



Antenna Datasheet

Product OC: YEIM001AA

Version: 2.0

Date: 2023-10-13

Status: Released

Product Name: LoRa Antenna

Key Features:

Frequency band: 470–510 MHz

Dimensions: Φ 30 mm \times 131 mm

Efficiency: Up to 59.34 % (FS)

RoHS and REACH Compliant

Overview

Quectel provides a range of antenna products that support the ISM radio band. These antennas are mounted outside the device to minimize the interference of the device's internal environment, with the antenna performance and This ensures a better efficiency, gain and omni-directional radiation, offering a superior user experience. Quectel also offers flexible installation with custom cable length and connector options.

Contents

Overview	1
Contents	2
1 Specification	3
1.1. Electrical.....	3
1.2. Mechanical & Environmental	5
2 Drawing	6
3 Detailed Performance	7
3.1. S-Parameter Test	7
3.1.1. VSWR.....	7
3.1.2. Return Loss	8
3.2. Radiation Performance Test.....	9
3.2.1. Efficiency	9
3.2.2. Average Gain	10
3.2.3. Peak Gain.....	11
3.2.4. 3D & 2D Radiation Pattern.....	12
3.2.4.1. Test Condition: Free Space	12
3.2.4.2. Test Condition: On 300 mm × 300 mm Metal Plane	15
4 Packaging	18
Contact Us	20
Legal Notices	21
Revision History	23

1 Specification

Test Condition: Free Space & On 300 mm × 300 mm Metal Plane

1.1. Electrical

Electrical	
Frequency Range	470–510 MHz
Impedance	50 Ω
Polarization	Linear
Radiation Pattern	Omni-directional

Specification	Band	LoRa	
	Freq. (MHz)	470 - 510	860 - 930
Max. VSWR	FS	3.6	-
	ABS	2.0	-
Max. Return Loss (dB)	FS	-4.9	-
	ABS	-9.7	-
AVG Eff. (%)	FS	33.2	-
	ABS	45.9	-
AVG AVG Gain (dB)	FS	-5.2	-
	ABS	-3.4	-
Max. Peak Gain (dBi)	FS	1.0	-
	ABS	1.2	-
VSWR	FS	≤ 3.6	

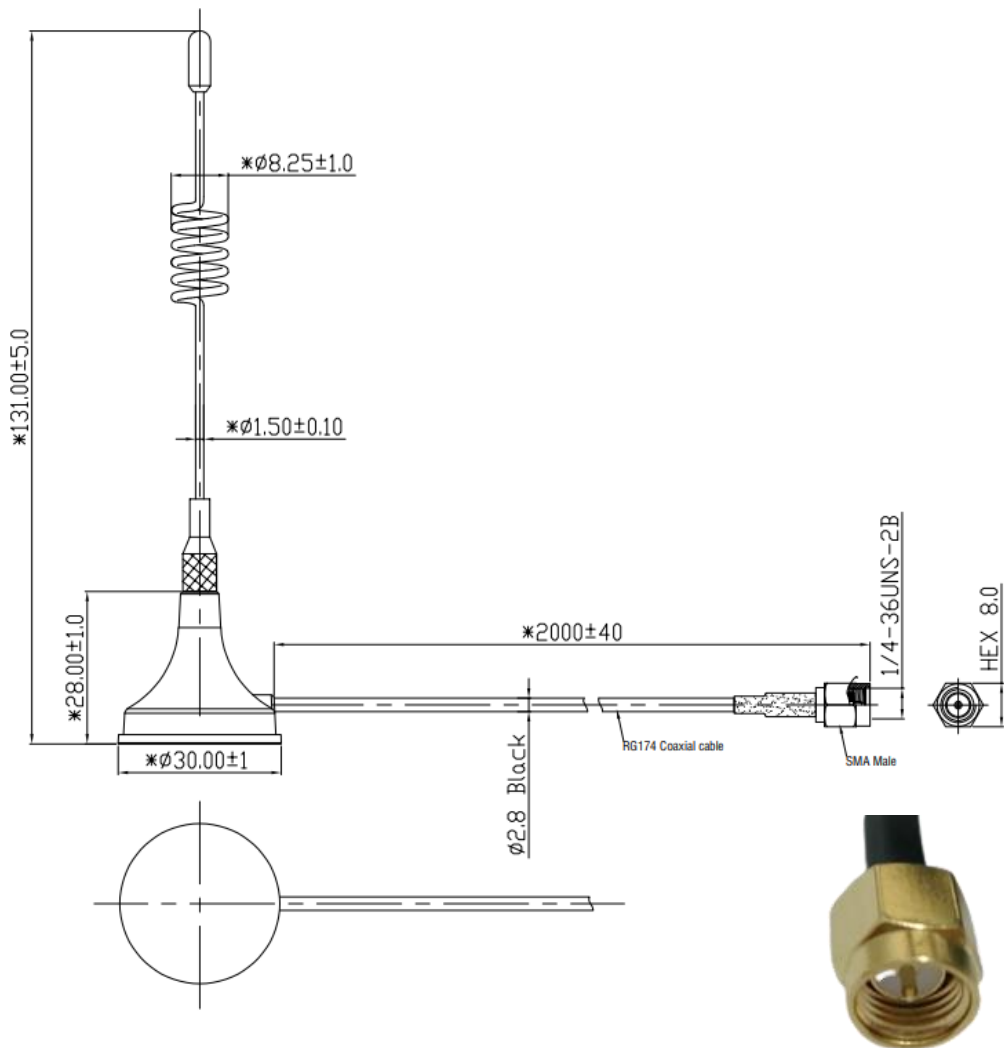
	ABS	≤ 2.0
Return Loss	FS	≤ -4.9 dB
	ABS	≤ -9.7 dB
Peak Gain	FS	≤ 1.0 dBi
	ABS	≤ 1.2 dBi

- **FS: Free Space**
- **MP: On 300 mm × 300 mm Metal Plane**

1.2. Mechanical & Environmental

Mechanical	
Antenna Size	Φ 30 mm × 131 mm
Material & Color	Carbon Steel & Black
Cable Type & Color & Length	RG174 & Black & 2000 mm
Connector Type	SMA Male
Mounting Type	Magnet
Antenna Weight	Typ. 34.6 g
Environmental	
Operation Temperature	-20 °C to +60 °C
Storage Temperature	-20 °C to +60 °C
Ingress Protection (IP) Rating	IP53
RoHS and REACH Compliant	Yes

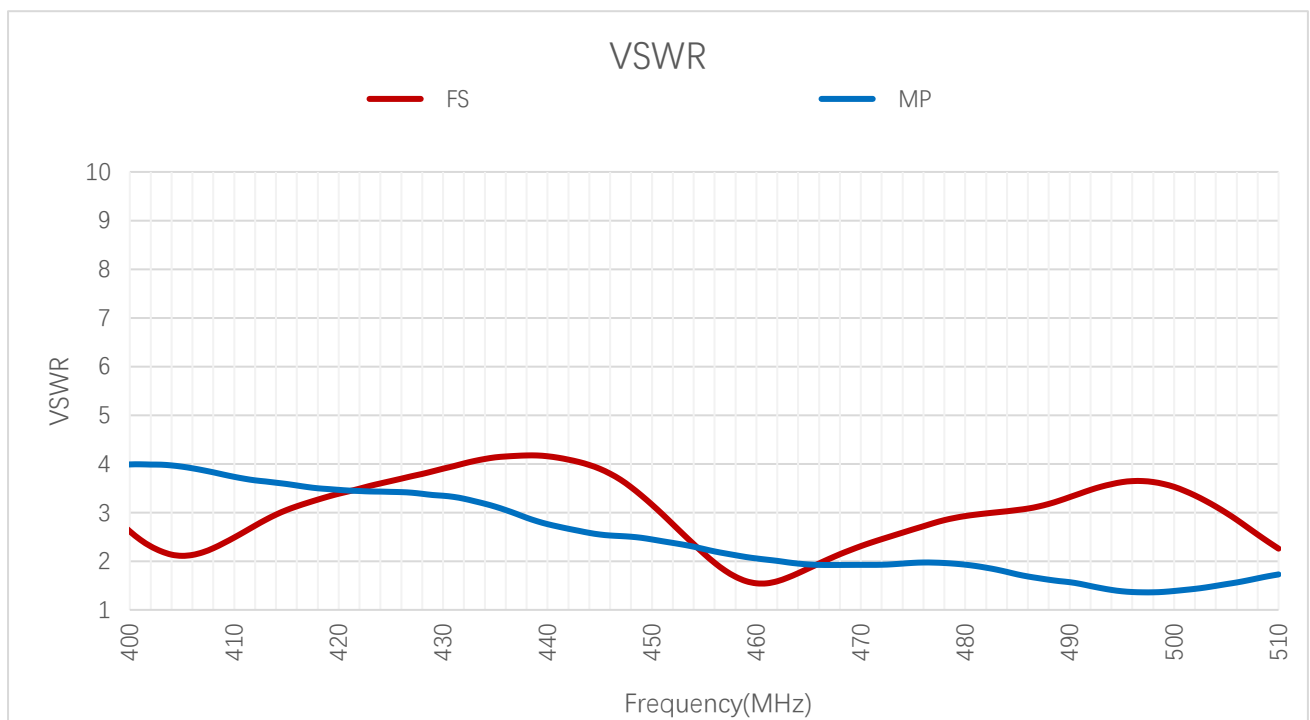
2 Drawing



3 Detailed Performance

3.1. S-Parameter Test

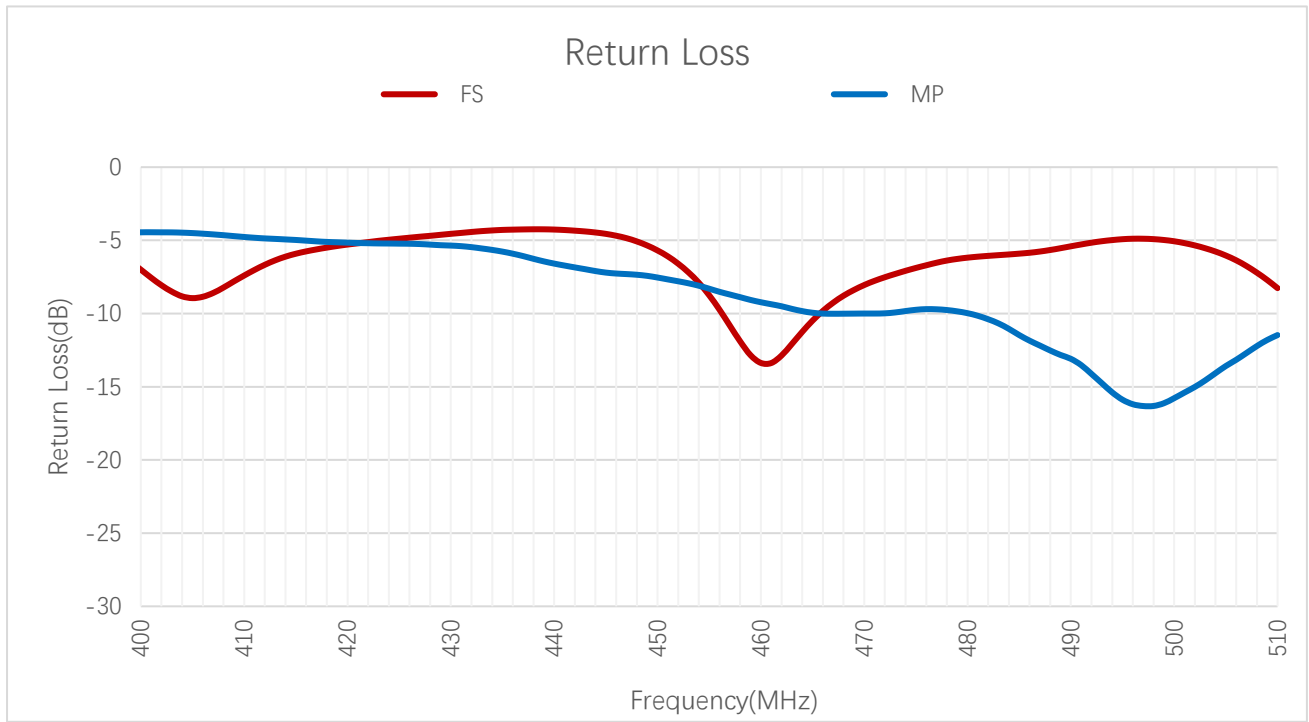
3.1.1. VSWR



VSWR

Frequency (MHz)	412	427	433	435	450	470	490	510	860
FS	2.7	3.7	4.1	4.1	3.2	2.3	3.3	2.3	-
MP	3.7	3.4	3.2	3.1	2.4	1.9	1.6	1.7	-

3.1.2. Return Loss

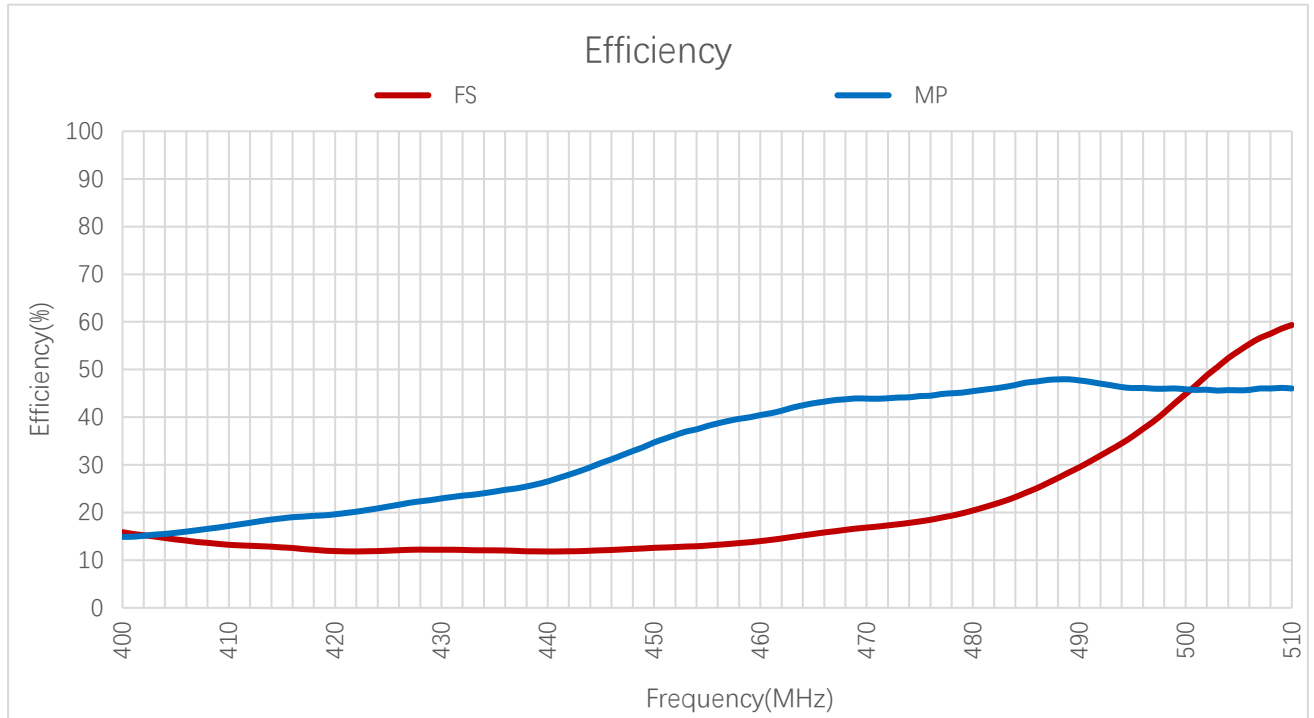


Return Loss (dB)

Frequency (MHz)	412	427	433	435	450	470	490	510	860
FS	-6.7	-4.8	-4.4	-4.3	-5.7	-8.1	-5.4	-8.3	-
MP	-4.9	-5.3	-5.6	-5.8	-7.5	-10.0	-13.1	-11.5	-

3.2. Radiation Performance Test

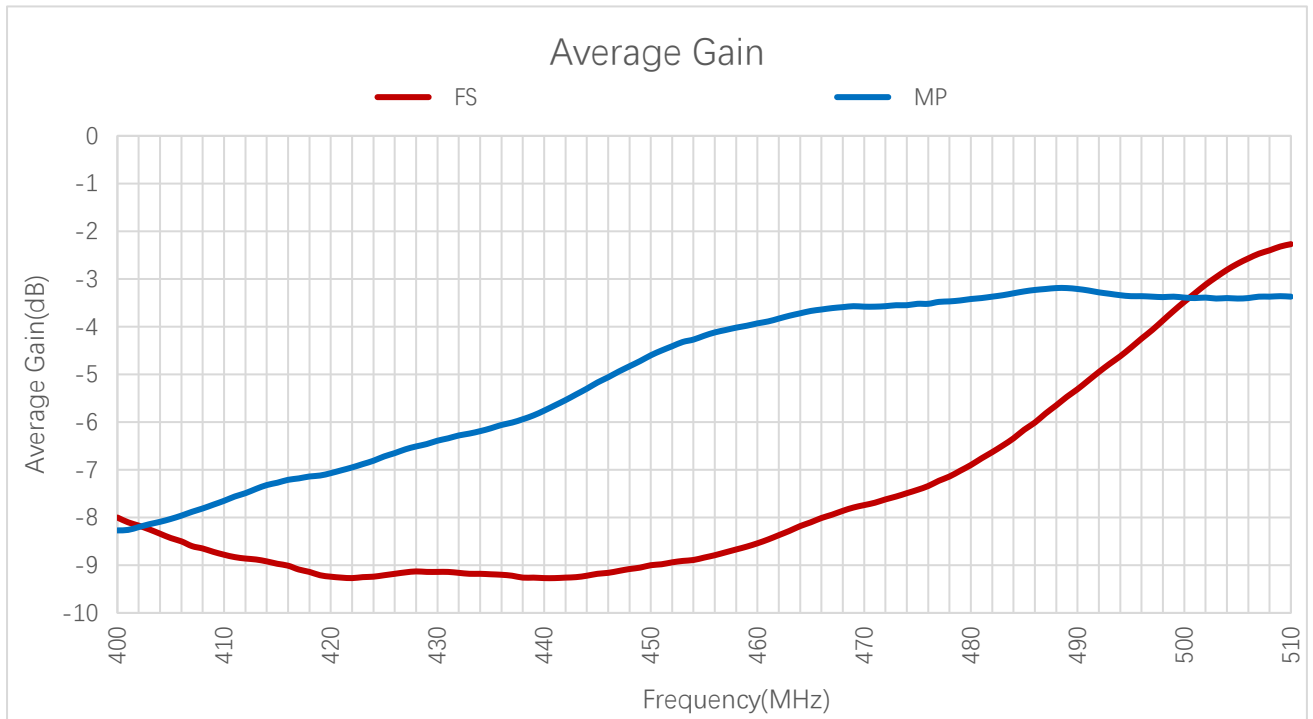
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)	412	427	433	435	450	470	490	510	860
FS	13.0	12.2	12.1	12.1	12.6	16.8	29.5	59.3	-
MP	17.8	22.0	23.7	24.4	34.7	43.9	47.7	46.0	-

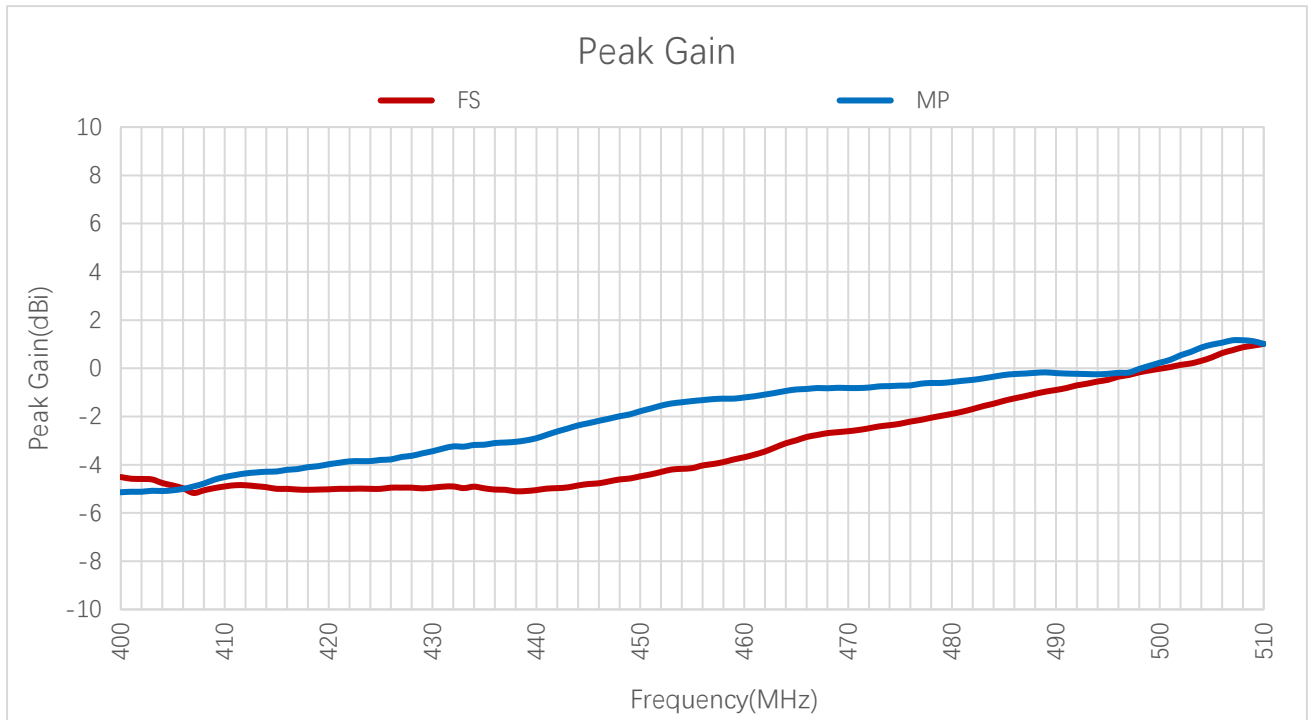
3.2.2. Average Gain



Average Gain (dB)

Frequency (MHz)	412	427	433	435	450	470	490	510	860
FS	-8.9	-9.2	-9.2	-9.2	-9.0	-7.7	-5.3	-2.3	-
MP	-7.5	-6.6	-6.2	-6.1	-4.6	-3.6	-3.2	-3.4	-

3.2.3. Peak Gain



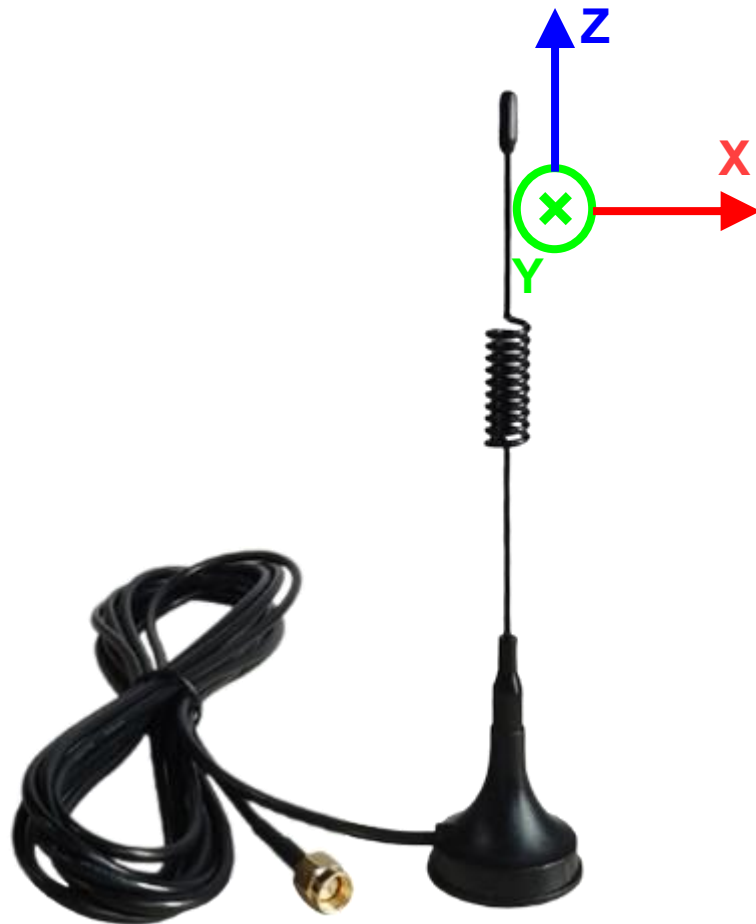
Peak Gain (dBi)

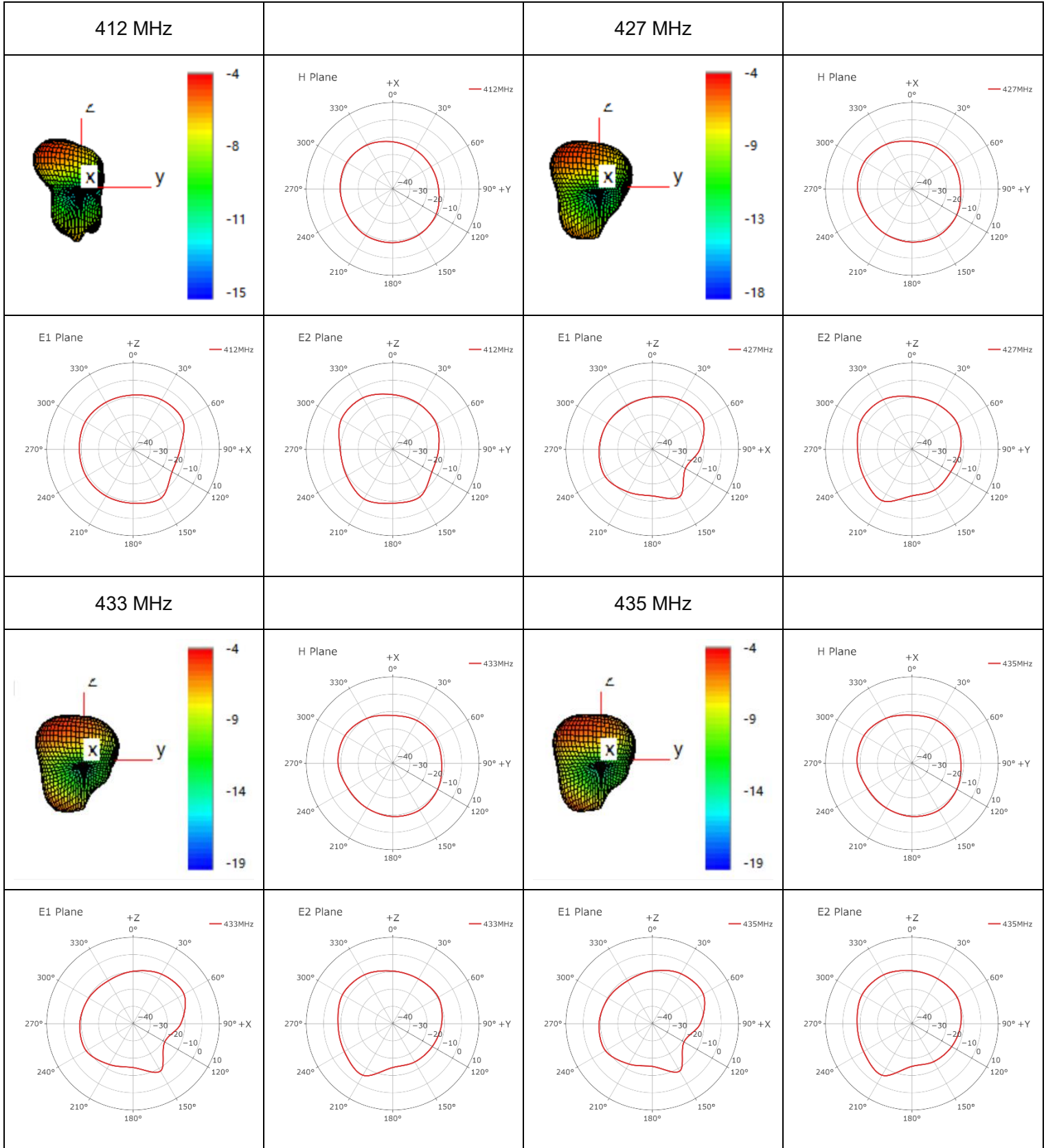
Frequency (MHz)	412	427	433	435	450	470	490	510	860
FS	-4.9	-5.0	-5.0	-5.0	-4.5	-2.6	-0.9	1.0	-
MP	-4.4	-3.7	-3.3	-3.2	-1.8	-0.8	-0.2	1.0	-

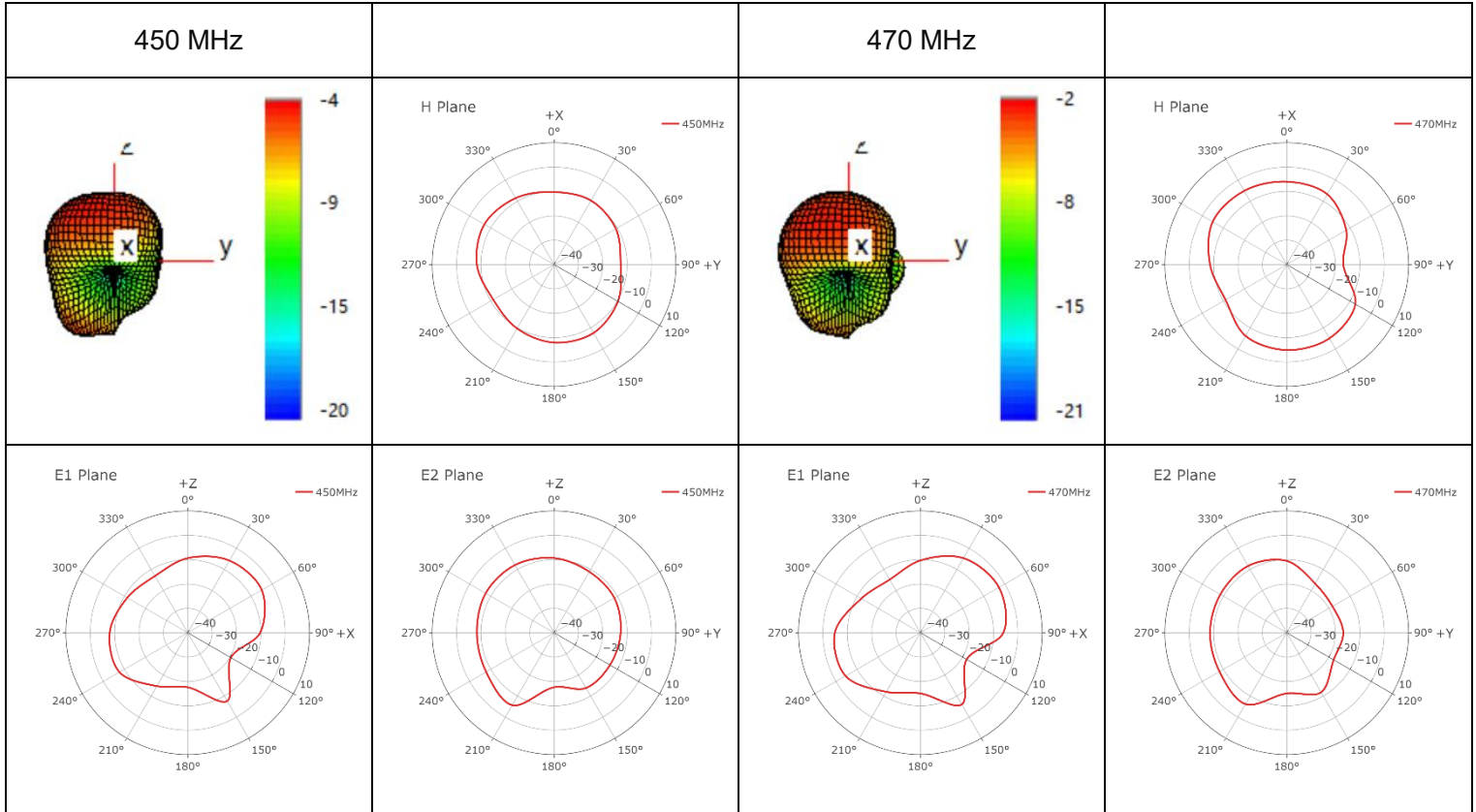
3.2.4. 3D & 2D Radiation Pattern

3.2.4.1. Test Condition: Free Space

- Test Chamber: HF-G-1

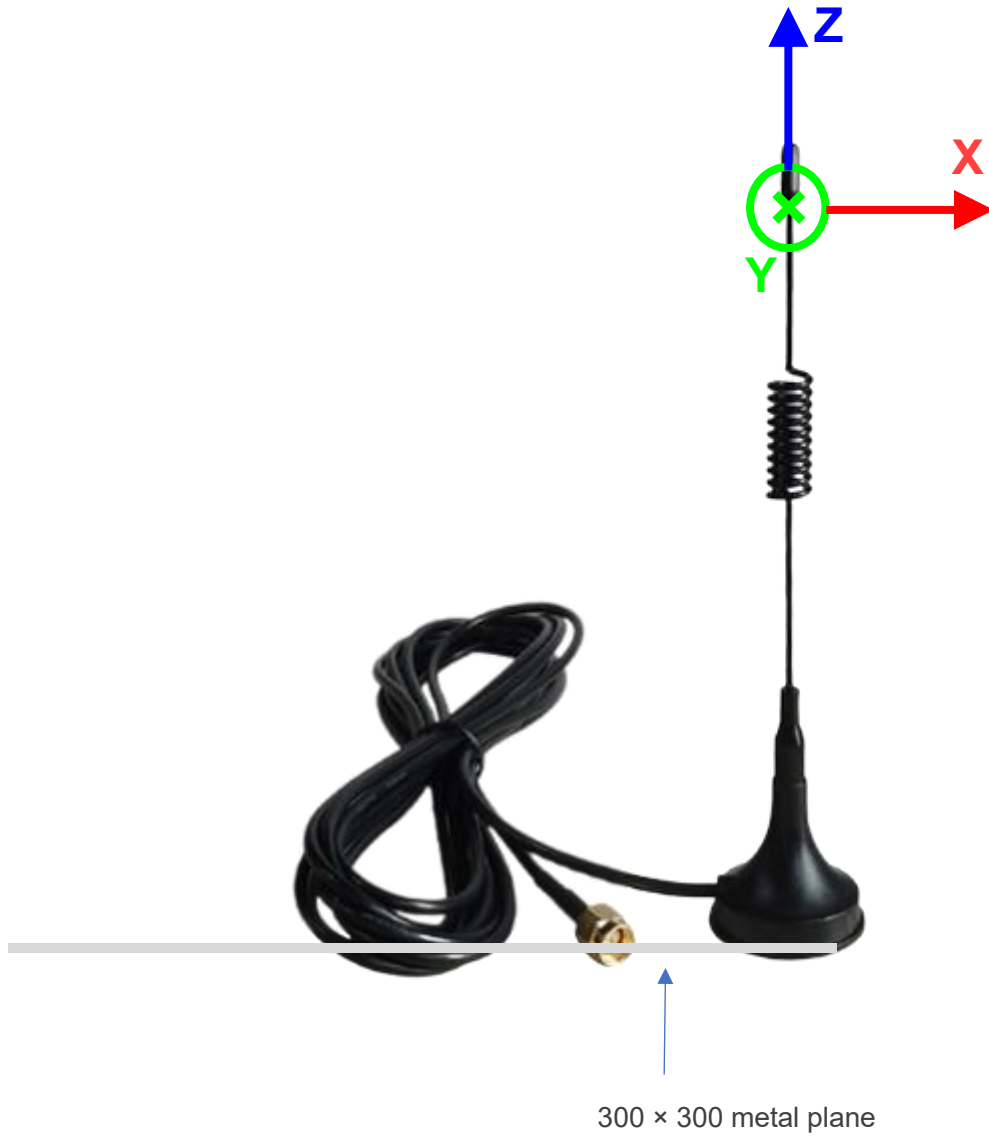


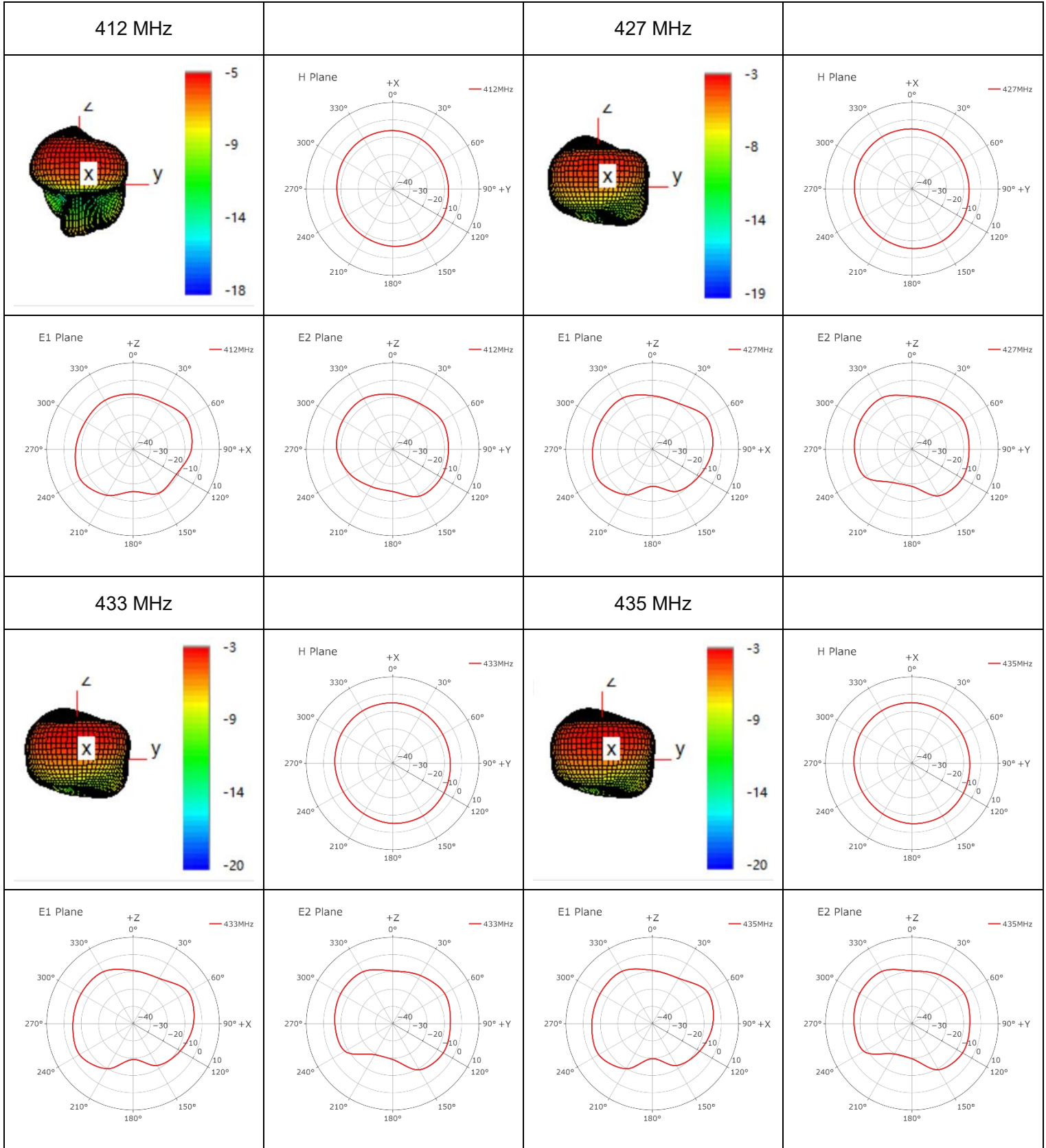


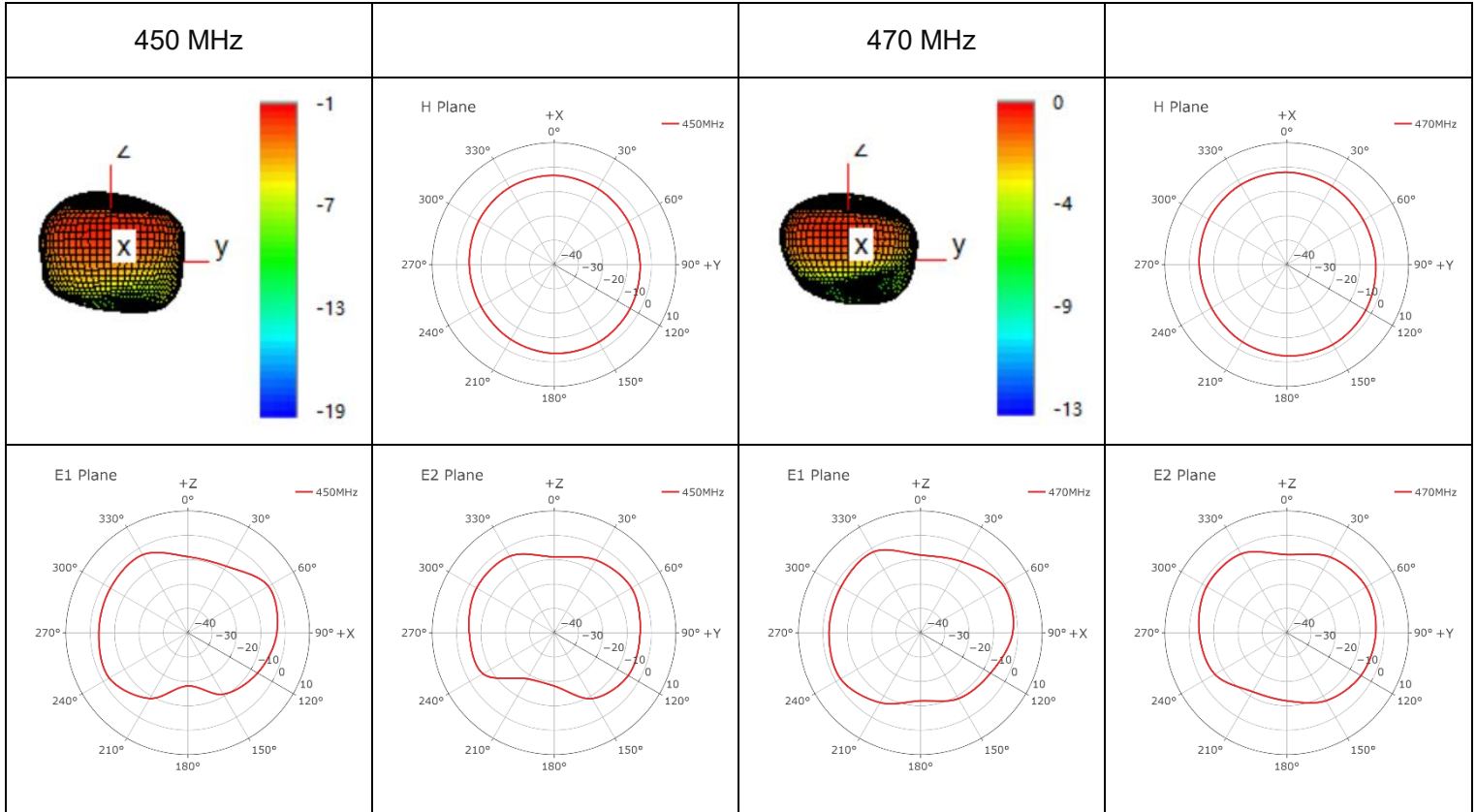


3.2.4.2. Test Condition: On 300 mm x 300 mm Metal Plane

- Test Chamber: HF-G-1

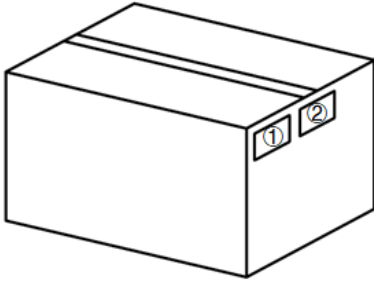
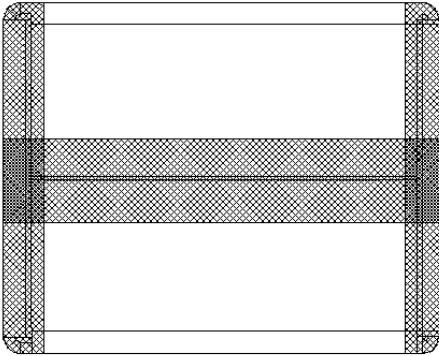






4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		<p>1 pc antenna product in a PE bag; (1 pc antenna per PE bag)</p>
2		<p>50 pcs antenna products in a big PE bag; (50 pcs antennas per big PE bag)</p>
3		<p>(4 PE bags per carton box) (200 pcs antennas per carton box) <u>Carton Size:</u> <u>L × W × H = 370 × 370 × 295 mm</u></p>

<p>4</p>		<p>Position for Attaching Labels</p> <ul style="list-style-type: none"> ① Carton Label ② Quality Label
<p>5</p>		<p>Sealing Cartons “工” type sealing cartons</p>

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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Revision History

Version	Date	Author	Note
-	2021-06-21	Aria CHU	Creation of the document
1.0	2021-06-21	Aria CHU	First official release
1.1	2021-12-03	Aria CHU	Updated the product description (Chapter 1).
2.0	2023-10-13	Bunny ZHANG/ Lucky FENG/ David LIU	Update all data and datasheet templates.

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