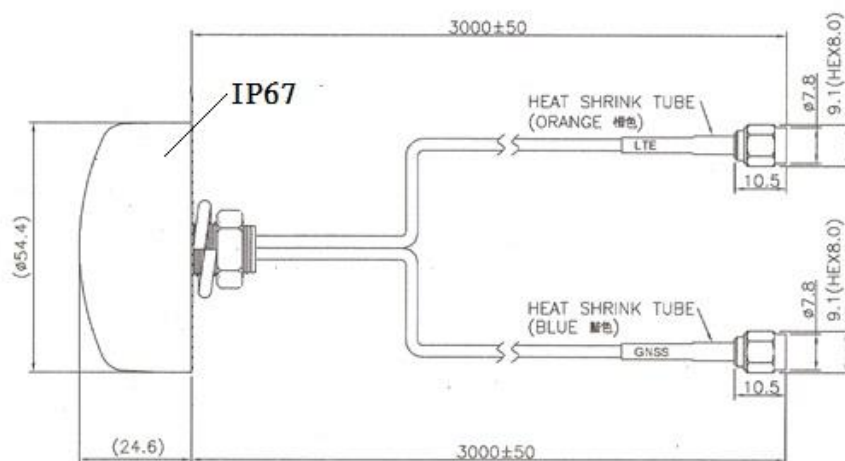




CHINMORE INDUSTRY CO.,LTD

## *Specification*

1. Product Type: GPS/GLONASS+4G LTE Antenna
  2. Chinmore No: R36F+CABLE+SMA M
  3. Frequency(GPS+GLONASS): 1575.42/1602MHz
  4. Frequency(4G LTE):  
824~960/1710~2170/2600~2700 MHz
  5. VSWR: 2.0:1
  6. Cable: RG174U FOR GPS+GLONASS  
RG316U FOR 4G LTE
  7. Connector: SMA M
  8. Gain for GPS+GLONASS: 30dBi
  9. Gain for 4G / LTE: 0dBi
- ※RoHS Compliant

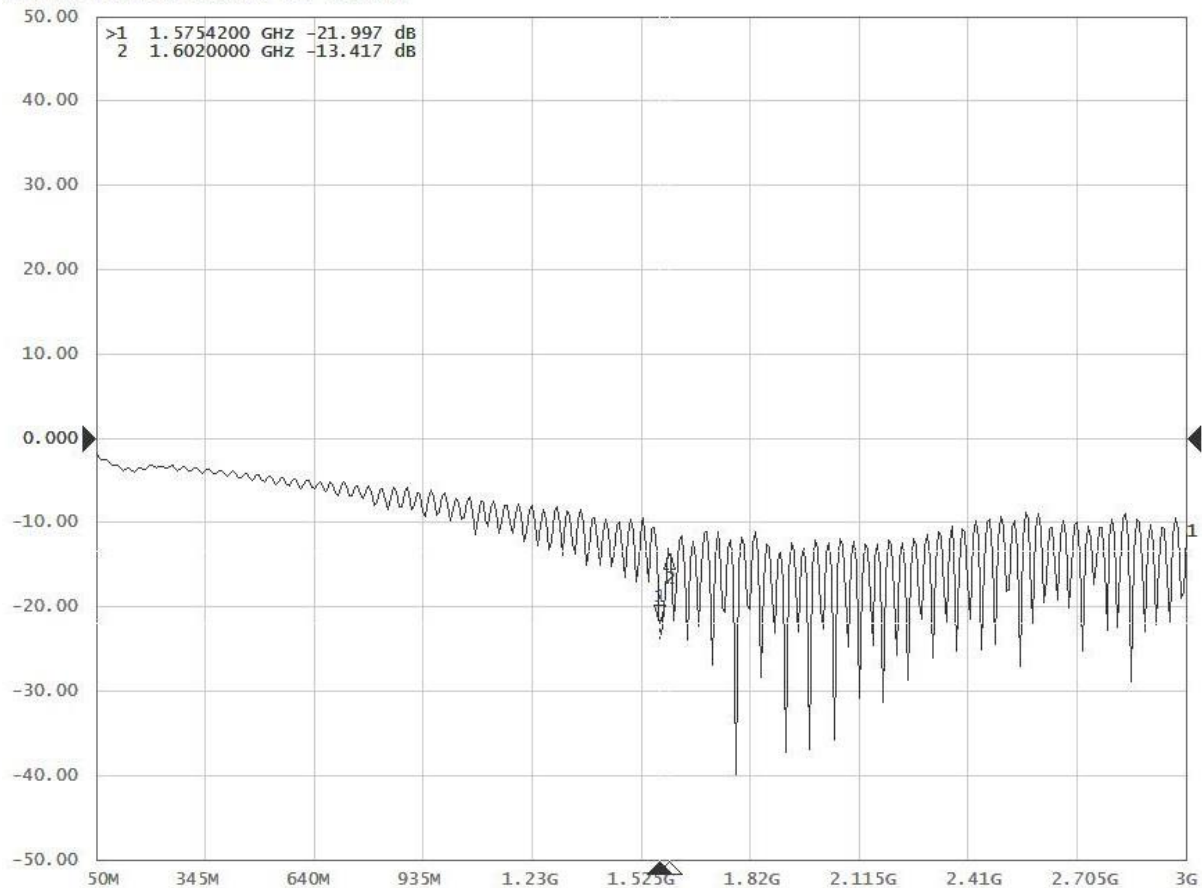


# ELECTRICAL(3M)

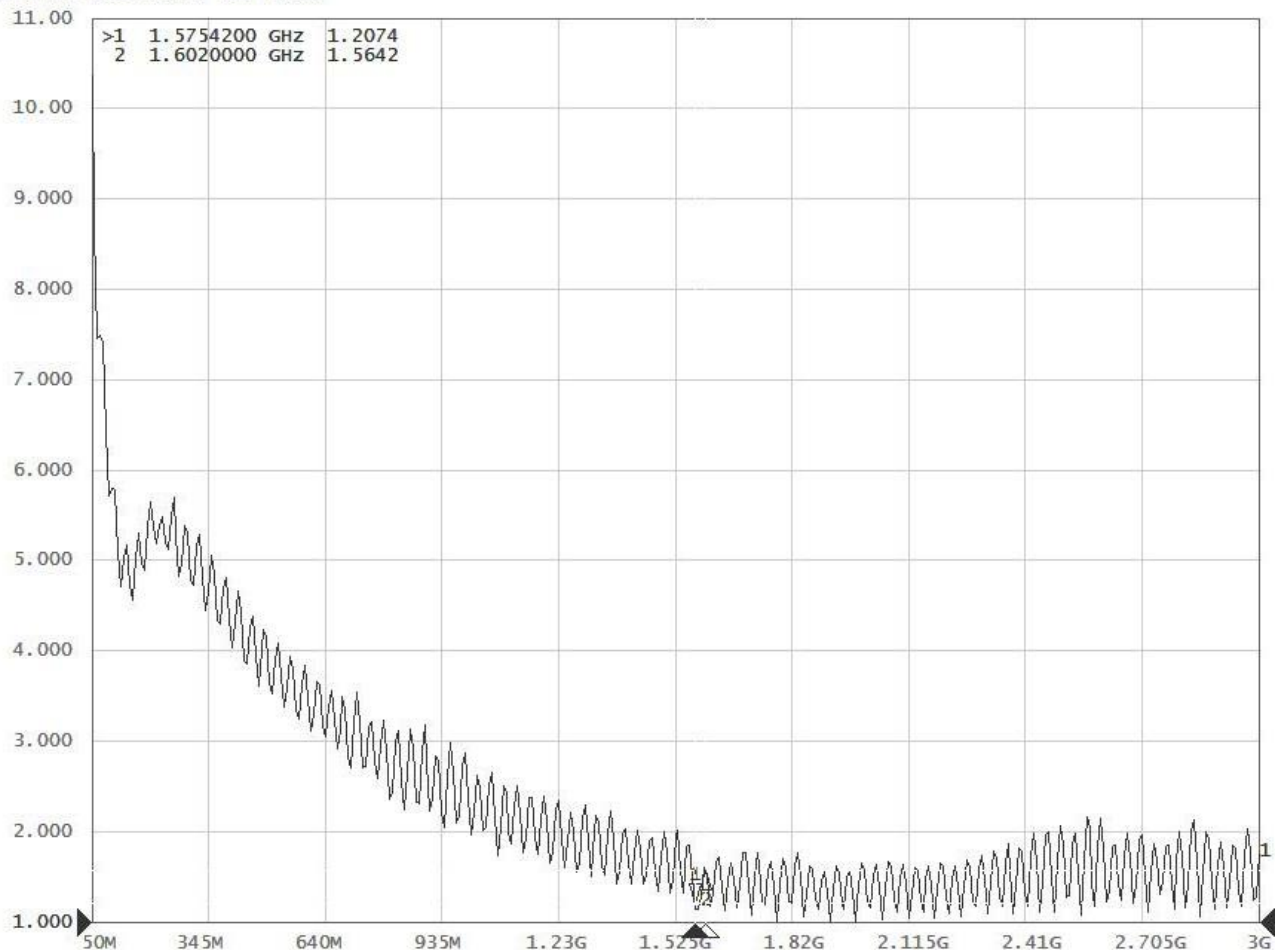
| Frequency<br>(MHz) | Return Loss<br>(dB) | VSWR<br>(dB) | E-Plane<br>(dB) | H-Plane<br>(dB) |
|--------------------|---------------------|--------------|-----------------|-----------------|
| 1575.42            | -21.99              | 1.20         | 31.02           | 22.51           |
| 1602               | -13.41              | 1.55         | 16.89           | 5.89            |
| 824                | -8.33               | 2.25         | -4.71           | -9.59           |
| 880                | -9.28               | 2.08         | -10.29          | -8.51           |
| 960                | -11.72              | 1.69         | -4.59           | -6.12           |
| 1710               | -17.81              | 1.30         | -2.88           | -2.86           |
| 1880               | -12.18              | 1.67         | -2.74           | -9.79           |
| 2170               | -14.23              | 1.48         | -3.50           | -6.07           |
| 2600               | -18.17              | 1.30         | -2.00           | -4.62           |
| 2700               | -19.26              | 1.24         | -----           | -----           |

## Test Data(3M)

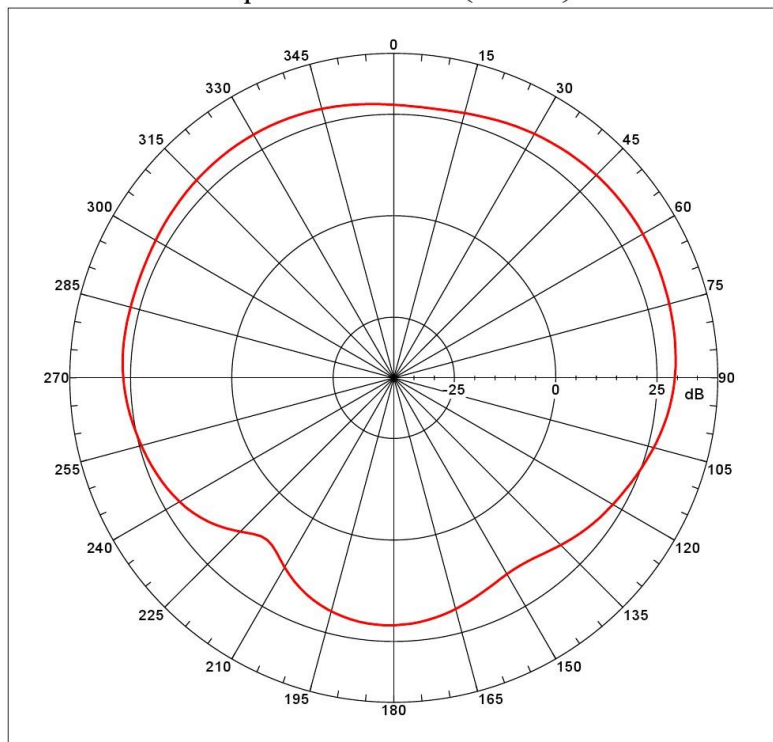
S11 Log Mag 10.00dB/ Ref 0.000dB



ITP S11 SWR 1.000/ Ref 1.000



Far-field amplitude of R36F(GNSS)+3M-E.nsi



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg  
Gain = 31.02165 dBi  
Max far-field (global) = -13.74589 dB, Max far-field (plot) = -13.74589 dB  
Normalization: Reference, Network offset = 0.000 dB  
Hpeak at: 55.88859 deg, Vpeak at: 0.000 deg  
Plot centering: On

R36F(GNSS)+3M-E

NSI2000 V4.0.124, Filename: C:\Documents and Settings\NSI\Desktop\R36F(GNSS)\R36F(GNSS)+3M-E.nsi  
Measurement date/time: 9/6/2017 2:35:12 PM, Filetype: NSI-97

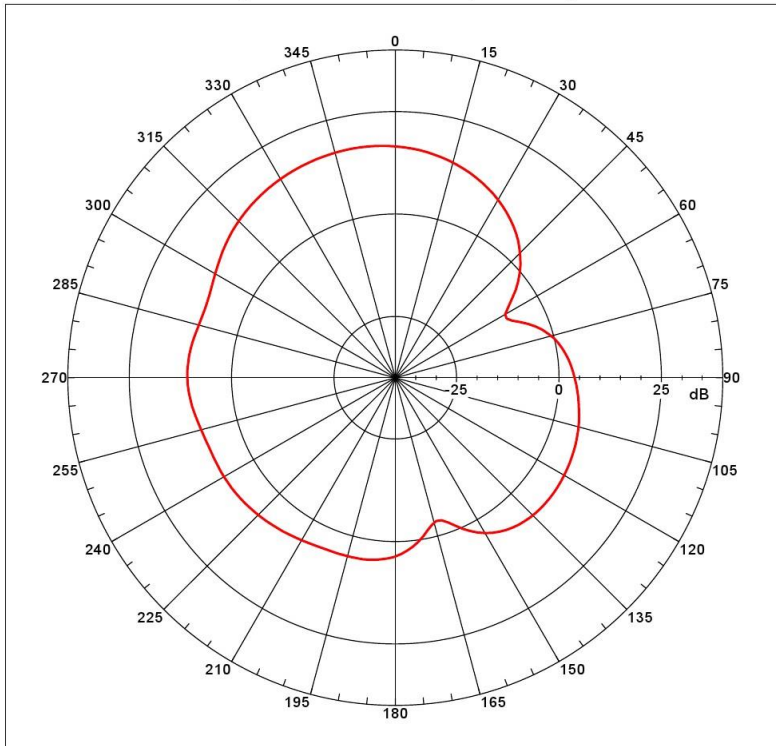
Far-field Cut Analysis:  
Avg value: -23.984 dB  
-3. dB beam width: 79.93 deg  
-6. dB beam width: 213.55 deg  
-10. dB beam width: 247.25 deg  
Left Sidelobe: -1.78 dB at -31.173 deg  
Right Sidelobe: Not Found

Far-field display setup  
Azimuth (deg)  
Span = 360.00001 deg, Center = 0.000 deg, #pts = 181  
Start = -180.00001 deg, Stop = 180.00001 deg, Delta = 2.000 deg  
Elevation (deg)  
Center = 0.000 deg, #pts = 1

Selected beam(s) 1 of 2

| Beam | Frequency   | Azimuth | Elevation | Pol        |
|------|-------------|---------|-----------|------------|
| 1    | 1.57542 GHz | Azimuth | Elevation | Single-pol |

## Far-field amplitude of R36F(GNSS)+3M-E.nsi



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg  
Gain = 16.89285 dBi  
Max far-field (global) = -28.23917 dB, Max far-field (plot) = -28.23917 dB  
Normalization: Reference, Network offset = 0.000 dB  
Hpeak at: -12.00001 deg, Vpeak at: 0.000 deg  
Plot centering: On

R36F(GNSS)+3M-E

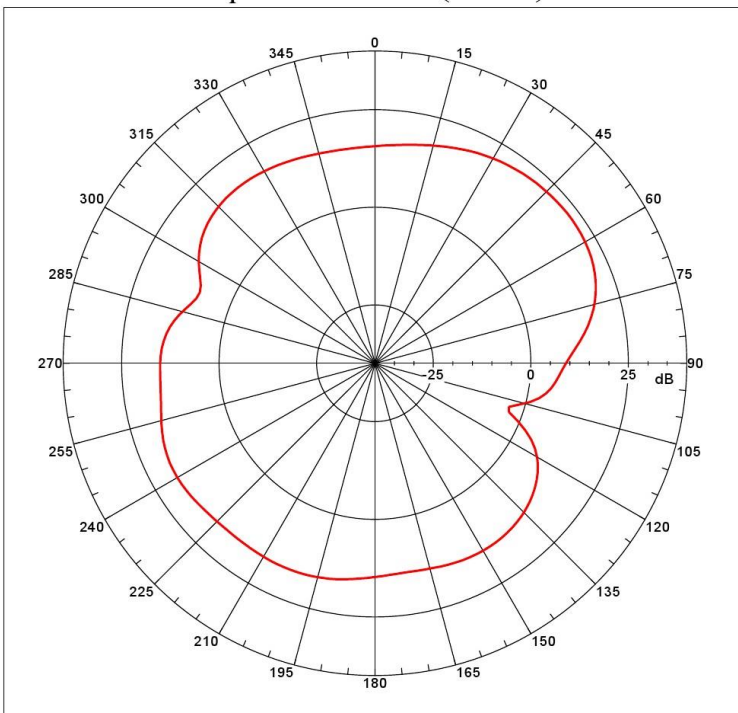
NSI2000 V4.0.124, Filename: C:\Documents and Settings\NSI\Desktop\R36F(GNSS)+3M-E.nsi  
Measurement date/time: 5/6/2017 2:35:12 PM, Filetype: NSI-97

Far-field Cut Analysis:  
Avg value: 5.284 dB  
-3. dB beam width: 83.46 deg  
-6. dB beam width: 87.90 deg  
-10. dB beam width: 178.72 deg  
Left Sidelobe: -6.05 dB at -87.486 deg  
Right Sidelobe: -9.06 dB at 127.710 deg

Far-field display setup  
Azimuth (deg)  
Span = 360.00001 deg, Center = 0.000 deg, #pts = 181  
Start = -180.00001 deg, Stop = 180.00001 deg, Delta = 2.000 deg  
Elevation (deg)  
Center = 0.000 deg, #pts = 1

Selected beam(s) 1 of 2  
Beam Frequency Azimuth Elevation Pol  
-----  
2 1.602 GHz Azimuth Elevation Single-pol

## Far-field amplitude of R36F(GNSS)+3M-H.nsi



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg  
Gain = 22.51596 dBi  
Max far-field (global) = -22.25162 dB, Max far-field (plot) = -22.25162 dB  
Normalization: Reference, Network offset = 0.000 dB  
Hpeak at: 53.99999 deg, Vpeak at: 0.000 deg  
Plot centering: On

R36F(GNSS)+3M-H

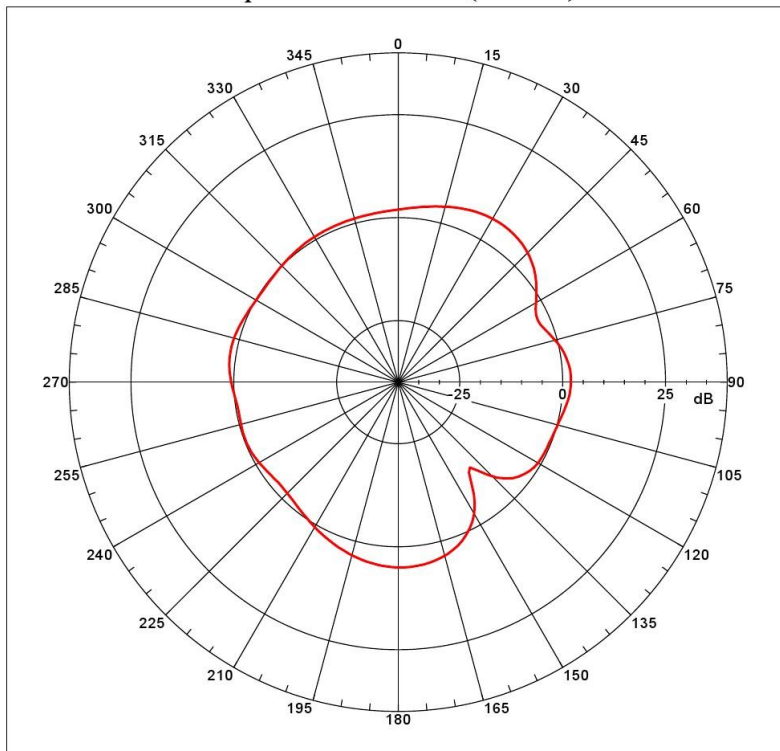
NSI2000 V4.0.124, Filename: C:\Documents and Settings\NSI\Desktop\R36F(GNSS)+3M-H.nsi  
Measurement date/time: 5/6/2017 2:29:39 PM, Filetype: NSI-97

Far-field Cut Analysis:  
Avg value: 16.278 dB  
-3. dB beam width: 48.47 deg  
-6. dB beam width: 70.72 deg  
-10. dB beam width: 144.37 deg  
Left Sidelobe: -5.42 dB at -37.207 deg  
Right Sidelobe: -7.05 dB at 151.844 deg

Far-field display setup  
Azimuth (deg)  
Span = 360.00001 deg, Center = 0.000 deg, #pts = 181  
Start = -180.00001 deg, Stop = 180.00001 deg, Delta = 2.000 deg  
Elevation (deg)  
Center = 0.000 deg, #pts = 1

Selected beam(s) 1 of 2  
Beam Frequency Azimuth Elevation Pol  
-----  
1 1.57542 GHz Azimuth Elevation Single-pol

## Far-field amplitude of R36F(GNSS)+3M-H.nsi



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg  
 Gain = 5.8923 dBi  
 Max far-field (global) = -39.23972 dB, Max far-field (plot) = -19.23973 dB  
 Normalization: Reference, Network offset = 0.000 dB  
 Hpeak at: 31.99969 deg, Vpeak at: 0.000 deg  
 Plot centering: On

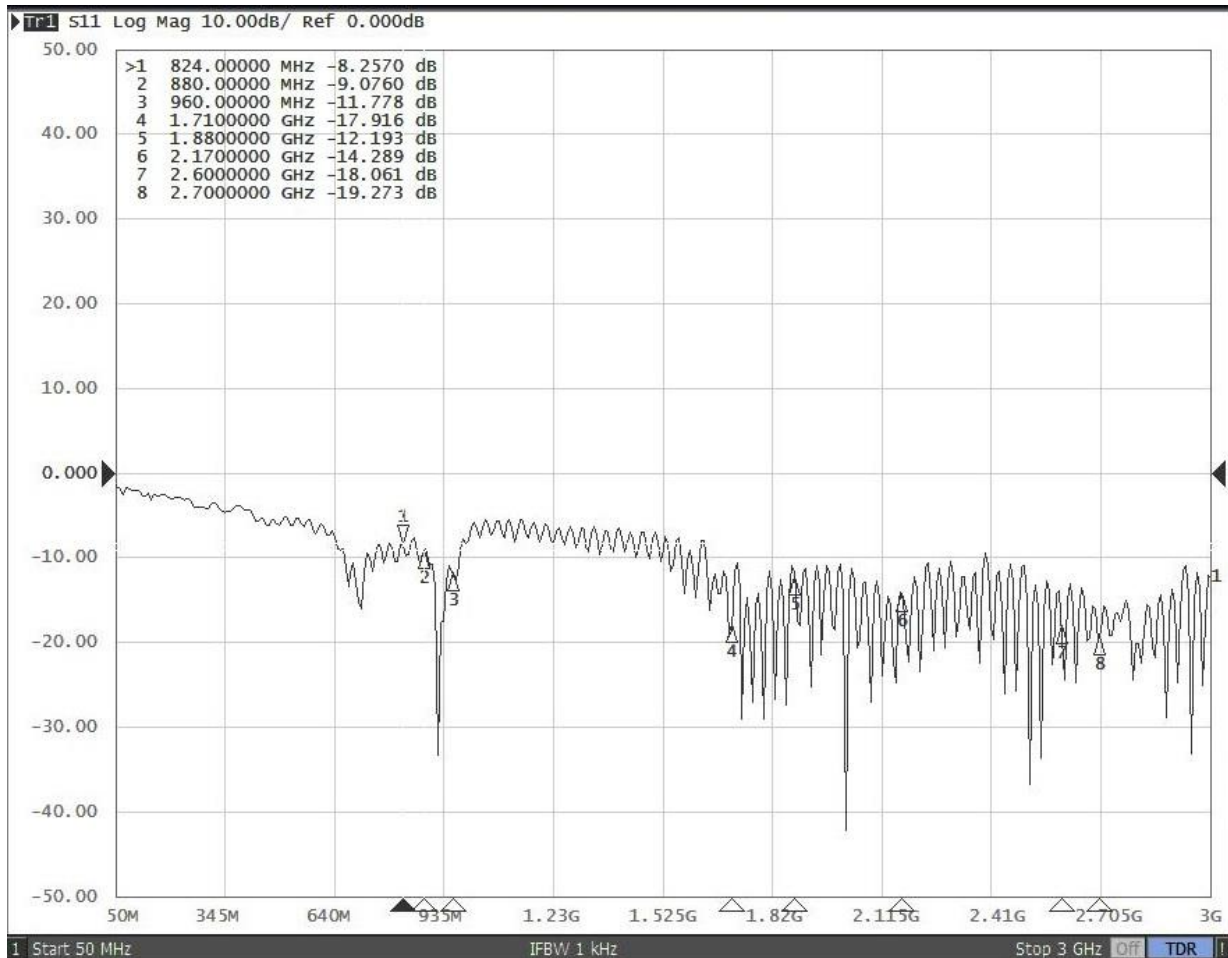
R36F(GNSS)+3M-H

NSI2000 V4.0.124, Filename: C:\Documents and Settings\NSI\Desktop\R36F(GNSS)+3M-H.nsi  
 Measurement date/time: 5/6/2017 2:29:39 PM, Filetype: NSI-97

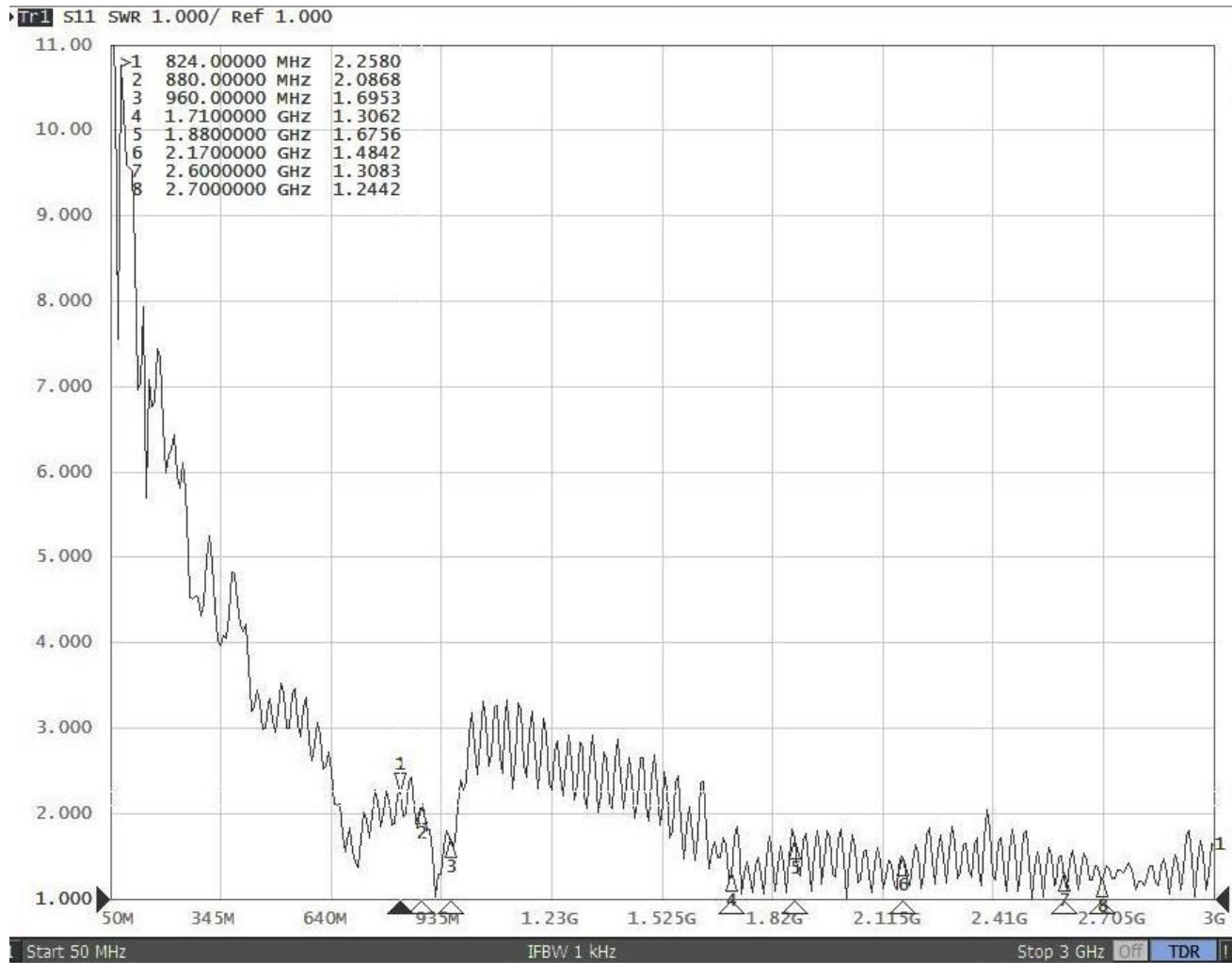
Far-field Cut Analysis:  
 Avg value: 1.159 dB  
 -3. dB beam width: 43.33 deg  
 -6. dB beam width: 105.31 deg  
 -10. dB beam width: Not Found  
 Left Sidelobe: -4.45 dB at -77.430 deg  
 Right Sidelobe: -3.88 dB at 51.508 deg

Far-field display setup  
 Azimuth (deg)  
 Span = 360.00001 deg, Center = 0.000 deg, #pts = 181  
 Start = -180.00001 deg, Stop = 180.00001 deg, Delta = 2.000 deg  
 Elevation (deg)  
 Center = 0.000 deg, #pts = 1

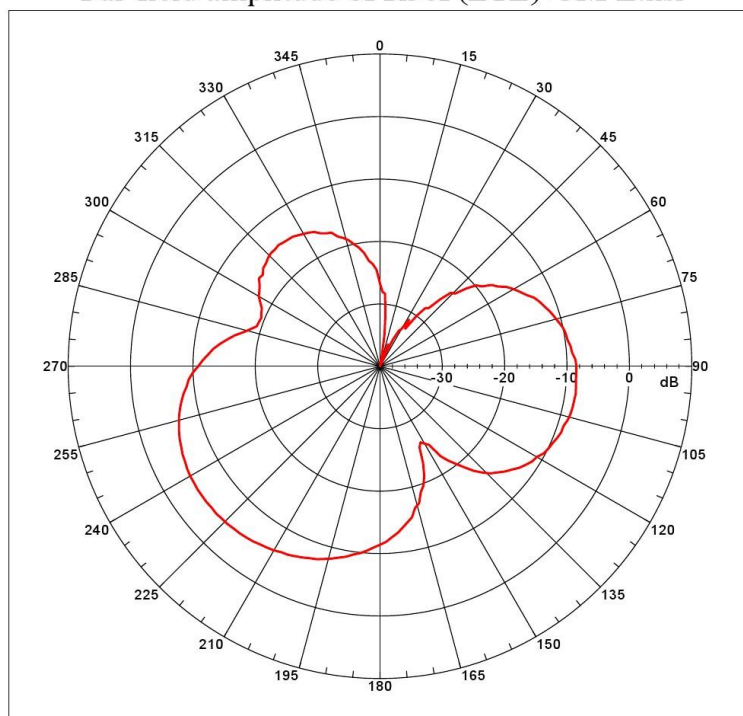
Selected beam(s) 1 of 2  
 Beam Frequency Azimuth Elevation Pol  
 ---  
 2 1.602 GHz Azimuth Elevation Single-pol







Far-field amplitude of R36F(LTE)+3M-E.nsi



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg  
Gain = -4.7159 dBi  
Max far-field (global) = -47.71514 dB, Max far-field (plot) = -47.71516 dB  
Normalization: Reference, Network offset = 0.000 dB  
Hpeak at: -126.00001 deg, Vpeak at: 0.000 deg  
Plot centering: On

R36F(LTE)+20cm-E

NSI2000 V4.0.124, Filename: C:\Documents and Settings\NSI\Desktop\R36F(LTE)+3M-E.nsi  
Measurement date/time: 8/30/2017 4:23:07 PM, Filetype: NSI-97

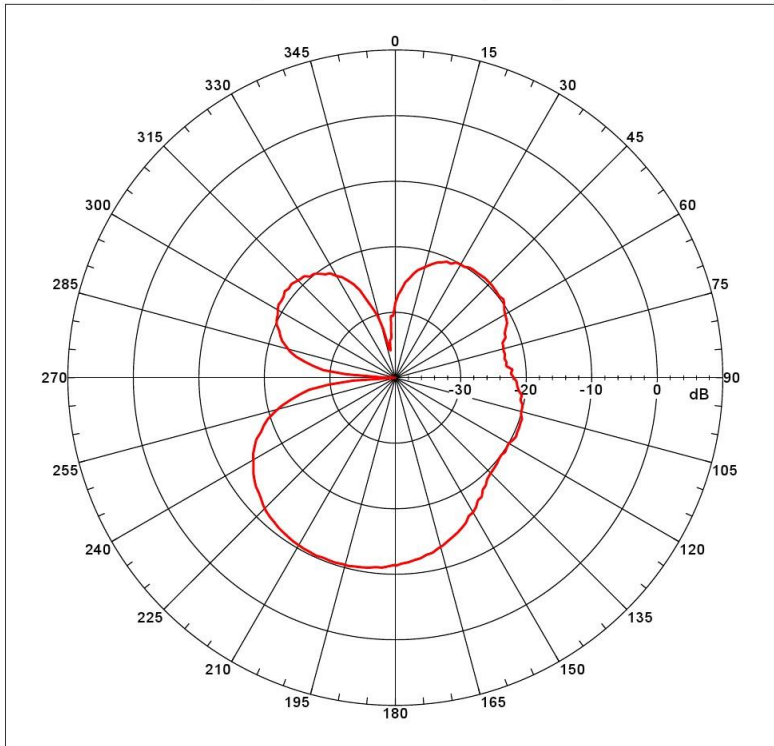
Far-field Cut Analysis:  
Avg value: -12.375 dB  
-3. dB beam width: 63.44 deg  
-6. dB beam width: 87.27 deg  
-10. dB beam width: Not Found  
Left Sidelobe: Not Found  
Right Sidelobe: -11.31 dB at -53.296 deg

Far-field display setup  
Azimuth (deg)  
Span = 360.00001 deg, Center = 0.000 deg, #pts = 181  
Start = -180.00001 deg, Stop = 180.00001 deg, Delta = 2.000 deg  
Elevation (deg)  
Center = 0.000 deg, #pts = 1

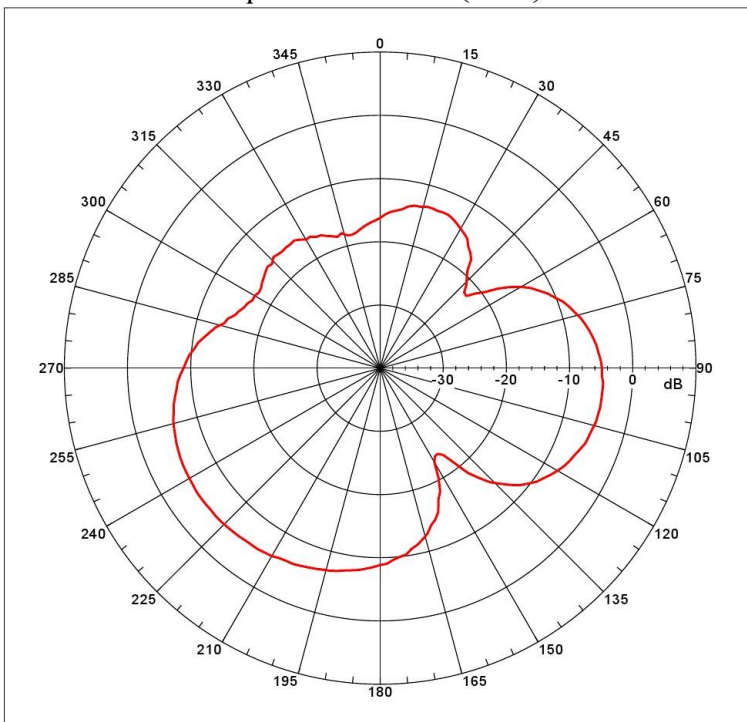
Selected beam(s) 1 of 7

| Beam | Frequency | Azimuth | Elevation | Pol        |
|------|-----------|---------|-----------|------------|
| 1    | 0.824 GHz | Azimuth | Elevation | Single-pol |

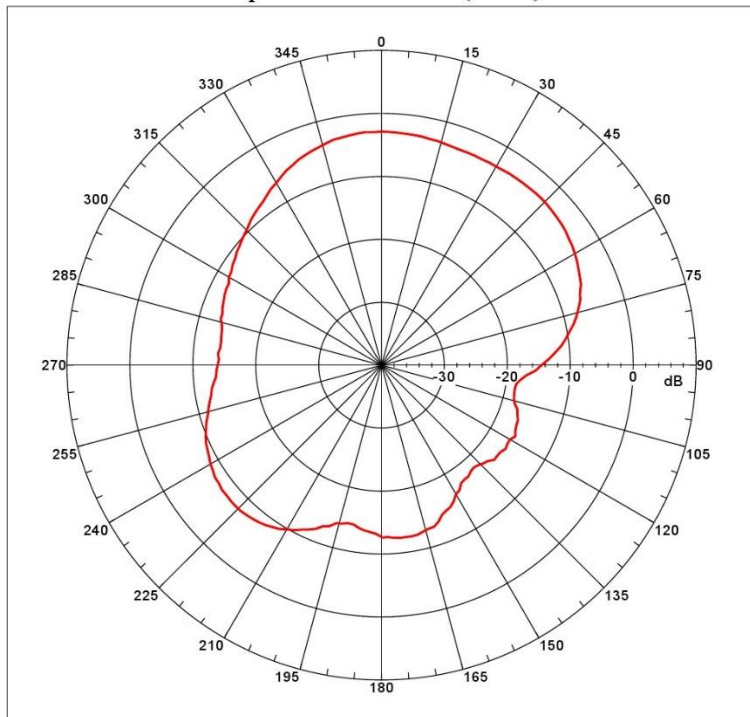
Far-field amplitude of R36F(LTE)+3M-E.nsi



Far-field amplitude of R36F(LTE)+3M-E.nsi



Far-field amplitude of R36F(LTE)+3M-E.nsi



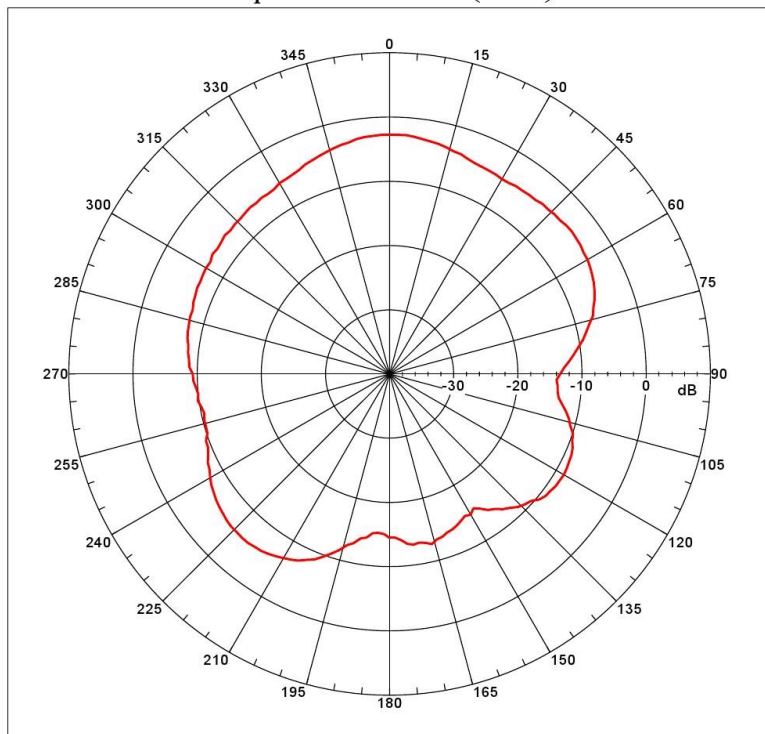
```

Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
Gain = -2.88457 dBi
Max far-field (global) = -45.07716 dB, Max far-field (plot) =
-45.07716 dB
Normalization: Reference, Network offset = 0.000 dB
Hpeak at: -4.00001 deg, Vpeak at: 0.000 deg
Plot centering: On

R36F(LTE)+3M-E

NSI2000 V4.0.124, Filename: C:\Documents and Settings\NSI\Desktop\R3
6F(LTE)\R36F(LTE)+3M-E.nsi
Measurement date/time: 8/30/2017 4:23:07 PM, Filetype: NSI-97
Far-field Cut Analysis:
Avg value: -8.850 dB
-3. dB beam width: 96.83 deg
-6. dB beam width: 120.38 deg
-10. dB beam width: 155.33 deg
Left Sidelobe: -4.93 dB at -127.710 deg
Right Sidelobe: -13.00 dB at 115.665 deg
Far-field display setup
Azimuth (deg)
Span = 360.00001 deg, Center = 0.000 deg, #pts = 181
Start = -180.00001 deg, Stop = 180.00001 deg, Delta = 2.000
deg
Elevation (deg)
Center = 0.000 deg, #pts = 1
Selected beam(s) 1 of 7
Beam Frequency Azimuth Elevation Pol
-----
4 1.710 GHz Azimuth Elevation Single-pol
    
```

Far-field amplitude of R36F(LTE)+3M-E.nsi



```

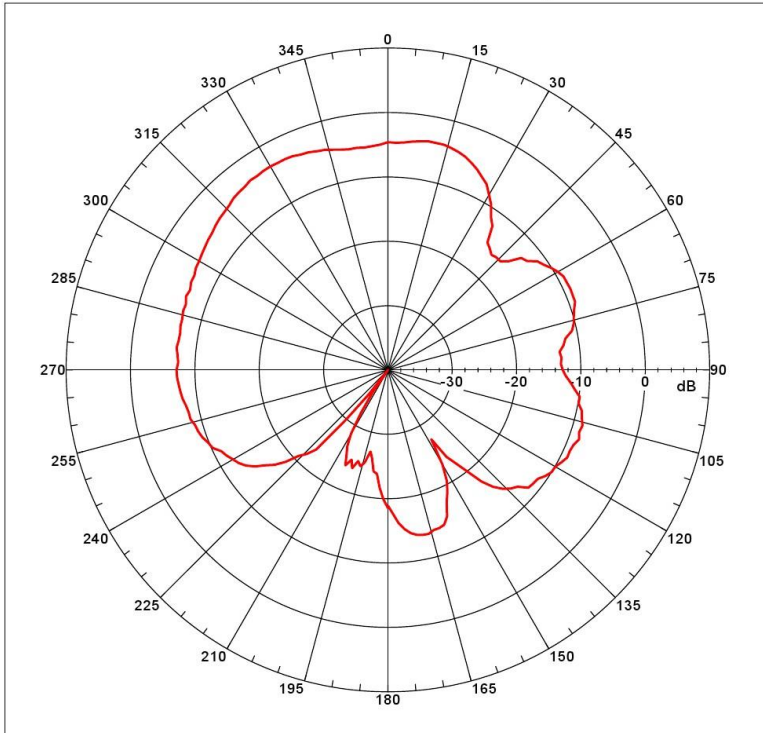
Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
Gain = -2.74492 dBi
Max far-field (global) = -45.41349 dB, Max far-field (plot) =
-45.41349 dB
Normalization: Reference, Network offset = 0.000 dB
Hpeak at: 3.99999 deg, Vpeak at: 0.000 deg
Plot centering: On

R36F(LTE)+3M-E

NSI2000 V4.0.124, Filename: C:\Documents and Settings\NSI\Desktop\R3
6F(LTE)\R36F(LTE)+3M-E.nsi
Measurement date/time: 8/30/2017 4:23:07 PM, Filetype: NSI-97
Far-field Cut Analysis:
Avg value: -7.531 dB
-3. dB beam width: 99.63 deg
-6. dB beam width: 166.74 deg
-10. dB beam width: 256.08 deg
Left Sidelobe: -2.92 dB at -137.765 deg
Right Sidelobe: -1.23 dB at 53.286 deg
Far-field display setup
Azimuth (deg)
Span = 360.00001 deg, Center = 0.000 deg, #pts = 181
Start = -180.00001 deg, Stop = 180.00001 deg, Delta = 2.000
deg
Elevation (deg)
Center = 0.000 deg, #pts = 1
Selected beam(s) 1 of 7
Beam Frequency Azimuth Elevation Pol
-----
5 1.880 GHz Azimuth Elevation Single-pol
    
```



Far-field amplitude of R36F(LTE)+3M-E.nsi



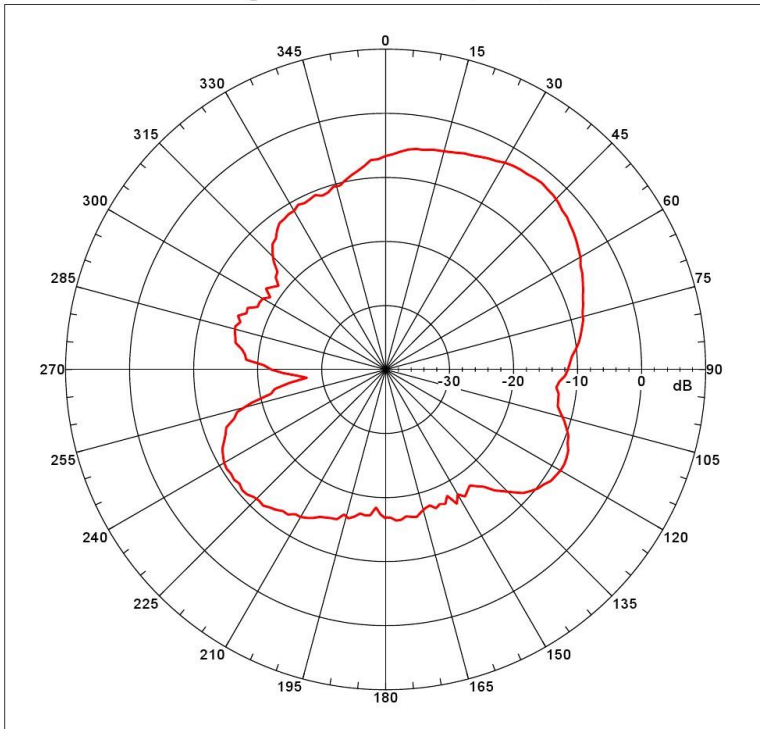
```

Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
Gain = -3.50819 dB
Max far-field (global) = -51.0403 dB, Max far-field (plot) =
-51.0403 dB
Normalization: Reference, Network offset = 0.000 dB
Hpeak at: -30.00001 deg, Vpeak at: 0.000 deg
Plot centering: On

R36F(LTE)+20cm-E

NSI2000 V4.0.124, Filename: C:\Documents and Settings\NSI\Desktop\R3
6F(LTE)\R36F(LTE)+3M-E.nsi
Measurement date/time: 8/30/2017 4:23:07 PM, Filetype: NSI-97
Far-field Cut Analysis:
Avg value: -5.656 dB
-3. dB beam width: 85.87 deg
-6. dB beam width: 143.04 deg
-10. dB beam width: 161.97 deg
Left Sidelobe: -20.27 dB at -155.866 deg
Right Sidelobe: -0.44 dB at 11.061 deg
Far-field display setup
Azimuth (deg)
Span = 360.00001 deg, Center = 0.000 deg, #pts = 181
Start = -180.00001 deg, Stop = 180.00001 deg, Delta = 2.000
deg
Elevation (deg)
Center = 0.000 deg, #pts = 1
Selected beam(s) 1 of 7
Beam Frequency Azimuth Elevation Pol
-----
6 2.170 GHz Azimuth Elevation Single-pol
    
```

Far-field amplitude of R36F(LTE)+3M-E.nsi



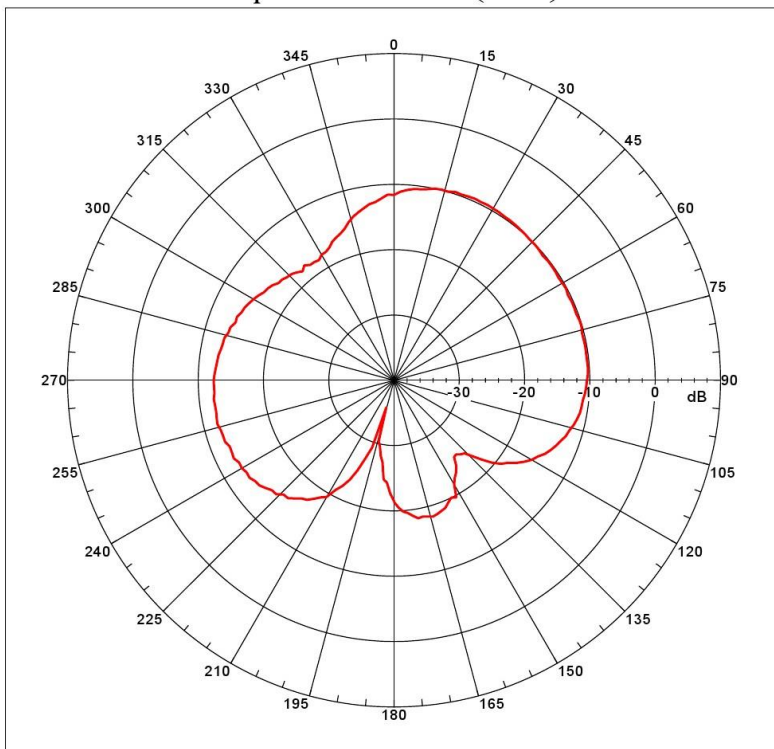
```

Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
Gain = -2.00825 dB
Max far-field (global) = -52.32504 dB, Max far-field (plot) =
-52.32507 dB
Normalization: Reference, Network offset = 0.000 dB
Hpeak at: 36.95959 deg, Vpeak at: 0.000 deg
Plot centering: On

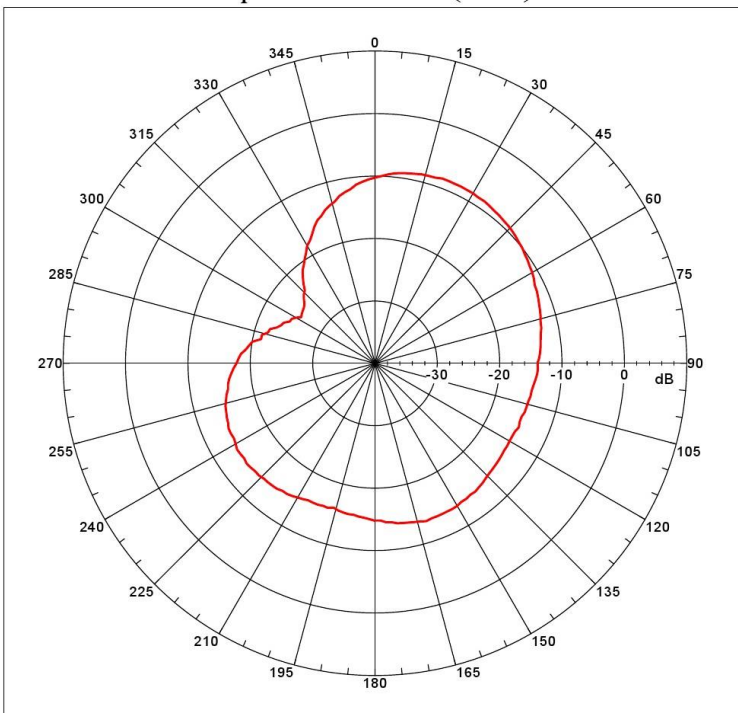
R36F(LTE)+20cm-E

NSI2000 V4.0.124, Filename: C:\Documents and Settings\NSI\Desktop\R3
6F(LTE)\R36F(LTE)+3M-E.nsi
Measurement date/time: 8/30/2017 4:23:07 PM, Filetype: NSI-97
Far-field Cut Analysis:
Avg value: -10.444 dB
-3. dB beam width: 49.36 deg
-6. dB beam width: 80.49 deg
-10. dB beam width: 126.52 deg
Left Sidelobe: -15.44 dB at -55.307 deg
Right Sidelobe: -6.39 dB at 115.665 deg
Far-field display setup
Azimuth (deg)
Span = 360.00001 deg, Center = 0.000 deg, #pts = 181
Start = -180.00001 deg, Stop = 180.00001 deg, Delta = 2.000
deg
Elevation (deg)
Center = 0.000 deg, #pts = 1
Selected beam(s) 1 of 7
Beam Frequency Azimuth Elevation Pol
-----
7 2.600 GHz Azimuth Elevation Single-pol
    
```

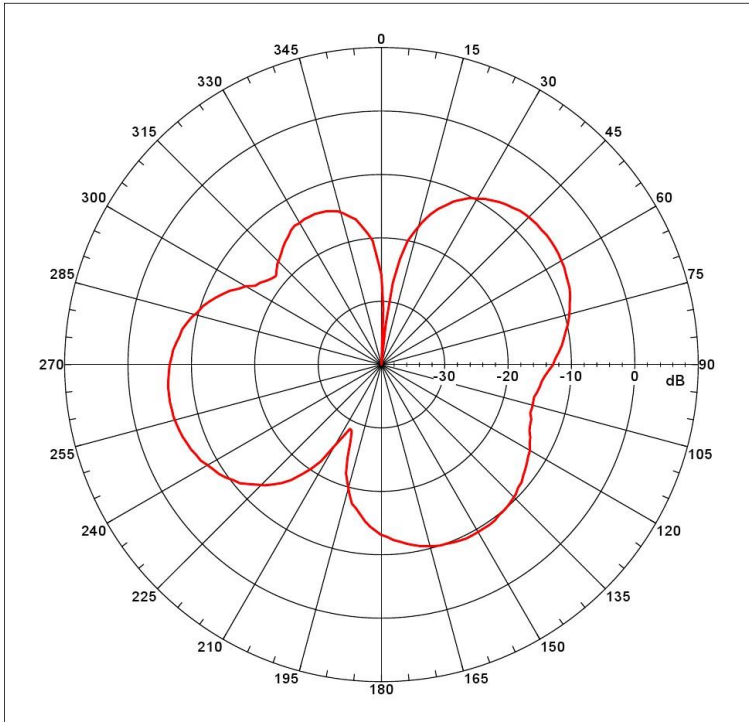
Far-field amplitude of R36F(LTE)+3M-H.nsi



Far-field amplitude of R36F(LTE)+3M-H.nsi



Far-field amplitude of R36F(LTE)+3M-H.nsi



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg  
Gain = -6.15676 dBi  
Max far-field (global) = -48.75643 dB, Max far-field (plot) = -48.75646 dB  
Normalisation: Reference, Network offset = 0.000 dB  
Hpeak at: -100.00001 deg, Vpeak at: 0.000 deg  
Plot centering: On

R36F(LTE)+20cm-H

NSI2000 V4.0.124, Filename: C:\Documents and Settings\NSI\Desktop\R36F(LTE)+3M-H.nsi  
Measurement date/time: 8/30/2017 4:16:56 PM, Filetype: NSI-97

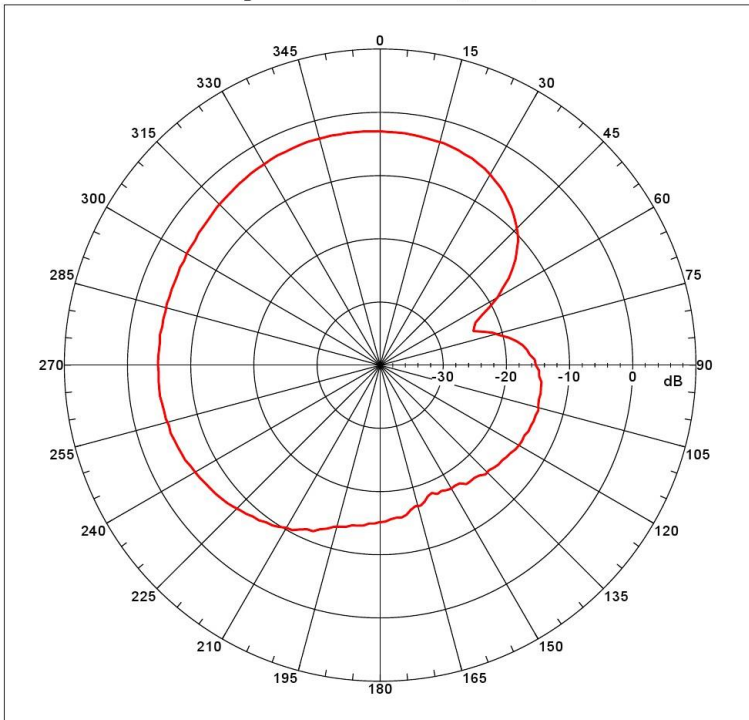
Far-field Cut Analysis:  
Avg value: -11.709 dB  
-3. dB beam width: 48.28 deg  
-6. dB beam width: 65.78 deg  
-10. dB beam width: 82.38 deg  
Left Sidelobe: Not Found  
Right Sidelobe: -8.05 dB at -31.173 deg

Far-field display setup  
Azimuth (deg)  
Span = 360.00001 deg, Center = 0.000 deg, #pts = 181  
Start = -180.00001 deg, Stop = 180.00001 deg, Delta = 2.000 deg  
Elevation (deg)  
Center = 0.000 deg, #pts = 1

Selected beam(s) 1 of 7

| Beam | Frequency | Azimuth | Elevation | Pol        |
|------|-----------|---------|-----------|------------|
| 3    | 0.960 GHz | Azimuth | Elevation | Single-pol |

Far-field amplitude of R36F(LTE)+3M-H.nsi



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg  
Gain = -2.48364 dBi  
Max far-field (global) = -48.06123 dB, Max far-field (plot) = -48.06123 dB  
Normalisation: Reference, Network offset = 0.000 dB  
Hpeak at: -18.00001 deg, Vpeak at: 0.000 deg  
Plot centering: On

R36F(LTE)+20cm-H

NSI2000 V4.0.124, Filename: C:\Documents and Settings\NSI\Desktop\R36F(LTE)+3M-H.nsi  
Measurement date/time: 8/30/2017 4:16:56 PM, Filetype: NSI-97

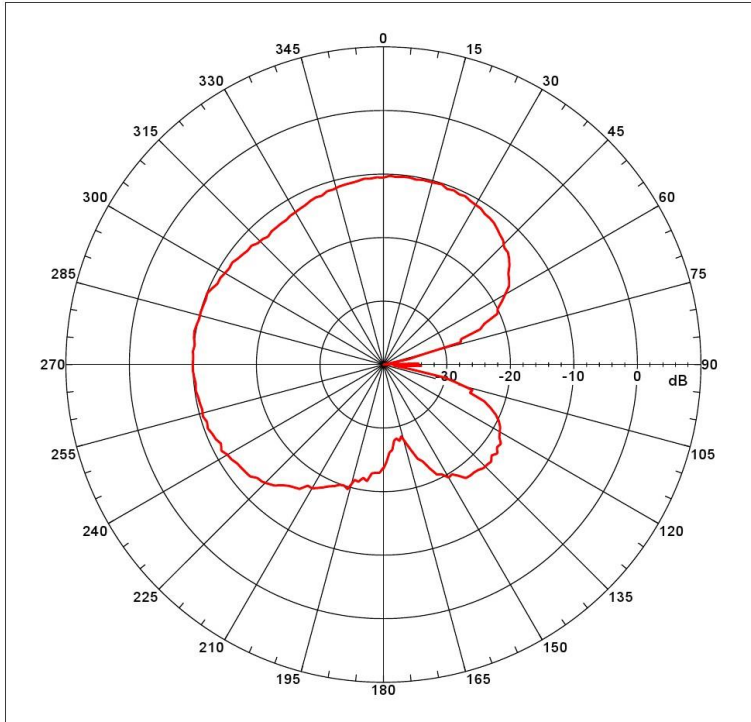
Far-field Cut Analysis:  
Avg value: -8.151 dB  
-3. dB beam width: 151.17 deg  
-6. dB beam width: 186.68 deg  
-10. dB beam width: 215.51 deg  
Left Sidelobe: Not Found  
Right Sidelobe: -11.32 dB at 101.564 deg

Far-field display setup  
Azimuth (deg)  
Span = 360.00001 deg, Center = 0.000 deg, #pts = 181  
Start = -180.00001 deg, Stop = 180.00001 deg, Delta = 2.000 deg  
Elevation (deg)  
Center = 0.000 deg, #pts = 1

Selected beam(s) 1 of 7

| Beam | Frequency | Azimuth | Elevation | Pol        |
|------|-----------|---------|-----------|------------|
| 4    | 1.710 GHz | Azimuth | Elevation | Single-pol |

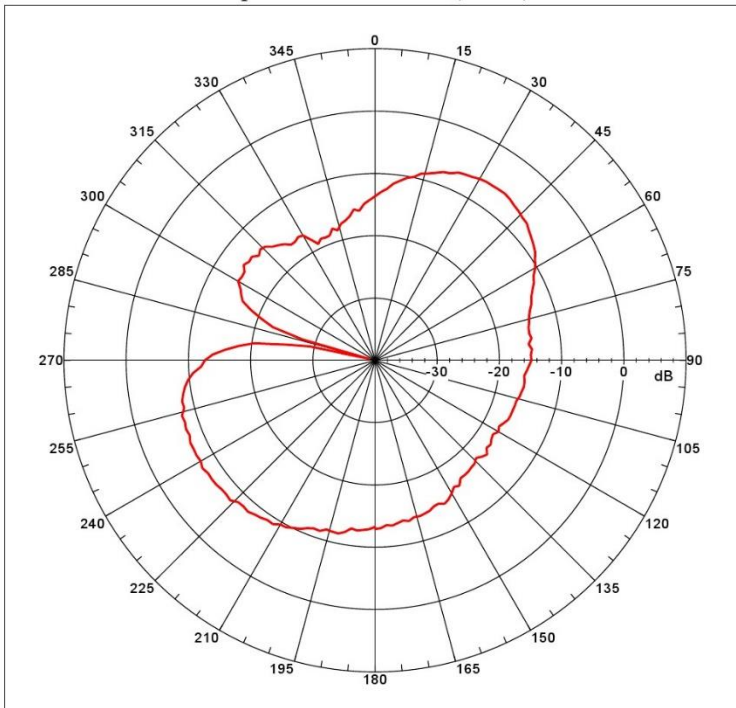
## Far-field amplitude of R36F(LTE)+3M-H.nsi



```

Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
Gain = -5.75288 dB
Max far-field (global) = -56.46145 dB, Max far-field (plot) =
-56.46151 dB
Normalization: Reference, Network offset = 0.000 dB
Hpeak at: -80.000 deg, Vpeak at: 0.000 deg
Plot centering: On
R36F(LTE)+20cm-H
NSI2000 V4.0.124, Filename: C:\Documents and Settings\NSI\Desktop\R3
6F(LTE) R36F(LTE)+3M-H.nsi
Measurement date/time: 8/30/2017 4:16:56 PM, Filetype: NSI-97
Far-field Cut Analysis:
Avg value: -14.666 dB
-3. dB beam width: 88.25 deg
-6. dB beam width: 197.69 deg
-10. dB beam width: 274.62 deg
Left Sidelobe: Not Found
Right Sidelobe: -1.83 dB at -21.117 deg
Far-field display setup
Azimuth (deg)
Span = 360.00001 deg, Center = 0.000 deg, #pts = 181
Start = -180.00001 deg, Stop = 180.00001 deg, Delta = 2.000
deg
Elevation (deg)
Center = 0.000 deg, #pts = 1
Selected beam(s) 1 of 7
Beam Frequency Azimuth Elevation Pol
-----
5 1.880 GHz Azimuth Elevation Single-pol
    
```

## Far-field amplitude of R36F(LTE)+3M-H.nsi

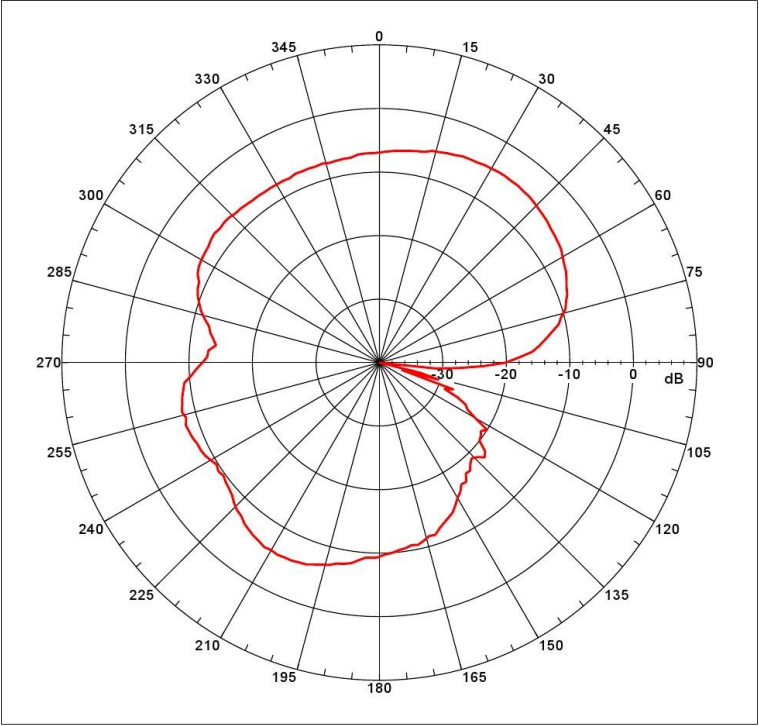


```

Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
Gain = -6.0791 dB
Max far-field (global) = -53.61121 dB, Max far-field (plot) =
-53.61123 dB
Normalization: Reference, Network offset = 0.000 dB
Hpeak at: 37.59955 deg, Vpeak at: 0.000 deg
Plot centering: On
R36F(LTE)+20cm-H
NSI2000 V4.0.124, Filename: C:\Documents and Settings\NSI\Desktop\R3
6F(LTE) R36F(LTE)+3M-H.nsi
Measurement date/time: 8/30/2017 4:16:56 PM, Filetype: NSI-97
Far-field Cut Analysis:
Avg value: -12.186 dB
-3. dB beam width: 42.14 deg
-6. dB beam width: 60.99 deg
-10. dB beam width: 114.05 deg
Left Sidelobe: -10.55 dB at -31.173 deg
Right Sidelobe: -10.40 dB at 131.732 deg
Far-field display setup
Azimuth (deg)
Span = 360.00001 deg, Center = 0.000 deg, #pts = 181
Start = -180.00001 deg, Stop = 180.00001 deg, Delta = 2.000
deg
Elevation (deg)
Center = 0.000 deg, #pts = 1
Selected beam(s) 1 of 7
Beam Frequency Azimuth Elevation Pol
-----
6 2.170 GHz Azimuth Elevation Single-pol
    
```



Far-field amplitude of R36F(LTE)+3M-H.nsi



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg  
Gain = -4.62145 dBi  
Max far-field (global) = -54.93824 dB, Max far-field (plot) =  
-54.93824 dB  
Normalisation: Reference, Network offset = 0.000 dB  
Hpeak at: 33.95998 deg, Vpeak at: 0.000 deg  
Plot centering: On  
R36F(LTE)+20cm-H  
NSI2000 V4.0.124, Filename: C:\Documents and Settings\NSI\Desktop\R3  
6F(LTE) R36F(LTE)+3M-H.nsi  
Measurement date/time: 5/30/2017 4:16:56 PM, Filetype: NSI-97  
Far-field Cut Analysis:  
Avg value: -5.257 dB  
-3. dB beam width: 90.58 deg  
-6. dB beam width: 150.49 deg  
-10. dB beam width: Not Found  
Left Sidelobe: -3.34 dB at -103.575 deg  
Right Sidelobe: -25.68 dB at 107.598 deg  
Far-field display setup  
Azimuth (deg)  
Span = 360.00001 deg, Center = 0.000 deg, #pts = 181  
Start = -180.00001 deg, Stop = 180.00001 deg, Delta = 2.000  
deg  
Elevation (deg)  
Center = 0.000 deg, #pts = 1  
Selected beam(s) 1 of 7  
Beam Frequency Azimuth Elevation Pol  
----  
7 2.600 GHz Azimuth Elevation Single-pol



Test Photo(3M)



