



Shenzhen Qianmu Communication Technology Co.,Ltd.

Focused on antenna solutions, design and manufacturing

Customer: DOOGEE

Project: D32FG

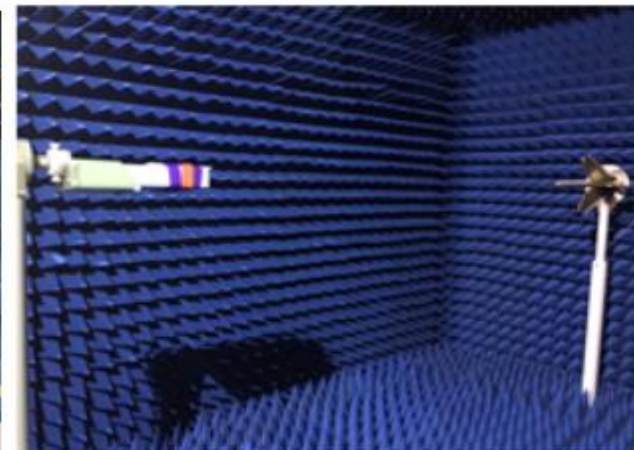
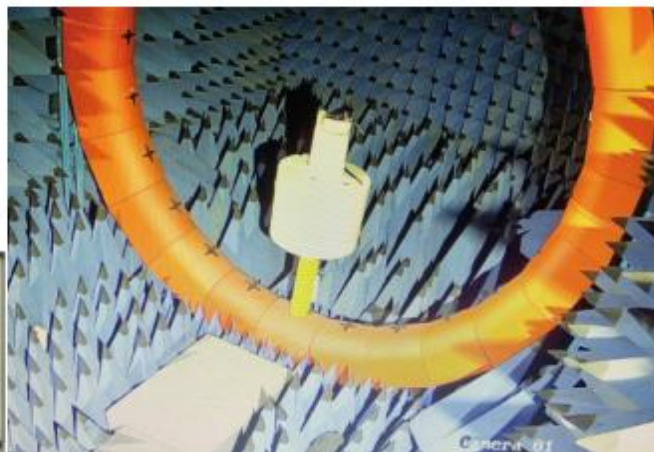
Date: September 12, 2025

RF Engineer: XU JUN JIE



Test Environment

	Test Content	Equipment
1. S-parameter	1. Return Loss 2. VSWR	Network Analyzer: Agilent E5071B ×2; HP 8753D; PROTEK A338
2. Active Test	1. TRP 2. TIS 3. Frequency Error 4. Screen On/Off	Chamber: Feitu 7×4×3m (24- probe 3D); ETS 5×3×3m 3D Integrated Tester: Agilent 8960 ×2; CMW500 ×3; CMU200
3. Passive Test	1. Antenna Gain 2. Antenna Efficiency	Chamber: Feitu 7×4×3m (24- probe 3D); ETS 5×3×3m 3D Network Analyzer: Agilent E5071B



No.	Test Item	Test Procedure	Criterion	结论
1	Bluetooth Signal Strength	After antenna tuning, assemble the complete device. Connect to the phone via APK, maintain a distance of 10cm, and record the signal strength.	Signal strength > -60 dB	
2	BLE Connection Range Test	1. After antenna tuning, assemble the complete device. 2. The tester wears the wristband (or watch) on the wrist, facing the phone, with arm hanging naturally and palm toward the body. Keep stationary for 2 minutes, then test the maximum coverage distance before Bluetooth disconnection. 3. Test the reconnection distance after disconnection at 0° (front), 90° , 180° (back), and 270° orientations.	Front disconnection (0°): > 10m	> 10m
			Front reconnection (0°): 10m	> 10m
			Back disconnection (180°): > 5m	> 5m
			Back reconnection (180°): 5m	> 5m
3	BT Connection Range Test (Audio)	1. After antenna tuning, assemble the complete device. 2. The tester wears the wristband (or watch) on the wrist, raises it to chest level, faces the phone, and gradually moves away. Test the maximum distance without audio stuttering.	Front (0°): 10m	> 10m
			Back (180°): 5m	> 5m
4	BT Connection Range Test (Call)	1. After antenna tuning, assemble the complete device. 2. The tester wears the wristband (or watch) on the wrist, raises it to chest level, faces the phone, and gradually moves away. Test the maximum distance without call stuttering.	Front (0°): 10m	> 10m
			Back (180°): 5m	> 5m



Hand Phantom Bluetooth Antenna Efficiency

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)	-17.25	-16.96	-17.01	-16.79	-17.63	-17.52	-17.38	-17.46	-18.35	-17.65	-17.38
Peak EIRP (dBm)	-7.67	-6.43	-6.20	-5.40	-6.11	-5.95	-6.12	-6.65	-8.06	-8.03	-8.06
Directivity (dBi)	9.57	10.53	10.81	11.39	11.52	11.58	11.26	10.82	10.28	9.62	9.32
Efficiency (dB)	-17.25	-16.96	-17.01	-16.79	-17.63	-17.52	-17.38	-17.46	-18.35	-17.65	-17.38
Efficiency (%)	2.69	2.00	2.00	2.10	2.70	2.80	2.80	2.80	2.80	2.70	2.80
Gain (dBi)	-7.67	-6.43	-6.20	-5.40	-6.11	-5.95	-6.12	-6.65	-8.06	-8.03	-8.06
NHPRP $\pm \pi/4$ (dBm)	-19.86	-19.74	-19.71	-19.48	-20.19	-20.03	-19.80	-19.85	-20.77	-20.18	-20.04
NHPRP $\pm \pi/6$ (dBm)	-21.53	-21.46	-21.53	-21.38	-22.18	-22.07	-21.90	-21.95	-22.84	-22.21	-21.95
NHPRP $\pm \pi/8$ (dBm)	-22.78	-22.73	-22.89	-22.75	-23.59	-23.49	-23.33	-23.38	-24.26	-23.62	-23.30
Upper Hem. PRP (dBm)	-20.79	-20.80	-20.70	-20.51	-21.38	-21.24	-21.15	-21.22	-22.16	-21.21	-21.09
Lower Hem. PRP (dBm)	-19.78	-19.27	-19.43	-19.19	-20.01	-19.93	-19.75	-19.84	-20.68	-20.17	-19.79
Upper Hem. PRP (%)	0.83	0.83	0.85	0.89	0.73	0.75	0.77	0.76	0.61	0.76	0.78
Lower Hem. PRP (%)	1.05	1.18	1.14	1.21	1.00	1.02	1.06	1.04	0.85	0.96	1.05



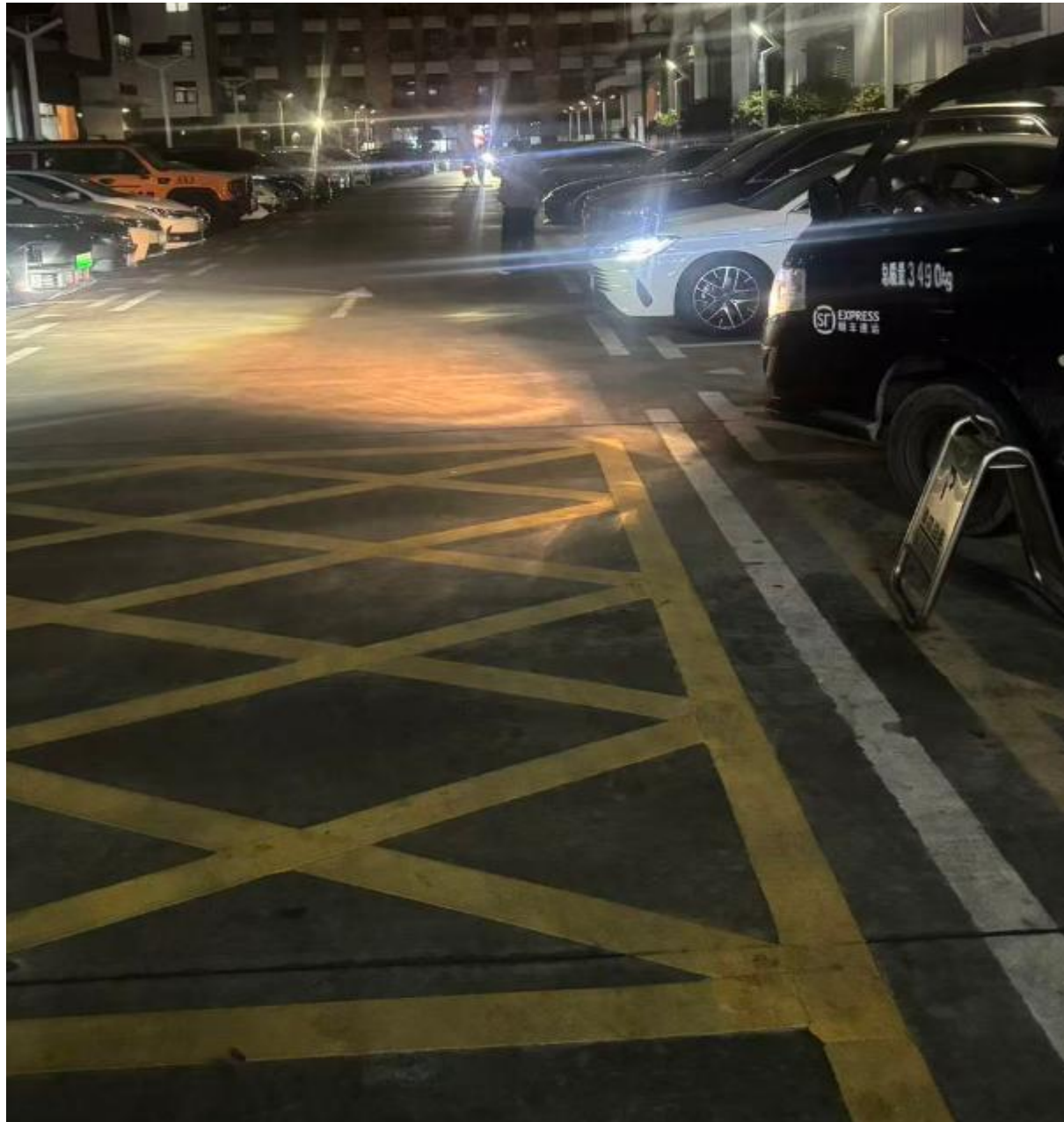
Antenna Placement



Bluetooth Cable Specification: $0.6 \times 20\text{mm}$



Smart Watch Test Site





Notes & Instructions

Notes:

- 1.This data is generated solely for the sample provided by the customer and does not represent the final mass production status.
- 2.Please carefully review and confirm the matching circuit modifications and environmental treatment instructions in our report.
Before mass production, please provide pilot samples for our secondary verification. 三、
- 3.Please notify us in advance of any changes to materials, software updates, or environmental treatment.
- 4.If third-party retesting or customer-side testing is required, please verify the samples with our company first to avoid discrepancies between the test units and our tuned samples.
- 5.We do not accept data from units not tuned by us or from other anechoic chamber tests (except for certification chambers), though such data may be used for reference. In the event of data discrepancies, all root cause analysis shall be based on our tuned samples



Thank you!

All information contained in this report is the proprietary property of our company. No part of this report may be distributed to any third party without our prior written permission.