



AP230W

Antenna Test Report

Wireless Access Point

Senao Networks, Inc.

Customer	WatchGuard
Project	AP230W
Project Description	2.4/5G antenna *2 Scan antenna *1
Date	2023/08/25
Prepared by	Kenny
Checked	Tony
Report Version	A02

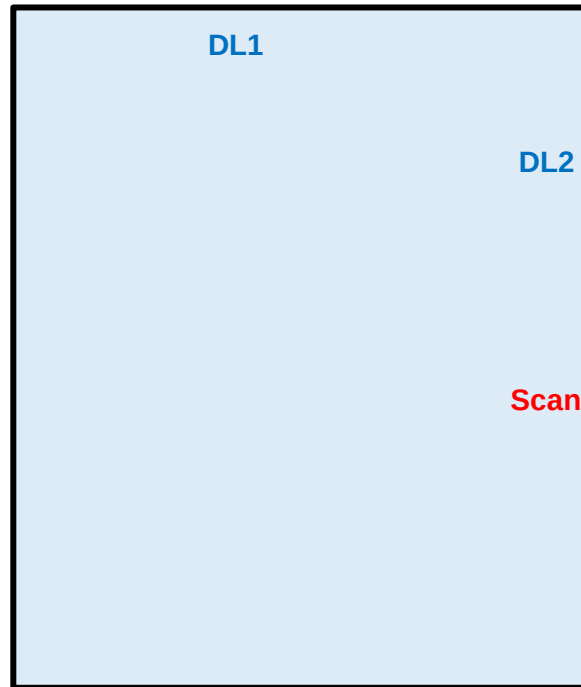
- **Purpose**

Antenna verification for AP230W device, result as following.

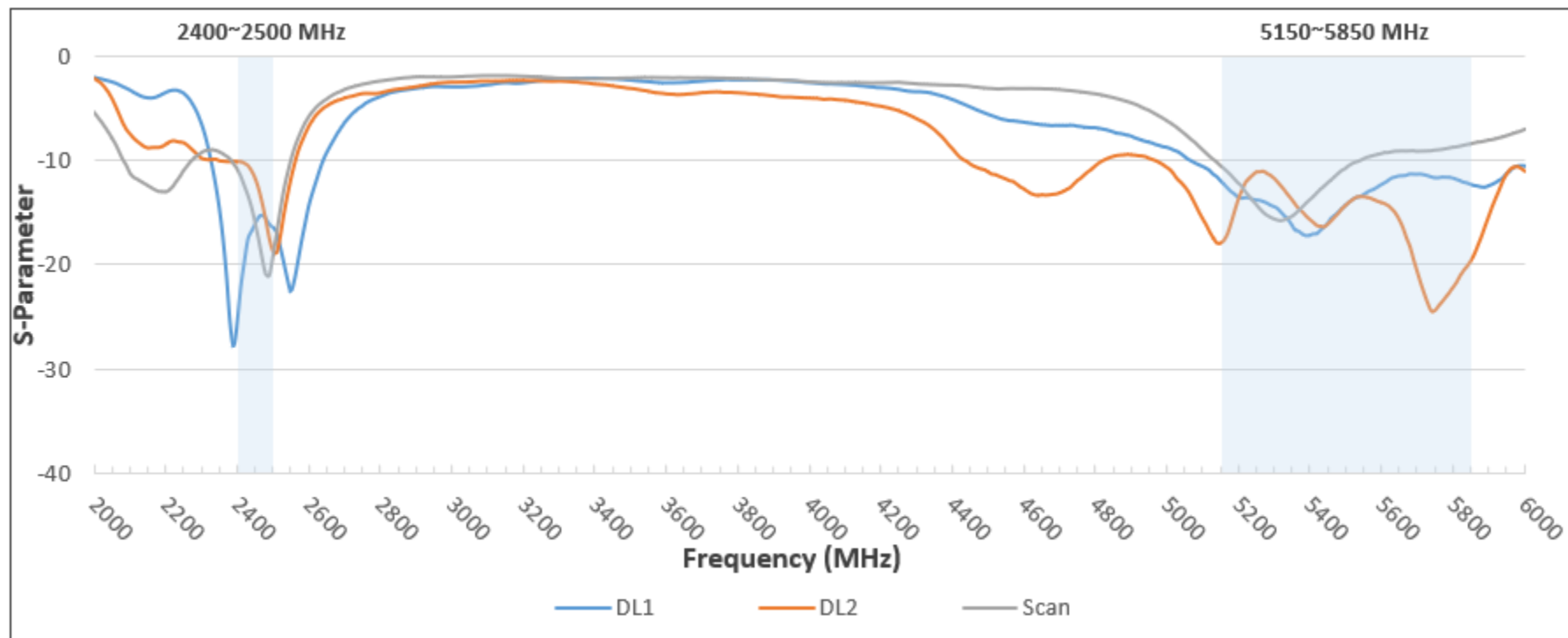
- **Agenda**

- Placement and Specification
- S-Parameter & Isolation
- Radiation Pattern
- Combine Pattern
- Efficiency and Gain

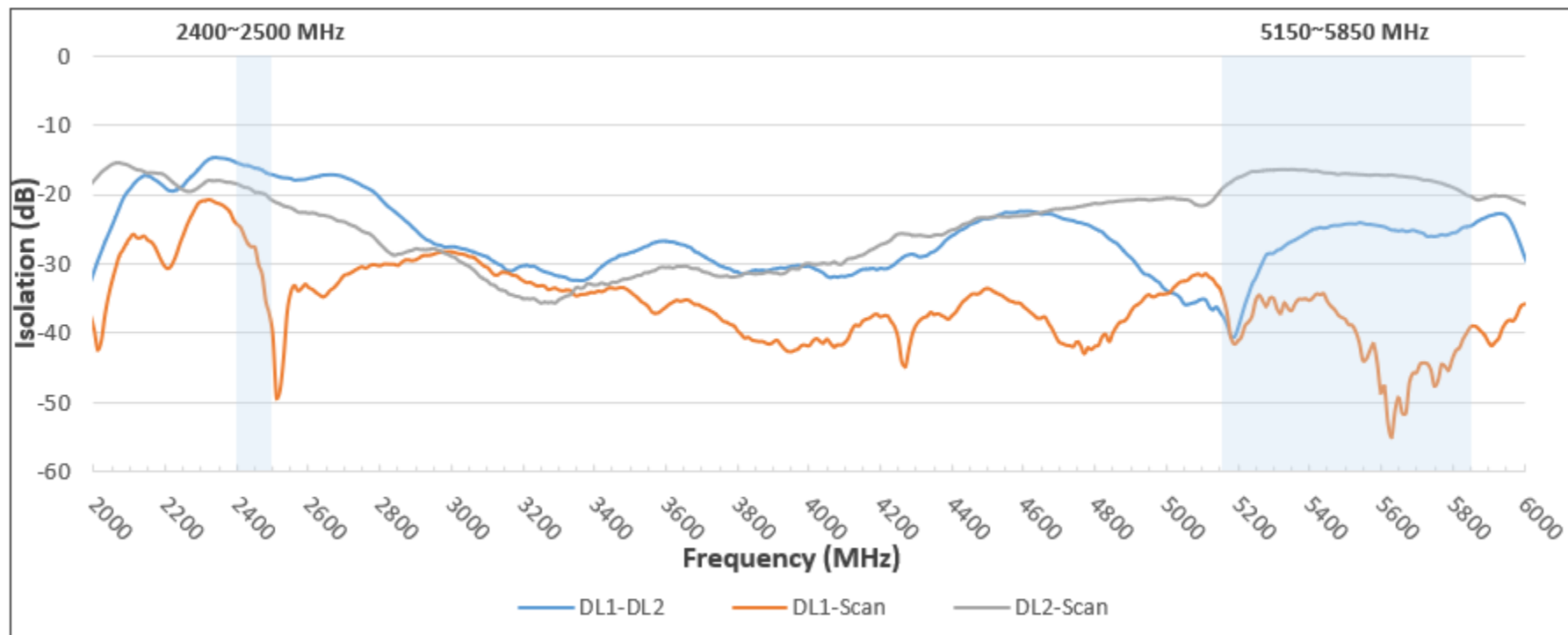
Placement and specification



Ant No.	Operating Band	Gain (dBi)	Efficiency (%)	Ant Type	Material	Feeding
DL1	2400MHz ~ 2500 MHz	2.65~3.39	52.3~55.5	PIFA	PCB	Cable
	5150MHz ~ 5850 MHz	2.28~3.19	44.7~46.9			
DL2	2400MHz ~ 2500 MHz	1.59~2.99	50.5~52.3	PIFA	PCB	Trace
	5150MHz ~ 5850 MHz	2.31~3.77	42.7~43.3			
Scan	2400MHz ~ 2500 MHz	2.65~3.94	41.8~46.0	Monopole	PCB	Trace
	5150MHz ~ 5850 MHz	1.31~3.40	28.6~31.3			

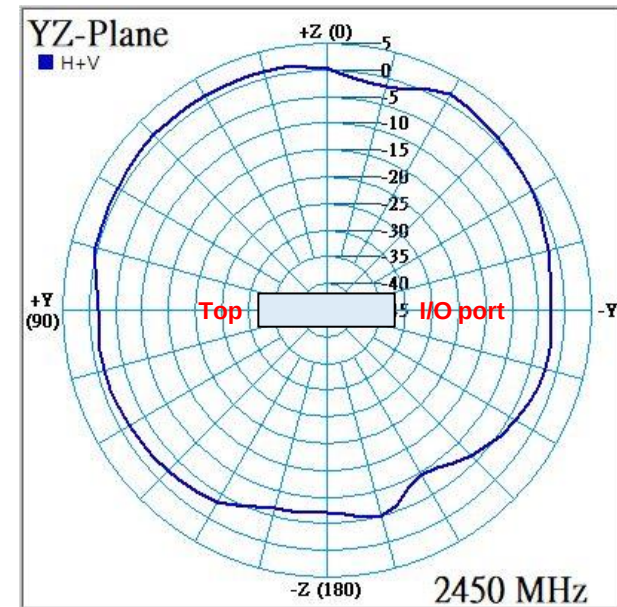
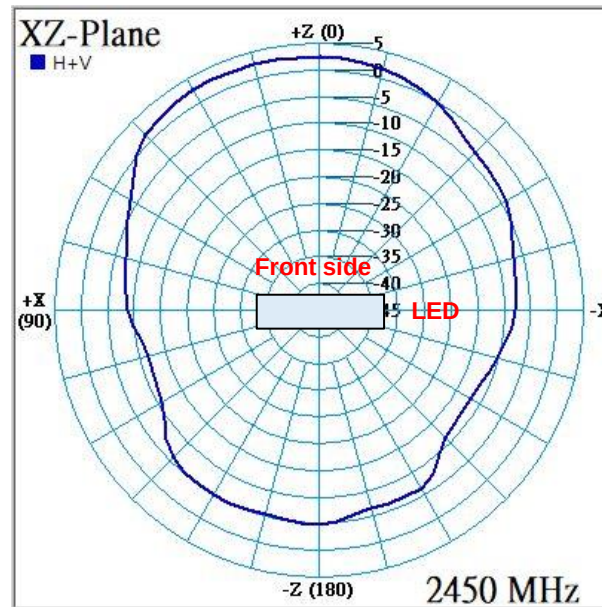
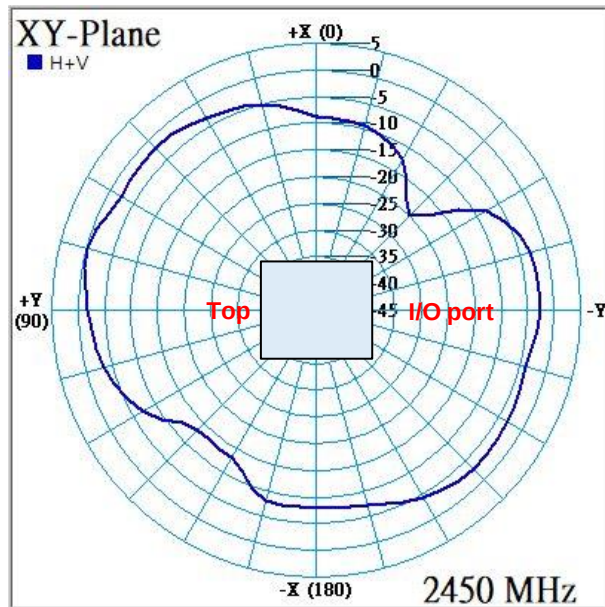
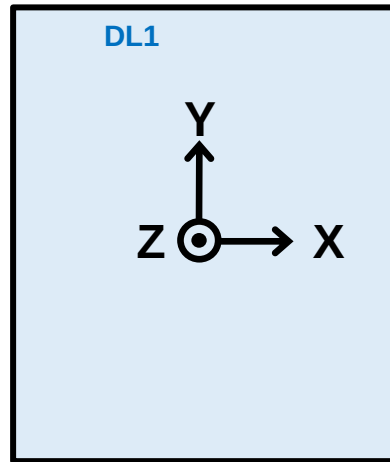
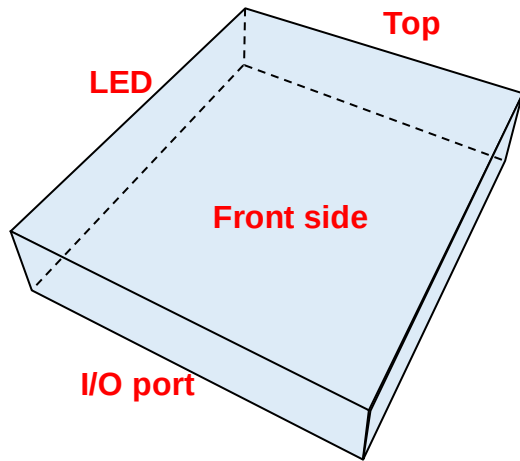


S11			
Freq. (MHz)	DL1	DL2	Scan
2400	-25.64	-10.11	-10.72
2450	-16.10	-11.75	-15.85
2500	-16.41	-18.78	-19.11
5150	-11.88	-17.95	-10.37
5500	-14.32	-14.32	-10.69
5850	-12.26	-19.65	-8.32

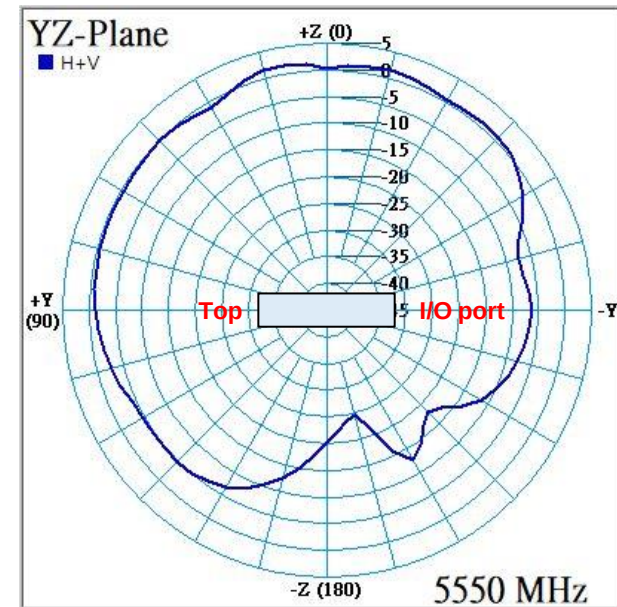
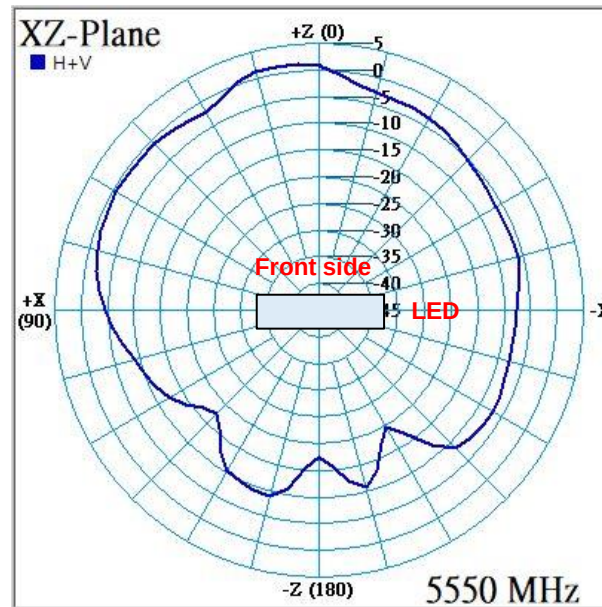
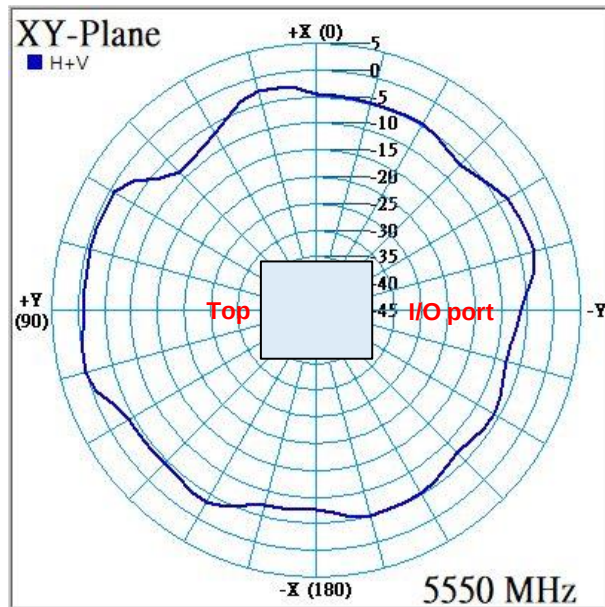
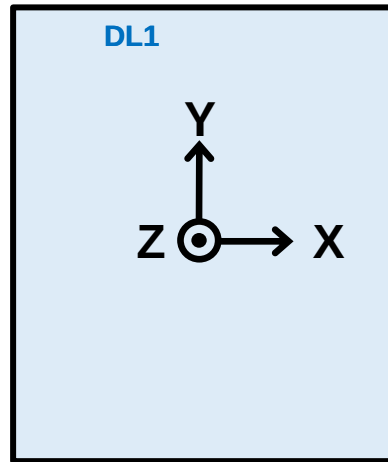
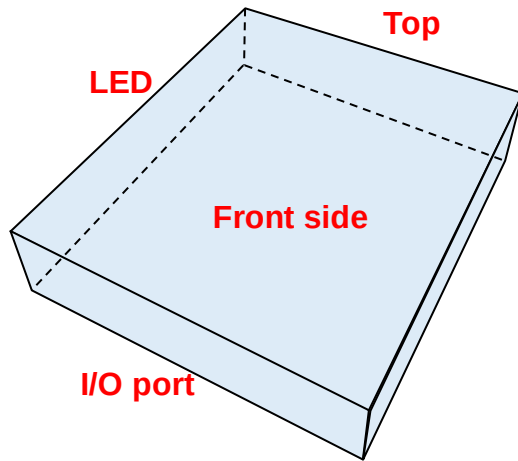


Isolation			
Freq. (MHz)	DL1-DL2	DL1-Scan	DL2-Scan
2400	-15.46	-24.29	-18.36
2450	-16.20	-27.63	-19.54
2500	-17.16	-40.45	-20.79
5150	-36.99	-33.55	-19.42
5500	-24.28	-37.95	-16.88
5850	-24.57	-39.12	-20.11

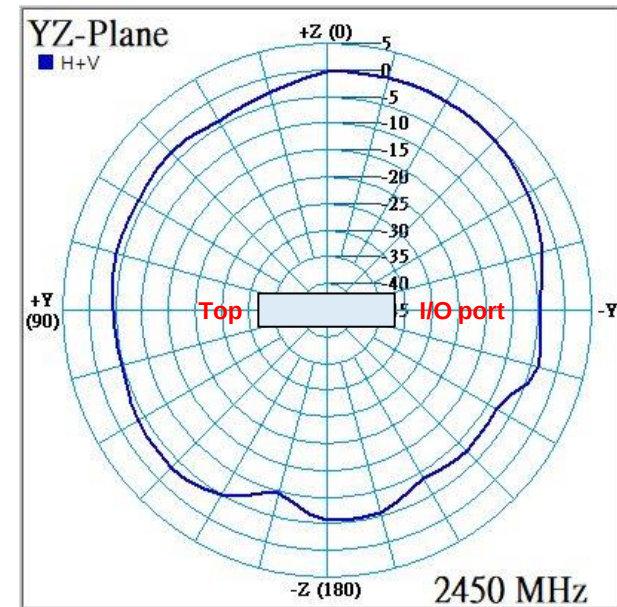
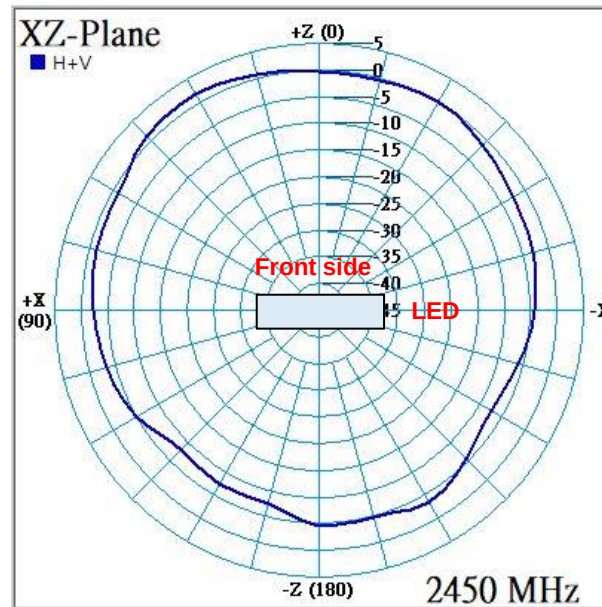
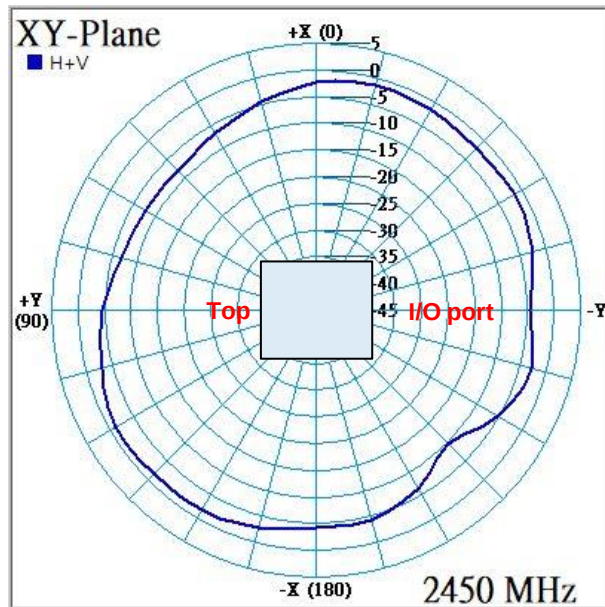
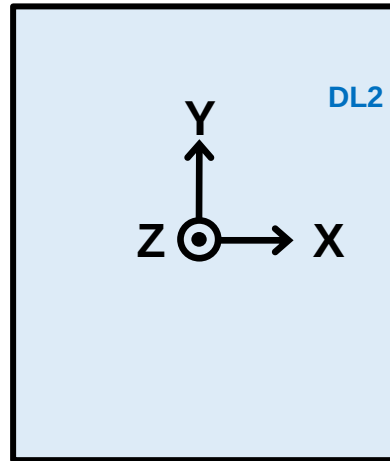
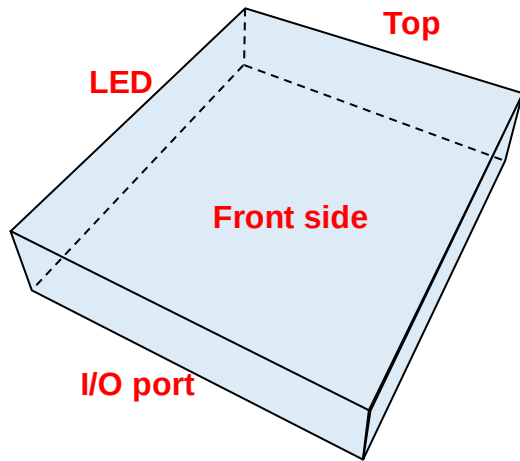
2D Radiation Pattern – DL1 @ 2.45GHz



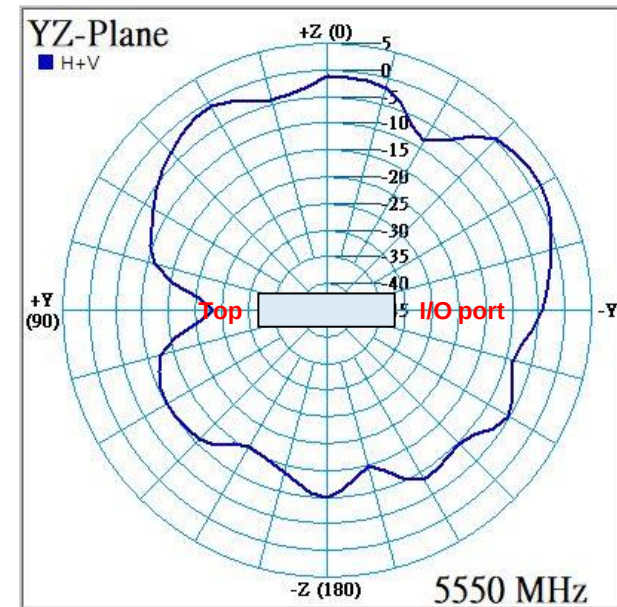
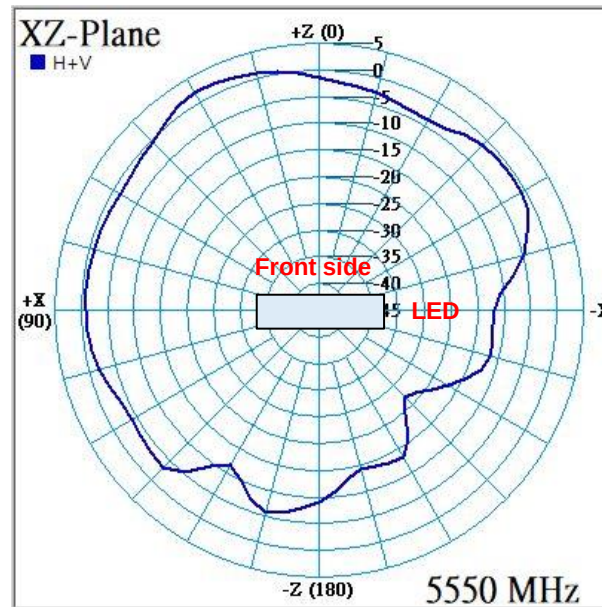
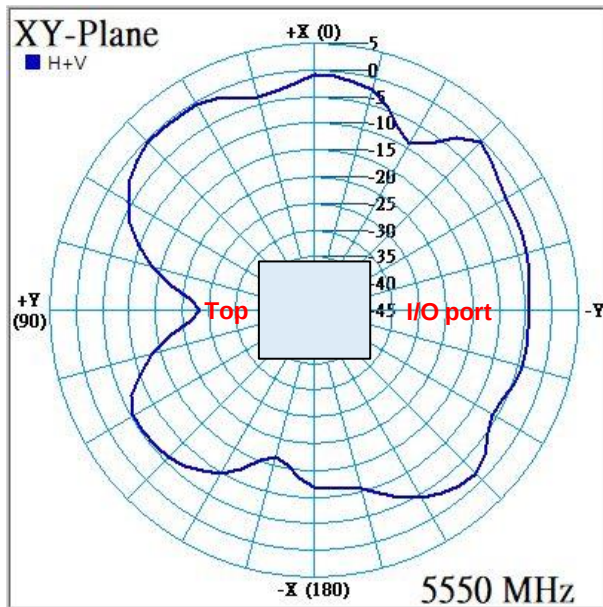
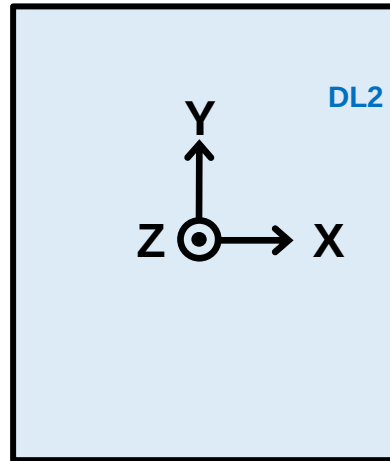
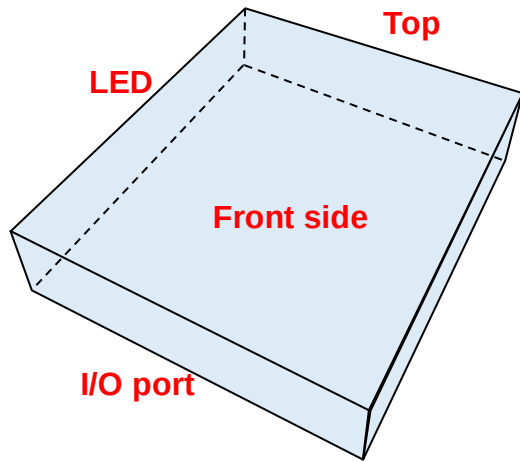
2D Radiation Pattern – DL1 @ 5.55GHz



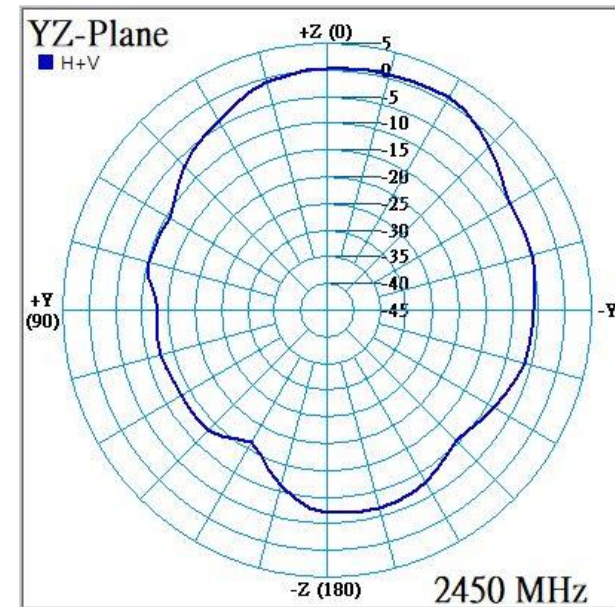
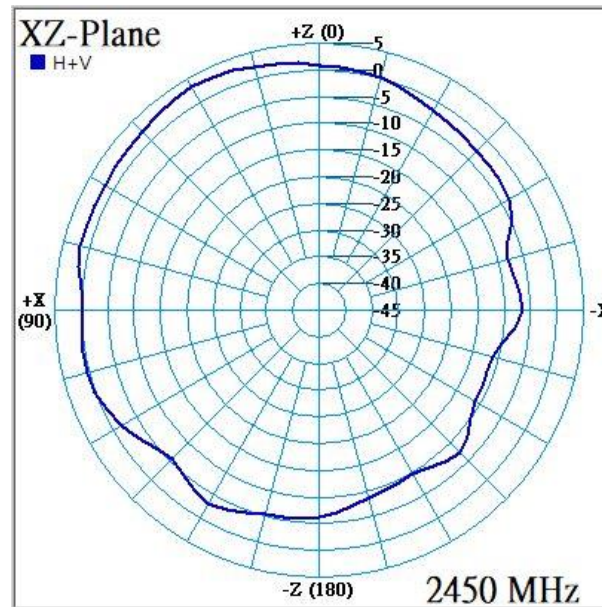
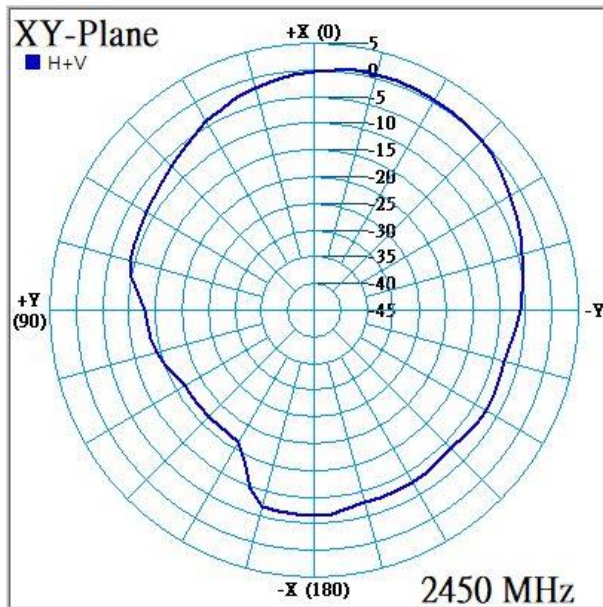
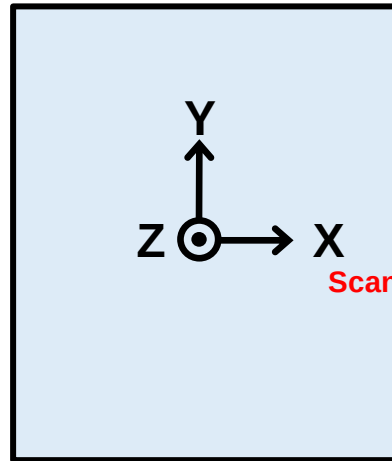
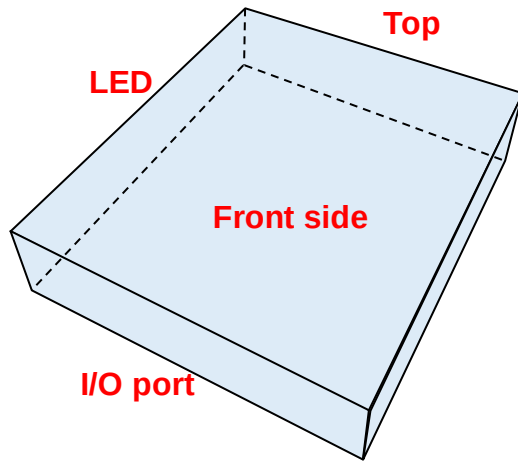
2D Radiation Pattern – DL2 @ 2.45GHz



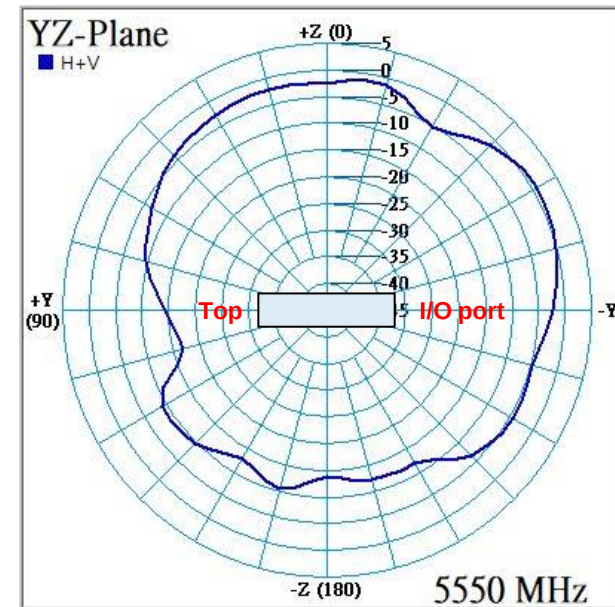
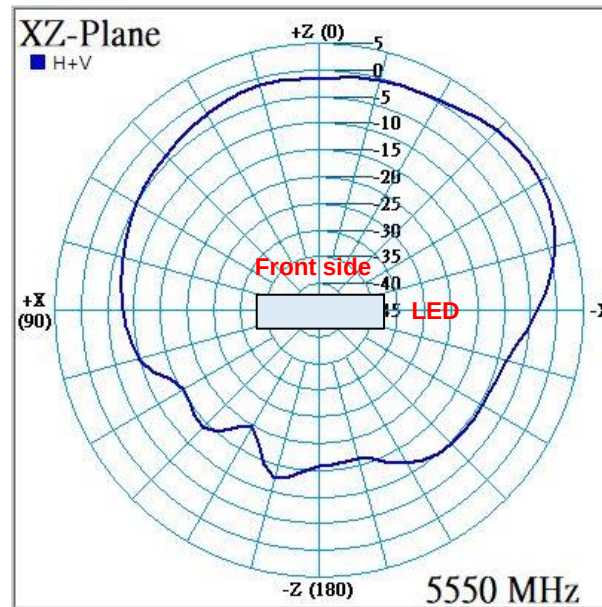
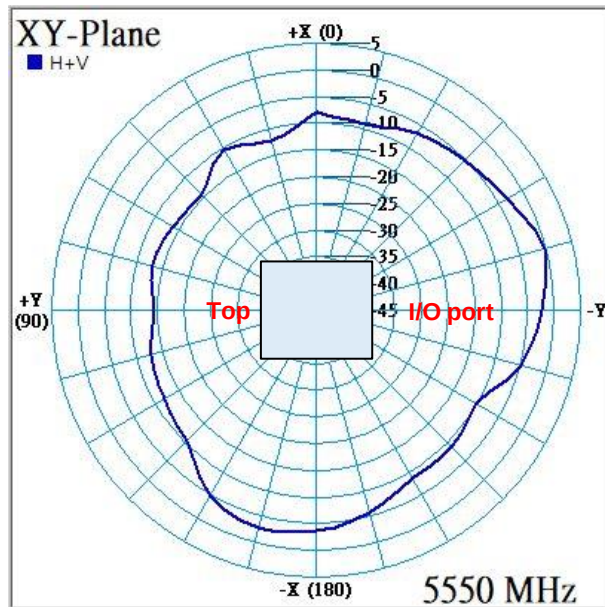
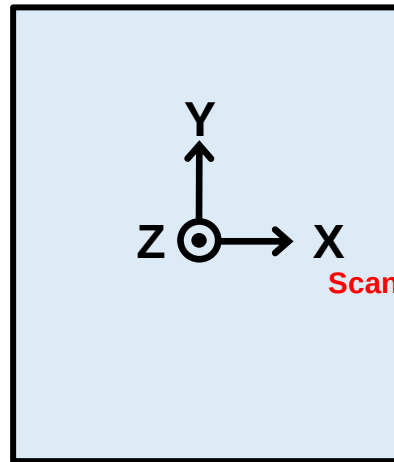
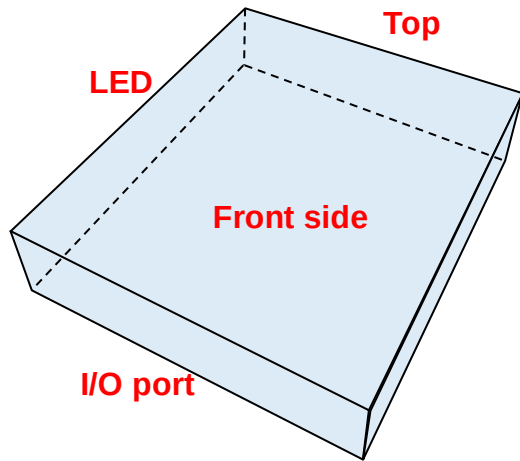
2D Radiation Pattern – DL2 @ 5.55GHz



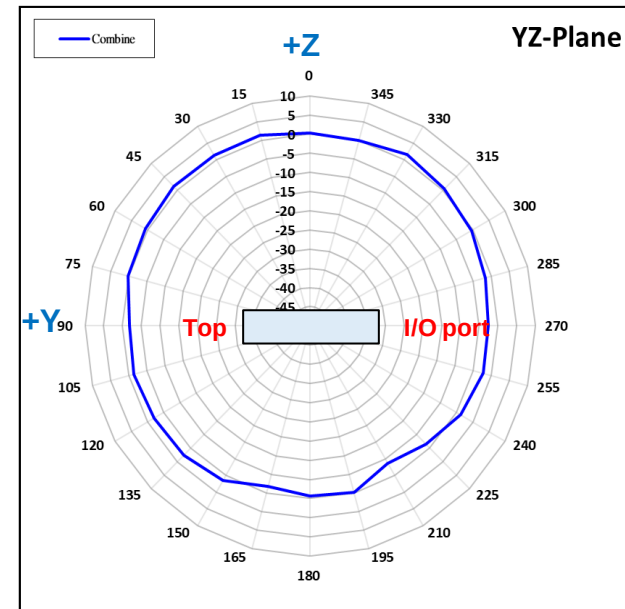
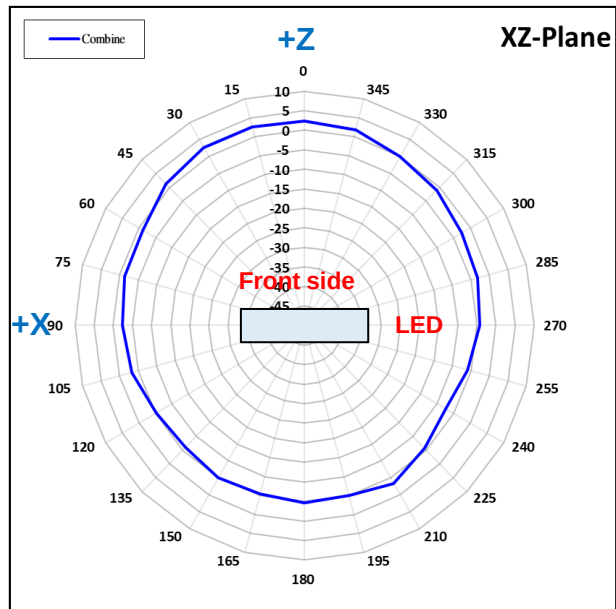
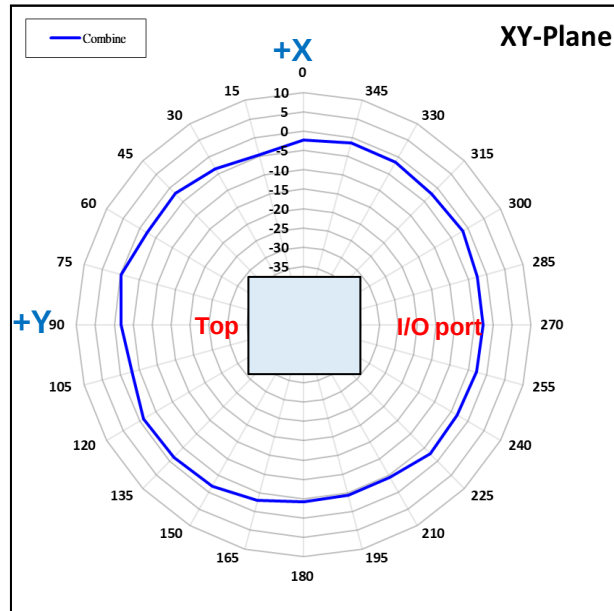
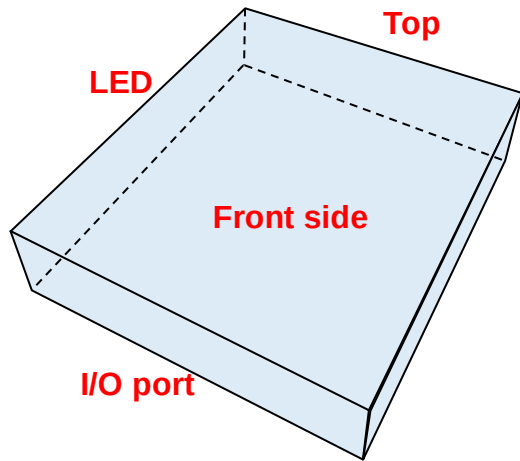
2D Radiation Pattern – Scan @ 2.45GHz



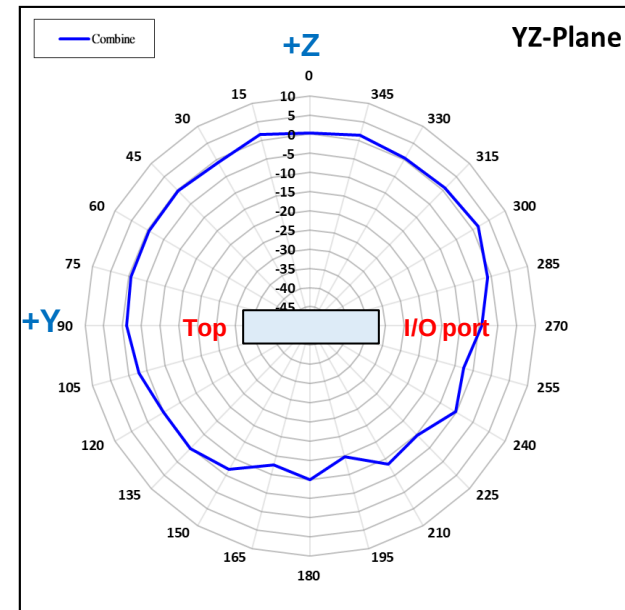
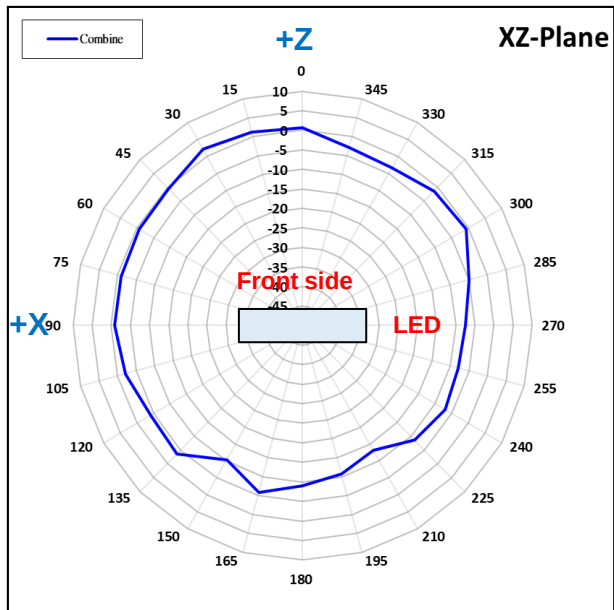
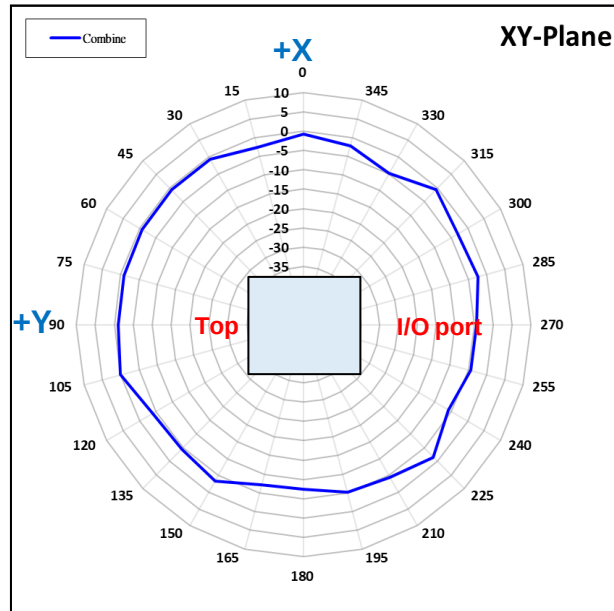
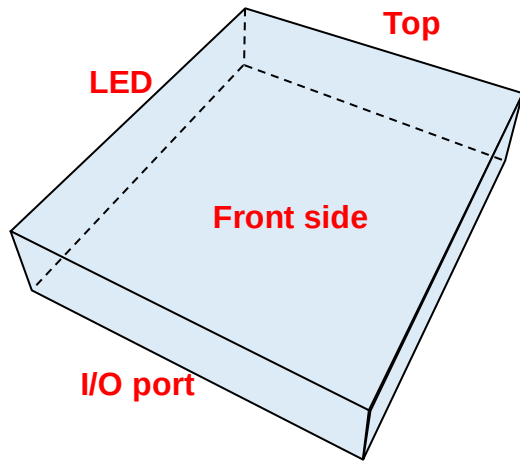
2D Radiation Pattern – Scan @ 5.55GHz



Combine pattern – 2G1+2G2 @2.45 GHz



Combine pattern – 5G1+5G2 @5.55 GHz



Antenna Efficiency and Gain

Antenna Performance						
Freq. (MHz)	DL1		DL2		Scan	
	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)
2400	52.3	2.65	50.5	1.59	41.8	2.65
2450	55.5	2.88	50.6	2.07	46.0	3.94
2500	55.1	3.39	52.3	2.99	44.3	3.62
5150	44.7	2.28	42.7	2.31	29.8	1.31
5500	44.8	2.96	43.3	3.71	31.3	3.40
5850	46.9	3.19	42.7	3.77	28.6	1.37