



WAP380

Antenna Test Report

Senao Networks, Inc.

Customer	Emplus
Project	WAP380
Project Description	2.4G antenna *4 5G antenna *4
Date	2020/04/28
Prepared by	Cell
Report Version	A01

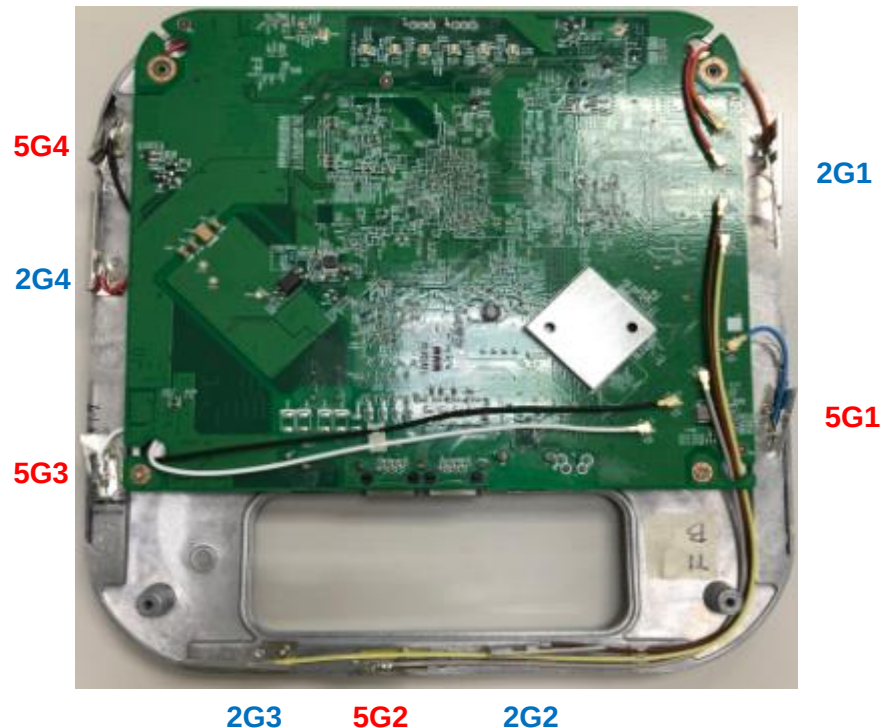
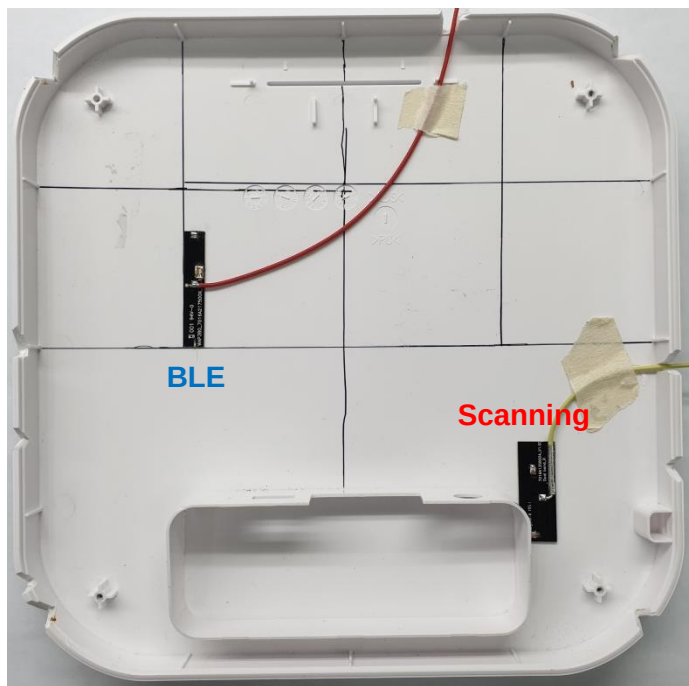
- **Purpose**

Antenna verification for WAP380 device, result as following.

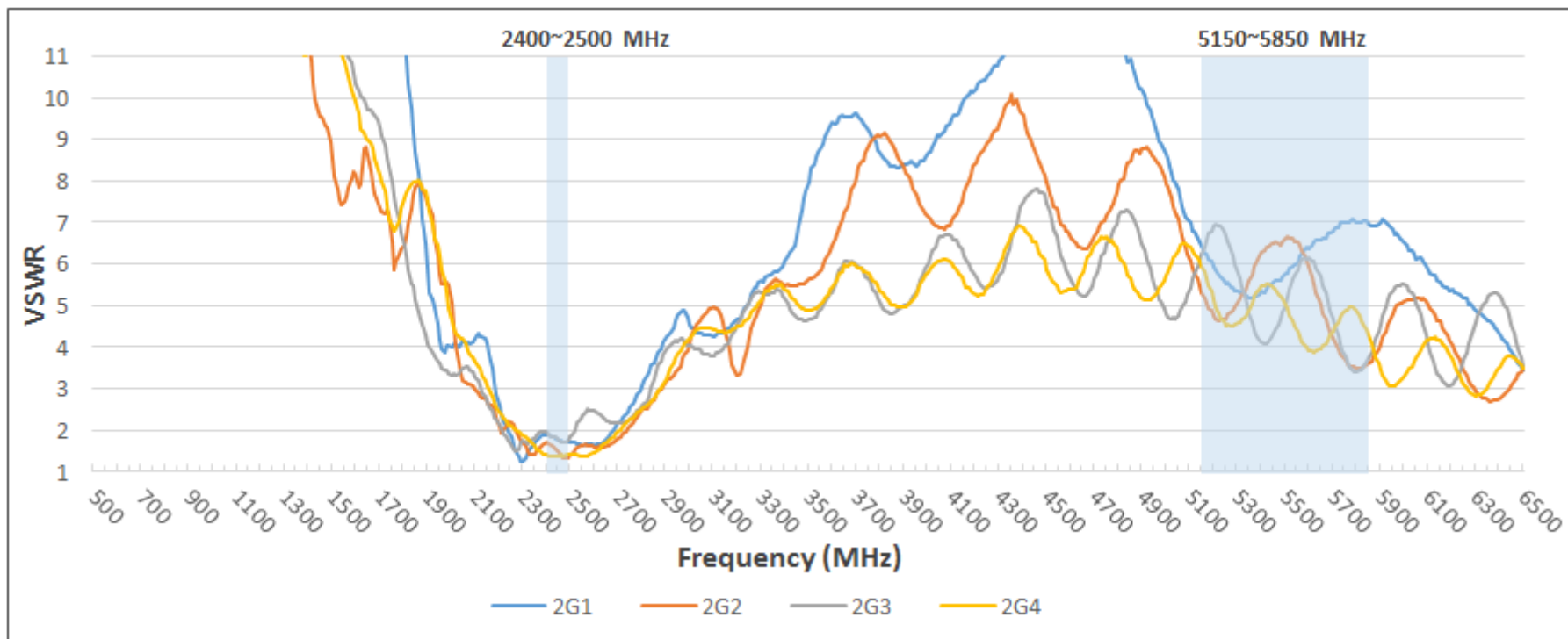
- **Agenda**

- Placement and Specification
- VSWR & Isolation
- Radiation Pattern
- Efficiency and Gain

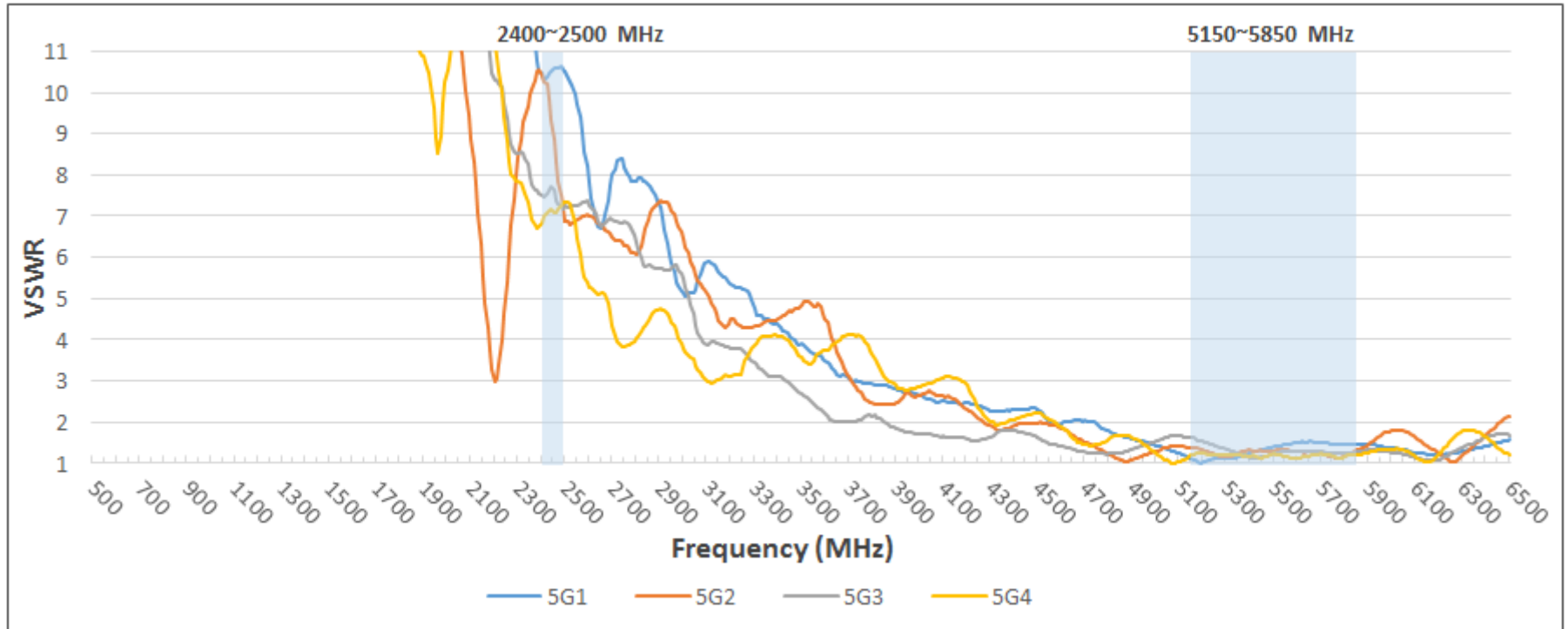
Placement and specification



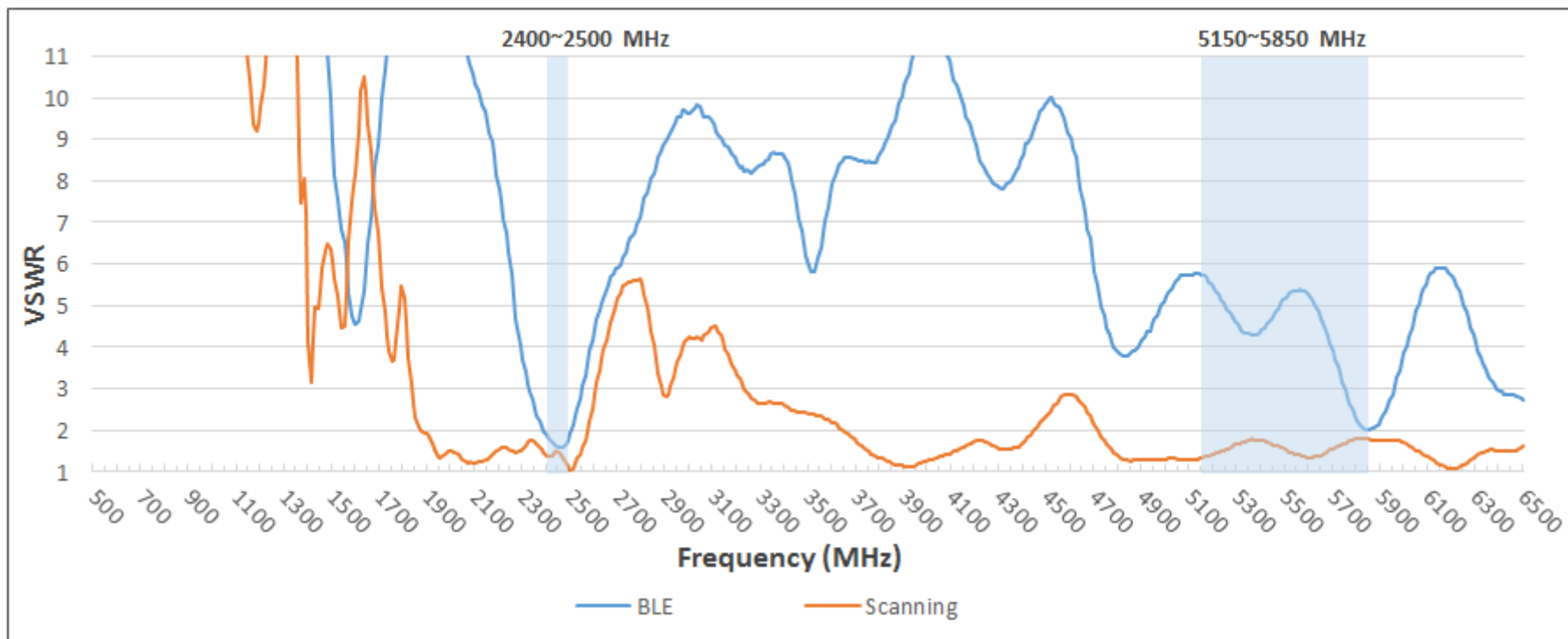
Ant No.	Operating Band	Gain (dBi)	Efficiency (%)	Ant type	Material	Feeding	Dimension
2G1~2G4	2400MHz ~ 2500 MHz	2.70~5.01	60.4~76.0	PIFA	Metal	Cable	29*10*7 mm ³
5G1~5G4	5150MHz ~ 5850 MHz	3.81~5.65	51.4~68.3	PIFA	Metal	Cable	21*10*5 mm ³
BLE	2400MHz ~ 2500 MHz	5.04~5.90	53.1~61.9	Dipole	PCB	Cable	38*6.5*0.55 mm ³
Scanning	2400MHz ~ 2500 MHz 5150MHz ~ 5850 MHz	3.50~4.33 5.72~6.17	53.0~63.0 52.4~60.7	PIFA	PCB	Cable	32*12*0.95 mm ³



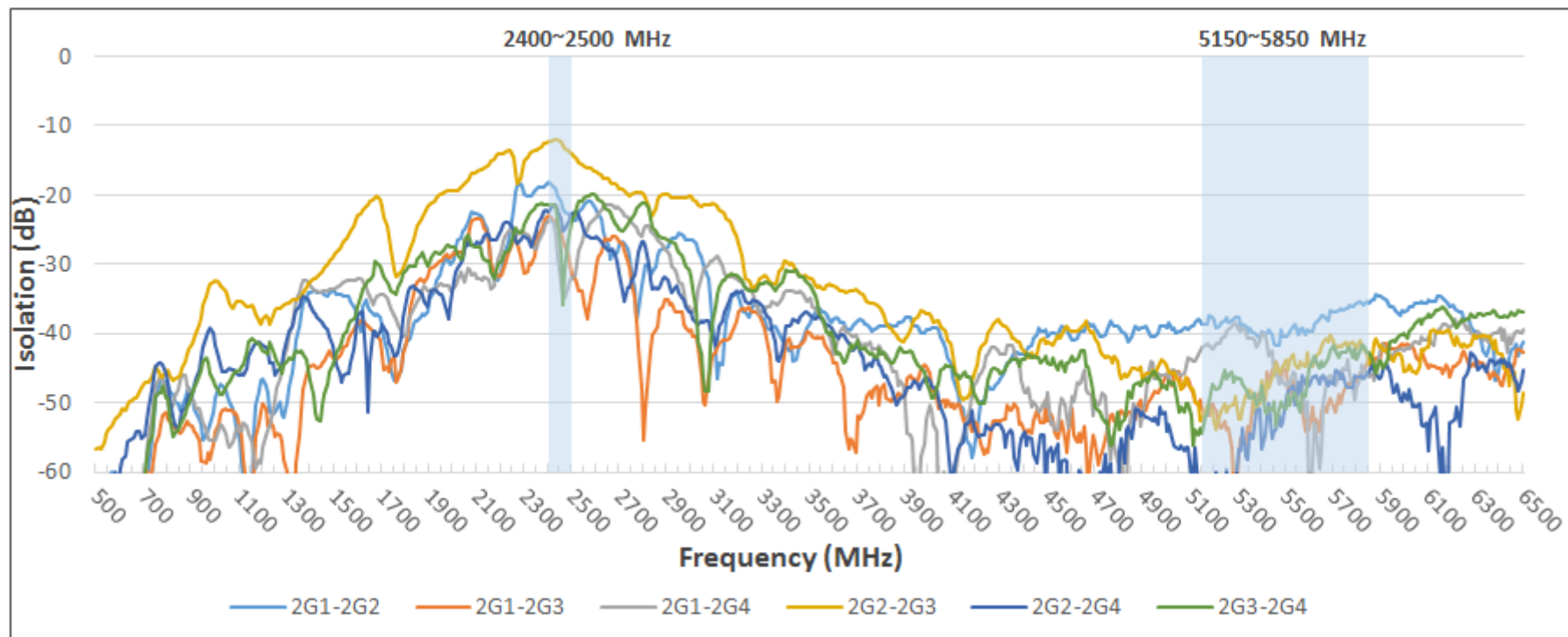
VSWR				
Freq. (MHz)	2G1	2G2	2G3	2G4
2400	1.88	1.69	1.95	1.40
2450	1.77	1.47	1.76	1.39
2500	1.73	1.40	1.82	1.42



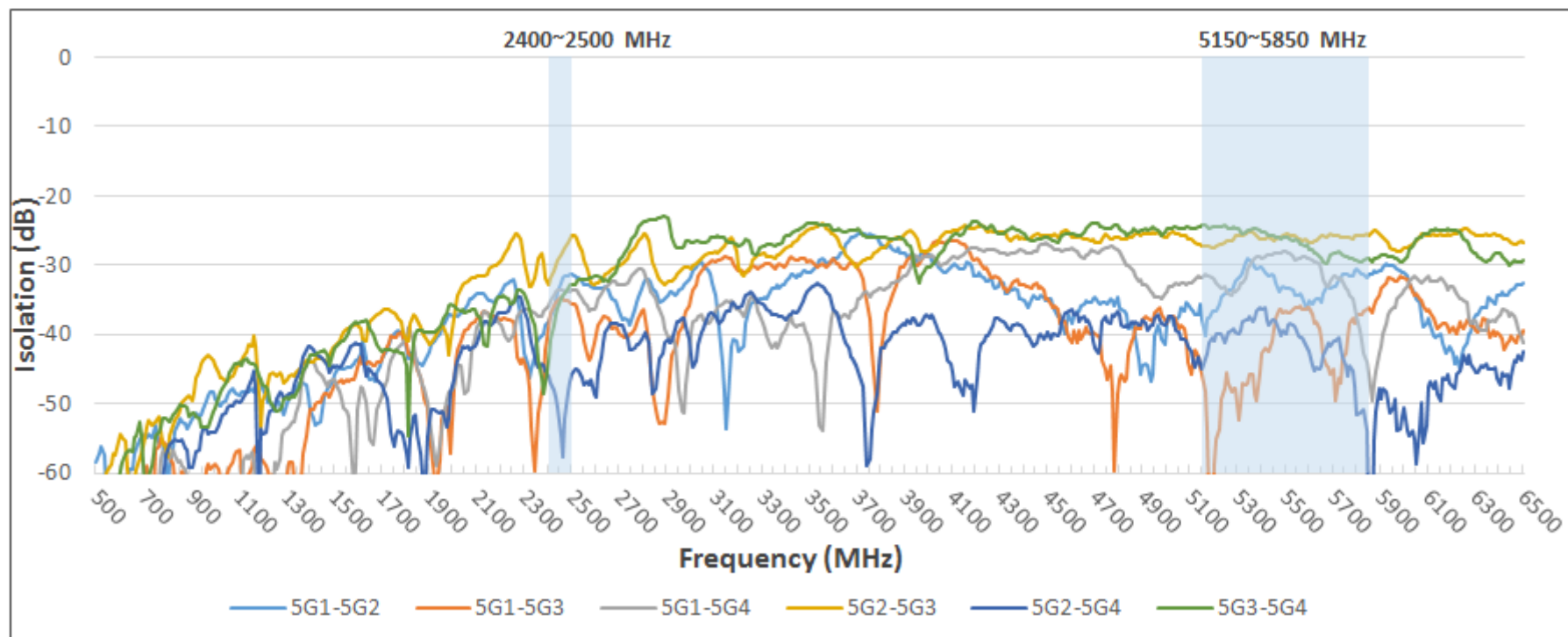
VSWR				
Freq. (MHz)	5G1	5G2	5G3	5G4
5150	1.39	1.38	1.20	1.64
5500	1.13	1.31	1.06	1.21
5850	1.47	1.32	1.12	1.13



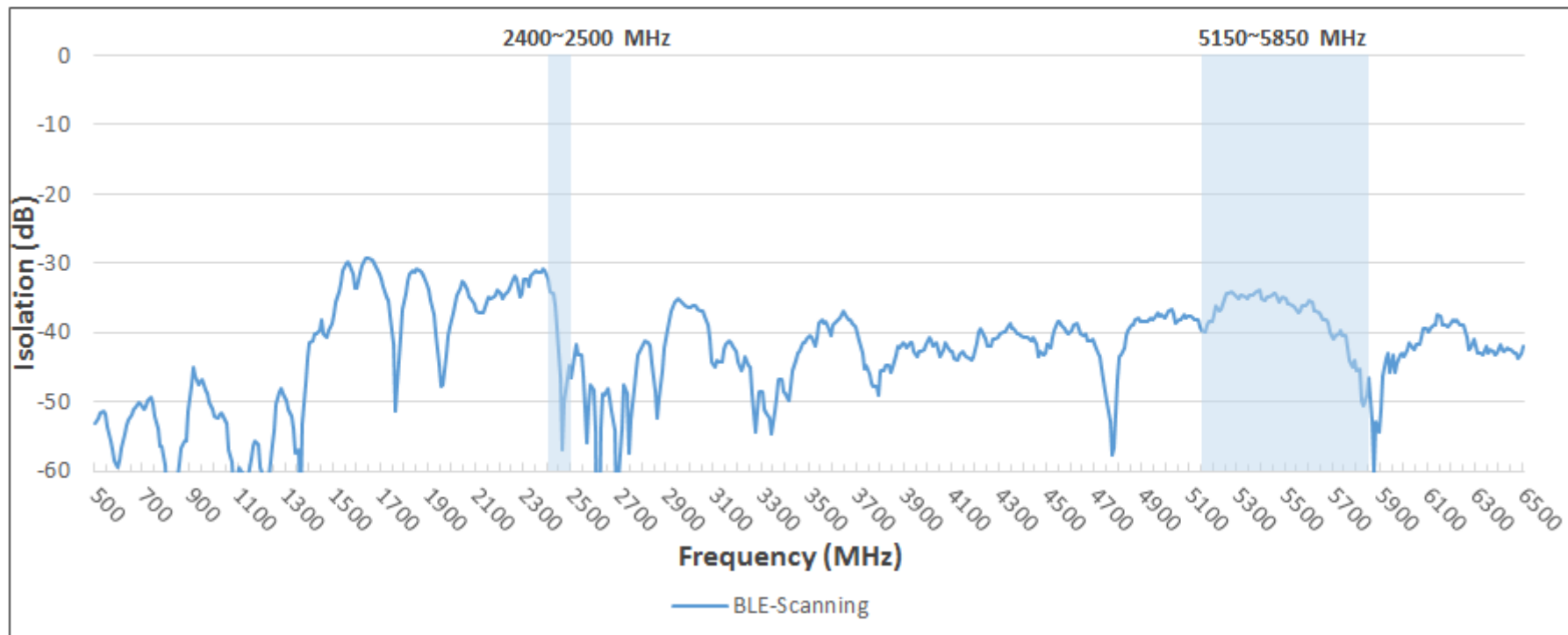
VSWR		
Freq. (MHz)	BLE	Scanning
2400	1.87	1.39
2450	1.60	1.47
2500	1.93	1.03
5150		1.34
5500		1.53
5850		1.78



Isolation						
Freq. (MHz)	2G1-2G2	2G1-2G3	2G1-2G4	2G2-2G3	2G2-2G4	2G3-2G4
2400	-18.17	-22.96	-23.65	-12.42	-22.39	-21.42
2450	-21.05	-25.51	-32.70	-12.40	-23.54	-28.34
2500	-23.44	-31.51	-32.13	-14.15	-22.82	-23.80

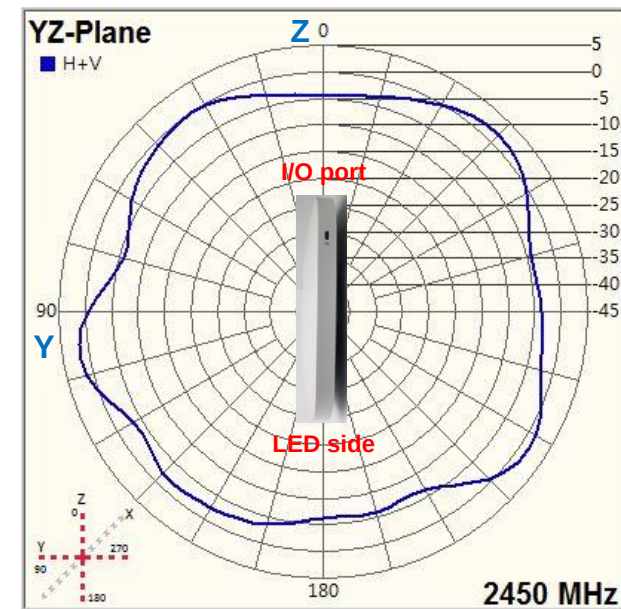
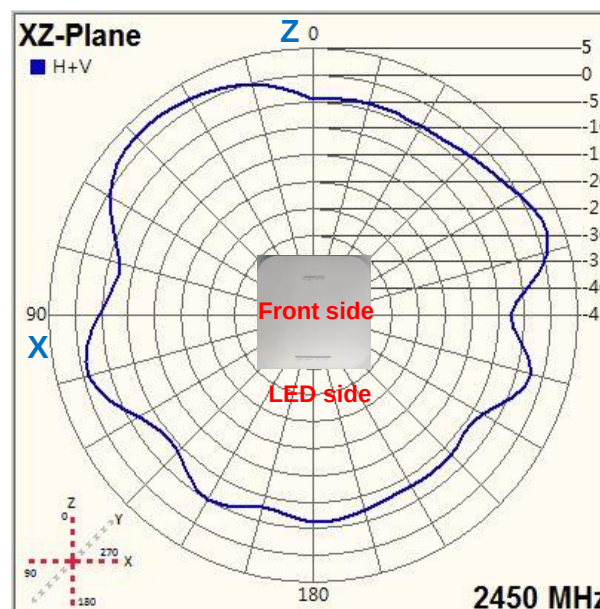
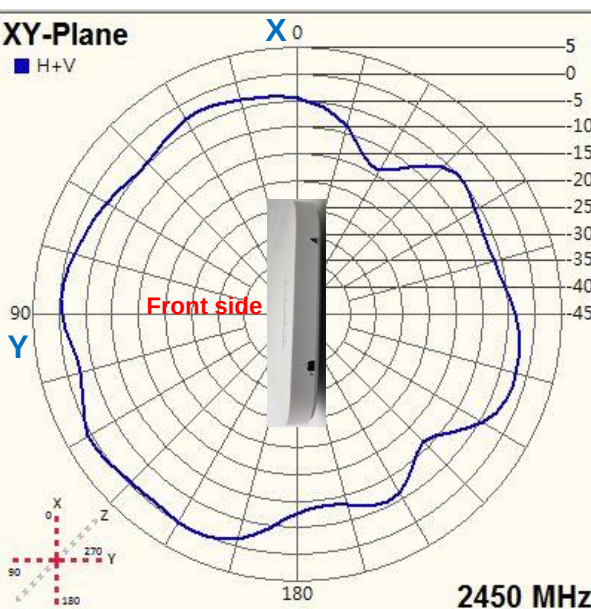
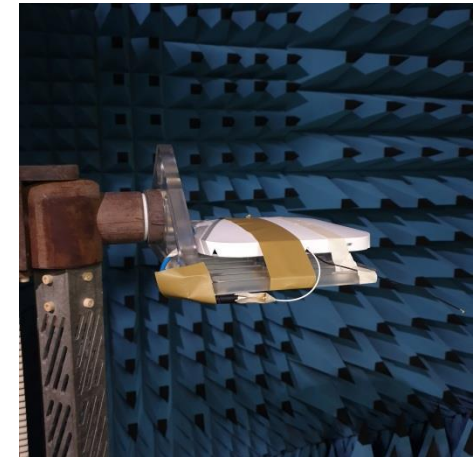
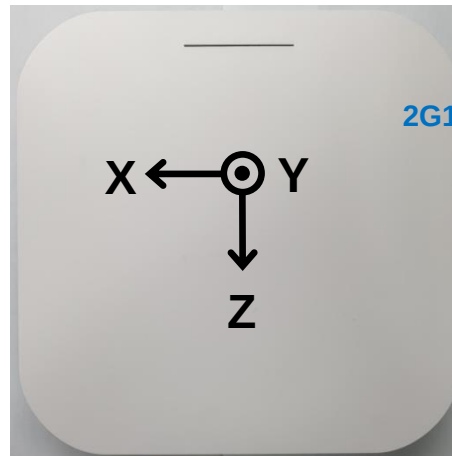
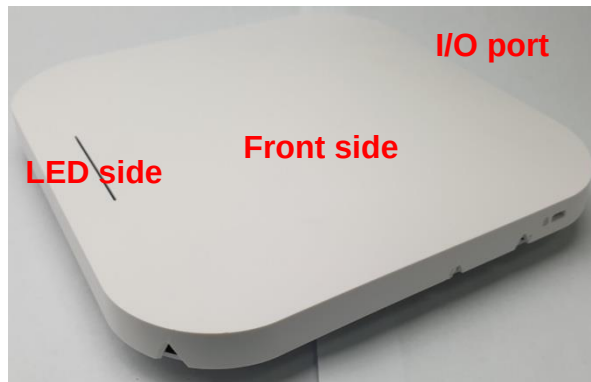


Isolation						
Freq. (MHz)	5G1-5G2	5G1-5G3	5G1-5G4	5G2-5G3	5G2-5G4	5G3-5G4
5150	-38.01	-45.90	-31.76	-27.40	-45.11	-24.34
5500	-33.28	-36.76	-28.12	-25.39	-40.03	-26.09
5850	-31.30	-36.11	-45.84	-25.74	-69.13	-29.17

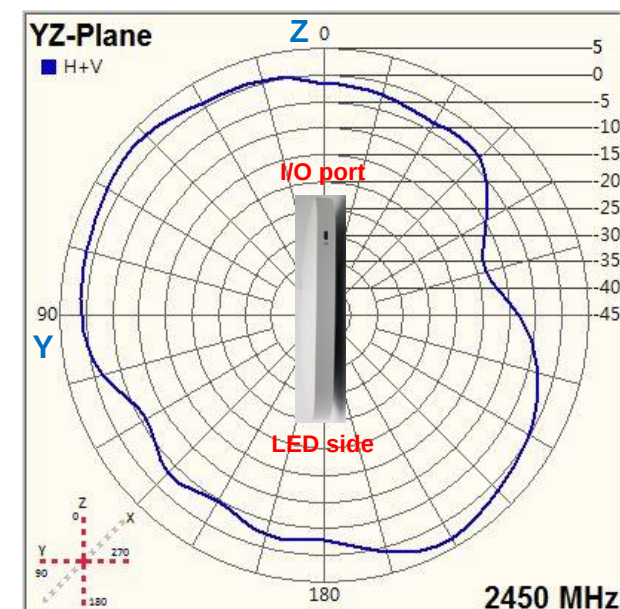
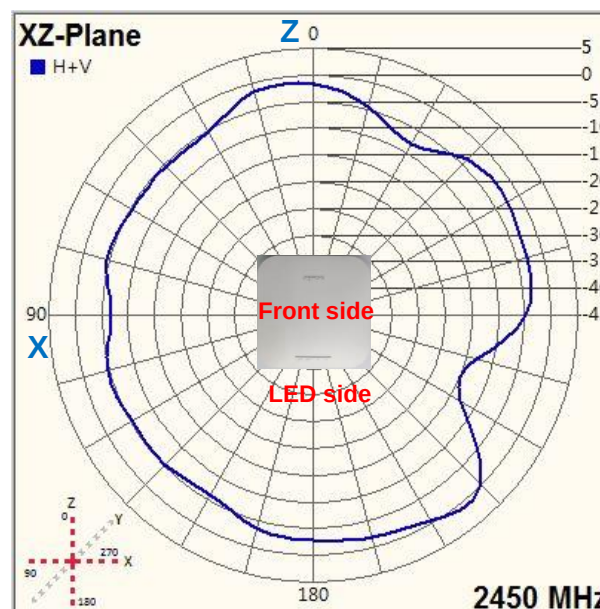
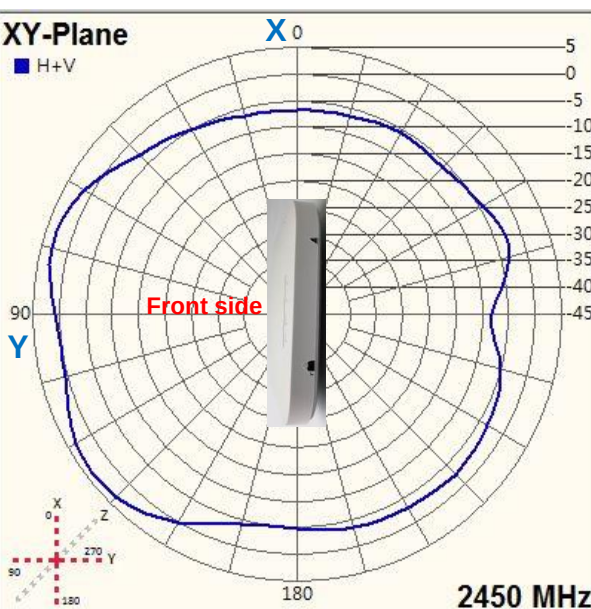
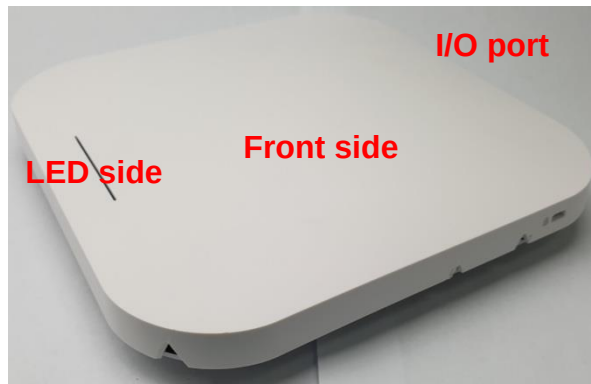


Isolation	
Freq. (MHz)	BLE-Scanning
2400	-32.42
2450	-46.47
2500	-46.67
5150	-39.76
5500	-35.21
5850	-46.44

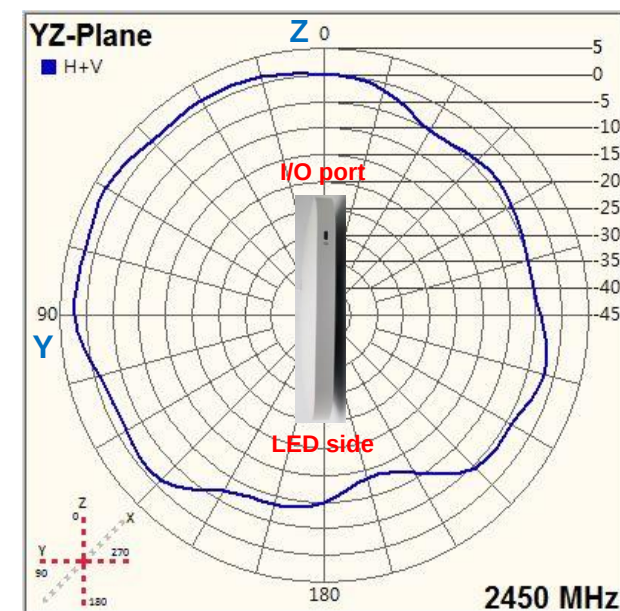
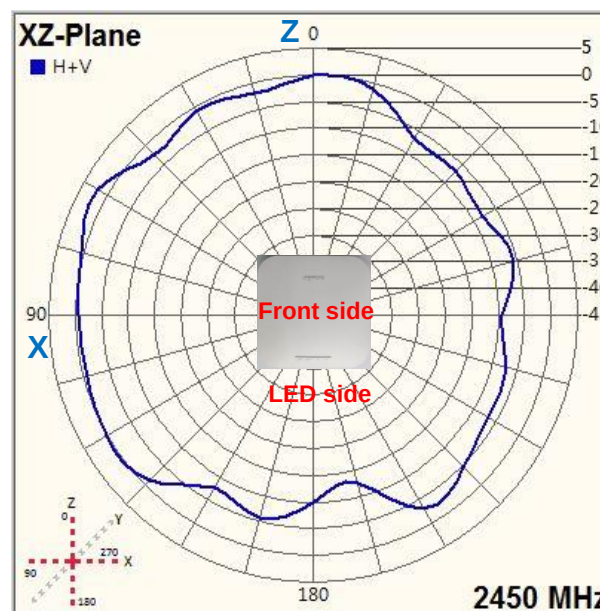
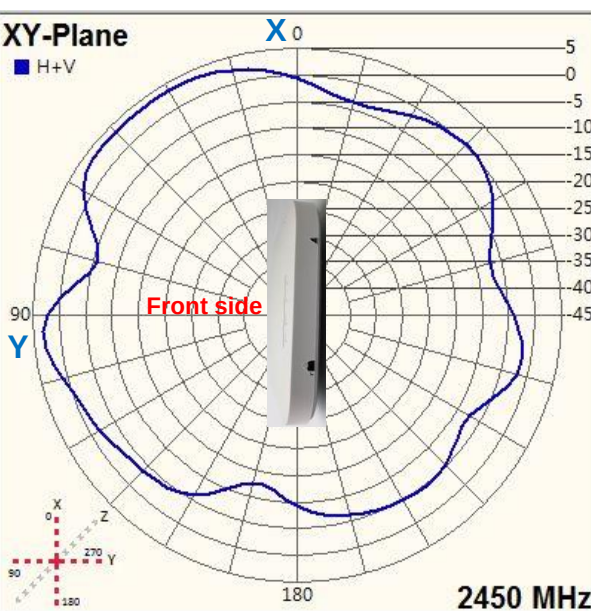
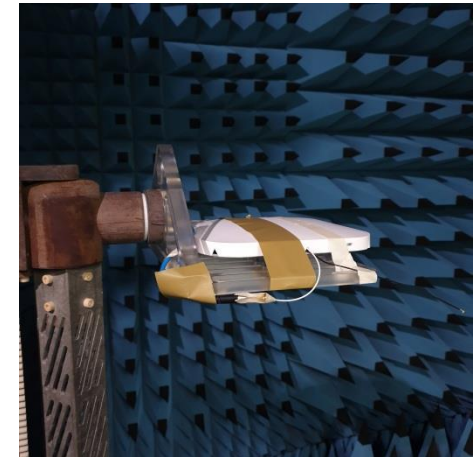
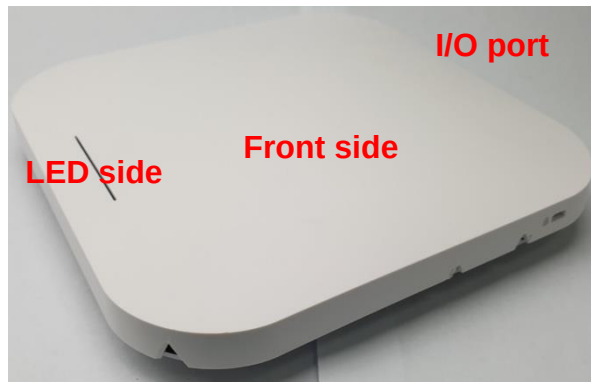
2D Radiation Pattern – 2G1 @ 2.45GHz



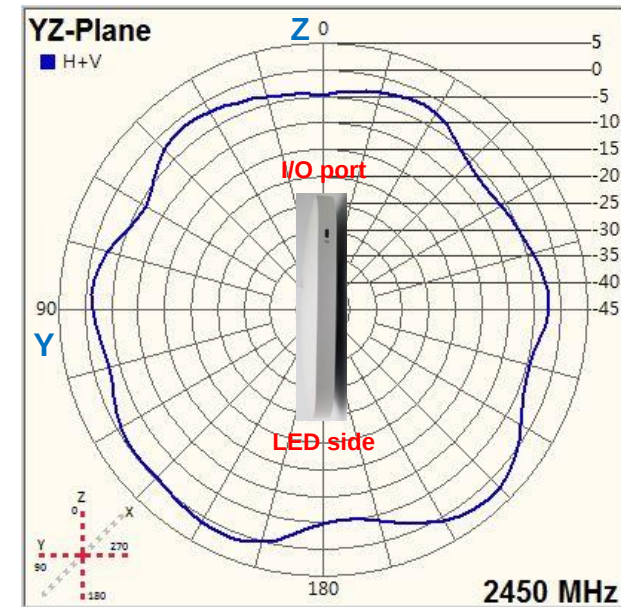
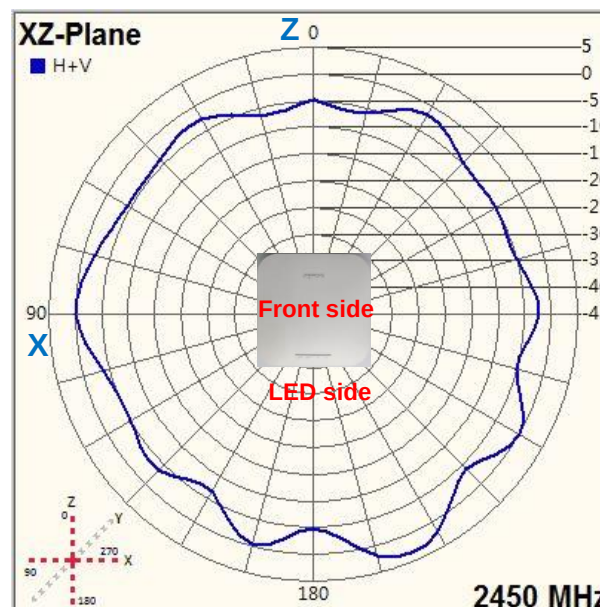
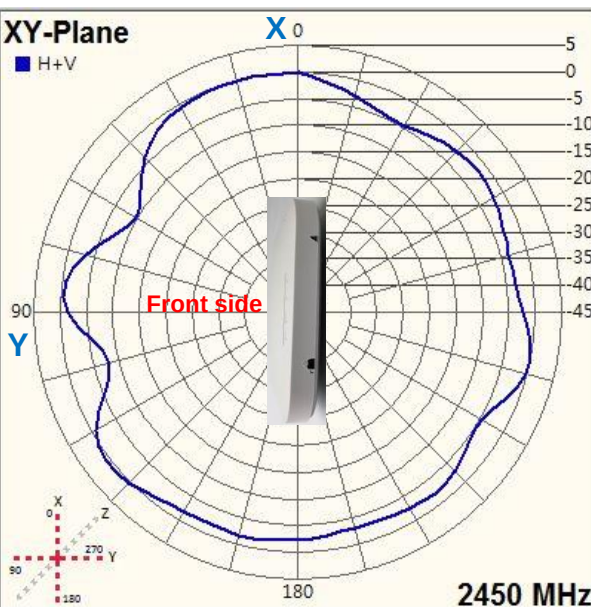
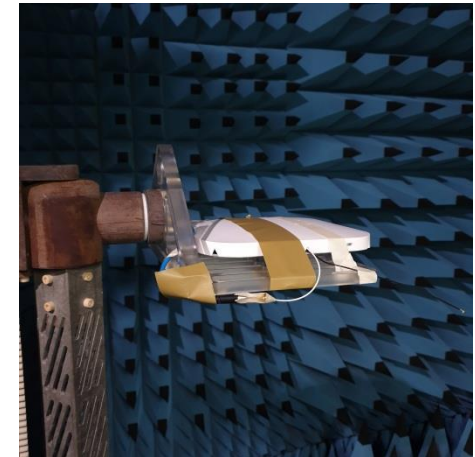
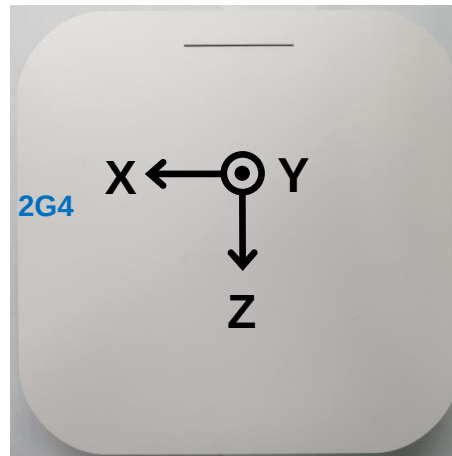
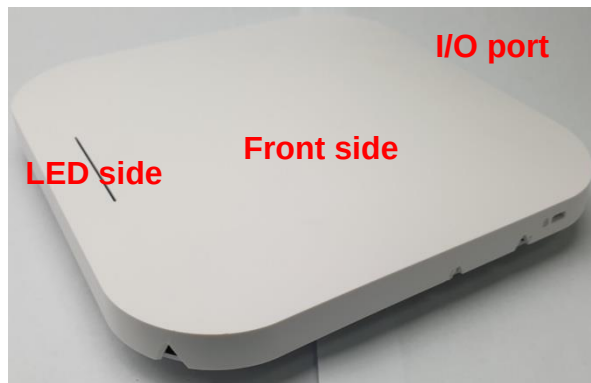
2D Radiation Pattern – 2G2 @ 2.45GHz



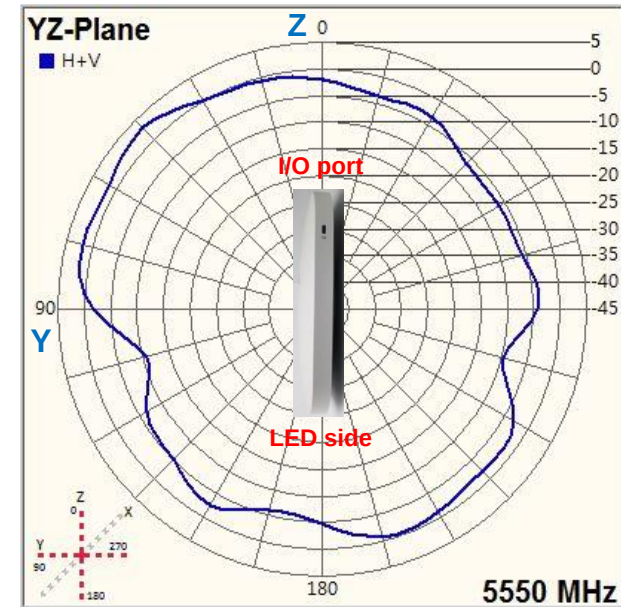
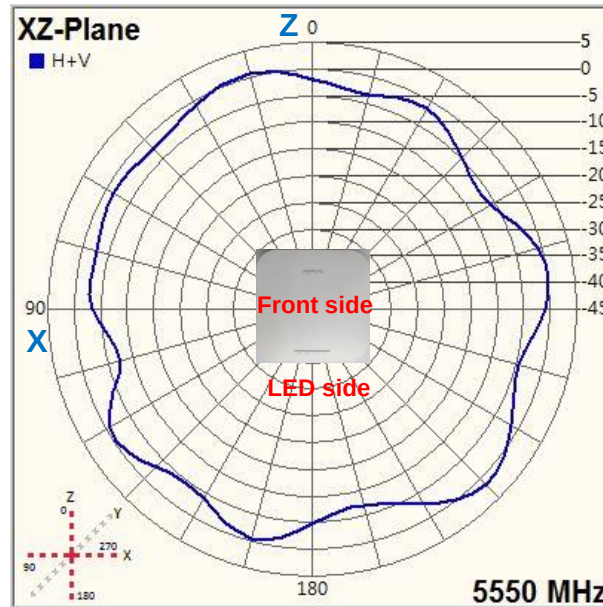
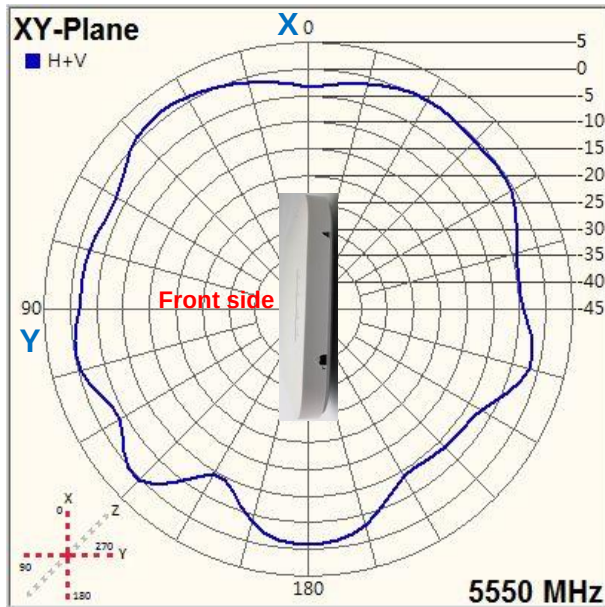
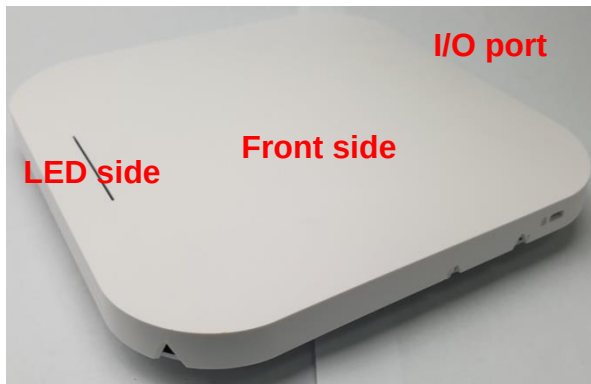
2D Radiation Pattern – 2G3 @ 2.45GHz



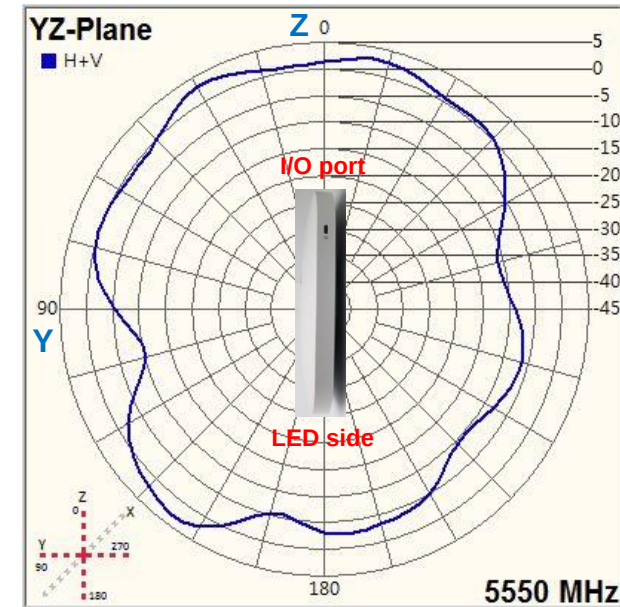
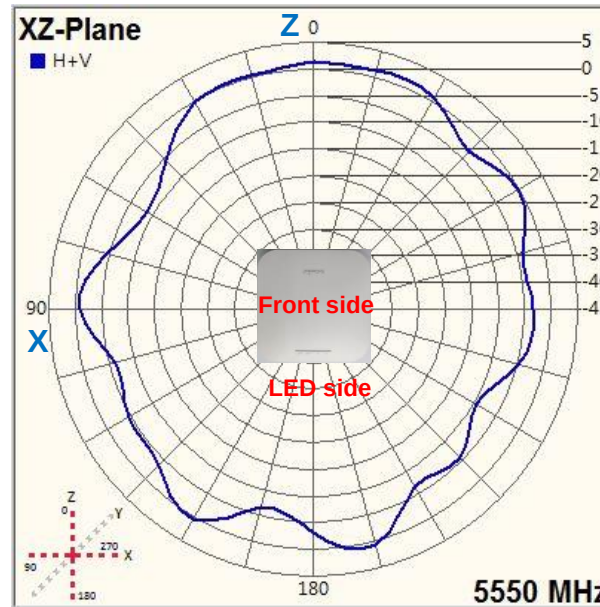
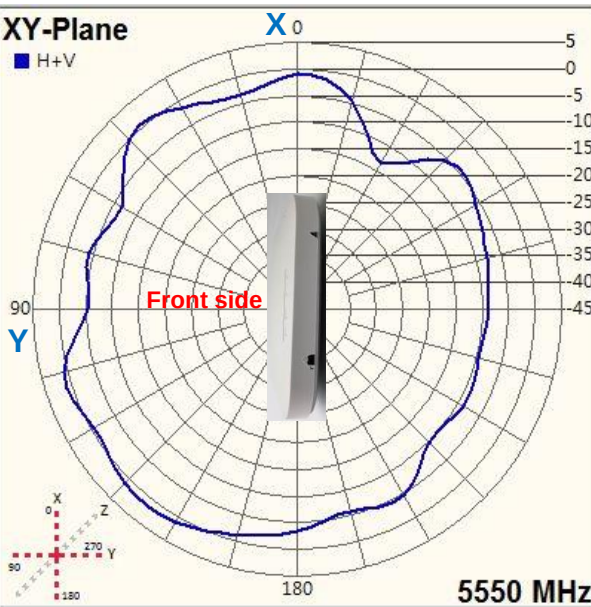
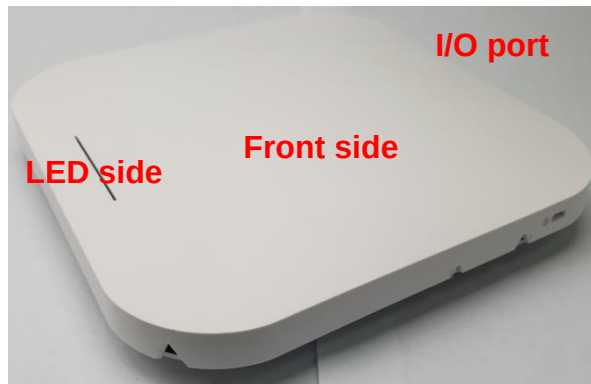
2D Radiation Pattern – 2G4 @ 2.45GHz



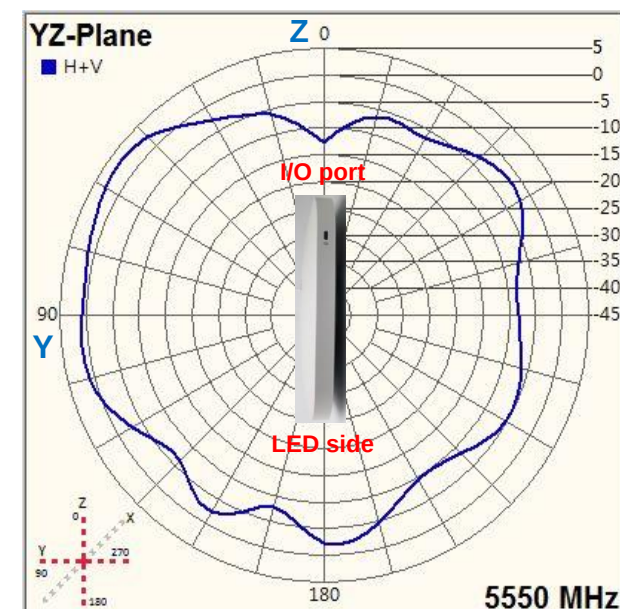
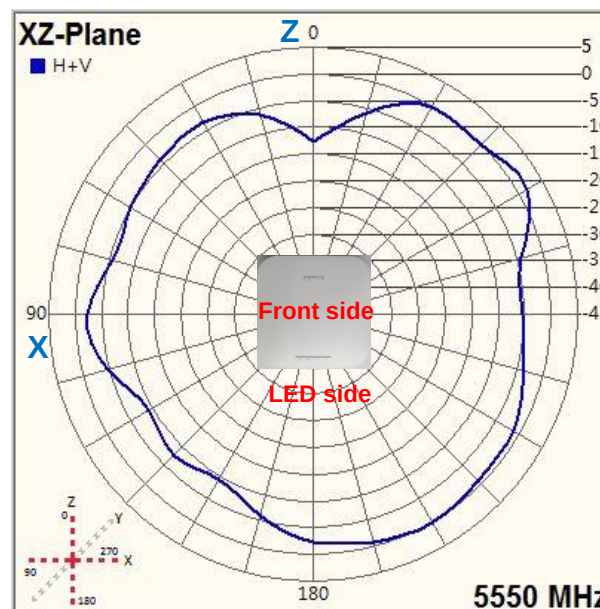
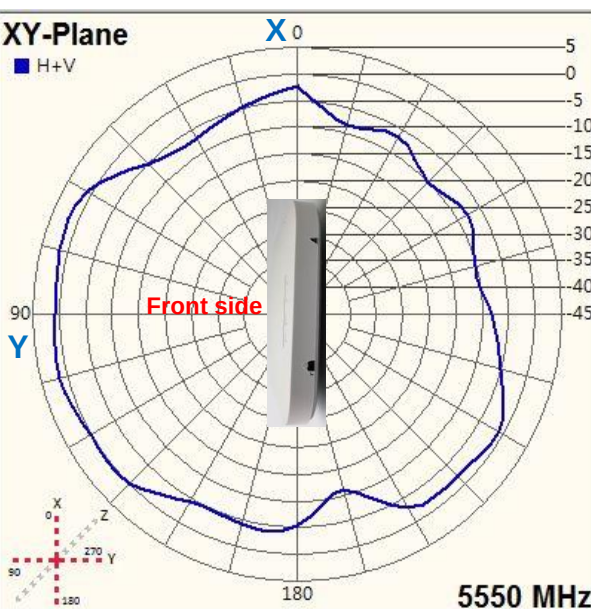
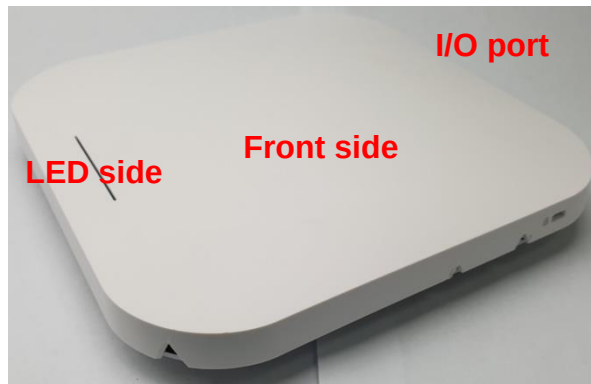
2D Radiation Pattern – 5G1 @ 5.55GHz



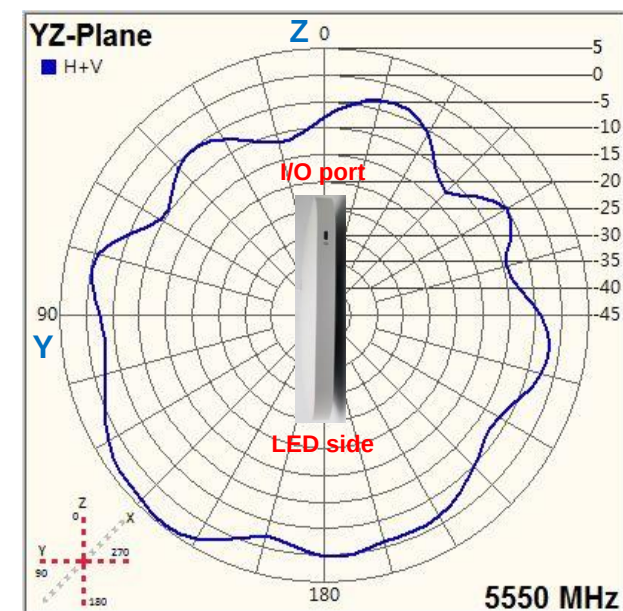
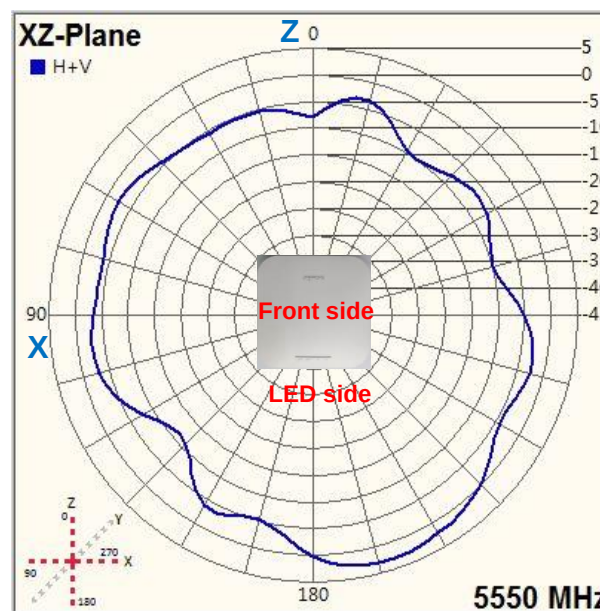
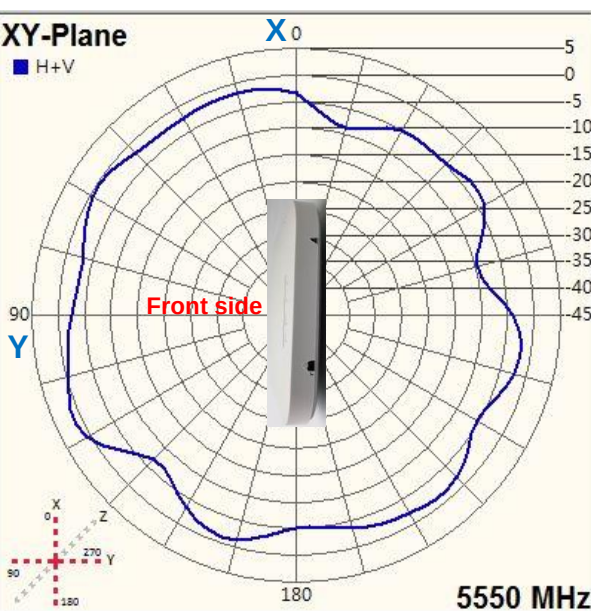
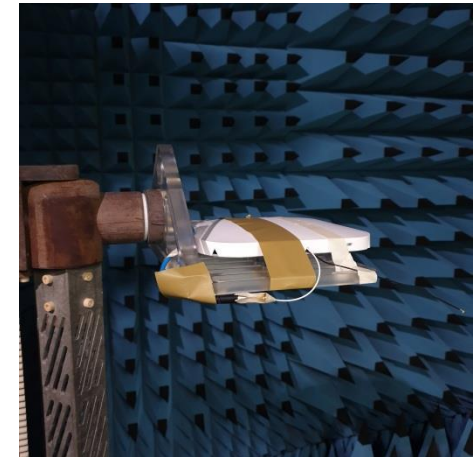
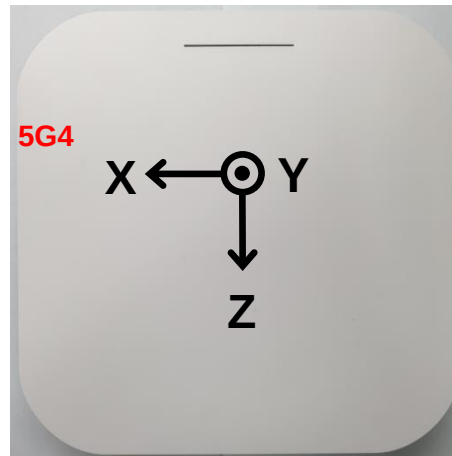
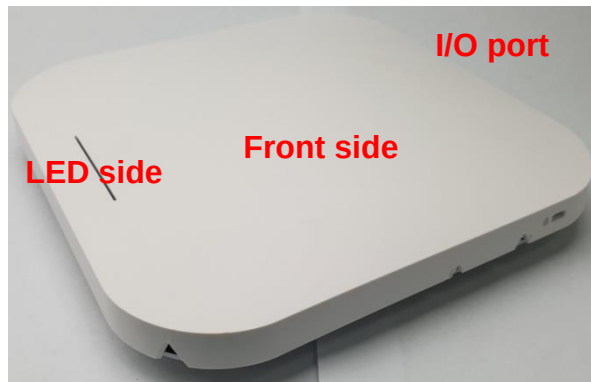
2D Radiation Pattern – 5G2 @ 5.55GHz



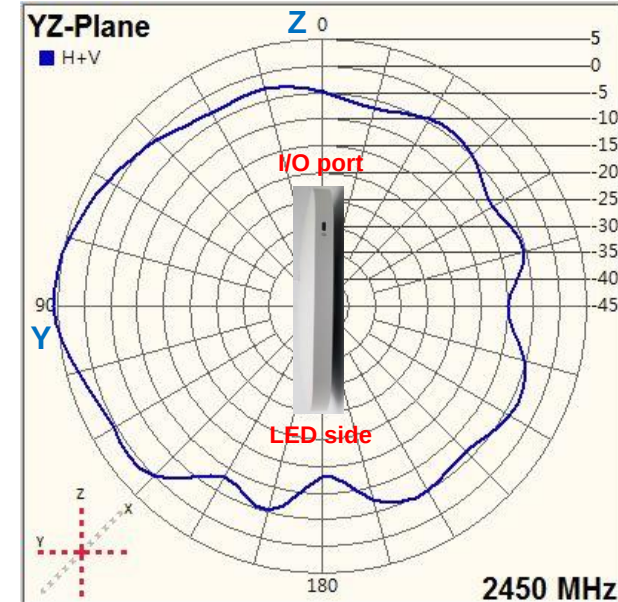
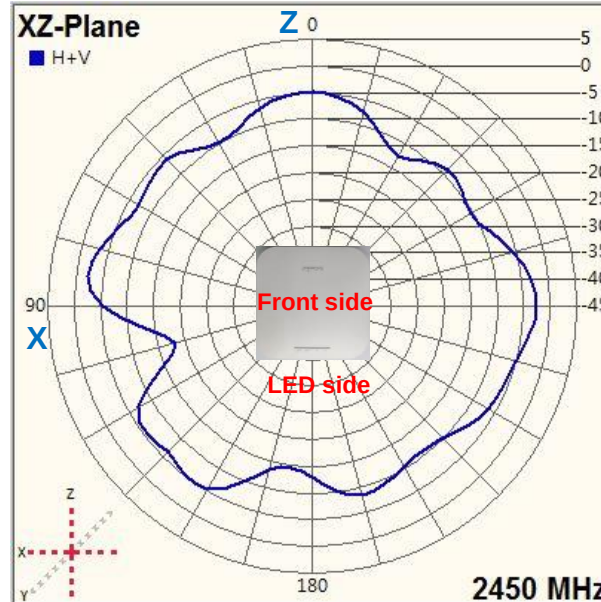
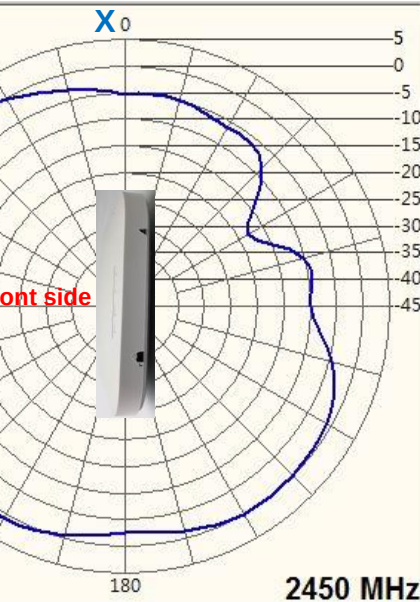
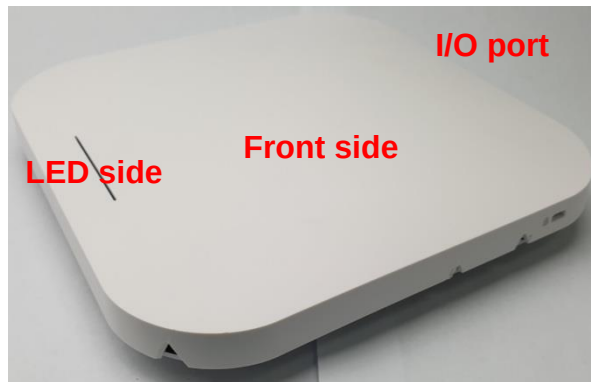
2D Radiation Pattern – 5G3 @ 5.55GHz



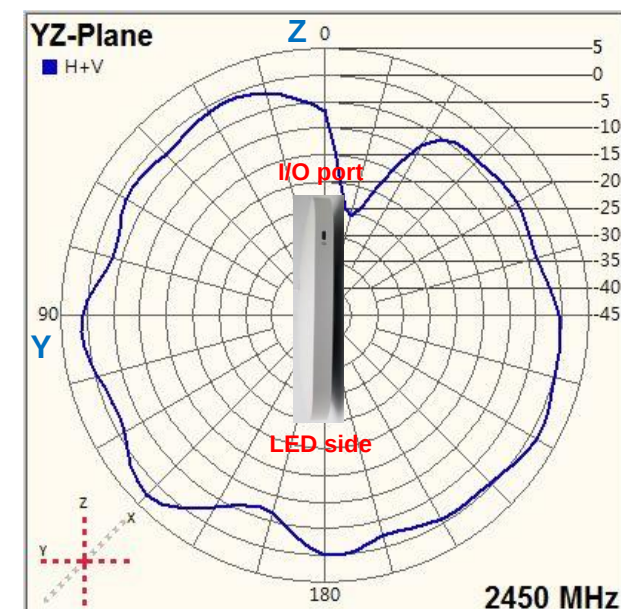
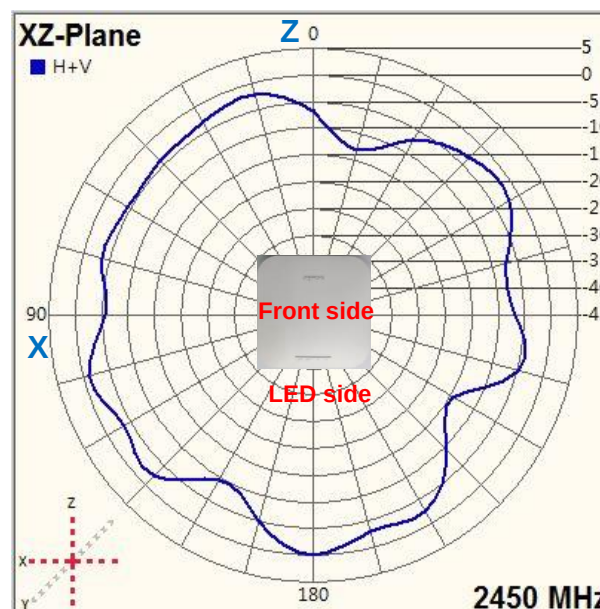
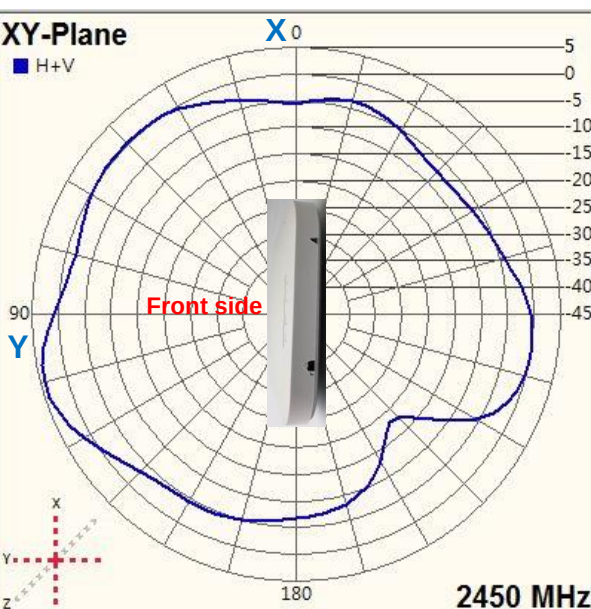
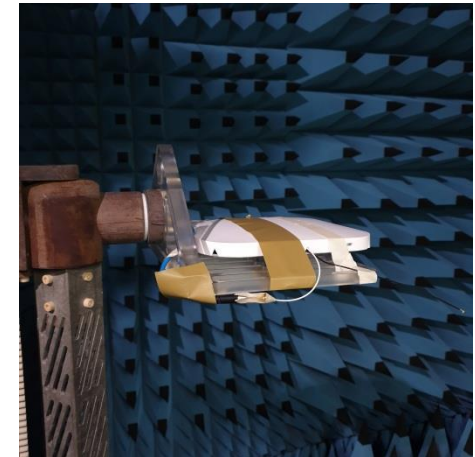
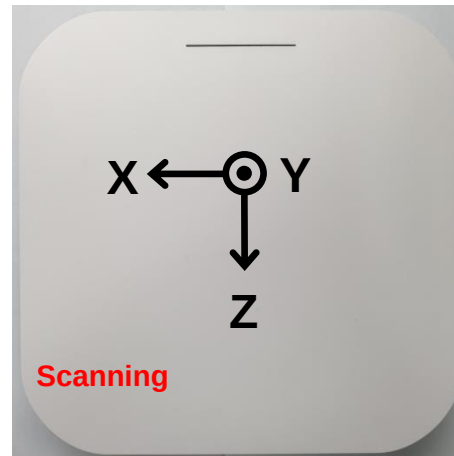
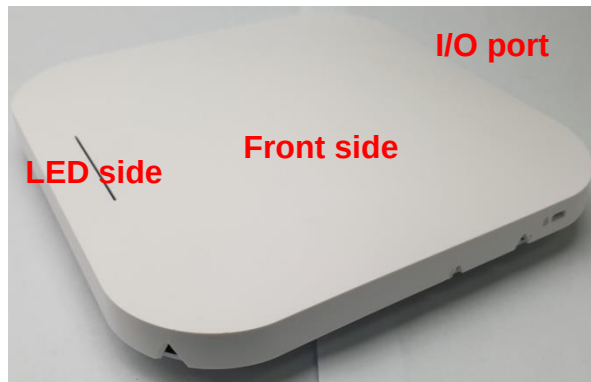
2D Radiation Pattern – 5G4 @ 5.55GHz



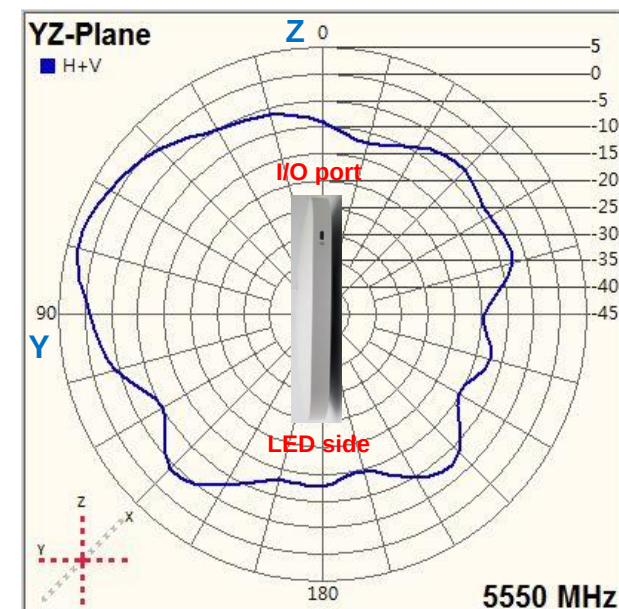
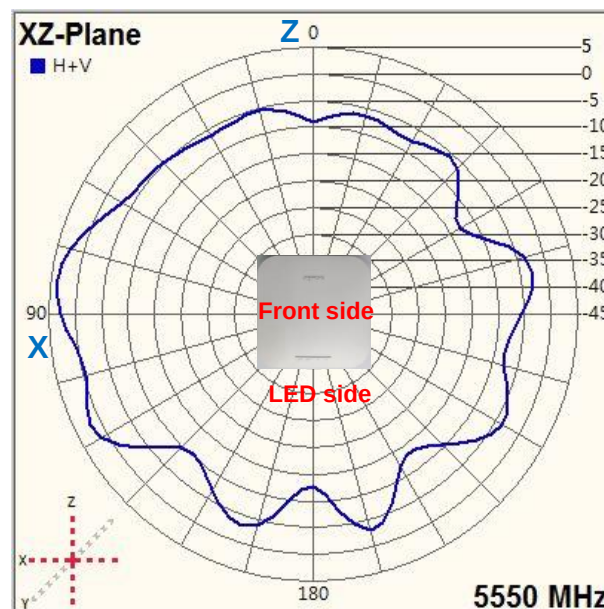
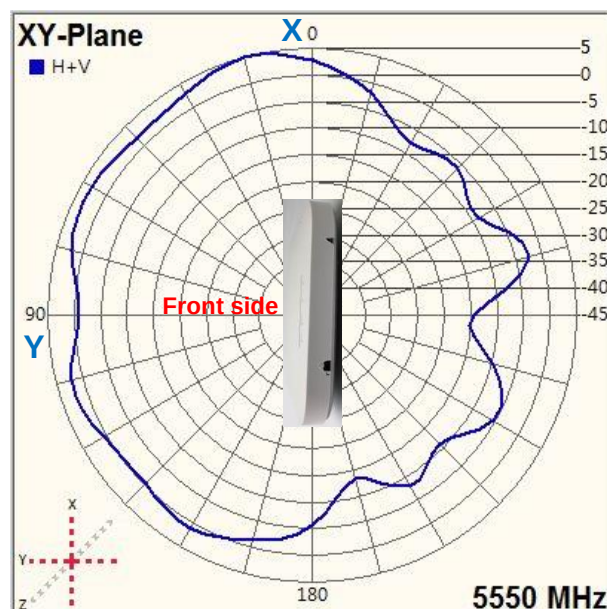
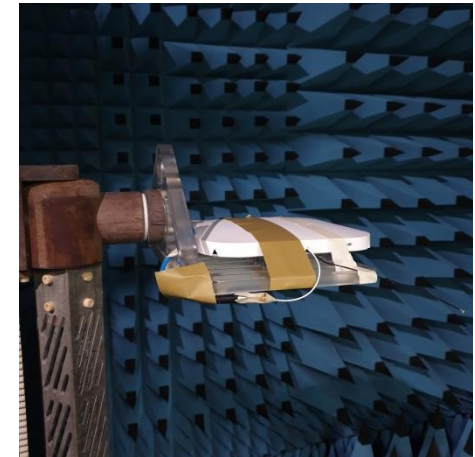
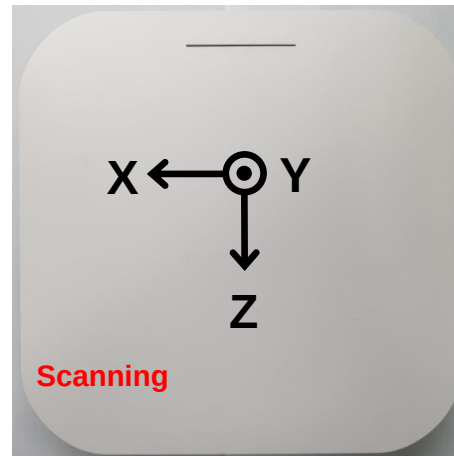
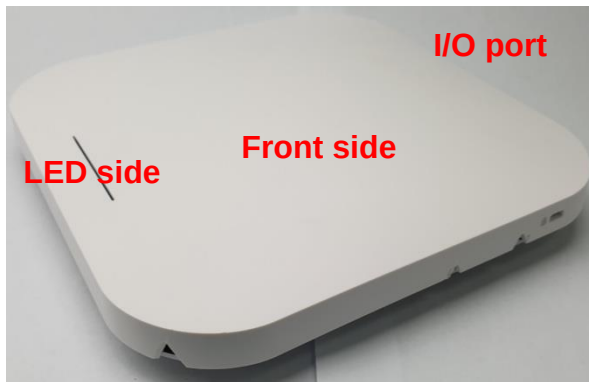
2D Radiation Pattern – BLE @ 2.45GHz



2D Radiation Pattern – Scanning @ 2.45GHz



2D Radiation Pattern – Scanning @ 5.55GHz



Antenna Efficiency and Gain

Antenna Performance				
Freq. (MHz)	2G1		2G2	
	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)
2400	61.1	2.70	67.7	3.93
2450	63.9	2.87	68.9	4.08
2500	66.4	3.70	76.0	3.59

Antenna Performance				
Freq. (MHz)	5G1		5G2	
	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)
5150	63.9	5.13	62.9	4.26
5500	61.1	4.19	60.5	3.58
5850	60.1	5.19	57.8	3.81

Antenna Performance				
Freq. (MHz)	2G3		2G4	
	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)
2400	63.0	4.12	60.4	3.26
2450	65.0	3.55	65.1	4.73
2500	60.5	3.30	62.3	5.01

Antenna Performance				
Freq. (MHz)	5G3		5G4	
	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)
5150	57.7	4.03	54.0	4.25
5500	58.9	4.02	54.7	5.04
5850	60.6	4.56	50.3	4.00

Antenna Performance				
Freq. (MHz)	BLE		Scanning	
	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)
2400	58.9	5.04	54.3	4.33
2450	61.9	5.90	53.0	4.27
2500	53.1	5.22	63.0	3.50
5150			60.7	6.17
5500			54.6	5.72
5850			52.4	6.17