Antenna Datasheet

Product OC: YHR00A4AA
Version: 1.0
Date: 2023-04-17
Status: Preliminary

Product Name: 4G External antenna
Key Features:
Frequency Band: 700-900 MHz, 1710-2200 MHz
Dimensions: 178.3 * 18.88 *10 mm
Efficiency: Up to 53.45%
RoHS Compliant
IP66

Overview

This Quectel external 4G antenna covers main 4G LTE bands and is compatible with 3G/2G/LPWA bands as well. The external antenna is barely influenced by the internal environment of devices, giving a much better performance in efficiency, radiation and gain whilst providing an optimized solution for a customer product. Quectel also offers flexible installation with custom cable length and connector options.

Contents

1 Specification

Test Condition: Free Space

1.1. Electrical

Electrical	
Frequency Range	700-900 MHz, 1710-2200 MHz
Impedance	50 Ω
Polarization	Linear
Radiation Pattern	Omni-directional

Electrical - Detail

Band / SPEC	Band	B71	B12 /B13 /B28	B5 /B26	N74 /N75 /N76	B1 /B2 /B4	B40	Wi-Fi 2G	B38 /B41	B42 /B48 /N77	N79	Wi-Fi 5G
	Freq. (MHz)	600–700	700–810	820–900	1420–1520	1700–2200	2300–2400	2400–2500	2500–2690	3300–4200	4400–5000	5150–5850
Max. VSWR		-	2.3	3.1	-	2.5	-	-	-	-	-	-
Max. Return Loss (dB)		-	-8.2	-5.9	-	-7.4	-	-	-	-	-	-
AVG Eff. (%)		-	37.2	29.3	-	48.3	-	-	-	-	-	-
AVG Gain (dB)		-	-4.3	-5.3	-	-3.2	-	-	-	-	-	-
Max. Peak Gain (dBi)		-	-0.9	-0.2	-	3.0	-	-	-	-	-	-

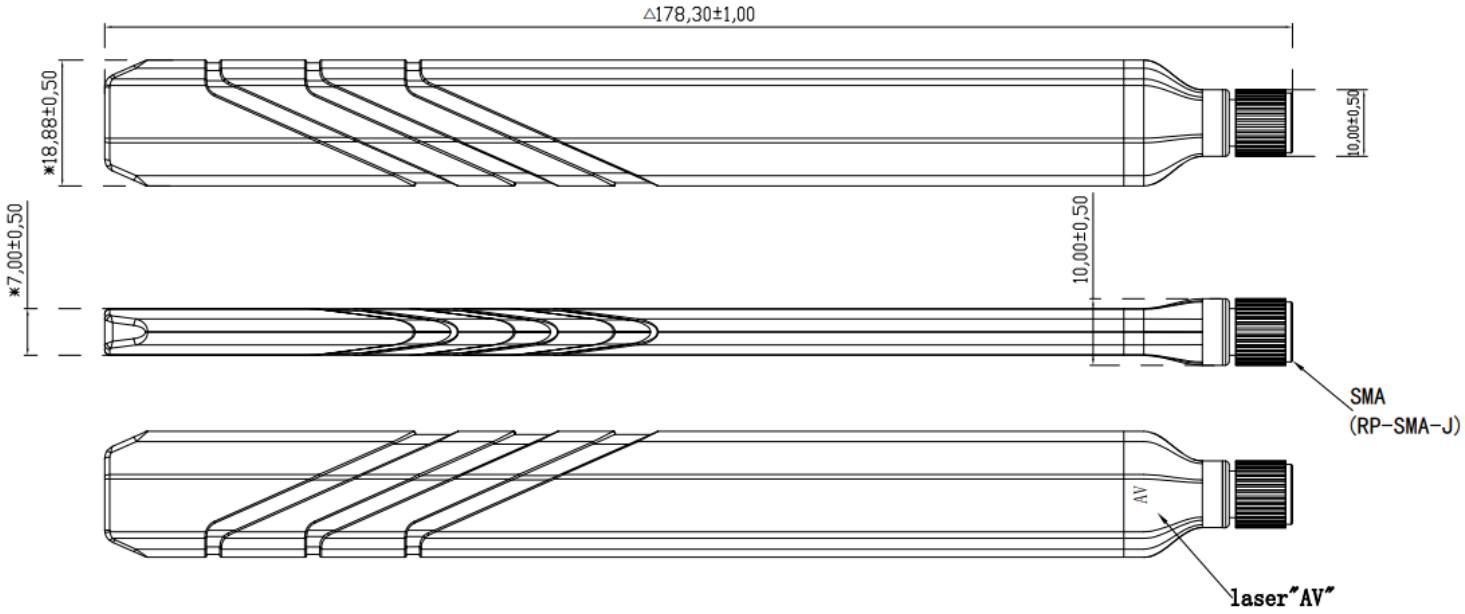
VSWR	≤ 3.1
Return Loss	≤ -5.9 dB
Gain	≤ 3.0 dBi

1.2. Mechanical, Environmental & Storage

Mechanical	
Antenna Dimensions	178.3 * 18.88 *10 mm
Casing Material & Color	ABS & Black
Connector Type	RP-SMA-J
Mounting Type	Screw
Weight	Typ. 22.65 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Ingress Protection (IP) Rating	IP66
RoHS Compliant	Yes
Storage	
Storage Temperature	18℃-27℃
Humidity	30%-80%RH
Storage Place	Away from corrosive gas and direct sunlight
Packing	Antennas should be stored in unopened sealed manufacturer's plastic packaging

1.3. Antenna Assembly

2 Drawing

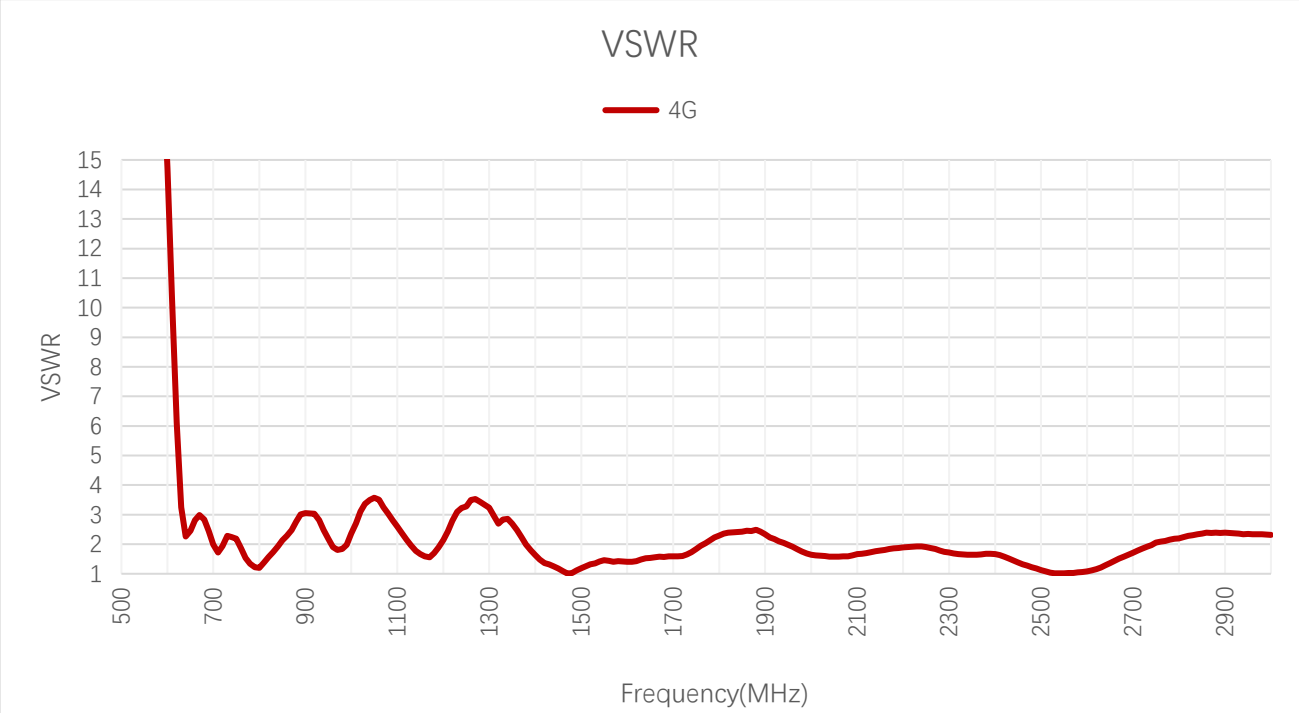


Unit: mm

3 Detailed Performance

3.1. S-Parameter Test

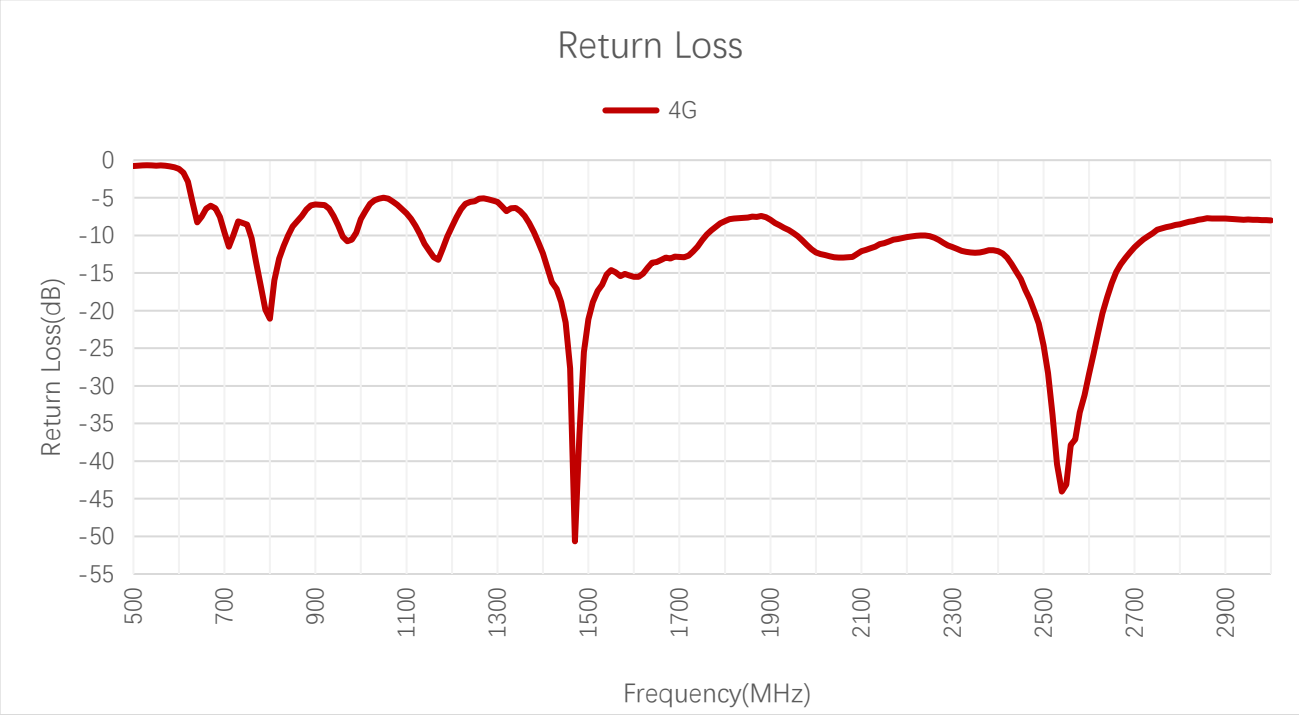
3.1.1. VSWR



VSWR

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
VSWR	-	-	1.7	1.7	3.1	-	-	1.6	1.7	2.5
Frequency (MHz)	1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
VSWR	2.0	1.8	-	-	-	-	-	-	-	-

3.1.2. Return Loss



Return Loss (dB)

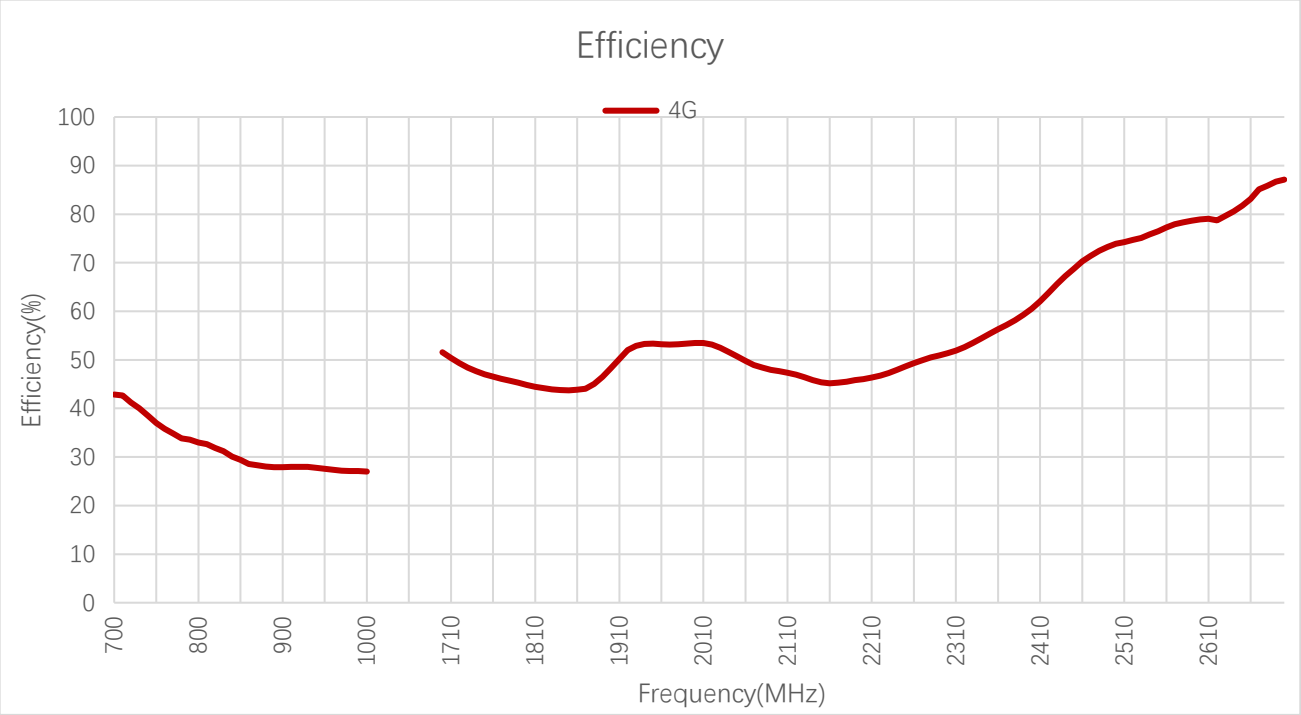
Frequency (MHz)	**600**	**630**	**710**	**830**	**900**	**960**	**1440**	**1710**	**1740**	**1880**
Return Loss (dB)	-	-	-11.5	-11.4	-5.9	-	-	-12.9	-11.5	-7.4
Frequency (MHz)	**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
Return Loss (dB)	-9.7	-11.2	-	-	-	-	-	-	-	-

3.2. OTA Test Data

Band		Channel	TRP (dBm)	Channel	TIS (dBm)
LTE	B2 (10M)	18650	20.17	650	-
		18900	20.84	900	-
		19150	20.81	1150	-96.7
	B4 (10M)	20000	20.52	2000	-
		20175	20.14	2175	-
		20350	20.07	2350	-97.46
	B5 (10M)	20450	20.44	2450	-
		20525	20.6	2525	-
		20600	20.33	2600	-94.41
	B12 (5M)	23035	19.35	5035	-
		23095	20.62	5095	-
		23155	20.49	5155	-95.6
	B13 (10M)	23230	20.5	5230	-94.37
	B25 (5M)	26065	20.47	8065	-
		26365	20.64	8365	-
		26665	20.95	8665	-96.45
	B26 (5M)	26715	20.28	8715	-
		26865	20.94	8865	-
		27015	20.33	9015	-94.06

3.3. Radiation Performance Test

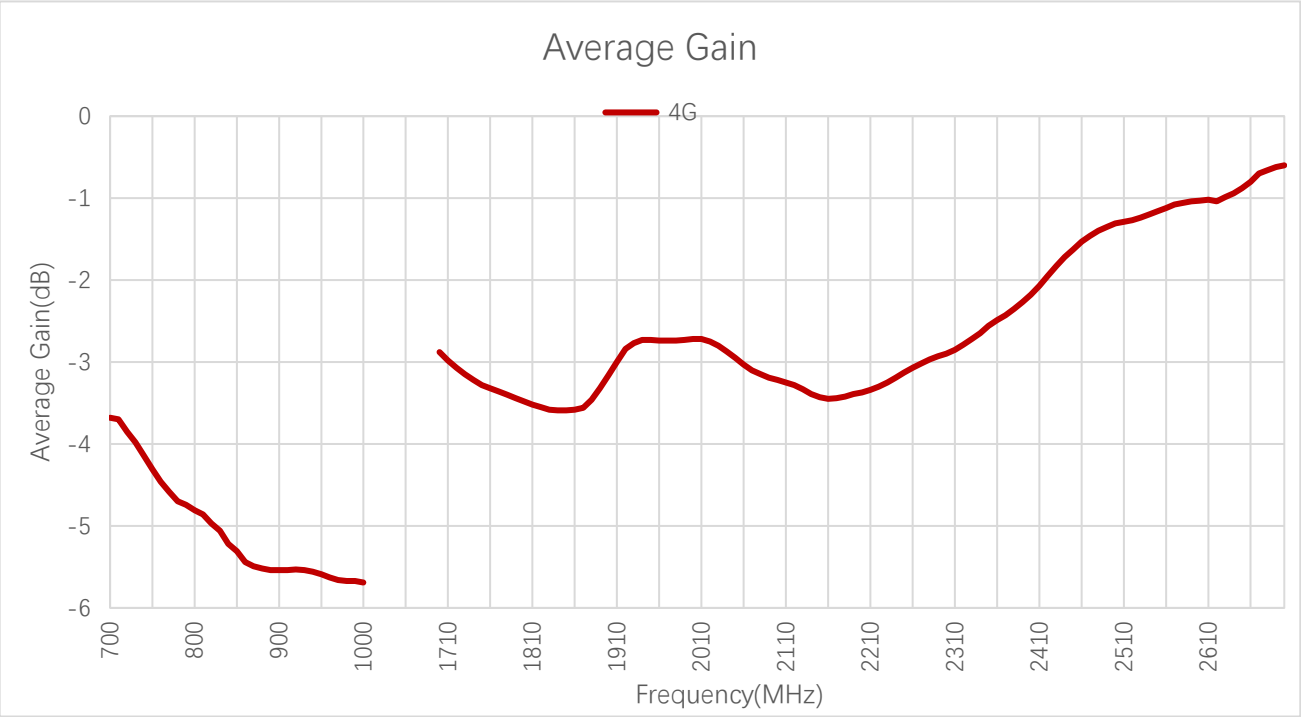
3.3.1. Efficiency



Efficiency (%)

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Efficiency (%)	-	-	42.6	31.2	27.9	-	-	50.4	47.7	45.1
Frequency (MHz)	**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
Efficiency (%)	53.3	45.8	-	-	-	-	-	-	-	-

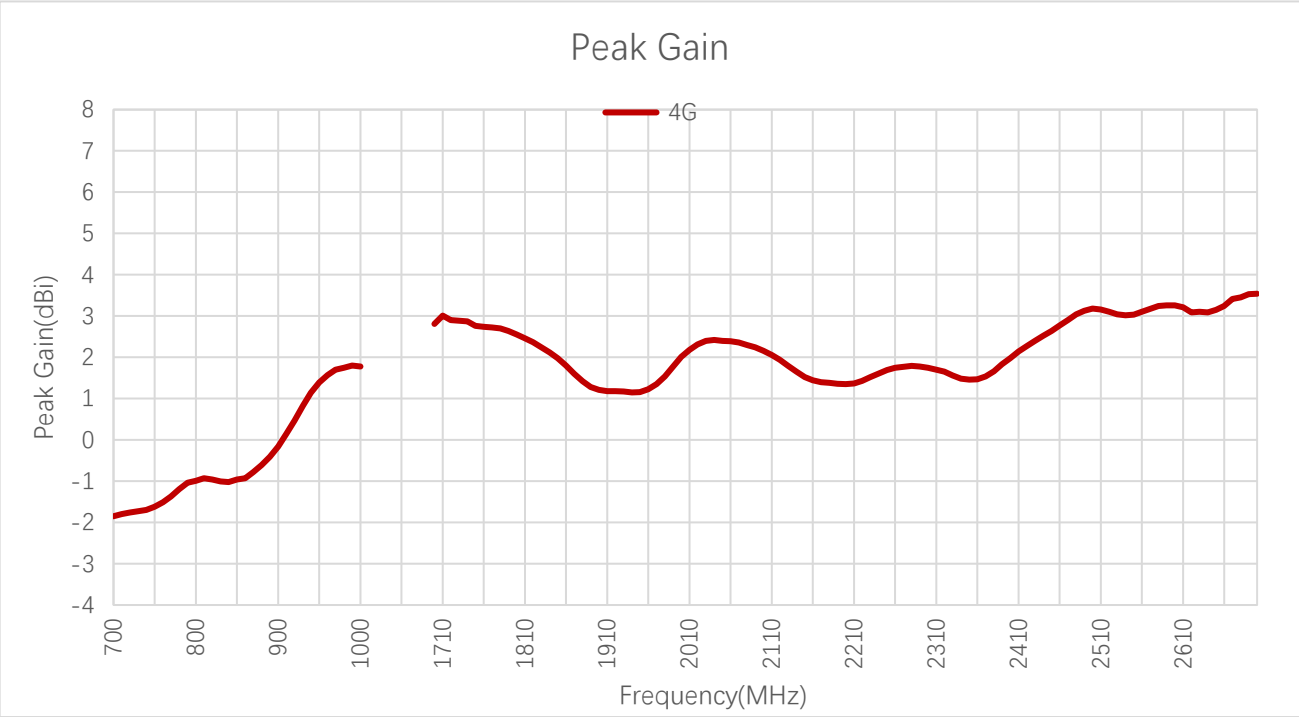
3.3.2. Average Gain



Average Gain (dB)

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Average Gain (dB)	-	-	-3.7	-5.1	-5.5	-	-	-3.0	-3.2	-3.5
Frequency (MHz)	**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
Average Gain (dB)	-2.7	-3.4	-	-	-	-	-	-	-	-

3.3.3. Peak Gain

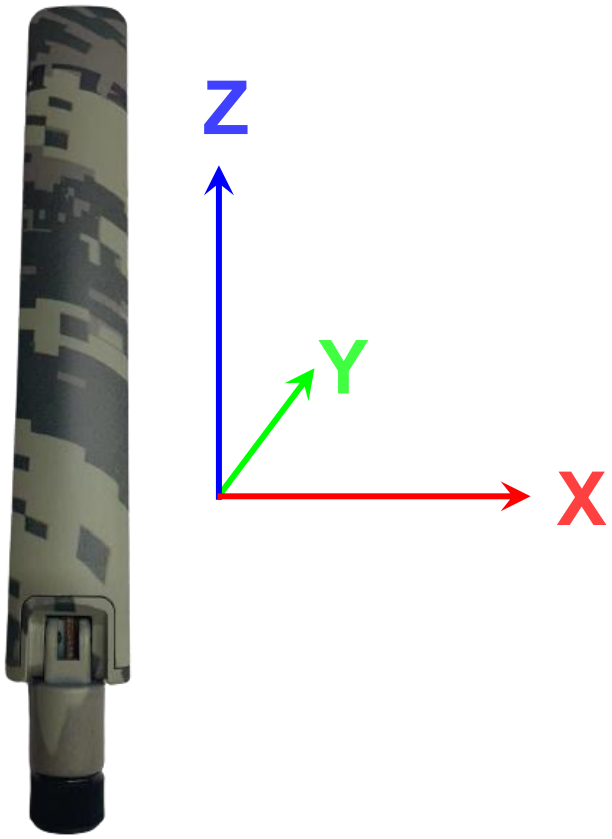


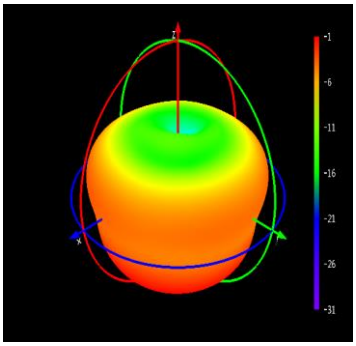
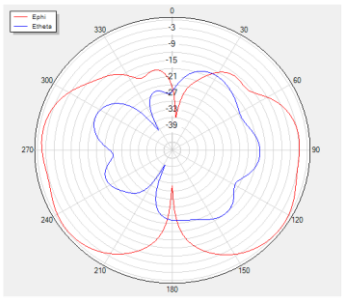
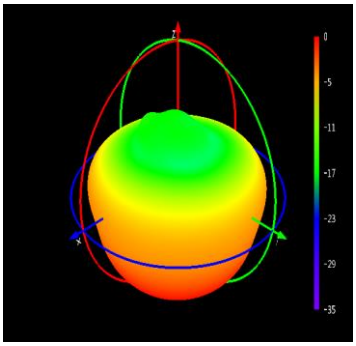
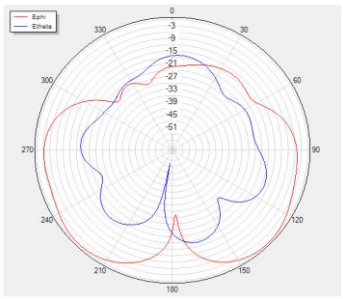
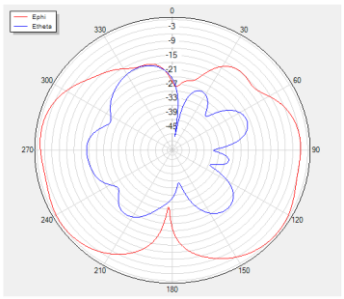
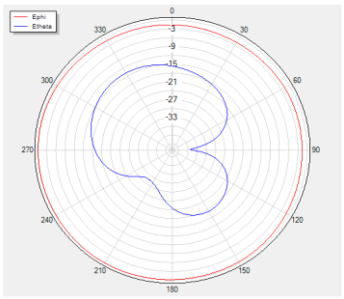
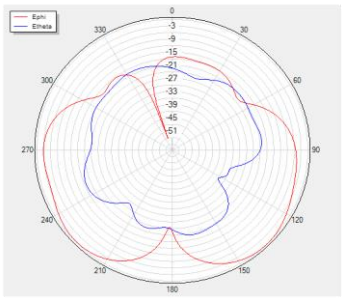
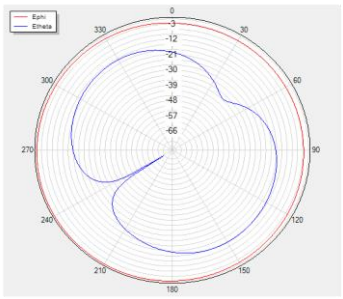
Peak Gain (dBi)

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
Peak Gain (dBi)	-	-	-1.8	-1.0	-0.2	-	-	3.0	2.9	1.4
Frequency (MHz)	**1950**	**2140**	**2350**	**2450**	**2600**	**3600**	**4700**	**5000**	**5500**	**6000**
Peak Gain (dBi)	1.2	1.7	-	-	-	-	-	-	-	-

3.3.4. 3D & 2D Radiation Pattern

- Test Condition: Free Space
- Test Chamber: SZ-S-1



710MHz		830MHz	
	Phi=0 freq=710MHz 		Phi=0 freq=830MHz 
Phi=90 freq=710MHz 	Theta=90 freq=710MHz 	Phi=90 freq=830MHz 	Theta=90 freq=830MHz 
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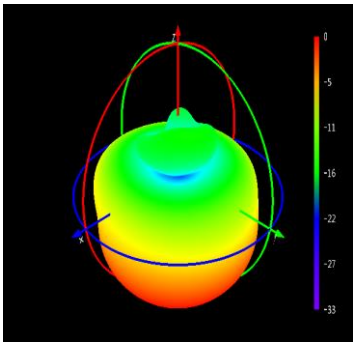
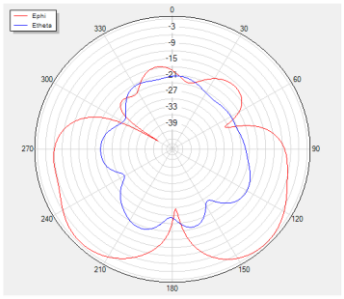
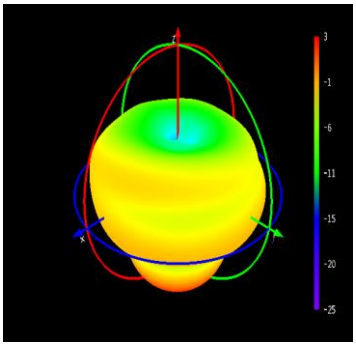
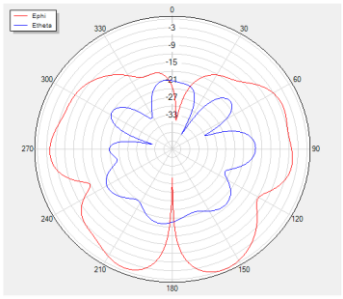
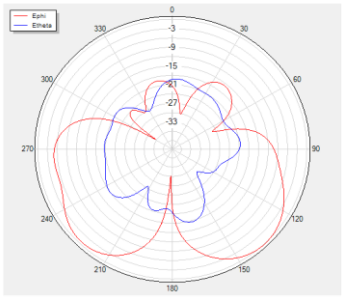
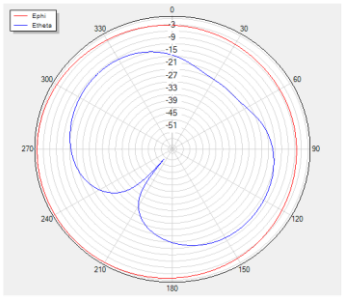
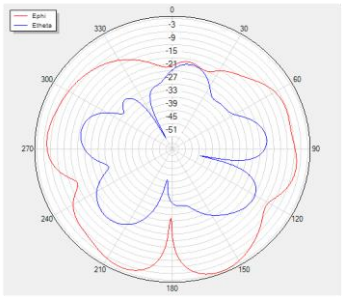
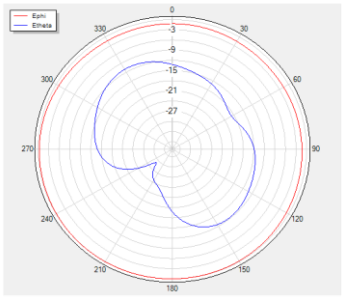
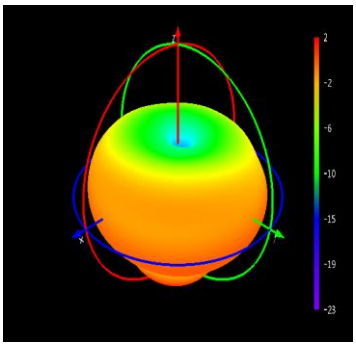
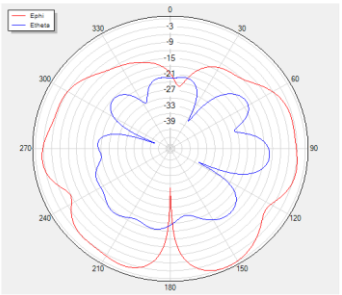
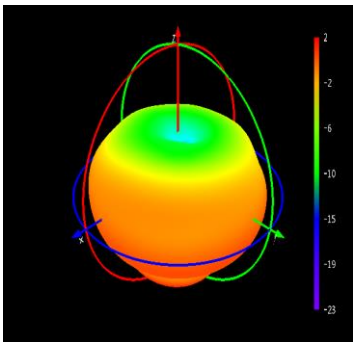
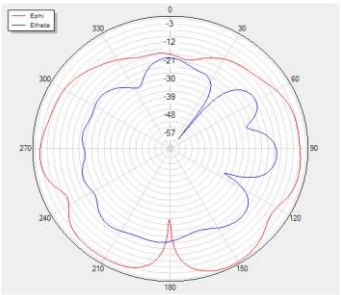
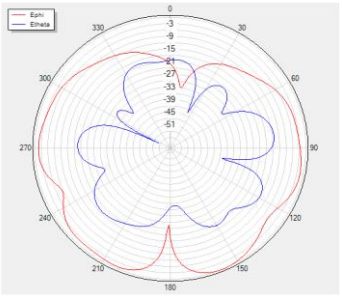
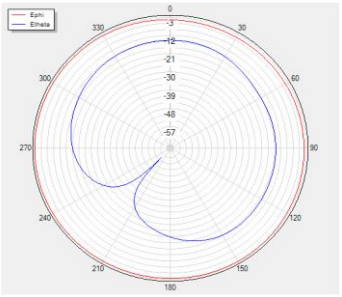
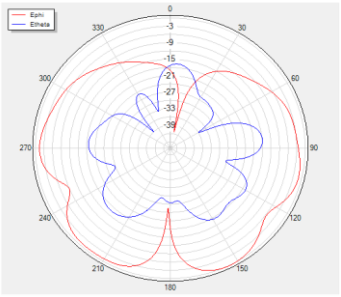
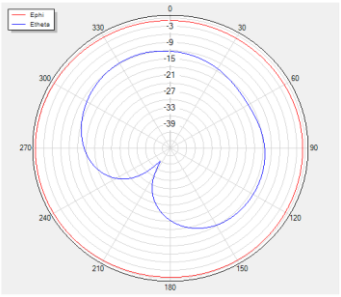
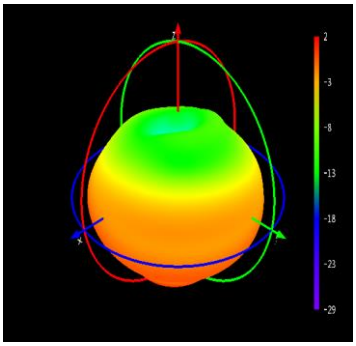
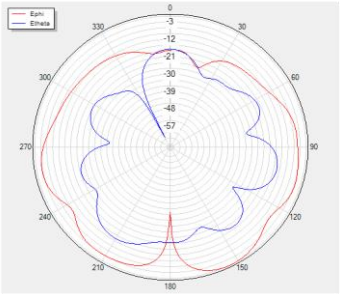
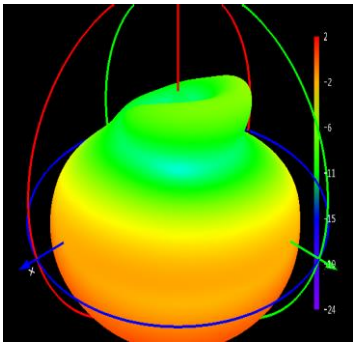
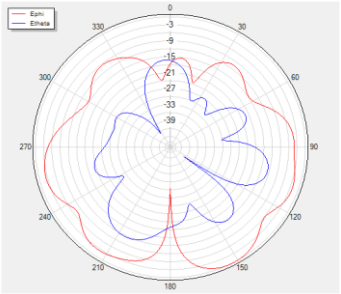
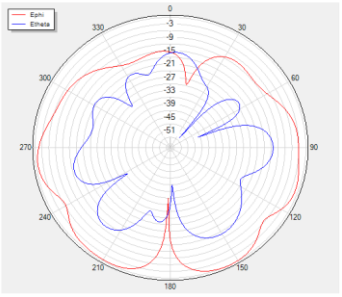
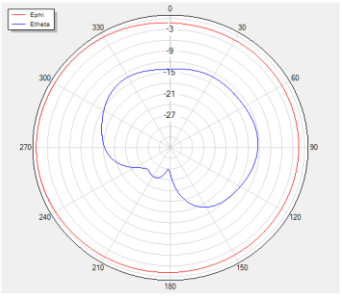
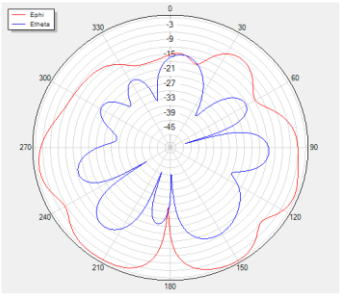
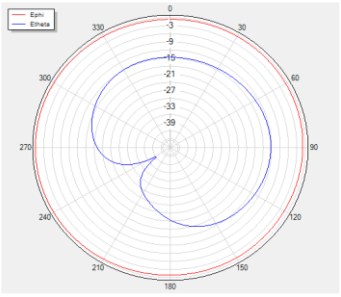
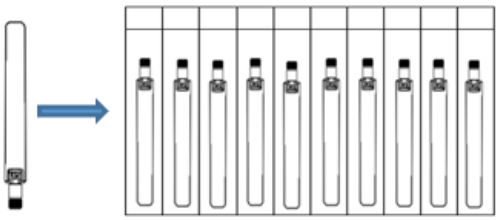
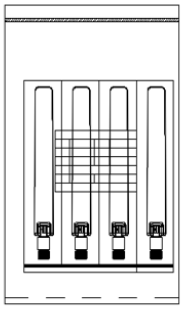
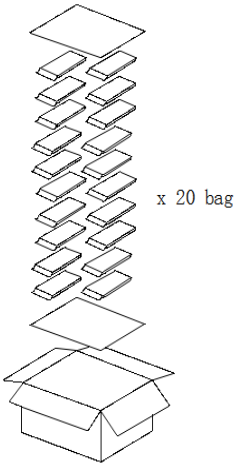
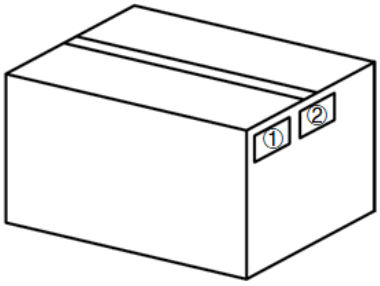
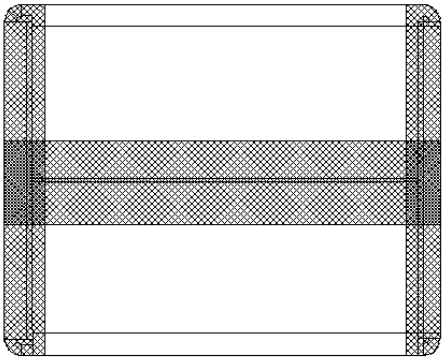
	Phi=0 freq=900MHz 		Phi=0 freq=1740MHz 
Phi=90 freq=900MHz 	Theta=90 freq=900MHz 	Phi=90 freq=1740MHz 	Theta=90 freq=1740MHz 

1880MHz		1950MHz	
	Phi=0 freq=1880MHz 		Phi=0 freq=1950MHz 
Phi=90 freq=1880MHz 	Theta=90 freq=1880MHz 	Phi=90 freq=1950MHz 	Theta=90 freq=1950MHz 
2140MHz		2200MHz	
	Phi=0 freq=2140MHz 		Phi=0 freq=2200MHz 
Phi=90 freq=2140MHz 	Theta=90 freq=2140MHz 	Phi=90 freq=2200MHz 	Theta=90 freq=2200MHz 

4 Packaging

Step	Packaging picture / 2D picture	Description
1		Put the product in a one-piece bag 10pcs/ one-piece bag
2	 20pcs/bag	20 pcs Antenna products in a big PE bags; (20 pcs Antenna / Per Big PE Bag) Big Pe bag Size: L*W=330X220mm
3	 x 20 bag	Place a clapboard at the bottom and top, 20 Big PE Bags / Per Carton Box) (400 pcs Antenna / Per Carton Box) Carton Size: L*W*H=325*325*200mm

4		**Position for Attaching Labels---** ① Carton Label ② Quality Label
5		**Sealing Cartons---** "工" type sealing cartons

Contact US

At Quectel, our aim is to provide timely and comprehensive services to our customers. If you require any assistance, please contact our headquarters:

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http://www.quectel.com/support/technical.htm.
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Revision History

Version	Date	Author	Note
-	2023-04-17	Jialin Chen Shea Li David Liu Bunny Zhang	Creation of the document
1.0	2023-04-17	Jialin Chen Shea Li David Liu Bunny Zhang	First official release

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