

Antenna Measurement Report

Model: CH2G4-6022-000D1-01
Equipment Name: CH2G4-6022-000D1-01
Brand (Trade) Name: TopGain
Applicant: 八洋精密股份有限公司 新北市三重區重新路 5 段 609 巷 14 號 10 樓之 5
Manufacturer: 頂益科技有限公司 新竹市新源街 108 號 4 樓之 1
Antenna Type: Chip Antenna
Tested by (name / position & signature) <i>Saul Wang</i> / Engineer 2024/1/31
Approved by (name / position & signature) <i>Lorien Chang</i> / Manager 2024/1/31
Date of issue 2024/1/31

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Competences and guarantees

DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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General conditions

1. This report is only referred to the item that has undergone the test.
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4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification.

Data provided by the client

The following data has been provided by the client:

1. No

DEKRA Testing and Certification declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Testing period and place

Test Location	DEKRA Testing and Certification No. 26, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan
Date (start)	2023/11/22
Date (finish)	2023/11/22

Document history

Report number	Revision	Date	Description
23B0120R-A324340030S-A	Rev. 1.0	2024/1/31	First release

Environmental conditions

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:

Ambient temperature	22 °C – 28 °C
Relative Humidity air	< 60%

Testing verdicts

Not applicable:	N/A
Pass:	P
Fail:	F
Information:	Info
Not measured:	N/M

Used Equipment

Name	Manufacturer	Type/Model	Serial Number	Calibration
				Last Cal.
Vector Network Analyzer	R&S	ZNB 8	106333	2023/5/10
Measurement Software	ETS-Lindgren	EMQuest 1.16	1474	N/A

Appendix A: Test results

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1. TEST CONDITIONS

1.1 Power supply (V)

Power supply (V) under test:

N/A

1.2 Temperature (°C)

Tn = +22 to +28

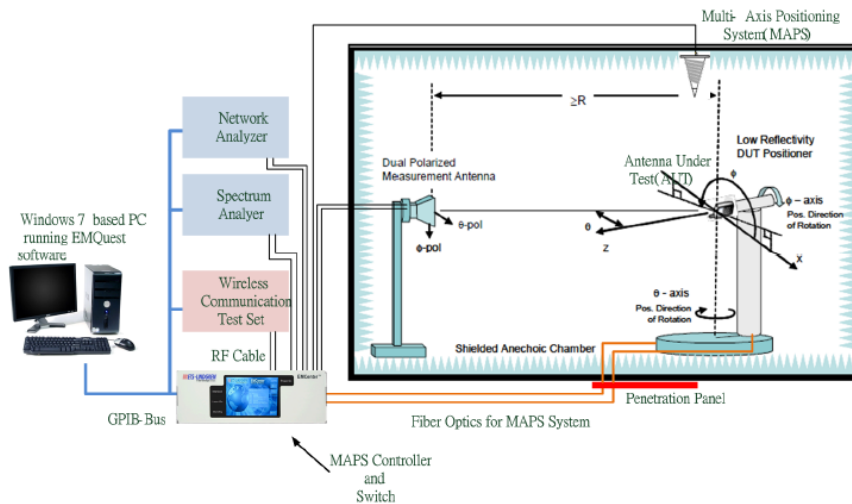
The subscript n indicates normal test conditions.

1.3 Device orientation and Setup Requirements

The EUT has only one mechanical configuration and it was tested in the scenario required by the standard [1]:

- “Free-space” configuration, whereby the EUT has been placed directly on a support.

The EUT is rotated along two different spherical axes: theta (θ) and phi (Φ). The relationship between the 3D Cartesian coordinate system (X, Y, Z) and the theta and phi axes is illustrated in the following figure.



Theta is the spherical axis that rotates along the Cartesian Y axis while Phi is the spherical axis that rotates along the Cartesian Z axis. The initial measurement position (Theta = 0° and Phi = 0°) is illustrated in each of the test setup photographs. The EUT has only one mechanical configuration each and it was tested in the Free-space configuration, whereby the EUT has been placed directly on a support.

2. TEST RESULTS

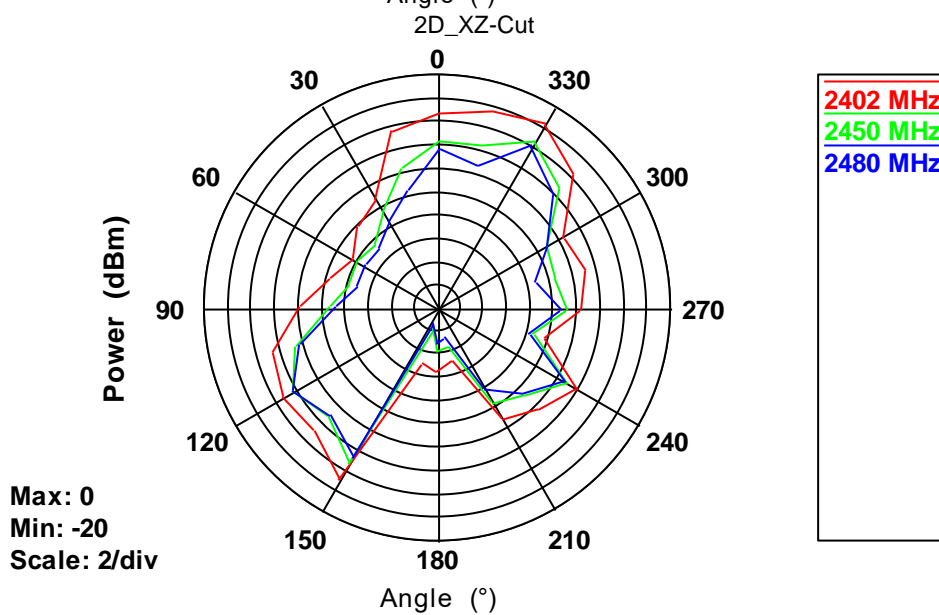
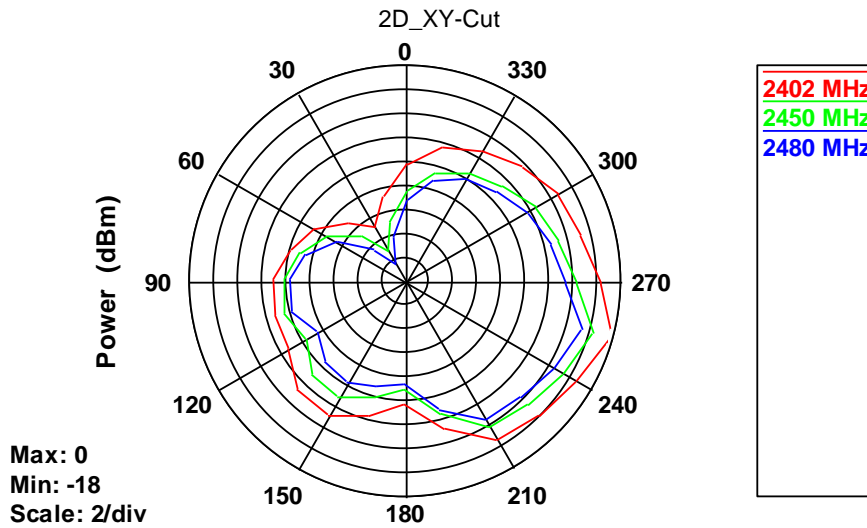
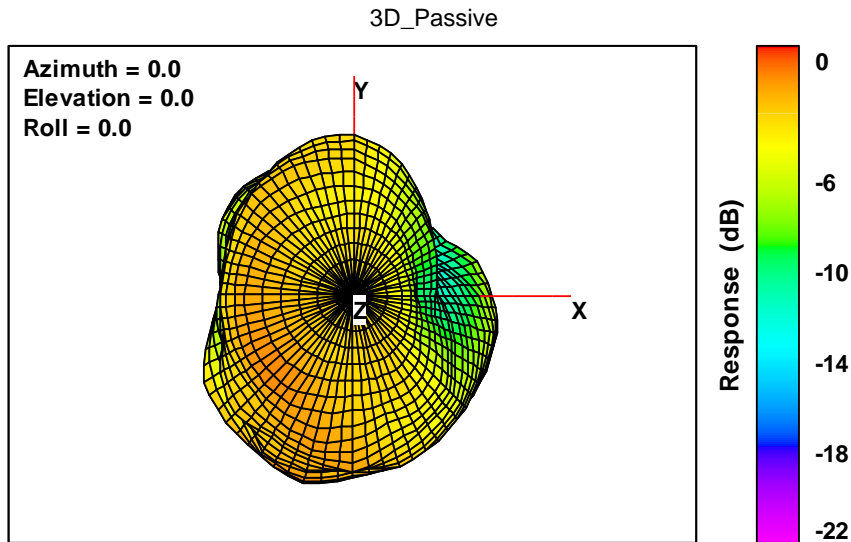
2.1 Summary

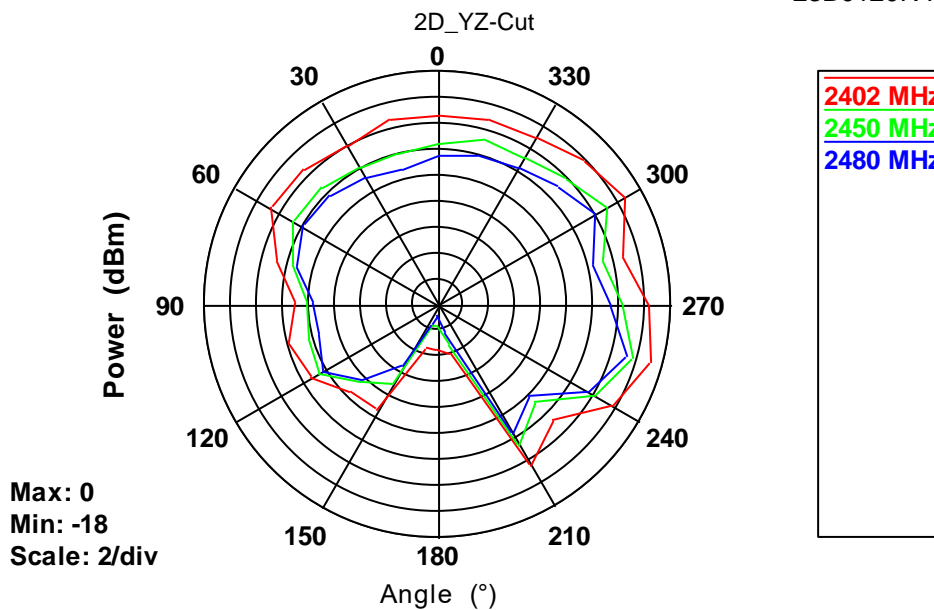
2.2 Antenna_Passive

3D Passive 2402MHz-2480MHz

Frequency (MHz)	Tot. Rad. Pwr. (dBm)	Peak EIRP (dBm)	Directivity (dBi)	Efficiency (dB)	Efficiency (%)	Gain (dBi)	NHPRP $\pm\pi/4$ (dBm)	NHPRP $\pm\pi/6$ (dBm)
2402	-5.1	-0.4	4.8	-5.1	30.7	-0.4	-6.7	-8.1
2450	-6.8	-2.0	4.8	-6.8	21.1	-2.0	-8.2	-9.7
2480	-7.5	-2.9	4.6	-7.5	17.8	-2.9	-8.9	-10.4

2.3 3D Plots

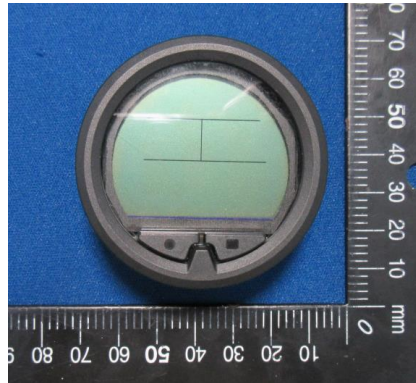




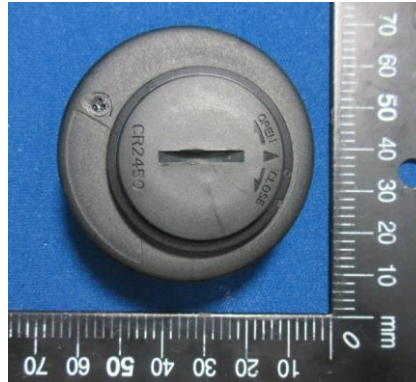
2.4 PHOTOGRAPHS

Equipment under test:

• EUT front view:



EUT back view.



2.5 Test Setup

