Antenna Test Report

March 13, 2025

Shian Chuang | Antenna Design Department

Sercomm Proprietary and Confidential

Outline

- Test Information
- Test Configuration
- Test Setup & Procedure
- Test Equipment & Calibration
- Antenna Structure & Placement
- Radiation Pattern
- Peak Gain & Efficiency

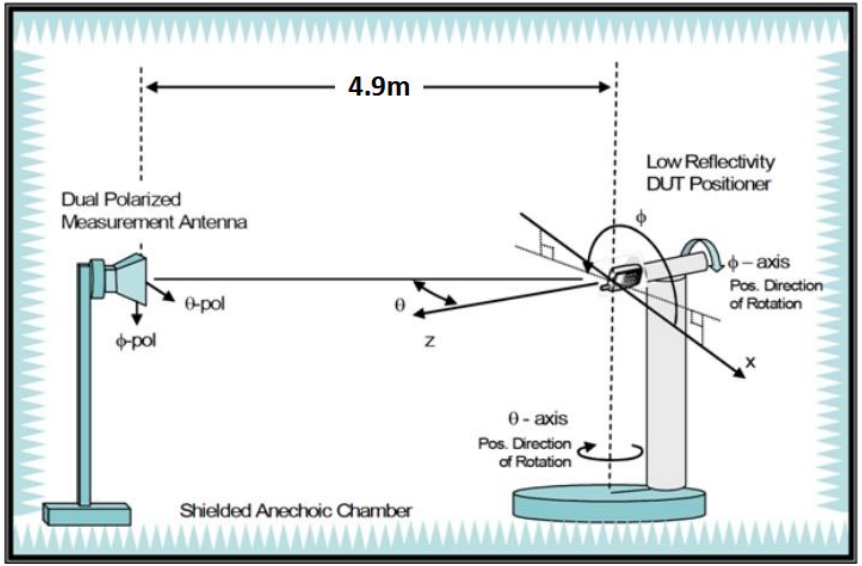
Test Information

Item	Description
Model	G6PPP
Test Location	8F, No. 3-1, YuanQu St. Taipei, Taiwan 115 R.O.C.
Test Condition	Radiation
Test Engineer	Shian Chuang
Test Environment	ETS-Lindgren AMS-8500 Antenna Measurement Chamber
Test Date	March. 10, 2025 ~ March. 13, 2025

Test Engineer : Shian Chuang

Test Configuration

ETS-Lindgren AMS-8500 antenna measurement system with a size of 7.32(L) × 3.66(W) × 3.66(H) m^3 is used for antenna performance test, which is based on the great-circle test method defined by CTIA. The multi-axis positioning system (MAPS) rotates the DUT around two orthogonal axes for full spherical coverage.

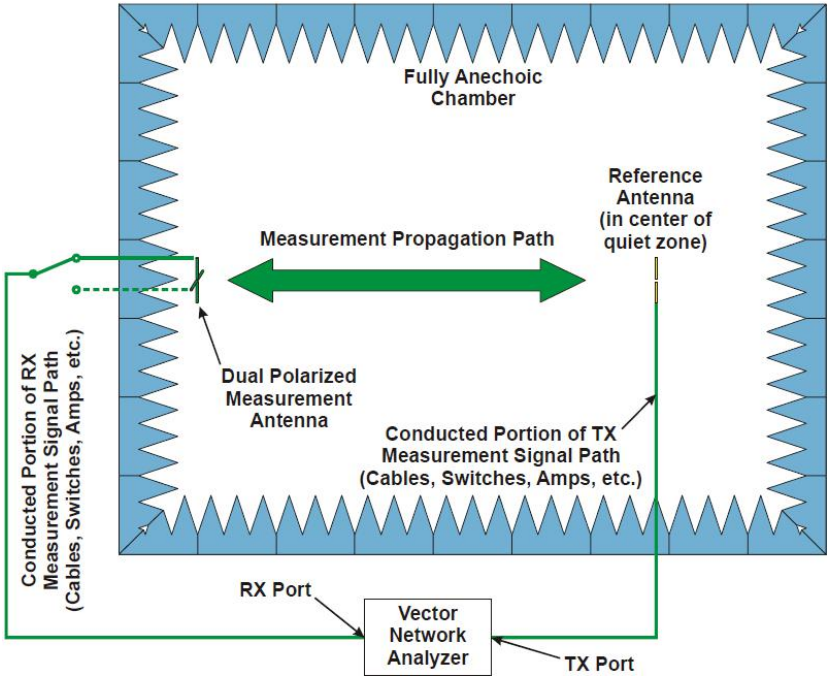


Test Setup & Procedure

1. Fix the DUT on the dielectric support structure and connect the feeding cable to the antenna used for test
2. Set measurement parameters such as frequency range and sampling angle
3. Perform test and then get far-field data (radiation pattern, gain, efficiency)
4. Repeat test procedure for other antennas

Test Equipment & Calibration

Network analyzer and reference antennas are used for calibration. Path loss and cable loss for different frequency bands can be checked and calculated.



Test Equipment & Calibration

Instrument	Brand	Characteristics	Model No.	Serial No.	Calibration Due Date
Precision Sleeve Dipole	ETS-Lindgren	600 MHz ~ 800 MHz	3126-700	00169715	May 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	800 MHz ~ 1000 MHz	3126-900	00169592	May 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	1400 MHz ~ 1700 MHz	3126-1550	00164599	May 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	1700 MHz ~ 2000 MHz	3126-1850	00169588	May 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	2000 MHz ~ 2300 MHz	3126-2150	00169593	May 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	2300 MHz ~ 2700 MHz	3126-2500	00169597	May 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	3000 MHz ~ 4000 MHz	3126-3500	00239652	Aug. 23, 2025
Precision Sleeve Dipole	ETS-Lindgren	4000 MHz ~ 5000 MHz	3126-4500	00239796	Aug. 23, 2025
Precision Sleeve Dipole	ETS-Lindgren	5000 MHz ~ 6000 MHz	3126-5500	00169728	May 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	6000 MHz ~ 7200 MHz	3126-6500	00235488	Aug. 23, 2025
Double Ridged Horn Antenna	SCHWARZBECK	1 GHz ~ 18 GHz	BBHA 9120D	BBHA 9120D-1294	Oct. 7, 2025
EMQuest Antenna Measurement Software	ETS-Lindgren	Control chamber system	EMQ-100	1437	Non-Calibration Required

Antenna Structure & Placement

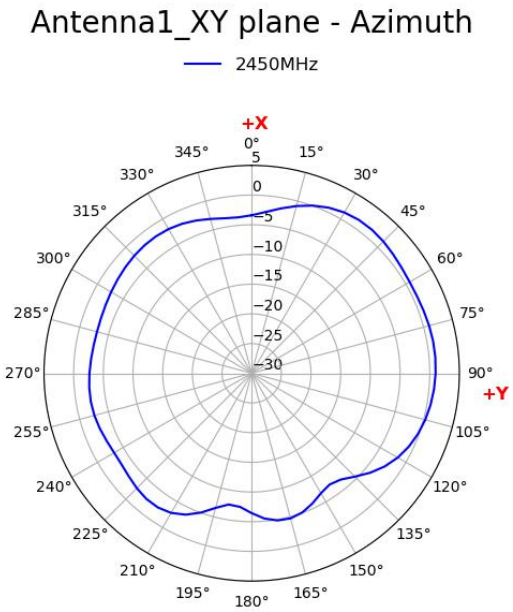
Ant No.	Operating Band	Type	Material	Feeding	Dimension
Ant 1	WiFi Dual Band (2400MHz~2500MHz,5150MHz~5850MHz)	PIFA	Metal	Cable	20.91(L) x 4.25(W) x 8.9(H) (mm^3)
Ant 2	WiFi Dual Band (2400MHz~2500MHz,5150MHz~5850MHz)	PIFA	Metal	Cable	22.36(L) x 4.64(W) x 7.42(H) (mm^3)

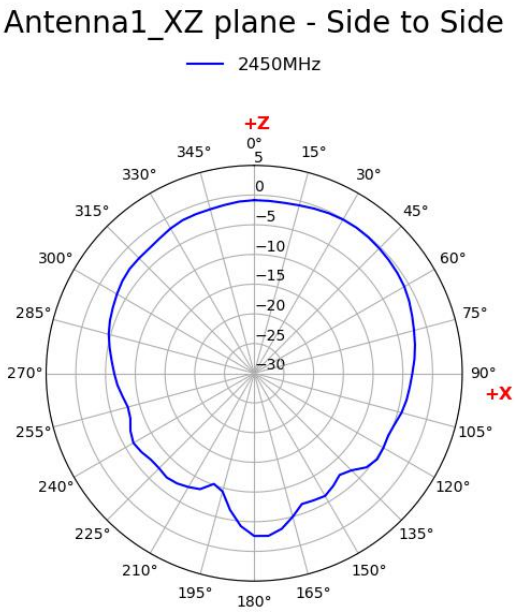
Antenna Specification

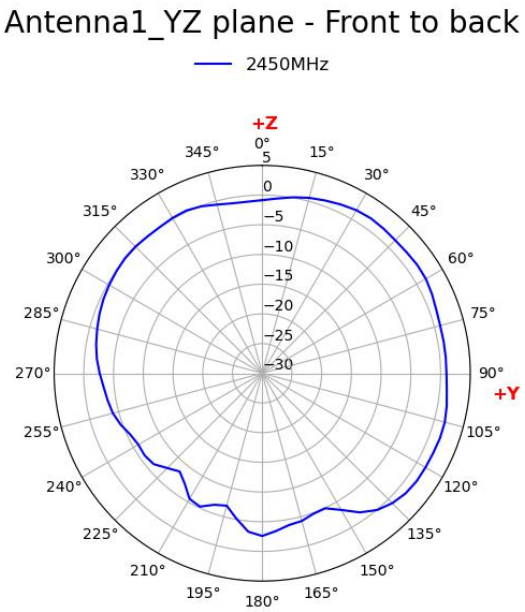
Item	Test Results			
Antenna No.	WiFi 1		WiFi 2	
Operation Band	WiFi 2.4G	WiFi 5G	WiFi 2.4G	WiFi 5G
Frequency (MHz)	2400 ~ 2500	5150 ~ 5850	2400 ~ 2500	5150 ~ 5850
Efficiency (dB)	> -3.0	> -3.0	> -3.0	> -3.0
Beamwidth	Omni	Omni	Omni	Omni
Isolation (dB)	≤ -15 dB	≤ -20dB	≤ -15 dB	≤ -20 dB
Return Loss (dB)	≥ 10 dB	≥ 10 dB	≥ 10 dB	≥ 10 dB

SERCOM

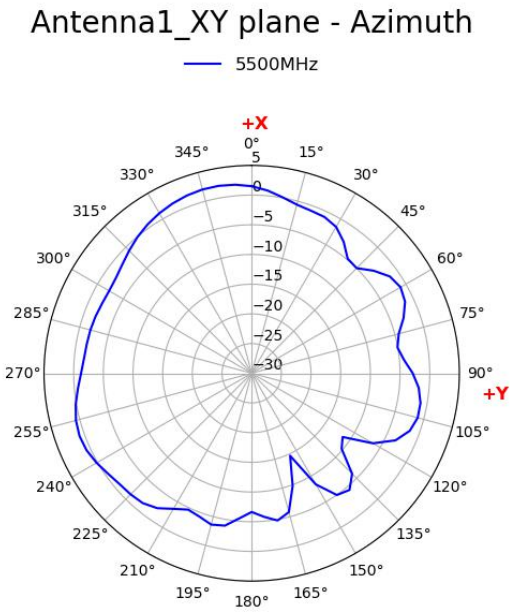
2D Radiation Pattern - Antenna1

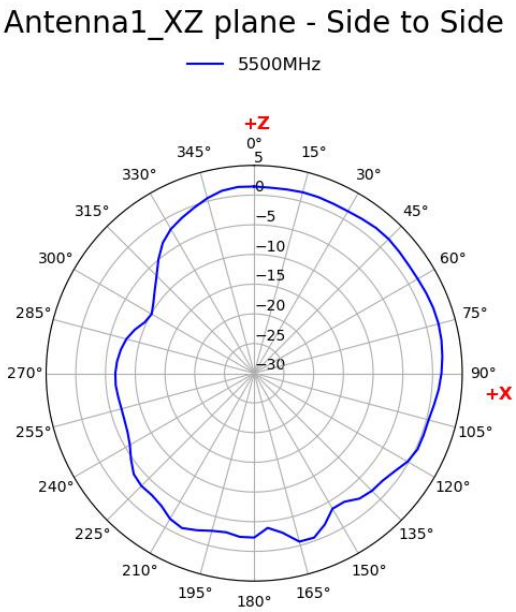


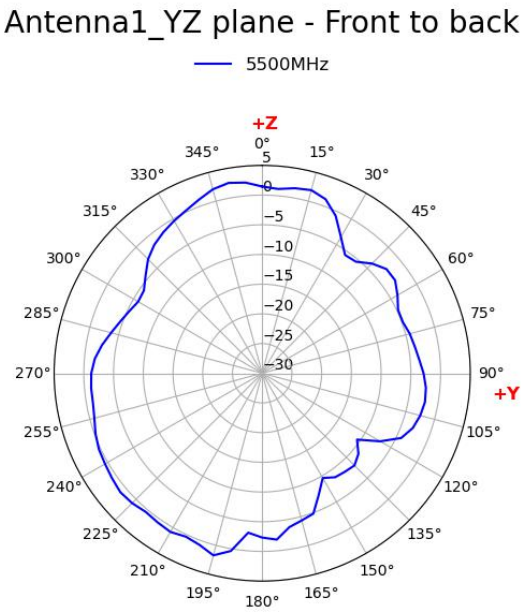




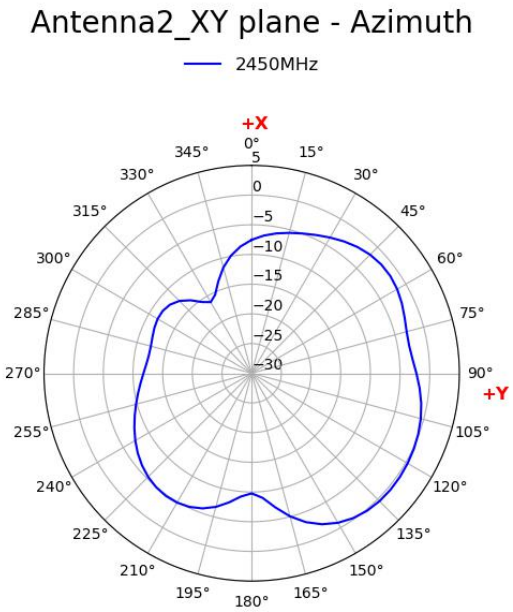
2D Radiation Pattern - Antenna1

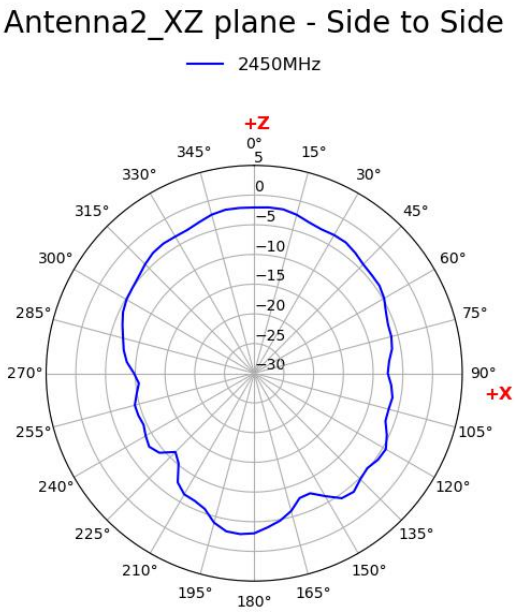


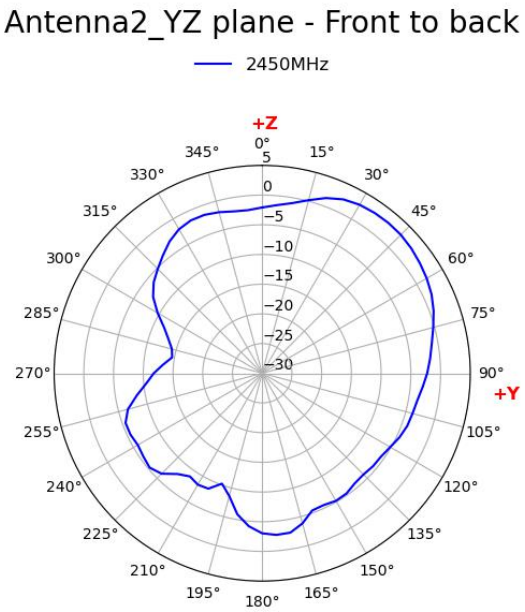




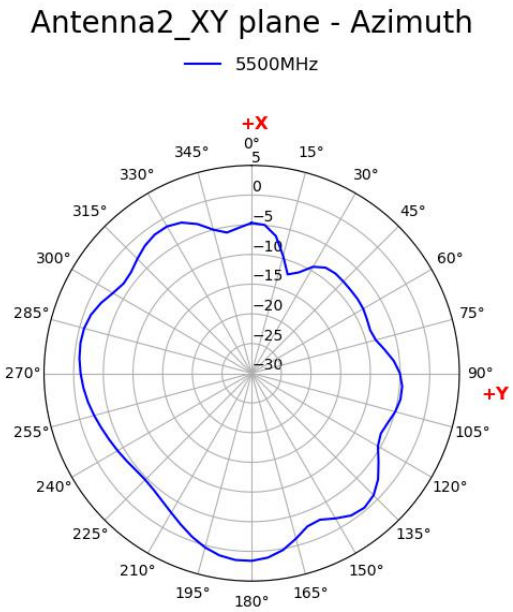
2D Radiation Pattern - Antenna2

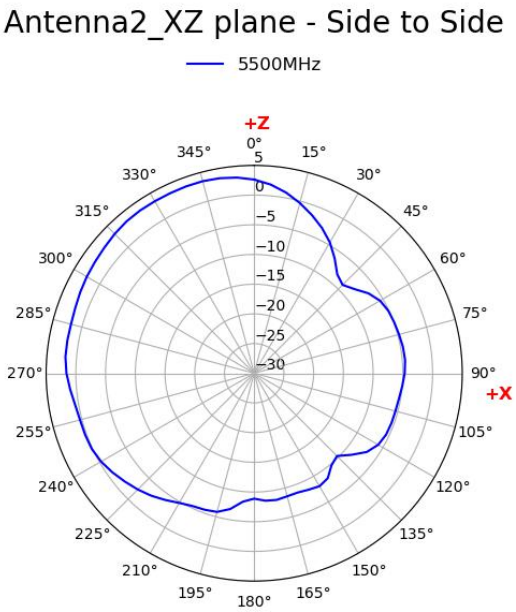


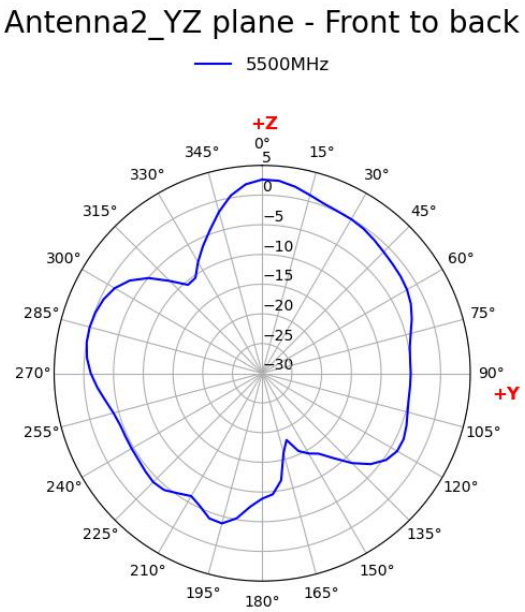




2D Radiation Pattern - Antenna2







Efficiency&Peak Gain

	Antenna1		Antenna2	
	Efficiency(dB)	Peak Gain(dBi)	Efficiency(%)	Peak Gain(dBi)
2400	-2.73	2.02	-2.45	2.76
2450	-2.15	2.43	-2.14	3.26
2500	-1.94	2.49	-1.67	3.43
5150	-1.9	3.43	-1.84	3.55
5350	-1.62	3.24	-1.82	3.54
5500	-1.78	3.08	-1.75	3.61
5725	-1.67	3.43	-1.98	4.38
5850	-1.88	3.34	-2.04	4.5

SERCOMM

WWW.SERCOMM.COM