Antenna Datasheet

Product OC (Antenna Only)**:** YC0018CA
Product OC (Antenna + Rectangular EVB)**:** YC0018CAEVB

Version: 2.2
Date: 2025-01-11
Status: Released

Product Name: 5G SMT Mount PCB Monopole Embedded Antenna
Key Features:
Frequency band: 617–960 MHz, 1420–1520 MHz, 1710–2690 MHz, 3300–4200 MHz, 4400–5000 MHz, 5150–5850 MHz
Efficiency: Up to 75.8 % (On 140 × 40 mm)
Dimensions: 40 mm × 7 mm × 3 mm
RoHS & REACH Compliant

Overview

Quectel YC0018CA is a compact form factor SMT mount PCB antenna for 5G applications. Due to the dimensions of 40 × 7 × 3 mm, it is designed for very small space requirements for smart metering, remote monitoring, vehicle tracking and telematics, and many other IoT devices. YC0018CA is a ground-depended monopole antenna, uses main PCB as its ground plane. It is delivered on tape and reel.

YC0018CA is a PCB antenna, which can be mounted on super compact space require terminals. Despite of this small factor, it has up to 75.8 % efficiency in working bands. This antenna is developed on a 140 × 40 mm evaluation board. If the devices have different ground sizes, matching circuit can be used to tune the resonant frequency correctly. We also offer gerber file, 2D & 3D documents for PCB layout.

YC0018CA allows high efficiency, stable signal transmission and reception for 5G working bands in 617–960 MHz, 1420–1520 MHz, 1710–2690 MHz, 3300–4200 MHz, 4400–5000 MHz, 5150–5850 MHz. This product is RoHS & REACH compliant.

Typical applications include:

- Asset Tracking
- Smart Metering
- Fleet Management
- IoT Sensors and Modules

Quectel provides comprehensive antenna design support such as simulation, testing and manufacturing for custom antenna solutions to meet your specific application needs. We have regional R & D centers to offer quick response to meet your requirements. Please contact our sales & FAEs if you have any requests.

Contents

1 Specification

Test Condition: Assembled On EVB

1.1 Electrical

Electrical	
Frequency Range	617–960 MHz, 1420–1520 MHz, 1710–2690 MHz, 3300–4200 MHz, 4400–5000 MHz, 5150–5850 MHz
Impedance	50 Ω
Polarization	Linear
Radiation Pattern	Omni-directional

Band / SPEC	Band	B71	B12 /B13 /B28	B5 /B8 /B26	n74 /n75 /n76	B1 /B2 /B3	B40	Wi-Fi 2G	B38 /B41	B42 /B48 /n77	n79	Wi-Fi 5G
	Freq. (MHz)	**600–700**	**700–810**	**820–960**	**1420–1520**	**1700–2170**	**2300–2400**	**2400–2500**	**2500–2690**	**3300–4200**	**4400–5000**	**5150–5850**
Max. VSWR	**On 140 × 40 mm EVB**	5.7	2.8	2.2	2.8	3.8	2.5	2.8	3.0	3.9	3.4	3.2
	On 130 × 40 mm EVB	6.6	3.1	2.9	2.8	4.1	2.6	2.4	3.3	3.9	3.5	3.2
	On 110 × 40 mm EVB	7.3	5.0	4.6	2.5	5.6	3.2	2.1	3.0	4.2	3.4	3.2
	On 90 × 40 mm EVB	6.6	5.9	5.7	1.9	4.9	3.0	2.7	2.9	4.0	3.5	3.2
	On 60 × 40 mm EVB	4.8	5.8	4.6	2.2	4.2	2.5	2.0	2.9	3.9	3.5	3.2
	On 40 × 40 mm EVB	4.6	5.2	3.6	3.1	5.7	3.1	3.0	3.0	4.6	3.4	3.2
Max. Return Loss (dB)	**On 140 × 40 mm EVB**	-3.1	-6.4	-8.3	-6.5	-4.7	-7.3	-6.6	-6.0	-4.5	-5.3	-5.6
	On 130 × 40 mm EVB	-2.6	-5.8	-6.3	-6.4	-4.3	-7.1	-7.8	-5.4	-4.6	-5.1	-5.6
	On 110 × 40 mm EVB	-2.4	-3.6	-3.8	-7.3	-3.1	-5.6	-8.8	-6.1	-4.2	-5.2	-5.5

	On 90 × 40 mm EVB	-2.7	-3.0	-3.1	-10.2	-3.6	-6.1	-6.7	-6.2	-4.5	-5.1	-5.7
	On 60 × 40 mm EVB	-3.6	-3.0	-3.8	-8.7	-4.3	-7.4	-9.6	-6.2	-4.5	-5.2	-5.7
	On 40 × 40 mm EVB	-3.9	-3.4	-5.0	-5.9	-3.1	-5.7	-6.1	-6.0	-3.8	-5.2	-5.6
AVG Eff. (%)	**On 140 × 40 mm EVB**	36.2	51.2	48.2	48.6	54.1	65.9	66.2	58.6	67.1	59.9	52.1
	On 130 × 40 mm EVB	32.5	51.1	49.0	45.9	49.7	66.8	68.2	57.4	66.6	59.9	51.5
	On 110 × 40 mm EVB	21.6	39.5	44.5	50.3	44.0	64.6	72.2	65.2	65.7	59.3	53.1
	On 90 × 40 mm EVB	15.3	29.0	36.6	65.8	52.5	63.9	64.7	59.8	68.9	61.4	53.1
	On 60 × 40 mm EVB	10.8	20.0	25.2	62.9	52.5	70.3	74.4	64.8	65.7	60.6	52.7
	On 40 × 40 mm EVB	12.4	21.9	25.5	36.0	38.3	60.9	59.2	56.5	64.7	59.3	52.4
AVG AVG Gain (dB)	**On 140 × 40 mm EVB**	-4.6	-2.9	-3.2	-3.2	-2.7	-1.8	-1.8	-2.3	-1.8	-2.3	-2.8
	On 130 × 40 mm EVB	-5.1	-2.9	-3.1	-3.4	-3.0	-1.8	-1.7	-2.4	-1.8	-2.3	-2.9
	On 110 × 40 mm EVB	-7.0	-4.0	-3.5	-3.0	-3.6	-1.9	-1.4	-1.9	-1.9	-2.3	-2.8
	On 90 × 40 mm EVB	-8.5	-5.4	-4.4	-1.8	-2.8	-2.0	-1.9	-2.2	-1.6	-2.1	-2.8
	On 60 × 40 mm EVB	-10.0	-7.0	-6.0	-2.0	-2.8	-1.5	-1.3	-1.9	-1.9	-2.2	-2.8
	On 40 × 40 mm EVB	-9.4	-6.6	-5.9	-4.5	-4.2	-2.2	-2.3	-2.5	-1.9	-2.3	-2.8
Max. Peak Gain (dBi)	**On 140 × 40 mm EVB**	-0.5	-0.2	0.1	1.9	2.3	4.1	4.5	4.7	5.9	3.2	2.4
	On 130 × 40 mm EVB	-0.7	-0.3	0.1	1.6	2.4	3.9	4.4	4.2	5.8	3.1	2.6
	On 110 × 40 mm EVB	-1.7	-0.9	-0.3	0.8	2.1	3.8	4.5	4.4	5.3	2.8	2.6
	On 90 × 40 mm EVB	-3.1	-2.2	-1.3	1.4	2.0	3.1	3.6	3.8	5.0	3.0	2.4
	On 60 × 40 mm EVB	-4.0	-3.3	-2.6	1.1	1.2	2.4	2.3	2.1	3.7	2.8	2.6
	On 40 × 40 mm EVB	-3.2	-2.7	-2.1	0.0	0.3	2.7	2.0	1.3	2.1	3.0	2.4
VSWR	**On 140 × 40 mm EVB**	≤ 5.7										
	On 130 × 40 mm EVB	≤ 6.6										
	On 110 × 40 mm EVB	≤ 7.3										
	On 90 × 40 mm EVB	≤ 6.6										
	On 60 × 40 mm EVB	≤ 5.8										

	On 40 × 40 mm EVB	≤ 5.7
Return Loss	**On 140 × 40 mm EVB**	≤ -3.1 dB
	On 130 × 40 mm EVB	≤ -2.6 dB
	On 110 × 40 mm EVB	≤ -2.4 dB
	On 90 × 40 mm EVB	≤ -2.7 dB
	On 60 × 40 mm EVB	≤ -3 dB
	On 40 × 40 mm EVB	≤ -3.1 dB
Peak Gain	**On 140 × 40 mm EVB**	≤ 5.9 dBi
	On 130 × 40 mm EVB	≤ 5.8 dBi
	On 110 × 40 mm EVB	≤ 5.3 dBi
	On 90 × 40 mm EVB	≤ 5 dBi
	On 60 × 40 mm EVB	≤ 3.7 dBi
	On 40 × 40 mm EVB	≤ 3 dBi

1.2 Supported Bands

5G NR / LTE / LTE-Advanced / WCDMA / HSPA / HSPA+ / GPRS / GSM / NB-IoT				
Band	**Frequency (MHz)**	**Uplink (MHz)**	**Downlink (MHz)**	**Covered**
1	2100	1920–1980	2110–2170	√
2	1900	1850–1910	1930–1990	√
3	1800	1710–1785	1805–1880	√
4	1700	1710–1755	2110–2155	√
5	850	824–849	869–894	√
7	2600	2500–2570	2620–2690	√
8	900	880–915	925–960	√
9	1800	1749.9–1784.9	1844.9–1879.9	√
11	1500	1427.9–1447.9	1475.9–1495.9	√
12	700	699–716	729–746	√
13	700	777–787	746–756	√
14	700	788–798	758–768	√
17	700	704–716	734–746	√
18	850	815–830	860–875	√
19	850	830–845	875–890	√
20	800	832–862	791–821	√
21	1500	1447.9–1462.9	1495.9–1510.9	√
22	3500	3410–3490	3510–3590	√
23	2100	2000–2020	2180–2200	√
24	1600	1626.5–1660.5	1525–1559	-
25	1900	1850–1915	1930–1995	√
26	850	814–849	859–894	√

28	700	703–748	758–803	√
31	450	452.5–457.5	462.5–467.5	-
34	2100	2010–2025		√
38	2600	2570–2620		√
39	1900	1880–1920		√
40	2300	2300–2400		√
41	2500	2496–2690		√
42	3500	3400–3600		√
48	3500	3550–3700		√
66	1700	1710–1780	2110–2200	√
71	600	663–698	617–652	√
74	1500	1427–1470	1475–1518	√
77	3500	3300–4200		√
78	3500	3300–3800		√
79	4500	4400–5000		√

Note:

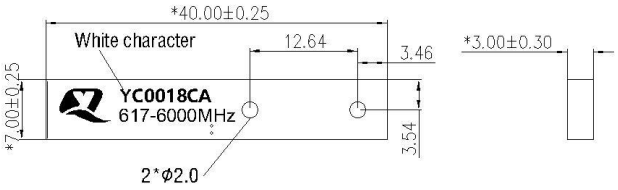
- Based on 140 mm × 40 mm EVB

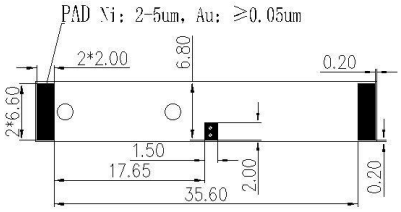
1.3 Mechanical & Environmental

Mechanical	
Antenna Size	40 mm × 7 mm × 3 mm
Material & Color	FR4 & Black
Antenna Weight	Typ. 1.05 g
Mounting Type	SMD
Recommended EVB Size	140 mm × 40 mm
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to 85 °C
RoHS & REACH Compliant	Yes

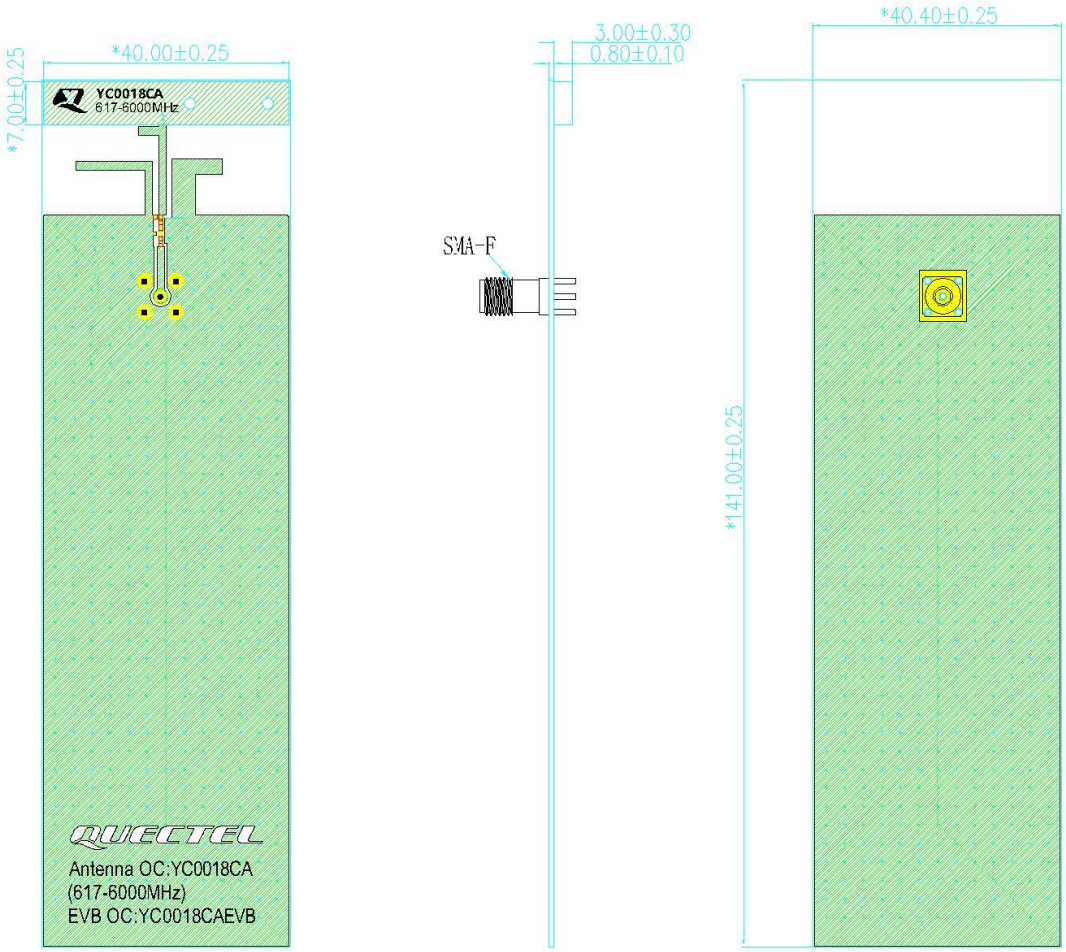
2 Drawing

2.1. Antenna





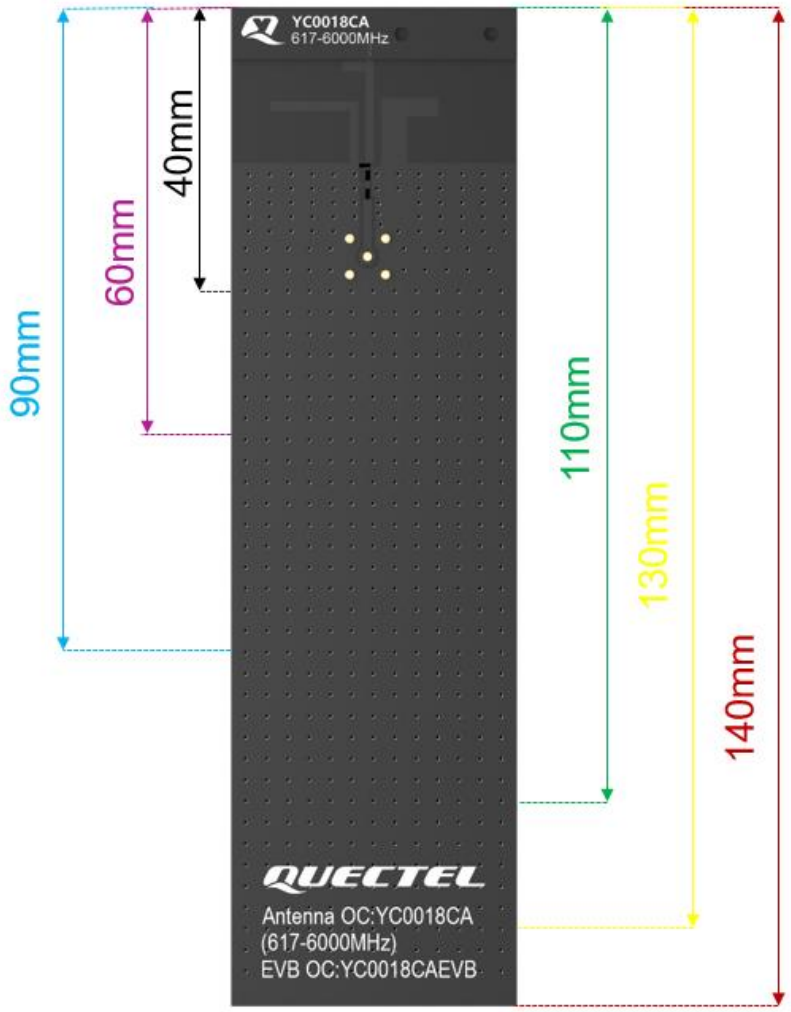
2.2. Rectangular EVB



3 Detailed Performance

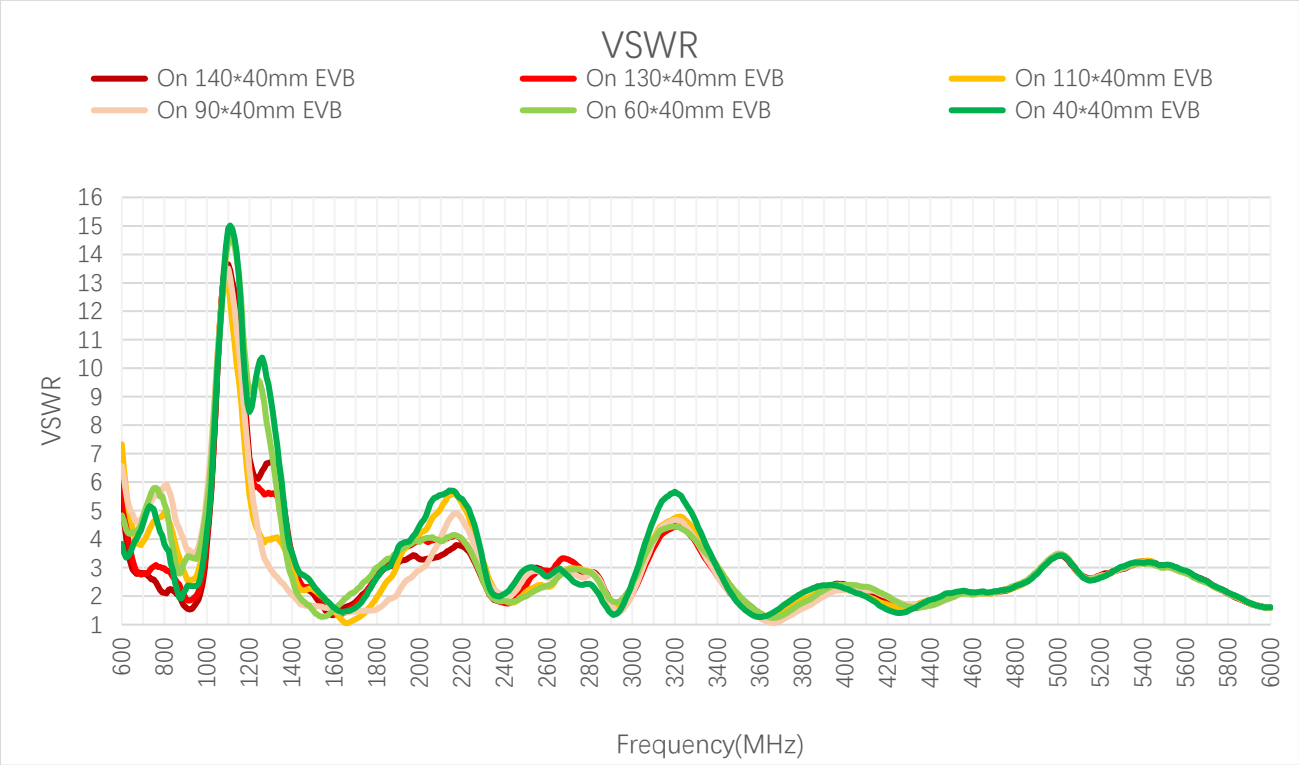
3.1. GND Length Dimensions Overview

The performance of the low bands is highly dependent on the ground plane length. The host PCB ground needs to be as long as the device allows. Reducing the GND directly relates to the performance of the low bands. As shown below you can see the effect of the different shapes vs the efficiency.



S-Parameter Test

3.1.1. VSWR

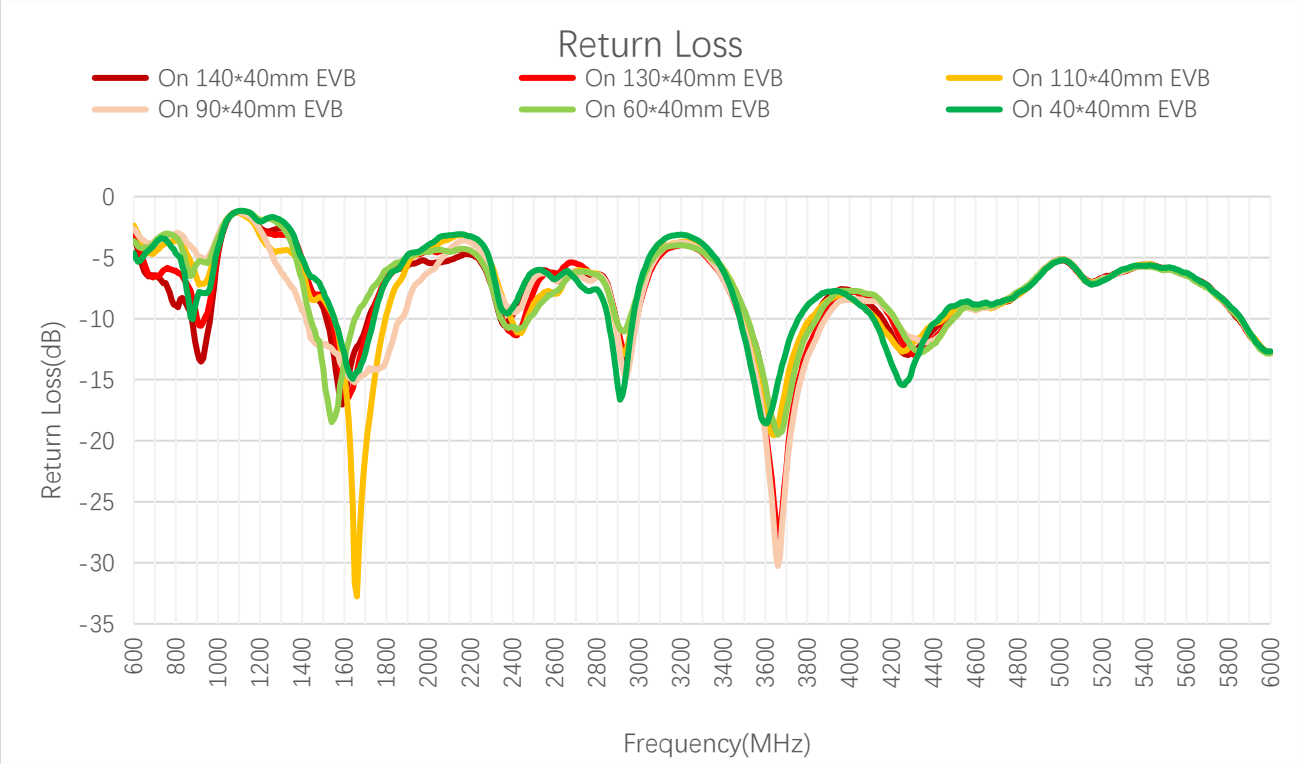


VSWR

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
On 140 × 40 mm EVB	5.7	3.5	2.8	2.2	1.6	1.9	2.5	1.9	2.1	3.1
On 130 × 40 mm EVB	6.6	4.0	2.8	2.8	1.9	2.2	2.4	1.8	2.0	3.2
On 110 × 40 mm EVB	7.3	5.1	4.0	4.5	2.7	2.9	2.2	1.2	1.4	2.8
On 90 × 40 mm EVB	6.6	5.3	5.0	5.5	3.7	3.7	1.7	1.5	1.5	2.0
On 60 × 40 mm EVB	4.8	4.2	5.0	4.0	3.3	3.5	1.9	2.3	2.5	3.5
On 40 × 40 mm EVB	3.8	3.4	4.8	3.2	2.2	2.4	2.8	1.7	1.9	3.3
Frequency (MHz)	**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**3300**	**3800**	**5500**	**6000**
On 140 × 40 mm EVB	3.3	3.6	1.9	2.3	2.7	2.9	3.9	1.8	3.0	1.6
On 130 × 40 mm EVB	3.8	4.1	1.9	1.9	2.9	3.3	3.9	1.6	3.1	1.6

On 110 × 40 mm EVB	3.8	5.6	2.3	1.8	2.3	3.0	4.2	1.9	3.0	1.6
On 90 × 40 mm EVB	2.6	4.7	2.3	2.2	2.7	2.9	4.0	1.6	3.0	1.6
On 60 × 40 mm EVB	3.8	4.1	1.9	1.8	2.4	2.9	3.9	1.8	3.0	1.6
On 40 × 40 mm EVB	3.9	5.7	2.0	2.5	2.7	2.8	4.6	2.1	3.1	1.6

3.1.2. Return Loss



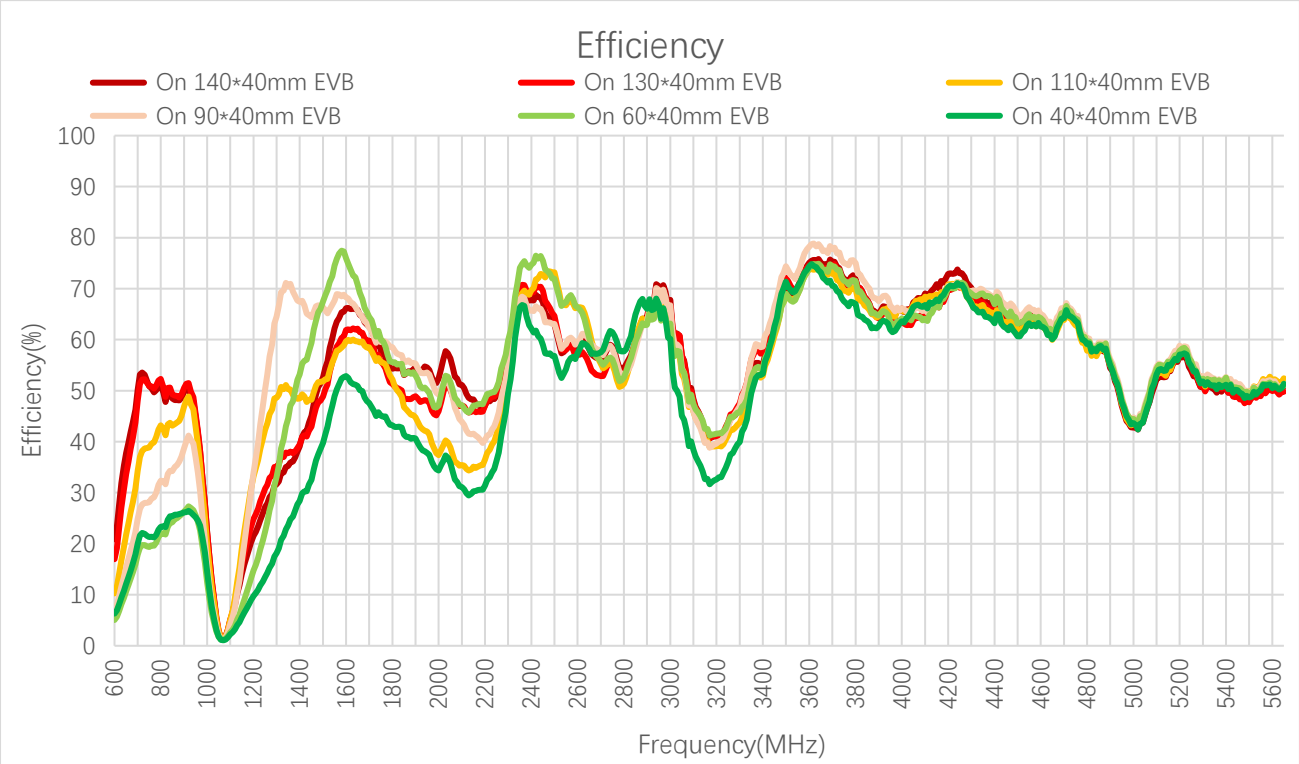
Return Loss (dB)

Frequency (MHz)	**600**	**630**	**710**	**830**	**900**	**960**	**1440**	**1710**	**1740**	**1880**
On 140 × 40 mm EVB	-3.1	-5.1	-6.5	-8.3	-12.6	-10.3	-7.5	-10.3	-9.0	-5.9
On 130 × 40 mm EVB	-2.6	-4.4	-6.5	-6.5	-10.0	-8.7	-7.6	-10.9	-9.3	-5.5
On 110 × 40 mm EVB	-2.4	-3.4	-4.4	-3.9	-6.7	-6.3	-8.4	-19.4	-15.3	-6.4
On 90 × 40 mm EVB	-2.7	-3.3	-3.5	-3.2	-4.7	-4.8	-11.6	-14.3	-14.1	-9.8

On 60 × 40 mm EVB	-3.6	-4.2	-3.5	-4.4	-5.5	-5.1	-10.0	-8.2	-7.3	-5.2
On 40 × 40 mm EVB	-4.6	-5.3	-3.7	-5.7	-8.4	-7.6	-6.6	-12.0	-10.0	-5.4
Frequency (MHz)	**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**3300**	**3800**	**5500**	**6000**
On 140 × 40 mm EVB	-5.4	-4.9	-10.4	-8.3	-6.8	-6.4	-4.5	-10.7	-5.9	-12.8
On 130 × 40 mm EVB	-4.7	-4.3	-10.0	-10.3	-6.3	-5.4	-4.6	-12.6	-5.9	-12.8
On 110 × 40 mm EVB	-4.7	-3.2	-8.2	-10.9	-8.0	-6.1	-4.2	-10.3	-6.0	-12.8
On 90 × 40 mm EVB	-7.0	-3.8	-8.3	-8.7	-6.9	-6.2	-4.5	-13.2	-6.0	-12.7
On 60 × 40 mm EVB	-4.6	-4.3	-10.2	-10.7	-7.8	-6.2	-4.5	-11.2	-6.0	-12.8
On 40 × 40 mm EVB	-4.5	-3.1	-9.3	-7.3	-6.8	-6.6	-3.8	-8.9	-5.8	-12.7

3.2. Radiation Performance Test

3.2.1. Efficiency

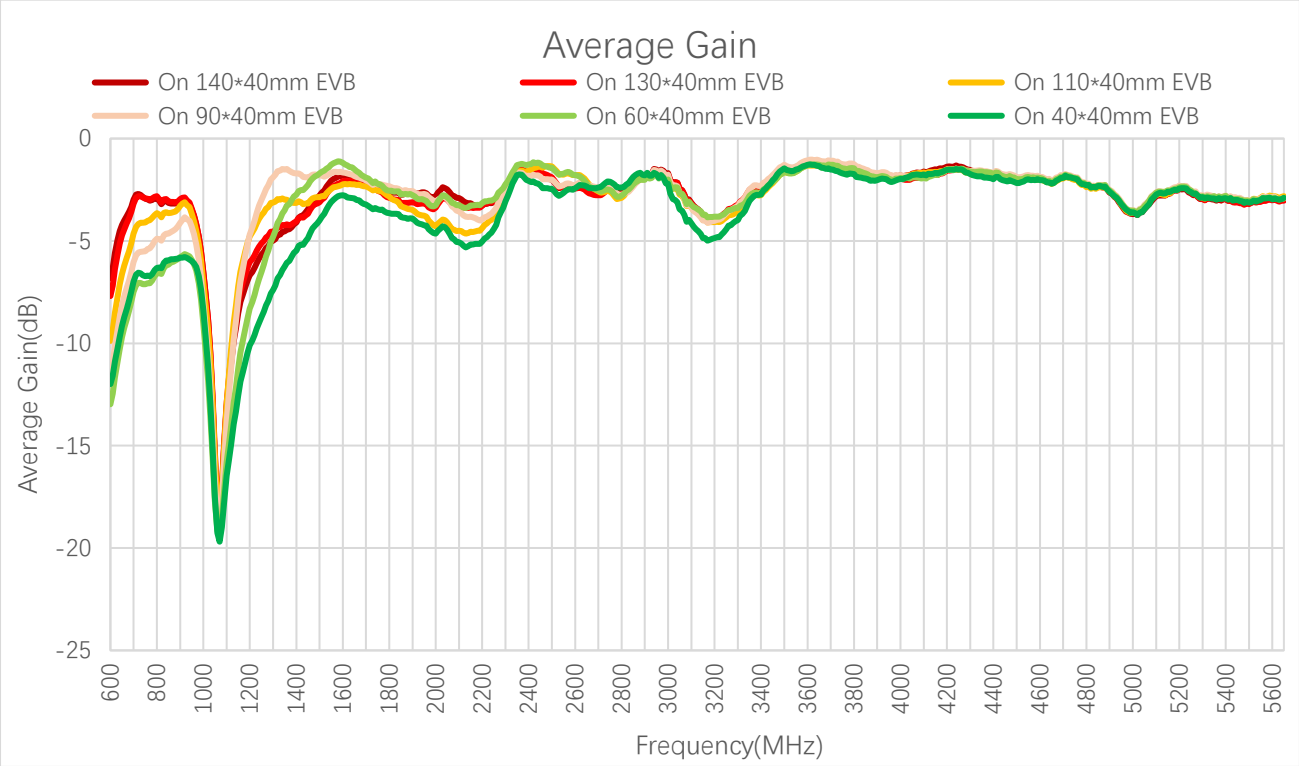


Efficiency (%)

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
On 140 × 40 mm EVB	20.8	31.9	53.2	49.5	49.8	41.8	43.7	61.9	59.5	53.7
On 130 × 40 mm EVB	17.0	27.1	51.4	50.5	50.5	42.2	42.2	59.1	57.0	48.4
On 110 × 40 mm EVB	10.3	16.8	37.0	43.4	46.9	39.6	48.2	57.7	56.4	45.3
On 90 × 40 mm EVB	7.0	11.6	26.9	33.7	38.8	34.0	64.8	61.7	60.4	55.5
On 60 × 40 mm EVB	5.0	8.1	19.2	23.3	26.3	24.3	57.7	63.8	61.8	53.3
On 40 × 40 mm EVB	6.3	9.5	21.6	24.7	26.2	24.6	31.6	46.8	45.8	40.6
Frequency (MHz)	**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**3300**	**3800**	**5500**	**6000**
On 140 × 40 mm EVB	54.6	48.3	69.7	67.3	58.5	56.5	46.4	71.9	48.5	48.4

On 130 × 40 mm EVB	48.1	45.9	70.1	69.6	57.0	53.0	47.5	71.5	47.7	46.6
On 110 × 40 mm EVB	42.0	34.5	68.3	72.8	66.3	56.1	43.7	69.9	49.1	49.3
On 90 × 40 mm EVB	53.6	41.4	67.9	65.2	59.4	58.0	47.0	75.1	49.4	46.6
On 60 × 40 mm EVB	50.1	46.4	74.1	75.5	66.3	56.3	45.7	71.5	49.5	46.4
On 40 × 40 mm EVB	37.8	29.8	66.4	59.0	57.3	57.3	40.0	67.0	48.7	48.5

3.2.2. Average Gain

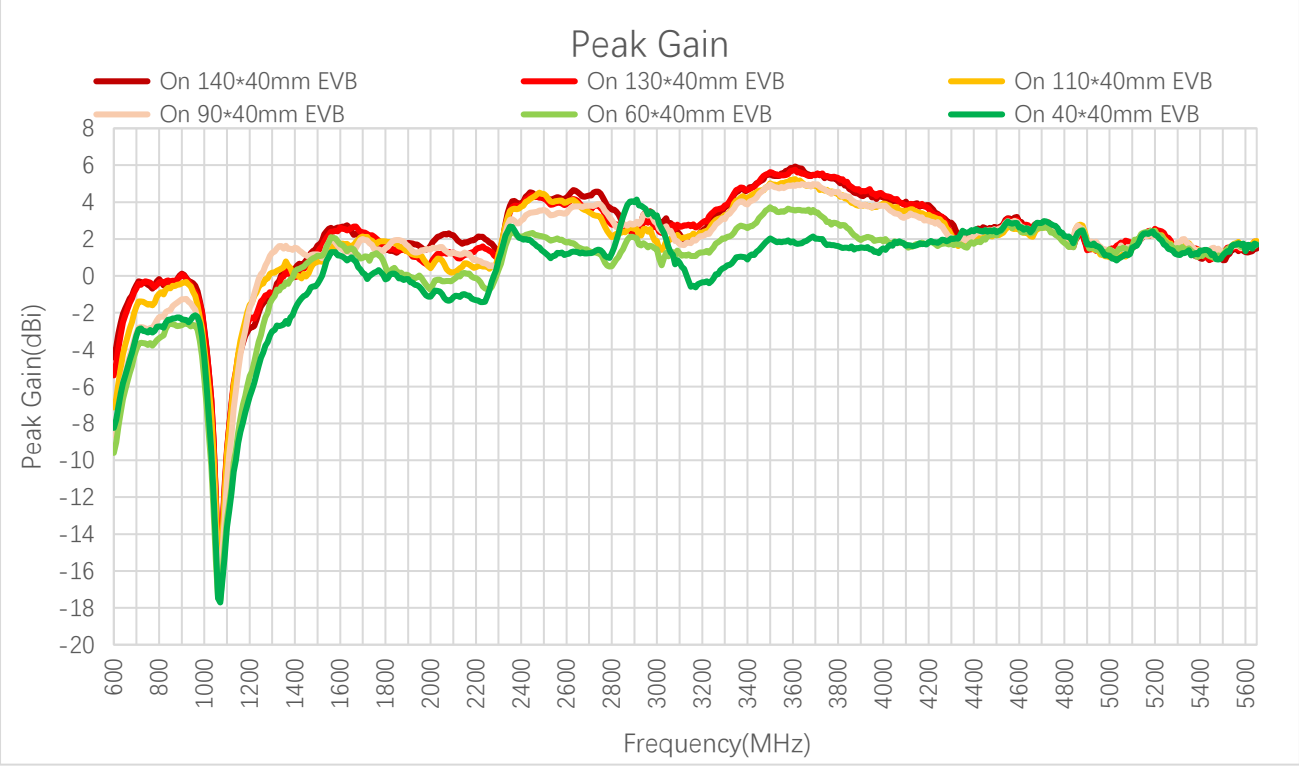


Average Gain (dB)

Frequency (MHz)	**600**	**630**	**710**	**830**	**900**	**960**	**1440**	**1710**	**1740**	**1880**
On 140 × 40 mm EVB	-6.8	-5.0	-2.7	-3.1	-3.0	-3.8	-3.6	-2.1	-2.3	-2.7
On 130 × 40 mm EVB	-7.7	-5.7	-2.9	-3.0	-3.0	-3.8	-3.8	-2.3	-2.4	-3.2
On 110 × 40 mm EVB	-9.9	-7.8	-4.3	-3.6	-3.3	-4.0	-3.2	-2.4	-2.5	-3.4

On 90 × 40 mm EVB	-11.5	-9.4	-5.7	-4.7	-4.1	-4.7	-1.9	-2.1	-2.2	-2.6
On 60 × 40 mm EVB	-13.0	-10.9	-7.2	-6.3	-5.8	-6.1	-2.4	-2.0	-2.1	-2.7
On 40 × 40 mm EVB	-12.0	-10.3	-6.7	-6.1	-5.8	-6.1	-5.0	-3.3	-3.4	-3.9
Frequency (MHz)	**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**3300**	**3800**	**5500**	**6000**
On 140 × 40 mm EVB	-2.6	-3.2	-1.6	-1.7	-2.3	-2.5	-3.3	-1.4	-3.2	-3.2
On 130 × 40 mm EVB	-3.2	-3.4	-1.5	-1.6	-2.4	-2.8	-3.2	-1.5	-3.2	-3.3
On 110 × 40 mm EVB	-3.8	-4.6	-1.7	-1.4	-1.8	-2.5	-3.6	-1.6	-3.1	-3.1
On 90 × 40 mm EVB	-2.7	-3.8	-1.7	-1.9	-2.3	-2.4	-3.3	-1.3	-3.1	-3.3
On 60 × 40 mm EVB	-3.0	-3.3	-1.3	-1.2	-1.8	-2.5	-3.4	-1.5	-3.1	-3.3
On 40 × 40 mm EVB	-4.2	-5.3	-1.8	-2.3	-2.4	-2.4	-4.0	-1.7	-3.1	-3.1

3.2.3. Peak Gain

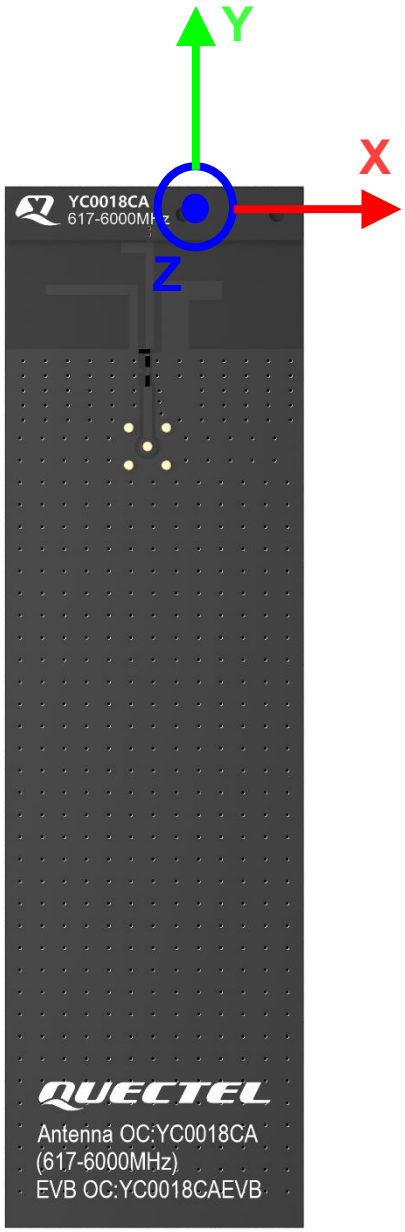


Peak Gain (dBi)

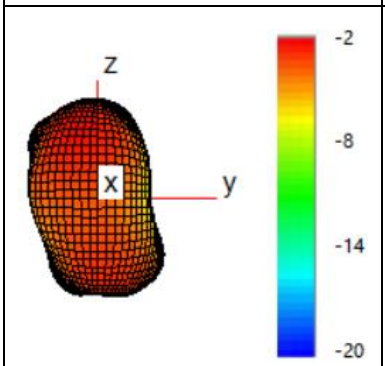
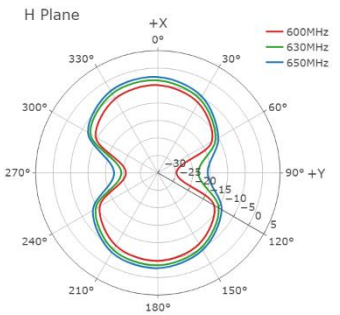
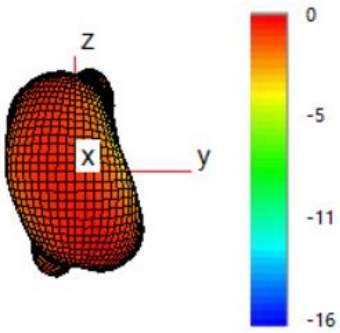
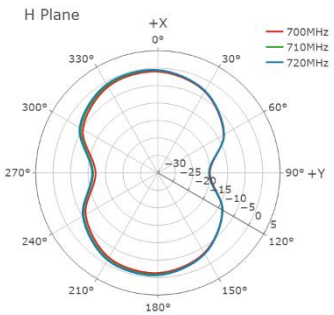
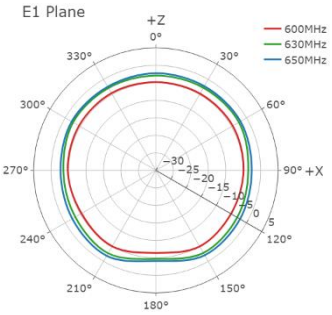
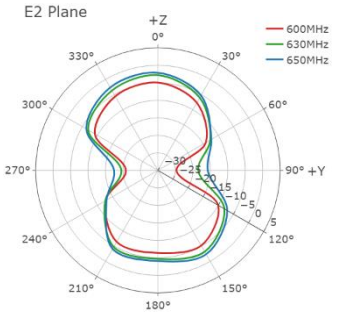
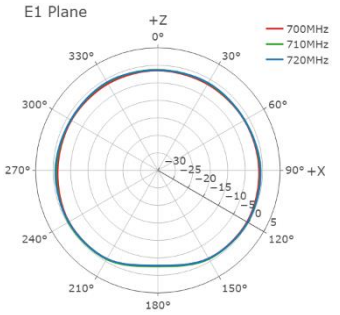
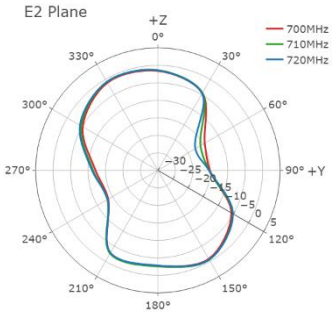
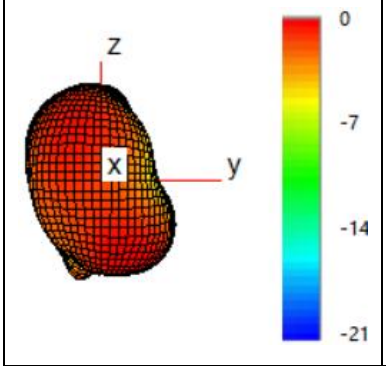
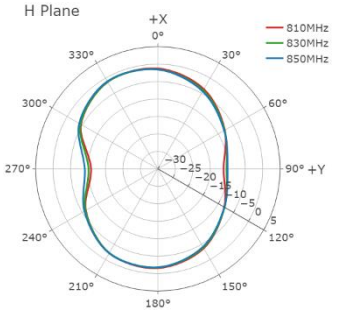
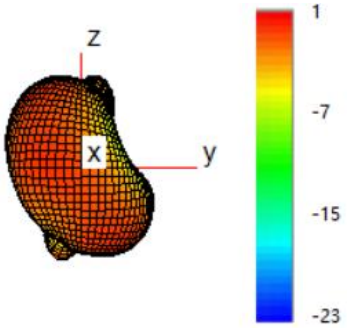
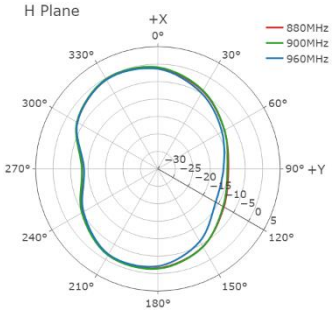
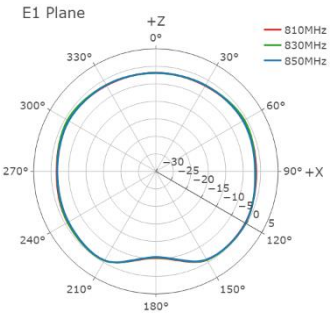
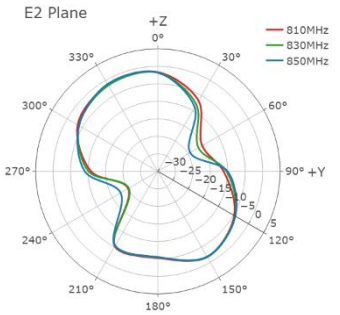
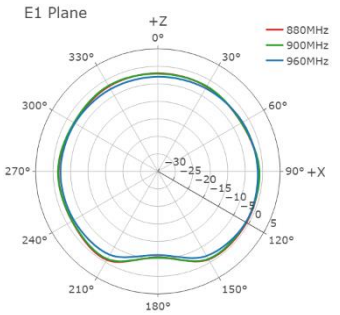
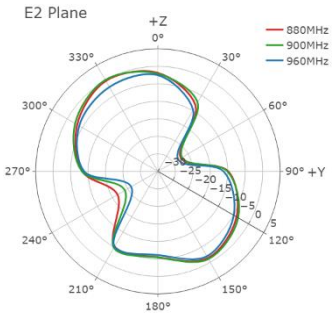
Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
On 140 × 40 mm EVB	-4.4	-2.6	-0.3	-0.3	0.1	-0.5	0.7	2.1	2.0	1.5
On 130 × 40 mm EVB	-5.4	-3.2	-0.4	-0.3	0.1	-0.9	0.5	2.3	2.2	1.4
On 110 × 40 mm EVB	-7.1	-5.0	-1.4	-0.8	-0.4	-1.1	0.1	2.1	1.9	1.5
On 90 × 40 mm EVB	-8.6	-6.5	-2.8	-2.0	-1.3	-1.8	1.2	1.9	1.7	1.9
On 60 × 40 mm EVB	-9.6	-7.4	-3.7	-2.9	-2.7	-2.7	0.5	1.1	1.2	0.0
On 40 × 40 mm EVB	-8.2	-6.4	-2.9	-2.5	-2.4	-2.1	-1.1	0.1	0.1	-0.2
Frequency (MHz)	**1950**	**2140**	**2350**	**2450**	**2600**	**2690**	**3300**	**3800**	**5500**	**6000**
On 140 × 40 mm EVB	1.6	1.7	3.8	4.5	4.2	4.3	3.7	5.1	0.9	2.6
On 130 × 40 mm EVB	0.9	1.0	3.5	4.4	3.9	3.7	3.8	5.3	1.2	2.3
On 110 × 40 mm EVB	1.2	0.5	3.5	4.3	4.0	3.6	3.3	4.4	1.2	2.7
On 90 × 40 mm EVB	1.3	1.2	3.0	3.4	3.4	3.8	3.1	4.6	1.2	2.3
On 60 × 40 mm EVB	0.0	0.1	2.3	2.3	1.8	1.4	2.0	2.8	1.1	2.4
On 40 × 40 mm EVB	-0.6	-1.0	2.7	1.8	1.2	1.2	0.5	1.6	1.1	2.5

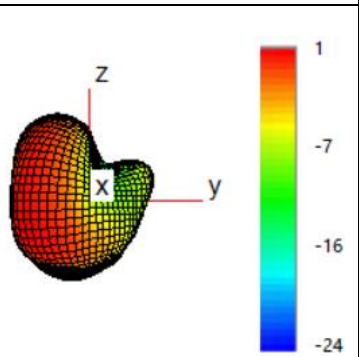
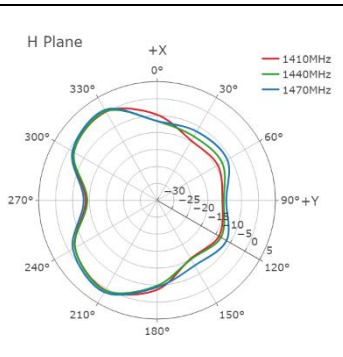
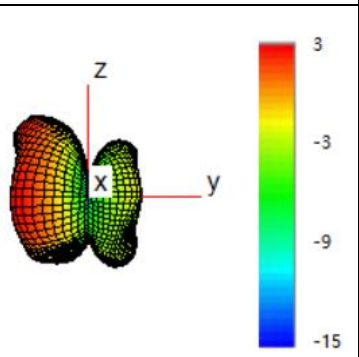
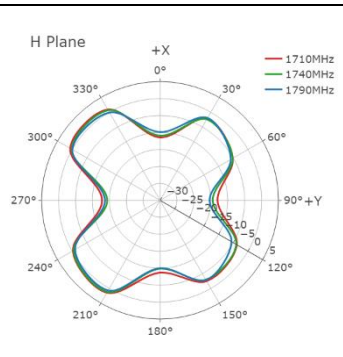
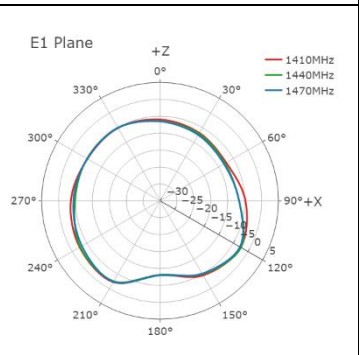
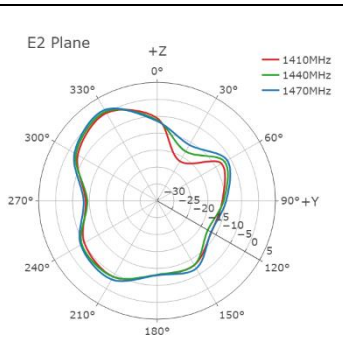
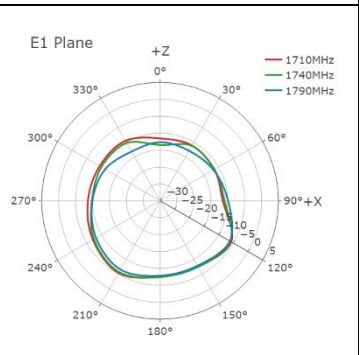
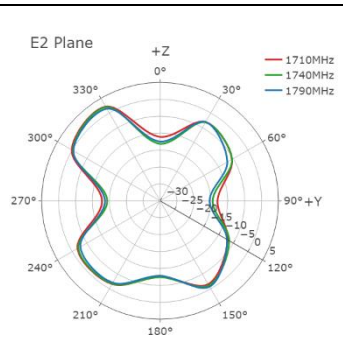
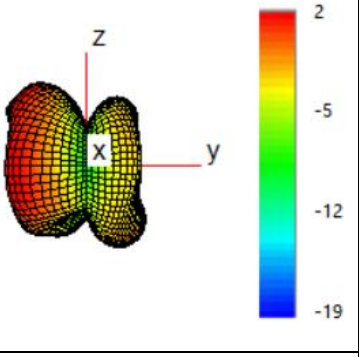
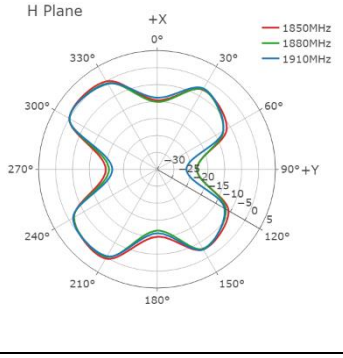
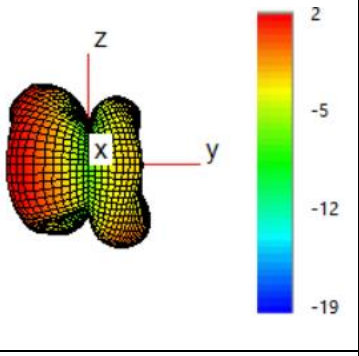
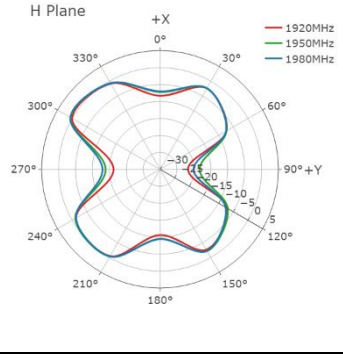
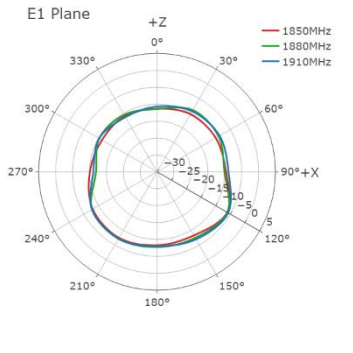
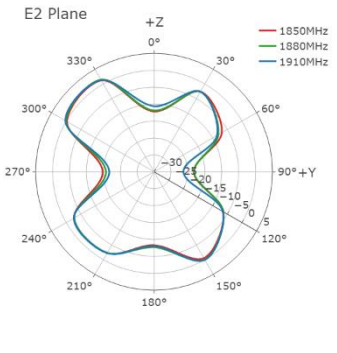
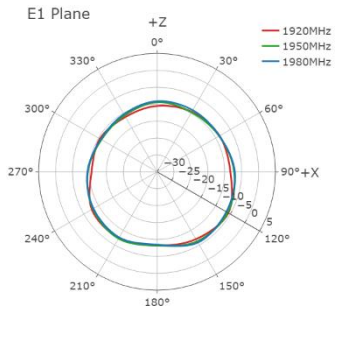
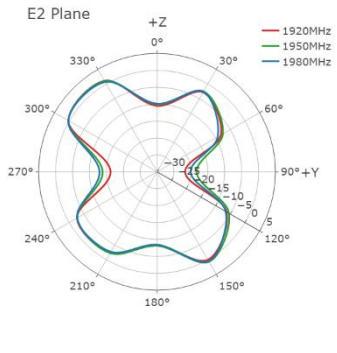
3.2.4. 3D & 2D Radiation Pattern

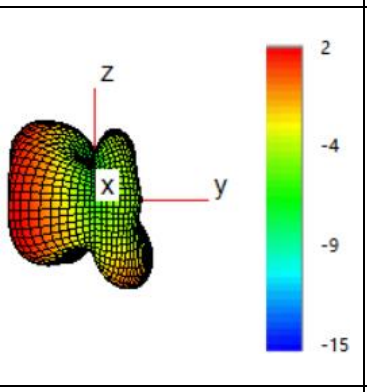
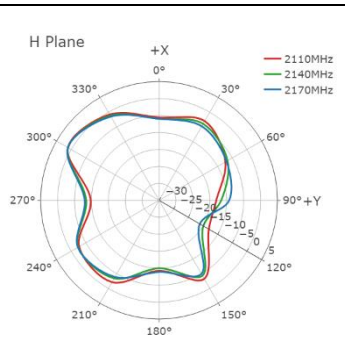
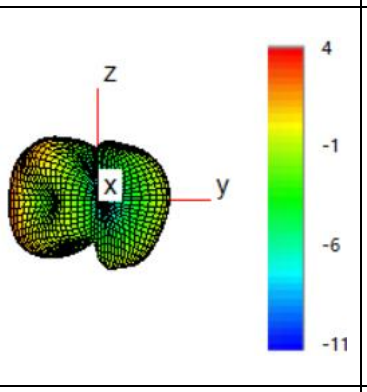
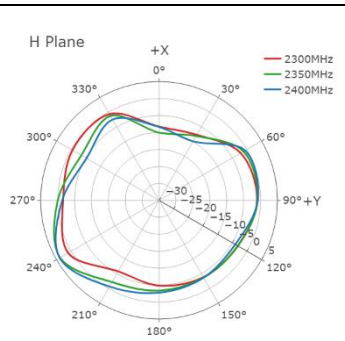
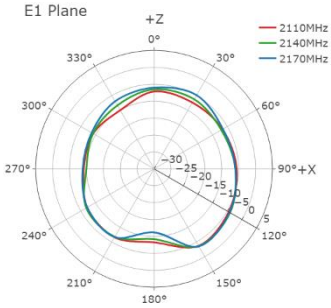
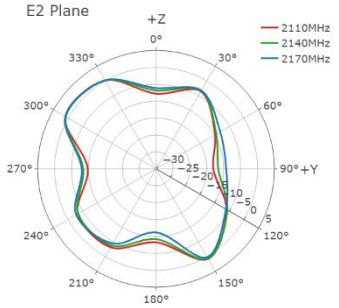
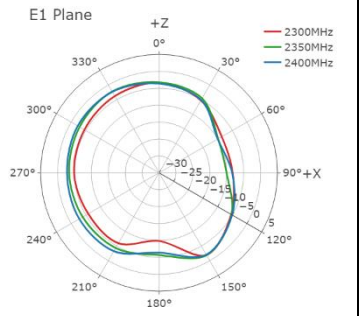
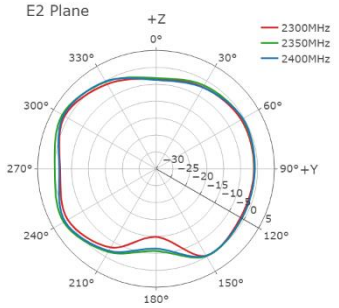
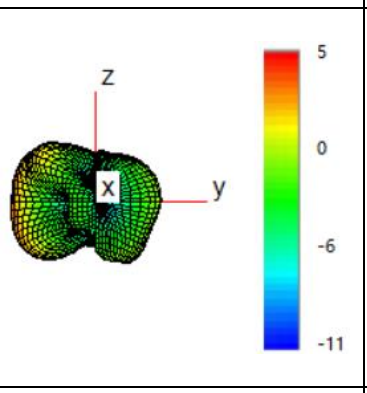
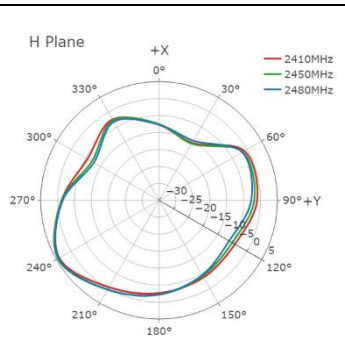
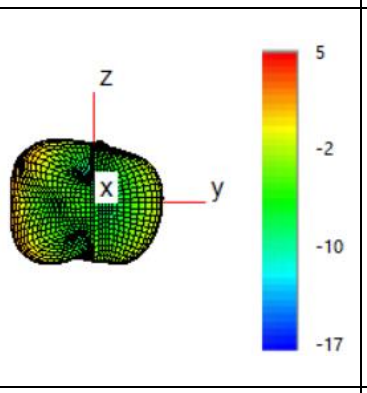
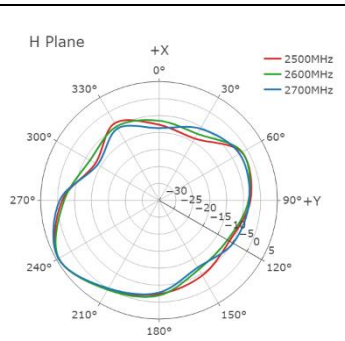
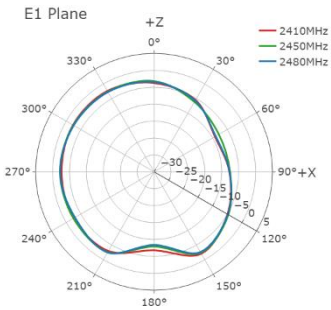
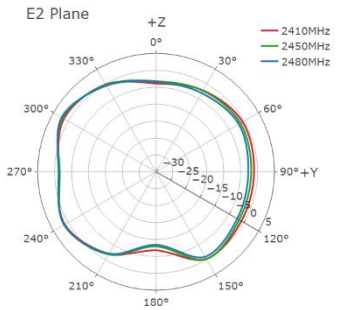
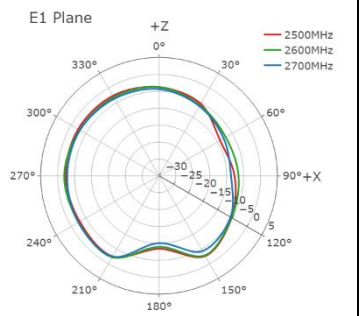
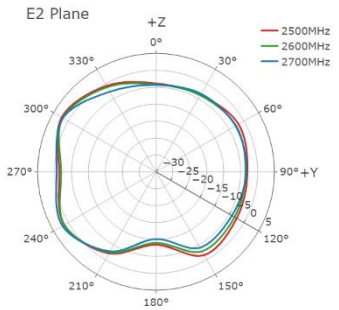
- Test Status: Assembled on 140 mm × 40 mm EVB
- Test Chamber: HF-G-1

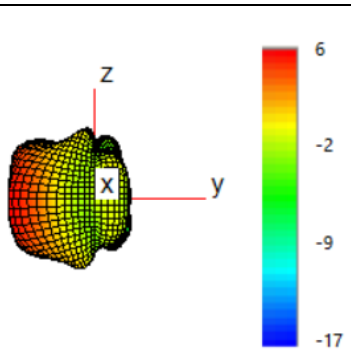
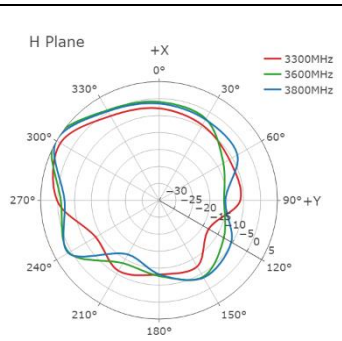
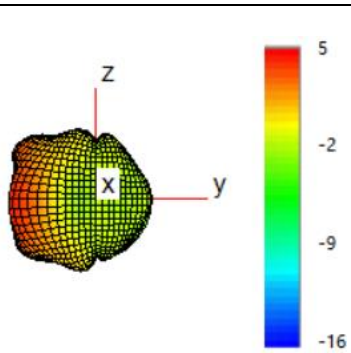
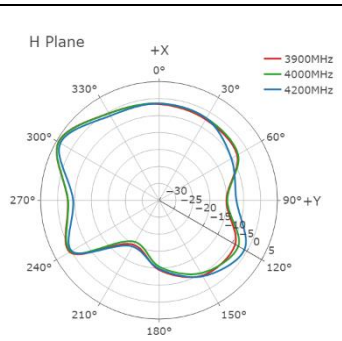
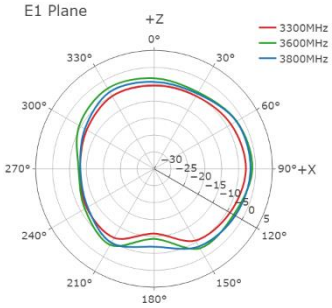
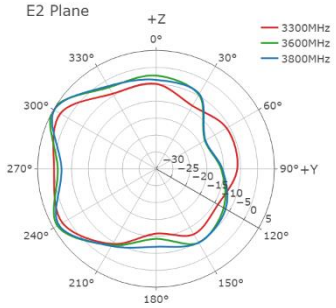
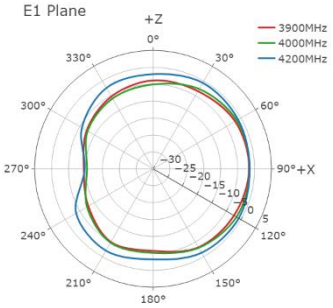
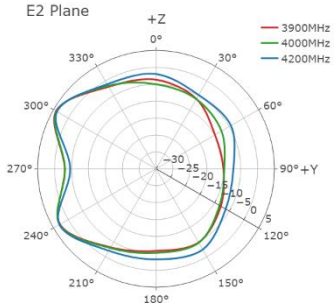
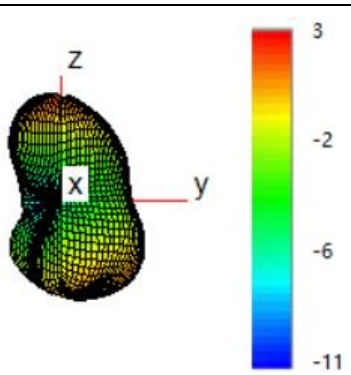
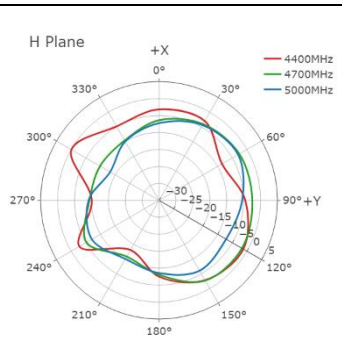
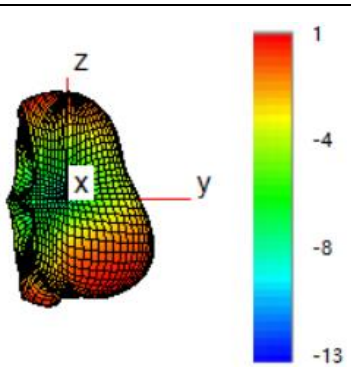
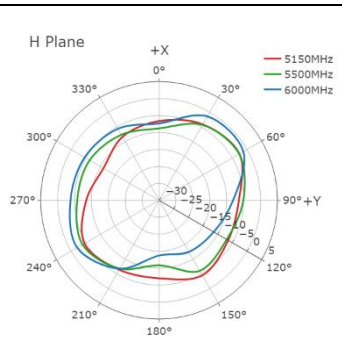
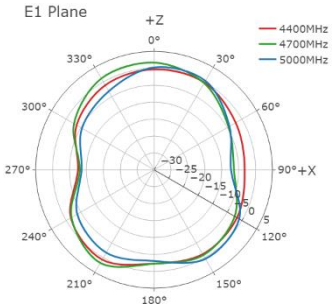
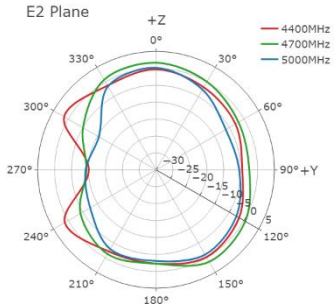
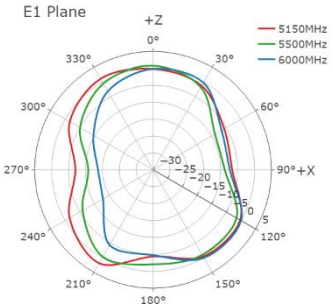
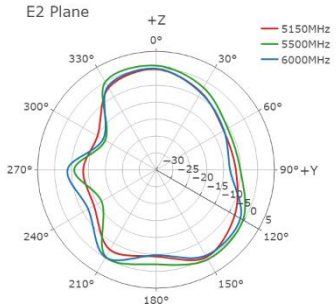


- **On 140 mm × 40 mm EVB**

630 MHz		710 MHz	
			
			
830 MHz		900 MHz	
			
			

1440MHz		1740MHz	
			
			
1880 MHz		1950 MHz	
			
			

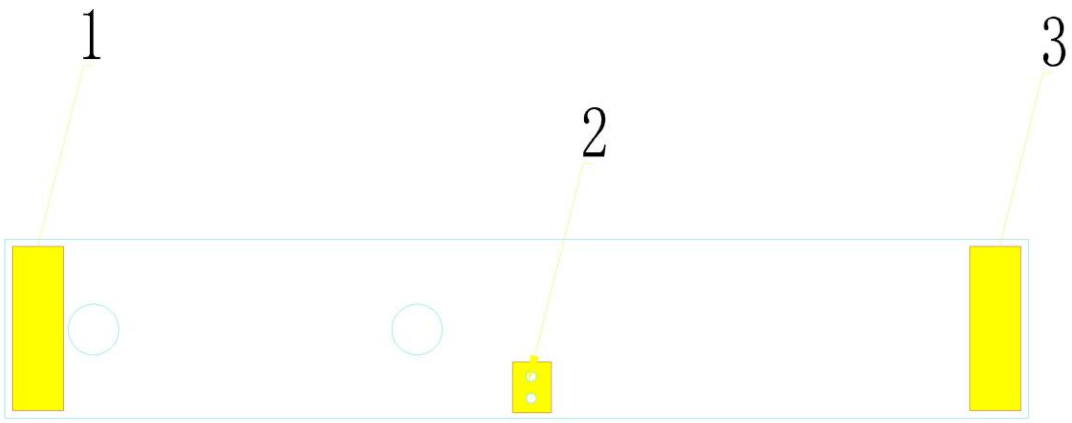
2140 MHz		2350 MHz	
			
			
2450 MHz		2600 MHz	
			
			

3600 MHz		4000 MHz	
			
			
4700 MHz		5500 MHz	
			
			

4 Schematic Symbol and Pin Definition

- The pin assignment for the antenna is as follows.
- The circuit symbol for the antenna is shown below. The antenna has 3 pins, only one of which works. All other pins are for mechanical strength.

Pin	Description
1, 3	Not used (Mechanical only)
2	Feed



5 Transmission Line

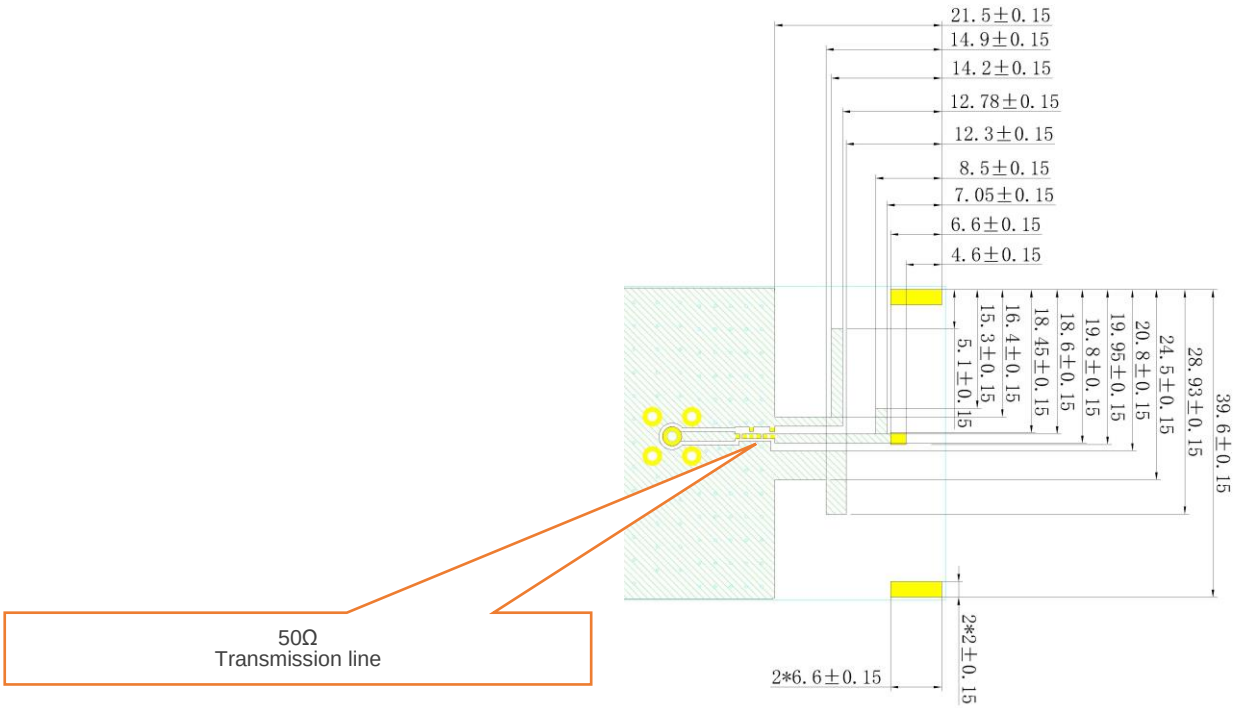
The characteristic impedance of all transmission lines shall be designed as 50 Ω.

- The length of the transmission lines should be kept as short as possible.
- Any other part of the RF system, such as transceiver, power amplifiers, etc., shall also be designed with an impedance of 50 Ω.

Once the material for the PCB has been chosen (PCB thickness and dielectric constant), a coplanar transmission line can easily be designed using any of the commercial software packages for transmission line design. For the chosen PCB thickness, copper thickness and substrate dielectric constant, the program will calculate the appropriate transmission line width and gaps on either side of the track so the characteristic impedance of the coplanar transmission is 50 Ω.

6 Recommended PCB Layout

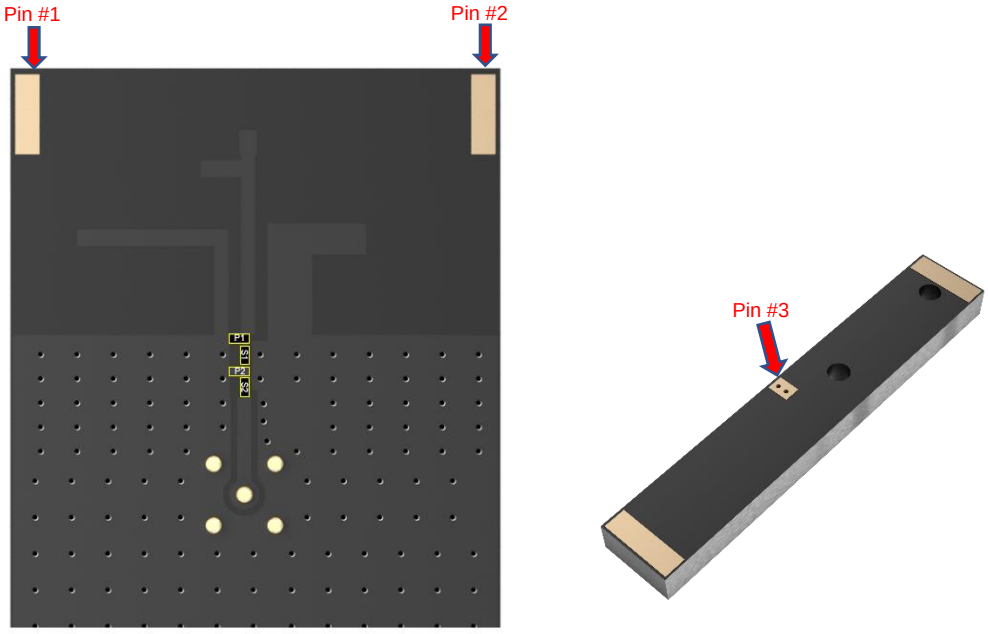
The host PCB must be designed using the PCB footprint shown with the correct clearances. An example of the PCB layout shows the antenna footprint. Please note this clearance area is critical to the performance of the antenna and must be applied through all layers of the PCB.



All dimensions are in mm.

7 Matching Circuit

Demo Board Top View



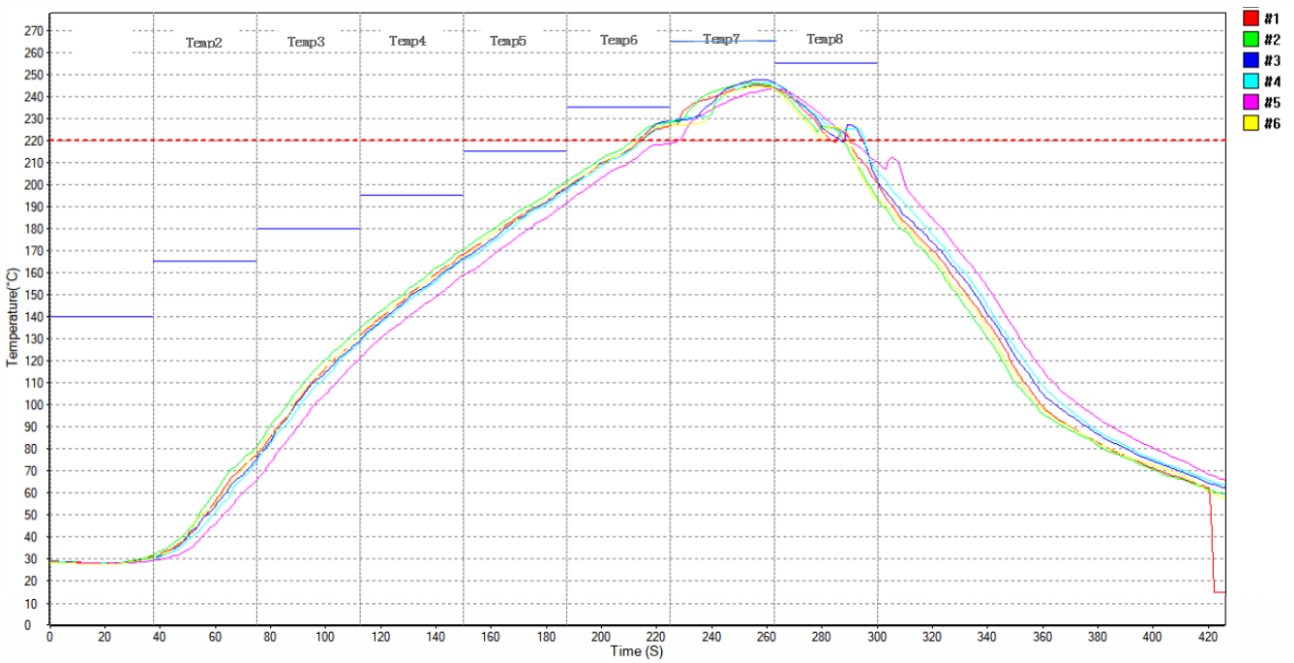
	P1	S1	P2	S2
Default Matching	11 nH	3.6 pF	-	0 ohm
Tolerance	±5 %	±5 %	-	-

Pin #	Description
1, 2	Not used (Mechanical only)
3	Feed

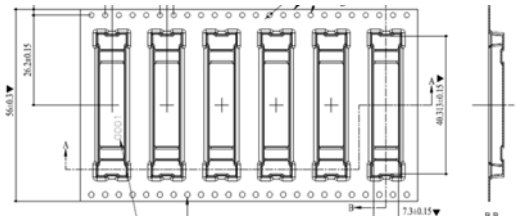
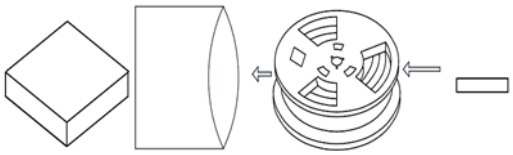
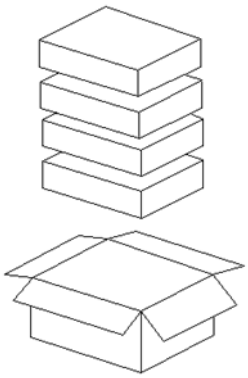
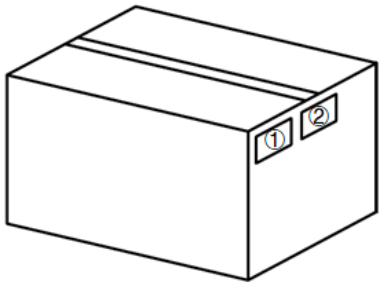
8 Soldering Temperature

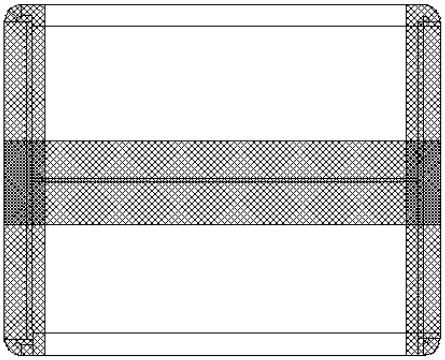
Phase	Profile Features	PB-Free Assembly
RAMP-UP	Avg. Ramp-up Rate (Tsmax to Tp)	3 °C/second (Max.)
PREHEAT	Temperature Min (Tsmin) Temperature Max (Tsmax) Time (tsmin to tsmax)	150 °C 190 °C 110 seconds (Max.)
REFLOW	Temperature (TL) Total Time above TL (tl)	220 °C 90 seconds (Max.)
PEAK	Temperature (Tp)	230–250 °C
RAMP-DOWN	Rate	-1 °C/second (Max.)

9 Reflow Profile



10 Packaging

Step	Packaging Picture / 2D Picture	Description
1		Reel
2		(900 PCS Antenna Products / Reel) Reel tape is vacuumed into the inner box.
3		(4 Inner Boxes / Carton Box) (3600 PCS Antennas / Carton Box) Carton Size: L × W × H = 300 × 250 × 200 mm
4		**Position for Attaching Labels** ① Carton Label ② Quality Label

5		**Sealing Cartons** H-shaped sealing cartons
Note	The initial packaging method described above is for reference only, and the final actual packaging method shall be subject to the actual shipping packaging.	

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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Or our local offices. For more information, please visit:
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Revision History

Version	Date	Author	Note
-	2022-12-13	Edison LIU/ Joye WANG/ David LIU/ Vinnie LIU	Creation of the document
1.0	2023-01-20	Edison LIU/ Joye WANG/ David LIU/ Vinnie LIU	First official release
1.1	2023-06-26	Joye WANG/ David LIU/ Vinnie LIU	Updated the drawing (Chapter 5).
2.0	2023-09-27	Edison LIU/ Joye WANG/ David LIU/ Vinnie LIU	Updated the template.
2.1	2024-08-19	David LIU/ Aria CHU	1. Updated the product name and overview. 2. Added the packaging (Chapter 10).
2.2	2025-01-11	Aria CHU	Delete a note below the table (Chapter 1.2).

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