HDR 275 Antenna Datasheet

Customer Name:	Sonova Consumer Hearing GmbH
Product Model No:	HDR 275
Antenna Model No:	HDT547-R-MAIN-R2
Antenna Type:	PIFA
Document Date:	16/06/2025
Document Revision:	2.1
Document Template Revision:	2.1
Test Date:	13/06/2025
Antenna engineer:	George Tang
Brand:	SENNHEISER

Sonova Consumer Hearing GmbH
Am Labor 1
30900 Wedemark, Germany
T +49 5130 9490 0
Sitz 30900 Wedemark,
Amtsgericht Hannover HRB 221905

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Revision History:

Revision No.	Release Date	Change Description	Prepared By
1.1	13/03/2025	Change Matching	George Tang
2.1	13/06/2025	Change Matching	George Tang

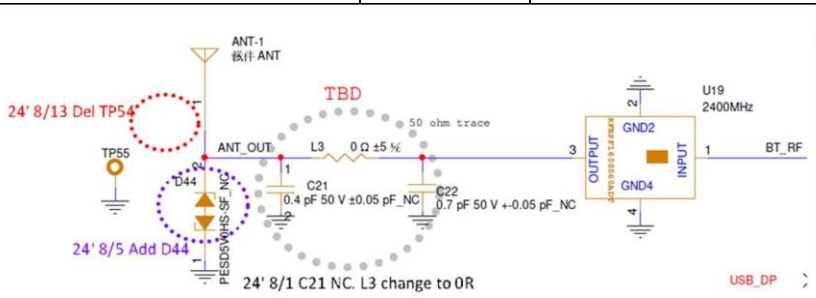
Sonova Consumer Hearing GmbH
Am Labor 1
30900 Wedemark, Germany
T +49 5130 9490 0
Sitz 30900 Wedemark,
Amtsgericht Hannover HRB 221905

1. Antenna Specification

Antenna Type:	PIFA	
Antenna Model No.:	HDT547-R-MAIN-R2	
Max. Antenna Gain:	3.01dBi	
Antenna position in text:	Antenna on PCBA top side	
RF connector used?	☒ No	☐ Yes (Mfr. Nr.):
Antenna position:		

SoC location:	
SoC Mfr. Nr.:	**Qualcomm QCC-3095-0-CSP134ATR-06-0**

Matching circuit used:	☒ Yes	☐ No



Matching Network	
Location	DVT-2
C22	NA
L3	0.5p
C21	6.2nH

Designator	MFR	MFR. Nr:	Description:
C22			N/A
L3	MuRata	GJM1555C1HR50BB01	0.5p
C21	MuRata	LQG15HS6N2B02	6.2nH

Matching circuit position:

Distance to human ear	
Min. antenna distance:	*11.38mm*

Min. SoC distance:	*10.38mm*

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Min. matching circuit distance:	*10.83mm*

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2. Test Setup

2.1 Test equipment

Tested P/N:	ETS-lindgren_AMS-8500 Antenna Measurement System
Tested Antenna Model:	Horn Antennas
Test Equipment (w/ calibration date):	E5071C ENA Vector Network Analyzer – Keysight Calibration Date: 2024/09/01
Test Chamber (w/ calibration date):	ETS-lindgren_AMS-8500 Antenna Measurement System Calibration Date: 2025/04/16
Testers:	Leo Chen 陳偉信
Test Software:	ETS-Lindgren EMQuest

2.2 Antenna Efficiency Measurement Setup

2.2.1 Test Description

The Antenna Anechoic Chamber Measurement

Equipment:


Free space:

BHR:

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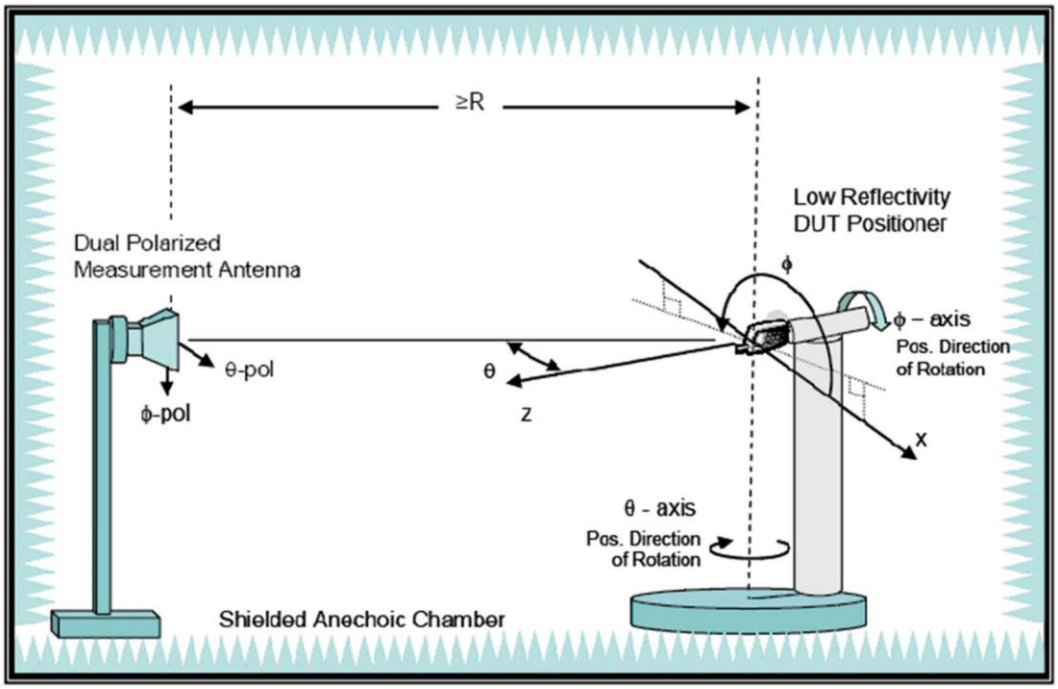
2.3 Antenna Radiation Pattern Test Setup

2.3.1 Test Description

The antenna radiation pattern test is performed to characterize the directional distribution of radiated power from the antenna under test (DUT). This test determines how the antenna radiates energy in space, typically measured in an anechoic chamber to minimize reflections and external interference.

The DUT is mounted on a positioner that allows for rotation in azimuth and/or elevation. A signal generator feeds the antenna, while a receiving antenna—connected to a spectrum analyzer or receiver—captures the radiated signal strength at different angles. Measurements are taken over a full 360-degree sweep (or as required) to generate a complete 2D or 3D radiation pattern.

The setup ensures proper alignment, calibration, and environmental control to ensure accurate and repeatable measurements. Radiation patterns are then plotted in polar or Cartesian coordinates for evaluation.

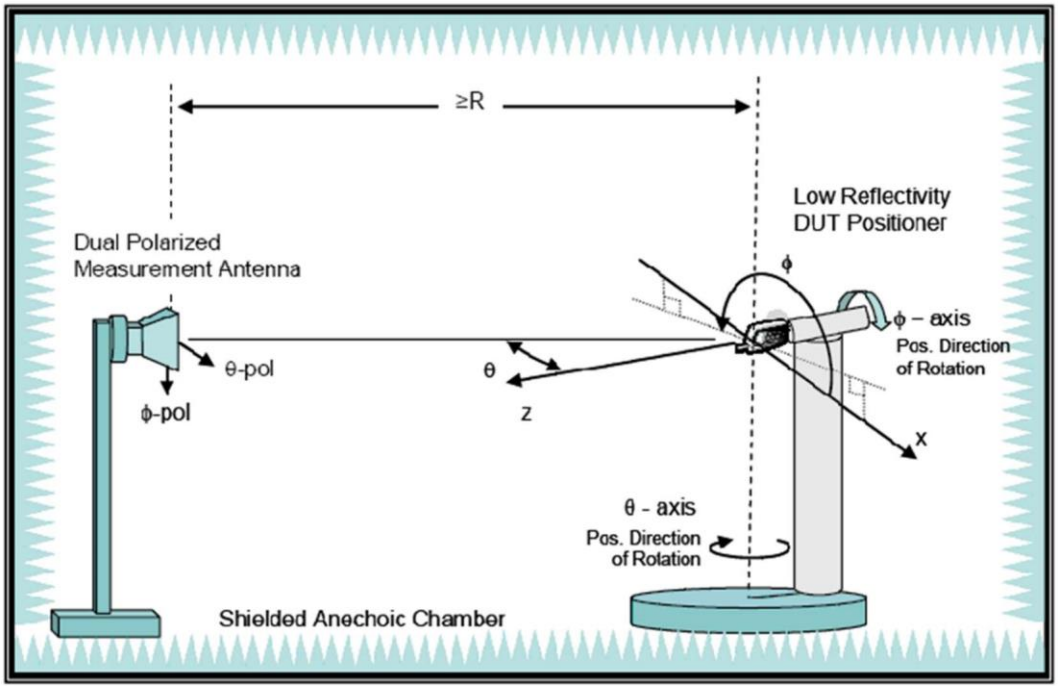


2.4 Antenna Gain Test Setup

2.4.1 Test Description

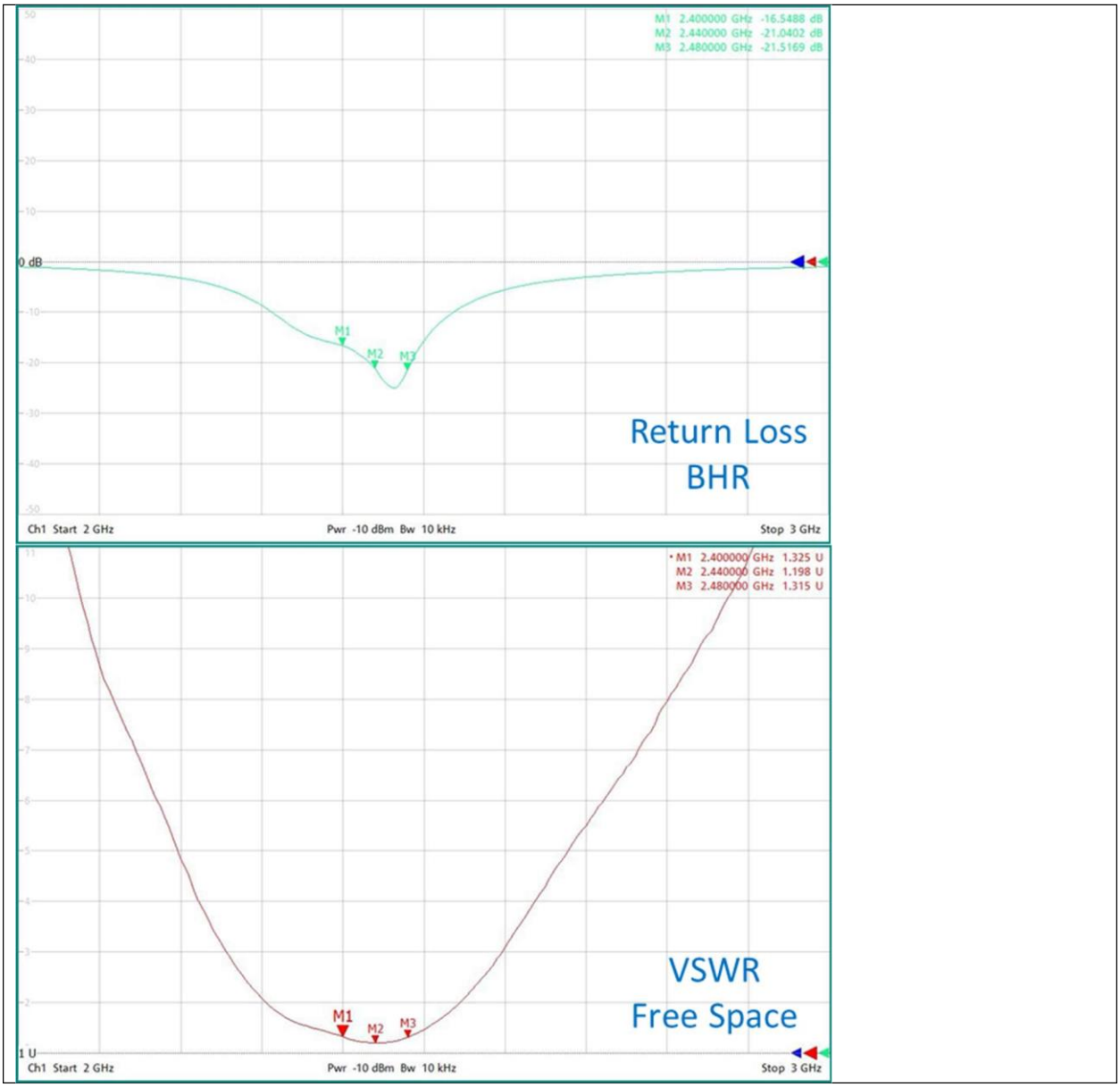
The antenna gain test is conducted to quantify the ability of the DUT to direct input power into a particular direction, compared to a reference antenna (typically an isotropic radiator or a known-gain standard antenna).

The test is usually performed in an anechoic chamber or an open-area test site (OATS). The DUT is fed with a known power level, and the received power at a fixed distance is measured by a calibrated receiving antenna. Alternatively, substitution or comparison methods are used—where the DUT is replaced by a reference antenna, and the difference in received power is used to compute the gain.



3. Antenna Performance

3.1 VSWR, Return Loss, Smith Chart



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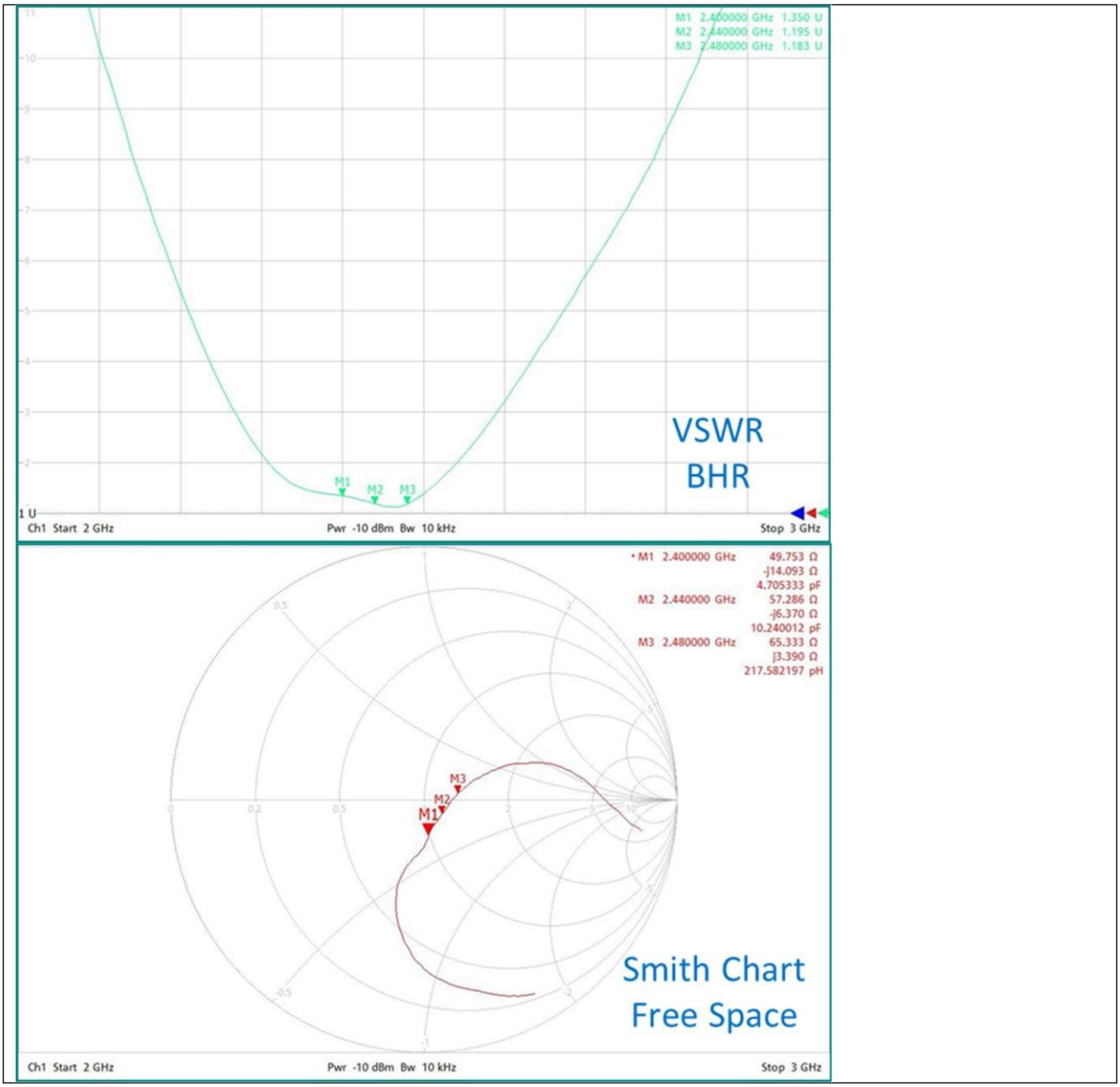

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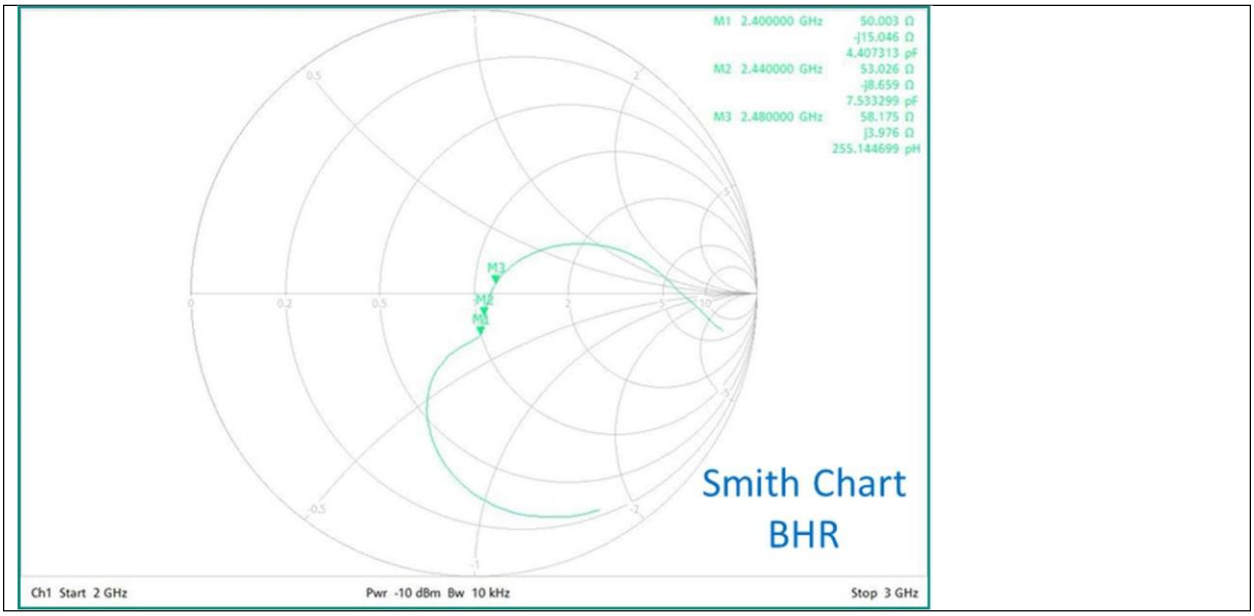


3.2 Antenna Efficiency Results

Free Space:

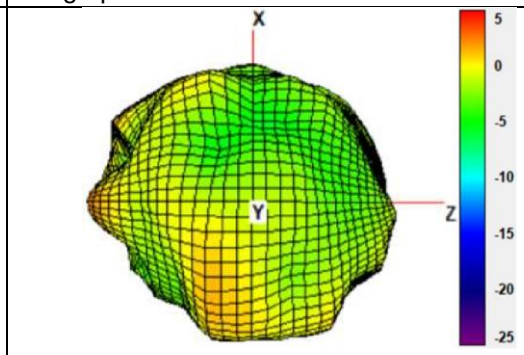
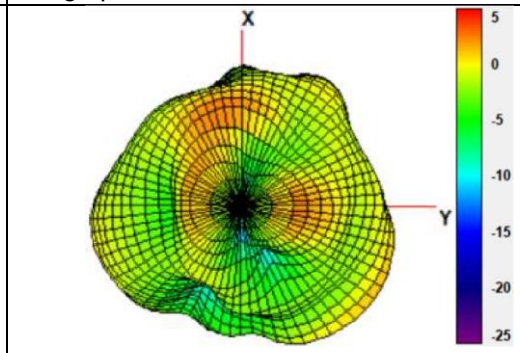
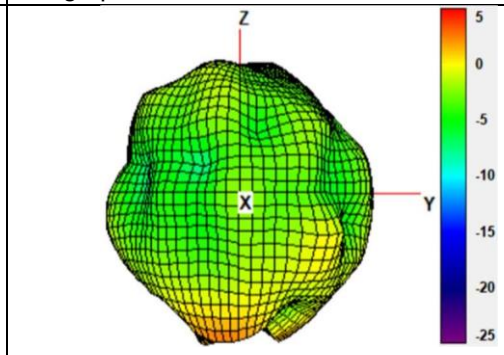
Merry DHT-547-DVT-2_3D_Gain_FS_2400~2500MHz											
Frequency (MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
Efficiency (dB)	-1.98	-1.95	-1.95	-2.00	-2.00	-2.02	-2.06	-2.12	-2.16	-2.12	-2.12
Efficiency (%)	63.44	63.77	63.82	63.09	63.14	62.84	62.29	61.37	60.85	61.32	61.42
Gain (dBi)	2.53	2.66	2.86	2.92	3.00	3.01	2.93	2.84	2.77	2.82	2.83

BHR:

Merry DHT-547-DVT-2_3D_Gain_BHR_2400~2500MHz											
Frequency (MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
Efficiency (dB)	-3.92	-3.90	-3.91	-3.99	-4.02	-4.10	-4.19	-4.32	-4.42	-4.45	-4.49
Efficiency (%)	40.58	40.77	40.60	39.92	39.58	38.90	38.07	36.96	36.14	35.93	35.59
Gain (dBi)	3.07	3.05	3.00	2.85	2.69	2.45	2.18	1.81	1.52	1.25	0.97

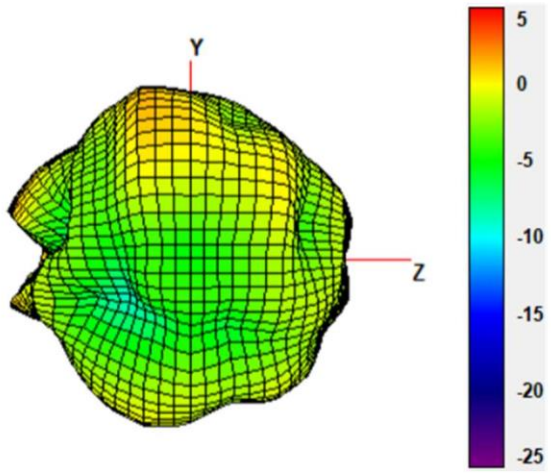
3.3 Radiation Pattern Results

Picture = in the orientation of the 3D graph

XZ:	
Test orientation picture	3D graph
	
XY:	
Test orientation picture	3D graph
	
ZY:	
Test orientation picture	3D graph
	

3.4 Antenna Gain Results

FS Radiation Pattern



BHR Radiation Pattern