



Shenzhen Qianmu Communication Technology Co.,Ltd.

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Focused on antenna solutions, design and manufacturing

Customer: DOOGEE

Date: September 12, 2025

RF Engineer: XU JUN JIE



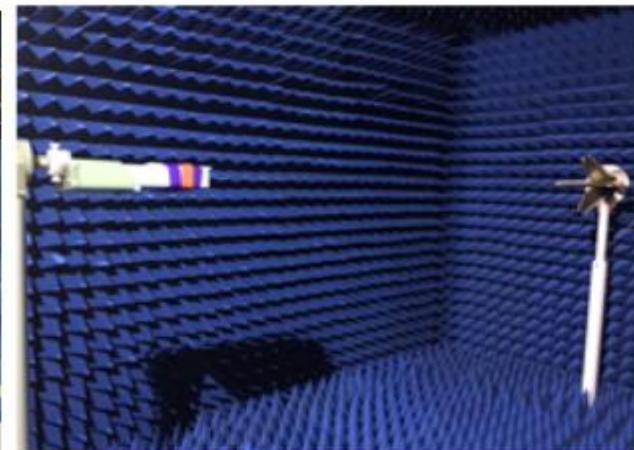
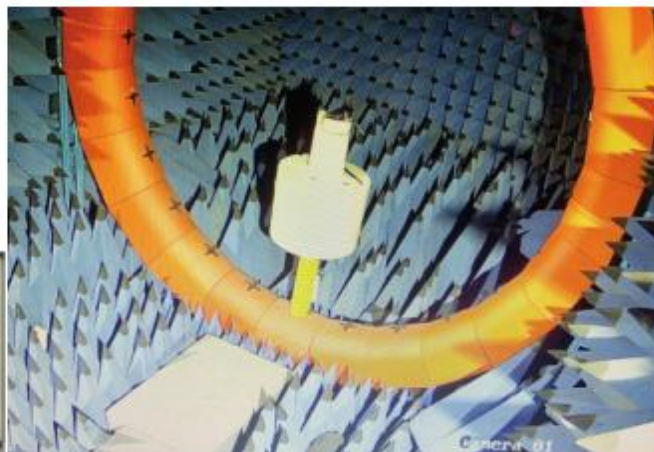
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Test Environment

	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





Debugging History

Date	Version	Version
2025-9-12	A	BT antenna, pilot production unit



Matching Circuit – BT Antenna

Original matching circuit unchanged.

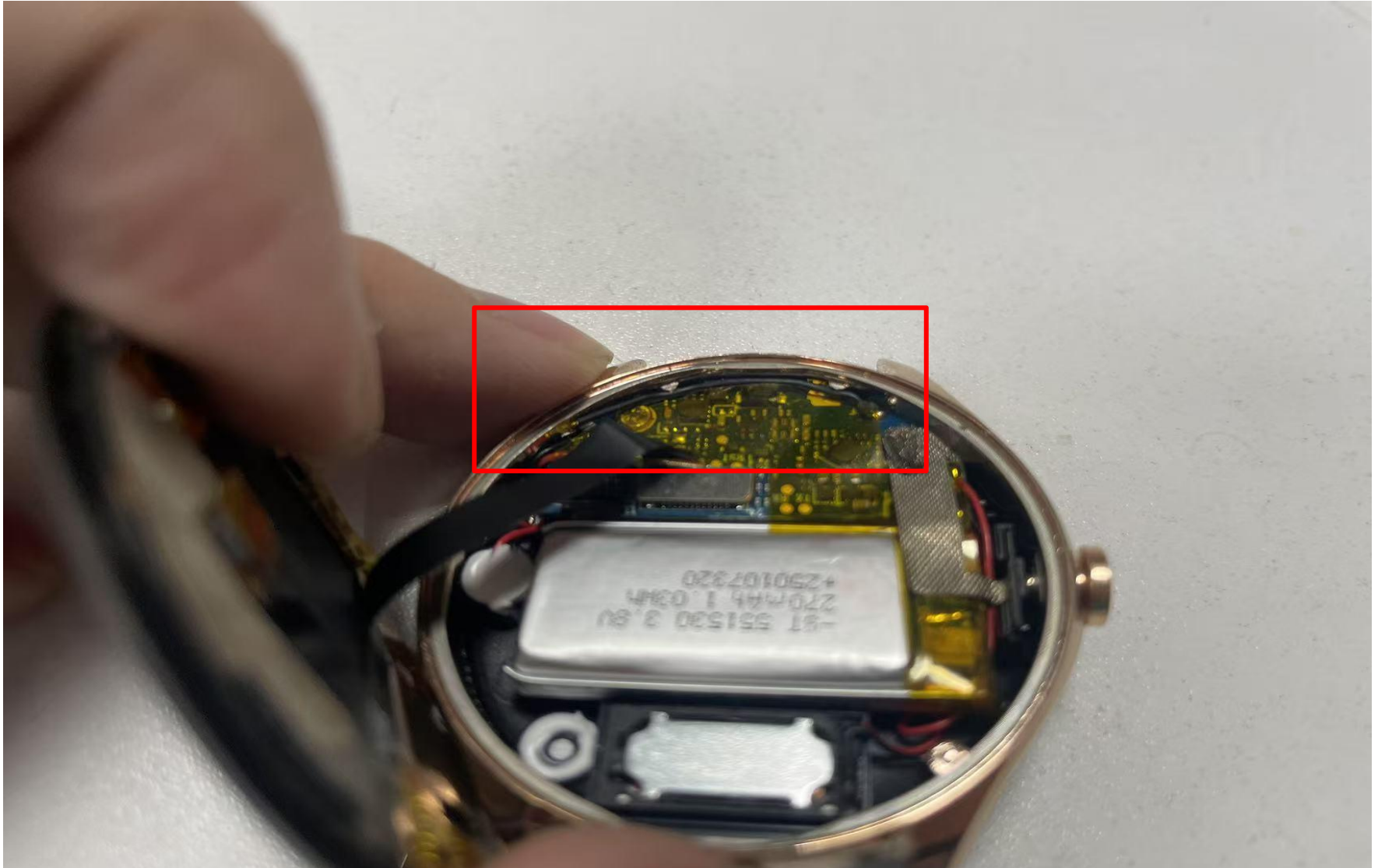


BT Antenna Efficiency (Hand Phantom)

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)	-11.65	-11.62	-11.59	-11.56	-11.50	-11.36	-11.24	-11.16	-11.10	-10.93	-10.80
Peak EIRP (dBm)	-7.69	-7.54	-7.45	-7.48	-7.54	-7.50	-7.40	-7.48	-7.44	-7.18	-6.87
Directivity (dBi)	3.96	4.08	4.14	4.09	3.96	3.86	3.85	3.69	3.66	3.75	3.93
Efficiency (dB)	-11.65	-11.62	-11.59	-11.56	-11.50	-11.36	-11.24	-11.16	-11.10	-10.93	-10.80
Efficiency (%)	6.80	6.90	6.90	7.00	7.10	7.30	7.50	7.60	7.80	8.10	8.30
Gain (dBi)	-7.69	-7.54	-7.45	-7.48	-7.54	-7.50	-7.40	-7.48	-7.44	-7.18	-6.87
NHPRP $\pm\pi/4$ (dBm)	-12.79	-12.79	-12.77	-12.76	-12.72	-12.60	-12.52	-12.49	-12.48	-12.36	-12.28
NHPRP $\pm\pi/6$ (dBm)	-14.12	-14.14	-14.14	-14.15	-14.13	-14.05	-14.00	-13.99	-14.00	-13.90	-13.84
NHPRP $\pm\pi/8$ (dBm)	-15.16	-15.19	-15.21	-15.25	-15.26	-15.20	-15.17	-15.17	-15.18	-15.08	-15.02
Upper Hem. PRP (dBm)	-14.40	-14.32	-14.26	-14.18	-14.08	-13.93	-13.85	-13.79	-13.72	-13.54	-13.37
Lower Hem. PRP (dBm)	-14.93	-14.96	-14.98	-15.01	-14.99	-14.84	-14.70	-14.60	-14.54	-14.38	-14.29
Upper Hem. PRP (%)	3.63	3.70	3.75	3.82	3.91	4.04	4.12	4.18	4.24	4.42	4.60
Lower Hem. PRP (%)	3.21	3.19	3.18	3.16	3.17	3.28	3.38	3.47	3.52	3.65	3.72



BT Antenna Position



Antenna placement diagram



Indoor and Outdoor Test Results

Test Setup 1: Android Xiaomi (connected to watch); Android Redmi K50

Call Test:

After antenna tuning, assemble the complete device. The tester wears the wristband (or watch) on the wrist, raises it to chest level, faces the phone, and gradually moves away. No stuttering during the call is observed.

Conclusion: (Indoor: 23 meters, Outdoor: 12 meters)

After antenna tuning, assemble the complete device. The tester wears the wristband (or watch) on the wrist, raises it to chest level, faces away from the phone, and gradually moves away. No stuttering during the call is observed.

Conclusion: (Indoor: 13 meters, Outdoor: 6 meters)

During the call test, switch repeatedly between speakerphone and earpiece modes on the phone connected to the watch.

Conclusion: (No current noise)

Test Setup 2: Redmi K50 (connected to watch); iPhone 11

Call Test:

After antenna tuning, assemble the complete device. The tester wears the wristband (or watch) on the wrist, raises it to chest level, faces the phone, and gradually moves away. No stuttering during the call is observed.

Conclusion: (Indoor: 22 meters, Outdoor: 12 meters)

After antenna tuning, assemble the complete device. The tester wears the wristband (or watch) on the wrist, raises it to chest level, faces away from the phone, and gradually moves away. No stuttering during the call is observed.

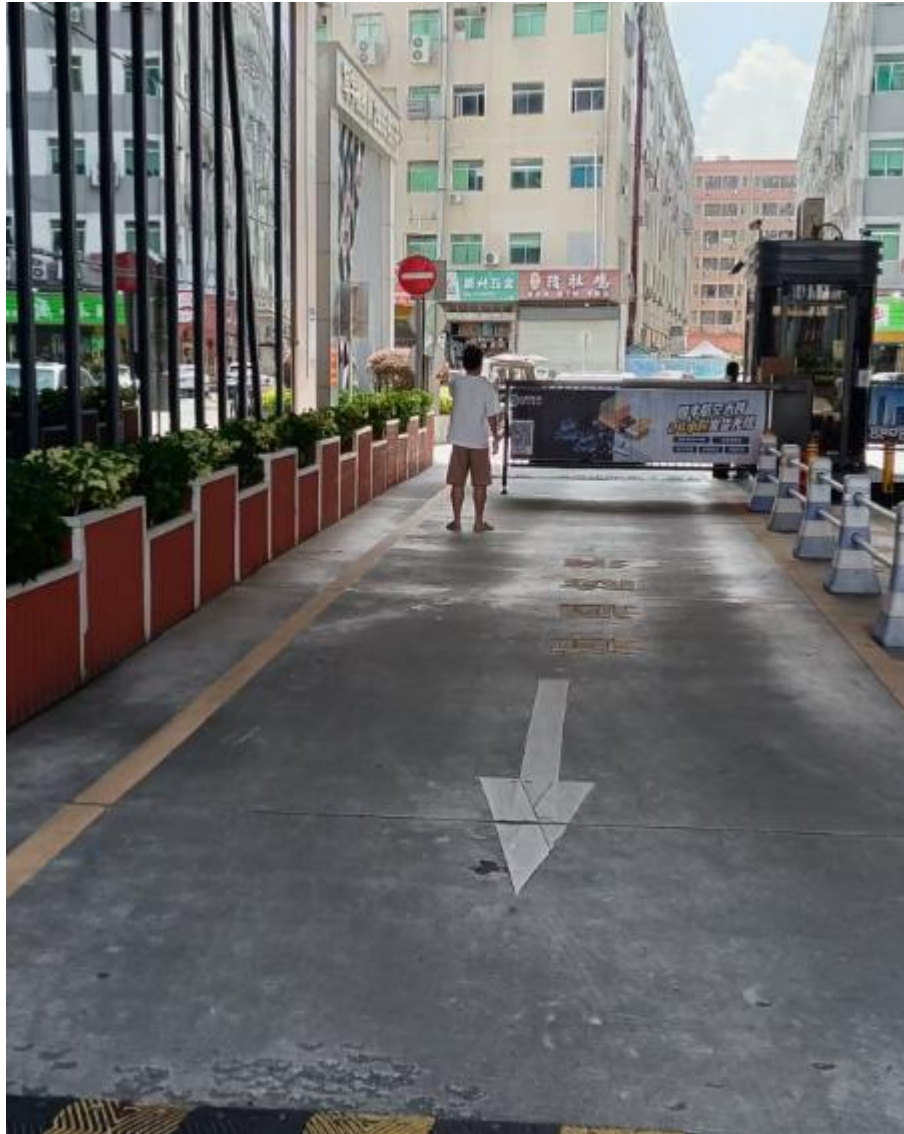
Conclusion: (Indoor: 13 meters, Outdoor: 5 meters)

During the call test, switch repeatedly between speakerphone and earpiece modes on the phone connected to the watch.

Conclusion: (No current noise)



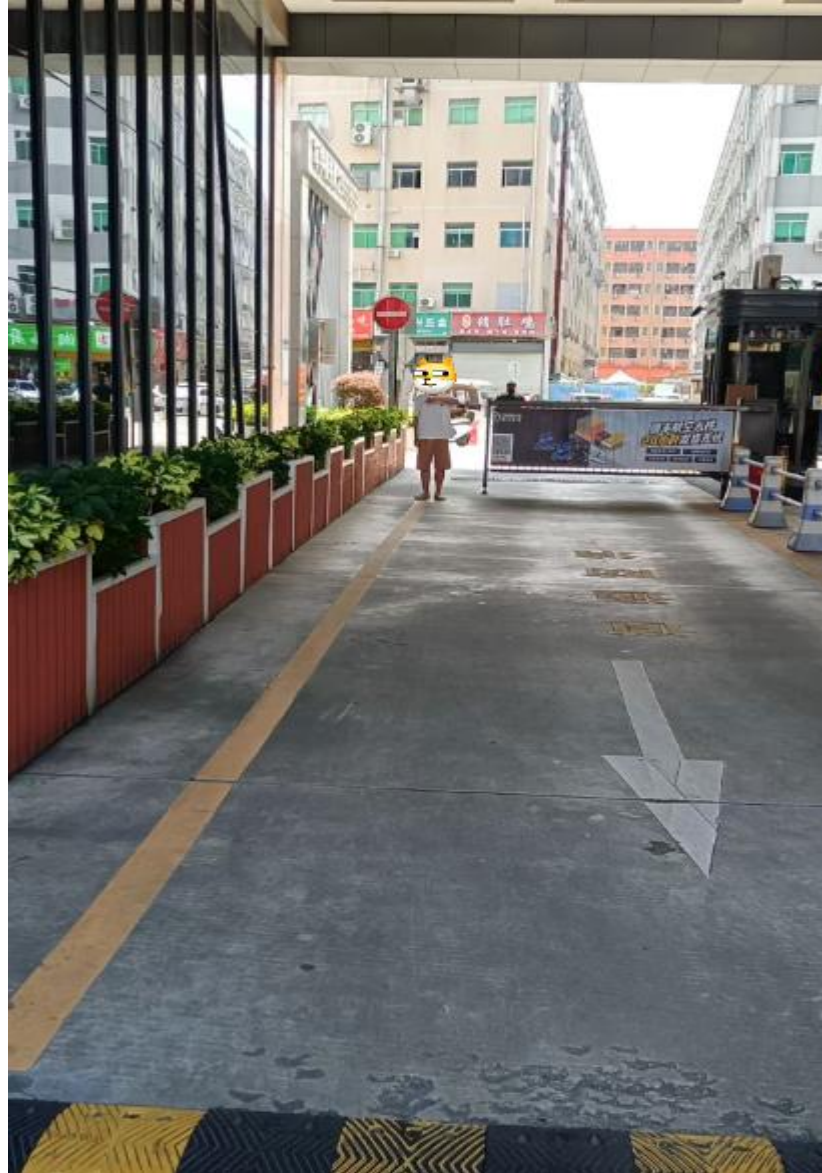
Indoor and Outdoor Test Results



Outdoor Test (Back to Phone)



Indoor and Outdoor Test Results



Outdoor Test (Facing the Phone)



Indoor and Outdoor Test Results



NOR X30i
IP Triple Camera

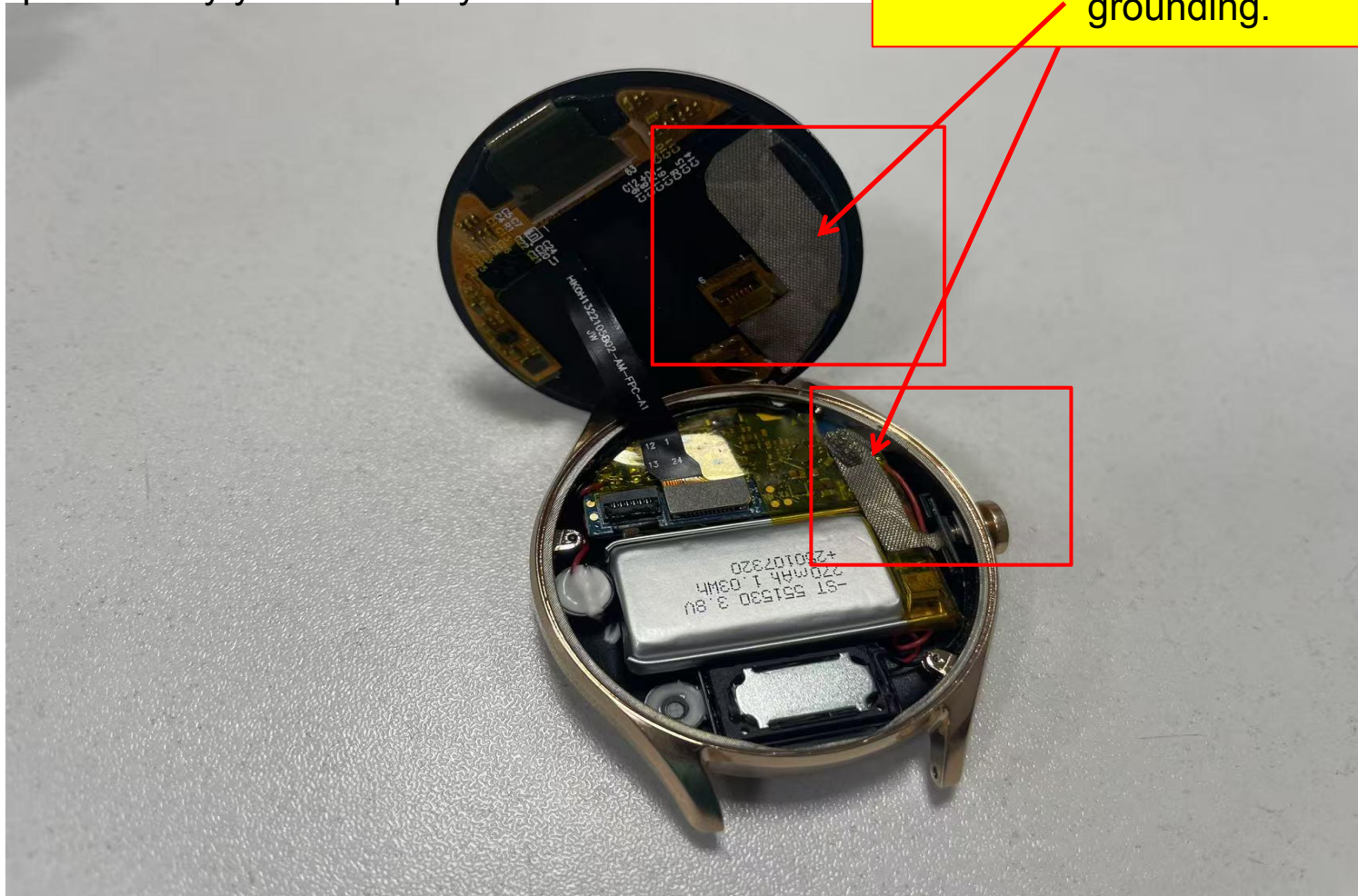
Wrist Placement (Hand Phantom Test)



Environmental Treatment Instructions

Implemented in accordance with the environmental treatment of the sample provided by your company.

Conductive cloth is applied at this position between the mainboard and the screen, and conductive flannel is padded to connect to the zinc alloy casing for grounding.





Notes & Instructions

Notes:

This data is only for the sample provided by the customer and does not represent the final mass production status.

Please carefully confirm the matching circuit modifications and environmental treatment instructions in our report.

Before mass production, please provide pilot production samples for our secondary verification. Please notify us in advance if there are any changes to materials, software updates, or environmental treatment.

If the customer requires third-party retesting or sends samples for customer testing, please verify with our company first to avoid discrepancies between the test units and the tuned samples.

We do not accept data from units not tuned by us or data from other anechoic chamber tests (except for certification chambers), but such data can be used for reference. In case of data discrepancies, all root cause analysis shall be based on the tuned samples.



Thank you!

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