

Antenna Test Report for Beachball_EVT1

Apr.14. 2023

Rev.02

Free Space

VSWR

	Bottom metal housing
BLE	< 2.5
WIFI_2GHz / 5GHz	< 2.5 / 2.5

Isolation

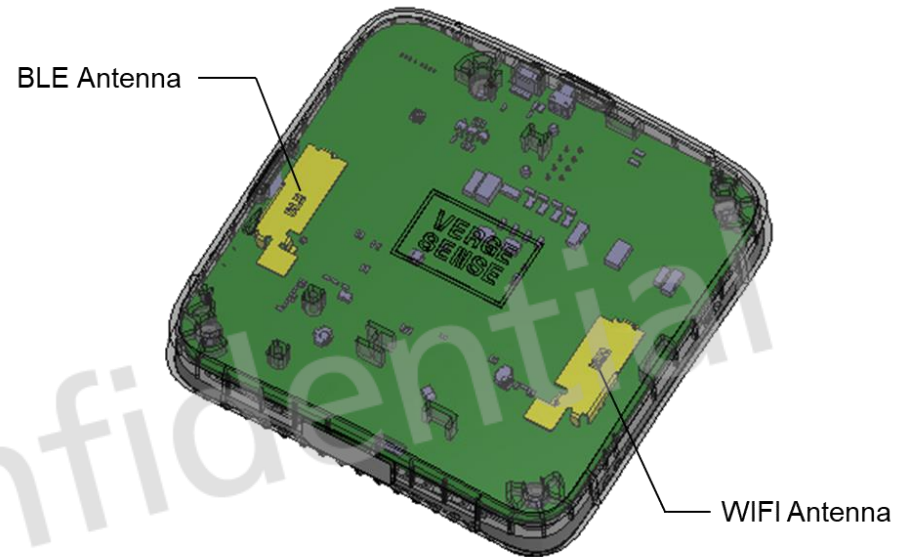
	Bottom metal housing
BLE to WIFI 2.4GHz	Max 26.3dB

Average Radiation efficiency

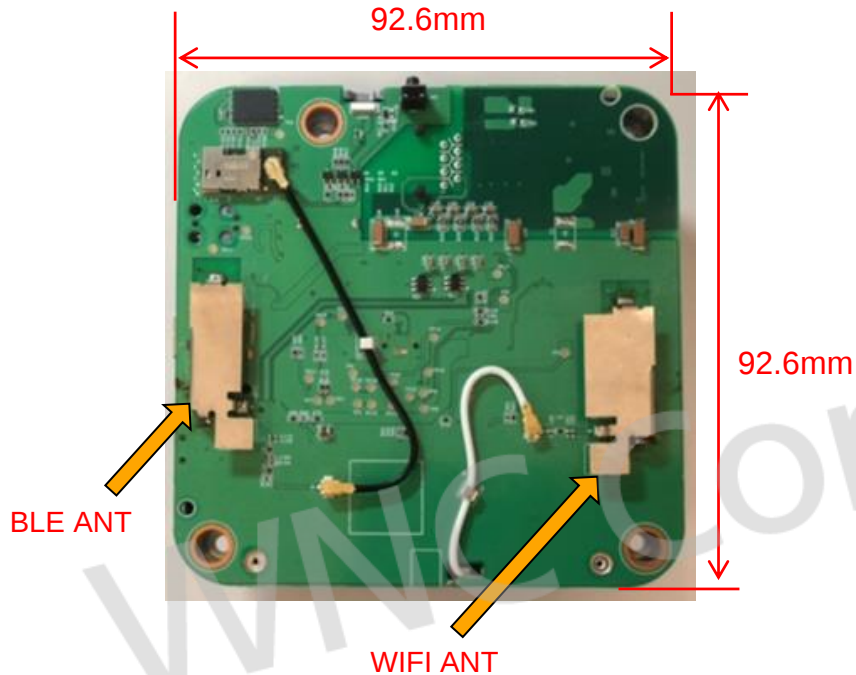
	Bottom metal housing
BLE	50%
WIFI_2GHz / 5GHz	50% / 60%

Peak gain

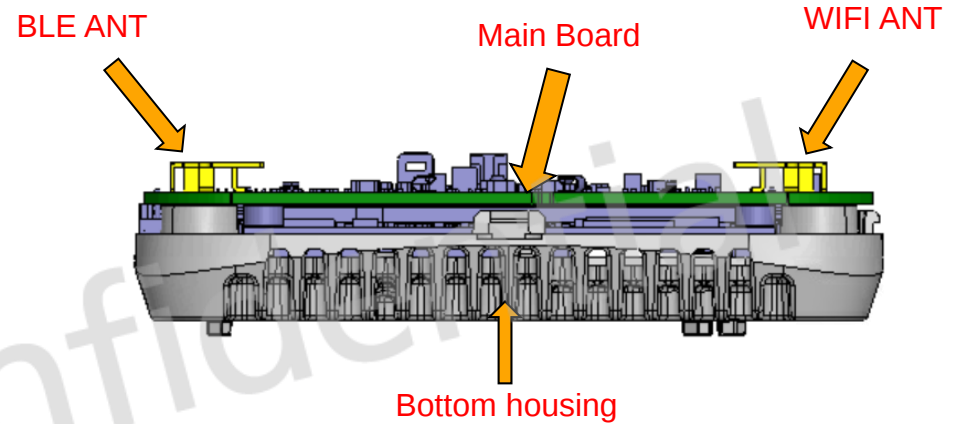
	Bottom metal housing
BLE	Max 1.9dBi
WIFI_2GHz / 5GHz	Max 2.6dBi / 4.8dBi



Antenna Placement for Free Space

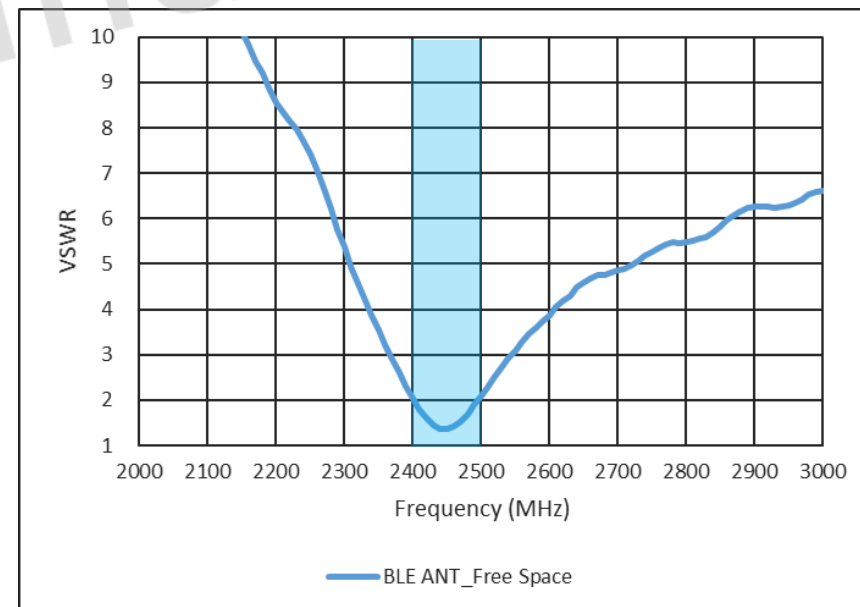
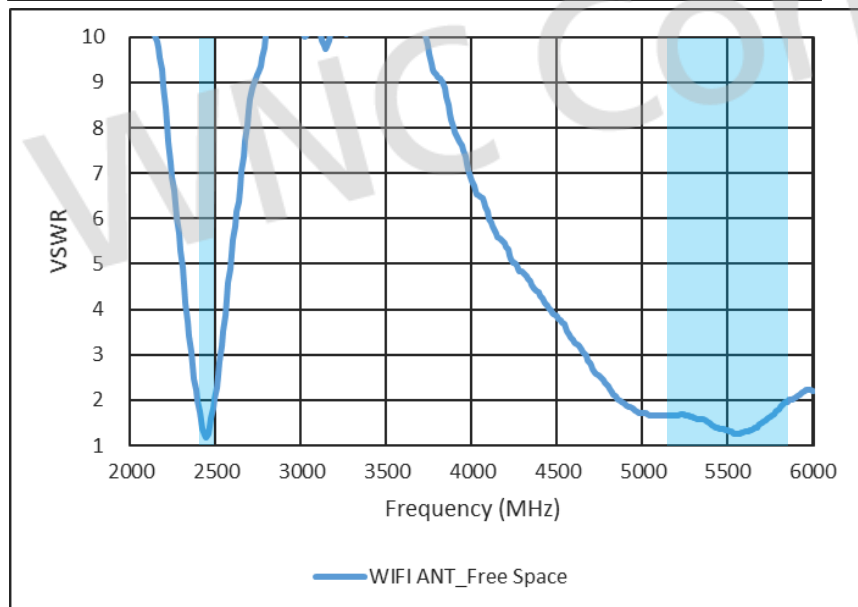
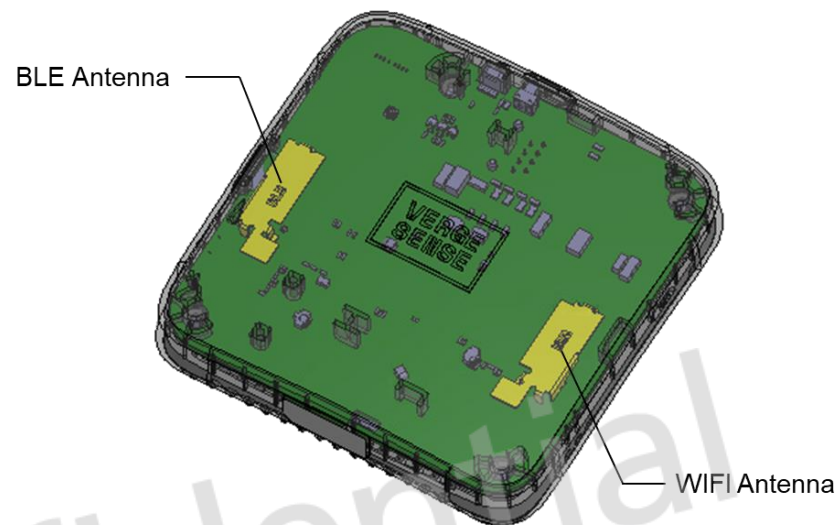
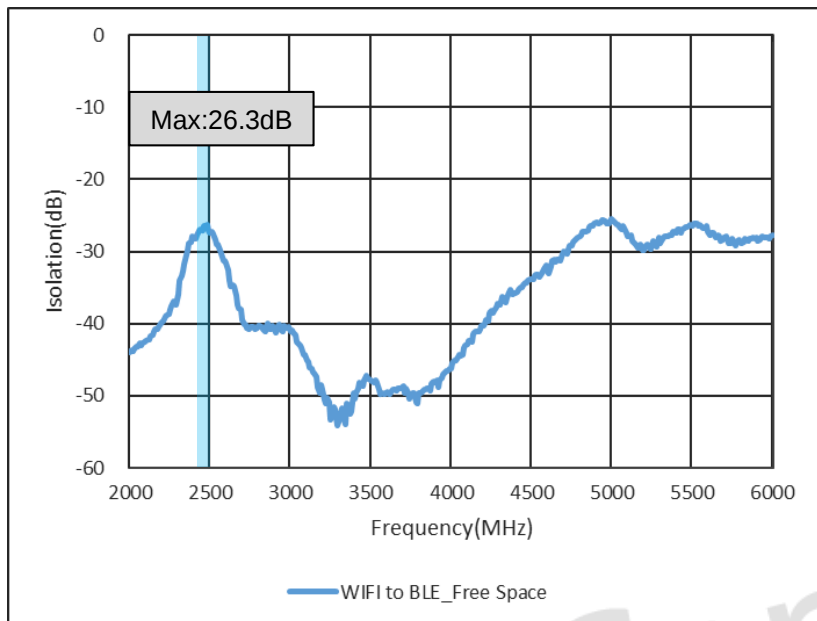


Main Board TOP View

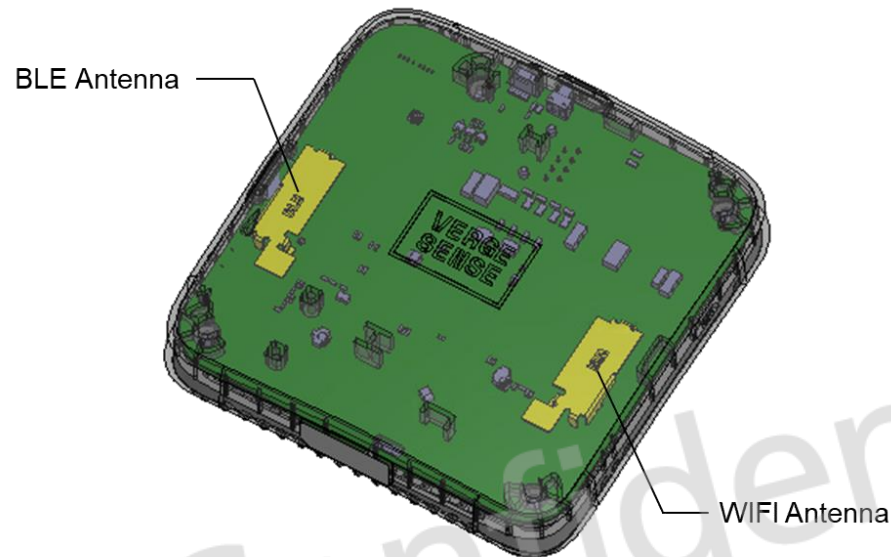


- WIFI metal antenna size : 33(L) x 12.5(W) x 3.65(H)mm³
- BLE metal antenna size : 33(L) x 11.6(W) x 3.65(H)mm³

VSWR & Isolation



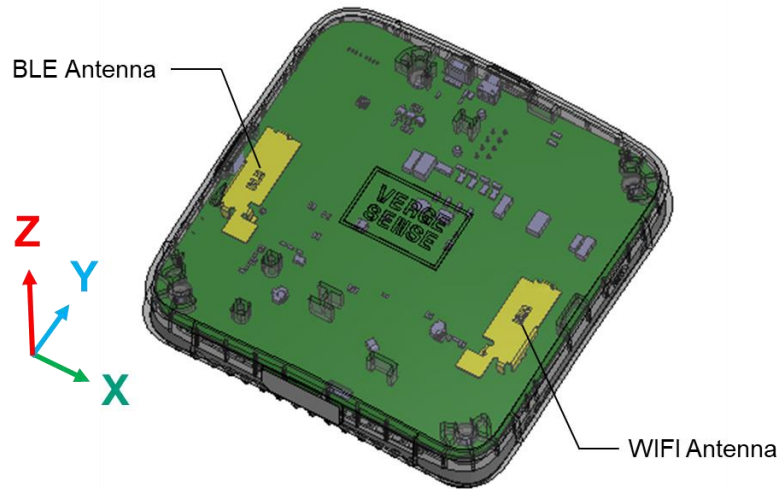
Efficiency



BLE_Free space	2400	2450	2500	avg.
Eff.	50.0%	56.7%	51.6%	52.8%
Eff. dB	-3.01	-2.47	-2.87	
Peak Gain	1.19	1.93	1.80	

WiFi_Free space	2400	2450	2500	avg.	5150	5350	5550	5750	5850	avg.
Eff.	51.8%	57.0%	52.5%	53.7%	63.7%	65.5%	66.0%	63.8%	60.4%	63.9%
Eff. dB	-2.86	-2.44	-2.80		-1.96	-1.84	-1.81	-1.95	-2.19	
Peak Gain	2.20	2.64	2.22		4.87	4.55	4.58	4.17	3.83	

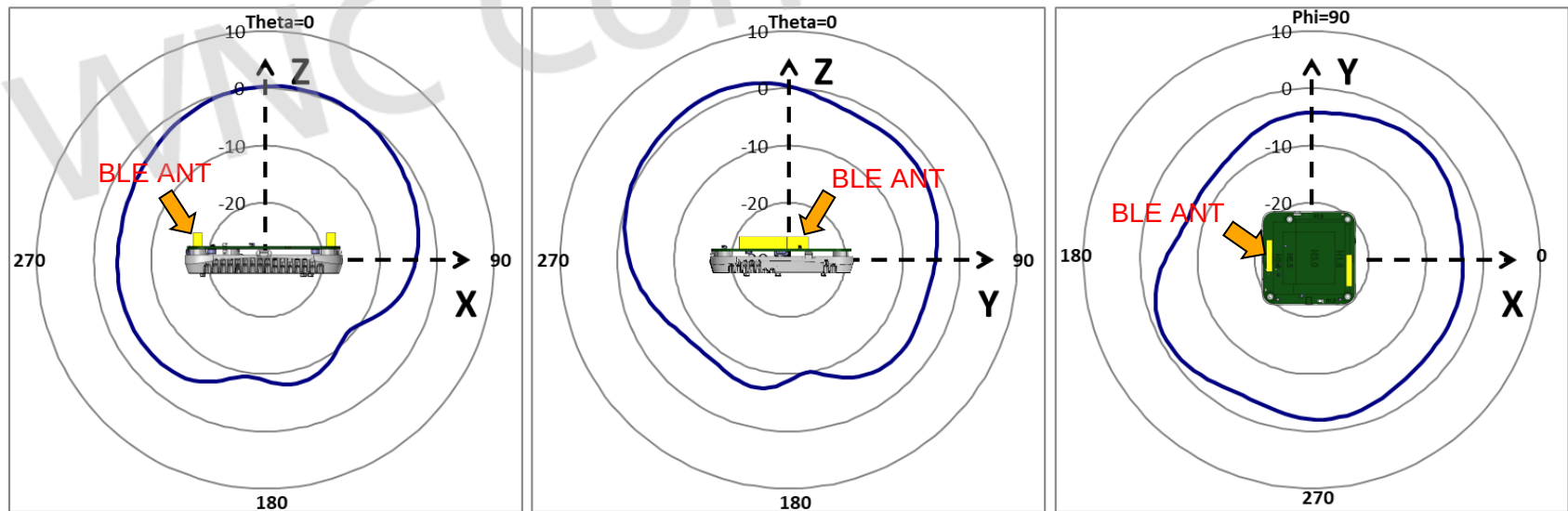
Radiation Pattern for BLE 2.4GHz



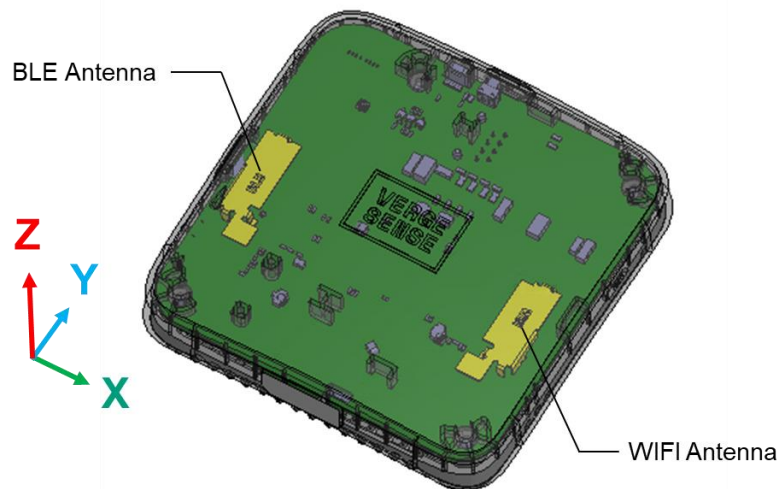
Measured with free space

2GHz Radiation Pattern

— BLE_Free Space



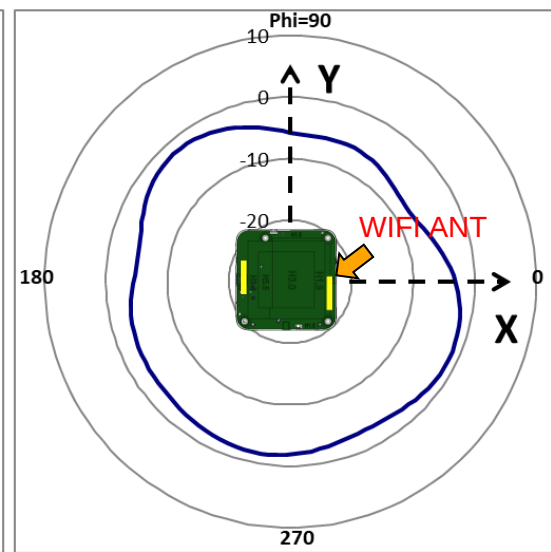
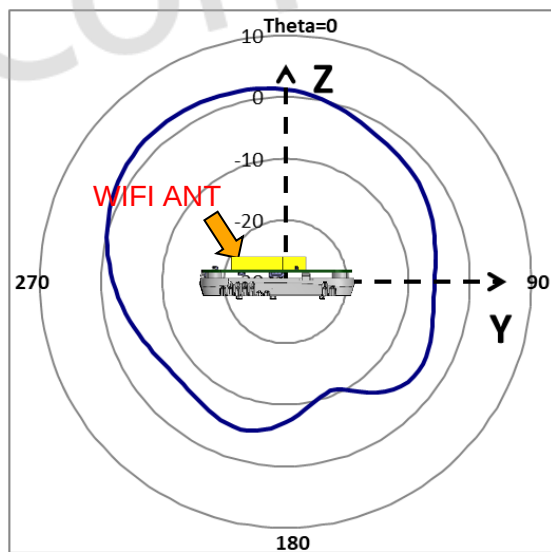
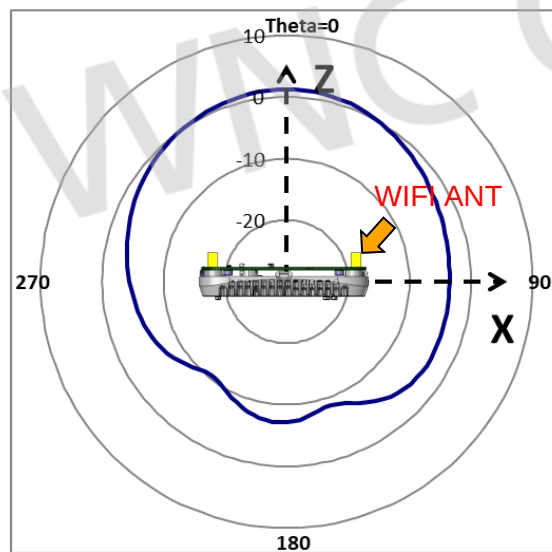
Radiation Pattern for WIFI 2.4GHz



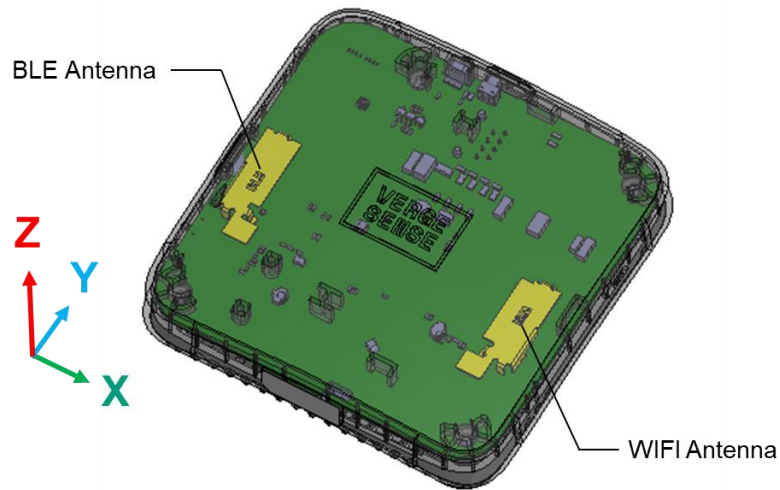
Measured with free space

2GHz Radiation Pattern

— WIFI_Free Space



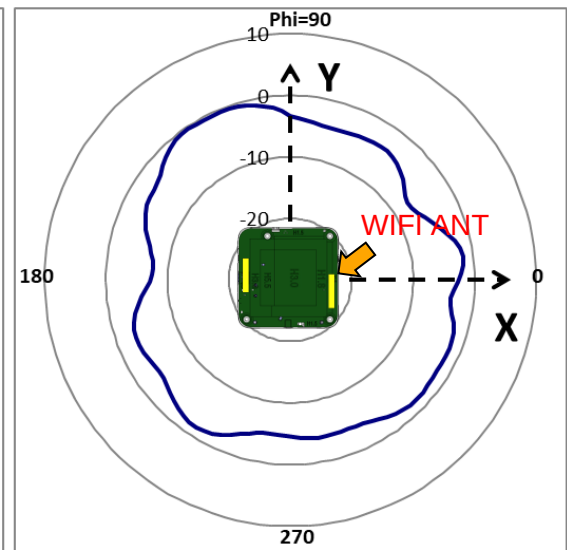
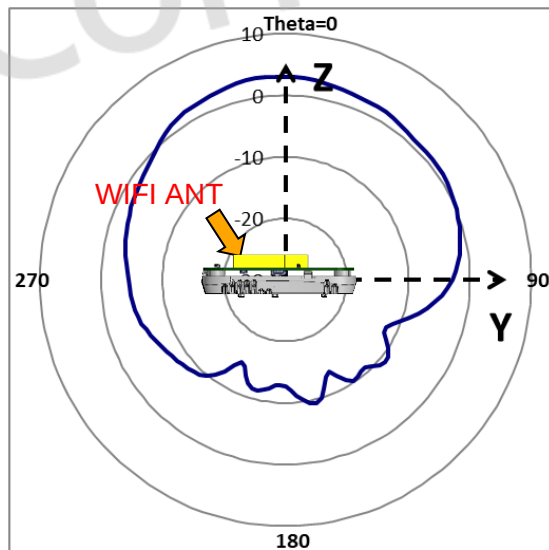
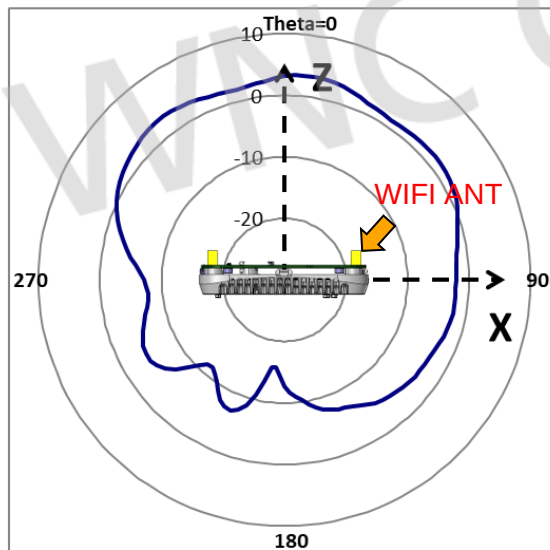
Radiation Pattern for WIFI 5GHz



Measured with free space

5GHz Radiation Pattern

— WIFI_Free Space



WNC

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