GSM Antenna

MODEL: TH-88A

GSM800/GSM900/DCS1800/PCS1900/3G2170

1. GENERAL DESCRIPTION

Model No
TH88A-SMA90(M)

Below is a table summarizing the antenna design specification.

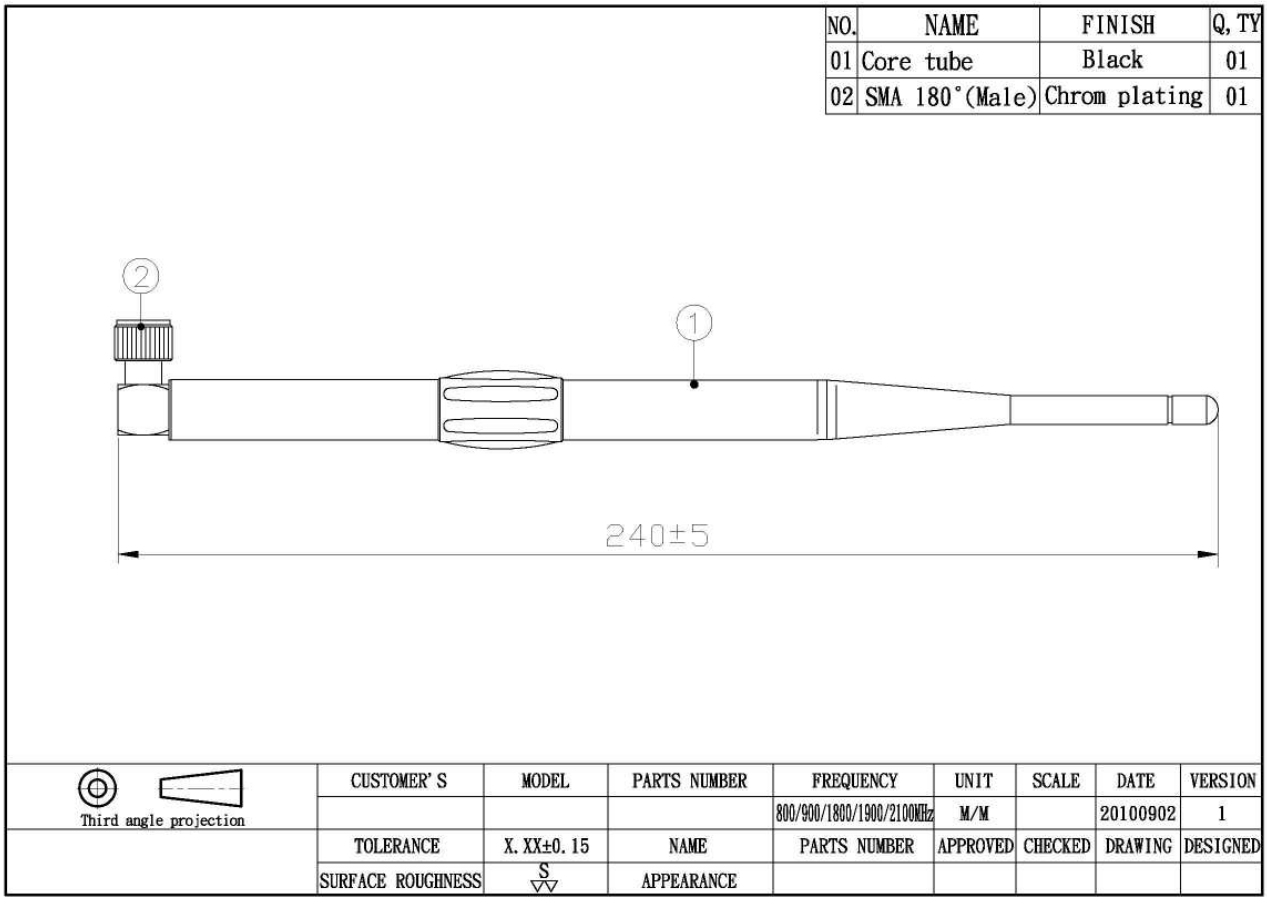
1.1 Electrical Properties

Parameter	Description
Frequency Band	800/900/1800/1900/2100 MHz
Nominal Impedance	50 ohm
Polarization	Vertical
Return Loss	Please See Data-1
V.S.W.R	2.3:1
Note: Gain includes the cable loss	

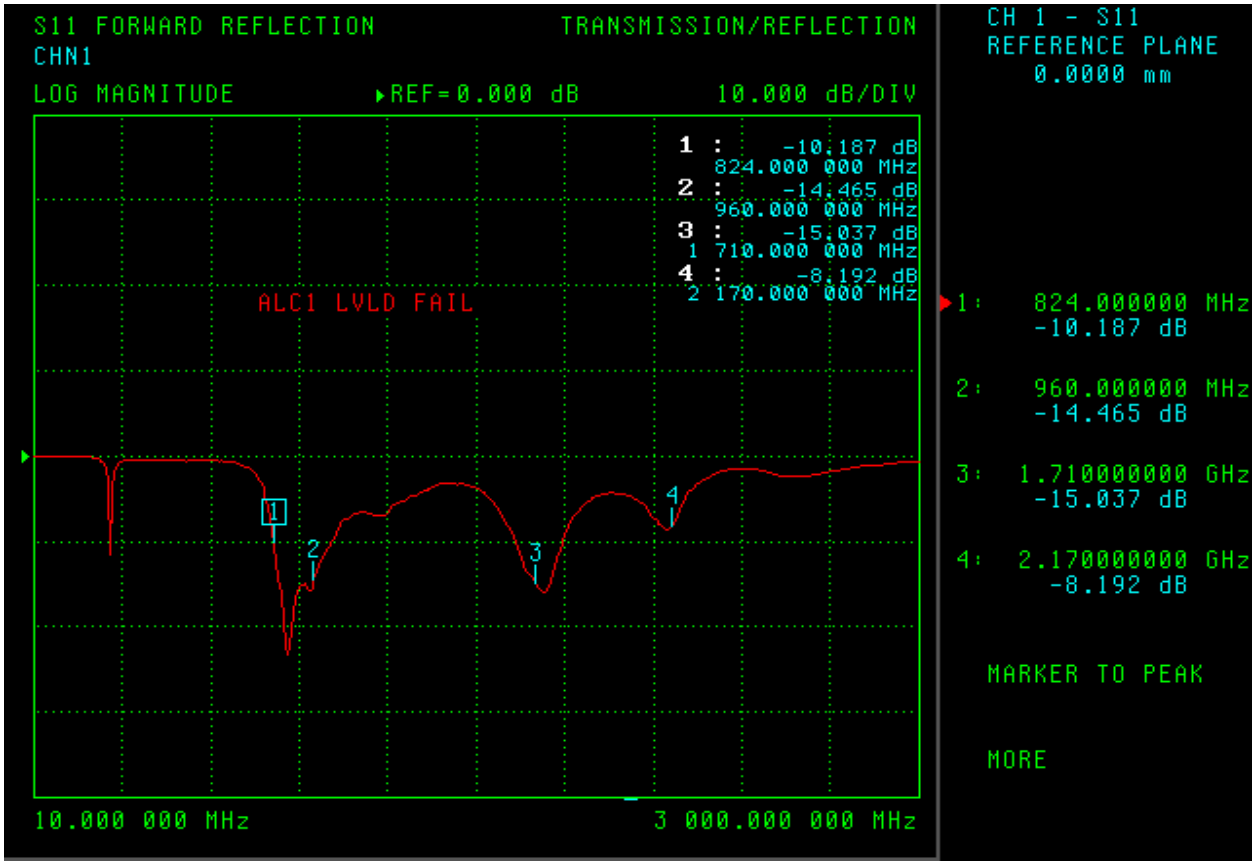
1.2 Mechanical Properties

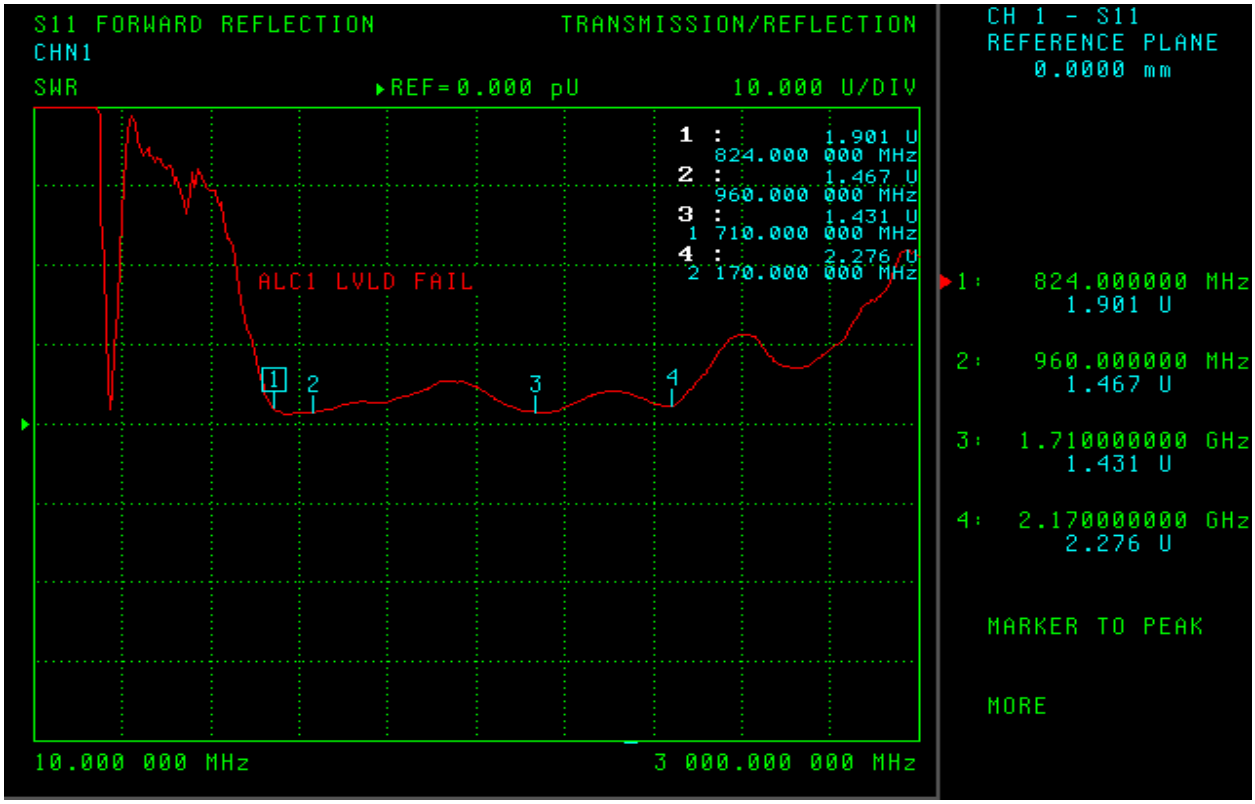
Parameter	Description
Antenna Type	External Antenna
Antenna Cover	TPE
Touch Type	Screw Type
Connector Type	SMA 180°(Male)
Antenna Dimensions	240 mm ±5
Operating Temperature Range	-20°C~+60°C
Storage Temperature Range	-30°C~+70°C

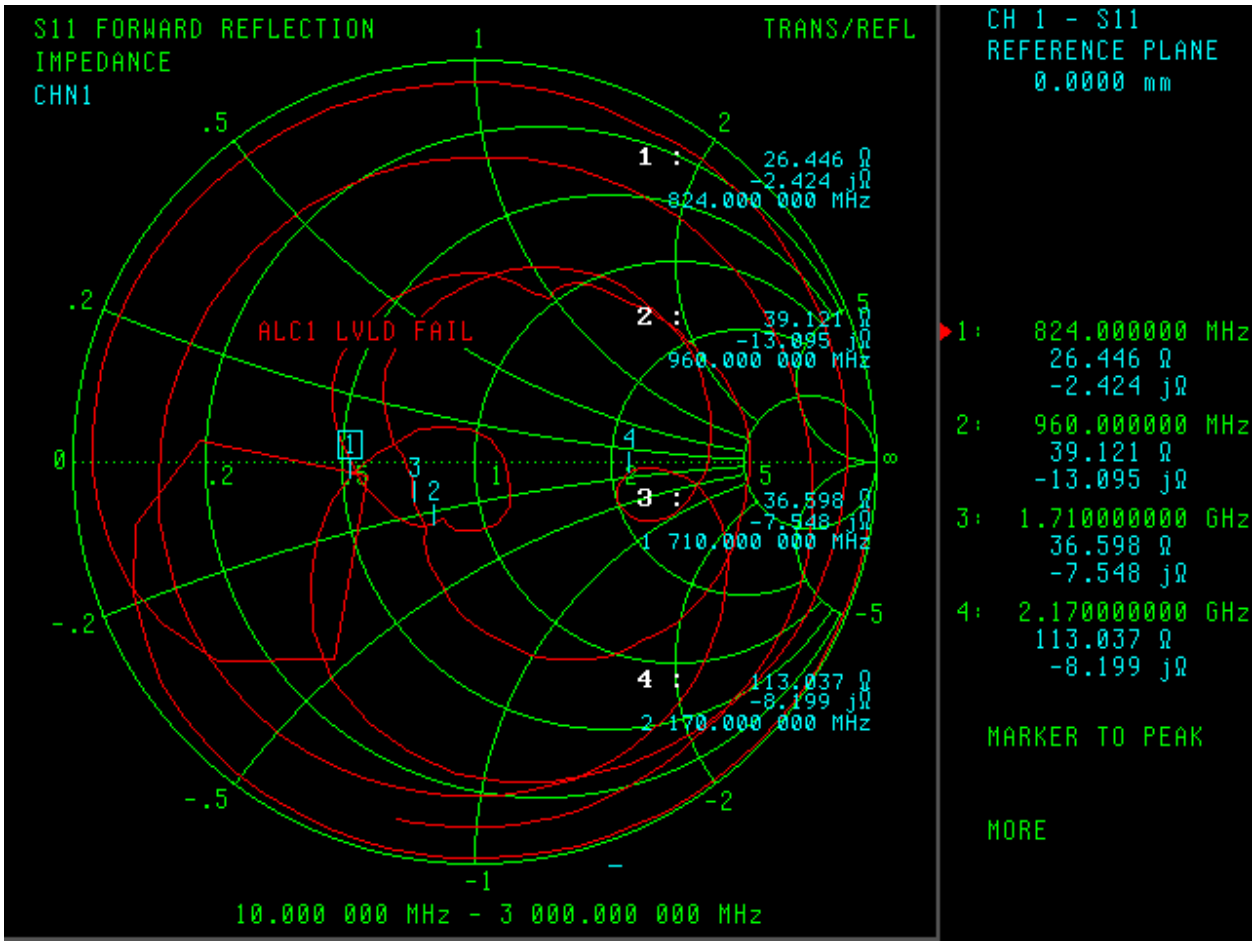
2. **Appearance**



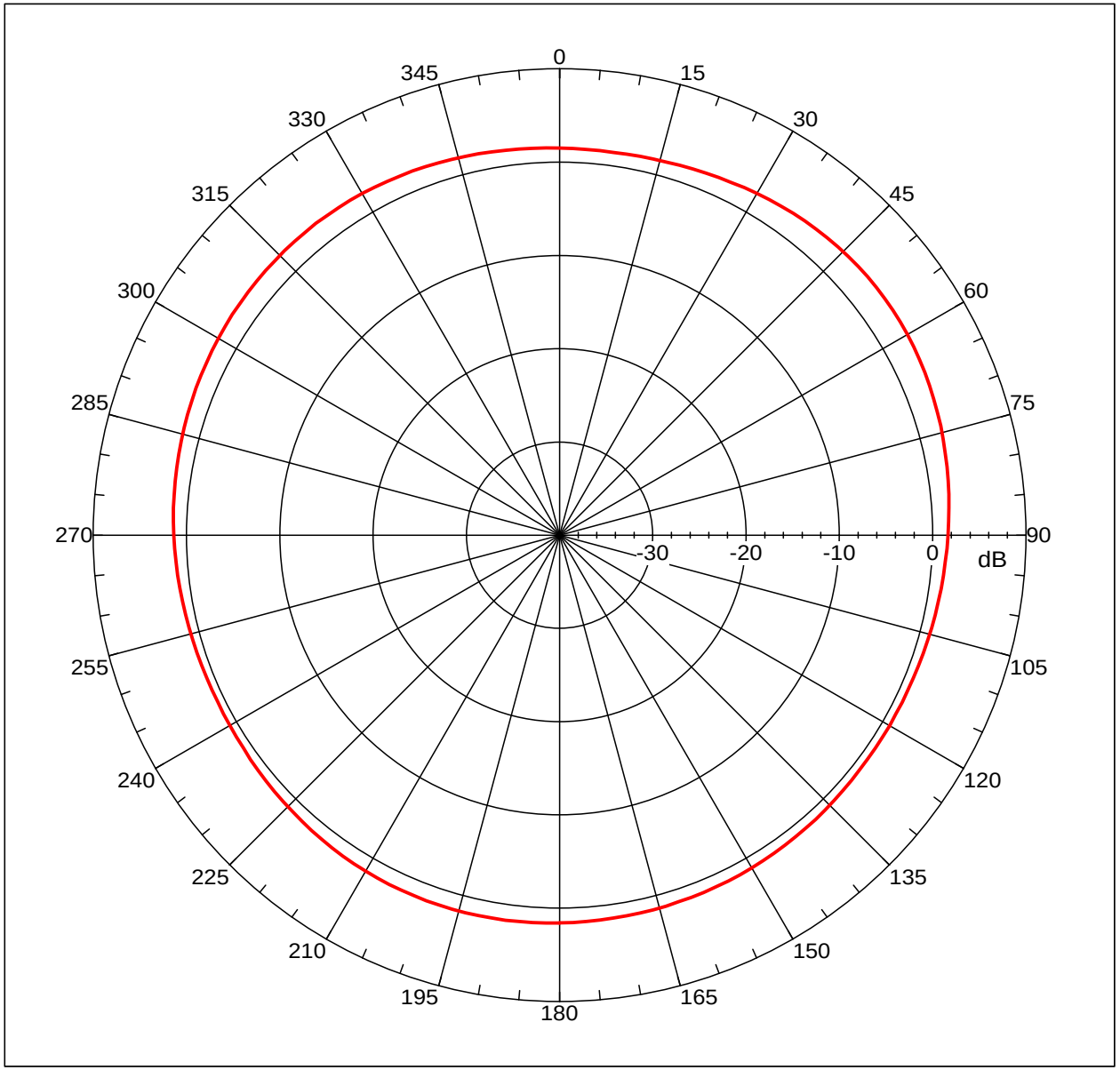
3. Return Loss, V.S.W.R. and Smith Chart






S11 FORWARD REFLECTION
IMPEDANCE
CHN1
TRANS/REFL
ALC1 LVLD FAIL
1 : 26.446 Ω -2.424 jΩ 824.000 000 MHz
2 : 39.121 Ω -13.095 jΩ 960.000 000 MHz
3 : 36.598 Ω -7.548 jΩ 1 710.000 000 MHz
4 : 113.037 Ω -8.199 jΩ 2 170.000 000 MHz
10.000 000 MHz - 3 000.000 000 MHz
CH 1 - S11
REFERENCE PLANE
0.0000 mm
1: 824.000000 MHz
26.446 Ω
-2.424 jΩ
2: 960.000000 MHz
39.121 Ω
-13.095 jΩ
3: 1.710000000 GHz
36.598 Ω
-7.548 jΩ
4: 2.170000000 GHz
113.037 Ω
-8.199 jΩ
MARKER TO PEAK
MORE

Far-field amplitude of 20100924 TH-88A 800-2100mhz H-PLANE01.nsi



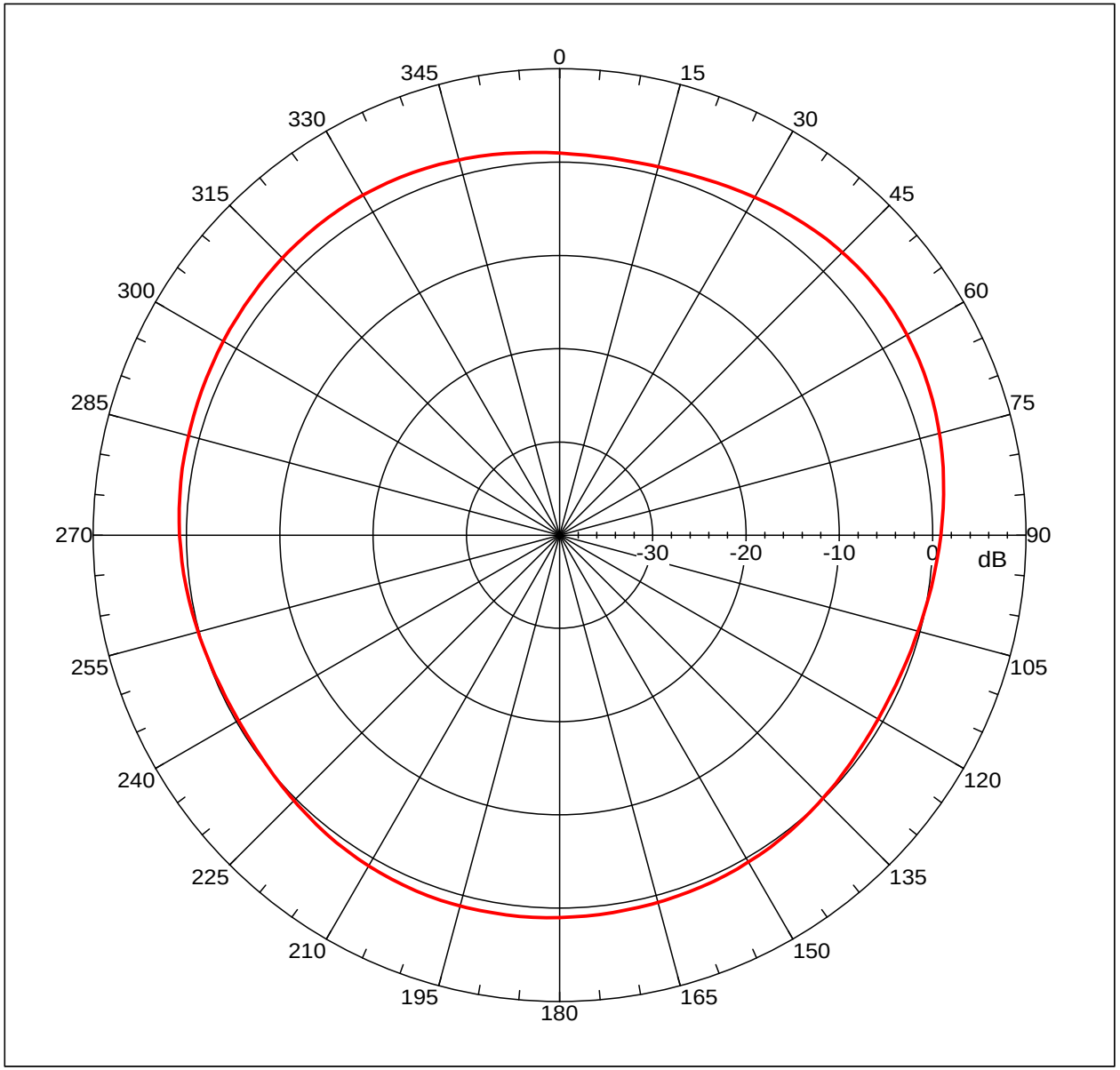

```
Far-field amplitude, Eprincipal: Linear, Tau = 0.000  deg
Gain = 3.11894  dBi
Max far-field (global) = -39.8804  dB, Max far-field (plot) =
-39.88041  dB
Normalization: Reference, Network offset = 0.000  dB
Hpeak at: 51.99999  deg, Vpeak at: 0.000  deg
Plot centering: On

20100924 TH88A  800-2100mhz  H-PLANE

NSI2000 V4.0.124, Filename:C:\nsi2000\Data\20100924 TH88A
800-2100mhz  H-PLANE01.nsi
Measurement date/time: 9/24/2010 9:15:15 AM, Filetype: NSI-97
Far-field Cut Analysis:
   Avg value: 1.711 dB
   -3. dB beam width: Not Found
   -6. dB beam width: Not Found
   -10. dB beam width: Not Found
   Left Sidelobe: Not Found
   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 10
Beam    Frequency   Azimuth  Elevation  Pol
----    ---------   -------  ---------  ---
1       0.824  GHz  Azimuth  Elevation  Single-pol
```

Far-field amplitude of 20100924 TH-88A 800-2100mhz H-PLANE01.nsi



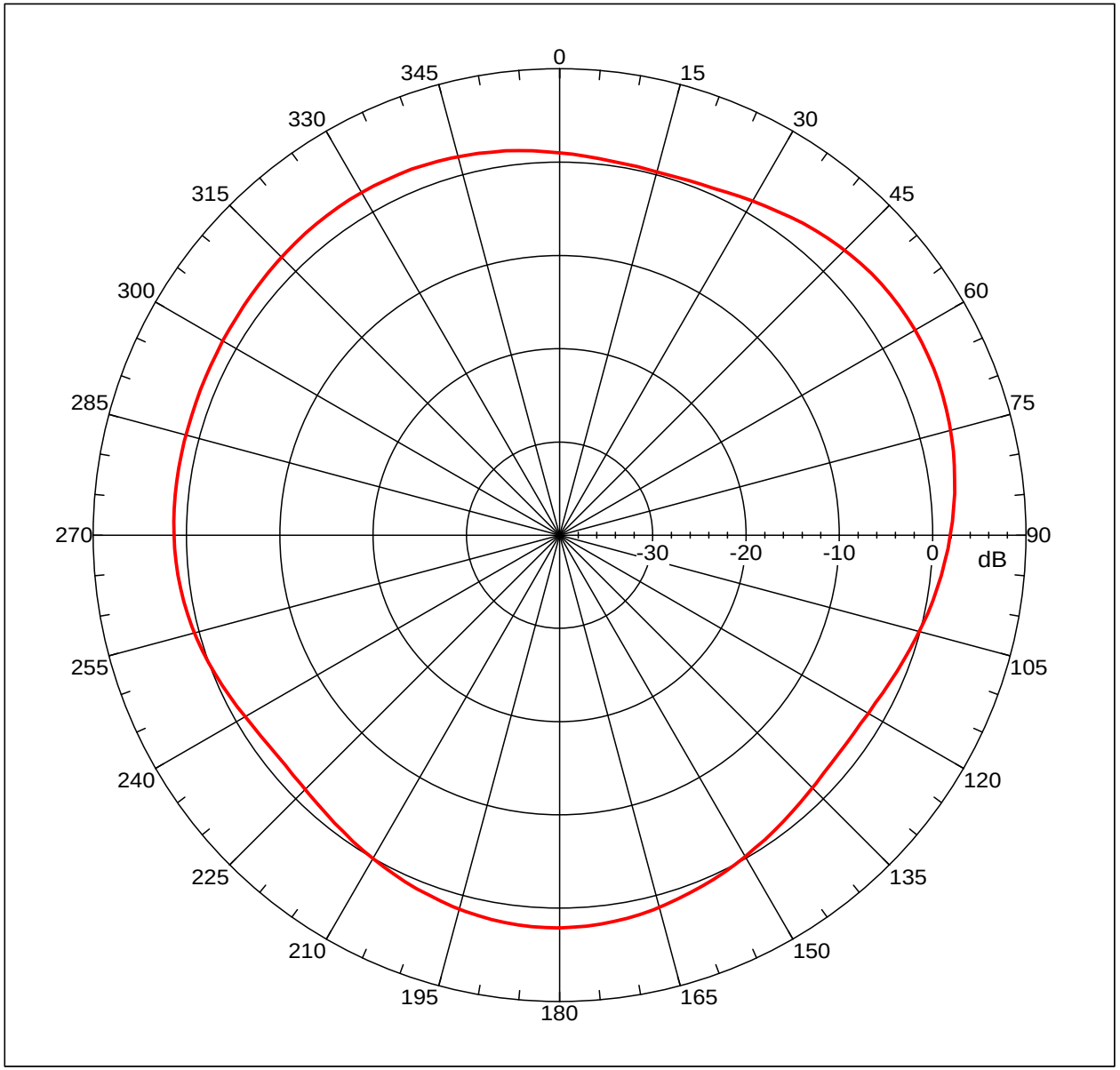

```
Far-field amplitude, Eprincipal: Linear, Tau = 0.000  deg
Gain = 3.08177  dBi
Max far-field (global) = -37.68606  dB, Max far-field (plot) =
-37.68606  dB
Normalization: Reference, Network offset = 0.000  dB
Hpeak at: 53.99999  deg, Vpeak at: 0.000  deg
Plot centering: On

20100924 TH88A  800-2100mhz  H-PLANE

NSI2000 V4.0.124, Filename:C:\nsi2000\Data\20100924 TH88A
800-2100mhz  H-PLANE01.nsi
Measurement date/time: 9/24/2010 9:15:15 AM, Filetype: NSI-97
Far-field Cut Analysis:
   Avg value: 1.104 dB
   -3. dB beam width: 206.49 deg
   -6. dB beam width: Not Found
   -10. dB beam width: Not Found
   Left Sidelobe: -0.96 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 10
Beam    Frequency   Azimuth  Elevation  Pol
----    ---------   -------  ---------  ---
2       0.860  GHz  Azimuth  Elevation  Single-pol
```

Far-field amplitude of 20100924 TH-88A 800-2100mhz H-PLANE01.nsi



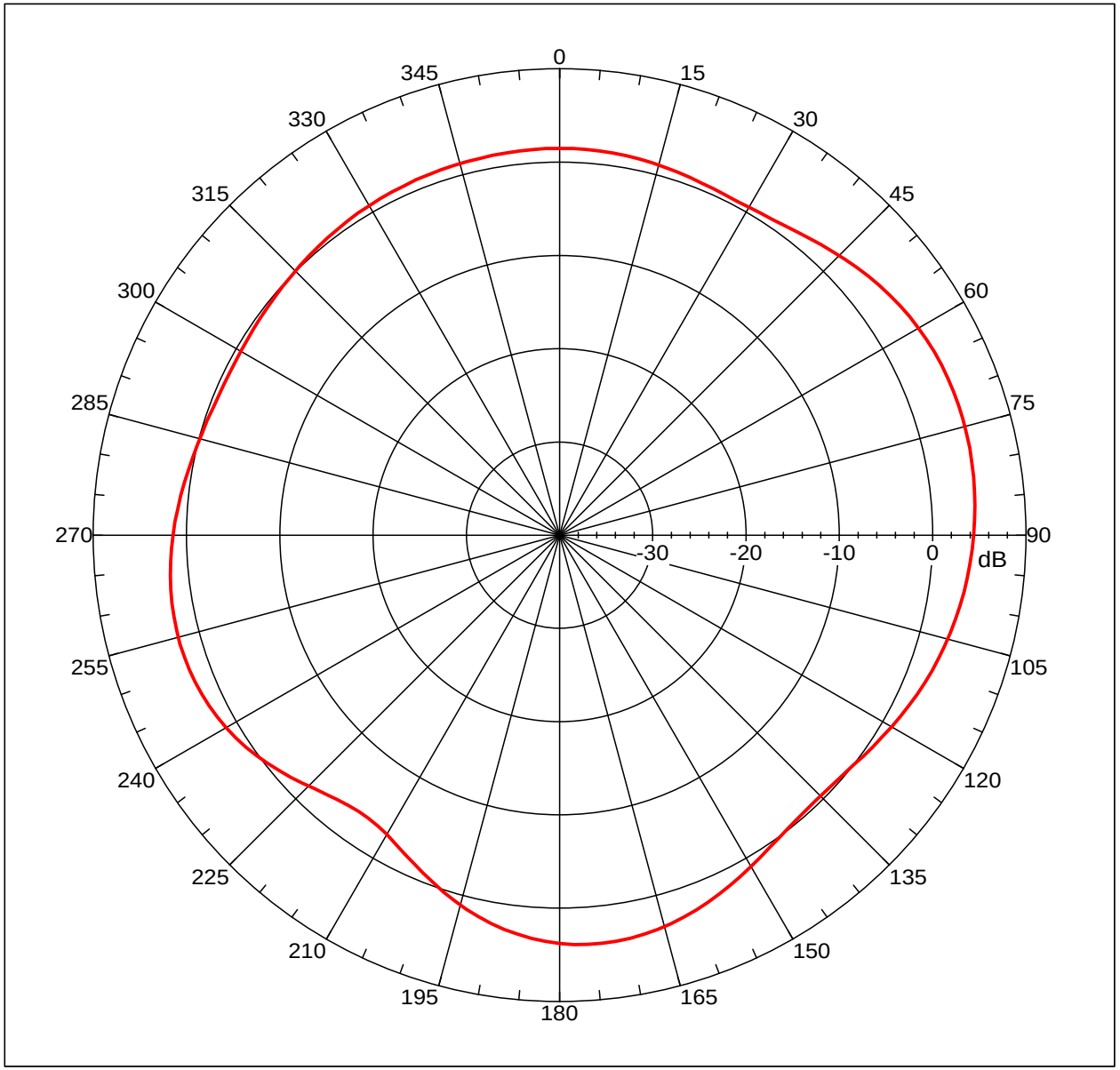

```
Far-field amplitude, Eprincipal: Linear, Tau = 0.000  deg
Gain = 3.98863  dBi
Max far-field (global) = -37.57105  dB, Max far-field (plot) =
-37.57106  dB
Normalization: Reference, Network offset = 0.000  dB
Hpeak at: 59.99999  deg, Vpeak at: 0.000  deg
Plot centering: On

20100924 TH88A  800-2100mhz  H-PLANE

NSI2000 V4.0.124, Filename:C:\nsi2000\Data\20100924 TH88A
800-2100mhz  H-PLANE01.nsi
Measurement date/time: 9/24/2010 9:15:15 AM, Filetype: NSI-97
Far-field Cut Analysis:
   Avg value: 1.184 dB
   -3. dB beam width: 70.67 deg
   -6. dB beam width: Not Found
   -10. dB beam width: Not Found
   Left Sidelobe: -1.58 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 10
Beam    Frequency   Azimuth  Elevation  Pol
----    ---------   -------  ---------  ---
3       0.900  GHz  Azimuth  Elevation  Single-pol
```

Far-field amplitude of 20100924 TH-88A 800-2100mhz H-PLANE01.nsi



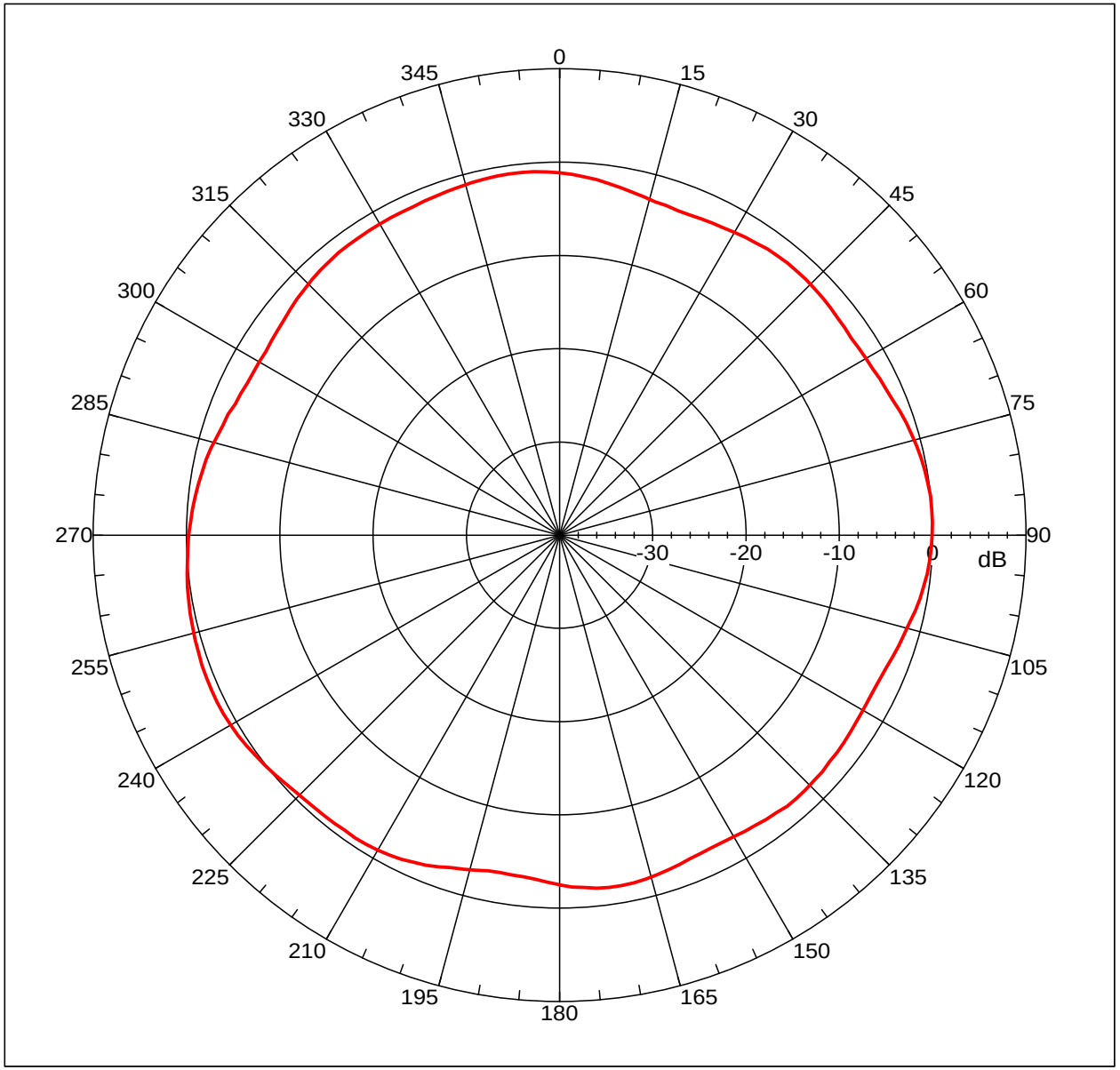

```
Far-field amplitude, Eprincipal: Linear, Tau = 0.000  deg
Gain = 4.98837  dBi
Max far-field (global) = -37.6413  dB, Max far-field (plot) =
-37.6413  dB
Normalization: Reference, Network offset = 0.000  dB
Hpeak at: 73.99999  deg, Vpeak at: 0.000  deg
Plot centering: On

20100924 TH88A  800-2100mhz  H-PLANE

NSI2000 V4.0.124, Filename:C:\nsi2000\Data\20100924 TH88A
800-2100mhz  H-PLANE01.nsi
Measurement date/time: 9/24/2010 9:15:15 AM, Filetype: NSI-97
Far-field Cut Analysis:
   Avg value: 1.616 dB
   -3. dB beam width: 71.56 deg
   -6. dB beam width: Not Found
   -10. dB beam width: Not Found
   Left Sidelobe: -2.67 dB at -105.587  deg
   Right Sidelobe: -1.00 dB at 175.978  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 10
Beam    Frequency   Azimuth  Elevation  Pol
----    ---------   -------  ---------  ---
4       0.960  GHz  Azimuth  Elevation  Single-pol
```

Far-field amplitude of 20100924 TH-88A 800-2100mhz H-PLANE01.nsi



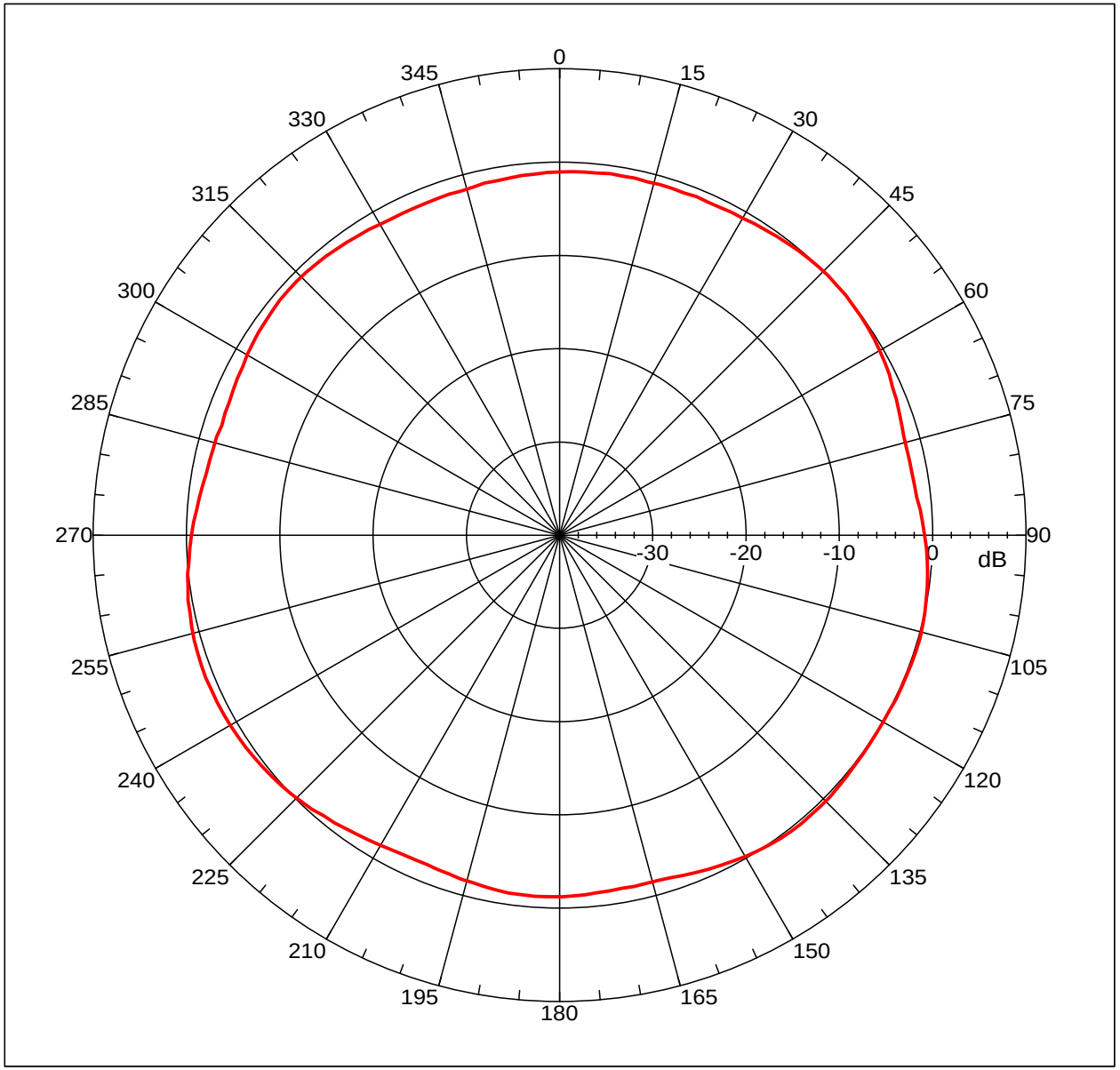

```
Far-field amplitude, Eprincipal: Linear, Tau = 0.000  deg
Gain = 0.84127  dBi
Max far-field (global) = -44.35132  dB, Max far-field (plot) =
-44.35133  dB
Normalization: Reference, Network offset = 0.000  dB
Hpeak at: -114.000  deg, Vpeak at: 0.000  deg
Plot centering: On

20100924 TH88A  800-2100mhz  H-PLANE

NSI2000 V4.0.124, Filename:C:\nsi2000\Data\20100924 TH88A
800-2100mhz  H-PLANE01.nsi
Measurement date/time: 9/24/2010 9:15:15 AM, Filetype: NSI-97
Far-field Cut Analysis:
   Avg value: -1.472 dB
   -3. dB beam width: 89.92 deg
   -6. dB beam width: Not Found
   -10. dB beam width: Not Found
   Left Sidelobe: Not Found
   Right Sidelobe: -2.29 dB at -27.151  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 10
Beam    Frequency   Azimuth  Elevation  Pol
----    ---------   -------  ---------  ---
5       1.710  GHz  Azimuth  Elevation  Single-pol
```

Far-field amplitude of 20100924 TH-88A 800-2100mhz H-PLANE01.nsi



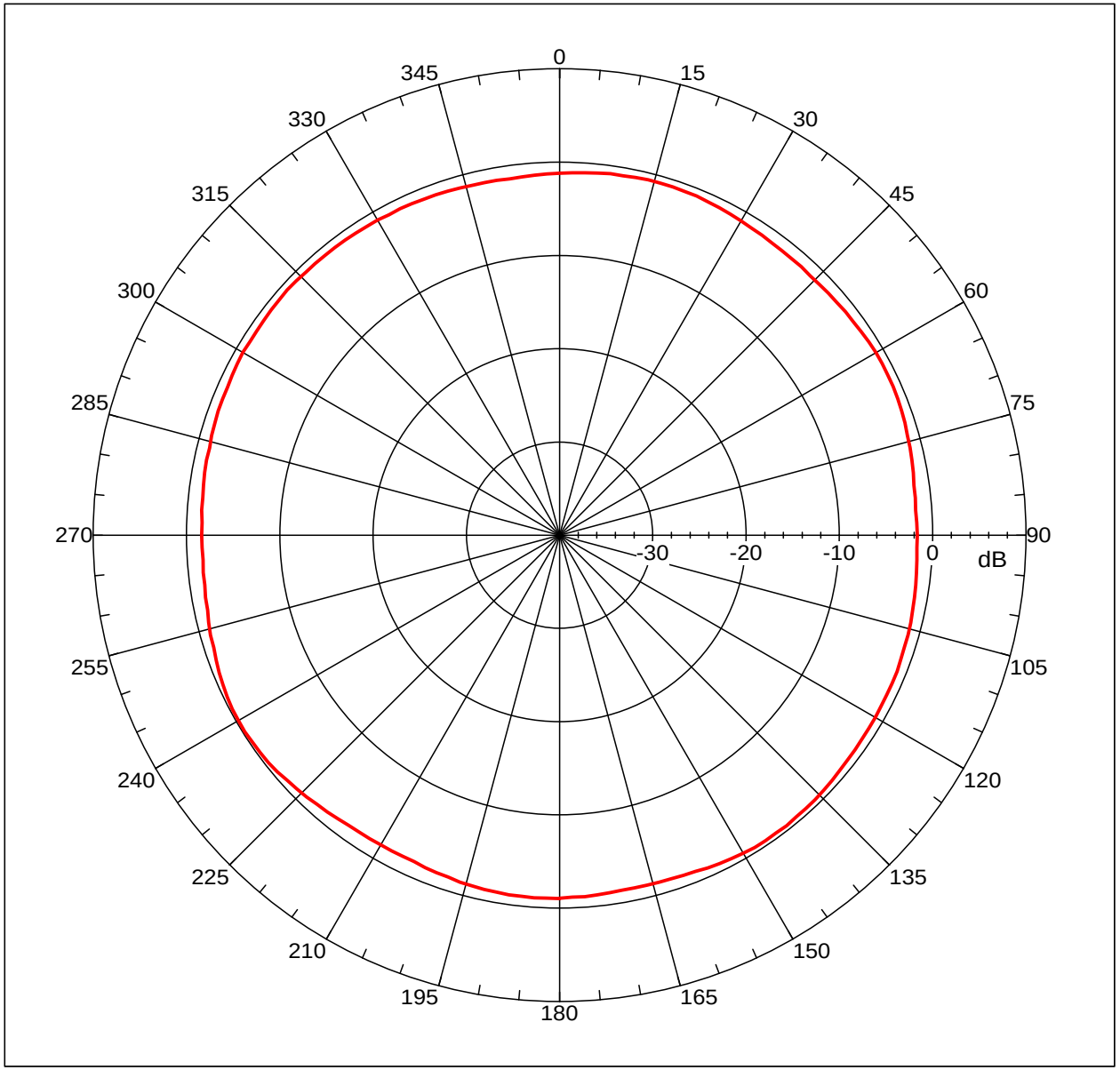

```
Far-field amplitude, Eprincipal: Linear, Tau = 0.000  deg
Gain = 0.89994  dBi
Max far-field (global) = -45.9221  dB, Max far-field (plot) =
-45.92213  dB
Normalization: Reference, Network offset = 0.000  dB
Hpeak at: -112.00001  deg, Vpeak at: 0.000  deg
Plot centering: On

20100924 TH88A  800-2100mhz  H-PLANE

NSI2000 V4.0.124, Filename:C:\nsi2000\Data\20100924 TH88A
800-2100mhz  H-PLANE01.nsi
Measurement date/time: 9/24/2010 9:15:15 AM, Filetype: NSI-97
Far-field Cut Analysis:
   Avg value: -0.705 dB
   -3. dB beam width: Not Found
   -6. dB beam width: Not Found
   -10. dB beam width: Not Found
   Left Sidelobe: Not Found
   Right Sidelobe: -1.75 dB at -49.274  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 10
Beam    Frequency   Azimuth  Elevation  Pol
----    ---------   -------  ---------  ---
6       1.800  GHz  Azimuth  Elevation  Single-pol
```

Far-field amplitude of 20100924 TH-88A 800-2100mhz H-PLANE01.nsi



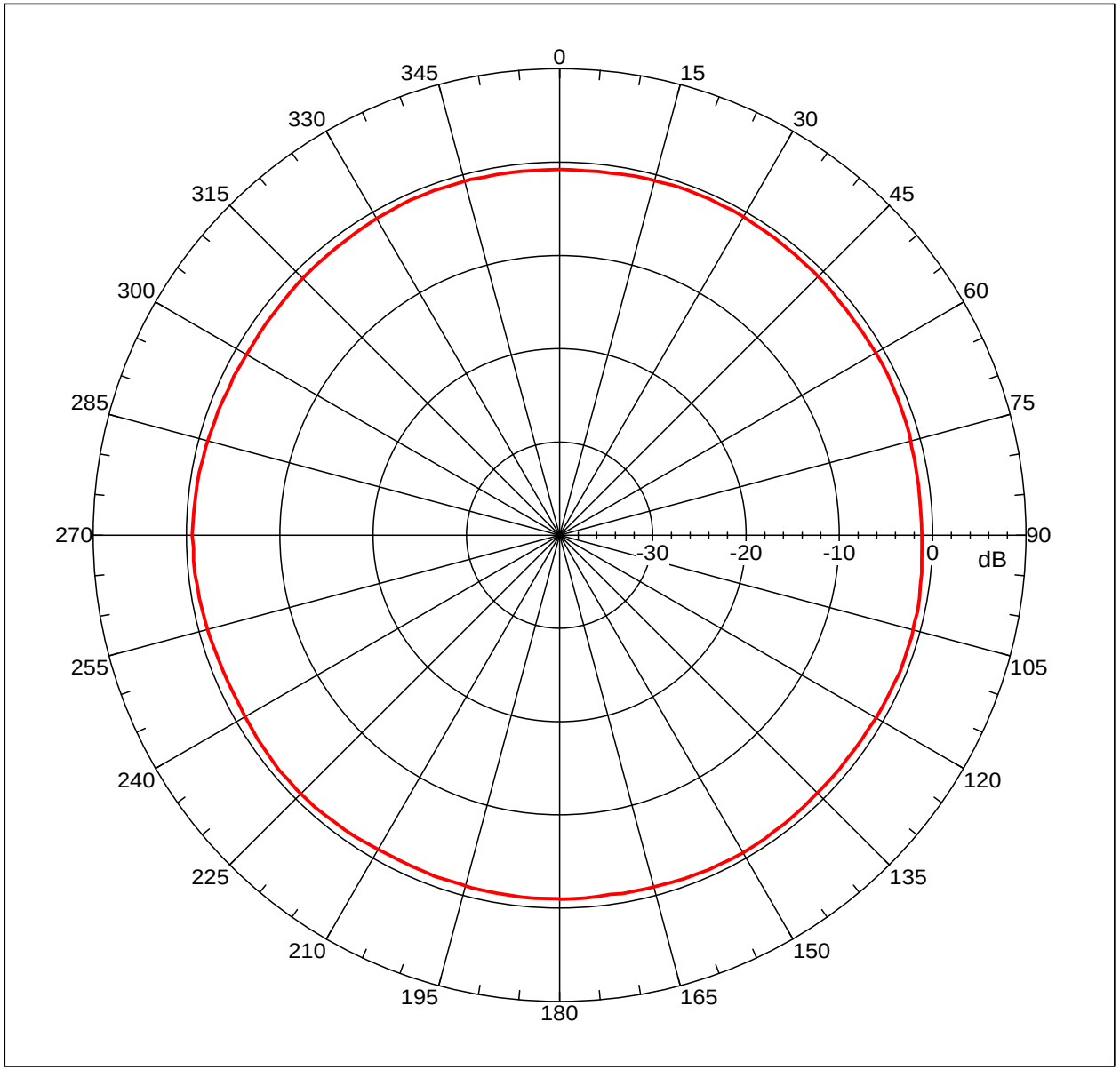

```
Far-field amplitude, Eprincipal: Linear, Tau = 0.000  deg
Gain = -0.2259  dBi
Max far-field (global) = -46.89447  dB, Max far-field (plot) =
-46.89448  dB
Normalization: Reference, Network offset = 0.000  dB
Hpeak at: -122.00001  deg, Vpeak at: 0.000  deg
Plot centering: On

20100924 TH88A  800-2100mhz  H-PLANE

NSI2000 V4.0.124, Filename:C:\nsi2000\Data\20100924 TH88A
800-2100mhz  H-PLANE01.nsi
Measurement date/time: 9/24/2010 9:15:15 AM, Filetype: NSI-97
Far-field Cut Analysis:
   Avg value: -1.089 dB
   -3. dB beam width: Not Found
   -6. dB beam width: Not Found
   -10. dB beam width: Not Found
   Left Sidelobe: Not Found
   Right Sidelobe: -0.32 dB at 139.777  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 10
Beam    Frequency   Azimuth  Elevation  Pol
----    ---------   -------  ---------  ---
7       1.880  GHz  Azimuth  Elevation  Single-pol
```

Far-field amplitude of 20100924 TH-88A 800-2100mhz H-PLANE01.nsi



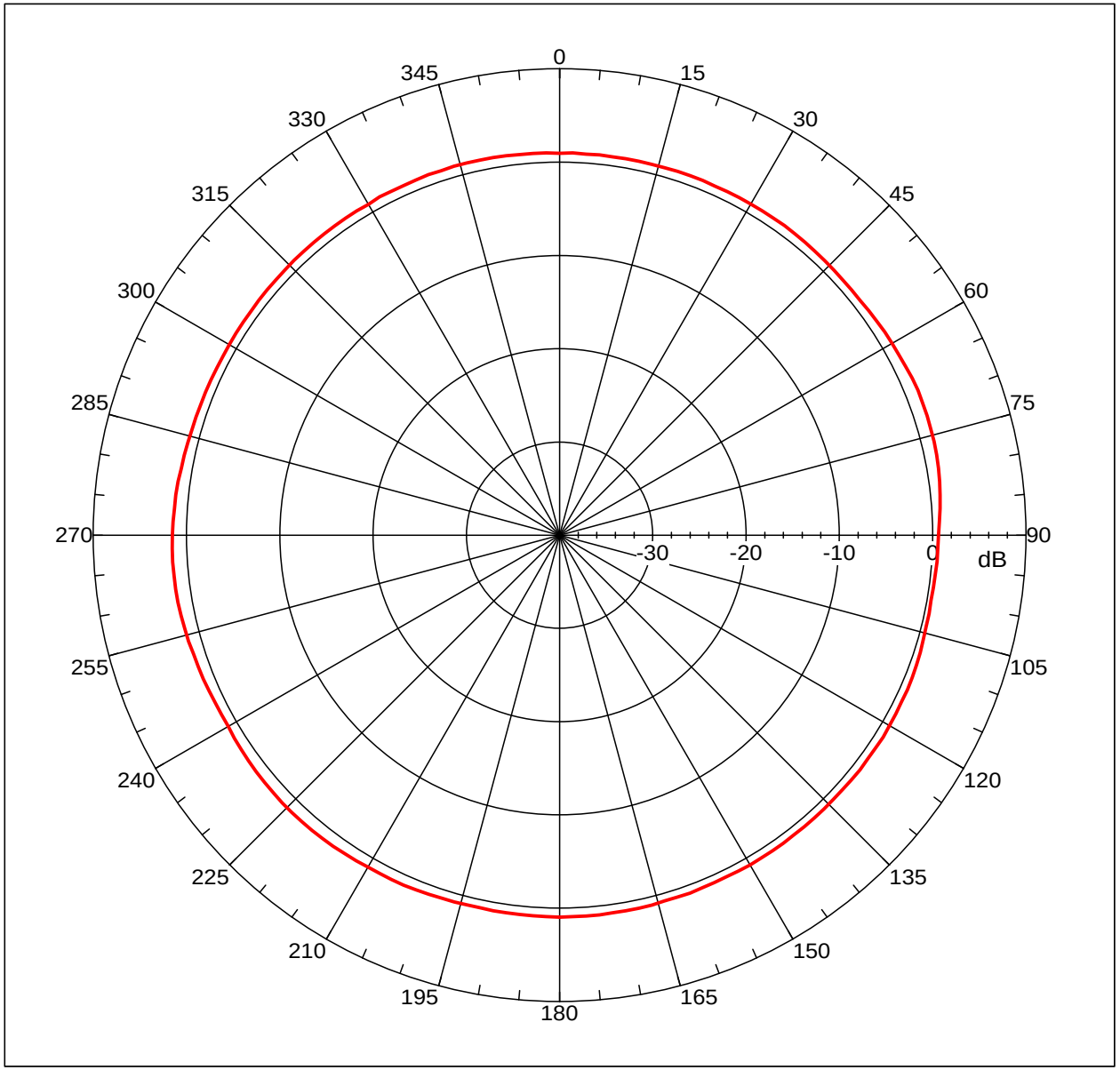

```
Far-field amplitude, Eprincipal: Linear, Tau = 0.000  deg
Gain = -0.55281  dBi
Max far-field (global) = -48.35891  dB, Max far-field (plot) =
-48.35892  dB
Normalization: Reference, Network offset = 0.000  dB
Hpeak at: 27.99999  deg, Vpeak at: 0.000  deg
Plot centering: On

20100924 TH88A  800-2100mhz  H-PLANE

NSI2000 V4.0.124, Filename:C:\nsi2000\Data\20100924 TH88A
800-2100mhz  H-PLANE01.nsi
Measurement date/time: 9/24/2010 9:15:15 AM, Filetype: NSI-97
Far-field Cut Analysis:
   Avg value: -0.902 dB
   -3. dB beam width: Not Found
   -6. dB beam width: Not Found
   -10. dB beam width: Not Found
   Left Sidelobe: Not Found
   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 10
Beam    Frequency   Azimuth  Elevation  Pol
----    ---------   -------  ---------  ---
8       1.990  GHz  Azimuth  Elevation  Single-pol
```

Far-field amplitude of 20100924 TH-88A 800-2100mhz H-PLANE01.nsi



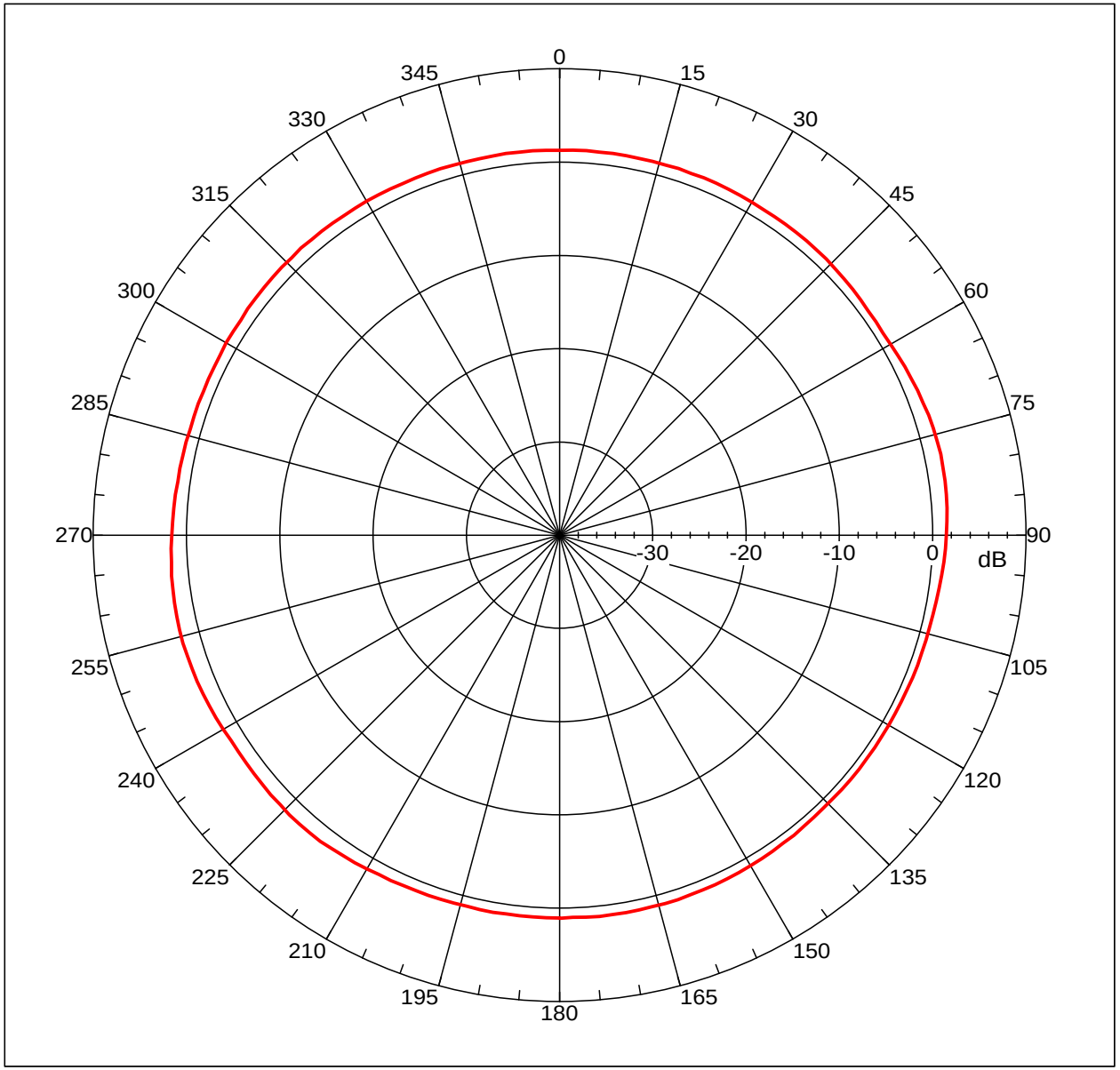

```
Far-field amplitude, Eprincipal: Linear, Tau = 0.000  deg
Gain = 1.56563  dBi
Max far-field (global) = -45.76107  dB, Max far-field (plot) =
-45.76109  dB
Normalization: Reference, Network offset = 0.000  dB
Hpeak at: -94.00001  deg, Vpeak at: 0.000  deg
Plot centering: On

20100924 TH88A  800-2100mhz  H-PLANE

NSI2000 V4.0.124, Filename:C:\nsi2000\Data\20100924 TH88A
800-2100mhz  H-PLANE01.nsi
Measurement date/time: 9/24/2010 9:15:15 AM, Filetype: NSI-97
Far-field Cut Analysis:
   Avg value: 1.002 dB
   -3. dB beam width: Not Found
   -6. dB beam width: Not Found
   -10. dB beam width: Not Found
   Left Sidelobe: Not Found
   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 10
Beam    Frequency   Azimuth  Elevation  Pol
----    ---------   -------  ---------  ---
9       2.100  GHz  Azimuth  Elevation  Single-pol
```

Far-field amplitude of 20100924 TH-88A 800-2100mhz H-PLANE01.nsi



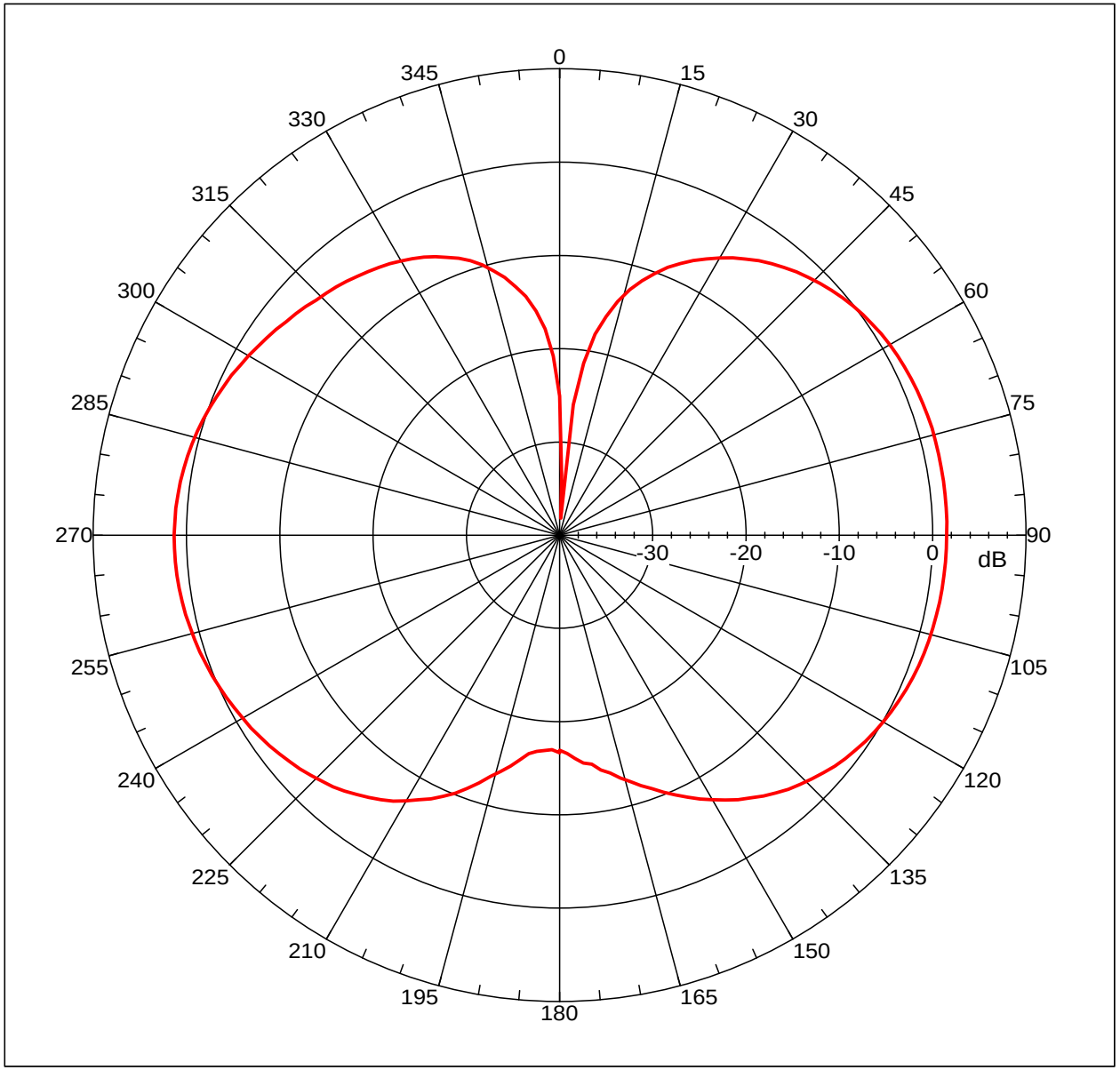

```
Far-field amplitude, Eprincipal: Linear, Tau = 0.000  deg
Gain = 1.99658  dBi
Max far-field (global) = -45.53553  dB, Max far-field (plot) =
-45.53554  dB
Normalization: Reference, Network offset = 0.000  dB
Hpeak at: -106.00001  deg, Vpeak at: 0.000  deg
Plot centering: On

20100924 TH88A  800-2100mhz  H-PLANE

NSI2000 V4.0.124, Filename:C:\nsi2000\Data\20100924 TH88A
800-2100mhz  H-PLANE01.nsi
Measurement date/time: 9/24/2010 9:15:15 AM, Filetype: NSI-97
Far-field Cut Analysis:
   Avg value: 1.251 dB
   -3. dB beam width: Not Found
   -6. dB beam width: Not Found
   -10. dB beam width: Not Found
   Left Sidelobe: Not Found
   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 10
Beam    Frequency   Azimuth  Elevation  Pol
----    ---------   -------  ---------  ---
10      2.170  GHz  Azimuth  Elevation  Single-pol
```

Far-field amplitude of 20100924 TH-88A 800-2100mhz E-PLANE.nsi



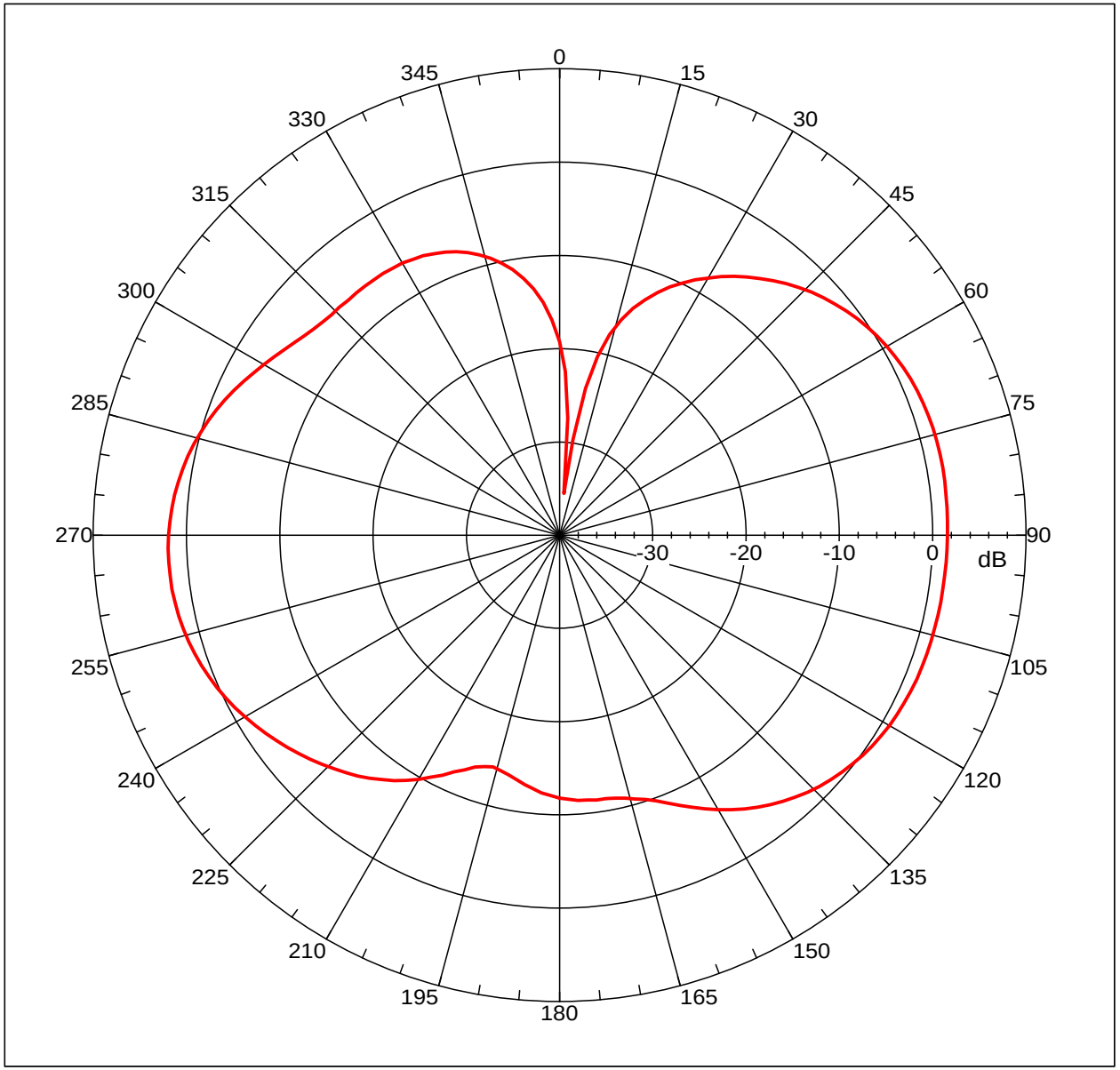

```
Far-field amplitude, Eprincipal: Linear, Tau = 0.000  deg
Gain = 1.55179  dBi
Max far-field (global) = -41.44755  dB, Max far-field (plot) =
-41.44756  dB
Normalization: Reference, Network offset = 0.000  dB
Hpeak at: 81.99999  deg, Vpeak at: 0.000  deg
Plot centering: On

20100924 TH88A  800-2100mhz  E-PLANE

NSI2000 V4.0.124, Filename:C:\nsi2000\Data\20100924 TH88A
800-2100mhz  E-PLANE.nsi
Measurement date/time: 9/24/2010 9:05:35 AM, Filetype: NSI-97
Far-field Cut Analysis:
   Avg value: -3.155 dB
   -3. dB beam width: 85.62 deg
   -6. dB beam width: 108.79 deg
   -10. dB beam width: 130.70 deg
   Left Sidelobe: -0.25 dB at -89.497  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 10
Beam    Frequency   Azimuth  Elevation  Pol
----    ---------   -------  ---------  ---
1       0.824  GHz  Azimuth  Elevation  Single-pol
```

Far-field amplitude of 20100924 TH-88A 800-2100mhz E-PLANE.nsi



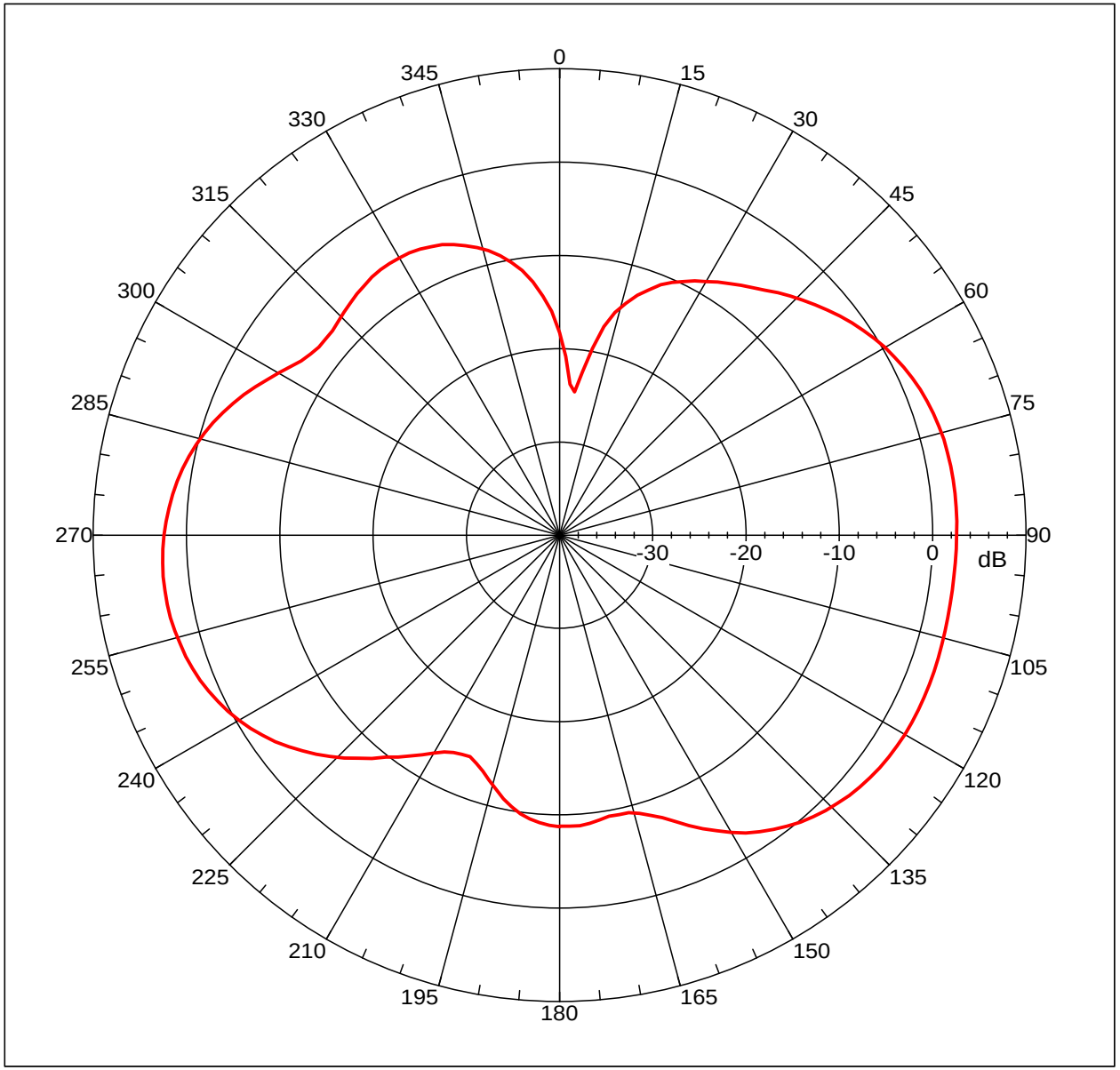

```
Far-field amplitude, Eprincipal: Linear, Tau = 0.000  deg
Gain = 1.97275  dBi
Max far-field (global) = -38.79508  dB, Max far-field (plot) =
-38.79509  dB
Normalization: Reference, Network offset = 0.000  dB
Hpeak at: -94.00001  deg, Vpeak at: 0.000  deg
Plot centering: On

20100924 TH88A  800-2100mhz  E-PLANE

NSI2000 V4.0.124, Filename:C:\nsi2000\Data\20100924 TH88A
800-2100mhz  E-PLANE.nsi
Measurement date/time: 9/24/2010 9:05:35 AM, Filetype: NSI-97
Far-field Cut Analysis:
   Avg value: -3.301 dB
   -3. dB beam width: 50.86 deg
   -6. dB beam width: 74.58 deg
   -10. dB beam width: 127.49 deg
   Left Sidelobe: Not Found
   Right Sidelobe: -0.27 dB at 79.441  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 10
Beam    Frequency   Azimuth  Elevation  Pol
----    ---------   -------  ---------  ---
2       0.860  GHz  Azimuth  Elevation  Single-pol
```

Far-field amplitude of 20100924 TH-88A 800-2100mhz E-PLANE.nsi



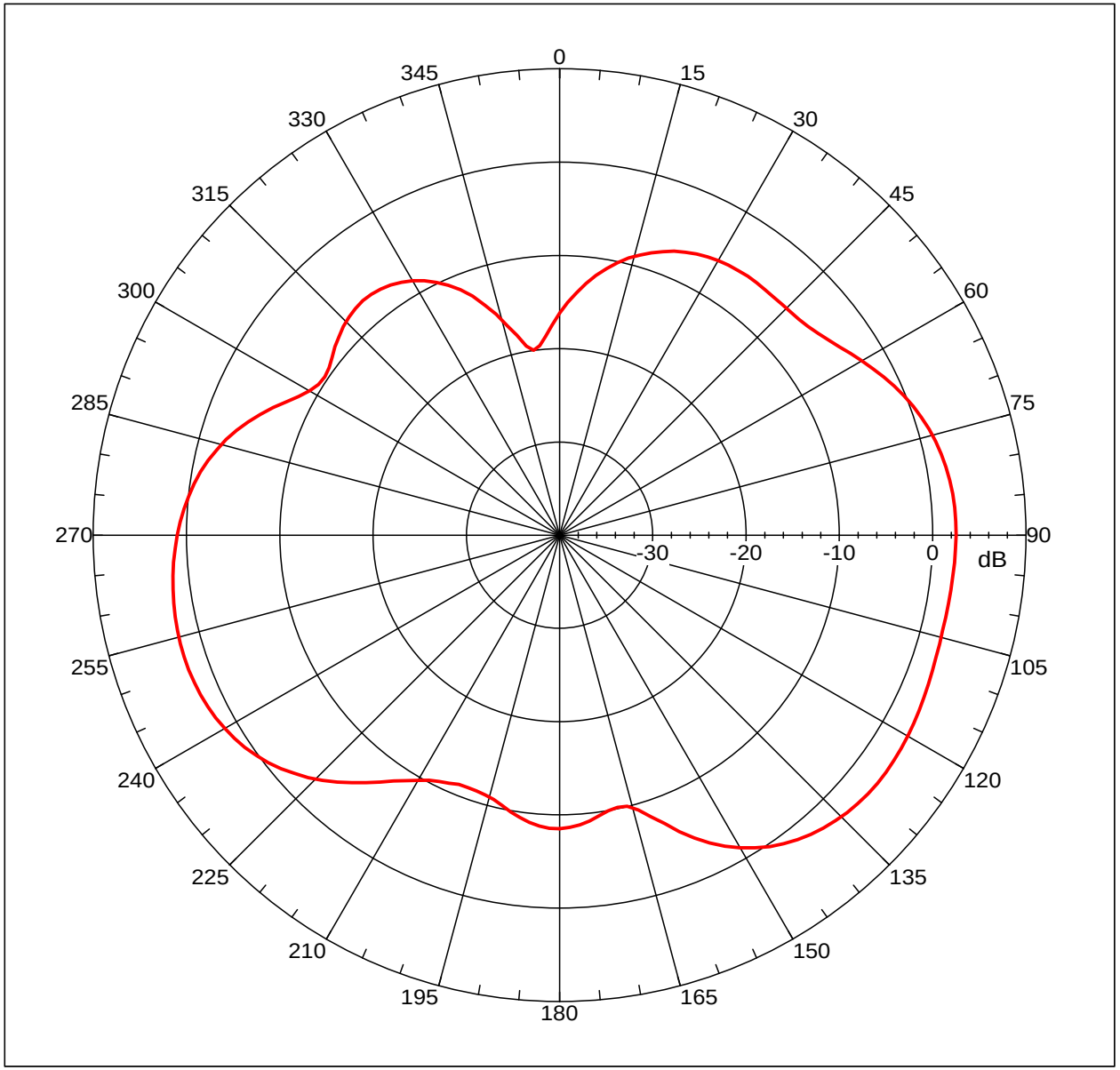

```
Far-field amplitude, Eprincipal: Linear, Tau = 0.000  deg
Gain = 2.77642  dBi
Max far-field (global) = -38.78326  dB, Max far-field (plot) =
-38.78327  dB
Normalization: Reference, Network offset = 0.000  dB
Hpeak at: 116.000  deg, Vpeak at: 0.000  deg
Plot centering: On

20100924 TH88A  800-2100mhz  E-PLANE

NSI2000 V4.0.124, Filename:C:\nsi2000\Data\20100924 TH88A
800-2100mhz  E-PLANE.nsi
Measurement date/time: 9/24/2010 9:05:35 AM, Filetype: NSI-97
Far-field Cut Analysis:
   Avg value: -2.649 dB
   -3. dB beam width: 83.89 deg
   -6. dB beam width: 102.97 deg
   -10. dB beam width: 124.53 deg
   Left Sidelobe: -8.43 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 10
Beam    Frequency   Azimuth  Elevation  Pol
----    ---------   -------  ---------  ---
3       0.900  GHz  Azimuth  Elevation  Single-pol
```

Far-field amplitude of 20100924 TH-88A 800-2100mhz E-PLANE.nsi



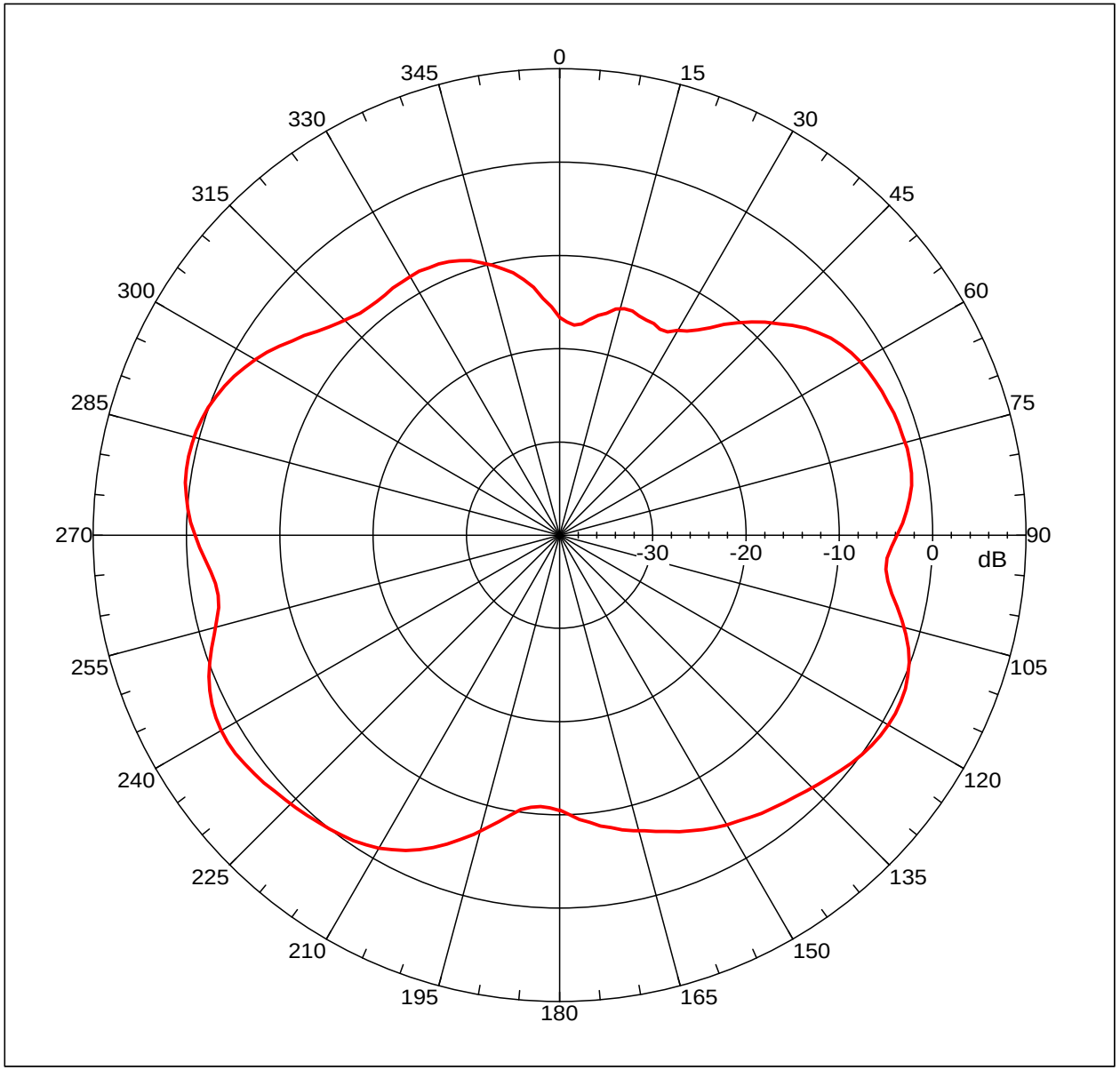

```
Far-field amplitude, Eprincipal: Linear, Tau = 0.000  deg
Gain = 3.24927  dBi
Max far-field (global) = -39.3804  dB, Max far-field (plot) =
-39.38042  dB
Normalization: Reference, Network offset = 0.000  dB
Hpeak at: 126.000  deg, Vpeak at: 0.000  deg
Plot centering: On

20100924 TH88A  800-2100mhz  E-PLANE

NSI2000 V4.0.124, Filename:C:\nsi2000\Data\20100924 TH88A
800-2100mhz  E-PLANE.nsi
Measurement date/time: 9/24/2010 9:05:35 AM, Filetype: NSI-97
Far-field Cut Analysis:
   Avg value: -2.789 dB
   -3. dB beam width: 76.87 deg
   -6. dB beam width: 93.99 deg
   -10. dB beam width: 135.85 deg
   Left Sidelobe: -10.45 dB at -39.218  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 10
Beam    Frequency   Azimuth  Elevation  Pol
----    ---------   -------  ---------  ---
4       0.960  GHz  Azimuth  Elevation  Single-pol
```

Far-field amplitude of 20100924 TH88A 800-2100mhz E-PLANE.nsi



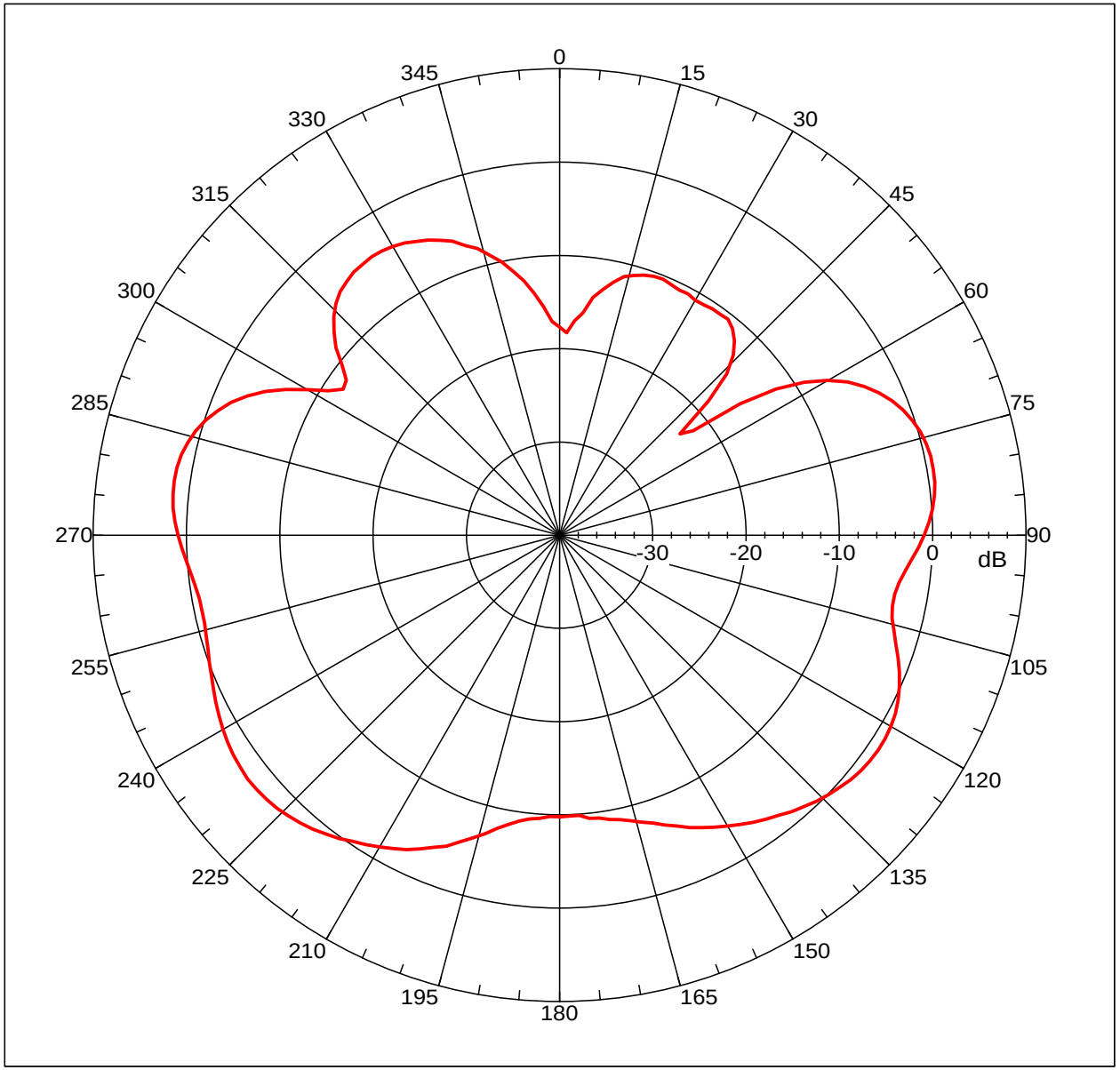

```
Far-field amplitude, Eprincipal: Linear, Tau = 0.000  deg
 Gain = 1.92073  dBi
 Max far-field (global) = -43.27186  dB, Max far-field (plot) =
 -43.27191  dB
 Normalization: Reference, Network offset = 0.000  dB
 Hpeak at: -122.00001  deg, Vpeak at: 0.000  deg
 Plot centering: On

 20100924 TH88A  800-2100mhz  E-PLANE

 NSI2000 V4.0.124, Filename:C:\nsi2000\Data\20100924 TH88A
 800-2100mhz  E-PLANE.nsi
 Measurement date/time: 9/24/2010 9:05:35 AM, Filetype: NSI-97
 Far-field Cut Analysis:
    Avg value: -3.798 dB
    -3. dB beam width: 42.14 deg
    -6. dB beam width: 103.73 deg
    -10. dB beam width: 126.52 deg
    Left Sidelobe: Not Found
    Right Sidelobe: -1.26 dB at -77.430  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 10
Beam    Frequency   Azimuth  Elevation  Pol
----    ---------   -------  ---------  ---
5       1.710  GHz  Azimuth  Elevation  Single-pol
```

Far-field amplitude of 20100924 TH-88A 800-2100mhz E-PLANE.nsi



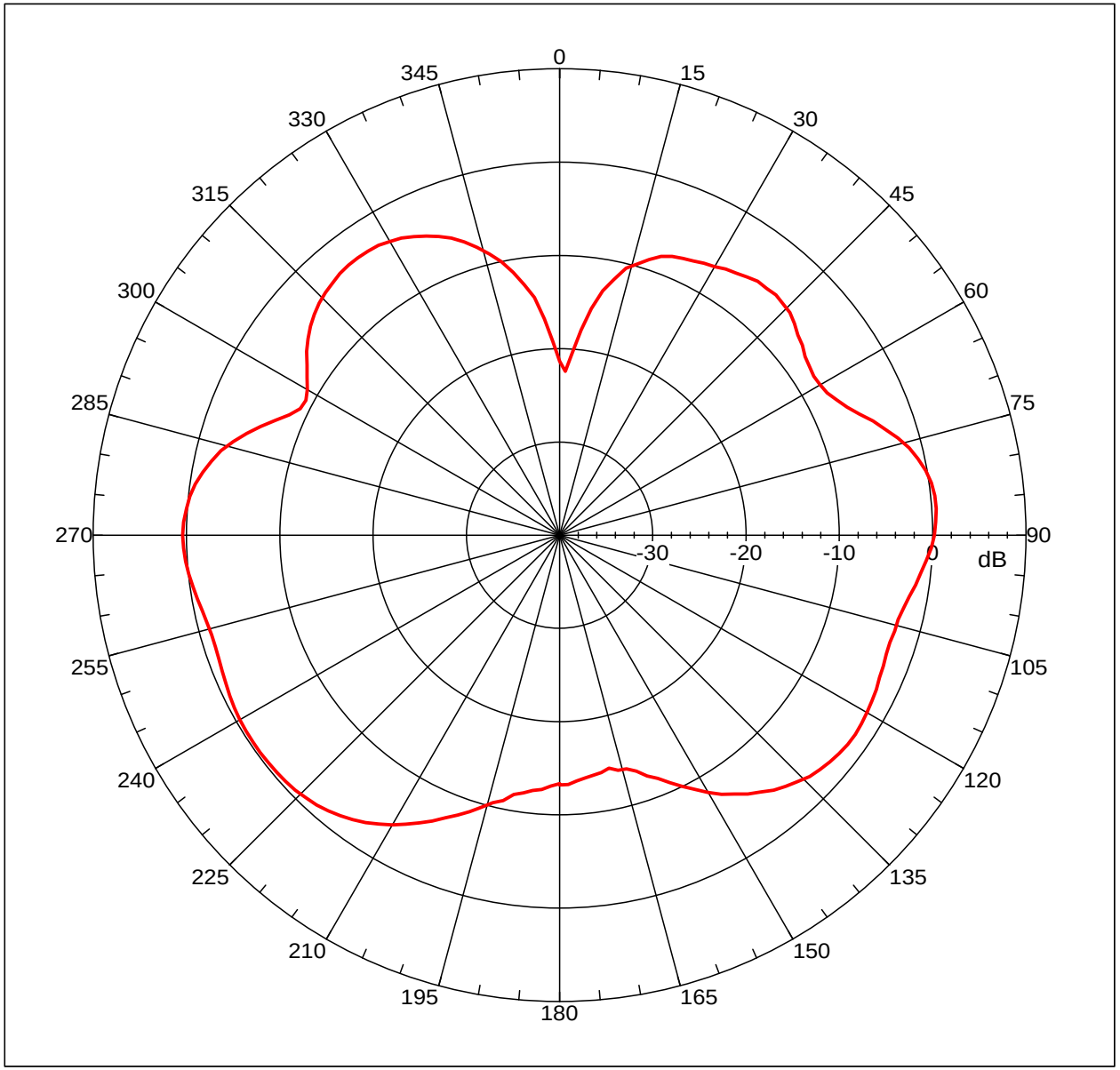

```
Far-field amplitude, Eprincipal: Linear, Tau = 0.000  deg
Gain = 2.4254  dBi
Max far-field (global) = -44.39664  dB, Max far-field (plot) =
-44.39673  dB
Normalization: Reference, Network offset = 0.000  dB
Hpeak at: -128.000  deg, Vpeak at: 0.000  deg
Plot centering: On

20100924 TH88A  800-2100mhz  E-PLANE

NSI2000 V4.0.124, Filename:C:\nsi2000\Data\20100924 TH88A
800-2100mhz  E-PLANE.nsi
Measurement date/time: 9/24/2010 9:05:35 AM, Filetype: NSI-97
Far-field Cut Analysis:
   Avg value: -3.431 dB
   -3. dB beam width: 40.65 deg
   -6. dB beam width: 91.89 deg
   -10. dB beam width: 106.70 deg
   Left Sidelobe: Not Found
   Right Sidelobe: -0.73 dB at -81.453  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 10
Beam    Frequency   Azimuth  Elevation  Pol
----    ---------   -------  ---------  ---
6       1.800  GHz  Azimuth  Elevation  Single-pol
```

Far-field amplitude of 20100924 TH-88A 800-2100mhz E-PLANE.nsi



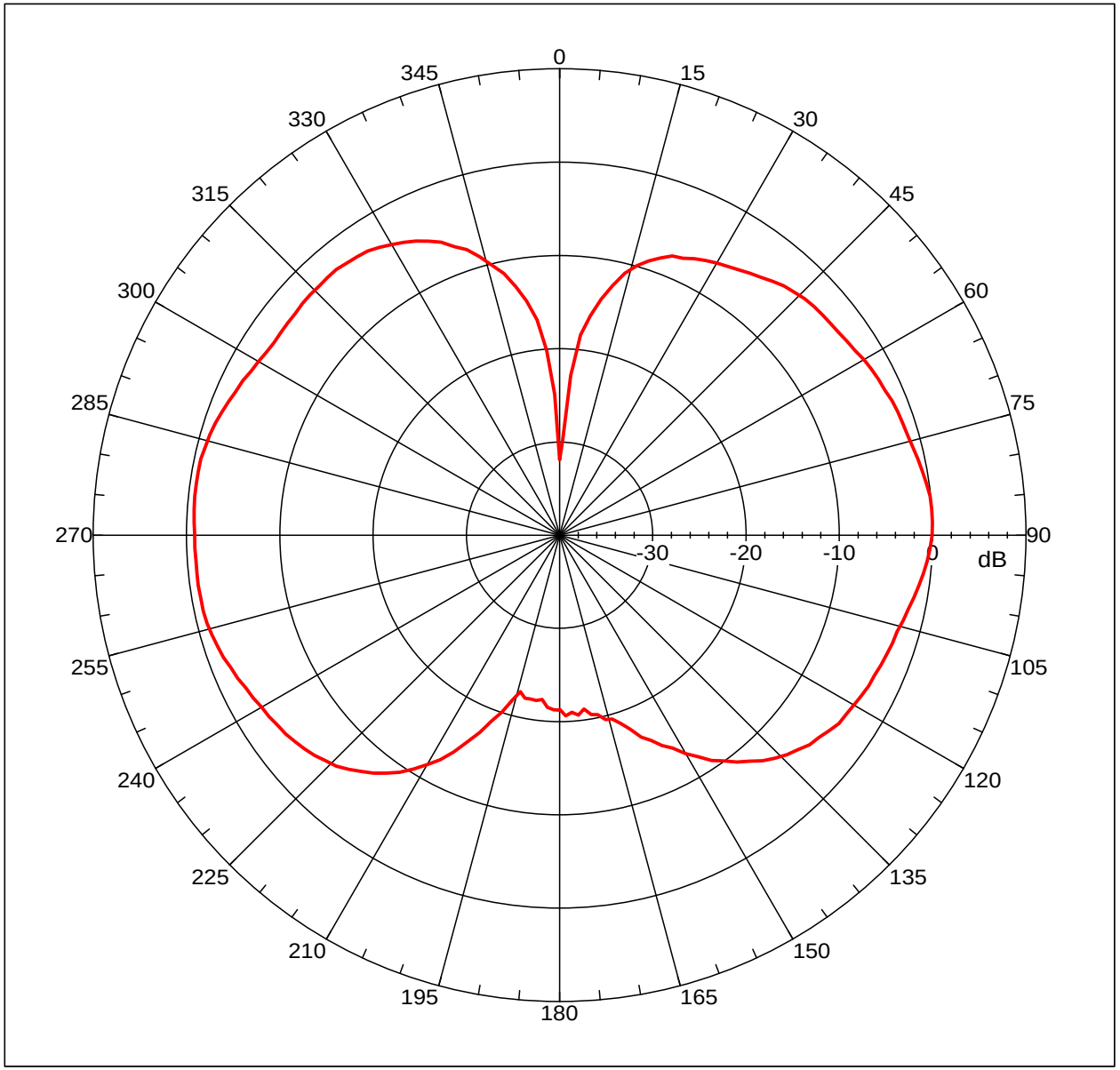

```
Far-field amplitude, Eprincipal: Linear, Tau = 0.000  deg
Gain = 0.46166  dBi
Max far-field (global) = -46.20691  dB, Max far-field (plot) =
-46.20695  dB
Normalization: Reference, Network offset = 0.000  dB
Hpeak at: 85.99999  deg, Vpeak at: 0.000  deg
Plot centering: On

20100924 TH88A  800-2100mhz  E-PLANE

NSI2000 V4.0.124, Filename:C:\nsi2000\Data\20100924 TH88A
800-2100mhz  E-PLANE.nsi
Measurement date/time: 9/24/2010 9:05:35 AM, Filetype: NSI-97
Far-field Cut Analysis:
   Avg value: -4.604 dB
   -3. dB beam width: 30.21 deg
   -6. dB beam width: 76.36 deg
   -10. dB beam width: 137.06 deg
   Left Sidelobe: -5.81 dB at 43.240  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 10
Beam    Frequency   Azimuth  Elevation  Pol
----    ---------   -------  ---------  ---
7       1.880  GHz  Azimuth  Elevation  Single-pol
```

Far-field amplitude of 20100924 TH-88A 800-2100mhz E-PLANE.nsi



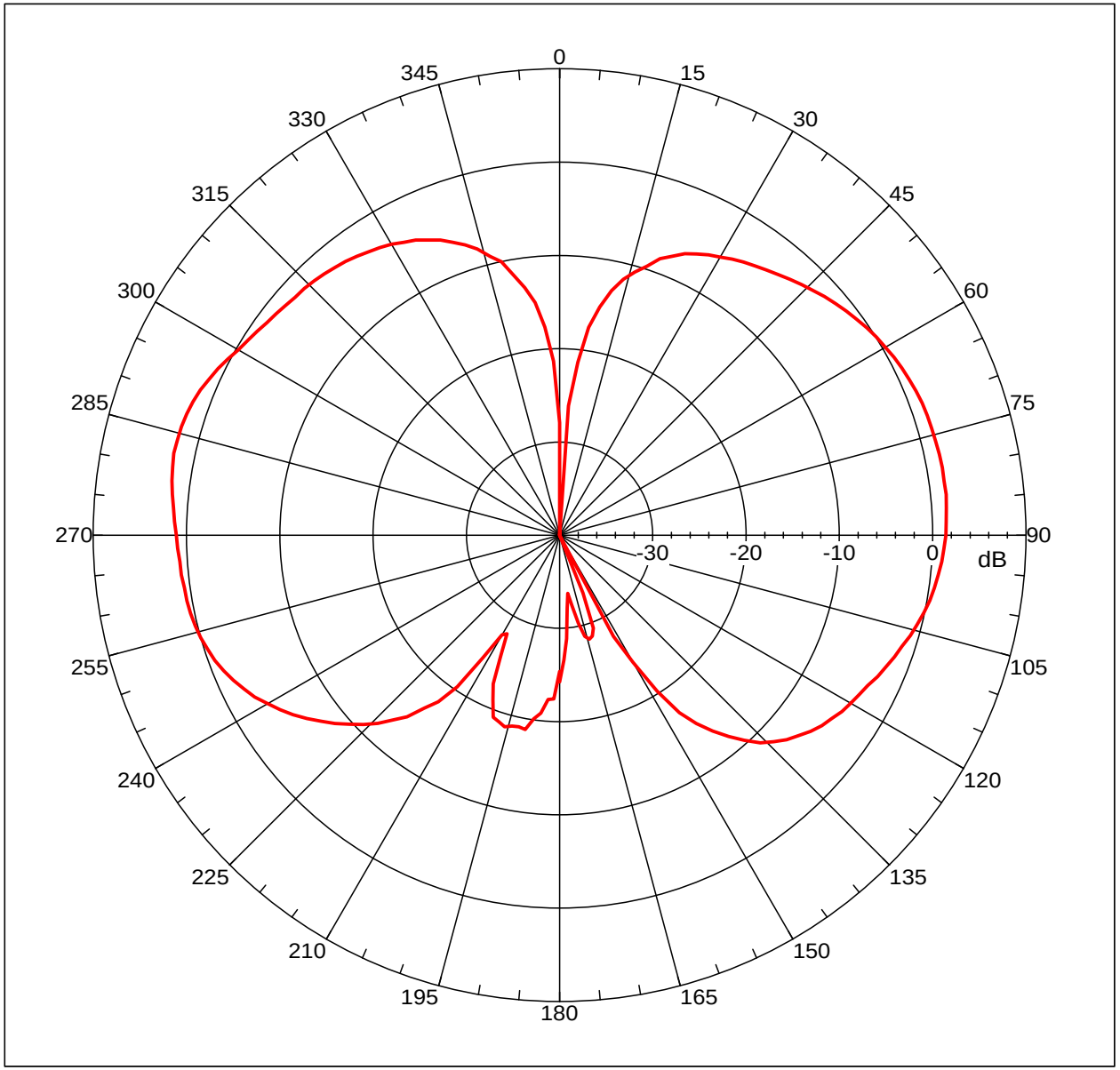

```
Far-field amplitude, Eprincipal: Linear, Tau = 0.000  deg
Gain = -0.01746  dBi
Max far-field (global) = -47.82356  dB, Max far-field (plot) =
-47.82364  dB
Normalization: Reference, Network offset = 0.000  dB
Hpeak at: 87.99999  deg, Vpeak at: 0.000  deg
Plot centering: On

20100924 TH88A  800-2100mhz  E-PLANE

NSI2000 V4.0.124, Filename:C:\nsi2000\Data\20100924 TH88A
800-2100mhz  E-PLANE.nsi
Measurement date/time: 9/24/2010 9:05:35 AM, Filetype: NSI-97
Far-field Cut Analysis:
   Avg value: -5.233 dB
   -3. dB beam width: 59.76 deg
   -6. dB beam width: 102.02 deg
   -10. dB beam width: 128.69 deg
   Left Sidelobe: -2.80 dB at -39.218  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 10
Beam    Frequency   Azimuth  Elevation  Pol
----    ---------   -------  ---------  ---
8       1.990  GHz  Azimuth  Elevation  Single-pol
```

Far-field amplitude of 20100924 TH-88A 800-2100mhz E-PLANE.nsi



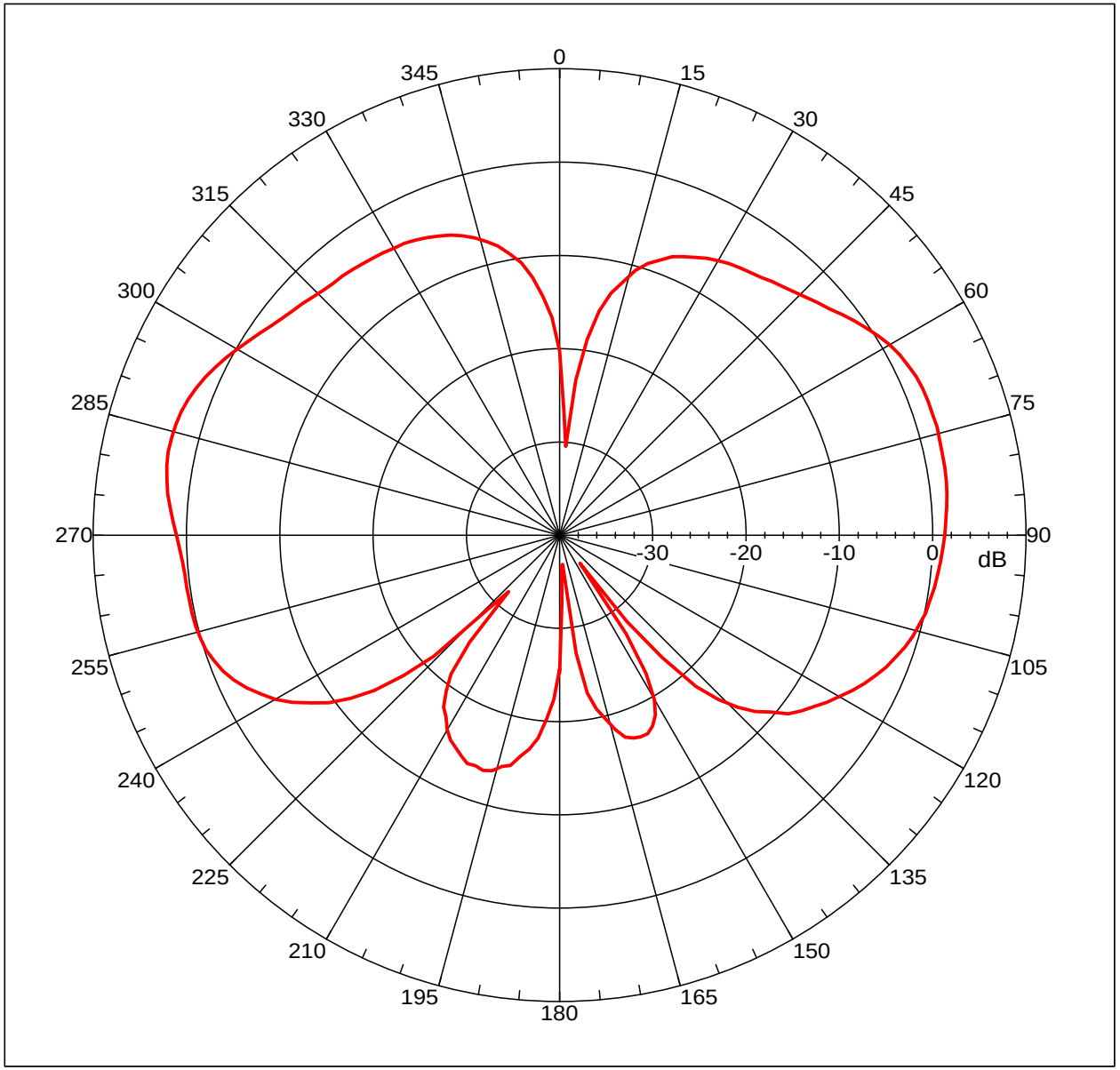

```
Far-field amplitude, Eprincipal: Linear, Tau = 0.000  deg
Gain = 2.25204  dBi
Max far-field (global) = -45.07466  dB, Max far-field (plot) =
-45.07474  dB
Normalization: Reference, Network offset = 0.000  dB
Hpeak at: -78.00001  deg, Vpeak at: 0.000  deg
Plot centering: On

20100924 TH88A  800-2100mhz  E-PLANE

NSI2000 V4.0.124, Filename:C:\nsi2000\Data\20100924 TH88A
800-2100mhz  E-PLANE.nsi
Measurement date/time: 9/24/2010 9:05:35 AM, Filetype: NSI-97
Far-field Cut Analysis:
   Avg value: -4.438 dB
   -3. dB beam width: 53.43 deg
   -6. dB beam width: 88.70 deg
   -10. dB beam width: 112.15 deg
   Left Sidelobe: -20.88 dB at -163.911  deg
   Right Sidelobe: -0.61 dB at 81.453  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 10
Beam    Frequency   Azimuth  Elevation  Pol
----    ---------   -------  ---------  ---
9       2.100  GHz  Azimuth  Elevation  Single-pol
```

Far-field amplitude of 20100924 TH-88A 800-2100mhz E-PLANE.nsi




```
Far-field amplitude, Eprincipal: Linear, Tau = 0.000  deg
Gain = 2.88511  dBi
Max far-field (global) = -44.647  dB, Max far-field (plot) =
-44.64706  dB
Normalization: Reference, Network offset = 0.000  dB
Hpeak at: -78.00001  deg, Vpeak at: 0.000  deg
Plot centering: On

20100924 TH88A  800-2100mhz  E-PLANE

NSI2000 V4.0.124, Filename:C:\nsi2000\Data\20100924 TH88A
800-2100mhz  E-PLANE.nsi
Measurement date/time: 9/24/2010 9:05:35 AM, Filetype: NSI-97
Far-field Cut Analysis:
   Avg value: -4.543 dB
   -3. dB beam width: 47.81 deg
   -6. dB beam width: 70.32 deg
   -10. dB beam width: 108.47 deg
   Left Sidelobe: -16.47 dB at -157.877  deg
   Right Sidelobe: -0.86 dB at 71.397  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 10
Beam    Frequency   Azimuth  Elevation  Pol
----    ---------   -------  ---------  ---
10      2.170  GHz  Azimuth  Elevation  Single-pol
```