



312 File Number: **SATLOI2017030100031**

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## Filing Description

Question	Response
Description	OneWeb V-band NGSO Satellite System

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**Satellite  
Information**

Question	Response
Select Orbit Type	NGSO
Space Station or Satellite Network Name	OneWeb V-band
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 (4)

Nature of service	Description	Frequency Band(s)	Mode Type
<b>Fixed-Satellite Service</b>		37500.0 MHz -42500.0 MHz	Transmit
<b>Fixed-Satellite Service</b>		42500.0 MHz -43500.0 MHz	Receive
<b>Fixed-Satellite Service</b>		47200.0 MHz -50200.0 MHz	Receive
<b>Fixed-Satellite Service</b>		50400.0 MHz -51400.0 MHz	Receive

**Orbital  
Information For  
Non-  
Geostationary  
Satellites**

Question	Response
Total Number of Satellites in the active constellation	2000
Orbit Epoch Date	01/01/2010
Celestial Reference Body	Earth

## Orbital Plane 1:

Question	Response
Number of Satellites in Plane	40
Inclination Angle	87.9 degrees
Right Ascension of Ascending Node	0.0 degrees
Argument of Perigee	0.0 degrees
Orbital Period	6600.0 seconds
Apogee	1200.0 km
Perigee	1200.0 km
Active Service Arc Begin Angle with respect to Ascending Node	87.9 degrees
Active Service Arc End Angle with respect to Ascending Node	87.9 degrees

## Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	261.0
2	270.0
3	279.0
4	288.0
5	297.0
6	306.0
7	315.0
8	324.0
9	333.0
10	342.0
11	351.0
12	252.0
13	243.0

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<b>14</b>	234.0
<b>15</b>	225.0
<b>16</b>	216.0
<b>17</b>	207.0
<b>18</b>	198.0
<b>19</b>	189.0
<b>20</b>	180.0
<b>21</b>	171.0
<b>22</b>	162.0
<b>23</b>	153.0
<b>24</b>	144.0
<b>25</b>	135.0
<b>26</b>	0.0
<b>27</b>	9.0
<b>28</b>	18.0
<b>29</b>	27.0
<b>30</b>	36.0
<b>31</b>	45.0
<b>32</b>	54.0
<b>33</b>	63.0
<b>34</b>	72.0
<b>35</b>	81.0
<b>36</b>	90.0
<b>37</b>	99.0
<b>38</b>	108.0
<b>39</b>	117.0

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<b>40</b>	126.0
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## Orbital Plane 2:

Question	Response
Number of Satellites in Plane	40
Inclination Angle	87.9 degrees
Right Ascension of Ascending Node	10.2 degrees
Argument of Perigee	0.0 degrees
Orbital Period	6600.0 seconds
Apogee	1200.0 km
Perigee	1200.0 km
Active Service Arc Begin Angle with respect to Ascending Node	87.9 degrees
Active Service Arc End Angle with respect to Ascending Node	87.9 degrees

## Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
<b>1</b>	346.5
<b>2</b>	355.5
<b>3</b>	337.5
<b>4</b>	328.5
<b>5</b>	319.5
<b>6</b>	310.5
<b>7</b>	301.5
<b>8</b>	292.5
<b>9</b>	283.5
<b>10</b>	274.5
<b>11</b>	265.5

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<b>12</b>	256.5
<b>13</b>	247.5
<b>14</b>	238.5
<b>15</b>	229.5
<b>16</b>	220.5
<b>17</b>	211.5
<b>18</b>	202.5
<b>19</b>	193.5
<b>20</b>	184.5
<b>21</b>	175.5
<b>22</b>	166.5
<b>23</b>	157.5
<b>24</b>	148.5
<b>25</b>	139.5
<b>26</b>	130.5
<b>27</b>	121.5
<b>28</b>	112.5
<b>29</b>	103.5
<b>30</b>	94.5
<b>31</b>	85.5
<b>32</b>	76.5
<b>33</b>	67.5
<b>34</b>	58.5
<b>35</b>	49.5
<b>36</b>	40.5
<b>37</b>	31.5

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<b>38</b>	22.5
<b>39</b>	4.5
<b>40</b>	13.5

### Orbital Plane 3:

Question	Response
Number of Satellites in Plane	40
Inclination Angle	87.9 degrees
Right Ascension of Ascending Node	20.4 degrees
Argument of Perigee	0.0 degrees
Orbital Period	6600.0 seconds
Apogee	1200.0 km
Perigee	1200.0 km
Active Service Arc Begin Angle with respect to Ascending Node	87.9 degrees
Active Service Arc End Angle with respect to Ascending Node	87.9 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
<b>1</b>	90.0
<b>2</b>	99.0
<b>3</b>	108.0
<b>4</b>	117.0
<b>5</b>	126.0
<b>6</b>	135.0
<b>7</b>	144.0
<b>8</b>	153.0
<b>9</b>	162.0

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<b>10</b>	171.0
<b>11</b>	180.0
<b>12</b>	189.0
<b>13</b>	198.0
<b>14</b>	207.0
<b>15</b>	216.0
<b>16</b>	225.0
<b>17</b>	234.0
<b>18</b>	243.0
<b>19</b>	252.0
<b>20</b>	261.0
<b>21</b>	270.0
<b>22</b>	279.0
<b>23</b>	288.0
<b>24</b>	297.0
<b>25</b>	306.0
<b>26</b>	315.0
<b>27</b>	324.0
<b>28</b>	333.0
<b>29</b>	342.0
<b>30</b>	351.0
<b>31</b>	81.0
<b>32</b>	72.0
<b>33</b>	63.0
<b>34</b>	54.0
<b>35</b>	45.0

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<b>36</b>	36.0
<b>37</b>	27.0
<b>38</b>	18.0
<b>39</b>	9.0
<b>40</b>	0.0

## Orbital Plane 4:

Question	Response
Number of Satellites in Plane	40
Inclination Angle	87.9 degrees
Right Ascension of Ascending Node	30.6 degrees
Argument of Perigee	0.0 degrees
Orbital Period	6600.0 seconds
Apogee	1200.0 km
Perigee	1200.0 km
Active Service Arc Begin Angle with respect to Ascending Node	87.9 degrees
Active Service Arc End Angle with respect to Ascending Node	87.9 degrees

## Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
<b>1</b>	202.5
<b>2</b>	211.5
<b>3</b>	220.5
<b>4</b>	229.5
<b>5</b>	238.5
<b>6</b>	247.5
<b>7</b>	256.5

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<b>8</b>	265.5
<b>9</b>	274.5
<b>10</b>	283.5
<b>11</b>	292.5
<b>12</b>	301.5
<b>13</b>	310.5
<b>14</b>	319.5
<b>15</b>	328.5
<b>16</b>	337.5
<b>17</b>	346.5
<b>18</b>	355.5
<b>19</b>	193.5
<b>20</b>	184.5
<b>21</b>	175.5
<b>22</b>	166.5
<b>23</b>	157.5
<b>24</b>	148.5
<b>25</b>	139.5
<b>26</b>	130.5
<b>27</b>	121.5
<b>28</b>	112.5
<b>29</b>	103.5
<b>30</b>	94.5
<b>31</b>	85.5
<b>32</b>	76.5
<b>33</b>	67.5

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<b>34</b>	58.5
<b>35</b>	49.5
<b>36</b>	40.5
<b>37</b>	31.5
<b>38</b>	22.5
<b>39</b>	13.5
<b>40</b>	4.5

### Orbital Plane 5:

Question	Response
Number of Satellites in Plane	40
Inclination Angle	87.9 degrees
Right Ascension of Ascending Node	40.8 degrees
Argument of Perigee	0.0 degrees
Orbital Period	6600.0 seconds
Apogee	1200.0 km
Perigee	1200.0 km
Active Service Arc Begin Angle with respect to Ascending Node	87.9 degrees
Active Service Arc End Angle with respect to Ascending Node	87.9 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
<b>1</b>	9.0
<b>2</b>	18.0
<b>3</b>	27.0
<b>4</b>	36.0
<b>5</b>	45.0

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<b>6</b>	54.0
<b>7</b>	63.0
<b>8</b>	72.0
<b>9</b>	81.0
<b>10</b>	90.0
<b>11</b>	99.0
<b>12</b>	108.0
<b>13</b>	117.0
<b>14</b>	126.0
<b>15</b>	135.0
<b>16</b>	144.0
<b>17</b>	306.0
<b>18</b>	315.0
<b>19</b>	324.0
<b>20</b>	333.0
<b>21</b>	342.0
<b>22</b>	351.0
<b>23</b>	297.0
<b>24</b>	288.0
<b>25</b>	279.0
<b>26</b>	270.0
<b>27</b>	261.0
<b>28</b>	252.0
<b>29</b>	243.0
<b>30</b>	234.0
<b>31</b>	225.0

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<b>32</b>	216.0
<b>33</b>	207.0
<b>34</b>	198.0
<b>35</b>	189.0
<b>36</b>	180.0
<b>37</b>	171.0
<b>38</b>	162.0
<b>39</b>	153.0
<b>40</b>	0.0

**Orbital Plane 6:**

<b>Question</b>	<b>Response</b>
Number of Satellites in Plane	40
Inclination Angle	87.9 degrees
Right Ascension of Ascending Node	51.0 degrees
Argument of Perigee	0.0 degrees
Orbital Period	6600.0 seconds
Apogee	1200.0 km
Perigee	1200.0 km
Active Service Arc Begin Angle with respect to Ascending Node	87.9 degrees
Active Service Arc End Angle with respect to Ascending Node	87.9 degrees

**Mean Anomaly For Each Satellite**

<b>Satellite Number</b>	<b>Mean Anomaly (degrees) at the Orbit Epoch Date</b>
<b>1</b>	4.5
<b>2</b>	13.5
<b>3</b>	22.5

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<b>4</b>	31.5
<b>5</b>	40.5
<b>6</b>	49.5
<b>7</b>	58.5
<b>8</b>	67.5
<b>9</b>	76.5
<b>10</b>	85.5
<b>11</b>	94.5
<b>12</b>	103.5
<b>13</b>	112.5
<b>14</b>	121.5
<b>15</b>	130.5
<b>16</b>	139.5
<b>17</b>	148.5
<b>18</b>	157.5
<b>19</b>	166.5
<b>20</b>	175.5
<b>21</b>	184.5
<b>22</b>	193.5
<b>23</b>	202.5
<b>24</b>	211.5
<b>25</b>	220.5
<b>26</b>	229.5
<b>27</b>	238.5
<b>28</b>	247.5
<b>29</b>	256.5

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<b>30</b>	265.5
<b>31</b>	274.5
<b>32</b>	283.5
<b>33</b>	292.5
<b>34</b>	301.5
<b>35</b>	355.5
<b>36</b>	346.5
<b>37</b>	337.5
<b>38</b>	328.5
<b>39</b>	319.5
<b>40</b>	310.5

**Orbital Plane 7:**

<b>Question</b>	<b>Response</b>
Number of Satellites in Plane	40
Inclination Angle	87.9 degrees
Right Ascension of Ascending Node	61.2 degrees
Argument of Perigee	0.0 degrees
Orbital Period	6600.0 seconds
Apogee	1200.0 km
Perigee	1200.0 km
Active Service Arc Begin Angle with respect to Ascending Node	87.9 degrees
Active Service Arc End Angle with respect to Ascending Node	87.9 degrees

**Mean Anomaly For Each Satellite**

<b>Satellite Number</b>	<b>Mean Anomaly (degrees) at the Orbit Epoch Date</b>
<b>1</b>	54.0

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<b>2</b>	63.0
<b>3</b>	72.0
<b>4</b>	81.0
<b>5</b>	90.0
<b>6</b>	99.0
<b>7</b>	108.0
<b>8</b>	117.0
<b>9</b>	126.0
<b>10</b>	135.0
<b>11</b>	144.0
<b>12</b>	153.0
<b>13</b>	162.0
<b>14</b>	171.0
<b>15</b>	180.0
<b>16</b>	189.0
<b>17</b>	198.0
<b>18</b>	207.0
<b>19</b>	216.0
<b>20</b>	225.0
<b>21</b>	234.0
<b>22</b>	243.0
<b>23</b>	252.0
<b>24</b>	261.0
<b>25</b>	270.0
<b>26</b>	279.0
<b>27</b>	288.0

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<b>28</b>	297.0
<b>29</b>	306.0
<b>30</b>	315.0
<b>31</b>	324.0
<b>32</b>	333.0
<b>33</b>	342.0
<b>34</b>	351.0
<b>35</b>	45.0
<b>36</b>	36.0
<b>37</b>	27.0
<b>38</b>	18.0
<b>39</b>	9.0
<b>40</b>	0.0

**Orbital Plane 8:**

<b>Question</b>	<b>Response</b>
Number of Satellites in Plane	40
Inclination Angle	87.9 degrees
Right Ascension of Ascending Node	71.4 degrees
Argument of Perigee	0.0 degrees
Orbital Period	6600.0 seconds
Apogee	1200.0 km
Perigee	1200.0 km
Active Service Arc Begin Angle with respect to Ascending Node	87.9 degrees
Active Service Arc End Angle with respect to Ascending Node	87.9 degrees

**Mean Anomaly For Each Satellite**

<b>Satellite Number</b>	<b>Mean Anomaly (degrees) at the Orbit Epoch Date</b>
1	166.5
2	175.5
3	184.5
4	193.5
5	202.5
6	211.5
7	220.5
8	229.5
9	238.5
10	247.5
11	256.5
12	265.5
13	274.5
14	283.5
15	292.5
16	301.5
17	310.5
18	319.5
19	328.5
20	337.5
21	346.5
22	355.5
23	157.5
24	148.5
25	139.5

<b>26</b>	130.5
<b>27</b>	121.5
<b>28</b>	112.5
<b>29</b>	103.5
<b>30</b>	94.5
<b>31</b>	85.5
<b>32</b>	76.5
<b>33</b>	67.5
<b>34</b>	58.5
<b>35</b>	49.5
<b>36</b>	40.5
<b>37</b>	31.5
<b>38</b>	22.5
<b>39</b>	13.5
<b>40</b>	4.5

### Orbital Plane 9:

Question	Response
Number of Satellites in Plane	40
Inclination Angle	87.9 degrees
Right Ascension of Ascending Node	81.6 degrees
Argument of Perigee	0.0 degrees
Orbital Period	6600.0 seconds
Apogee	1200.0 km
Perigee	1200.0 km
Active Service Arc Begin Angle with respect to Ascending Node	87.9 degrees
Active Service Arc End Angle with respect to Ascending Node	87.9 degrees

## Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	9.0
3	18.0
4	27.0
5	36.0
6	45.0
7	54.0
8	63.0
9	72.0
10	270.0
11	279.0
12	288.0
13	297.0
14	306.0
15	315.0
16	324.0
17	333.0
18	342.0
19	351.0
20	261.0
21	252.0
22	243.0
23	234.0
24	225.0

<b>25</b>	216.0
<b>26</b>	207.0
<b>27</b>	198.0
<b>28</b>	189.0
<b>29</b>	180.0
<b>30</b>	171.0
<b>31</b>	162.0
<b>32</b>	153.0
<b>33</b>	144.0
<b>34</b>	135.0
<b>35</b>	126.0
<b>36</b>	117.0
<b>37</b>	108.0
<b>38</b>	99.0
<b>39</b>	90.0
<b>40</b>	81.0

**Orbital Plane 10:**

<b>Question</b>	<b>Response</b>
Number of Satellites in Plane	40
Inclination Angle	87.9 degrees
Right Ascension of Ascending Node	91.8 degrees
Argument of Perigee	0.0 degrees
Orbital Period	6600.0 seconds
Apogee	1200.0 km
Perigee	1200.0 km
Active Service Arc Begin Angle with respect to Ascending Node	87.9 degrees

**Mean Anomaly For Each Satellite**

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	4.5
2	13.5
3	22.5
4	31.5
5	40.5
6	49.5
7	58.5
8	67.5
9	76.5
10	85.5
11	94.5
12	103.5
13	112.5
14	121.5
15	130.5
16	139.5
17	148.5
18	157.5
19	166.5
20	175.5
21	184.5
22	193.5



<b>23</b>	202.5
<b>24</b>	211.5
<b>25</b>	220.5
<b>26</b>	229.5
<b>27</b>	238.5
<b>28</b>	247.5
<b>29</b>	256.5
<b>30</b>	265.5
<b>31</b>	355.5
<b>32</b>	346.5
<b>33</b>	337.5
<b>34</b>	328.5
<b>35</b>	319.5
<b>36</b>	310.5
<b>37</b>	301.5
<b>38</b>	292.5
<b>39</b>	283.5
<b>40</b>	274.5

**Orbital Plane 11:**

<b>Question</b>	<b>Response</b>
Number of Satellites in Plane	40
Inclination Angle	87.9 degrees
Right Ascension of Ascending Node	102.0 degrees
Argument of Perigee	0.0 degrees
Orbital Period	6600.0 seconds
Apogee	1200.0 km

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Perigee	1200.0 km
Active Service Arc Begin Angle with respect to Ascending Node	87.9 degrees
Active Service Arc End Angle with respect to Ascending Node	87.9 degrees

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### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	18.0
2	27.0
3	36.0
4	45.0
5	54.0
6	63.0
7	72.0
8	81.0
9	90.0
10	99.0
11	108.0
12	117.0
13	126.0
14	135.0
15	144.0
16	153.0
17	162.0
18	171.0
19	180.0
20	189.0

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21	198.0
22	207.0
23	216.0
24	225.0
25	234.0
26	243.0
27	252.0
28	261.0
29	270.0
30	279.0
31	288.0
32	297.0
33	306.0
34	315.0
35	324.0
36	333.0
37	342.0
38	351.0
39	9.0
40	0.0

**Orbital Plane 12:**

Question	Response
Number of Satellites in Plane	40
Inclination Angle	87.9 degrees
Right Ascension of Ascending Node	112.2 degrees
Argument of Perigee	0.0 degrees

Orbital Period	6600.0 seconds
Apogee	1200.0 km
Perigee	1200.0 km
Active Service Arc Begin Angle with respect to Ascending Node	87.9 degrees
Active Service Arc End Angle with respect to Ascending Node	87.9 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	130.5
2	139.5
3	148.5
4	157.5
5	166.5
6	175.5
7	184.5
8	193.5
9	202.5
10	211.5
11	220.5
12	229.5
13	238.5
14	247.5
15	256.5
16	265.5
17	274.5
18	283.5
19	292.5

20	301.5
21	310.5
22	319.5
23	328.5
24	337.5
25	346.5
26	355.5
27	121.5
28	112.5
29	103.5
30	94.5
31	85.5
32	76.5
33	67.5
34	58.5
35	49.5
36	40.5
37	31.5
38	22.5
39	13.5
40	4.5

**Orbital Plane 13:**

Question	Response
Number of Satellites in Plane	40
Inclination Angle	87.9 degrees
Right Ascension of Ascending Node	122.4 degrees

Argument of Perigee	0.0 degrees
Orbital Period	6600.0 seconds
Apogee	1200.0 km
Perigee	1200.0 km
Active Service Arc Begin Angle with respect to Ascending Node	87.9 degrees
Active Service Arc End Angle with respect to Ascending Node	87.9 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	234.0
3	243.0
4	252.0
5	261.0
6	270.0
7	279.0
8	288.0
9	297.0
10	306.0
11	315.0
12	324.0
13	333.0
14	342.0
15	351.0
16	225.0
17	216.0
18	207.0

19	198.0
20	189.0
21	180.0
22	171.0
23	162.0
24	153.0
25	144.0
26	135.0
27	126.0
28	117.0
29	108.0
30	99.0
31	90.0
32	81.0
33	72.0
34	63.0
35	54.0
36	45.0
37	36.0
38	27.0
39	18.0
40	9.0

**Orbital Plane 14:**

Question	Response
Number of Satellites in Plane	40
Inclination Angle	87.9 degrees

Right Ascension of Ascending Node	132.6 degrees
Argument of Perigee	0.0 degrees
Orbital Period	6600.0 seconds
Apogee	1200.0 km
Perigee	1200.0 km
Active Service Arc Begin Angle with respect to Ascending Node	87.9 degrees
Active Service Arc End Angle with respect to Ascending Node	87.9 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	4.5
2	13.5
3	22.5
4	31.5
5	40.5
6	49.5
7	58.5
8	67.5
9	76.5
10	85.5
11	94.5
12	103.5
13	112.5
14	121.5
15	130.5
16	139.5
17	148.5



18	157.5
19	166.5
20	175.5
21	184.5
22	193.5
23	202.5
24	211.5
25	346.5
26	355.5
27	337.5
28	328.5
29	319.5
30	310.5
31	301.5
32	292.5
33	283.5
34	274.5
35	265.5
36	256.5
37	247.5
38	238.5
39	229.5
40	220.5

**Orbital Plane 15:**

Question	Response
Number of Satellites in Plane	40

Inclination Angle	87.9 degrees
Right Ascension of Ascending Node	142.8 degrees
Argument of Perigee	0.0 degrees
Orbital Period	6600.0 seconds
Apogee	1200.0 km
Perigee	1200.0 km
Active Service Arc Begin Angle with respect to Ascending Node	87.9 degrees
Active Service Arc End Angle with respect to Ascending Node	87.9 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	9.0
3	18.0
4	27.0
5	36.0
6	45.0
7	54.0
8	63.0
9	72.0
10	81.0
11	90.0
12	99.0
13	108.0
14	117.0
15	126.0
16	135.0

17	144.0
18	153.0
19	162.0
20	171.0
21	180.0
22	189.0
23	198.0
24	207.0
25	216.0
26	225.0
27	234.0
28	243.0
29	252.0
30	261.0
31	270.0
32	279.0
33	288.0
34	297.0
35	306.0
36	315.0
37	324.0
38	333.0
39	351.0
40	342.0

**Orbital Plane 16:**

**Question**

**Response**

Number of Satellites in Plane	40
Inclination Angle	87.9 degrees
Right Ascension of Ascending Node	153.0 degrees
Argument of Perigee	0.0 degrees
Orbital Period	6600.0 seconds
Apogee	1200.0 km
Perigee	1200.0 km
Active Service Arc Begin Angle with respect to Ascending Node	87.9 degrees
Active Service Arc End Angle with respect to Ascending Node	87.9 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	94.5
2	103.5
3	112.5
4	121.5
5	130.5
6	139.5
7	148.5
8	157.5
9	166.5
10	175.5
11	184.5
12	193.5
13	202.5
14	211.5
15	220.5

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<b>16</b>	229.5
<b>17</b>	238.5
<b>18</b>	247.5
<b>19</b>	256.5
<b>20</b>	265.5
<b>21</b>	274.5
<b>22</b>	283.5
<b>23</b>	292.5
<b>24</b>	301.5
<b>25</b>	310.5
<b>26</b>	319.5
<b>27</b>	328.5
<b>28</b>	337.5
<b>29</b>	346.5
<b>30</b>	355.5
<b>31</b>	85.5
<b>32</b>	76.5
<b>33</b>	67.5
<b>34</b>	58.5
<b>35</b>	49.5
<b>36</b>	40.5
<b>37</b>	31.5
<b>38</b>	22.5
<b>39</b>	13.5
<b>40</b>	4.5

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## Orbital Plane 17:

Question	Response
Number of Satellites in Plane	40
Inclination Angle	87.9 degrees
Right Ascension of Ascending Node	163.2 degrees
Argument of Perigee	0.0 degrees
Orbital Period	6600.0 seconds
Apogee	1200.0 km
Perigee	1200.0 km
Active Service Arc Begin Angle with respect to Ascending Node	87.9 degrees
Active Service Arc End Angle with respect to Ascending Node	87.9 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	198.0
2	207.0
3	216.0
4	225.0
5	234.0
6	243.0
7	252.0
8	261.0
9	270.0
10	279.0
11	288.0
12	297.0
13	306.0
14	315.0

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<b>15</b>	324.0
<b>16</b>	333.0
<b>17</b>	342.0
<b>18</b>	351.0
<b>19</b>	189.0
<b>20</b>	180.0
<b>21</b>	171.0
<b>22</b>	162.0
<b>23</b>	153.0
<b>24</b>	144.0
<b>25</b>	135.0
<b>26</b>	126.0
<b>27</b>	117.0
<b>28</b>	108.0
<b>29</b>	99.0
<b>30</b>	90.0
<b>31</b>	81.0
<b>32</b>	72.0
<b>33</b>	63.0
<b>34</b>	54.0
<b>35</b>	45.0
<b>36</b>	36.0
<b>37</b>	27.0
<b>38</b>	18.0
<b>39</b>	9.0
<b>40</b>	0.0

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## Orbital Plane 18:

Question	Response
Number of Satellites in Plane	40
Inclination Angle	87.9 degrees
Right Ascension of Ascending Node	173.4 degrees
Argument of Perigee	0.0 degrees
Orbital Period	6600.0 seconds
Apogee	1200.0 km
Perigee	1200.0 km
Active Service Arc Begin Angle with respect to Ascending Node	87.9 degrees
Active Service Arc End Angle with respect to Ascending Node	87.9 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	4.5
2	13.5
3	22.5
4	31.5
5	40.5
6	49.5
7	58.5
8	67.5
9	76.5
10	85.5
11	94.5
12	103.5
13	112.5



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<b>14</b>	121.5
<b>15</b>	130.5
<b>16</b>	139.5
<b>17</b>	148.5
<b>18</b>	310.5
<b>19</b>	319.5
<b>20</b>	328.5
<b>21</b>	337.5
<b>22</b>	346.5
<b>23</b>	355.5
<b>24</b>	301.5
<b>25</b>	292.5
<b>26</b>	283.5
<b>27</b>	274.5
<b>28</b>	265.5
<b>29</b>	256.5
<b>30</b>	247.5
<b>31</b>	238.5
<b>32</b>	229.5
<b>33</b>	220.5
<b>34</b>	211.5
<b>35</b>	202.5
<b>36</b>	193.5
<b>37</b>	184.5
<b>38</b>	175.5
<b>39</b>	166.5

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<b>40</b>	157.5
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### Orbital Plane 19:

Question	Response
Number of Satellites in Plane	80
Inclination Angle	45.9959 degrees
Right Ascension of Ascending Node	0.0 degrees
Argument of Perigee	0.0 degrees
Orbital Period	17924.0 seconds
Apogee	8425.0 km
Perigee	8425.0 km
Active Service Arc Begin Angle with respect to Ascending Node	46.0 degrees
Active Service Arc End Angle with respect to Ascending Node	46.0 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	288.0
2	292.5
3	297.0
4	301.5
5	306.0
6	310.5
7	315.0
8	319.5
9	324.0
10	328.5

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<b>11</b>	333.0
<b>12</b>	337.5
<b>13</b>	342.0
<b>14</b>	27.0
<b>15</b>	31.5
<b>16</b>	36.0
<b>17</b>	40.5
<b>18</b>	45.0
<b>19</b>	49.5
<b>20</b>	54.0
<b>21</b>	58.5
<b>22</b>	63.0
<b>23</b>	67.5
<b>24</b>	72.0
<b>25</b>	76.5
<b>26</b>	81.0
<b>27</b>	85.5
<b>28</b>	90.0
<b>29</b>	94.5
<b>30</b>	99.0
<b>31</b>	103.5
<b>32</b>	108.0
<b>33</b>	112.5
<b>34</b>	117.0
<b>35</b>	121.5
<b>36</b>	126.0

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<b>37</b>	130.5
<b>38</b>	135.0
<b>39</b>	139.5
<b>40</b>	144.0
<b>41</b>	148.5
<b>42</b>	153.0
<b>43</b>	157.5
<b>44</b>	162.0
<b>45</b>	166.5
<b>46</b>	171.0
<b>47</b>	175.5
<b>48</b>	180.0
<b>49</b>	225.0
<b>50</b>	220.5
<b>51</b>	216.0
<b>52</b>	211.5
<b>53</b>	207.0
<b>54</b>	202.5
<b>55</b>	198.0
<b>56</b>	193.5
<b>57</b>	189.0
<b>58</b>	184.5
<b>59</b>	0.0
<b>60</b>	4.5
<b>61</b>	9.0
<b>62</b>	13.5

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<b>63</b>	18.0
<b>64</b>	22.5
<b>65</b>	229.5
<b>66</b>	234.0
<b>67</b>	238.5
<b>68</b>	243.0
<b>69</b>	247.5
<b>70</b>	252.0
<b>71</b>	256.5
<b>72</b>	261.0
<b>73</b>	265.5
<b>74</b>	270.0
<b>75</b>	274.5
<b>76</b>	279.0
<b>77</b>	283.5
<b>78</b>	355.5
<b>79</b>	351.0
<b>80</b>	346.5

**Orbital Plane 20:**

<b>Question</b>	<b>Response</b>
Number of Satellites in Plane	80
Inclination Angle	45.4685 degrees
Right Ascension of Ascending Node	22.5 degrees
Argument of Perigee	0.0 degrees
Orbital Period	17996.7 seconds
Apogee	8465.0 km

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Perigee	8465.0 km
Active Service Arc Begin Angle with respect to Ascending Node	45.47 degrees
Active Service Arc End Angle with respect to Ascending Node	45.47 degrees

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### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	220.5
2	216.0
3	211.5
4	207.0
5	202.5
6	198.0
7	189.0
8	184.5
9	180.0
10	175.5
11	171.0
12	166.5
13	162.0
14	157.5
15	153.0
16	148.5
17	144.0
18	139.5
19	135.0
20	130.5

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<b>21</b>	126.0
<b>22</b>	121.5
<b>23</b>	117.0
<b>24</b>	112.5
<b>25</b>	108.0
<b>26</b>	103.5
<b>27</b>	99.0
<b>28</b>	94.5
<b>29</b>	90.0
<b>30</b>	85.5
<b>31</b>	81.0
<b>32</b>	355.5
<b>33</b>	351.0
<b>34</b>	346.5
<b>35</b>	342.0
<b>36</b>	337.5
<b>37</b>	333.0
<b>38</b>	328.5
<b>39</b>	324.0
<b>40</b>	319.5
<b>41</b>	315.0
<b>42</b>	310.5
<b>43</b>	306.0
<b>44</b>	301.5
<b>45</b>	297.0
<b>46</b>	193.5

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<b>47</b>	292.5
<b>48</b>	76.5
<b>49</b>	72.0
<b>50</b>	67.5
<b>51</b>	63.0
<b>52</b>	58.5
<b>53</b>	54.0
<b>54</b>	49.5
<b>55</b>	45.0
<b>56</b>	40.5
<b>57</b>	36.0
<b>58</b>	31.5
<b>59</b>	27.0
<b>60</b>	22.5
<b>61</b>	18.0
<b>62</b>	13.5
<b>63</b>	9.0
<b>64</b>	4.5
<b>65</b>	0.0
<b>66</b>	288.0
<b>67</b>	283.5
<b>68</b>	279.0
<b>69</b>	274.5
<b>70</b>	270.0
<b>71</b>	265.5
<b>72</b>	261.0

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<b>73</b>	256.5
<b>74</b>	252.0
<b>75</b>	247.5
<b>76</b>	243.0
<b>77</b>	238.5
<b>78</b>	234.0
<b>79</b>	229.5
<b>80</b>	225.0

### Orbital Plane 21:

Question	Response
Number of Satellites in Plane	80
Inclination Angle	44.9325 degrees
Right Ascension of Ascending Node	45.0 degrees
Argument of Perigee	0.0 degrees
Orbital Period	18069.5 seconds
Apogee	8505.0 km
Perigee	8505.0 km
Active Service Arc Begin Angle with respect to Ascending Node	44.93 degrees
Active Service Arc End Angle with respect to Ascending Node	44.93 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
<b>1</b>	0.0
<b>2</b>	4.5
<b>3</b>	9.0

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<b>4</b>	13.5
<b>5</b>	18.0
<b>6</b>	22.5
<b>7</b>	27.0
<b>8</b>	31.5
<b>9</b>	36.0
<b>10</b>	40.5
<b>11</b>	310.5
<b>12</b>	315.0
<b>13</b>	58.5
<b>14</b>	63.0
<b>15</b>	67.5
<b>16</b>	72.0
<b>17</b>	76.5
<b>18</b>	81.0
<b>19</b>	85.5
<b>20</b>	90.0
<b>21</b>	94.5
<b>22</b>	99.0
<b>23</b>	103.5
<b>24</b>	108.0
<b>25</b>	112.5
<b>26</b>	117.0
<b>27</b>	121.5
<b>28</b>	126.0
<b>29</b>	130.5

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<b>30</b>	135.0
<b>31</b>	139.5
<b>32</b>	144.0
<b>33</b>	148.5
<b>34</b>	153.0
<b>35</b>	157.5
<b>36</b>	162.0
<b>37</b>	166.5
<b>38</b>	171.0
<b>39</b>	175.5
<b>40</b>	180.0
<b>41</b>	184.5
<b>42</b>	189.0
<b>43</b>	193.5
<b>44</b>	198.0
<b>45</b>	202.5
<b>46</b>	207.0
<b>47</b>	211.5
<b>48</b>	216.0
<b>49</b>	220.5
<b>50</b>	225.0
<b>51</b>	229.5
<b>52</b>	234.0
<b>53</b>	238.5
<b>54</b>	243.0
<b>55</b>	247.5

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<b>56</b>	252.0
<b>57</b>	256.5
<b>58</b>	261.0
<b>59</b>	265.5
<b>60</b>	270.0
<b>61</b>	274.5
<b>62</b>	279.0
<b>63</b>	283.5
<b>64</b>	288.0
<b>65</b>	292.5
<b>66</b>	297.0
<b>67</b>	301.5
<b>68</b>	306.0
<b>69</b>	319.5
<b>70</b>	324.0
<b>71</b>	328.5
<b>72</b>	333.0
<b>73</b>	337.5
<b>74</b>	342.0
<b>75</b>	346.5
<b>76</b>	351.0
<b>77</b>	355.5
<b>78</b>	54.0
<b>79</b>	49.5
<b>80</b>	45.0

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## Orbital Plane 22:

Question	Response
Number of Satellites in Plane	80
Inclination Angle	44.3879 degrees
Right Ascension of Ascending Node	67.5 degrees
Argument of Perigee	0.0 degrees
Orbital Period	18142.4 seconds
Apogee	8545.0 km
Perigee	8545.0 km
Active Service Arc Begin Angle with respect to Ascending Node	44.39 degrees
Active Service Arc End Angle with respect to Ascending Node	44.39 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	4.5
3	9.0
4	13.5
5	18.0
6	22.5
7	27.0
8	31.5
9	36.0
10	40.5
11	45.0
12	49.5

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<b>13</b>	54.0
<b>14</b>	58.5
<b>15</b>	63.0
<b>16</b>	67.5
<b>17</b>	72.0
<b>18</b>	76.5
<b>19</b>	81.0
<b>20</b>	85.5
<b>21</b>	90.0
<b>22</b>	94.5
<b>23</b>	99.0
<b>24</b>	103.5
<b>25</b>	108.0
<b>26</b>	112.5
<b>27</b>	117.0
<b>28</b>	121.5
<b>29</b>	126.0
<b>30</b>	130.5
<b>31</b>	135.0
<b>32</b>	139.5
<b>33</b>	144.0
<b>34</b>	148.5
<b>35</b>	153.0
<b>36</b>	157.5
<b>37</b>	162.0
<b>38</b>	229.5

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<b>39</b>	234.0
<b>40</b>	238.5
<b>41</b>	243.0
<b>42</b>	247.5
<b>43</b>	252.0
<b>44</b>	256.5
<b>45</b>	261.0
<b>46</b>	265.5
<b>47</b>	270.0
<b>48</b>	274.5
<b>49</b>	279.0
<b>50</b>	283.5
<b>51</b>	288.0
<b>52</b>	292.5
<b>53</b>	297.0
<b>54</b>	301.5
<b>55</b>	306.0
<b>56</b>	310.5
<b>57</b>	315.0
<b>58</b>	319.5
<b>59</b>	324.0
<b>60</b>	328.5
<b>61</b>	333.0
<b>62</b>	337.5
<b>63</b>	342.0
<b>64</b>	346.5

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65	351.0
66	355.5
67	225.0
68	220.5
69	216.0
70	211.5
71	207.0
72	202.5
73	198.0
74	193.5
75	189.0
76	184.5
77	180.0
78	175.5
79	171.0
80	166.5

**Orbital Plane 23:**

Question	Response
Number of Satellites in Plane	80
Inclination Angle	45.8648 degrees
Right Ascension of Ascending Node	90.0 degrees
Argument of Perigee	0.0 degrees
Orbital Period	17942.2 seconds
Apogee	8435.0 km
Perigee	8435.0 km



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Active Service Arc Begin Angle with respect to Ascending Node	45.86 degrees
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Active Service Arc End Angle with respect to Ascending Node	45.86 degrees
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### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	4.5
3	9.0
4	13.5
5	18.0
6	22.5
7	27.0
8	31.5
9	36.0
10	40.5
11	45.0
12	49.5
13	54.0
14	58.5
15	166.5
16	171.0
17	175.5
18	180.0
19	184.5
20	189.0
21	193.5

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<b>22</b>	198.0
<b>23</b>	202.5
<b>24</b>	207.0
<b>25</b>	211.5
<b>26</b>	216.0
<b>27</b>	220.5
<b>28</b>	225.0
<b>29</b>	229.5
<b>30</b>	234.0
<b>31</b>	238.5
<b>32</b>	243.0
<b>33</b>	247.5
<b>34</b>	252.0
<b>35</b>	256.5
<b>36</b>	261.0
<b>37</b>	265.5
<b>38</b>	270.0
<b>39</b>	274.5
<b>40</b>	279.0
<b>41</b>	283.5
<b>42</b>	288.0
<b>43</b>	292.5
<b>44</b>	297.0
<b>45</b>	301.5
<b>46</b>	306.0
<b>47</b>	310.5

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<b>48</b>	315.0
<b>49</b>	319.5
<b>50</b>	324.0
<b>51</b>	328.5
<b>52</b>	333.0
<b>53</b>	337.5
<b>54</b>	342.0
<b>55</b>	346.5
<b>56</b>	351.0
<b>57</b>	355.5
<b>58</b>	162.0
<b>59</b>	157.5
<b>60</b>	153.0
<b>61</b>	148.5
<b>62</b>	144.0
<b>63</b>	139.5
<b>64</b>	135.0
<b>65</b>	130.5
<b>66</b>	126.0
<b>67</b>	121.5
<b>68</b>	117.0
<b>69</b>	112.5
<b>70</b>	108.0
<b>71</b>	103.5
<b>72</b>	99.0
<b>73</b>	94.5

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<b>74</b>	90.0
<b>75</b>	85.5
<b>76</b>	81.0
<b>77</b>	76.5
<b>78</b>	72.0
<b>79</b>	67.5
<b>80</b>	63.0

**Orbital Plane 24:**

<b>Question</b>	<b>Response</b>
Number of Satellites in Plane	80
Inclination Angle	45.3353 degrees
Right Ascension of Ascending Node	112.5 degrees
Argument of Perigee	0.0 degrees
Orbital Period	18014.9 seconds
Apogee	8475.0 km
Perigee	8475.0 km
Active Service Arc Begin Angle with respect to Ascending Node	45.34 degrees
Active Service Arc End Angle with respect to Ascending Node	45.34 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>	4.5
<b>3</b>	9.0
<b>4</b>	13.5

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<b>5</b>	18.0
<b>6</b>	22.5
<b>7</b>	27.0
<b>8</b>	31.5
<b>9</b>	36.0
<b>10</b>	40.5
<b>11</b>	85.5
<b>12</b>	90.0
<b>13</b>	94.5
<b>14</b>	99.0
<b>15</b>	103.5
<b>16</b>	108.0
<b>17</b>	112.5
<b>18</b>	117.0
<b>19</b>	121.5
<b>20</b>	126.0
<b>21</b>	130.5
<b>22</b>	135.0
<b>23</b>	139.5
<b>24</b>	144.0
<b>25</b>	148.5
<b>26</b>	153.0
<b>27</b>	157.5
<b>28</b>	162.0
<b>29</b>	166.5
<b>30</b>	171.0

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<b>31</b>	175.5
<b>32</b>	180.0
<b>33</b>	184.5
<b>34</b>	189.0
<b>35</b>	193.5
<b>36</b>	198.0
<b>37</b>	202.5
<b>38</b>	207.0
<b>39</b>	211.5
<b>40</b>	216.0
<b>41</b>	220.5
<b>42</b>	225.0
<b>43</b>	229.5
<b>44</b>	234.0
<b>45</b>	238.5
<b>46</b>	243.0
<b>47</b>	247.5
<b>48</b>	252.0
<b>49</b>	256.5
<b>50</b>	261.0
<b>51</b>	265.5
<b>52</b>	270.0
<b>53</b>	274.5
<b>54</b>	279.0
<b>55</b>	283.5
<b>56</b>	288.0

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57	292.5
58	297.0
59	301.5
60	306.0
61	310.5
62	315.0
63	355.5
64	351.0
65	346.5
66	342.0
67	337.5
68	333.0
69	328.5
70	324.0
71	319.5
72	81.0
73	76.5
74	72.0
75	67.5
76	63.0
77	58.5
78	54.0
79	49.5
80	45.0

**Orbital Plane 25:**

**Question**

**Response**

Number of Satellites in Plane	80
Inclination Angle	44.7972 degrees
Right Ascension of Ascending Node	135.0 degrees
Argument of Perigee	0.0 degrees
Orbital Period	18087.8 seconds
Apogee	8515.0 km
Perigee	8515.0 km
Active Service Arc Begin Angle with respect to Ascending Node	44.8 degrees
Active Service Arc End Angle with respect to Ascending Node	44.8 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	4.5
3	9.0
4	13.5
5	18.0
6	22.5
7	27.0
8	31.5
9	36.0
10	40.5
11	45.0
12	49.5
13	54.0



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<b>14</b>	58.5
<b>15</b>	63.0
<b>16</b>	67.5
<b>17</b>	72.0
<b>18</b>	76.5
<b>19</b>	81.0
<b>20</b>	85.5
<b>21</b>	90.0
<b>22</b>	94.5
<b>23</b>	99.0
<b>24</b>	103.5
<b>25</b>	108.0
<b>26</b>	112.5
<b>27</b>	117.0
<b>28</b>	121.5
<b>29</b>	126.0
<b>30</b>	130.5
<b>31</b>	135.0
<b>32</b>	139.5
<b>33</b>	144.0
<b>34</b>	148.5
<b>35</b>	153.0
<b>36</b>	157.5
<b>37</b>	162.0
<b>38</b>	166.5
<b>39</b>	171.0

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<b>40</b>	175.5
<b>41</b>	180.0
<b>42</b>	184.5
<b>43</b>	189.0
<b>44</b>	193.5
<b>45</b>	198.0
<b>46</b>	202.5
<b>47</b>	207.0
<b>48</b>	211.5
<b>49</b>	216.0
<b>50</b>	220.5
<b>51</b>	225.0
<b>52</b>	229.5
<b>53</b>	234.0
<b>54</b>	238.5
<b>55</b>	243.0
<b>56</b>	247.5
<b>57</b>	252.0
<b>58</b>	256.5
<b>59</b>	261.0
<b>60</b>	265.5
<b>61</b>	270.0
<b>62</b>	355.5
<b>63</b>	351.0
<b>64</b>	346.5
<b>65</b>	342.0

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<b>66</b>	337.5
<b>67</b>	333.0
<b>68</b>	328.5
<b>69</b>	324.0
<b>70</b>	319.5
<b>71</b>	315.0
<b>72</b>	310.5
<b>73</b>	306.0
<b>74</b>	301.5
<b>75</b>	297.0
<b>76</b>	292.5
<b>77</b>	288.0
<b>78</b>	283.5
<b>79</b>	279.0
<b>80</b>	274.5

**Orbital Plane 26:**

<b>Question</b>	<b>Response</b>
Number of Satellites in Plane	80
Inclination Angle	44.2503 degrees
Right Ascension of Ascending Node	157.5 degrees
Argument of Perigee	0.0 degrees
Orbital Period	18160.7 seconds
Apogee	8555.0 km
Perigee	8555.0 km
Active Service Arc Begin Angle with respect to Ascending Node	44.25 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	27.0
2	31.5
3	36.0
4	40.5
5	45.0
6	49.5
7	54.0
8	58.5
9	63.0
10	67.5
11	72.0
12	76.5
13	81.0
14	85.5
15	90.0
16	94.5
17	99.0
18	103.5
19	108.0
20	112.5
21	117.0
22	121.5

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<b>23</b>	126.0
<b>24</b>	130.5
<b>25</b>	135.0
<b>26</b>	139.5
<b>27</b>	144.0
<b>28</b>	148.5
<b>29</b>	153.0
<b>30</b>	157.5
<b>31</b>	162.0
<b>32</b>	166.5
<b>33</b>	171.0
<b>34</b>	175.5
<b>35</b>	180.0
<b>36</b>	184.5
<b>37</b>	189.0
<b>38</b>	193.5
<b>39</b>	198.0
<b>40</b>	202.5
<b>41</b>	207.0
<b>42</b>	211.5
<b>43</b>	216.0
<b>44</b>	220.5
<b>45</b>	225.0
<b>46</b>	229.5
<b>47</b>	234.0
<b>48</b>	238.5

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<b>49</b>	243.0
<b>50</b>	247.5
<b>51</b>	252.0
<b>52</b>	256.5
<b>53</b>	261.0
<b>54</b>	265.5
<b>55</b>	270.0
<b>56</b>	274.5
<b>57</b>	279.0
<b>58</b>	283.5
<b>59</b>	288.0
<b>60</b>	292.5
<b>61</b>	297.0
<b>62</b>	301.5
<b>63</b>	306.0
<b>64</b>	355.5
<b>65</b>	351.0
<b>66</b>	346.5
<b>67</b>	342.0
<b>68</b>	337.5
<b>69</b>	333.0
<b>70</b>	328.5
<b>71</b>	324.0
<b>72</b>	319.5
<b>73</b>	315.0
<b>74</b>	310.5

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<b>75</b>	0.0
<b>76</b>	4.5
<b>77</b>	9.0
<b>78</b>	13.5
<b>79</b>	18.0
<b>80</b>	22.5

**Orbital Plane 27:**

Question	Response
Number of Satellites in Plane	80
Inclination Angle	45.7332 degrees
Right Ascension of Ascending Node	180.0 degrees
Argument of Perigee	0.0 degrees
Orbital Period	17960.4 seconds
Apogee	8445.0 km
Perigee	8445.0 km
Active Service Arc Begin Angle with respect to Ascending Node	45.73 degrees
Active Service Arc End Angle with respect to Ascending Node	45.73 degrees

**Mean Anomaly For Each Satellite**

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
<b>1</b>	0.0
<b>2</b>	4.5
<b>3</b>	9.0
<b>4</b>	13.5
<b>5</b>	18.0

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<b>6</b>	22.5
<b>7</b>	27.0
<b>8</b>	31.5
<b>9</b>	36.0
<b>10</b>	40.5
<b>11</b>	45.0
<b>12</b>	49.5
<b>13</b>	54.0
<b>14</b>	58.5
<b>15</b>	63.0
<b>16</b>	67.5
<b>17</b>	72.0
<b>18</b>	76.5
<b>19</b>	81.0
<b>20</b>	85.5
<b>21</b>	90.0
<b>22</b>	94.5
<b>23</b>	99.0
<b>24</b>	103.5
<b>25</b>	108.0
<b>26</b>	112.5
<b>27</b>	117.0
<b>28</b>	121.5
<b>29</b>	126.0
<b>30</b>	130.5
<b>31</b>	135.0

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<b>32</b>	139.5
<b>33</b>	144.0
<b>34</b>	148.5
<b>35</b>	153.0
<b>36</b>	157.5
<b>37</b>	162.0
<b>38</b>	166.5
<b>39</b>	171.0
<b>40</b>	175.5
<b>41</b>	180.0
<b>42</b>	184.5
<b>43</b>	189.0
<b>44</b>	193.5
<b>45</b>	198.0
<b>46</b>	202.5
<b>47</b>	207.0
<b>48</b>	211.5
<b>49</b>	216.0
<b>50</b>	220.5
<b>51</b>	225.0
<b>52</b>	229.5
<b>53</b>	234.0
<b>54</b>	238.5
<b>55</b>	243.0
<b>56</b>	247.5
<b>57</b>	252.0

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58	256.5
59	261.0
60	265.5
61	270.0
62	274.5
63	279.0
64	283.5
65	288.0
66	292.5
67	297.0
68	301.5
69	306.0
70	310.5
71	315.0
72	319.5
73	324.0
74	328.5
75	333.0
76	337.5
77	355.5
78	351.0
79	346.5
80	342.0

**Orbital Plane 28:**

Question	Response
Number of Satellites in Plane	80

Inclination Angle	45.2016 degrees
Right Ascension of Ascending Node	202.5 degrees
Argument of Perigee	0.0 degrees
Orbital Period	18033.1 seconds
Apogee	8485.0 km
Perigee	8485.0 km
Active Service Arc Begin Angle with respect to Ascending Node	45.2 degrees
Active Service Arc End Angle with respect to Ascending Node	45.2 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	4.5
3	9.0
4	13.5
5	18.0
6	22.5
7	27.0
8	31.5
9	36.0
10	40.5
11	45.0
12	49.5
13	54.0
14	58.5

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<b>15</b>	63.0
<b>16</b>	67.5
<b>17</b>	72.0
<b>18</b>	76.5
<b>19</b>	81.0
<b>20</b>	85.5
<b>21</b>	90.0
<b>22</b>	94.5
<b>23</b>	99.0
<b>24</b>	103.5
<b>25</b>	108.0
<b>26</b>	112.5
<b>27</b>	117.0
<b>28</b>	121.5
<b>29</b>	126.0
<b>30</b>	130.5
<b>31</b>	135.0
<b>32</b>	139.5
<b>33</b>	144.0
<b>34</b>	148.5
<b>35</b>	153.0
<b>36</b>	157.5
<b>37</b>	162.0
<b>38</b>	166.5
<b>39</b>	171.0
<b>40</b>	175.5

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<b>41</b>	180.0
<b>42</b>	184.5
<b>43</b>	189.0
<b>44</b>	193.5
<b>45</b>	198.0
<b>46</b>	202.5
<b>47</b>	207.0
<b>48</b>	211.5
<b>49</b>	216.0
<b>50</b>	220.5
<b>51</b>	225.0
<b>52</b>	229.5
<b>53</b>	234.0
<b>54</b>	238.5
<b>55</b>	243.0
<b>56</b>	247.5
<b>57</b>	252.0
<b>58</b>	256.5
<b>59</b>	342.0
<b>60</b>	337.5
<b>61</b>	333.0
<b>62</b>	328.5
<b>63</b>	324.0
<b>64</b>	319.5
<b>65</b>	315.0
<b>66</b>	310.5

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<b>67</b>	306.0
<b>68</b>	301.5
<b>69</b>	297.0
<b>70</b>	292.5
<b>71</b>	288.0
<b>72</b>	283.5
<b>73</b>	279.0
<b>74</b>	274.5
<b>75</b>	270.0
<b>76</b>	265.5
<b>77</b>	261.0
<b>78</b>	355.5
<b>79</b>	351.0
<b>80</b>	346.5

**Orbital Plane 29:**

<b>Question</b>	<b>Response</b>
Number of Satellites in Plane	80
Inclination Angle	44.6613 degrees
Right Ascension of Ascending Node	225.0 degrees
Argument of Perigee	0.0 degrees
Orbital Period	18106.0 seconds
Apogee	8525.0 km
Perigee	8525.0 km
Active Service Arc Begin Angle with respect to Ascending Node	44.66 degrees
Active Service Arc End Angle with respect to Ascending Node	44.66 degrees

## Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	4.5
3	9.0
4	13.5
5	18.0
6	22.5
7	27.0
8	31.5
9	36.0
10	40.5
11	45.0
12	49.5
13	54.0
14	58.5
15	63.0
16	67.5
17	72.0
18	76.5
19	81.0
20	85.5
21	90.0
22	94.5
23	99.0
24	103.5

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<b>25</b>	108.0
<b>26</b>	112.5
<b>27</b>	117.0
<b>28</b>	121.5
<b>29</b>	126.0
<b>30</b>	130.5
<b>31</b>	135.0
<b>32</b>	139.5
<b>33</b>	144.0
<b>34</b>	148.5
<b>35</b>	153.0
<b>36</b>	157.5
<b>37</b>	162.0
<b>38</b>	166.5
<b>39</b>	171.0
<b>40</b>	175.5
<b>41</b>	180.0
<b>42</b>	184.5
<b>43</b>	189.0
<b>44</b>	193.5
<b>45</b>	198.0
<b>46</b>	202.5
<b>47</b>	207.0
<b>48</b>	211.5
<b>49</b>	216.0
<b>50</b>	220.5

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<b>51</b>	225.0
<b>52</b>	229.5
<b>53</b>	234.0
<b>54</b>	238.5
<b>55</b>	243.0
<b>56</b>	355.5
<b>57</b>	351.0
<b>58</b>	346.5
<b>59</b>	342.0
<b>60</b>	337.5
<b>61</b>	333.0
<b>62</b>	328.5
<b>63</b>	324.0
<b>64</b>	319.5
<b>65</b>	315.0
<b>66</b>	310.5
<b>67</b>	306.0
<b>68</b>	301.5
<b>69</b>	297.0
<b>70</b>	292.5
<b>71</b>	288.0
<b>72</b>	283.5
<b>73</b>	279.0
<b>74</b>	274.5
<b>75</b>	270.0
<b>76</b>	265.5

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<b>77</b>	261.0
<b>78</b>	256.5
<b>79</b>	252.0
<b>80</b>	247.5

**Orbital Plane 30:**

<b>Question</b>	<b>Response</b>
Number of Satellites in Plane	80
Inclination Angle	44.1122 degrees
Right Ascension of Ascending Node	247.5 degrees
Argument of Perigee	0.0 degrees
Orbital Period	18178.9 seconds
Apogee	8565.0 km
Perigee	8565.0 km
Active Service Arc Begin Angle with respect to Ascending Node	44.11 degrees
Active Service Arc End Angle with respect to Ascending Node	44.11 degrees

**Mean Anomaly For Each Satellite**

<b>Satellite Number</b>	<b>Mean Anomaly (degrees) at the Orbit Epoch Date</b>
<b>1</b>	94.5
<b>2</b>	99.0
<b>3</b>	103.5
<b>4</b>	108.0
<b>5</b>	112.5
<b>6</b>	117.0
<b>7</b>	121.5

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<b>8</b>	126.0
<b>9</b>	130.5
<b>10</b>	135.0
<b>11</b>	139.5
<b>12</b>	144.0
<b>13</b>	148.5
<b>14</b>	153.0
<b>15</b>	157.5
<b>16</b>	162.0
<b>17</b>	166.5
<b>18</b>	171.0
<b>19</b>	175.5
<b>20</b>	180.0
<b>21</b>	184.5
<b>22</b>	189.0
<b>23</b>	193.5
<b>24</b>	198.0
<b>25</b>	202.5
<b>26</b>	207.0
<b>27</b>	211.5
<b>28</b>	216.0
<b>29</b>	220.5
<b>30</b>	225.0
<b>31</b>	229.5
<b>32</b>	234.0
<b>33</b>	238.5

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<b>34</b>	243.0
<b>35</b>	247.5
<b>36</b>	252.0
<b>37</b>	256.5
<b>38</b>	261.0
<b>39</b>	265.5
<b>40</b>	270.0
<b>41</b>	274.5
<b>42</b>	279.0
<b>43</b>	283.5
<b>44</b>	288.0
<b>45</b>	292.5
<b>46</b>	297.0
<b>47</b>	301.5
<b>48</b>	306.0
<b>49</b>	310.5
<b>50</b>	315.0
<b>51</b>	319.5
<b>52</b>	324.0
<b>53</b>	328.5
<b>54</b>	333.0
<b>55</b>	337.5
<b>56</b>	342.0
<b>57</b>	0.0
<b>58</b>	4.5
<b>59</b>	346.5

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60	351.0
61	355.5
62	9.0
63	13.5
64	18.0
65	22.5
66	27.0
67	31.5
68	36.0
69	40.5
70	45.0
71	49.5
72	54.0
73	58.5
74	63.0
75	67.5
76	72.0
77	76.5
78	81.0
79	85.5
80	90.0

**Orbital Plane 31:**

Question	Response
Number of Satellites in Plane	80
Inclination Angle	45.6011 degrees
Right Ascension of Ascending Node	270.0 degrees

Argument of Perigee	0.0 degrees
Orbital Period	17978.6 seconds
Apogee	8455.0 km
Perigee	8455.0 km
Active Service Arc Begin Angle with respect to Ascending Node	45.6 degrees
Active Service Arc End Angle with respect to Ascending Node	45.6 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	4.5
3	9.0
4	13.5
5	18.0
6	22.5
7	27.0
8	31.5
9	36.0
10	40.5
11	45.0
12	49.5
13	54.0
14	58.5
15	63.0
16	67.5

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<b>17</b>	72.0
<b>18</b>	76.5
<b>19</b>	81.0
<b>20</b>	85.5
<b>21</b>	90.0
<b>22</b>	94.5
<b>23</b>	99.0
<b>24</b>	103.5
<b>25</b>	108.0
<b>26</b>	112.5
<b>27</b>	117.0
<b>28</b>	121.5
<b>29</b>	126.0
<b>30</b>	130.5
<b>31</b>	135.0
<b>32</b>	139.5
<b>33</b>	144.0
<b>34</b>	148.5
<b>35</b>	153.0
<b>36</b>	157.5
<b>37</b>	162.0
<b>38</b>	166.5
<b>39</b>	171.0
<b>40</b>	175.5
<b>41</b>	180.0
<b>42</b>	184.5

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<b>43</b>	189.0
<b>44</b>	193.5
<b>45</b>	198.0
<b>46</b>	202.5
<b>47</b>	207.0
<b>48</b>	211.5
<b>49</b>	216.0
<b>50</b>	220.5
<b>51</b>	225.0
<b>52</b>	229.5
<b>53</b>	234.0
<b>54</b>	238.5
<b>55</b>	243.0
<b>56</b>	247.5
<b>57</b>	252.0
<b>58</b>	256.5
<b>59</b>	261.0
<b>60</b>	265.5
<b>61</b>	270.0
<b>62</b>	274.5
<b>63</b>	279.0
<b>64</b>	283.5
<b>65</b>	288.0
<b>66</b>	292.5
<b>67</b>	297.0
<b>68</b>	301.5

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<b>69</b>	306.0
<b>70</b>	310.5
<b>71</b>	315.0
<b>72</b>	319.5
<b>73</b>	324.0
<b>74</b>	328.5
<b>75</b>	333.0
<b>76</b>	355.5
<b>77</b>	351.0
<b>78</b>	346.5
<b>79</b>	342.0
<b>80</b>	337.5

**Orbital Plane 32:**

<b>Question</b>	<b>Response</b>
Number of Satellites in Plane	80
Inclination Angle	45.0673 degrees
Right Ascension of Ascending Node	292.5 degrees
Argument of Perigee	0.0 degrees
Orbital Period	18051.3 seconds
Apogee	8495.0 km
Perigee	8495.0 km
Active Service Arc Begin Angle with respect to Ascending Node	45.07 degrees
Active Service Arc End Angle with respect to Ascending Node	45.07 degrees

**Mean Anomaly For Each Satellite**

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	0.0
2	4.5
3	9.0
4	13.5
5	18.0
6	22.5
7	27.0
8	31.5
9	36.0
10	40.5
11	45.0
12	49.5
13	54.0
14	58.5
15	63.0
16	67.5
17	72.0
18	76.5
19	81.0
20	85.5
21	90.0
22	94.5
23	99.0
24	103.5
25	108.0

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<b>26</b>	112.5
<b>27</b>	117.0
<b>28</b>	121.5
<b>29</b>	126.0
<b>30</b>	130.5
<b>31</b>	135.0
<b>32</b>	139.5
<b>33</b>	144.0
<b>34</b>	148.5
<b>35</b>	153.0
<b>36</b>	157.5
<b>37</b>	162.0
<b>38</b>	166.5
<b>39</b>	171.0
<b>40</b>	175.5
<b>41</b>	180.0
<b>42</b>	184.5
<b>43</b>	189.0
<b>44</b>	193.5
<b>45</b>	198.0
<b>46</b>	202.5
<b>47</b>	207.0
<b>48</b>	211.5
<b>49</b>	216.0
<b>50</b>	220.5
<b>51</b>	225.0

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<b>52</b>	229.5
<b>53</b>	234.0
<b>54</b>	238.5
<b>55</b>	243.0
<b>56</b>	247.5
<b>57</b>	355.5
<b>58</b>	351.0
<b>59</b>	346.5
<b>60</b>	342.0
<b>61</b>	337.5
<b>62</b>	333.0
<b>63</b>	328.5
<b>64</b>	324.0
<b>65</b>	319.5
<b>66</b>	315.0
<b>67</b>	310.5
<b>68</b>	306.0
<b>69</b>	301.5
<b>70</b>	297.0
<b>71</b>	292.5
<b>72</b>	288.0
<b>73</b>	283.5
<b>74</b>	279.0
<b>75</b>	274.5
<b>76</b>	270.0
<b>77</b>	265.5

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<b>78</b>	261.0
<b>79</b>	256.5
<b>80</b>	252.0

### Orbital Plane 33:

Question	Response
Number of Satellites in Plane	80
Inclination Angle	44.5249 degrees
Right Ascension of Ascending Node	315.0 degrees
Argument of Perigee	0.0 degrees
Orbital Period	18124.2 seconds
Apogee	8535.0 km
Perigee	8535.0 km
Active Service Arc Begin Angle with respect to Ascending Node	44.52 degrees
Active Service Arc End Angle with respect to Ascending Node	44.52 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
<b>1</b>	0.0
<b>2</b>	4.5
<b>3</b>	9.0
<b>4</b>	13.5
<b>5</b>	18.0
<b>6</b>	22.5
<b>7</b>	27.0
<b>8</b>	31.5

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<b>9</b>	36.0
<b>10</b>	40.5
<b>11</b>	45.0
<b>12</b>	49.5
<b>13</b>	54.0
<b>14</b>	58.5
<b>15</b>	63.0
<b>16</b>	67.5
<b>17</b>	72.0
<b>18</b>	76.5
<b>19</b>	315.0
<b>20</b>	319.5
<b>21</b>	324.0
<b>22</b>	328.5
<b>23</b>	333.0
<b>24</b>	337.5
<b>25</b>	342.0
<b>26</b>	346.5
<b>27</b>	351.0
<b>28</b>	355.5
<b>29</b>	81.0
<b>30</b>	85.5
<b>31</b>	90.0
<b>32</b>	94.5
<b>33</b>	99.0
<b>34</b>	103.5

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<b>35</b>	108.0
<b>36</b>	112.5
<b>37</b>	117.0
<b>38</b>	121.5
<b>39</b>	126.0
<b>40</b>	130.5
<b>41</b>	135.0
<b>42</b>	139.5
<b>43</b>	144.0
<b>44</b>	148.5
<b>45</b>	153.0
<b>46</b>	157.5
<b>47</b>	162.0
<b>48</b>	166.5
<b>49</b>	171.0
<b>50</b>	175.5
<b>51</b>	180.0
<b>52</b>	184.5
<b>53</b>	189.0
<b>54</b>	193.5
<b>55</b>	198.0
<b>56</b>	202.5
<b>57</b>	207.0
<b>58</b>	211.5
<b>59</b>	216.0
<b>60</b>	220.5

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61	225.0
62	229.5
63	234.0
64	238.5
65	243.0
66	247.5
67	252.0
68	256.5
69	261.0
70	265.5
71	270.0
72	274.5
73	279.0
74	283.5
75	288.0
76	292.5
77	297.0
78	301.5
79	306.0
80	310.5

**Orbital Plane 34:**

Question	Response
Number of Satellites in Plane	80
Inclination Angle	43.9735 degrees
Right Ascension of Ascending Node	337.5 degrees
Argument of Perigee	0.0 degrees



Orbital Period	18197.2 seconds
Apogee	8575.0 km
Perigee	8575.0 km
Active Service Arc Begin Angle with respect to Ascending Node	43.97 degrees
Active Service Arc End Angle with respect to Ascending Node	43.97 degrees

### Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	301.5
2	306.0
3	310.5
4	315.0
5	319.5
6	324.0
7	328.5
8	333.0
9	337.5
10	342.0
11	346.5
12	351.0
13	355.5
14	0.0
15	4.5
16	9.0
17	13.5

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<b>18</b>	18.0
<b>19</b>	22.5
<b>20</b>	27.0
<b>21</b>	31.5
<b>22</b>	36.0
<b>23</b>	40.5
<b>24</b>	45.0
<b>25</b>	49.5
<b>26</b>	54.0
<b>27</b>	58.5
<b>28</b>	63.0
<b>29</b>	67.5
<b>30</b>	72.0
<b>31</b>	76.5
<b>32</b>	81.0
<b>33</b>	85.5
<b>34</b>	90.0
<b>35</b>	94.5
<b>36</b>	99.0
<b>37</b>	103.5
<b>38</b>	108.0
<b>39</b>	112.5
<b>40</b>	117.0
<b>41</b>	121.5
<b>42</b>	126.0
<b>43</b>	130.5

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<b>44</b>	135.0
<b>45</b>	139.5
<b>46</b>	189.0
<b>47</b>	193.5
<b>48</b>	198.0
<b>49</b>	202.5
<b>50</b>	207.0
<b>51</b>	211.5
<b>52</b>	216.0
<b>53</b>	220.5
<b>54</b>	225.0
<b>55</b>	229.5
<b>56</b>	234.0
<b>57</b>	238.5
<b>58</b>	243.0
<b>59</b>	247.5
<b>60</b>	252.0
<b>61</b>	256.5
<b>62</b>	261.0
<b>63</b>	265.5
<b>64</b>	270.0
<b>65</b>	274.5
<b>66</b>	279.0
<b>67</b>	283.5
<b>68</b>	288.0
<b>69</b>	292.5

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<b>70</b>	297.0
<b>71</b>	184.5
<b>72</b>	180.0
<b>73</b>	175.5
<b>74</b>	171.0
<b>75</b>	166.5
<b>76</b>	162.0
<b>77</b>	157.5
<b>78</b>	153.0
<b>79</b>	148.5
<b>80</b>	144.0

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## Receiving Beams 1:

Question	Response
Beam ID	LGR1
Receive Beam Frequency	42500.0 MHz -43500.0 MHz
Beam Type	Steerable
Polarization	LHCP
Peak Gain	41.5 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	13.1 dB/K
Min. Saturation Flux Density	-76.8 dBW/m <sup>2</sup>
Max. Saturation Flux Density	-56.8 dBW/m <sup>2</sup>
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 15 degree elevation angle

## Receiving Beams 2:

Question	Response
Beam ID	LGR2
Receive Beam Frequency	47200.0 MHz -50200.0 MHz
Beam Type	Steerable
Polarization	LHCP
Peak Gain	41.5 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees

Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	13.1 dB/K
Min. Saturation Flux Density	-76.8 dBW/m2
Max. Saturation Flux Density	-56.8 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 15 degree elevation angle

**Receiving Beams 3:**

Question	Response
Beam ID	LGR3
Receive Beam Frequency	50400.0 MHz -51400.0 MHz
Beam Type	Steerable
Polarization	LHCP
Peak Gain	41.5 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	13.1 dB/K
Min. Saturation Flux Density	-76.8 dBW/m2
Max. Saturation Flux Density	-56.8 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 15 degree elevation angle

## Receiving Beams 4:

Question	Response
Beam ID	LGR4
Receive Beam Frequency	42500.0 MHz -43500.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	41.5 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	13.1 dB/K
Min. Saturation Flux Density	-76.8 dBW/m <sup>2</sup>
Max. Saturation Flux Density	-56.8 dBW/m <sup>2</sup>
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 15 degree elevation

## Receiving Beams 5:

Question	Response
Beam ID	LGR5
Receive Beam Frequency	47200.0 MHz -50200.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	41.5 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	

Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	13.1 dB/K
Min. Saturation Flux Density	-76.8 dBW/m2
Max. Saturation Flux Density	-56.8 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 15 degree elevation

**Receiving Beams 6:**

Question	Response
Beam ID	LGR6
Receive Beam Frequency	50400.0 MHz -51400.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	41.5 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	13.1 dB/K
Min. Saturation Flux Density	-76.8 dBW/m2
Max. Saturation Flux Density	-56.8 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 15 degree elevation

**Receiving Beams 7:**

Question	Response
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Beam ID	MGR1
Receive Beam Frequency	42500.0 MHz -43500.0 MHz
Beam Type	Steerable
Polarization	LHCP
Peak Gain	49.5 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	21.0 dB/K
Min. Saturation Flux Density	-84.7 dBW/m2
Max. Saturation Flux Density	-64.7 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 25 degree elevation angle

**Receiving Beams 8:**

Question	Response
Beam ID	MGR2
Receive Beam Frequency	47200.0 MHz -50200.0 MHz
Beam Type	Steerable
Polarization	LHCP
Peak Gain	49.5 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees

G/T at Max. Gain Point	21.0 dB/K
Min. Saturation Flux Density	-84.7 dBW/m2
Max. Saturation Flux Density	-64.7 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 25 degree elevation angle

### Receiving Beams 9:

Question	Response
Beam ID	MGR3
Receive Beam Frequency	50400.0 MHz -51400.0 MHz
Beam Type	Steerable
Polarization	LHCP
Peak Gain	49.5 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	21.0 dB/K
Min. Saturation Flux Density	-84.7 dBW/m2
Max. Saturation Flux Density	-64.7 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 25 degree elevation angle

### Receiving Beams 10:

Question	Response
Beam ID	MGR4

Receive Beam Frequency	42500.0 MHz -43500.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	49.5 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	21.0 dB/K
Min. Saturation Flux Density	-84.7 dBW/m <sup>2</sup>
Max. Saturation Flux Density	-64.7 dBW/m <sup>2</sup>
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 25 degree elevation angle

**Receiving Beams 11:**

Question	Response
Beam ID	MGR5
Receive Beam Frequency	47200.0 MHz -50200.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	49.5 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	21.0 dB/K

Min. Saturation Flux Density	-84.7 dBW/m <sup>2</sup>
Max. Saturation Flux Density	-64.7 dBW/m <sup>2</sup>
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 25 degree elevation angle

## Receiving Beams 12:

Question	Response
Beam ID	MGR6
Receive Beam Frequency	50400.0 MHz -51400.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	49.5 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	21.0 dB/K
Min. Saturation Flux Density	-84.7 dBW/m <sup>2</sup>
Max. Saturation Flux Density	-64.7 dBW/m <sup>2</sup>
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 25 degree elevation angle

## Receiving Beams 13:

Question	Response
Beam ID	LURL
Receive Beam Frequency	48200.0 MHz -50200.0 MHz

Beam Type	Steerable
Polarization	LHCP
Peak Gain	36.2 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	7.8 dB/K
Min. Saturation Flux Density	-69.5 dBW/m <sup>2</sup>
Max. Saturation Flux Density	-54.5 dBW/m <sup>2</sup>
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 45 degree elevation angle

**Receiving  
Beams 14:**

Question	Response
Beam ID	LURR
Receive Beam Frequency	48200.0 MHz -50200.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	36.2 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	7.8 dB/K
Min. Saturation Flux Density	-69.5 dBW/m <sup>2</sup>

Max. Saturation Flux Density	-54.5 dBW/m <sup>2</sup>
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 45 degree elevation angle

**Receiving Beams 15:**

Question	Response
Beam ID	MURL
Receive Beam Frequency	48200.0 MHz -50200.0 MHz
Beam Type	Steerable
Polarization	LHCP
Peak Gain	47.7 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	19.3 dB/K
Min. Saturation Flux Density	-81.0 dBW/m <sup>2</sup>
Max. Saturation Flux Density	-66.0 dBW/m <sup>2</sup>
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 45 degree elevation angle

**Receiving Beams 16:**

Question	Response
Beam ID	MURR
Receive Beam Frequency	48200.0 MHz -50200.0 MHz
Beam Type	Steerable

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Polarization	RHCP
Peak Gain	47.7 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	19.3 dB/K
Min. Saturation Flux Density	-81.0 dBW/m <sup>2</sup>
Max. Saturation Flux Density	-66.0 dBW/m <sup>2</sup>
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 45 degree elevation angle

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## Receiving Channels (14)

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
GU1	490.0	47495.0	Service Link
UU4	490.0	49945.0	Service Link
GU8	490.0	51145.0	Service Link
GU7	490.0	50655.0	Service Link
GU6	490.0	49945.0	Service Link
GU5	490.0	49455.0	Service Link
GU4	490.0	48965.0	Service Link
GU3	490.0	48475.0	Service Link
GU2	490.0	47985.0	Service Link
GU10	490.0	43245.0	Service Link
UU3	490.0	49455.0	Service Link
UU2	490.0	48965.0	Service Link
UU1	490.0	48475.0	Service Link
GU9	490.0	42755.0	Service Link



## Transmitting Beams 1:

Question	Response
Beam ID	LGTL
Transmit Beam Frequency	37500.0 MHz -42500.0 MHz
Beam Type	Steerable
Polarization	LHCP
Peak Gain	40.1 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-44.7 dBW/Hz
Max. Transmit EIRP	52.3 dBW
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 15 degree elevation angle

### 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>	-146.9	-138.6	-124.5	-123.5	-122.5	-117.3

## Transmitting Beams 2:

Question	Response
Beam ID	LGTR
Transmit Beam Frequency	37500.0 MHz -42500.0 MHz

Beam Type	Steerable
Polarization	RHCP
Peak Gain	40.1 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-44.7 dBW/Hz
Max. Transmit EIRP	52.3 dBW
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 15 degree elevation angle

### 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>	-146.9	-138.6	-124.5	-123.5	-122.5	-117.3

### Transmitting Beams 3:

Question	Response
Beam ID	MGTL
Transmit Beam Frequency	37500.0 MHz -42500.0 MHz
Beam Type	Steerable
Polarization	LHCP
Peak Gain	48.1 dBi
Antenna Pointing Error	0.02 degrees

Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-28.9 dBW/Hz
Max. Transmit EIRP	68.1 dBW
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 25 degree elevation angle

### 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>	-142.8	-142.2	-141.6	-141.0	-121.6	-118.4

### Transmitting Beams 4:

Question	Response
Beam ID	MGTR
Transmit Beam Frequency	37500.0 MHz -42500.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	48.1 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-28.9 dBW/Hz

Max. Transmit EIRP	68.1 dBW
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 25 degree elevation angle

### 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>	-142.8	-142.2	-141.6	-141.0	-121.6	-118.4

### Transmitting Beams 5:

Question	Response
Beam ID	LUTL
Transmit Beam Frequency	40000.0 MHz -42000.0 MHz
Beam Type	Steerable
Polarization	LHCP
Peak Gain	36.2 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-33.3 dBW/Hz
Max. Transmit EIRP	53.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 45 degree elevation angle

### 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>	-137.8	-136.2	-134.6	-133.1	-131.6	-105.8

### Transmitting Beams 6:

Question	Response
Beam ID	LUTR
Transmit Beam Frequency	40000.0 MHz -42000.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	36.2 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-33.3 dBW/Hz
Max. Transmit EIRP	53.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 45 degree elevation angle

### 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>	-137.8	-136.2	-134.6	-133.1	-131.6	-105.8
<b>MHz</b>						

## Transmitting Beams 7:

Question	Response
Beam ID	MUTL
Transmit Beam Frequency	40000.0 MHz -42000.0 MHz
Beam Type	Steerable
Polarization	LHCP
Peak Gain	47.7 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-16.3 dBW/Hz
Max. Transmit EIRP	70.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 45 degree elevation angle

## 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>	-132.9	-132.0	-131.2	-130.4	-129.5	-105.8
<b>MHz</b>						

## Transmitting Beams 8:

Question	Response
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Beam ID	MUTR
Transmit Beam Frequency	40000.0 MHz -42000.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	47.7 dBi
Antenna Pointing Error	0.02 degrees
Antenna Rotational Error	1.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-16.3 dBW/Hz
Max. Transmit EIRP	70.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	Earth locations above 45 degree elevation angle

### 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>	-132.9	-132.0	-131.2	-130.4	-129.5	-105.8

## Transmitting Channels (14)

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
UD3	490.0	41225.0	Service Link
UD2	490.0	40735.0	Service Link
UD1	490.0	40245.0	Service Link
UD4	490.0	41715.0	Service Link
GD1	490.0	37795.0	Service Link
GD10	490.0	42205.0	Service Link
GD4	490.0	39265.0	Service Link
GD5	490.0	39755.0	Service Link
GD6	490.0	40245.0	Service Link
GD7	490.0	40735.0	Service Link
GD8	490.0	41225.0	Service Link
GD3	490.0	38775.0	Service Link
GD2	490.0	38285.0	Service Link
GD9	490.0	41715.0	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?	Yes
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?	N/A
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
<a href="#"><u>LGTL.gxt</u></a>	LGTL	NGSO Antenna Gain Data	GXT file (*.gxt)	LEO Satellite Transmit Gateway Beam (LHCP)
<a href="#"><u>MGTR.gxt</u></a>	MGTR	NGSO Antenna Gain Data	GXT file (*.gxt)	MEO Satellite Transmit Gateway Beam (RHCP)
<a href="#"><u>LUTL.gxt</u></a>	LUTL	NGSO Antenna Gain Data	GXT file (*.gxt)	LEO Satellite Transmit User Beam (LHCP)
<a href="#"><u>LUTR.gxt</u></a>	LUTR	NGSO Antenna Gain Data	GXT file (*.gxt)	LEO Satellite Transmit User Beam (RHCP)
<a href="#"><u>MUTL.gxt</u></a>	MUTL	NGSO Antenna Gain Data	GXT file (*.gxt)	MEO Satellite Transmit User Beam (LHCP)
<a href="#"><u>MUTR.gxt</u></a>	MUTR	NGSO Antenna Gain Data	GXT file (*.gxt)	MEO Satellite Transmit User Beam (RHCP)
<a href="#"><u>LGTR.gxt</u></a>	LGTR	NGSO Antenna Gain Data	GXT file (*.gxt)	LEO Satellite Transmit Gateway Beam (RHCP)
<a href="#"><u>MGTL.gxt</u></a>	MGTL	NGSO Antenna Gain Data	GXT file (*.gxt)	MEO Satellite Transmit Gateway Beam (LHCP)
<a href="#"><u>LGRL.gxt</u></a>	LGR1	NGSO Antenna Gain Data	GXT file (*.gxt)	LEO Satellite Receive Gateway Beam (LHCP)
<a href="#"><u>LGRL.gxt</u></a>	LGR3	NGSO Antenna Gain Data	GXT file (*.gxt)	LEO Satellite Receive Gateway Beam (LHCP)
<a href="#"><u>LGRL.gxt</u></a>	LGR2	NGSO Antenna Gain Data	GXT file (*.gxt)	LEO Satellite Receive Gateway Beam (LHCP)
<a href="#"><u>LGRR.gxt</u></a>	LGR4	NGSO Antenna Gain Data	GXT file (*.gxt)	LEO Satellite Receive Gateway Beam (RHCP)
<a href="#"><u>LGRR.gxt</u></a>	LGR5	NGSO Antenna Gain Data	GXT file (*.gxt)	LEO Satellite Receive Gateway Beam (RHCP)
<a href="#"><u>LGRR.gxt</u></a>	LGR6	NGSO Antenna Gain Data	GXT file (*.gxt)	LEO Satellite Receive Gateway Beam (RHCP)
<a href="#"><u>MGRL.gxt</u></a>	MGR1	NGSO Antenna Gain Data	GXT file (*.gxt)	MEO Satellite Receive Gateway Beam (LHCP)
<a href="#"><u>MGRL.gxt</u></a>	MGR2	NGSO Antenna Gain Data	GXT file (*.gxt)	MEO Satellite Receive Gateway Beam (LHCP)

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<u>MGRL</u> <u>gxt</u>	MGR3	NGSO Antenna Gain Data	GXT file (*. gxt)	MEO Satellite Receive Gateway Beam (LHCP)
<u>MURR</u> <u>gxt</u>	MURR	NGSO Antenna Gain Data	GXT file (*. gxt)	MEO Satellite Receive User Beam (RHCP)
<u>MGRR</u> <u>gxt</u>	MGR4	NGSO Antenna Gain Data	GXT file (*. gxt)	MEO Satellite Receive Gateway Beam (RHCP)
<u>MGRR</u> <u>gxt</u>	MGR5	NGSO Antenna Gain Data	GXT file (*. gxt)	MEO Satellite Receive Gateway Beam (RHCP)
<u>MGRR</u> <u>gxt</u>	MGR6	NGSO Antenna Gain Data	GXT file (*. gxt)	MEO Satellite Receive Gateway Beam (RHCP)
<u>LURL</u> <u>gxt</u>	LURL	NGSO Antenna Gain Data	GXT file (*. gxt)	LEO Satellite Receive User Beam (LHCP)
<u>LURR</u> <u>gxt</u>	LURR	NGSO Antenna Gain Data	GXT file (*. gxt)	LEO Satellite Receive User Beam (RHCP)
<u>MURL</u> <u>gxt</u>	MURL	NGSO Antenna Gain Data	GXT file (*. gxt)	MEO Satellite Receive User Beam (LHCP)

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