do the MAGIC+

900 MHz Antenna report

29 May-2019

Revision History

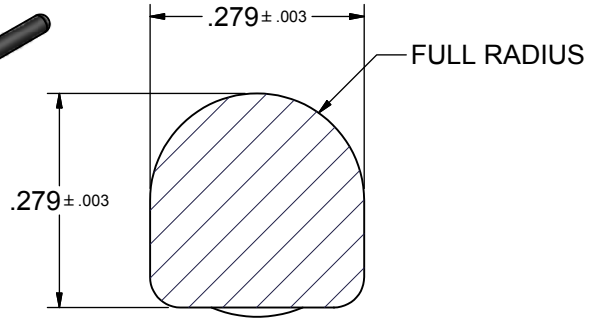
Revision	Date	Description of changes
A	29 May-2019	Verify antenna efficiency.

Content

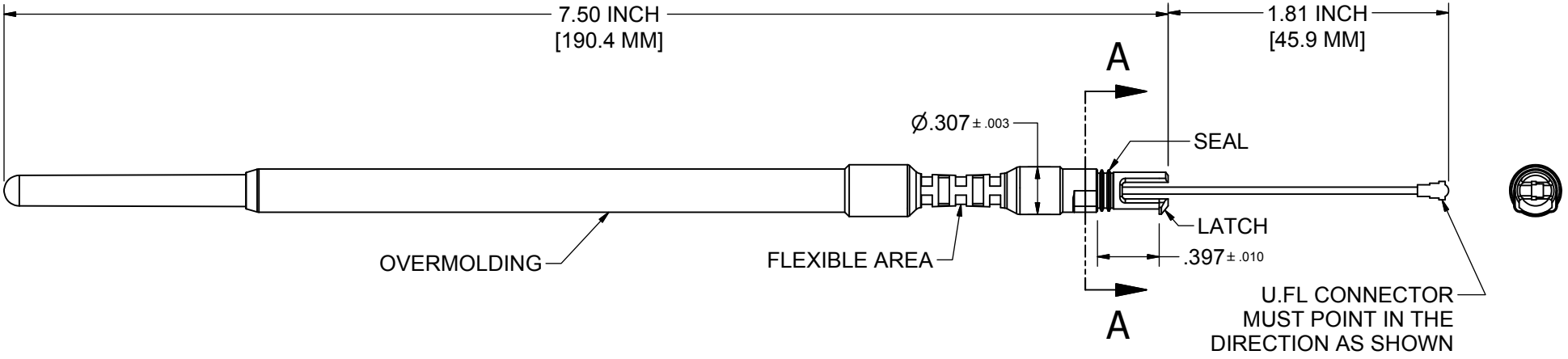
1.0 Test fixtures pictures

Part No.: QX-008-387	Rev No.
Title: ANTENNA (900MHZ)	B

NOTES:
1. FLEXIBLE AREA MUST BEND FROM 0° TO 90° 100 TIMES MINIMUM WITHOUT FRACTURE.
2. CENTER FREQUENCY (MHz): 915
3. GAIN (dBi): 0±1.5
4. IMPEDANCE - NOMINAL (OHMS): 50
5. VSWR: 2.0 MAX.
6. POLARIZATION: VERTICAL
7. ELECTRICAL LENGTH: 1/4 DIPOLE
8. RADIATION: OMNI
9. EFFICIENCY: 50% MINIMUM, 70%+ DESIRED.
10. MATERIAL:
    - LATCH: PC, SHORE D 118, UL94V-0, BLACK
    - SEAL: RED SILICONE
    - OVERMOLDING: BLACK TPE COMPOUND, UV & CHEMICAL RESISTANT, SHORE A 76, UL94V-HB
11. ANTENNA MUST BE ROHS COMPLIANT PER THE LATEST ROHS DIRECTIVE.
12. ANTENNA MUST MEET WATER INGRESS REQUIREMENTS OF IEC 60529 IP67.



SECTION A-A

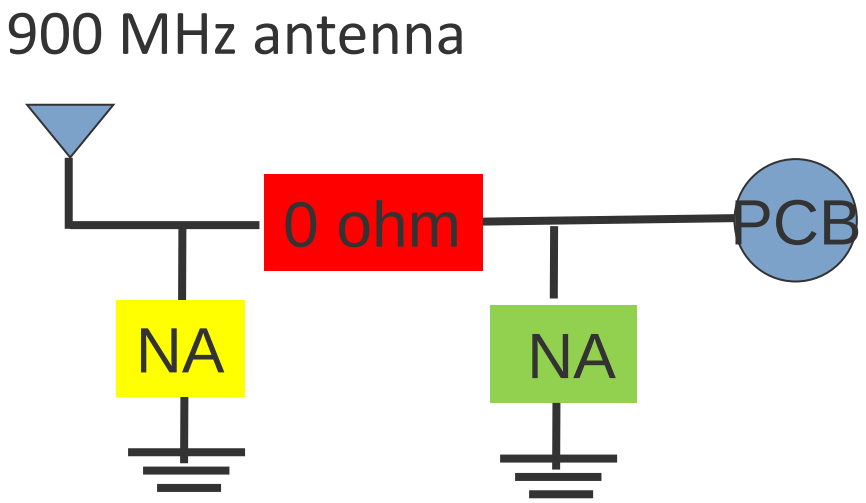


Modeled: S.ELLIS	***SHALL CONFORM TO ES1020***	Parker Fluid Connectors — Quick Coupling Division
Drawn: S.ELLIS	Date: 6/27/2014	
Checked: R.BRIESE	Approved: S.ELLIS	

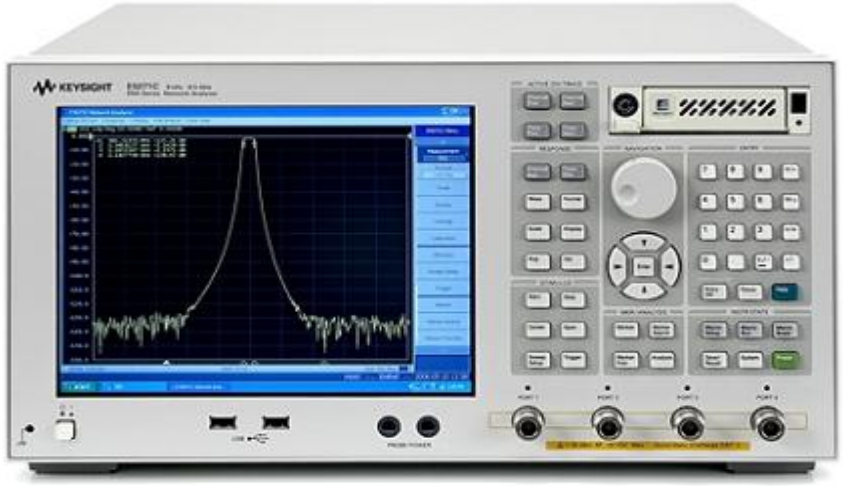
Material: SEE NOTES	BASIC TOLERANCES			Wt:0.0057 kg	
Grade: N/A	2-Place .XX±.01	SQUARENESS (MAX IN/IN)	.005	Part No.: QX-008-387	
Heat Treat: N/A	3-Place .XXX±.005	RUNOUT (MAX F.I.M.)	.005	Title: ANTENNA (900MHZ)	
Finish: N/A	4-Place .XXXX±.0005	MAX AA MACHINED SURFACE ROUGHNESS	125	Reference:	
	Angular X.X±0.5°	CORNER BREAK AND FILLETS	.001/.015		Scale: 1:1

ECN	Rev	Revised by	Revision	Date		Sheet 1 Of 1	Rev./Ver.
0079931	B	S.ELLIS	UPDATED ANTENNA	9/29/2014			B

2.0 Matching Network Circuitry



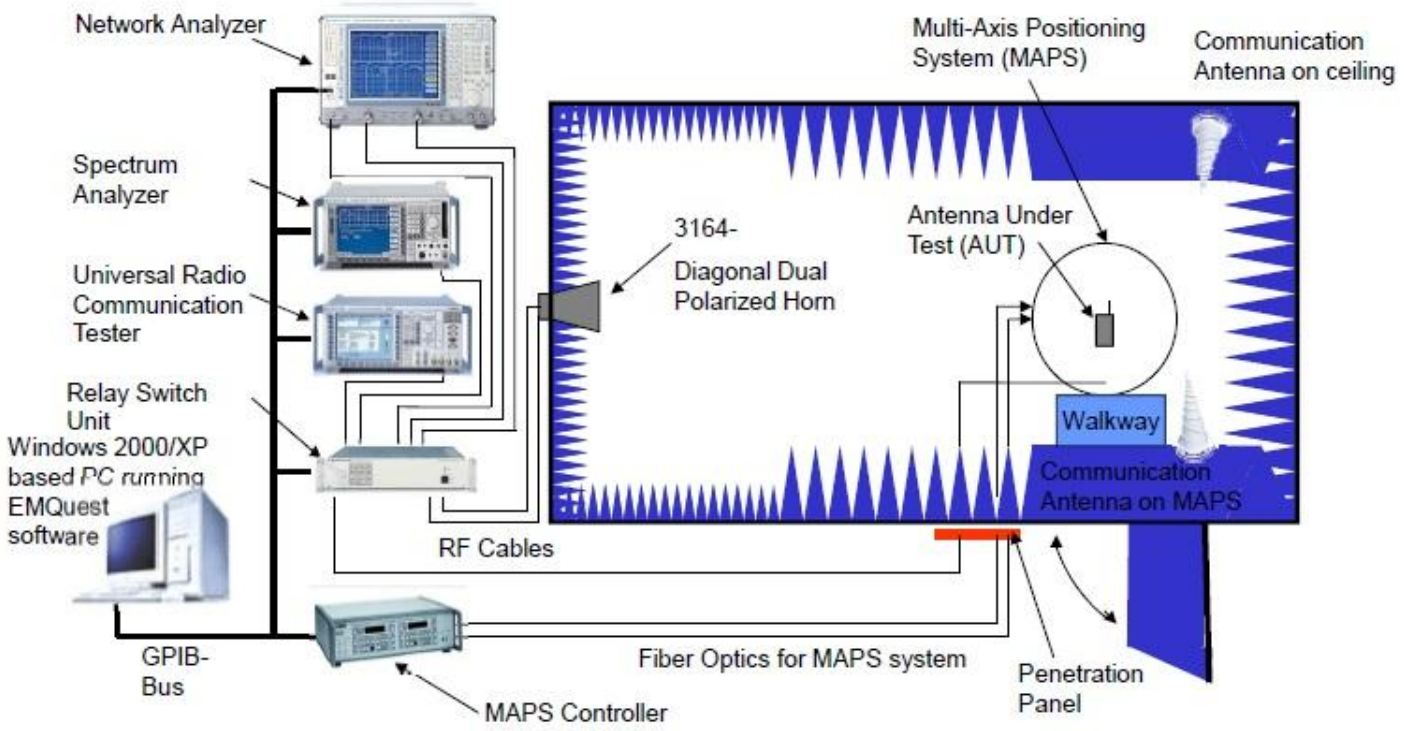
3.0 Test setup (Network Analyzer)



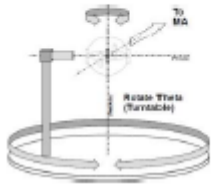
VSWR / S11 measurements were performed using an Agilent E5071C Network Analyzer and the test fixture shown in section 2. The testing was performed in free space. The complete VSWR and isolation plots are provided in section 5.0.

3.1 Laboratory Equipment

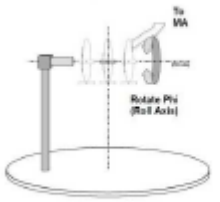
3.2 ETS Chamber - AMS-8500



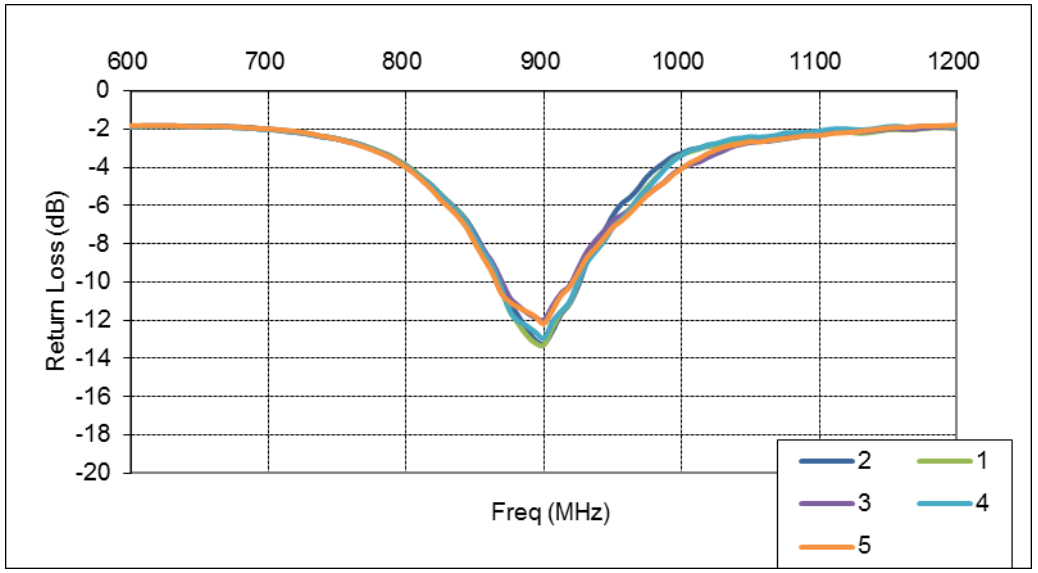
Theta - Axis

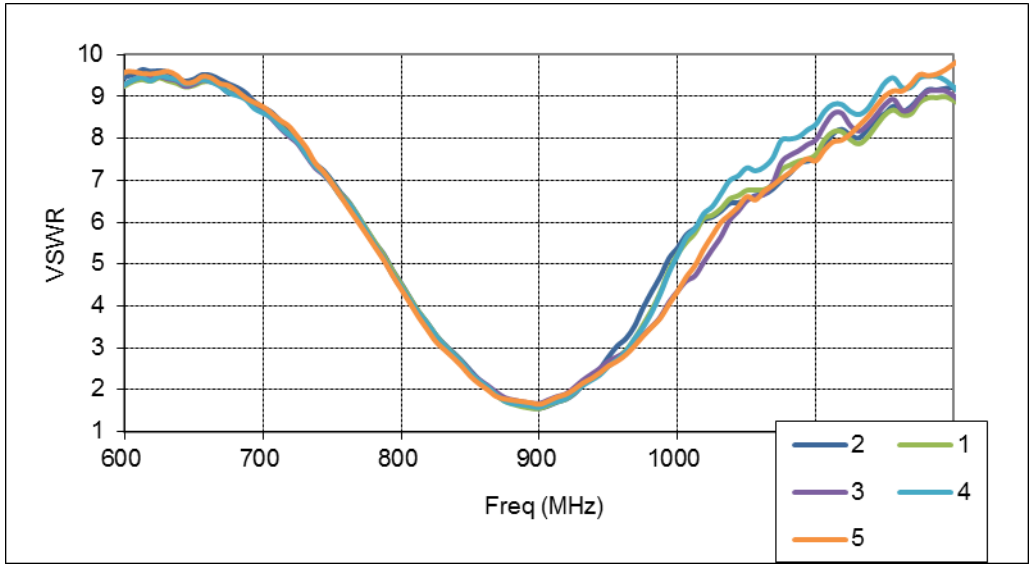


Phi - Axis



4.0 S11/VSWR





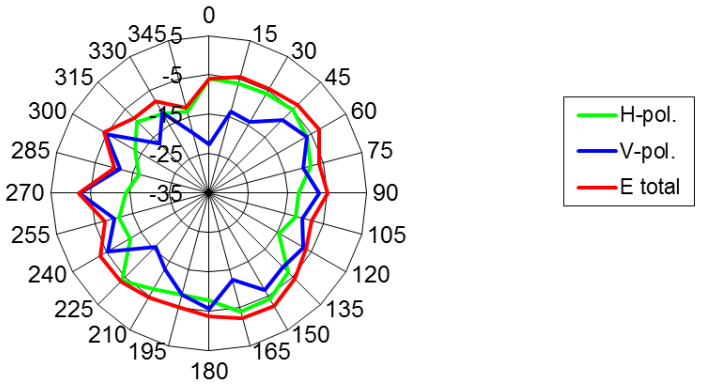
4.1 900 MHz Antenna Efficiency

Frequency Band		Sample 1			Sample 2			Sample 3		
		Free Space								
	MHz	Efficiency (%)	3D Gain (dB)	Peak (dBi)	Efficiency (%)	3D Gain (dB)	Peak (dBi)	Efficiency (%)	3D Gain (dB)	Peak (dBi)
900 MHz	880	45	-3.5	0.4	48	-3.2	0.2	43	-3.6	0.0
	894	48	-3.2	0.8	47	-3.3	0.7	44	-3.6	0.3
	900	48	-3.2	1.0	48	-3.2	0.9	44	-3.5	0.5

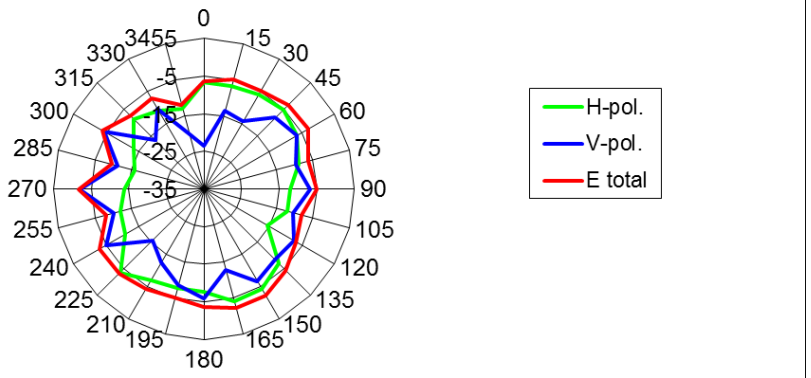
Frequency Band	Sample 4			Sample 5		
	Free Space					
	Efficiency (%)	3D Gain (dB)	Peak (dBi)	Efficiency (%)	3D Gain (dB)	Peak (dBi)
900 MHz	45	-3.5	0.2	46	-3.4	1.3
	46	-3.4	0.6	48	-3.2	1.0
	46	-3.4	0.7	48	-3.2	0.8

5.0 2D Radiation Pattern

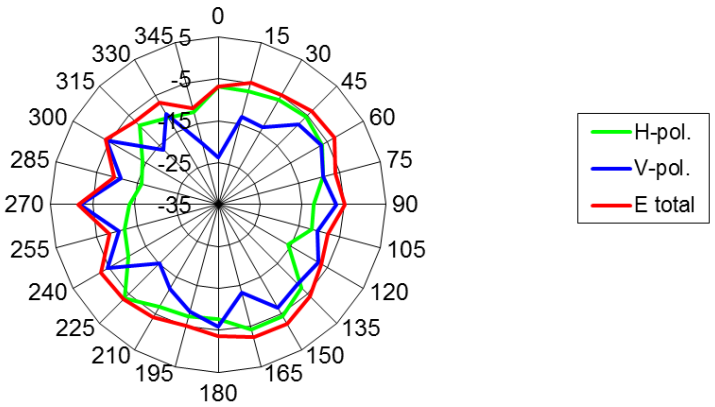
Antenna @ 880 MHz



Antenna @ 894MHz

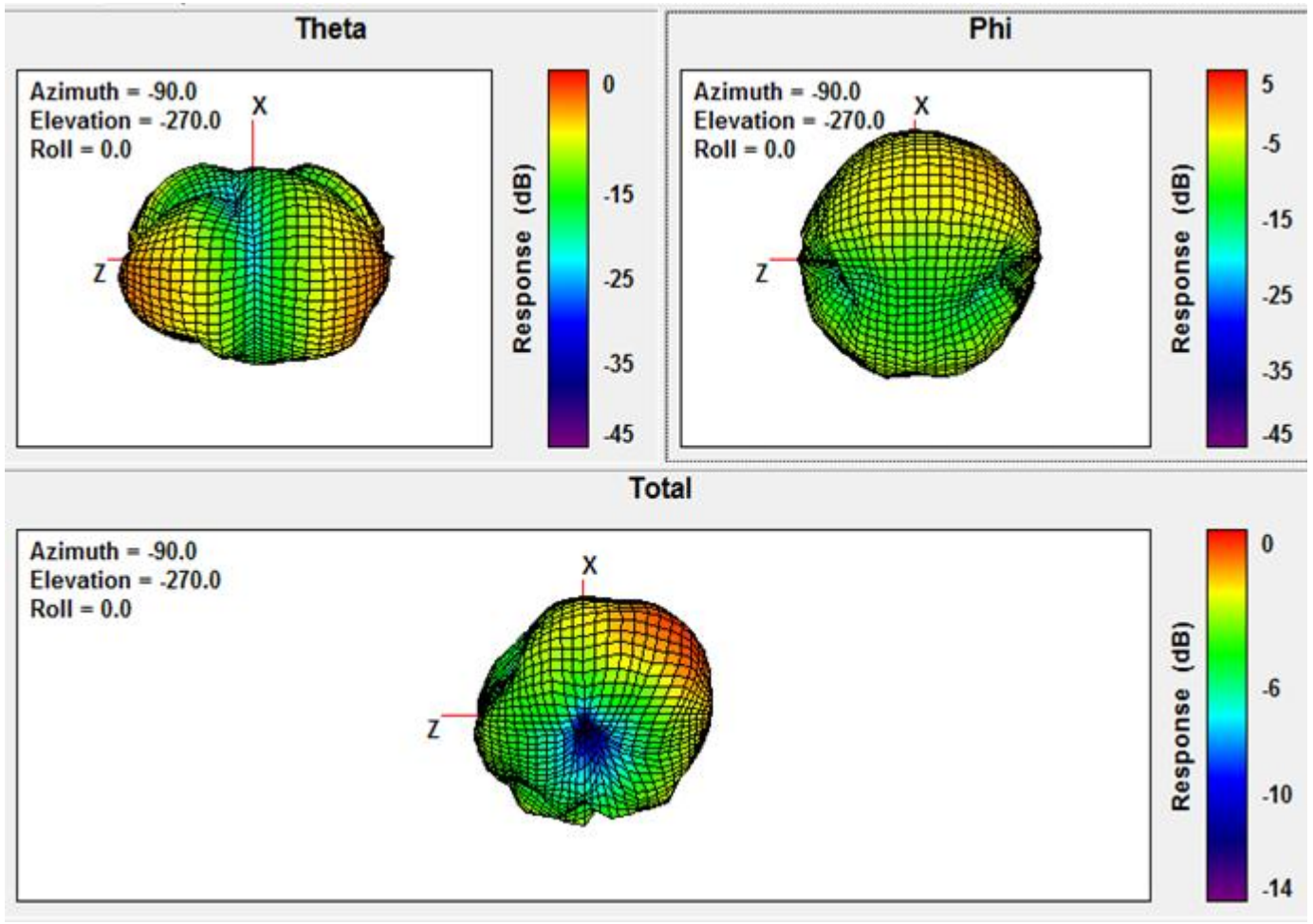


Antenna @ 900MHz



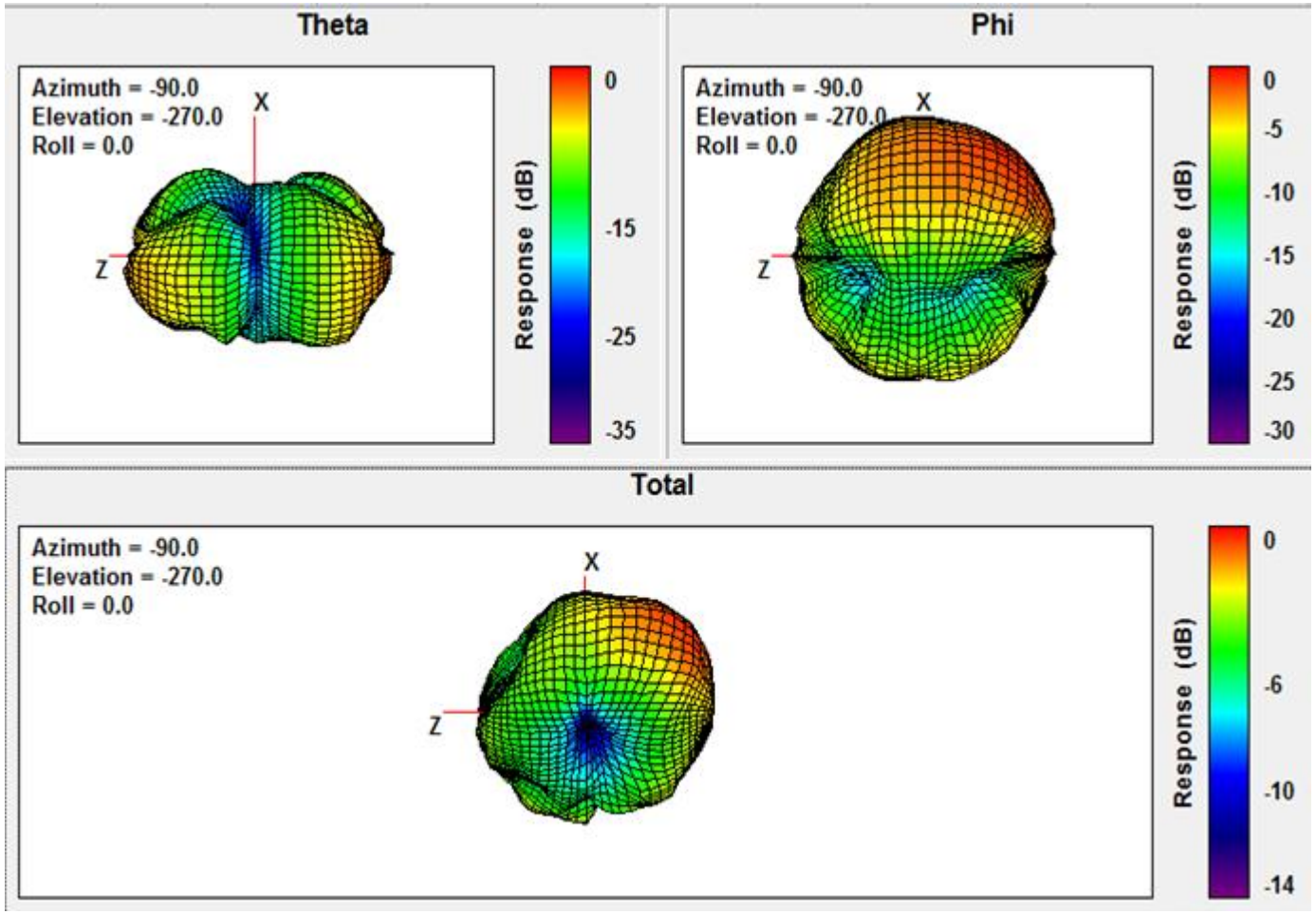
5.1 3D Radiation Pattern

880 MHz



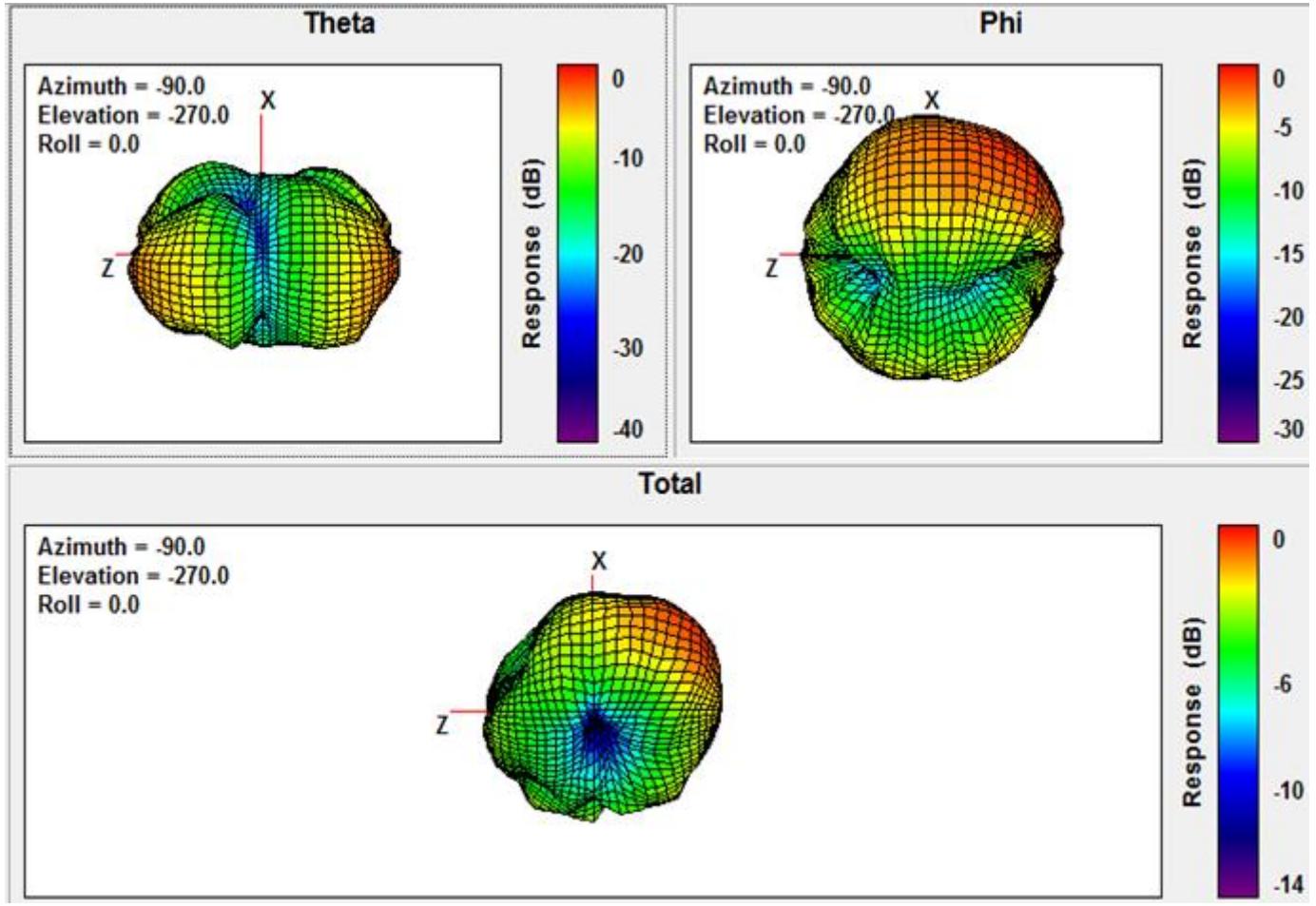
5.1 3D Radiation Pattern

894 MHz



5.1 3D Radiation Pattern

900 MHz



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thank you

danke děkuji ありがとう merci gracias
grazie kiitos תודות köszi tak tack