Product performance and specification

Tian wei xun antenna the research and development department

CUSTOMER NAME	Shenzhen AZW Technology Co., Ltd.		
Android Micro Material Number: AIN antenna: 14.02.036200 0；AUX antenna: 14.02.03620001			
PRODUCT NAME	GTI14	BOARD MODEL	V3
Item number	TWX-069-085		

Client	Admit manufacturing party		
Customers confirmation	**Quality department**	**R&D**	**Approval**
		ME: **RF:**	
Date:	May 25, 2024		

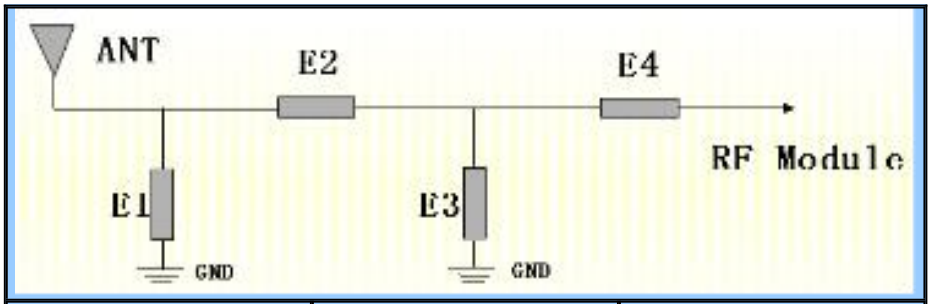
Shenzhen Tianweixun Wireless Technology Co., Ltd

Indexes

1.1 Project Diagram

GTI14

1.1.1 Antenna matching diagram



Element	capacitance	inductance
E1(0402)		
E2(0402)		
E3(0402)		
E4(0402)		

Matching instructions: Match according to the original motherboard without any changes.

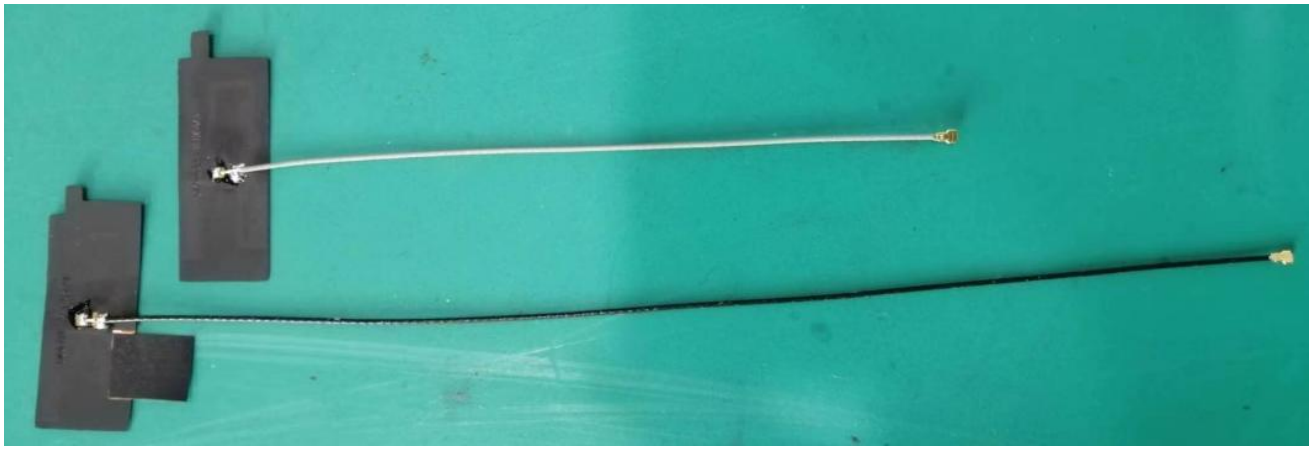
2.1 objective

Standardize the specifications and testing methods of mobile communication terminal antenna products produced by Shenzhen Tianweixun Wireless Technology Co., Ltd. to avoid errors caused by different testing conditions and methods.

3.1 Main antenna

3.1.1 Electrical specifications and materials of the main antenna

This report mainly provides the testing status of the structural performance parameters of the prototype antenna GTI14.



Physical image of antenna designed by Tianwei Xun

3.1.2 Antenna form

Implementation type: PIFA antenna

3.1.3 antenna design working frequency band

The working frequency band of the antenna is 2400MHz~ 2500MHz , 5100 MHz~ 5800MHz,

3.1.4 Measurement data of the main antenna in the ETS-SG24SYSTEM 3D testing system

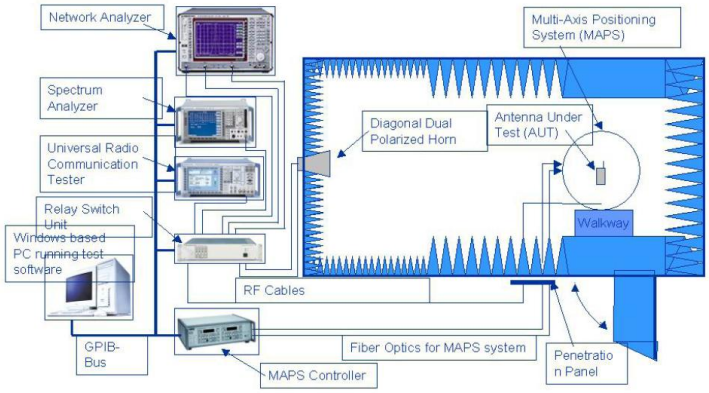


Figure (2) ETS Testing System

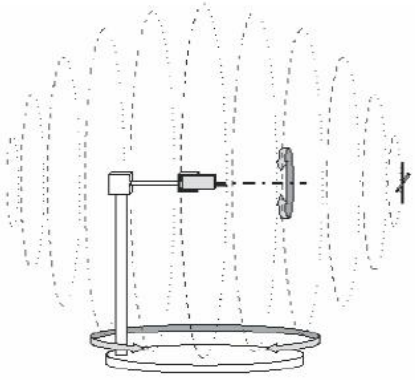
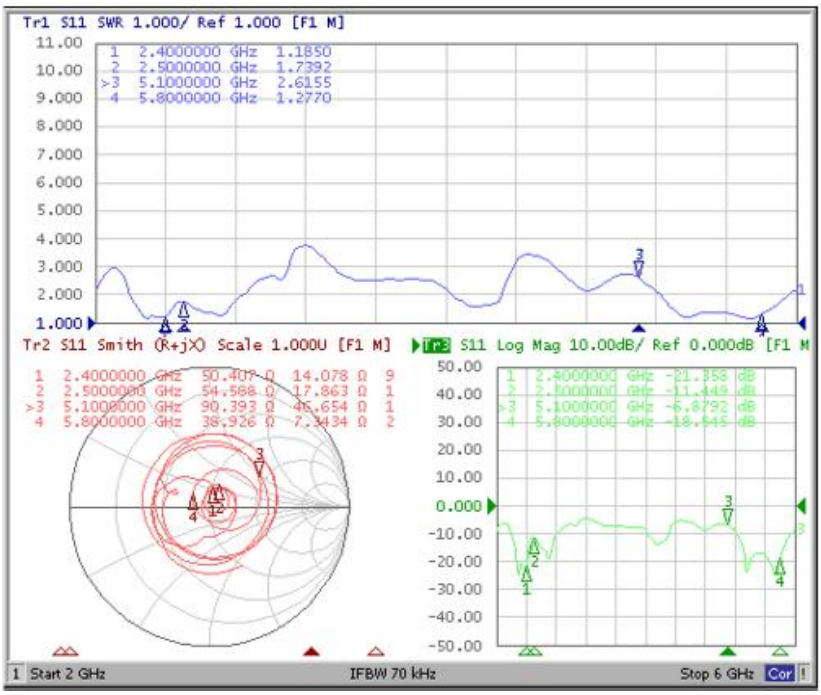


Figure (3) Three dimensional positioning device for mobile phone in darkroom

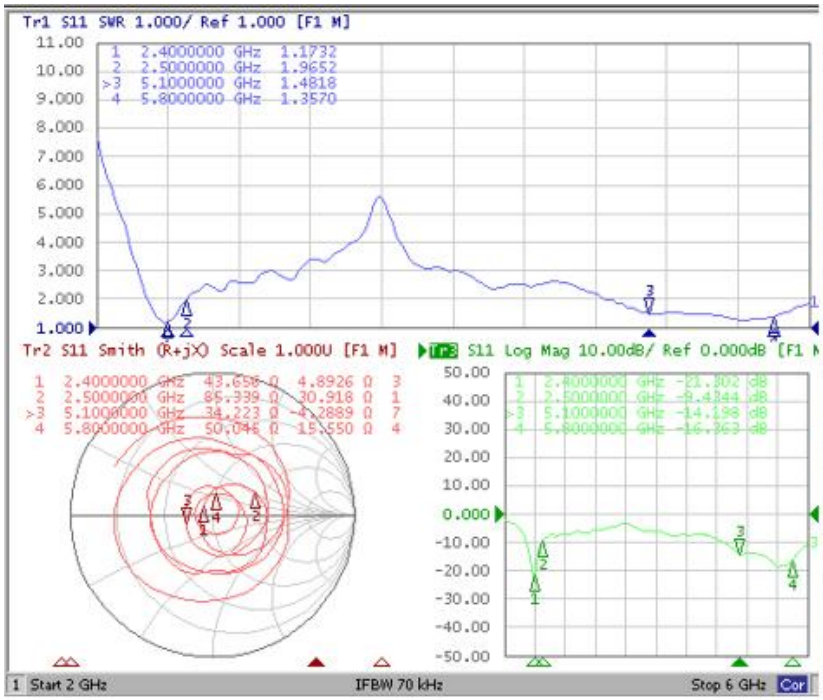
3.1.5 Antenna passive standing wave and return loss

MAIN passive data:



Test Point ID	Freq. (MHz)	Gain (dBi)	Efficiency (%)
1	2400.0	0.55	31.0%
2	2410.0	0.57	31.5%
3	2420.0	0.70	32.4%
4	2430.0	0.70	31.8%
5	2440.0	0.73	31.9%
6	2450.0	0.74	31.6%
7	2460.0	0.74	31.5%
8	2470.0	0.83	32.0%
9	2480.0	0.92	33.1%
10	2490.0	0.67	32.3%
11	2500.0	0.80	34.5%
12	5100.0	2.15	37.8%
13	5135.0	1.81	35.0%
14	5170.0	1.81	34.1%
15	5205.0	2.48	36.6%
16	5240.0	2.39	36.4%
17	5275.0	2.48	38.0%
18	5310.0	2.27	36.3%
19	5345.0	2.30	37.4%
20	5380.0	2.74	39.4%
21	5415.0	2.72	40.7%
22	5450.0	2.43	41.8%
23	5485.0	2.63	43.8%
24	5520.0	2.48	42.7%
25	5555.0	2.04	42.6%
26	5590.0	2.75	45.3%
27	5625.0	2.34	48.0%
28	5660.0	2.05	46.2%
29	5695.0	2.11	47.0%
30	5730.0	2.35	43.1%
31	5765.0	2.16	43.6%
32	5800.0	2.33	42.1%

AUX Passive data:



Test Point ID	Freq. (MHz)	Gain (dBi)	Efficiency (%)
1	2400.0	2.50	49.8%
2	2410.0	2.57	49.3%
3	2420.0	2.59	48.5%
4	2430.0	2.64	47.9%
5	2440.0	2.69	48.2%
6	2450.0	2.85	49.6%
7	2460.0	2.98	50.9%
8	2470.0	2.97	49.8%
9	2480.0	3.19	51.4%
10	2490.0	3.09	49.9%
11	2500.0	3.37	52.4%
12	5100.0	3.65	47.8%
13	5135.0	3.66	46.9%
14	5170.0	3.74	48.1%
15	5205.0	3.58	50.9%
16	5240.0	3.72	48.8%
17	5275.0	3.47	50.1%
18	5310.0	3.63	50.2%
19	5345.0	3.33	49.1%
20	5380.0	3.49	47.9%
21	5415.0	3.63	48.4%
22	5450.0	3.52	48.0%
23	5485.0	3.81	46.7%
24	5520.0	4.07	46.4%
25	5555.0	3.75	46.6%
26	5590.0	4.15	46.7%
27	5625.0	4.10	48.2%
28	5660.0	4.03	46.4%
29	5695.0	4.42	50.1%
30	5730.0	4.17	49.2%
31	5765.0	3.84	46.8%
32	5800.0	4.21	48.2%

3.1.6 WiFi Actual test results of antenna

2.4G Throughput testing **5.8G Throughput testing**

信道	throughput（MHZ）	hotspot	channel	throughput（40MHZ）	throughput（80MHZ）	throughput（160MHZ）
1	20.7	6	36	201	313	319
2	28.5	1	40	194	291	319
3	30.6	1	44	150	308	320
4	35.8	1	48	224	308	331
5	38.6	1	52	230	312	320
6	19.9	9	56	230	317	314
7	35.5	3	60	240	317	329
8	32.6	2	64	327	307	316
9	30.5	2	149	158	299	
10	31.6	2	153	214	306	
11	31.3	8	157	135	310	
12	29.9	2	165	221	293	
13	17.4	2				

Antenna Performance				
		Channel No.	TRP (dBm)	TIS (dBm)
WiFi	2.4G	1	13.2	-71.4
		6	13.3	-70.9
		13	12.9	-71.5
	5G	36	11.3	-67.9
		64	11.4	-67.9
		149	10.4	-67.4
		157	10.4	-67.6
		165	9.3	-68.9

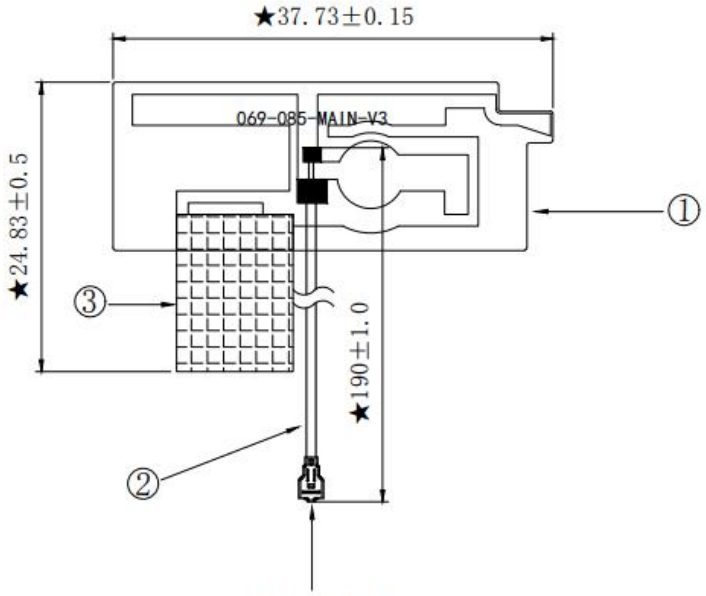
Note: Use the GTI14 machine to connect to our Huawei Bluetooth speaker and test that music playback does not lag at a distance of 10 meters.

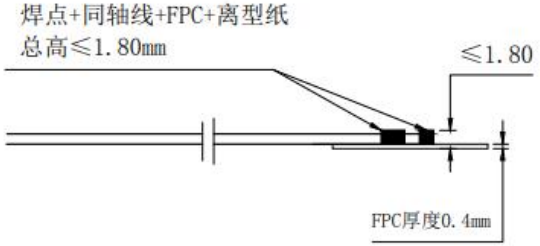
4.1 Product Design Drawing

日期	修改内容	版本	备注

要求：

1. 打“★”为严格控制尺寸；
2. 焊点表面光滑饱满；
3. 表面无油污，杂质，毛刺等；
4. 产品必须符合ROHS的要求。





序号	名称	描述	数量	备注
3	导电布	10*13.5*0.1mm/黑色	1	
2	端子线	φ0.81*190mm/黑色线材/4代端子	1	
1	FPC	37.73*14.43mm/补强0.2mm/黑色/字符亮黑色	1	

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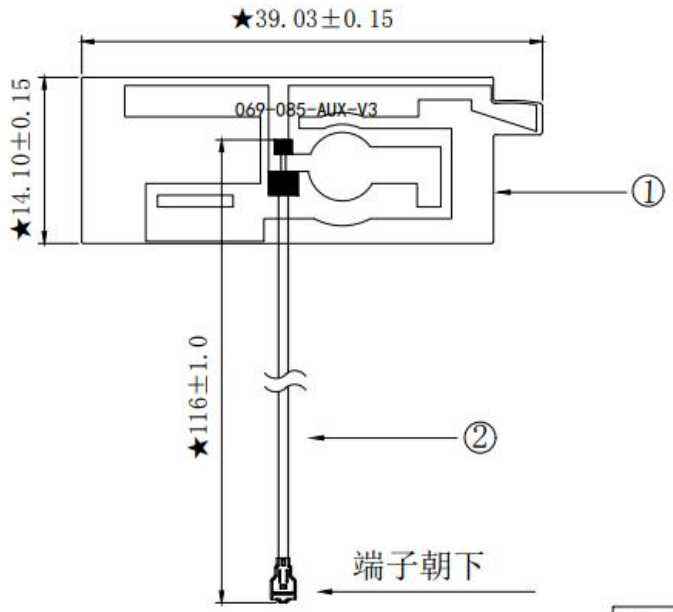
ShenZhen TianWeiXun Communication Equipment Co.,Ltd.

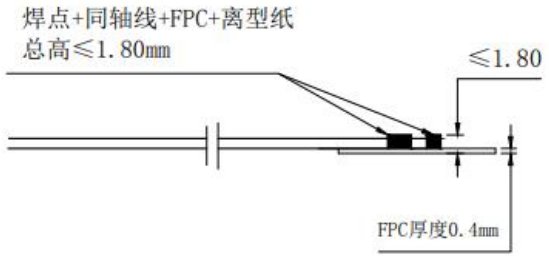
未注公差		位置	
0~10	±0.10	○	0.02
10~20	±0.12	◎	φ0.03
20~40	±0.15	⊥	0.02
40~50	±0.20	▱	0.04
		⌓	0.02

机种	TWX-069-085	日期	2024.05.24
品名	MAIN天线	设计	Allen
料号		审核	结构
材质			射频
模面处理		确认	
外观处理		单位	mm 比例 FIT 版本 V:1

日期	修改内容	版本	备注

要求：
1. 打“★”为严格控制尺寸；
2. 焊点表面光滑饱满；
3. 表面无油污，杂质，毛刺等；
4. 产品必须符合ROHS的要求。





序号	名称	描述	数量	备注
2	端子线	Φ0.81*116mm/灰色线材/4代端子	1	
1	FPC	39.03*14.10mm/补强0.2mm/黑色/字符亮黑色	1	

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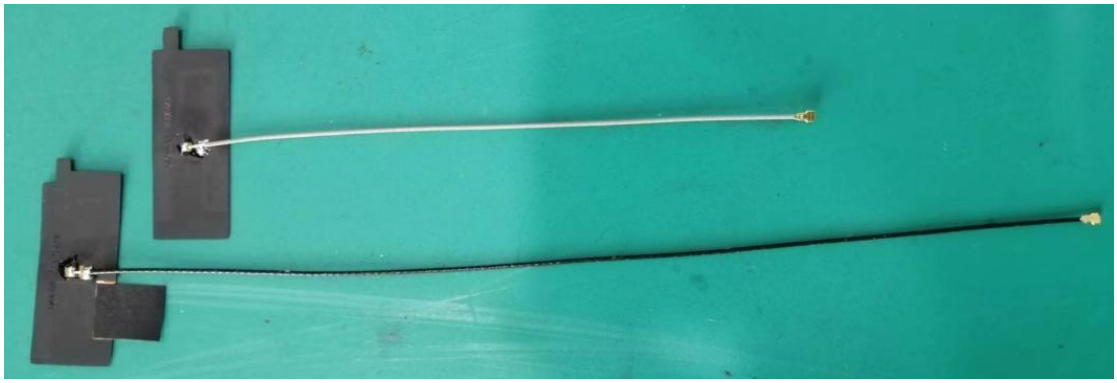
未注公差				机种	TWX-069-085	日期	2024.05.24
0~10	±0.10	○	0.02	品名	AUX天线	设计	Allen
10~20	±0.12	◎	Φ0.03	料号		审核	结构
20~40	±0.15	⊥	0.02	材质			射频
40~50	±0.20	▱	0.04	模面处理		确认	
位置		⌓	0.02	外观处理		单位	mm 比例 FIT 版本 V:1

5.1 Product assembly diagram

5.1.1 Antenna composition:

The antenna is a combination of FPC antenna and coaxial cable. As shown in the figure below, weld the coaxial line with the MIA port facing downwards and the AUX port facing downwards.

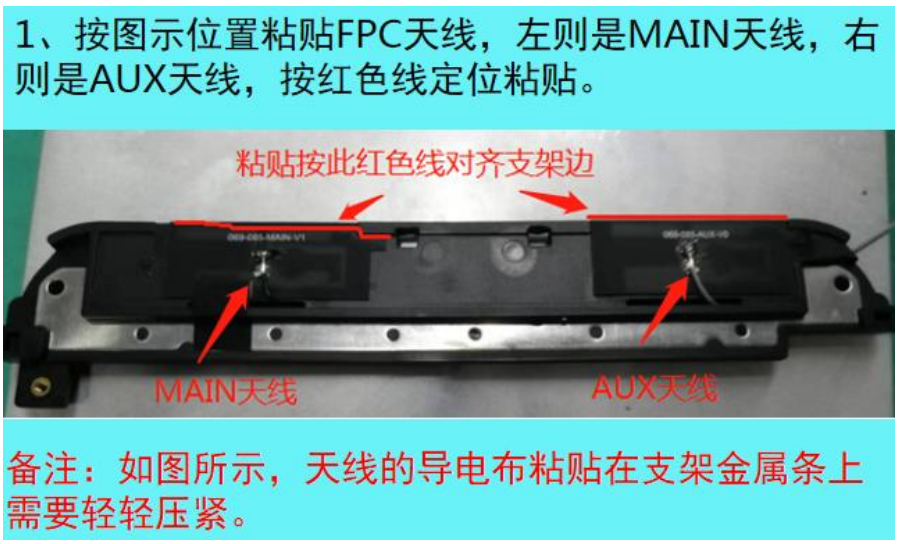


5.1.2 Antenna assembly

FPC The antenna is attached to the bracket as shown in the diagram. Please attach it to the middle position of the bracket as shown in the diagram, and then place the coaxial line according to the diagram. The conductive cloth of the antenna needs to be gently pressed and pasted onto the metal sheet to ensure sufficient grounding. (Note: This is for reference only. The placement method of the coaxial line can be adjusted according to the actual assembly convenience. The antenna should be pasted as close to the edge as possible. If the FPC antenna is far away from the outer edge or has a deviation position when pasting, it will affect the antenna performance.)

5.1.3 The antenna assembly is shown in the diagram inside the entire machine

After attaching the antenna, install it into the entire machine according to the diagram.

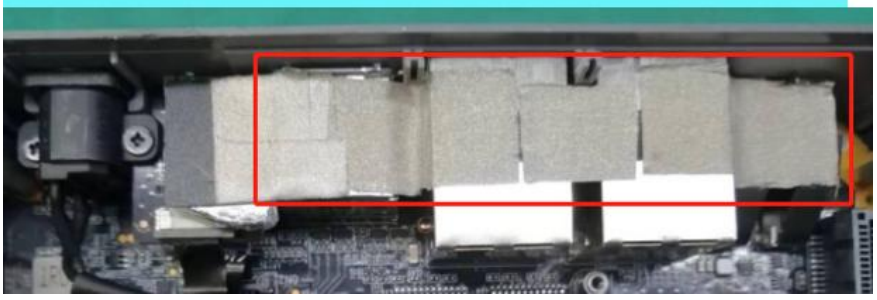


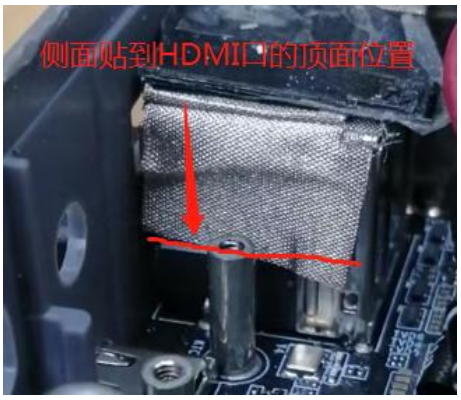
2、按图示,把MAIN天线的同轴线固定在支架槽内。

3、按图示,支架上贴一个导电泡棉与网口金属接地。

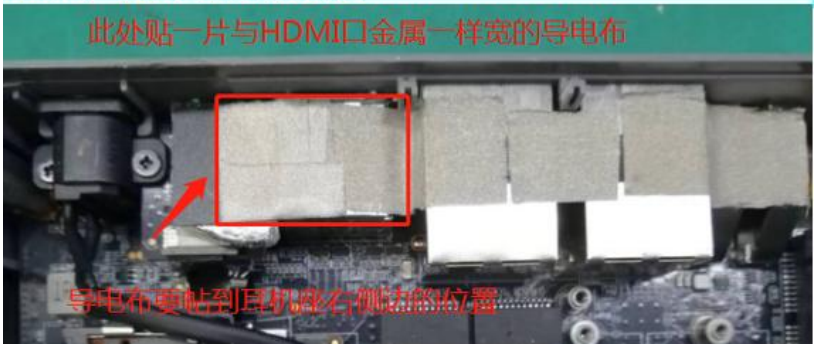
4、按图示摆线，天线端子扣接示意。

5、按图示,USB口至到HDMI贴一片导电布，
HDMI侧面如图贴到金属壳的上边。

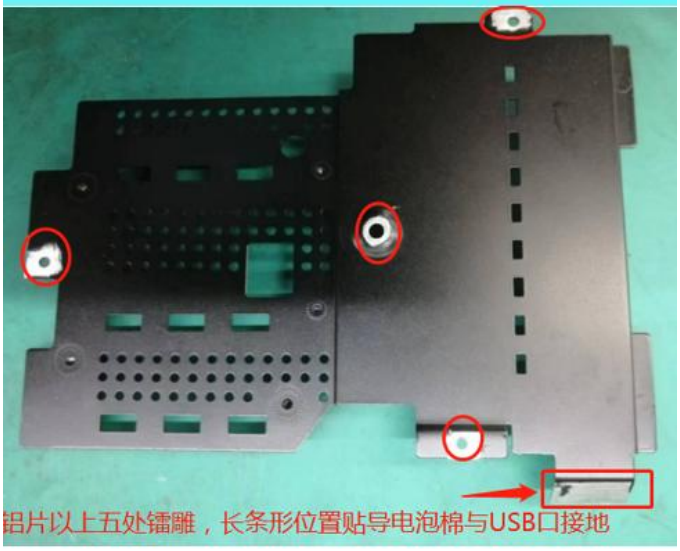




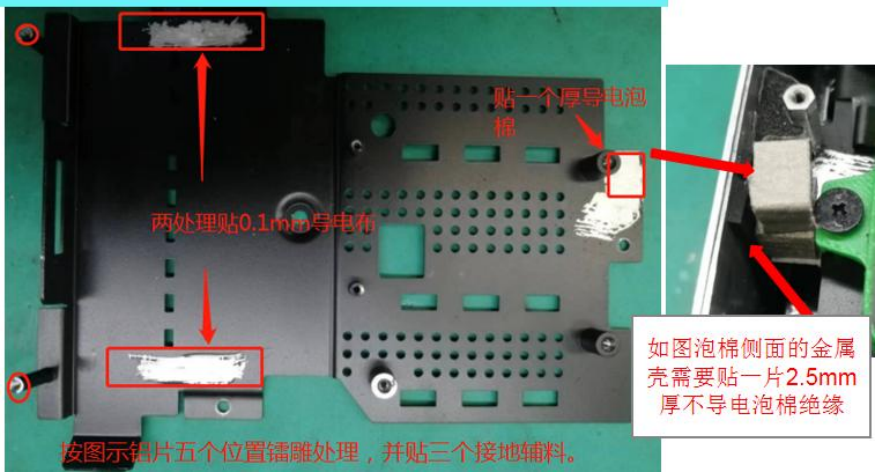
6、按图示，DHMI口到耳机座之间要贴一片导电布，贴导布要准确。



7、按图示，铝片接地处理。

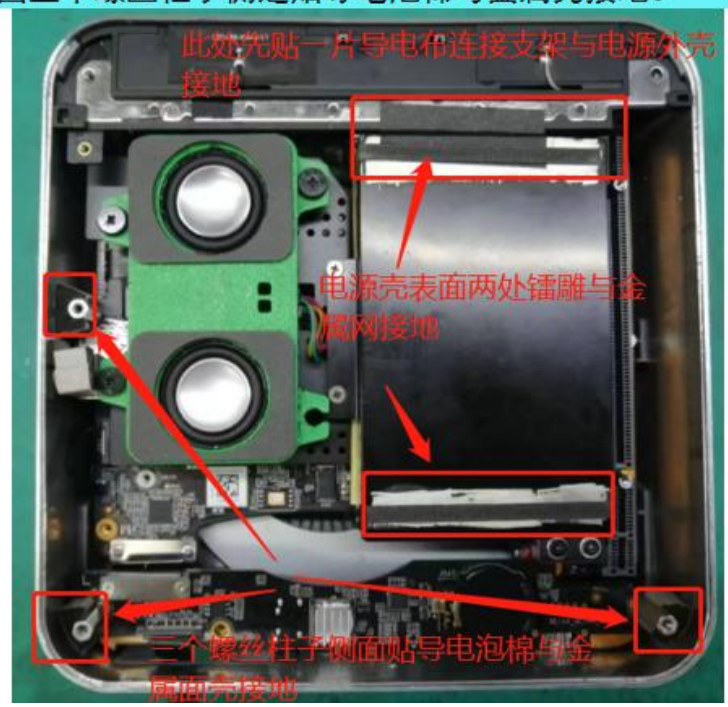


8、按图示，铝片五处理镭雕接地处理。

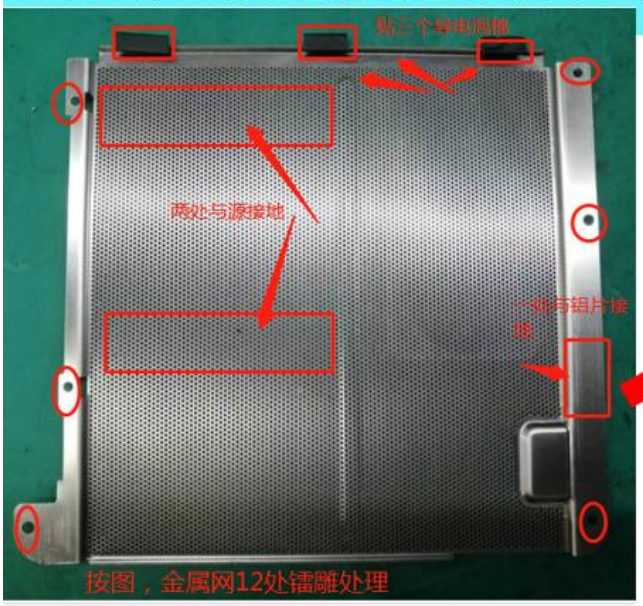


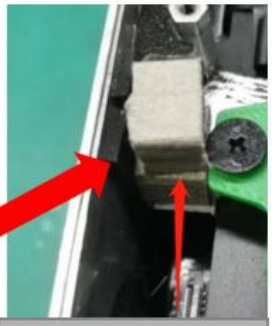
9、按图示，电源金属壳底部两处镭雕与铝片对应位置接地。

10、按图示，
1）天线支架与电源壳之间贴一片导电布连接接地。
2）电源金属壳表面两处镭雕与金属网对应位置接地。
3）如图三个螺丝柱子侧边贴导电泡棉与金属壳接地。



11、按图示，电源金属壳底部两处镭雕与铝片对应位置接地。





此导电泡棉厚度建议过赢3mm以上