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TWINHEAD S14Y

Antenna Test Report

Data 06/11/06

RD Manager	Supervisor	RD engineer	Sales engineer
Joy	Johnson	Jim	Jerry

1. Information Overview

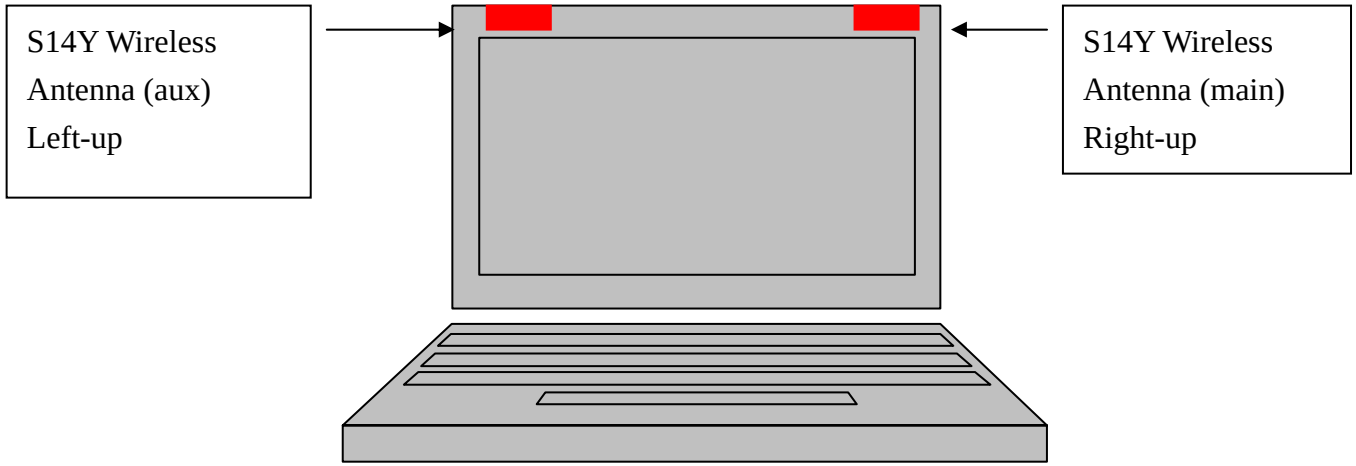
1.1 Platform Information

	Description	Comments
Project Code of System		
Project Stage	☐ ES ▒ EPR ☐ PPR ☐ MP	
Platform Type	▒ Notebook PC ☐ Tablet PC	

1.2 Antenna Information

Manufacturer	Well Green Technology Co., Ltd.	
Design Stage	☐ Handmade ☐ Machine ▒ Tooling	
Antenna (aux)		
Type	PIFA	
Model Name	S14Y-L	
Part Number	TW14YWIPI01+ B	
Antenna Location	Left-up of the panel	
Antenna Purpose	**Wireless LAN 802.11bg aux Antenna**	
Connector Manufacturer	SSMCX Plug(Molex)	
Connector Part No.	SD-73415-468	
Frequency GHz	2.4 – 2.5, 4.9 – 5.85	
Impedance	50Ω	
Cable Manufacturer & PN	AXON AWG32 Tin	
Cable Diameter ψmm	1.13	
Cable Length		
Antenna (main)		
Type	PIFA	
Model Name	S14Y-R	
Part Number	TW14YWIPI02+B	
Antenna Location	Right-up of the panel	
Antenna Purpose	**Wireless LAN 802.11bg main Antenna**	
Connector Manufacturer	SSMCX Plug(Molex)	
Connector Part No.	SD-73415-468	
Frequency GHz	2.4 – 2.5, 4.9 – 5.85	
Impedance	50Ω	
Cable Manufacturer & PN	AXON AWG32 Tin	
Cable Diameter ψmm	1.13	
Cable Length		

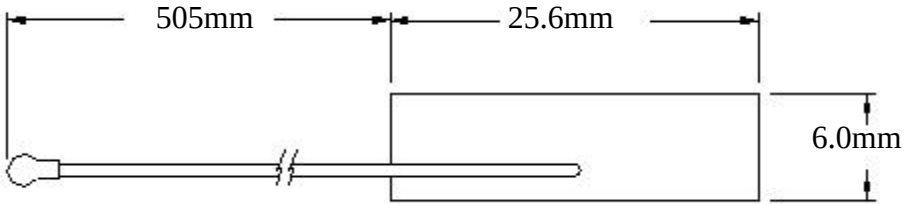
2. Antenna placement and Photo



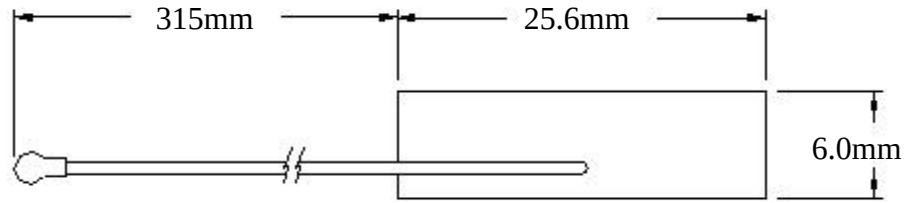
Antenna Assembly Photo

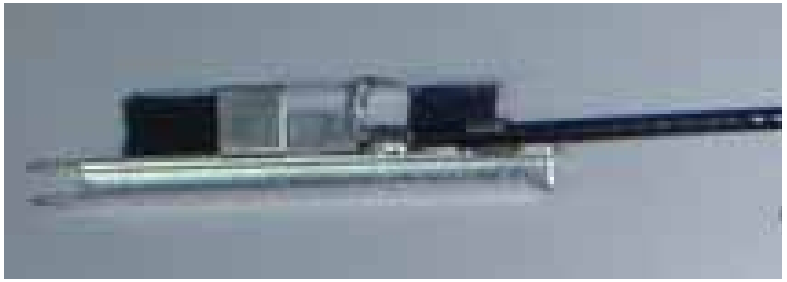
3. Antenna Dimension

3.1 Antenna (aux)



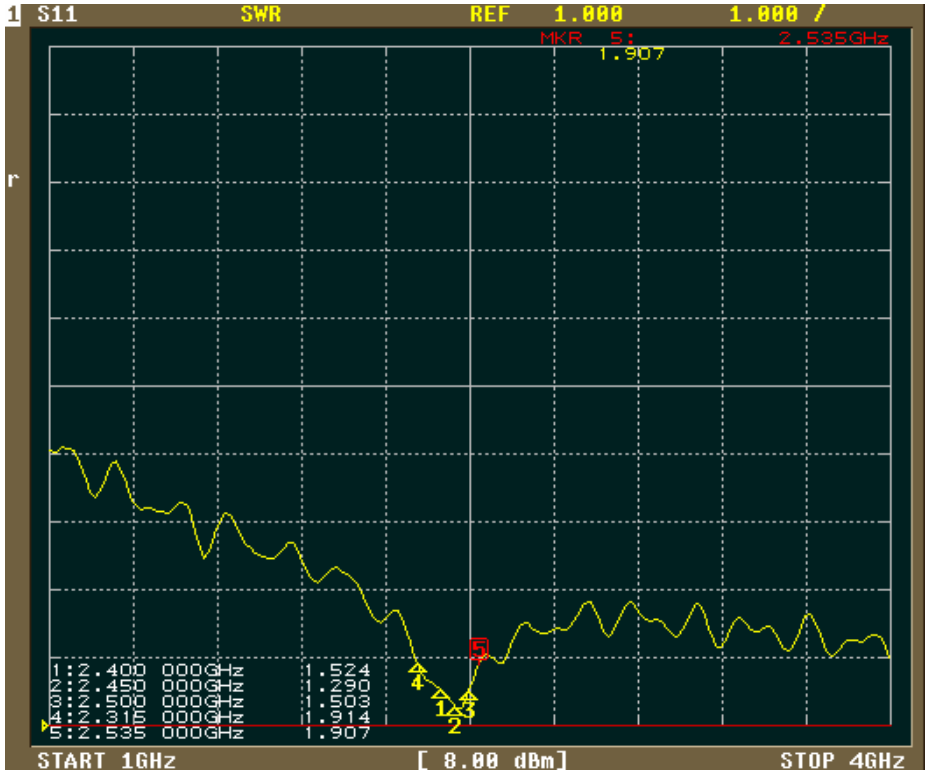
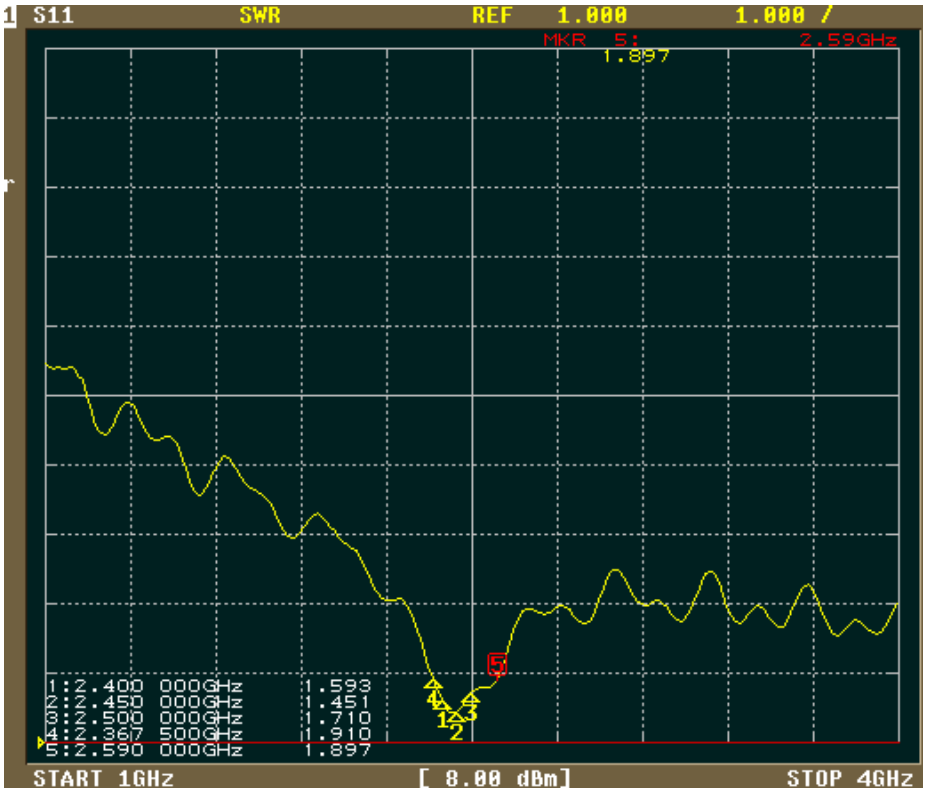
3.2 Antenna (main)





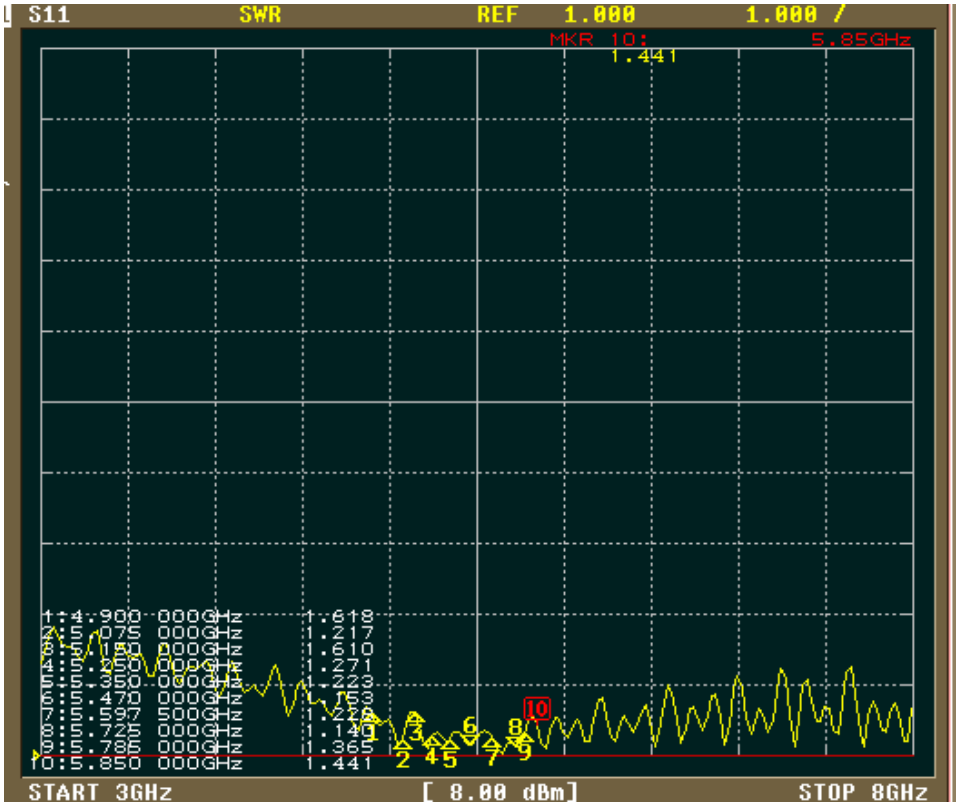
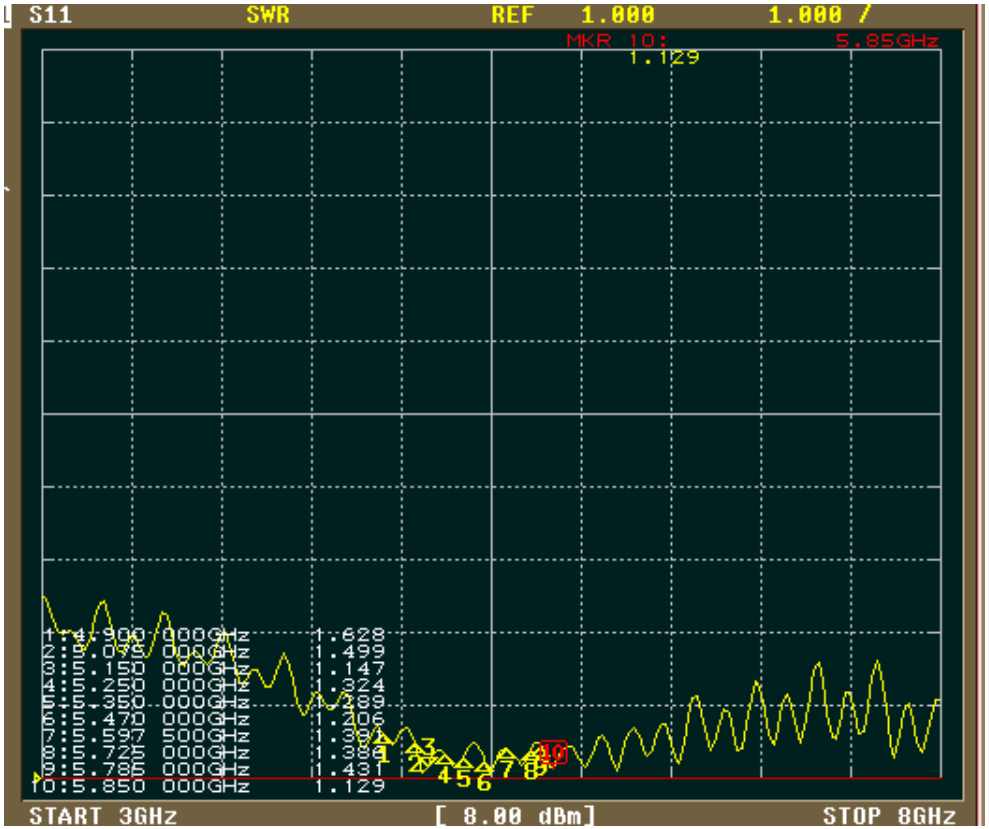
4. Voltage Standing Wave Ratio (VSWR)

4.1 VSWR 2.4 GHz ~ 2.5 GHz

Antenna (aux)	Antenna (main)
	

Center freq. @MHz	Bandwidth @MHz	VSWR			Center freq. @MHz	Bandwidth @MHz	VSWR		
		2.4GHz	2.45GHz	2.5GHz			2.4GHz	2.45GHz	2.5GHz
2450	**220**	1.52	1.29	1.50	**2450**	**223**	1.59	1.45	1.71

4.2 VSWR 5.075 GHz ~ 5.85 GHz

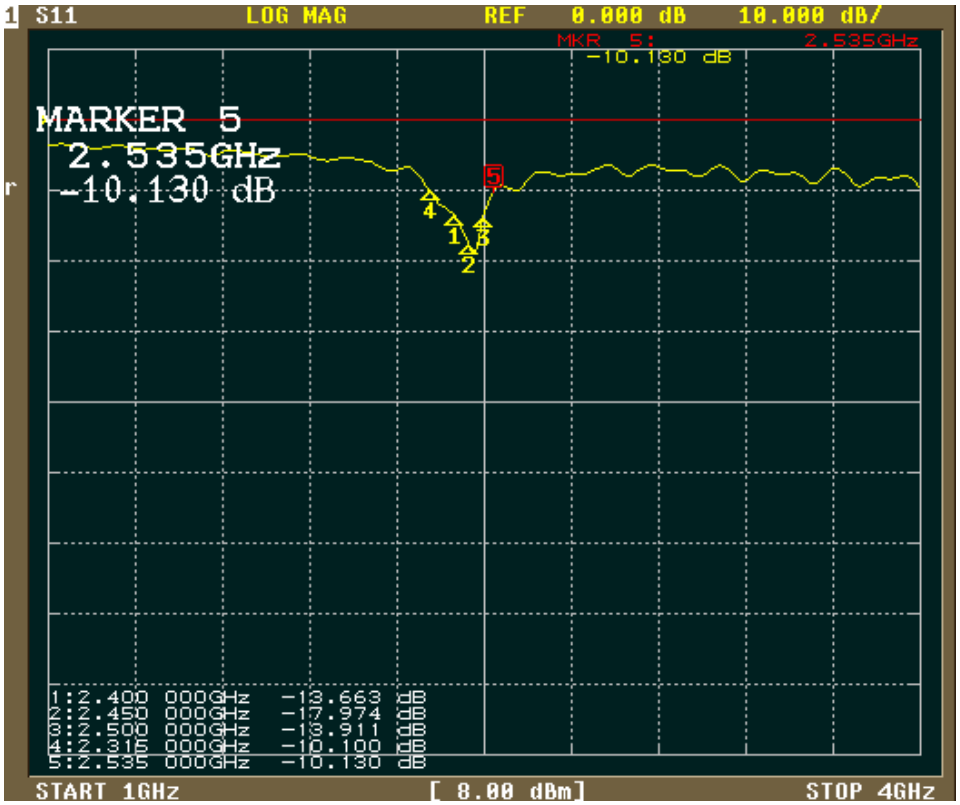
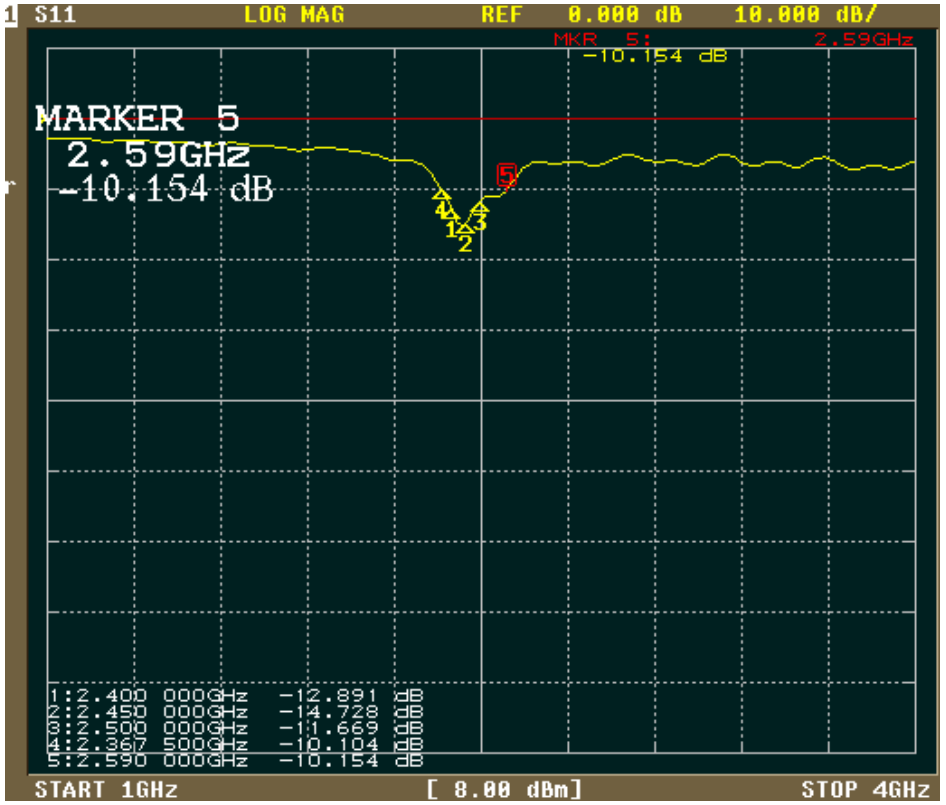
Antenna (aux)	Antenna (main)
	

Center freq. @MHz	Bandwidth @MHz	VSWR		
		5.075GHz	**5.15GHz**	**5.25GHz**
		1.21	1.61	1.27
		5.35GHz	**5.47GHz**	**5.597GHz**
		1.22	1.15	1.22
		5.725GHz	**5.785GHz**	**5.85GHz**
		1.14	1.36	1.44

Center freq. @MHz	Bandwidth @MHz	VSWR		
		5.075GHz	**5.15GHz**	**5.25GHz**
		1.49	1.14	1.32
		5.35GHz	**5.47GHz**	**5.597GHz**
		1.28	1.20	1.39
		5.725GHz	**5.785GHz**	**5.85GHz**
		1.38	1.43	1.12

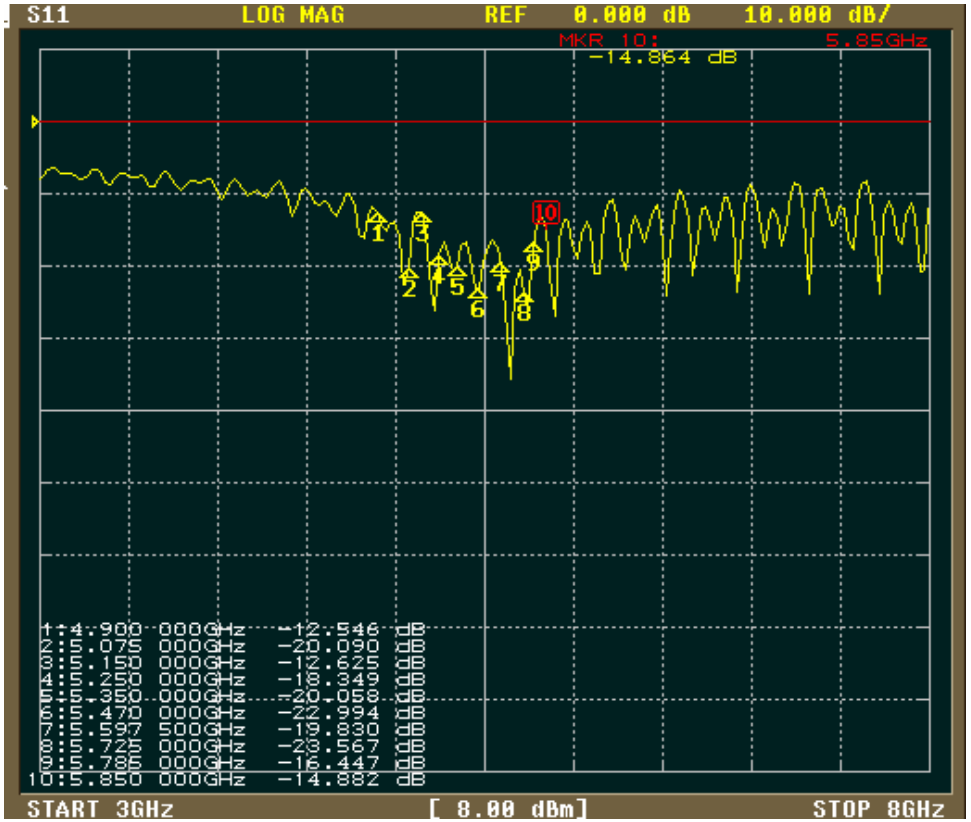
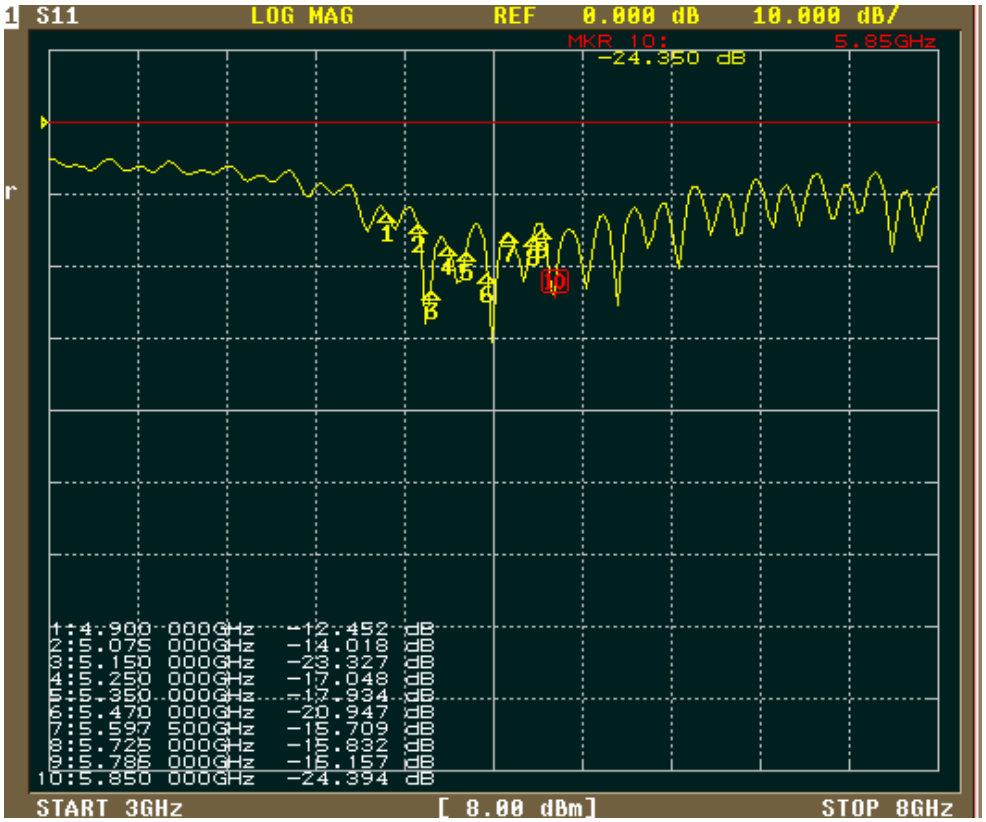
5. Return Loss

5.1 Return Loss 2.4GHz ~ 2.5GHz

Antenna (aux)	Antenna (main)
	

Center freq. @MHz	Bandwidth @MHz	Return Loss			Center freq. @MHz	Bandwidth @MHz	Return Loss		
		2.4GHz	2.45GHz	2.5GHz			2.4GHz	2.45GHz	2.5GHz
2450	**220**	-13.66	-17.97	-13.91	**2450**	**223**	-12.89	-14.72	-11.66

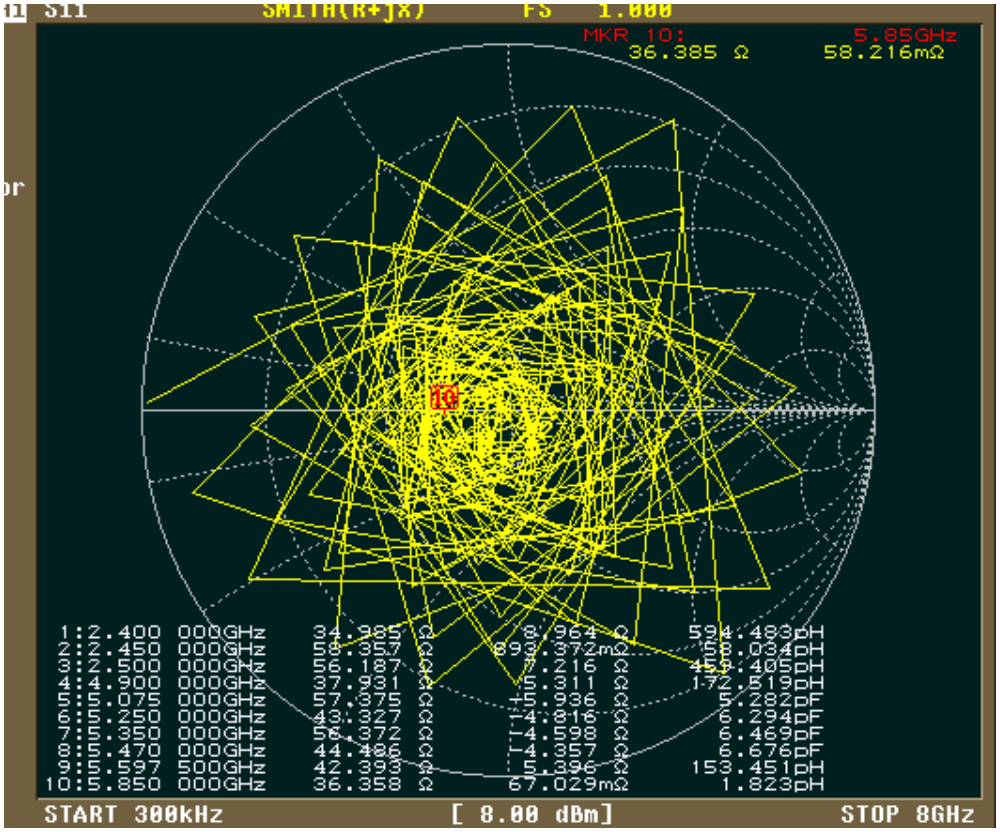
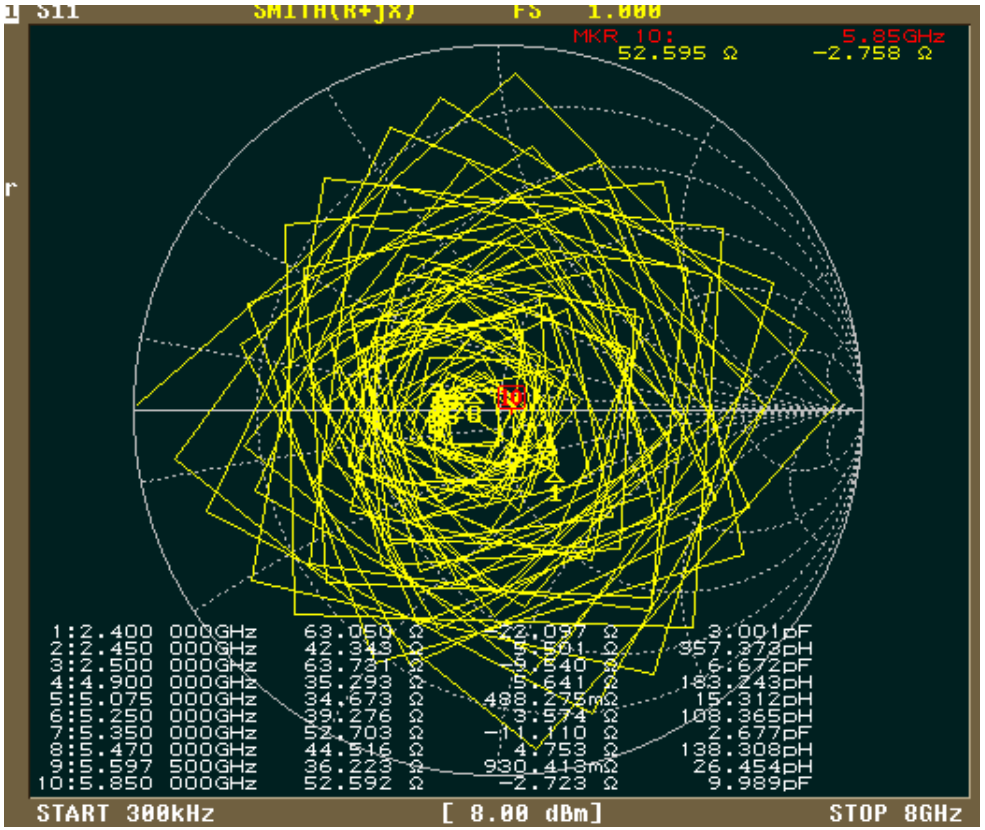
5.2 Return Loss 5.075GHz ~ 5.85GHz

Antenna (aux)	Antenna (main)
	

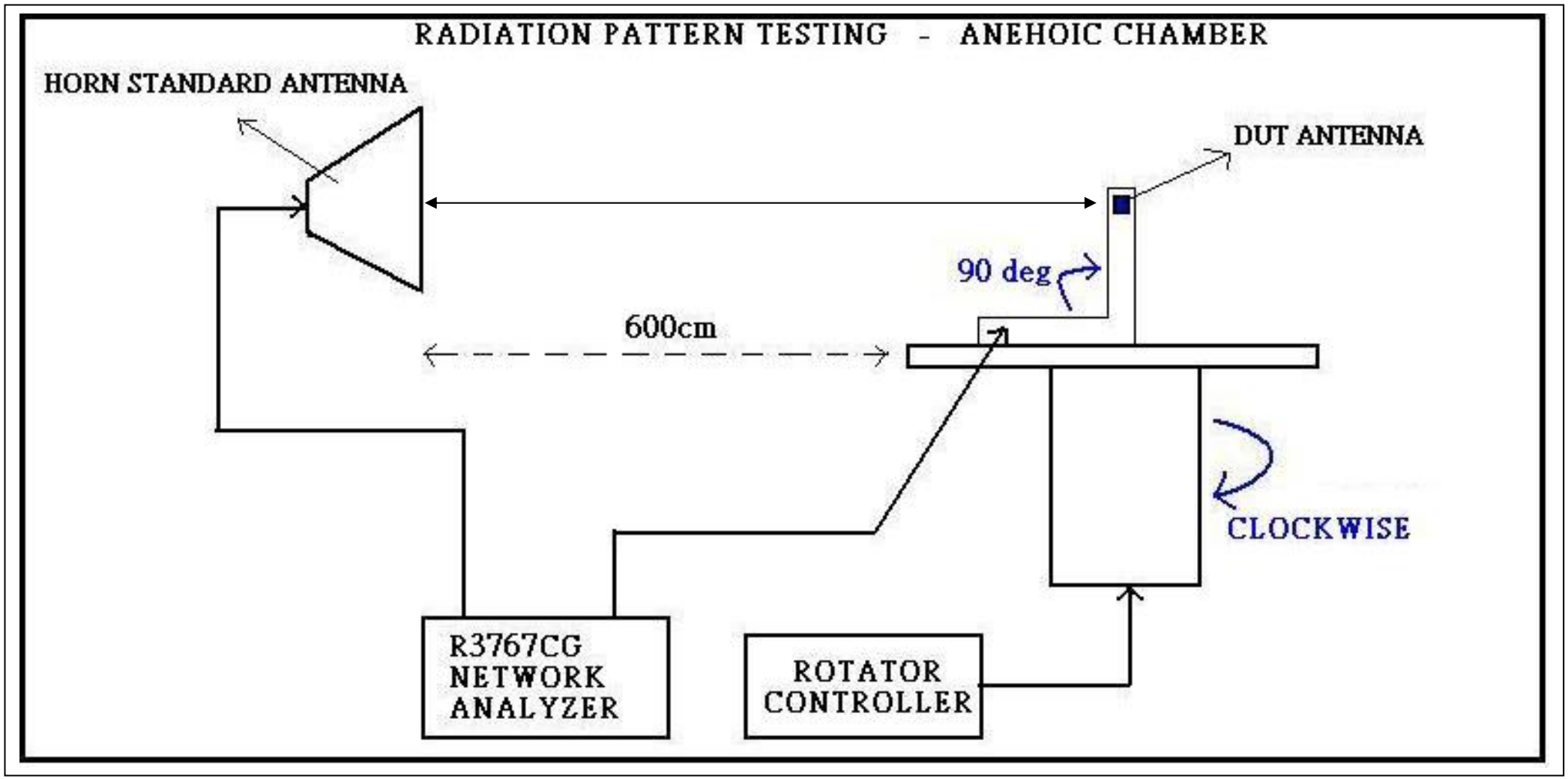
Center freq. @MHz	Bandwidth @MHz	Return Loss		
		5.075GHz	**5.15GHz**	**5.25GHz**
		-20.09	-12.62	-18.34
		5.35GHz	**5.47GHz**	**5.597GHz**
		-20.05	-22.99	-19.83
		5.725GHz	**5.785GHz**	**5.85GHz**
		-23.56	-16.44	-14.88

Center freq. @MHz	Bandwidth @MHz	Return Loss		
		5.075GHz	**5.15GHz**	**5.25GHz**
		-14.01	-23.32	-17.04
		5.35GHz	**5.47GHz**	**5.597GHz**
		-17.93	-20.94	-15.70
		5.725GHz	**5.785GHz**	**5.85GHz**
		-15.83	-15.15	-24.39

6. Smith Chart

Antenna (aux)	Antenna (main)
	

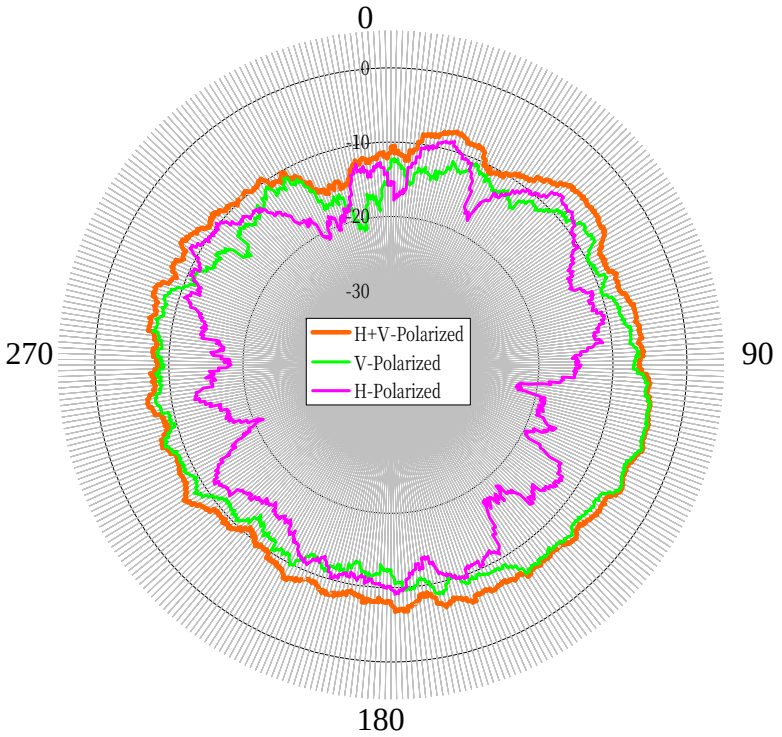
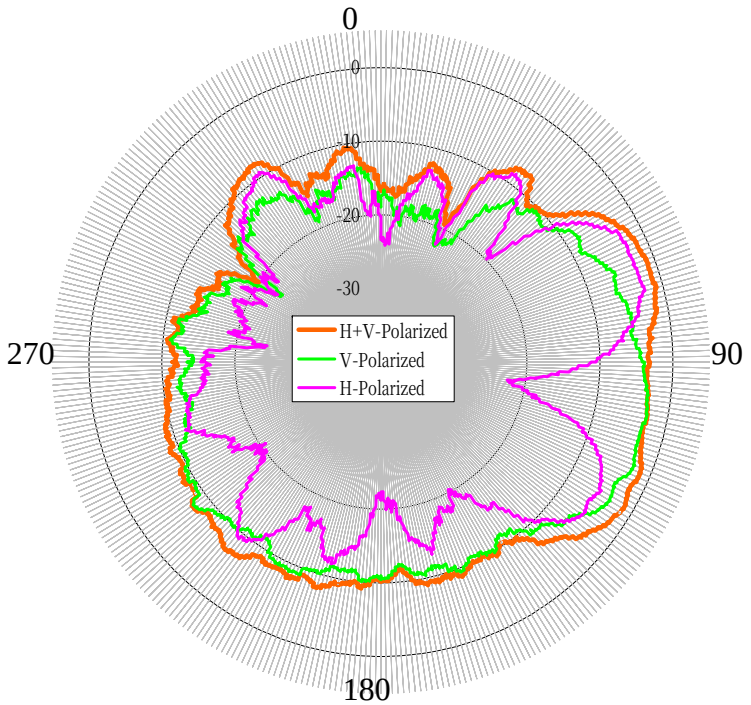
7. Antenna Radiation Pattern Testing Set Up



The radiation pattern and antenna gain shall be tested in an anechoic chamber. The anechoic chamber must be lined with absorptive materials. The measurements shall be made at the connector end of the cable for antenna assembly. The antennas must be installed in a fully populated platform to include a complete display and display plastics.

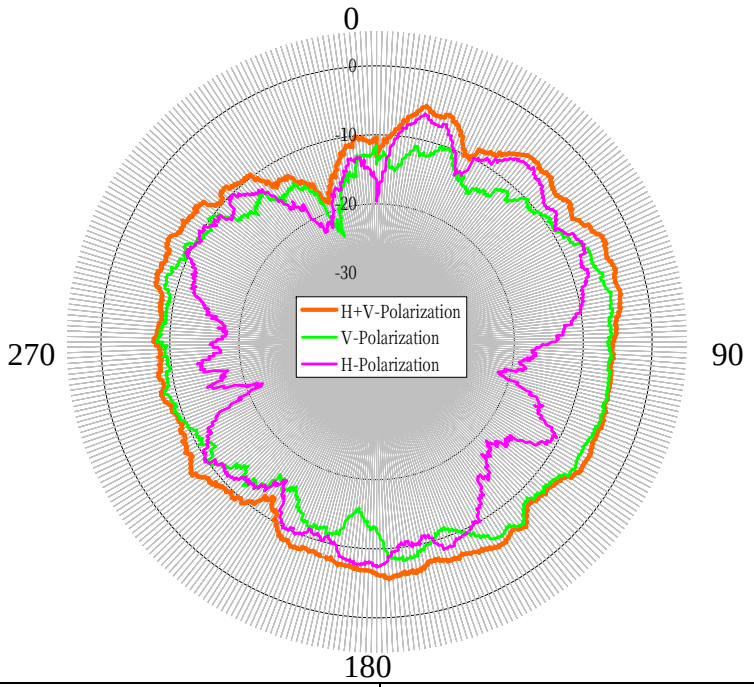
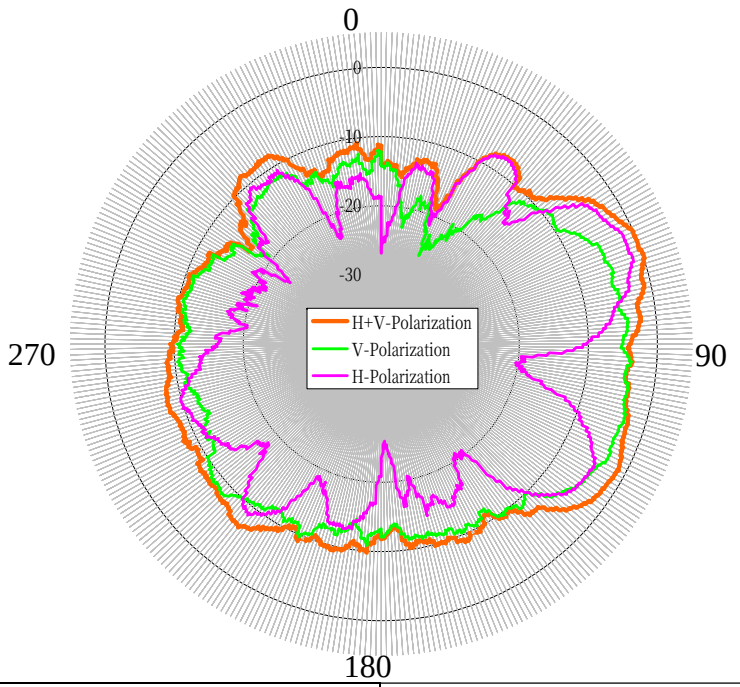
8. Radiation Pattern of XY Plane Testing Result

8.1 2.4 GHz

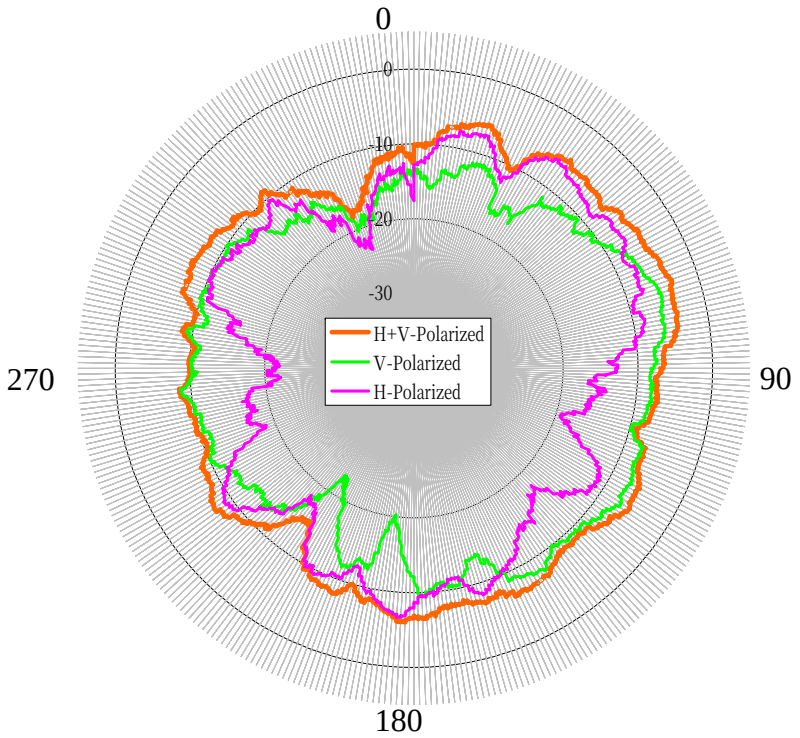
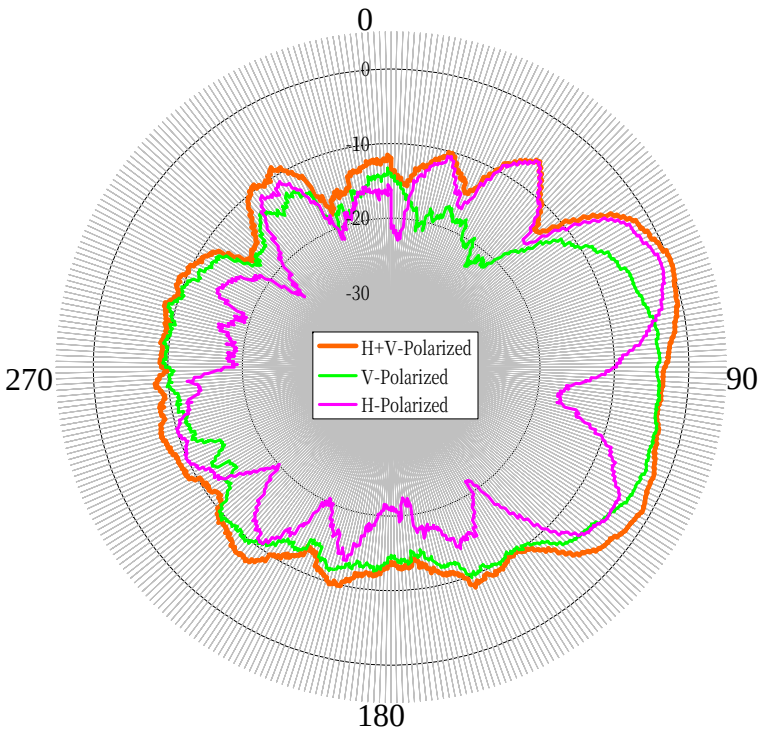
Antenna (aux)	Antenna (main)
	

Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	-4.29	V	Peak	-2.51
	Average	-9.29		Average	-9.14
H	Peak	-7.55	H	Peak	-2.58
	Average	-12.64		Average	-10.85
H + V	Peak	-4.14	H + V	Peak	-0.95
	Average	-7.64		Average	-6.90
V Gain >= -4 Area	0.00%		V Gain >= -4 Area	8.91%	
V Gain >= -5 Area	4.00%		V Gain >= -5 Area	11.07%	

8.2 2.45 GHz

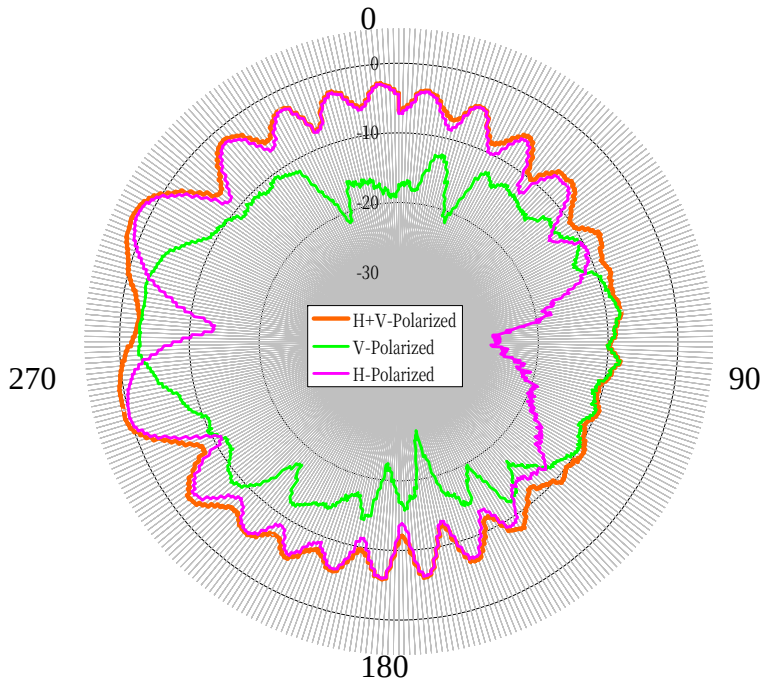
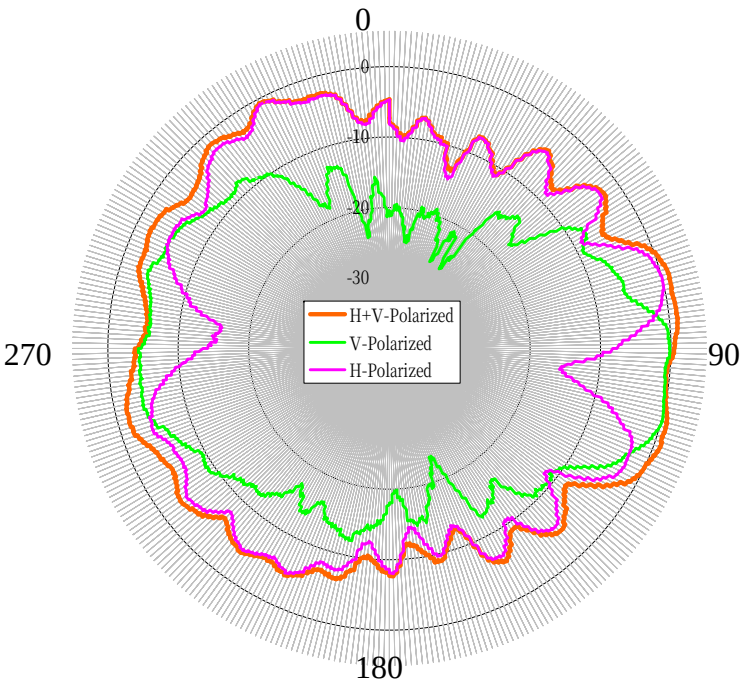
Antenna (aux)			Antenna (main)		
					
Horn Antenna Polarization	**Gain of XY Plane (Azimuth)**		**Horn Antenna Polarization**	**Gain of XY Plane (Azimuth)**	
V	**Peak**	-5.17	**V**	**Peak**	-3.13
	Average	-9.42		**Average**	-9.21
H	**Peak**	-5.96	**H**	**Peak**	-1.51
	Average	-11.04		**Average**	-10.16
H + V	**Peak**	-3.73	**H + V**	**Peak**	0.10
	Average	-7.15		**Average**	-6.65
V Gain >= -4 Area	**0%**		**V Gain >= -4 Area**	**5.83%**	
V Gain >= -5 Area	**0%**		**V Gain >= -5 Area**	**12.82%**	

8.3 2.5 GHz

Antenna (aux)	Antenna (main)
	

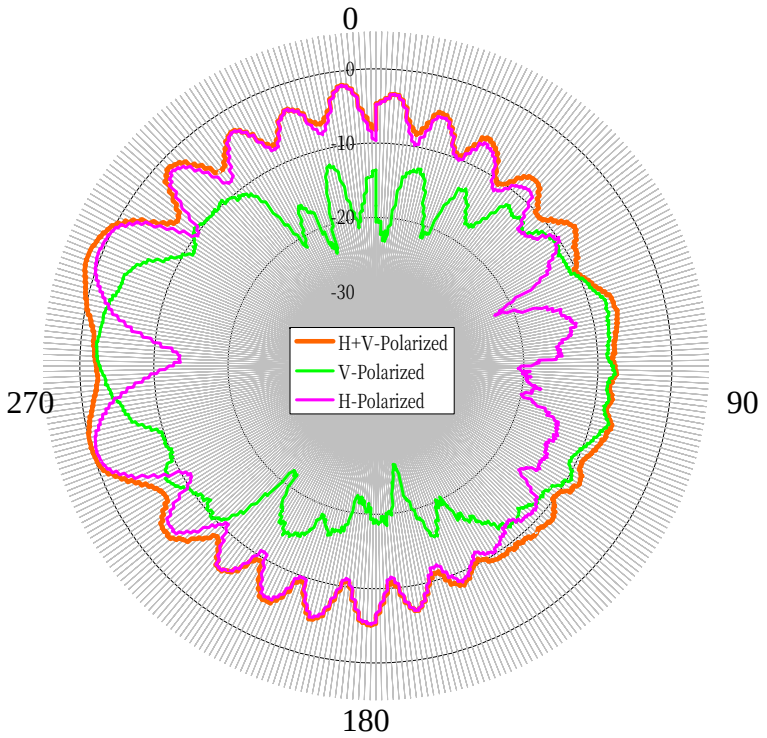
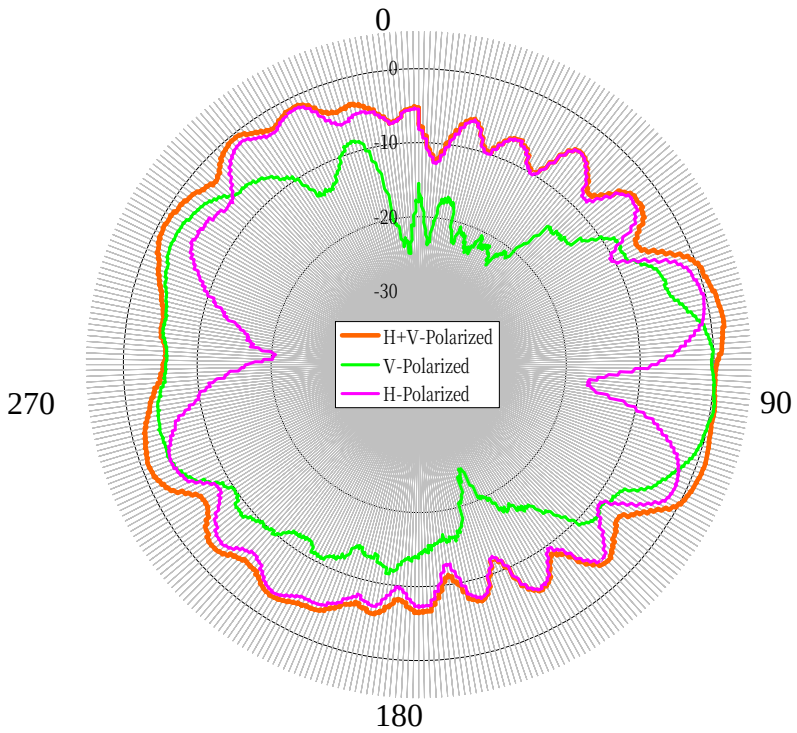
Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	-5.43	V	Peak	-3.05
	Average	-10.59		Average	-9.27
H	Peak	-6.05	H	Peak	-1.13
	Average	-11.10		Average	-10.00
H + V	Peak	-3.52	H + V	Peak	0.19
	Average	-7.83		Average	-6.61
V Gain >= -4 Area	0%		V Gain >= -4 Area	8.66%	
V Gain >= -5 Area	0%		V Gain >= -5 Area	14.15%	

8.4 5.075 GHz

Antenna (aux)	Antenna (main)
	

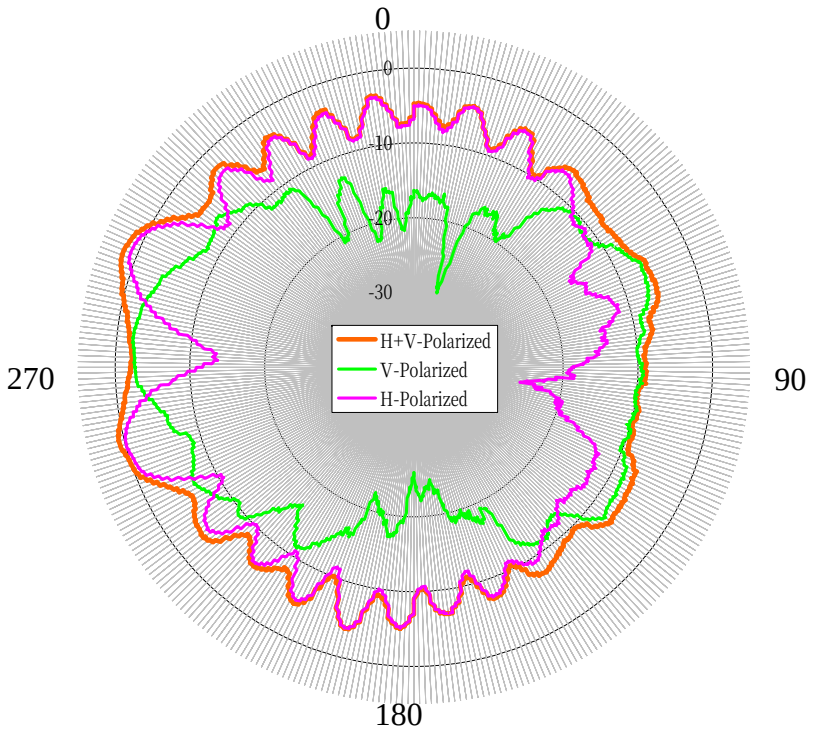
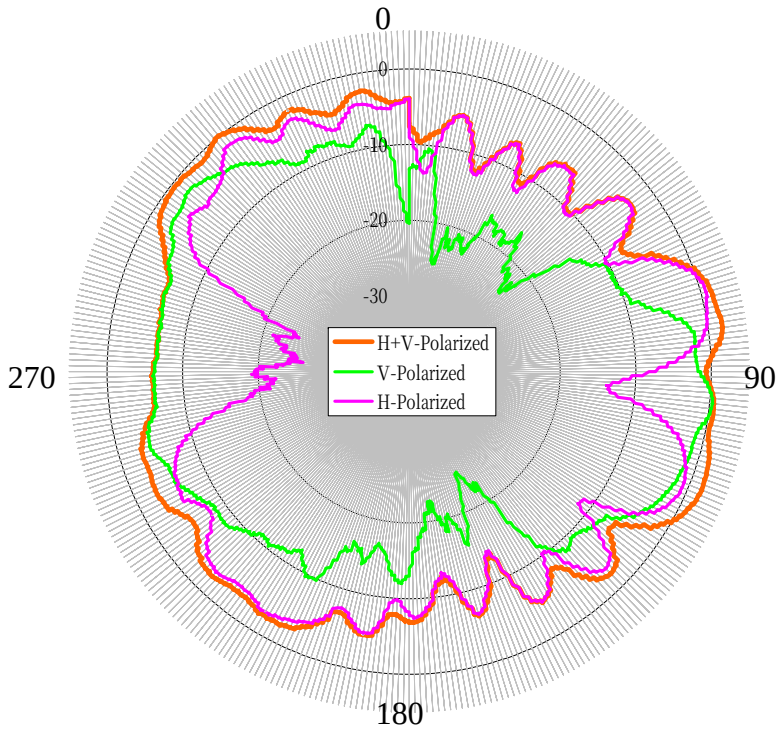
Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	-2.71	V	Peak	0.11
	Average	-10.06		Average	-7.39
H	Peak	1.60	H	Peak	0.00
	Average	-6.00		Average	-5.78
H + V	Peak	2.18	H + V	Peak	1.18
	Average	-4.57		Average	-3.50
V Gain >= -4 Area	7.08%		V Gain >= -4 Area	10.32%	
V Gain >= -5 Area	8.58%		V Gain >= -5 Area	18.40%	

8.5 5.15 GHz

Antenna (aux)	Antenna (main)
	

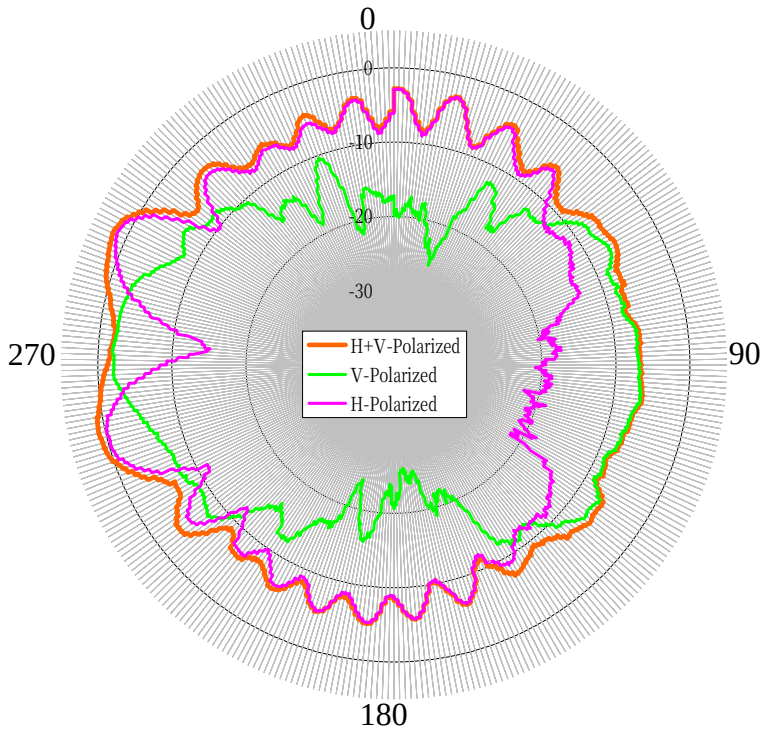
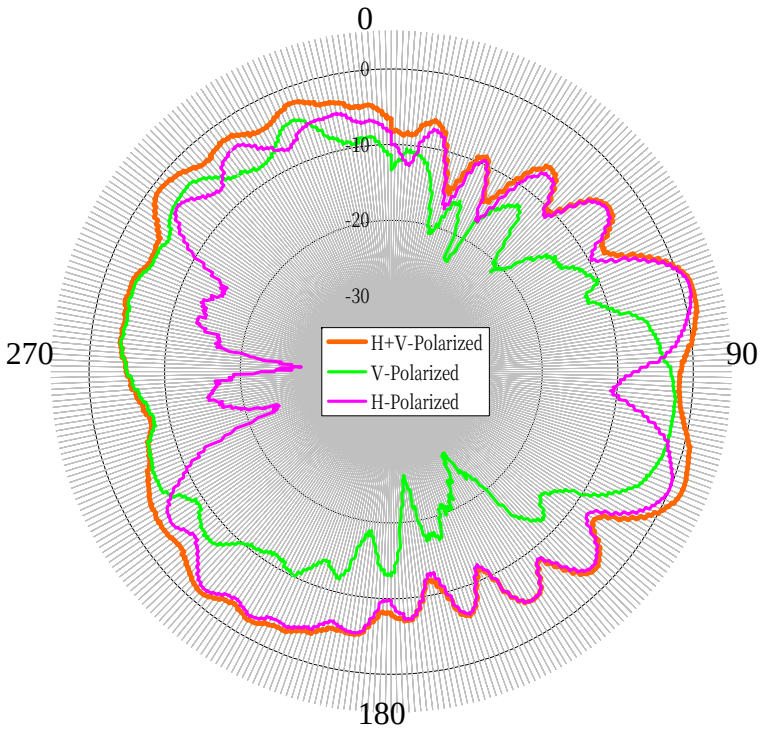
Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	-2.12	V	Peak	0.42
	Average	-9.78		Average	-6.55
H	Peak	0.47	H	Peak	-0.29
	Average	-6.53		Average	-5.60
H + V	Peak	1.64	H + V	Peak	1.73
	Average	-4.85		Average	-3.04
V Gain >= -4 Area	6.99%		V Gain >= -4 Area	18.73%	
V Gain >= -5 Area	8.58%		V Gain >= -5 Area	26.48%	

8.6 5.25 GHz

Antenna (aux)	Antenna (main)
	

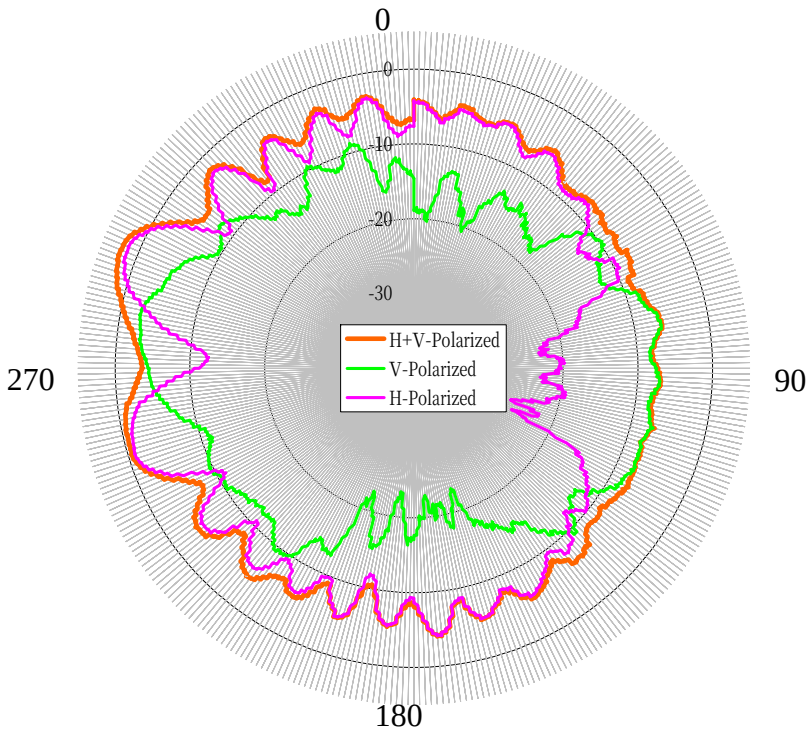
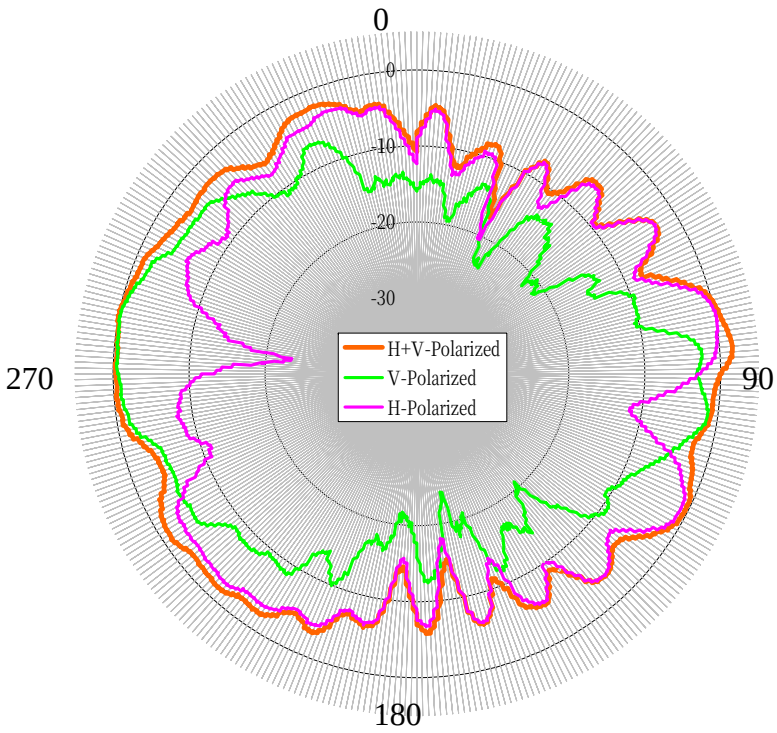
Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	-2.20	V	Peak	0.39
	Average	-9.39		Average	-6.80
H	Peak	0.91	H	Peak	0.71
	Average	-6.52		Average	-5.46
H + V	Peak	1.90	H + V	Peak	1.89
	Average	-4.71		Average	-3.07
V Gain >= -4 Area	6.58%		V Gain >= -4 Area	16.49%	
V Gain >= -5 Area	8.16%		V Gain >= -5 Area	22.40%	

8.7 5.35 GHz

Antenna (aux)	Antenna (main)
	

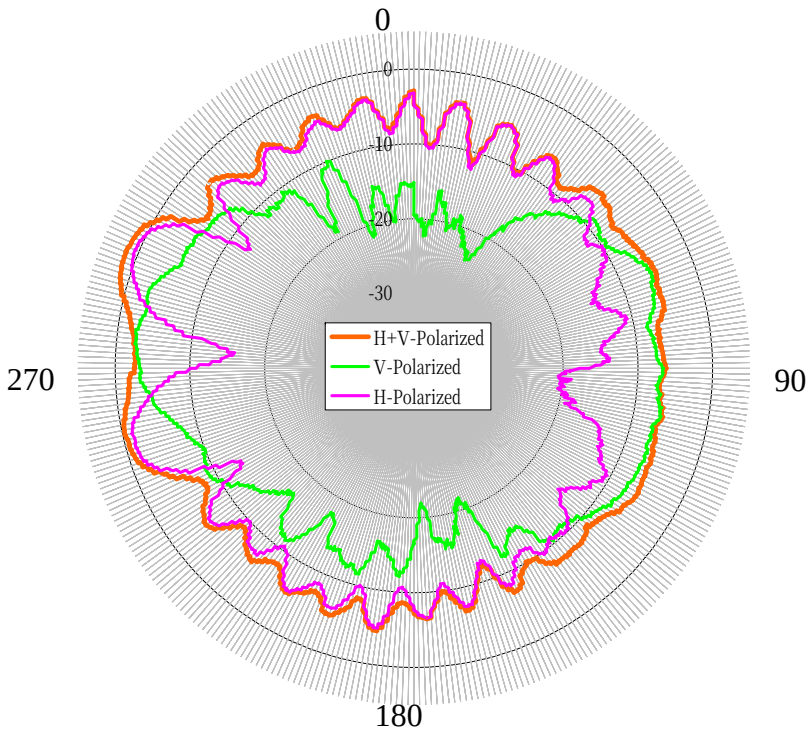
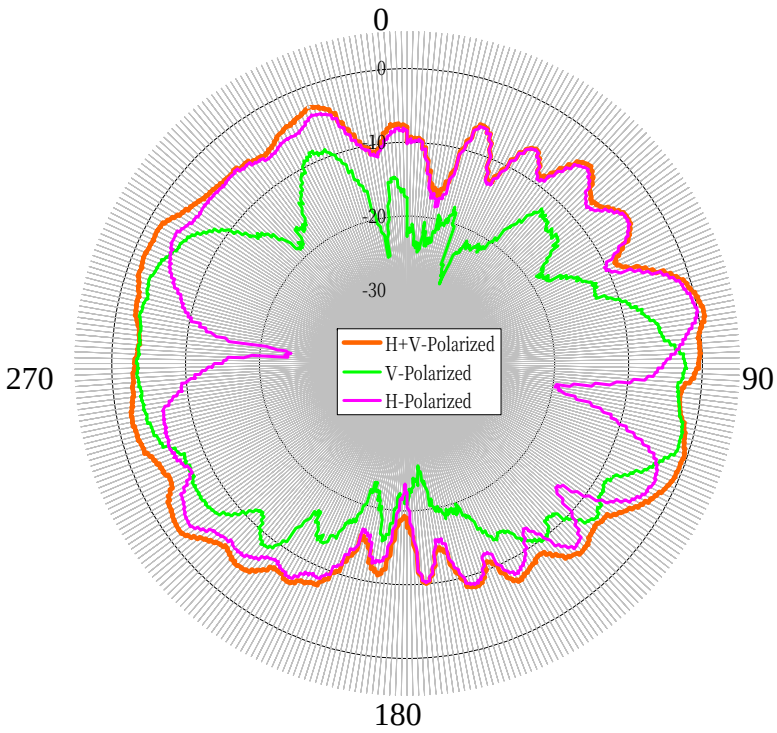
Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	-1.93	V	Peak	-2.15
	Average	-8.84		Average	-7.63
H	Peak	1.37	H	Peak	1.06
	Average	-6.55		Average	-5.65
H + V	Peak	1.93	H + V	Peak	1.66
	Average	-4.54		Average	-3.52
V Gain >= -4 Area	7.74%		V Gain >= -4 Area	9.83%	
V Gain >= -5 Area	8.91%		V Gain >= -5 Area	21.23%	

8.8 5.47 GHz

Antenna (aux)	Antenna (main)
	

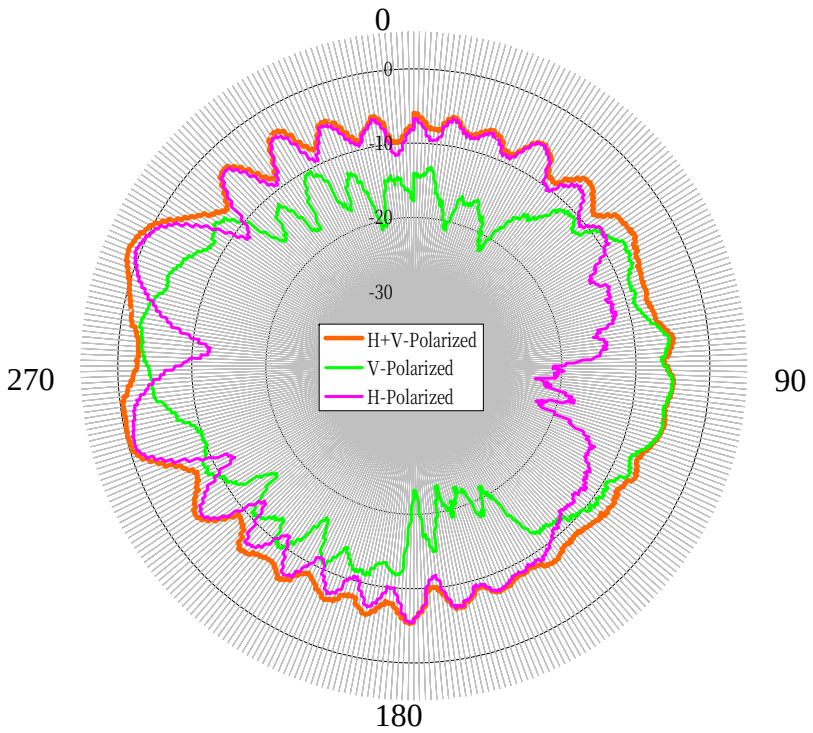
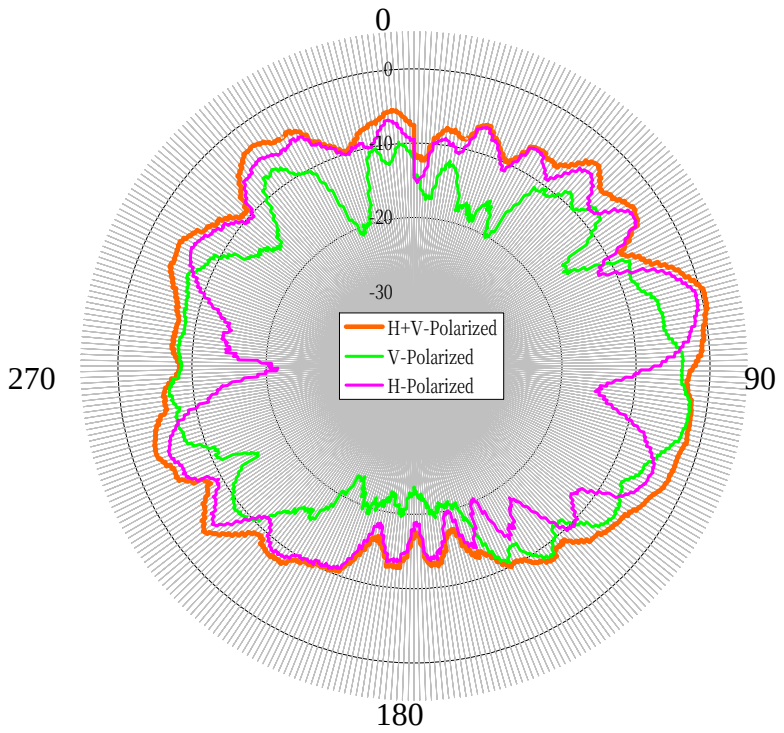
Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	-2.59	V	Peak	-0.11
	Average	-9.79		Average	-6.84
H	Peak	1.56	H	Peak	0.17
	Average	-6.20		Average	-5.71
H + V	Peak	2.33	H + V	Peak	1.70
	Average	-4.62		Average	-3.23
V Gain >= -4 Area	3.91%		V Gain >= -4 Area	17.49%	
V Gain >= -5 Area	6.74%		V Gain >= -5 Area	23.65%	

8.9 5.5975 GHz

Antenna (aux)	Antenna (main)
	

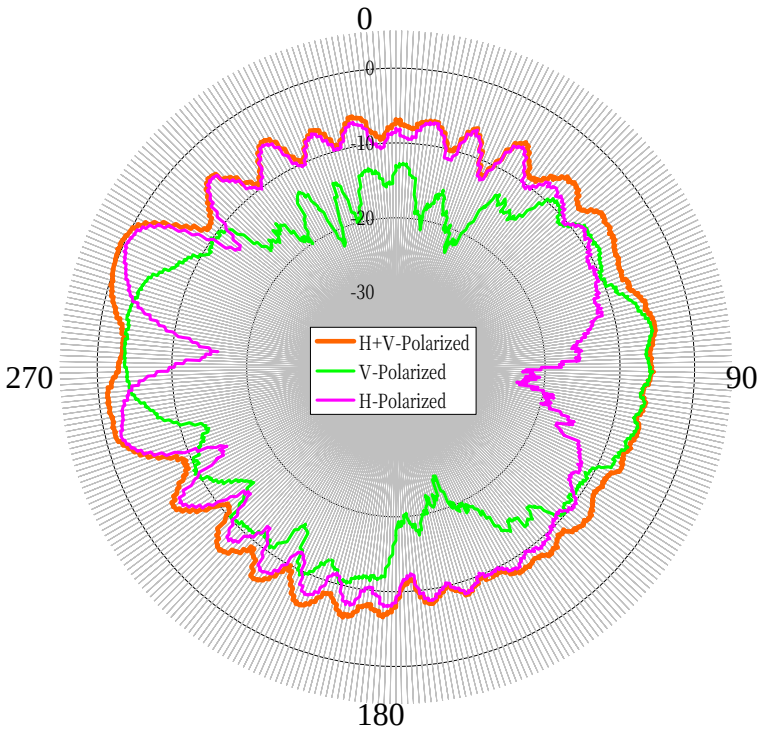
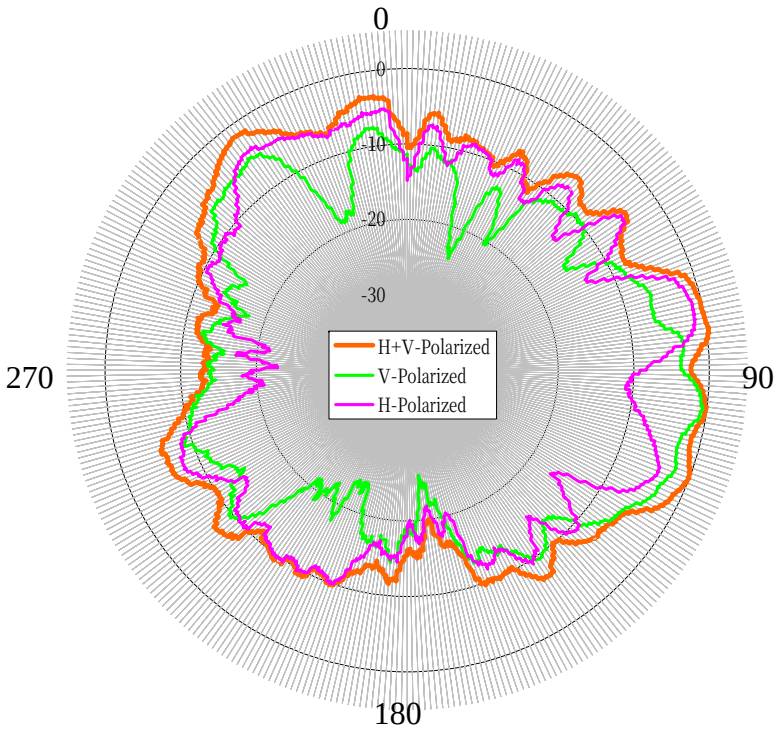
Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	-2.42	V	Peak	-1.49
	Average	-9.04		Average	-8.09
H	Peak	0.52	H	Peak	-0.05
	Average	-6.91		Average	-6.71
H + V	Peak	1.60	H + V	Peak	0.83
	Average	-4.83		Average	-4.33
V Gain >= -4 Area	6.58%		V Gain >= -4 Area	17.15%	
V Gain >= -5 Area	8.49%		V Gain >= -5 Area	20.40%	

8.10 5.725 GHz

Antenna (aux)	Antenna (main)
	

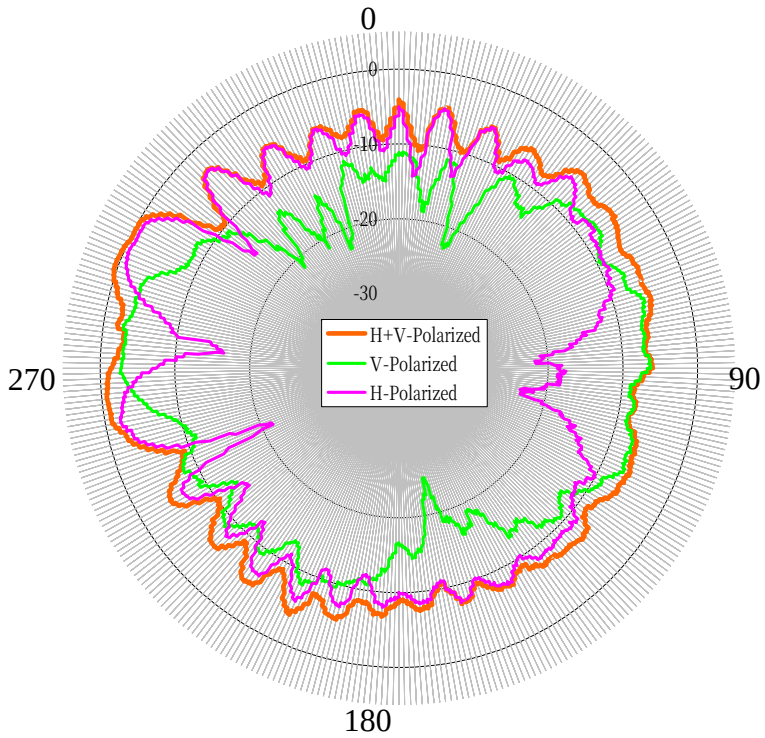
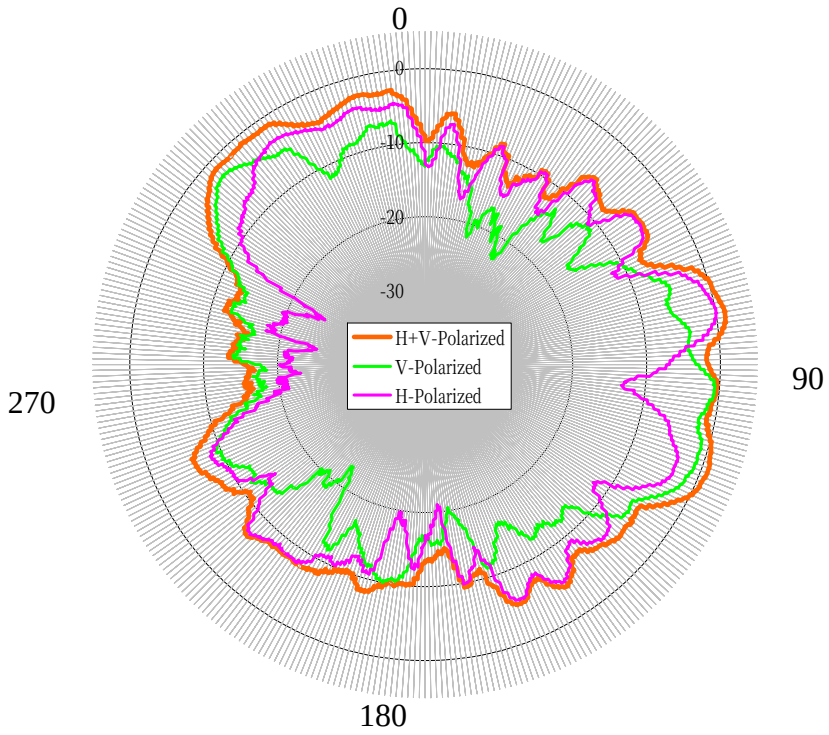
Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	-2.59	V	Peak	-2.29
	Average	-9.25		Average	-9.25
H	Peak	0.65	H	Peak	-0.69
	Average	-7.10		Average	-8.02
H + V	Peak	1.61	H + V	Peak	0.45
	Average	-5.04		Average	-5.58
V Gain >= -4 Area	4.16%		7.74%	6.00%	
V Gain >= -5 Area	7.99%		10.16%	7.41%	

8.11 5.785 GHz

Antenna (aux)	Antenna (main)
	

Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	-3.39	V	Peak	-0.55
	Average	-9.74		Average	-8.82
H	Peak	-0.32	H	Peak	-1.27
	Average	-7.99		Average	-8.68
H + V	Peak	0.45	H + V	Peak	0.32
	Average	-5.76		Average	-5.74
V Gain >= -4 Area	4.75%		6.00%	10.16%	
V Gain >= -5 Area	7.41%		9.41%	11.07%	

8.12 5.85 GHz

Antenna (aux)	Antenna (main)
	

Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	-2.68	V	Peak	-0.63
	Average	-9.26		Average	-8.11
H	Peak	-0.55	H	Peak	0.05
	Average	-7.65		Average	-7.63
H + V	Peak	0.45	H + V	Peak	1.25
	Average	-5.37		Average	-4.86
Gain >= -4 Area	6.41%		Gain >= -4 Area	12.24%	
Gain >= -5 Area	7.58%		Gain >= -5 Area	16.32%	

9.1 Isolation test result

Main → Aux