

Regulatory WLAN Antenna Information (Metal)

Platform information											
Brand		ODM		****End product model name		Intel platform (ex: Yes, No or NA)		Platform type (ex: regular NB, convertible PC, AIO...etc)		*SAR minimum separation (mm)	
Lenovo		Compal Electronics Inc.		IdeaPad Slim 5 14IMH9		Yes		NB		w/ bumper:11.5 w/o bumper:9.6	
				IdeaPad Slim 5 14IRU9							
				IdeaPad Slim 5 14AHP9		No					
Antenna information											
Vendor			Type			Antenna Part number (Main)			Antenna Part number (Aux)		
SOUTHSTAR TECHNOLOGY CO.,LTD			PIFA			DC33002SU10 (3.N201.0219)			DC33002SU10 (3.N201.0219)		
Peak gain w/ cable loss (dBi)*											
	2.4GHz 2400-2483.5 MHz	5.2GHz 5150-5250MHz	5.3GHz 5250-5350MHz	5.6GHz 5470-5725MHz	5.8GHz 5725-5850MHz	5.9GHz 5850-5895MHz	6.2GHz 5925-6425MHz	6.5GHz 6425-6525MHz	6.7GHz 6525-6875MHz	7.0 GHz 6875-7125MHz	
Main	1.56	-0.19	-0.04	2.35	1.34	2.64	1.42	1.41	1.41	1.96	
Aux	0.58	1.25	0.15	0.19	-0.84	0.79	0.91	1.95	0.76	0.78	
Intel Reference Gain/Type/ Separation distance											
Antenna Type	Antenna Peak gain (In dBi)*										Distance to the end user (mm)
	2.4GHz 2400-2483.5 MHz	5.2GHz 5150-5250MHz	5.3GHz 5250-5350MHz	5.6GHz 5470-5725MHz	5.8GHz 5725-5850MHz	5.9GHz 5850-5895MHz	6.2GHz 5925-6425MHz	6.5GHz 6425-6525MHz	6.7GHz 6525-6875MHz	7.0GHz 6875-7125MHz	Generic: refer to modular FCC SAR report
Design	3.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	Mid-power: ≥ 8 mm Low power: ≥ 5 mm
PIFA	3.24	3.64	3.73	4.77	4.97	4.72	4.83	4.30	5.37	5.59	
Dipole	2.89	2.92	3.19	4.41	4.22	4.22	4.83	4.30	4.49	5.34	
Notes (marked with *)											
* SAR minimum separation (mm)											
- Regular NB: Minimum antenna-to-body (from antenna bottom to the bottom of the device)											
- Tablet / Convertible PC: Minimum antenna-to-edge (5 sides of the device)											
- Mini-tablet: Minimum antenna-to-edge (6 sides of the device)											
* 3D Peak Antenna gain should be equal or greater than -2 dBi											
- If a host integrator plans to use a lower gain antenna of the same type, additional CBP(FCC)/EDT(EU) testing need to be performed while the module is installed in the host.											

Antenna Manufacture Address: 1606/C6, Hengfeng Industry Building, Baoan District, ShenZhen, China

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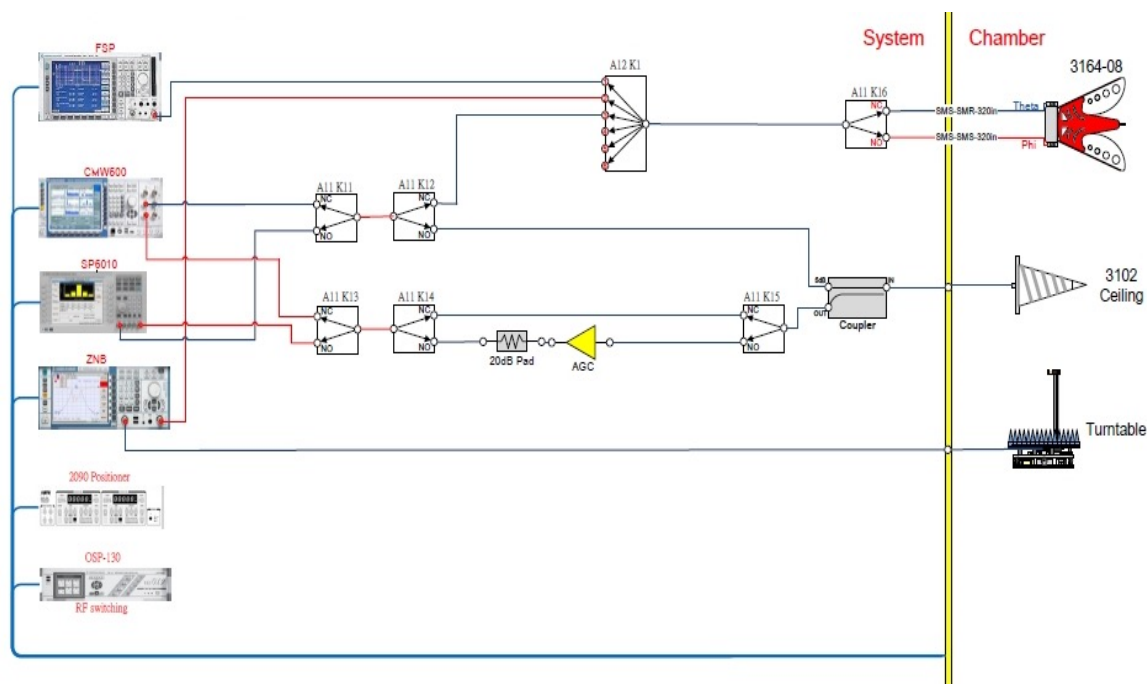
1. Applicable test methods

This test report is prepared for host antenna testing under a Full Anechoic Chamber.

The radiation pattern of antenna is measured in both horizontal polarization and vertical polarization. The radiation pattern measurements are performed in the three-dimensional anechoic chamber. The chamber provides less than -30dB reflectivity from 800MHz through 8GHz . The chamber is calibrated using both standard dipole antenna and horn antenna. The Gain here is expressed as dBi that standardizes the isotropic antenna. The Gain measurements and antenna radiation pattern are also performed in the same chamber described previously.

2. Test & System Description

a. Test setup



b. Equipment list

Device	Type/Model	Manufacturer	Cal.Date	Cal.Date
Customized Switch Module	-	BWant	N/A	N/A
Programmable Attenuator	PATT-121-4	BWant	N/A	N/A
Horn Antenna	700MHz-10GHz	BWant	2021.11.19	2023.11.19
Network Analyzer	ZNB 20	ROHDE&SCHWARZ	2022.1.10	2024.1.10
Cable	LL142	Fairview Microwave	2022.3.17	2023.9.17
Turn table	-	BWant	N/A	N/A
Anechoic Chamber	-	BWant	2022.5.10	2023.5.10

Antenna Information

Section 1. Antenna Assembly Specifications

1A Antenna Part Number	1B Manufacturer	1C Antenna Type	1D Cable Assembly Part Number and Information	Freq Range MHz	1E * Peak Gain W/ Cable loss (dBi)	1F Peak Gain w/o Cable Loss (dBi)	1G Max VSWR	1H Cable Loss (dB)
DC33002SU10 (3.N201.0219)	SOUTHSTAR TECHNOLOGY CO.,LTD	PIFA	Connector Type: I-pex 4 (P/N: MHF-B13-N-01) 50 ohm Coaxial length: 260mm diameter: 1.1mm Type:L/L	2400-2483.5	1.56	2.32	3	0.76
				5150-5250	-0.19	0.94	3	1.13
				5250-5350	-0.04	1.12	3	1.16
				5470-5725	2.35	3.53	3	1.18
				5725-5850	1.34	2.58	3	1.24
				5850-5895	2.64	3.92	3	1.28
				5925-6425	1.42	2.72	3	1.30
				6425-6525	1.41	2.74	3	1.33
				6525-6875	1.41	2.70	3	1.29
				6875-7125	1.96	3.29	3	1.33
DC33002SU10 (3.N201.0219)	SOUTHSTAR TECHNOLOGY CO.,LTD	PIFA	Connector Type: I-pex 4 (P/N: MHF-B13-N-01) 50 ohm Coaxial length: 317mm diameter: 1.1mm Type:L/L	2400-2483.5	0.58	1.59	3	1.01
				5150-5250	1.25	2.75	3	1.50
				5250-5350	0.15	1.7	3	1.55
				5470-5725	0.19	1.76	3	1.57
				5725-5850	-0.84	0.81	3	1.65
				5850-5895	0.79	2.47	3	1.68
				5925-6425	0.91	2.60	3	1.69
				6425-6525	1.95	3.65	3	1.70
				6525-6875	0.76	2.48	3	1.72
				6875-7125	0.78	2.55	3	1.77

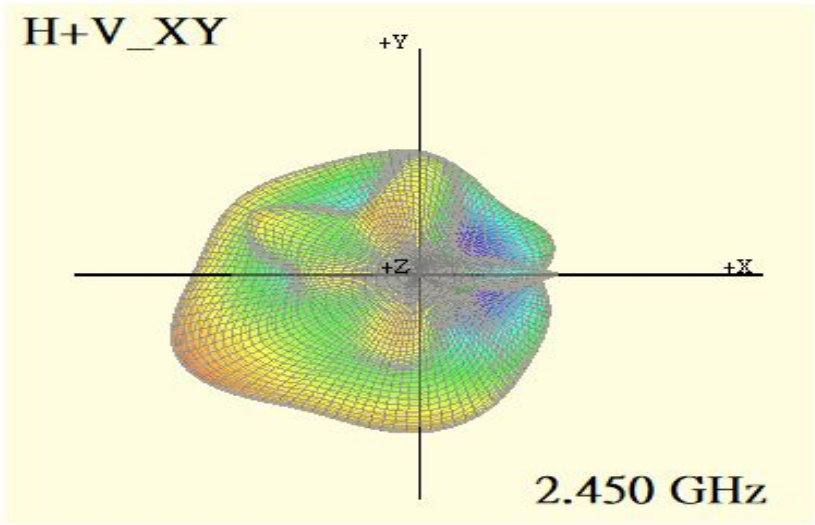
- 3D Antenna Peak Gain required being test in system basis.

Section 3. Radiation characteristics of antenna loaded in Host Platform

Main Antenna

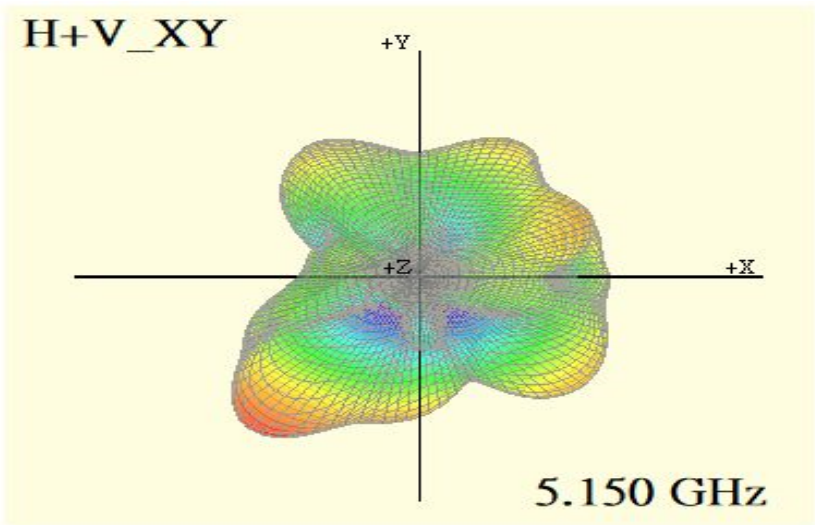
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
2400-2483.5	1.56



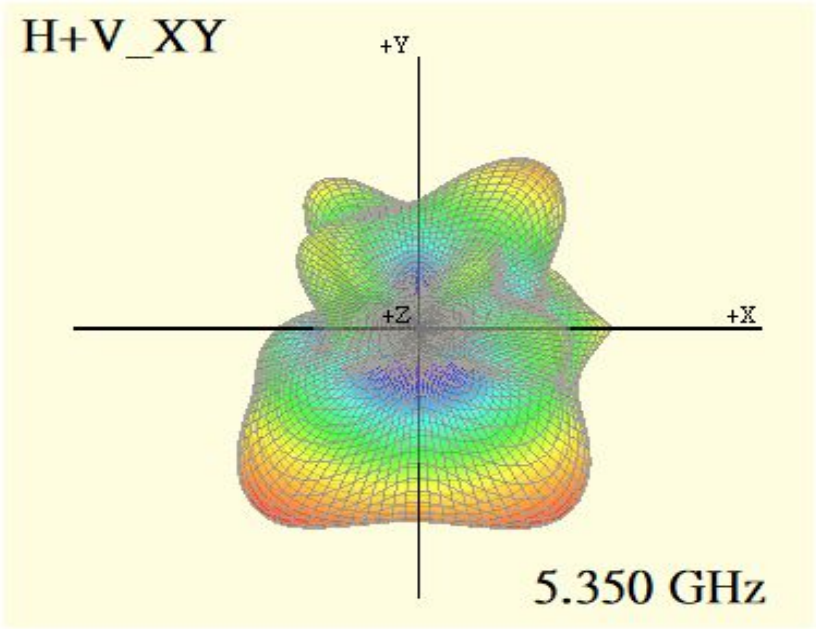
Max Antenna 3D Radiation Pattern 5150-5250 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5150-5250	-0.19



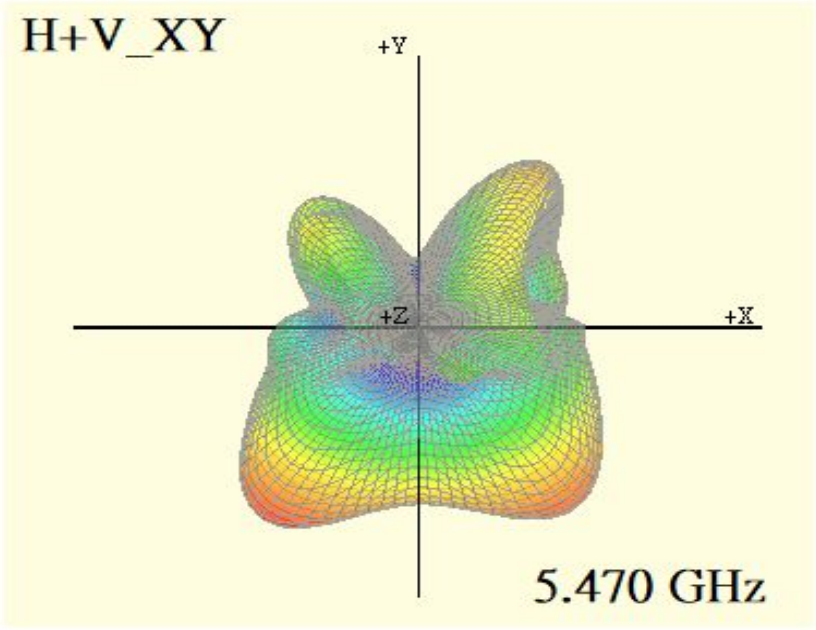
Max Antenna 3D Radiation Pattern 5250-5350 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5250-5350	-0.04



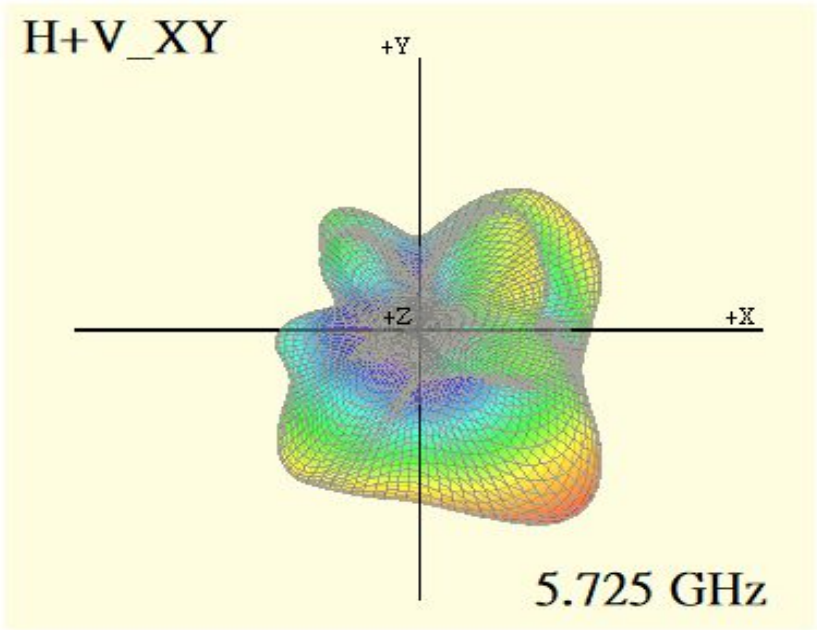
Max Antenna 3D Radiation Pattern 5470-5725 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5470-5725	2.35



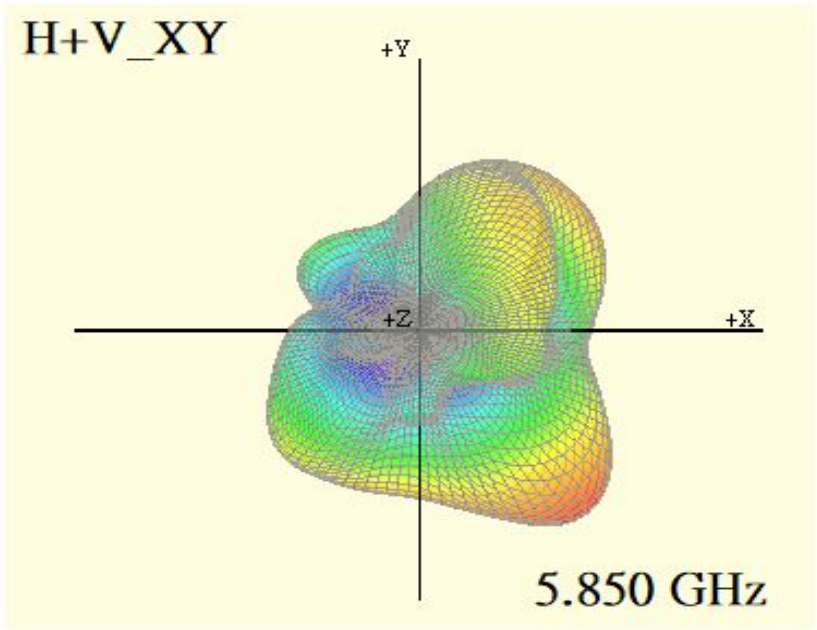
Max Antenna 3D Radiation Pattern 5725-5850 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5725-5850	1.34



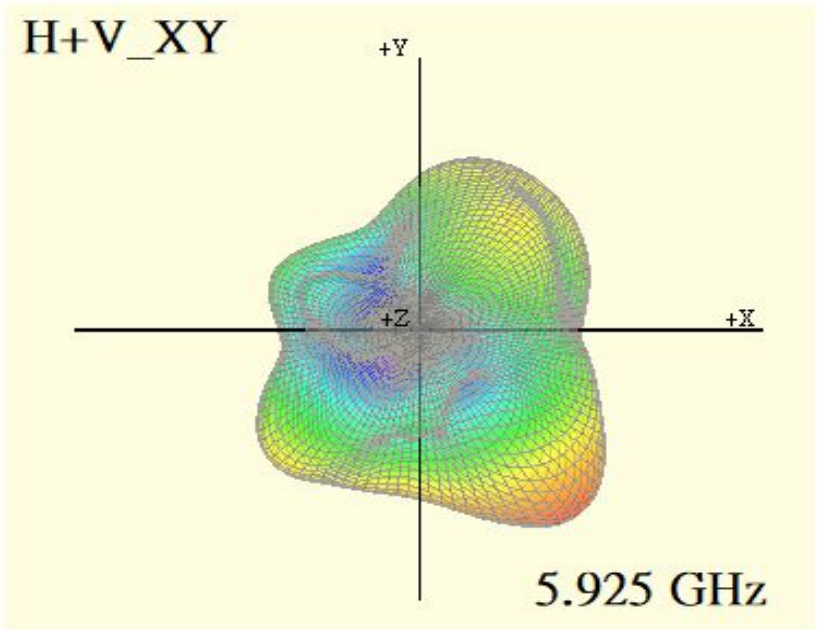
Max Antenna 3D Radiation Pattern 5850-5895 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5850-5895	2.64



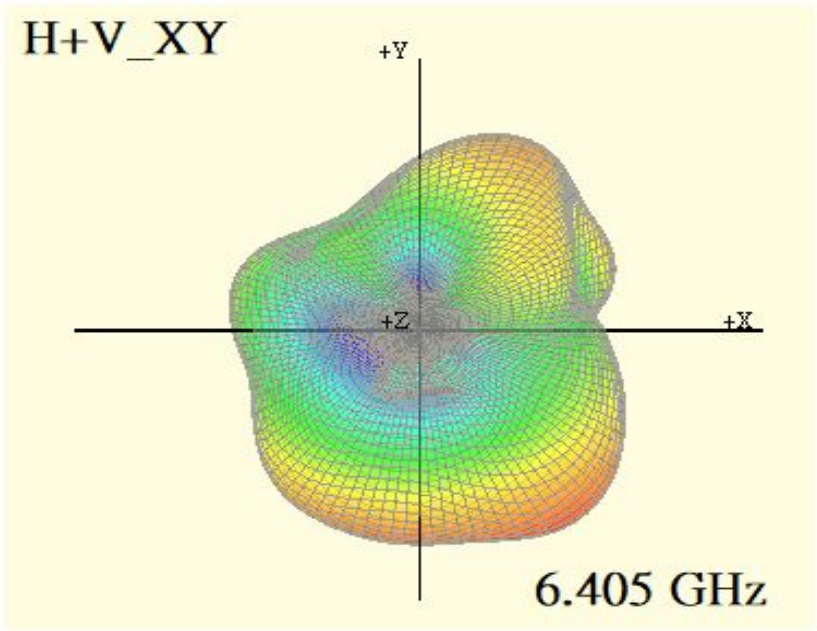
Max Antenna 3D Radiation Pattern 5925-6425 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5925-6425	1.42



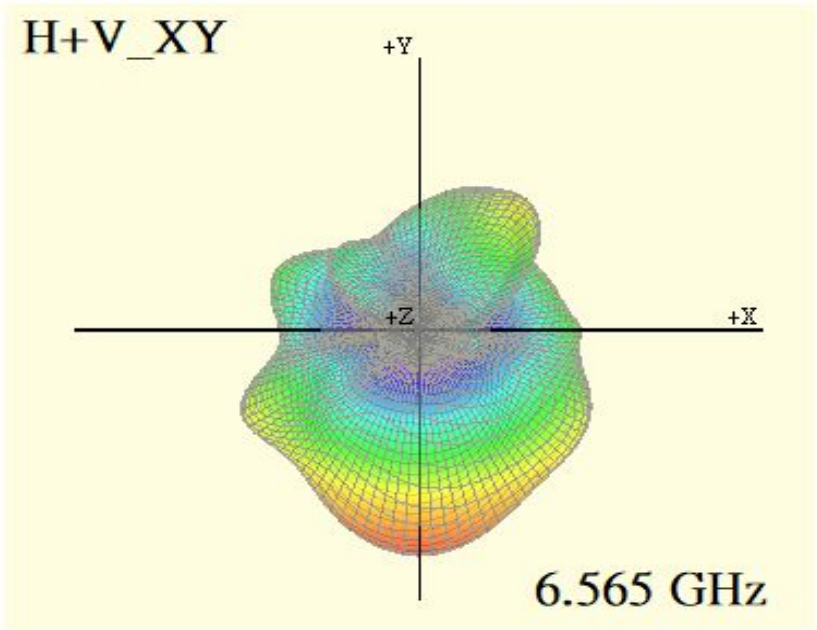
Max Antenna 3D Radiation Pattern 6425-6565 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6425-6525	1.41



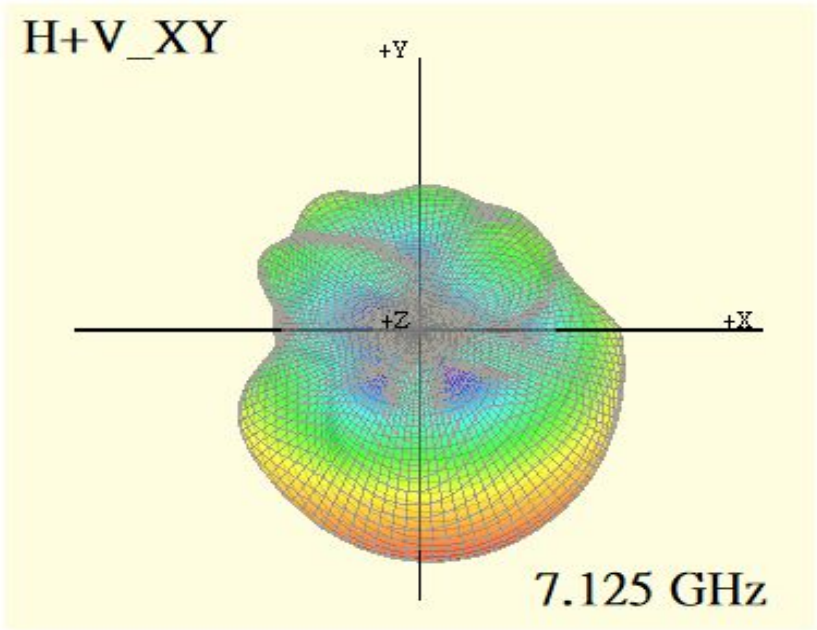
Max Antenna 3D Radiation Pattern 6525-6875 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6525-6875	1.41



Max Antenna 3D Radiation Pattern 6875-7125 MHz

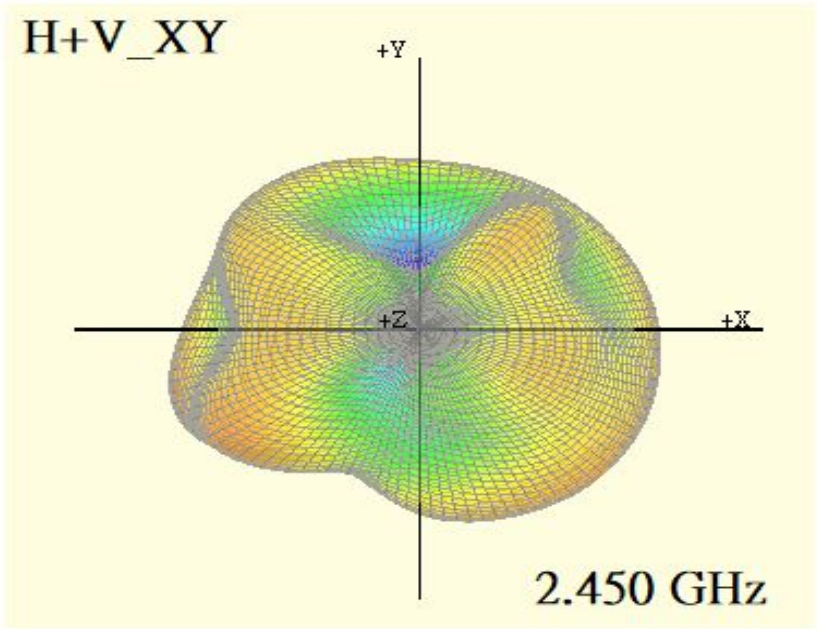
Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6875-7125	1.96



Auxiliary Antenna

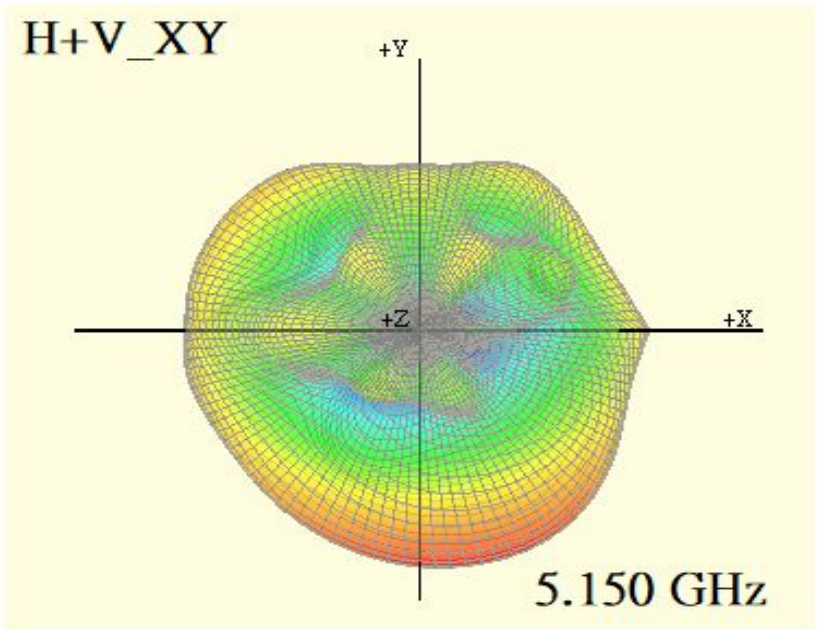
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
2400-2483.5	0.58



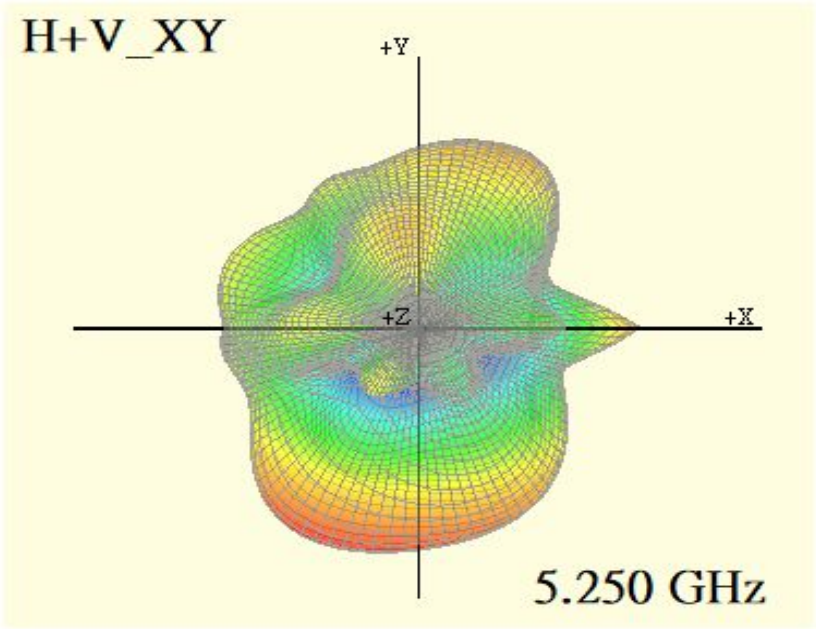
Max Antenna 3D Radiation Pattern 5150-5250 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5150-5250	1.25



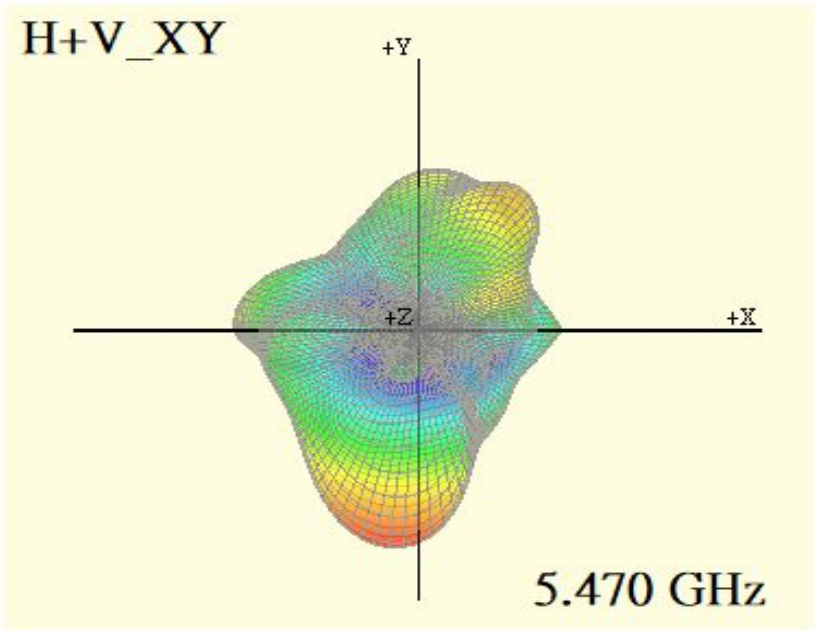
Max Antenna 3D Radiation Pattern 5250-5350 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5250-5350	0.15



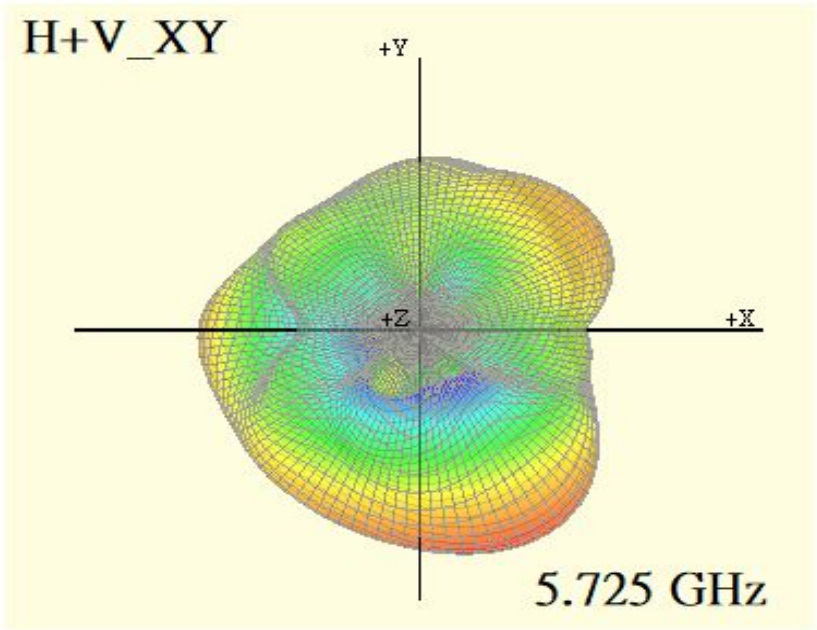
Max Antenna 3D Radiation Pattern 5470-5725 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5470-5725	0.19



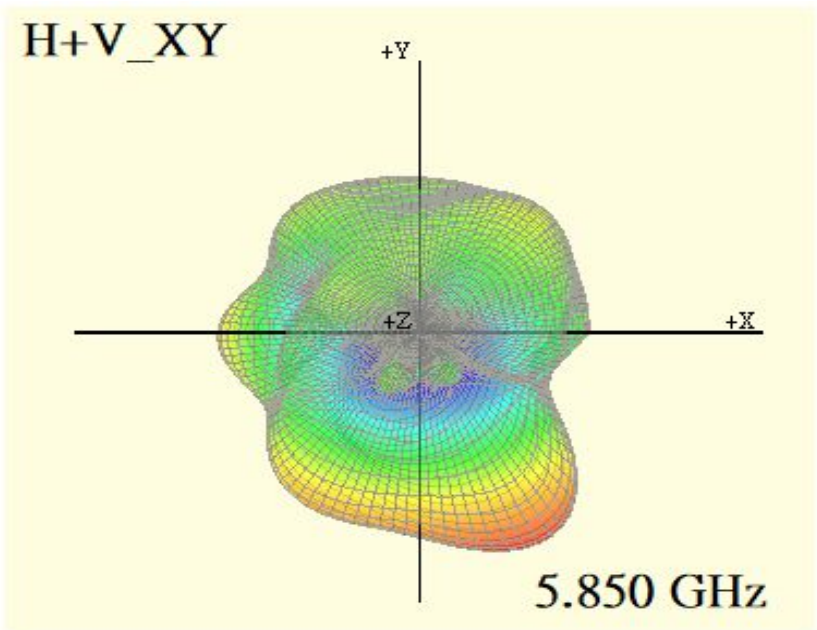
Max Antenna 3D Radiation Pattern 5725-5850 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5725-5850	-0.84



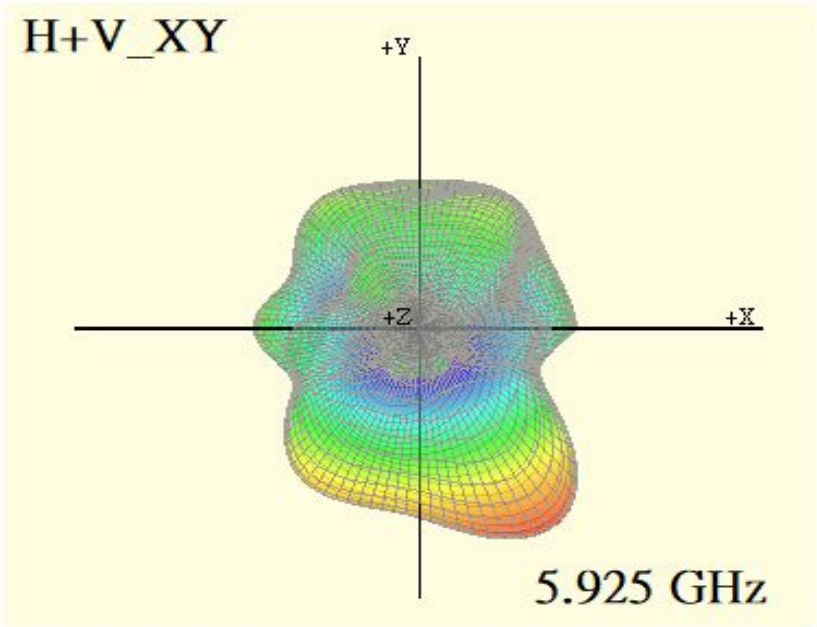
Max Antenna 3D Radiation Pattern 5850-5895 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5850-5895	0.79



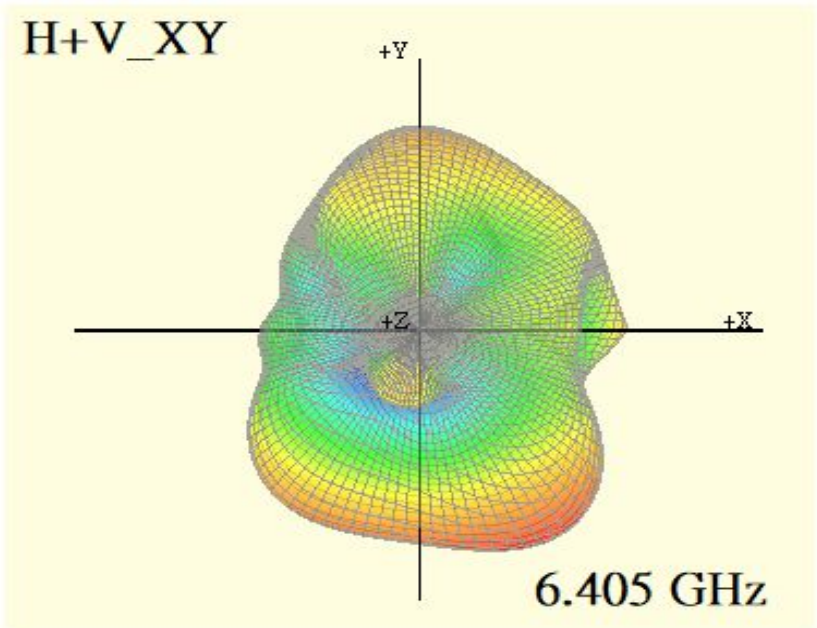
Max Antenna 3D Radiation Pattern 5925-6425 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5925-6425	0.91



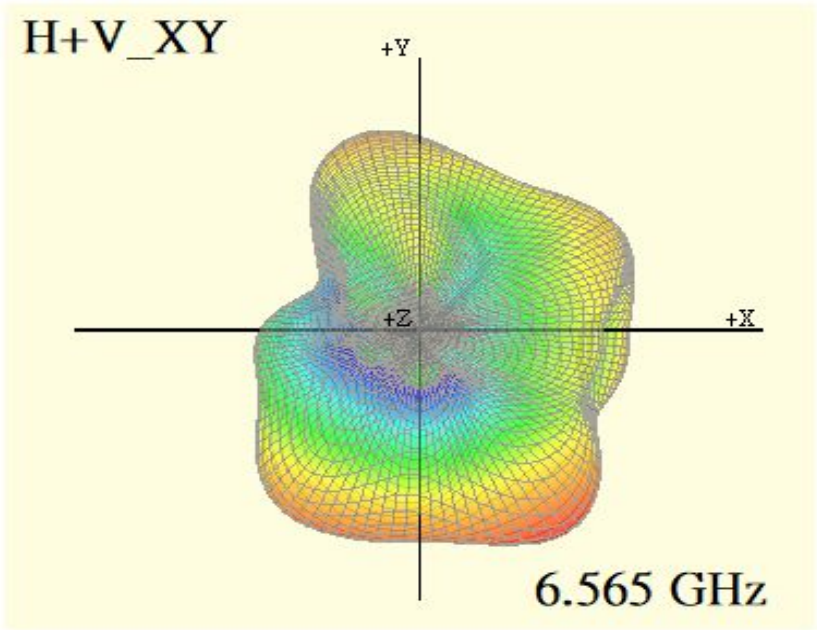
Max Antenna 3D Radiation Pattern 6405-6525 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6425-6525	1.95



Max Antenna 3D Radiation Pattern 6525-6875 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6525-6875	0.76



Max Antenna 3D Radiation Pattern 6875-7125 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6875-7125	0.78

