Test Report

Verified code: 348480

Report No.: E20230306359801-1

Customer:	Guangdong Bestcore Internet of Things Technology CO., Ltd
Address:	Room1501,15F,ShuMao Building,6 Xiangxing Road, Torch Development District,Zhong shan
Sample Name:	Bluetooth Module
Sample Model:	BC204
Receive Sample Date:	Mar.07,2023
Test Date:	Mar.07,2023 ~ Mar.07,2023
Reference Document:	ANSI IEEE 149-2021 Part 7, Part 8, Part 10
Test Result:	Not make judgment

Prepared by: Xu Xingqiu Reviewed by: Feng Hui Approved by: Zhao Zetian

GRG METROLOGY & TEST GROUP CO., LTD.

Issued Date: 2023-03-09

GRG METROLOGY & TEST GROUP CO., LTD.
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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.

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REPORT ISSUED HISTORY

Report Version	Report No.	Description	Compile Date
1.0	E20230306359801-1	Original Issue	2023-03-07

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1. TEST RESULT SUMMARY

Test Item	Test Frequency	Test Method	Test Scene	Test Result
Gain	2400 MHz ~2500MHz	ANSI IEEE 149-2021 Part 8	scene 1	/[1)]
Radiation efficiency	2400 MHz ~2500MHz	ANSI IEEE 149-2021 Part 10	scene 1	/[1)]
Radiation pattern	2400 MHz ~2500MHz	ANSI IEEE 149-2021 Part 7	scene 1	/[1)]
Note 1)：Customer-defined test, test results do not make judgment.				

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2. GENERAL DESCRIPTION OF EUT

2.1 APPLICANT INFORMATION

Name:	Guangdong Bestcore Internet of Things Technology CO., Ltd
Address:	Room1501,15F,ShuMao Building,6 Xiangxing Road, Torch Development District,Zhong shan

2.2 MANUFACTURER

Name:	Guangdong Bestcore Internet of Things Technology CO., Ltd
Address:	Room1501,15F,ShuMao Building,6 Xiangxing Road, Torch Development District,Zhong shan

2.3 FACTORY

Name:	Guangdong Bestcore Internet of Things Technology CO., Ltd
Address:	Room1501,15F,ShuMao Building,6 Xiangxing Road, Torch Development District,Zhong shan

2.4 BASIC DESCRIPTION OF EUT

Product Name:	Bluetooth Module
Product Model:	BC204
Trade Name:	Best Core
Antenna Type:	PCB
Frequency Band:	2400MHz – 2500MHz
Sample submitting way:	■Provided by customer □Sampling
Sample No:	E20230306359801-0001
Peak Gain:	-2.31dBi

2.5 TEST SCENE

Scene	Scene description
Test scene 1	Free space

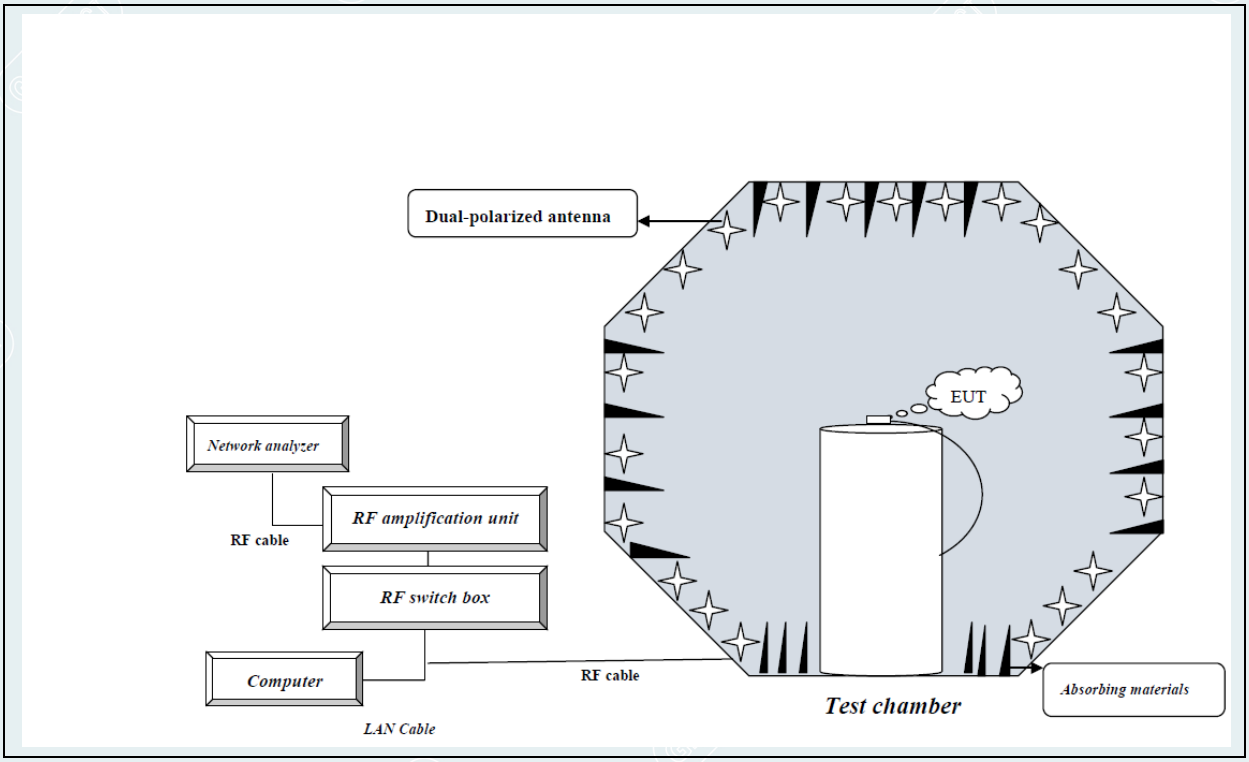
2.6 SAMPLE WORK DESCRIPTION

Serial **No.**	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

No.	Name of Equipment	Manufacturer	Model No.	Serial No.
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 Report Lab EMC Laboratory of GRG METROLOGY & TEST GROUP CO., LTD.

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P.C.	:	518110
Tel	:	0755-61180008
Fax	:	0755-61180008

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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

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5. EQUIPMENT AND TOOLS USED DURING TEST

Name of Equipment	Manufacturer	Model No.	Serial No.	Calibration Due
OTA test chamber	HWA-TECH	AC7500	OTA-SC2021030 1MSN	2024-02-23
Network analyzer	ROHDE&SCHWARZ	ZNB8	101169	2023-07-07

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6. ANTENNA RADIATION PERFORMANCE MEASUREMENT

6.1 LIMITS

Test Item	Test Frequency	Limits
Gain	2400 MHz ~2500MHz	/[1)]
Radiation efficiency	2400 MHz ~2500MHz	/[1)]
Radiation pattern	2400 MHz ~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±3)℃.

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.

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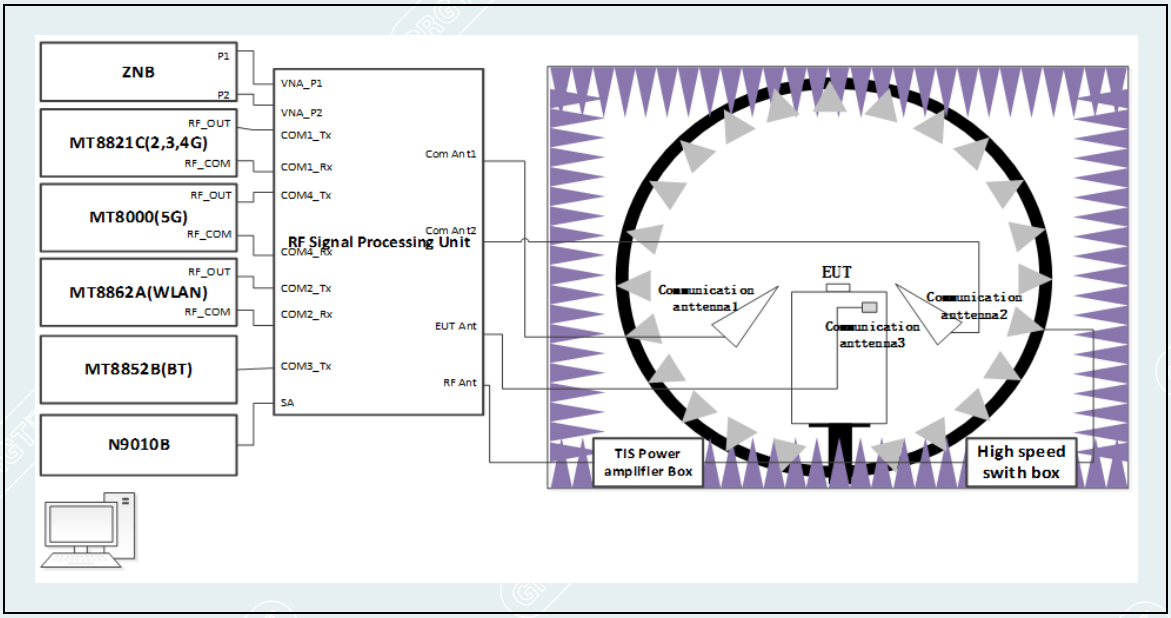
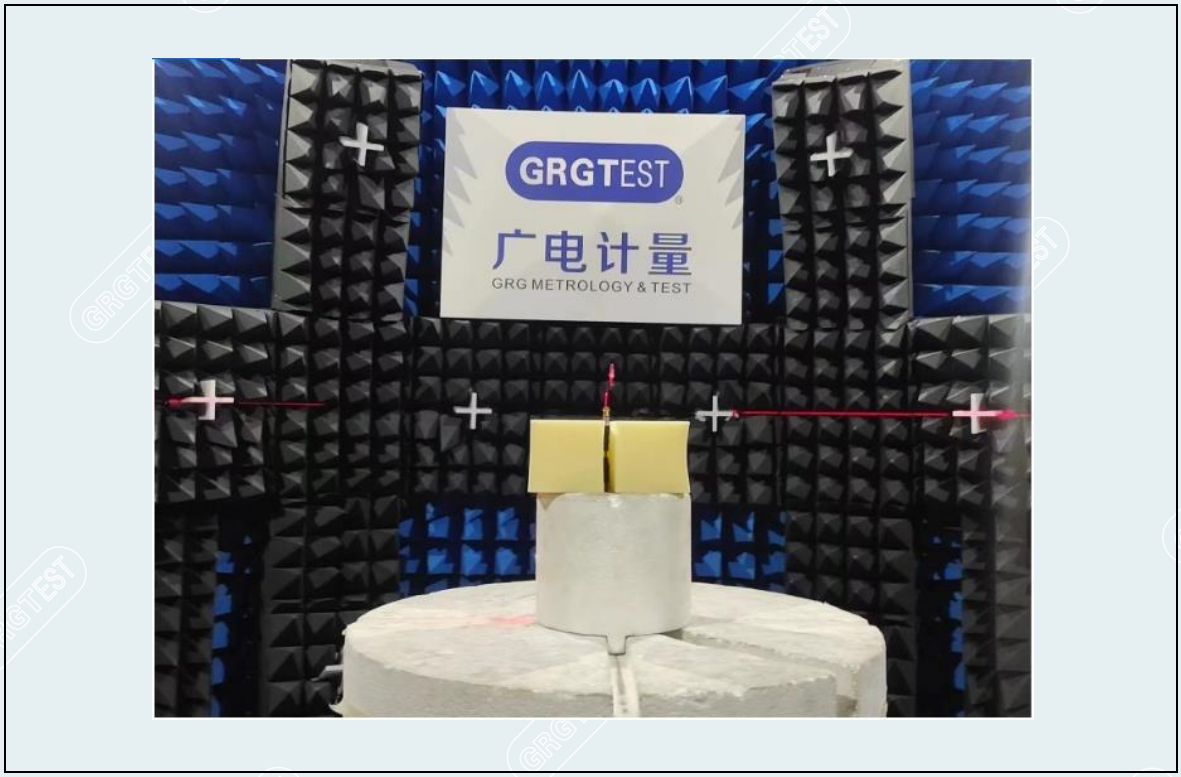
6.3 CONFIGURATION OF SYSTEM UNDER TEST



6.4 TEST PHOTOS



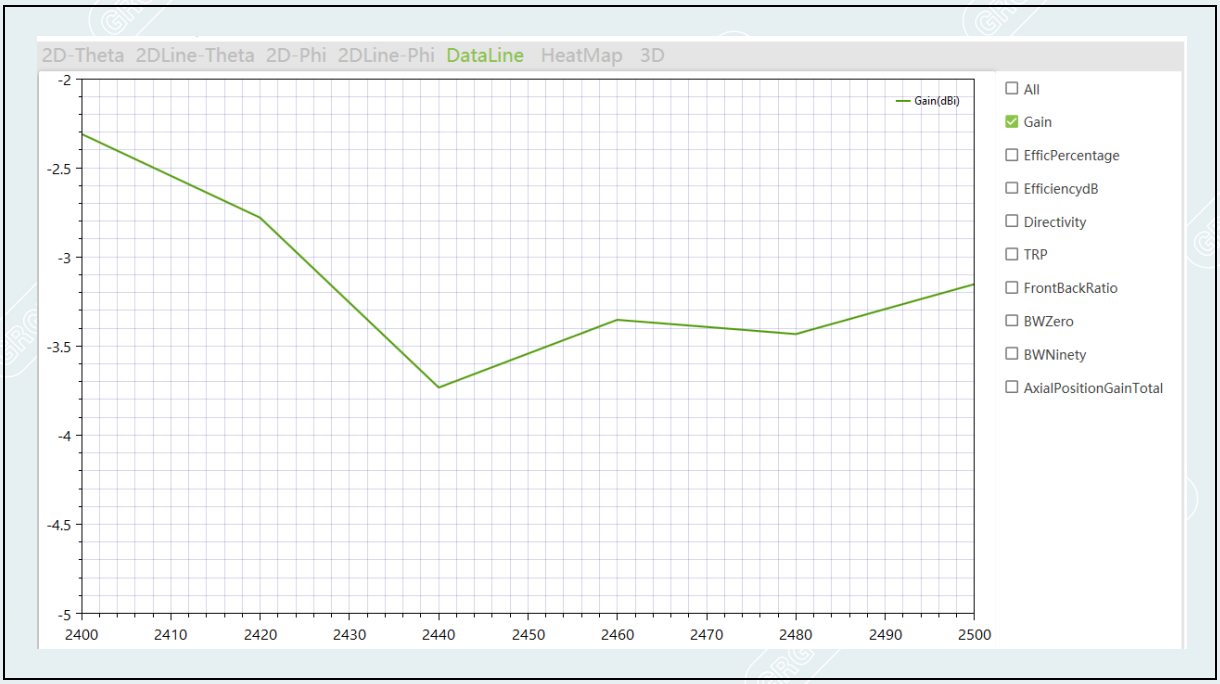
Test photo

6.5 TEST RESULTS

EUT Name	Bluetooth Module	Model No.	BC204
Environmental Conditions	22.7℃/52%RH /101kPa	Test Scene	Scene 1
Power Supply	/	Tested By	Wang Jun
Test Date	2023-03-06	Sample No.	E20230306359801-0001
Antenna polarization	/	Impedance	50 Ω

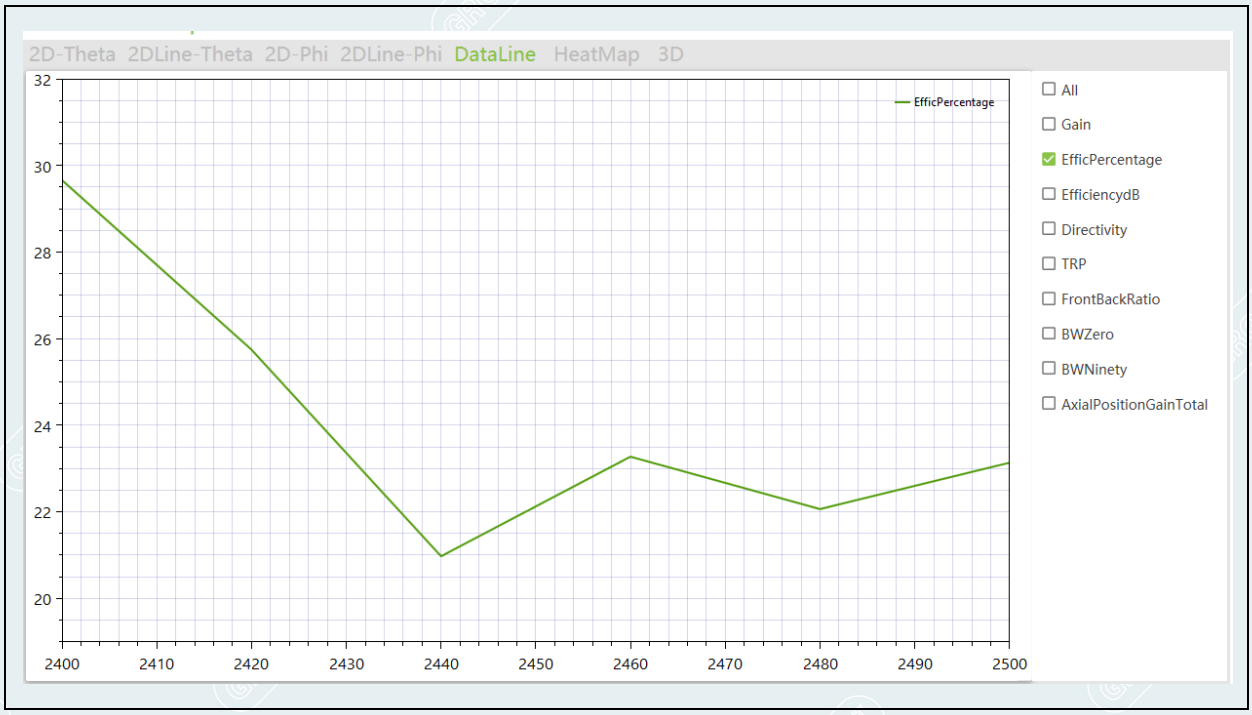
Test item	Test Frequency (MHz)	Test Data
Gain(dBi)	2400	-2.31
	2420	-2.78
	2440	-3.73
	2460	-3.35
	2480	-3.43
	2500	-3.15
Efficiency (%)	2400	29.66
	2420	25.74
	2440	20.97
	2460	23.27
	2480	22.06
	2500	23.13
Note ： The sample is tested after grounding treatment.		

a)Gain result plot



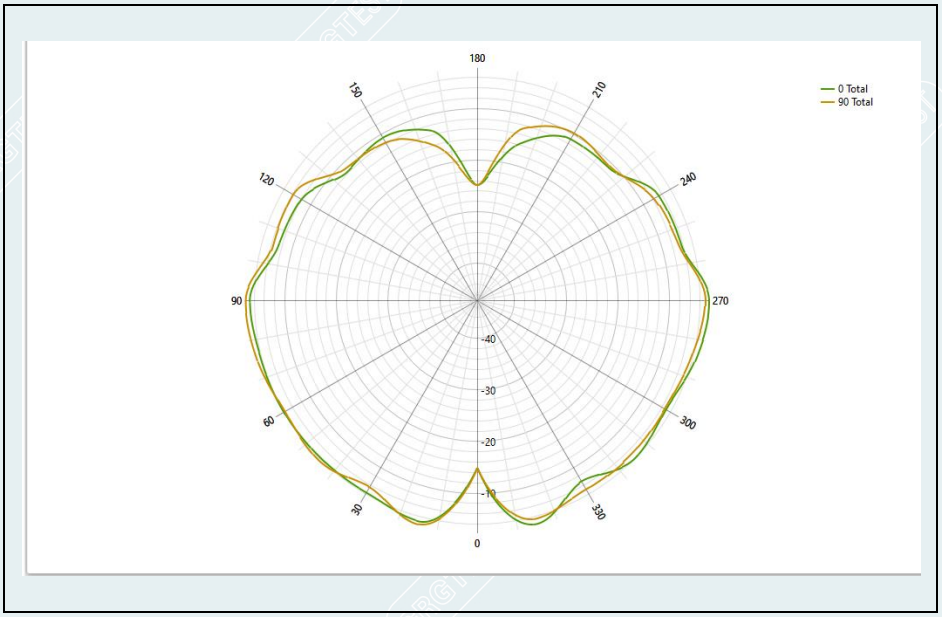
Gain plot

b) Efficiency result plot

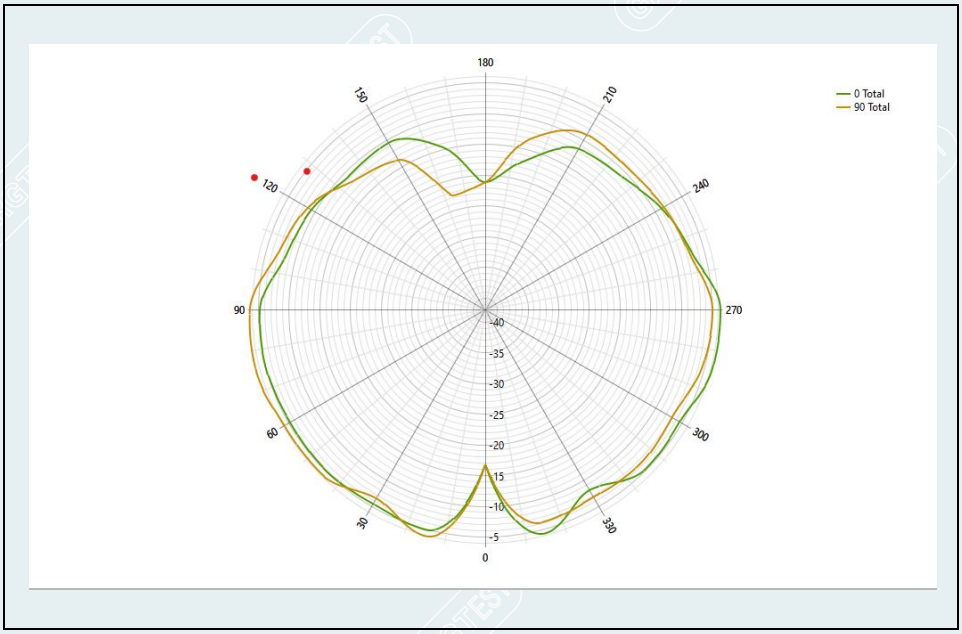


Efficiency plot

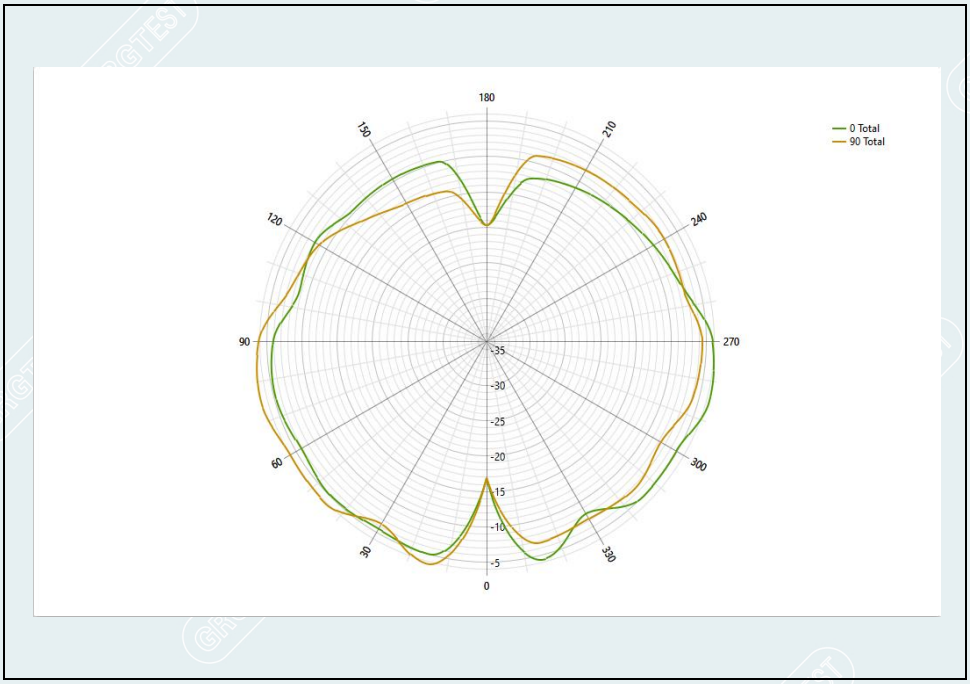
c）2D Radiation pattern



Phi=0 ℃ & Phi=90 °_2400MHz



Phi=0 & Phi=90 °_2460 MHz



Phi=0 & Phi=90 °_2500 MHz

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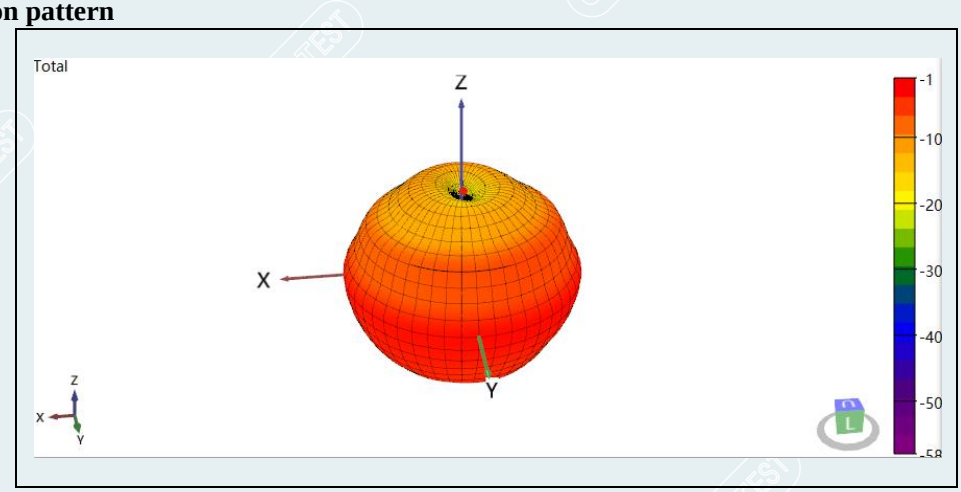
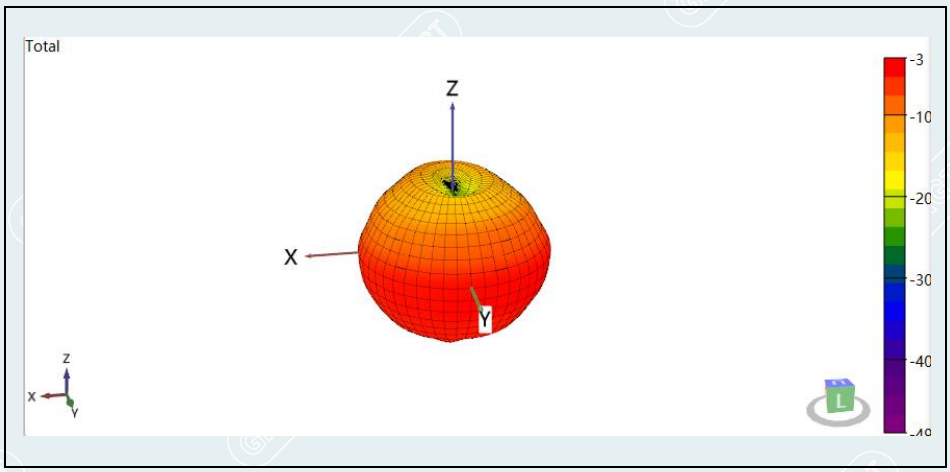
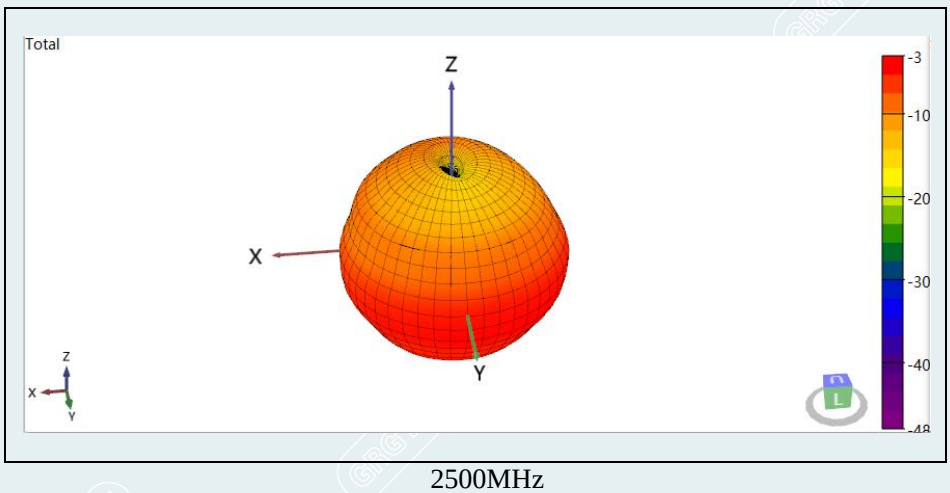
d）**3 D Radiation pattern**



2400MHz

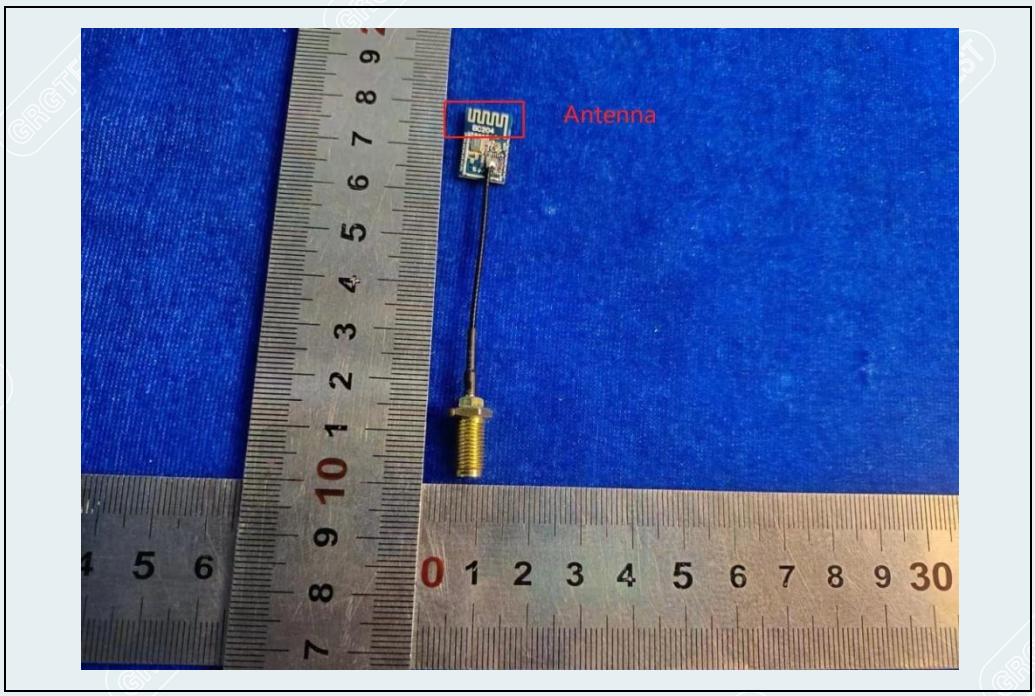


2460MHz

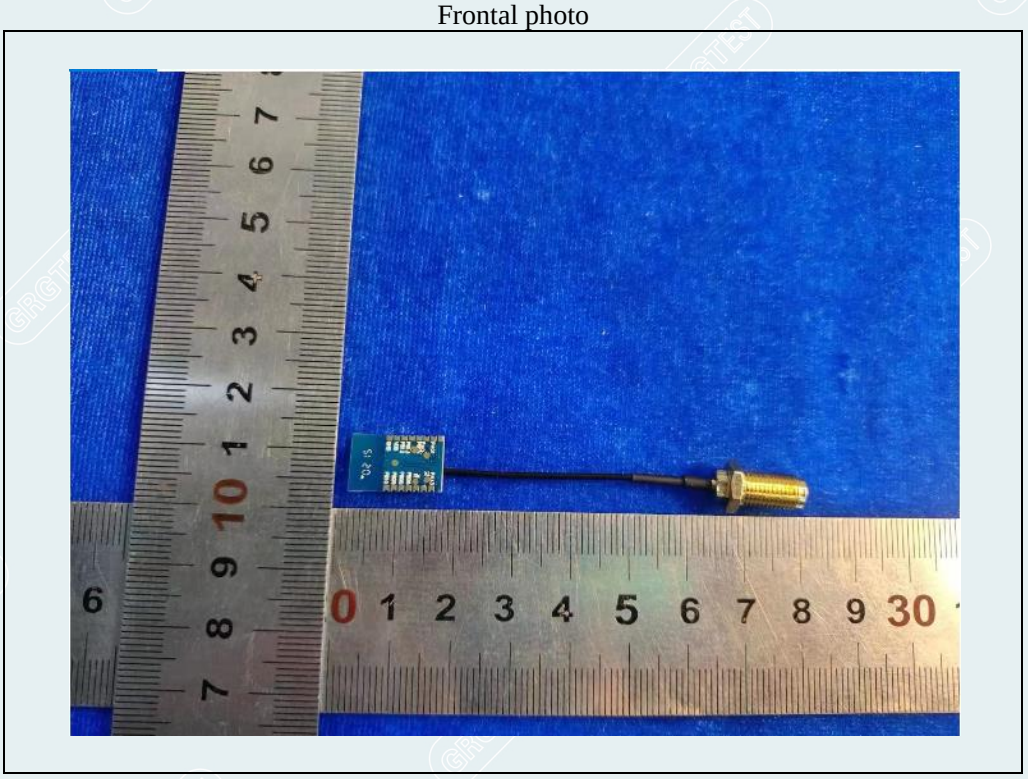


2500MHz

7. PHOTOGRAPH OF THE EUT

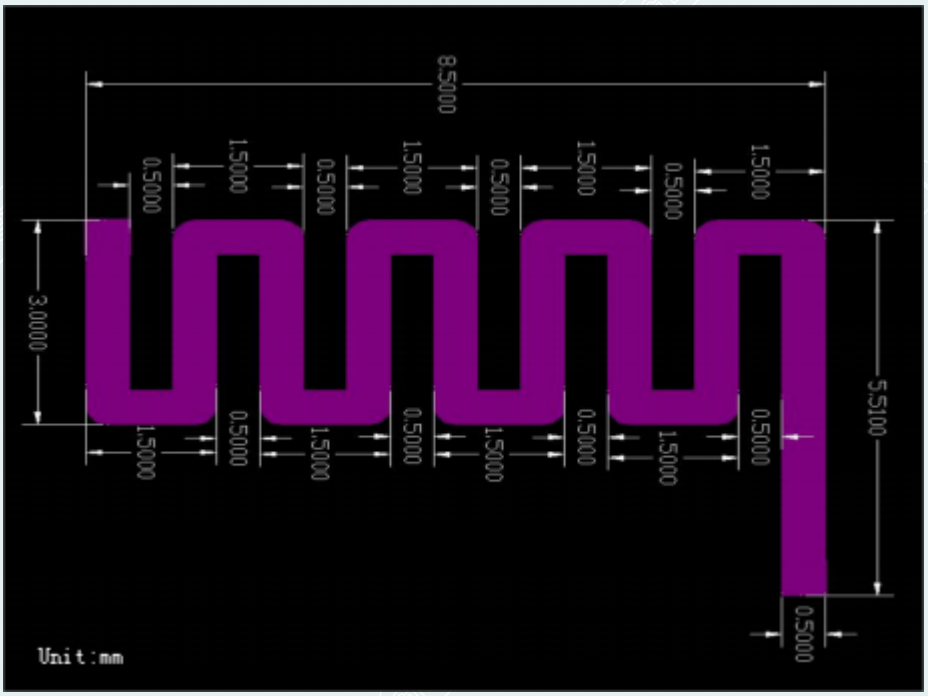


Frontal photo



Back photo

Frontal photo



Antenna Size

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