

Shenzhen Guangyuanfa Electronic Co., Ltd.

Antenna Test Report

Manufacturer: Shenzhen Xtooltech Intelligent Co., Ltd

Customer name	Yun jia	Project name	F500
time	2022/9/29	Report version	A0
Commissioning engineer	Junhua liu	Contact information	15915368033

History

Version	Report Date	Revision Description	Prepared by
A0	2022. 9. 29	Antenna test report	Junhua liu

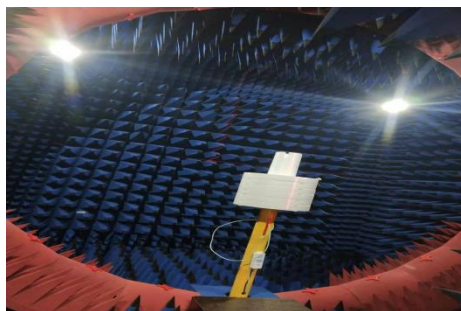
Directory

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Introduction to project debugging

Machine type	F500			
Antenna type	FPC			
Frequency band and antenna material	Main antenna	Frequency band		material
		2G	/	/
		3G	/	
		LTE	/	
	Other antennas	diversity	/	/
		WIFI+GPS+BT	2. 4G+5. 8G WIFI	FPC
Performance requirement	Execute according to customer requirements			

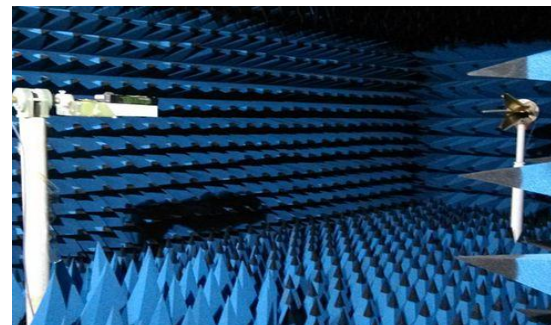
Description of test equipment



24 probe microwave darkroom



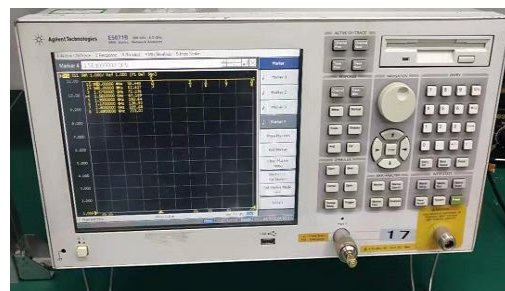
CMW500



7*4*3M ETS microwave darkroom



Agilent 8960



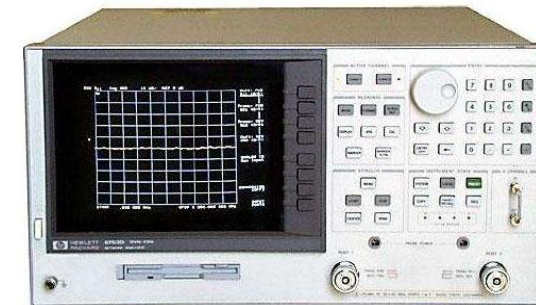
Agilent E5071B



High and low temperature test chamber



MT8820C

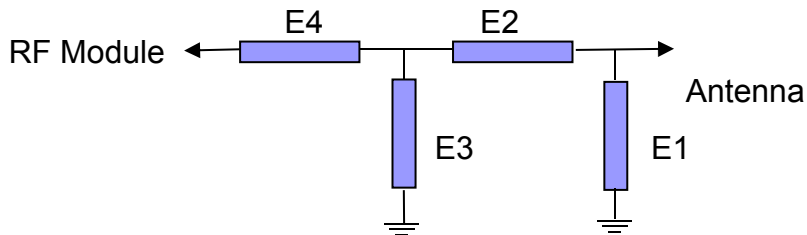


HP8753ES

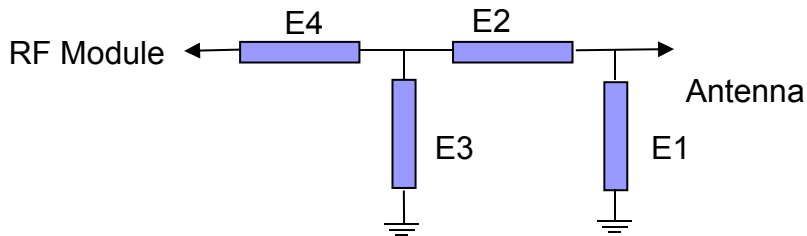
Test system	Test environment	Active test	Passive test
ETS darkroom 24 probe OTA darkroom	Temperature: $22^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Humidity: $50\% \pm 15\%$	Supports 2G, 3G, and 4G Support for NB-IoT/CAT-M/BT/WIFI	700MHz——6G

Matching circuit specification

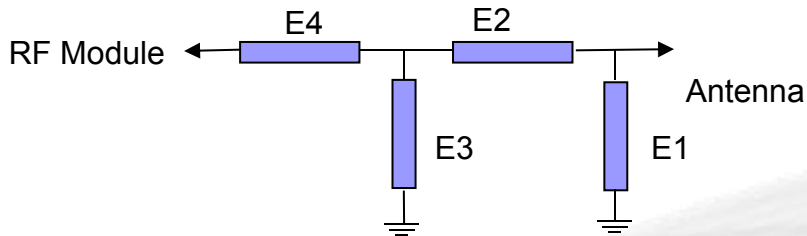
Antenna matching has not changed



Main antenna	Element	Value
	E1 (0402)	N/A
	E2 (0402)	0欧姆
	E3 (0402)	N/A
	E4 (0402)	0欧姆



GWB antenna	Element	Value
	E1 (0402)	N/A
	E2 (0402)	0欧姆
	E3 (0402)	N/A
	E4 (0402)	0欧姆



DIV antenna	Element	Value
	E1 (0402)	N/A
	E2 (0402)	0欧姆
	E3 (0402)	N/A
	E4 (0402)	0欧姆

OTAdata----WIFI

BAND	b-mode			G-mode		
CH	1	6	11	1	6	11
TRP (dBm)	12.66	12.78	12.80	12.24	12.12	12.88
(Brightening screen) TIS (dBm)	-81.31	-81.37	-81.90	-68.78	-69.83	-69.75
(Screen off) TIS (dBm)	-83.70	-84.65	-84.68	-72.17	-72.23	-72.61

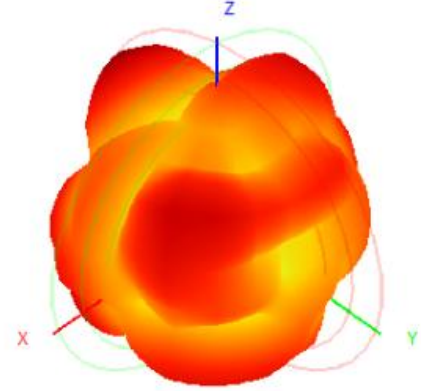
BAND	N-mode		
CH	1	6	11
TRP (dBm)	11.81	11.56	11.67
(Brightening screen) TIS (dBm)	-65.30	-65.51	-65.39
(Screen off) TIS (dBm)	-68.02	-68.18	-68.31

OTAdata----2.4G WIFI

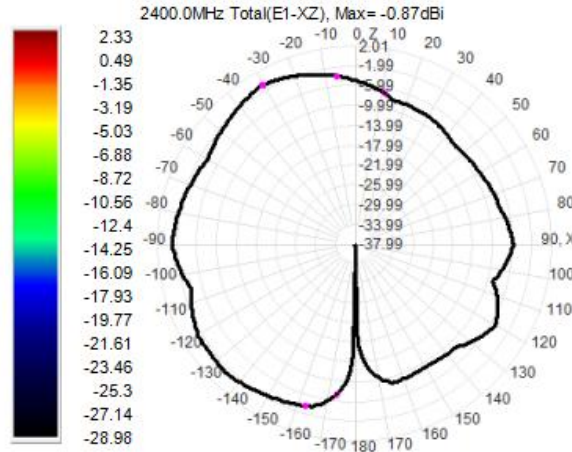
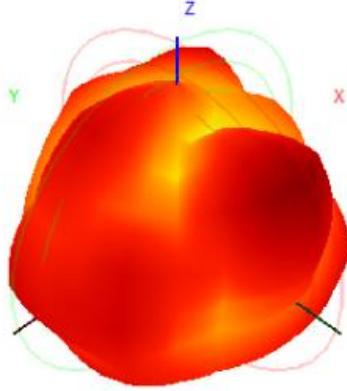
Frequency (MHz)	2400.0	2410.0	2420.0	2430.0	2440.0	2450.0	2460.0	2470.0	2480.0	2490.0	2500.0
Efficiency (dBi)	-3.90	-3.81	-3.74	-3.65	-3.54	-3.42	-3.31	-3.22	-3.25	-3.24	-3.31
Gain (dBi)	2.33	2.50	2.54	2.52	2.57	2.61	2.64	2.80	2.90	2.99	2.89
Efficiency (%)	40.75	41.63	42.30	43.18	44.31	45.45	46.64	47.63	47.30	47.42	46.67

2.4G WIFI

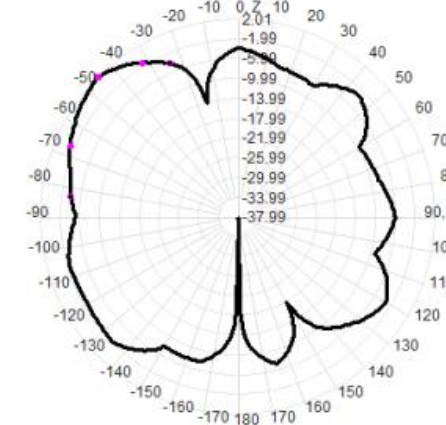
2400.0MHz H+V, Eff: 40.7%



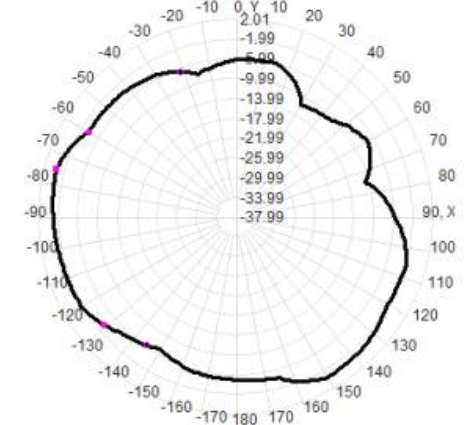
Back View



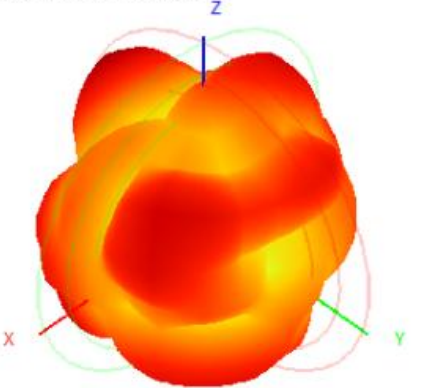
2400.0MHz Total(E2-YZ), Max= 2.01dBi



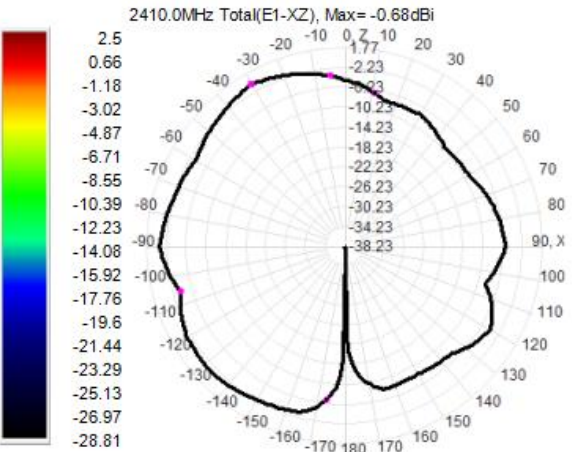
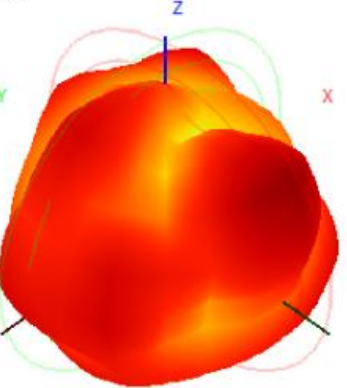
Total(H-XY), Max= -0.39dBi, CirD=11.48



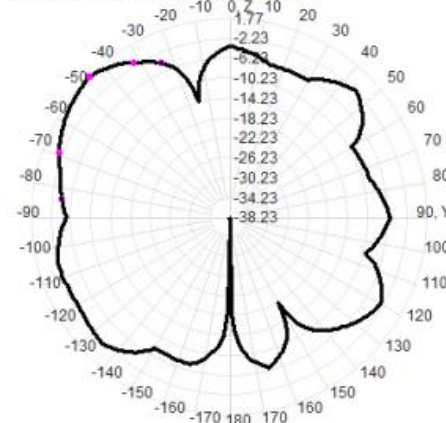
2410.0MHz H+V, Eff: 41.6%



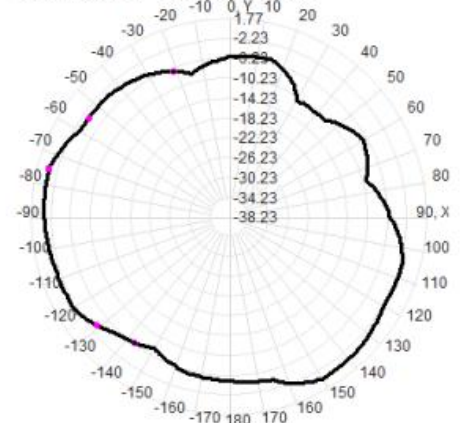
Back View



2410.0MHz Total(E2-YZ), Max= 1.77dBi

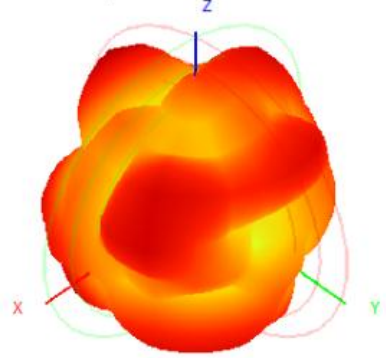


Total(H-XY), Max= -0.61dBi, CirD=10.46

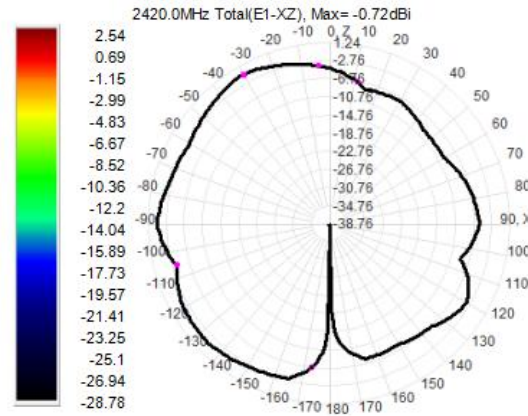
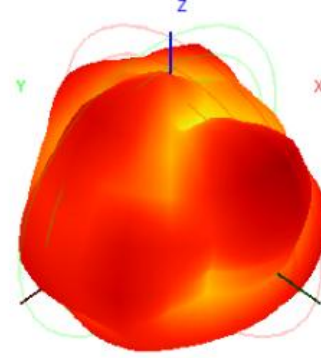


2.4G WIFI

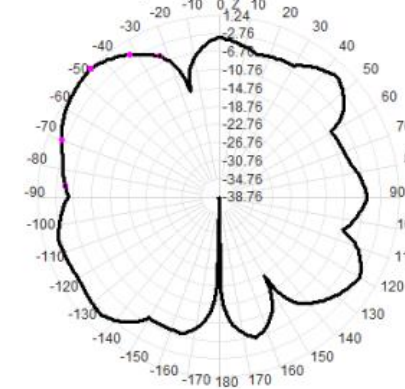
2420.0MHz H+V, Eff: 42.3%



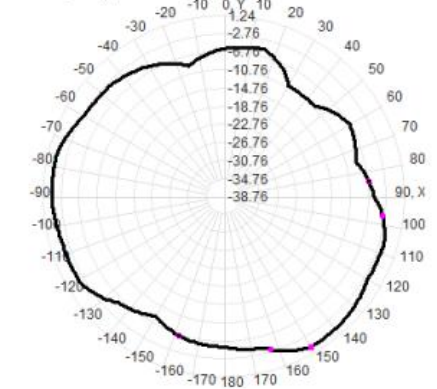
Back View



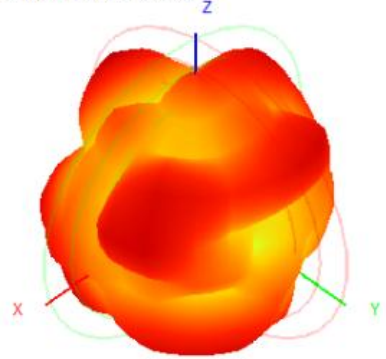
2420.0MHz Total(E2-YZ), Max= 1.24dBi



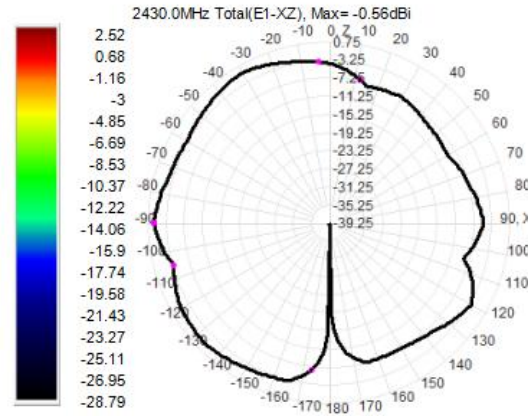
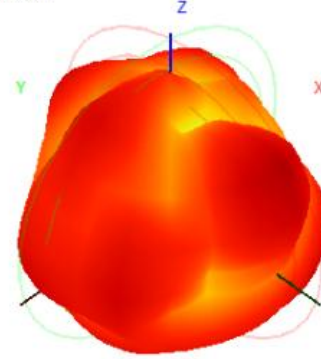
Total(H-XY), Max= -0.55dBi, CirD=9.96



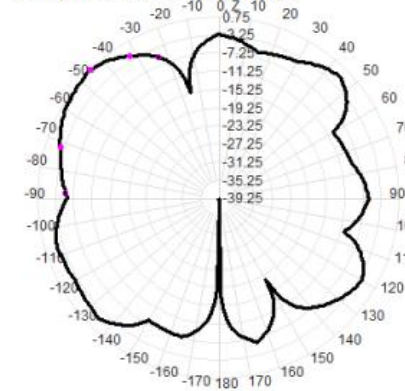
2430.0MHz H+V, Eff: 43.2%



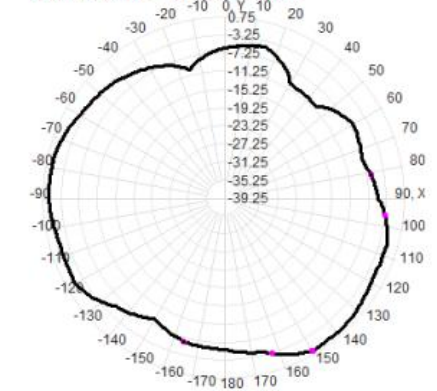
Back View



2430.0MHz Total(E2-YZ), Max= 0.75dBi

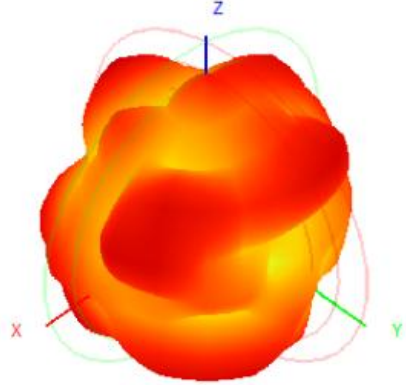


Total(H-XY), Max= -0.47dBi, CirD=10.10

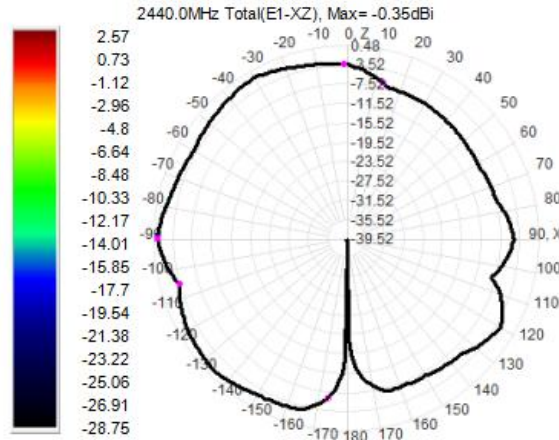
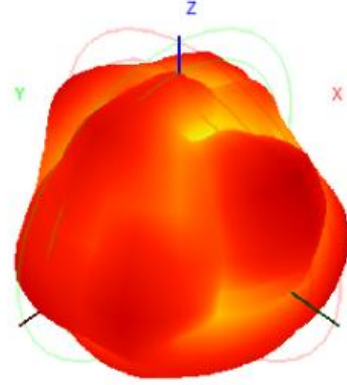


2.4G WIFI

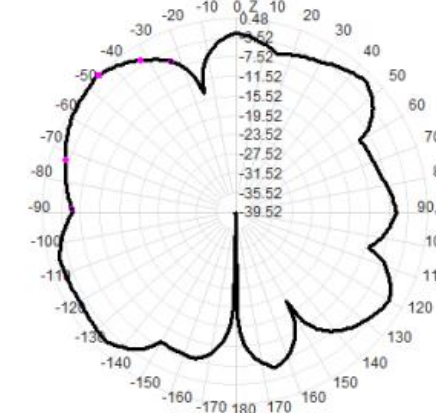
2440.0MHz H+V, Eff: 44.3%



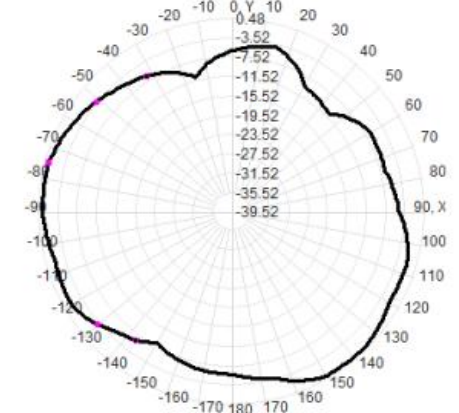
Back View



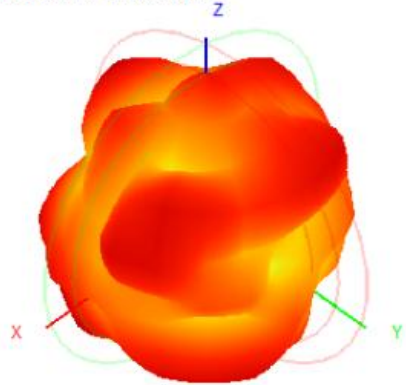
2440.0MHz Total(E2-YZ), Max=0.48dBi



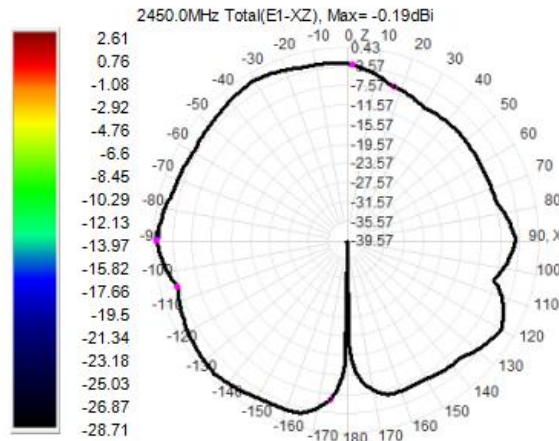
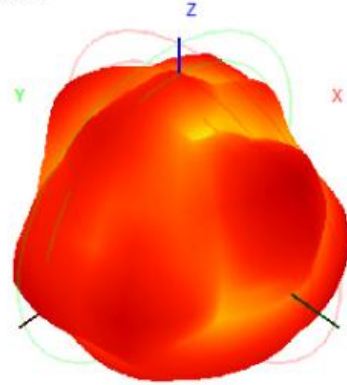
Total(H-XY), Max=-0.31dBi, CirD=10.68



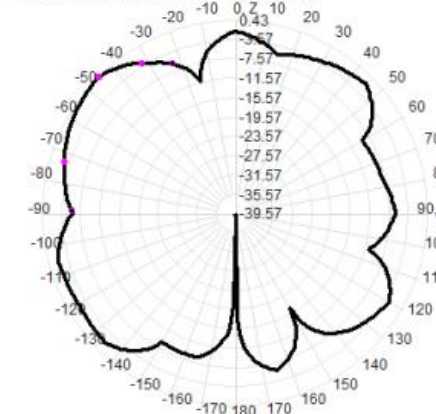
2450.0MHz H+V, Eff: 45.4%



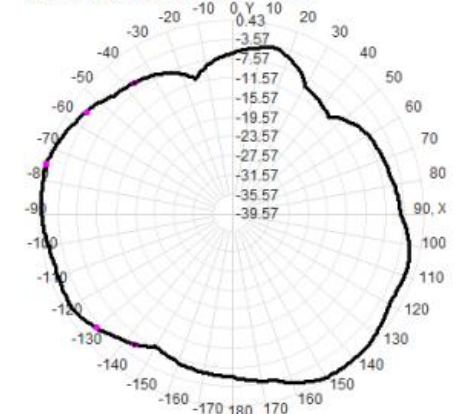
Back View



2450.0MHz Total(E2-YZ), Max=0.43dBi

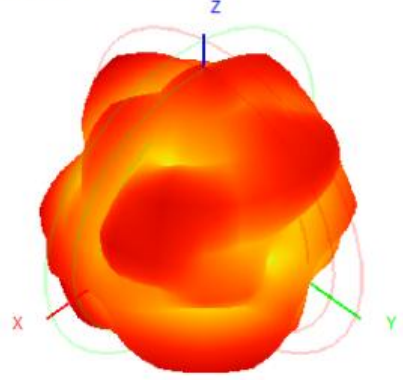


Total(H-XY), Max=0.17dBi, CirD=11.42

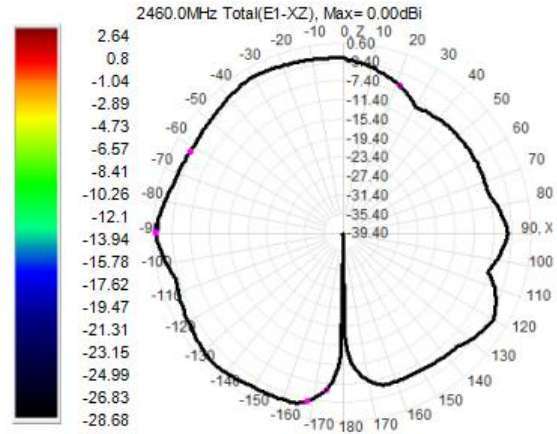
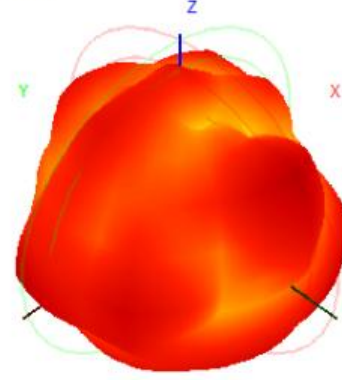


2.4G WIFI

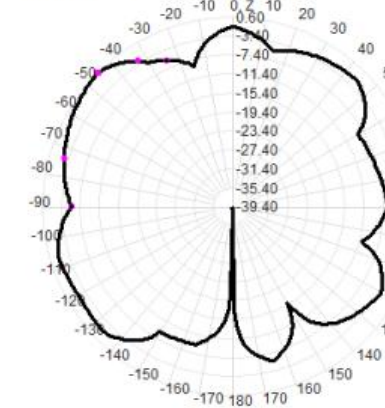
2460.0MHz H+V, Eff: 46.6%



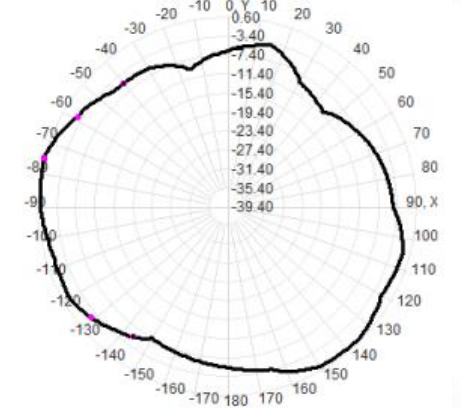
Back View



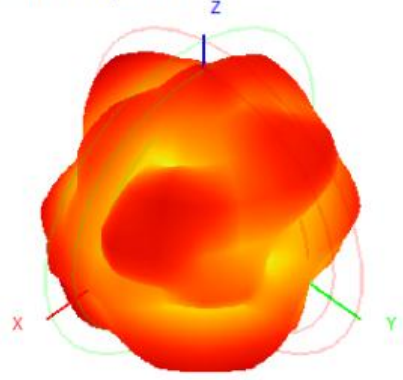
2460.0MHz Total(E2-YZ), Max=0.60dBi



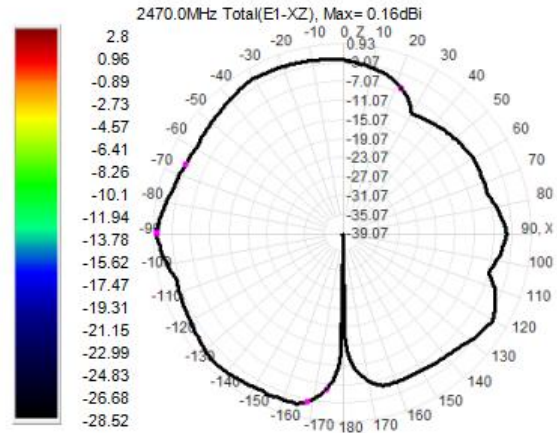
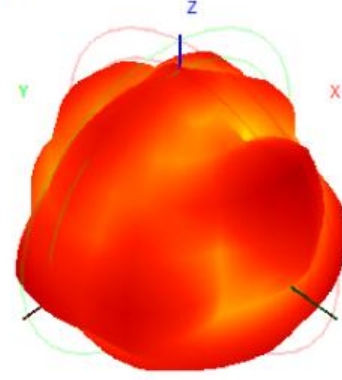
Total(H-XY), Max=0.60dBi, CirD=11.66



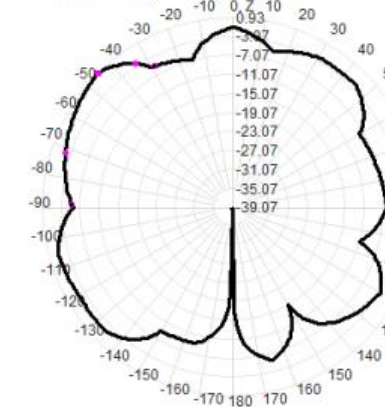
2470.0MHz H+V, Eff: 47.6%



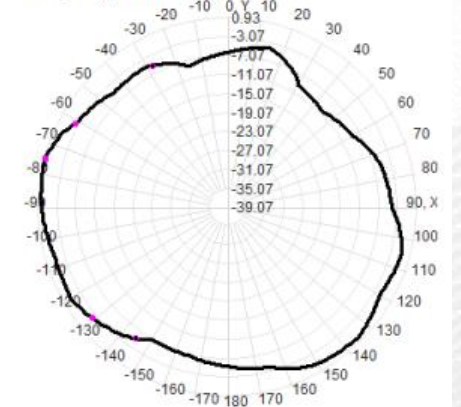
Back View



2470.0MHz Total(E2-YZ), Max=0.93dBi

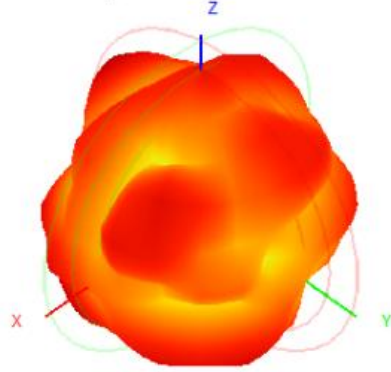


Total(H-XY), Max=0.79dBi, CirD=11.48

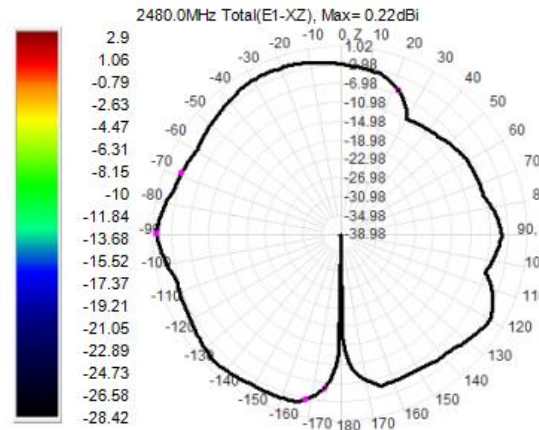
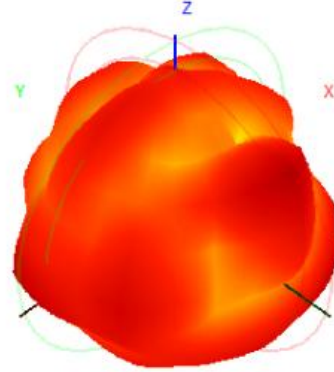


2.4G WIFI

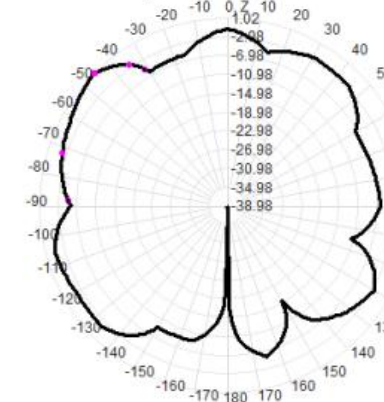
2480.0MHz H+V, Eff: 47.3%



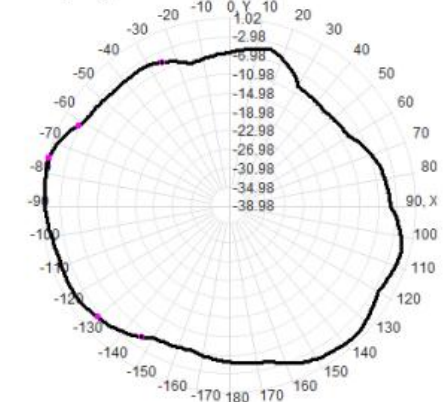
Back View



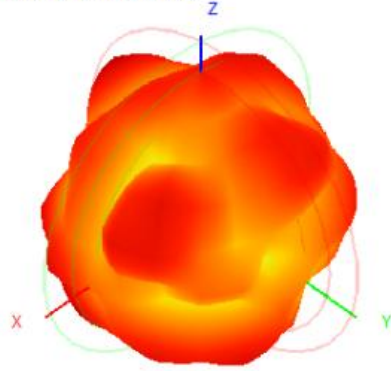
2480.0MHz Total(E2-YZ), Max= 1.02dBi



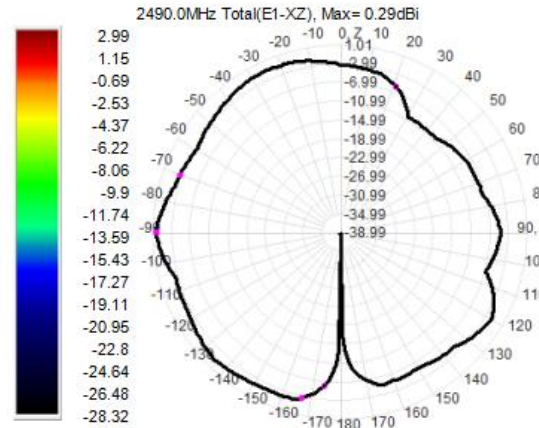
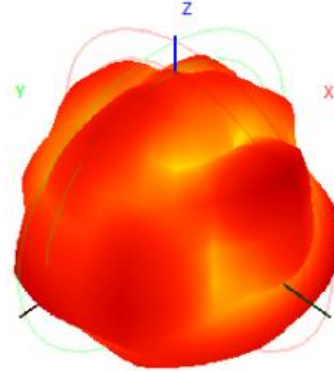
Total(H-XY), Max= 0.75dBi, CirD=11.08



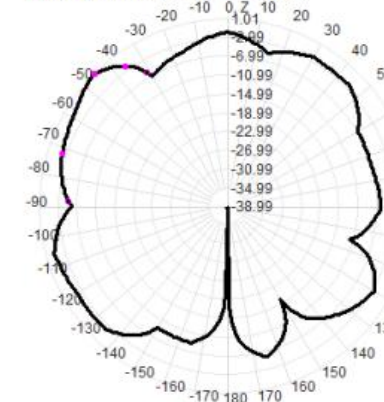
2490.0MHz H+V, Eff: 47.4%



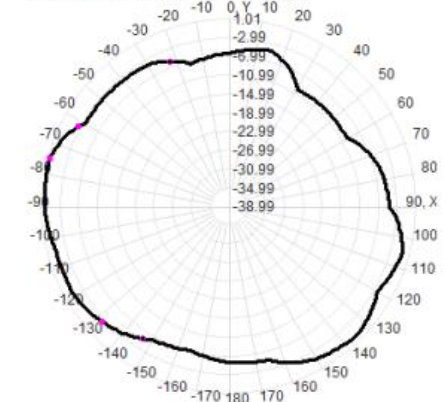
Back View



2490.0MHz Total(E2-YZ), Max= 1.01dBi

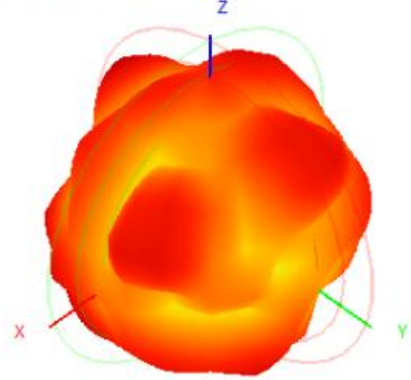


Total(H-XY), Max= 0.58dBi, CirD=10.63

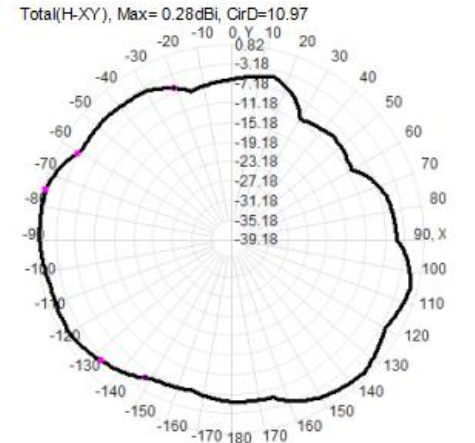
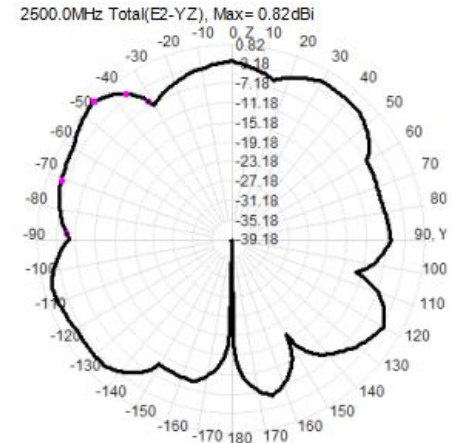
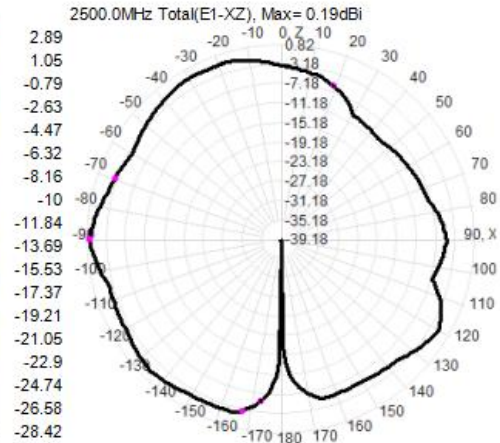
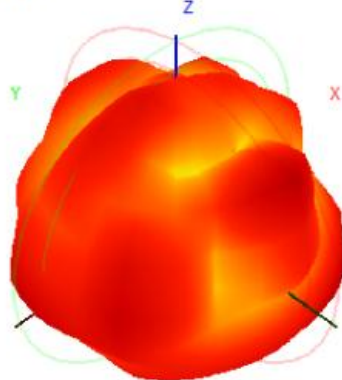


2.4G WIFI

2500.0MHz H+V, Eff: 46.7%



Back View

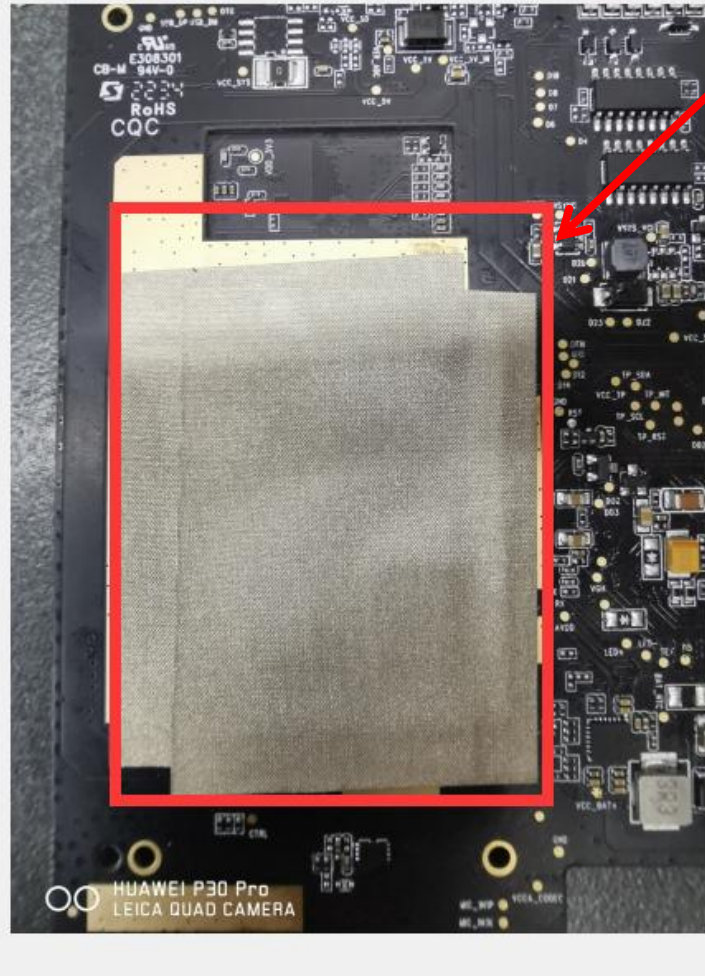


Antenna position

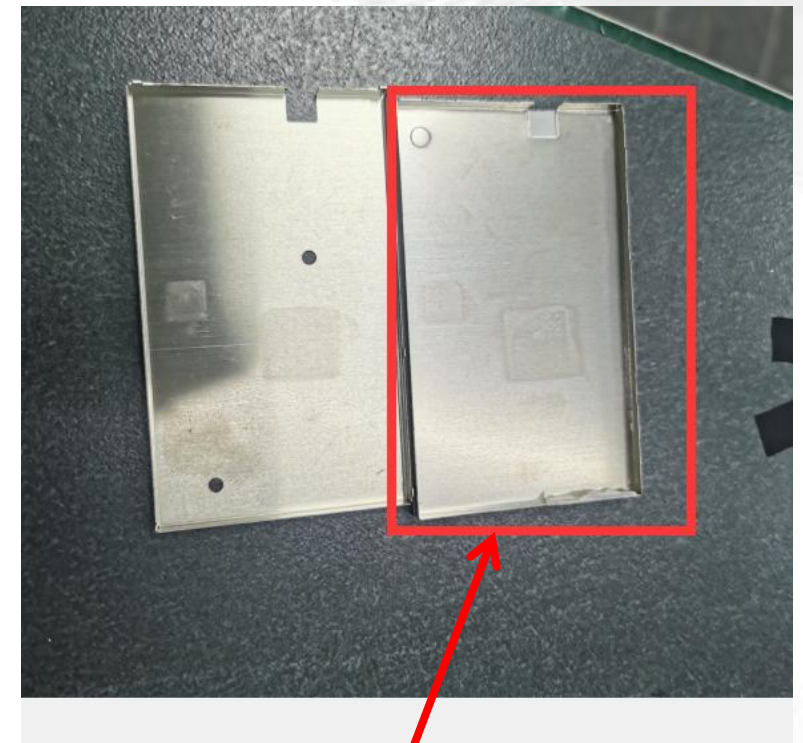
WIFI Antenna position



Environmental treatment



This step needs to be masked;



Adopt non-porous shield cover

Explanatory matters

1. Please confirm whether the matching and environmental treatment methods in the report are approved or not; This will directly affect the antenna performance, if you have different opinions, please contact the department in time;
2. If your company changes materials, components, updates software, changes environmental treatment, etc., please provide the machine with the latest status to our company for performance verification;
3. If your machine needs to be sent to a third party for performance verification, please provide the testing machine to our company for testing and verification. (Because motherboard, environmental treatment, antenna assembly and other consistency will affect the antenna performance deviation).以上

Address: 606, Block D, Huahan Science Park, Nanshan
District, Shenzhen

Tel: 0755-26702159 Fax: 0755-26702585

Website: <http://www.gyfgpsbd.com>

Thanks.



Shenzhen Guangyuanfa Electronic Co., Ltd.