

Antenna Report

Manufacturer: Shenzhen IPM Biotechnology Co., Ltd
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Long Wang Miao Industrial Zone, Bai Shi Xia, Fuyong Town, Baoan District, Shenzhen, China

1. Testing devices:

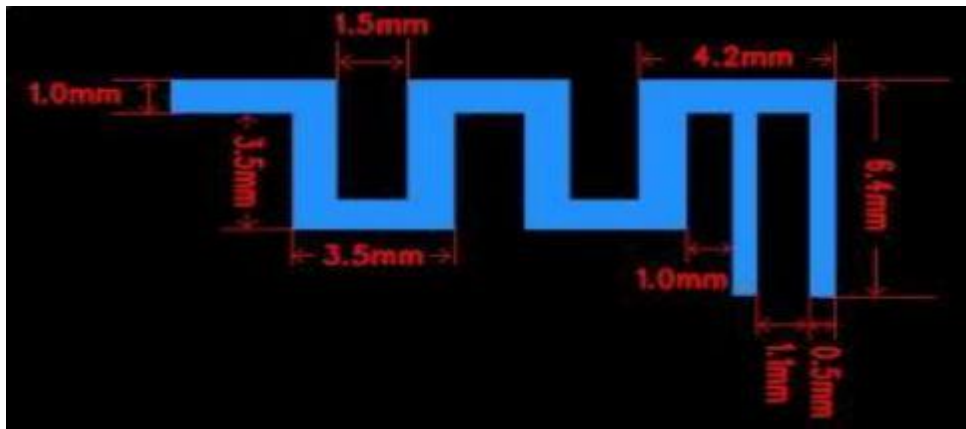
Name	Mode	Device No.	Manufacturer	Calibration dates	Next calibration dates
OTA testing systems	RayZone-5000	RFI-LAB-RF-D00	GTS	2021.3.22	2023.3.21
Network analyzer	E5071C	RFI-LAB-RF-C02	KEYSIGHT	2022.5.13	2023.5.12
Network analyzer	E5071C	RFI-LAB-RF-D01	KEYSIGHT	2022.5.13	2023.5.12

1.1 Testing Environment:

Environment temperature	23.7℃
Relative humidity	58%RH
Atmosphere pressure	atmospheric pressure

2.Sample actual photoes:

PCB Antenna



3.Testing sample:



FrontView:

3. Testing Result:

3.1 Testing standard:

Name:	name of parameter	Method name	
Mobile communication antenna	radiation direction name	General technical specification for mobile communication antennas	GB/T 9410-2008
	antenna gain		
	voltage standing wave ratio		
	Roundness of the directional graph		
antenna	Gain and directivity	IEEE Standard Procedure for antenna testing	ANSI/IEEE Std 149-1979
	radiant efficiency		
	impedance		

3.2 Test uncertainty

the calculation of Uncertainty is based on the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO, which uses K=2 inclusion factor and 95% confidence level to represent extended uncertainty.

ITEM	Uncertainty
Standing-wave ratio	Standing-wave ratio
Gain, efficiency	$\pm 0.72\text{dB}$

3.3 Testing Data:

3.3.1Network analyzer test



3.3.2 standing-wave ratio (SWR)

Frequency /MHz	2402	2440	2480
voltage standing wave ratio	1.3910	1.4662	2.0735

3.3.3Gain and efficiency

Frequency /MHz	2402	2410	2420	2430	2440	2450	2460	2470	2480
Maximum gain /dBi	2.85	2.88	2.79	2.77	2.69	2.52	2.46	2.41	2.03

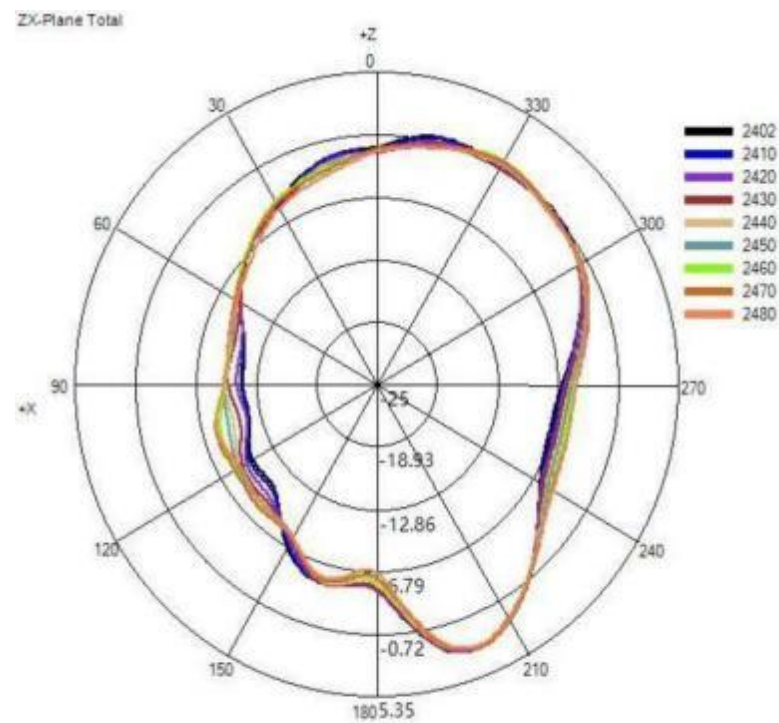
Efficiency	44.98	45.34	44.93	45.74	46.00	45.14	45.56	44.49	40.81
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3.3.4 Roundness of the direction chart

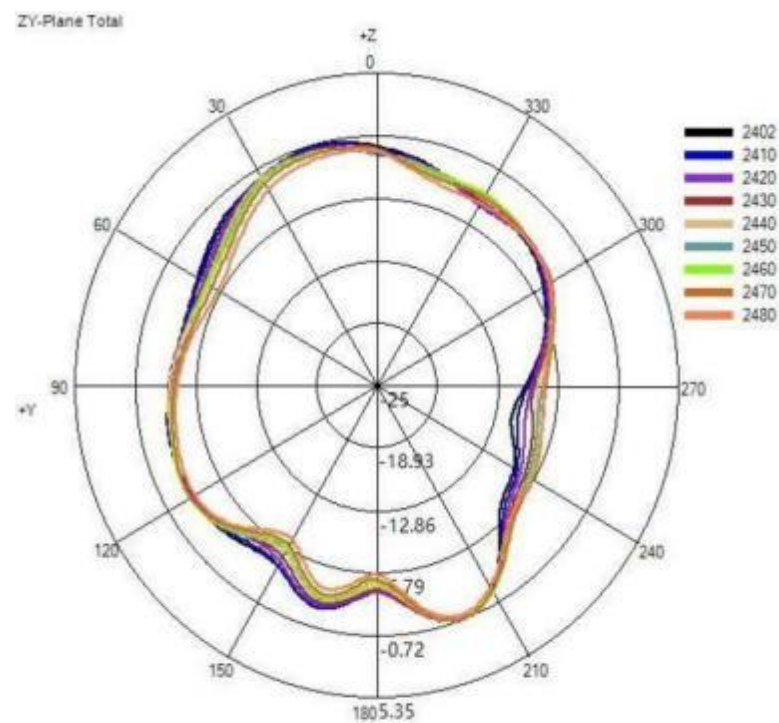
Frequency /MHz	2402	2410	2420	2430	2440	2450	2460	2470	2480
H Theta=90/dB	14.2 2	14.4 3	14.3 1	13.6 8	13.3 8	13.3 0	13.1 8	13.3 1	13.5 8

3.3.5 Direction Photos:

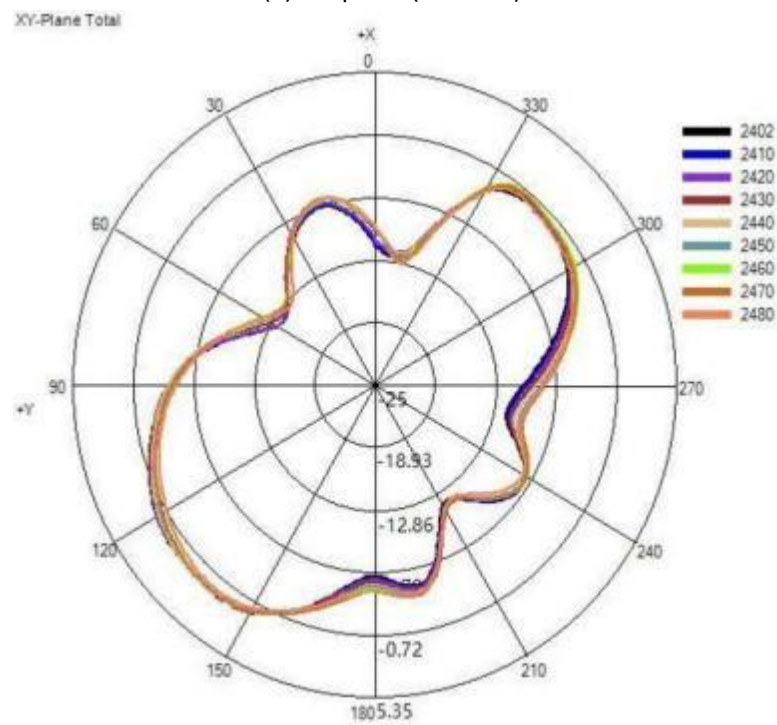
(1) X-Z plane (unit: dBi) :



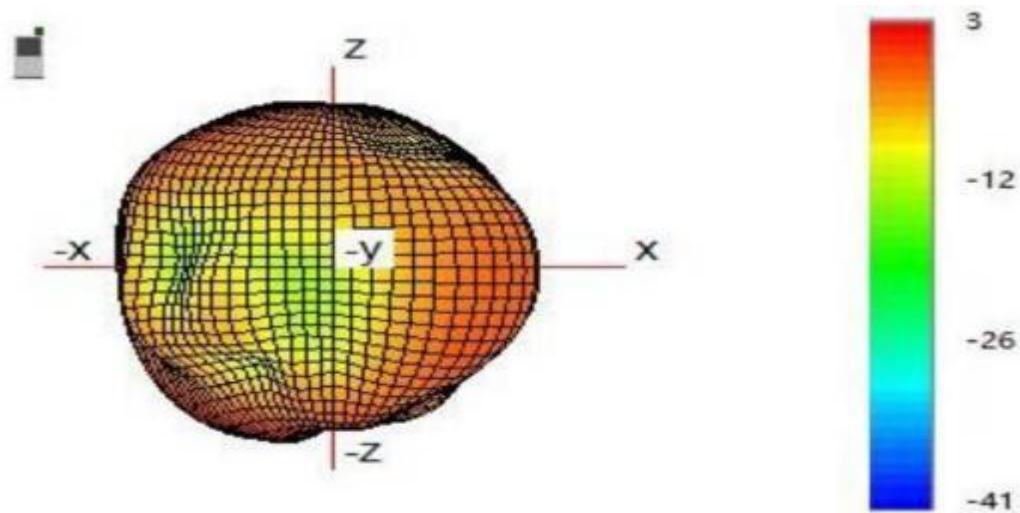
(2) Y-Z plane (unit: dBi) :



(3) X-Y plane (unit: dBi) :



(4) 2410MHz 3D orientation diagram (unit: dBi) :



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