



求是 价值 双赢

Shenzhen Qianmu Communication Technology Co., Ltd.

Focus on antenna solutions, design and production

Customer:
Item: HT42
Date: 2025.11.04
Frequency: ZHANG LI



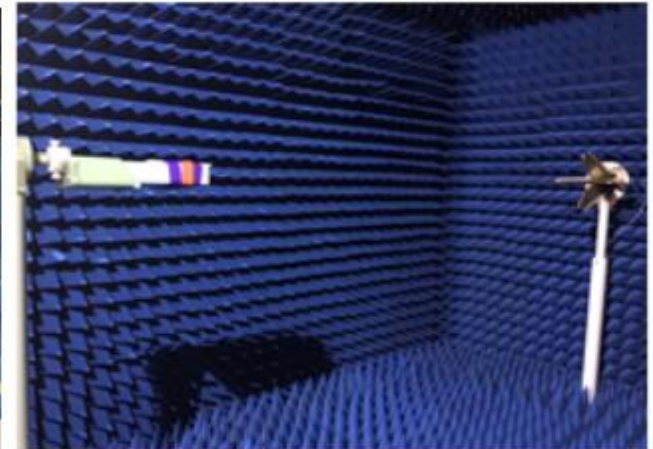
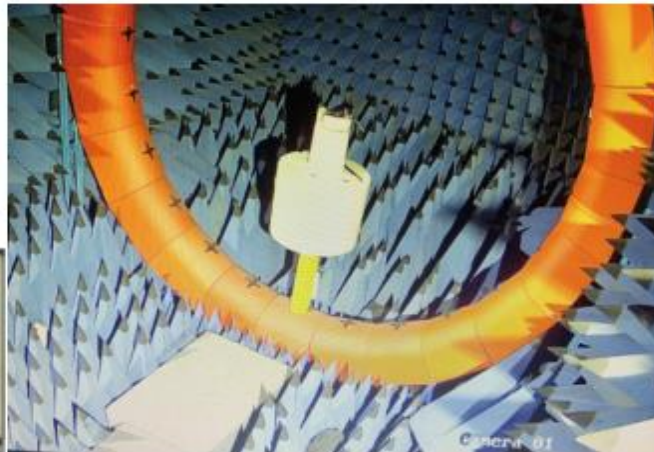
Catalogue

1. Testing environment
2. Explanation of previous debugging records
3. Matching circuit description
4. Active test data
5. Conduction test data
6. Analog test of telephone call sound
7. Environmental Treatment Instructions
8. GPS/WIFI/BT passive parameters
9. GPS/WIFI/BT performance
10. Sum up



Testing environment

	Test item	Equipment
1. S-parameters (S-parameter)	1. Return Loss 2. Voltage Standing Wave Ratio (VSWR)	Network analyzer: Agilent E5071B × 2 HP 8753D PROTEK A338
2. Active testing (Active)	1. Emission power (TRP) 2. Receiving Sensitivity (TIS) 3.frequency error 4.screen off, screen on	1. Darkroom: Feitu 7x4x3 m (24-probe 3D) Chamber ETS 5x3 x3 m (3D) Chamber 2. Comprehensive tester: Agilent 8960 × 2 CMW500 × 3/CMU200
3.passive test (Passive)	1. Antenna gain 2. Antenna Efficiency (Efficiency)	1. Darkroom: Feitu 7x4x3 m (24-probe 3D) Chamber ETS 5x3 x3 m (3D) Chamber 2. Network analyzer: Agilent E5071B





Explanation of previous debugging records

Date	Edition	Debugging Record Description
2025-11- 04	T:A	Metal Frame as Antenna, Debugging Prototype

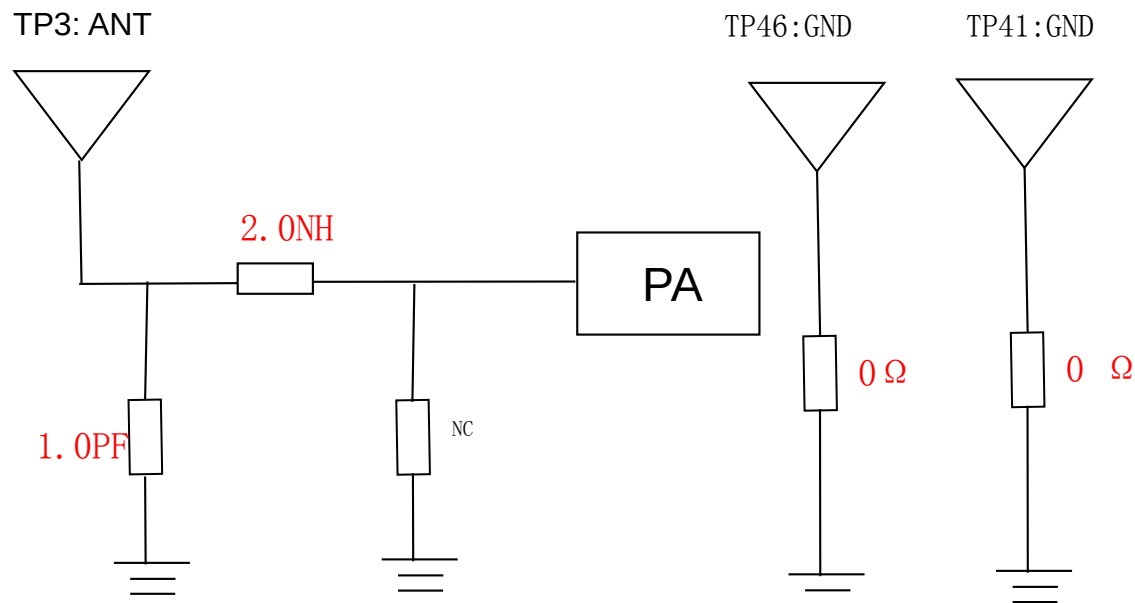


Complete machine debugging instructions

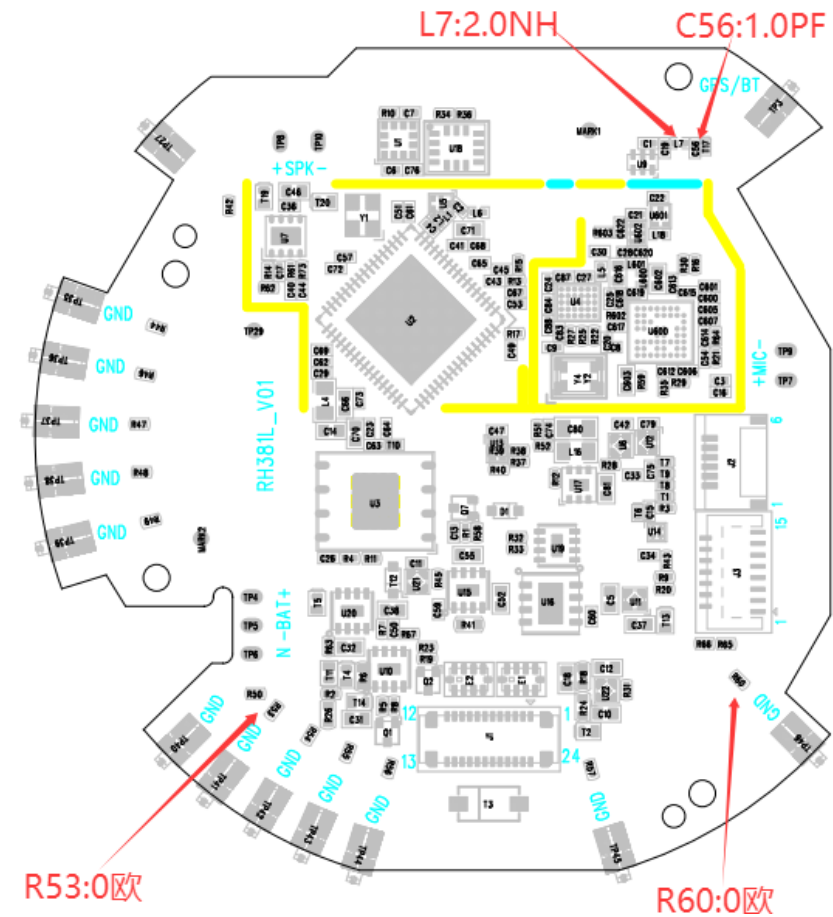
type	watch						
Layout	motherboard						
Antenna Overview	main antenna	Antenna status		Antenna status	antenna form	Design area	Match changes
	Other antennas	GPS	1575.42 MHz	Metal Frame		shell material	have
prototype status	debug prototype			environmental treatment	multiple		



Matching Circuit-GPS/BT Antenna

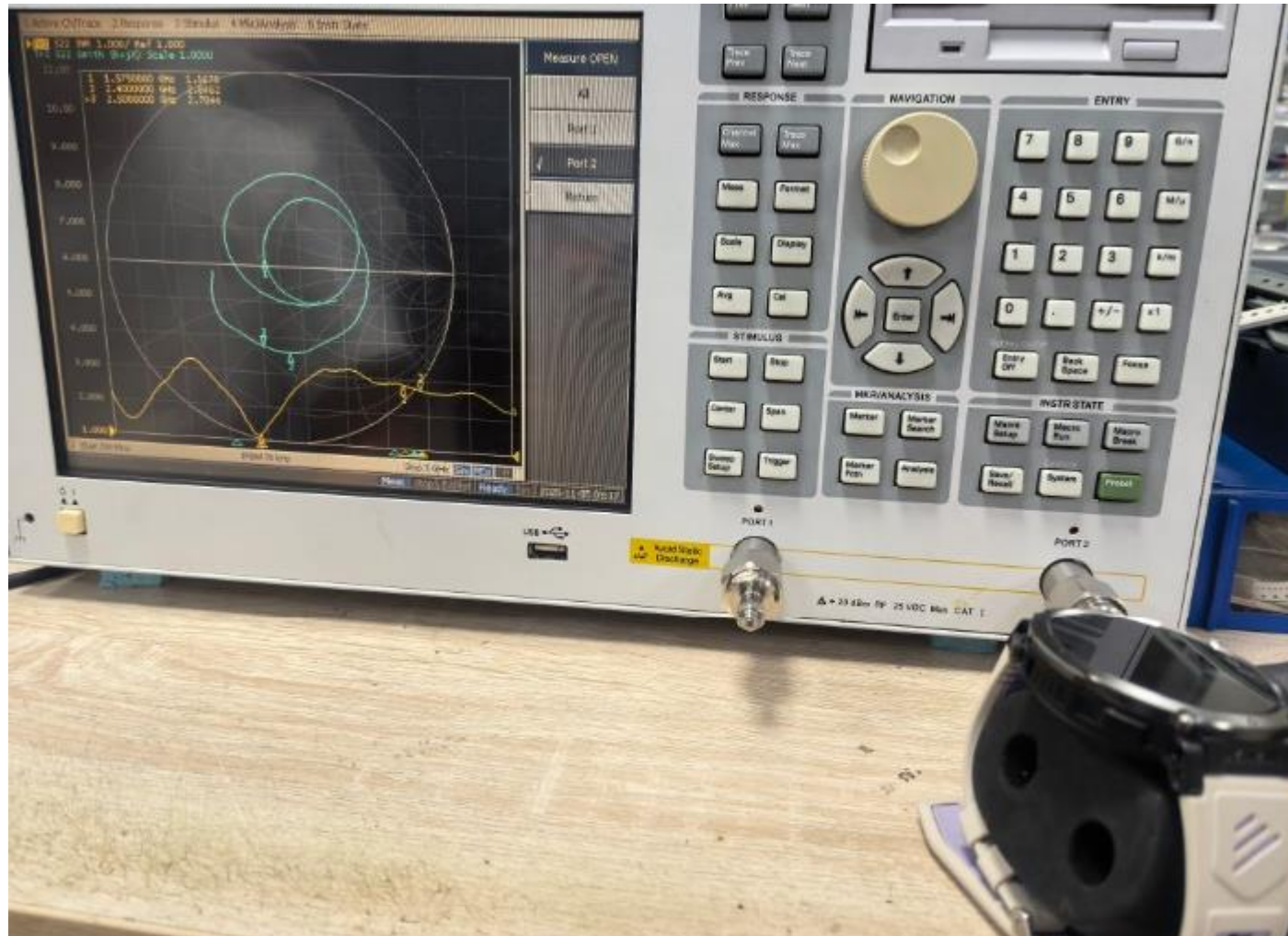


Please make the required modifications to your matching circuit as specified above.





GPS+BT S11 passive parameters:





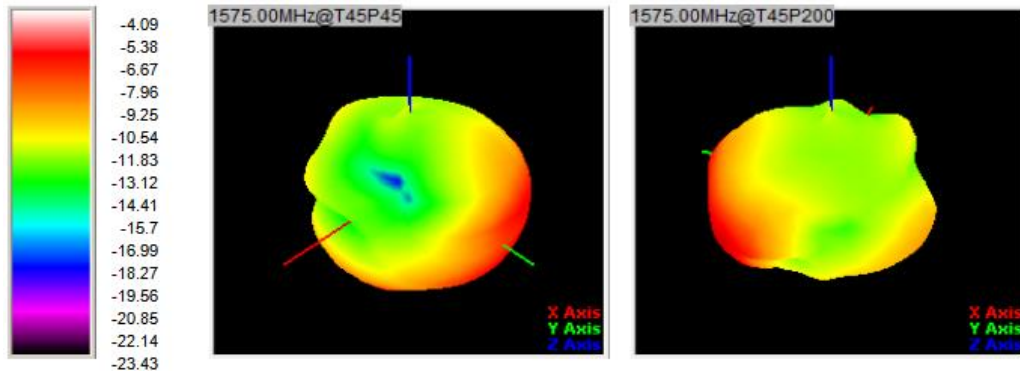
GPS+BT antenna efficiency and gain:

Frequency ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Frequency (MHz)	1570.0	1575.0	1580.0	2400.0	2410.0	2420.0	2430.0	2440.0	2450.0	2460.0	2470.0	2480.0	2490.0	2500.0
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	0.00	0.00	0.00
Tot. Rad. Pwr. (dBm)	-10.77	-10.84	-10.98	-12.34	-12.59	-12.37	-12.28	-12.29	-12.37	-12.41	-12.35	-12.20	-12.32	-12.50
Peak EIRP (dBm)	-3.97	-4.09	-4.34	-5.53	-5.65	-5.34	-5.57	-5.35	-5.75	-5.78	-5.75	-5.39	-5.45	-5.53
Directivity (dBi)	6.80	6.74	6.63	6.81	6.94	7.03	6.71	6.94	6.62	6.63	6.60	6.81	6.87	6.98
Efficiency (dB)	-10.77	-10.84	-10.98	-12.34	-12.59	-12.37	-12.28	-12.29	-12.37	-12.41	-12.35	-12.20	-12.32	-12.50
Efficiency (%)	8.40	8.20	8.00	5.80	5.50	5.80	5.90	5.90	5.80	5.70	5.80	6.00	5.90	5.60
Gain (dBi)	-3.97	-4.09	-4.34	-5.53	-5.65	-5.34	-5.57	-5.35	-5.75	-5.78	-5.75	-5.39	-5.45	-5.53
NHPRP $\pm\pi/4$ (dBm)	-11.91	-11.98	-12.13	-13.14	-13.43	-13.21	-13.09	-13.11	-13.19	-13.24	-13.22	-13.02	-13.17	-13.39
NHPRP $\pm\pi/6$ (dBm)	-13.27	-13.35	-13.51	-14.20	-14.49	-14.30	-14.15	-14.13	-14.21	-14.30	-14.26	-14.00	-14.15	-14.40
NHPRP $\pm\pi/8$ (dBm)	-14.30	-14.38	-14.55	-15.09	-15.38	-15.24	-15.04	-15.00	-15.07	-15.20	-15.11	-14.82	-14.93	-15.20
Upper Hem. PRP (dBm)	-15.35	-15.41	-15.54	-15.91	-16.12	-15.91	-15.86	-15.82	-15.85	-15.92	-15.90	-15.71	-15.81	-15.98
Lower Hem. PRP (dBm)	-12.63	-12.70	-12.85	-14.85	-15.14	-14.90	-14.79	-14.85	-14.95	-14.97	-14.88	-14.77	-14.91	-15.09
Upper Hem. PRP (%)	2.92	2.88	2.79	2.57	2.44	2.57	2.60	2.62	2.60	2.56	2.57	2.69	2.63	2.52
Lower Hem. PRP (%)	5.46	5.37	5.19	3.27	3.07	3.23	3.32	3.28	3.20	3.19	3.25	3.34	3.23	3.10

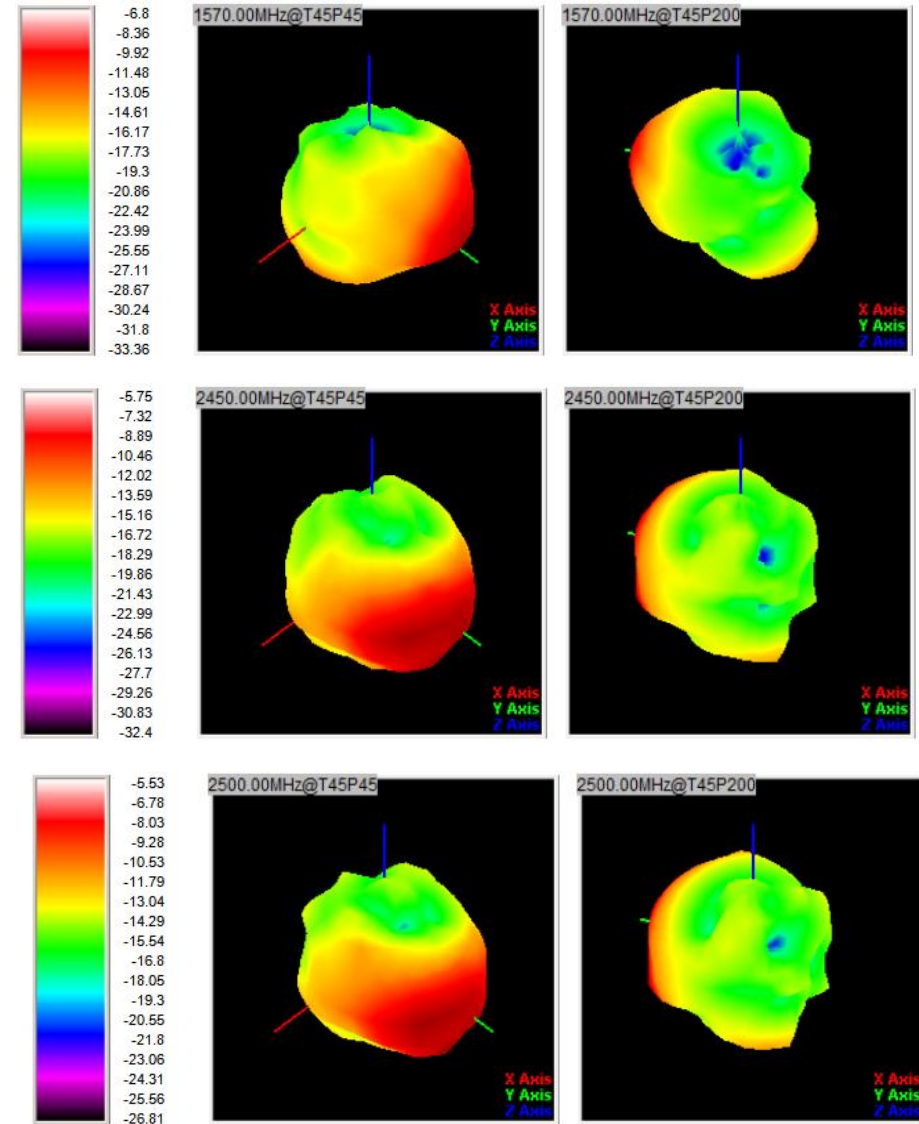


GPS+BT direction:

GPS



BT





GPS test:

manp ower



GPS test: Cold start positioning within 40 seconds at an open rooftop location
Bluetooth test results: When the Mate70 was paired with the smartwatch in an open rooftop area, the 7-meter call remained smooth and uninterrupted with no lag or interruptions.

Shenzhen Qianmu Communication Technology Co.,Ltd.



antenna

求是 价值 双赢





Instructions

point out :

1. This data is exclusively generated during prototype testing and does not reflect the final mass production status of the client.
2. Please verify the circuit modification and environmental treatment instructions in our companys report.
3. Before mass production, please provide trial production samples for our second verification. Please notify us in advance of any material changes, software updates, or environmental adjustments.
4. If the customer requires third-party retesting or needs to send samples for testing, please verify with our company before submitting the prototype to prevent discrepancies between the production machine and the debugging machine.
5. Our company does not accept data from machines other than the debugging machine or from other darkroom tests, except for reference purposes (excluding certified darkrooms). In case of discrepancies, the debugging machines data shall prevail for troubleshooting.



thanks !