

Specification For Approval

Customer: Changhe Electronics Co., Ltd

Supplier: Gaoke Ant Co., Ltd.

Customer P/N: 150203000020

Production Name: Bluetooth antenna

Production Number: GKZS-LY-TG550-RF1.13I-250

Supplier Signature		
Engineer	Checked by	Approved by
Liu Nan gang	Xie Qianju	Liu and Ming
2020.01.16	2020.01.16	2020.01.16

Customer Signature		
Engineer	Checked by	Approved by
Date:	Date:	Date:

Note: After the customer confirms and seals it, please send the confirmation letter back to our company.

GaoKe Ant Co.,Ltd

ADD:2 Floor, No. 22 Guangcong South Road, Shengang, Taiping Town, Conghua District, Guangzhou, Guangdong, China

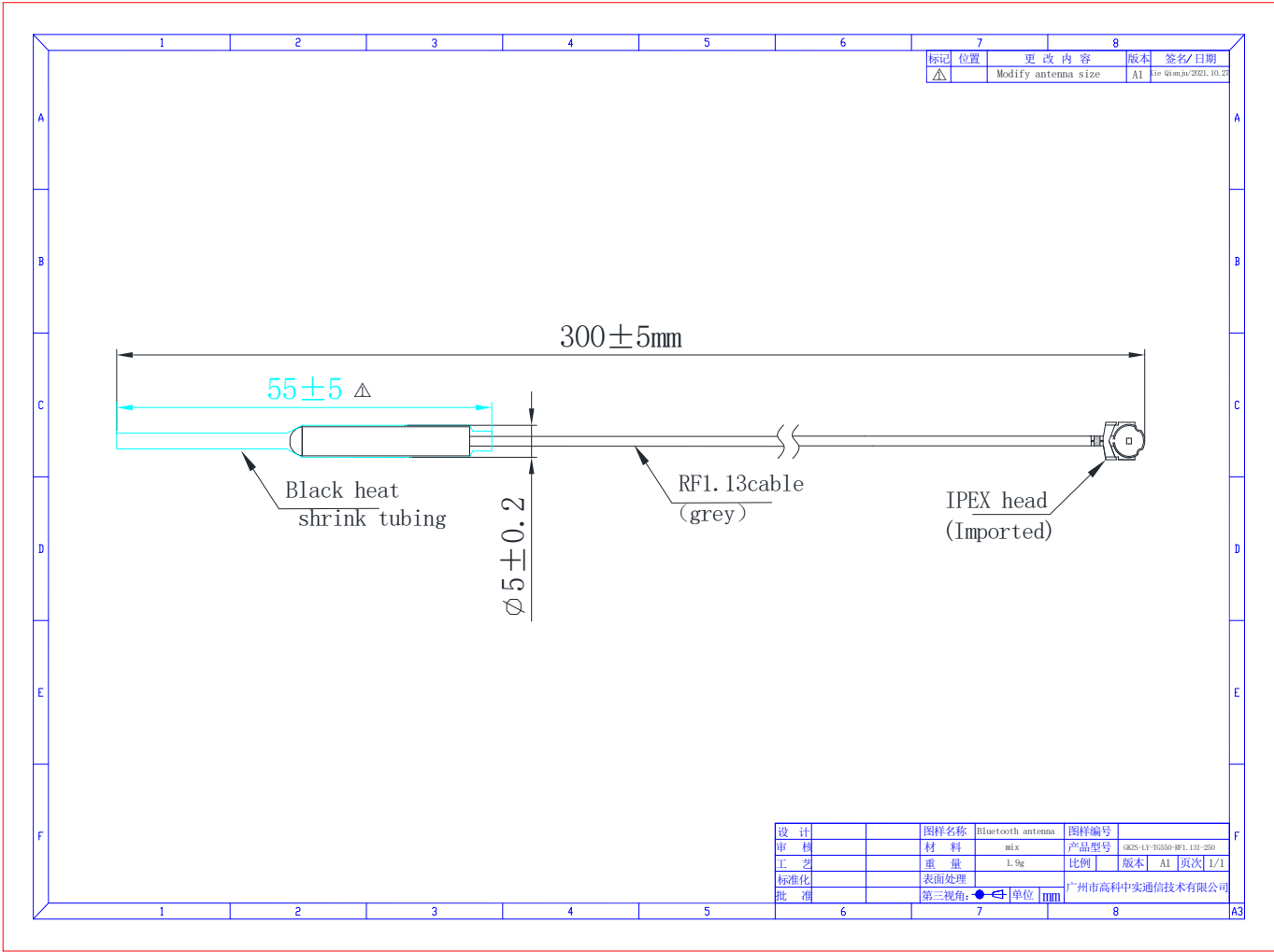
Tel: 020-87080630-8020

Fax: 020-87080731

Email: gkzs6@gkzs.com.cn

http://www.gkzs.com.cn

1. Product Structure Drawing (mm)



2. Product physical diagram



3. Antenna characteristics

- The appearance is exquisite
- small volume
- All day long work
- Low standing wave, anti-interference

4.The application of antenna

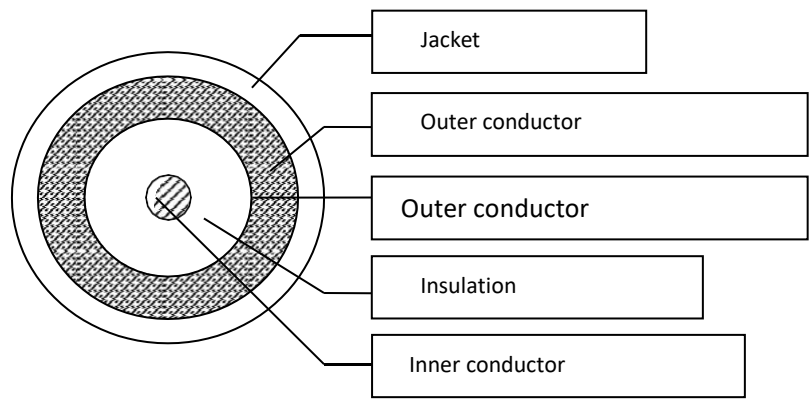
All kinds of mobile devices: such as mobile phones, laptops, netbooks, etc.

5. Antenna technical parameters

Design Specifications	Typical	Units
Antenna form	铜管	
working Frequency	2400–2500MHz	MHz
Gain	0.99dBi	dBi
Antenna efficiency	47.2% (average)	
VSWR	≤ 2.0	
Ploriaztion	vertical	
Radiation pattern	all-around	
impedance	50	Ω
Power handling	33	dBm
Interface	IPEX head / RF1.13 with exposed length of 250mm	
Overall dimensions	Diameter of Φ 5mm, with a total length of 300mm	mm
Weight	1.9g	g
Operatin Temp	-40°C~85°C	°C
Storing Temp	-40°C~85°C	°C

6. RF-1.13 wire rod specifications

- 6.1.product description
- 6.11.This product is soft Teflon insulation series coaxial cable.Is suitable for the microwave equipment, wireless communication systems and equipment.
- 6.1.2.Product features : Excellent flexi-ability, good V.S.W.R, good shielding performance.
- 6.2.Cable with data and structure diagram:
- 6.2.1.structure diagram:



6.2.2.Specification of cable:

Item		NO	Materials and size
Inner conductor	Material	/	Silver plated copper wire
	Composition	mm	7/0.08±0.003
	OD	mm	Φ0.24
Insulation	Material	/	Teflon FEP (200 degrees of fluorinated ethylene propylene resin)
	Thickness	mm	0.21
	OD	mm	Φ0.68±0.03
	Color	/	transparent color
Outer conductor	Material	/	Copper platinum
	Form	/	Keep a pack
	Density	%	100%
	OD	mm	Φ0.715±0.02

Outer conductor	Material	/	Tinned copper wire
	Form	/	Weave
	Density	%	93%(26 目 (Mesh); 80 (Coding 5*16/0.05mm))
	OD	mm	$\Phi 0.92 \pm 0.05$
Jacket	Material	/	Teflon FEP(200 degrees of fluorinated ethylene propylene resin)
	Thickness	mm	0.105
	OD	mm	$\Phi 1.13 \pm 0.05$
	color of sheath	/	Gray or black (Can also be processed according to customer requirements)

6.3.The cable properties

6.3.1.Electrical properties

test project	Standard value			Note
Rated temperature / voltage	$-55^{\circ}\text{C} \sim +200^{\circ}\text{C} / 30\text{V}$			/
Insulation resistance	3000M Ω . Km			Resistance tester
Conductor resistance	482 Ω /Km 20 $^{\circ}\text{C}$			/
Pressure	2KV			Withstand voltage tester
Insulation	Unaged	Tensile Strength	2500 PSI MIN. (1.76Kg/mm ²)	
		Elongation	200% MIN	
	Aged	Tensile Strength	2500 PSI*75% (168HRS*232 $^{\circ}\text{C}$)	
		Elongation	200% MIN*75% (168HRS*232 $^{\circ}\text{C}$)	
Jacket	Unaged	Tensile Strength	2500 PSI MIN. (1.76Kg/mm ²)	
		Elongation	200% MIN	
	Aged	Tensile Strength	2500 PSI*75% (168HRS*232 $^{\circ}\text{C}$)	
		Elongation	200% MIN*75% (168HRS*232 $^{\circ}\text{C}$)	
characteristic impedance	50 $\pm$ 2 Ω			Analysis of network analyzer The TRK tester
Capacitance	96 $\pm$ 3 PF/M			Digital capacitance meter

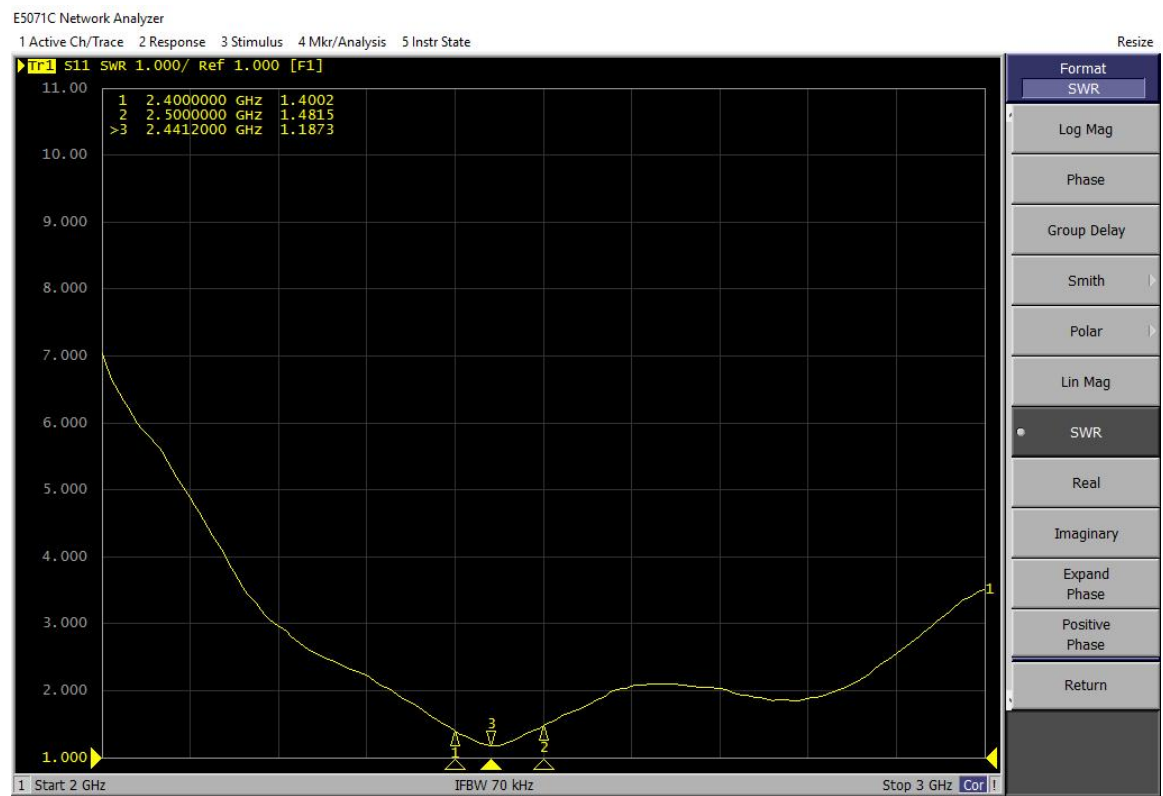
Velocity	69%		Analysis of network analyzer
Propagation Delay	4. 8ns/m		/
Shielding attenuation	100dB		/
Bending radius	<7mm		/
Flame retardant	passed		VW-1 provides material report
Attenuation (dB/m)	test frequency	Attenuation	Sea level to 20 DEG C test
	0. 1GHz	0. 42	
	0. 4GHz	0. 58	
	1GHz	1. 80	
	2GHz	2. 55	
	3GHz	3. 10	
	4GHz	3. 70	
	5GHz	4. 10	
	6GHz	4. 50	
VSWR	0. 3—3GHz	≤1. 30	
	3—6GHz	≤1. 40	

7. dimensional check report

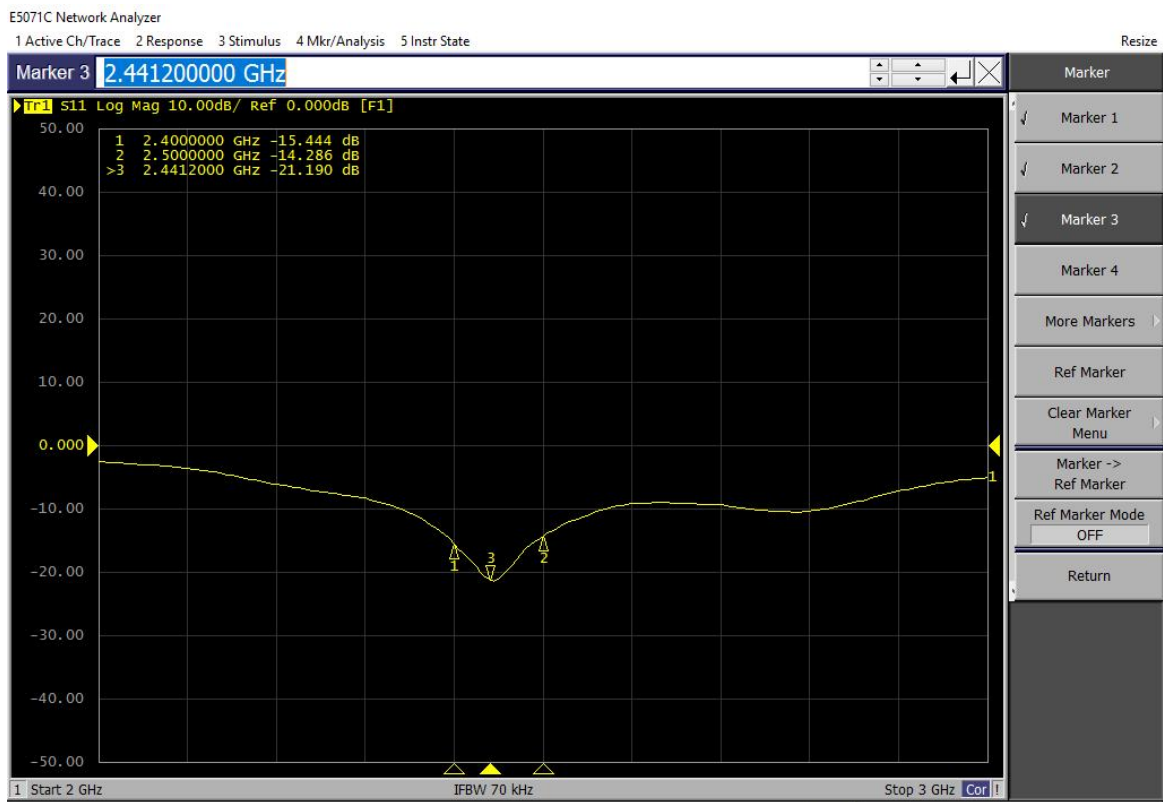
NO.	Inspection items	Inspection standards	Inspection method	Measurement results					Judgment results	notes
				1	2	3	4	5		
1	cable	RF1.13 wire (medium gray) with a length of $300 \pm 5\text{mm}$	steel ruler	300	300	300.5	300.5	300	qualified	
2	wire diameter	size: $\varnothing 1.13 \pm 0.05\text{mm}$	calipers	$\varnothing 1.13$	$\varnothing 1.15$	$\varnothing 1.13$	$\varnothing 1.12$	$\varnothing 1.13$	qualified	
3	copper tube	size: $\Phi 4.5 \times 23\text{mm}$	Steel ruler/caliper	4.5 23.2	4.5 23	4.5 23.2	4.5 23.2	4.5 23	qualified	

8.Antenna performance test

8.1.return loss

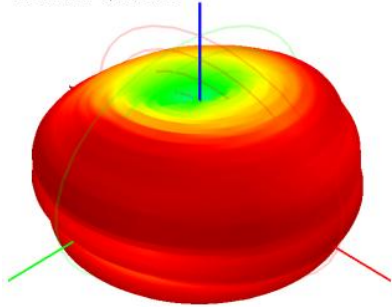


8.2.VSWR

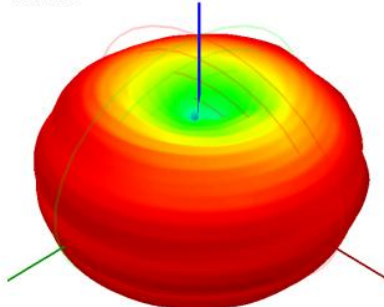


8.3.Direction diagram

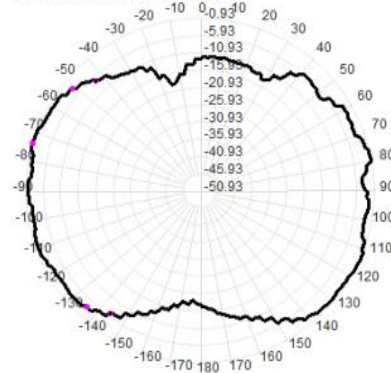
2400.0MHz H+V, Eff: 37.5%



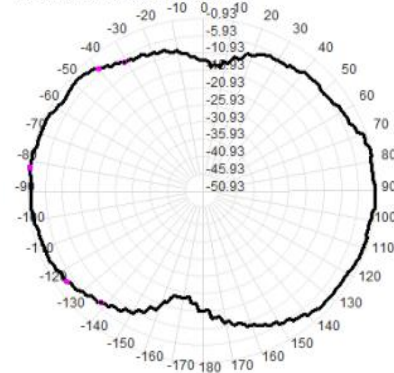
Back View



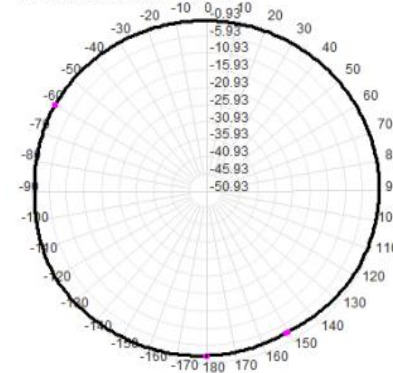
2400.0MHz Total(E1), Max=-0.93dBi



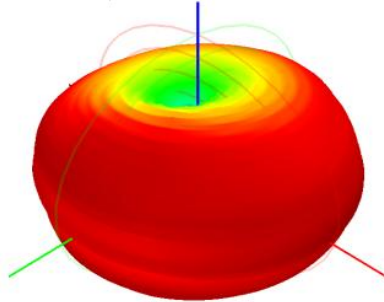
2400.0MHz Total(E2), Max=-1.23dBi



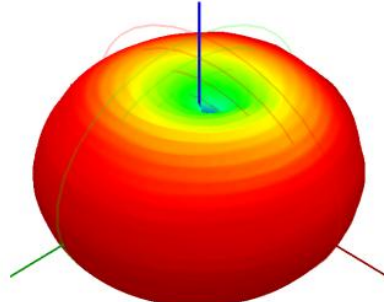
2400.0MHz Total(H), Max=-1.01dBi



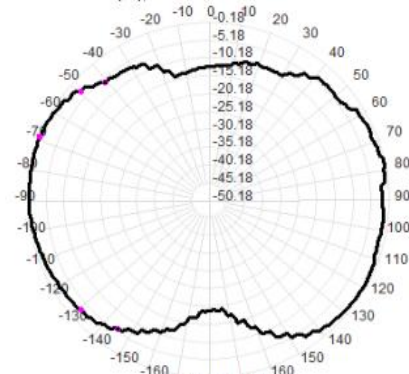
2450.0MHz H+V, Eff: 45.9%



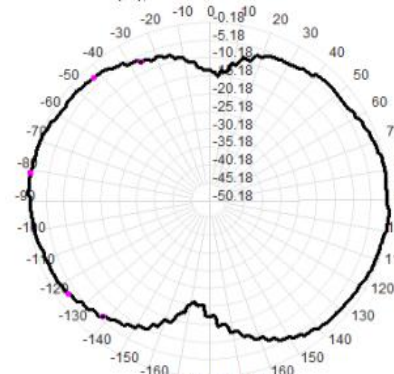
Back View



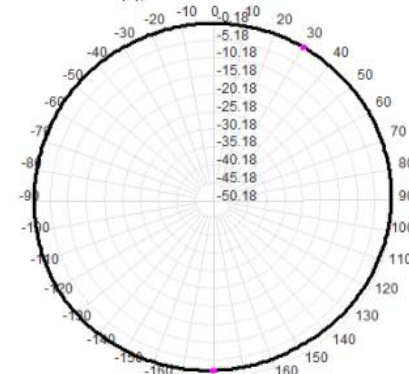
2450.0MHz Total(E1), Max=-0.18dBi

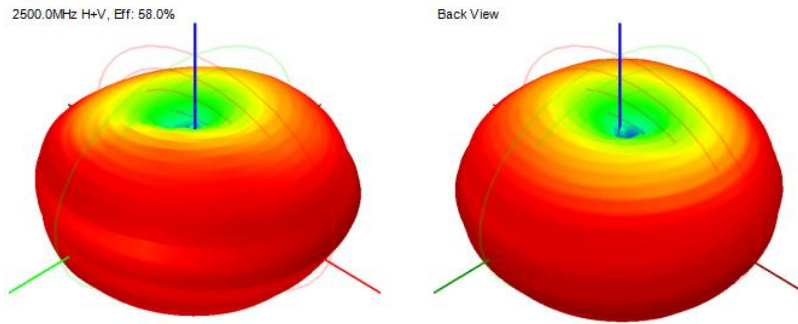


2450.0MHz Total(E2), Max=-0.25dBi

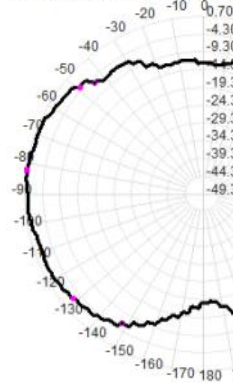


2450.0MHz Total(H), Max=-0.50dBi

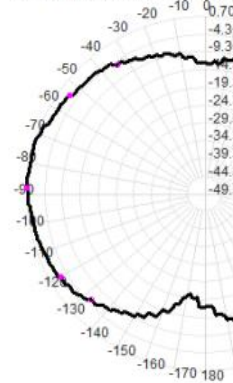




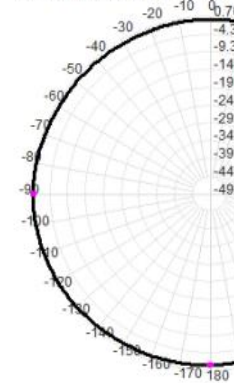
2500.0MHz Total(E1), Max= 0.40dBi



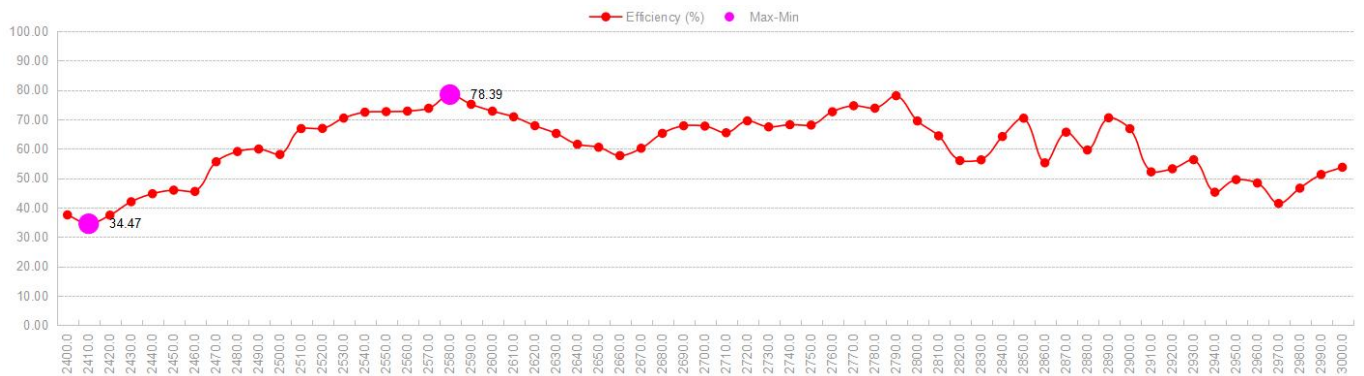
2500.0MHz Total(E2), Max= 0.70dBi



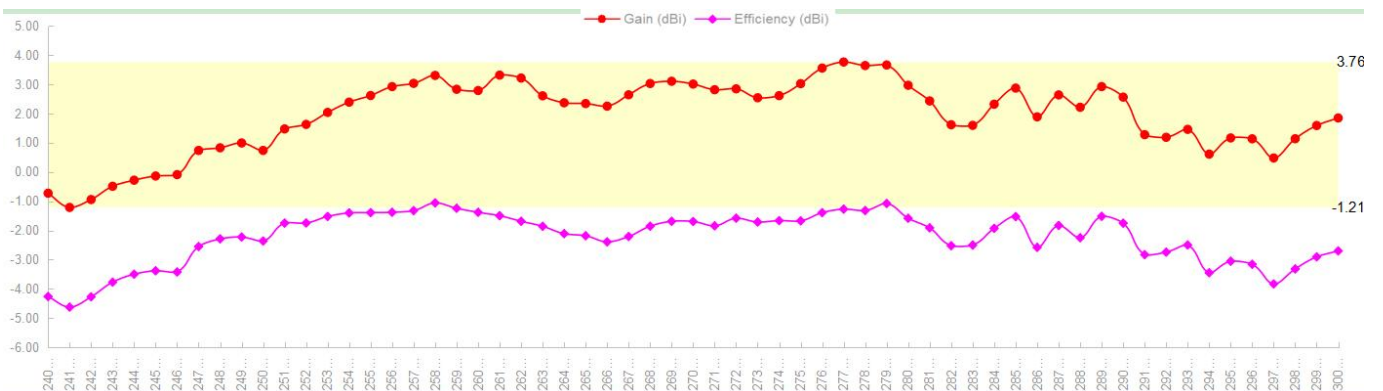
2500.0MHz Total(H), Max= 0.44dBi



8.4.Efficiency curve



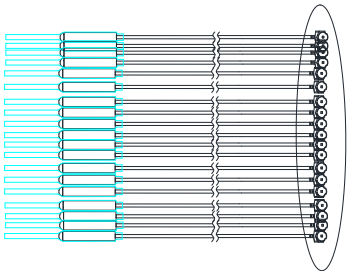
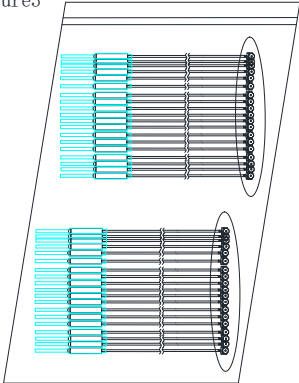
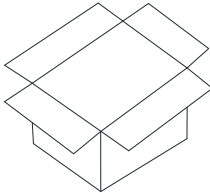
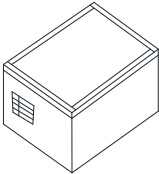
8.5.Gain curve plot



FEITUKEJI

Frequency ID	1	2	3	4	5	6	7	8	9	10	11
Frequency (MHz)	2400.0	2410.0	2420.0	2430.0	2440.0	2450.0	2460.0	2470.0	2480.0	2490.0	2500.0
Efficiency (dBi)	-4.26	-4.63	-4.27	-3.77	-3.50	-3.38	-3.42	-2.55	-2.29	-2.23	-2.36
Gain (dBi)	-0.73	-1.21	-0.94	-0.49	-0.28	-0.14	-0.09	0.74	0.83	0.99	0.74
Efficiency (%)	37.48	34.47	37.39	41.96	44.68	45.89	45.46	55.55	59.03	59.88	58.03
Directivity (dB)	3.53	3.41	3.33	3.28	3.22	3.24	3.33	3.29	3.12	3.22	3.10
Peak Gain Position (°)	84.00	84.00	84.00	105.00	105.00	101.00	100.00	92.00	92.00	83.00	83.00
Peak Gain Position (°)	300.00	300.00	300.00	150.00	150.00	150.00	150.00	270.00	270.00	120.00	120.00
Efficiency ThetaPol (%)	35.39	32.81	35.76	40.29	43.08	44.43	44.15	54.09	57.58	58.46	56.63
Efficiency PhiPol (%)	2.09	1.66	1.63	1.68	1.59	1.47	1.31	1.46	1.45	1.42	1.41
Upper Hem. Efficiency (%)	19.37	17.97	19.34	21.28	22.16	22.37	21.95	26.78	28.51	29.07	28.20
Lower Hem. Efficiency (%)	18.11	16.51	18.06	20.68	22.52	23.53	23.51	28.77	30.52	30.81	29.83

9、Packaging style:

picture1  end-product drawing	picture2  Wrap the IPEX head with foam paper every 100PCS and tie it with rubber rings.	
picture3  10 bundles/plastic bag (300x450mm), quantity: 1000PCS, put the products with already tied rubber rings (10 bundles) into the plastic bag neatly and seal them. Attach quantity labels.	picture4  2 plastic bags/box, quantity: 2000PCS/box	picture5  Label and seal the outside of the box.