

# JMGO Sample Confirmation Letter

Supplier Name: SHENZHEN YINGJIACHUANG TECHNOLOGY ELECTRONIC CO. LTD


Material Name: BT 2.4G Black FPC built-in Antenna (C51A)

Material No.: 23040311 /

Material Description: BT 2.4G Black FPC built-in Antenna (C61A)

Version: A0

Drawing Version: A0

Supplier Approved <div>This needs to be stamped, and each acknowledgment letter needs to be stamped with a riding seal.</div>			Shenzhen Holatek Approved			
R&D/Engineering	Quality	Approved	Product Center	R&D	Supply-Chain Center	Quality Management Department
Yin FeiJie	Yang YunGang	 Xiao Han				

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Product drawings:

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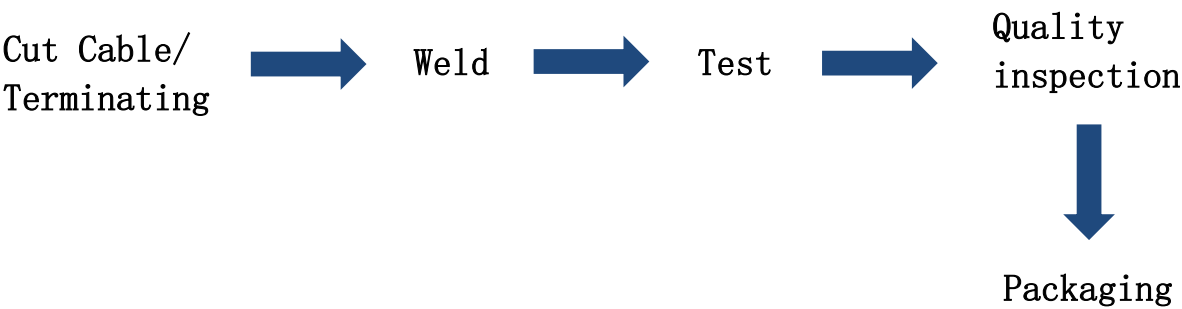
## Specification:

Electrical Specifications	
Frequency Range	2400-2500MHz
VSWR	<1.92
Input Impedance	50 $\Omega$
Direction	All
Gain	1.40 dBi
Mechanical Specifications	
Cable Color	Black
Input connector	XD
Cable length	110mm (Total Length)
Working Temperature	-20℃~+70℃
Working Humidity	20%~80%

## Environmental performance test:

Project	Test condition	Standard
Storage Conditions	In the absence of specified test temperature, humidity, air pressure is as follows: 1. Temperature is - 20 ℃ ~ + 70 ℃ 2. Relative humidity of 45% to 85% 3. Air pressure is 86 kpa to 106 kpa	Electrical and mechanical properties is normal
High and low temperature test	Between 70 ℃ and -20 ℃ for 5 loops, then 1-2 h under normal conditions, check the appearance quality.	Size should meet the requirements and should satisfy the content with the electrical and mechanical properties
Constant damp and hot resistance test	95 + / - 3% relative humidity, temperature test: 40 ℃. Lasts 2 h after, try to take out the determination of electrical properties, within 5 min after try 1-2 h under article normal thing, check the appearance quality	Size should meet the requirements and should satisfy the content with the electrical and mechanical properties
vibration test	Vibration frequency range: 10-55 Hz, vibration frequency range of displacement amplitude: 0.35 MM, acceleration amplitude: 50.0 M/S, sweep cycles: 30 times	Electrical and mechanical properties is normal
Fall down test	1 m high altitude in accordance with the perpendicular axis free drop 3 times	Electrical and mechanical properties is normal

Process Flow Diagram



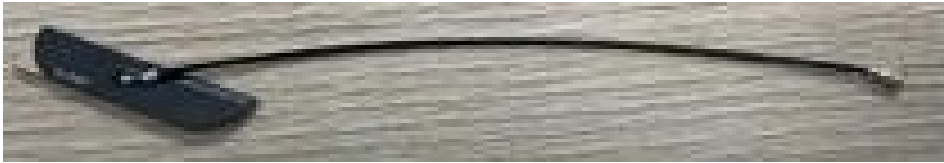
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## BOM list

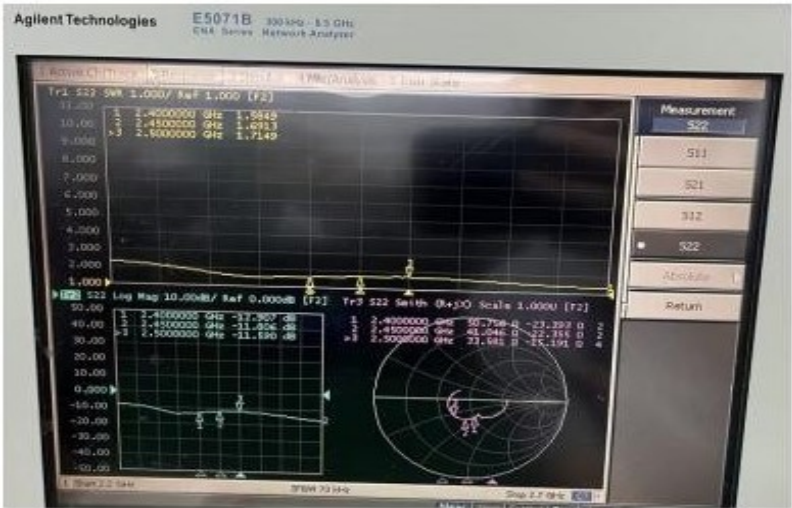
FPC、Cable、Terminal、PE packaging bag、Carton

Performance testing reports:

Antenna physical image:



Antenna performance test chart:

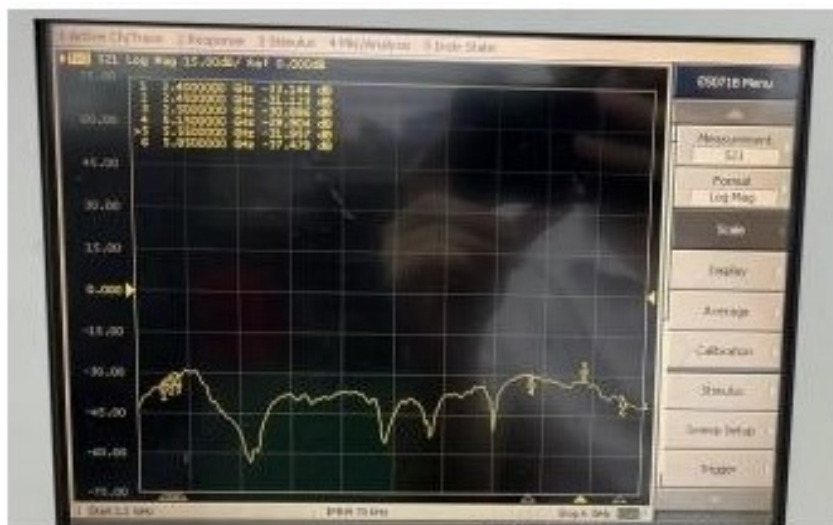


Frequency (MHZ)	2400	2450	2500
VSWR (dB)	1.58	1.69	1.71

BT and WiFi 1 isolation test diagram



BT and WiFi 2 isolation test diagram



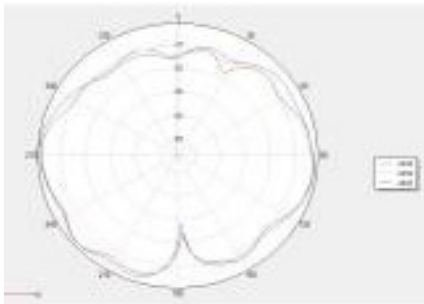
Frequency (MHz)	2400	2450	2500	5150	5725	5850
WIFI1 and BT isolation (dB)	-40	-31	-30	-36	-29	-29
WIFI2 and BT isolation (dB)	-33	-31	-30	-29	-31	-37



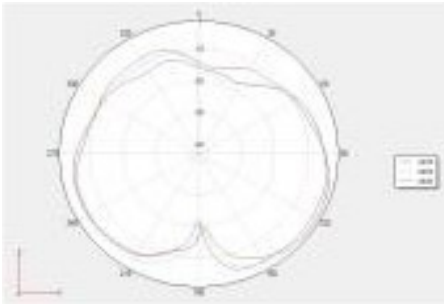
2D、3D test data (BT):

Frequency	Efficiency (%)	Gain. (dBi)
2400MHz	35.50	1.23
2410MHz	36.46	1.40
2420MHz	37.12	1.37
2430MHz	36.66	1.33
2440MHz	36.25	1.32
2450MHz	37.18	1.40
2460MHz	37.37	1.32
2470MHz	36.93	1.38
2480MHz	35.95	1.36
2490MHz	35.85	1.34
2500MHz	34.92	1.20

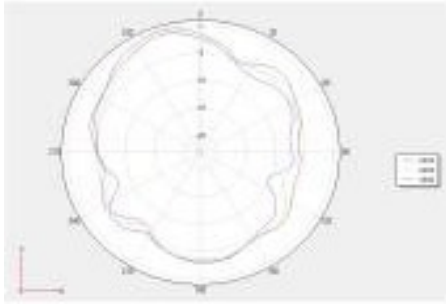
Phi 0 2D :



Phi 90 2D

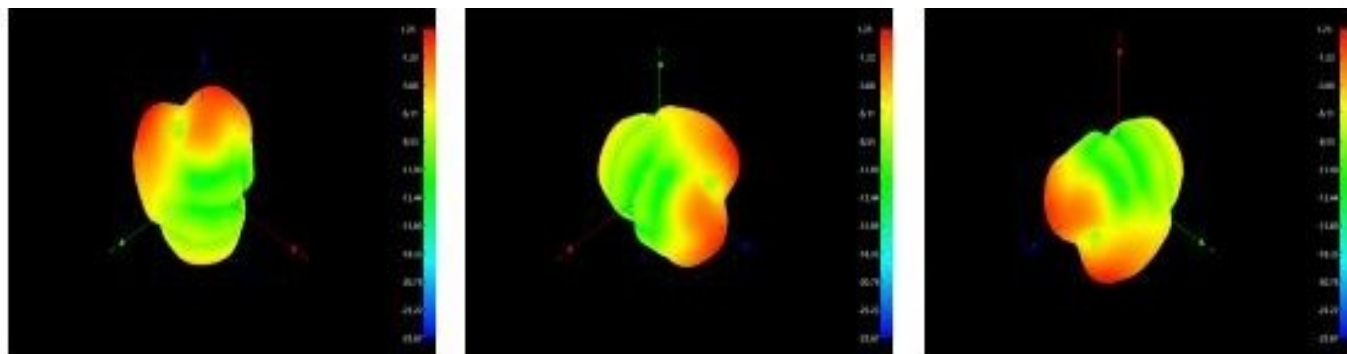


Theta 90 2D

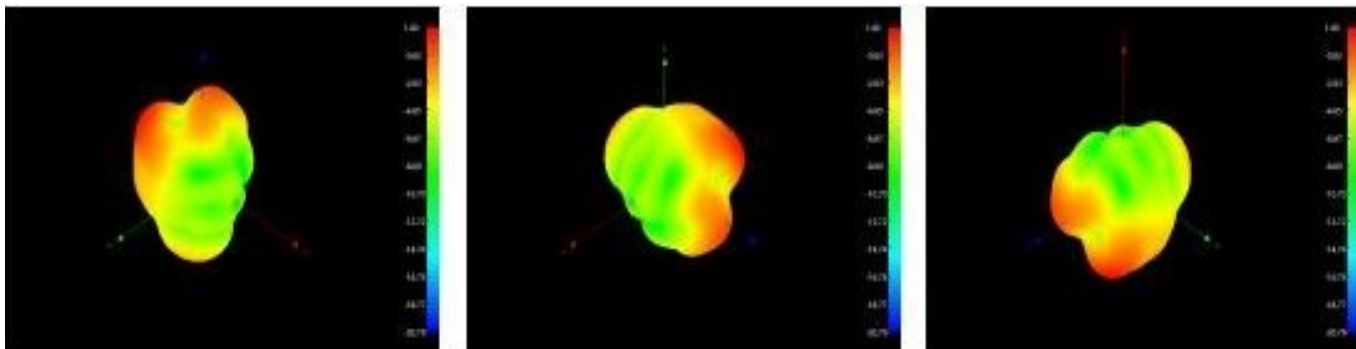


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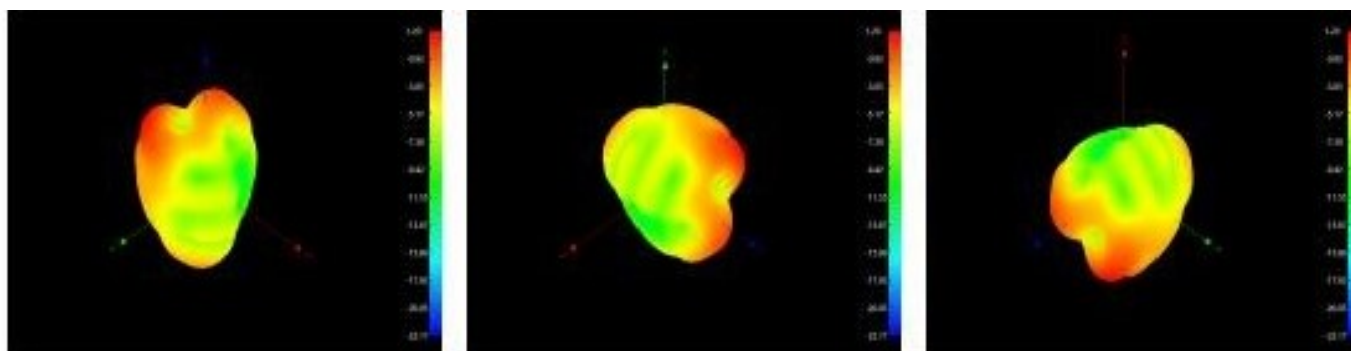
3D 2400:



3D 2450:



3D 2500:



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OTA active test data:

Item	Measurement	Band	Channel	Frequency	Total
1	TRP	BLUETOOTH	0	2402	-2.96
2	TRP	BLUETOOTH	39	2441	-2.42
3	TRP	BLUETOOTH	78	2480	-1.51
4	TIS(EIRP)	BLUETOOTH	0	2402	-85.86
5	TIS(EIRP)	BLUETOOTH	39	2441	-86.91
6	TIS(EIRP)	BLUETOOTH	78	2480	-87.58
7	TRP	BLUETOOTH	0	2402	-3.2
8	TRP	BLUETOOTH	39	2441	-2.59
9	TRP	BLUETOOTH	78	2480	-1.44
10	TIS(EIRP)	BLUETOOTH	0	2402	-85.61
11	TIS(EIRP)	BLUETOOTH	39	2441	-96.19
12	TIS(EIRP)	BLUETOOTH	78	2480	-86.3
13	TRP	BLUETOOTH	0	2402	-3.1
14	TRP	BLUETOOTH	39	2441	-2.52
15	TRP	BLUETOOTH	78	2480	-1.66
16	TIS(EIRP)	BLUETOOTH	0	2402	-79.27
17	TIS(EIRP)	BLUETOOTH	39	2441	-80.85
18	TIS(EIRP)	BLUETOOTH	78	2480	-81.9

Material RoHS conformity declaration form											
This is to certify that the delivery to your company's components, raw materials, auxiliary materials used and the additives in the production engine      ord with RoHS environmental requirements of the restrictions on the use of hazardous substances directive (RoHS directive 2011/65 / EC)											
About components used raw materials, packaging materials, auxiliary materials and additives used in the production process such as composition of the report is as follows:											
Component /Part Name	Material Composition	ICP report #	Test Org.	Test Date	Content of harmful substances (ppm)						PASS?
					Cd	Pb	Hg	Cr <sup>6+</sup>	PBB	PBDE	PASS
FPC	Ink	ETR23701480	SGS	23/07/13	ND	ND	ND	ND	ND	ND	PASS
	3M9471LE	SHAEC23021627701	SGS	23/12/27	ND	ND	ND	ND	ND	ND	PASS
	Cooper foil	A2240082746101006E	CTI	24/03/01	ND	ND	ND	ND	ND	ND	PASS
Wire	Series Coaxial Cables	CANEC24002746206	SGS	24/02/23	ND	ND	ND	ND	ND	ND	PASS
Terminal	Copper	CANEC24000977302	SGS	24/01/22	ND	6	ND	ND	ND	ND	PASS
	Au plating	A2230400553101001E	CTI	23/08/12	ND	ND	ND	ND	ND	ND	PASS
	Rubber core	ETR23705931	SGS	23/08/04	ND	ND	ND	ND	ND	ND	PASS
Enviro nmenta lly friend ly Tin	Environmenta lly friendly Tin wire	SZXEC23001647204	SGS	23/07/28	ND	63	ND	ND	ND	ND	PASS