



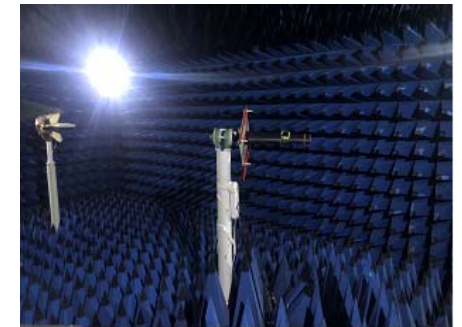
深圳市昱晟通讯设备有限公司
Yusheng Communications-equipment Co.,LTD

M80 antenna optimization report

RF: Jiang Mingfei

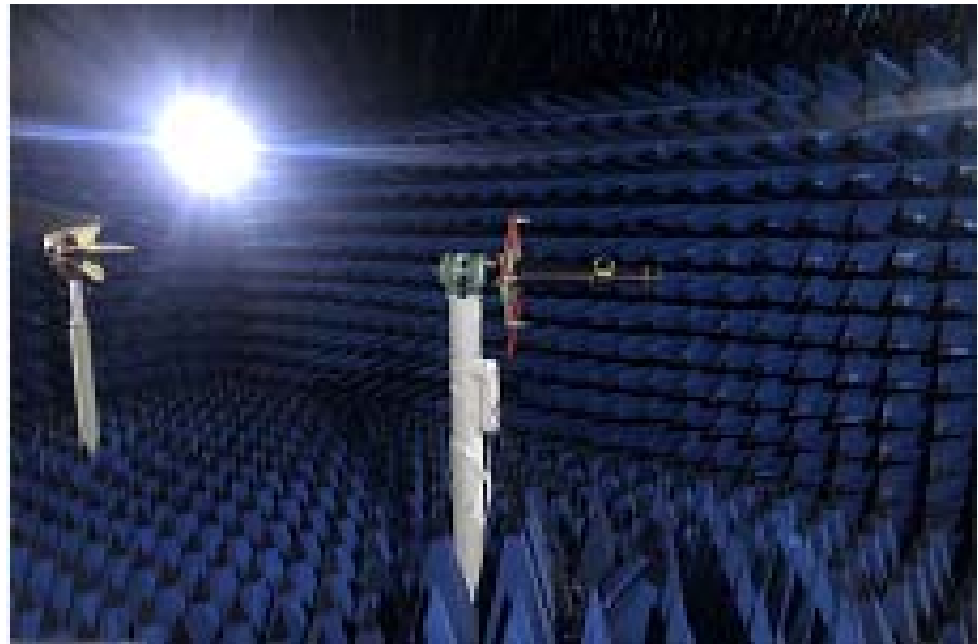
Date: 2024-3-4

Contact information:
13762527134



Project development environment

We are moving from the Internet era to the intelligent era, and the country is building a digital society and a smart city. In the next 5-10 years, there is a huge development potential in both the consumer electronics market and the Internet of Things market. The field of wireless communication is very diversified. In the future, relying on the customer platform advantages of the main antenna industry, Yusheng will strive to provide customers with professional product solutions with market competitiveness.



Yu Sheng communication products cover almost all wireless terminal equipment antenna applications, including car antenna, high precision surveying antenna, drone ground and satellite data navigation, high precision positioning antenna, medical equipment wireless transmission, consumer antenna (mobile phone antenna, PAD, laptop antenna), base station / indoor distribution antenna, smart wear antenna (smart watches, TWS headphones), security household antenna and a variety of wireless data transmission and wireless control of intelligent equipment antenna, etc.

1

Project commissioning brief

2

Outline of the report version

3

Antenna passive parameter

4

Antenna pull distance test

5

Antenna matching changes



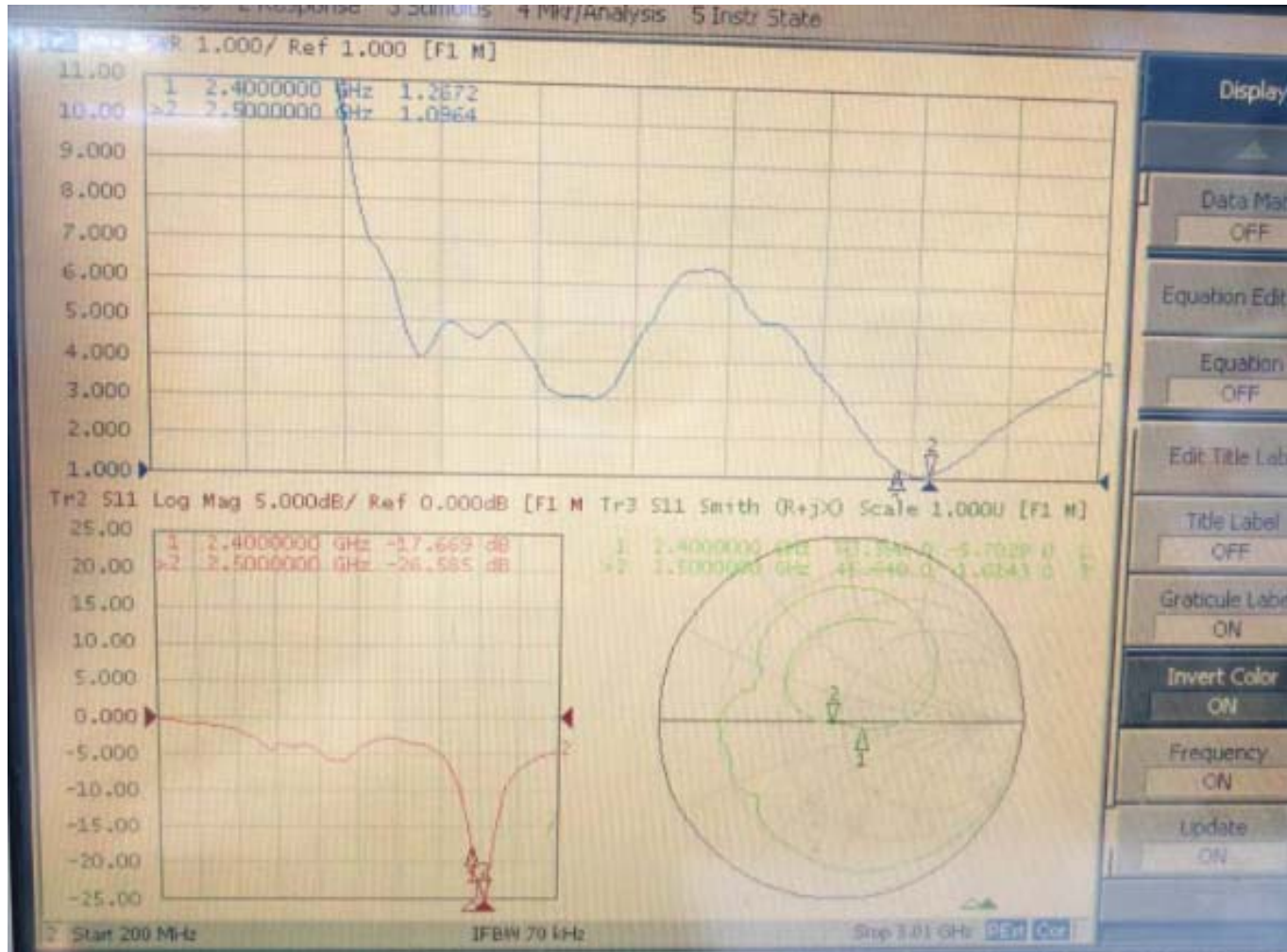
Project
commissioning brief

type	watch			
Frequency band and antenna material	antenna	frequency range		material quality
		BT	2400-2500MHZ	Metal medium frame + FPC
performance requirement	According to the customer's requirements			



Report version	Report time	The problem solved by the antenna development
V0.1	2023-12-12	Antenna preliminary commissioning report
V0.2	2023-12-26	Antenna optimization report
V0.3	2024-3-2	Increase antenna gain
V0.4	2024-3-4	Add to the antenna orientation diagram

Antenna passive parameter





Antenna passive
parameter

No FPC antenna is added

Test	free state								
Test Point ID	1	2	3	4	5	6	7	8	9
Freq.(MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480
Efficiency (%)	8.5	8.7	9.1	10.7	11.4	12.7	9.8	8.7	8.3
gain (dBi)	-3.76	-3.82	-3.56	-3.53	-3.44	-3.27	-3.88	-4.15	-4.27

Test	Arm state								
Test Point ID	1	2	3	4	5	6	7	8	9
Freq.(MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480
Efficiency (%)	4.1	4.3	5.1	6.7	6.5	7.3	5.1	4.5	4.2
gain (dBi)	-7.52	-6.86	-6.73	-6.75	-7.22	-6.23	-6.70	-6.78	-6.66



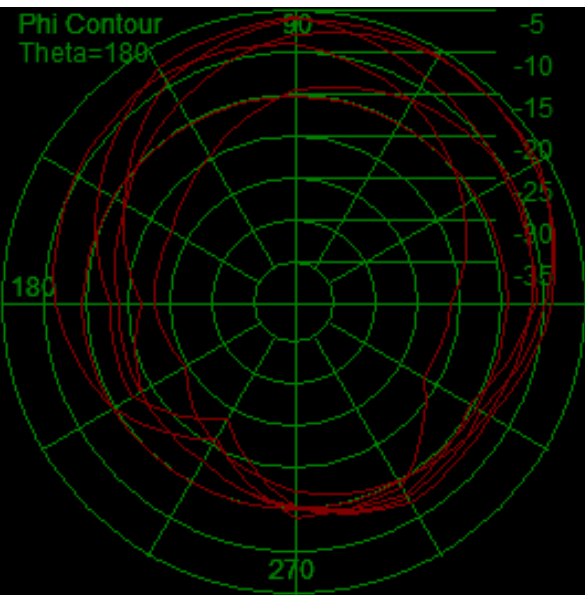
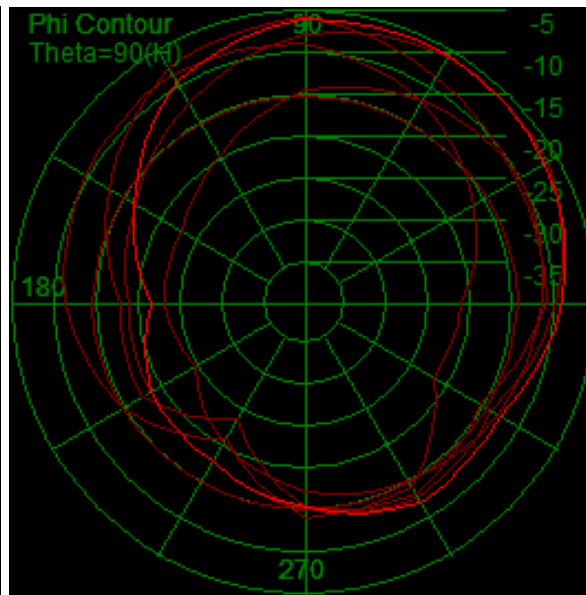
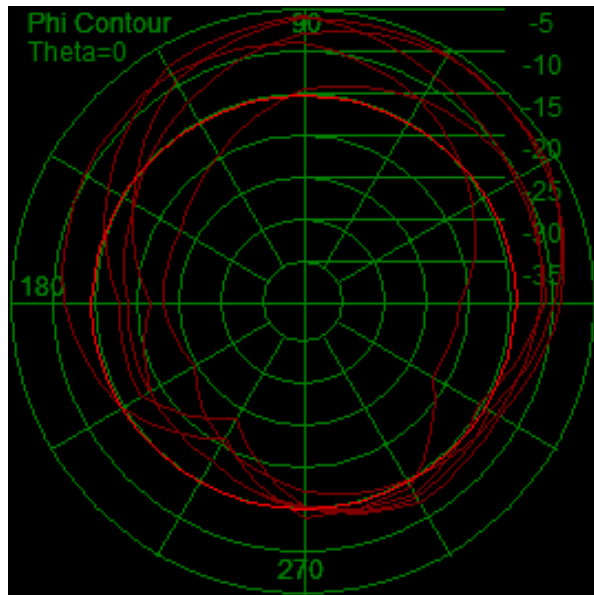
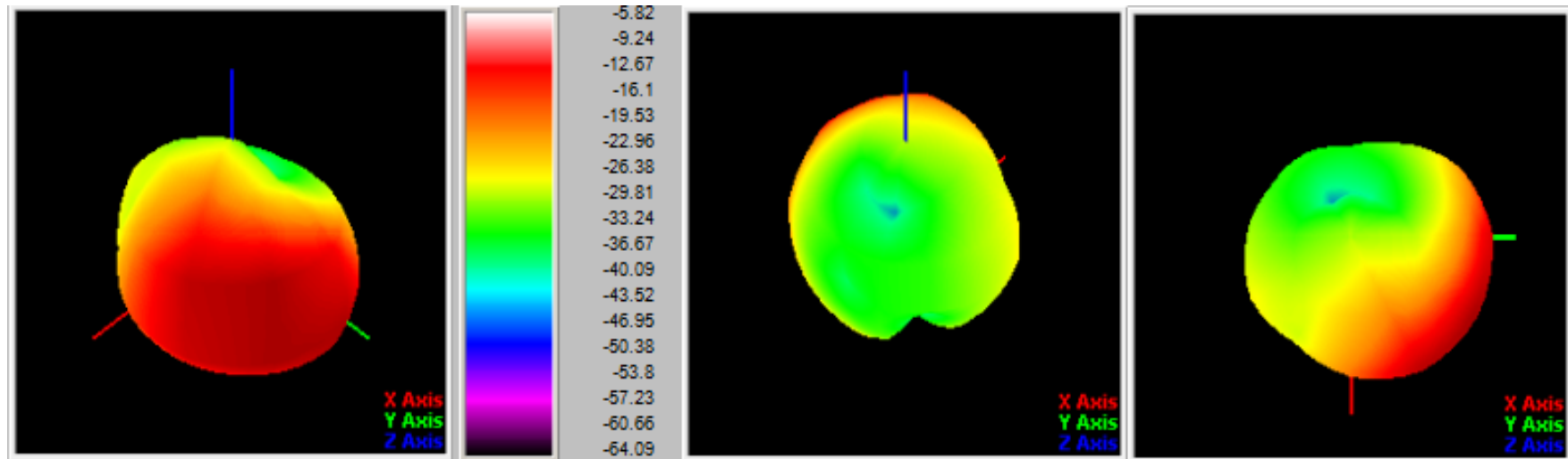
Antenna passive
parameter

Add to the FPC antenna

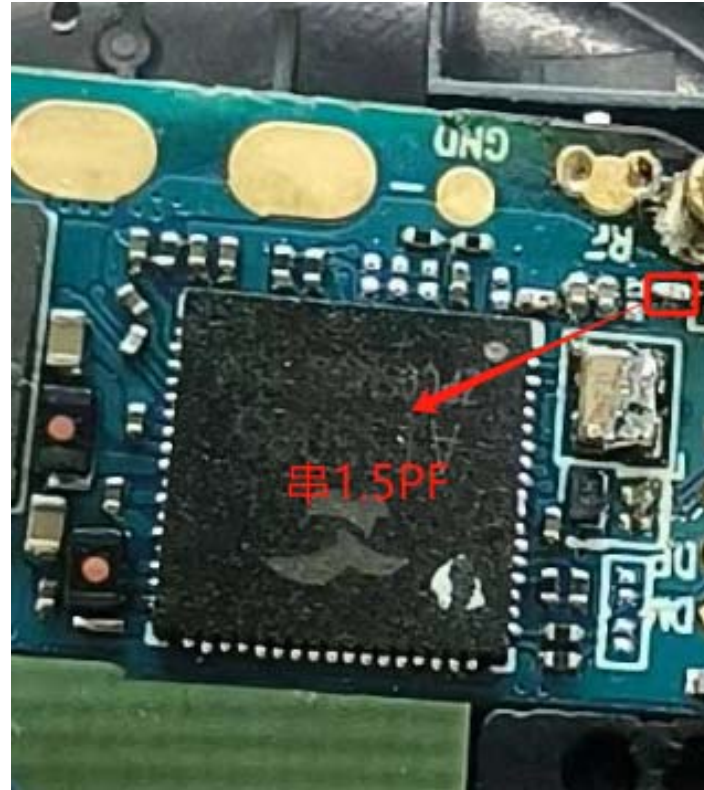
Test	free state								
Test Point ID	1	2	3	4	5	6	7	8	9
Freq.(MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480
Efficiency (%)	15.4	15.2	14.7	13.9	13.7	12.5	11.7	12.1	12.4
gain (dBi)	-2.98	-3.10	-3.24	-3.23	-3.47	-3.54	-3.66	-3.61	-3.78

Test	Arm state								
Test Point ID	1	2	3	4	5	6	7	8	9
Freq.(MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480
Efficiency (%)	9.4	10.2	9.1	8.7	8.3	7.4	6.5	6.8	7.1
gain (dBi)	-6.67	-6.38	-6.23	-6.02	-5.90	-5.82	-6.34	-6.75	-6.43

antenna pattern



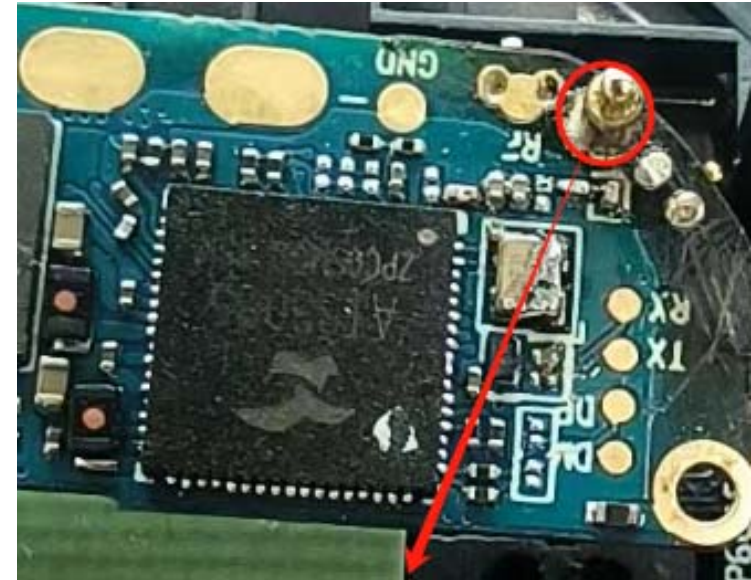
Antenna matching
changes



Antenna environment processing



Remove a thimble for a monopolar antenna



Add gold finger thimble to do FPC auxiliary debugging

A

B

C

1

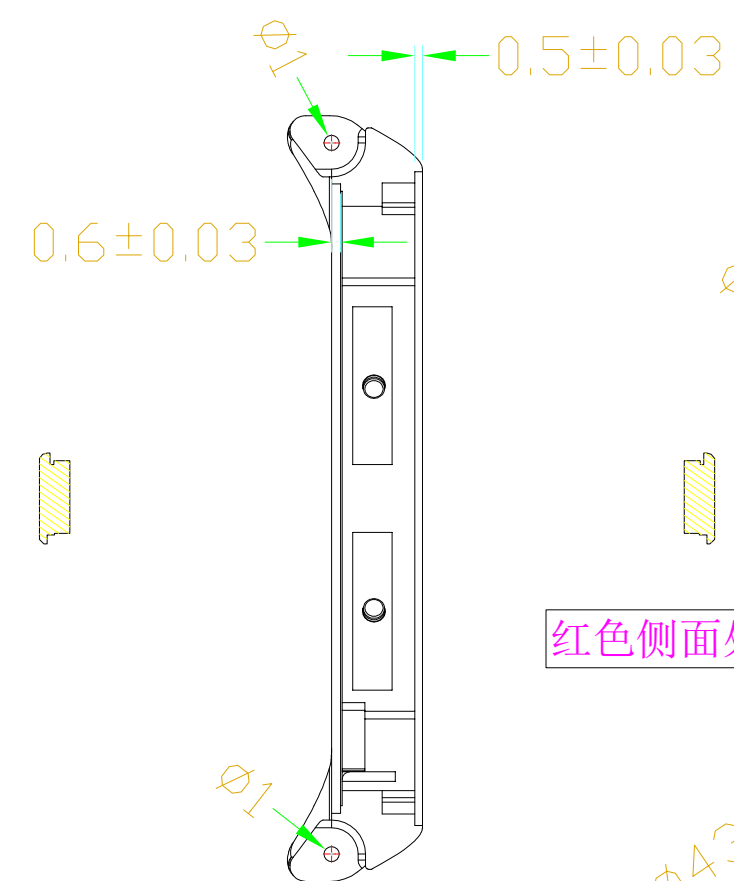
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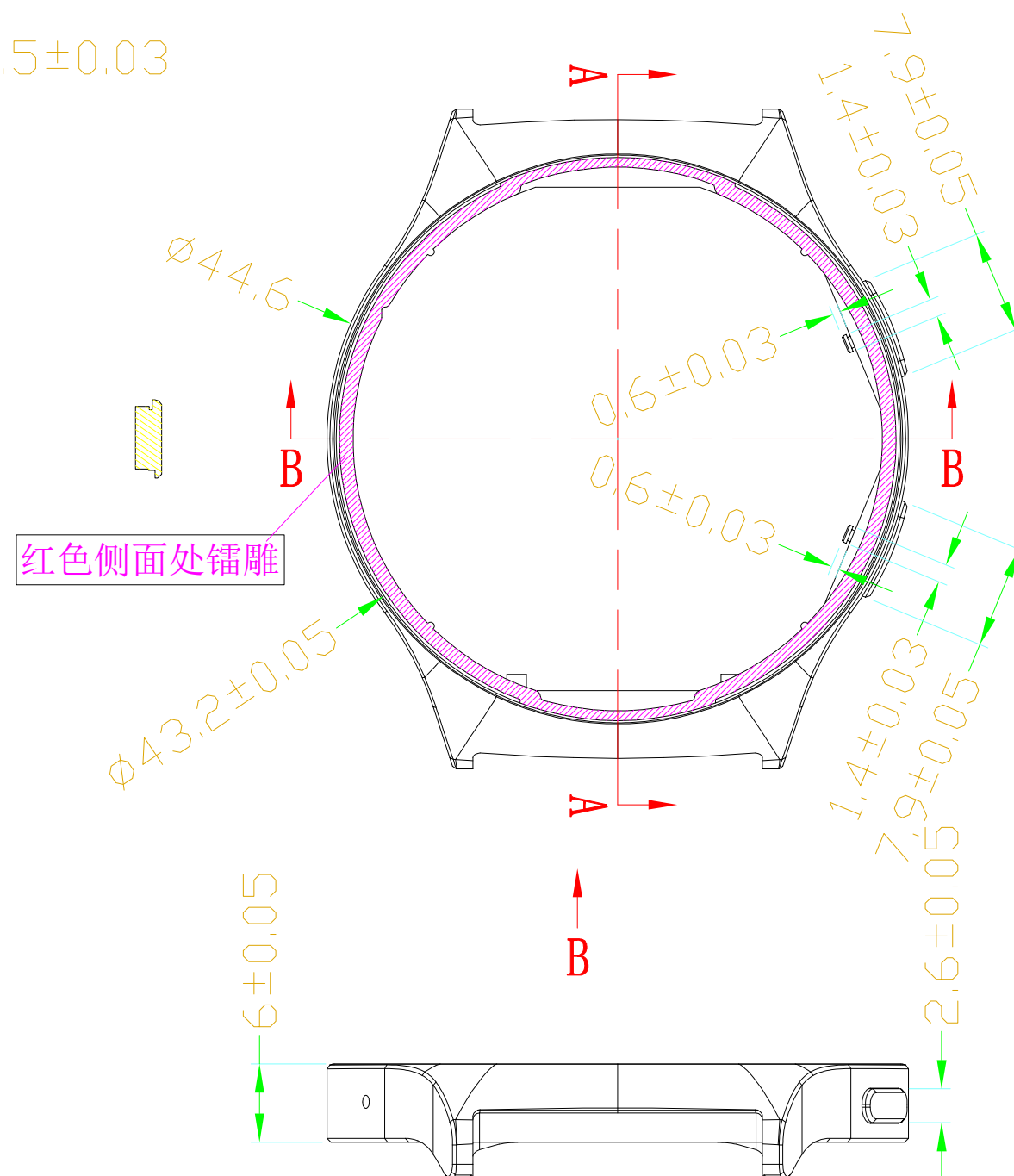
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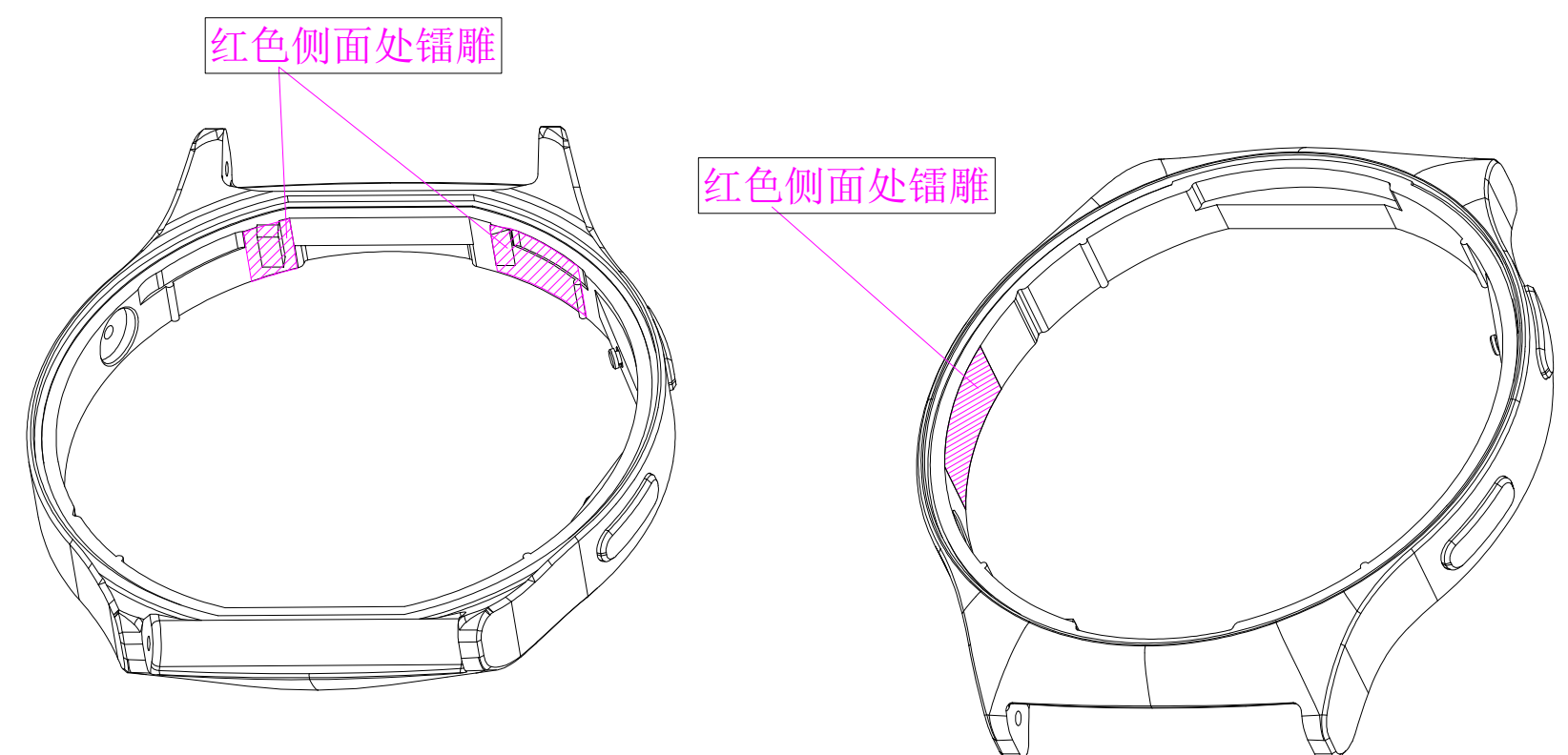
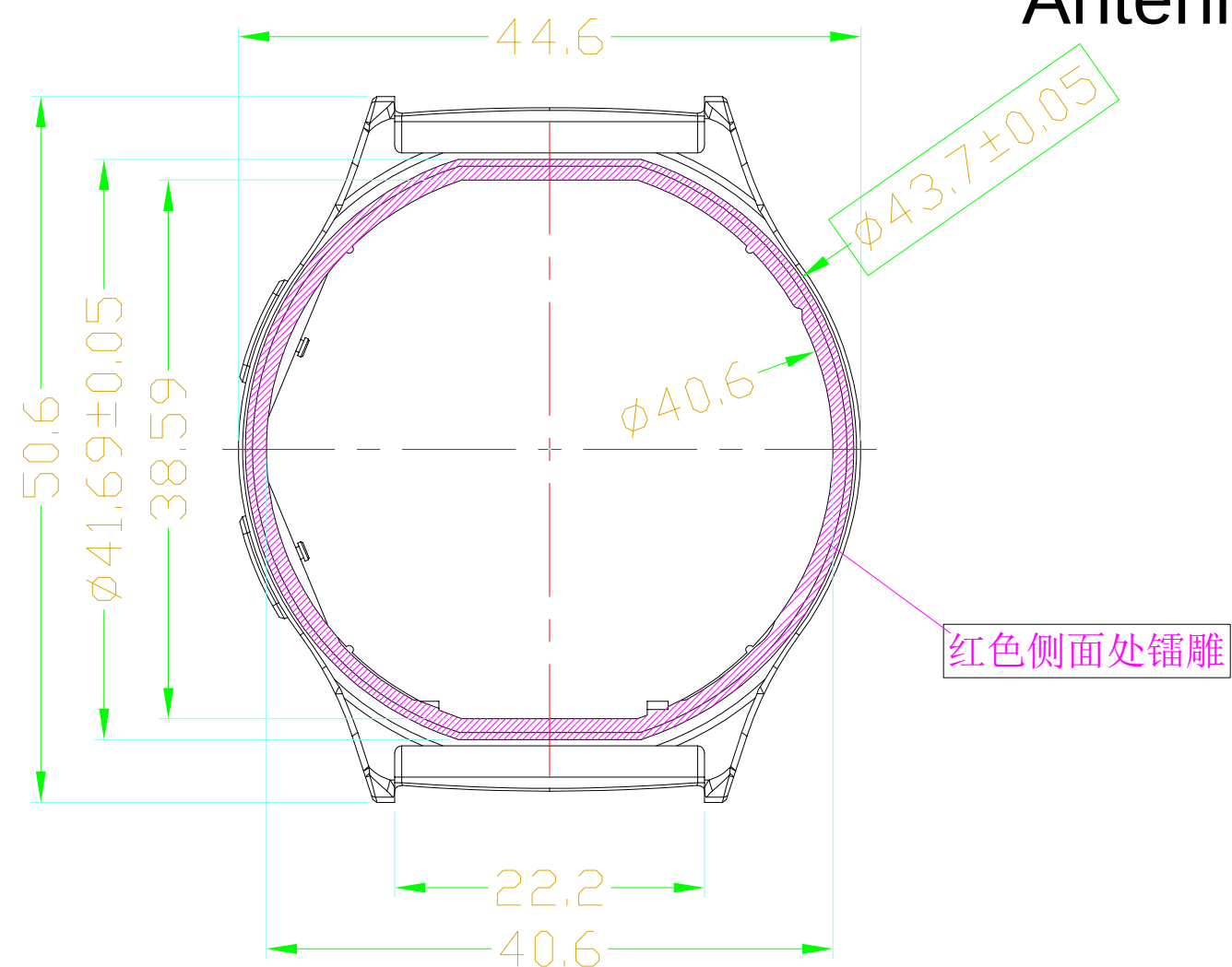
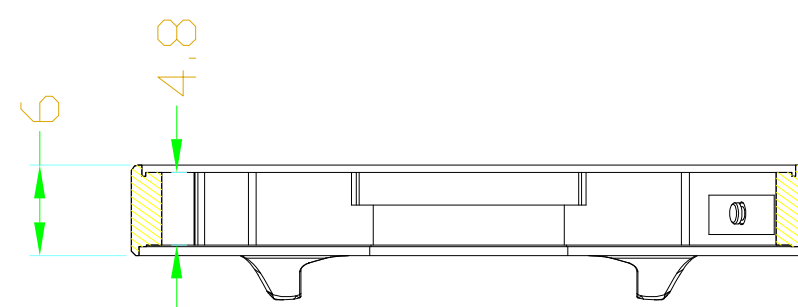
Antenna size diagram



Section A-A



Section B-B





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Arm simulation
test scenario



Thank you!



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