

Antenna Test Report

The gain of each antenna is measured in a fully anechoic chamber certified by CTIA OTA. The maximum gain of each antenna is recorded, along with its corresponding coordinates (azimuth and elevation) in the spherical antenna pattern.

1. General Information of Equipment Under Test

Equipment	BT+2.4G SRD ANTENNA
Brand Name	ONEWAVE
Model Name	WAN223216F2451SC04
Applicant	LITEON Technology Corp
Manufacturer	LITEON Technology Corp

2. Test Location

Test Site	Sporton International Inc. (Taiwan)
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)
Test Site No.	Sporton Site No.
	OTA05-HY

Test Method	Test Engineer	Environment (°C / %)	Test Date
Radiated		24~25 / 50~60	Jul. 31, 2025

3. Test Frequency

Band (MHz)	Test Frequency (MHz)
2400-2480	2400, 2437, 2480

4. Antenna Information

Ant. Position	Brand Name	Model Name	Ant. Type	Connector
Antenna #1 (BT+2.4G SRD)	ONEWAVE	WAN223216F2451SC04	Chip	N/A



5. Test Results:

5.1 Individual Antenna Gain

Maximum Antenna Gains of Individual Antennas				
Antenna	Frequency (MHz)	Antenna gain (dBi)	Theta	Phi
#1	2400MHz	0.71(dBi)	15	120
#1	2437MHz	1.34(dBi)	15	120
#1	2480MHz	1.85(dBi)	15	120

6. Radiated Measurement Method and Environment:

The directional gain is measured using a gain-comparison method, with the antenna under test positioned inside an anechoic chamber that meets the following specifications:

- Overall dimensions (L x W x H) : 7.5m x 3.9m x 3.9m (rectangular chamber)
- Antenna measured frequency range: 700MHz to 10GHz
- Quiet zone (cylindrical volume): diameter: 50cm, height: 36cm

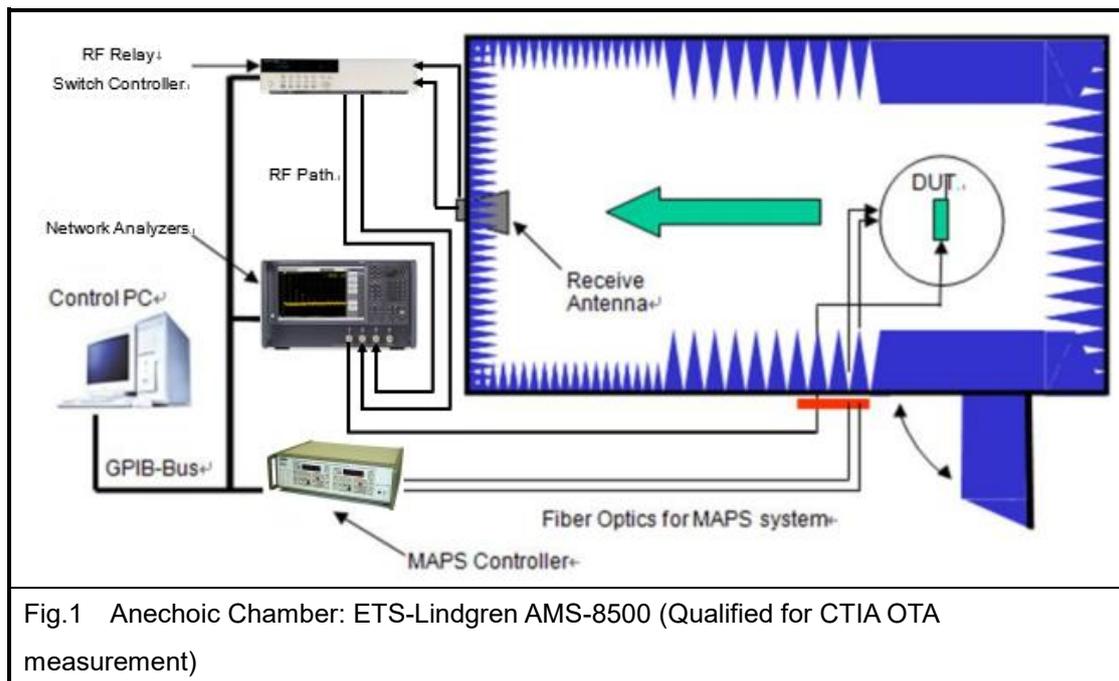


Fig.1 Anechoic Chamber: ETS-Lindgren AMS-8500 (Qualified for CTIA OTA measurement)

6.1 Radiated Test Procedure:

- i. This test procedure primarily adheres to Section 3 of the CTIA Test Plan [1], which outlines the scope of measurement. The total range loss—comprising air loss, receiving antenna loss, and cable loss—has been pre-calibrated by comparing it with a calibrated antenna (ETS-Lindgren Sleeve dipole and horn antenna 3117). While conducting the radiated test on the Device Under Test (DUT), the total range loss has been taken into account for final results.
- ii. The Device Under Test (DUT) is positioned on a three-dimensional (3D) fixture constructed from low-dielectric material. One of the DUT's antennas is connected to the network analyzer, while the input port of the other antenna is properly terminated.
- iii. A three-dimensional characterization of the antenna performance of the DUT is pieced together by analyzing the data from the spatially distributed measurements. Data points taken every 15 degrees in the theta and in the phi axes are deemed sufficient to fully characterize the DUT's Far-Field radiation pattern and total radiated power.
- iv. The antenna gain is reported in Section 5.1 of this document and antenna patterns in Appendix A, respectively.



Fig.2 Test Chamber – Network Analyzer



6.2 Test Equipment:

OTA05-HY					
Instrument	Brand Name	Type/Model	Serial Number	Last Cal.	Due Date
Network Analyer	Agilent	E5071C	MY46417800	2024.06.03	2025.06.02
RF Switch	Agilent	3499A	N/A	NCR	NCR
Multi-Axis Positioner Controller	ETS-Lindgren	2090	N/A	NCR	NCR
Medium-Duty Positioner	ETS-Lindgren	2015	N/A	NCR	NCR
Measurement Horn Antenna (400M-10G)	EMCO	3164-10	00239261	NCR	NCR
ETS Test Software	ETS-Lindgren	ETS_EMQuest	SN:1049	NCR	NCR

Note: NCR means No Calibration Required.



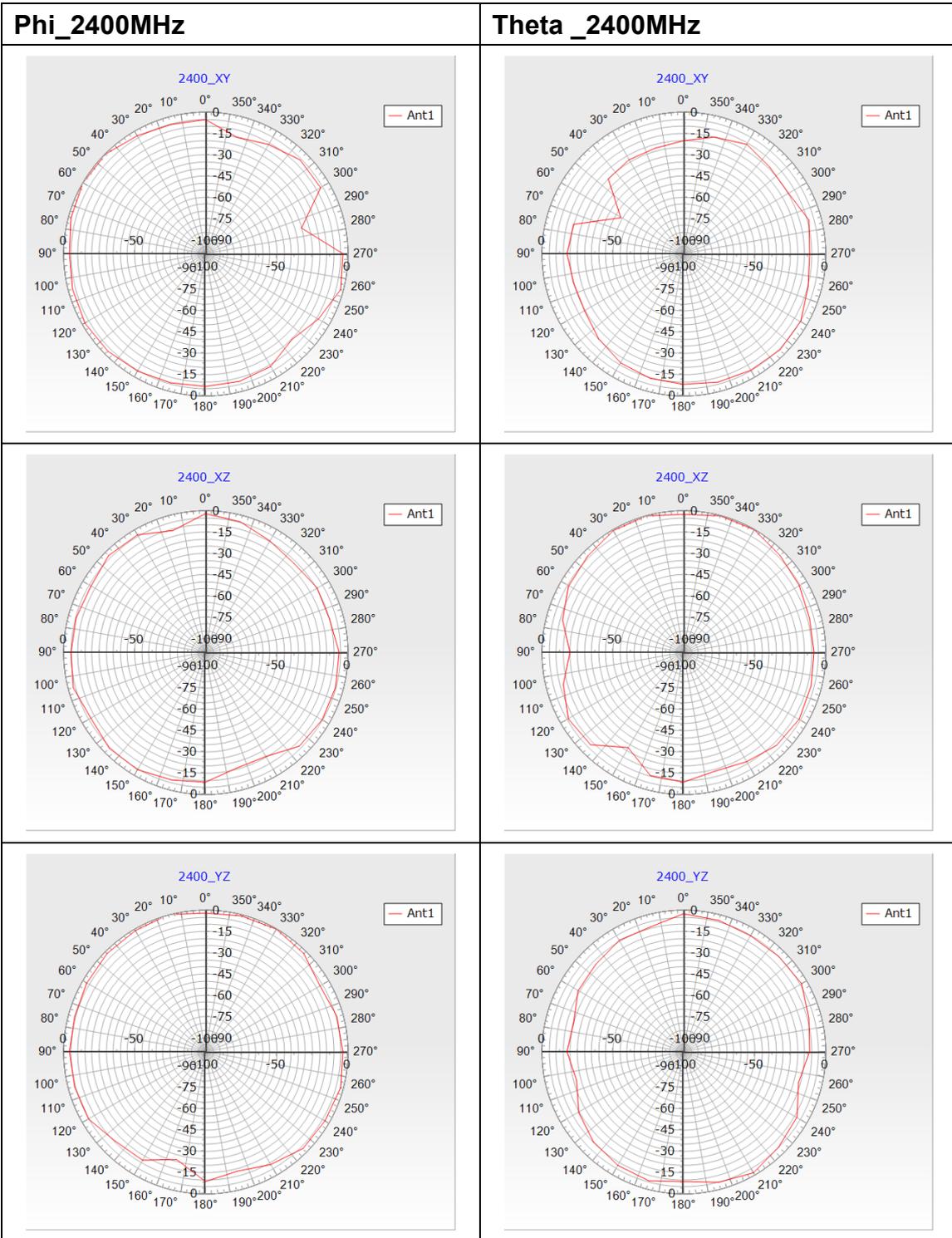
7. References

1. CTIA Test Plan for Wireless Device Over-the-Air Performance Version 3.7

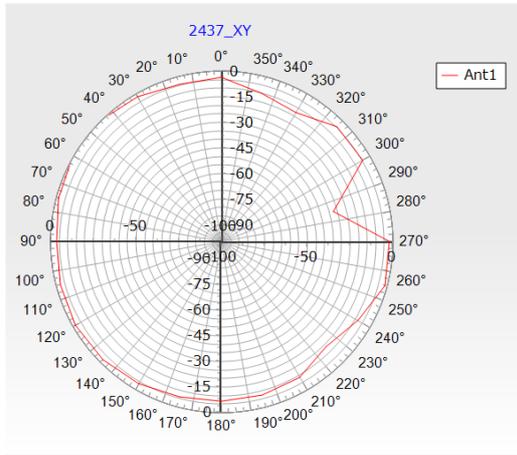


Appendix A. 2D Patterns

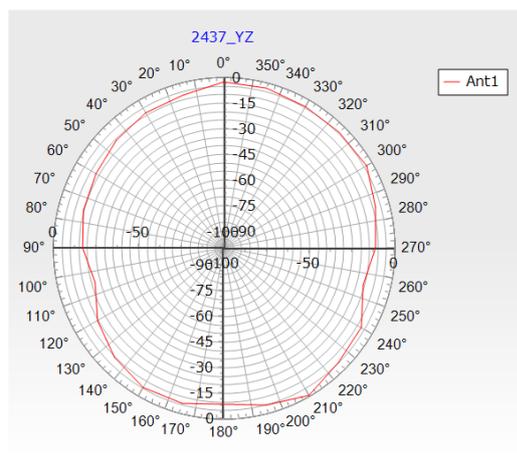
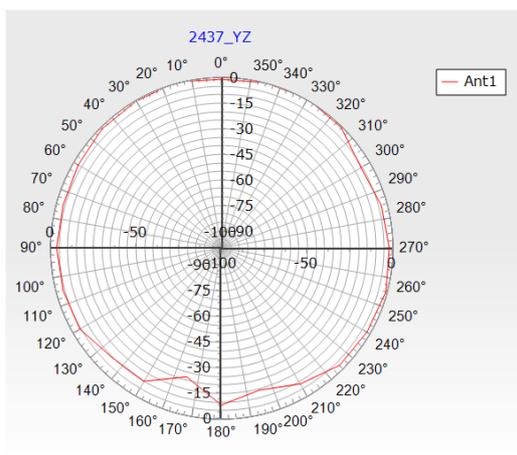
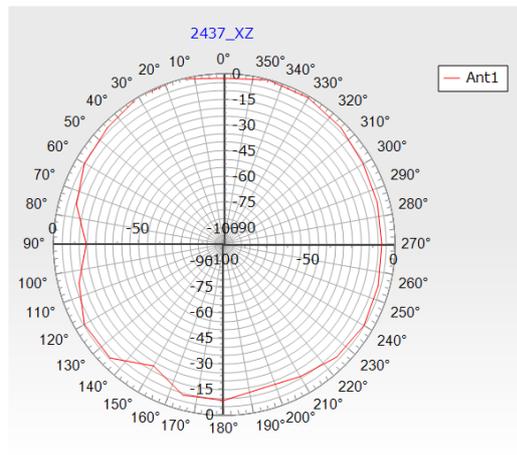
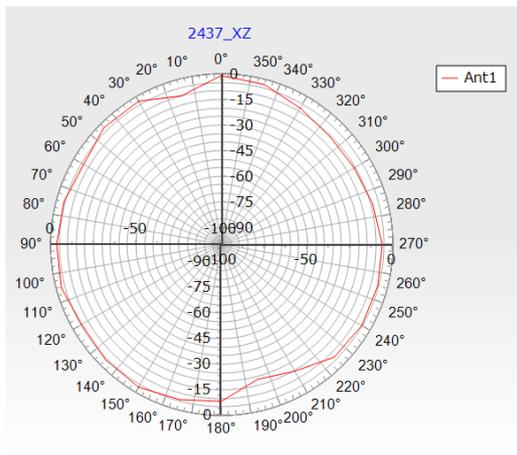
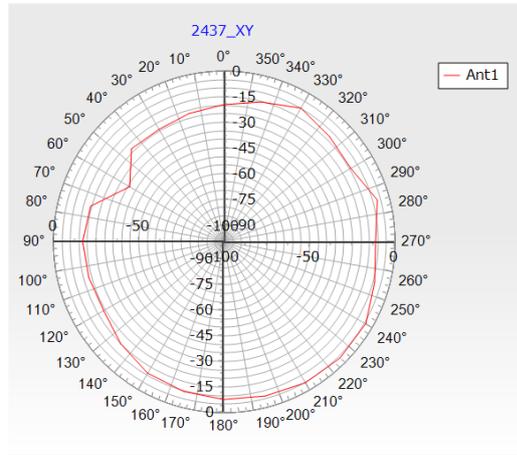
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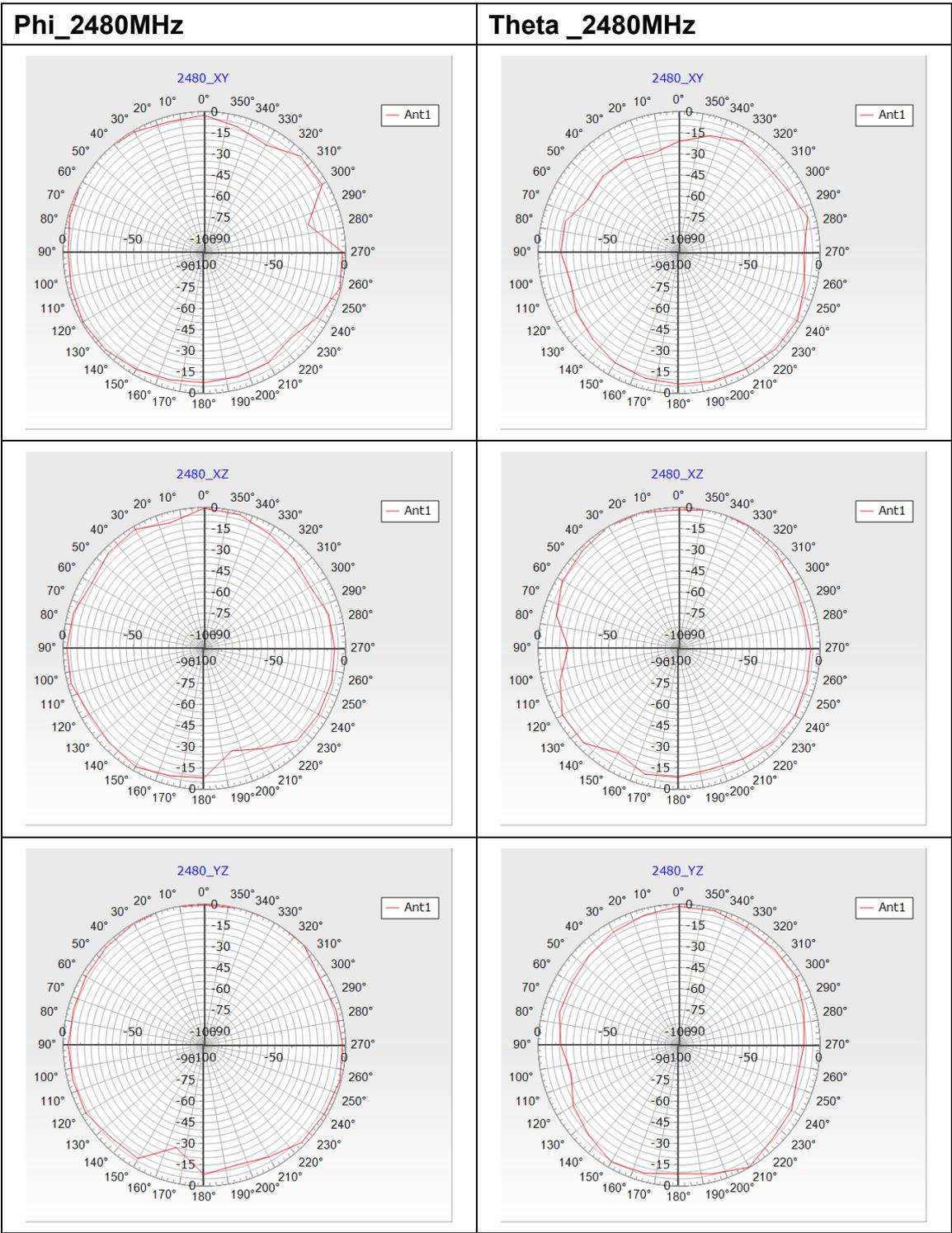


Phi_2437MHz



Theta_2437MHz







Appendix B. Photographs

Photographs are in a separate document due to confidentiality concerns.