



FAP-241K

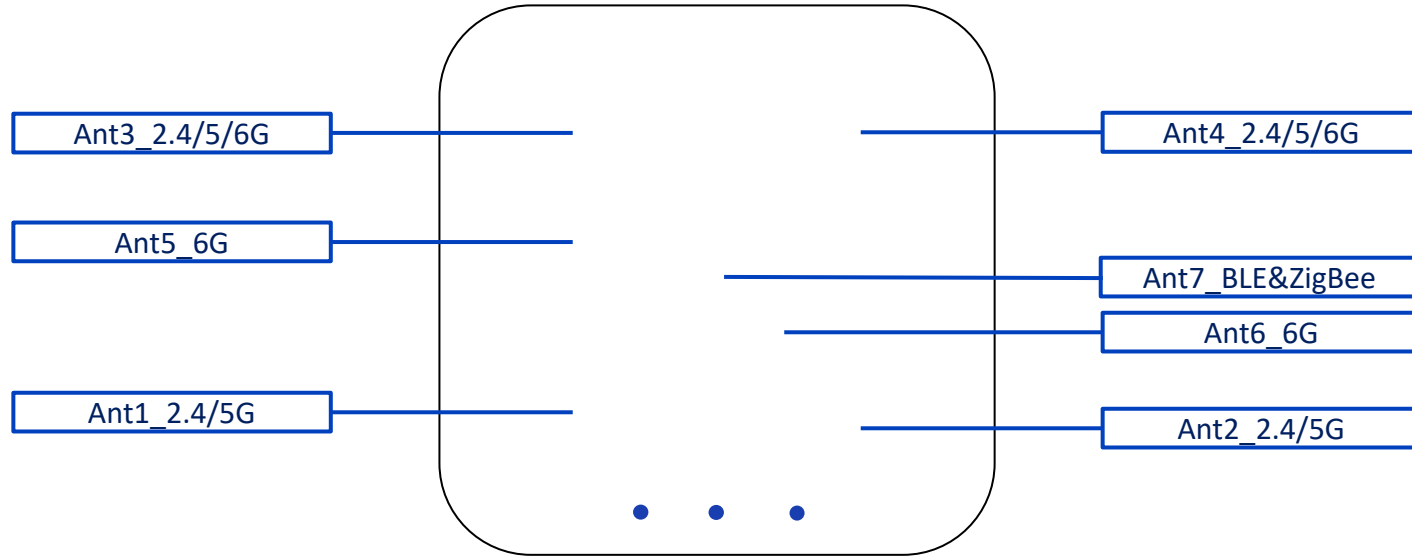
Antenna Test Report

A faint, light blue world map is visible in the background of the lower-left section of the page.

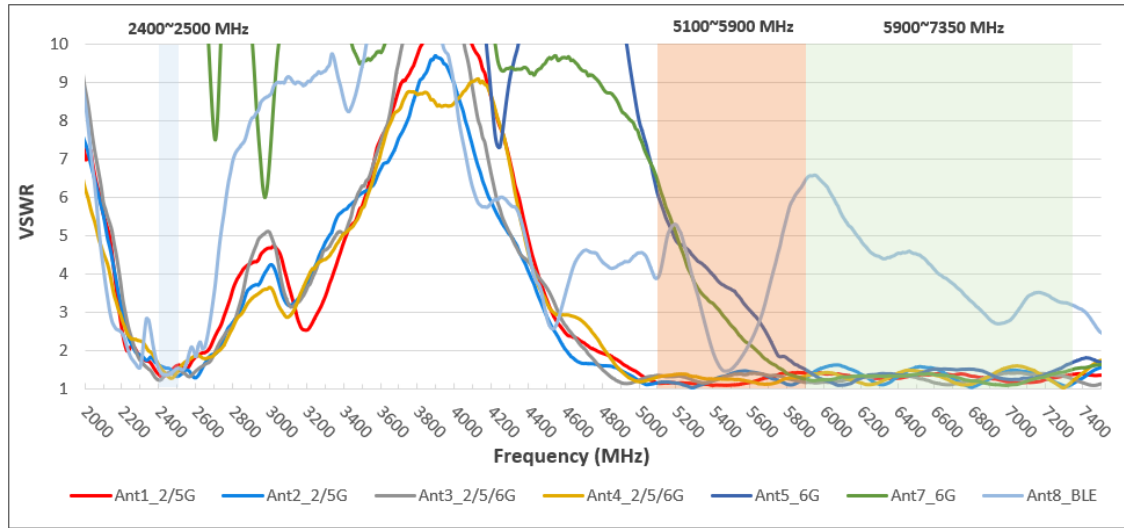
Senao Networks Inc.

Customer	Fortinet
Project	FAP-241K
Project Description	Dual antenna*2 Tri antenna*2 6G antenna*2 BLE antenna*1
Date	2024/03/01
Prepared by	Tony
Report Version	A02

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

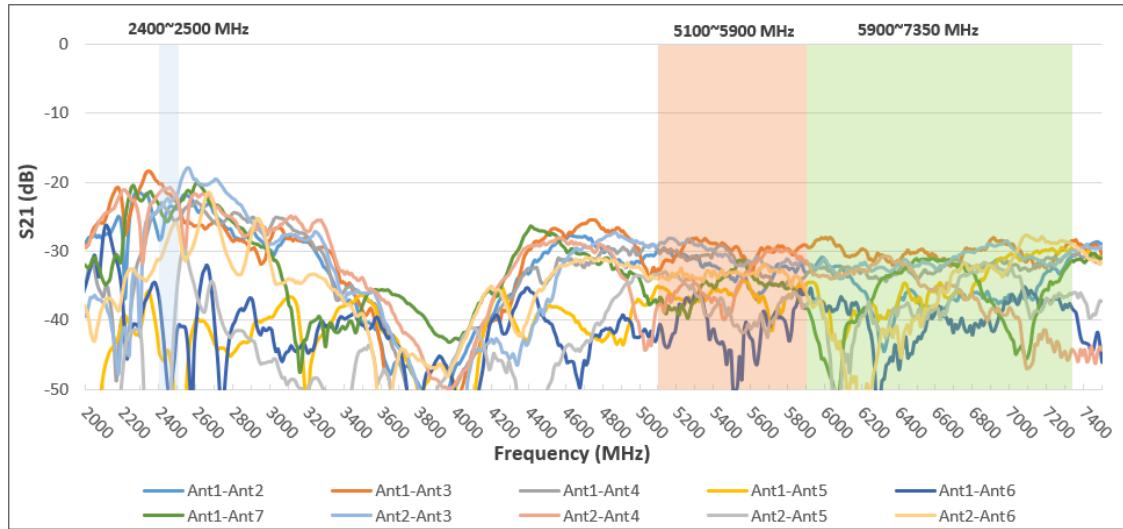


Ant No.	Brand Name	Model Name	Operating Band	Ant Type	Feeding
ANT1	Enrack	7102A1242000	2400MHz ~ 2500 MHz	PIFA	Cable
ANT2		7102A1241000	5150MHz ~ 5895 MHz		
ANT3		7102A1244000	2400MHz ~ 2500 MHz		
ANT4		7102A1243000	5150MHz ~ 5895 MHz 5925MHz ~ 7125 MHz		
ANT5	AWAN	7102A1240000	5925MHz ~ 7125 MHz	Alford Loop	
ANT6			5925MHz ~ 7125 MHz	Alford Loop	
ANT7			2400MHz ~ 2500 MHz	Dipole	



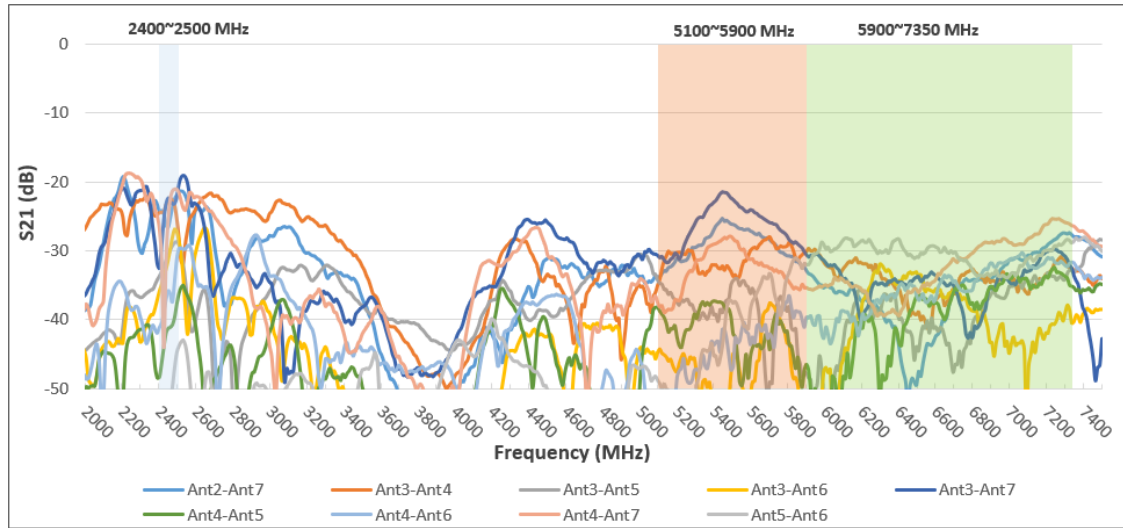
Antenna VSWR							
Freq. (MHz)	Ant1_2/5G	Ant2_2/5G	Ant3_2/5/6G	Ant4_2/5/6G	Ant5_6G	Ant7_6G	Ant8_BLE
2400	1.35	1.60	1.21	1.60	21.97	14.14	1.49
2450	1.34	1.52	1.40	1.33	22.37	14.93	1.36
2500	1.60	1.31	1.42	1.41	21.61	14.58	1.53
5150	1.14	1.16	1.30	1.35	5.33	5.61	5.03
5550	1.12	1.45	1.37	1.23	3.32	2.34	1.81
5850	1.40	1.11	1.20	1.29	1.62	1.32	6.04
5925	1.39	1.35	1.15	1.36	1.41	1.21	6.56
6500	1.35	1.55	1.26	1.46	1.36	1.37	4.50
7125	1.16	1.42	1.36	1.51	1.26	1.21	3.44

- The gray text indicates that the antenna does not support the corresponding frequency band and can be disregarded.



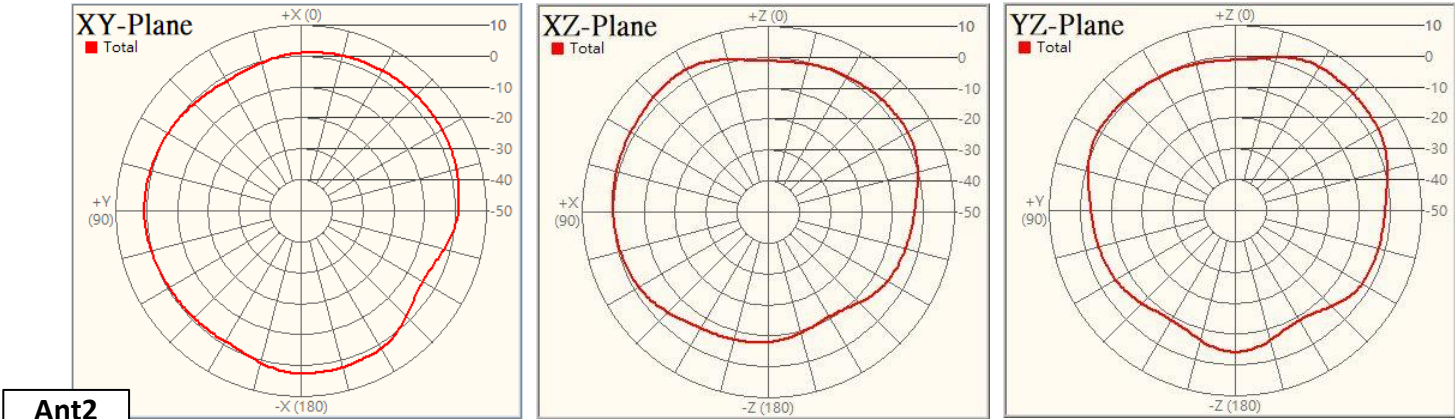
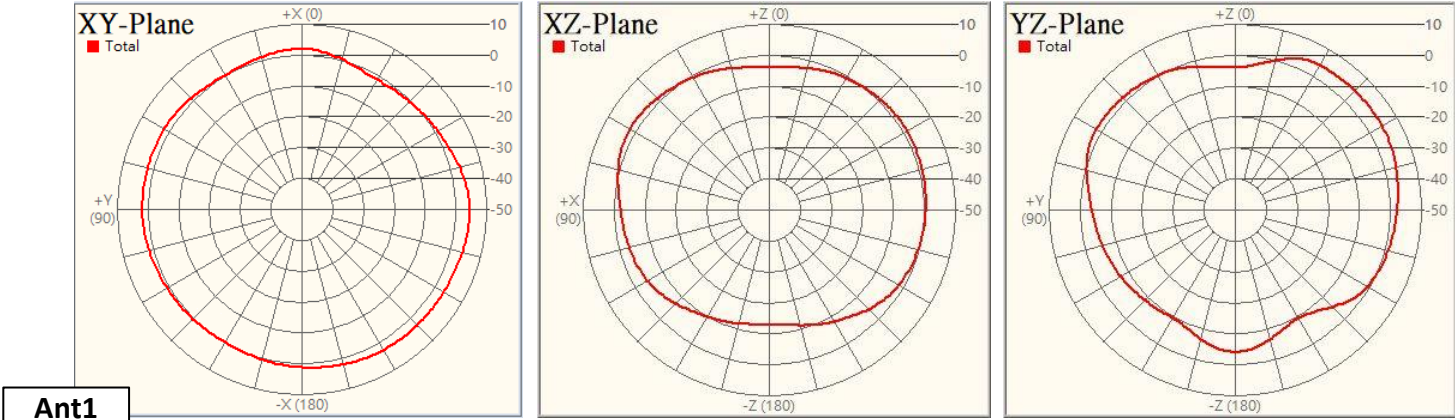
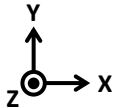
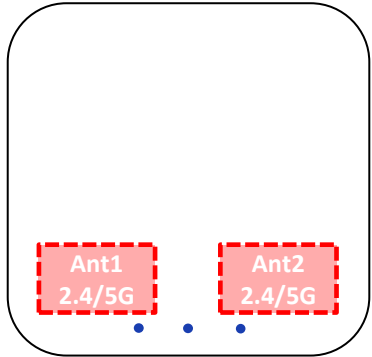
S21 (Isolation)										
Freq. (MHz)	Ant1-Ant2	Ant1-Ant3	Ant1-Ant4	Ant1-Ant5	Ant1-Ant6	Ant1-Ant7	Ant2-Ant3	Ant2-Ant4	Ant2-Ant5	Ant2-Ant6
2400	-28.42	-20.21	-23.58	-44.80	-37.19	-23.43	-23.62	-21.55	-69.01	-31.19
2450	-23.92	-21.65	-24.25	-44.41	-50.05	-25.61	-22.39	-20.90	-56.90	-28.09
2500	-23.94	-22.90	-25.57	-55.86	-41.77	-23.30	-22.12	-22.04	-35.84	-25.92
5150	-29.96	-31.35	-30.28	-35.83	-43.86	-37.89	-28.16	-36.41	-33.71	-34.08
5550	-33.75	-30.71	-31.84	-34.40	-48.62	-31.30	-32.11	-34.09	-41.79	-33.28
5850	-32.55	-29.57	-35.55	-35.00	-37.06	-36.68	-32.11	-31.13	-36.54	-33.72
5925	-32.89	-29.36	-32.88	-34.52	-35.38	-39.32	-31.92	-32.48	-37.48	-37.64
6500	-37.21	-29.87	-33.98	-36.67	-42.38	-31.35	-32.11	-34.69	-38.48	-39.32
7125	-37.06	-31.66	-32.54	-30.35	-36.18	-40.92	-30.91	-45.99	-39.23	-28.08

- The gray text indicates that the antenna does not support the corresponding frequency band and can be disregarded.

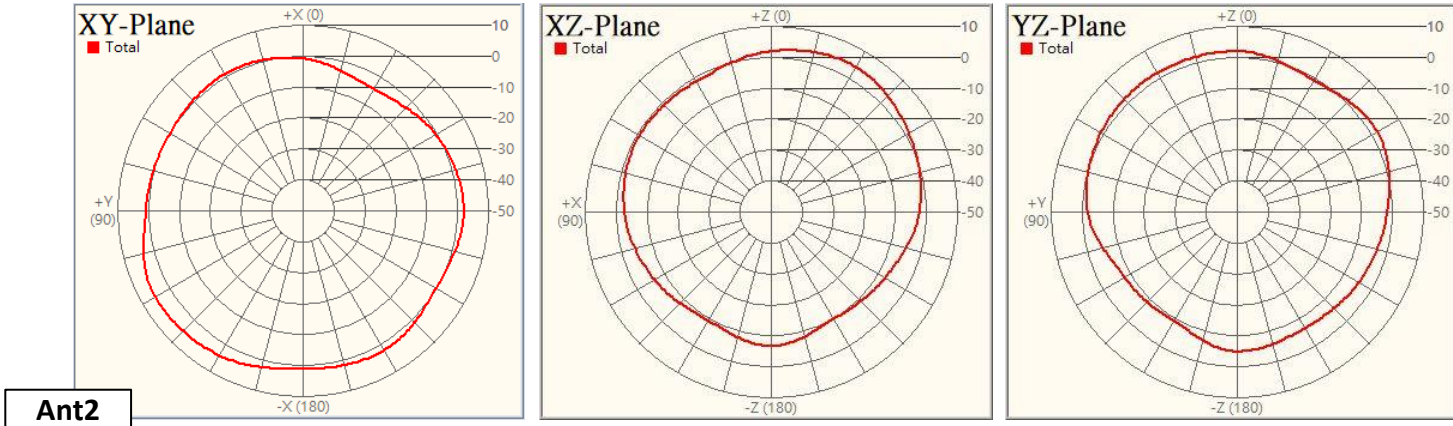
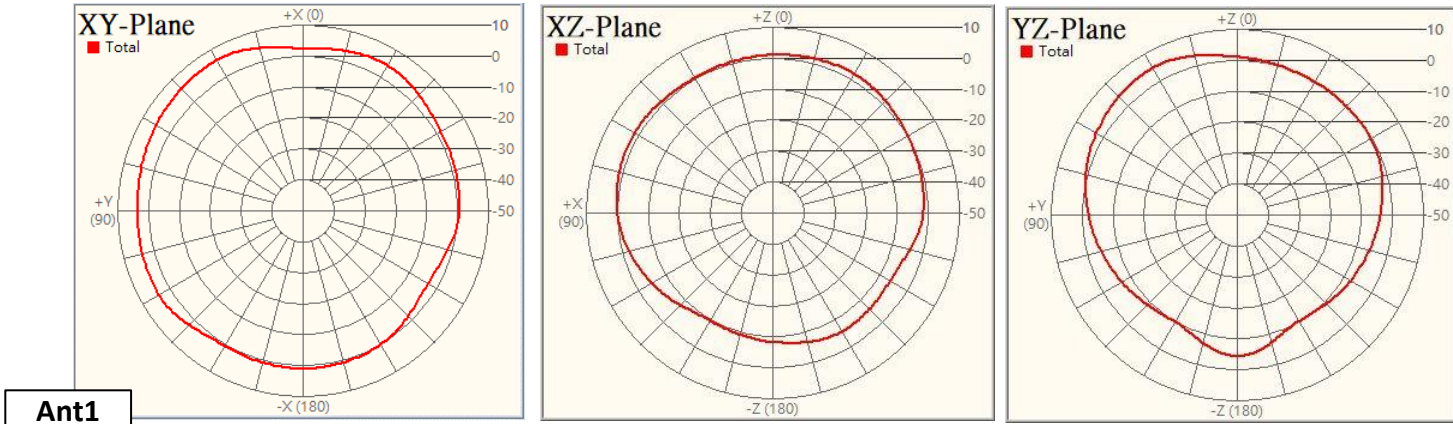
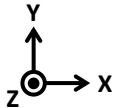
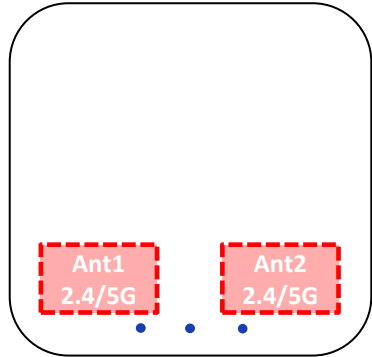


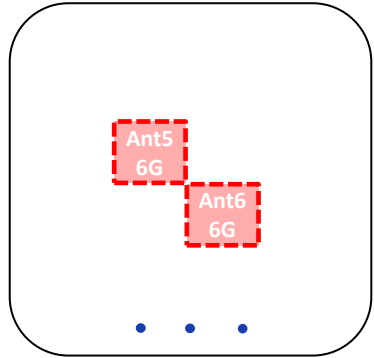
S21 (Isolation)									
Freq. (MHz)	Ant2-Ant7	Ant3-Ant4	Ant3-Ant5	Ant3-Ant6	Ant3-Ant7	Ant4-Ant5	Ant4-Ant6	Ant4-Ant7	Ant5-Ant6
2400	-24.27	-24.55	-33.73	-35.82	-32.46	-48.31	-41.11	-26.82	-58.14
2450	-26.60	-22.79	-30.70	-31.37	-22.36	-41.28	-35.83	-25.56	-54.63
2500	-21.91	-25.41	-28.71	-27.16	-22.24	-37.79	-31.24	-21.02	-44.91
5150	-32.42	-30.13	-36.37	-46.02	-31.66	-41.82	-54.77	-38.48	-50.41
5550	-26.79	-32.45	-34.53	-49.47	-23.73	-49.58	-41.47	-29.86	-39.93
5850	-31.56	-31.35	-45.32	-49.61	-29.02	-45.45	-38.87	-35.47	-31.41
5925	-33.43	-30.08	-48.84	-51.54	-30.64	-50.40	-39.49	-35.58	-31.54
6500	-47.51	-38.93	-44.58	-33.70	-33.78	-36.70	-37.15	-36.00	-30.99
7125	-30.30	-35.39	-34.14	-43.26	-32.21	-35.01	-32.37	-27.84	-31.53

- The gray text indicates that the antenna does not support the corresponding frequency band and can be disregarded.

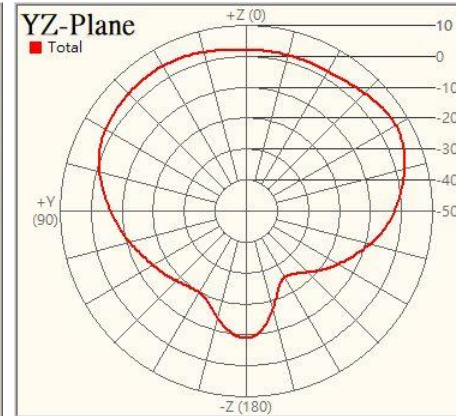
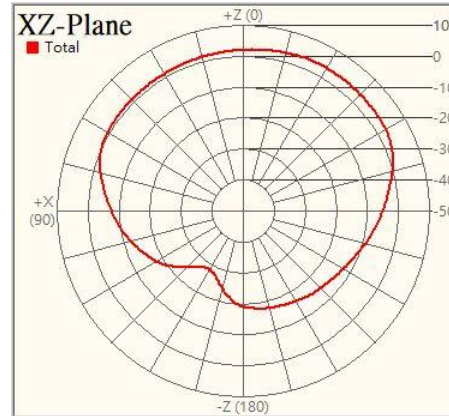
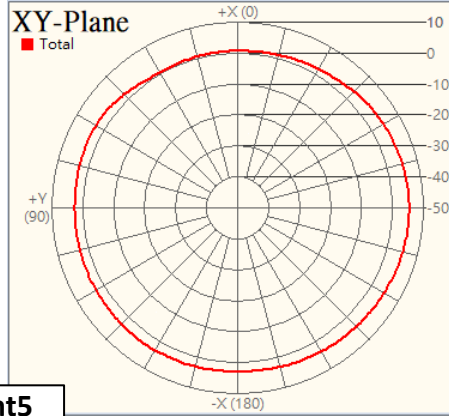


Represent the all X-Y plane using down tiles 30-degree angle.

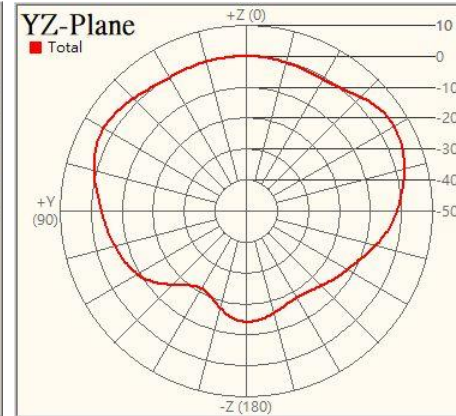
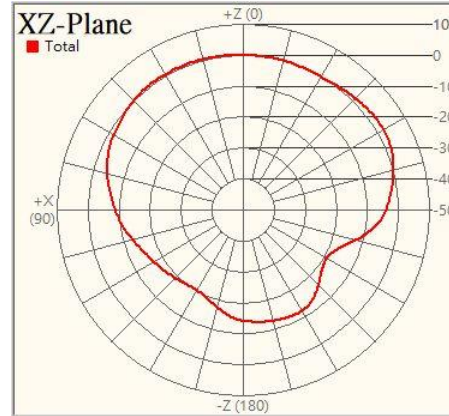
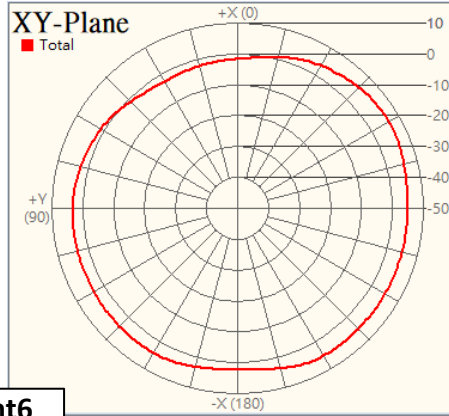


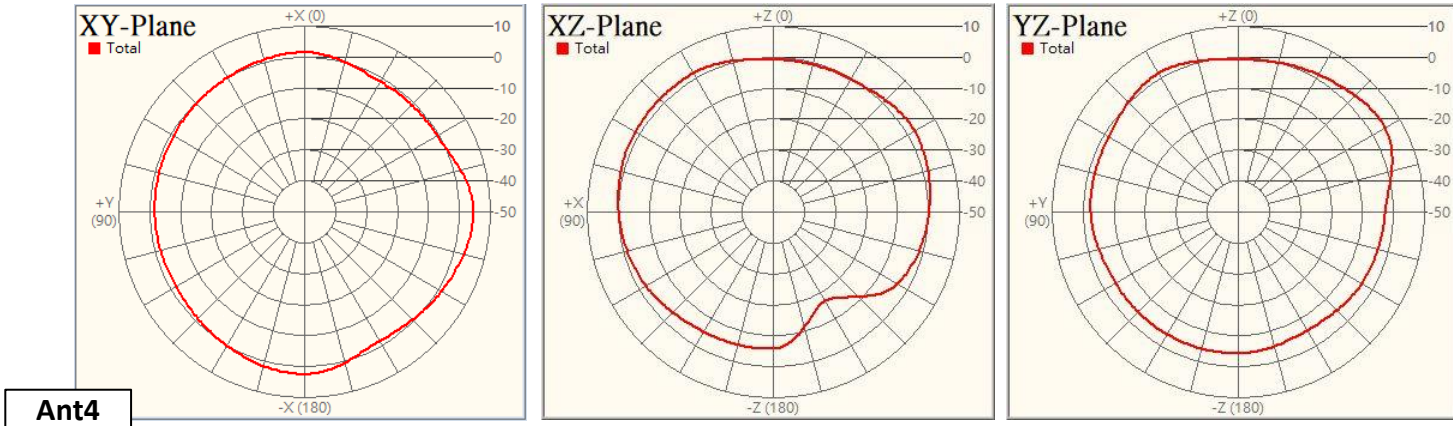
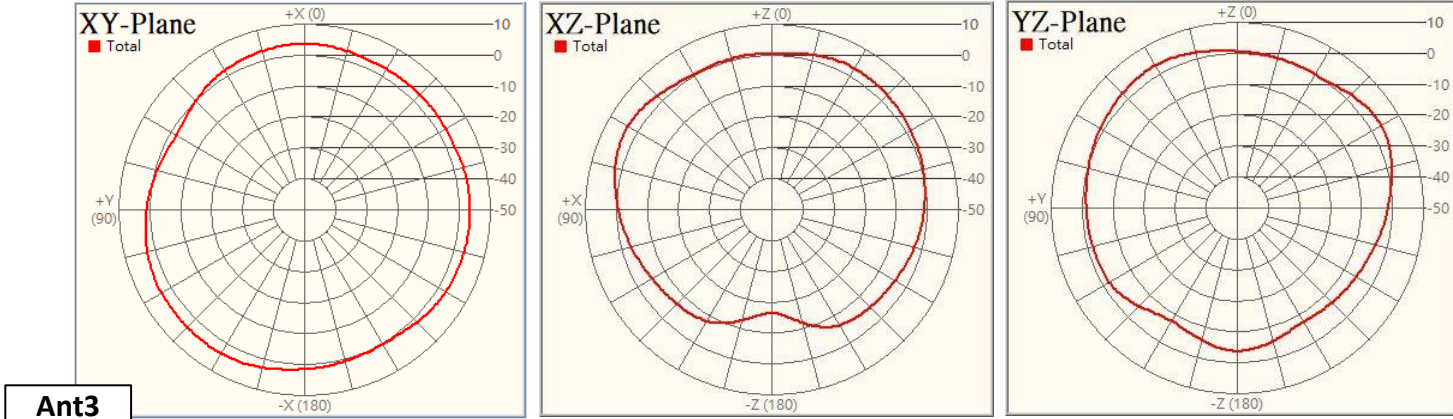
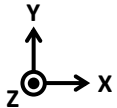
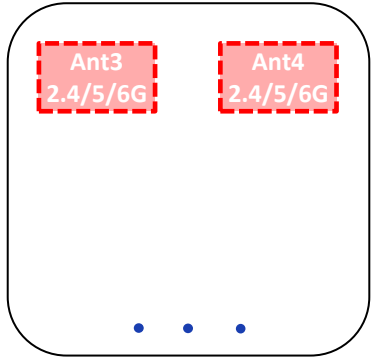


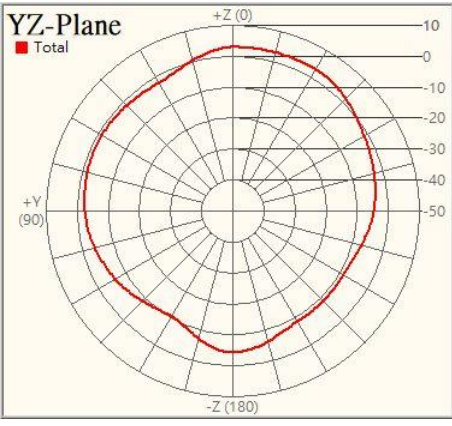
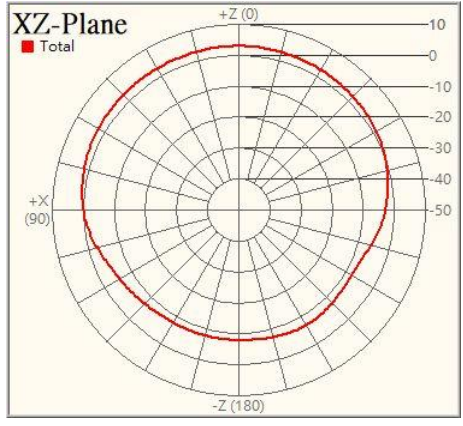
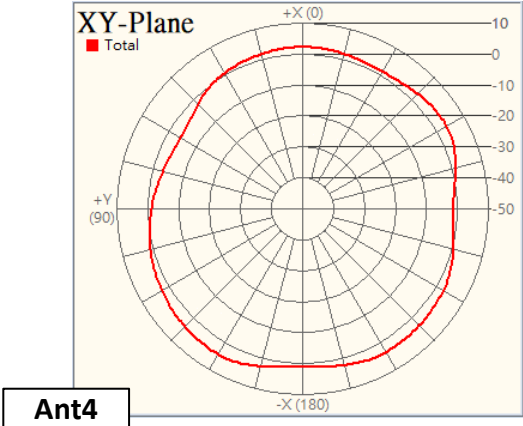
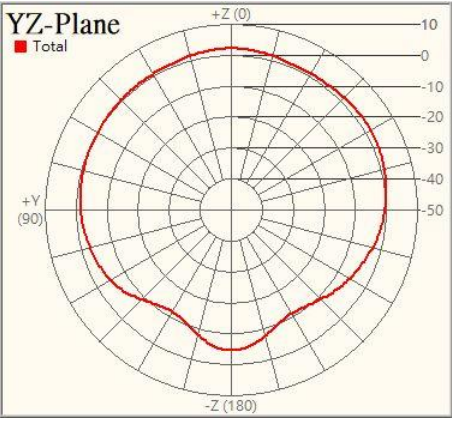
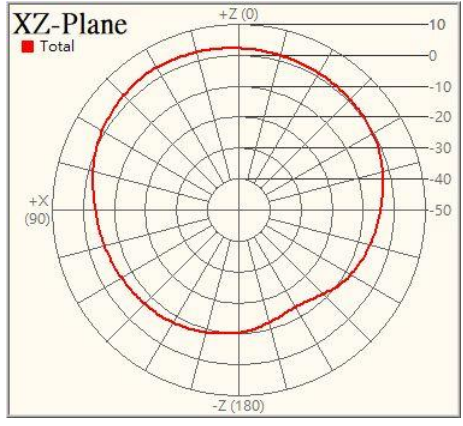
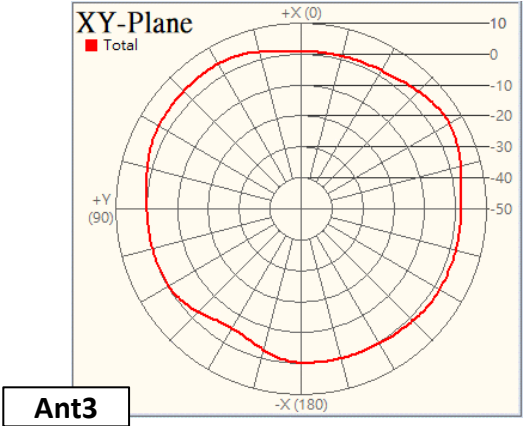
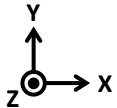
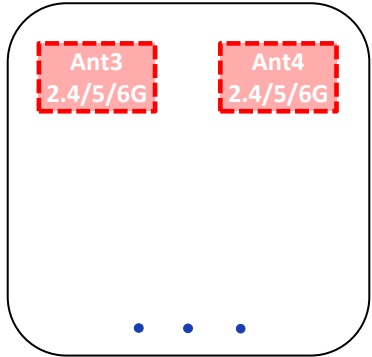
Ant5

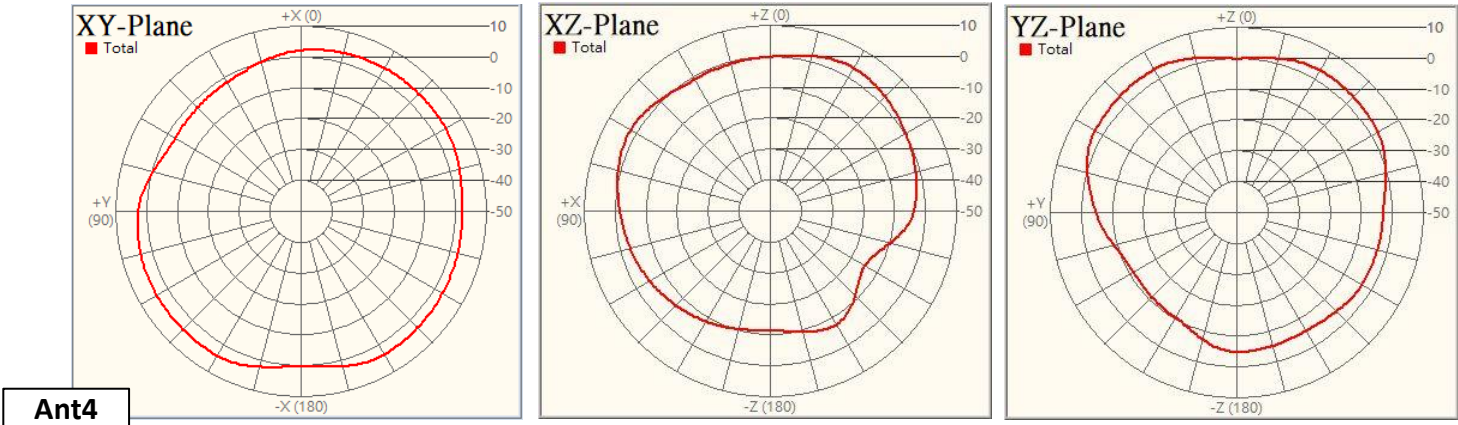
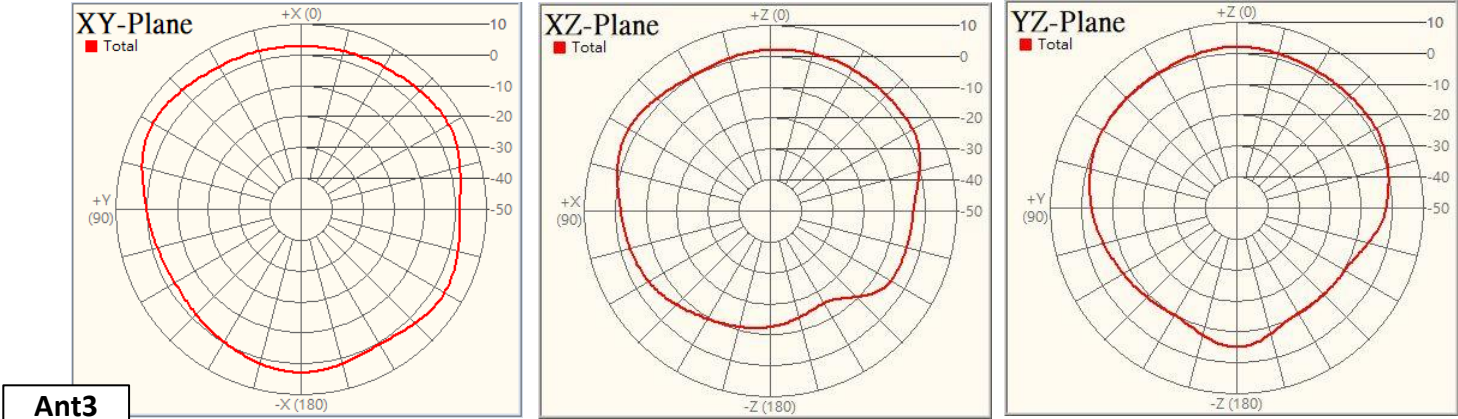
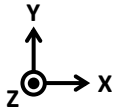
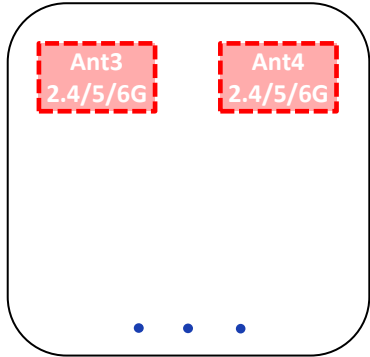


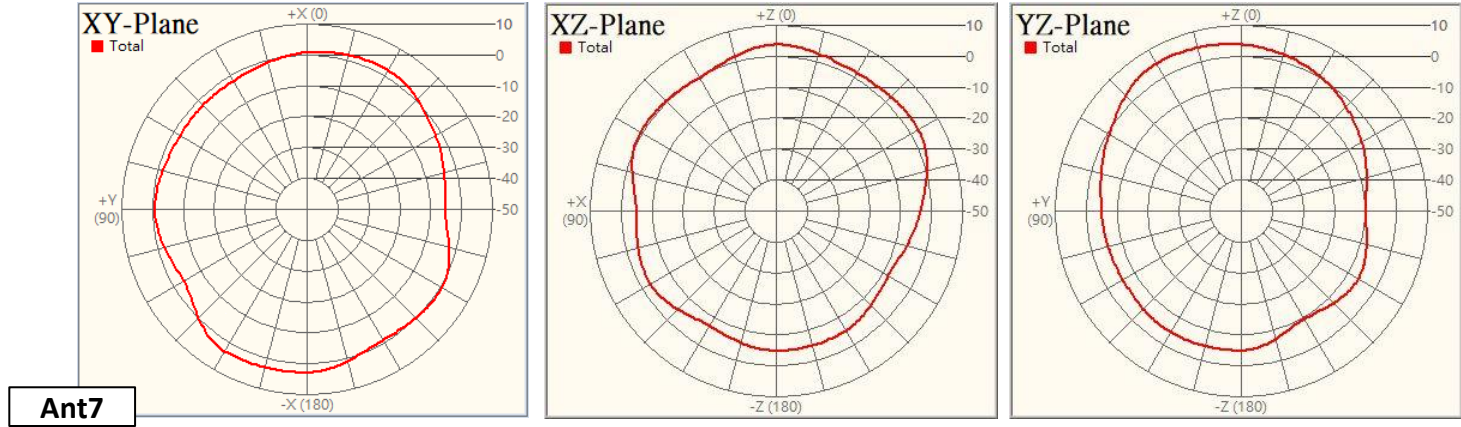
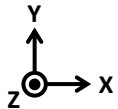
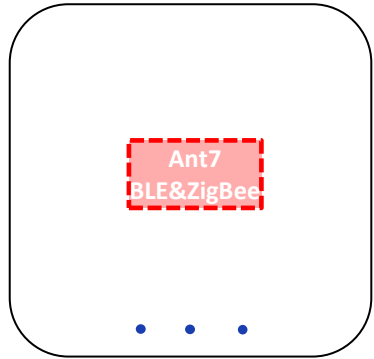
Ant6

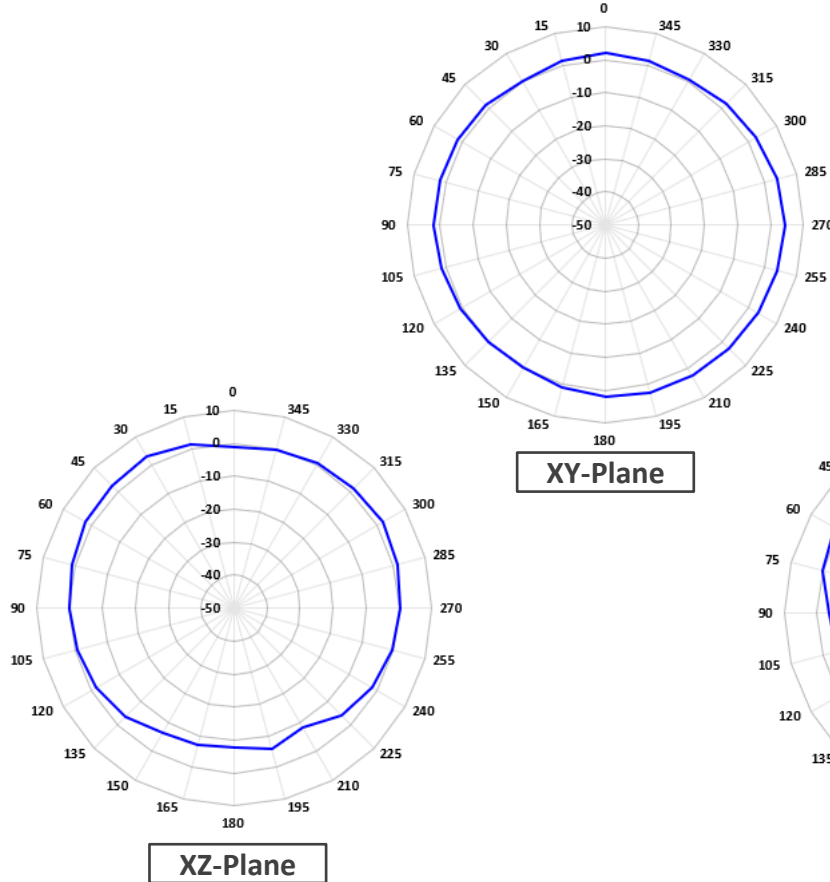
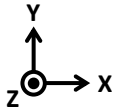
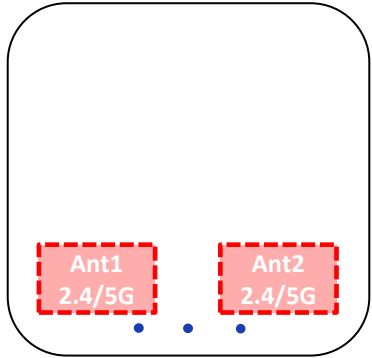


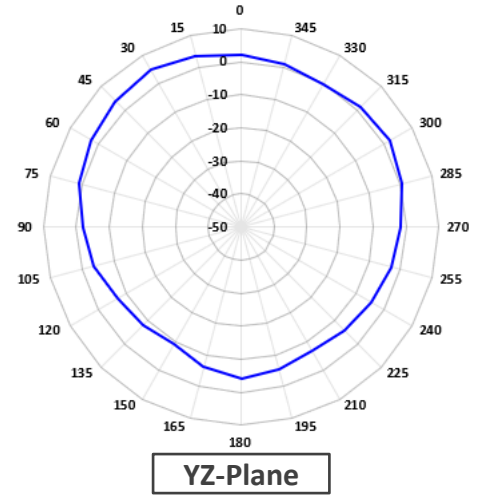
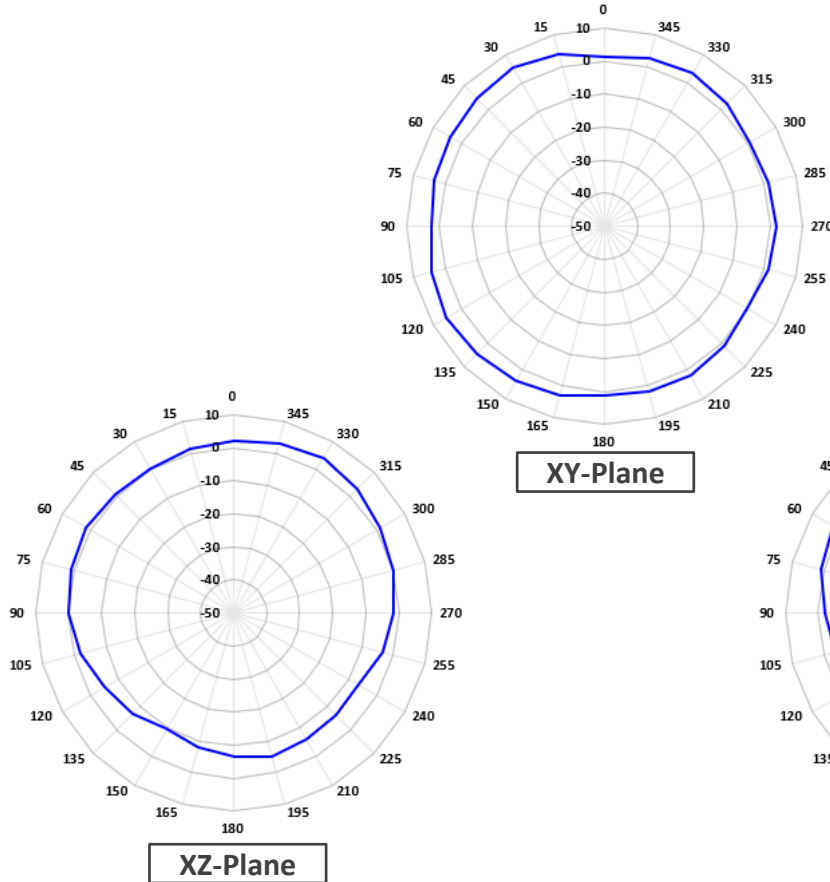
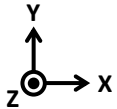
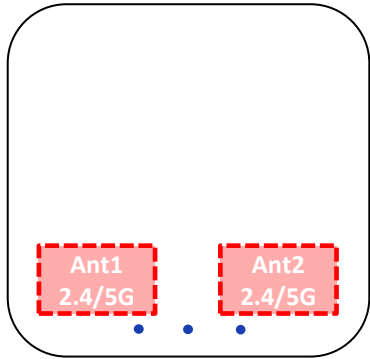


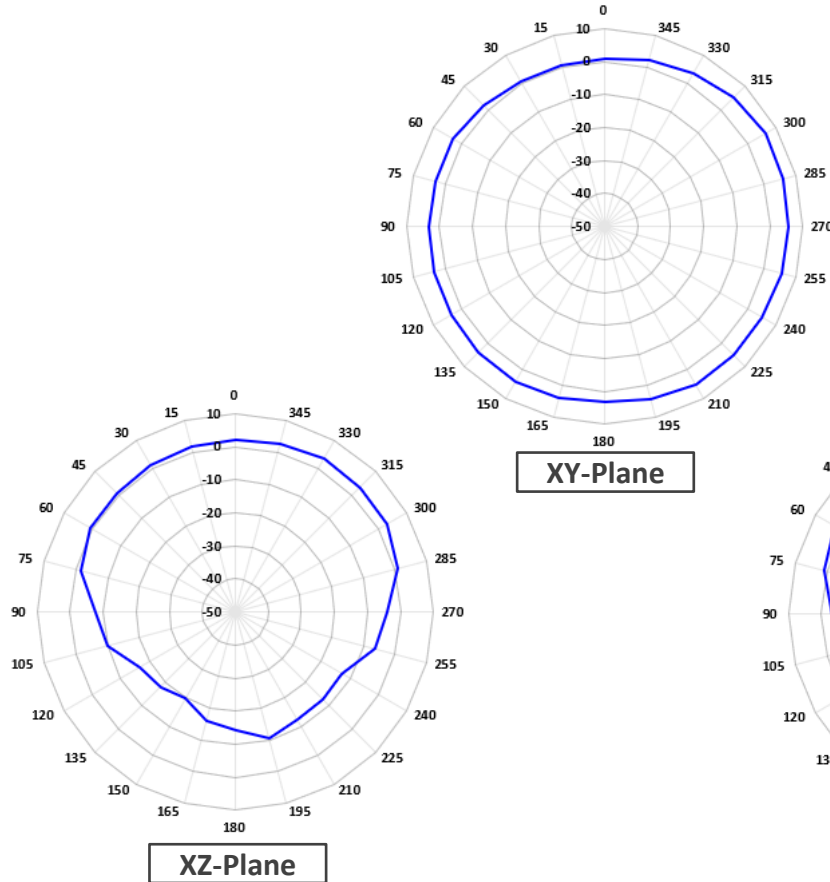
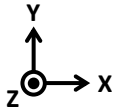
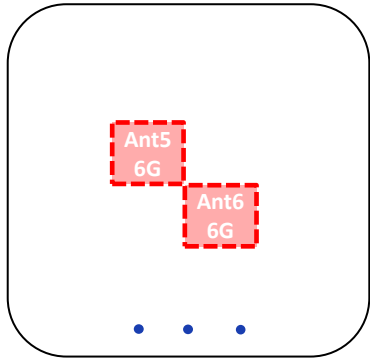






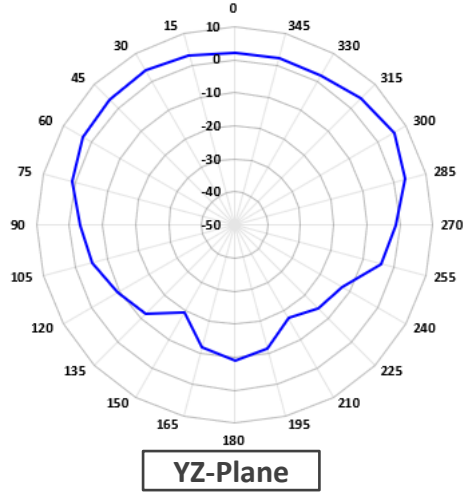






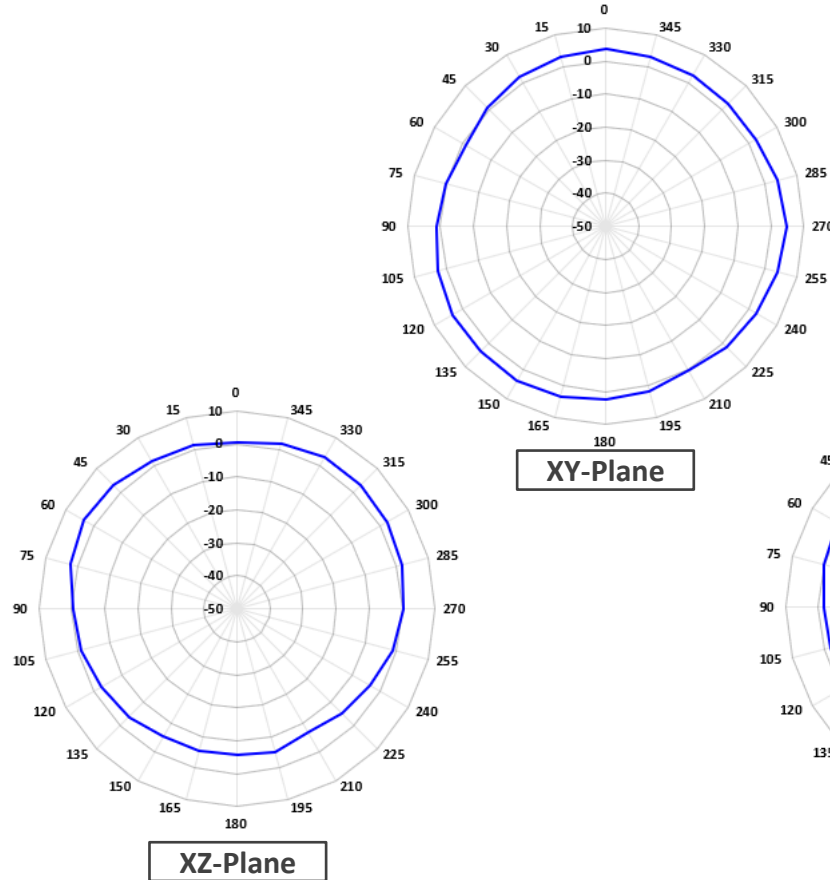
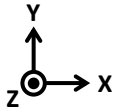
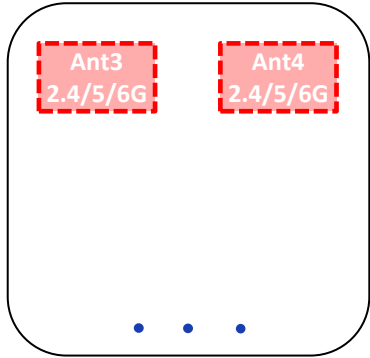
XY-Plane

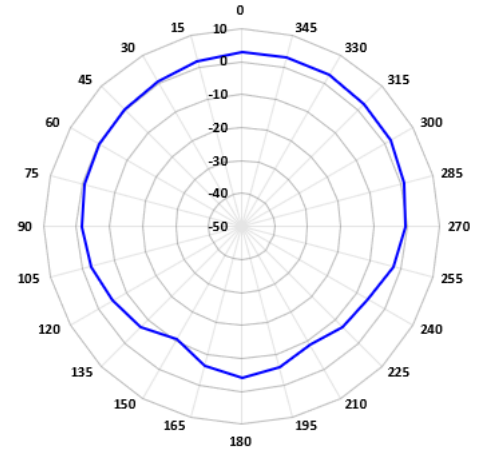
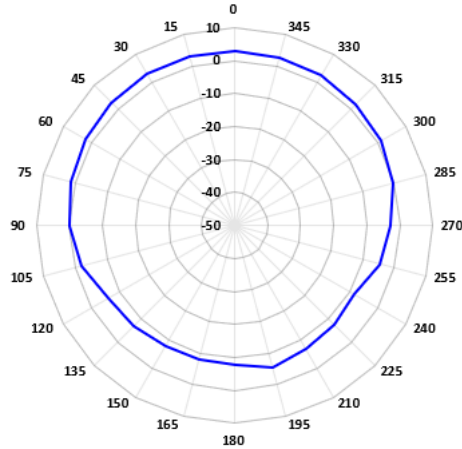
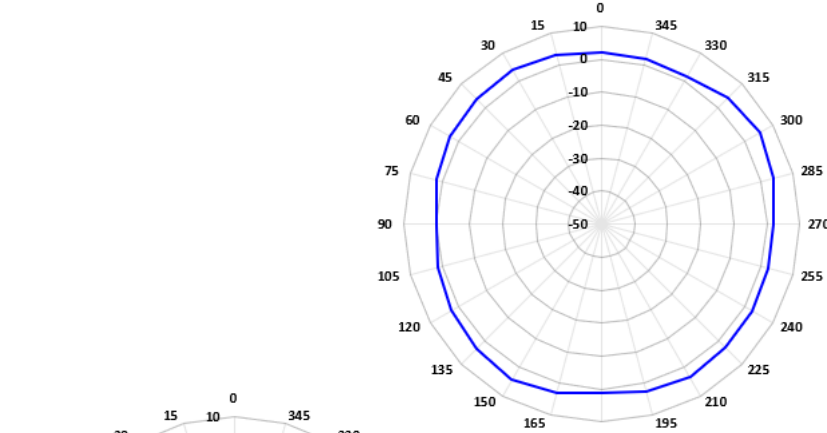
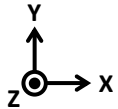
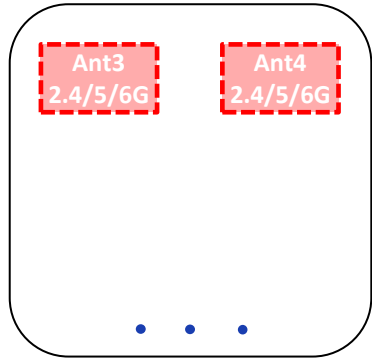
XZ-Plane

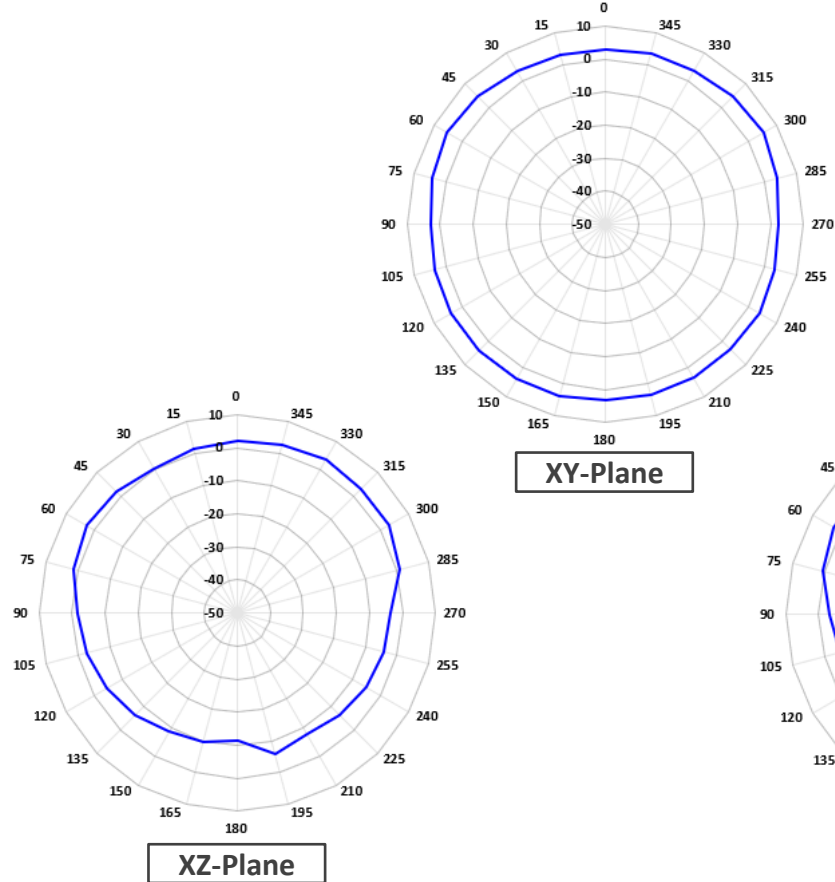
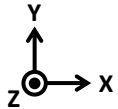
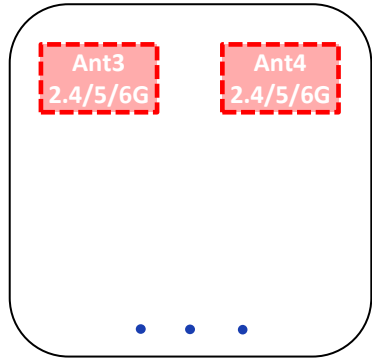


YZ-Plane

Combine pattern – Scan Radio @2.45 GHz







Freq. (MHz)	ANT1_2/5G		ANT2_2/5G		ANT3_2/5/6G		ANT4_2/5/6G		ANT5_6G		ANT6_6G		ANT7_BLE&ZigBee	
	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)
2400	67.95	5.11	66.48	5.18	65.37	4.93	63.98	4.69					61.16	4.38
2450	73.59	4.59	69.47	4.98	64.11	4.54	63.64	4.61					62.59	5.00
2500	70.08	4.68	67.24	5.19	70.21	4.97	73.68	4.65					63.66	4.81
5150	69.27	5.13	67.91	4.83	68.38	5.01	68.06	5.18						
5550	71.46	5.22	68.80	5.32	66.21	5.34	73.99	4.90						
5850	67.56	5.11	70.64	5.13	69.70	5.35	71.39	5.43						
5895	67.15	5.11	69.14	4.79	69.10	5.40	66.40	5.13						
5925					69.77	5.41	69.18	4.71	67.71	5.19	68.30	5.26		
6500					69.67	5.48	71.44	5.37	66.83	5.41	67.23	5.58		
7125					68.25	5.10	66.81	5.08	61.71	5.53	62.74	5.32		