



求是 价值 双赢

深圳市千目通讯科技有限公司

Shenzhen Qianmu Communication Technology Co., Ltd.

专注天线方案、设计与生产

客 户：道格
项 目：D28
日 期：2023. 7. 14
射 频：QIU ZHI YUAN



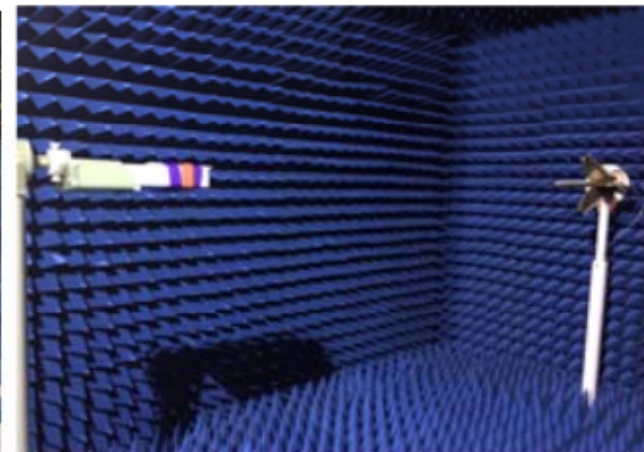
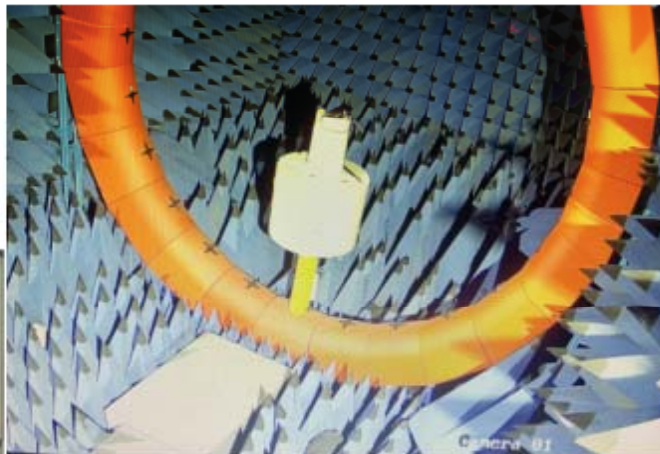
目 录

- | | |
|---------------------------|--|
| 1. <u>测试环境</u> | 1. Test the environment |
| 2. <u>历次调试记录说明</u> | 2. Description of previous debugging records |
| 3. <u>匹配电路说明</u> | 3. Match the circuit description |
| 4. <u>有源测试数据</u> | 4. Active test data |
| 5. <u>传导测试数据</u> | 5. Conduct test data |
| 6. <u>通话电流声模拟测试</u> | 6. Call current acoustic simulation test |
| 7. <u>环境处理说明</u> | 7. Environmental treatment instructions |
| 8. <u>GPS/WIFI/BT无源参数</u> | 8. GPS/WIFI/BT passive parameters |
| 9. <u>GPS/WIFI/BT实测效果</u> | 9. GPS/WIFI/BT measurement effect |
| 10. <u>总结</u> | 10. Summary |



测试环境

	测试项目	设备
1. S参数 (S-parameter)	1. 回波损耗 (Return Loss) 2. 电压驻波比 (VSWR)	网络分析仪: Agilent E5071B ×2 HP 8753D PROTEK A338
2. 有源测试 (Active)	1. 发射功率 (TRP) 2. 接收灵敏度 (TIS) 3. 频率误差 4. 屏灭、屏亮	1. 暗室: 飞图 7x4x3 m (24探头 3D) Chamber ETS 5x3x3 m (3D) Chamber 2. 综合测试仪: Agilent 8960 ×2 CMW500 ×3/CMU200
3. 无源测试 (Passive)	1. 天线增益 (Gain) 2. 天线效率 (Efficiency)	1. 暗室: 飞图 7x4x3 m (24探头 3D) Chamber ETS 5x3x3 m (3D) Chamber 2. 网络分析仪: Agilent E5071B





历次调试记录说明

日期	版本	调试记录说明
2023-7-14	A	铜箔样，调试样机Copper foil sample, commissioning prototype

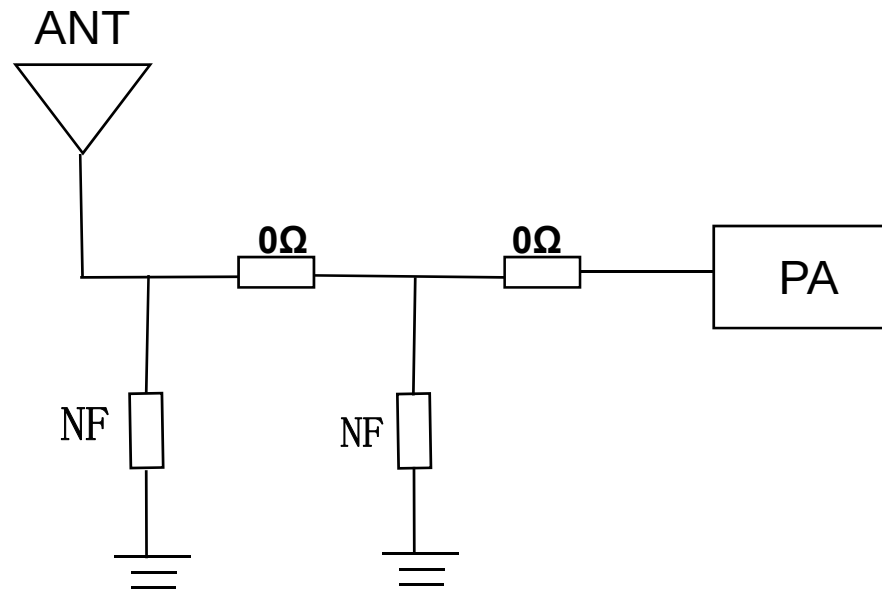


整机调试说明

机型 Machine type	蓝牙手表Bluetooth watch						
版型 pattern	主板Main board						
天线概况 Antenna profile		Antenna state		Antenna state	Antenna form	Design area	Match change
	BT Antenna	BT	2.4GHz~2.5GHz	铜箔样	Monopole	支架	无
样机状态	调试机器			环境处理			



匹配电路-BT天线 Matching circuit -BT 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)	-10.54	-10.51	-10.45	-10.19	-10.11	-9.81	-9.90	-10.09	-10.03	-9.83	-9.68
Peak EIRP (dBm)	-2.64	-2.46	-2.27	-1.92	-1.78	-1.53	-1.76	-2.16	-2.38	-2.46	-2.60
Directivity (dBi)	7.90	8.05	8.17	8.27	8.33	8.29	8.14	7.93	7.66	7.37	7.07
Efficiency (dB)	-10.54	-10.51	-10.45	-10.19	-10.11	-9.81	-9.90	-10.09	-10.03	-9.83	-9.68
Efficiency (%)	8.80	8.90	9.00	9.60	9.70	10.40	10.20	9.80	9.90	10.40	10.80
Gain (dBi)	-2.64	-2.46	-2.27	-1.92	-1.78	-1.53	-1.76	-2.16	-2.38	-2.46	-2.60
NHPRP $\pm\pi/4$ (dBm)	-12.75	-12.69	-12.59	-12.31	-12.21	-11.89	-11.94	-12.08	-11.97	-11.72	-11.51
NHPRP $\pm\pi/6$ (dBm)	-14.54	-14.45	-14.34	-14.05	-13.95	-13.63	-13.70	-13.85	-13.77	-13.51	-13.29
NHPRP $\pm\pi/8$ (dBm)	-15.78	-15.68	-15.56	-15.26	-15.16	-14.84	-14.92	-15.08	-15.00	-14.73	-14.48
Upper Hem. PRP (dBm)	-14.59	-14.60	-14.56	-14.34	-14.32	-14.06	-14.18	-14.38	-14.33	-14.13	-13.96
Lower Hem. PRP (dBm)	-12.71	-12.66	-12.57	-12.29	-12.18	-11.86	-11.93	-12.11	-12.05	-11.85	-11.71
Upper Hem. PRP (%)	3.48	3.47	3.50	3.68	3.69	3.93	3.82	3.65	3.69	3.86	4.02
Lower Hem. PRP (%)	5.36	5.42	5.53	5.90	6.05	6.51	6.41	6.15	6.23	6.54	6.75

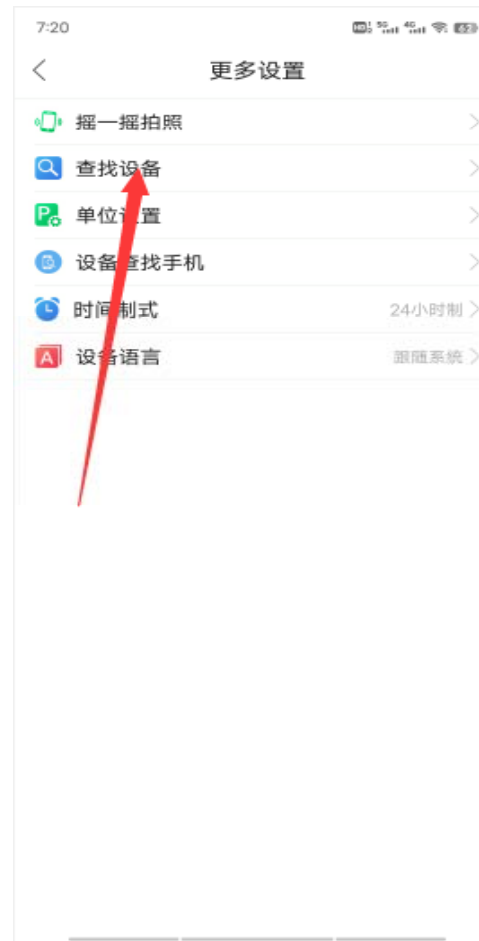
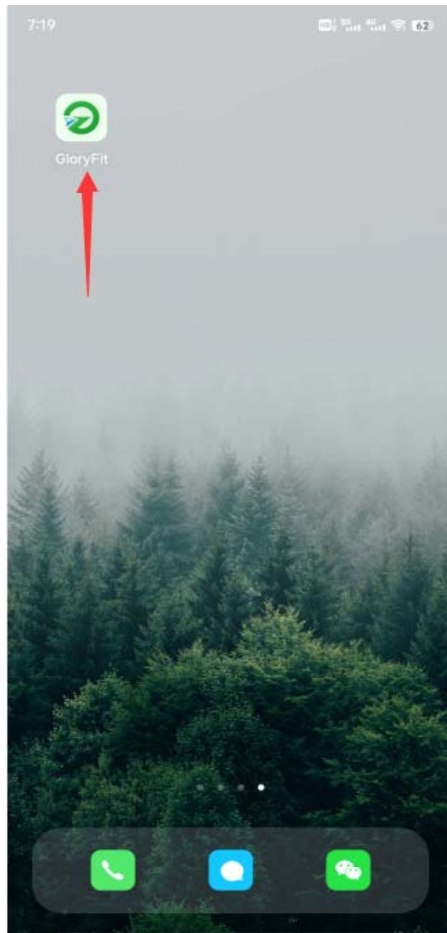


BT天线摆放位置：
BT antenna placement:





测试：用APP查找手环实际测试Test: Use the APP to find the actual test of the bracelet





Indoor test: APP search bracelet
straight line test 40m
Call test: indoor without shelter about
25 meters



提示说明

提示：

- 一、此数据只针对客户提供样机所产生的数据，不代表客户最终量产状态；
- 二、请客户仔细确认我司报告中，匹配电路修改及环境处理说明；
- 三、量产前请配合提供试产样机来我司二次验证；如有更换物料、更新软件及环境处理等，请提前告知；
- 四、如客户需要第三方复测，或者送客户测试，请到我司验证后再送样机；防止机器与调试机有差异；
- 五：我司不接受，我们调试以外的机器数据和其它暗室测试的数据，但可以参考，认证暗室除外，如数据有差异，一切以调试机为准去找原因。

Tip:

One. This data is only for the data generated by the customer's prototype, and does not represent the customer's final mass production status;

Two. Please carefully confirm the description of matching circuit modification and environmental treatment in our report;

Third, before the volume, please provide trial production prototype to our company for secondary verification; If there is any material replacement, software update and environmental treatment, please inform us in advance;

Fourth, if the customer needs a third party retest, or send the customer to test, please go to our verification and then send the prototype; Prevent the difference between the machine and the test machine;

Five: Our company does not accept, we debug other machine data and other darkroom test data, but you can refer to, except the certification darkroom, if there is a difference in data, all to the test machine to find the reason.



谢谢! Thank you!

此报告中所包含的一切信息、版权归我司所有，再未经我司许可的情况下，请勿散播给第三方
All information and copyright contained in this report belong to our company, and do not
distribute it to any third party without our permission