



Customer Approval Document

SPECIFICATION FOR APPROVAL

CUSTOMER/PROJECT Customer/Model: _____

CUSTOMER P.N./ Customer Part Number: _____

PRODUCT NAME./ Part Name: External Antenna

MODEL NO./ Part Number: 5Q004U

SPECIFICATION/ Specification: _____

VERSION Version	DATE Date	REVISION DESCRIPTION Revision Description
T:A	2022.1.10	Addition
T:B	2024.12.10	Added Test Data for 824-960 MHz

SUPPLIER AUTHORIZED SIGNATURE/Supplier Approval Signature		
Prepared/PREPARED	Checked/CHECKED	Approved/APPROVED
Cheng Xiangjie		

CUSTOMER AUTHORIZED SIGNATURE/Customer Approval Signature			
Project		Quality	

Please return one signed copy of the "SPECIFICATION FOR APPROVAL" to us. After customer confirmation signature and seal, kindly return one approved copy to our company.

ADD: No.358 Liuyuan RD., Baoshan Urban Industrial District.,Shanghai,PR.China.

Address: 1st Floor, Building 2, No. 358 Liuyuan Road, Baoshan City Industrial Park, Shanghai

TEL: +86-21-66276925(26/29/35) — 615

Table of Contents

Table of Contents.....	1
1 Definitions.....	4
2 Testing Equipment.....	4
3 Applicable Frequency Band.....	4
4 Basic Test Items.....	5
4.1 SWR Chart.....	5
4.2 Smith Chart.....	5
4.3 Radiation Pattern.....	5
4.4 Gain and Efficiency.....	5
4.5 TRP&TIS Test.....	5
5 Testing Metrics and Data Graphs.....	5
5.1 SWR.....	5
5.1.1 SWR Chart.....	5
5.1.2 SWR Data.....	6
5.2 Smith Impedance Chart.....	6
5.3 Radiation Pattern.....	7
5.3.1 H-plane	7
5.3.2 E-plane	8-9
5.4 Gain and Efficiency.....	10
5.5 TRP&TIS	10-11
6 Environmental Processing Recommendations.....	10
7 Requirements for Impedance Matching.....	10

8	External Antenna Outline Drawing.....	11
	Antenna Dimensions Drawing.....	11
	Feedline Dimension Drawing.....	11
	RF Port Dimension Drawing.....	11
9	Antenna Installation Guidance.....	12
	Antenna Installation Manual.....	12
	Feedline Routing Description.....	12
10	Other.....	12

1 Terminology Explanation

dBi	Decibel relative isotropic antenna
Tx	Transmit frequency
Rx	Receive frequency
TRP	Total Radiated Power
TIS	Total Isotropic Sensitivity
VSWR	Voltage Standing Wave Ratio
GSM	Global Service for Mobile communication
DCS	Digital Communication System
CDMA	Code Division Multiple Access
WCDMA	Wideband Code Division Multiple Access

2 Test Equipment

Items may be added or removed according to actual conditions.

Vector Network Analyzer
Comprehensive Tester
SATIMO64 Anechoic Chamber

3 Applicable Frequency Bands

Please highlight the applicable frequency bands with different colors.

Standard	Uplink	Downlink
NB-B20	790MHz~820MHz	830MHz~860MHz
824-960M	824MHz~960MHz	824MHz~960MHz
DCS1800	1710MHz~1785MHz	1805MHz~1880MHz
PCS1900	1850MHz~1910MHz	1930MHz~1990MHz
CDMA800	825MHz~835MHz	870MHz~880 MHz
CDMA2000	824MHz ~849MHz	869MHz ~894MHz
WCDMA2100	1920MHz~1980MHz	2110MHz~2170MHz
NB-20	832MHz-862MHz	791MHz-821MHz
LORA-868	865MHz -868MHz	865MHz -868MHz

4 Basic Test Items

4.1 SWR Chart

4.2 Smith Chart

4.3 Radiation Pattern

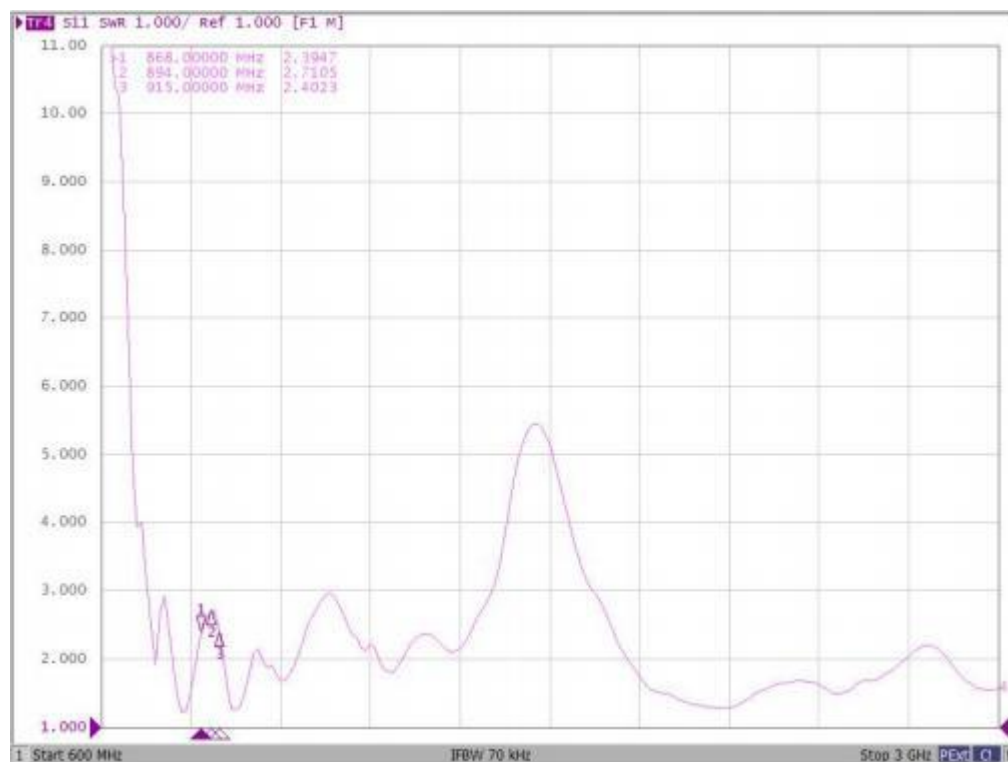
4.4 Gain and Efficiency

4.5 TRP & TIS Test

5 Test Criteria and Data Charts

5.1 SWR

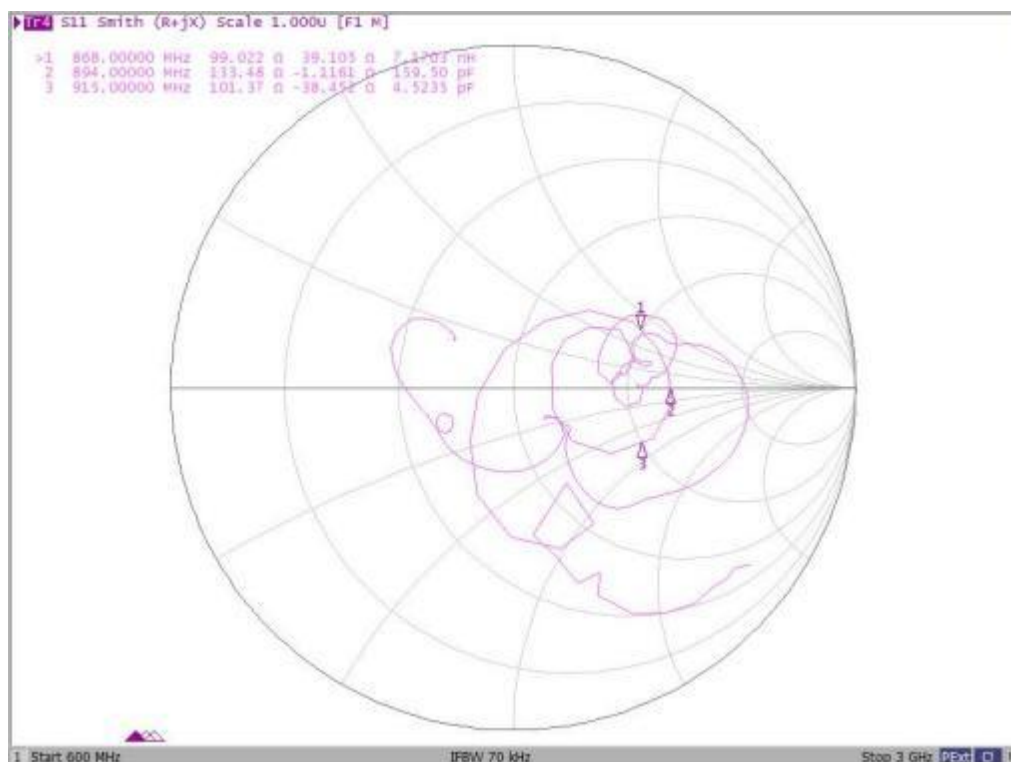
5.1.1 SWR Chart



5.1.2 SWR Data

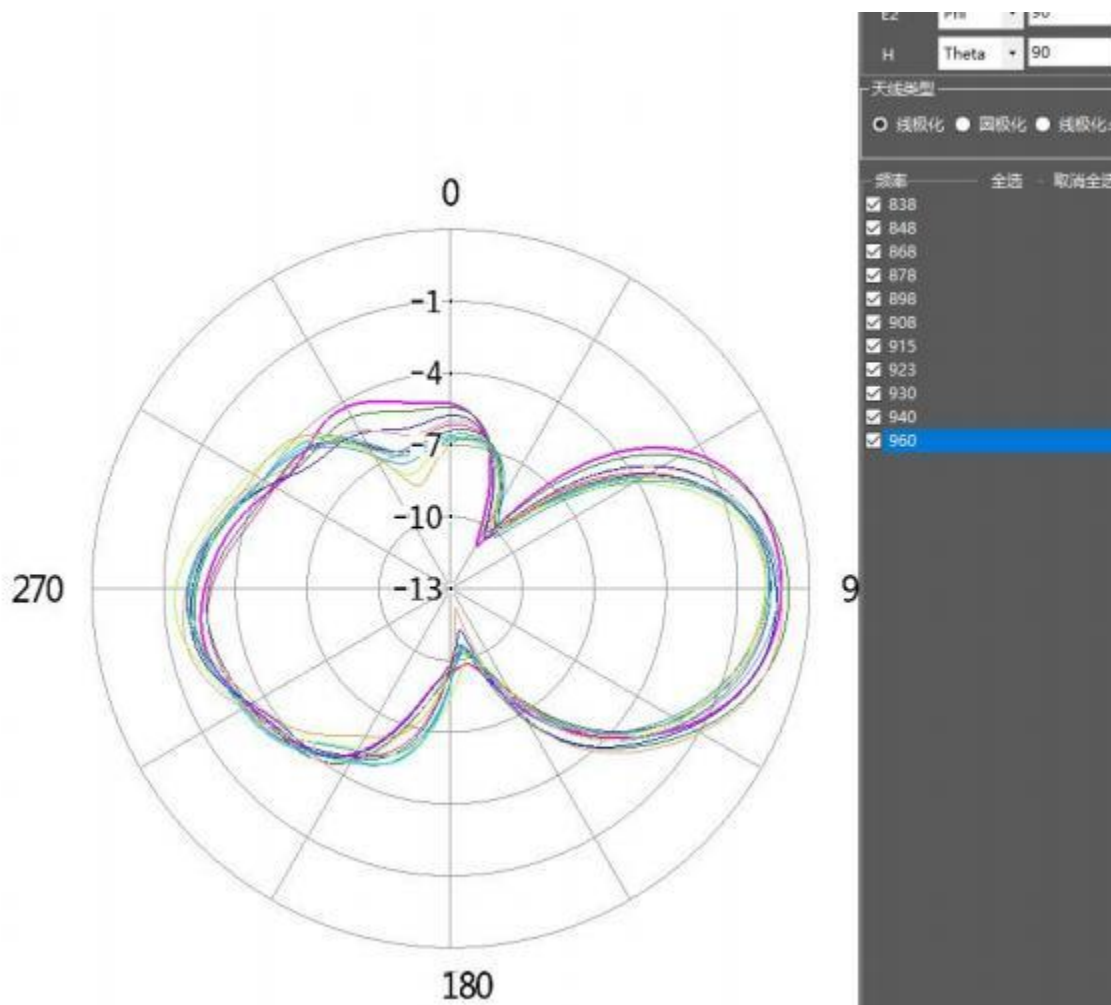
Freq/MHz	868	915
VSWR	2.3	2.4

5.2 Smith Impedance Chart



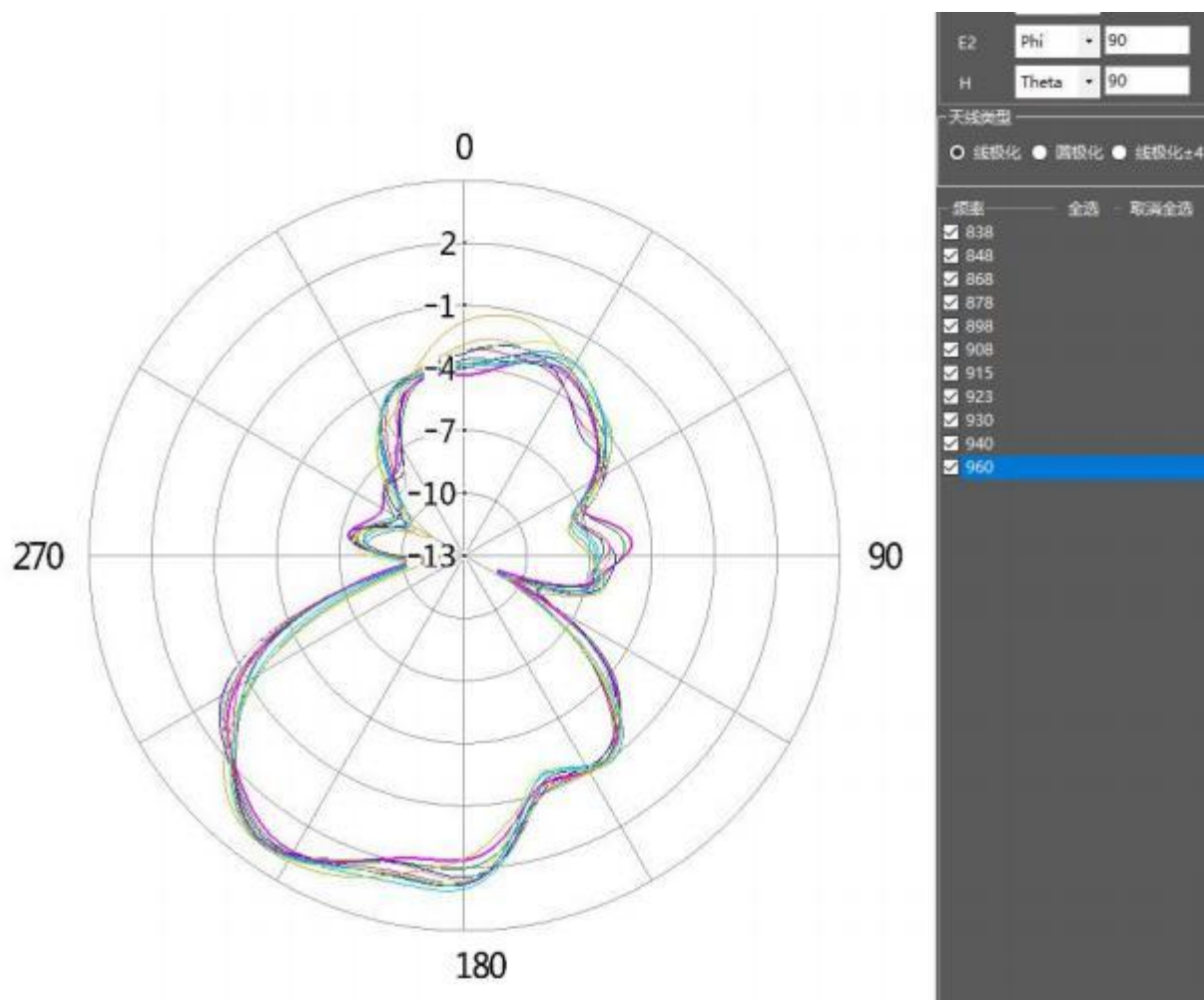
5.3 Radiation Pattern

5.3.1 H-plane

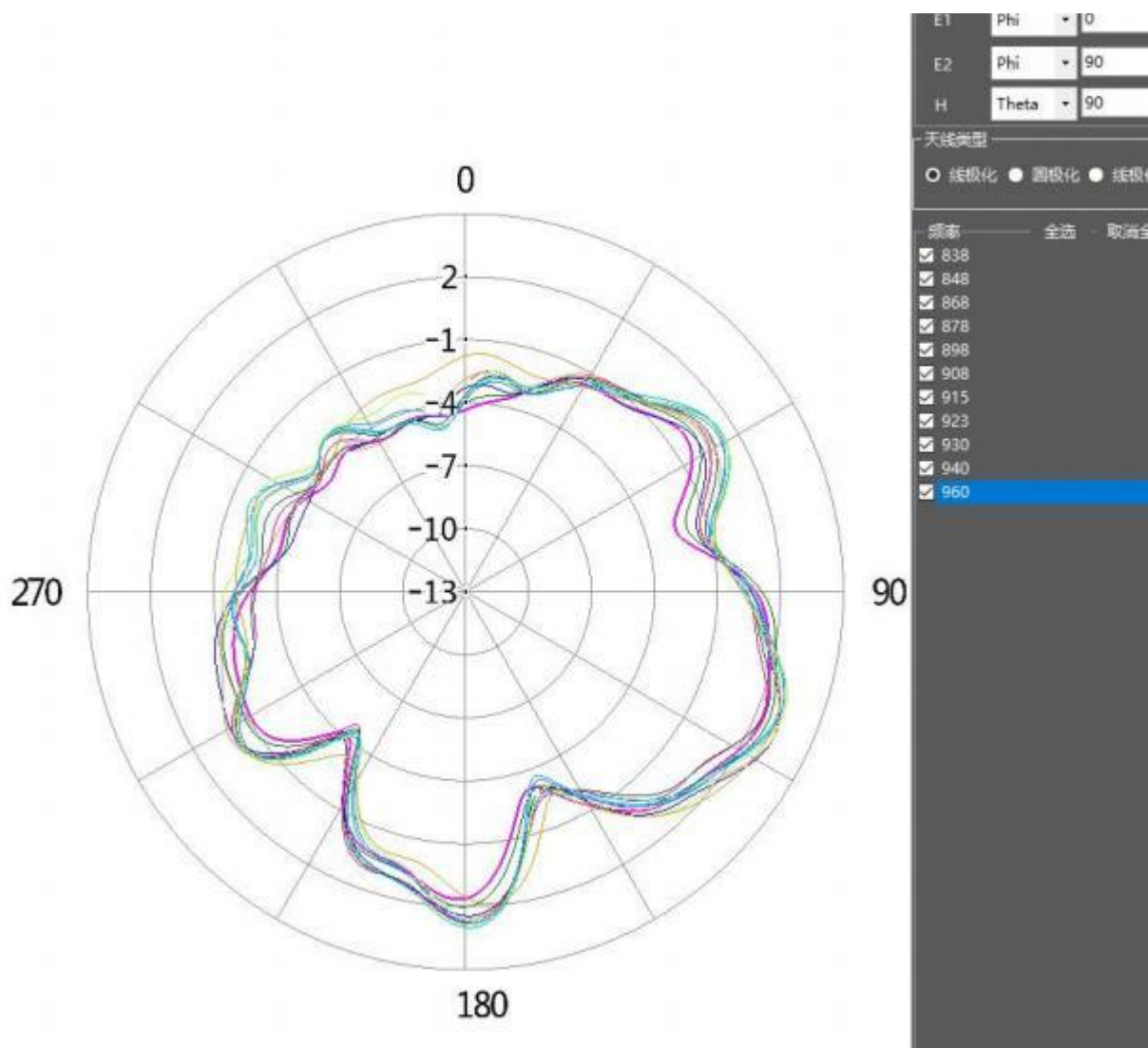


5.3.2 E-plane

E1



E2



5.4 Gain and Efficiency

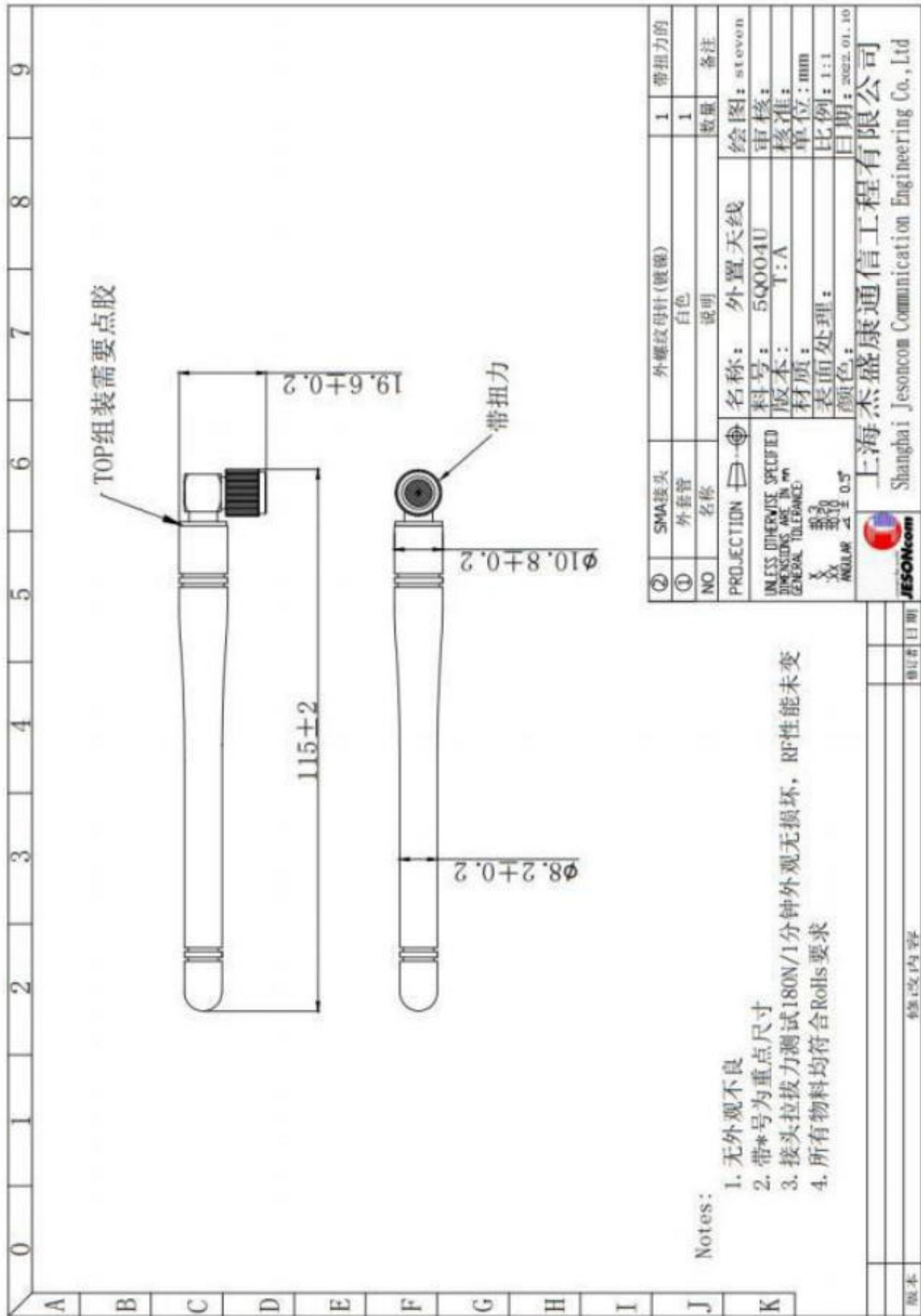
Frequency(MHz)	Gain(dBi)	Efficiency(%)
838	1.46	67.17
848	1.62	67.77
868	1.63	66.23
878	1.05	53.75
898	1.49	56.31
908	1.94	65.23
915	2.31	73.29
923	2.39	70.51
930	2.21	69.58
940	2.17	68.56
960	2.01	68.02

6 Environmental Handling Recommendations

No environmental handling is necessary

7 Impedance Matching Requirements

No matching processing is necessary





9 Antenna Installation Guide

9.1 Antenna Installation and Feeder Routing Instructions

10 Others