Antenna

YFCA010AA Datasheet

Antenna Services

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About the Document

Revision History

Version	Date	Author	Note
-	2022-10-19	Wilson BAO/ Joye WANG	Creation of the document
1.0	2022-10-19	Wilson BAO/ Joye WANG	First official release
1.1	2023-01-28	Wilson BAO/ Joye WANG	Updated all data in this datasheet.

Contents

1 Product Description

This Quectel embedded 5G FPC antenna covers 5G NR Sub-6 GHz frequency bands and is compatible with 4G/3G/2G/LPWA bands. Ground plane independent, it's designed to be mounted directly to the underside of either a plastic or non-metallic enclosure. Ease of integration with a cable and connector which can be customized to meet your product design and RF module. Used with other 5G antennas, it can achieve MIMO (multiple input, multiple output) antenna technology for wireless communications in which multiple antennas are used at both the source (transmitter) and the destination (receiver).

2 Product Features

- Cellular 5G
- High efficiency
- Excellent performance

3 Product Specifications

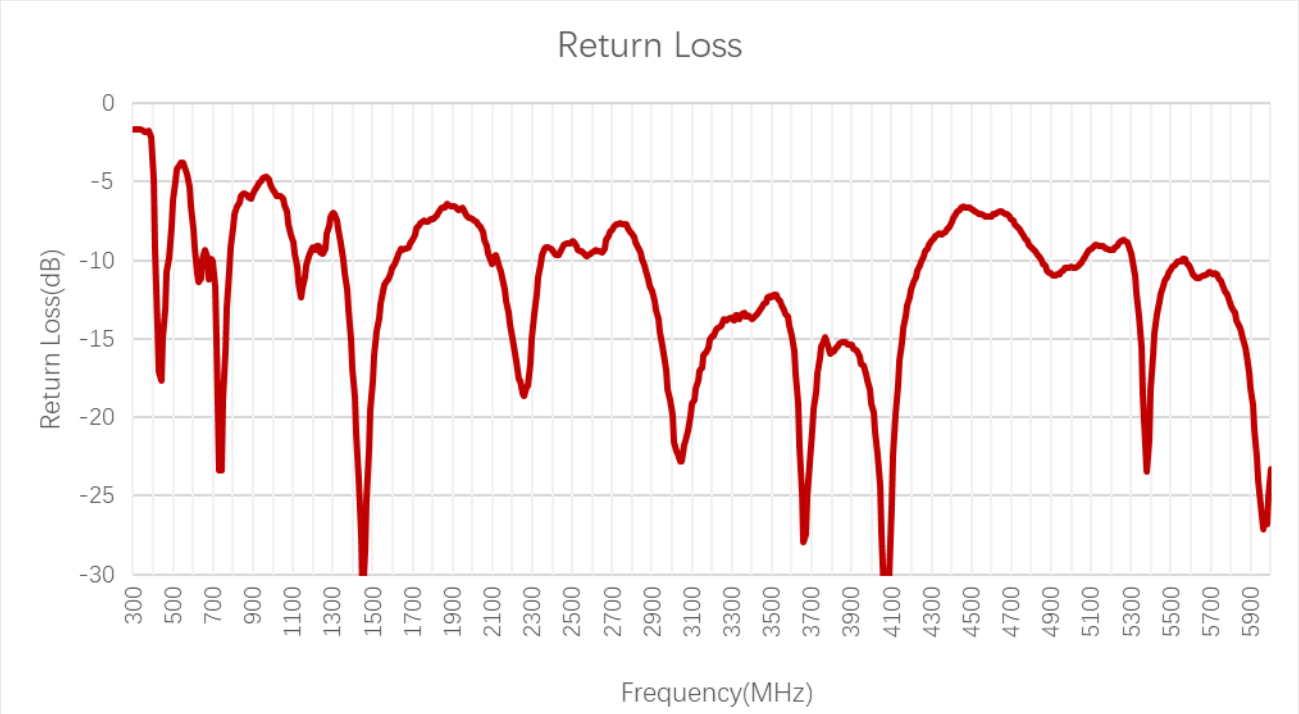
Passive Electrical Specifications	
Frequency Range	410–470 MHz; 700–960 MHz; 1400–6000 MHz
Input Impedance	50 Ω
VSWR	≤ 3.8
Peak Gain	≤ 5.6 dBi
Polarization Type	Linear
Mechanical Specifications	
Antenna Size	138.8 × 16.2 mm
Material	FPC
Cable Type	Φ 1.13 Black & 101 mm
Connector	IPEX MHF 1
Color	Black
Weight	Typ. 1.1 g
Mounting Type	Adhesive
Working Temperature	-40 °C to +85 °C

4 Overall Performance

4.1. Test Environment

- KEYSIGHT ENA Network Analyzer E5063A 100 kHz – 8.5 GHz
- RayZone® 2800 Chamber 5G (FR1) SISO/MIMO, 600 MHz – 8.5 GHz

4.2. Return Loss

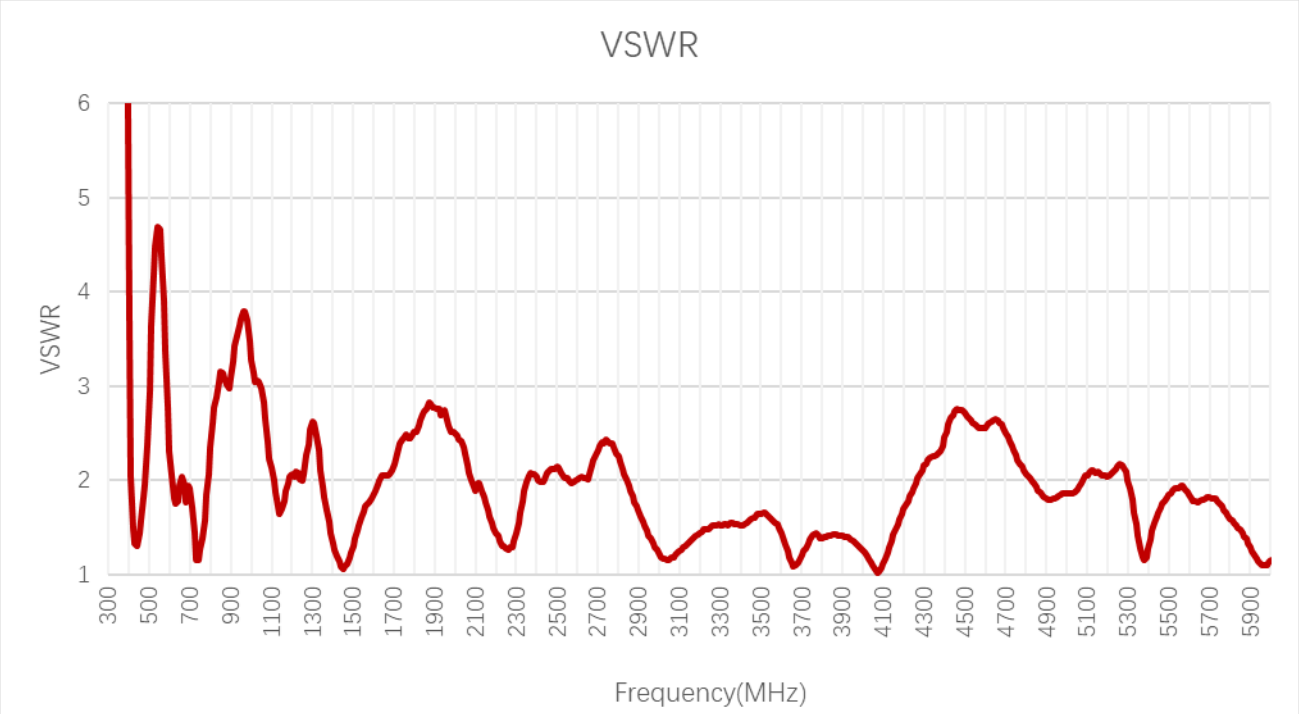


Frequency (MHz)	410	420	460	470	600	630	710	830	900	960
Return Loss(dB)	-9.4	-14.3	-13.1	-10.7	-8.0	-11.3	-11.7	-7.0	-5.9	-4.7

Frequency (MHz)	1440	1700	1740	1800	1940	2140	2340	2400	2600	2700
Return Loss(dB)	-27.8	-8.7	-7.6	-6.5	-6.7	-10.8	-10.2	-9.5	-18.0	-16.5

Frequency (MHz)	3600	4000	4700	5500	6000
Return Loss (dB)	-14.8	-19.1	-7.3	-10.5	-23.3

4.3. VSWR

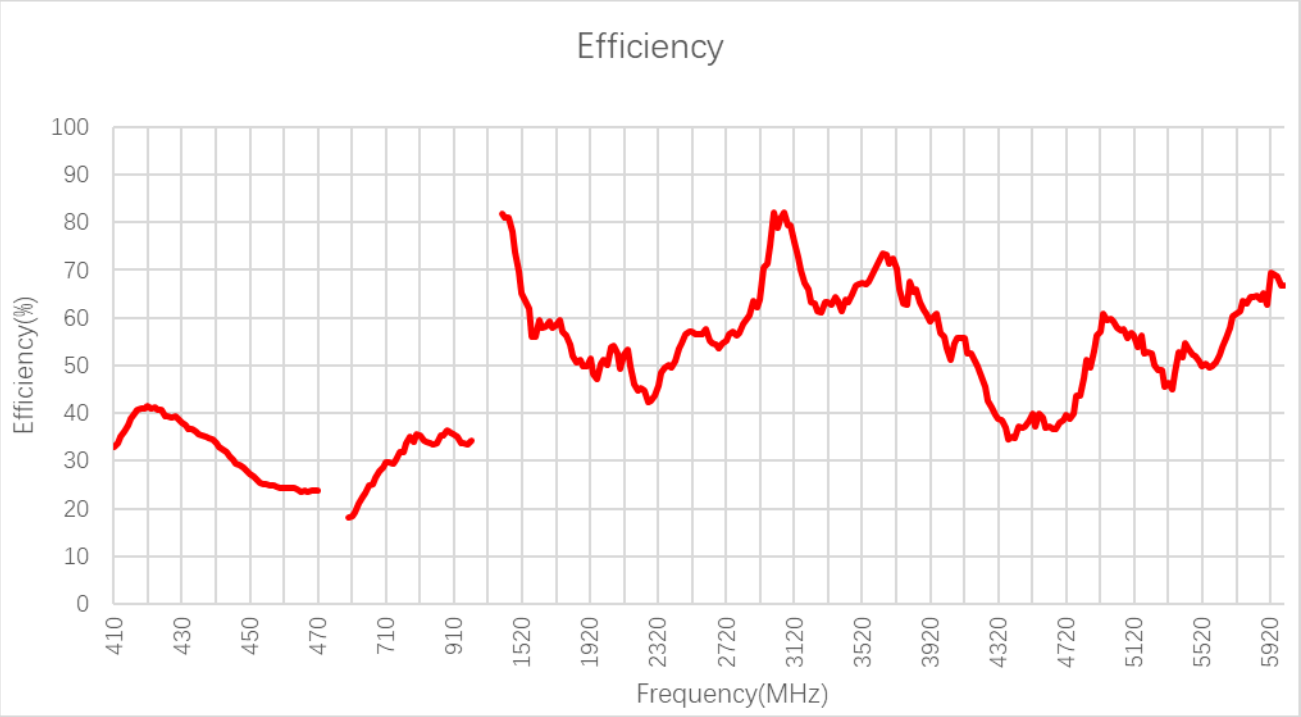


Frequency (MHz)	410	420	460	470	600	630	710	830	900	960
VSWR	2.0	1.5	1.6	1.8	2.3	1.7	1.7	2.9	3.1	3.8

Frequency (MHz)	1440	1700	1740	1800	1940	2140	2340	2400	2600	2700
VSWR	1.1	2.2	2.4	2.8	2.7	1.8	1.9	2.0	2.0	2.3

Frequency (MHz)	3600	4000	4700	5500	6000
VSWR	1.4	1.2	2.5	1.8	1.1

4.4. Efficiency

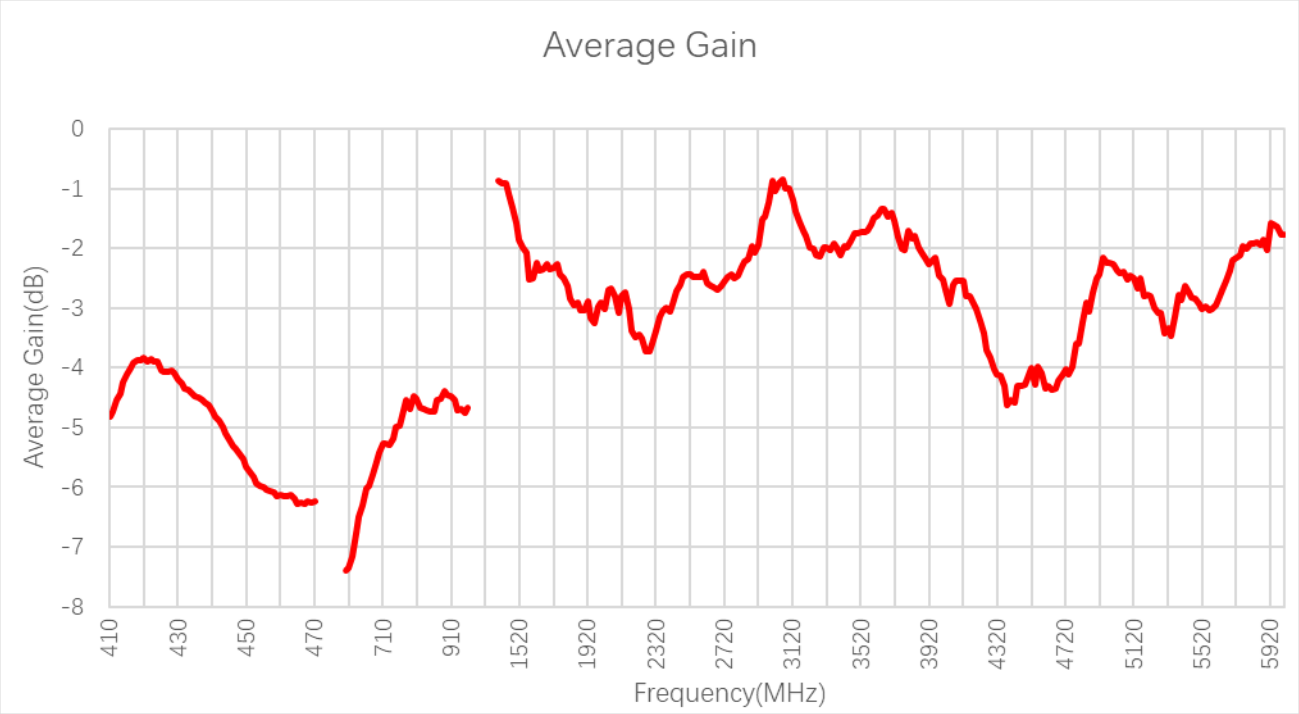


Frequency (MHz)	410	420	460	470	600	630	710	830	900	960
Efficiency (%)	33.2	38.4	22.1	21.5	14.8	17.7	35.7	38.7	40.9	39.0

Frequency (MHz)	1440	1700	1740	1800	1940	2140	2340	2400	2600	2700
Efficiency (%)	79.4	57.3	57.7	49.6	49.7	55.5	42.6	46.4	52.4	55.0

Frequency (MHz)	3600	4000	4700	5500	6000
Efficiency (%)	74.2	52.5	60.6	50.1	58.0

4.5. Average Gain

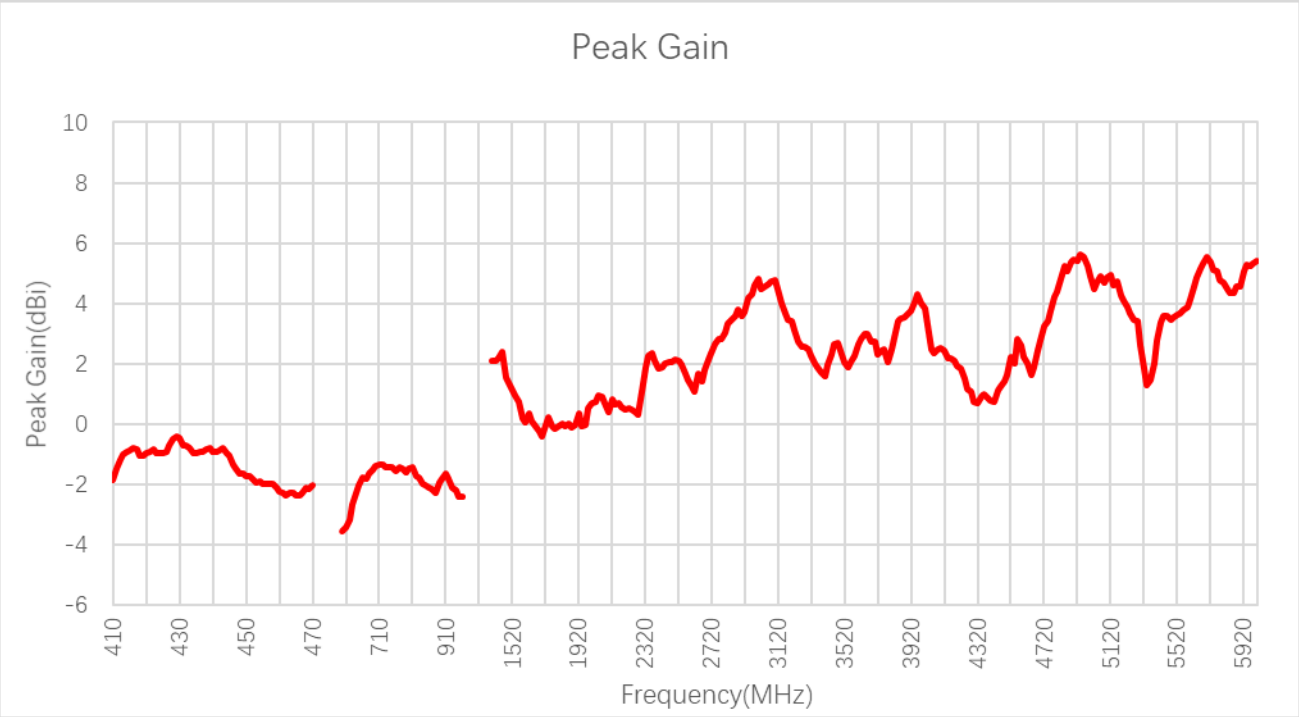


Frequency (MHz)	410	420	460	470	600	630	710	830	900	960
Average Gain (dB)	-4.8	-4.2	-6.6	-6.7	-8.3	-7.5	-4.5	-4.1	-3.9	-4.1

Frequency (MHz)	1440	1700	1740	1800	1940	2140	2340	2400	2600	2700
Average Gain (dB)	-1.0	-2.4	-2.4	-3.0	-3.0	-2.6	-3.7	-3.3	-2.8	-2.6

Frequency (MHz)	3600	4000	4700	5500	6000
Average Gain (dB)	-1.3	-2.8	-2.2	-3.0	-2.4

4.6. Peak Gain



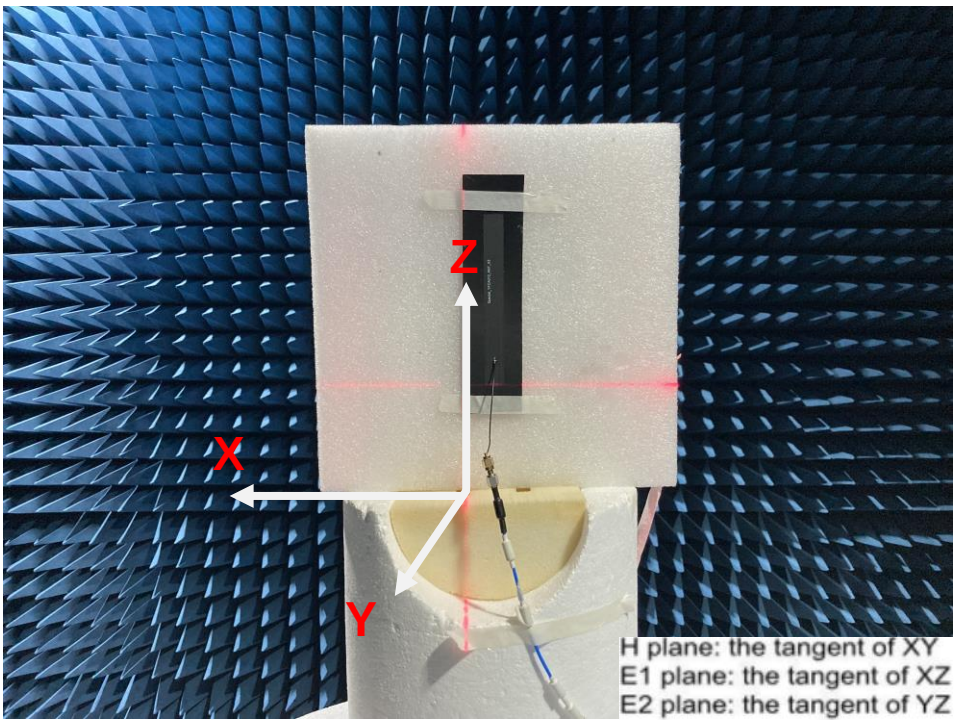
Frequency (MHz)	410	420	460	470	600	630	710	830	900	960
Peak Gain (dBi)	-1.2	-1.0	-2.5	-2.1	-3.9	-2.8	-0.7	0.2	-0.1	-0.3

Frequency (MHz)	1440	1700	1740	1800	1940	2140	2340	2400	2600	2700
Peak Gain (dBi)	2.2	0.4	1.0	0.6	0.8	1.0	2.4	1.9	1.4	2.9

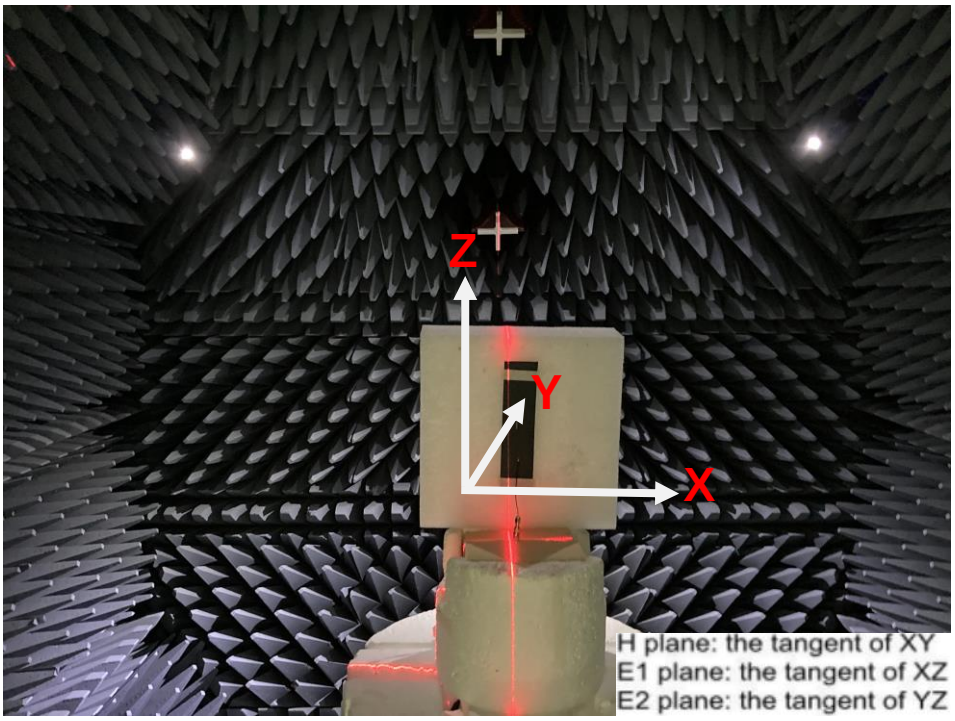
Frequency (MHz)	3600	4000	4700	5500	6000
Peak Gain (dBi)	2.7	2.2	4.1	3.7	5.4

4.7. Radiation Pattern

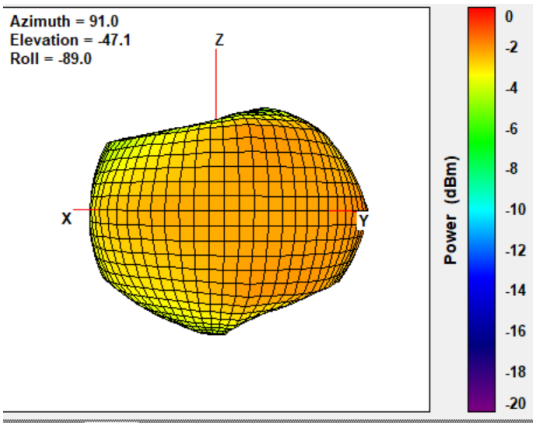
- Test condition: stick on a 2 mm ABS board (410–470 MHz).

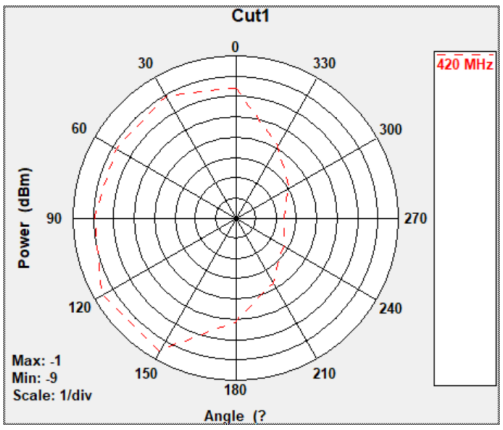


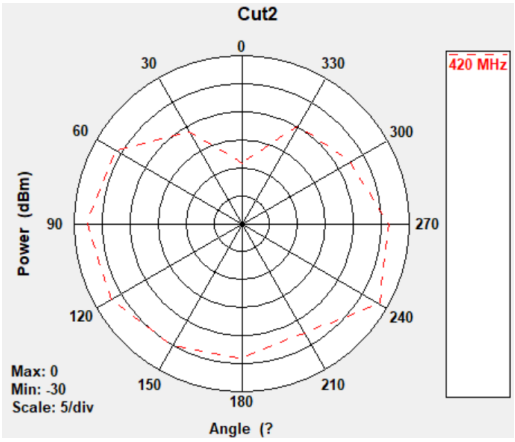
- Test condition: stick on a 2 mm ABS board (700–960 MHz, 1400–6000 MHz).

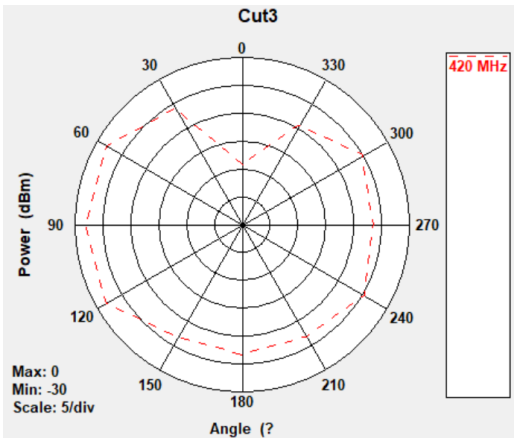


420 MHz

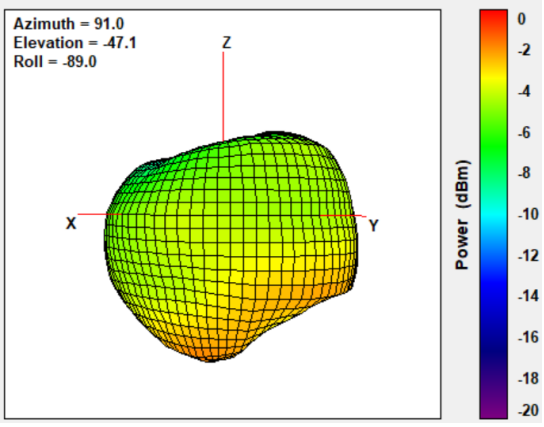


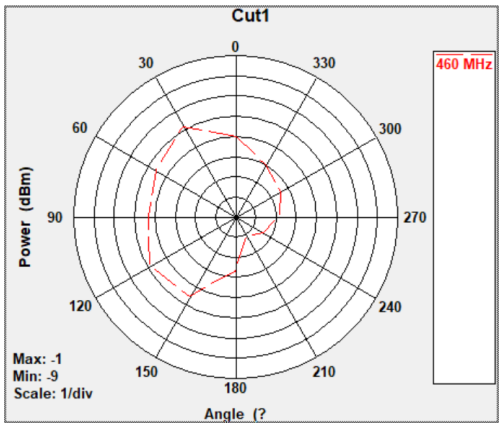


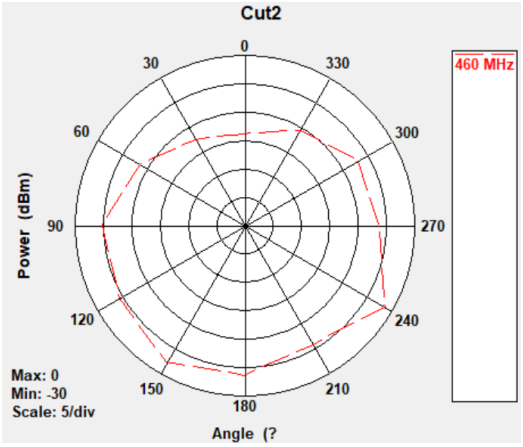


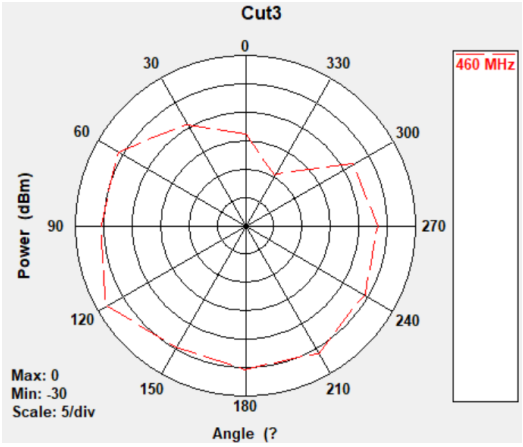


460 MHz

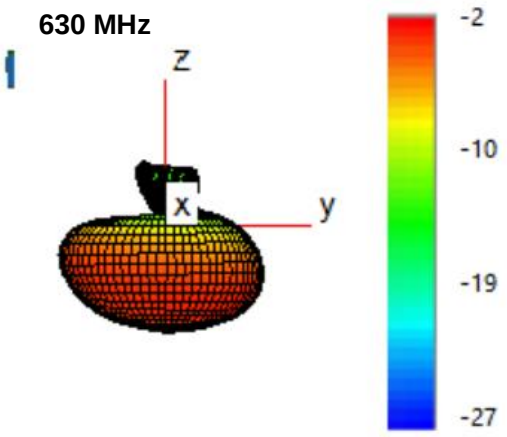




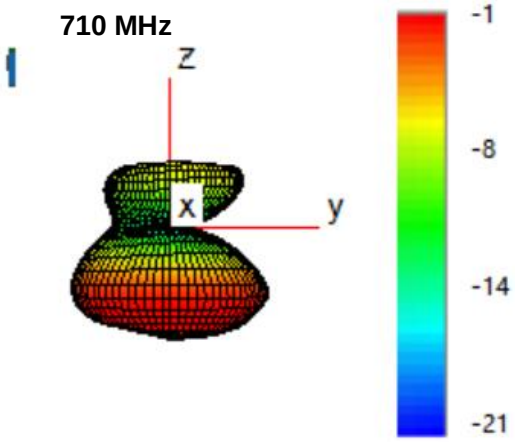


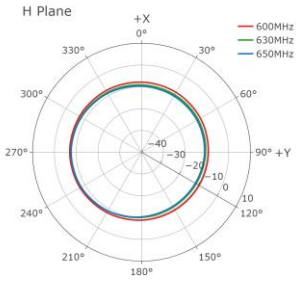


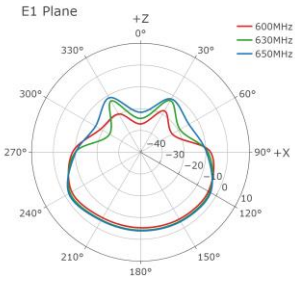
630 MHz

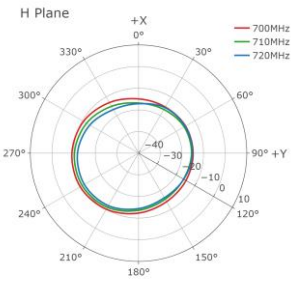


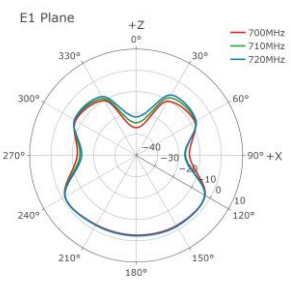
710 MHz



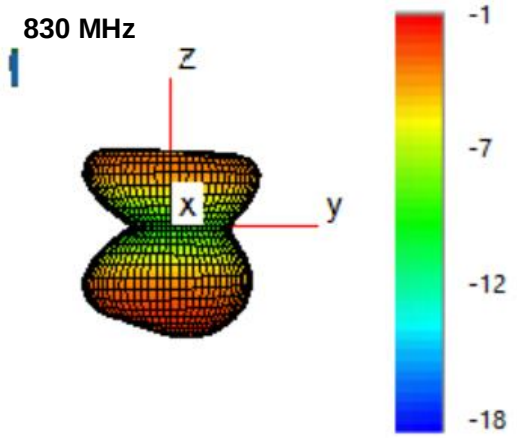




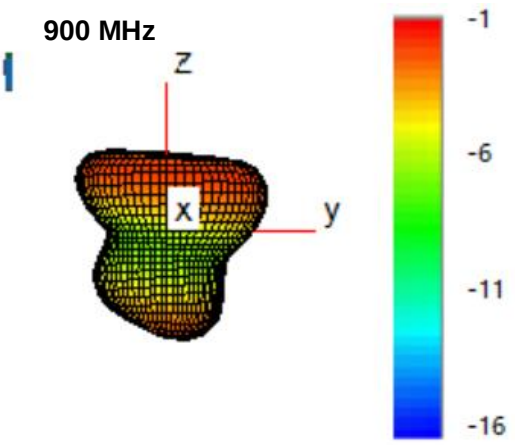


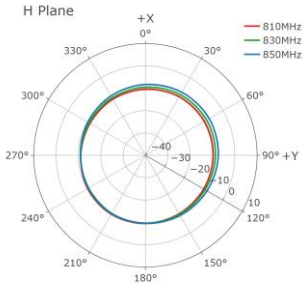


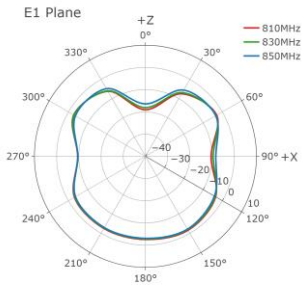
830 MHz

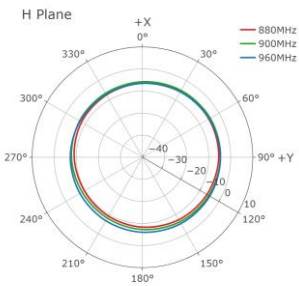


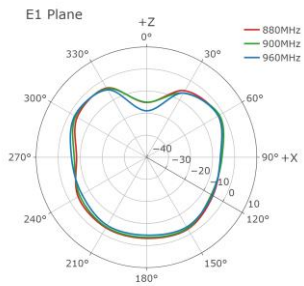
900 MHz



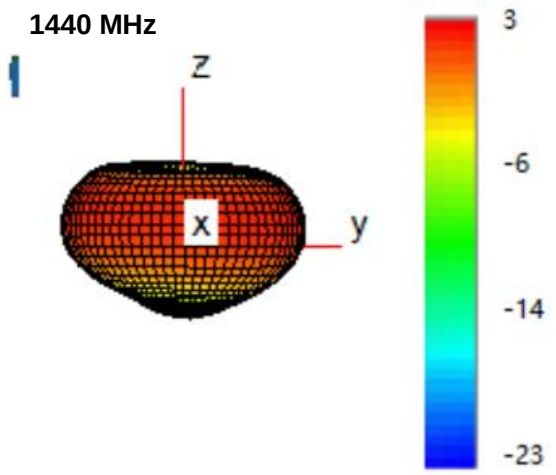




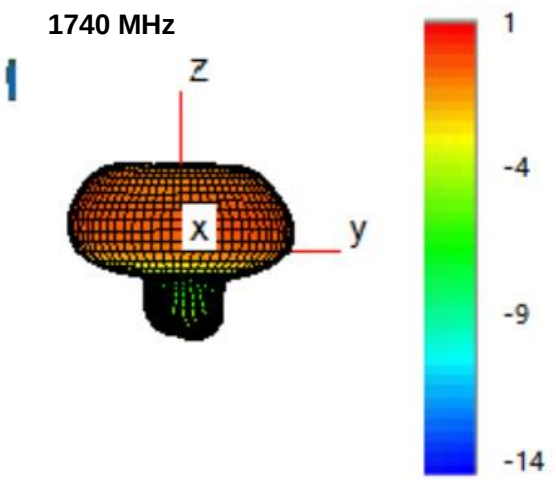


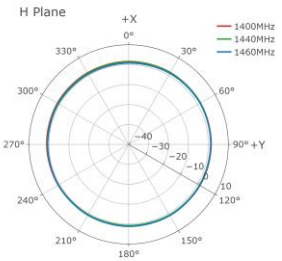


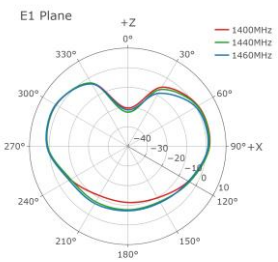
1440 MHz

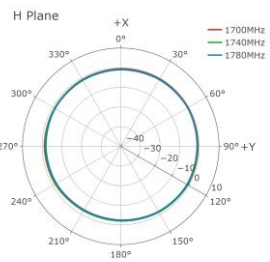


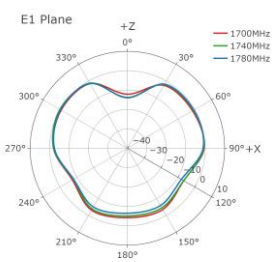
1740 MHz



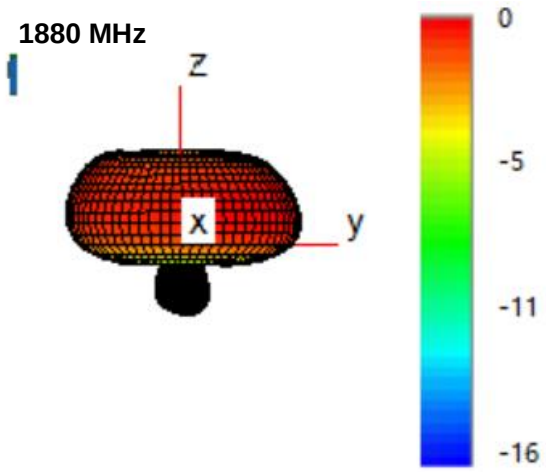




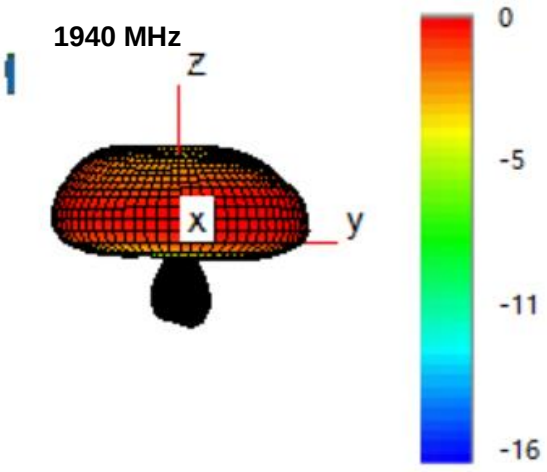


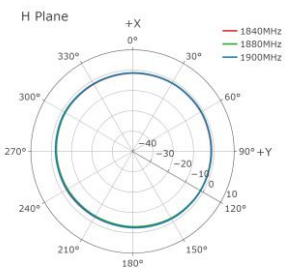


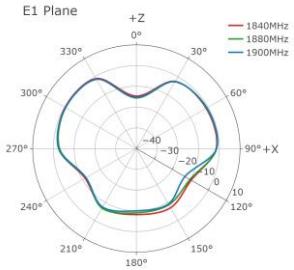
1880 MHz

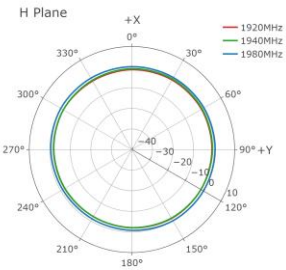


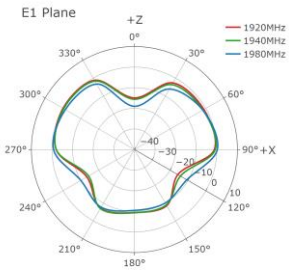
1940 MHz



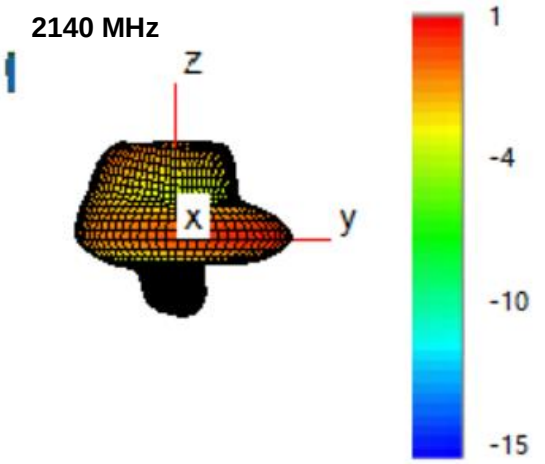




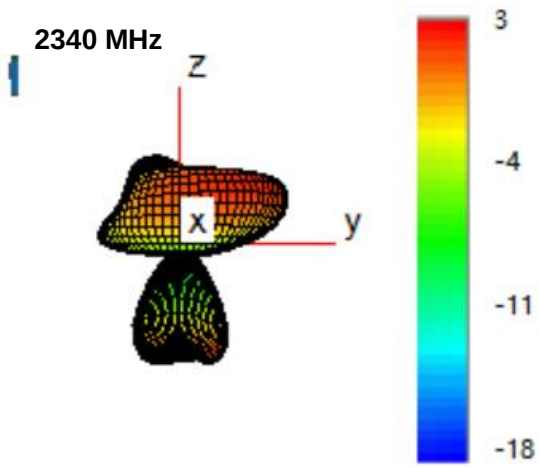


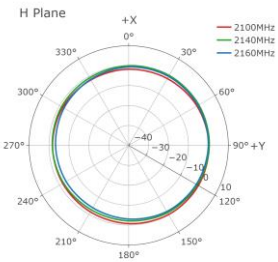


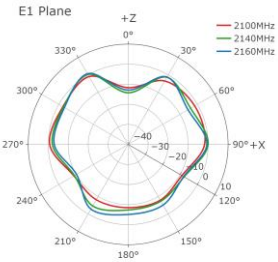
2140 MHz

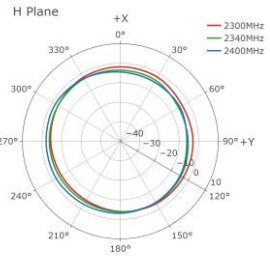


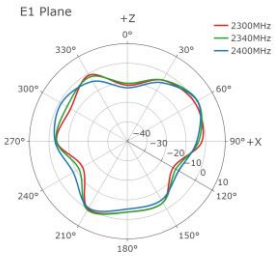
2340 MHz



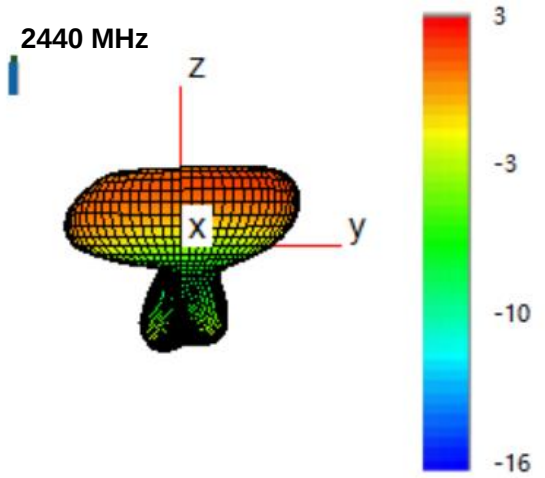




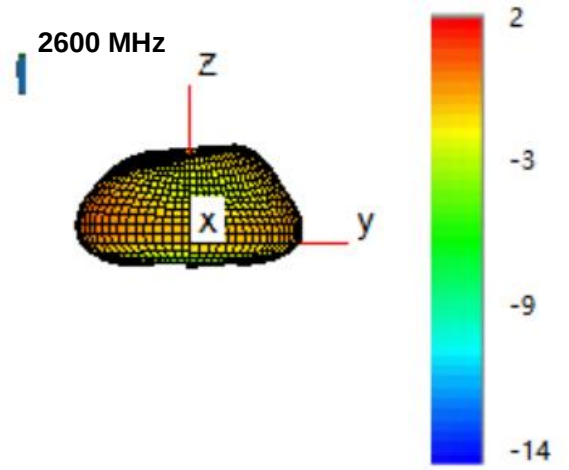


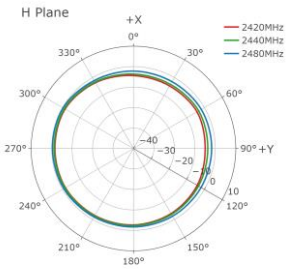


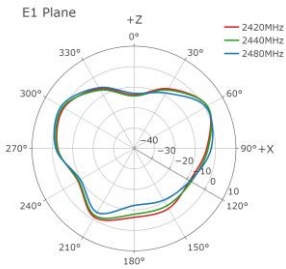
2440 MHz

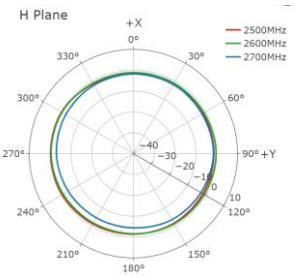


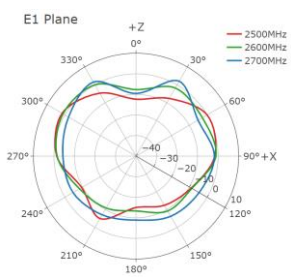
2600 MHz



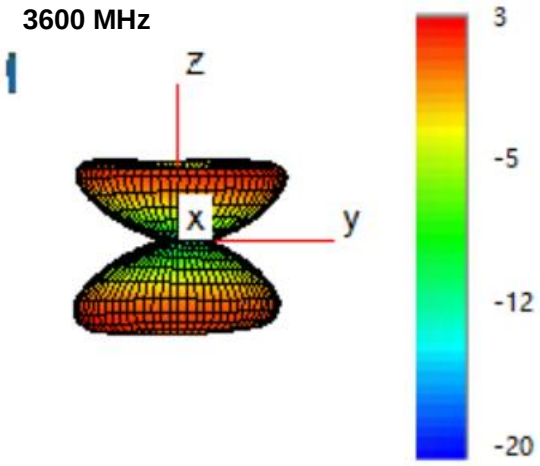




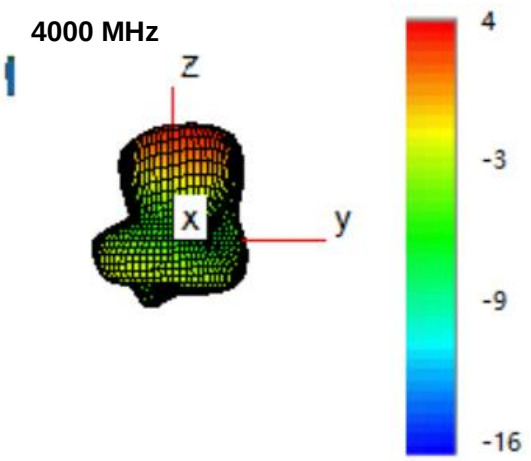


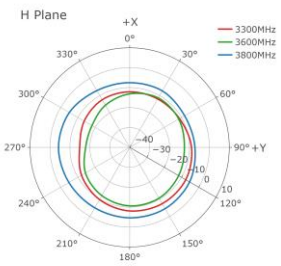


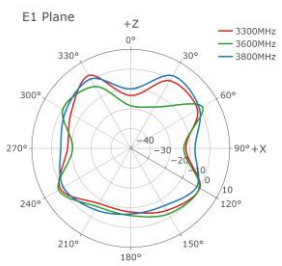
3600 MHz

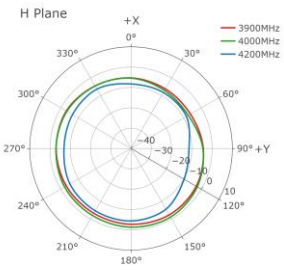


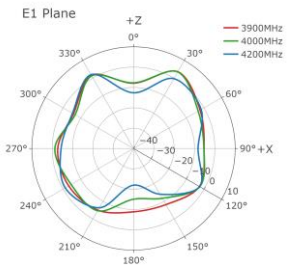
4000 MHz



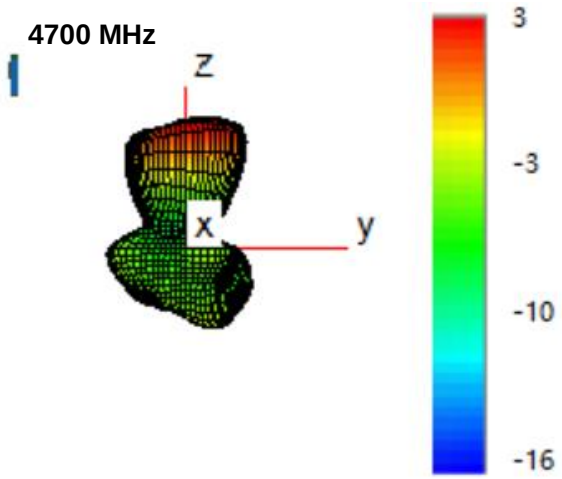




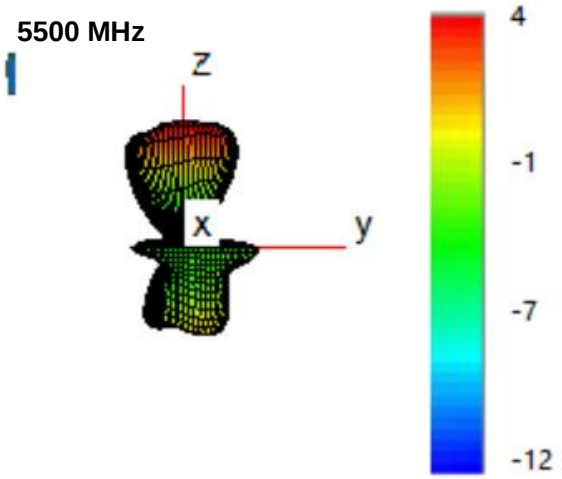


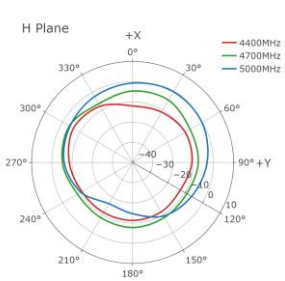


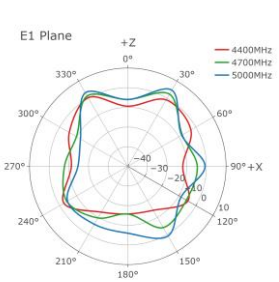
4700 MHz

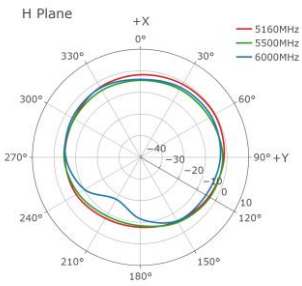


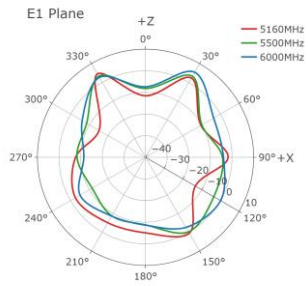
5500 MHz



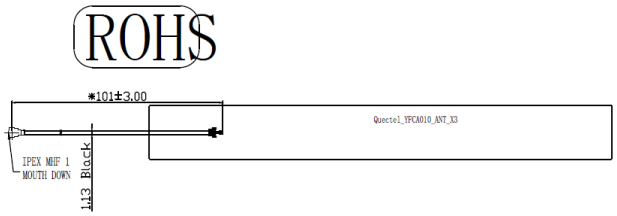


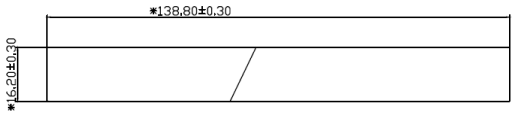






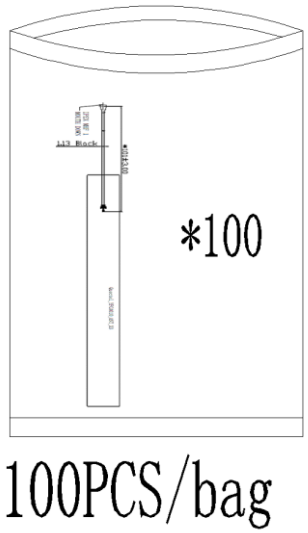
5 Product Size



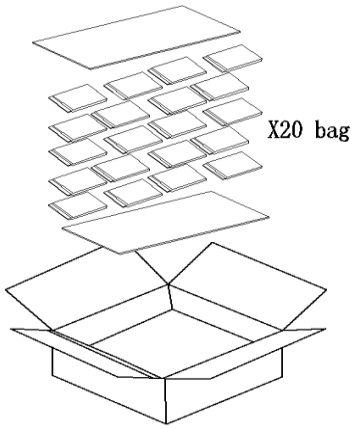


6 Packaging

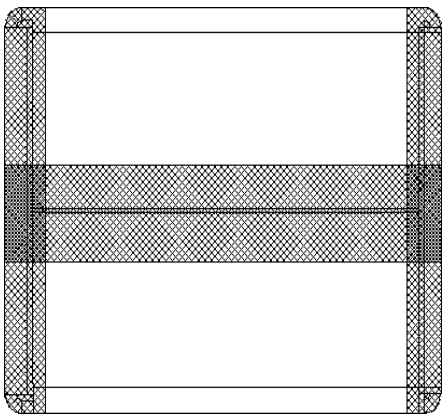
(1) One PE bag for 100 pcs.



(2) 20 PE bags packed in a carton (2000 pcs). Place a flat card above the carton.



(3) Seal the carton into H-shape.



(4) Pictures of carton labels.

- Carton Label 1

- Carton Label 2

- Carton Label 3

Paste this label in the carton containing the inspection report, if there is any mantissa note on the mantissa box.