Antenna Passive Report of EAP101

Angeei

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Oct 31, 2020

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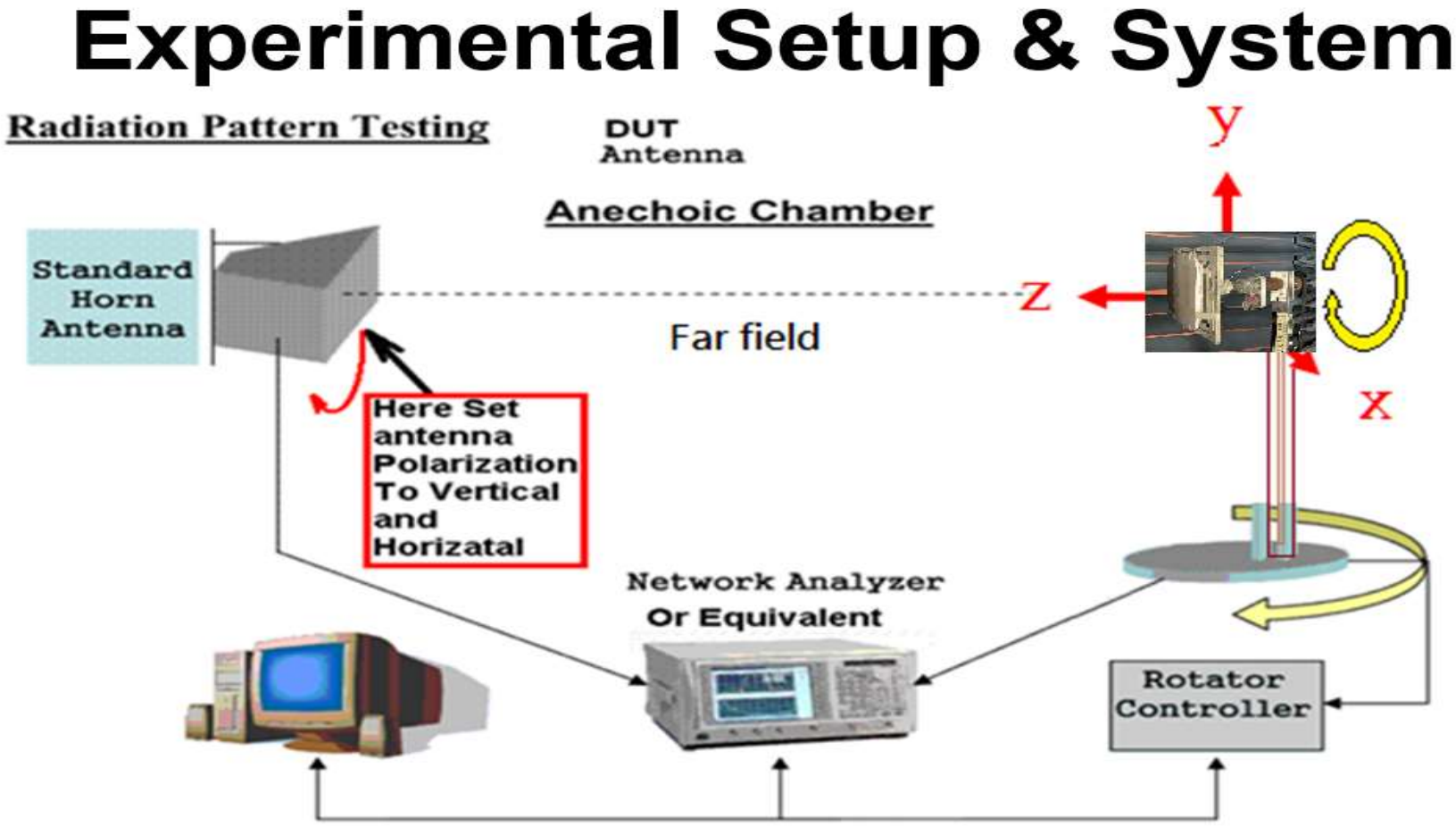
Antenna Description

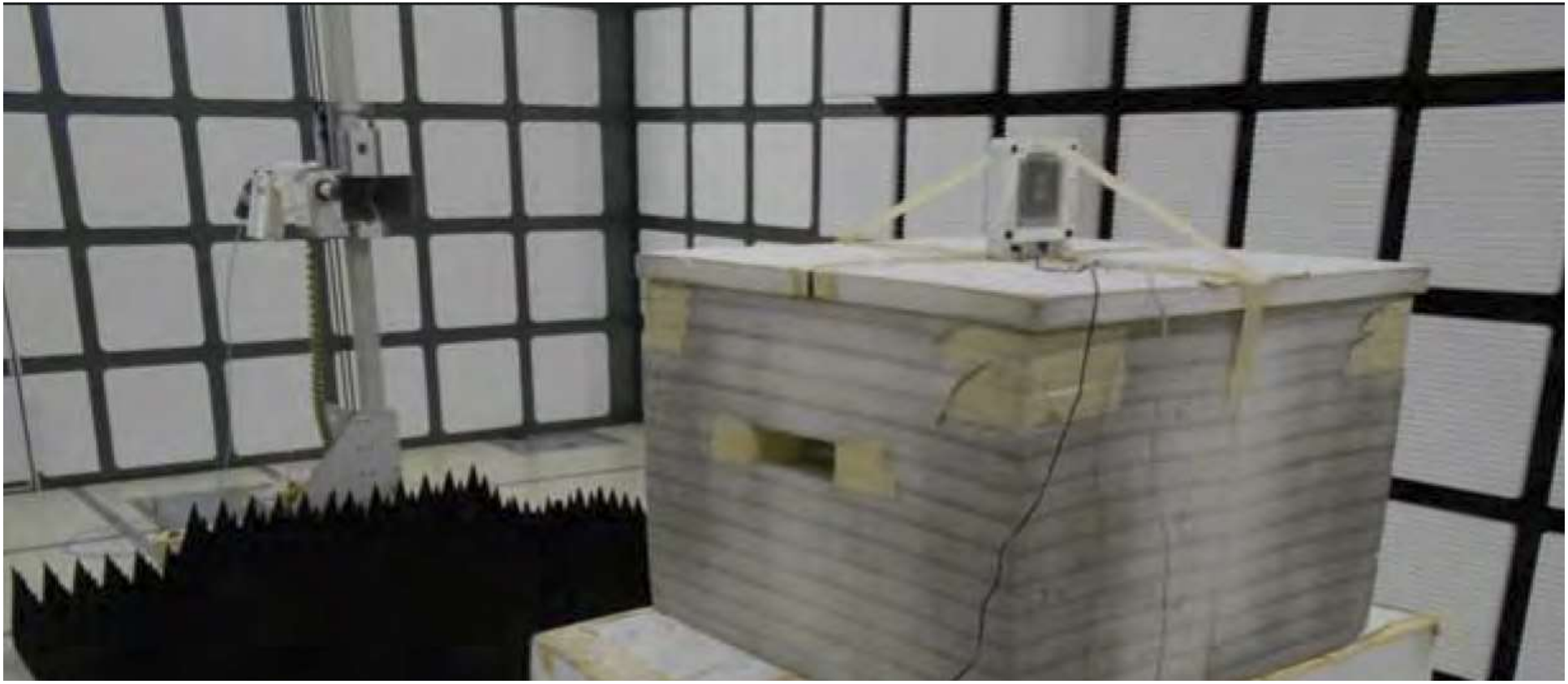
Company name(製造商公司名稱)	Address(製造商地址)
Angeei 愛吉亞 Technology Corporation	**No.28,jinxing Rd.,Jinfeng Town,Zhangjiagang City,Jiangsu,China**

Antenna model (天線型號)	Antenna application (天線應用)	Material (材質)	Antenna Type (天線類型)	Peak Gain (天線最大增益)
SD2430S01-185G13U1S	WiFi 2.4/5GHz	Metal	PIFA	(2.4G)4.8dBi / (5G)5.8dBi
SD2430R01-100G13U1S	WiFi 2.4/5GHz	Metal	PIFA	(2.4G)4.8dBi / (5G)6dBi
P242003-T4-55G13U1S	BLE	FR4	PCB	(2.4G)4.6dBi

Experimental Setup & Coordinate System

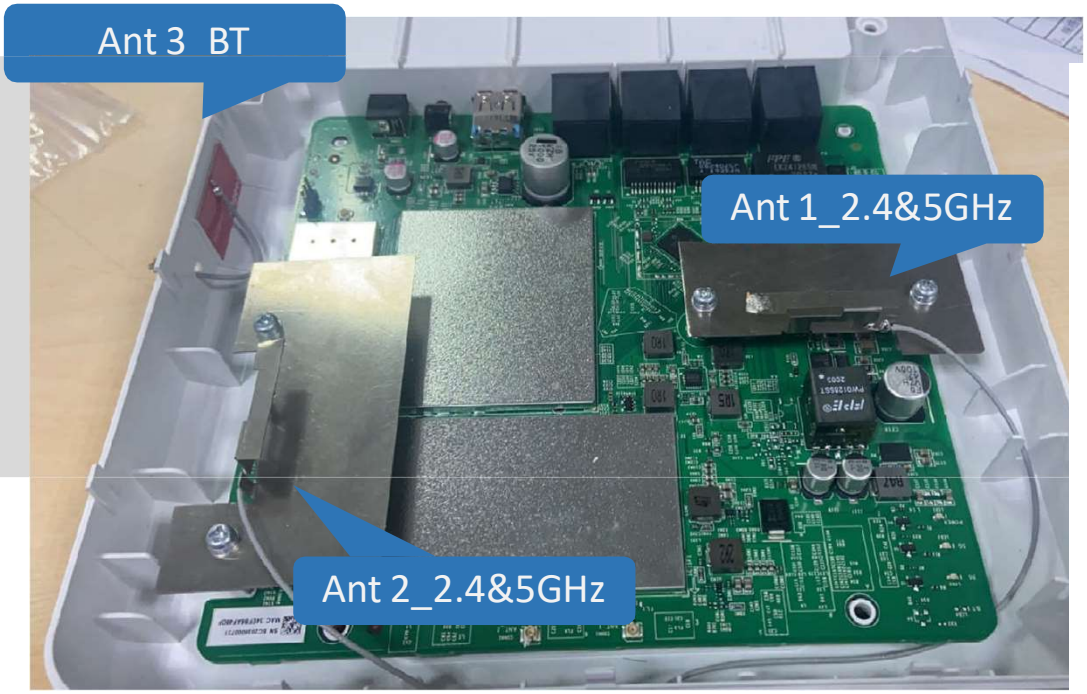


Experimental Setup & Coordinate System

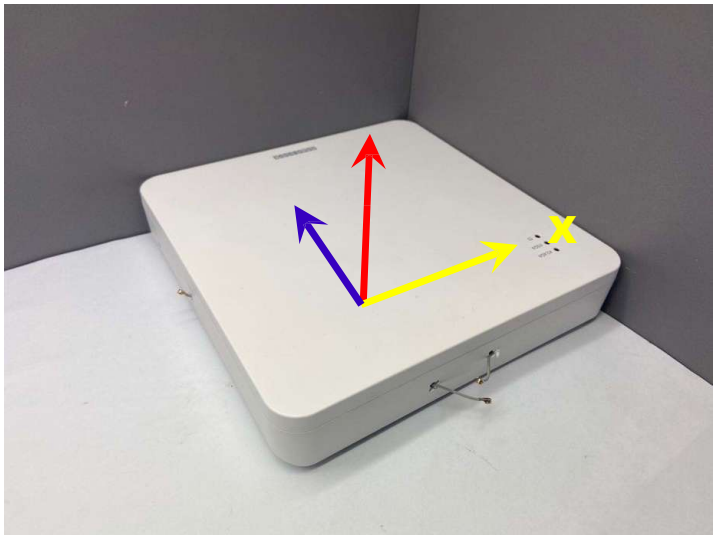


Experimental Setup & Coordinate System

➢Angeei Solution



Ant #	P/N
Ant 1_2.4&5GHz	SD2430S01-185G13U1S
Ant 2_2.4&5GHz	SD2430R01-100G13U1S
Ant 3_BT	P242003-T4-55G13U1S



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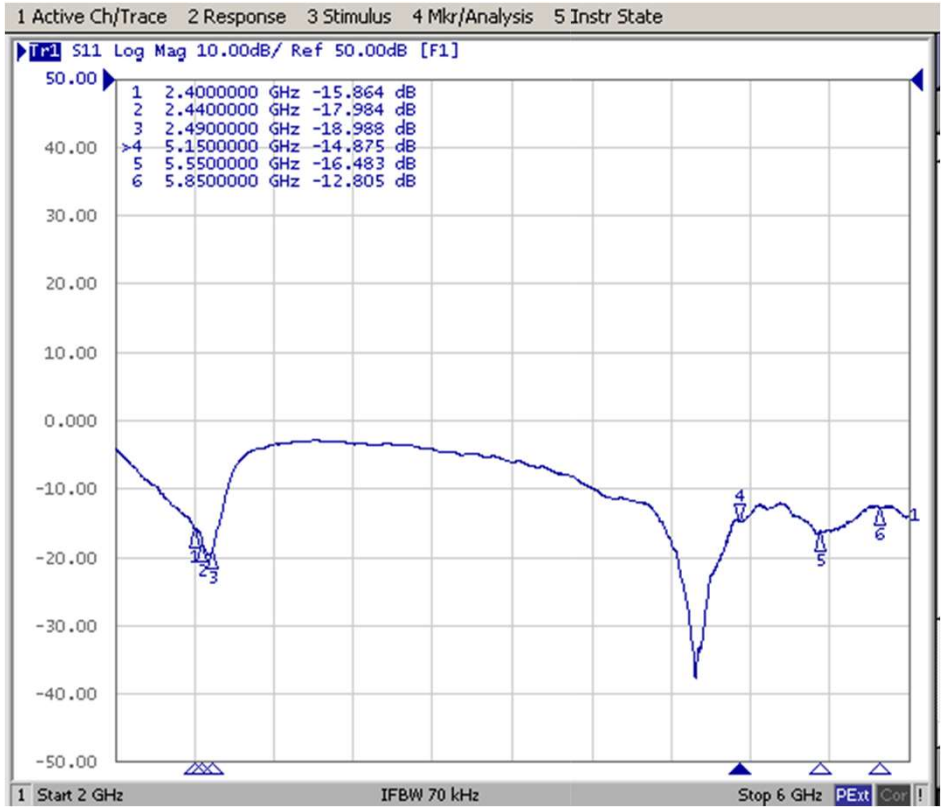
Return Loss

- Ant 1 at 2.4-2.49GHz&5.15-5.85GHz



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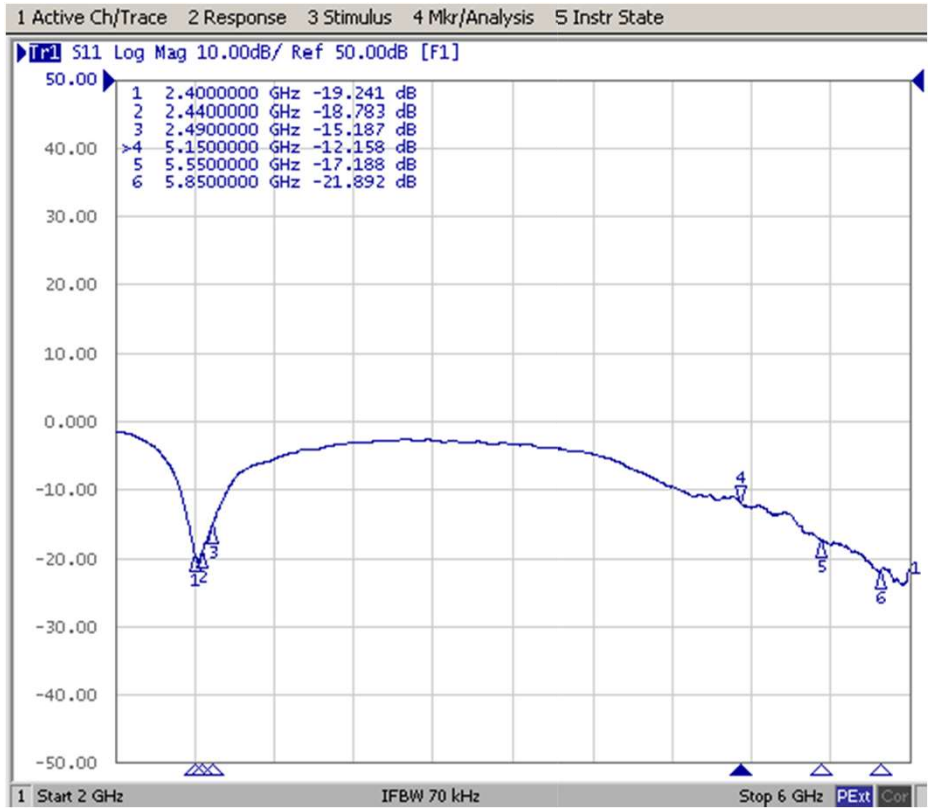
Return Loss

- Ant 2 at 2.4-2.49GHz&5.15-5.85GHz



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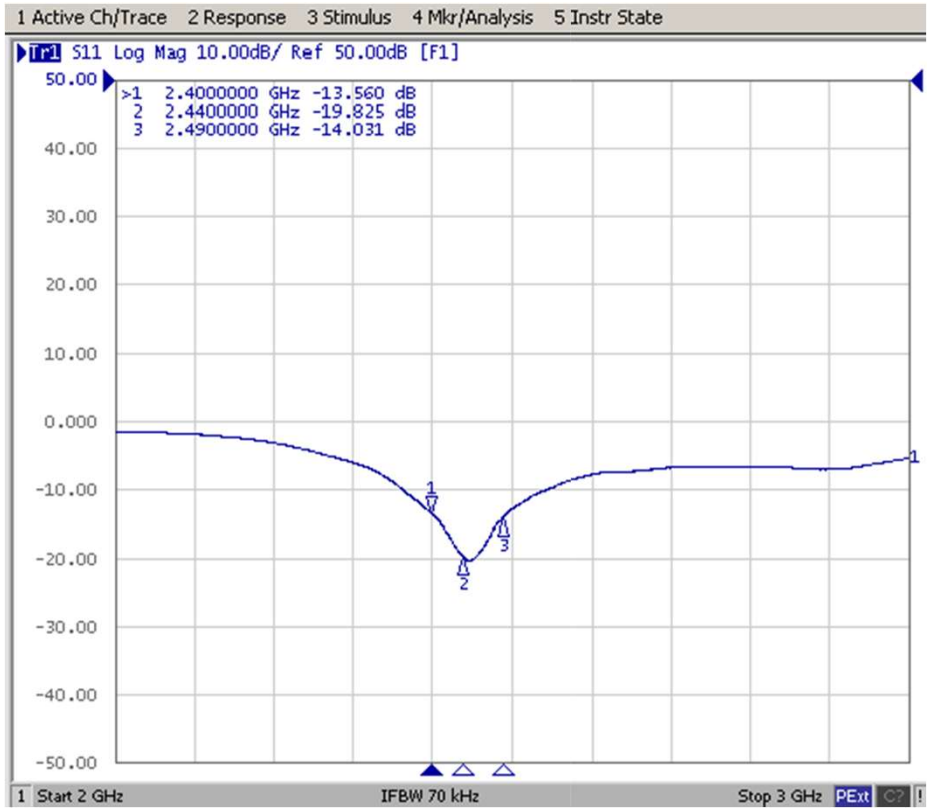
Return Loss

- Ant 3 at 2.4-2.49GHz



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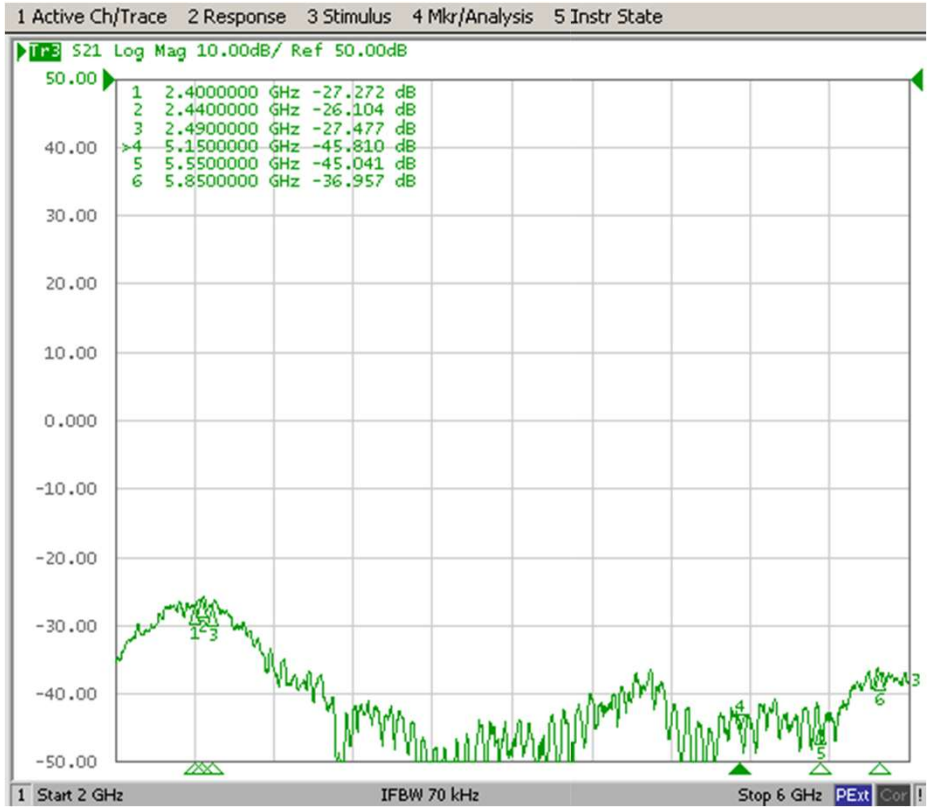
Isolation

➢Ant 1 & Ant 2



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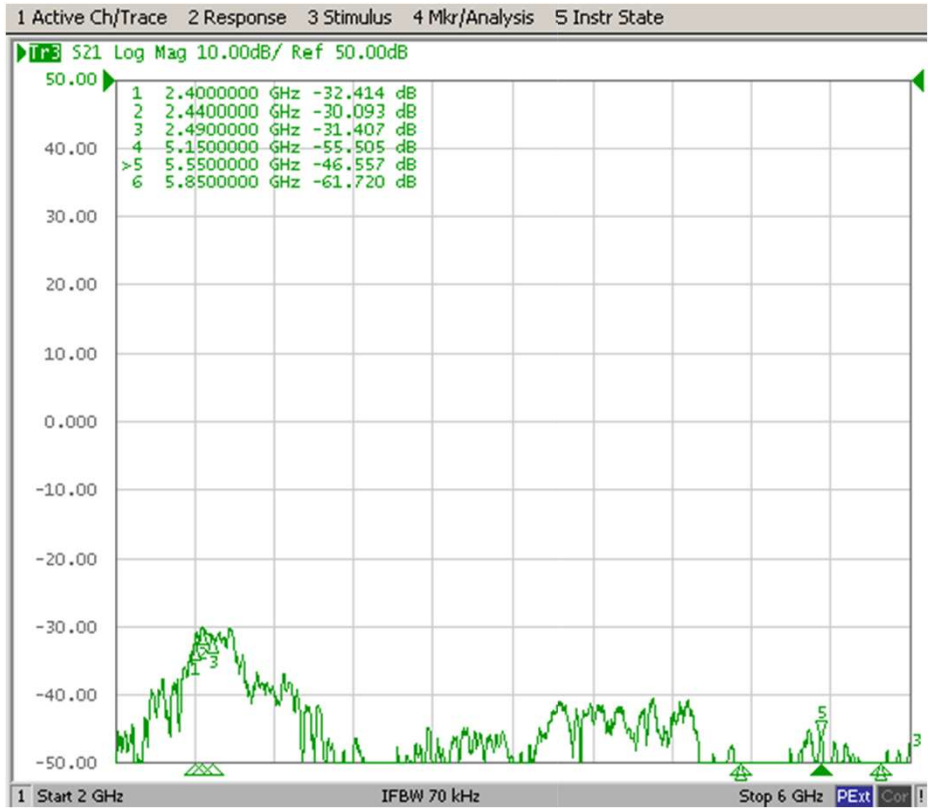
Isolation

➢Ant 1 & Ant 3



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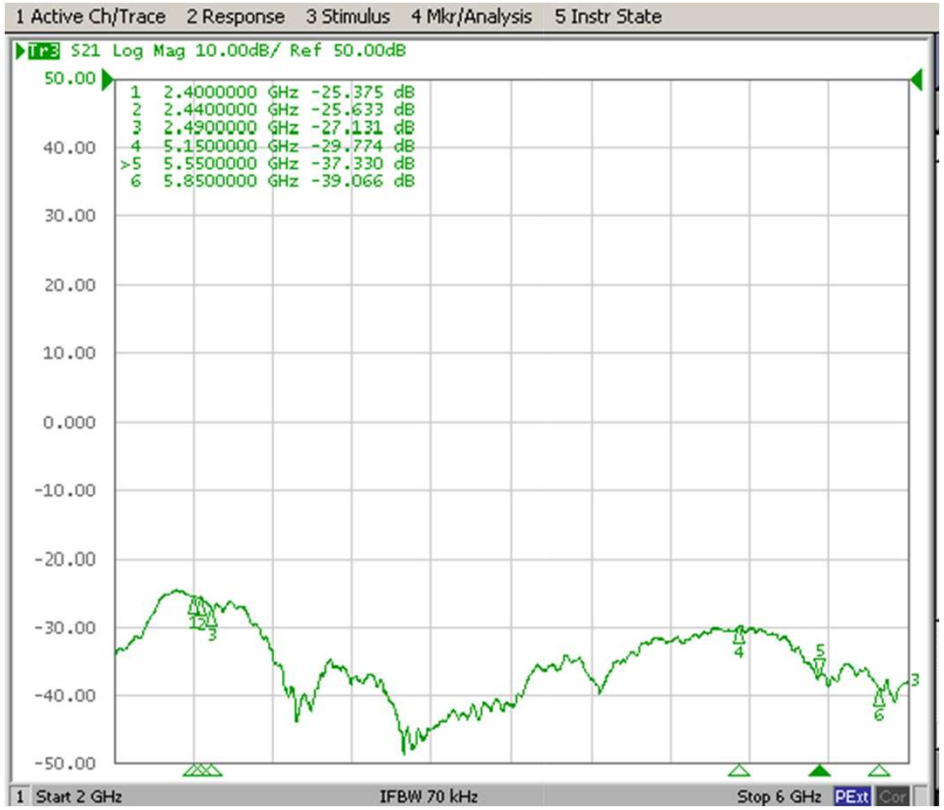
Isolation

➢Ant 2 & Ant 3



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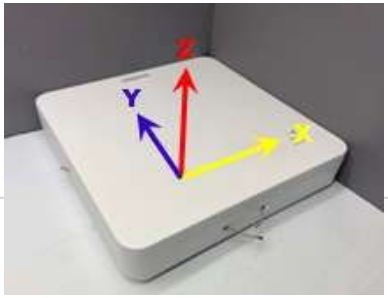
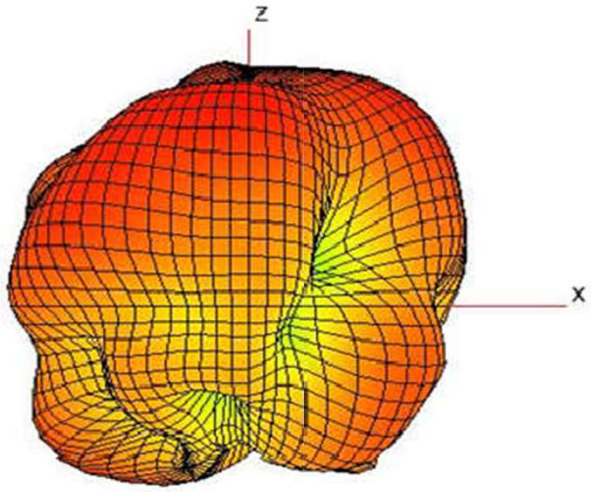
3D Radiation Pattern_2.4GHz



2.4G_Ant1



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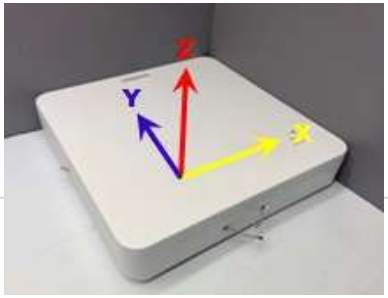
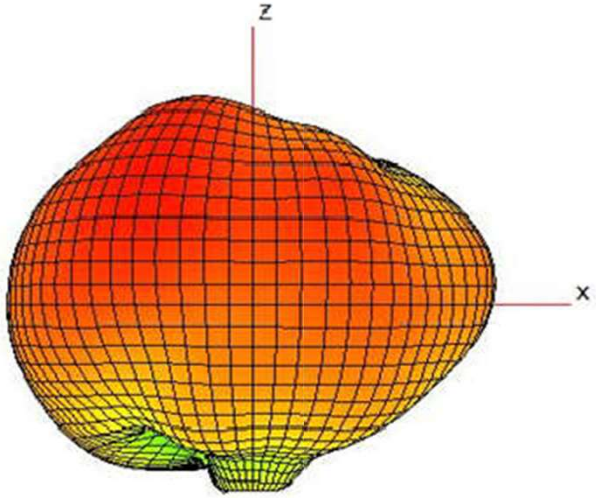
3D Radiation Pattern_2.4GHz



2.4G_Ant2



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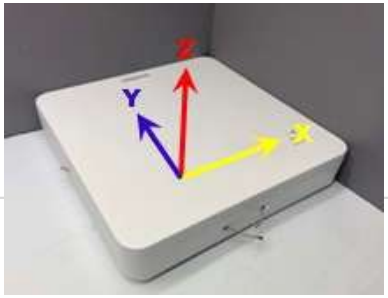
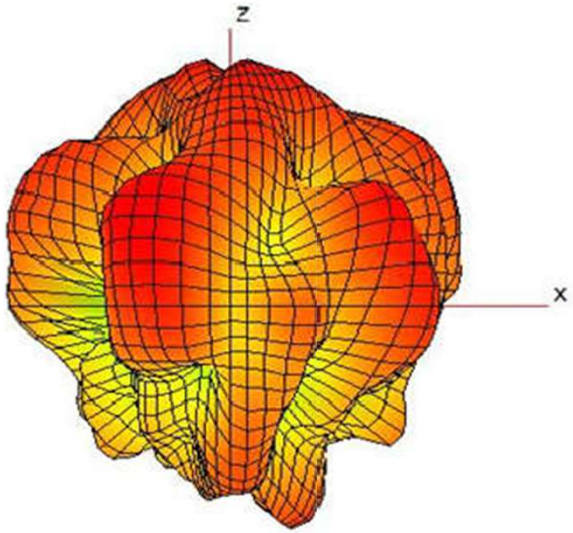
3D Radiation Pattern_5GHz



5G_Ant1



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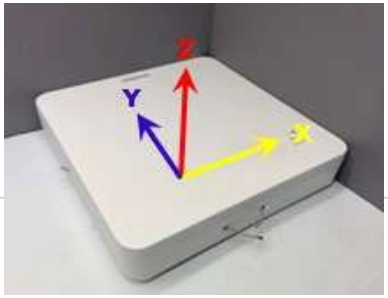
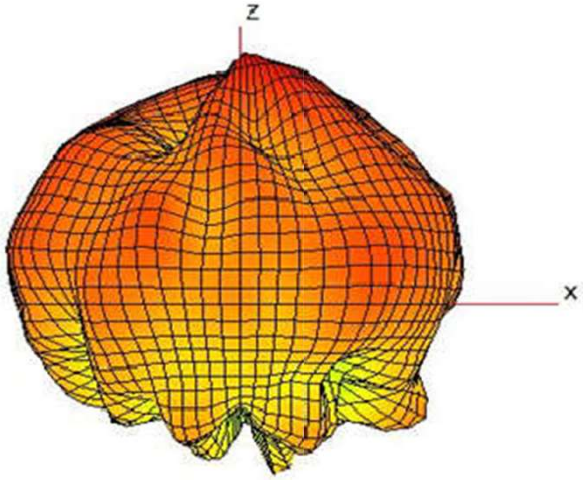
3D Radiation Pattern_5GHz



5G_Ant2



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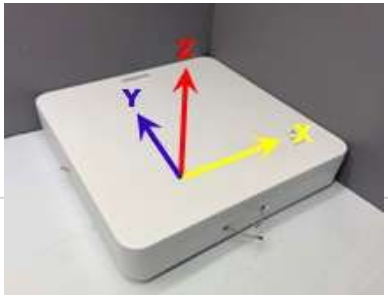
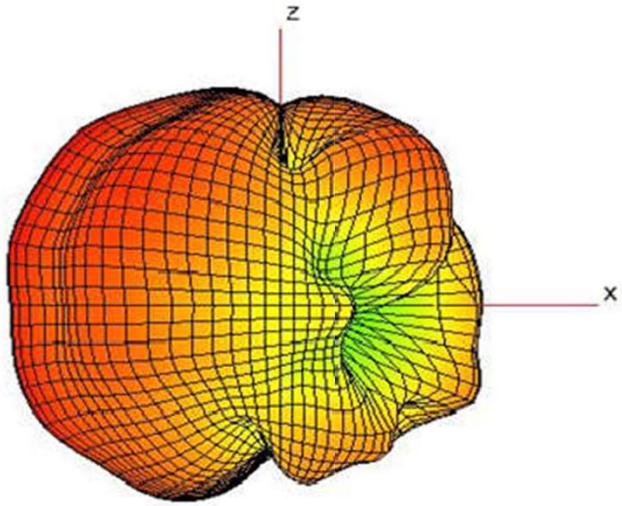
3D Radiation Pattern_2.4GHz



2.4G_Ant3



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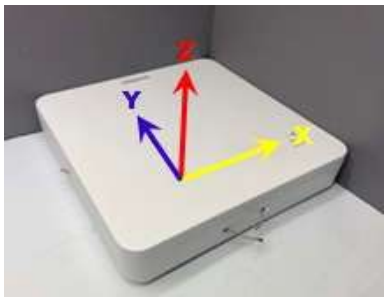
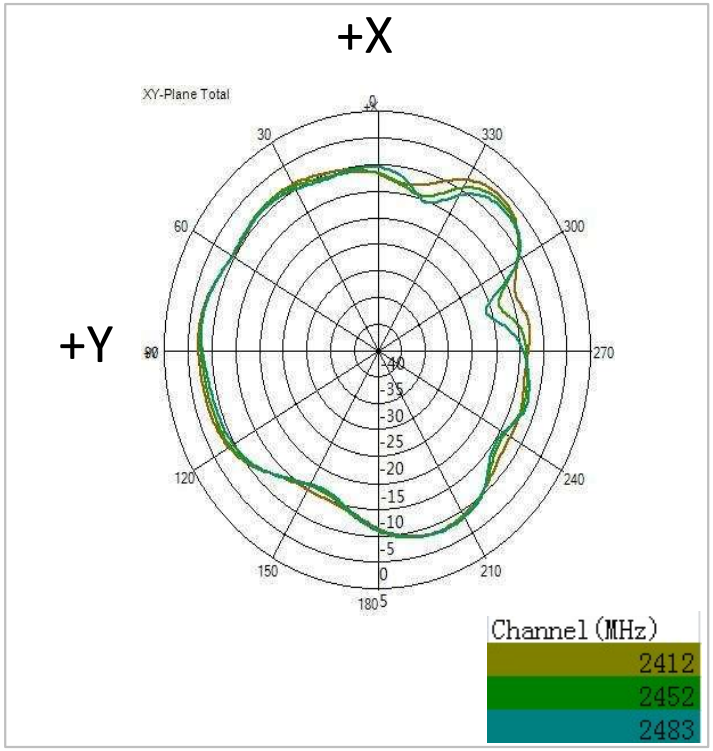
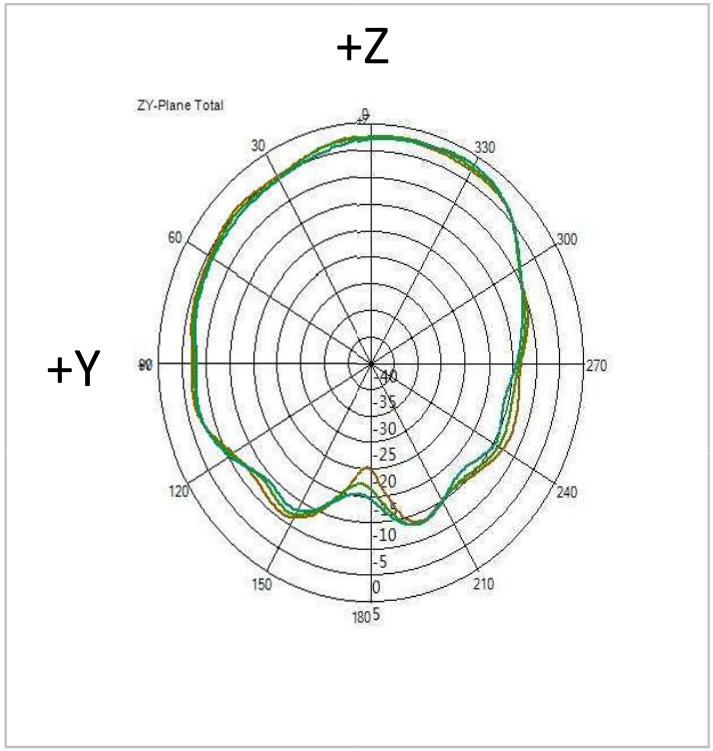
2D Radiation Patterns



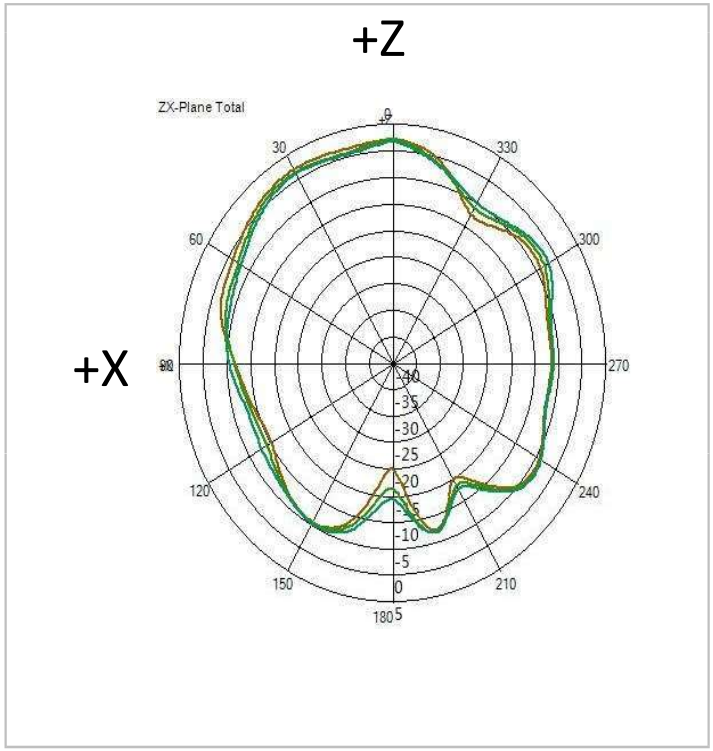
➢ Ant 1 at 2.44GHz



• AZ Plane



• EL-1 Plane



• EL-2 Plane

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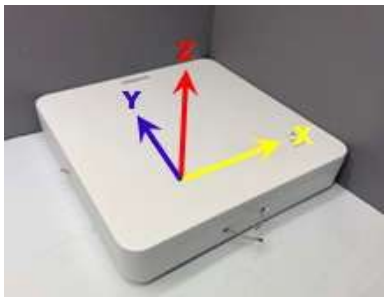
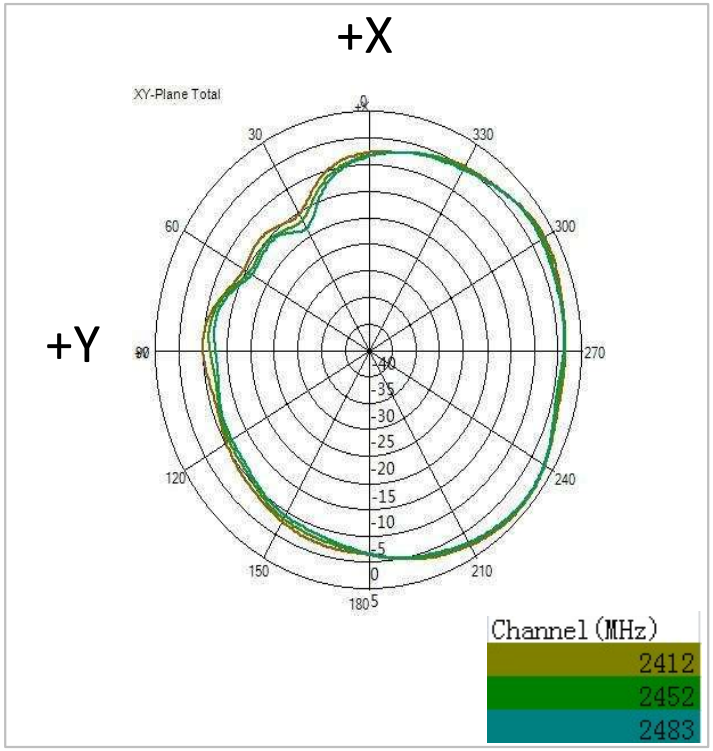
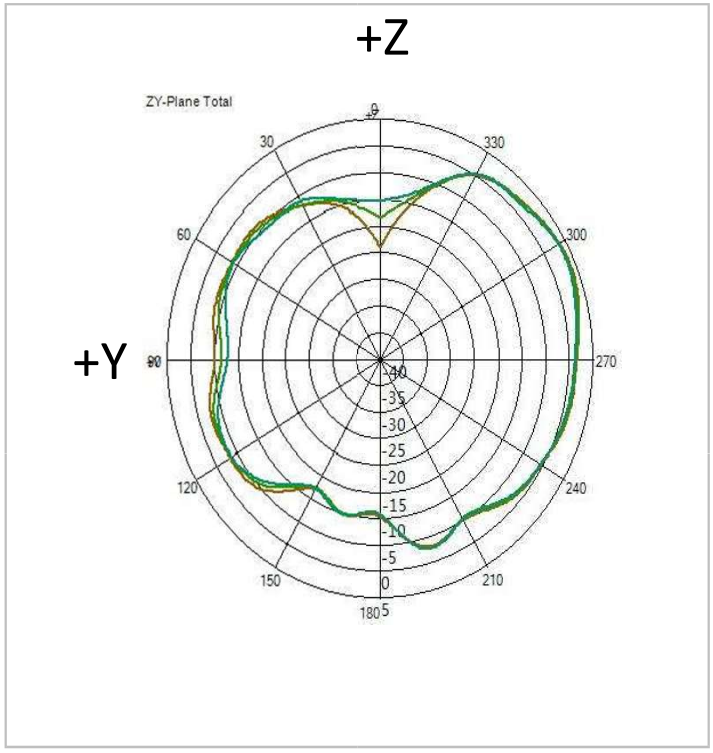
2D Radiation Patterns



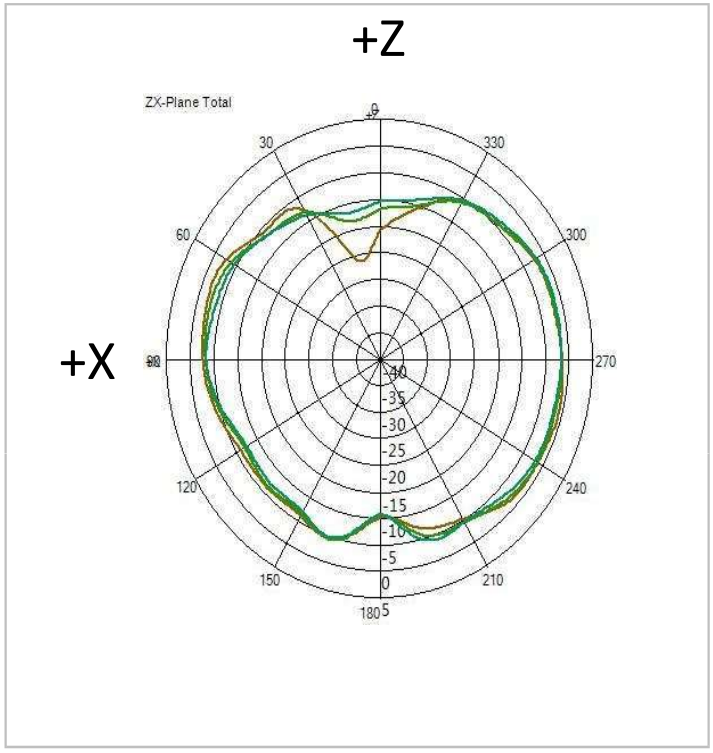
➢ Ant 2 at 2.44GHz



- AZ Plane



- EL-1 Plane



- EL-2 Plane

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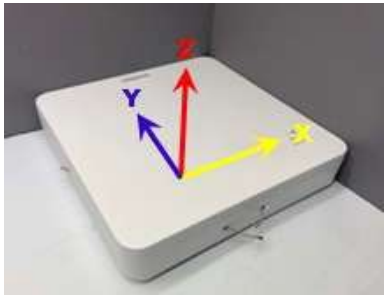
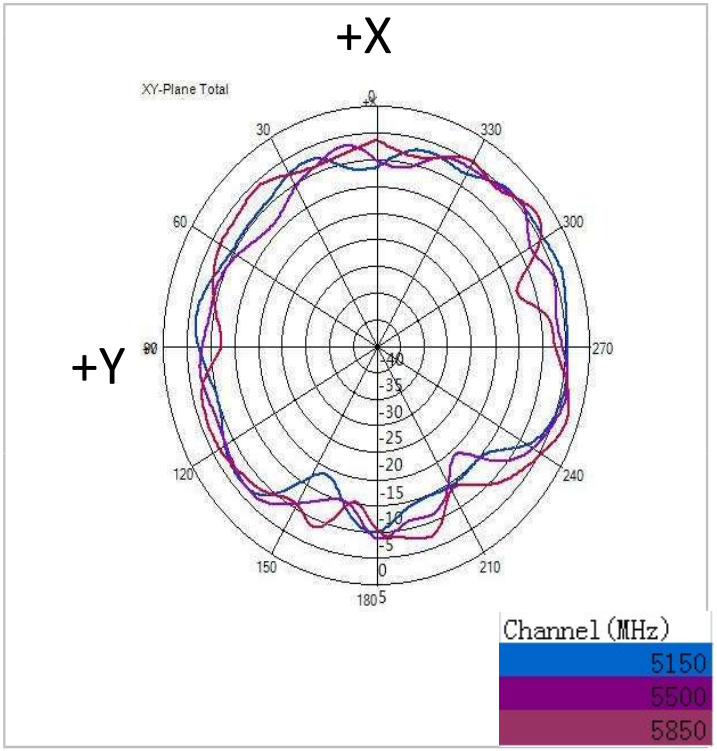
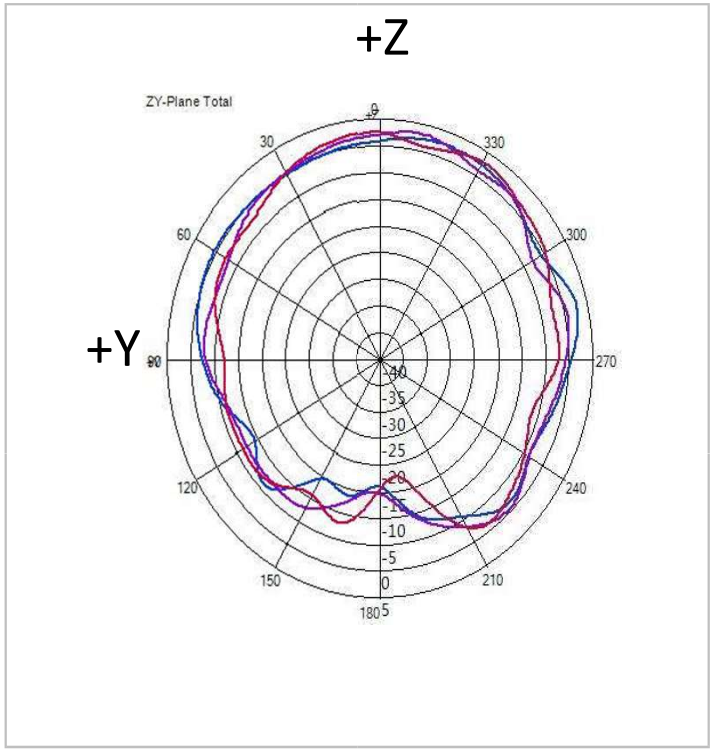
2D Radiation Patterns



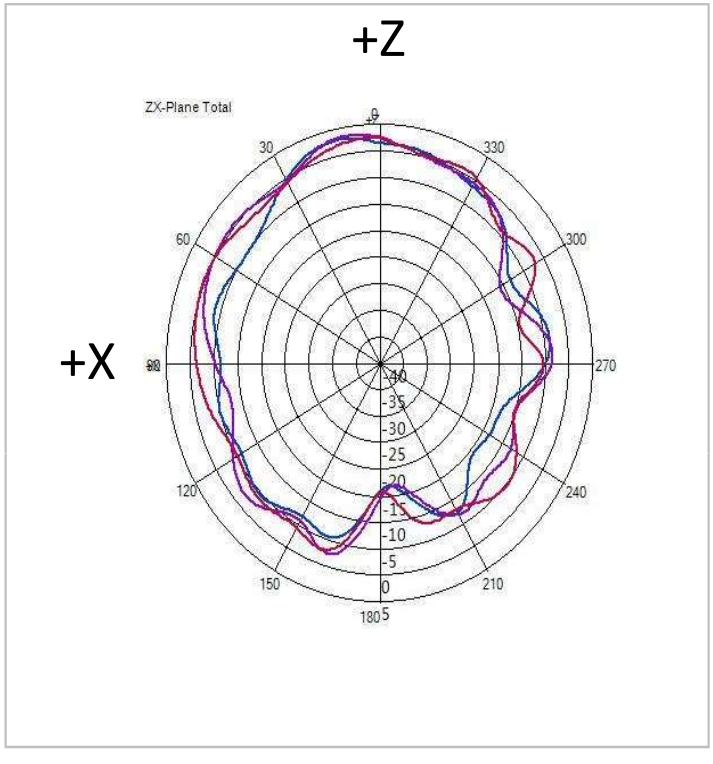
➢ Ant 1 at 5.55GHz



• AZ Plane



• EL-1 Plane



• EL-2 Plane

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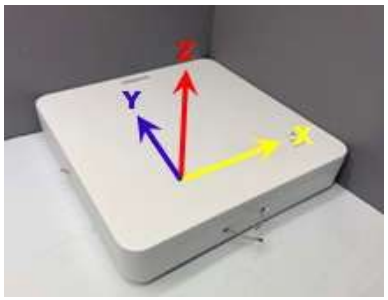
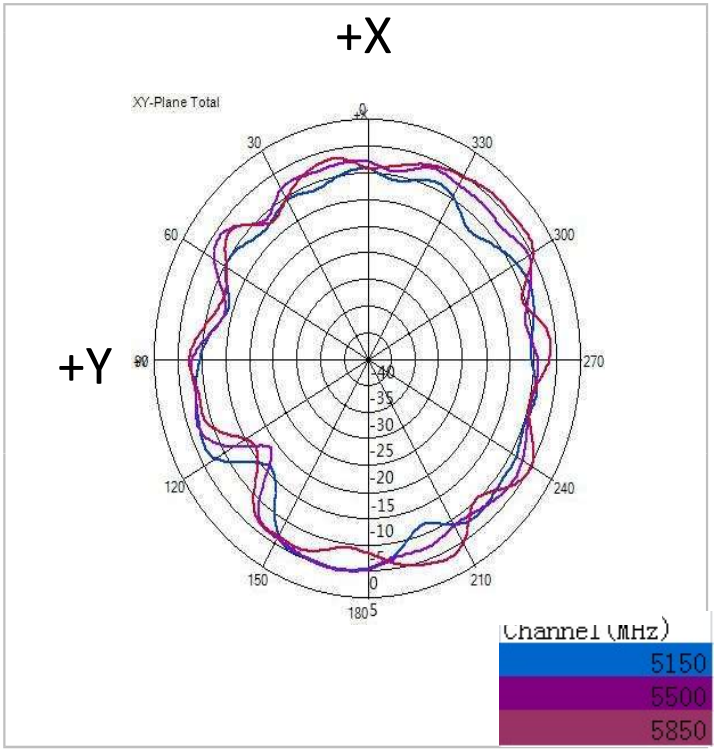
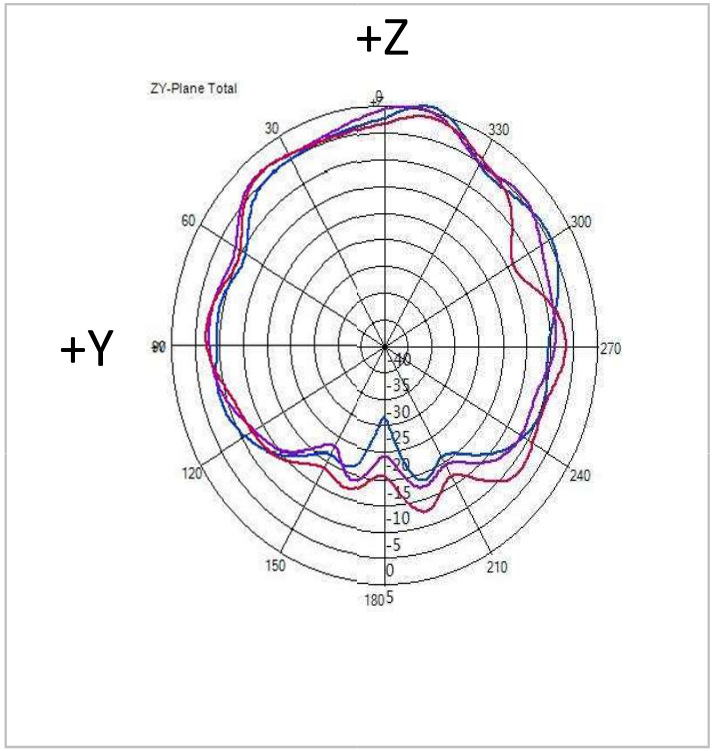
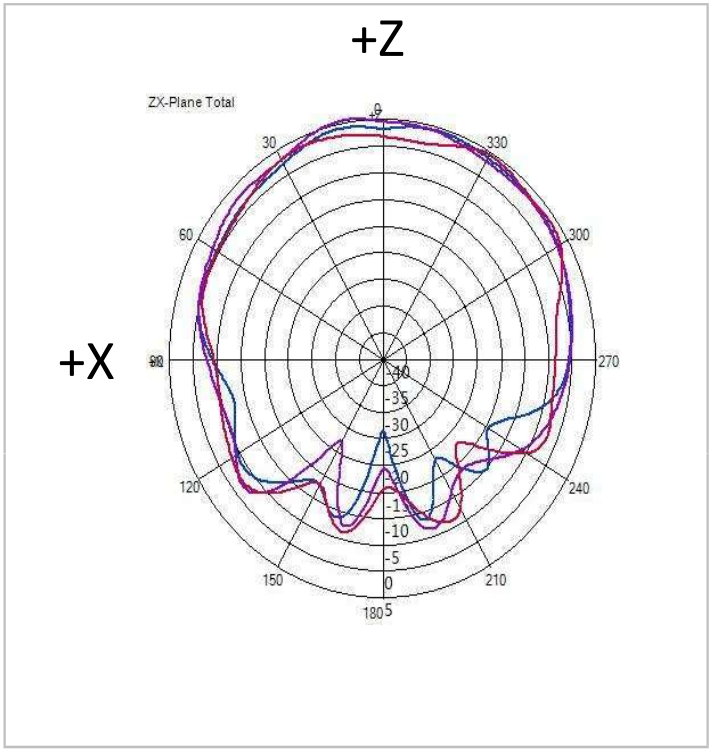
2D Radiation Patterns



➢ Ant 2 at 5.55GHz







- AZ Plane
- EL-1 Plane
- EL-2 Plane

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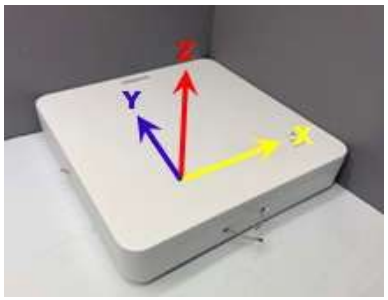
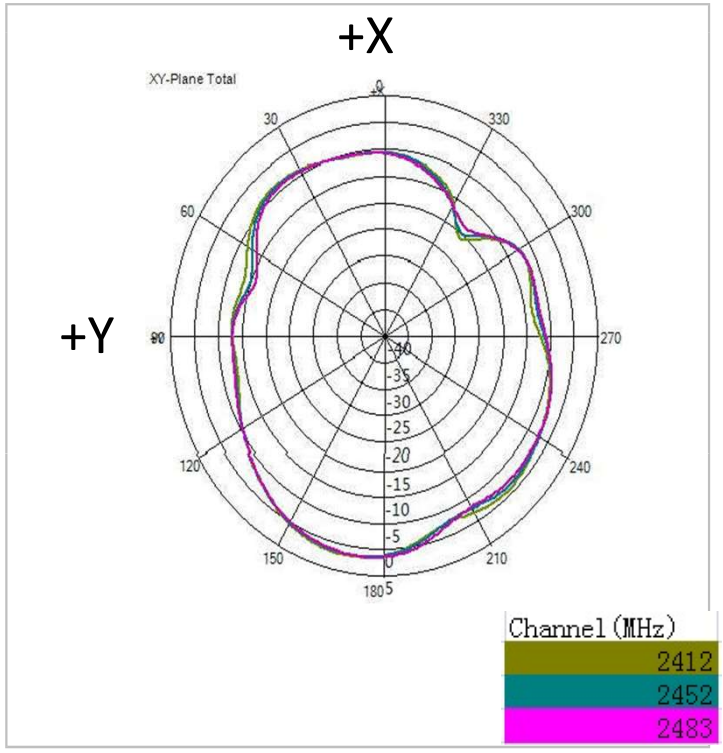
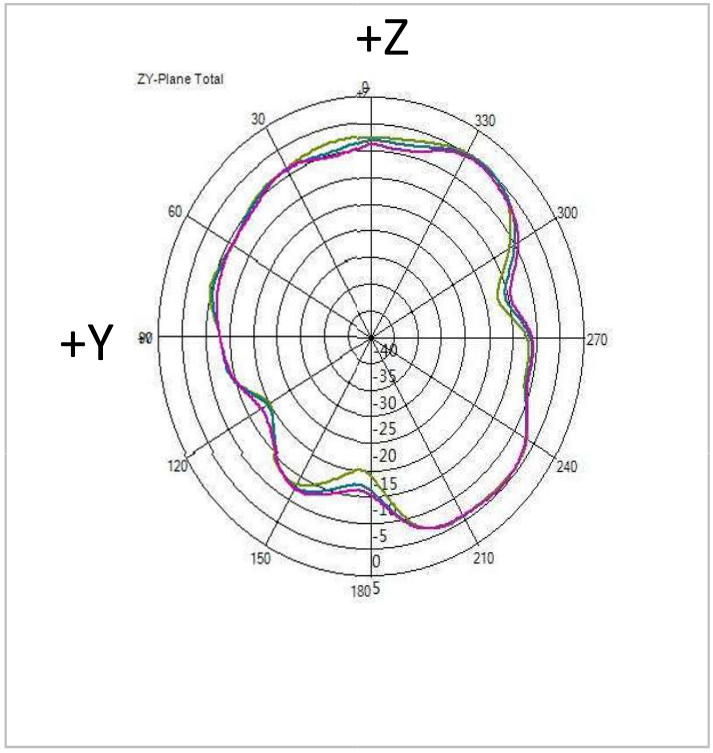
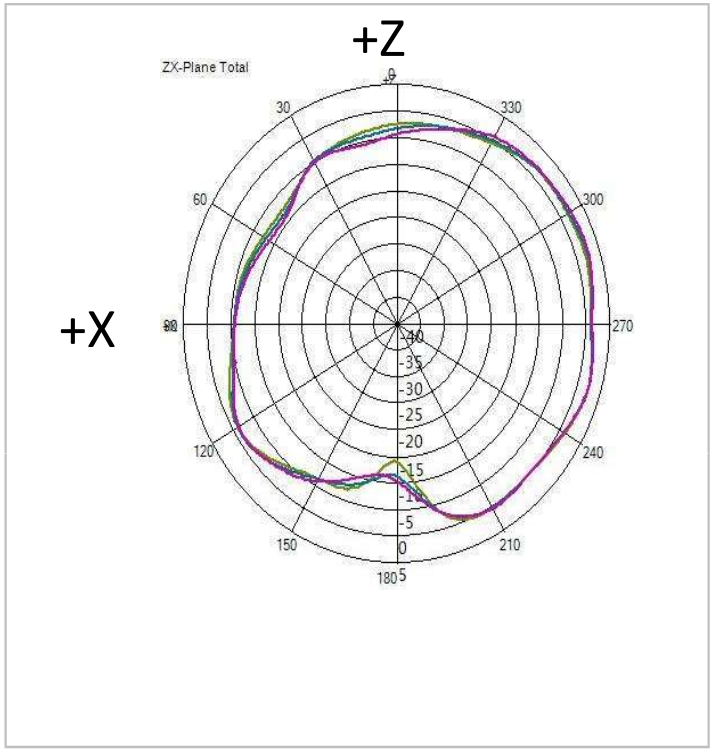
2D Radiation Patterns



➢ Ant 3 at 2.44GHz







- AZ Plane
- EL-1 Plane
- EL-2 Plane

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Peak Gain & Efficiency

Wi-Fi 2.4GHz-1 Antenna			
Frequency	2.412 GHz	2.447 GHz	2.4835 GHz
Efficiency	81.6 %	80.3%	82.1%
Peak Gain	4.8 dBi	4.2 dBi	4.5 dBi
Peak gain at polarization	(Φ)310°(Θ)75°	(Φ)145°(Θ)45°	(Φ)155°(Θ)45°
Wi-Fi 5.5GHz-1 Antenna			
Frequency	5.150 GHz	5.500 GHz	5.850 GHz
Efficiency	82.3 %	81.3%	81.4%
Peak Gain	5.8 dBi	5.5 dBi	5.7 dBi
Peak gain at polarization	(Φ)0°(Θ)50°	(Φ)0°(Θ)50°	(Φ) 55°(Θ)95°
Wi-Fi 2.4GHz-2 Antenna			
Frequency	2.412 GHz	2.447 GHz	2.4835 GHz
Efficiency	82.1 %	82.5%	81.5%
Peak Gain	4.8 dBi	4.5 dBi	4.6 dBi
Peak gain at polarization	(Φ)325°(Θ)10°	(Φ)15°(Θ)60°	(Φ)25°(Θ)45°
Wi-Fi 5.5GHz-2 Antenna			
Frequency	5.150 GHz	5.500 GHz	5.850 GHz
Efficiency	83.5%	82.4%	82.7%
Peak Gain	6.0 dBi	6.0 dBi	5.6 dBi
Peak gain at polarization	(Φ)305°(Θ)25°	(Φ)0°(Θ)40°	(Φ)335°(Θ)35°
BLE Antenna			
Frequency	2.412 GHz	2.447 GHz	2.4835 GHz
Efficiency	70.6%	70.1%	70.2%
Peak Gain	4.5 dBi	4.5 dBi	4.6 dBi
Peak gain at polarization	(Φ) 20°(Θ)0°	(Φ)35°(Θ)0°	(Φ)30°(Θ)0°

Peak Gain & Efficiency

※Φ(Phi) ; Θ(Theta)
※Peak Gain (G) and directivity (D) are linked by the formula G = k x D, where the antenna effective factor k (0 ≤ k ≤ 1) corresponds to the overall losses of the antenna. Accordingly antenna gain can be calculated by the following formula, where represents antenna losses comprising of all ohm and dielectric losses between the input connector and the outer surface of the radome and the loss due to the impedance mismatch.