



深圳市千目通讯科技有限公司

Shenzhen Qianmu Communication Technology Co., Ltd.

Customer:

Ideum: LW77

Daily: 2023-2-1

Version: A1

Radio frequency: zheng Li Guo



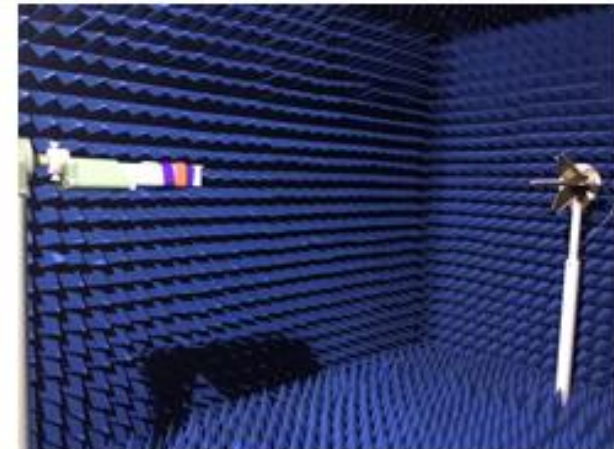
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Test environment

	Test items	Equipment
1. S-parameter (S-parameter)	1. Back loss (Return Loss) 2. Voltage resident Bobby (VSWR)	Network Analyzer : Agilent E5071B HP 8753D
2. Source test (Active)	1. Launch power (TRP) 2. Receiving sensitivity (TIS) 3.Frequency error 4.Destroy	1. darkroom: ETS 7x4x3 m (3D) Chamber ETS 5x3x3 m (3D) Chamber 2.Tester: Agilent 8960 E5515B × 2 StarPoint SP6011
3.Passive test (Passive)	1.Antenna gain (Gain) 2.Antenna efficiency (Efficiency)	1. Darkroom: ETS 7x4x3 m (3D) Chamber ETS 5x3x3 m (3D) Chamber 2. Network Analyzer: Agilent E5071B





历次调试记录说明

Date	Version	Debugging record description
2023-2-1	A1	Metal model as antenna debugging prototype

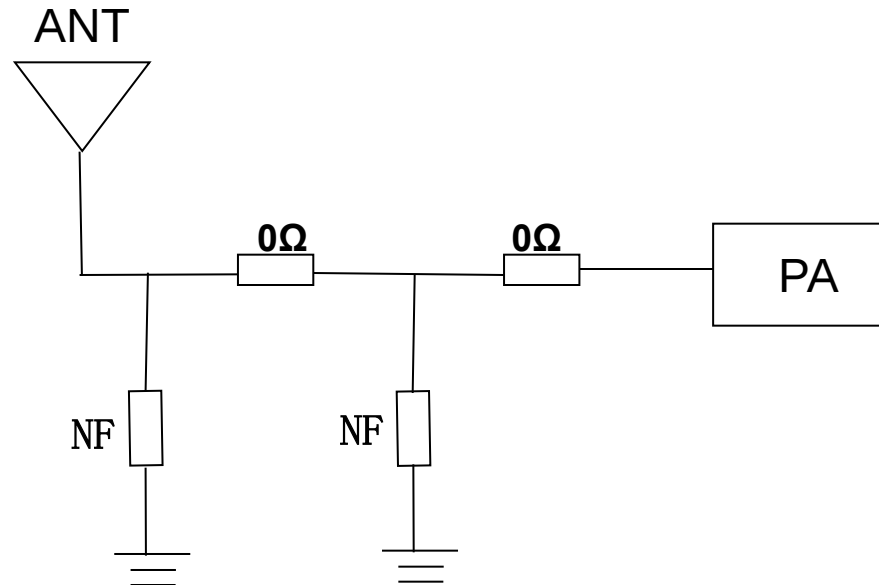


Terminal debugging instructions

model	Bluetooth Watches						
Version	Motherboard						
Antenna overview		Antenna status		Antenna status	Antenna form	Design area	Match change
	Bluetooth antenna	BT	2.4GHz~2.5GHz	Metal	Monopole	Motherboard	/
Prototype state	Debug machine			Environmental treatment			



Matching circuit-BT antenna



The original matching circuit of your company has not changed any changes



WIFI/BT天线

Situated efficiency and gain of the antenna

FEITUKEJI											
Frequency ID	1	2	3	4	5	6	7	8	9	10	11
Frequency (MHz)	2400.0	2410.0	2420.0	2430.0	2440.0	2450.0	2460.0	2470.0	2480.0	2490.0	2500.0
Point Values											
Ant. Port Input Pwr. (dBm)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tot. Rad. Pwr. (dBm)	-17.29	-17.08	-16.88	-16.38	-16.39	-15.86	-15.91	-15.92	-15.75	-15.37	-15.27
Peak EIRP (dBm)	-9.54	-8.92	-8.45	-7.66	-7.52	-7.02	-7.20	-7.52	-7.70	-6.98	-6.88
Directivity (dBi)	7.74	8.16	8.43	8.72	8.86	8.84	8.71	8.40	8.05	8.39	8.39
Efficiency (dB)	-17.29	-17.08	-16.88	-16.38	-16.39	-15.86	-15.91	-15.92	-15.75	-15.37	-15.27
Efficiency (%)	1.90	2.00	2.10	2.30	2.30	2.60	2.60	2.60	2.70	2.90	3.00
Gain (dBi)	-9.54	-8.92	-8.45	-7.66	-7.52	-7.02	-7.20	-7.52	-7.70	-6.98	-6.88
NHPRP $\pm\pi/4$ (dBm)	-19.60	-19.49	-19.35	-18.90	-18.92	-18.40	-18.44	-18.43	-18.26	-17.88	-17.77
NHPRP $\pm\pi/6$ (dBm)	-21.71	-21.59	-21.46	-21.00	-21.05	-20.55	-20.63	-20.66	-20.50	-20.14	-20.00
NHPRP $\pm\pi/8$ (dBm)	-23.16	-23.04	-22.90	-22.45	-22.54	-22.07	-22.18	-22.23	-22.08	-21.70	-21.52
Upper Hem. PRP (dBm)	-22.60	-22.57	-22.42	-21.96	-22.06	-21.50	-21.59	-21.59	-21.39	-20.95	-20.82
Lower Hem. PRP (dBm)	-18.80	-18.52	-18.30	-17.78	-17.75	-17.25	-17.28	-17.30	-17.13	-16.78	-16.69
Upper Hem. PRP (%)	0.55	0.55	0.57	0.64	0.62	0.71	0.69	0.69	0.73	0.80	0.83
Lower Hem. PRP (%)	1.32	1.41	1.48	1.67	1.68	1.88	1.87	1.86	1.94	2.10	2.14

—◆— Efficiency (%)



BT antenna measure:

1. Bluetooth test, Android mobile phone connection watch to play music (indoor) testing more than 30 meters in the case of barrier -free obstacles.



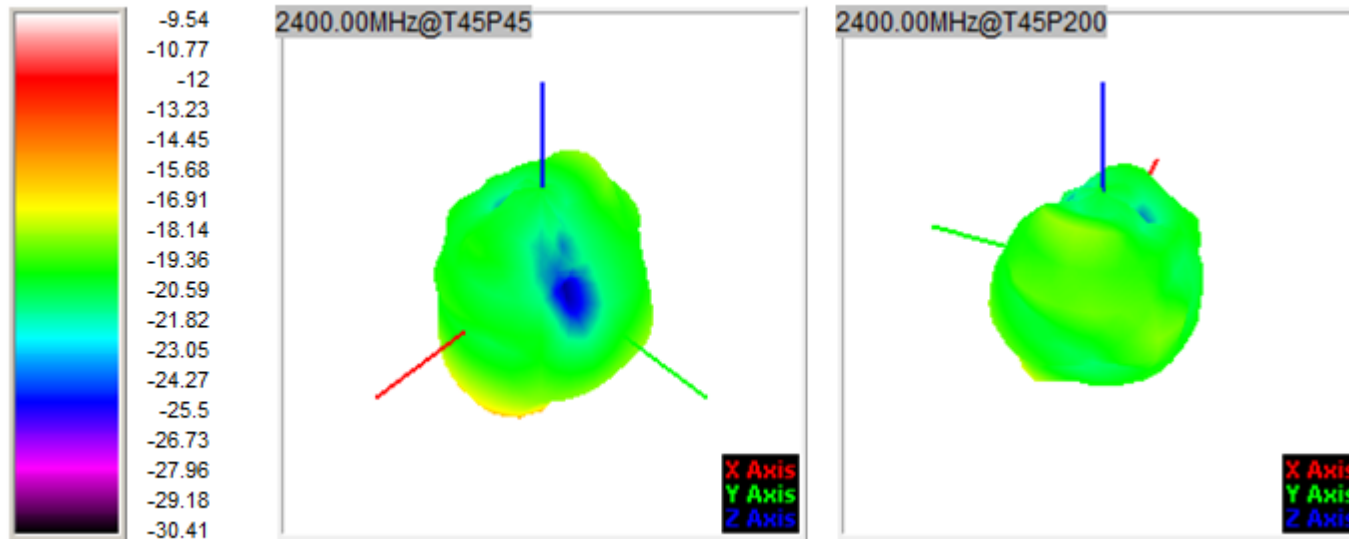
2. Bluetooth test, Android mobile phone connection watch call,
(Outdoor) Test a straight line distance of about 15 meters.



Motherboard antenna contact and middle frame contact to make antennas

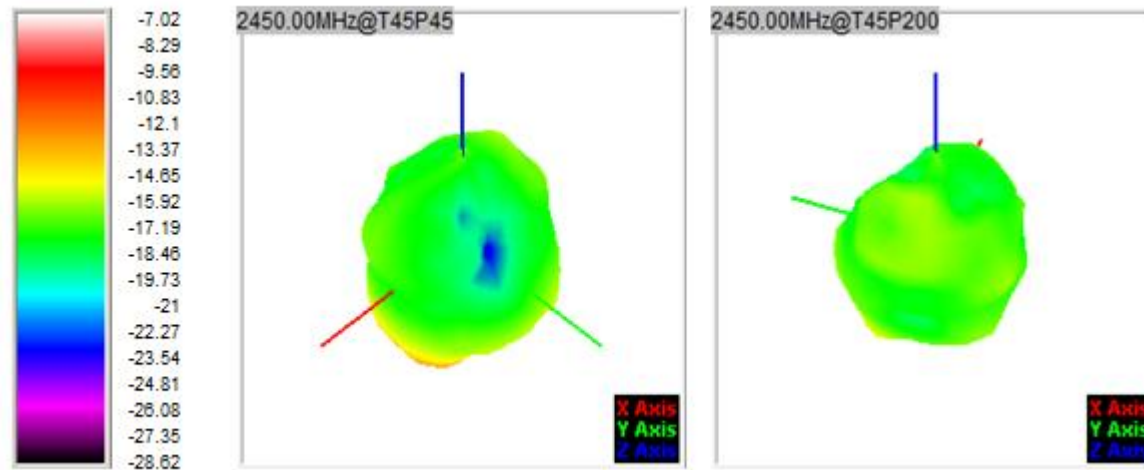


The antenna direction map and apple map



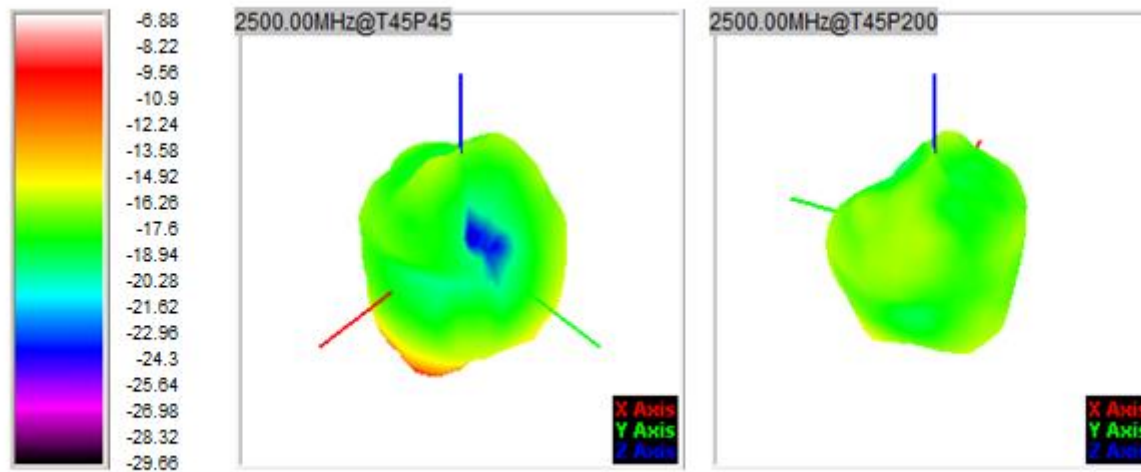


The antenna direction map and apple map





The antenna direction map and apple map





Prompt

hint:

1. This data is only for the data generated by the customer to provide the prototype, which does not mean that the customer's final mass production status;
2. Ask customers to carefully confirm in our report, matching circuit modification and environmental processing instructions;
3. Please cooperate with the sample machine to provide a secondary verification before mass production; if there are replacement materials, update software and environmental processing, please inform in advance;
4. If the customer needs a third -party reinstatement, or send the customer for testing, please go to our company to verify and then send the sample machine; prevent the machine from the difference between the machine and the debugging machine;
- Five: Our company does not accept it. We have been debugging machine data and other dark room testing data, but you can refer to and certify the dark room except. If the data is different, everything shall be based on the debug machine.



Thanks!

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