

HT13 project antenna material requirements specification

Customer name: QCY

Customer name: HT13

Product name: FPC antenna

Size of product: See the BOM table for more details

Material code: 10.157.000145

Change Content CV:

order number	edition	state	Start and end date	person liable	page number	remarks
1	editio princeps	editio princeps	2025-1-17	Li Jieyi	11	
2						

The Supplier acknowledges the signature of the following documents:

Responsible person / date		IQC/ date	Review / Date	Approval / Date
MD				
RF				

The Demander acknowledges the signature (please send it back after the confirmation):

The demander's judgment result: ☐ qualified ☐ unqualified			
Development & Design Engineer / Date	SQE Engineer / Date	Purchasing Leader / Date	Development Manager approval / date

catalogue

1. OVERVIEW	3
1.1 SCOPE OF APPLICATION	3
1.2 PROJECT BASIC INFORMATION	3
2. TECHNICAL INDEX REQUIREMENTS	3
2.1 INTRODUCTION OF TEST ITEMS AND EQUIPMENT	3
2.2.1 TEST INSTRUCTIONS	3
2.2.2 CONDUCTION DATA	4
2.2.3 THE MATCHING CIRCUIT IS SHOWN BELOW	4
2.2.4 S11 PASSIVE PARAMETER	4
2.2.5 FREE SPACE OTA TEST DATA	5
2.2.6 ANTENNA PATTERN	5
2.2.7 OTA TEST DATA	5
2.2.8 ANTENNA PATTERN	6
2.2.9 ANTENNA OTA TEST DATA	6
2.2.10 ANTENNA TEST ENVIRONMENT	6
3. ENGINEERING DRAWINGS	7
4. RELIABILITY TEST REPORT	8
5. LIST OF MATERIALS	10
6. PACKAGING DIAGRAM	11

1. Overview

1.1 Scope of application

This requirement, provided HT13 Antenna technical requirements and material requirements specifications.

This requirement applies to HT13 Antenna selection, testing and acceptance of the product.

1.2 Project basic information

Antenna name:	HT13
Antenna band:	2400MHz-2500MHz
Antenna material:	FPC

2. Technical index requirements

2.1 Introduction of test items and equipment

inventory	test item	equipment
S11 parameter	Standing wave ratio, echo loss	network analyzer
Active test	TRP,TIS	Integrated tester, microwave darkroom
Passive test	Gain, efficiency	network analyzer

2.2.1 Test instructions

Test tools: Agilent8960 instrument, R & S CMW500, full wave far field ETS dark room, high precision positioning system and its controller and computer with automatic test program

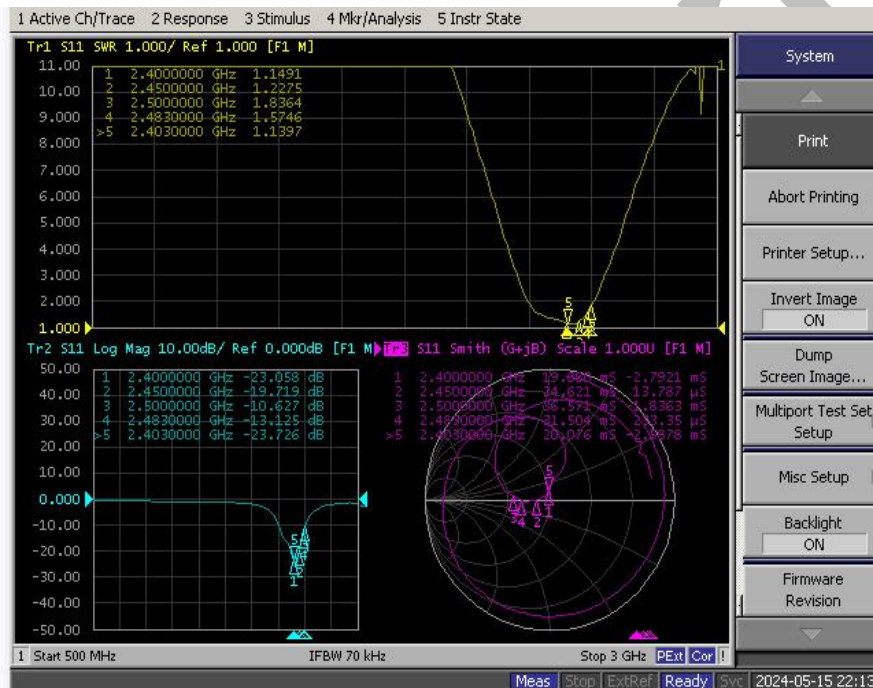
Test environment: temperature $22^{\circ}\text{C} \pm 3^{\circ}\text{C}$, humidity $50\% \pm 15\%$

Test method: DUT is fixed in the center of the turntable on the same horizontal line as the center of the horn antenna. The positioning system enables the DUT to rotate in the whole sphere to satisfy the high-precision 3 D positioning. Each RF instrument and turntable controller communicate with the PC with automatic test software through the GPIB interface

2.2.2 Conduction data

	Channel	power	sensitivity
	0	4.2	-90.0
	39	4.3	-91.0
	78	4.5	-91.0

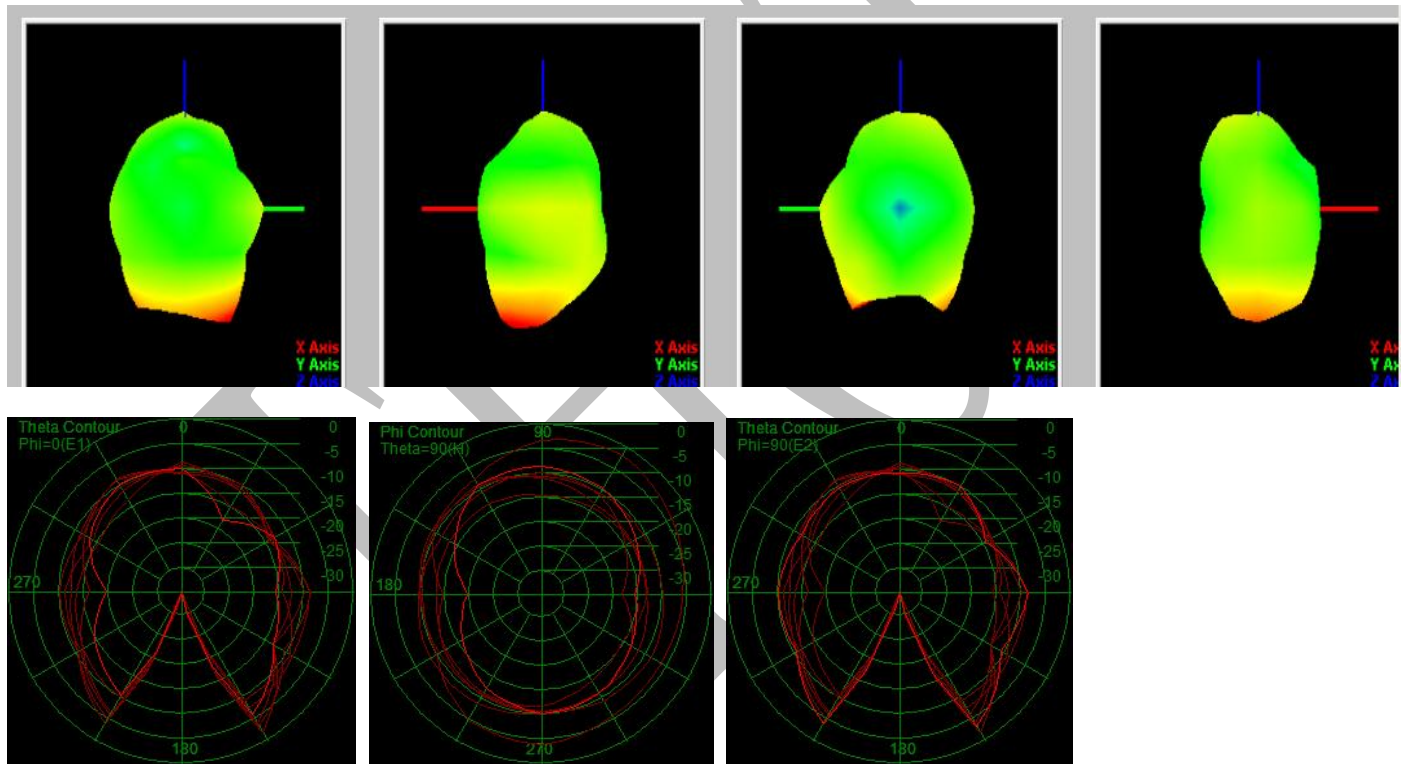
2.2.4 S11 Passive parameter



2.2.5 Free space OTA test data

Test Point ID	1	2	3	4	5	6	7	8	9
Freq. (MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480
Efficiency (%)	23.2%	24.2%	25.1%	25.8%	26.3%	25.8%	24.6%	23.4%	22.8%
efficiency(dB)	-6.4	-6.1	-6.1	-5.9	-5.8	-5.9	-6.1	-6.3	-6.4
gain(dBi)	-1.8	-1.7	-1.4	-1.2	-0.8	-1.4	-1.5	-1.6	-1.8

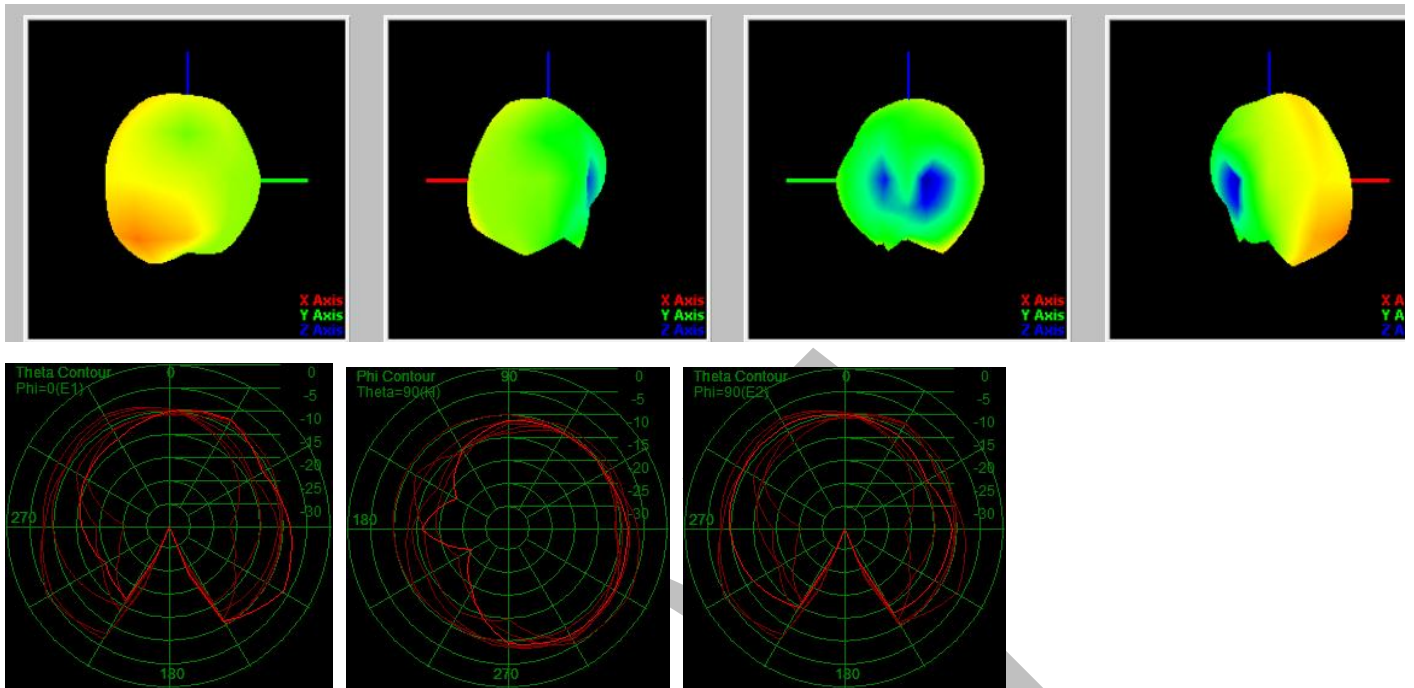
2.2.6 Antenna pattern



2.2.7 OTA test data

Test Point ID	1	2	3	4	5	6	7	8	9
Freq. (MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480
Efficiency (%)	9.7%	10.1%	10.8%	11.2%	11.5%	11.2%	10.5%	10.1%	9.6%
efficiency(dB)	-10.1	-10	-9.7	-9.5	-9.4	-9.4	-9.8	-10	-10.2
gain(dBi)	-5.2	-4.9	-4.8	-4.6	-4.5	-4.7	-4.9	-5.2	-5.4

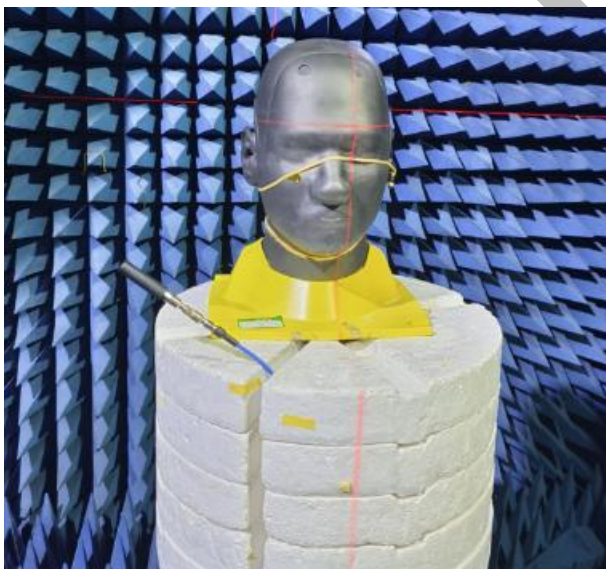
2.2.8 Antenna pattern



2.2.9 Antenna OTA test data

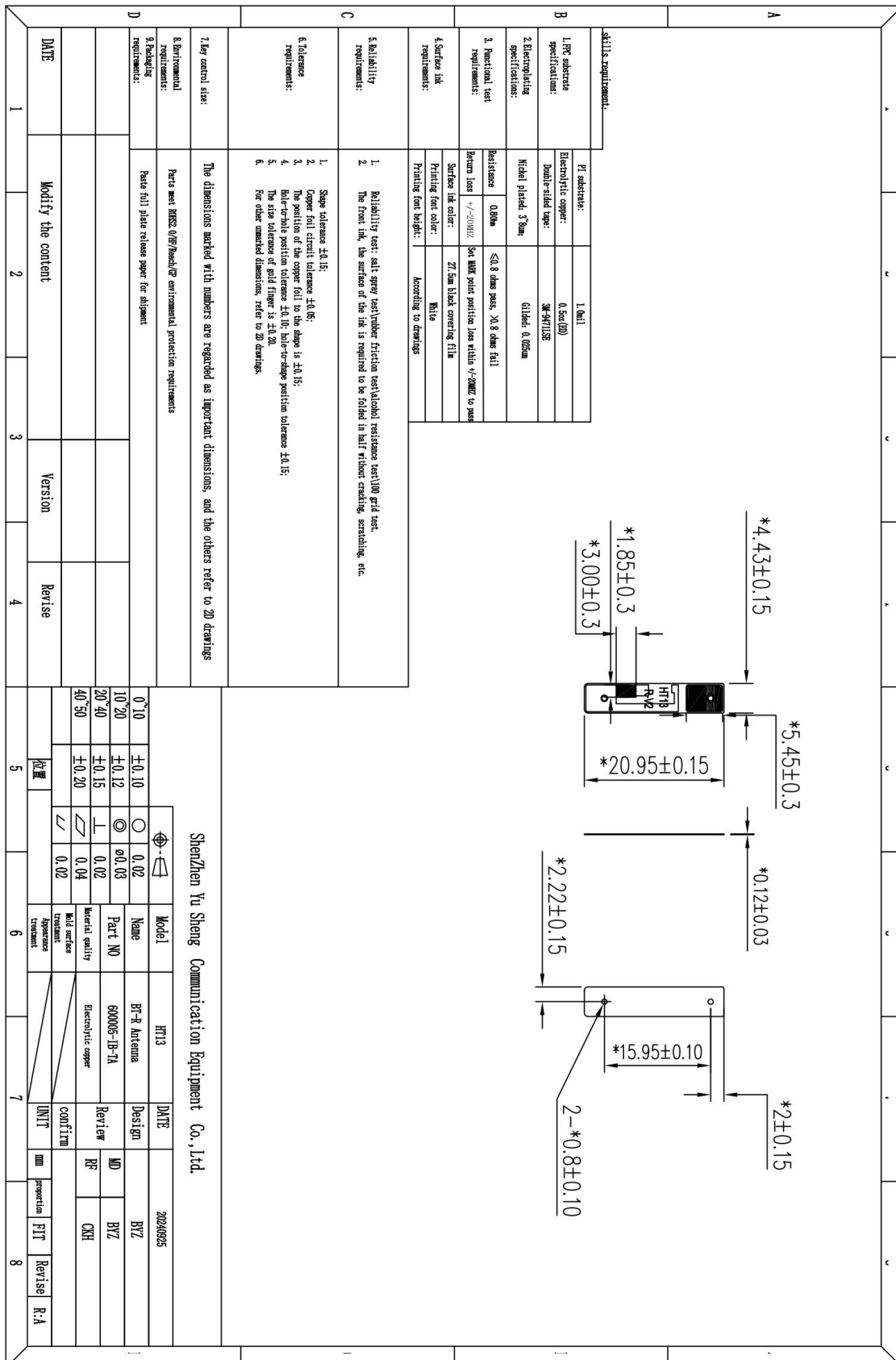
	Channel	TRP (dBm)	TIS (dBm)
	0	-4.1	-80.9
	39	-4.2	-81.3
	78	-4.4	-81.6

2.2.10 Antenna test environment



3. Engineering drawings

Right antenna



4. Reliability test report

Hot and cold shock test report

client	QCY		date	2025-01-17		Factory number	600005	
P / N	HT13		quantity	Each 5PCS		testing time	48H	
material specification	Single side half to half, electrolytic copper gold plating		supplier	Renesola		reference standard	MIL-SDT-202Method017IEC 60749-25 JEDEC JESD22-A104-B IEC68-2-1MIL-STD-2168-85	
Test purpose: To test the reliability of products and coating binding force, coating and oxidation resistance and corrosion resistance.								
Equipment name: high and low temperature test box								
laboratory environment								
temperature	22-26℃		relative humidity	65-75%	atmos		1MPA	
test parameter								
temperature	high temperature		80℃	low temperature	minus forty ℃		Temperature tolerance	2℃
time	constant temperature	high temperature	0.30H	High temperature heating	10min		remarks	1. High temperature heating up rises from room temperature to set high temperature 2. Low temperature cooling refers to the set high temperature to the set low temperature
		low temperature	0.30H	Low temperature cooling	10min			
cycle index	32 Times		else	relative humidity	95%			
visual inspection	lamination	ACC	oxidize	ACC	blister	ACC	The ink fell off	ACC
test	antistripping	≥ 0.8kgf/cm2	spot welding	ACC	Bige test	ACC	Wear-resistant experiment	ACC
test record:								
identification of product		Product test results					judge	
		After the experiment, the product has no warping and no glue overflow.					ACC	

Shenzhen Yusheng Communication Equipment Co., LTD		
Salt mist test report		
client:	QCY	Model number: HT13
Sample condition	Number of samples: 5 PCS	
	Material: single-sided half-to-half electrolytic copper	Plating layer: gold-plated
Start time of the experiment: 09, JAN 15,2024 to 09,25, JAN 17,2024		
Type of experiment	☒ NSS ☐ ASS ☐ CASS	
experiment condition	Salt solution: 5%	PH:7.0
	Box temperature: 35 °C	Relative humidity: 85% °C
	Spray method: ☒ Continuous ☐ interval	Compressed air pressure: 1kg / m ²
	precipitation rate of salt spray:	Fog liquid collection: PH7.0anc
	Experimental period: 1- -cycle	Spray time: 48H
		Hold time: 2H
The results were observed every 16 hours	The test temperature is: 36°C	Pressure barrel temperature: 47.5°C
experimental result	Appearance after the experiment: the appearance is intact and intact, no obvious change	
	Plating: no peeling, no corrosion	
	Surface spraying, screen printing: no falling off, no bubbles	

5. List of materials

600005 (HT13) BOM

edition: R:A

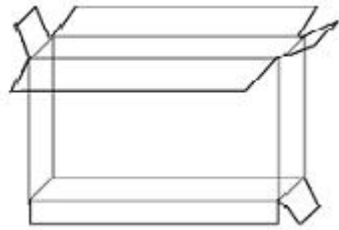
client: 600

Type of aircraft: 600005

Set a date: 2024/09/25

Item numb	* Material code	* Material	Material class	*Machine type	Specification and model	colour	*unit.	dosage	remark
2	600005-IB-RA	BT-R-FPC		HT13	BT-R-FPC Electrolytic copper 20.95*4.43*0.12 mm	BLACK	PCS	1	
2.1	600005-IB-01-RA	BT-R-FPC		HT13	BT-R-FPC Electrolytic copper 20.95*4.43*0.12 mm	BLACK	PCS	1	
verify: examine: manufacture: BYZ									

6. Packaging diagram

Packaging method diagram		
product name	Antenna components	
P / N	600005	
Project model	HT13	
File details	Carton Size 1: 270*260*200MM Carton Size 2: 260*200*200MM Carton Size 3: Depending on the order quantity / volume	
	Boating method	The minimum package of 100 bags, in turn with waterproof bags, a waterproof bag with up to 1000 materials
	Total number of binning	Packaging by order quantity
labeling requirement	Tag Size 1: Universal use 100 * 100mm Tag Size 2: According to customer requirements	
matters need attention		
1. Due to the limitation of order quantity, the packing method of each material is the size of the box according to the total quantity of the order or the physical volume		
2. Storage temperature: room temperature		
3. Preservation conditions: store them in a cool and dry place		