SPECIFICATION FOR APPROVAL

客　　户
CUSTOMER: Launch Tech Co., Ltd.
客 户 料 号
CUSTOMER PART NO.:
供 应 商
SUPPLIER : Tongxun Technology
供应商料号
SUPPLIER PART NO.
产 品 名 称
PRODUCT NAME: DBSCar VIIBuilt-in Bluetooth antenna
日 期
DATE: 2023-05.-11

Customer Signature :	Customer Seal:

Supplier Signature:	Supplier Seal :

NOTE: Please return this copy as a certification of your approval !

IA.0320.LA.0FE Bluetooth Antenna Specification

1. Application:

This application shall apply for antenna unit which shall be used such as automotive, conventional communications, smart home, etc..

2.Electrical Specification:

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

2-1. Frequency Band:

Frequency Band	MHz
Bluetooth	2400-2500

2-2. Impedance

50 ohm nominal

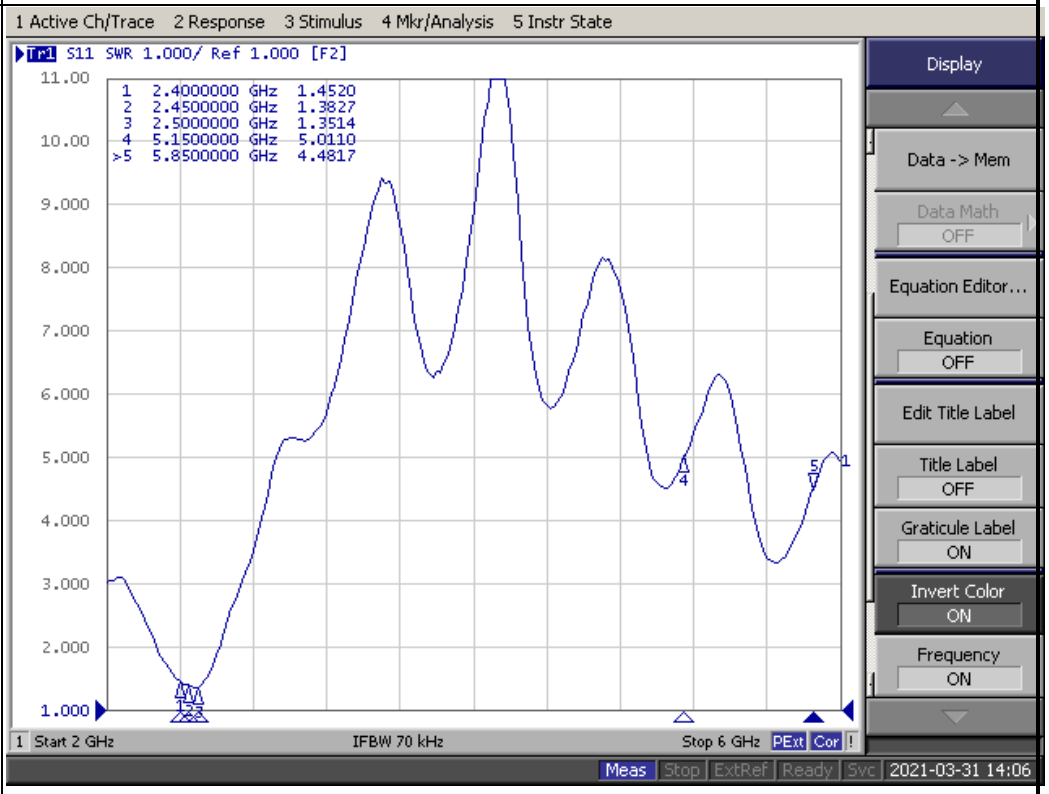
2-3. VSWR

2-3-1.Measurement frequency points and VSWR value

Frequency Band(MHz)	2400	2450	2500
2-3-3. Typical Value:	1.46	1.37	1.34

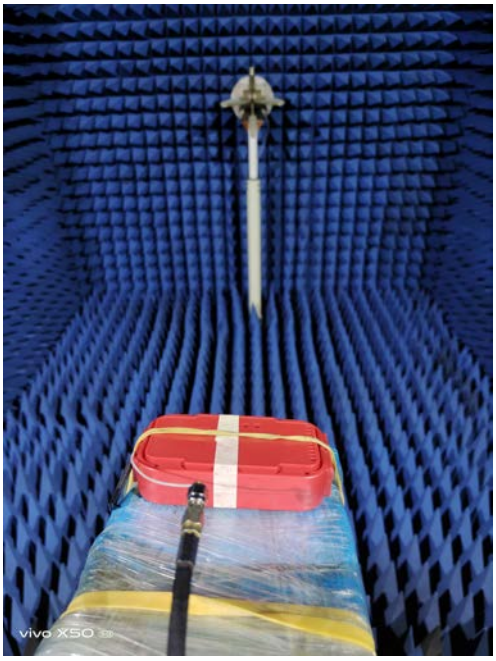
2-3-2. VSWR

Frequency Band(MHz)	2400	2450	2500
Typical Value:	≤2	≤2	≤2

2-3-3 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 20 cm
2-3-4 Picture	

2-4-1 Efficiency and Gain

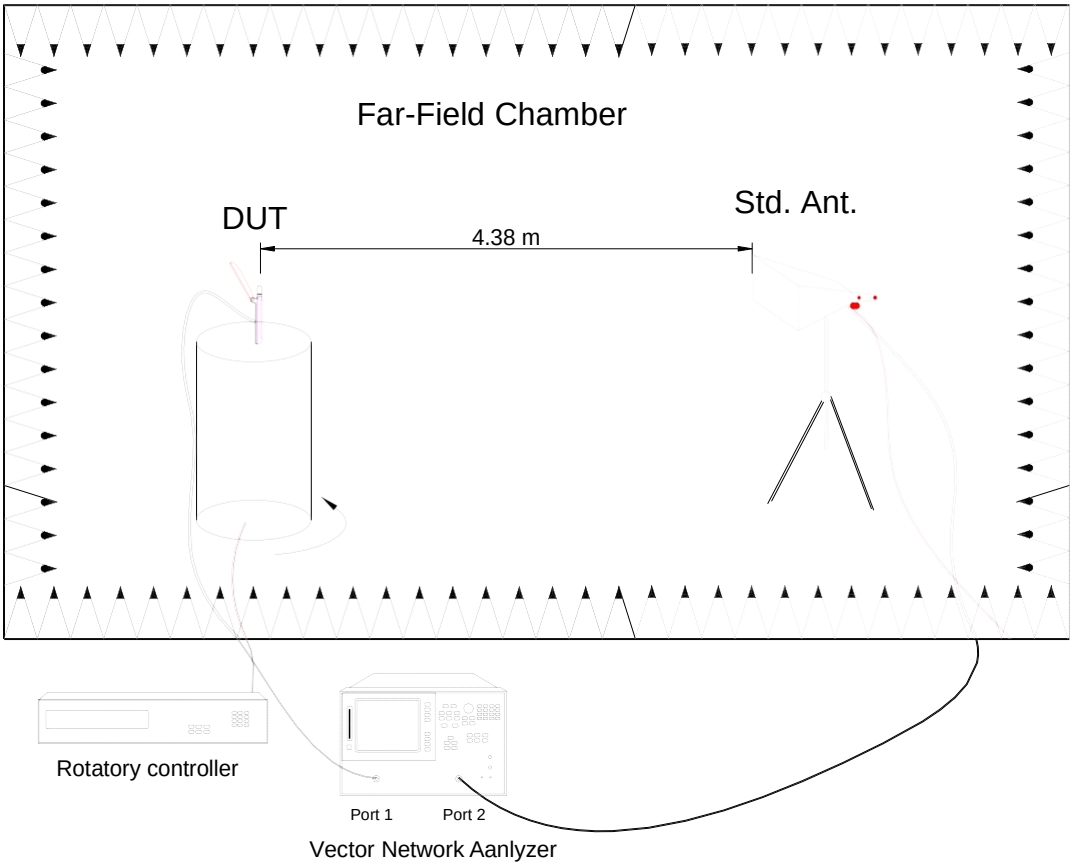
Passive Test For TEST-2.4			
Freq	Effi	Effi	Gain
(MHz)	(%)	(dB)	(dBi)
2400	47.57	-3.22	0.88
2410	52.88	-2.78	1.28
2420	52.64	-2.78	1.19
2430	56.18	-2.48	1.42
2440	48.79	-3.12	0.98
2450	49.11	-3.08	1.21
2460	52.45	-2.77	1.58
2470	50.28	-2.98	1.65
2480	51.77	-2.85	1.89
2490	51.44	-2.89	2.08
2500	48.66	-3.12	1.93



2-4-2 Measure method

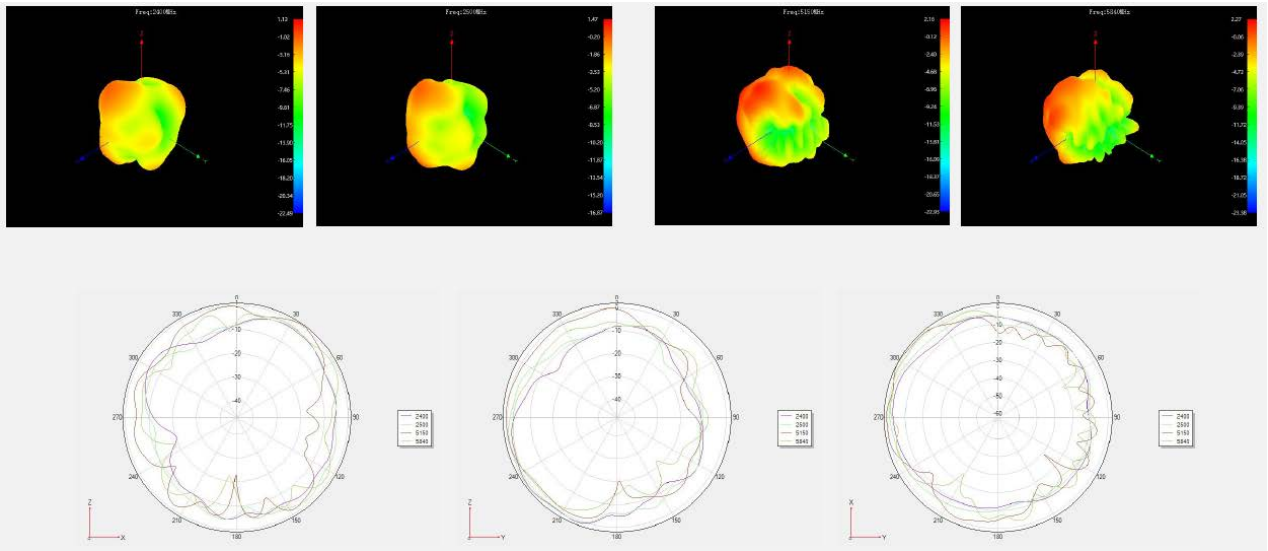
1. Using a low loss coaxial cable to link a standard handset jig
2. Fixed this handset jig on chamber's rotator plane
3. Linking jig into network analyzer port and using a probing horn antenna to collect data.
4. Using another standard gain horn antenna to calibrated those data

2-4-3 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)

2-5-1 3D Date



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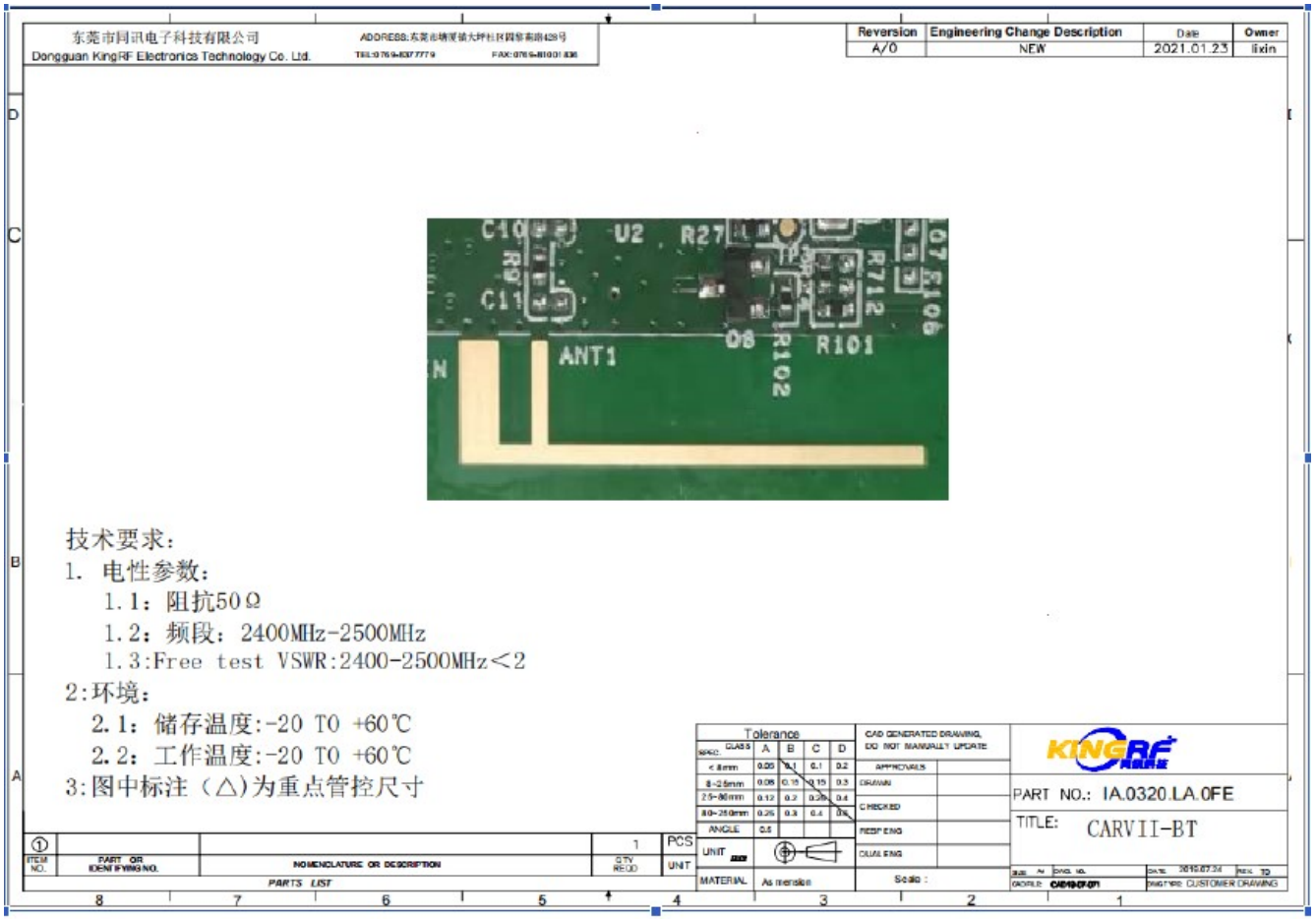
3. Mechanical Specification:

3-1. Mechanical Configuration (Unit: mm)

The appearance of the antenna is according to drawing



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