



# FAP-233G

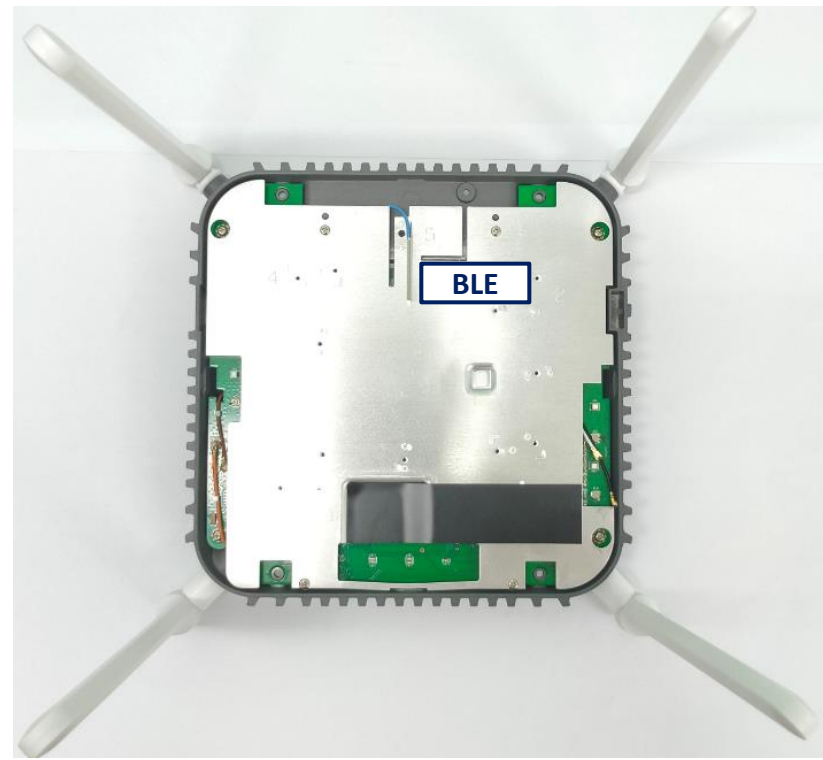
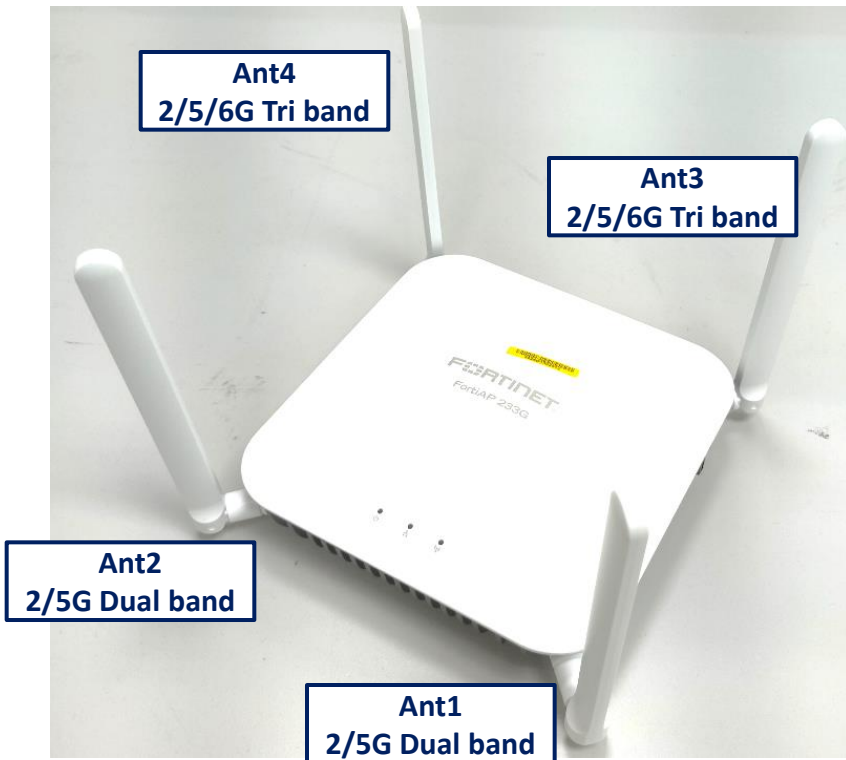
## Antenna Test Report

Senao Networks, Inc.

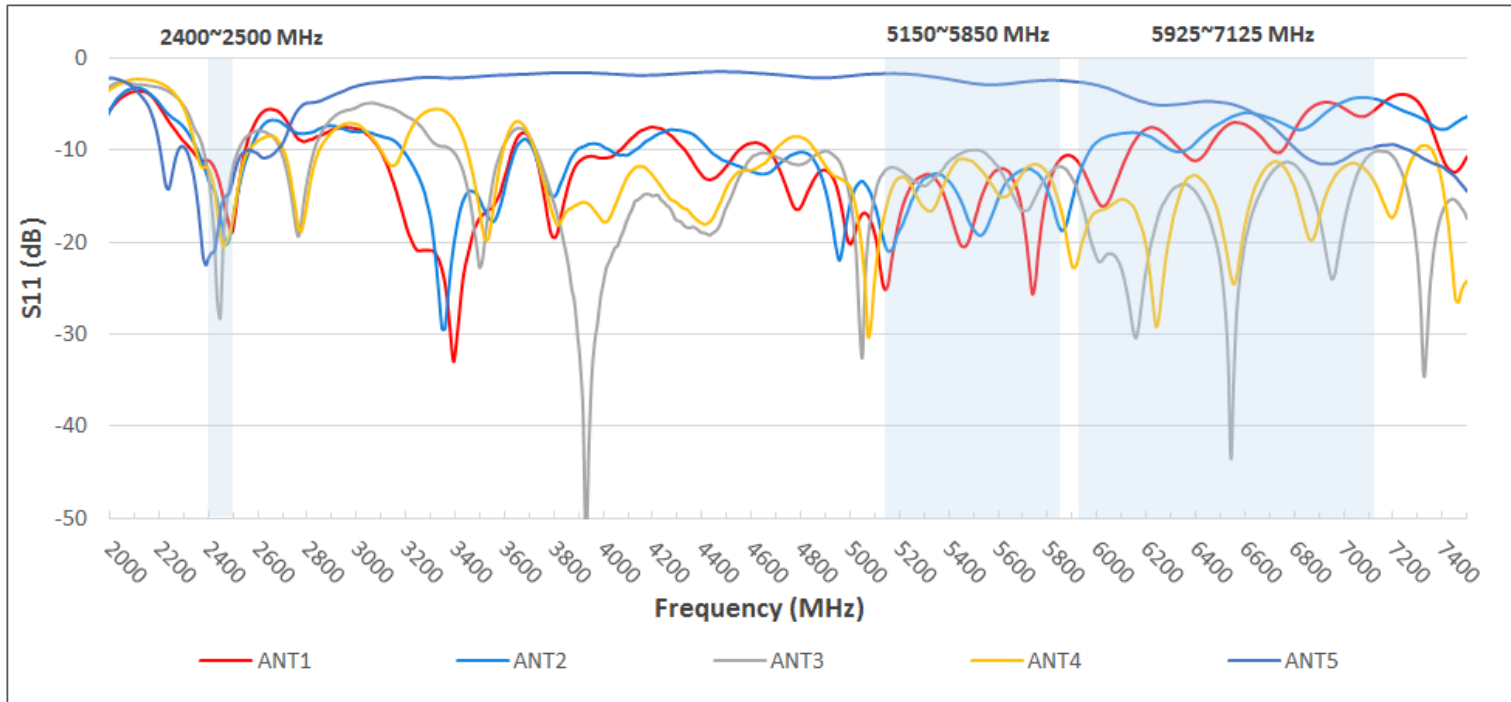
Customer	Fortinet
Project	FAP-233G
Project Description	Dual antenna*2 Tri antenna*2 BLE antenna*1
Date	2022/07/15
Prepared by	Tony
Report Version	A01

- **Agenda**
  - Placement and Specification
  - S11 & Isolation
  - Radiation Pattern
  - Combine Pattern
  - Efficiency and Gain

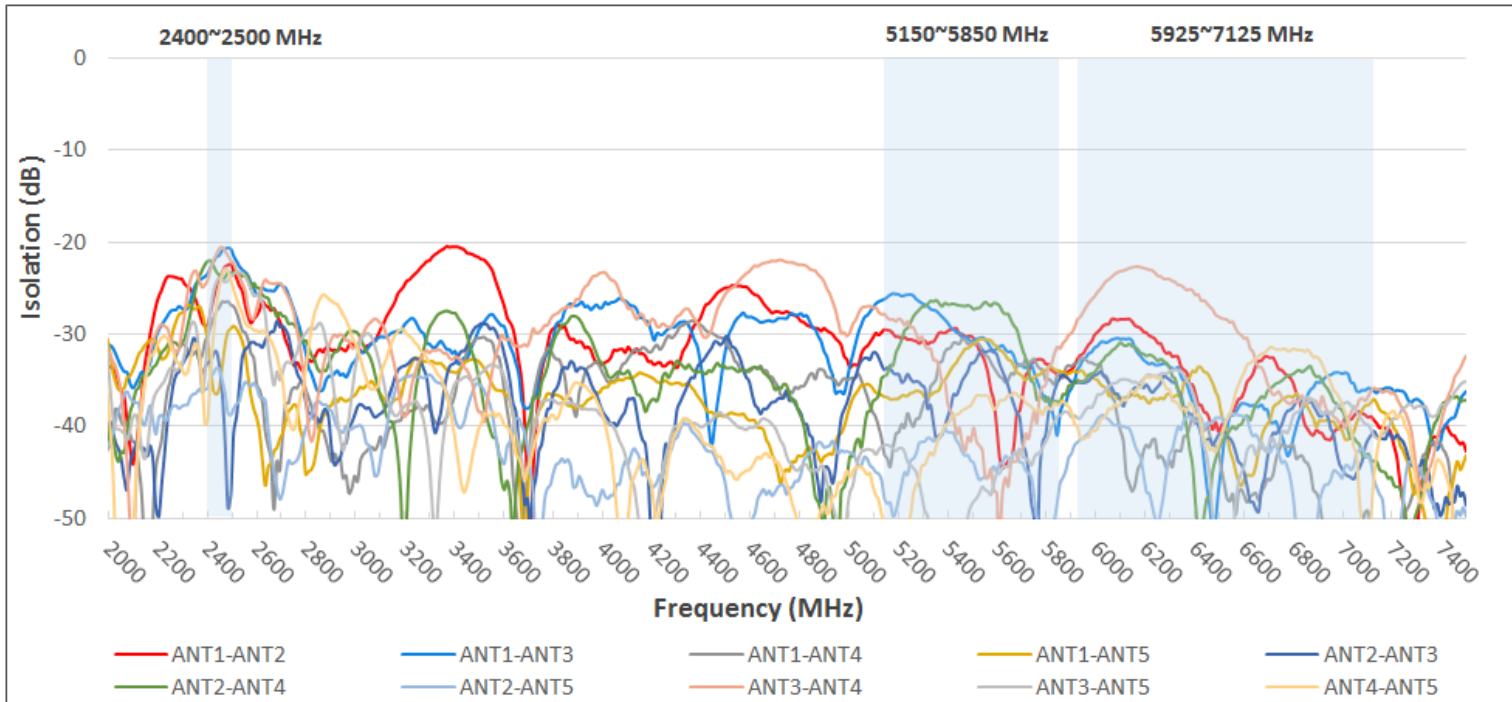
# Placement and specification



Ant No.	Brand Name	Model Name	Operating Band	Gain (dBi)	Efficiency (%)	Ant Type
Ant 1	AWAN	7102A0560000	2400MHz ~ 2500 MHz	4.94@2G	70.90@2G	Dipole
				4.58@5G	65.53@5G	
Ant 2	AWAN	7102A0560000	5150MHz ~ 5850 MHz	5.24@2G	71.11@2G	Dipole
				4.98@5G	67.90@5G	
Ant 3	AWAN	7102A0561000	2400MHz ~ 2500 MHz	4.53@2G	65.29@2G	Dipole
				4.62@5G	66.70@5G	
				4.77@6G	67.15@6G	
Ant 4	AWAN	7102A0562000	5925MHz ~ 7125 MHz	4.27@2G	63.87@2G	Dipole
				4.23@5G	62.30@5G	
				4.37@6G	62.42@6G	
Ant 5	SENAO	5718A0679300	2400MHz ~ 2500 MHz	5.1	63.02	PIFA



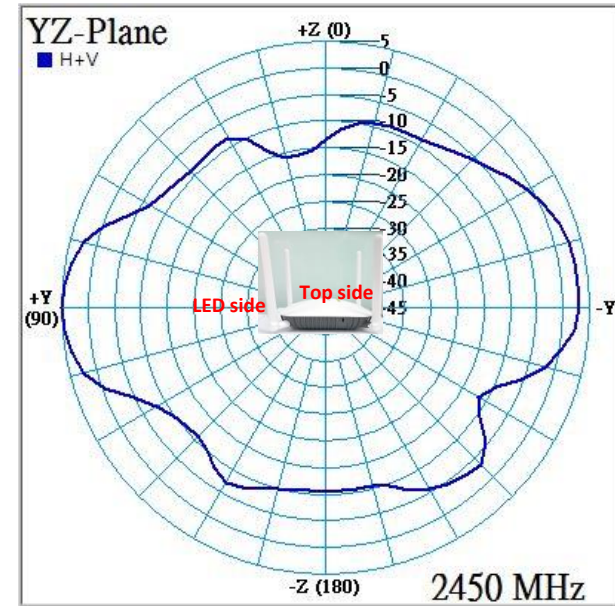
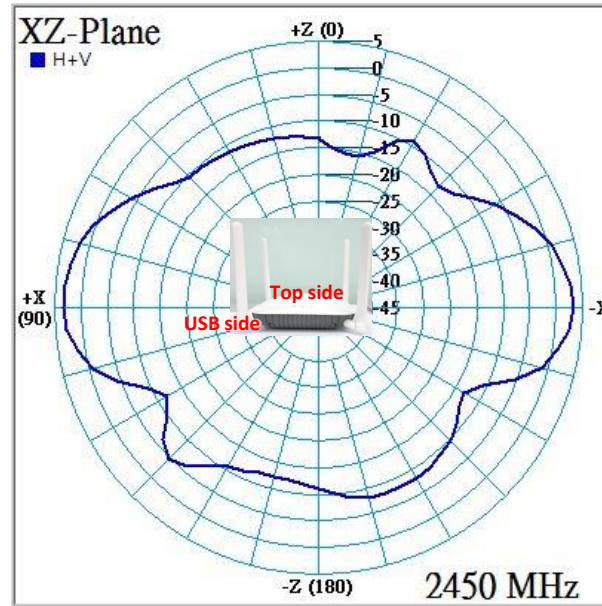
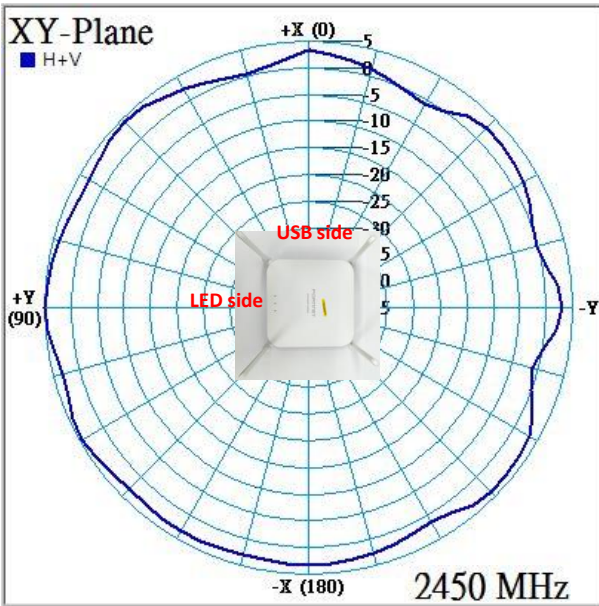
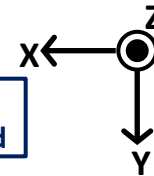
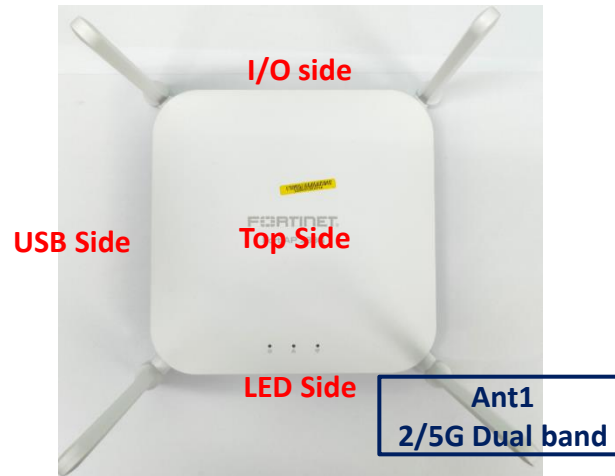
Antenna S11					
Freq. (MHz)	ANT1	ANT2	ANT3	ANT4	ANT5
2400	-11.15	-13.33	-13.19	-12.07	-21.70
2450	-13.88	-17.07	-28.17	-19.27	-16.75
2500	-18.99	-18.19	-12.33	-18.10	-13.73
5150	-24.49	-21.03	-11.99	-15.31	-1.71
5500	-17.55	-18.80	-10.01	-11.46	-2.78
5850	-11.28	-18.12	-11.79	-15.46	-2.43
5925	-11.32	-12.98	-14.67	-21.77	-2.61
6500	-8.09	-7.12	-21.77	-17.37	-4.80
7125	-5.63	-4.45	-10.15	-13.57	-9.67



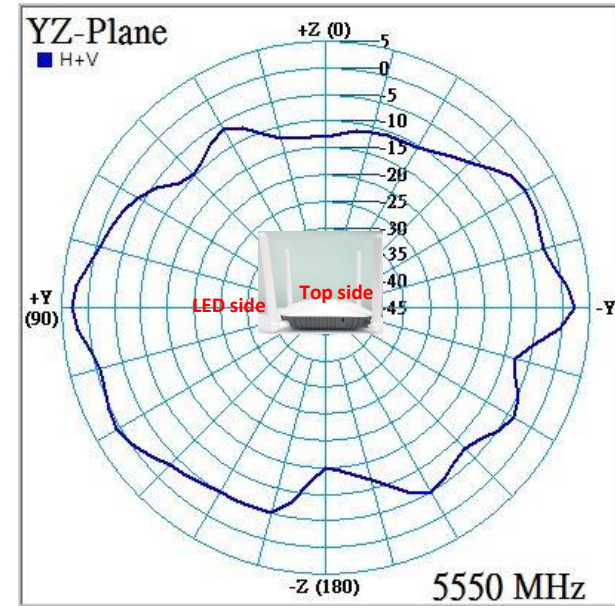
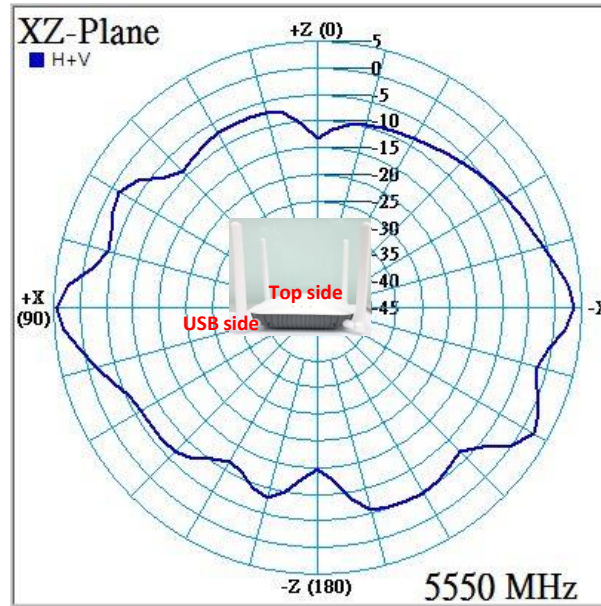
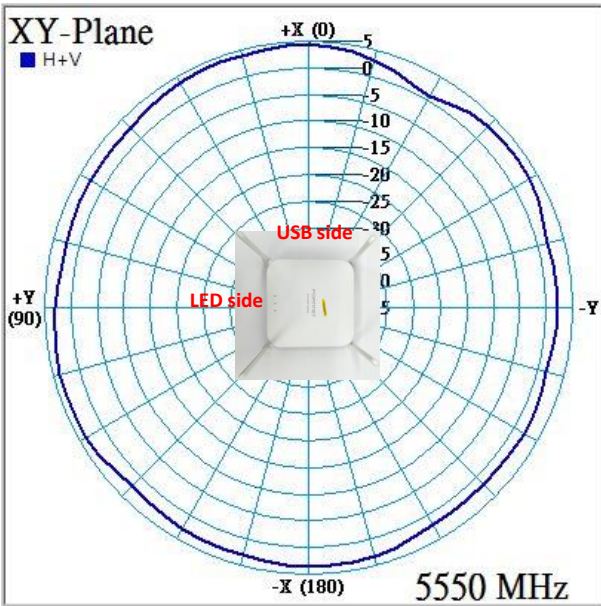
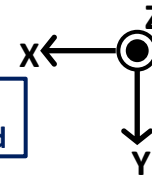
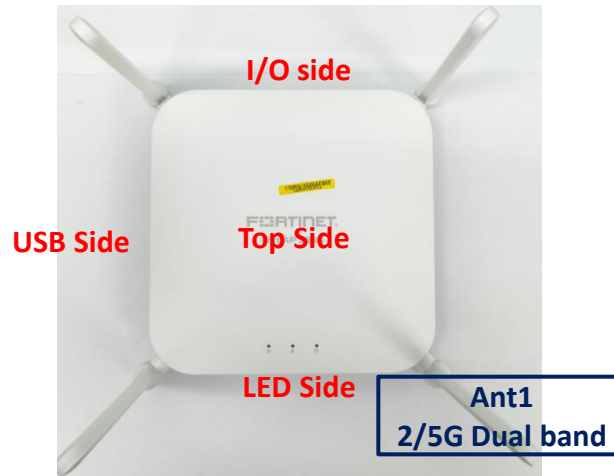
Antenna S11

Freq. (MHz)	ANT1-ANT2	ANT1-ANT3	ANT1-ANT4	ANT1-ANT5	ANT2-ANT3	ANT2-ANT4	ANT2-ANT5	ANT3-ANT4	ANT3-ANT5	ANT4-ANT5
2400	-29.04	-23.44	-30.13	-30.86	-33.11	-22.08	-35.86	-24.15	-30.49	-39.42
2450	-23.97	-21.45	-27.08	-35.95	-33.36	-23.62	-33.80	-20.71	-23.90	-24.93
2500	-22.41	-20.76	-26.85	-29.41	-47.50	-23.29	-38.80	-22.00	-23.78	-24.06
5150	-29.57	-25.99	-43.53	-36.86	-33.63	-34.35	-48.43	-28.22	-42.02	-51.76
5500	-30.44	-30.69	-31.14	-31.02	-33.12	-27.31	-43.99	-40.20	-48.21	-37.20
5850	-34.39	-41.00	-34.42	-33.92	-35.34	-37.31	-48.34	-31.41	-39.01	-37.74
5925	-32.78	-33.91	-33.11	-34.18	-35.24	-35.02	-41.76	-28.45	-39.10	-40.04
6500	-40.58	-47.03	-42.79	-36.98	-40.94	-42.60	-39.13	-28.09	-50.87	-42.05
7125	-39.36	-36.17	-51.94	-37.06	-40.56	-43.80	-45.79	-35.85	-41.01	-45.61

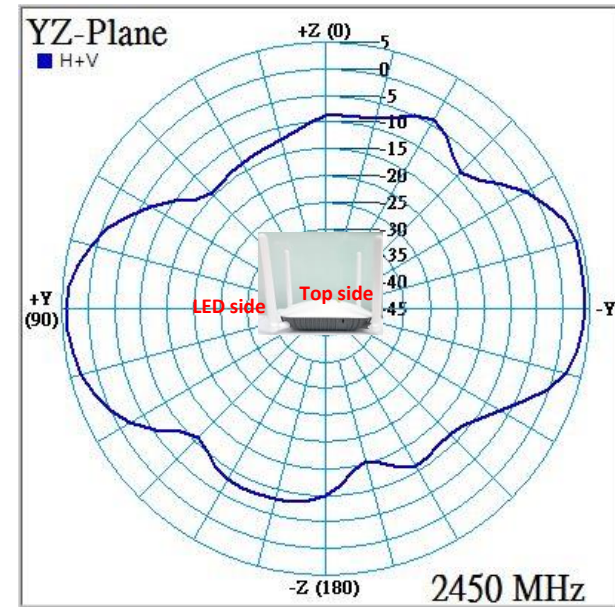
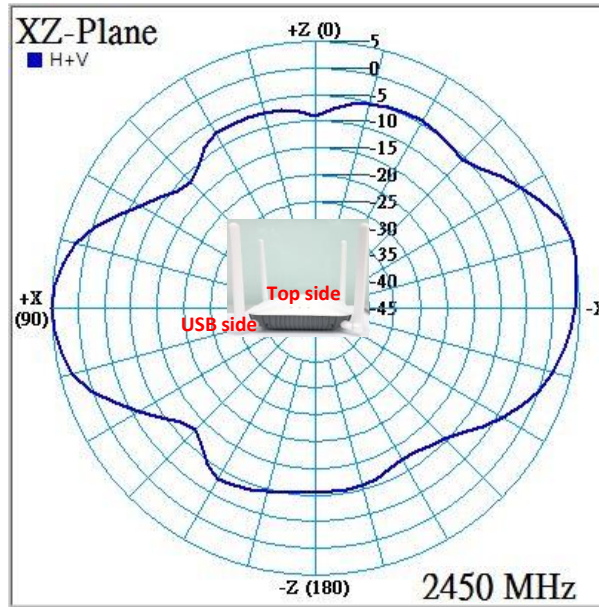
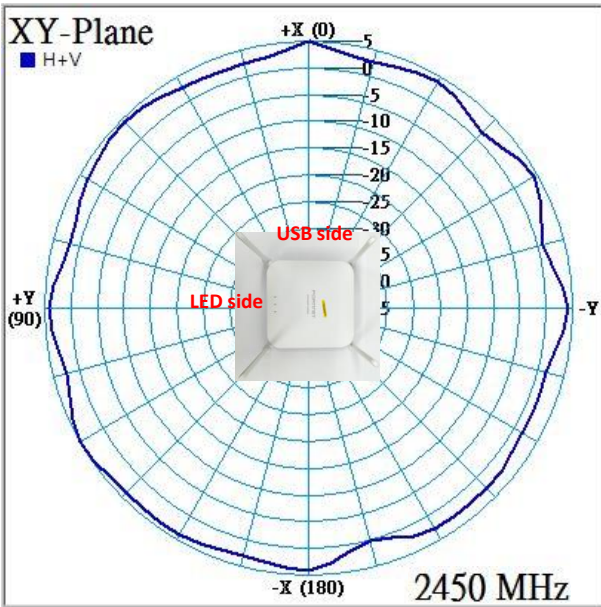
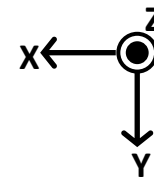
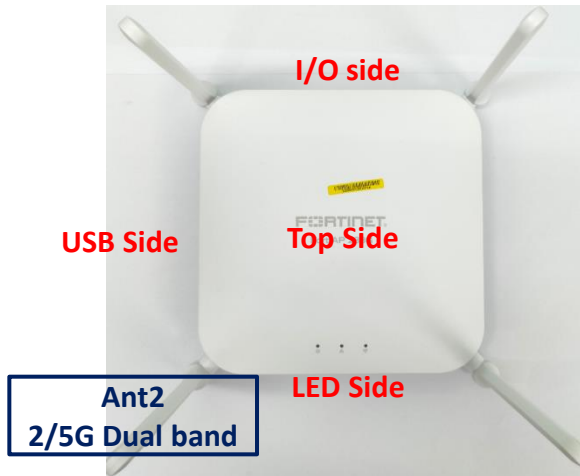
# 2D Radiation Pattern – Ant1 @ 2.45GHz



# 2D Radiation Pattern – Ant1 @ 5.55GHz

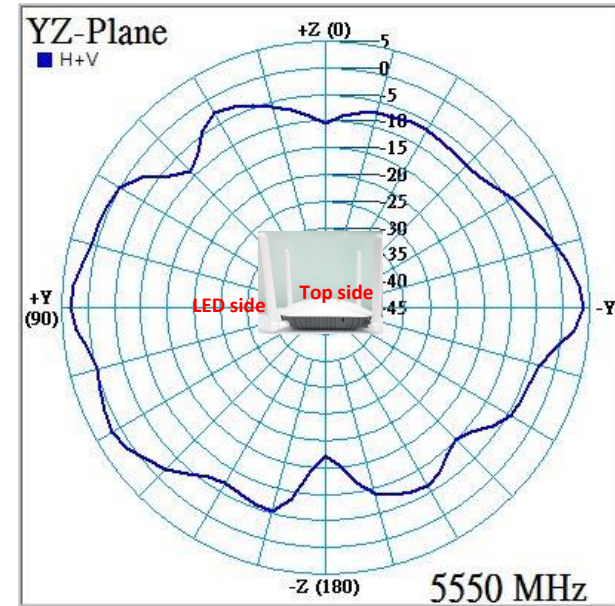
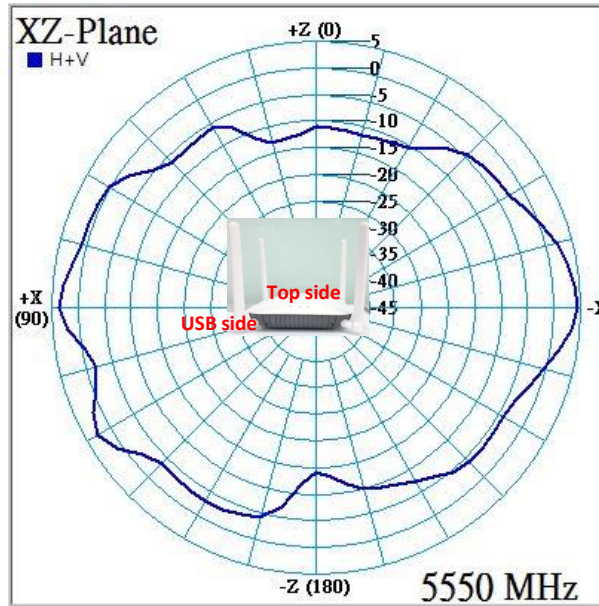
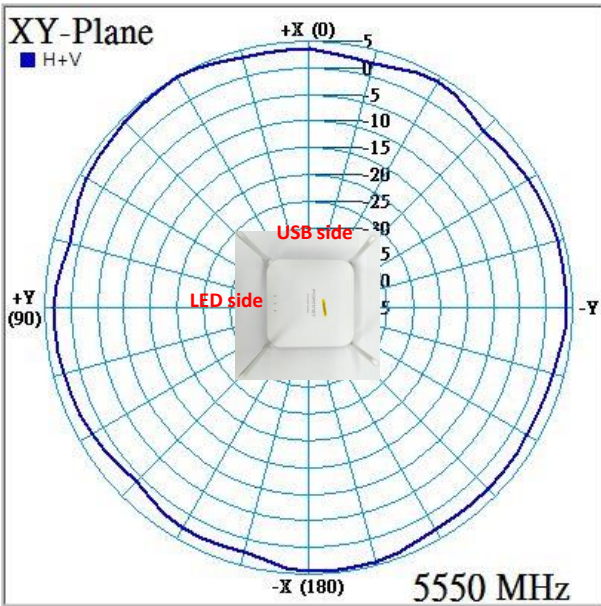
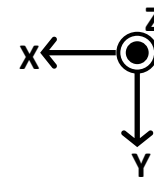
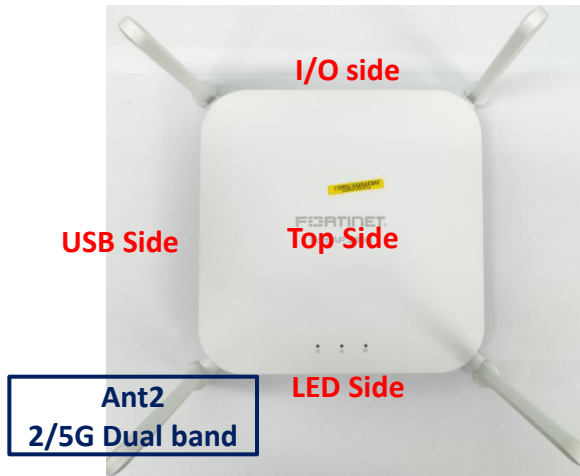


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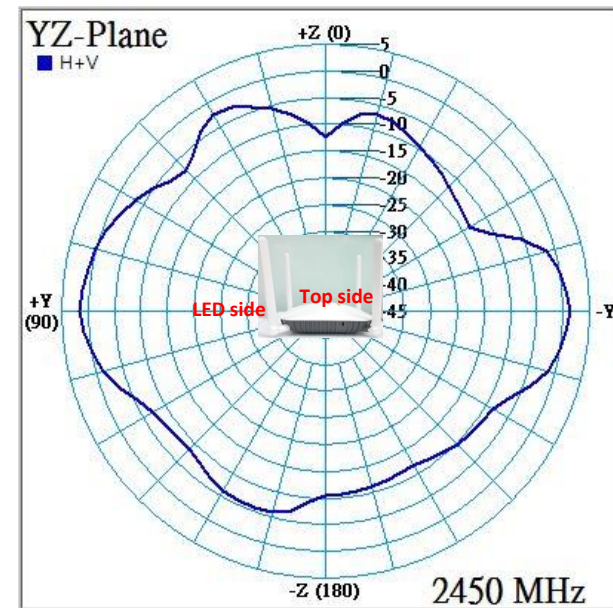
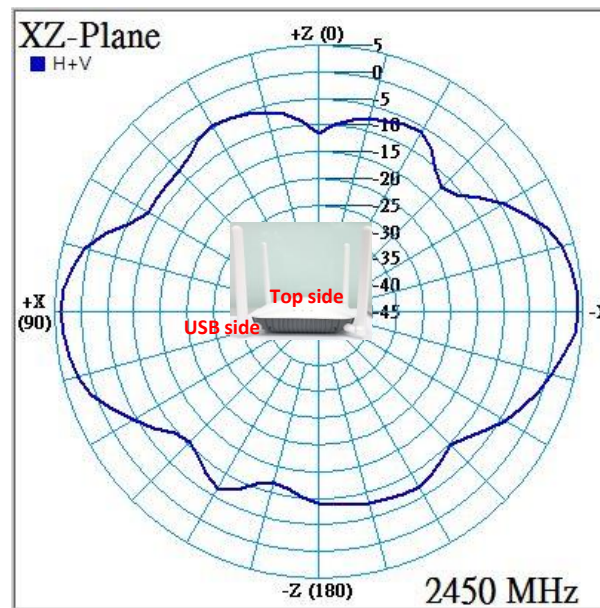
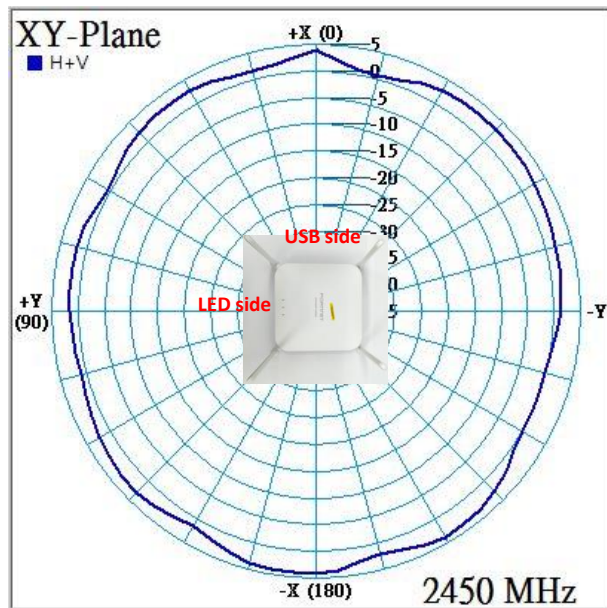
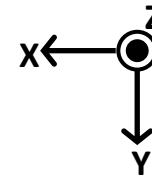
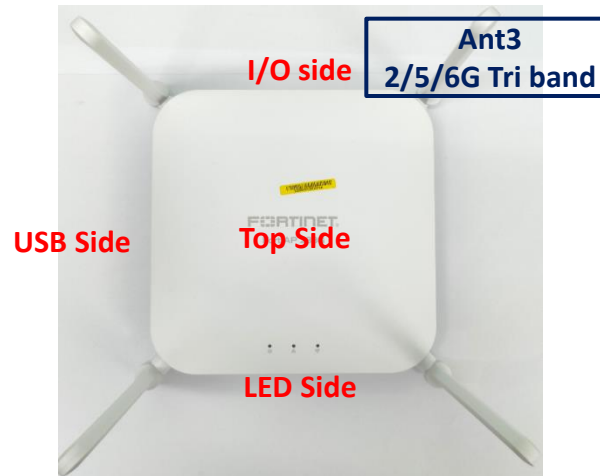




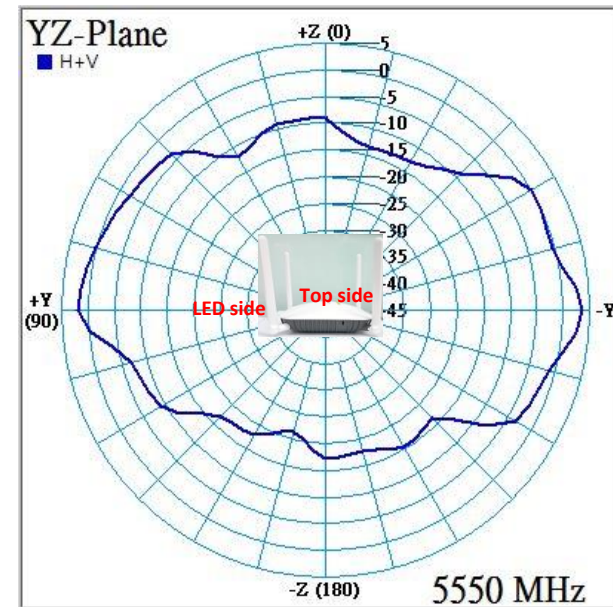
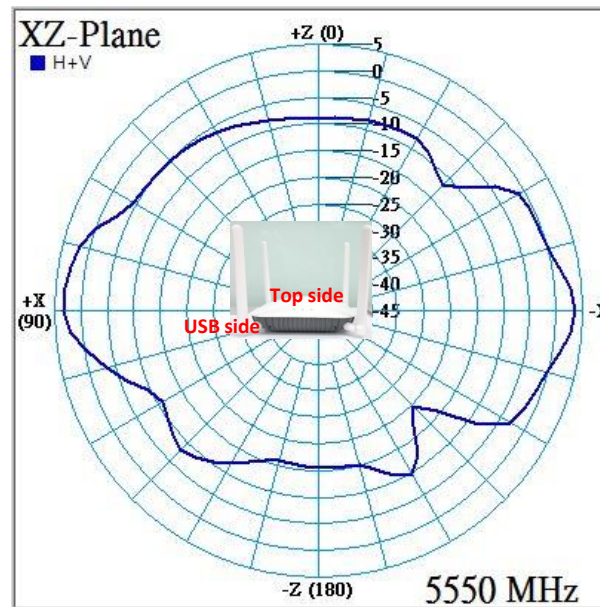
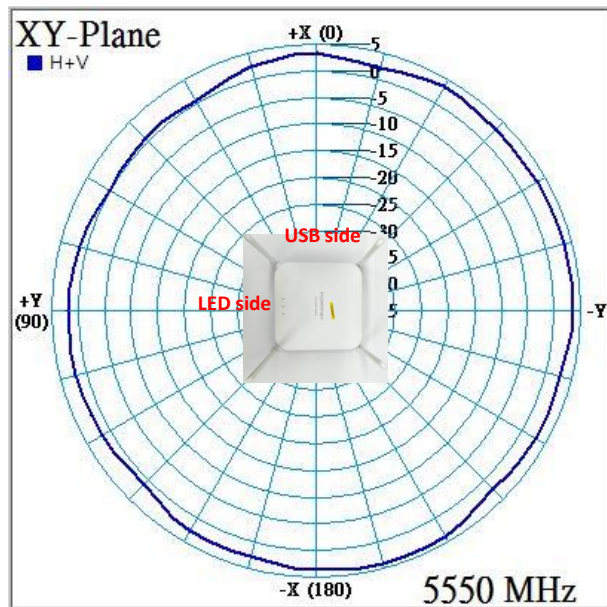
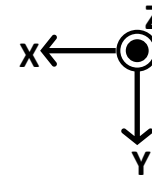
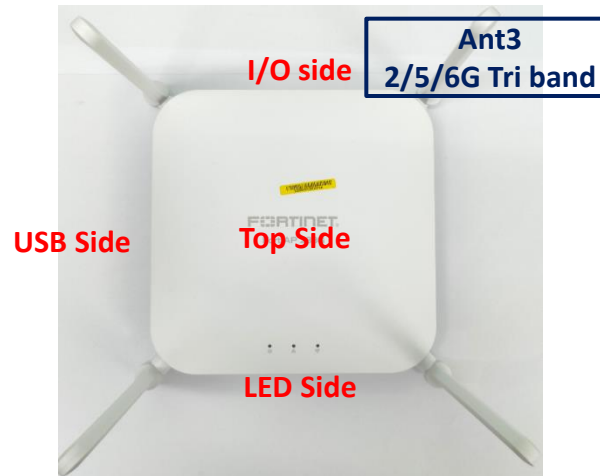
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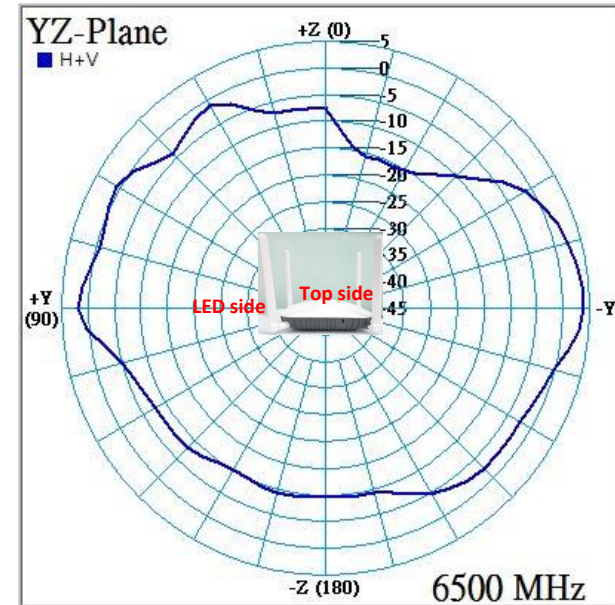
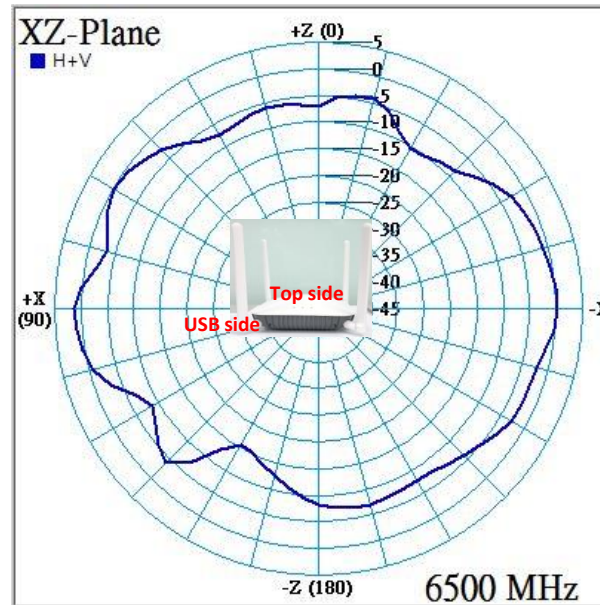
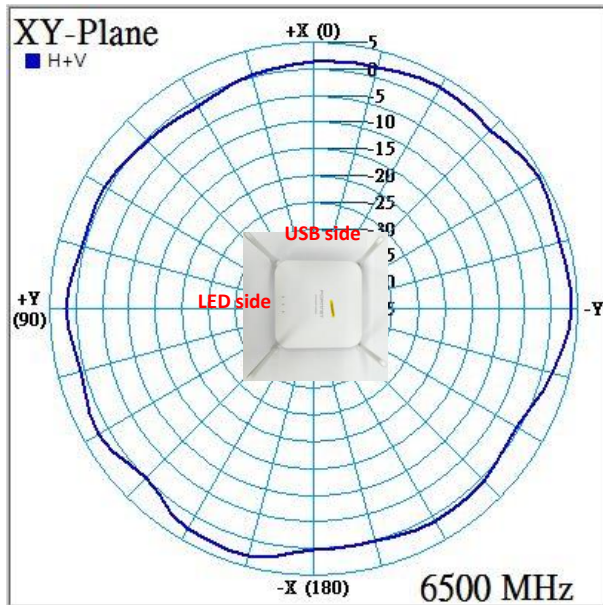
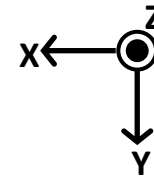
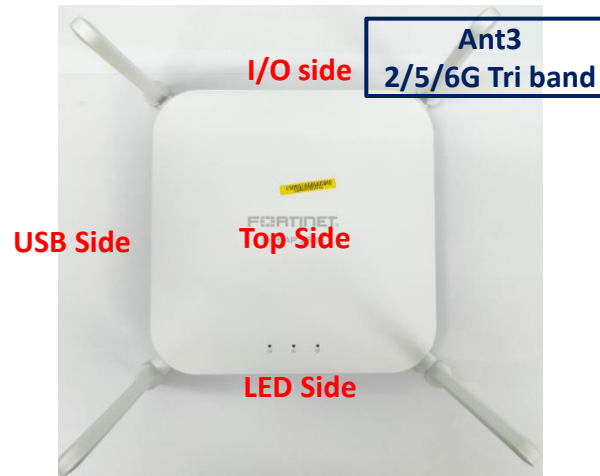
# 2D Radiation Pattern – Ant3 @ 2.45GHz



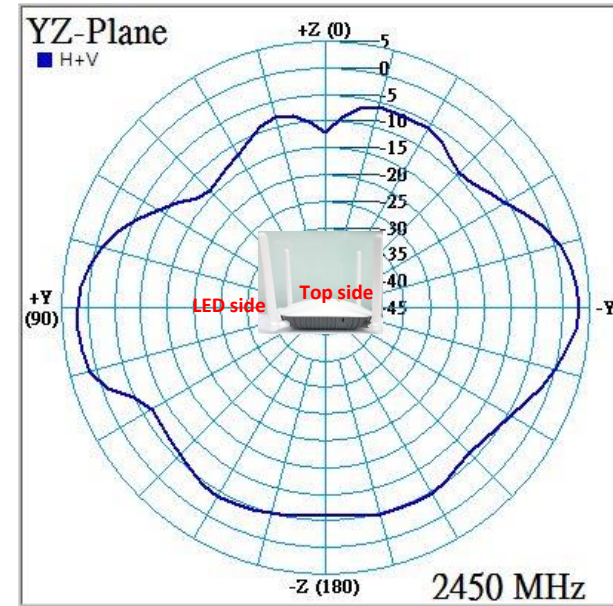
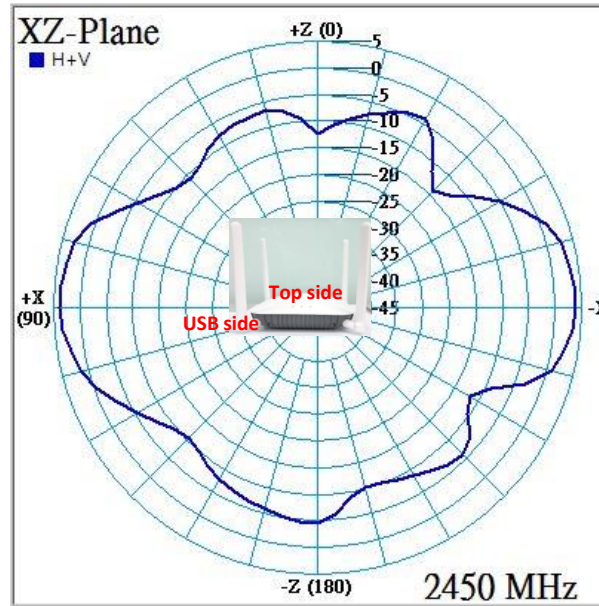
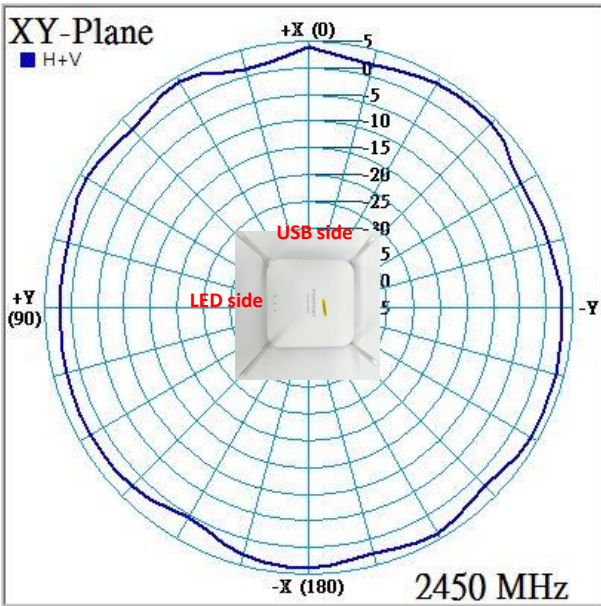
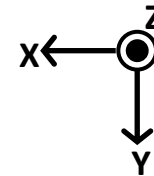
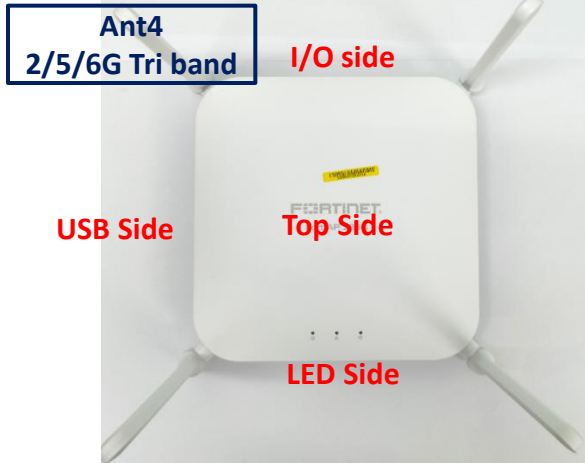
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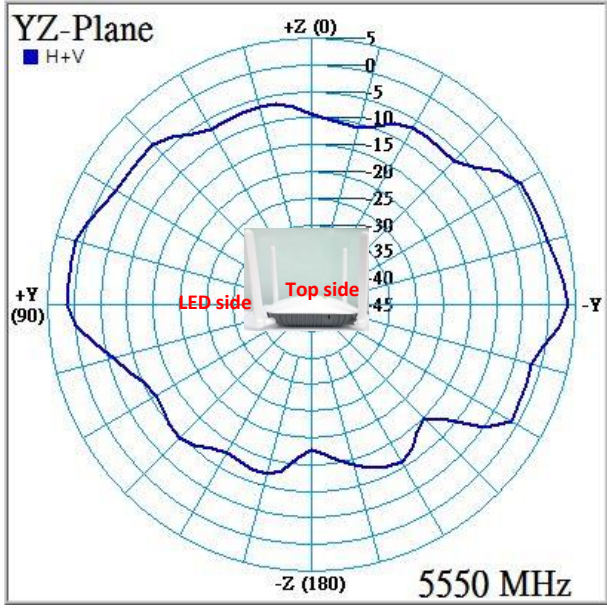
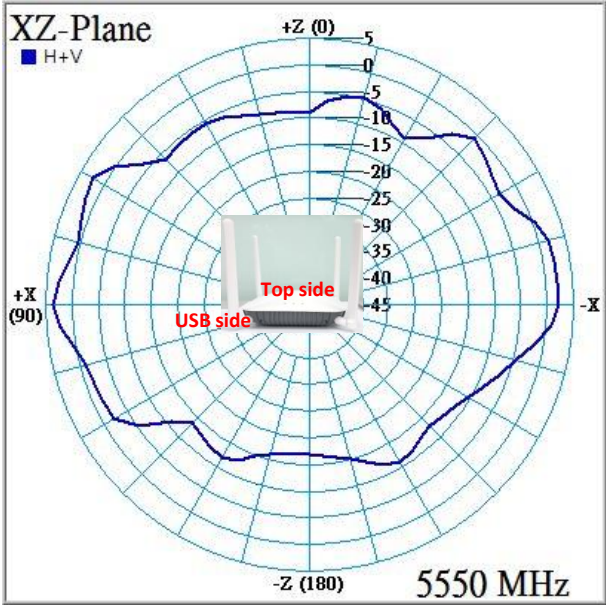
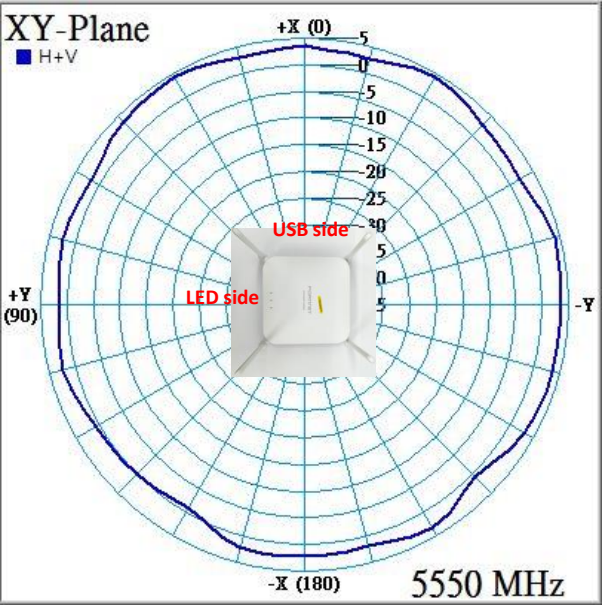
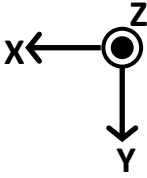
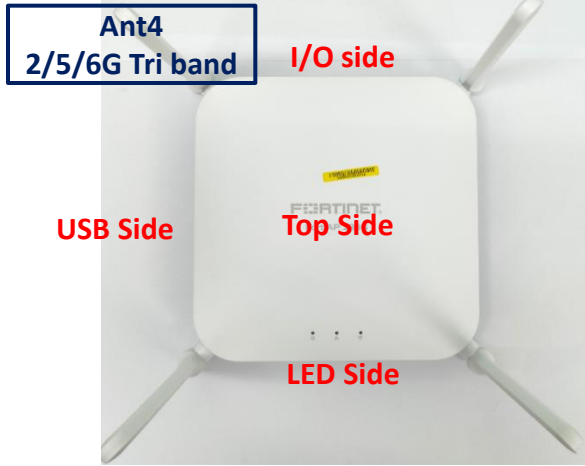
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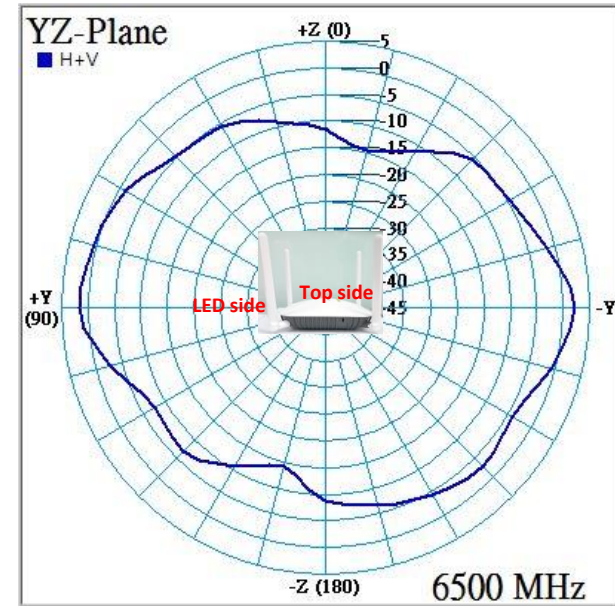
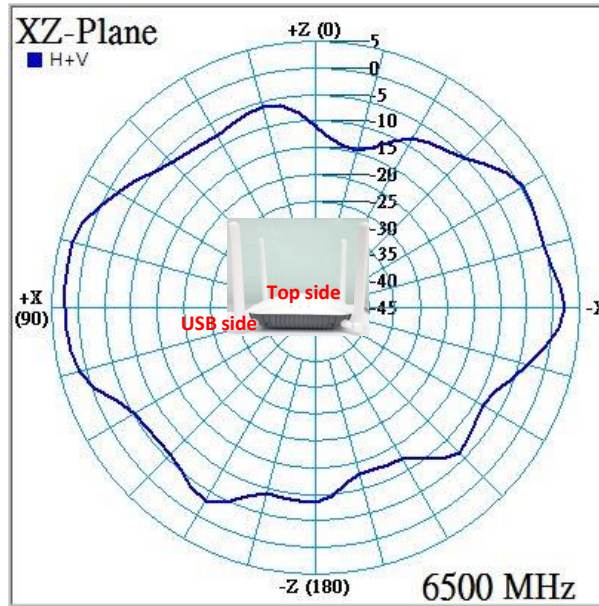
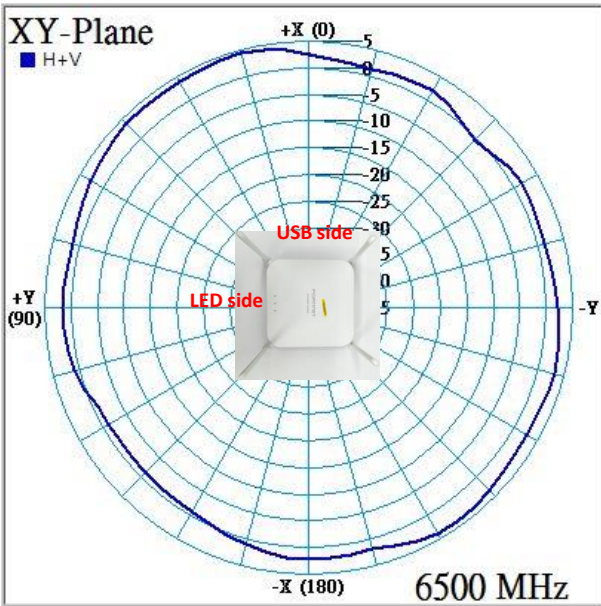
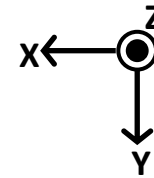
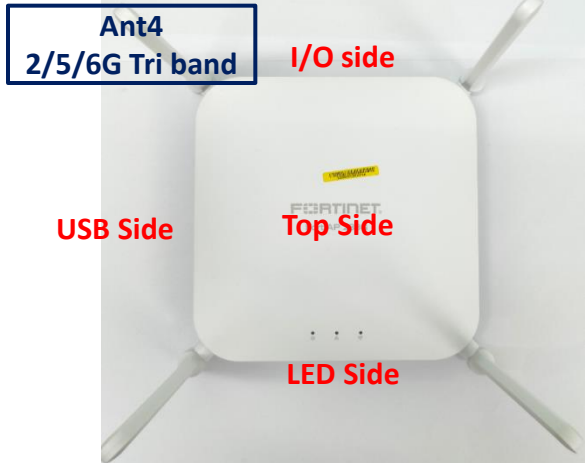
# 2D Radiation Pattern – Ant4 @ 2.45GHz



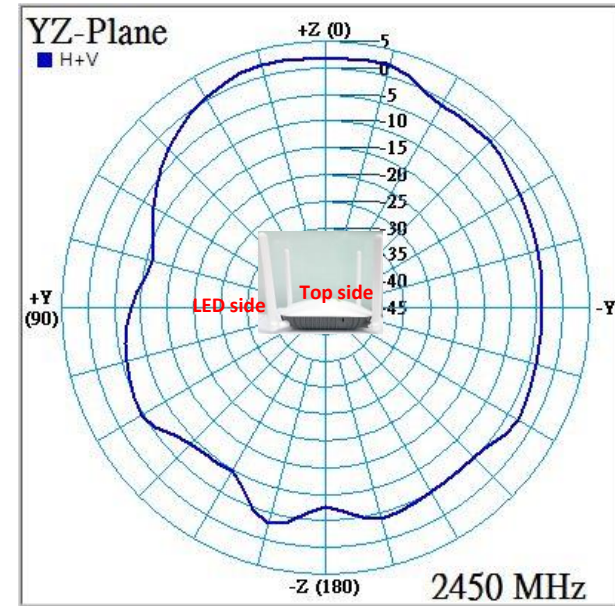
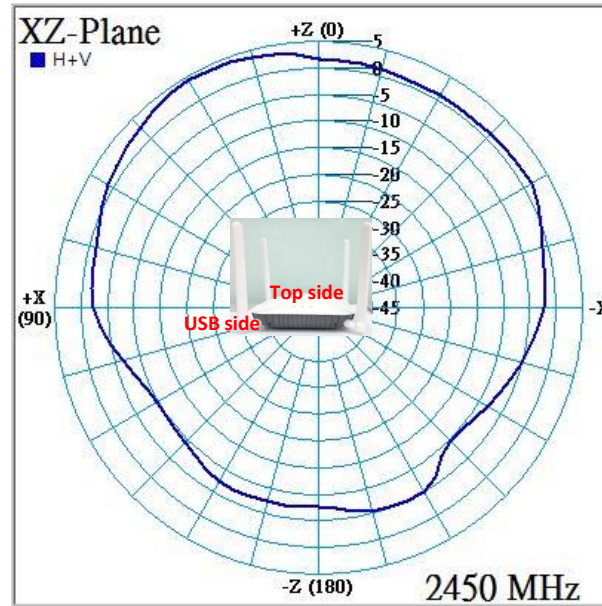
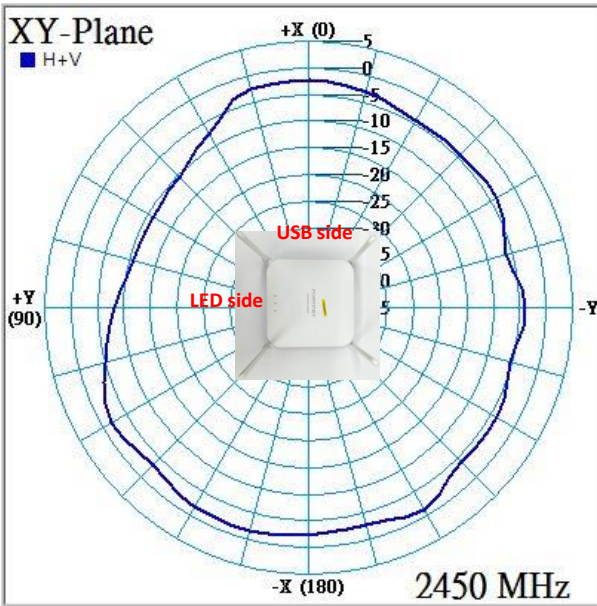
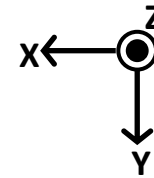
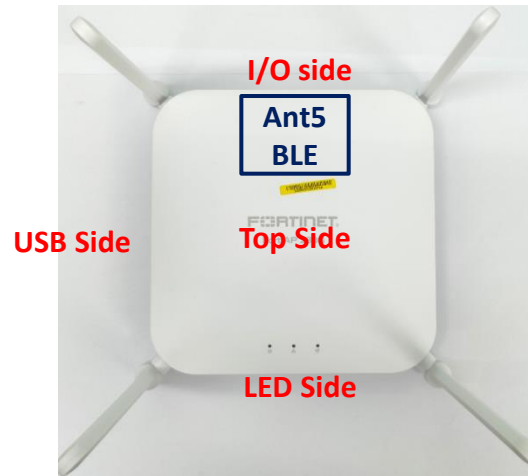
# 2D Radiation Pattern – Ant4 @ 5.55GHz



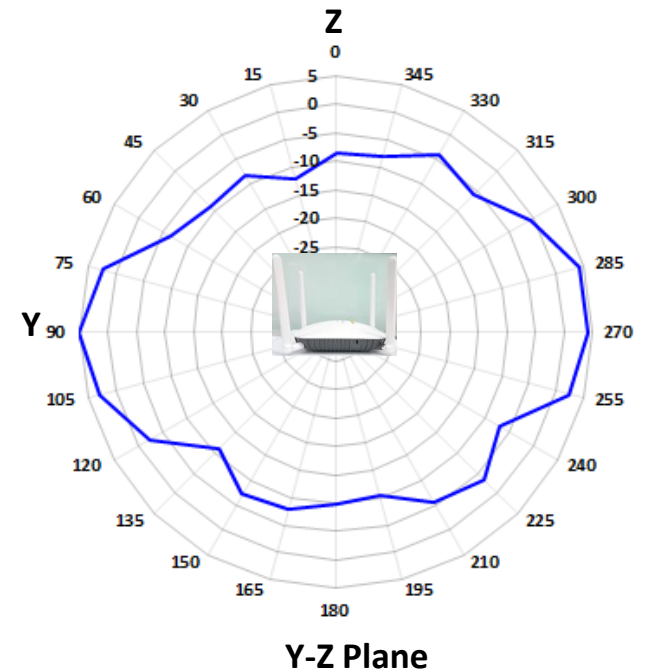
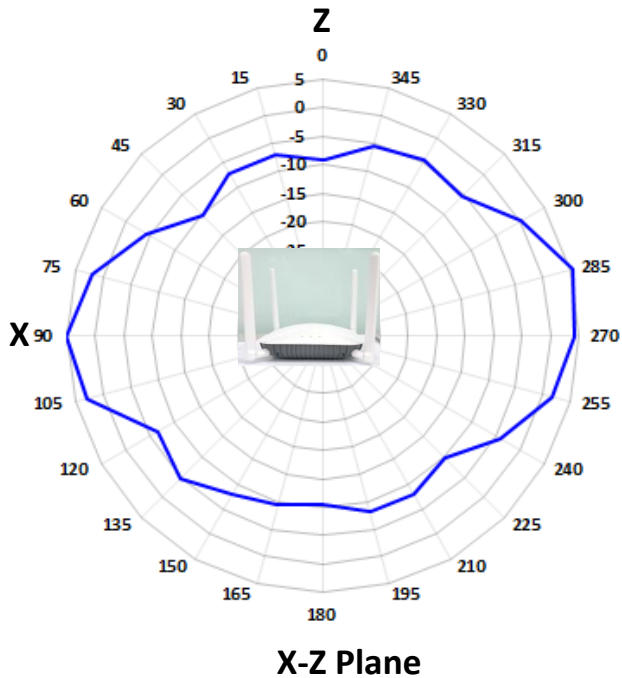
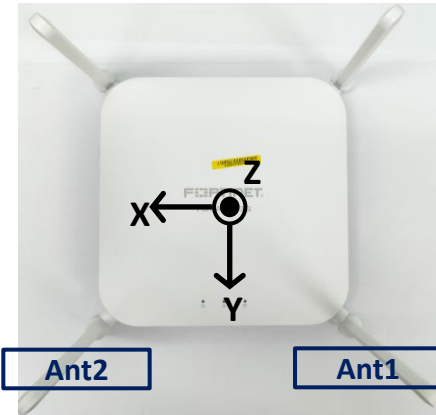
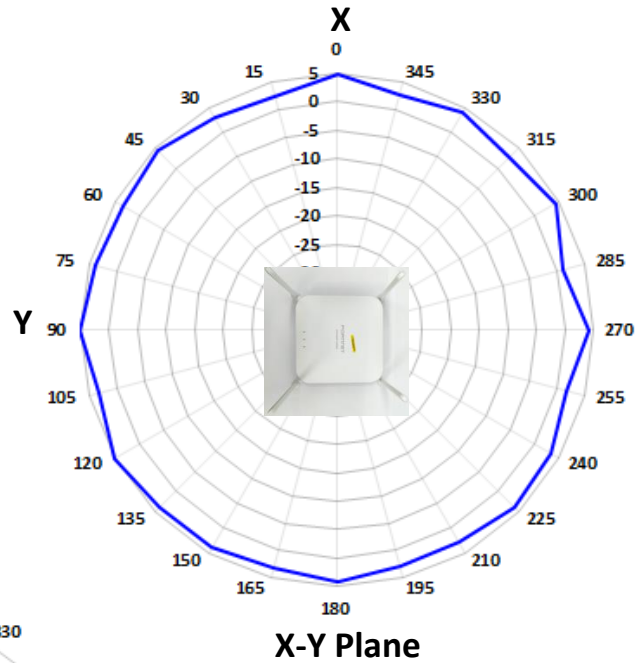
# 2D Radiation Pattern – Ant4 @ 6.5GHz

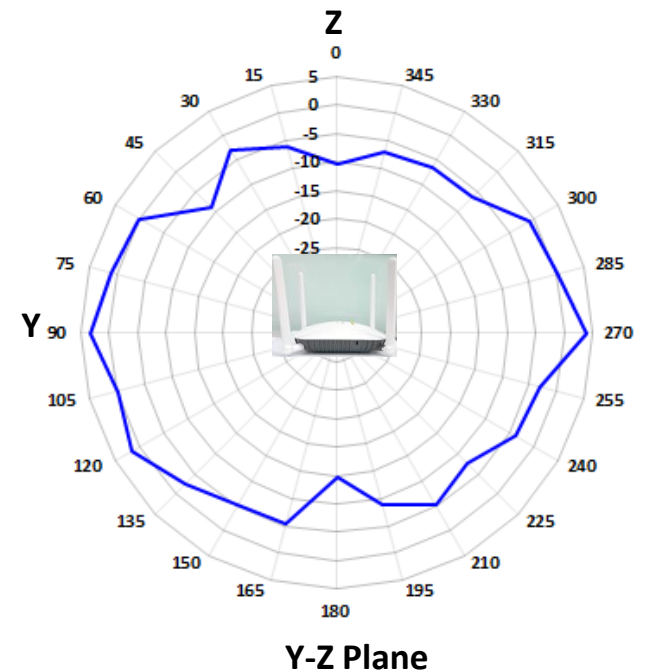
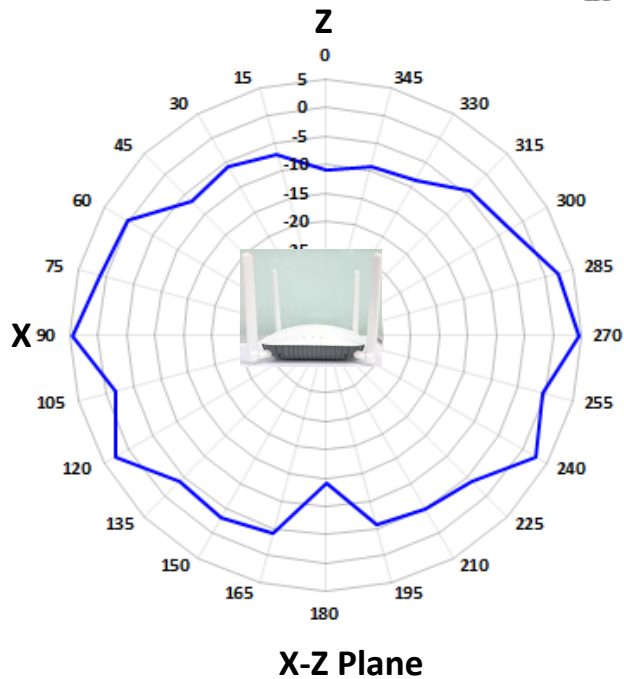
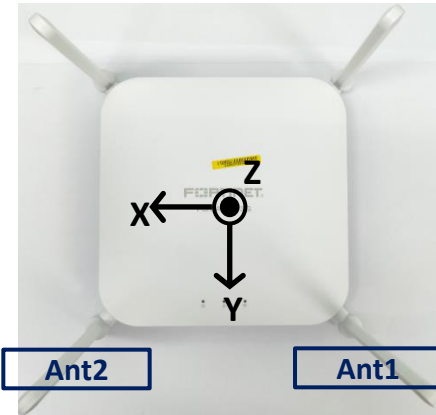
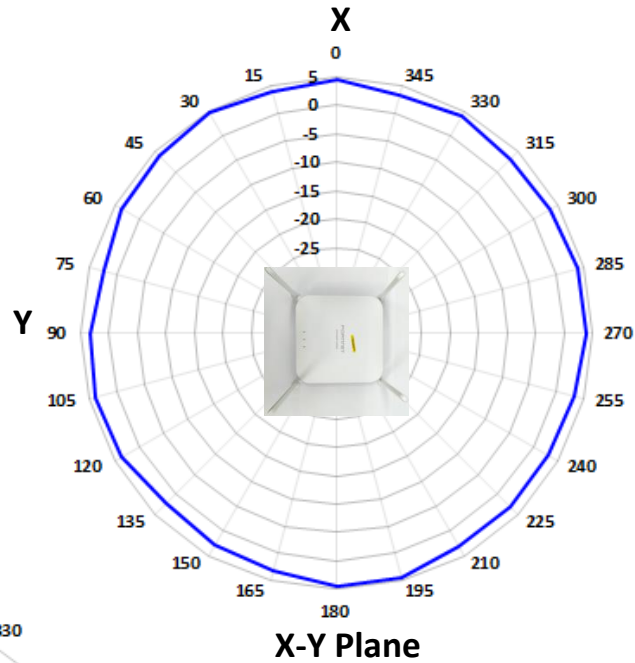


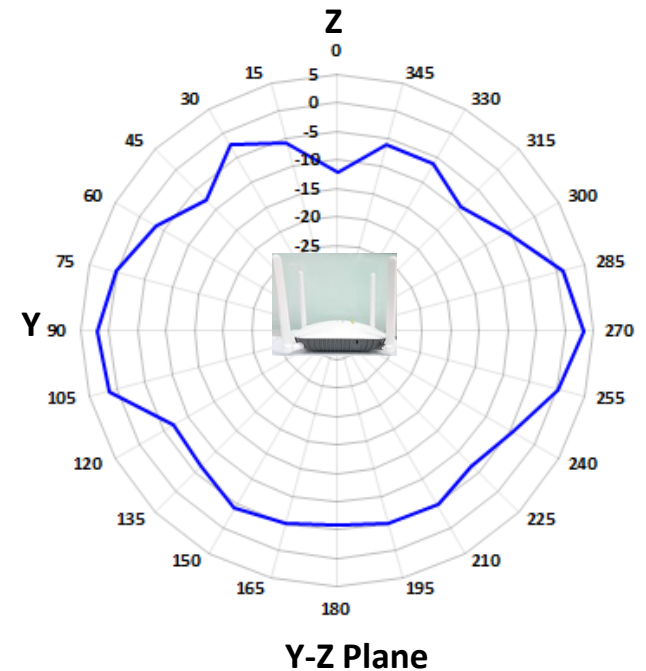
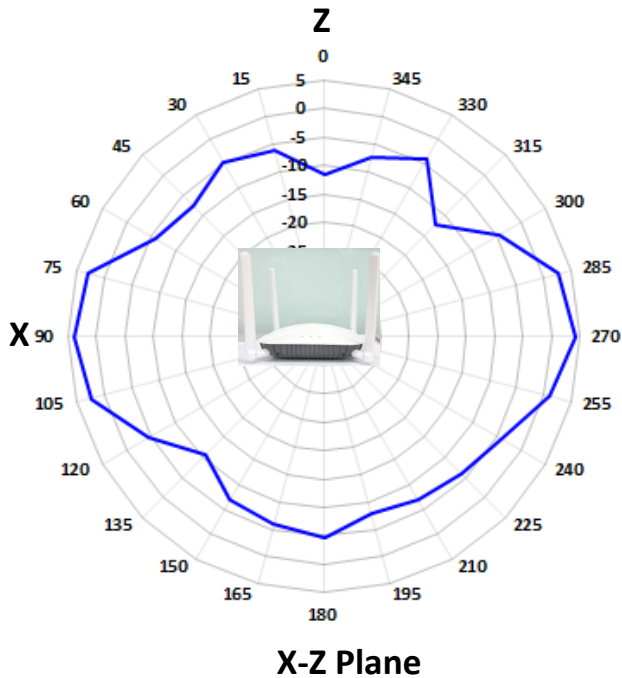
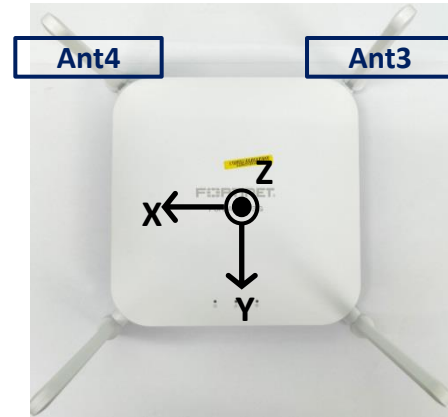
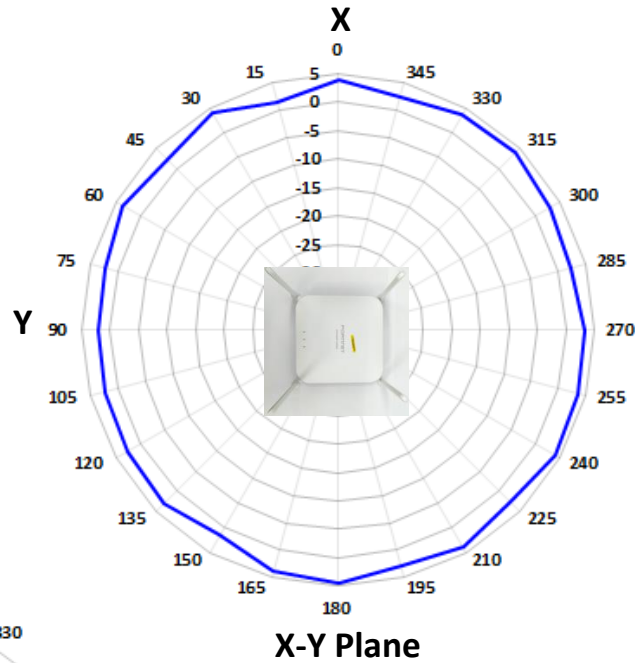
# 2D Radiation Pattern – Ant5 @ 2.45GHz

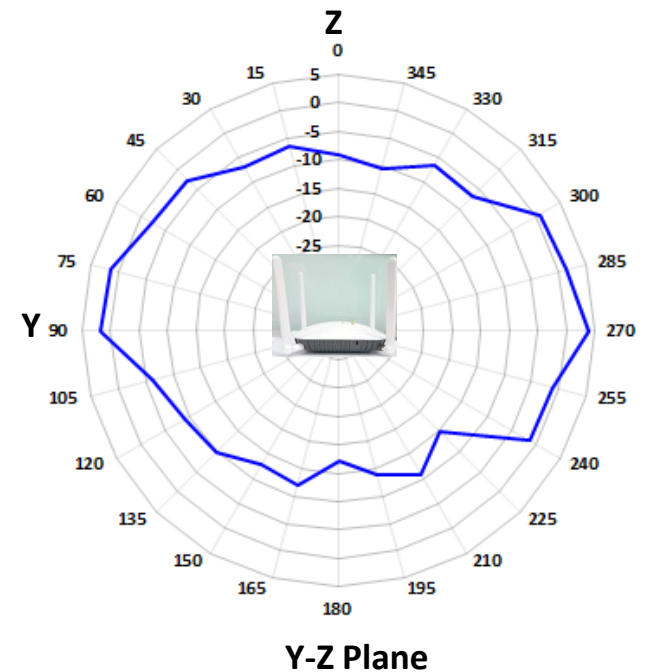
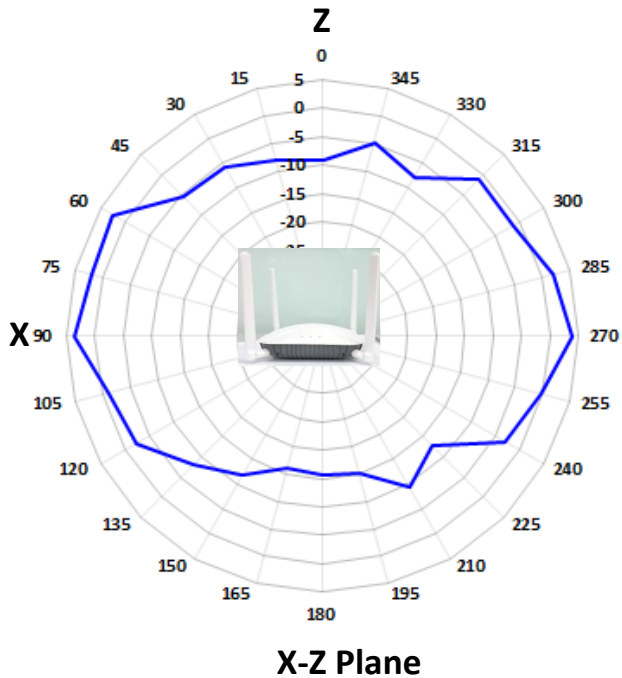
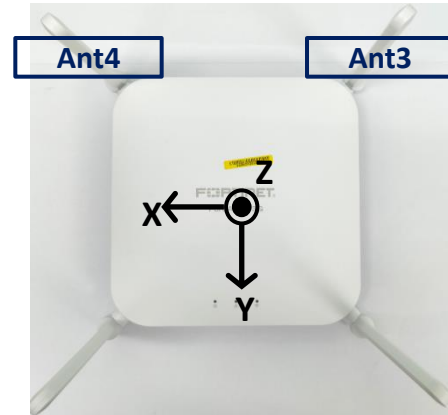
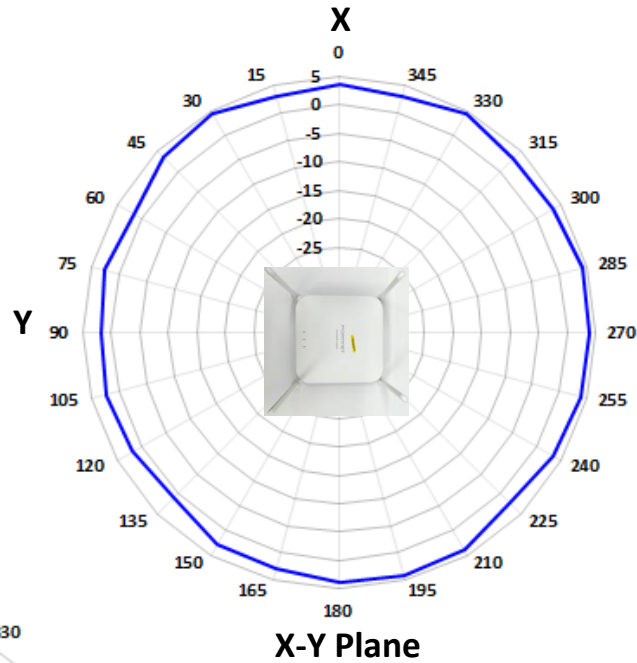


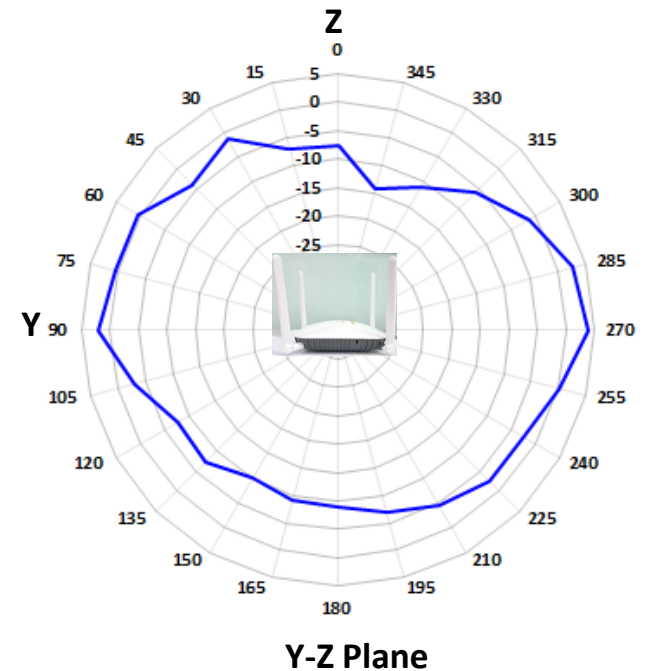
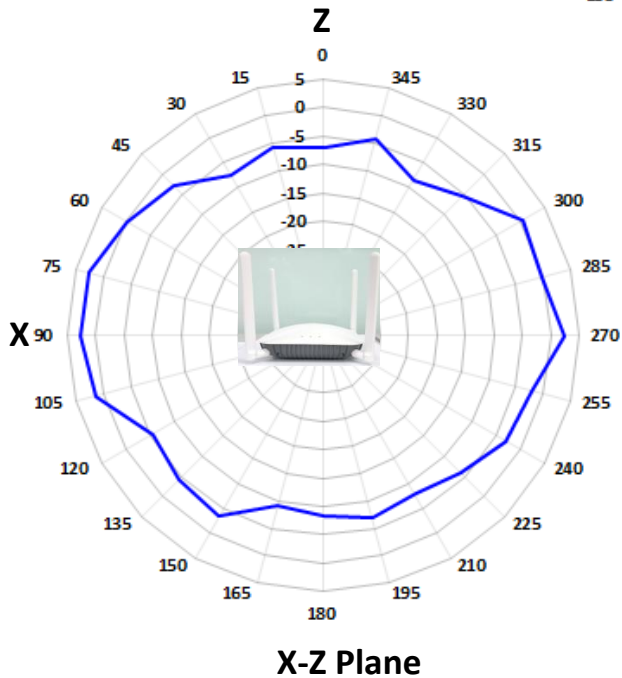
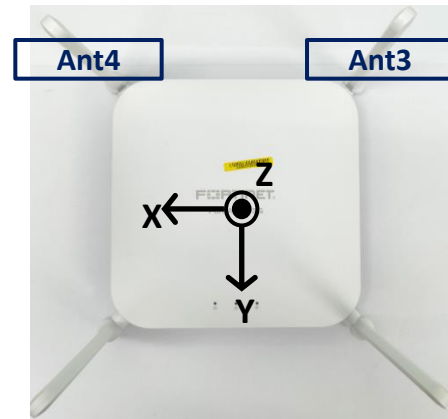
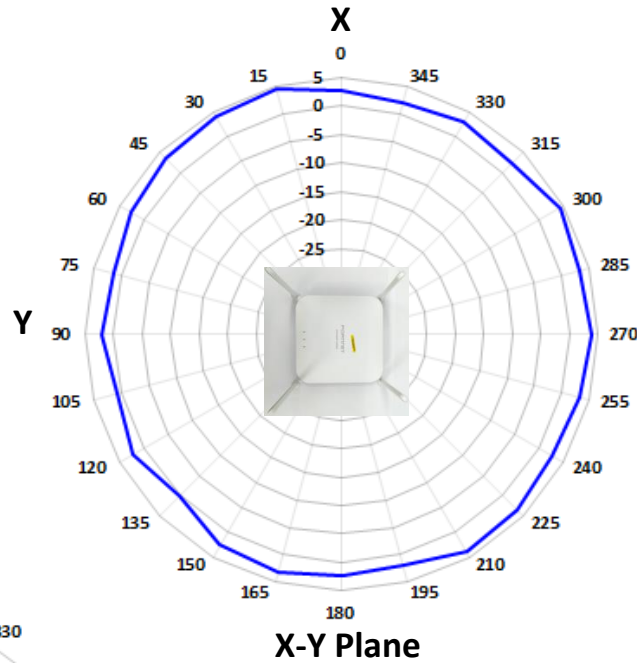












Antenna Efficiency and Gain				
Freq. (MHz)	ANT 1		ANT 2	
	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)
2400	68.19	4.94	70.51	5.07
2450	70.90	4.85	71.11	5.24
2500	62.82	4.15	62.97	4.45
5150	64.62	4.39	67.21	4.51
5500	65.53	4.06	67.90	4.33
5850	62.32	4.58	64.64	4.98

Antenna Efficiency and Gain				
Freq. (MHz)	ANT 3		ANT 4	
	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)
2400	61.72	3.78	61.55	3.23
2450	65.29	4.53	63.87	4.27
2500	64.36	4.37	59.05	3.74
5150	63.54	4.62	56.37	3.63
5500	66.70	4.12	58.32	4.09
5850	64.72	3.88	62.30	4.23
5925	65.86	3.72	61.02	4.23
6500	67.15	4.77	62.42	4.37
7125	63.48	4.09	55.32	3.87

Antenna Efficiency and Gain		
Freq. (MHz)	ANT 5	
	Efficiency (%)	Peak Gain (dBi)
2400	59.47	4.24
2450	63.02	5.10
2500	59.32	3.75