Well Green Technology Co., Ltd

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TWINHEAD

Antenna Test Report

Data 3/22/05

RD Manager	Supervisor	RD engineer	Sales engineer
David	Johnson	Tim	Jerry

1. Information Overview

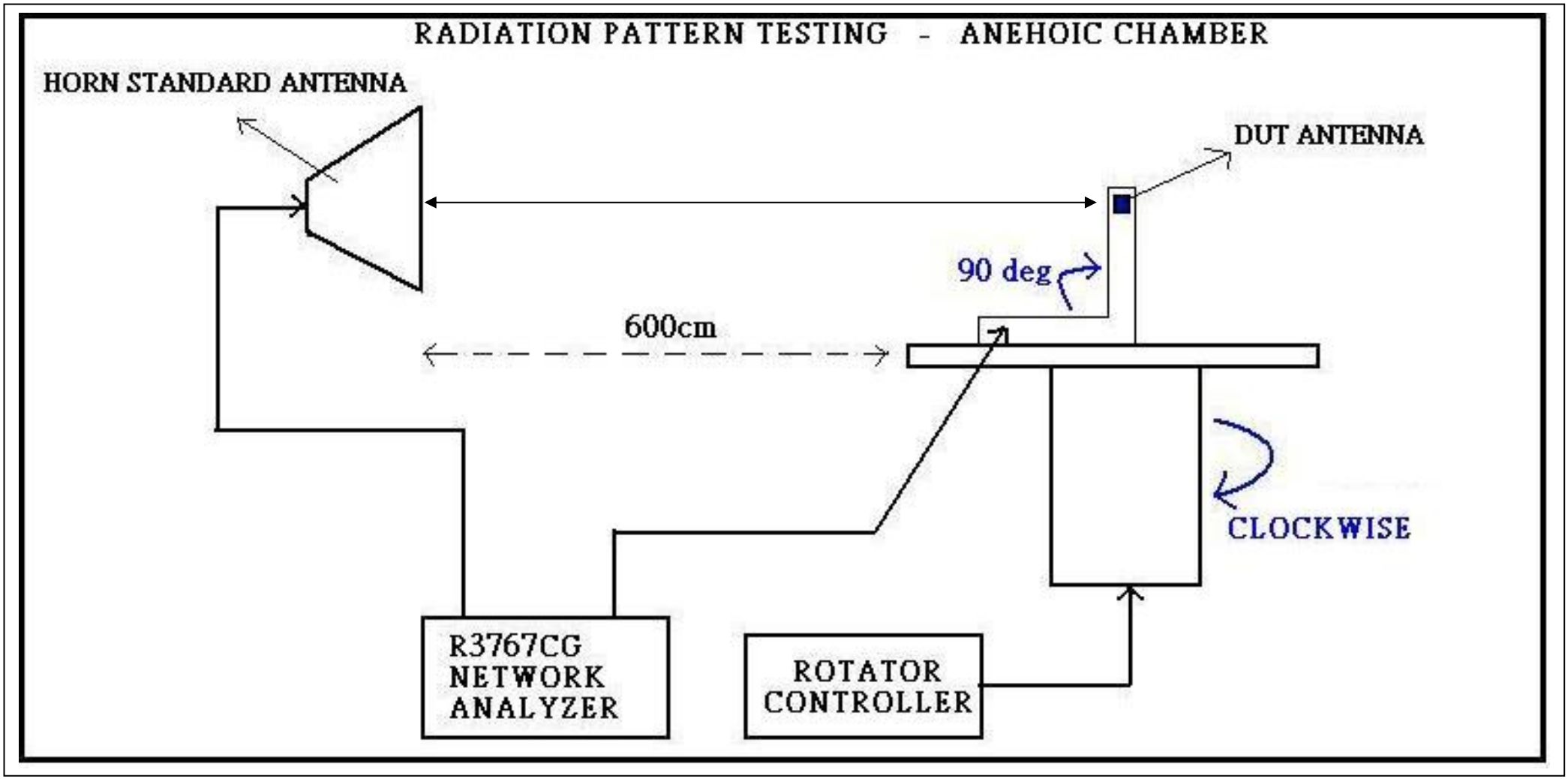
1.1 Platform Information

	Description	Comments
Project Code of System		
Project Stage	■ Prototype □ 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 1		
Type	PIFA	
Model Name	F10D-L	
Part Number	TWF10WIPI01A	
Antenna Location	Left-up of the panel	
Antenna Purpose	**Wireless LAN 802.11abg Main Antenna**	
Connector Manufacturer	IPEX	
Connector Part No.	2078-101R-13 20278-111R-13	
Frequency GHz	2.4 – 2.5, 5.15 – 5.85	
Impedance	50Ω	
Cable Manufacturer & PN	Wonderful A3132TS001	
Cable Diameter ϕmm	1.13	
Cable Length		
Antenna 2		
Type	PIFA	
Model Name	F10D-R	
Part Number	TWF10WIPI02A	
Antenna Location	Right-up of the panel	
Antenna Purpose	**Wireless LAN 802.11abg Aux Antenna**	
Connector Manufacturer	IPEX	
Connector Part No.	2078-101R-13 20278-111R-13	
Frequency GHz	2.4 – 2.5, 5.15 – 5.85	
Impedance	50Ω	
Cable Manufacturer & PN	Wonderful A3132TS001	
Cable Diameter ϕmm	1.13	
Cable Length		
Antenna 3		
Type	PIFA	
Model Name	F10D-Side	
Part Number	TWF10BLPI01A	
Antenna Location	Left-Side of the panel	
Antenna Purpose	**Bluetooth Antenna**	
Connector Manufacturer	IPEX	
Connector Part No.	2078-101R-13 20278-111R-13	
Frequency GHz	2.4 – 2.5	
Impedance	50Ω	
Cable Manufacturer & PN	Wonderful A3132TS001	
Cable Diameter ϕmm	1.13	
Cable Length		

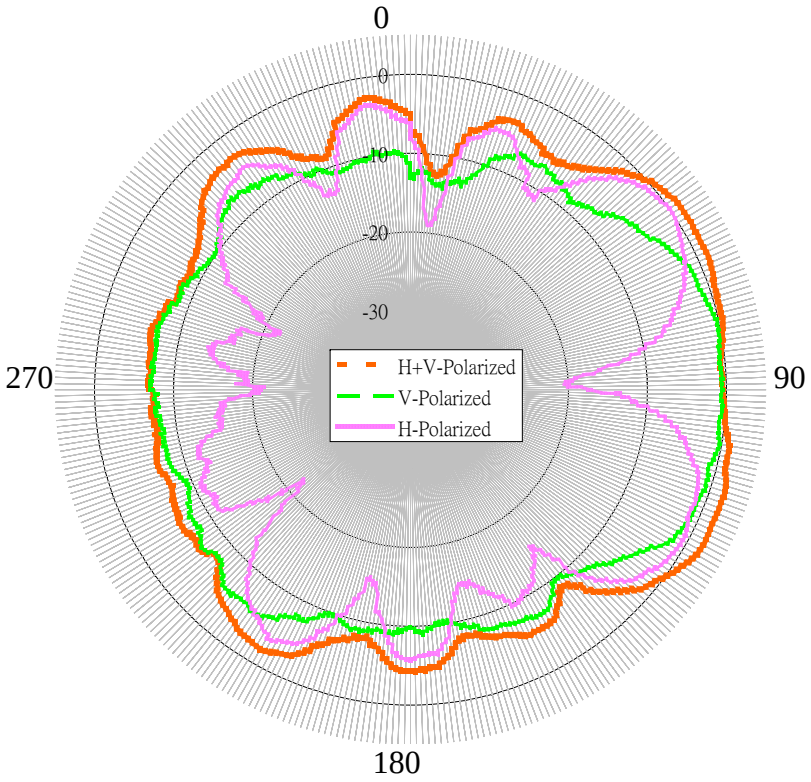
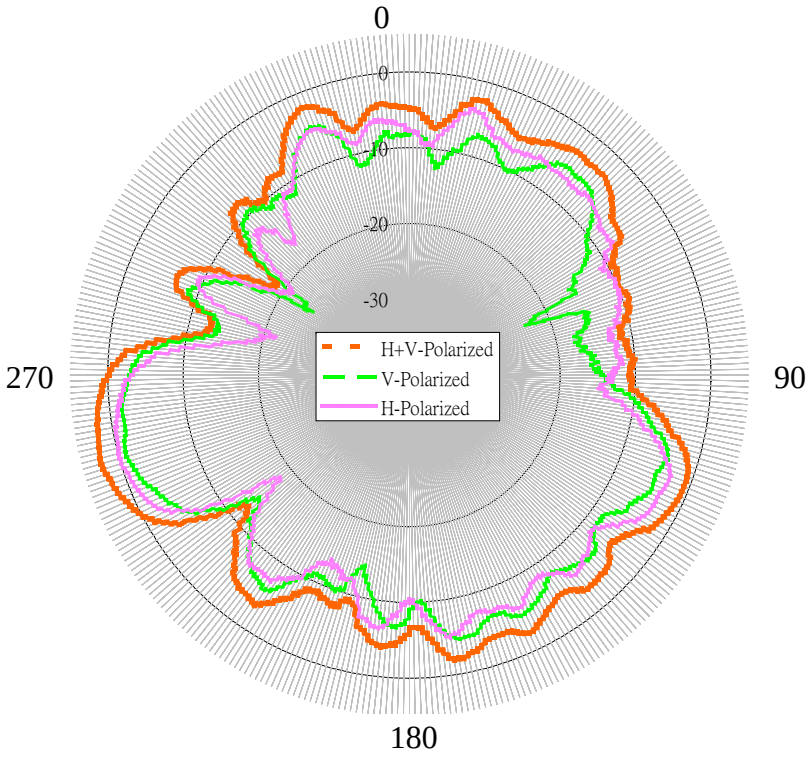
7. Antenna Radiation Pattern Testing Set Up



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.

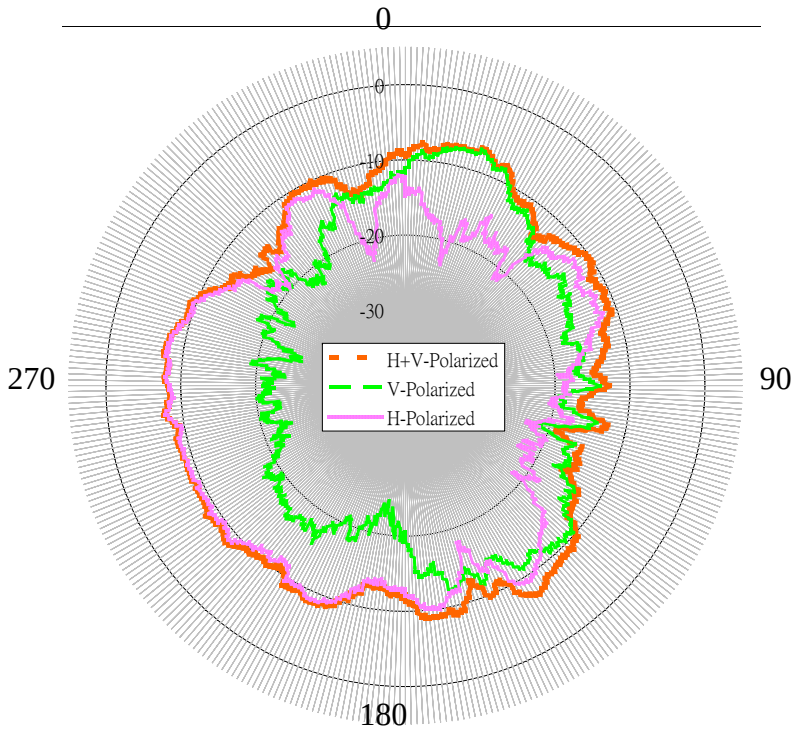
8. Radiation Pattern of XY Plane Testing Result

8.1 2.4 GHz

Antenna 1	Antenna 2
	

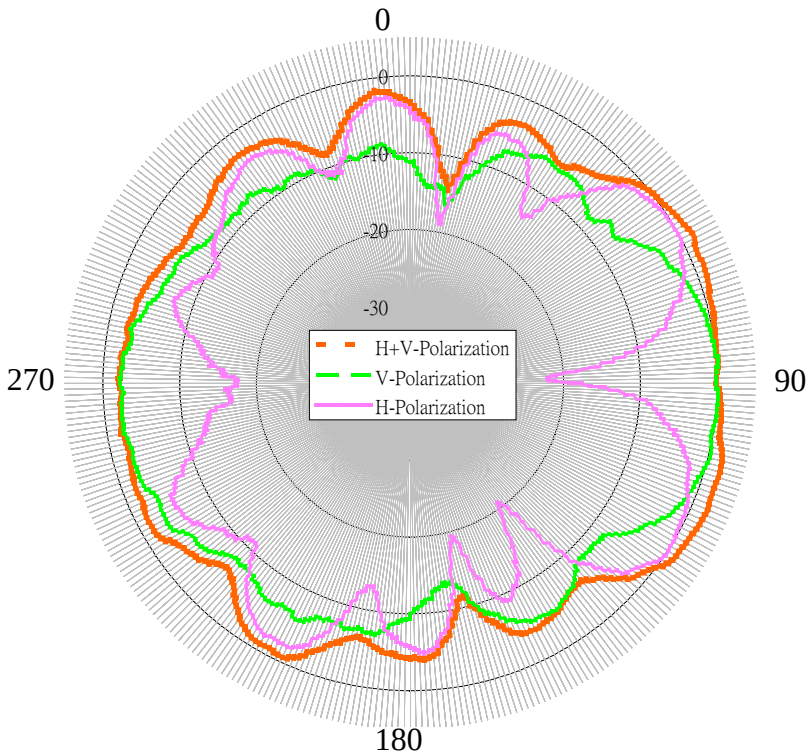
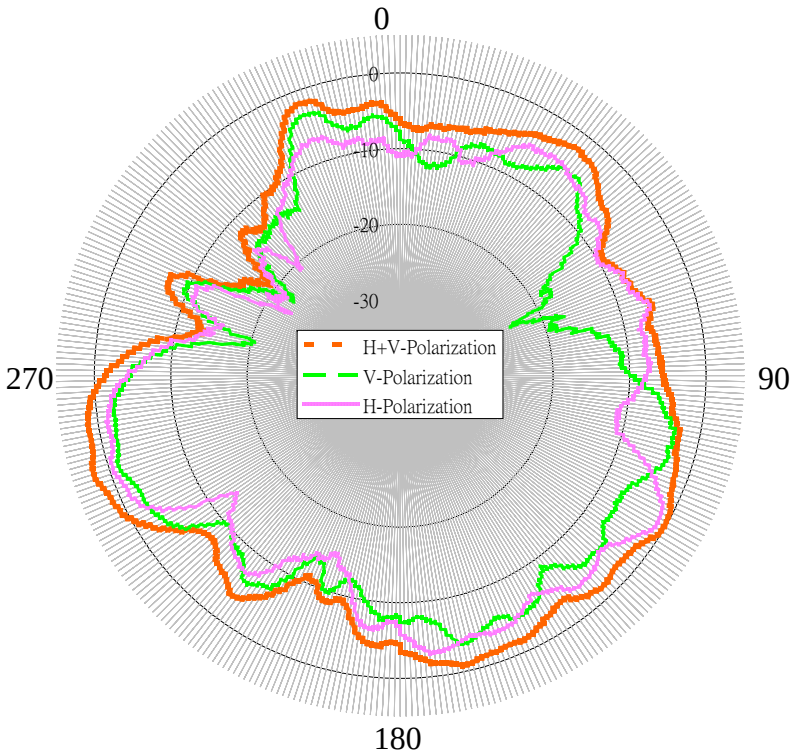
Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	-0.17	V	Peak	-0.92
	Average	-5.66		Average	-7.18
H	Peak	0.06	H	Peak	0.05
	Average	-6.34		Average	-6.71
H + V	Peak	2.01	H + V	Peak	2.57
	Average	-2.98		Average	-3.93
V Gain >= -4 Area	18.57%		V Gain >= -4 Area	8.99%	
V Gain >= -5 Area	20.57%		V Gain >= -5 Area	15.99%	

2.4 GHz

Antenna 3


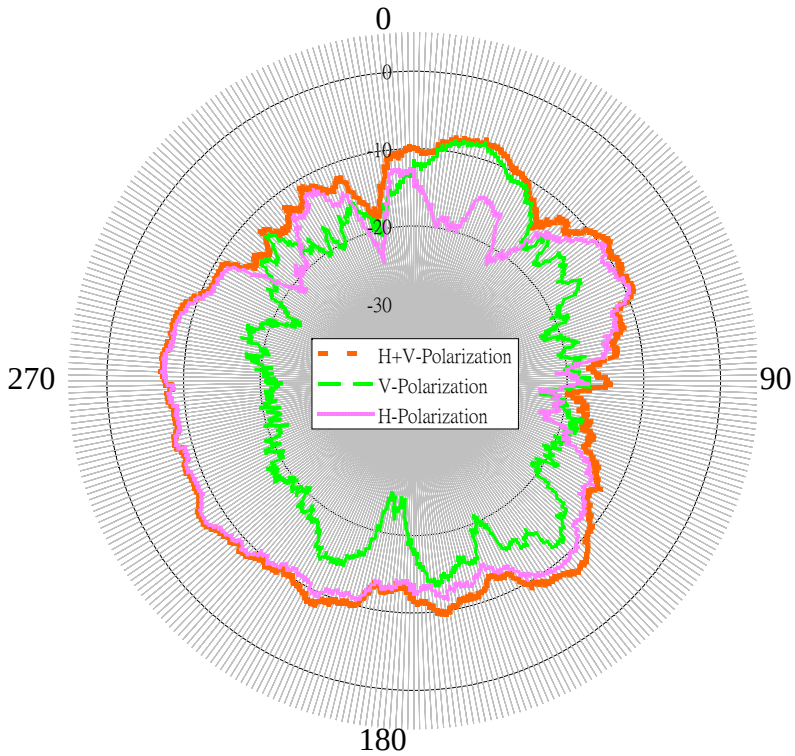
Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	-3.97
	Average	-14.59
H	Peak	-7.66
	Average	-12.28
H + V	Peak	-6.74
	Average	-10.27
V Gain >= -4 Area	0%	
V Gain >= -5 Area	0%	

8.2 2.45 GHz

Antenna 1	Antenna 2
	

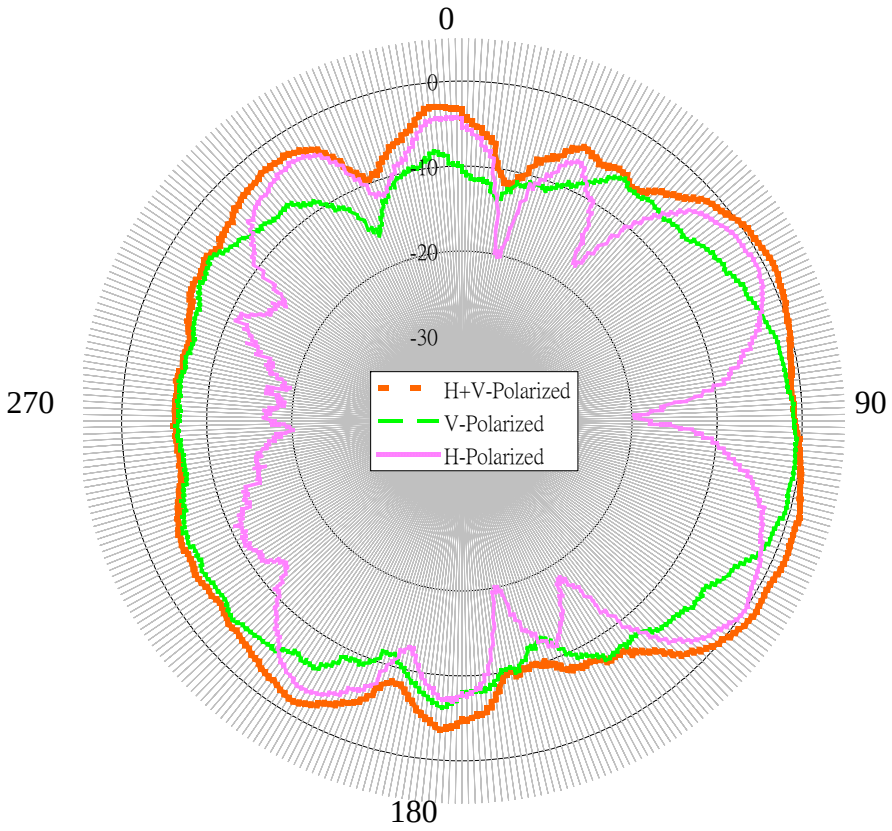
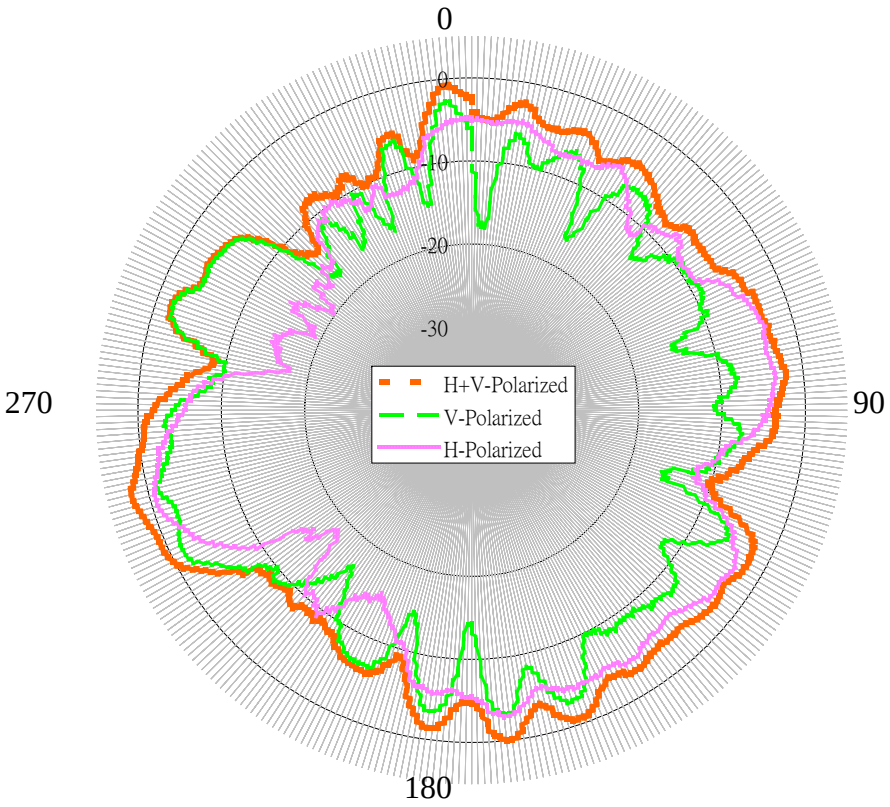
Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	0.00	V	Peak	-1.25
	Average	-5.12		Average	-6.94
H	Peak	-0.10	H	Peak	-0.40
	Average	-5.89		Average	-6.33
H + V	Peak	1.82	H + V	Peak	2.15
	Average	-2.48		Average	-3.62
V Gain >= -4 Area	27.56%		V Gain >= -4 Area	13.99%	
V Gain >= -5 Area	31.72%		V Gain >= -5 Area	20.15%	

2.45 GHz

Antenna 3


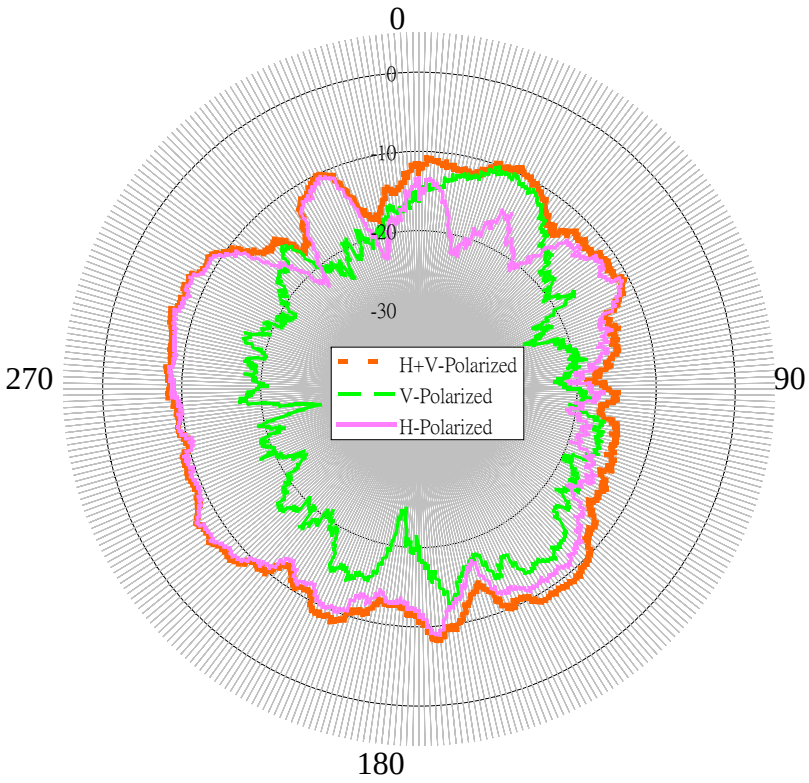
Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	-7.85
	Average	-15.78
H	Peak	-7.21
	Average	-11.79
H + V	Peak	-6.92
	Average	-10.33
V Gain >= -4 Area	0%	
V Gain >= -5 Area	0%	

8.3 2.5 GHz

Antenna 1	Antenna 2
	

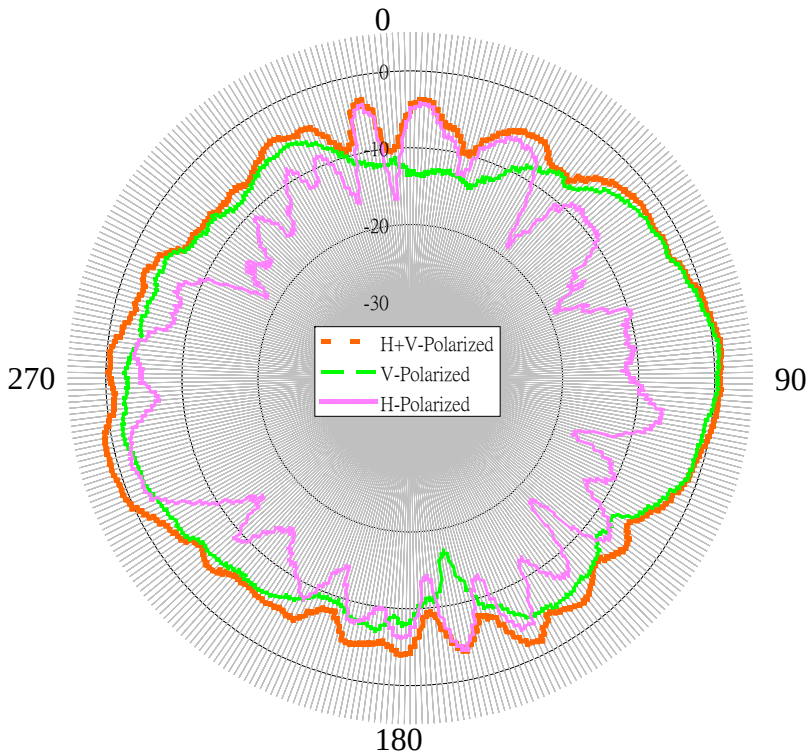
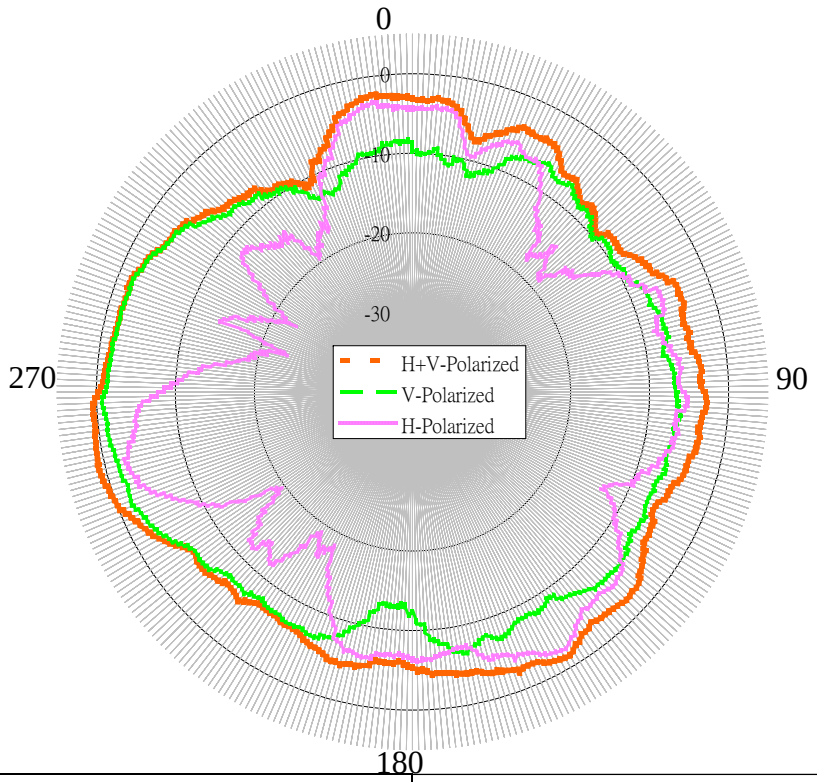
Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	-0.47	V	Peak	-1.06
	Average	-5.62		Average	-6.98
H	Peak	0.11	H	Peak	-0.61
	Average	-6.41		Average	-6.48
H + V	Peak	1.38	H + V	Peak	2.02
	Average	-2.99		Average	-3.71
Gain >= -4 Area	16.40%		Gain >= -4 Area	15.82%	
Gain >= -5 Area	24.56%		Gain >= -5 Area	21.90%	

2.5 GHz

Antenna 3


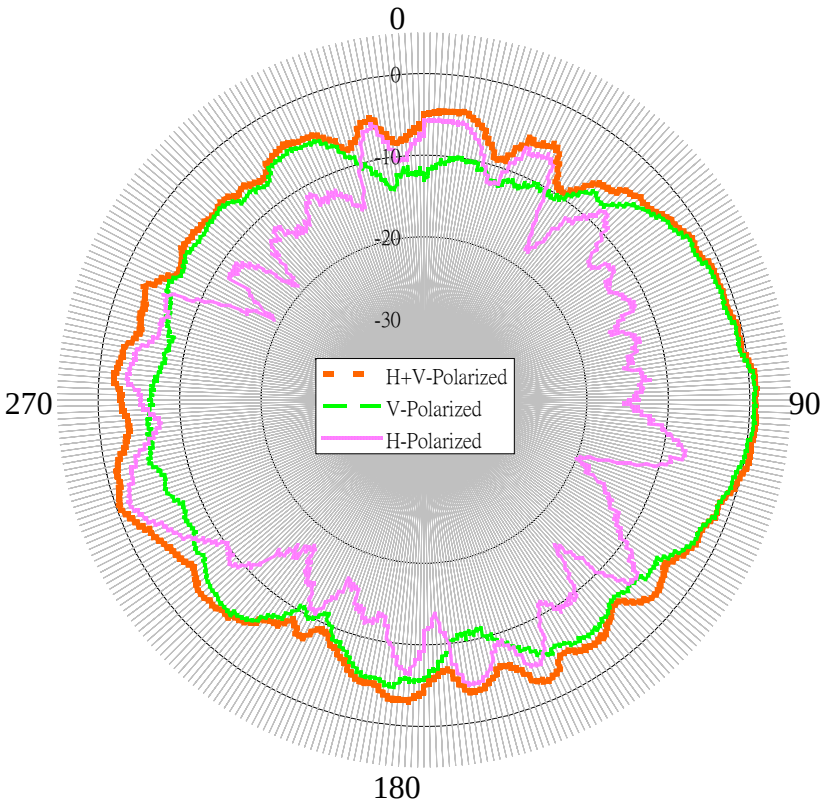
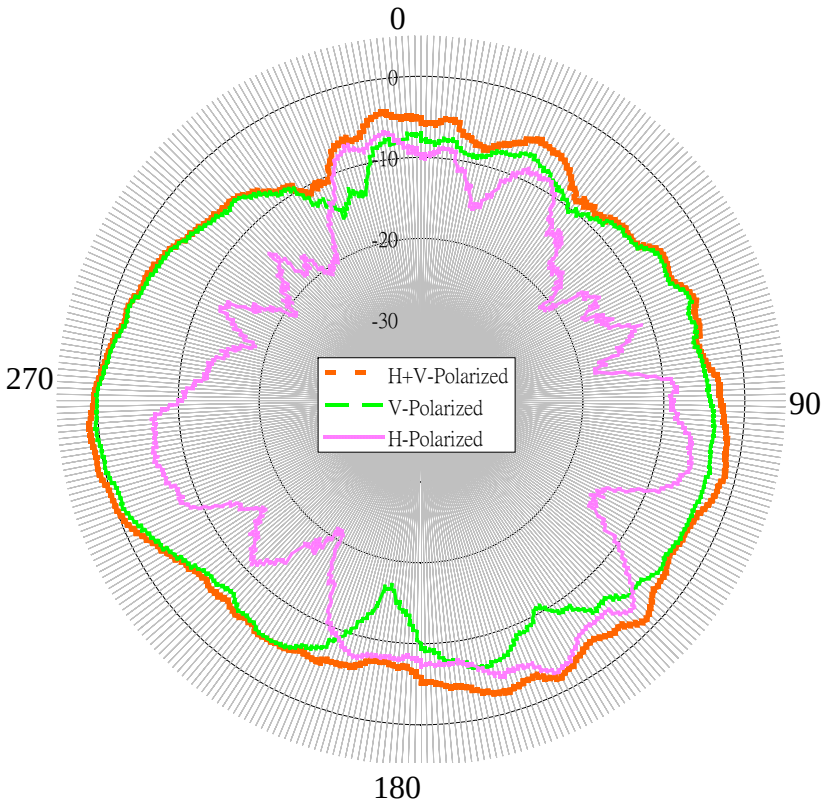
Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	-10.23
	Average	-16.60
H	Peak	-7.20
	Average	-12.10
H + V	Peak	-7.05
	Average	-10.79
V Gain >= -4 Area	0%	
V Gain >= -5 Area	0%	

8.4 5.15 GHz

Antenna 1	Antenna 2
	

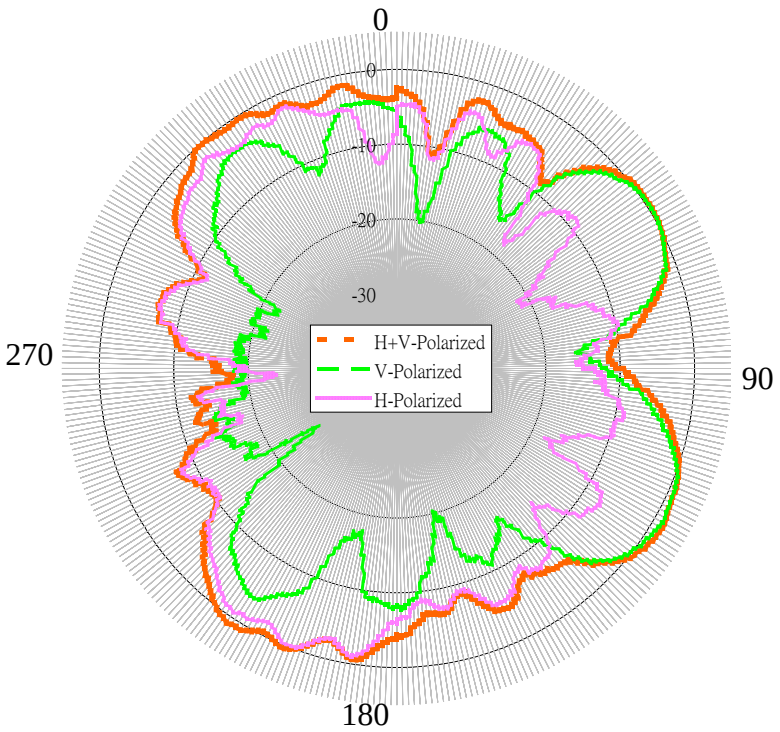
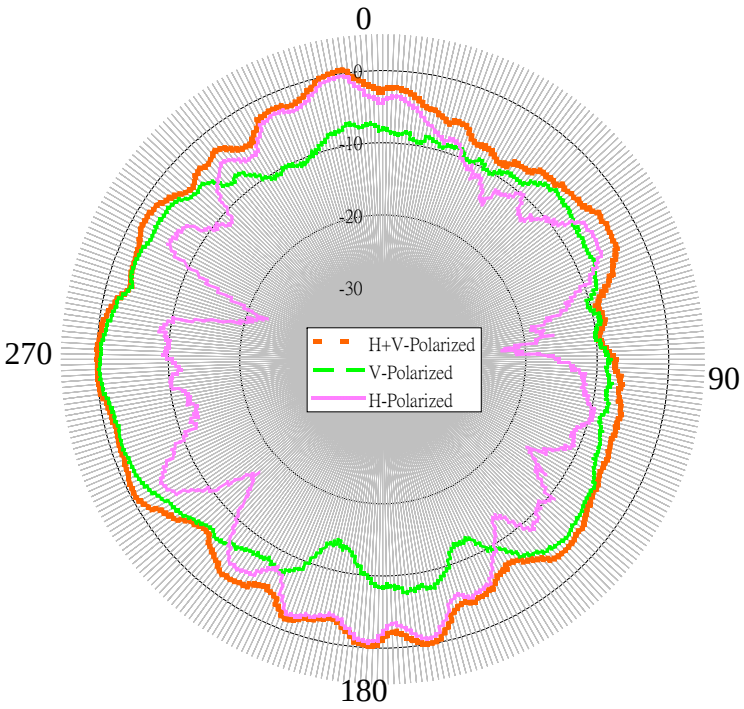
Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	0.76	V	Peak	-0.63
	Average	-4.66		Average	-6.05
H	Peak	-1.59	H	Peak	-2.28
	Average	-8.25		Average	-7.60
H + V	Peak	1.06	H + V	Peak	0.93
	Average	-3.09		Average	-3.75
Gain >= -4 Area	30.89%		Gain >= -4 Area	17.49%	
Gain >= -5 Area	40.13%		Gain >= -5 Area	19.40%	

8.5 5.25 GHz

Antenna 1	Antenna 2
	

Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	0.73	V	Peak	0.39
	Average	-5.02		Average	-5.09
H	Peak	-1.58	H	Peak	-2.43
	Average	-8.69		Average	-9.29
H + V	Peak	0.91	H + V	Peak	1.13
	Average	-3.47		Average	-3.69
Gain >= -4 Area	19.57%		Gain >= -4 Area	26.14%	
Gain >= -5 Area	24.98%		Gain >= -5 Area	35.72%	

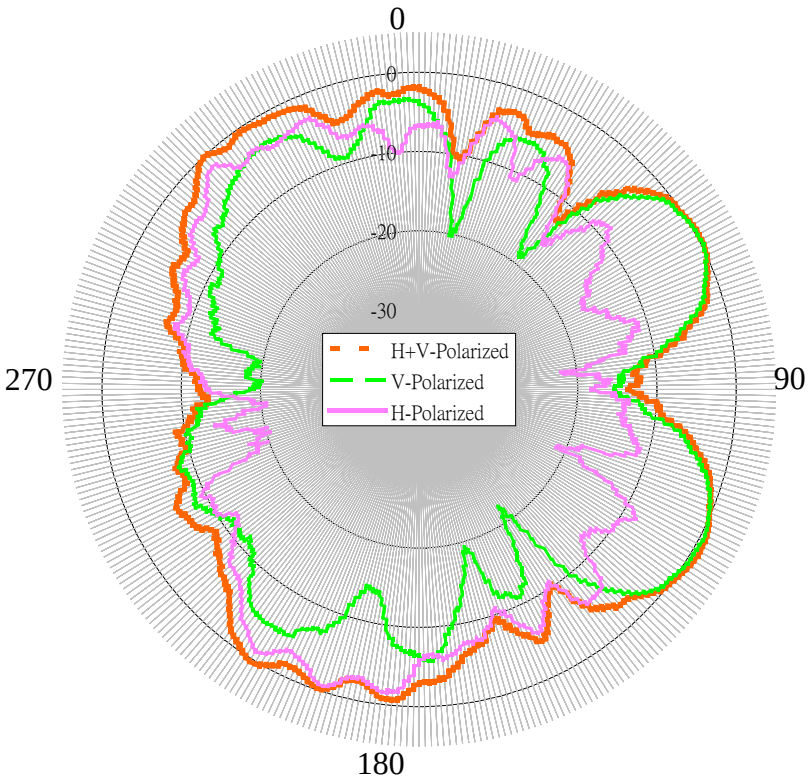
8.6 5.35 GHz

Antenna 1	Antenna 2
	

Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	1.21	V	Peak	-0.36
	Average	-5.78		Average	-5.90
H	Peak	-0.14	H	Peak	-0.34
	Average	-6.36		Average	-6.54
H + V	Peak	1.58	H + V	Peak	0.49
	Average	-3.05		Average	-3.19
Gain >= -4 Area	20.82%		Gain >= -4 Area	19.73%	
Gain >= -5 Area	28.06%		Gain >= -5 Area	24.90%	

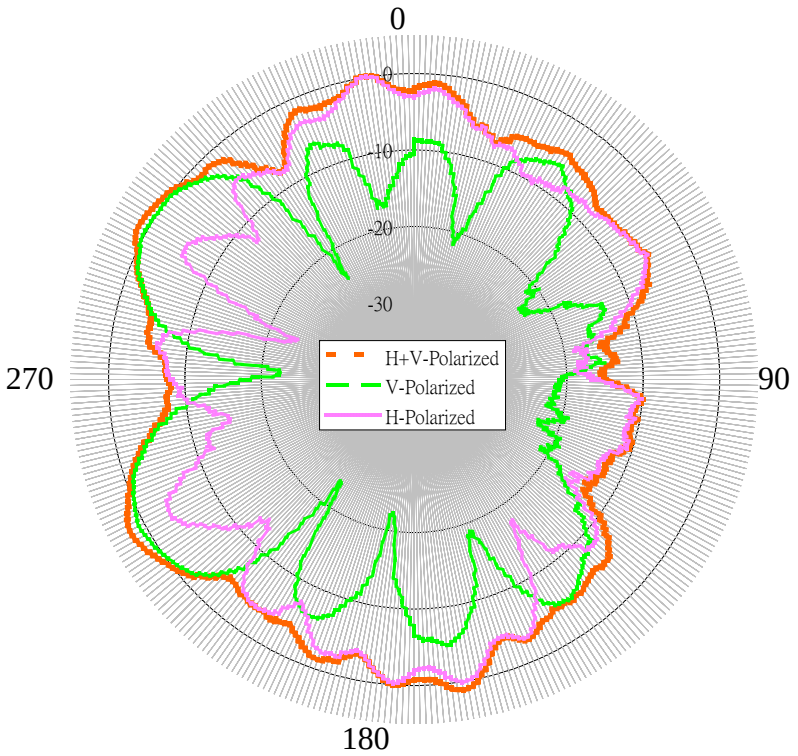
8.7 5.47 GHz

Antenna 1



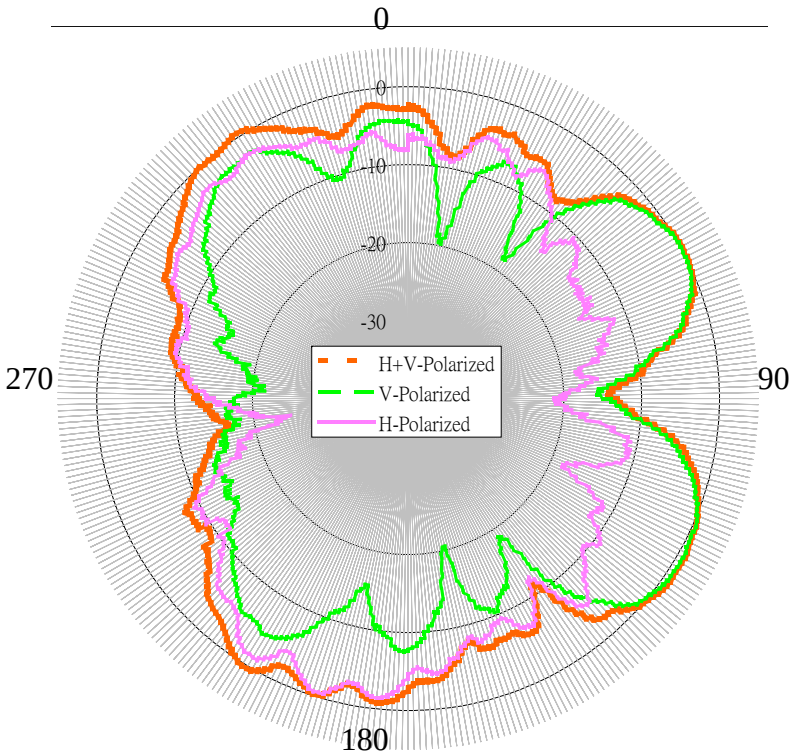
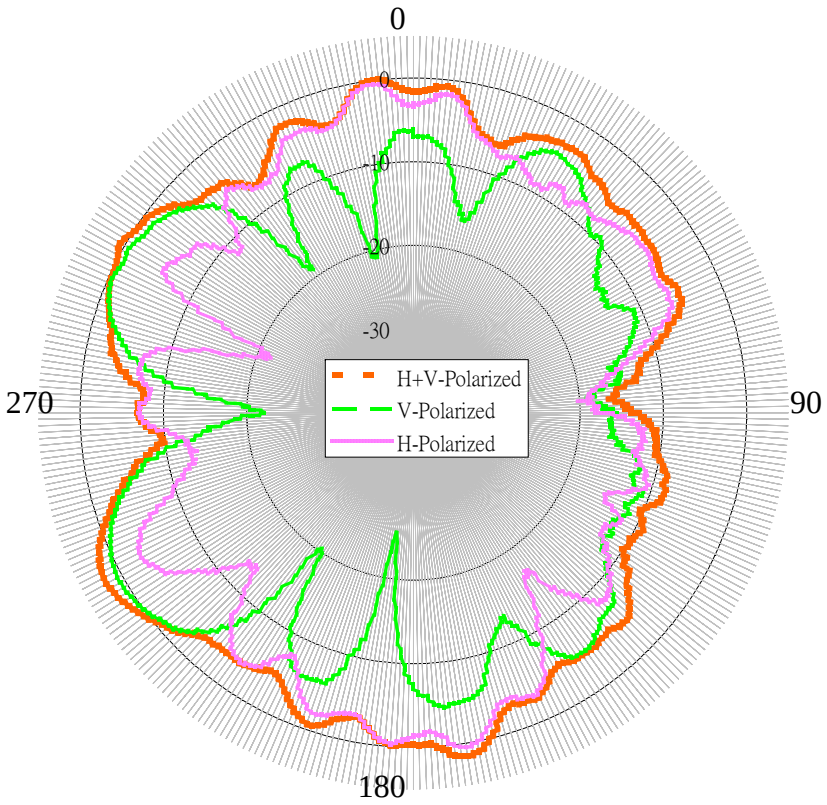
Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	0.59
	Average	-5.77
H	Peak	-0.65
	Average	-6.97
H + V	Peak	0.98
	Average	-3.21
Gain >= -4 Area	21.57%	
Gain >= -5 Area	28.39%	

Antenna 2



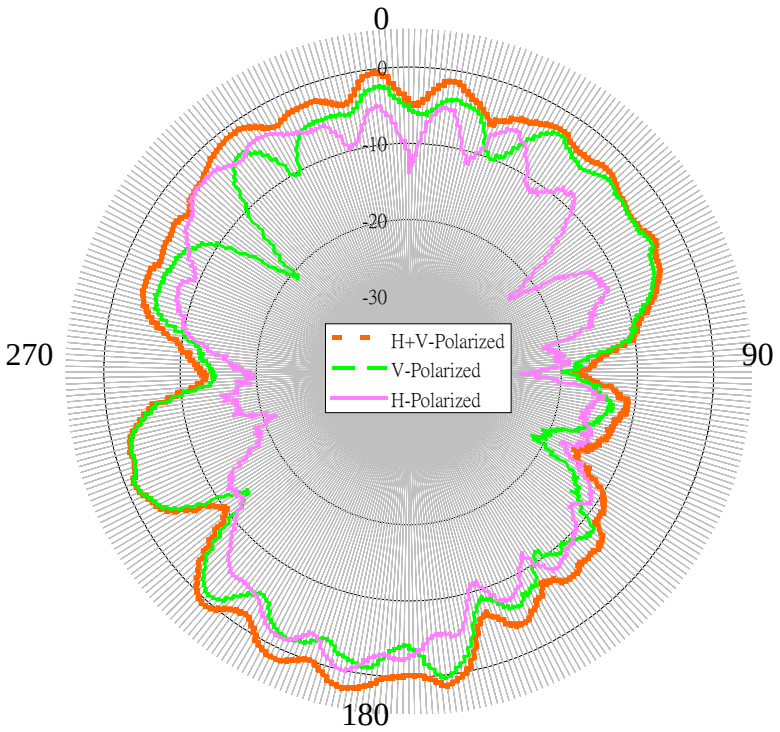
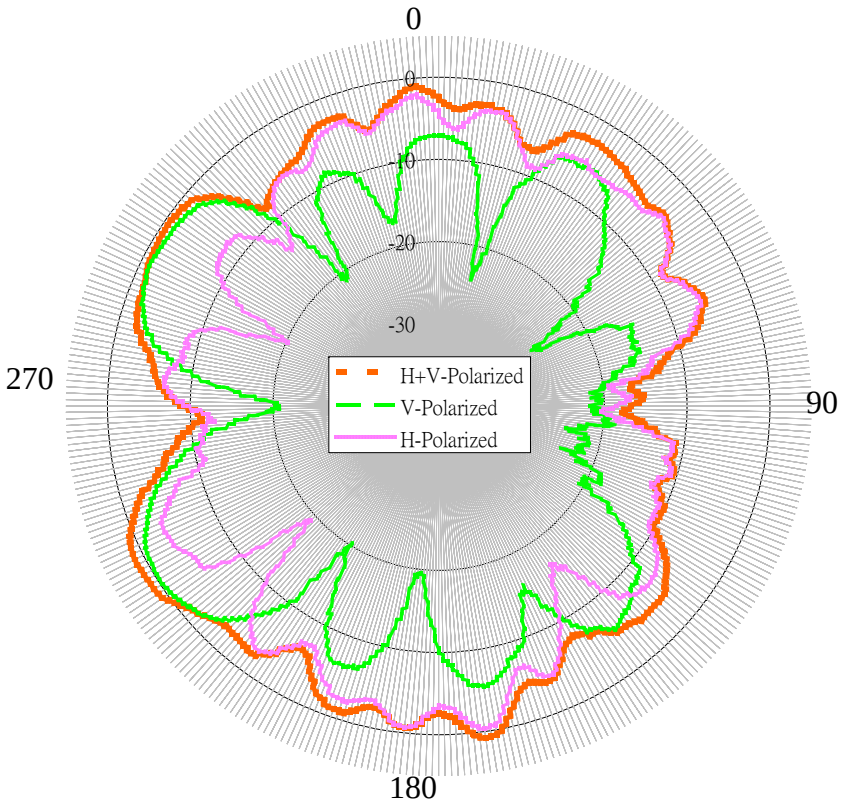
Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	0.85
	Average	-6.43
H	Peak	0.18
	Average	-5.89
H + V	Peak	2.1
	Average	-3.14
Gain >= -4 Area	17.49%	
Gain >= -5 Area	19.98%	

8.8 5.5975 GHz

Antenna 1	Antenna 2
	

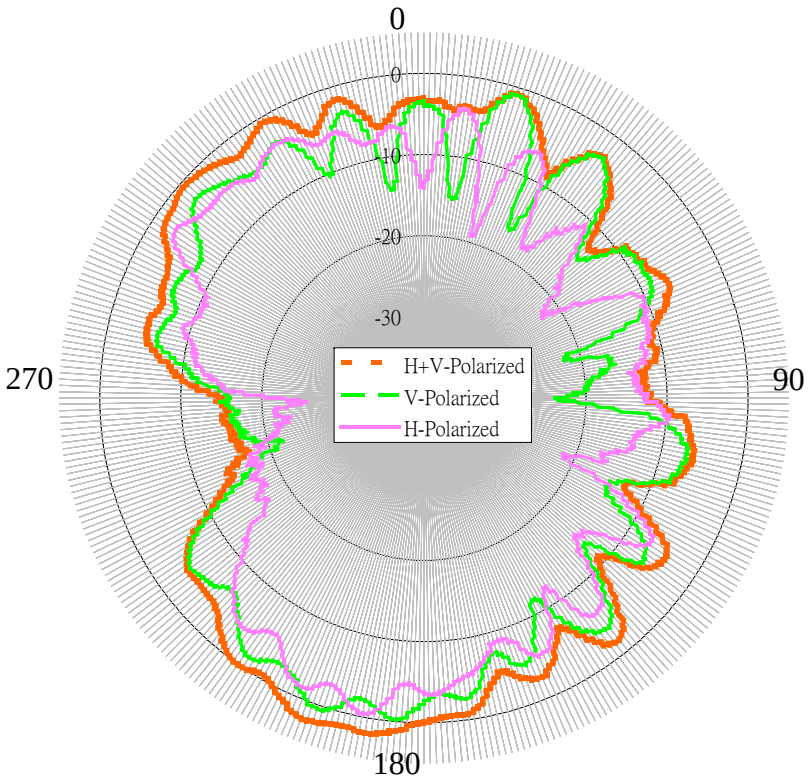
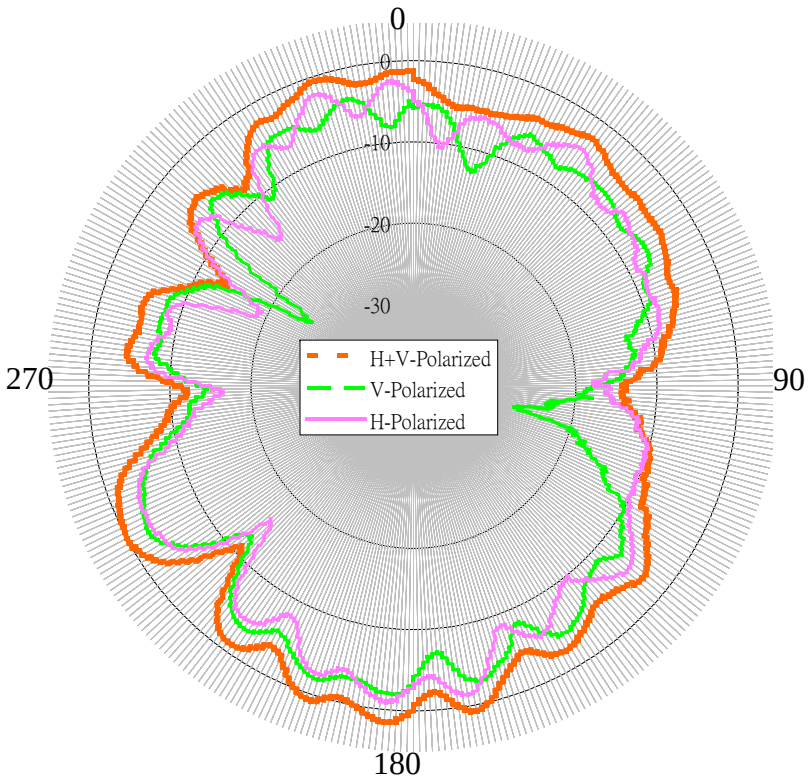
Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	0.84	V	Peak	0.65
	Average	-5.69		Average	-6.26
H	Peak	-0.43	H	Peak	0.50
	Average	-6.82		Average	-5.80
H + V	Peak	1.06	H + V	Peak	2.13
	Average	-3.21		Average	-3.02
Gain >= -4 Area	22.06%		Gain >= -4 Area	16.82%	
Gain >= -5 Area	29.14%		Gain >= -5 Area	22.56%	

8.9 5.725 GHz

Antenna 1	Antenna 2
	

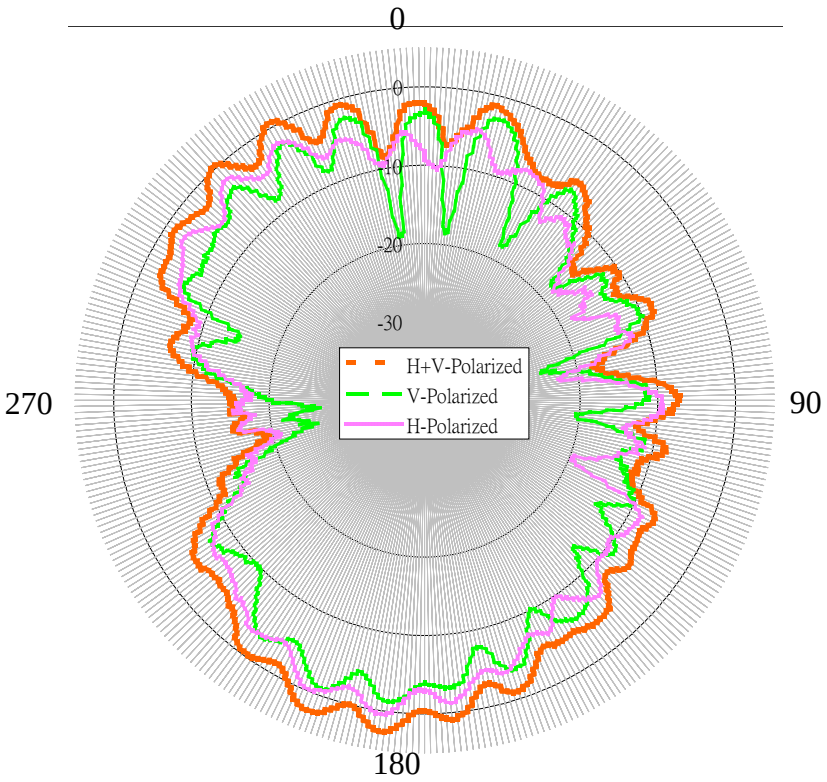
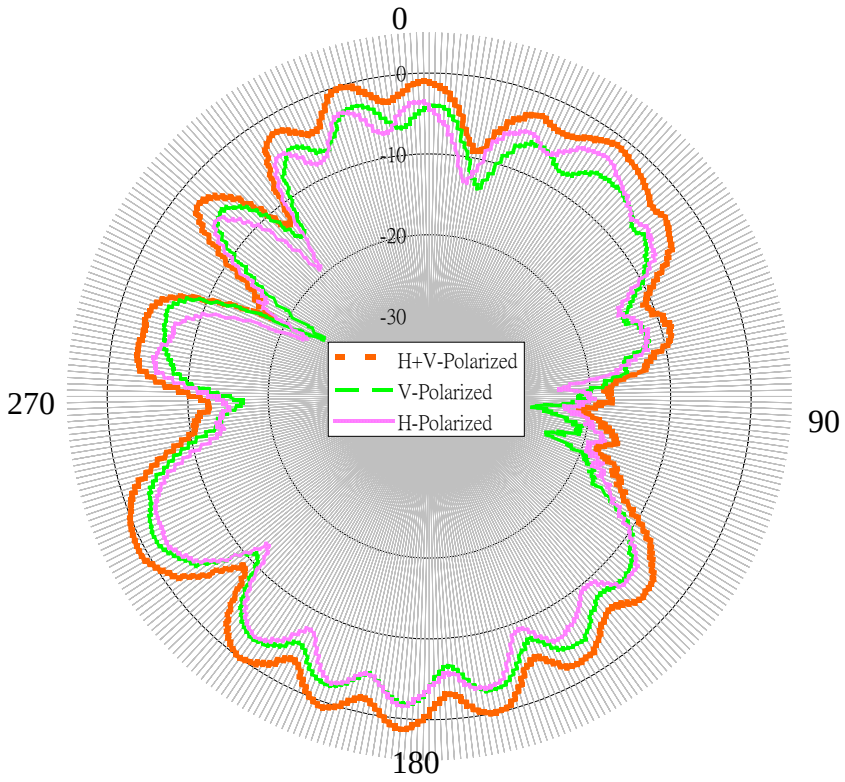
Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	0.36	V	Peak	-0.18
	Average	-5.36		Average	-7.07
H	Peak	0.02	H	Peak	-0.36
	Average	-7.23		Average	-6.20
H + V	Peak	2.34	H + V	Peak	1.23
	Average	-3.18		Average	-3.60
Gain >= -4 Area	26.39%		Gain >= -4 Area	16.15%	
Gain >= -5 Area	40.39%		Gain >= -5 Area	17.82%	

8.10 5.785 GHz

Antenna 1	Antenna 2
	

Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	0.54	V	Peak	-1.93
	Average	-5.83		Average	-6.73
H	Peak	0.34	H	Peak	-0.89
	Average	-7.42		Average	-6.40
H + V	Peak	2.36	H + V	Peak	1.56
	Average	-3.54		Average	-3.55
Gain >= -4 Area	23.23%		Gain >= -4 Area	13.91%	
Gain >= -5 Area	32.14%		Gain >= -5 Area	23.06%	

8.11 5.85 GHz

Antenna 1	Antenna 2
	

Horn Antenna Polarization	Gain of XY Plane (Azimuth)		Horn Antenna Polarization	Gain of XY Plane (Azimuth)	
V	Peak	-0.85	V	Peak	-1.63
	Average	-7.16		Average	-6.41
H	Peak	0.45	H	Peak	-1.51
	Average	-6.34		Average	-6.69
H + V	Peak	2.68	H + V	Peak	1.29
	Average	-3.72		Average	-3.53
Gain >= -4 Area	17.65%		Gain >= -4 Area	17.32%	
Gain >= -5 Area	23.98%		Gain >= -5 Area	26.73%	