

Testing Report

Customer Name: Guangdong Welland Technology Co.,Ltd

Product Name: HM2411WB

Reference Standard: *GB/T9410-2008; ANSI/IEEE Std 149-1979*

Issue Date: 2024.12.14

Engineer:	邱波	Date	2024.12.14
Auditor:	姚常青	Date	2024.12.14
Approve	黃俊杰	Date	2024.12.14

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1. General Information

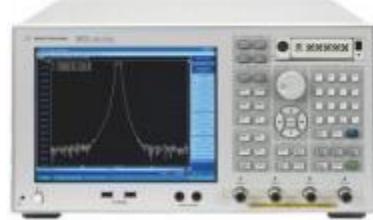
1. 1 General information of testing institutions

Name	Shenzhen DBT Communication Device Co., Ltd
Address	Rm505, 8th building, Yungu 2nd period, pingshan No.1 Road, Xili Town,Nanshan District, ShenZhen , China
Tel	0755-83763273
E-mail	Dbt_yang@ 163.com
Equipment	1. ETS 2. Keysight E5071C

1.2 Test equipment



ETS



E5071C

Model No.	Manufacturer	Calibration date	Next calibration date
ETS	RFI-LAB-RF-A00	2024.11.13	2025.11.13
E5071C	Agilent	2024.09.20	2025.09.20

1.3 Test environment

Temperature	25. 0*C
Humidity	59%RH
Pressure	100.12kPa

1.4 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) Any objection to this report shall be raised 30 days after formal confirmation of the report.
- (3) The report is invalid without the signature of the auditor and approver.

2. Sample Information

2.1 Client information

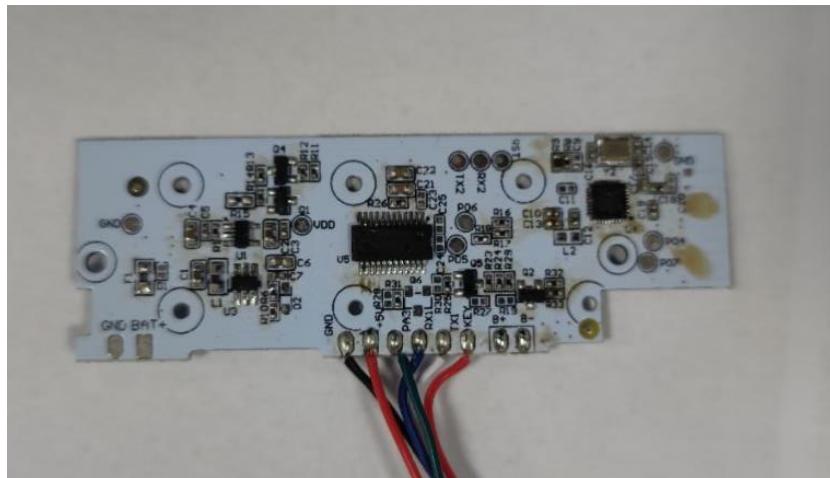
Name	Guangdong Welland Technology Co.,Ltd
Address	Room222, Building 4 TOP Business Park, No.9 Boai Three Road, Zhongshan,Guangdong,China
Contacts	
Tel	
E-mail	

2.2 Description of EUT(S)

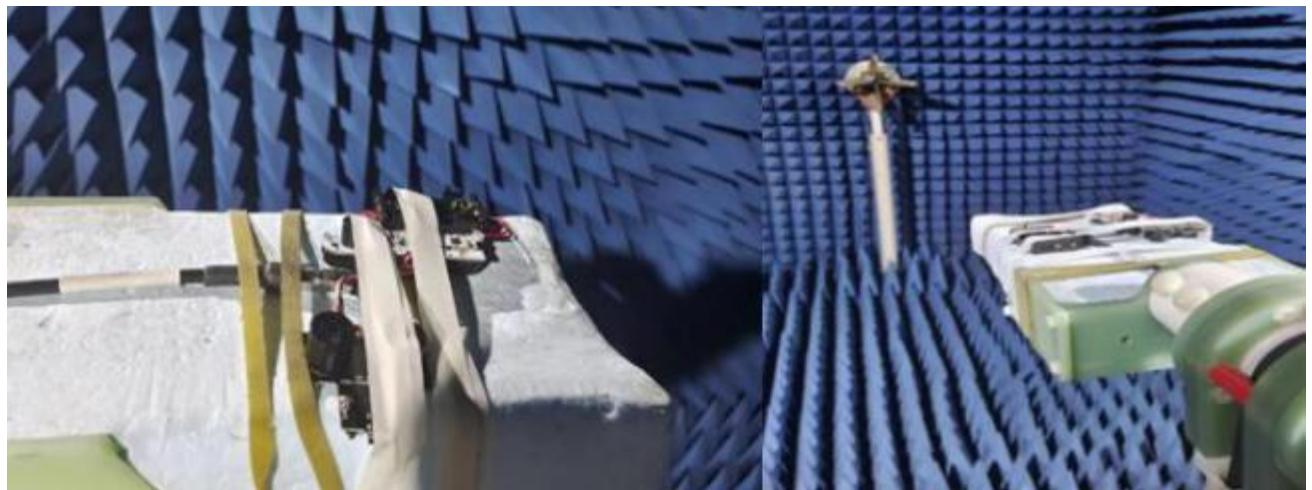
Product Name	HM2049B
Antenna Size	12.9*2.95mm

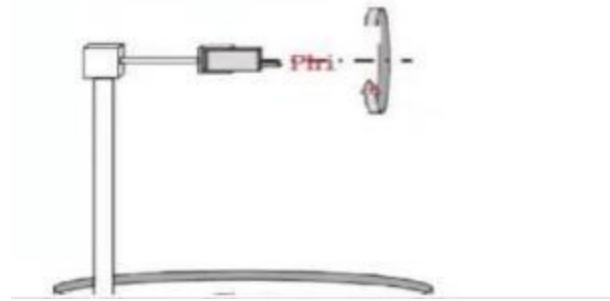
Antenna Type	PIFA / PCB Antenna
Test Item	VSWR; Gain; Efficiency; Radiation pattern
Manufacturer	HE SHAN RUN CHANG ELECTRON AND FLECTRIC CO.,LTD
Frequency Range	2400-2500MHZ
Received Date	2024.12.10
Test Date	2024.12.14
Remark	<i>i</i>

2.3 EUT appearance

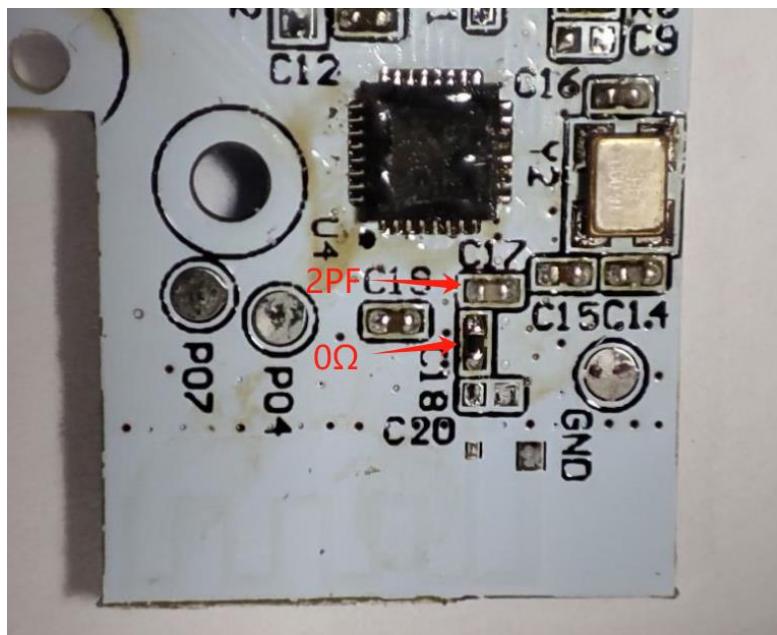


2.4 DUT setup photo of free space OTA testing





2.5 Matching circuit



3. Test Results

3.1 Test standard

Name	Parameter	Method	Standard no.
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

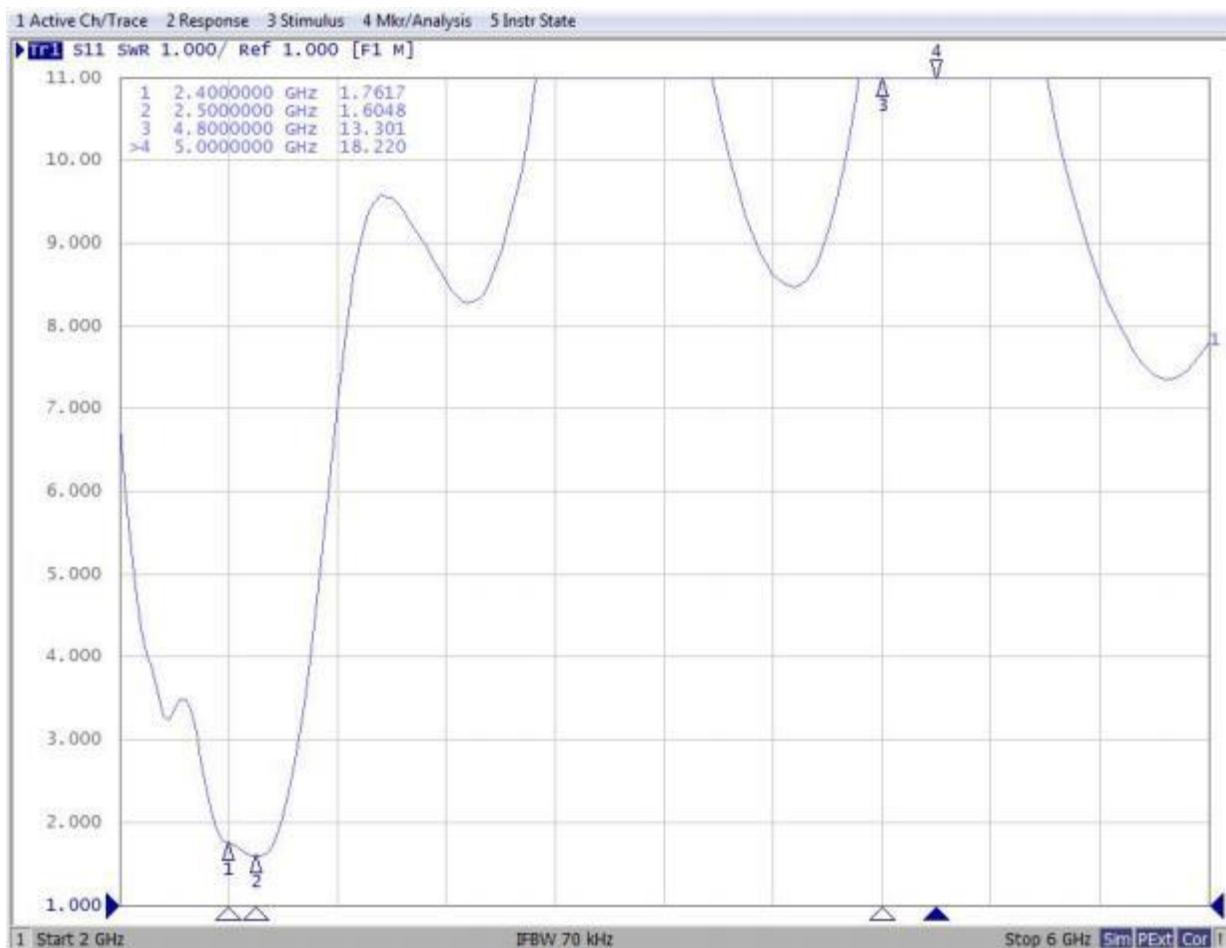
3.2 Test uncertainty

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	$\pm 1\text{dB}$
Radiation efficiency	$\pm 10\%$

3.3 Test data

3.3.1 S11 parameters



3.3.2 VSWR

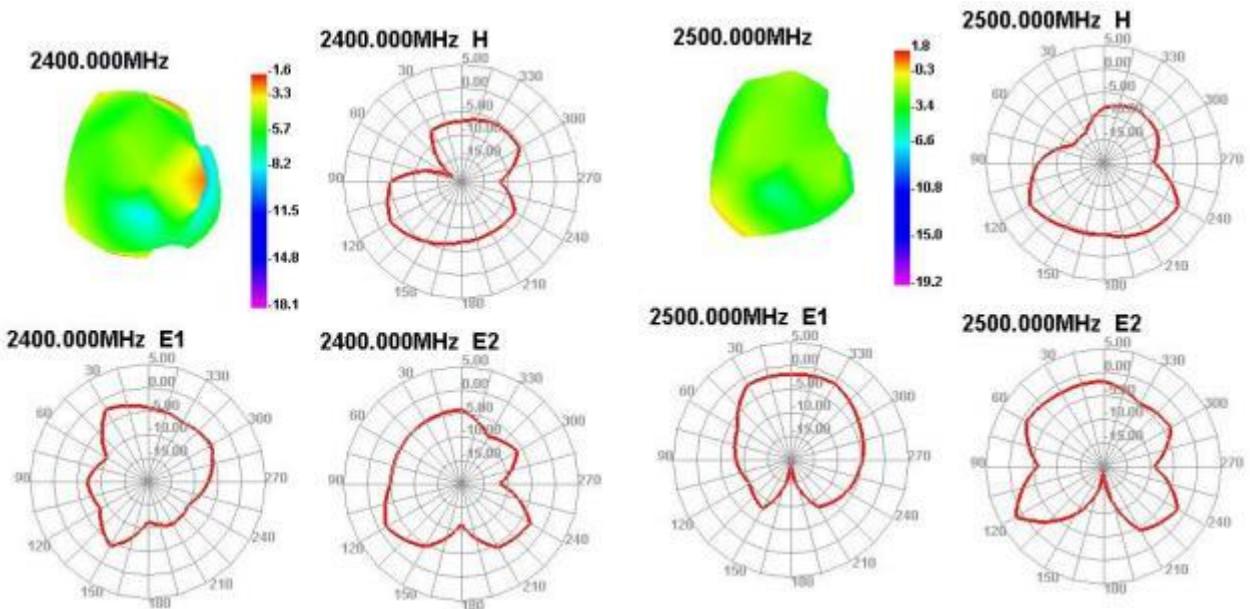
Frequency/MHz	2400	2500
VSWR	1.76	1.6

3.3.3 Max Gain

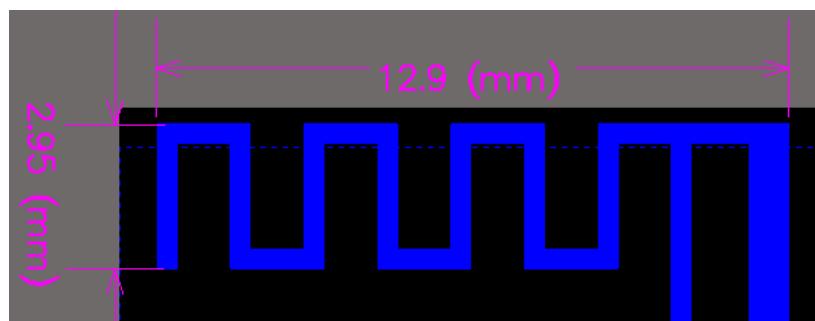
Antenna Gain	
2400-2500MHz	1.85dbi

3.3.4 Typical free space efficiency and gain

Freq (MHz)	Effi (%)	Gain (dBi)
2400	26.32	-1.61
2410	25.65	-1.43
2420	27.04	-0.73
2430	26.57	-0.54
2440	30.3	0.21
2450	29.88	0.08
2460	30.41	0.14
2470	31.34	0.25
2480	36.9	0.85
2490	36.47	1.06
2500	39.67	1.85



4. Product specifications



5.Environmental regulations and packaging

Operating Temperature Range: -40. C ~ +85. C

Storage Temperature Range: -40. C ~ +120. C

Antenna be exposed in a 35°C, 5% salt fog chamber for 24 hours then check the appearance and performance

against the specifications in normal temperature.

The antenna is subjected to the following test:

Temperatures:

+70°C and 90%--95%RH

Test Duration:

24 Hours

The antenna should not undergo any structural or functional change and remain within the electrical/mechanical specification.

The antenna will be installed on the PCB.