

Antenna specification

1. Antenna location drawing

See the following documents:

- 10_Operational Description_Antenna Drawing_APYHRO00326.pdf

2. Working principle of multiple antennas

2.1 Antenna Diversity: None.

2.2 Power Mode: None.

3. Maximum antenna gain

WWAN antenna:

Band	Tx
GSM 850	-6.8 dBi
GSM 1900	-4.0 dBi
B2 (WCDMA/LTE)	-4.0 dBi
B4 (WCDMA/LTE)	-5.7 dBi
B5 (WCDMA/LTE)	-6.7 dBi
B12 (LTE)	-8.1 dBi
B13 (LTE)	-8.6 dBi
B17 (LTE)	-8.1 dBi
B38 (LTE)	-4.5 dBi
B41 (LTE)	-4.5 dBi
B66(LTE)	-3.1 dBi
n5	-6.7 dBi
n41	-10.2 dBi

WLAN antenna:

	Band (MHz)	ANT4	ANT7
2.4GHz Band	2412-2472	-1.3 dBi	-3.9 dBi
5GHz Band	5150-5250	-6.0 dBi	-3.9 dBi
	5250-5350	-5.4 dBi	-5.4 dBi
	5470-5725	-4.2 dBi	-3.4 dBi
	5725-5850	-1.8 dBi	-0.2 dBi
6GHz Band	5925-6425	-0.4 dBi	-0.6 dBi

Antenna specification

Bluetooth antenna:

Band (MHz)	ANT4	ANT7
2402-2480	-1.3 dBi	-3.9 dBi

UWB antenna:

Band (MHz)	ANT6
7737.6-8236.8	1.3 dBi

4. Maximum beamforming gain

Don' t use beamforming technology.

5. The state of antenna simultaneous transmission

See the following documents :

- 16_Simultaneous_Tx_Combination_List_APYHRO00326.pdf

Note : WiFi 2.4GHz and BT are time-division exclusive control, so they will not operate at the same time.

6.Type of antenna

All antenna: PIFA

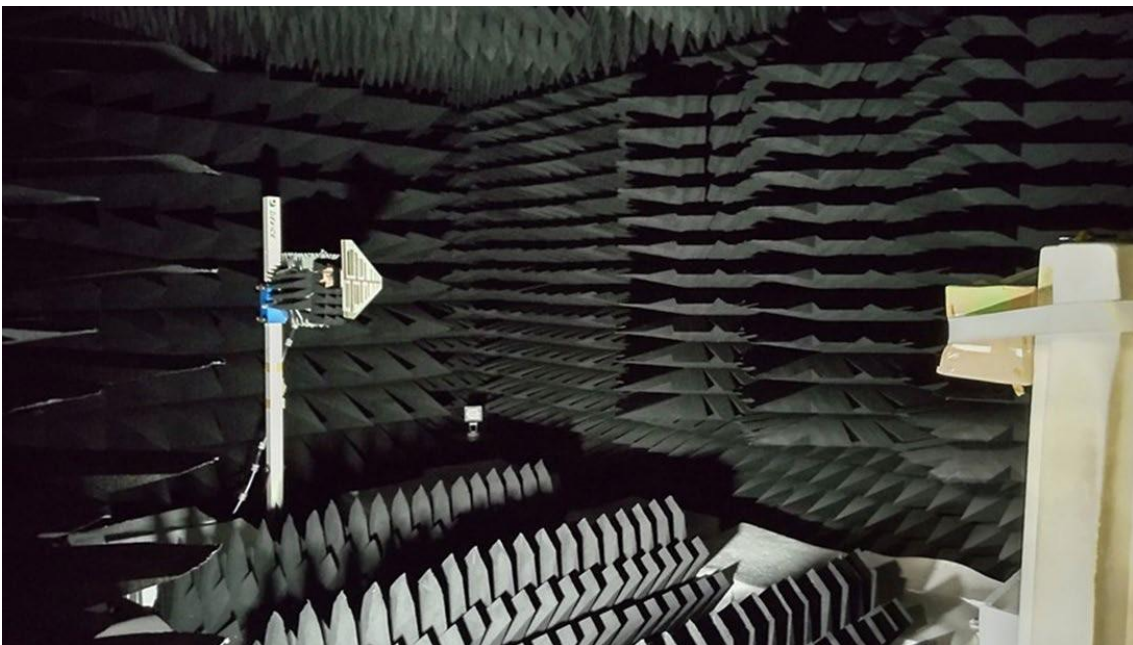
These antennas designed by Sharp.

Manufacturer : DONGGUAN CHENSONG PLASTIC CO., LTD
Brand Name : Sharp
Model Number : GCABAB640AFSA

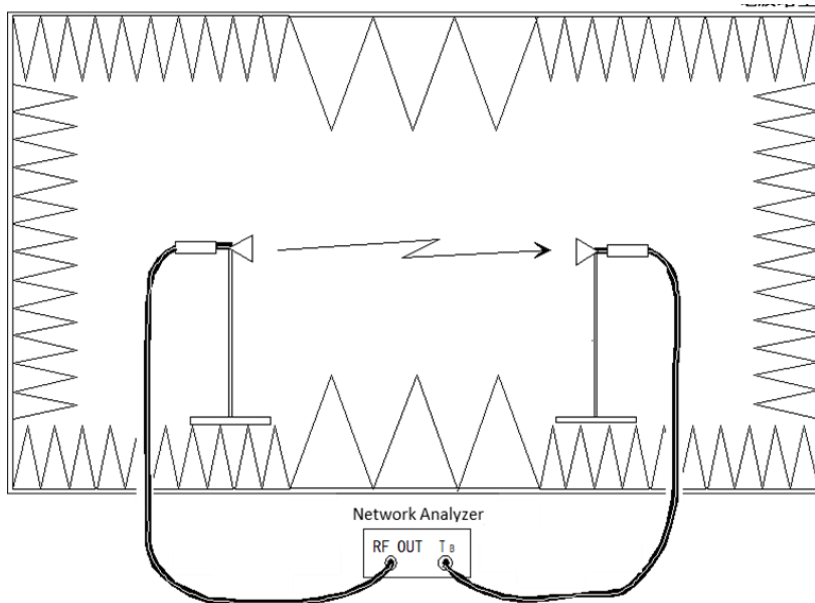
7. Radiation Pattern Test

The antenna is tested in free space in the anechoic chamber in Each Polarizations. The radiation patterns are measured at the center of transmit and receive bands. Following shows the geometry for this device is included in the test setup.

Chamber Information & Equipment list

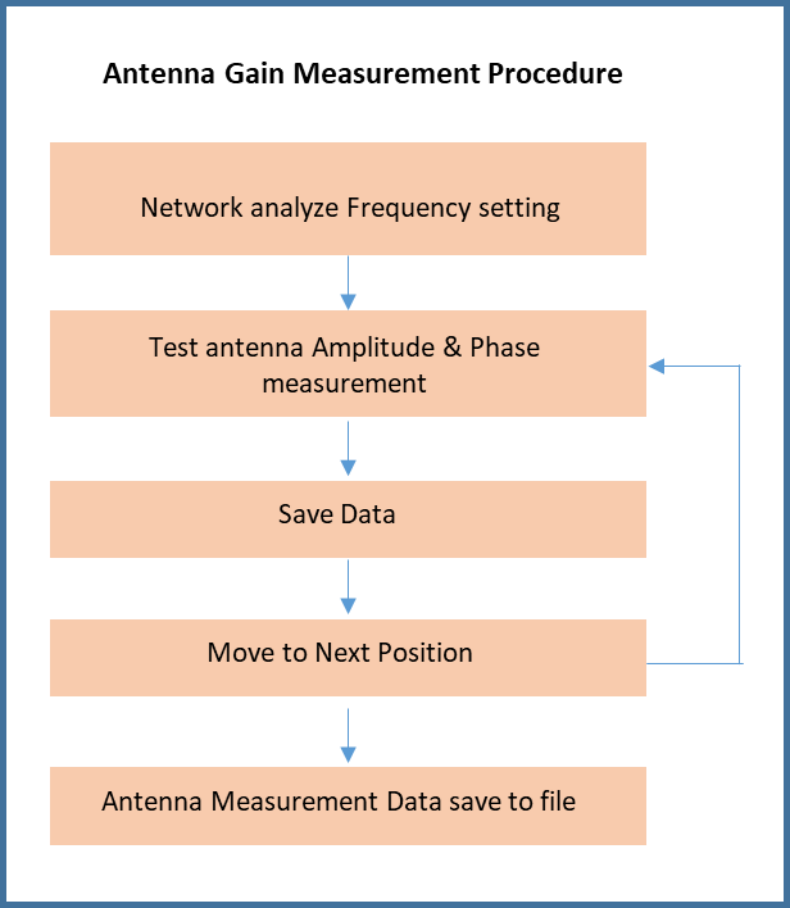


- Location : Sharp Makuhari bld.
- Size : 7m x 4.5m x 3.4m (L x W x H)
- Frequency : 150kHz – 40GHz
- Tx Antenna : 0.5GHz – 8GHz LPDA Single Polarization
- Quiet Zone : 60cm @ 3GHz (Far Field Length 2m)
- 2-axis DUT Positioner 360deg continuous rotation



Part	Model	Specification
Tx Antenna	LPDA	500MHz to 8GHz
	Double Ridge horn ETS-LINDGREN Model 3164-04	400MHz to 6GHz
Reference Antenna	Anritsu Dipole	For Each band
Network Analyzer	Agilent E5071C	300kHz to 8.5GHz

Antenna Gain Measurement Procedure



Test Dates

2023.04.19

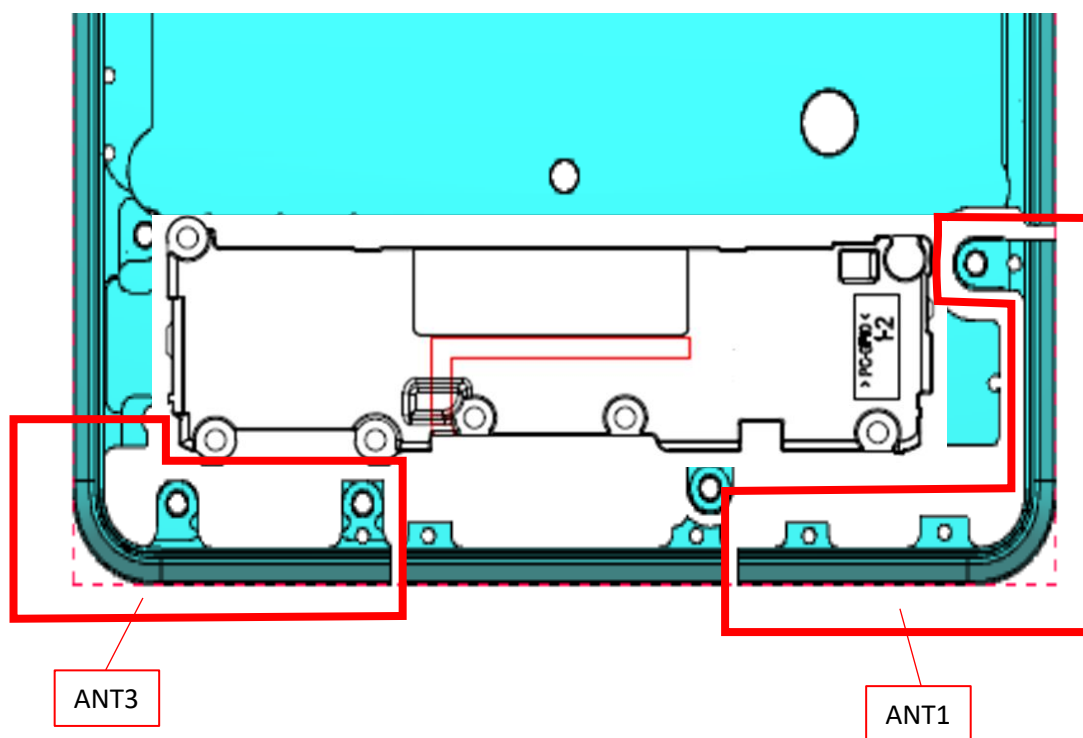
Names of test personnel

Hideaki Aono

Cellular

8.1 Antenna Photos

Figure 1

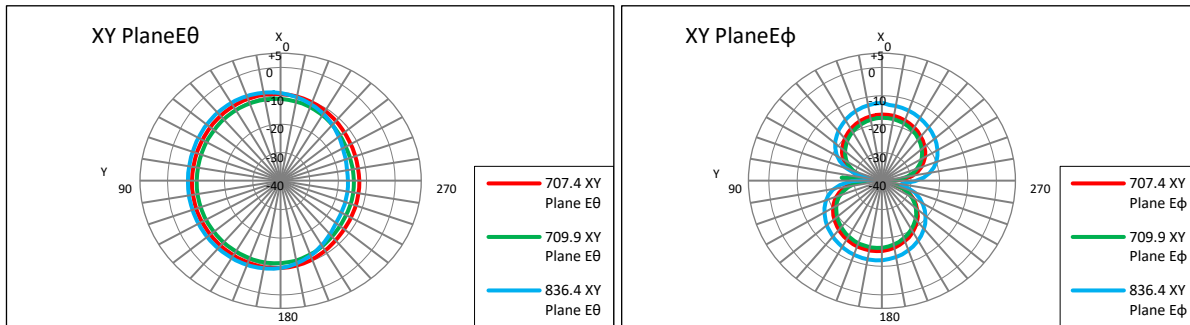


Cellular

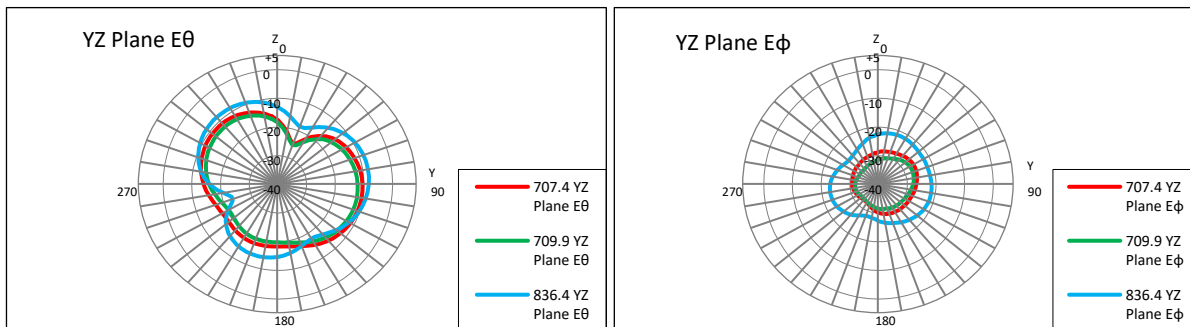
8.2 Antenna Pattern

ANT1_707.4/709.9/836.4MHz

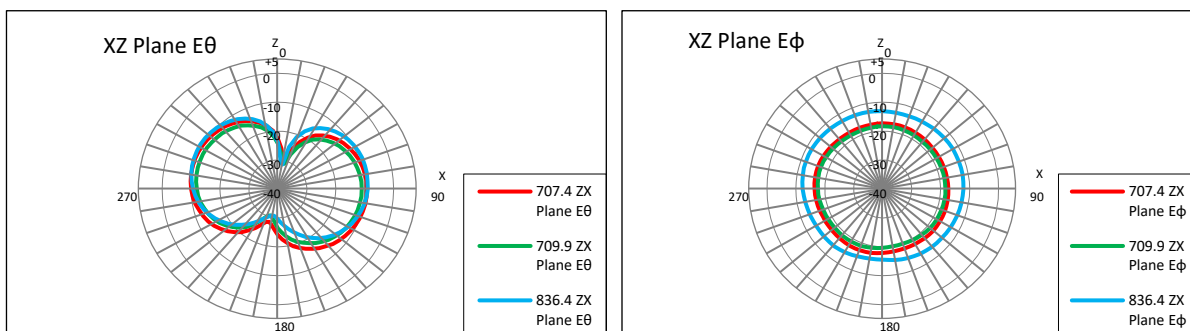
XY Plane



YZ Plane

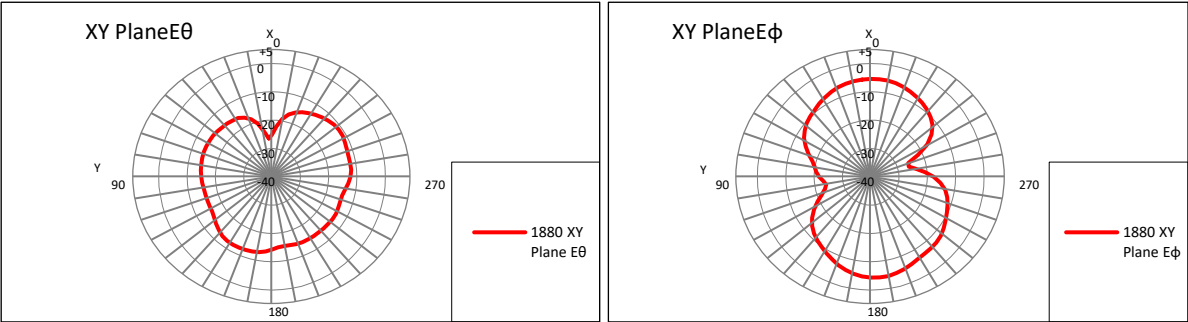


XZ Plane

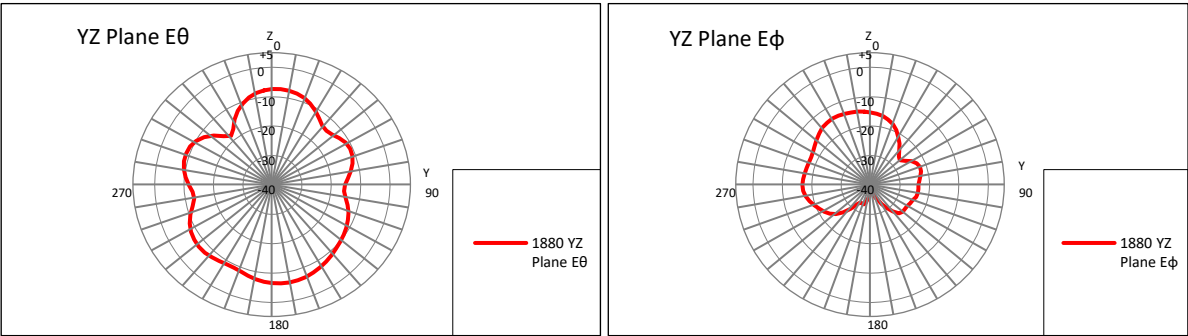


ANT3_1880MHz

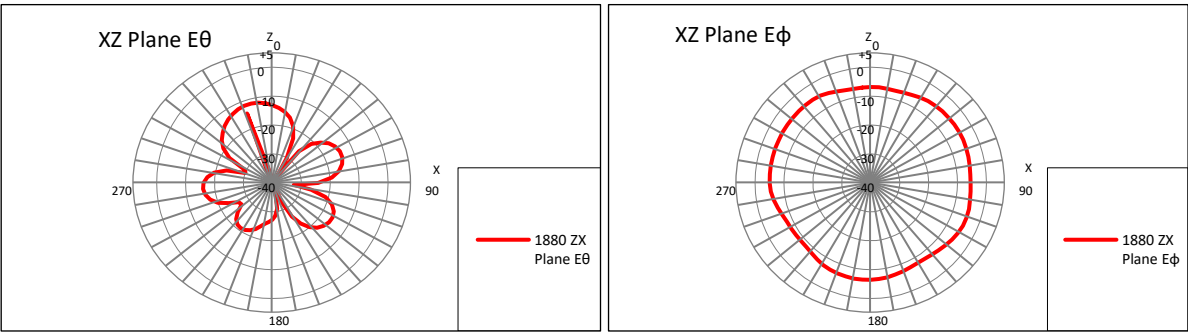
XY Plane



YZ Plane



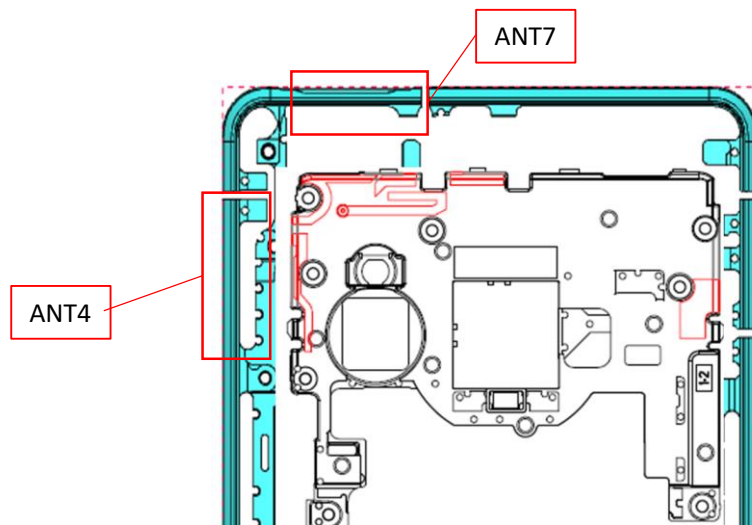
XZ Plane



WiFi

9.1 Antenna Photos

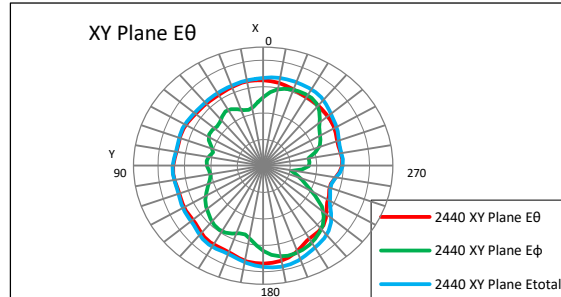
Figure 2



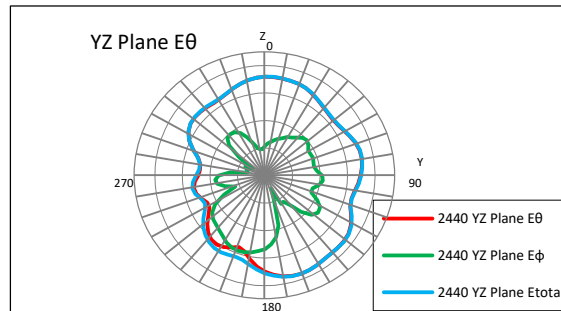
9.2 Antenna Pattern for Max Gain Plane

ANT4 (2440MHz)

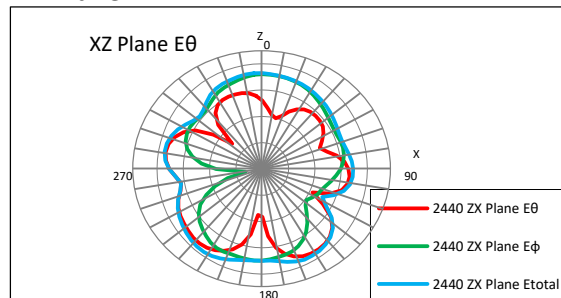
XY Plane



YZ Plane

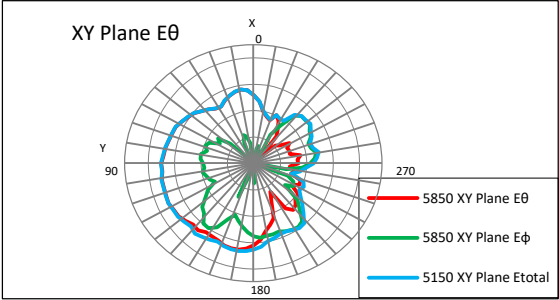


XZ Plane

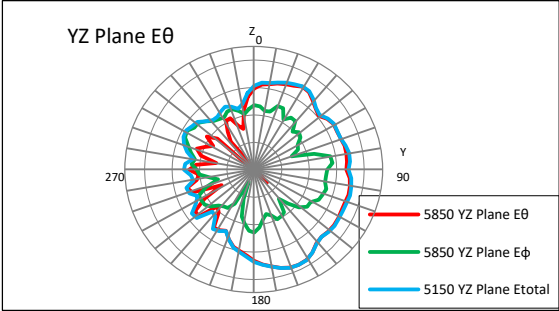


ANT4 (5850MHz)

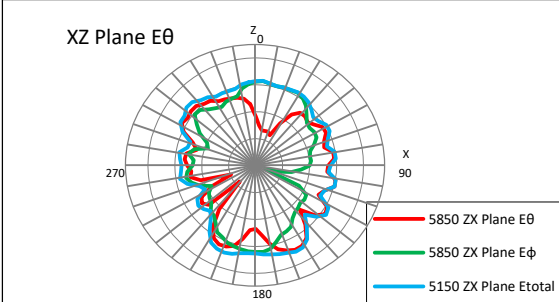
XY Plane



YZ Plane

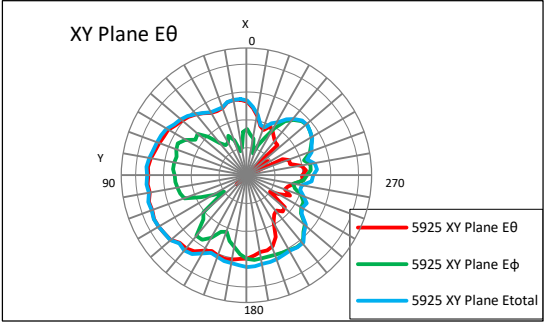


XZ Plane

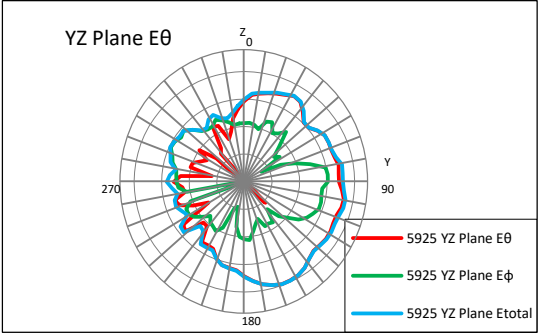


ANT4 (5925MHz)

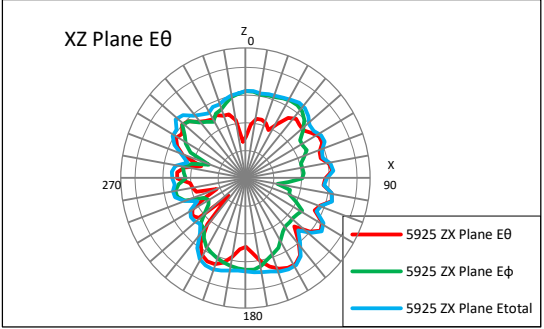
XY Plane



YZ Plane

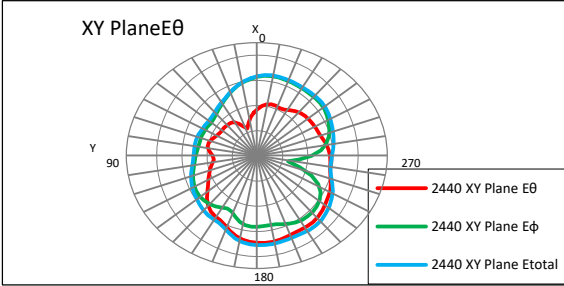


XZ Plane

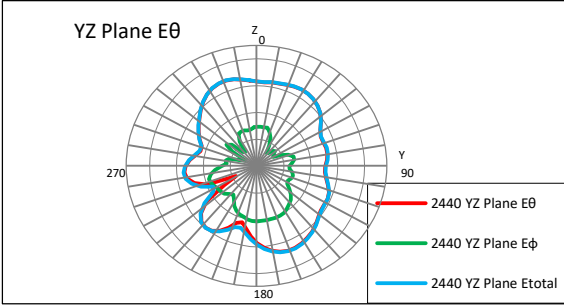


ANT7 (2440MHz)

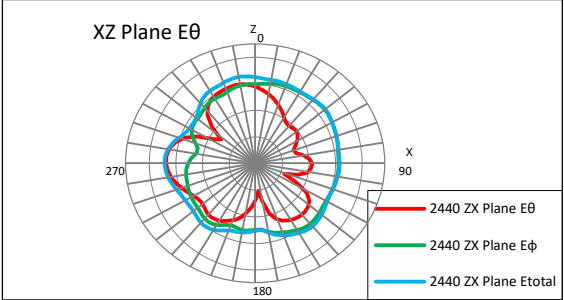
XY Plane



YZ Plane

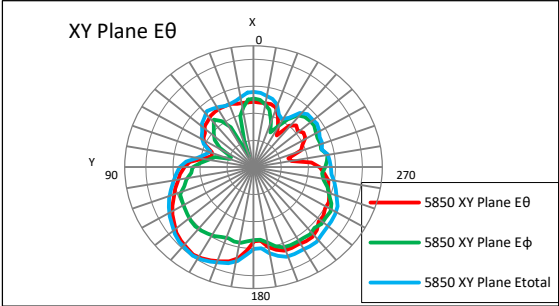


XZ Plane

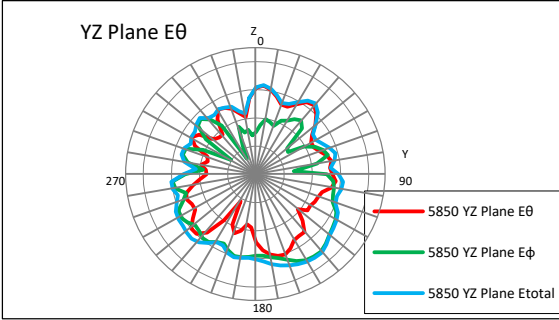


ANT7 (5850MHz)

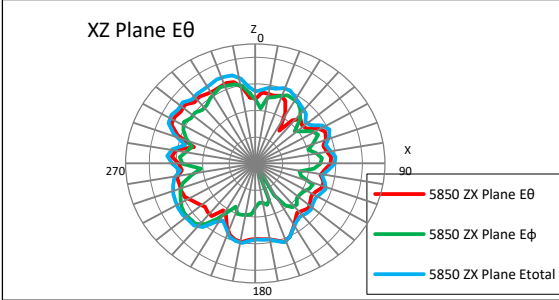
XY Plane



YZ Plane

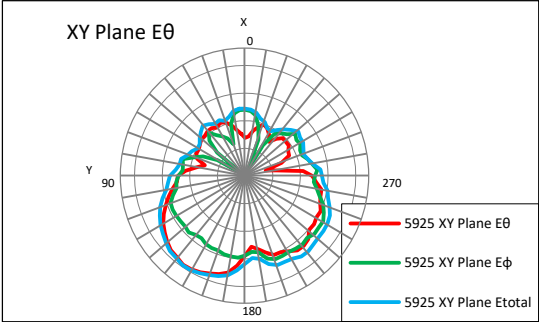


XZ Plane

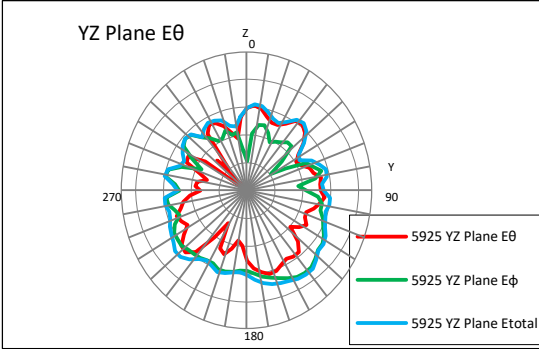


ANT7 (5925MHz)

XY Plane



YZ Plane



XZ Plane

