

# CPE(Omni + Directional) 5 in 1 Combo Antenna

4G (LB/MB/HB) & B42/43/48 x4 / GPS&GNSS x1

Updated on 02232024 Rev 4.0

## P/N: ANT-SX-5048

### RF Specification

Port	ANT0 / ANT2				
Frequency Range	617MHz~960MHz	1427MHz~1559MHz	1710MHz~2170MHz	2300MHz~2690MHz	3400MHz~3800MHz
Polarization	Linear, Vertical				-45deg / +45deg
Horizontal / Vertical	360° / 45°				57°-73° / 31°-44°
Peak Gain	1.4 dBi typ.	2.3 dBi typ.	4.1 dBi typ.	4.7 dBi typ.	9.0 dBi typ.
Efficiency	30%-53%	30%-44%	53%-59%	53%-57%	51~56%
VSWR	4.0max.:1	2.5max.:1			2.0max.:1
Power Handling	2W (cw)				
Impedance	50 ohms				
Port	ANT1 / ANT3				
Frequency Range	1427MHz~1559MHz	1710MHz~2170MHz	2300MHz~2690MHz	3400MHz~3800MHz	
Polarization	Linear, Vertical				-45deg / +45deg
Horizontal / Vertical	360° / 45°				57°-73° / 31°-44°
Peak Gain	2.9 dBi typ.	3.4 dBi typ.	3.8 dBi typ.	9.0 dBi typ.	
Efficiency	44%-48%	42%-50%	42%-51%	50~56%	
VSWR	2.5max.:1			2.0max.:1	
Power Handling	2W (cw)				
Impedance	50 ohms				
Port	GPS/GNSS Passive				
Frequency Range	1575MHz-1602MHz				
Polarization	R.H.C.P				
Zenith Gain (0°) 1575 / 1602	2.5 dBi / 1.8 dBi				
VSWR	2.0:1 typ.				
Power Handling	2W (cw)				
Impedance	50 ohms				

### Environmental & Mechanical Characteristics

- **Temperature:** -30°C to +70°C
- **Humidity:** 95% @55°C
- **Weight:** 1200g (W/I Cable 1ft)
- **Antenna Housing Material:** PC
- **Dimensions:** 216(L)x141(W)x215(H) mm
- **Cable :** SMA Jack onto LMR-100A 1ft

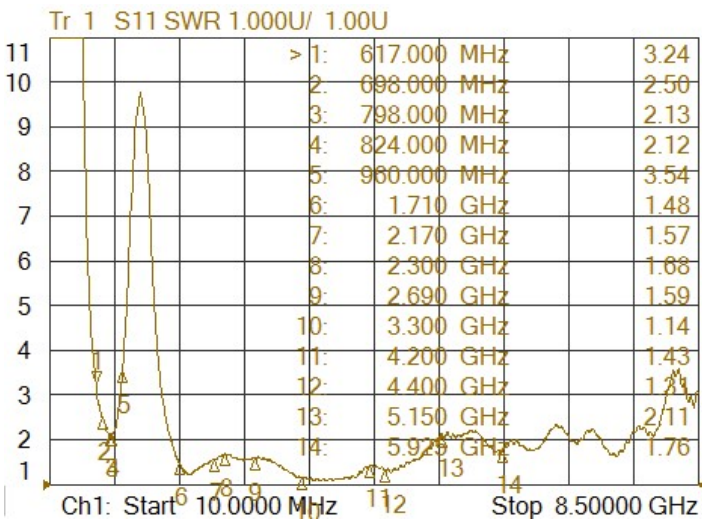
# Performance Summary

Updated on 02232024 Rev 4.0

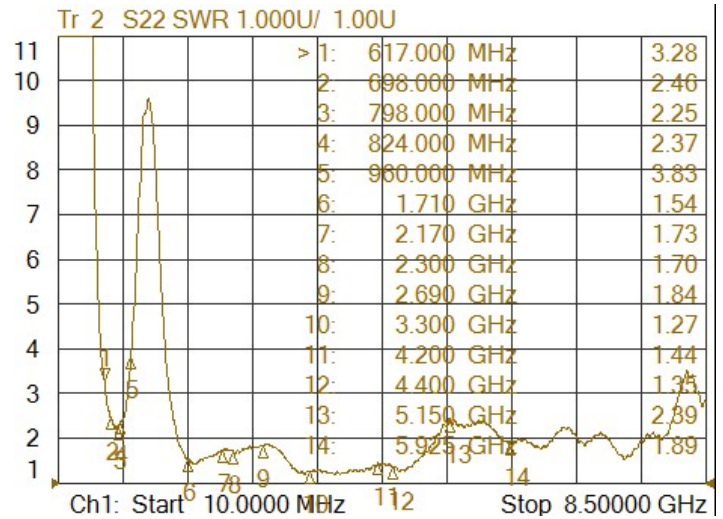
## VSWR

Frequency(MHz)	617MHz~960MHz	1427MHz~1559MHz	1710MHz~2170MHz	2300MHz~2690MHz	3400MHz~3800MHz
VSWR	4.0max.:1	2.5max.:1			2.0max.:1

### ANT0



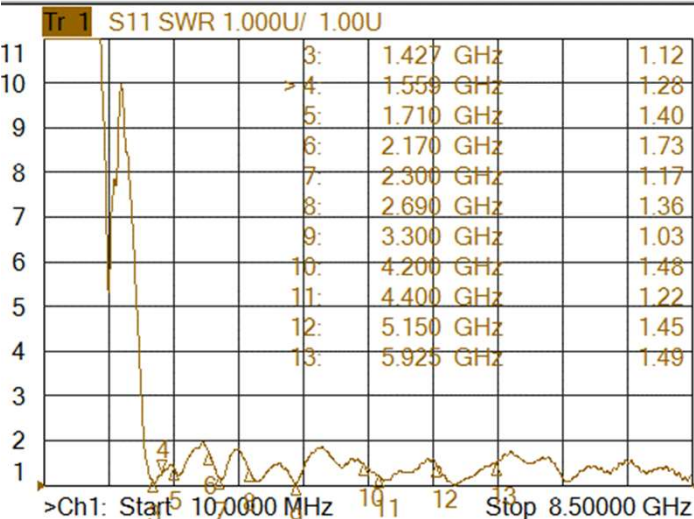
### ANT2



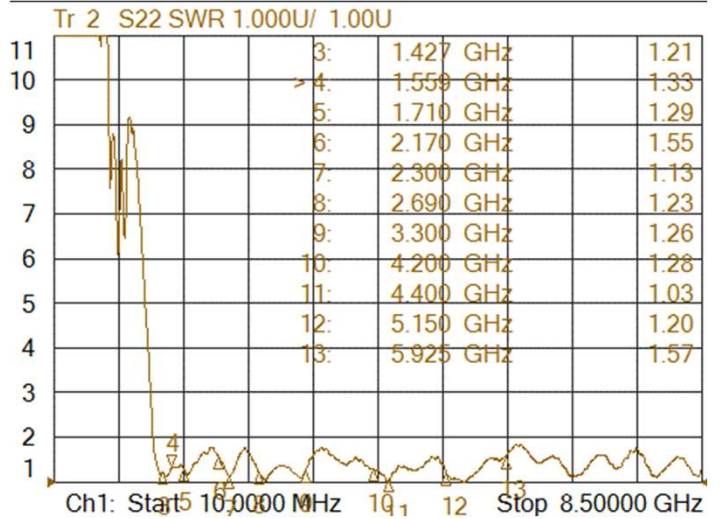
## VSWR

Frequency(MHz)	1427MHz~1559MHz	1710MHz~2170MHz	2300MHz~2690MHz	3400MHz~3800MHz
VSWR	2.5max.:1			2.0max.:1

### ANT1



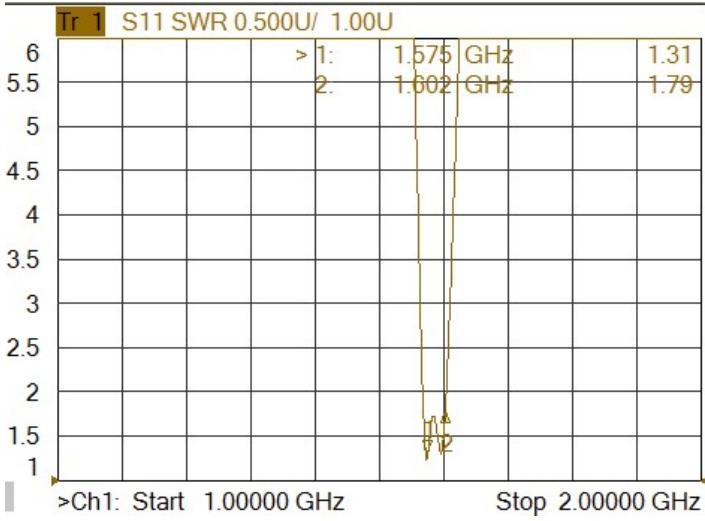
### ANT3



## VSWR

Frequency(MHz)	1575MHz~1602MHz
VSWR	2.0max.:1

## GPS/GNSS

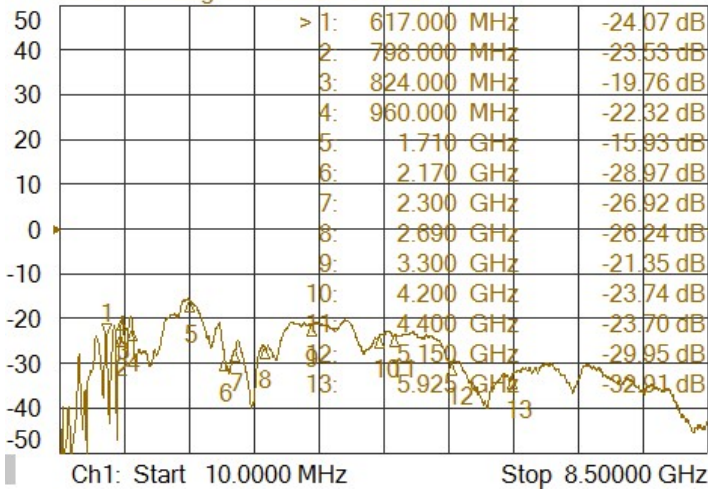


**Isolation** \*is Antennas frequency 617-3800MHz, other antennas frequency is 1400MHz~3800MHz

Isolation	ANT0*	ANT1	ANT2*	ANT3
ANT0*		LB (-18dB) MB (-14dB) HB (-20dB)	LB (-9dB) MB (-15dB) HB (-20dB)	LB (-18dB) MB (-14dB) HB (-20dB)
ANT1	LB (-18dB) MB (-14dB) HB (-20dB)		LB (-18dB) MB (-14dB) HB (-20dB)	MB (-15dB) HB (-22dB)
ANT2*	LB (-9dB) MB (-15dB) HB (-20dB)	LB (-18dB) MB (-14dB) HB (-20dB)		LB (-18dB) MB (-14dB) HB (-20dB)
ANT3	LB (-18dB) MB (-14dB) HB (-20dB)	MB (-15dB) HB (-22dB)	LB (-18dB) MB (-14dB) HB (-20dB)	

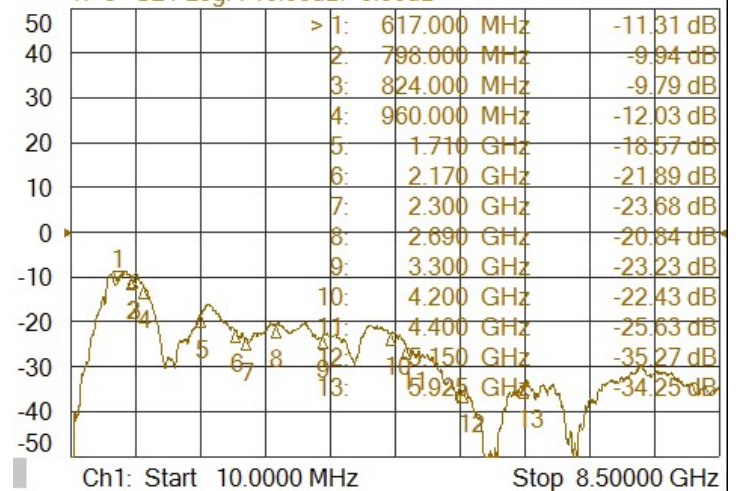
ANT0 vs ANT1

Tr 3 S21 LogM 10.00dB/ 0.00dB



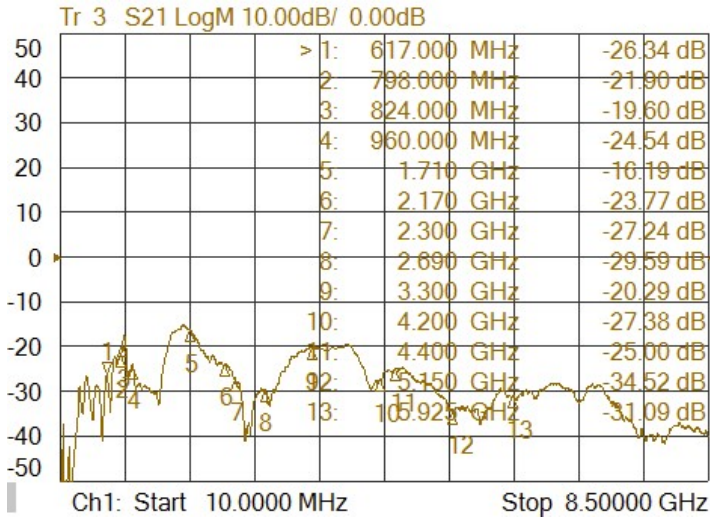
ANT0 vs ANT2

Tr 3 S21 LogM 10.00dB/ 0.00dB

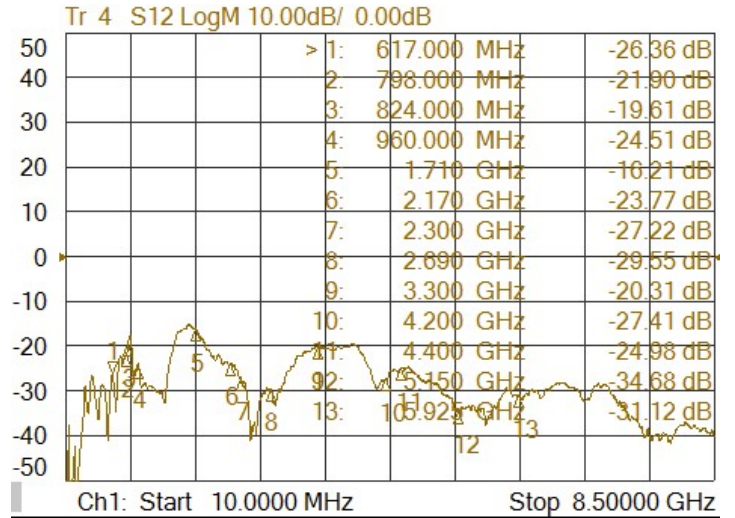


## Isolation

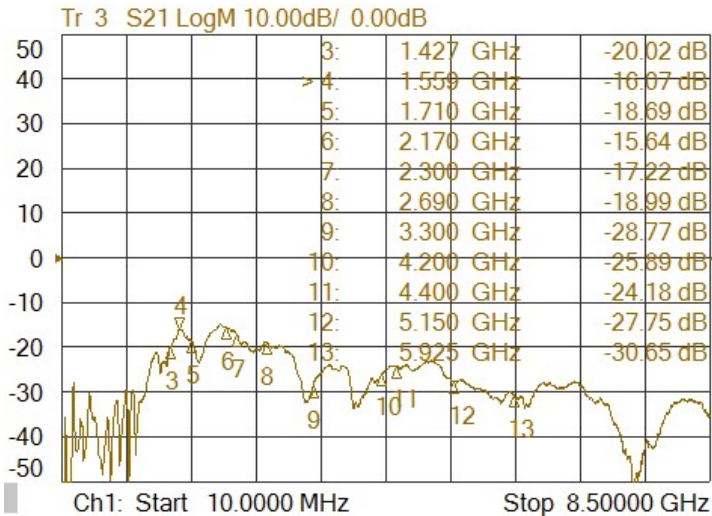
### ANT0 vs ANT3



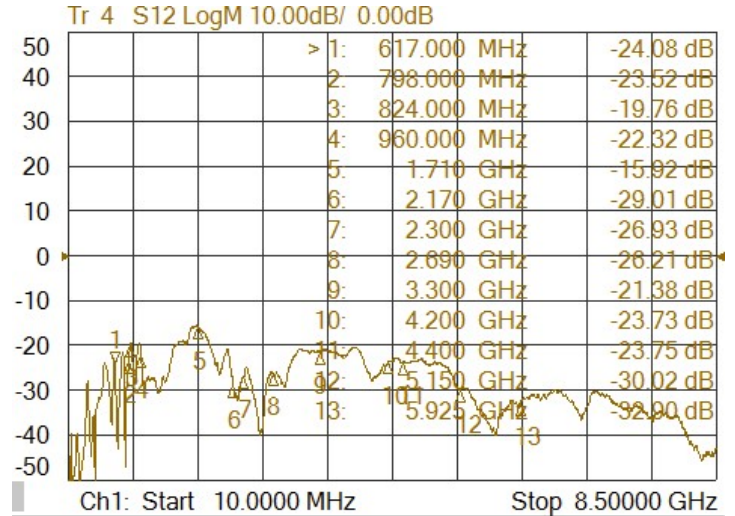
### ANT1 vs ANT2



### ANT1 vs ANT3



### ANT2 vs ANT3



## Gain Table

### ANT0

Frequency (MHz)	3D	
	Efficiency (%)	Peak Gain (dBi)
617	37%	-1.0
652	35%	-1.3
663	36%	-1.2
698	33%	-1.1
710	32%	-1.0
734	30%	-1.1
751	30%	-0.7
768	30%	-0.3
798	33%	0.2
824	35%	-0.1
849	36%	-0.1
869	38%	1.1
894	40%	0.6
900	41%	0.6
925	36%	-0.2
960	41%	0.7
1427	30%	-1.7
1447	31%	-1.8
1475	33%	-1.3
1496	36%	-0.7
1517	38%	-0.4
1559	44%	0.2
1710	53%	1.8
1805	54%	2.7
1880	58%	3.1
1900	58%	3.1
1920	59%	3.2
2110	56%	3.9
2170	57%	3.8
2200	56%	3.8
2300	56%	3.9
2305	56%	3.9
2315	55%	4.0
2350	54%	3.7
2360	53%	3.6
2400	53%	3.5
2500	53%	3.8
2595	57%	3.7
2690	55%	3.8

### ANT2

Frequency (MHz)	3D	
	Efficiency (%)	Peak Gain (dBi)
617	30%	-1.3
652	31%	-1.3
663	30%	-1.2
698	31%	-0.7
710	32%	-0.7
734	32%	-0.9
751	33%	-0.8
768	34%	-0.5
798	35%	0.5
824	38%	0.5
849	45%	1.2
869	50%	1.4
894	52%	0.6
900	53%	0.4
925	44%	-0.8
960	38%	-0.9
1427	30%	-1.0
1447	30%	-1.7
1475	31%	-1.4
1496	35%	-0.4
1517	36%	-0.3
1559	42%	0.8
1710	54%	1.8
1805	55%	2.1
1880	57%	2.7
1900	57%	2.8
1920	57%	2.9
2110	56%	3.9
2170	57%	4.1
2200	57%	4.1
2300	57%	4.1
2305	57%	4.1
2315	56%	4.1
2350	54%	4.2
2360	53%	4.1
2400	53%	4.1
2500	53%	4.3
2595	56%	4.1
2690	55%	4.2

### ANT0 (-45deg) / ANT2 (+45deg)

Frequency (MHz)	3D		HPBW	
	Efficiency (%)	Peak Gain (dBi)	H-plane (deg)	V-plane (deg)
3400	52%	8.1	76	40
3500	52%	8.0	76	44
3550	51%	8.0	75	45
3600	53%	8.1	73	43
3700	55%	8.8	71	40
3800	55%	8.5	72	40

## Gain Table

### ANT1

Frequency (MHz)	3D	
	Efficiency (%)	Peak Gain (dBi)
1427	46%	2.5
1447	46%	2.6
1475	45%	2.6
1496	47%	2.8
1517	47%	2.7
1559	48%	2.9
1710	50%	3.4
1805	45%	3.1
1880	44%	3.0
1900	44%	2.7
1920	43%	2.5
2110	47%	2.1
2170	48%	2.3
2300	48%	2.1
2305	48%	2.2
2315	48%	2.2
2350	45%	2.3
2360	45%	2.3
2400	43%	2.2
2690	51%	3.8

### ANT3

Frequency (MHz)	3D	
	Efficiency (%)	Peak Gain (dBi)
1427	45%	2.5
1447	45%	2.0
1475	44%	2.3
1496	45%	2.0
1517	45%	2.0
1559	46%	2.0
1710	47%	3.4
1805	42%	3.3
1880	45%	3.1
1900	43%	2.7
1920	43%	2.4
2110	42%	2.2
2170	43%	2.0
2300	47%	2.0
2305	47%	2.0
2315	44%	2.0
2350	44%	2.0
2360	44%	2.1
2400	44%	1.9
2690	45%	3.4

### ANT1 (-45deg) / ANT3 (+45deg)

Frequency (MHz)	3D		HPBW	
	Efficiency (%)	Peak Gain (dBi)	H-plane (deg)	V-plane (deg)
3400	51%	8.1	68	37
3500	51%	8.0	68	38
3550	50%	8.0	67	39
3600	53%	8.3	65	36
3700	55%	8.9	66	31
3800	54%	8.7	67	36

## Gain Table

### GPS/GNSS

Frequency (MHz)	3D		HPBW	
	Efficiency (%)	Peak Gain (dBi)	H-plane (deg)	V-plane (deg)
1575	62%	2.5	62.9	44.1
1602	65%	1.8	59.9	43.6



## ANT0

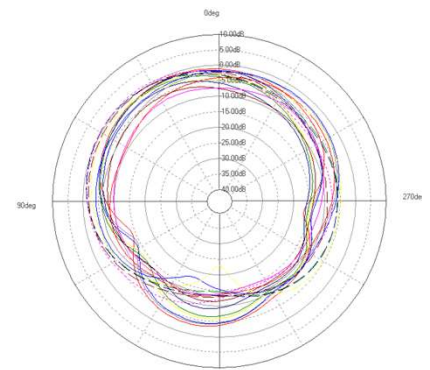
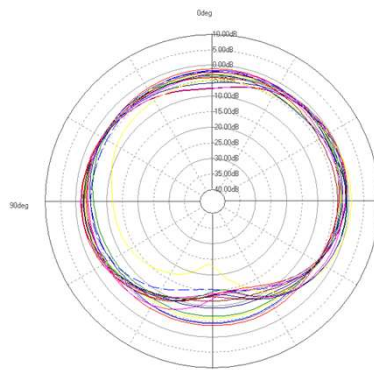
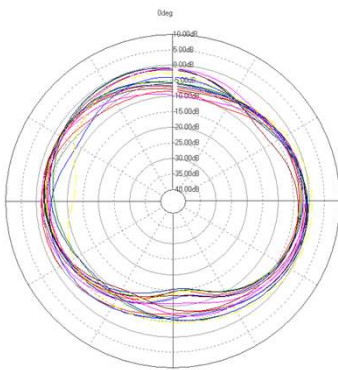
### XY-plane

### YZ-plane

### ZX-plane

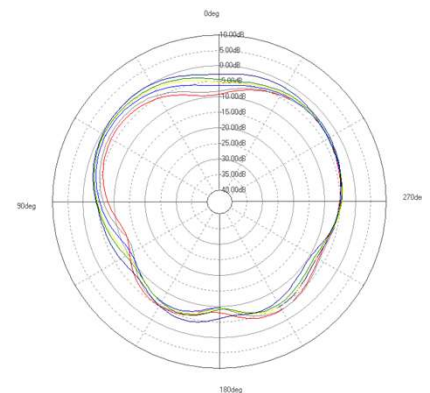
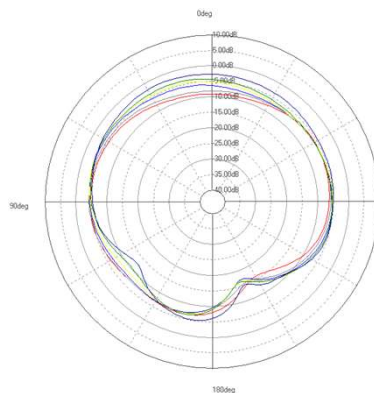
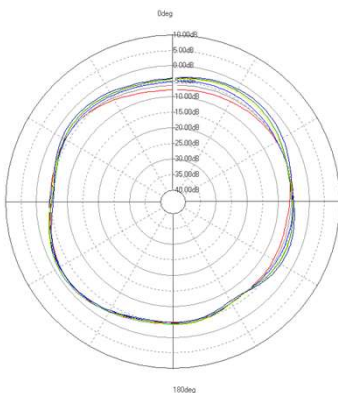
Legend

- 617.00(MHz)
- 652.00(MHz)
- 663.00(MHz)
- 698.00(MHz)
- 710.00(MHz)
- 734.00(MHz)
- 751.00(MHz)
- 768.00(MHz)
- 798.00(MHz)
- 824.00(MHz)
- 849.00(MHz)
- 863.00(MHz)
- 894.00(MHz)
- 925.00(MHz)
- 960.00(MHz)



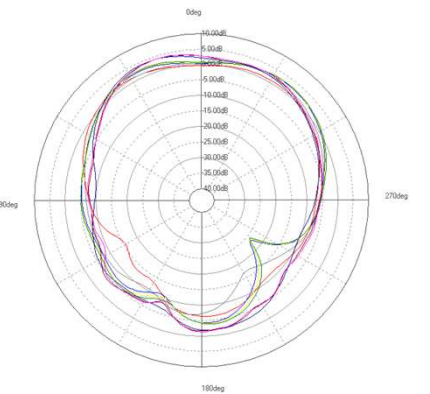
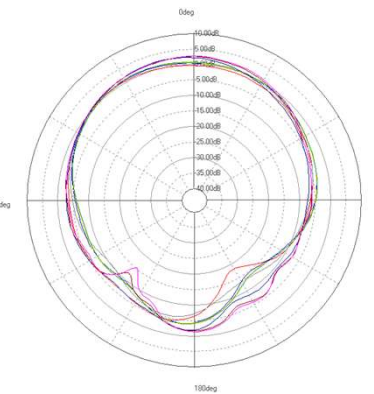
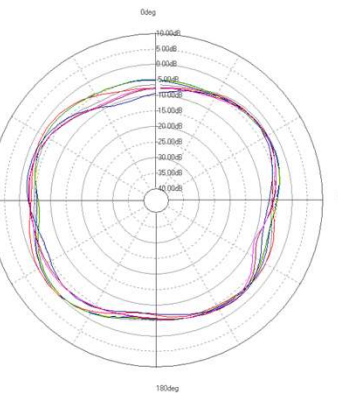
Legend

- 1427.00(MHz)
- 1447.00(MHz)
- 1475.00(MHz)
- 1496.00(MHz)
- 1517.00(MHz)
- 1559.00(MHz)



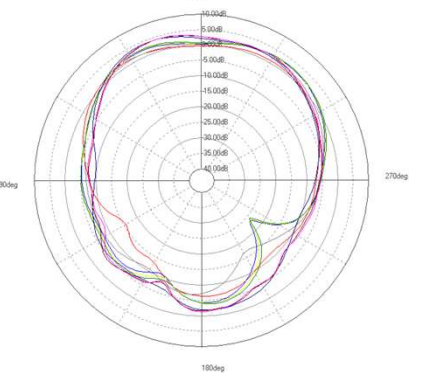
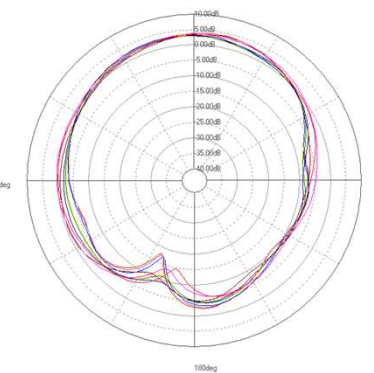
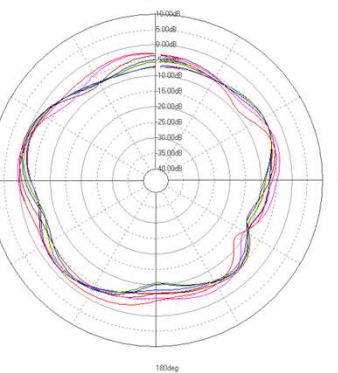
Legend

- 1710.00(MHz)
- 1805.00(MHz)
- 1880.00(MHz)
- 1929.00(MHz)
- 2110.00(MHz)
- 2170.00(MHz)
- 2200.00(MHz)



Legend

- 2300.00(MHz)
- 2305.00(MHz)
- 2315.00(MHz)
- 2350.00(MHz)
- 2360.00(MHz)
- 2400.00(MHz)
- 2500.00(MHz)
- 2595.00(MHz)
- 2690.00(MHz)



## ANT1

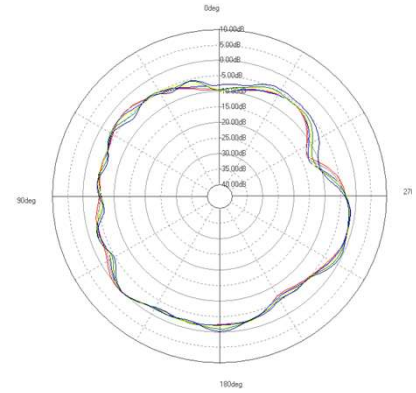
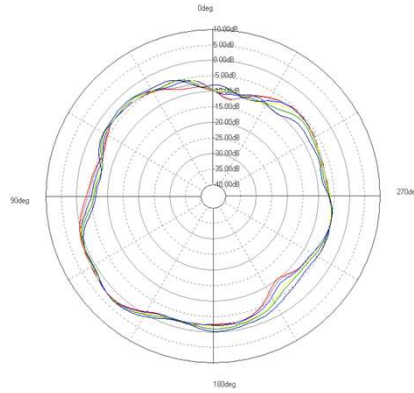
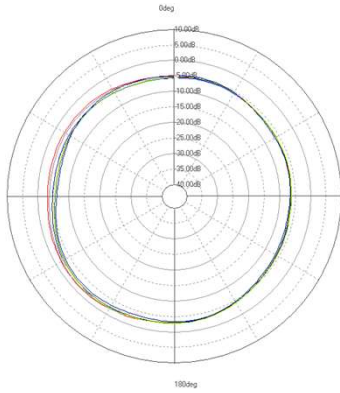
### XY-plane

### YZ-plane

### ZX-plane

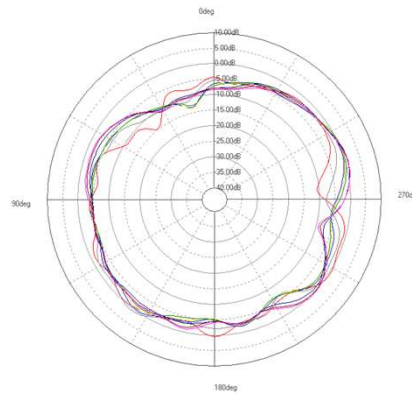
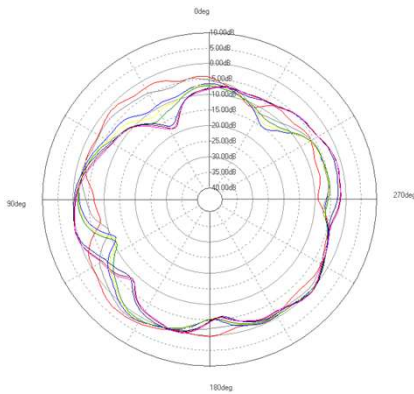
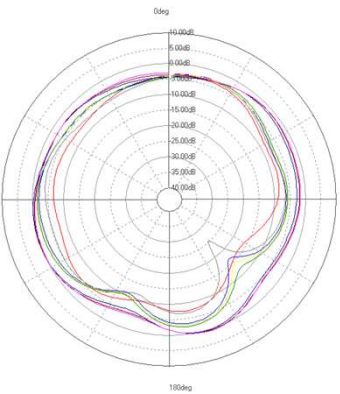
Legend

- 1427.00(MHz)
- 1447.00(MHz)
- 1475.00(MHz)
- 1496.00(MHz)
- 1517.00(MHz)
- 1559.00(MHz)



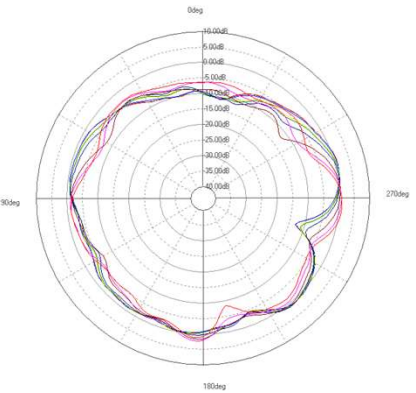
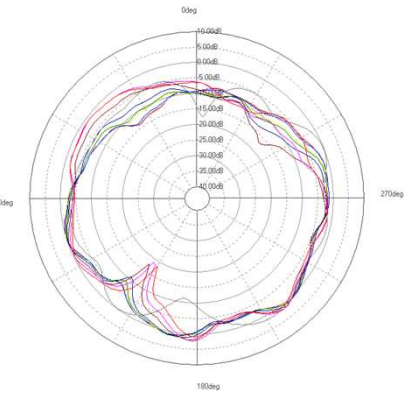
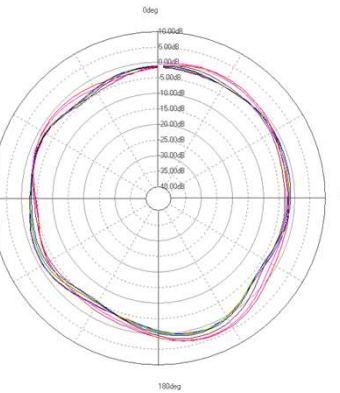
Legend

- 1710.00(MHz)
- 1805.00(MHz)
- 1880.00(MHz)
- 1920.00(MHz)
- 2110.00(MHz)
- 2170.00(MHz)
- 2200.00(MHz)



Legend

- 2300.00(MHz)
- 2305.00(MHz)
- 2315.00(MHz)
- 2350.00(MHz)
- 2360.00(MHz)
- 2400.00(MHz)
- 2500.00(MHz)
- 2595.00(MHz)
- 2690.00(MHz)



## ANT2

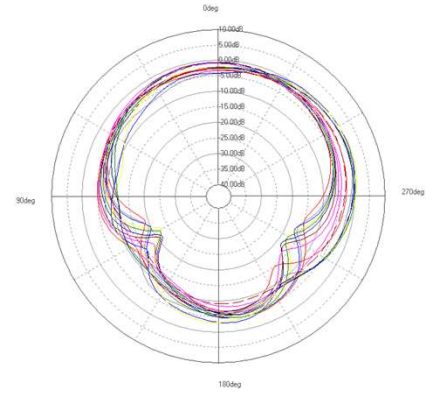
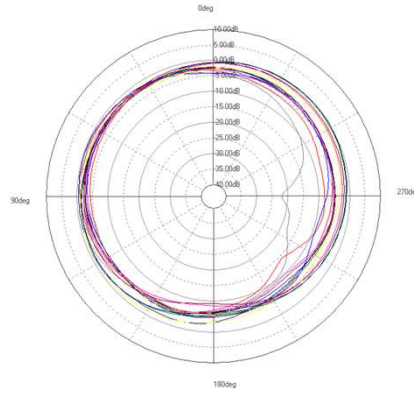
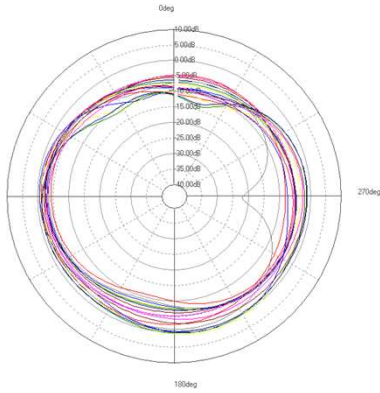
### XY-plane

### YZ-plane

### ZX-plane

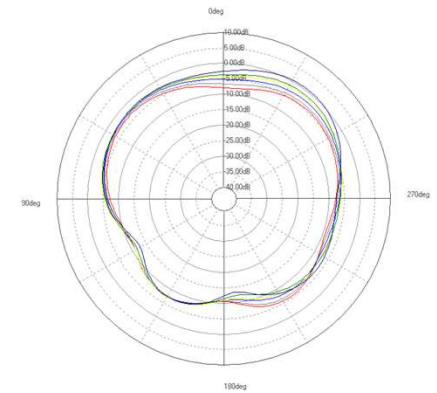
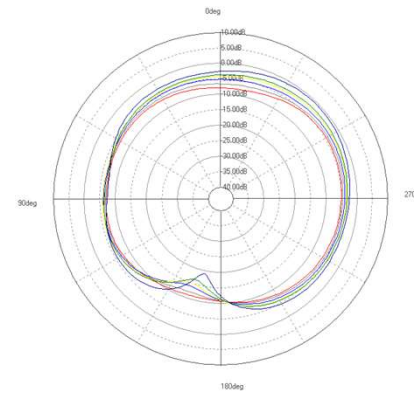
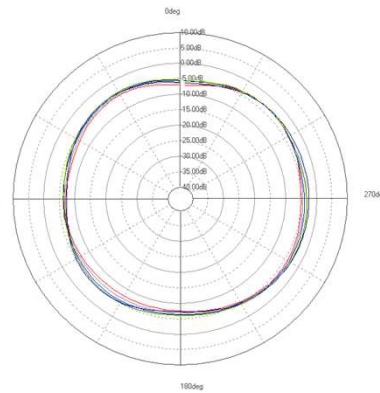
Legend

- 617.00(MHz)
- 652.00(MHz)
- 663.00(MHz)
- 658.00(MHz)
- 710.00(MHz)
- 734.00(MHz)
- 751.00(MHz)
- 768.00(MHz)
- 798.00(MHz)
- 824.00(MHz)
- 849.00(MHz)
- 863.00(MHz)
- 894.00(MHz)
- 925.00(MHz)
- 960.00(MHz)



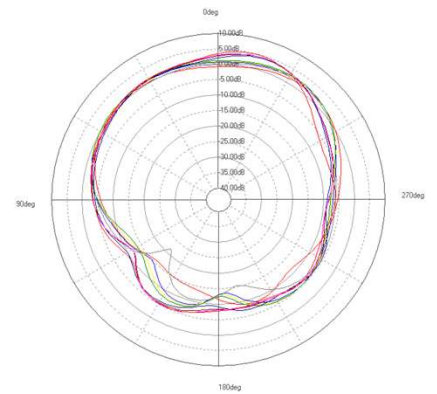
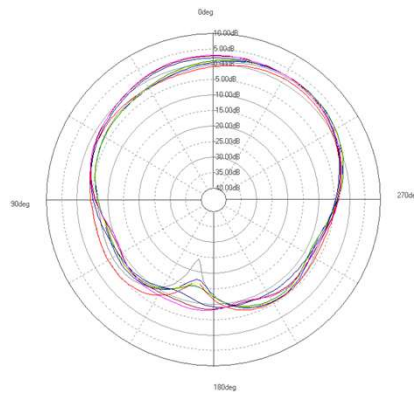
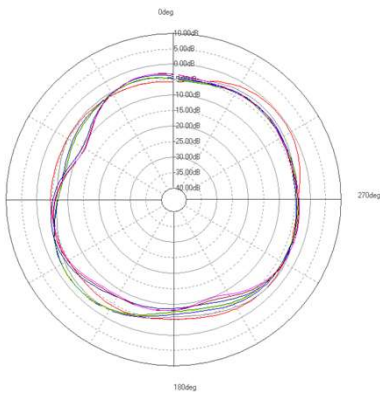
Legend

- 1427.00(MHz)
- 1447.00(MHz)
- 1475.00(MHz)
- 1436.00(MHz)
- 1517.00(MHz)
- 1559.00(MHz)



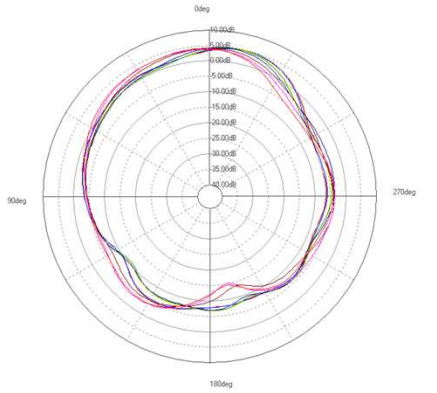
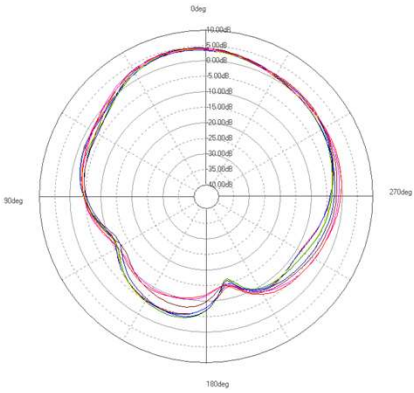
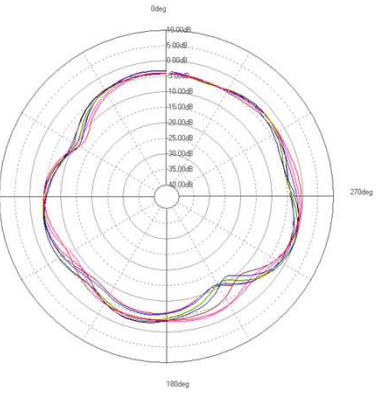
Legend

- 1710.00(MHz)
- 1805.00(MHz)
- 1880.00(MHz)
- 1920.00(MHz)
- 2110.00(MHz)
- 2170.00(MHz)
- 2200.00(MHz)



Legend

- 2300.00(MHz)
- 2305.00(MHz)
- 2315.00(MHz)
- 2350.00(MHz)
- 2360.00(MHz)
- 2400.00(MHz)
- 2500.00(MHz)
- 2595.00(MHz)
- 2690.00(MHz)



## ANT3

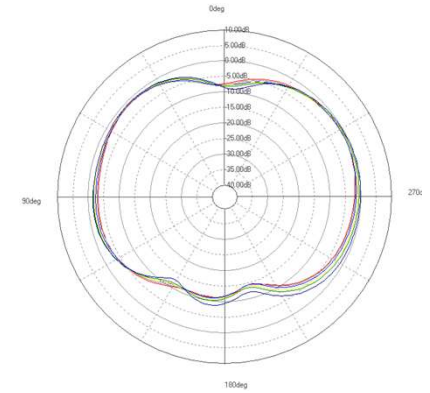
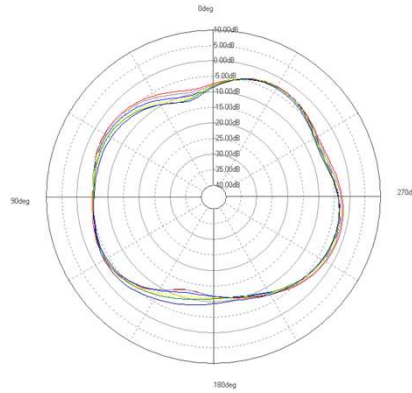
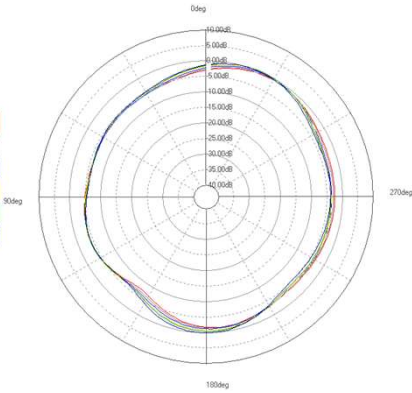
### XY-plane

### YZ-plane

### ZX-plane

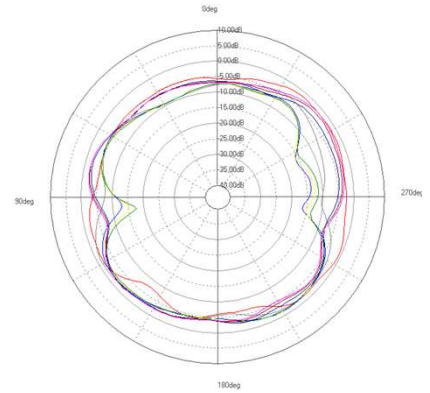
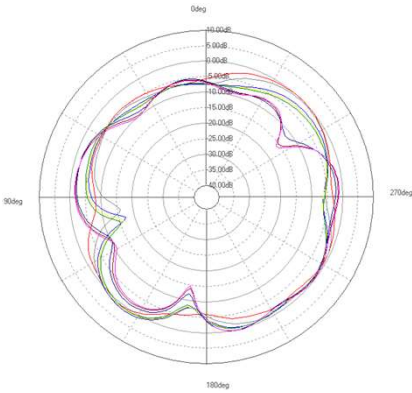
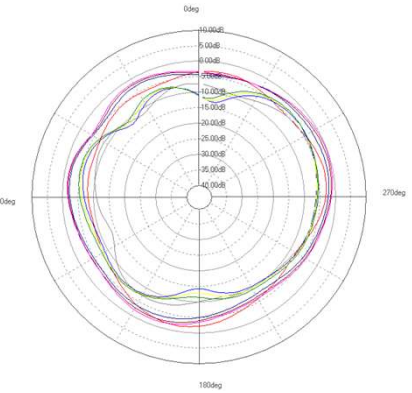
Legend

- 1427.00(MHz)
- 1447.00(MHz)
- 1475.00(MHz)
- 1495.00(MHz)
- 1517.00(MHz)
- 1559.00(MHz)



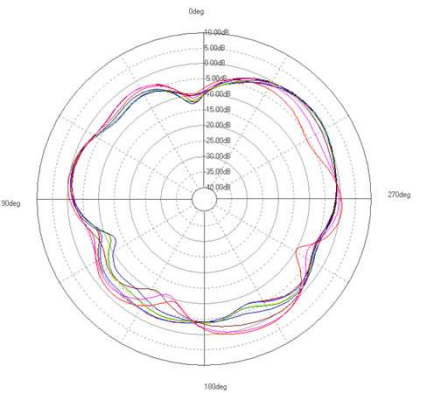
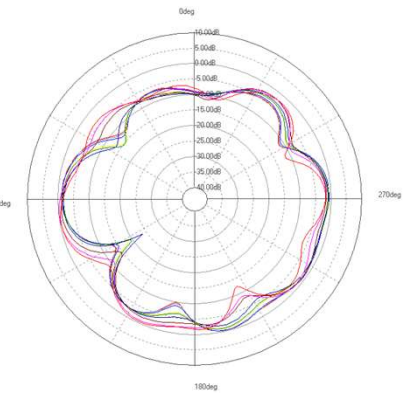
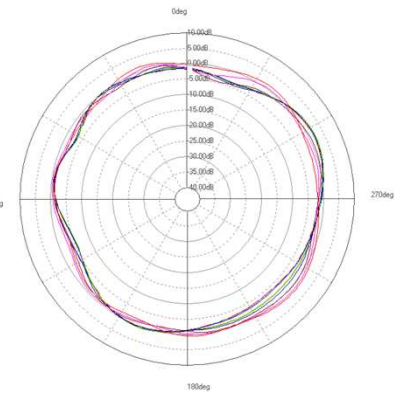
Legend

- 1710.00(MHz)
- 1805.00(MHz)
- 1880.00(MHz)
- 1930.00(MHz)
- 2110.00(MHz)
- 2170.00(MHz)
- 2200.00(MHz)



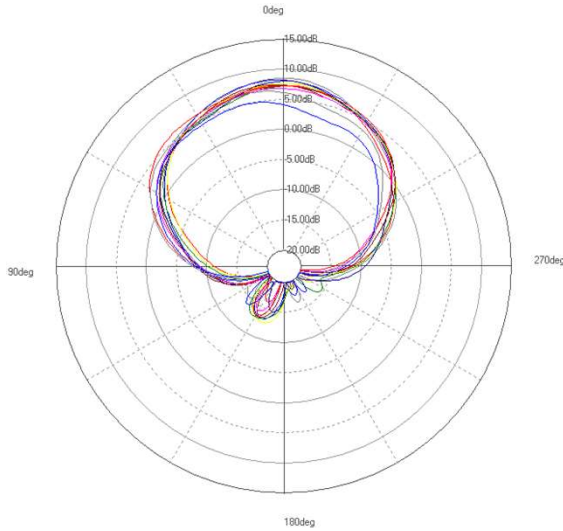
Legend

- 2300.00(MHz)
- 2305.00(MHz)
- 2315.00(MHz)
- 2350.00(MHz)
- 2360.00(MHz)
- 2400.00(MHz)
- 2500.00(MHz)
- 2595.00(MHz)
- 2690.00(MHz)

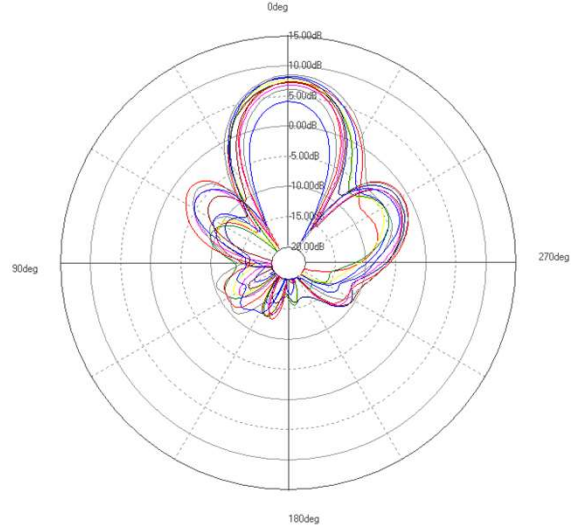


## ANT0 & ANT3 (-45deg)

### H-plane



### V-plane

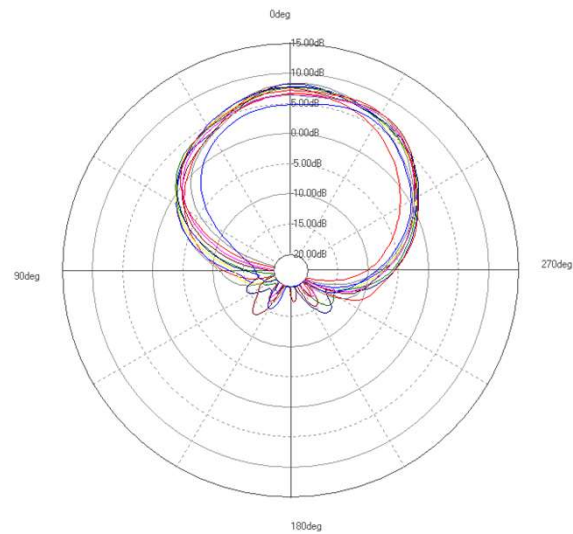


#### Legend

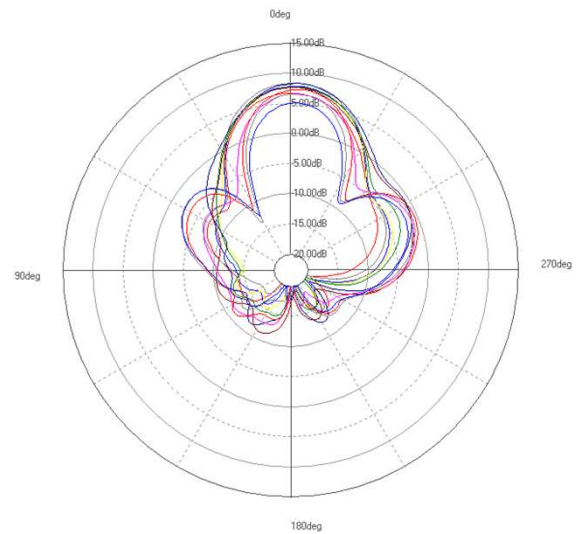
- 3400.00(MHz)
- 3500.00(MHz)
- 3550.00(MHz)
- 3600.00(MHz)
- 3700.00(MHz)
- 3800.00(MHz)

## ANT1 & ANT2 (+45deg)

### H-plane



### V-plane

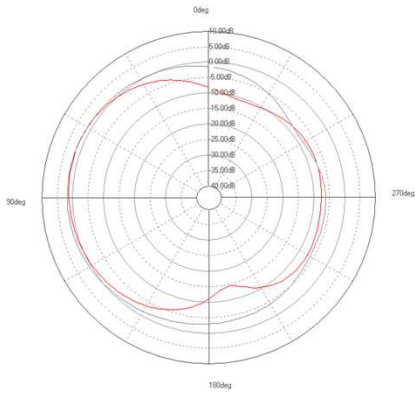


#### Legend

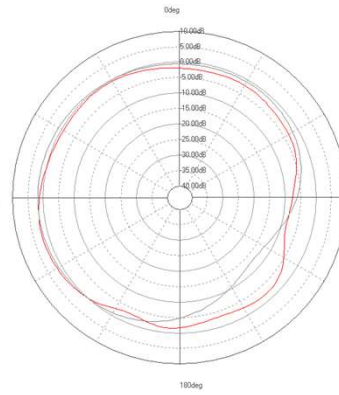
- 3400.00(MHz)
- 3500.00(MHz)
- 3550.00(MHz)
- 3600.00(MHz)
- 3700.00(MHz)
- 3800.00(MHz)

## GPS/GNSS

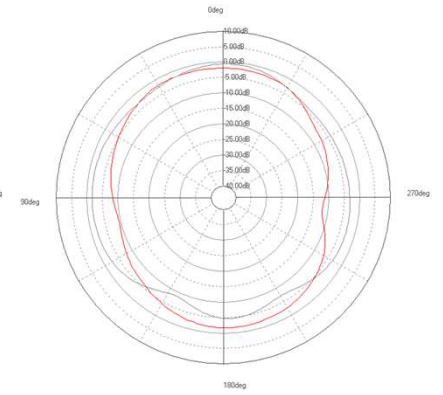
### XY-plane



### YZ-plane



### ZX-plane



**Legend**  
— 1575.00(MHz)  
— 1602.00(MHz)