

WLAN Tri-Band Reference Antenna Datasheet

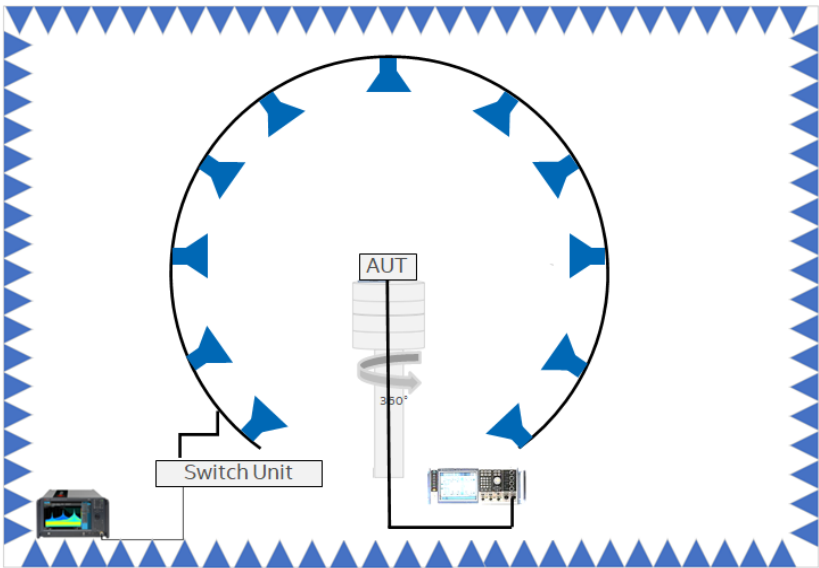
1. Measurement Method and Test System

The measurement method is based on 3D spherical measurement using a distributed axis test system shown in the figures below.

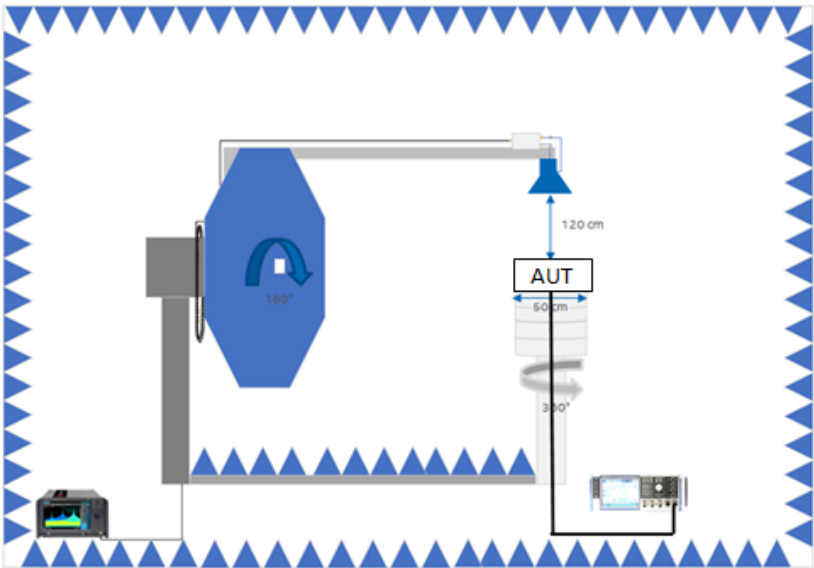
2. Test Setup & Equipment List

2.1. Test Setup

2.1.1. WiFi/BT 2.4G (2400 - 2483 MHz) and WiFi 5G (5150 - 5925 MHz)



2.1.2. WiFi 6G (5925 - 7200 MHz)



2.2. Test Equipment List

2.3. WiFi 2.4G (2400 - 2483 MHz) and WiFi 5G (5150 – 5925 MHz)

ID#	Device	Type/Model	Serial #	Manufacturer
013-000	Spherical full anechoic chamber	AMS-8923-150	5719	ETS-Lindgren
013-011	Measurement Software	EMQuest v 1.15 build 27347	1404	ETS-Lindgren
013-001	Switch & Positioning Control Platform	EMCenter	00159758	ETS-Lindgren
013-003	System Amplifier Module (0.5 - 6 GHz)	SAM-01	-	ETS-Lindgren
271-000	Signal Analyzer 9kHz – 6GHz	FSL6	102143	Rohde & Schwarz
130-000	Signal generator	SMB 100A	178217	Rohde & Schwarz

2.4. WiFi 6G (5925 - 7200 MHz)

ID#	Device	Type/Model	Serial #	Manufacturer
009-000	Spherical full anechoic chamber	WPTC	P28765-00651-001-PRB	Rohde & Schwarz
009-001	Measurement software (v11.30)	AMS32	100084	Rohde & Schwarz
152-000	Cross-polarized vivaldi antenna	TC-TA85CP	101018	Rohde & Schwarz
345-000	Switch unit + LNA	TC-ELAMP-D	1533.6350.02	Rohde & Schwarz
335-000	Positionner	NCD	173167577	Maturo
143-000	Spectrum analyser	UXA N9040B	US57212210	Keysight
130-000	Signal generator	SMB 100A	178217	Rohde & Schwarz

3. Antenna Specification

The herein test results were performed by:

Test case measurement	Test Personnel
Antenna Gain measurement below 6 GHz	A. Azize Gilbert
Antenna Gain measurement above 6 GHz	T. Andriamiharivolamena

3.1. Antenna information

Manufacturer	Type	Antenna Part number	Band	Peak Gain (dBi)	Target Peak Gain (dBi)
Intel WRF Lab	PIFA	WRF-Tri Band-Antenna	2.4GHz 2400-2483MHz	2.95	3
			5.2GHz 5.150-5.250MHz	5.11	5
			5.4GHz 5250-5470MHz	5.15	
			5.6GHz 5470-5725MHz	5.15	
			5.8GHz 5725-5925MHz	5.13	5
			6.2GHz 5925-6425MHz	5.02	
			6.5GHz 6425-6525MHz	5.02	
			6.6GHz 6525-6875MHz	4.96	
			7GHz 6875-7125MHz	4.96	

3.2. Antenna Peak Gain Table

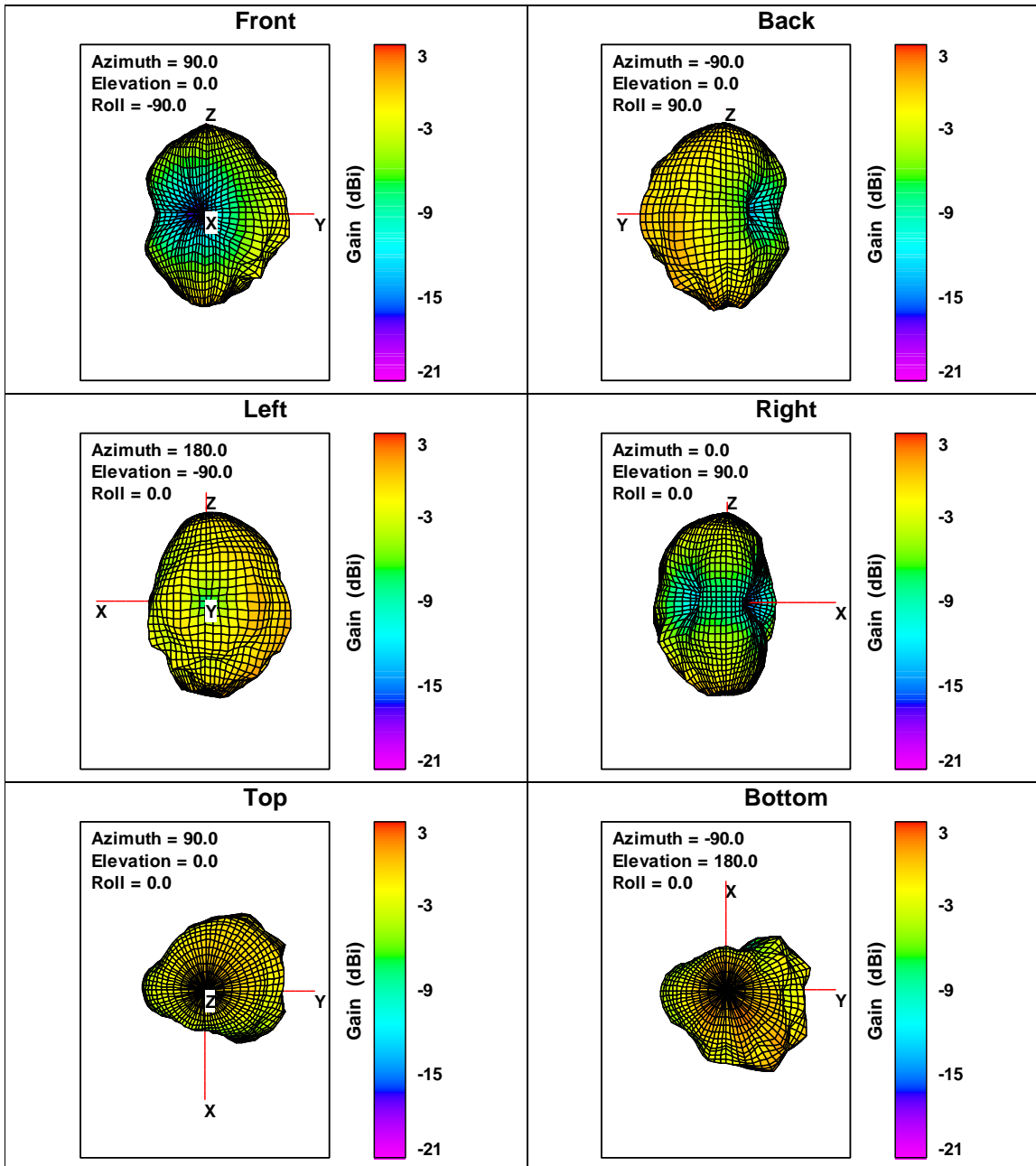
Frequency (MHz)	Peak Gain		
	Horizontal (Theta)	Vertical (Phi)	Total
	(dBi)	(dBi)	(dBi)
2400	-2.45	0.11	2.03
2450	-2.85	1.63	2.95
2483	-2.23	1.37	2.94
5150	3.27	-2.31	4.33
5175	-7.63	4.87	5.11
5250	-5.4	4.08	4.55
5350	-4.76	3.79	4.36
5470	3.95	-1.02	5.15
5725	-6.5	4.82	5.13
5850	3.64	-3.33	4.44
5925	-10.4	4.31	4.45
6000	3.61	-0.54	5.02
6425	-7.08	4.74	5.02
6525	3.37	-0.46	4.88
6875	3.03	0.53	4.96
7125	4.38	-4.02	4.96

4. Antenna Radiation Patterns

4.1. WiFi/BT 2.4G (2400 - 2483 MHz)

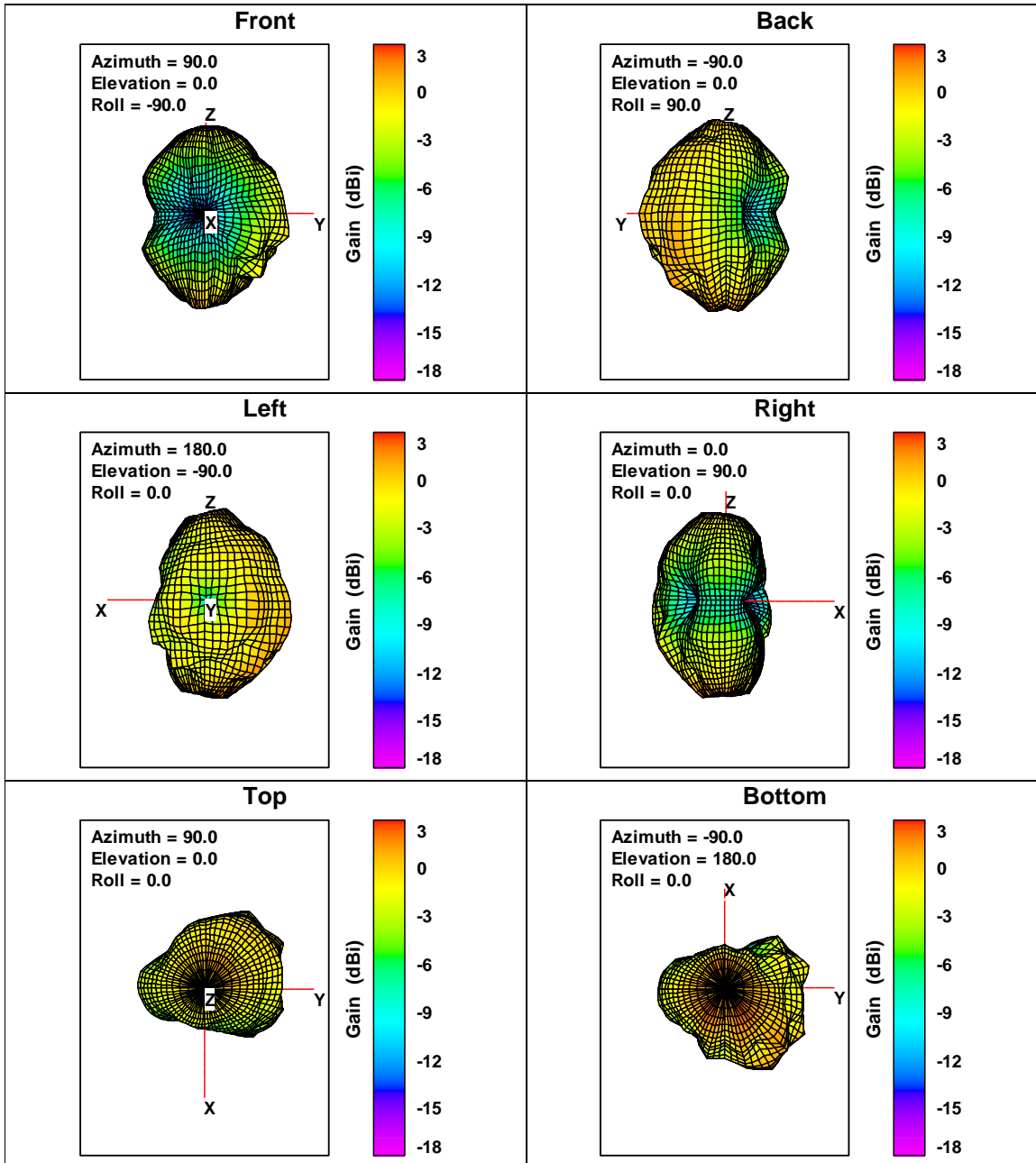
4.1.1. Antenna Pattern @2400MHz

Frequency (MHz)	Peak Gain		
	Horizontal (Theta)	Vertical (Phi)	Total
	(dBi)	(dBi)	(dBi)
2400	-2.45	0.11	2.03



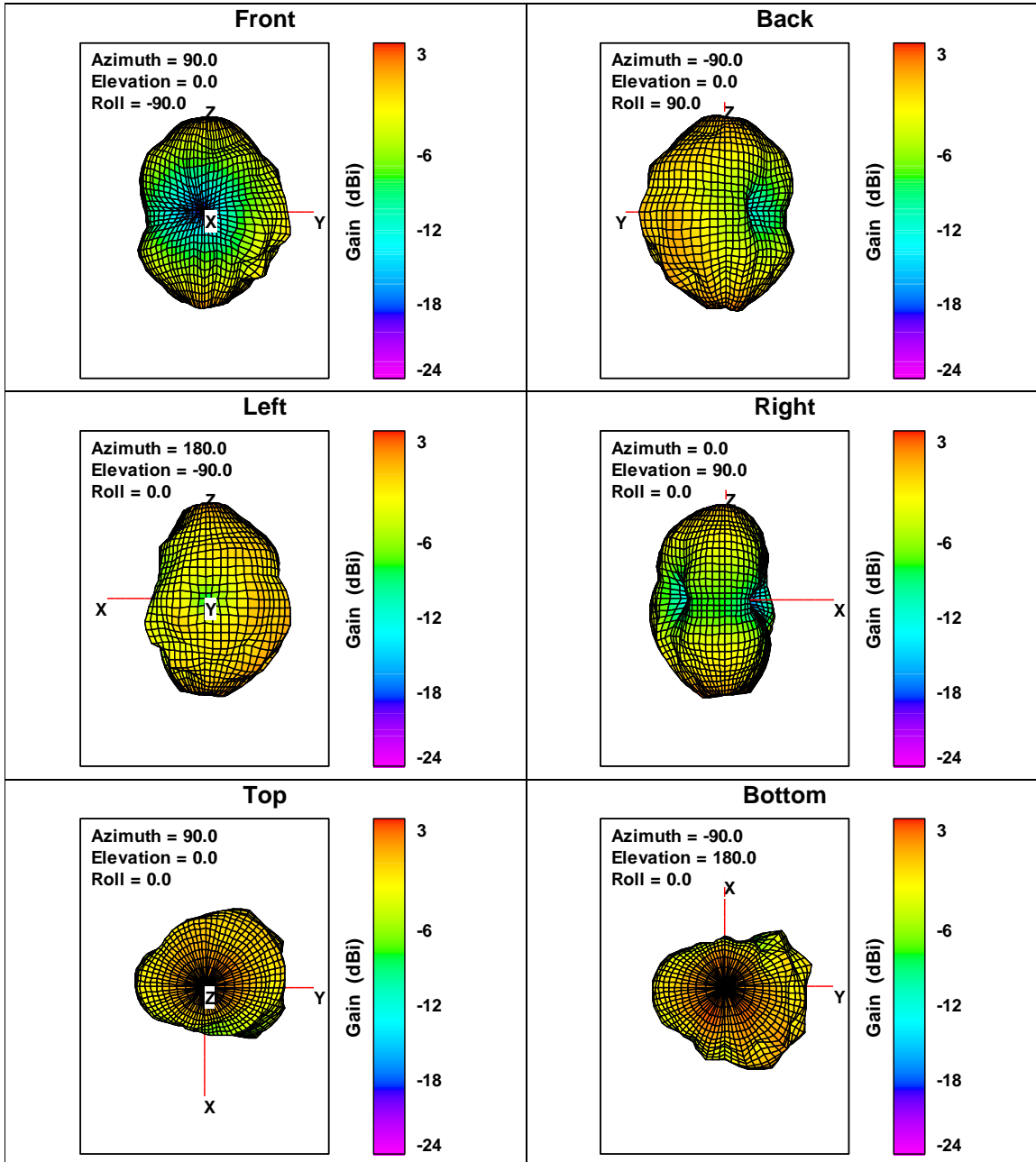
4.1.2. Antenna Pattern @2450MHz

Frequency (MHz)	Peak Gain		
	Horizontal (Theta)	Vertical (Phi)	Total
	(dBi)	(dBi)	(dBi)
2450	-2.85	1.63	2.95



4.1.3. Antenna Pattern @2483MHz

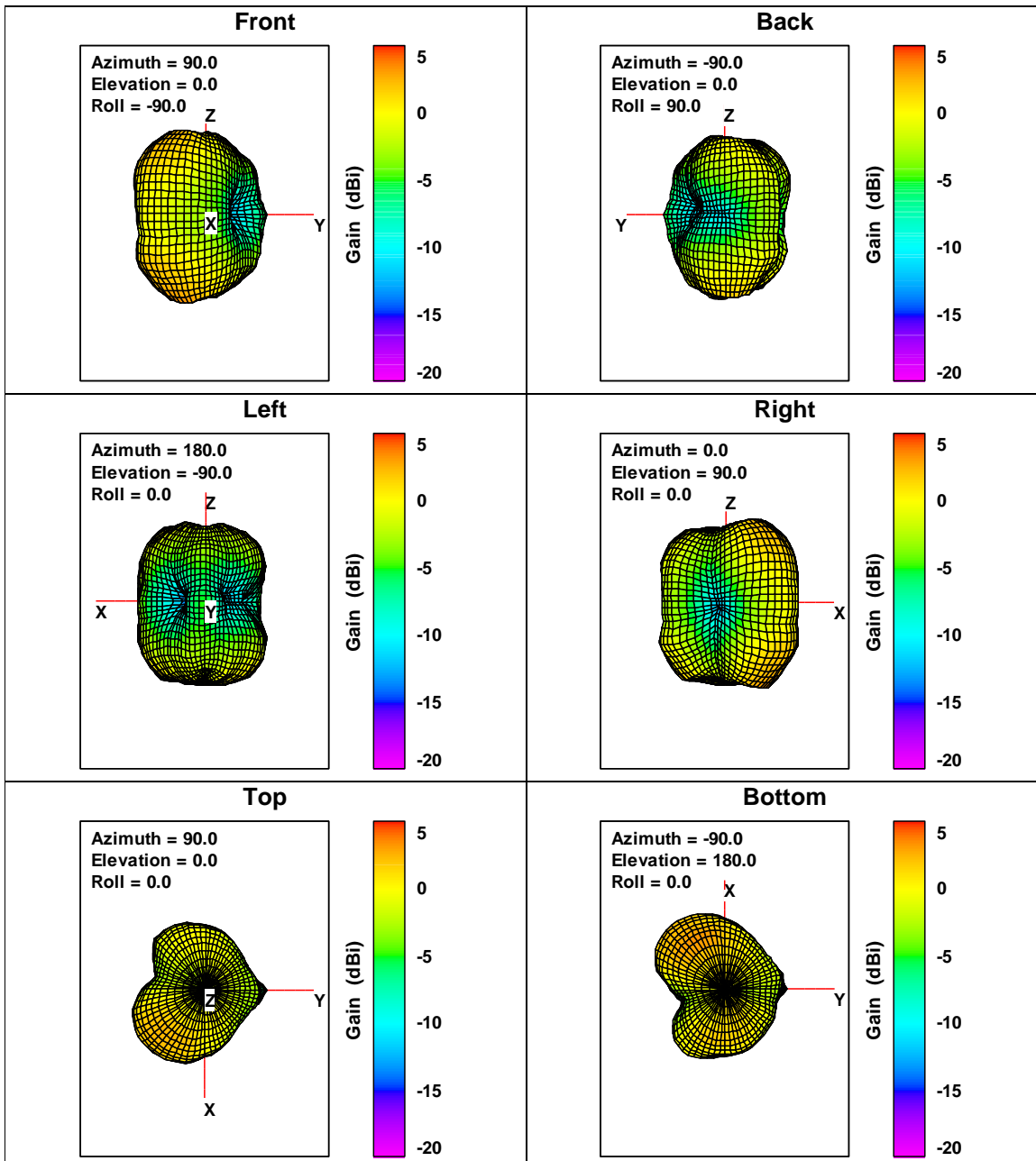
Frequency (MHz)	Peak Gain		
	Horizontal (Theta)	Vertical (Phi)	Total
	(dBi)	(dBi)	(dBi)
2483	-2.23	1.37	2.94



4.2. WiFi 5G (5150 - 5925 MHz)

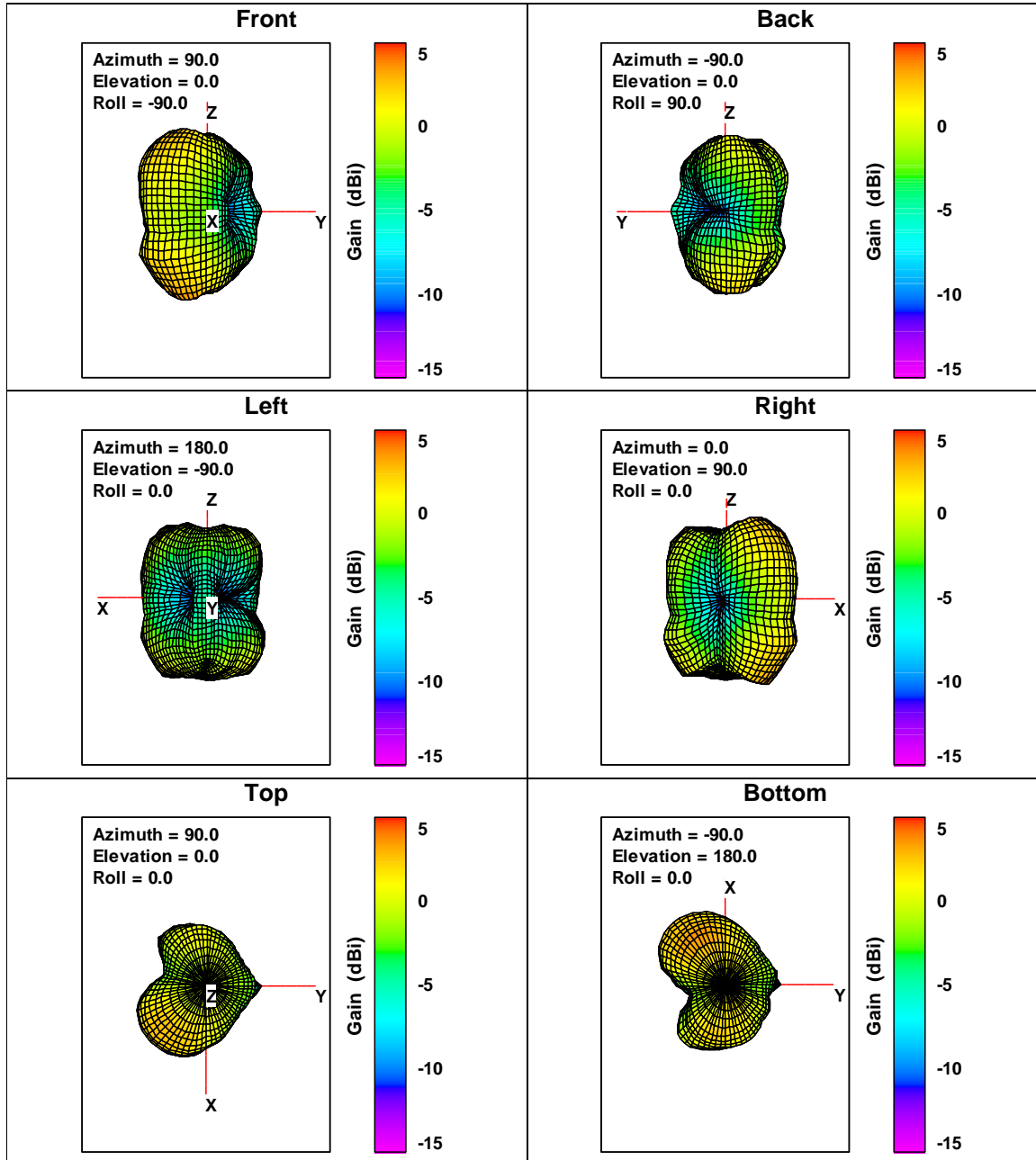
4.2.1. Antenna Pattern @5150MHz

Frequency (MHz)	Peak Gain		
	Horizontal (Theta)	Vertical (Phi)	Total
	(dBi)	(dBi)	(dBi)
5150	3.27	-2.31	4.33



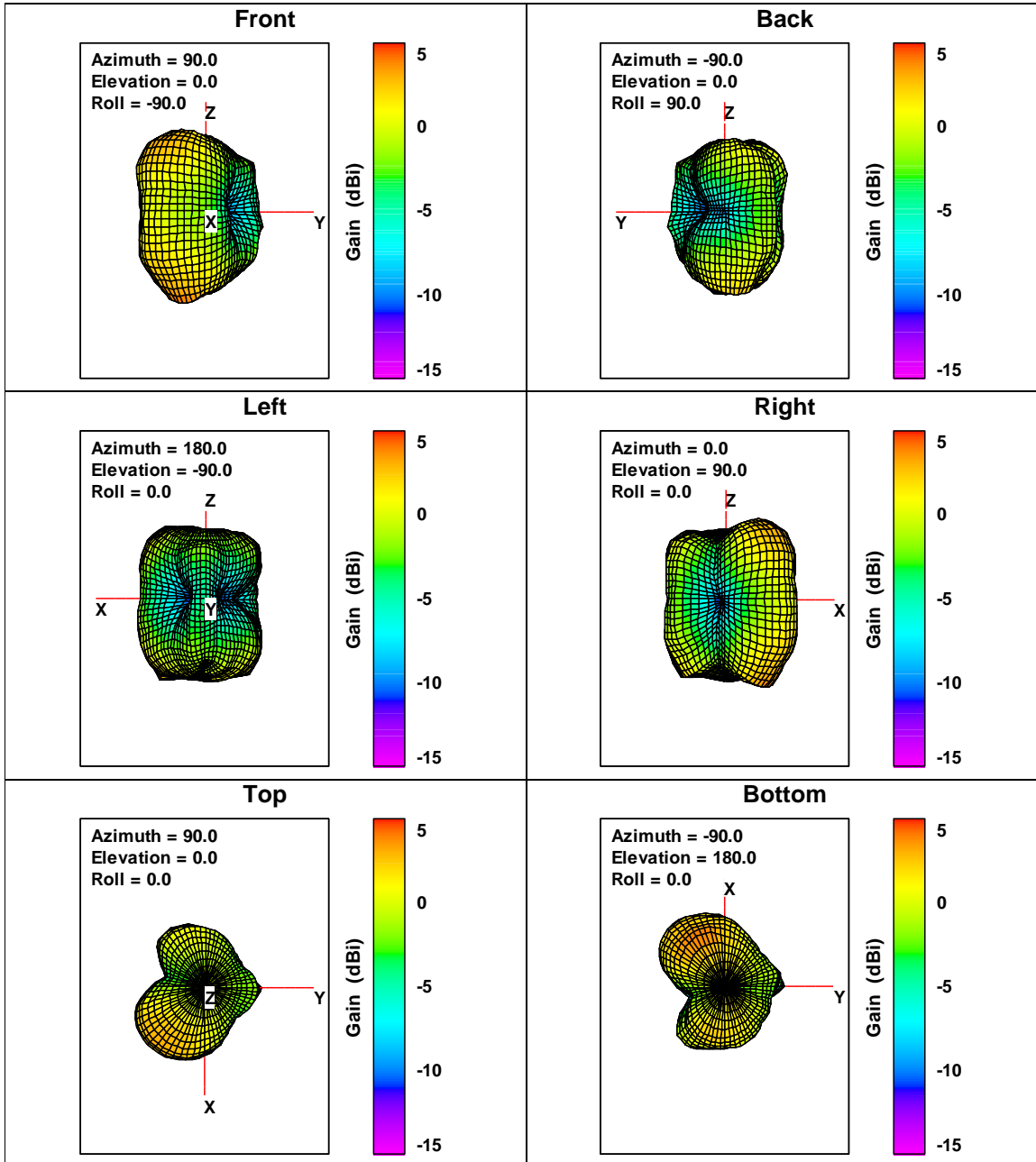
4.2.2. Antenna Pattern @5175MHz

Frequency (MHz)	Peak Gain		
	Horizontal (Theta)	Vertical (Phi)	Total
	(dBi)	(dBi)	(dBi)
5175	-7.63	4.87	5.11



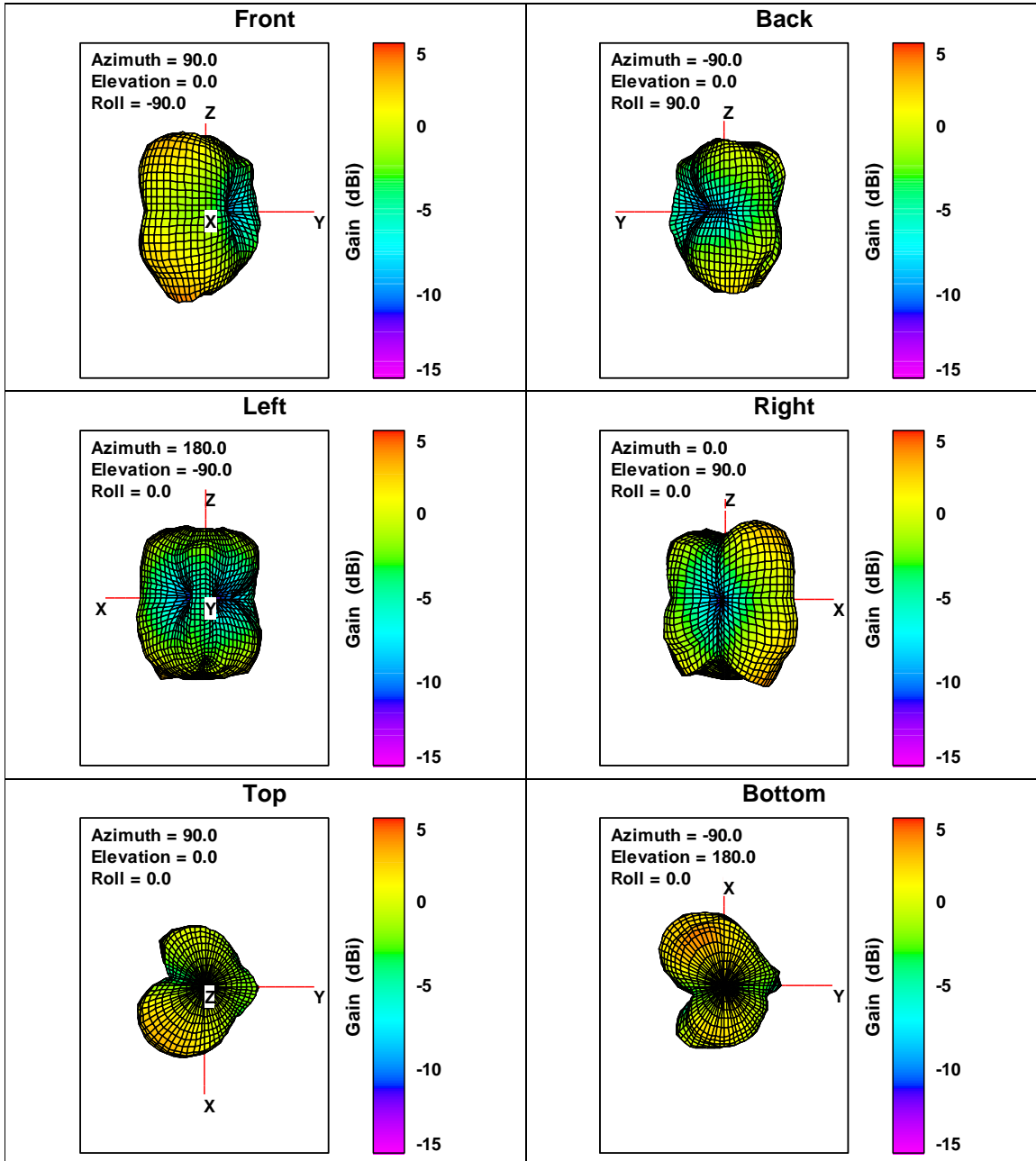
4.2.3. Antenna Pattern @5250MHz

Frequency (MHz)	Peak Gain		
	Horizontal (Theta)	Vertical (Phi)	Total
	(dBi)	(dBi)	(dBi)
5250	-5.4	4.08	4.55



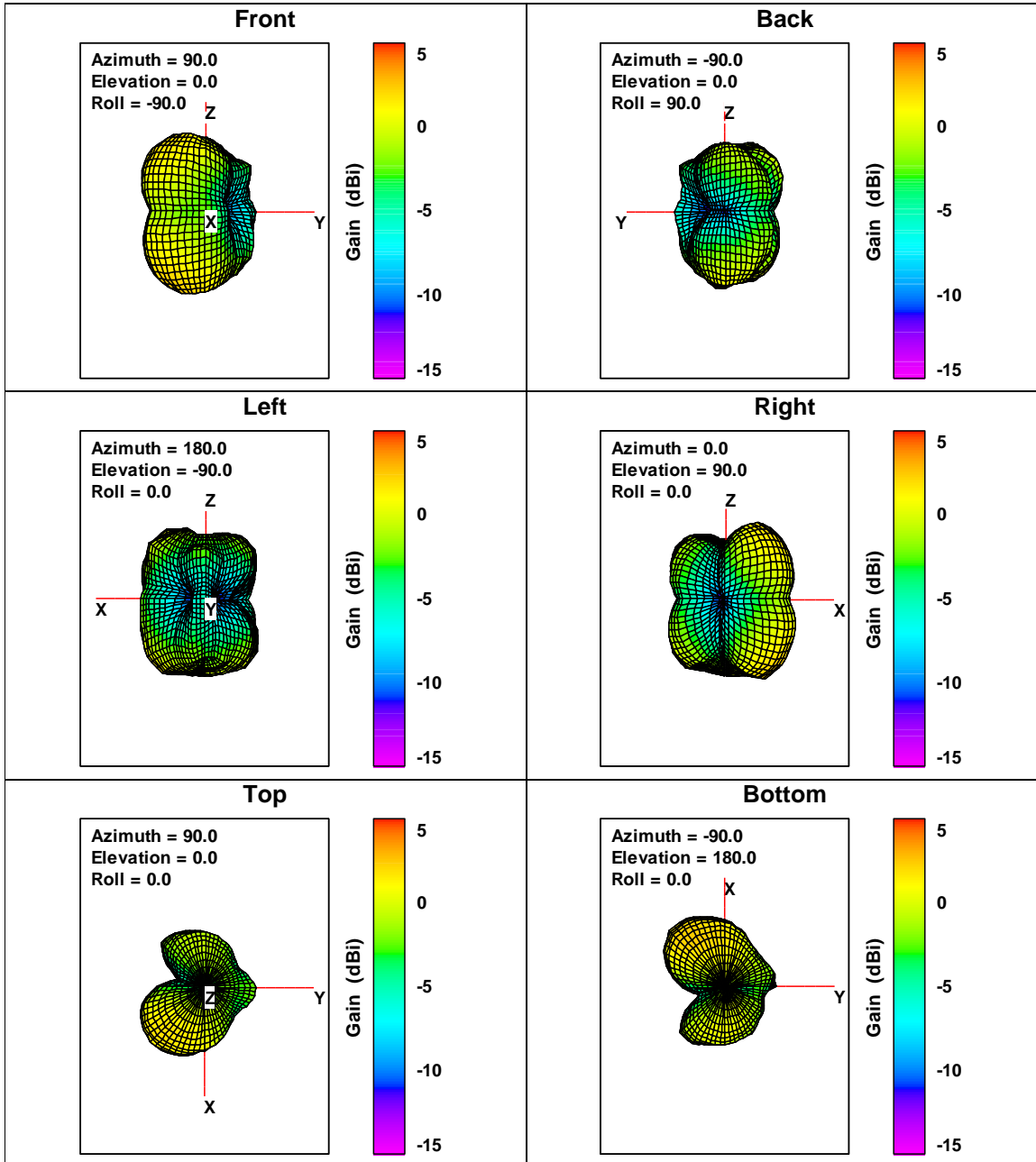
4.2.4. Antenna Pattern @5350MHz

Frequency (MHz)	Peak Gain		
	Horizontal (Theta)	Vertical (Phi)	Total
	(dBi)	(dBi)	(dBi)
5350	-4.76	3.79	4.36



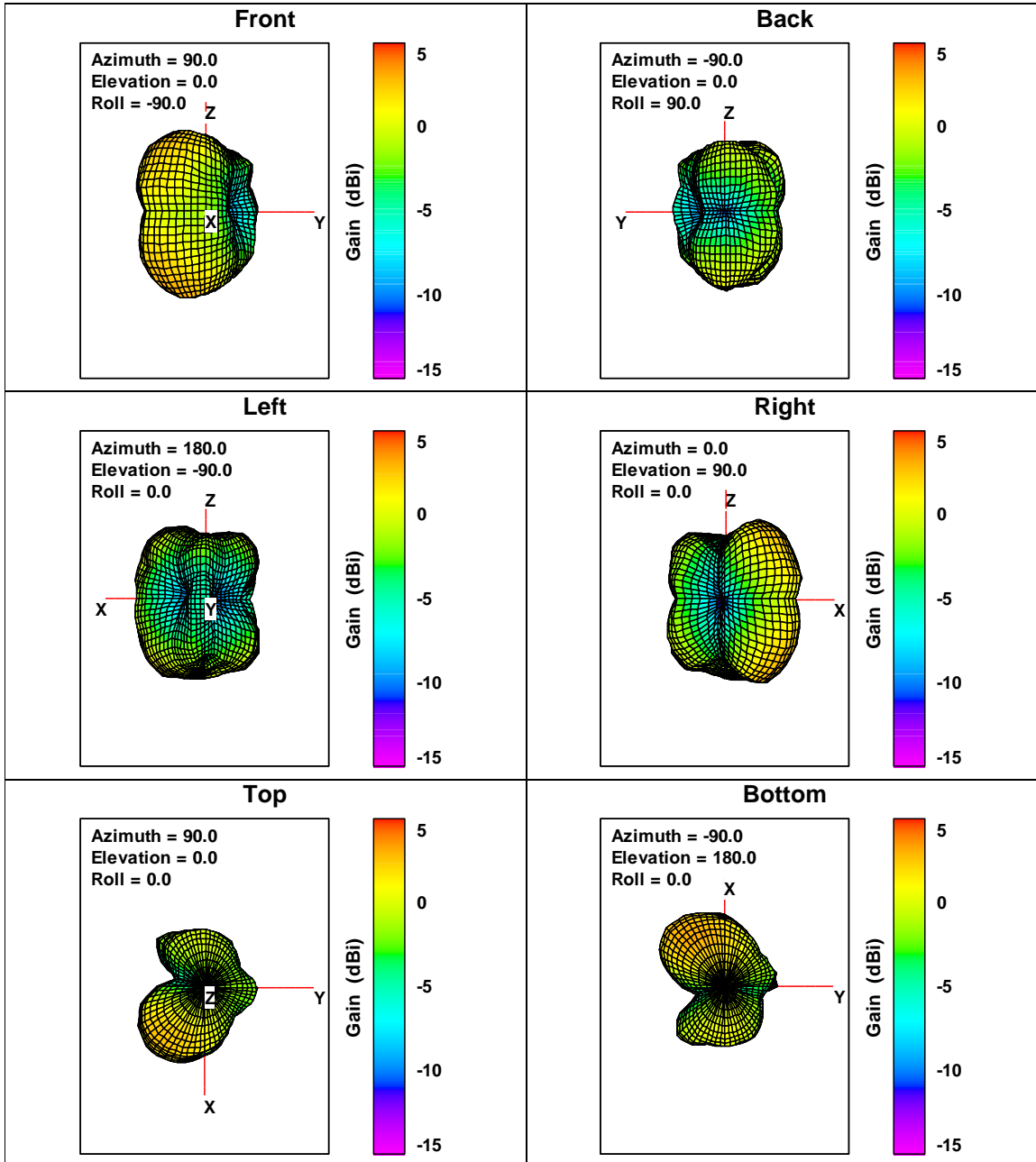
4.2.5. Antenna Pattern @5470MHz

Frequency (MHz)	Peak Gain		
	Horizontal (Theta)	Vertical (Phi)	Total
	(dBi)	(dBi)	(dBi)
5470	3.95	-1.02	5.15



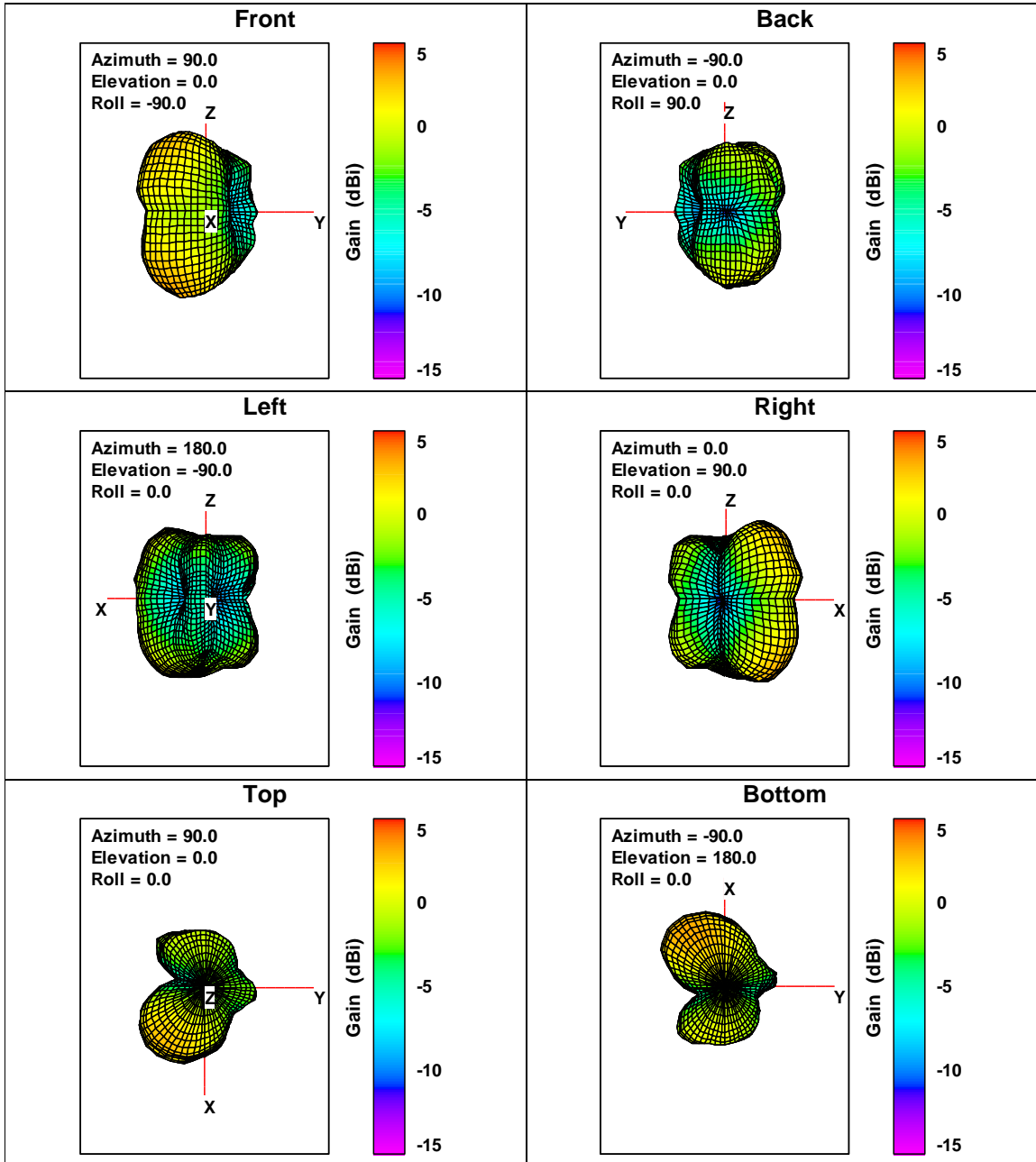
4.2.6. Antenna Pattern @5725MHz

Frequency (MHz)	Peak Gain		
	Horizontal (Theta)	Vertical (Phi)	Total
	(dBi)	(dBi)	(dBi)
5725	-6.5	4.82	5.13



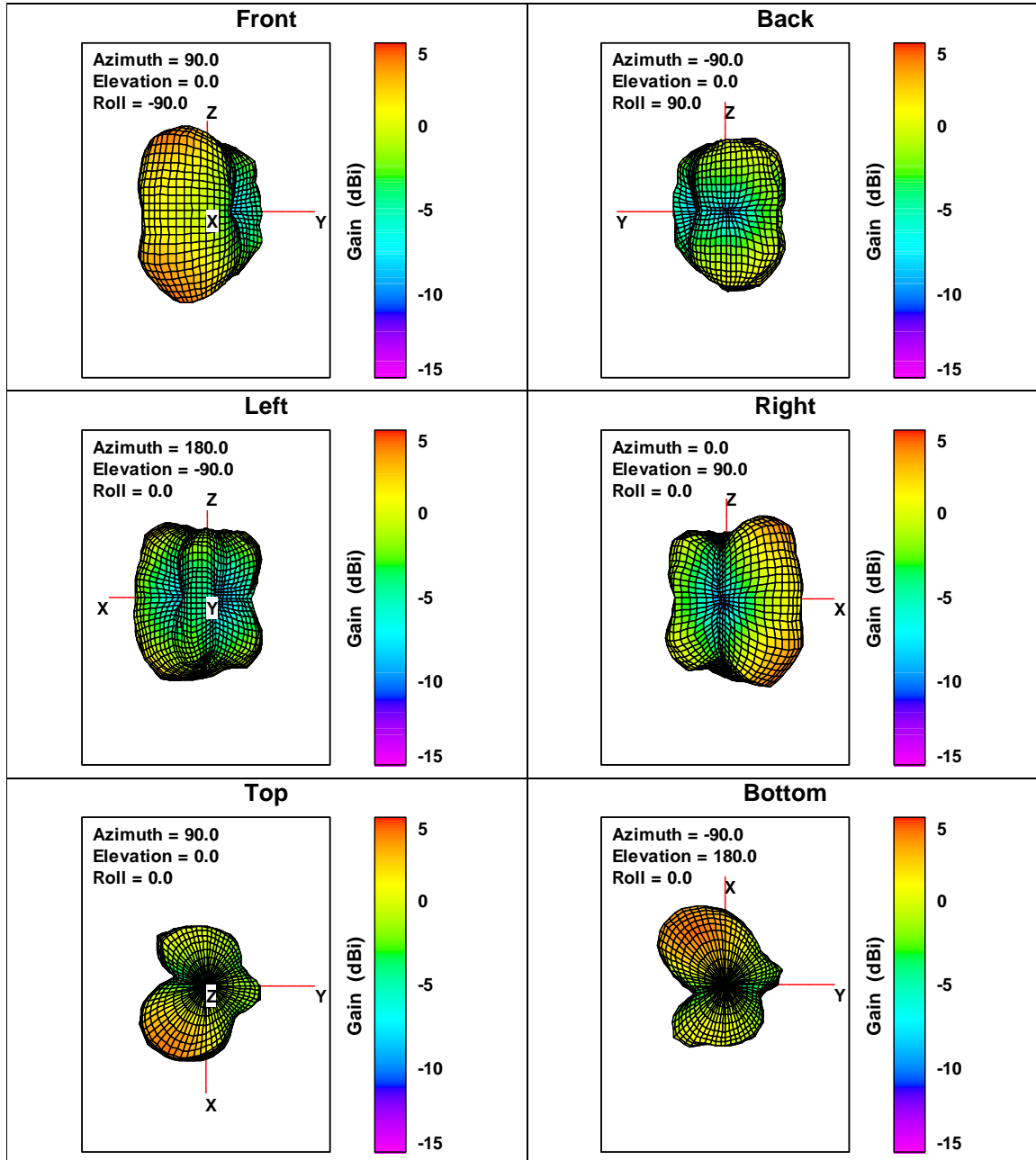
4.2.7. Antenna Pattern @5850MHz

Frequency (MHz)	Peak Gain		
	Horizontal (Theta)	Vertical (Phi)	Total
	(dBi)	(dBi)	(dBi)
5850	3.64	-3.33	4.44



4.2.8. Antenna Pattern @5925MHz

Frequency (MHz)	Peak Gain		
	Horizontal (Theta)	Vertical (Phi)	Total
	(dBi)	(dBi)	(dBi)
5925	-10.4	4.31	4.45

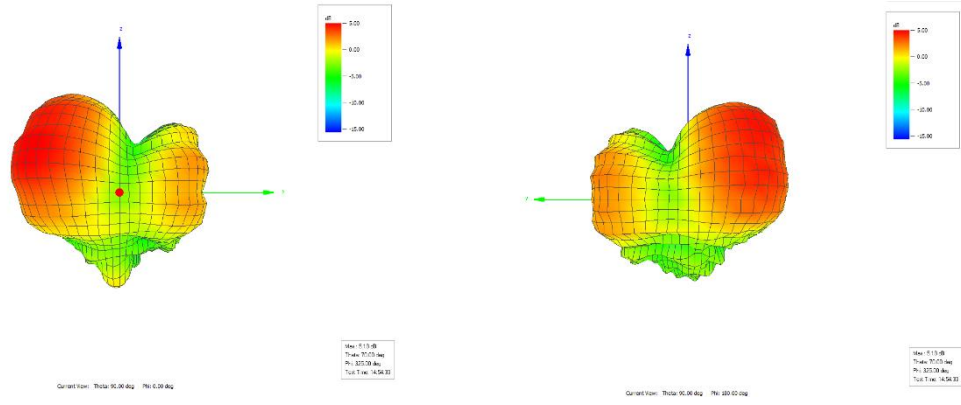


4.3. WiFi 6G (5925 - 7200 MHz)

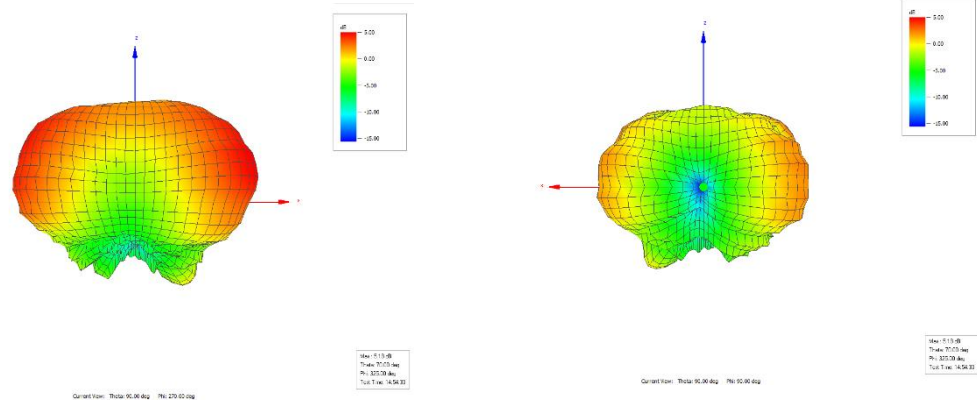
4.3.1. Antenna Pattern @6000MHz

Frequency (MHz)	Peak Gain		
	Horizontal (Theta) (dBi)	Vertical (Phi) (dBi)	Total (dBi)
6000	3.61	-0.54	5.02

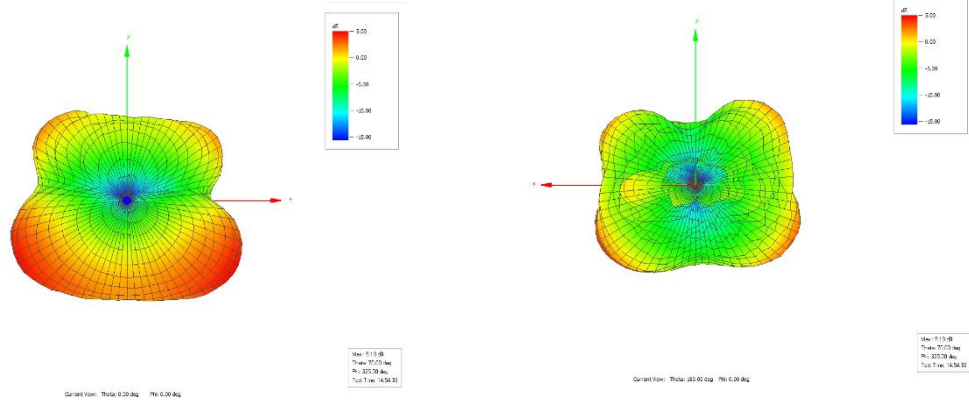
Front **Back**



Left **Right**



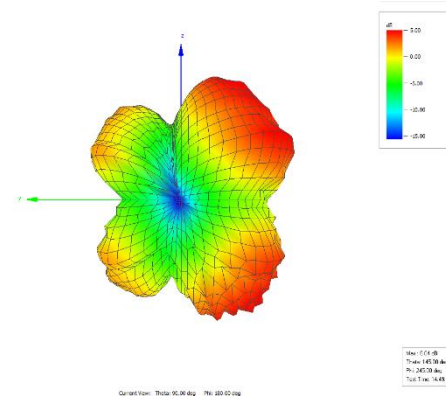
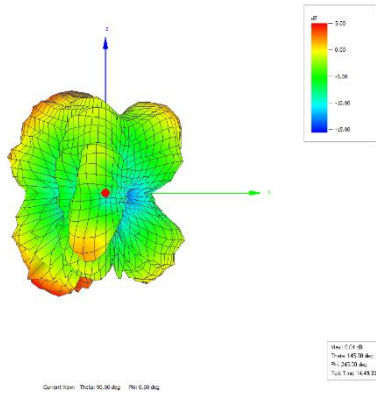
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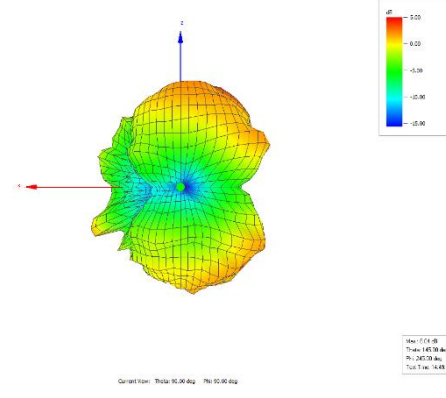
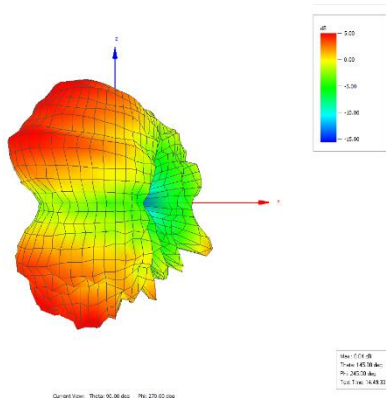
4.3.2. Antenna Pattern @6425MHz

Frequency (MHz)	Peak Gain		
	Horizontal (Theta) (dBi)	Vertical (Phi) (dBi)	Total (dBi)
6425	-7.08	4.74	5.02

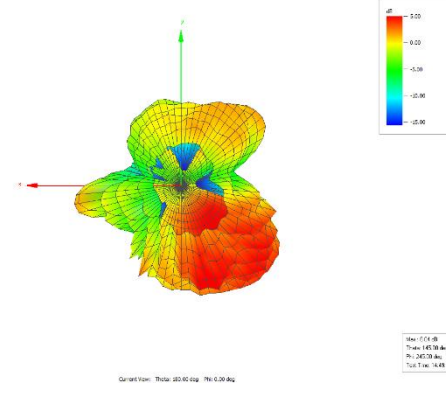
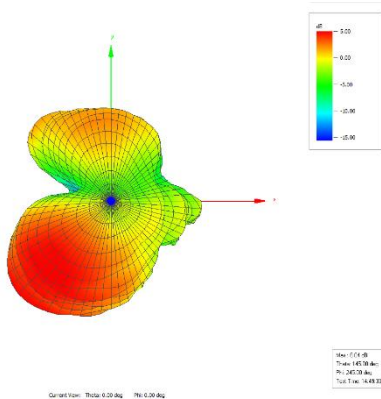
Front **Back**



Left **Right**



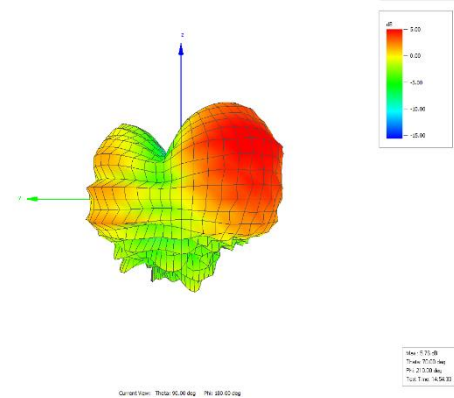
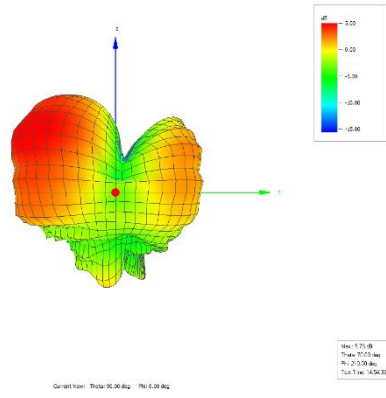
Top **Bottom**



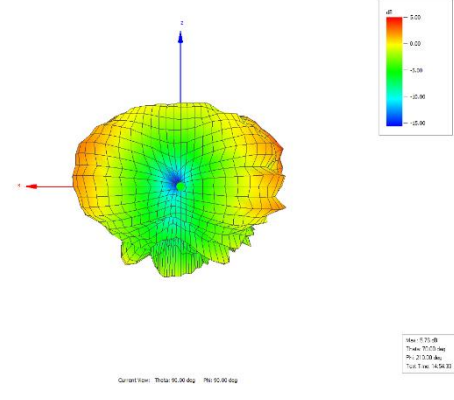
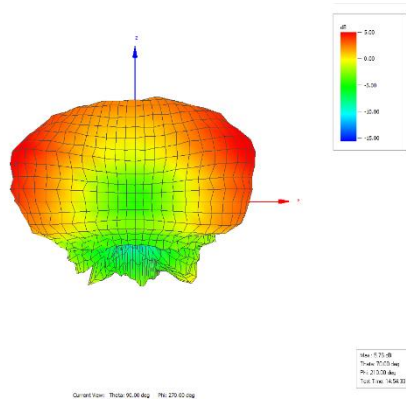
4.3.3. Antenna Pattern @6525MHz

Frequency (MHz)	Peak Gain		
	Horizontal (Theta) (dBi)	Vertical (Phi) (dBi)	Total (dBi)
6525	3.37	-0.46	4.88

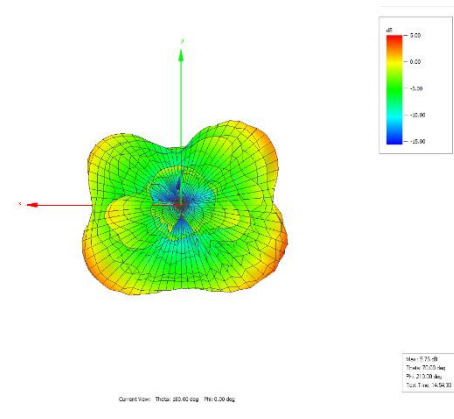
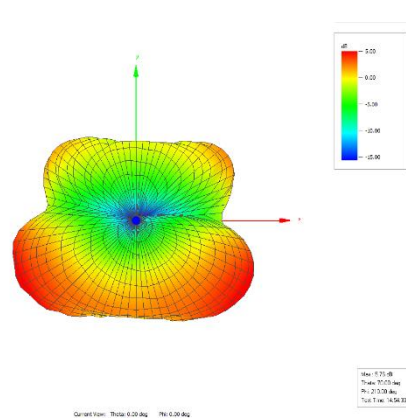
Front **Back**



Left **Right**



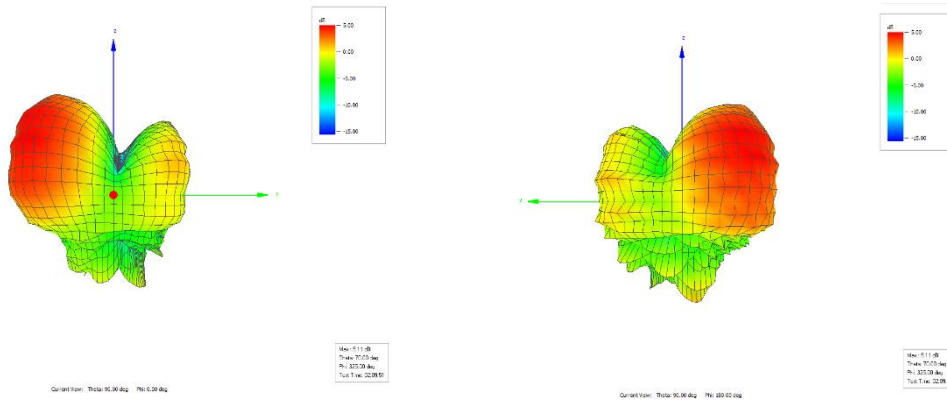
Top **Bottom**



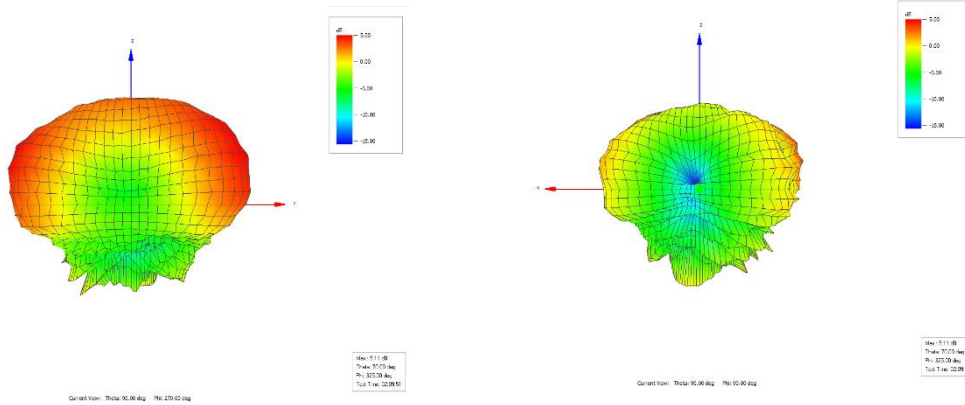
4.3.4. Antenna Pattern @6875MHz

Frequency (MHz)	Peak Gain		
	Horizontal (Theta) (dBi)	Vertical (Phi) (dBi)	Total (dBi)
6875	3.03	0.53	4.96

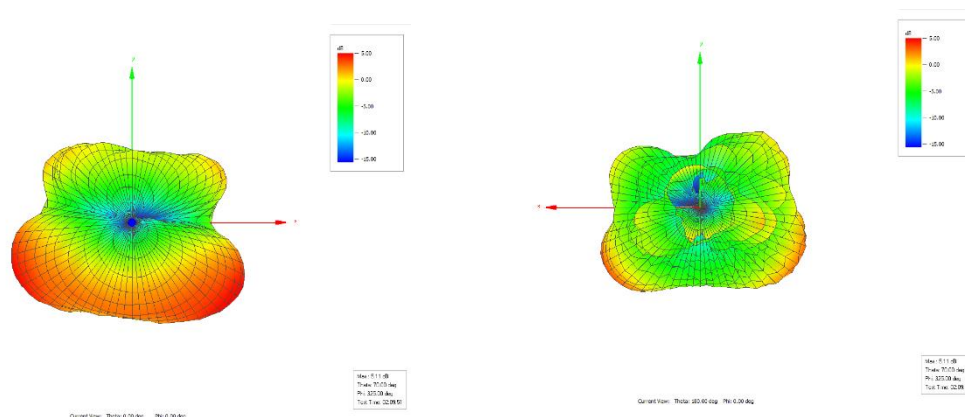
Front **Back**



Left **Right**



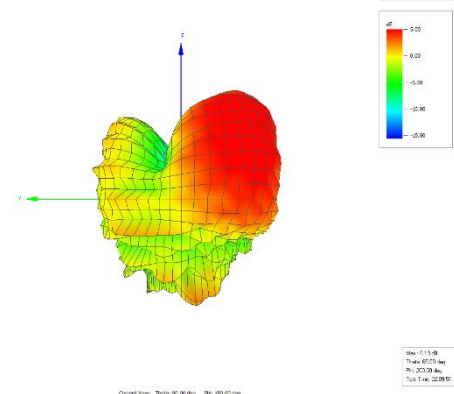
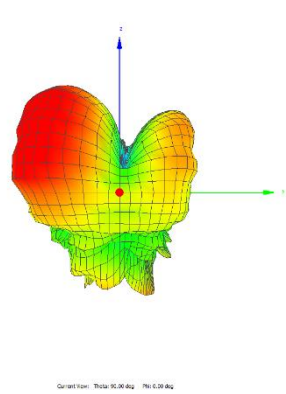
Top **Bottom**



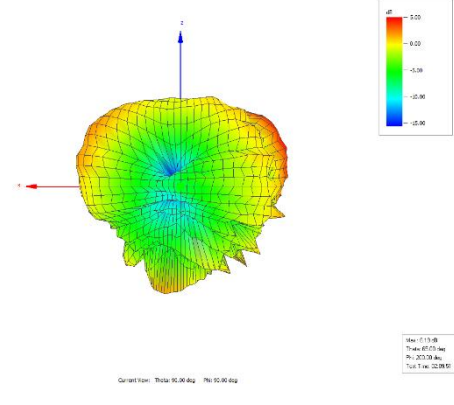
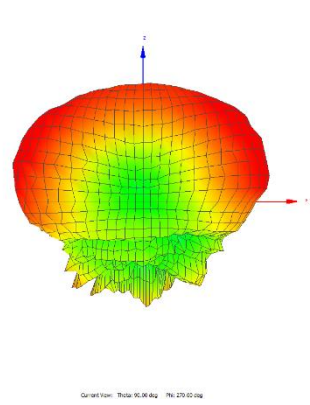
4.3.5. Antenna Pattern @7125MHz

Frequency (MHz)	Peak Gain		
	Horizontal (Theta) (dBi)	Vertical (Phi) (dBi)	Total (dBi)
7125	4.38	-4.02	4.96

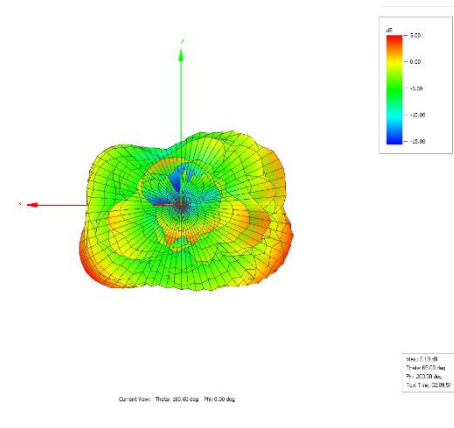
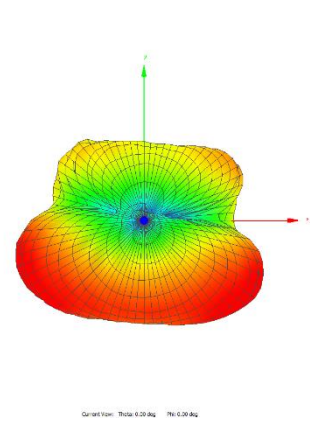
Front **Back**



Left **Right**



Top **Bottom**



5. VSWR

