



L3 SOTM Systems FCC 25.226 Compliance

L3 is seeking a permanent VSAT/blanket FCC license for:

- L3/Linkabit MPM-1000 Modem and Controller Assembly
- L3/Datron FSS-4180-LP Antenna Assembly
- Ku Band (14-14.5 GHz, 11.7-12.2 GHz)
- All CONUS operation
- Many US Satellites
- Mobile operation

1 COMPLIANCE STATEMENT

FCC 25.226 Section	Compliance Statement
(a)(1)(i)	will comply with PSD limits
(a)(1)(ii)(A)	will maintain a pointing error of less than or equal to 0.2°
(a)(1)(iii)(A)	will cease within 100 milliseconds if antenna exceeds 0.5°, shall not resume until angle is less equal to 0.2°
(a)(4)	contention protocol use will be reasonable
(a)(5)	will be a point of contact in the United States
(a)(6)	records will be recorded and made available
(a)(7)	will not claim protection from terrestrial
(a)(8)	will not claim protection from space stations
(a)(9)	will automatically cease transmitting within 100 milliseconds upon loss of reception of the satellite downlink signal



2 APPLICATION – 25.226 Section (b)

(b)(1) EIRP Spectral Density Limits - Compliant

(b)(1)(i) Tables

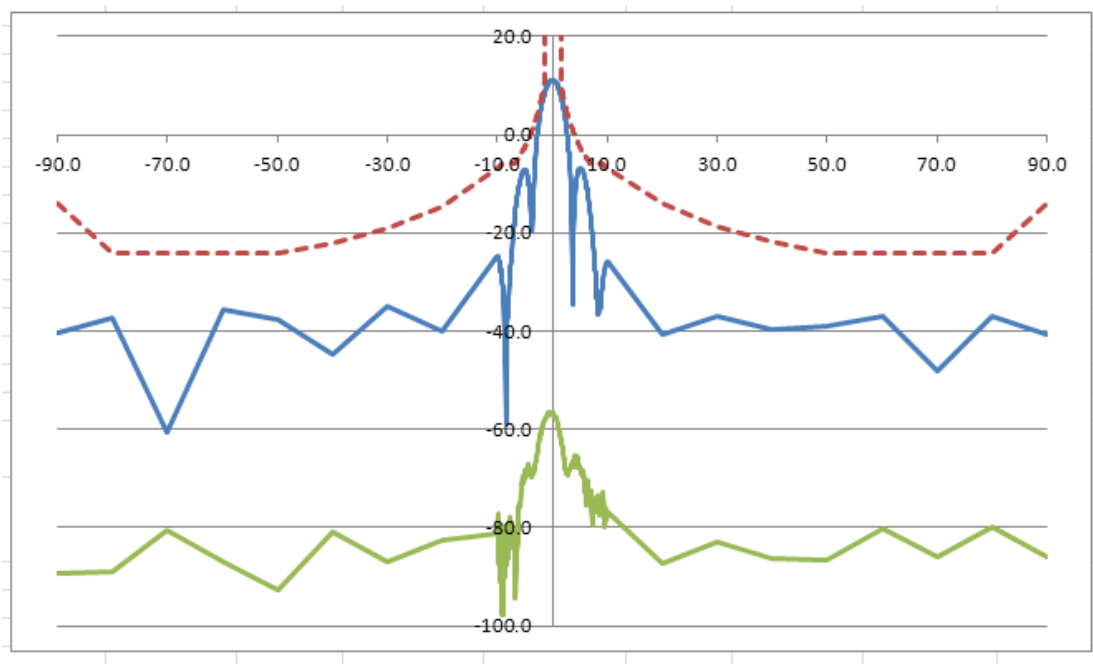
Tables are provided at the end of this document for:

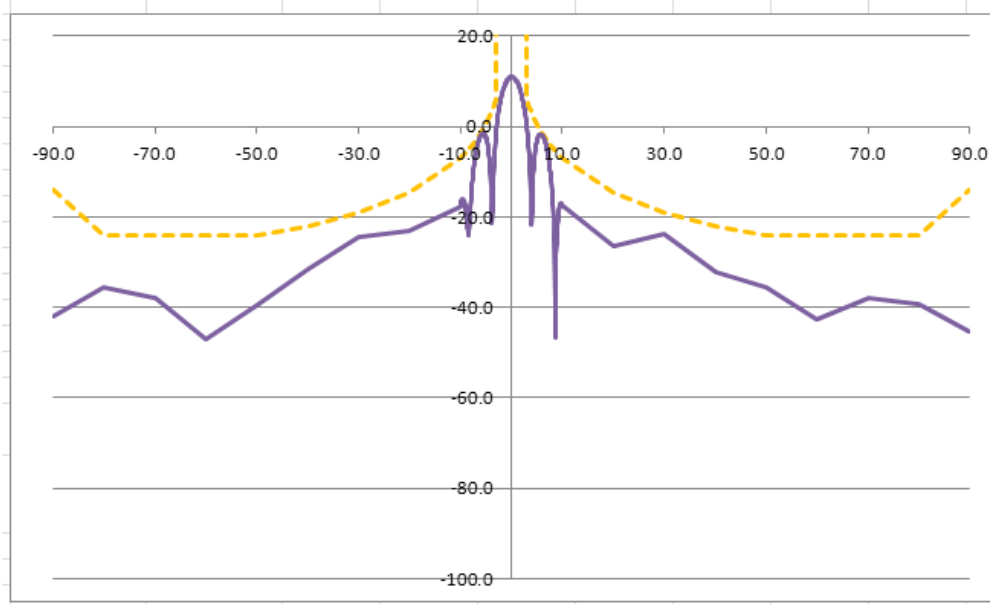
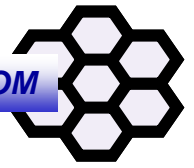
- off-axis EIRP level of the proposed earth station antenna in the **direction of the plane** of the GSO;
- the co-polarized EIRP in the **elevation** plane, that is, the plane perpendicular to the plane of the GSO;
- and **cross polarized** EIRP.

The following charts show:

- EIRP Density (dBW/4kHz) vs. angle (degrees)
- **BLUE** - off-axis EIRP density level of the proposed earth station antenna in the direction of the plane of the GSO;
- **PURPLE** - the co-polarized EIRP density in the elevation plane, that is, the plane perpendicular to the plane of the GSO;
- **GREEN** - cross polarized EIRP density
- **RED** - FCC25.226 EIRP density limits per (1)(i)(A) azimuth
- **ORANGE** - FCC25.226 EIRP density limits per (1)(i)(B) elevation

Charts for all frequencies and polarizations are included in this filing (TECH_BRIEF.pdf).





- Per (a)(1)(i)(A) N is equal to one.

(b)(1)(ii) 25.209 Compliance

- The antenna is not compliant with FCC25.209. Antenna gain plots are contained in the Technical Brief filed with this application (TECH_BRIEF.pdf).

(b)(1)(iii)

- The antenna system will maintain a pointing error of less than or equal to 0.2° between the orbital location of the target satellite and the axis of the main lobe of the VMES antenna
- The antenna tracking system will cease emissions within 100 milliseconds if the angle between the orbital location of the target satellite and the axis of the main lobe of the VMES antenna exceeds 0.5° .
- Analysis and performance data are contained in the Technical Brief filed with this application (TECH_BRIEF.pdf)

(b)(2) EIRP Spectral Density Limits – Excess Levels

- not applicable

(b)(3) Simultaneously Transmitting Co-Frequency

- not applicable
- Our system uses MF-TDMA, N is equal to one

(b)(4) Geographic Area(s)

- An exhibit is included with the application describing the geographic area(s) in which the VMESs will operate (see Filing_Notes.pdf)

(b)(5) Contention Protocol



- A contention protocol is used for initial signaling. The **use of the contention protocol is reasonable** and complies with the requirements of paragraph (a)(4). A detailed analysis of the contention protocol is on file with this application (see TECH_BRIEF.pdf filed with this application).

(b)(6) Point of Contact

- The point of contact referred to in paragraph (a)(5) of this section is on file with this application (see PointOFcontact.pdf)

(b)(7) Record keeping

- Records will be recorded and made available in compliance with (a)(6)

(b)(8) Radio Frequency Hazard

- A Radio Frequency Hazard analysis has been prepared and a copy is on file with this application (Rad_Hazard.pdf)

(c)(1) NASA Coordination

- A coordination agreement has been executed and a copy is on file with this application (3.5_Coordination_NASA ITC VMES Agreement.pdf)

(d)(1) NSF Coordination

- A coordination agreement has been executed and a copy is on file with this application (Coordination.pdf)



14.5 GHz

Azimuth

Profile

Horizontal

Polarization

Angle (Degrees)	Gain dBi	Off-Axis EIRP in Plane of GSO (Az) dBW	EIRP Density dBW/4kHz	25.226 EIRP Density dBW/4kHz	Margin dB
-90.0	-19.4	-14.7	-40.2	-14.0	26.2
-80.0	-16.6	-11.9	-37.4	-24.0	13.4
-70.0	-39.9	-35.2	-60.7	-24.0	36.7
-60.0	-14.7	-10.0	-35.5	-24.0	11.5
-50.0	-16.9	-12.2	-37.7	-24.0	13.7
-40.0	-23.8	-19.1	-44.6	-22.1	22.6
-30.0	-14.0	-9.3	-34.9	-18.9	15.9
-20.0	-19.1	-14.4	-39.9	-14.5	25.4
-10.0	-3.9	0.9	-24.7	-7.0	17.7
-9.9	-3.9	0.8	-24.7	-6.9	17.9
-9.8	-4.7	0.0	-25.5	-6.8	18.7
-9.7	-4.6	0.1	-25.4	-6.7	18.8
-9.6	-4.9	-0.1	-25.7	-6.6	19.1
-9.5	-5.4	-0.7	-26.2	-6.4	19.8
-9.4	-6.9	-2.2	-27.7	-6.3	21.4
-9.3	-6.7	-2.0	-27.6	-6.2	21.3
-9.2	-8.4	-3.7	-29.2	-6.0	23.2
-9.1	-9.5	-4.8	-30.4	-6.0	24.4
-9.0	-9.9	-5.2	-30.7	-6.0	24.7
-8.9	-11.7	-7.0	-32.6	-6.0	26.6
-8.8	-13.9	-9.2	-34.7	-6.0	28.7
-8.7	-19.4	-14.7	-40.2	-6.0	34.2
-8.6	-18.7	-14.0	-39.5	-6.0	33.5
-8.5	-25.5	-20.8	-46.4	-6.0	40.4
-8.4	-38.0	-33.3	-58.8	-6.0	52.8
-8.3	-25.5	-20.8	-46.4	-6.0	40.4
-8.2	-17.3	-12.6	-38.1	-6.0	32.1
-8.1	-16.2	-11.5	-37.1	-6.0	31.1
-8.0	-13.9	-9.2	-34.7	-6.0	28.7
-7.9	-12.0	-7.3	-32.9	-6.0	26.9
-7.8	-9.5	-4.8	-30.4	-6.0	24.4
-7.7	-8.0	-3.3	-28.8	-6.0	22.8
-7.6	-6.0	-1.3	-26.8	-6.0	20.8
-7.5	-5.0	-0.3	-25.9	-6.0	19.9
-7.4	-3.7	1.0	-24.6	-6.0	18.6
-7.3	-2.7	2.0	-23.5	-6.0	17.5
-7.2	-0.4	4.4	-21.2	-6.0	15.2
-7.1	1.3	6.0	-19.6	-6.0	13.6



-7.0	2.3	7.0	-18.6	-6.0	12.6
-6.9	2.5	7.2	-18.4	-6.0	12.4
-6.8	4.5	9.2	-16.4	-5.8	10.6
-6.7	5.7	10.4	-15.1	-5.7	9.5
-6.6	6.5	11.2	-14.4	-5.5	8.9
-6.5	7.1	11.8	-13.7	-5.3	8.4
-6.4	8.2	12.9	-12.6	-5.2	7.5
-6.3	9.0	13.7	-11.9	-5.0	6.9
-6.2	9.7	14.4	-11.2	-4.8	6.4
-6.1	10.2	14.9	-10.7	-4.6	6.0
-6.0	10.5	15.2	-10.4	-4.5	5.9
-5.9	11.5	16.2	-9.3	-4.3	5.0
-5.8	11.7	16.4	-9.1	-4.1	5.0
-5.7	12.4	17.1	-8.4	-3.9	4.5
-5.6	12.7	17.4	-8.2	-3.7	4.5
-5.5	13.0	17.7	-7.9	-3.5	4.4
-5.4	13.3	18.0	-7.5	-3.3	4.2
-5.3	13.5	18.2	-7.3	-3.1	4.2
-5.2	13.6	18.3	-7.2	-2.9	4.3
-5.1	13.7	18.4	-7.2	-2.7	4.5
-5.0	13.7	18.4	-7.1	-2.5	4.6
-4.9	13.7	18.4	-7.2	-2.3	4.9
-4.8	13.5	18.2	-7.3	-2.0	5.3
-4.7	13.2	17.9	-7.6	-1.8	5.8
-4.6	12.8	17.5	-8.0	-1.6	6.4
-4.5	12.3	17.0	-8.6	-1.3	7.2
-4.4	12.0	16.7	-8.9	-1.1	7.8
-4.3	10.5	15.2	-10.3	-0.8	9.5
-4.2	10.5	15.2	-10.3	-0.6	9.7
-4.1	8.0	12.7	-12.8	-0.3	12.5
-4.0	6.5	11.2	-14.3	-0.1	14.3
-3.9	4.1	8.8	-16.7	0.2	17.0
-3.8	1.3	6.0	-19.5	0.5	20.0
-3.7	1.1	5.8	-19.7	0.8	20.5
-3.6	4.2	8.9	-16.6	1.1	17.7
-3.5	7.5	12.2	-13.3	1.4	14.7
-3.4	9.7	14.4	-11.2	1.7	12.9
-3.3	12.1	16.8	-8.7	2.0	10.8
-3.2	14.0	18.7	-6.9	2.4	9.2
-3.1	16.1	20.8	-4.7	2.7	7.5
-3.0	17.5	22.2	-3.3	3.1	6.4
-2.9	19.0	23.7	-1.9	3.4	5.3
-2.8	20.2	24.9	-0.6	3.8	4.4
-2.7	21.2	25.9	0.4	4.2	3.8
-2.6	22.2	26.9	1.4	4.6	3.2
-2.5	22.2	26.9	1.4	5.1	3.7
-2.4	23.9	28.6	3.1	5.5	2.4
-2.3	24.7	29.4	3.8	6.0	2.1



-2.2	25.4	30.1	4.6	6.4	1.9
-2.1	26.0	30.7	5.2	6.9	1.8
-2.0	26.7	31.4	5.8	7.5	1.7
-1.9	27.2	31.9	6.4	8.0	1.7
-1.8	27.7	32.4	6.9	8.6	1.7
-1.7	28.3	33.0	7.4	9.2	1.8
-1.6	28.7	33.4	7.8	9.9	2.1
-1.5	28.9	33.6	8.1	10.6	2.5
-1.4	29.3	34.0	8.5	999.0	990.5
-1.3	29.8	34.5	8.9	999.0	990.1
-1.2	30.1	34.8	9.3	999.0	989.7
-1.1	30.4	35.1	9.6	999.0	989.4
-1.0	30.7	35.4	9.8	999.0	989.2
-0.9	30.8	35.5	9.9	999.0	989.1
-0.8	31.0	35.7	10.2	999.0	988.8
-0.7	31.2	35.9	10.4	999.0	988.6
-0.6	31.3	36.0	10.5	999.0	988.5
-0.5	31.6	36.3	10.8	999.0	988.2
-0.4	31.7	36.4	10.9	999.0	988.1
-0.3	31.7	36.4	10.9	999.0	988.1
-0.2	31.8	36.5	10.9	999.0	988.1
-0.1	31.9	36.6	11.1	999.0	987.9
0.0	31.9	36.6	11.1	999.0	987.9
0.1	31.9	36.6	11.1	999.0	987.9
0.2	31.8	36.5	11.0	999.0	988.0
0.3	31.8	36.5	10.9	999.0	988.1
0.4	31.7	36.4	10.9	999.0	988.1
0.5	31.7	36.4	10.8	999.0	988.2
0.6	31.5	36.2	10.7	999.0	988.3
0.7	31.4	36.1	10.6	999.0	988.4
0.8	31.2	35.9	10.4	999.0	988.6
0.9	31.1	35.8	10.3	999.0	988.7
1.0	30.8	35.5	9.9	999.0	989.1
1.1	30.5	35.2	9.6	999.0	989.4
1.2	30.2	34.9	9.4	999.0	989.6
1.3	30.0	34.7	9.1	999.0	989.9
1.4	29.6	34.3	8.8	999.0	990.2
1.5	29.1	33.8	8.3	999.0	990.7
1.6	28.7	33.4	7.8	10.6	2.8
1.7	28.3	33.0	7.4	9.9	2.5
1.8	27.9	32.6	7.1	9.2	2.2
1.9	27.4	32.1	6.6	8.6	2.1
2.0	26.8	31.5	5.9	8.0	2.1
2.1	26.2	30.9	5.4	7.5	2.1
2.2	25.6	30.3	4.8	6.9	2.2
2.3	24.9	29.6	4.1	6.4	2.4
2.4	24.2	28.9	3.3	6.0	2.6
2.5	23.3	28.0	2.5	5.5	3.0



2.6	22.4	27.1	1.6	5.1	3.5
2.7	21.4	26.1	0.6	4.6	4.1
2.8	20.3	25.0	-0.6	4.2	4.8
2.9	19.1	23.8	-1.7	3.8	5.6
3.0	17.8	22.5	-3.1	3.4	6.5
3.1	17.0	21.7	-3.8	3.1	6.9
3.2	15.4	20.1	-5.4	2.7	8.1
3.3	13.5	18.2	-7.3	2.4	9.7
3.4	11.2	15.9	-9.6	2.0	11.7
3.5	7.3	12.0	-13.5	1.7	15.2
3.6	2.6	7.3	-18.2	1.4	19.6
3.7	-6.4	-1.7	-27.2	1.1	28.3
3.8	-13.9	-9.2	-34.7	0.8	35.5
3.9	0.6	5.4	-20.2	0.5	20.7
4.0	4.7	9.4	-16.2	0.2	16.4
4.1	6.2	10.9	-14.7	-0.1	14.6
4.2	8.6	13.3	-12.2	-0.3	11.9
4.3	10.2	14.9	-10.6	-0.6	10.0
4.4	11.6	16.3	-9.2	-0.8	8.4
4.5	12.0	16.7	-8.9	-1.1	7.8
4.6	13.0	17.7	-7.9	-1.3	6.5
4.7	13.2	17.9	-7.6	-1.6	6.1
4.8	13.7	18.4	-7.2	-1.8	5.4
4.9	13.9	18.6	-6.9	-2.0	4.9
5.0	14.0	18.7	-6.9	-2.3	4.6
5.1	14.0	18.7	-6.8	-2.5	4.3
5.2	14.0	18.7	-6.9	-2.7	4.2
5.3	14.0	18.7	-6.9	-2.9	4.0
5.4	13.8	18.5	-7.1	-3.1	4.0
5.5	13.7	18.4	-7.2	-3.3	3.9
5.6	13.3	18.0	-7.5	-3.5	4.0
5.7	13.2	17.9	-7.7	-3.7	4.0
5.8	12.6	17.3	-8.2	-3.9	4.3
5.9	12.4	17.1	-8.4	-4.1	4.3
6.0	12.0	16.7	-8.9	-4.3	4.6
6.1	11.3	16.0	-9.5	-4.5	5.0
6.2	10.8	15.5	-10.0	-4.6	5.4
6.3	10.0	14.7	-10.9	-4.8	6.1
6.4	9.7	14.4	-11.1	-5.0	6.1
6.5	8.7	13.4	-12.2	-5.2	7.0
6.6	7.8	12.5	-13.0	-5.3	7.7
6.7	6.9	11.6	-13.9	-5.5	8.4
6.8	6.9	11.6	-13.9	-5.7	8.3
6.9	5.2	9.9	-15.6	-5.8	9.8
7.0	4.0	8.7	-16.9	-6.0	10.9
7.1	3.7	8.4	-17.2	-6.0	11.2
7.2	1.7	6.4	-19.2	-6.0	13.2
7.3	0.3	5.0	-20.6	-6.0	14.6



7.4	0.0	4.7	-20.9	-6.0	14.9
7.5	-1.9	2.9	-22.7	-6.0	16.7
7.6	-3.4	1.4	-24.2	-6.0	18.2
7.7	-4.6	0.1	-25.4	-6.0	19.4
7.8	-6.7	-2.0	-27.6	-6.0	21.6
7.9	-7.4	-2.7	-28.2	-6.0	22.2
8.0	-10.1	-5.4	-30.9	-6.0	24.9
8.1	-12.5	-7.8	-33.3	-6.0	27.3
8.2	-11.5	-6.8	-32.3	-6.0	26.3
8.3	-14.9	-10.2	-35.7	-6.0	29.7
8.4	-15.9	-11.2	-36.7	-6.0	30.7
8.5	-15.2	-10.5	-36.1	-6.0	30.1
8.6	-15.0	-10.3	-35.8	-6.0	29.8
8.7	-13.5	-8.8	-34.3	-6.0	28.3
8.8	-12.4	-7.7	-33.2	-6.0	27.2
8.9	-14.6	-9.9	-35.4	-6.0	29.4
9.0	-11.2	-6.5	-32.0	-6.0	26.0
9.1	-10.3	-5.6	-31.1	-6.0	25.1
9.2	-8.7	-4.0	-29.6	-6.0	23.6
9.3	-8.3	-3.6	-29.1	-6.1	23.0
9.4	-7.4	-2.7	-28.2	-6.2	22.0
9.5	-7.0	-2.3	-27.9	-6.3	21.5
9.6	-6.6	-1.9	-27.4	-6.4	21.0
9.7	-5.3	-0.6	-26.1	-6.6	19.6
9.8	-5.4	-0.6	-26.2	-6.7	19.5
9.9	-5.4	-0.7	-26.2	-6.8	19.5
10.0	-4.9	-0.2	-25.7	-6.9	18.9
20.0	-19.8	-15.1	-40.6	-14.0	26.7
30.0	-16.2	-11.5	-37.1	-18.6	18.5
40.0	-19.0	-14.3	-39.8	-21.8	18.0
50.0	-18.1	-13.4	-38.9	-24.0	14.9
60.0	-16.0	-11.3	-36.8	-24.0	12.8
70.0	-27.4	-22.7	-48.2	-24.0	24.2
80.0	-16.2	-11.5	-37.0	-24.0	13.0
90.0	-19.9	-15.2	-40.7	-14.0	26.7



14.5 GHz

Co-pol Horizontal	Elevation Polarization	Profile	min 0.3		
Angle (Degrees)	Gain dBi	Off- Axis EIRP in Plane of GSO dBW	EIRP Density dBW/4kHz	25.226 EIRP Density dBW/4kHz (1)(i)(B)	Margin dB
-90.0	-21.2	-16.5	-42.0	-14.0	28.0
-80.0	-14.8	-10.1	-35.6	-24.0	11.6
-70.0	-17.0	-12.3	-37.8	-24.0	13.8
-60.0	-26.3	-21.6	-47.2	-24.0	23.2
-50.0	-18.8	-14.1	-39.6	-24.0	15.6
-40.0	-10.5	-5.8	-31.3	-22.1	9.3
-30.0	-3.6	1.1	-24.5	-18.9	5.5
-20.0	-2.2	2.5	-23.0	-14.5	8.5
-10.0	3.3	8.0	-17.5	-7.0	10.5
-9.9	4.1	8.8	-16.7	-6.9	9.8
-9.8	4.4	9.1	-16.4	-6.8	9.6
-9.7	4.5	9.2	-16.3	-6.7	9.7
-9.6	4.6	9.3	-16.2	-6.6	9.7
-9.5	4.9	9.6	-16.0	-6.4	9.5
-9.4	4.6	9.3	-16.3	-6.3	10.0
-9.3	4.3	9.0	-16.5	-6.2	10.3
-9.2	4.2	8.9	-16.7	-6.1	10.6
-9.1	3.6	8.3	-17.2	-6.0	11.2
-9.0	2.9	7.6	-18.0	-5.9	12.1
-8.9	2.6	7.3	-18.2	-5.7	12.5
-8.8	0.8	5.5	-20.0	-5.6	14.4
-8.7	-0.3	4.4	-21.1	-5.5	15.6
-8.6	-1.5	3.2	-22.3	-5.4	17.0
-8.5	-2.4	2.3	-23.2	-5.2	18.0
-8.4	-3.3	1.4	-24.1	-5.1	19.0
-8.3	-2.3	2.4	-23.2	-5.0	18.2
-8.2	-0.7	4.0	-21.5	-4.8	16.7
-8.1	2.2	6.9	-18.7	-4.7	13.9
-8.0	3.1	7.8	-17.7	-4.6	13.1
-7.9	4.9	9.6	-15.9	-4.4	11.5
-7.8	6.6	11.3	-14.2	-4.3	9.9
-7.7	8.1	12.8	-12.7	-4.2	8.6
-7.6	9.1	13.8	-11.7	-4.0	7.7



-7.5	9.9	14.6	-10.9	-3.9	7.0
-7.4	11.4	16.1	-9.4	-3.7	5.7
-7.3	12.6	17.3	-8.3	-3.6	4.7
-7.2	13.2	17.9	-7.6	-3.4	4.2
-7.1	13.7	18.4	-7.2	-3.3	3.9
-7.0	14.8	19.5	-6.0	-3.1	2.9
-6.9	15.1	19.8	-5.7	-3.0	2.7
-6.8	15.9	20.6	-4.9	-2.8	2.1
-6.7	16.6	21.3	-4.3	-2.7	1.6
-6.6	16.8	21.5	-4.0	-2.5	1.5
-6.5	17.4	22.1	-3.4	-2.3	1.1
-6.4	17.8	22.5	-3.0	-2.2	0.9
-6.3	18.0	22.7	-2.8	-2.0	0.9
-6.2	18.4	23.1	-2.4	-1.8	0.6
-6.1	18.7	23.4	-2.2	-1.6	0.5
-6.0	18.9	23.6	-1.9	-1.5	0.5
-5.9	19.1	23.8	-1.8	-1.3	0.5
-5.8	19.2	23.9	-1.7	-1.1	0.6
-5.7	19.2	23.9	-1.6	-0.9	0.7
-5.6	19.3	24.0	-1.5	-0.7	0.8
-5.5	19.2	23.9	-1.6	-0.5	1.1
-5.4	19.3	24.0	-1.5	-0.3	1.2
-5.3	19.1	23.8	-1.7	-0.1	1.6
-5.2	19.1	23.8	-1.8	0.1	1.9
-5.1	18.7	23.4	-2.2	0.3	2.5
-5.0	18.5	23.2	-2.3	0.5	2.9
-4.9	18.3	23.0	-2.5	0.7	3.3
-4.8	17.9	22.6	-3.0	1.0	3.9
-4.7	17.2	21.9	-3.7	1.2	4.9
-4.6	16.6	21.3	-4.3	1.4	5.7
-4.5	15.6	20.3	-5.2	1.7	6.9
-4.4	14.7	19.4	-6.2	1.9	8.1
-4.3	13.7	18.4	-7.2	2.2	9.3
-4.2	11.7	16.4	-9.2	2.4	11.6
-4.1	10.7	15.4	-10.1	2.7	12.8
-4.0	7.6	12.3	-13.3	2.9	16.2
-3.9	3.6	8.3	-17.2	3.2	20.4
-3.8	-0.7	4.0	-21.5	3.5	25.0
-3.7	2.5	7.2	-18.3	3.8	22.1
-3.6	7.0	11.7	-13.8	4.1	17.9
-3.5	9.7	14.4	-11.2	4.4	15.6
-3.4	12.4	17.1	-8.5	4.7	13.2
-3.3	14.9	19.6	-5.9	5.0	10.9
-3.2	15.8	20.5	-5.0	5.4	10.4
-3.1	17.8	22.5	-3.0	5.7	8.7
-3.0	19.1	23.8	-1.7	6.1	7.8
-2.9	20.3	25.0	-0.5	999.0	999.5
-2.8	21.7	26.4	0.8	999.0	998.2



-2.7	22.6	27.3	1.8	999.0	997.2
-2.6	23.5	28.2	2.7	999.0	996.3
-2.5	24.3	29.0	3.5	999.0	995.5
-2.4	25.0	29.7	4.2	999.0	994.8
-2.3	25.4	30.1	4.5	999.0	994.5
-2.2	26.0	30.7	5.2	999.0	993.8
-2.1	26.6	31.3	5.7	999.0	993.3
-2.0	27.2	31.9	6.3	999.0	992.7
-1.9	27.7	32.4	6.8	999.0	992.2
-1.8	28.1	32.8	7.3	999.0	991.7
-1.7	28.6	33.3	7.7	999.0	991.3
-1.6	29.0	33.7	8.2	999.0	990.8
-1.5	29.2	33.9	8.4	999.0	990.6
-1.4	29.6	34.3	8.8	999.0	990.2
-1.3	29.8	34.5	9.0	999.0	990.0
-1.2	30.1	34.8	9.2	999.0	989.8
-1.1	30.4	35.1	9.5	999.0	989.5
-1.0	30.6	35.3	9.8	999.0	989.2
-0.9	30.7	35.4	9.9	999.0	989.1
-0.8	31.0	35.7	10.2	999.0	988.8
-0.7	31.1	35.8	10.2	999.0	988.8
-0.6	31.3	36.0	10.5	999.0	988.5
-0.5	31.5	36.2	10.7	999.0	988.3
-0.4	31.6	36.3	10.7	999.0	988.3
-0.3	31.6	36.3	10.8	999.0	988.2
-0.2	31.7	36.4	10.8	999.0	988.2
-0.1	31.7	36.4	10.9	999.0	988.1
0.0	31.7	36.4	10.9	999.0	988.1
0.1	31.7	36.4	10.9	999.0	988.1
0.2	31.8	36.5	11.0	999.0	988.0
0.3	31.7	36.4	10.9	999.0	988.1
0.4	31.7	36.4	10.8	999.0	988.2
0.5	31.6	36.3	10.8	999.0	988.2
0.6	31.5	36.2	10.7	999.0	988.3
0.7	31.4	36.1	10.6	999.0	988.4
0.8	31.3	36.0	10.5	999.0	988.5
0.9	31.2	35.9	10.4	999.0	988.6
1.0	30.9	35.6	10.1	999.0	988.9
1.1	30.7	35.4	9.9	999.0	989.1
1.2	30.6	35.3	9.8	999.0	989.2
1.3	30.4	35.1	9.5	999.0	989.5
1.4	30.1	34.8	9.3	999.0	989.7
1.5	30.0	34.7	9.2	999.0	989.8
1.6	29.5	34.2	8.7	999.0	990.3
1.7	29.1	33.8	8.3	999.0	990.7
1.8	28.7	33.4	7.9	999.0	991.1
1.9	28.4	33.1	7.5	999.0	991.5
2.0	27.9	32.6	7.1	999.0	991.9



2.1	27.4	32.1	6.6	999.0	992.4
2.2	26.9	31.6	6.1	999.0	992.9
2.3	26.4	31.1	5.5	999.0	993.5
2.4	25.8	30.5	5.0	999.0	994.0
2.5	25.1	29.8	4.3	999.0	994.7
2.6	24.8	29.5	4.0	999.0	995.0
2.7	24.1	28.8	3.2	999.0	995.8
2.8	23.2	27.9	2.4	999.0	996.6
2.9	22.4	27.1	1.5	999.0	997.5
3.0	21.4	26.1	0.5	999.0	998.5
3.1	20.3	25.0	-0.5	5.7	6.2
3.2	19.0	23.7	-1.8	5.4	7.2
3.3	17.9	22.6	-2.9	5.0	7.9
3.4	16.4	21.1	-4.4	4.7	9.1
3.5	14.6	19.3	-6.2	4.4	10.6
3.6	11.7	16.4	-9.1	4.1	13.2
3.7	10.4	15.1	-10.4	3.8	14.2
3.8	6.4	11.1	-14.5	3.5	18.0
3.9	0.2	4.9	-20.6	3.2	23.8
4.0	-1.0	3.7	-21.8	2.9	24.8
4.1	2.3	7.0	-18.5	2.7	21.2
4.2	7.0	11.7	-13.8	2.4	16.3
4.3	10.4	15.1	-10.5	2.2	12.6
4.4	11.5	16.2	-9.3	1.9	11.3
4.5	13.5	18.2	-7.3	1.7	9.0
4.6	14.2	18.9	-6.7	1.4	8.1
4.7	15.7	20.4	-5.2	1.2	6.4
4.8	15.7	20.4	-5.2	1.0	6.1
4.9	17.0	21.7	-3.8	0.7	4.6
5.0	17.4	22.1	-3.4	0.5	3.9
5.1	17.9	22.6	-3.0	0.3	3.3
5.2	18.2	22.9	-2.7	0.1	2.8
5.3	18.6	23.3	-2.3	-0.1	2.2
5.4	18.8	23.5	-2.0	-0.3	1.7
5.5	18.9	23.6	-2.0	-0.5	1.5
5.6	19.0	23.7	-1.8	-0.7	1.1
5.7	19.1	23.8	-1.7	-0.9	0.8
5.8	19.1	23.8	-1.7	-1.1	0.6
5.9	19.1	23.8	-1.8	-1.3	0.5
6.0	19.0	23.7	-1.8	-1.5	0.4
6.1	18.9	23.6	-2.0	-1.6	0.3
6.2	18.7	23.4	-2.1	-1.8	0.3
6.3	18.5	23.2	-2.3	-2.0	0.4
6.4	18.2	22.9	-2.6	-2.2	0.4
6.5	17.9	22.6	-2.9	-2.3	0.6
6.6	17.8	22.5	-3.0	-2.5	0.5
6.7	17.3	22.0	-3.5	-2.7	0.9
6.8	16.9	21.6	-4.0	-2.8	1.2



6.9	16.4	21.1	-4.5	-3.0	1.5
7.0	15.7	20.4	-5.1	-3.1	2.0
7.1	15.2	19.9	-5.7	-3.3	2.4
7.2	15.2	19.9	-5.7	-3.4	2.2
7.3	14.1	18.8	-6.8	-3.6	3.2
7.4	13.1	17.8	-7.7	-3.7	4.0
7.5	12.5	17.2	-8.3	-3.9	4.5
7.6	11.4	16.1	-9.5	-4.0	5.4
7.7	10.5	15.2	-10.3	-4.2	6.2
7.8	9.6	14.3	-11.3	-4.3	7.0
7.9	8.4	13.1	-12.4	-4.4	8.0
8.0	6.6	11.3	-14.2	-4.6	9.6
8.1	4.8	9.5	-16.0	-4.7	11.3
8.2	3.5	8.2	-17.3	-4.8	12.5
8.3	0.5	5.2	-20.3	-5.0	15.4
8.4	-2.8	1.9	-23.6	-5.1	18.5
8.5	-4.7	0.0	-25.5	-5.2	20.3
8.6	-18.3	-13.6	-39.1	-5.4	33.7
8.7	-26.0	-21.3	-46.8	-5.5	41.4
8.8	-7.5	-2.8	-28.3	-5.6	22.7
8.9	-5.1	-0.4	-25.9	-5.7	20.2
9.0	-2.1	2.6	-23.0	-5.9	17.1
9.1	-0.8	3.9	-21.7	-6.0	15.7
9.2	0.6	5.3	-20.3	-6.1	14.2
9.3	1.7	6.4	-19.1	-6.2	12.9
9.4	2.6	7.3	-18.3	-6.3	12.0
9.5	3.1	7.8	-17.8	-6.4	11.3
9.6	3.2	7.9	-17.6	-6.6	11.0
9.7	3.7	8.4	-17.2	-6.7	10.5
9.8	3.7	8.4	-17.2	-6.8	10.4
9.9	3.7	8.4	-17.2	-6.9	10.3
10.0	3.5	8.2	-17.3	-7.0	10.3
20.0	-5.7	-1.0	-26.5	-14.5	12.0
30.0	-2.9	1.8	-23.7	-18.9	4.8
40.0	-11.2	-6.5	-32.0	-22.1	10.0
50.0	-14.7	-10.0	-35.5	-24.0	11.5
60.0	-22.0	-17.3	-42.8	-24.0	18.8
70.0	-17.0	-12.3	-37.8	-24.0	13.8
80.0	-18.5	-13.8	-39.3	-24.0	15.3
90.0	-24.5	-19.8	-45.3	-14.0	31.3



14.5 GHz

Cross Pol

Vertical	Polarization				min
Angle (Degrees)	Gain dBi	Off-Axis EIRP in Plane of GSO (Az) dBW	EIRP Density dBW/4kHz	25.226 EIRP Density dBW/4kHz (1)(i)(C)	53.7
-90.0	-68.4	-63.7	-89.2	-16.0	73.2
-80.0	-68.1	-63.4	-88.9	-16.0	72.9
-70.0	-59.6	-54.9	-80.4	-16.0	64.4
-60.0	-66.1	-61.4	-86.9	-16.0	70.9
-50.0	-71.9	-67.2	-92.8	-16.0	76.8
-40.0	-59.9	-55.2	-80.8	-16.0	64.8
-30.0	-66.2	-61.5	-87.0	-16.0	71.0
-20.0	-61.8	-57.1	-82.6	-16.0	66.6
-10.0	-60.4	-55.7	-81.3	-16.0	65.3
-9.9	-56.3	-51.6	-77.1	-16.0	61.1
-9.8	-66.4	-61.7	-87.3	-16.0	71.3
-9.7	-58.2	-53.5	-79.0	-16.0	63.0
-9.6	-61.2	-56.5	-82.0	-16.0	66.0
-9.5	-70.0	-65.3	-90.8	-16.0	74.8
-9.4	-62.8	-58.1	-83.6	-16.0	67.6
-9.3	-62.8	-58.1	-83.6	-16.0	67.6
-9.2	-58.6	-53.9	-79.5	-16.0	63.5
-9.1	-77.0	-72.3	-97.8	-16.0	81.8
-9.0	-77.0	-72.3	-97.8	-16.0	81.8
-8.9	-59.4	-54.7	-80.3	-16.0	64.3
-8.8	-63.3	-58.6	-84.1	-16.0	68.1
-8.7	-69.3	-64.6	-90.1	-16.0	74.1
-8.6	-60.1	-55.4	-81.0	-16.0	65.0
-8.5	-67.1	-62.4	-87.9	-16.0	71.9
-8.4	-58.7	-54.0	-79.5	-16.0	63.5
-8.3	-66.6	-61.9	-87.5	-16.0	71.5
-8.2	-59.9	-55.2	-80.7	-16.0	64.7
-8.1	-59.3	-54.6	-80.1	-16.0	64.1
-8.0	-65.4	-60.7	-86.2	-16.0	70.2
-7.9	-59.8	-55.1	-80.6	-16.0	64.6
-7.8	-57.1	-52.4	-77.9	-16.0	61.9
-7.7	-60.0	-55.3	-80.8	-16.0	64.8
-7.6	-58.8	-54.1	-79.6	-16.0	63.6
-7.5	-59.4	-54.7	-80.2	-16.0	64.2
-7.4	-57.9	-53.2	-78.8	-16.0	62.8
-7.3	-58.8	-54.1	-79.6	-16.0	63.6
-7.2	-63.4	-58.7	-84.3	-16.0	68.3
-7.1	-61.9	-57.2	-82.7	-16.0	66.7



-7.0	-59.6	-54.9	-80.5	-16.0	64.5
-6.9	-62.6	-57.9	-83.5	-16.0	67.5
-6.8	-63.8	-59.1	-84.6	-15.8	68.8
-6.7	-73.6	-68.9	-94.4	-15.7	78.7
-6.6	-66.9	-62.2	-87.8	-15.5	72.3
-6.5	-61.4	-56.7	-82.3	-15.3	66.9
-6.4	-63.9	-59.2	-84.7	-15.2	69.6
-6.3	-62.1	-57.4	-82.9	-15.0	67.9
-6.2	-61.0	-56.3	-81.8	-14.8	67.0
-6.1	-54.9	-50.2	-75.8	-14.6	61.1
-6.0	-53.8	-49.1	-74.6	-14.5	60.2
-5.9	-55.1	-50.4	-75.9	-14.3	61.6
-5.8	-55.0	-50.3	-75.8	-14.1	61.7
-5.7	-51.3	-46.6	-72.1	-13.9	58.2
-5.6	-50.0	-45.3	-70.8	-13.7	57.1
-5.5	-50.4	-45.7	-71.2	-13.5	57.7
-5.4	-48.5	-43.8	-69.3	-13.3	56.0
-5.3	-50.3	-45.6	-71.1	-13.1	58.0
-5.2	-50.3	-45.6	-71.1	-12.9	58.2
-5.1	-47.9	-43.2	-68.8	-12.7	56.1
-5.0	-49.4	-44.7	-70.2	-12.5	57.7
-4.9	-47.7	-43.0	-68.5	-12.3	56.3
-4.8	-47.2	-42.5	-68.0	-12.0	56.0
-4.7	-47.9	-43.2	-68.8	-11.8	57.0
-4.6	-48.6	-43.9	-69.5	-11.6	57.9
-4.5	-46.6	-41.9	-67.5	-11.3	56.1
-4.4	-47.4	-42.7	-68.3	-11.1	57.2
-4.3	-46.3	-41.6	-67.1	-10.8	56.2
-4.2	-48.2	-43.5	-69.0	-10.6	58.4
-4.1	-47.3	-42.6	-68.1	-10.3	57.8
-4.0	-47.9	-43.2	-68.7	-10.1	58.7
-3.9	-47.9	-43.2	-68.8	-9.8	59.0
-3.8	-48.1	-43.4	-69.0	-9.5	59.5
-3.7	-48.8	-44.1	-69.6	-9.2	60.4
-3.6	-47.4	-42.7	-68.2	-8.9	59.3
-3.5	-47.3	-42.6	-68.1	-8.6	59.5
-3.4	-48.1	-43.4	-69.0	-8.3	60.7
-3.3	-47.3	-42.6	-68.1	-8.0	60.2
-3.2	-47.0	-42.3	-67.8	-7.6	60.2
-3.1	-46.1	-41.4	-67.0	-7.3	59.7
-3.0	-45.5	-40.8	-66.3	-6.9	59.4
-2.9	-45.5	-40.8	-66.3	-6.6	59.8
-2.8	-44.6	-39.9	-65.5	-6.2	59.3
-2.7	-43.4	-38.7	-64.3	-5.8	58.5
-2.6	-43.0	-38.3	-63.8	-5.4	58.5
-2.5	-42.1	-37.4	-63.0	-4.9	58.0
-2.4	-41.1	-36.4	-61.9	-4.5	57.4
-2.3	-40.3	-35.6	-61.1	-4.0	57.1



-2.2	-40.1	-35.4	-61.0	-3.6	57.4
-2.1	-39.9	-35.2	-60.8	-3.1	57.7
-2.0	-39.4	-34.7	-60.2	-2.5	57.7
-1.9	-38.9	-34.2	-59.7	-2.0	57.7
-1.8	-38.6	-33.9	-59.4	-1.4	58.0
-1.7	-38.0	-33.3	-58.8	999.0	1057.8
-1.6	-37.7	-33.0	-58.5	999.0	1057.5
-1.5	-37.5	-32.8	-58.3	999.0	1057.3
-1.4	-37.1	-32.4	-58.0	999.0	1057.0
-1.3	-36.9	-32.2	-57.8	999.0	1056.8
-1.2	-36.6	-31.9	-57.5	999.0	1056.5
-1.1	-36.4	-31.7	-57.3	999.0	1056.3
-1.0	-36.5	-31.8	-57.3	999.0	1056.3
-0.9	-36.3	-31.6	-57.1	999.0	1056.1
-0.8	-36.3	-31.6	-57.1	999.0	1056.1
-0.7	-35.8	-31.1	-56.6	999.0	1055.6
-0.6	-35.8	-31.1	-56.6	999.0	1055.6
-0.5	-35.8	-31.1	-56.6	999.0	1055.6
-0.4	-35.7	-31.0	-56.5	999.0	1055.5
-0.3	-35.9	-31.2	-56.8	999.0	1055.8
-0.2	-36.0	-31.3	-56.8	999.0	1055.8
-0.1	-35.7	-31.0	-56.5	999.0	1055.5
0.0	-36.0	-31.3	-56.8	999.0	1055.8
0.1	-35.8	-31.1	-56.6	999.0	1055.6
0.2	-36.3	-31.6	-57.1	999.0	1056.1
0.3	-36.3	-31.6	-57.1	999.0	1056.1
0.4	-36.3	-31.6	-57.1	999.0	1056.1
0.5	-36.6	-31.9	-57.5	999.0	1056.5
0.6	-36.6	-31.9	-57.5	999.0	1056.5
0.7	-37.2	-32.5	-58.0	999.0	1057.0
0.8	-37.1	-32.4	-58.0	999.0	1057.0
0.9	-38.2	-33.5	-59.0	999.0	1058.0
1.0	-38.2	-33.5	-59.0	999.0	1058.0
1.1	-38.4	-33.7	-59.2	999.0	1058.2
1.2	-39.0	-34.3	-59.8	999.0	1058.8
1.3	-39.4	-34.7	-60.2	999.0	1059.2
1.4	-40.3	-35.6	-61.1	999.0	1060.1
1.5	-40.4	-35.7	-61.2	999.0	1060.2
1.6	-41.1	-36.4	-62.0	999.0	1061.0
1.7	-41.9	-37.2	-62.8	999.0	1061.8
1.8	-42.1	-37.4	-62.9	999.0	1061.9
1.9	-42.9	-38.2	-63.7	-2.0	61.7
2.0	-43.1	-38.4	-63.9	-2.5	61.4
2.1	-44.1	-39.4	-65.0	-3.1	61.9
2.2	-45.9	-41.2	-66.8	-3.6	63.2
2.3	-45.1	-40.4	-66.0	-4.0	61.9
2.4	-47.1	-42.4	-68.0	-4.5	63.5
2.5	-47.4	-42.7	-68.3	-4.9	63.3



2.6	-47.7	-43.0	-68.5	-5.4	63.1
2.7	-48.3	-43.6	-69.1	-5.8	63.3
2.8	-47.8	-43.1	-68.6	-6.2	62.5
2.9	-48.7	-44.0	-69.5	-6.6	63.0
3.0	-47.5	-42.8	-68.3	-6.9	61.4
3.1	-47.3	-42.6	-68.1	-7.3	60.8
3.2	-47.5	-42.8	-68.3	-7.6	60.7
3.3	-47.1	-42.4	-67.9	-8.0	59.9
3.4	-46.8	-42.1	-67.6	-8.3	59.3
3.5	-46.8	-42.1	-67.6	-8.6	59.0
3.6	-46.2	-41.5	-67.0	-8.9	58.1
3.7	-47.0	-42.3	-67.8	-9.2	58.6
3.8	-46.9	-42.2	-67.8	-9.5	58.3
3.9	-45.4	-40.7	-66.2	-9.8	56.4
4.0	-45.9	-41.2	-66.8	-10.1	56.7
4.1	-44.6	-39.9	-65.4	-10.3	55.1
4.2	-45.3	-40.6	-66.1	-10.6	55.6
4.3	-45.6	-40.9	-66.4	-10.8	55.6
4.4	-46.9	-42.2	-67.7	-11.1	56.6
4.5	-44.6	-39.9	-65.5	-11.3	54.1
4.6	-45.7	-41.0	-66.5	-11.6	55.0
4.7	-44.7	-40.0	-65.5	-11.8	53.7
4.8	-46.6	-41.9	-67.4	-12.0	55.4
4.9	-46.6	-41.9	-67.5	-12.3	55.2
5.0	-47.0	-42.3	-67.8	-12.5	55.4
5.1	-47.3	-42.6	-68.1	-12.7	55.5
5.2	-47.3	-42.6	-68.1	-12.9	55.2
5.3	-47.6	-42.9	-68.5	-13.1	55.4
5.4	-48.2	-43.5	-69.0	-13.3	55.7
5.5	-47.6	-42.9	-68.4	-13.5	54.9
5.6	-48.9	-44.2	-69.8	-13.7	56.1
5.7	-48.0	-43.3	-68.8	-13.9	54.9
5.8	-49.2	-44.5	-70.0	-14.1	55.9
5.9	-49.1	-44.4	-70.0	-14.3	55.7
6.0	-51.9	-47.2	-72.8	-14.5	58.3
6.1	-50.4	-45.7	-71.3	-14.6	56.6
6.2	-50.3	-45.6	-71.1	-14.8	56.3
6.3	-54.6	-49.9	-75.4	-15.0	60.4
6.4	-52.0	-47.3	-72.8	-15.2	57.7
6.5	-49.5	-44.8	-70.3	-15.3	55.0
6.6	-51.6	-46.9	-72.5	-15.5	57.0
6.7	-53.4	-48.7	-74.2	-15.7	58.6
6.8	-52.5	-47.8	-73.3	-15.8	57.5
6.9	-52.7	-48.0	-73.5	-16.0	57.5
7.0	-52.4	-47.7	-73.3	-16.1	57.1
7.1	-51.6	-46.9	-72.4	-16.0	56.4
7.2	-55.2	-50.5	-76.0	-16.0	60.0
7.3	-58.8	-54.1	-79.6	-16.0	63.6



7.4	-55.8	-51.1	-76.6	-16.0	60.6
7.5	-55.9	-51.2	-76.8	-16.0	60.8
7.6	-53.1	-48.4	-74.0	-16.0	58.0
7.7	-54.8	-50.1	-75.6	-16.0	59.6
7.8	-55.8	-51.1	-76.6	-16.0	60.6
7.9	-52.9	-48.2	-73.7	-16.0	57.7
8.0	-53.9	-49.2	-74.8	-16.0	58.8
8.1	-54.9	-50.2	-75.8	-16.0	59.8
8.2	-54.5	-49.8	-75.3	-16.0	59.3
8.3	-52.7	-48.0	-73.5	-16.0	57.5
8.4	-55.8	-51.1	-76.6	-16.0	60.6
8.5	-55.8	-51.1	-76.6	-16.0	60.6
8.6	-56.5	-51.8	-77.3	-16.0	61.3
8.7	-54.7	-50.0	-75.5	-16.0	59.5
8.8	-56.1	-51.4	-77.0	-16.0	61.0
8.9	-54.3	-49.6	-75.1	-16.0	59.1
9.0	-54.3	-49.6	-75.1	-16.0	59.1
9.1	-51.9	-47.2	-72.7	-16.0	56.7
9.2	-54.2	-49.5	-75.0	-16.0	59.0
9.3	-53.0	-48.3	-73.8	-16.0	57.8
9.4	-55.3	-50.6	-76.1	-16.0	60.1
9.5	-57.2	-52.5	-78.0	-16.0	62.0
9.6	-59.1	-54.4	-79.9	-16.0	63.9
9.7	-56.2	-51.5	-77.0	-16.0	61.0
9.8	-55.4	-50.7	-76.3	-16.0	60.3
9.9	-57.8	-53.1	-78.6	-16.0	62.6
10.0	-55.8	-51.1	-76.6	-16.0	60.6
20.0	-66.4	-61.7	-87.3	-16.0	71.3
30.0	-61.9	-57.2	-82.8	-16.0	66.8
40.0	-65.3	-60.6	-86.1	-16.0	70.1
50.0	-65.8	-61.1	-86.6	-16.0	70.6
60.0	-59.5	-54.8	-80.3	-16.0	64.3
70.0	-65.0	-60.3	-85.8	-16.0	69.8
80.0	-59.1	-54.4	-80.0	-16.0	64.0
90.0	-65.1	-60.4	-86.0	-16.0	70.0