

QT35 project antenna material requirements specification

Customer name: QCY

Customer name: QT35

Product name: FPC antenna

Size of product: See the BOM table for more details

Material code: 10.157.000141

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

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1. Overview

1.1 Scope of application

This requirement, provided QT35 Antenna technical requirements and material requirements specifications.

This requirement applies to QT 35 Antenna selection, testing and acceptance of the product.

1.2 Project basic information

Antenna name:	QT35
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

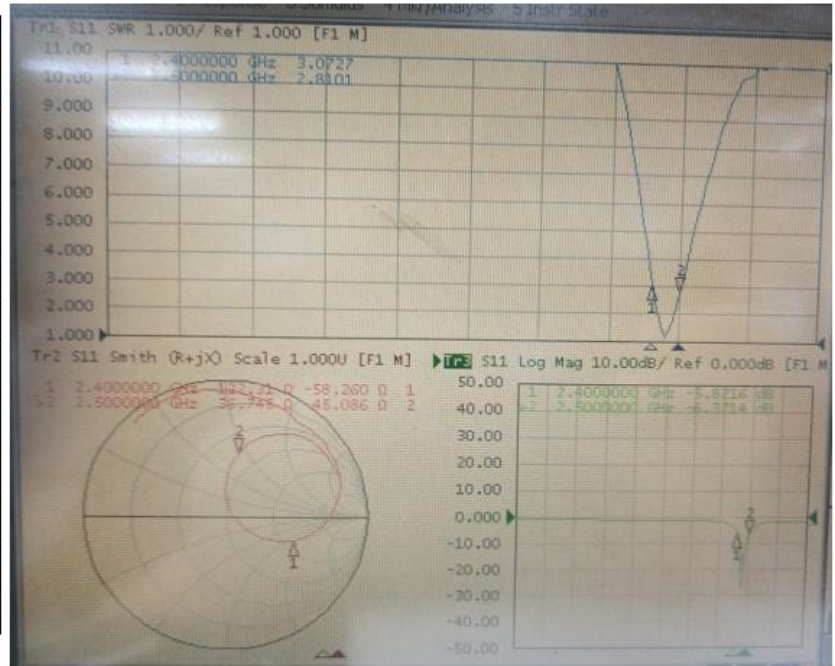
Test tools: Agilent8960 instrument, R & S CMW500, full wave far field ETS dark room, high precision positioning system and its controller and computer with automatic test program

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

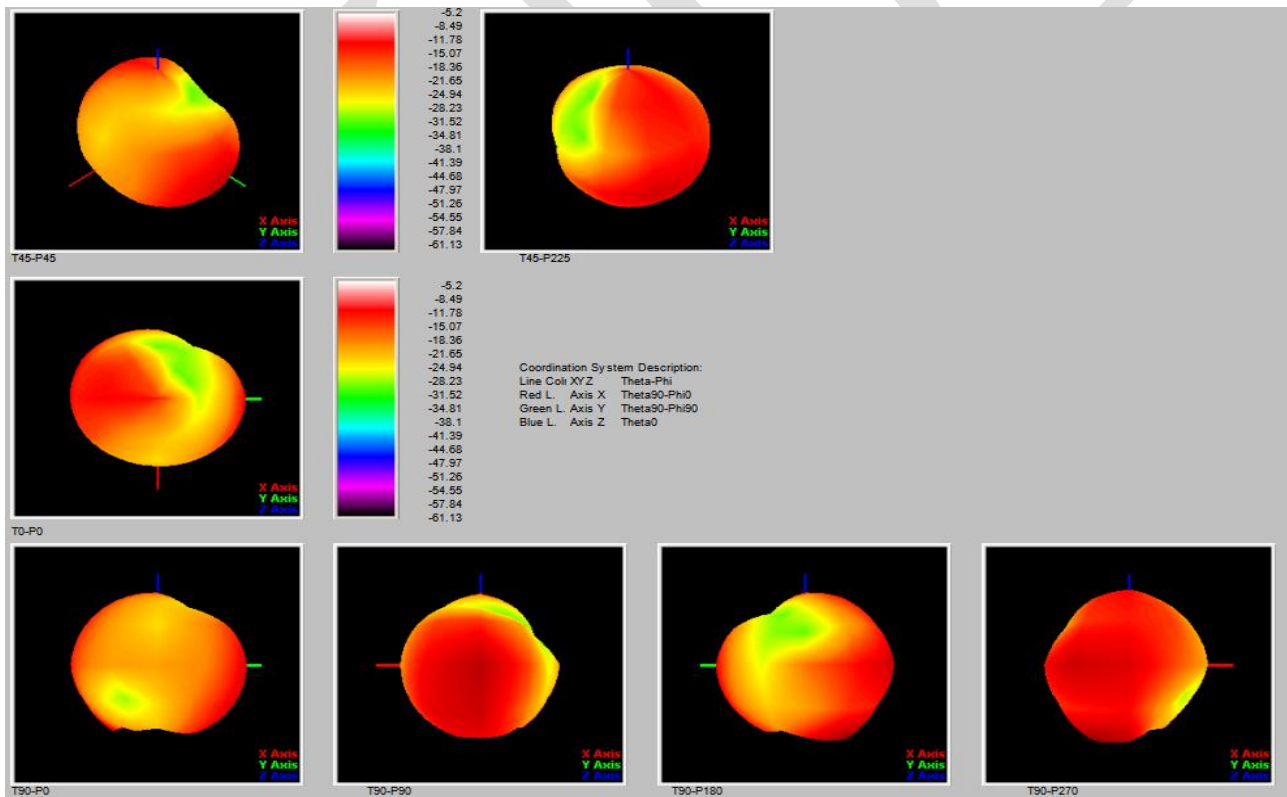
Test method: DUT is fixed in the center of the turntable on the same horizontal line as the center of the horn antenna. The positioning system enables the DUT to rotate in the whole sphere to satisfy the high-precision 3 D positioning. Each RF instrument and turntable controller communicate with the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

2.2.2 Active and passive data of the right ear antenna

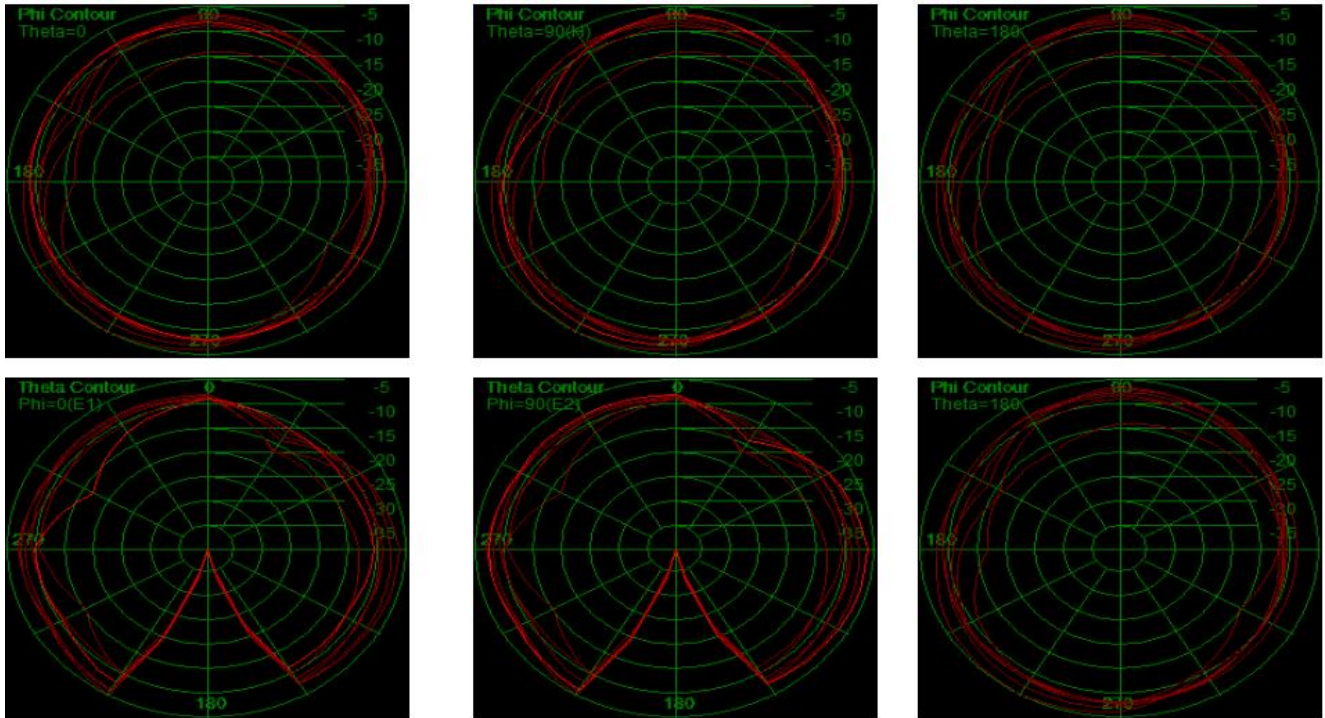
Freq	Gain (dBi)	Effi (%)
2400.0	-2.68	19.24%
2410.0	-2.80	20.61%
2420.0	-1.74	21.24%
2430.0	-1.59	22.36%
2440.0	-1.34	23.58%
2450.0	-1.48	22.75%
2460.0	-1.35	21.41%
2470.0	-1.77	20.33%
2480.0	-2.69	19.56%
2490.0	-2.55	18.21%
2500.0	-2.84	17.44%



2.2.3 Right ear antenna passive parameter-direction graph



2.2.4 Active parameters of right ear antenna-plan plan



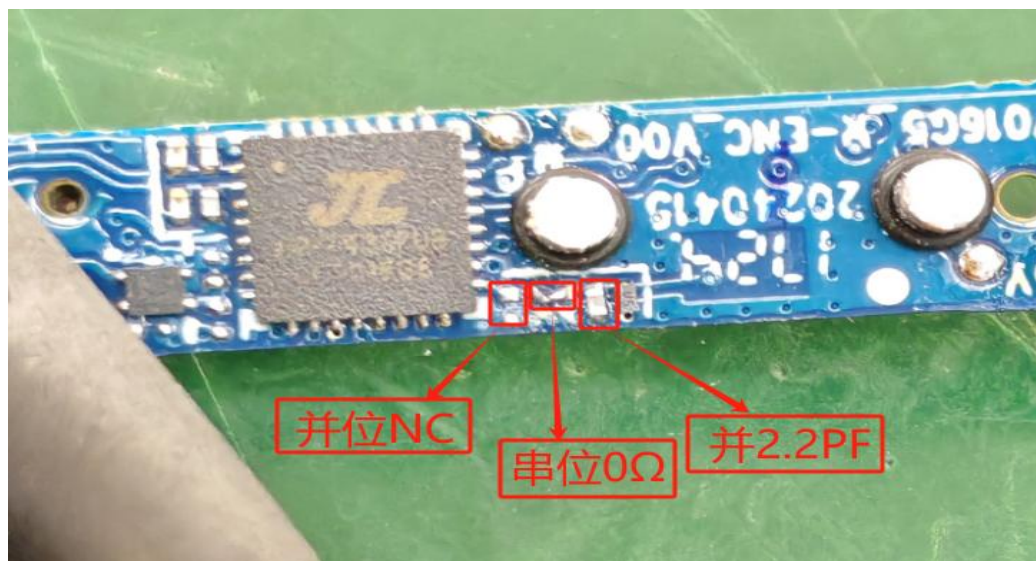
2.2.5 Antenna active parameters / head ear 1

Channel No.	Head and ear test data/R	
	TRP (dBm)	TIS (dBm)
0	-2.82	-81.76
39	-2.55	-82.73
78	-1.37	-82.53

2.2.6 Antenna active parameters / head ear 2

Channel No.	Head and ear test data/R	
	TRP (dBm)	TIS (dBm)
0	-2.87	-81.49
39	-2.67	-81.59
78	-2.59	-82.75

2.2.7 Antenna matching



Note: Antenna π -shaped matching changes, and position 2.2 PF / string 0 Ohm-left and right ear matching synchronization- - (as shown in the figure)

2.2.8 antenna field measurement data

test method:	1. Distance test: Connect the Bluetooth headset with the mobile phone, and place the mobile phone on the 60cm high non-metal bracket. The tester wears the headset to walk to the distance, and the tester rotates 360 degrees. Measure the limit distance between the call sound and music sound in the headset, measure the distance.	
	2. Close body test: the tester carries the mobile phone (preferably the back pocket of the pants opposite the main ear of the Bluetooth headset) for the human rotation test whether there is no card.	
	3. Cover the hands test: testers wear headphones and connect with the mobile phone to play music, test two states: 1) fingertip up test, test whether the music is broken; 2) fingertip back test, test whether the music is broken.	
Test location:	In the outdoor open space of our building (see the test environment)	
testing facility:	Apple 6	
test result:	listen to music	1. The left and right ears are the main ear test 12M.
		2. The close proximity has not been tested yet.
		3, cover your ears with both hands and test for 5M. (Apple 5S)

Right antenna

A							
skills requirement:							
B							
1. PCB substrate specifications:		PI substrate:		1.0m1			
		Electrolytic copper:		0.5oz(2D)			
		Double-sided tape:		3H-9471SE			
2. Electroplating specifications:		Nickel plated: 30um		0.025um			
3. Functional test requirements:		Resistance		≤0.8 ohm pass, >0.8 ohm fail			
		Return loss		+/-20dBZ/ Set MMR point position loss within +/-20dBZ to pass			
4. Surface ink requirements:		Surface ink color:		27.5um black covering film			
		Printing font color:		White			
		Printing font height:		According to drawings			
C							
5. Reliability requirements:		1. Reliability test: salt spray test(rubber friction test)(alcohol resistance test)(100 grid test).					
		2. The front ink, the surface of the ink is required to be folded in half without cracking, scratching, etc.					
6. Tolerance requirements:		1. Shape tolerance ±0.15;					
		2. Copper foil circuit tolerance ±0.05;					
		3. The position of the copper foil to the shape is ±0.15;					
		4. Hole-to-hole position tolerance ±0.10; hole-to-shape position tolerance ±0.15;					
		5. The size tolerance of gold finger is ±0.20.					
		6. For other unmarked dimensions, refer to 2D drawings.					
7. Key control size:				The dimensions marked with numbers are regarded as important dimensions, and the others refer to 2D drawings			
8. Environmental requirements:				Parts meet RoHS2.0/REACH/CE environmental protection requirements			
9. Packaging requirements:				Paste full plate release paper for shipment			
D							
		0~10		±0.10			
		10~20		±0.12			
		20~40		±0.15			
		40~50		±0.20			
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4. Reliability test report

Hot and cold shock test report

client	QCY		date	2024-7-12		Factory number	600004	
P / N	QT35		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-resistance experiment	ACC
test record:								
identification of product		Product test results					judge	
		After the experiment, the product has no warping and no glue overflow.					ACC	

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Shenzhen Yusheng Communication Equipment Co., LTD		
Salt mist test report		
client:	QCY	Model number: QT 35
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, July 20,2024 to 09,25, July 12,2024		
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

600004 (QT35) BOM

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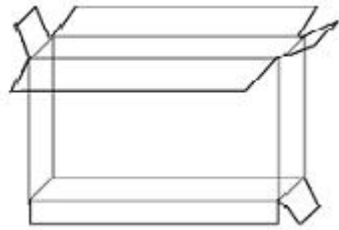
client: 600

Type of aircraft: 600004

et a date: 2024/08/2

Item numb	* Material code	* Material	Material class	*Machine type	Specification and model	colour	*unit.	dosage	remark
2	600004-IB-TA	BT-R-FPC		QT35	BT-R-FPC Electrolytic copper 20.95*4.43*0.12 mm	BLACK	PCS	1	
2.1	600004-IB-01-TA	BT-R-FPC		QT35	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	600004	
Project model	QT35	
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		