



Tekfun Co., Ltd.

SPECIFICATION FOR APPROVAL

CUSTOMER _____

DESCRIPTION GSM/CDMA/UMTS 850-960/1770-2100MHz Screw type antenna

PART NO. GSM-04A-IP67

DATE _____

DESIGNER		DIRECTOR	
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Approved by Customer/date:





Tekfun Co., Ltd.

ANTENNA SPECIFICATIONS FOR APPROVAL

1 GENERAL DESCRIPTION

- 1.1 Type No. : GSM-04A-IP67
 1.2 Customer P/N :

2 DESCRIPTION & APPLICATION

This antenna assembly is designed for use in GSM/CDMA/UMTS 850-960/1770-2100MHz Screw type antenna Antennas

3 ELECTRICAL CHARACTERISTICS

- 3.1 Antenna type: Roof Screw Car Antenna
 3.2 Frequency Rang: 850-960/1770-2100MHz
 3.3 V.S.W.R: < 2.0
 3.4 Impedance: 50 OHM
 3.5 Gain: 0-3 dBi (Page 6-21)
 3.6 Connector: SMA male, FME Female...etc
 3.7 Cable RG174
 3.7 Color: Black

4 ENVIRONMENTAL CHARACTERISTICS

- 4.1 Operating temperature range -40°C to + 70°C

5 QUALIFICATION TESTING

- 5.1 All products shall be able to withstand the following testing.
 5.2 Physical dimensions identified within this specification.

6 PACKING STYLE

- 6.1 Packing: Poly Bag.



ANTENNA SPECIFICATIONS FOR APPROVAL

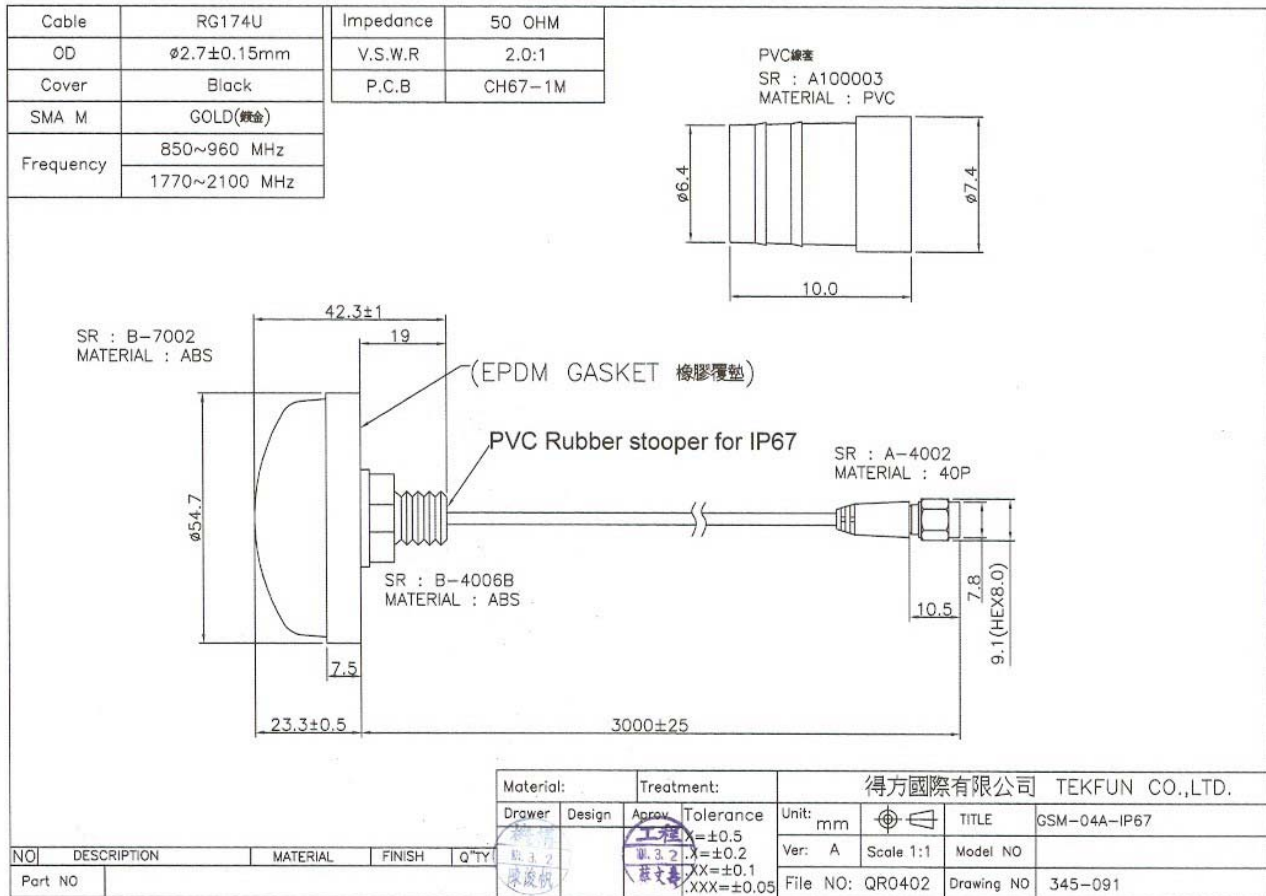
7 APPEARANCE :

Well-conditioned on each part of assembly; got rid of the obvious rust, breakage, greasiness and scar...etc.



ANTENNA SPECIFICATIONS FOR APPROVAL

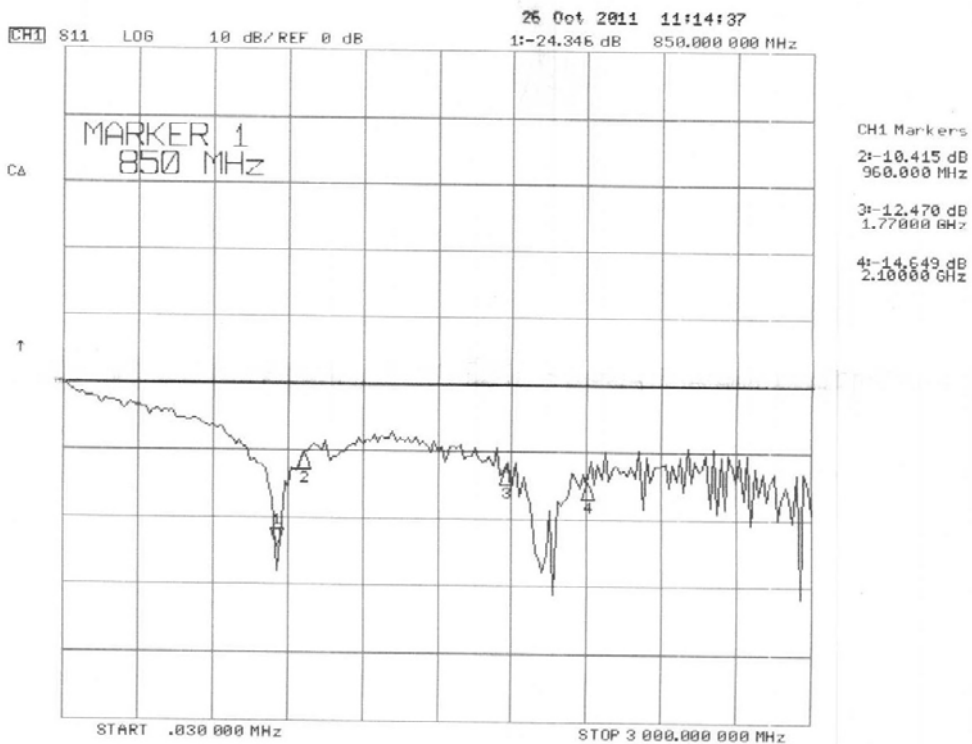
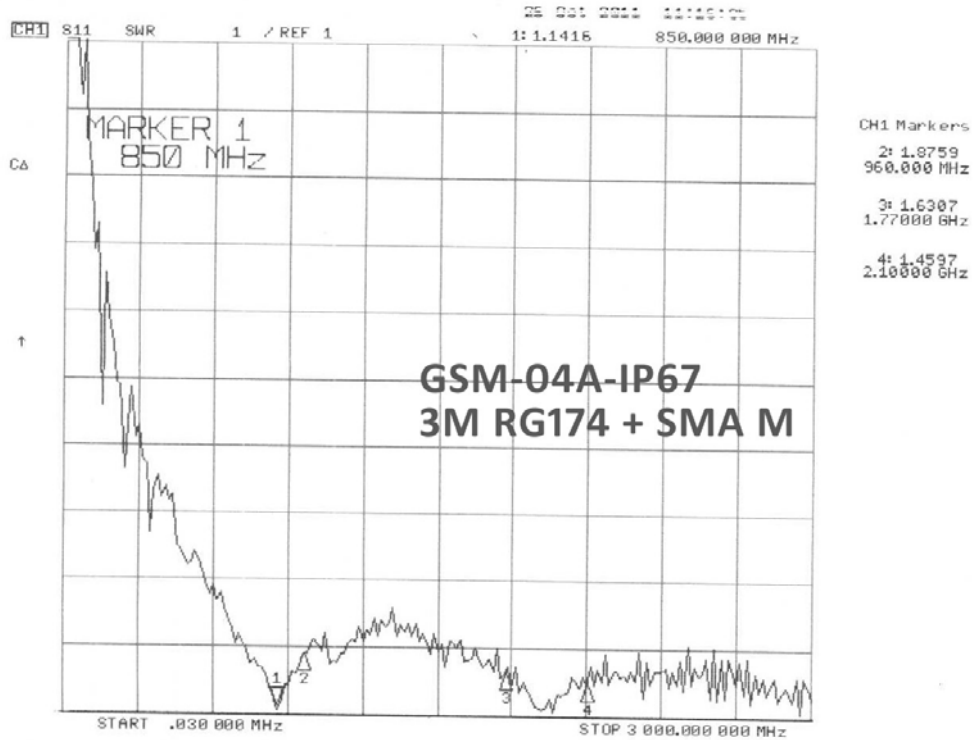
8 DRAWING, DIMENSION



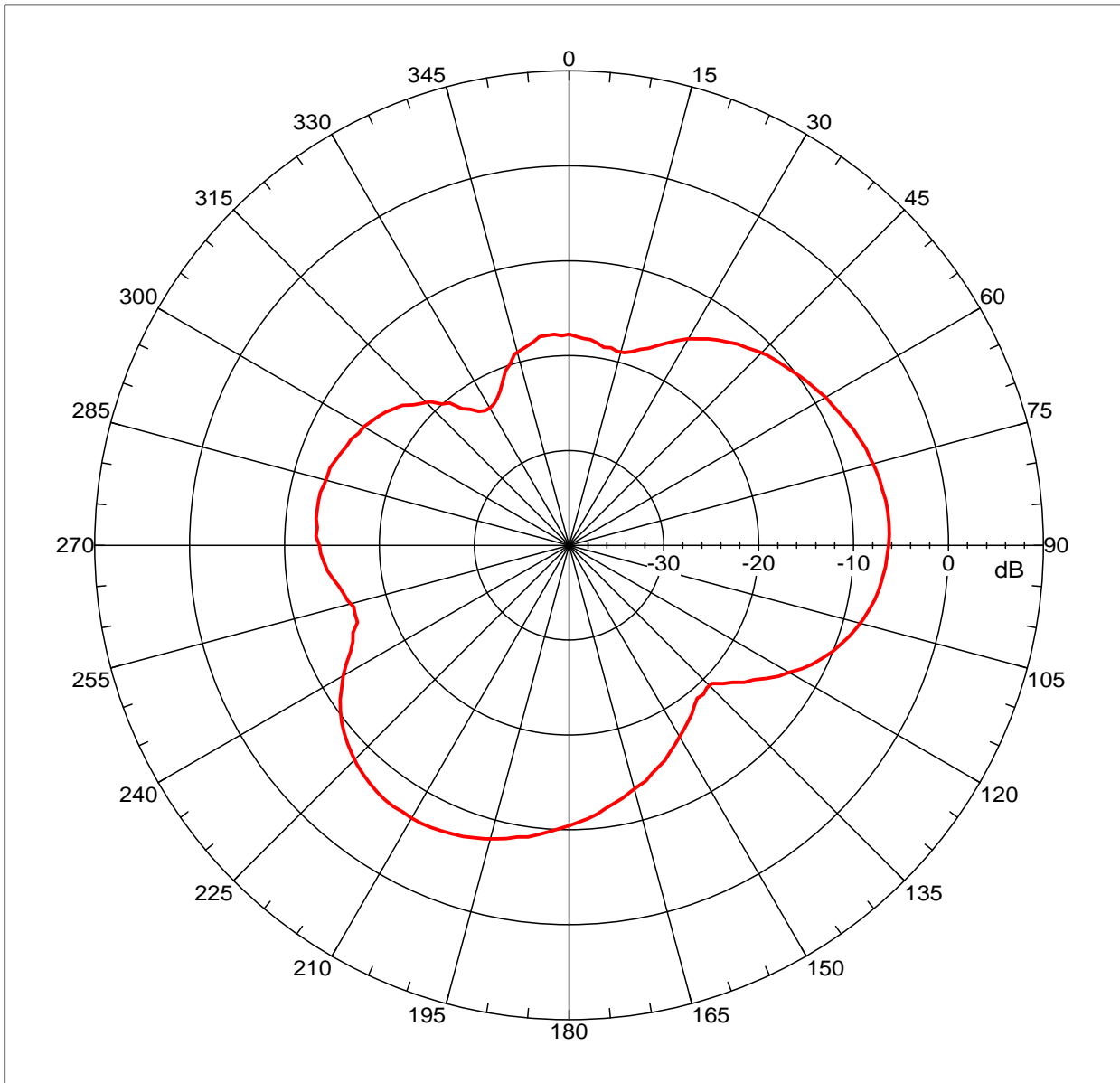
ANTENNA HOUSING MEETS TO IP67 WATERPROOF RATING

ANTENNA SPECIFICATIONS FOR APPROVAL

9 TEST VSWR



Far-field amplitude of GSM-04A "E"



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
 Gain = -6.20455 dBi
 Max far-field (global) = -49.20389 dB, Max far-field (plot) = -49.20391 dB
 Normalization: Reference, Network offset = 0.000 dB
 Hpeak at: 85.99999 deg, Vpeak at: 0.000 deg
 Plot centering: On

ÖURÉEHN

NSI2000 V4.0.124, Filename:C:\Documents and Settings\NSI\Desktop\20
 Measurement date/time: 4/15/2014 1:43:10 PM, Filetype: NSI-97

Far-field Cut Analysis:

Avg value: -12.161 dB
 -3. dB beam width: 51.34 deg
 -6. dB beam width: 77.59 deg
 -10. dB beam width: 101.31 deg
 Left Sidelobe: -11.54 dB at 1.006 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

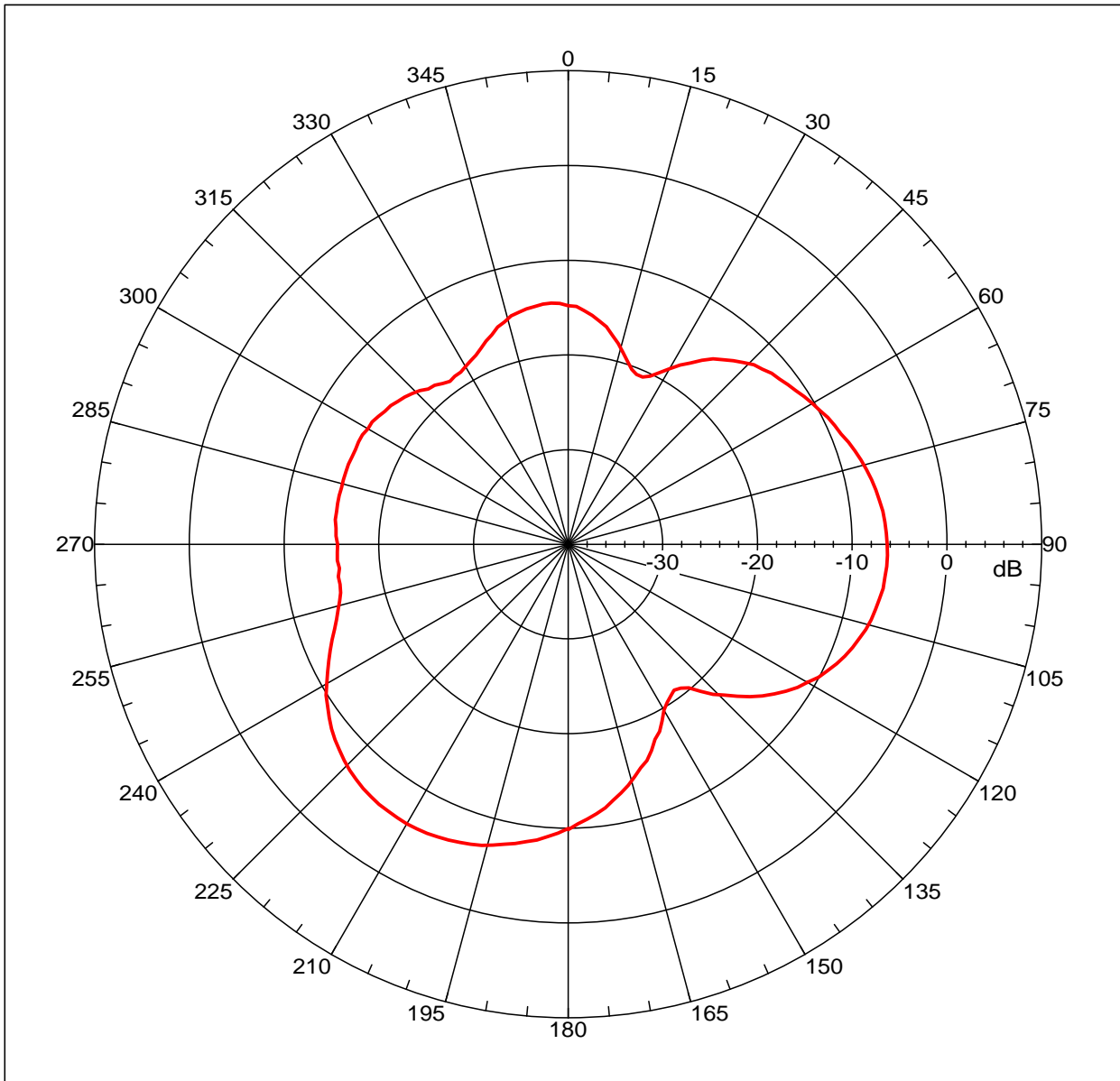
Elevation (deg)

Center = 0.000 deg, #pts = 1

Selected beam(s) 1 of 8

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

Far-field amplitude of GSM-04A "E"



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
 Gain = -5.93605 dBi
 Max far-field (global) = -47.19291 dB, Max far-field (plot) =
 -47.19292 dB
 Normalization: Reference, Network offset = 0.000 dB
 Hpeak at: -150.00001 deg, Vpeak at: 0.000 deg
 Plot centering: On

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NSI2000 V4.0.124, Filename:C:\Documents and Settings\NSI\Desktop\20
 Measurement date/time: 4/15/2014 1:43:10 PM, Filetype: NSI-97

Far-field Cut Analysis:

Avg value: -11.868 dB
 -3. dB beam width: 50.14 deg
 -6. dB beam width: Not Found
 -10. dB beam width: Not Found
 Left Sidelobe: Not Found
 Right Sidelobe: -8.55 dB at -3.017 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

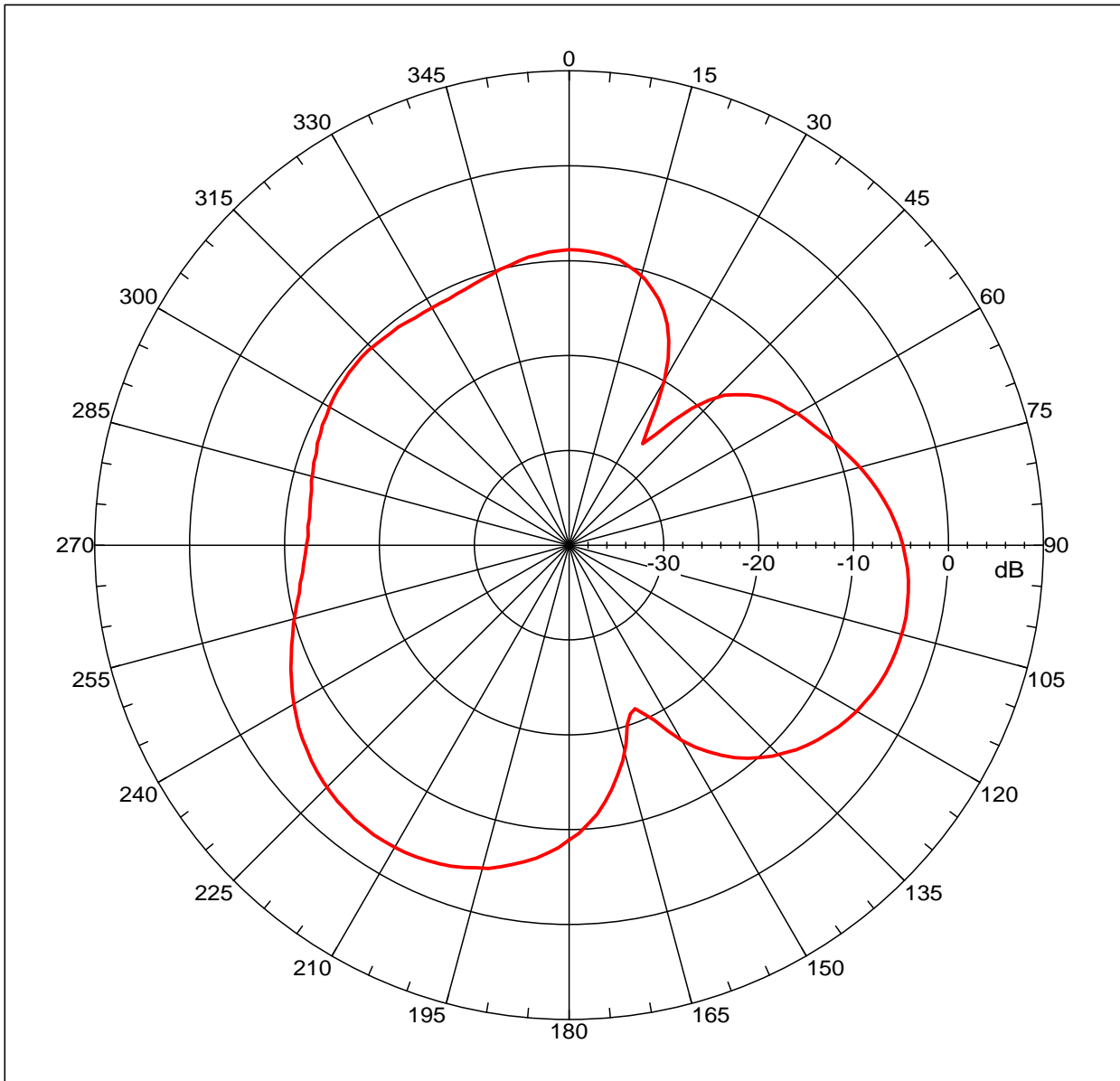
Elevation (deg)

Center = 0.000 deg, #pts = 1

Selected beam(s) 1 of 8

Beam	Frequency	Azimuth	Elevation	Pol
2	0.850 GHz	Azimuth	Elevation	Single-pol

Far-field amplitude of GSM-04A "E"



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
 Gain = -3.17831 dBi
 Max far-field (global) = -44.73799 dB, Max far-field (plot) = -44.73805 dB
 Normalization: Reference, Network offset = 0.000 dB
 Hpeak at: -146.00001 deg, Vpeak at: 0.000 deg
 Plot centering: On

ÖURÉEHN

NSI2000 V4.0.124, Filename:C:\Documents and Settings\NSI\Desktop\20
 Measurement date/time: 4/15/2014 1:43:10 PM, Filetype: NSI-97

Far-field Cut Analysis:

Avg value: -8.861 dB
 -3. dB beam width: 50.22 deg
 -6. dB beam width: Not Found
 -10. dB beam width: Not Found
 Left Sidelobe: Not Found
 Right Sidelobe: -7.47 dB at -55.307 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

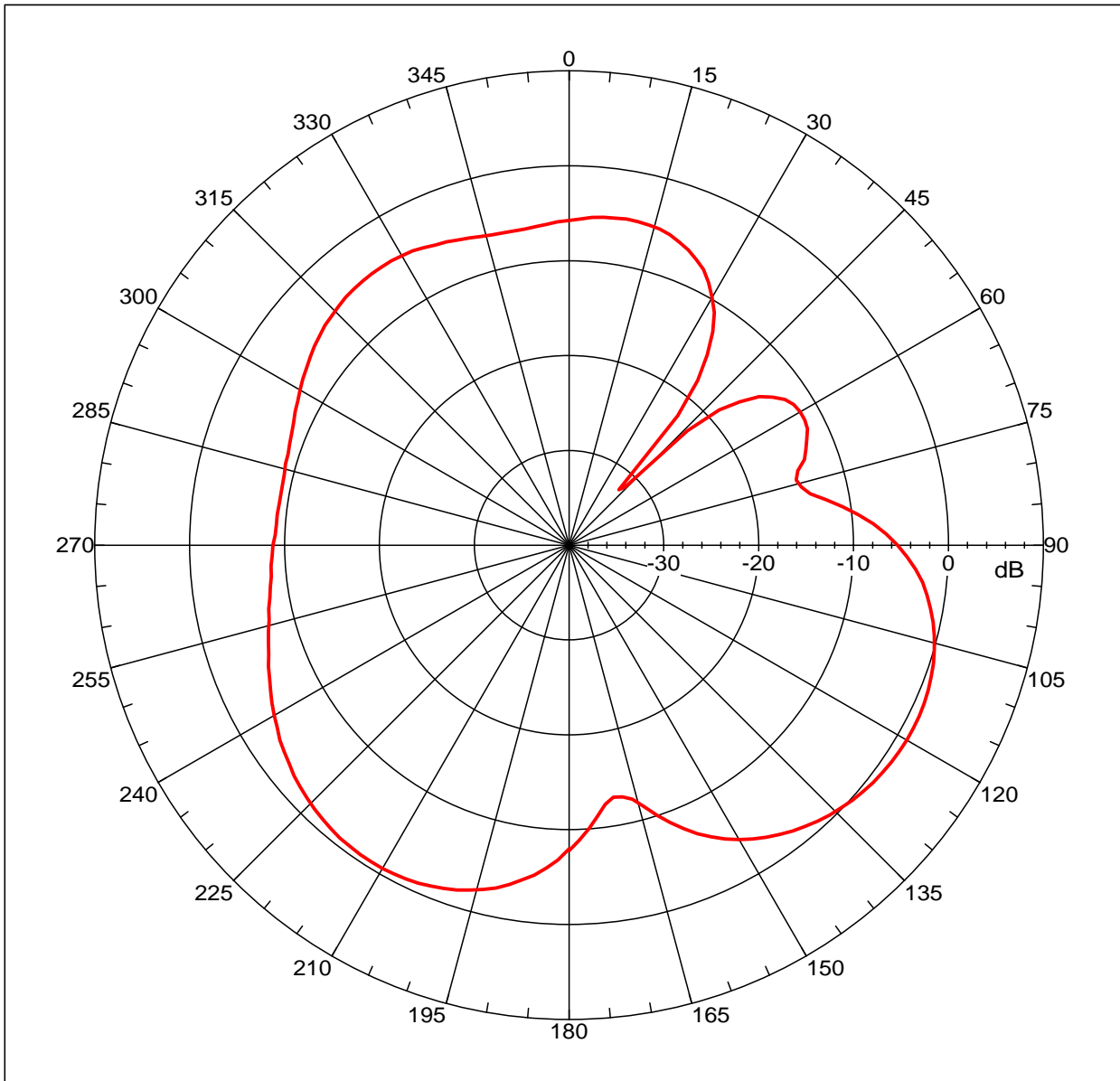
Elevation (deg)

Center = 0.000 deg, #pts = 1

Selected beam(s) 1 of 8

Beam	Frequency	Azimuth	Elevation	Pol
3	0.900 GHz	Azimuth	Elevation	Single-pol

Far-field amplitude of GSM-04A "E"



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
 Gain = 1.10737 dBi
 Max far-field (global) = -41.5223 dB, Max far-field (plot) =
 -41.5223 dB
 Normalization: Reference, Network offset = 0.000 dB
 Hpeak at: 119.99999 deg, Vpeak at: 0.000 deg
 Plot centering: On

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NSI2000 V4.0.124, Filename:C:\Documents and Settings\NSI\Desktop\20
 Measurement date/time: 4/15/2014 1:43:10 PM, Filetype: NSI-97

Far-field Cut Analysis:

Avg value: -5.226 dB
 -3. dB beam width: 44.75 deg
 -6. dB beam width: 61.32 deg
 -10. dB beam width: 75.85 deg
 Left Sidelobe: -12.98 dB at 63.352 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

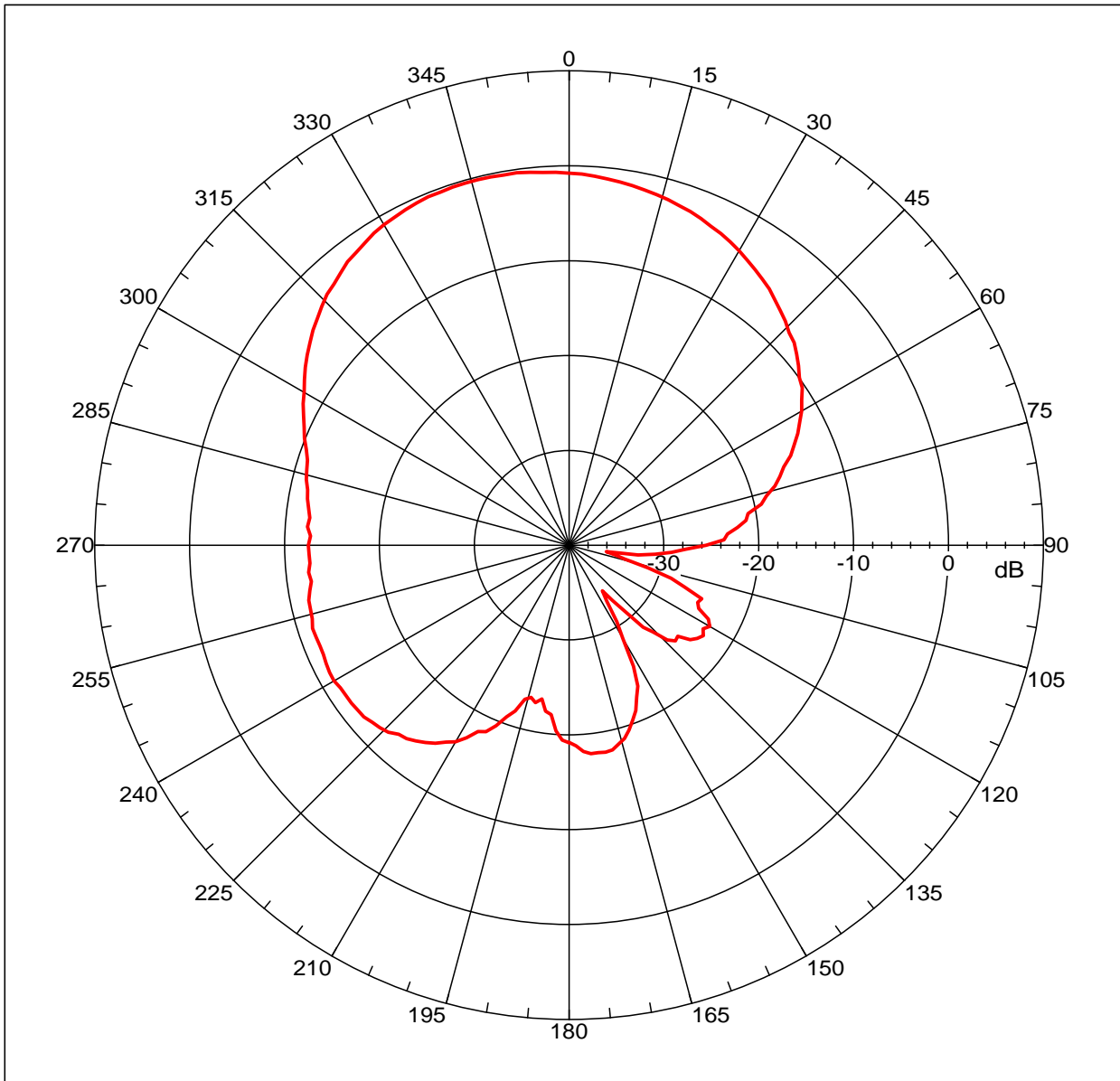
Elevation (deg)

Center = 0.000 deg, #pts = 1

Selected beam(s) 1 of 8

Beam	Frequency	Azimuth	Elevation	Pol
4	0.960 GHz	Azimuth	Elevation	Single-pol

Far-field amplitude of GSM-04A "E"



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
 Gain = -0.30641 dBi
 Max far-field (global) = -46.49443 dB, Max far-field (plot) =
 -46.49443 dB
 Normalization: Reference, Network offset = 0.000 dB
 Hpeak at: -14.00001 deg, Vpeak at: 0.000 deg
 Plot centering: On

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NSI2000 V4.0.124, Filename:C:\Documents and Settings\NSI\Desktop\20
 Measurement date/time: 4/15/2014 1:43:10 PM, Filetype: NSI-97

Far-field Cut Analysis:

Avg value: -9.534 dB
 -3. dB beam width: 69.23 deg
 -6. dB beam width: 96.15 deg
 -10. dB beam width: 125.61 deg
 Left Sidelobe: -11.27 dB at -107.598 deg
 Right Sidelobe: -24.62 dB at 113.631 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

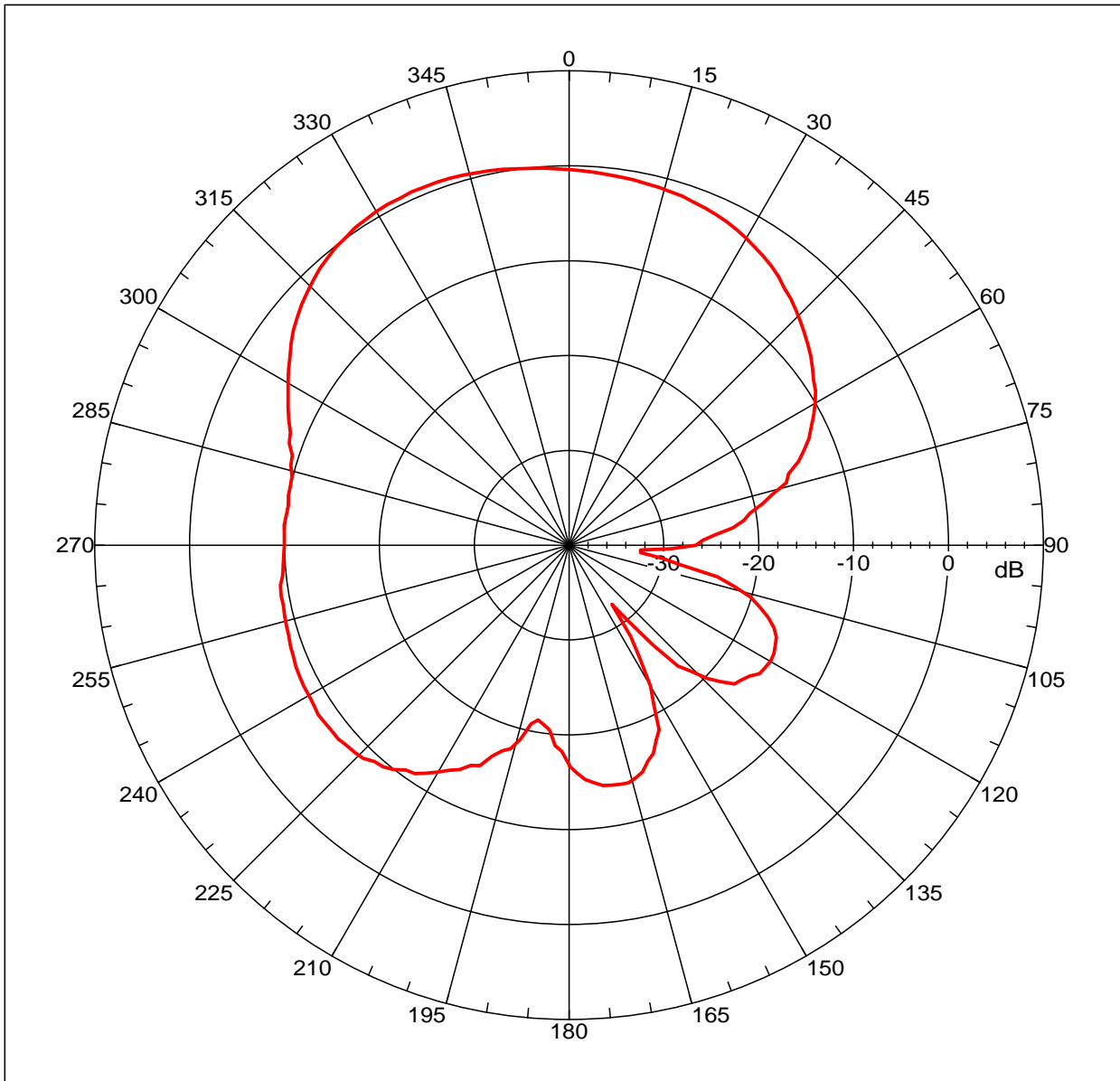
Elevation (deg)

Center = 0.000 deg, #pts = 1

Selected beam(s) 1 of 8

Beam	Frequency	Azimuth	Elevation	Pol
5	1.770 GHz	Azimuth	Elevation	Single-pol

Far-field amplitude of GSM-04A "E"



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
 Gain = 0.74919 dBi
 Max far-field (global) = -45.67785 dB, Max far-field (plot) = -45.67786 dB
 Normalization: Reference, Network offset = 0.000 dB
 Hpeak at: -24.00001 deg, Vpeak at: 0.000 deg
 Plot centering: On

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NSI2000 V4.0.124, Filename:C:\Documents and Settings\NSI\Desktop\20
 Measurement date/time: 4/15/2014 1:43:10 PM, Filetype: NSI-97

Far-field Cut Analysis:

Avg value: -7.679 dB
 -3. dB beam width: 76.34 deg
 -6. dB beam width: 101.58 deg
 -10. dB beam width: 130.00 deg
 Left Sidelobe: -8.85 dB at -123.687 deg
 Right Sidelobe: -16.26 dB at 121.676 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

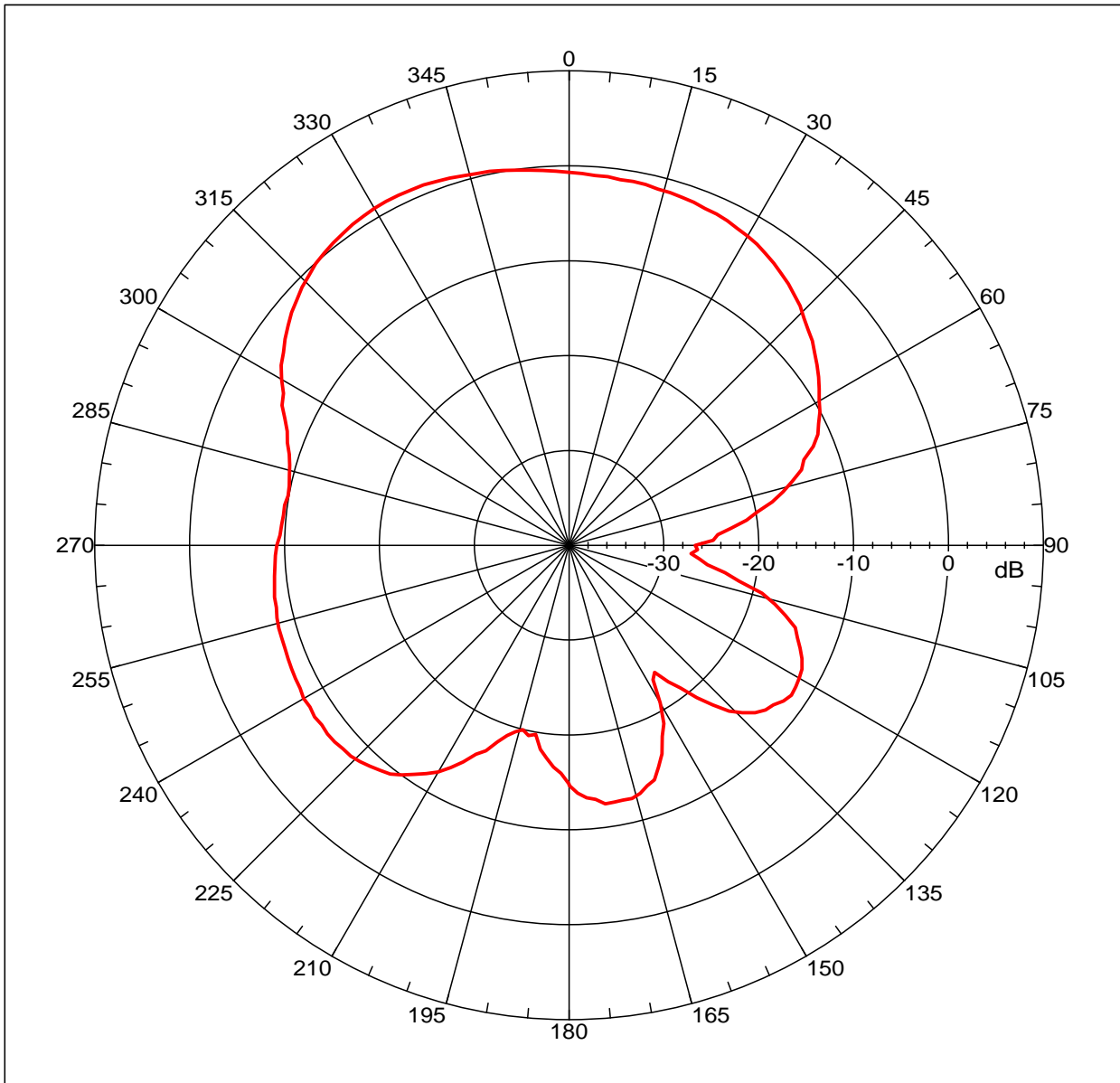
Elevation (deg)

Center = 0.000 deg, #pts = 1

Selected beam(s) 1 of 8

Beam	Frequency	Azimuth	Elevation	Pol
6	1.850 GHz	Azimuth	Elevation	Single-pol

Far-field amplitude of GSM-04A "E"



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
 Gain = 1.05238 dBi
 Max far-field (global) = -45.98458 dB, Max far-field (plot) = -45.98458 dB
 Normalization: Reference, Network offset = 0.000 dB
 Hpeak at: -28.00001 deg, Vpeak at: 0.000 deg
 Plot centering: On

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NSI2000 V4.0.124, Filename:C:\Documents and Settings\NSI\Desktop\20
 Measurement date/time: 4/15/2014 1:43:10 PM, Filetype: NSI-97

Far-field Cut Analysis:

Avg value: -7.147 dB
 -3. dB beam width: 76.62 deg
 -6. dB beam width: 104.45 deg
 -10. dB beam width: 130.71 deg
 Left Sidelobe: -8.76 dB at -119.665 deg
 Right Sidelobe: -12.77 dB at 125.698 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

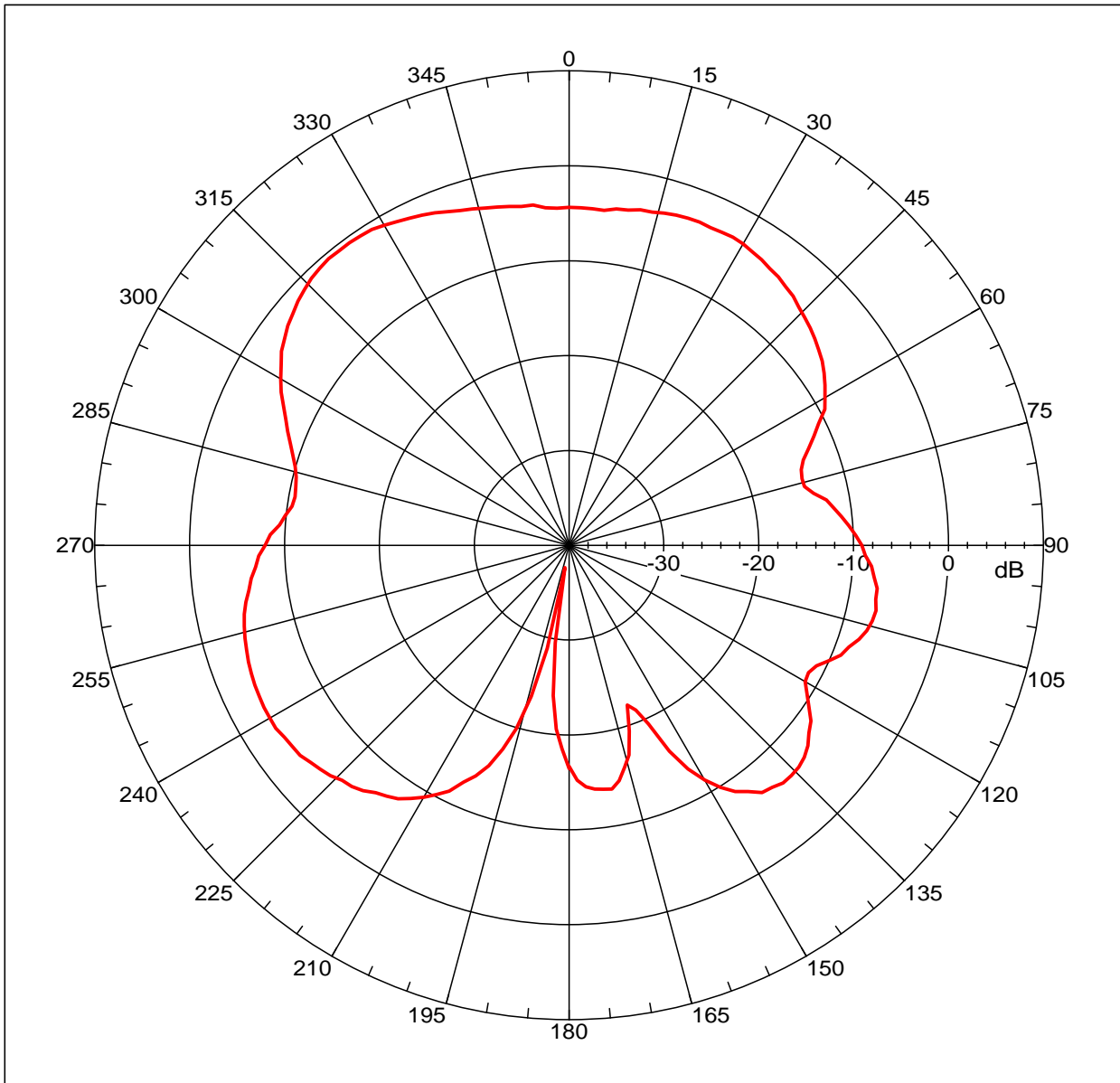
Elevation (deg)

Center = 0.000 deg, #pts = 1

Selected beam(s) 1 of 8

Beam	Frequency	Azimuth	Elevation	Pol
7	1.900 GHz	Azimuth	Elevation	Single-pol

Far-field amplitude of GSM-04A "E"



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
 Gain = -0.59095 dBi
 Max far-field (global) = -48.12306 dB, Max far-field (plot) = -48.12307 dB
 Normalization: Reference, Network offset = 0.000 dB
 Hpeak at: -40.00001 deg, Vpeak at: 0.000 deg
 Plot centering: On

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NSI2000 V4.0.124, Filename:C:\Documents and Settings\NSI\Desktop\20
 Measurement date/time: 4/15/2014 1:43:10 PM, Filetype: NSI-97

Far-field Cut Analysis:

Avg value: -6.723 dB
 -3. dB beam width: 44.74 deg
 -6. dB beam width: 116.88 deg
 -10. dB beam width: 143.19 deg
 Left Sidelobe: -2.99 dB at -117.654 deg
 Right Sidelobe: -2.68 dB at 23.129 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

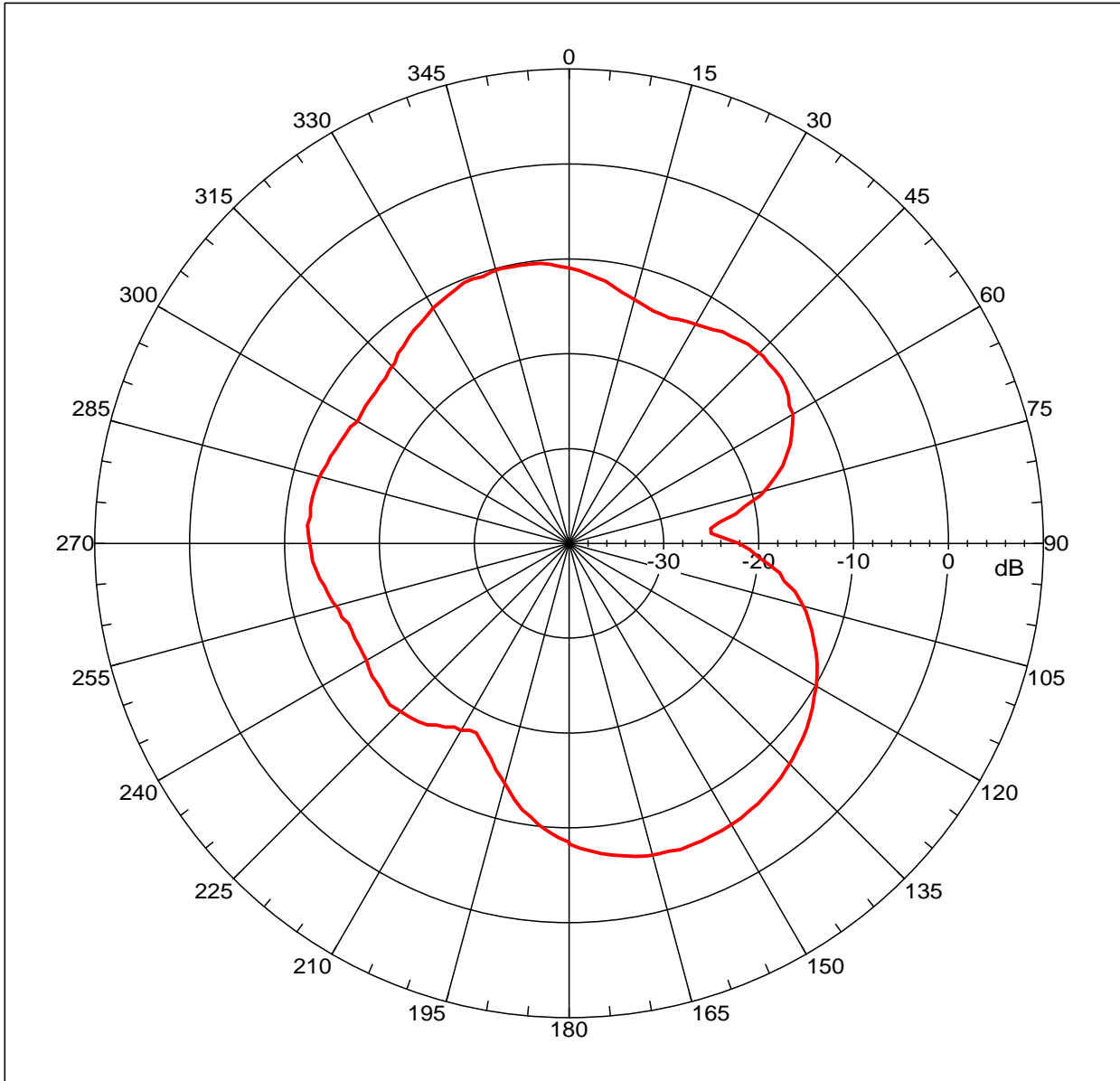
Elevation (deg)

Center = 0.000 deg, #pts = 1

Selected beam(s) 1 of 8

Beam	Frequency	Azimuth	Elevation	Pol
8	2.170 GHz	Azimuth	Elevation	Single-pol

Far-field amplitude of I UO /26C""\$J \$



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
 Gain = -5.6551 dBi
 Max far-field (global) = -48.65444 dB, Max far-field (plot) =
 -48.65449 dB
 Normalization: Reference, Network offset = 0.000 dB
 Hpeak at: 155.99999 deg, Vpeak at: 0.000 deg
 Plot centering: On

GSM-04A

NSI2000 V4.0.124, Filename:C:\Documents and Settings\NSI\Desktop\20
 Measurement date/time: 4/15/2014 1:36:36 PM, Filetype: NSI-97

Far-field Cut Analysis:

Avg value: -11.954 dB
 -3. dB beam width: Not Found
 -6. dB beam width: Not Found
 -10. dB beam width: Not Found
 Left Sidelobe: -5.98 dB at 51.285 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

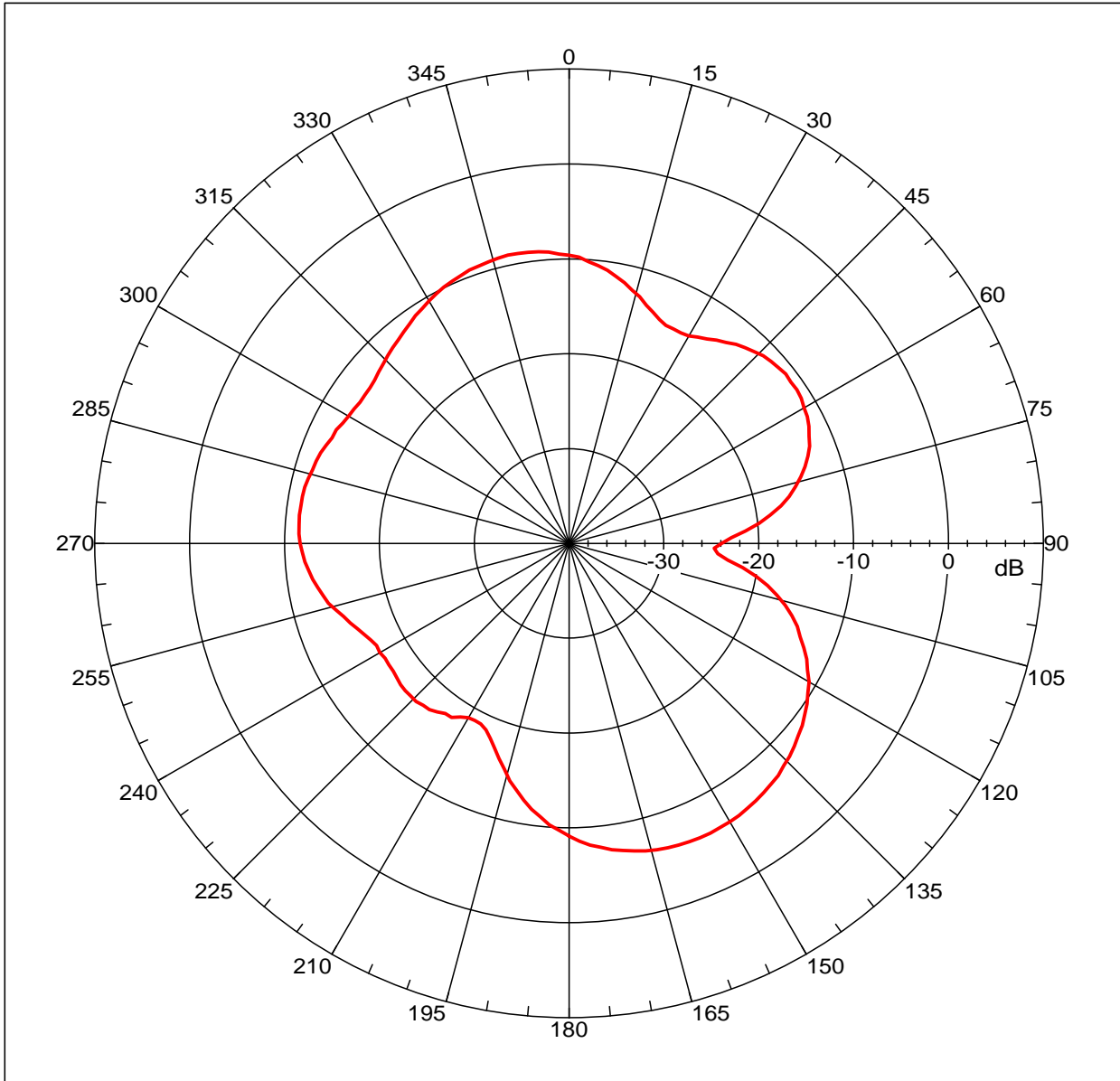
Elevation (deg)

Center = 0.000 deg, #pts = 1

Selected beam(s) 1 of 8

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

Far-field amplitude of I UO /26C""\$J \$



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
 Gain = -6.0091 dBi
 Max far-field (global) = -47.26596 dB, Max far-field (plot) =
 -47.26603 dB
 Normalization: Reference, Network offset = 0.000 dB
 Hpeak at: 153.99999 deg, Vpeak at: 0.000 deg
 Plot centering: On

GSM-04A

NSI2000 V4.0.124, Filename:C:\Documents and Settings\NSI\Desktop\20
 Measurement date/time: 4/15/2014 1:36:36 PM, Filetype: NSI-97

Far-field Cut Analysis:

Avg value: -11.924 dB
 -3. dB beam width: Not Found
 -6. dB beam width: Not Found
 -10. dB beam width: Not Found
 Left Sidelobe: -5.01 dB at 57.318 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

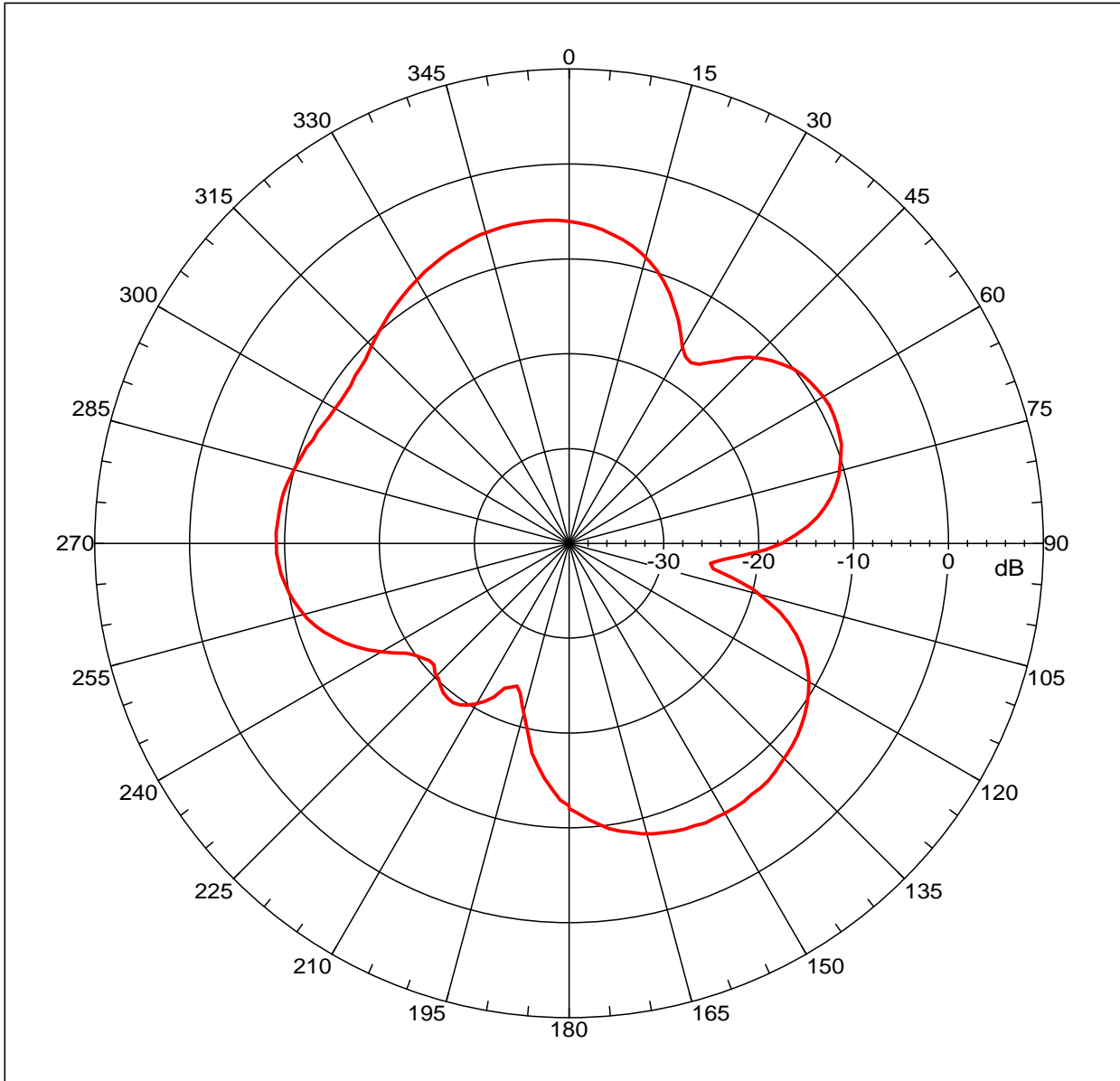
Elevation (deg)

Center = 0.000 deg, #pts = 1

Selected beam(s) 1 of 8

Beam	Frequency	Azimuth	Elevation	Pol
2	0.850 GHz	Azimuth	Elevation	Single-pol

Far-field amplitude of I UO /26C""\$J \$



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
 Gain = -5.85129 dBi
 Max far-field (global) = -47.41097 dB, Max far-field (plot) =
 -47.41097 dB
 Normalization: Reference, Network offset = 0.000 dB
 Hpeak at: -8.00001 deg, Vpeak at: 0.000 deg
 Plot centering: On

GSM-04A

NSI2000 V4.0.124, Filename:C:\Documents and Settings\NSI\Desktop\20
 Measurement date/time: 4/15/2014 1:36:36 PM, Filetype: NSI-97

Far-field Cut Analysis:

Avg value: -11.058 dB
 -3. dB beam width: 50.84 deg
 -6. dB beam width: 131.05 deg
 -10. dB beam width: 147.96 deg
 Left Sidelobe: -3.26 dB at -87.486 deg
 Right Sidelobe: -3.11 dB at 63.352 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

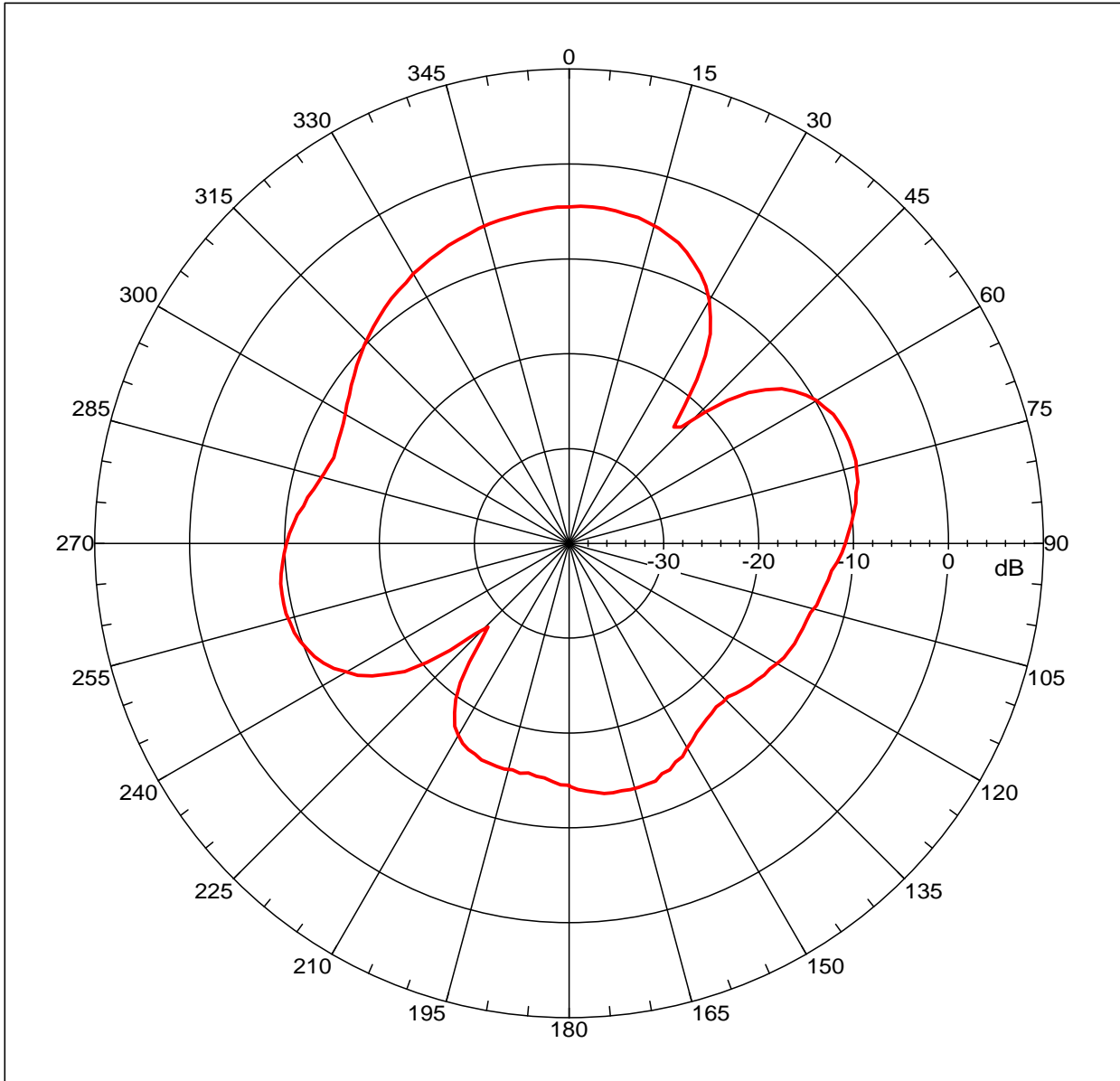
Elevation (deg)

Center = 0.000 deg, #pts = 1

Selected beam(s) 1 of 8

Beam	Frequency	Azimuth	Elevation	Pol
3	0.900 GHz	Azimuth	Elevation	Single-pol

Far-field amplitude of I UO /26C""\$J \$



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
 Gain = -4.44603 dBi
 Max far-field (global) = -47.0757 dB, Max far-field (plot) = -47.0757 dB
 Normalization: Reference, Network offset = 0.000 dB
 Hpeak at: 1.99999 deg, Vpeak at: 0.000 deg
 Plot centering: On

GSM-04A

NSI2000 V4.0.124, Filename:C:\Documents and Settings\NSI\Desktop\20
 Measurement date/time: 4/15/2014 1:36:36 PM, Filetype: NSI-97

Far-field Cut Analysis:

Avg value: -11.169 dB
 -3. dB beam width: 54.98 deg
 -6. dB beam width: 78.59 deg
 -10. dB beam width: 159.01 deg
 Left Sidelobe: -4.81 dB at -101.564 deg
 Right Sidelobe: -4.09 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

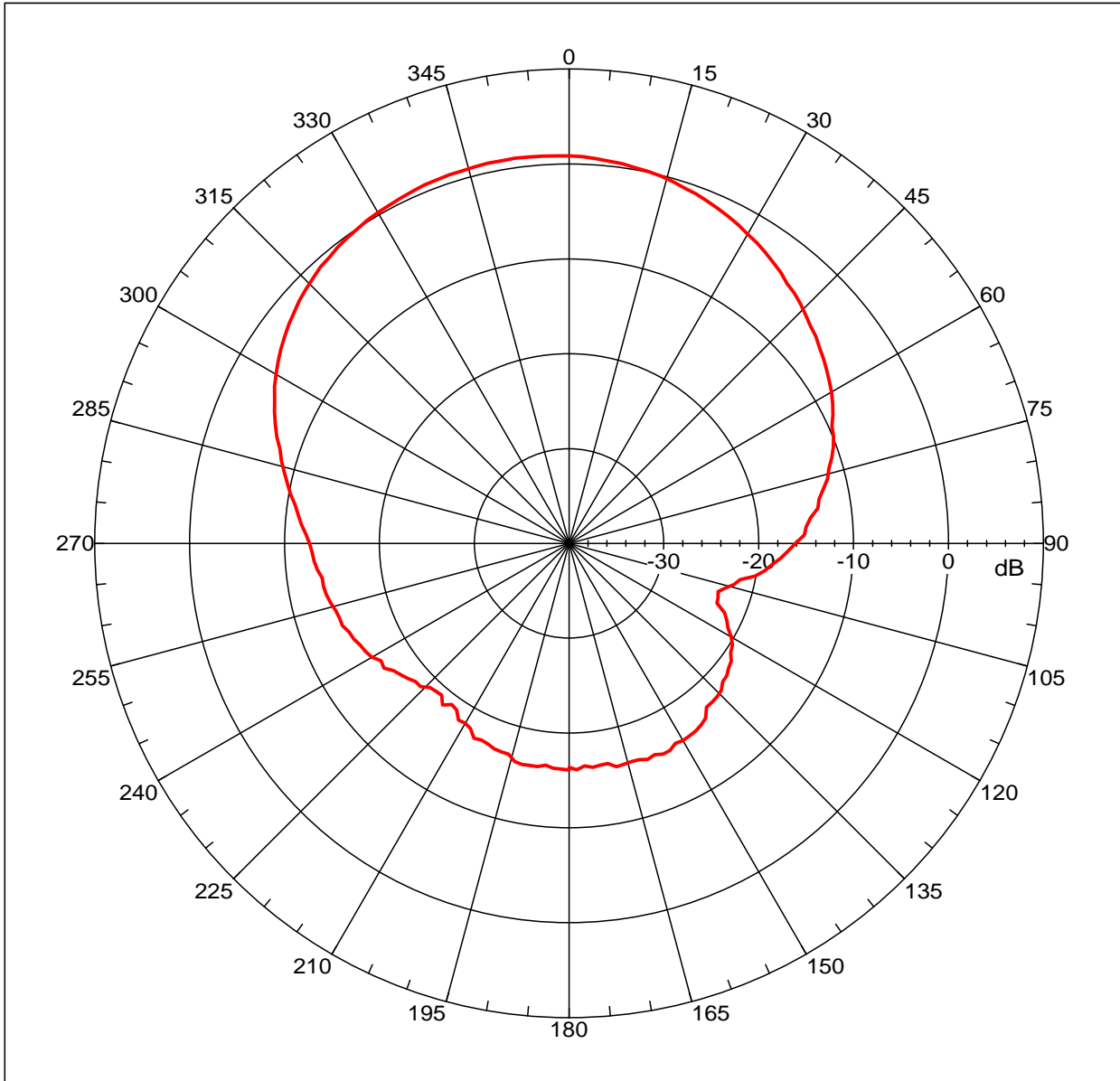
Elevation (deg)

Center = 0.000 deg, #pts = 1

Selected beam(s) 1 of 8

Beam	Frequency	Azimuth	Elevation	Pol
4	0.960 GHz	Azimuth	Elevation	Single-pol

Far-field amplitude of I UO /26C""\$J \$



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
 Gain = 0.97936 dBi
 Max far-field (global) = -45.20866 dB, Max far-field (plot) = -45.20867 dB
 Normalization: Reference, Network offset = 0.000 dB
 Hpeak at: -8.00001 deg, Vpeak at: 0.000 deg
 Plot centering: On

GSM-04A

NSI2000 V4.0.124, Filename:C:\Documents and Settings\NSI\Desktop\20
 Measurement date/time: 4/15/2014 1:36:36 PM, Filetype: NSI-97

Far-field Cut Analysis:

Avg value: -7.677 dB
 -3. dB beam width: 77.92 deg
 -6. dB beam width: 107.69 deg
 -10. dB beam width: 140.44 deg
 Left Sidelobe: -19.01 dB at -147.821 deg
 Right Sidelobe: -18.43 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

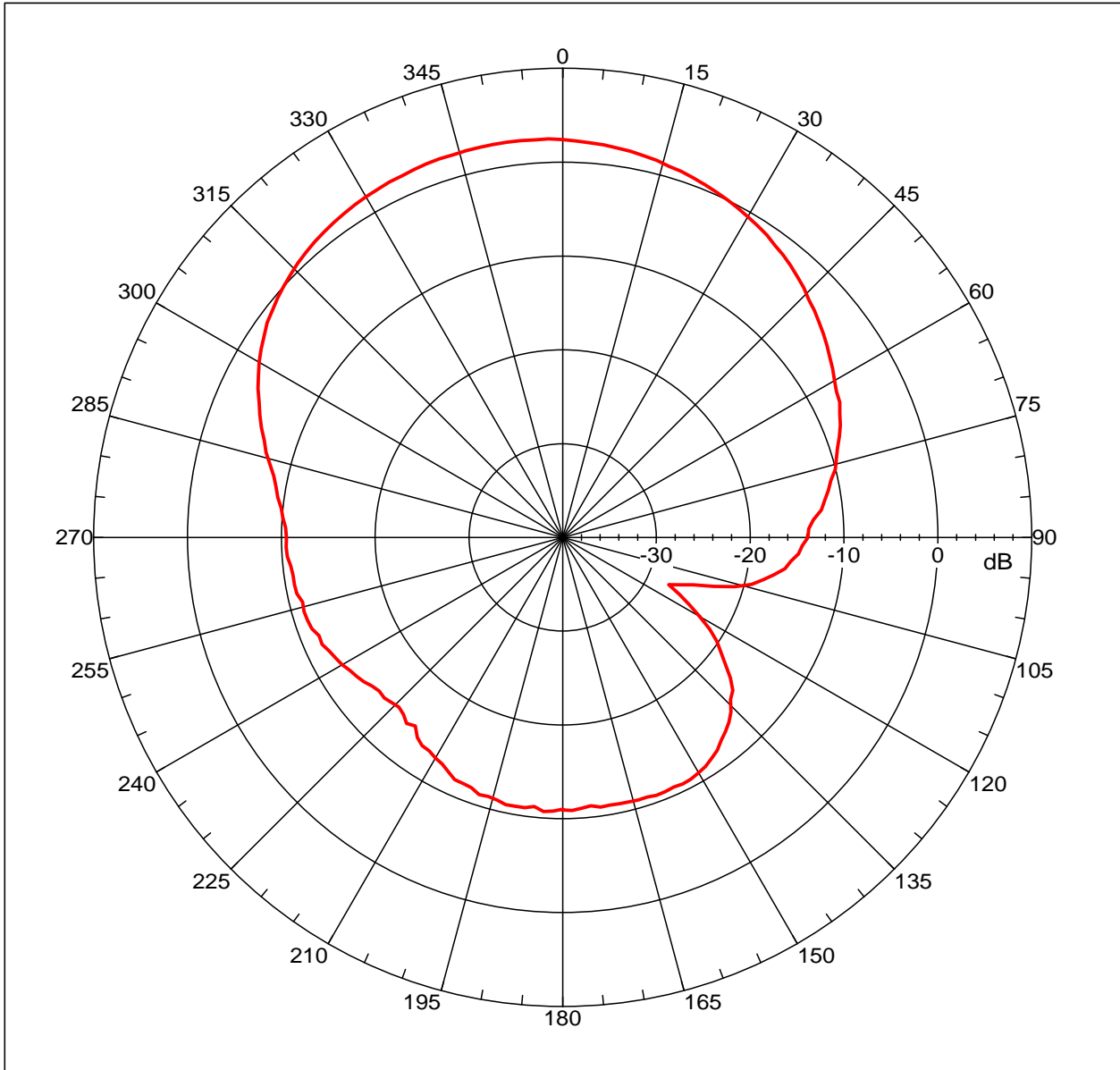
Elevation (deg)

Center = 0.000 deg, #pts = 1

Selected beam(s) 1 of 8

Beam	Frequency	Azimuth	Elevation	Pol
5	1.770 GHz	Azimuth	Elevation	Single-pol

Far-field amplitude of I UO /26C""\$J \$



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
 Gain = 2.52662 dBi
 Max far-field (global) = -43.90042 dB, Max far-field (plot) =
 -43.90041 dB
 Normalization: Reference, Network offset = 0.000 dB
 Hpeak at: -10.00001 deg, Vpeak at: 0.000 deg
 Plot centering: On

GSM-04A

NSI2000 V4.0.124, Filename:C:\Documents and Settings\NSI\Desktop\20
 Measurement date/time: 4/15/2014 1:36:36 PM, Filetype: NSI-97

Far-field Cut Analysis:

Avg value: -5.617 dB
 -3. dB beam width: 80.58 deg
 -6. dB beam width: 109.08 deg
 -10. dB beam width: 141.03 deg
 Left Sidelobe: -13.70 dB at -161.899 deg
 Right Sidelobe: -13.28 dB at 155.866 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

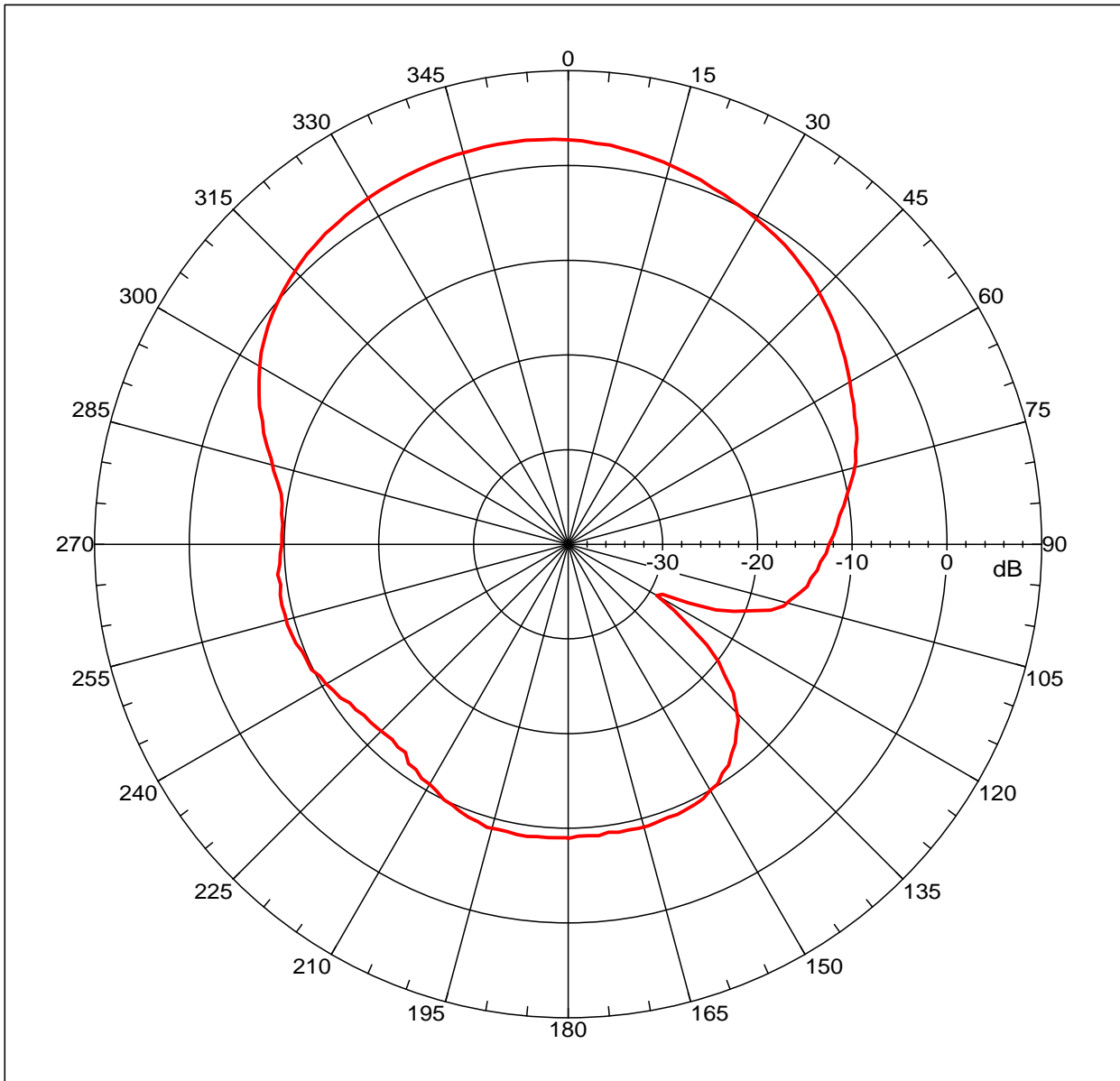
Elevation (deg)

Center = 0.000 deg, #pts = 1

Selected beam(s) 1 of 8

Beam	Frequency	Azimuth	Elevation	Pol
6	1.850 GHz	Azimuth	Elevation	Single-pol

Far-field amplitude of I UO /26C""\$J \$



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
 Gain = 2.89236 dBi
 Max far-field (global) = -44.1446 dB, Max far-field (plot) = -44.1446 dB
 Normalization: Reference, Network offset = 0.000 dB
 Hpeak at: -6.00001 deg, Vpeak at: 0.000 deg
 Plot centering: On

GSM-04A

NSI2000 V4.0.124, Filename:C:\Documents and Settings\NSI\Desktop\20
 Measurement date/time: 4/15/2014 1:36:36 PM, Filetype: NSI-97

Far-field Cut Analysis:
 Avg value: -4.947 dB
 -3. dB beam width: 79.14 deg
 -6. dB beam width: 111.04 deg
 -10. dB beam width: 141.56 deg
 Left Sidelobe: -11.78 dB at -163.911 deg
 Right Sidelobe: -12.12 dB at 159.888 deg

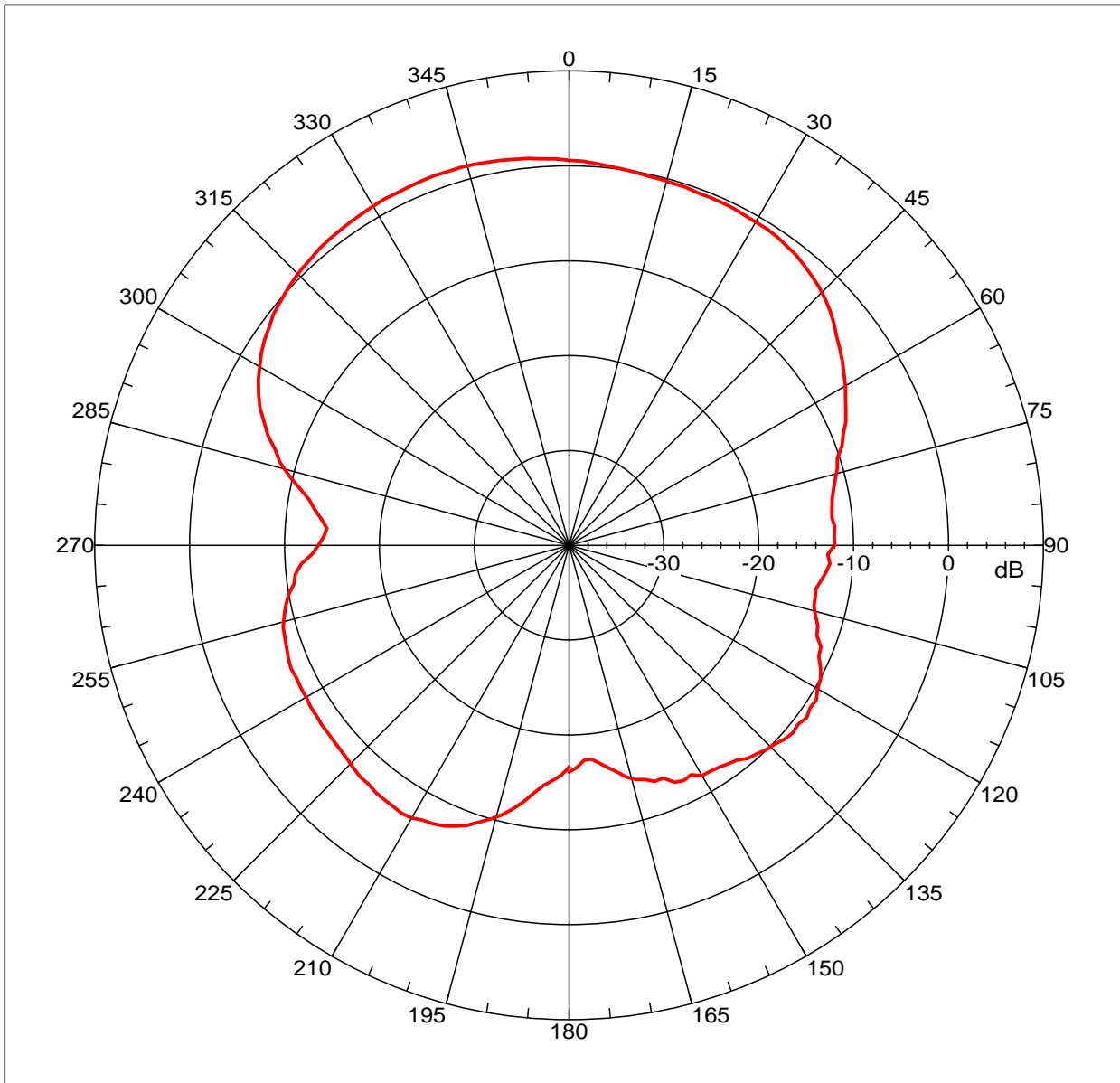
Far-field display setup
 Azimuth (deg)
 Span = 360.00001 deg, Center = 0.000 deg, #pts = 181
 Start = -180.00001 deg, Stop = 180.00001 deg, Delta = 2.000 deg

Elevation (deg)
 Center = 0.000 deg, #pts = 1

Selected beam(s) 1 of 8

Beam	Frequency	Azimuth	Elevation	Pol
7	1.900 GHz	Azimuth	Elevation	Single-pol

Far-field amplitude of GSM-04A "H"



Far-field amplitude, Eprincipal: Linear, Tau = 0.000 deg
 Gain = 1.44719 dBi
 Max far-field (global) = -46.08492 dB, Max far-field (plot) = -46.08493 dB
 Normalization: Reference, Network offset = 0.000 dB
 Hpeak at: -20.00001 deg, Vpeak at: 0.000 deg
 Plot centering: On

GSM-04A

NSI2000 V4.0.124, Filename: C:\Documents and Settings\NSI\Desktop\20
 Measurement date/time: 4/15/2014 1:36:36 PM, Filetype: NSI-97

Far-field Cut Analysis:

Avg value: -5.442 dB
 -3. dB beam width: 98.16 deg
 -6. dB beam width: 120.42 deg
 -10. dB beam width: 142.39 deg
 Left Sidelobe: -9.40 dB at -113.631 deg
 Right Sidelobe: -10.71 dB at 123.687 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 8

Beam	Frequency	Azimuth	Elevation	Pol
8	2.170 GHz	Azimuth	Elevation	Single-pol