

# Sward Antenna Report

Customer: **Techvision Intelligent**

Project : **TVE8313M-8-inch plastic shell**  
**-MT8766V main control**

Report Date: 2024. 01. 25

# Project Introduction

## 1.Resume

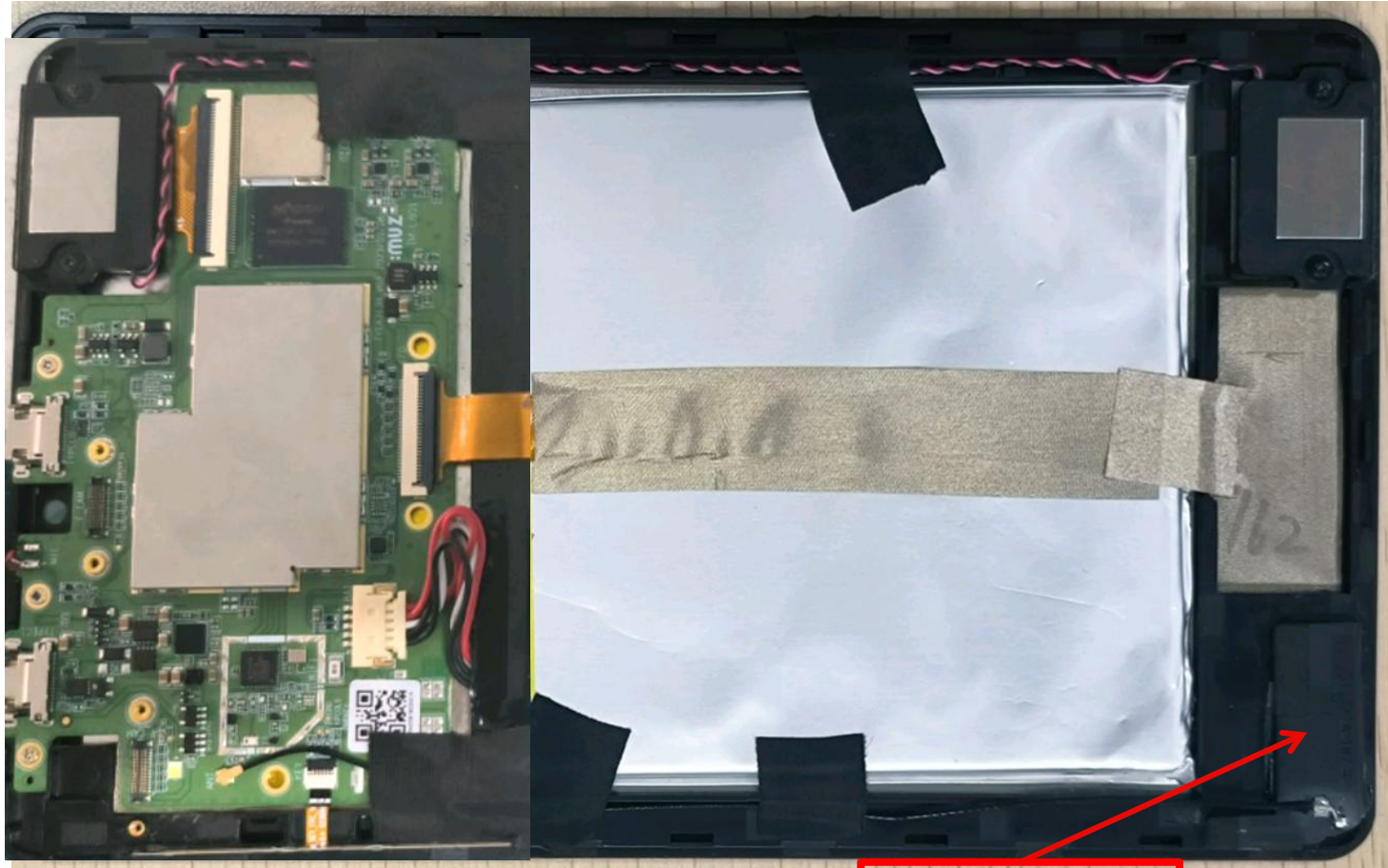
Antennas	Type
1	Tablet
Shell Material: 8 inch plastic shell	

## 2.Description

Num.	Function	Frequency Band / MHz	Material / Structure
1	WIFI&BT&GPS&5Gwifi	2400MHz/2500MHz&1575MHz&5.8GHz	FPC

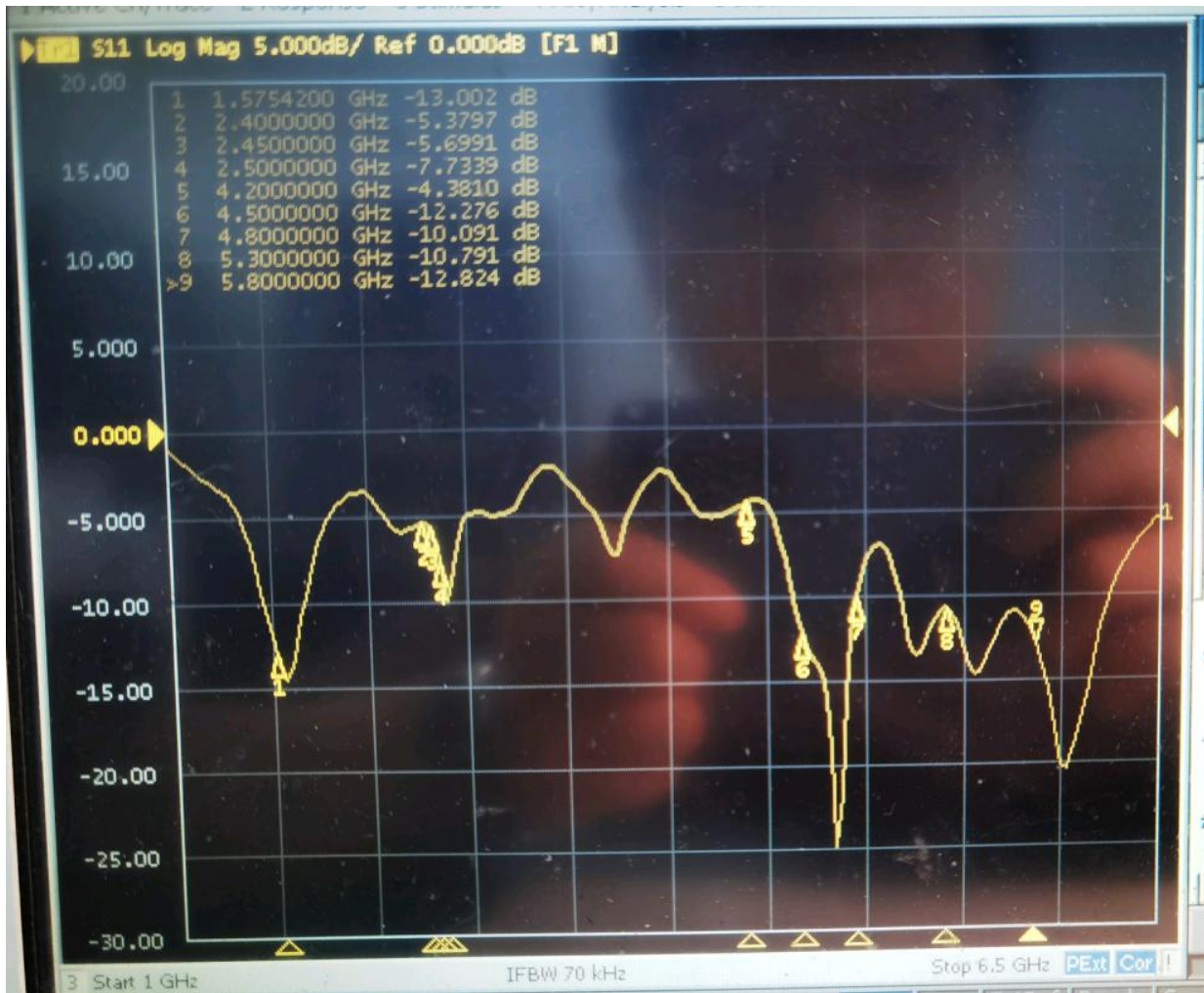
Part number	ST1777A-1D24B-165-A (ST1777A-1B2-A)
Antenna manufacturer	ShenZhen SWARD Communication Technology Co.Ltd

## Antenna Position



GPS&WIFI&BT天线

## WIFI&BT Antenna S11



# Antenna OTA Data

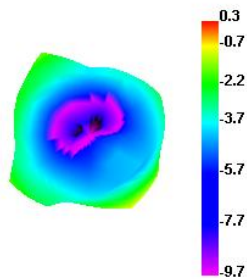
Num.	Channel	802.11b : 11Mbps		802.11n : MCS7)	
		TRP	TIS	TRP	TIS
1	1	11.77	-83.66	11.25	-66.8
	7	13.47	-83.2	11.96	-63.93
	13	12.03	-83.18	10.54	-65.46
	36	NA	NA	10	-67.91
	149	NA	NA	10.15	-68.25
	165	NA	NA	11.29	-68.25

## Antenna 2.4G Efficiency

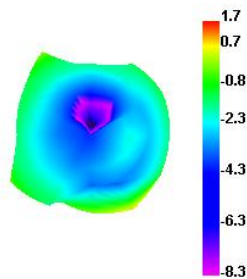
Passive Test For 2.4Gwifi

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHIS (%)	Max (dB)	Min (dB)
2400	27.57	-5.6	0.3	-1.85	9.522	18.049	0.3	-17.37
2410	26.1	-5.83	0.25	-1.9	8.949	17.147	0.25	-18.52
2420	32.44	-4.89	1.12	-1.03	11.059	21.382	1.12	-17.15
2430	38.07	-4.19	1.87	-0.28	13.034	25.04	1.87	-17.44
2440	36.52	-4.37	1.68	-0.47	12.505	24.017	1.68	-18.31
2450	35.84	-4.46	1.69	-0.46	12.283	23.559	1.69	-18.08
2460	33.1	-4.8	1.34	-0.81	11.424	21.681	1.34	-18.13
2470	31.26	-5.05	1.11	-1.04	10.854	20.407	1.11	-19.59
2480	33.12	-4.8	1.27	-0.88	11.591	21.529	1.27	-21
2490	41.41	-3.83	2.19	0.04	14.598	26.807	2.19	-22.02
2500	45.73	-3.4	2.64	0.49	16.244	29.49	2.64	-23.24

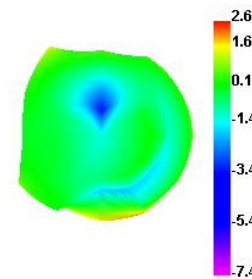
2400.000MHz



2450.000MHz



2500.000MHz

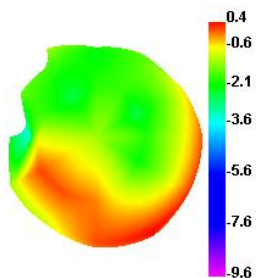


## Antenna 5G Efficiency

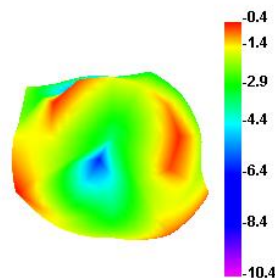
Passive Test For 5Gwifi

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHIS (%)	Max (dB)	Min (dB)
5000	39.14	-4.07	0.37	-1.78	22.482	16.663	0.37	-28.35
5100	40.13	-3.97	0.15	-2	22.458	17.669	0.15	-22.76
5200	37.38	-4.27	-0.79	-2.94	21.408	15.967	-0.79	-13.7
5300	39.57	-4.03	-0.2	-2.35	23.928	15.638	-0.2	-14.4
5400	45.14	-3.45	0.25	-1.9	26.974	18.169	0.25	-15.23
5500	39.59	-4.02	-0.4	-2.55	22.82	16.771	-0.4	-17.26
5600	41.5	-3.82	0	-2.15	23.583	17.914	0	-17.92
5700	44.67	-3.5	0.98	-1.17	26.508	18.162	0.98	-17.46
5800	42.25	-3.74	0.37	-1.78	24.935	17.317	0.37	-15
5900	43.62	-3.6	0.79	-1.36	25.698	17.918	0.79	-13.4
6000	54.58	-2.63	2.78	0.63	32.35	22.226	2.78	-15.49

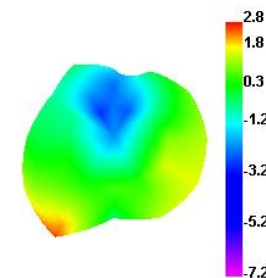
5000.000MHz



5500.000MHz



6000.000MHz



## Antenna 2.4G& 5G Signal Strength



Test Location: R & D of Sward

Test Time : 15:00-15:30

Test Distance: 10-15 meters

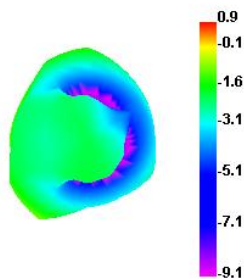
Test Result : -50dbm to -41dbm



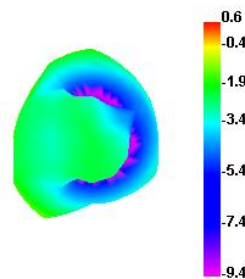
## Antenna GPS Efficiency

Passive Test For GPS2								
Freq	Effi	Effi	Gain	Gain	UHS	DHIS	Max	Min
(MHz)	(%)	(dB)	(dBi)	(dBd)	(%)	(%)	(dB)	(dB)
1570	42.88	-3.68	0.91	-1.24	17.586	25.289	0.91	-12
1571	42.55	-3.71	0.85	-1.3	17.488	25.058	0.85	-11.9
1572	42.17	-3.75	0.78	-1.37	17.374	24.793	0.78	-11.89
1573	41.74	-3.79	0.72	-1.43	17.229	24.507	0.72	-11.84
1574	41.36	-3.83	0.65	-1.5	17.118	24.241	0.65	-11.77
1575	40.97	-3.88	0.58	-1.57	16.996	23.971	0.58	-11.74
1576	40.56	-3.92	0.53	-1.62	16.865	23.695	0.53	-11.65
1577	40.25	-3.95	0.49	-1.66	16.785	23.461	0.49	-11.56
1578	40.03	-3.98	0.44	-1.71	16.741	23.294	0.44	-11.51
1579	39.89	-3.99	0.41	-1.74	16.714	23.174	0.41	-11.45
1580	39.73	-4.01	0.36	-1.79	16.694	23.036	0.36	-11.33

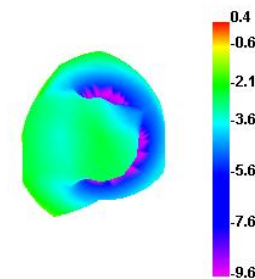
1570.000MHz



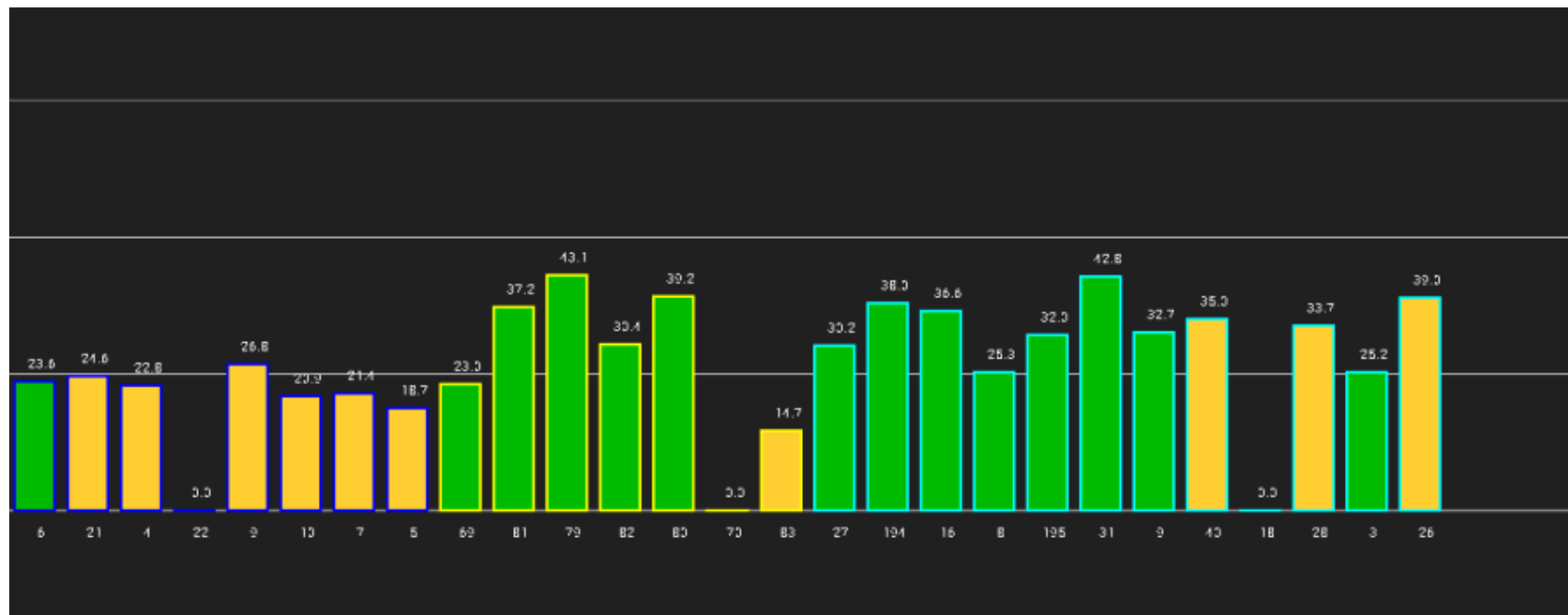
1575.000MHz



1580.000MHz

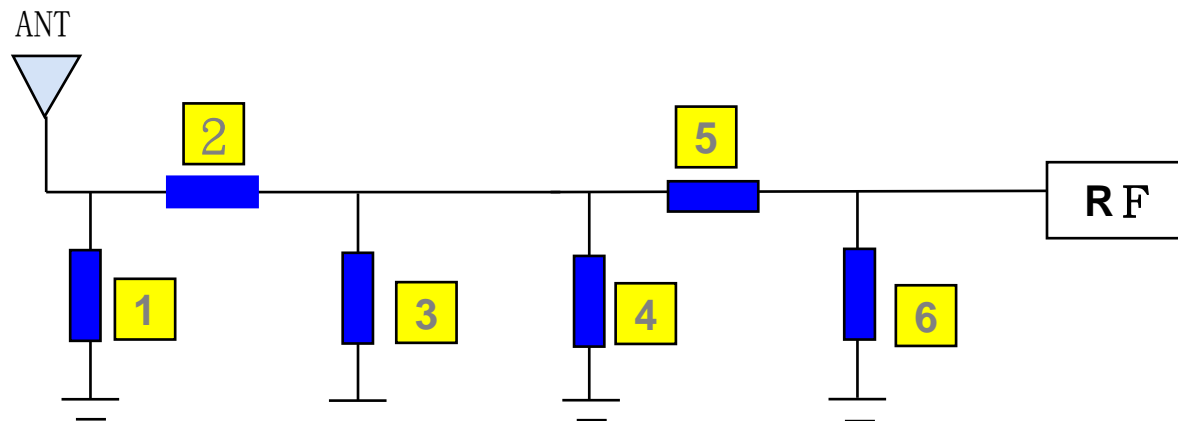


## Measured Data of GPS



**Test Location : Roof of Sward**  
**Test Time : 9:30-10:00**  
**Test Direction : 10-15 meters**  
**Cold start Positioning : < 60s**

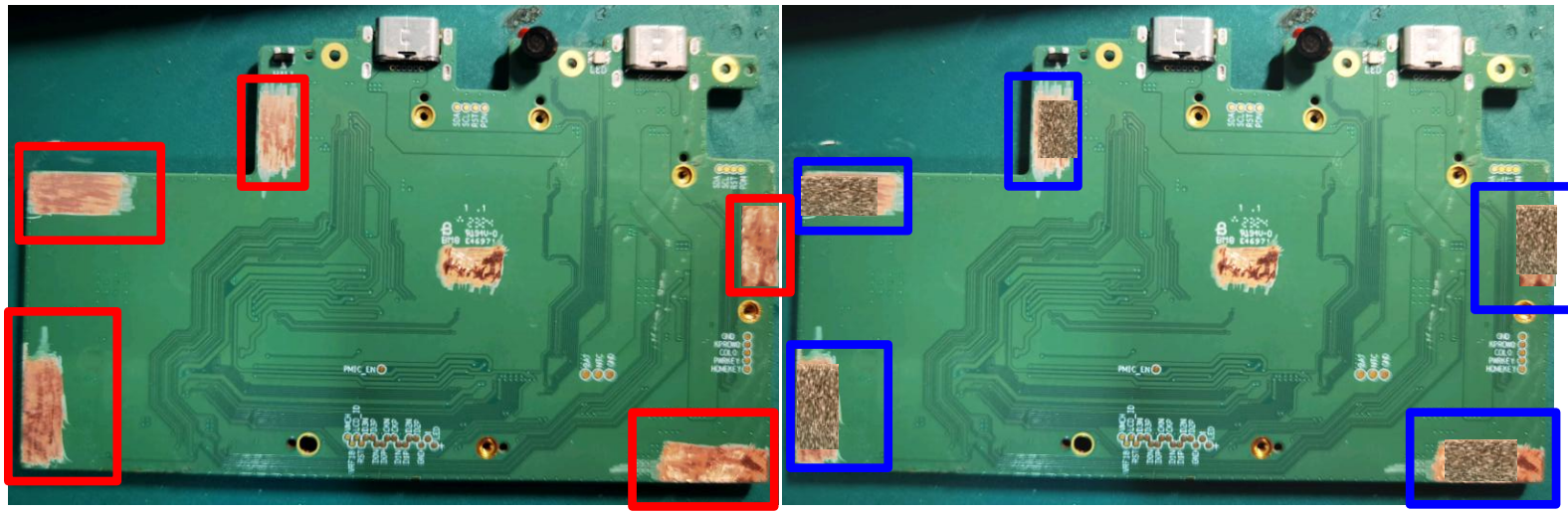
## Antenna Matching Network



**Antenna matching has not been changed.**

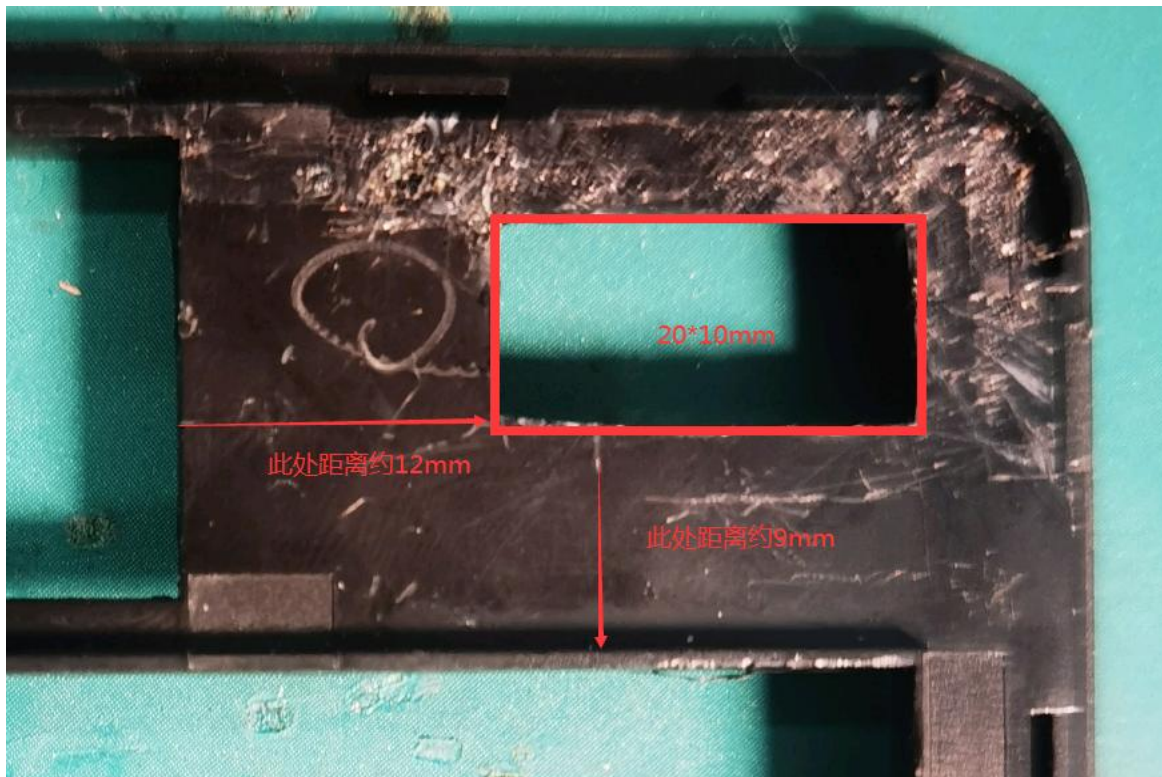
Main Ant	1	2	3	4	5	6	Remarks
Original Match	-	-	-	-	-	-	-
Changed Match	-	-	-	-	-	-	-

# Assembly Instructions



**1. Stick 1mm conductive sponge on the back of the main board, the FIVE red frames, to make the main board and screen sufficiently contact.**

## Assembly Instructions



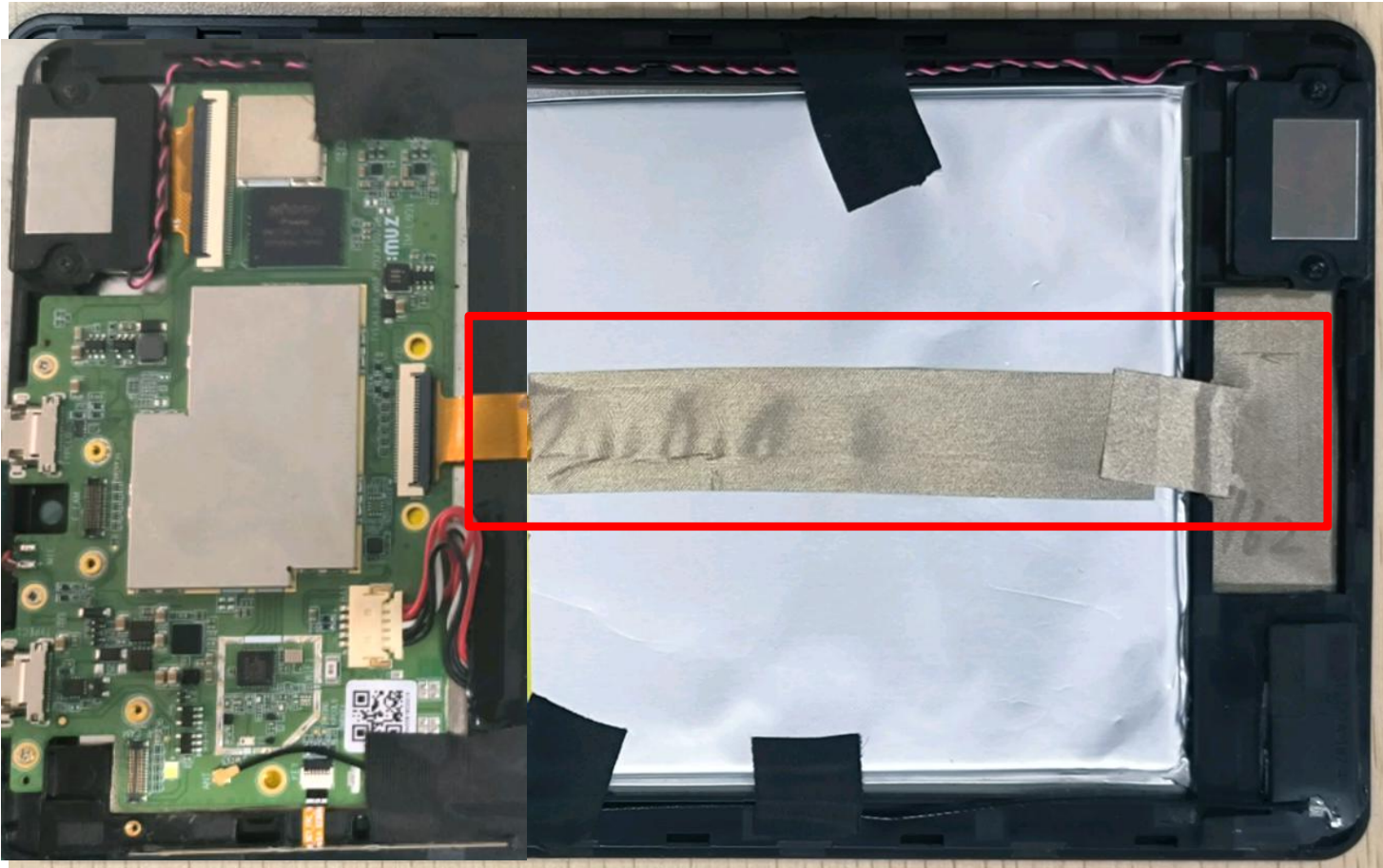
**2. Plastic frame, on the side of the screen below the machine, draw a box of about 20 \* 10mm as shown in the diagram to ground the antenna accessories.**

## Assembly Instructions



**3. As shown the red box, a conductive cloth is pasted at the screen position to connect to the screen around, shielding interference from the screen connection point .**

## Assembly Instructions



**5.As shown the red box, conductive cloth is pasted at the Screen cable to shield interference from itself.**

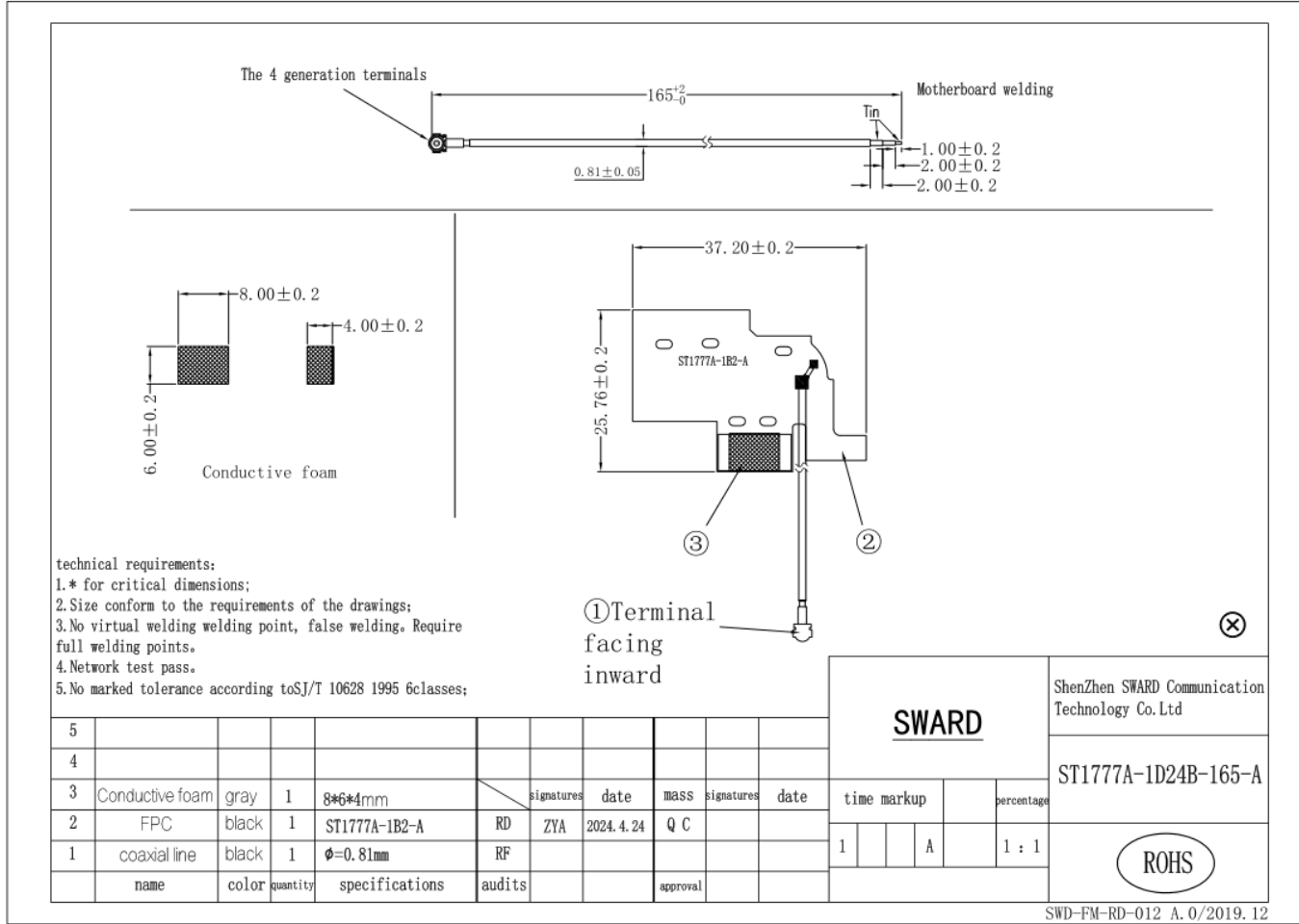
## Assembly Instructions



**5. The antenna assembly process is basically as shown in the diagram.**



## Antenna drawings



**Notes:**

1. This report is based on the actual commissioning and testing of the commissioning prototype, including the assembly instructions, antenna position and assembly position of each device. **It cannot be changed at will;**
2. If there is **any change** in the materials used in the prototype, it is necessary to timely feed back to our company for **re-verification;**
3. List of sensitive devices:
  - TP (material, coating, wiring, etc.)
  - Screen** (amplification circuit, led, cable layout design, etc.)
  - Shell material** (antenna assembly method, structural interference, shell material, antenna position height and area, etc.)
  - Mainboard** (mainboard conduction, RF circuit matching, PA, duplex, filter, LNA, power circuit, etc.)
  - Camera, battery, motor, MIC, fingerprint identification module, etc.**
4. Due to the small number or only one sample adjusting machine, some probabilistic problems cannot be completely found. **It is recommended to Check the problem points in small batch trial production before mass production**( screen flashes , horn noise, TP jump point, black screen OR crash, signal diving, etc.).