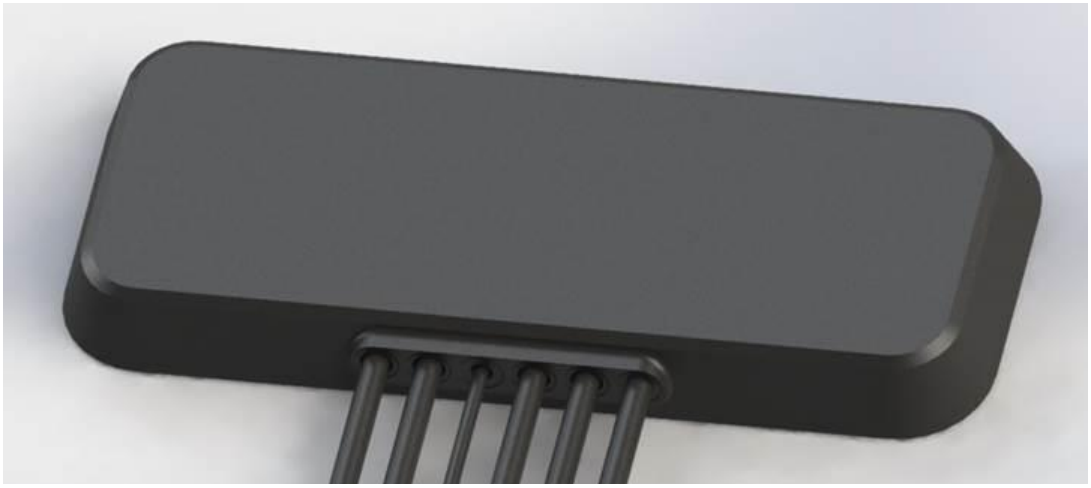
ADA-15WXYZ



Product Name: 15 Series_ 6 in 1 Adhesive Mount Combination Antenna

Part Number: MT-15B-AS-60101

Feature:

- 2*LTE, 3*WiFi, 1*GNSS Antenna Combination
- LTE 698-960MHz, 1710-2170MHz, 2300-2690MHz, 3300-3800MHz Supporting
- WiFi Dual Bands, 2400-2500MHz, 5150-5850MHz Supporting
- Adhesive Mounting, Direct Stick on Target Plate
- IP67 grade waterproof

Application:

- Vehicle Communication
- IoT Application
- Vending Machine Application

Specifications:

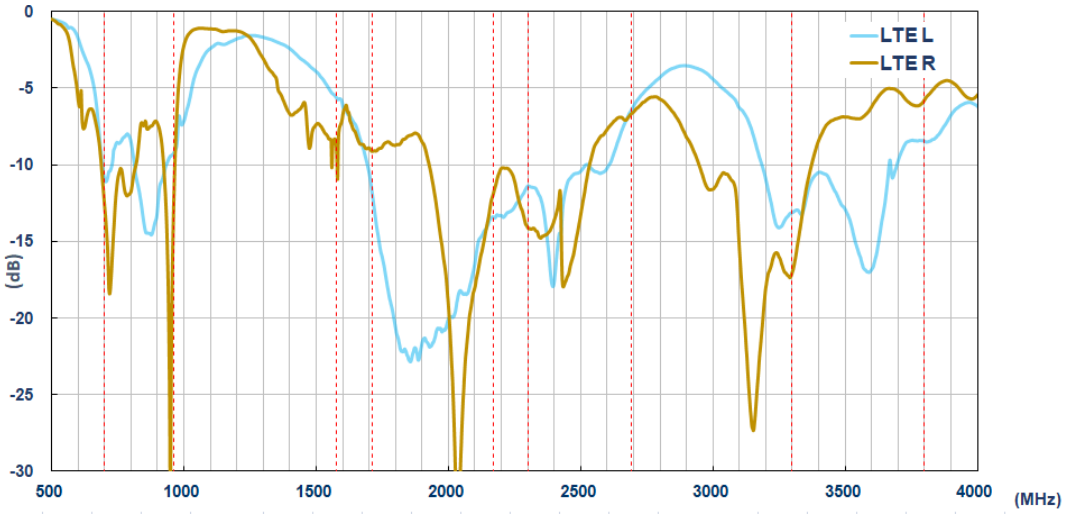
Category		Specifications		
GNSS Electrical Characteristics				
Polarization		R.H.C.P. (Right Handed Circular Polarization)		
Frequency (MHz)		1561	1575.42	1602
Output Impedance (Ω)		50		
V.S.W.R		≤ 2.0		
Gain @ Zenith (dBi)	1561 MHZ	1.0		
	1575.42 MHZ	1.7		
	1602 MHz	1.2		
Low Noise Amplifier				
Frequency (MHz)		1561 ~ 1602		
Gain @ Zenith (dB)	1561 MHZ	28 ± 3		
	1575.42 MHZ	28 ± 3		
	1602 MHz	28 ± 3		
Noise Figure (typical)		2.0 dB		
Operation Voltage (V)		3.0 ~ 5.0		
Current (mA)		8 ~ 13		
Output V.S.W.R		2.0 Max.		
Overall Specification (Through Patch and LNA)				
Frequency (MHz)		1561	1575.42	1602
Gain @ Zenith	1561 MHZ	29 ± 3		

	1575.42 MHZ	29.7 ± 3					
	1602 MHz	29.2 ± 3					
Output Impedance (Ω)		50					
V.S.W.R		2.0 Max.					
Operation Voltage (V)		3.0 ~ 5.0					
Current (mA)		8 ~ 13					
Cable / Connector		0.3 meter H-100 / SMA (Male)					
LTE Electrical Characteristics							
Application Band	LTE 700	GSM 850/900	DCS	PCS	UMTS1	LTE 2600	5G NR Band
Frequency (MHz)	698~824	824~960	1710~1880	1850~1990	1920~2170	2300~2690	3300~3600
Efficiency (%)							
LTE MIMO1	56.76	61.23	71.80	79.70	68.80	68.00	63.30
LTE MIMO2	54.20	69.40	66.60	78.72	72.30	65.70	57.60
Average Gain (dBi)							
LTE MIMO1	-2.45	-2.13	-1.40	-0.98	-1.62	-1.67	-2.00
LTE MIMO2	-2.66	-1.58	-1.76	-1.03	-1.40	-1.80	-2.50
Peak Gain (dBi)							
LTE MIMO1	1.66	2.56	3.00	3.50	2.50	2.45	3.40
LTE MIMO2	2.00	3.40	2.80	4.44	3.80	3.50	2.30
V.S.W.R	< 3						
Return Loss (dB)	< -5						
Cable / Connector	0.3 meter LMR-200 / SMA (Male)						
WiFi Electrical Characteristics							
Frequency (MHz)	2400	2450	2500	5150	5350	5750	5850
Efficiency (%)							
WiFi MIMO1	66.00	73.60	74.20	84.40	77.20	67.70	59.63
WiFi MIMO2	60.74	64.67	62.09	62.34	57.05	46.22	45.60
WiFi MIMO3	51.65	57.70	62.36	44.21	54.60	56.54	51.52

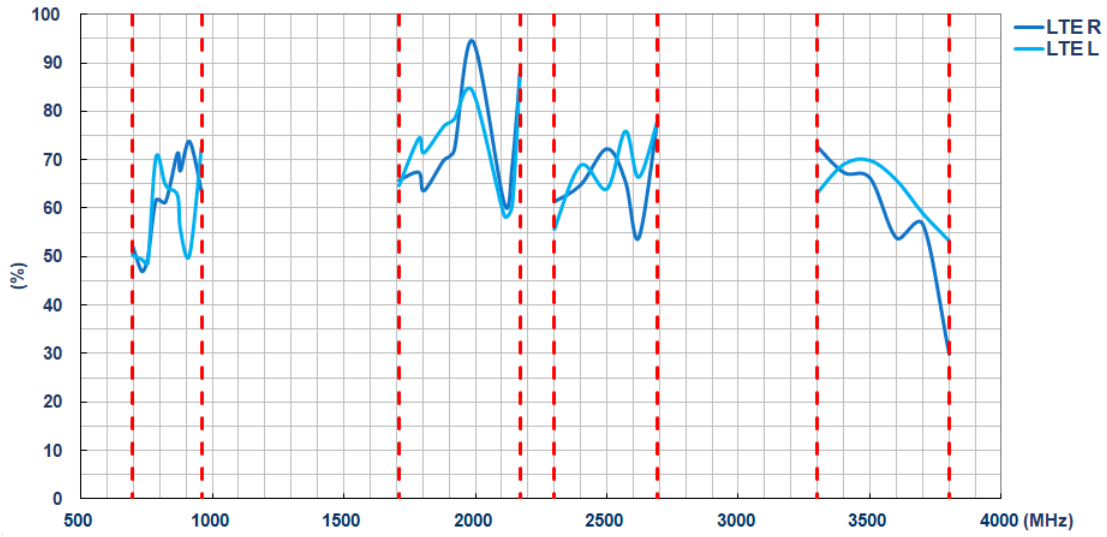
Average Gain (dBi)							
WiFi MIMO1	-1.80	-1.33	-1.92	-0.73	-1.12	-1.69	-2.25
WiFi MIMO2	-2.17	-1.89	-2.01	-2.05	-2.44	-3.35	-3.41
WiFi MIMO3	-2.87	-2.39	-2.05	-3.54	-2.63	-2.48	-2.90
Peak Gain (dBi)							
WiFi MIMO1	3.90	5.27	3.10	4.65	5.20	4.11	3.98
WiFi MIMO2	3.99	4.14	3.44	2.60	2.55	1.24	1.05
WiFi MIMO3	2.39	2.53	2.70	4.31	5.35	5.40	5.24
V.S.W.R	< 3						
Return Loss (dB)	< -5						
Cable and Connector							
Cable / Connector	0.3 meter LMR-200 / SMA (Male)						
Physical Condition							
Dimension (mm)	170.34(L) x 70.34(W) x 15.4(T)						
Environmental Conditions							
Operation Temperature	-40 ~ +85 $_{o}$C						
Storage Temperature	-40 ~ +85 $_{o}$C						
Waterproof Resistant	IP67						
Relative Humidity	95% non-condensing						

I. Antenna Technical Parameters:

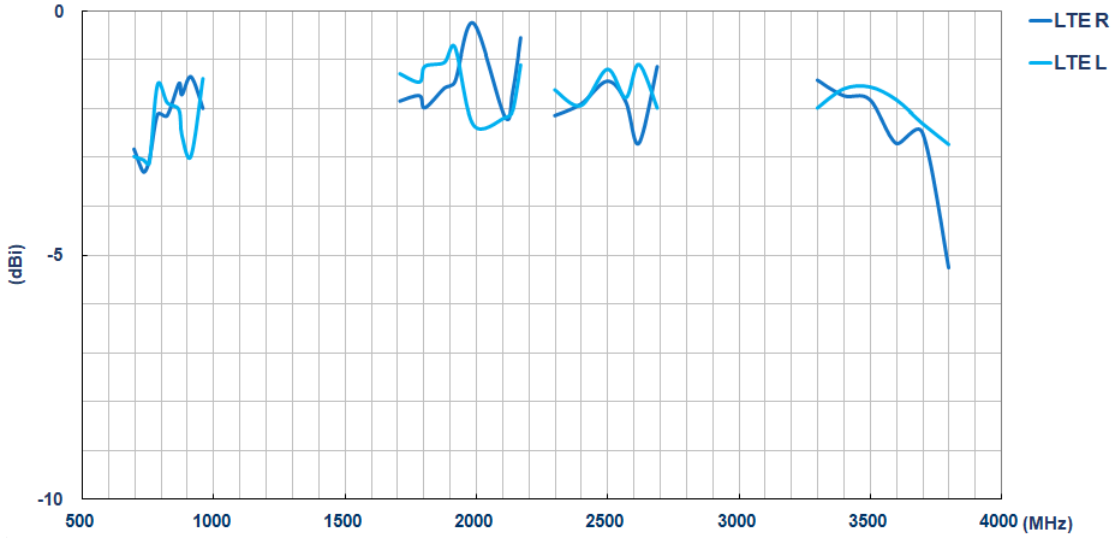
S11 (dB) - LTE



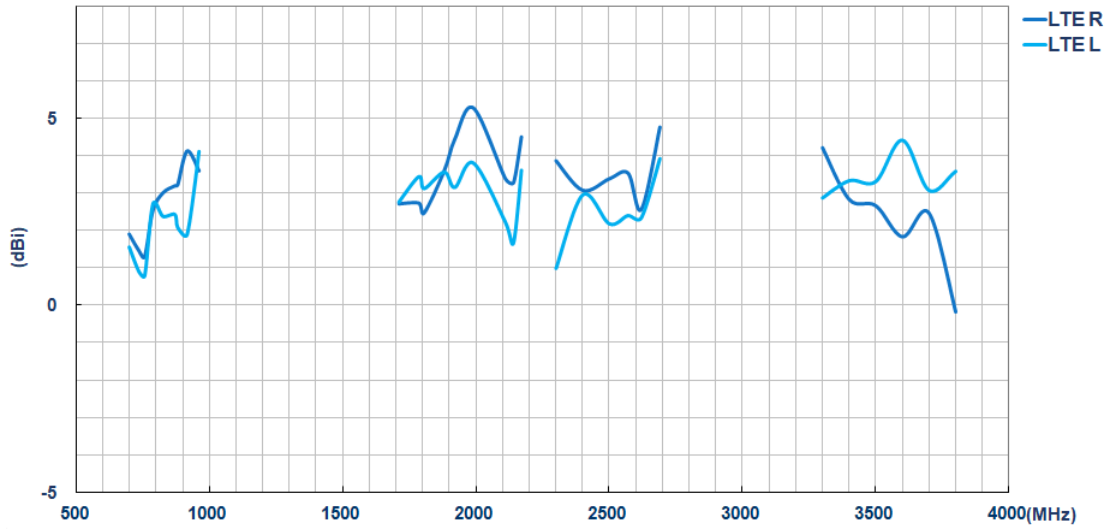
Efficiency (%) – LTE



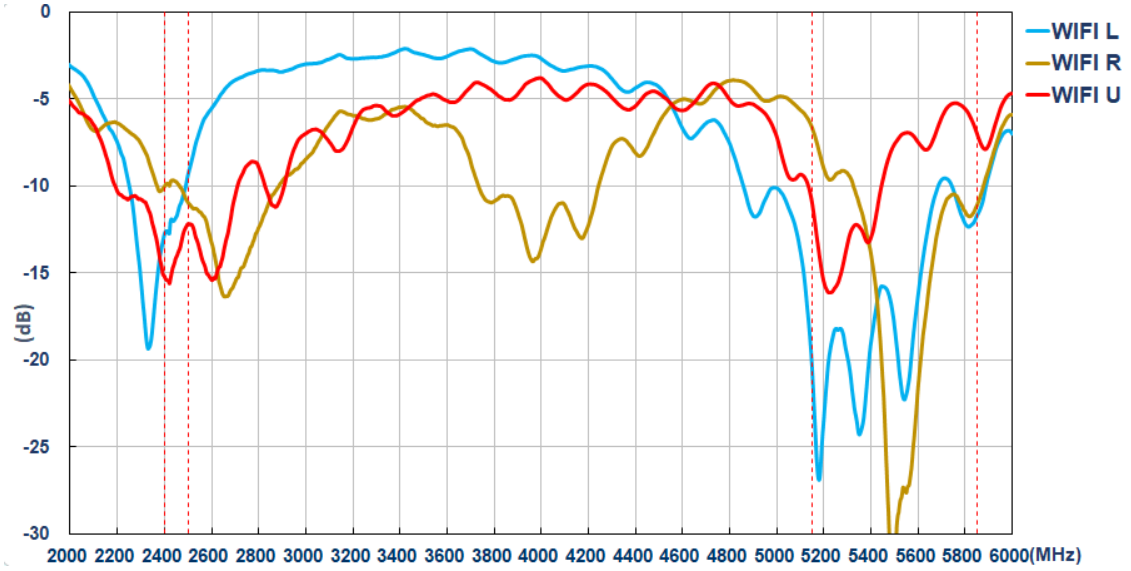
Average Gain (dBi) – LTE



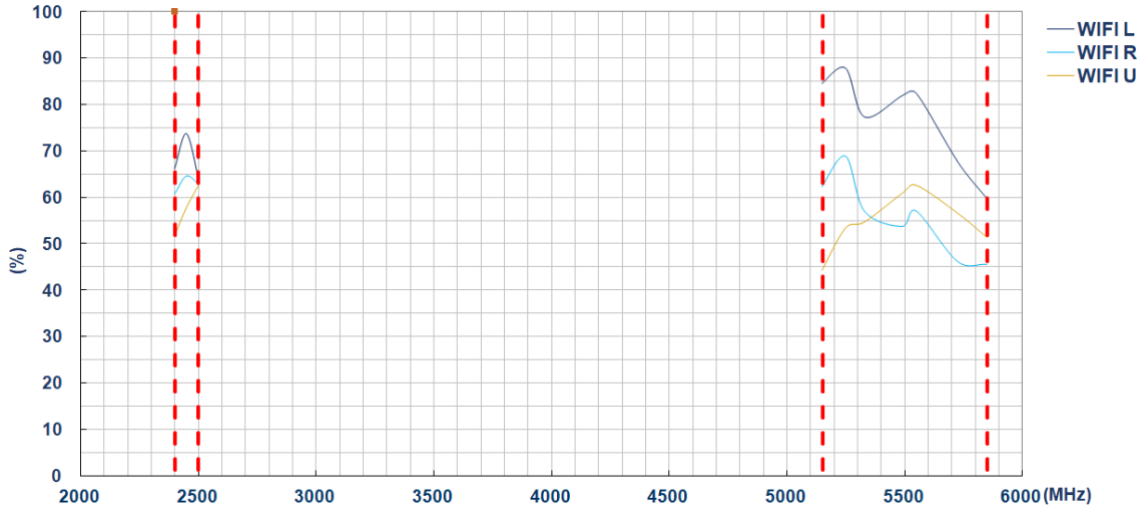
Peak Gain (dBi) – LTE



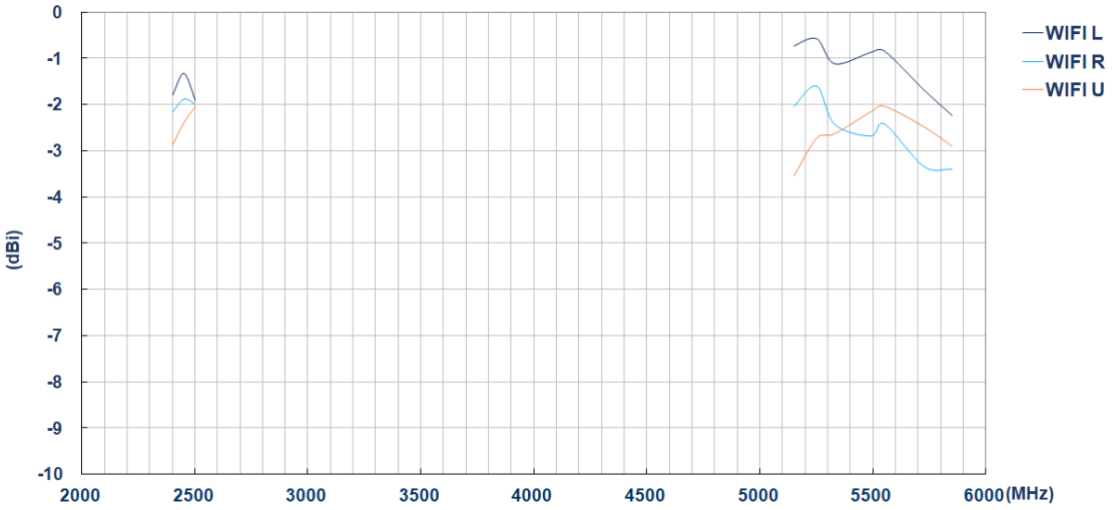
S11 (dB) - WiFi



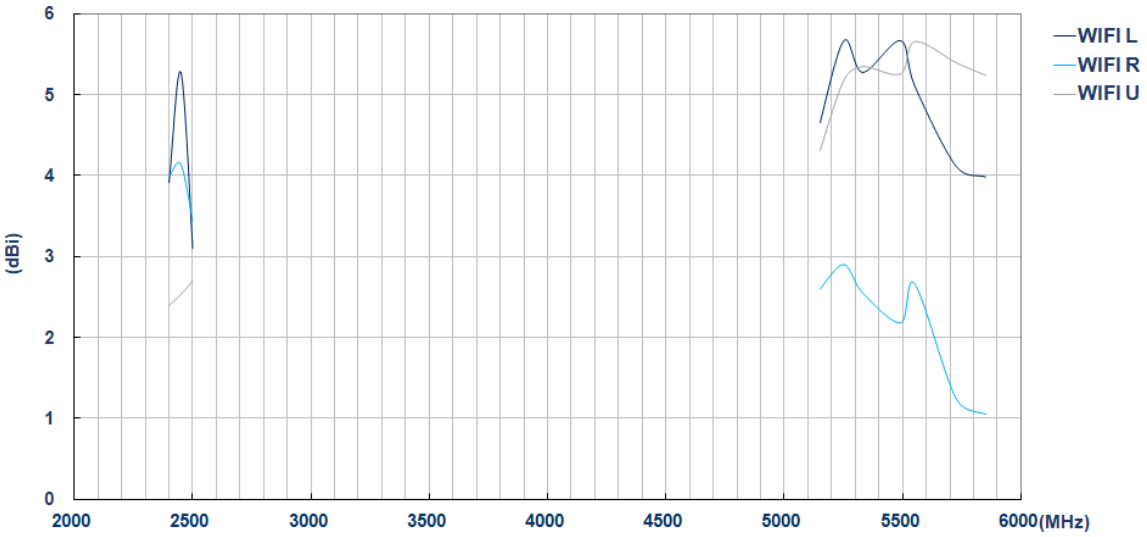
Efficiency (%) – WiFi



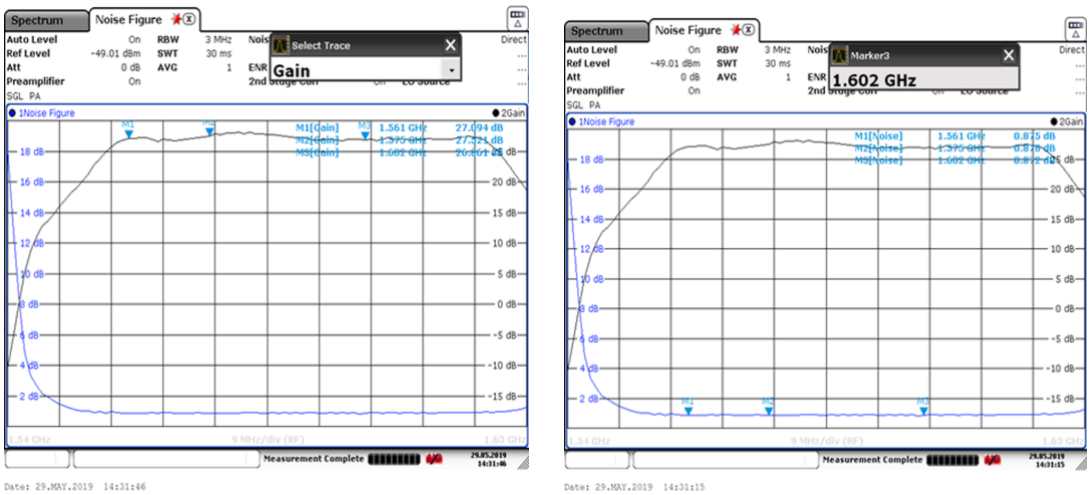
Average Gain (dBi) – WiFi



Peak Gain (dBi) – WiFi MIMO1



LNA – N.F Measurement

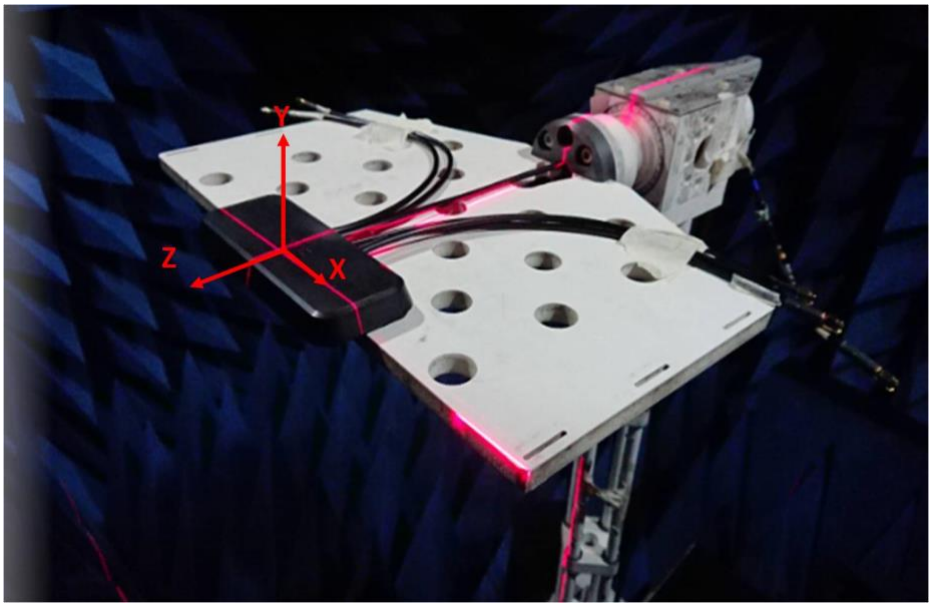


Frequency (MHz)	Gain (dB)	Noise (dB)
1561	27.094	0.875
1575	27.521	0.878
1602	26.861	0.872

II. Antenna Radiation Pattern Measurement:

The antenna radiation patterns were measured in Anechoic Chamber.

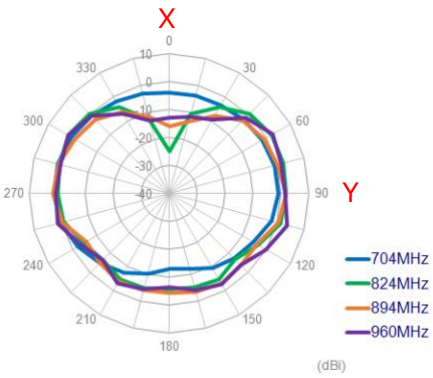
The measurement setup as below,

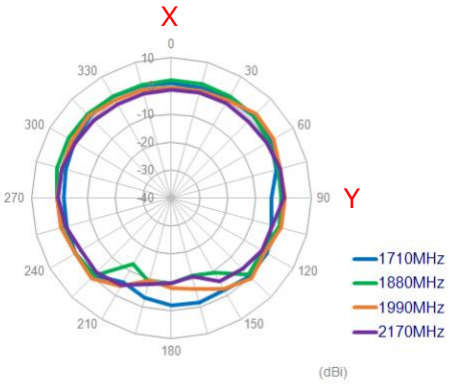


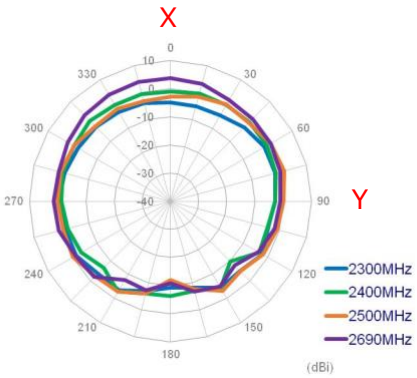
III. 2D Radiation Pattern:

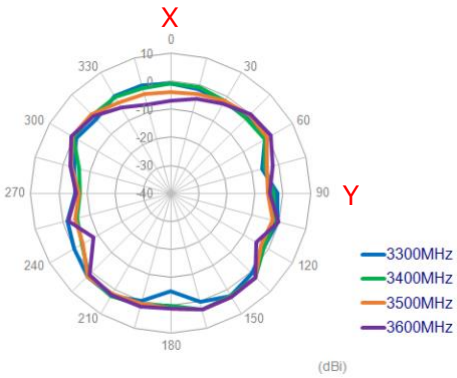
LTE MIMO1

X-Y Plane

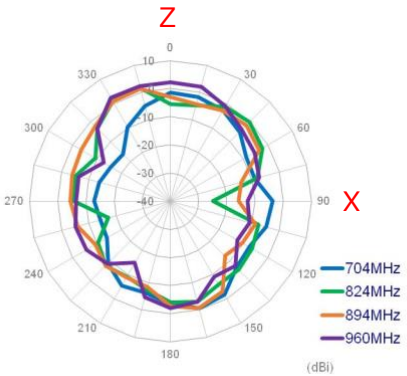


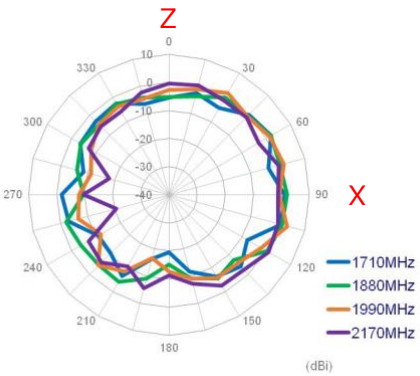


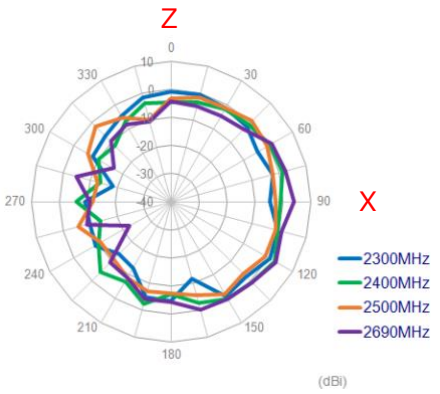


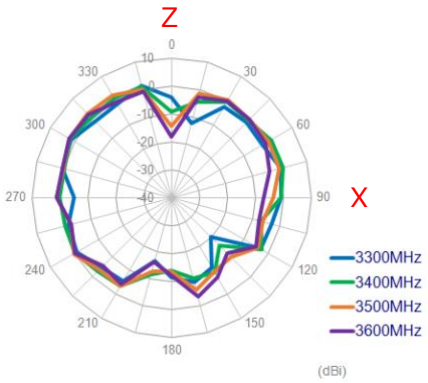


X-Z Plane

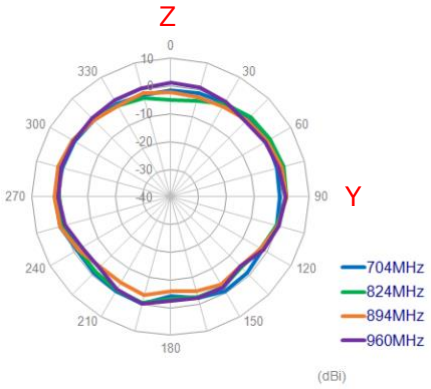


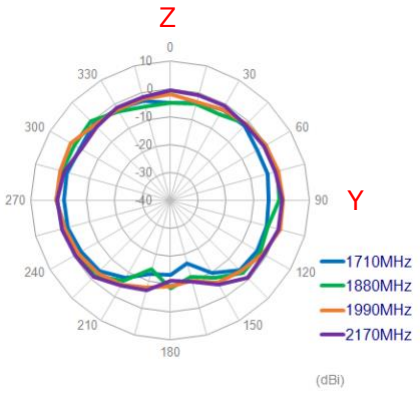


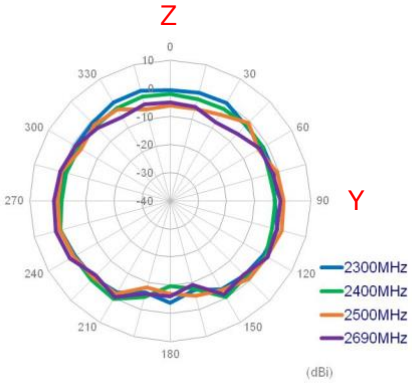

Z
X
2300MHz
2400MHz
2500MHz
2690MHz
(dBi)

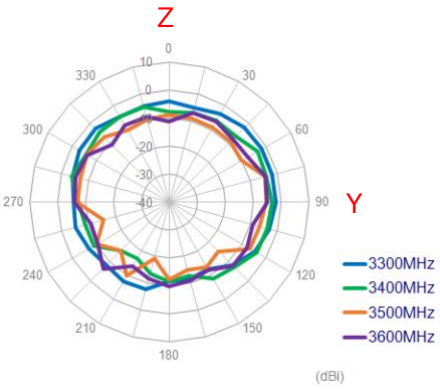

Z
X
3300MHz
3400MHz
3500MHz
3600MHz
(dBi)

Y-Z Plane


Z
Y
704MHz
824MHz
894MHz
960MHz
(dBi)

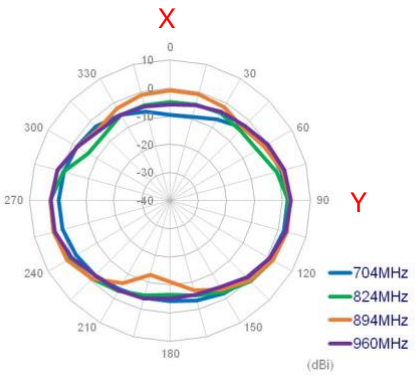

Z
Y
1710MHz
1880MHz
1990MHz
2170MHz
(dBi)

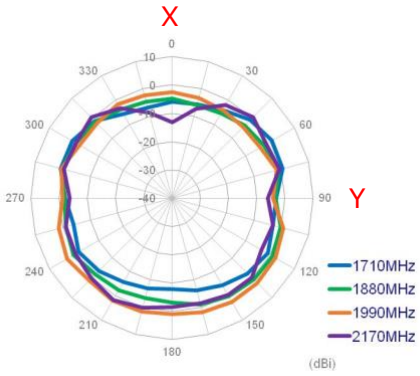

Z
Y
2300MHz
2400MHz
2500MHz
2690MHz
(dBi)

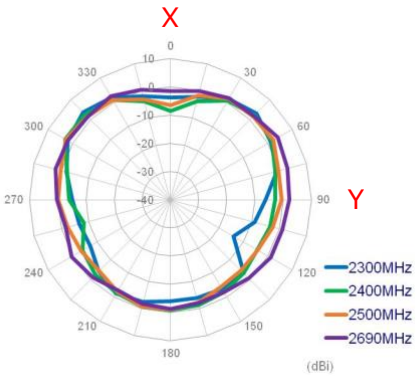

Z
Y
3300MHz
3400MHz
3500MHz
3600MHz
(dBi)

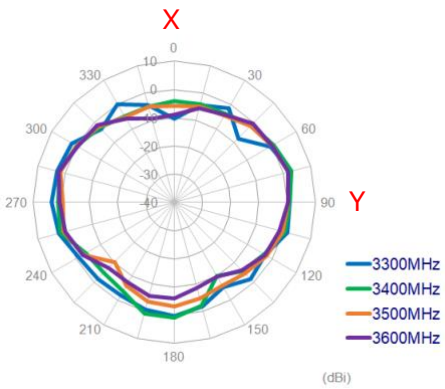
LTE MIMO2

X-Y Plane

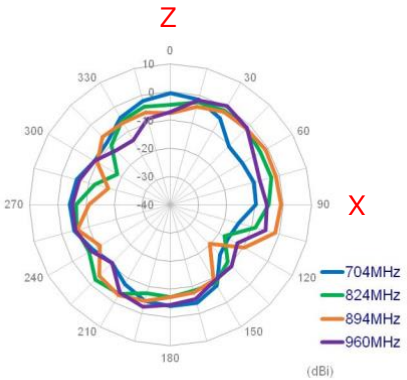


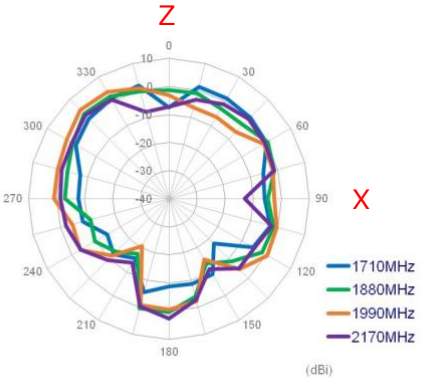


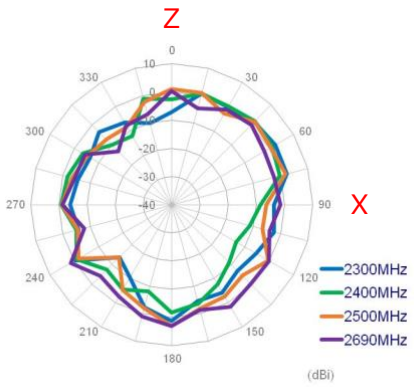


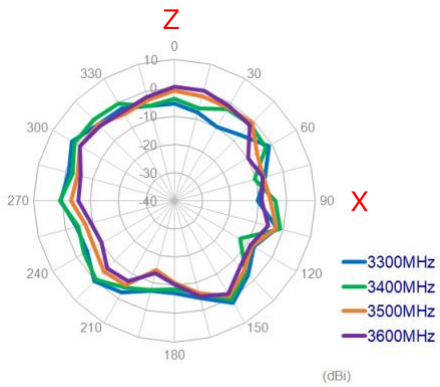


X-Z Plane

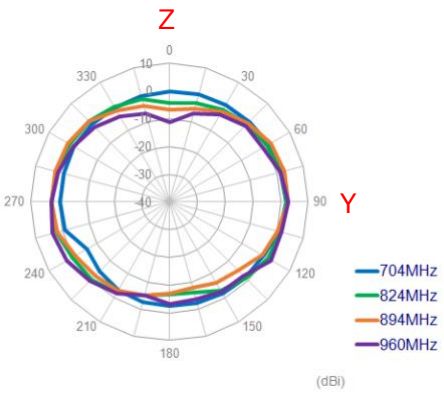


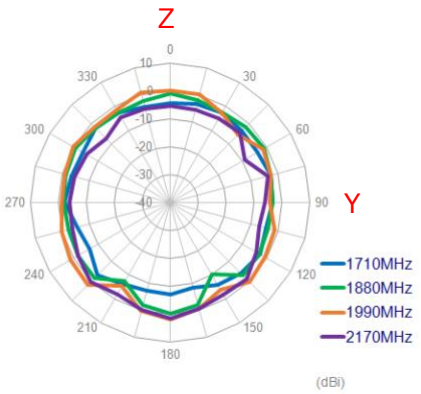


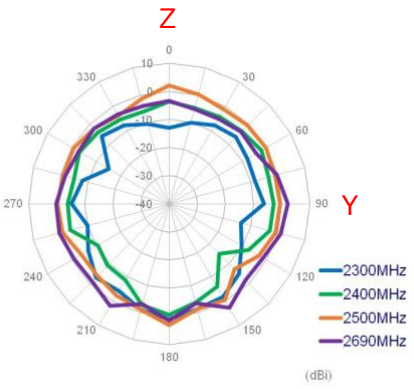

Z
X
2300MHz
2400MHz
2500MHz
2690MHz
(dBi)

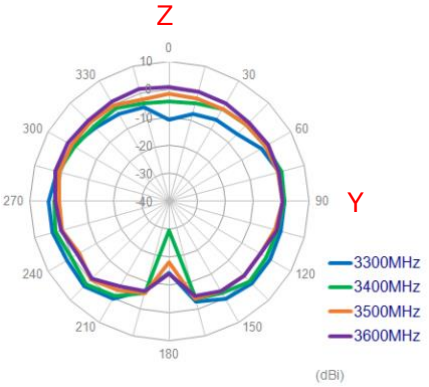

Z
X
3300MHz
3400MHz
3500MHz
3600MHz
(dBi)

Y-Z Plane


Z
Y
704MHz
824MHz
894MHz
960MHz
(dBi)

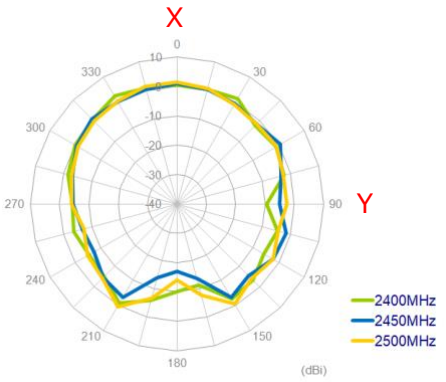

Z
Y
1710MHz
1880MHz
1990MHz
2170MHz
(dBi)

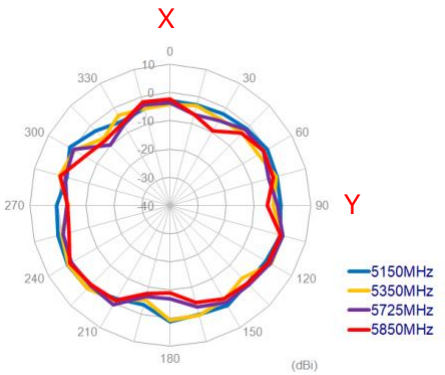

Z
Y
2300MHz
2400MHz
2500MHz
2690MHz
(dBi)


Z
Y
3300MHz
3400MHz
3500MHz
3600MHz
(dBi)

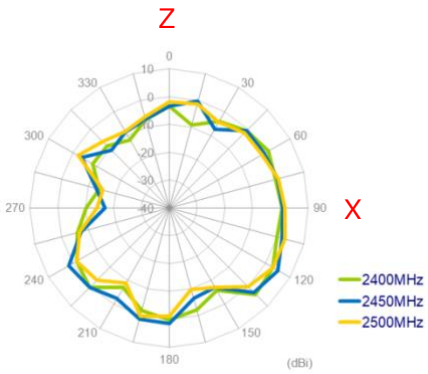
WiFi MIMO1

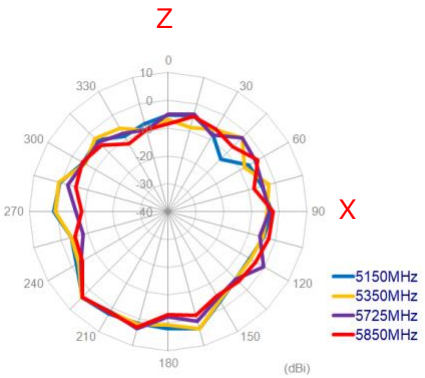
X-Y Plane



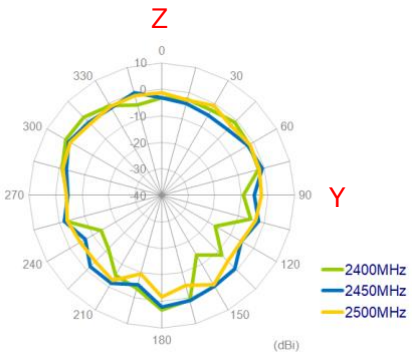


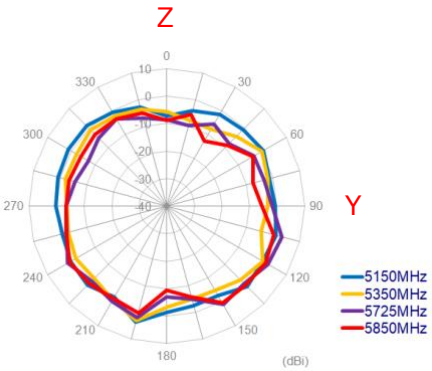
X-Z Plane





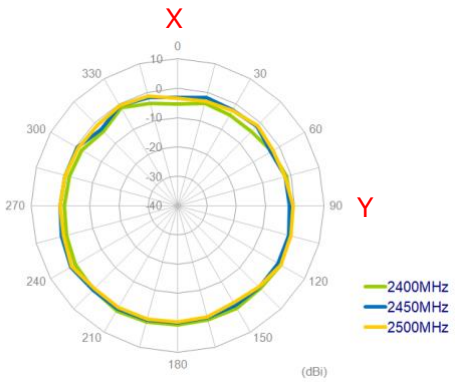
Y-Z Plane

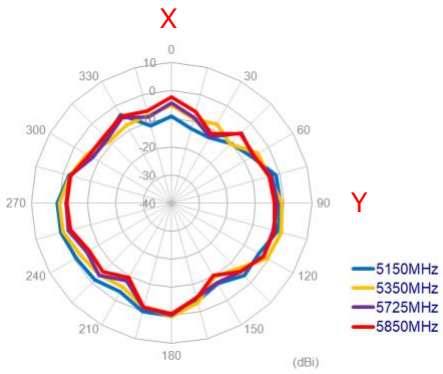




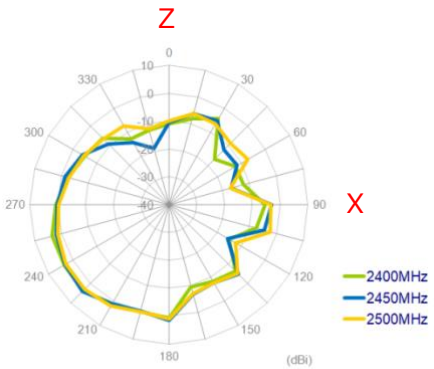
WiFi MIMO2

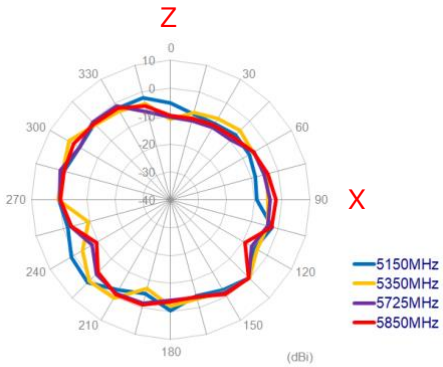
X-Y Plane



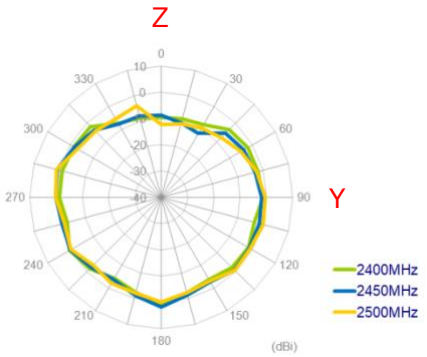


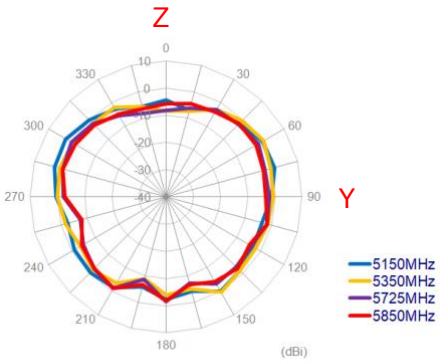
X-Z Plane





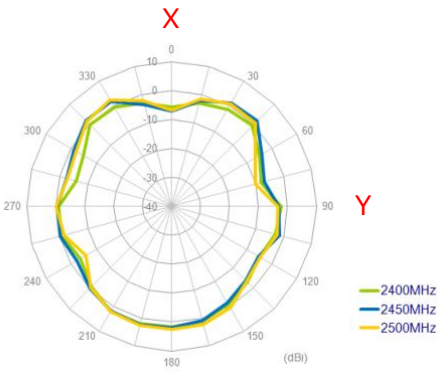
Y-Z Plane

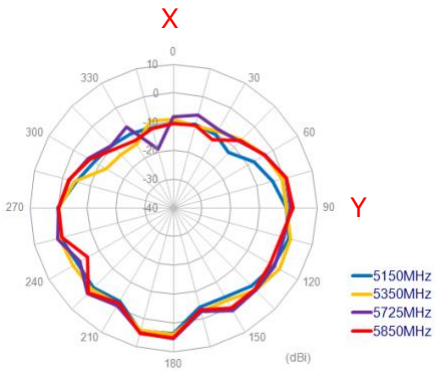




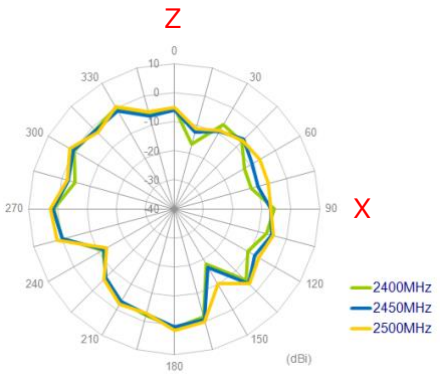
WiFi MIMO3

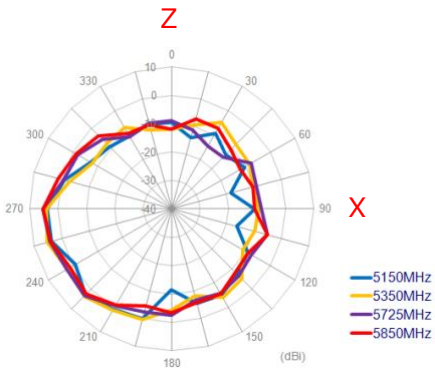
X-Y Plane



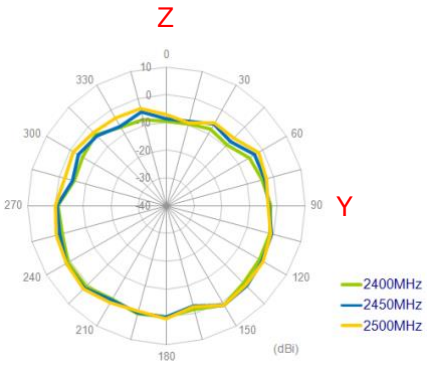


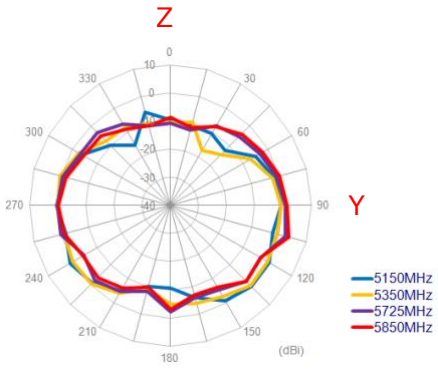
X-Z Plane





Y-Z Plane

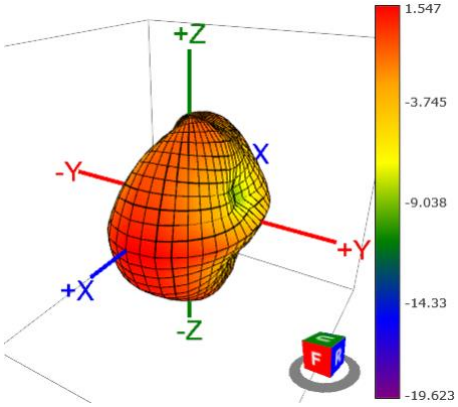




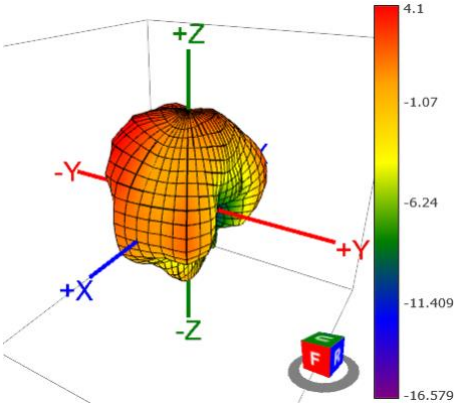
IV. 3D Radiation Pattern:

LTE MIMO1

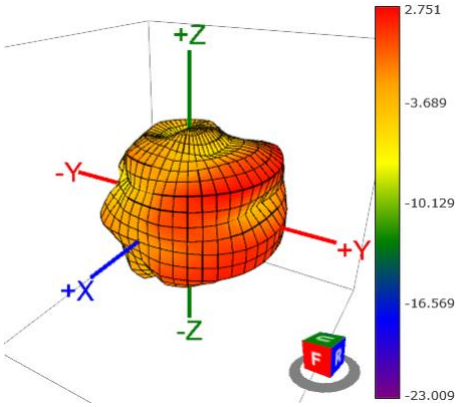
704MHz (dBi)



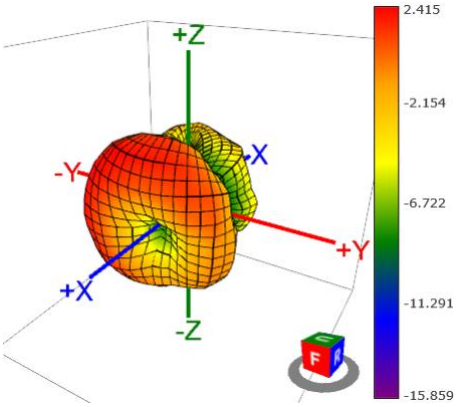
960MHz (dBi)



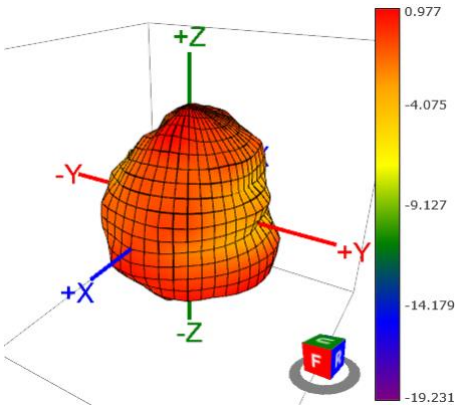
1710MHz (dBi)



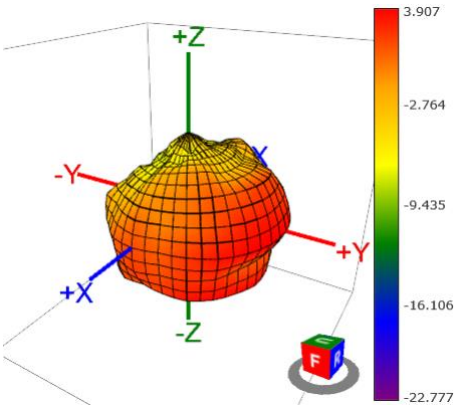
2170MHz (dBi)



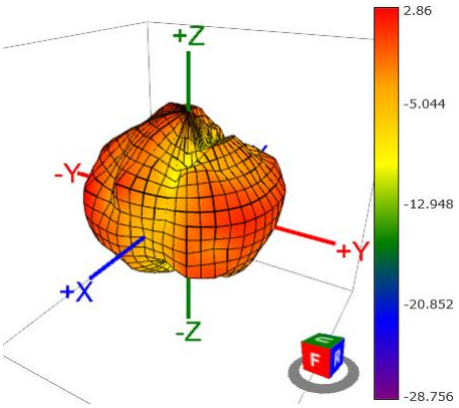
2300MHz (dBi)



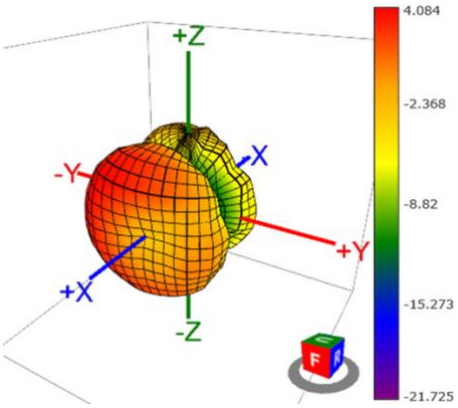
2690MHz (dBi)



3300MHz (dBi)

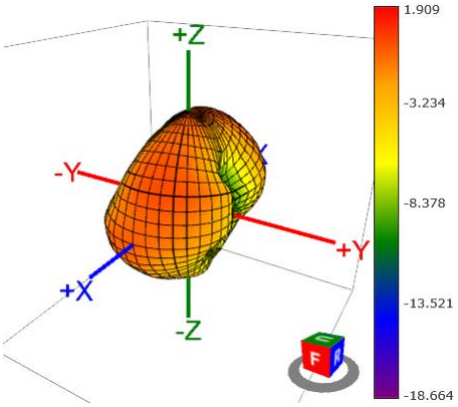


3600MHz (dBi)

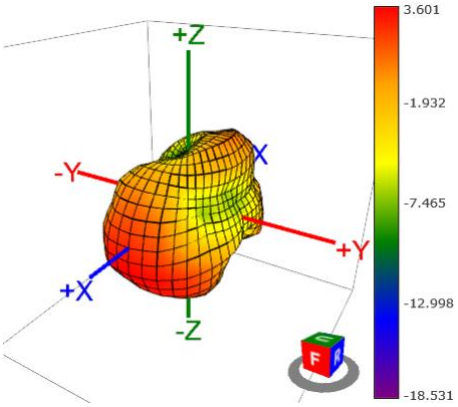


LTE MIMO2

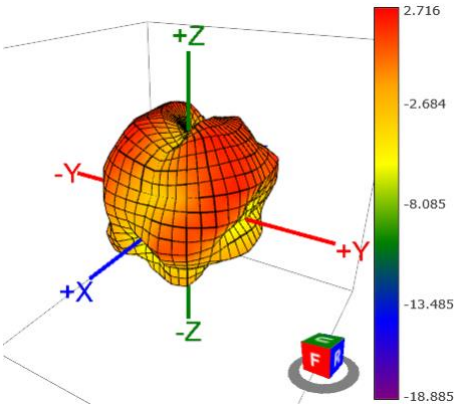
704MHz (dBi)



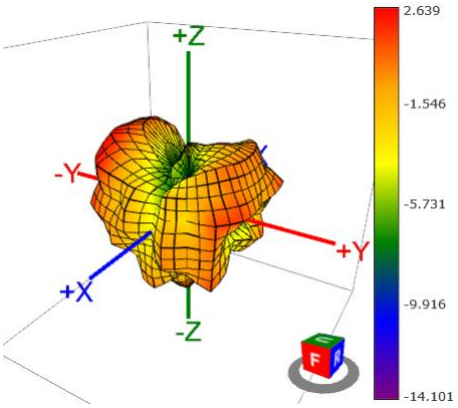
960MHz (dBi)



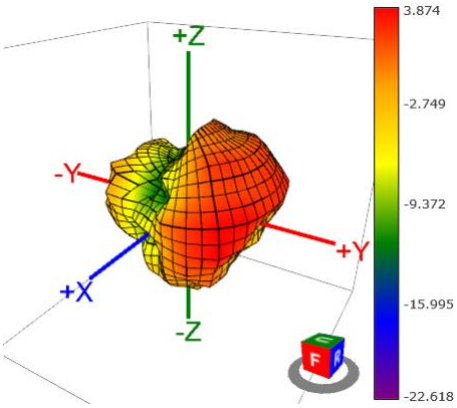
1710MHz (dBi)



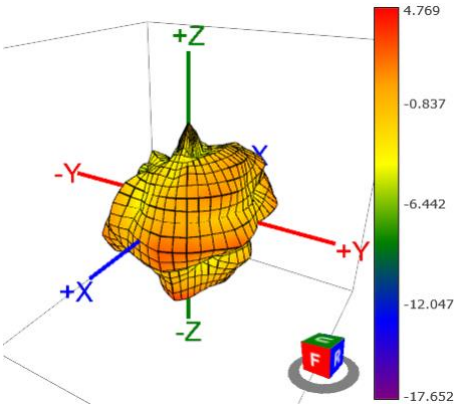
2170MHz (dBi)



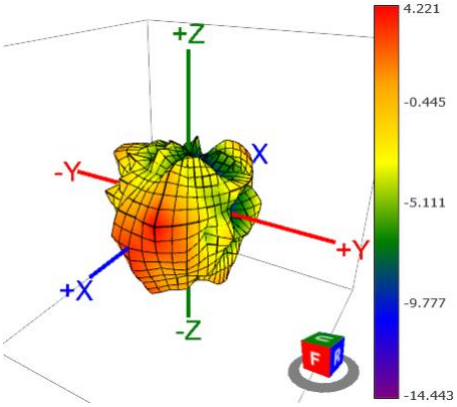
2300MHz (dBi)



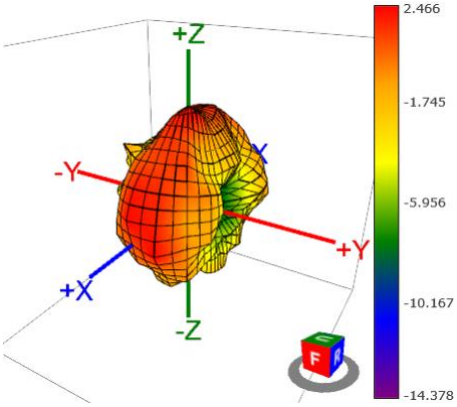
2690MHz (dBi)



3300MHz (dBi)

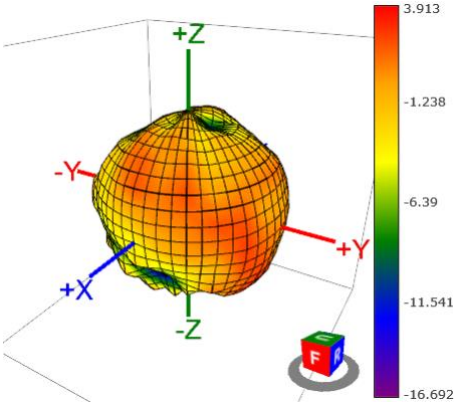


3600MHz (dBi)

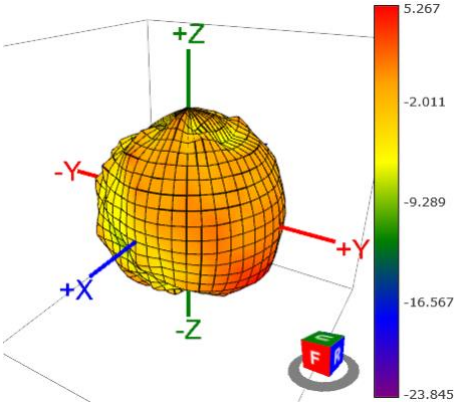


WiFi MIMO1

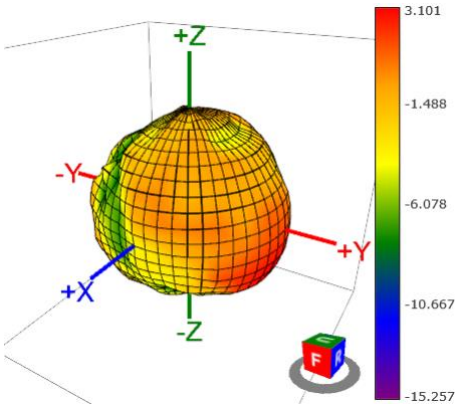
2400MHz (dBi)



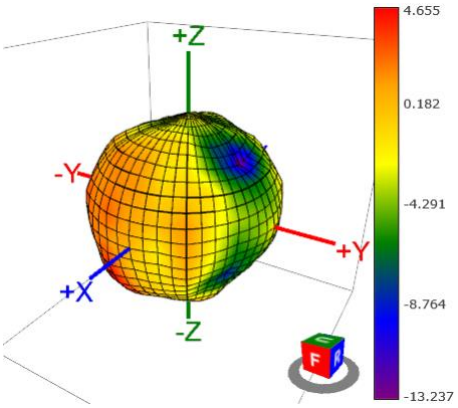
2450MHz (dBi)



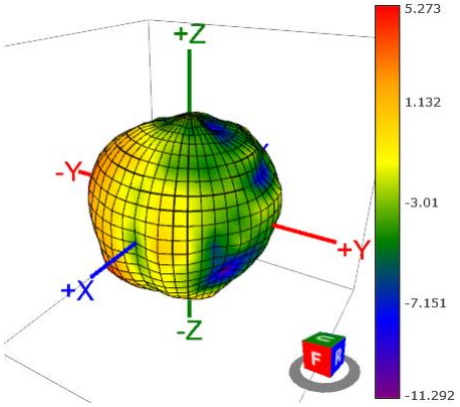
2500MHz (dBi)



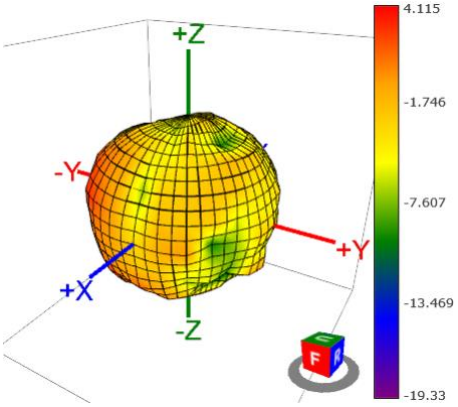
5150MHz (dBi)



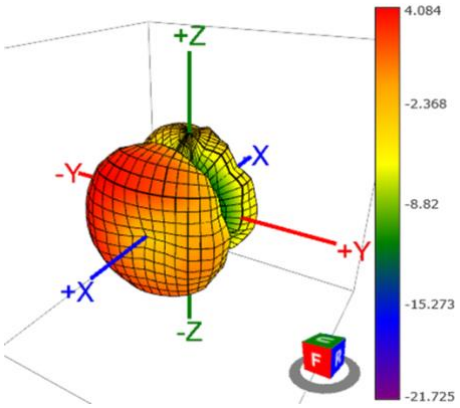
5350MHz (dBi)



5750MHz (dBi)

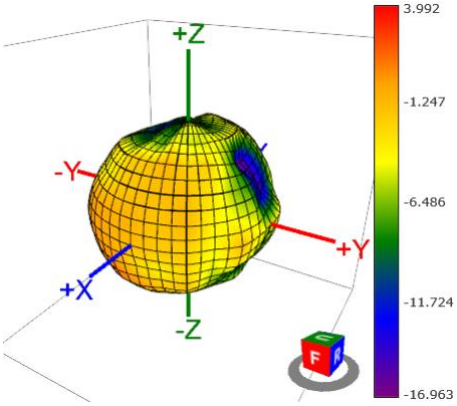


5850MHz (dBi)

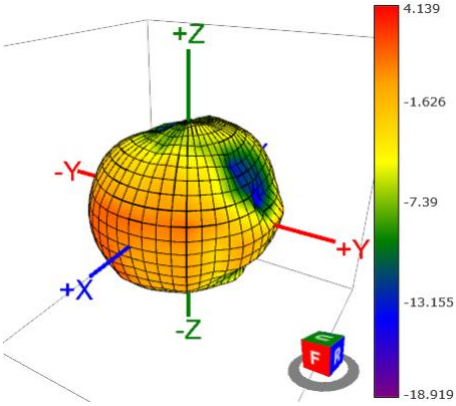


WiFi MIMO2

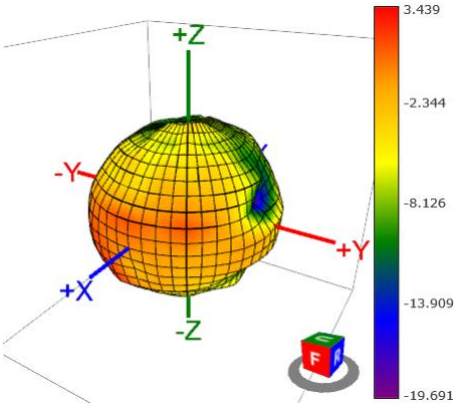
2400MHz (dBi)



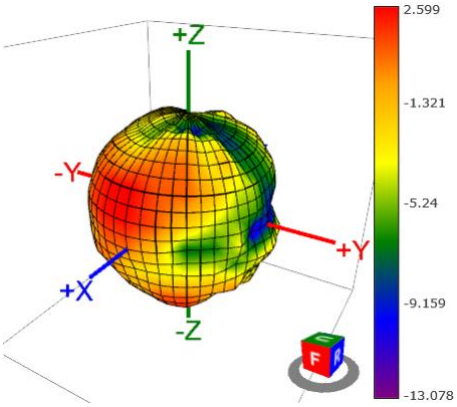
2450MHz (dBi)



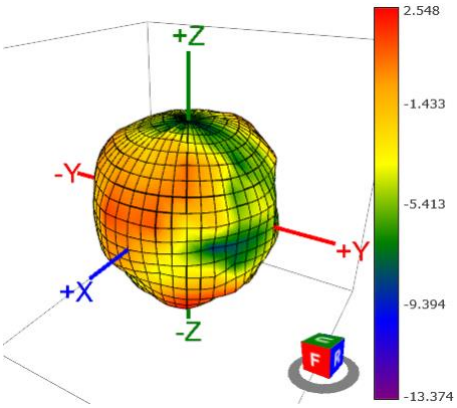
2500MHz (dBi)



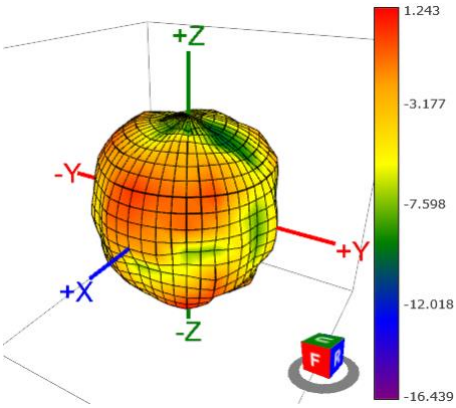
5150MHz (dBi)



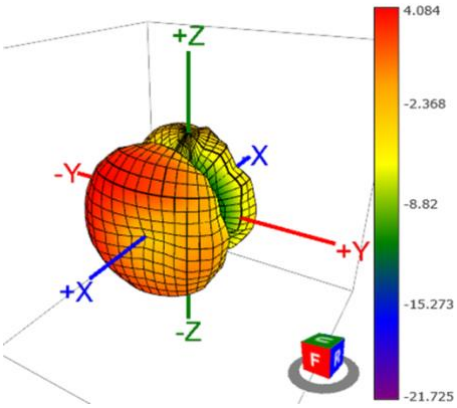
5350MHz (dBi)



5750MHz (dBi)

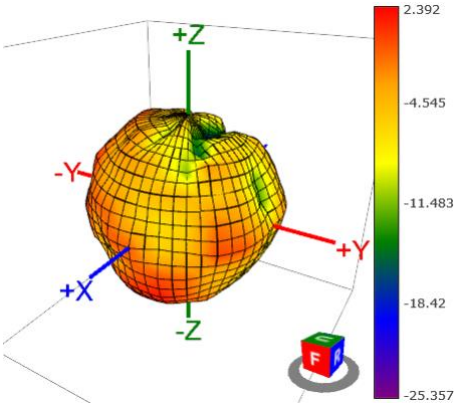


5850MHz (dBi)

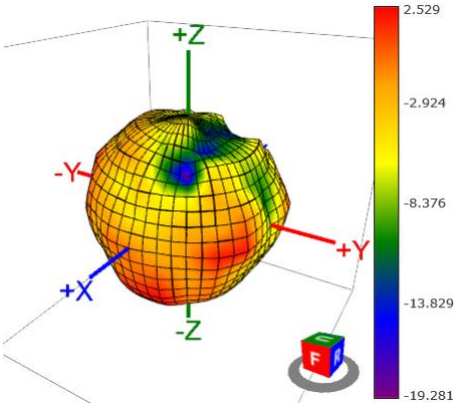


WiFi MIMO3

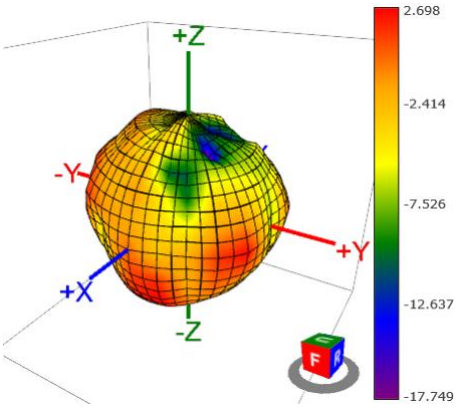
2400MHz (dBi)



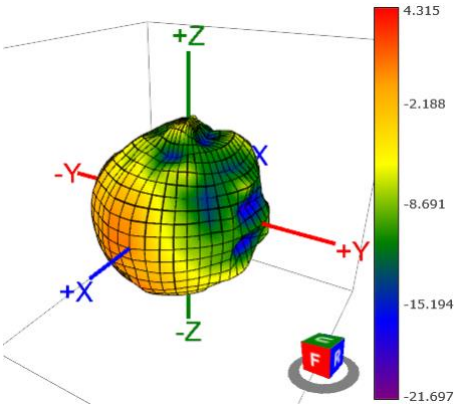
2450MHz (dBi)



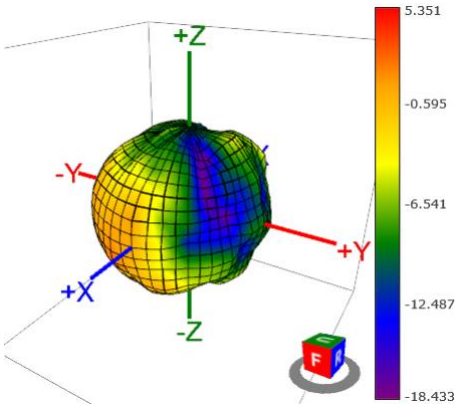
2500MHz (dBi)



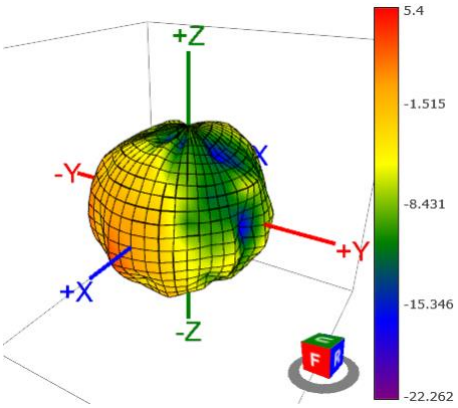
5150MHz (dBi)



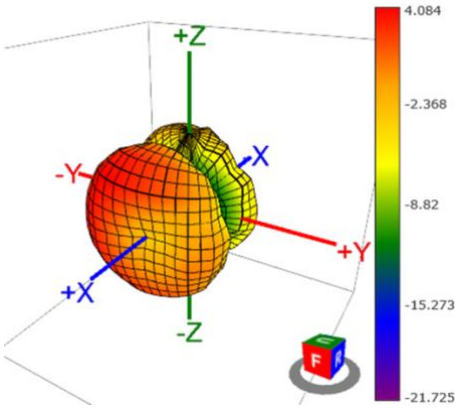
5350MHz (dBi)



5750MHz (dBi)



5850MHz (dBi)



V. Mechanical Drawing (Unit:mm):