



FAP-243K

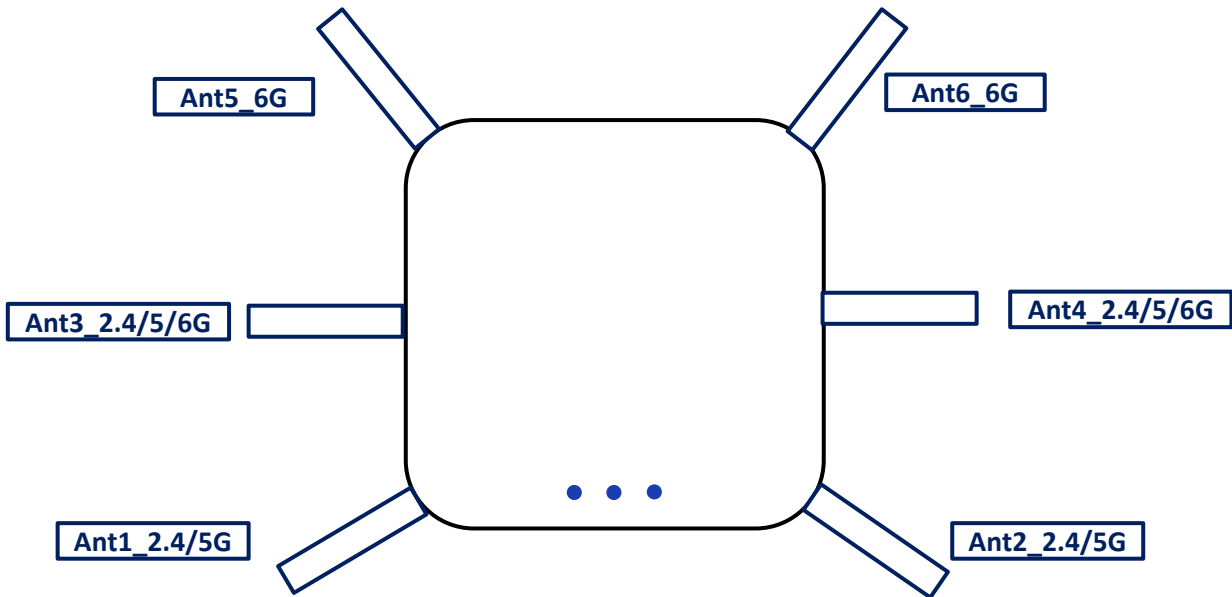
Antenna Test Report



Senao Networks Inc.

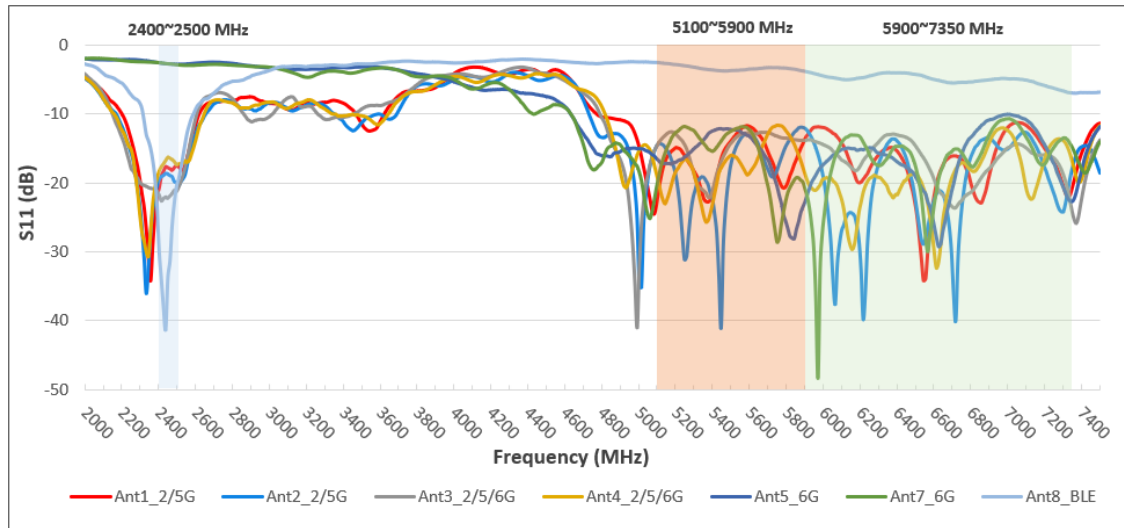
Customer	Fortinet
Project	FAP-243K
Project Description	Dual antenna*2 Tri antenna*2 6G antenna*2 BLE antenna*1
Date	2024/08/23
Prepared by	Tony
Report Version	A03

- **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	MASTER WAVE	7102A1334000	2400MHz ~ 2500 MHz 5150MHz ~ 5895 MHz	Dipole	Cable
ANT2		7102A1334000			
ANT3		7102A1335000	2400MHz ~ 2500 MHz 5150MHz ~ 5895 MHz 5925MHz ~ 7125 MHz	Dipole	
ANT4		7102A1335000			
ANT5		7102A1333000	5925MHz ~ 7125 MHz	Dipole	
ANT6		7102A1333000	5925MHz ~ 7125 MHz	Dipole	
ANT7	Enrack	7102A1239000	2400MHz ~ 2500 MHz	PIFA	

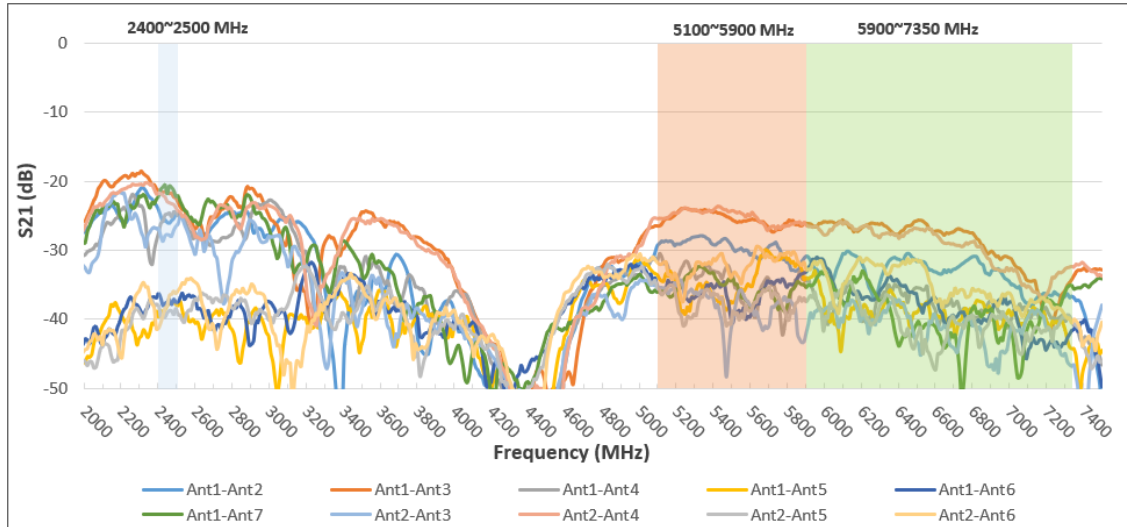
Antenna Return Loss (S11)



Antenna S11							
Freq. (MHz)	Ant1_2/5G	Ant2_2/5G	Ant3_2/5/6G	Ant4_2/5/6G	Ant5_6G	Ant7_6G	Ant8_BLE
2400	-20.82	-19.52	-21.80	-18.29	-2.60	-2.65	-29.94
2450	-17.87	-18.75	-22.22	-16.30	-2.75	-2.80	-33.79
2500	-17.60	-19.99	-21.26	-17.33	-2.80	-2.94	-20.52
5150	-16.24	-15.35	-12.81	-22.29	-17.18	-14.91	-2.62
5550	-12.31	-13.63	-12.94	-17.16	-12.53	-11.97	-3.56
5850	-17.36	-12.67	-13.72	-14.41	-28.04	-19.66	-3.44
5925	-12.74	-12.86	-13.70	-20.44	-20.80	-23.67	-3.90
6500	-24.89	-24.09	-14.94	-18.79	-19.47	-18.57	-4.23
7125	-12.09	-13.04	-15.27	-22.03	-11.17	-14.09	-5.13

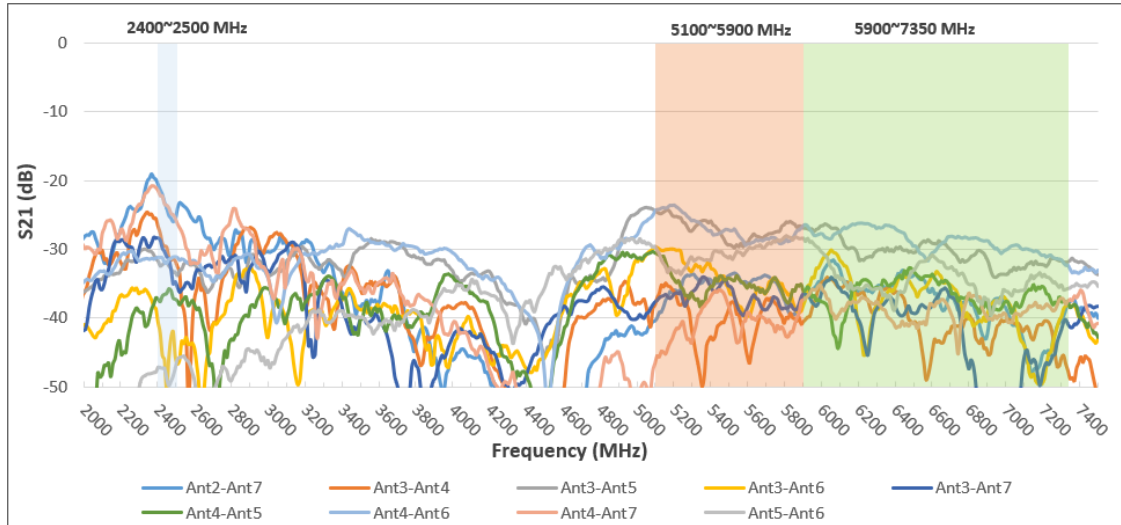
- The gray text indicates that the antenna does not support the corresponding frequency band and can be disregarded.

Antenna Isolation (S21)



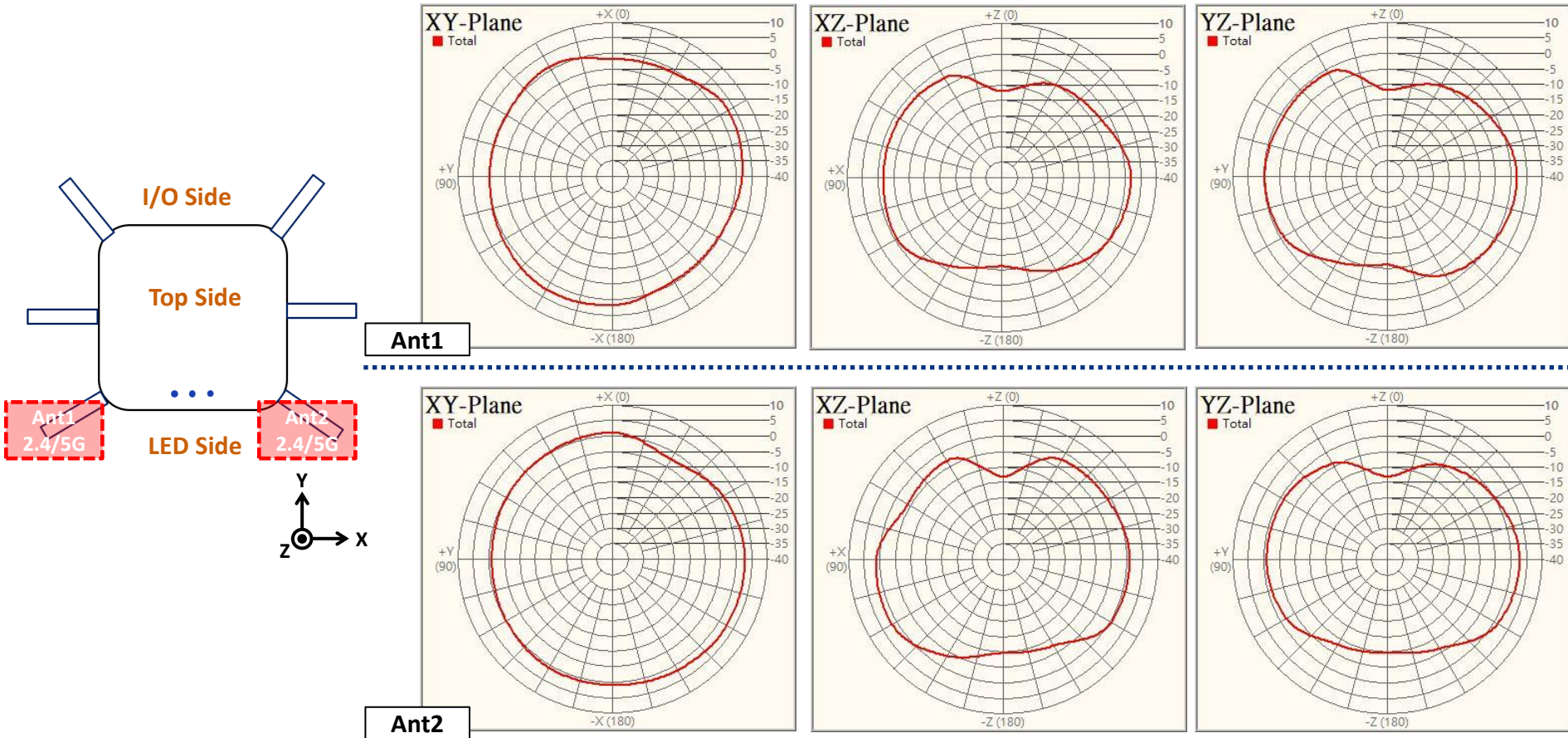
S21 (Isolation)										
Freq. (MHz)	Ant1-Ant2	Ant1-Ant3	Ant1-Ant4	Ant1-Ant5	Ant1-Ant6	Ant1-Ant7	Ant2-Ant3	Ant2-Ant4	Ant2-Ant5	Ant2-Ant6
2400	-24.22	-21.46	-27.55	-39.68	-36.26	-22.22	-26.84	-21.75	-38.06	-41.33
2450	-26.03	-21.57	-24.82	-38.10	-37.48	-21.86	-27.71	-22.99	-39.14	-38.04
2500	-24.89	-22.52	-24.64	-37.89	-37.50	-22.22	-26.50	-23.88	-38.54	-36.30
5150	-28.83	-25.47	-32.47	-33.81	-34.36	-36.51	-36.28	-25.28	-35.37	-33.52
5550	-29.79	-25.98	-37.54	-35.65	-39.64	-36.85	-35.75	-24.69	-39.27	-34.89
5850	-32.97	-26.27	-34.25	-31.86	-33.96	-34.62	-42.12	-26.05	-37.57	-31.60
5925	-31.57	-26.26	-35.18	-33.95	-32.08	-35.15	-39.08	-26.59	-36.62	-32.81
6500	-31.54	-25.72	-35.50	-38.82	-37.82	-40.37	-43.58	-26.92	-41.98	-31.69
7125	-38.03	-34.52	-39.03	-38.35	-42.63	-41.19	-38.75	-35.98	-41.99	-37.52

Antenna Isolation (S21)

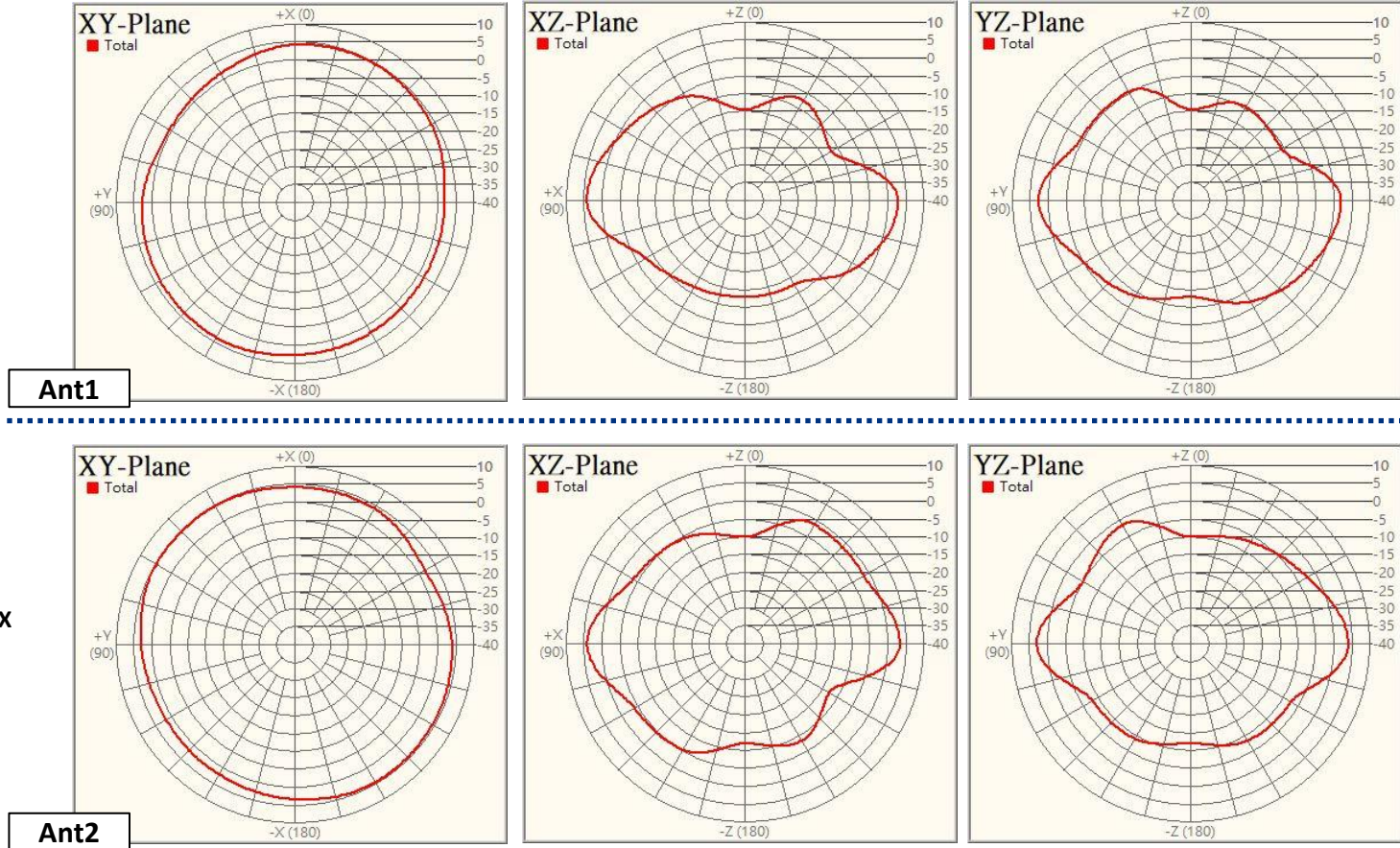
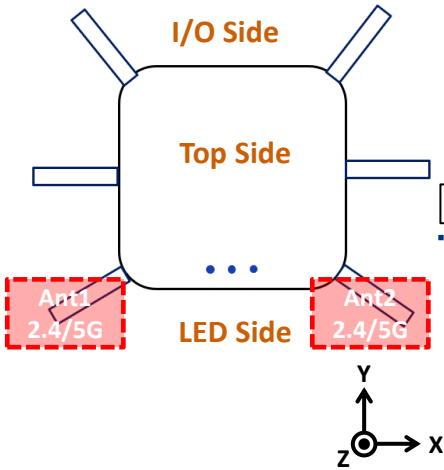


S21 (Isolation)									
Freq. (MHz)	Ant2-Ant7	Ant3-Ant4	Ant3-Ant5	Ant3-Ant6	Ant3-Ant7	Ant4-Ant5	Ant4-Ant6	Ant4-Ant7	Ant5-Ant6
2400	-20.64	-26.70	-31.68	-40.54	-28.42	-37.21	-31.19	-21.43	-47.16
2450	-24.10	-29.69	-31.84	-50.25	-31.15	-36.37	-32.03	-23.55	-48.75
2500	-25.75	-31.73	-33.31	-45.61	-34.81	-37.21	-31.10	-25.47	-47.24
5150	-37.41	-34.97	-24.32	-29.97	-36.66	-31.79	-24.07	-45.21	-32.56
5550	-34.10	-39.55	-29.57	-38.19	-38.91	-34.29	-28.07	-43.50	-30.41
5850	-39.47	-40.10	-26.32	-38.48	-38.90	-36.03	-27.86	-40.90	-28.21
5925	-36.12	-39.87	-26.97	-35.30	-36.84	-35.44	-26.65	-36.80	-28.42
6500	-33.72	-40.59	-30.39	-36.00	-39.43	-33.41	-29.56	-40.91	-32.83
7125	-46.73	-41.90	-32.02	-47.89	-46.05	-35.78	-30.08	-38.25	-34.46

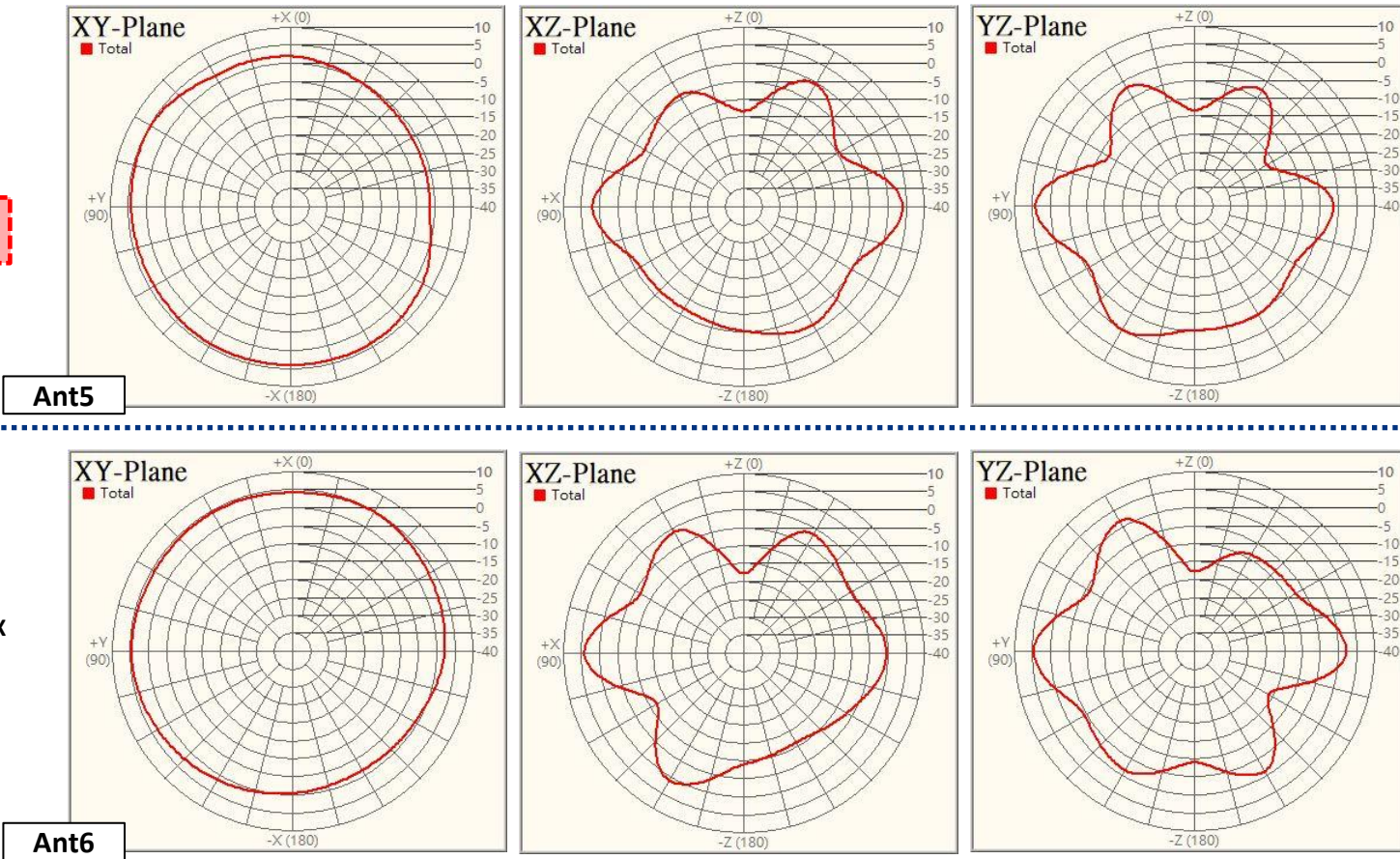
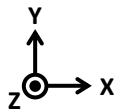
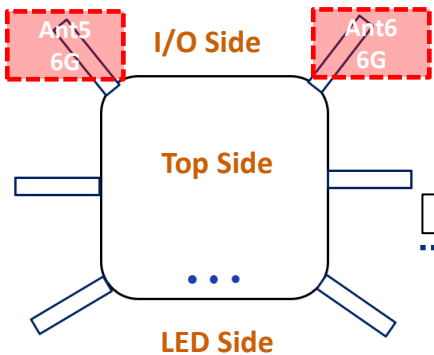
2D Radiation Pattern – Radio 1_2.45GHz



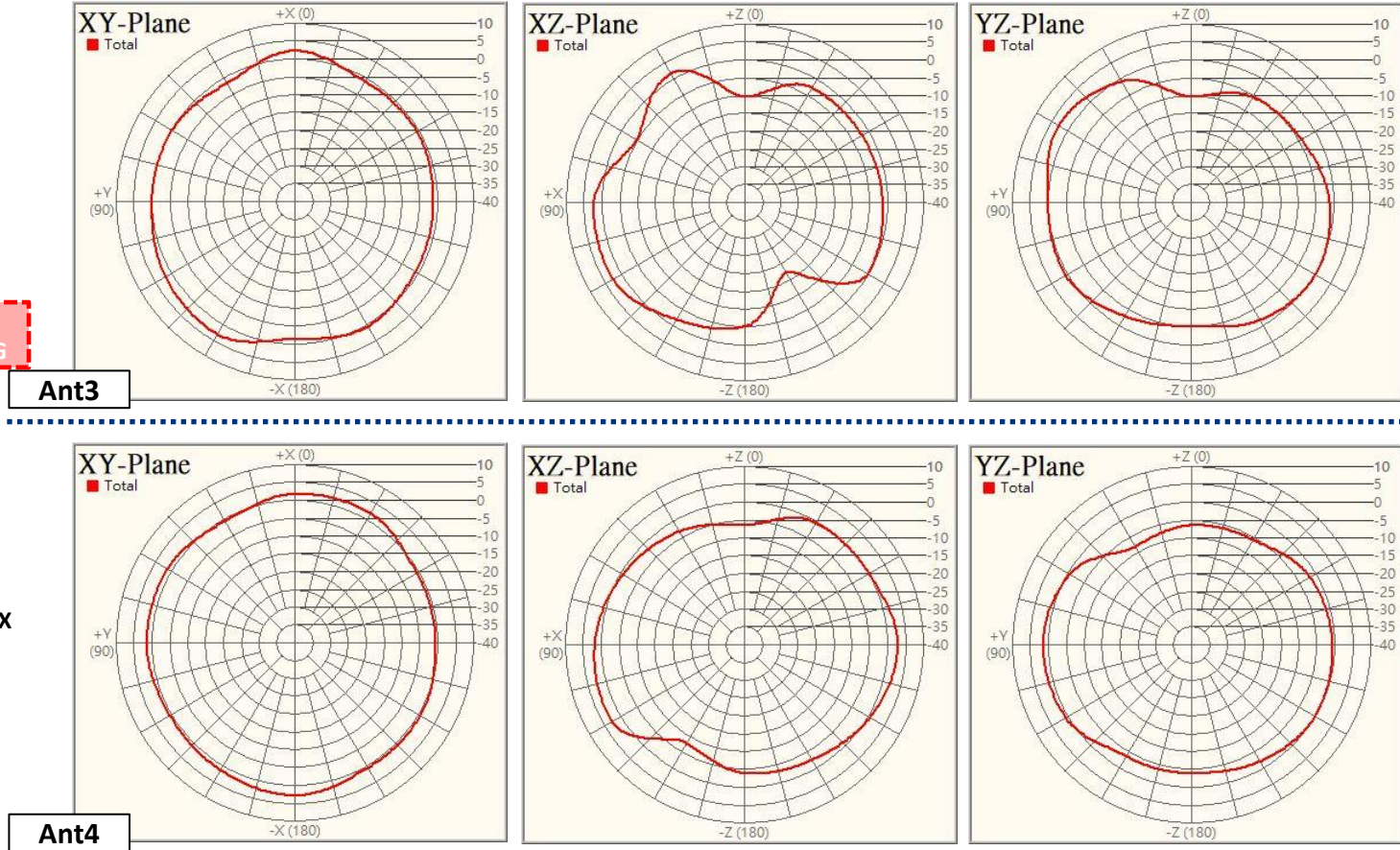
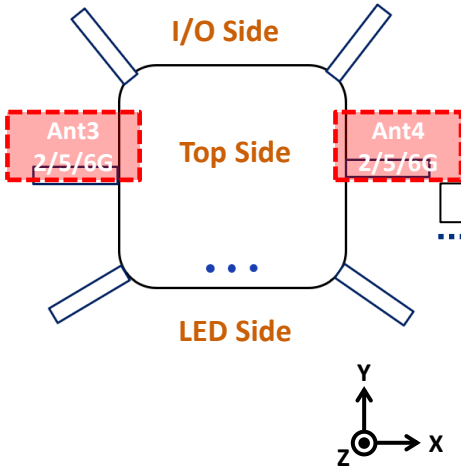
2D Radiation Pattern – Radio 2_5.55GHz



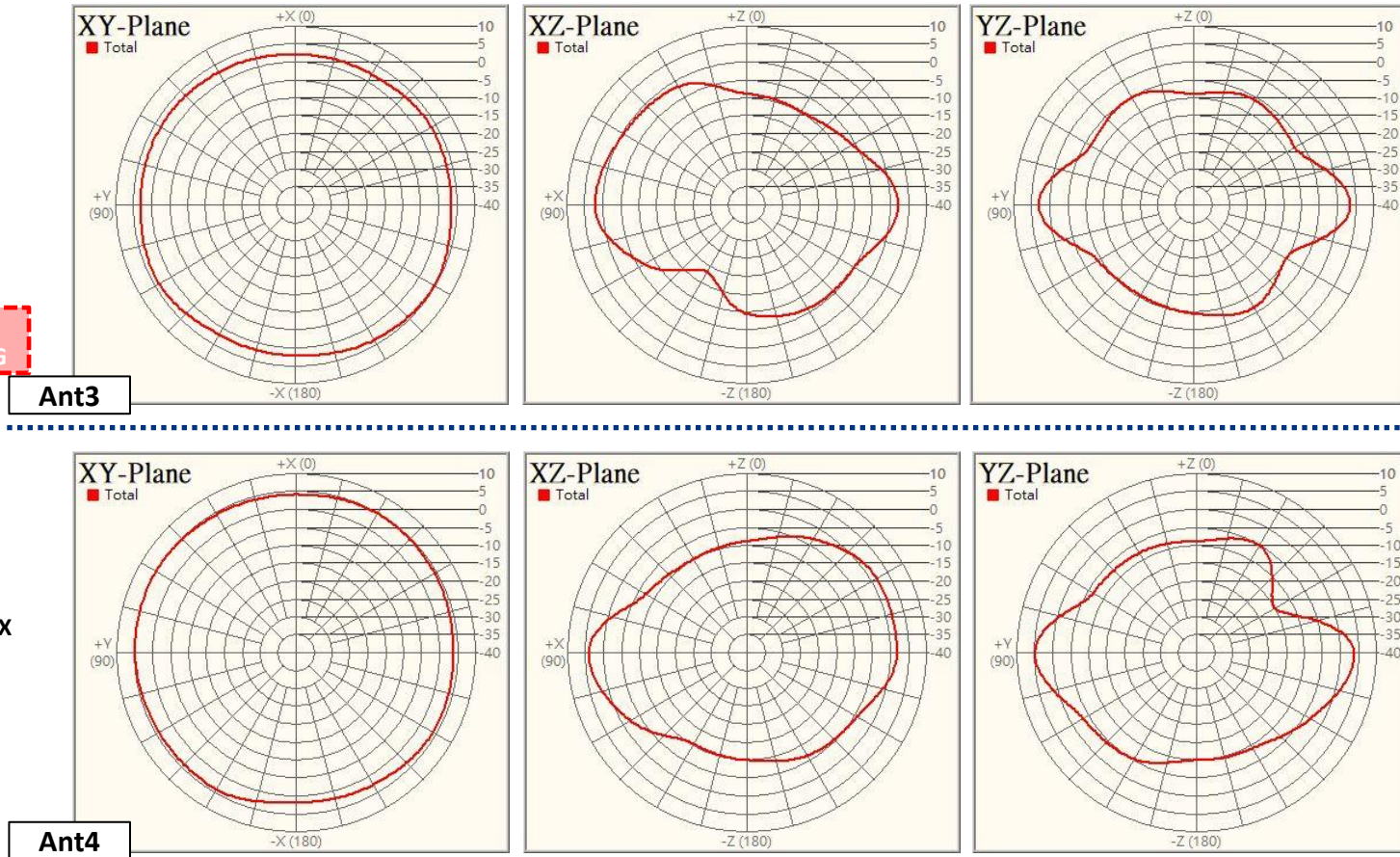
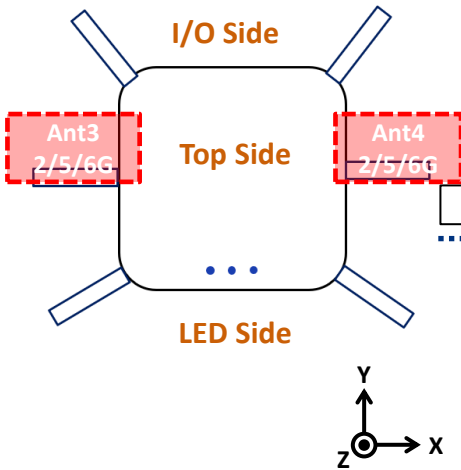
2D Radiation Pattern – Radio 3_6.5GHz



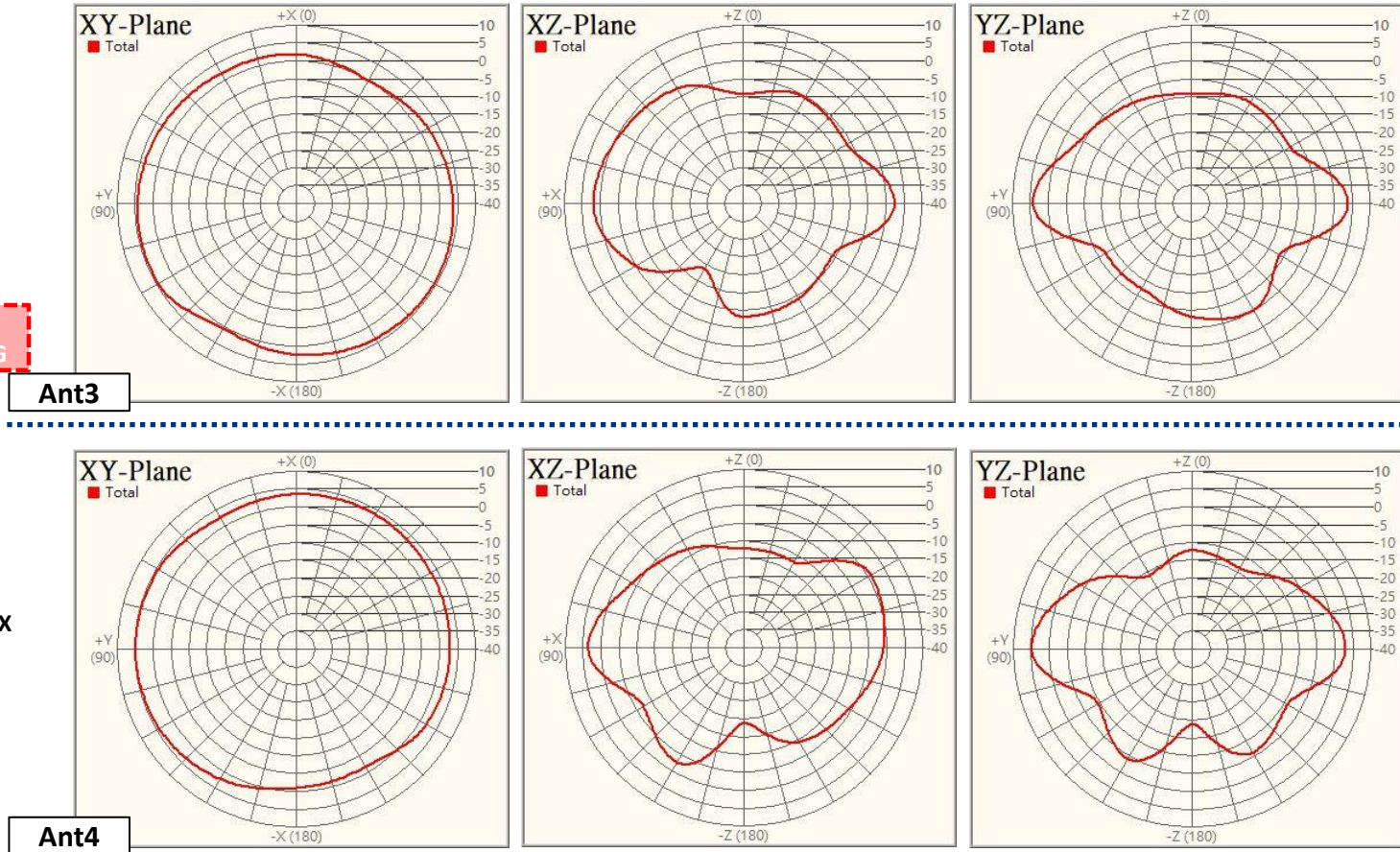
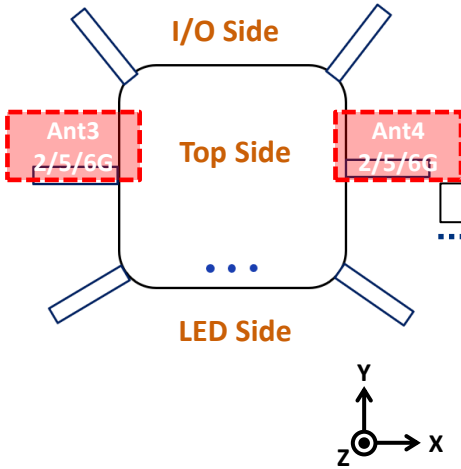
2D Radiation Pattern – Scan Radio_2.45GHz

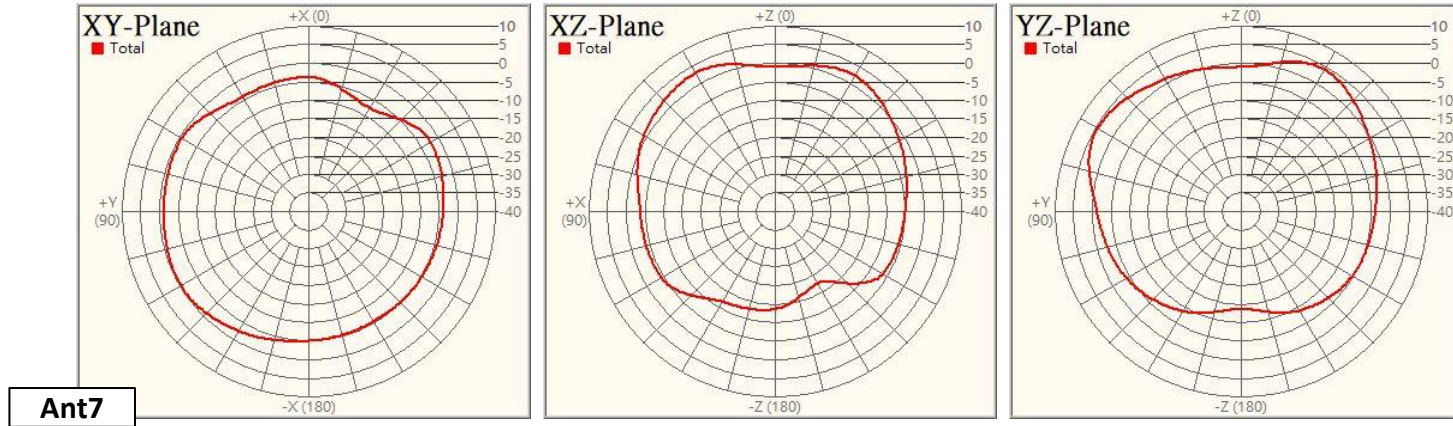
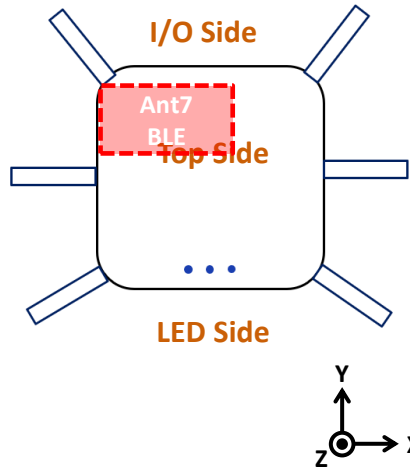


2D Radiation Pattern – Scan Radio_5.55GHz

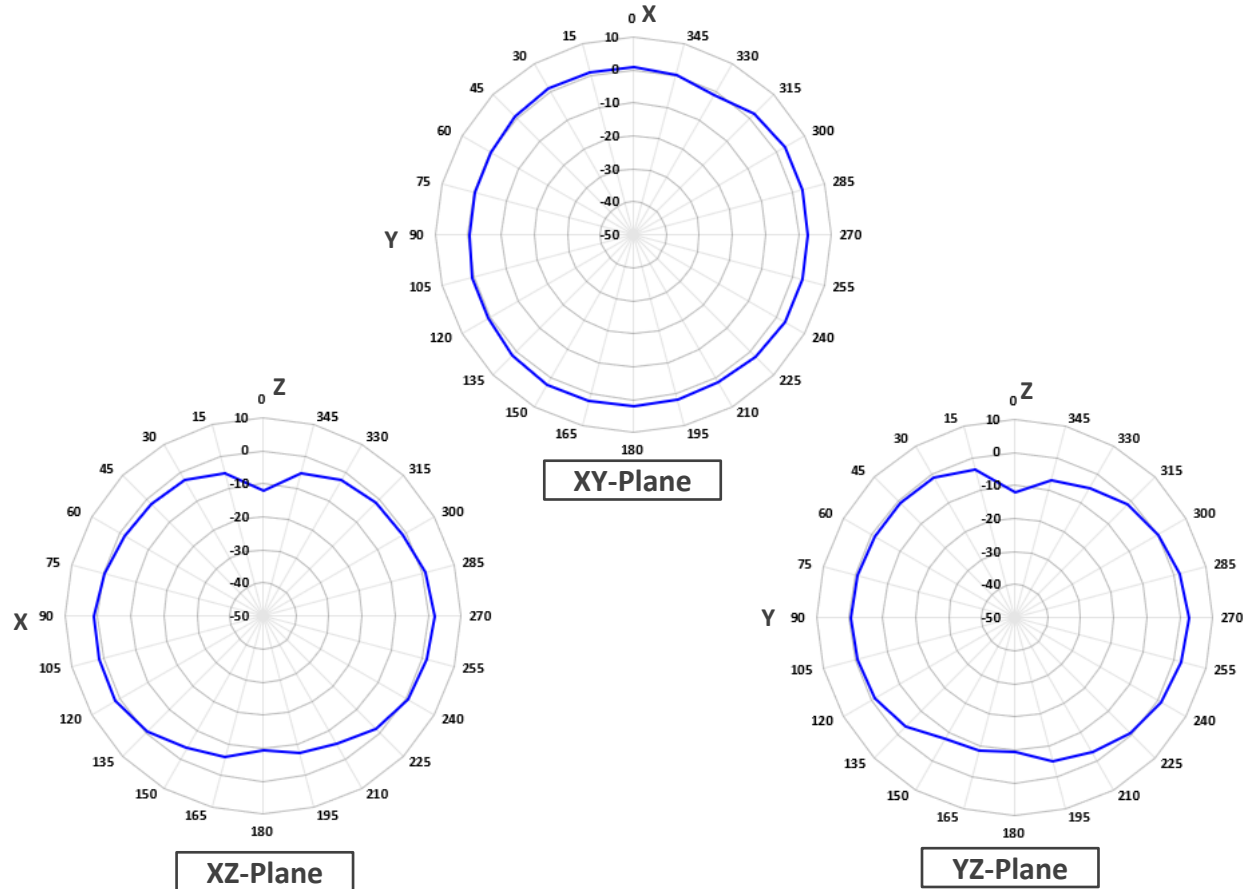
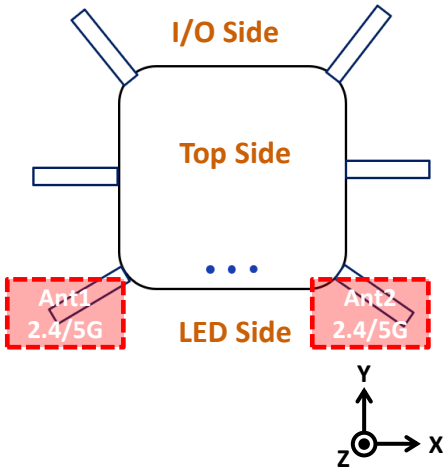


2D Radiation Pattern – Scan Radio_6.5GHz

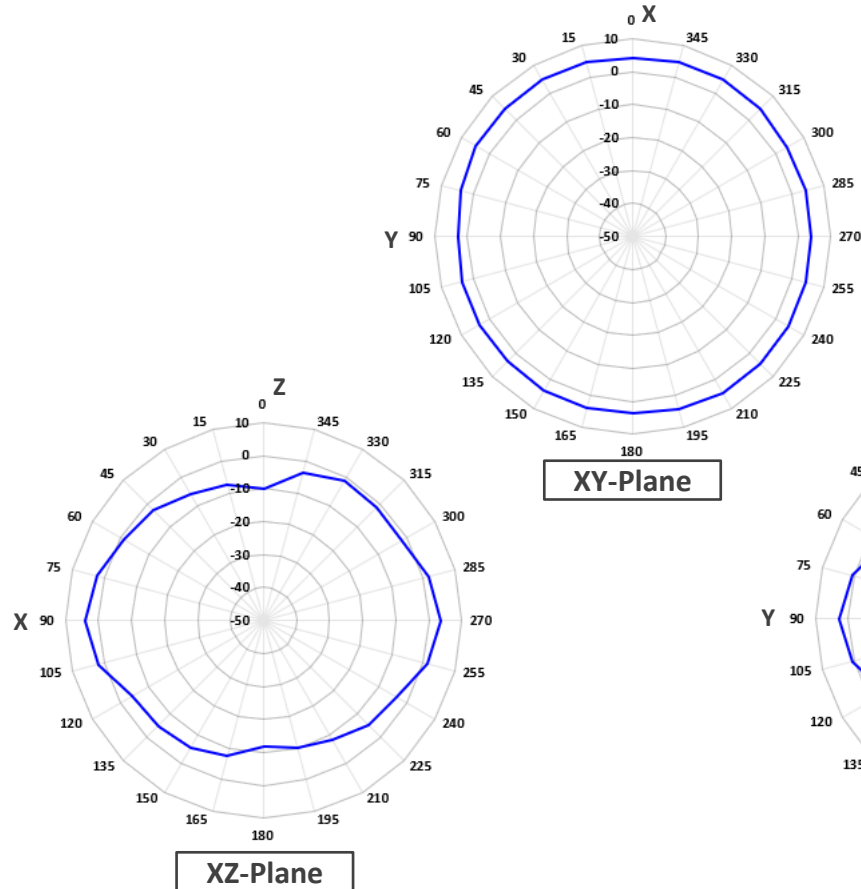
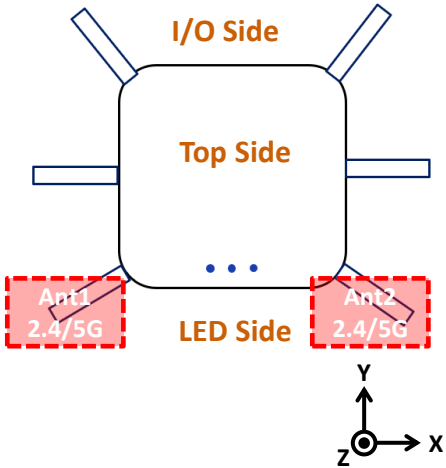




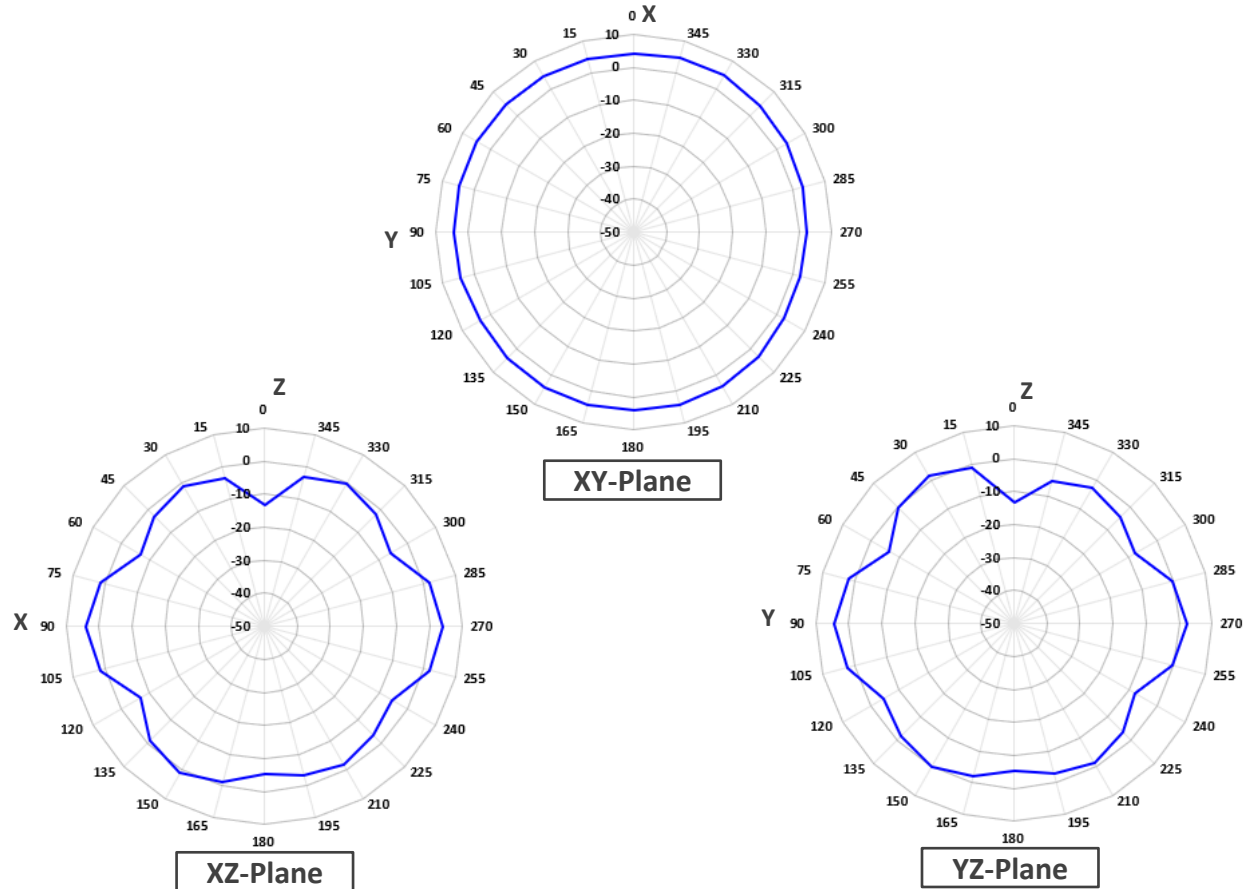
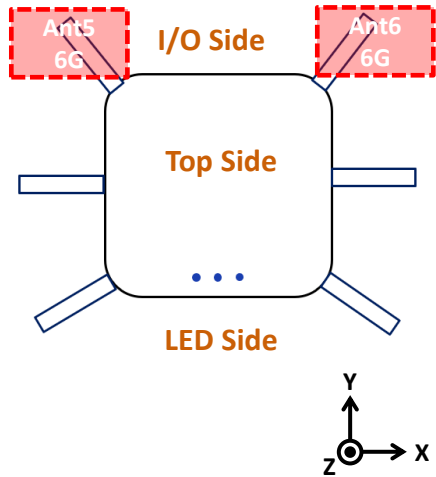
Combine pattern – Radio 1 @2.45 GHz



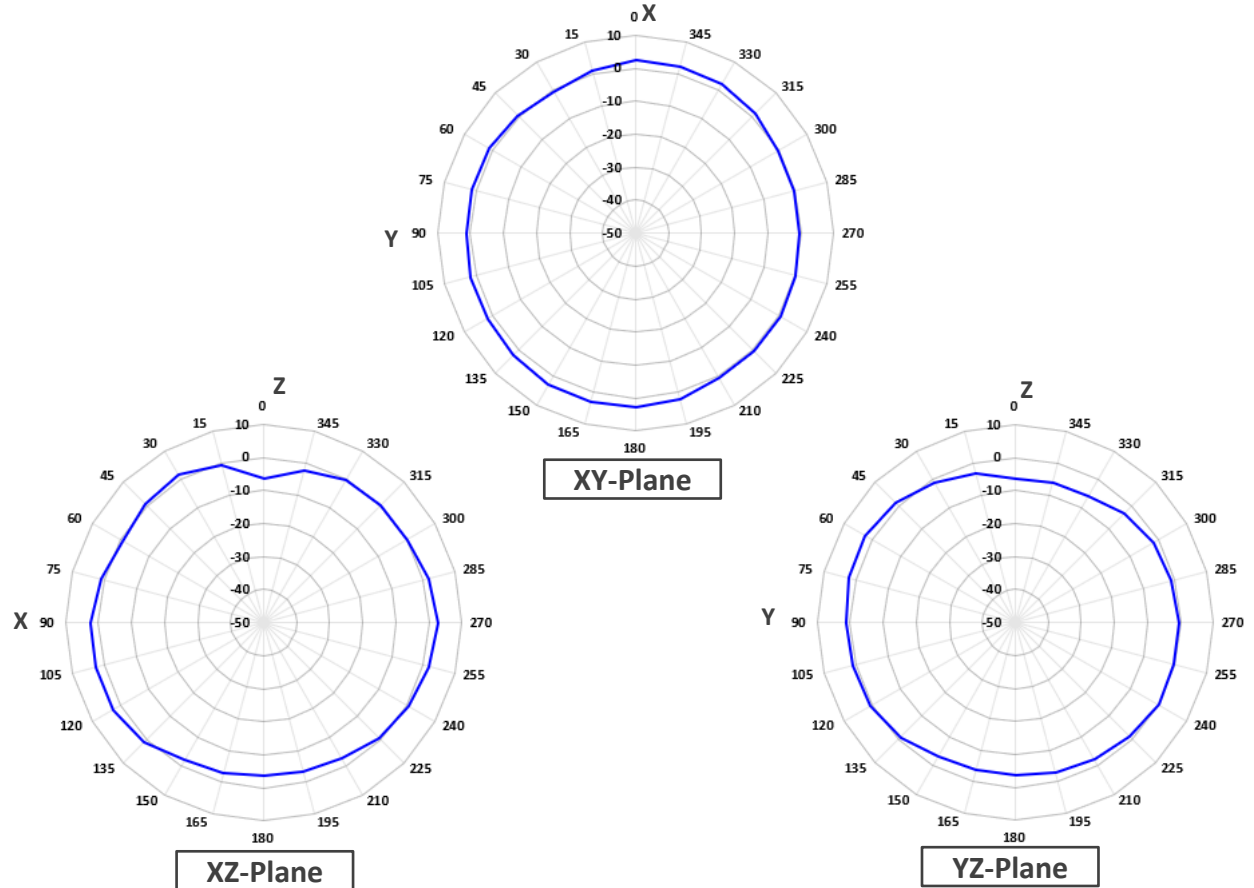
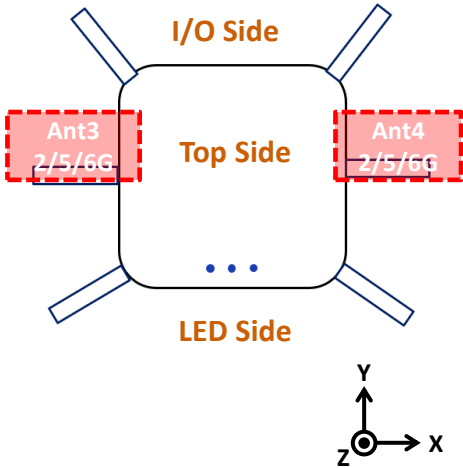
Combine pattern – Radio 2 @5.55 GHz



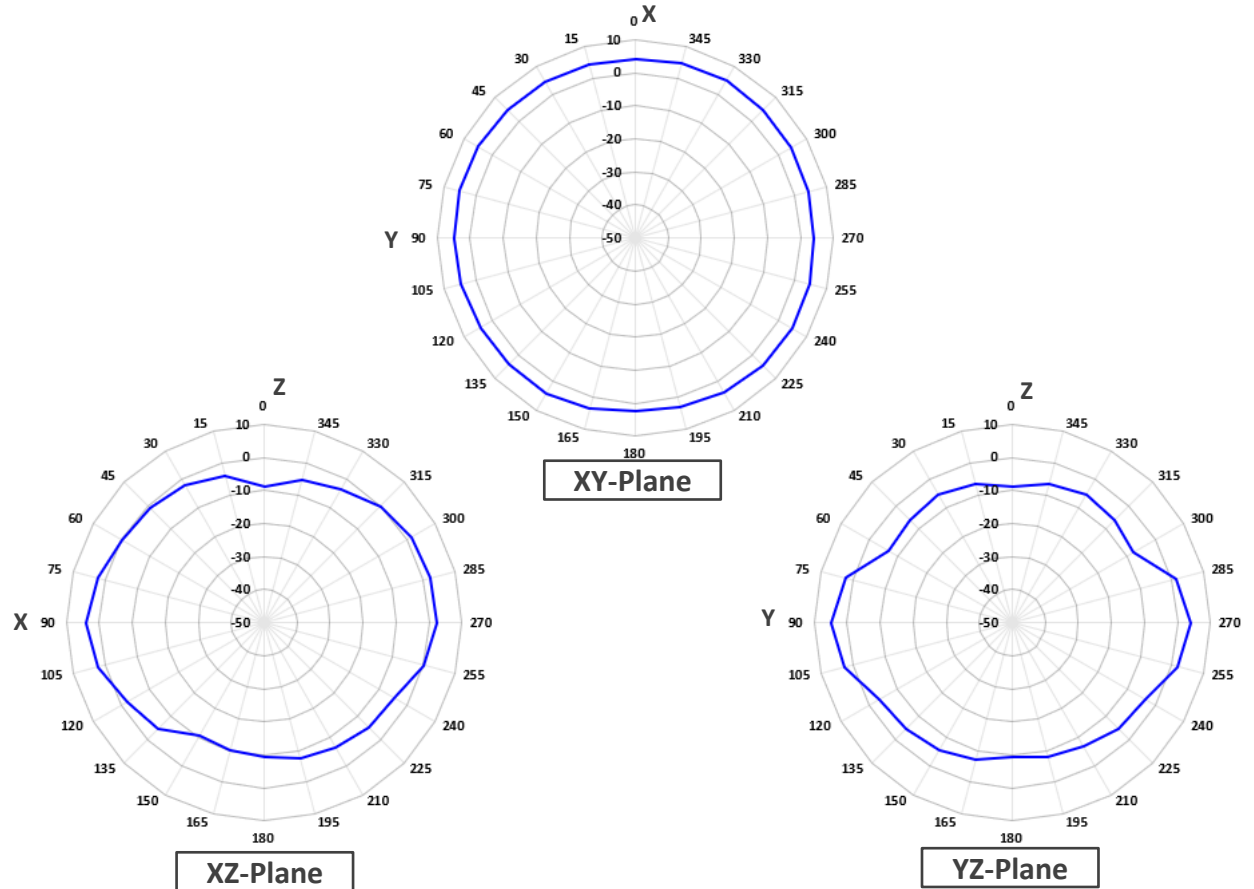
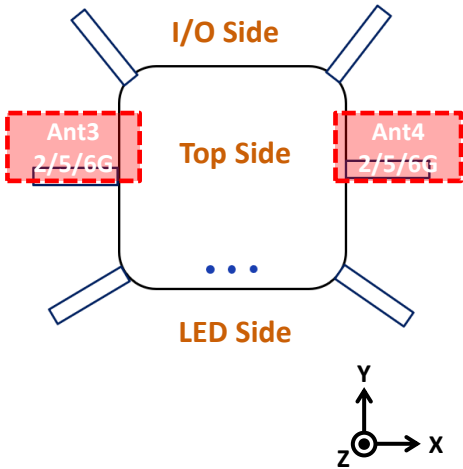
Combine pattern – Radio 3 @6.5 GHz



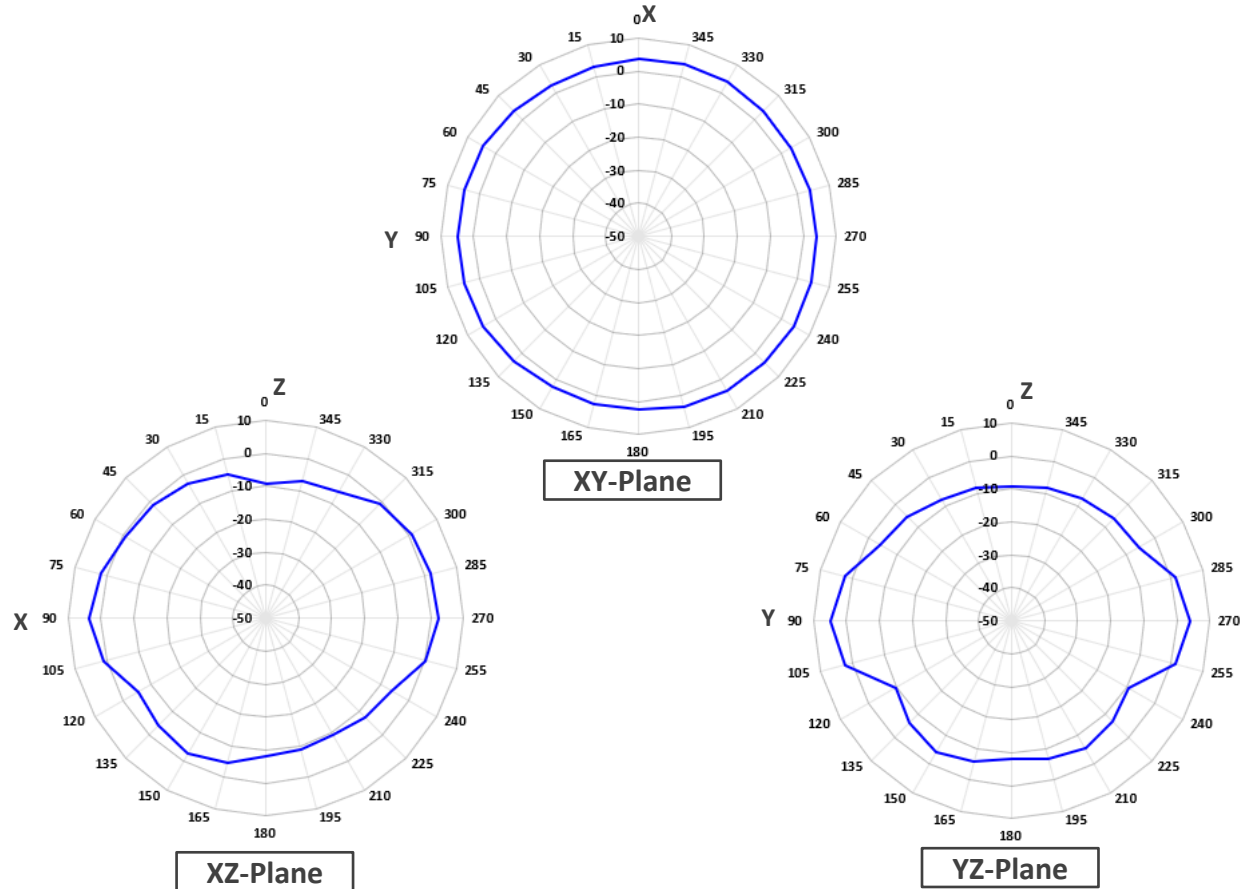
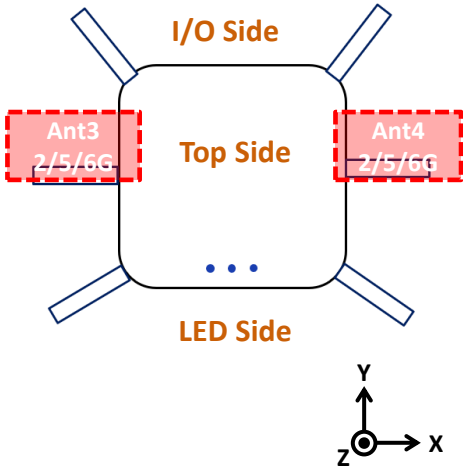
Combine pattern – Scan Radio @2.45 GHz



Combine pattern – Scan Radio @5.55 GHz



Combine pattern – Scan Radio @6.5 GHz



Freq. (MHz)	ANT1_2/5G		ANT2_2/5G		ANT3_2/5/6G		ANT4_2/5/6G		ANT5_6G		ANT6_6G		ANT7_BLE	
	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	67.34	2.94	72.79	3.04	69.55	2.74	72.03	3.03					67.53	4.21
2450	69.84	3.19	68.49	2.91	65.00	3.13	69.30	2.88					72.96	4.61
2500	70.07	3.15	70.50	3.27	67.24	2.98	67.13	2.83					66.17	4.82
5150	66.49	4.52	65.83	4.61	64.55	5.03	69.86	4.82						
5500	69.14	4.83	67.21	4.88	65.03	4.87	65.68	5.03						
5850	70.96	5.14	71.07	5.13	68.68	4.94	65.52	4.80						
5895	70.57	5.24	67.06	4.71	66.99	5.26	67.86	5.17						
5925					70.64	4.63	71.56	4.80	69.42	5.01	64.71	4.80		
6500					65.43	4.66	67.50	4.82	70.69	4.96	66.80	4.87		
7125					61.78	4.37	62.95	4.54	66.73	4.85	64.76	4.89		