品名 : WA-F-S6G2S6G2R0R0-02-001 Specification History List

版本 REV.	修訂者 EDITOR	修訂頁次 PAGE	修訂內容 ITEMS OF CHANGE	申請日期 DATE	生效日期 VALID DATE	ECN 編號 ECN NO.
P0	徐健/王婷	ALL	暂行	2023/07/18	2023/07/18	NA
P1	徐健/王婷	ALL	规格书增加 aux peak gain	2023/07/24	2023/07/24	NA
P2	徐健/王婷	ALL	规格书增加 6E peak gain	2023/09/27	2023/09/27	NA
P3	徐健/王婷	ALL	规格书增加所有频点 peak gain	2023/10/12	2023/10/12	NA

WA-F-S6G2S6G2R0R0-02-001 Specification

1. Explanation of part number :

WA	_	F	_	S6G2S6G2R0R0	_	02	_	001
(1)		(2)		(3)		(4)		(5)

(1) Product Type：Wireless Antenna

(2) Material:: NFC+Plastic+FPCB+Cu+Cable

(3) Frequency : 2400～2500MHz，5150~5850MHz，5925~7125MHz, 13.56MHz

(4) Coaxial Cable Type : 02

(5) Suffix : 001

2. Storage Condition:

Temperature	-40	to	+70℃
Humidity	20	to	65 %RH

3. Operating Condition:

Temperature	-40	to	+70℃
Humidity	10	to	85 %RH

4. Electrical Specification :

*Those specifications were specially defined for **Helsinki** model, and all characteristics were measured under the model's handset testing jig .*

4-1. Frequency Band:

Frequency Band	MHz
WIFI	**2400~2500，5150~5850,5925~7125**
NFC	**13.56**

4-2. Impedance

50 ohm nominal

4-3. Matching circuit

None

4-4. VSWR

4-4.1 Measuring Method

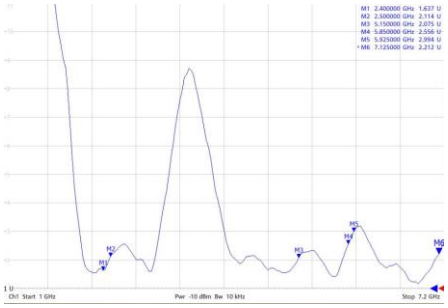
1.A 50Ω coaxial cable is connected to the antenna. Then this cable is connected to a network analyzer to measure the VSWR

2.Keeping this jig away from metal at least 20cm

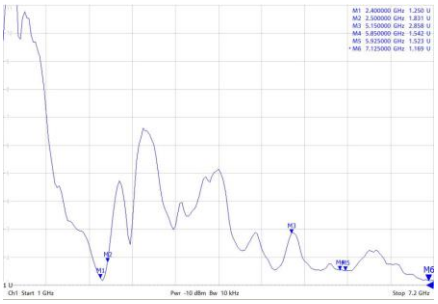
4-4.2 Measurement frequency points and VSWR value

Frequency (Unit MHz)	Spec	Ant-main	Ant-aux
2400	≦2.5	1.6	1.2
2500	≦3.0	2.1	1.8
5150	≦3.5	2.0	2.8
5850	≦3.5	2.5	1.5
5925	≦3.5	2.9	1.5
7125	≦3.0	2.2	1.1
Judgement		ok	ok

Ant-main



Ant-aux



4-5. Efficiency and Gain

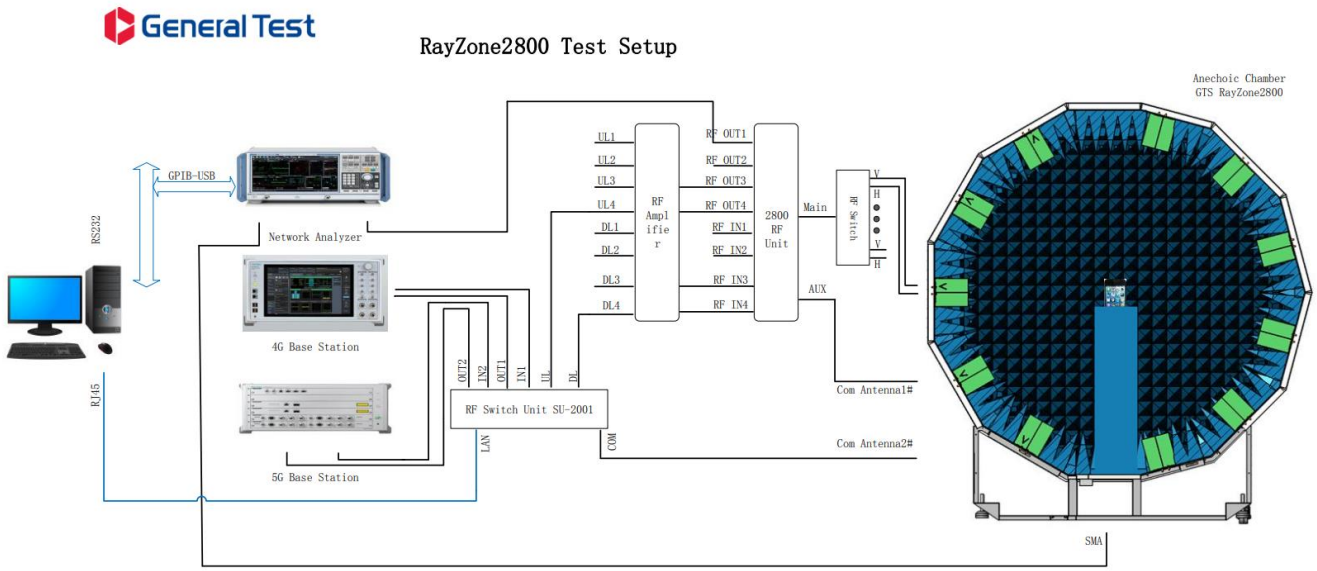
4-5.1 Measuring equipment

Measuring instrument：

Microwave chamber, Network analyzer, and standard antenna.

Instructions for microwave chamber：

This is a microwave chamber set up by our company in Suzhou，This microwave chamber belongs to a set of near-field measurement system. The size of the chamber is 2.95M * 3M * 3M.



The microware chamber, shown above, using a unique multi-probe technique，The aim is to reduce the measurement time of the whole measurement system. The measuring system use multi-probe array instead of single probe to scan the measured surface of the antenna under test, a single probe has the capability of measuring orthogonal polarization amplitude and phase, it also has a wide frequency range, the corresponding multi-probe array is switched quickly by electronic switch, greatly improved the measurement efficiency.

The probe model：MA186960A(400MHz～7.5GHz) . Because of its capability of broadband frequency and the orthogonal polarization function, the number of probes needed to be equipped with the system is reduced; The small size of the probe reduces the coupling between the probes, make it is possible to insert probes of other frequency bands between probes, then a single system can support a wider frequency range.

4-5.2 Passive Efficiency and Gain

Antenna gain is marked (dBi) and is based on STANDARD HORN antenna. The data shows Peak Gain and Average Gain.

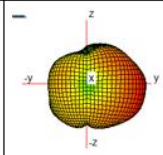
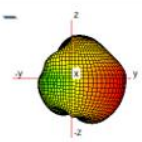
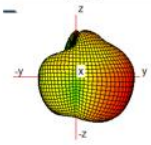
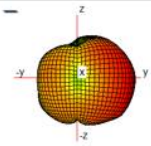
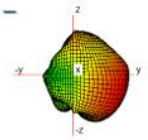
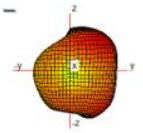
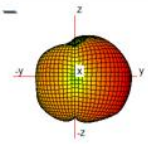
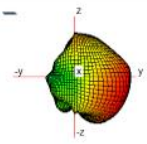
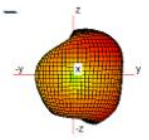
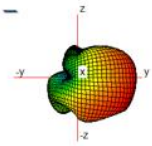
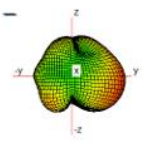
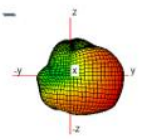
	Main			Aux		
frequency(MHz)	Efficiency(dB)	Efficiency(%)	Peak Gain(dBi)	Efficiency(dB)	Efficiency(%)	Peak Gain(dBi)
2400	-3.8	41.5	2.4	-3.8	41.3	2.4
2450	-4.0	40.1	2.6	-3.9	40.9	2.5
2500	-3.9	40.5	2.4	-3.9	40.5	2.3
5150	-5.0	31.3	3.5	-5.4	28.6	3.0
5200	-4.9	32.2	2.5	-5.4	29.2	2.1
5250	-4.9	32.7	2.8	-5.2	30.2	2.5
5300	-4.9	32.3	3.1	-5.1	30.6	2.6
5350	-4.8	32.9	3.3	-5.1	30.8	2.7
5400	-4.9	32.7	3.4	-5.0	31.4	2.9
5450	-4.8	32.9	3.2	-5.1	30.9	2.9
5500	-5.0	31.6	2.9	-5.2	30.3	2.5
5550	-4.9	32.3	2.8	-5.2	30.1	3.0
5600	-5.0	31.6	2.9	-5.2	30.2	3.0
5650	-5.0	31.4	2.7	-5.1	31.2	2.8
5700	-4.6	34.5	3.1	-4.9	32.1	2.2
5750	-4.4	36.7	2.6	-5.2	30.5	2.4
5800	-4.4	36.3	2.6	-5.4	28.7	2.6
5850	-4.5	35.7	2.8	-5.4	29.0	2.9
5925	-4.9	32.6	3.2	-5.1	30.9	2.7
6025	-4.6	34.8	2.6	-4.5	35.7	3.0
6125	-5.6	27.8	3.1	-4.5	35.2	2.9
6225	-5.2	30.1	2.4	-4.6	35.0	2.4
6325	-5.5	28.0	2.6	-4.5	35.6	2.2
6425	-5.2	30.4	2.7	-4.9	32.6	2.7
6525	-5.3	29.3	3.5	-4.9	32.5	3.0
6625	-5.1	30.9	2.9	-4.9	32.0	2.4
6725	-5.1	31.2	2.9	-5.1	30.6	2.1
6825	-4.4	36.0	2.9	-5.1	31.2	2.4
6925	-3.8	41.3	3.2	-5.0	31.8	2.9
7025	-3.7	42.8	3.4	-4.9	32.3	2.8
7125	-4.2	37.7	2.7	-4.7	33.8	2.8

4-5.3 Active test data

频段	信道		OTA					
			Main		Aux		合路	
	uplink	downlink	TRP	TIS	TRP	TIS	TRP	TIS
802.11b	1	1	13.7	-85.3	13.5	-84.4	15.5	-87.1
	7	7	13.5	-84.5	13.7	-85.5	15.4	-85.5
	11	11	13.6	-84.6	13.6	-84.1	15.0	-85.8
802.11g	1	1	12.5	-70.7	12.4	-70.9	12.9	-71.3
	7	7	12.7	-70.4	13.1	-71.9	13.2	-71.5
	11	11	13.0	-71.0	13.0	-70.1	13.2	-71.8
802.11n	1	1	12.4	-69.4	12.2	-68.6	12.8	-70.3
	7	7	12.5	-69.5	12.6	-69.9	13.1	-69.7

	11	11	12.9	-69.2	13.0	-69.1	13.2	-69.5
802.11a	36	36	14.2	-71.2	13.7	-70.2	14.6	-71.9
	100	100	12.9	-70.9	12.7	-70.5	14.0	-71.7
	165	165	12.8	-71.0	10.7	-71.2	14.0	-72.6

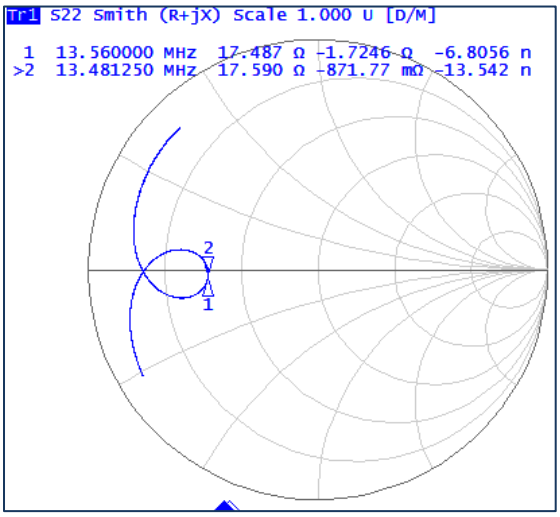
4-5.4 Antenna 3D Radiation Pattern

	main	aux	合路
802.11b			
802.11g			
802.11n			
802.11a			

5. Recognition Distance

Chip name		Ultralight -C	Ultralight	M1-S50	S70	Mifare-Plus	Des fire	18092	ISO 15693	Type B
Recognition Distance	左	20↑	30↑	36↑	35↑	33↑	36↑	23↑	39↑	19↑
	右	20↑	30↑	36↑	35↑	32↑	35↑	23↑	38↑	19↑

6 · NFC Antenna Reader Mode Load Impedance



7. Mechanical Specification:

Mechanical Configuration: (# * are important dimensions)

UNLESS OTHER SPECIFIED TOLERANCES ON： X＝± 0.15 X.X＝±0.1 X.XX＝±0.05 ANGLES＝± 1 HOLEDIA＝±0.1		佳邦科技股份有限公司 INPAQ TECHNOLOGY CO., LTD.	
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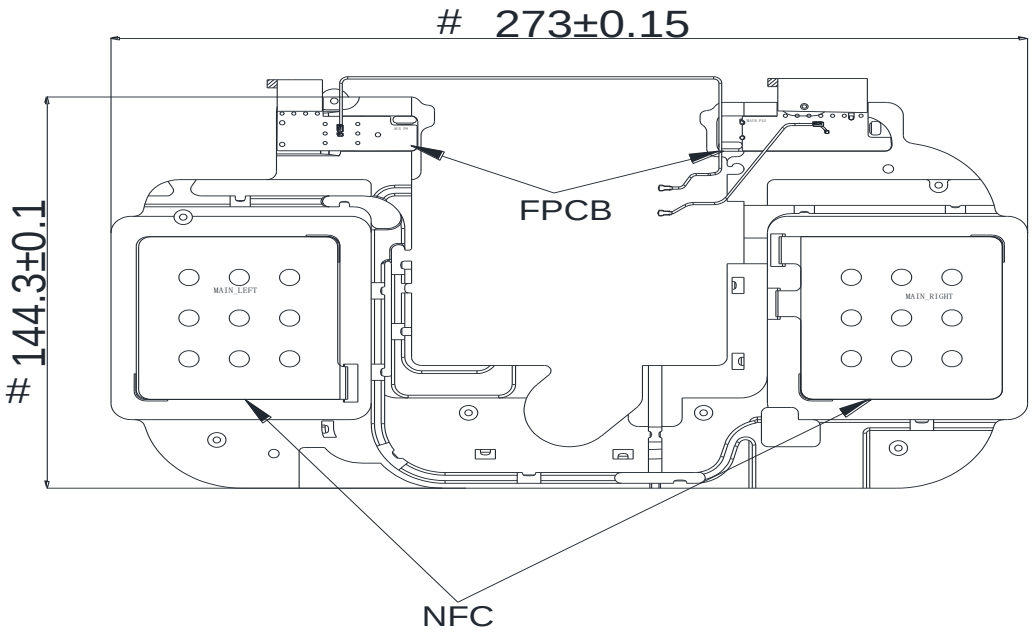

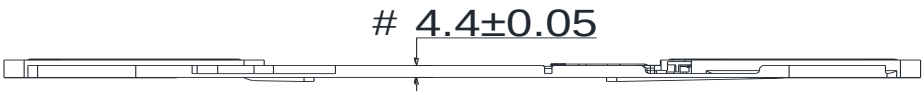

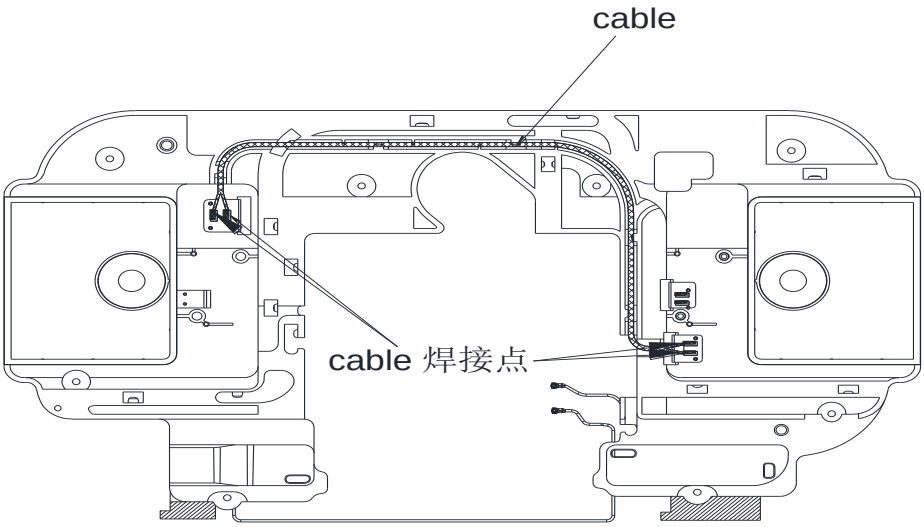

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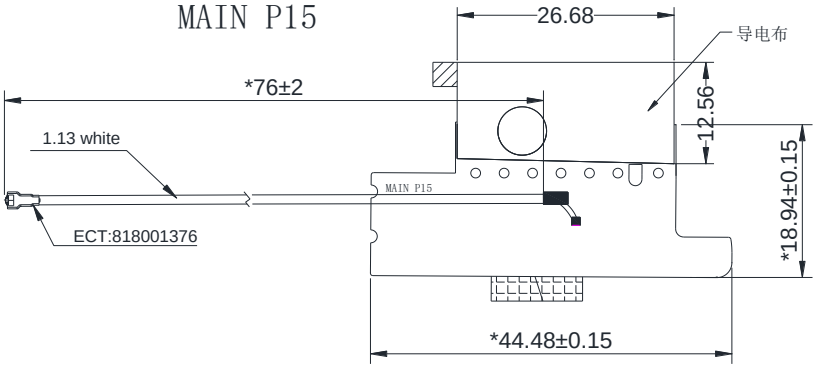
FPCB
MAIN P15



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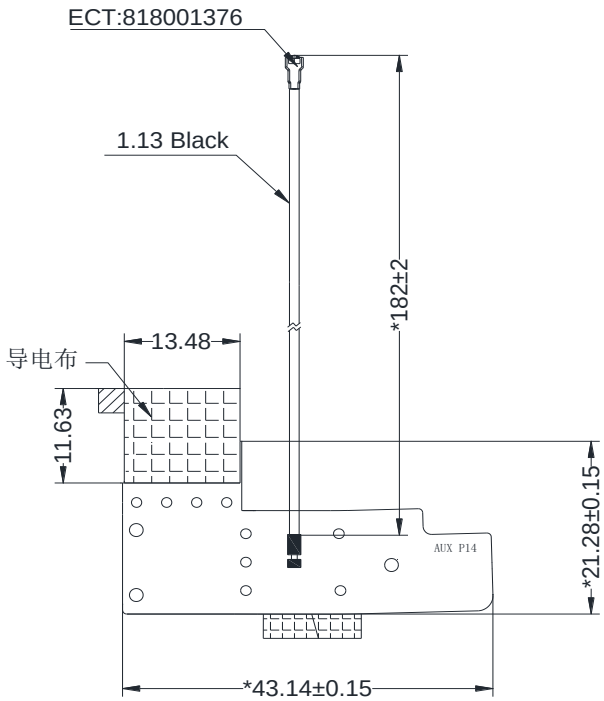
AUX P14



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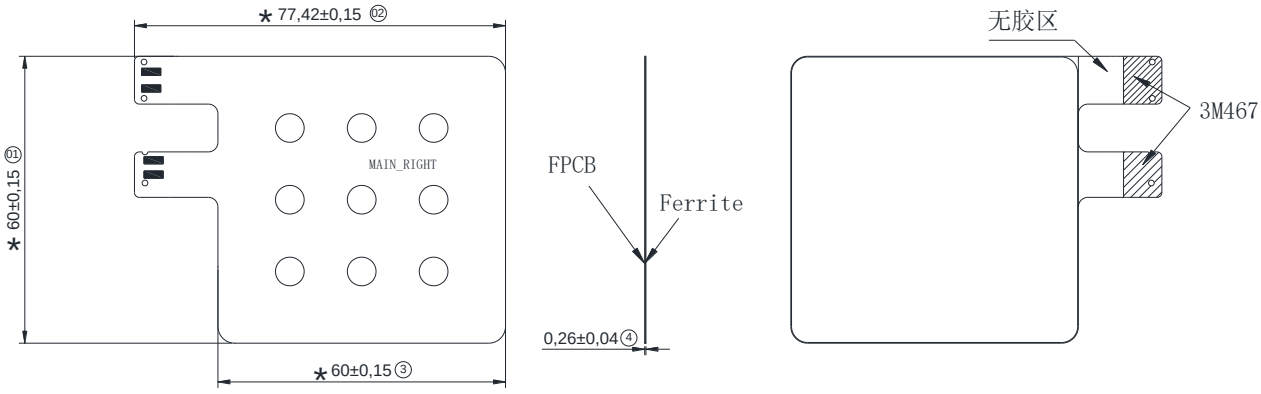
NFC
MAIN_RIGHT



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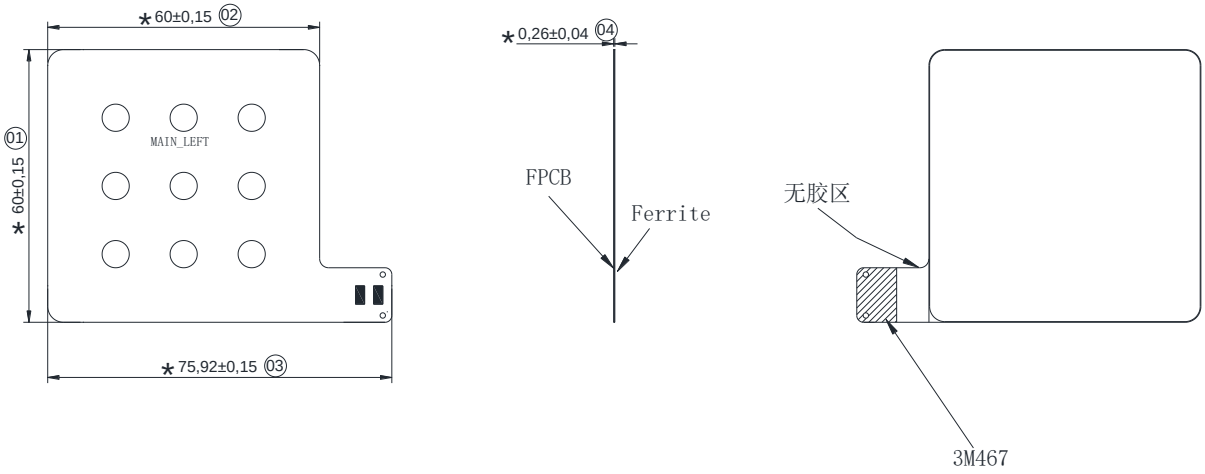
MAIN_LEFT



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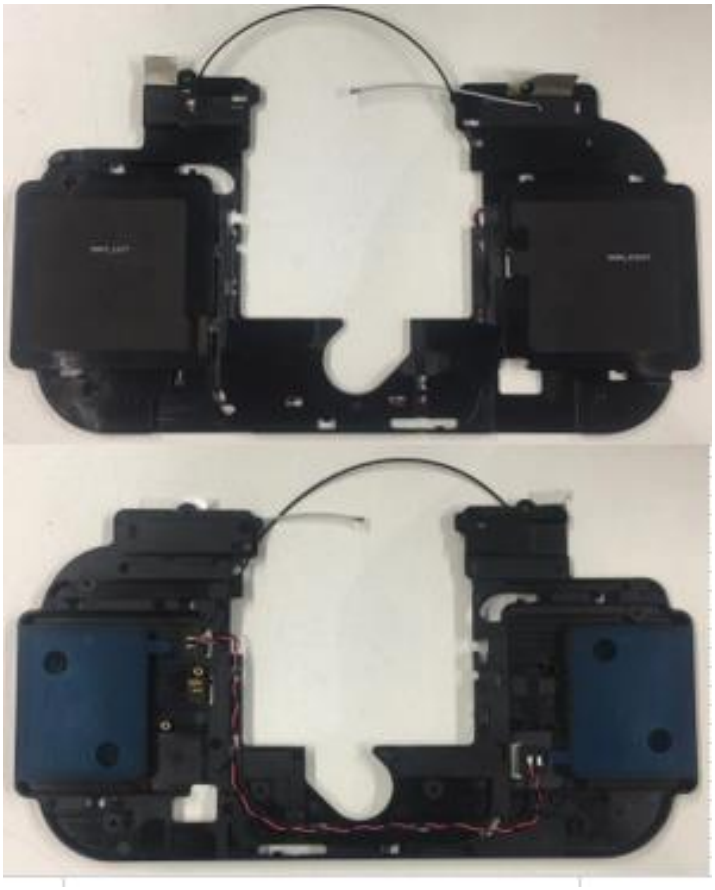
8.Product Picture:



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