MOTREX

REV : 01

Date : 2023. 08. 23.

Approval

Approval Report

PRODUCT SPECIFICATION

Product Name : **BT/WIFI PIFA Antenna**

MODEL : RS210A

PART No. : ANT2

Prepared	Reviewed	Approved

Motrex.

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Product History

NO	Date	Mark	Changes	Remark
1	2018.10.11	00	Released	
2	2023.08.23	01	Add to Test Equipment Information	
3				
4				
5				
6				
7				

1. General

1.1. The product

Model Name	MTXRSE200
Antenna Type	PIFA
Applications	WIFI Antenna

1.2 Electrical Properties

Frequency Range(TX/RX)	2400 ~ 2483MHz, 5150 ~ 5250MHz, 5250 ~ 5350MHz, 5470 ~ 5472MHz, 5725 ~ 5875MHz
Impedance	50ohm ± Normal
VSWR	Less Than 2.2:1
Radiation Pattern	Omni-directional
Polarization	Linear

1.3. Mechanical Properties

Dimension	See page 12
Operational Temperature	-30℃ ~ +85℃
Connector Type	PCB Pattern

2. Electrical Properties

2.1.Prequency Band

Band / Freq	WIFI
TX/RX(MHz)	2400 ~ 2483MHz, 5150 ~ 5250MHz, 5250 ~ 5350MHz, 5470 ~ 5472MHz, 5725 ~ 5875MHz
Band / Freq	Bluetooth
TX/RX(MHz)	2400 ~ 2483 MHz

2.2. Impedance

2.2.1. Normal Value

50Ω ± Normal

2.2.2. Measuring Method

The impedance over the frequency bands shall be as close as possible to 50Ω after matching. Both free space and talk position are considered.

2.3.VSWR

The impedance matching should be optimized in the more critical talk position.

2.3.1.Maximum values in free space

Service	WIFI/Bluetooth
	TX/RX
VXWR	2:1

2.3.2.Measuring Method

A 50Ω coaxial cable is connected(soldered) to the 50Ω point, at the duplexfilter on the main PCB. The connection of the coaxial cable shall be done to introduce a minimum of mismatch. As much as possible the coaxial cable arrangement shall prevent influences from induced currents on the cable.

In the other end, the coaxial cable is connected to a network analyzer. The measurement is performed at room temperature. The handset, including the PCB, must not in any significant way differ from the mass production, i.e. the antenna feeding network has to be equivalent to the feeding network in mass production.

The specification shall be met in the entire frequency band. has been put free-fall into effect from height

2.4. Gain(dBi)

2.4.1 Method

The connection is done according to 2.3.2. Radiation patterns are measured at 3 different Plane.

The antenna measured according to the figure 1 below.

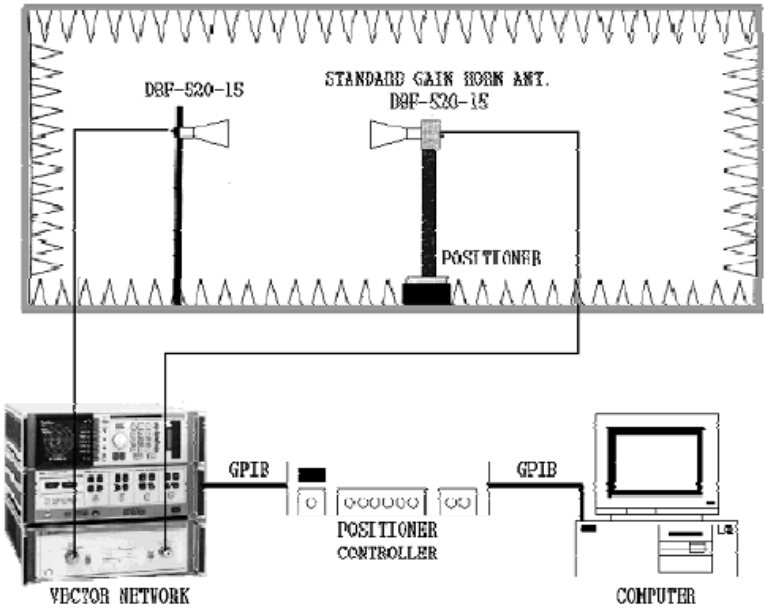


figure 1

*** Test Equipment List**

Description	Manufacturer	Model	S/N	Cal Due
Network Analyzer	HEWLETT PACKARD	H/P 8753E	US37390102	2022.11.01

2.4.2 Typical values in maximum direction

2.4.2.1 Passive Gain

Freq	Peak Gain[dBi]			
	3D	H	E1	E2
2400	0.92			
2440	0.56			
2483	-3.19			
5150	-4.25			
5200	-3.68			
5250	-3.19			
5300	-1.92			
5350	-1.88			
5470	-2.63			
5472	-2.86			
5725	-2.4			
5800	-2.6			
5875	-1.11			

3. Mechanical Test

3.1 Drop Test)

3.1.1 Test Condition

- Drop Height =1.0m
- Antenna Angle = 180°
- Free Drop / Front&Rear&Left&Right 3 cycles

3.1.2 Measuring Method

This drop test has been put free-fall into effect from height of 1.0m

on to a concrete plate surface (400x400x30 mm) for 3cycles.

(used the same sample during the test)

After the test same as above method, the antenna must have no defect or change for appearance.

4. Environment Feature

4.1 Operational Temperature

4.1.1. Low Operational Temperature

TLO = -20℃

4.1.2 High Operational Temperature

THO = +70℃

4.1.3 Demands

No visual deterioration shall occur, and the antenna shall satisfy the electrical demands, according to 2.4.1, during the test.

4.1.4 Measuring Method

The antenna is placed in a climatic chamber at temperature TLO.

The antenna is taken out after 1hour, and VSWR is immediately measured.

The antenna is placed in a climatic chamber at temperature THO.

The antenna is taken out after 1hour, and VSWR is immediately measured.

Within 10 minutes after test, should be removed the salt on streaming water and completely dried at normal temperature for 1 hours at least, then must have no changes of performance and appearance.

4.2 Temperature Cycling

4.2.1 Low Cycling Temperature

TLC = -40°C

4.2.2 High Cycling Temperature

THC = +80°C

4.2.3 Demands

No visual deterioration shall occur during the test. The antenna shall satisfy the electrical demands, according to 2.4.1.

4.2.4 Measuring Method

The antenna is placed in a climatic chamber. The temperature is cycled as follows : The temperature is kept constantly at TLC for 1hour, increased to THC during 1hour, kept constantly at THC for 1hour, and then decreased to TLC during 1hour.

This procedure is repeated 10 times, ending at room temperature according to figure 3 below.

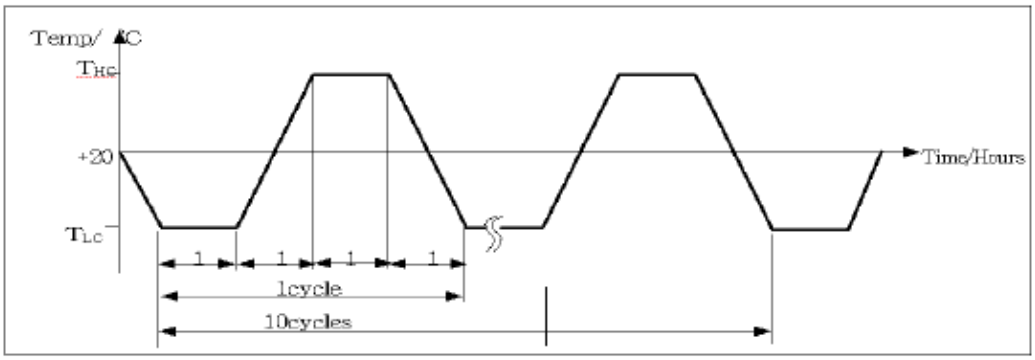


Figure 3. Temperature Cycling

4.3 Humidity

4.3.1 Relative Humidity

95%

4.3.2 Temperature

+55°C

4.3.3 Demands

No visual deterioration shall occur during the test. The antenna shall satisfy the electrical demands, according to 2.4.1, after the test.

4.3.4 Measuring Method

4.4 Sinusoidal Vibration

4.4.1 Vibration Frequencies

10-55-10Hz (1cycle)

4.4.2 Sweep Rate

1 octave/min (logarithmic)

4.4.3 Maximum Amplitude

A = 1.52mm

4.4.4 Maxim Acceleration

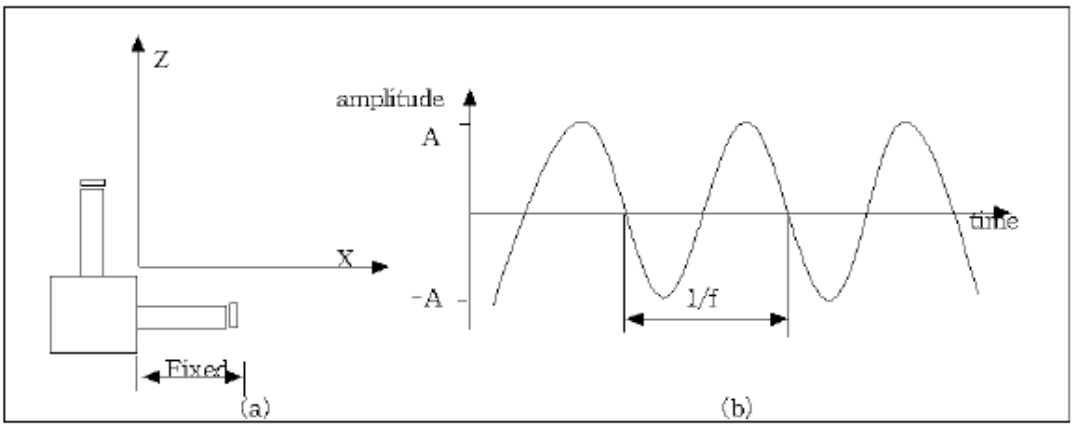
2g

4.4.5 Crossover Frequency

18.2Hz

4.4.7 Measuring Method

The fixed antenna is assembled in the test equipment. The vibration is done both in x-and z-directions, according to figure 4(a), with a duration of 1 hour in each direction.



(a) Vibration directions (b) Vibration form

Figure 4. Sinusoidal Vibrator

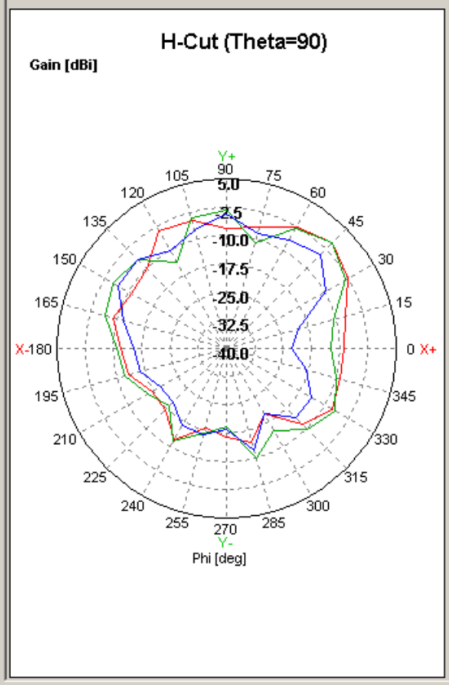
5. Test Data

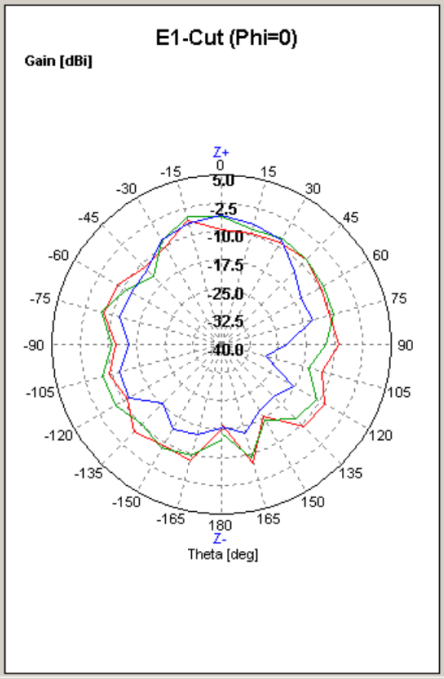
5.1 Chanber Data

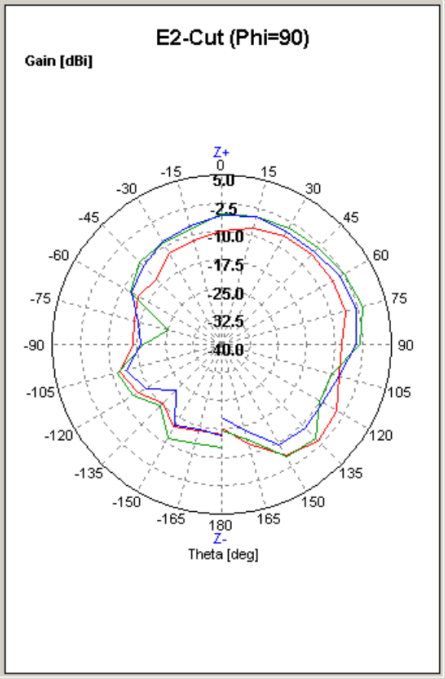
2D SUM (2.4 ~ 2.483G)

Summary | **Multiple Frequency** | Multiple Cut | 3D-View | Reserved

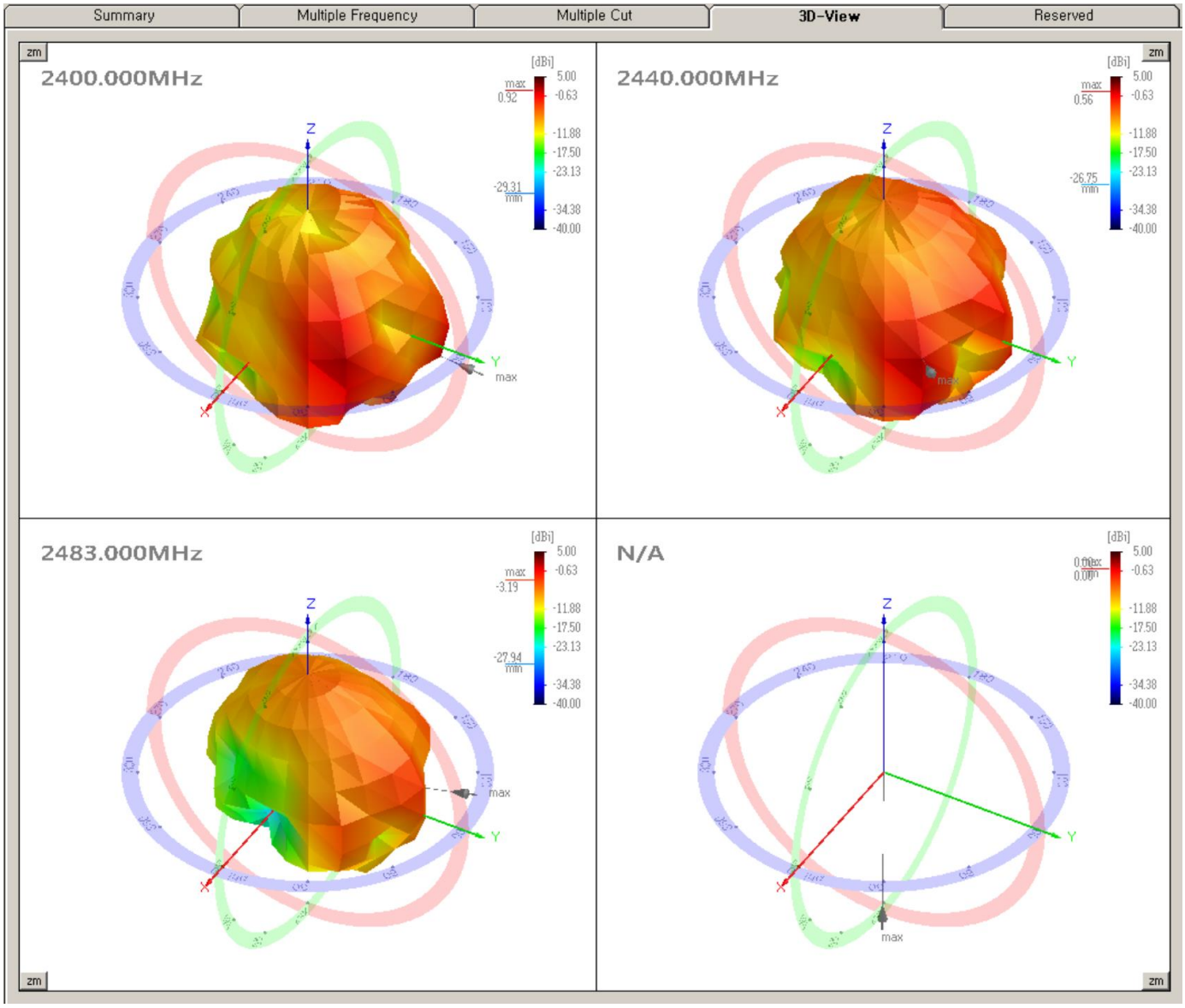
		PwrSum					H(Theta=!				E1(Phi=0)				E2(Phi=90			
No.	Freq.	Eff.[%]	Avg.[dBi]	Peak[dBi]	Theta[(	Phi[deg	Avg.[dBi]	Peak[dBi]	Phi[deg	BW[deg]	Avg.[dBi]	Peak[dBi]	Theta[(	BW[deg]	Avg.[dBi]	Peak[dBi]	Theta[(	BW[deg]
1	2400.000	18.46	-7.34	0.92	120.00	120.00	-7.41	-0.34	45.00	34.26	-9.27	-5.88	-15.00	24.00	-9.00	-3.67	135.00	40.61
5	2440.000	18.39	-7.35	0.56	75.00	45.00	-7.25	-0.11	45.00	26.52	-9.10	-4.77	-15.00	37.87	-6.98	-1.47	75.00	68.64
10	2483.000	9.94	-10.03	-3.19	75.00	90.00	-10.29	-4.42	90.00	25.67	-11.73	-5.82	0.00	64.78	-8.15	-3.19	75.00	102.58



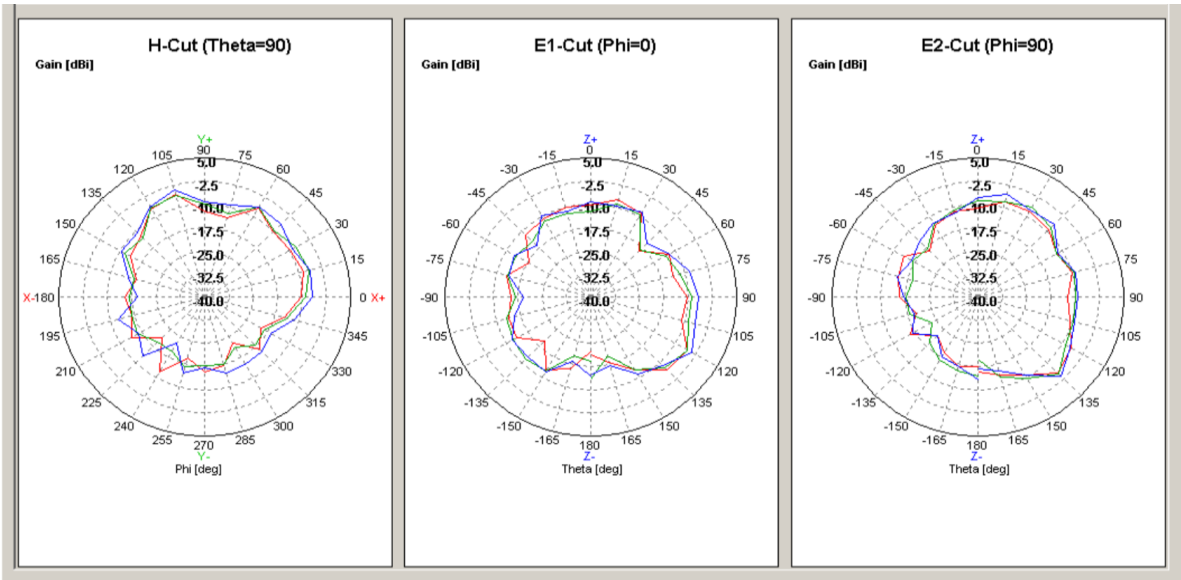




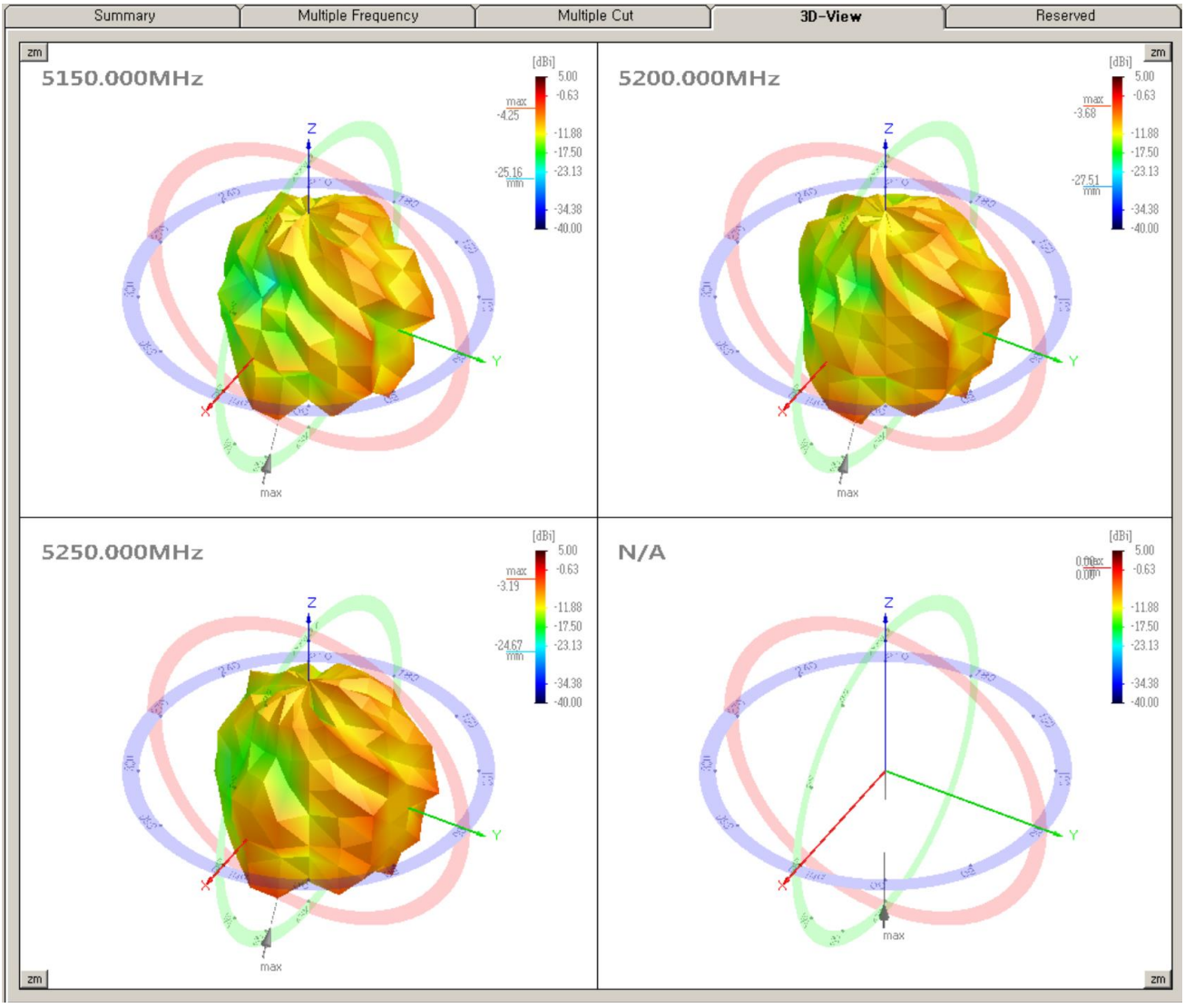
3D SUM (2.4 ~ 2.482G)



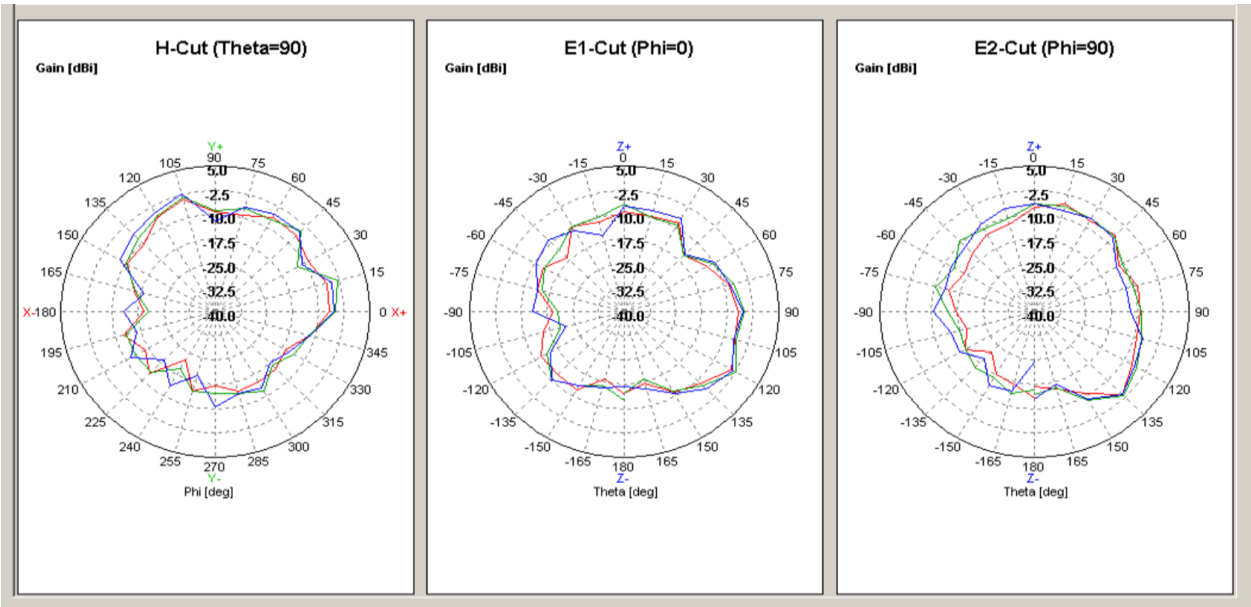
2D SUM (5.15 ~ 5.25G)



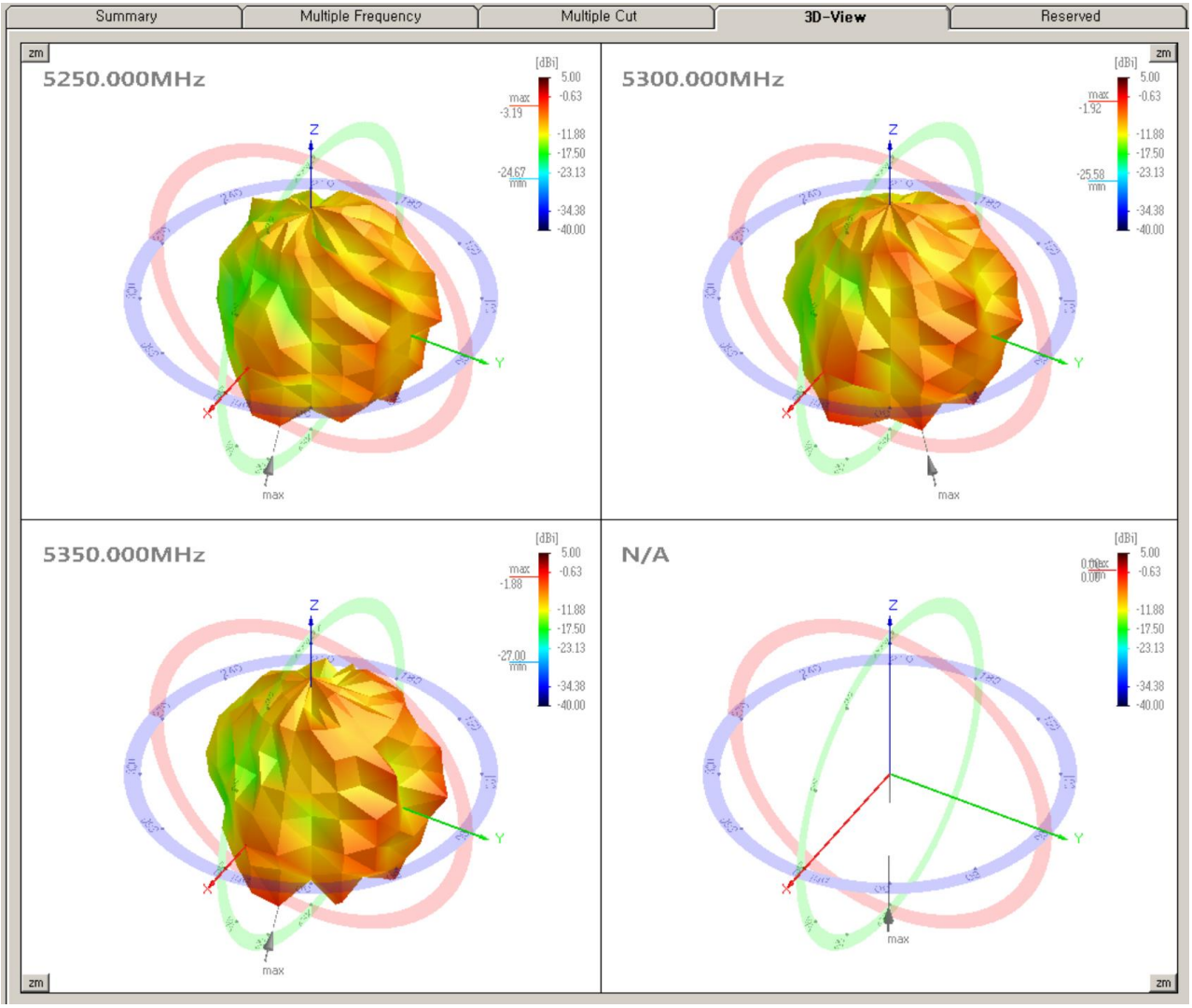
3D SUM (5.15 ~ 5.25G)



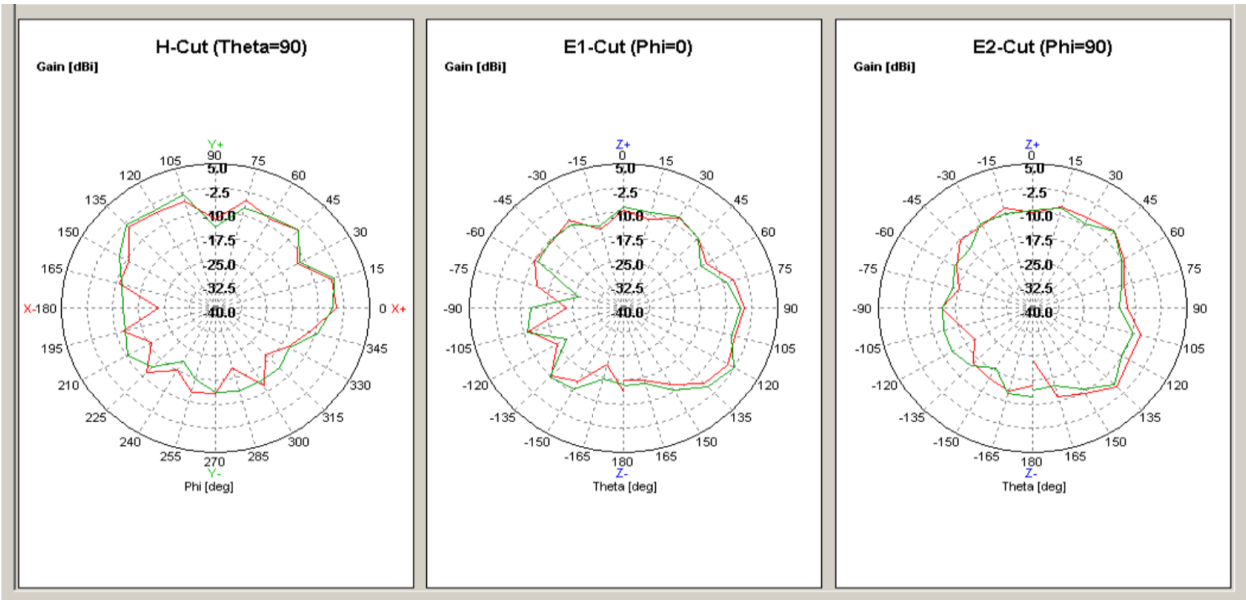
2D SUM (5.25 ~ 5.35G)



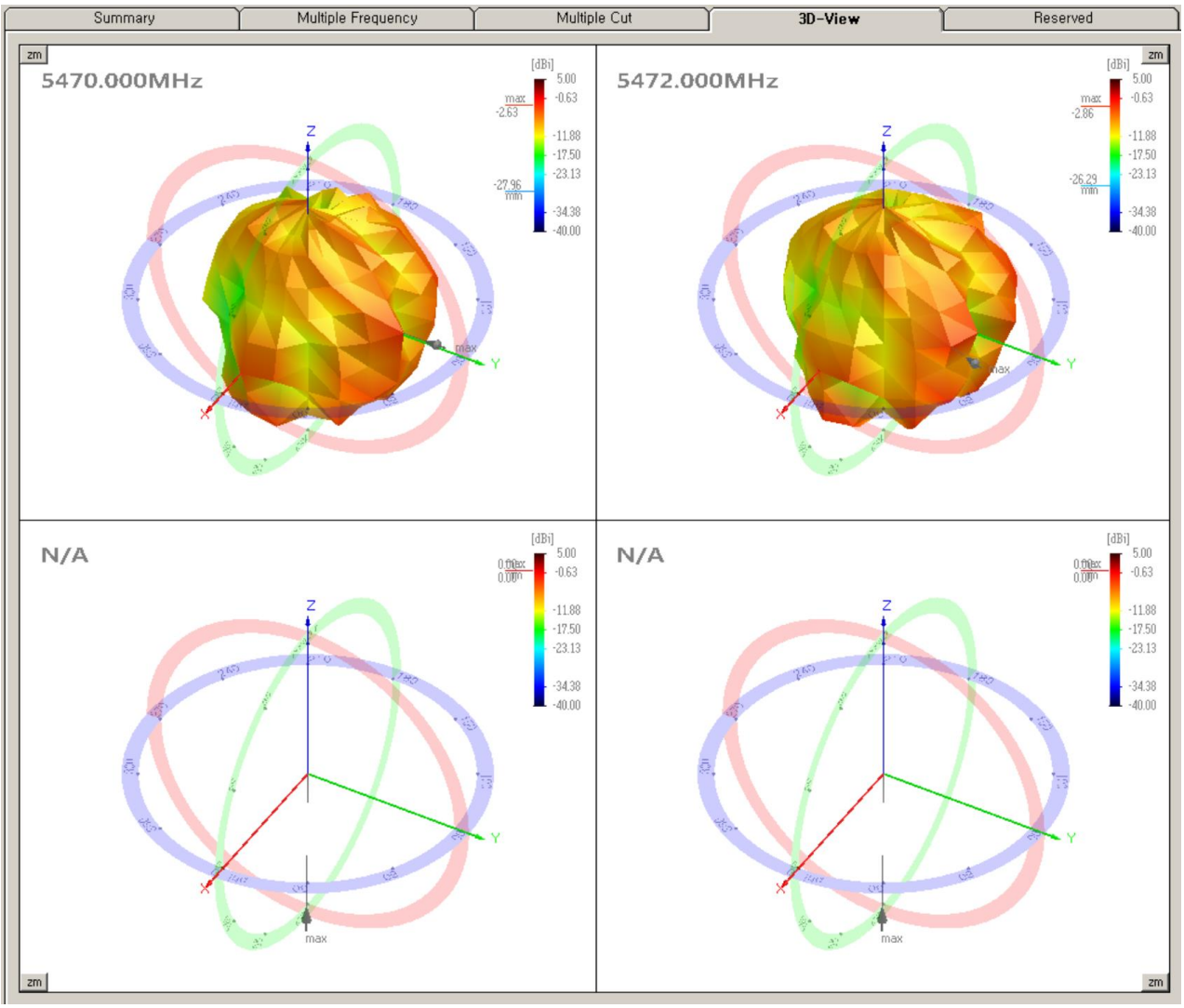
3D SUM (5.25 ~ 5.35G)



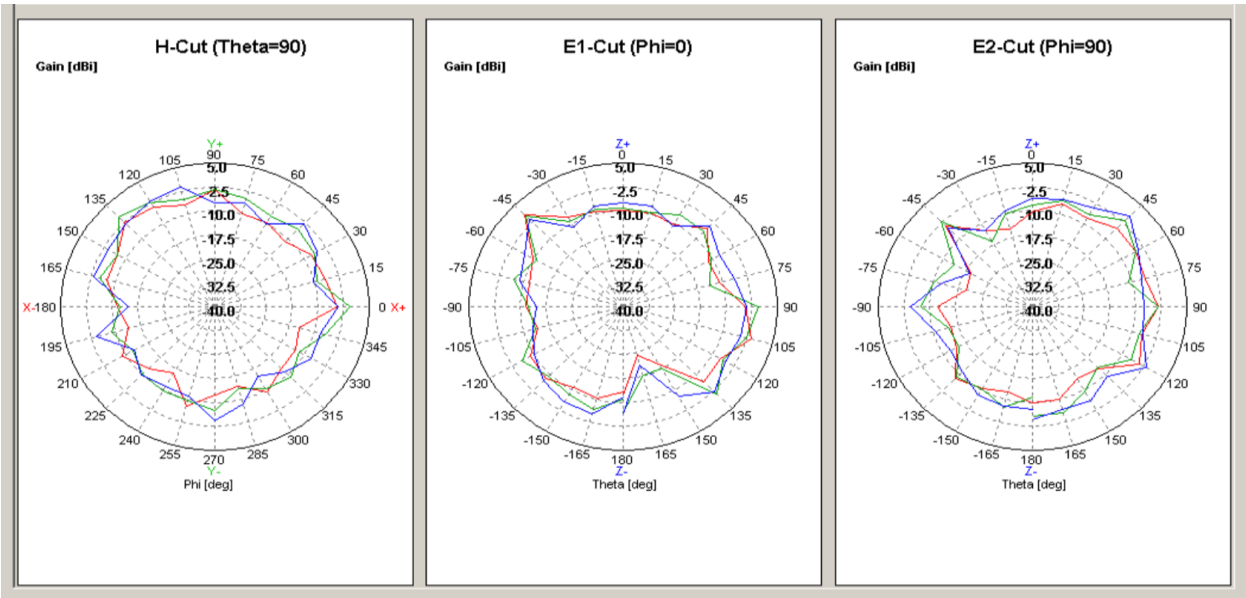
2D SUM (5.47 ~ 5.472G)



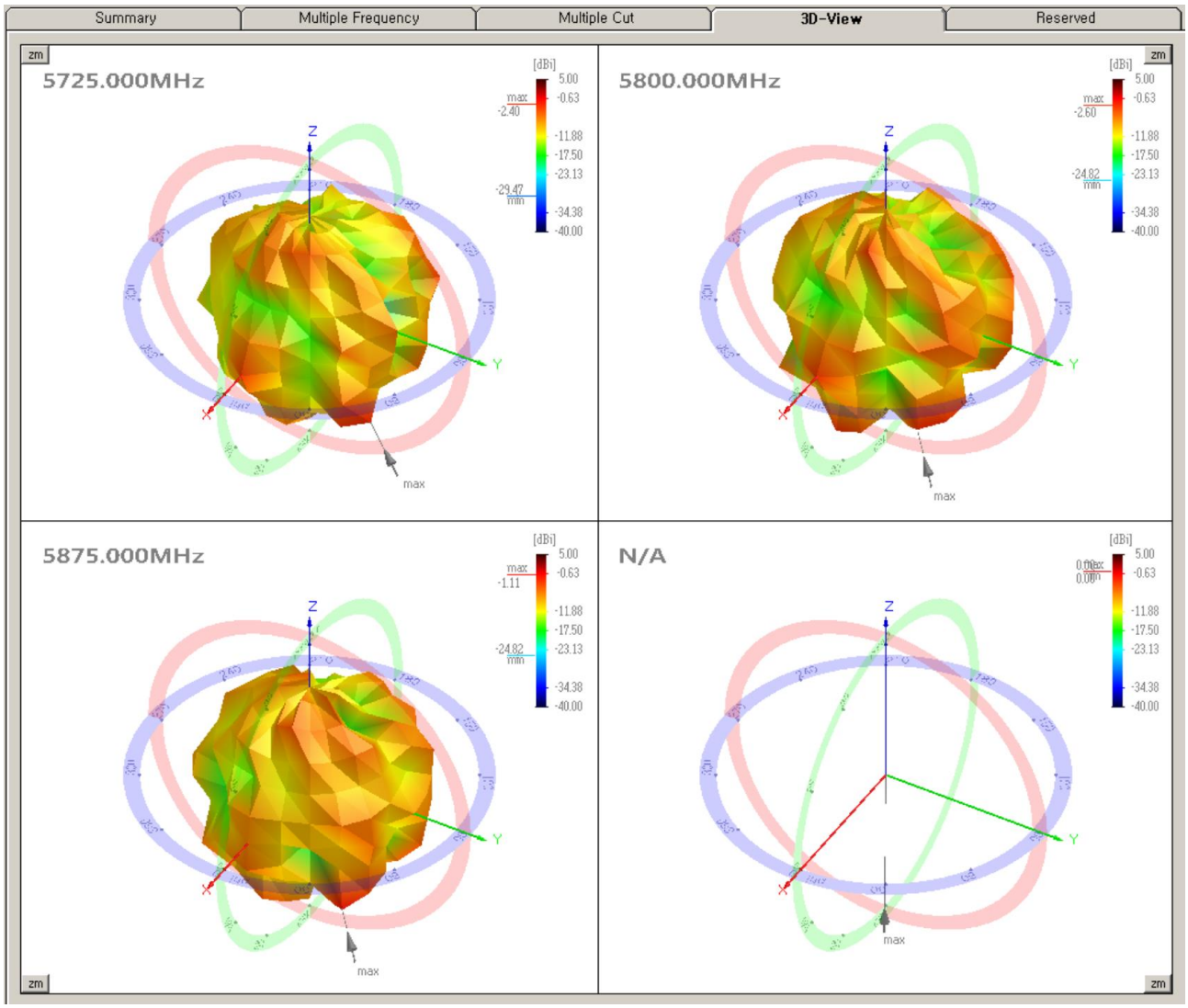
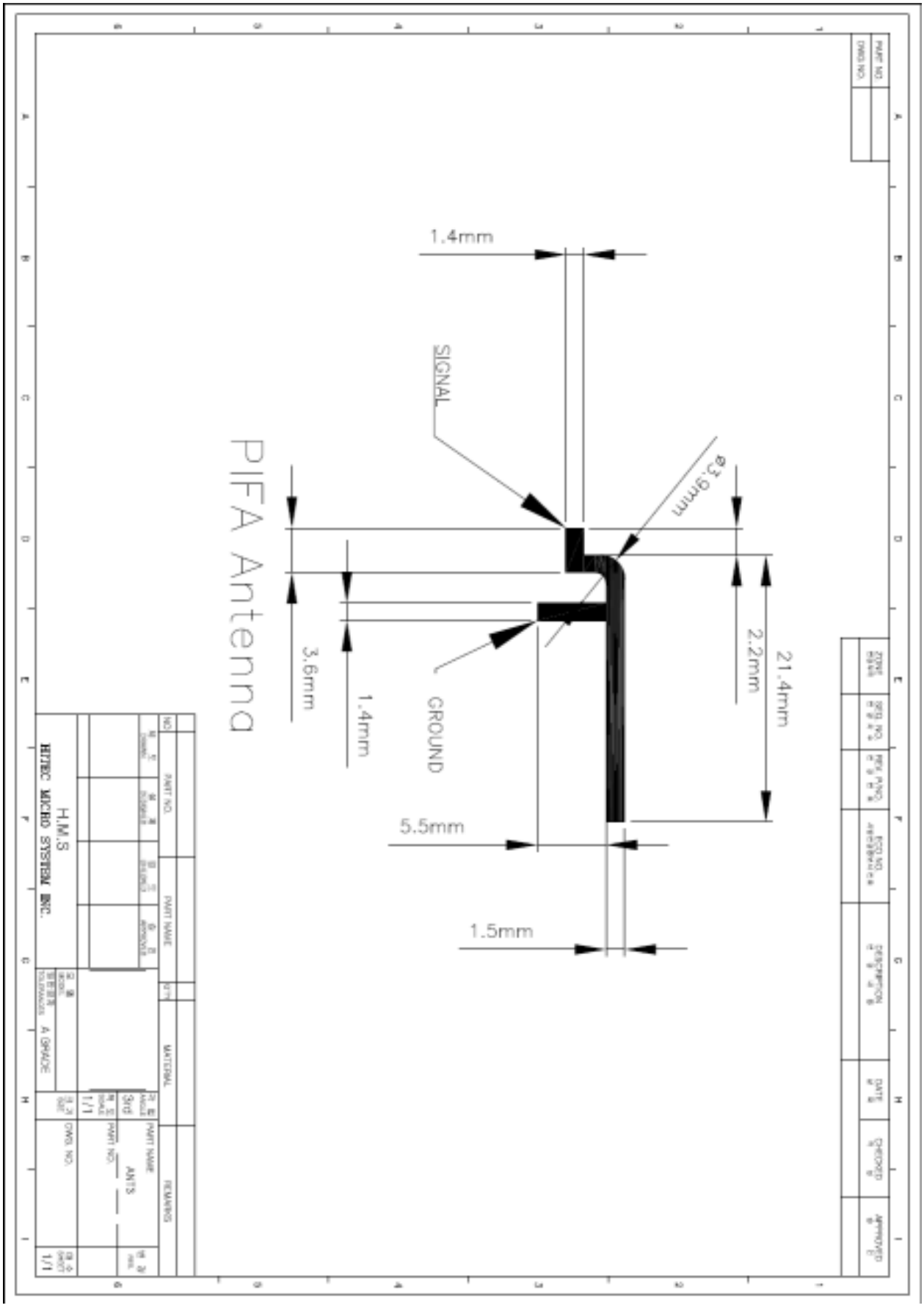
3D SUM (5.47 ~ 5.472G)



2D SUM (5.725 ~ 5.875G)



3D SUM (5.725 ~ 5.875G)



6. Mechanical Drawing