.1973	-113.7381	-111.5903	-114.6158	-120.7399	-110.2956	-119.7355	-109.5028	-120.3493	-117.0025	-115.7070	-123.7412	-112.9427	-118.3055	-127.6800
9646.8750	-115.4302	-119.0394	-107.7012	-122.9457	-123.3314	-109.4892	-118.8176	-110.7855	-117.2475	-134.3098	-120.7514	-122.7194	-119.3591	-118.1376	-137.1638
9689.9410	-117.3635	-122.7387	-106.9476	-132.1665	-121.7775	-112.7162	-118.5070	-113.0685	-125.6664	-132.0565	-118.1455	-135.4382	-121.2044	-117.3396	-127.2449
9733.0070	-128.4858	-121.6107	-108.9795	-115.6338	-117.7302	-116.6676	-112.7428	-116.1420	-115.0087	-119.0922	-116.4006	-124.2164	-113.7287	-118.6114	-119.7164
9776.0740	-120.9465	-117.3638	-113.6232	-111.5049	-114.8835	-115.6250	-112.1794	-116.3381	-109.6737	-113.6773	-116.7523	-122.0461	-111.6064	-119.2638	-118.6486
9819.1400	-117.9157	-114.0629	-116.7984	-113.2124	-113.1985	-114.5091	-111.2013	-116.6851	-111.0833	-112.6930	-130.1555	-120.7480	-112.1407	-122.3728	-116.3804
9862.2070	-118.0015	-117.0183	-116.1777	-124.4858	-116.1837	-116.1483	-109.8526	-119.7431	-117.3811	-115.2388	-120.7455	-126.5943	-112.7327	-115.9586	-115.2125
9905.2730	-116.2508	-126.2678	-115.0655	-116.9992	-121.8293	-121.8781	-111.2471	-124.5713	-125.0941	-117.5842	-122.1555	-122.9175	-112.4017	-116.9630	-118.6873
9948.3390	-113.0406	-114.9946	-112.8502	-115.2941	-118.2534	-136.8472	-116.3043	-126.2783	-118.3992	-117.5942	-122.1555	-122.0959	-112.9283	-116.9749	-111.8107
9991.4060	-110.0237	-116.4714	-114.4187	-117.3033	-116.3290	-125.5164	-123.2590	-119.5360	-115.2821	-116.4260	-129.5935	-122.9305	-112.1199	-116.8695	-108.9257
10034.4720	-108.4489	-131.5914	-121.1466	-115.1774	-118.3100	-124.2142	-116.2277	-119.5119	-114.8908	-114.0553	-119.0023	-124.9305	-112.1199	-116.8695	-108.9257
10077.5390	-111.0543	-126.4545	-121.2225	-116.5418	-113.9520	-127.1825	-110.8031	-114.6561	-115.2698	-121.6382	-112.6115	-118.1178	-117.1564	-114.9138	-109.4696
10120.6050	-111.7474	-125.2754	-117.1141	-122.0667	-114.1897	-119.2597	-109.5856	-111.5429	-114.1618	-121.4847	-110.6766	-114.3140	-120.8619	-112.4802	-114.0450
10163.6710	-110.5630	-125.8271	-114.9994	-113.7893	-115.2566	-138.8774	-120.7245	-115.4482	-110.9346	-118.6837	-113.0346	-112.7673	-111.8468	-114.8817	-121.2275
10249.8040	-140.7645	-118.7993	-129.2810	-110.5467	-117.2134	-112.7929	-122.2353	-125.4835	-108.4973	-123.4044	-116.3352	-113.3371	-111.9959	-124.6409	-118.8487
10292.8710	-124.3812	-117.8695	-118.0349	-110.9807	-118.4629	-113.6750	-119.9945	-129.9630	-112.5956	-116.1306	-111.6419	-117.0563	-118.0637	-119.6776	-115.9677
10335.9370	-128.3303	-112.4928	-116.5487	-114.2569	-118.2578	-114.3001	-115.1957	-124.5128	-121.8404	-115.0014	-113.0933	-117.3617	-135.7017	-115.0308	-116.6937
10379.0030	-117.1345	-110.6618	-117.9094	-116.7462	-114.9088	-113.2930	-111.9653	-116.6733	-127.2896	-113.7363	-112.8904	-115.0576	-125.8584	-116.2148	-117.0005
10422.0700	-112.7603	-109.1233	-120.1114	-112.8014	-120.9803	-109.9177	-111.6191	-118.4425	-134.2421	-114.7451	-109.8061	-115.1494	-120.6645	-111.6800	-115.6952
10465.1360	-111.4077	-110.1908	-115.9919	-111.0585	-117.7790	-109.9024	-117.6771	-110.5435	-110.7943	-123.2785	-114.7490	-112.6134	-122.6765	-111.3882	-122.8063
10508.2030	-111.9297	-114.7285	-111.8422	-115.0532	-112.6126	-113.3143	-119.3222	-109.0203	-108.9808	-126.8778	-114.7490	-112.6134	-108.7865	-134.9752	-118.2340
10551.2690	-114.2810	-115.7925	-109.3888	-133.6530	-120.6667	-115.2095	-119.3222	-109.0203	-108.9808	-118.4332	-115.7480	-112.2103	-108.7865	-134.9752	-118.2340
10594.3350	-128.2899	-111.0353	-110.2858	-113.6214	-118.9295	-125.8157	-113.5505	-111.9488	-112.7407	-115.7637	-114.8024	-111.6577	-110.6489	-121.3944	-115.1087
10637.4020	-112.8625	-111.0800	-114.0753	-111.0588	-118.9103	-120.4396	-111.3537	-117.8202	-125.8178	-118.1999	-117.3026	-110.9583	-115.2610	-112.9850	-120.4554
10680.4680	-112.3536	-118.8042	-119.2821	-112.6709	-130.7703	-123.2222	-113.2528	-120.6111	-119.6930	-115.6474	-117.4546	-111.2359	-127.9968	-110.3318	-119.3369
10723.5350	-112.8504	-116.2810	-120.6879	-118.3897	-129.7168	-118.0280	-113.3437	-122.3424	-117.0186	-116.4206	-117.1562	-112.1656	-118.1464	-111.1557	-114.7563
10766.6010	-118.6048	-112.5137	-121.3147	-123.5892	-114.4034	-133.1317	-118.6009	-127.7271	-123.3334	-121.2860	-119.5374	-112.5844	-110.3463	-114.2199	-117.4243
10809.6670	-118.2244	-115.2446	-126.6558	-114.5892	-114.4034	-133.1317	-115.0508	-117.5712	-122.3515	-118.2860	-119.5374	-112.5844	-110.3463	-114.2199	-117.4243
10852.7340	-115.3493	-120.0502	-122.6231	-111.4573	-119.7908	-121.8238	-112.6017	-117.3937	-121.3325	-121.0158	-134.0179	-114.8875	-108.4684	-115.3773	-118.8561
10895.8000	-110.2294	-121.2300	-118.2018	-110.6102	-126.4158	-121.0888	-114.9969	-123.3979	-126.0116	-115.8831	-119.3631	-116.2719	-118.3606	-116.8946	-122.5549
10938.8670	-109.8556	-121.0273	-122.7786	-114.2785	-119.2837	-121.9449	-117.8112	-121.2420	-116.8495	-115.5221	-115.2211	-114.7619	-112.5633	-113.4975	-126.6634
10981.9330	-114.4353	-120.0134	-118.9570	-112.2820	-124.9570	-113.8638	-116.0792	-113.1021	-122.9208	-119.2058	-116.0688	-117.8074	-112.2620	-113.4555	-120.6162
11025.0000	-129.3317	-127.1077	-113.8781	-114.8282	-120.7522	-108.0651	-117.3860	-109.7411	-123.2370	-122.8734	-113.8605	-120.1673	-123.2212	-117.0425	-116.9216
11068.0660	-134.3505	-117.1409	-114.6512	-113.6375	-126.0493	-106.5404	-121.7234	-107.4474	-114.6544	-115.3335	-113.8919	-116.7733	-120.3696	-131.6752	-124.3398
11111.1320	-122.1978	-116.8041	-117.1546	-114.9445	-121.4310	-108.8568	-123.9953	-107.8031	-111.4745	-117.0825	-115.8360	-115.7013	-132.5718	-118.0653	-123.0729
11154.1990	-138.1009	-126.7576	-113.6143	-115.9678	-119.2686	-111.6381	-124.7280	-112.2082	-111.3103	-123.4452	-116.0104	-118.2442	-118.7884	-116.9761	-120.6030

Freq	4.1.0	4.2.0	4.3.0	4.1.25	4.2.25	4.3.25	4.1.50	4.2.50	4.3.50	4.1.75	4.2.75	4.3.75	4.1.100	4.2.100	4.3.100
11197.2650	-116.6817	-118.9517	-109.8155	-115.8764	-123.5259	-113.8896	-115.2353	-119.5618	-114.1273	-118.9688	-123.7906	-114.6408	-116.0859	-126.6855	-128.8895
11240.3320	-115.6961	-115.7366	-109.0125	-120.2635	-119.5674	-117.0178	-113.1560	-113.8006	-117.0575	-114.0121	-120.5467	-115.0673	-117.7836	-133.5814	-119.2846
11283.3980	-115.3007	-113.9706	-108.4513	-122.1148	-119.4219	-116.9069	-113.0723	-110.5277	-117.8670	-113.7867	-115.0810	-120.5399	-121.7100	-120.1303	-117.9856
11326.4640	-114.2881	-110.6599	-108.4630	-118.5387	-129.4901	-115.3459	-115.1904	-110.1674	-119.1054	-119.9388	-117.5644	-118.4946	-115.8050	-118.4504	-121.9744
11369.5310	-112.6305	-110.6974	-111.8016	-114.6832	-122.6528	-113.7010	-116.9026	-109.8706	-116.5888	-118.1846	-117.7879	-116.6947	-117.1065	-116.8145	-124.7608
11412.5970	-111.7647	-112.2311	-117.7291	-118.1228	-119.1399	-109.1626	-118.6220	-108.7929	-113.9223	-113.5422	-118.2194	-122.4572	-131.7921	-111.0816	-122.2188
11455.6640	-112.4462	-111.8805	-116.7354	-119.7486	-117.9291	-107.3425	-120.4447	-108.8396	-111.8384	-117.9870	-120.3795	-123.4764	-123.2861	-110.5404	-116.1474
11498.7300	-113.4644	-110.5751	-117.8328	-112.1108	-126.0837	-108.3146	-123.8080	-111.1216	-109.8016	-115.7264	-119.1188	-124.6794	-112.9529	-114.3871	-113.4270
11541.7960	-115.6797	-110.1614	-123.4796	-110.5820	-118.0255	-111.3824	-113.8008	-116.5471	-109.8414	-112.1827	-116.9642	-131.9096	-109.0521	-111.6849	-113.4338
11584.8630	-116.0211	-112.5423	-113.1929	-110.7265	-113.0177	-117.7055	-109.5054	-119.1379	-113.2616	-112.9078	-119.4137	-120.5380	-110.1904	-111.6117	-113.3868
11627.9290	-115.6501	-118.4828	-111.5678	-114.7984	-112.4528	-120.2044	-112.0221	-113.9103	-119.2751	-114.5202	-118.6656	-115.6176	-119.2779	-114.5911	-112.3707
11670.9960	-113.0399	-127.1310	-113.1260	-118.7655	-116.2158	-112.6414	-120.1120	-111.3806	-121.3622	-117.7851	-113.5720	-111.4784	-122.2848	-117.0690	-111.6034
11714.0620	-111.3878	-129.3009	-115.9050	-117.0838	-118.1215	-113.6105	-114.2530	-118.2520	-115.7513	-123.6747	-115.4449	-130.7330	-119.4407	-115.6935	-112.3736
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11800.1950	-110.3892	-120.7547	-121.7480	-119.6649	-111.1544	-117.8051	-108.2531	-119.6112	-107.9703	-118.6849	-115.2195	-116.6568	-111.2511	-118.0449	-114.9445
11843.2610	-115.7444	-114.8221	-125.3502	-122.1056	-109.4676	-120.4154	-109.5256	-117.2714	-109.8672	-115.1418	-113.7389	-115.7117	-130.6956	-119.6651	-110.1254
11886.3280	-114.4713	-110.8526	-127.5573	-114.3362	-108.5322	-117.7690	-113.0098	-117.9138	-111.5801	-119.1586	-115.8269	-115.0088	-111.3826	-118.1255	-109.0492
11929.3940	-110.9486	-115.3463	-122.9692	-115.9640	-109.1964	-112.0125	-116.2297	-116.2239	-113.4896	-119.4752	-121.6115	-112.5573	-112.1583	-115.5532	-108.0049
11972.4600	-114.0777	-120.0628	-121.1353	-125.8739	-110.7742	-110.0609	-115.3513	-113.8913	-124.4089	-115.7439	-125.6614	-110.8555	-111.9166	-115.1987	-107.8288
12015.5270	-118.2033	-112.6881	-120.4360	-119.5986	-113.8804	-109.8348	-113.2679	-116.2991	-118.3271	-112.2942	-127.3147	-132.6856	-111.6082	-119.3268	-111.7482
12058.5930	-123.3945	-117.6356	-133.7575	-113.1013	-123.8631	-110.7799	-115.8744	-117.0514	-120.8997	-111.5635	-124.2998	-116.2343	-112.2324	-111.2947	-117.3607
12101.6600	-118.1989	-123.2906	-130.8468	-113.2139	-117.6567	-114.5764	-116.9831	-118.9873	-117.6160	-114.6608	-121.5003	-114.3243	-132.8336	-109.6687	-118.6053
12144.7260	-114.0191	-117.0827	-131.2701	-122.0156	-113.6295	-120.6646	-113.2250	-125.6704	-119.8851	-118.2782	-121.7459	-114.2017	-116.3526	-132.3559	-116.6639
12187.7920	-114.0379	-120.8778	-134.8279	-121.2773	-114.8721	-128.1495	-118.2816	-117.0450	-117.0274	-122.9856	-124.9956	-117.7668	-119.9197	-118.3670	-119.0668
12230.8590	-116.8719	-129.9234	-119.3146	-123.4715	-119.8773	-122.6670	-120.6821	-112.9750	-112.0295	-129.9568	-123.1839	-120.8099	-116.4076	-117.7066	-116.0094
12273.9250	-117.0645	-117.1430	-116.7255	-128.1082	-116.9341	-117.4658	-114.0273	-112.9896	-112.5410	-130.2233	-120.1834	-118.1595	-115.6025	-113.3356	-113.9692
12360.0580	-118.6594	-114.6643	-122.3619	-119.5411	-109.9151	-117.9603	-114.7097	-117.4644	-115.9759	-123.9376	-118.0309	-122.8807	-116.5283	-112.4139	-117.5355
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12489.2570	-115.5956	-119.3117	-112.3050	-113.2476	-127.0442	-126.0153	-117.7034	-113.0286	-115.1285	-114.9014	-109.8146	-118.0628	-117.3543	-114.8081	-112.3599
12532.3240	-118.8831	-125.9550	-117.2697	-113.3562	-114.1346	-120.8598	-116.6429	-118.7409	-118.1471	-111.8389	-111.9597	-112.4271	-119.5243	-116.6122	-116.5617
12575.3900	-118.2622	-122.3406	-110.8336	-121.1782	-112.9041	-116.5339	-124.8198	-122.4387	-120.0573	-110.8840	-115.0326	-111.0049	-116.6546	-118.4358	-124.4632
12618.4570	-116.2270	-113.8923	-111.1147	-123.3667	-112.9173	-112.9158	-120.6171	-120.0522	-118.5595	-114.0941	-118.6658	-116.8602	-112.4139	-120.4649	-119.7811
12661.5230	-123.6891	-111.9033	-120.9572	-119.5872	-113.0116	-114.2072	-120.7276	-113.3155	-118.1483	-121.2603	-122.9580	-116.1741	-111.5787	-116.0238	-115.1946
12704.5890	-126.0318	-115.9496	-119.4007	-123.4738	-115.1294	-114.6086	-120.5386	-111.9407	-122.7440	-117.2647	-126.5084	-110.4193	-112.4139	-120.4649	-119.7811
12747.6560	-127.2062	-119.6328	-111.5199	-123.1972	-116.0566	-113.4966	-121.2946	-112.9341	-128.0535	-119.4875	-128.2512	-110.9606	-113.0950	-115.5257	-114.5647
12790.7220	-123.7648	-114.8325	-112.5154	-119.8961	-115.0490	-114.6488	-116.5881	-113.3926	-121.2423	-123.5953	-127.7122	-114.5831	-112.4146	-118.3869	-116.7023
12833.7890	-120.0824	-113.4177	-129.0696	-115.6117	-114.9409	-120.4370	-113.8564	-114.8683	-120.1934	-114.6966	-120.5618	-117.5790	-113.2259	-118.5081	-118.0157
12876.8550	-114.7850	-119.3377	-110.9033	-112.8484	-114.8908	-146.1102	-120.1758	-118.5635	-123.9991	-108.9973	-120.1759	-115.5391	-116.4250	-117.0431	-115.9077
12919.9210	-111.1149	-125.8963	-108.8261	-115.9240	-115.2933	-121.1654	-119.1220	-128.6640	-121.8528	-109.9959	-125.6284	-118.2177	-117.8411	-117.3883	-116.6227
12962.9880	-110.3047	-120.5139	-111.2907	-122.6855	-118.2727	-121.9410	-115.0176	-112.1360	-114.5696	-111.3043	-120.0863	-124.3365	-119.8656	-118.0631	-120.1445
13006.0540	-112.6621	-124.1771	-117.5156	-115.2793	-120.6753	-126.0098	-116.8312	-109.1309	-115.8579	-116.2420	-116.6337	-122.4392	-120.2156	-117.8753	-118.6681

Freq	4.1.0	4.2.0	4.3.0	4.1.25	4.2.25	4.3.25	4.1.50	4.2.50	4.3.50	4.1.75	4.2.75	4.3.75	4.1.100	4.2.100	4.3.100
13049.1210	-117.1386	-122.1392	-122.0234	-114.5682	-121.3933	-117.3046	-123.0830	-109.6998	-123.9433	-115.0656	-115.5285	-149.2810	-119.0520	-115.7483	-115.5554
13092.1870	-119.7799	-117.9242	-126.2092	-121.6799	-120.3987	-119.2693	-117.3292	-112.1947	-125.1066	-114.7637	-118.6021	-122.2875	-122.6335	-111.3229	-114.5620
13135.2530	-119.7323	-121.1361	-120.5500	-124.9863	-119.6413	-118.1291	-116.8718	-112.9436	-119.9793	-117.8630	-123.8023	-138.2068	-117.2913	-113.4989	-114.8629
13178.3200	-120.0169	-124.5087	-118.4692	-117.9926	-124.2381	-115.7092	-117.6845	-116.3093	-117.2883	-115.9169	-116.8478	-116.2098	-119.9100	-121.3599	-114.0281
13221.3860	-126.1741	-114.9579	-124.8211	-117.1776	-112.3371	-118.4343	-119.0101	-118.7875	-119.4054	-111.6263	-113.6155	-114.2361	-129.3349	-112.5934	-115.6043
13264.4530	-119.8187	-114.0103	-131.9786	-116.3722	-108.3719	-118.4765	-119.0012	-117.9626	-132.5669	-111.7852	-116.3881	-115.4517	-122.6486	-108.8503	-111.6371
13307.5190	-127.6779	-114.0543	-123.3408	-120.9147	-108.6822	-118.4981	-119.1929	-115.8990	-125.2847	-111.1450	-117.5554	-111.9779	-118.0323	-109.7210	-108.9912
13350.5850	-119.5129	-112.7666	-120.6717	-123.0983	-111.7967	-122.9235	-123.6964	-114.1556	-113.6993	-110.2855	-114.8713	-108.7010	-114.2575	-114.5319	-109.8106
13393.6520	-115.0851	-113.3298	-128.1899	-124.6292	-110.7063	-117.9812	-122.9055	-112.5552	-111.9798	-114.8476	-117.9835	-110.8065	-113.7761	-119.4459	-117.1125
13436.7180	-111.7092	-115.2852	-121.8496	-134.7652	-110.9205	-113.2000	-113.3940	-110.5457	-121.5663	-121.0653	-135.2387	-117.7066	-122.5620	-115.5399	-116.2555
13479.7850	-110.3927	-115.3345	-111.9339	-136.2322	-114.0121	-111.7953	-110.8148	-111.5902	-116.7219	-121.6426	-118.6524	-116.1199	-127.0597	-113.5526	-120.8083
13522.8510	-110.2144	-116.4240	-110.3659	-117.9759	-112.8844	-113.5909	-112.1245	-116.7107	-114.2805	-120.4980	-117.1195	-115.8461	-124.5640	-112.5886	-123.2715
13565.9170	-109.4179	-114.4802	-114.5383	-113.3719	-109.3642	-117.8230	-119.5677	-122.0504	-123.6754	-112.0674	-122.3980	-116.3078	-117.8360	-112.5252	-115.9196
13608.9840	-110.5868	-117.5861	-123.9027	-110.7881	-109.1343	-110.5940	-120.9292	-120.6834	-122.2950	-113.3842	-121.3054	-116.4067	-117.8360	-112.5252	-115.9196
13652.0500	-113.9916	-125.0457	-121.1408	-109.5187	-112.0132	-109.6213	-117.9214	-131.8513	-126.2489	-127.0991	-115.8564	-121.6081	-114.9184	-113.1086	-112.6865
13695.1170	-115.3597	-111.9046	-113.9963	-109.5187	-112.0132	-109.6213	-117.9214	-142.4740	-116.8317	-116.7451	-114.1627	-114.2975	-115.3750	-115.3212	-121.2721
13738.1830	-117.7615	-108.7206	-113.7608	-113.4065	-118.4132	-108.8070	-140.1378	-142.4740	-116.6644	-118.6594	-111.6371	-112.9357	-128.0812	-117.3342	-124.2434
13781.2500	-120.6327	-111.4882	-118.6852	-118.4756	-115.4945	-111.1844	-115.8586	-128.2526	-116.6644	-119.8004	-116.8223	-112.2897	-125.4107	-118.7727	-116.3892
13824.3160	-121.2319	-122.1650	-126.1994	-113.3469	-109.1247	-116.9905	-115.9656	-131.9781	-117.4488	-119.6702	-115.6729	-116.3372	-125.4107	-118.7727	-116.3892
13867.3820	-120.2375	-121.6271	-122.1652	-112.1164	-108.0228	-123.9026	-124.1731	-120.1860	-117.0457	-119.8327	-114.2409	-137.3857	-124.3421	-120.6733	-116.7435
13910.4490	-120.7209	-125.2645	-114.8148	-113.7437	-110.8422	-117.6669	-116.3197	-115.5248	-117.4617	-131.1849	-116.1068	-121.0707	-121.2544	-116.9961	-116.5428
13953.5150	-118.2771	-119.2418	-111.7458	-116.6381	-121.3060	-116.8436	-131.5899	-115.2590	-115.1584	-116.1249	-110.3120	-112.5063	-132.1715	-113.4906	-110.2093
13996.5820	-112.8388	-126.5311	-111.3476	-116.7881	-121.3060	-116.8436	-114.9278	-123.6731	-115.8374	-131.2849	-107.7484	-109.6585	-119.9442	-112.2020	-108.2154
14039.6480	-113.2213	-115.1516	-112.2088	-115.7324	-112.8458	-117.6596	-112.3915	-129.6740	-113.5220	-115.4834	-107.7484	-109.6585	-119.9442	-112.2020	-108.2154
14082.7140	-118.7650	-113.0199	-111.9397	-112.3711	-111.5740	-115.6799	-117.9963	-120.5408	-112.9303	-124.0670	-108.5084	-111.7620	-115.3964	-115.1915	-108.9730
14125.7810	-117.6196	-113.3274	-111.3252	-111.8193	-111.6734	-115.5382	-123.0896	-113.4550	-110.7662	-129.7377	-112.7376	-120.6856	-114.1625	-130.3925	-111.7087
14168.8470	-116.2619	-113.2766	-111.2707	-116.2241	-114.9336	-116.1002	-117.2469	-112.3829	-112.3028	-128.1059	-117.8506	-128.0655	-117.4822	-132.6584	-117.6744
14211.9140	-113.2970	-111.8528	-112.6165	-119.0723	-124.4604	-115.5883	-116.8116	-117.5945	-115.0349	-120.7431	-114.1492	-126.0604	-124.6180	-121.2383	-114.7859
14254.9800	-110.9389	-114.6779	-118.1550	-116.3998	-126.9493	-114.4150	-115.8141	-142.2284	-129.2847	-121.0188	-113.6064	-125.7632	-116.2575	-114.4506	-117.0440
14298.0460	-110.8185	-121.5520	-122.6767	-114.8808	-117.6888	-127.8116	-114.1795	-126.5844	-115.7906	-116.6211	-116.5525	-115.7999	-116.2575	-114.4506	-117.0440
14341.1130	-113.6577	-114.1863	-117.2040	-112.4541	-117.9572	-112.4119	-115.0023	-122.6432	-111.5037	-112.1272	-120.5454	-111.6846	-111.7028	-113.7480	-121.2493
14384.1790	-120.7581	-109.4549	-113.2186	-111.1348	-118.4242	-107.1193	-129.7695	-116.9059	-112.4344	-111.3056	-118.8489	-110.5548	-113.5450	-111.9272	-120.6650
14427.2460	-113.5988	-104.7593	-107.3989	-107.4133	-106.1183	-98.1137	-115.5061	-112.8317	-107.5205	-107.6415	-115.6259	-105.9741	-120.3824	-98.6328	-108.9208
14470.3120	-101.1881	-98.9197	-102.0824	-95.0335	-97.1713	-90.0477	-106.1749	-106.6323	-96.5098	-100.2415	-122.6272	-100.6338	-105.7886	-90.3254	-99.1318
14513.3780	-97.3483	-96.2701	-101.7456	-90.7589	-93.8002	-88.2914	-101.4188	-102.4849	-91.1615	-97.7288	-109.1609	-102.9650	-101.6355	-88.1855	-96.6469
14556.4450	-99.2972	-98.6156	-107.0682	-92.3579	-96.7842	-94.1681	-102.7610	-103.9084	-91.1161	-100.2329	-107.9450	-111.0891	-99.9203	-93.2671	-101.8507
14599.5110	-106.7779	-107.4018	-113.8194	-98.6185	-111.4601	-107.9696	-107.2881	-110.8893	-96.8860	-103.7499	-107.0120	-103.0850	-103.7175	-108.2418	-117.2477
14642.5780	-124.6277	-116.8658	-113.8844	-105.4596	-111.6636	-112.1272	-112.0402	-116.8169	-107.4420	-105.5245	-105.6620	-107.7484	-119.9880	-103.2256	-107.9527
14685.6440	-119.2017	-117.1931	-113.0555	-110.4013	-113.8173	-112.6721	-111.3753	-123.2077	-109.4425	-108.0432	-105.9816	-117.0271	-118.4537	-111.6729	-107.0260
14728.7100	-112.3819	-121.3618	-106.0183	-110.0732	-103.8310	-101.7566	-102.7253	-117.1955	-106.4514	-101.7825	-106.1848	-107.1597	-112.2779	-102.1111	-100.1322
14771.7770	-109.4217	-106.5348	-101.4367	-98.1622	-98.9941	-99.9428	-98.2234	-108.7109	-118.0890	-95.8197	-105.3972	-96.6864	-102.7763	-96.5895	-96.8263
14814.8430	-98.0377	-97.6712	-101.5805	-92.0680	-107.9030	-96.7344	-98.4329	-106.3352	-92.7739	-94.8463	-105.1740	-94.4341	-96.0026	-102.2169	-102.6109
14857.9100	-94.6317	-93.7933	-101.8992	-88.3256	-93.7275	-89.6296	-97.7409	-100.7400	-87.7306	-94.8812	-104.6692	-105.0147	-95.0692	-89.1408	-97.3132

Freq	4.1.0	4.2.0	4.3.0	4.1.25	4.2.25	4.3.25	4.1.50	4.2.50	4.3.50	4.1.75	4.2.75	4.3.75	4.1.100	4.2.100	4.3.100
14900.9760	-96.0387	-94.5064	-101.2883	-89.1679	-91.4621	-86.7752	-99.5655	-100.2091	-89.8817	-95.8075	-107.0620	-99.5724	-98.8908	-86.4123	-94.7902
14944.0420	-103.1309	-98.8225	-104.0631	-96.0647	-96.1663	-90.9342	-109.0719	-105.7247	-98.5450	-101.2925	-126.8278	-99.1459	-106.2093	-91.0945	-99.4585
14987.1090	-115.9020	-104.1141	-111.5295	-111.4340	-105.5716	-102.7257	-126.4896	-114.2417	-119.5785	-110.1181	-111.5746	-106.0241	-126.3772	-102.8370	-108.2660
15030.1750	-116.3139	-111.0800	-116.9427	-118.1973	-117.8507	-125.9920	-121.1075	-116.9296	-113.9449	-113.6263	-111.6854	-112.4834	-112.3595	-122.6571	-111.3149
15073.2420	-114.0285	-119.0486	-113.5158	-113.9129	-126.3490	-119.1547	-118.1772	-116.1628	-113.9179	-120.5403	-119.0110	-114.1906	-112.4840	-118.8360	-110.3811
15116.3080	-112.1328	-118.2793	-115.1847	-114.3954	-123.6561	-115.1597	-116.5735	-117.5345	-118.8610	-122.9203	-131.4566	-112.3158	-120.2925	-115.9110	-111.8774
15159.3750	-113.4958	-122.7519	-116.7188	-118.6666	-112.7370	-112.8597	-116.6508	-121.3555	-124.4061	-114.9315	-116.2152	-110.2833	-117.8873	-120.2501	-116.6239
15202.4410	-112.1160	-131.1777	-114.6400	-120.5260	-112.9136	-113.2832	-128.9593	-110.0817	-118.6716	-111.2805	-113.6576	-111.8512	-124.7005	-127.4056	-113.3443
15245.5070	-109.7547	-125.0038	-119.1269	-117.2323	-113.9153	-113.2832	-127.7600	-107.2692	-116.5294	-111.2383	-115.4022	-116.7574	-113.8788	-114.6789	-112.9759
15288.5740	-113.3199	-117.9108	-122.9327	-118.8435	-118.0060	-130.3837	-124.4695	-106.3056	-116.1700	-112.0479	-118.8713	-121.2585	-108.8071	-130.6465	-115.1295
15331.6400	-119.5684	-114.3670	-115.2766	-124.4222	-115.7459	-117.1124	-117.7237	-108.1385	-117.7828	-111.5420	-115.7644	-117.8531	-111.3094	-113.1269	-111.8216
15374.7070	-123.9948	-111.4594	-116.3602	-115.2884	-111.0115	-116.5402	-117.7237	-108.1385	-117.7828	-111.5420	-115.7644	-117.8531	-111.3094	-113.1269	-111.8216
15417.7730	-125.6201	-113.2799	-117.0613	-117.9869	-112.4855	-124.0059	-121.8860	-114.5025	-120.9974	-111.1074	-115.5052	-117.0372	-123.8539	-116.5881	-108.8771
15460.8390	-127.3727	-123.6713	-111.8816	-116.3416	-118.8495	-117.1073	-117.2222	-119.1088	-115.9748	-113.0258	-120.5698	-119.0643	-118.5865	-113.8155	-109.9739
15503.9060	-122.6698	-140.0001	-112.3768	-113.8177	-132.9410	-116.5829	-112.5561	-124.9708	-112.7074	-118.2058	-124.1256	-125.6640	-110.7470	-112.7174	-111.8982
15546.9720	-116.9325	-127.8928	-116.6163	-119.1793	-127.7420	-123.0084	-111.8680	-128.7733	-114.2563	-115.9683	-119.3504	-125.8133	-130.5753	-115.2100	-112.9856
15590.0390	-124.5183	-119.5399	-118.3772	-115.4424	-125.1686	-117.0493	-115.3017	-125.7855	-119.3053	-118.7371	-117.4983	-119.3433	-116.2321	-117.3531	-118.8210
15633.1050	-119.3228	-117.4384	-121.8974	-124.0606	-117.2053	-127.0732	-117.8371	-119.2682	-120.6194	-114.9776	-126.3583	-114.9021	-126.0889	-121.3971	-120.8580
15676.1710	-113.0748	-117.9311	-146.6967	-118.9518	-114.3475	-118.3234	-115.4399	-123.1921	-113.3802	-111.9694	-125.8836	-114.6122	-121.2103	-112.2497	-136.3004
15719.2380	-113.1180	-114.8764	-125.8576	-114.5762	-114.5825	-112.6531	-110.9505	-123.9988	-110.1204	-113.8660	-117.2376	-119.9677	-116.4851	-108.2291	-120.6657
15762.3040	-115.1369	-111.7704	-126.1555	-114.1407	-118.9238	-110.4182	-110.4219	-125.3846	-111.1631	-123.1764	-132.7410	-121.2236	-122.4507	-109.2201	-117.5454
15805.3710	-115.9512	-112.9532	-115.2799	-117.5342	-116.5476	-112.0933	-118.9858	-123.2241	-114.3294	-138.6405	-116.3341	-139.5747	-113.1558	-115.8445	-116.8712
15848.4370	-120.7256	-121.4058	-113.4890	-118.0187	-118.2180	-112.4465	-119.8545	-127.0364	-115.3127	-138.6405	-116.3341	-139.5747	-113.1558	-115.8445	-116.8712
15891.5080	-117.4379	-129.5527	-118.1431	-112.3575	-124.4833	-113.6235	-116.9359	-114.4781	-115.2267	-120.6777	-112.8914	-115.8285	-111.7953	-130.4183	-114.6355
15934.5700	-111.4973	-117.5447	-123.7568	-110.6142	-123.1893	-114.3501	-117.1823	-130.8889	-120.8707	-118.9567	-110.7777	-113.9465	-115.6626	-120.8854	-112.7255
15977.6360	-110.4926	-111.9695	-119.0676	-115.8269	-123.2203	-117.5600	-112.6936	-130.6947	-119.2389	-121.4032	-112.5954	-117.0236	-115.9789	-120.3539	-116.2568
16020.7030	-113.7512	-111.9092	-118.3937	-115.8269	-123.2203	-117.5600	-109.0057	-112.3938	-113.3652	-115.2533	-116.9659	-117.3783	-115.8169	-122.8720	-118.9241
16063.7690	-133.9824	-114.1753	-121.8333	-118.4159	-120.8078	-131.3271	-108.0821	-115.1558	-113.5967	-115.5533	-115.6534	-115.4693	-119.5421	-119.3721	-114.4427
16106.8350	-119.0458	-113.3762	-123.7507	-123.9615	-120.8062	-113.4409	-111.0022	-117.1552	-120.4400	-119.7602	-115.8096	-112.7994	-114.9398	-120.7673	-112.6659
16149.9020	-119.9318	-111.8922	-115.8867	-114.4675	-117.9323	-109.7136	-118.6494	-121.1311	-114.1173	-120.3514	-116.4108	-112.4329	-117.0064	-118.0545	-117.7269
16192.9680	-118.3388	-113.2230	-113.1727	-110.7889	-113.8161	-109.6835	-112.1305	-123.5516	-113.0896	-119.0987	-114.9601	-112.6197	-117.0064	-118.0545	-117.7269
16236.0350	-116.5424	-119.7948	-116.6675	-110.7801	-114.2594	-110.3721	-111.6716	-125.0250	-118.3169	-116.6110	-120.3831	-114.7491	-114.0209	-113.2970	-116.9928
16279.1010	-114.5814	-114.5517	-117.2592	-115.9211	-123.0186	-111.7605	-117.3641	-127.6717	-110.8186	-120.1151	-117.5263	-115.4234	-113.5595	-118.3454	-111.8654
16322.1670	-114.2784	-109.4042	-112.0262	-118.4041	-117.5298	-116.3188	-122.5323	-128.7226	-110.6219	-124.8617	-111.7163	-112.3759	-138.0936	-124.1956	-110.7786
16365.2340	-115.5998	-109.9642	-109.6695	-115.5363	-112.9816	-129.6415	-121.3685	-127.8765	-115.7455	-131.8964	-114.5167	-112.0580	-129.8464	-125.8314	-111.4233
16408.3000	-115.6217	-114.3969	-110.7740	-116.1193	-112.9888	-114.5373	-118.6247	-113.2236	-113.0117	-115.4303	-121.8019	-116.3231	-121.0463	-118.2630	-110.7780
16451.3670	-113.1292	-136.9002	-117.1813	-116.9557	-111.8398	-113.2571	-122.0563	-116.1995	-111.4981	-110.1401	-116.3240	-120.0636	-120.2206	-115.2219	-111.9407
16494.4330	-111.1993	-115.7856	-117.0306	-120.4126	-110.7946	-112.9951	-132.8974	-119.7966	-112.2830	-110.1528	-122.0396	-111.2236	-124.1686	-111.8510	-113.7449
16537.5000	-109.2622	-113.1924	-115.4885	-117.9199	-112.3867	-115.4693	-124.0767	-117.3369	-114.2532	-110.8146	-121.0701	-110.0262	-123.7230	-108.5693	-112.9849
16580.5660	-110.8702	-115.8930	-119.9644	-115.1971	-118.2476	-122.7418	-116.7228	-114.3023	-116.8777	-110.2177	-115.4993	-112.8978	-121.7476	-110.1064	-113.5828
16622.6320	-116.0080	-118.5468	-125.2731	-117.1256	-127.8000	-122.8565	-119.2337	-115.7075	-119.1096	-111.0064	-114.3083	-117.1590	-116.7736	-120.5875	-138.9622
16666.6990	-114.2273	-117.9150	-124.3752	-115.1407	-147.9348	-124.5446	-120.9274	-125.3446	-116.0380	-113.6050	-113.1296	-122.2979	-114.6304	-119.0699	-127.7041
16709.7650	-116.2185	-116.9459	-117.0777	-113.5968	-119.8774	-120.9420	-115.2612	-118.2620	-115.6668	-117.7153	-118.3550	-116.8340	-118.3037	-115.3916	-123.5443

Freq	4.1.0	4.2.0	4.3.0	4.1.25	4.2.25	4.3.25	4.1.50	4.2.50	4.3.50	4.1.75	4.2.75	4.3.75	4.1.100	4.2.100	4.3.100
16752.8220	-117.8473	-115.4829	-112.7061	-117.9881	-111.1026	-112.4376	-117.8991	-112.4784	-115.7533	-118.0499	-134.2536	-111.7634	-123.3383	-115.6154	-111.9649
16795.8980	-116.9194	-114.6609	-110.4380	-125.8584	-110.3392	-112.4767	-125.6311	-115.3222	-119.3959	-114.9697	-119.5838	-110.0484	-116.2186	-117.2502	-107.4307
16838.9640	-115.2247	-113.9662	-109.9920	-128.1528	-117.4168	-119.7138	-128.9999	-120.9729	-124.4366	-119.3079	-112.2553	-113.7059	-110.3627	-116.8003	-107.1439
16882.0310	-116.5735	-117.0165	-111.2564	-123.2891	-120.7018	-120.3986	-113.7645	-118.4529	-127.1168	-125.9467	-110.4577	-116.3812	-108.2454	-113.1413	-109.9500
16925.0970	-119.2454	-118.8399	-112.8062	-120.1732	-115.9480	-113.4220	-110.1177	-121.0721	-118.6922	-121.5122	-109.5325	-113.7277	-109.9429	-112.9521	-114.3786
16968.1640	-115.1681	-119.2241	-114.6099	-120.2328	-115.6580	-117.6435	-112.7544	-124.5731	-115.5063	-119.8175	-110.7511	-114.7517	-148.8208	-124.8505	-116.7298
17011.2300	-115.7546	-122.7605	-118.1248	-116.9600	-114.9729	-124.5112	-114.9938	-119.6313	-120.5566	-115.0695	-110.8569	-113.1176	-127.9731	-121.1237	-113.9709
17054.2960	-126.7361	-119.6022	-116.6942	-118.2332	-115.4609	-135.3311	-118.2639	-121.5999	-121.4527	-117.7990	-110.9521	-113.4538	-124.2802	-119.7803	-116.2190
17097.3630	-119.1759	-114.2344	-111.2987	-118.0063	-122.3518	-120.8264	-110.4990	-133.3575	-115.9803	-120.3870	-113.4177	-121.4363	-124.4682	-116.5059	-118.7439
17140.4290	-114.3762	-113.8046	-109.4886	-138.8648	-125.7288	-120.8264	-110.3892	-128.9479	-116.6743	-112.3601	-123.0275	-114.5102	-114.6621	-114.3007	-117.7917
17183.4950	-114.8332	-120.7658	-109.7679	-117.6764	-116.3997	-111.1646	-114.9908	-120.3962	-119.3666	-113.7233	-115.5884	-112.4984	-112.9126	-113.4224	-116.6716
17226.5620	-114.8998	-126.0729	-110.9992	-116.5315	-119.8679	-109.7154	-122.4802	-116.1318	-118.2931	-118.4120	-114.6119	-117.6068	-116.1886	-115.3725	-114.8879
17269.6280	-111.7122	-114.7029	-113.0734	-115.9312	-120.9887	-116.1226	-120.5994	-128.0417	-115.4940	-124.7769	-117.6449	-119.1034	-116.9515	-118.1030	-118.3207
17312.6950	-113.5732	-109.7756	-116.0310	-115.0067	-115.9092	-118.5543	-122.0077	-114.8722	-118.6176	-121.6452	-123.8388	-114.3413	-117.0073	-121.2240	-110.5013
17355.7610	-125.8249	-110.1057	-116.6380	-116.0067	-115.9092	-118.5543	-119.8281	-110.2042	-120.2146	-121.4555	-121.7096	-114.4350	-114.0171	-141.4622	-108.6255
17398.8280	-119.1465	-111.5372	-120.0025	-115.8397	-113.4523	-110.9338	-119.8281	-110.2042	-120.2146	-122.5561	-117.3431	-116.8542	-113.0411	-118.8897	-113.2204
17441.8940	-122.4524	-110.7248	-118.4981	-115.7309	-111.2724	-109.3331	-119.4051	-108.7379	-115.9545	-114.2800	-117.3004	-121.2461	-118.9049	-112.3456	-125.9636
17484.9600	-113.9605	-109.4279	-118.4351	-117.5096	-110.0313	-112.6478	-118.4206	-111.6386	-115.2579	-109.8944	-110.6914	-114.5384	-123.0895	-113.6605	-117.0183
17528.0270	-110.1113	-110.1433	-128.1358	-132.7117	-109.4418	-122.7746	-116.3653	-112.2450	-118.0268	-112.1909	-110.9195	-110.9040	-122.0621	-121.5619	-117.1415
17571.0930	-110.3905	-112.1358	-131.6914	-121.4540	-109.4814	-125.5553	-117.2823	-109.2636	-122.0565	-119.7030	-115.8503	-111.4288	-124.6828	-113.0097	-116.6920
17614.1600	-113.6602	-115.2165	-115.4114	-128.3356	-113.9180	-126.4104	-113.2439	-112.3948	-119.9255	-116.1291	-115.4723	-114.6824	-119.8175	-117.1635	-112.1073
17657.2260	-115.2677	-128.1167	-109.0788	-117.0197	-140.7598	-115.2637	-113.2439	-112.3948	-119.9255	-116.1291	-115.4723	-114.6824	-119.8175	-117.1635	-112.1073
17700.2920	-114.8093	-115.4123	-109.7603	-115.4509	-118.5036	-112.4547	-110.5142	-117.3251	-123.4941	-122.6591	-112.1981	-118.8553	-114.3343	-114.2933	-114.6395
17743.3590	-121.3373	-111.4707	-114.5015	-111.8400	-122.6342	-114.0590	-111.4014	-124.5411	-116.4125	-127.6583	-111.1151	-121.4530	-117.1944	-112.5067	-113.7178
17786.4250	-131.8926	-112.2060	-115.4947	-110.1393	-128.8174	-121.6605	-114.8965	-120.4979	-113.1367	-124.4235	-110.1250	-125.7439	-120.7485	-114.9036	-114.0194
17829.4920	-119.1355	-110.9795	-113.7766	-110.2066	-127.8789	-128.1406	-116.2186	-115.3656	-115.4649	-118.9479	-109.3535	-122.8550	-118.3091	-119.5849	-119.2000
17872.5580	-114.9626	-110.4294	-115.4871	-110.9439	-128.1472	-142.6851	-115.2188	-115.3188	-119.2467	-113.4666	-112.8793	-116.7070	-115.0002	-122.2522	-122.4571
17915.6250	-115.4811	-111.0294	-109.7354	-113.6315	-119.9004	-120.2141	-118.4571	-114.0961	-118.5347	-113.3223	-120.1755	-115.6991	-118.1398	-122.8205	-125.2253
17958.6910	-120.4108	-112.9009	-108.2322	-122.8169	-115.1136	-117.9419	-119.8137	-113.5411	-115.6672	-118.0378	-110.7279	-120.4929	-128.9608	-117.9949	-116.3026
18001.7570	-125.8928	-119.1730	-111.8432	-116.1176	-110.4329	-114.0791	-120.8199	-118.0658	-119.6118	-114.7206	-124.6838	-112.4145	-142.3284	-112.7784	-112.6761
18044.8240	-128.7023	-135.6961	-117.1204	-112.6588	-113.0675	-120.6466	-110.4076	-113.3647	-115.2034	-122.2196	-118.8012	-119.2034	-124.9454	-114.2666	-112.6897
18087.8900	-117.0751	-125.1422	-123.0900	-111.3015	-111.6864	-113.5301	-112.5978	-112.9132	-120.7183	-117.9068	-129.5984	-113.1629	-113.7873	-121.0954	-114.5731
18130.9570	-116.8869	-121.3443	-119.4607	-116.1176	-110.4329	-114.0791	-120.8199	-118.0658	-119.6118	-114.7206	-124.6838	-112.4145	-109.9191	-125.7828	-118.6672
18174.0320	-129.2190	-129.3769	-112.8750	-116.4591	-113.3348	-123.2191	-117.3449	-112.3717	-113.0925	-114.8112	-137.8177	-113.3518	-111.2701	-118.5100	-123.2193
18217.0890	-117.9944	-119.7005	-111.0352	-113.6588	-116.3537	-119.0252	-120.5314	-109.4830	-110.4268	-115.3290	-135.9250	-117.1721	-123.5983	-118.9860	-113.8292
18260.1560	-115.1934	-114.7478	-110.8955	-115.6746	-137.8582	-119.0252	-115.9670	-113.5186	-110.4084	-114.5948	-118.9257	-118.6685	-121.2304	-117.0744	-111.3281
18303.2220	-114.6707	-113.7609	-109.6122	-122.7669	-119.5474	-123.8258	-115.9670	-113.5186	-110.4084	-113.5808	-115.6672	-126.8212	-116.0469	-113.2764	-114.1508
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18389.3550	-119.0629	-117.7782	-108.6501	-122.2387	-111.4086	-115.9856	-108.0067	-129.2817	-113.8017	-120.9948	-119.4083	-116.9219	-115.5862	-116.0653	-117.6602
18432.4210	-117.3890	-125.2470	-107.4806	-128.3315	-115.3029	-119.4054	-112.9740	-124.5664	-118.2004	-113.3023	-128.6019	-115.1220	-118.7312	-124.0445	-118.1591
18475.4680	-113.5368	-120.5749	-106.9610	-121.6798	-118.4490	-131.0557	-115.9560	-118.5962	-119.4704	-108.4033	-143.2487	-115.6832	-120.7669	-123.1867	-116.7163
18518.5540	-111.1096	-120.4837	-108.4435	-117.3509	-120.7958	-120.2362	-115.7435	-117.3224	-118.7183	-111.5530	-128.4371	-116.5310	-116.0257	-114.0467	-122.4395
18561.6210	-130.5682	-124.3820	-112.8807	-119.2944	-114.5822	-116.7782	-114.9799	-117.0501	-112.0775	-127.7427	-148.6213	-117.4179	-110.1105	-111.2467	-116.5519

Freq	4.1.0	4.2.0	4.3.0	4.1.25	4.2.25	4.3.25	4.1.50	4.2.50	4.3.50	4.1.75	4.2.75	4.3.75	4.1.100	4.2.100	4.3.100
18604.6870	-111.9307	-132.4201	-118.8463	-124.3162	-110.1264	-114.0302	-114.1132	-116.6668	-109.5046	-117.9592	-120.1261	-114.7439	-107.8089	-113.2483	-112.1532
18647.7530	-117.1188	-128.4434	-125.0987	-129.7501	-109.6919	-112.8009	-114.9316	-116.2741	-111.5120	-112.7923	-111.1157	-112.1781	-108.1515	-120.8999	-111.6577
18690.8200	-139.7694	-136.9377	-119.4505	-129.8689	-111.4396	-115.4353	-117.7775	-113.4940	-114.4928	-111.2456	-106.9343	-113.9700	-109.8064	-115.3277	-112.5435
18733.8860	-122.0676	-124.6018	-115.6925	-135.2779	-115.9938	-117.7787	-128.7688	-111.7060	-115.6665	-113.3988	-105.9433	-120.2795	-110.7888	-117.3698	-114.4254
18776.9530	-120.2786	-121.1819	-116.3199	-119.4130	-123.4727	-114.0302	-127.9919	-113.2978	-122.4054	-110.3601	-106.4911	-126.7405	-110.4164	-125.4604	-119.3354
18820.0190	-117.0857	-121.2556	-119.2040	-111.3329	-120.4863	-112.8585	-119.2212	-121.5282	-117.2065	-109.8561	-109.6760	-117.3796	-111.1927	-115.8803	-112.3754
18863.0850	-115.1964	-121.8717	-125.6968	-110.8961	-119.2730	-114.1385	-115.0441	-124.3035	-114.8979	-110.9245	-116.0925	-116.0304	-114.3862	-112.9797	-107.3198
18906.1520	-114.5935	-118.5977	-119.5893	-117.2962	-117.7556	-116.1512	-115.5843	-122.6271	-120.1227	-112.2747	-116.2100	-123.8943	-115.0205	-116.9113	-107.6466
18949.2180	-113.6428	-113.9593	-120.4247	-124.8178	-116.3322	-118.3831	-120.7648	-126.2356	-125.4712	-118.5956	-113.0382	-118.7471	-112.8696	-139.3748	-109.8183
18992.2850	-113.8464	-111.6834	-123.4404	-129.8573	-118.0569	-114.2425	-125.9954	-114.7658	-119.3927	-131.9138	-113.4488	-120.2050	-117.2476	-122.0369	-111.6947
19035.3510	-115.8378	-114.6334	-125.4218	-123.9226	-118.7068	-112.3828	-125.3013	-112.6372	-118.7145	-122.9892	-115.7649	-121.2732	-121.6897	-121.0361	-115.7690
19078.4170	-116.7907	-135.6424	-119.1717	-117.7467	-118.8128	-115.8346	-120.0246	-112.0740	-120.3275	-124.1856	-118.0229	-110.5000	-119.4512	-114.5717	-115.9353
19121.4840	-114.5162	-114.0681	-121.0175	-116.0590	-123.7328	-126.6917	-112.4876	-117.0310	-113.9578	-129.6795	-114.7248	-111.9794	-119.7561	-113.0776	-114.6502
19164.5500	-113.3701	-114.1825	-118.7943	-116.0632	-122.6339	-131.6286	-111.9334	-121.2059	-113.4404	-116.1930	-118.2121	-117.6965	-115.6120	-114.8316	-110.7882
19207.6170	-116.3040	-124.6148	-117.0733	-115.9784	-126.2222	-123.5984	-123.8502	-124.3944	-121.1910	-121.2072	-118.8404	-117.6080	-116.1076	-121.7377	-108.1816
19250.6830	-118.2161	-117.7669	-130.4935	-113.5661	-116.6985	-121.1492	-122.9417	-113.0740	-117.6028	-116.8545	-126.0671	-113.8741	-116.7667	-135.5900	-110.7723
19293.7500	-115.2691	-116.2128	-120.5151	-113.6973	-119.5261	-128.9405	-122.9417	-113.0740	-117.6028	-122.5894	-132.7534	-109.8136	-121.1707	-126.4630	-115.7766
19336.8160	-115.5235	-121.4400	-116.4651	-114.4359	-115.8091	-119.0404	-119.1928	-112.7116	-112.3282	-122.1236	-127.2660	-108.6761	-118.6066	-122.1875	-118.7625
19379.8820	-123.4818	-112.4525	-115.0275	-113.1567	-110.6529	-114.0942	-113.3822	-117.2753	-111.4709	-118.3941	-118.5567	-109.6059	-112.0813	-122.7428	-121.9344
19422.9490	-119.0091	-108.2163	-112.9878	-112.7539	-108.4091	-134.6227	-113.0437	-118.3991	-117.6381	-118.5277	-113.2950	-111.5459	-112.4336	-119.1974	-123.7710
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19509.0820	-114.1911	-115.1441	-112.1467	-117.8391	-110.4437	-116.2821	-110.3557	-115.1556	-115.4595	-113.4394	-111.8988	-114.8089	-118.4788	-118.2261	-118.4201
19552.1480	-120.2529	-116.8703	-115.2107	-117.1967	-116.3005	-116.8834	-110.5158	-118.8338	-113.1789	-115.4221	-115.5771	-116.5713	-118.3709	-115.1187	-124.2613
19595.2140	-121.2597	-114.0277	-118.9866	-117.4534	-126.0696	-115.8116	-109.0970	-124.6321	-114.2933	-116.9817	-119.5900	-114.9645	-120.4528	-112.7259	-127.4295
19638.2810	-121.8898	-129.6648	-116.9375	-116.7592	-122.5484	-112.5713	-109.2275	-132.7507	-117.9033	-119.9680	-124.7275	-111.4325	-133.0087	-115.0557	-118.5281
19681.3470	-135.8076	-110.8559	-114.4050	-117.2400	-137.0685	-114.3969	-112.8664	-130.4300	-119.0807	-114.3648	-117.1906	-112.8294	-116.2302	-116.7940	-113.6459
19724.4140	-128.4916	-108.4871	-117.3163	-120.9166	-122.5687	-121.2648	-116.5173	-122.6908	-113.0598	-112.4663	-114.7004	-126.8825	-112.0317	-118.6891	-114.2490
19767.4800	-124.4822	-111.9210	-114.3061	-114.0966	-116.3173	-131.7078	-112.9388	-120.5788	-111.1675	-110.7193	-116.9055	-118.2318	-110.7625	-117.2519	-114.8209
19810.5460	-115.2151	-117.5275	-112.9193	-113.6834	-110.6241	-122.4746	-112.4663	-125.3766	-110.3919	-112.5014	-118.9759	-118.1388	-110.9010	-121.2124	-114.5243
19853.6130	-112.4369	-126.2131	-113.7429	-116.2829	-111.1451	-120.9459	-113.2960	-120.0208	-110.5503	-112.5587	-115.9991	-120.3052	-122.4559	-124.1766	-115.4750
19896.6790	-110.9559	-122.2749	-113.6073	-115.0558	-117.5339	-122.7059	-113.5587	-125.6204	-113.2776	-115.9471	-118.9759	-120.3052	-122.4559	-124.1766	-115.4750
19939.7460	-111.3183	-117.4581	-113.2062	-113.3725	-127.8969	-114.0590	-116.0795	-130.6928	-117.4021	-111.9199	-117.1920	-118.8808	-114.9595	-122.6346	-118.1753
19982.8120	-112.9860	-114.7536	-113.1166	-117.6191	-125.4057	-113.5926	-118.1300	-123.1264	-123.8419	-109.1075	-125.4394	-134.8491	-113.3509	-118.9316	-120.2009
20025.8780	-113.2539	-115.7575	-114.2611	-121.2291	-122.3330	-118.2322	-114.5262	-120.5104	-128.4258	-111.5700	-125.0168	-115.0988	-129.4515	-118.4968	-124.2543
20068.9650	-113.5957	-124.4463	-113.9864	-114.5612	-120.9550	-118.1415	-116.4843	-118.4954	-122.8474	-138.7130	-119.1154	-110.8169	-117.3677	-116.6674	-131.6448
20112.0110	-116.3667	-129.5293	-110.0763	-114.5911	-117.3186	-113.4785	-134.5075	-114.5937	-121.0339	-113.5152	-119.5024	-112.7385	-115.1876	-114.5380	-130.3754
20155.0780	-120.5410	-128.8286	-107.8176	-114.3078	-113.4547	-111.6700	-120.2461	-114.7353	-126.7621	-116.1217	-118.3831	-124.0237	-115.4827	-120.9840	-120.9845
20198.1440	-119.4314	-117.9813	-107.8358	-113.7359	-111.0937	-111.9032	-116.3694	-114.8121	-137.2218	-112.6250	-114.8043	-121.0451	-115.1353	-131.2160	-115.8841
20241.2100	-115.6826	-115.4769	-109.7661	-114.4760	-110.2181	-113.2644	-119.3630	-112.3370	-125.2756	-111.1488	-114.4004	-114.4937	-112.4696	-124.9503	-114.9664
20284.2770	-113.2810	-122.4375	-115.9792	-114.1144	-111.5625	-116.3817	-128.9993	-112.1300	-119.9030	-118.8686	-116.9608	-111.8053	-115.8719	-116.1234	-123.8070
20327.3430	-112.3068	-127.4888	-130.2081	-112.9369	-114.1432	-115.1427	-129.2906	-116.1687	-115.3831	-125.5323	-133.6709	-116.5282	-115.8181	-118.0346	-118.1625
20370.4100	-114.0799	-118.1532	-126.2253	-114.5341	-114.8455	-110.5990	-120.1054	-120.6194	-112.7341	-119.7013	-115.2569	-116.9991	-117.7412	-113.6756	-113.0898
20413.4760	-119.0569	-112.5708	-117.1214	-119.6360	-116.0408	-109.7265	-117.3318	-121.0424	-112.7342						

Freq	4.1.0	4.2.0	4.3.0	4.1.25	4.2.25	4.3.25	4.1.50	4.2.50	4.3.50	4.1.75	4.2.75	4.3.75	4.1.100	4.2.100	4.3.100
20456.5420	-119.3004	-112.1336	-115.5900	-117.7953	-121.7673	-132.9020	-120.8673	-117.4653	-120.7922	-118.2298	-111.6669	-120.7964	-116.4533	-114.7212	-116.0454
20499.6090	-113.5553	-113.2410	-122.3985	-116.1468	-119.8215	-116.3620	-129.0586	-121.2608	-117.2667	-118.8952	-111.2336	-116.8979	-114.0805	-119.6512	-121.8601
20542.6750	-111.6212	-114.3433	-117.1071	-110.7958	-118.9572	-123.9140	-118.1725	-127.9287	-113.4539	-120.9305	-109.4987	-117.5474	-115.4697	-134.0188	-124.4804
20585.7420	-115.4515	-112.8993	-114.6677	-110.4846	-122.9821	-124.3306	-110.7743	-125.9226	-118.0479	-116.2524	-108.5892	-116.4811	-125.0622	-123.8592	-116.9594
20628.8080	-123.2156	-113.0127	-119.9719	-114.7004	-121.3824	-122.8010	-111.1907	-124.5688	-116.6770	-119.6548	-110.3176	-115.3803	-124.6917	-138.6651	-111.5568
20671.8750	-115.6797	-115.7131	-121.0251	-113.1952	-113.8018	-118.3260	-117.5084	-119.0073	-112.7151	-132.2722	-118.4391	-120.6834	-117.4934	-112.2287	-112.5629
20714.9410	-126.7698	-121.0974	-117.5275	-111.6933	-109.9997	-120.9604	-118.7480	-116.2677	-113.1048	-119.6820	-117.8596	-112.4620	-113.4016	-111.1179	-113.8566
20758.0070	-114.6338	-118.6200	-117.3779	-115.9228	-108.5489	-125.8085	-115.7820	-111.5982	-116.8145	-116.9116	-113.0593	-108.2081	-111.2138	-115.4989	-112.0299
20801.0740	-113.5096	-148.2517	-124.1577	-122.0818	-110.7620	-123.6768	-112.8748	-108.9058	-124.8049	-118.1577	-115.2841	-107.6644	-109.9982	-123.3789	-110.1574
20844.1400	-115.2769	-120.9109	-121.1330	-126.1642	-118.3897	-118.1212	-116.9029	-109.2964	-113.7864	-128.6052	-119.2335	-110.1601	-110.5295	-123.2897	-108.4317
20887.2070	-116.0748	-112.4038	-117.6542	-112.6785	-128.0596	-112.6519	-122.5574	-114.1129	-112.6068	-118.4835	-121.5807	-116.5941	-112.3605	-125.6379	-108.7360
20930.2730	-123.6348	-109.9054	-120.8497	-110.0443	-117.2209	-111.3127	-121.8860	-116.0520	-115.1081	-110.8772	-124.4129	-136.1279	-114.1210	-127.4349	-111.1545
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21016.4060	-122.2003	-116.0662	-112.6757	-114.0120	-116.6023	-117.3928	-115.1052	-115.9184	-119.3848	-113.4674	-123.8991	-117.8821	-119.9184	-116.4359	-122.1126
21059.4720	-130.3880	-114.4955	-112.5117	-114.2245	-118.2307	-118.8873	-112.8157	-118.4820	-115.0938	-114.2714	-135.8385	-116.0938	-118.7321	-112.1481	-133.8293
21102.5390	-126.8787	-115.6577	-114.4190	-113.5578	-112.0912	-116.5959	-113.5655	-117.7828	-113.9097	-114.4672	-117.9480	-112.4071	-117.9851	-110.3275	-118.5710
21145.6050	-120.7745	-122.0091	-113.7265	-113.2588	-110.5548	-114.7529	-116.1441	-117.2911	-111.4703	-113.8134	-113.8170	-113.9853	-116.8660	-112.0305	-110.0612
21188.6710	-119.4319	-122.0916	-112.7613	-113.1605	-112.1879	-114.8371	-113.5547	-117.8746	-110.3179	-111.5166	-112.9678	-120.4704	-115.0411	-115.8077	-106.9679
21231.7380	-119.3513	-123.2776	-109.0696	-116.0850	-116.6227	-114.7990	-109.1190	-117.3325	-111.5394	-112.0794	-112.1791	-125.3214	-114.3837	-119.5789	-107.1961
21274.8040	-122.3639	-121.4776	-108.8860	-116.4568	-118.9010	-115.8059	-110.1421	-122.3429	-114.2537	-115.9870	-114.5162	-119.3951	-112.4131	-118.0501	-111.3324
21317.8710	-119.7370	-126.8733	-114.2099	-124.0834	-116.8988	-116.2324	-115.2374	-122.2196	-116.1478	-135.2322	-125.2868	-125.5954	-109.2024	-113.3621	-115.0626
21360.9370	-119.6016	-114.7707	-122.4254	-117.8845	-115.4991	-113.6720	-116.8134	-112.4566	-115.8073	-113.1265	-116.5294	-117.7982	-108.4386	-117.6935	-111.3924
21404.0030	-138.3344	-114.0508	-126.2390	-116.3217	-111.5834	-115.5123	-117.4612	-110.6879	-117.7689	-109.8760	-114.0024	-113.8754	-113.2983	-126.3161	-110.3584
21447.0700	-115.9563	-115.8056	-119.0936	-115.6485	-114.0649	-121.7367	-116.6665	-112.4411	-114.8029	-111.1521	-111.2728	-117.0901	-129.6028	-119.1475	-109.7996
21490.1360	-110.2527	-123.0987	-113.9213	-119.9584	-116.3443	-117.2658	-113.1782	-116.3255	-111.1995	-112.4216	-109.5239	-122.0821	-126.9528	-120.1680	-111.3104
21533.2030	-109.2080	-122.6660	-115.0895	-126.3481	-114.3795	-116.3540	-115.9818	-117.5622	-112.3287	-112.7423	-112.3544	-117.7370	-121.0646	-121.7003	-116.1764
21576.2690	-112.6405	-114.4894	-122.0911	-129.0584	-117.5581	-112.3263	-118.1892	-113.5934	-117.3787	-112.5372	-113.4654	-117.0892	-129.7903	-123.1387	-121.6522
21619.3350	-116.7703	-111.4310	-125.5256	-144.8573	-115.0153	-113.0952	-119.7640	-112.2955	-122.2289	-113.3658	-111.1532	-133.5198	-120.5372	-117.1749	-125.1197
21662.4020	-113.4179	-110.8007	-120.9426	-118.3517	-112.0408	-115.6784	-118.4483	-118.6085	-129.6559	-115.7726	-111.5678	-117.6755	-120.5409	-112.0276	-121.8306
21705.4680	-113.6387	-112.3210	-120.1476	-117.0806	-111.8242	-114.7456	-119.1847	-130.4438	-125.3297	-116.2200	-114.3760	-121.8508	-131.7488	-130.4619	-120.1323
21748.5350	-114.8564	-116.7775	-122.0167	-132.8887	-111.4469	-113.8917	-123.4173	-117.5014	-120.7260	-117.0272	-143.4314	-121.4466	-124.9857	-113.4147	-125.9575
21791.6010	-113.4702	-116.3002	-122.2230	-119.9038	-113.5019	-119.4071	-134.6561	-112.2443	-118.1654	-117.8316	-113.7669	-115.4062	-118.5211	-121.5767	-118.0380
21834.6670	-114.6301	-113.3993	-117.4419	-120.8771	-121.4546	-118.7293	-123.2536	-110.4631	-112.2473	-123.3435	-113.8898	-113.7866	-119.0269	-123.0528	-114.4567
21877.7340	-118.0429	-112.2342	-116.6488	-112.7061	-124.7933	-112.5137	-119.5456	-110.2092	-111.1036	-113.2409	-118.5062	-111.9354	-127.8304	-121.3237	-114.6204
21920.8000	-123.9470	-114.8097	-121.2791	-118.9583	-119.1371	-114.2974	-119.3403	-110.4467	-114.2385	-114.1183	-122.7184	-113.4163	-125.0865	-114.4876	-114.7429
21963.8670	-126.7224	-113.4156	-128.2733	-116.8458	-121.3066	-122.7621	-114.6802	-110.1728	-119.7948	-116.5196	-136.6707	-118.8198	-118.5791	-111.5577	-130.9490
22006.9330	-118.8613	-112.0188	-136.4131	-133.6822	-123.1044	-116.7383	-110.1091	-109.9784	-126.1194	-111.7533	-125.4005	-118.0053	-116.9469	-112.6422	-110.2348
	-103.4519	-107.0517	-104.0907	-105.7044	-106.4301	-105.1441	-107.7022	-108.1869	-107.5006	-107.1197	-107.6408	-106.8364	-106.9305	-106.8742	-100.5235
		-104.8648		-105.7595			-107.7966			-107.1997					

Freq	5.1.0	5.2.0	5.3.0	5.1.25	5.2.25	5.3.25	5.1.50	5.2.50	5.3.50	5.1.75	5.2.75	5.3.75	5.1.100	5.2.100	5.3.100
43.0660	47.4984	50.5383	48.1657	42.2768	47.6375	48.3128	36.3430	46.2887	44.8198	52.4808	52.4906	32.2698	-29.9197	-39.0289	-35.0204
86.1320	42.2967	46.3811	44.9868	33.7857	43.3711	39.6063	31.4152	-20.2180	32.0124	58.7515	-23.2726	30.5327	-30.4643	-31.0251	-24.4318
129.1990	41.6515	43.7305	45.5331	-28.8221	-44.0947	-34.0747	-31.8191	-36.3285	-26.4458	-40.2466	-21.8508	-34.4309	-29.9600	-27.0402	-20.3708
172.2650	43.0818	43.7128	47.5318	-27.6329	-37.4254	-33.2861	-31.1595	-35.2809	-27.4692	-37.2728	-23.0258	-40.0690	-23.3160	-26.8700	-22.7208
215.3320	45.9490	48.2289	53.0892	-30.9696	-37.0963	-37.0502	-30.8373	-35.7964	-34.8981	-41.5012	-26.5702	-46.3860	-25.0284	-29.8017	-32.3878
258.3980	52.7687	57.8797	70.3330	-39.9094	-43.3691	-45.7185	-36.6137	-37.3791	-48.8747	-52.4436	-33.4765	-48.3565	-33.9080	-36.4834	-51.0418
301.4640	64.0960	74.9084	71.6965	-52.7330	-53.5181	-59.3649	-49.6792	-42.5723	-55.2446	-61.7068	-47.3829	-57.2293	-44.1134	-46.3730	-61.1134
344.5310	59.5550	65.7731	68.7272	-57.2958	-55.4603	-62.6636	-51.2585	-55.2277	-50.5659	-56.8329	-50.3439	-55.1693	-34.1218	-46.1074	-55.9596
387.5970	56.5897	65.1440	63.9756	-51.2679	-54.8699	-60.6268	-51.9644	-49.4229	-54.4001	-60.1062	-58.3808	-51.3864	-33.4173	-45.7634	-52.8406
430.6640	57.7911	66.8965	63.1424	-46.8033	-53.8851	-67.9559	-54.9093	-47.4669	-57.0146	-74.5063	-62.8816	-59.4110	-40.1445	-55.5961	-67.9646
473.7300	64.4840	67.3869	66.8147	-48.0471	-56.0305	-70.2084	-66.0367	-49.4984	-58.7009	-79.1823	-68.2757	-69.1399	-49.4181	-65.1418	-66.8539
516.7960	89.4792	74.3957	76.5896	-52.9823	-64.4418	65.0432	-66.0367	-49.4984	-58.7009	-79.1823	-68.2757	-69.1399	-49.4181	-65.1418	-66.8539
559.8630	76.0635	72.1126	74.2598	-59.7405	-69.2567	-66.4286	-64.4925	-52.1540	-60.4762	-93.2882	-70.1378	-81.0058	-55.5899	-76.4474	-68.0510
602.9290	74.8200	70.0490	72.1135	-64.3828	-74.4730	-66.3076	-61.7370	-52.9432	-60.7311	-74.4470	-76.1163	-81.8616	-56.2387	-80.6432	-69.3580
645.9960	85.8148	71.7755	74.2234	-59.8551	-65.5090	-65.9983	-67.2687	-55.1069	-64.5585	-72.5655	-77.7018	-79.2014	-58.5632	-80.4917	-73.8738
689.0620	75.3612	70.2822	84.7491	-58.8629	-67.0306	-70.5681	-80.0480	-59.9705	-70.7159	-72.9405	-74.9585	-77.3916	-64.5586	-82.1191	-77.3093
732.1280	71.0287	-67.6723	77.8430	-65.3729	-72.0518	-83.9676	-71.9142	-63.8002	-78.2621	-75.1699	-71.6855	-80.9932	-75.5574	-79.5368	-75.9849
775.1950	71.9370	-66.8976	70.9686	-64.6955	-65.9873	-94.6460	-66.0660	-67.0374	-71.2176	-104.8958	-69.3134	-76.9520	-71.2864	-69.2839	-74.1419
818.2610	79.7625	70.4791	-71.3570	-58.5018	-64.2657	-73.5890	-67.1039	-55.4082	-64.6665	-72.2415	-72.5852	-74.8351	-67.2525	-65.2074	-72.5530
861.3280	77.0724	-80.1838	-68.3788	-56.8012	-62.4697	-68.7116	-81.2894	-55.5811	-65.8971	-66.4905	-68.6178	-65.8103	-64.4003	-67.3004	-71.0128
904.3940	67.6203	-71.3513	-69.7350	-62.6776	-61.3980	-70.6126	-80.1567	-63.1107	-65.9280	-65.5082	-68.2017	-66.0036	-62.6554	-84.8176	-72.0657
947.4660	63.7818	-67.1548	-77.8766	-56.2149	-65.1444	-70.7549	-76.8721	-63.4457	-64.7418	-68.9344	-80.2430	-75.1456	-62.3538	-69.7138	-71.3154
990.5270	62.9429	-62.5762	70.4980	-47.8675	-73.4103	-72.0472	-75.2246	-65.7268	-66.5083	-75.6908	-69.0779	-89.4733	-64.7680	-66.1877	-72.5737
1033.5930	62.3413	-63.9789	-67.8367	-46.0750	-71.1193	-71.9601	-82.5934	-67.5178	-71.9274	-77.1061	-64.5591	-76.6699	-73.8140	-66.8962	-80.2825
1076.6600	62.7940	-74.7216	-69.9549	-49.9270	-73.1474	-68.7334	-78.5340	-67.1949	-74.7277	-87.8882	-66.3813	-72.9356	-76.7032	-68.3069	-87.8618
1119.7260	65.8134	-68.9980	-66.2058	-55.9916	-72.5193	-67.9976	-75.2685	-66.2071	-73.3086	-77.5702	-71.3670	-75.8746	-76.1870	-68.8226	-78.3254
1162.7920	71.0833	-67.2784	-60.1143	-58.1271	-81.3081	-71.2095	-82.5934	-67.5178	-71.9274	-75.4134	-75.0586	-74.0476	-76.9756	-71.4533	-74.4715
1205.8590	75.0422	-70.0331	-61.3595	-61.7582	-78.9535	-77.2519	-81.9835	-82.6239	-78.5632	-76.0697	-80.0545	-76.2161	-84.2176	-79.9475	-76.0999
1248.9250	75.7738	-73.5667	-65.7224	-64.0766	-76.6173	-78.1225	-79.9684	-66.6234	-80.5527	-74.9428	-82.6179	-86.2948	-77.1053	-78.7255	-102.1623
1291.9920	75.3379	-73.2359	-67.4033	-63.8620	-81.7008	-73.6993	-85.2763	-59.8418	-82.5180	-73.8213	-76.2500	-84.5048	-77.6284	-78.7554	-72.1257
1335.0580	75.6619	-71.3088	-63.9720	-65.8433	-78.4219	-74.0838	-90.9639	-60.6041	-80.6258	-76.0437	-74.7219	-79.5610	-82.1975	-90.1475	-69.2761
1378.1250	77.8614	-70.2371	-63.4590	-63.9027	-80.5743	-80.2867	-86.5876	-67.3610	-78.2860	-84.2509	-76.3229	-79.9996	-79.5634	-82.7220	-74.8846
1421.1910	80.2578	-73.2464	-71.8570	-61.0643	-80.4178	-84.6756	-88.8961	-77.5655	-79.7294	-104.6768	-80.6497	-78.9657	-68.9286	-76.6344	-80.5790
1464.2570	76.0089	-79.8190	-70.8728	-65.4786	-74.3844	-80.1683	-95.3781	-78.7665	-76.7234	-82.6944	-80.7142	-77.1921	-66.6627	-76.0775	-75.3049
1507.3240	76.6145	-78.5998	-64.8613	-65.6221	-74.6217	-81.3601	-83.1097	-81.2582	-74.2818	-79.4634	-85.2542	-78.7319	-66.5806	-76.7234	-83.0076
1550.3900	84.1102	-75.5250	-69.8122	-75.7032	-76.7734	-83.6178	-80.4435	-75.2735	-73.6415	-84.5234	-87.7917	-81.3509	-67.1254	-72.4802	-77.4237
1593.4570	79.0092	-79.6222	-75.1442	-78.5299	-89.5920	-80.4412	-80.2108	-70.8675	-75.6539	-79.1599	-75.2334	-81.8883	-67.1254	-72.4802	-77.4237
1636.5230	82.7361	-79.5827	-73.8771	-74.3776	-81.2946	-88.6140	-74.9475	-68.2997	-72.8497	-72.2009	-65.8935	-70.7799	-67.6444	-77.6074	-75.6793
1679.5890	83.6693	-73.8165	-75.7739	-87.2292	-74.9905	-84.3966	-72.9751	-67.5532	-67.8570	-69.5940	-60.8691	-66.9906	-71.1479	-74.4043	-76.4991
1722.6560	81.4905	-74.2306	-87.7559	-78.8776	-71.7926	-84.4767	-74.5506	-68.5045	-68.6174	-69.5314	-61.3072	-69.4585	-73.9481	-68.8037	-78.3463
1765.7220	99.3997	-78.0630	-75.1012	-77.3424	-71.5891	-94.3453	-75.0078	-70.2460	-87.4714	-70.5748	-68.4443	-78.5822	-73.3448	-71.8777	-76.1488
1808.7890	91.1295	-83.5942	-71.5207	-73.7866	-72.3989	-92.7343	-77.6595	-69.1242	-73.3744	-73.2193	-68.8538	-82.7362	-73.8775	-71.9610	-78.2368
1851.8550	83.7372	-83.7344	-75.2625	-77.3661	-73.6686	-91.6086	-80.9538	-64.5748	-71.9587	-76.3541	-75.4143	-84.3249	-73.7009	-72.1348	-82.0373
1894.9210	78.6632	-82.5268	-97.0124	-74.0510	-78.5038	-93.8237	-82.5034	-62.0642	-74.4615	-82.5349	-69.2107	-88.4330	-73.4121	-75.8093	-83.5777

freq	5.1.0	5.2.0	5.3.0	5.1.25	5.2.25	5.3.25	5.1.50	5.2.50	5.3.50	5.1.75	5.2.75	5.3.75	5.1.100	5.2.100	5.3.100
1937.9880	-82.6845	-80.7406	-82.0107	-76.8853	-83.9836	-92.5424	-82.0033	-63.9228	-78.7165	-82.8794	-67.8222	-78.1693	-71.6576	-81.6992	-79.5609
1981.0540	-96.8495	-80.6908	-81.3233	-69.9985	-94.1609	-87.5481	-79.4466	-68.5174	-81.2983	-84.6965	-69.9385	-77.0388	-70.5484	-86.4160	-78.5653
2024.1210	-82.6126	-85.8720	-82.3418	-69.4673	-84.8853	-88.0435	-81.3117	-73.7045	-85.2820	-80.0028	-70.1669	-83.5519	-72.7952	-94.0709	-79.6684
2067.1870	-80.1329	-84.2200	-80.6356	-79.1182	-86.3918	-90.0235	-84.2722	-83.5155	-88.8816	-83.3205	-71.5497	-83.2944	-76.2146	-82.0245	-84.3143
2110.2530	-81.9228	-81.2373	-74.0850	-71.7163	-80.2136	-83.7964	-107.6932	-73.6216	-106.0344	-83.1817	-72.8941	-74.1628	-83.5734	-82.1482	-92.0645
2153.3200	-83.5295	-83.1555	-69.1289	-65.7609	-80.0678	-80.3407	-95.9735	-69.1496	-82.7504	-79.1565	-73.9243	-70.7041	-74.7928	-84.0021	-96.0362
2196.3860	-78.7511	-88.8812	-69.3679	-65.5629	-80.8161	-82.8931	-84.4300	-69.9384	-79.7721	-80.3370	-77.7287	-70.3588	-69.0305	-79.2690	-87.0674
2239.4530	-77.6409	-90.9083	-74.7932	-69.3390	-84.6359	-89.2728	-82.6693	-78.1986	-83.1339	-82.6906	-81.8618	-73.7823	-70.5718	-81.7580	-81.9722
2282.5190	-85.5024	-89.0260	-81.0714	-76.9028	-89.7855	-91.5116	-87.0896	-89.0861	-90.0157	-83.2939	-84.5333	-80.5513	-79.3344	-90.0411	-84.3172
2325.5890	-82.6294	-87.8123	-82.3652	-86.2657	-91.6725	-90.0182	-92.5475	-87.2493	-87.9532	-83.9192	-91.8721	-85.8610	-82.4901	-93.5469	-86.8873
2368.6520	-78.3165	-89.6481	-85.5709	-78.8133	-93.2469	-90.4357	-102.2961	-84.1654	-85.0712	-89.9155	-95.8096	-87.2581	-80.8740	-92.5010	-84.6395
2411.7180	-82.8489	-94.1887	-90.5234	-76.9592	-94.8896	-85.9646	-92.1194	-84.1076	-86.3053	-92.7941	-90.8491	-87.6407	-84.9513	-97.6173	-84.2098
2454.7850	-91.5270	-87.5946	-92.6745	-78.5630	-103.4735	-85.5850	-104.8664	-82.4568	-95.6098	-87.9798	-88.4738	-87.5473	-94.5000	-103.3606	-86.2839
2497.8510	-85.4520	-85.1266	-96.5278	-90.3798	-90.8335	-88.2385	-92.1060	-82.8788	-93.1080	-85.3222	-90.7756	-91.4727	-98.4660	-96.3048	-88.1557
2540.9170	-85.4367	-87.1812	-85.1746	-78.4730	-86.5438	-89.0040	-91.5656	-78.9806	-89.9757	-81.6855	-98.6373	-96.1404	-97.0838	-96.3803	-89.9710
2583.9840	-91.9477	-92.6485	-83.5498	-74.1958	-85.7558	-87.2898	-90.4796	-79.2930	-93.4731	-78.6748	-92.6872	-98.6549	-92.3412	-107.2111	-103.0371
2627.0500	-81.7457	-99.9657	-82.8692	-75.3097	-68.4282	-93.4417	-89.3366	-90.0739	-98.6882	-78.6670	-91.0261	-104.0321	-96.9281	-102.0298	-94.8374
2670.1170	-80.0002	-89.8529	-84.4767	-85.0756	-87.0268	-88.5721	-94.2806	-91.0322	-90.4933	-82.6451	-89.6106	-92.8474	-96.8207	-104.3768	-93.7340
2713.1830	-81.2555	-87.2269	-87.3392	-80.8327	-80.8912	-87.9515	-95.7068	-79.1690	-91.6628	-93.3482	-90.0590	-88.4814	-89.1159	-95.9986	-95.6090
2756.2500	-81.0608	-88.7364	-73.8375	-89.7332	-79.4171	-97.0559	-94.6660	-80.4968	-105.0890	-93.1070	-90.6058	-84.3856	-87.4482	-88.6279	-92.2204
2799.3160	-80.5361	-88.3313	-71.5606	-72.3547	-80.4063	-83.2709	-90.1263	-86.0697	-94.6098	-89.1672	-87.8695	-82.6476	-91.2220	-92.3755	-86.1253
2842.3820	-82.0672	-87.8530	-75.8088	-68.5603	-84.8176	-86.1587	-91.8905	-100.1224	-91.5579	-90.0704	-89.2260	-86.2515	-95.1080	-98.1281	-89.1930
2885.4490	-80.8661	-89.3004	-77.2786	-72.9695	-86.4349	-86.1587	-96.8411	-92.8704	-93.9953	-96.0097	-100.4950	-96.2074	-91.6633	-94.4754	-96.0506
2928.5150	-80.6991	-94.7694	-82.7094	-77.7810	-84.8945	-88.7415	-96.8411	-92.8704	-93.9953	-96.0097	-100.4950	-96.2074	-91.6633	-94.4754	-96.0506
2971.5820	-79.7827	-95.2076	-74.6053	-67.6605	-85.9036	-92.3335	-92.0808	-99.5917	-97.6616	-93.1560	-97.1468	-92.0633	-89.7126	-93.9143	-90.9012
3014.6480	-82.4536	-85.7988	-72.7296	-67.1461	-83.3742	-91.8495	-94.6843	-103.2631	-106.1827	-93.7660	-97.6437	-90.8352	-92.4294	-104.4657	-88.8658
3057.7140	-96.9605	-80.5595	-73.2577	-69.9611	-87.3007	-81.3114	-93.7996	-103.2114	-103.1727	-95.8140	-101.6828	-89.4909	-100.0025	-99.9783	-89.9101
3100.7810	-78.5167	-78.9203	-70.4986	-74.2514	-96.3237	-78.8749	-89.6379	-93.1326	-96.3468	-96.8511	-110.4592	-88.2963	-93.8087	-94.4608	-91.8863
3143.8470	-74.4671	-84.7930	-69.6109	-70.3626	-84.5691	-78.2915	-89.7214	-92.0870	-97.0459	-105.0237	-99.2075	-91.0294	-90.8200	-94.1718	-93.8589
3186.9140	-75.4022	-94.1996	-70.1419	-65.0428	-76.9445	-77.8800	-100.2731	-89.9104	-96.1551	-95.0510	-91.9128	-101.1877	-95.0629	-101.8673	-92.8154
3229.9800	-78.8111	-88.4205	-72.0525	-65.7517	-76.8286	-80.7886	-94.1818	-80.1572	-100.0316	-90.3693	-90.7573	-97.1964	-106.0999	-97.9430	-89.5637
3273.0460	-81.2524	-86.9765	-76.9279	-75.4159	-83.4777	-90.5760	-93.9837	-94.4964	-103.1497	-91.6678	-92.1272	-91.6020	-92.9440	-97.7896	-87.9388
3316.1130	-83.5924	-85.0854	-80.6799	-80.7918	-88.1936	-96.9311	-101.1703	-94.9332	-93.2015	-91.8378	-96.8242	-87.6548	-89.5242	-101.5585	-87.4067
3359.1790	-87.0701	-88.3911	-82.3122	-81.3187	-84.7684	-93.0916	-93.8710	-90.8875	-94.8853	-89.0909	-99.4065	-85.3991	-90.9410	-113.0876	-89.9123
3402.2460	-92.4926	-102.1569	-88.1578	-86.8793	-87.1452	-97.5494	-95.6728	-86.5144	-104.1003	-87.6368	-91.7233	-86.2856	-90.8136	-104.2820	-105.4718
3445.3120	-96.0733	-101.7361	-94.7172	-78.8990	-83.1201	-90.2556	-105.0088	-86.1512	-108.2071	-87.7586	-93.8340	-89.6166	-90.8923	-96.7189	-91.6832
3488.3780	-104.0720	-106.2146	-94.3776	-74.3911	-79.4294	-82.6943	-101.2610	-88.5180	-97.1375	-89.6618	-98.9999	-91.3541	-96.0730	-92.5632	-86.6924
3531.4450	-99.8025	-93.7489	-93.2834	-74.1774	-81.5212	-81.0861	-91.6797	-91.4986	-98.0150	-96.9328	-92.5087	-94.2922	-95.1878	-93.9069	-86.1478
3574.5110	-97.2702	-92.6826	-91.9113	-77.4384	-90.8810	-81.9582	-89.7407	-98.4606	-96.1916	-101.1035	-88.2803	-90.8601	-93.6010	-99.0909	-85.5365
3617.5780	-87.0218	-94.3499	-91.4196	-77.4517	-92.1712	-82.3953	-97.9340	-98.5373	-88.8139	-96.5702	-88.5017	-89.9305	-97.9461	-104.9700	-87.1738
3660.6440	-81.2907	-92.9116	-81.9381	-76.2396	-86.5763	-84.5128	-95.0079	-90.9498	-86.1271	-95.1826	-92.6745	-96.6262	-108.8029	-99.2671	-96.1365
3703.7100	-77.4136	-88.3315	-80.2759	-79.7067	-87.2988	-92.4154	-90.4224	-88.8639	-85.4890	-92.5340	-99.6754	-102.4036	-99.8754	-91.1133	-93.5418
3746.7770	-74.8562	-82.9090	-87.5937	-90.3364	-86.9764	-90.3277	-93.1050	-92.0320	-86.9637	-90.4732	-116.6704	-107.7255	-98.7384	-90.1735	-98.2503

(lanjutan)
 Hasil Percobaan : Pengolahan Data Seat Ring No. 5

Freq	5.1.0	5.2.0	5.3.0	5.1.125	5.2.125	5.3.125	5.1.150	5.2.150	5.3.150	5.1.175	5.2.175	5.3.175	5.1.100	5.2.100	5.3.100
3789.8430	-73.9240	-78.7061	-76.2288	-75.5195	-84.1193	-96.0045	-92.9022	-97.8406	-90.6004	-90.2324	-99.9776	-94.5751	-101.1761	-95.5644	-92.7585
3832.9100	-72.6873	-74.7320	-69.5741	-69.3232	-81.4685	-95.2833	-92.6097	-100.1106	-90.1577	-90.8892	-111.3001	-89.3789	-93.9045	-100.7490	-87.4321
3875.9760	-71.8573	-71.8707	-66.3098	-69.5537	-81.8293	-88.5558	-92.2406	-104.5295	-88.3824	-88.0530	-102.0060	-89.8915	-90.3073	-97.1727	-92.6701
3919.0420	-73.0344	-72.4518	-68.0479	-72.3976	-83.3691	-89.4068	-91.7672	-99.3747	-91.3808	-85.4197	-106.4894	-88.6341	-92.2253	-94.5679	-100.6606
3962.1090	-78.2107	-77.3296	-78.0376	-79.5694	-85.1681	-93.5784	-91.5901	-92.2290	-100.3426	-86.9369	-104.8570	-103.3342	-98.9528	-97.7553	-92.4839
4005.1750	-79.0590	-84.5843	-78.7861	-86.2473	-86.8547	-95.9231	-93.0485	-90.6605	-105.3323	-95.7411	-95.1503	-112.8118	-99.5621	-100.3839	-97.0773
4048.2420	-82.9531	-86.5901	-75.9263	-86.6287	-91.7450	-95.3238	-94.4099	-95.4047	-96.5033	-92.6797	-88.3275	-90.5935	-96.4650	-96.0162	-96.8264
4091.3080	-98.8326	-89.2204	-79.8059	-88.5210	-94.7816	-90.5809	-94.8038	-106.9265	-91.1271	-85.9562	-87.3933	-83.7749	-96.9987	-88.0644	-90.4003
4134.3750	-91.4821	-96.8861	-80.5432	-87.7956	-91.5035	-90.9168	-91.5887	-92.9247	-89.0426	-84.2968	-87.7824	-81.5960	-89.6794	-83.0501	-90.9962
4177.4410	-88.9584	-87.8511	-77.9334	-85.7616	-88.4093	-94.4642	-88.3720	-87.4498	-90.1323	-89.8993	-90.7477	-83.8269	-81.2421	-81.1711	-90.9211
4220.5070	-89.6327	-87.8468	-81.2679	-83.9392	-87.0992	-99.0035	-85.8464	-87.2706	-87.1923	-87.1551	-105.9739	-90.9878	-77.2415	-82.8714	-84.9639
4263.5740	-91.2600	-90.1814	-90.7774	-87.2515	-98.3926	-103.0257	-84.7148	-93.0187	-85.6173	-80.4185	-90.5658	-91.0545	-76.5288	-86.4785	-83.7651
4306.6400	-91.4345	-92.4487	-88.8264	-97.8172	-93.3973	-97.5650	-86.3596	-99.4470	-85.9377	-81.1744	-88.3171	-89.3670	-78.8415	-88.6393	-85.1644
4349.7070	-88.8167	-95.7978	-80.8765	-95.1666	-94.8927	-94.2605	-92.3601	-100.6478	-88.9667	-85.5564	-90.5019	-90.9207	-85.3923	-90.8714	-88.2768
4392.7730	-86.8875	-93.0294	-80.0941	-90.2971	-97.5814	-102.6204	-104.5423	-99.5743	-89.3930	-90.0239	-93.9327	-89.8677	-82.5050	-91.6730	-89.4488
4435.8390	-87.3712	-94.5831	-82.9493	-90.7131	-91.2900	-98.5666	-92.0222	-89.6344	-89.7973	-95.2687	-99.1865	-87.4708	-77.2267	-86.1965	-86.0663
4478.9060	-93.0336	-94.5372	-88.4501	-88.3843	-91.0092	-91.1942	-86.9394	-87.2097	-87.3956	-107.5335	-100.9392	-88.3342	-76.1055	-86.6980	-87.2163
4521.9720	-110.9137	-87.7260	-94.1411	-86.6031	-91.2712	-88.5629	-83.4929	-90.3272	-83.8959	-91.5812	-98.4481	-87.8025	-76.4967	-87.5401	-86.8531
4565.0390	-106.1882	-87.0440	-92.2672	-93.0684	-91.7838	-88.5468	-84.0616	-94.9722	-83.2858	-84.1962	-92.6595	-85.7836	-78.2637	-83.8055	-84.9185
4608.1050	-100.4392	-86.9916	-86.7260	-96.1704	-93.1723	-90.5182	-89.7064	-95.4703	-85.1966	-83.6356	-86.7601	-85.1000	-88.2417	-88.8847	-85.4797
4651.1710	-92.2406	-87.8985	-83.7484	-91.2123	-97.0483	-101.4399	-110.6007	-103.3175	-88.7834	-87.4748	-89.4942	-85.5249	-85.5561	-84.0384	-89.6570
4694.2380	-92.6366	-94.8113	-85.4750	-101.6013	-98.1993	-96.8237	-98.9597	-101.5635	-89.6067	-95.6707	-94.1458	-86.5431	-85.52735	-78.5996	-96.6974
4737.3040	-96.6349	-97.7058	-91.5982	-97.7508	-100.8299	-93.8572	-107.3870	-100.6255	-89.3520	-96.2915	-100.2850	-85.7069	-85.2735	-81.3597	-99.9290
4780.3710	-95.9890	-93.8414	-93.1335	-94.0580	-122.3193	-98.7871	-108.1589	-118.7897	-90.4310	-92.2842	-83.9512	-92.9794	-89.3067	-92.9675	-91.4584
4823.4370	-102.9690	-96.3853	-93.1986	-92.4655	-97.6321	-99.0586	-109.4373	-108.8989	-95.5979	-91.2629	-83.9512	-92.9794	-89.3073	-88.3076	-90.3286
4866.5030	-98.1893	-96.6296	-109.6833	-89.7708	-91.5258	-90.7327	-97.0851	-105.3887	-101.5935	-92.6748	-81.6616	-92.2849	-90.2762	-86.1097	-92.8976
4909.5700	-92.3363	-94.4628	-90.5122	-87.1800	-89.5109	-89.1588	-92.4799	-99.1374	-90.7707	-90.5587	-81.8197	-92.1147	-84.5614	-84.2793	-83.3782
4952.6360	-91.0889	-96.7652	-87.8846	-87.7399	-90.6751	-91.0354	-91.4805	-97.6076	-88.0416	-86.4604	-82.4986	-86.9863	-84.5179	-86.6252	-79.3542
4995.7030	-88.2945	-93.0152	-89.2819	-99.7325	-97.0181	-91.3115	-94.6770	-94.0038	-93.0064	-84.7560	-86.3934	-83.3863	-88.5020	-88.7324	-80.3994
5038.7690	-87.5359	-93.6024	-97.6790	-92.3293	-102.1034	-91.8487	-95.6370	-91.7295	-86.2823	-86.8003	-96.7929	-85.2743	-97.9804	-82.3202	-85.0794
5081.8350	-92.5544	-94.9985	-102.1240	-91.9104	-102.5981	-95.3150	-96.8409	-94.4688	-87.8383	-92.7192	-96.6370	-93.4562	-91.4268	-90.3431	-88.9621
5124.9020	-99.1042	-94.5819	-102.9258	-103.6986	-98.8033	-98.0918	-98.9546	-113.4756	-94.1212	-104.8431	-93.8974	-111.4146	-91.9327	-90.6758	-94.1785
5167.9680	-95.3578	-98.2692	-96.3964	-110.4562	-97.4154	-95.0626	-95.7494	-118.4492	-95.1033	-95.3118	-99.4433	-106.2965	-86.7087	-86.6118	-99.8585
5211.0350	-101.0859	-103.5191	-89.4421	-105.5695	-97.8591	-94.8608	-93.1977	-99.6708	-98.0623	-95.5022	-103.4118	-97.4149	-83.8701	-85.2478	-95.4841
5254.1010	-95.5068	-102.9316	-91.1913	-109.3518	-94.2806	-98.8810	-94.0320	-97.7010	-95.7242	-99.7538	-111.6621	-88.1648	-85.2295	-85.6502	-92.3033
5297.1670	-95.1919	-130.1188	-105.4836	-100.5354	-91.1682	-113.5376	-92.3471	-105.1555	-92.7422	-97.5823	-92.4203	-84.6918	-88.4876	-88.9978	-96.0664
5340.2340	-110.9483	-100.5113	-96.8047	-107.1467	-90.3858	-107.0183	-93.1153	-95.5691	-94.1593	-92.0640	-88.9843	-84.9546	-88.0684	-93.0763	-102.3873
5383.3000	-92.2611	-97.5785	-93.7764	-92.8169	-90.5162	-105.4853	-101.6265	-95.2110	-91.7007	-90.8565	-90.9336	-87.0796	-85.0826	-100.0324	-98.6585
5426.3670	-87.9990	-97.4250	-94.3357	-92.0688	-90.7998	-99.7667	-90.5622	-95.1271	-88.3129	-92.2949	-92.2810	-92.3986	-85.9800	-102.0604	-94.2151
5469.4330	-90.8213	-95.8238	-101.0461	-90.0488	-92.4326	-93.8212	-89.5264	-96.9191	-88.3896	-105.7869	-88.3767	-97.7511	-90.6902	-90.4441	-90.4078
5512.5000	-91.3718	-96.1430	-102.7481	-85.2505	-94.0223	-91.0825	-85.7275	-98.6065	-89.9884	-89.1232	-86.4596	-90.7611	-86.6317	-89.1369	-92.2698
5555.5660	-92.0235	-101.3015	-101.9202	-85.1625	-93.3220	-91.5125	-85.7192	-95.3641	-92.8193	-91.9537	-91.7899	-88.6594	-81.0683	-93.2783	-93.8511
5598.6320	-98.0034	-106.7706	-108.4663	-90.9390	-93.8156	-94.5926	-90.3755	-96.1130	-96.2394	-100.3579	-117.1597	-92.0149	-81.5177	-93.5581	-93.3781

Freq	5.1.0	5.2.0	5.3.0	5.1.25	5.2.25	5.3.25	5.1.50	5.2.50	5.3.50	5.1.75	5.2.75	5.3.75	5.1.100	5.2.100	5.3.100
5641.6990	-97.3973	-105.1354	-102.4772	-91.2701	-93.1021	-102.1721	-93.4362	-96.5127	-94.7426	-101.7346	-99.5946	-101.4778	-85.6881	-98.0573	-100.7663
5684.7650	-95.6089	-102.4261	-97.1150	-91.5307	-95.1552	-112.1383	-97.4775	-98.0293	-96.4547	-100.7253	-96.3926	-101.4503	-88.9005	-99.7999	-103.9794
5727.8320	-101.4060	-108.0693	-97.9310	-95.4220	-99.9938	-103.0580	-98.0584	-101.4643	-97.4876	-98.2019	-101.7254	-101.6910	-91.9048	-95.6507	-104.8634
5770.8980	-105.4687	-111.2637	-102.9786	-107.5706	-104.2066	-98.2534	-97.4116	-97.9092	-95.3649	-93.5012	-98.4157	-105.4245	-89.2034	-91.0867	-103.4158
5813.9640	-99.4442	-103.3255	-99.1710	-100.3885	-98.3801	-94.9623	-100.8429	-94.8688	-94.8945	-88.7048	-90.2557	-106.5473	-87.8263	-87.9380	-100.1040
5857.0310	-114.2943	-101.6562	-96.7885	-96.1208	-96.4236	-94.2767	-105.8355	-96.7835	-96.7073	-86.9341	-94.4231	-97.2331	-90.1651	-84.7459	-103.7563
5900.0970	-99.6269	-104.7243	-101.0024	-97.7154	-97.6732	-97.1865	-96.5239	-87.3705	-95.3374	-88.3606	-90.0894	-97.9487	-86.3796	-86.6852	-91.7358
5943.1640	-100.4954	-101.2542	-103.4102	-94.3789	-96.1566	-105.5147	-90.2322	-86.3784	-90.5806	-88.2523	-84.7137	-93.4946	-78.5043	-85.0137	-89.7429
5986.2300	-102.6309	-100.9267	-99.4339	-93.3877	-97.7376	-119.7543	-92.6665	-90.3944	-89.8672	-89.1821	-87.9538	-91.9658	-76.8958	-82.5593	-90.9428
6029.2960	-96.4801	-104.6659	-97.9946	-96.6632	-101.6385	-102.8657	-109.9773	-96.1634	-93.2583	-93.8450	-99.6088	-94.1857	-80.8174	-88.8114	-92.2471
6072.3630	-96.6028	-100.2591	-96.1791	-101.7244	-100.5076	-99.1311	-99.9711	-102.6268	-96.8773	-98.9980	-108.5118	-97.0522	-89.0223	-105.6041	-94.3885
6115.4290	-103.6703	-100.0148	-94.7557	-95.8320	-94.9303	-100.6576	-100.8006	-107.8752	-99.0489	-119.6375	-99.3774	-106.2672	-93.9382	-106.3398	-95.4795
6158.4960	-105.4555	-108.2126	-93.5030	-92.3247	-91.7682	-97.3108	-112.1612	-106.2625	-116.5412	-99.9080	-98.7922	-96.4904	-92.3339	-94.1062	-95.6305
6201.5620	-102.3332	-104.6804	-96.8223	-91.8966	-93.0093	-92.8672	-104.8417	-103.0470	-98.5347	-97.0872	-104.7875	-96.4053	-92.6120	-87.9014	-92.6811
6244.6280	-101.2040	-103.9845	-104.2687	-94.3909	-97.7855	-92.8672	-112.2343	-102.2276	-100.7431	-97.7626	-97.3955	-94.528	-94.6189	-86.8307	-95.2932
6287.6950	-100.4785	-102.3204	-97.0344	-103.2267	-111.1519	-95.6617	-101.7762	-104.1864	-110.4954	-102.6110	-97.2381	-94.4231	-97.4071	-89.8006	-97.1007
6330.7610	-102.3324	-96.8307	-96.1951	-108.3841	-104.9669	-98.4986	-100.0420	-106.8958	-105.4700	-108.6781	-100.2276	-99.6359	-105.3670	-93.6284	-92.8305
6373.8280	-99.4590	-98.1713	-99.9898	-100.7932	-105.7665	-102.0415	-123.3541	-109.2353	-105.7412	-108.6781	-100.2276	-99.6359	-102.7278	-100.4485	-95.5006
6416.8940	-101.1658	-106.5291	-97.5427	-98.2397	-112.9547	-102.6093	-104.8475	-112.9077	-110.2849	-114.3045	-103.7498	-98.5656	-110.9622	-98.6126	-99.4079
6459.9600	-101.8207	-96.2767	-97.3687	-100.2007	-102.6309	-100.8207	-113.9756	-105.5750	-105.8913	-106.1497	-103.4759	-100.3186	-102.9967	-100.7110	-97.9164
6503.0270	-100.2101	-95.5617	-104.1084	-103.7848	-100.5074	-101.9851	-105.9701	-113.6820	-103.9966	-100.1591	-101.5071	-96.9079	-98.9437	-103.5611	-98.3713
6546.0930	-100.7098	-101.7954	-110.9669	-97.1874	-105.9338	-104.9441	-103.2633	-103.7663	-103.8777	-101.3692	-100.9693	-96.4737	-101.4939	-105.0757	-102.4529
6589.1600	-101.7414	-100.7657	-103.0210	-94.9572	-115.9738	-107.8027	-103.0192	-109.6793	-102.5078	-104.6806	-104.0180	-99.6829	-105.7384	-106.5812	-107.4364
6632.2260	-101.4611	-99.4356	-106.8414	-98.6920	-110.5629	-111.7281	-102.9405	-112.6140	-102.5074	-106.2516	-106.4236	-103.7039	-105.0865	-108.4926	-109.0022
6675.2920	-99.0241	-105.4630	-111.2858	-116.4066	-105.5859	-115.3974	-104.4624	-109.3360	-107.2555	-102.6906	-108.8899	-107.7729	-110.4028	-110.0090	-112.4708
6718.3590	-100.0742	-110.9298	-102.5609	-102.5337	-108.1350	-109.8256	-122.4361	-108.2532	-112.5315	-102.6862	-115.8030	-113.0557	-111.6378	-114.6842	-107.8112
6761.4250	-110.5142	-111.7543	-101.6151	-102.9695	-113.0076	-105.6479	-107.8913	-115.4473	-110.4228	-103.7516	-125.0203	-129.9310	-105.0301	-121.5356	-105.4921
6804.4920	-101.8182	-110.5707	-104.6665	-104.9270	-112.8576	-105.9208	-108.3978	-107.8461	-108.7438	-103.7315	-122.3046	-117.5428	-109.1309	-106.7205	-106.9239
6847.5580	-99.3530	-116.5839	-114.4285	-105.7647	-113.3118	-110.2601	-112.9643	-109.4606	-103.8448	-104.1479	-111.0743	-109.4748	-111.5593	-104.9827	-110.9024
6890.6250	-101.4212	-109.9968	-120.7585	-107.7466	-111.9084	-122.2114	-114.7409	-130.5625	-105.4988	-106.7308	-109.1573	-105.9337	-106.2699	-110.9590	-111.5837
6933.6910	-104.4369	-107.9073	-113.9666	-110.4491	-109.6267	-118.8383	-117.3400	-113.0024	-111.6920	-108.3163	-115.2685	-107.1818	-109.5536	-120.8954	-108.1559
6976.7570	-107.4006	-110.8685	-109.8509	-114.2344	-109.6823	-118.5249	-111.5229	-112.9251	-118.0206	-109.1055	-122.4367	-113.3914	-109.9697	-110.5479	-107.5110
7019.8240	-113.5857	-115.9876	-108.0943	-111.9338	-109.1043	-122.2697	-113.0922	-117.2055	-122.1421	-118.0387	-112.7943	-119.5990	-107.0847	-110.7258	-109.1964
7062.8900	-126.1965	-121.3572	-109.9809	-109.1637	-109.9125	-124.5482	-123.6530	-115.4092	-116.5666	-114.9118	-110.6386	-133.4497	-107.4351	-117.3230	-112.8454
7149.0230	-119.3388	-120.7343	-123.3611	-111.6379	-118.4566	-121.8455	-129.5574	-124.3833	-120.4853	-106.5787	-110.4562	-120.4818	-110.9110	-122.4339	-111.3192
7192.0890	-122.3760	-121.7833	-114.6335	-113.5894	-119.3874	-138.5884	-131.4380	-122.9000	-117.1478	-106.5774	-115.1501	-108.7295	-114.8922	-118.7704	-110.7864
7235.1560	-114.9680	-130.9065	-111.2768	-117.3953	-118.2897	-115.7752	-123.9499	-119.5763	-116.0140	-106.8754	-113.7919	-107.7902	-109.0303	-150.2042	-113.6298
7278.2220	-114.8003	-118.9853	-113.0796	-117.2462	-117.5009	-119.8176	-125.9249	-114.9323	-113.6999	-106.3290	-115.9988	-110.5278	-109.2509	-120.7332	-113.8365
7321.2890	-124.8391	-117.4147	-125.9204	-112.7314	-119.6906	-127.7746	-149.4778	-112.8591	-115.7584	-107.0035	-126.9092	-120.0374	-115.5609	-119.2646	-114.6497
7364.3550	-125.1875	-124.0847	-118.3465	-116.0113	-114.5222	-117.9291	-124.2587	-117.1585	-133.1508	-109.3167	-129.3923	-123.1540	-123.0398	-111.7783	-118.9296
7407.4210	-118.6238	-125.1104	-114.4001	-127.6513	-112.1054	-117.3511	-117.7565	-110.7871	-115.8512	-112.0632	-119.5173	-117.9531	-132.0896	-109.2995	-121.2476
7450.4880	-113.6925	-120.3739	-112.3470	-112.5243	-116.3035	-119.1443	-115.6149	-110.4711	-115.9455	-114.1945	-116.5583	-116.1407	-124.1014	-108.6189	-127.2145

Freq	5.1.0	5.2.0	5.3.0	5.1.25	5.2.25	5.3.25	5.1.50	5.2.50	5.3.50	5.1.75	5.2.75	5.3.75	5.1.100	5.2.100	5.3.100
7493.5540	-115.0840	-123.9772	-113.9557	-109.1861	-121.2043	-118.1374	-114.0101	-113.7605	-127.0450	-117.3736	-115.3165	-114.8209	-116.7638	-109.9869	-116.6153
7536.6210	-115.3229	-124.7755	-116.6352	-110.4259	-118.2419	-116.0265	-115.3681	-110.5227	-118.7907	-120.5024	-110.8741	-113.0231	-115.5648	-111.4937	-111.7354
7579.6870	-113.6867	-121.9588	-113.4758	-116.6086	-113.5056	-112.8698	-118.5775	-109.1091	-114.0782	-126.2285	-110.8198	-113.8918	-121.0585	-114.3909	-115.2266
7622.7530	-112.6069	-122.7257	-110.1740	-127.8787	-112.3912	-112.1676	-120.6240	-110.6980	-111.4010	-128.6414	-114.7595	-127.8269	-127.1413	-116.7986	-145.9409
7665.8200	-112.2658	-127.4571	-110.9002	-117.9006	-115.6209	-115.2839	-114.3571	-113.0288	-111.4285	-124.9413	-117.0691	-115.9620	-128.4684	-129.3489	-118.3271
7708.8860	-112.0068	-118.9895	-117.5931	-114.8936	-118.6393	-122.0756	-112.6770	-119.1204	-115.3423	-123.2634	-113.7552	-113.2272	-122.1945	-124.4919	-117.0247
7751.9530	-116.4248	-122.5633	-120.1060	-116.1206	-113.9370	-126.5922	-117.4692	-122.5078	-123.8020	-116.0795	-111.8092	-119.2985	-123.0836	-127.5107	-118.6426
7795.0190	-113.0928	-123.1480	-112.7650	-117.7567	-112.4507	-119.4370	-132.9896	-122.9256	-117.1137	-113.0417	-114.4091	-119.8521	-116.7127	-128.7136	-122.1023
7838.0850	-109.8535	-131.1423	-111.1070	-119.0478	-113.1816	-119.3631	-116.1112	-123.9717	-116.7478	-111.7275	-115.9225	-119.3667	-114.6920	-118.2311	-122.0431
7881.1520	-111.4273	-124.1423	-110.2336	-119.6691	-109.8830	-119.2622	-117.2180	-124.4973	-118.1988	-110.5642	-117.0381	-125.0603	-114.7232	-114.1962	-116.2616
7924.2180	-114.8125	-118.5754	-108.3111	-121.3312	-108.5246	-117.4688	-132.4955	-131.0326	-116.0429	-112.1047	-122.0887	-128.0193	-112.2547	-114.9547	-114.8429
7967.2850	-114.6891	-115.0443	-107.8719	-115.7131	-110.6937	-115.4576	-128.5128	-122.2711	-113.4541	-115.9951	-130.2411	-125.5615	-118.3578	-118.5226	-115.3205
8010.3510	-116.0716	-115.0903	-109.5600	-113.2660	-113.5092	-115.2667	-118.8762	-122.5622	-114.4842	-122.2036	-131.1774	-118.7041	-121.3655	-117.1964	-121.2379
8053.4170	-124.2994	-121.6206	-113.0493	-113.5780	-116.6950	-112.2939	-118.9712	-128.5370	-127.8873	-117.5281	-120.8032	-118.8764	-112.7214	-115.0852	-120.8973
8096.4840	-115.8695	-119.8933	-119.8222	-114.6018	-124.3373	-110.4174	-118.6026	-133.7194	-121.8964	-117.4454	-115.9360	-116.7051	-110.5060	-118.5966	-117.2079
8139.5500	-115.8322	-114.7118	-117.2349	-117.6981	-131.9088	-116.0018	-116.5359	-126.8551	-122.9864	-113.5827	-116.4572	-116.8097	-110.8752	-125.5292	-115.1306
8182.6170	-117.7946	-111.4162	-115.2212	-120.5989	-127.5679	-120.3360	-115.4964	-136.7804	-123.8577	-110.9067	-118.4430	-119.6509	-116.1966	-124.5732	-116.7251
8225.6830	-117.7298	-110.9219	-123.3224	-119.7362	-126.6671	-114.4523	-115.1775	-131.6304	-119.1045	-115.3239	-120.8441	-122.3378	-126.1867	-120.9201	-123.5315
8268.7500	-114.2690	-115.3071	-114.0856	-115.6965	-123.1448	-122.5349	-126.8048	-120.9184	-120.7755	-125.9208	-116.8465	-128.7465	-131.1989	-118.2690	-121.8016
8311.8160	-115.3518	-119.8055	-110.4960	-115.8470	-129.3176	-119.3558	-116.8490	-114.4370	-115.9508	-121.7041	-112.5840	-122.3940	-126.2666	-117.4651	-115.1062
8354.8820	-116.6570	-115.1109	-110.3014	-113.8131	-127.0611	-118.1717	-114.5251	-111.0985	-110.2017	-120.4519	-110.8915	-118.9356	-134.7933	-123.7921	-115.2928
8397.9490	-115.9125	-112.7011	-113.7676	-112.5390	-120.6725	-115.1921	-118.3547	-112.1648	-108.5913	-115.5013	-111.7443	-117.6011	-120.9855	-121.6719	-117.7803
8441.0150	-128.4524	-111.2690	-126.7926	-115.4566	-115.2350	-116.4995	-135.1071	-122.8831	-112.1278	-122.4217	-114.2034	-116.7311	-116.5689	-114.3970	-118.4069
8484.0820	-120.2667	-114.1217	-116.5216	-118.4758	-117.2139	-115.9072	-117.9727	-114.6846	-135.1950	-128.6289	-113.7051	-112.7252	-123.4259	-113.5038	-132.4599
8527.1480	-119.9213	-119.6678	-123.9342	-115.5462	-125.2263	-119.0647	-120.7161	-113.8067	-114.4307	-119.6484	-113.5816	-112.9009	-124.9653	-115.9994	-116.4122
8570.2140	-117.7028	-118.9174	-121.5312	-119.7972	-117.3972	-118.5605	-118.9632	-116.7382	-114.1266	-117.0392	-113.7060	-116.8962	-124.1747	-119.6545	-112.3413
8613.2810	-116.3018	-121.2847	-117.6483	-123.2682	-118.0696	-116.0045	-114.7915	-118.1505	-115.8146	-114.8364	-118.3006	-115.3356	-120.3825	-119.5303	-114.6543
8656.3470	-117.4452	-122.1218	-114.5940	-119.8592	-121.1351	-121.5325	-114.7034	-118.4118	-118.9522	-112.2871	-120.8241	-115.5560	-115.1894	-116.8630	-121.8399
8699.4140	-123.9436	-118.1643	-111.4636	-122.7381	-126.8633	-119.6539	-115.1392	-120.6555	-122.0323	-111.1731	-117.4849	-115.5074	-116.2762	-124.8485	-119.2414
8742.4800	-123.9753	-117.8201	-108.3435	-121.0794	-140.9895	-118.5949	-114.4603	-115.0490	-115.7061	-114.6884	-119.3352	-116.2348	-115.5794	-115.6235	-110.2485
8785.5460	-117.3334	-131.7812	-107.8883	-118.2431	-120.0380	-116.7029	-114.7787	-113.7939	-114.6221	-114.6884	-119.3352	-116.2348	-115.5794	-115.6235	-110.2485
8828.6130	-114.3957	-117.8831	-113.6593	-117.1630	-113.3986	-118.5962	-116.8224	-115.2526	-116.1493	-113.3709	-120.9537	-115.1900	-111.6982	-114.8238	-115.0200
8871.6790	-124.0619	-113.9537	-120.1609	-127.1559	-114.1034	-121.4669	-116.7638	-120.8585	-123.5208	-113.5889	-116.8907	-111.1363	-113.5510	-110.3873	-113.2897
8914.7460	-111.1568	-114.4915	-112.4896	-125.3639	-120.8531	-119.5756	-111.0148	-123.7320	-119.6119	-116.4127	-119.0583	-111.5990	-124.4523	-111.1405	-112.3071
8957.8120	-108.5365	-120.0643	-110.0159	-127.6469	-115.4129	-120.9424	-110.0729	-124.7434	-113.3895	-117.9518	-117.7001	-121.6575	-120.0905	-117.8469	-119.3902
9000.8780	-112.2039	-122.3138	-111.5732	-121.9884	-112.0485	-131.8452	-113.7453	-120.9550	-113.6958	-123.1891	-115.5521	-118.2769	-121.6456	-125.2167	-127.0411
9043.9450	-115.7339	-116.4085	-116.9151	-122.1790	-111.9203	-117.9831	-123.2224	-118.1438	-114.5410	-113.7250	-115.1307	-116.1063	-127.1717	-116.2549	-125.4563
9087.0110	-116.8074	-114.4660	-115.1765	-119.2139	-110.2897	-117.2999	-123.8795	-127.9306	-121.6811	-114.3985	-114.9504	-118.7799	-130.1711	-115.0993	-127.8509
9130.0780	-122.4805	-116.9155	-116.0653	-114.9768	-107.8019	-115.6387	-119.3696	-123.2478	-124.8392	-127.6798	-131.5074	-118.1052	-118.8157	-116.3332	-161.5797
9173.1440	-123.9787	-120.5591	-124.9945	-115.0968	-107.7583	-113.8099	-124.9782	-119.3609	-121.3021	-115.7697	-111.4234	-116.0272	-109.8690	-125.2419	-124.3643
9216.2100	-117.6422	-131.0527	-127.5512	-117.8137	-110.3948	-113.8085	-116.2660	-123.4427	-119.7405	-110.8331	-107.1561	-119.0522	-107.7217	-118.9915	-124.7636
9259.2770	-112.8643	-115.8056	-115.2143	-117.1342	-113.6306	-114.2151	-111.1495	-115.6737	-115.2297	-111.8856	-108.1390	-125.7520	-109.0826	-118.1806	-116.2204
9302.3430	-113.5407	-113.6804	-110.0047	-115.8955	-113.3221	-117.1290	-115.5969	-113.1106	-113.9651	-115.0347	-111.3058	-119.6951	-116.5148	-125.3580	-115.7176

Freq	5.1.0	5.2.0	5.3.0	5.1.25	5.2.25	5.3.25	5.1.50	5.2.50	5.3.50	5.1.75	5.2.75	5.3.75	5.1.100	5.2.100	5.3.100
9345.4100	-117.3510	-114.1246	-109.9034	-120.7801	-116.8755	-116.0809	-123.5060	-116.4169	-113.1997	-118.5369	-112.3889	-111.8580	-114.9152	-118.9387	-119.7812
9388.4760	-116.2488	-110.8059	-113.3102	-125.0424	-121.0248	-113.0933	-113.4520	-119.6767	-113.8525	-122.7778	-118.6517	-110.0237	-110.1384	-113.2954	-124.6623
9431.5420	-116.6467	-115.8144	-118.1711	-140.9444	-120.4061	-115.3975	-115.3100	-117.1046	-121.0262	-119.6913	-118.6802	-112.1533	-109.1287	-110.3021	-119.5934
9474.6090	-119.8767	-118.3367	-121.6684	-132.3775	-118.5124	-118.0674	-118.4878	-120.0412	-128.1347	-118.7284	-114.2146	-114.2756	-112.7609	-113.8933	-122.0089
9517.6750	-118.6452	-109.6818	-124.6173	-118.6718	-119.8389	-119.3407	-112.9165	-114.7727	-130.0437	-128.1039	-129.2986	-112.4508	-118.9151	-120.7539	-114.4224
9560.7420	-115.2148	-108.8540	-116.9403	-112.5109	-112.5779	-120.5205	-113.6121	-117.6609	-122.3939	-124.1017	-122.1203	-109.2424	-118.9151	-120.7539	-114.4224
9603.8080	-114.2076	-109.5486	-108.0298	-113.5273	-112.2929	-121.1757	-138.2734	-120.9177	-131.2760	-129.8080	-120.0814	-109.2635	-113.3464	-118.5198	-111.6077
9646.8750	-121.2877	-111.9865	-106.6266	-115.0150	-112.9585	-113.4085	-113.4533	-114.7052	-116.3980	-122.3003	-115.2996	-113.7290	-114.6160	-117.7164	-112.9250
9689.9310	-113.5966	-117.1058	-109.9033	-113.3637	-112.0125	-113.7411	-111.2831	-112.7531	-111.7975	-119.8408	-111.1563	-113.6836	-119.2859	-123.9566	-117.0720
9733.0070	-110.4100	-111.6405	-115.3651	-113.1914	-111.9305	-117.4272	-111.7997	-115.6808	-117.7839	-119.6089	-109.2335	-115.0947	-122.1528	-120.2811	-123.7364
9776.0740	-114.4109	-111.0626	-119.6118	-115.5102	-110.6690	-114.7943	-112.8085	-119.2104	-118.1194	-116.8010	-110.4115	-126.1391	-127.6734	-112.5810	-120.1184
9819.1400	-125.1444	-114.5044	-115.1000	-113.0409	-111.3597	-109.4917	-112.1095	-113.7852	-113.0960	-113.6747	-112.6575	-119.1850	-127.7184	-112.2176	-116.7189
9862.2070	-115.2128	-117.7211	-110.8996	-112.0222	-114.3961	-107.2293	-111.5712	-110.9677	-114.3706	-112.5524	-119.6993	-118.4087	-120.7710	-113.5976	-114.8160
9905.2730	-116.2368	-119.5456	-109.9680	-119.3069	-113.9831	-108.4967	-111.6118	-113.5609	-137.2895	-115.2411	-126.4549	-124.1350	-121.8531	-115.3427	-113.5149
9948.3390	-119.2803	-123.5886	-111.2084	-117.6712	-111.2007	-113.6966	-112.8495	-122.6630	-112.3737	-117.9253	-131.5687	-124.3334	-120.4480	-120.3907	-109.0866
9991.4060	-117.1951	-119.8832	-116.7861	-115.4365	-111.4675	-120.3217	-115.0536	-120.7626	-110.4870	-119.3273	-120.6884	-119.0842	-120.4480	-118.4068	-110.4647
10034.4720	-121.0044	-116.7484	-115.8581	-119.4423	-113.3488	-132.5155	-122.1725	-123.5093	-114.1540	-121.6536	-115.3124	-118.5753	-120.2281	-116.6275	-115.5491
10077.5390	-121.9422	-122.9341	-111.6327	-119.9037	-112.7293	-144.3212	-122.7863	-118.7873	-121.8507	-116.1748	-113.1321	-120.5701	-130.7964	-116.5236	-111.4532
10120.6050	-128.6087	-119.0707	-112.3593	-123.5001	-113.8334	-127.4073	-112.9647	-112.1424	-123.1213	-112.1828	-116.1851	-112.4143	-121.7219	-112.4794	-112.8102
10163.6710	-118.0241	-119.6607	-125.5694	-123.8806	-116.1197	-122.8683	-109.6718	-110.0429	-118.5081	-111.4376	-121.9467	-109.3274	-113.1880	-112.1252	-127.8954
10206.7380	-111.5423	-130.6030	-113.6476	-117.6585	-112.8200	-125.1599	-109.4357	-110.8113	-121.6792	-113.2983	-111.6030	-111.2696	-110.8874	-113.6790	-119.2062
10249.8040	-111.4539	-122.0822	-114.0223	-115.6002	-115.4112	-120.1804	-110.1083	-112.6962	-127.1345	-114.3514	-109.9096	-118.8434	-116.6332	-113.1487	-119.8552
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10335.9370	-119.1043	-112.3411	-117.1214	-113.9640	-114.9252	-118.8305	-113.7734	-122.5407	-132.7252	-114.3852	-113.0784	-113.0453	-118.6633	-120.0308	-118.0494
10379.0030	-123.4176	-109.1953	-115.6483	-115.4379	-109.9635	-117.1906	-117.5917	-117.9743	-130.6681	-114.0772	-114.6161	-115.0444	-115.4361	-111.3028	-114.5524
10422.0700	-129.3323	-109.7596	-118.3309	-116.3680	-109.4675	-121.3620	-125.5247	-118.1097	-121.0691	-113.5239	-121.4644	-123.3600	-115.5059	-114.4085	-116.5242
10465.1360	-118.5537	-119.0287	-118.8714	-123.8757	-112.3738	-117.4779	-116.8535	-121.4140	-120.3959	-116.5941	-111.1427	-118.9379	-116.8264	-121.7717	-116.0696
10551.2690	-115.7471	-117.3160	-114.5598	-120.6287	-113.5551	-111.4998	-112.3092	-116.1840	-113.4509	-118.3412	-112.0562	-117.3554	-119.4922	-118.2495	-122.6556
10594.3350	-118.7469	-131.6481	-127.1306	-121.6972	-113.6155	-118.2737	-119.9360	-118.9859	-112.7534	-114.0884	-110.6520	-116.7330	-118.6509	-124.7986	-117.3403
10637.4020	-116.2759	-115.3915	-124.7564	-114.0788	-117.8245	-112.8030	-120.0479	-117.2312	-114.6744	-113.6465	-109.7291	-115.7751	-119.5388	-121.9280	-116.5268
10680.4680	-114.1028	-115.2230	-127.2549	-109.4403	-128.9019	-111.2715	-121.1658	-118.1571	-114.6209	-111.6795	-113.5230	-112.5535	-115.0775	-124.5402	-115.0379
10723.5350	-116.1359	-120.7091	-129.4656	-107.7944	-123.1611	-111.2396	-123.7602	-123.9479	-114.4092	-114.1657	-119.7430	-110.6180	-113.2740	-125.4349	-115.5696
10766.6010	-113.9022	-118.2134	-118.1153	-111.8348	-124.1312	-109.2830	-121.0211	-122.6529	-116.3441	-121.3088	-140.1742	-113.6654	-114.5989	-115.0789	-115.0245
10809.6670	-113.2962	-112.2078	-118.6257	-119.5248	-124.3569	-108.9378	-121.6837	-122.0416	-114.3494	-117.1275	-126.1452	-120.5204	-118.4093	-121.3950	-112.7046
10852.7340	-121.1326	-110.8145	-110.1970	-113.9372	-126.2529	-112.1131	-122.7860	-124.3565	-114.1207	-117.6183	-128.8870	-111.6440	-123.3025	-121.0074	-113.4411
10895.8000	-126.8398	-110.6076	-109.5303	-112.5522	-126.8510	-123.5845	-134.2687	-116.0624	-116.8385	-116.1292	-114.6342	-108.6012	-116.6778	-119.0146	-111.2052
10938.8670	-126.3027	-112.0068	-111.2242	-113.9747	-126.1425	-119.4842	-119.9069	-115.4207	-115.7424	-113.3243	-113.8520	-110.1616	-115.7916	-121.1685	-113.9958
10981.9330	-120.8207	-116.3131	-117.7794	-119.4595	-139.8258	-111.8358	-117.2471	-119.7463	-114.9575	-116.1352	-115.6458	-116.6516	-111.0679	-126.2046	-126.0182
11025.0000	-114.2456	-133.6078	-127.3439	-122.4017	-134.5185	-109.4315	-128.5696	-124.9688	-123.7470	-123.0261	-112.6850	-124.0723	-111.8283	-117.1846	-127.4969
11068.0660	-113.0954	-124.9331	-118.9153	-116.7492	-119.6519	-110.5914	-119.2697	-120.0593	-116.2477	-119.3079	-112.0807	-122.8657	-111.6043	-118.3849	-117.3146
11111.1320	-138.6748	-119.9378	-112.9847	-112.9554	-120.6894	-113.4271	-119.0558	-119.9941	-112.6461	-119.7981	-118.1397	-111.6766	-115.6043	-118.3849	-117.3146
11154.1990	-131.3995	-115.6527	-112.2468	-111.2340	-114.6978	-112.4722	-140.3344	-120.1444	-113.8119	-128.3127	-118.5514	-107.2201	-117.2982	-121.5242	-116.0125

Freq	5.1.0	5.2.0	5.3.0	5.1.25	5.2.25	5.3.25	5.1.50	5.2.50	5.3.50	5.1.75	5.2.75	5.3.75	5.1.100	5.2.100	5.3.100
11197.2650	-127.8624	-110.1255	-116.5534	-115.2975	-111.7184	-111.7939	-116.0177	-114.5967	-120.4387	-113.2799	-114.4737	-106.4982	-115.3706	-123.1877	-124.9752
11240.3320	-120.2748	-107.8050	-115.2813	-126.7995	-110.6745	-113.4077	-115.9827	-113.6648	-125.8915	-110.6626	-114.7175	-108.0605	-115.4848	-127.0182	-119.7164
11283.3980	-121.3295	-109.4448	-117.5297	-127.3402	-110.6774	-115.1137	-116.6979	-114.3958	-121.3876	-113.1272	-117.7473	-112.2572	-124.4241	-118.9564	-114.0166
11326.4640	-116.5922	-112.9764	-123.1239	-117.6076	-112.3424	-116.6782	-111.7407	-114.9488	-125.4991	-117.6821	-121.2428	-112.2438	-120.8057	-114.3684	-115.7338
11369.5310	-112.3401	-113.1667	-134.8605	-114.0433	-113.1286	-114.3298	-110.4568	-116.5284	-127.8613	-118.1519	-129.7661	-109.2395	-116.3315	-112.4219	-119.4315
11412.5970	-111.0198	-114.1949	-117.4103	-114.0019	-130.6702	-115.0194	-113.9339	-123.7226	-125.0517	-115.6612	-116.8668	-108.9241	-117.1943	-112.0480	-114.0561
11455.6640	-111.3547	-118.5412	-115.7604	-113.1526	-110.1645	-115.0514	-115.8831	-117.8462	-114.1560	-114.4121	-111.7513	-110.8544	-118.4620	-112.5112	-114.1938
11498.7300	-114.1875	-119.9372	-120.6130	-114.1923	-112.2259	-114.8964	-115.8831	-117.8462	-114.1560	-110.7275	-117.9434	-117.5503	-123.7024	-113.6142	-115.8751
11541.7960	-117.1875	-138.1689	-117.8813	-119.9584	-112.4482	-116.5375	-122.1093	-124.7982	-114.5371	-108.8512	-114.5344	-118.0501	-127.1305	-110.3408	-112.2160
11584.8630	-120.5250	-116.9529	-117.4932	-120.9315	-111.0446	-119.0478	-129.6409	-118.0360	-118.9484	-109.8512	-113.3444	-117.4084	-118.6968	-107.4382	-110.9109
11627.9290	-124.2096	-113.9027	-118.7955	-113.5554	-113.3474	-117.8831	-119.2206	-114.5482	-122.8232	-109.2870	-113.3444	-117.4084	-115.9399	-105.6724	-113.8242
11670.9960	-130.6969	-115.5820	-114.4577	-110.8880	-123.7380	-113.0070	-113.6445	-115.5546	-122.9214	-111.0416	-111.3385	-124.8708	-118.1296	-105.4067	-123.8361
11714.0620	-119.8901	-118.4706	-111.6767	-112.4995	-118.3407	-113.8395	-111.2389	-116.9339	-120.5577	-110.0572	-108.6351	-123.8191	-126.7425	-106.4599	-116.2914
11757.1280	-115.4815	-120.0313	-110.8278	-120.2464	-113.2046	-117.1562	-113.0877	-127.3532	-113.8026	-109.7587	-107.8021	-120.1653	-121.5814	-107.9540	-117.8343
11800.1950	-114.2287	-119.5261	-112.2979	-120.7088	-112.7480	-123.1495	-120.7600	-117.6970	-110.2274	-112.4871	-109.8675	-118.9655	-114.2626	-109.6305	-119.1730
11843.2610	-114.9839	-118.4167	-116.1651	-121.8958	-118.3397	-117.3109	-119.2973	-114.1896	-111.1595	-116.9386	-117.4625	-119.3351	-111.8261	-109.7797	-118.2183
11886.3280	-117.3616	-118.5216	-120.2195	-123.1001	-136.1328	-116.0845	-112.1923	-115.8813	-117.6888	-120.4171	-127.5386	-120.4891	-111.6948	-112.1244	-135.1704
11929.3940	-134.5666	-115.9258	-114.6070	-115.7885	-130.9437	-117.1441	-110.9962	-120.5259	-117.5453	-117.8505	-120.4190	-119.9773	-112.4482	-124.0698	-114.6503
11972.4600	-115.0056	-112.0782	-111.0019	-114.6747	-130.5404	-114.4519	-111.8728	-114.6035	-115.2398	-114.6172	-119.6200	-119.8535	-116.3427	-115.1242	-121.6509
12015.5270	-111.2774	-110.6972	-112.2112	-113.6190	-125.5788	-113.6945	-113.6571	-119.8699	-114.5012	-112.0673	-116.8384	-122.3464	-114.4652	-118.4266	-113.2251
12058.5930	-114.7936	-112.1044	-118.5132	-111.1349	-121.3802	-115.8991	-118.3815	-129.0165	-116.4980	-115.8078	-111.0922	-120.3017	-114.8966	-120.1643	-118.8554
12101.6600	-118.9919	-118.1908	-110.7689	-111.2639	-115.5321	-115.3532	-125.9771	-116.9206	-130.0581	-130.2729	-109.3478	-116.8458	-112.9717	-121.0810	-118.2029
12144.7260	-115.4923	-119.8408	-116.1544	-113.3917	-113.7418	-114.0540	-117.5763	-111.6923	-116.0038	-123.6085	-130.2044	-117.2141	-113.5077	-120.8426	-112.3302
12187.7920	-114.9891	-119.3662	-111.2818	-116.4500	-117.5561	-111.7819	-111.7271	-110.9929	-116.1300	-131.3934	-113.7250	-117.6757	-113.8778	-113.6496	-110.9171
12230.8590	-116.9919	-118.1908	-110.7689	-113.4433	-125.9241	-116.6612	-113.0090	-113.6705	-121.2321	-124.9025	-111.0641	-115.8162	-117.3772	-112.3594	-114.1858
12273.9250	-119.4074	-115.8161	-115.2713	-115.5176	-120.7627	-117.5201	-113.9356	-119.6038	-123.0658	-120.8190	-108.2005	-112.8807	-118.5630	-116.5998	-125.6516
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12403.1250	-121.8886	-117.2357	-115.4385	-127.4130	-119.7494	-120.6125	-116.9817	-112.5770	-117.7789	-126.6491	-111.8637	-127.1221	-118.9591	-110.5263	-114.1345
12446.1910	-123.8614	-119.1828	-123.9247	-118.7006	-115.8574	-111.1402	-118.9395	-108.7280	-124.1828	-114.2709	-128.7032	-131.4105	-126.0706	-111.6637	-115.2311
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12532.3240	-120.7108	-112.4166	-126.5291	-119.3167	-123.3470	-111.8147	-117.1562	-115.3654	-119.8829	-116.0502	-116.6795	-113.2785	-114.1863	-115.2484	-114.1738
12575.3900	-131.3882	-115.3041	-129.2383	-141.9339	-125.0582	-119.3797	-116.0500	-118.8176	-122.9133	-112.8367	-112.5888	-114.1301	-115.0872	-113.0250	-113.1288
12618.4570	-112.8823	-117.6149	-127.0465	-121.6960	-119.8594	-134.3292	-113.5141	-121.7206	-125.0508	-113.5662	-109.1635	-112.2206	-121.4708	-112.9795	-115.4401
12661.5230	-108.9842	-114.0343	-116.9470	-117.2178	-119.4066	-122.1117	-113.5196	-112.4060	-141.9888	-114.8424	-110.4146	-110.7154	-133.0602	-114.1319	-116.9181
12704.5890	-108.9669	-113.5747	-111.2628	-117.0835	-138.6889	-125.4285	-114.8448	-108.0620	-124.6971	-116.3318	-117.6598	-113.5239	-140.1595	-116.2678	-116.6853
12747.6560	-112.2116	-116.0342	-111.7765	-127.4361	-119.2655	-118.3120	-131.0005	-108.4654	-123.0283	-116.6496	-116.2126	-126.6087	-115.7792	-121.0085	-113.7630
12790.7220	-116.7634	-115.8923	-118.8059	-120.7374	-119.7343	-117.2711	-119.3317	-109.7808	-131.8779	-118.5758	-112.3519	-115.9081	-109.5254	-119.7452	-111.9889
12833.7890	-116.7298	-118.1080	-117.9827	-115.5876	-116.0996	-122.2980	-116.9714	-110.3687	-119.0732	-127.1308	-112.3032	-111.2482	-109.9400	-114.4606	-112.1031
12876.8550	-115.9371	-126.0467	-121.0698	-115.7642	-111.9144	-120.3693	-120.8954	-113.7489	-116.7145	-139.6422	-112.6588	-112.3595	-115.7973	-113.7368	-113.9934
12919.9210	-113.2788	-122.3988	-121.8142	-120.6040	-111.8878	-117.9534	-122.1109	-125.9206	-115.1496	-127.7785	-112.0676	-117.7616	-137.0670	-116.8790	-114.2322
12962.9880	-111.9651	-116.0360	-114.8321	-122.5866	-116.3252	-118.7555	-123.0495	-127.9093	-115.2472	-115.2934	-112.8195	-113.5101	-120.2152	-117.1748	-114.6101
13006.0540	-113.0019	-116.9862	-117.5295	-115.0351	-120.4592	-120.1113	-116.7911	-140.9443	-117.7186	-111.5478	-118.5417	-112.3740	-114.1835	-118.1395	-116.7126

Freq	5.1.0	5.2.0	5.3.0	5.1.25	5.2.25	5.3.25	5.1.50	5.2.50	5.3.50	5.1.75	5.2.75	5.3.75	5.1.100	5.2.100	5.3.100
13049.1210	-115.3492	-120.1017	-126.9212	-111.0375	-133.4613	-122.5159	-117.2965	-119.0641	-115.0553	-134.8215	-132.5544	-116.0121	-111.8038	-117.2148	-115.6848
13092.1870	-118.1056	-125.8059	-119.9908	-114.3443	-117.0303	-126.5434	-116.3788	-114.8563	-116.7199	-117.9419	-118.5401	-115.5802	-111.8402	-115.9953	-114.8226
13135.2530	-134.7519	-130.5662	-113.7098	-121.0944	-112.3260	-129.4965	-115.4761	-116.4795	-117.8350	-111.1991	-116.2010	-112.5932	-113.4812	-126.2982	-116.6610
13178.3200	-123.0837	-125.3453	-113.1220	-111.5992	-112.3015	-126.9927	-110.8349	-122.7391	-116.8748	-111.1686	-118.9100	-113.1385	-116.8006	-124.3109	-115.7823
13221.3860	-130.3941	-125.1376	-119.3098	-113.3685	-113.2342	-136.1266	-114.0031	-126.7793	-116.1091	-113.0749	-118.7020	-116.5826	-119.6102	-119.0627	-113.7683
13264.4530	-115.2040	-119.4739	-117.2044	-115.0434	-116.3627	-126.4014	-127.8641	-129.5049	-114.5112	-112.9548	-113.8021	-128.4484	-117.9948	-111.5745	-113.3350
13307.5190	-114.1858	-114.0913	-114.8528	-134.5981	-127.2418	-125.0238	-122.8067	-131.9683	-109.3040	-112.9743	-112.4073	-123.9171	-116.6312	-115.9550	-110.1853
13350.5850	-117.1032	-110.9525	-119.9766	-113.7142	-117.1865	-117.9147	-119.4215	-117.2076	-108.7248	-115.6682	-113.9175	-115.6357	-122.3241	-128.0314	-110.0395
13393.6520	-120.1402	-111.0176	-112.8973	-115.6522	-118.0597	-114.7323	-114.4908	-112.1735	-113.7731	-115.1913	-117.9243	-129.2418	-119.9226	-124.2516	-114.0595
13436.7180	-115.0350	-116.2037	-109.8518	-116.9208	-123.4956	-112.2774	-115.1579	-116.0026	-117.1614	-117.5899	-116.3085	-124.1994	-113.1423	-133.7314	-135.5056
13479.7850	-115.5222	-122.3716	-111.8003	-112.9154	-120.3631	-110.2117	-118.9021	-110.8864	-113.0707	-113.7761	-114.2723	-120.7843	-116.6574	-119.2383	-110.0445
13522.8510	-115.7718	-116.1492	-117.6596	-111.2026	-122.2286	-113.5905	-118.5565	-110.3366	-112.8994	-112.6902	-113.7361	-120.6153	-119.7755	-127.8008	-109.1327
13565.9170	-112.7400	-115.2255	-126.7224	-113.3692	-117.9353	-124.4712	-119.9714	-113.9648	-114.6275	-116.2749	-114.7087	-117.6051	-113.9628	-121.9618	-114.5933
13608.9840	-112.7955	-116.6982	-117.2521	-113.7338	-120.9806	-138.7194	-118.5565	-110.3366	-112.8994	-113.7761	-114.2723	-120.7843	-116.6574	-119.2383	-110.0445
13652.0500	-116.8302	-123.2973	-118.1228	-132.1238	-111.7745	-120.9563	-116.3446	-125.3194	-117.4776	-117.8824	-116.8322	-115.3887	-116.7871	-112.5807	-112.8362
13695.1170	-124.4423	-129.4845	-117.9442	-110.9528	-109.4785	-115.7679	-116.0485	-119.8234	-120.3773	-109.5141	-117.6679	-119.8306	-109.4006	-112.9386	-117.3385
13738.1830	-119.7610	-117.9556	-116.1956	-111.4240	-111.2174	-117.4768	-113.4910	-117.9301	-123.0667	-110.3321	-115.4449	-119.0657	-111.0405	-132.1441	-118.0136
13781.2500	-116.9713	-120.0538	-116.8045	-121.2822	-116.3263	-121.4388	-115.2092	-122.9044	-123.0031	-110.3321	-115.4449	-119.0657	-111.0405	-132.1441	-118.0136
13824.3160	-127.9960	-127.7307	-117.6434	-112.3518	-125.7517	-123.6065	-117.9483	-114.0216	-117.7101	-115.3635	-113.0659	-120.8021	-114.0137	-111.0106	-112.8322
13867.3820	-120.8333	-116.4718	-113.6064	-109.9711	-124.6823	-118.0301	-122.9169	-110.6599	-117.9896	-117.0160	-113.6198	-118.2186	-114.2538	-110.6253	-112.7706
13910.4490	-117.9741	-114.1138	-119.8471	-109.2387	-124.2267	-113.7149	-122.9207	-115.1717	-125.8506	-119.9868	-121.6300	-113.5372	-117.9663	-111.5771	-116.1903
13953.5150	-121.4583	-113.6209	-117.3504	-110.2958	-119.0085	-113.2470	-150.0615	-123.8698	-129.0076	-118.8336	-117.2390	-115.1791	-117.1103	-114.9362	-115.4259
13996.5820	-123.1251	-116.0973	-111.6358	-114.5141	-117.0087	-120.0493	-120.3593	-118.1976	-119.2146	-112.3112	-117.2390	-116.8571	-115.5637	-116.0110	-114.9701
14039.6480	-119.9702	-117.3768	-113.3232	-115.1009	-114.2010	-114.7445	-115.4985	-113.2557	-114.4963	-112.2197	-114.2198	-118.8861	-120.8537	-117.7618	-114.3516
14082.7140	-118.5734	-116.4285	-129.7818	-116.0567	-111.9330	-112.9091	-114.1240	-111.9206	-117.6099	-122.0513	-113.2075	-120.7731	-131.2063	-118.9288	-117.5386
14125.7810	-117.0687	-115.7724	-112.8922	-125.1909	-121.0700	-116.3030	-116.5592	-113.7597	-122.8998	-114.9580	-117.6173	-117.1560	-149.5106	-118.4163	-115.9573
14168.8470	-115.0683	-114.7021	-111.1640	-122.6135	-121.6135	-116.3030	-117.1362	-122.7750	-121.2599	-113.5506	-115.7408	-115.2314	-121.9906	-119.6100	-111.5762
14211.9140	-118.7595	-119.0117	-114.5861	-118.9104	-133.3714	-122.3827	-112.8107	-115.1175	-137.2036	-115.5890	-112.2830	-114.2037	-111.9589	-121.8405	-109.3934
14254.9800	-129.5432	-123.7761	-121.0694	-115.5976	-115.6483	-117.2128	-113.0326	-116.4914	-132.0773	-111.3167	-112.5214	-115.0197	-104.0908	-114.9415	-111.5595
14298.0460	-119.1430	-118.5317	-119.5422	-113.8326	-111.2504	-111.8734	-115.1064	-108.8507	-120.8839	-109.6255	-113.7098	-122.4456	-99.6724	-110.1869	-121.0003
14341.1130	-117.7530	-130.0175	-120.5658	-115.1862	-110.9015	-110.3428	-115.5680	-108.8584	-118.1386	-111.0716	-113.4289	-125.1293	-104.0908	-114.9415	-111.5595
14384.1790	-117.2235	-116.3976	-127.9788	-112.2640	-111.8058	-111.1756	-118.4474	-118.9512	-125.0715	-114.9793	-108.3548	-117.3417	-104.5761	-110.2616	-111.0921
14427.2460	-117.0249	-114.0068	-118.4792	-107.3038	-111.3154	-110.1545	-109.1475	-106.7033	-111.7258	-116.5162	-101.4865	-112.5802	-106.0596	-104.5406	-107.9462
14470.3120	-116.3465	-113.2653	-124.3588	-100.4777	-107.0521	-105.5189	-99.8321	-104.3068	-108.3741	-110.0060	-96.3595	-110.0473	-95.1722	-99.3088	-105.2562
14513.3780	-121.9252	-111.9505	-123.8384	-97.0917	-104.7866	-102.8539	-98.8021	-105.3895	-102.3591	-105.0925	-93.3675	-118.9183	-91.1842	-97.1721	-96.6785
14556.4450	-121.2589	-114.8664	-119.6301	-98.2701	-106.3980	-104.6377	-94.8103	-107.3370	-98.0483	-104.7708	-93.0142	-111.9765	-93.3606	-97.5359	-92.7185
14599.5110	-114.1079	-129.8194	-118.1691	-105.4091	-111.2523	-111.7285	-109.4406	-111.7272	-100.5617	-109.8133	-96.2446	-111.9647	-102.6056	-101.7804	-95.0053
14642.5780	-114.1799	-112.3647	-125.0583	-113.0672	-117.3052	-119.5025	-114.8744	-113.2416	-111.3034	-121.7192	-103.4592	-112.7222	-112.8315	-112.0208	-103.6707
14685.6440	-116.6840	-109.6104	-119.8569	-110.5410	-118.3372	-110.9164	-112.3739	-111.6202	-114.0035	-125.2658	-108.2697	-118.9522	-120.3677	-119.6169	-113.8820
14728.7100	-118.8030	-109.9750	-111.4578	-112.1788	-116.8031	-109.1281	-102.1396	-115.3730	-112.3356	-121.0258	-99.8664	-101.9394	-101.8782	-112.8967	-104.6048
14771.7770	-117.1686	-108.5732	-110.7662	-105.5521	-113.7885	-110.3430	-97.9405	-121.4781	-101.7751	-126.9627	-92.3773	-97.9374	-99.5618	-99.9686	-93.4960
14814.8430	-113.9117	-106.5948	-113.9785	-98.0787	-112.5703	-102.9102	-98.7298	-106.6067	-94.1423	-108.1365	-88.0902	-100.2682	-101.2653	-94.3424	-87.6876
14857.9100	-113.5801	-104.0894	-111.1835	-93.9361	-104.0295	-99.8632	-99.4718	-102.5051	-92.9615	-101.9773	-89.9853	-102.8906	-90.6865	-93.0807	-87.9714

Freq	5.1.0	5.2.0	5.3.0	5.1.25	5.2.25	5.3.25	5.1.50	5.2.50	5.3.50	5.1.75	5.2.75	5.3.75	5.1.100	5.2.100	5.3.100
14900.9760	-111.3987	-104.2790	-112.5282	-95.0282	-101.5313	-101.8897	-97.6137	-101.9033	-97.6731	-103.6558	-91.5243	-110.1116	-90.2137	-94.9493	-95.1515
14944.0420	-114.4385	-107.7159	-112.8782	-100.8959	-105.2235	-108.1382	-101.3218	-102.9035	-107.6757	-112.6751	-96.3948	-115.7721	-96.6368	-99.2378	-115.2247
14987.1090	-125.2744	-114.1391	-108.9519	-109.6508	-113.9385	-112.0355	-112.2962	-106.4580	-117.9311	-120.5897	-103.7887	-112.8758	-112.3958	-106.4722	-121.7906
15030.1750	-114.4780	-118.0893	-108.3061	-112.2264	-120.6828	-112.9286	-120.6419	-116.1361	-122.2124	-119.9462	-112.6134	-113.8439	-127.2192	-110.9281	-121.8202
15073.2420	-110.3212	-127.7191	-112.7563	-111.8170	-118.7438	-116.2239	-117.9897	-116.6770	-121.5694	-122.4240	-124.6449	-116.4283	-128.5413	-118.0081	-114.8851
15116.3080	-111.6821	-116.6253	-126.3491	-112.5853	-116.6091	-119.7771	-114.1344	-111.0390	-120.6389	-125.2522	-118.3193	-118.8159	-118.3558	-114.2867	-115.1130
15159.3750	-115.2600	-119.6244	-119.2517	-109.7861	-118.9573	-120.6093	-117.2828	-111.5701	-115.6553	-122.6297	-117.9247	-122.9007	-110.8793	-109.2289	-117.0502
15202.4410	-115.4972	-123.3937	-114.6714	-107.7673	-122.9362	-121.5944	-121.9760	-113.2507	-115.0845	-130.2825	-122.2632	-125.6252	-108.8900	-109.9303	-118.0487
15245.5070	-113.4211	-143.1472	-112.2239	-108.1031	-115.5027	-126.4519	-115.1753	-111.7627	-120.6526	-131.2970	-115.2576	-121.5303	-112.1221	-113.7452	-123.1243
15288.5740	-112.6236	-121.0558	-112.0122	-108.7478	-115.1882	-114.4918	-119.9586	-108.9765	-118.0963	-119.7666	-114.4212	-118.5988	-124.2113	-118.6378	-112.7374
15331.6400	-115.7415	-121.7637	-117.8451	-109.7187	-112.6033	-110.6575	-128.8309	-106.6954	-115.3363	-118.5315	-112.8140	-120.1872	-120.9713	-115.4474	-115.6640
15374.7070	-119.4615	-114.3690	-126.8067	-113.0810	-110.0048	-113.5308	-116.3279	-105.8539	-110.3041	-116.7802	-132.0386	-122.1613	-120.9713	-115.4474	-115.6640
15417.7730	-116.8511	-108.7095	-124.8565	-114.1505	-108.1259	-117.8298	-114.0934	-106.5147	-107.8029	-117.4733	-113.0270	-119.7111	-119.4361	-117.0035	-116.7075
15460.8390	-115.0348	-110.3095	-124.2761	-113.3406	-108.8253	-114.2954	-115.3942	-109.3967	-109.6761	-117.6861	-116.6332	-115.8509	-117.5680	-120.1183	-112.2411
15503.9060	-117.2667	-121.1230	-125.9757	-116.2896	-135.0497	-114.2114	-123.2151	-115.7007	-121.6438	-115.5706	-124.4568	-114.9946	-121.0861	-116.1282	-108.9358
15546.9720	-120.0817	-116.3621	-112.6448	-121.8905	-133.6604	-123.9712	-124.7838	-113.4259	-114.0584	-119.9280	-117.7703	-120.5879	-125.3705	-113.3685	-110.1174
15590.0390	-120.7320	-118.2807	-108.5082	-118.9789	-121.8862	-129.1345	-117.8482	-112.3317	-110.6249	-120.1810	-117.2703	-125.7205	-129.6465	-112.8437	-111.6376
15633.1050	-123.0301	-125.3180	-108.2500	-114.9413	-123.9719	-116.0063	-117.9746	-112.8771	-114.1791	-120.4279	-117.1509	-118.7898	-118.8755	-113.8896	-110.9972
15676.1710	-116.0291	-131.8883	-111.2592	-112.7236	-134.4995	-112.5978	-127.5649	-121.0453	-124.3128	-115.0166	-125.5343	-117.5557	-114.6246	-117.0244	-116.1975
15719.2380	-118.1129	-119.7012	-125.5027	-112.7842	-121.5368	-125.4235	-118.9415	-118.9853	-122.6012	-109.7126	-118.6166	-112.7669	-115.2007	-114.4267	-122.0047
15762.3040	-119.0871	-115.5691	-117.8192	-115.6578	-120.6266	-113.5444	-115.7012	-115.1139	-117.2053	-110.1687	-112.3125	-110.9590	-115.8742	-112.2126	-112.1728
15805.3710	-120.9387	-113.7248	-115.9699	-119.0102	-114.8928	-115.3929	-119.0320	-115.6287	-114.8684	-118.9375	-111.9418	-112.4143	-115.3893	-112.2049	-111.6243
15848.4370	-122.1727	-114.0271	-115.9684	-117.9022	-112.0146	-116.6437	-115.0637	-111.7857	-116.6055	-119.8535	-116.1264	-115.4426	-119.0498	-113.6380	-114.7527
15891.5030	-122.5352	-119.1362	-121.0086	-116.9664	-110.5141	-116.3692	-107.4558	-111.2958	-142.5508	-117.5045	-123.2111	-116.6626	-132.3638	-113.0777	-118.0958
15934.5700	-118.5626	-116.0395	-130.5607	-113.1457	-110.8232	-116.6989	-106.5925	-118.0036	-115.6410	-121.8594	-120.7169	-116.7565	-116.9161	-117.3795	-116.2842
15977.6360	-118.8044	-110.9963	-122.9138	-110.8538	-113.6723	-113.2606	-109.1328	-114.1004	-117.8838	-120.6080	-118.1835	-111.9930	-116.0695	-117.7715	-111.1034
16020.7030	-121.6482	-113.3683	-118.9192	-110.3894	-115.1054	-113.1471	-110.1744	-112.6971	-120.3686	-118.2799	-110.7471	-109.7699	-126.3792	-112.6489	-108.3777
16063.7690	-134.2207	-118.9579	-115.6212	-111.4720	-112.2233	-114.4137	-110.1272	-117.0184	-111.8900	-123.7442	-109.8058	-111.7064	-120.8472	-111.9755	-111.2571
16106.8350	-121.5702	-113.6681	-112.5023	-112.8512	-110.5834	-116.2841	-113.6027	-121.5013	-111.8251	-114.5109	-110.1948	-115.0740	-118.9899	-114.0507	-119.7105
16149.9020	-114.7642	-114.5672	-113.1054	-111.3835	-112.1354	-118.9265	-118.5912	-116.1819	-114.7242	-112.3607	-112.1826	-111.8570	-124.3770	-119.3139	-121.1936
16192.9680	-113.1739	-114.5876	-124.5407	-107.6631	-113.7290	-113.8735	-122.0963	-112.7807	-114.4823	-113.7347	-115.1394	-111.6426	-133.2168	-116.5931	-115.4794
16236.0350	-114.9061	-114.0769	-118.4476	-107.0876	-116.0344	-112.8148	-125.1182	-110.9771	-112.8282	-117.6224	-115.3003	-115.6405	-122.6213	-116.5293	-114.8292
16279.1010	-115.3441	-116.7579	-116.3039	-112.0684	-113.8481	-113.3052	-115.9281	-109.9249	-115.9653	-119.8060	-116.4355	-121.2452	-116.4712	-115.6279	-116.2140
16322.1670	-115.0153	-119.3783	-111.8532	-125.6982	-111.2670	-110.5246	-112.1031	-111.0287	-120.8149	-120.7624	-117.7068	-119.1702	-115.5133	-116.1596	-118.6218
16365.2340	-118.6084	-126.8723	-110.7223	-116.5108	-114.5863	-109.3104	-113.2942	-112.9520	-116.1517	-129.2738	-115.8892	-116.0328	-115.1012	-116.8405	-119.1312
16408.3000	-117.6895	-133.9958	-112.2477	-115.3617	-119.3411	-112.1084	-114.3660	-115.2924	-112.5282	-139.0955	-115.7459	-116.5409	-115.8836	-114.1078	-116.3421
16451.3670	-111.0543	-115.7622	-114.4411	-114.6724	-123.3133	-113.1469	-115.1434	-116.4230	-113.7445	-122.4096	-116.7230	-120.2661	-123.4460	-112.8607	-117.4254
16494.4330	-108.9895	-111.2600	-121.8937	-114.4137	-122.7878	-112.3473	-118.2326	-112.1925	-117.6094	-119.4159	-118.7596	-117.4839	-117.1804	-114.6881	-120.8083
16537.5000	-110.9523	-114.4135	-115.4785	-118.4724	-115.9285	-112.0428	-120.8908	-108.2181	-115.4422	-125.4076	-115.7029	-115.0821	-118.8055	-117.0385	-125.2172
16580.5660	-115.7473	-117.0584	-111.2206	-127.1619	-114.2162	-113.3172	-121.5102	-108.3387	-116.7993	-122.7308	-118.9383	-113.2929	-115.0494	-125.1690	-131.4211
16623.6320	-120.2635	-119.1826	-111.7662	-122.0634	-115.3150	-115.5882	-132.9098	-111.7529	-121.1807	-113.9740	-125.0590	-111.8533	-113.7206	-124.3044	-123.6087
16666.6990	-120.7136	-126.1715	-115.9118	-118.6219	-116.3917	-114.8494	-118.5320	-113.0574	-123.4517	-112.4503	-120.8046	-114.0266	-116.9462	-118.8434	-120.7857
16709.7650	-118.2199	-117.5111	-121.7030	-116.7888	-122.2818	-113.4660	-116.1897	-112.2495	-133.4927	-118.6036	-130.2993	-119.8335	-118.7342	-118.6539	-114.4393

Freq	5.1.0	5.2.0	5.3.0	5.1.25	5.2.25	5.3.25	5.1.50	5.2.50	5.3.50	5.1.75	5.2.75	5.3.75	5.1.100	5.2.100	5.3.100
16752.8320	-124.6898	-117.3520	-123.2487	-115.3727	-129.5008	-113.6320	-114.1747	-111.5261	-121.9321	-133.6465	-125.4447	-119.8284	-118.7840	-120.3705	-110.7073
16795.8980	-121.9543	-115.8936	-113.0498	-114.7185	-122.4001	-115.1217	-111.0525	-111.5390	-123.7003	-124.1494	-133.3335	-121.6811	-117.0268	-122.7931	-113.1917
16838.9640	-113.6839	-119.2001	-110.6654	-116.4678	-122.8233	-120.5309	-109.4858	-112.0566	-123.2644	-119.7172	-126.4731	-131.8113	-121.0804	-120.5365	-120.9211
16882.0310	-111.9374	-119.3489	-111.7956	-118.6625	-133.1283	-136.3177	-111.3255	-112.4126	-120.2453	-115.8275	-117.4975	-124.2556	-118.2957	-115.4717	-117.6712
16925.0970	-116.5515	-116.3859	-112.1909	-123.5950	-143.1143	-119.3200	-116.7181	-118.3481	-118.8224	-115.7851	-114.1490	-121.5477	-108.7534	-113.6789	-123.8706
16968.1640	-126.6762	-116.0519	-110.7785	-126.6734	-118.7930	-116.9385	-120.0514	-127.3008	-118.6131	-114.3667	-113.8585	-133.9670	-106.8489	-112.6844	-134.5222
17011.2300	-118.0140	-116.2278	-112.0885	-118.3435	-111.2310	-113.2400	-119.1290	-117.9884	-118.5535	-112.8410	-115.4717	-119.0557	-109.2378	-110.9697	-114.1688
17054.2960	-118.5439	-115.7466	-119.9483	-118.8439	-110.2605	-109.7654	-118.8203	-115.8090	-124.2654	-129.9775	-118.7206	-116.3195	-114.1335	-110.1636	-109.1511
17097.3630	-115.7273	-116.0443	-138.2580	-127.1349	-114.5980	-110.2112	-117.3474	-116.6240	-120.4955	-112.4594	-119.8641	-114.5603	-119.4735	-111.0280	-112.2034
17140.4290	-112.9162	-117.0898	-127.4808	-117.6775	-115.1761	-115.3336	-113.7401	-120.7407	-118.1708	-110.2272	-116.1909	-115.0356	-116.2358	-112.6199	-118.8279
17183.4960	-113.1829	-116.9505	-119.5131	-115.6712	-112.6650	-119.1523	-113.2511	-126.3205	-124.4721	-113.1356	-112.3699	-123.6022	-114.9463	-114.0914	-112.0270
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17269.6280	-118.3501	-116.4461	-123.8893	-125.4830	-115.1395	-118.8687	-118.1539	-117.4924	-127.0288	-125.3214	-120.1561	-120.2205	-117.9991	-113.8410	-111.6739
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17398.8280	-118.3069	-124.6845	-115.2563	-131.0788	-125.3127	-109.5310	-120.0033	-115.3131	-123.0028	-119.1833	-115.1497	-121.0200	-112.8985	-110.0275	-119.4811
17441.8940	-117.7832	-122.6486	-122.1423	-117.7696	-113.8565	-113.8400	-116.4892	-113.6062	-123.2344	-119.0737	-118.0027	-118.8581	-117.6983	-121.8823	-118.9337
17484.9600	-120.7549	-115.4984	-117.6447	-117.1414	-111.2156	-110.9037	-117.2033	-110.3794	-119.2521	-112.5098	-114.6696	-116.1934	-121.2076	-145.2745	-116.2720
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17614.1600	-116.9157	-119.0873	-113.5728	-118.0522	-118.1474	-121.6764	-118.4668	-123.5435	-114.9827	-119.8379	-116.3715	-114.8151	-115.9158	-117.7200	-113.8618
17657.2260	-117.3805	-123.0197	-119.6095	-127.8345	-117.0835	-113.4301	-117.3706	-118.8815	-121.5611	-117.3698	-111.9609	-113.7738	-115.9061	-122.1833	-113.9781
17700.2920	-125.6463	-124.8012	-119.4060	-120.9272	-118.5018	-114.5154	-115.3987	-116.5584	-121.4885	-115.4703	-108.6916	-117.2303	-112.8126	-126.1817	-118.1038
17743.3590	-137.3525	-131.6506	-115.9899	-114.0381	-116.9843	-124.8077	-114.0154	-118.9858	-118.5436	-119.3257	-110.7822	-122.7019	-111.8856	-130.1748	-117.8280
17786.4250	-131.1232	-126.8701	-115.2457	-117.2346	-112.2019	-118.0716	-115.8146	-115.3648	-117.4403	-115.1295	-112.1115	-121.5667	-113.9369	-126.0283	-130.7199
17829.4920	-118.3340	-122.6285	-114.8500	-121.6575	-110.9310	-115.2003	-122.3669	-113.4953	-114.6443	-118.5921	-114.9419	-122.5809	-115.5368	-122.0016	-117.1744
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17915.6250	-116.5256	-115.9371	-114.2723	-116.2968	-112.9831	-127.2210	-120.0026	-117.0107	-115.9321	-117.8515	-117.7892	-121.4133	-115.8202	-114.7849	-112.2273
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18001.7570	-113.8636	-119.1320	-122.6510	-118.3205	-122.1111	-125.5123	-119.0730	-137.2243	-114.0199	-120.2497	-113.1486	-115.3795	-113.1708	-108.6428	-121.5790
18044.8240	-112.8079	-122.9830	-119.4872	-119.6307	-126.0242	-120.3547	-117.5839	-116.8098	-111.3633	-118.0151	-114.4592	-113.7125	-119.3948	-112.1124	-115.5555
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18130.9570	-116.0575	-112.5552	-114.1289	-120.6846	-116.0399	-116.3300	-114.8872	-125.2629	-126.3216	-119.1584	-113.0851	-125.6676	-125.6656	-122.2634	-117.9934
18174.0230	-120.5167	-111.1811	-115.7660	-120.4583	-114.0268	-117.9077	-114.9011	-125.1540	-119.9691	-121.8416	-114.2797	-119.0762	-119.7848	-118.1620	-116.6873
18217.0890	-115.0794	-111.1771	-115.0514	-114.9881	-116.4288	-123.7409	-114.3302	-119.6797	-117.6542	-114.9370	-123.1234	-111.3163	-114.6626	-119.3158	-113.8134
18260.1560	-112.9747	-111.7036	-117.9391	-112.5910	-120.7022	-119.3698	-117.4972	-119.3799	-114.9973	-113.3406	-113.2653	-108.9368	-112.2961	-123.5679	-114.7128
18303.2220	-114.4232	-116.5000	-122.7685	-119.0297	-119.1351	-117.7528	-120.1011	-118.5008	-118.7460	-115.9027	-114.6207	-111.1233	-113.6404	-117.0369	-116.4606
18346.2890	-125.1502	-123.9484	-119.4518	-119.7470	-120.2912	-124.3238	-118.7077	-114.3121	-135.7855	-119.4792	-128.8027	-116.5075	-117.0444	-115.6528	-117.4859
18389.3550	-117.7209	-113.8126	-122.7281	-117.5197	-120.9692	-126.1134	-117.8161	-112.4202	-124.4700	-122.1648	-128.8417	-125.3747	-122.0635	-119.3894	-123.3791
18432.4210	-114.5479	-115.8642	-124.7086	-121.0287	-120.1940	-116.1480	-118.6890	-114.7038	-120.5725	-114.2487	-121.7748	-123.8411	-128.1940	-120.2116	-122.7357
18475.4880	-115.7817	-136.4772	-134.0563	-115.0721	-116.9341	-115.3025	-115.3101	-119.9133	-116.1257	-111.2766	-115.4352	-115.9828	-121.2219	-136.3860	-112.8361
18518.5540	-115.6450	-118.3444	-127.7034	-110.7769	-116.1616	-119.7978	-115.4650	-125.4291	-112.2058	-112.4014	-112.6165	-116.9489	-115.0431	-115.2898	-111.2408
18561.6210	-114.2229	-117.8053	-124.4299	-113.9455	-123.9158	-125.7311	-120.7842	-126.4971	-116.2050	-111.6790	-115.8211	-121.1192	-117.9775	-111.4656	-112.9669

freq	5.1.0	5.2.0	5.3.0	5.1.25	5.2.25	5.3.25	5.1.50	5.2.50	5.3.50	5.1.75	5.2.75	5.3.75	5.1.100	5.2.100	5.3.100
18604.6870	-113.2839	-112.9906	-120.4014	-117.0533	-124.3402	-131.5348	-129.8362	-122.7678	-119.8842	-112.6358	-124.2442	-119.9575	-127.1277	-110.9344	-115.3797
18647.7530	-113.1704	-113.7887	-115.5431	-109.4311	-119.7243	-115.9068	-117.1808	-120.9224	-115.4536	-118.0077	-113.4941	-116.0233	-123.5526	-112.9144	-117.4727
18690.8200	-114.2845	-118.1518	-116.6200	-113.3729	-127.3772	-130.3721	-115.3996	-119.6330	-111.6857	-117.9392	-111.3698	-125.3220	-121.0024	-114.7001	-117.3751
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18906.1520	-114.3179	-125.4160	-110.9804	-116.5850	-121.7989	-110.9195	-107.1763	-114.5310	-118.0562	-119.5770	-119.4096	-123.2769	-115.6065	-112.8387	-113.2296
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19121.4840	-111.5225	-121.4557	-120.8828	-121.7031	-119.2785	-119.3110	-113.8796	-112.7374	-118.0571	-126.1915	-111.4365	-117.5463	-116.3503	-112.6361	-120.5815
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19207.6170	-114.4486	-118.4071	-108.9968	-121.2763	-111.3753	-114.4432	-114.0566	-109.8219	-139.8934	-120.6651	-112.4676	-120.7272	-118.3834	-162.9694	-122.8880
19250.6830	-113.9088	-127.3058	-109.4098	-126.3672	-108.7664	-114.0663	-115.4692	-108.2131	-115.4706	-113.9181	-128.0807	-126.9106	-118.0509	-116.4463	-115.1632
19293.7500	-112.2309	-137.9231	-114.7358	-125.8410	-112.1969	-115.9584	-111.7109	-108.2776	-111.0487	-113.9151	-116.6246	-123.1752	-109.1771	-110.9415	-115.2303
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19422.9490	-128.1760	-121.4386	-117.6241	-113.8262	-113.3045	-115.6055	-111.4806	-119.5636	-120.1586	-113.3651	-120.0532	-112.5690	-120.7125	-120.9794	-125.7598
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19552.1480	-119.9064	-116.9258	-112.5742	-120.2547	-116.4662	-116.0529	-112.1739	-124.6409	-119.4267	-111.0358	-112.7100	-115.2199	-114.1186	-115.0489	-120.6685
19595.2140	-116.3779	-115.1494	-114.8681	-121.1200	-122.8627	-117.2970	-113.5333	-121.5692	-120.3102	-111.7162	-112.3280	-119.9493	-114.3579	-111.1653	-124.9754
19638.2810	-117.0353	-116.8963	-121.0629	-121.1008	-121.9032	-115.5703	-116.2436	-113.3320	-122.1702	-115.0371	-114.0928	-116.5657	-121.3609	-108.1301	-124.9572
19681.3470	-125.0120	-118.0647	-115.8361	-120.5480	-118.6987	-120.2367	-119.9669	-117.0515	-118.0946	-114.7263	-117.1723	-114.3159	-127.7696	-108.3670	-119.6173
19724.4140	-118.6563	-119.6478	-111.4630	-113.9214	-114.2124	-123.3047	-116.2838	-117.3444	-118.9298	-111.6798	-116.4833	-121.1397	-117.7327	-112.0032	-113.8440
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19853.6130	-123.1147	-139.4256	-118.2517	-110.5141	-124.5219	-115.0926	-118.2664	-113.6881	-117.2585	-134.2647	-113.7972	-116.5542	-114.6611	-113.2651	-118.7390
19896.6790	-112.1481	-121.5615	-122.1212	-114.0527	-112.3293	-116.0695	-119.3032	-112.0027	-115.6751	-120.2486	-116.2877	-123.1063	-113.7439	-116.3954	-119.1311
19939.7460	-108.9415	-116.4290	-112.6260	-125.7127	-112.4512	-129.8719	-117.5118	-113.9813	-115.7423	-116.5888	-115.7086	-122.7096	-118.4722	-116.6024	-112.1997
19982.8120	-108.8189	-113.3112	-112.7861	-119.8820	-120.5136	-118.5153	-114.4610	-113.3630	-115.5301	-116.4647	-119.9458	-122.1657	-118.4099	-116.2593	-112.3212
20025.8780	-110.8225	-112.7178	-116.2942	-120.2717	-122.6792	-118.1529	-114.2151	-120.8916	-113.3770	-119.4805	-123.7852	-111.4496	-114.1910	-117.3077	-116.9355
20068.9450	-112.3316	-115.1849	-122.6017	-125.5906	-120.4256	-124.2221	-119.6310	-125.3904	-112.3702	-120.5494	-118.7117	-108.2048	-109.7643	-117.5218	-120.1234
20112.0110	-112.5770	-120.5821	-124.7980	-123.0635	-134.8612	-125.1380	-138.1082	-129.9754	-116.2035	-112.0961	-123.0892	-109.7176	-109.7643	-117.5218	-120.1234
20155.0780	-114.7257	-113.5655	-118.8715	-116.8818	-119.5006	-117.0030	-125.0087	-118.1873	-120.2326	-110.8346	-116.9477	-113.9891	-114.7910	-122.5210	-110.9886
20198.1440	-117.6602	-108.5819	-117.7242	-115.4438	-120.9223	-120.1790	-125.8677	-120.2195	-119.2954	-117.2915	-113.0930	-114.0151	-117.0619	-119.4801	-108.5798
20241.2100	-116.2032	-109.4245	-117.0831	-117.8378	-120.0478	-120.2321	-123.1697	-122.4612	-119.3389	-130.2195	-113.5364	-113.8611	-111.1215	-119.3861	-111.2247
20284.2770	-113.0215	-112.8941	-122.7458	-126.5267	-113.2142	-112.8931	-127.1308	-127.0528	-121.8285	-134.7495	-117.0775	-116.4910	-112.5660	-116.6069	-118.3588
20327.3430	-110.9556	-111.4023	-115.3354	-120.8977	-108.3130	-112.6274	-117.3154	-119.4027	-122.7208	-125.6386	-132.8214	-119.8755	-114.0095	-116.5937	-122.6974
20370.4100	-110.8645	-109.3293	-112.2885	-116.0776	-107.7937	-113.9068	-112.7831	-111.3966	-133.6842	-126.8989	-120.2941	-119.3420	-113.0451	-121.9953	-118.0843
20413.4760	-113.8311	-109.9885	-122.6334	-114.7608	-113.4471	-114.9452	-113.3505	-108.9060	-119.5308	-119.9914	-115.1989	-115.2696	-114.6159	-124.4017	-117.1747

Freq	5.1.0	5.2.0	5.3.0	5.1.25	5.2.25	5.3.25	5.1.50	5.2.50	5.3.50	5.1.75	5.2.75	5.3.75	5.1.100	5.2.100	5.3.100
20456.5420	-121.5915	-111.7695	-115.5010	-113.7005	-134.9836	-116.4885	-120.7872	-108.9915	-115.2224	-116.2241	-115.6013	-118.0081	-116.3052	-119.3316	-118.7120
20499.6090	-125.5600	-113.0187	-110.8719	-114.2043	-119.2391	-119.4222	-112.4707	-114.3218	-117.2535	-114.9007	-122.3570	-118.1449	-116.0303	-115.3017	-117.8938
20542.6750	-124.8888	-112.9399	-111.1161	-118.1408	-116.9067	-121.8612	-112.8227	-114.5399	-122.8950	-116.6598	-118.8980	-114.5051	-118.3024	-109.9003	-118.5792
20585.7420	-133.5074	-111.8930	-113.0627	-122.2851	-115.6470	-115.3319	-118.9249	-112.7039	-115.1154	-118.2852	-112.3253	-115.6395	-112.8191	-111.2361	-122.3519
20628.8080	-118.2376	-112.8311	-119.9487	-116.7311	-109.8011	-116.5430	-122.9103	-111.2461	-112.3753	-118.4306	-114.0022	-124.2781	-125.1363	-115.8005	-124.3273
20671.8750	-121.4385	-112.1432	-120.7415	-110.6994	-109.1128	-120.3046	-114.3727	-112.5768	-115.2002	-118.1064	-117.0523	-115.1394	-123.8257	-124.6378	-125.3944
20714.9410	-127.3927	-108.3134	-115.7274	-110.3610	-111.5185	-122.6719	-112.6961	-114.1793	-114.6162	-116.9316	-118.6036	-113.1772	-121.8241	-123.8887	-119.5614
20758.0070	-138.9158	-107.6955	-115.2340	-115.9302	-114.6731	-117.1959	-119.8633	-114.7993	-111.8970	-114.3766	-125.6283	-115.6395	-118.1021	-131.9202	-117.1802
20801.0740	-120.6835	-114.0646	-115.0244	-127.1020	-119.9030	-113.4540	-125.3956	-115.7353	-109.4559	-112.3020	-129.3577	-120.4802	-113.3176	-130.1011	-116.4822
20844.1400	-120.5737	-121.4025	-116.0117	-117.2921	-134.6205	-113.9660	-113.1880	-112.6089	-108.4372	-111.4364	-125.4345	-130.6207	-111.1127	-128.5466	-116.7566
20887.2070	-116.2199	-116.0870	-121.2622	-116.9007	-122.0147	-118.6746	-108.6880	-109.2307	-109.2504	-112.4386	-119.1846	-124.4471	-113.7175	-121.2409	-117.5268
20930.2730	-116.8978	-119.9655	-132.8687	-118.5672	-116.4839	-120.6777	-109.3647	-109.9978	-109.7097	-124.8631	-115.9626	-119.1266	-110.5667	-116.7096	-121.3933
20973.3390	-116.3975	-121.1080	-123.4470	-119.4055	-115.7241	-119.0839	-114.4699	-116.7920	-111.1401	-118.5756	-117.7494	-116.5539	-109.0420	-113.7669	-133.4669
21016.4060	-112.5507	-119.5958	-134.1256	-121.0096	-115.2639	-119.5947	-121.9115	-117.6054	-114.3609	-120.8975	-117.2002	-117.0490	-111.7821	-111.1547	-117.6044
21059.4720	-110.3573	-120.6088	-110.8743	-120.9844	-112.9842	-118.2529	-119.7781	-118.3199	-112.2541	-117.8653	-118.9556	-117.4593	-115.5085	-130.5015	-114.2216
21102.5390	-111.0358	-114.9154	-111.3229	-119.4320	-110.6758	-114.4144	-118.5442	-119.4060	-111.0101	-117.9241	-121.7037	-113.1456	-116.6684	-111.2652	-112.7508
21145.6050	-114.2810	-113.8578	-113.3929	-126.5367	-110.5888	-112.7066	-123.7058	-119.8533	-112.3144	-128.3365	-117.2551	-115.7104	-118.2391	-113.8956	-112.2922
21188.6710	-117.7103	-113.2760	-116.2490	-120.4105	-114.9778	-113.7436	-130.7066	-117.9972	-112.5123	-125.3243	-112.0209	-119.3256	-119.6169	-123.1191	-112.7053
21231.7380	-120.4276	-112.0648	-116.5949	-115.5446	-120.5368	-114.8043	-121.3063	-114.0143	-110.9508	-123.7178	-111.1017	-119.0083	-117.9817	-118.2696	-112.8252
21274.8040	-115.7922	-113.5162	-113.4064	-110.5478	-120.7256	-119.1003	-115.7851	-112.1277	-111.1226	-124.4672	-112.9009	-116.9829	-115.2937	-118.8796	-113.1259
21317.8710	-113.2960	-113.9226	-113.2494	-110.0680	-117.7030	-140.0798	-116.4520	-115.7562	-113.2194	-122.1633	-116.5661	-118.9079	-129.3567	-117.5780	-113.6469
21360.9370	-114.0101	-117.4664	-117.8241	-115.5032	-120.0789	-122.5941	-120.6092	-112.8247	-113.7753	-127.5931	-120.2090	-125.2507	-129.3567	-117.5780	-113.6469
21404.0030	-120.3450	-144.2373	-125.0025	-121.3822	-120.3568	-119.2226	-117.0465	-116.3891	-113.5138	-116.1118	-120.4045	-117.1781	-121.3113	-115.2603	-112.6650
21447.0700	-119.3871	-127.1340	-122.2755	-117.8097	-117.7047	-132.6070	-116.9364	-125.7578	-115.9767	-109.5345	-122.3201	-117.0096	-118.4554	-115.7530	-114.7920
21490.1360	-115.2433	-122.1700	-114.9800	-113.2598	-118.9684	-150.1043	-115.5521	-120.3458	-116.5124	-108.2639	-120.4524	-122.1219	-119.6029	-114.3741	-122.7563
21533.2030	-118.1123	-114.3761	-114.9349	-112.7825	-115.9536	-132.6995	-116.3849	-118.5640	-117.5967	-112.1704	-114.7882	-122.4816	-120.3301	-116.3828	-121.1181
21576.2690	-112.9257	-111.4760	-117.9838	-112.5823	-114.8757	-133.6079	-116.7109	-127.5745	-120.2108	-115.7175	-118.7228	-116.4426	-126.2365	-120.2571	-118.9310
21619.3350	-111.6387	-112.5918	-115.4280	-112.9578	-117.8430	-143.0508	-112.4012	-127.5196	-118.3537	-113.3730	-116.9137	-116.9948	-118.0920	-121.9279	-124.2461
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21748.5350	-111.1188	-110.1469	-117.2883	-112.8845	-121.2910	-114.6057	-118.2133	-111.8643	-114.4893	-116.3271	-125.9489	-132.1188	-112.1264	-118.4693	-113.8341
21791.6010	-114.8178	-112.3106	-109.9984	-113.5398	-116.0350	-118.6136	-119.7503	-111.7074	-115.7176	-119.8798	-123.4938	-118.0293	-112.1175	-118.4199	-112.4808
21834.6670	-121.4188	-113.6655	-109.3562	-114.7899	-115.2999	-118.9291	-114.1284	-115.3961	-119.3134	-115.9945	-119.7582	-112.5255	-117.4879	-119.9431	-115.0066
21877.7340	-120.7374	-113.0035	-112.8493	-116.8485	-118.6690	-128.0367	-115.8698	-117.9438	-125.5464	-116.2766	-116.5153	-112.0554	-124.6763	-121.6089	-120.6300
21920.8000	-118.1398	-115.1936	-117.2727	-120.9999	-115.6296	-123.1658	-116.4222	-121.9520	-129.8589	-134.9966	-111.3026	-120.0554	-123.1218	-115.5732	-114.4294
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22006.9330	-126.1702	-119.4010	-111.9835	-113.9159	-113.5684	-134.9451	-115.6218	-120.6727	-114.2818	-119.3263	-111.6297	-112.2121	-118.4263	-116.3525	-114.8171
	-107.6872	-108.3911	-106.4679	-104.9931	-107.4680	-108.3293	-108.2007	-106.9861	-108.2008	-107.8446	-106.7820	-107.6925	-106.1715	-107.0957	-101.1240
		-107.5154		-106.9301				-107.7959		-107.4397				-104.7970	