

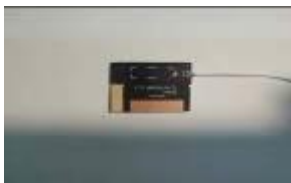
Antenna Datasheet with Test Report

for

Harman 17.3" In-Flight Tablet

Product Name : Dual-band 2.4 GHz and 5GHz Antenna

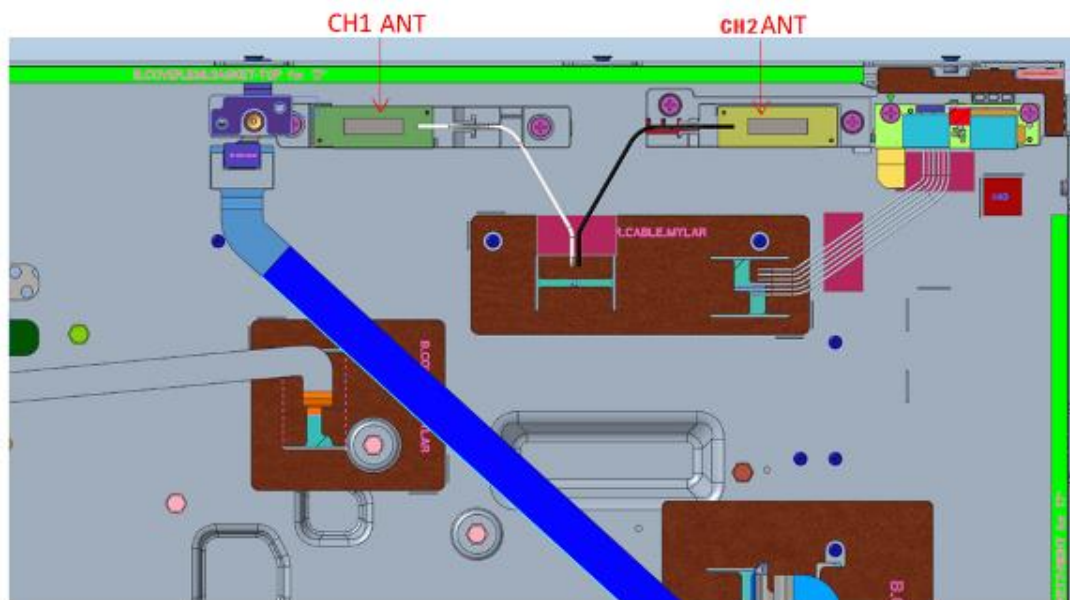
Features : FPC Welding Cable Line Form
ECT: 818000089 (Plug 1)
301/291 mm Ø 1.13mm mini-coaxial cable
Customizable cable and connector



1.Introduction

The report provides antenna specifications and antenna test results

17.3" SVDU utilizes two antennas for 2.4 GHz + 5GHz WIFI and Bluetooth, with customized cable. Antenna setup is shown in below picture.

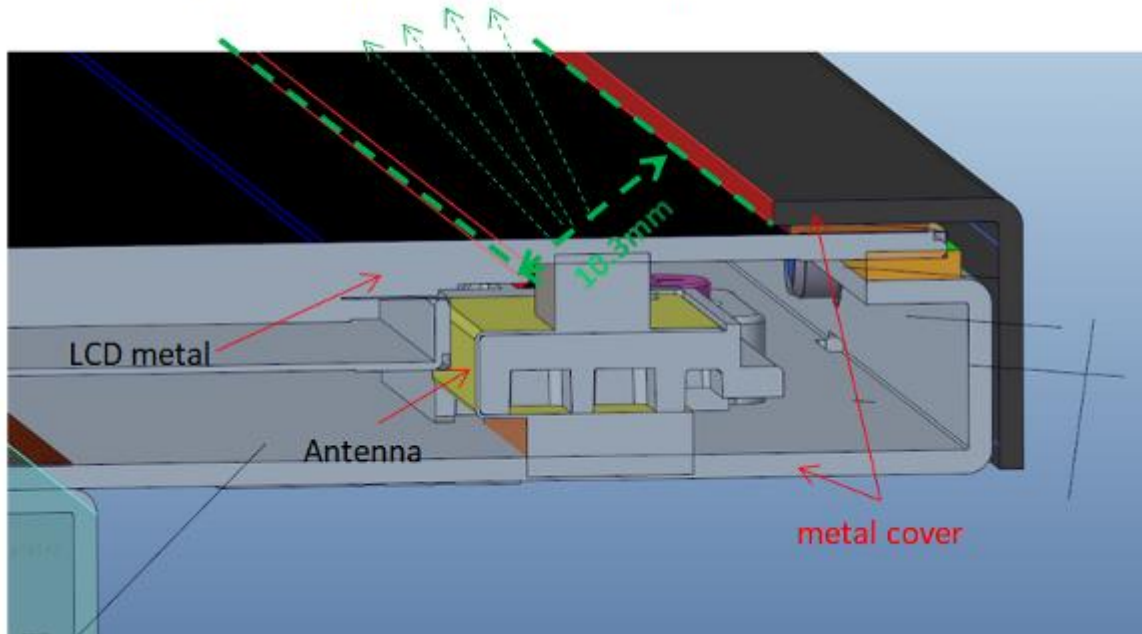


Antenna position

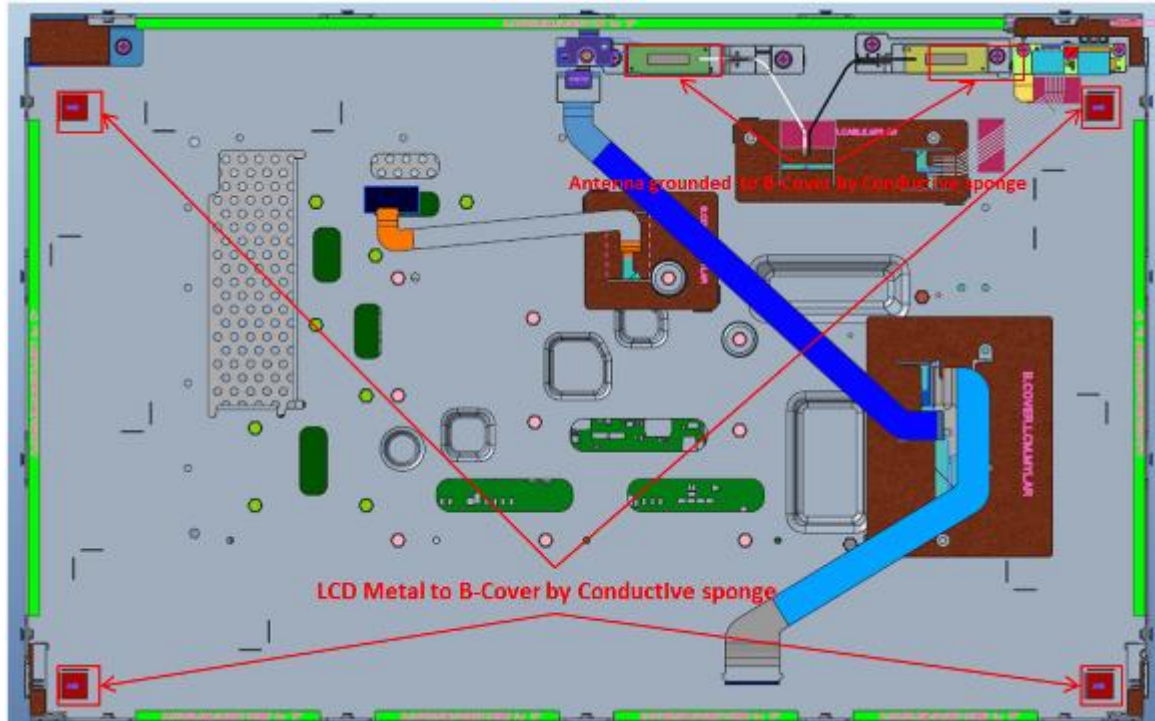
1.1 Antenna environment

The antenna is wrapped in metal. The antenna can only radiate to the LCD direction, and the radiation width is only 10.3mm. As shown in the figure below;

The effective radiation direction of the antenna



The two antennas are grounded to the B-Cover, and the four grounding positions of the LCD metal are via the conductive sponge to the B-Cover.



2.Specification

Electrical CH1		
Standard	2400 MHz	5800 MHz
Operation Frequency (MHz)	2400-2500 MHz	5150-5850 MHz
Polarization	Linear	Linear
Impedance	50 Ohms	50 Ohms
Max Return Loss (dB)	-15.5	-8.5
Peak Gain (dBi)	1.91	-4.1
Efficiency (%)		
Average Gain (dB)		

Electrical CH2		
Standard	2400 MHz	5800 MHz
Operation Frequency (MHz)	2400-2500 MHz	5150-5850 MHz
Polarization	Linear	Linear
Impedance	50 Ohms	50 Ohms
Max Return Loss (dB)	-16.4	-5.5
Peak Gain (dBi)	1.91	-0.74
Efficiency (%)		
Average Gain (dB)		

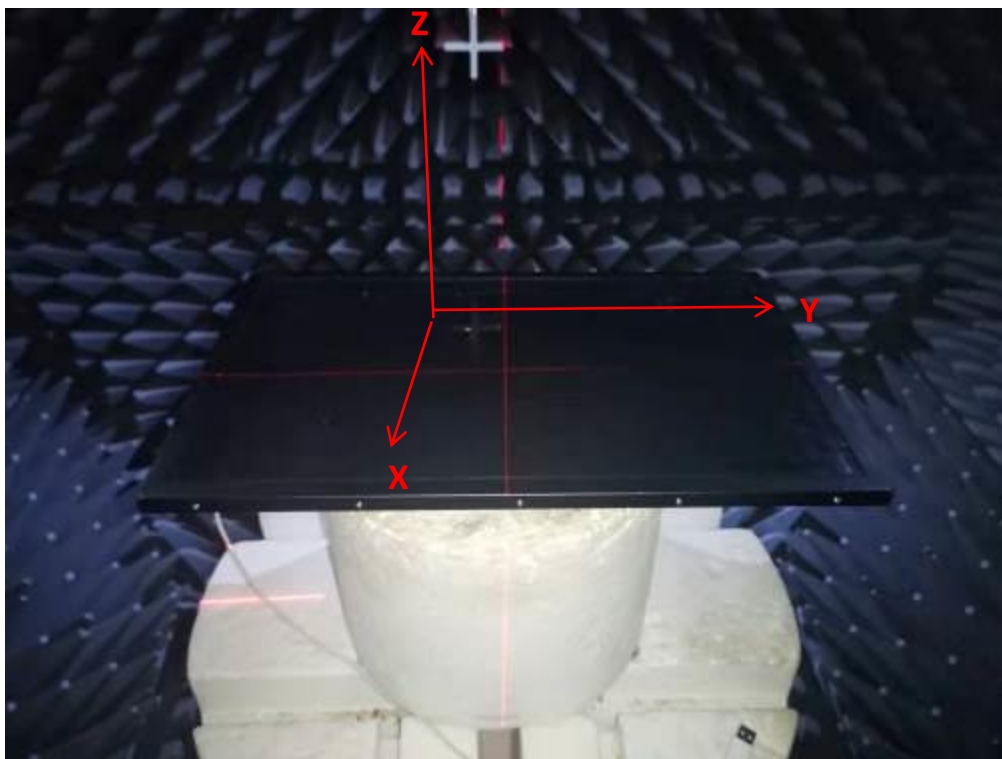
Mechanical	
Dimensions (mm)	30 x 22.5 x 0.12
Required Space (mm)	30 x 22.5 x 0.12
Material	Polymer
Connector	ECT : 818000089 (Plug 1)

3.Test Setup

The test fixture was made for further testing, which was shown below.



Return Loss test

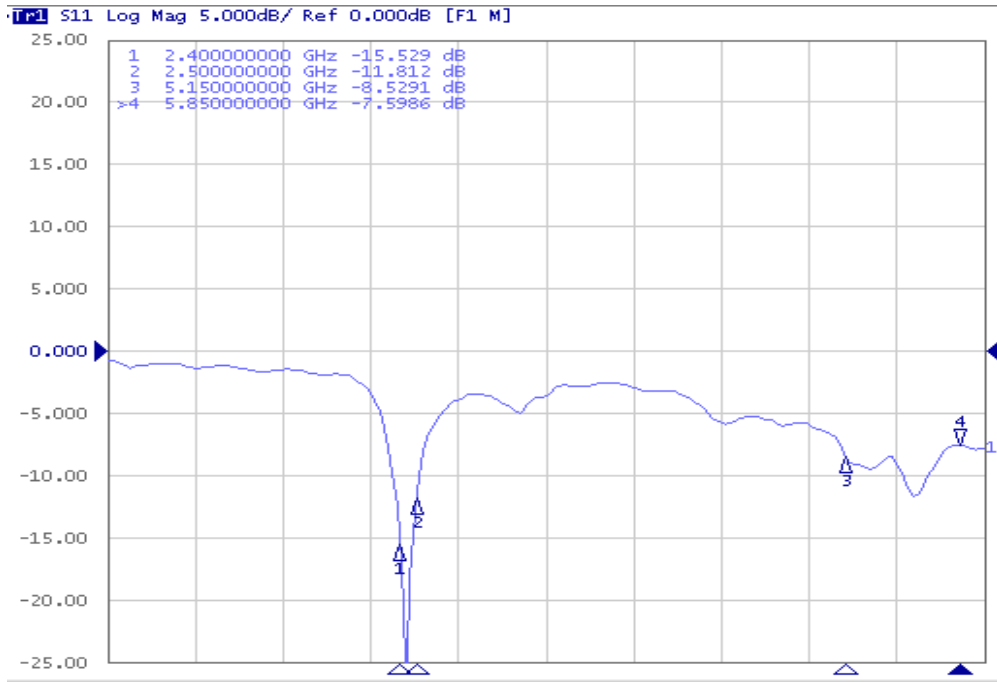


Peak gain, Efficiency, Radiation pattern and TRP/TIS measurements

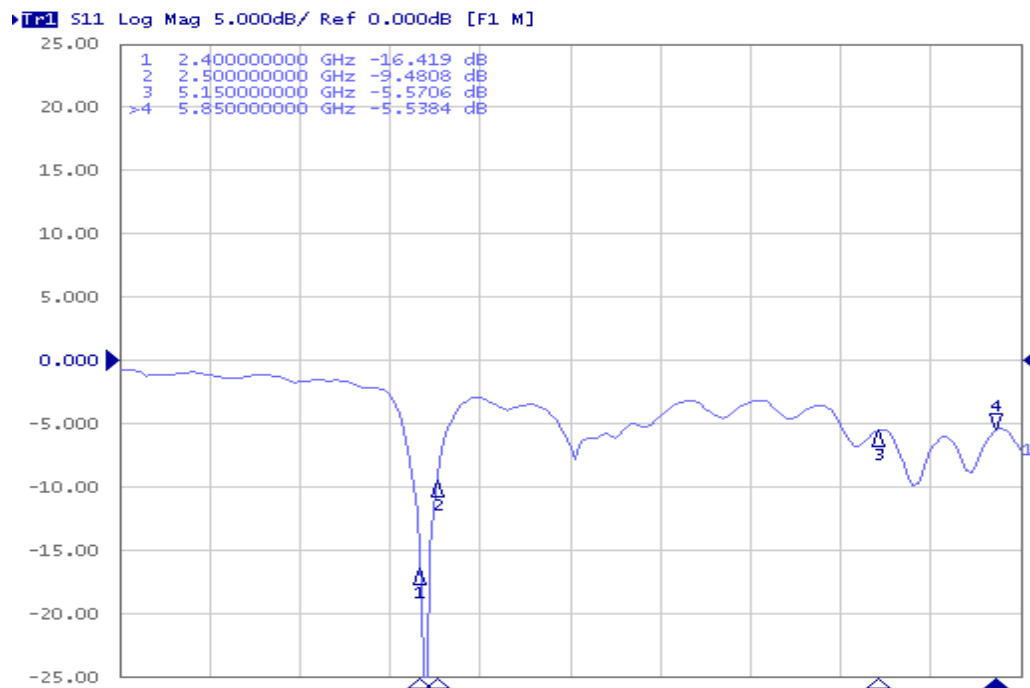
4. Antenna Passive Performance

4.1 Return Loss

S11 parameter of antennas

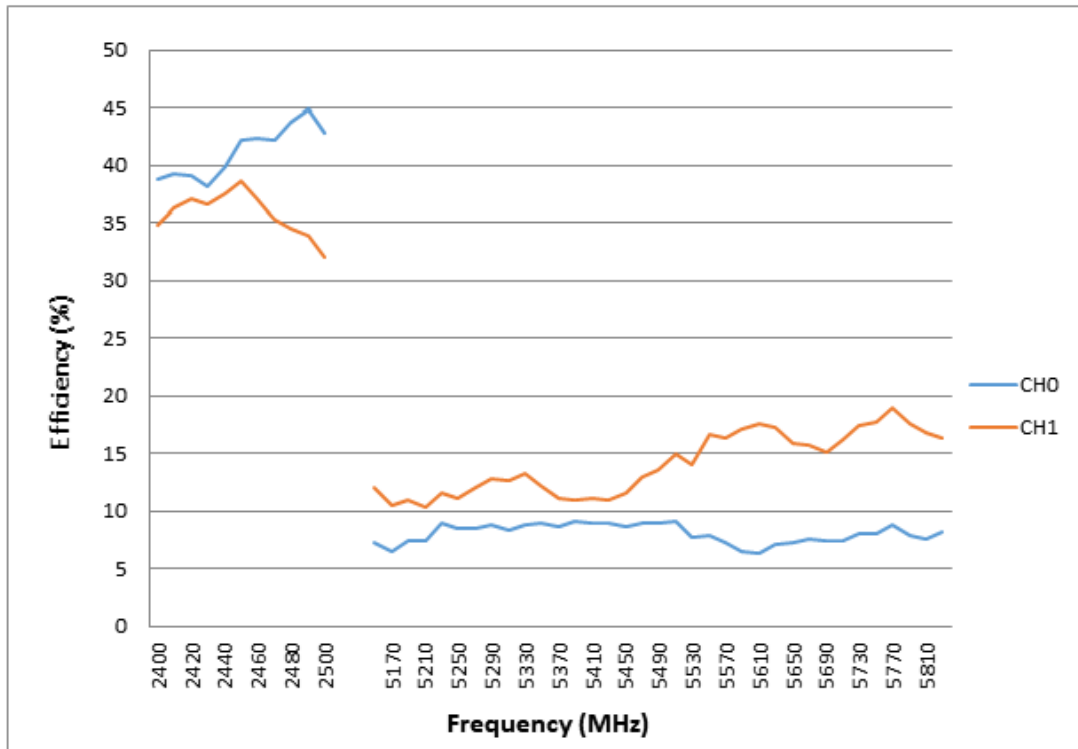


Return Loss of the CH0 antenna



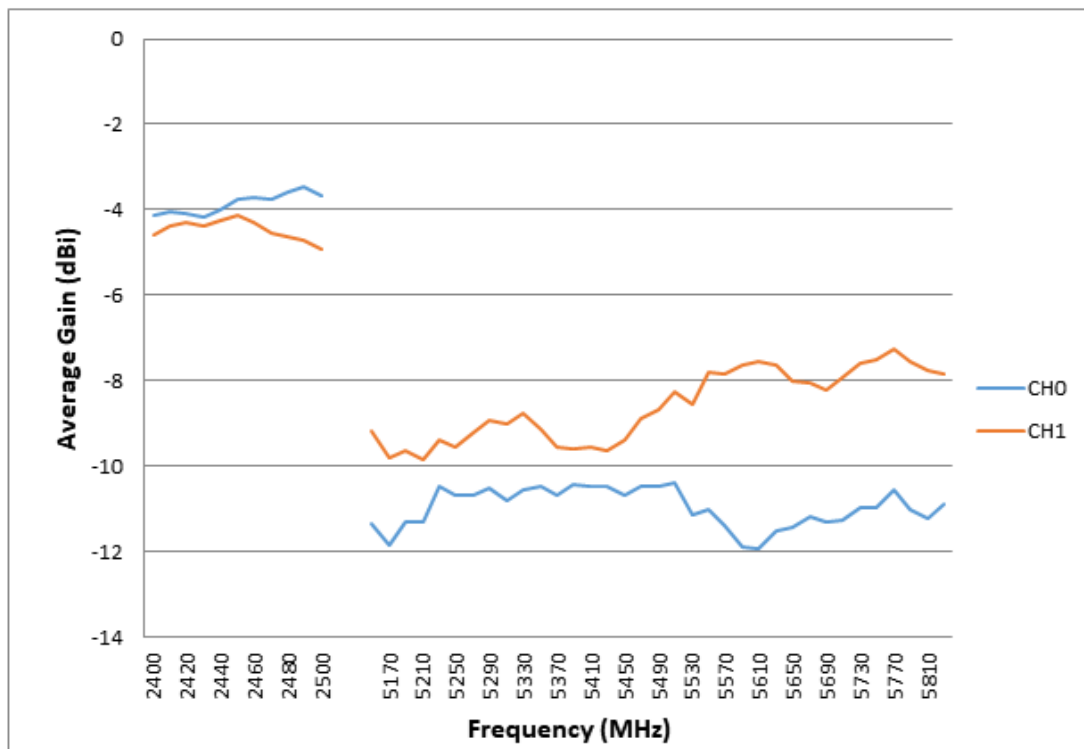
Return Loss of CH1 antenna

4.2 Efficiency



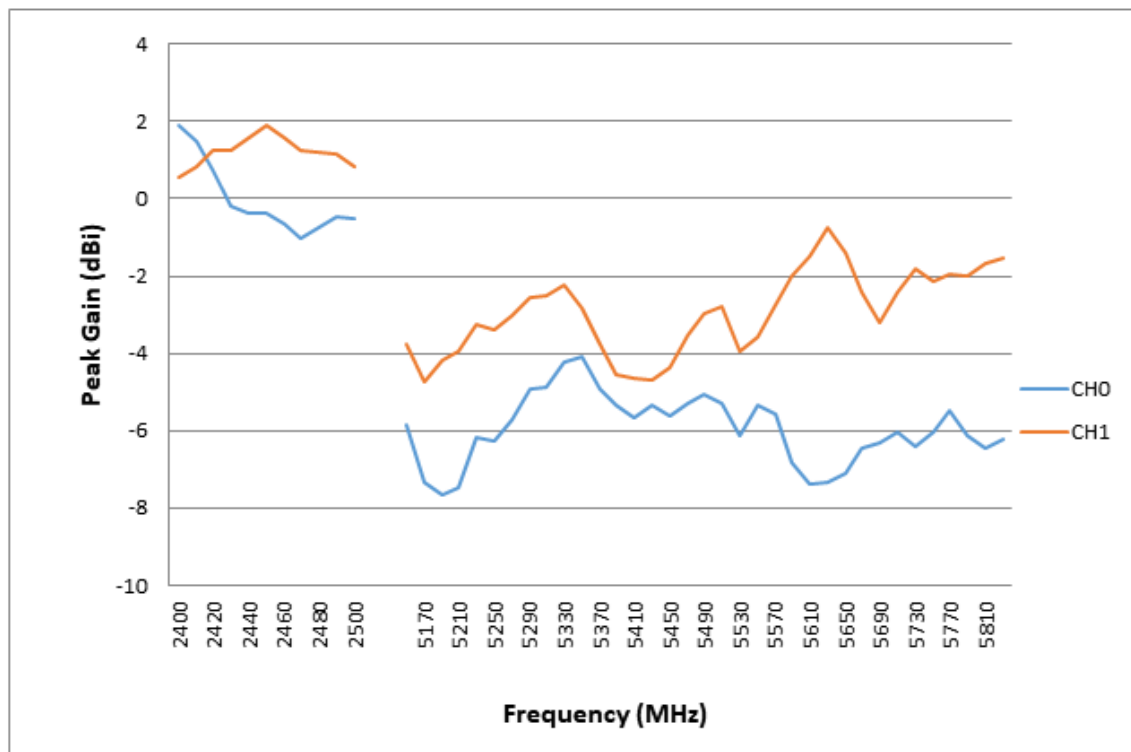
Efficiency of the two antennas

4.3 Average Gain



Average Gain of the two antennas

4.4 Peak Gain



Peak Gain of the two antennas

4.5 3D Radiation Pattern

3D Radiation Pattern at 2450 MHz of 17.3" FPC-WIFI1-L-W antenna

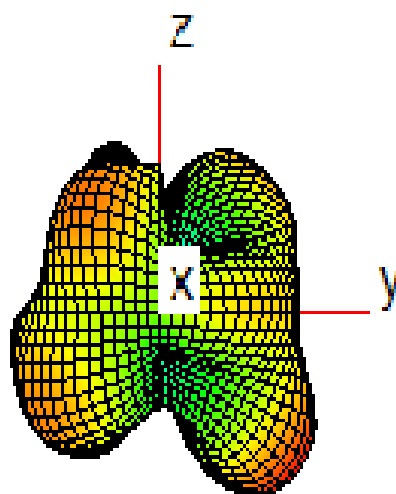
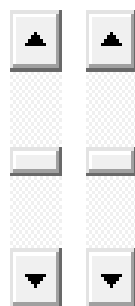
Theta

Azimuth:0

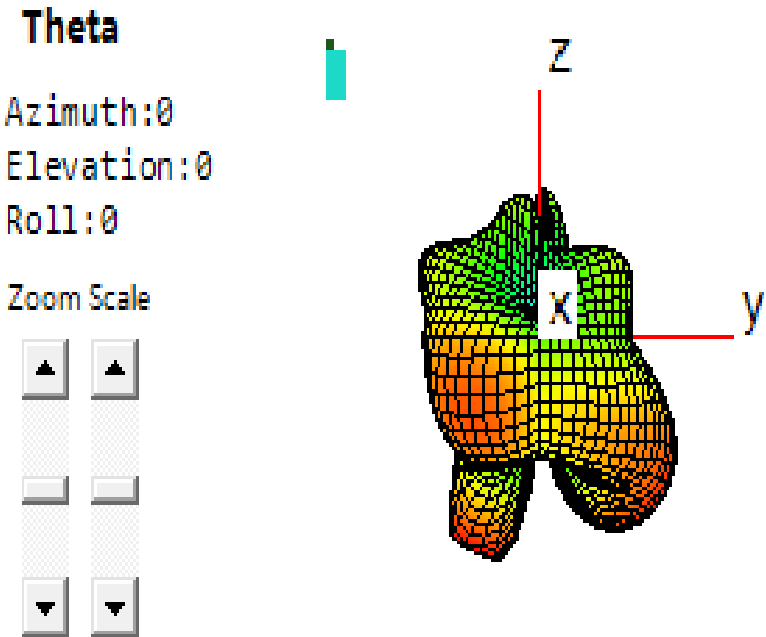
Elevation:0

Roll:0

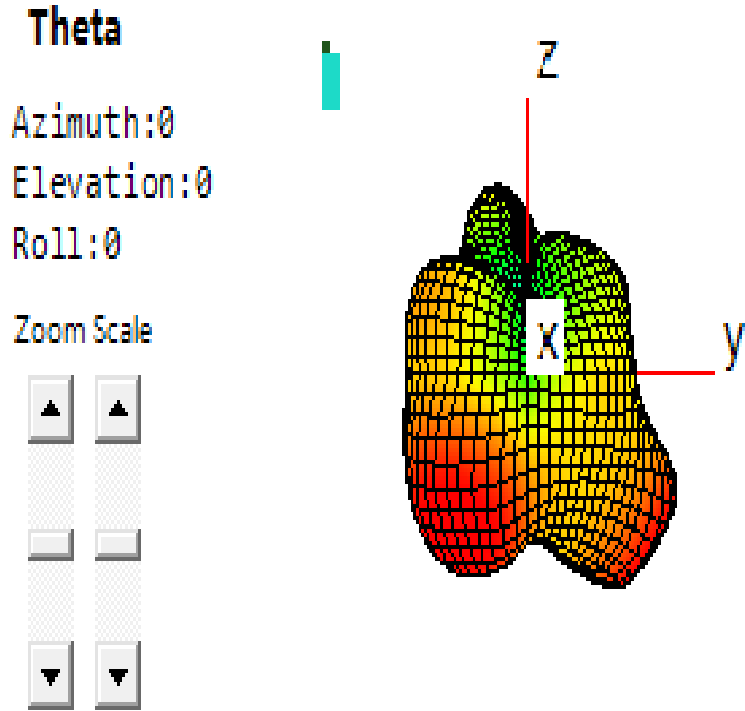
Zoom Scale



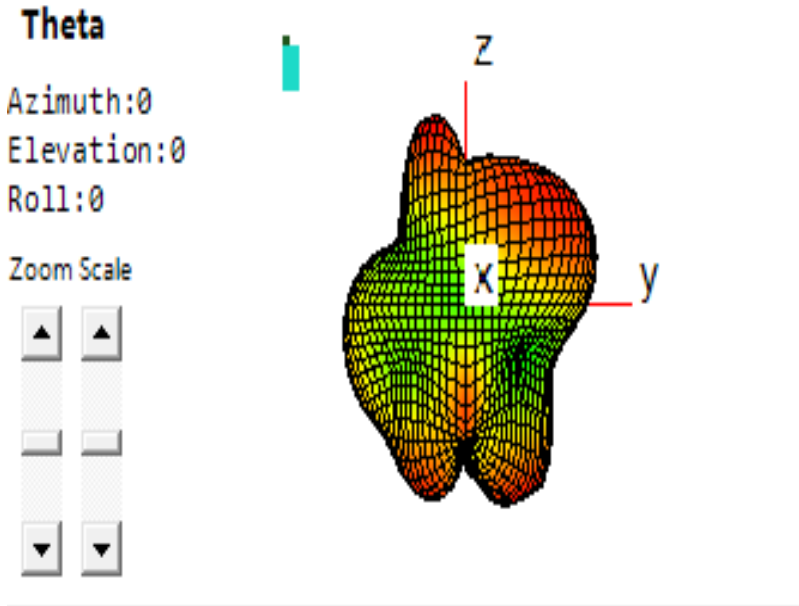
3D Radiation Pattern at 5500 MHz of 17.3" FPC-WIFI1-L-W-TF antenna



3D Radiation Pattern at 2450 MHz of 17.3" FPC-WIFI2-R-B antenna

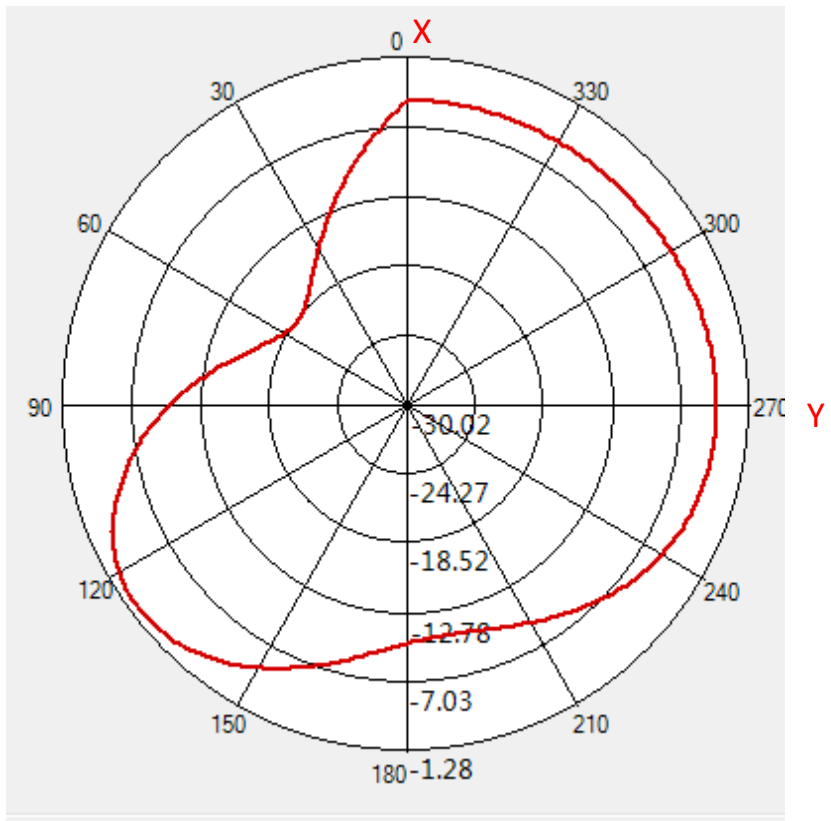


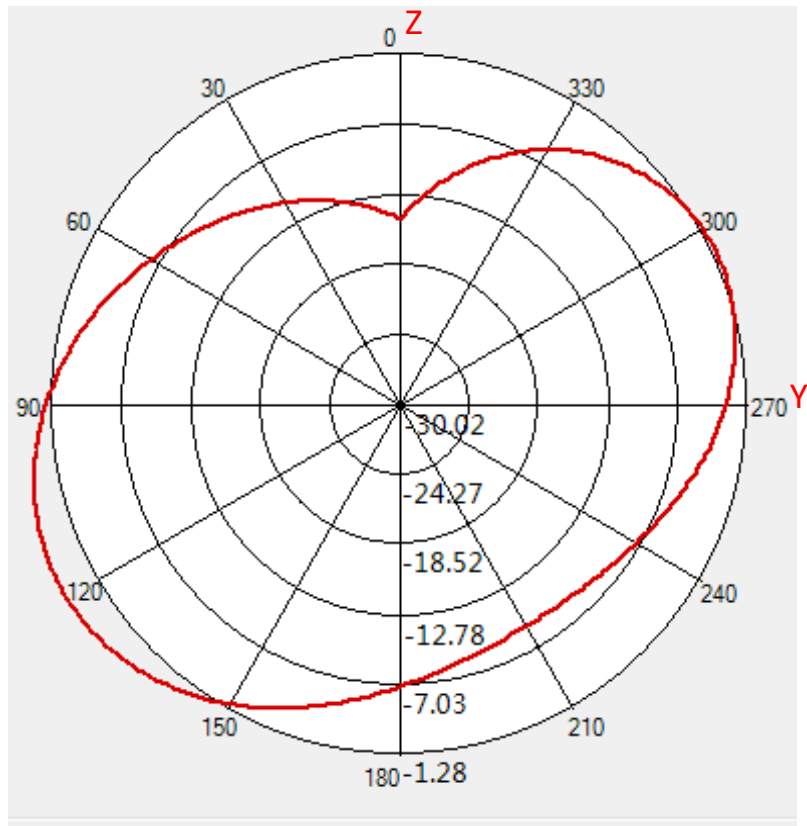
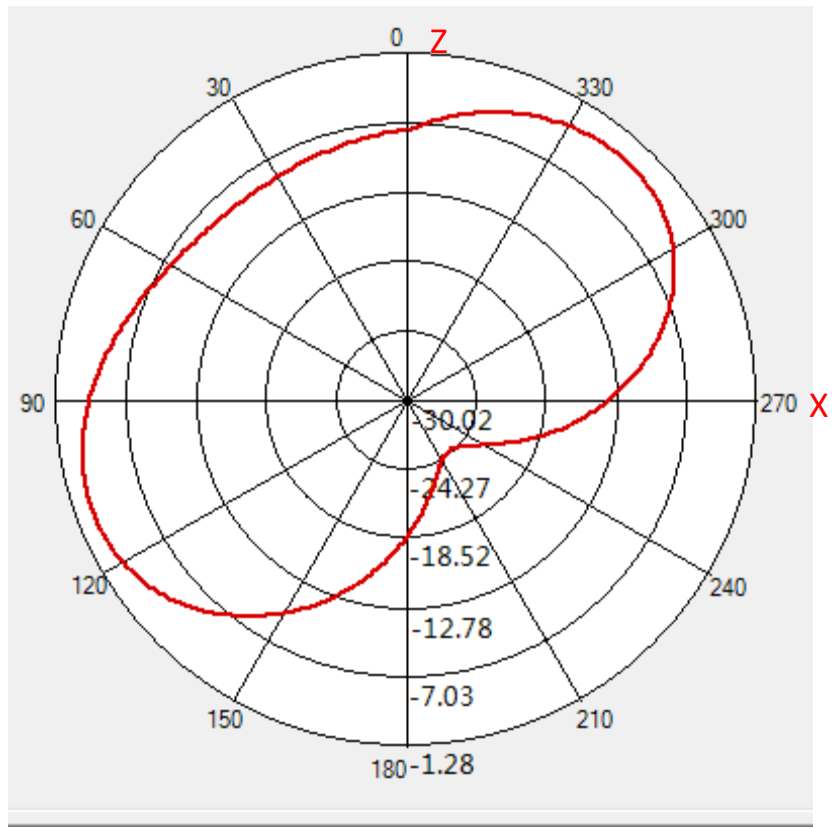
3D Radiation Pattern at 5500 MHz of 17.3" FPC-WIFI2-R-B antenna



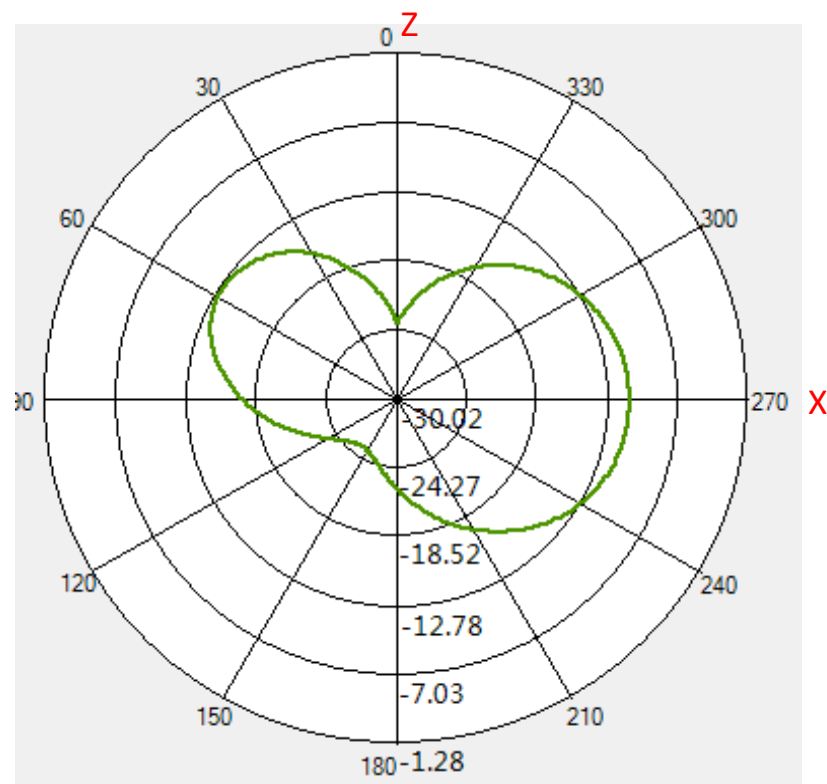
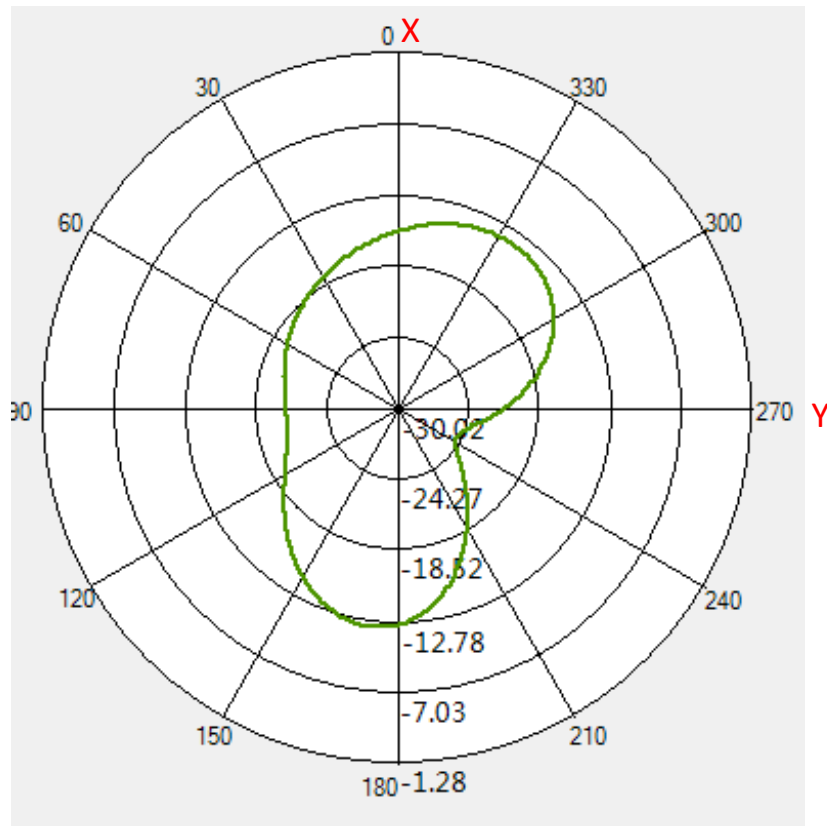
4.6 2D Radiation Pattern

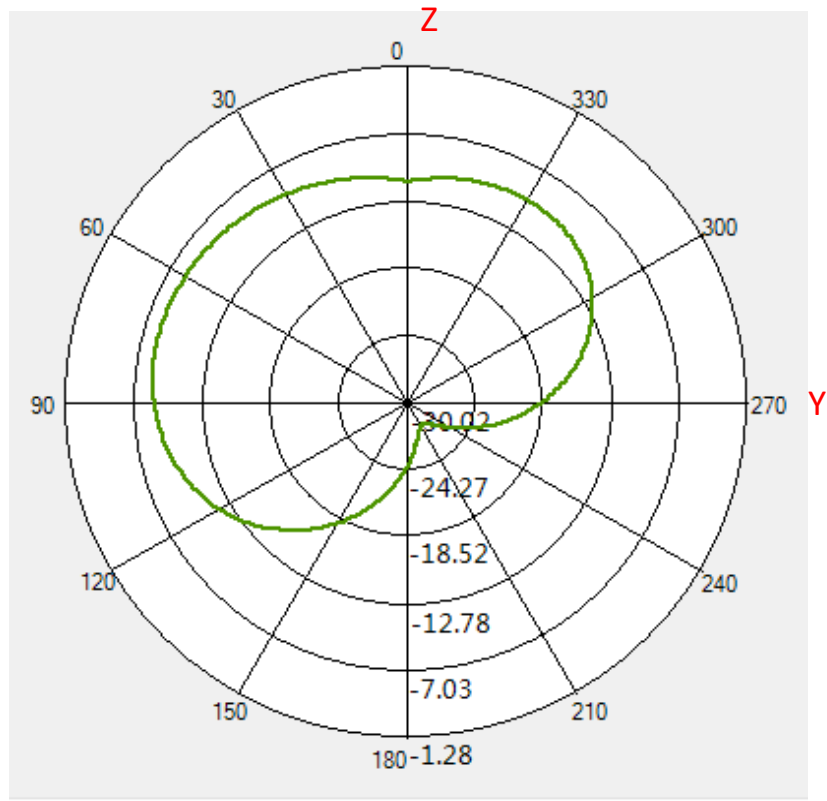
2D Radiation Pattern at 2400MHz band of WIFI1-L-W-TF antenna



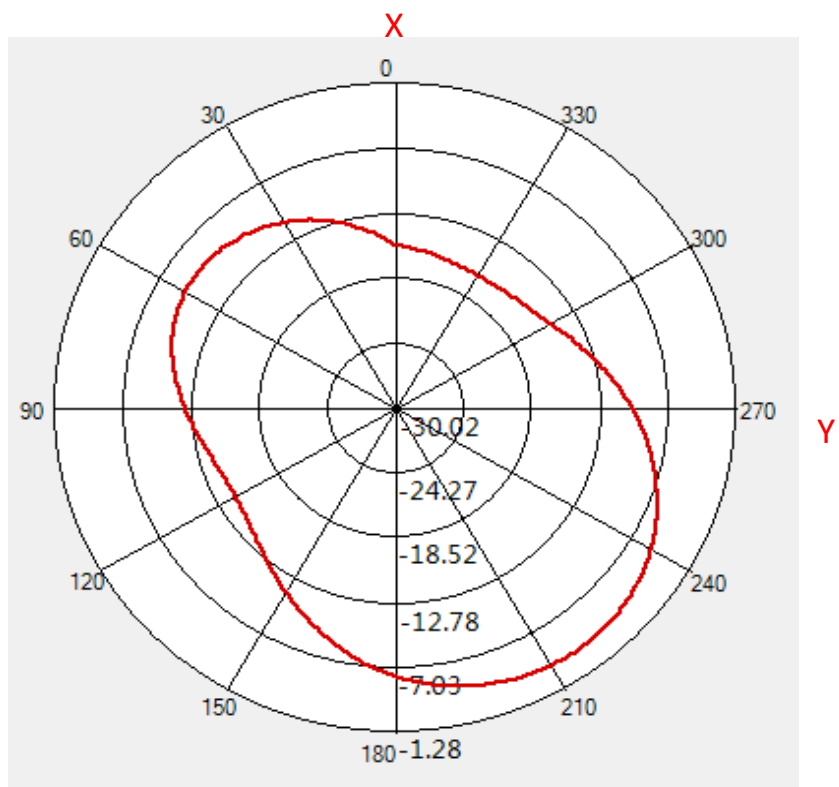


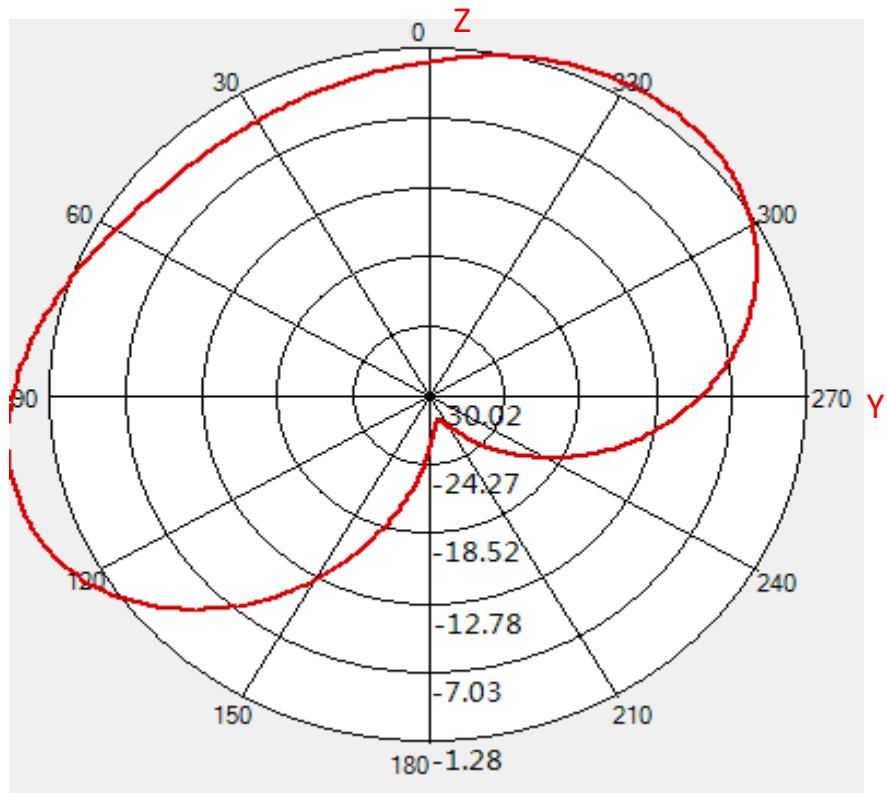
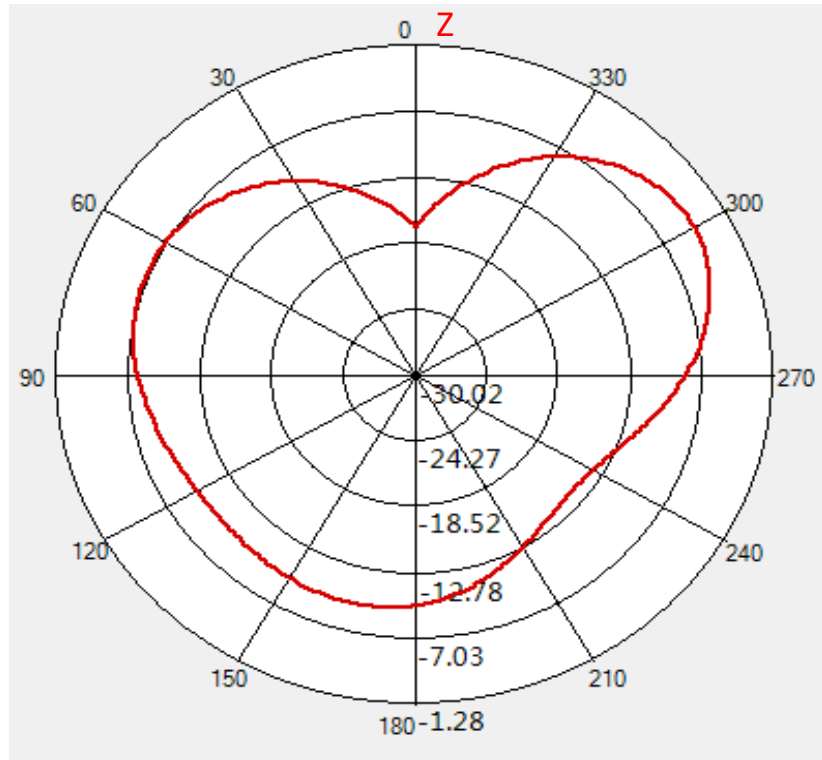
2D Radiation Pattern at 5800 MHz band of WIFI1-L-W antenna



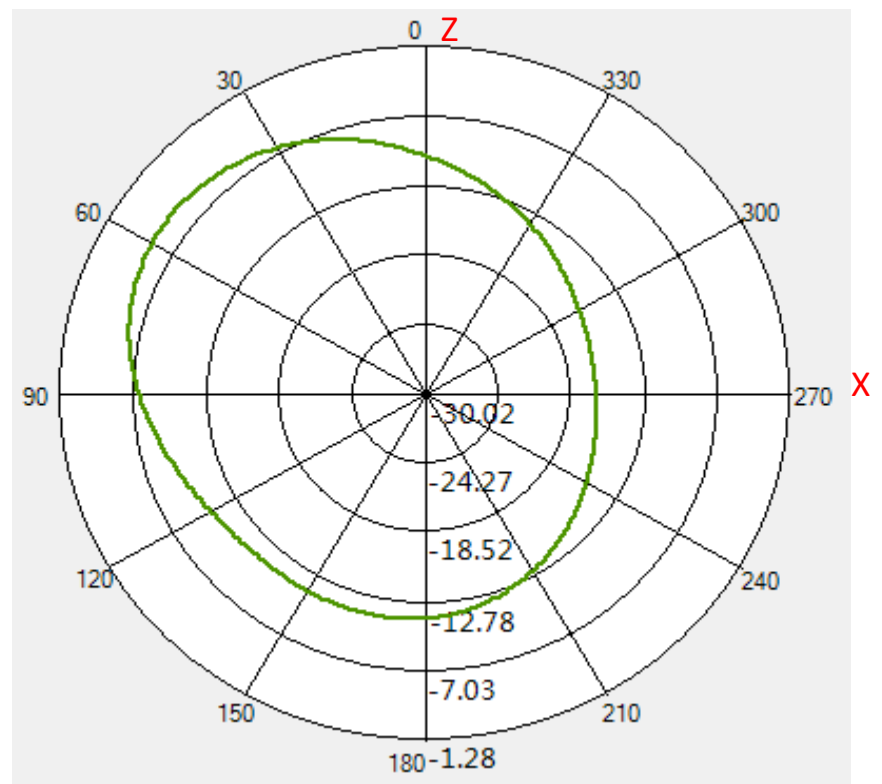
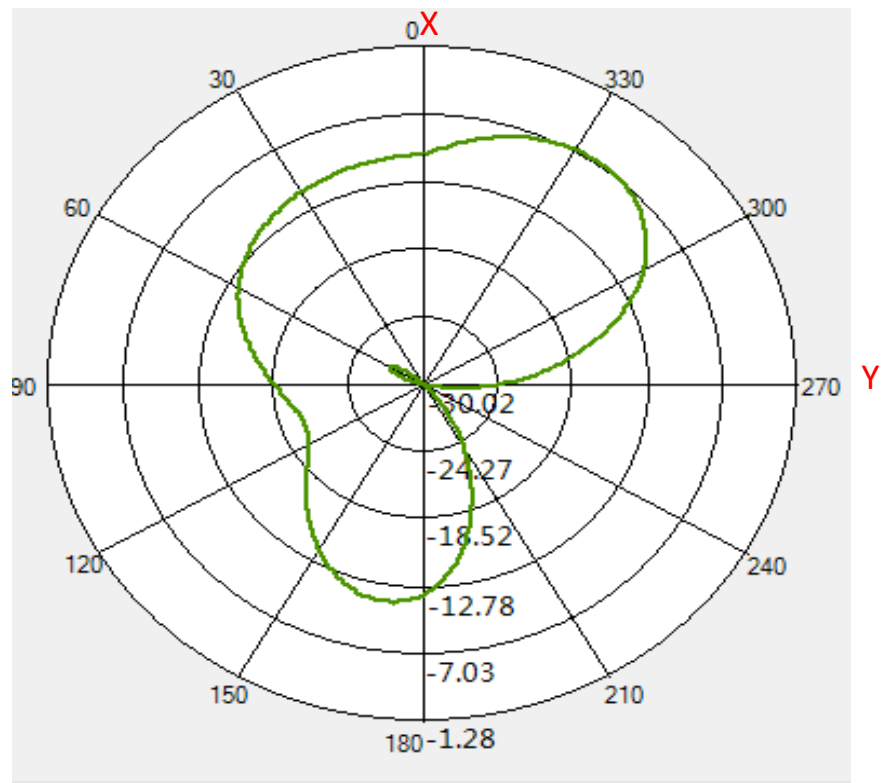


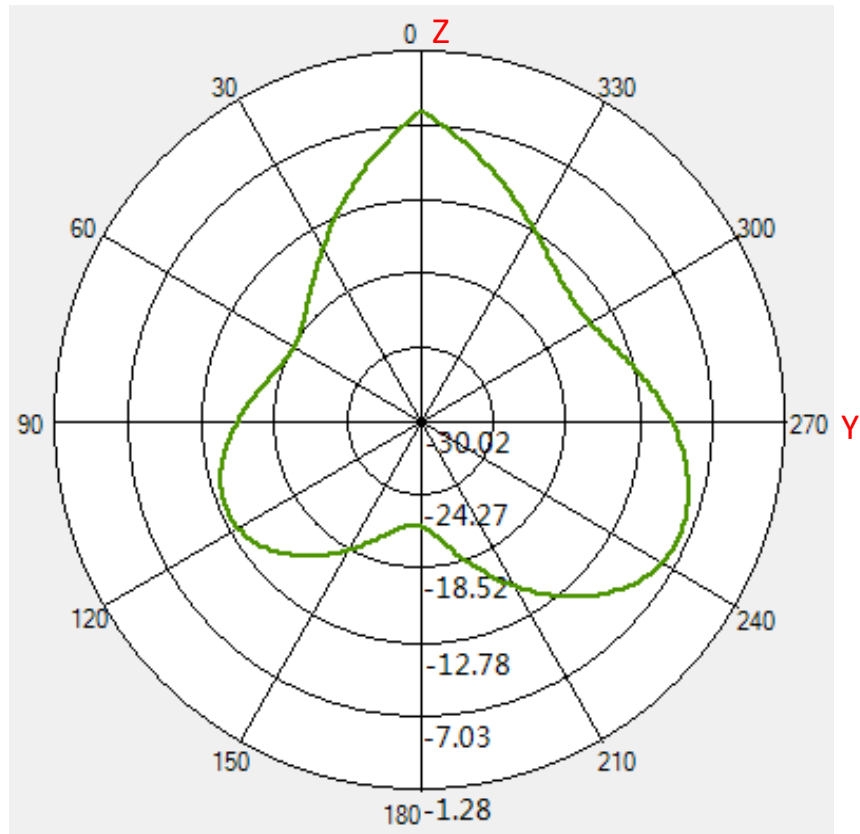
2D Radiation Pattern at 2400 MHz band of WIFI2-R-B antenna





2D Radiation Pattern at 5800MHz band of WIFI2-R-B antenna





5. Antenna Active Performance

5.1 WIFI Active Performance

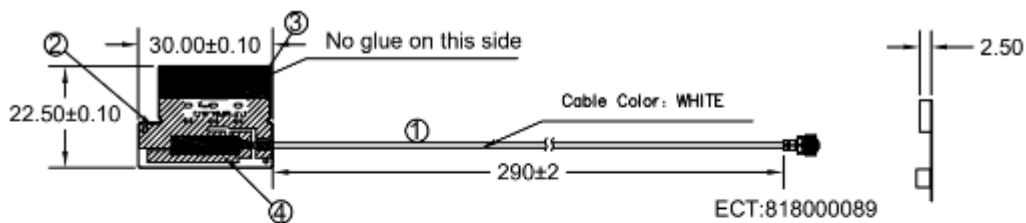
WIFI	RER	CH	Frequency (MHz)	Pack Gain[dB]		CH1		CH2		Conducted measured	
				CH1	CH2	TRP(dBm)	TIS(dBm)	TRP(dBm)	TIS(dBm)	TRP(dBm)	TIS(dBm)
11B 11M	10%	4	2427			14.08	-82.05	14.19	-82.79	17.2	-89.5
	10%	7	2442			13.78	-82.22	15.04	-82.79	17.3	-90
	10%	11	2462			14.93	-82.23	14.64	-83.41	17.2	-89.5
11A (TRP 6M/TIS 54M)	10%	36	5180			9.74	-65.29	10.99	-65.11	16.2	-75
	10%	56	5280			10.91	-65.52	11.44	-65.61	16.7	-75
	10%	157	5785	-6.14	-1.98	9.6	-65.75	10.57	-65.7	15.8	-75
11N (TRP MCS0/TIS MCS7)	10%	4	2427			13.73	-63.03	12.63	-62.1	16.2	-75
	10%	7	2442			12.3	-62.99	13.74	-63.15	16.7	-75
	10%	11	2462			12.89	-63.85	13.1	-64.74	15.8	-75
			2472	-1.03	1.27						

5.2 Bluetooth Active Performance

BT CH	BER	OTA		Conducted measured	
		TRP(dBm)	TIS(dBm)	TRP(dBm)	TIS(dBm)
0	10%	2.0	-82.1	10.3	-93.0
39	10%	2.2	-81.5	9.4	-93.0
78	10%	2.4	-81.7	10.3	-92.5

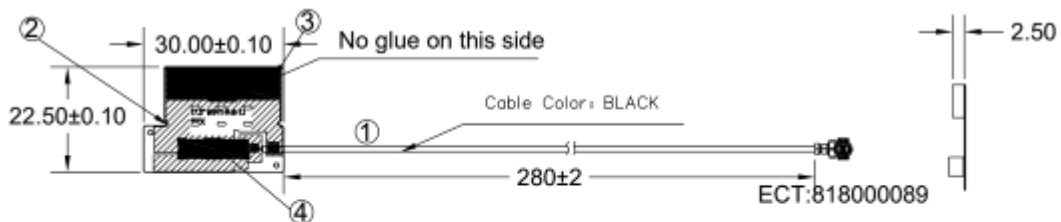
6. Antenna Drawing

WIFI1-L-W Drawing



Item	Part Name	MATERIAL Specification	Quantity	Remarks column
①	Cable	White ϕ 1.13	1	ECT:818000089
②	FPC-WIFI0-L-W		1	
③	Conductive	T=2.5mm	1	LAIRD 902-AB-51K/4902-PB-51G
④	PORON	3.18mm Free	1	ROGERS 4701-40-15125

WIFI2-R-B Drawing



Item	Part Name	MATERIAL Specification	Quantity	Remarks column
①	Cable	BLACK ϕ 1.13	1	ECT:818000089
②	FPC-WIFI1-R-B		1	
③	Conductive	T=2.5mm	1	LAIRD 902-AB-51K/4902-PB-51G
④	PORON	3.18mm Free	1	ROGERS 4701-40-15125

7.Packaging



Shipping Label

370*258*145mm

3000PCS/Carton