客戶名稱 CUSTOMER ：朝阳

Documnet No.:_____.
Approval Sheet Rev.: A0_____.
Spec. Rev. : P3_____.

承　認　書

APPROVAL SHEET

產品品名/Product Model No. :	WA-F-LA-02-133
客戶料號/Customer No. :	1029-0000197
發行日期/ Issue Date :	2023-03-31
承認日期/ Approved Date :	2023-03-31

Approved by customer: (signing or stamping here)

禾邦電子(蘇州)有限公司
INPAQ TECHNOLOGY(SuZhou) Co.,Ltd

■ 蘇州市相城區黃埭鎮潘陽工業園區中心大道5號

No.5,zhongxin Road, PanYang industrial Park,HuangDai town,XiangCheng district ,Suzhou City

佳邦科技股份有限公司
INPAQ TECHNOLOGY Co.,Ltd

□ 苗栗縣竹南鎮大厝裏9鄰59-12號

No. 59-12, 9 Lin, Ta Tsuo Li, Chu Nan Chen, Miao Li Hsien, Taiwan, R.O.C.

WA-F-LA-02-133 Specification

Model：WA-F-LA-02-133

1. Explanation of part number :

WA	_	F	_	LA	_	02	_	133
(1)		(2)		(3)		(4)		(5)

(1) Product Type：Wireless Antenna

(2) Material: FPC+CABLE

(3) Frequency : 2.4GHz-2.5GHz

(4) Coaxial Cable Type : 02

(5) Suffix :133

2. Storage Condition:

Temperature	-40 to +70°C
Humidity	65±20 % RH

3. Operating Condition:

Temperature	-40 to +70°C
Humidity	65±20 % RH

4. Electrical Specification :

*Those specifications were specially defined for 朝阳-**ATC PARTY-BT1**model, and all characteristics were measured under the model's handset testing.*

4-1. Frequency Band:

Frequency Band	MHz
ISM	2400-2500

4-2. Impedance

50 ohm nominal

4-3. Matching circuit

None

4-4. VSWR

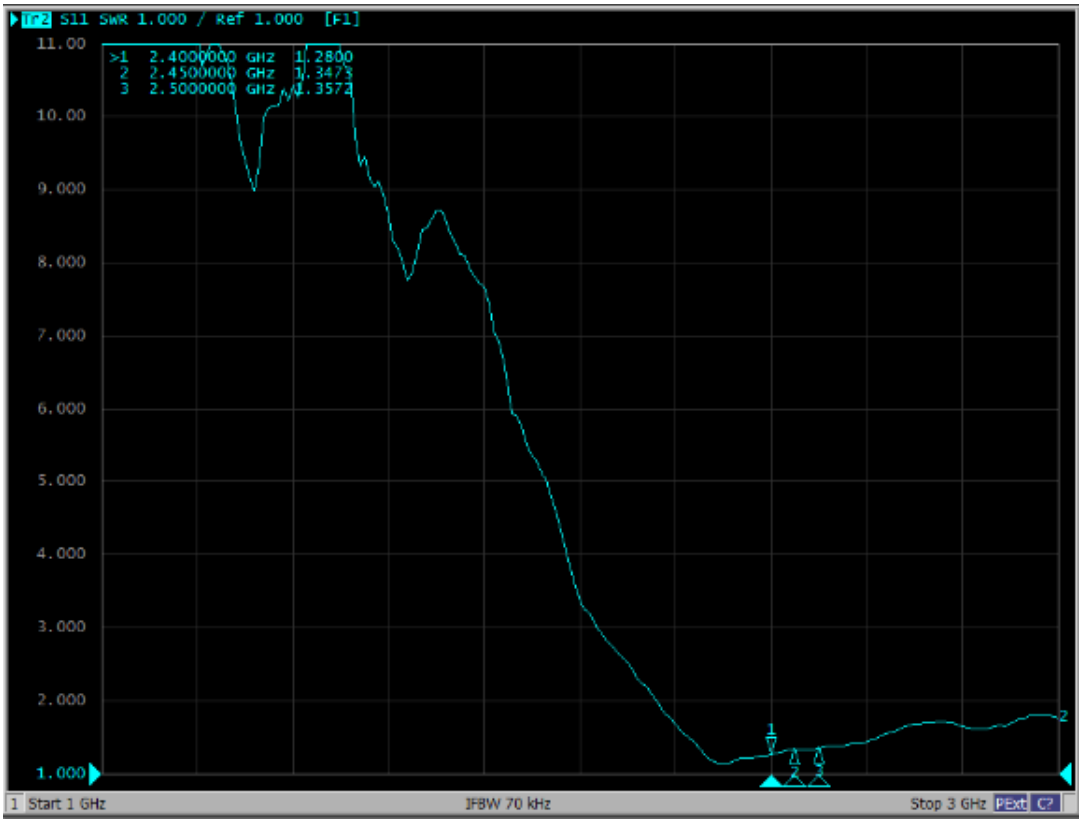
4-4.1 Measuring Method

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)	2400	2450	2500
VSWR	1.28	1.34	1.35



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DESIGNED BY：Ziv	APPROVED BY：赵付辉		
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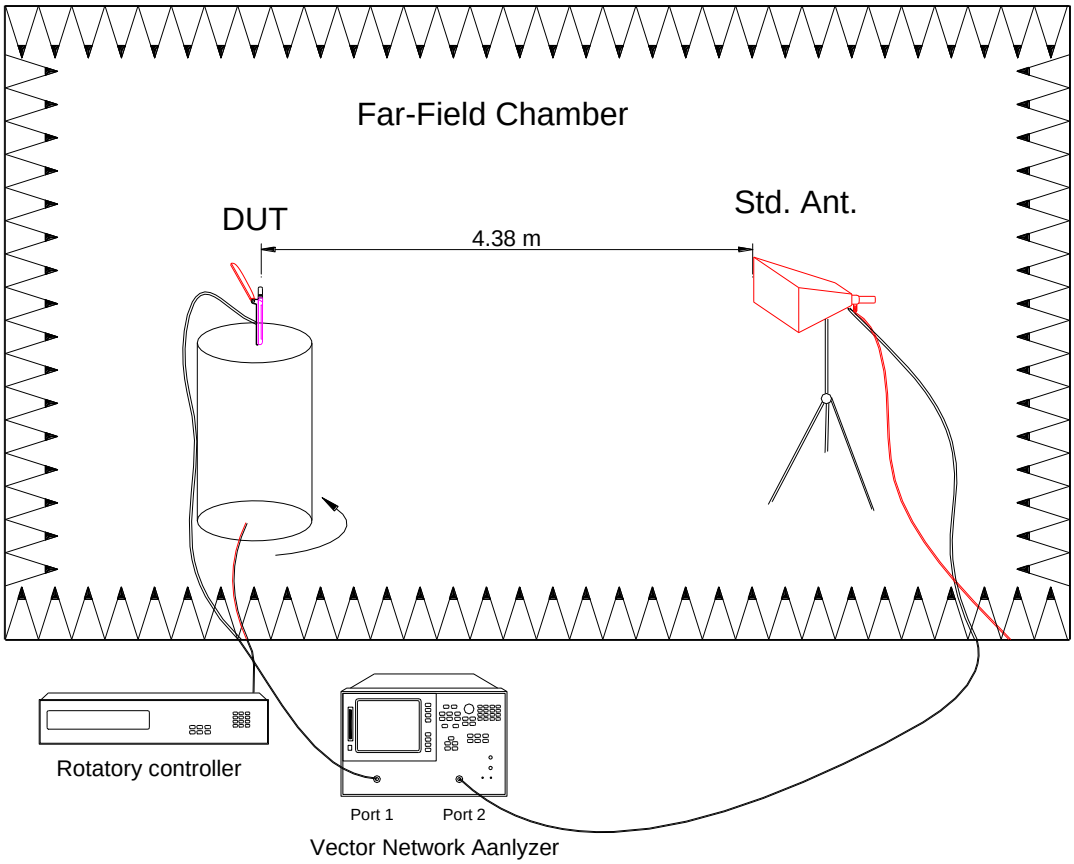
4-5. Efficiency and Gain

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.

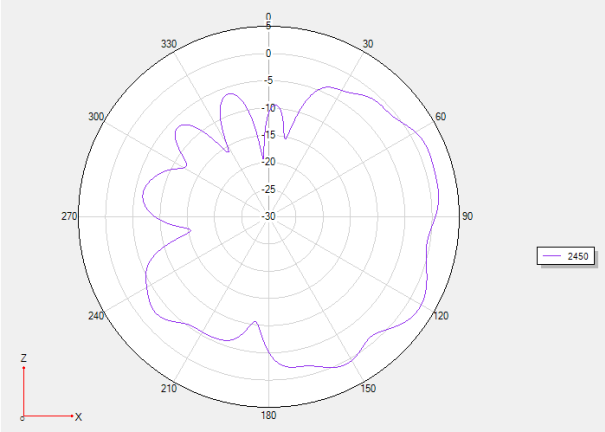
Frequency (MHz)	2400	2450	2500
Efficiency (%)	45.46	47.61	50.15
Peak Gain (dBi)	4.62	5.06	5.22

Freq. (MHz)	Efficiency (%)	Peak Gain (dBi)
2400	45.46	4.62
2410	43.68	4.57
2420	43.39	4.61
2430	45.46	4.8
2440	45.31	4.93
2450	47.61	5.06
2460	48.71	5.19
2470	49.5	5.28
2480	47.92	5.17
2490	47.92	5.17
2500	50.15	5.22
AVG	46.83	

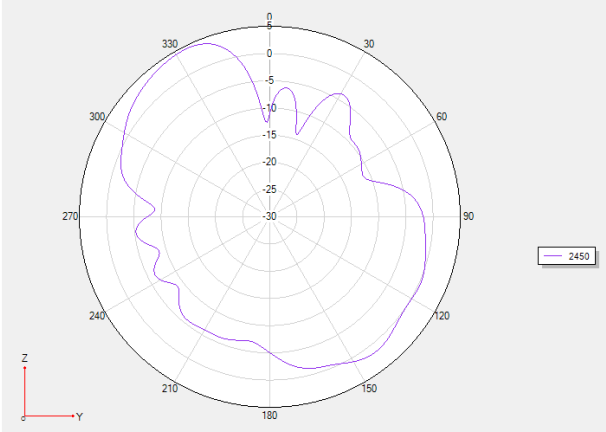
4-5.4 2D&3D Radiation Pattern Results

2D Radiation Pattern

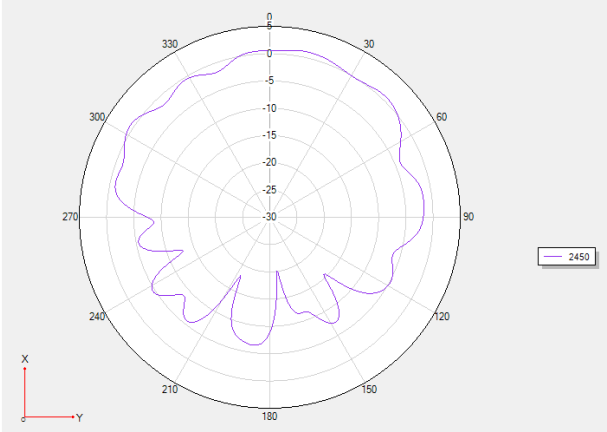
E1 面



E2 面



H 面



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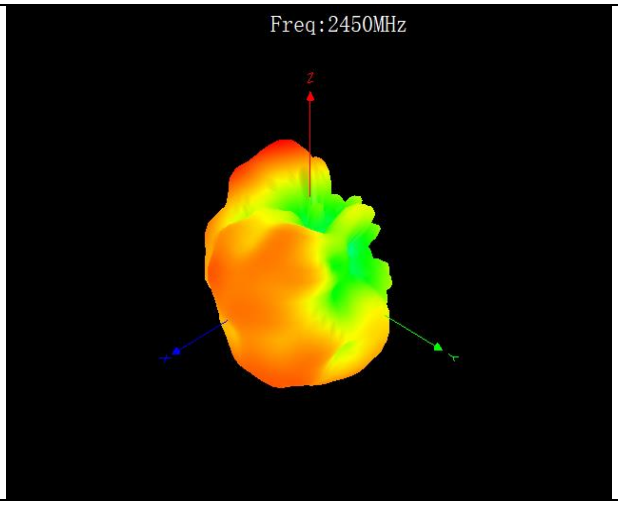
3D Radiation Pattern



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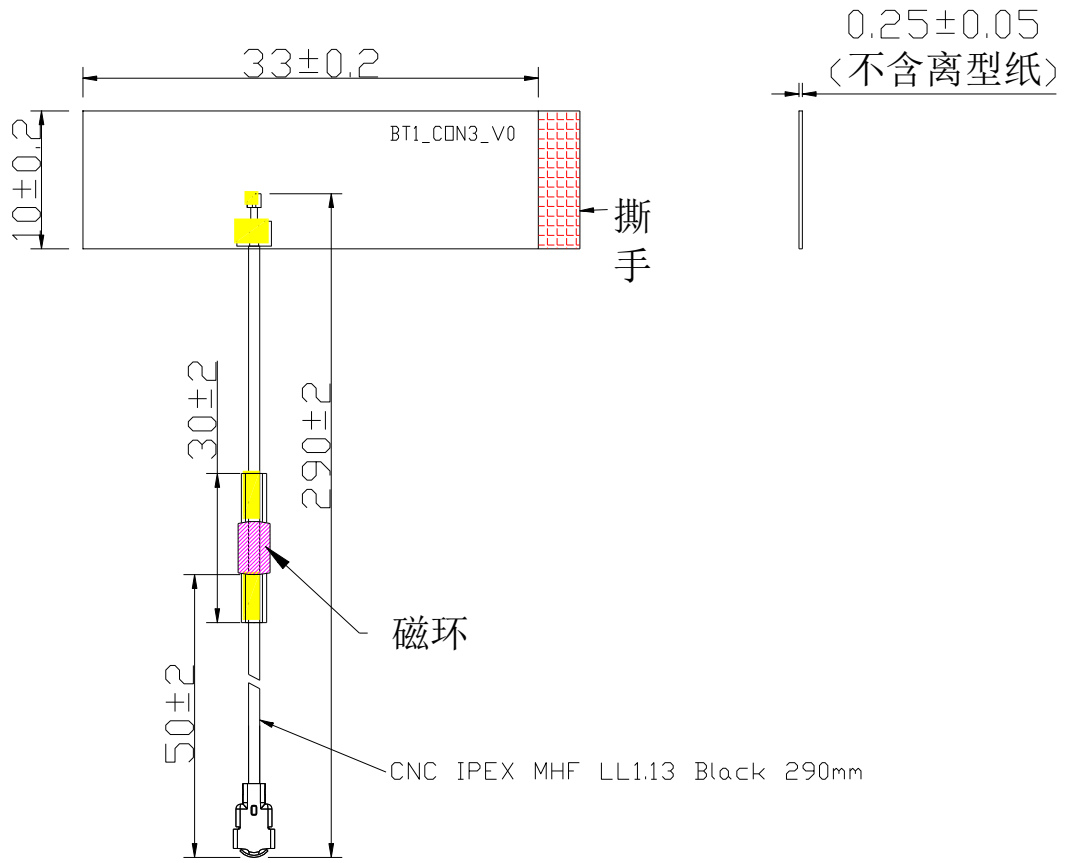
5. Mechanical Specification:

5-1. Mechanical Configuration (Unit: mm)

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



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