



312 File Number: **SATLOI2020052600054**

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## Filing Description

Question	Response
Description	Petition for Declaratory Ruling Granting Access to the U.S. Market for the Mangata Networks System

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## Satellite Information

Question	Response
Select Orbit Type	NGSO
Space Station or Satellite Network Name	Mangata Networks
Estimated Lifetime of Satellite(s) From Date of Launch	10 Years
Will the space station(s) operate on a Common Carrier basis?	No

## Operating Frequency Bands (19)

Nature of service	Description	Frequency Band(s)	Mode Type
Mobile-Satellite Service		50400.0 MHz -51400.0 MHz	Receive
Mobile-Satellite Service		39500.0 MHz -40000.0 MHz	Transmit
Mobile-Satellite Service		40000.0 MHz -42000.0 MHz	Transmit
Fixed-Satellite Service		37500.0 MHz -39500.0 MHz	Transmit
Fixed-Satellite Service		39500.0 MHz -40000.0 MHz	Transmit
Fixed-Satellite Service		40000.0 MHz -42000.0 MHz	Transmit
Fixed-Satellite Service		42000.0 MHz -42500.0 MHz	Transmit
Fixed-Satellite Service		50400.0 MHz -51400.0 MHz	Receive
Fixed-Satellite Service		18800.0 MHz -19300.0 MHz	Transmit
Fixed-Satellite Service		17700.0 MHz -18600.0 MHz	Transmit
Fixed-Satellite Service		19300.0 MHz -19700.0 MHz	Transmit
Mobile-Satellite Service		19700.0 MHz -20200.0 MHz	Transmit
Fixed-Satellite Service		27500.0 MHz -28600.0 MHz	Receive
Fixed-Satellite Service		28600.0 MHz -29100.0 MHz	Receive
Fixed-Satellite Service		29100.0 MHz -29500.0 MHz	Receive
Mobile-Satellite Service		29500.0 MHz -30000.0 MHz	Receive

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<b>Fixed-Satellite Service</b>	47200.0 MHz -50200.0 MHz	Receive
<b>Fixed-Satellite Service</b>	19700.0 MHz -20200.0 MHz	Transmit
<b>Fixed-Satellite Service</b>	29500.0 MHz -30000.0 MHz	Receive

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**Orbital  
Information For  
Non-  
Geostationary  
Satellites**

Question	Response
Total Number of Satellites in the active constellation	791
Orbit Epoch Date	01/01/2023
Celestial Reference Body	Earth

## Orbital Plane 1:

Question	Response
Number of Satellites in Plane	21
Inclination Angle	45.0 degrees
Right Ascension of Ascending Node	0.0 degrees
Argument of Perigee	0.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-45.0 degrees
Active Service Arc End Angle with respect to Ascending Node	45.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	342.9
2	325.7
3	308.6
4	291.4
5	274.3
6	257.1
7	240.0
8	222.9
9	205.7
10	188.6
11	171.4
12	154.3

<b>13</b>	137.1
<b>14</b>	120.0
<b>15</b>	102.9
<b>16</b>	85.7
<b>17</b>	68.6
<b>18</b>	51.4
<b>19</b>	34.3
<b>20</b>	17.1
<b>21</b>	0.0

**Orbital Plane 2:**

<b>Question</b>	<b>Response</b>
Number of Satellites in Plane	21
Inclination Angle	45.0 degrees
Right Ascension of Ascending Node	40.0 degrees
Argument of Perigee	40.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-45.0 degrees
Active Service Arc End Angle with respect to Ascending Node	45.0 degrees

**Mean Anomaly For Each Satellite**

<b>Satellite Number</b>	<b>Mean Anomaly (degrees) at the Orbit Epoch Date</b>
<b>1</b>	342.9
<b>2</b>	325.7

3	308.6
4	291.4
5	274.3
6	257.1
7	240.0
8	222.9
9	205.7
10	188.6
11	171.4
12	154.3
13	137.1
14	120.0
15	102.9
16	85.7
17	68.6
18	51.4
19	34.3
20	17.1
21	0.0

**Orbital Plane 3:**

Question	Response
Number of Satellites in Plane	21
Inclination Angle	45.0 degrees
Right Ascension of Ascending Node	80.0 degrees
Argument of Perigee	80.0 degrees
Orbital Period	14400.0 seconds



Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-45.0 degrees
Active Service Arc End Angle with respect to Ascending Node	45.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	342.9
2	325.7
3	308.6
4	291.4
5	274.3
6	257.1
7	240.0
8	222.9
9	205.7
10	188.6
11	171.4
12	154.3
13	137.1
14	120.0
15	102.9
16	85.7
17	68.6
18	51.4
19	34.3

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<b>20</b>	17.1
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<b>21</b>	0.0
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### Orbital Plane 4:

Question	Response
Number of Satellites in Plane	21
Inclination Angle	45.0 degrees
Right Ascension of Ascending Node	120.0 degrees
Argument of Perigee	120.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-45.0 degrees
Active Service Arc End Angle with respect to Ascending Node	45.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
<b>1</b>	342.9
<b>2</b>	325.7
<b>3</b>	308.6
<b>4</b>	291.4
<b>5</b>	274.3
<b>6</b>	257.1
<b>7</b>	240.0
<b>8</b>	222.9
<b>9</b>	205.7

<b>10</b>	188.6
<b>11</b>	171.4
<b>12</b>	154.3
<b>13</b>	137.1
<b>14</b>	120.0
<b>15</b>	102.9
<b>16</b>	85.7
<b>17</b>	68.6
<b>18</b>	51.4
<b>19</b>	34.3
<b>20</b>	17.1
<b>21</b>	0.0

**Orbital Plane 5:**

<b>Question</b>	<b>Response</b>
Number of Satellites in Plane	21
Inclination Angle	45.0 degrees
Right Ascension of Ascending Node	160.0 degrees
Argument of Perigee	160.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-45.0 degrees
Active Service Arc End Angle with respect to Ascending Node	45.0 degrees

**Mean Anomaly For Each Satellite**

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	342.9
2	325.7
3	308.6
4	291.4
5	274.3
6	257.1
7	240.0
8	222.9
9	205.7
10	188.6
11	171.4
12	154.3
13	137.1
14	120.0
15	102.9
16	85.7
17	68.6
18	51.4
19	34.3
20	17.1
21	0.0

**Orbital Plane 6:**

Question	Response
Number of Satellites in Plane	21
Inclination Angle	45.0 degrees

Right Ascension of Ascending Node	200.0 degrees
Argument of Perigee	200.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-45.0 degrees
Active Service Arc End Angle with respect to Ascending Node	45.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	342.9
2	325.7
3	308.6
4	291.4
5	274.3
6	257.1
7	240.0
8	222.9
9	205.7
10	188.6
11	171.4
12	154.3
13	137.1
14	120.0
15	102.9

16	85.7
17	68.6
18	51.4
19	34.3
20	17.1
21	0.0

**Orbital Plane 7:**

Question	Response
Number of Satellites in Plane	21
Inclination Angle	45.0 degrees
Right Ascension of Ascending Node	240.0 degrees
Argument of Perigee	240.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-45.0 degrees
Active Service Arc End Angle with respect to Ascending Node	45.0 degrees

**Mean Anomaly For Each Satellite**

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	342.9
2	325.7
3	308.6
4	291.4
5	274.3

<b>6</b>	257.1
<b>7</b>	240.0
<b>8</b>	222.9
<b>9</b>	205.7
<b>10</b>	188.6
<b>11</b>	171.4
<b>12</b>	154.3
<b>13</b>	137.1
<b>14</b>	120.0
<b>15</b>	102.9
<b>16</b>	85.7
<b>17</b>	68.6
<b>18</b>	51.4
<b>19</b>	34.3
<b>20</b>	17.1
<b>21</b>	0.0

**Orbital Plane 8:**

<b>Question</b>	<b>Response</b>
Number of Satellites in Plane	21
Inclination Angle	45.0 degrees
Right Ascension of Ascending Node	280.0 degrees
Argument of Perigee	280.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km

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Active Service Arc Begin Angle with respect to Ascending Node      -45.0 degrees

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Active Service Arc End Angle with respect to Ascending Node      45.0 degrees

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### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	342.9
2	325.7
3	308.6
4	291.4
5	274.3
6	257.1
7	240.0
8	222.9
9	205.7
10	188.6
11	171.4
12	154.3
13	137.1
14	120.0
15	102.9
16	85.7
17	68.6
18	51.4
19	34.3
20	17.1
21	0.0

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## Orbital Plane 9:

Question	Response
Number of Satellites in Plane	21
Inclination Angle	45.0 degrees
Right Ascension of Ascending Node	320.0 degrees
Argument of Perigee	320.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-45.0 degrees
Active Service Arc End Angle with respect to Ascending Node	45.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	342.9
2	325.7
3	308.6
4	291.4
5	274.3
6	257.1
7	240.0
8	222.9
9	205.7
10	188.6
11	171.4
12	154.3

<b>13</b>	137.1
<b>14</b>	120.0
<b>15</b>	102.9
<b>16</b>	85.7
<b>17</b>	68.6
<b>18</b>	51.4
<b>19</b>	34.3
<b>20</b>	17.1
<b>21</b>	0.0

**Orbital Plane 10:**

<b>Question</b>	<b>Response</b>
Number of Satellites in Plane	21
Inclination Angle	50.0 degrees
Right Ascension of Ascending Node	0.0 degrees
Argument of Perigee	0.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-50.0 degrees
Active Service Arc End Angle with respect to Ascending Node	50.0 degrees

**Mean Anomaly For Each Satellite**

<b>Satellite Number</b>	<b>Mean Anomaly (degrees) at the Orbit Epoch Date</b>
<b>1</b>	0.0
<b>2</b>	17.1

3	34.3
4	51.4
5	68.6
6	85.7
7	102.9
8	120.0
9	137.1
10	154.3
11	171.4
12	188.6
13	205.7
14	222.9
15	240.0
16	257.1
17	274.3
18	291.4
19	308.6
20	325.7
21	342.9

**Orbital Plane 11:**

Question	Response
Number of Satellites in Plane	21
Inclination Angle	50.0 degrees
Right Ascension of Ascending Node	40.0 degrees
Argument of Perigee	40.0 degrees
Orbital Period	14400.0 seconds

Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-50.0 degrees
Active Service Arc End Angle with respect to Ascending Node	50.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	342.9
2	325.7
3	308.6
4	291.4
5	274.3
6	257.1
7	240.0
8	222.9
9	205.7
10	188.6
11	171.4
12	154.3
13	137.1
14	120.0
15	102.9
16	85.7
17	68.6
18	51.4
19	34.3

<b>20</b>	17.1
<b>21</b>	0.0

## Orbital Plane 12:

Question	Response
Number of Satellites in Plane	21
Inclination Angle	50.0 degrees
Right Ascension of Ascending Node	80.0 degrees
Argument of Perigee	80.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-50.0 degrees
Active Service Arc End Angle with respect to Ascending Node	50.0 degrees

## Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
<b>1</b>	342.9
<b>2</b>	325.7
<b>3</b>	308.6
<b>4</b>	291.4
<b>5</b>	274.3
<b>6</b>	257.1
<b>7</b>	240.0
<b>8</b>	222.9
<b>9</b>	205.7

<b>10</b>	188.6
<b>11</b>	171.4
<b>12</b>	154.3
<b>13</b>	137.1
<b>14</b>	120.0
<b>15</b>	102.9
<b>16</b>	85.7
<b>17</b>	68.6
<b>18</b>	51.4
<b>19</b>	34.3
<b>20</b>	17.1
<b>21</b>	0.0

**Orbital Plane 13:**

<b>Question</b>	<b>Response</b>
Number of Satellites in Plane	21
Inclination Angle	50.0 degrees
Right Ascension of Ascending Node	120.0 degrees
Argument of Perigee	120.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-50.0 degrees
Active Service Arc End Angle with respect to Ascending Node	50.0 degrees

**Mean Anomaly For Each Satellite**

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	342.9
2	325.7
3	308.6
4	291.4
5	274.3
6	257.1
7	240.0
8	222.9
9	205.7
10	188.6
11	171.4
12	154.3
13	137.1
14	120.0
15	102.9
16	85.7
17	68.6
18	51.4
19	34.3
20	17.1
21	0.0

**Orbital Plane 14:**

Question	Response
Number of Satellites in Plane	21
Inclination Angle	50.0 degrees

Right Ascension of Ascending Node	160.0 degrees
Argument of Perigee	160.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-50.0 degrees
Active Service Arc End Angle with respect to Ascending Node	50.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	342.9
2	325.7
3	308.6
4	291.4
5	274.3
6	257.1
7	240.0
8	222.9
9	205.7
10	188.6
11	171.4
12	154.3
13	137.1
14	120.0
15	102.9



16	85.7
17	68.6
18	51.4
19	34.3
20	17.1
21	0.0

**Orbital Plane 15:**

Question	Response
Number of Satellites in Plane	21
Inclination Angle	50.0 degrees
Right Ascension of Ascending Node	200.0 degrees
Argument of Perigee	200.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-50.0 degrees
Active Service Arc End Angle with respect to Ascending Node	50.0 degrees

**Mean Anomaly For Each Satellite**

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	342.9
2	325.7
3	308.6
4	291.4
5	274.3

<b>6</b>	257.1
<b>7</b>	240.0
<b>8</b>	222.9
<b>9</b>	205.7
<b>10</b>	188.6
<b>11</b>	171.4
<b>12</b>	154.3
<b>13</b>	137.1
<b>14</b>	120.0
<b>15</b>	102.9
<b>16</b>	85.7
<b>17</b>	68.6
<b>18</b>	51.4
<b>19</b>	34.3
<b>20</b>	17.1
<b>21</b>	0.0

**Orbital Plane 16:**

<b>Question</b>	<b>Response</b>
Number of Satellites in Plane	21
Inclination Angle	50.0 degrees
Right Ascension of Ascending Node	240.0 degrees
Argument of Perigee	240.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km

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Active Service Arc Begin Angle with respect to Ascending Node      -50.0 degrees

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Active Service Arc End Angle with respect to Ascending Node      50.0 degrees

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### **Mean Anomaly For Each Satellite**

<b>Satellite Number</b>	<b>Mean Anomaly (degrees) at the Orbit Epoch Date</b>
1	342.9
2	325.7
3	308.6
4	291.4
5	274.3
6	257.1
7	240.0
8	222.9
9	205.7
10	188.6
11	171.4
12	154.3
13	137.1
14	120.0
15	102.9
16	85.7
17	68.6
18	51.4
19	34.3
20	17.1
21	0.0

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## Orbital Plane 17:

Question	Response
Number of Satellites in Plane	21
Inclination Angle	50.0 degrees
Right Ascension of Ascending Node	280.0 degrees
Argument of Perigee	280.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-50.0 degrees
Active Service Arc End Angle with respect to Ascending Node	50.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	342.9
2	325.7
3	308.6
4	291.4
5	274.3
6	257.1
7	240.0
8	222.9
9	205.7
10	188.6
11	171.4
12	154.3

<b>13</b>	137.1
<b>14</b>	120.0
<b>15</b>	102.9
<b>16</b>	85.7
<b>17</b>	68.6
<b>18</b>	51.4
<b>19</b>	34.3
<b>20</b>	17.1
<b>21</b>	0.0

**Orbital Plane 18:**

<b>Question</b>	<b>Response</b>
Number of Satellites in Plane	21
Inclination Angle	50.0 degrees
Right Ascension of Ascending Node	320.0 degrees
Argument of Perigee	320.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-50.0 degrees
Active Service Arc End Angle with respect to Ascending Node	50.0 degrees

**Mean Anomaly For Each Satellite**

<b>Satellite Number</b>	<b>Mean Anomaly (degrees) at the Orbit Epoch Date</b>
<b>1</b>	342.9
<b>2</b>	325.7

3	308.6
4	291.4
5	274.3
6	257.1
7	240.0
8	222.9
9	205.7
10	188.6
11	171.4
12	154.3
13	137.1
14	120.0
15	102.9
16	85.7
17	68.6
18	51.4
19	34.3
20	17.1
21	0.0

**Orbital Plane 19:**

Question	Response
Number of Satellites in Plane	21
Inclination Angle	52.5 degrees
Right Ascension of Ascending Node	0.0 degrees
Argument of Perigee	0.0 degrees
Orbital Period	14400.0 seconds

Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-52.5 degrees
Active Service Arc End Angle with respect to Ascending Node	52.5 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	342.9
2	325.7
3	308.6
4	291.4
5	274.3
6	257.1
7	240.0
8	222.9
9	205.7
10	188.6
11	171.4
12	154.3
13	137.1
14	120.0
15	102.9
16	85.7
17	68.6
18	51.4
19	34.3

<b>20</b>	17.1
<b>21</b>	0.0

## Orbital Plane 20:

Question	Response
Number of Satellites in Plane	21
Inclination Angle	52.5 degrees
Right Ascension of Ascending Node	40.0 degrees
Argument of Perigee	40.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-52.5 degrees
Active Service Arc End Angle with respect to Ascending Node	52.5 degrees

## Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
<b>1</b>	342.9
<b>2</b>	325.7
<b>3</b>	308.6
<b>4</b>	291.4
<b>5</b>	274.3
<b>6</b>	257.1
<b>7</b>	240.0
<b>8</b>	222.9
<b>9</b>	205.7



<b>10</b>	188.6
<b>11</b>	171.4
<b>12</b>	154.3
<b>13</b>	137.1
<b>14</b>	120.0
<b>15</b>	102.9
<b>16</b>	85.7
<b>17</b>	68.6
<b>18</b>	51.4
<b>19</b>	34.3
<b>20</b>	17.1
<b>21</b>	0.0

**Orbital Plane 21:**

<b>Question</b>	<b>Response</b>
Number of Satellites in Plane	21
Inclination Angle	52.5 degrees
Right Ascension of Ascending Node	80.0 degrees
Argument of Perigee	80.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-52.5 degrees
Active Service Arc End Angle with respect to Ascending Node	52.5 degrees

**Mean Anomaly For Each Satellite**

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	342.9
2	325.7
3	308.6
4	291.4
5	274.3
6	257.1
7	240.0
8	222.9
9	205.7
10	188.6
11	171.4
12	154.3
13	137.1
14	120.0
15	102.9
16	85.7
17	68.6
18	51.4
19	34.3
20	17.1
21	0.0

**Orbital Plane 22:**

Question	Response
Number of Satellites in Plane	21
Inclination Angle	52.5 degrees

Right Ascension of Ascending Node	120.0 degrees
Argument of Perigee	120.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-52.5 degrees
Active Service Arc End Angle with respect to Ascending Node	52.5 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	342.9
2	325.7
3	308.6
4	291.4
5	274.3
6	257.1
7	240.0
8	222.9
9	205.7
10	188.6
11	171.4
12	154.3
13	137.1
14	120.0
15	102.9

16	85.7
17	68.6
18	51.4
19	34.3
20	17.1
21	0.0

**Orbital Plane 23:**

Question	Response
Number of Satellites in Plane	21
Inclination Angle	52.5 degrees
Right Ascension of Ascending Node	160.0 degrees
Argument of Perigee	160.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-52.5 degrees
Active Service Arc End Angle with respect to Ascending Node	52.5 degrees

**Mean Anomaly For Each Satellite**

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	342.9
2	325.7
3	308.6
4	291.4
5	274.3

6	257.1
7	240.0
8	222.9
9	205.7
10	188.6
11	171.4
12	154.3
13	137.1
14	120.0
15	102.9
16	85.7
17	68.6
18	51.4
19	34.3
20	17.1
21	0.0

**Orbital Plane 24:**

Question	Response
Number of Satellites in Plane	21
Inclination Angle	52.5 degrees
Right Ascension of Ascending Node	200.0 degrees
Argument of Perigee	200.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km

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Active Service Arc Begin Angle with respect to Ascending Node      -52.5 degrees

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Active Service Arc End Angle with respect to Ascending Node      52.5 degrees

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### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	342.9
2	325.7
3	308.6
4	291.4
5	274.3
6	257.1
7	240.0
8	222.9
9	205.7
10	188.6
11	171.4
12	154.3
13	137.1
14	120.0
15	102.9
16	85.7
17	68.6
18	51.4
19	34.3
20	17.1
21	0.0

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## Orbital Plane 25:

Question	Response
Number of Satellites in Plane	21
Inclination Angle	52.5 degrees
Right Ascension of Ascending Node	240.0 degrees
Argument of Perigee	240.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-52.5 degrees
Active Service Arc End Angle with respect to Ascending Node	52.5 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	342.9
2	325.7
3	308.6
4	291.4
5	274.3
6	257.1
7	240.0
8	222.9
9	205.7
10	188.6
11	171.4
12	154.3

<b>13</b>	137.1
<b>14</b>	120.0
<b>15</b>	102.9
<b>16</b>	85.7
<b>17</b>	68.6
<b>18</b>	51.4
<b>19</b>	34.3
<b>20</b>	17.1
<b>21</b>	0.0

**Orbital Plane 26:**

<b>Question</b>	<b>Response</b>
Number of Satellites in Plane	21
Inclination Angle	52.5 degrees
Right Ascension of Ascending Node	280.0 degrees
Argument of Perigee	280.0 degrees
Orbital Period	14400.0 seconds
Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-52.5 degrees
Active Service Arc End Angle with respect to Ascending Node	52.5 degrees

**Mean Anomaly For Each Satellite**

<b>Satellite Number</b>	<b>Mean Anomaly (degrees) at the Orbit Epoch Date</b>
<b>1</b>	342.9
<b>2</b>	325.7



3	308.6
4	291.4
5	274.3
6	257.1
7	240.0
8	222.9
9	205.7
10	188.6
11	171.4
12	154.3
13	137.1
14	120.0
15	102.9
16	85.7
17	68.6
18	51.4
19	34.3
20	17.1
21	0.0

**Orbital Plane 27:**

Question	Response
Number of Satellites in Plane	21
Inclination Angle	52.5 degrees
Right Ascension of Ascending Node	320.0 degrees
Argument of Perigee	320.0 degrees
Orbital Period	14400.0 seconds

Apogee	6400.0 km
Perigee	6400.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-52.5 degrees
Active Service Arc End Angle with respect to Ascending Node	52.5 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	17.1
3	34.3
4	51.4
5	68.6
6	85.7
7	102.9
8	342.9
9	325.7
10	308.6
11	291.4
12	274.3
13	257.1
14	240.0
15	222.9
16	205.7
17	188.6
18	171.4
19	154.3

<b>20</b>	137.1
<b>21</b>	120.0

**Orbital Plane 28:**

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	0.0 degrees
Argument of Perigee	270.0 degrees
Orbital Period	14400.0 seconds
Apogee	11585.0 km
Perigee	1215.0 km
Active Service Arc Begin Angle with respect to Ascending Node	0.0 degrees
Active Service Arc End Angle with respect to Ascending Node	63.4 degrees

**Mean Anomaly For Each Satellite**

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
<b>1</b>	0.0
<b>2</b>	51.0
<b>3</b>	103.0
<b>4</b>	154.0
<b>5</b>	206.0
<b>6</b>	257.0
<b>7</b>	309.0

**Orbital Plane 29:**

Question	Response
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Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	90.0 degrees
Argument of Perigee	270.0 degrees
Orbital Period	14400.0 seconds
Apogee	11585.0 km
Perigee	1215.0 km
Active Service Arc Begin Angle with respect to Ascending Node	0.0 degrees
Active Service Arc End Angle with respect to Ascending Node	63.4 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0
4	154.0
5	206.0
6	257.0
7	309.0

### Orbital Plane 30:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	180.0 degrees
Argument of Perigee	270.0 degrees

Orbital Period	14400.0 seconds
Apogee	11585.0 km
Perigee	1215.0 km
Active Service Arc Begin Angle with respect to Ascending Node	0.0 degrees
Active Service Arc End Angle with respect to Ascending Node	63.4 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0
4	309.0
5	257.0
6	206.0
7	154.0

### Orbital Plane 31:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	270.0 degrees
Argument of Perigee	270.0 degrees
Orbital Period	14400.0 seconds
Apogee	11585.0 km
Perigee	1215.0 km

Active Service Arc Begin Angle with respect to Ascending Node	0.0 degrees
Active Service Arc End Angle with respect to Ascending Node	63.4 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	309.0
2	257.0
3	206.0
4	154.0
5	103.0
6	51.0
7	0.0

### Orbital Plane 32:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	0.0 degrees
Argument of Perigee	90.0 degrees
Orbital Period	14400.0 seconds
Apogee	11585.0 km
Perigee	1215.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-63.4 degrees
Active Service Arc End Angle with respect to Ascending Node	0.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0
4	154.0
5	206.0
6	257.0
7	309.0

### Orbital Plane 33:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	90.0 degrees
Argument of Perigee	90.0 degrees
Orbital Period	14400.0 seconds
Apogee	11585.0 km
Perigee	1215.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-63.4 degrees
Active Service Arc End Angle with respect to Ascending Node	0.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0

4	154.0
5	206.0
6	257.0
7	309.0

### Orbital Plane 34:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	180.0 degrees
Argument of Perigee	90.0 degrees
Orbital Period	14400.0 seconds
Apogee	11585.0 km
Perigee	1215.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-63.4 degrees
Active Service Arc End Angle with respect to Ascending Node	0.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0
4	154.0
5	206.0
6	257.0
7	309.0



## Orbital Plane 35:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	270.0 degrees
Argument of Perigee	90.0 degrees
Orbital Period	14400.0 seconds
Apogee	11585.0 km
Perigee	1215.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-63.4 degrees
Active Service Arc End Angle with respect to Ascending Node	0.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0
4	154.0
5	206.0
6	257.0
7	309.0

## Orbital Plane 36:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	0.0 degrees

Argument of Perigee	270.0 degrees
Orbital Period	14400.0 seconds
Apogee	11024.0 km
Perigee	1776.0 km
Active Service Arc Begin Angle with respect to Ascending Node	0.0 degrees
Active Service Arc End Angle with respect to Ascending Node	63.4 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	309.0
2	257.0
3	206.0
4	154.0
5	103.0
6	51.0
7	0.0

### Orbital Plane 37:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	90.0 degrees
Argument of Perigee	270.0 degrees
Orbital Period	14400.0 seconds
Apogee	11024.0 km
Perigee	1776.0 km

Active Service Arc Begin Angle with respect to Ascending Node	0.0 degrees
Active Service Arc End Angle with respect to Ascending Node	63.4 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	309.0
2	257.0
3	206.0
4	154.0
5	103.0
6	51.0
7	0.0

### Orbital Plane 38:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	180.0 degrees
Argument of Perigee	270.0 degrees
Orbital Period	14400.0 seconds
Apogee	11024.0 km
Perigee	1776.0 km
Active Service Arc Begin Angle with respect to Ascending Node	0.0 degrees
Active Service Arc End Angle with respect to Ascending Node	63.4 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	309.0
2	0.0
3	51.0
4	103.0
5	154.0
6	206.0
7	257.0

### Orbital Plane 39:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	270.0 degrees
Argument of Perigee	270.0 degrees
Orbital Period	14400.0 seconds
Apogee	11024.0 km
Perigee	1776.0 km
Active Service Arc Begin Angle with respect to Ascending Node	0.0 degrees
Active Service Arc End Angle with respect to Ascending Node	63.4 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	309.0
2	257.0
3	206.0

4	154.0
5	103.0
6	51.0
7	0.0

### Orbital Plane 40:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	0.0 degrees
Argument of Perigee	90.0 degrees
Orbital Period	14400.0 seconds
Apogee	11024.0 km
Perigee	1776.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-63.4 degrees
Active Service Arc End Angle with respect to Ascending Node	0.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	309.0
2	257.0
3	206.0
4	154.0
5	103.0
6	51.0
7	0.0

## Orbital Plane 41:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	90.0 degrees
Argument of Perigee	90.0 degrees
Orbital Period	14400.0 seconds
Apogee	11024.0 km
Perigee	1776.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-63.4 degrees
Active Service Arc End Angle with respect to Ascending Node	0.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0
4	154.0
5	206.0
6	257.0
7	309.0

## Orbital Plane 42:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	180.0 degrees

Argument of Perigee	90.0 degrees
Orbital Period	14400.0 seconds
Apogee	11024.0 km
Perigee	1776.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-63.4 degrees
Active Service Arc End Angle with respect to Ascending Node	0.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0
4	154.0
5	206.0
6	257.0
7	309.0

### Orbital Plane 43:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	270.0 degrees
Argument of Perigee	90.0 degrees
Orbital Period	14400.0 seconds
Apogee	11024.0 km
Perigee	1776.0 km

Active Service Arc Begin Angle with respect to Ascending Node	-63.4 degrees
Active Service Arc End Angle with respect to Ascending Node	0.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0
4	154.0
5	206.0
6	257.0
7	309.0

### Orbital Plane 44:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	0.0 degrees
Argument of Perigee	270.0 degrees
Orbital Period	14400.0 seconds
Apogee	9000.0 km
Perigee	3800.0 km
Active Service Arc Begin Angle with respect to Ascending Node	0.0 degrees
Active Service Arc End Angle with respect to Ascending Node	63.4 degrees

### Mean Anomaly For Each Satellite



Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0
4	154.0
5	206.0
6	257.0
7	309.0

### Orbital Plane 45:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	90.0 degrees
Argument of Perigee	270.0 degrees
Orbital Period	14400.0 seconds
Apogee	9000.0 km
Perigee	3800.0 km
Active Service Arc Begin Angle with respect to Ascending Node	0.0 degrees
Active Service Arc End Angle with respect to Ascending Node	63.4 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0

4	154.0
5	206.0
6	257.0
7	309.0

### Orbital Plane 46:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	180.0 degrees
Argument of Perigee	270.0 degrees
Orbital Period	14400.0 seconds
Apogee	9000.0 km
Perigee	3800.0 km
Active Service Arc Begin Angle with respect to Ascending Node	0.0 degrees
Active Service Arc End Angle with respect to Ascending Node	63.4 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0
4	154.0
5	206.0
6	257.0
7	309.0

## Orbital Plane 47:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	270.0 degrees
Argument of Perigee	270.0 degrees
Orbital Period	14400.0 seconds
Apogee	9000.0 km
Perigee	3800.0 km
Active Service Arc Begin Angle with respect to Ascending Node	0.0 degrees
Active Service Arc End Angle with respect to Ascending Node	63.4 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0
4	154.0
5	206.0
6	257.0
7	309.0

## Orbital Plane 48:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	0.0 degrees

Argument of Perigee	90.0 degrees
Orbital Period	14400.0 seconds
Apogee	9000.0 km
Perigee	3800.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-63.4 degrees
Active Service Arc End Angle with respect to Ascending Node	0.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0
4	154.0
5	206.0
6	257.0
7	309.0

### Orbital Plane 49:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	90.0 degrees
Argument of Perigee	90.0 degrees
Orbital Period	14400.0 seconds
Apogee	9000.0 km
Perigee	3800.0 km

Active Service Arc Begin Angle with respect to Ascending Node	-63.4 degrees
Active Service Arc End Angle with respect to Ascending Node	0.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0
4	154.0
5	206.0
6	257.0
7	309.0

### Orbital Plane 50:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	180.0 degrees
Argument of Perigee	90.0 degrees
Orbital Period	14400.0 seconds
Apogee	9000.0 km
Perigee	3800.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-63.4 degrees
Active Service Arc End Angle with respect to Ascending Node	0.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0
4	154.0
5	206.0
6	257.0
7	309.0

### Orbital Plane 51:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	270.0 degrees
Argument of Perigee	90.0 degrees
Orbital Period	14400.0 seconds
Apogee	9000.0 km
Perigee	3800.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-63.4 degrees
Active Service Arc End Angle with respect to Ascending Node	0.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0

4	154.0
5	206.0
6	257.0
7	309.0

## Orbital Plane 52:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	0.0 degrees
Argument of Perigee	270.0 degrees
Orbital Period	14400.0 seconds
Apogee	9800.0 km
Perigee	3000.0 km
Active Service Arc Begin Angle with respect to Ascending Node	0.0 degrees
Active Service Arc End Angle with respect to Ascending Node	63.4 degrees

## Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0
4	154.0
5	206.0
6	257.0
7	309.0

## Orbital Plane 53:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	90.0 degrees
Argument of Perigee	270.0 degrees
Orbital Period	14400.0 seconds
Apogee	9800.0 km
Perigee	3000.0 km
Active Service Arc Begin Angle with respect to Ascending Node	0.0 degrees
Active Service Arc End Angle with respect to Ascending Node	63.4 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0
4	154.0
5	206.0
6	257.0
7	309.0

## Orbital Plane 54:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	180.0 degrees



Argument of Perigee	270.0 degrees
Orbital Period	14400.0 seconds
Apogee	9800.0 km
Perigee	3000.0 km
Active Service Arc Begin Angle with respect to Ascending Node	0.0 degrees
Active Service Arc End Angle with respect to Ascending Node	63.4 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0
4	154.0
5	206.0
6	257.0
7	309.0

### Orbital Plane 55:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	270.0 degrees
Argument of Perigee	270.0 degrees
Orbital Period	14400.0 seconds
Apogee	9800.0 km
Perigee	3000.0 km

Active Service Arc Begin Angle with respect to Ascending Node	0.0 degrees
Active Service Arc End Angle with respect to Ascending Node	63.4 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0
4	154.0
5	206.0
6	257.0
7	309.0

### Orbital Plane 56:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	0.0 degrees
Argument of Perigee	90.0 degrees
Orbital Period	14400.0 seconds
Apogee	9800.0 km
Perigee	3000.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-63.4 degrees
Active Service Arc End Angle with respect to Ascending Node	0.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0
4	154.0
5	206.0
6	257.0
7	309.0

### Orbital Plane 57:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	90.0 degrees
Argument of Perigee	90.0 degrees
Orbital Period	14400.0 seconds
Apogee	9800.0 km
Perigee	3000.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-63.4 degrees
Active Service Arc End Angle with respect to Ascending Node	0.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0

4	154.0
5	206.0
6	257.0
7	309.0

### Orbital Plane 58:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	180.0 degrees
Argument of Perigee	90.0 degrees
Orbital Period	14400.0 seconds
Apogee	9800.0 km
Perigee	3000.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-63.4 degrees
Active Service Arc End Angle with respect to Ascending Node	0.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	51.0
3	103.0
4	154.0
5	309.0
6	257.0
7	206.0

## Orbital Plane 59:

Question	Response
Number of Satellites in Plane	7
Inclination Angle	63.4 degrees
Right Ascension of Ascending Node	270.0 degrees
Argument of Perigee	90.0 degrees
Orbital Period	14400.0 seconds
Apogee	9800.0 km
Perigee	3000.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-63.4 degrees
Active Service Arc End Angle with respect to Ascending Node	0.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	309.0
2	257.0
3	206.0
4	154.0
5	103.0
6	51.0
7	0.0

## Receiving Beams 1:

Question	Response
Beam ID	RBR1
Receive Beam Frequency	27500.0 MHz -28600.0 MHz
Beam Type	Both Steerable and Shapeable
Polarization	RHCP
Peak Gain	46.3 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	18.17 dB/K
Min. Saturation Flux Density	-100.0 dBW/m <sup>2</sup>
Max. Saturation Flux Density	-50.0 dBW/m <sup>2</sup>
Co- or Cross Polar Mode	C
Service Area Description	Global reference Technical Narrative Figure 2 and Figure 3.

## Receiving Beams 2:

Question	Response
Beam ID	RBL1
Receive Beam Frequency	27500.0 MHz -28600.0 MHz
Beam Type	Both Steerable and Shapeable
Polarization	LHCP
Peak Gain	46.3 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees

Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	18.17 dB/K
Min. Saturation Flux Density	-100.0 dBW/m2
Max. Saturation Flux Density	-50.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Global reference Technical Narrative Figure 2 and Figure 3.

**Receiving Beams 3:**

Question	Response
Beam ID	RBR2
Receive Beam Frequency	28600.0 MHz -29100.0 MHz
Beam Type	Both Steerable and Shapeable
Polarization	RHCP
Peak Gain	46.4 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	18.3 dB/K
Min. Saturation Flux Density	-100.0 dBW/m2
Max. Saturation Flux Density	-50.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Global reference Technical Narrative Figure 2 and Figure 3.

## Receiving Beams 4:

Question	Response
Beam ID	RBL2
Receive Beam Frequency	28600.0 MHz -29100.0 MHz
Beam Type	Both Steerable and Shapeable
Polarization	LHCP
Peak Gain	46.4 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	18.3 dB/K
Min. Saturation Flux Density	-100.0 dBW/m <sup>2</sup>
Max. Saturation Flux Density	-50.0 dBW/m <sup>2</sup>
Co- or Cross Polar Mode	C
Service Area Description	Global reference Technical Narrative Figure 2 and Figure 3.

## Receiving Beams 5:

Question	Response
Beam ID	RBR3
Receive Beam Frequency	29100.0 MHz -29500.0 MHz
Beam Type	Both Steerable and Shapeable
Polarization	RHCP
Peak Gain	46.5 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	



Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	18.4 dB/K
Min. Saturation Flux Density	-100.0 dBW/m2
Max. Saturation Flux Density	-50.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Global reference Technical Narrative Figure 2 and Figure 3.

### Receiving Beams 6:

Question	Response
Beam ID	RBL3
Receive Beam Frequency	29100.0 MHz -29500.0 MHz
Beam Type	Both Steerable and Shapeable
Polarization	LHCP
Peak Gain	46.5 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	18.4 dB/K
Min. Saturation Flux Density	-100.0 dBW/m2
Max. Saturation Flux Density	-50.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Global reference Technical Narrative Figure 2 and Figure 3.

### Receiving Beams 7:

Question	Response
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Beam ID	RBR4
Receive Beam Frequency	29500.0 MHz -30000.0 MHz
Beam Type	Both Steerable and Shapeable
Polarization	RHCP
Peak Gain	46.7 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	18.6 dB/K
Min. Saturation Flux Density	-100.0 dBW/m2
Max. Saturation Flux Density	-50.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Global reference Technical Narrative Figure 2 and Figure 3.

**Receiving Beams 8:**

Question	Response
Beam ID	RBL4
Receive Beam Frequency	29500.0 MHz -30000.0 MHz
Beam Type	Both Steerable and Shapeable
Polarization	LHCP
Peak Gain	46.7 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees

G/T at Max. Gain Point	18.6 dB/K
Min. Saturation Flux Density	-100.0 dBW/m <sup>2</sup>
Max. Saturation Flux Density	-50.0 dBW/m <sup>2</sup>
Co- or Cross Polar Mode	C
Service Area Description	Global reference Technical Narrative Figure 2 and Figure 3.

### Receiving Beams 9:

Question	Response
Beam ID	RGR5
Receive Beam Frequency	47200.0 MHz -50200.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	48.1 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	20.0 dB/K
Min. Saturation Flux Density	-100.0 dBW/m <sup>2</sup>
Max. Saturation Flux Density	-50.0 dBW/m <sup>2</sup>
Co- or Cross Polar Mode	C
Service Area Description	Global, see Technical Narrative Figure 2 and Figure 3.

### Receiving Beams 10:

Question	Response
Beam ID	RGL5

Receive Beam Frequency	47200.0 MHz -50200.0 MHz
Beam Type	Steerable
Polarization	LHCP
Peak Gain	48.1 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	20.0 dB/K
Min. Saturation Flux Density	-100.0 dBW/m <sup>2</sup>
Max. Saturation Flux Density	-50.0 dBW/m <sup>2</sup>
Co- or Cross Polar Mode	C
Service Area Description	Global, see Technical Narrative Figure 2 and Figure 3.

## Receiving Beams 11:

Question	Response
Beam ID	RGR6
Receive Beam Frequency	50400.0 MHz -51400.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	48.3 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	20.2 dB/K

Min. Saturation Flux Density	-100.0 dBW/m <sup>2</sup>
Max. Saturation Flux Density	-50.0 dBW/m <sup>2</sup>
Co- or Cross Polar Mode	C
Service Area Description	Global, see Technical Narrative Figure 2 and Figure 3.

## Receiving Beams 12:

Question	Response
Beam ID	RGL6
Receive Beam Frequency	50400.0 MHz -51400.0 MHz
Beam Type	Steerable
Polarization	LHCP
Peak Gain	48.3 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	20.2 dB/K
Min. Saturation Flux Density	-100.0 dBW/m <sup>2</sup>
Max. Saturation Flux Density	-50.0 dBW/m <sup>2</sup>
Co- or Cross Polar Mode	C
Service Area Description	Global, see Technical Narrative Figure 2 and Figure 3.

## Receiving Beams 13:

Question	Response
Beam ID	RTR2
Receive Beam Frequency	29094.0 MHz -29100.0 MHz

Beam Type	Fixed
Polarization	RHCP
Peak Gain	6.6 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	-21.5 dB/K
Min. Saturation Flux Density	-0.1 dBW/m <sup>2</sup>
Max. Saturation Flux Density	0.0 dBW/m <sup>2</sup>
Co- or Cross Polar Mode	C
Service Area Description	Global with earth coverage antenna. See Technical Narrative Figure 2 and Figure 3.

**Receiving Beams 14:**

Question	Response
Beam ID	RTL2
Receive Beam Frequency	29094.0 MHz -29100.0 MHz
Beam Type	Fixed
Polarization	LHCP
Peak Gain	6.6 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	-21.5 dB/K

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Min. Saturation Flux Density	-0.1 dBW/m <sup>2</sup>
Max. Saturation Flux Density	0.0 dBW/m <sup>2</sup>
Co- or Cross Polar Mode	C
Service Area Description	Global with earth coverage antenna. See Technical Narrative Figure 2 and Figure 3.

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## Receiving Channels (128)

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
SL04	100.0	27850.0	Service Link
SL05	100.0	27950.0	Service Link
SL06	100.0	28050.0	Service Link
SL07	100.0	28150.0	Service Link
SL08	100.0	28250.0	Service Link
SL09	100.0	28350.0	Service Link
SL10	100.0	28450.0	Service Link
SL11	100.0	28550.0	Service Link
SL12	100.0	28650.0	Service Link
SL13	100.0	28750.0	Service Link
SL14	100.0	28850.0	Service Link
SL15	100.0	28950.0	Service Link
SL16	100.0	29050.0	Service Link
SL17	100.0	29150.0	Service Link
SL18	100.0	29250.0	Service Link
SL19	100.0	29350.0	Service Link
SL20	100.0	29450.0	Service Link
SL21	100.0	29550.0	Service Link
SL22	100.0	29650.0	Service Link
SL23	100.0	29750.0	Service Link
SL24	100.0	29850.0	Service Link
SL25	100.0	29950.0	Service Link
SR01	100.0	27550.0	Service Link
SR02	100.0	27650.0	Service Link



<b>SR03</b>	100.0	27750.0	Service Link
<b>SR04</b>	100.0	27850.0	Service Link
<b>SR05</b>	100.0	27950.0	Service Link
<b>SR06</b>	100.0	28050.0	Service Link
<b>SR07</b>	100.0	28150.0	Service Link
<b>FR23</b>	100.0	29750.0	Feeder Link
<b>FR24</b>	100.0	29850.0	Feeder Link
<b>FR25</b>	100.0	29950.0	Feeder Link
<b>TL01</b>	1.0	29094.5	TT&C
<b>TR01</b>	1.0	29094.5	TT&C
<b>FL17</b>	100.0	29150.0	Feeder Link
<b>FL16</b>	100.0	29050.0	Feeder Link
<b>FL15</b>	100.0	28950.0	Feeder Link
<b>FL14</b>	100.0	28850.0	Feeder Link
<b>FL13</b>	100.0	28750.0	Feeder Link
<b>FR13</b>	100.0	28750.0	Feeder Link
<b>FR14</b>	100.0	28850.0	Feeder Link
<b>TL06</b>	1.0	29099.5	TT&C
<b>TR06</b>	1.0	29099.5	TT&C
<b>TL05</b>	1.0	29098.5	TT&C
<b>TR05</b>	1.0	29098.5	TT&C
<b>TL04</b>	1.0	29097.5	TT&C
<b>TR04</b>	1.0	29097.5	TT&C
<b>TL03</b>	1.0	29096.5	TT&C
<b>TR03</b>	1.0	29096.5	TT&C
<b>TL02</b>	1.0	29095.5	TT&C

<b>TR02</b>	1.0	29095.5	TT&C
<b>SR19</b>	100.0	29350.0	Service Link
<b>FL33</b>	500.0	51150.0	Feeder Link
<b>FR33</b>	500.0	51150.0	Feeder Link
<b>FL32</b>	500.0	50650.0	Feeder Link
<b>FR32</b>	500.0	50650.0	Feeder Link
<b>FL31</b>	500.0	49950.0	Feeder Link
<b>FR31</b>	500.0	49950.0	Feeder Link
<b>FL30</b>	500.0	49450.0	Feeder Link
<b>FR30</b>	500.0	49450.0	Feeder Link
<b>FL29</b>	500.0	48950.0	Feeder Link
<b>FR29</b>	500.0	48950.0	Feeder Link
<b>FL28</b>	500.0	48450.0	Feeder Link
<b>FR28</b>	500.0	48450.0	Feeder Link
<b>FL27</b>	500.0	47950.0	Feeder Link
<b>FR27</b>	500.0	47950.0	Feeder Link
<b>FL26</b>	500.0	47450.0	Feeder Link
<b>FR26</b>	500.0	47450.0	Feeder Link
<b>FR12</b>	100.0	28650.0	Feeder Link
<b>FR11</b>	100.0	28550.0	Feeder Link
<b>FR10</b>	100.0	28450.0	Feeder Link
<b>FR09</b>	100.0	28350.0	Feeder Link
<b>FR08</b>	100.0	28250.0	Feeder Link
<b>FR07</b>	100.0	28150.0	Feeder Link
<b>FR06</b>	100.0	28050.0	Feeder Link
<b>FR05</b>	100.0	27950.0	Feeder Link

<b>FR04</b>	100.0	27850.0	Feeder Link
<b>FL12</b>	100.0	28650.0	Feeder Link
<b>FL11</b>	100.0	28550.0	Feeder Link
<b>FL10</b>	100.0	28450.0	Feeder Link
<b>FL09</b>	100.0	28350.0	Feeder Link
<b>FL08</b>	100.0	28250.0	Feeder Link
<b>FL07</b>	100.0	28150.0	Feeder Link
<b>FL06</b>	100.0	28050.0	Feeder Link
<b>FL05</b>	100.0	27950.0	Feeder Link
<b>FL04</b>	100.0	27850.0	Feeder Link
<b>FL03</b>	100.0	27750.0	Feeder Link
<b>FL02</b>	100.0	27650.0	Feeder Link
<b>FL01</b>	100.0	27550.0	Feeder Link
<b>SL01</b>	100.0	27550.0	Service Link
<b>SL02</b>	100.0	27650.0	Service Link
<b>SL03</b>	100.0	27750.0	Service Link
<b>SR20</b>	100.0	29450.0	Service Link
<b>SR21</b>	100.0	29550.0	Service Link
<b>FR16</b>	100.0	29050.0	Feeder Link
<b>FR17</b>	100.0	29150.0	Feeder Link
<b>FR18</b>	100.0	29250.0	Feeder Link
<b>FR19</b>	100.0	29350.0	Feeder Link
<b>FR20</b>	100.0	29450.0	Feeder Link
<b>FR21</b>	100.0	29550.0	Feeder Link
<b>FR22</b>	100.0	29650.0	Feeder Link
<b>SR22</b>	100.0	29650.0	Service Link

<b>SR23</b>	100.0	29750.0	Service Link
<b>SR24</b>	100.0	29850.0	Service Link
<b>SR25</b>	100.0	29950.0	Service Link
<b>FR03</b>	100.0	27750.0	Feeder Link
<b>FR02</b>	100.0	27650.0	Feeder Link
<b>FR01</b>	100.0	27550.0	Feeder Link
<b>FL25</b>	100.0	29950.0	Feeder Link
<b>FL24</b>	100.0	29850.0	Feeder Link
<b>FL23</b>	100.0	29750.0	Feeder Link
<b>FL22</b>	100.0	29650.0	Feeder Link
<b>FL21</b>	100.0	29550.0	Feeder Link
<b>FL20</b>	100.0	29450.0	Feeder Link
<b>FR15</b>	100.0	28950.0	Feeder Link
<b>SR16</b>	100.0	29050.0	Service Link
<b>SR17</b>	100.0	29150.0	Service Link
<b>SR18</b>	100.0	29250.0	Service Link
<b>FL19</b>	100.0	29350.0	Feeder Link
<b>FL18</b>	100.0	29250.0	Feeder Link
<b>SR08</b>	100.0	28250.0	Service Link
<b>SR09</b>	100.0	28350.0	Service Link
<b>SR10</b>	100.0	28450.0	Service Link
<b>SR11</b>	100.0	28550.0	Service Link
<b>SR12</b>	100.0	28650.0	Service Link
<b>SR13</b>	100.0	28750.0	Service Link
<b>SR14</b>	100.0	28850.0	Service Link
<b>SR15</b>	100.0	28950.0	Service Link

## Transmitting Beams 1:

Question	Response
Beam ID	EBR1
Transmit Beam Frequency	17700.0 MHz -18600.0 MHz
Beam Type	Both Steerable and Shapeable
Polarization	RHCP
Peak Gain	42.5 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-44.0 dBW/Hz
Max. Transmit EIRP	45.6 dBW
Co- or Cross Polar Mode	C
Service Area Description	Global see Technical Narrative Figure 2 and Figure 3.

### Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
*	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>
BW:	/BW):	/BW):	/BW):	/BW):	/BW):	/BW):
<b>1.0 MHz</b>	-132.6	-132.1	-131.5	-130.9	-130.4	-127.0

## Transmitting Beams 2:

Question	Response
Beam ID	EBL1
Transmit Beam Frequency	17700.0 MHz -18600.0 MHz

Beam Type	Both Steerable and Shapeable
Polarization	LHCP
Peak Gain	42.5 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-44.0 dBW/Hz
Max. Transmit EIRP	45.6 dBW
Co- or Cross Polar Mode	C
Service Area Description	Global see Technical Narrative Figure 2 and Figure 3.

### Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>
	/BW):	/BW):	/BW):	/BW):	/BW):	/BW):
<b>1.0 MHz</b>	-132.6	-132.1	-131.5	-130.9	-130.4	-127.0

### Transmitting Beams 3:

Question	Response
Beam ID	EBR2
Transmit Beam Frequency	18800.0 MHz -19300.0 MHz
Beam Type	Both Steerable and Shapeable
Polarization	RHCP
Peak Gain	42.8 dBi
Antenna Pointing Error	0.1 degrees

Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-43.7 dBW/Hz
Max. Transmit EIRP	43.3 dBW
Co- or Cross Polar Mode	C
Service Area Description	Global see Technical Narrative Figure 2 and Figure 3.

### Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>
	/BW):	/BW):	/BW):	/BW):	/BW):	/BW):
<b>1.0 MHz</b>	-132.3	-131.8	-131.2	-130.6	-130.1	-126.7

### Transmitting Beams 4:

Question	Response
Beam ID	EBL2
Transmit Beam Frequency	18800.0 MHz -19300.0 MHz
Beam Type	Both Steerable and Shapeable
Polarization	LHCP
Peak Gain	42.8 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-43.7 dBW/Hz

Max. Transmit EIRP	43.3 dBW
Co- or Cross Polar Mode	C
Service Area Description	Global see Technical Narrative Figure 2 and Figure 3.

### Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
*	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>
BW:	/BW):	/BW):	/BW):	/BW):	/BW):	/BW):
<b>1.0 MHz</b>	-132.3	-131.8	-131.2	-130.6	-130.1	-126.7

### Transmitting Beams 5:

Question	Response
Beam ID	EBR3
Transmit Beam Frequency	19300.0 MHz -19700.0 MHz
Beam Type	Both Steerable and Shapeable
Polarization	RHCP
Peak Gain	43.0 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-43.5 dBW/Hz
Max. Transmit EIRP	42.5 dBW
Co- or Cross Polar Mode	C
Service Area Description	Global see Technical Narrative Figure 2 and Figure 3.



### Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
*	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>
BW:	/BW):	/BW):	/BW):	/BW):	/BW):	/BW):
<b>1.0 MHz</b>	-132.1	-131.6	-131.0	-130.4	-129.9	-126.5

### Transmitting Beams 6:

Question	Response
Beam ID	EBL3
Transmit Beam Frequency	19300.0 MHz -19700.0 MHz
Beam Type	Both Steerable and Shapeable
Polarization	LHCP
Peak Gain	43.0 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-43.5 dBW/Hz
Max. Transmit EIRP	42.5 dBW
Co- or Cross Polar Mode	C
Service Area Description	Global see Technical Narrative Figure 2 and Figure 3.

### Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
*	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>
BW:	/BW):	/BW):	/BW):	/BW):	/BW):	/BW):

<b>1.0</b>	-132.1	-131.6	-131.0	-130.4	-129.9	-126.5
<b>MHz</b>						

**Transmitting Beams 7:**

Question	Response
Beam ID	EBR4
Transmit Beam Frequency	19700.0 MHz -20200.0 MHz
Beam Type	Both Steerable and Shapeable
Polarization	RHCP
Peak Gain	43.2 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-43.3 dBW/Hz
Max. Transmit EIRP	43.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	Global see Technical Narrative Figure 2 and Figure 3.

**Max. Power Flux Density**

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>
	/BW):	/BW):	/BW):	/BW):	/BW):	/BW):
<b>1.0</b>	-131.9	-131.4	-130.8	-130.2	-129.7	-126.3
<b>MHz</b>						

**Transmitting Beams 8:**

Question	Response
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Beam ID	EBL4
Transmit Beam Frequency	19700.0 MHz -20200.0 MHz
Beam Type	Both Steerable and Shapeable
Polarization	LHCP
Peak Gain	43.2 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-43.3 dBW/Hz
Max. Transmit EIRP	43.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	Global see Technical Narrative Figure 2 and Figure 3.

### Max. Power Flux Density

	* 0° - 5° (dBW/m <sup>2</sup> ) /BW):	* 5° - 10° (dBW/m <sup>2</sup> ) /BW):	* 10° - 15° (dBW/m <sup>2</sup> ) /BW):	* 15° - 20° (dBW/m <sup>2</sup> ) /BW):	* 20° - 25° (dBW/m <sup>2</sup> ) /BW):	* 25° - 90° (dBW/m <sup>2</sup> ) /BW):
<b>1.0 MHz</b>	-131.9	-131.4	-130.8	-130.2	-129.7	-126.3

### Transmitting Beams 9:

Question	Response
Beam ID	EGR5
Transmit Beam Frequency	37500.0 MHz -39500.0 MHz
Beam Type	Steerable
Polarization	RHCP

Peak Gain	46.0 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-37.0 dBW/Hz
Max. Transmit EIRP	56.0 dBW
Co- or Cross Polar Mode	C
Service Area Description	Global, see Technical Narrative Figure 2 and Figure 3.

### Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>
* BW:	/BW):	/BW):	/BW):	/BW):	/BW):	/BW):
<b>1.0 MHz</b>	-140.7	-135.1	-129.5	-124.0	-123.5	-120.0

### Transmitting Beams 10:

Question	Response
Beam ID	EGL5
Transmit Beam Frequency	37500.0 MHz -39500.0 MHz
Beam Type	Steerable
Polarization	LHCP
Peak Gain	46.0 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	

Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-37.0 dBW/Hz
Max. Transmit EIRP	56.0 dBW
Co- or Cross Polar Mode	C
Service Area Description	Global, see Technical Narrative Figure 2 and Figure 3.

### Max. Power Flux Density

	* 0° - 5° (dBW/m <sup>2</sup> /BW):	* 5° - 10° (dBW/m <sup>2</sup> /BW):	* 10° - 15° (dBW/m <sup>2</sup> /BW):	* 15° - 20° (dBW/m <sup>2</sup> /BW):	* 20° - 25° (dBW/m <sup>2</sup> /BW):	* 25° - 90° (dBW/m <sup>2</sup> /BW):
<b>1.0 MHz</b>	-140.7	-135.1	-129.5	-124.0	-123.5	-120.0

### Transmitting Beams 11:

Question	Response
Beam ID	EGR6
Transmit Beam Frequency	39500.0 MHz -40000.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	46.1 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-36.9 dBW/Hz
Max. Transmit EIRP	50.1 dBW
Co- or Cross Polar Mode	C

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Service Area Description

Global, see Technical Narrative Figure 2 and Figure 3.

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### Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
*	(dbW/m <sup>2</sup> )	(dbW/m <sup>2</sup> )	(dbW/m <sup>2</sup> )	(dbW/m <sup>2</sup> )	(dbW/m <sup>2</sup> )	(dbW/m <sup>2</sup> )
BW:	/BW):	/BW):	/BW):	/BW):	/BW):	/BW):
<b>1.0</b>	-140.6	-135.0	-129.4	-123.9	-123.4	-119.9
<b>MHz</b>						

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### Transmitting Beams 12:

Question	Response
Beam ID	EGL6
Transmit Beam Frequency	39500.0 MHz -40000.0 MHz
Beam Type	Steerable
Polarization	LHCP
Peak Gain	46.1 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-36.9 dBW/Hz
Max. Transmit EIRP	50.1 dBW
Co- or Cross Polar Mode	C
Service Area Description	Global, see Technical Narrative Figure 2 and Figure 3.

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### Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
*	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>
BW:	/BW):	/BW):	/BW):	/BW):	/BW):	/BW):
<b>1.0 MHz</b>	-140.6	-135.0	-129.4	-123.9	-123.4	-119.9

## Transmitting Beams 13:

Question	Response
Beam ID	EGR7
Transmit Beam Frequency	40000.0 MHz -42000.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	46.6 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-36.4 dBW/Hz
Max. Transmit EIRP	56.6 dBW
Co- or Cross Polar Mode	C
Service Area Description	Global, see Technical Narrative Figure 2 and Figure 3.

## Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
*	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>
BW:	/BW):	/BW):	/BW):	/BW):	/BW):	/BW):
<b>1.0 MHz</b>	-140.1	-134.5	-128.9	-123.4	-122.9	-119.4

## Transmitting Beams 14:

Question	Response
Beam ID	EGL7
Transmit Beam Frequency	40000.0 MHz -42000.0 MHz
Beam Type	Steerable
Polarization	LHCP
Peak Gain	46.6 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-36.4 dBW/Hz
Max. Transmit EIRP	56.6 dBW
Co- or Cross Polar Mode	C
Service Area Description	Global, see Technical Narrative Figure 2 and Figure 3.

### Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
*	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>
BW:	/BW):	/BW):	/BW):	/BW):	/BW):	/BW):
<b>1.0 MHz</b>	-140.1	-134.5	-128.9	-123.4	-122.9	-119.4

## Transmitting Beams 15:

Question	Response
Beam ID	EGR8
Transmit Beam Frequency	42000.0 MHz -42500.0 MHz



Beam Type	Steerable
Polarization	RHCP
Peak Gain	46.7 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-36.3 dBW/Hz
Max. Transmit EIRP	50.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	Global, see Technical Narrative Figure 2 and Figure 3.

### Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>
*	/BW):	/BW):	/BW):	/BW):	/BW):	/BW):
<b>1.0 MHz</b>	-140.0	-134.4	-128.8	-123.3	-122.8	-119.3

### Transmitting Beams 16:

Question	Response
Beam ID	EGL8
Transmit Beam Frequency	42000.0 MHz -42500.0 MHz
Beam Type	Steerable
Polarization	LHCP
Peak Gain	46.7 dBi
Antenna Pointing Error	0.1 degrees

Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-36.3 dBW/Hz
Max. Transmit EIRP	50.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	Global, see Technical Narrative Figure 2 and Figure 3.

### Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
*	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>	(dBW/m <sup>2</sup>
BW:	/BW):	/BW):	/BW):	/BW):	/BW):	/BW):
<b>1.0 MHz</b>	-140.0	-134.4	-128.8	-123.3	-122.8	-119.3

### Transmitting Beams 17:

Question	Response
Beam ID	ETR2
Transmit Beam Frequency	19298.0 MHz -19300.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	6.6 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees

Max. Transmit EIRP Density	-53.0 dBW/Hz
Max. Transmit EIRP	10.0 dBW
Co- or Cross Polar Mode	C
Service Area Description	Global with earth coverage antenna. See Technical Narrative Figure 2 and Figure 3.

### Max. Power Flux Density

	* 0° - 5° (dBW/m <sup>2</sup> /BW):	* 5° - 10° (dBW/m <sup>2</sup> /BW):	* 10° - 15° (dBW/m <sup>2</sup> /BW):	* 15° - 20° (dBW/m <sup>2</sup> /BW):	* 20° - 25° (dBW/m <sup>2</sup> /BW):	* 25° - 90° (dBW/m <sup>2</sup> /BW):
<b>1.0 MHz</b>	-138.6	-138.1	-137.5	-136.9	-136.4	-133.0

### Transmitting Beams 18:

Question	Response
Beam ID	ETL2
Transmit Beam Frequency	19298.0 MHz -19300.0 MHz
Beam Type	Fixed
Polarization	LHCP
Peak Gain	6.6 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-53.0 dBW/Hz
Max. Transmit EIRP	10.0 dBW
Co- or Cross Polar Mode	C

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Service Area Description

Global with earth coverage antenna. See  
Technical Narrative Figure 2 and Figure 3.

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### Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
	(dbW/m <sup>2</sup> )	(dbW/m <sup>2</sup> )	(dbW/m <sup>2</sup> )	(dbW/m <sup>2</sup> )	(dbW/m <sup>2</sup> )	(dbW/m <sup>2</sup> )
BW:	/BW):	/BW):	/BW):	/BW):	/BW):	/BW):
<b>1.0</b>	-138.6	-138.1	-137.5	-136.9	-136.4	-133.0
<b>MHz</b>						

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## Transmitting Channels (116)

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
FR32	500.0	41750.0	Feeder Link
FR31	500.0	41250.0	Feeder Link
FR30	500.0	40750.0	Feeder Link
FL32	500.0	41750.0	Feeder Link
FL31	500.0	41250.0	Feeder Link
FL30	500.0	40750.0	Feeder Link
SL21	100.0	19950.0	Service Link
FL05	100.0	18150.0	Feeder Link
FR20	100.0	19850.0	Feeder Link
SL20	100.0	19850.0	Service Link
FL04	100.0	18050.0	Feeder Link
FR19	100.0	19750.0	Feeder Link
SL19	100.0	19750.0	Service Link
FL03	100.0	17950.0	Feeder Link
FR18	100.0	19650.0	Feeder Link
SL18	100.0	19650.0	Service Link
TR02	1.0	19299.5	TT&C
TL02	1.0	19299.5	TT&C
FR14	100.0	19250.0	Feeder Link
FL22	100.0	20050.0	Feeder Link
SR15	100.0	19350.0	Service Link
SL15	100.0	19350.0	Service Link
FR15	100.0	19350.0	Feeder Link
FL23	100.0	20150.0	Feeder Link

<b>SR18</b>	100.0	19650.0	Service Link
<b>SR16</b>	100.0	19450.0	Service Link
<b>SR19</b>	100.0	19750.0	Service Link
<b>SR17</b>	100.0	19550.0	Service Link
<b>FR08</b>	100.0	18450.0	Feeder Link
<b>SL08</b>	100.0	18450.0	Service Link
<b>SR08</b>	100.0	18450.0	Service Link
<b>FL15</b>	100.0	19350.0	Feeder Link
<b>FR07</b>	100.0	18350.0	Feeder Link
<b>SL07</b>	100.0	18350.0	Service Link
<b>SR07</b>	100.0	18350.0	Service Link
<b>FL14</b>	100.0	19250.0	Feeder Link
<b>FR06</b>	100.0	18250.0	Feeder Link
<b>SL14</b>	100.0	19250.0	Service Link
<b>SR14</b>	100.0	19250.0	Service Link
<b>FL21</b>	100.0	19950.0	Feeder Link
<b>FR13</b>	100.0	19150.0	Feeder Link
<b>SL13</b>	100.0	19150.0	Service Link
<b>SL06</b>	100.0	18250.0	Service Link
<b>SR06</b>	100.0	18250.0	Service Link
<b>FL13</b>	100.0	19150.0	Feeder Link
<b>FR05</b>	100.0	18150.0	Feeder Link
<b>SL05</b>	100.0	18150.0	Service Link
<b>SR05</b>	100.0	18150.0	Service Link
<b>FL12</b>	100.0	19050.0	Feeder Link
<b>FR04</b>	100.0	18050.0	Feeder Link

<b>SL04</b>	100.0	18050.0	Service Link
<b>SR04</b>	100.0	18050.0	Service Link
<b>FL11</b>	100.0	18950.0	Feeder Link
<b>FR03</b>	100.0	17950.0	Feeder Link
<b>SL03</b>	100.0	17950.0	Service Link
<b>SR03</b>	100.0	17950.0	Service Link
<b>FL10</b>	100.0	18850.0	Feeder Link
<b>SL02</b>	100.0	17850.0	Service Link
<b>SR02</b>	100.0	17850.0	Service Link
<b>FL09</b>	100.0	18550.0	Feeder Link
<b>SL01</b>	100.0	17750.0	Service Link
<b>SR01</b>	100.0	17750.0	Service Link
<b>FL08</b>	100.0	18450.0	Feeder Link
<b>FR23</b>	100.0	20150.0	Feeder Link
<b>SL23</b>	100.0	20150.0	Service Link
<b>FL07</b>	100.0	18350.0	Feeder Link
<b>FR22</b>	100.0	20050.0	Feeder Link
<b>SL22</b>	100.0	20050.0	Service Link
<b>FL06</b>	100.0	18250.0	Feeder Link
<b>FR21</b>	100.0	19950.0	Feeder Link
<b>FL02</b>	100.0	17850.0	Feeder Link
<b>FR02</b>	100.0	17850.0	Feeder Link
<b>FR17</b>	100.0	19550.0	Feeder Link
<b>SL17</b>	100.0	19550.0	Service Link
<b>FL01</b>	100.0	17750.0	Feeder Link
<b>FR01</b>	100.0	17750.0	Feeder Link

<b>FR16</b>	100.0	19450.0	Feeder Link
<b>SL16</b>	100.0	19450.0	Service Link
<b>FL24</b>	500.0	37750.0	Feeder Link
<b>FL25</b>	500.0	38250.0	Feeder Link
<b>FL26</b>	500.0	38750.0	Feeder Link
<b>FL27</b>	500.0	39250.0	Feeder Link
<b>FL28</b>	500.0	39750.0	Feeder Link
<b>FL29</b>	500.0	40250.0	Feeder Link
<b>FL33</b>	500.0	42250.0	Feeder Link
<b>FR24</b>	500.0	37750.0	Feeder Link
<b>FR25</b>	500.0	38250.0	Feeder Link
<b>FR26</b>	500.0	38750.0	Feeder Link
<b>FR27</b>	500.0	39250.0	Feeder Link
<b>FR28</b>	500.0	39750.0	Feeder Link
<b>FR29</b>	500.0	40250.0	Feeder Link
<b>FR33</b>	500.0	42250.0	Feeder Link
<b>SR20</b>	100.0	19850.0	Service Link
<b>SR21</b>	100.0	19950.0	Service Link
<b>SR22</b>	100.0	20050.0	Service Link
<b>SR23</b>	100.0	20150.0	Service Link
<b>TL01</b>	1.0	19298.5	TT&C
<b>TR01</b>	1.0	19298.5	TT&C
<b>FL16</b>	100.0	19450.0	Feeder Link
<b>SR09</b>	100.0	18550.0	Service Link
<b>SL09</b>	100.0	18550.0	Service Link
<b>FR09</b>	100.0	18550.0	Feeder Link



<b>FL17</b>	100.0	19550.0	Feeder Link
<b>SR10</b>	100.0	18850.0	Service Link
<b>SL10</b>	100.0	18850.0	Service Link
<b>FR10</b>	100.0	18850.0	Feeder Link
<b>FL18</b>	100.0	19650.0	Feeder Link
<b>SR11</b>	100.0	18950.0	Service Link
<b>SL11</b>	100.0	18950.0	Service Link
<b>FR11</b>	100.0	18950.0	Feeder Link
<b>FL19</b>	100.0	19750.0	Feeder Link
<b>SR12</b>	100.0	19050.0	Service Link
<b>SL12</b>	100.0	19050.0	Service Link
<b>FR12</b>	100.0	19050.0	Feeder Link
<b>FL20</b>	100.0	19850.0	Feeder Link
<b>SR13</b>	100.0	19150.0	Service Link

## Certification Questions

Question	Response
Are the applicable service area coverage requirements of 25.143(b)(2) (ii) and (iii), or 25.144(a)(3)(i), or 25.145 (c)(1) and (2), or 25.146(i)(1) and (2), or 25.148(c), or 25.225 met?	N/A
Are the applicable frequency tolerances of 25.202(e) and out-of-band emission limits of 25.202(f)(1),(2), and (3) met?	Yes
Are the cessation of emissions requirements of 25.207 met?	Yes
Are the applicable power-flux-density limits of 25.208 met, and is the appropriate technical showing provided within the application?	Yes
For NGSO applications, are the applicable equivalent-power-flux-density limits of 25.208 met, and is the appropriate technical showing provided within the application?	Yes
Are the applicable full-frequency-reuse requirements of 25.210 met?	Yes
If the application is for a 17/24 GHz BSS space station, will it be operated at an offset location with full power and interference protection in accordance with 25.262(b)?	

## Attachments

File Name	Beam	Field	Attachment Type	Description
<u><a href="#">Mangata Networks - Gain Contours v3.pdf</a></u>		NGSO Antenna Gain Data	PDF file (*.pdf)	Antenna contours for user, gateway, ttc (Ka /V-Band) Tx and Rx