WA-P-LTE12LTE11LBLB-12-001-B Specification

1. Explanation of part number :

WA	_	P	_	LTE12LTE11LBLB	_	12	_	001	_	B
(1)		(2)		(3)		(4)		(5)		(6)

(1) Product Type：1.LTE Antenna 2.WiFi Antenna 3.BT+WiFi5.8G Antenna

(2) Material: PCB+CABLE

(3) Frequency : ①699MHz-960MHz, 1710MHz-2690MHz

②1710MHz-2690MHz

③2400MHz-2500MHz, 5150MHz-5850MHz

④2400MHz-2500MHz, 5150MHz-5850MHz

(4) Coaxial Cable Type : 12

(5) Suffix :001

(6) B:車用前裝

2. Storage Condition:

Temperature	-40 to +90˚C
Humidity	65±20 % RH

3. Operating Condition:

Temperature	-40 to +90˚C
Humidity	65±20 % RH

4. Electrical Specification :

Those specifications were specially defined for 惠州华阳_***HS7012A（C857 海外版）LTE&WIFI*** model, and all characteristics were measured under the model's handset testing.

4-1. Frequency Band:

Frequency Band	MHz
LTE-Main	**699MHz-960MHz,1710MHz-2690MHz**
LTE-Aux	**1710MHz-2690MHz**
WIFI	**2400MHz-2500MHz，5150MHz-5850MHz**
BT	**2400MHz-2500MHz，5150MHz-5850MHz**

4-2. Impedance

50 ohm nominal

4-3. Matching circuit

None

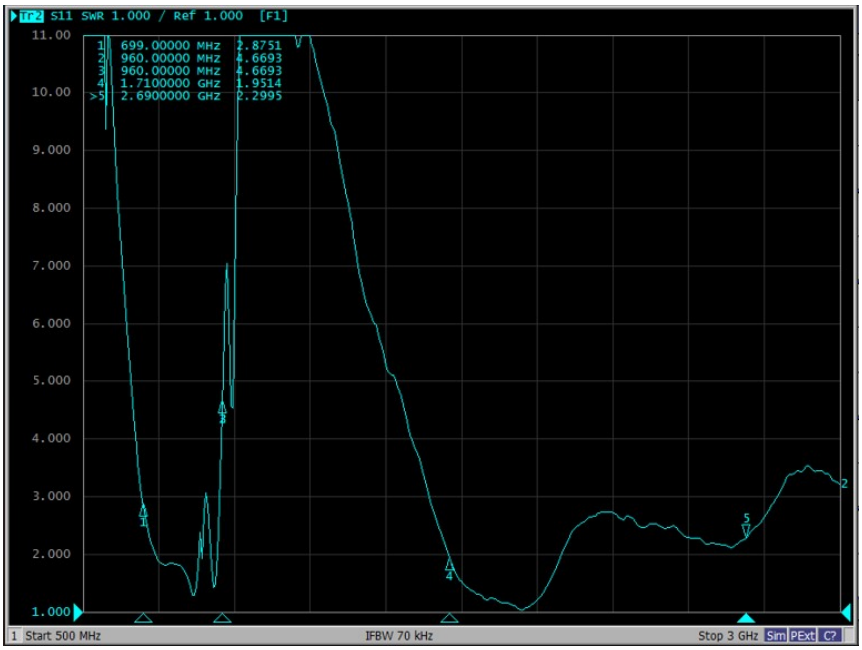
4-4. VSWR

4-4.1 Measuring Method

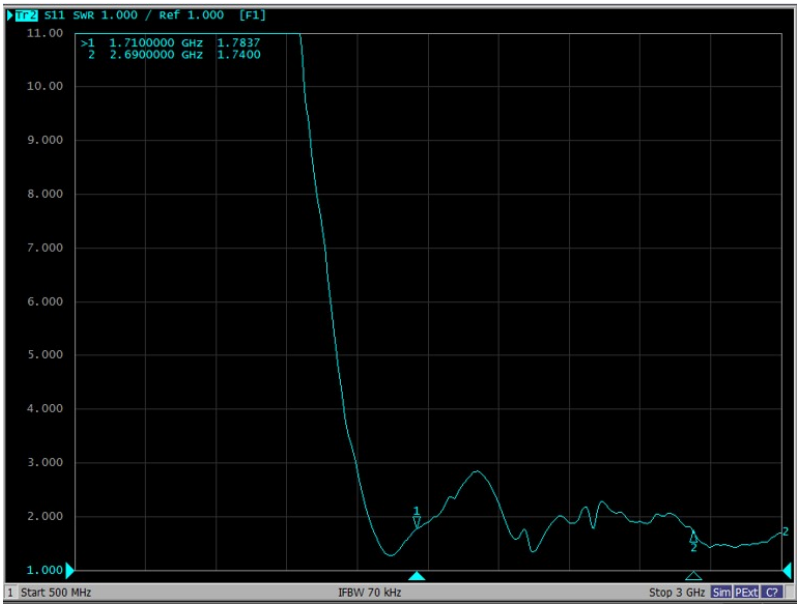
1.A 50Ω coaxial cable is connected to the antenna. Then this cable is connected to a network analyzer to measure the VSWR

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

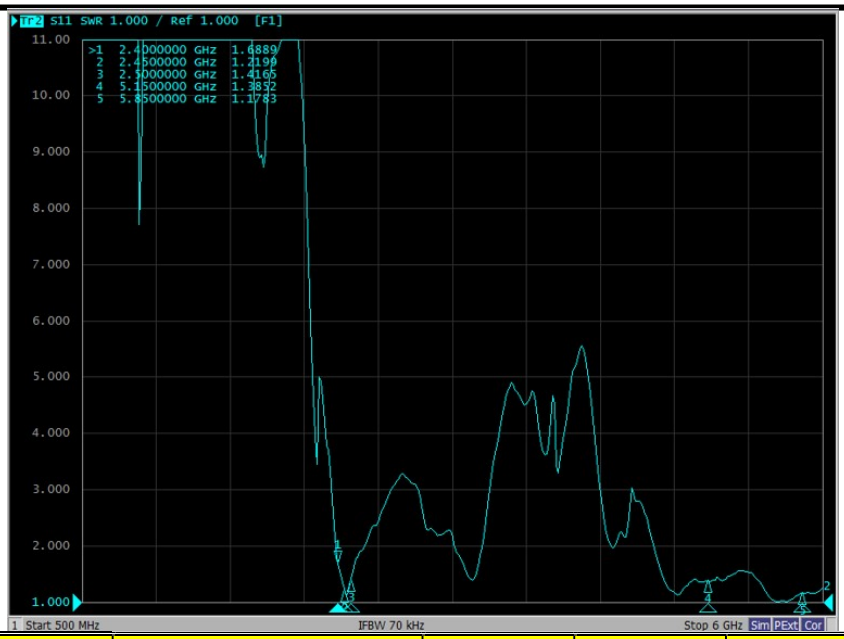
4-4.2 Measurement frequency points and VSWR value



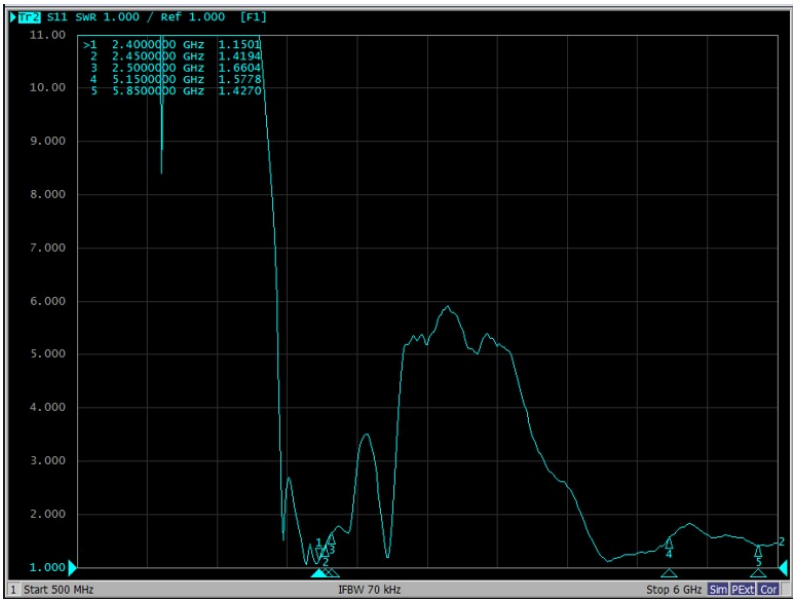
LTE-MAIN	Frequency (Unit MHz)	699	960	1710	2690
	VSWR	2.88	4.67	1.95	2.30



LTE-AUX	Frequency (Unit MHz)	1710	2690
	VSWR	1.78	1.74



WiFi	Frequency (Unit MHz)	2400	2500	5150	5850
	VSWR	1.69	1.42	1.39	1.18



BT	Frequency (Unit MHz)	2400	2450	2500	5150	5850
	VSWR	1.15	1.42	1.67	1.58	1.43

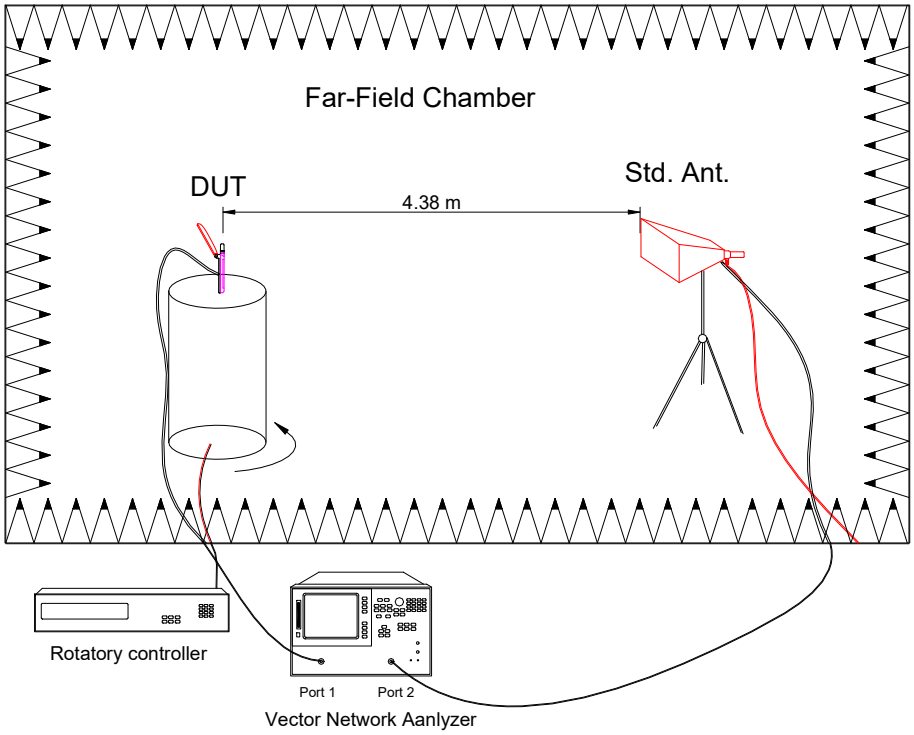
4-5. Efficiency and Gain

4-5.1 Measure method

1. Using a low loss coaxial cable to link a standard handset
2. Fixed this handset jig on chamber's rotator plane
3. Linking jig into network analyzer port and using a probing horn antenna to collect data.
4. Using another standard gain horn antenna to calibrated those data

4-5.2 Chamber definition

1. An anechoic chamber (7mx4mx3m) which satisfied far-field condition was applied to avoid multi-path effect
2. The quite room region is 40cmx40cmx40cm at the center of rotator
3. The distance between DUT and standard antenna is 4.38 m
4. Probing antenna (9120D horn antenna) and standard gain horn antenna (BBHA9120 LPF 700MHz ~6GHz)

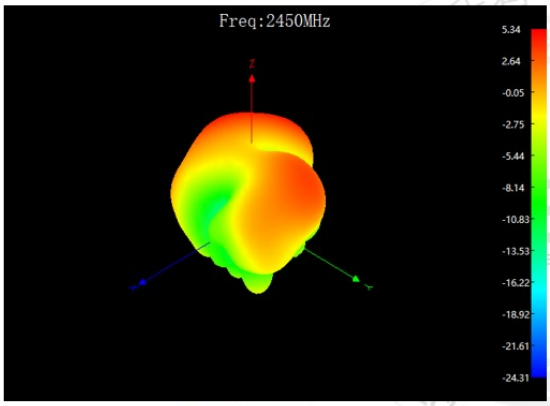


4-5.3 **Efficiency and Gain**

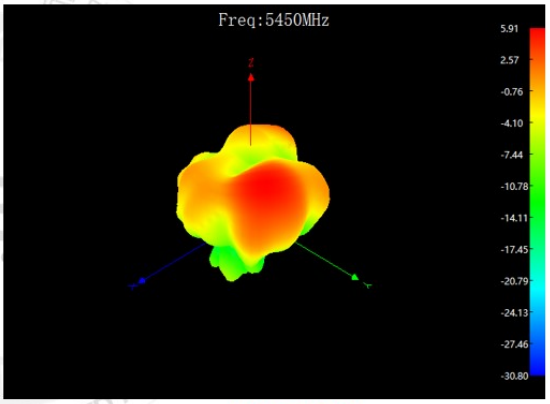
Antenna gain is marked (dBi) and is based on STANDARD HORN antenna. The data shows Peak Gain and Average Gain.

3D Radiation Pattern Results

WIFI



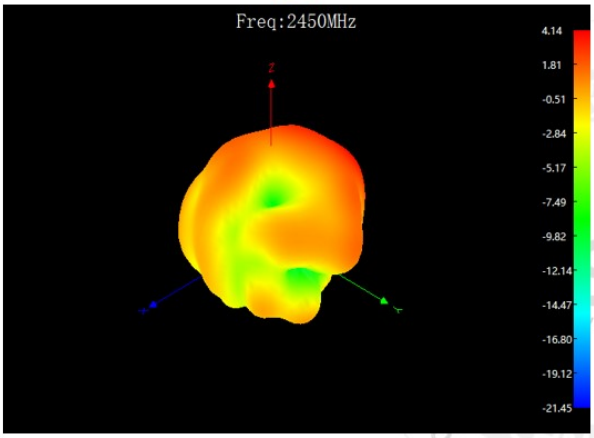
2450MHz



5450MHz

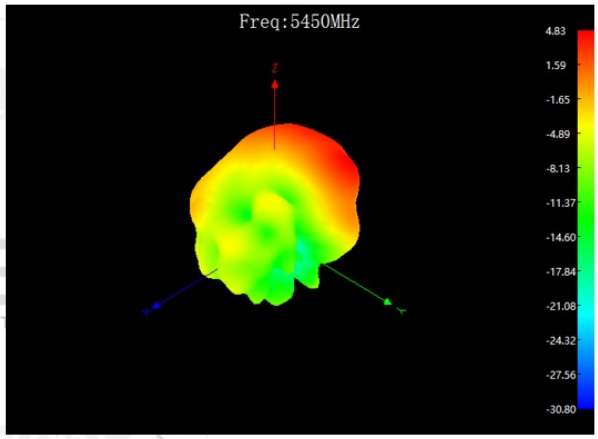
3D Radiation Pattern Results

BT



2450MHz

WiFi 5G



5450MHz

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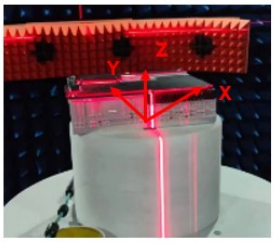
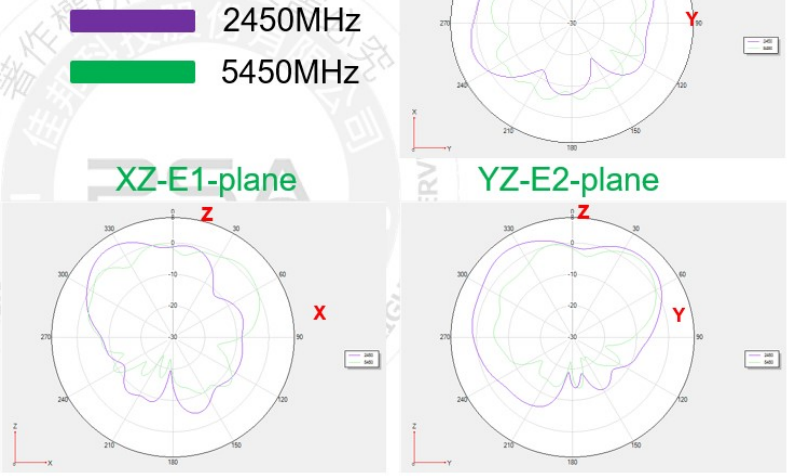
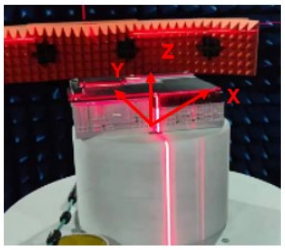
DESIGNED BY：牛永林	APPROVED BY：赵付辉		
TITLE：WA-P-LTE12LTE11LBLB-12-001-B Specification		DOCUMENT NO.	PAGE REV. P4

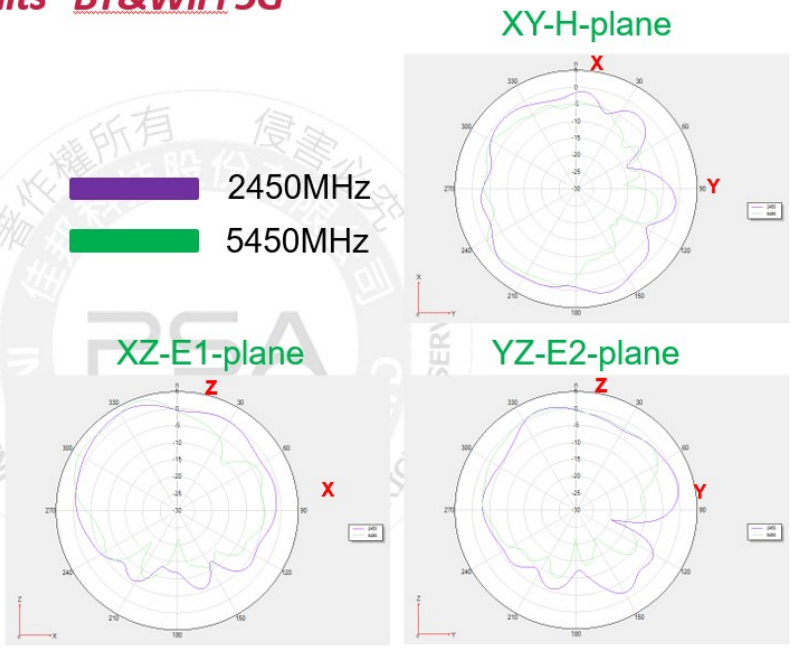
2D Radiation Pattern Results WIFI





2D Radiation Pattern Results BT&WiFi 5G





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Results Summary-Peak Gain &Efficiency

Frequency (MHz)	LTE MAIN		
	Efficiency (dB)	Efficiency (%)	Peak Gain (dBi)
699	-4.86	32.66	-1.76
710	-4.45	35.89	-1.32
720	-3.87	41.02	-1.06
730	-3.74	42.27	-0.96
740	-3.85	41.21	-0.84
750	-3.58	43.85	-0.12
760	-3.1	48.98	-0.06
770	-2.86	51.76	-0.2
780	-2.58	55.21	0.84
790	-2.36	58.08	0.77
800	-2.18	60.53	0.86
810	-2.05	62.37	1
820	-2.01	62.95	1.28
830	-1.92	64.27	2.37

Frequency (MHz)	LTE MAIN		
	Efficiency (dB)	Efficiency (%)	Peak Gain (dBi)
840	-2.36	58.08	1.16
850	-2.88	51.52	1.45
860	-3.87	41.02	1.93
870	-4.32	36.98	1.47
880	-4.47	35.73	1.38
890	-4.11	38.82	1.55
900	-3.51	44.57	1.54
910	-3.01	50.00	1.85
920	-2.68	53.95	2.47
930	-2.14	61.09	3.24
940	-2.61	54.83	2.38
950	-3.56	44.06	1.64
960	-5.21	30.13	-0.42

Results Summary-Peak Gain &Efficiency

Frequency (MHz)	LTE MAIN		
	Efficiency (dB)	Efficiency (%)	Peak Gain (dBi)
1710	-2.02	62.81	3.69
1750	-2	63.1	2.44
1790	-2.03	62.66	2.53
1830	-2.38	57.81	2.86
1870	-1.97	63.53	3.57
1910	-1.94	63.97	3.62
1950	-2.04	62.52	3.22
1990	-2.14	61.09	3.23
2030	-2.41	57.41	3.32
2070	-2.65	54.33	3.21
2110	-2.6	54.95	3.6
2150	-2.11	61.52	3.61
2190	-2.74	53.21	3.76

Frequency (MHz)	LTE MAIN		
	Efficiency (dB)	Efficiency (%)	Peak Gain (dBi)
2230	-3.19	47.97	3.35
2270	-3.29	46.88	4.12
2310	-3.16	48.31	4.35
2350	-2.91	51.17	3.99
2390	-3.16	48.31	4.15
2430	-2.97	50.47	4.12
2470	-2.97	50.47	4.15
2510	-3.04	49.66	3.6
2550	-3.33	46.45	3.52
2590	-3.56	44.06	3.88
2630	-3.49	44.77	3.5
2670	-3.34	46.34	3.96
2690	-3.33	46.45	4

Results Summary-Peak Gain &Efficiency

Frequency (MHz)	LTE AUX			Frequency (MHz)	LTE AUX		
	Efficiency (dB)	Efficiency (%)	Peak Gain (dBi)		Efficiency (dB)	Efficiency (%)	Peak Gain (dBi)
1710	-2.33	58.48	3.03	2230	-1.74	66.99	2.92
1750	-2.07	62.09	3.27	2270	-2.61	54.83	1.86
1790	-1.76	66.68	3.89	2310	-3.07	49.32	3.55
1830	-1.67	68.08	4.31	2350	-2.85	51.88	3.67
1870	-1.84	65.46	3.49	2390	-3.16	48.31	2.8
1910	-1.44	71.78	4.49	2430	-3.71	42.56	3.36
1950	-1.62	68.87	3.83	2470	-4.66	34.2	2.33
1990	-1.8	66.07	3.9	2510	-4.13	38.64	1.94
2030	-1.94	63.97	3.74	2550	-3.64	43.25	2.68
2070	-2.32	58.61	2.56	2590	-3.05	49.55	4.66
2110	-2.83	52.12	1.4	2630	-2.38	57.81	5.28
2150	-2.62	54.7	3.23	2670	-1.94	63.97	6.61
2190	-1.68	67.92	2.87	2690	-2.02	62.81	7.05

Results Summary-Peak Gain &Efficiency

Frequency (MHz)	WiFi (2.4G)			Frequency (MHz)	WiFi (5G)		
	Efficiency (dB)	Efficiency (%)	Peak Gain (dBi)		Efficiency (dB)	Efficiency (%)	Peak Gain (dBi)
2400	-2.82	52.24	4.54	5150	-2.24	59.7	5.59
2410	-2.58	55.21	4.58	5200	-2.17	60.67	6.16
2420	-2.23	59.84	4.69	5250	-2.18	60.53	5.67
2430	-1.98	63.39	4.76	5300	-2.6	54.95	4.93
2440	-2.09	61.8	5.02	5350	-2.48	56.49	5.33
2450	-2.15	60.95	5.34	5400	-2.36	58.08	5.93
2460	-2.08	61.94	5.46	5450	-2.48	56.49	5.91
2470	-2.18	60.53	5.71	5500	-2.51	56.1	6.08
2480	-2.2	60.26	5.72	5550	-2.37	57.94	6.38
2490	-2.21	60.12	5.77	5600	-2.26	59.43	6.64
2500	-2.27	59.29	5.69	5650	-2.07	62.09	6.49
				5700	-2.13	61.24	6.18
				5750	-1.98	63.39	5.93
				5800	-2.01	62.95	6.63
				5850	-2.12	61.38	7.26

Results Summary-Peak Gain &Efficiency

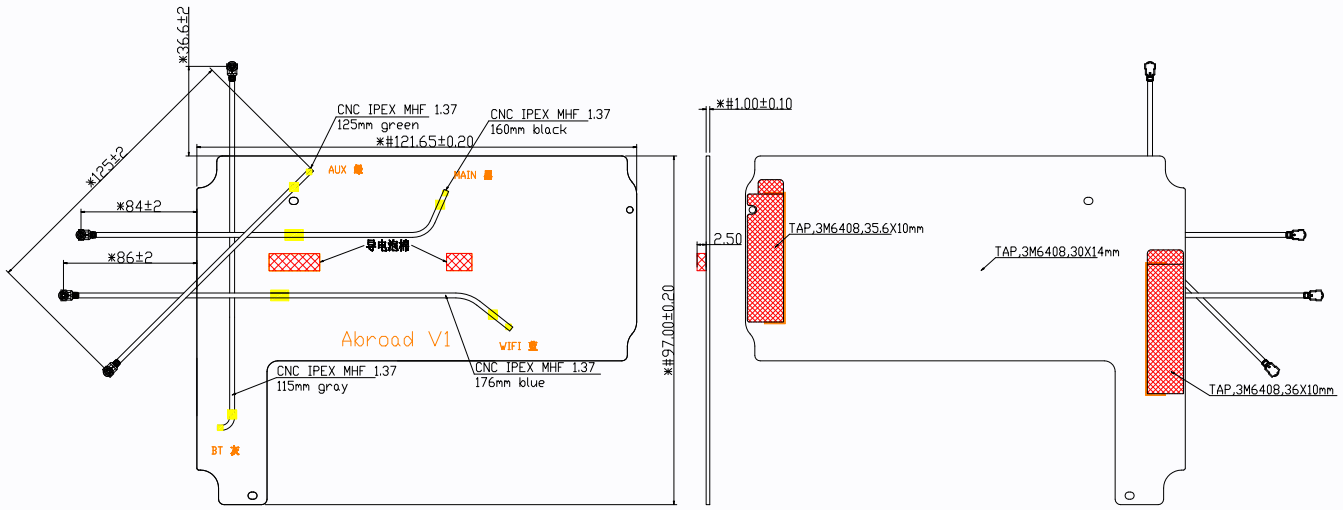
Frequency (MHz)	BT		
	Efficiency (dB)	Efficiency (%)	Peak Gain (dBi)
2400	-2.09	61.80	4.98
2410	-2.21	60.12	4.58
2420	-2.12	61.38	4.63
2430	-2.12	61.38	4.4
2440	-2.13	61.24	4.25
2450	-2.09	61.80	4.14
2460	-2.31	58.75	3.77
2470	-2.14	61.09	3.77
2480	-2.28	59.16	3.35
2490	-2.11	61.52	3.36
2500	-2.23	59.84	3.02

Frequency (MHz)	WiFi (5G)		
	Efficiency (dB)	Efficiency (%)	Peak Gain (dBi)
5150	-2.22	59.98	3.95
5200	-2.49	56.36	3.68
5250	-2.55	55.59	3.7
5300	-2.67	54.08	4.27
5350	-2.25	59.57	4.91
5400	-2.14	61.09	5.23
5450	-2.11	61.52	4.83
5500	-1.89	64.71	4.81
5550	-1.74	66.99	5.01
5600	-1.85	65.31	4.73
5650	-1.82	65.77	4.65
5700	-1.92	64.27	4.57
5750	-1.8	66.07	4.97
5800	-1.98	63.39	5.45
5850	-2	63.1	5.32

5. Mechanical Specification:

5-1. Mechanical Configuration (Unit: mm)

The appearance of the antenna is according to drawing Figure **5-1-1**



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