

Antenna test report

Test Laboratory	Shenzhen Morlab Communications Technology Co., Ltd.
Address	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China
Contact:	Devyn Deng +86 755 36698555
Model	On-board Antenna

Manufacturer	Shenzhen shundacheng Technologies Co., LTD
Address	4th Floor, Building B5, Xinfu Industrial Park, Chongqing Road, Fuhai Sub-district, Bao 'an District, Shenzhen City

1. Test procedures

Standards	Description of Test Item	Result
ANSI/ IEEE 149-2021	IEEE Recommended Practice for Antenna Measurements	Compliant

2. Test Items and Equipment

	Test items	Test equipment
S Parameter	1.Return Loss 2.VSWR	Network analyzer (Agilent E5071B)
The whole machine of Passive parameters	1.Frequency 2.Gain 3.Radiation Pattern	1.3D microwave darkroom (5m*3m*3m) 2.Network analyzer (Agilent E5071B)

3. Test Equipment

Equipement Name	Serial No.	Type	Manufacture	Cal.Date	Cal.Due Date
Network Analyzer	MY46110140	E5071B	Agilent	2025.03.18	2026.03.17
OTA Chamber	TJ2235-Q1793	AMS-8923-150	ETS	2022-11-30	2025-11-29
Antenna Measurement System	1685	EMQuest EMQ-100 V1.13 Build 21267	ETS	N/A	N/A

4. Name of commercial test software

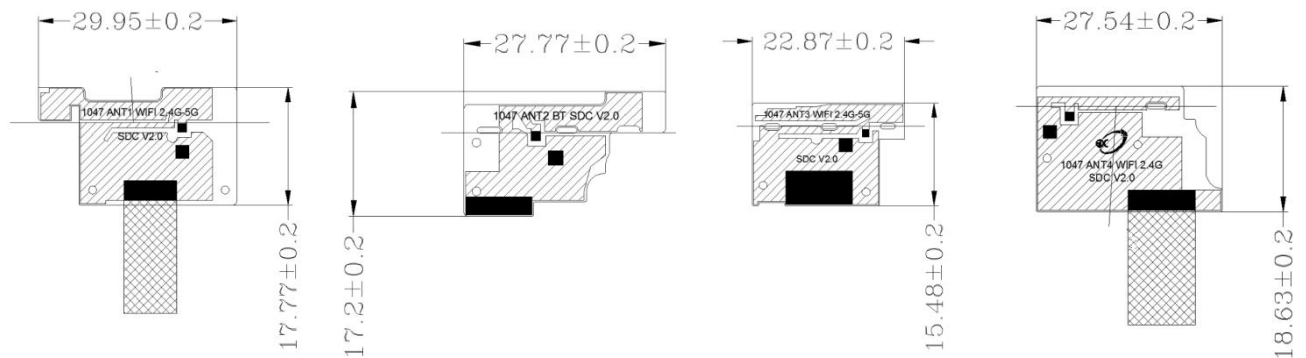
Software Name	Serial No.	Version	Manufacturer
Antenna Measurement System	1685	"EMQuest EMQ-100 V 1.13 Build 21267"	ETS

5. The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO. When the test result is a critical value, we will use the measurement uncertainty to give the judgment result based on the 95% Confidence intervals.

6. DUT Setup Photo

Please refer to Appendix

7. FPC Antenna Physical Size (unit: mm)



8. Antenna Electrical Specification

	ANT 1	ANT 2	ANT 3	ANT 4
Freq	2.4~2.5GHz+ 5.15~5.85GHz	2.4~2.5GHz	2.4~2.5GHz+ 5.15~5.85GHz	2.4~2.5GHz
Gain	4.59	1.57	3.6	2.81
VSWR	<3	<2	<3	<2
Impedance	50 ohm	50 ohm	50 ohm	50 ohm
Polarization	Linear	Linear	Linear	Linear
Type of Antenna	FPC+Cable Antenna	FPC+Cable Antenna	FPC+Cable Antenna	FPC+Cable Antenna
Outline Dimensions	29.95mm*17.77mm*0.21mm	27.77mm*17.2mm*0.21mm	22.87mm*15.48mm*0.21mm	27.54mm*18.63mm*0.21mm
Manufacture	KUAIXINDA	KUAIXINDA	KUAIXINDA	KUAIXINDA
Efficiency	≥36.34%	≥39.82%	≥39.62%	≥40.73%
Connector Type	Cable	Cable	Cable	Cable
Operating Temperature	-40°C~+85°C	-40°C~+85°C	-40°C~+85°C	-40°C~+85°C
Storage Temp	-40°C~+85°C	-40°C~+85°C	-40°C~+85°C	-40°C~+85°C

Note:

ANT 1: Q1-C4595: Wi-Fi2.4G/5G Ant1

ANT 2: Q1-C4595: Bluetooth BR/EDR Ant.

ANT 3: Q1-C4595: Wi-Fi2.4G/5G Ant2

ANT 4: ESP32-S3-WROOM-1U:Wi-Fi2.4G/LE Ant.

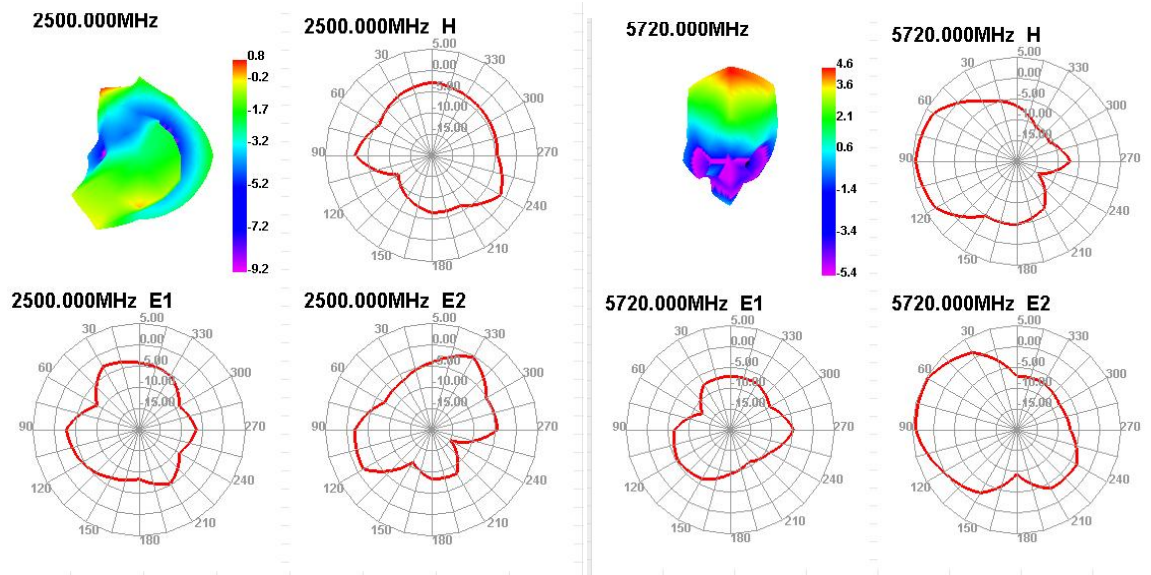
9. 2.4G Antenna Type & Gain

Type: FPC Antenna

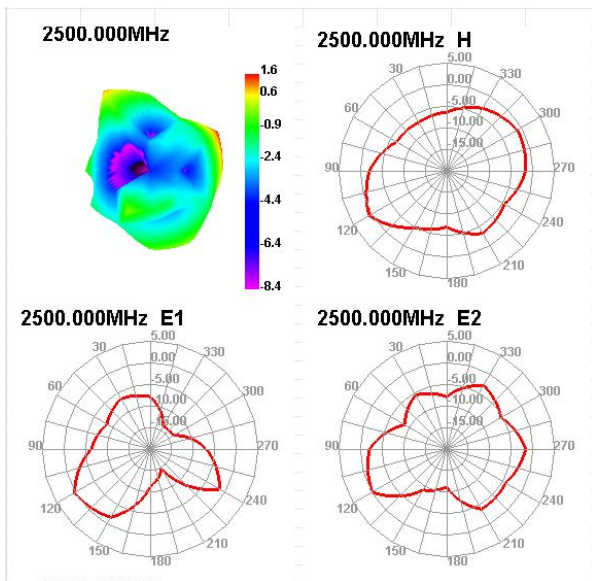
	ANT 1		ANT 2		ANT 3		ANT 4	
Frequency	Gain(dBi)	Eff (%)	Gain(dBi)	Eff (%)	Gain(dBi)	Eff (%)	Gain(dBi)	Eff (%)
2400MHz	-0.31	36.34	0.71	39.82	2.72	53.78	2.01	40.73
2450MHz	-0.01	38.28	1.46	41.22	3.47	56.44	2.81	44.86
2500MHz	0.78	36.43	1.57	42.77	3.6	54.6	2.39	45.89
5150MHz	4.54	44.28			2.07	39.62		
5720MHz	4.59	53.17			2.09	43.46		
5850MHz	4.36	47.17			2.06	43.17		

10. Pattern and Gain

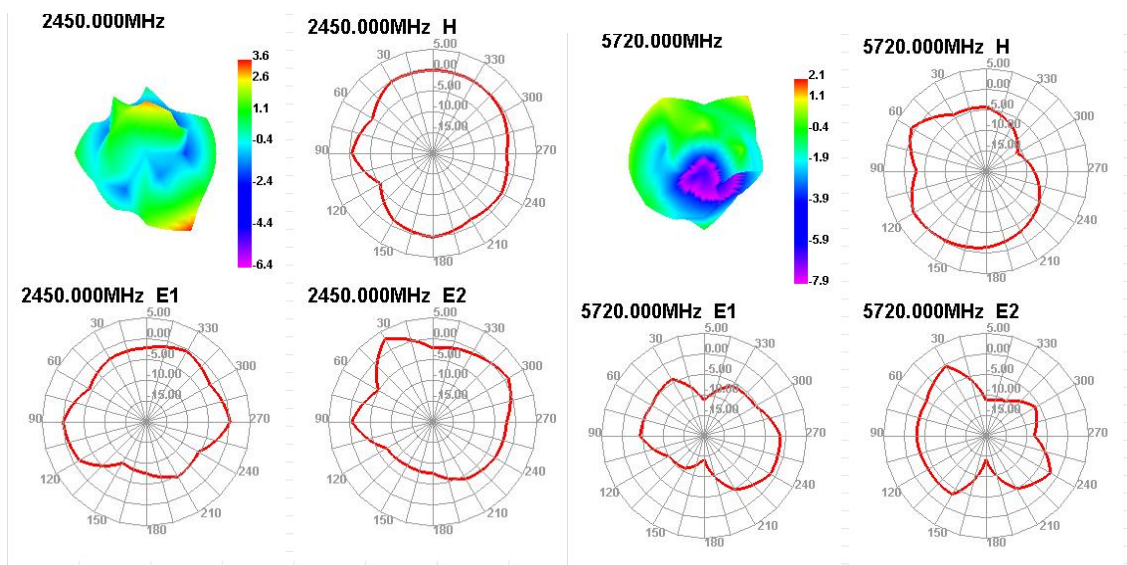
ANT1 Antenna



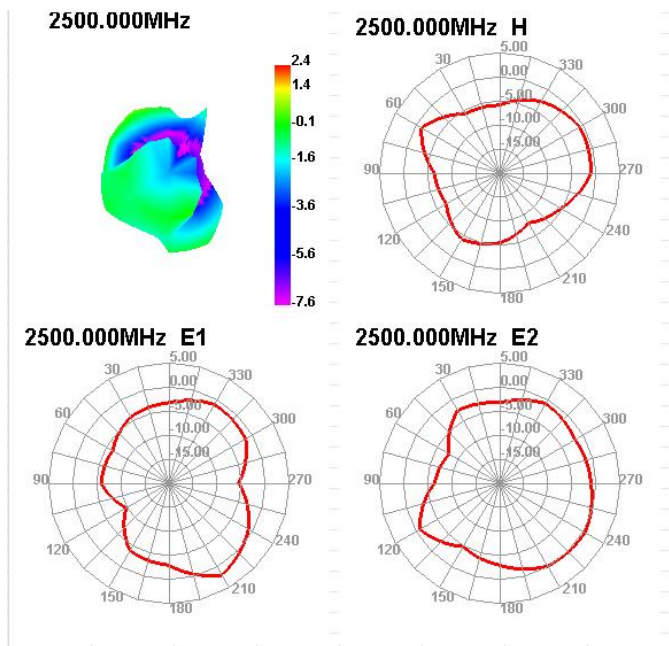
ANT2 Antenna



ANT3 Antenna



ANT4 Antenna



Tester by: Tongbin Xu