JMGO Sample Confirmation Letter

Supplier Name: SHENZHEN YINGJIACHUANG TECHNOLOGY ELECTRONIC CO. LTD

Material Name: BT 2.4G Black FPC built-in Antenna (S91A)
Material No.: 23040304 & YJC-6N105-B47
Material Description: BT 2.4G Black FPC built-in Antenna (S91A)
Version: A0
Drawing Version: A0

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

Address: Building C, Hongyu Guangming Valley, No. 11, Shiwei Community, Matian Office, Guangming District, Shenzhen

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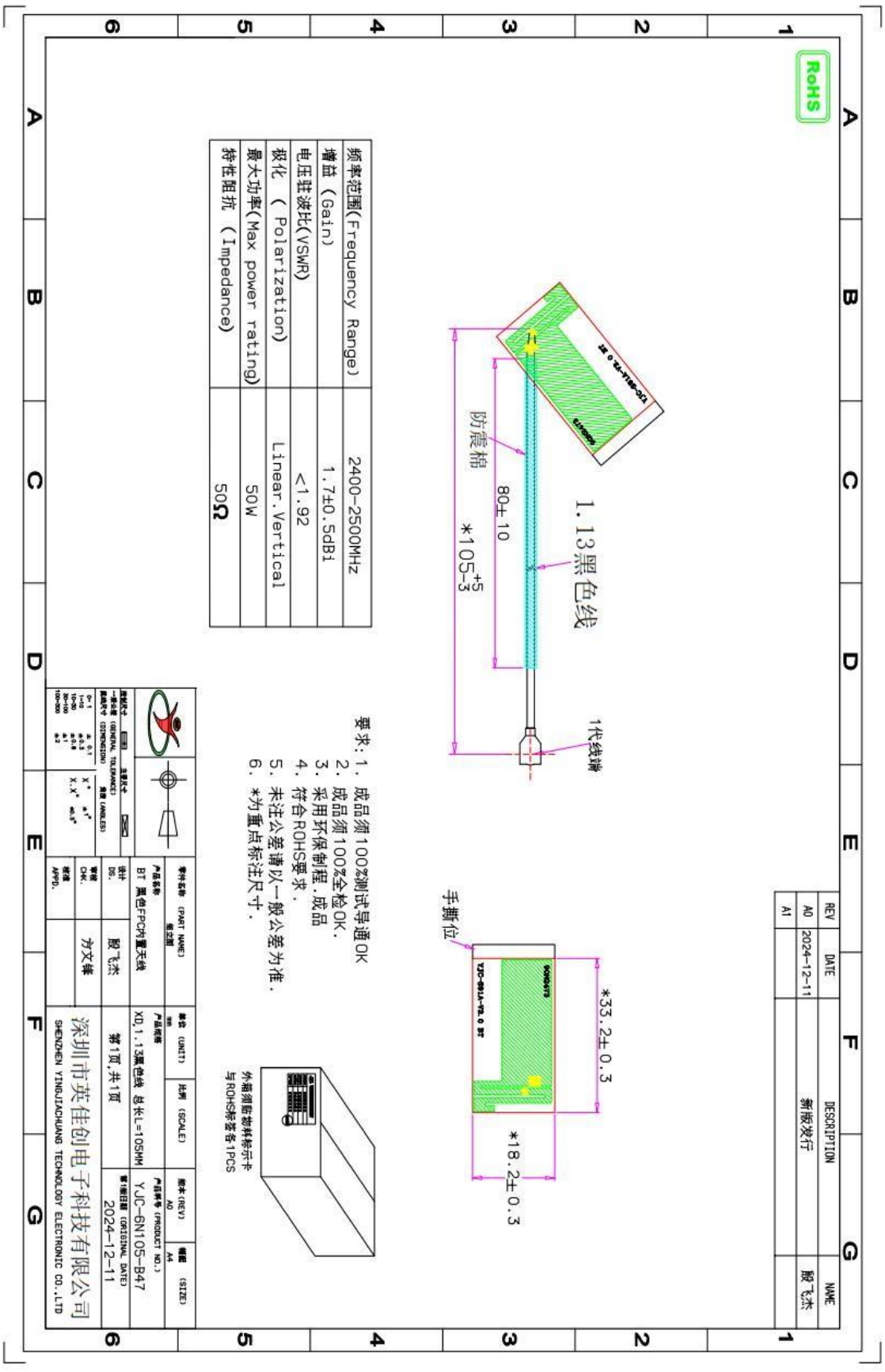
Product drawings:



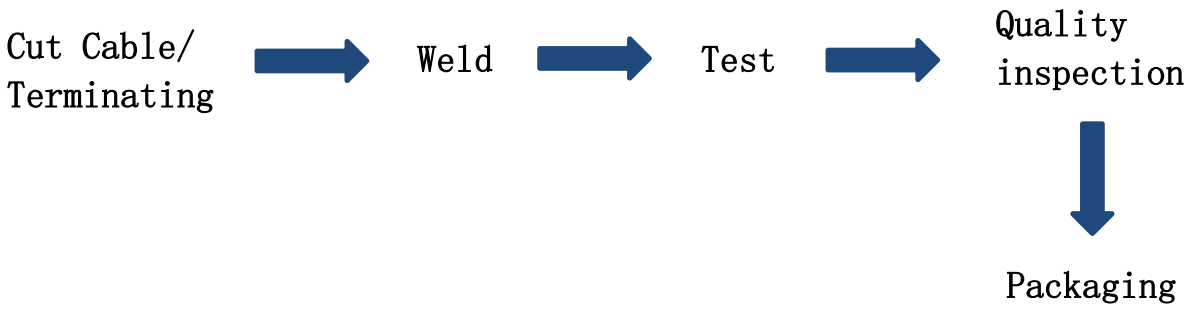
Specification:

Electrical Specifications	
Frequency Range	2400-2500MHz
VSWR	＜1.92
Input Impedance	50 Ω
Direction	All
Gain	1.90 dBi
Mechanical Specifications	
Cable Color	Black
Input connector	XD
Cable length	105mm （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



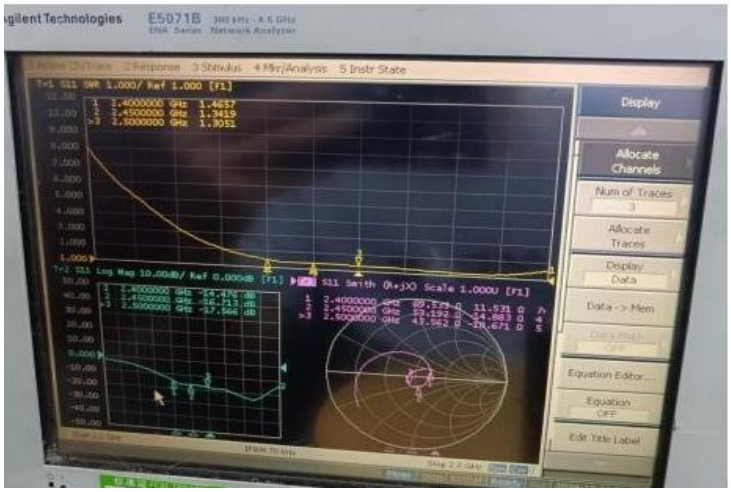
BOM list

FPC、Cable、Terminal、PE packaging bag、Carton

Performance testing reports:

Antenna physical image:

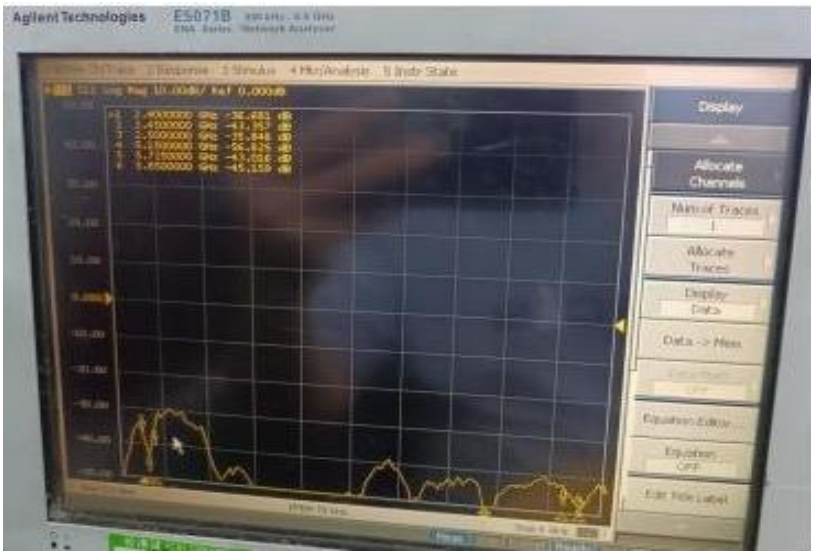
Antenna performance test chart:



Frequency（MHZ）	2400	2450	2500
VSWR（dB）	1.46	1.34	1.30

BT and WiFi 1 isolation test diagram

BT and WiFi 2 isolation test diagram

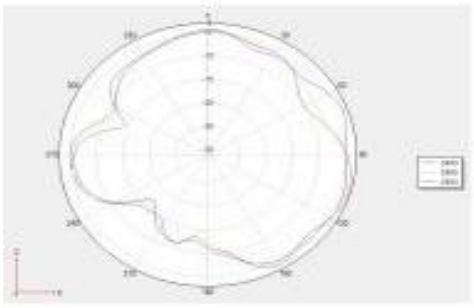


Frequency（MHz）	2400	2450	2500	5150	5725	5850
WIFI1 and BT isolation (dB)	-35	-31	-31	-39	-24	-27
WIFI2 and BT isolation (dB)	-36	-43	-35	-56	-43	-45

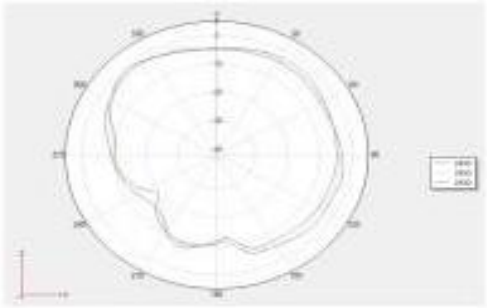
2D、3D test data (BT)：

Frequency	Efficiency (%)	Gain.(dBi)
2400MHz	52.92	1.81
2410MHz	54.31	1.77
2420MHz	54.13	1.68
2430MHz	53.08	1.90
2440MHz	53.09	1.89
2450MHz	56.91	1.85
2460MHz	55.72	1.65
2470MHz	55.34	1.54
2480MHz	55.51	1.84
2490MHz	52.78	1.76
2500MHz	53.62	1.88

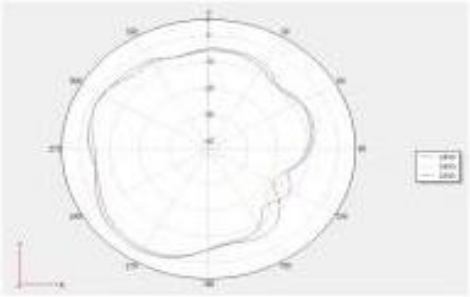
Phi 0 2D :



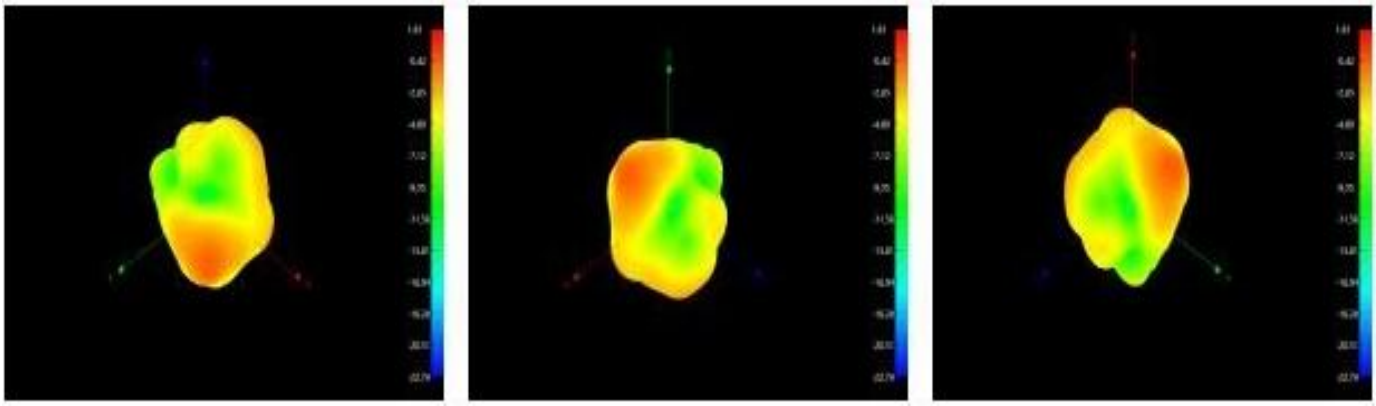
Phi 90 2D



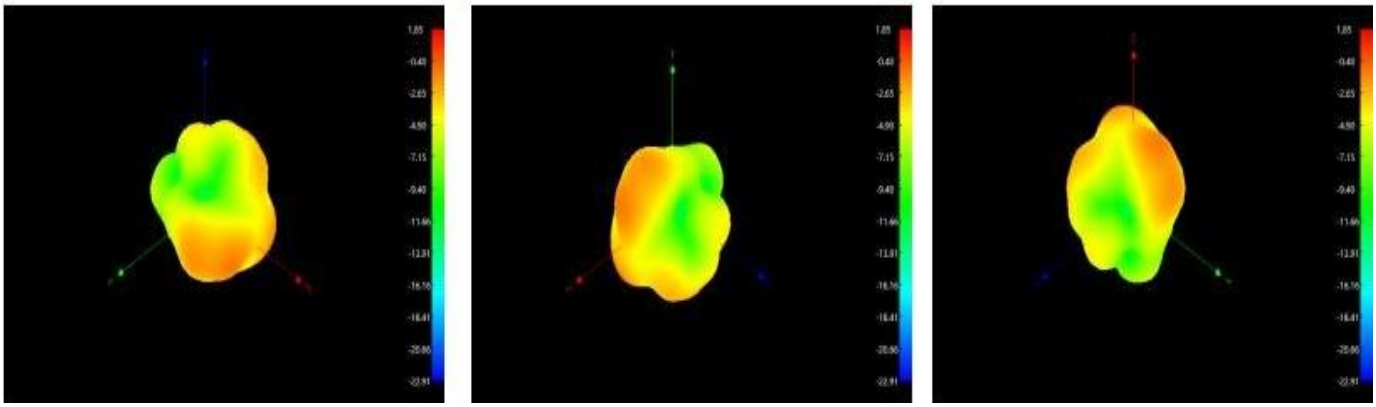
Theta 90 2D



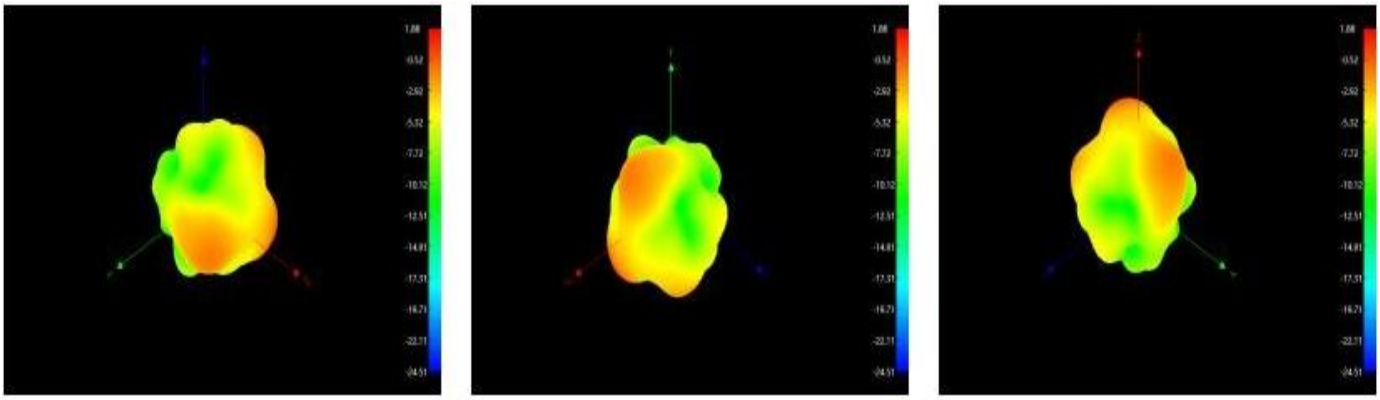
3D 2400：



3D 2450：



3D 2500：



OTA active test data:

Item	Measurement	Band	Channel	Frequency	Total
1	TRP	BLUETOOTH	0	2402	3.45
2	TRP	BLUETOOTH	39	2441	3.52
3	TRP	BLUETOOTH	78	2480	2.87
4	TIS(EIRP)	BLUETOOTH	0	2402	-85.39
5	TIS(EIRP)	BLUETOOTH	39	2441	-86.77
6	TIS(EIRP)	BLUETOOTH	78	2480	-86.49
7	TRP	BLUETOOTH	0	2402	3.71
8	TRP	BLUETOOTH	39	2441	3.87
9	TRP	BLUETOOTH	78	2480	3.15
10	TIS(EIRP)	BLUETOOTH	0	2402	-85.06
11	TIS(EIRP)	BLUETOOTH	39	2441	-85.85
12	TIS(EIRP)	BLUETOOTH	78	2480	-85.9
13	TRP	BLUETOOTH	0	2402	3.78
14	TRP	BLUETOOTH	39	2441	3.91
15	TRP	BLUETOOTH	78	2480	3.2
16	TIS(EIRP)	BLUETOOTH	0	2402	-79.41
17	TIS(EIRP)	BLUETOOTH	39	2441	-80.81
18	TIS(EIRP)	BLUETOOTH	78	2480	-79.12

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 $^{6+}$	PBB	PBDE	PASS
FPC	Ink	ETR24902229M01	SGS	24/09/23	ND	ND	ND	ND	ND	ND	PASS
	Copper	A2240082746101006E	CTI	24/03/01	ND	ND	ND	ND	ND	ND	PASS
	FPC	SHAEC23021627701	SGS	23/12/27	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	A2240410234101001E	CTI	24/07/16	ND	ND	ND	ND	ND	ND	PASS
	Rubber core	A2240126395101003E	CTI	24/03/16	ND	ND	ND	ND	ND	ND	PASS
Environmentally friendly Tin wire	Environmentally friendly Tin wire	SHAEC24006459102	SGS	24/04/10	ND	78	ND	ND	ND	ND	PASS

JMGO Sample Confirmation Letter

Supplier Name: SHENZHEN YINGJIACHUANG TECHNOLOGY ELECTRONIC CO. LTD

Material Name: WiFi1 2.4G/5.8G Black FPC built-in Antenna (S91A)
Material No.: 23040305&YJC-6N120-B63
Material Description: _____ /_____
Version: AO
Drawing Version: AO

Supplier Approved This needs to be stamped, and each acknowledgment letter needs to be stamped with a riding seal.				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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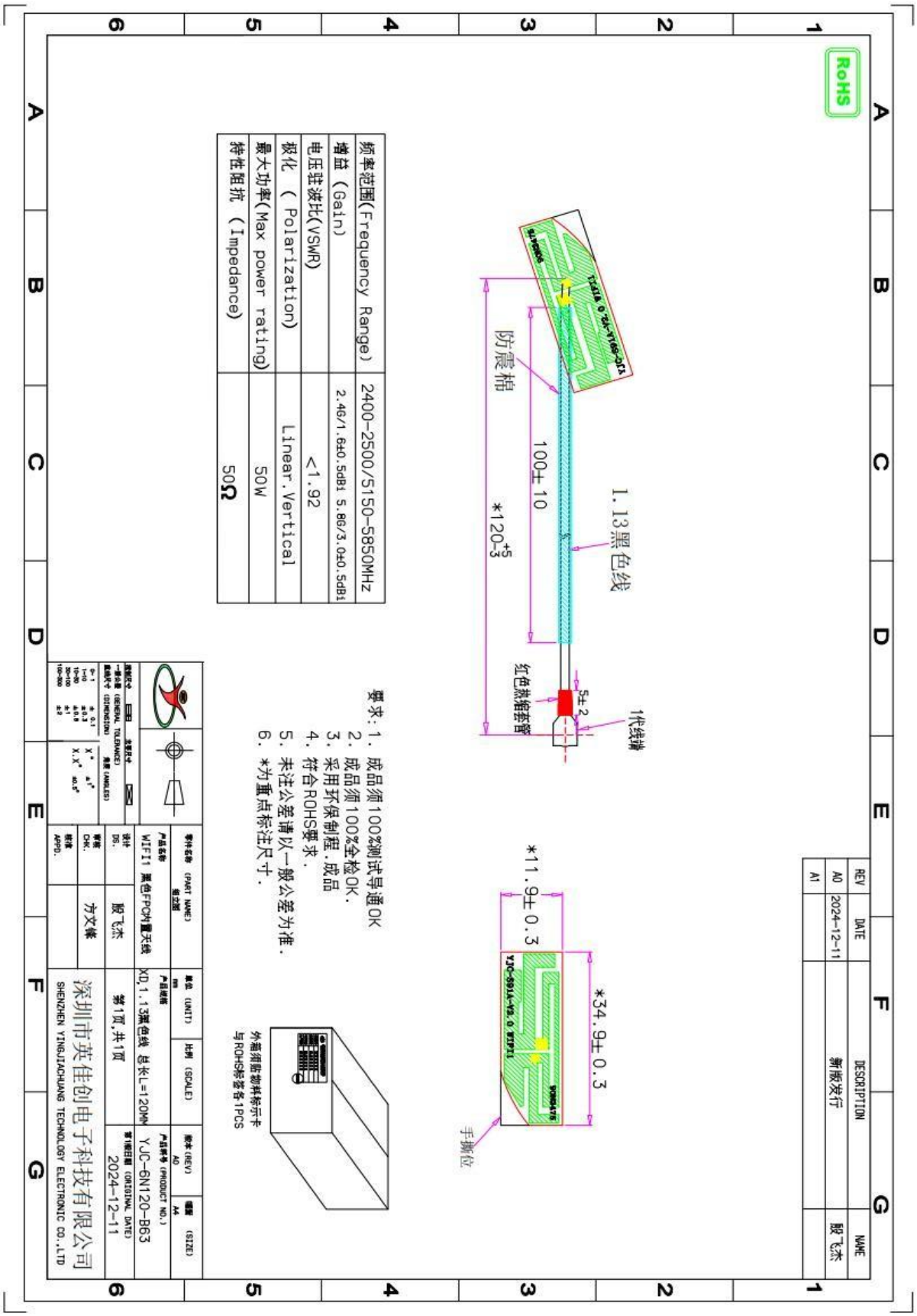
Product drawings:



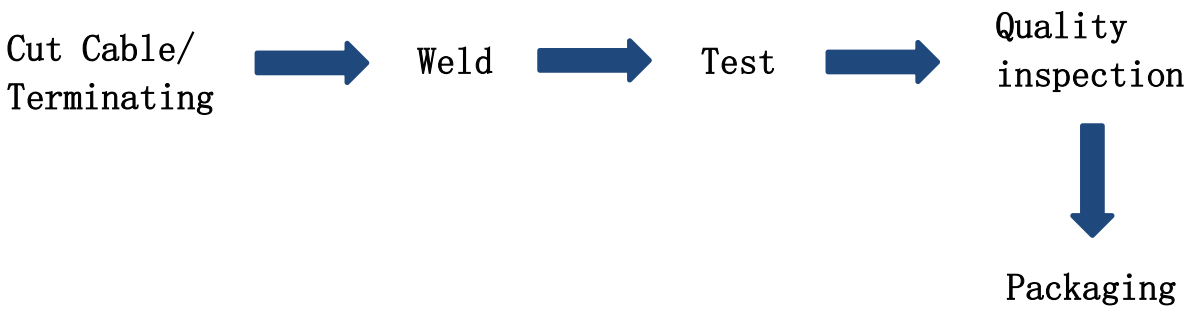
Specification:

Electrical Specifications	
Frequency Range	2400-2500/5150-5850MHz
VSWR	＜1.92
Input Impedance	50 Ω
Direction	All
Gain(2.4G)	1.9 dBi
Gain(5.1G)	3.2 dBi
Gain(5.8G)	2.9 dBi
Mechanical Specifications	
Cable Color	Black
Input connector	XD
Cable length	120mm (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



BOM list

FPC、Cable、Terminal、PE packaging bag、Carton

Performance testing reports:

Antenna physical image:

Antenna performance test chart:

Frequency（MHZ）	2400	2450	2500	5150	5725	5850
VSWR（dB）	1.30	1.11	1.14	1.29	1.36	1.46

WIFI 1 and WIFI 2 isolation test diagram

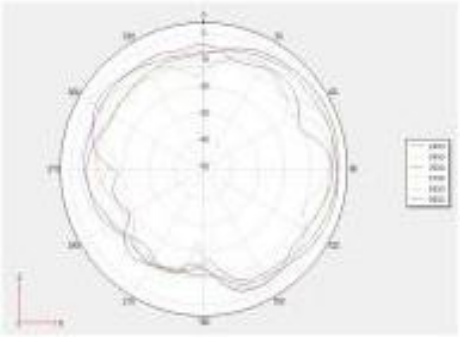
WIFI 1 and BT isolation test diagram

Frequency（MHz）	2400	2450	2500	5150	5725	5850
WIFI1 and BT isolation (dB)	-35	-31	-31	-39	-24	-27
WIFI1 and WIFI2 isolation (dB)	-45	-43	-44	-36	-32	-29

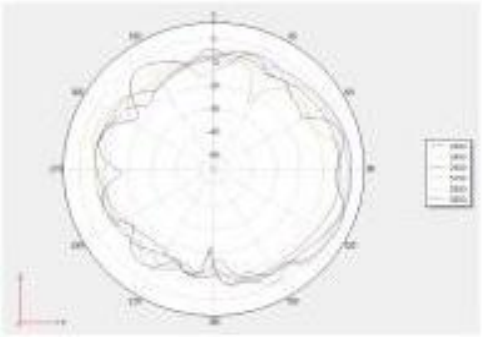
2D、3D test data (WIFI 1)：

Frequency	Efficiency (%)	Gain.(dBi)
2400MHz	57.65	1.82
2410MHz	52.42	1.76
2420MHz	52.75	1.59
2430MHz	50.05	1.64
2440MHz	52.7	1.67
2450MHz	55.88	1.90
2460MHz	56.37	1.87
2470MHz	56.89	1.64
2480MHz	56.02	1.82
2490MHz	57.83	1.77
2500MHz	57.96	1.83
5150MHz	46.81	3.11
5250MHz	50.07	3.20
5350MHz	51.14	3.09
5450MHz	46.79	2.89
5550MHz	46.96	2.70
5650MHz	47.53	3.20
5750MHz	51.54	2.90
5850MHz	48.33	2.86

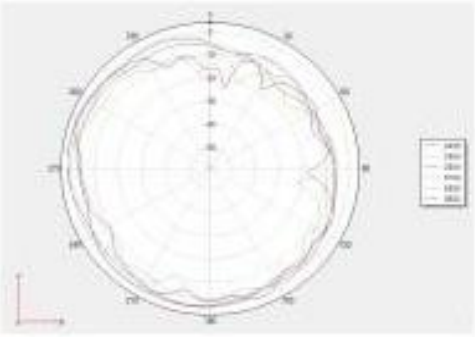
Phi 0 2D :



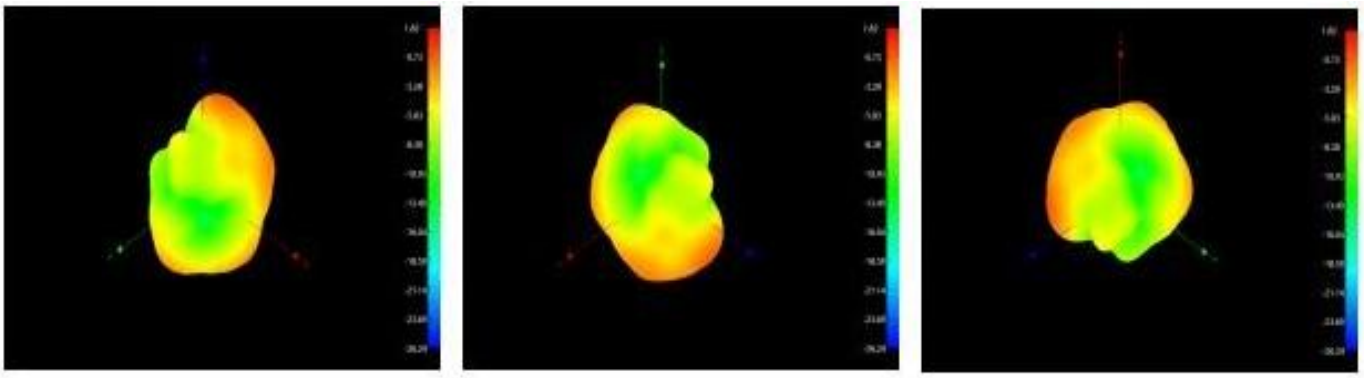
Phi 90 2D



Theta 90 2D



3D 2400：



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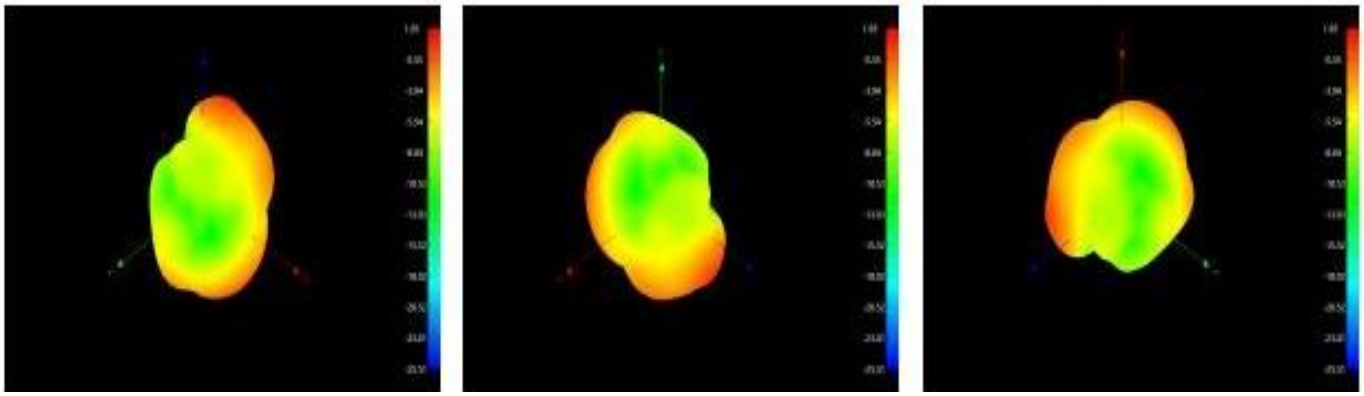

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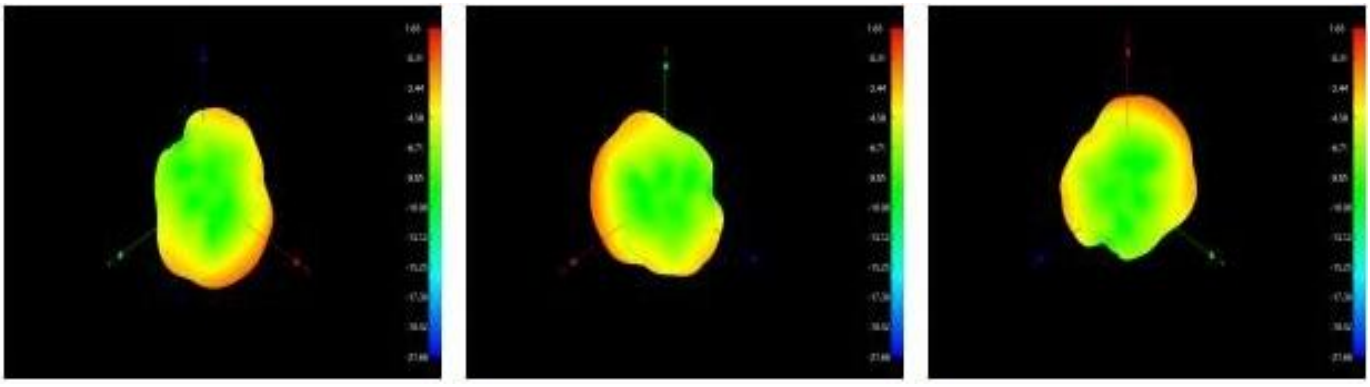

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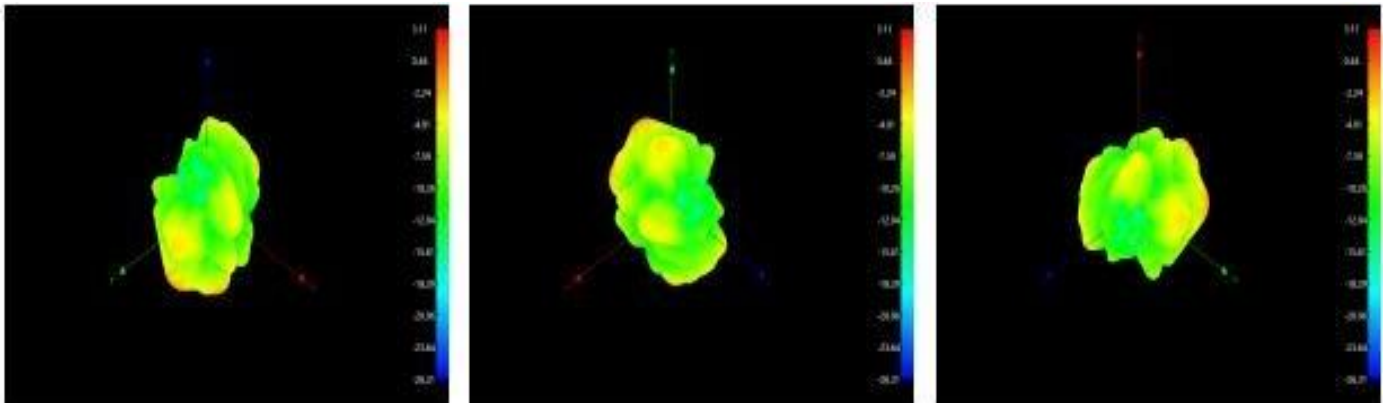
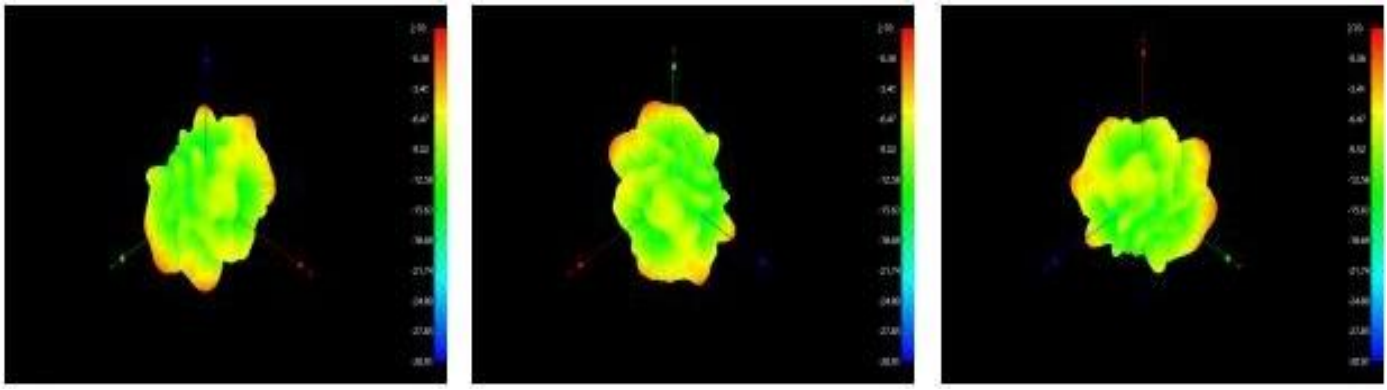
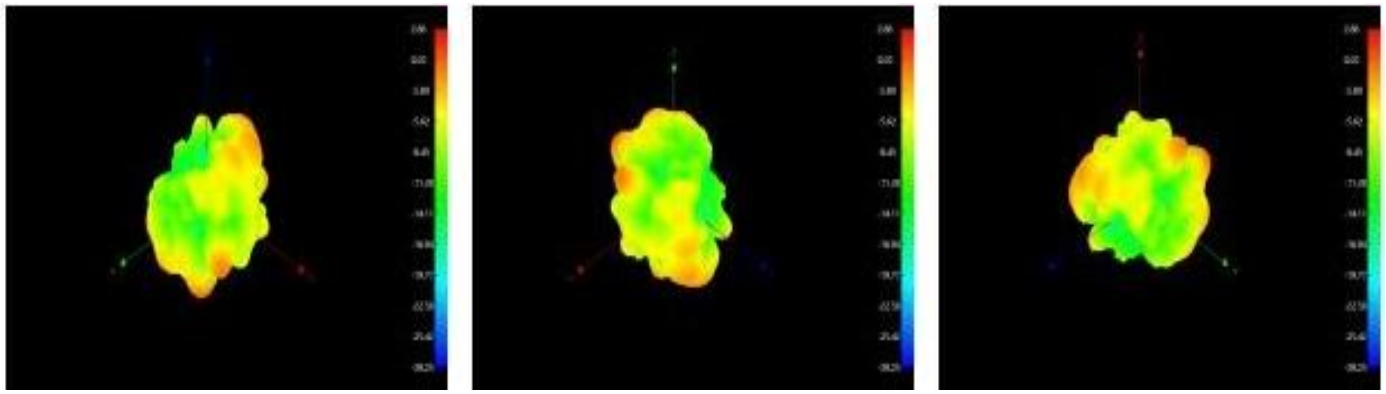


3D 5500：



3D 5850：



OTA active test data：

Item	Measurement	Band	Channel	Frequency	Total
1	TRP	WIFI_B (11M)	1	2412	15.53
2	TRP	WIFI_B (11M)	6	2437	14.25
3	TRP	WIFI_B (11M)	11	2462	14.26
4	TIS(EIRP)	WIFI_B (11M)	1	2412	-82.85
5	TIS(EIRP)	WIFI_B (11M)	6	2437	-81.01
6	TIS(EIRP)	WIFI_B (11M)	11	2462	-80.56
7	TRP	WIFI_G (54M)	1	2412	13.77
8	TRP	WIFI_G (54M)	6	2437	13.05
9	TRP	WIFI_G (54M)	11	2462	12.92
10	TIS(EIRP)	WIFI_G (54M)	1	2412	-70.95
11	TIS(EIRP)	WIFI_G (54M)	6	2437	-69.6
12	TIS(EIRP)	WIFI_G (54M)	11	2462	-70.29
13	TRP	WIFI_N_ISM (65M)	1	2412	16.31
14	TRP	WIFI_N_ISM (65M)	6	2437	15.02
15	TRP	WIFI_N_ISM (65M)	11	2462	16.42
16	TIS(EIRP)	WIFI_N_ISM (65M)	1	2412	-68.26
17	TIS(EIRP)	WIFI_N_ISM (65M)	6	2437	-67.34
18	TIS(EIRP)	WIFI_N_ISM (65M)	11	2462	-68.04
19	TRP	WIFI_A (54M)	36	5180	14.48
20	TRP	WIFI_A (54M)	149	5745	15.18
21	TRP	WIFI_A (54M)	165	5825	16
22	TIS(EIRP)	WIFI_A (54M)	36	5180	-73.78
23	TIS(EIRP)	WIFI_A (54M)	149	5745	-74.74
24	TIS(EIRP)	WIFI_A (54M)	165	5825	-75.64

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Component /Part Name	Material Composition	ICP report #	Test Org.	Test Date	Content of harmful substances (ppm)						PASS?
					Cd	Pb	Hg	Cr $^{6+}$	PBB	PBDE	PASS
FPC	Ink	ETR24902229M01	SGS	24/09/23	ND	ND	ND	ND	ND	ND	PASS
	Copper	A2240082746101006E	CTI	24/03/01	ND	ND	ND	ND	ND	ND	PASS
	FPC	SHAEC23021627701	SGS	23/12/27	ND	ND	ND	ND	ND	ND	PASS
Wire	Series Coaxial Cables	CANEC24002746206	SGS	24/02/23	ND	ND	ND	ND	ND	ND	PASS
Tube	Tube	CANEC24001723028	SGS	24/01/29	ND	ND	ND	ND	ND	ND	PASS
Terminal	Copper	CANEC24000977302	SGS	24/01/22	ND	6	ND	ND	ND	ND	PASS
	Au plating	A2240410234101001E	CTI	24/07/16	ND	ND	ND	ND	ND	ND	PASS
	Rubber core	A2240126395101003E	CTI	24/03/16	ND	ND	ND	ND	ND	ND	PASS
Environmentally friendly Tin wire	Environmentally friendly Tin wire	SHAEC24006459102	SGS	24/04/10	ND	78	ND	ND	ND	ND	PASS

JMGO Sample Confirmation Letter

Supplier Name: SHENZHEN YINGJIACHUANG TECHNOLOGY ELECTRONIC CO. LTD

Material Name: WiFi2 2.4G/5.8G Black FPC built-in Antenna (S91A)
Material No.: 23040306 & YJC-6N175-B17
Material Description: WiFi2 2.4G/5.8G Black FPC built-in Antenna (S91A)
Version: A0
Drawing Version: A0

Supplier Approved This needs to be stamped, and each acknowledgment letter needs to be stamped with a riding seal.				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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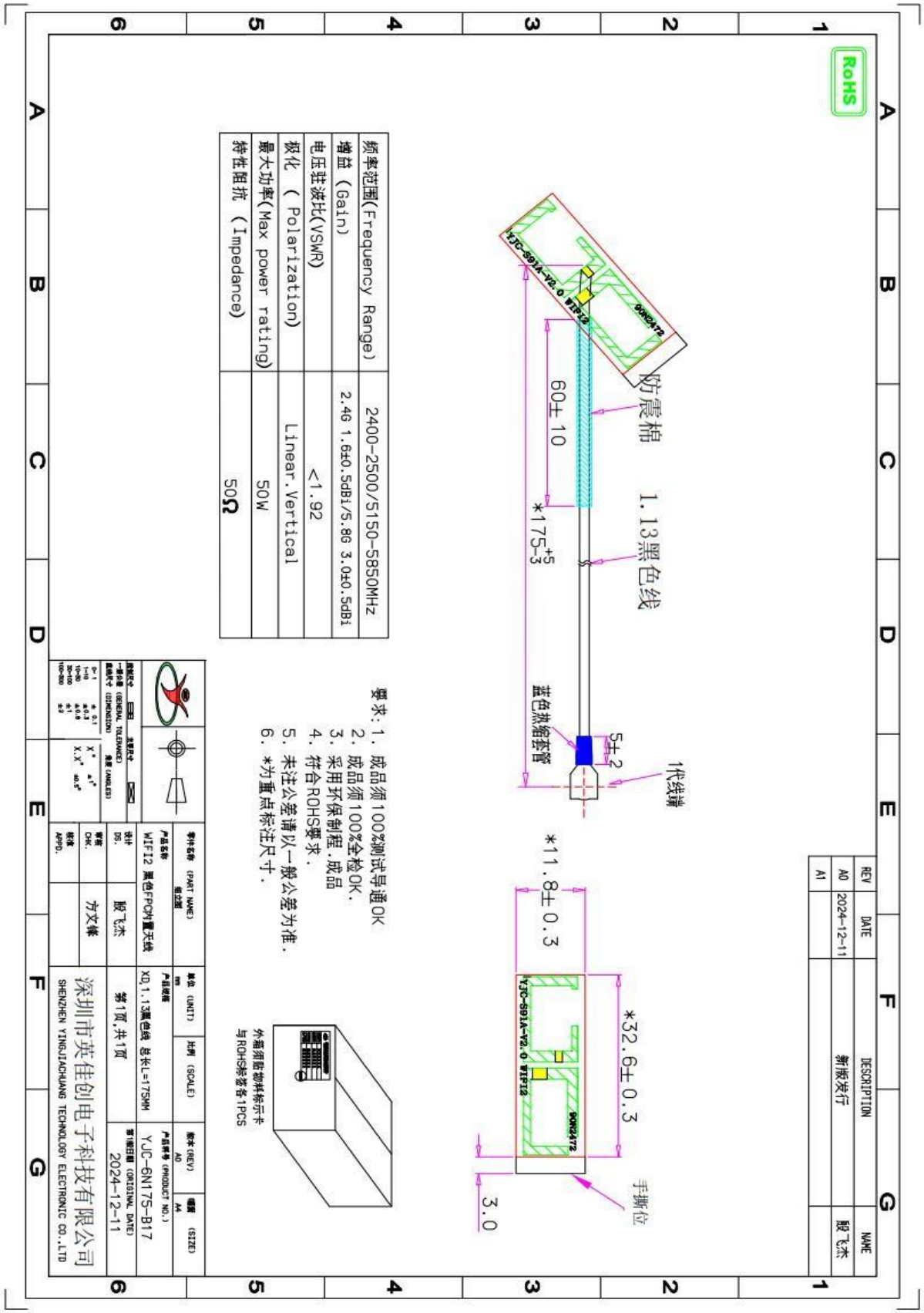


Antenna technology parameters:

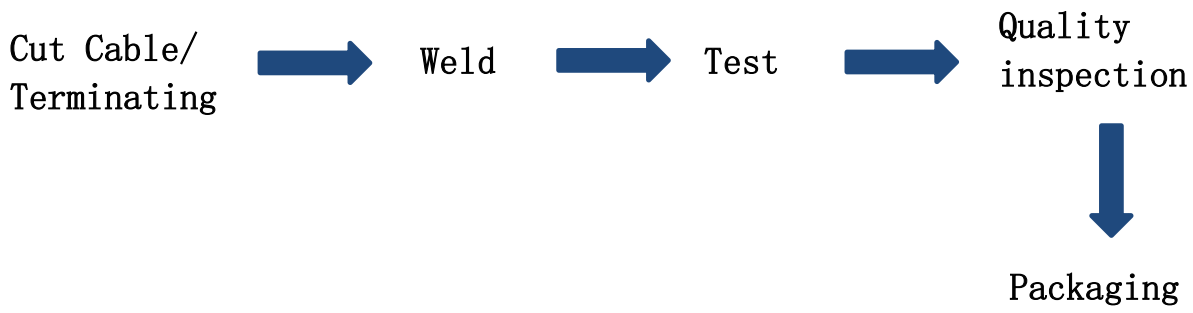
Electrical Specifications	
Frequency Range	2400-2500/5150-5850MHz
VSWR	＜1.92
Input Impedance	50 Ω
Direction	All
Gain(2.4G)	1.9dBi
Gain(5.1G)	3.2dBi
Gain(5.4G)	2.9dBi
Gain(5.8G)	2.9dBi
Mechanical Specifications	
Cable Color	Black
Input connector	XD
Cable length	175mm(Total length)
Working Temperature	-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



BOM list

FPC、Cable、Terminal、PE packaging bag、Carton

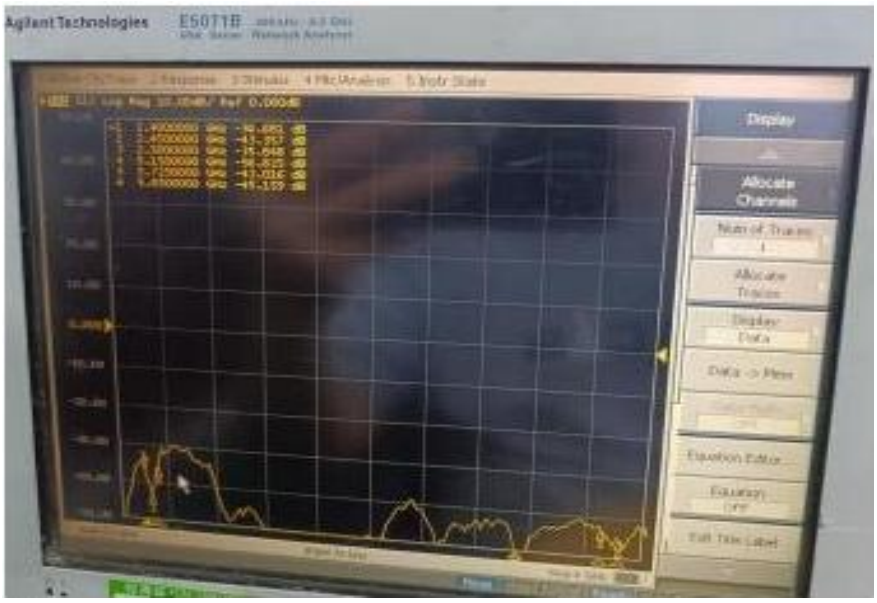
Performance testing reports:

Antenna physical image:

Antenna performance test chart:

Frequency（MHZ）	2400	2450	2500	5150	5725	5850
VSWR（dB）	1.18	1.21	1.38	1.66	1.48	1.43

WIFI 2 and BT isolation test diagram



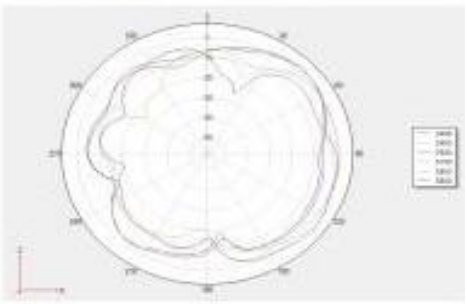
WIFI 2 and WIFI 1 isolation test diagram

Frequency （MHz）	2400	2450	2500	5150	5725	5850
WIFI1 and WIFI2 isolation (dB)	-45	-43	-44	-36	-32	-29
WIFI2 and BT isolation (dB)	-36	-43	-35	-56	-43	-45

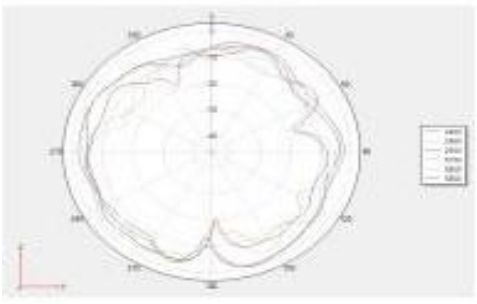
2D、3D test data (WIFI 2)：

Frequency	Efficiency (%)	Gain.(dBi)
2400MHz	55.1	1.90
2410MHz	56.86	1.88
2420MHz	59.61	1.76
2430MHz	53.75	1.64
2440MHz	56.86	1.90
2450MHz	56.57	1.89
2460MHz	55.23	1.68
2470MHz	55.68	1.69
2480MHz	54.88	1.73
2490MHz	52.46	1.85
2500MHz	54.81	1.90
5150MHz	47.98	3.19
5250MHz	47.72	3.20
5350MHz	48.09	3.10
5450MHz	50.53	2.87
5550MHz	49.95	2.90
5650MHz	49.54	2.81
5750MHz	46.45	2.90
5850MHz	44.98	2.90

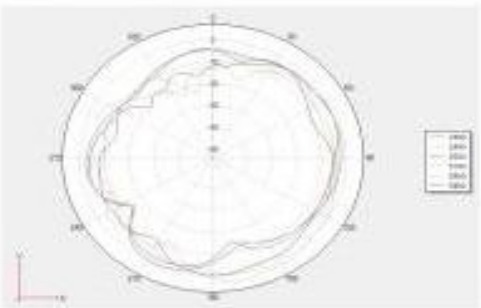
Phi 0 2D:



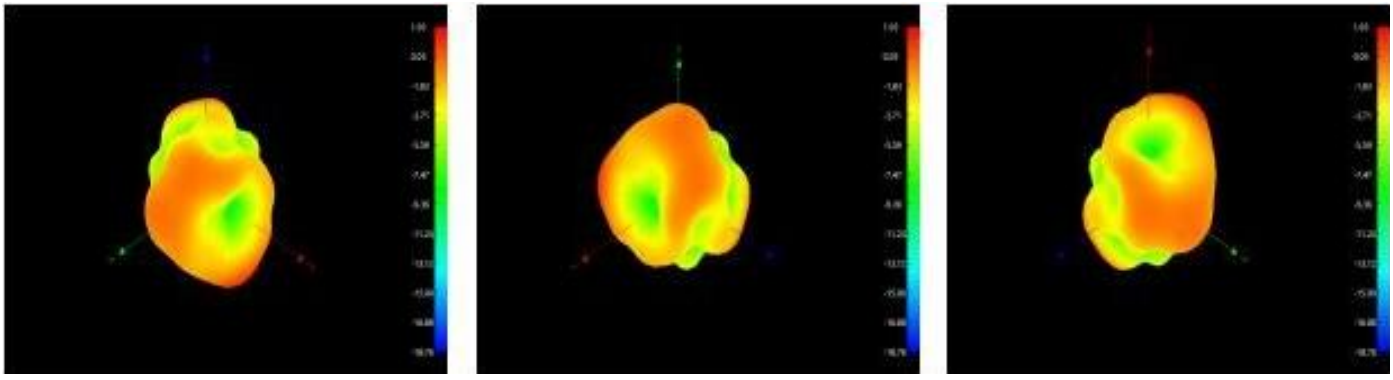
Phi 90 2D



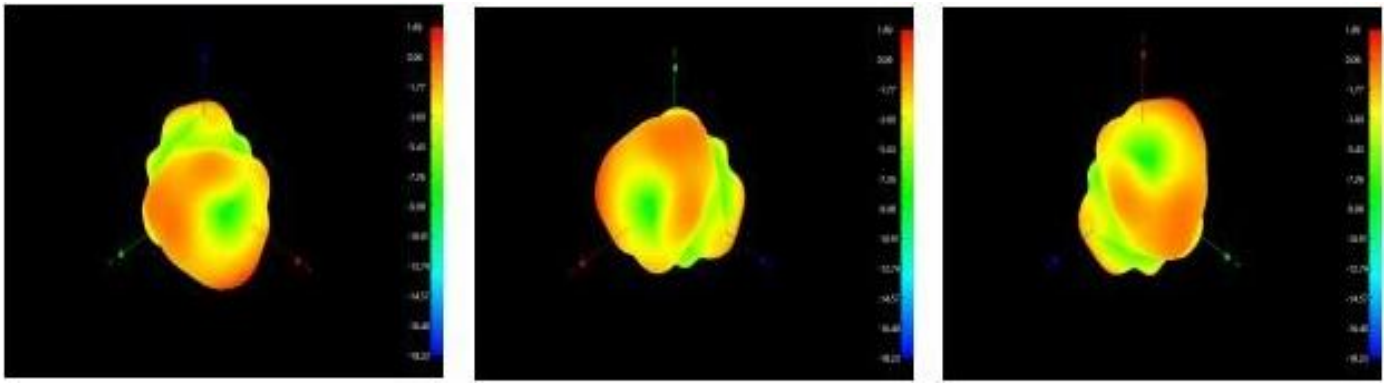
Theta 90 2D



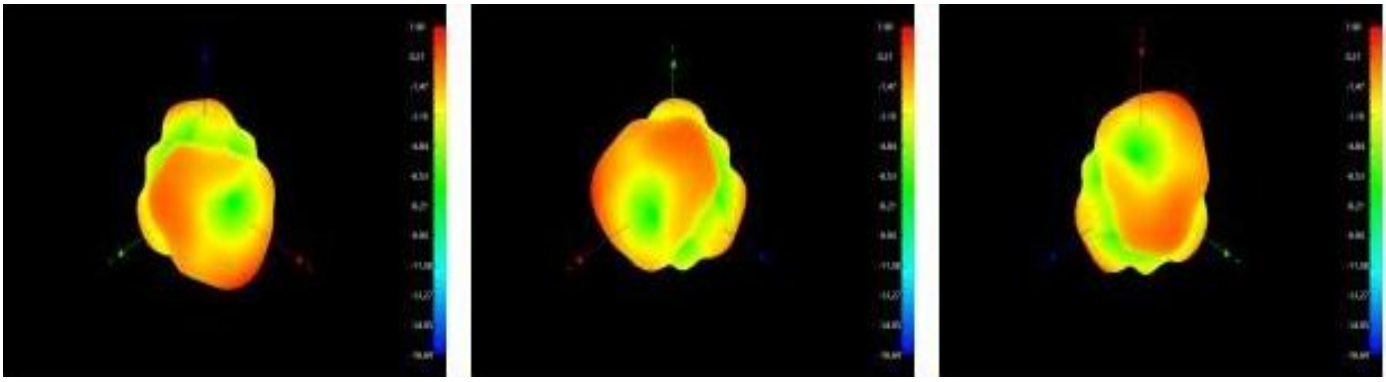
3D 2400：



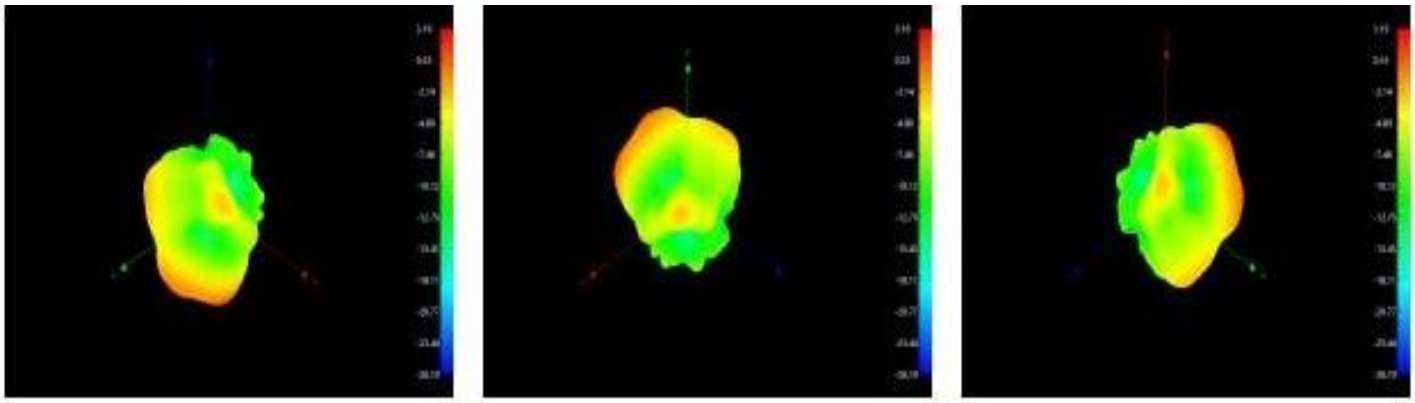
3D 2450：



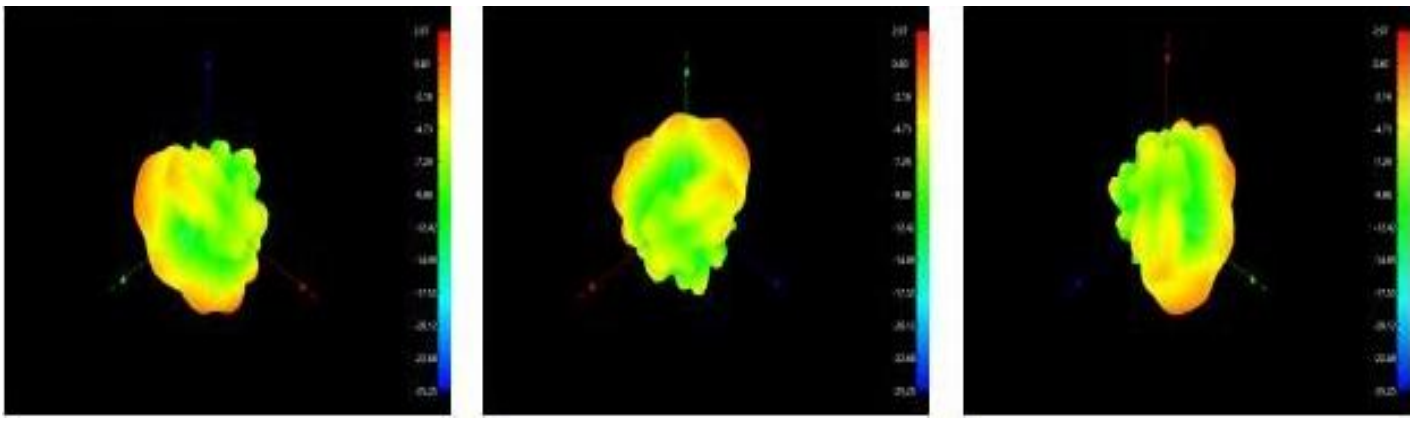
3D 2500：



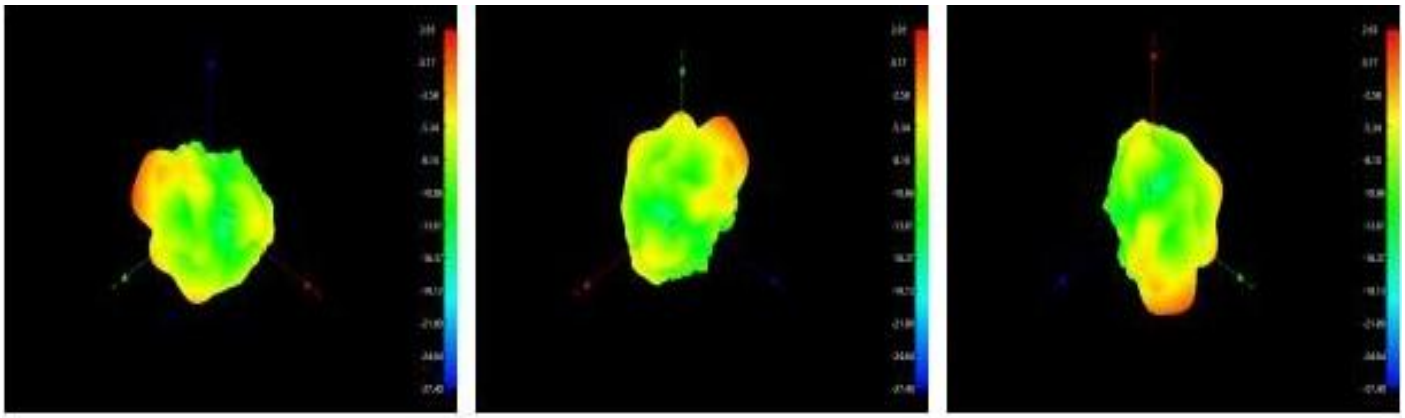
3D 5150：



3D 5500：



3D 5850：



OTA active test data:

Item	Measurement	Band	Channel	Frequency	Total
1	TRP	WIFI_B (11M)	1	2412	15.53
2	TRP	WIFI_B (11M)	6	2437	14.25
3	TRP	WIFI_B (11M)	11	2462	14.26
4	TIS(EIRP)	WIFI_B (11M)	1	2412	-82.85
5	TIS(EIRP)	WIFI_B (11M)	6	2437	-81.01
6	TIS(EIRP)	WIFI_B (11M)	11	2462	-80.56
7	TRP	WIFI_G (54M)	1	2412	13.77
8	TRP	WIFI_G (54M)	6	2437	13.05
9	TRP	WIFI_G (54M)	11	2462	12.92
10	TIS(EIRP)	WIFI_G (54M)	1	2412	-70.95
11	TIS(EIRP)	WIFI_G (54M)	6	2437	-69.6
12	TIS(EIRP)	WIFI_G (54M)	11	2462	-70.29
13	TRP	WIFI_N_ISM (65M)	1	2412	16.31
14	TRP	WIFI_N_ISM (65M)	6	2437	15.02
15	TRP	WIFI_N_ISM (65M)	11	2462	16.42
16	TIS(EIRP)	WIFI_N_ISM (65M)	1	2412	-68.26
17	TIS(EIRP)	WIFI_N_ISM (65M)	6	2437	-67.34
18	TIS(EIRP)	WIFI_N_ISM (65M)	11	2462	-68.04
19	TRP	WIFI_A (54M)	36	5180	14.48
20	TRP	WIFI_A (54M)	149	5745	15.18
21	TRP	WIFI_A (54M)	165	5825	16.00
22	TIS(EIRP)	WIFI_A (54M)	36	5180	-73.78
23	TIS(EIRP)	WIFI_A (54M)	149	5745	-74.74
24	TIS(EIRP)	WIFI_A (54M)	165	5825	-75.64

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 $^{6+}$	PBB	PBDE	PASS
FPC	Ink	ETR24902229M01	SGS	24/09/23	ND	ND	ND	ND	ND	ND	PASS
	Copper	A2240082746101006E	CTI	24/03/01	ND	ND	ND	ND	ND	ND	PASS
	FPC	SHAEC23021627701	SGS	23/12/27	ND	ND	ND	ND	ND	ND	PASS
Tube	Tube	CANEC24001723028	SGS	24/01/29	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	A2240410234101001E	CTI	24/07/16	ND	ND	ND	ND	ND	ND	PASS
	Rubber core	A2240126395101003E	CTI	24/03/16	ND	ND	ND	ND	ND	ND	PASS
Environmentally friendly Tin wire	Environmentally friendly Tin wire	SHAEC24006459102	SGS	24/04/10	ND	78	ND	ND	ND	ND	PASS