

Antenna Specification

Customer Name: Xiaomi Communication Technology Co. LTD

Product Name: 2.4GHz WIFI+Bluetooth dual-mode module

Sample Model: MHCWB8G

Reference Standard: GB/T 9410-2008;ANSI/IEEE Std 149-1979

Issue Date:2023.06.20

Role	Name	Date
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Auditor	于永亮	2023.6.20
Approver	张赞	2023.6.20

Version

Version No.	Date	Description	Formulate	Approval
A0	2022.5.17	For the first time, formulate	Lin Yuzhe	Zhang He

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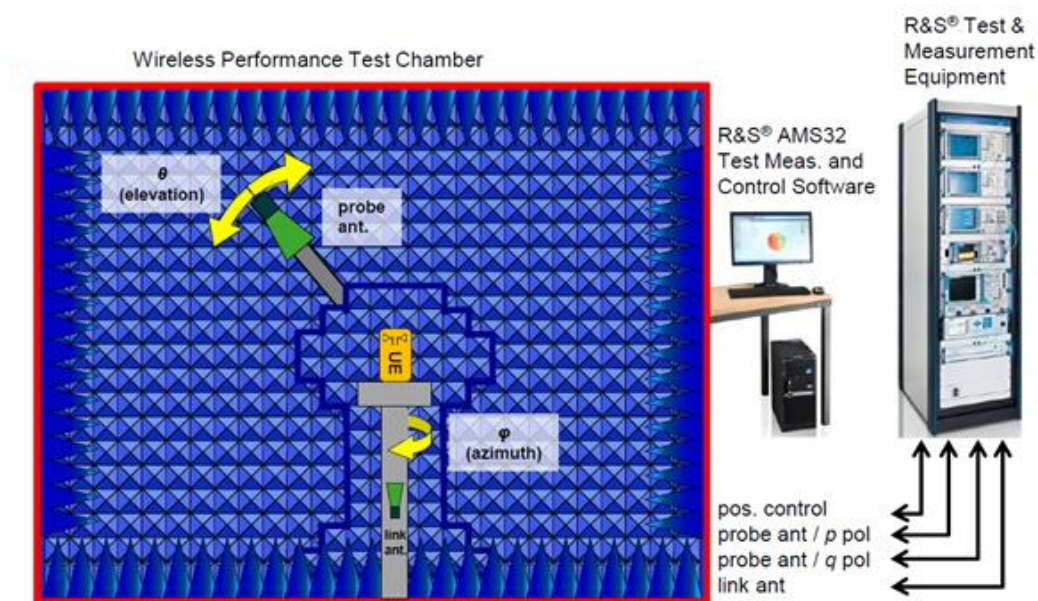
1.General Information

1.1 General information of testing institutions

Name	Xiaomi Communication Technology Co. LTD
Address	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China
Tel	010-6060666

1.2 Testing principle

Multi-Probe OTA Measurement System



1.3 Test equipment

Equipment	Model No.	Serial No.	Manufacturer	Calibration date	Next calibration date
Network Analyzer	Rohde&Schwarz	102231	ZND	20231018	20241018

1.4 Test environment

Temperature	23.9℃
Humidity	24%RH
Pressure	100.32kPa

1.5 Statement

- (1) The test results in the report are only applicable to the tested samples and the tested samples work under the environment described in the report.
- (2) Only Xiaomi Communication Technology Co. LTD. have the right to modify the report, and the modification information shall be annotated in the revision form.
- (3) Any objection to this report shall be raised within 30 days after formal confirmation of the report.
- (4) This report is invalid if there is any evidence that the sample information provided is falsified.
- (5) The report is invalid without the signature of the auditor and approver.

2.Sample Information

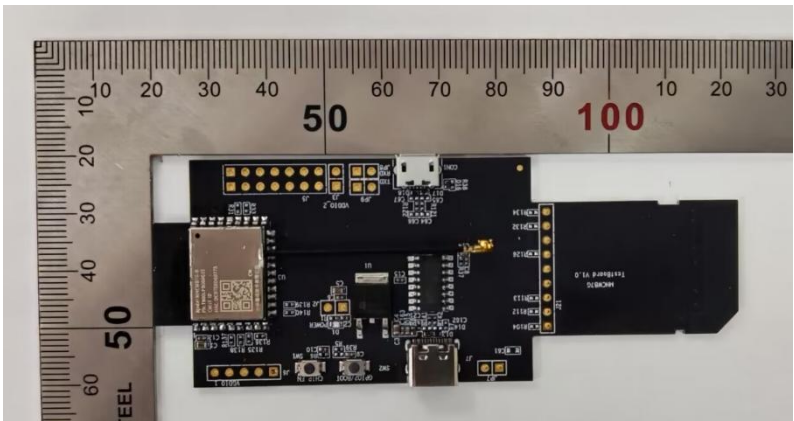
2.1 Client information

Name	Xiaomi Communication Technology Co. LTD
Address	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

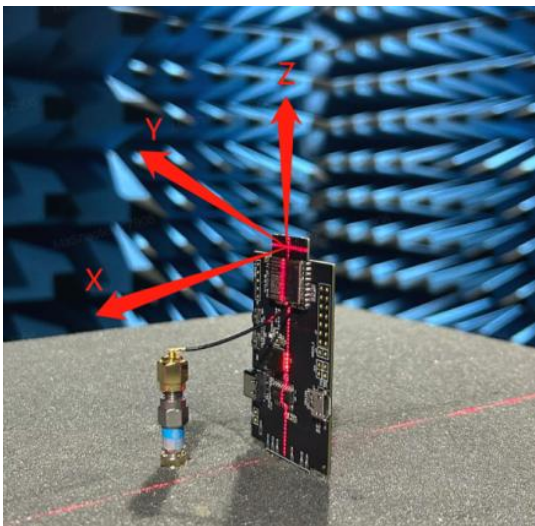
2.2 Description of EUT(S)

Product Name	2.4GHz WIFI+Bluetooth dual-mode Module
Sample Modle	MHCWB8G-B
Serial No.	
Test Item	VSWR, Peak Gian, Radiation Efficiency, Radiation pattern
Frequency Range	2400-2480MHz
Received Date	2023.06.20
Test Date	2023.06.20
Remark	RF Cable: cable length=50mm, IPEX

2.3 EUT appearance



2.4 DUT setup photo of free space OTA testing



3. Test Results

3.1 Test standard

Name	Parameter	Method	Standard no.
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Mobile communication antenna	VSWR	Generic specification for antennas used in the mobile communications	GB/T 9410-2008
	Antenna gain		
	Radiation pattern		
Antenna	Radiation efficiency	IEEE Standard Test Procedures for Antennas	ANSI/IEEE Std 149-1979
	Gain and directivity		

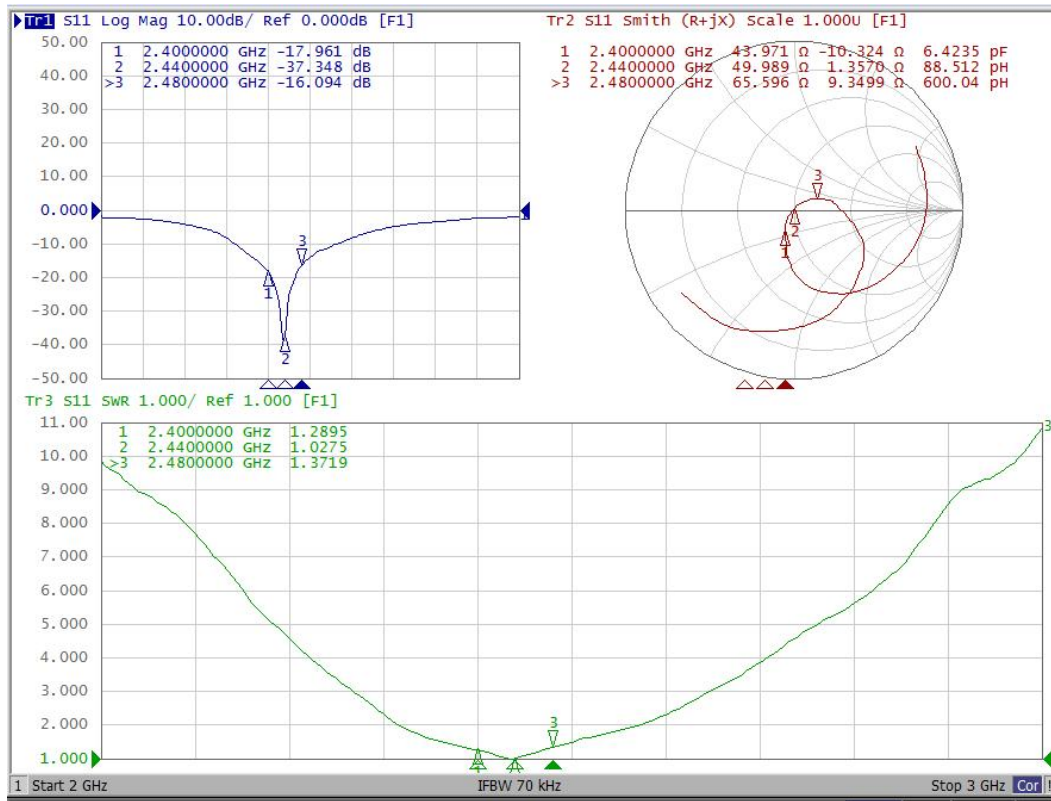
3.2 Test uncertainty

The uncertainty was calculated on the basis of the GUM published by ISO, using the inclusion factor of K=2 and the 95% confidence level to express the extended uncertainty.

Item	Uncertainty
VSWR	± 0.3
Antenna gain	$\pm 1.0 \text{ dBi}$
Radiation efficiency	$\pm 10\%$

3.3 Test data

3.3.1 Network analyzer S parameter



3.3.2 S11 Data

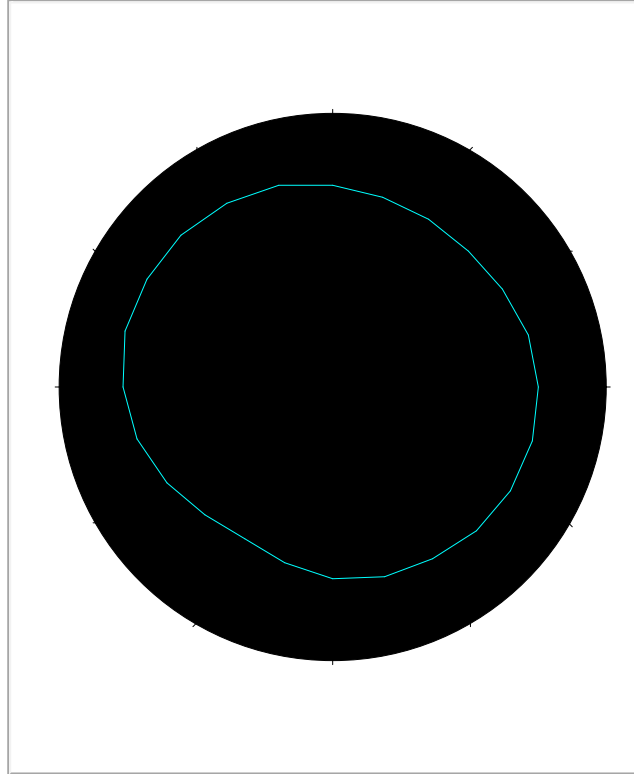
Frequency/MHz	2400	2440	2480
VSWR	1.3	1.0	1.4

3.3.3 Typical free space efficiency and gain

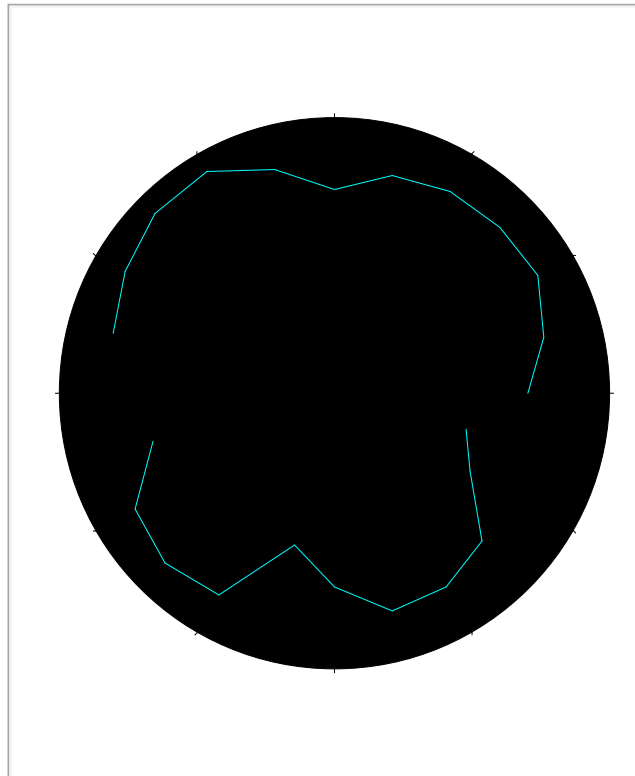
Frequency/MHz	2400	2410	2420	2430	2440	2450	2460	2470	2480
Peak Gain/dBi	2.1	2.2	2.1	2.0	2.2	2.0	2.2	2.3	2.4
Efficiency/%	65.8	65.2	66.0	65.7	66.7	63.2	64.4	66.3	66.4

3.3.4 Typical free space radiation pattern

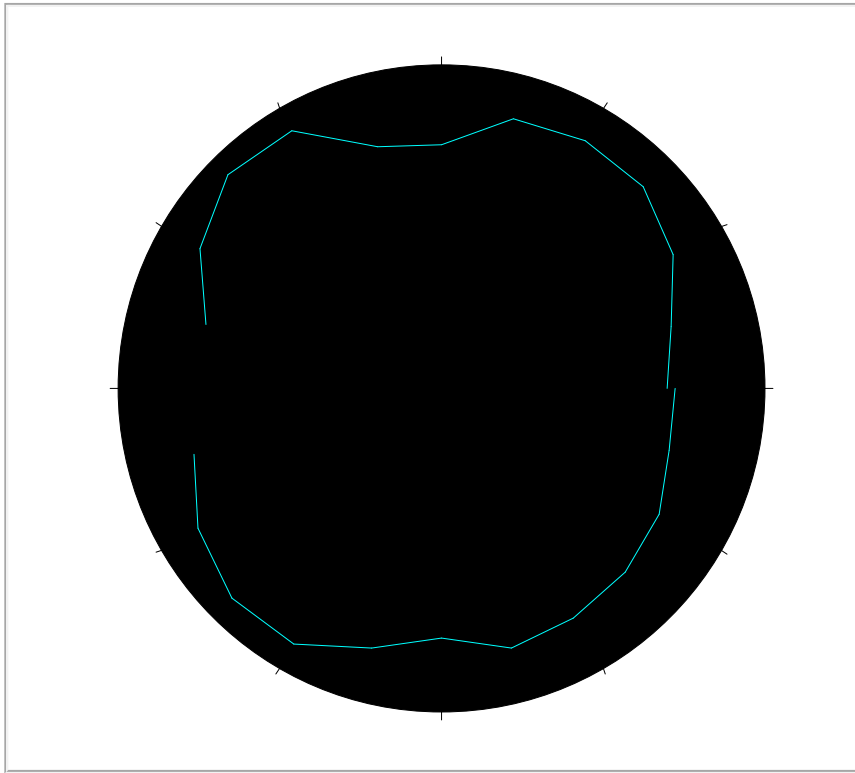
(1) X-Y Plane:



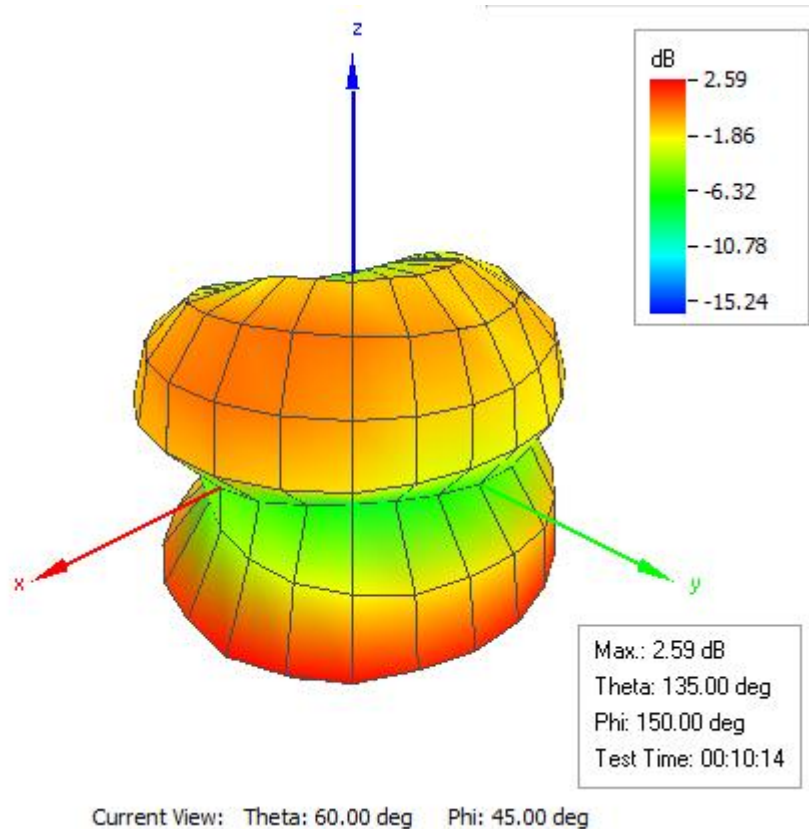
(2) Y-Z Plane:



(3) X-Z Plane:



(4) Typical Free Space 3D Radiation Pattern at 2440MHz:



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