

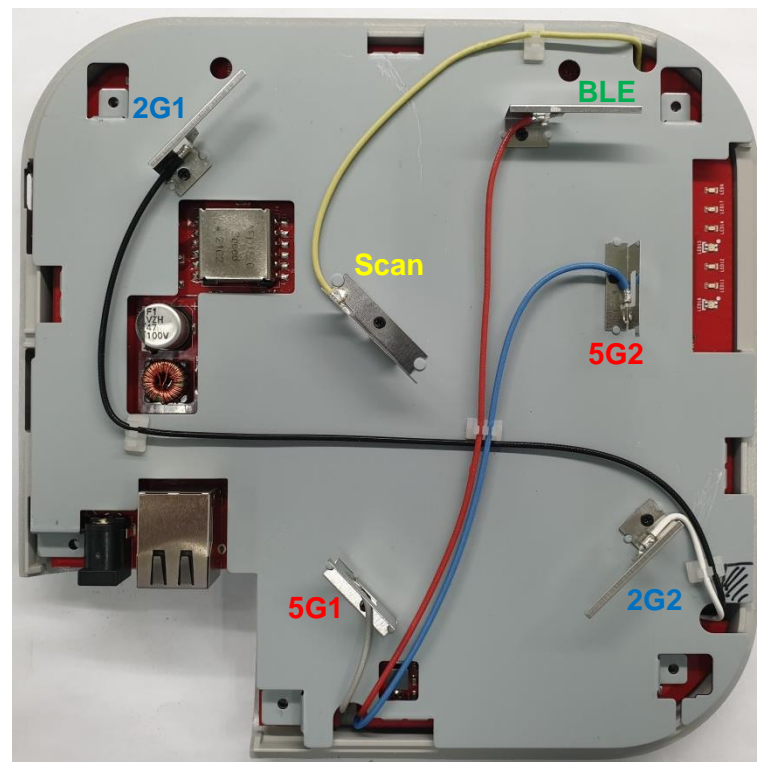
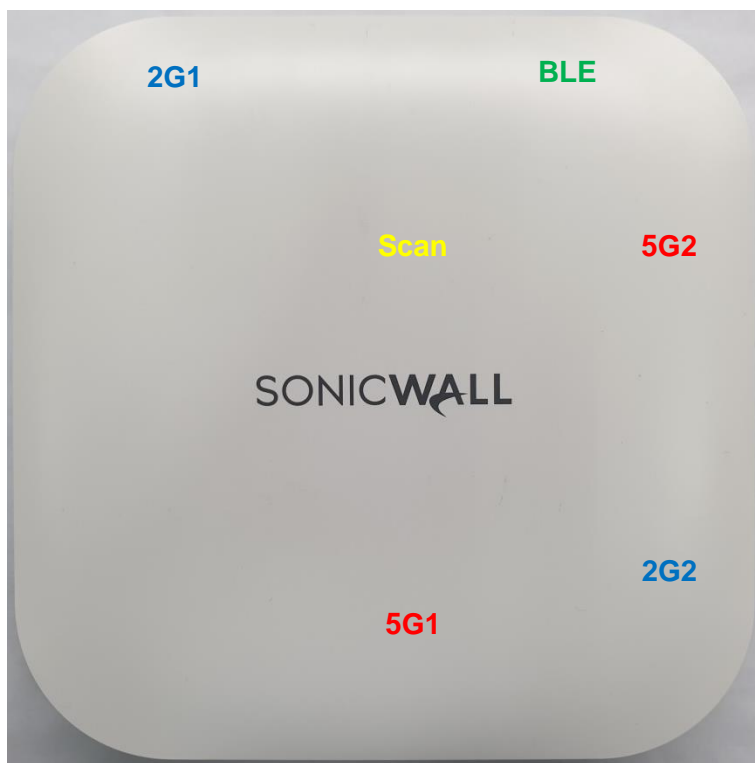


# SONICWAVE 621 Antenna Test Report

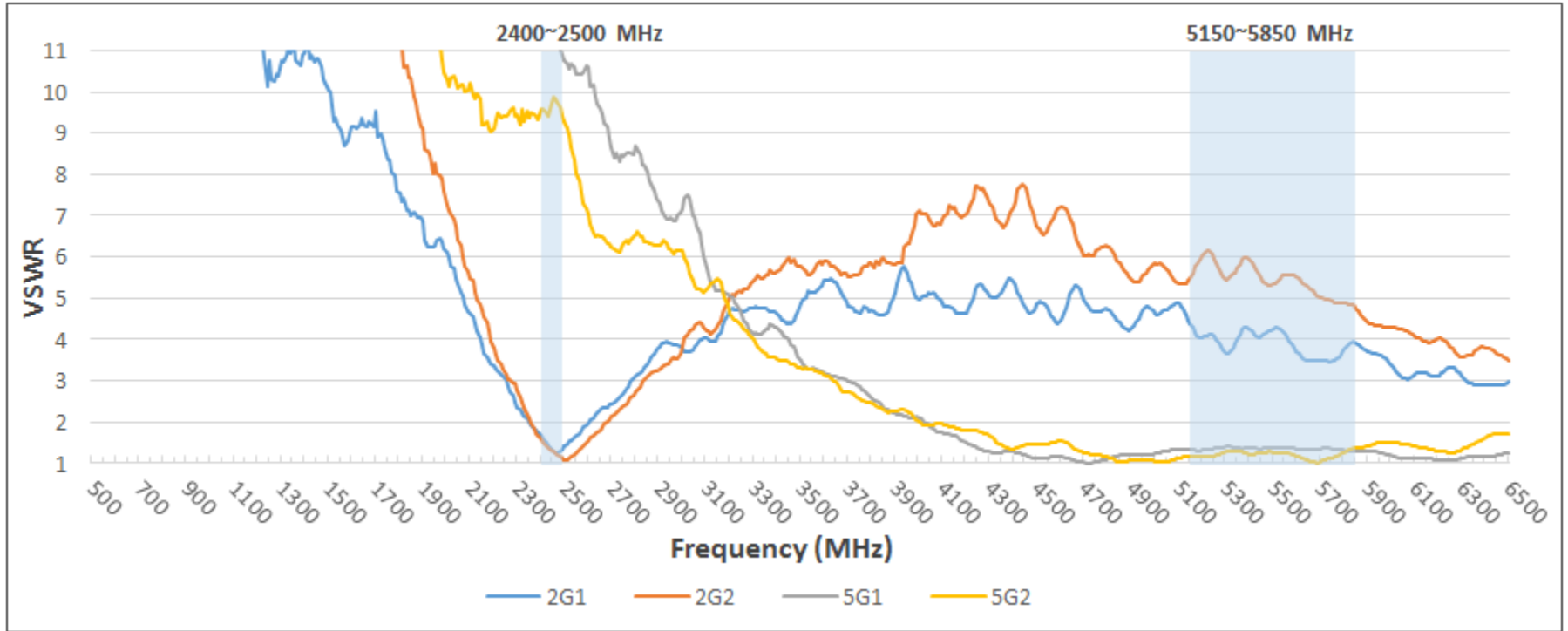
Senao Networks, Inc.

Customer	SonicWall
Project	SONICWAVE 621
Project Description	2.4G antenna *2 5G antenna *2 BLE antenna *1 Scan antenna *1
Date	2022/01/05
Prepared by	Kenny
Checked	Tony
Report Version	A02

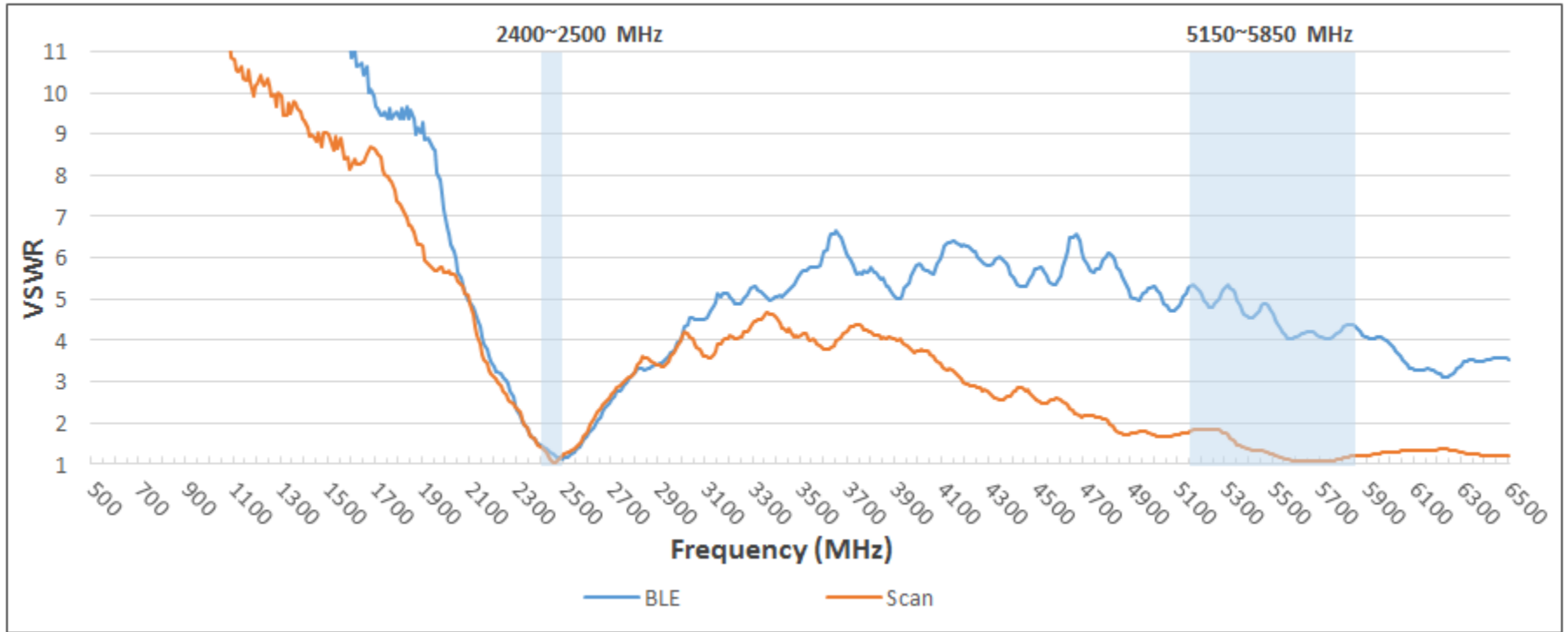
- **Agenda**
  - Placement and Specification
  - VSWR & Isolation
  - Radiation Pattern
  - Combine Pattern
  - Efficiency and Gain



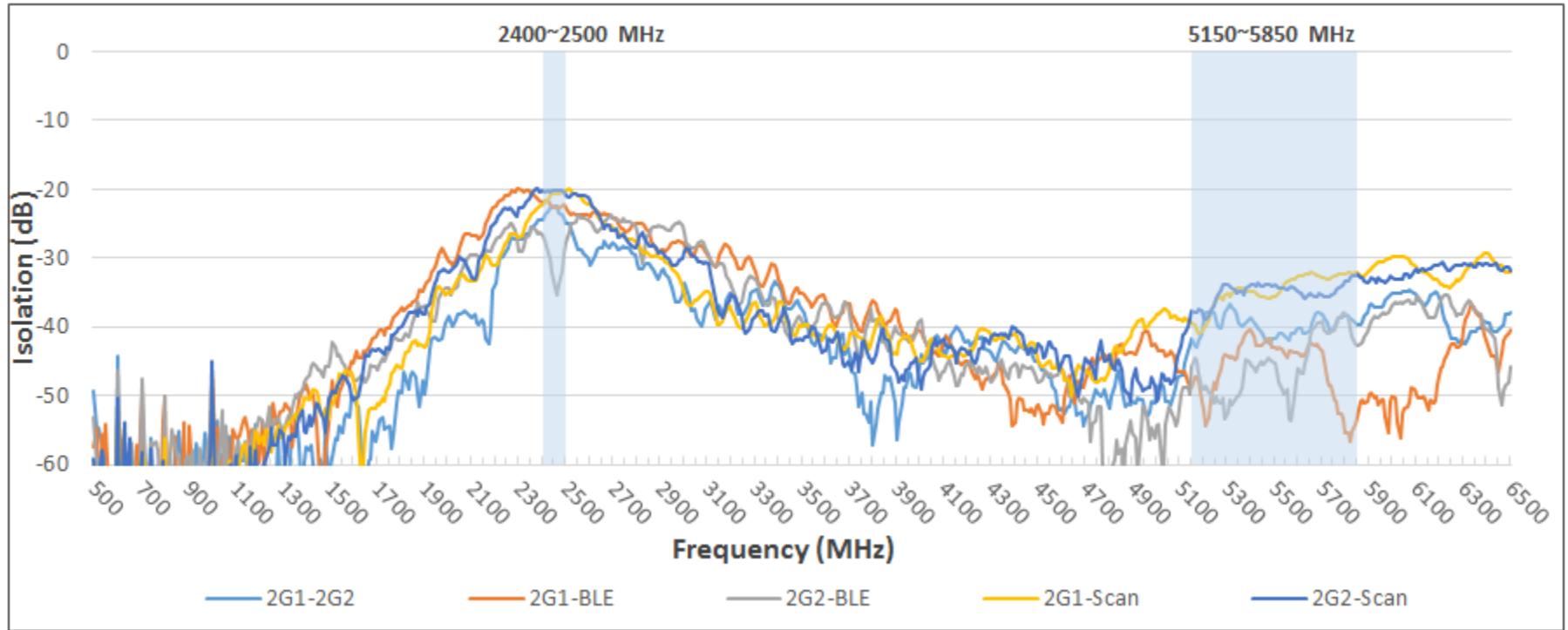
Ant No.	Operating Band	Gain (dBi)	Efficiency (%)	Ant type	Material	Feeding	Dimension
2G1~2G2	2400MHz ~ 2500 MHz	3.05~3.64	61.1~69.4	PIFA	Metal	Cable	29*10*7 mm <sup>3</sup>
5G1~5G2	5150MHz ~ 5850 MHz	4.13~5.07	61.5~66.6	PIFA	Metal	Cable	21*10*5 mm <sup>3</sup>
BLE	2400MHz ~ 2500 MHz	3.09~3.70	61.0~68.8	PIFA	Metal	Cable	29*10*7 mm <sup>3</sup>
Scan	2400MHz ~ 2500 MHz 5150MHz ~ 5850 MHz	3.81~3.93 3.81~4.89	60.3~62.2 60.0~63.9	PIFA	Metal	Cable	30.2*6.3*10.3 mm <sup>3</sup>



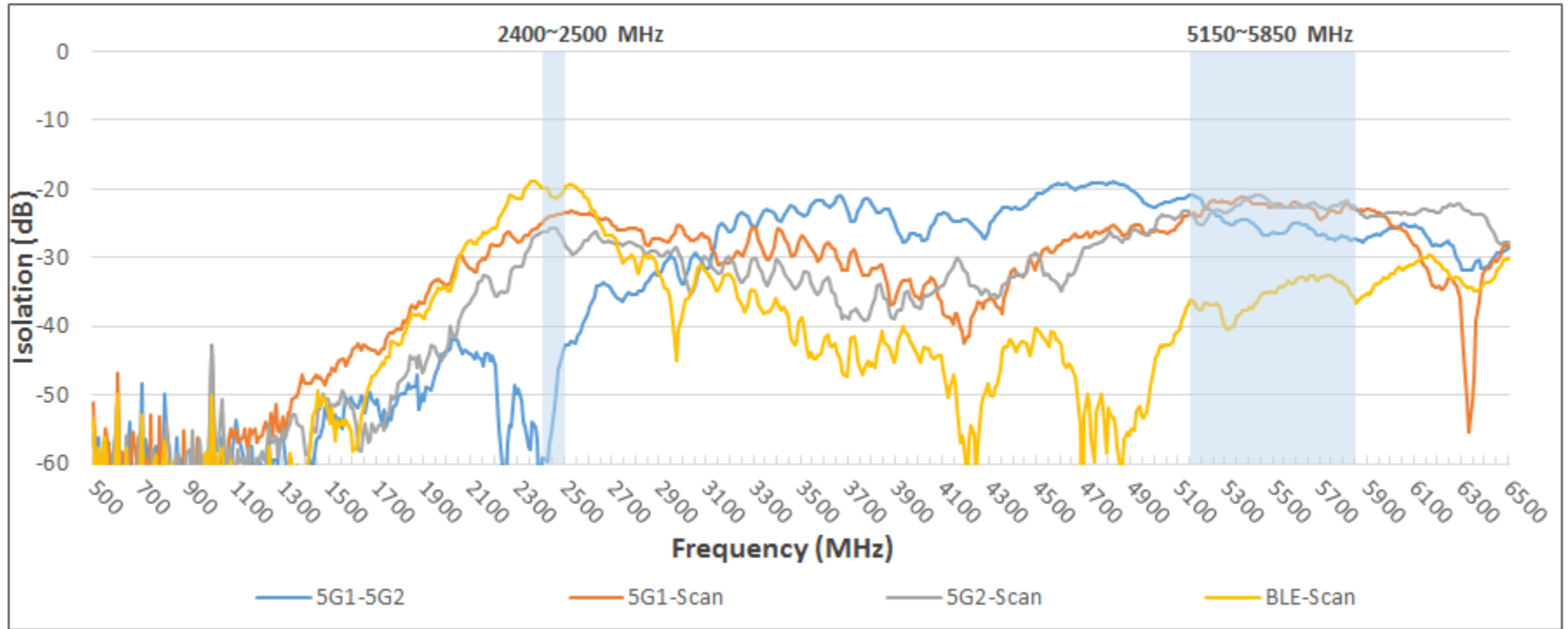
VSWR				
Freq. (MHz)	2G1	2G2	5G1	5G2
2400	1.67	1.59	11.60	9.58
2450	1.29	1.29	11.45	9.88
2500	1.41	1.08	10.74	9.30
5150	4.39	5.50	1.32	1.16
5500	4.27	5.34	1.37	1.26
5850	3.92	4.75	1.29	1.39



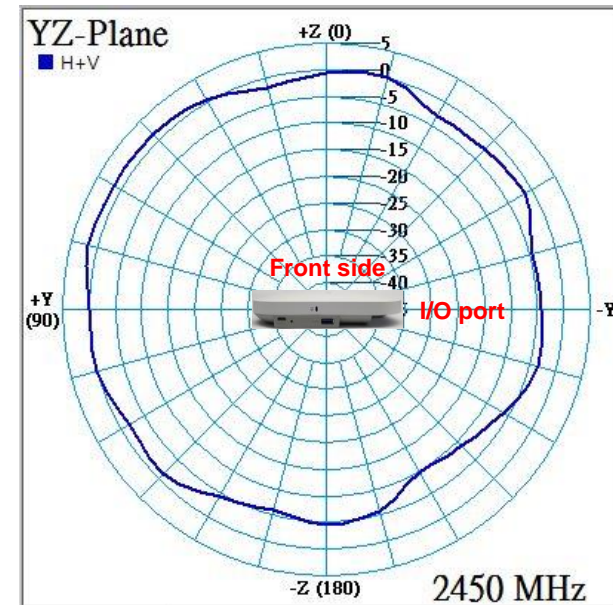
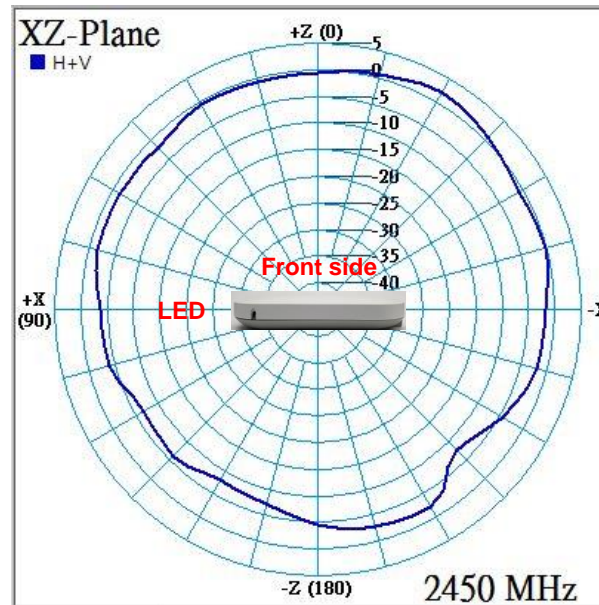
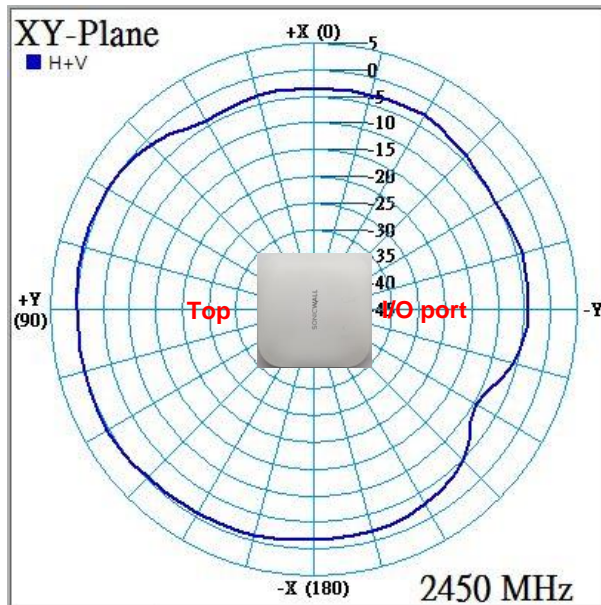
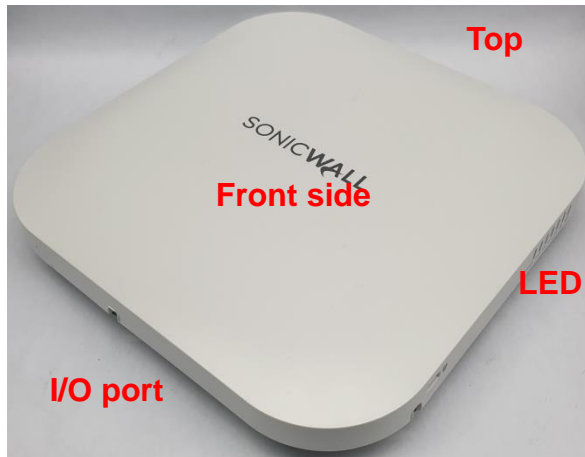
VSWR		
Freq. (MHz)	BLE	Scan
2400	1.44	1.43
2450	1.24	1.05
2500	1.15	1.27
5150	5.31	1.81
5500	4.64	1.25
5850	4.32	1.21



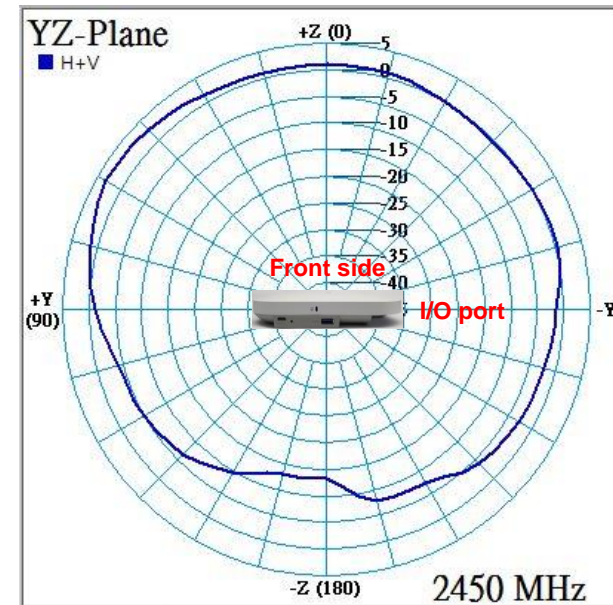
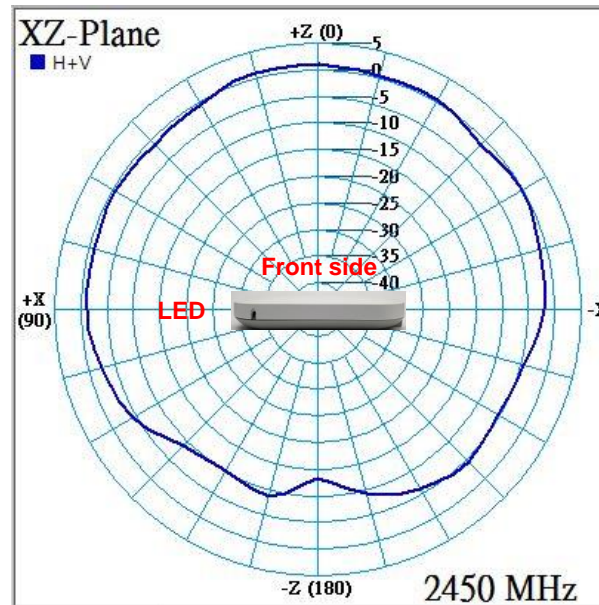
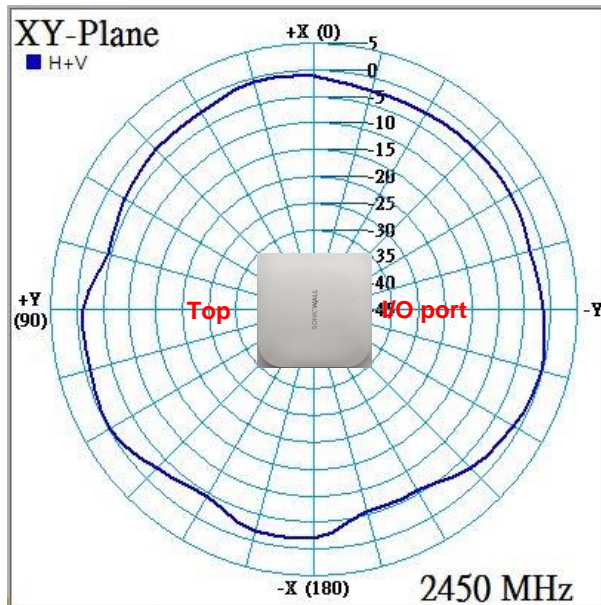
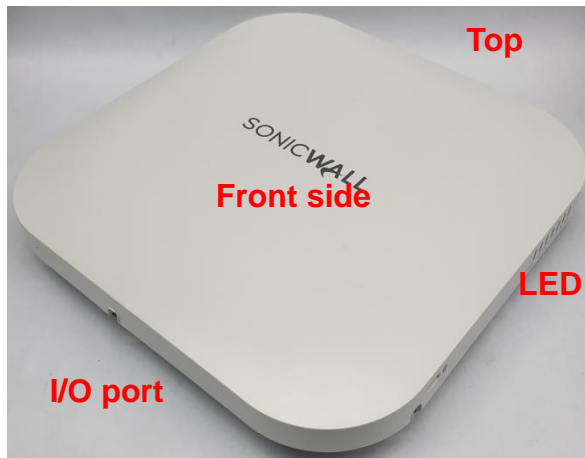
Isolation					
Freq. (MHz)	2G1-2G2	2G1-BLE	2G2-BLE	2G1-Scan	2G2-Scan
2400	-24.47	-21.95	-26.73	-22.15	-20.31
2450	-22.37	-22.62	-34.44	-20.82	-20.13
2500	-25.10	-22.72	-27.76	-20.07	-21.05
5150	-41.86	-48.79	-45.87	-39.49	-37.71
5500	-41.66	-43.11	-45.36	-35.70	-33.97
5850	-39.70	-53.13	-42.65	-32.08	-32.47

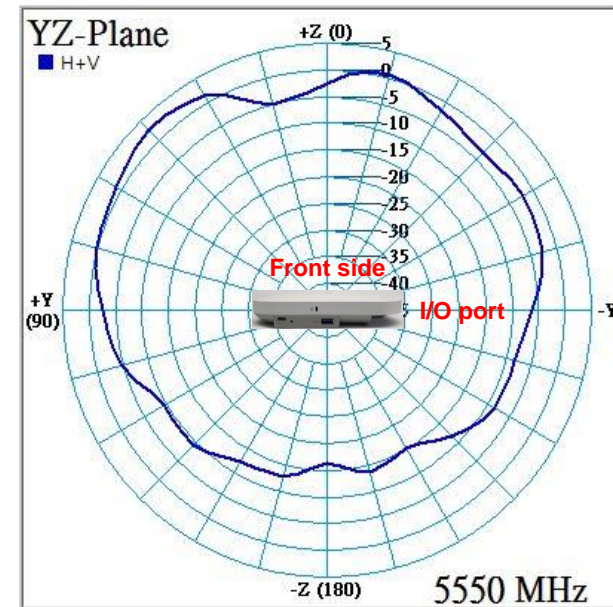
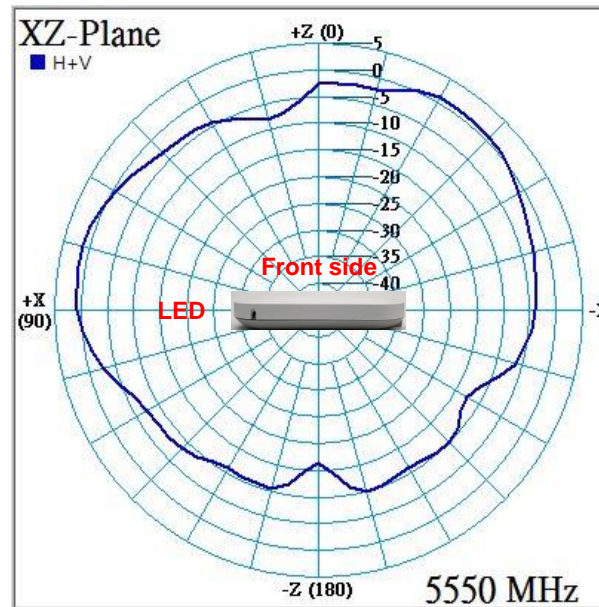
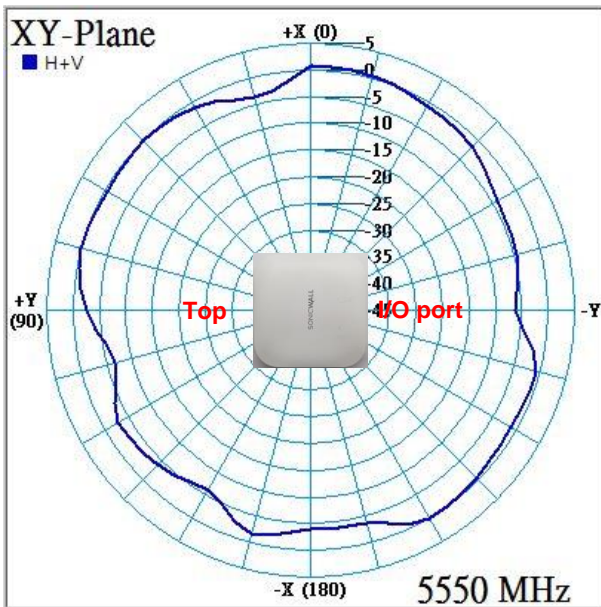
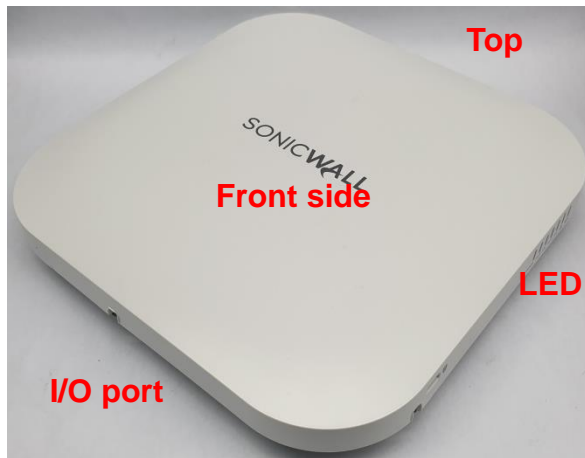


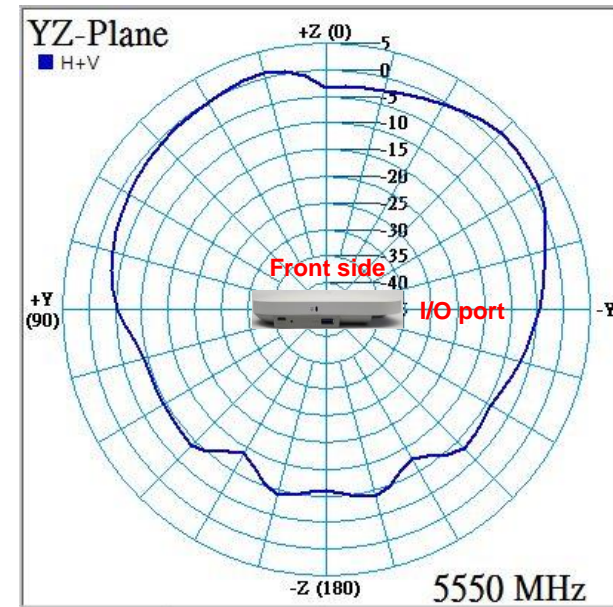
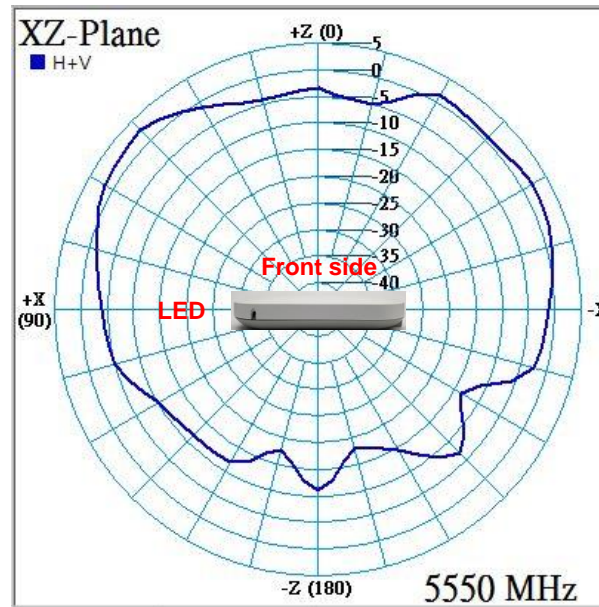
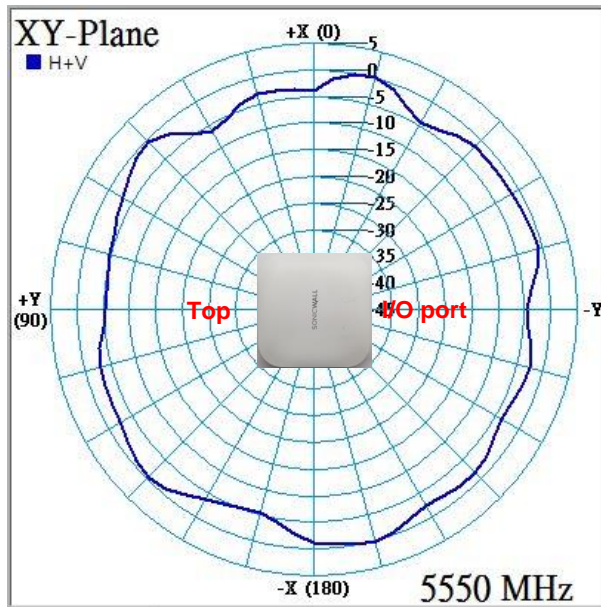
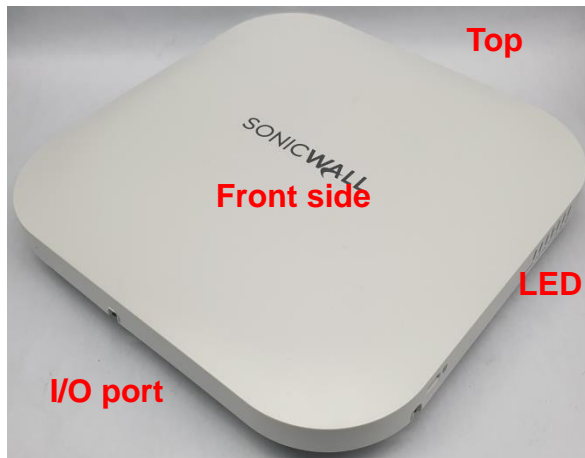
Isolation				
Freq. (MHz)	5G1-5G2	5G1-Scan	5G2-Scan	BLE-Scan
2400	-59.15	-25.00	-26.26	-19.86
2450	-51.54	-23.87	-25.65	-21.24
2500	-42.79	-23.61	-28.40	-19.64
5150	-20.96	-23.70	-23.72	-36.06
5500	-26.35	-22.47	-22.41	-35.27
5850	-27.34	-23.06	-22.90	-36.55



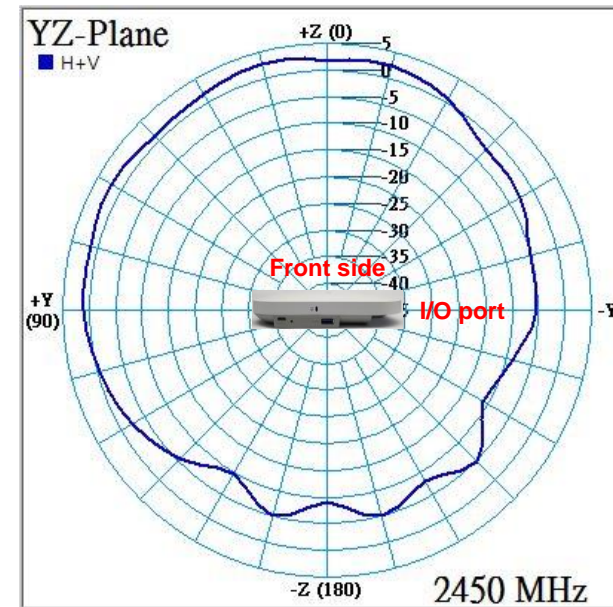
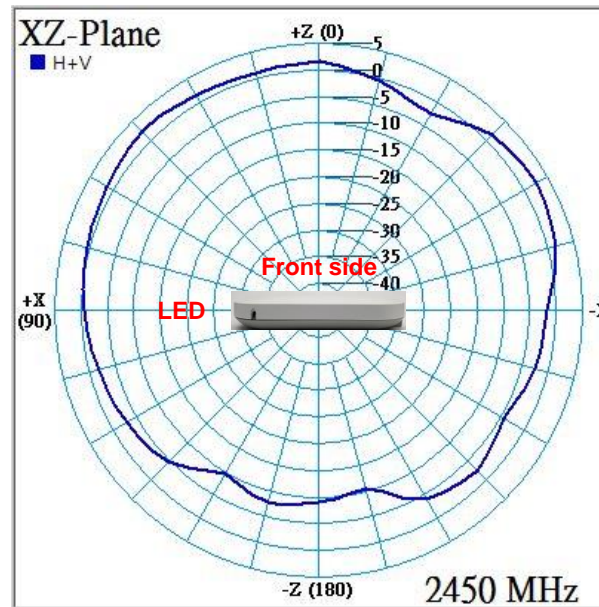
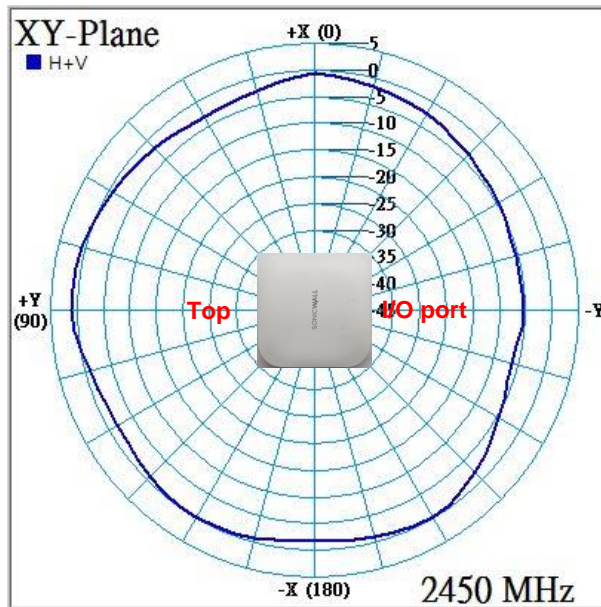
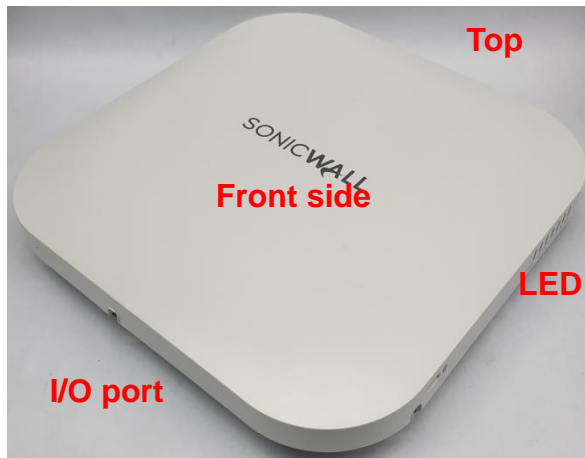


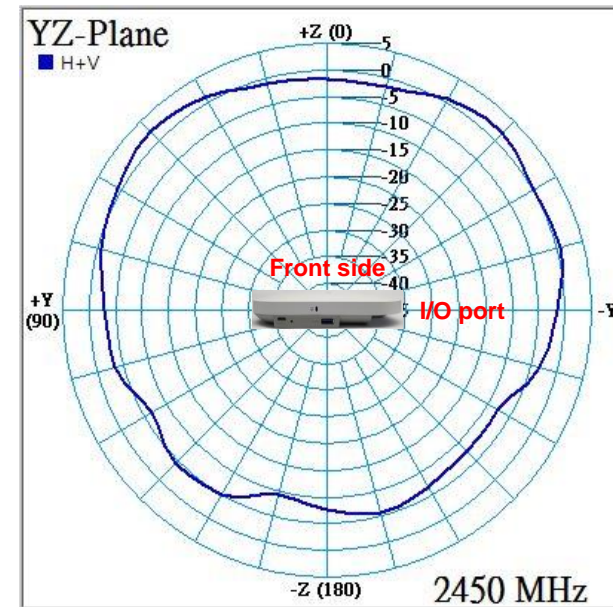
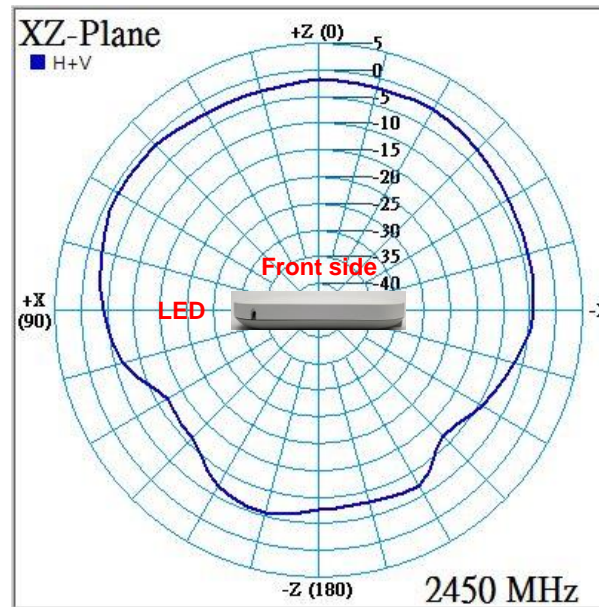
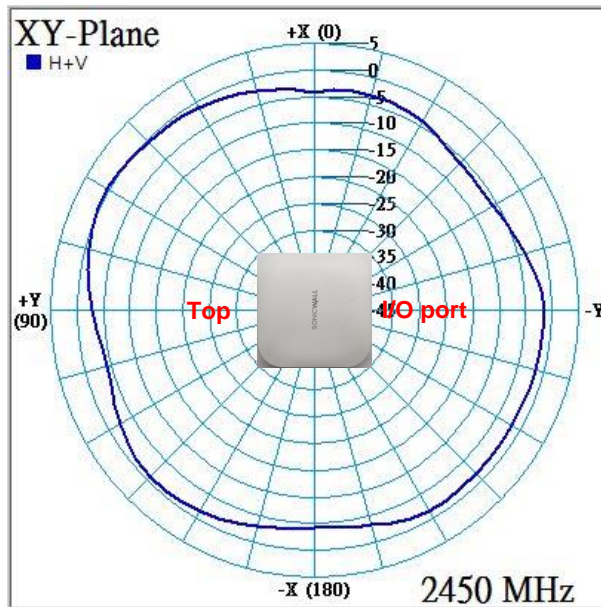
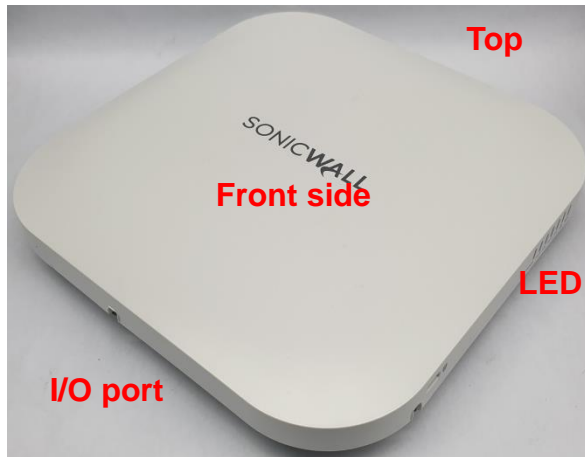




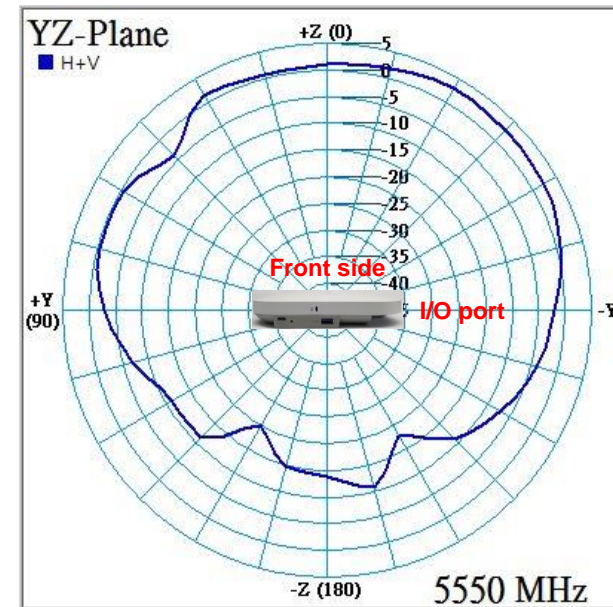
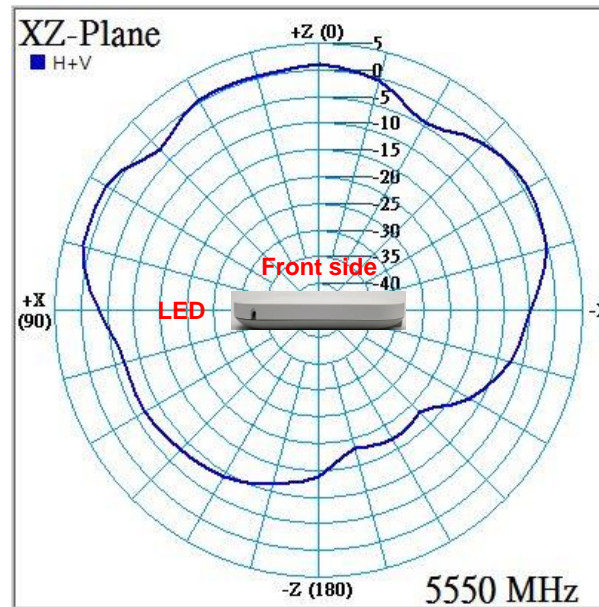
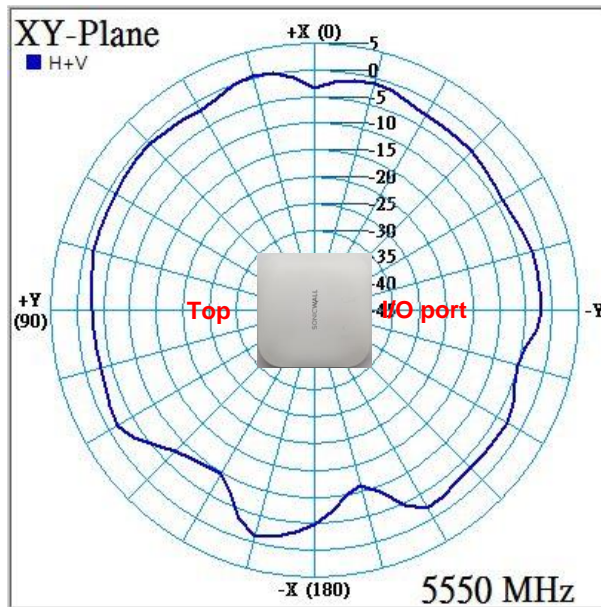
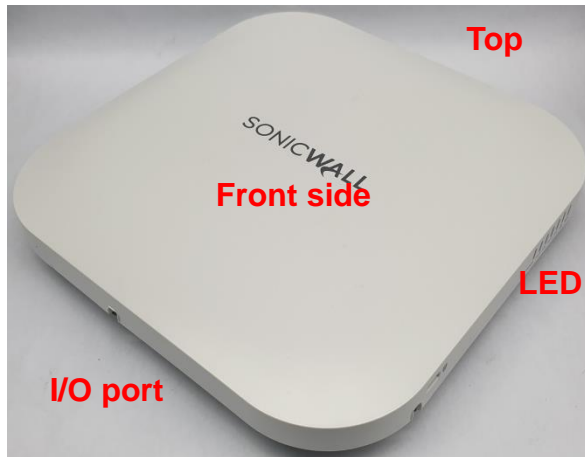






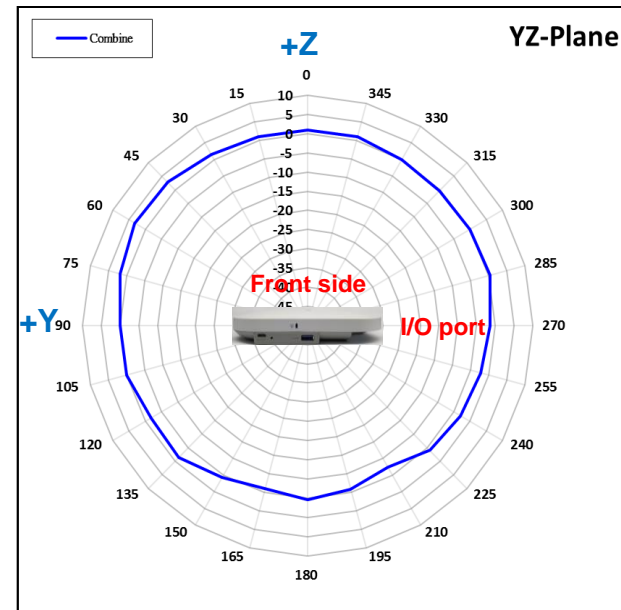
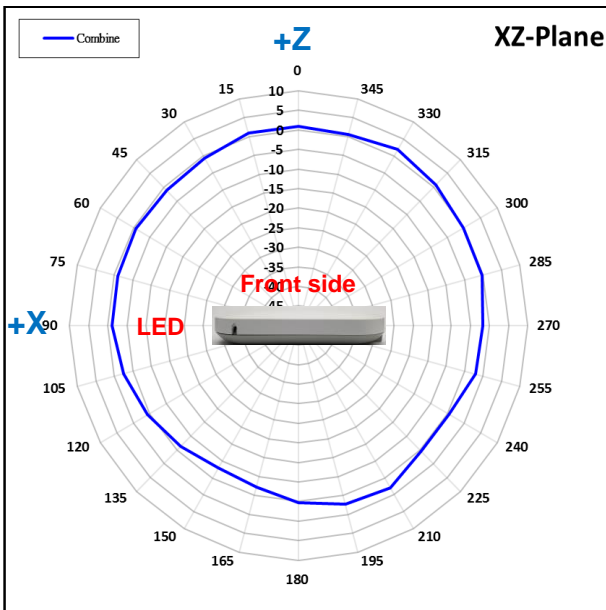
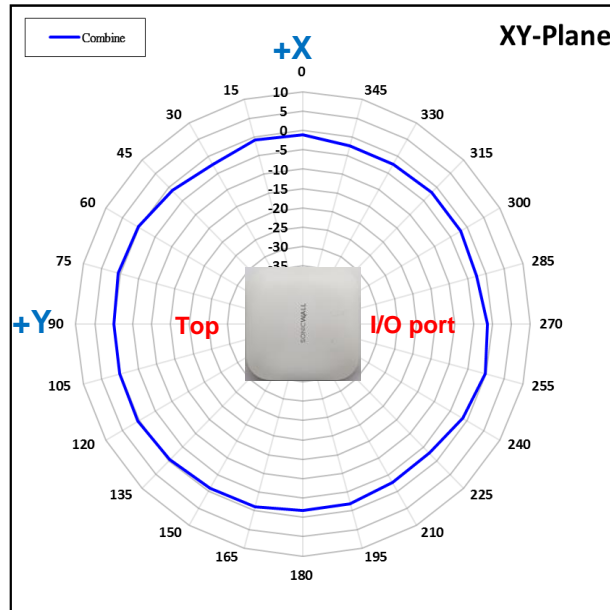
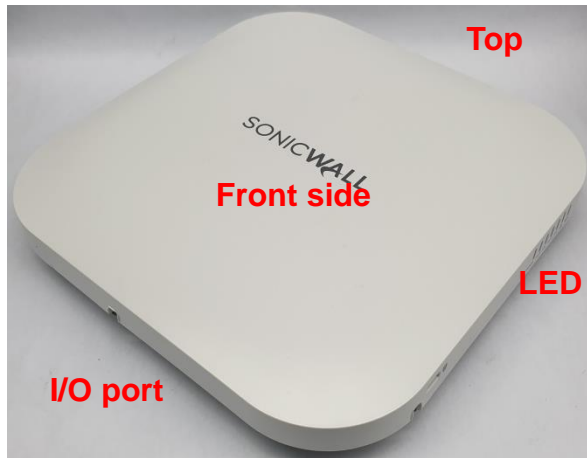


# 2D Radiation Pattern – Scan @ 5.55GHz

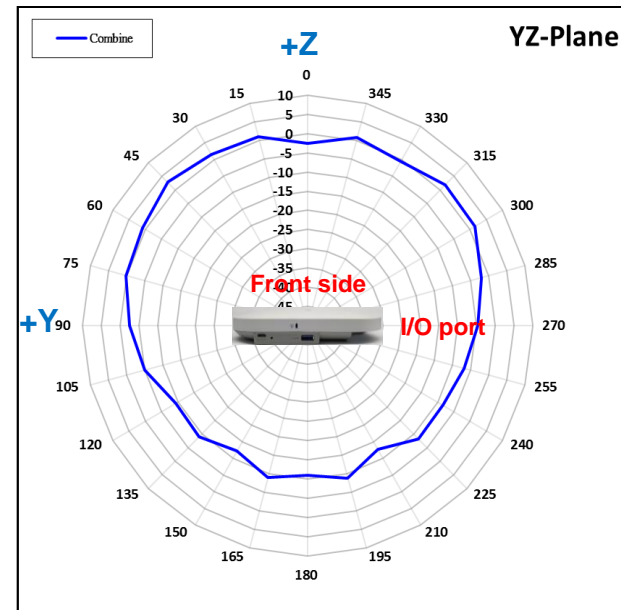
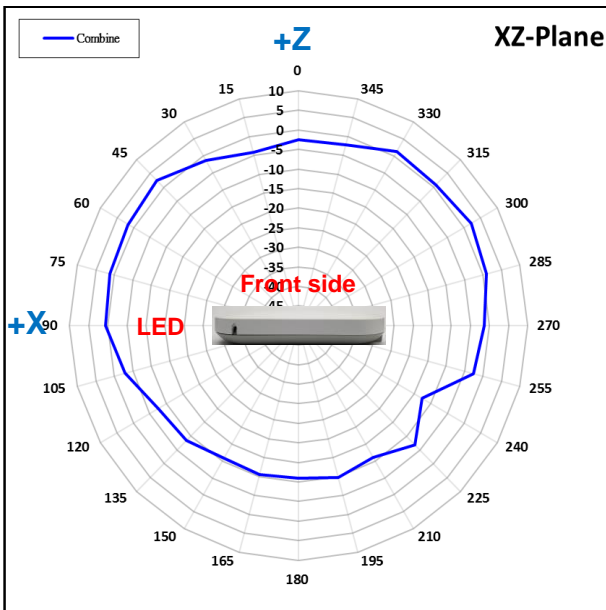
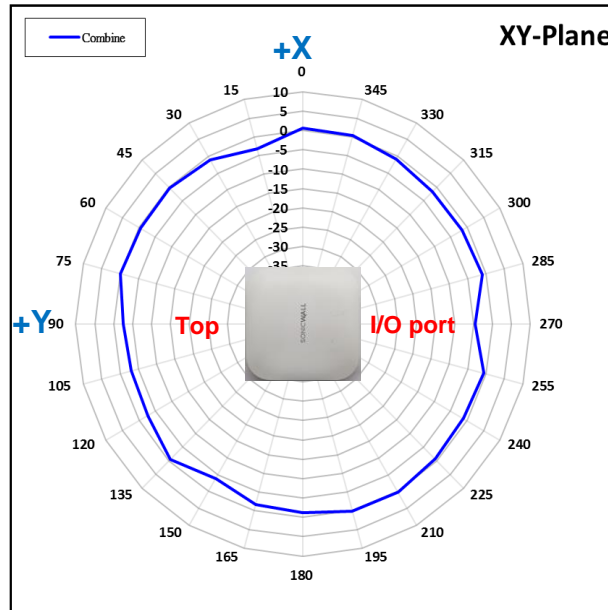
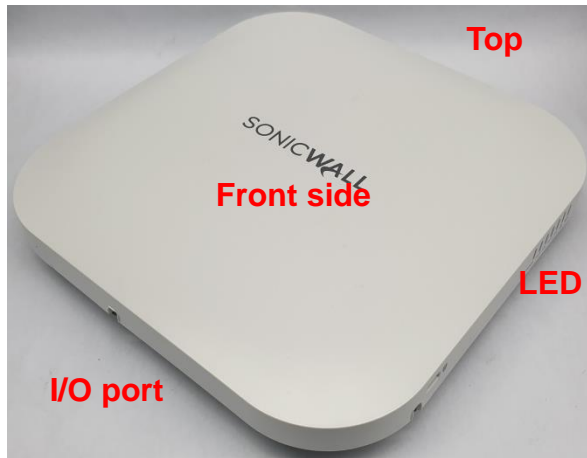




# Combine pattern – 2G1+2G2 @2.45 GHz



# Combine pattern – 5G1+5G2 @5.55 GHz





Antenna Performance				
Freq. (MHz)	2G1		2G2	
	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)
2400	61.1	3.05	63.8	3.52
2450	62.4	3.14	69.4	3.43
2500	63.7	3.21	66.7	3.64

Antenna Performance				
Freq. (MHz)	5G1		5G2	
	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)
5150	64.8	4.52	64.3	4.13
5500	66.6	4.63	63.4	4.98
5850	61.5	5.07	65.2	4.62

Antenna Performance		
Freq. (MHz)	BLE	
	Efficiency (%)	Peak Gain (dBi)
2400	61.0	3.09
2450	65.4	3.70
2500	68.8	3.58

Antenna Performance		
Freq. (MHz)	Scan	
	Efficiency (%)	Peak Gain (dBi)
2400	60.4	3.83
2450	62.2	3.93
2500	60.3	3.81
5150	60.5	3.81
5500	60.0	4.23
5850	63.9	4.89