Antenna Test Report

Report No.: TEOT2302000057E4

Applicant Name: Sony Corporation
Manufacturer Name: Sony Corporation

Product Name: GSM/WCDMA/LTE Phone with BT, DTS/UNII A/B/G/N/AC/AX, GPS, WPT & NFC

FCC ID: PY7-83376C

Measurements performed at
SGS Taiwan Ltd.
Hwaya District, Taiwan

Issued Date: February 08, 2023

	Name	Date & Signature
Prepared by:	Nandi Chen Sr. Engineer	Nandi Chen February 08, 2023
Approved by:	Shawn Yen Supervisor	Shawn Yen February 08, 2023

Distribution

Measurement System Information

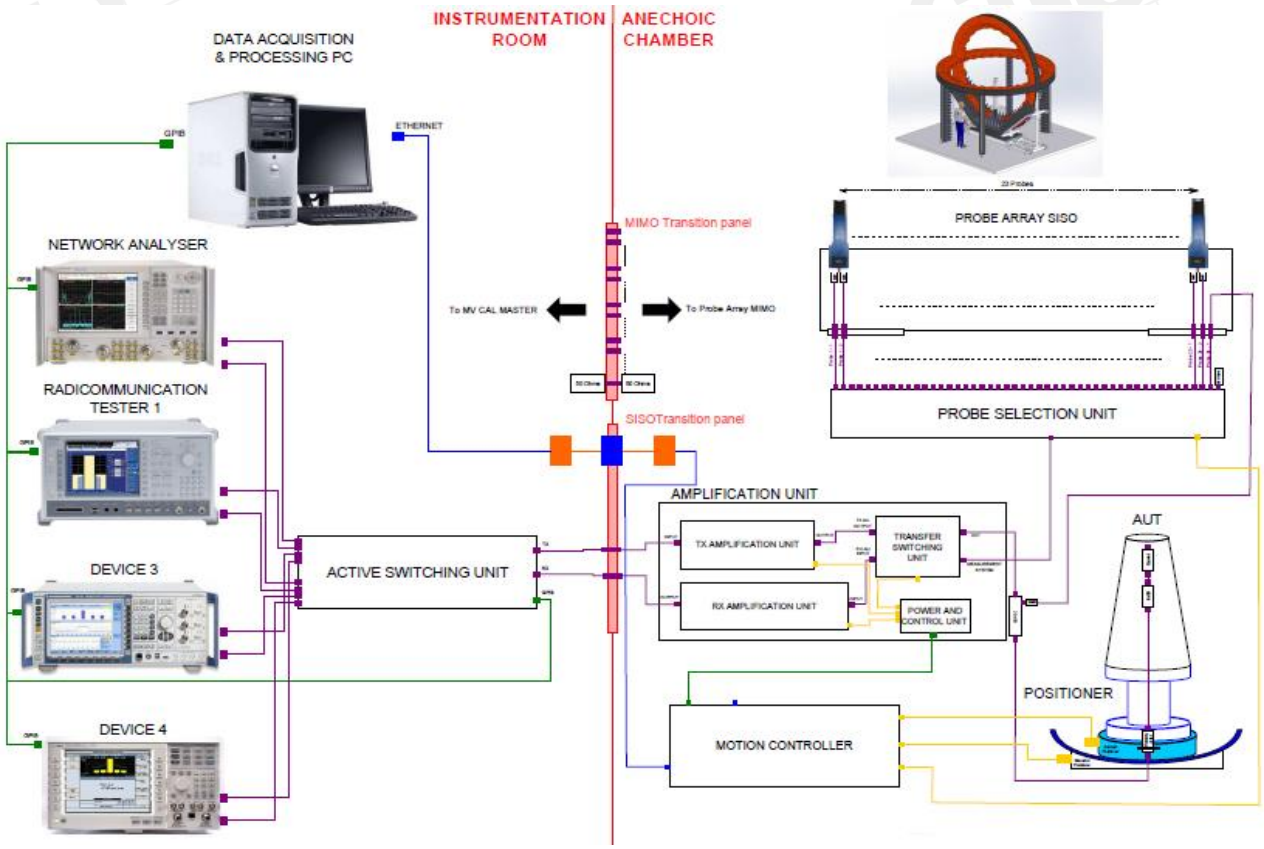
General Information

Testing Condition:

- Temperature: 22±3˚C
- Humidity: <80%

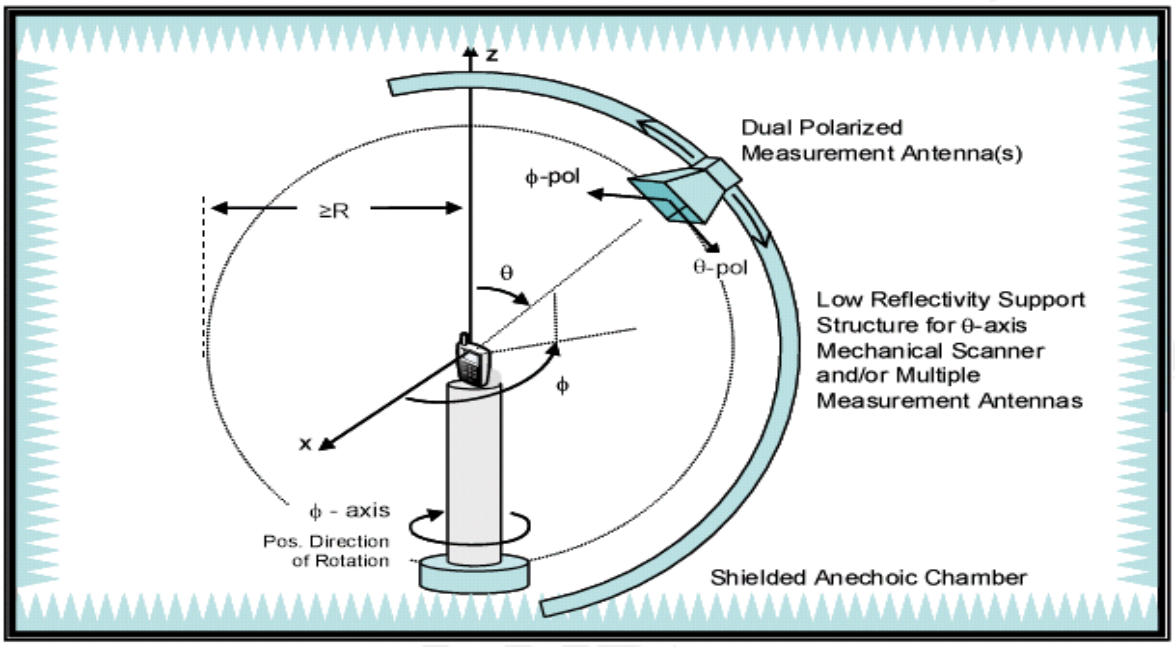
Measurement Facility:

- Measurement Chamber: MVG 3D fully anechoic chamber and its measuring system (Stargate-24-L)
- Base Station Simulator: Anritsu MT8820C (or R&S CMU200)
- Network Analyzer: Agilent E5071C



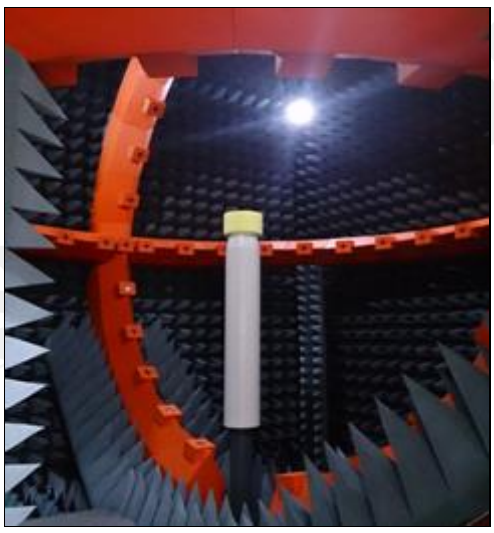
Measurements are performed in a MVG **Stargate-24-L** with the StarAct interface for a base station simulator. The **Stargate-24-L** has 23 probe antennas mounted with equal spacing on a circular arch. Electronic switching of the probe antennas provides outstanding measurement speed. The geometry of the setup, with only a Styrofoam column within 1.6 meters of the EUT, ensures minimum interference and low ripple on the measured radiation patterns. The DUT is placed on top of the pedestal, in the center of the system.

Typical Setup for MVG Stargate-24-L:



Instruments View

Inside View



Testing Laboratory: Identification of the Responsible Test Laboratory.

- **OTA Laboratory:**
  SGS Taiwan Ltd. Wireless Laboratory
  No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803.
  Telephone: +886 2 2299 3279
  Fax: +886 2 2298 0488
  Internet: http://www.tw.sgs.com

- **Testing Location:**
  No. 2, Keji 1st Rd., Hwaya Technology Park, Guishan District, Taoyuan City, Taiwan 33383.

Details of Applicant:

Applicant's name:	**Sony Corporation**
Applicant's address:	**1-7-1 Konan Minato-ku, Tokyo, 108-0075, Japan**

Details of Manufacturer:

Applicant's name:	**Sony Corporation**
Applicant's address:	**1-7-1 Konan Minato-ku, Tokyo, 108-0075, Japan**

Details of EUT:

Device Description:	**GSM/WCDMA/LTE Phone with BT, DTS/UNII A/B/G/N/AC/AX, GPS, WPT & NFC**
Device Manufacturer:	**Sony Corporation**
Device Model:	**PY7-83376C**
Frequency Range:	**2402MHz ~ 5850MHz**
Antenna Type:	**Internal**

Duration of Tests:

Sample Receive Date:	**2022-12-30**
Test Starting Date:	**2022-12-30**
Test Ending Date:	**2023-01-07**
Report Issued Date:	**2023-02-08**

List of Equipment

Equipment Summary Sheet

Equipment Description	Manufacturer	Identification no.	S/N	Current calibration date	Next calibration date
Network Analyzer	Agilent	E5071C	MY46100433	2022/01/12	2023/01/11
Sleeve Dipole	MVG	SD740	SD740-07	2022/01/07	2025/01/06
Dual Ridge Horn	MVG	SH800	S0051	2022/11/25	2023/11/24
Stargate-24-L probe array	MVG	Stargate-24-L	MVG	2022/08/26	2023/08/25
Measurement software	MVG	SPM V1.9	N/A	N/A	N/A

Test Results

WiFi Main Antenna
Antenna Gain and Efficiency

Freq(MHz)	Peak Gain (dBi)	Efficiency
2402	-1.86	18.91%
2441	-0.43	24.57%
2480	-0.77	23.48%
5240	-0.45	13.32%
5600	0.37	22.09%
5800	0.00	24.19%

Maximum Gain

- **2402 MHz – 2480 MHz: -0.43 dBi**
- **5180 MHz – 5320 MHz: -0.29 dBi**
- **5500 MHz – 5720 MHz: 0.53 dBi**
- **5725 MHz – 5850 MHz: 0.38 dBi**

WiFi Sub Antenna
Gain and Efficiency

Freq(MHz)	Peak Gain (dBi)	Efficiency
2402	-4.55	10.26%
2441	-4.44	10.45%
2480	-5.15	9.11%
5240	-0.57	16.58%
5600	-2.42	10.00%
5800	-3.92	7.14%

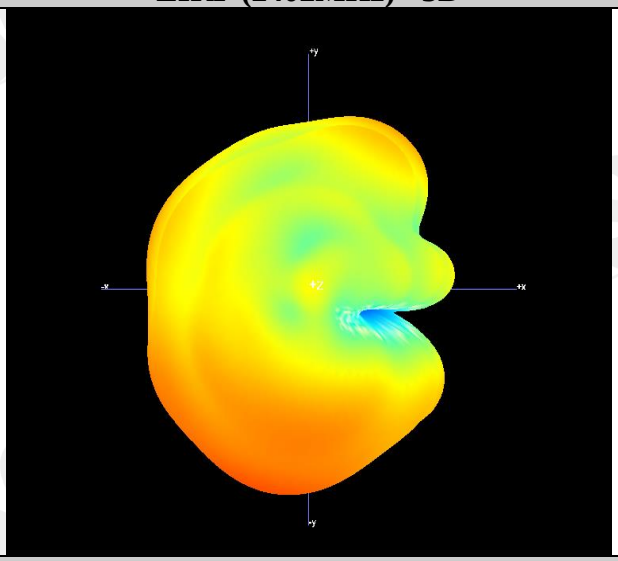
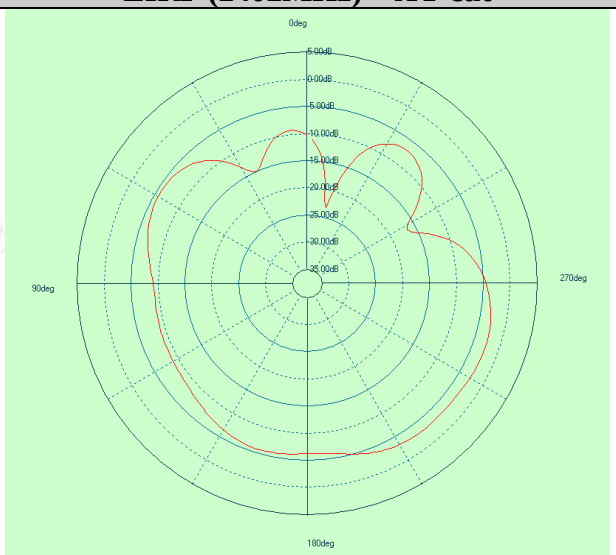
Maximum Gain

- **2402 MHz – 2480 MHz: -4.44 dBi**
- **5180 MHz – 5320 MHz: 0.61 dBi**
- **5500 MHz – 5720 MHz: -0.43 dBi**
- **5725 MHz – 5850 MHz: -3.72 dBi**

Antenna 3D Plot Matrix

All plots in this section show the total EIRP (EIRPθ + EIRPφ) with the +x-axis pointing right, +y-axis pointing up, and +z-axis pointing out of the page.

WiFi Main Antenna

Free Space EIRP (2402MHz) - 3D	Free Space EIRP (2402MHz) – XY cut
	
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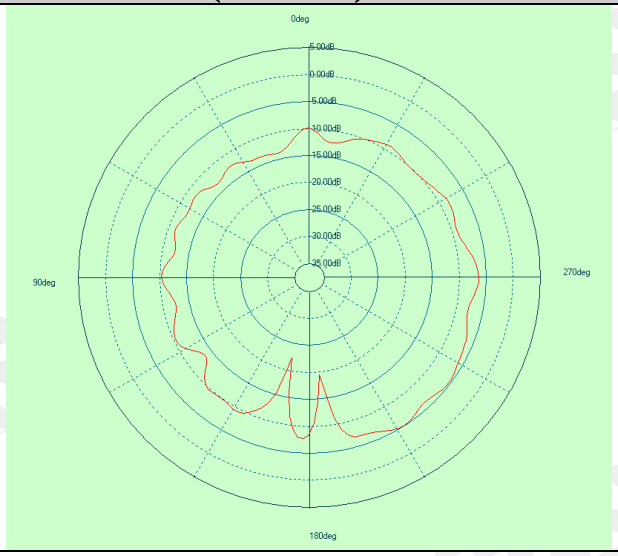
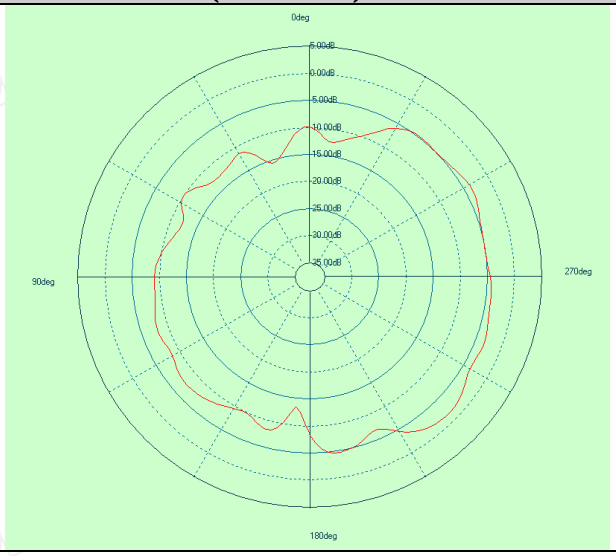
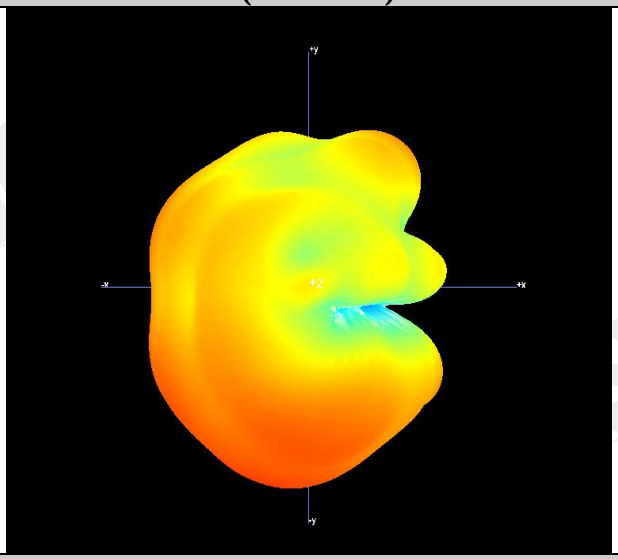
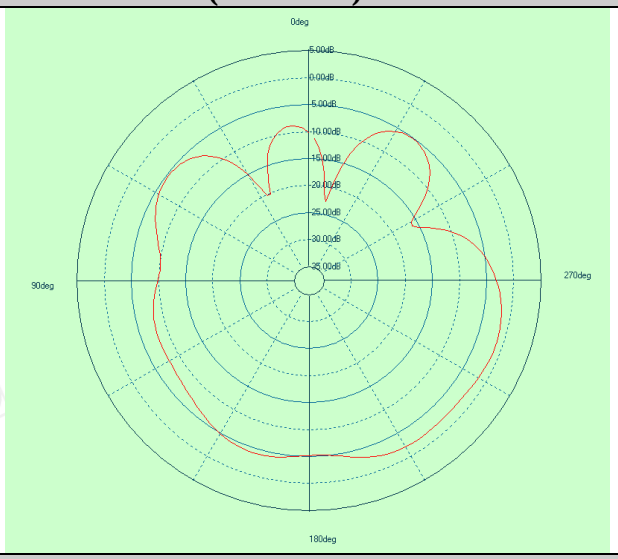
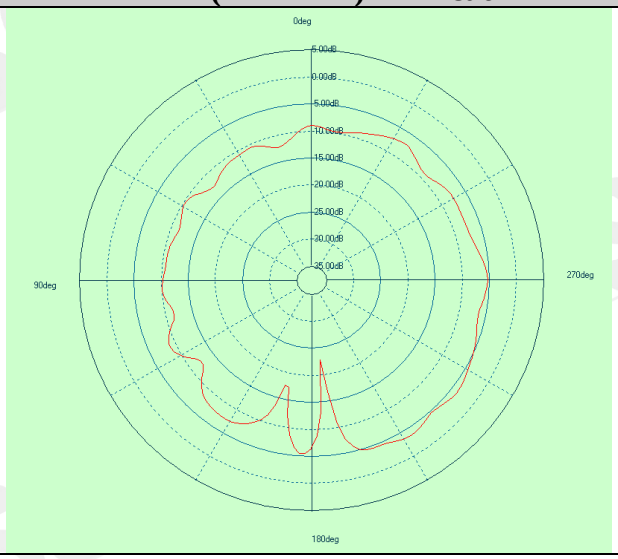
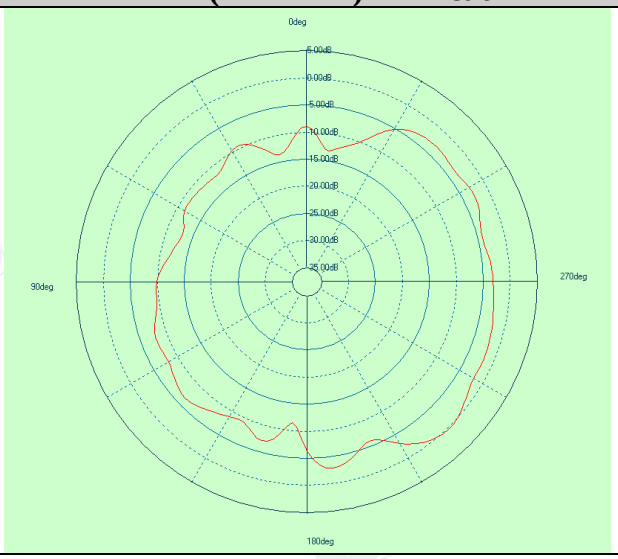
	

Free Space EIRP (2441MHz) - 3D	Free Space EIRP (2441MHz) – XY cut
	
Free Space EIRP (2441MHz) – XZ cut	**Free Space EIRP (2441MHz) – YZ cut**
	

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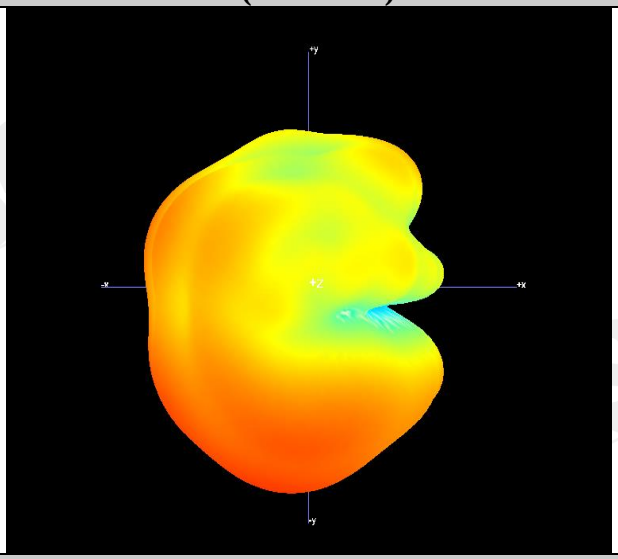
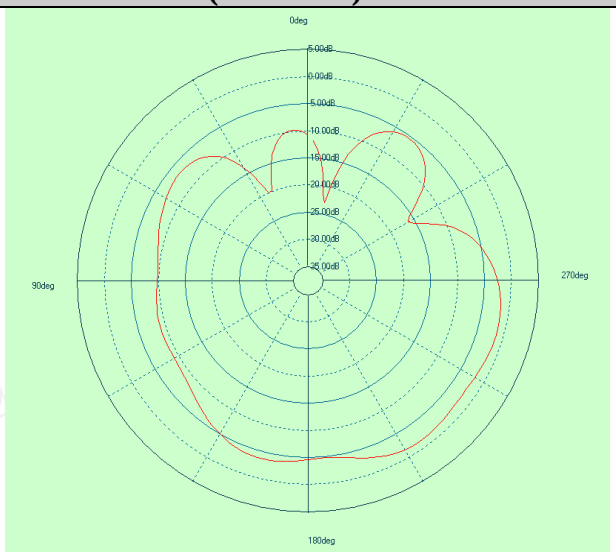
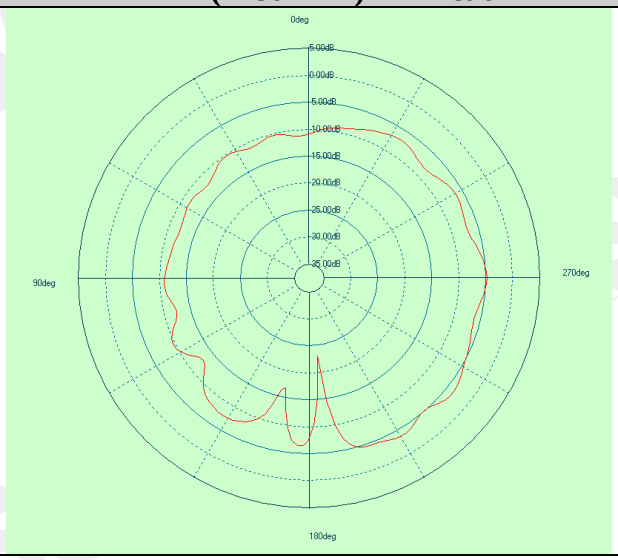
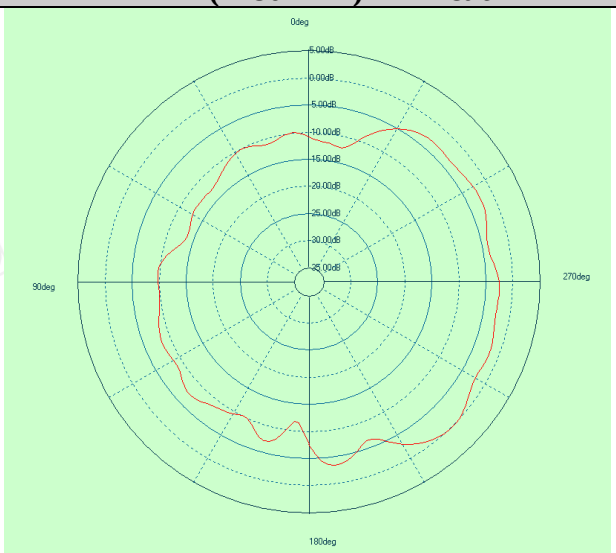
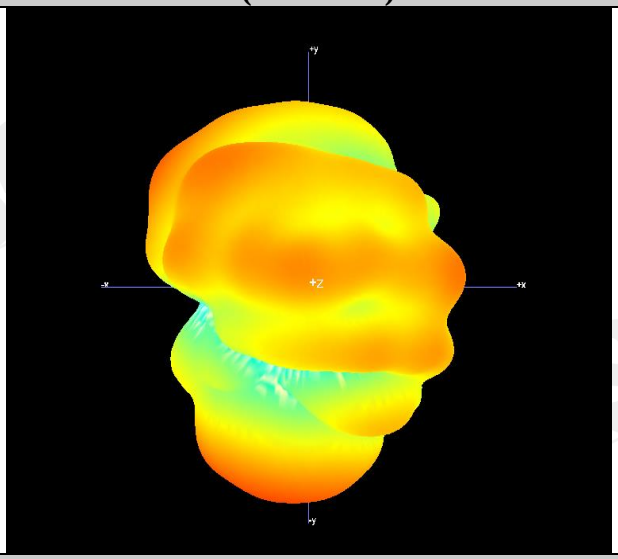
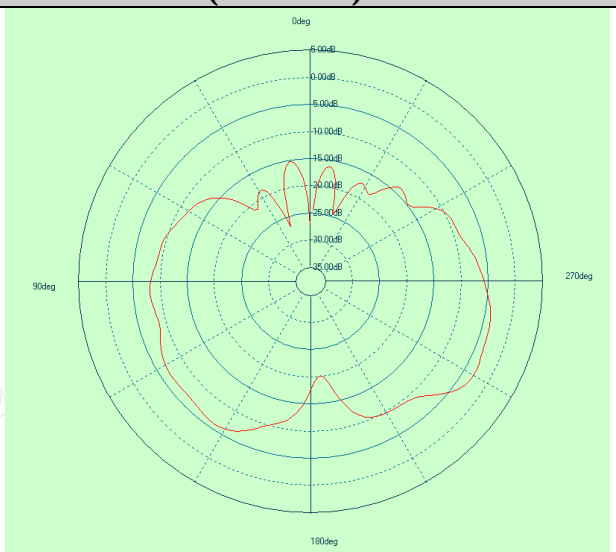
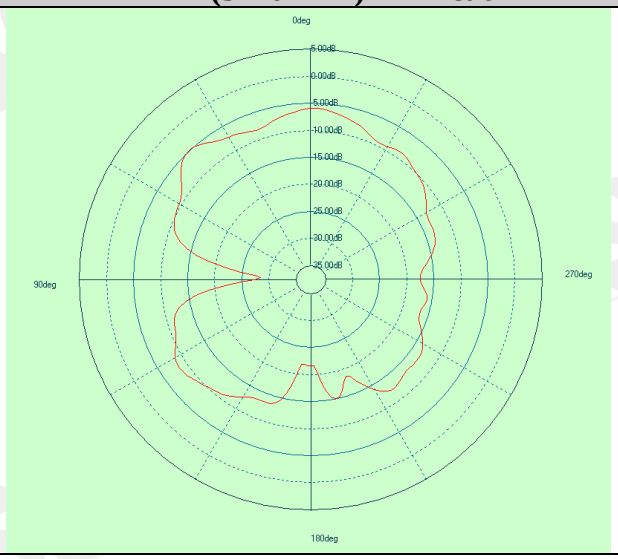
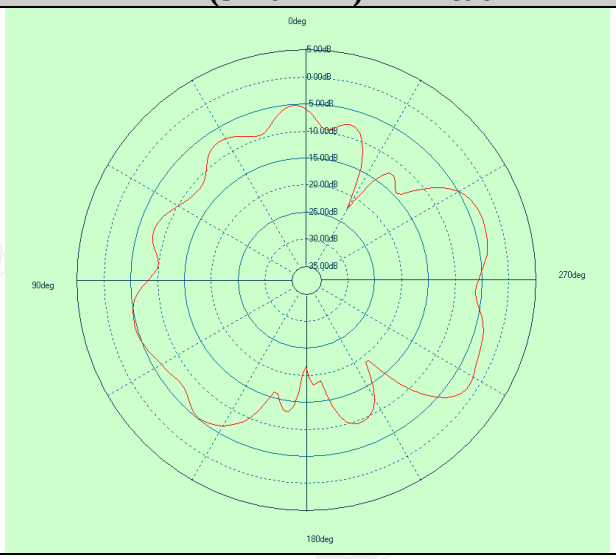
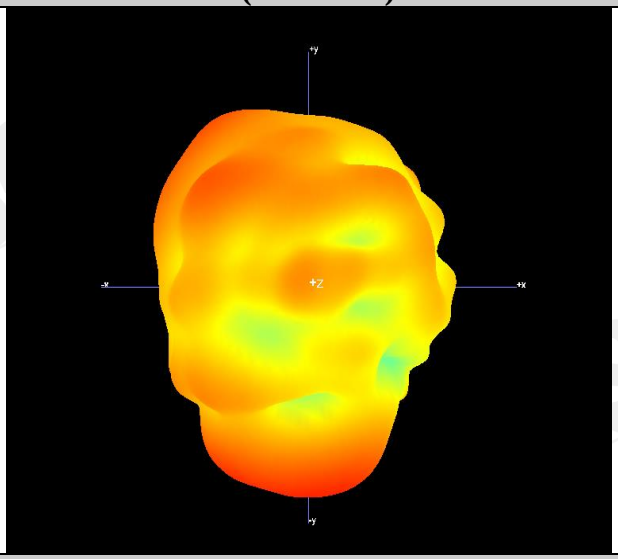
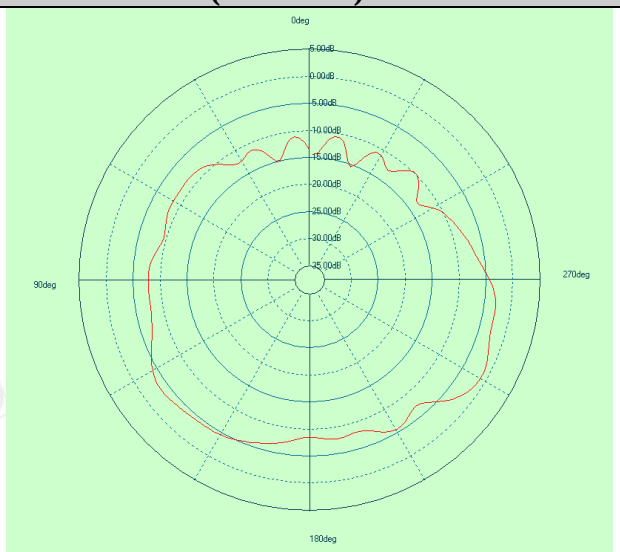
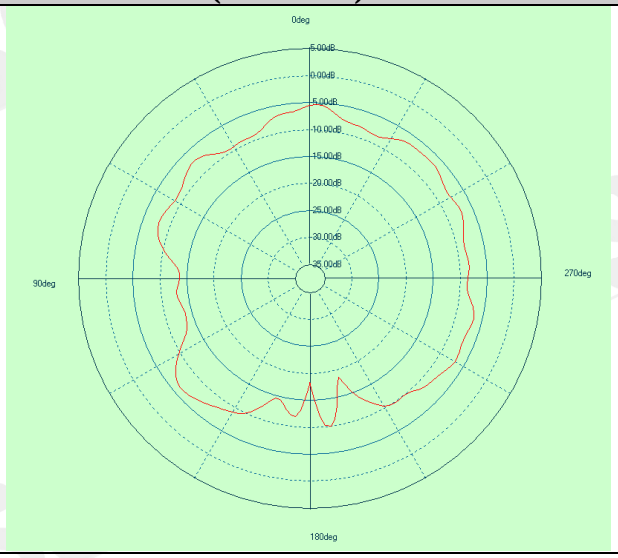
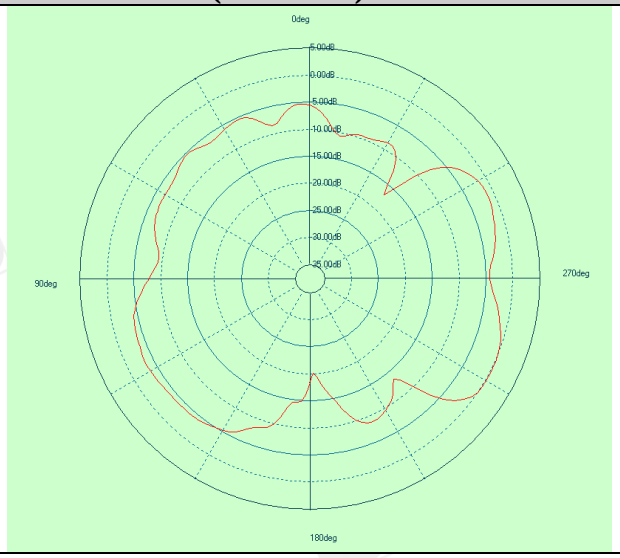
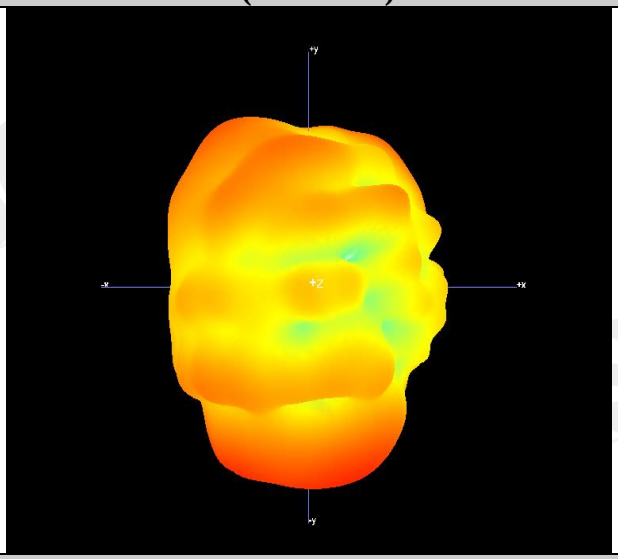
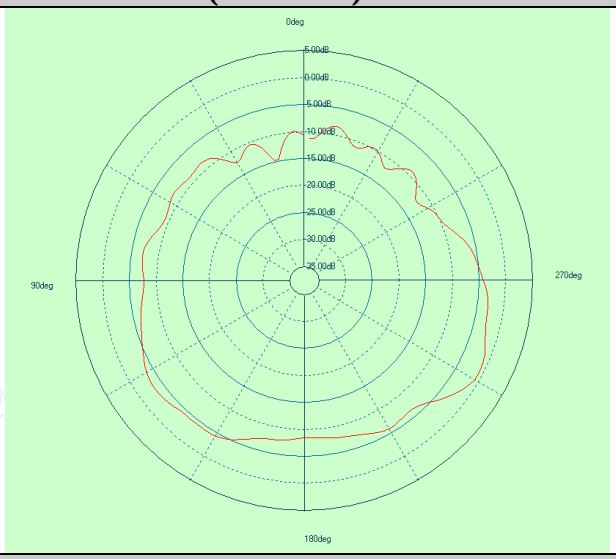
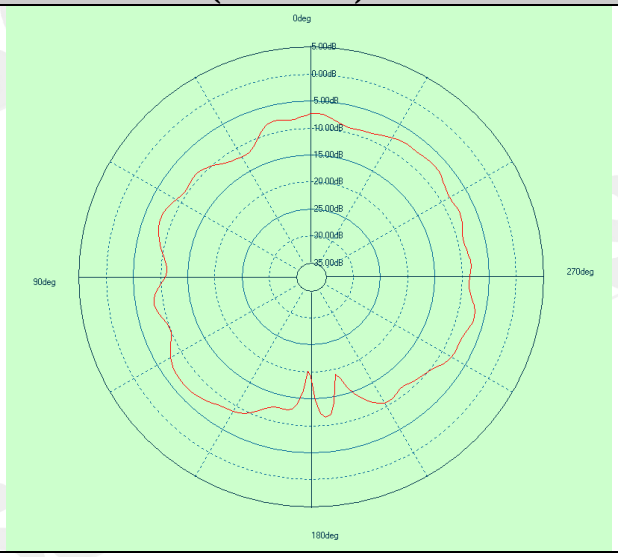
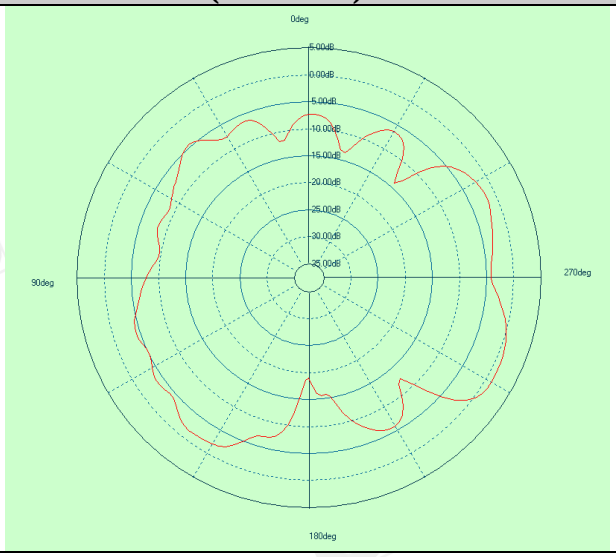
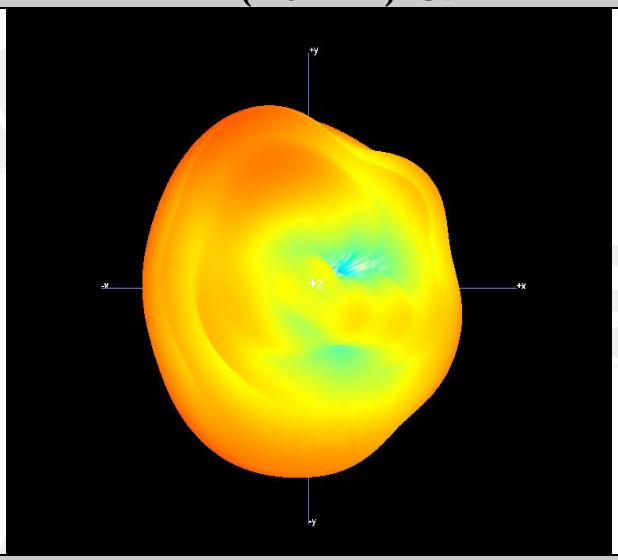
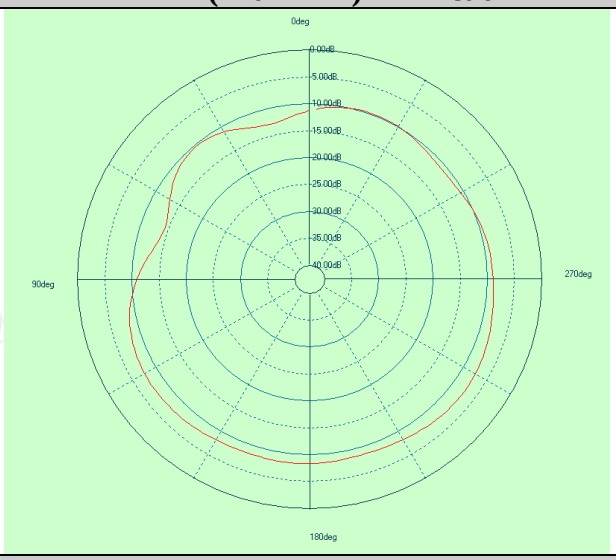
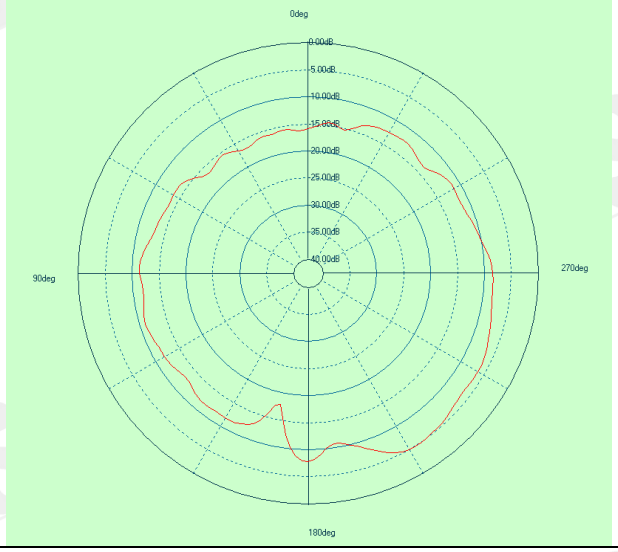
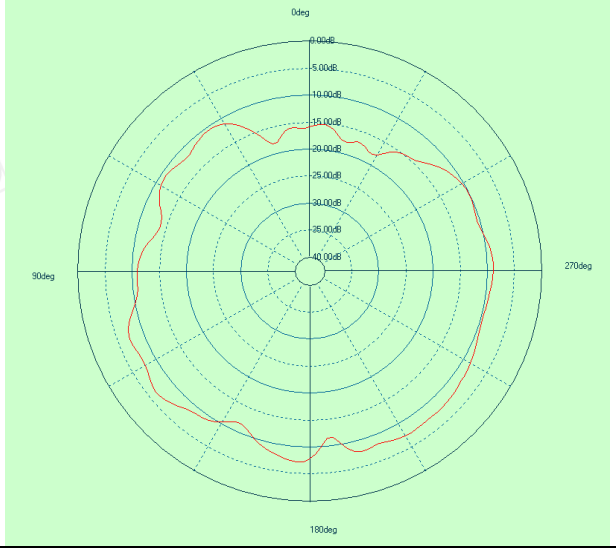
	
Free Space EIRP (2480MHz) – XZ cut	**Free Space EIRP (2480MHz) – YZ cut**
	

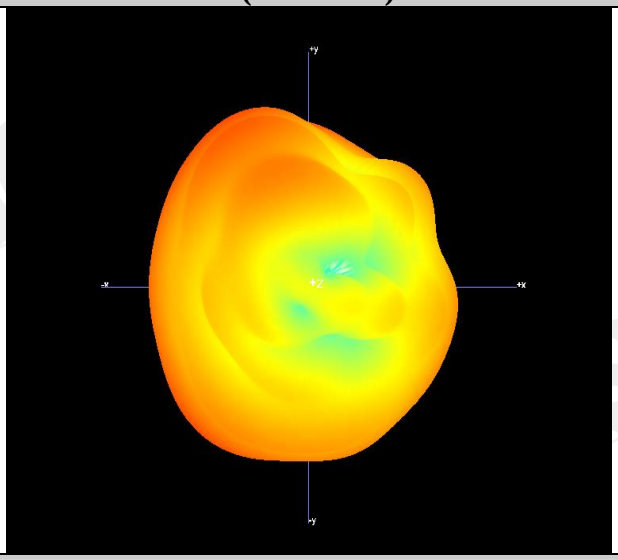
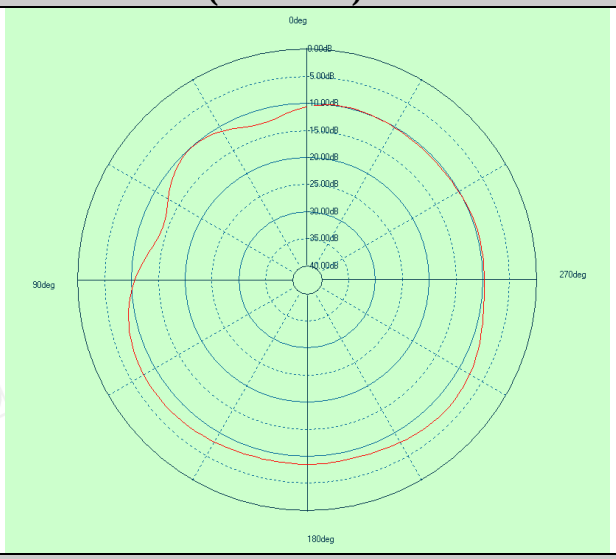
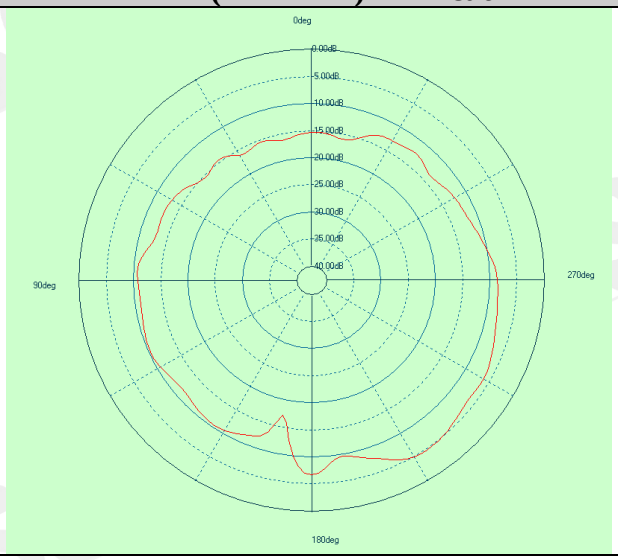
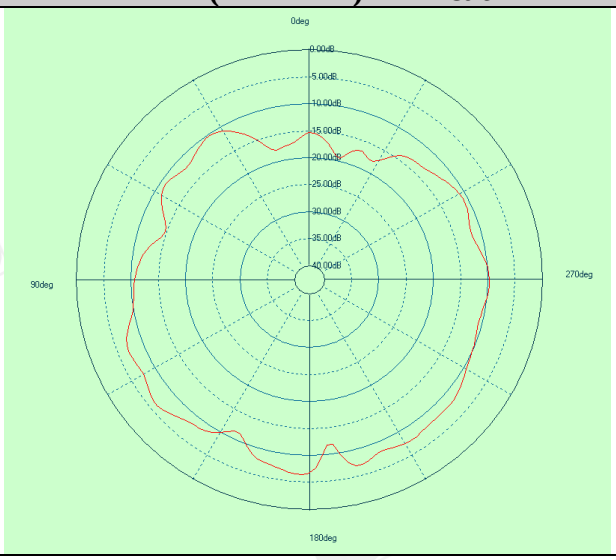
Free Space EIRP (5240MHz) - 3D	Free Space EIRP (5240MHz) – XY cut
	
Free Space EIRP (5240MHz) – XZ cut	**Free Space EIRP (5240MHz) – YZ cut**
	

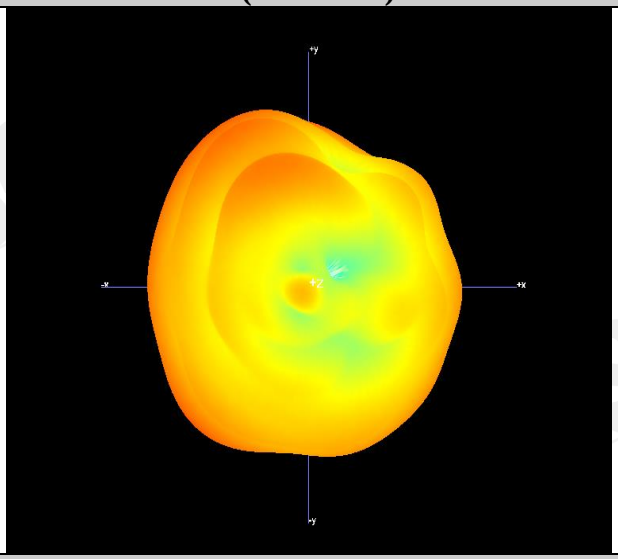
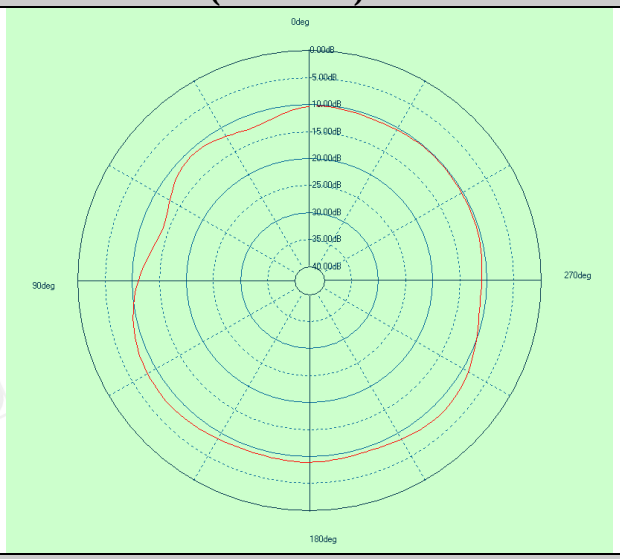
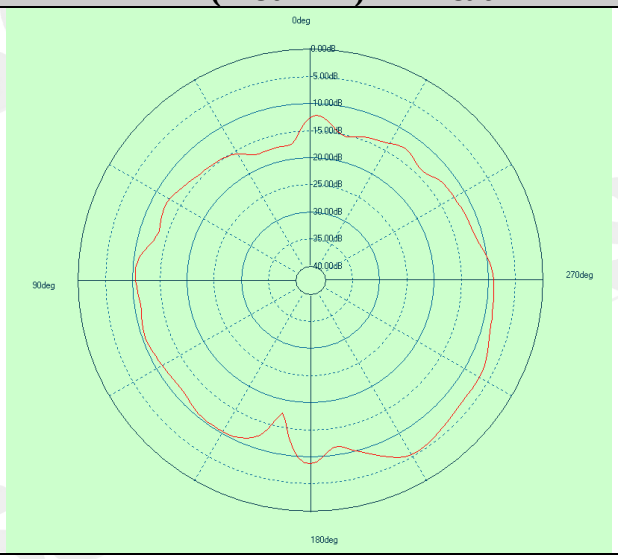
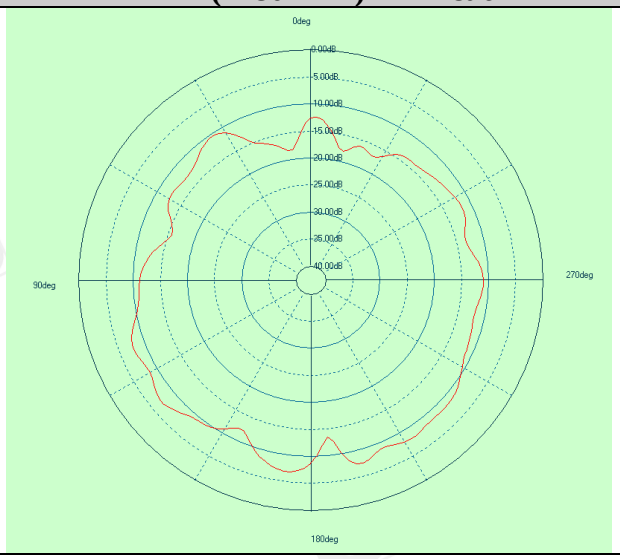
Free Space EIRP (5600MHz) - 3D	Free Space EIRP (5600MHz) – XY cut
	
Free Space EIRP (5600MHz) – XZ cut	**Free Space EIRP (5600MHz) – YZ cut**
	

Free Space EIRP (5800MHz) - 3D	Free Space EIRP (5800MHz) – XY cut
	
Free Space EIRP (5800MHz) – XZ cut	**Free Space EIRP (5800MHz) – YZ cut**
	

WiFi Sub Antenna

Free Space EIRP (2402MHz) - 3D	Free Space EIRP (2402MHz) – XY cut
	
Free Space EIRP (2402MHz) – XZ cut	**Free Space EIRP (2402MHz) – YZ cut**
	

Free Space EIRP (2441MHz) - 3D	Free Space EIRP (2441MHz) – XY cut
	
Free Space EIRP (2441MHz) – XZ cut	**Free Space EIRP (2441MHz) – YZ cut**
	

Free Space EIRP (2480MHz) - 3D	Free Space EIRP (2480MHz) – XY cut
	
Free Space EIRP (2480MHz) – XZ cut	**Free Space EIRP (2480MHz) – YZ cut**
	

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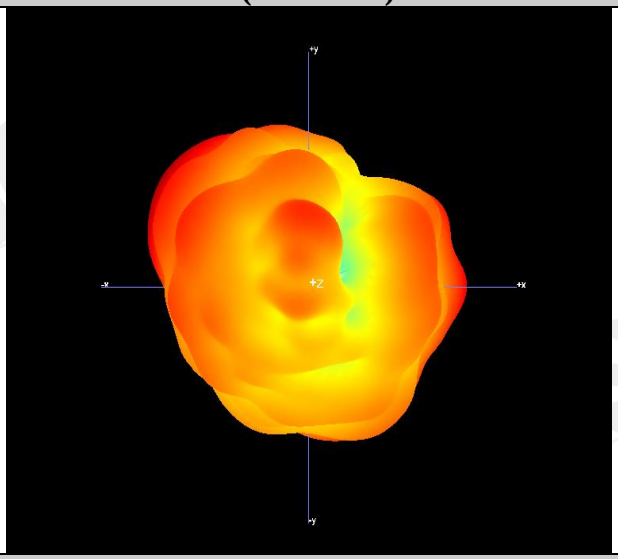
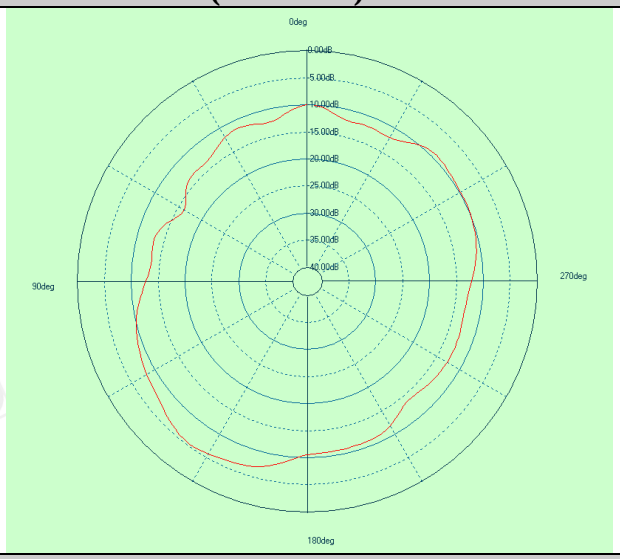
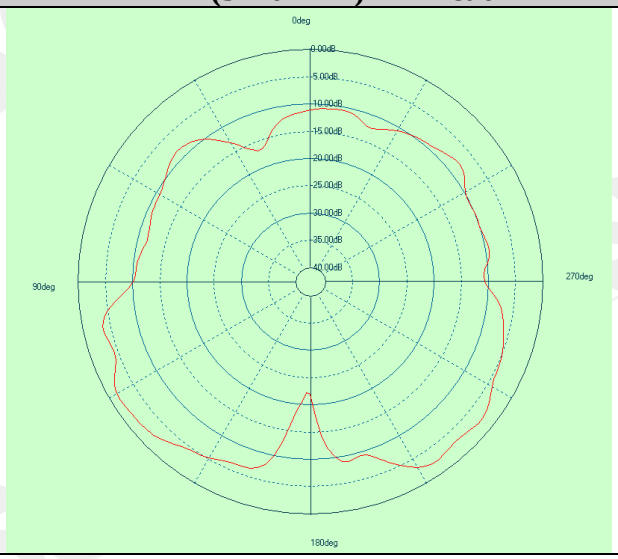
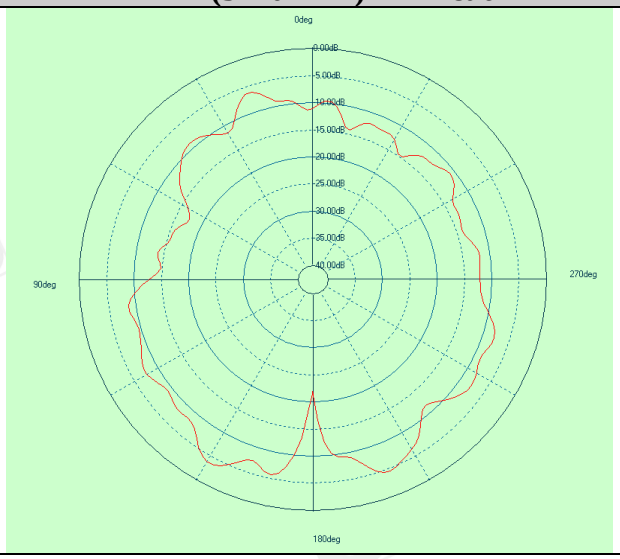
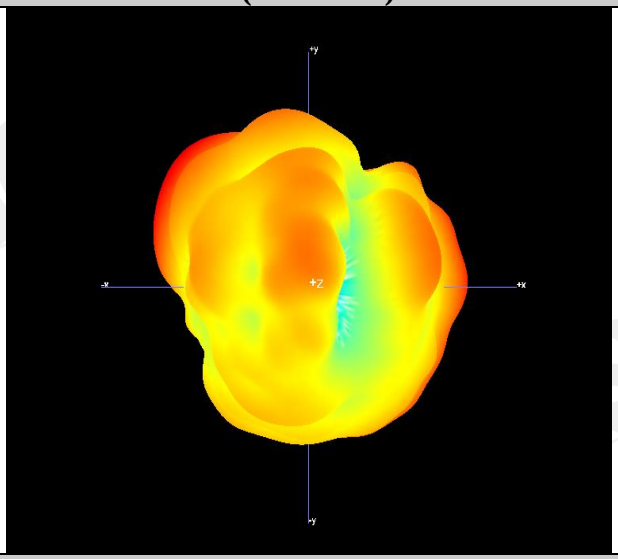
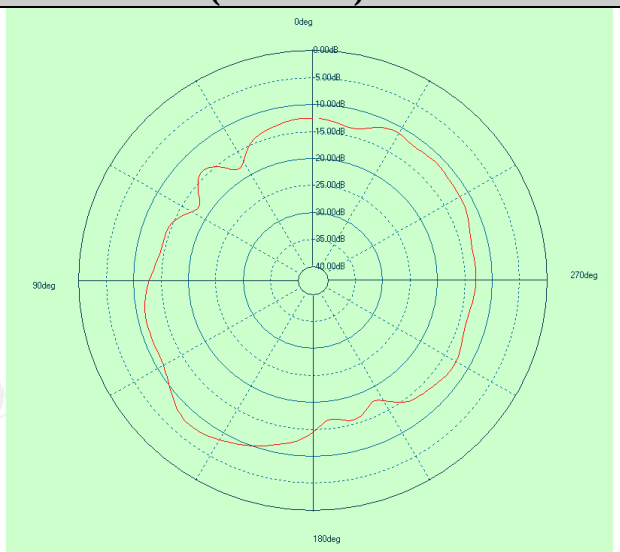
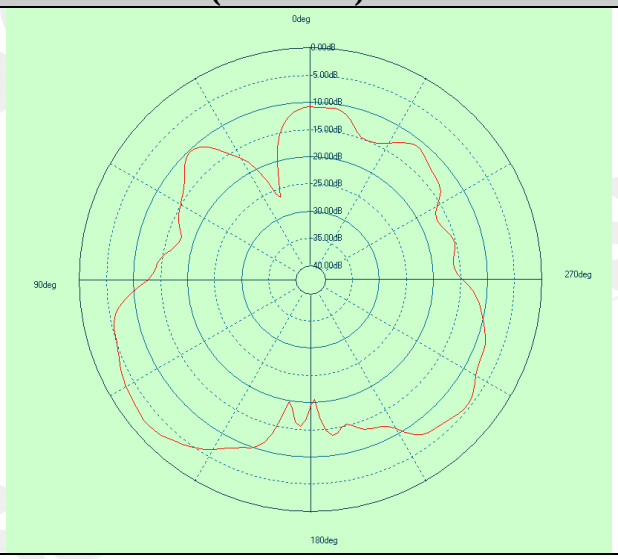
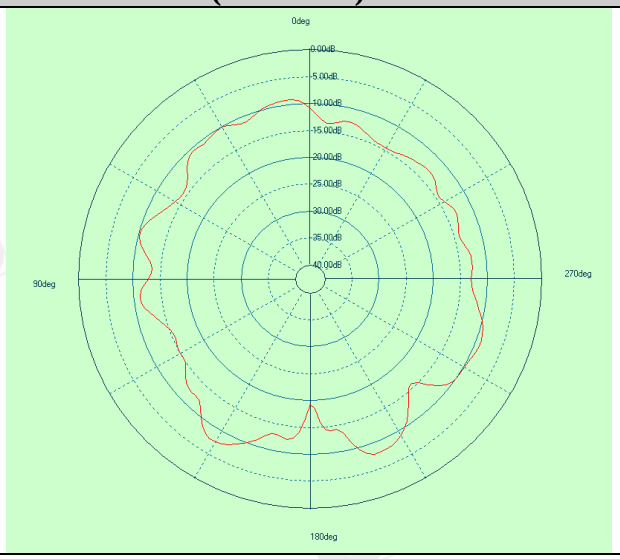
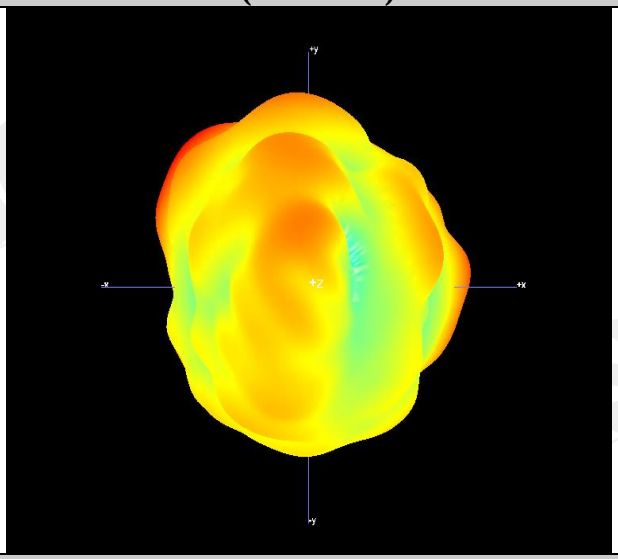
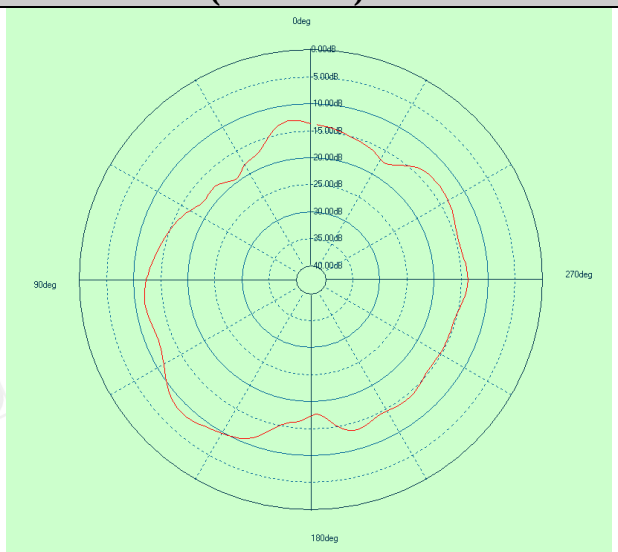
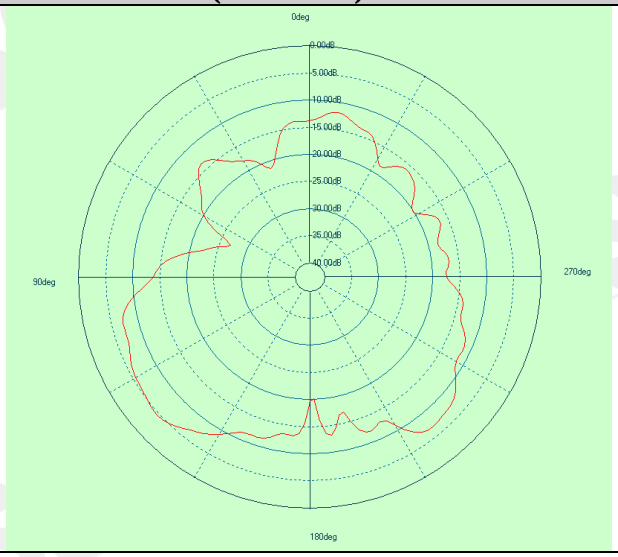
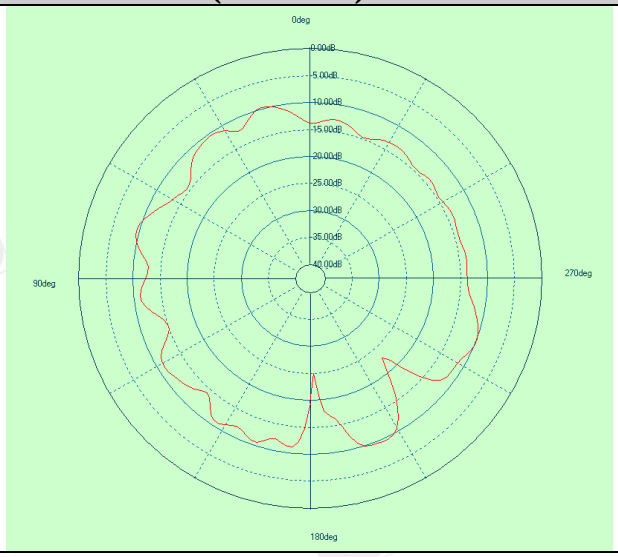
	
Free Space EIRP (5240MHz) – XZ cut	**Free Space EIRP (5240MHz) – YZ cut**
	

Free Space EIRP (5600MHz) - 3D	Free Space EIRP (5600MHz) – XY cut
	
Free Space EIRP (5600MHz) – XZ cut	**Free Space EIRP (5600MHz) – YZ cut**
	

Free Space EIRP (5800MHz) - 3D	Free Space EIRP (5800MHz) – XY cut
	
Free Space EIRP (5800MHz) – XZ cut	**Free Space EIRP (5800MHz) – YZ cut**
	

End of Report