

Test Report

Verified code: 405080

Report No.: E202212057025-1

Customer: Taicang Zhigengniao Information Technology Co.,Ltd.

Address: No.20 JianxiongRoad TaicangCity China

Sample Name: ANNE PRO 2D

Sample Model: AP2D

Receive Sample
Date: Dec.09,2022

Test Date: Dec.12,2022 ~ Dec.12,2022

Reference
Document: ANSI IEEE 149-2021 Part 8, Part 10

Test Result: Pass

Prepared by: Xu Xingqiu

Reviewed by: Feng Pan

Approved by: Zhao Zetian

GUANGZHOU GRG METROLOGY & TEST CO., LTD

Issued Date: 2022-12-28

GUANGZHOU GRG METROLOGY & TEST CO., LTD.

Address: No.163, Pingyun Road, West of Huangpu Avenue, Guangzhou, Guangdong, China
Tel: (+86) 400-602-0999 FAX: (+86) 020-38698685 Web: <http://www.grgtest.com>

Statement

1. The report is invalid without "special seal for inspection and testing"; some copies are invalid; The report is invalid if it is altered or missing; The report is invalid without the signature of the person who prepared, reviewed and approved it.
2. The sample information is provided by the client and responsible for its authenticity; The content of the report is only valid for the samples sent this time.
3. When there are reports in both Chinese and English, the Chinese version will prevail when the language problems are inconsistent.
4. If there is any objection concerning the report, please inform us within 15 days from the date of receiving the report.
5. Without the agreement of the laboratory, the client is not authorized to use the test results for unapproved propaganda.

----- The following blanks -----

TABLE OF CONTENTS

1.	TEST RESULT SUMMARY	5
2.	GENERAL DESCRIPTION OF EUT	6
2.1	APPLICANT INFORMATION	6
2.2	MANUFACTURER.....	6
2.3	FACTORY	6
2.4	BASIC DESCRIPTION OF EUT	6
2.5	TEST SCENE.....	6
2.6	SAMPLE WORK DESCRIPTION	7
2.7	ASSISTIVE DEVICE INFORMATION	7
2.8	SAMPLE CONNECTION DIAGRAM	7
3.	LABORATORY	8
4.	MEASUREMENT UNCERTAINTY	9
5.	EQUIPMENT AND TOOLS USED DURING TEST	10
6.	ANTENNA RADIATION PERFORMANCE TEST	11
6.1	LIMITS	11
6.2	TEST PROCEDURE	11
6.3	CONFIGURATION OF SYSTEM UNDER TEST	12
6.4	TEST PHOTOS.....	12
6.5	TEST RESULTS.....	13
7.	SAMPLE PHOTO	17

----- The following blanks -----

REPORT ISSUED HISTORY

Report Version	Report No.	Description	Compile Date
1.0	E202212057025-1	Original Issue	2022-12-12
2.0	E202212057025-1-G1	Updated	2022-12-28

Note:

This report E202212057025-1-G1 is the modification of report E202212057025-1. On the basis of the original report, the content of Chinese remarks in the CONFIGURATION OF SYSTEM UNDER TEST in page 12 and section 6.3 of the report is modified to english, and the original report E202212057025-1 is invalid.

----- The following blanks -----

1. TEST RESULT SUMMARY

Test Item	Test Frequency	Test Method	Test Scene	Test Result
Gain	2400 MHz ~2500 MHz	ANSI IEEE 149-2021 Part 8	scene 1	/ ¹⁾
Efficiency	2400 MHz ~2500 MHz	ANSI IEEE 149-2021 Part 10	scene 1	/ ¹⁾

Note: ¹⁾ Customer-defined test, test results do not make judgment.

----- The following blanks -----

.

2. GENERAL DESCRIPTION OF EUT

2.1 APPLICANT INFORMATION

Name:	Taicang Zhigengniao Information Technology Co.,Ltd.
Address:	No.20 JianxiongRoad TaicangCity China

2.2 MANUFACTURER

Name:	Taicang Zhigengniao Information Technology Co.,Ltd.
Address:	No.20 JianxiongRoad TaicangCity China

2.3 FACTORY

Name:	Taicang Zhigengniao Information Technology Co.,Ltd.
Address:	No.20 JianxiongRoad TaicangCity China

2.4 BASIC DESCRIPTION OF EUT

Product Name:	ANNE PRO 2D
Product Model:	AP2D
Trade Name:	/
Product Size	
Power Supply:	/
Frequency Band:	2400MHz – 2500MHz
Sample submitting way:	☒ Provided by customer ☐ Sampling
Sample No:	E202212057025-0001
Note:	

2.5 TEST SCENE

Scene	Scene description
Test scene 1	Free space

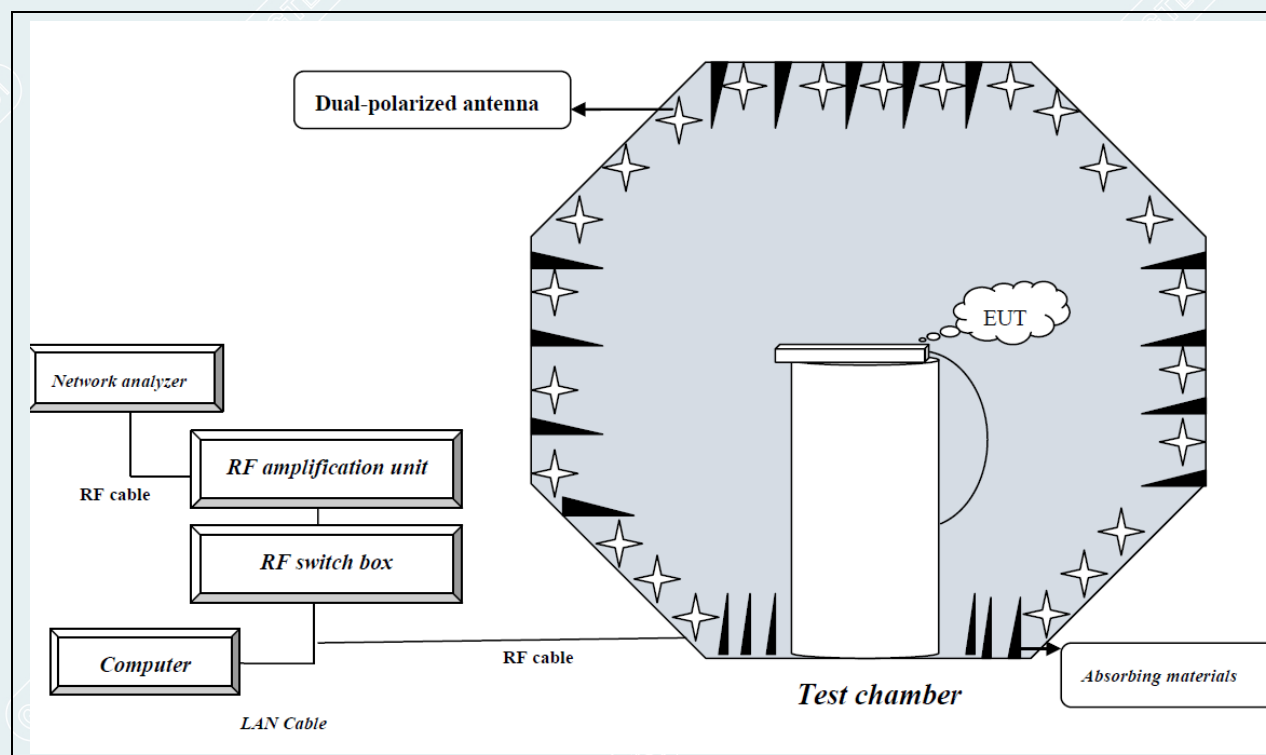
2.6 SAMPLE WORK DESCRIPTION

Serial number	Work description
a)	The sample is erected according to the standard, so that the sample can be tested under normal operation

2.7 ASSISTIVE DEVICE INFORMATION

Serial number	Name of Equipment	Manufacturer	Model	Serial Number
1)	RF cable	Jun you radiofrequency	Amplitude stabilization and phase stabilization cable	/
2)	Calibrated parts	R&S	ZV-Z270	/

2.8 SAMPLE CONNECTION DIAGRAM



Sample connection diagram

3. LABORATORY

The tests and measurements refer to this report were performed by Shenzhen EMC Laboratory of Guangzhou GRG Metrology & Test Co., Ltd.

Add : No.1301 Guangguang Road Xinlan Community, Guanlan Street, Longhua District
Shenzhen, 518110, People's Republic of China

P.C. : 518110

Tel : 0755-61180008

Fax : 0755-61180008

----- The following blanks -----

4. MEASUREMENT UNCERTAINTY

Uncertainty is calculated according to ISO's "Guide to the Expression of Uncertainty in Measurement" (GUM), and the extended uncertainty is expressed using an inclusion factor of $k=2$ and a 95% confidence level.

Measurement	Uncertainty
Gain	0.6

----- The following blanks -----

5. EQUIPMENT AND TOOLS USED DURING TEST

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Gain& Efficiency				
OTA test chamber	HWA-TECH	AC7500	OTA-SC202103 01MSN	2023-02-23
Network analyzer	ROHDE&SCHWARZ	ZNB8	101169	2023-07-08

----- The following blanks -----

6. ANTENNA RADIATION PERFORMANCE TEST

6.1 LIMITS

Test Item	Test Frequency	Limits
Gain	2400MHz ~2500MHz	≥ 1
Efficiency	2400MHz ~2500MHz	≥ 1
Note: 1) ‘/’ Customer-defined tests, unlimited definitions.		

6.2 TEST PROCEDURE

a) Adjust the ambient temperature of the test system to within $(24 \pm 3)^\circ\text{C}$.

b) System gain calibration:

1) Set up the standard antenna so that the apparent phase center of the standard antenna is consistent with the geometric center of the system, rotate the turntable by 90° , and adjust the phase center of the standard antenna again;

2) Start the test after setting the test frequency;

3) Gain calibration data is calculated and stored on the control computer.

c) Antenna test:

1) The antenna to be measured is erected on the test fixture, and the antenna phase center coincides with the center of the probe array ring by adjusting the antenna;

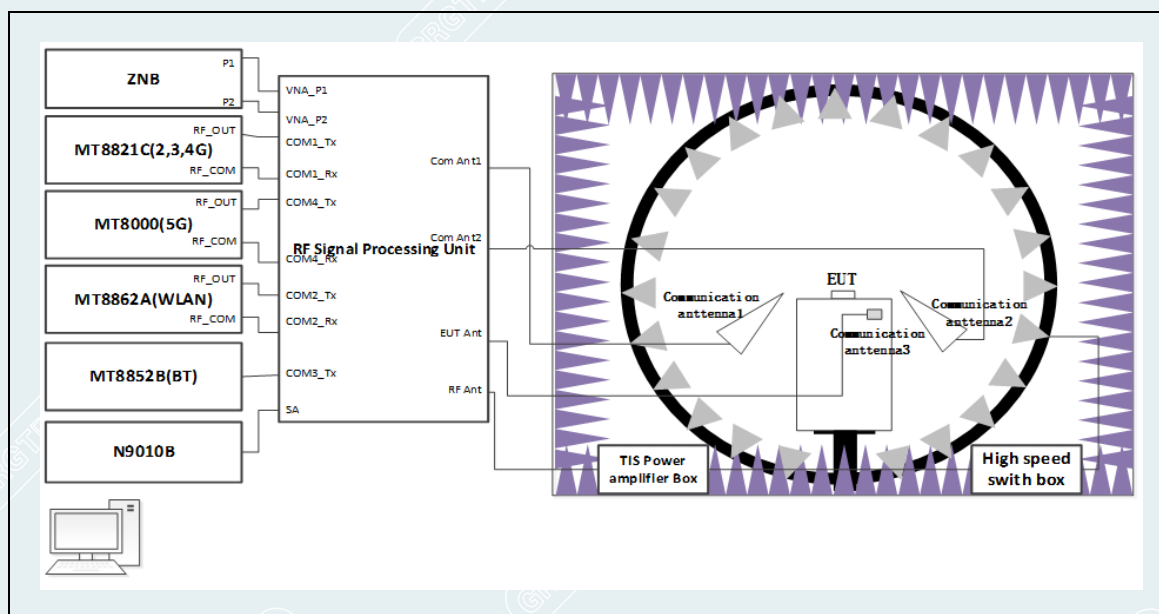
2) Connect the test cable, set the test frequency, start the test, during the test, the system supporting software should be able to automatically complete the acquisition, storage and calculation of the antenna amplitude and phase data to be measured.

d) Data processing:

The OTA system is used to test the antenna, and all the radiation information on the spherical surface of the antenna (including the polarization mode, gain, efficiency, pattern of the antenna, etc.) can be obtained through one test. Therefore, the antenna radiation indicators described in this standard can be obtained by a single test, the difference is that the data of different indicators are extracted differently.

----- The following blanks -----

6.3 CONFIGURATION OF SYSTEM UNDER TEST



6.4 TEST PHOTOS



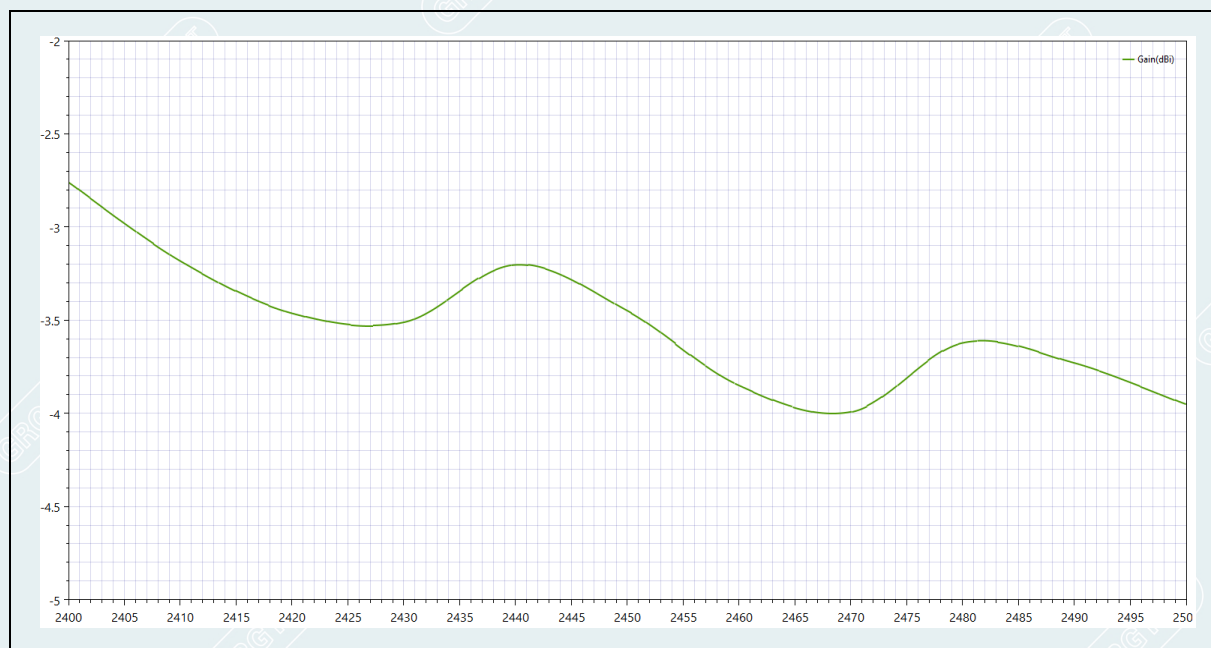
AP2D_ Test photo

6.5 TEST RESULTS

EUT Name	ANNE PRO 2D	Model No.	AP2D
Environmental Conditions	24.3℃/58%/101kPa	Test Scene	Scene 1
Power Supply	/	Tested By	Ma Lintao
Test Date	2022-12-12	Sample No.	E202212057025-0001

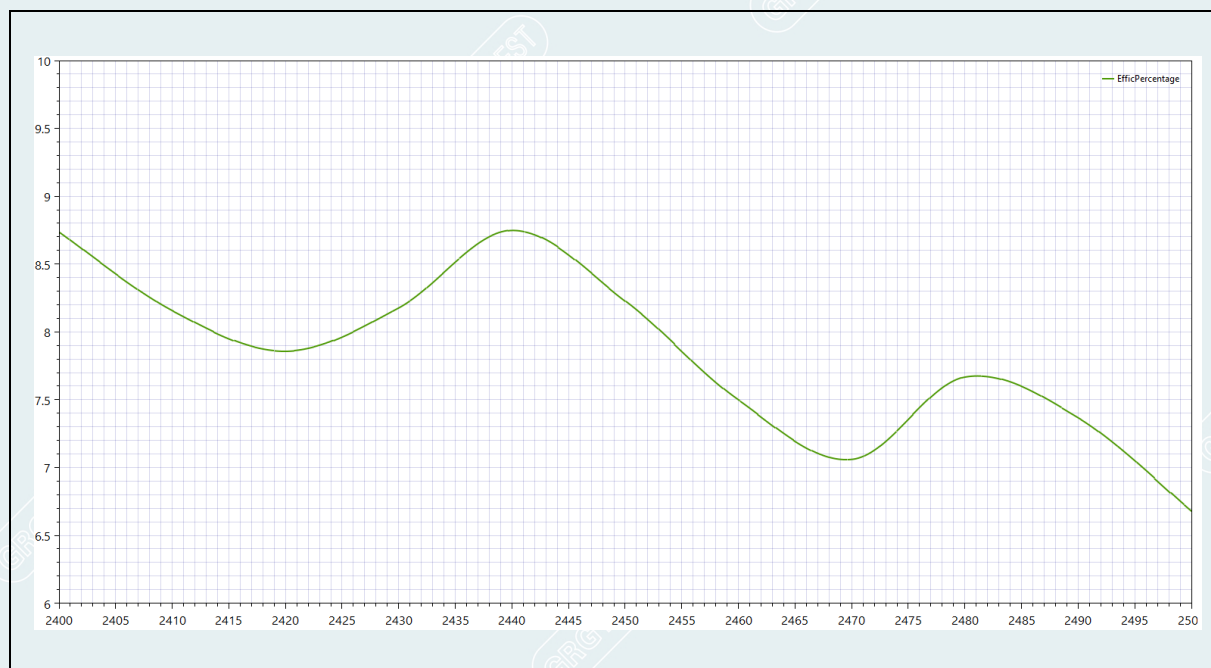
Test item	Test Frequency (MHz)	Test Data
		AP2D
Gain (dBi)	2400	-2.76
	2410	-3.18
	2420	-3.46
	2430	-3.51
	2440	-3.20
	2450	-3.45
	2460	-3.85
	2470	-3.99
	2480	-3.62
	2490	-3.73
	2500	-3.95
Efficiency (%)	2400	8.74%
	2410	8.16%
	2420	7.86%
	2430	8.18%
	2440	8.75%
	2450	8.23%
	2460	7.50%
	2470	7.06%
	2480	7.67%
	2490	7.37%
	2500	6.68%

a) Gain result plot



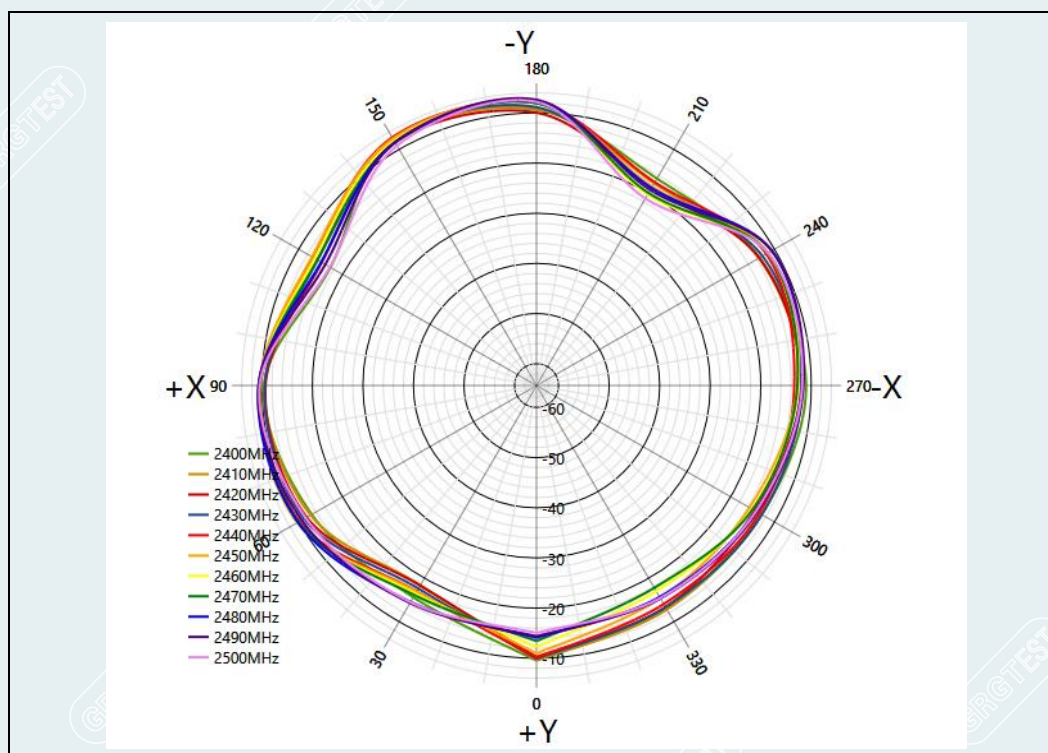
AP2D _ Gain plot

b) Efficiency result plot

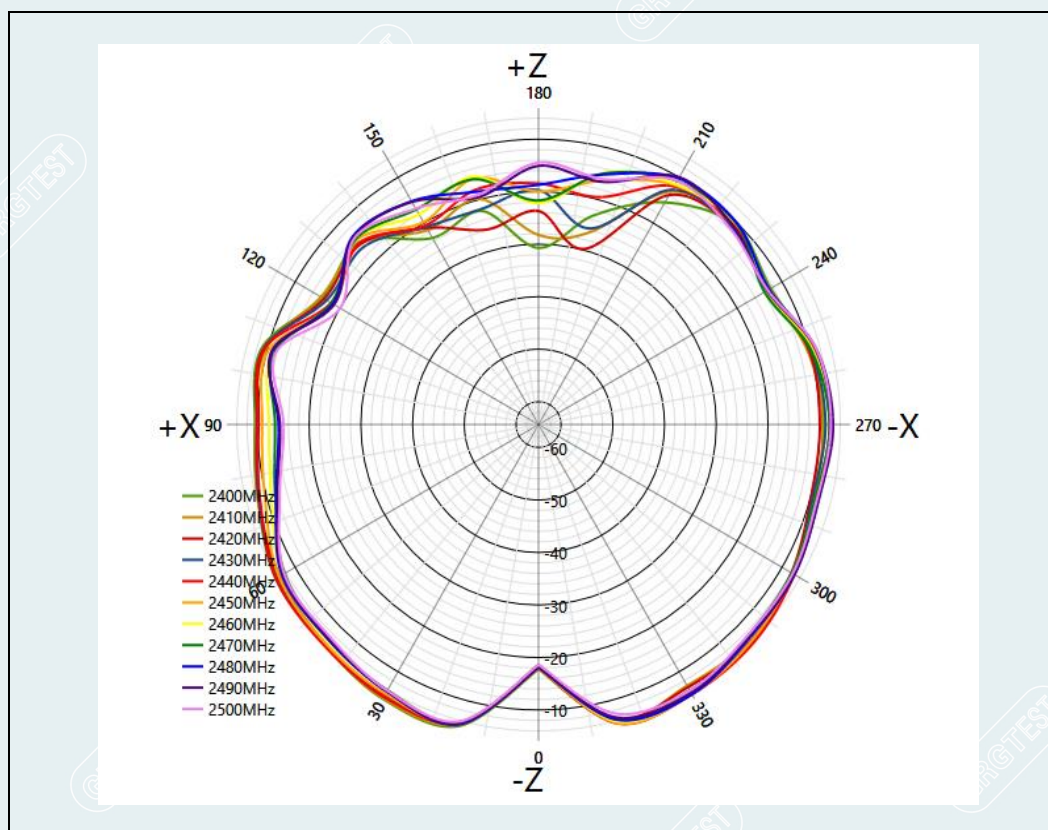


AP2D _ Efficiency plot

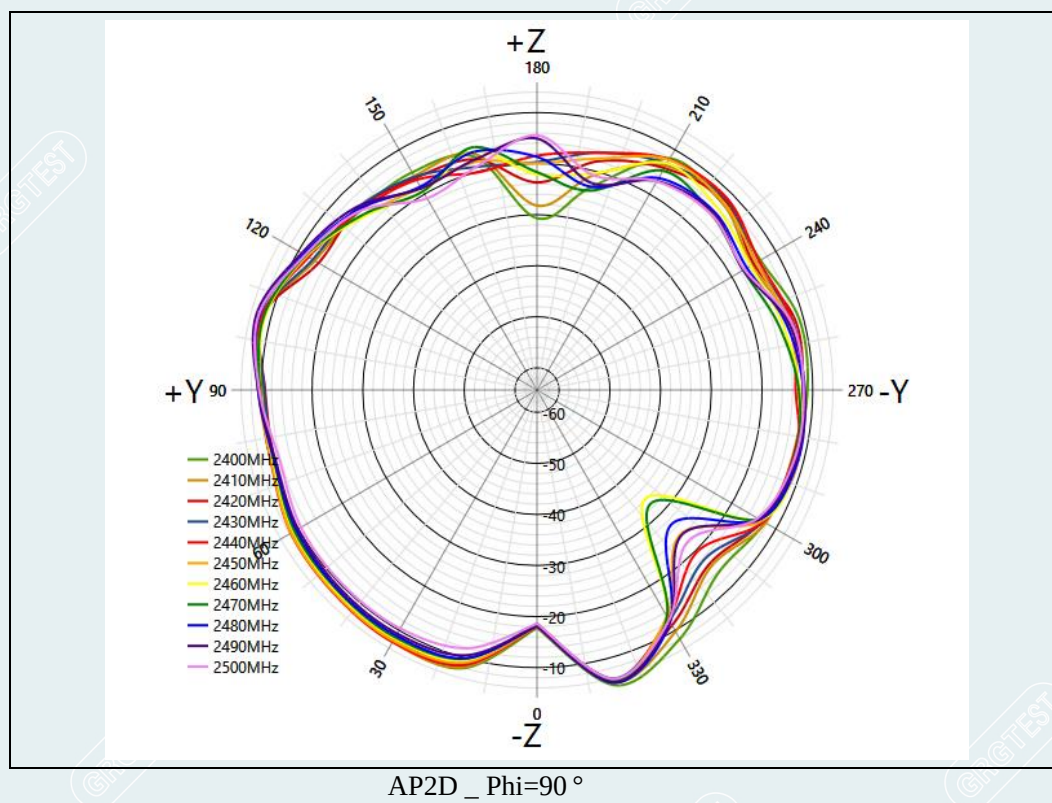
c) 2D Radiation pattern



AP2D _Theta=90 °



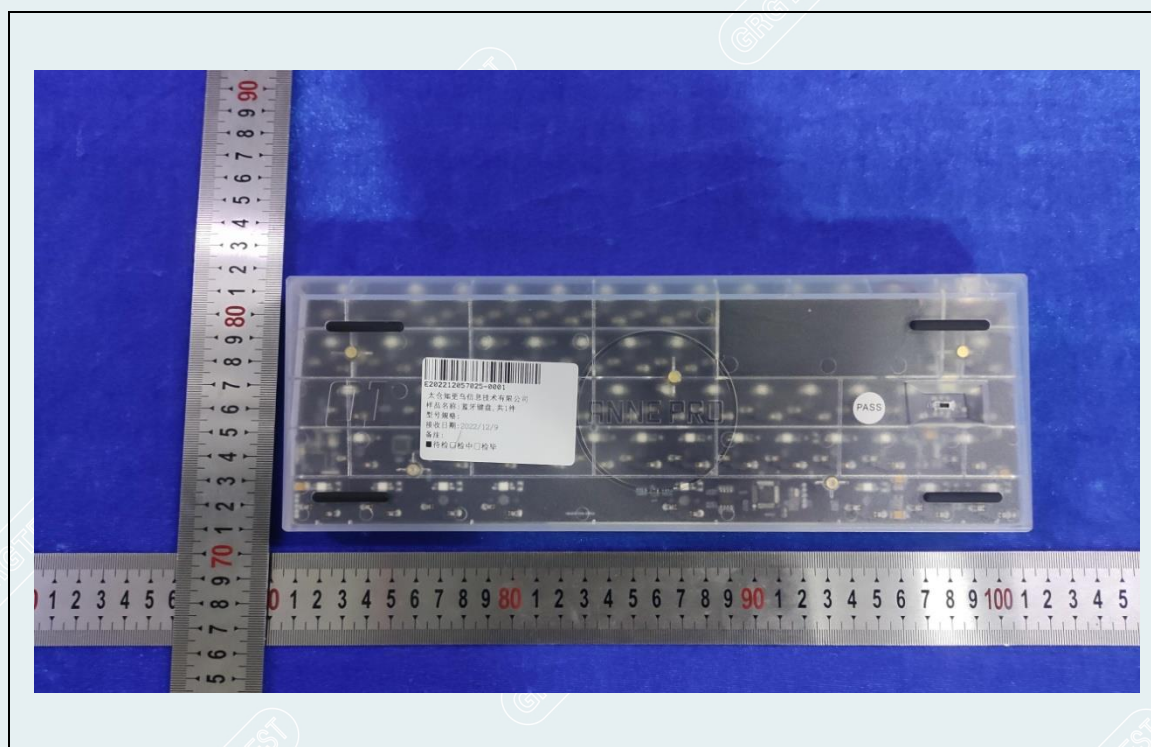
AP2D _Phi=0 °



7. SAMPLE PHOTO



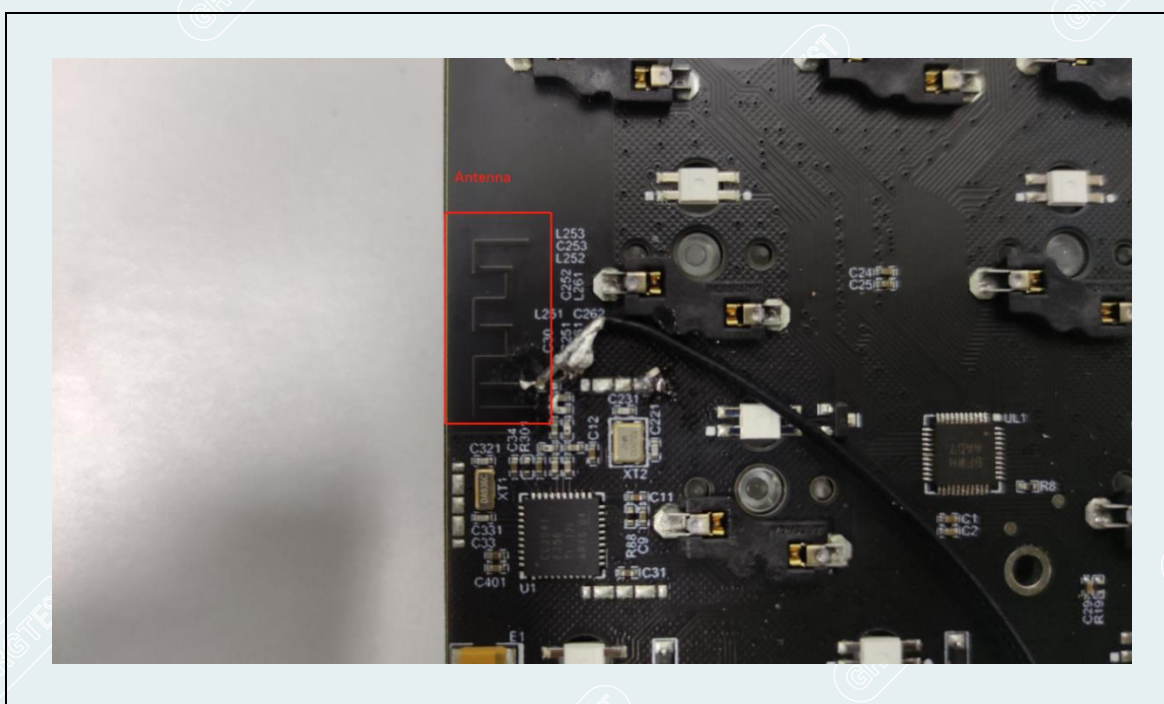
AP2D_Front



AP2D_Back



Interior photograph



Antenna

----- End of Report -----