

TEST REPORT

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2. Test Environment**2.1. Test Area Environmental Conditions****Table 1. Environmental conditions and parameters of the full anechoic chamber**

Temperature	Minimum: 19 °C, Maximum: 25 °C
Relative Humidity	Minimum: 40%, Maximum: 72%
Chamber Dimensions	7.40 m (L) × 3.66 m (W) × 3.66 m (H)
Shielding Effectiveness	0.3 – 6 GHz > 100 dB
Ground System Impedance	< 0.5 Ω

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3. Test Conditions

3.1. Appearance of the Tested Sample

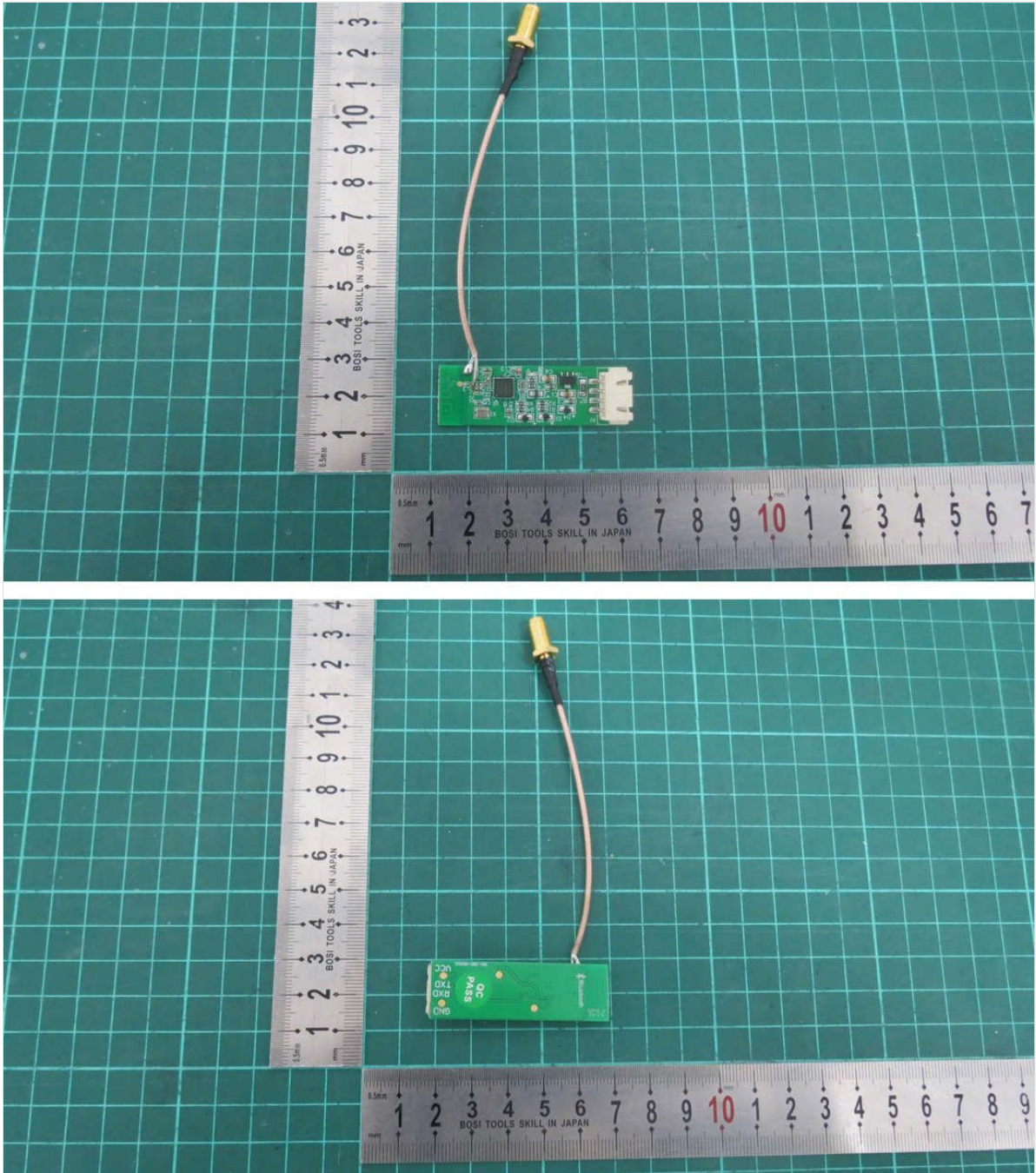


Figure 1. Sample appearance (top: front view; bottom: back view)

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3.2. Test Setup

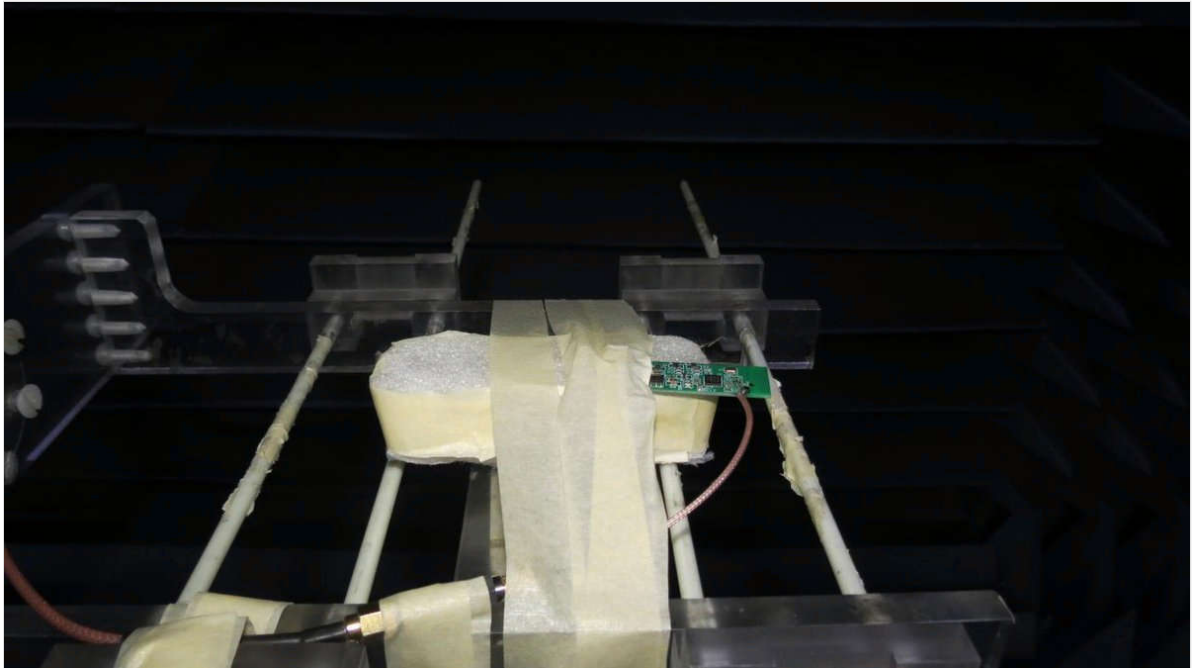


Figure 2. Site layout of the test (EUT mounted in the anechoic chamber)

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3.3. Test System Configuration

The test employed the great-circle cutting method, i.e. the combined-axis system: the measurement antenna is fixed while the EUT is rotated sequentially about two orthogonal axes. As shown in the figure, to complete the entire spherical scan, the EUT must rotate about both the Theta axis (θ) and the Phi axis (Φ).

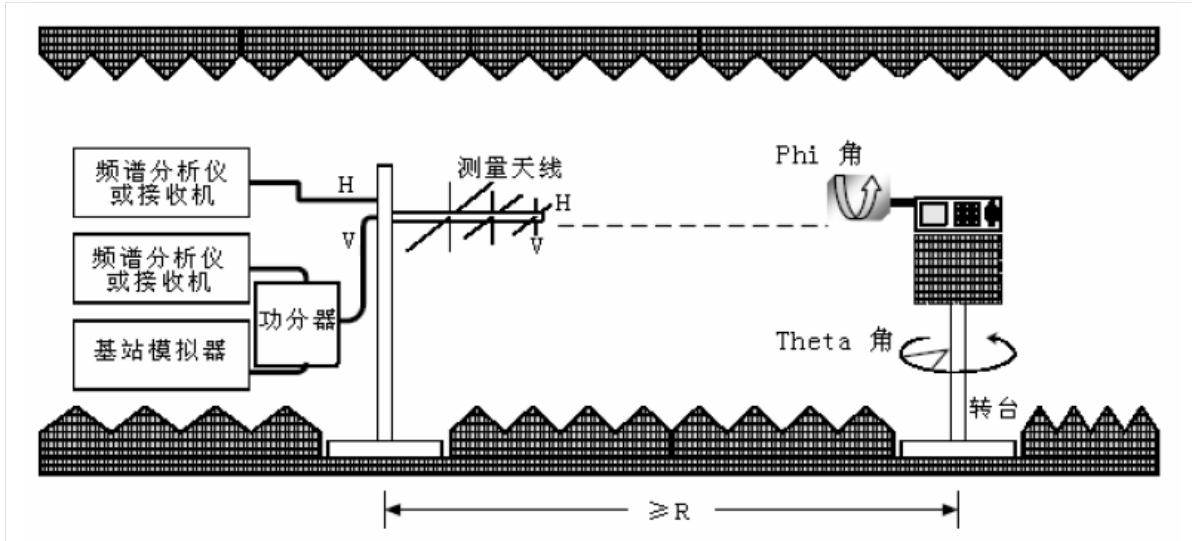


Figure 3. Typical test configuration for the great-circle cutting method

3.4. Test Software

The proprietary measurement software EMQuest V1.17 from ETS-Lindgren was used to automate the data acquisition process and to provide all post-processing calculations and data outputs required by CTIA. Its parametric test configuration system and carefully validated design help ensure repeatability and accuracy of results. Protection measures prevent data tampering and ensure that the original “raw” measurement data is always available for review.

4. Test Method

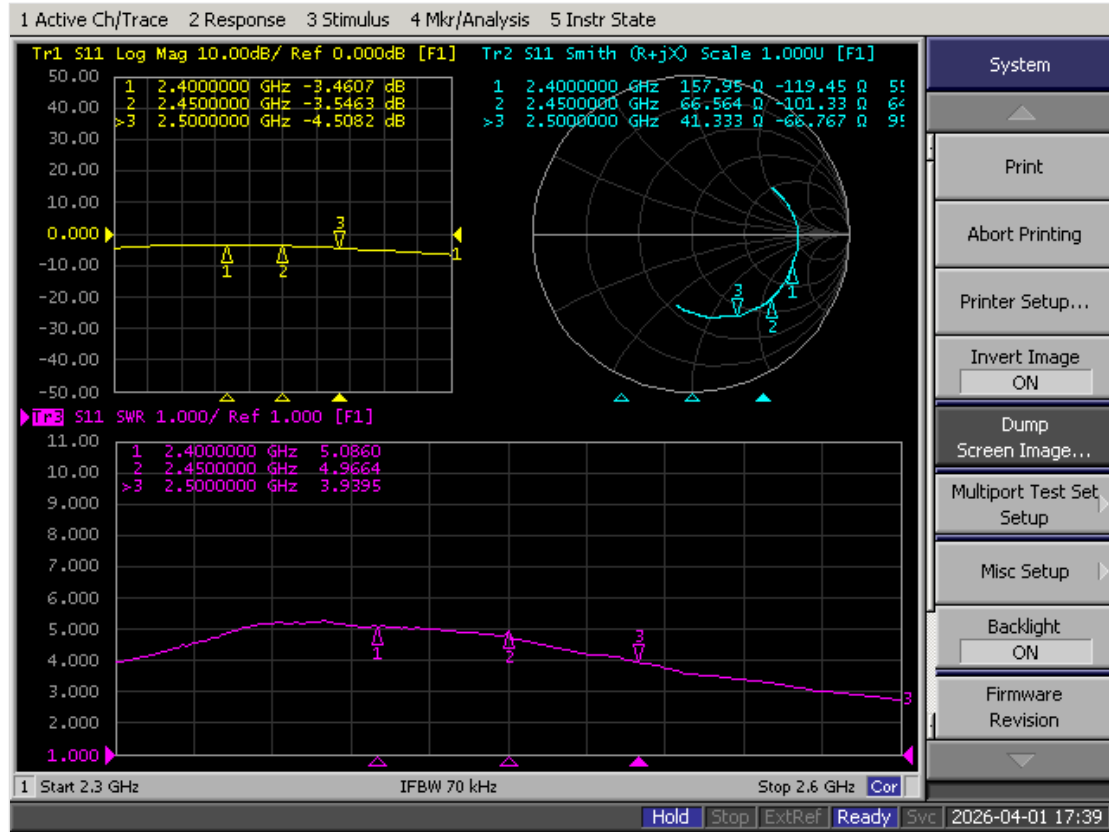
The antenna under test (AUT) is connected to the output port of a network analyzer, which feeds a signal into the AUT. A horn antenna connected to the input port of the network analyzer is used as the receiving antenna.

TEST REPORT**5. Test Results****5.1. Antenna Gain and Efficiency Test Results**

Model	Test Item	Test State	Frequency (MHz)	Efficiency (%)	Gain (dBi)
GQ-JBD-8851S	Gain	FS	2402	42.76	0.46
			2407	44.18	0.72
			2412	45.27	0.81
			2417	45.59	0.71
			2422	47.55	1.05
			2427	46.68	0.97
			2432	47.14	0.82
			2437	46.32	0.70
			2442	45.07	0.58
			2447	43.52	0.69
			2452	42.72	0.43
			2457	42.32	0.51
			2462	41.40	0.52
			2467	40.46	0.21
			2472	40.61	0.42
			2477	40.91	0.16
			2482	40.55	0.32
			2487	40.96	0.32
			2492	40.62	0.28

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5.2. Voltage Standing Wave Ratio (VSWR)



VSWR measurement screenshot from the network analyzer

Frequency (MHz)	2400	2450	2500
VSWR	5.0860	4.9664	3.9395

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6. Main Test Equipment

Equipment Name	Manufacturer	Model	Serial No.	Version	Calibration Date	Re-calibration Date
Anechoic Chamber	ETS	AMS-8500	CT-001157-1219	/	2025-05-07	2030-05-06
Test Software	ETS	EMQuest™	1464	REV 1.17	/	/
EMCenter Switch Control System	ETS	7006 / 7001	00059957 / MY42001152	/	/	/
Dual-Polarization Horn Antenna	ETS	ETS 3164-04	00062743	/	2024-03-09	2029-03-08
Network Analyzer	Keysight	E5071B	MY42404014	REV.A.06.50	2025-11-24	2026-11-23

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Appendix 1: Antenna Radiation Pattern

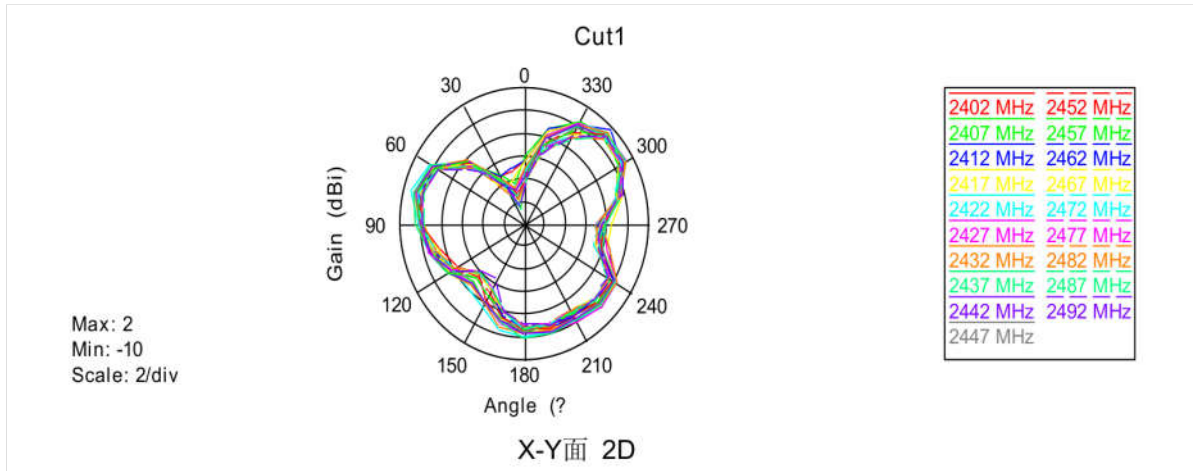


Figure A1-1. Cut1 — 2D radiation pattern in the X-Y plane
(all measured frequencies 2402–2492 MHz, 5 MHz step)

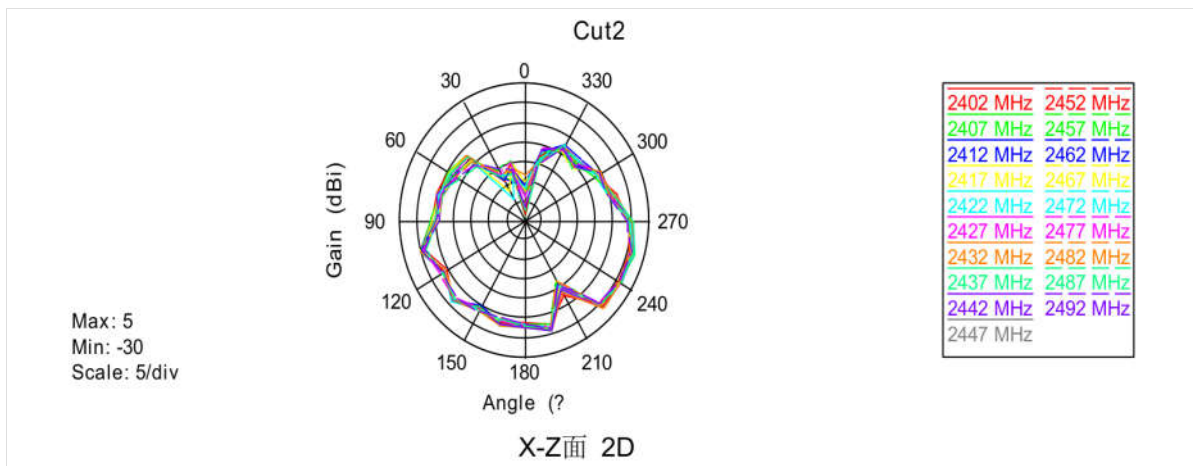


Figure A1-2. Cut2 — 2D radiation pattern in the X-Z plane
(all measured frequencies 2402–2492 MHz, 5 MHz step)

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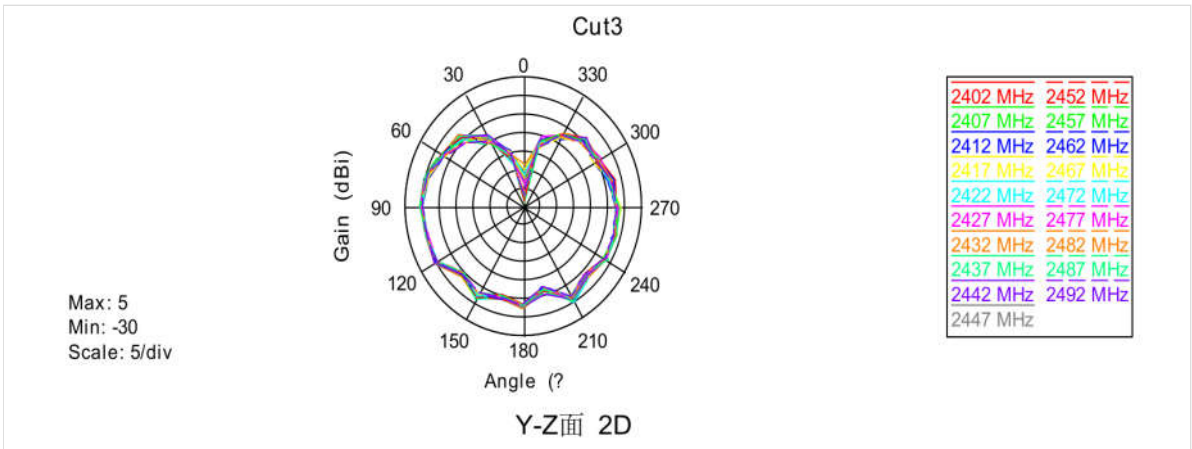


Figure A1-3. Cut3 — 2D radiation pattern in the Y-Z plane
(all measured frequencies 2402–2492 MHz, 5 MHz step)

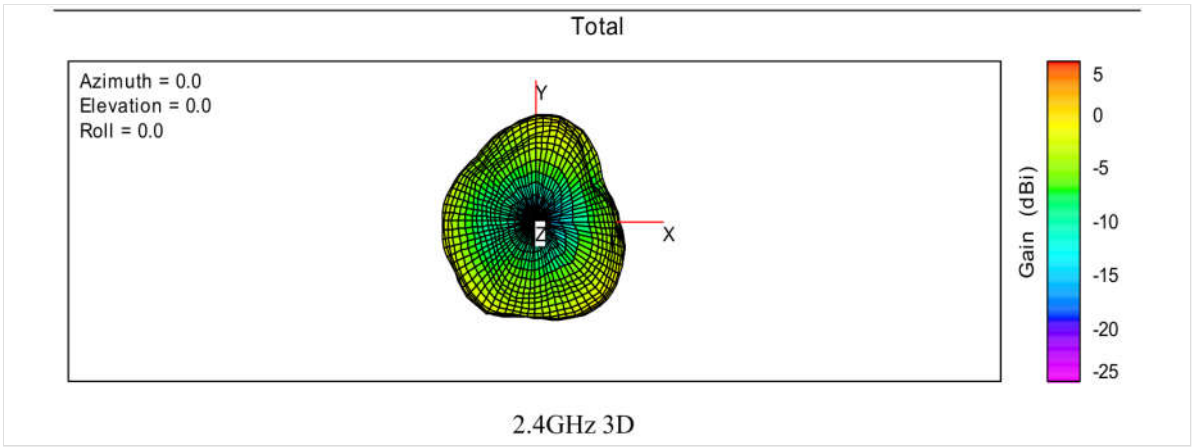


Figure A1-4. Total 3D radiation pattern at 2.4 GHz
(Azimuth = 0.0°, Elevation = 0.0°, Roll = 0.0°)

***** End of Report *****