



Antenna Datasheet

Product OC: YECN028AA

Version: 3.0

Date: 2026-01-05

Status: Released

Product Name: 5G Terminal Mount Rubber Dipole External Antenna

Key Features:

Frequency Band: 410–470 MHz, 617–960 MHz, 1427–6000 MHz

Dimensions: 225 mm × 54.5 mm × 13 mm

Efficiency: Up to 83.3 % (5G-EVB)

RoHS and REACH Compliant

IP66 (housing)

Overview

YECN028AA is a 5G external antenna measuring 225 mm × 54.5 mm × 13 mm. This ultra-wide-band 5G antenna provides broad coverage from 410–470 MHz, 617–960 MHz, 1427–6000 MHz whilst offering backward-compatibility to support 4G/3G and 2G networks as well as LTE Cat-M and narrowband IoT (NB-IoT). The antenna is terminated with SMA Male connector. Ideal for applications where the antenna is required to be discrete, this low profile, terminal mount omni-directional antenna is easy to install with maximum durability assured thanks to its IP66 rated, PC enclosure. The YECN028AA can be used in harsh environments thanks to its robust UV resistant (UL 746c f1) and flame resistant (UL 94 V-0) enclosure.

The antenna is designed as dipole type to work with various GND plane sizes or in free space for ease of integration with a hinged SMA Male connector to achieve the optimum position. Hinged structure helps to avoid other antennas or objects by rotating to different directions when mounted on terminals. This omni-directional antenna is ideally suited for access points, terminals and routers, high speed video, real-time streaming, public transportation, offering great performance with its high gain and efficiency.

Typical applications include:

- Access points, terminals and routers
- High speed video
- Real-time streaming
- Public transportation

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

Overview.....	1
Contents.....	2
1 Specification.....	3
1.1. Electrical.....	3
1.2. Mechanical & Environmental	7
2 Drawing	8
3 Detailed Performance.....	9
3.1. S-Parameter Test	9
3.1.1. VSWR	9
3.1.2. Return Loss.....	12
3.2. Radiation Performance Test.....	15
3.2.1. Efficiency.....	15
3.2.2. Average Gain	18
3.2.3. Peak Gain	21
3.2.4. Upper Hemisphere Efficiency	24
3.2.5. 3D & 2D Radiation Pattern	25
3.2.5.1. Test Condition: In Free Space.....	25
3.2.5.2. Test Condition: On 130 mm × 130 mm EVB.....	37
4 Packaging	45
Contact Us.....	47
Legal Notices	48
Revision History	50

1 Specification

Test Condition: In Free Space & On 130 mm × 130 mm EVB

1.1. Electrical

Electrical	
Frequency Range	410–470 MHz, 617–960 MHz, 1427–6000 MHz
Radiation Pattern	Omni-directional
Polarization	Linear
Impedance	50 Ω

Electrical – NTN Bands						
SPEC	Band	L Band	L Band	L Band	B256 / B23	B256 / B23
		1518–1559	1620–1665	1668–1675	1980–2020	2170–2200
Max. VSWR	FS	1.8	2.2	2.2	2.2	1.5
	EVB	1.7	2.3	2.4	2.1	1.9
Max. Return Loss (dB)	FS	-10.8	-8.7	-8.5	-8.6	-14.1
	EVB	-11.8	-8.0	-7.7	-8.8	-10.3
AVG Eff. (%)	FS	64.0	60.1	62.3	65.7	68.3
	EVB	74.7	64.6	62.5	71.0	72.2
AVG AVG Gain (dB)	FS	-1.9	-2.2	-2.1	-1.8	-1.7
	EVB	-1.3	-1.9	-2.0	-1.5	-1.4
Max. Peak Gain (dBi)	FS	2.5 (1560)	0.8 (1630)	0.4 (1670)	1.4 (1990)	2.4 (2200)
	EVB	3.4	2.5	2.0	2.8	3.7
Upper Hemisphere Efficiency (dB)	FS	-3.5	-3.5	-3.8	-2.5	-2.2
	EVB	-6.1	-5.9	-5.9	-3.9	-3.6
VSWR	FS	≤ 2.2				
	EVB	≤ 2.4				
Return Loss	FS	≤ -8.5 dB				
	EVB	≤ -7.7 dB				
Peak Gain	FS	≤ 2.5 dBi				
	EVB	≤ 3.7 dBi				

Electrical – Detail								
SPEC	Band	B5/B8 /B12 /B13 /B26 /B28 /B71	n74 /n75 /n76	B1 /B2 /B3	B40 /Wi-Fi 2G	Wi-Fi 2G	B42 /B48 /n77 /n79	Wi-Fi 5G
	Band	Freq. (MHz)	617– 960	1420– 1520	1710– 2170	2300– 2500	2500– 2690	3300– 5000
Max VSWR	FS	3.0	1.6	2.8	2.0	1.9	2.9	2.4
	EVB	3.8	1.7	3.3	2.0	1.9	2.8	4.6
Max Return Loss (dB)	FS	-6.0	-12.4	-6.4	-9.7	-10.4	-6.4	-7.6
	EVB	-4.7	-12.1	-5.5	-9.6	-10.2	-6.5	-3.8
AVG Eff. (%)	FS	64.5	54.9	64.4	75.2	65.2	58.7	60.9
	EVB	68.6	74.4	65.1	74.1	74.9	62.1	51.2
AVG AVG Gain (dB)	FS	-2.0	-2.6	-1.9	-1.2	-1.9	-2.3	-2.2
	EVB	-1.7	-1.3	-1.9	-1.3	-1.3	-2.1	-3.0
Max Peak Gain (dBi)	FS	0.5 (880)	2.8 (1470)	2.0 (2170)	2.5 (2360)	2.2 (2690)	5.5 (4900)	5.8 (5300)
	EVB	1.3	3.6	3.7	3.7	3.0	5.5	5.3
VSWR	FS	≤ 3.0						
	EVB	≤ 4.6						
Return Loss	FS	≤ -6.0 dB						
	EVB	≤ -3.8 dB						
Peak Gain	FS	≤ 5.8 dBi						
	EVB	≤ 5.5 dBi						

Electrical – Detail			
SPEC	Band	Band	
	Freq. (MHz)	B87/B88	B31/B72/B73
		410–430 MHz	450–470 MHz
Max. VSWR	FS	4.9	1.6
	EVB	2.8	6.5
Max. Return Loss (dB)	FS	-3.6	-12.5
	EVB	-6.5	-2.7
AVG Eff. (%)	FS	47.6	38.4
	EVB	62.4	34.4
AVG AVG Gain (dB)	FS	-3.3	-4.2
	EVB	-2.1	-4.8
Max. Peak Gain (dBi)	FS	0.0 (430)	-0.4 (450)
	EVB	0.5 (430)	-1.3 (450)
VSWR	FS	≤ 4.9	
	EVB	≤ 6.5	
Return Loss	FS	≤ -3.6	
	EVB	≤ -2.7	
Peak Gain	FS	≤ 0.0	
	EVB	≤ 0.5	

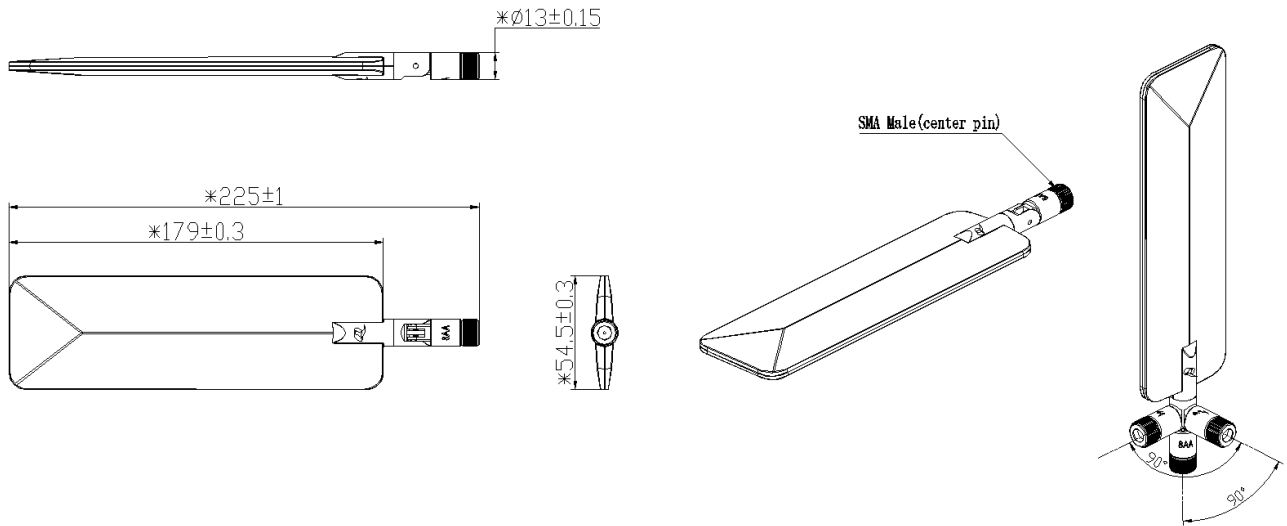
Note:

- FS: In Free Space
- EVB: On 130 mm × 130 mm EVB

1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	225 mm × 54.5 mm × 13 mm
Casing Material & Color	PC & Black
Connector Type	SMA Male
Mounting Type	Terminal
Weight	Typ. 75 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
Ingress Protection (IP) Rating	Antenna plastic housing could meet IP66, SMA connector is not waterproof. After installation, SMA connector needs additional waterproof methods.
RoHS & REACH Compliant	Yes
Housing Flame Rating	UL 94 V-0
Housing UV Resistant	UL 746c f1

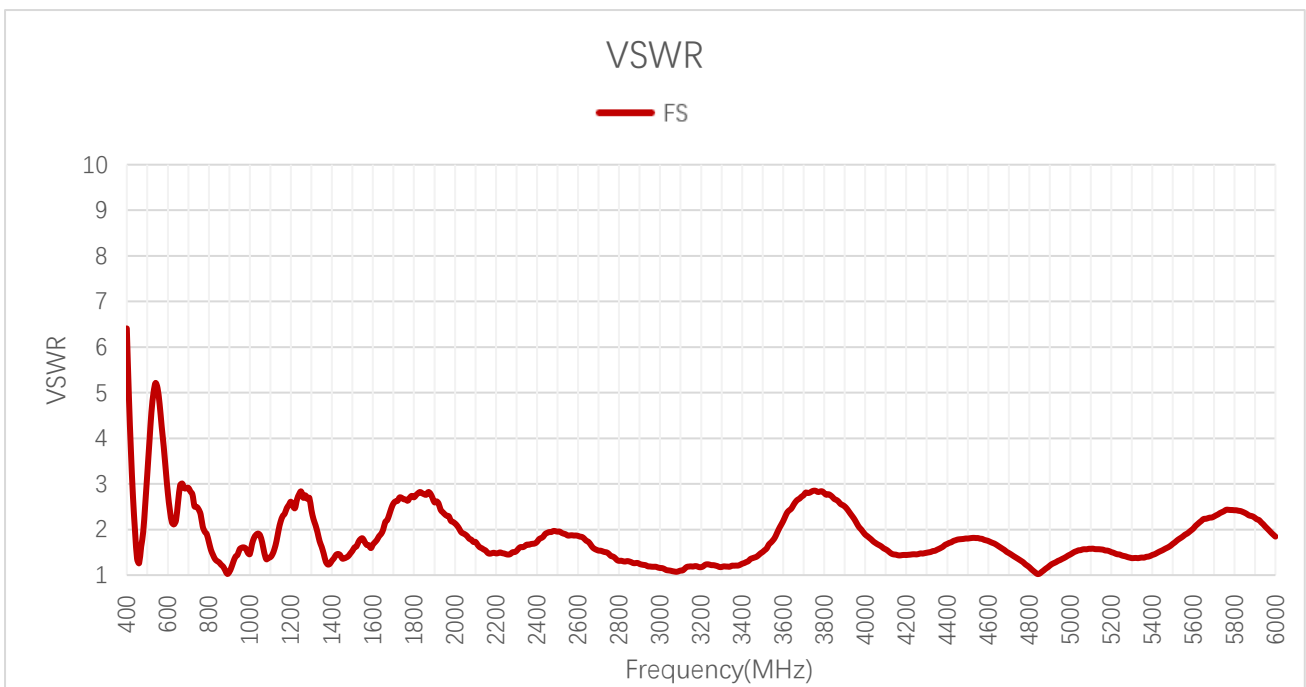
2 Drawing

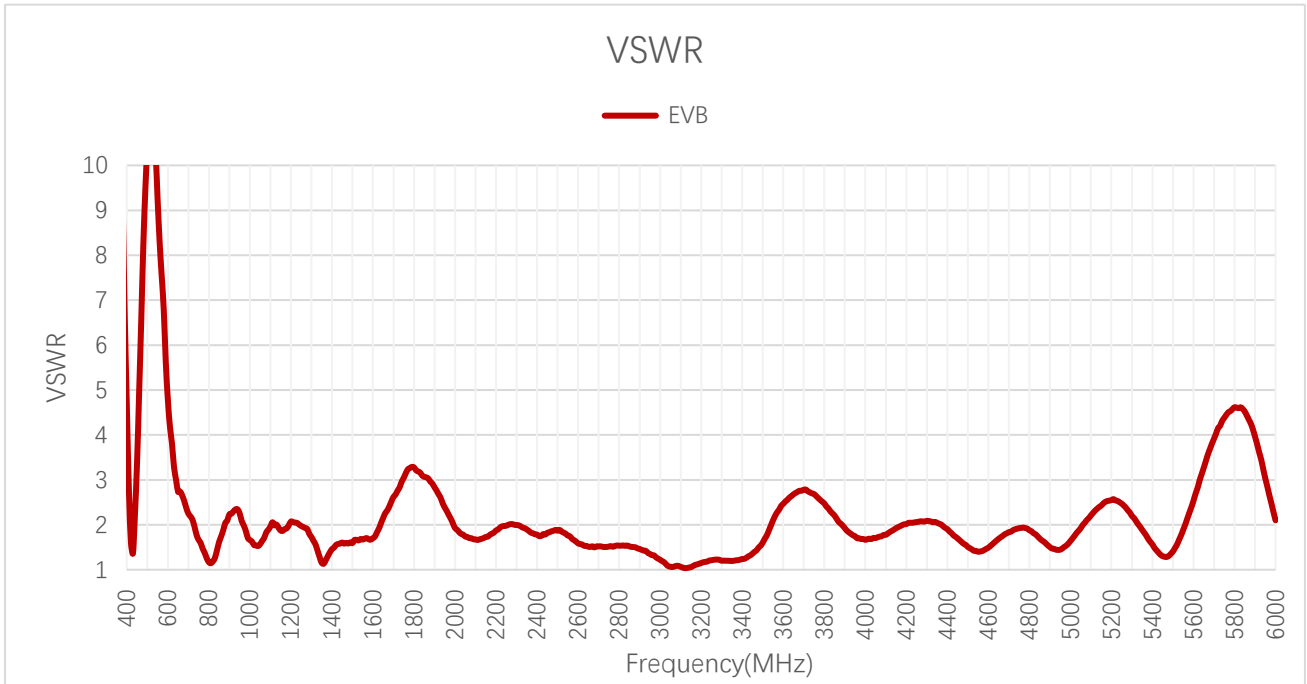


3 Detailed Performance

3.1. S-Parameter Test

3.1.1. VSWR



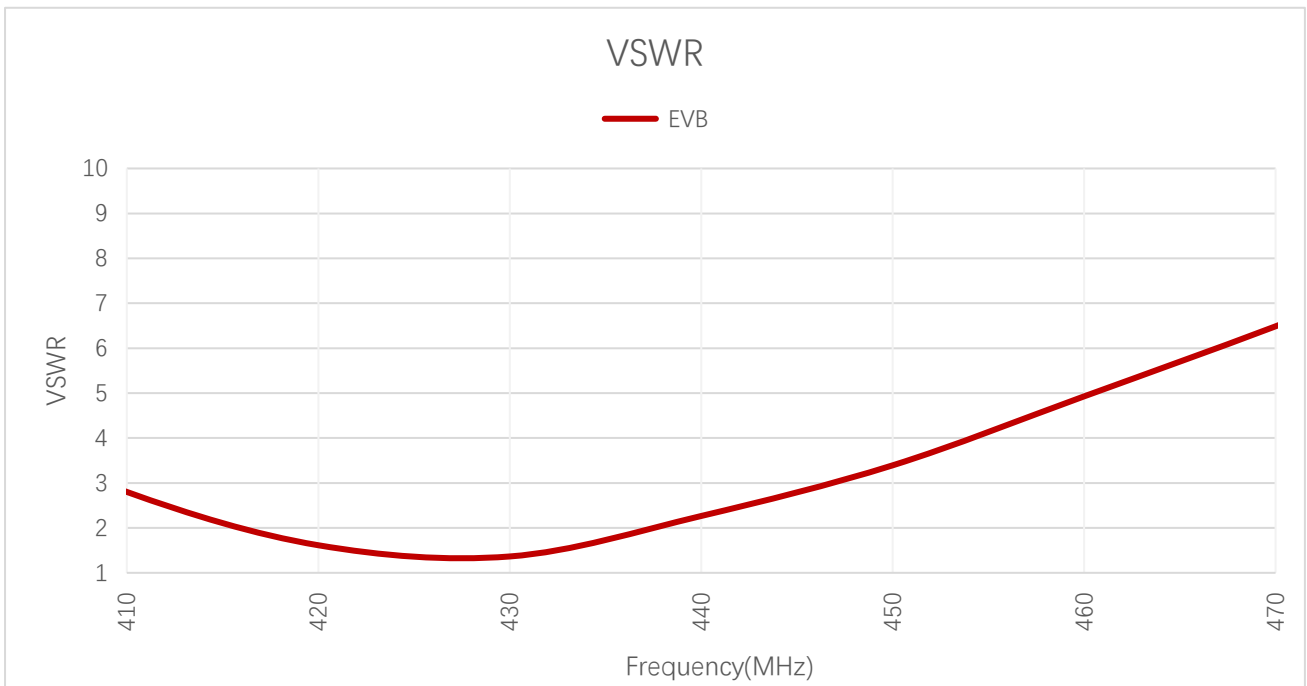
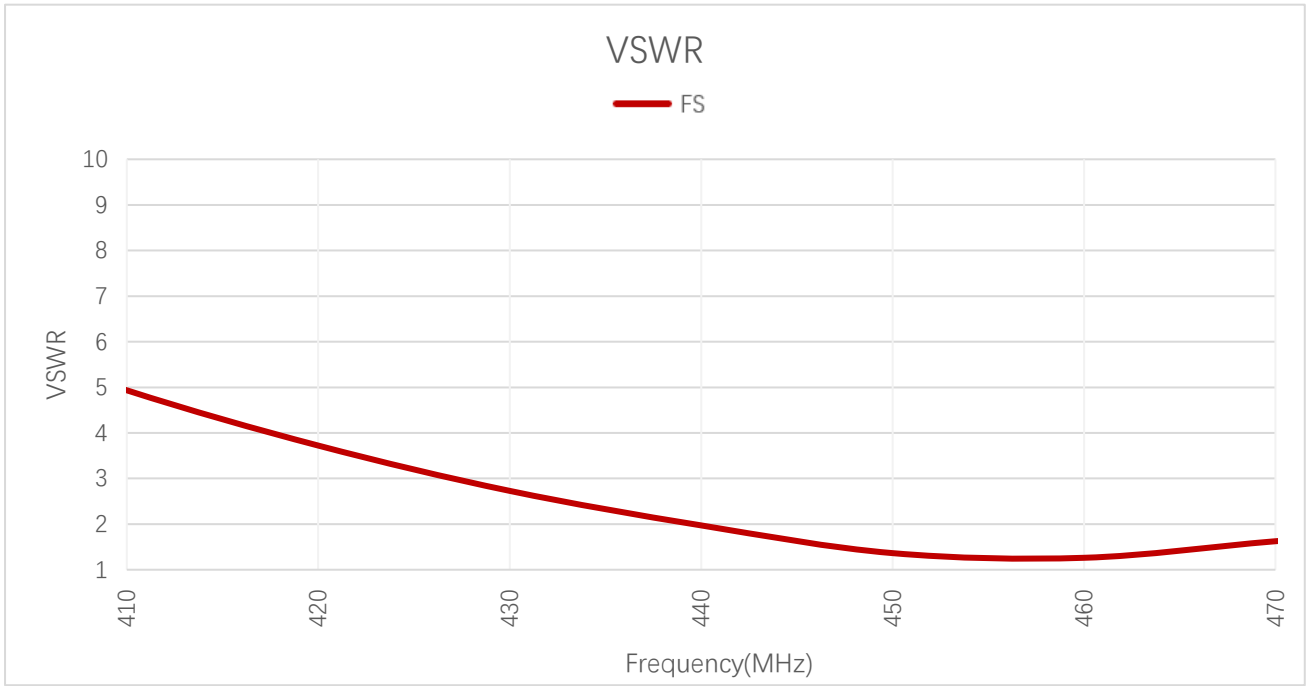


VSWR

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
FS	2.8	2.1	2.8	1.4	1.1	1.6	1.4	2.6	2.7	2.8
EVB	4.8	3.3	2.2	1.3	2.2	2.1	1.6	2.7	3.0	3.0
Frequency (MHz)	1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
FS	2.3	1.6	1.7	1.9	1.9	2.2	1.5	1.5	1.7	1.8
EVB	2.4	1.7	1.9	1.8	1.6	2.5	1.8	1.6	1.4	2.1

VSWR – NTN Bands

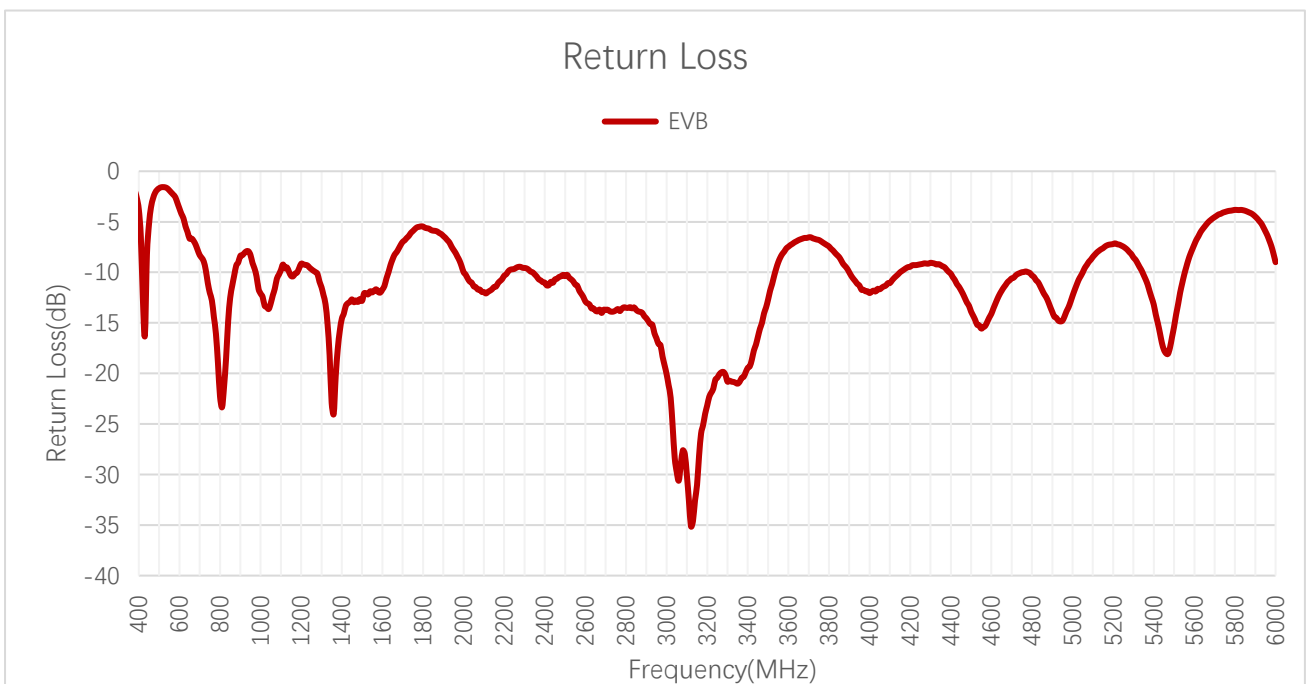
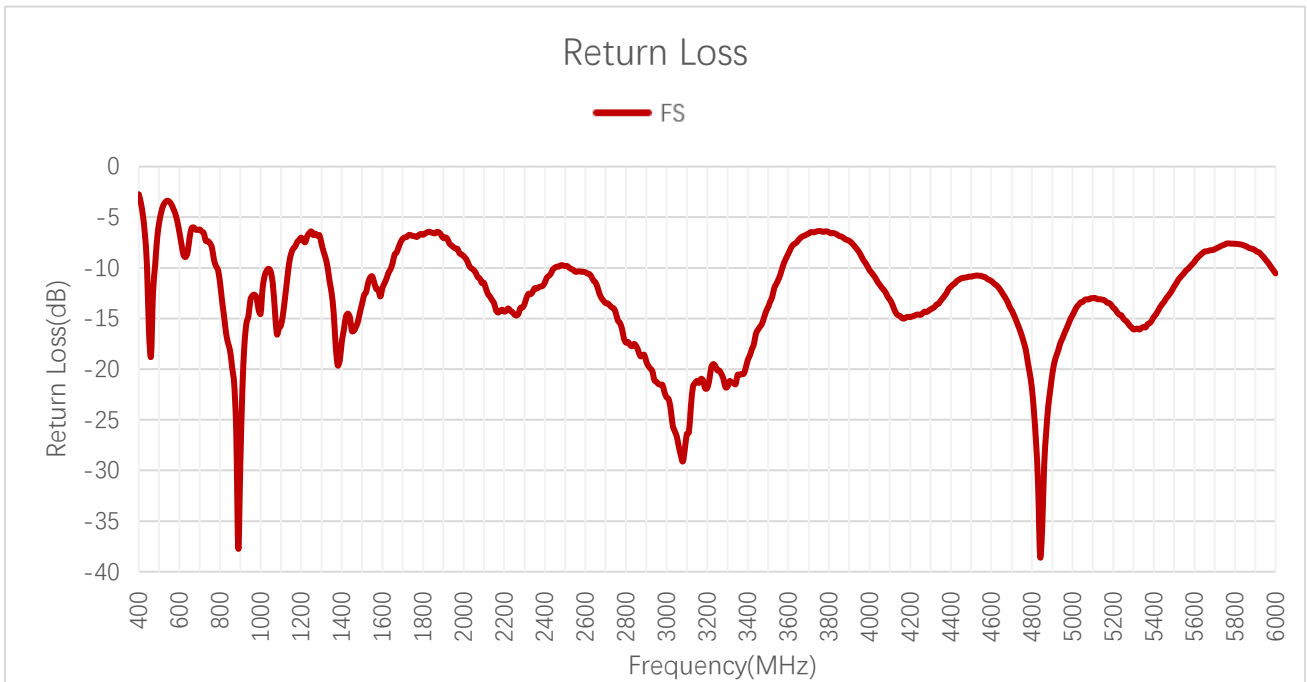
Frequency (MHz)	1520	1560	1630	1680	2000	2200
FS	1.6	1.7	1.9	2.3	2.1	1.5
EVB	1.7	1.7	1.9	2.4	1.9	1.9



VSWR

Frequency (MHz)	410	420	430	440	450	460	470
FS	4.9	3.7	2.7	2.0	1.3	1.3	1.6
EVB	2.8	1.6	1.4	2.3	3.4	4.9	6.5

3.1.2. Return Loss

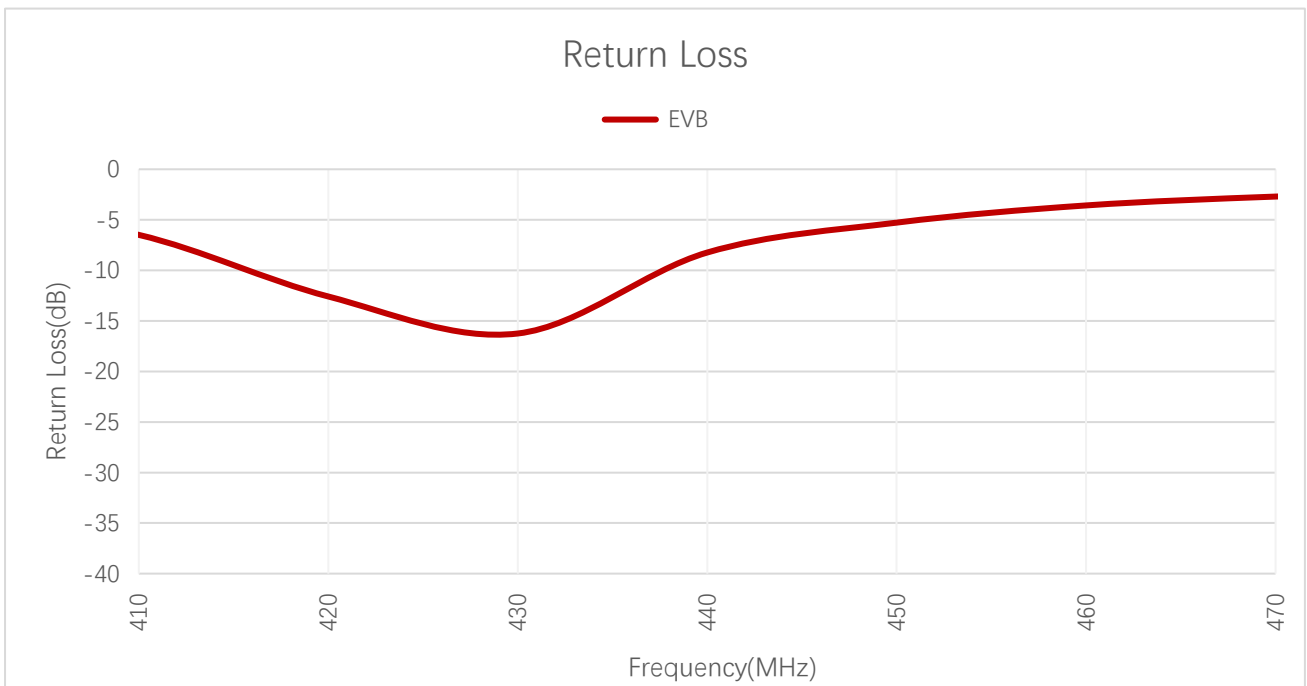
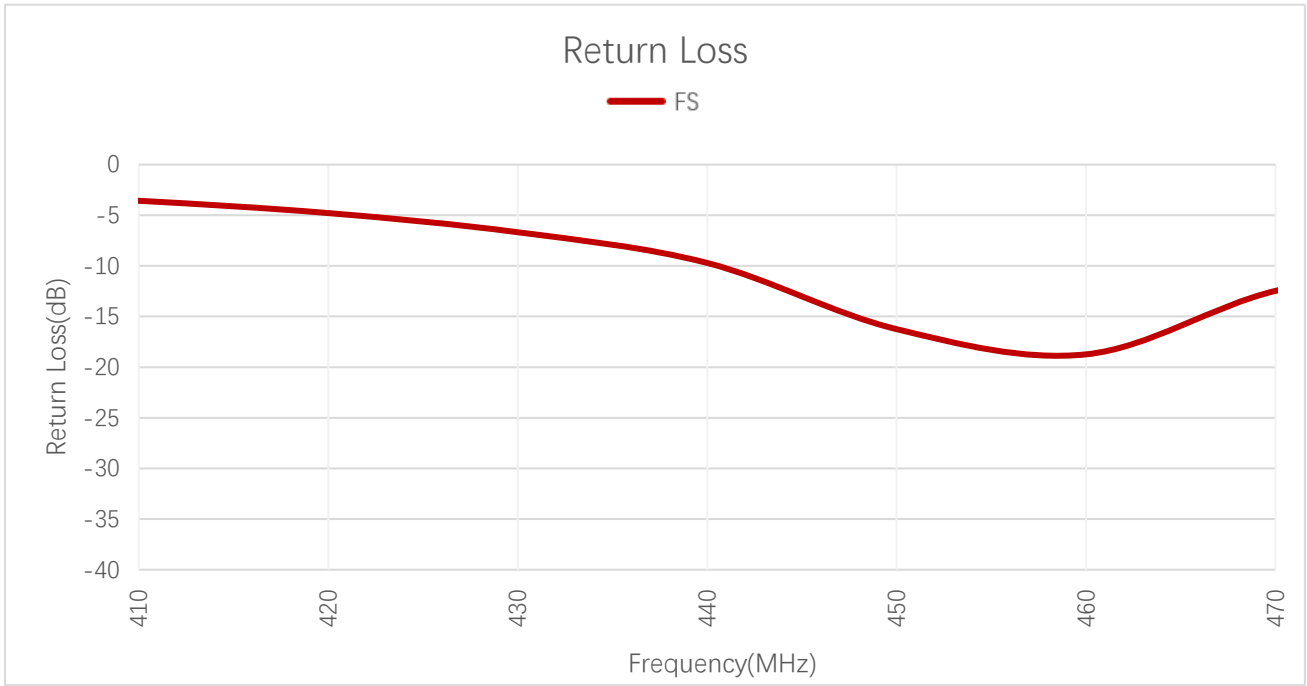


Return Loss (dB)

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
FS	-6.5	-8.9	-6.4	-16.5	-29.4	-12.7	-14.9	-7.0	-6.8	-6.5
EVB	-3.7	-5.4	-8.6	-18.5	-8.4	-9.1	-12.9	-6.8	-6.1	-6.1
Frequency (MHz)	1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
FS	-7.9	-13.2	-12.0	-10.0	-10.4	-8.6	-14.2	-14.7	-11.9	-10.5
EVB	-7.8	-11.7	-10.2	-10.7	-12.9	-7.5	-10.6	-12.3	-15.4	-9.0

Return Loss (dB) – NTN Bands

Frequency (MHz)	1520	1560	1630	1680	2000	2200
FS	-12.4	-11.5	-10.5	-8.0	-8.8	-14.3
EVB	-12.1	-11.8	-10.0	-7.7	-10.0	-10.3

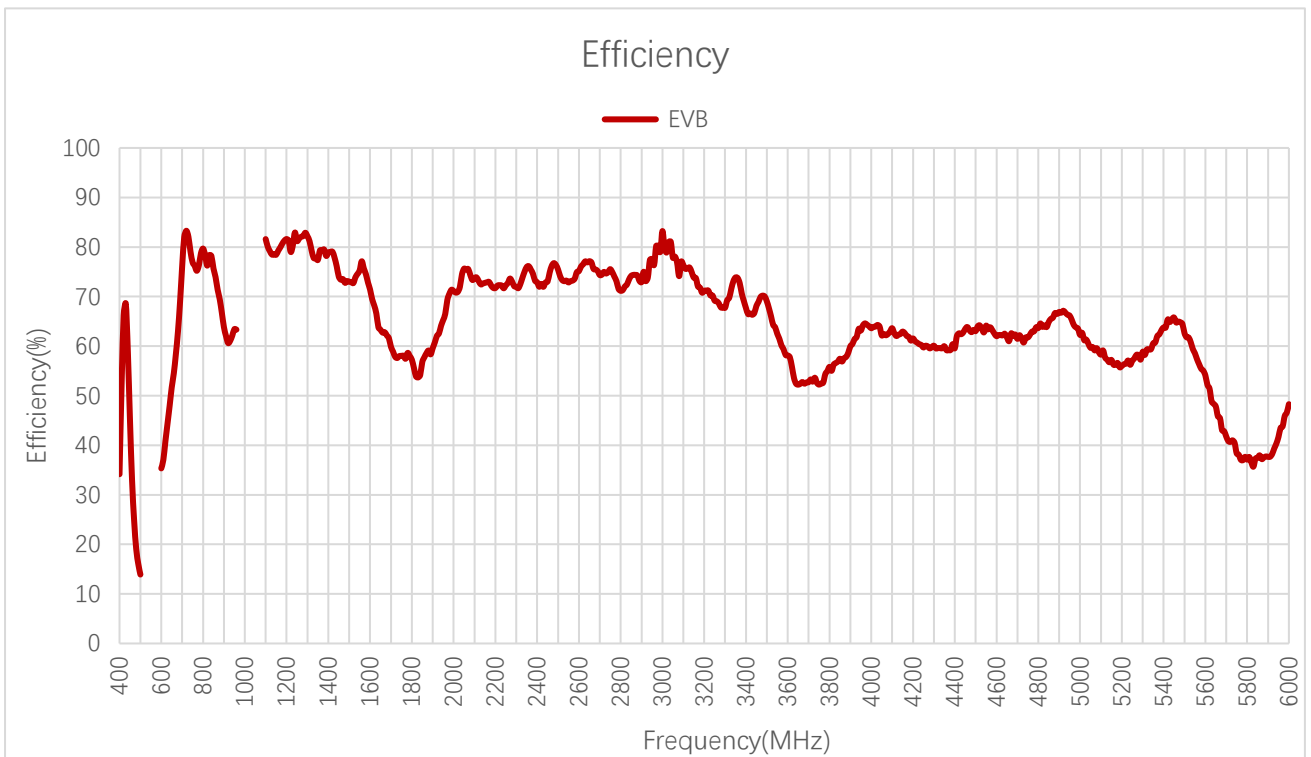
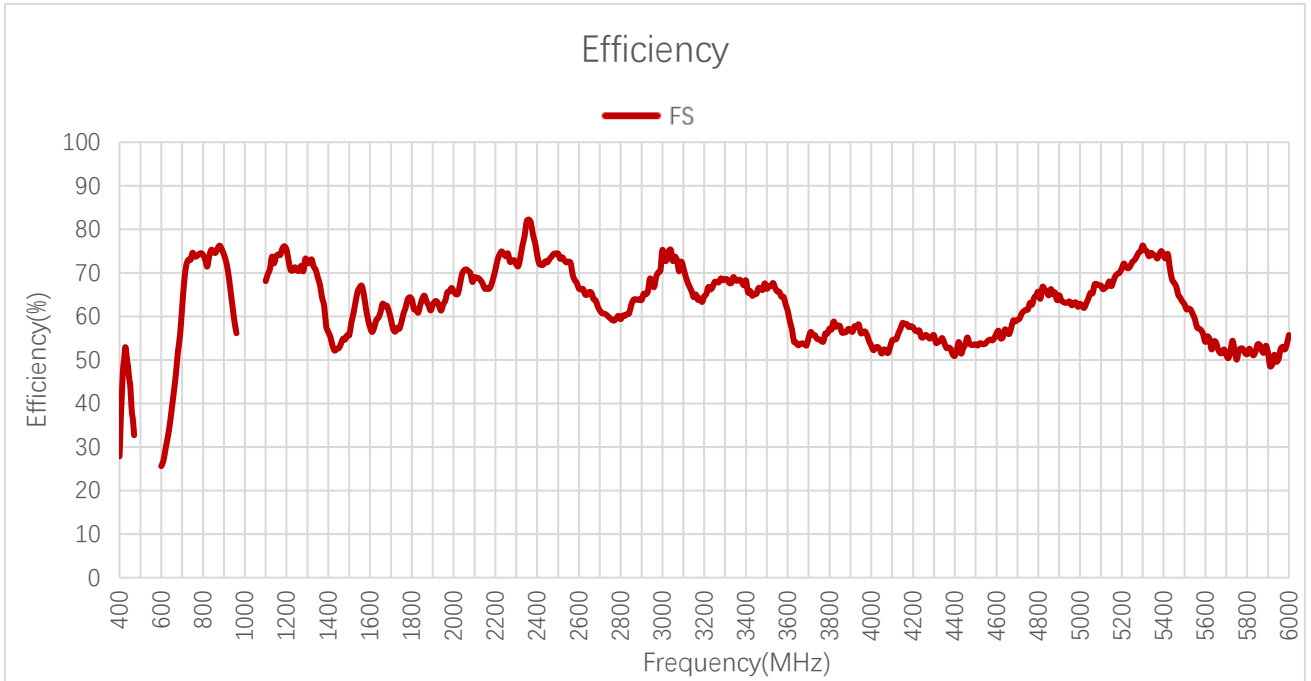


Return Loss (dB)

Frequency (MHz)	410	420	430	440	450	460	470
FS	-3.6	-4.8	-6.7	-9.7	-16.2	-18.7	-12.5
EVB	-6.5	-12.6	-16.2	-8.2	-5.3	-3.6	-2.7

3.2. Radiation Performance Test

3.2.1. Efficiency

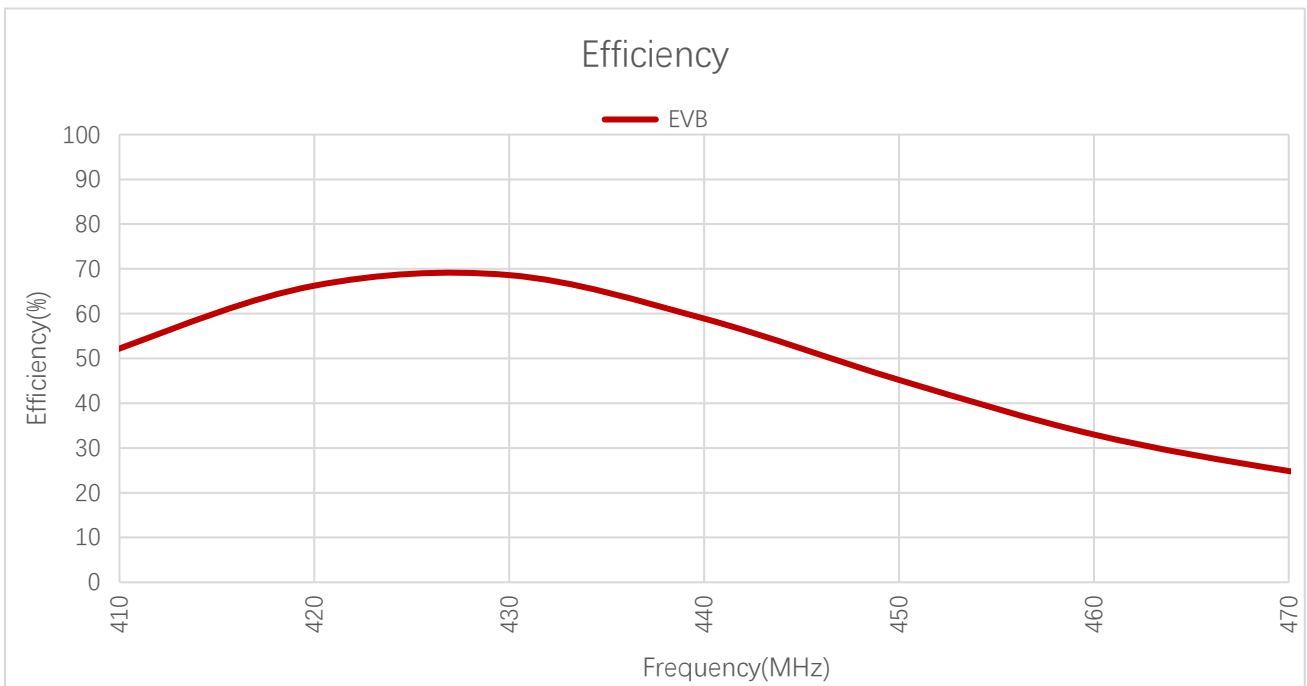
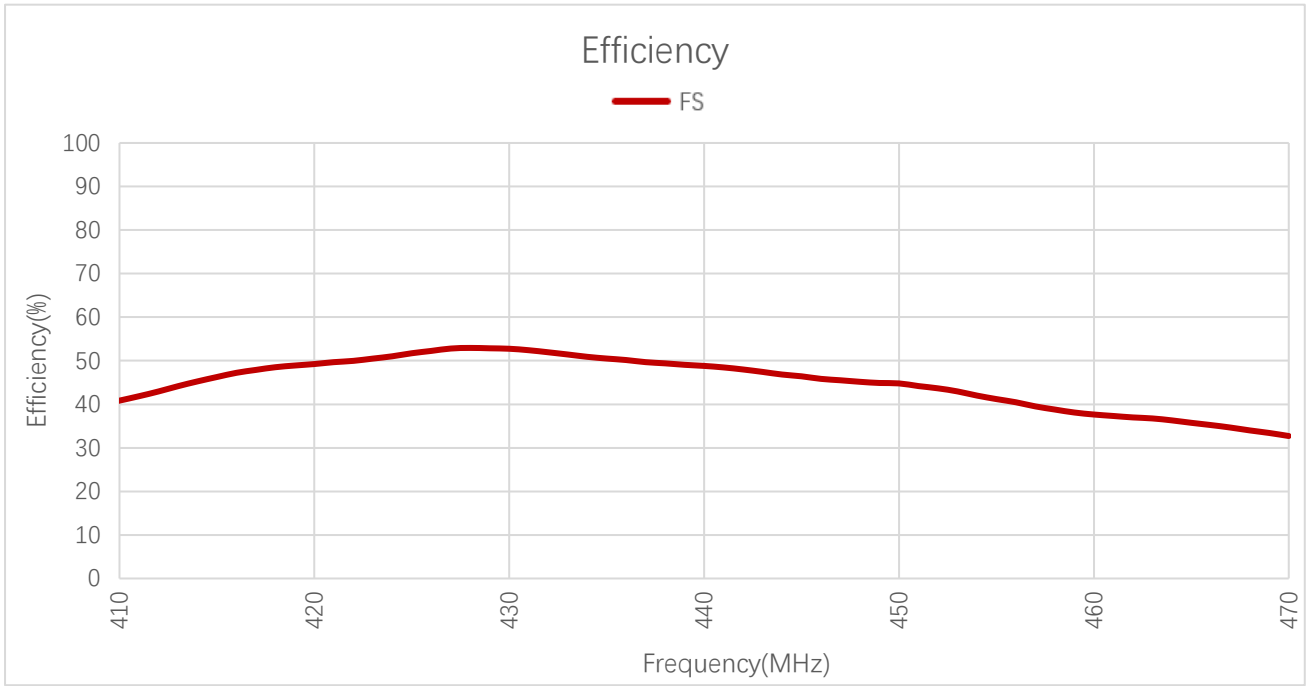


Efficiency (%)

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
FS	25.6	32.0	68.1	73.9	74.2	56.1	52.6	57.2	57.2	62.6
EVB	35.3	44.4	82.0	78.3	63.9	63.3	76.1	58.9	58.0	59.1
Frequency (MHz)	1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
FS	62.7	67.4	81.9	72.4	66.4	61.3	59.2	62.9	62.8	55.7
EVB	65.3	72.6	76.0	73.0	75.1	58.1	61.5	62.3	62.6	48.3

Efficiency (%) – NTN Bands

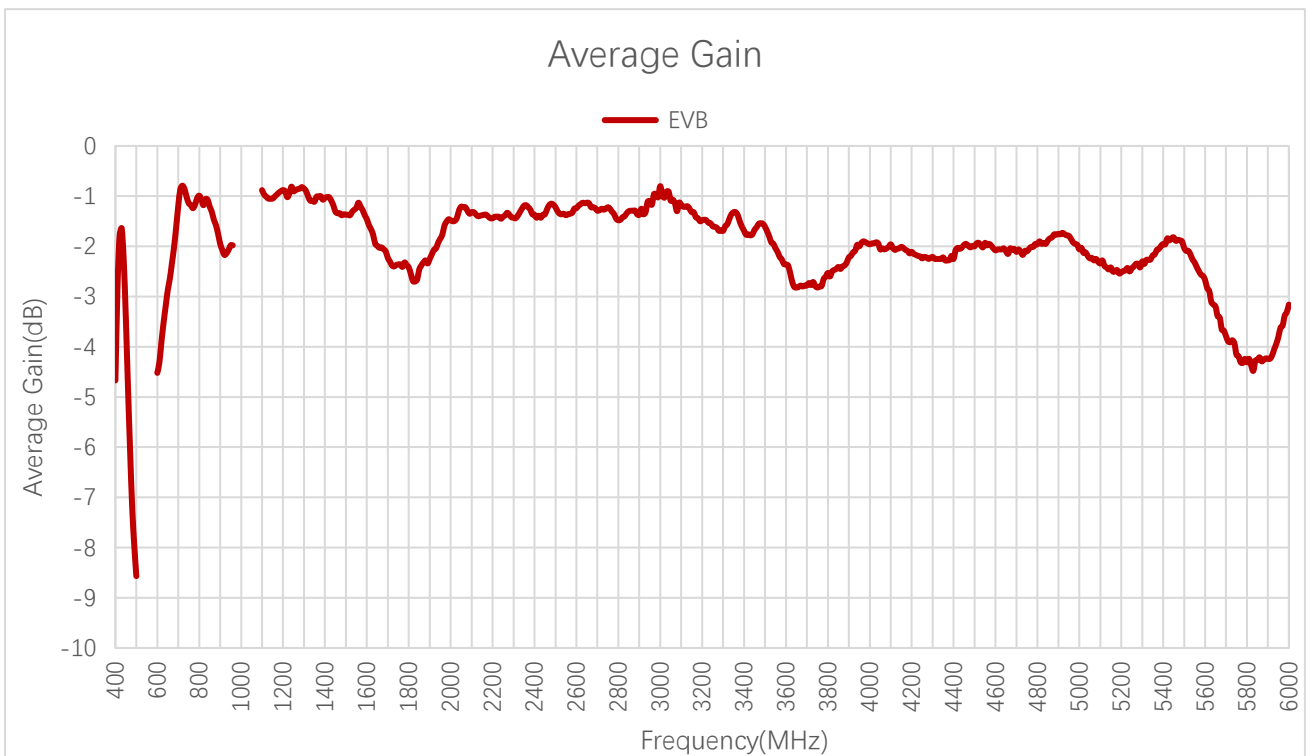
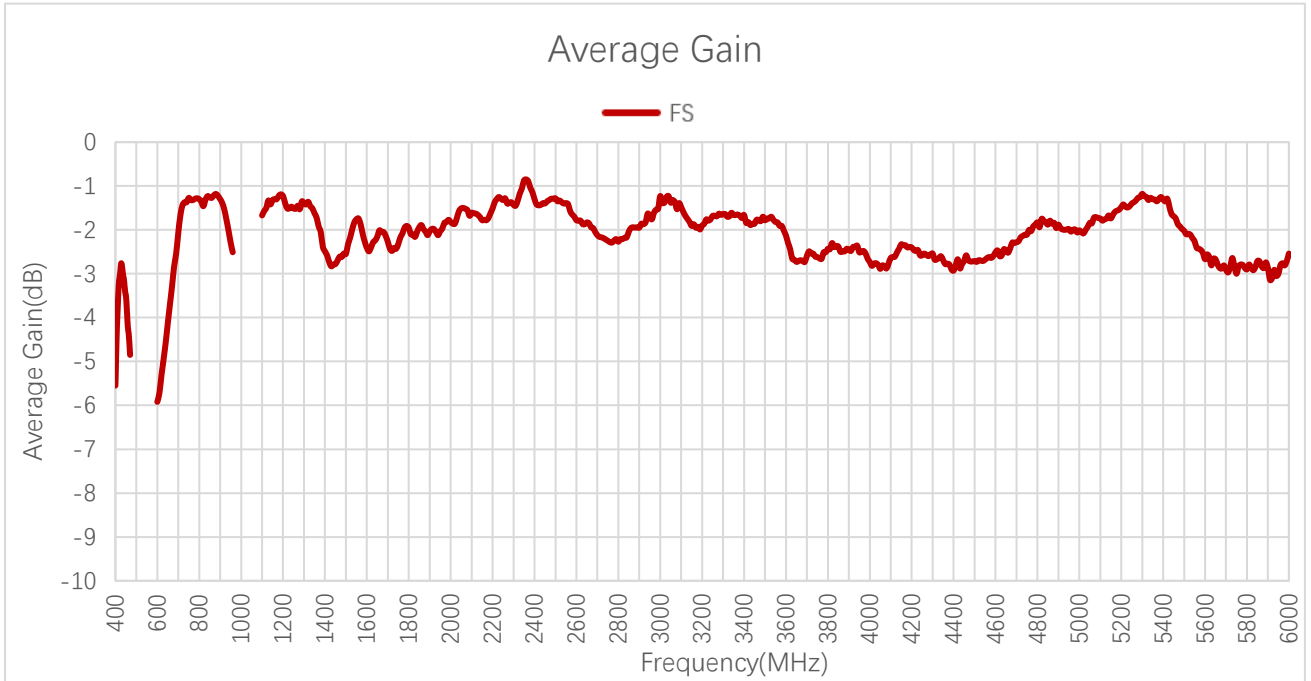
Frequency (MHz)	1520	1560	1630	1680	2000	2200
FS	60.6	67.0	59.2	62.4	65.8	70.7
EVB	72.7	77.1	66.6	62.2	71.1	71.7



Efficiency (%)

Frequency (MHz)	410	420	430	440	450	460	470
FS	40.8	49.2	52.8	48.8	44.8	37.7	32.7
EVB	52.2	66.3	68.6	58.9	45.2	33.0	24.9

3.2.2. Average Gain

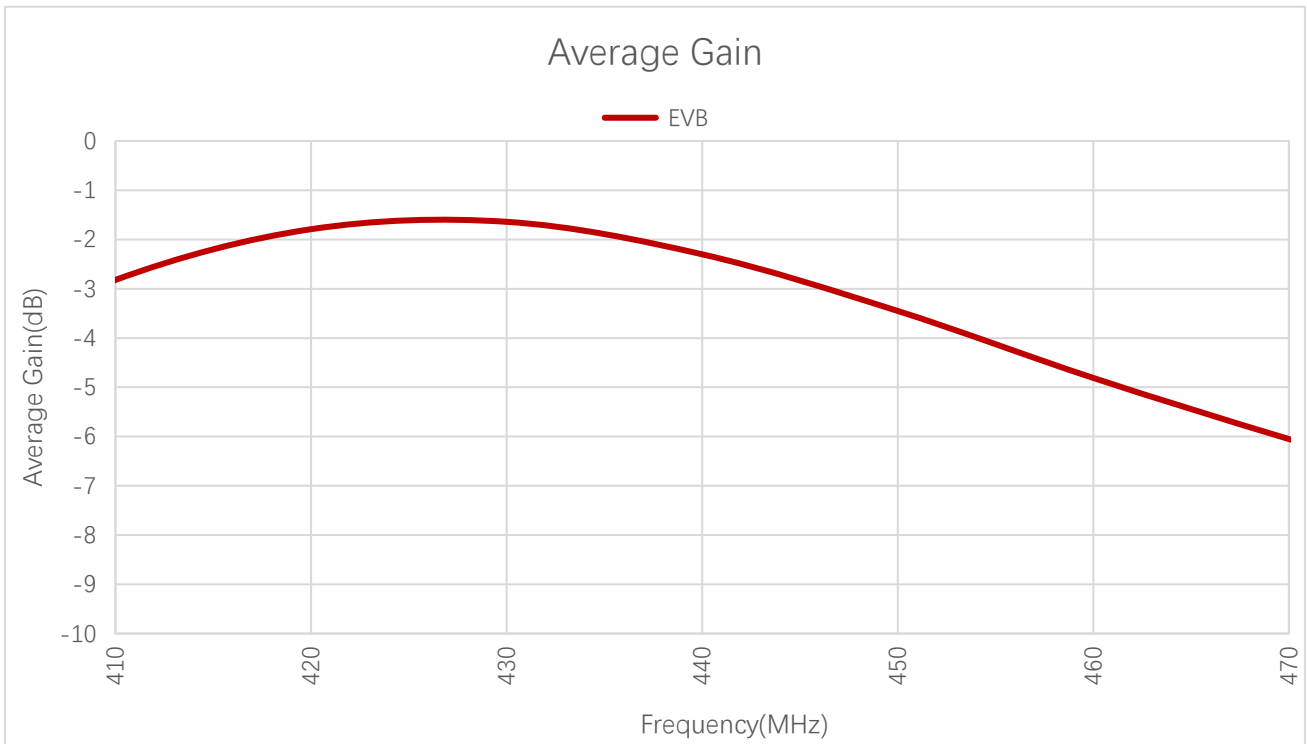
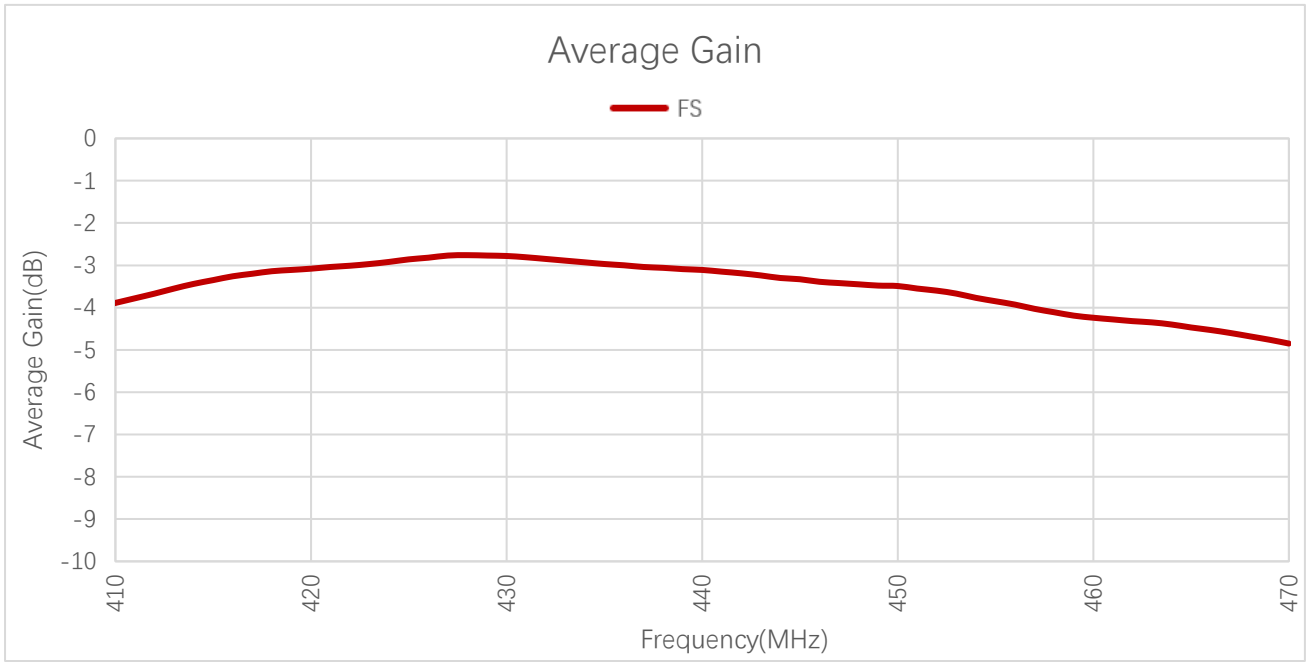


Average Gain (dB)

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
FS	-5.9	-5.0	-1.7	-1.3	-1.3	-2.5	-2.8	-2.4	-2.4	-2.0
EVB	-4.5	-3.5	-0.9	-1.1	-2.0	-2.0	-1.2	-2.3	-2.4	-2.3
Frequency (MHz)	1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
FS	-2.0	-1.7	-0.9	-1.4	-1.8	-2.1	-2.3	-2.0	-2.0	-2.5
EVB	-1.9	-1.4	-1.2	-1.4	-1.2	-2.4	-2.1	-2.1	-2.0	-3.2

Average Gain (dB) – NTN Bands

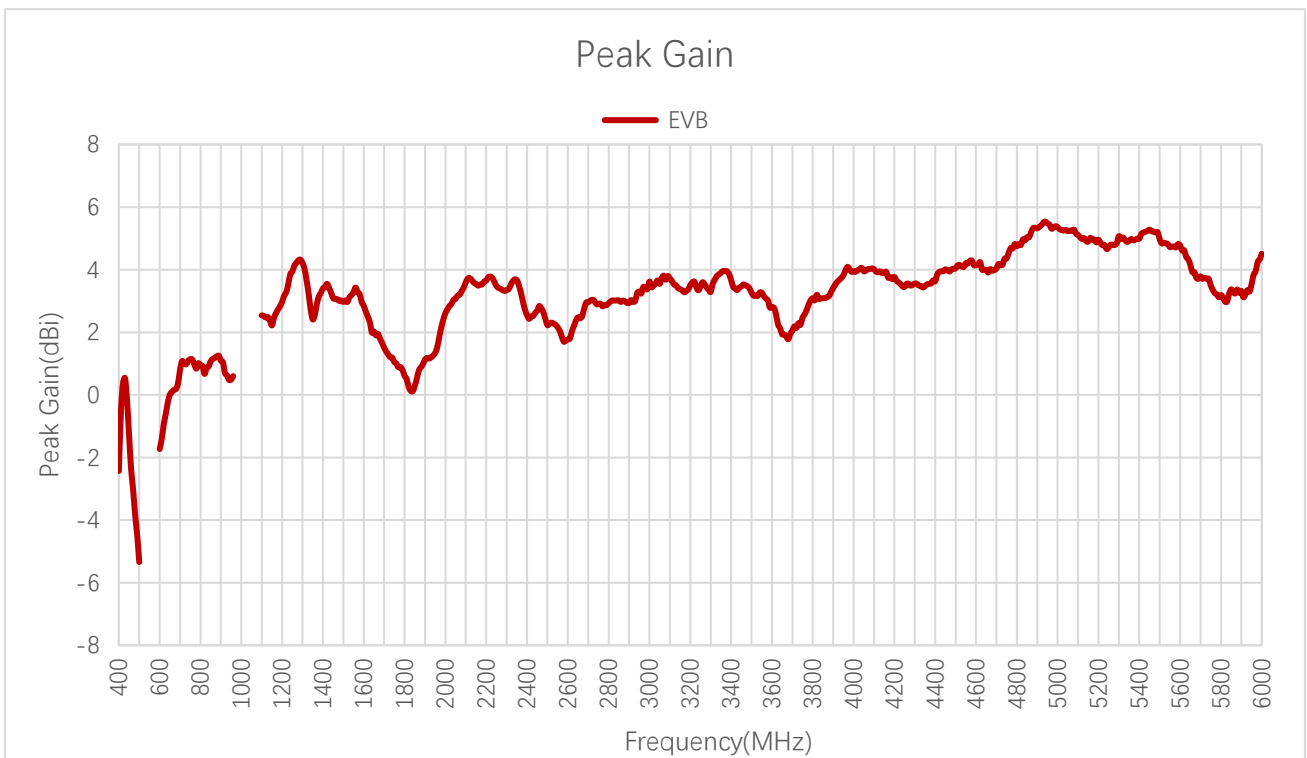
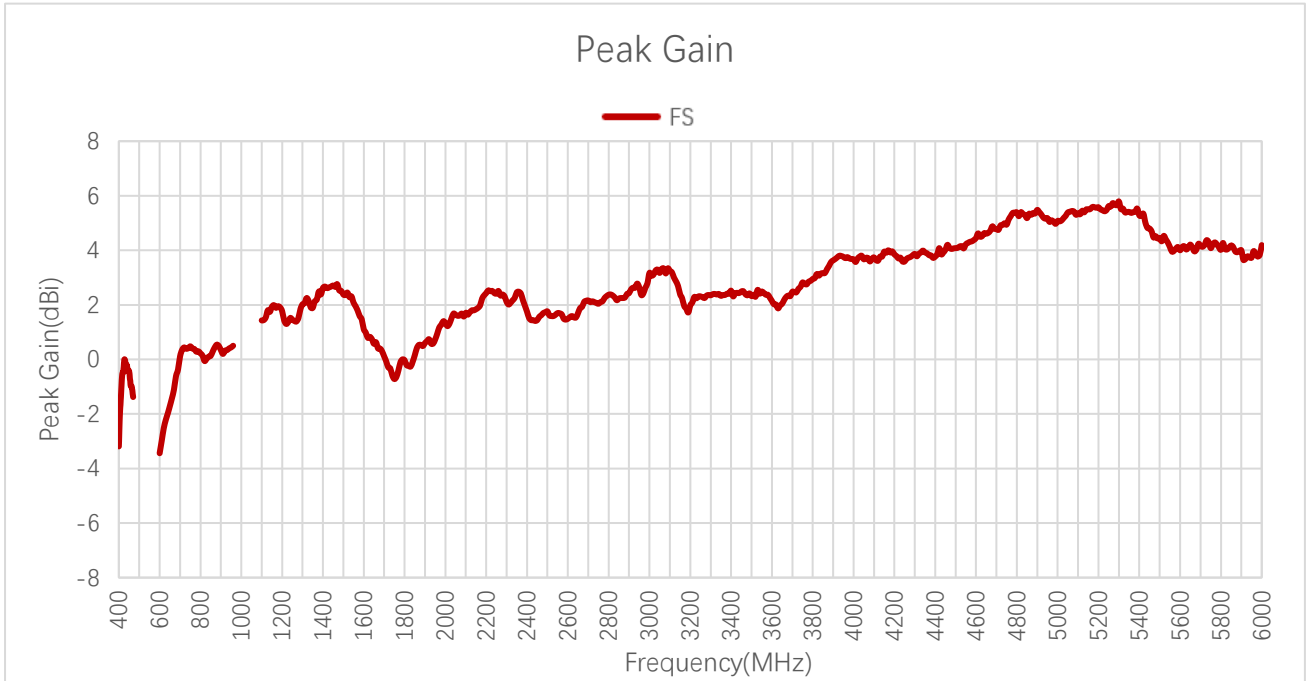
Frequency (MHz)	1520	1560	1630	1680	2000	2200
FS	-2.2	-1.7	-2.3	-2.1	-1.8	-1.5
EVB	-1.4	-1.1	-1.8	-2.1	-1.5	-1.4



Average Gain (dB)

Frequency (MHz)	410	420	430	440	450	460	470
FS	-3.9	-3.1	-2.8	-3.1	-3.6	-4.3	-4.9
EVB	-2.8	-1.8	-1.6	-2.3	-3.5	-4.8	-6.1

3.2.3. Peak Gain

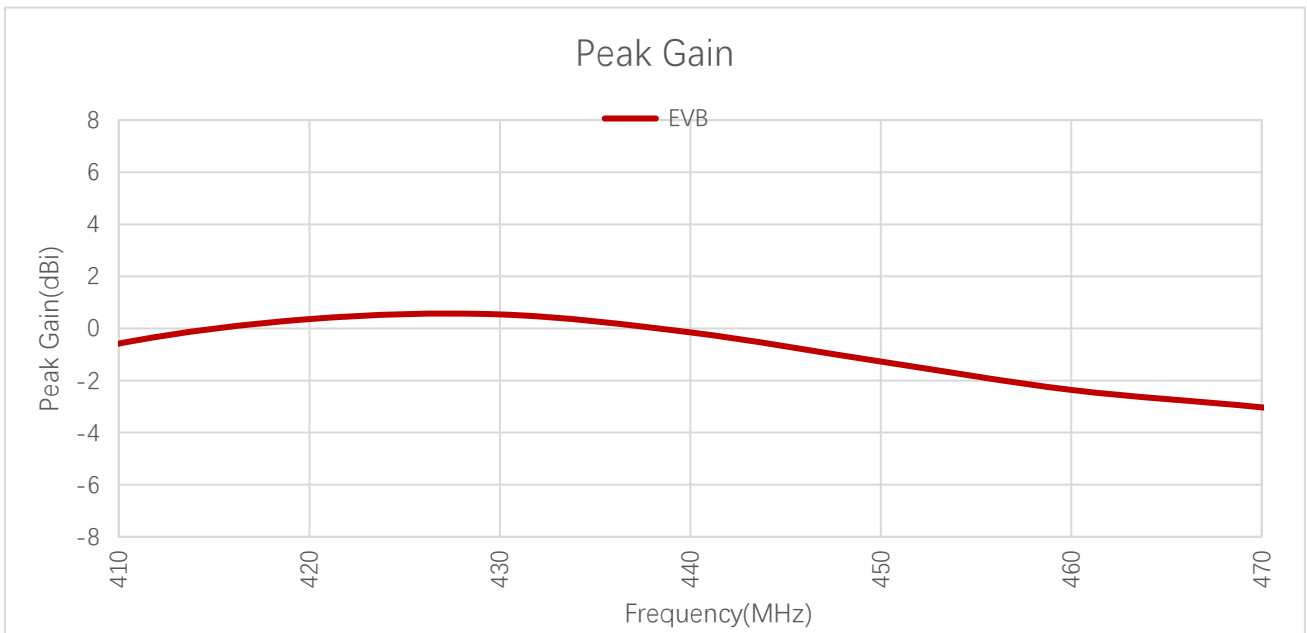
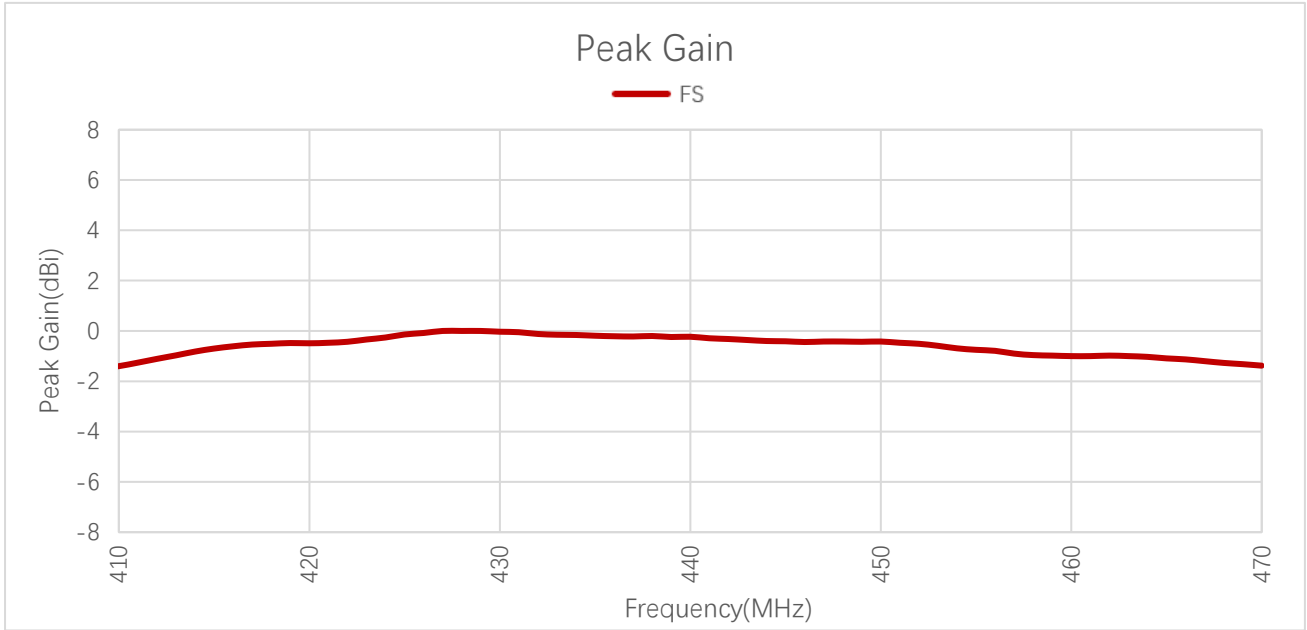


Peak Gain (dBi)

Frequency (MHz)	600	630	710	830	900	960	1440	1710	1740	1880
FS	-3.4	-2.2	0.4	0.0	0.3	0.5	2.7	-0.1	-0.6	0.5
EVB	-1.7	-0.6	1.1	0.9	1.1	0.6	3.3	1.4	1.2	0.9
Frequency (MHz)	1950	2140	2350	2450	2600	3600	4700	5000	5500	6000
FS	0.7	1.8	2.5	1.4	1.5	2.1	4.8	5.1	4.5	4.2
EVB	1.3	3.6	3.7	2.7	1.8	2.8	4.0	5.4	5.0	4.5

Peak Gain (dBi) – NTN Bands

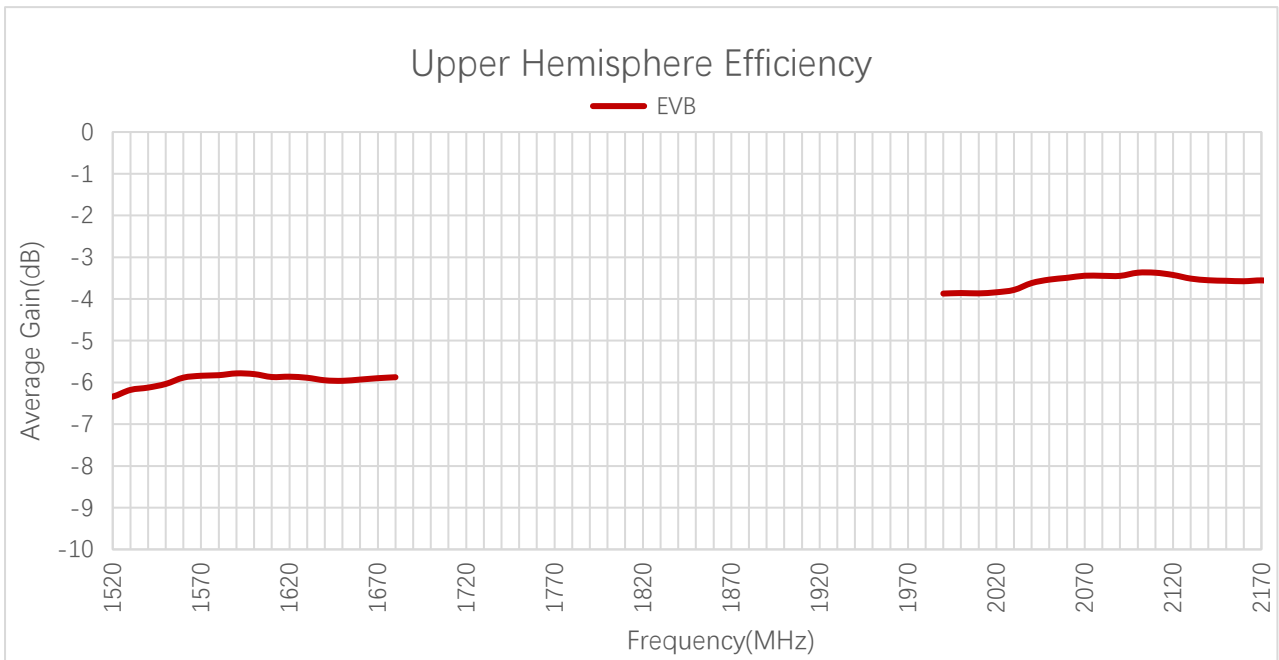
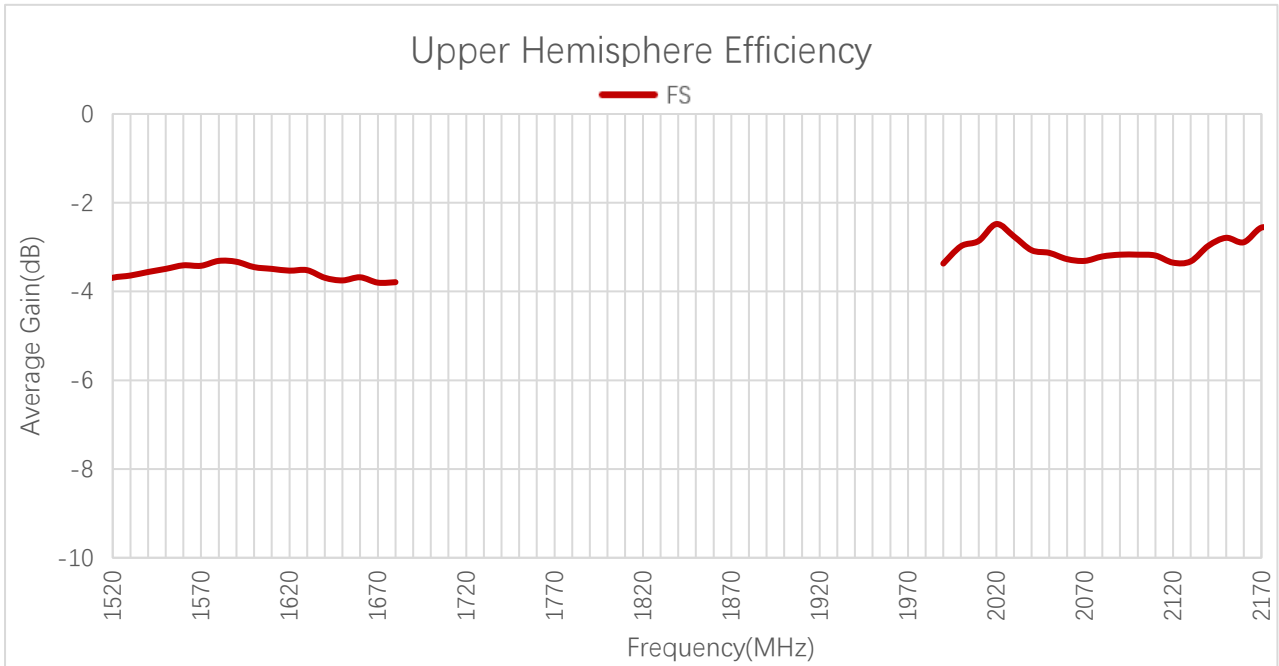
Frequency (MHz)	1520	1560	1630	1680	2000	2200
FS	2.5	2.0	0.8	0.4	1.3	2.4
EVB	3.0	3.4	2.3	1.8	2.6	3.7



Peak Gain (dBi)

Frequency (MHz)	410	420	430	440	450	460	470
FS	-1.4	-0.5	0.0	-0.3	-0.4	-1.0	-1.4
EVB	-0.6	0.4	0.5	-0.2	-1.3	-2.4	-3.0

3.2.4. Upper Hemisphere Efficiency



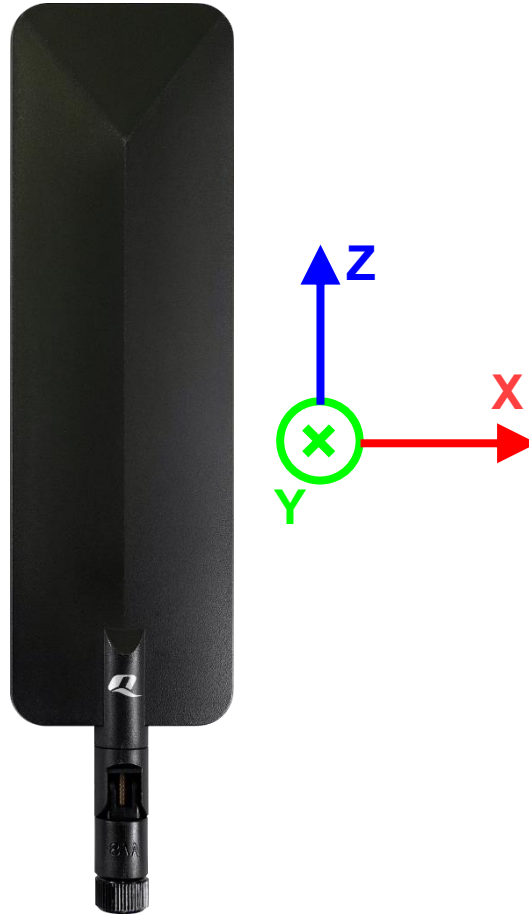
Upper Hemisphere Efficiency (dB) – NTN Bands

Frequency (MHz)	1520	1560	1630	1680	2000	2200
FS	-3.7	-3.4	-3.5	-3.8	-3.0	-2.2
EVB	-6.3	-5.9	-5.9	-5.9	-3.9	-3.6

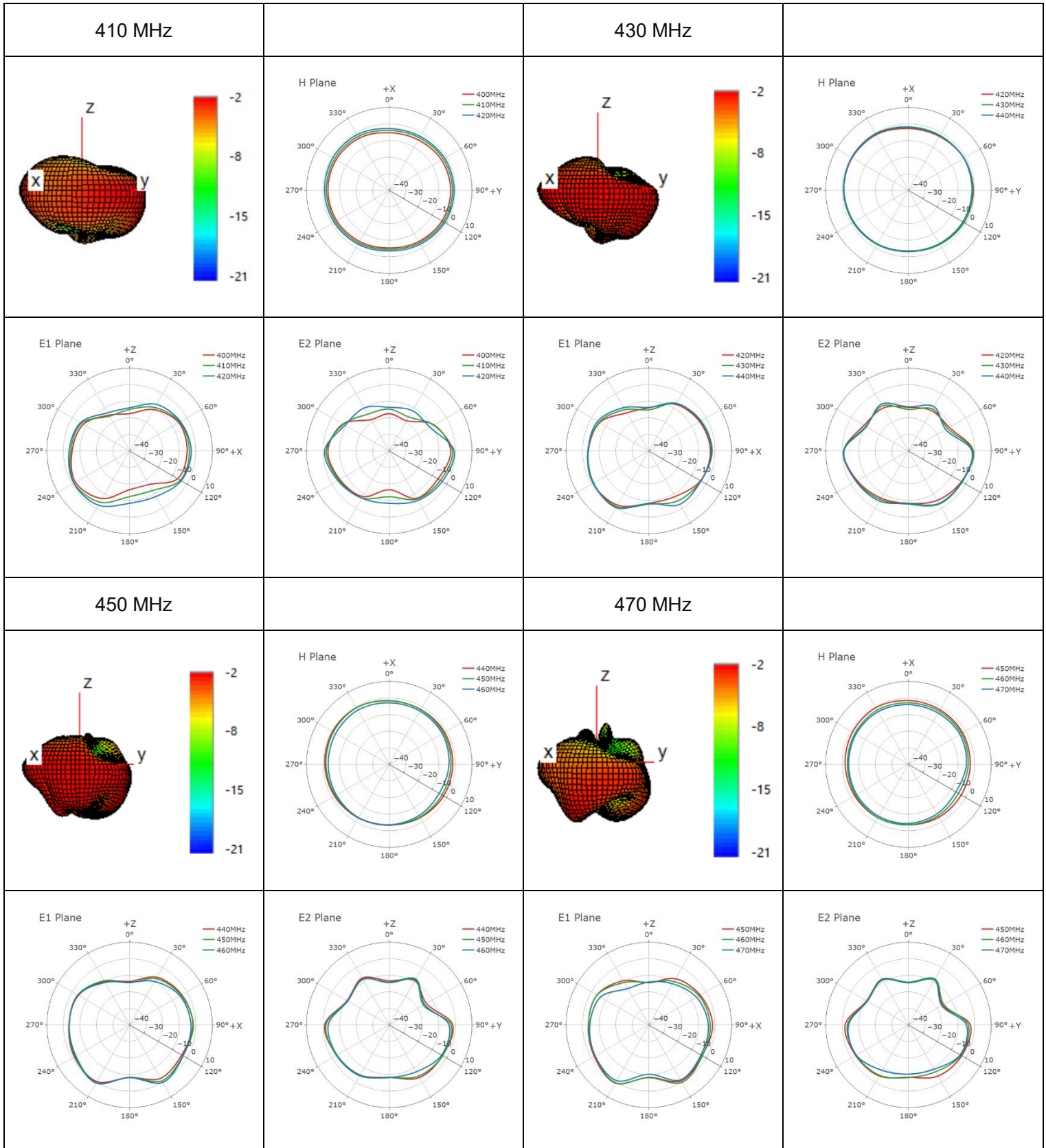
3.2.5. 3D & 2D Radiation Pattern

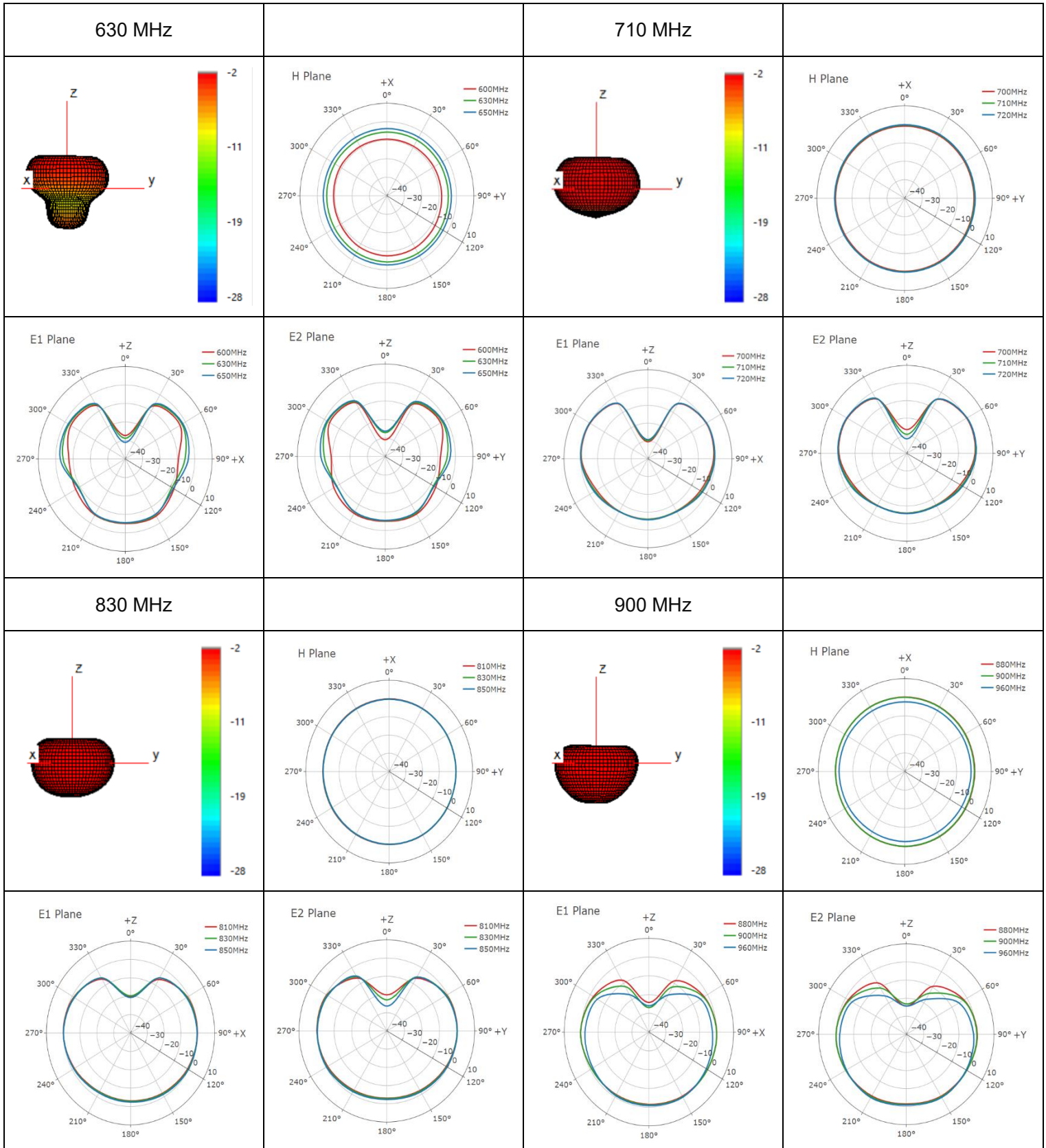
3.2.5.1. Test Condition: In Free Space

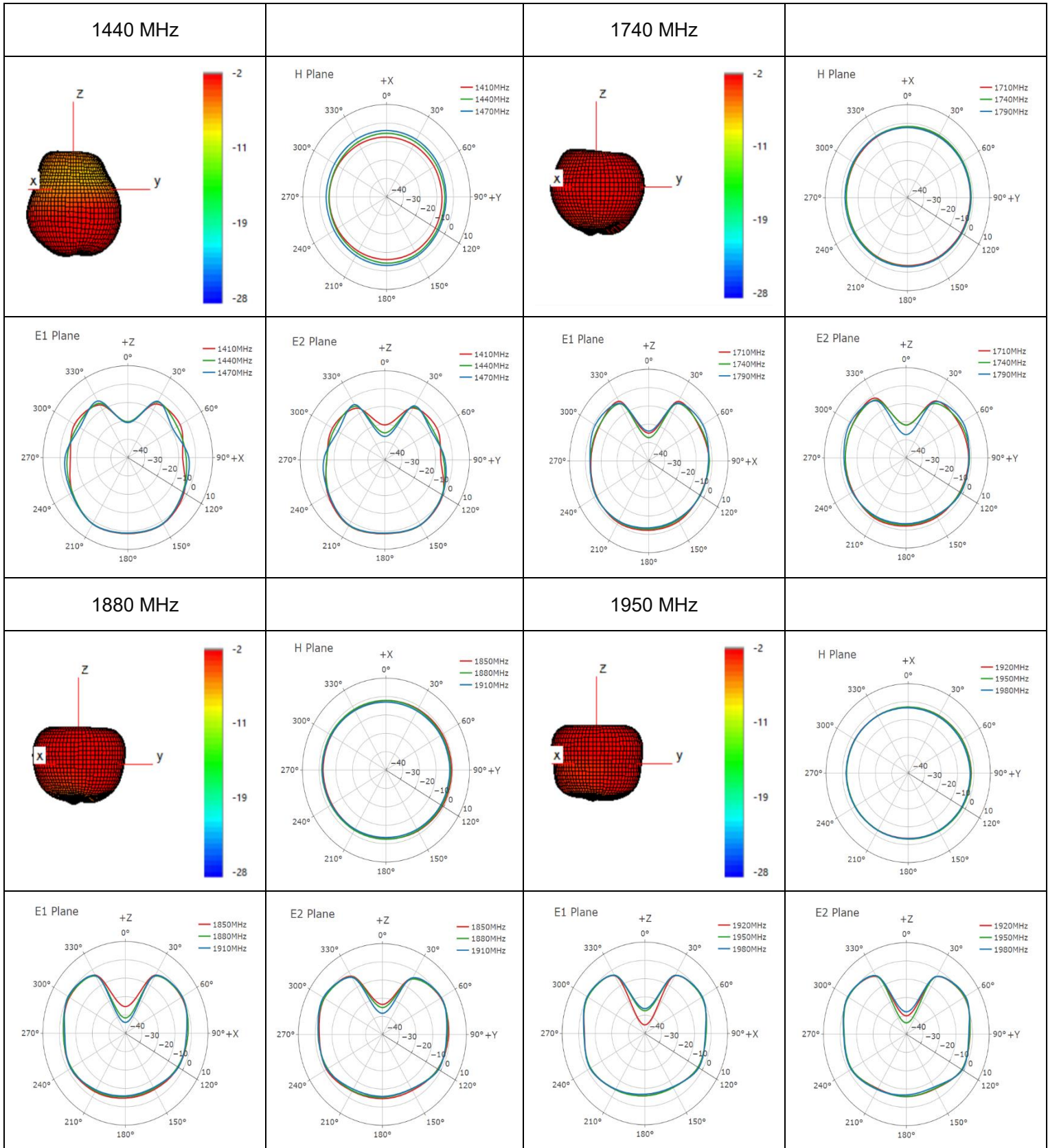
- Test Chamber: HF-G-1

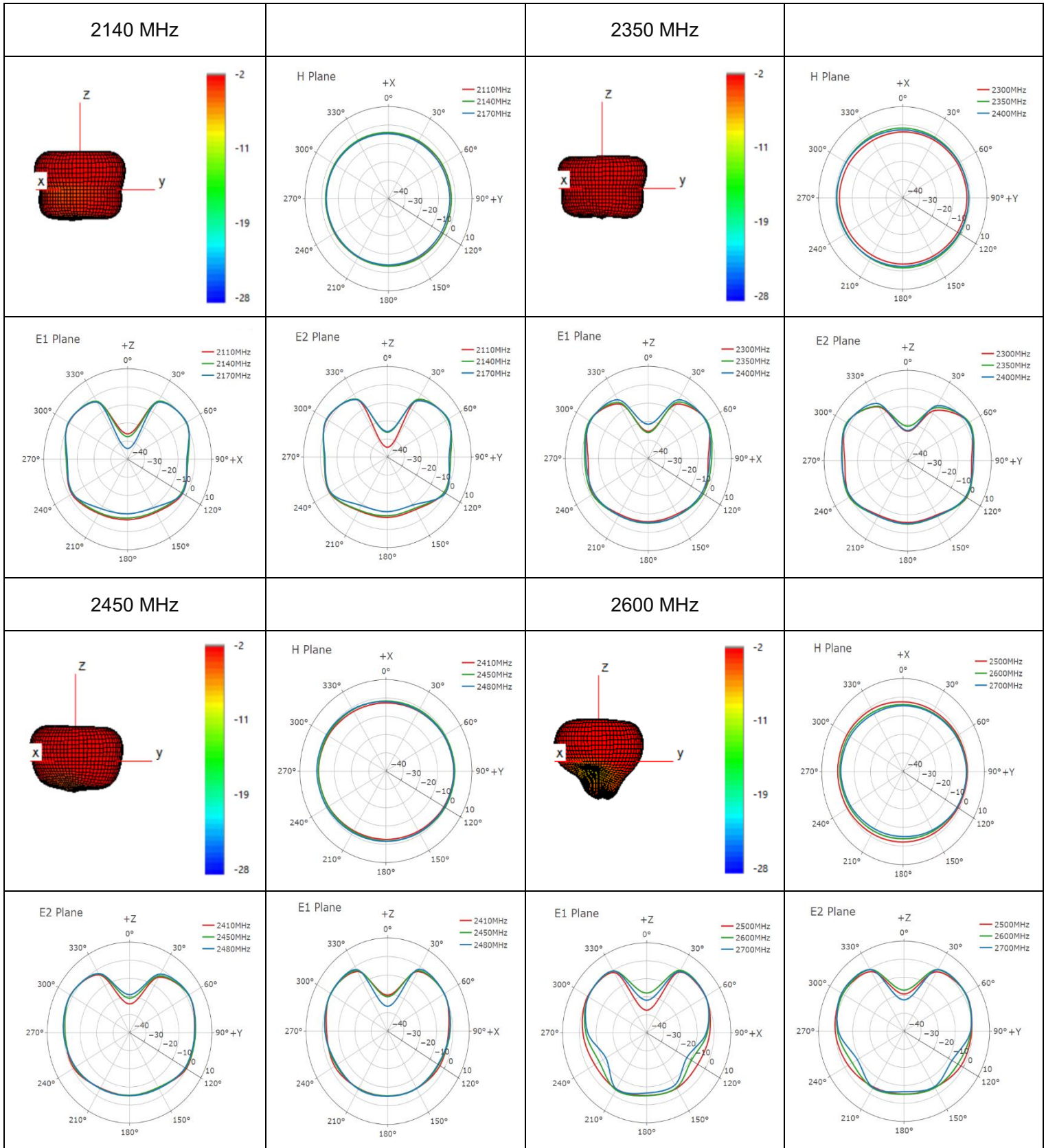


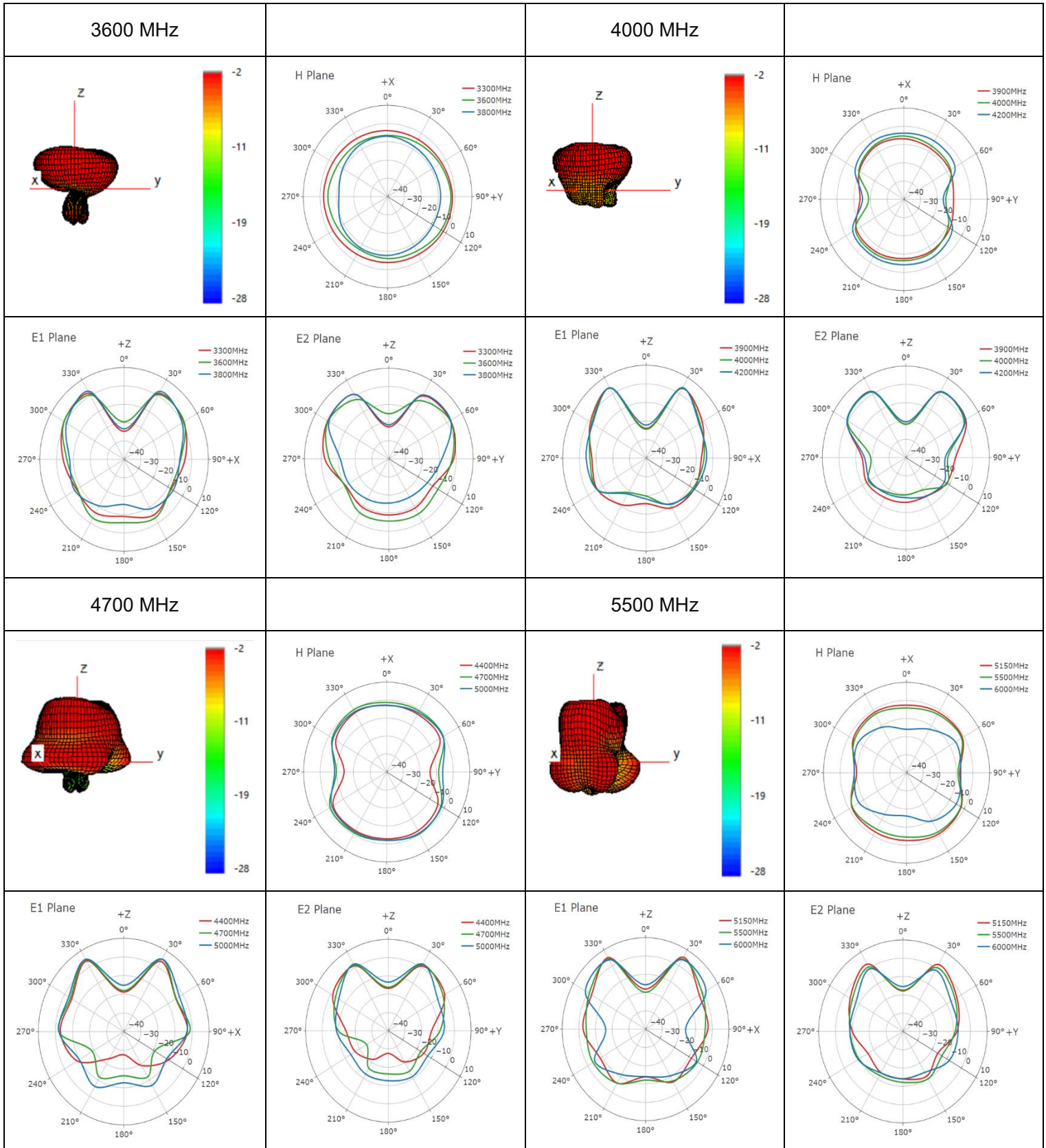
● 5G Bands



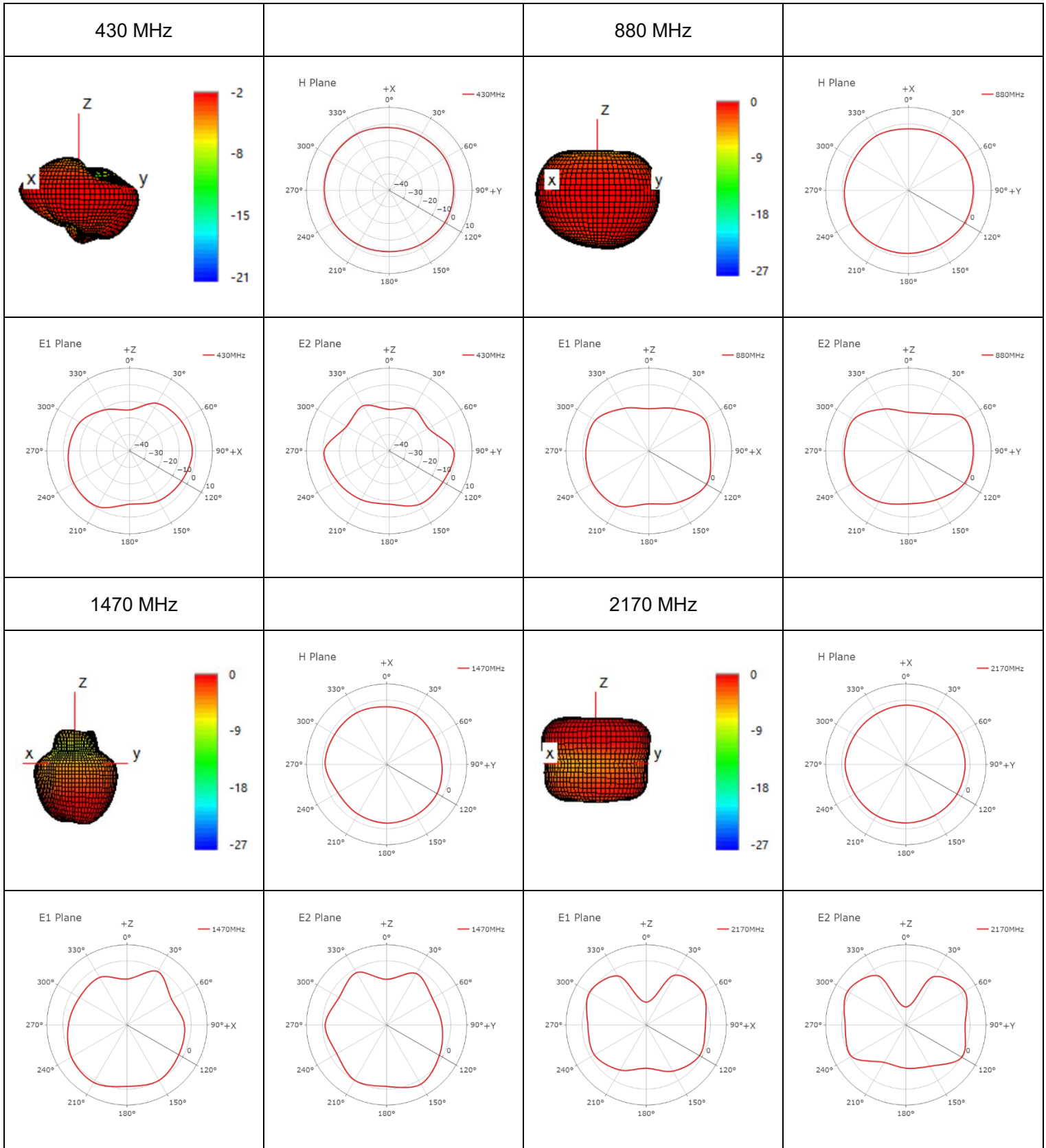


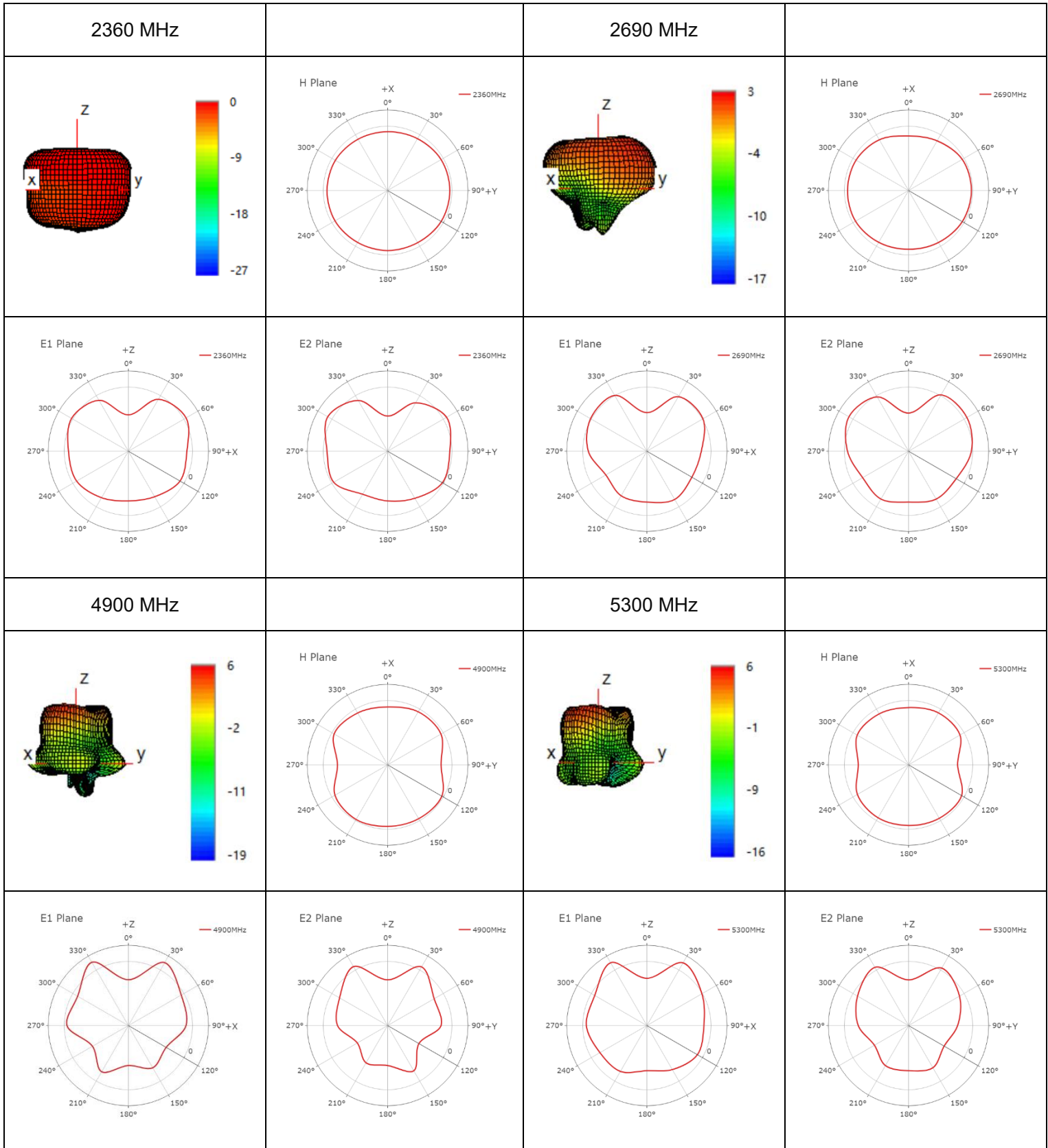




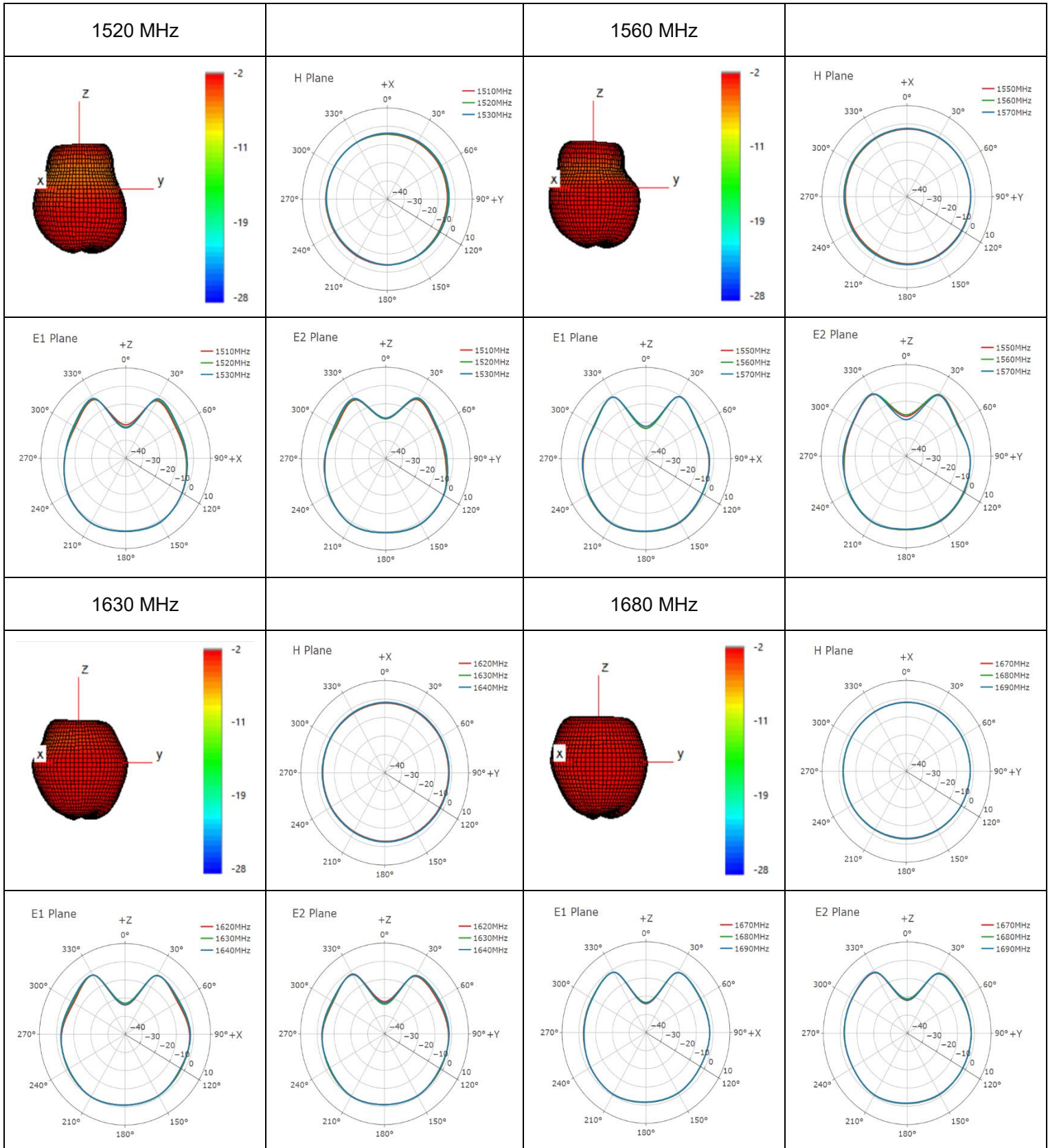


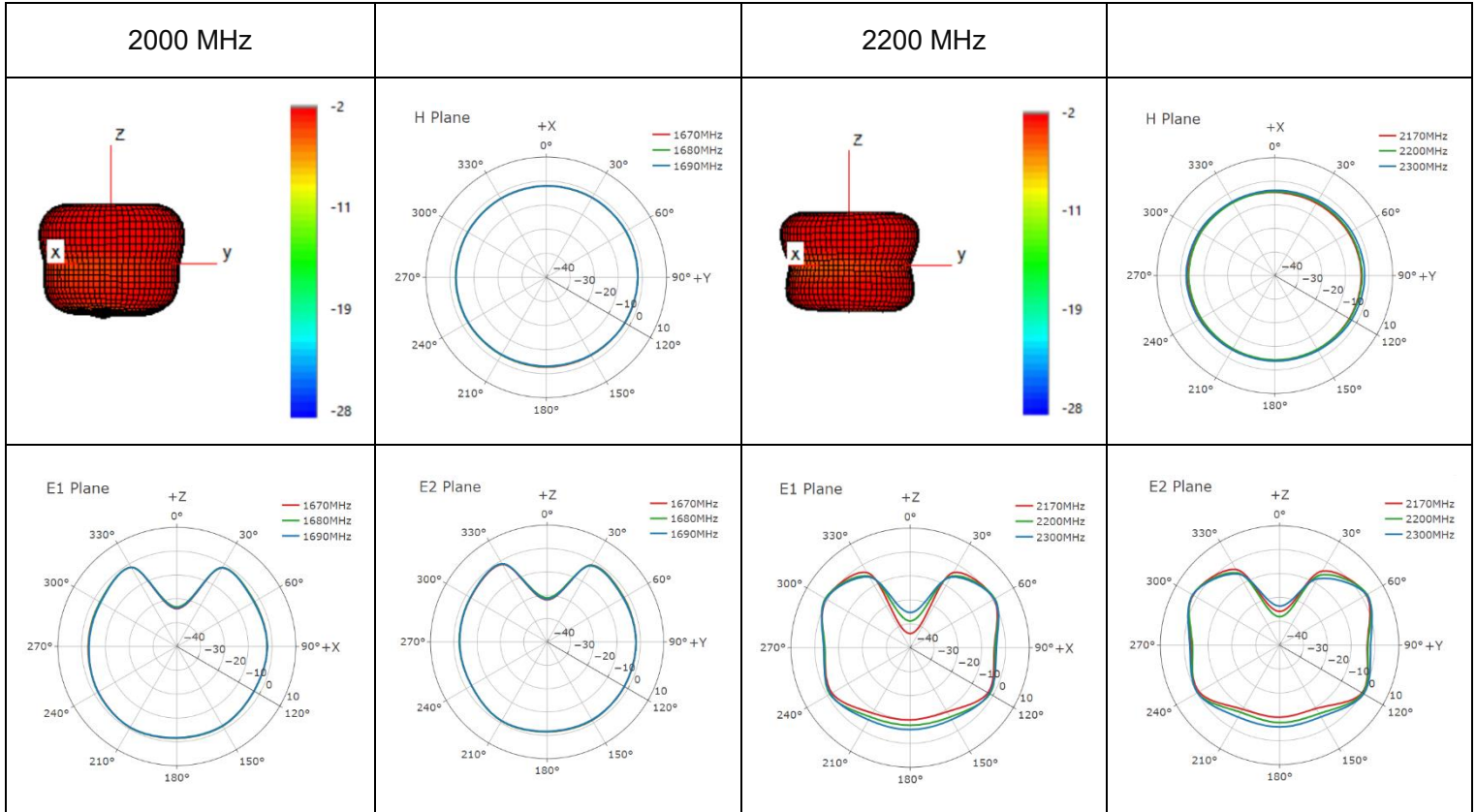
● 5G Bands-Max Peak Gain



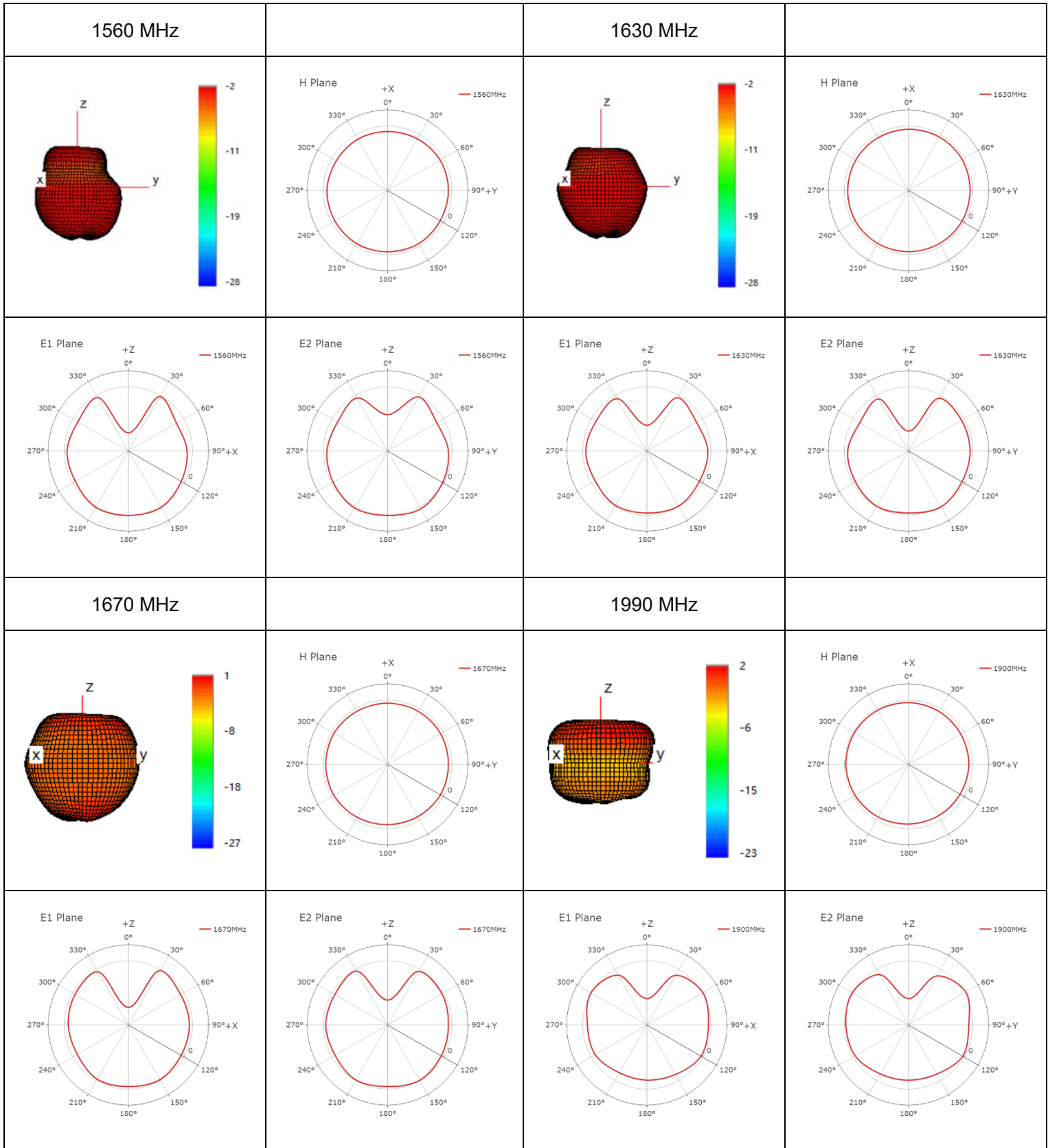


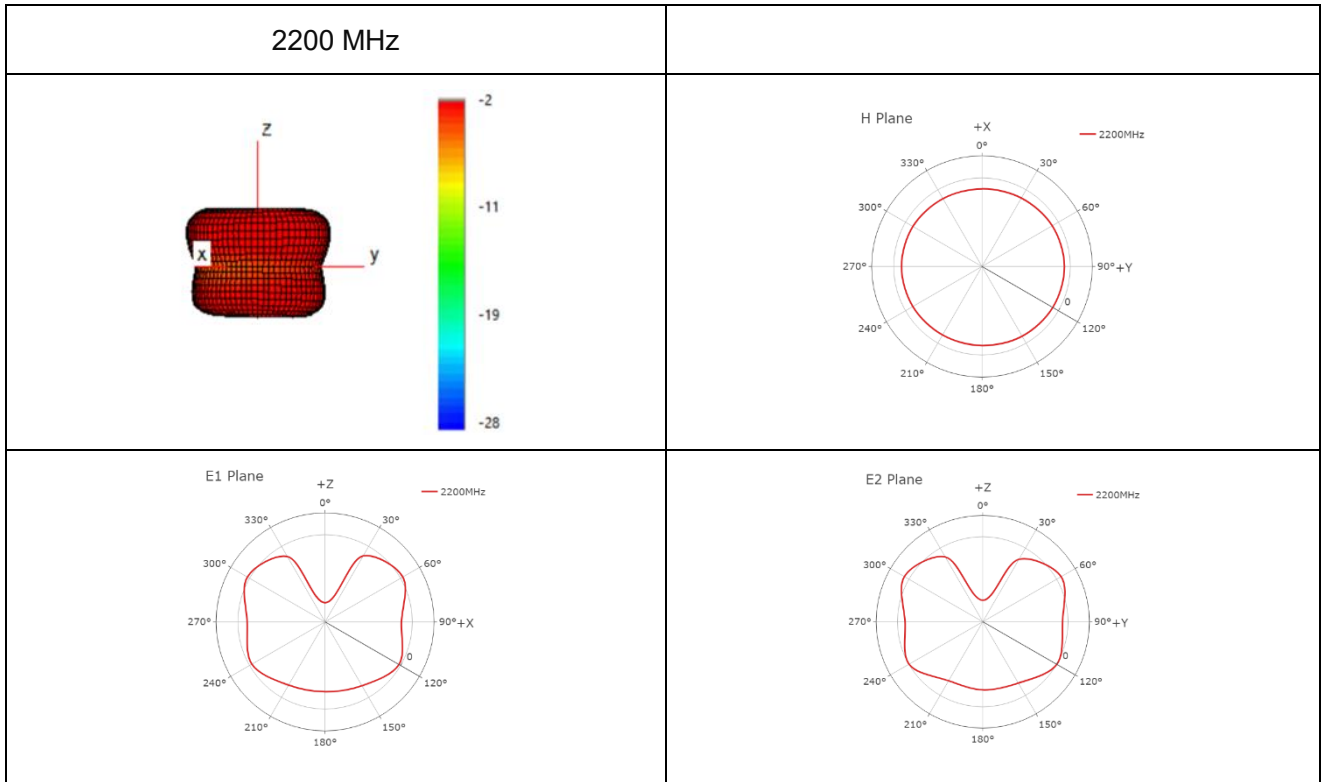
● NTN Bands





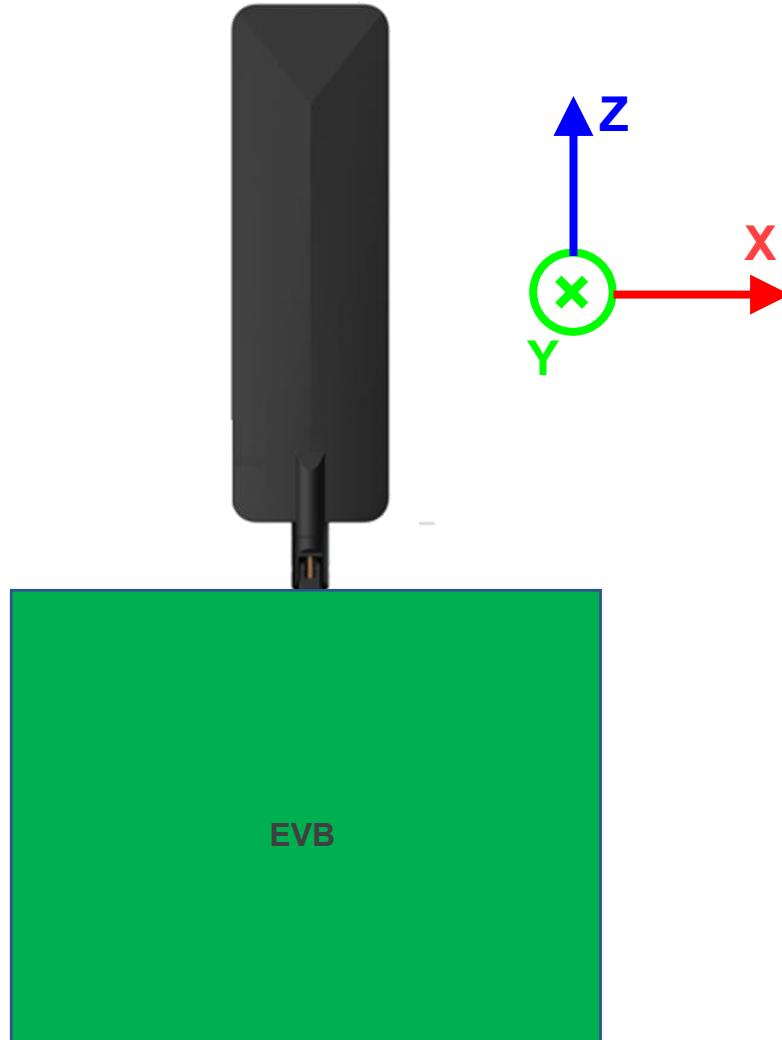
● NTN Bands- Max Peak Gain



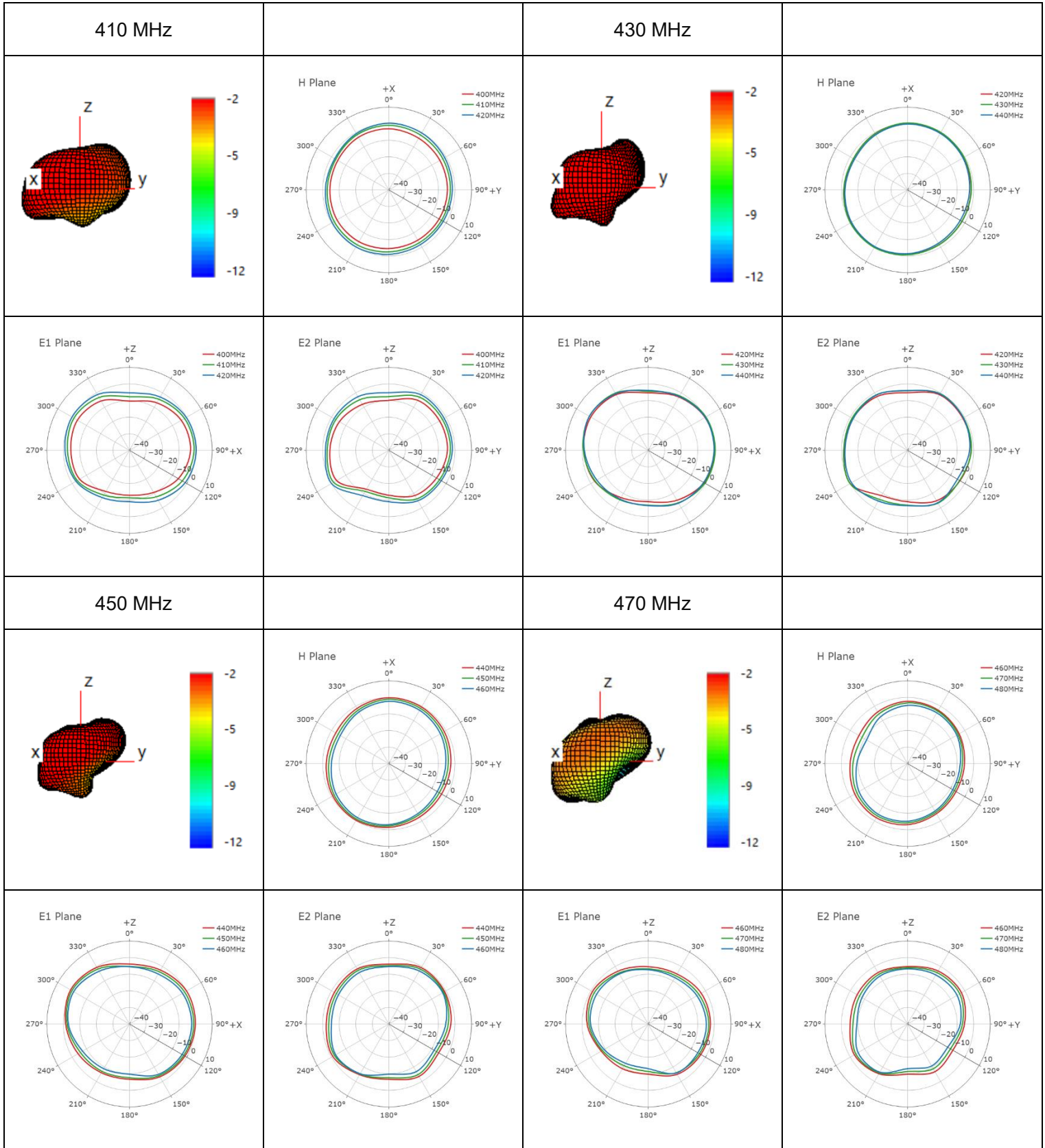


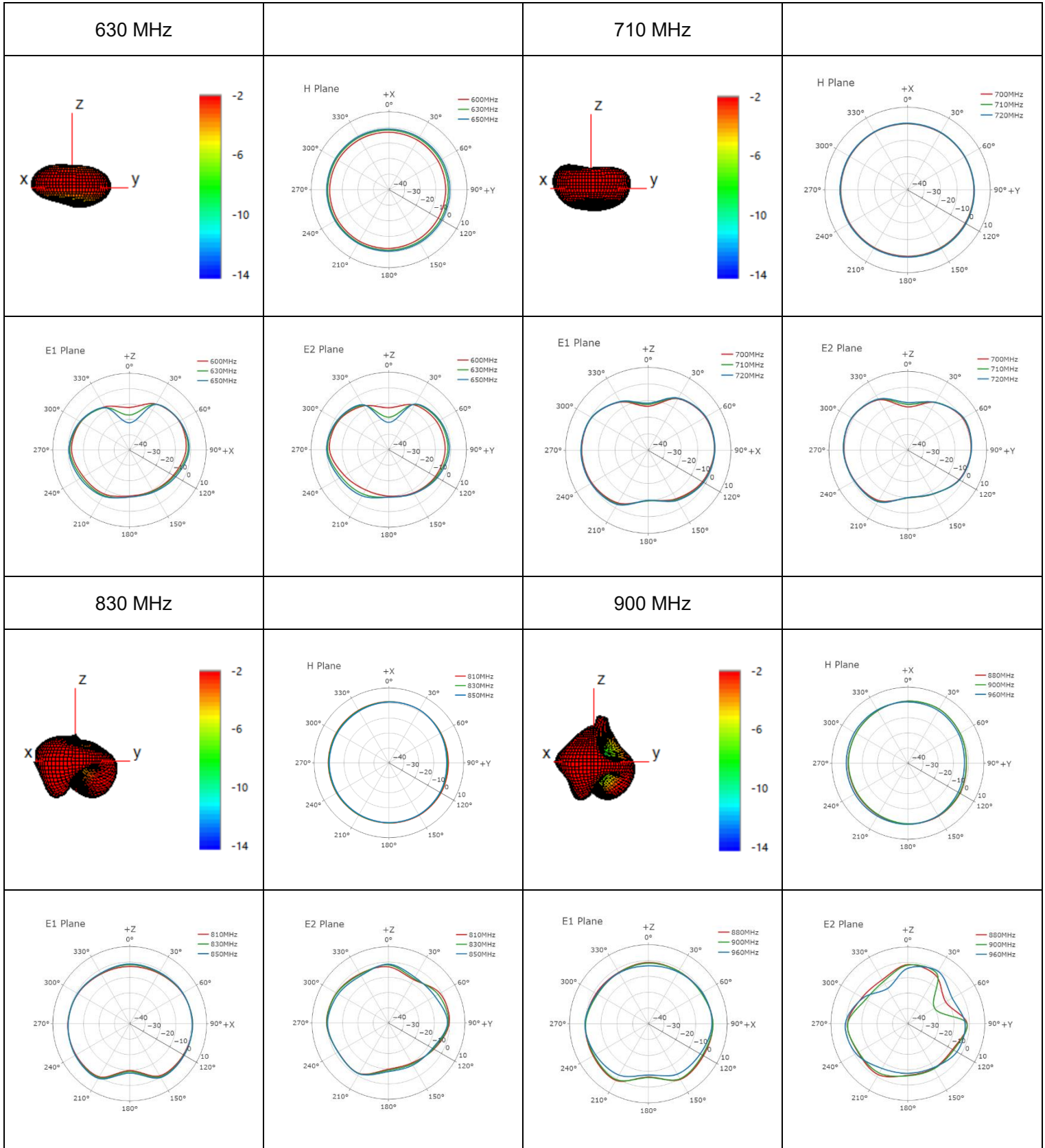
3.2.5.2. Test Condition: On 130 mm × 130 mm EVB

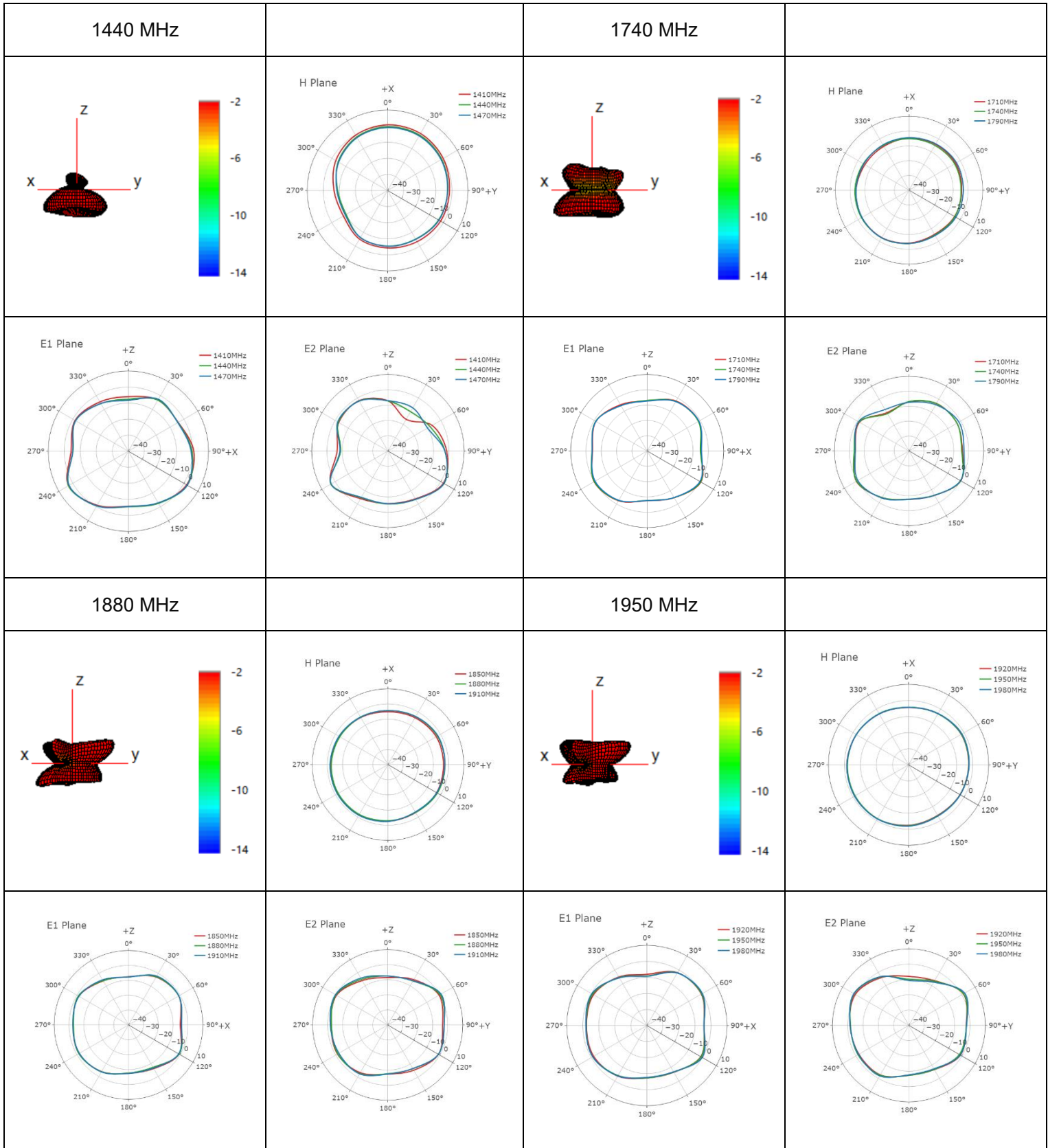
- Test Chamber: HF-G-1

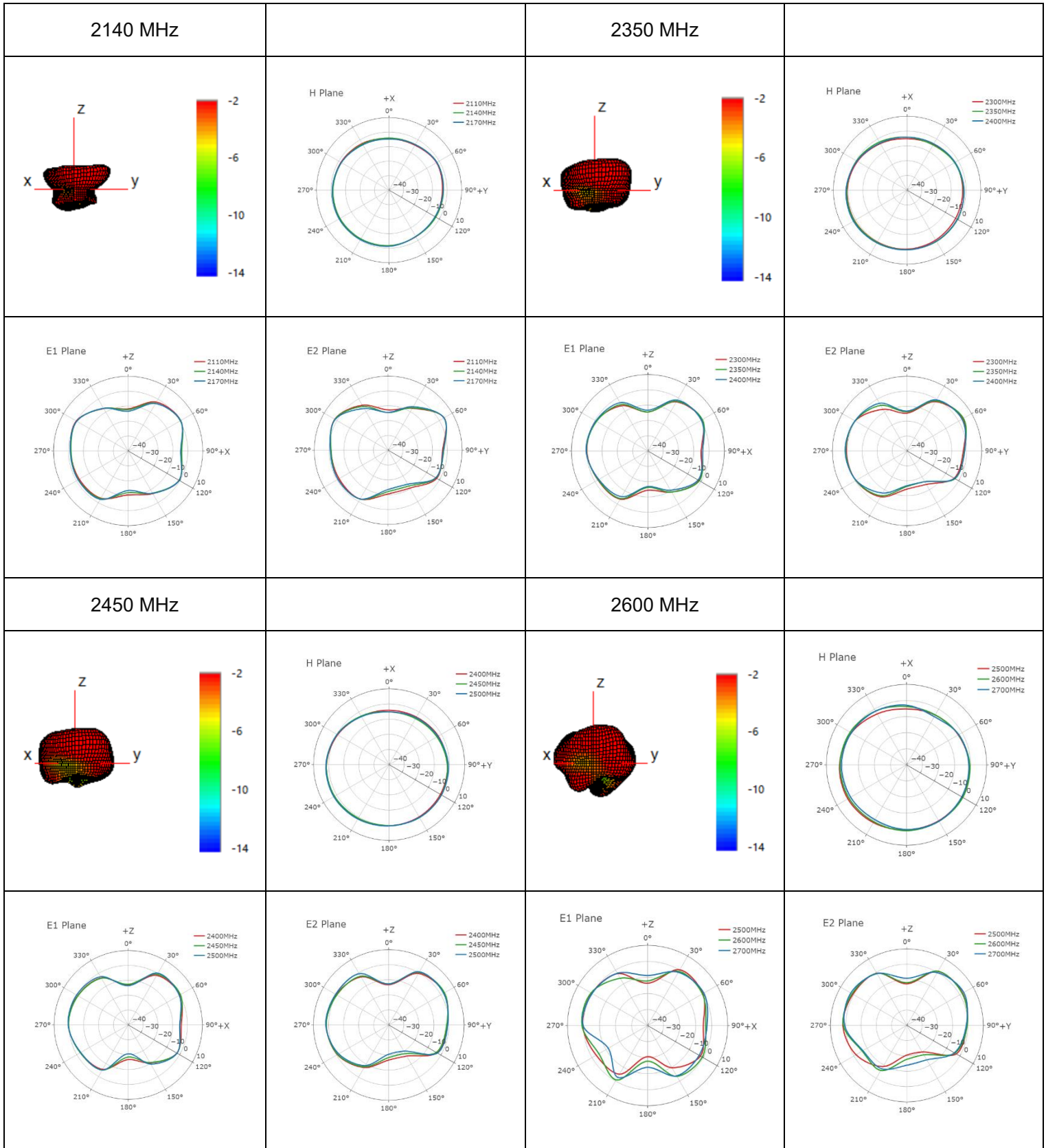


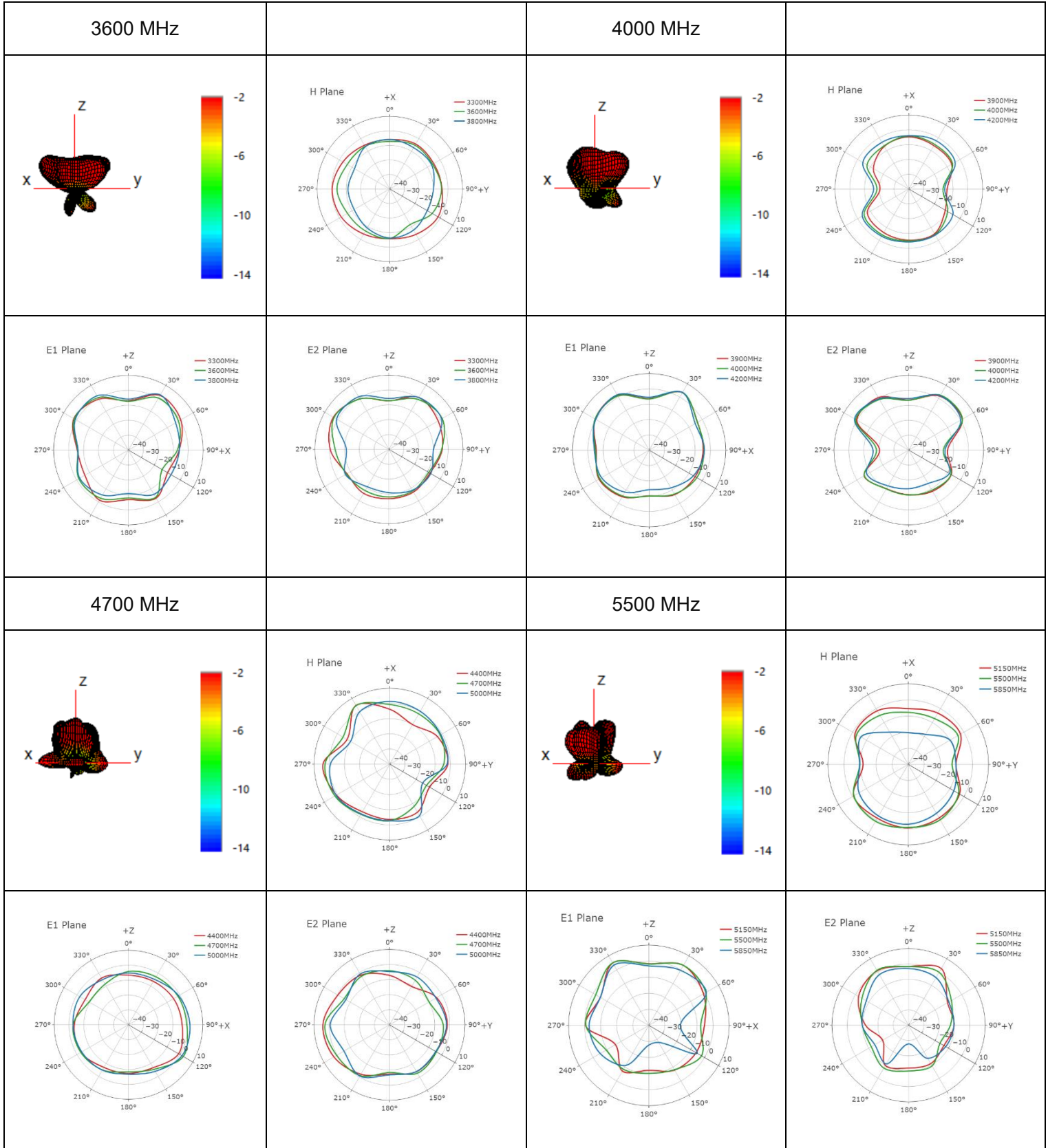
● 5G Bands



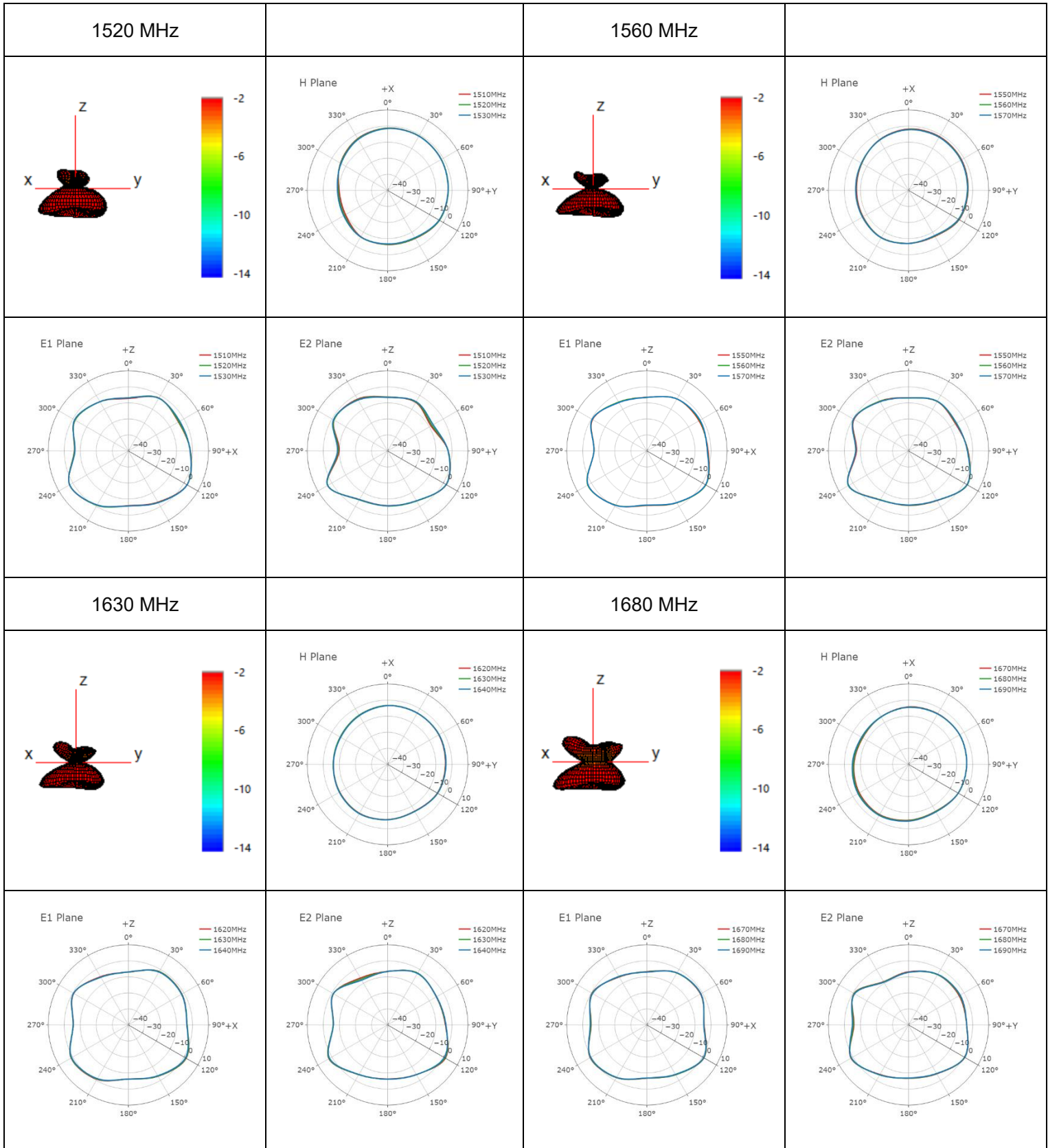


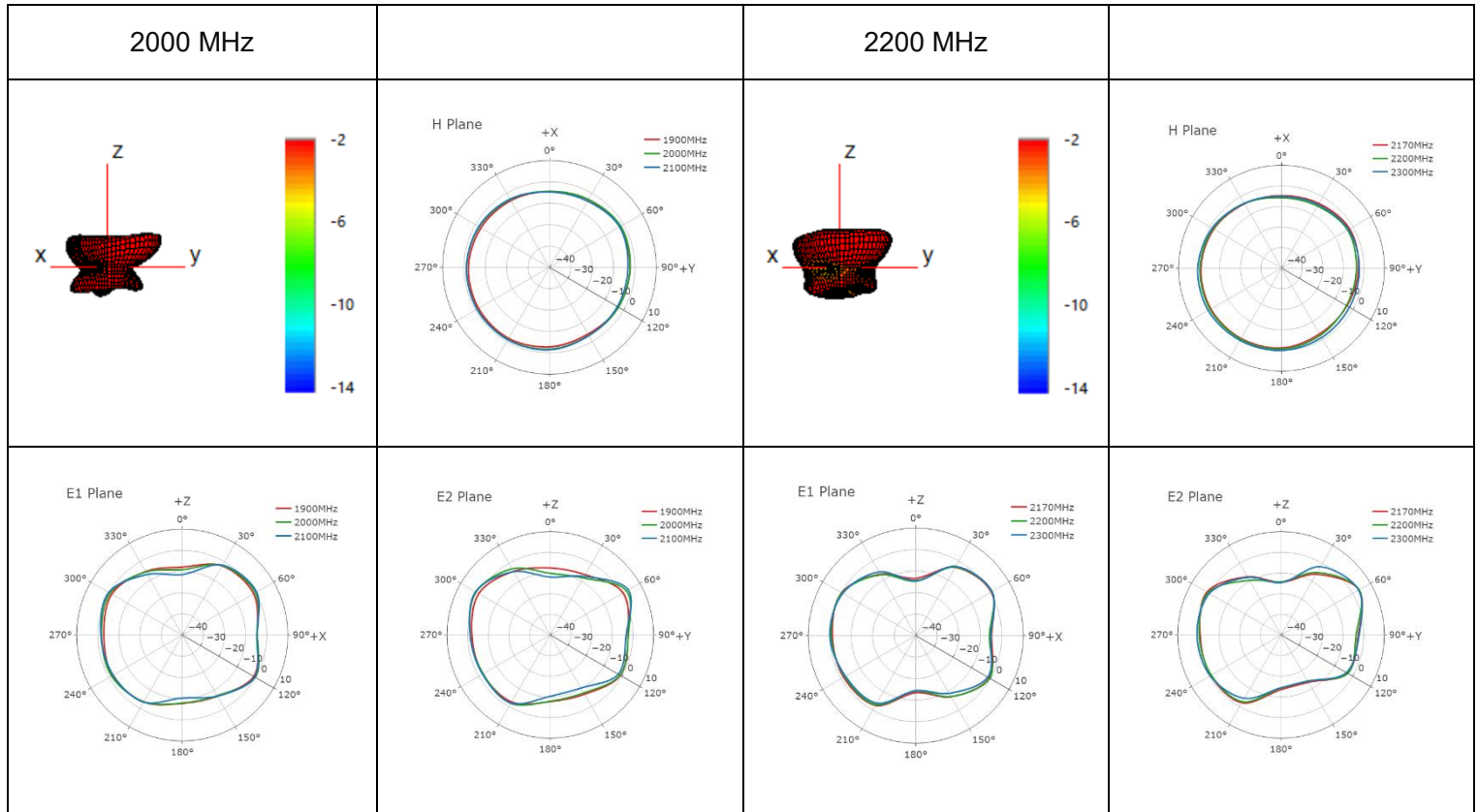









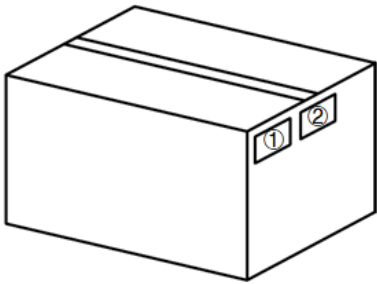
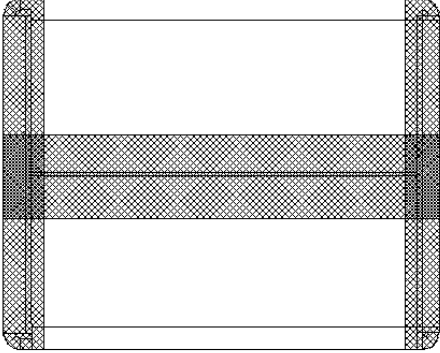
● NTN Bands





4 Packaging

Step	Packaging Picture/2D Picture	Description
1		<p>Put the product in a one-piece bag; Each one-piece bag contains 10 products.</p>
2		<p>10 pcs antenna products in a PE bag. (10 Antennas / PE Bag)</p> <p><u>PE Bag Size: L × W = 320 × 220 mm</u></p>
3		<p>Put bubble bags at the bottom of the carton. (10 PE Bags / Carton Box) (100 Antennas / Carton Box)</p> <p><u>Carton Size:</u> <u>L × W × H = 405 × 293 × 185 mm</u></p>

4	 A 3D perspective drawing of a rectangular cardboard box. On the front face, there are two small rectangular labels. The left label is marked with a circled '1' and the right label is marked with a circled '2'.	<p>Position for Attaching Labels</p> <ul style="list-style-type: none">① Carton Label② Quality Label
5	 A 3D perspective drawing of a rectangular carton with a mesh-like texture. It features a prominent H-shaped structure on its front face, consisting of two horizontal bars and two vertical bars, which likely serve as a sealing mechanism.	<p>Sealing Cartons H-shaped 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:

Quectel Wireless Solutions Co., Ltd.

No. 8 Waipojing Road, Sijing Town, Songjiang District, Shanghai 201601, China

Tel: +86 21 5108 6236

Email: info@quectel.com

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

<https://www.quectel.com/contact/>.

For technical support, or to report documentation errors, please visit:

<https://www.quectel.com/tech-support/>.

Or email us at: support@quectel.com.

Legal Notices

We provide this document to support your product design. You are required to design your products based on the specifications and parameters set forth herein. You agree that you are responsible for using independent analysis and evaluation in designing intended products, and we provide reference designs for illustrative purposes only. Before using any hardware, software or service guided by this document, please read this notice carefully. Even though we employ commercially reasonable efforts to provide the best possible experience, you hereby acknowledge and agree that this document and related services hereunder are provided to you on an “as available” basis. You acknowledge and agree that we may add to, amend, or restate this document at any time at our sole discretion without any prior notice to you, and such additions, amendments, or restatements shall be binding upon you.

Use and Disclosure Restrictions

License Agreements

The recipient of any hardware, software, materials, or documentation provided by us shall keep such content confidential, unless expressly authorized by us. The recipient shall not disclose, access, or use any part of the received content for any purpose other than the execution and implementation of the intended project.

Copyright

Our and third-party products hereunder may contain copyrighted materials, including but not limited to protected content, hardware, software, and documentation owned by us or applicable third parties. Unless prior written consent is obtained, you shall not access, use, or disclose any documents or information provided by us, nor shall you copy, reproduce, republish, display, translate, distribute, merge, modify, or create derivative works from any such copyrighted materials. We and the applicable third party retain exclusive rights to all copyrighted materials. No license to any patents, copyrights, trademarks, or service marks shall be granted or transferred. For the avoidance of doubt, no form of purchase shall be construed as granting any license beyond a normal, non-exclusive, royalty-free license to use the product. We reserve the right to pursue legal action against any violation of confidentiality obligations, unauthorized use, or any other unlawful or malicious use of the aforementioned documents and information.

Trademarks

Unless otherwise expressly provided, nothing in this document shall be construed as conferring any rights to use any trademark, trade name, name, abbreviation, or counterfeit thereof owned by us or any third party in advertising, publicity, or any other contexts.

Third-Party Rights

You understand that this document may refer to hardware, software, and/or documentation owned by one or more third parties (“third-party materials”). Use of such third-party materials is subject to all applicable restrictions and obligations set forth herein.

We make no warranty or representation, either express or implied, regarding the third-party materials, including but not limited to any implied or statutory, warranties of merchantability or fitness for a particular purpose, quiet enjoyment, system integration, information accuracy, and non-infringement of any third-party intellectual property rights with regard to the licensed technology or use thereof. Nothing herein constitutes a representation or warranty by us to either develop, enhance, modify, distribute, market, sell, offer for sale, or otherwise maintain production of any our products or any other hardware, software, device, tool, information, or product. We moreover disclaim any and all warranties arising from the course of dealing, course of performance, or usage of trade.

Privacy Policy

To enable product functionality, certain device data may be uploaded to our or third-party servers, including those operated by carriers, chipset suppliers, or servers designated by you. We strictly comply with applicable laws and regulations and will retain, use, disclose, or otherwise process relevant data solely for the purpose of enabling product functionality, or as permitted by applicable laws. Before interacting with any third party regarding data exchange, please be informed of and understand their privacy and data security policies.

Disclaimer

- a) We shall not be liable for any damages resulting from failure to comply with applicable operational or design specifications.
- b) We shall bear no liability for any inaccuracies or omissions in this document, nor for any damages arising from the use of the information contained herein.
- c) While we make every effort to ensure the integrity, accuracy, and timeliness of the features and functions under development, errors or omissions may nevertheless occur. Unless otherwise provided in a valid written agreement, we make no warranties of any kind, express, implied, or statutory, and disclaim all liability for any loss or damage arising from the use of any features or functions under development, to the maximum extent permitted by law, regardless of whether such loss or damage is foreseeable.
- d) We assume no legal responsibility for the accessibility, safety, accuracy, availability, legality, or completeness of any information, content, advertising, commercial offers, products, services, or materials on third-party websites or third-party resources.

Copyright © Quectel Wireless Solutions Co., Ltd. 2026. All rights reserved.

Revision History

Version	Date	Author	Note
-	2023-05-25	Ezail Tan/ Hart Hu/ David Liu/ Bunny Zhang	Creation of the document
1.0	2023-05-25	Ezail Tan/ Hart Hu/ David Liu/ Bunny Zhang	First official release
1.1	2023-07-14	Aria Chu	Updated Chapter 1.2.
1.2	2023-09-01	Hart hu	Updated the drawing (Chapter 2).
2.0	2023-11-07	Hart Hu/ Black Li	<ol style="list-style-type: none"> Updated efficiency data (Front page) Added antenna installation instructions (Chapter 2). Added EVB status test data (Chapter 3).
2.1	2024-09-23	Mayes Li/ Rainey Liao	Added max peak gain data (Chapter 1 and 3).
2.2	2024-11-05	Shea Li/ Aria Chu	<ol style="list-style-type: none"> Updated the overview. Added housing flame rating and housing UV resistant (Chapter 1.2). Updated Chapter 2.
3.0	2026-01-05	Mayes Li/ Jason Long/ Rainey Liao	Numerous changes were made to this document. It should be read in its entirety.

QUECTEL

www.quectel.com