**ENGINEERING EXHIBIT
IN SUPPORT OF AN
APPLICATION FOR STATION LICENSE
STATION WDEV – WATERBURY, VERMONT
550 kHz - 5 kW-D, 1 kW-N, U, DA-2
FACILITY ID: 54866**

Applicant: Radio Vermont, Inc.

November, 2023

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ENGINEERING STATEMENT OF JAMES D. SADLER

Consulting Engineers
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Applicant: Radio Vermont, Inc.

I am a Technical Consultant, an employee in the firm of Carl T. Jones Corporation, with offices located in Springfield, Virginia. My education and experience are a matter of record with the Federal Communications Commission.

1.0 GENERAL

This office has been authorized by Radio Vermont, Inc. ("RVI"), licensee of AM Station WDEV, to prepare this engineering statement, FCC Form 2100, Schedule 302-AM, and the associated figures and appendices in support of an Application for License. Station WDEV is licensed for operation on 550 kilohertz at a power of 5 kilowatts during daytime hours and 1 kilowatt during nighttime hours.[1] The station uses a two tower directional antenna during daytime hours and a three tower directional antenna during nighttime hours (DA-2). The two daytime towers (#2 center and #3 northwest) are shared with the nighttime directional array.

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[1] The WDEV nighttime operation is licensed with an antenna input power of 2,268 Watts (2,100 Watts nominal) authorized in April, 1994, FCC File No. BZ-19940201AE, to comply with the FCC's rules for minimum RMS in a directional radiation pattern.

Presently, Station WDEV is operating under the terms of a special temporary authorization (STA), granted on August 4, 2023, that authorizes non-directional operation with reduced daytime and nighttime power due to transmitter and pattern switching issues.

Verizon Wireless has removed its antennas, transmission lines, and associated isocouplers from tower #1 (southeast). The before and after measurements showed the construction impacted the WDEV nighttime directional pattern. Following the evaluation of the before and after data, it was decided to prepare an application for license under the Commission's moment of methods ("MoM") rules. It is proposed to license both the daytime and nighttime arrays in accordance with the MoM rules.

Computer modeling and sample system verification techniques, as described in Section 47 CFR 73.151(c) of the Commission's Rules and Regulations, were used to verify the performance of the WDEV daytime and nighttime directional antenna systems. The specific measurement and modeling techniques used in performing the proof of performance on the WDEV directional patterns are described in detail in this engineering statement. Impedance measurement data, sample system verification measurement data and model derived operating parameters are tabulated in the figures attached to this engineering statement. Finally, all pertinent computer model input and output files are contained in the attached Appendices A, B, C, and D.

2.0 IMPEDANCE MEASUREMENTS, COMPUTER MODELING AND SAMPLE SYSTEM VERIFICATION

The proof of performance contained herein is based on the computer modeling and sample system verification procedures described in Section 47 CFR 73.151(c) of the FCC's Rules and Regulations. The WDEV antenna array consists of three, tapered, steel, self-supporting, series fed towers. Two of the towers (#2 and #3) have an identical triangular design and the other tower (#1) has a square design with a larger base width. All three towers have equal electrical heights. The sampling system employs identical toroidal current transformers located at the output of the antenna matching network at the base of each tower.

A detailed description of the impedance measurements, the computer models employed, and the sample system verification measurements, is contained below.

2.1 INDIVIDUAL TOWER IMPEDANCE MEASUREMENTS

Impedance measurements were performed at the base of each tower, by the undersigned, at the output branch of the antenna matching network. This measurement location is immediately adjacent to the location of the sampling system toroidal current transformer. The impedance measurements were performed using a Hewlett Packard, Model 8357C network analyzer; an ENI, Model 325LA, power amplifier; and a Tunwall Radio directional coupler. The impedance of each tower was measured with the other towers open-circuited at the same ATU output location that was used to perform the impedance measurement. The measured impedances are tabulated in Figure 3.

2.2 INDIVIDUAL TOWER COMPUTER MODELS

A Method of Moments ("MoM") computer model was developed to model each element in the array using Expert MiniNEC Broadcast Professional (Version 23.0). The WDEV towers are all equal height, tapered, wide-based, self-supporting structures with base insulators. Tower #1 has a square base design and has a much wider base face width than the other two towers. Tower #2 and #3 are both identical triangular base designs. Each tower was modeled using multiple wires to represent the legs and connecting members to faithfully reproduce the geometry of each individual tower in the model. The tower models replicate the average base pier height for each of the towers. Included in the model were only a few of the horizontal and none of the diagonal cross members.

To replicate the individual measured base impedances to within FCC specified tolerances, each tower's physical height was adjusted in the MiniNEC model and series inductances and shunt capacitance were employed in a separate circuit model. The actual tower face width was used in all computer models contained in this application. Drawings of the wire-frame model for each of the two towers as modeled are included herein as Figure 1. Details of the modeled individual tower adjusted heights are contained in Figure 2.

The values of the shunt capacitances and lumped series inductances used in the circuit model are contained in the table of Figure 3. A comparison of the measured individual tower impedances, the modeled individual tower impedances, and the adjusted modeled (circuit model) individual tower impedances is also contained in the table of Figure 3. The percentage difference between the adjusted modeled tower

height and the actual physical tower height and the magnitude of the lumped shunt capacitances and series inductances that were used in the circuit models are all within the tolerances set forth in the Rules.

As demonstrated by the data contained in Figure 3, the adjusted modeled individual tower resistance and reactance for each tower is well within ± 2 ohms and ± 4 percent tolerance of the corresponding measured individual tower resistance and reactance. The text files containing all pertinent input and output data associated with the individual tower models are contained in Appendix A.

2.3 DIRECTIONAL ANTENNA COMPUTER MODEL AND ANTENNA MONITOR PARAMETERS

The theoretical daytime and nighttime directional field parameters and the licensed tower spacing's and orientations were used in combination with the adjusted individual tower models to produce the daytime and nighttime directional antenna computer models. From each directional computer model, tower currents were derived for each wire segment of each antenna.

The new daytime and nighttime directional array operating parameters were determined from the modeled base currents and are tabulated in Figure 4. The text files containing all pertinent input and output data associated with the daytime and nighttime directional antenna computer model are contained in Appendix B and Appendix C, respectively. Tower #1 is not used in the daytime array and is included in the model in Appendix B detuned at the tower base. Details of the detune model are contained in Appendix D.

2.4 SAMPLE SYSTEM DESCRIPTION AND VERIFICATION MEASUREMENTS

The WDEV daytime and nighttime antenna sampling system is comprised of: 1) Delta Electronics, Model TCT-1, toroidal current transformers mounted in an identical manner in the output branch of each tower's impedance matching network; 2) equal lengths of Andrew, Type LDF4-50A, 3/8-inch, foam dielectric, coaxial cable between each toroidal current transformer and the antenna monitor located in the transmitter building; and 3) a Potomac Instruments, Model AM-19(204), antenna monitor. Each sample line between the ATU building and the transmitter building, including excess lengths, is buried below ground level such that each sample line is subjected to the same environmental conditions.

The sample lines were verified to be equal in length by measuring the open-circuit series resonate frequency closest to the carrier frequency. The characteristic impedance was verified by measuring the impedance at frequencies corresponding to odd multiples of 1/8 wavelength immediately above and below the open circuit series resonant frequency closest to the carrier frequency, while the line was open-circuited at the sample element end of the line. The characteristic impedance was calculated by the following formula:

$$Z = \sqrt{\sqrt{R_1^2 + X_1^2} \times \sqrt{R_2^2 + X_2^2}}$$

where:

Z = Characteristic impedance and

$R_1 + j\,X_1$ *and* $R_2 + j\,X_2$ *are the measured impedances*

at ± 45 *degrees offset frequencies.*

A tabulation of the measured sample line lengths and the characteristic impedance of each line is contained in Figure 5. All sample line verification measurements were performed by the undersigned using a Hewlett Packard, Model 8357C network analyzer; an ENI, Model 325LA, power amplifier; and a Tunwall Radio directional coupler. As demonstrated by the measured values in Figure 5, the measured sample line lengths are within 1 electrical degree with respect to each other and the measured characteristic impedances are well within 2 ohms of each other, as required by Section 47 CFR 73.151(c)(2)(I) of the FCC Rules and Regulations.

An impedance measurement was performed at the input to each sample line, at the antenna monitor end of the line, with the toroidal current transformer connected. The measurement was performed at the WDEV operating frequency of 550 kilohertz. The measured sample line impedances with the current transformers connected are tabulated in Figure 5 under the heading "Reference Impedance Sample Transformer Connected."

The performance of the toroidal current transformers was verified by driving a common reference current through the three WDEV transformers and comparing the relative outputs as observed on the antenna monitor. The test confirmed that the performance of the two WDEV current transformers is well within the manufacturer's stated accuracy. A tabulation of the toroidal current transformer measurement data and the serial number of each toroidal current transformer is contained in Figure 6.

The performance of the Potomac Instruments, Model AM-19(204), antenna monitor employed at WDEV was checked, by the undersigned, and the accuracy was found to be within the manufacturer's stated accuracy.

3.0 COMMON POINT IMPEDANCE AND COMMON POINT CURRENT

The networks associated with the daytime and nighttime directional antenna system were adjusted for proper impedance transformation and the common point impedance matching network was set for $Z = 50 -j 12$ Ohms (direct bridge reading). The WDEV primary transmitter has failed and is being replaced by a new transmitter which was not in place when this proof was performed. The station is currently operating with a backup 1 kilowatt transmitter. Once the new transmitter is installed the transmitter output power level will be adjusted for a common point current of 10.39 amperes daytime and 6.74 amperes nighttime.

4.0 REFERENCE FIELD STRENGTH MEASUREMENTS

Reference field strength measurements were performed on the WDEV daytime directional antenna pattern on the 129° radial bearing, corresponding to the major lobe of the daytime pattern. In addition, reference field strength measurements were performed on the 13° and 245° radial bearings, corresponding to the daytime directional pattern minima. Reference field strength measurements were performed on the WDEV nighttime directional antenna pattern on the 129° and 309° radial bearings, corresponding to the major lobes of the nighttime pattern. In addition, reference field strength measurements were performed on the 9°, 65°, 193°, and 249° radial bearings, corresponding to the nighttime directional pattern minima. Three reference field strength measurements were performed on each of the selected radial bearings.

The field strength measurements were performed by the undersigned. A single meter was used to perform the measurements, a Potomac Instruments, Model FIM-41, Serial Number 446, last calibrated by the manufacturer in November, 2022.
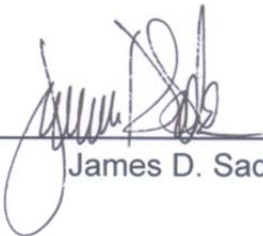
Because the primary transmitter was not functioning properly at the time of the measurements, the backup transmitter was used to perform the reference field strength measurements. The daytime and nighttime reference field strength measurements were performed with the transmitter set at power levels of 882 Watts and 903 Watts, respectively. The daytime measured fields were ratioed up by a factor of 2.47 and the nighttime measured fields were ratioed up by a factor of 1.58 to correspond with the authorized daytime and nighttime power levels. The measured field strength value for each established reference point location is tabulated in Figure 7. The tabulations contained in Figure 7 also include for each reference location; GPS coordinates (NAD83), distance from the WDEV array center, and a description of measurement location.
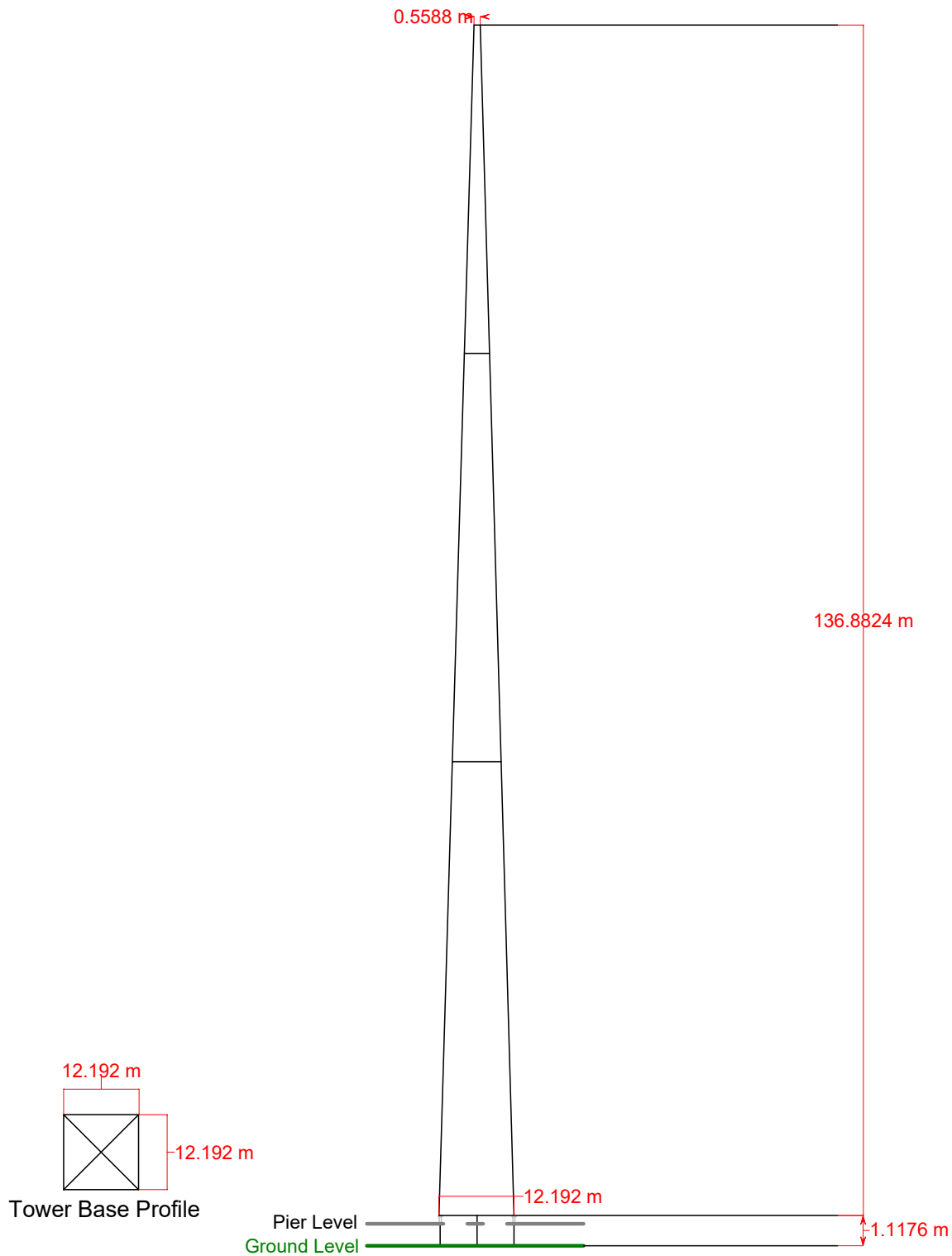
<u>SUMMARY</u>

It is submitted that the WDEV daytime and nighttime directional patterns performance has been verified using computer modeling and sample system verification procedures in accordance with Section 47 CFR 73.151(c) of the Commission's Rules and Regulations. It is believed that the daytime and nighttime directional antenna patterns, as adjusted, fully comply with the terms of the station's FCC Authorization and all applicable FCC Rules and Regulations. It is requested that a superseding license be issued to RVI reflecting the new MoM model derived operating parameters.

This engineering statement, FCC Form 2100, Schedule 302-AM, and the attached figures and appendices were prepared by the undersigned or under the direct supervision of the undersigned and are believed to be true and correct.

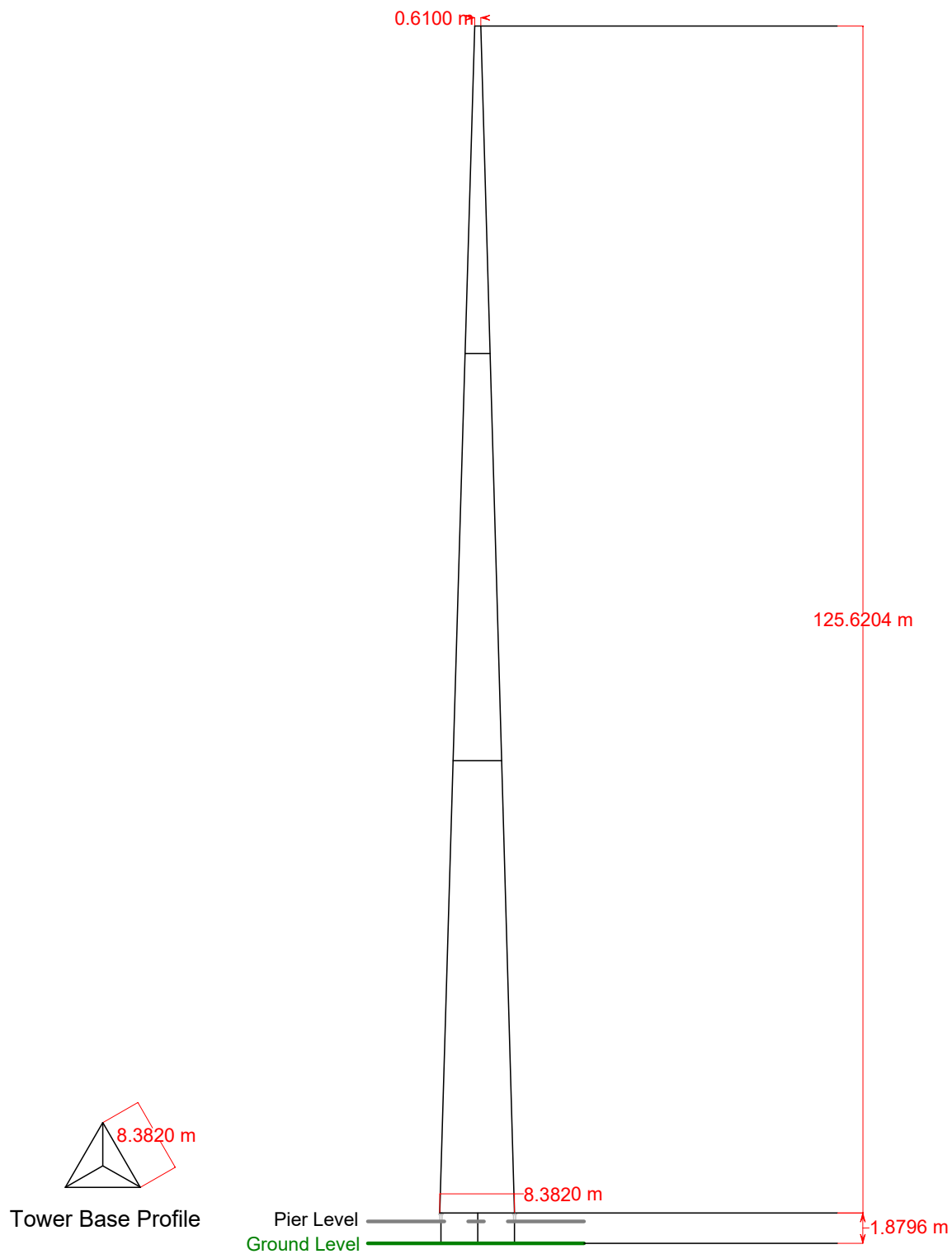Dated: November 15, 2023

_____
James D. Sadler

Figure 1
Sheet 1 of 3

0.5588 m

136.8824 m

12.192 m

12.192 m

Tower Base Profile

12.192 m

Pier Level
Ground Level

1.1176 m

WIREFRAME TOWER MODEL - TOWER #1 (Southeast)
STATION WDEV - WATERBURY, VERMONT
550 kHz - 5 kW-D, 1 kW-N, U, DA-2
NOVEMBER, 2023

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Figure 1
Sheet 2 of 3

0.6100 m

125.6204 m
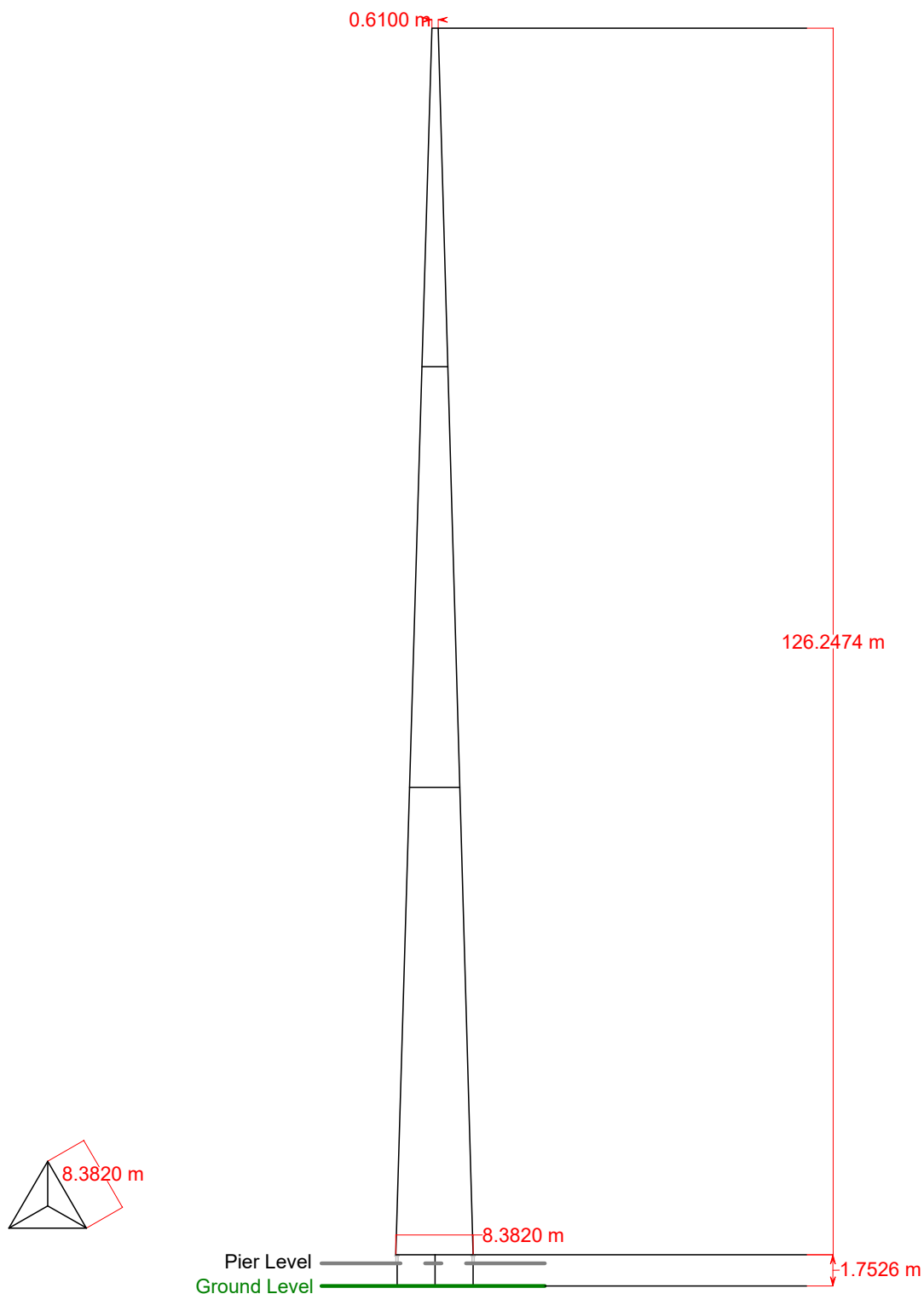
8.3820 m

Tower Base Profile

8.3820 m

Pier Level
Ground Level

1.8796 m

WIREFRAME TOWER MODEL - TOWER #2 (Center)
STATION WDEV - WATERBURY, VERMONT
550 kHz - 5 kW-D, 1 kW-N, U, DA-2
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Figure 1
Sheet 3 of 3

0.6100 m

126.2474 m

8.3820 m

8.3820 m

Pier Level

Ground Level

1.7526 m

WIREFRAME TOWER MODEL - TOWER #3 (Northwest)
STATION WDEV - WATERBURY, VERMONT
550 kHz - 5 kW-D, 1 kW-N, U, DA-2
NOVEMBER, 2023

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Figure 2

TOWER MODEL HEIGHT AND RADIUS
STATION WDEV - WATERBURY, VERMONT
550 kHz - 5 kW-D, 1 kW-N, U, DA-2
NOVEMBER, 2023

Tower	Physical Height (meters)	Modeled Height (meters)	Percent of Physical Height	Modeled Radius (meters)	Percent of Equivalent Radius
1 (Southeast)	131.73	136.88	103.9	See Note	See Note
2 (Center)	131.73	125.62	95.4	See Note	See Note
3 (Northwest)	131.73	126.25	95.8	See Note	See Note

Note: The complete structure of the wide-based self-supporting towers was modeled using thin wires of a radius typically found in such construction. The actual radius values for each of the elements that make up each tower are shown in the geometry files contained in the Appendices. Scale drawings of each tower based on the actual physical height are contained in Figure 1, Sheets 1 through 3.

MEASURED AND MODELED IMPEDANCES

STATION WDEV - WATERBURY, VERMONT
550 kHz - 5 kW-D, 1 kW-N, U, DA-2
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Tower	Measured Tower Base Impedance[1]	Modeled Tower Base Impedance	Shunt Capacitance (pF)	Modeled plus Shunt Reactance	Lumped Series Inductance (uH)	Total Adjusted Tower Base Impedance
1 (Southeast)	30.44 +j 33.90	32.55 -j 2.80	15.0	32.54 -j 2.86	10.0	32.54 +j 31.70
2 (Center)	25.04 -j 23.21	24.25 -j 21.74	15.0	24.19 -j 21.75	0.00	24.19 -j 21.75
3 (Northwest)	27.47 -j 18.52	27.83 -j 21.16	15.0	27.77 -j 21.18	0.75	27.77 -j 18.59

[1] Measured at output of matching network with other towers open-circuited

Figure 3

Figure 4

ANTENNA MONITOR PARAMETERS
AND COMMON POINT DATA
STATION WDEV - WATERBURY, VERMONT
550 kHz - 5 kW-D, 1 kW-N, U, DA-2
NOVEMBER, 2023

DAYTIME MiniNEC Modeled Parameters		
Tower	Ratio	Phase (degrees)
2 (Center)	1.000	0.0
3 (Northwest)	1.439	142.1
Common Point Impedance = 50 -j 12 ohms		
Common Point Current = 10.39 amperes		
Antenna Input Power = 5,400 Watts		

NIGHTTIME MiniNEC Modeled Parameters		
Tower	Ratio	Phase (degrees)
1 (Southeast)	0.553	-174.9
2 (Center)	1.000	0.0
3 (Northwest)	0.732	-179.7
Common Point Impedance = 50 -j 12 ohms		
Common Point Current = 6.74 amperes		
Antenna Input Power = 2,268 Watts[1]		

[1] Station WDEV is currently licensed with a nighttime antenna input power of 2,268 Watts.

SAMPLE LINE VERIFICATION MEASUREMENTS
STATION WDEV - WATERBURY, VERMONT
550 kHz, 5 kW-D, 1 kW-N, U, DA-2
NOVEMBER, 2023

Tower	Open Circuit Series Resonant Frequency[1] (kHz)	Open Circuit Measured Line Length[2] (degrees)	Resonant Frequency -45 degree Offset Frequency (kHz)	Resonant Frequency -45 degree Offset Impedance (Ohms)	Resonant Frequency +45 degree Offset Frequency (kHz)	Resonant Frequency +45 degree Offset Impedance (Ohms)	Calculated Characteristic Impedance (Ohms)	Reference Impedance Sample Toroid Connected[2] (Ohms)
1	442.6	335.5	368.8	9.24 -j 49.96	516.4	13.25 +j 49.40	50.98	49.51 -j 0.74
2	442.2	335.9	368.5	9.25 -j 49.85	515.8	13.22 +j 49.21	50.83	49.54 -j 0.48
3	442.6	335.5	368.8	9.24 -j 49.81	516.4	13.31 +j 49.36	50.89	49.03 -j 0.76

[1] At this frequency, the sample line electrical length is equal to 270°.

[2] At carrier frequency (550 kHz)

Figure 5

Figure 6

SAMPLE DEVICE VERIFICATION MEASUREMENTS
STATION WDEV - WATERBURY, VERMONT
550 kHz - 5 kW-D, 1 kW-N, U, DA-2
NOVEMBER, 2023

Reference Sample Toroid Number	Measured Sample Toroid Number	Measured	
		Field Ratio	Phase (degrees)
1	2	1.00	0.0
1	3	1.00	0.0
2	3	1.00	0.0

Sample Toroid Number	Type	Serial Number
1	Delta Electronics, TCT-1	15013
2	Delta Electronics, TCT-1	15012
3	Delta Electronics, TCT-1	15058

REFERENCE FIELD STRENGTH MEASUREMENTS

STATION WDEV - WATERBURY, VERMONT
550 kHz, 5 kW-D, 1 kW-N, U, DA-2
NOVEMBER, 2023

9 Degree Radial

Point Number	Distance (km)	Daytime Field (mV/m)	Nighttime Field (mV/m)	Geographic Coordinates (NAD83) Latitude	Longitude	Description
1	10.38	- - -	3.53	44° 26' 47.6"	72° 43' 52.9"	Point is located at #1338 Moscow Road in the center of the driveway on the north edge of the road.
2	11.75	- - -	1.92	44° 27' 32.6"	72° 43' 42.6"	Point is located next to row of mailboxes (#17, 19, and 33) on McAllister Road, east of Barrows Road.
3	12.49	- - -	1.51	44° 27' 56.4"	72° 43' 37.3"	Point is located at the curb in line with the western most entry doors for Stowe High School.

13 Degree Radial

Point Number	Distance (km)	Daytime Field (mV/m)	Nighttime Field (mV/m)	Geographic Coordinates (NAD83) Latitude	Longitude	Description
1	10.07	8.41	- - -	44° 26' 34.5"	72° 43' 22.9"	Point is located on the north side of Moscow Road in front of Grace Bible Church, #856 Moscow Road.
2	13.23	5.00	- - -	44° 28' 14.2"	72° 42' 51.7"	Point is located on the south edge of Stonybrook Lane at the center of the driveway for garage #27 and 29.
3	13.87	5.10	- - -	44° 28' 34.5"	72° 42' 44.8"	Point is located near the large landscaping rock on the westside of the parking area #201 Snowflake Road (Units 648 - 651).

Figure 7
Sheet 1 of 4

REFERENCE FIELD STRENGTH MEASUREMENTS
STATION WDEV - WATERBURY, VERMONT
550 kHz, 5 kW-D, 1 kW-N, U, DA-2
NOVEMBER, 2023

65 Degree Radial

Point Number	Distance (km)	Daytime Field (mV/m)	Nighttime Field (mV/m)	Geographic Coordinates (NAD83)		Description
				Latitude	Longitude	
1	2.88	- - -	23.5	44° 21' 56.5"	72° 43' 08.0"	Point is located on the east edge of Guptil Road in line with front door (facing road) of #1212.
2	3.19	- - -	17.0	44° 22' 00.6"	72° 42' 55.5"	Point is located on the southeast side of Back Pasture Lane midway between road and large double barn doors.
3	4.83	- - -	9.03	44° 22' 22.4"	72° 41' 47.7"	Point is located adjacent to mailbox #1087 on the south side of Valley Veiw Road northwest of Shaw Mansion Road.

129 Degree Radial

Point Number	Distance (km)	Daytime Field (mV/m)	Nighttime Field (mV/m)	Geographic Coordinates (NAD83)		Description
				Latitude	Longitude	
1	9.33	18.8	9.67	44° 18' 06.7"	72° 39' 38.1"	Point is located on the south side of Brook Road opposite utility pole #4.
2	9.75	25.7	14.1	44° 17' 58.1"	72° 39' 23.3"	Point is located south side of Mc Cullough Hill Road at mailbox #487.
3	13.57	7.55	3.63	44° 16' 40.4"	72° 37' 08.7"	Point is located on the west side of Lower Sunny Brook Road and the center of driveway #169.

Figure 7
Sheet 2 of 4

REFERENCE FIELD STRENGTH MEASUREMENTS

STATION WDEV - WATERBURY, VERMONT
550 kHz, 5 kW-D, 1 kW-N, U, DA-2
NOVEMBER, 2023

193 Degree Radial

Point Number	Distance (km)	Daytime Field (mV/m)	Nighttime Field (mV/m)	Geographic Coordinates (NAD83) Latitude	Longitude	Description
1	4.01	- - -	24.4	44° 19' 10.1"	72° 45' 46.2"	Point is located on the south side of road adjacent to mailbox #3152 Crossett Hill Road.
2	4.94	- - -	15.8	44° 18' 40.8"	72° 45' 55.8"	Point is located on the northwest edge of road adjacent to mailbox #4767 Vermont Route 100.
3	5.16	- - -	12.0	44° 18' 34.2"	72° 45' 59.6"	Point is located in the center of Dalton Road in line with first driveway to the south, approximately 200 feet southeast of Vermont Route 100.

245 Degree Radial

Point Number	Distance (km)	Daytime Field (mV/m)	Nighttime Field (mV/m)	Geographic Coordinates (NAD83) Latitude	Longitude	Description
1	7.22	3.98	- - -	44° 19' 37.8"	72° 50' 02.4"	Point is located adjacent to mailbox #229 Mountain View.
2	7.60	2.80	- - -	44° 19' 32.6"	72° 50' 17.9"	Point is located on the west side of Camel Hump Road opposite utility pole #27234 53.
3	7.83	4.08	- - -	44° 19' 30.0"	72° 50' 27.8"	Point is located in the center of Marshall Road atop culvert pipe crossing beneath the roadway into the ravine to the east.

Figure 7
Sheet 3 of 4

REFERENCE FIELD STRENGTH MEASUREMENTS

STATION WDEV - WATERBURY, VERMONT
550 kHz, 5 kW-D, 1 kW-N, U, DA-2
NOVEMBER, 2023

249 Degree Radial

Point Number	Distance (km)	Daytime Field (mV/m)	Nighttime Field (mV/m)	Geographic Coordinates (NAD83)		Description
				Latitude	Longitude	
1	5.64	- - -	4.39	44° 20' 12.0"	72° 49' 04.9"	Point is located in the center of Ridley Road at the intersection with overgrown road to the north (yellow arrow signs southwest side).
2	6.49	- - -	2.96	44° 20' 01.4"	72° 49' 40.6"	Point is located on the south edge of driveway opposite mailbox #700 Scrabble Hill Road.
3	7.24	- - -	3.11	44° 19' 52.7"	72° 50' 12.2"	Point is located on the west edge center of bridge Camels Hump Road.

309 Degree Radial

Point Number	Distance (km)	Daytime Field (mV/m)	Nighttime Field (mV/m)	Geographic Coordinates (NAD83)		Description
				Latitude	Longitude	
1	10.80	- - -	4.82	44° 24' 56.6"	72° 51' 26.6"	Point is located at the bottom of the stairway for units 3, 4, and 5 Bear Run Townhouses on Bear Run Road.
2	14.73	- - -	1.97	44° 26' 17.0"	72° 53' 45.2"	Point is located on the east edge of Notch Road at south end of guard rail.
3	15.74	- - -	1.44	44° 26' 26.8"	72° 54' 03.4"	Point is located on the south side of Stage Road at driveway for #5118.

Figure 7
Sheet 4 of 4

APPENDIX A

INDIVIDUAL TOWER MODEL

```
IMPEDANCE – TOWER #1
   normalization = 50.
freq     resist   react    imped    phase   VSWR    S11       S12
(MHz)    (ohms)   (ohms)   (ohms)   (deg)           dB        dB
source =  1; node 1, sector 1
.55      32.547   -2.8037  32.667   355.1   1.5446  -13.391   -.20363

GEOMETRY – TOWER #1
Dimensions in meters
Environment: perfect ground


wire  caps X           Y           Z            radius    segs
 1    none 0           0           0            .0032     2
           0           0           1.1176
 2    none 6.096       6.096       1.1176       .0254     12
           -6.096      6.096       1.1176
 3    none -6.096      6.096       1.1176       .0254     12
           -6.096      -6.096      1.1176
 4    none -6.096      -6.096      1.1176       .0254     12
           6.096       -6.096      1.1176
 5    none 6.096       -6.096      1.1176       .0254     12
           6.096       6.096       1.1176
 6    none 0           0           1.1176       .0254     8
           6.096       6.096       1.1176
 7    none 0           0           1.1176       .0254     8
           -6.096      6.096       1.1176
 8    none 0           0           1.1176       .0254     8
           -6.096      -6.096      1.1176
 9    none 0           0           1.1176       .0254     8
           6.096       -6.096      1.1176
10    none 6.096       6.096       1.1176       .0254     132
           .2794       .2794       138.
11    none -6.096      6.096       1.1176       .0254     132
           -.2794      .2794       138.
12    none -6.096      -6.096      1.1176       .0254     132
           -.2794      -.2794      138.
13    none 6.096       -6.096      1.1176       .0254     132
           .2794       -.2794      138.
14    none .2794       .2794       138.         .0254     1
           -.2794      .2794       138.
15    none -.2794      .2794       138.         .0254     1
           -.2794      -.2794      138.
16    none -.2794      -.2794      138.         .0254     1
           .2794       -.2794      138.
17    none .2794       -.2794      138.         .0254     1
           .2794       .2794       138.
18    none 91.4742     -112.961    0            .0032     2
           91.4742     -112.961    1.8796
19    none 96.3135     -112.961    1.8796       .0254     8
           89.0545     -108.77     1.8796
20    none 89.0545     -108.77     1.8796       .0254     8
           89.0545     -117.152    1.8796
21    none 89.0545     -117.152    1.8796       .0254     8
           96.3135     -112.961    1.8796
22    none 91.4742     -112.961    1.8796       .0254     5
           96.3135     -112.961    1.8796
23    none 91.4742     -112.961    1.8796       .0254     5
           89.0545     -108.77     1.8796
24    none 91.4742     -112.961    1.8796       .0254     5
           89.0545     -117.152    1.8796
25    none 96.3135     -112.961    1.8796       .0254     132
           91.8261     -112.961    127.5
26    none 89.0545     -108.77     1.8796       .0254     132
```

```
          91.2982      -112.656     127.5
27   none 89.0545      -117.152     1.8796      .0254        132
          91.2982      -113.266     127.5
28   none 91.8261      -112.961     127.5       .0254        1
          91.2982      -112.656     127.5
29   none 91.2982      -112.656     127.5       .0254        1
          91.2982      -113.266     127.5
30   none 91.2982      -113.266     127.5       .0254        1
          91.8261      -112.961     127.5
31   none 171.514      -211.802     0           .0032        2
          171.514      -211.802     1.7526
32   none 176.353      -211.802     1.7526      .0254        8
          169.094      -207.611     1.7526
33   none 169.094      -207.611     1.7526      .0254        8
          169.094      -215.993     1.7526
34   none 169.094      -215.993     1.7526      .0254        8
          176.353      -211.802     1.7526
35   none 171.514      -211.802     1.7526      .0254        5
          176.353      -211.802     1.7526
36   none 171.514      -211.802     1.7526      .0254        5
          169.094      -207.611     1.7526
37   none 171.514      -211.802     1.7526      .0254        5
          169.094      -215.993     1.7526
38   none 176.353      -211.802     1.7526      .0254        132
          171.866      -211.802     128.
39   none 169.094      -207.611     1.7526      .0254        132
          171.338      -211.498     128.
40   none 169.094      -215.993     1.7526      .0254        132
          171.338      -212.107     128.
41   none 171.866      -211.802     128.        .0254        1
          171.338      -211.498     128.
42   none 171.338      -211.498     128.        .0254        1
          171.338      -212.107     128.
43   none 171.338      -212.107     128.        .0254        1
          171.866      -211.802     128.

Number of wires        =   43
        current nodes  = 1514


                        minimum                    maximum
Individual wires       wire    value        wire    value
segment length          1      .5588          6     1.07763
segment/radius ratio   14      22.           18     293.688
radius                  1      3.2E-03         2     .0254


ELECTRICAL DESCRIPTION – TOWER #1
Frequencies (MHz)
     frequency                  no. of  segment length (wavelengths)
no.  lowest       step          steps   minimum         maximum
1    .55          0             1       1.03E-03        1.98E-03

Sources
source node    sector  magnitude      phase          type
1      1       1       1.             0              voltage

Lumped loads
            resistance    reactance      inductance  capacitance passive
load  node  (ohms)        (ohms)         (mH)        (uF)        circuit
1     1      .01          0              0           0           0
2     623    .01          0              0           1.5E-05     0
3     1069   .01          0              0           1.5E-05     0
```

```
IMPEDANCE – TOWER #2
   normalization = 50.
freq      resist   react    imped    phase    VSWR     S11       S12
(MHz)     (ohms)   (ohms)   (ohms)   (deg)             dB        dB
source =  1; node 623, sector 1
.55       24.245   -21.74   32.564   318.1    2.544    -7.2169   -.91412

GEOMETRY – TOWER #2
Dimensions in meters
Environment: perfect ground

wire  caps X           Y           Z           radius    segs
 1    none 0           0           0           .0032     2
           0           0           1.1176
 2    none 6.096       6.096       1.1176      .0254     12
           -6.096      6.096       1.1176
 3    none -6.096      6.096       1.1176      .0254     12
           -6.096      -6.096      1.1176
 4    none -6.096      -6.096      1.1176      .0254     12
           6.096       -6.096      1.1176
 5    none 6.096       -6.096      1.1176      .0254     12
           6.096       6.096       1.1176
 6    none 0           0           1.1176      .0254     8
           6.096       6.096       1.1176
 7    none 0           0           1.1176      .0254     8
           -6.096      6.096       1.1176
 8    none 0           0           1.1176      .0254     8
           -6.096      -6.096      1.1176
 9    none 0           0           1.1176      .0254     8
           6.096       -6.096      1.1176
10    none 6.096       6.096       1.1176      .0254     132
           .2794       .2794       138.
11    none -6.096      6.096       1.1176      .0254     132
           -.2794      .2794       138.
12    none -6.096      -6.096      1.1176      .0254     132
           -.2794      -.2794      138.
13    none 6.096       -6.096      1.1176      .0254     132
           .2794       -.2794      138.
14    none .2794       .2794       138.        .0254     1
           -.2794      .2794       138.
15    none -.2794      .2794       138.        .0254     1
           -.2794      -.2794      138.
16    none -.2794      -.2794      138.        .0254     1
           .2794       -.2794      138.
17    none .2794       -.2794      138.        .0254     1
           .2794       .2794       138.
18    none 91.4742     -112.961    0           .0032     2
           91.4742     -112.961    1.8796
19    none 96.3135     -112.961    1.8796      .0254     8
           89.0545     -108.77     1.8796
20    none 89.0545     -108.77     1.8796      .0254     8
           89.0545     -117.152    1.8796
21    none 89.0545     -117.152    1.8796      .0254     8
           96.3135     -112.961    1.8796
22    none 91.4742     -112.961    1.8796      .0254     5
           96.3135     -112.961    1.8796
23    none 91.4742     -112.961    1.8796      .0254     5
           89.0545     -108.77     1.8796
24    none 91.4742     -112.961    1.8796      .0254     5
           89.0545     -117.152    1.8796
25    none 96.3135     -112.961    1.8796      .0254     132
           91.8261     -112.961    127.5
26    none 89.0545     -108.77     1.8796      .0254     132
```

```
          91.2982       -112.656     127.5
27  none 89.0545       -117.152     1.8796        .0254         132
          91.2982       -113.266     127.5
28  none 91.8261       -112.961     127.5         .0254         1
          91.2982       -112.656     127.5
29  none 91.2982       -112.656     127.5         .0254         1
          91.2982       -113.266     127.5
30  none 91.2982       -113.266     127.5         .0254         1
          91.8261       -112.961     127.5
31  none 171.514       -211.802     0             .0032         2
          171.514       -211.802     1.7526
32  none 176.353       -211.802     1.7526        .0254         8
          169.094       -207.611     1.7526
33  none 169.094       -207.611     1.7526        .0254         8
          169.094       -215.993     1.7526
34  none 169.094       -215.993     1.7526        .0254         8
          176.353       -211.802     1.7526
35  none 171.514       -211.802     1.7526        .0254         5
          176.353       -211.802     1.7526
36  none 171.514       -211.802     1.7526        .0254         5
          169.094       -207.611     1.7526
37  none 171.514       -211.802     1.7526        .0254         5
          169.094       -215.993     1.7526
38  none 176.353       -211.802     1.7526        .0254         132
          171.866       -211.802     128.
39  none 169.094       -207.611     1.7526        .0254         132
          171.338       -211.498     128.
40  none 169.094       -215.993     1.7526        .0254         132
          171.338       -212.107     128.
41  none 171.866       -211.802     128.          .0254         1
          171.338       -211.498     128.
42  none 171.338       -211.498     128.          .0254         1
          171.338       -212.107     128.
43  none 171.338       -212.107     128.          .0254         1
          171.866       -211.802     128.

Number of wires       =   43
        current nodes =   1514


                        minimum                  maximum
Individual wires      wire    value          wire    value
segment length        1       .5588          6       1.07763
segment/radius ratio  14      22.            18      293.688
radius                1       3.2E-03        2       .0254


ELECTRICAL DESCRIPTION – TOWER #2
Frequencies (MHz)
     frequency                   no. of  segment length (wavelengths)
no. lowest        step          steps   minimum        maximum
1   .55           0             1       1.03E-03       1.98E-03


Sources
source node    sector  magnitude       phase          type
1      623     1       1.              0              voltage


Lumped loads
          resistance    reactance      inductance  capacitance passive
load node (ohms)        (ohms)         (mH)        (uF)        circuit
1    1    .01           0              0           1.5E-05     0
2    623  .01           0              0           0           0
3    1069 .01           0              0           1.5E-05     0
```

```
IMPEDANCE – TOWER #3
   normalization = 50.
freq      resist    react    imped     phase    VSWR     S11        S12
(MHz)     (ohms)    (ohms)   (ohms)    (deg)              dB         dB
source =  1; node 1069, sector 1
.55       27.832    -21.164  34.965    322.7    2.2257   -8.4046    -.67725

GEOMETRY – TOWER #3
Dimensions in meters
Environment: perfect ground

wire  caps X            Y            Z            radius      segs
 1    none 0            0            0            .0032       2
           0            0            1.1176
 2    none 6.096        6.096        1.1176       .0254       12
           -6.096       6.096        1.1176
 3    none -6.096       6.096        1.1176       .0254       12
           -6.096       -6.096       1.1176
 4    none -6.096       -6.096       1.1176       .0254       12
           6.096        -6.096       1.1176
 5    none 6.096        -6.096       1.1176       .0254       12
           6.096        6.096        1.1176
 6    none 0            0            1.1176       .0254       8
           6.096        6.096        1.1176
 7    none 0            0            1.1176       .0254       8
           -6.096       6.096        1.1176
 8    none 0            0            1.1176       .0254       8
           -6.096       -6.096       1.1176
 9    none 0            0            1.1176       .0254       8
           6.096        -6.096       1.1176
10    none 6.096        6.096        1.1176       .0254       132
           .2794        .2794        138.
11    none -6.096       6.096        1.1176       .0254       132
           -.2794       .2794        138.
12    none -6.096       -6.096       1.1176       .0254       132
           -.2794       -.2794       138.
13    none 6.096        -6.096       1.1176       .0254       132
           .2794        -.2794       138.
14    none .2794        .2794        138.         .0254       1
           -.2794       .2794        138.
15    none -.2794       .2794        138.         .0254       1
           -.2794       -.2794       138.
16    none -.2794       -.2794       138.         .0254       1
           .2794        -.2794       138.
17    none .2794        -.2794       138.         .0254       1
           .2794        .2794        138.
18    none 91.4742      -112.961     0            .0032       2
           91.4742      -112.961     1.8796
19    none 96.3135      -112.961     1.8796       .0254       8
           89.0545      -108.77      1.8796
20    none 89.0545      -108.77      1.8796       .0254       8
           89.0545      -117.152     1.8796
21    none 89.0545      -117.152     1.8796       .0254       8
           96.3135      -112.961     1.8796
22    none 91.4742      -112.961     1.8796       .0254       5
           96.3135      -112.961     1.8796
23    none 91.4742      -112.961     1.8796       .0254       5
           89.0545      -108.77      1.8796
24    none 91.4742      -112.961     1.8796       .0254       5
           89.0545      -117.152     1.8796
25    none 96.3135      -112.961     1.8796       .0254       132
           91.8261      -112.961     127.5
26    none 89.0545      -108.77      1.8796       .0254       132
```

```
           91.2982        -112.656      127.5
27  none  89.0545        -117.152      1.8796      .0254      132
           91.2982        -113.266      127.5
28  none  91.8261        -112.961      127.5       .0254      1
           91.2982        -112.656      127.5
29  none  91.2982        -112.656      127.5       .0254      1
           91.2982        -113.266      127.5
30  none  91.2982        -113.266      127.5       .0254      1
           91.8261        -112.961      127.5
31  none  171.514        -211.802      0           .0032      2
           171.514        -211.802      1.7526
32  none  176.353        -211.802      1.7526      .0254      8
           169.094        -207.611      1.7526
33  none  169.094        -207.611      1.7526      .0254      8
           169.094        -215.993      1.7526
34  none  169.094        -215.993      1.7526      .0254      8
           176.353        -211.802      1.7526
35  none  171.514        -211.802      1.7526      .0254      5
           176.353        -211.802      1.7526
36  none  171.514        -211.802      1.7526      .0254      5
           169.094        -207.611      1.7526
37  none  171.514        -211.802      1.7526      .0254      5
           169.094        -215.993      1.7526
38  none  176.353        -211.802      1.7526      .0254      132
           171.866        -211.802      128.
39  none  169.094        -207.611      1.7526      .0254      132
           171.338        -211.498      128.
40  none  169.094        -215.993      1.7526      .0254      132
           171.338        -212.107      128.
41  none  171.866        -211.802      128.        .0254      1
           171.338        -211.498      128.
42  none  171.338        -211.498      128.        .0254      1
           171.338        -212.107      128.
43  none  171.338        -212.107      128.        .0254      1
           171.866        -211.802      128.

Number of wires       =   43
        current nodes =   1514


                        minimum                  maximum
Individual wires    wire    value        wire    value
segment length       1      .5588         6      1.07763
segment/radius ratio 14     22.          18      293.688
radius               1      3.2E-03       2      .0254

ELECTRICAL DESCRIPTION – TOWER #3
Frequencies (MHz)
     frequency               no. of  segment length (wavelengths)
no. lowest      step        steps   minimum       maximum
1   .55          0           1      1.03E-03      1.98E-03


Sources
source node    sector  magnitude     phase        type
1     1069    1      1.             0            voltage


Lumped loads
          resistance    reactance    inductance  capacitance passive
load node (ohms)        (ohms)       (mH)        (uF)        circuit
1    1    .01           0            0           1.5E-05     0
2    623  .01           0            0           1.5E-05     0
3    1069 .01           0            0           0           0
```

APPENDIX B

DAYTIME DIRECTIONAL ARRAY MODEL

```
IMPEDANCE - DAYTIME OPERATION
   normalization = 50.
freq      resist   react    imped    phase    VSWR     S11      S12
(MHz)     (ohms)   (ohms)   (ohms)   (deg)             dB       dB
source =  1; node 623, sector 1
.55       20.62    5.584    21.363   15.2     2.4612   -7.4904  -.85245


source =  2; node 1069, sector 1
.55       13.032   -20.99   24.707   301.8    4.5538   -3.878   -2.2875

GEOMETRY - DAYTIME OPERATION
Dimensions in meters
Environment: perfect ground


wire  caps X           Y           Z           radius    segs
 1    none 0           0           0           .0032     2
           0           0           1.1176
 2    none 6.096       6.096       1.1176      .0254     12
           -6.096      6.096       1.1176
 3    none -6.096      6.096       1.1176      .0254     12
           -6.096      -6.096      1.1176
 4    none -6.096      -6.096      1.1176      .0254     12
           6.096       -6.096      1.1176
 5    none 6.096       -6.096      1.1176      .0254     12
           6.096       6.096       1.1176
 6    none 0           0           1.1176      .0254     8
           6.096       6.096       1.1176
 7    none 0           0           1.1176      .0254     8
           -6.096      6.096       1.1176
 8    none 0           0           1.1176      .0254     8
           -6.096      -6.096      1.1176
 9    none 0           0           1.1176      .0254     8
           6.096       -6.096      1.1176
10    none 6.096       6.096       1.1176      .0254     132
           .2794       .2794       138.
11    none -6.096      6.096       1.1176      .0254     132
           -.2794      .2794       138.
12    none -6.096      -6.096      1.1176      .0254     132
           -.2794      -.2794      138.
13    none 6.096       -6.096      1.1176      .0254     132
           .2794       -.2794      138.
14    none .2794       .2794       138.        .0254     1
           -.2794      .2794       138.
15    none -.2794      .2794       138.        .0254     1
           -.2794      -.2794      138.
16    none -.2794      -.2794      138.        .0254     1
           .2794       -.2794      138.
17    none .2794       -.2794      138.        .0254     1
           .2794       .2794       138.
18    none 91.4742     -112.961    0           .0032     2
           91.4742     -112.961    1.8796
19    none 96.3135     -112.961    1.8796      .0254     8
           89.0545     -108.77     1.8796
20    none 89.0545     -108.77     1.8796      .0254     8
           89.0545     -117.152    1.8796
21    none 89.0545     -117.152    1.8796      .0254     8
           96.3135     -112.961    1.8796
22    none 91.4742     -112.961    1.8796      .0254     5
           96.3135     -112.961    1.8796
23    none 91.4742     -112.961    1.8796      .0254     5
           89.0545     -108.77     1.8796
```

```
24   none 91.4742     -112.961     1.8796       .0254        5
          89.0545     -117.152     1.8796
25   none 96.3135     -112.961     1.8796       .0254        132
          91.8261     -112.961     127.5
26   none 89.0545     -108.77      1.8796       .0254        132
          91.2982     -112.656     127.5
27   none 89.0545     -117.152     1.8796       .0254        132
          91.2982     -113.266     127.5
28   none 91.8261     -112.961     127.5        .0254        1
          91.2982     -112.656     127.5
29   none 91.2982     -112.656     127.5        .0254        1
          91.2982     -113.266     127.5
30   none 91.2982     -113.266     127.5        .0254        1
          91.8261     -112.961     127.5
31   none 171.514     -211.802     0            .0032        2
          171.514     -211.802     1.7526
32   none 176.353     -211.802     1.7526       .0254        8
          169.094     -207.611     1.7526
33   none 169.094     -207.611     1.7526       .0254        8
          169.094     -215.993     1.7526
34   none 169.094     -215.993     1.7526       .0254        8
          176.353     -211.802     1.7526
35   none 171.514     -211.802     1.7526       .0254        5
          176.353     -211.802     1.7526
36   none 171.514     -211.802     1.7526       .0254        5
          169.094     -207.611     1.7526
37   none 171.514     -211.802     1.7526       .0254        5
          169.094     -215.993     1.7526
38   none 176.353     -211.802     1.7526       .0254        132
          171.866     -211.802     128.
39   none 169.094     -207.611     1.7526       .0254        132
          171.338     -211.498     128.
40   none 169.094     -215.993     1.7526       .0254        132
          171.338     -212.107     128.
41   none 171.866     -211.802     128.         .0254        1
          171.338     -211.498     128.
42   none 171.338     -211.498     128.         .0254        1
          171.338     -212.107     128.
43   none 171.338     -212.107     128.         .0254        1
          171.866     -211.802     128.

Number of wires         =   43
        current nodes   = 1514


                        minimum                 maximum
Individual wires     wire    value           wire   value
segment length        1      .5588            6     1.07763
segment/radius ratio 14      22.             18     293.688
radius                1      3.2E-03          2     .0254


ELECTRICAL DESCRIPTION – DAYTIME OPERATION
Frequencies (MHz)
     frequency                no. of  segment length (wavelengths)
no. lowest        step        steps   minimum        maximum
1   .55           0             1     1.03E-03       1.98E-03

Sources
source node     sector  magnitude    phase        type
1      623      1       309.981      235.5        voltage
2      1069     1       515.017      304.3        voltage
```

```
Lumped loads
            resistance    reactance    inductance   capacitance passive
load  node  (ohms)        (ohms)       (mH)         (uF)        circuit
 1    1     .01           0            .049         0           0
 2    623   .01           0            0            0           0
 3    1069  .01           0            0            0           0

RMS CURRENT - NIGHTTIME OPERATION
Frequency   = .55 MHz
Input power = 5,000. watts
Efficiency  = 99.93 %
coordinates in meters
current                             mag      phase  real       imaginary
no.   X        Y        Z           (amps)   (deg)  (amps)     (amps)
GND   0        0        0           2.02161  300.4  1.02311    -1.74361
 2    0        0        .5588       2.01484  300.4  1.01968    -1.73777
J1    0        0        1.1176      2.01254  300.4  1.01852    -1.73578
J2    6.096    6.096    1.1176      .079017  287.9  .0243243   -.0751799
 3    5.08     6.096    1.1176      .0697339 286.2  .0195012   -.0669517
 4    4.064    6.096    1.1176      .0576819 283.2  .0131763   -.0561568
 5    3.048    6.096    1.1176      .0448974 278.1  6.32E-03   -.0444504
 6    2.032    6.096    1.1176      .032289  268.6  -8.06E-04  -.032279
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 23   -6.096   -3.048   1.1176      .0469201 93.6   -2.98E-03  .0468256
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54	2.286	2.286	1.1176	.464863	300.	.232595	-.402489
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56	3.81	3.81	1.1176	.436201	300.	.218091	-.377767
57	4.572	4.572	1.1176	.422692	300.	.211257	-.366114
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61	-.762	.762	1.1176	.491819	297.3	.225758	-.436943
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66	-4.572	4.572	1.1176	.421666	296.8	.190266	-.376299
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71	-1.524	-1.524	1.1176	.479683	300.7	.244923	-.412443
72	-2.286	-2.286	1.1176	.465315	300.7	.23765	-.400051
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92	5.87567	5.87567	6.30254	.197175	298.1	.0928045	-.17397
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113	4.95031	4.95031	28.0793	.0577476	291.9	.0215133	-.0535907
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116	4.81811	4.81811	31.1903	.0437573	288.9	.0141985	-.0413896
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118	4.72998	4.72998	33.2642	.0351053	285.9	9.61E-03	-.0337632
119	4.68592	4.68592	34.3012	.0309931	283.8	7.41E-03	-.0300955
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127	4.33339	4.33339	42.5971	9.29E-03	205.6	-8.38E-03	-4.01E-03
128	4.28933	4.28933	43.6341	.0101978	186.4	-.0101346	-1.13E-03
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131	4.15713	4.15713	46.7451	.0166507	155.1	-.0151034	7.01E-03
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138	3.84868	3.84868	54.004	.0342556	137.1	-.025109	.0233021
139	3.80461	3.80461	55.041	.036561	136.1	-.0263627	.025332
140	3.76055	3.76055	56.078	.0387946	135.3	-.0275734	.0272897
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143	3.62835	3.62835	59.1889	.045051	133.4	-.0309512	.0327355
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153	3.1877	3.1877	69.5588	.0609875	130.4	-.0395338	.0464387
154	3.14364	3.14364	70.5958	.0621685	130.3	-.0401717	.0474463
155	3.09957	3.09957	71.6328	.0632759	130.1	-.0407705	.0483901
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168	2.52672	2.52672	85.1136	.071171	129.3	−.0450909	.0550648
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172	2.35046	2.35046	89.2616	.0712698	129.3	−.0451713	.0551266
173	2.3064	2.3064	90.2986	.0711308	129.4	−.045103	.0550028
174	2.26233	2.26233	91.3356	.0709273	129.4	−.0449999	.0548243
175	2.21827	2.21827	92.3725	.0706601	129.4	−.0448622	.0545915
176	2.1742	2.1742	93.4095	.0703295	129.5	−.0446901	.0543051
177	2.13014	2.13014	94.4465	.0699362	129.5	−.0444839	.0539654
178	2.08607	2.08607	95.4835	.0694808	129.6	−.0442439	.053573
179	2.04201	2.04201	96.5205	.0689638	129.6	−.0439703	.0531283
180	1.99794	1.99794	97.5575	.0683859	129.7	−.0436635	.0526321
181	1.95388	1.95388	98.5945	.0677475	129.8	−.0433235	.0520845
182	1.90981	1.90981	99.6315	.0670494	129.8	−.0429509	.0514864
183	1.86575	1.86575	100.668	.0662922	129.9	−.0425459	.050838
184	1.82168	1.82168	101.705	.0654764	130.	−.0421087	.05014
185	1.77762	1.77762	102.742	.0646027	130.1	−.0416395	.049393
186	1.73355	1.73355	103.779	.0636718	130.2	−.0411389	.0485973
187	1.68949	1.68949	104.816	.0626844	130.4	−.0406069	.0477536
188	1.64542	1.64542	105.853	.061641	130.5	−.0400441	.0468624
189	1.60135	1.60135	106.89	.0605424	130.7	−.0394505	.0459243
190	1.55729	1.55729	107.927	.0593894	130.8	−.0388267	.0449398
191	1.51322	1.51322	108.964	.0581824	131.	−.0381728	.0439093
192	1.46916	1.46916	110.001	.0569225	131.2	−.0374893	.0428336
193	1.42509	1.42509	111.038	.0556101	131.4	−.0367764	.0417131
194	1.38103	1.38103	112.075	.0542463	131.6	−.0360345	.0405484
195	1.33696	1.33696	113.112	.0528317	131.9	−.0352639	.0393401
196	1.2929	1.2929	114.149	.0513671	132.1	−.034465	.0380886
197	1.24883	1.24883	115.186	.0498535	132.4	−.0336382	.0367947
198	1.20477	1.20477	116.223	.0482917	132.8	−.0327837	.0354588
199	1.1607	1.1607	117.26	.0466827	133.1	−.0319019	.0340815
200	1.11664	1.11664	118.297	.0450273	133.5	−.0309931	.0326633
201	1.07257	1.07257	119.334	.0433267	133.9	−.0300577	.0312047
202	1.02851	1.02851	120.371	.0415818	134.4	−.0290961	.0297063
203	.984442	.984442	121.408	.039794	134.9	−.0281085	.0281687
204	.940377	.940377	122.445	.0379644	135.5	−.0270952	.0265922
205	.896312	.896312	123.482	.0360945	136.2	−.0260567	.0249772
206	.852247	.852247	124.519	.0341858	137.	−.0249929	.0233243
207	.808182	.808182	125.556	.0322401	137.9	−.0239043	.0216335
208	.764117	.764117	126.593	.0302596	138.9	−.0227908	.0199053
209	.720051	.720051	127.63	.0282467	140.	−.0216526	.0181395
210	.675986	.675986	128.667	.0262048	141.4	−.0204896	.0163361
211	.631921	.631921	129.704	.0241378	143.1	−.0193014	.0144944
212	.587856	.587856	130.741	.0220513	145.1	−.0180875	.0126136
213	.543791	.543791	131.778	.0199529	147.6	−.0168465	.0106917
214	.499726	.499726	132.815	.0178542	150.7	−.0155767	8.73E-03
215	.455661	.455661	133.852	.015773	154.8	−.0142744	6.71E-03
216	.411595	.411595	134.889	.0137386	160.3	−.0129332	4.63E-03
217	.36753	.36753	135.926	.011803	167.9	−.0115397	2.48E-03
218	.323465	.323465	136.963	.010063	178.9	−.0100612	1.92E-04
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2J1	−6.096	6.096	1.1176	.249421	285.5	.0667337	−.240328
220	−6.05194	6.05194	2.15459	.240298	284.9	.0619761	−.232168
221	−6.00787	6.00787	3.19158	.23044	284.3	.0568156	−.223326
222	−5.96381	5.96381	4.22856	.220863	283.6	.0517829	−.214707
223	−5.91974	5.91974	5.26555	.211653	282.8	.0469213	−.206386

224	−5.87567	5.87567	6.30254	.202816	282.	.0422341	−.19837
225	−5.83161	5.83161	7.33953	.19434	281.2	.0377138	−.190645
226	−5.78754	5.78754	8.37652	.186204	280.3	.0333504	−.183193
227	−5.74348	5.74348	9.4135	.178393	279.4	.0291333	−.175998
228	−5.69941	5.69941	10.4505	.170887	278.4	.025053	−.169041
229	−5.65535	5.65535	11.4875	.163674	277.4	.0211008	−.162308
230	−5.61128	5.61128	12.5245	.15674	276.3	.0172687	−.155786
231	−5.56722	5.56722	13.5615	.150075	275.2	.0135498	−.149462
232	−5.52315	5.52315	14.5984	.14367	274.	9.94E−03	−.143326
233	−5.47909	5.47909	15.6354	.137518	272.7	6.43E−03	−.137367
234	−5.43502	5.43502	16.6724	.131613	271.3	3.01E−03	−.131578
235	−5.39096	5.39096	17.7094	.12595	269.9	−3.11E−04	−.125949
236	−5.34689	5.34689	18.7464	.120526	268.3	−3.55E−03	−.120474
237	−5.30283	5.30283	19.7834	.115341	266.7	−6.7E−03	−.115146
238	−5.25876	5.25876	20.8204	.110393	264.9	−9.77E−03	−.109959
239	−5.2147	5.2147	21.8574	.105682	263.1	−.0127692	−.104908
240	−5.17063	5.17063	22.8944	.10121	261.1	−.0156916	−.0999857
241	−5.12657	5.12657	23.9313	.0969797	259.	−.0185428	−.0951905
242	−5.0825	5.0825	24.9683	.0929943	256.7	−.0213253	−.0905161
243	−5.03844	5.03844	26.0053	.0892578	254.4	−.0240413	−.0859591
244	−4.99437	4.99437	27.0423	.085775	251.9	−.026693	−.0815159
245	−4.95031	4.95031	28.0793	.0825516	249.2	−.0292821	−.0771837
246	−4.90624	4.90624	29.1163	.0795915	246.4	−.0318103	−.0729582
247	−4.86218	4.86218	30.1533	.0769007	243.5	−.0342794	−.0688378
248	−4.81811	4.81811	31.1903	.0744833	240.5	−.0366906	−.0648194
249	−4.77405	4.77405	32.2272	.0723424	237.3	−.0390454	−.0609006
250	−4.72998	4.72998	33.2642	.07048	234.1	−.0413449	−.0570792
251	−4.68592	4.68592	34.3012	.0688962	230.8	−.0435905	−.0533531
252	−4.64185	4.64185	35.3382	.0675884	227.4	−.045783	−.0497203
253	−4.59779	4.59779	36.3752	.066552	223.9	−.0479236	−.0461791
254	−4.55372	4.55372	37.4122	.0657796	220.5	−.050013	−.0427277
255	−4.50966	4.50966	38.4492	.065261	217.1	−.052052	−.0393648
256	−4.46559	4.46559	39.4862	.0649837	213.7	−.0540417	−.0360886
257	−4.42153	4.42153	40.5231	.0649331	210.4	−.0559825	−.032898
258	−4.37746	4.37746	41.5601	.0650928	207.2	−.0578752	−.0297916
259	−4.33339	4.33339	42.5971	.0654451	204.1	−.0597204	−.0267681
260	−4.28933	4.28933	43.6341	.0659716	201.2	−.0615187	−.0238266
261	−4.24526	4.24526	44.6711	.0666538	198.3	−.0632706	−.0209658
262	−4.2012	4.2012	45.7081	.0674734	195.6	−.0649767	−.0181848
263	−4.15713	4.15713	46.7451	.0684123	193.1	−.0666373	−.0154827
264	−4.11307	4.11307	47.7821	.0694536	190.7	−.068253	−.0128584
265	−4.069	4.069	48.819	.0705813	188.4	−.0698241	−.0103112
266	−4.02494	4.02494	49.856	.0717808	186.3	−.0713513	−7.84E−03
267	−3.98087	3.98087	50.893	.0730377	184.3	−.0728345	−5.44E−03
268	−3.93681	3.93681	51.93	.0743395	182.4	−.0742739	−3.12E−03
269	−3.89274	3.89274	52.967	.0756759	180.7	−.0756708	−8.77E−04
270	−3.84868	3.84868	54.004	.0770355	179.	−.0770246	1.3E−03
271	−3.80461	3.80461	55.041	.0784097	177.5	−.078336	3.4E−03
272	−3.76055	3.76055	56.078	.0797905	176.1	−.0796057	5.43E−03
273	−3.71648	3.71648	57.1149	.0811696	174.8	−.080833	7.38E−03
274	−3.67242	3.67242	58.1519	.0825409	173.6	−.0820185	9.27E−03
275	−3.62835	3.62835	59.1889	.0838991	172.4	−.0831631	.0110888
276	−3.58429	3.58429	60.2259	.085238	171.3	−.0842659	.0128361
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281	−3.36396	3.36396	65.4109	.0915076	167.	−.0891708	.0205477
282	−3.3199	3.3199	66.4478	.0926538	166.3	−.0900311	.0218887
283	−3.27583	3.27583	67.4848	.0937583	165.7	−.0908519	.0231637
284	−3.23177	3.23177	68.5218	.0948192	165.1	−.0916331	.0243732

285	-3.1877	3.1877	69.5588	.0958344	164.6	-.0923747	.0255177
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287	-3.09957	3.09957	71.6328	.0977238	163.6	-.0937412	.0276139
288	-3.05551	3.05551	72.6698	.0985945	163.2	-.0943655	.0285663
289	-3.01144	3.01144	73.7068	.0994161	162.8	-.0949522	.0294556
290	-2.96737	2.96737	74.7437	.100186	162.4	-.0955001	.0302823
291	-2.92331	2.92331	75.7807	.100904	162.1	-.0960091	.0310468
292	-2.87924	2.87924	76.8177	.10157	161.8	-.0964807	.0317495
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295	-2.74705	2.74705	79.9287	.103251	161.1	-.0976676	.0334919
296	-2.70298	2.70298	80.9657	.103703	160.9	-.0979879	.0339522
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303	-2.39453	2.39453	88.2246	.105373	160.3	-.0992003	.0355353
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647	95.4061	-113.485	1.8796	.112848	51.3	.0704856	.088128
1J2	96.3135	-112.961	1.8796	.115312	53.3	.068866	.0924899
2J1	91.4742	-112.961	1.8796	3.62871	220.1	-2.77543	-2.33763
650	92.4421	-112.961	1.8796	3.62839	220.	-2.77777	-2.33435
651	93.4099	-112.961	1.8796	3.62795	220.	-2.78057	-2.33034
652	94.3778	-112.961	1.8796	3.62719	219.9	-2.78299	-2.32626
653	95.3456	-112.961	1.8796	3.62617	219.8	-2.78486	-2.32243
1J2	96.3135	-112.961	1.8796	3.6253	219.8	-2.78591	-2.31981
2J1	91.4742	-112.961	1.8796	3.31303	220.6	-2.51597	-2.15548
656	90.9903	-112.123	1.8796	3.31271	220.5	-2.51834	-2.15221
657	90.5063	-111.285	1.8796	3.31216	220.4	-2.52108	-2.14815
658	90.0224	-110.446	1.8796	3.31136	220.4	-2.52351	-2.14406
659	89.5384	-109.608	1.8796	3.31038	220.3	-2.52545	-2.14027
2J2	89.0545	-108.77	1.8796	3.30959	220.2	-2.52659	-2.1377
2J1	91.4742	-112.961	1.8796	3.31872	220.2	-2.53457	-2.14239
662	90.9903	-113.799	1.8796	3.31842	220.1	-2.53694	-2.13913
663	90.5063	-114.637	1.8796	3.3179	220.1	-2.53968	-2.13507
664	90.0224	-115.476	1.8796	3.31713	220.	-2.5421	-2.13098
665	89.5384	-116.314	1.8796	3.31617	219.9	-2.54402	-2.12719
2J2	89.0545	-117.152	1.8796	3.31529	219.9	-2.54507	-2.12456
1J1	96.3135	-112.961	1.8796	3.4142	218.7	-2.66439	-2.13491
668	96.2795	-112.961	2.83127	3.4123	218.6	-2.66587	-2.13
669	96.2455	-112.961	3.78294	3.40983	218.5	-2.66709	-2.12451
670	96.2115	-112.961	4.73461	3.40688	218.5	-2.66787	-2.1188
671	96.1775	-112.961	5.68628	3.40348	218.4	-2.6682	-2.11291
672	96.1435	-112.961	6.63795	3.39962	218.3	-2.66806	-2.10686
673	96.1095	-112.961	7.58962	3.39531	218.2	-2.66748	-2.10064
674	96.0755	-112.961	8.54129	3.39056	218.1	-2.66645	-2.09426
675	96.0415	-112.961	9.49296	3.38536	218.1	-2.66498	-2.08771
676	96.0075	-112.961	10.4446	3.37972	218.	-2.66308	-2.08099
677	95.9736	-112.961	11.3963	3.37364	217.9	-2.66074	-2.0741
678	95.9396	-112.961	12.348	3.36711	217.9	-2.65797	-2.06702
679	95.9056	-112.961	13.2996	3.36014	217.8	-2.65478	-2.05978
680	95.8716	-112.961	14.2513	3.35273	217.7	-2.65117	-2.05234
681	95.8376	-112.961	15.203	3.34489	217.7	-2.64715	-2.04472
682	95.8036	-112.961	16.1547	3.3366	217.6	-2.64271	-2.03691
683	95.7696	-112.961	17.1063	3.32788	217.6	-2.63787	-2.02891
684	95.7356	-112.961	18.058	3.31872	217.5	-2.63261	-2.02071
685	95.7016	-112.961	19.0097	3.30914	217.5	-2.62697	-2.01232
686	95.6676	-112.961	19.9613	3.29911	217.4	-2.62091	-2.00374
687	95.6336	-112.961	20.913	3.28866	217.3	-2.61447	-1.99495
688	95.5996	-112.961	21.8647	3.27777	217.3	-2.60762	-1.98596
689	95.5656	-112.961	22.8163	3.26645	217.2	-2.60039	-1.97678
690	95.5316	-112.961	23.768	3.2547	217.2	-2.59277	-1.96739
691	95.4976	-112.961	24.7197	3.24253	217.1	-2.58477	-1.95781
692	95.4636	-112.961	25.6713	3.22994	217.1	-2.57638	-1.94802
693	95.4296	-112.961	26.623	3.21692	217.	-2.56762	-1.93803
694	95.3956	-112.961	27.5747	3.20348	217.	-2.55847	-1.92783
695	95.3616	-112.961	28.5264	3.18963	217.	-2.54895	-1.91744
696	95.3276	-112.961	29.478	3.17536	216.9	-2.53906	-1.90684
697	95.2936	-112.961	30.4297	3.16067	216.9	-2.5288	-1.89605
698	95.2596	-112.961	31.3814	3.14557	216.8	-2.51817	-1.88505
699	95.2257	-112.961	32.333	3.13006	216.8	-2.50718	-1.87385
700	95.1917	-112.961	33.2847	3.11414	216.7	-2.49582	-1.86245
701	95.1577	-112.961	34.2364	3.09781	216.7	-2.4841	-1.85085
702	95.1237	-112.961	35.188	3.08108	216.6	-2.47203	-1.83905
703	95.0897	-112.961	36.1397	3.06395	216.6	-2.4596	-1.82706
704	95.0557	-112.961	37.0914	3.04642	216.6	-2.44682	-1.81487

705	95.0217	–112.961	38.0431	3.02849	216.5	–2.43369	–1.80248
706	94.9877	–112.961	38.9947	3.01018	216.5	–2.42021	–1.7899
707	94.9537	–112.961	39.9464	2.99146	216.4	–2.40638	–1.77712
708	94.9197	–112.961	40.8981	2.97237	216.4	–2.39222	–1.76416
709	94.8857	–112.961	41.8497	2.95289	216.4	–2.37772	–1.751
710	94.8517	–112.961	42.8014	2.93302	216.3	–2.36287	–1.73765
711	94.8177	–112.961	43.7531	2.91278	216.3	–2.3477	–1.72412
712	94.7837	–112.961	44.7047	2.89215	216.3	–2.33219	–1.71039
713	94.7497	–112.961	45.6564	2.87116	216.2	–2.31635	–1.69648
714	94.7157	–112.961	46.6081	2.84978	216.2	–2.30018	–1.68239
715	94.6817	–112.961	47.5598	2.82805	216.1	–2.2837	–1.66811
716	94.6477	–112.961	48.5114	2.80595	216.1	–2.26689	–1.65365
717	94.6137	–112.961	49.4631	2.78349	216.1	–2.24976	–1.63901
718	94.5797	–112.961	50.4148	2.76067	216.	–2.23232	–1.6242
719	94.5457	–112.961	51.3664	2.73749	216.	–2.21457	–1.6092
720	94.5117	–112.961	52.3181	2.71396	216.	–2.1965	–1.59403
721	94.4778	–112.961	53.2698	2.69008	215.9	–2.17814	–1.57869
722	94.4438	–112.961	54.2214	2.66586	215.9	–2.15947	–1.56318
723	94.4098	–112.961	55.1731	2.64129	215.9	–2.14049	–1.54749
724	94.3758	–112.961	56.1248	2.61639	215.8	–2.12122	–1.53164
725	94.3418	–112.961	57.0764	2.59115	215.8	–2.10166	–1.51562
726	94.3078	–112.961	58.0281	2.56558	215.8	–2.0818	–1.49944
727	94.2738	–112.961	58.9798	2.53968	215.7	–2.06165	–1.4831
728	94.2398	–112.961	59.9315	2.51346	215.7	–2.04122	–1.46659
729	94.2058	–112.961	60.8831	2.48692	215.7	–2.02051	–1.44993
730	94.1718	–112.961	61.8348	2.46005	215.6	–1.99952	–1.43311
731	94.1378	–112.961	62.7865	2.43288	215.6	–1.97825	–1.41613
732	94.1038	–112.961	63.7381	2.4054	215.6	–1.95671	–1.399
733	94.0698	–112.961	64.6898	2.37761	215.5	–1.9349	–1.38173
734	94.0358	–112.961	65.6415	2.34951	215.5	–1.91282	–1.3643
735	94.0018	–112.961	66.5931	2.32112	215.5	–1.89048	–1.34672
736	93.9678	–112.961	67.5448	2.29244	215.4	–1.86789	–1.32901
737	93.9338	–112.961	68.4965	2.26346	215.4	–1.84503	–1.31115
738	93.8998	–112.961	69.4482	2.2342	215.4	–1.82193	–1.29314
739	93.8658	–112.961	70.3998	2.20466	215.3	–1.79857	–1.27501
740	93.8318	–112.961	71.3515	2.17484	215.3	–1.77497	–1.25674
741	93.7978	–112.961	72.3032	2.14474	215.3	–1.75113	–1.23833
742	93.7638	–112.961	73.2548	2.11437	215.2	–1.72704	–1.21978
743	93.7299	–112.961	74.2065	2.08373	215.2	–1.70272	–1.20111
744	93.6959	–112.961	75.1582	2.05283	215.2	–1.67817	–1.18232
745	93.6619	–112.961	76.1098	2.02168	215.1	–1.65339	–1.1634
746	93.6279	–112.961	77.0615	1.99024	215.1	–1.62839	–1.14435
747	93.5939	–112.961	78.0132	1.95861	215.1	–1.60316	–1.12519
748	93.5599	–112.961	78.9648	1.9267	215.	–1.57771	–1.1059
749	93.5259	–112.961	79.9165	1.89455	215.	–1.55204	–1.0865
750	93.4919	–112.961	80.8682	1.86217	215.	–1.52618	–1.06698
751	93.4579	–112.961	81.8199	1.82955	214.9	–1.50009	–1.04737
752	93.4239	–112.961	82.7715	1.7967	214.9	–1.47381	–1.02763
753	93.3899	–112.961	83.7232	1.76363	214.9	–1.44732	–1.00779
754	93.3559	–112.961	84.6749	1.73033	214.8	–1.42064	–.987839
755	93.3219	–112.961	85.6265	1.69682	214.8	–1.39376	–.967797
756	93.2879	–112.961	86.5782	1.6631	214.7	–1.3667	–.947649
757	93.2539	–112.961	87.5299	1.62918	214.7	–1.33945	–.927409
758	93.2199	–112.961	88.4815	1.59505	214.7	–1.31202	–.90707
759	93.1859	–112.961	89.4332	1.56071	214.6	–1.28441	–.886639
760	93.1519	–112.961	90.3849	1.52619	214.6	–1.25662	–.866116
761	93.1179	–112.961	91.3366	1.49148	214.5	–1.22866	–.845508
762	93.0839	–112.961	92.2882	1.45657	214.5	–1.20053	–.824809
763	93.0499	–112.961	93.2399	1.42148	214.4	–1.17224	–.804032
764	93.016	–112.961	94.1916	1.38622	214.4	–1.14379	–.783176
765	92.982	–112.961	95.1432	1.35079	214.4	–1.11518	–.762236

766	92.948	-112.961	96.0949	1.31518	214.3	-1.08642	-.741219
767	92.914	-112.961	97.0466	1.27941	214.3	-1.0575	-.72013
768	92.88	-112.961	97.9982	1.24348	214.2	-1.02844	-.698972
769	92.846	-112.961	98.9499	1.2074	214.1	-.999235	-.677741
770	92.812	-112.961	99.9016	1.17116	214.1	-.969897	-.656443
771	92.778	-112.961	100.853	1.13477	214.	-.94041	-.635079
772	92.744	-112.961	101.805	1.09823	214.	-.910795	-.613651
773	92.71	-112.961	102.757	1.06155	213.9	-.881047	-.592161
774	92.676	-112.961	103.708	1.02474	213.8	-.851171	-.57061
775	92.642	-112.961	104.66	.987785	213.8	-.821168	-.549
776	92.608	-112.961	105.612	.950696	213.7	-.791038	-.527334
777	92.574	-112.961	106.563	.913483	213.6	-.760794	-.505613
778	92.54	-112.961	107.515	.876137	213.5	-.730424	-.483836
779	92.506	-112.961	108.467	.838668	213.4	-.699939	-.462005
780	92.472	-112.961	109.418	.801073	213.3	-.669336	-.440122
781	92.438	-112.961	110.37	.763356	213.2	-.638618	-.418185
782	92.404	-112.961	111.322	.725515	213.1	-.607784	-.396196
783	92.37	-112.961	112.273	.68755	213.	-.576832	-.374153
784	92.336	-112.961	113.225	.649461	212.8	-.545762	-.352056
785	92.302	-112.961	114.177	.611243	212.7	-.51457	-.329902
786	92.268	-112.961	115.128	.572891	212.5	-.483252	-.307686
787	92.2341	-112.961	116.08	.534398	212.3	-.451802	-.285405
788	92.2001	-112.961	117.032	.495756	212.	-.420211	-.263054
789	92.1661	-112.961	117.983	.456951	211.8	-.388466	-.240621
790	92.1321	-112.961	118.935	.417962	211.5	-.356548	-.218096
791	92.0981	-112.961	119.887	.378764	211.1	-.324435	-.19546
792	92.0641	-112.961	120.838	.339321	210.6	-.292091	-.17269
793	92.0301	-112.961	121.79	.299582	210.	-.259468	-.149752
794	91.9961	-112.961	122.742	.259467	209.2	-.22649	-.126592
795	91.9621	-112.961	123.693	.218864	208.1	-.193043	-.103131
796	91.9281	-112.961	124.645	.177586	206.5	-.158931	-.0792324
797	91.8941	-112.961	125.597	.135312	203.8	-.123789	-.0546417
798	91.8601	-112.961	126.548	.0914275	198.3	-.0867813	-.028775
J25	91.8261	-112.961	127.5	.0464818	180.8	-.0464775	-6.37E-04
2J1	89.0545	-108.77	1.8796	3.38518	220.	-2.59385	-2.17518
800	89.0715	-108.799	2.83127	3.38318	219.9	-2.59536	-2.17026
801	89.0885	-108.829	3.78294	3.38057	219.8	-2.59658	-2.16472
802	89.1055	-108.858	4.73461	3.37748	219.7	-2.59736	-2.15896
803	89.1225	-108.888	5.68628	3.37394	219.7	-2.59768	-2.15304
804	89.1395	-108.917	6.63795	3.36996	219.6	-2.59755	-2.14694
805	89.1565	-108.947	7.58962	3.36553	219.5	-2.59697	-2.14068
806	89.1735	-108.976	8.54129	3.36066	219.4	-2.59595	-2.13426
807	89.1905	-109.006	9.49296	3.35536	219.4	-2.5945	-2.12768
808	89.2075	-109.035	10.4446	3.34962	219.3	-2.59261	-2.12093
809	89.2245	-109.064	11.3963	3.34345	219.2	-2.59029	-2.11401
810	89.2415	-109.094	12.348	3.33683	219.2	-2.58755	-2.1069
811	89.2585	-109.123	13.2996	3.32979	219.1	-2.58439	-2.09963
812	89.2755	-109.153	14.2513	3.32232	219.	-2.58082	-2.09217
813	89.2925	-109.182	15.203	3.31441	219.	-2.57683	-2.08453
814	89.3095	-109.212	16.1547	3.30607	218.9	-2.57243	-2.0767
815	89.3265	-109.241	17.1063	3.2973	218.9	-2.56763	-2.06868
816	89.3435	-109.271	18.058	3.2881	218.8	-2.56243	-2.06047
817	89.3605	-109.3	19.0097	3.27846	218.8	-2.55682	-2.05206
818	89.3775	-109.329	19.9613	3.26841	218.7	-2.55083	-2.04347
819	89.3945	-109.359	20.913	3.25792	218.6	-2.54444	-2.03467
820	89.4115	-109.388	21.8647	3.24701	218.6	-2.53766	-2.02567
821	89.4285	-109.418	22.8163	3.23567	218.6	-2.53049	-2.01648
822	89.4454	-109.447	23.768	3.22391	218.5	-2.52293	-2.0071
823	89.4624	-109.477	24.7197	3.21174	218.5	-2.515	-1.99751
824	89.4794	-109.506	25.6713	3.19914	218.4	-2.50669	-1.98772
825	89.4964	-109.535	26.623	3.18613	218.4	-2.498	-1.97773

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826    89.5134    -109.565    27.5747    3.1727     218.3    -2.48893    -1.96754
827    89.5304    -109.594    28.5264    3.15885    218.3    -2.4795     -1.95716
828    89.5474    -109.624    29.478     3.1446     218.2    -2.46969    -1.94657
829    89.5644    -109.653    30.4297    3.12993    218.2    -2.45952    -1.93578
830    89.5814    -109.683    31.3814    3.11486    218.2    -2.44898    -1.92479
831    89.5984    -109.712    32.333     3.09937    218.1    -2.43808    -1.9136
832    89.6154    -109.742    33.2847    3.08349    218.1    -2.42683    -1.90222
833    89.6324    -109.771    34.2364    3.06721    218.1    -2.41521    -1.89064
834    89.6494    -109.8      35.188     3.05052    218.     -2.40324    -1.87886
835    89.6664    -109.83     36.1397    3.03344    218.     -2.39091    -1.86689
836    89.6834    -109.859    37.0914    3.01595    217.9    -2.37824    -1.85471
837    89.7004    -109.889    38.0431    2.99808    217.9    -2.36522    -1.84235
838    89.7174    -109.918    38.9947    2.97982    217.9    -2.35185    -1.82978
839    89.7344    -109.948    39.9464    2.96116    217.9    -2.33813    -1.81703
840    89.7514    -109.977    40.8981    2.94212    217.8    -2.32408    -1.80409
841    89.7684    -110.007    41.8497    2.92271    217.8    -2.30969    -1.79096
842    89.7854    -110.036    42.8014    2.9029     217.8    -2.29497    -1.77763
843    89.8024    -110.065    43.7531    2.88272    217.7    -2.2799     -1.76412
844    89.8194    -110.095    44.7047    2.86217    217.7    -2.26451    -1.75042
845    89.8364    -110.124    45.6564    2.84124    217.7    -2.2488     -1.73654
846    89.8534    -110.154    46.6081    2.81995    217.6    -2.23275    -1.72248
847    89.8704    -110.183    47.5598    2.7983     217.6    -2.2164     -1.70823
848    89.8874    -110.213    48.5114    2.77627    217.6    -2.19971    -1.6938
849    89.9044    -110.242    49.4631    2.75389    217.6    -2.18271    -1.6792
850    89.9214    -110.271    50.4148    2.73115    217.5    -2.1654     -1.66441
851    89.9384    -110.301    51.3664    2.70806    217.5    -2.14777    -1.64945
852    89.9554    -110.33     52.3181    2.68462    217.5    -2.12984    -1.63431
853    89.9724    -110.36     53.2698    2.66083    217.5    -2.1116     -1.61901
854    89.9894    -110.389    54.2214    2.6367     217.5    -2.09305    -1.60352
855    90.0064    -110.419    55.1731    2.61223    217.4    -2.07421    -1.58788
856    90.0234    -110.448    56.1248    2.58742    217.4    -2.05508    -1.57207
857    90.0404    -110.478    57.0764    2.56228    217.4    -2.03565    -1.55608
858    90.0574    -110.507    58.0281    2.5368     217.4    -2.01593    -1.53994
859    90.0744    -110.536    58.9798    2.511      217.4    -1.99592    -1.52363
860    90.0914    -110.566    59.9315    2.48488    217.3    -1.97562    -1.50717
861    90.1084    -110.595    60.8831    2.45844    217.3    -1.95505    -1.49055
862    90.1254    -110.625    61.8348    2.43169    217.3    -1.9342     -1.47376
863    90.1424    -110.654    62.7865    2.40462    217.3    -1.91307    -1.45683
864    90.1594    -110.684    63.7381    2.37725    217.3    -1.89168    -1.43975
865    90.1764    -110.713    64.6898    2.34957    217.3    -1.87001    -1.42251
866    90.1933    -110.742    65.6415    2.32158    217.2    -1.84807    -1.40513
867    90.2103    -110.772    66.5931    2.2933     217.2    -1.82588    -1.38759
868    90.2273    -110.801    67.5448    2.26473    217.2    -1.80342    -1.36992
869    90.2443    -110.831    68.4965    2.23587    217.2    -1.78071    -1.3521
870    90.2613    -110.86     69.4482    2.20671    217.2    -1.75774    -1.33414
871    90.2783    -110.89     70.3998    2.17728    217.2    -1.73453    -1.31604
872    90.2953    -110.919    71.3515    2.14757    217.2    -1.71107    -1.29781
873    90.3123    -110.949    72.3032    2.11758    217.2    -1.68736    -1.27944
874    90.3293    -110.978    73.2548    2.08732    217.2    -1.66341    -1.26094
875    90.3463    -111.007    74.2065    2.0568     217.2    -1.63923    -1.24231
876    90.3633    -111.037    75.1582    2.02602    217.2    -1.61482    -1.22356
877    90.3803    -111.066    76.1098    1.99497    217.1    -1.59018    -1.20468
878    90.3973    -111.096    77.0615    1.96367    217.1    -1.56531    -1.18567
879    90.4143    -111.125    78.0132    1.93212    217.1    -1.54022    -1.16654
880    90.4313    -111.155    78.9648    1.90032    217.1    -1.5149     -1.1473
881    90.4483    -111.184    79.9165    1.86829    217.1    -1.48938    -1.12794
882    90.4653    -111.214    80.8682    1.83601    217.1    -1.46364    -1.10846
883    90.4823    -111.243    81.8199    1.8035     217.1    -1.43769    -1.08888
884    90.4993    -111.272    82.7715    1.77077    217.1    -1.41155    -1.06918
885    90.5163    -111.302    83.7232    1.73781    217.1    -1.3852     -1.04938
886    90.5333    -111.331    84.6749    1.70462    217.2    -1.35865    -1.02946
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887	90.5503	−111.361	85.6265	1.67122	217.2	−1.33191	−1.00946
888	90.5673	−111.39	86.5782	1.63761	217.2	−1.30497	−.989345
889	90.5843	−111.42	87.5299	1.60379	217.2	−1.27785	−.969133
890	90.6013	−111.449	88.4815	1.56976	217.2	−1.25054	−.94883
891	90.6183	−111.478	89.4332	1.53553	217.2	−1.22306	−.928427
892	90.6353	−111.508	90.3849	1.50111	217.2	−1.1954	−.907939
893	90.6523	−111.537	91.3366	1.4665	217.2	−1.16757	−.88736
894	90.6693	−111.567	92.2882	1.4317	217.3	−1.13957	−.866696
895	90.6863	−111.596	93.2399	1.39672	217.3	−1.1114	−.845947
896	90.7033	−111.626	94.1916	1.36156	217.3	−1.08307	−.825113
897	90.7203	−111.655	95.1432	1.32624	217.3	−1.05459	−.804201
898	90.7373	−111.685	96.0949	1.29073	217.4	−1.02594	−.783212
899	90.7543	−111.714	97.0466	1.25506	217.4	−.99715	−.762152
900	90.7713	−111.743	97.9982	1.21924	217.4	−.968214	−.741014
901	90.7883	−111.773	98.9499	1.18325	217.5	−.939123	−.719805
902	90.8053	−111.802	99.9016	1.14711	217.5	−.909898	−.698528
903	90.8223	−111.832	100.853	1.11082	217.6	−.880531	−.677184
904	90.8393	−111.861	101.805	1.07438	217.6	−.85103	−.655774
905	90.8563	−111.891	102.757	1.0378	217.7	−.821394	−.634301
906	90.8733	−111.92	103.708	1.00108	217.7	−.791632	−.612767
907	90.8903	−111.95	104.66	.964228	217.8	−.761742	−.591172
908	90.9073	−111.979	105.612	.927239	217.9	−.731724	−.569519
909	90.9243	−112.008	106.563	.890124	218.	−.701588	−.547809
910	90.9413	−112.038	107.515	.85288	218.1	−.671329	−.526043
911	90.9582	−112.067	108.467	.815512	218.2	−.640952	−.504222
912	90.9752	−112.097	109.418	.778021	218.3	−.610457	−.482347
913	90.9922	−112.126	110.37	.740407	218.5	−.579845	−.460416
914	91.0092	−112.156	111.322	.702674	218.6	−.549115	−.438432
915	91.0262	−112.185	112.273	.664818	218.8	−.518267	−.416392
916	91.0432	−112.214	113.225	.626842	219.	−.4873	−.394297
917	91.0602	−112.244	114.177	.588741	219.2	−.456209	−.372141
918	91.0772	−112.273	115.128	.550512	219.5	−.424992	−.349923
919	91.0942	−112.303	116.08	.512152	219.8	−.393641	−.327638
920	91.1112	−112.332	117.032	.473652	220.1	−.362147	−.305279
921	91.1282	−112.362	117.983	.435002	220.6	−.330498	−.282838
922	91.1452	−112.391	118.935	.396188	221.1	−.298677	−.260302
923	91.1622	−112.421	119.887	.357192	221.7	−.266658	−.237654
924	91.1792	−112.45	120.838	.317988	222.5	−.234409	−.21487
925	91.1962	−112.479	121.79	.278542	223.6	−.201877	−.191914
926	91.2132	−112.509	122.742	.23881	225.	−.168991	−.168736
927	91.2302	−112.538	123.693	.198735	227.	−.135635	−.145253
928	91.2472	−112.568	124.645	.158261	230.1	−.101613	−.121332
929	91.2642	−112.597	125.597	.117405	235.5	−.0665605	−.096714
930	91.2812	−112.627	126.548	.076771	247.3	−.0296406	−.0708183
J26	91.2982	−112.656	127.5	.0439394	283.9	.0105752	−.0426478
2J1	89.0545	−117.152	1.8796	3.40878	218.9	−2.65205	−2.14159
932	89.0715	−117.123	2.83127	3.40683	218.8	−2.65352	−2.13666
933	89.0885	−117.093	3.78294	3.40428	218.8	−2.6547	−2.13112
934	89.1055	−117.064	4.73461	3.40126	218.7	−2.65544	−2.12538
935	89.1225	−117.034	5.68628	3.39778	218.6	−2.65572	−2.11944
936	89.1395	−117.005	6.63795	3.39385	218.5	−2.65555	−2.11335
937	89.1565	−116.975	7.58962	3.38947	218.4	−2.65493	−2.10709
938	89.1735	−116.946	8.54129	3.38464	218.4	−2.65386	−2.10067
939	89.1905	−116.917	9.49296	3.37936	218.3	−2.65235	−2.09408
940	89.2075	−116.887	10.4446	3.37365	218.2	−2.6504	−2.08732
941	89.2245	−116.858	11.3963	3.3675	218.2	−2.64803	−2.08039
942	89.2415	−116.828	12.348	3.36091	218.1	−2.64523	−2.07328
943	89.2585	−116.799	13.2996	3.35388	218.	−2.642	−2.06599
944	89.2755	−116.769	14.2513	3.34641	218.	−2.63836	−2.05852
945	89.2925	−116.74	15.203	3.3385	217.9	−2.6343	−2.05086
946	89.3095	−116.71	16.1547	3.33015	217.8	−2.62984	−2.04301

947	89.3265	−116.681	17.1063	3.32138	217.8	−2.62496	−2.03498
948	89.3435	−116.652	18.058	3.31216	217.7	−2.61968	−2.02674
949	89.3605	−116.622	19.0097	3.30251	217.7	−2.61399	−2.01832
950	89.3775	−116.593	19.9613	3.29243	217.6	−2.60791	−2.0097
951	89.3945	−116.563	20.913	3.28192	217.6	−2.60144	−2.00087
952	89.4115	−116.534	21.8647	3.27098	217.5	−2.59457	−1.99186
953	89.4285	−116.504	22.8163	3.2596	217.5	−2.58731	−1.98264
954	89.4454	−116.475	23.768	3.24781	217.4	−2.57966	−1.97323
955	89.4624	−116.446	24.7197	3.23559	217.4	−2.57163	−1.9636
956	89.4794	−116.416	25.6713	3.22295	217.3	−2.56323	−1.95378
957	89.4964	−116.387	26.623	3.20988	217.3	−2.55443	−1.94377
958	89.5134	−116.357	27.5747	3.1964	217.2	−2.54527	−1.93354
959	89.5304	−116.328	28.5264	3.18251	217.2	−2.53573	−1.92312
960	89.5474	−116.298	29.478	3.16819	217.1	−2.52582	−1.91251
961	89.5644	−116.269	30.4297	3.15347	217.1	−2.51554	−1.90168
962	89.5814	−116.239	31.3814	3.13833	217.	−2.5049	−1.89066
963	89.5984	−116.21	32.333	3.12278	217.	−2.49389	−1.87943
964	89.6154	−116.181	33.2847	3.10683	217.	−2.48252	−1.86801
965	89.6324	−116.151	34.2364	3.09046	216.9	−2.47079	−1.85639
966	89.6494	−116.122	35.188	3.0737	216.9	−2.4587	−1.84457
967	89.6664	−116.092	36.1397	3.05653	216.8	−2.44625	−1.83255
968	89.6834	−116.063	37.0914	3.03896	216.8	−2.43345	−1.82033
969	89.7004	−116.033	38.0431	3.021	216.8	−2.42031	−1.80792
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971	89.7344	−115.974	39.9464	2.9839	216.7	−2.39297	−1.78251
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973	89.7684	−115.916	41.8497	2.94525	216.6	−2.36427	−1.75634
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980	89.8874	−115.71	48.5114	2.79808	216.4	−2.25334	−1.65882
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992	90.0914	−115.356	59.9315	2.50527	216.	−2.02756	−1.47152
993	90.1084	−115.327	60.8831	2.47871	215.9	−2.00684	−1.45485
994	90.1254	−115.297	61.8348	2.45182	215.9	−1.98584	−1.43801
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998	90.1933	−115.18	65.6415	2.34122	215.8	−1.89914	−1.36914
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1000	90.2273	−115.121	67.5448	2.28411	215.7	−1.8542	−1.33382
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1002	90.2613	−115.062	69.4482	2.22584	215.7	−1.80824	−1.29793
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1004	90.2953	−115.003	71.3515	2.16643	215.6	−1.76127	−1.26149
1005	90.3123	−114.974	72.3032	2.13631	215.6	−1.73742	−1.24306
1006	90.3293	−114.944	73.2548	2.10592	215.6	−1.71333	−1.22451
1007	90.3463	−114.915	74.2065	2.07527	215.5	−1.689	−1.20582

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1061	91.2642	-113.325	125.597	.125044	208.1	-.110316	-.0588759
1062	91.2812	-113.295	126.548	.080402	204.2	-.0733174	-.0330007
J27	91.2982	-113.266	127.5	.0333759	188.4	-.0330209	-4.85E-03
2J1	91.8261	-112.961	127.5	.0313359	169.6	-.0308188	5.67E-03
2J2	91.2982	-112.656	127.5	.023092	109.9	-7.86E-03	.0217148
2J1	91.2982	-112.656	127.5	.0211089	277.4	2.72E-03	-.0209329
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2J1	91.2982	-113.266	127.5	.0121831	233.	-7.33E-03	-9.73E-03

2J2	91.8261	-112.961	127.5	.0168806	21.9	.0156587	6.31E-03
GND	171.514	-211.802	0	14.7364	2.5	14.7228	.633714
1070	171.514	-211.802	.8763	14.7271	2.4	14.7137	.627672
J31	171.514	-211.802	1.7526	14.7228	2.4	14.7095	.624976
J32	176.353	-211.802	1.7526	.442272	5.	.440573	.0387334
1071	175.446	-211.278	1.7526	.432694	4.5	.431337	.0342418
1072	174.538	-210.754	1.7526	.419766	3.9	.418797	.0285038
1073	173.631	-210.23	1.7526	.405781	3.1	.405171	.0222479
1074	172.724	-209.707	1.7526	.391344	2.3	.391026	.0157569
1075	171.816	-209.183	1.7526	.376959	1.4	.376845	9.26E-03
1076	170.909	-208.659	1.7526	.36312	.5	.363108	3.E-03
1077	170.001	-208.135	1.7526	.350398	359.6	.350387	-2.75E-03
J32	169.094	-207.611	1.7526	.341041	358.8	.340965	-7.24E-03
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1079	169.094	-208.659	1.7526	.260509	5.8	.25918	.0262861
1080	169.094	-209.707	1.7526	.247206	4.8	.246352	.0205322
1081	169.094	-210.754	1.7526	.232845	3.5	.232408	.0142603
1082	169.094	-211.802	1.7526	.218091	2.	.217953	7.75E-03
1083	169.094	-212.85	1.7526	.203487	.4	.203483	1.25E-03
1084	169.094	-213.898	1.7526	.189567	358.5	.189501	-5.02E-03
1085	169.094	-214.945	1.7526	.177003	356.5	.176675	-.0107736
J33	169.094	-215.993	1.7526	.166062	354.7	.165352	-.0153395
2J1	169.094	-215.993	1.7526	.703534	180.6	-.703493	-7.64E-03
1087	170.001	-215.469	1.7526	.713695	181.	-.713591	-.012161
1088	170.909	-214.945	1.7526	.726657	181.4	-.726436	-.0179075
1089	171.816	-214.421	1.7526	.740708	181.9	-.740314	-.0241689
1090	172.724	-213.898	1.7526	.755224	182.3	-.754601	-.0306607
1091	173.631	-213.374	1.7526	.769708	182.8	-.768811	-.0371494
1092	174.538	-212.85	1.7526	.783665	183.2	-.782462	-.0434016
1093	175.446	-212.326	1.7526	.79645	183.5	-.794933	-.0491326
1J2	176.353	-211.802	1.7526	.806715	183.8	-.804929	-.053647
2J1	171.514	-211.802	1.7526	6.0318	2.4	6.02652	.252118
1096	172.482	-211.802	1.7526	6.02351	2.4	6.01841	.247945
1097	173.45	-211.802	1.7526	6.01392	2.3	6.00901	.242937
1098	174.417	-211.802	1.7526	6.00403	2.3	5.99931	.238104
1099	175.385	-211.802	1.7526	5.99464	2.2	5.99007	.233835
1J2	176.353	-211.802	1.7526	5.98867	2.2	5.98421	.231075
2J1	171.514	-211.802	1.7526	4.77185	2.5	4.76745	.204801
1102	171.03	-210.964	1.7526	4.76371	2.4	4.75948	.200634
1103	170.546	-210.126	1.7526	4.75379	2.4	4.74977	.195609
1104	170.062	-209.287	1.7526	4.74384	2.3	4.74001	.19077
1105	169.578	-208.449	1.7526	4.73467	2.3	4.731	.186505
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1109	170.546	-213.478	1.7526	3.90097	2.3	3.89773	.158861
1110	170.062	-214.317	1.7526	3.89101	2.3	3.88796	.154022
1111	169.578	-215.155	1.7526	3.88206	2.2	3.87917	.149767
2J2	169.094	-215.993	1.7526	3.87625	2.2	3.87346	.147009
1J1	176.353	-211.802	1.7526	4.74074	1.7	4.73871	.138694
1114	176.319	-211.802	2.70902	4.72943	1.6	4.72753	.133823
1115	176.285	-211.802	3.66544	4.71679	1.6	4.71504	.12865
1116	176.251	-211.802	4.62186	4.70373	1.5	4.70211	.123575
1117	176.217	-211.802	5.57828	4.69032	1.4	4.68881	.118636
1118	176.183	-211.802	6.5347	4.67657	1.4	4.67518	.113839
1119	176.149	-211.802	7.49112	4.66249	1.3	4.66122	.109183
1120	176.115	-211.802	8.44754	4.64809	1.3	4.64691	.104659
1121	176.081	-211.802	9.40396	4.63333	1.2	4.63224	.100266
1122	176.047	-211.802	10.3604	4.61822	1.2	4.61722	.095995
1123	176.013	-211.802	11.3168	4.60274	1.1	4.60182	.0918409
1124	175.979	-211.802	12.2732	4.58689	1.1	4.58605	.0877986

1125	175.945	-211.802	13.2296	4.57066	1.1	4.56989	.0838623
1126	175.911	-211.802	14.1861	4.55404	1.	4.55333	.0800263
1127	175.877	-211.802	15.1425	4.53702	1.	4.53637	.0762873
1128	175.843	-211.802	16.0989	4.51959	.9	4.519	.0726401
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1130	175.775	-211.802	18.0117	4.4835	.8	4.48302	.0656063
1131	175.741	-211.802	18.9682	4.46482	.8	4.46439	.0622124
1132	175.707	-211.802	19.9246	4.44572	.8	4.44533	.0588964
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1136	175.571	-211.802	23.7503	4.365	.6	4.36475	.046359
1137	175.537	-211.802	24.7067	4.34373	.6	4.34351	.0433952
1138	175.503	-211.802	25.6631	4.32202	.5	4.32183	.0404959
1139	175.469	-211.802	26.6195	4.29987	.5	4.2997	.0376594
1140	175.435	-211.802	27.5759	4.27728	.5	4.27713	.0348844
1141	175.401	-211.802	28.5324	4.25425	.4	4.25412	.0321694
1142	175.367	-211.802	29.4888	4.23078	.4	4.23067	.0295132
1143	175.333	-211.802	30.4452	4.20687	.4	4.20678	.0269148
1144	175.299	-211.802	31.4016	4.18252	.3	4.18245	.0243731
1145	175.265	-211.802	32.358	4.15773	.3	4.15767	.0218872
1146	175.231	-211.802	33.3145	4.1325	.3	4.13246	.0194561
1147	175.197	-211.802	34.2709	4.10684	.2	4.10681	.0170791
1148	175.163	-211.802	35.2273	4.08075	.2	4.08072	.0147555
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1150	175.095	-211.802	37.1401	4.02726	.1	4.02725	.0102656
1151	175.061	-211.802	38.0966	3.99988	.1	3.99987	8.1E-03
1152	175.027	-211.802	39.053	3.97207	.1	3.97206	5.98E-03
1153	174.993	-211.802	40.0094	3.94384	.1	3.94384	3.92E-03
1154	174.959	-211.802	40.9658	3.91518	0.0	3.91518	1.9E-03
1155	174.925	-211.802	41.9222	3.88611	360.	3.88611	-6.76E-05
1156	174.891	-211.802	42.8787	3.85662	360.	3.85662	-1.99E-03
1157	174.857	-211.802	43.8351	3.82672	359.9	3.82671	-3.85E-03
1158	174.823	-211.802	44.7915	3.7964	359.9	3.7964	-5.67E-03
1159	174.789	-211.802	45.7479	3.76569	359.9	3.76568	-7.45E-03
1160	174.755	-211.802	46.7043	3.73457	359.9	3.73456	-9.17E-03
1161	174.721	-211.802	47.6607	3.70304	359.8	3.70303	-.0108493
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1170	174.415	-211.802	56.2685	3.40185	359.6	3.40177	-.0238523
1171	174.381	-211.802	57.2249	3.36652	359.6	3.36642	-.0250685
1172	174.347	-211.802	58.1814	3.33082	359.5	3.33072	-.0262395
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1184	173.94	-211.802	69.6584	2.87595	359.3	2.87571	-.0368332
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1186	173.872	–211.802	71.5712	2.7957	359.2	2.79544	–.0379878
1187	173.838	–211.802	72.5277	2.75513	359.2	2.75486	–.0385007
1188	173.804	–211.802	73.4841	2.71428	359.2	2.714	–.0389708
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1190	173.736	–211.802	75.3969	2.63172	359.1	2.63142	–.0397832
1191	173.702	–211.802	76.3533	2.59003	359.1	2.58972	–.0401257
1192	173.668	–211.802	77.3098	2.54808	359.1	2.54776	–.040426
1193	173.634	–211.802	78.2662	2.50586	359.1	2.50553	–.0406842
1194	173.6	–211.802	79.2226	2.46338	359.	2.46304	–.0409004
1195	173.566	–211.802	80.179	2.42065	359.	2.4203	–.0410748
1196	173.532	–211.802	81.1354	2.37768	359.	2.37732	–.0412075
1197	173.498	–211.802	82.0919	2.33445	359.	2.33409	–.0412987
1198	173.464	–211.802	83.0483	2.291	359.	2.29063	–.0413485
1199	173.43	–211.802	84.0047	2.24731	358.9	2.24693	–.041357
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1201	173.362	–211.802	85.9175	2.15927	358.9	2.15887	–.041251
1202	173.328	–211.802	86.874	2.11491	358.9	2.11451	–.0411367
1203	173.294	–211.802	87.8304	2.07034	358.9	2.06994	–.0409818
1204	173.26	–211.802	88.7868	2.02557	358.8	2.02516	–.0407864
1205	173.226	–211.802	89.7432	1.9806	358.8	1.98018	–.0405508
1206	173.192	–211.802	90.6996	1.93543	358.8	1.93501	–.040275
1207	173.158	–211.802	91.6561	1.89007	358.8	1.88965	–.0399592
1208	173.124	–211.802	92.6125	1.84453	358.8	1.8441	–.0396037
1209	173.09	–211.802	93.5689	1.7988	358.8	1.79838	–.0392086
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1212	172.988	–211.802	96.4382	1.6606	358.7	1.66017	–.0377872
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1218	172.784	–211.802	102.177	1.37997	358.6	1.37956	–.0338989
1219	172.75	–211.802	103.133	1.33271	358.6	1.3323	–.0331175
1220	172.716	–211.802	104.09	1.28531	358.6	1.28491	–.0322983
1221	172.682	–211.802	105.046	1.2378	358.5	1.2374	–.0314417
1222	172.648	–211.802	106.002	1.19016	358.5	1.18977	–.0305479
1223	172.614	–211.802	106.959	1.1424	358.5	1.14201	–.0296168
1224	172.58	–211.802	107.915	1.09452	358.5	1.09414	–.0286488
1225	172.546	–211.802	108.872	1.04653	358.5	1.04616	–.0276438
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1231	172.342	–211.802	114.61	.756175	358.4	.755888	–.0208442
1232	172.308	–211.802	115.567	.707358	358.4	.707087	–.0195824
1233	172.274	–211.802	116.523	.658403	358.4	.658149	–.0182836
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1236	172.172	–211.802	119.392	.510522	358.4	.510325	–.0141592
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1242	171.968	–211.802	125.131	.205522	358.7	.205467	–4.73E-03
1243	171.934	–211.802	126.087	.151525	358.9	.151496	–2.93E-03
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1491  171.032  -212.637  110.784  .924136  358.3  .923719   -.0277789
1492  171.049  -212.608  111.741  .875727  358.3  .875321   -.0266769
1493  171.066  -212.578  112.697  .827204  358.2  .82681    -.025538
1494  171.083  -212.549  113.654  .778574  358.2  .778192   -.0243619
1495  171.1    -212.519  114.61   .729815  358.2  .729448   -.0231487
1496  171.117  -212.49   115.567  .680941  358.2  .680588   -.0218982
1497  171.134  -212.46   116.523  .631927  358.1  .631591   -.0206101
1498  171.151  -212.431  117.479  .582763  358.1  .582444   -.0192838
1499  171.168  -212.401  118.436  .533428  358.1  .533126   -.0179191
1500  171.185  -212.372  119.392  .483896  358.   .483614   -.0165148
1501  171.202  -212.343  120.349  .434129  358.   .433868   -.0150698
1502  171.219  -212.313  121.305  .384075  358.   .383834   -.0135823
1503  171.236  -212.284  122.262  .333656  357.9  .333439   -.0120497
1504  171.253  -212.254  123.218  .282759  357.9  .282566   -.0104679
1505  171.27   -212.225  124.174  .231209  357.8  .23104    -8.83E-03
1506  171.287  -212.195  125.131  .178704  357.7  .178562   -7.13E-03
1507  171.304  -212.166  126.087  .124689  357.5  .124574   -5.34E-03
1508  171.321  -212.136  127.044  .0678804 357.1  .0677942  -3.42E-03
J40   171.338  -212.107  128.     6.14E-03 347.9  6.01E-03  -1.29E-03
2J1   171.866  -211.802  128.     6.9E-03  7.4    6.85E-03  8.89E-04
2J2   171.338  -211.498  128.     .0282722 175.7  -.0281933 2.11E-03
2J1   171.338  -211.498  128.     .0379651 357.9  .0379391  -1.4E-03
2J2   171.338  -212.107  128.     2.93E-03 356.4  2.93E-03  -1.85E-04
2J1   171.338  -212.107  128.     9.06E-03 350.7  8.94E-03  -1.47E-03
2J2   171.866  -211.802  128.     .0261015 180.5  -.0261004 -2.41E-04
```

APPENDIX C

NIGHTTIME DIRECTIONAL ARRAY MODEL

```
IMPEDANCE – NIGHTTIME OPERATION
   normalization = 50.
freq      resist   react    imped    phase    VSWR     S11       S12
(MHz)     (ohms)   (ohms)   (ohms)   (deg)             dB        dB
source =  1; node 1, sector 1
.55       1.3506   14.226   14.29    84.6     40.019   -.43418   -10.216


source =  2; node 623, sector 1
.55       6.4507   -5.6602  8.5819   318.7    7.8521   -2.2245   -3.9705


source =  3; node 1069, sector 1
.55       1.117    -14.429  14.472   274.4    48.491   -.3583    -11.013

GEOMETRY – NIGHTTIME OPERATION
Dimensions in meters
Environment: perfect ground


wire  caps X            Y            Z            radius     segs
 1    none 0            0            0            .0032      2
           0            0            1.1176
 2    none 6.096        6.096        1.1176       .0254      12
           -6.096       6.096        1.1176
 3    none -6.096       6.096        1.1176       .0254      12
           -6.096       -6.096       1.1176
 4    none -6.096       -6.096       1.1176       .0254      12
           6.096        -6.096       1.1176
 5    none 6.096        -6.096       1.1176       .0254      12
           6.096        6.096        1.1176
 6    none 0            0            1.1176       .0254      8
           6.096        6.096        1.1176
 7    none 0            0            1.1176       .0254      8
           -6.096       6.096        1.1176
 8    none 0            0            1.1176       .0254      8
           -6.096       -6.096       1.1176
 9    none 0            0            1.1176       .0254      8
           6.096        -6.096       1.1176
10    none 6.096        6.096        1.1176       .0254      132
           .2794        .2794        138.
11    none -6.096       6.096        1.1176       .0254      132
           -.2794       .2794        138.
12    none -6.096       -6.096       1.1176       .0254      132
           -.2794       -.2794       138.
13    none 6.096        -6.096       1.1176       .0254      132
           .2794        -.2794       138.
14    none .2794        .2794        138.         .0254      1
           -.2794       .2794        138.
15    none -.2794       .2794        138.         .0254      1
           -.2794       -.2794       138.
16    none -.2794       -.2794       138.         .0254      1
           .2794        -.2794       138.
17    none .2794        -.2794       138.         .0254      1
           .2794        .2794        138.
18    none 91.4742      -112.961     0            .0032      2
           91.4742      -112.961     1.8796
19    none 96.3135      -112.961     1.8796       .0254      8
           89.0545      -108.77      1.8796
20    none 89.0545      -108.77      1.8796       .0254      8
           89.0545      -117.152     1.8796
21    none 89.0545      -117.152     1.8796       .0254      8
           96.3135      -112.961     1.8796
```

```
22    none 91.4742      -112.961     1.8796        .0254         5
           96.3135      -112.961     1.8796
23    none 91.4742      -112.961     1.8796        .0254         5
           89.0545      -108.77      1.8796
24    none 91.4742      -112.961     1.8796        .0254         5
           89.0545      -117.152     1.8796
25    none 96.3135      -112.961     1.8796        .0254         132
           91.8261      -112.961     127.5
26    none 89.0545      -108.77      1.8796        .0254         132
           91.2982      -112.656     127.5
27    none 89.0545      -117.152     1.8796        .0254         132
           91.2982      -113.266     127.5
28    none 91.8261      -112.961     127.5         .0254         1
           91.2982      -112.656     127.5
29    none 91.2982      -112.656     127.5         .0254         1
           91.2982      -113.266     127.5
30    none 91.2982      -113.266     127.5         .0254         1
           91.8261      -112.961     127.5
31    none 171.514      -211.802     0             .0032         2
           171.514      -211.802     1.7526
32    none 176.353      -211.802     1.7526        .0254         8
           169.094      -207.611     1.7526
33    none 169.094      -207.611     1.7526        .0254         8
           169.094      -215.993     1.7526
34    none 169.094      -215.993     1.7526        .0254         8
           176.353      -211.802     1.7526
35    none 171.514      -211.802     1.7526        .0254         5
           176.353      -211.802     1.7526
36    none 171.514      -211.802     1.7526        .0254         5
           169.094      -207.611     1.7526
37    none 171.514      -211.802     1.7526        .0254         5
           169.094      -215.993     1.7526
38    none 176.353      -211.802     1.7526        .0254         132
           171.866      -211.802     128.
39    none 169.094      -207.611     1.7526        .0254         132
           171.338      -211.498     128.
40    none 169.094      -215.993     1.7526        .0254         132
           171.338      -212.107     128.
41    none 171.866      -211.802     128.          .0254         1
           171.338      -211.498     128.
42    none 171.338      -211.498     128.          .0254         1
           171.338      -212.107     128.
43    none 171.338      -212.107     128.          .0254         1
           171.866      -211.802     128.

Number of wires        =  43
         current nodes =  1514


                       minimum                    maximum
Individual wires       wire    value              wire   value
segment length         1       .5588              6      1.07763
segment/radius ratio   14      22.                18     293.688
radius                 1       3.2E-03            2      .0254


ELECTRICAL DESCRIPTION – NIGHTTIME OPERATION
Frequencies (MHz)
     frequency              no. of  segment length (wavelengths)
no. lowest      step        steps   minimum         maximum
1   .55         0           1       1.03E-03        1.98E-03
```

```
Sources
source node    sector  magnitude       phase         type
 1      1       1       129.452         267.3         voltage
 2      623     1       140.502         316.3         voltage
 3      1069    1       173.269         92.3          voltage

Lumped loads
              resistance      reactance      inductance  capacitance passive
load   node   (ohms)          (ohms)         (mH)        (uF)        circuit
 1      1     .01             0              0           0           0
 2      623   .01             0              0           0           0
 3      1069  .01             0              0           0           0

RMS CURRENT - NIGHTTIME OPERATION
Frequency   = .55 MHz
Input power = 1,000. watts
Efficiency  = 99.75 %
coordinates in meters
current                              mag      phase  real       imaginary
no.    X        Y        Z           (amps)   (deg)  (amps)     (amps)
GND    0        0        0           6.40577  182.7  -6.39867   -.301549
 2     0        0        .5588       6.40754  182.7  -6.40045   -.301462
J1     0        0        1.1176      6.40814  182.7  -6.40105   -.301433
J2     6.096    6.096    1.1176      .0178228 339.2  .0166645   -6.32E-03
 3     5.08     6.096    1.1176      .0172078 339.2  .0160823   -6.12E-03
 4     4.064    6.096    1.1176      .0163946 339.1  .0153115   -5.86E-03
 5     3.048    6.096    1.1176      .0154982 338.9  .01446     -5.58E-03
 6     2.032    6.096    1.1176      .0145568 338.7  .0135646   -5.28E-03
 7     1.016    6.096    1.1176      .0135908 338.5  .012645    -4.98E-03
 8     0        6.096    1.1176      .0126129 338.2  .0117136   -4.68E-03
 9     -1.016   6.096    1.1176      .0116333 337.9  .0107802   -4.37E-03
10     -2.032   6.096    1.1176      .0106618 337.6  9.85E-03   -4.07E-03
11     -3.048   6.096    1.1176      9.71E-03 337.1  8.95E-03   -3.77E-03
12     -4.064   6.096    1.1176      8.8E-03  336.7  8.08E-03   -3.48E-03
13     -5.08    6.096    1.1176      7.97E-03 336.2  7.3E-03    -3.22E-03
J2     -6.096   6.096    1.1176      7.35E-03 335.8  6.7E-03    -3.01E-03
2J1    -6.096   6.096    1.1176      .0104107 156.6  -9.56E-03  4.13E-03
15     -6.096   5.08     1.1176      .011026  156.8  -.0101374  4.34E-03
16     -6.096   4.064    1.1176      .0118545 157.2  -.0109243  4.6E-03
17     -6.096   3.048    1.1176      .0127622 157.5  -.011788   4.89E-03
18     -6.096   2.032    1.1176      .0137109 157.8  -.0126914  5.19E-03
19     -6.096   1.016    1.1176      .01468   158.   -.0136146  5.49E-03
20     -6.096   0        1.1176      .0156566 158.3  -.014545   5.79E-03
21     -6.096   -1.016   1.1176      .0166307 158.5  -.0154729  6.1E-03
22     -6.096   -2.032   1.1176      .0175925 158.7  -.0163885  6.4E-03
23     -6.096   -3.048   1.1176      .0185293 158.8  -.0172796  6.69E-03
24     -6.096   -4.064   1.1176      .0194207 159.   -.0181265  6.97E-03
25     -6.096   -5.08    1.1176      .0202287 159.1  -.0188923  7.23E-03
J3     -6.096   -6.096   1.1176      .0208397 159.1  -.019471   7.43E-03
2J1    -6.096   -6.096   1.1176      8.4E-03  158.5  -7.82E-03  3.07E-03
27     -5.08    -6.096   1.1176      8.99E-03 158.7  -8.38E-03  3.27E-03
28     -4.064   -6.096   1.1176      9.79E-03 158.9  -9.14E-03  3.53E-03
29     -3.048   -6.096   1.1176      .0106721 159.1  -9.97E-03  3.81E-03
30     -2.032   -6.096   1.1176      .0115903 159.3  -.0108436  4.09E-03
31     -1.016   -6.096   1.1176      .0125286 159.5  -.0117362  4.38E-03
32     0        -6.096   1.1176      .0134743 159.7  -.0126359  4.68E-03
33     1.016    -6.096   1.1176      .0144178 159.8  -.0135334  4.97E-03
34     2.032    -6.096   1.1176      .0153493 160.   -.0144191  5.26E-03
35     3.048    -6.096   1.1176      .0162562 160.1  -.0152809  5.55E-03
```

```
36    4.064    -6.096    1.1176    .0171188 160.1   -.0160995 5.82E-03
37    5.08     -6.096    1.1176    .0179     160.2   -.0168394 6.07E-03
J4    6.096    -6.096    1.1176    .0184892 160.2   -.0173969 6.26E-03
2J1   6.096    -6.096    1.1176    .0215021 340.     .0202071  -7.35E-03
39    6.096    -5.08     1.1176    .0209266 340.     .0196645  -7.16E-03
40    6.096    -4.064    1.1176    .0201435 339.9   .0189226  -6.91E-03
41    6.096    -3.048    1.1176    .0192791 339.9   .0181021  -6.63E-03
42    6.096    -2.032    1.1176    .01837   339.8   .0172382  -6.35E-03
43    6.096    -1.016    1.1176    .0174358 339.7   .0163498  -6.06E-03
44    6.096    0         1.1176    .0164891 339.5   .0154491  -5.76E-03
45    6.096    1.016     1.1176    .0155395 339.4   .0145455  -5.47E-03
46    6.096    2.032     1.1176    .0145969 339.2   .0136489  -5.17E-03
47    6.096    3.048     1.1176    .0136739 339.1   .0127713  -4.89E-03
48    6.096    4.064     1.1176    .0127907 338.9   .0119324  -4.61E-03
49    6.096    5.08      1.1176    .0119849 338.7   .0111684  -4.35E-03
1J2   6.096    6.096     1.1176    .0113875 338.6   .0106046  -4.15E-03
2J1   0        0         1.1176    1.5997   182.7   -1.59788  -.0761038
52    .762     .762      1.1176    1.60155  182.7   -1.59975  -.0759418
53    1.524    1.524     1.1176    1.60382  182.7   -1.60204  -.0757149
54    2.286    2.286     1.1176    1.60596  182.7   -1.60419  -.0754674
55    3.048    3.048     1.1176    1.60788  182.7   -1.60612  -.0752093
56    3.81     3.81      1.1176    1.60955  182.7   -1.60781  -.0749469
57    4.572    4.572     1.1176    1.61093  182.7   -1.6092   -.0746895
58    5.334    5.334     1.1176    1.61199  182.6   -1.61027  -.0744534
1J2   6.096    6.096     1.1176    1.61259  182.6   -1.61087  -.07429
2J1   0        0         1.1176    1.58333  183.    -1.58118  -.0824995
61    -.762    .762      1.1176    1.58518  183.    -1.58304  -.0823369
62    -1.524   1.524     1.1176    1.58746  183.    -1.58533  -.0821078
63    -2.286   2.286     1.1176    1.58961  183.    -1.5875   -.0818582
64    -3.048   3.048     1.1176    1.59153  182.9   -1.58944  -.0815966
65    -3.81    3.81      1.1176    1.59322  182.9   -1.59114  -.0813293
66    -4.572   4.572     1.1176    1.59461  182.9   -1.59255  -.0810662
67    -5.334   5.334     1.1176    1.59568  182.9   -1.59363  -.0808237
2J2   -6.096   6.096     1.1176    1.5963   182.9   -1.59426  -.0806554
2J1   0        0         1.1176    1.60396  182.7   -1.60222  -.074616
70    -.762    -.762     1.1176    1.60581  182.7   -1.60408  -.0744541
71    -1.524   -1.524    1.1176    1.60808  182.6   -1.60636  -.0742271
72    -2.286   -2.286    1.1176    1.61021  182.6   -1.60851  -.073981
73    -3.048   -3.048    1.1176    1.61213  182.6   -1.61044  -.0737236
74    -3.81    -3.81     1.1176    1.6138   182.6   -1.61213  -.0734627
75    -4.572   -4.572    1.1176    1.61518  182.6   -1.61352  -.073206
76    -5.334   -5.334    1.1176    1.61623  182.6   -1.61458  -.0729713
2J2   -6.096   -6.096    1.1176    1.61682  182.6   -1.61518  -.0728094
2J1   0        0         1.1176    1.6212   182.4   -1.61976  -.0682139
79    .762     -.762     1.1176    1.62305  182.4   -1.62162  -.0680525
80    1.524    -1.524    1.1176    1.62532  182.4   -1.6239   -.0678278
81    2.286    -2.286    1.1176    1.62745  182.4   -1.62604  -.0675842
82    3.048    -3.048    1.1176    1.62935  182.4   -1.62796  -.0673309
83    3.81     -3.81     1.1176    1.631    182.4   -1.62962  -.0670746
84    4.572    -4.572    1.1176    1.63237  182.3   -1.631    -.0668238
85    5.334    -5.334    1.1176    1.6334   182.3   -1.63204  -.0665947
2J2   6.096    -6.096    1.1176    1.63398  182.3   -1.63263  -.0664378
1J1   6.096    6.096     1.1176    1.61854  182.6   -1.61693  -.0721192
88    6.05194  6.05194   2.15459   1.61894  182.5   -1.61734  -.0719163
89    6.00787  6.00787   3.19158   1.61912  182.5   -1.61754  -.0716872
90    5.96381  5.96381   4.22856   1.61903  182.5   -1.61745  -.0714538
91    5.91974  5.91974   5.26555   1.61866  182.5   -1.61709  -.0712177
92    5.87567  5.87567   6.30254   1.61801  182.5   -1.61645  -.0709794
93    5.83161  5.83161   7.33953   1.61709  182.5   -1.61554  -.0707382
94    5.78754  5.78754   8.37652   1.61589  182.5   -1.61435  -.0704943
```

95	5.74348	5.74348	9.4135	1.61443	182.5	-1.6129	-.0702469
96	5.69941	5.69941	10.4505	1.6127	182.5	-1.61119	-.0699958
97	5.65535	5.65535	11.4875	1.61071	182.5	-1.6092	-.0697409
98	5.61128	5.61128	12.5245	1.60846	182.5	-1.60696	-.0694816
99	5.56722	5.56722	13.5615	1.60595	182.5	-1.60445	-.0692177
100	5.52315	5.52315	14.5984	1.60317	182.5	-1.60169	-.0689491
101	5.47909	5.47909	15.6354	1.60015	182.5	-1.59868	-.0686755
102	5.43502	5.43502	16.6724	1.59687	182.5	-1.5954	-.0683969
103	5.39096	5.39096	17.7094	1.59334	182.5	-1.59188	-.0681129
104	5.34689	5.34689	18.7464	1.58956	182.4	-1.58811	-.0678235
105	5.30283	5.30283	19.7834	1.58553	182.4	-1.58409	-.0675288
106	5.25876	5.25876	20.8204	1.58125	182.4	-1.57983	-.0672282
107	5.2147	5.2147	21.8574	1.57673	182.4	-1.57531	-.0669221
108	5.17063	5.17063	22.8944	1.57197	182.4	-1.57056	-.0666101
109	5.12657	5.12657	23.9313	1.56697	182.4	-1.56556	-.0662923
110	5.0825	5.0825	24.9683	1.56172	182.4	-1.56033	-.0659685
111	5.03844	5.03844	26.0053	1.55624	182.4	-1.55486	-.0656389
112	4.99437	4.99437	27.0423	1.55053	182.4	-1.54915	-.0653031
113	4.95031	4.95031	28.0793	1.54457	182.4	-1.5432	-.0649614
114	4.90624	4.90624	29.1163	1.53838	182.4	-1.53702	-.0646136
115	4.86218	4.86218	30.1533	1.53197	182.4	-1.53062	-.0642597
116	4.81811	4.81811	31.1903	1.52532	182.4	-1.52398	-.0638997
117	4.77405	4.77405	32.2272	1.51844	182.4	-1.51711	-.0635336
118	4.72998	4.72998	33.2642	1.51134	182.4	-1.51002	-.0631613
119	4.68592	4.68592	34.3012	1.50401	182.4	-1.5027	-.0627829
120	4.64185	4.64185	35.3382	1.49646	182.4	-1.49516	-.0623986
121	4.59779	4.59779	36.3752	1.48869	182.4	-1.4874	-.062008
122	4.55372	4.55372	37.4122	1.4807	182.4	-1.47942	-.0616113
123	4.50966	4.50966	38.4492	1.47249	182.4	-1.47122	-.0612085
124	4.46559	4.46559	39.4862	1.46406	182.4	-1.4628	-.0607997
125	4.42153	4.42153	40.5231	1.45543	182.4	-1.45417	-.0603849
126	4.37746	4.37746	41.5601	1.44658	182.4	-1.44533	-.0599641
127	4.33339	4.33339	42.5971	1.43751	182.4	-1.43628	-.0595372
128	4.28933	4.28933	43.6341	1.42824	182.4	-1.42702	-.0591045
129	4.24526	4.24526	44.6711	1.41876	182.4	-1.41755	-.0586658
130	4.2012	4.2012	45.7081	1.40908	182.4	-1.40788	-.0582213
131	4.15713	4.15713	46.7451	1.39919	182.4	-1.398	-.0577709
132	4.11307	4.11307	47.7821	1.38911	182.4	-1.38792	-.0573147
133	4.069	4.069	48.819	1.37882	182.4	-1.37765	-.0568527
134	4.02494	4.02494	49.856	1.36834	182.4	-1.36718	-.0563851
135	3.98087	3.98087	50.893	1.35767	182.4	-1.35651	-.0559118
136	3.93681	3.93681	51.93	1.34679	182.4	-1.34565	-.0554328
137	3.89274	3.89274	52.967	1.33573	182.4	-1.3346	-.0549483
138	3.84868	3.84868	54.004	1.32448	182.4	-1.32336	-.0544582
139	3.80461	3.80461	55.041	1.31305	182.4	-1.31194	-.0539626
140	3.76055	3.76055	56.078	1.30142	182.4	-1.30032	-.0534616
141	3.71648	3.71648	57.1149	1.28962	182.4	-1.28853	-.0529552
142	3.67242	3.67242	58.1519	1.27763	182.4	-1.27655	-.0524436
143	3.62835	3.62835	59.1889	1.26547	182.4	-1.26441	-.0519267
144	3.58429	3.58429	60.2259	1.25313	182.4	-1.25207	-.0514045
145	3.54022	3.54022	61.2629	1.24062	182.4	-1.23957	-.0508772
146	3.49616	3.49616	62.2999	1.22793	182.3	-1.2269	-.0503449
147	3.45209	3.45209	63.3369	1.21508	182.3	-1.21406	-.0498076
148	3.40803	3.40803	64.3739	1.20207	182.3	-1.20106	-.0492653
149	3.36396	3.36396	65.4109	1.18888	182.3	-1.18788	-.0487182
150	3.3199	3.3199	66.4478	1.17553	182.3	-1.17455	-.0481662
151	3.27583	3.27583	67.4848	1.16203	182.3	-1.16106	-.0476095
152	3.23177	3.23177	68.5218	1.14837	182.3	-1.1474	-.0470481
153	3.1877	3.1877	69.5588	1.13455	182.3	-1.1336	-.046482
154	3.14364	3.14364	70.5958	1.12058	182.3	-1.11964	-.0459114

155	3.09957	3.09957	71.6328	1.10646	182.3	-1.10553	-.0453364
156	3.05551	3.05551	72.6698	1.0922	182.3	-1.09128	-.0447569
157	3.01144	3.01144	73.7068	1.07779	182.3	-1.07688	-.0441731
158	2.96737	2.96737	74.7437	1.06323	182.3	-1.06234	-.0435851
159	2.92331	2.92331	75.7807	1.04854	182.3	-1.04766	-.0429929
160	2.87924	2.87924	76.8177	1.03371	182.4	-1.03284	-.0423965
161	2.83518	2.83518	77.8547	1.01874	182.4	-1.01788	-.0417962
162	2.79111	2.79111	78.8917	1.00364	182.4	-1.0028	-.0411919
163	2.74705	2.74705	79.9287	.988414	182.4	-.98758	-.0405836
164	2.70298	2.70298	80.9657	.973065	182.4	-.972243	-.0399717
165	2.65892	2.65892	82.0027	.957588	182.4	-.956779	-.0393559
166	2.61485	2.61485	83.0396	.941984	182.4	-.941187	-.0387366
167	2.57079	2.57079	84.0766	.926267	182.4	-.925482	-.0381137
168	2.52672	2.52672	85.1136	.910429	182.4	-.909657	-.0374873
169	2.48266	2.48266	86.1506	.894486	182.4	-.893726	-.0368574
170	2.43859	2.43859	87.1876	.878429	182.4	-.877682	-.0362244
171	2.39453	2.39453	88.2246	.862259	182.4	-.861525	-.035588
172	2.35046	2.35046	89.2616	.84599	182.4	-.845268	-.0349485
173	2.3064	2.3064	90.2986	.829615	182.4	-.828906	-.034306
174	2.26233	2.26233	91.3356	.813141	182.4	-.812444	-.0336605
175	2.21827	2.21827	92.3725	.796568	182.4	-.795884	-.0330121
176	2.1742	2.1742	93.4095	.779903	182.4	-.779232	-.0323609
177	2.13014	2.13014	94.4465	.763153	182.4	-.762494	-.0317069
178	2.08607	2.08607	95.4835	.746304	182.4	-.745658	-.0310504
179	2.04201	2.04201	96.5205	.729377	182.4	-.728744	-.0303914
180	1.99794	1.99794	97.5575	.712366	182.4	-.711745	-.0297299
181	1.95388	1.95388	98.5945	.695277	182.4	-.694669	-.029066
182	1.90981	1.90981	99.6315	.678111	182.4	-.677516	-.0284
183	1.86575	1.86575	100.668	.660872	182.4	-.66029	-.0277318
184	1.82168	1.82168	101.705	.643562	182.4	-.642993	-.0270615
185	1.77762	1.77762	102.742	.626184	182.4	-.625628	-.0263892
186	1.73355	1.73355	103.779	.608742	182.4	-.608199	-.0257151
187	1.68949	1.68949	104.816	.591238	182.4	-.590708	-.0250391
188	1.64542	1.64542	105.853	.573675	182.4	-.573157	-.0243615
189	1.60135	1.60135	106.89	.556056	182.4	-.555552	-.0236823
190	1.55729	1.55729	107.927	.538385	182.4	-.537893	-.0230015
191	1.51322	1.51322	108.964	.520664	182.5	-.520185	-.0223195
192	1.46916	1.46916	110.001	.502895	182.5	-.50243	-.021636
193	1.42509	1.42509	111.038	.485084	182.5	-.484631	-.0209514
194	1.38103	1.38103	112.075	.467231	182.5	-.466792	-.0202655
195	1.33696	1.33696	113.112	.44934	182.5	-.448914	-.0195787
196	1.2929	1.2929	114.149	.431414	182.5	-.431001	-.018891
197	1.24883	1.24883	115.186	.413456	182.5	-.413055	-.0182024
198	1.20477	1.20477	116.223	.395468	182.5	-.39508	-.0175131
199	1.1607	1.1607	117.26	.377454	182.6	-.377079	-.0168231
200	1.11664	1.11664	118.297	.359415	182.6	-.359052	-.0161324
201	1.07257	1.07257	119.334	.341354	182.6	-.341004	-.0154413
202	1.02851	1.02851	120.371	.323274	182.6	-.322937	-.0147498
203	.984442	.984442	121.408	.305175	182.6	-.304851	-.0140578
204	.940377	.940377	122.445	.287062	182.7	-.286751	-.0133656
205	.896312	.896312	123.482	.268934	182.7	-.268635	-.012673
206	.852247	.852247	124.519	.250792	182.7	-.250506	-.0119802
207	.808182	.808182	125.556	.232638	182.8	-.232364	-.0112871
208	.764117	.764117	126.593	.214468	182.8	-.214207	-.0105936
209	.720051	.720051	127.63	.196283	182.9	-.196033	-9.9E-03
210	.675986	.675986	128.667	.178078	183.	-.17784	-9.21E-03
211	.631921	.631921	129.704	.159845	183.1	-.159619	-8.51E-03
212	.587856	.587856	130.741	.141575	183.2	-.141359	-7.81E-03
213	.543791	.543791	131.778	.123248	183.3	-.123043	-7.11E-03
214	.499726	.499726	132.815	.104838	183.5	-.104641	-6.41E-03

215	.455661	.455661	133.852	.0862932	183.8	-.0861044	-5.71E-03
216	.411595	.411595	134.889	.0675291	184.2	-.0673444	-4.99E-03
217	.36753	.36753	135.926	.0483748	185.1	-.0481868	-4.26E-03
218	.323465	.323465	136.963	.0284174	187.1	-.0282012	-3.5E-03
J10	.2794	.2794	138.	6.91E-03	202.7	-6.37E-03	-2.67E-03
2J1	-6.096	6.096	1.1176	1.58044	183.2	-1.578	-.0877993
220	-6.05194	6.05194	2.15459	1.58085	183.2	-1.57842	-.0875907
221	-6.00787	6.00787	3.19158	1.58105	183.2	-1.57864	-.0873574
222	-5.96381	5.96381	4.22856	1.58098	183.2	-1.57858	-.0871212
223	-5.91974	5.91974	5.26555	1.58063	183.2	-1.57824	-.0868836
224	-5.87567	5.87567	6.30254	1.58	183.1	-1.57762	-.0866453
225	-5.83161	5.83161	7.33953	1.5791	183.1	-1.57674	-.0864063
226	-5.78754	5.78754	8.37652	1.57793	183.1	-1.57558	-.0861652
227	-5.74348	5.74348	9.4135	1.57649	183.1	-1.57415	-.0859219
228	-5.69941	5.69941	10.4505	1.57478	183.1	-1.57245	-.0856773
229	-5.65535	5.65535	11.4875	1.57282	183.1	-1.5705	-.0854291
230	-5.61128	5.61128	12.5245	1.57059	183.1	-1.56828	-.0851781
231	-5.56722	5.56722	13.5615	1.5681	183.1	-1.5658	-.0849242
232	-5.52315	5.52315	14.5984	1.56536	183.1	-1.56307	-.0846661
233	-5.47909	5.47909	15.6354	1.56236	183.1	-1.56008	-.0844045
234	-5.43502	5.43502	16.6724	1.55912	183.1	-1.55684	-.0841393
235	-5.39096	5.39096	17.7094	1.55561	183.1	-1.55335	-.0838699
236	-5.34689	5.34689	18.7464	1.55186	183.1	-1.54961	-.0835963
237	-5.30283	5.30283	19.7834	1.54787	183.1	-1.54562	-.0833184
238	-5.25876	5.25876	20.8204	1.54362	183.1	-1.54139	-.0830355
239	-5.2147	5.2147	21.8574	1.53914	183.1	-1.53691	-.0827484
240	-5.17063	5.17063	22.8944	1.53441	183.1	-1.53219	-.0824564
241	-5.12657	5.12657	23.9313	1.52944	183.1	-1.52723	-.0821594
242	-5.0825	5.0825	24.9683	1.52423	183.1	-1.52203	-.0818582
243	-5.03844	5.03844	26.0053	1.51879	183.1	-1.5166	-.0815513
244	-4.99437	4.99437	27.0423	1.51311	183.1	-1.51092	-.0812395
245	-4.95031	4.95031	28.0793	1.50719	183.1	-1.50501	-.0809227
246	-4.90624	4.90624	29.1163	1.50104	183.1	-1.49888	-.080601
247	-4.86218	4.86218	30.1533	1.49466	183.1	-1.4925	-.0802743
248	-4.81811	4.81811	31.1903	1.48805	183.1	-1.4859	-.0799419
249	-4.77405	4.77405	32.2272	1.48122	183.1	-1.47908	-.0796046
250	-4.72998	4.72998	33.2642	1.47415	183.1	-1.47202	-.0792617
251	-4.68592	4.68592	34.3012	1.46687	183.1	-1.46474	-.0789138
252	-4.64185	4.64185	35.3382	1.45936	183.1	-1.45724	-.0785603
253	-4.59779	4.59779	36.3752	1.45163	183.1	-1.44952	-.0782017
254	-4.55372	4.55372	37.4122	1.44369	183.1	-1.44159	-.0778376
255	-4.50966	4.50966	38.4492	1.43552	183.1	-1.43343	-.0774685
256	-4.46559	4.46559	39.4862	1.42714	183.1	-1.42505	-.0770937
257	-4.42153	4.42153	40.5231	1.41855	183.1	-1.41647	-.076714
258	-4.37746	4.37746	41.5601	1.40974	183.1	-1.40767	-.0763286
259	-4.33339	4.33339	42.5971	1.40072	183.1	-1.39866	-.0759383
260	-4.28933	4.28933	43.6341	1.3915	183.1	-1.38945	-.0755423
261	-4.24526	4.24526	44.6711	1.38207	183.1	-1.38003	-.0751414
262	-4.2012	4.2012	45.7081	1.37244	183.1	-1.3704	-.0747348
263	-4.15713	4.15713	46.7451	1.3626	183.1	-1.36057	-.0743233
264	-4.11307	4.11307	47.7821	1.35256	183.1	-1.35054	-.0739061
265	-4.069	4.069	48.819	1.34233	183.1	-1.34031	-.0734839
266	-4.02494	4.02494	49.856	1.33189	183.1	-1.32988	-.0730568
267	-3.98087	3.98087	50.893	1.32126	183.2	-1.31926	-.0726241
268	-3.93681	3.93681	51.93	1.31044	183.2	-1.30845	-.0721857
269	-3.89274	3.89274	52.967	1.29943	183.2	-1.29745	-.071743
270	-3.84868	3.84868	54.004	1.28822	183.2	-1.28625	-.0712947
271	-3.80461	3.80461	55.041	1.27684	183.2	-1.27487	-.0708415
272	-3.76055	3.76055	56.078	1.26527	183.2	-1.26331	-.0703834
273	-3.71648	3.71648	57.1149	1.25351	183.2	-1.25156	-.0699201

274	−3.67242	3.67242	58.1519	1.24157	183.2	−1.23963	−.0694518
275	−3.62835	3.62835	59.1889	1.22946	183.2	−1.22752	−.0689785
276	−3.58429	3.58429	60.2259	1.21717	183.2	−1.21524	−.0685002
277	−3.54022	3.54022	61.2629	1.20471	183.2	−1.20279	−.0680171
278	−3.49616	3.49616	62.2999	1.19207	183.2	−1.19016	−.0675291
279	−3.45209	3.45209	63.3369	1.17927	183.3	−1.17736	−.0670363
280	−3.40803	3.40803	64.3739	1.1663	183.3	−1.1644	−.0665386
281	−3.36396	3.36396	65.4109	1.15317	183.3	−1.15128	−.0660363
282	−3.3199	3.3199	66.4478	1.13987	183.3	−1.13798	−.0655291
283	−3.27583	3.27583	67.4848	1.12641	183.3	−1.12453	−.0650174
284	−3.23177	3.23177	68.5218	1.11279	183.3	−1.11092	−.0645011
285	−3.1877	3.1877	69.5588	1.09903	183.3	−1.09716	−.0639801
286	−3.14364	3.14364	70.5958	1.0851	183.4	−1.08325	−.0634546
287	−3.09957	3.09957	71.6328	1.07103	183.4	−1.06918	−.0629246
288	−3.05551	3.05551	72.6698	1.05681	183.4	−1.05497	−.0623903
289	−3.01144	3.01144	73.7068	1.04244	183.4	−1.04061	−.0618515
290	−2.96737	2.96737	74.7437	1.02793	183.4	−1.0261	−.0613084
291	−2.92331	2.92331	75.7807	1.01329	183.4	−1.01147	−.060761
292	−2.87924	2.87924	76.8177	.998505	183.5	−.996688	−.0602094
293	−2.83518	2.83518	77.8547	.983579	183.5	−.981768	−.0596536
294	−2.79111	2.79111	78.8917	.968525	183.5	−.966721	−.0590938
295	−2.74705	2.74705	79.9287	.953345	183.5	−.951546	−.0585298
296	−2.70298	2.70298	80.9657	.938037	183.5	−.936244	−.0579617
297	−2.65892	2.65892	82.0027	.922602	183.6	−.920815	−.0573898
298	−2.61485	2.61485	83.0396	.907047	183.6	−.905266	−.0568138
299	−2.57079	2.57079	84.0766	.891372	183.6	−.889597	−.0562341
300	−2.52672	2.52672	85.1136	.875584	183.6	−.873814	−.0556506
301	−2.48266	2.48266	86.1506	.859676	183.7	−.857911	−.0550633
302	−2.43859	2.43859	87.1876	.843663	183.7	−.841902	−.0544724
303	−2.39453	2.39453	88.2246	.827536	183.7	−.82578	−.0538779
304	−2.35046	2.35046	89.2616	.811311	183.8	−.809559	−.0532798
305	−2.3064	2.3064	90.2986	.794979	183.8	−.793232	−.0526782
306	−2.26233	2.26233	91.3356	.778549	183.8	−.776806	−.0520732
307	−2.21827	2.21827	92.3725	.762021	183.9	−.760281	−.0514648
308	−2.1742	2.1742	93.4095	.745401	183.9	−.743664	−.0508531
309	−2.13014	2.13014	94.4465	.728689	184.	−.726955	−.0502381
310	−2.08607	2.08607	95.4835	.711886	184.	−.710154	−.0496199
311	−2.04201	2.04201	96.5205	.695001	184.	−.693271	−.0489987
312	−1.99794	1.99794	97.5575	.678033	184.1	−.676305	−.0483744
313	−1.95388	1.95388	98.5945	.660986	184.1	−.659259	−.0477471
314	−1.90981	1.90981	99.6315	.643863	184.2	−.642136	−.0471169
315	−1.86575	1.86575	100.668	.626666	184.3	−.624939	−.0464838
316	−1.82168	1.82168	101.705	.609398	184.3	−.607671	−.0458481
317	−1.77762	1.77762	102.742	.592064	184.4	−.590336	−.0452096
318	−1.73355	1.73355	103.779	.574666	184.4	−.572935	−.0445685
319	−1.68949	1.68949	104.816	.557207	184.5	−.555473	−.0439249
320	−1.64542	1.64542	105.853	.53969	184.6	−.537952	−.0432787
321	−1.60135	1.60135	106.89	.522118	184.7	−.520375	−.0426303
322	−1.55729	1.55729	107.927	.504494	184.8	−.502744	−.0419794
323	−1.51322	1.51322	108.964	.486821	184.9	−.485064	−.0413262
324	−1.46916	1.46916	110.001	.469103	185.	−.467337	−.0406709
325	−1.42509	1.42509	111.038	.451342	185.1	−.449565	−.0400135
326	−1.38103	1.38103	112.075	.433543	185.2	−.431753	−.0393539
327	−1.33696	1.33696	113.112	.415707	185.3	−.413902	−.0386925
328	−1.2929	1.2929	114.149	.397838	185.5	−.396016	−.038029
329	−1.24883	1.24883	115.186	.379939	185.6	−.378097	−.0373638
330	−1.20477	1.20477	116.223	.362013	185.8	−.360149	−.0366968
331	−1.1607	1.1607	117.26	.344065	186.	−.342173	−.036028
332	−1.11664	1.11664	118.297	.326096	186.2	−.324174	−.0353576
333	−1.07257	1.07257	119.334	.30811	186.5	−.306152	−.0346856

334	-1.02851	1.02851	120.371	.290111	186.7	-.288111	-.034012
335	-.984442	.984442	121.408	.272102	187.	-.270052	-.033337
336	-.940377	.940377	122.445	.254085	187.4	-.251977	-.0326604
337	-.896312	.896312	123.482	.236065	187.8	-.233888	-.0319824
338	-.852247	.852247	124.519	.218044	188.3	-.215786	-.0313028
339	-.808182	.808182	125.556	.200028	188.8	-.19767	-.0306217
340	-.764117	.764117	126.593	.182019	189.5	-.17954	-.0299392
341	-.720051	.720051	127.63	.164024	190.3	-.161394	-.0292548
342	-.675986	.675986	128.667	.146049	191.3	-.143228	-.0285687
343	-.631921	.631921	129.704	.128105	192.6	-.125034	-.0278803
344	-.587856	.587856	130.741	.110209	194.3	-.106802	-.0271892
345	-.543791	.543791	131.778	.0923945	196.7	-.0885142	-.0264948
346	-.499726	.499726	132.815	.0747336	200.2	-.0701405	-.0257958
347	-.455661	.455661	133.852	.0574059	205.9	-.0516324	-.0250904
348	-.411595	.411595	134.889	.0409474	216.5	-.032902	-.0243752
349	-.36753	.36753	135.926	.0273629	239.8	-.0137739	-.0236433
350	-.323465	.323465	136.963	.0236988	285.1	6.18E-03	-.0228784
J11	-.2794	.2794	138.	.0356168	321.8	.0279771	-.0220418
2J1	-6.096	-6.096	1.1176	1.62827	182.4	-1.62683	-.0684549
352	-6.05194	-6.05194	2.15459	1.62867	182.4	-1.62724	-.0682533
353	-6.00787	-6.00787	3.19158	1.62884	182.4	-1.62742	-.0680251
354	-5.96381	-5.96381	4.22856	1.62875	182.4	-1.62734	-.0677922
355	-5.91974	-5.91974	5.26555	1.62837	182.4	-1.62697	-.0675563
356	-5.87567	-5.87567	6.30254	1.62771	182.4	-1.62632	-.0673178
357	-5.83161	-5.83161	7.33953	1.62678	182.4	-1.6254	-.0670763
358	-5.78754	-5.78754	8.37652	1.62558	182.4	-1.62421	-.0668315
359	-5.74348	-5.74348	9.4135	1.62411	182.3	-1.62275	-.0665831
360	-5.69941	-5.69941	10.4505	1.62238	182.3	-1.62102	-.0663307
361	-5.65535	-5.65535	11.4875	1.62037	182.3	-1.61903	-.066074
362	-5.61128	-5.61128	12.5245	1.61811	182.3	-1.61677	-.0658126
363	-5.56722	-5.56722	13.5615	1.61559	182.3	-1.61426	-.0655465
364	-5.52315	-5.52315	14.5984	1.61281	182.3	-1.61149	-.0652753
365	-5.47909	-5.47909	15.6354	1.60978	182.3	-1.60846	-.0649988
366	-5.43502	-5.43502	16.6724	1.60649	182.3	-1.60518	-.064717
367	-5.39096	-5.39096	17.7094	1.60294	182.3	-1.60165	-.0644296
368	-5.34689	-5.34689	18.7464	1.59915	182.3	-1.59786	-.0641366
369	-5.30283	-5.30283	19.7834	1.59511	182.3	-1.59383	-.0638377
370	-5.25876	-5.25876	20.8204	1.59082	182.3	-1.58955	-.063533
371	-5.2147	-5.2147	21.8574	1.5863	182.3	-1.58504	-.0632223
372	-5.17063	-5.17063	22.8944	1.58152	182.3	-1.58027	-.0629056
373	-5.12657	-5.12657	23.9313	1.5765	182.3	-1.57526	-.0625828
374	-5.0825	-5.0825	24.9683	1.57124	182.3	-1.57001	-.0622539
375	-5.03844	-5.03844	26.0053	1.56575	182.3	-1.56452	-.0619187
376	-4.99437	-4.99437	27.0423	1.56002	182.3	-1.5588	-.0615773
377	-4.95031	-4.95031	28.0793	1.55406	182.3	-1.55285	-.0612296
378	-4.90624	-4.90624	29.1163	1.54785	182.3	-1.54665	-.0608757
379	-4.86218	-4.86218	30.1533	1.54142	182.3	-1.54023	-.0605155
380	-4.81811	-4.81811	31.1903	1.53476	182.2	-1.53358	-.060149
381	-4.77405	-4.77405	32.2272	1.52787	182.2	-1.5267	-.0597761
382	-4.72998	-4.72998	33.2642	1.52076	182.2	-1.5196	-.059397
383	-4.68592	-4.68592	34.3012	1.51342	182.2	-1.51227	-.0590115
384	-4.64185	-4.64185	35.3382	1.50586	182.2	-1.50472	-.0586198
385	-4.59779	-4.59779	36.3752	1.49807	182.2	-1.49694	-.0582217
386	-4.55372	-4.55372	37.4122	1.49006	182.2	-1.48894	-.0578174
387	-4.50966	-4.50966	38.4492	1.48184	182.2	-1.48073	-.0574069
388	-4.46559	-4.46559	39.4862	1.47341	182.2	-1.4723	-.0569901
389	-4.42153	-4.42153	40.5231	1.46475	182.2	-1.46366	-.0565671
390	-4.37746	-4.37746	41.5601	1.45588	182.2	-1.4548	-.056138
391	-4.33339	-4.33339	42.5971	1.44681	182.2	-1.44574	-.0557027
392	-4.28933	-4.28933	43.6341	1.43753	182.2	-1.43647	-.0552613

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395   -4.15713   -4.15713   46.7451   1.40844   182.2   -1.4074    -.0539009
396   -4.11307   -4.11307   47.7821   1.39834   182.2   -1.39731   -.0534356
397   -4.069     -4.069     48.819    1.38804   182.2   -1.38703   -.0529643
398   -4.02494   -4.02494   49.856    1.37754   182.2   -1.37654   -.0524873
399   -3.98087   -3.98087   50.893    1.36684   182.2   -1.36585   -.0520044
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405   -3.71648   -3.71648   57.1149   1.29872   182.2   -1.2978    -.048989
406   -3.67242   -3.67242   58.1519   1.28672   182.2   -1.28581   -.0484673
407   -3.62835   -3.62835   59.1889   1.27454   182.2   -1.27364   -.0479402
408   -3.58429   -3.58429   60.2259   1.26219   182.2   -1.2613    -.0474078
409   -3.54022   -3.54022   61.2629   1.24967   182.1   -1.24879   -.0468703
410   -3.49616   -3.49616   62.2999   1.23698   182.1   -1.23611   -.0463277
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412   -3.40803   -3.40803   64.3739   1.21107   182.1   -1.21023   -.0452272
413   -3.36396   -3.36396   65.4109   1.19788   182.1   -1.19705   -.0446696
414   -3.3199    -3.3199    66.4478   1.18452   182.1   -1.1837    -.0441071
415   -3.27583   -3.27583   67.4848   1.171     182.1   -1.17019   -.0435399
416   -3.23177   -3.23177   68.5218   1.15733   182.1   -1.15653   -.042968
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418   -3.14364   -3.14364   70.5958   1.12952   182.1   -1.12875   -.0418104
419   -3.09957   -3.09957   71.6328   1.11539   182.1   -1.11463   -.0412249
420   -3.05551   -3.05551   72.6698   1.10111   182.1   -1.10036   -.0406349
421   -3.01144   -3.01144   73.7068   1.08669   182.1   -1.08595   -.0400406
422   -2.96737   -2.96737   74.7437   1.07213   182.1   -1.0714    -.0394421
423   -2.92331   -2.92331   75.7807   1.05742   182.1   -1.05671   -.0388395
424   -2.87924   -2.87924   76.8177   1.04258   182.1   -1.04188   -.0382327
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430   -2.61485   -2.61485   83.0396   .950794   182.1   -.950167   -.034511
431   -2.57079   -2.57079   84.0766   .935069   182.1   -.934456   -.033878
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447   -1.86575   -1.86575   100.668   .669535   182.    -.669128   -.0233487
448   -1.82168   -1.82168   101.705   .652218   182.    -.651824   -.0226703
449   -1.77762   -1.77762   102.742   .634833   182.    -.634452   -.0219901
450   -1.73355   -1.73355   103.779   .617384   182.    -.617016   -.0213082
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454	-1.55729	-1.55729	107.927	.547001	181.9	-.546685	-.0185657
455	-1.51322	-1.51322	108.964	.529273	181.9	-.528971	-.0178769
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457	-1.42509	-1.42509	111.038	.493681	181.9	-.493406	-.0164958
458	-1.38103	-1.38103	112.075	.475822	181.9	-.47556	-.0158039
459	-1.33696	-1.33696	113.112	.457926	181.9	-.457676	-.0151112
460	-1.2929	-1.2929	114.149	.439994	181.9	-.439757	-.0144178
461	-1.24883	-1.24883	115.186	.422029	181.9	-.421806	-.0137237
462	-1.20477	-1.20477	116.223	.404035	181.8	-.403825	-.0130292
463	-1.1607	-1.1607	117.26	.386014	181.8	-.385817	-.0123341
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467	-.984442	-.984442	121.408	.313711	181.7	-.313566	-9.55E-03
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469	-.896312	-.896312	123.482	.277457	181.7	-.277337	-8.16E-03
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471	-.808182	-.808182	125.556	.241148	181.6	-.241053	-6.77E-03
472	-.764117	-.764117	126.593	.222973	181.6	-.222891	-6.07E-03
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474	-.675986	-.675986	128.667	.18657	181.4	-.186511	-4.68E-03
475	-.631921	-.631921	129.704	.168331	181.4	-.168284	-3.98E-03
476	-.587856	-.587856	130.741	.150054	181.3	-.150018	-3.28E-03
477	-.543791	-.543791	131.778	.13172	181.1	-.131695	-2.59E-03
478	-.499726	-.499726	132.815	.113303	181.	-.113287	-1.88E-03
479	-.455661	-.455661	133.852	.0947504	180.7	-.0947431	-1.18E-03
480	-.411595	-.411595	134.889	.0759786	180.3	-.0759772	-4.6E-04
481	-.36753	-.36753	135.926	.0568133	179.7	-.0568126	2.69E-04
482	-.323465	-.323465	136.963	.0368344	178.4	-.03682	1.03E-03
J12	-.2794	-.2794	138.	.0151011	172.9	-.014986	1.86E-03
2J1	6.096	-6.096	1.1176	1.67107	181.8	-1.67024	-.0528276
484	6.05194	-6.05194	2.15459	1.67145	181.8	-1.67062	-.0526315
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486	5.96381	-5.96381	4.22856	1.67148	181.8	-1.67067	-.0521778
487	5.91974	-5.91974	5.26555	1.67108	181.8	-1.67027	-.0519436
488	5.87567	-5.87567	6.30254	1.6704	181.8	-1.6696	-.0517051
489	5.83161	-5.83161	7.33953	1.66945	181.8	-1.66865	-.0514624
490	5.78754	-5.78754	8.37652	1.66822	181.8	-1.66744	-.051215
491	5.74348	-5.74348	9.4135	1.66672	181.8	-1.66594	-.0509627
492	5.69941	-5.69941	10.4505	1.66496	181.7	-1.66419	-.050705
493	5.65535	-5.65535	11.4875	1.66293	181.7	-1.66217	-.0504417
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495	5.56722	-5.56722	13.5615	1.65809	181.7	-1.65734	-.0498975
496	5.52315	-5.52315	14.5984	1.65527	181.7	-1.65453	-.0496163
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502	5.25876	-5.25876	20.8204	1.63309	181.7	-1.63239	-.0477895
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508	4.99437	-4.99437	27.0423	1.60207	181.6	-1.60141	-.0457119
509	4.95031	-4.95031	28.0793	1.59606	181.6	-1.59542	-.0453405
510	4.90624	-4.90624	29.1163	1.58982	181.6	-1.58919	-.0449621
511	4.86218	-4.86218	30.1533	1.58335	181.6	-1.58272	-.0445764

512	4.81811	-4.81811	31.1903	1.57665	181.6	-1.57603	-.0441836
513	4.77405	-4.77405	32.2272	1.56972	181.6	-1.56911	-.0437836
514	4.72998	-4.72998	33.2642	1.56257	181.6	-1.56196	-.0433765
515	4.68592	-4.68592	34.3012	1.55519	181.6	-1.5546	-.0429622
516	4.64185	-4.64185	35.3382	1.54759	181.6	-1.547	-.0425409
517	4.59779	-4.59779	36.3752	1.53976	181.6	-1.53919	-.0421126
518	4.55372	-4.55372	37.4122	1.53171	181.6	-1.53115	-.0416771
519	4.50966	-4.50966	38.4492	1.52345	181.6	-1.5229	-.0412349
520	4.46559	-4.46559	39.4862	1.51497	181.5	-1.51442	-.0407856
521	4.42153	-4.42153	40.5231	1.50628	181.5	-1.50574	-.0403295
522	4.37746	-4.37746	41.5601	1.49737	181.5	-1.49684	-.0398665
523	4.33339	-4.33339	42.5971	1.48825	181.5	-1.48773	-.0393968
524	4.28933	-4.28933	43.6341	1.47893	181.5	-1.47842	-.0389204
525	4.24526	-4.24526	44.6711	1.4694	181.5	-1.46889	-.0384373
526	4.2012	-4.2012	45.7081	1.45966	181.5	-1.45917	-.0379476
527	4.15713	-4.15713	46.7451	1.44972	181.5	-1.44924	-.0374514
528	4.11307	-4.11307	47.7821	1.43958	181.5	-1.43911	-.0369488
529	4.069	-4.069	48.819	1.42924	181.5	-1.42878	-.0364398
530	4.02494	-4.02494	49.856	1.41871	181.5	-1.41825	-.0359244
531	3.98087	-3.98087	50.893	1.40798	181.4	-1.40753	-.0354029
532	3.93681	-3.93681	51.93	1.39706	181.4	-1.39662	-.0348751
533	3.89274	-3.89274	52.967	1.38594	181.4	-1.38552	-.0343413
534	3.84868	-3.84868	54.004	1.37464	181.4	-1.37423	-.0338014
535	3.80461	-3.80461	55.041	1.36316	181.4	-1.36275	-.0332556
536	3.76055	-3.76055	56.078	1.35148	181.4	-1.35108	-.0327039
537	3.71648	-3.71648	57.1149	1.33962	181.4	-1.33924	-.0321464
538	3.67242	-3.67242	58.1519	1.32759	181.4	-1.32721	-.0315833
539	3.62835	-3.62835	59.1889	1.31538	181.4	-1.31501	-.0310145
540	3.58429	-3.58429	60.2259	1.30299	181.3	-1.30263	-.0304402
541	3.54022	-3.54022	61.2629	1.29043	181.3	-1.29008	-.0298606
542	3.49616	-3.49616	62.2999	1.2777	181.3	-1.27737	-.0292755
543	3.45209	-3.45209	63.3369	1.2648	181.3	-1.26448	-.0286852
544	3.40803	-3.40803	64.3739	1.25174	181.3	-1.25142	-.0280897
545	3.36396	-3.36396	65.4109	1.23851	181.3	-1.2382	-.0274893
546	3.3199	-3.3199	66.4478	1.22512	181.3	-1.22482	-.0268838
547	3.27583	-3.27583	67.4848	1.21157	181.2	-1.21129	-.0262735
548	3.23177	-3.23177	68.5218	1.19787	181.2	-1.19759	-.0256583
549	3.1877	-3.1877	69.5588	1.18401	181.2	-1.18375	-.0250384
550	3.14364	-3.14364	70.5958	1.17	181.2	-1.16975	-.0244141
551	3.09957	-3.09957	71.6328	1.15583	181.2	-1.15559	-.0237851
552	3.05551	-3.05551	72.6698	1.14153	181.2	-1.14129	-.0231518
553	3.01144	-3.01144	73.7068	1.12708	181.1	-1.12685	-.0225142
554	2.96737	-2.96737	74.7437	1.11249	181.1	-1.11227	-.0218724
555	2.92331	-2.92331	75.7807	1.09776	181.1	-1.09755	-.0212266
556	2.87924	-2.87924	76.8177	1.08289	181.1	-1.08269	-.0205768
557	2.83518	-2.83518	77.8547	1.06788	181.1	-1.0677	-.0199231
558	2.79111	-2.79111	78.8917	1.05275	181.	-1.05258	-.0192656
559	2.74705	-2.74705	79.9287	1.03749	181.	-1.03733	-.0186045
560	2.70298	-2.70298	80.9657	1.0221	181.	-1.02195	-.0179398
561	2.65892	-2.65892	82.0027	1.00659	181.	-1.00644	-.0172717
562	2.61485	-2.61485	83.0396	.990958	181.	-.990819	-.0166003
563	2.57079	-2.57079	84.0766	.975209	180.9	-.975079	-.0159256
564	2.52672	-2.52672	85.1136	.95934	180.9	-.959218	-.0152478
565	2.48266	-2.48266	86.1506	.943364	180.9	-.943252	-.014567
566	2.43859	-2.43859	87.1876	.927276	180.9	-.927172	-.0138833
567	2.39453	-2.39453	88.2246	.911082	180.8	-.910987	-.0131969
568	2.35046	-2.35046	89.2616	.894782	180.8	-.894695	-.0125078
569	2.3064	-2.3064	90.2986	.878384	180.8	-.878304	-.0118162
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572	2.1742	-2.1742	93.4095	.828602	180.7	-.828545	-9.73E-03
573	2.13014	-2.13014	94.4465	.811823	180.6	-.811773	-9.03E-03
574	2.08607	-2.08607	95.4835	.794959	180.6	-.794915	-8.32E-03
575	2.04201	-2.04201	96.5205	.77801	180.6	-.777973	-7.62E-03
576	1.99794	-1.99794	97.5575	.760977	180.5	-.760946	-6.91E-03
577	1.95388	-1.95388	98.5945	.743874	180.5	-.743848	-6.21E-03
578	1.90981	-1.90981	99.6315	.726686	180.4	-.726665	-5.5E-03
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580	1.82168	-1.82168	101.705	.692103	180.3	-.692091	-4.07E-03
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582	1.73355	-1.73355	103.779	.657252	180.2	-.657247	-2.65E-03
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584	1.64542	-1.64542	105.853	.622159	180.1	-.622158	-1.22E-03
585	1.60135	-1.60135	106.89	.604528	180.	-.604528	-5.01E-04
586	1.55729	-1.55729	107.927	.586846	180.	-.586846	2.16E-04
587	1.51322	-1.51322	108.964	.569115	179.9	-.569114	9.33E-04
588	1.46916	-1.46916	110.001	.551338	179.8	-.551336	1.65E-03
589	1.42509	-1.42509	111.038	.533519	179.7	-.533513	2.37E-03
590	1.38103	-1.38103	112.075	.515659	179.7	-.51565	3.08E-03
591	1.33696	-1.33696	113.112	.497762	179.6	-.497748	3.8E-03
592	1.2929	-1.2929	114.149	.479833	179.5	-.479811	4.52E-03
593	1.24883	-1.24883	115.186	.461871	179.4	-.461842	5.24E-03
594	1.20477	-1.20477	116.223	.443883	179.2	-.443843	5.95E-03
595	1.1607	-1.1607	117.26	.425869	179.1	-.425817	6.67E-03
596	1.11664	-1.11664	118.297	.407833	179.	-.407766	7.38E-03
597	1.07257	-1.07257	119.334	.389776	178.8	-.389692	8.1E-03
598	1.02851	-1.02851	120.371	.371704	178.6	-.371599	8.81E-03
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600	.940377	-.940377	122.445	.335518	178.3	-.335362	.0102331
601	.896312	-.896312	123.482	.317409	178.	-.31722	.0109431
602	.852247	-.852247	124.519	.299291	177.8	-.299064	.0116519
603	.808182	-.808182	125.556	.281166	177.5	-.280895	.0123595
604	.764117	-.764117	126.593	.263035	177.2	-.262711	.013066
605	.720051	-.720051	127.63	.244897	176.8	-.244509	.0137713
606	.675986	-.675986	128.667	.226749	176.3	-.226287	.0144756
607	.631921	-.631921	129.704	.208589	175.8	-.208036	.0151792
608	.587856	-.587856	130.741	.19041	175.2	-.189746	.0158825
609	.543791	-.543791	131.778	.1722	174.5	-.171399	.016586
610	.499726	-.499726	132.815	.153939	173.6	-.152965	.0172911
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614	.323465	-.323465	136.963	.079013	165.2	-.0763873	.0201999
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2J2	-.2794	.2794	138.	.0153446	140.3	-.0118049	9.8E-03
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2J1	-.2794	-.2794	138.	.0164758	323.	.0131542	-9.92E-03
2J2	.2794	-.2794	138.	.0268641	339.4	.0251408	-9.47E-03
2J1	.2794	-.2794	138.	.0315731	158.5	-.0293813	.0115586
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GND	91.4742	-112.961	0	11.5767	357.6	11.5666	-.48188
624	91.4742	-112.961	.9398	11.5744	357.6	11.5643	-.484123
J18	91.4742	-112.961	1.8796	11.5732	357.6	11.5631	-.485115
J19	96.3135	-112.961	1.8796	.129776	1.2	.129749	2.65E-03
625	95.4061	-112.437	1.8796	.125994	.6	.125988	1.25E-03
626	94.4988	-111.913	1.8796	.120339	359.8	.120338	-4.78E-04
627	93.5914	-111.389	1.8796	.114294	358.8	.114269	-2.36E-03
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629   91.7766   -110.342   1.8796    .101902  356.5  .10171    -6.27E-03
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631   89.9619   -109.294   1.8796    .0905009 353.7  .0899602  -9.88E-03
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2J1   89.0545   -108.77    1.8796    .021607   15.5  .0208182   5.79E-03
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634   89.0545   -110.866   1.8796    .0109385  14.3  .0106006   2.7E-03
635   89.0545   -111.913   1.8796    4.55E-03  10.3  4.48E-03   8.16E-04
636   89.0545   -112.961   1.8796    2.17E-03 211.6  -1.85E-03 -1.14E-03
637   89.0545   -114.009   1.8796    8.74E-03 200.7  -8.18E-03 -3.09E-03
638   89.0545   -115.057   1.8796    .0151396 199.2  -.0143017 -4.97E-03
639   89.0545   -116.104   1.8796    .0210918 198.5  -.0200023 -6.69E-03
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641   89.9619   -116.628   1.8796    .101878  174.3  -.101379   .0100635
642   90.8693   -116.104   1.8796    .107351  175.5  -.107027   8.34E-03
643   91.7766   -115.58    1.8796    .113298  176.7  -.113114   6.45E-03
644   92.684    -115.057   1.8796    .119476  177.8  -.119391   4.5E-03
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646   94.4988   -114.009   1.8796    .131712  179.7  -.131711   6.66E-04
647   95.4061   -113.485   1.8796    .137307  180.4  -.137302  -1.06E-03
1J2   96.3135   -112.961   1.8796    .141872  181.   -.141851  -2.42E-03
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650   92.4421   -112.961   1.8796    4.08709  357.6  4.08341   -.173507
651   93.4099   -112.961   1.8796    4.08357  357.5  4.07981   -.175078
652   94.3778   -112.961   1.8796    4.07979  357.5  4.07597   -.176574
653   95.3456   -112.961   1.8796    4.07607  357.5  4.07219   -.177875
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725	94.3418	-112.961	57.0764	2.80001	356.3	2.79406	-.182478
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750	93.4919	−112.961	80.8682	1.99646	356.	1.99159	−.139248
751	93.4579	−112.961	81.8199	1.9609	356.	1.9561	−.137108
752	93.4239	−112.961	82.7715	1.92512	356.	1.92038	−.134939
753	93.3899	−112.961	83.7232	1.88912	356.	1.88445	−.132741
754	93.3559	−112.961	84.6749	1.8529	356.	1.8483	−.130515
755	93.3219	−112.961	85.6265	1.81647	356.	1.81194	−.128261
756	93.2879	−112.961	86.5782	1.77984	355.9	1.77538	−.12598
757	93.2539	−112.961	87.5299	1.74301	355.9	1.73861	−.123672
758	93.2199	−112.961	88.4815	1.70597	355.9	1.70165	−.121337
759	93.1859	−112.961	89.4332	1.66875	355.9	1.66451	−.118975
760	93.1519	−112.961	90.3849	1.63134	355.9	1.62717	−.116587
761	93.1179	−112.961	91.3366	1.59374	355.9	1.58965	−.114174
762	93.0839	−112.961	92.2882	1.55597	355.9	1.55195	−.111735
763	93.0499	−112.961	93.2399	1.51802	355.9	1.51409	−.109271
764	93.016	−112.961	94.1916	1.4799	355.9	1.47604	−.106782
765	92.982	−112.961	95.1432	1.44162	355.9	1.43785	−.104269
766	92.948	−112.961	96.0949	1.40317	355.8	1.39948	−.101731
767	92.914	−112.961	97.0466	1.36457	355.8	1.36096	−.0991696
768	92.88	−112.961	97.9982	1.32581	355.8	1.32229	−.0965851
769	92.846	−112.961	98.9499	1.28691	355.8	1.28348	−.0939773
770	92.812	−112.961	99.9016	1.24786	355.8	1.24452	−.0913461
771	92.778	−112.961	100.853	1.20867	355.8	1.20541	−.0886931
772	92.744	−112.961	101.805	1.16934	355.8	1.16617	−.0860174
773	92.71	−112.961	102.757	1.12988	355.8	1.1268	−.0833198
774	92.676	−112.961	103.708	1.09029	355.8	1.0873	−.0806003
775	92.642	−112.961	104.66	1.05057	355.7	1.04768	−.0778588
776	92.608	−112.961	105.612	1.01073	355.7	1.00793	−.0750968
777	92.574	−112.961	106.563	.970761	355.7	.968064	−.0723137
778	92.54	−112.961	107.515	.930677	355.7	.928077	−.0695094
779	92.506	−112.961	108.467	.890471	355.7	.88797	−.0666845
780	92.472	−112.961	109.418	.850157	355.7	.847757	−.063839
781	92.438	−112.961	110.37	.809723	355.7	.807424	−.060973
782	92.404	−112.961	111.322	.769174	355.7	.766977	−.0580864
783	92.37	−112.961	112.273	.72851	355.7	.726418	−.0551792
784	92.336	−112.961	113.225	.687725	355.6	.685737	−.0522512
785	92.302	−112.961	114.177	.646817	355.6	.644935	−.0493022
786	92.268	−112.961	115.128	.605779	355.6	.604005	−.0463316
787	92.2341	−112.961	116.08	.564605	355.6	.562939	−.0433389
788	92.2001	−112.961	117.032	.52328	355.6	.521724	−.0403231
789	92.1661	−112.961	117.983	.481789	355.6	.480345	−.0372831
790	92.1321	−112.961	118.935	.440109	355.5	.438777	−.0342171
791	92.0981	−112.961	119.887	.398208	355.5	.396989	−.0311226
792	92.0641	−112.961	120.838	.356041	355.5	.354939	−.0279963
793	92.0301	−112.961	121.79	.313544	355.5	.312559	−.0248332
794	91.9961	−112.961	122.742	.27062	355.4	.269754	−.021626
795	91.9621	−112.961	123.693	.22712	355.4	.226376	−.0183631
796	91.9281	−112.961	124.645	.182791	355.3	.182173	−.0150254
797	91.8941	−112.961	125.597	.137161	355.2	.136672	−.0115763
798	91.8601	−112.961	126.548	.0891457	354.9	.0887921	−7.93E−03
J25	91.8261	−112.961	127.5	.036903	353.9	.0366907	−3.95E−03
2J1	89.0545	−108.77	1.8796	3.79006	357.3	3.78581	−.179456
800	89.0715	−108.799	2.83127	3.78486	357.3	3.78054	−.180905
801	89.0885	−108.829	3.78294	3.77879	357.2	3.77439	−.182416
802	89.1055	−108.858	4.73461	3.77225	357.2	3.76777	−.183866
803	89.1225	−108.888	5.68628	3.76529	357.2	3.76073	−.185245
804	89.1395	−108.917	6.63795	3.75791	357.2	3.75327	−.186549
805	89.1565	−108.947	7.58962	3.75013	357.1	3.74542	−.187779

806	89.1735	-108.976	8.54129	3.74195	357.1	3.73718	-.188936
807	89.1905	-109.006	9.49296	3.73336	357.1	3.72852	-.190023
808	89.2075	-109.035	10.4446	3.72438	357.1	3.71947	-.191041
809	89.2245	-109.064	11.3963	3.71498	357.	3.71001	-.191992
810	89.2415	-109.094	12.348	3.70518	357.	3.70016	-.192878
811	89.2585	-109.123	13.2996	3.69496	357.	3.68988	-.1937
812	89.2755	-109.153	14.2513	3.68434	357.	3.6792	-.19446
813	89.2925	-109.182	15.203	3.6733	357.	3.66811	-.19516
814	89.3095	-109.212	16.1547	3.66184	356.9	3.6566	-.195801
815	89.3265	-109.241	17.1063	3.64996	356.9	3.64468	-.196384
816	89.3435	-109.271	18.058	3.63767	356.9	3.63234	-.196911
817	89.3605	-109.3	19.0097	3.62496	356.9	3.61958	-.197383
818	89.3775	-109.329	19.9613	3.61182	356.9	3.6064	-.1978
819	89.3945	-109.359	20.913	3.59827	356.8	3.59281	-.198164
820	89.4115	-109.388	21.8647	3.5843	356.8	3.5788	-.198476
821	89.4285	-109.418	22.8163	3.56991	356.8	3.56437	-.198736
822	89.4454	-109.447	23.768	3.5551	356.8	3.54953	-.198945
823	89.4624	-109.477	24.7197	3.53987	356.8	3.53427	-.199105
824	89.4794	-109.506	25.6713	3.52423	356.8	3.51859	-.199215
825	89.4964	-109.535	26.623	3.50816	356.7	3.5025	-.199278
826	89.5134	-109.565	27.5747	3.49169	356.7	3.48599	-.199291
827	89.5304	-109.594	28.5264	3.4748	356.7	3.46908	-.199258
828	89.5474	-109.624	29.478	3.45749	356.7	3.45175	-.199177
829	89.5644	-109.653	30.4297	3.43978	356.7	3.43401	-.19905
830	89.5814	-109.683	31.3814	3.42165	356.7	3.41587	-.198877
831	89.5984	-109.712	32.333	3.40313	356.7	3.39732	-.198659
832	89.6154	-109.742	33.2847	3.38419	356.6	3.37836	-.198396
833	89.6324	-109.771	34.2364	3.36485	356.6	3.35901	-.198087
834	89.6494	-109.8	35.188	3.3451	356.6	3.33925	-.197735
835	89.6664	-109.83	36.1397	3.32496	356.6	3.3191	-.197339
836	89.6834	-109.859	37.0914	3.30443	356.6	3.29855	-.1969
837	89.7004	-109.889	38.0431	3.28349	356.6	3.27761	-.196417
838	89.7174	-109.918	38.9947	3.26216	356.6	3.25628	-.195892
839	89.7344	-109.948	39.9464	3.24044	356.5	3.23455	-.195323
840	89.7514	-109.977	40.8981	3.21833	356.5	3.21244	-.194713
841	89.7684	-110.007	41.8497	3.19584	356.5	3.18994	-.194061
842	89.7854	-110.036	42.8014	3.17296	356.5	3.16707	-.193368
843	89.8024	-110.065	43.7531	3.14971	356.5	3.14381	-.192633
844	89.8194	-110.095	44.7047	3.12607	356.5	3.12018	-.191858
845	89.8364	-110.124	45.6564	3.10207	356.5	3.09618	-.191041
846	89.8534	-110.154	46.6081	3.07769	356.5	3.07181	-.190185
847	89.8704	-110.183	47.5598	3.05295	356.4	3.04707	-.189289
848	89.8874	-110.213	48.5114	3.02783	356.4	3.02197	-.188353
849	89.9044	-110.242	49.4631	3.00236	356.4	2.99651	-.187378
850	89.9214	-110.271	50.4148	2.97652	356.4	2.97068	-.186363
851	89.9384	-110.301	51.3664	2.95034	356.4	2.94451	-.185309
852	89.9554	-110.33	52.3181	2.9238	356.4	2.91799	-.184218
853	89.9724	-110.36	53.2698	2.8969	356.4	2.89111	-.183088
854	89.9894	-110.389	54.2214	2.86967	356.4	2.8639	-.18192
855	90.0064	-110.419	55.1731	2.8421	356.4	2.83635	-.180715
856	90.0234	-110.448	56.1248	2.81419	356.3	2.80846	-.179472
857	90.0404	-110.478	57.0764	2.78594	356.3	2.78024	-.178192
858	90.0574	-110.507	58.0281	2.75737	356.3	2.75169	-.176876
859	90.0744	-110.536	58.9798	2.72846	356.3	2.72281	-.175523
860	90.0914	-110.566	59.9315	2.69924	356.3	2.69362	-.174134
861	90.1084	-110.595	60.8831	2.6697	356.3	2.66411	-.172709
862	90.1254	-110.625	61.8348	2.63984	356.3	2.63428	-.171249
863	90.1424	-110.654	62.7865	2.60967	356.3	2.60415	-.169753
864	90.1594	-110.684	63.7381	2.5792	356.3	2.57371	-.168223
865	90.1764	-110.713	64.6898	2.54842	356.3	2.54297	-.166657

866	90.1933	−110.742	65.6415	2.51734	356.2	2.51193	−.165058
867	90.2103	−110.772	66.5931	2.48596	356.2	2.48059	−.163424
868	90.2273	−110.801	67.5448	2.45429	356.2	2.44896	−.161756
869	90.2443	−110.831	68.4965	2.42234	356.2	2.41705	−.160056
870	90.2613	−110.86	69.4482	2.3901	356.2	2.38485	−.158321
871	90.2783	−110.89	70.3998	2.35758	356.2	2.35237	−.156554
872	90.2953	−110.919	71.3515	2.32478	356.2	2.31962	−.154754
873	90.3123	−110.949	72.3032	2.29171	356.2	2.2866	−.152922
874	90.3293	−110.978	73.2548	2.25837	356.2	2.25332	−.151058
875	90.3463	−111.007	74.2065	2.22478	356.2	2.21977	−.149162
876	90.3633	−111.037	75.1582	2.19092	356.1	2.18596	−.147234
877	90.3803	−111.066	76.1098	2.1568	356.1	2.1519	−.145277
878	90.3973	−111.096	77.0615	2.12244	356.1	2.11759	−.143287
879	90.4143	−111.125	78.0132	2.08782	356.1	2.08304	−.141268
880	90.4313	−111.155	78.9648	2.05297	356.1	2.04825	−.139219
881	90.4483	−111.184	79.9165	2.01788	356.1	2.01322	−.137139
882	90.4653	−111.214	80.8682	1.98257	356.1	1.97796	−.135031
883	90.4823	−111.243	81.8199	1.94702	356.1	1.94248	−.132893
884	90.4993	−111.272	82.7715	1.91125	356.1	1.90677	−.130727
885	90.5163	−111.302	83.7232	1.87525	356.1	1.87084	−.128532
886	90.5333	−111.331	84.6749	1.83904	356.1	1.8347	−.126309
887	90.5503	−111.361	85.6265	1.80263	356.1	1.79836	−.124058
888	90.5673	−111.39	86.5782	1.766	356.	1.7618	−.12178
889	90.5843	−111.42	87.5299	1.72918	356.	1.72505	−.119474
890	90.6013	−111.449	88.4815	1.69216	356.	1.6881	−.117142
891	90.6183	−111.478	89.4332	1.65495	356.	1.65096	−.114783
892	90.6353	−111.508	90.3849	1.61754	356.	1.61363	−.112399
893	90.6523	−111.537	91.3366	1.57996	356.	1.57613	−.109988
894	90.6693	−111.567	92.2882	1.54219	356.	1.53844	−.107552
895	90.6863	−111.596	93.2399	1.50426	356.	1.50058	−.105091
896	90.7033	−111.626	94.1916	1.46615	356.	1.46255	−.102605
897	90.7203	−111.655	95.1432	1.42787	356.	1.42435	−.100095
898	90.7373	−111.685	96.0949	1.38943	356.	1.386	−.0975602
899	90.7543	−111.714	97.0466	1.35084	356.	1.34749	−.0950019
900	90.7713	−111.743	97.9982	1.31209	356.	1.30883	−.0924203
901	90.7883	−111.773	98.9499	1.2732	356.	1.27003	−.0898153
902	90.8053	−111.802	99.9016	1.23416	355.9	1.23107	−.0871877
903	90.8223	−111.832	100.853	1.19497	355.9	1.19198	−.0845367
904	90.8393	−111.861	101.805	1.15566	355.9	1.15275	−.0818646
905	90.8563	−111.891	102.757	1.1162	355.9	1.11339	−.0791698
906	90.8733	−111.92	103.708	1.07662	355.9	1.0739	−.0764531
907	90.8903	−111.95	104.66	1.03691	355.9	1.03429	−.0737152
908	90.9073	−111.979	105.612	.997073	355.9	.994545	−.0709567
909	90.9243	−112.008	106.563	.957117	355.9	.954686	−.0681763
910	90.9413	−112.038	107.515	.917039	355.9	.914706	−.0653753
911	90.9582	−112.067	108.467	.876847	355.9	.874613	−.0625536
912	90.9752	−112.097	109.418	.836541	355.9	.834407	−.0597114
913	90.9922	−112.126	110.37	.796113	355.9	.794081	−.0568486
914	91.0092	−112.156	111.322	.755571	355.9	.753641	−.0539653
915	91.0262	−112.185	112.273	.714915	355.9	.713089	−.0510615
916	91.0432	−112.214	113.225	.67414	355.9	.672419	−.0481369
917	91.0602	−112.244	114.177	.63324	355.9	.631626	−.0451913
918	91.0772	−112.273	115.128	.592211	355.9	.590704	−.0422242
919	91.0942	−112.303	116.08	.551045	355.9	.549647	−.0392349
920	91.1112	−112.332	117.032	.509729	355.9	.50844	−.0362227
921	91.1282	−112.362	117.983	.468246	355.9	.467069	−.0331863
922	91.1452	−112.391	118.935	.426574	356.	.425509	−.0301238
923	91.1622	−112.421	119.887	.384682	356.	.383731	−.027033
924	91.1792	−112.45	120.838	.342524	356.	.341688	−.0239104
925	91.1962	−112.479	121.79	.300035	356.	.299317	−.0207511

926	91.2132	-112.509	122.742	.257121	356.1	.256521	-.0175478
927	91.2302	-112.538	123.693	.21363	356.2	.213152	-.0142889
928	91.2472	-112.568	124.645	.169312	356.3	.168957	-.010955
929	91.2642	-112.597	125.597	.123692	356.5	.123464	-7.51E-03
930	91.2812	-112.627	126.548	.0756916	357.1	.0755925	-3.87E-03
J26	91.2982	-112.656	127.5	.023498	.3	.0234978	1.06E-04
2J1	89.0545	-117.152	1.8796	3.79938	357.2	3.79497	-.182996
932	89.0715	-117.123	2.83127	3.79415	357.2	3.78967	-.184441
933	89.0885	-117.093	3.78294	3.78808	357.2	3.78351	-.185951
934	89.1055	-117.064	4.73461	3.78152	357.2	3.77688	-.1874
935	89.1225	-117.034	5.68628	3.77455	357.1	3.76983	-.188776
936	89.1395	-117.005	6.63795	3.76716	357.1	3.76237	-.190079
937	89.1565	-116.975	7.58962	3.75937	357.1	3.7545	-.191306
938	89.1735	-116.946	8.54129	3.75118	357.1	3.74624	-.192462
939	89.1905	-116.917	9.49296	3.74259	357.	3.73758	-.193547
940	89.2075	-116.887	10.4446	3.73359	357.	3.72852	-.194563
941	89.2245	-116.858	11.3963	3.72418	357.	3.71905	-.195512
942	89.2415	-116.828	12.348	3.71437	357.	3.70917	-.196396
943	89.2585	-116.799	13.2996	3.70414	356.9	3.69888	-.197216
944	89.2755	-116.769	14.2513	3.69349	356.9	3.68818	-.197974
945	89.2925	-116.74	15.203	3.68244	356.9	3.67707	-.198672
946	89.3095	-116.71	16.1547	3.67096	356.9	3.66555	-.19931
947	89.3265	-116.681	17.1063	3.65907	356.9	3.65361	-.199891
948	89.3435	-116.652	18.058	3.64676	356.8	3.64125	-.200415
949	89.3605	-116.622	19.0097	3.63403	356.8	3.62848	-.200884
950	89.3775	-116.593	19.9613	3.62088	356.8	3.61528	-.201299
951	89.3945	-116.563	20.913	3.60731	356.8	3.60167	-.20166
952	89.4115	-116.534	21.8647	3.59332	356.8	3.58764	-.201969
953	89.4285	-116.504	22.8163	3.57891	356.8	3.57319	-.202228
954	89.4454	-116.475	23.768	3.56408	356.7	3.55833	-.202435
955	89.4624	-116.446	24.7197	3.54883	356.7	3.54304	-.202592
956	89.4794	-116.416	25.6713	3.53316	356.7	3.52735	-.202699
957	89.4964	-116.387	26.623	3.51709	356.7	3.51124	-.202759
958	89.5134	-116.357	27.5747	3.50059	356.7	3.49471	-.202769
959	89.5304	-116.328	28.5264	3.48367	356.7	3.47777	-.202733
960	89.5474	-116.298	29.478	3.46635	356.6	3.46042	-.20265
961	89.5644	-116.269	30.4297	3.44861	356.6	3.44266	-.20252
962	89.5814	-116.239	31.3814	3.43047	356.6	3.4245	-.202344
963	89.5984	-116.21	32.333	3.41191	356.6	3.40592	-.202123
964	89.6154	-116.181	33.2847	3.39295	356.6	3.38694	-.201856
965	89.6324	-116.151	34.2364	3.37359	356.6	3.36756	-.201546
966	89.6494	-116.122	35.188	3.35382	356.6	3.34778	-.20119
967	89.6664	-116.092	36.1397	3.33365	356.5	3.32759	-.200791
968	89.6834	-116.063	37.0914	3.31307	356.5	3.30701	-.200348
969	89.7004	-116.033	38.0431	3.29211	356.5	3.28604	-.199862
970	89.7174	-116.004	38.9947	3.27075	356.5	3.26467	-.199333
971	89.7344	-115.974	39.9464	3.249	356.5	3.24291	-.198761
972	89.7514	-115.945	40.8981	3.22685	356.5	3.22077	-.198148
973	89.7684	-115.916	41.8497	3.20433	356.5	3.19824	-.197492
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976	89.8194	-115.827	44.7047	3.13446	356.4	3.12837	-.195277
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978	89.8534	-115.768	46.6081	3.086	356.4	3.07992	-.193597
979	89.8704	-115.739	47.5598	3.06122	356.4	3.05515	-.192697
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982	89.9214	-115.651	50.4148	2.98468	356.4	2.97864	-.189759
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985	89.9724	−115.562	53.2698	2.90494	356.3	2.89895	−.186472
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987	90.0064	−115.503	55.1731	2.85006	356.3	2.8441	−.18409
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993	90.1084	−115.327	60.8831	2.67741	356.2	2.67162	−.17606
994	90.1254	−115.297	61.8348	2.64752	356.2	2.64176	−.174596
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1010	90.3973	−114.826	77.0615	2.12942	356.1	2.12437	−.146567
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1177   174.178   -211.802   62.9635   1.84007   177.9   -1.83881   .0680392
1178   174.144   -211.802   63.9199   1.81811   177.9   -1.81687   .0671775
1179   174.11    -211.802   64.8763   1.79595   177.9   -1.79473   .0663055
1180   174.076   -211.802   65.8327   1.77359   177.9   -1.77238   .0654236
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1183   173.974   -211.802   68.702    1.70534   177.9   -1.70418   .0627192
1184   173.94    -211.802   69.6584   1.68221   177.9   -1.68108   .0617986
1185   173.906   -211.802   70.6148   1.65889   177.9   -1.65778   .0608687
1186   173.872   -211.802   71.5712   1.63539   177.9   -1.63429   .0599298
1187   173.838   -211.802   72.5277   1.61171   177.9   -1.61063   .0589817
1188   173.804   -211.802   73.4841   1.58786   177.9   -1.5868    .0580247
1189   173.77    -211.802   74.4405   1.56383   177.9   -1.56278   .057059
1190   173.736   -211.802   75.3969   1.53962   177.9   -1.5386    .0560846
1191   173.702   -211.802   76.3533   1.51526   177.9   -1.51426   .0551019
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1201   173.362   -211.802   85.9175   1.26302   178.    -1.26222   .0448421
1202   173.328   -211.802   86.874    1.23701   178.    -1.23623   .0437762
1203   173.294   -211.802   87.8304   1.21087   178.    -1.21011   .0427037
1204   173.26    -211.802   88.7868   1.1846    178.    -1.18387   .0416247
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1207   173.158   -211.802   91.6561   1.10507   178.    -1.1044    .0383501
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1209   173.09    -211.802   93.5689   1.05146   178.    -1.05084   .0361375
1210   173.056   -211.802   94.5253   1.0245    178.    -1.0239    .0350226
1211   173.022   -211.802   95.4817   .997427   178.1   -.996851   .0339024
1212   172.988   -211.802   96.4382   .970251   178.1   -.969698   .0327769
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1214   172.92    -211.802   98.351    .915618   178.1   -.915109   .0305106
1215   172.886   -211.802   99.3074   .888159   178.1   -.887673   .0293701
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1217   172.818   -211.802   101.22    .832966   178.1   -.832526   .0270751
1218   172.784   -211.802   102.177   .805246   178.2   -.804829   .0259209
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1222	172.648	-211.802	106.002	.693546	178.2	-.69322	.021262
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1224	172.58	-211.802	107.915	.637245	178.3	-.636964	.0189088
1225	172.546	-211.802	108.872	.608988	178.3	-.60873	.0177266
1226	172.512	-211.802	109.828	.580661	178.4	-.580425	.0165408
1227	172.478	-211.802	110.784	.552264	178.4	-.55205	.0153514
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1229	172.41	-211.802	112.697	.49526	178.5	-.49509	.0129616
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1232	172.308	-211.802	115.567	.409204	178.7	-.409097	9.35E-03
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1235	172.206	-211.802	118.436	.322372	179.	-.322322	5.7E-03
1236	172.172	-211.802	119.392	.293208	179.1	-.293174	4.47E-03
1237	172.138	-211.802	120.349	.263903	179.3	-.263883	3.24E-03
1238	172.104	-211.802	121.305	.234426	179.5	-.234418	2.E-03
1239	172.07	-211.802	122.262	.204735	179.8	-.204734	7.45E-04
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1241	172.002	-211.802	124.174	.144411	180.7	-.1444	-1.8E-03
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1252	169.213	-207.817	8.44754	2.74518	177.6	-2.74271	.116339
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1313	170.25	−209.613	66.7891	1.79833	177.3	−1.7963	.085393
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1355	170.964	-210.85	106.959	.707096	176.6	-.705854	.0418778
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1358	171.015	-210.939	109.828	.622059	176.5	-.620875	.0383623
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1365	171.134	-211.145	116.523	.421209	175.9	-.420139	.0300012
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J39	171.338	-211.498	128.	.0528147	164.2	-.0508077	.0144212
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1386	169.247	-215.728	10.3604	2.67585	177.9	-2.674	.0994545
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1390	169.315	-215.61	14.1861	2.64163	177.9	-2.63978	.0988245
1391	169.332	-215.581	15.1425	2.63243	177.9	-2.63058	.0986272
1392	169.349	-215.551	16.0989	2.62296	177.8	-2.62111	.0984151
1393	169.366	-215.522	17.0553	2.61322	177.8	-2.61137	.0981867
1394	169.383	-215.493	18.0117	2.60321	177.8	-2.60137	.0979442
1395	169.4	-215.463	18.9682	2.59293	177.8	-2.59109	.0976854
1396	169.417	-215.434	19.9246	2.58237	177.8	-2.58054	.0974124
1397	169.434	-215.404	20.881	2.57155	177.8	-2.56972	.0971239

1398	169.451	−215.375	21.8374	2.56045	177.8	−2.55862	.0968206
1399	169.468	−215.345	22.7938	2.54907	177.8	−2.54724	.0965024
1400	169.485	−215.316	23.7503	2.53742	177.8	−2.53559	.0961693
1401	169.502	−215.287	24.7067	2.52548	177.8	−2.52366	.0958221
1402	169.519	−215.257	25.6631	2.51328	177.8	−2.51147	.0954601
1403	169.536	−215.228	26.6195	2.50079	177.8	−2.49899	.0950832
1404	169.553	−215.198	27.5759	2.48804	177.8	−2.48624	.0946922
1405	169.57	−215.169	28.5324	2.475	177.8	−2.4732	.0942877
1406	169.587	−215.139	29.4888	2.46169	177.8	−2.4599	.0938684
1407	169.604	−215.11	30.4452	2.44811	177.8	−2.44633	.0934349
1408	169.621	−215.08	31.4016	2.43426	177.8	−2.43248	.0929873
1409	169.638	−215.051	32.358	2.42013	177.8	−2.41836	.0925263
1410	169.655	−215.022	33.3145	2.40573	177.8	−2.40397	.0920511
1411	169.672	−214.992	34.2709	2.39106	177.8	−2.38931	.0915618
1412	169.689	−214.963	35.2273	2.37613	177.8	−2.37438	.0910598
1413	169.706	−214.933	36.1837	2.36091	177.8	−2.35918	.0905436
1414	169.723	−214.904	37.1401	2.34544	177.8	−2.34371	.090014
1415	169.74	−214.874	38.0966	2.32971	177.8	−2.32799	.0894709
1416	169.757	−214.845	39.053	2.3137	177.8	−2.31199	.0889151
1417	169.774	−214.815	40.0094	2.29743	177.8	−2.29574	.0883452
1418	169.791	−214.786	40.9658	2.28091	177.8	−2.27922	.0877632
1419	169.808	−214.757	41.9222	2.26413	177.8	−2.26245	.0871679
1420	169.825	−214.727	42.8787	2.24709	177.8	−2.24542	.0865597
1421	169.842	−214.698	43.8351	2.2298	177.8	−2.22814	.0859389
1422	169.859	−214.668	44.7915	2.21225	177.8	−2.21061	.0853053
1423	169.876	−214.639	45.7479	2.19446	177.8	−2.19282	.0846598
1424	169.893	−214.609	46.7043	2.17641	177.8	−2.17479	.0840014
1425	169.91	−214.58	47.6607	2.15812	177.8	−2.15651	.0833304
1426	169.927	−214.551	48.6172	2.13959	177.8	−2.13799	.082648
1427	169.944	−214.521	49.5736	2.12081	177.8	−2.11923	.0819529
1428	169.961	−214.492	50.53	2.1018	177.8	−2.10023	.0812458
1429	169.978	−214.462	51.4864	2.08254	177.8	−2.08099	.0805274
1430	169.995	−214.433	52.4428	2.06305	177.8	−2.06151	.0797963
1431	170.012	−214.403	53.3993	2.04333	177.8	−2.0418	.0790545
1432	170.029	−214.374	54.3557	2.02337	177.8	−2.02186	.0783007
1433	170.046	−214.344	55.3121	2.0032	177.8	−2.0017	.0775357
1434	170.063	−214.315	56.2685	1.98279	177.8	−1.98131	.07676
1435	170.08	−214.286	57.2249	1.96217	177.8	−1.96069	.0759722
1436	170.097	−214.256	58.1814	1.94132	177.8	−1.93986	.0751739
1437	170.114	−214.227	59.1378	1.92025	177.8	−1.91881	.074365
1438	170.131	−214.197	60.0942	1.89897	177.8	−1.89755	.0735455
1439	170.148	−214.168	61.0506	1.87748	177.8	−1.87607	.0727146
1440	170.165	−214.138	62.007	1.85578	177.8	−1.85439	.0718739
1441	170.182	−214.109	62.9635	1.83387	177.8	−1.8325	.0710225
1442	170.199	−214.079	63.9199	1.81176	177.8	−1.8104	.0701607
1443	170.216	−214.05	64.8763	1.78945	177.8	−1.7881	.069289
1444	170.233	−214.021	65.8327	1.76693	177.8	−1.7656	.0684074
1445	170.25	−213.991	66.7891	1.74422	177.8	−1.74291	.0675159
1446	170.267	−213.962	67.7456	1.72132	177.8	−1.72003	.0666148
1447	170.284	−213.932	68.702	1.69823	177.8	−1.69696	.0657041
1448	170.301	−213.903	69.6584	1.67495	177.8	−1.67369	.064784
1449	170.318	−213.873	70.6148	1.65149	177.8	−1.65025	.0638546
1450	170.335	−213.844	71.5712	1.62784	177.8	−1.62663	.0629159
1451	170.352	−213.815	72.5277	1.60402	177.8	−1.60282	.0619684
1452	170.369	−213.785	73.4841	1.58003	177.8	−1.57885	.0610121
1453	170.386	−213.756	74.4405	1.55585	177.8	−1.55469	.060047
1454	170.403	−213.726	75.3969	1.53152	177.8	−1.53038	.0590733
1455	170.42	−213.697	76.3533	1.50702	177.8	−1.5059	.0580912
1456	170.437	−213.667	77.3098	1.48235	177.8	−1.48125	.0571009
1457	170.454	−213.638	78.2662	1.45752	177.8	−1.45644	.0561024

1458	170.471	−213.608	79.2226	1.43253	177.8	−1.43147	.0550959
1459	170.488	−213.579	80.179	1.4074	177.8	−1.40636	.0540816
1460	170.505	−213.55	81.1354	1.38211	177.8	−1.38109	.0530595
1461	170.522	−213.52	82.0919	1.35668	177.8	−1.35568	.05203
1462	170.539	−213.491	83.0483	1.33109	177.8	−1.33012	.050993
1463	170.556	−213.461	84.0047	1.30538	177.8	−1.30442	.0499488
1464	170.573	−213.432	84.9611	1.27952	177.8	−1.27858	.0488975
1465	170.59	−213.402	85.9175	1.25353	177.8	−1.25262	.0478393
1466	170.607	−213.373	86.874	1.2274	177.8	−1.22651	.0467743
1467	170.624	−213.343	87.8304	1.20116	177.8	−1.20029	.0457027
1468	170.641	−213.314	88.7868	1.17479	177.8	−1.17394	.0446247
1469	170.658	−213.285	89.7432	1.14829	177.8	−1.14746	.0435402
1470	170.675	−213.255	90.6996	1.12167	177.8	−1.12087	.0424497
1471	170.692	−213.226	91.6561	1.09495	177.8	−1.09417	.0413531
1472	170.709	−213.196	92.6125	1.06811	177.8	−1.06735	.0402506
1473	170.726	−213.167	93.5689	1.04116	177.8	−1.04042	.0391424
1474	170.743	−213.137	94.5253	1.0141	177.9	−1.01339	.0380286
1475	170.76	−213.108	95.4817	.986942	177.9	−.986251	.0369093
1476	170.777	−213.079	96.4382	.959688	177.9	−.95902	.0357847
1477	170.794	−213.049	97.3946	.932328	177.9	−.931684	.0346549
1478	170.811	−213.02	98.351	.904883	177.9	−.904262	.0335202
1479	170.828	−212.99	99.3074	.877339	177.9	−.876742	.0323805
1480	170.845	−212.961	100.264	.84971	177.9	−.849136	.0312361
1481	170.862	−212.931	101.22	.821997	177.9	−.821446	.030087
1482	170.879	−212.902	102.177	.794198	177.9	−.793671	.0289335
1483	170.896	−212.872	103.133	.766321	177.9	−.765818	.0277756
1484	170.913	−212.843	104.09	.738367	177.9	−.737887	.0266134
1485	170.93	−212.814	105.046	.710334	177.9	−.709878	.0254471
1486	170.947	−212.784	106.002	.682227	178.	−.681795	.0242768
1487	170.964	−212.755	106.959	.65405	178.	−.653642	.0231025
1488	170.981	−212.725	107.915	.625802	178.	−.625417	.0219244
1489	170.998	−212.696	108.872	.597485	178.	−.597125	.0207425
1490	171.015	−212.666	109.828	.5691	178.	−.568764	.0195569
1491	171.032	−212.637	110.784	.540648	178.1	−.540336	.0183676
1492	171.049	−212.608	111.741	.512129	178.1	−.511841	.0171746
1493	171.066	−212.578	112.697	.483541	178.1	−.483277	.015978
1494	171.083	−212.549	113.654	.454884	178.1	−.454643	.0147776
1495	171.1	−212.519	114.61	.426153	178.2	−.425937	.0135734
1496	171.117	−212.49	115.567	.397346	178.2	−.397154	.0123652
1497	171.134	−212.46	116.523	.368455	178.3	−.368287	.0111528
1498	171.151	−212.431	117.479	.339474	178.3	−.339328	9.94E−03
1499	171.168	−212.401	118.436	.31039	178.4	−.310268	8.71E−03
1500	171.185	−212.372	119.392	.281188	178.5	−.281088	7.49E−03
1501	171.202	−212.343	120.349	.251845	178.6	−.251767	6.25E−03
1502	171.219	−212.313	121.305	.222332	178.7	−.222275	5.01E−03
1503	171.236	−212.284	122.262	.192602	178.9	−.192566	3.76E−03
1504	171.253	−212.254	123.218	.162591	179.1	−.162572	2.49E−03
1505	171.27	−212.225	124.174	.132196	179.5	−.132191	1.21E−03
1506	171.287	−212.195	125.131	.101245	180.1	−.101245	−9.54E−05
1507	171.304	−212.166	126.087	.0694199	181.2	−.0694049	−1.44E−03
1508	171.321	−212.136	127.044	.0360284	184.5	−.0359151	−2.86E−03
J40	171.338	−212.107	128.	4.43E−03	276.9	5.32E−04	−4.4E−03
2J1	171.866	−211.802	128.	7.44E−03	293.6	2.98E−03	−6.82E−03
2J2	171.338	−211.498	128.	.0248776	342.	.0236581	−7.69E−03
2J1	171.338	−211.498	128.	.0279707	166.1	−.0271496	6.73E−03
2J2	171.338	−212.107	128.	8.74E−03	138.	−6.49E−03	5.85E−03
2J1	171.338	−212.107	128.	6.13E−03	166.3	−5.96E−03	1.46E−03
2J2	171.866	−211.802	128.	.0147208	2.3	.0147093	5.83E−04

APPENDIX D

DETUNE MODEL

```
ELECTRICAL DESCRIPTION – TOWER #1 DETUNE
Frequencies (MHz)
     frequency                 no. of  segment length (wavelengths)
 no. lowest       step         steps   minimum        maximum
 1   .55          0            1       1.03E-03       1.98E-03

Plane wave source
      zenith angle (deg)      =  90
         increment (deg)      =  0
         number of angles     =  1
      azimuth angle (deg)     =  0
         increment (deg)      =  0
         number of angles     =  1
      polarization angle (deg) = 0
      magnitude (v/m)         =  1

Lumped loads
            resistance    reactance     inductance  capacitance passive
load  node  (ohms)        (ohms)        (mH)        (uF)        circuit
 1    1     .01           0             .049        0           0

GEOMETRY - TOWER #1 DETUNE
Dimensions in meters
Environment: perfect ground


wire  caps X             Y             Z             radius      segs
 1    none 0             0             0             .0032       2
           0             0             1.1176
 2    none 6.096         6.096         1.1176        .0254       12
           -6.096        6.096         1.1176
 3    none -6.096        6.096         1.1176        .0254       12
           -6.096        -6.096        1.1176
 4    none -6.096        -6.096        1.1176        .0254       12
           6.096         -6.096        1.1176
 5    none 6.096         -6.096        1.1176        .0254       12
           6.096         6.096         1.1176
 6    none 0             0             1.1176        .0254       8
           6.096         6.096         1.1176
 7    none 0             0             1.1176        .0254       8
           -6.096        6.096         1.1176
 8    none 0             0             1.1176        .0254       8
           -6.096        -6.096        1.1176
 9    none 0             0             1.1176        .0254       8
           6.096         -6.096        1.1176
10    none 6.096         6.096         1.1176        .0254       132
           .2794         .2794         138.
11    none -6.096        6.096         1.1176        .0254       132
           -.2794        .2794         138.
12    none -6.096        -6.096        1.1176        .0254       132
           -.2794        -.2794        138.
13    none 6.096         -6.096        1.1176        .0254       132
           .2794         -.2794        138.
14    none .2794         .2794         138.          .0254       1
           -.2794        .2794         138.
15    none -.2794        .2794         138.          .0254       1
           -.2794        -.2794        138.
16    none -.2794        -.2794        138.          .0254       1
           .2794         -.2794        138.
17    none .2794         -.2794        138.          .0254       1
           .2794         .2794         138.
```

```
Number of wires        =  17
        current nodes  =  622

                          minimum                 maximum
Individual wires      wire    value          wire   value
segment length         1      .5588           6     1.07763
segment/radius ratio   14     22.             1     174.625
radius                 1      3.2E-03         2     .0254


PEAK CURRENTS - TOWER #1 DETUNE
Frequency   = .55 MHz
Plane wave zenith (deg)   =  90
Plane wave azimuth (deg) =  0
Polarization angle (deg) =  0
coordinates in meters
current                              mag      phase   real       imaginary
no.    X        Y        Z           (amps)   (deg)   (amps)     (amps)
GND    0        0        0           .975302  270.    6.78E-04   -.975302
 2     0        0        .5588       .972035  270.    6.76E-04   -.972035
J1     0        0        1.1176      .970923  270.    6.76E-04   -.970923
J2     6.096    6.096    1.1176      .0389507 256.3   -9.2E-03   -.0378497
 3     5.08     6.096    1.1176      .0344976 254.5   -9.2E-03   -.0332472
 4     4.064    6.096    1.1176      .0287271 251.3   -9.21E-03  -.0272098
 5     3.048    6.096    1.1176      .0226273 246.    -9.22E-03  -.0206631
 6     2.032    6.096    1.1176      .0166491 236.3   -9.23E-03  -.0138571
 7     1.016    6.096    1.1176      .0115394 216.8   -9.24E-03  -6.92E-03
 8     0        6.096    1.1176      9.24E-03 179.5   -9.24E-03  7.63E-05
 9     -1.016   6.096    1.1176      .0116386 142.6   -9.24E-03  7.07E-03
 10    -2.032   6.096    1.1176      .0167859 123.4   -9.25E-03  .0140096
 11    -3.048   6.096    1.1176      .0227773 114.    -9.25E-03  .0208155
 12    -4.064   6.096    1.1176      .0288825 108.7   -9.25E-03  .0273621
 13    -5.08    6.096    1.1176      .0346555 105.5   -9.25E-03  .0333994
J2     -6.096   6.096    1.1176      .0391087 103.7   -9.24E-03  .0380006
2J1    -6.096   6.096    1.1176      .0377364 270.    -9.57E-06  -.0377364
 15    -6.096   5.08     1.1176      .0331327 270.    -6.59E-06  -.0331327
 16    -6.096   4.064    1.1176      .0270954 270.    -3.25E-06  -.0270954
 17    -6.096   3.048    1.1176      .0205487 270.    1.31E-07   -.0205487
 18    -6.096   2.032    1.1176      .0137426 270.    3.49E-06   -.0137426
 19    -6.096   1.016    1.1176      6.8E-03  270.1   6.83E-06   -6.8E-03
 20    -6.096   0        1.1176      1.91E-04 87.     1.01E-05   1.91E-04
 21    -6.096   -1.016   1.1176      7.19E-03 89.9    1.35E-05   7.19E-03
 22    -6.096   -2.032   1.1176      .014124  89.9    1.68E-05   .014124
 23    -6.096   -3.048   1.1176      .02093   89.9    2.02E-05   .02093
 24    -6.096   -4.064   1.1176      .0274765 90.     2.35E-05   .0274765
 25    -6.096   -5.08    1.1176      .0335138 90.     2.69E-05   .0335138
J3     -6.096   -6.096   1.1176      .0381152 90.     2.98E-05   .0381152
2J1    -6.096   -6.096   1.1176      .0389449 283.7   9.25E-03   -.0378308
 27    -5.08    -6.096   1.1176      .0344909 285.6   9.25E-03   -.0332272
 28    -4.064   -6.096   1.1176      .0287209 288.8   9.25E-03   -.0271899
 29    -3.048   -6.096   1.1176      .0226218 294.1   9.25E-03   -.0206432
 30    -2.032   -6.096   1.1176      .0166449 303.8   9.25E-03   -.0138372
 31    -1.016   -6.096   1.1176      .0115382 323.3   9.25E-03   -6.9E-03
 32    0        -6.096   1.1176      9.25E-03 .6      9.24E-03   9.61E-05
 33    1.016    -6.096   1.1176      .0116471 37.5    9.24E-03   7.09E-03
 34    2.032    -6.096   1.1176      .0167951 56.6    9.23E-03   .0140294
 35    3.048    -6.096   1.1176      .0227864 66.1    9.23E-03   .0208353
 36    4.064    -6.096   1.1176      .0288915 71.4    9.22E-03   .0273819
 37    5.08     -6.096   1.1176      .0346645 74.6    9.21E-03   .0334192
J4     6.096    -6.096   1.1176      .0391191 76.4    9.2E-03    .038022
2J1    6.096    -6.096   1.1176      .0377901 270.1   5.95E-05   -.03779
```

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39    6.096      -5.08      1.1176   .0331864 270.1   5.07E-05   -.0331864
40    6.096      -4.064     1.1176   .0271491 270.1   3.96E-05   -.0271491
41    6.096      -3.048     1.1176   .0206024 270.1   2.78E-05   -.0206024
42    6.096      -2.032     1.1176   .0137964 270.1   1.58E-05   -.0137964
43    6.096      -1.016     1.1176   6.86E-03 270.    3.56E-06   -6.86E-03
44    6.096      0          1.1176   1.37E-04 93.6    -8.71E-06  1.37E-04
45    6.096      1.016      1.1176   7.13E-03 90.2    -2.1E-05   7.13E-03
46    6.096      2.032      1.1176   .0140701 90.1    -3.32E-05  .0140701
47    6.096      3.048      1.1176   .0208761 90.1    -4.52E-05  .020876
48    6.096      4.064      1.1176   .0274227 90.1    -5.7E-05   .0274226
49    6.096      5.08       1.1176   .0334598 90.1    -6.8E-05   .0334597
1J2   6.096      6.096      1.1176   .0380634 90.1    -7.69E-05  .0380633
2J1   0          0          1.1176   .242815  271.5   6.5E-03    -.242728
52    .762       .762       1.1176   .237892  271.6   6.5E-03    -.237803
53    1.524      1.524      1.1176   .231269  271.6   6.49E-03   -.231178
54    2.286      2.286      1.1176   .224339  271.7   6.49E-03   -.224245
55    3.048      3.048      1.1176   .217365  271.7   6.48E-03   -.217268
56    3.81       3.81       1.1176   .210513  271.8   6.47E-03   -.210413
57    4.572      4.572      1.1176   .203996  271.8   6.46E-03   -.203894
58    5.334      5.334      1.1176   .198197  271.9   6.45E-03   -.198092
1J2   6.096      6.096      1.1176   .194309  271.9   6.45E-03   -.194202
2J1   0          0          1.1176   .242762  268.5   -6.17E-03  -.242683
61    -.762      .762       1.1176   .237838  268.5   -6.18E-03  -.237758
62    -1.524     1.524      1.1176   .231216  268.5   -6.18E-03  -.231133
63    -2.286     2.286      1.1176   .224284  268.4   -6.18E-03  -.224199
64    -3.048     3.048      1.1176   .21731   268.4   -6.18E-03  -.217222
65    -3.81      3.81       1.1176   .210459  268.3   -6.18E-03  -.210368
66    -4.572     4.572      1.1176   .203942  268.3   -6.18E-03  -.203848
67    -5.334     5.334      1.1176   .198142  268.2   -6.18E-03  -.198046
2J2   -6.096     6.096      1.1176   .194253  268.2   -6.18E-03  -.194155
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70    -.762      -.762      1.1176   .23798   268.5   -6.17E-03  -.2379
71    -1.524     -1.524     1.1176   .231357  268.5   -6.18E-03  -.231275
72    -2.286     -2.286     1.1176   .224426  268.4   -6.18E-03  -.224341
73    -3.048     -3.048     1.1176   .217452  268.4   -6.18E-03  -.217364
74    -3.81      -3.81      1.1176   .2106    268.3   -6.18E-03  -.210509
75    -4.572     -4.572     1.1176   .204084  268.3   -6.18E-03  -.20399
76    -5.334     -5.334     1.1176   .198284  268.2   -6.18E-03  -.198188
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79    .762       -.762      1.1176   .237853  271.6   6.51E-03   -.237764
80    1.524      -1.524     1.1176   .231231  271.6   6.51E-03   -.231139
81    2.286      -2.286     1.1176   .224299  271.7   6.5E-03    -.224205
82    3.048      -3.048     1.1176   .217325  271.7   6.49E-03   -.217228
83    3.81       -3.81      1.1176   .210474  271.8   6.48E-03   -.210374
84    4.572      -4.572     1.1176   .203958  271.8   6.47E-03   -.203855
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88    6.05194    6.05194    2.15459  .114789  277.8   .0155563   -.11373
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90    5.96381    5.96381    4.22856  .105127  278.5   .0155481   -.103971
91    5.91974    5.91974    5.26555  .100528  278.9   .0155478   -.0993186
92    5.87567    5.87567    6.30254  .0961013 279.3   .01555     -.0948349
93    5.83161    5.83161    7.33953  .0918395 279.8   .0155546   -.0905127
94    5.78754    5.78754    8.37652  .0877331 280.2   .0155616   -.086342
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96    5.69941    5.69941    10.4505  .0799495 281.2   .0155824   -.0784163
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99    5.56722    5.56722    13.5615  .0692282 283.    .0156301   -.0674407
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103    5.39096    5.39096    17.7094    .0564718 286.2    .0157226    -.0542389
104    5.34689    5.34689    18.7464    .0535306 287.1    .0157506    -.051161
105    5.30283    5.30283    19.7834    .0506834 288.1    .0157806    -.0481641
106    5.25876    5.25876    20.8204    .0479285 289.3    .0158123    -.045245
107    5.2147     5.2147     21.8574    .0452646 290.5    .0158459    -.0424004
108    5.17063    5.17063    22.8944    .0426916 291.8    .0158813    -.0396277
109    5.12657    5.12657    23.9313    .0402095 293.3    .0159185    -.0369243
110    5.0825     5.0825     24.9683    .0378192 295.    .0159573    -.0342878
111    5.03844    5.03844    26.0053    .0355223 296.8    .0159978    -.031716
112    4.99437    4.99437    27.0423    .0333216 298.8    .01604      -.029207
113    4.95031    4.95031    28.0793    .0312207 301.    .0160838    -.026759
114    4.90624    4.90624    29.1163    .0292242 303.5    .0161291    -.0243702
115    4.86218    4.86218    30.1533    .0273383 306.3    .016176     -.0220391
116    4.81811    4.81811    31.1903    .0255707 309.4    .0162244    -.0197644
117    4.77405    4.77405    32.2272    .0239305 312.8    .0162743    -.0175447
118    4.72998    4.72998    33.2642    .0224283 316.7    .0163256    -.0153787
119    4.68592    4.68592    34.3012    .0210766 321.    .0163783    -.0132655
120    4.64185    4.64185    35.3382    .0198885 325.7    .0164324    -.0112039
121    4.59779    4.59779    36.3752    .0188775 330.9    .0164878    -9.19E-03
122    4.55372    4.55372    37.4122    .018056  336.4    .0165445    -7.23E-03
123    4.50966    4.50966    38.4492    .0174339 342.2    .0166025    -5.32E-03
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128    4.28933    4.28933    43.6341    .0172748 11.8    .01691      3.53E-03
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131    4.15713    4.15713    46.7451    .019013  25.9    .0171074    8.3E-03
132    4.11307    4.11307    47.7821    .0197729 29.7    .0171752    9.8E-03
133    4.069      4.069      48.819     .0205913 33.1    .0172438    .011254
134    4.02494    4.02494    49.856     .0214532 36.2    .0173133    .0126684
135    3.98087    3.98087    50.893     .0223455 38.9    .0173836    .0140403
136    3.93681    3.93681    51.93      .0232575 41.4    .0174547    .0153702
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139    3.80461    3.80461    55.041     .0260294 47.2    .0176725    .0191105
140    3.76055    3.76055    56.078     .0269448 48.8    .0177464    .0202753
141    3.71648    3.71648    57.1149    .0278483 50.2    .017821     .0213995
142    3.67242    3.67242    58.1519    .0287364 51.5    .0178961    .0224835
143    3.62835    3.62835    59.1889    .0296061 52.6    .0179717    .0235274
144    3.58429    3.58429    60.2259    .0304553 53.7    .0180478    .0245316
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146    3.49616    3.49616    62.2999    .0320842 55.4    .0182014    .0264217
147    3.45209    3.45209    63.3369    .032861  56.2    .0182788    .0273081
148    3.40803    3.40803    64.3739    .0336111 56.9    .0183566    .0281556
149    3.36396    3.36396    65.4109    .0343333 57.5    .0184346    .0289645
150    3.3199     3.3199     66.4478    .0350271 58.1    .0185129    .029735
151    3.27583    3.27583    67.4848    .0356917 58.6    .0185915    .0304673
152    3.23177    3.23177    68.5218    .0363265 59.1    .0186702    .0311615
153    3.1877     3.1877     69.5588    .0369312 59.5    .018749     .031818
154    3.14364    3.14364    70.5958    .0375052 59.9    .018828     .0324368
155    3.09957    3.09957    71.6328    .0380484 60.2    .0189071    .0330182
156    3.05551    3.05551    72.6698    .0385605 60.5    .0189862    .0335624
157    3.01144    3.01144    73.7068    .0390412 60.8    .0190653    .0340695
158    2.96737    2.96737    74.7437    .0394905 61.    .0191443    .0345398
159    2.92331    2.92331    75.7807    .0399082 61.2    .0192233    .0349733
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164	2.70298	2.70298	80.9657	.0415227	61.8	.0196157	.0365973
165	2.65892	2.65892	82.0027	.041751	61.9	.0196934	.0368146
166	2.61485	2.61485	83.0396	.0419479	61.9	.0197707	.0369966
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172	2.35046	2.35046	89.2616	.0424792	61.6	.0202253	.0373553
173	2.3064	2.3064	90.2986	.0424611	61.4	.0202991	.0372947
174	2.26233	2.26233	91.3356	.0424131	61.3	.0203722	.0372001
175	2.21827	2.21827	92.3725	.0423357	61.1	.0204447	.0370719
176	2.1742	2.1742	93.4095	.0422291	60.9	.0205164	.0369103
177	2.13014	2.13014	94.4465	.0420934	60.7	.0205873	.0367153
178	2.08607	2.08607	95.4835	.0419291	60.5	.0206574	.0364873
179	2.04201	2.04201	96.5205	.0417366	60.2	.0207267	.0362263
180	1.99794	1.99794	97.5575	.0415163	59.9	.0207951	.0359328
181	1.95388	1.95388	98.5945	.0412685	59.6	.0208625	.0356068
182	1.90981	1.90981	99.6315	.0409937	59.3	.020929	.0352485
183	1.86575	1.86575	100.668	.0406924	58.9	.0209945	.0348583
184	1.82168	1.82168	101.705	.040365	58.6	.0210589	.0344363
185	1.77762	1.77762	102.742	.0400122	58.1	.0211223	.0339827
186	1.73355	1.73355	103.779	.0396345	57.7	.0211845	.0334979
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189	1.60135	1.60135	106.89	.038358	56.2	.0213641	.0318577
190	1.55729	1.55729	107.927	.0378871	55.6	.0214214	.0312499
191	1.51322	1.51322	108.964	.037395	54.9	.0214775	.0306121
192	1.46916	1.46916	110.001	.0368822	54.3	.0215322	.0299443
193	1.42509	1.42509	111.038	.03635	53.6	.0215855	.029247
194	1.38103	1.38103	112.075	.0357991	52.8	.0216373	.0285202
195	1.33696	1.33696	113.112	.0352309	52.	.0216877	.0277644
196	1.2929	1.2929	114.149	.0346466	51.1	.0217366	.0269798
197	1.24883	1.24883	115.186	.0340475	50.2	.021784	.0261666
198	1.20477	1.20477	116.223	.033435	49.2	.0218298	.0253251
199	1.1607	1.1607	117.26	.0328107	48.2	.0218739	.0244555
200	1.11664	1.11664	118.297	.0321762	47.1	.0219164	.023558
201	1.07257	1.07257	119.334	.0315337	45.9	.0219572	.0226331
202	1.02851	1.02851	120.371	.0308852	44.6	.0219963	.0216808
203	.984442	.984442	121.408	.0302329	43.2	.0220336	.0207014
204	.940377	.940377	122.445	.0295795	41.7	.0220691	.0196952
205	.896312	.896312	123.482	.0289277	40.2	.0221027	.0186623
206	.852247	.852247	124.519	.0282806	38.5	.0221345	.0176028
207	.808182	.808182	125.556	.0276418	36.7	.0221643	.016517
208	.764117	.764117	126.593	.0270148	34.8	.0221921	.0154048
209	.720051	.720051	127.63	.0264037	32.7	.0222179	.0142661
210	.675986	.675986	128.667	.0258132	30.5	.0222416	.0131008
211	.631921	.631921	129.704	.0252481	28.1	.0222633	.0119084
212	.587856	.587856	130.741	.0247136	25.6	.0222828	.0106882
213	.543791	.543791	131.778	.0242154	22.9	.0223001	9.44E-03
214	.499726	.499726	132.815	.0237597	20.1	.0223151	8.16E-03
215	.455661	.455661	133.852	.0233529	17.	.0223279	6.84E-03
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2J1	−6.096	6.096	1.1176	.119416	262.6	−.0154099	−.118418
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240   -5.17063   5.17063   22.8944   .0427821  248.3   -.0158247   -.0397478
241   -5.12657   5.12657   23.9313   .0402981  246.8   -.015865    -.0370437
242   -5.0825    5.0825    24.9683   .0379056  245.2   -.0159069   -.0344065
243   -5.03844   5.03844   26.0053   .0356065  243.4   -.0159504   -.0318341
244   -4.99437   4.99437   27.0423   .0334032  241.4   -.0159955   -.0293244
245   -4.95031   4.95031   28.0793   .0312993  239.2   -.0160421   -.0268756
246   -4.90624   4.90624   29.1163   .0292996  236.7   -.0160902   -.0244861
247   -4.86218   4.86218   30.1533   .0274099  233.9   -.0161397   -.0221543
248   -4.81811   4.81811   31.1903   .025638   230.8   -.0161907   -.0198788
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251   -4.68592   4.68592   34.3012   .0211268  219.3   -.0163518   -.0133776
252   -4.64185   4.64185   35.3382   .0199315  214.6   -.0164082   -.0113153
253   -4.59779   4.59779   36.3752   .0189124  209.5   -.0164658   -9.3E-03
254   -4.55372   4.55372   37.4122   .0180821  204.    -.0165246   -7.34E-03
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256   -4.46559   4.46559   39.4862   .017023   192.1   -.0166458   -3.56E-03
257   -4.42153   4.42153   40.5231   .0167992  186.    -.0167082   -1.75E-03
258   -4.37746   4.37746   41.5601   .0167716  179.9   -.0167716   2.39E-05
259   -4.33339   4.33339   42.5971   .0169266  174.1   -.0168361   1.75E-03
260   -4.28933   4.28933   43.6341   .0172455  168.5   -.0169016   3.43E-03
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265   -4.069     4.069     48.819    .0205363  147.1   -.0172432   .0111539
266   -4.02494   4.02494   49.856    .0213954  144.    -.0173141   .0125692
267   -3.98087   3.98087   50.893    .0222855  141.3   -.0173857   .0139421
268   -3.93681   3.93681   51.93     .0231959  138.8   -.0174582   .0152729
269   -3.89274   3.89274   52.967    .0241173  136.6   -.0175313   .016562
270   -3.84868   3.84868   54.004    .0250425  134.7   -.0176051   .0178097
271   -3.80461   3.80461   55.041    .0259651  132.9   -.0176795   .0190163
272   -3.76055   3.76055   56.078    .0268801  131.3   -.0177545   .0201821
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286	−3.14364	3.14364	70.5958	.0374473	120.2	−.0188464	.0323591
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288	−3.05551	3.05551	72.6698	.0385043	119.6	−.0190053	.033487
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290	−2.96737	2.96737	74.7437	.0394365	119.1	−.0191642	.0344669
291	−2.92331	2.92331	75.7807	.0398553	118.9	−.0192435	.0349017
292	−2.87924	2.87924	76.8177	.0402425	118.7	−.0193226	.0353001
293	−2.83518	2.83518	77.8547	.0405981	118.5	−.0194015	.0356621
294	−2.79111	2.79111	78.8917	.0409221	118.4	−.0194802	.035988
295	−2.74705	2.74705	79.9287	.0412145	118.3	−.0195586	.036278
296	−2.70298	2.70298	80.9657	.0414753	118.3	−.0196367	.0365322
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306	−2.26233	2.26233	91.3356	.0423777	118.8	−.0203927	.0371484
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