TAOGLAS



Datasheet

2.4GHz 2dBi Terminal Mount Dipole Antenna

Part No: GW.15.2113

Description:

2dBi 2.4GHz Dipole Antenna, Hinged SMA(M)

Features:

SMA Male Straight Connector

Peak Gain 2dBi

High Efficiency up to 85%

Works well with or without ground plane

Hinged Design for Straight or 90° Degree Mounting

Robust TPU Housing

Dimensions: 108.5 x 10mm

RoHS & REACH Compliant

1.	Introduction	3
2.	Specifications	4
3.	Antenna Characteristics	5
4.	Radiation Patterns	9
5.	Ground Plane Effect	11
6.	Radiation Patterns 2.4GHz to 2.5GHz	23
7.	3D Radiation Patterns	41
8.	Mechanical Drawing	47
9.	Packaging	48
	Changelog	49

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1. Introduction



The GW.15 2.4GHz dipole SMA terminal mount antenna is ideal for 2.4GHz wireless applications such as Bluetooth® and Wireless LAN. At only 108mm in length, an omni-directional 2dBi gain across all bands ensures constant reception and transmission. The antenna structure is designed for robust handling and the housing is made with robust TPU giving superior environmental reliability and a quality finish. The antenna can be rotated 90 degrees on the base hinge for ease of placement.

Many module manufacturers specify peak gain requirements for any antennas that is to be connected to that module. Upon testing of any of our antennas with your device and a selection of appropriate layout, integration technique, or cable, Taoglas can make sure any of our antennas peak gain will be below the peak gain requirements. Taoglas can then issue a specification and/or report for these selected Wi-Fi® antennas in your device that will clearly show it complying with the peak gain requirements, so you can be assured you are meeting regulatory requirements for that module. It is better not to select an embedded antenna with very low free-space peak gain (<2dBi) directly, as this antenna would have worse performance in your device, and lead to compromised performance compared to using a Taoglas antenna. For more information, contact your regional sales office.

The connector can be customized subject to MOQ, please contact your regional Taoglas customer support team for further information.

2. Specifications

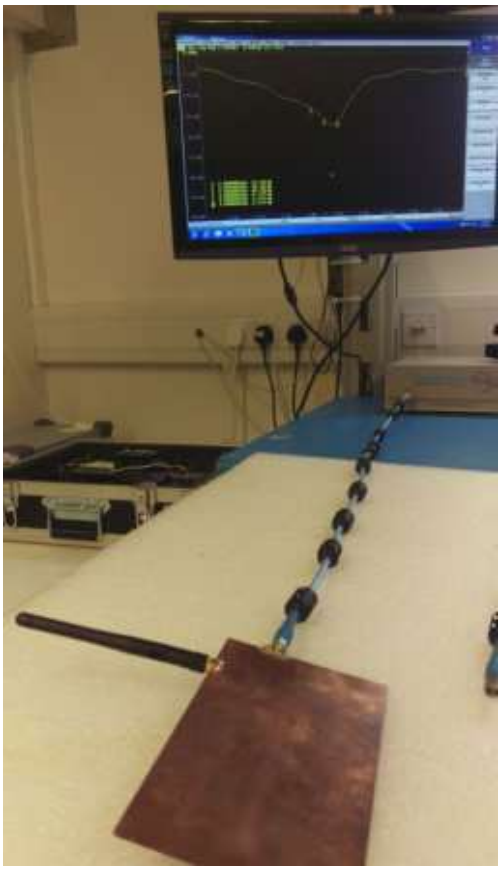
ELECTRICAL	
Frequency	2.4~2.5 GHz
Peak Gain*	2 dBi
VSWR	≤ 1.8
Return Loss**	≥12dB
Polarization	Vertical
Impedance	50 Ω
Radiation Pattern	Omni-directional
Power Handling	10W
MECHANICAL	
Antenna Length	108.5 mm (Straight) / 87.5mm (Hinged)
Antenna Weight	9g
Antenna Cover	TPU Black
Connector	SMA (M)
Antenna Base	Nylon
ENVIRONMENTAL	
Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +90°C

*Tested on a 500mm x 500mm Ground Plane

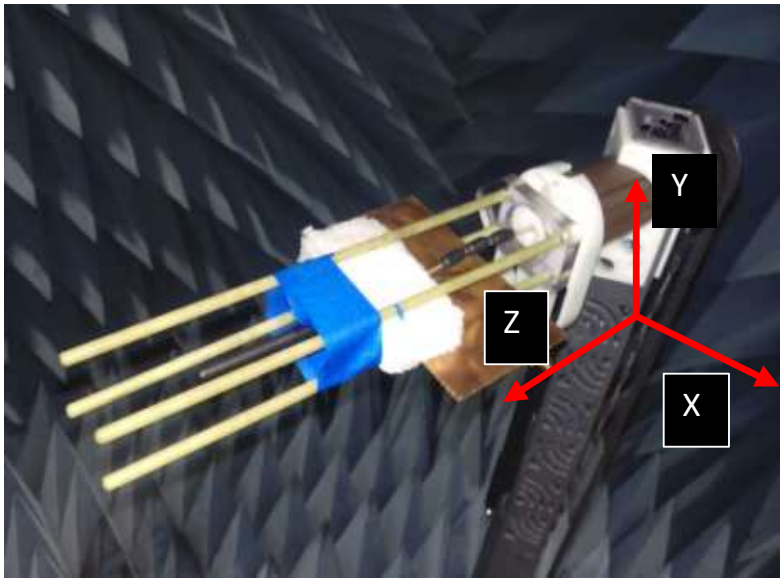
**Tested on a 150mm x 90mm Ground Plane

3. Antenna Charateristics

3.1 Test Setup

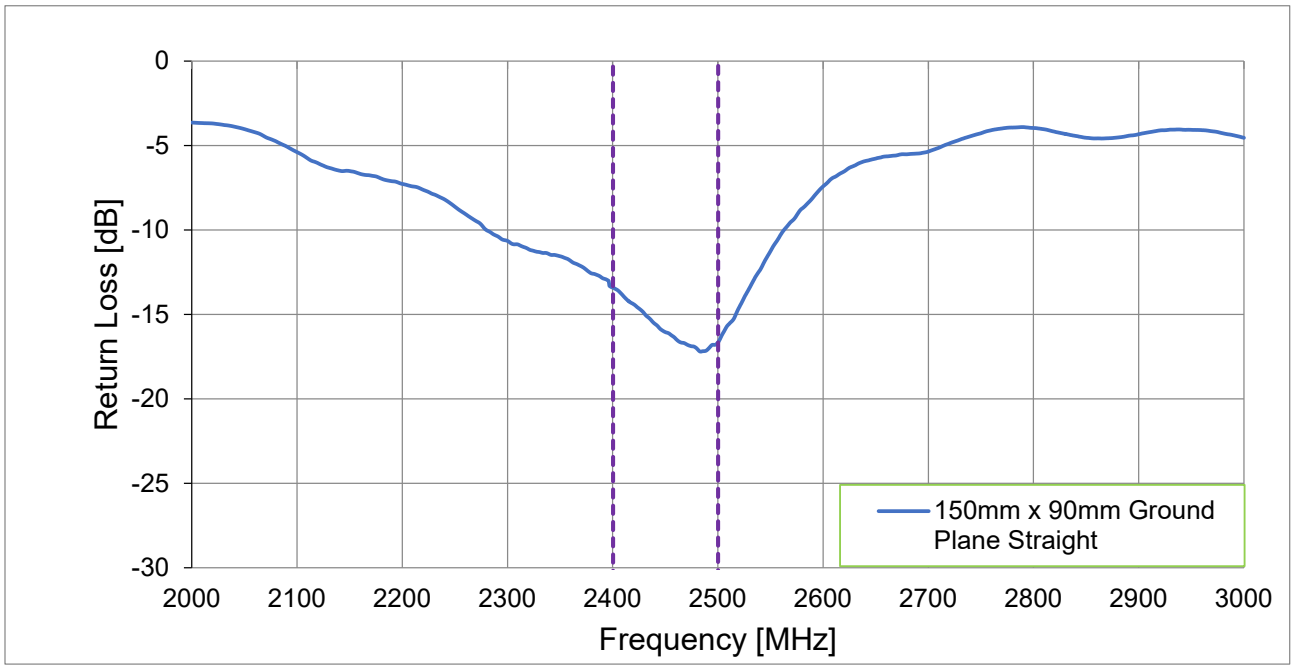


Return Loss Measurement

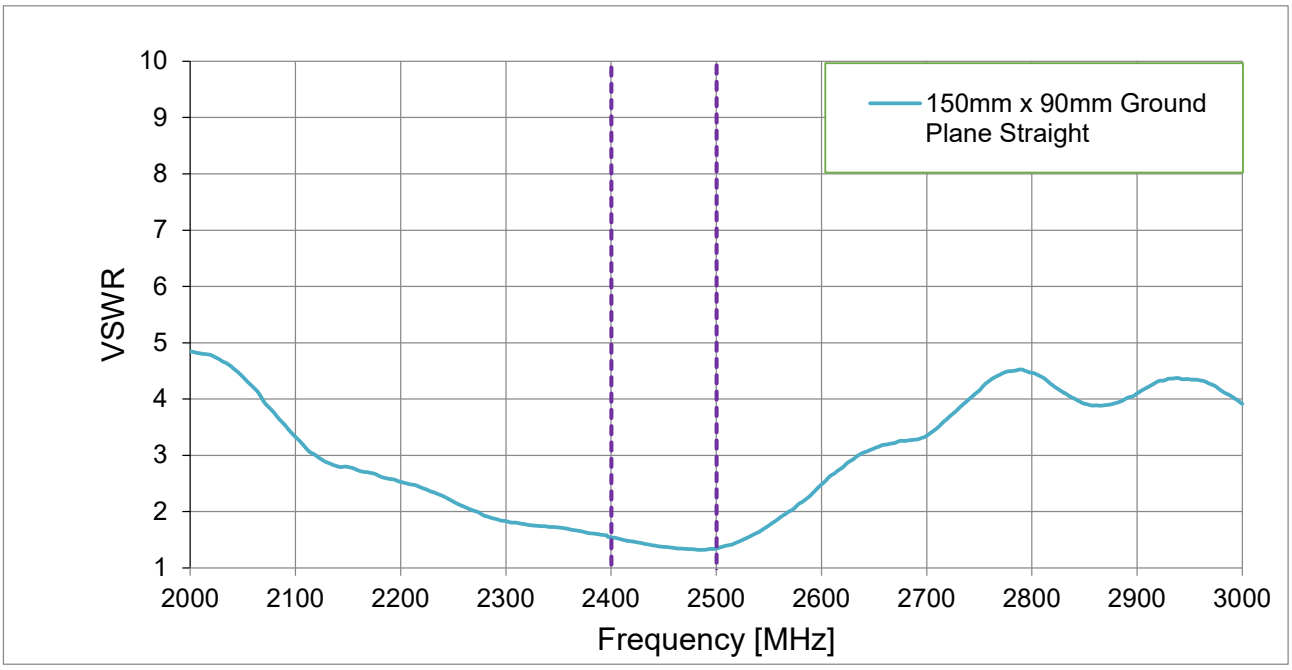


Chamber Setup

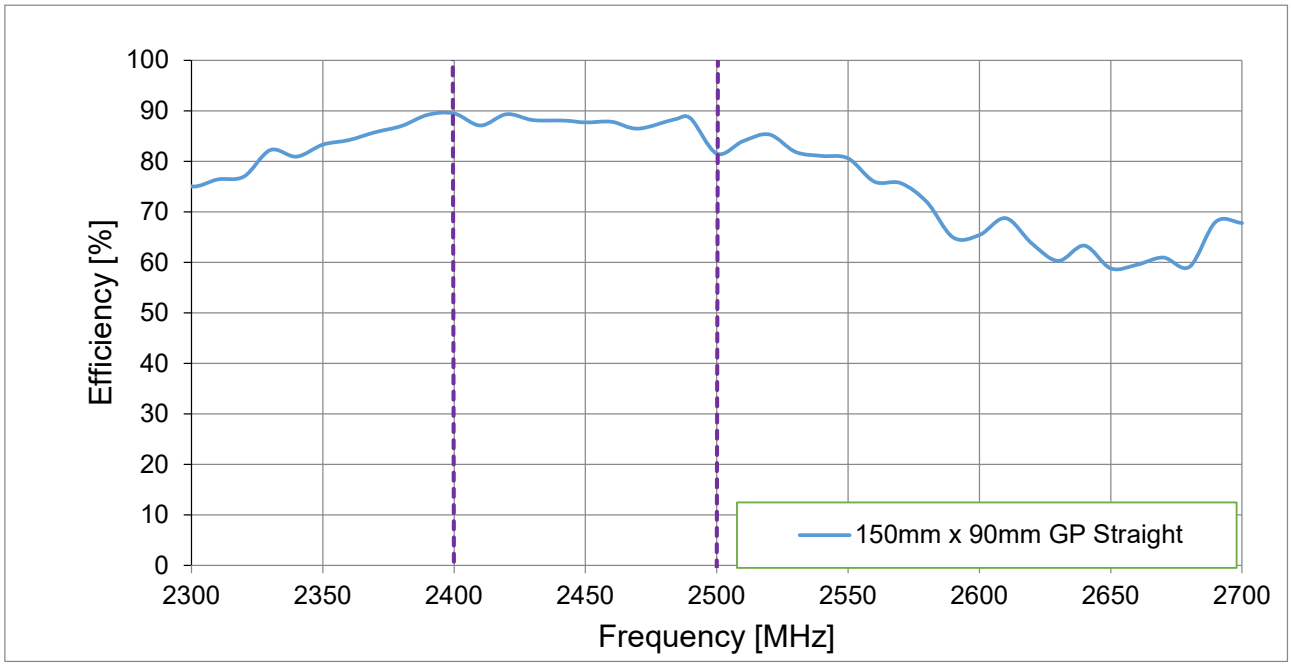
3.2 Return Loss



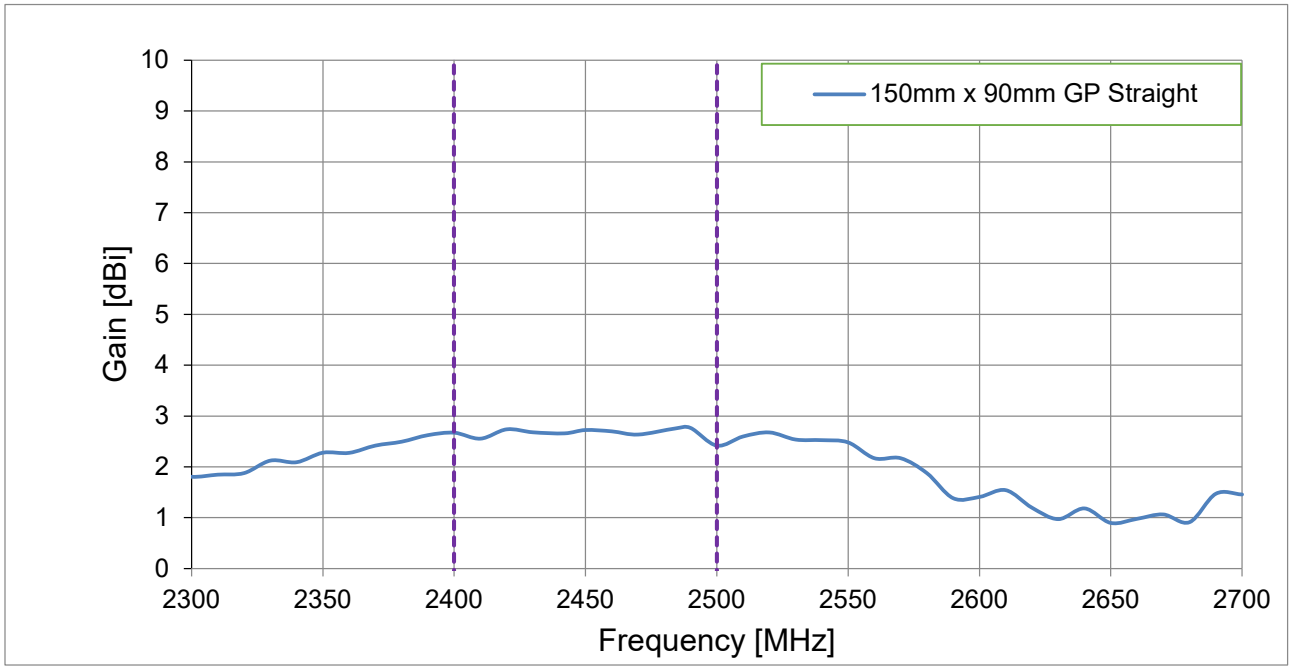
3.3 VSWR



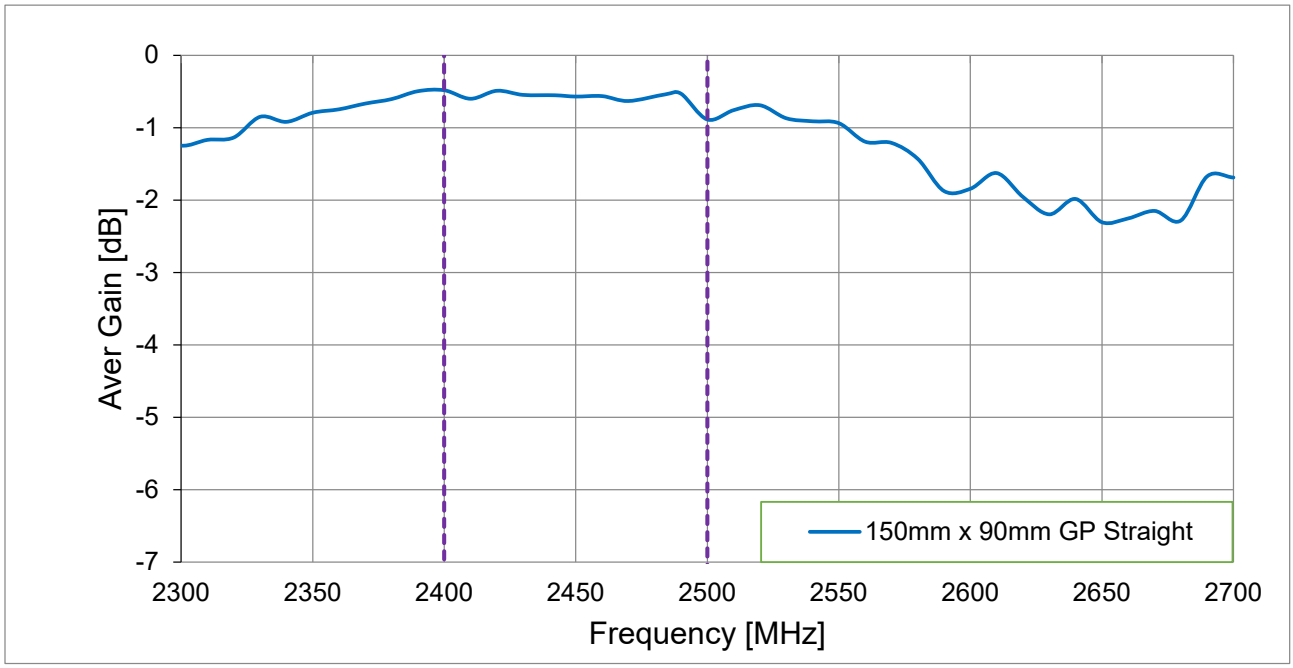
3.4 Efficiency



3.5 Peak Gain

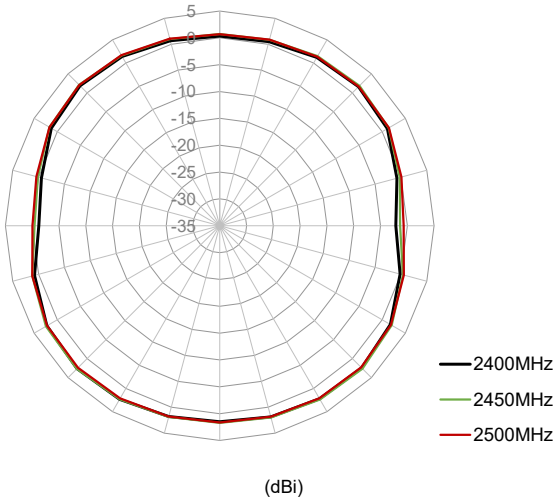


3.6 Average Gain

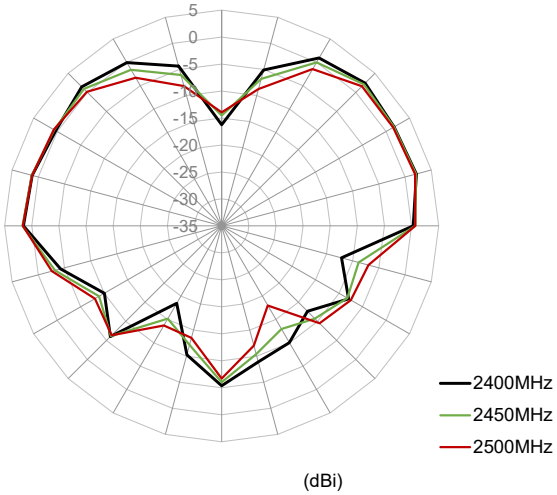


4. Radiation Patterns

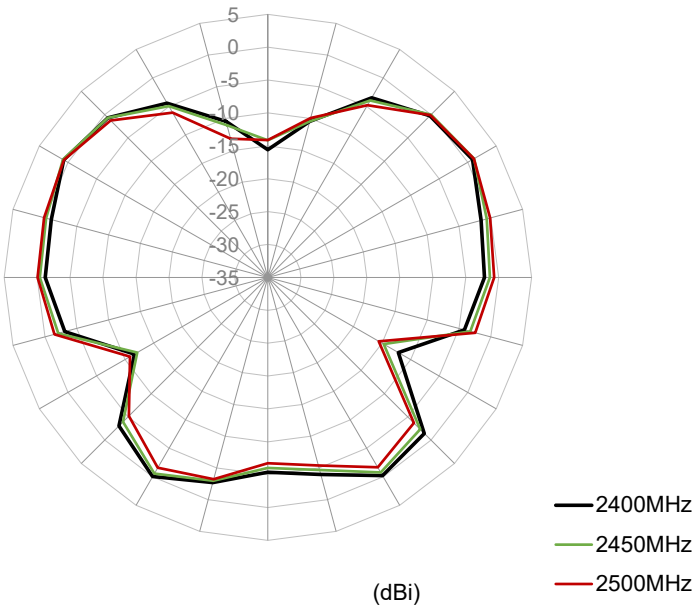
4.1 Straight Position XY Plane



4.2 Straight Position ZX Plane



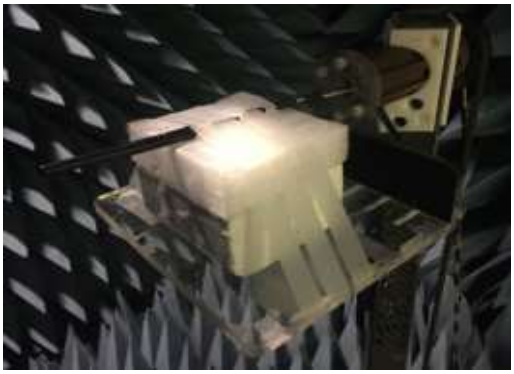
4.3 Straight Position YZ Plane



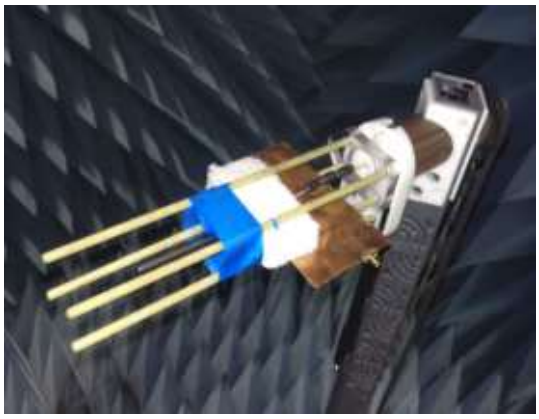
5. Ground Plane Effect

Six ground setups are used to see the effect of positioning the GW.15 close to a ground plane.

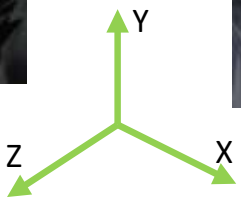
1. Extra Small Ground (30mm x 30mm) – common size of Bluetooth devices
2. Small Ground (15 x 9cm) – common size of IoT devices. GW.15 is mounted at the longer edge for testing.
3. Ground Edge (30cm x 30cm) – simulate the effect of mounting antenna on a gateway/router.
4. Ground Centre (30cm x 30cm) – simulate the effect of mounting antenna in the centre of a big ground plane.
5. Large Ground Edge (50cm x 50cm) - simulate the effect of mounting antenna on a large gateway/router.
6. Large Ground Center (50cm x 50cm) - simulate the effect of mounting antenna in the centre of a large ground plane e.g. vehicle body.



Free Space

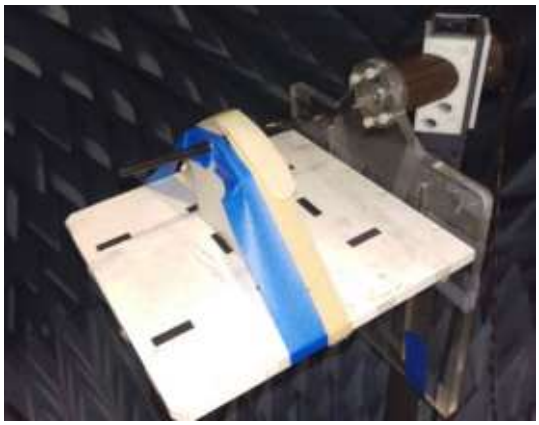


15cm x 9cm Ground Plane Edge

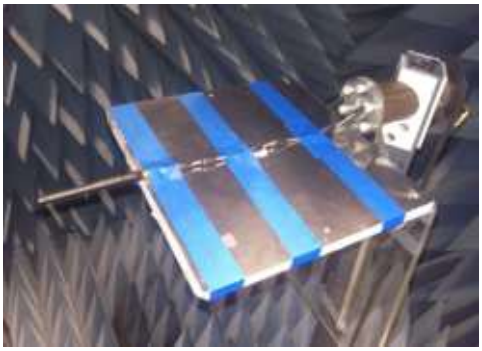




30mm x 30mm Ground Plane Edge



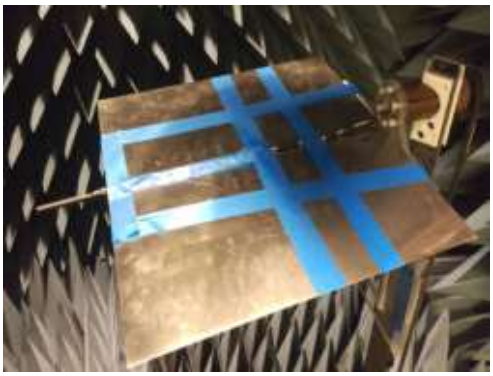
30mm x 30mm Ground Plane Center



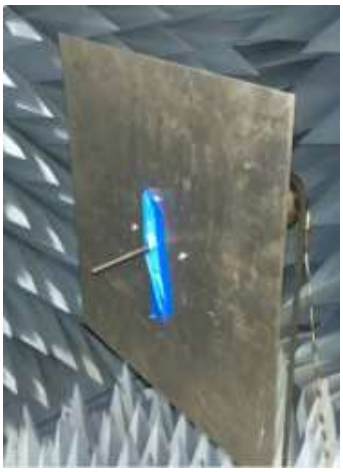
30cm x 30cm Ground Plane Edge



30cm x 30cm Ground Plane Center

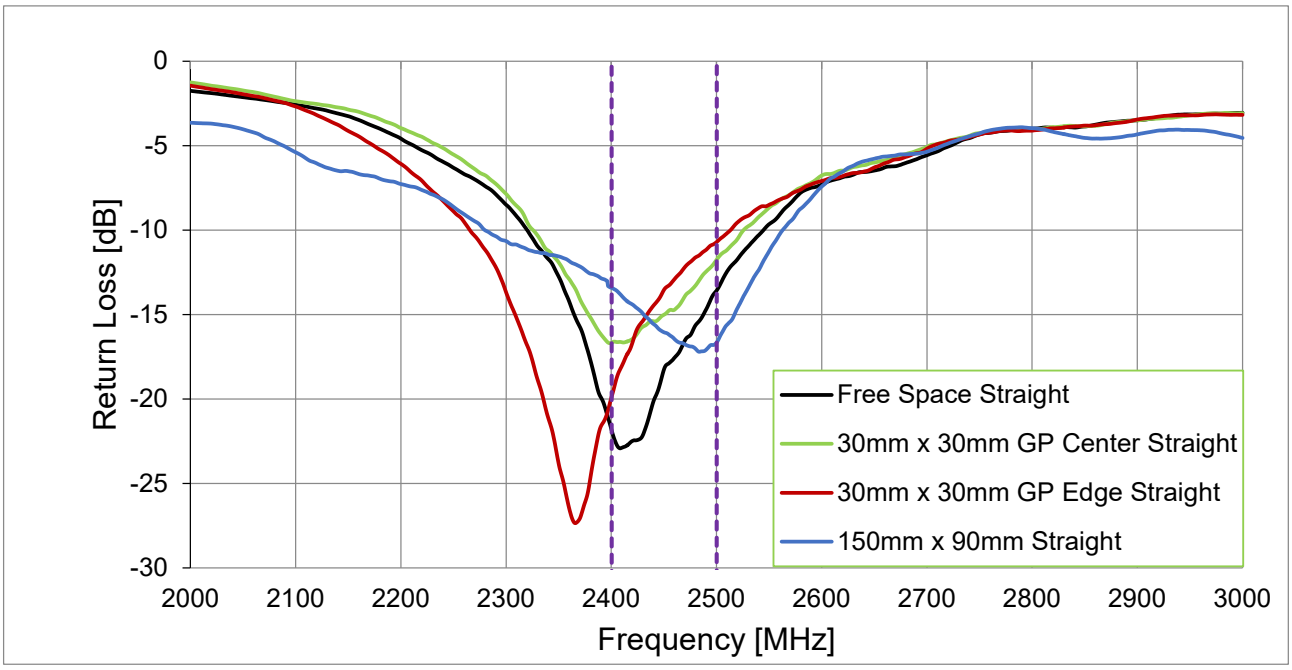


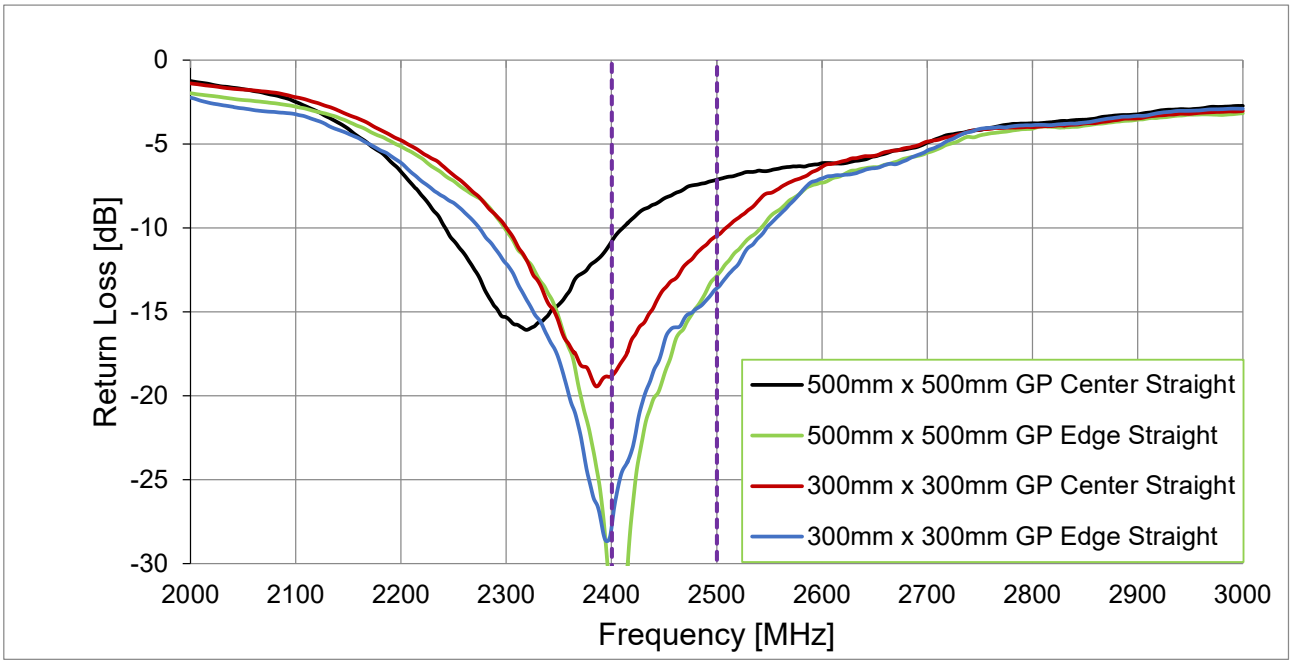
50cm x 50cm Ground Plane Edge



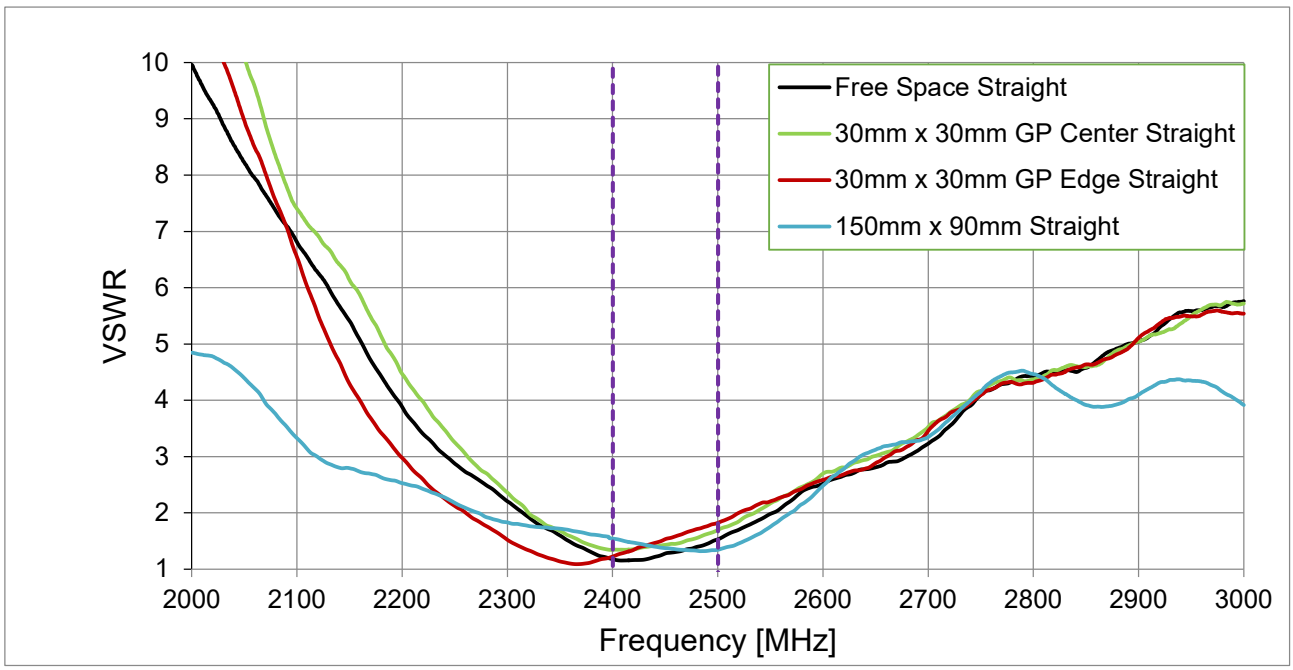
50cm x 50cm Ground Plane Center

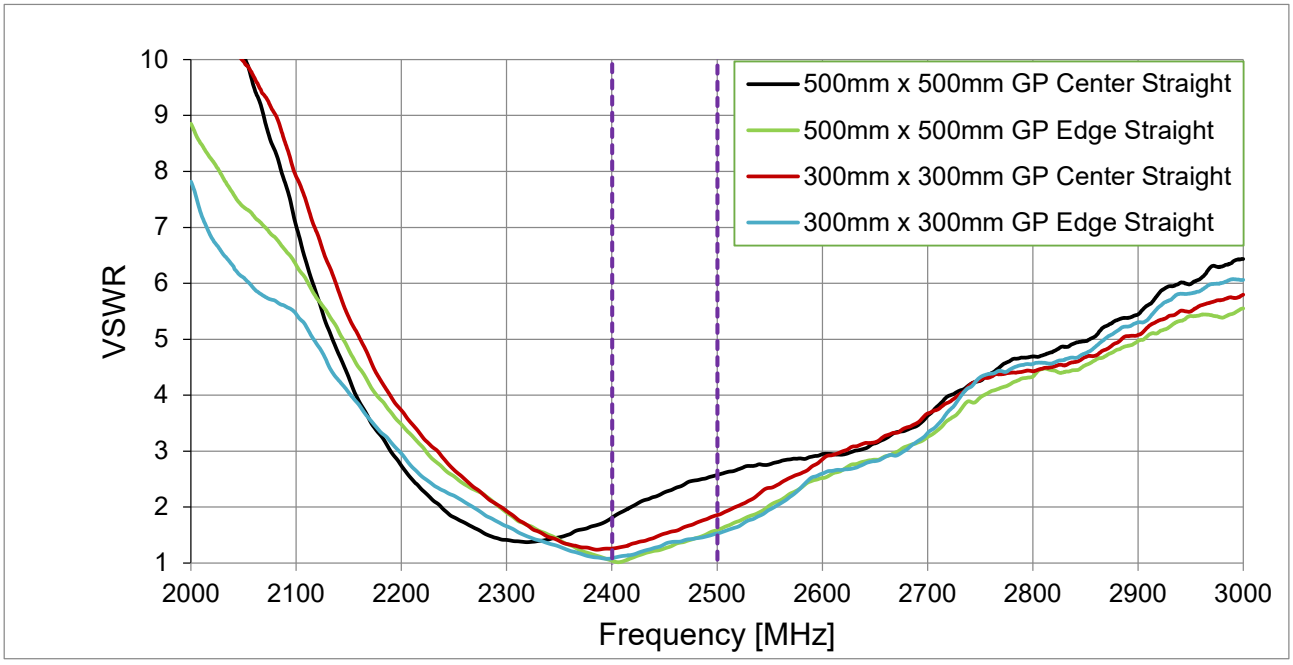
5.1 Return Loss (Straight Antenna)



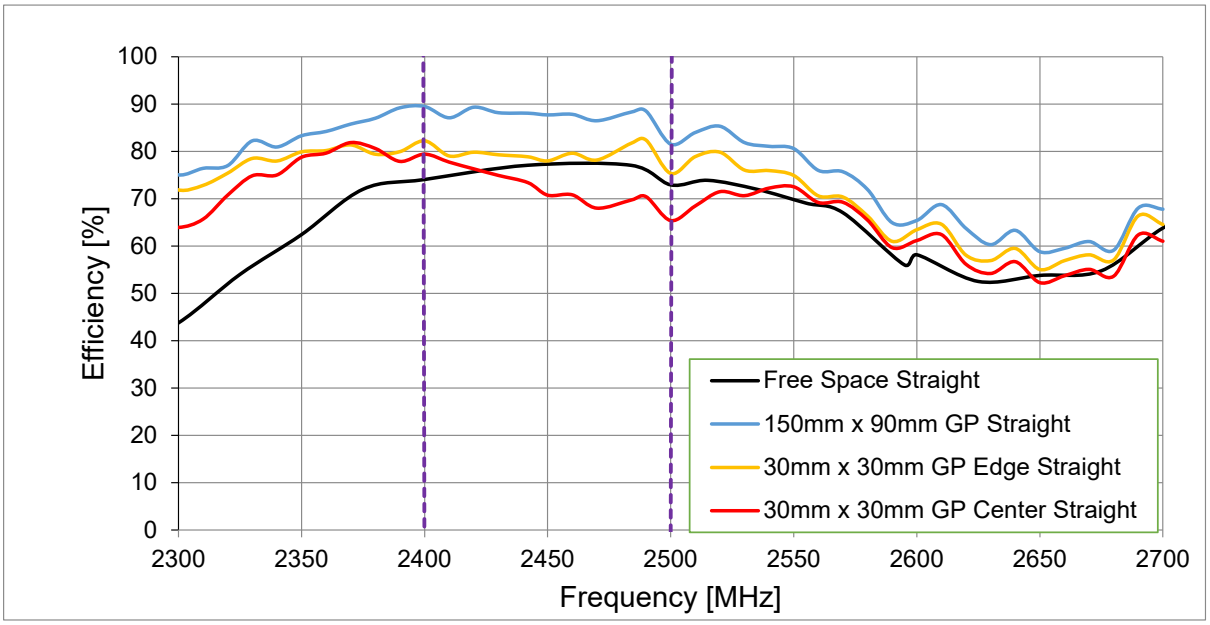


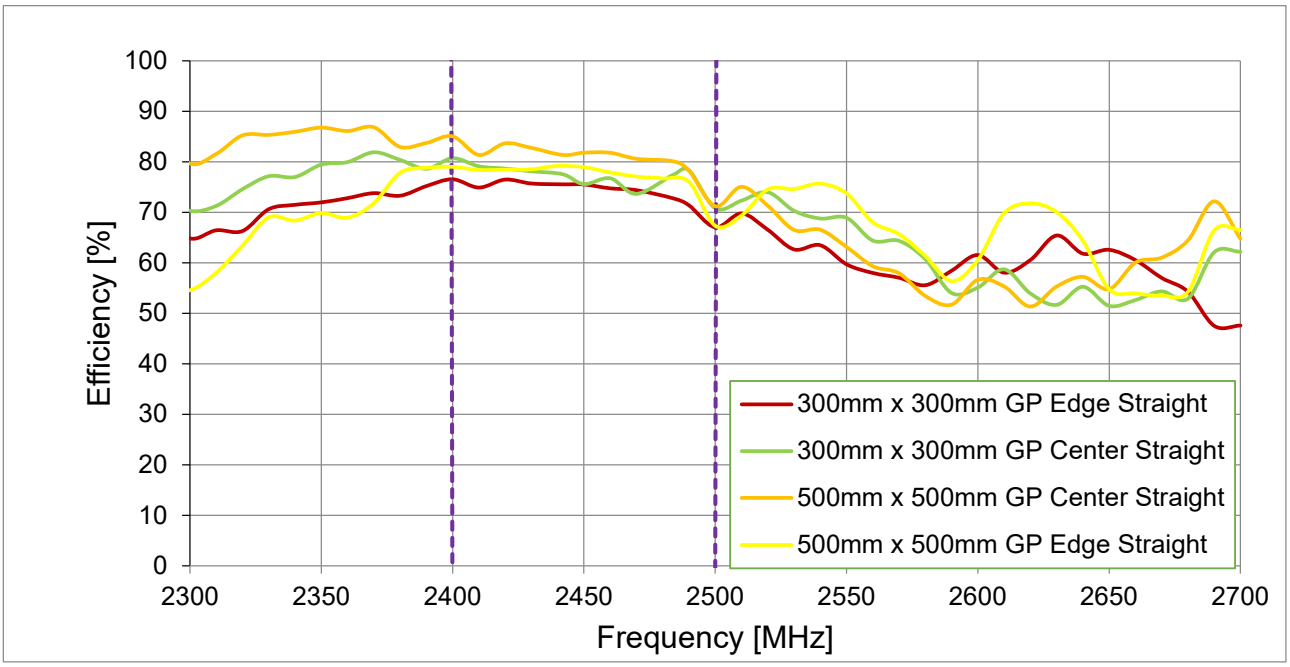
5.2 VSWR (Straight Antenna)



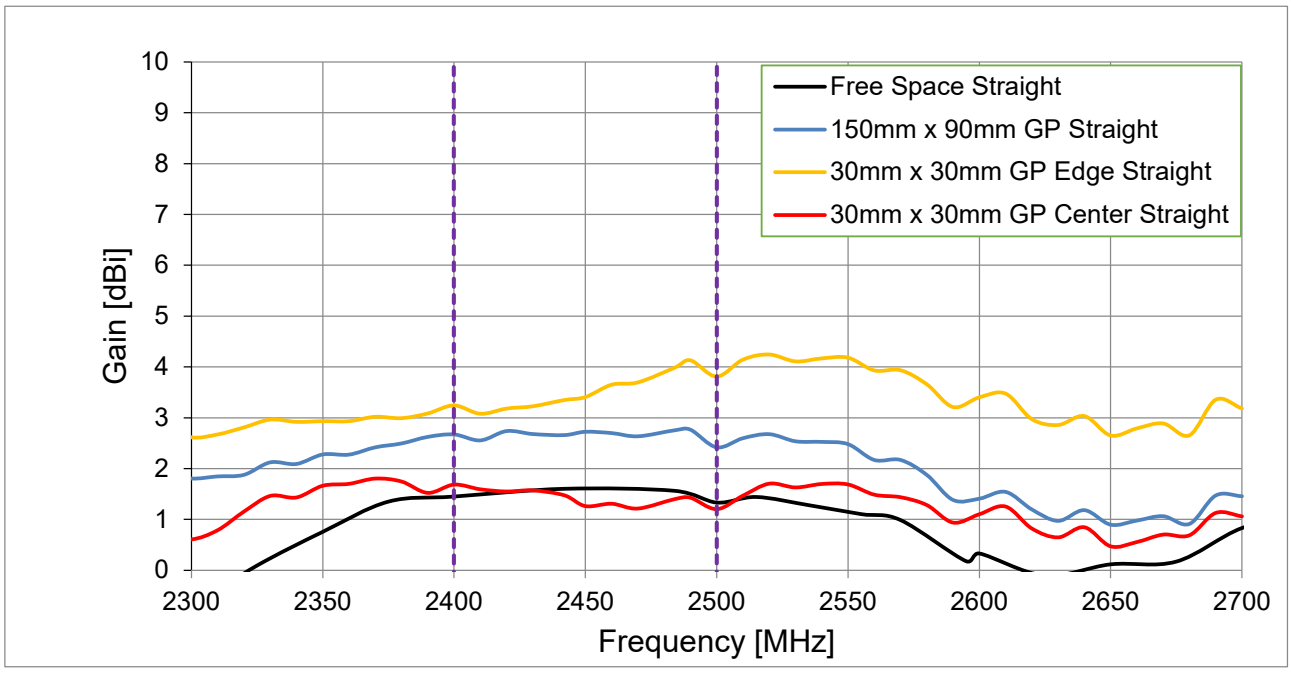


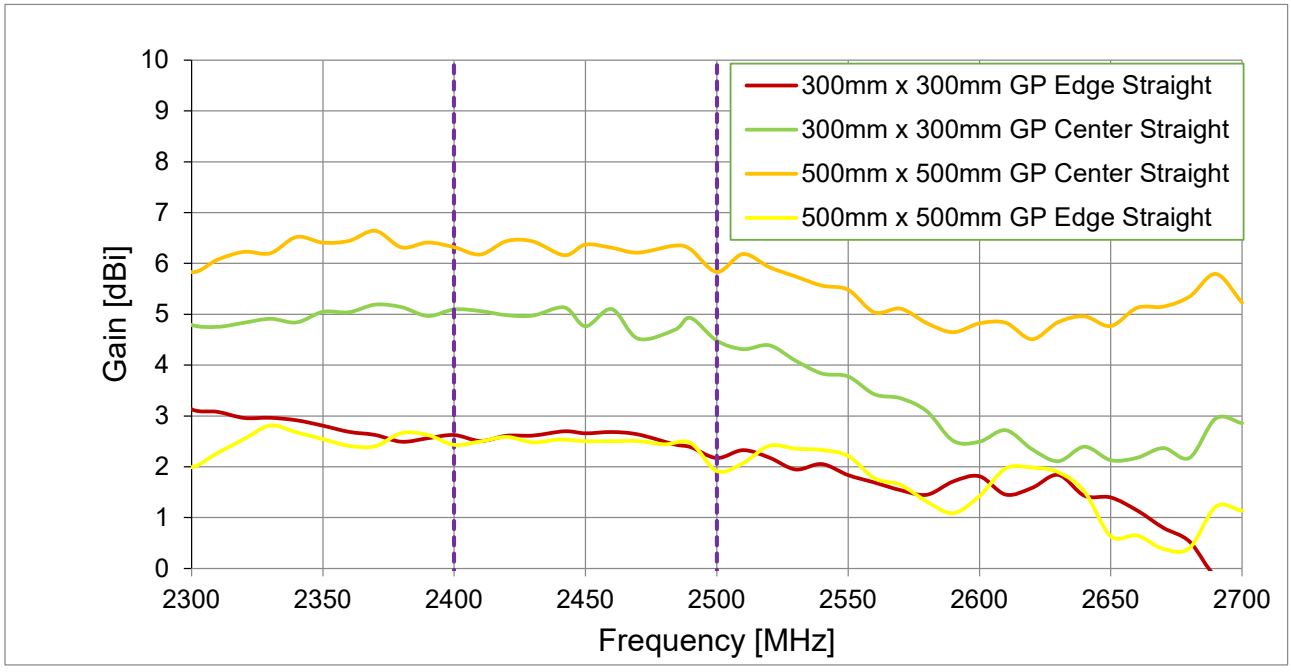
5.3 Efficiency (Straight Antenna)



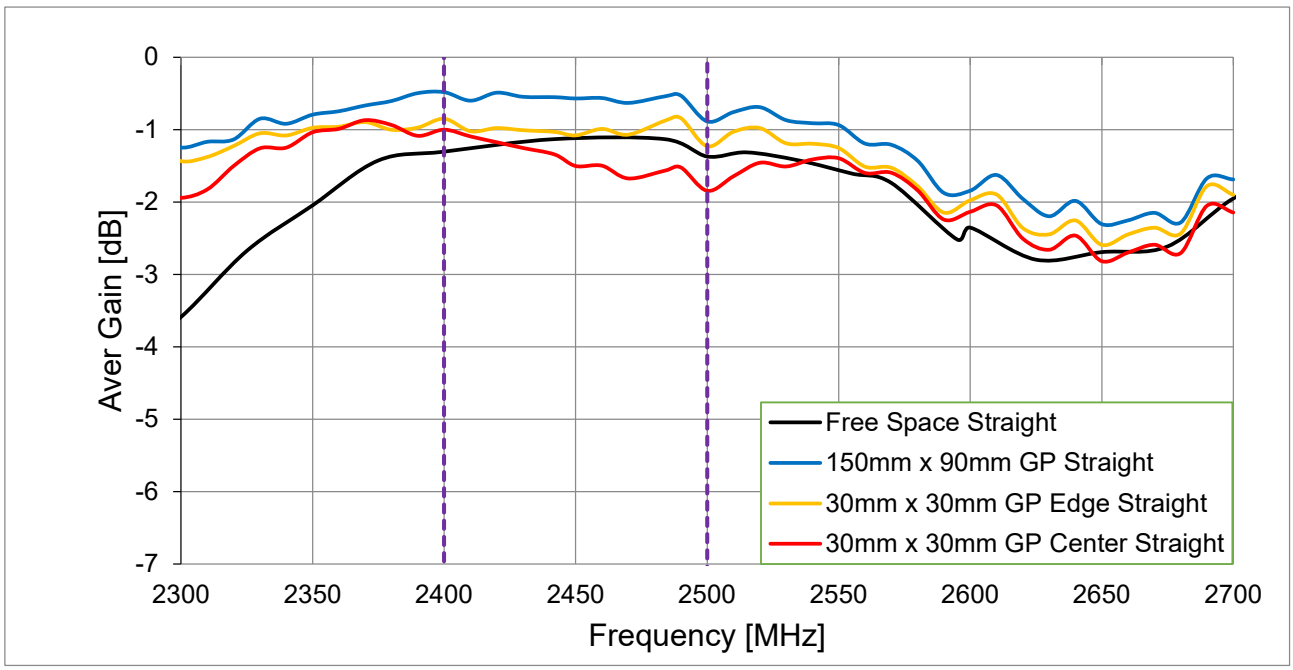


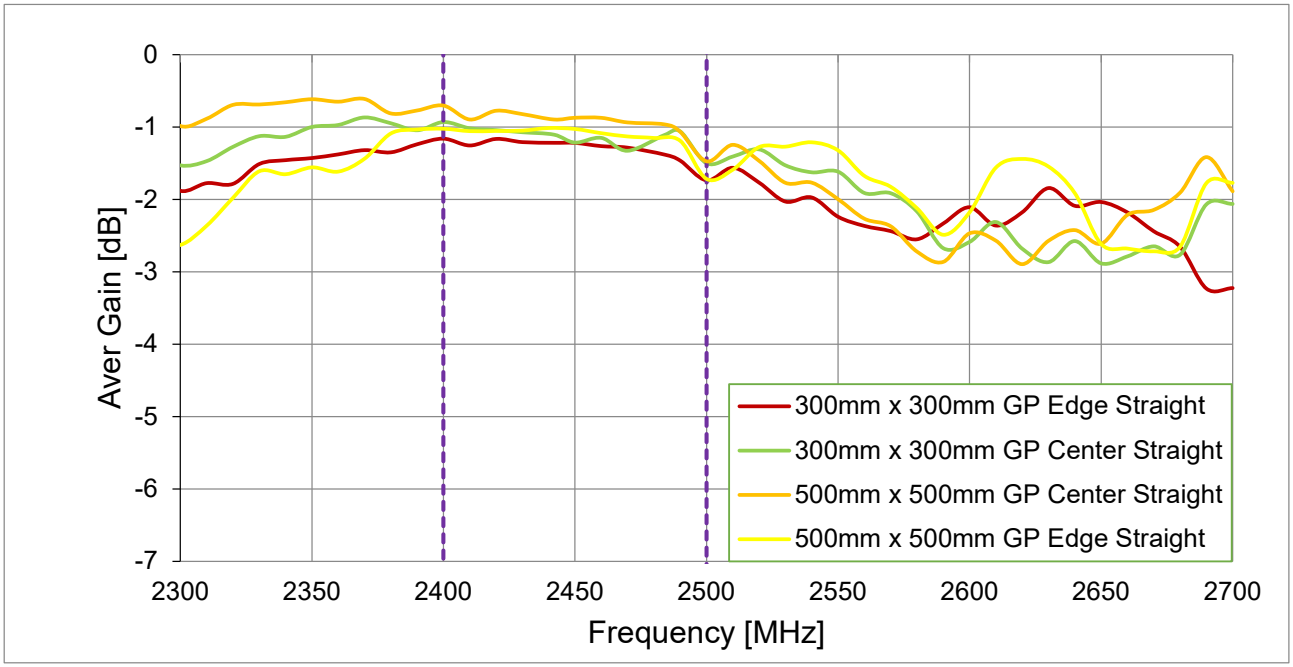
5.4 Peak Gain (Straight Antenna)



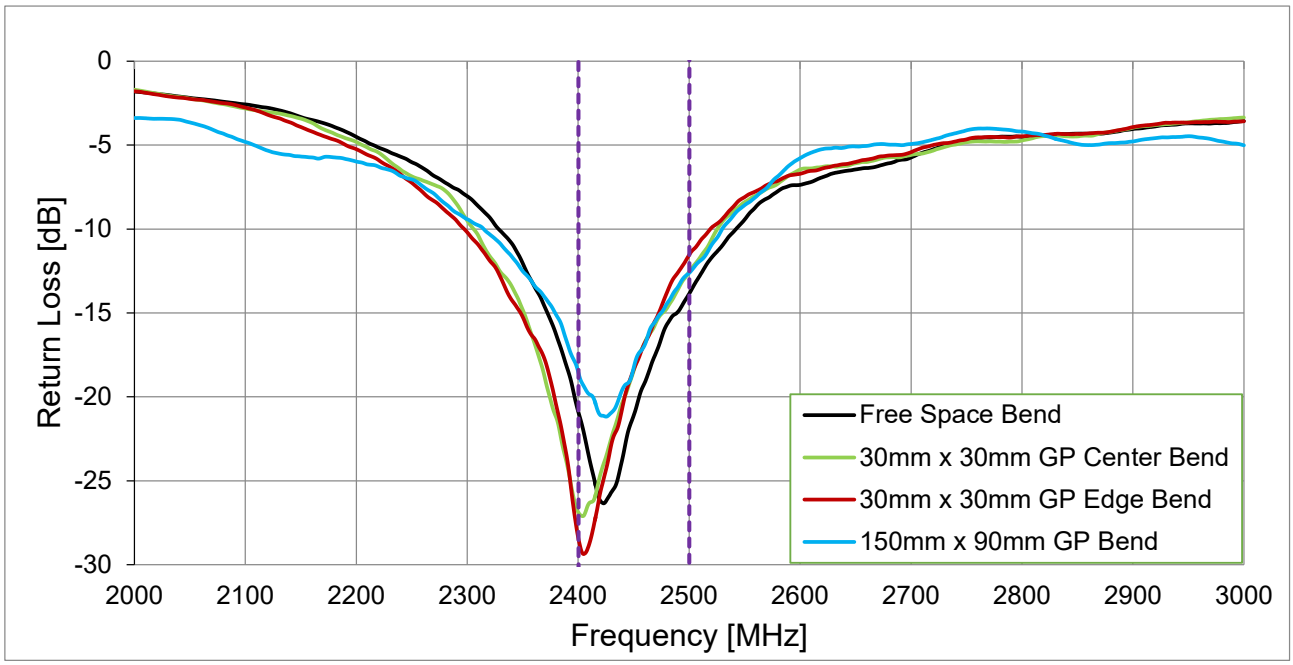


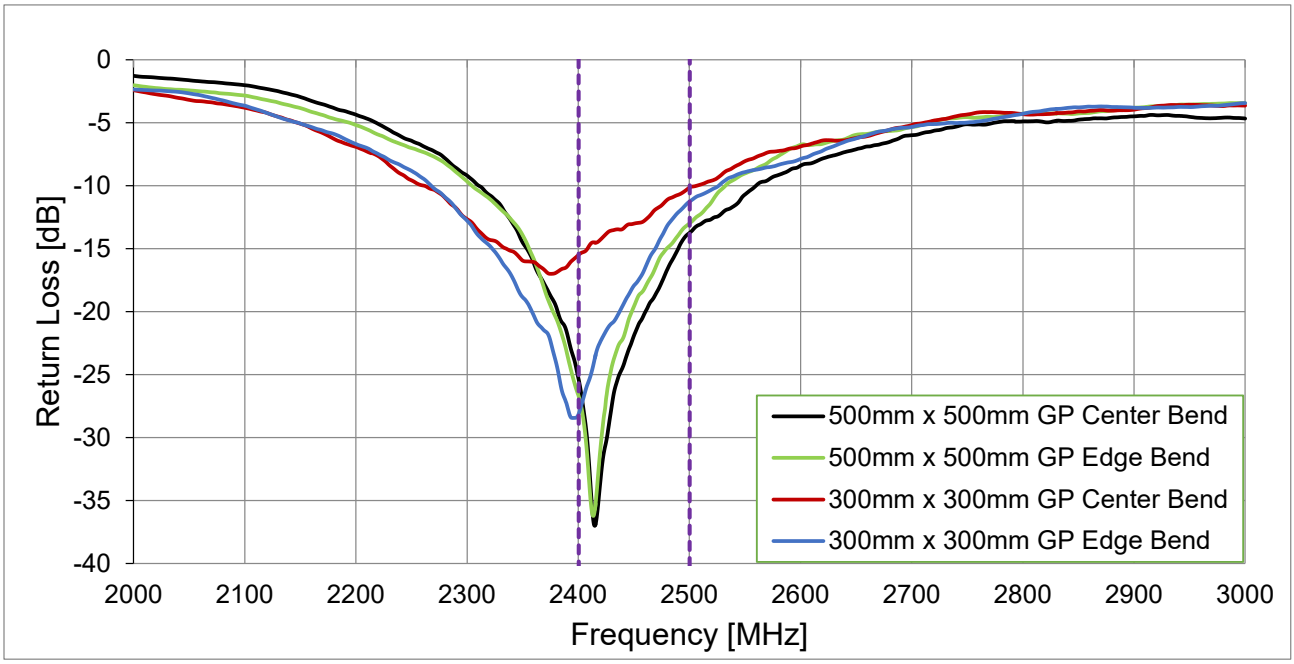
5.5 Average Gain (Straight Antenna)



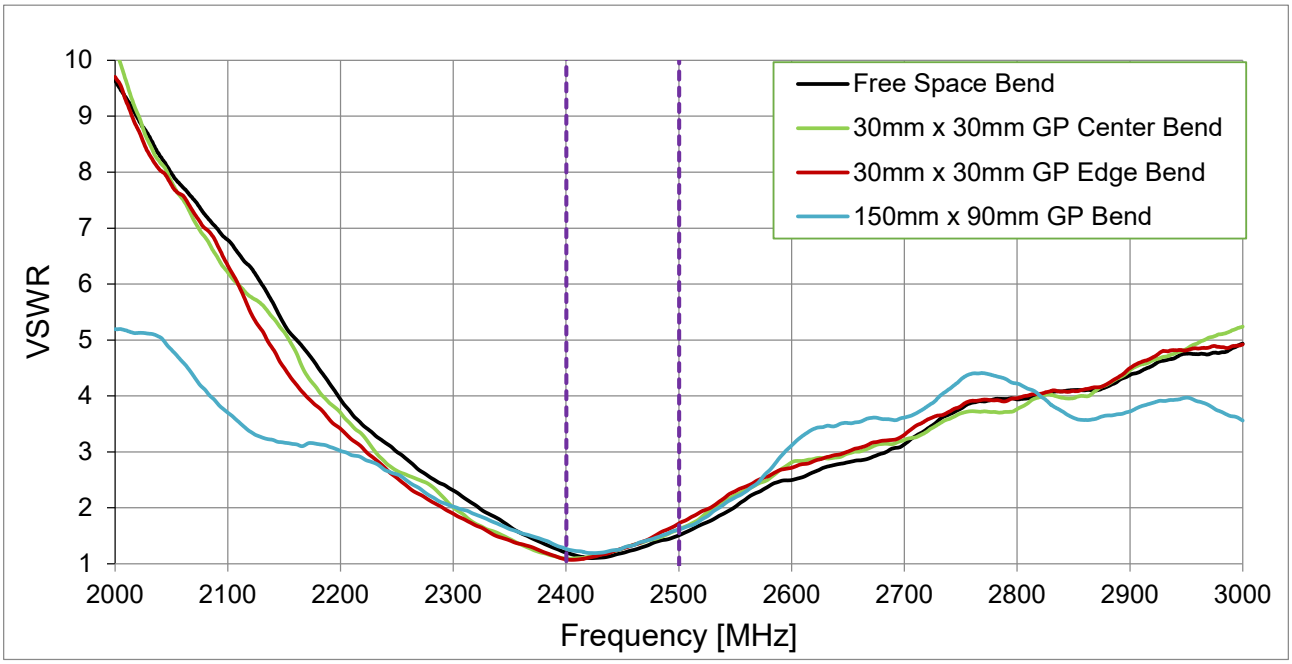


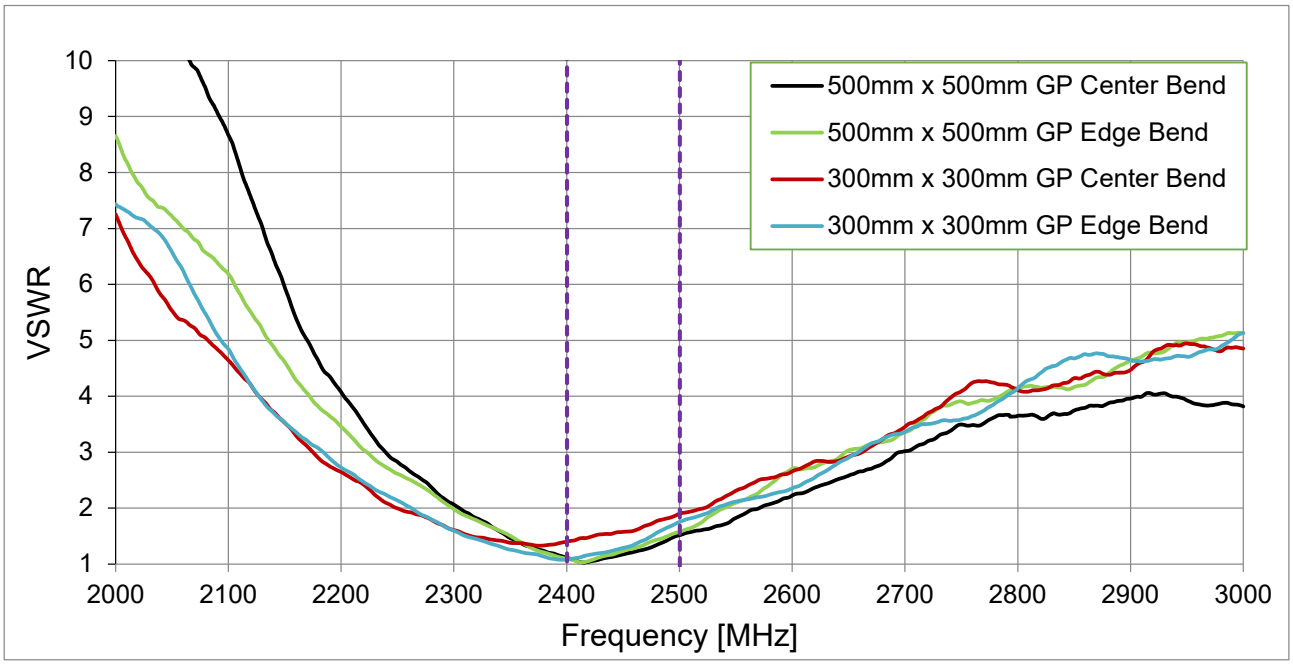
5.6 Return Loss (90° Bend)



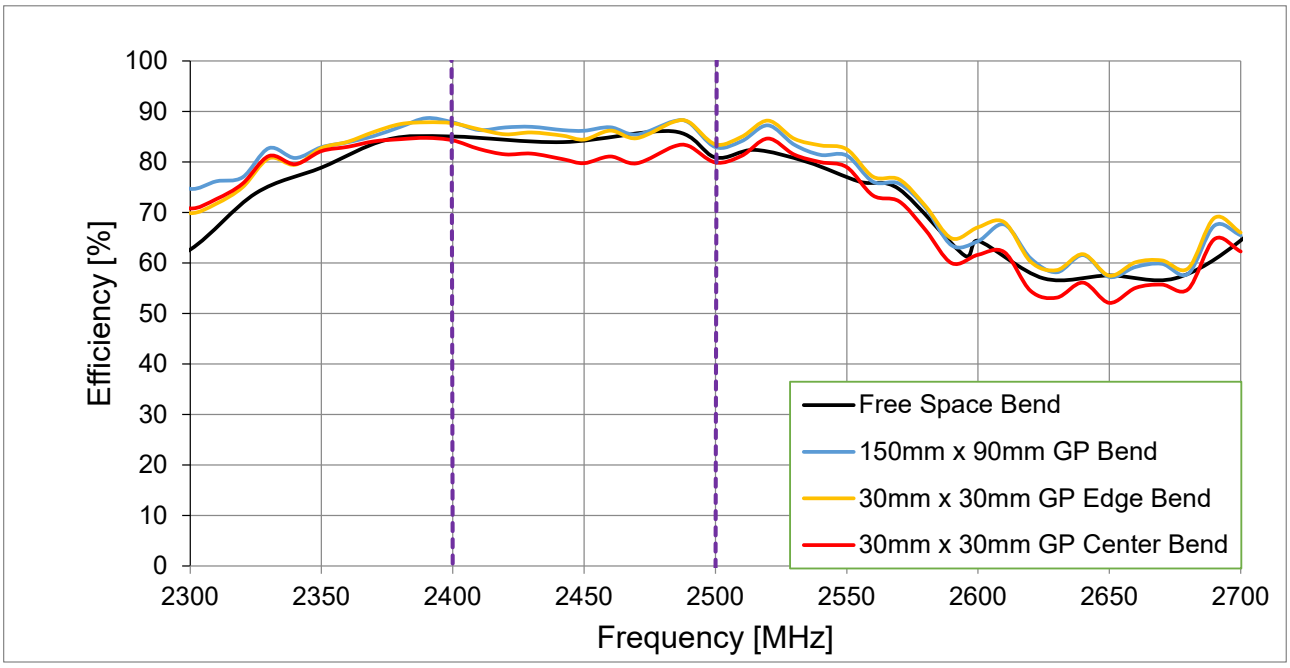


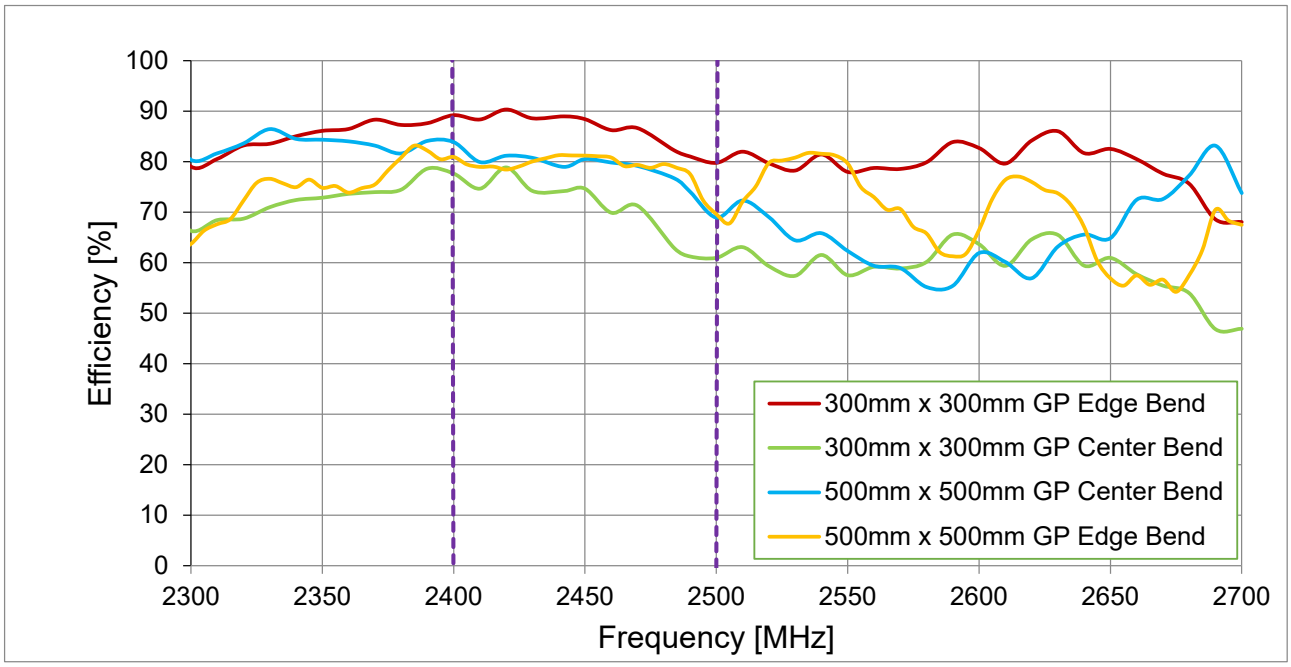
5.7 VSWR (90° Bend)



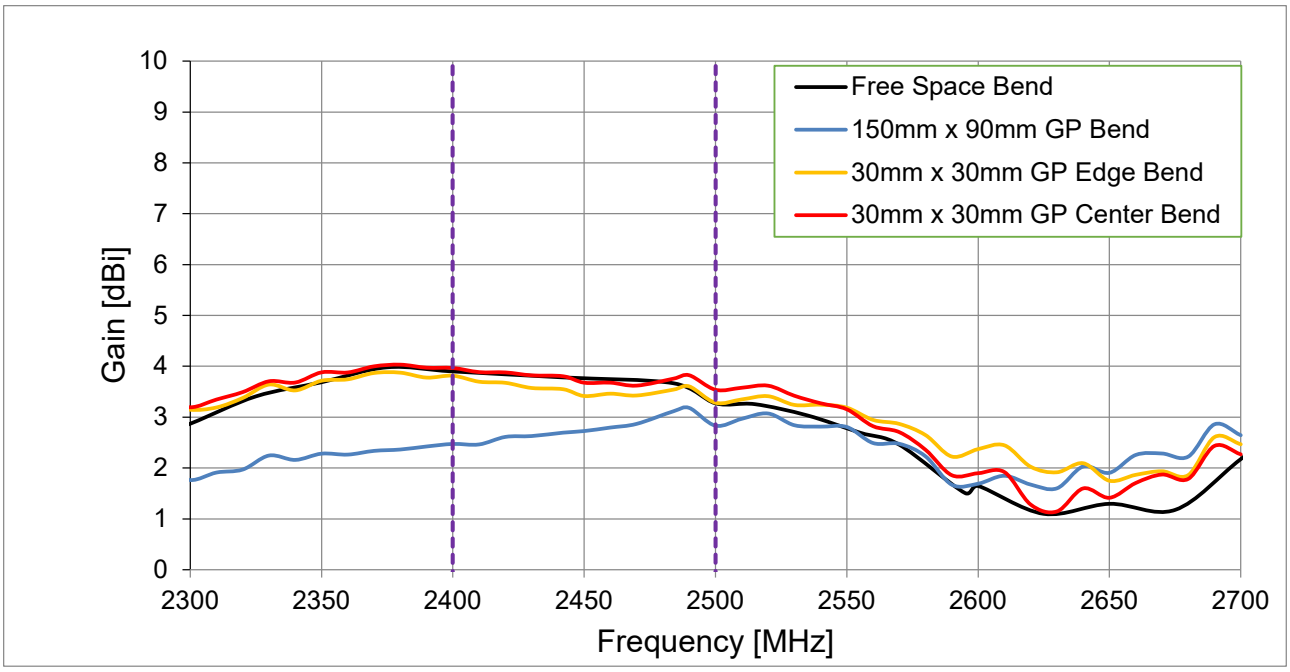


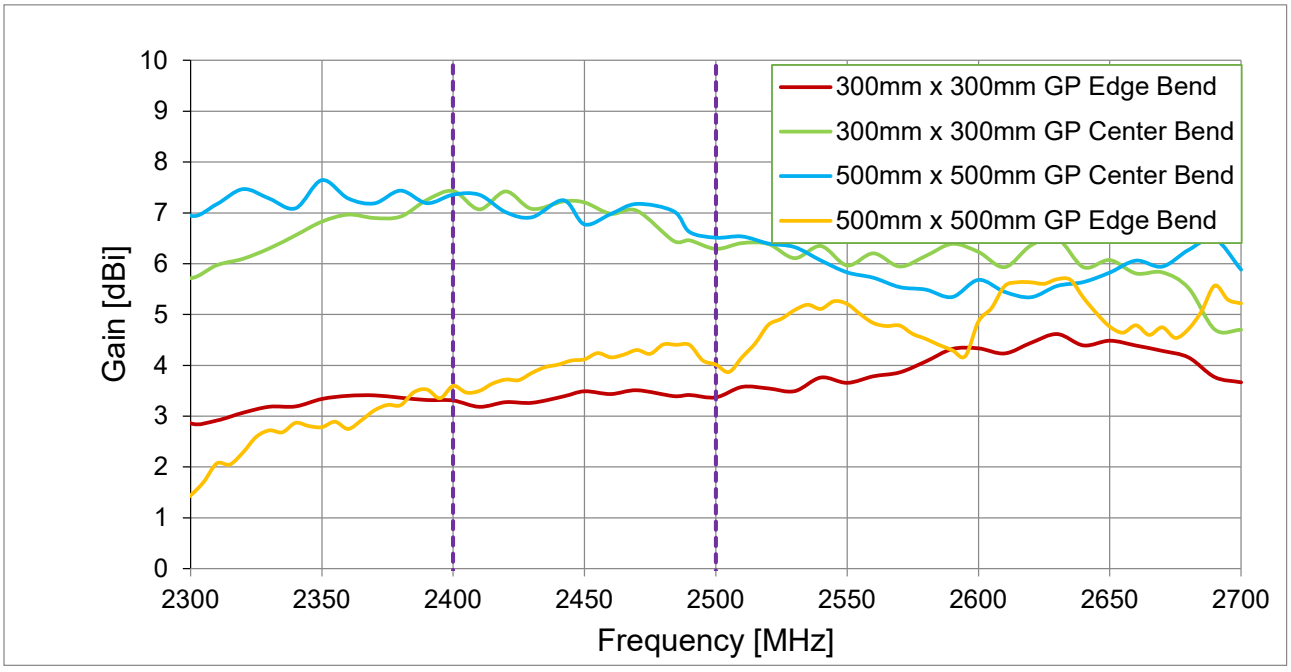
5.8 6.8 Efficiency (90° Bend)



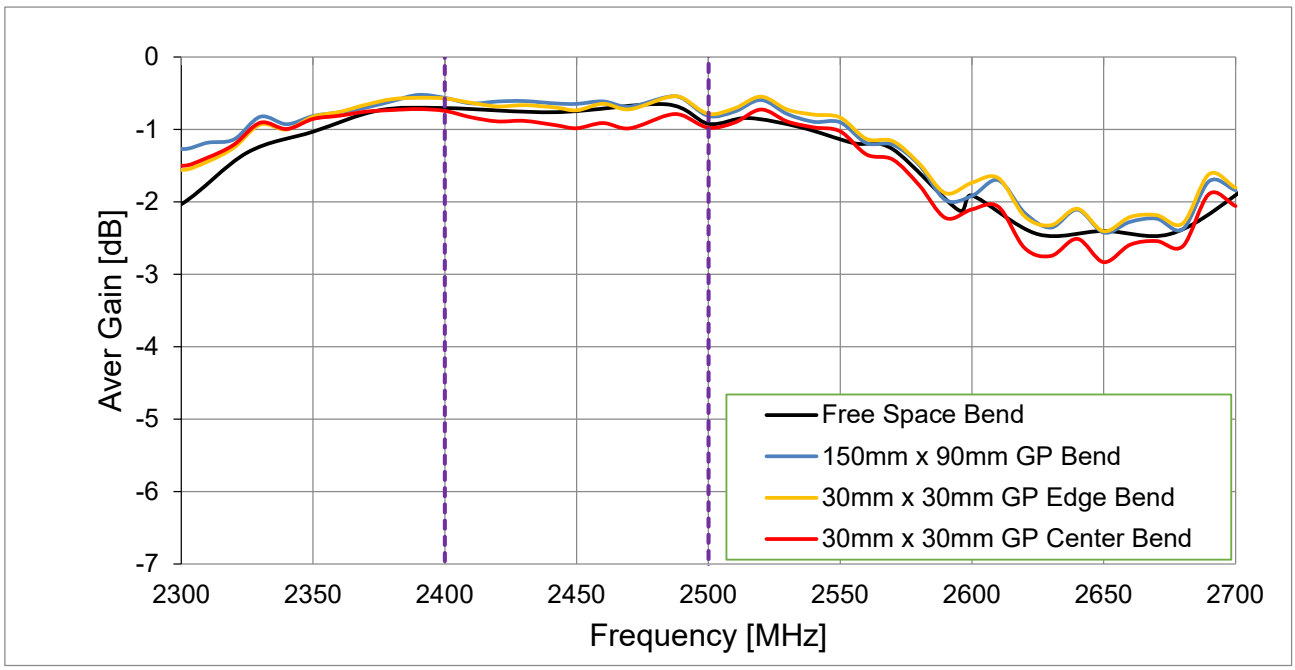


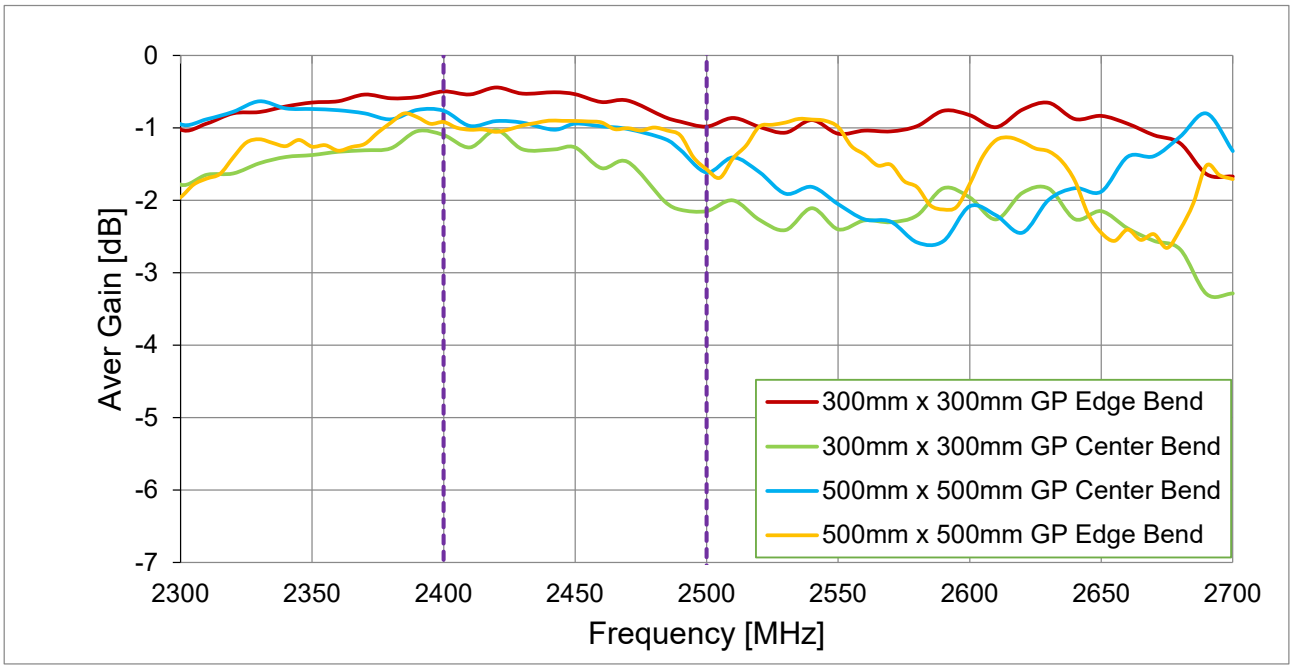
5.9 Peak Gain (90° Bend)





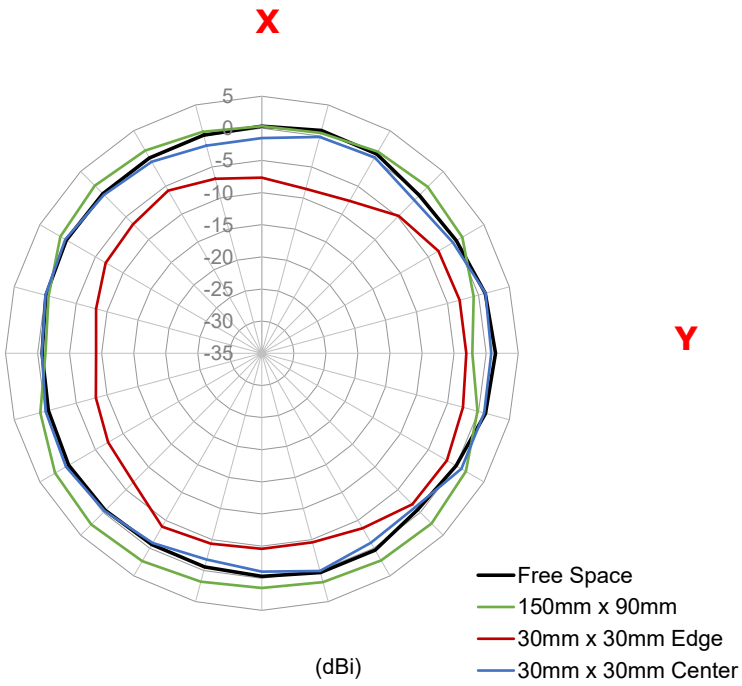
5.10 Average Gain (90° Bend)

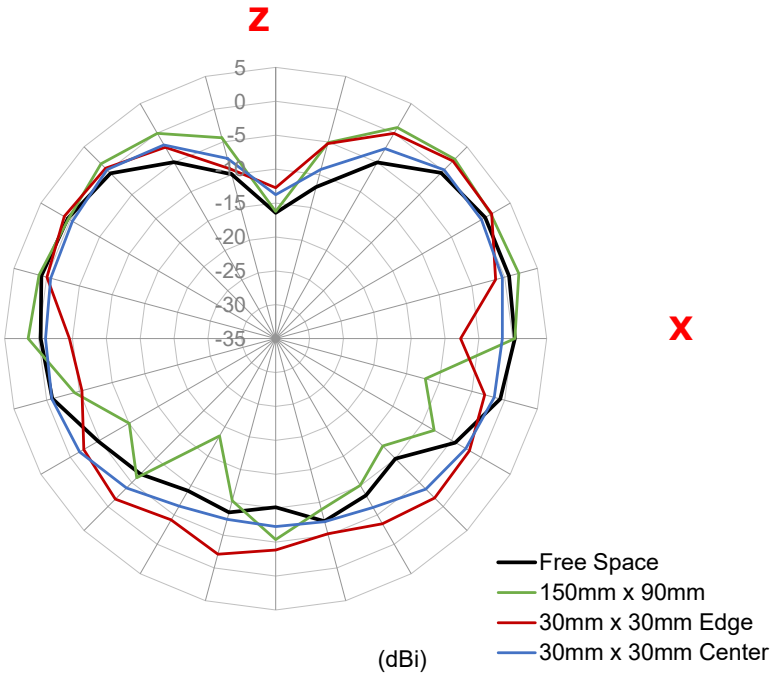


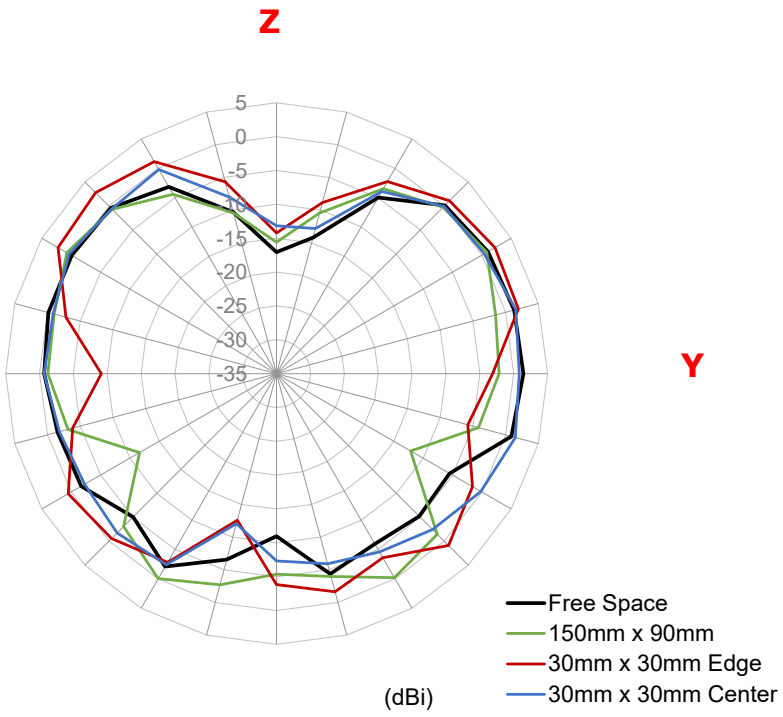


6. Radiation Patterns

6.1 GW.15 Straight at 2.4GHz






Z
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0
-5
-10
-15
-20
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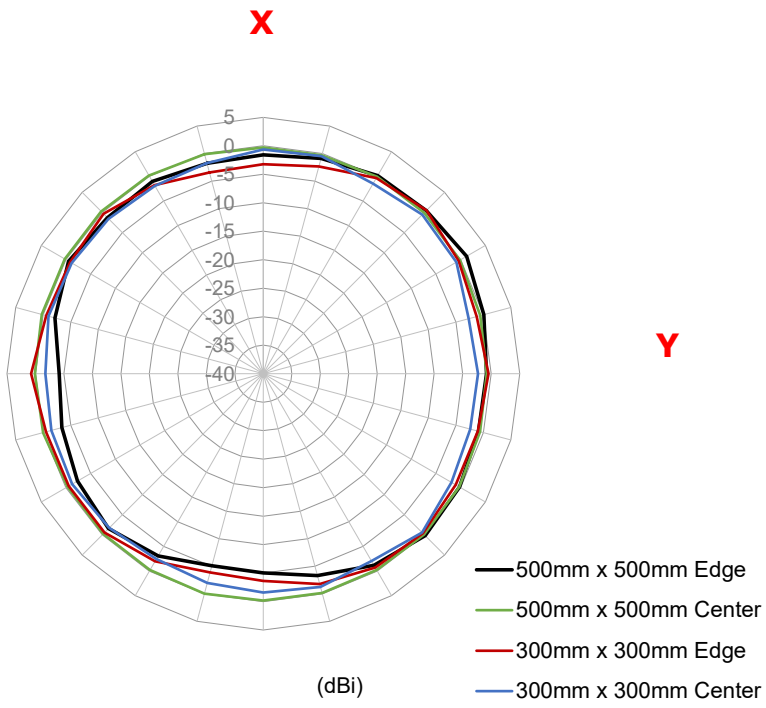
-30
-35
Y
Free Space
150mm x 90mm
30mm x 30mm Edge
30mm x 30mm Center
(dBi)


X
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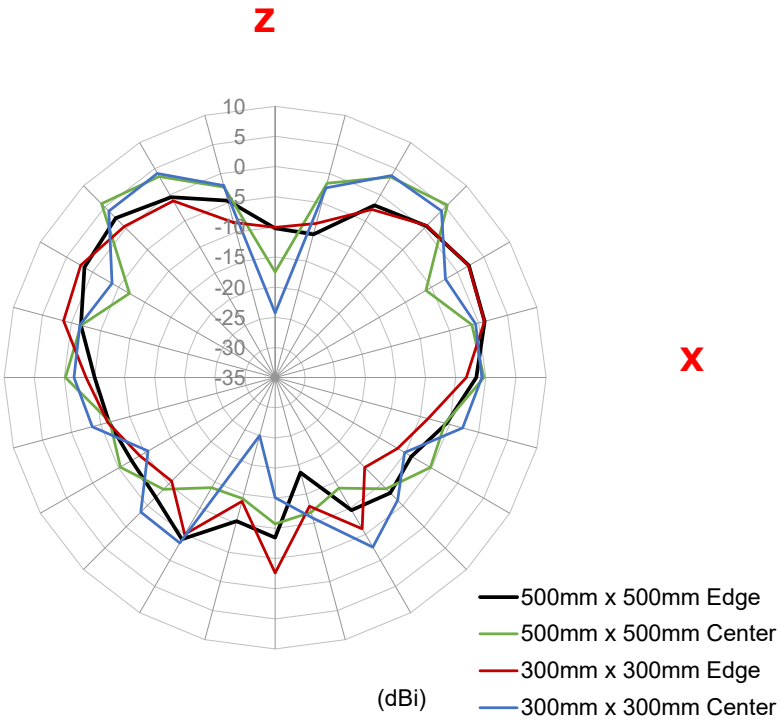
0
-5
-10
-15
-20
-25
-30
-35
-40
Y
500mm x 500mm Edge
500mm x 500mm Center
300mm x 300mm Edge
300mm x 300mm Center
(dBi)


Z
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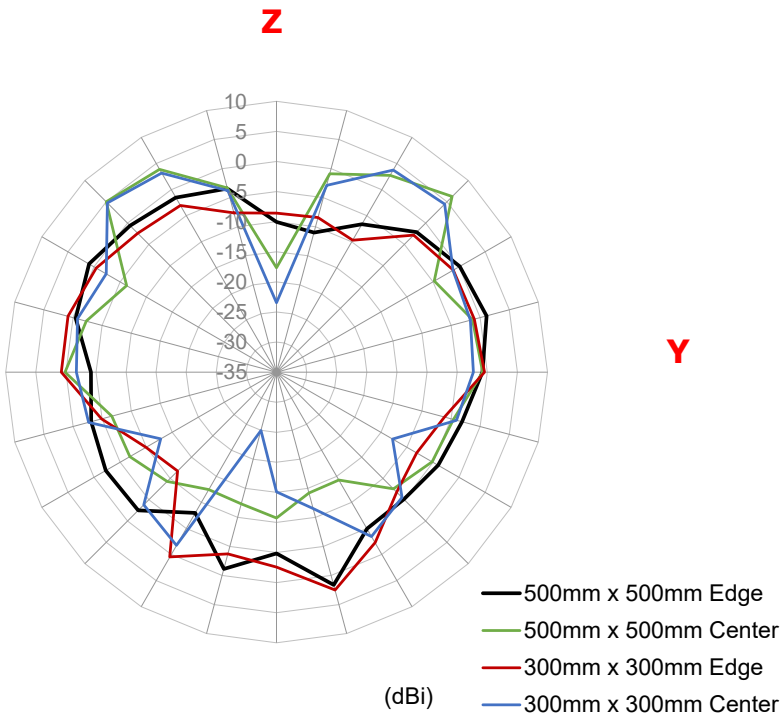
-10
-15
-20
-25
-30
-35
X
500mm x 500mm Edge
500mm x 500mm Center
300mm x 300mm Edge
300mm x 300mm Center
(dBi)


Z
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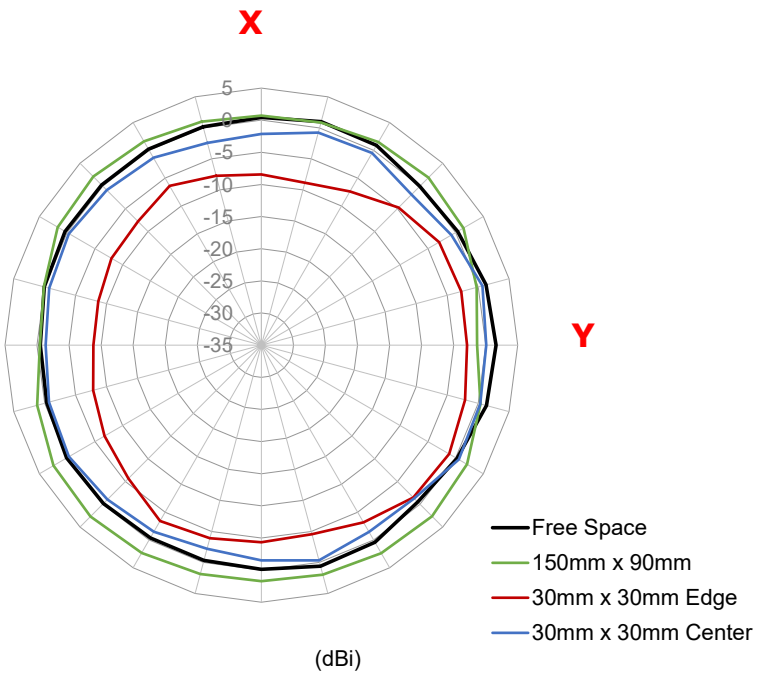
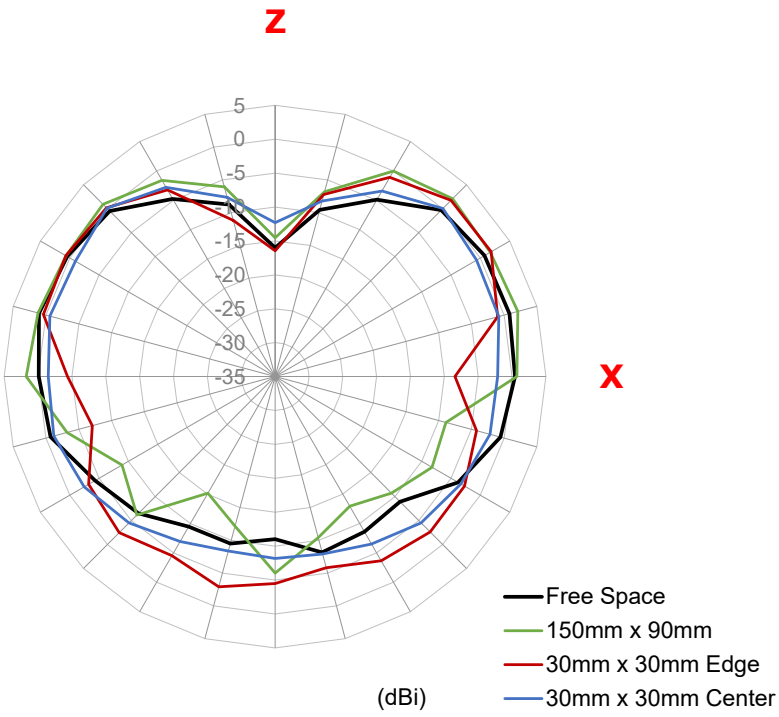
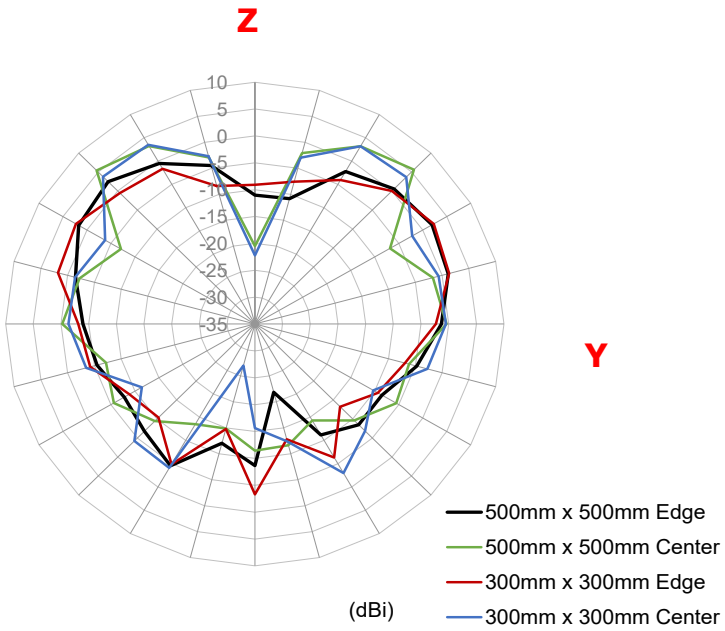
-5
-10
-15
-20
-25
-30
-35
Y
500mm x 500mm Edge
500mm x 500mm Center
300mm x 300mm Edge
300mm x 300mm Center
(dBi)

6.2 GW.15 Straight at 2.45GHz






Z
10
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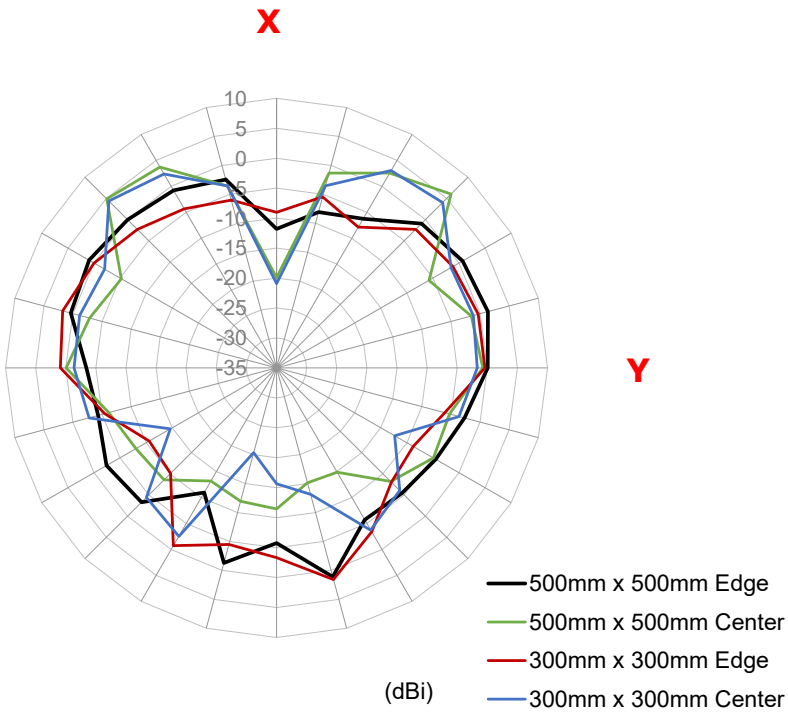
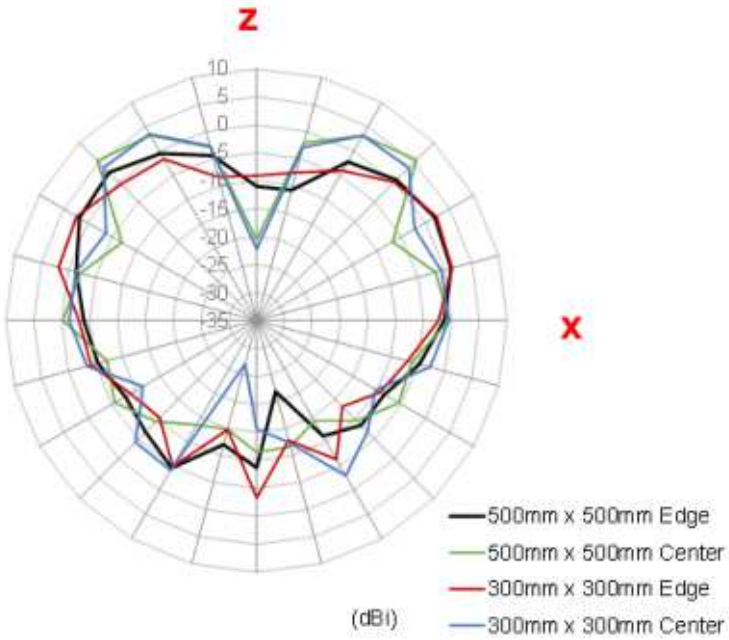
0
-5
-10
-15
-20
-25
-30
-35
Y
500mm x 500mm Edge
500mm x 500mm Center
300mm x 300mm Edge
300mm x 300mm Center
(dBi)


X
10
5
0
-5
-10
-15
-20
-25
-30
-35
Y
500mm x 500mm Edge
500mm x 500mm Center
300mm x 300mm Edge
300mm x 300mm Center
(dBi)


Z
10
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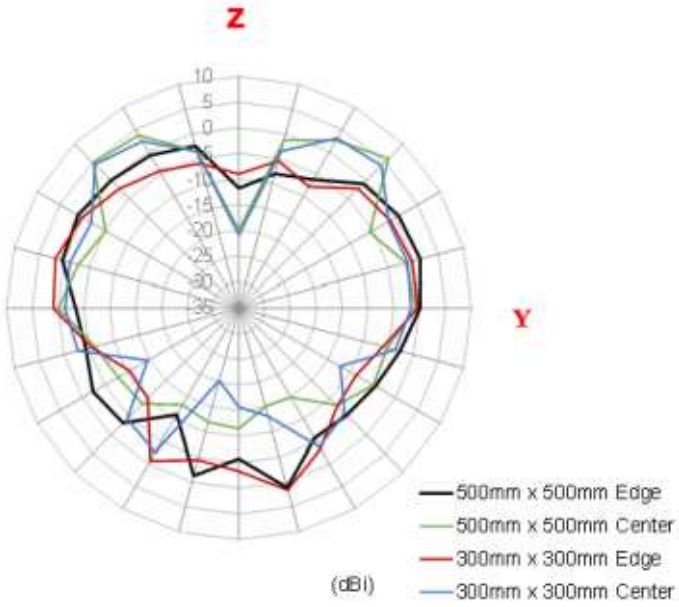
0
-5
-10
-15
-20
-25
-30
-35
X
500mm x 500mm Edge
500mm x 500mm Center
300mm x 300mm Edge
300mm x 300mm Center
(dBi)


Z
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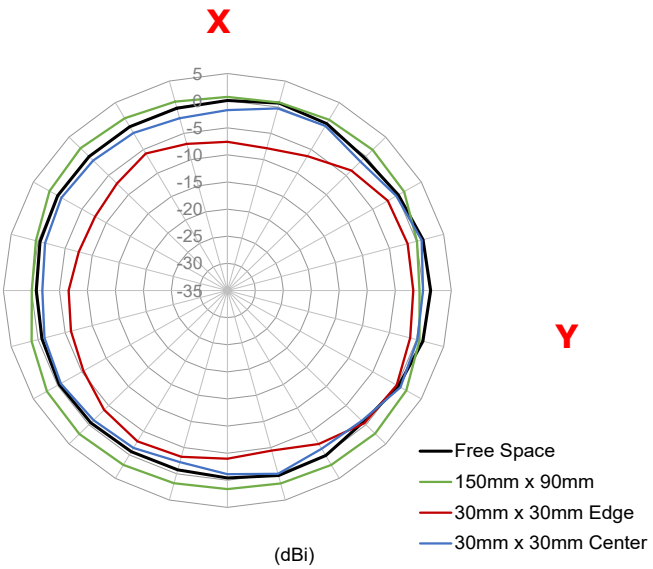
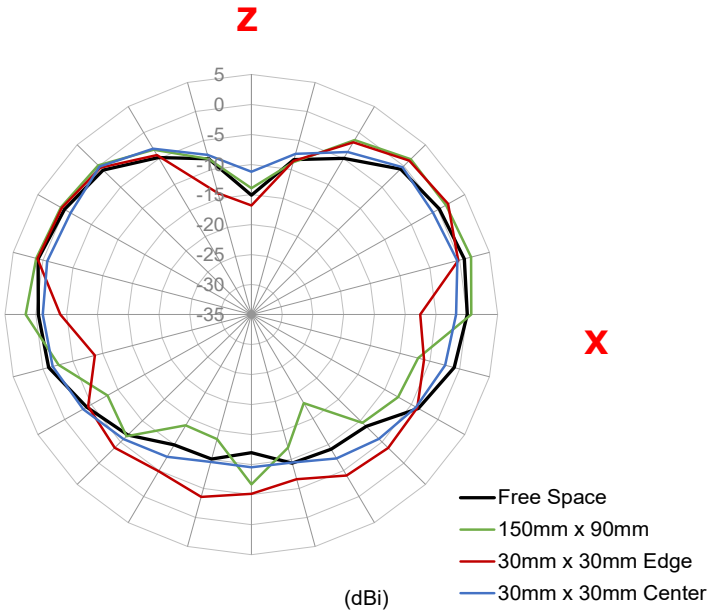
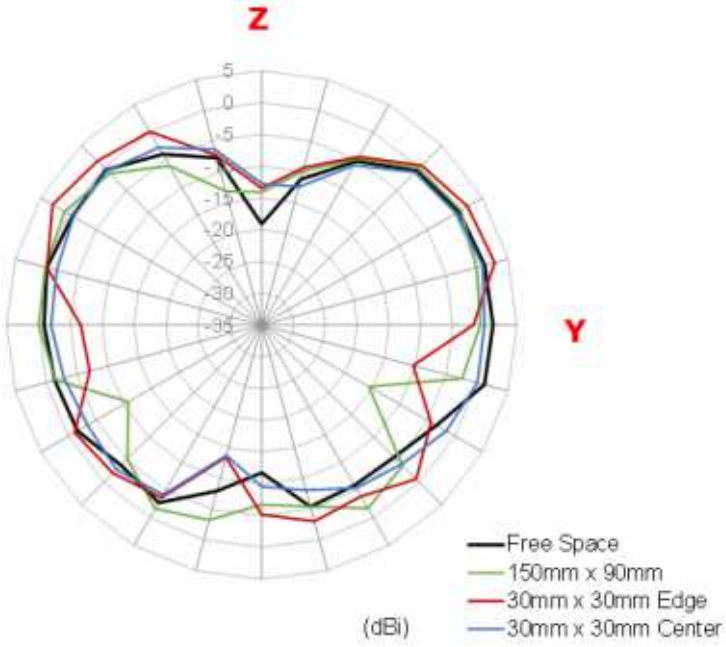
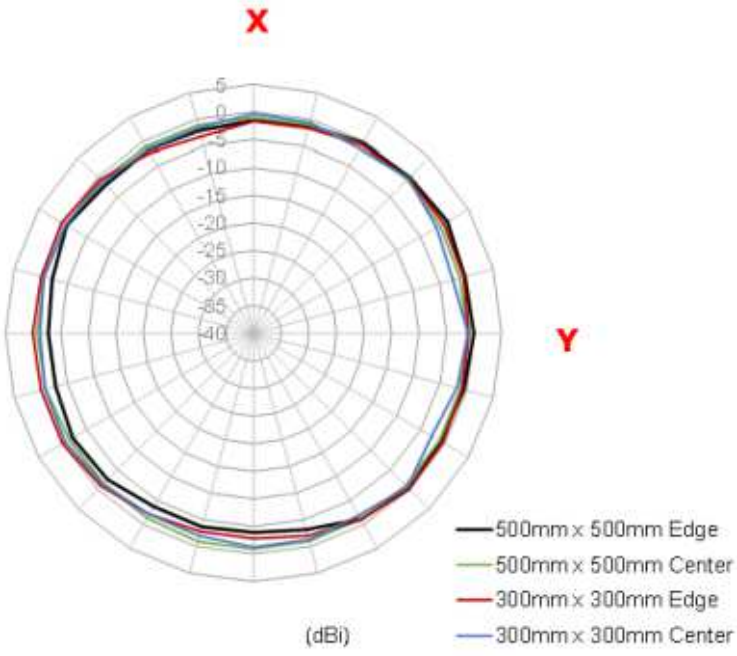
5
0
-5
-10
-15
-20
-25
-30
-35
Y
500mm x 500mm Edge
500mm x 500mm Center
300mm x 300mm Edge
300mm x 300mm Center
(dBi)

6.3 GW.15 Straight at 2.5GHz






Z
Y
5
0
-5
-10
-15
-20
-25
-30
-35
Free Space
150mm x 90mm
30mm x 30mm Edge
30mm x 30mm Center
(dBi)


X
Y
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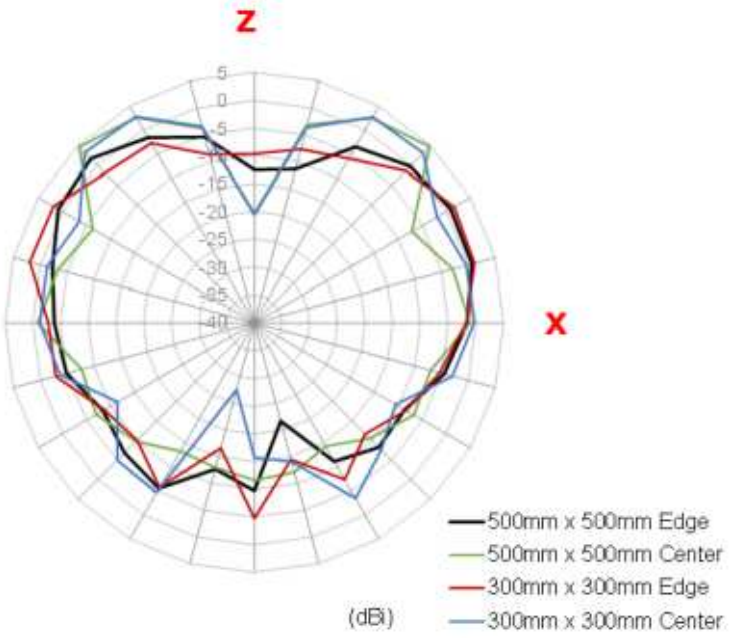
-10
-15
-20
-25
-30
-35
-40
500mm x 500mm Edge
500mm x 500mm Center
300mm x 300mm Edge
300mm x 300mm Center
(dBi)


Z
X
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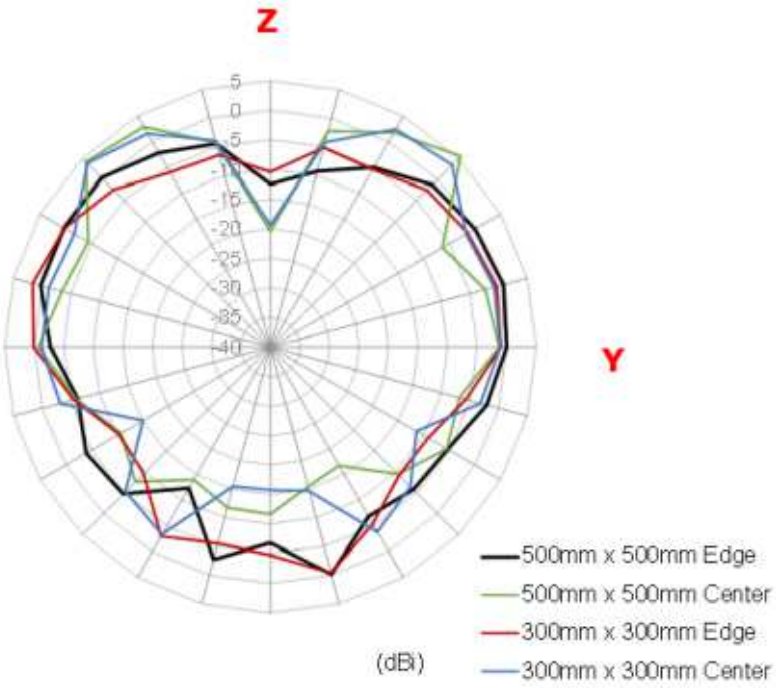
-5
-10
-15
-20
-25
-30
-35
-40
500mm x 500mm Edge
500mm x 500mm Center
300mm x 300mm Edge
300mm x 300mm Center
(dBi)


Z
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-5
-10
-15
-20
-25
-30
-35
-40
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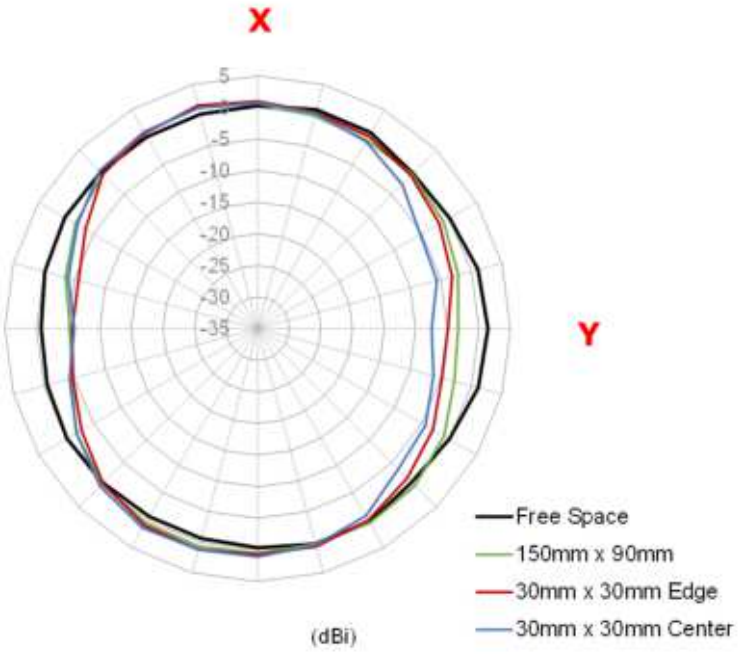
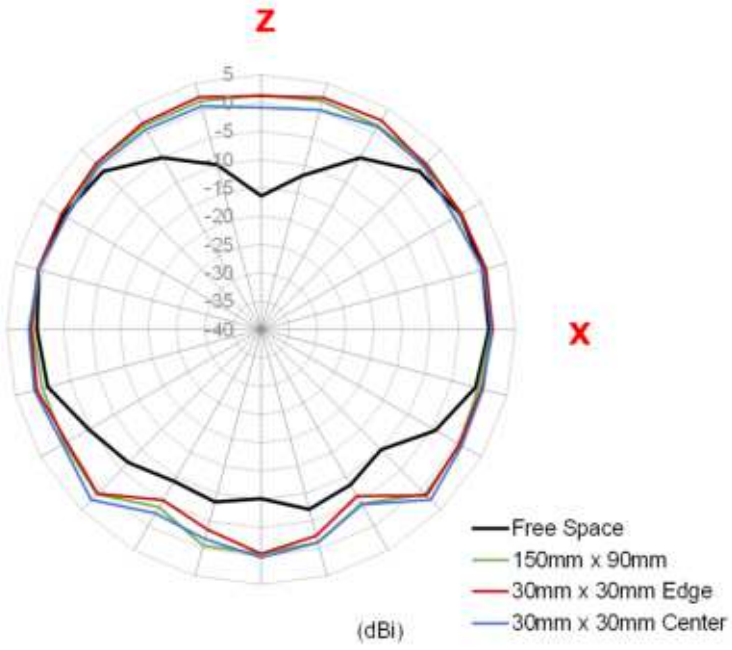
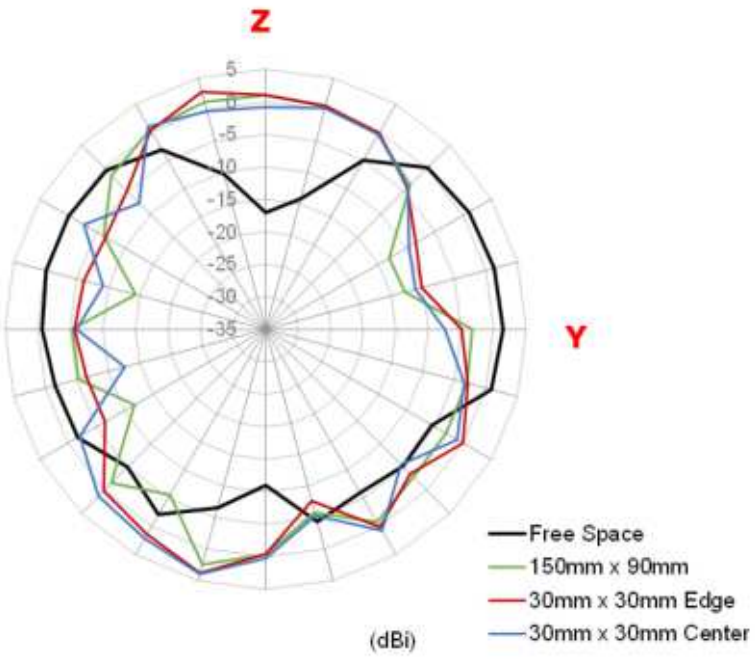
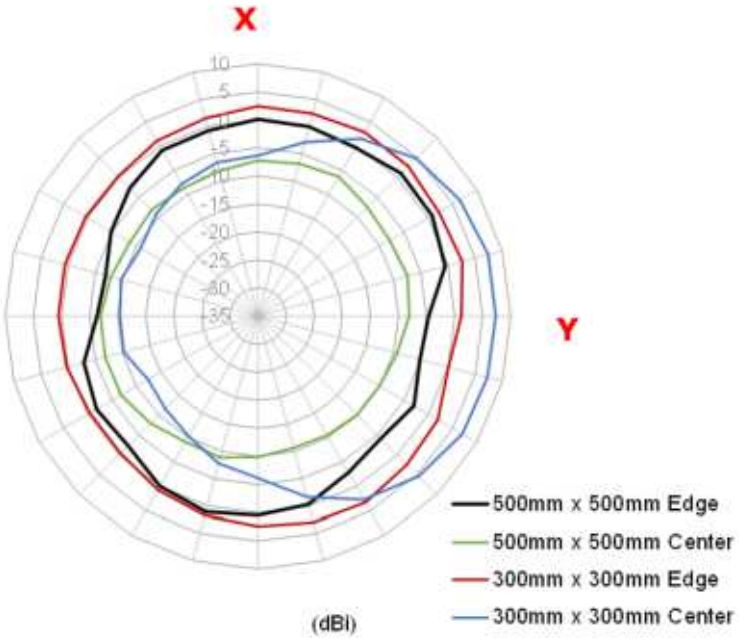
500mm x 500mm Center
300mm x 300mm Edge
300mm x 300mm Center
(dBi)

6.4 GW.15 90° Bend at 2.4GHz






Z
5
0
-5
-10
-15
-20
-25
-30
-35
Y
Free Space
150mm x 90mm
30mm x 30mm Edge
30mm x 30mm Center
(dBi)


X
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-5
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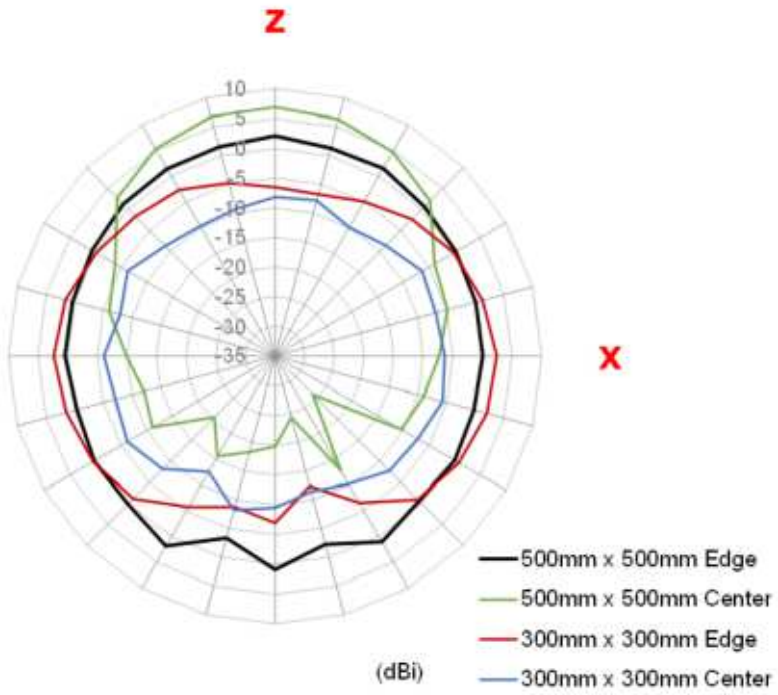
-15
-20
-25
-30
-35
Y
500mm x 500mm Edge
500mm x 500mm Center
300mm x 300mm Edge
300mm x 300mm Center
(dBi)


Z
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5
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-5
-10
-15
-20
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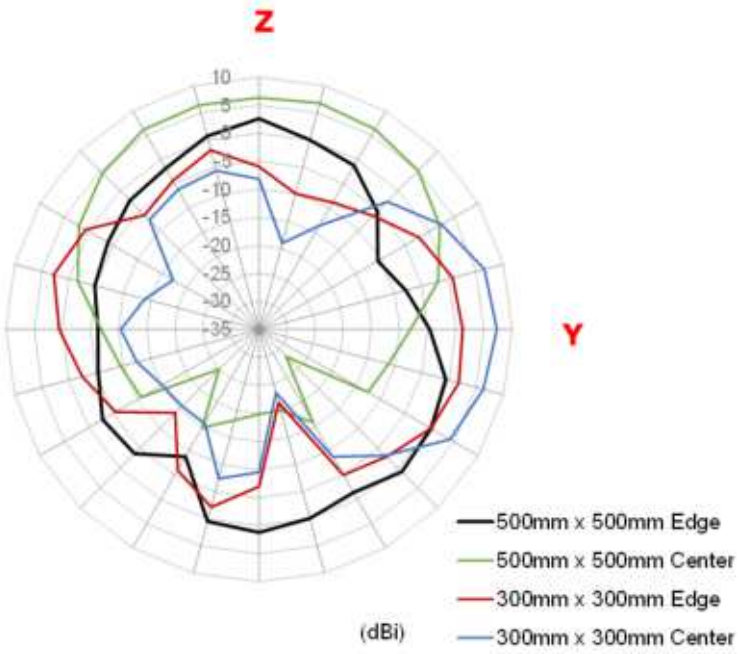
-30
-35
X
500mm x 500mm Edge
500mm x 500mm Center
300mm x 300mm Edge
300mm x 300mm Center
(dBi)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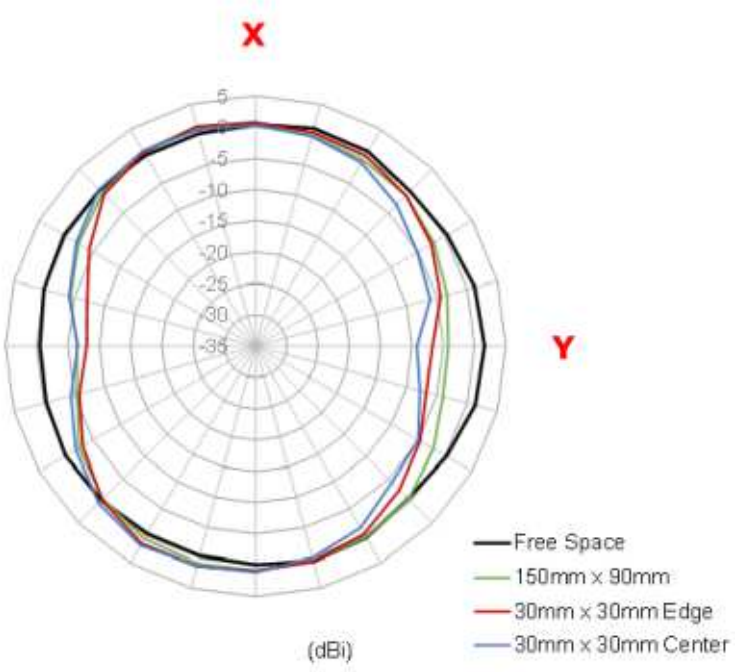
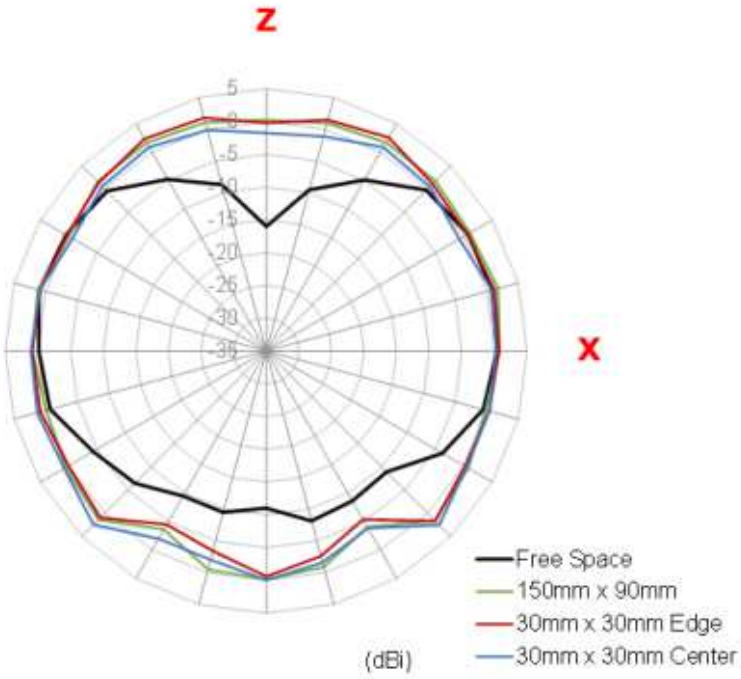
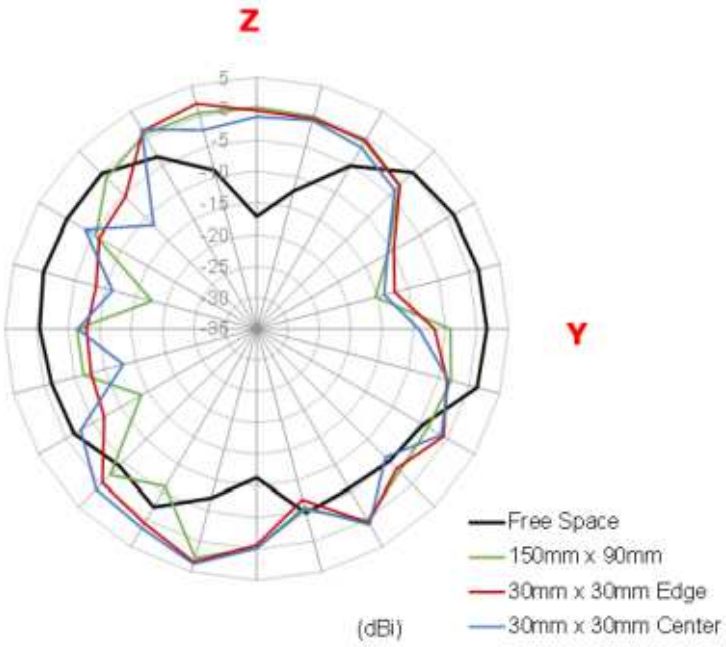
-5
-10
-15
-20
-25
-30
-35
Y
500mm x 500mm Edge
500mm x 500mm Center
300mm x 300mm Edge
300mm x 300mm Center
(dBi)

6.5 GW.15 90° Bend at 2.45GHz






Z
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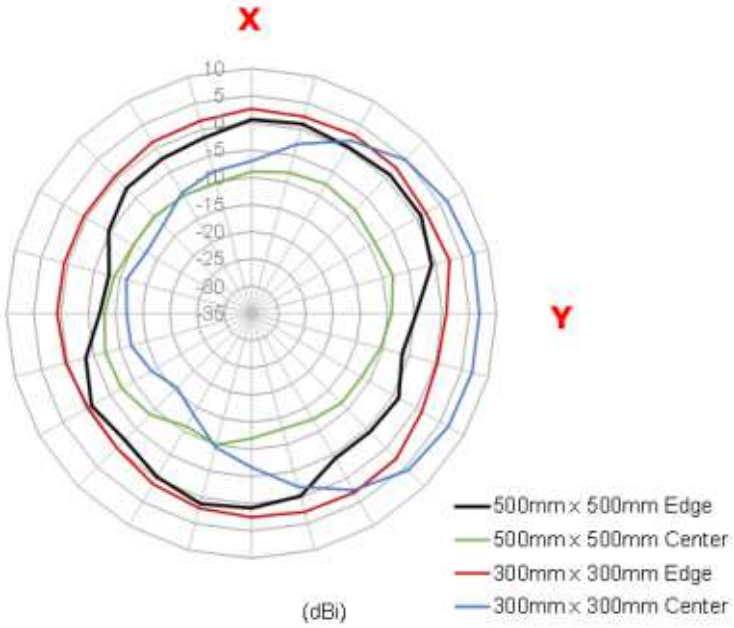
-5
-10
-15
-20
-25
-30
-35
Free Space
150mm x 90mm
30mm x 30mm Edge
30mm x 30mm Center
(dBi)


X
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-10
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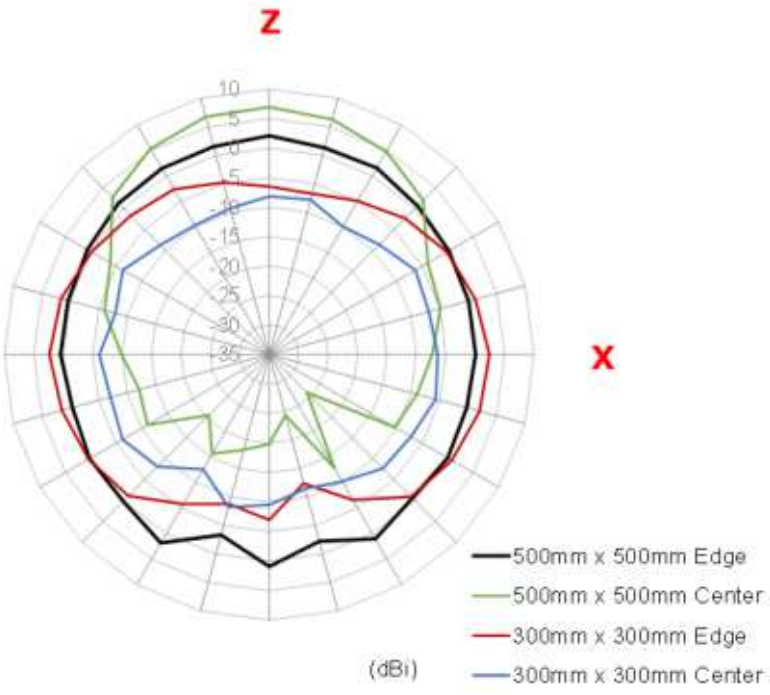
-20
-25
-30
-35
500mm x 500mm Edge
500mm x 500mm Center
300mm x 300mm Edge
300mm x 300mm Center
(dBi)


Z
X
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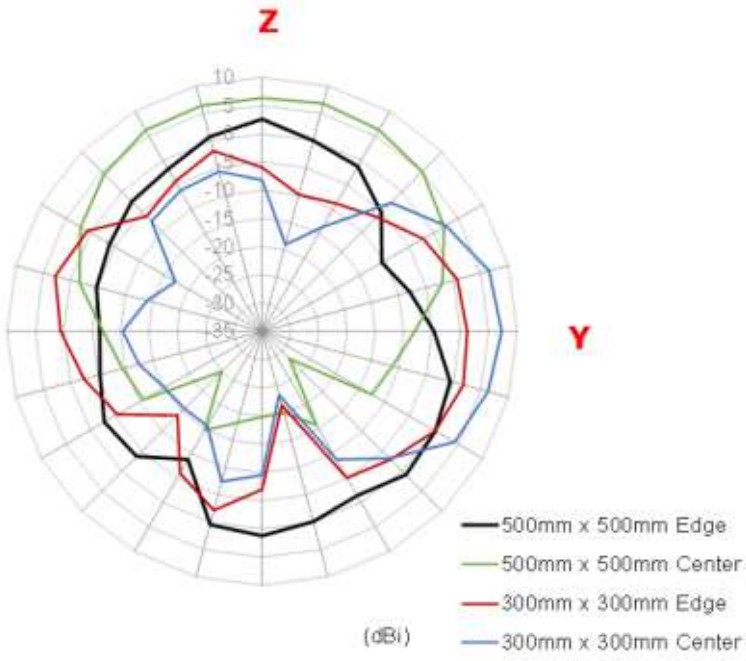
-5
-10
-15
-20
-25
-30
-35
(dBi)
500mm x 500mm Edge
500mm x 500mm Center
300mm x 300mm Edge
300mm x 300mm Center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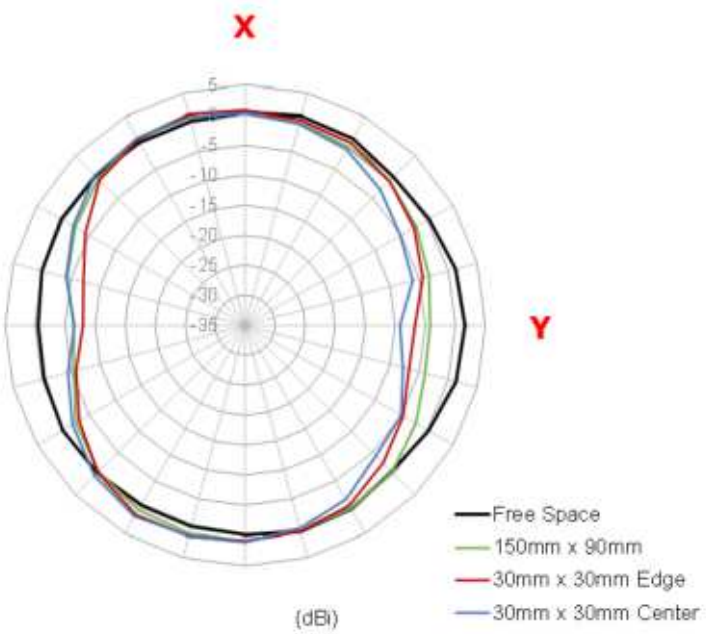
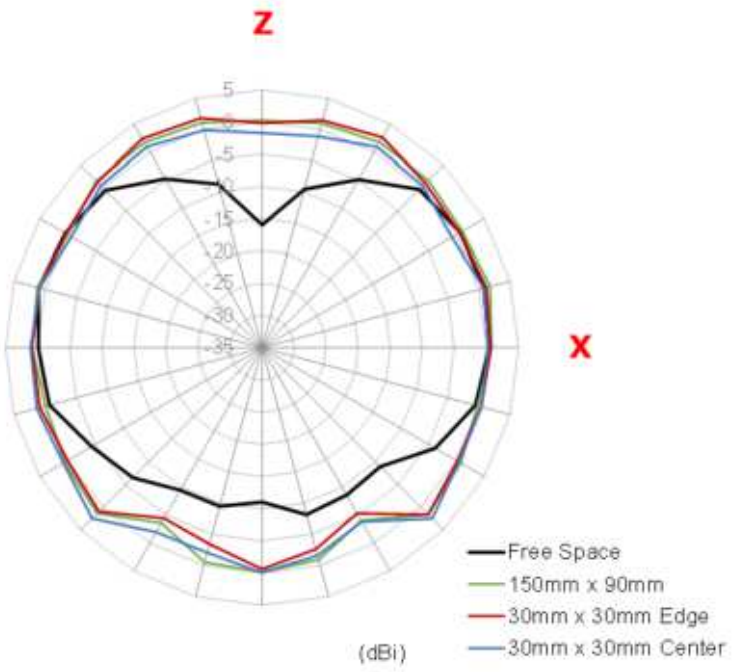
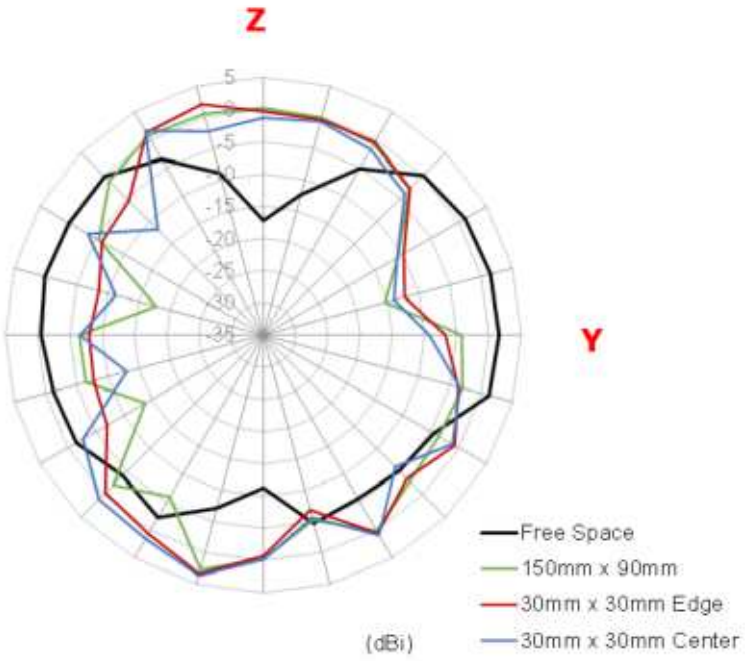
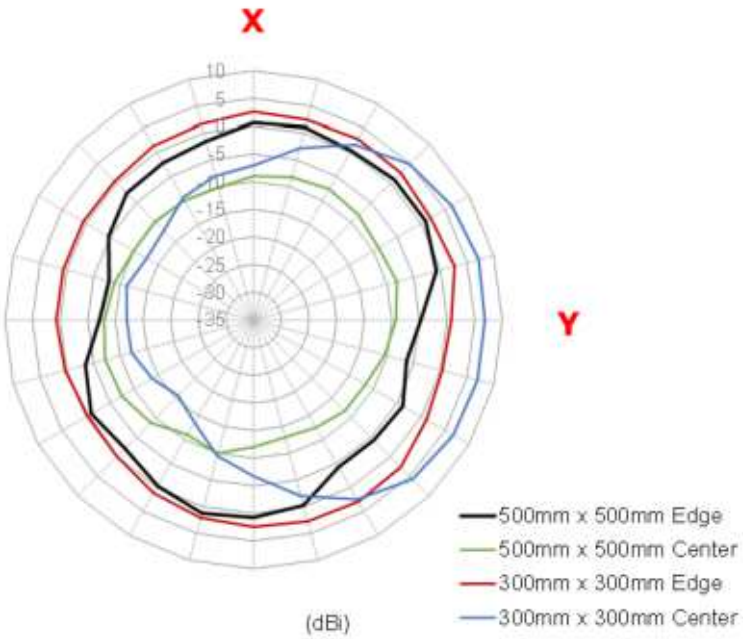
-15
-20
-25
-30
-35
(dBi)
500mm x 500mm Edge
500mm x 500mm Center
300mm x 300mm Edge
300mm x 300mm Center

6.6 GW.15 90° Bend at 2.5GHz






Z
Y
5
-5
-15
-20
-25
-30
-35
Free Space
150mm x 90mm
30mm x 30mm Edge
30mm x 30mm Center
(dBi)


X
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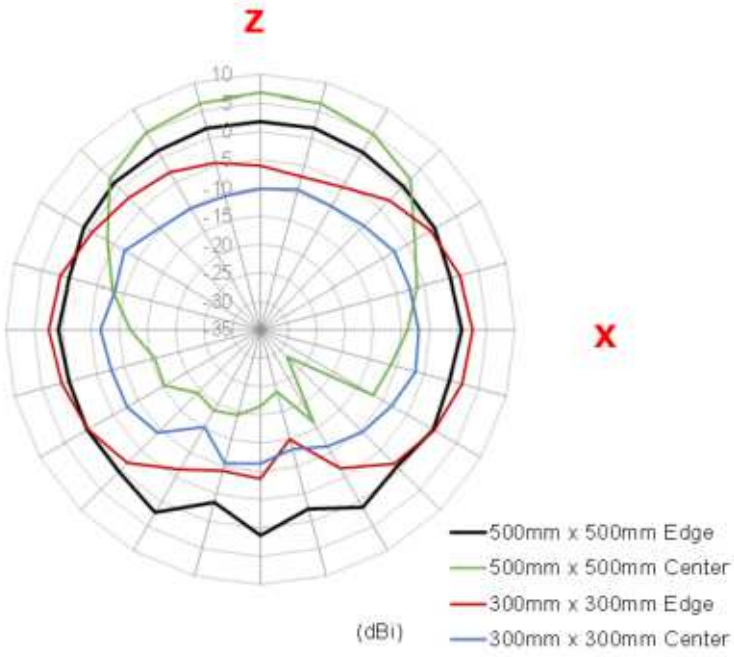
5
-5
-15
-20
-25
-30
-35
500mm x 500mm Edge
500mm x 500mm Center
300mm x 300mm Edge
300mm x 300mm Center
(dBi)


Z
X
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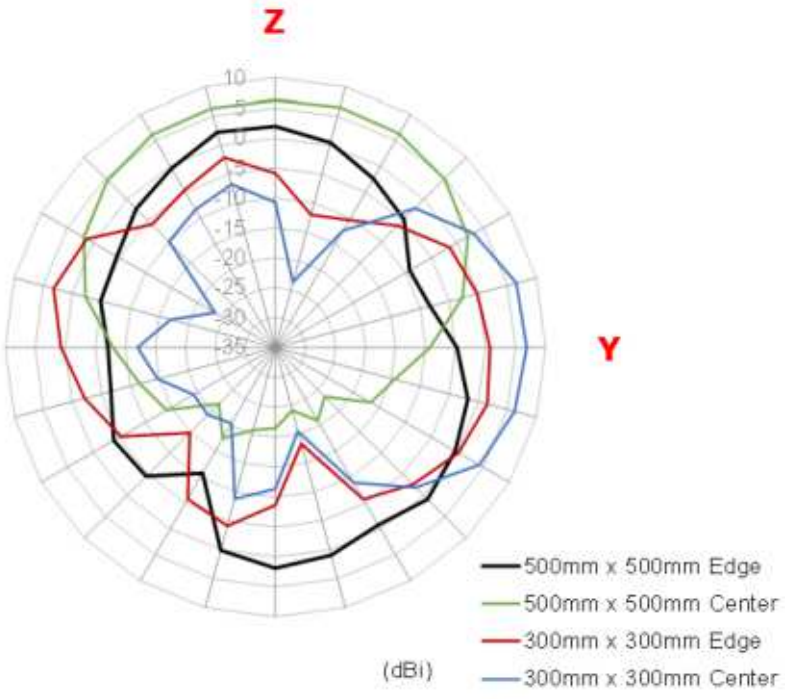
0
-5
-10
-15
-20
-25
-30
-35
500mm x 500mm Edge
500mm x 500mm Center
300mm x 300mm Edge
300mm x 300mm Center
(dBi)


Z
Y
10
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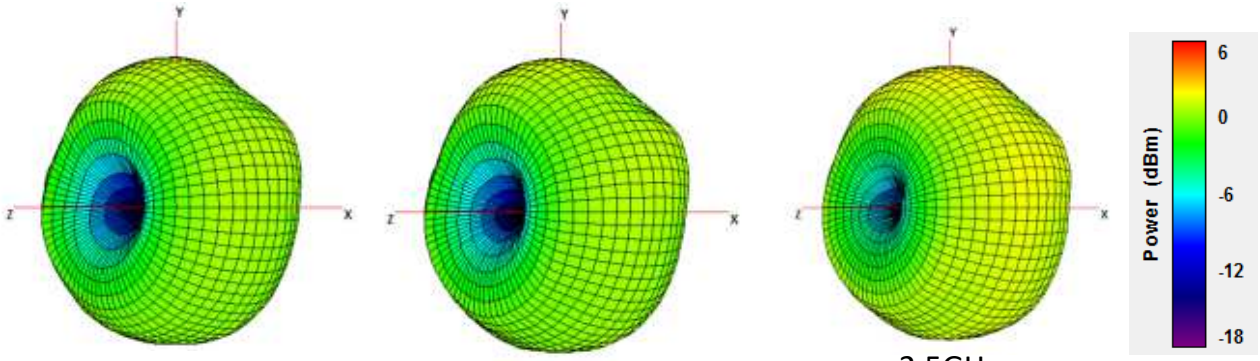
0
-5
-10
-15
-20
-25
-30
-35
500mm x 500mm Edge
500mm x 500mm Center
300mm x 300mm Edge
300mm x 300mm Center
(dBi)

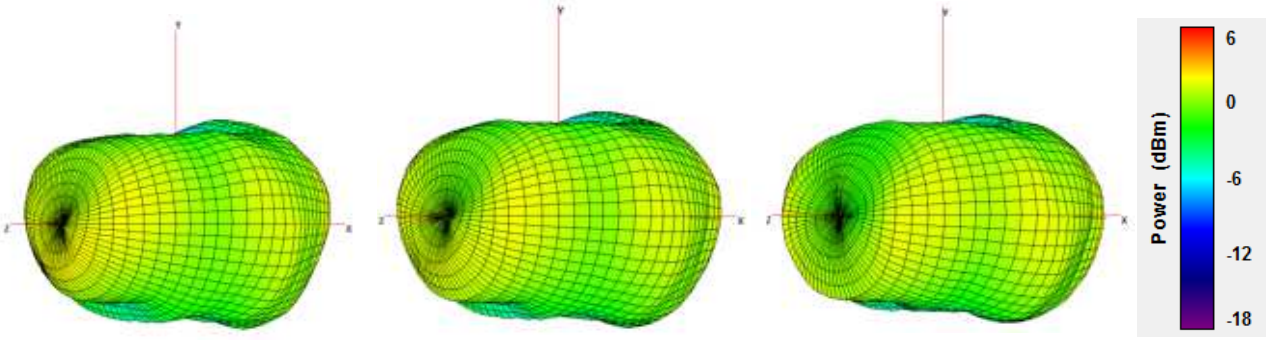
7. 3D Radiation Pattern

7.1 Free Space - Straight



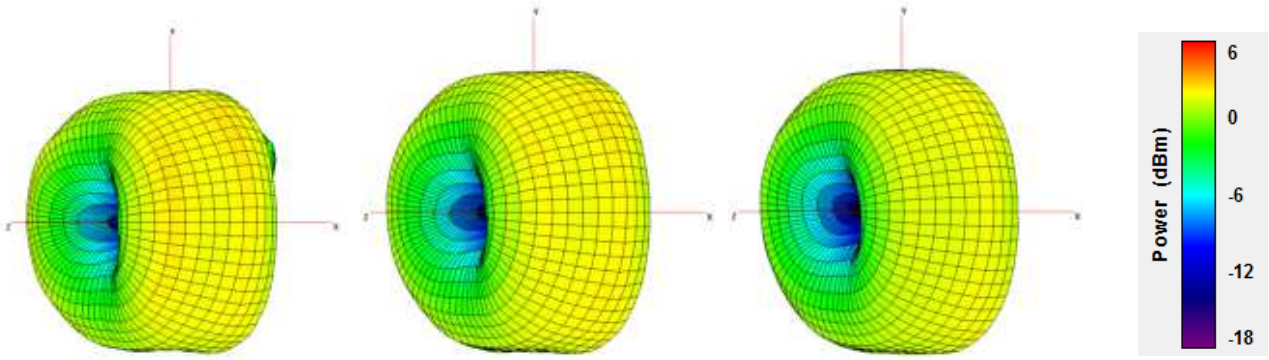
2.4GHz 2.45GHz 2.5GHz

7.2 Free Space 90° Bend



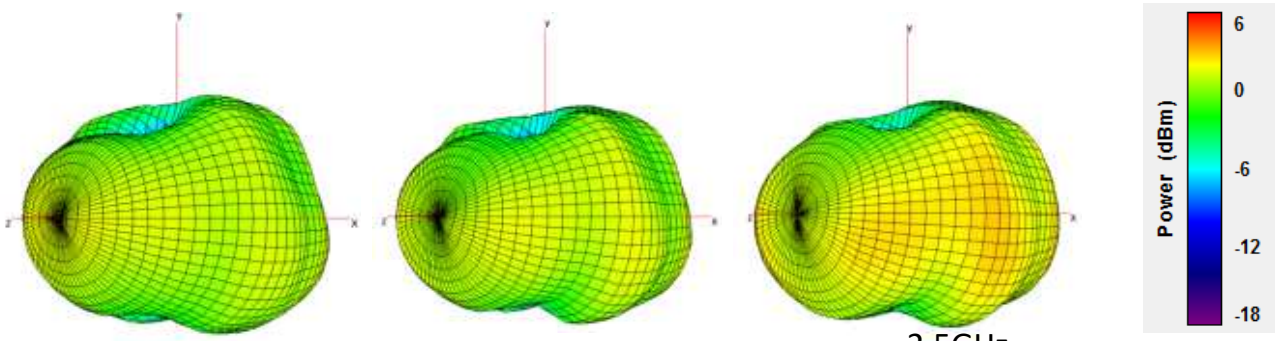
2.4GHz 2.45GHz 2.5GHz

7.3 150mm x 90mm Ground Plane Straight



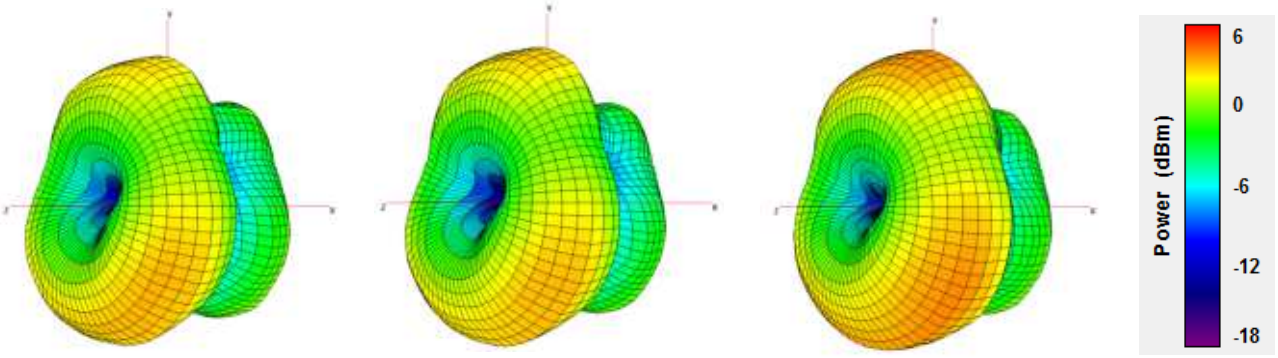
2.4GHz 2.45GHz 2.5GHz

7.4 150mm x 90mm Ground Plane 90° Bend



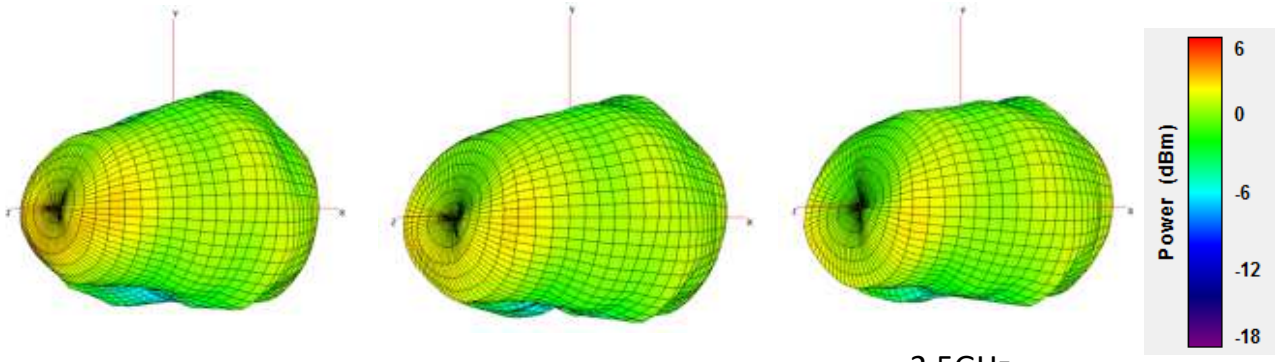
2.4GHz 2.45GHz 2.5GHz

7.5 30mm x 30mm Ground Plane Straight Edge Mount



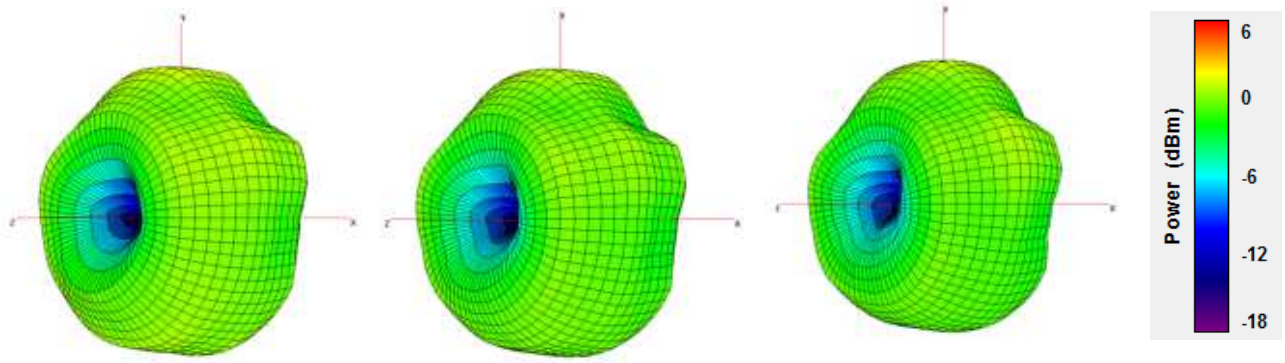
2.4GHz 2.45GHz 2.5GHz

7.6 30mm x 30mm Ground Plane 90° Bend Edge Mount



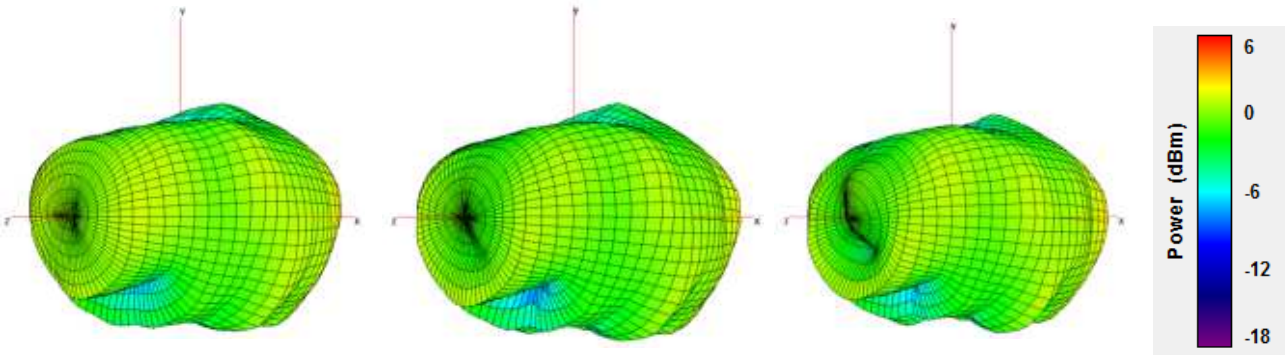
2.4GHz 2.45GHz 2.5GHz

7.7 30mm x 30mm Ground Plane Straight Center Mount



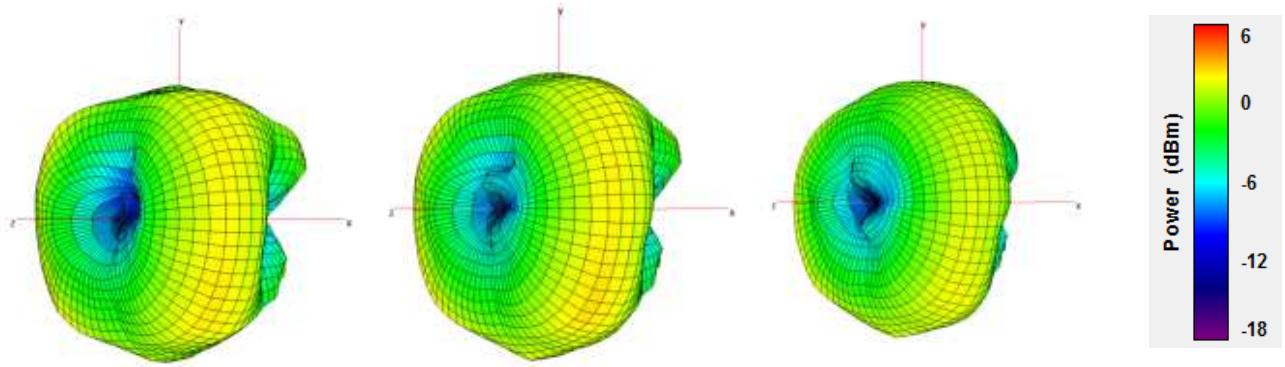
2.4GHz 2.45GHz 2.5GHz

7.8 30mm x 30mm Ground Plane 90° Bend Center Mount



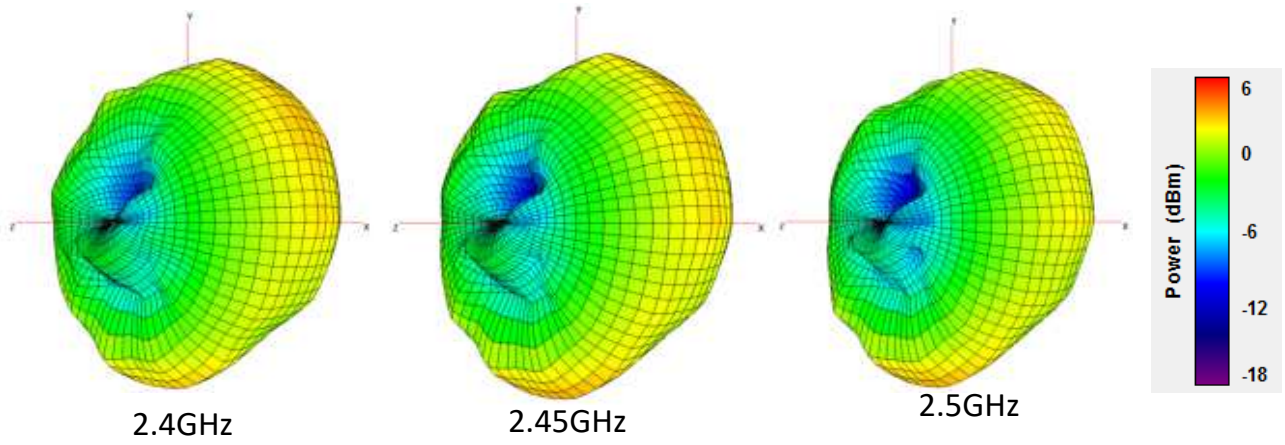
2.4GHz 2.45GHz 2.5GHz

7.9 300mm x 300mm Ground Plane Straight Edge Mount



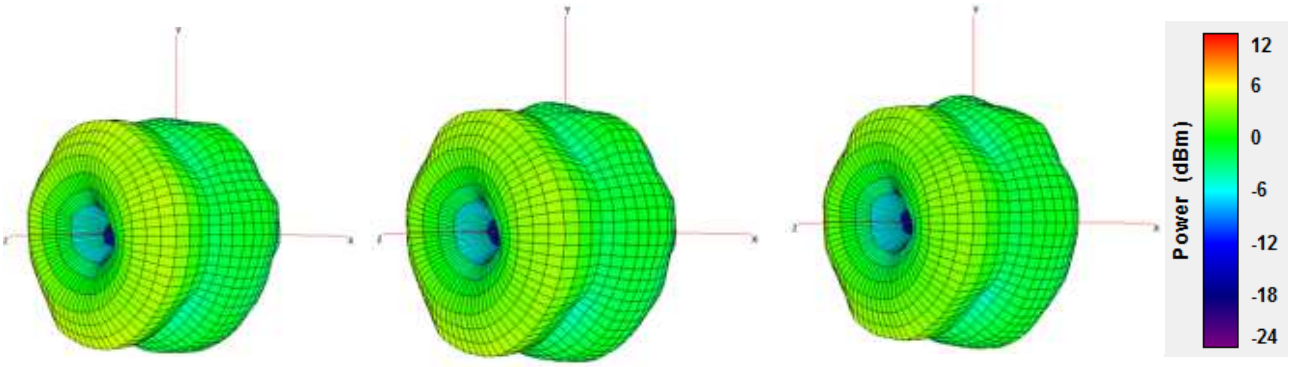
2.4GHz 2.45GHz 2.5GHz

7.10 300mm x 300mm Ground Plane 90° Bend Edge Mount



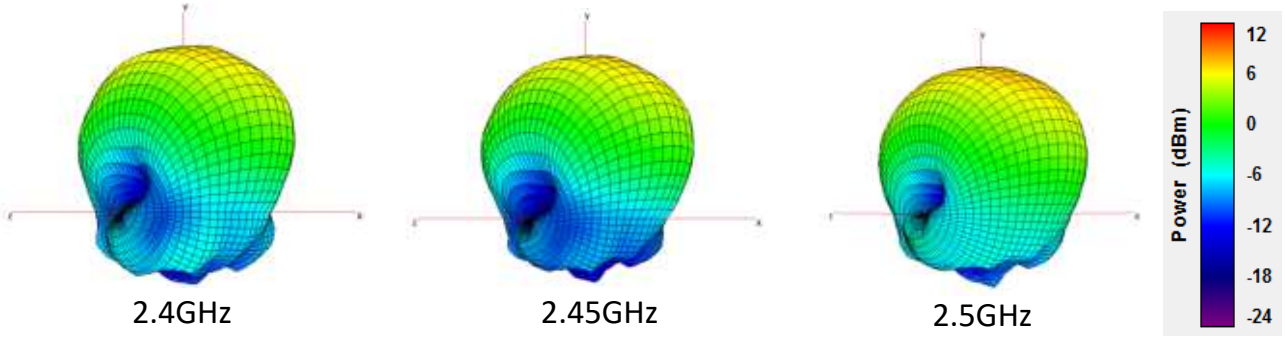
2.4GHz 2.45GHz 2.5GHz

7.11 300mm x 300mm Ground Plane Straight Center Mount



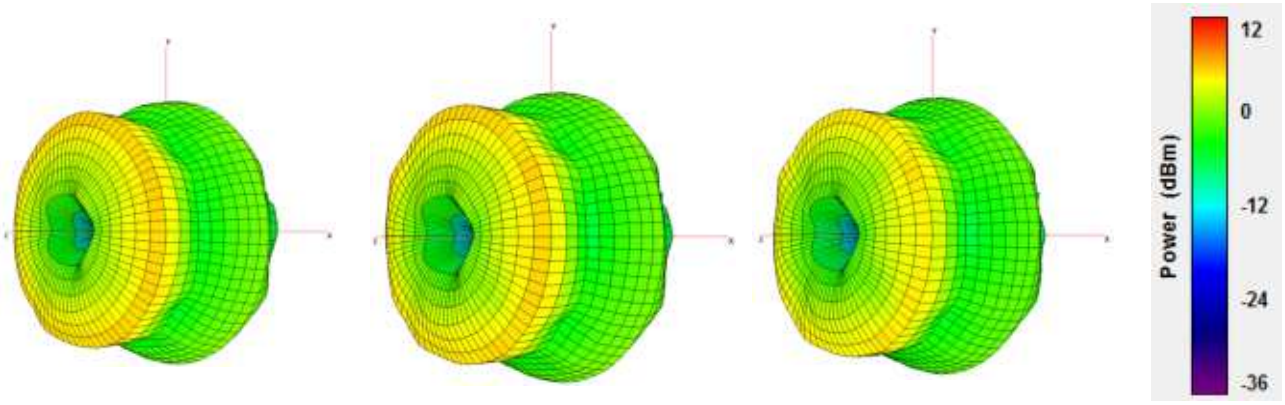
2.4GHz 2.45GHz 2.5GHz

7.12 300mm x 300mm Ground Plane 90° Bend Center Mount



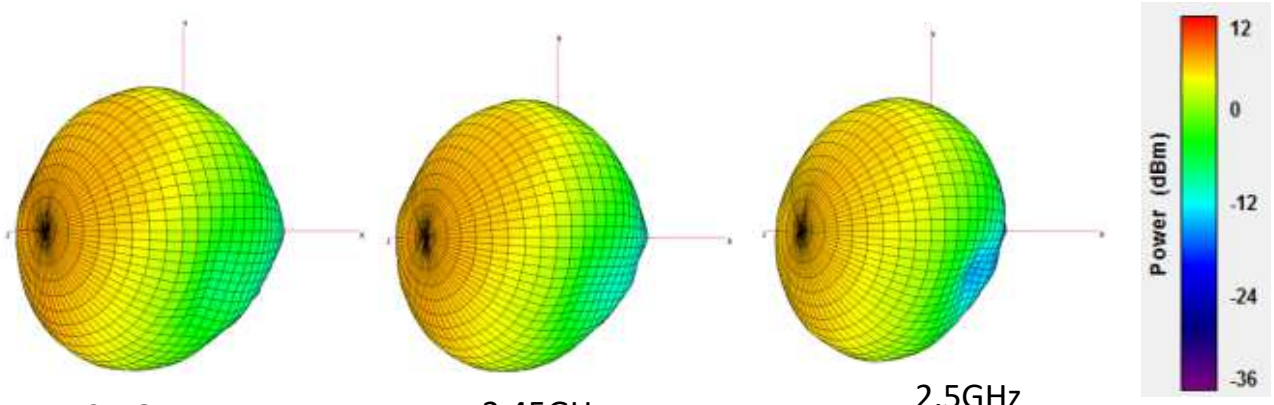
2.4GHz 2.45GHz 2.5GHz

7.13 500mm x 500mm Ground Plane Straight Center Mount



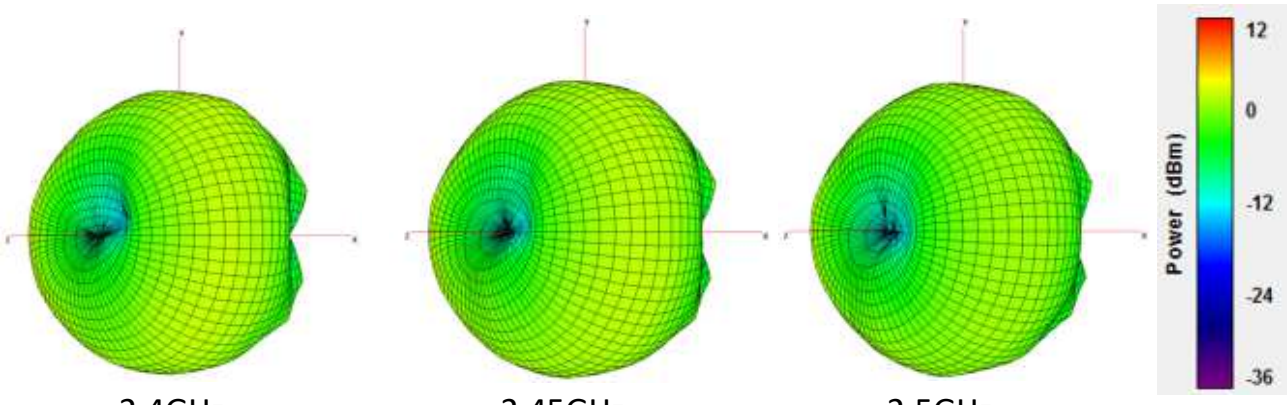
2.4GHz 2.45GHz 2.5GHz

7.14 500mm x 500mm Ground Plane 90° Bend Center Mount



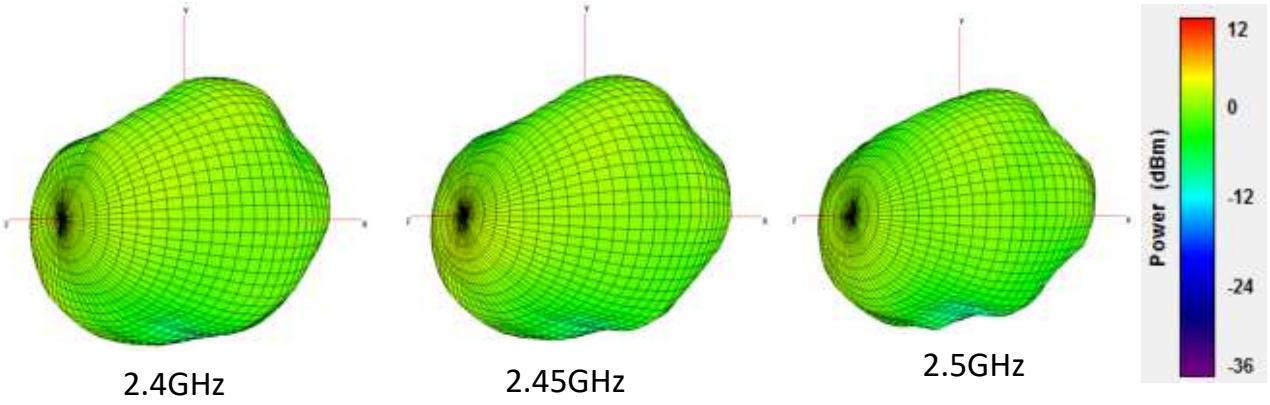
2.4GHz 2.45GHz 2.5GHz

7.15 500mm x 500mm Ground Plane Straight Center Mount



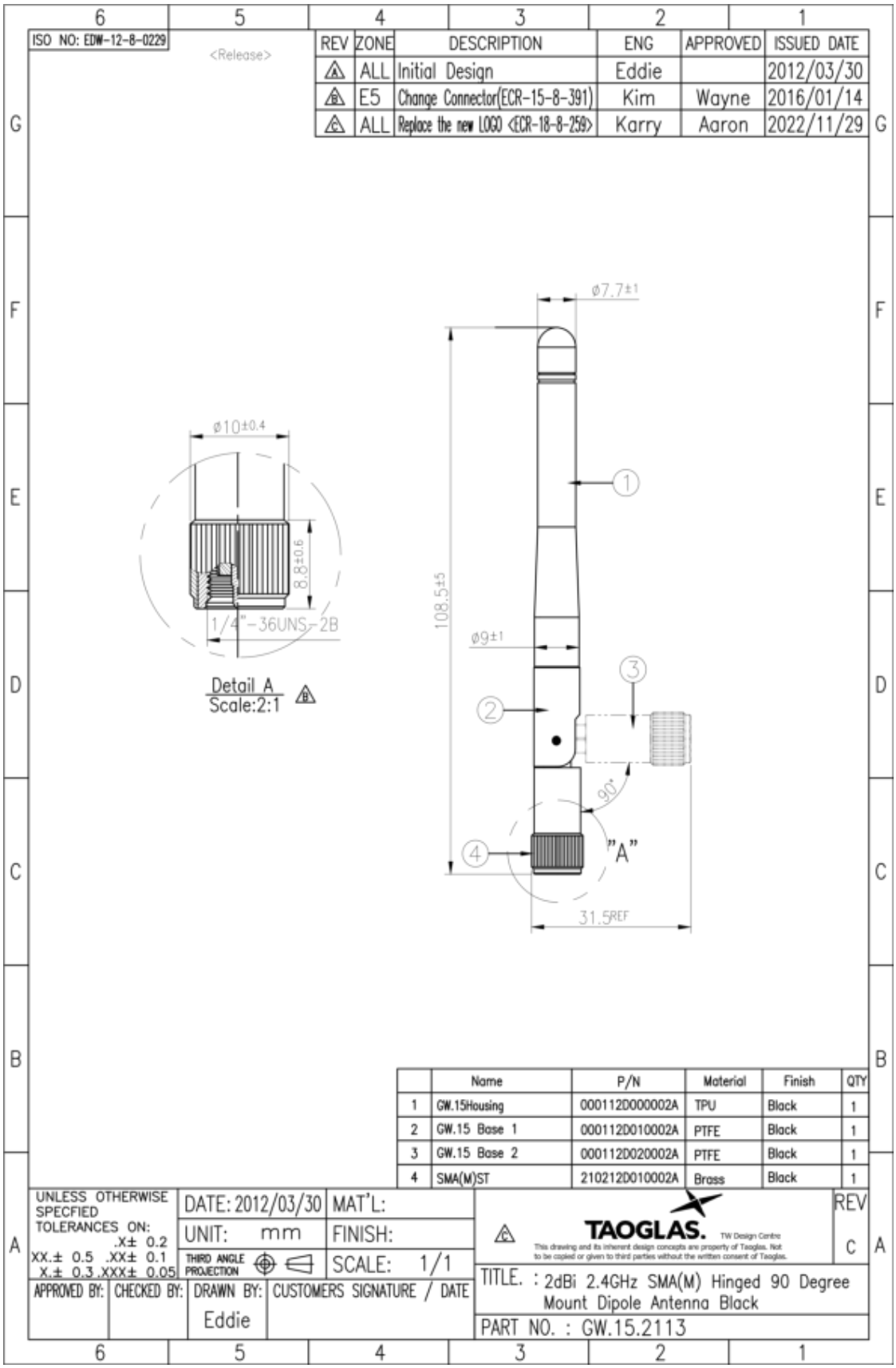
2.4GHz 2.45GHz 2.5GHz

7.16 500mm x 500mm Ground Plane 90° Bend Edge Mount



2.4GHz 2.45GHz 2.5GHz

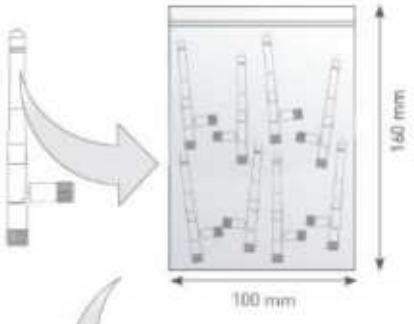
8. Mechanical Drawing (Units: mm)



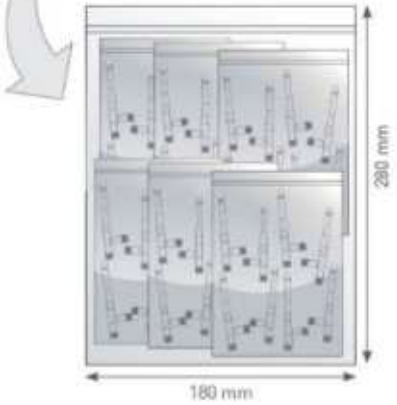
9. Packaging

GW.15.2113
Packaging Specifications

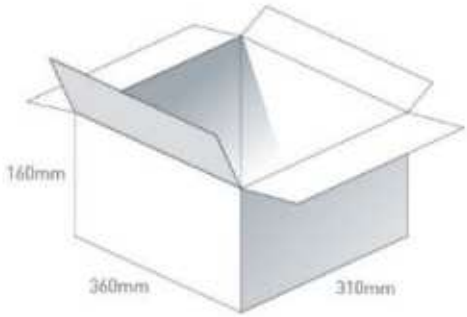
10 pcs GW.15.2113 per PE bag
PE Bag Dimensions - 100*160mm
Weight - 81g



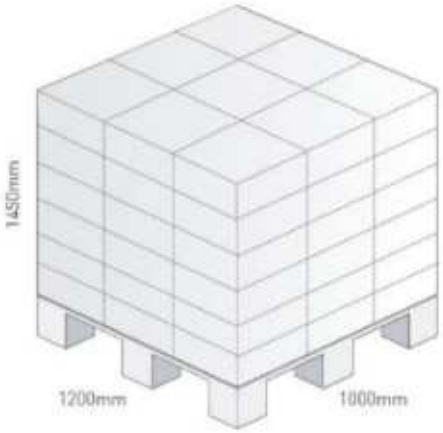
100 PE bags per large PE bag
100 pcs GW.15.2113 per large PE bags
Large PE bag Dimensions - 180*280mm
Weight - .82kg



10 Large PE bags per carton
1000 pcs GW.15.2113 per carton
Carton Dimensions - 360*310*160mm
Weight - 8.2kg



Pallet Dimensions 1200*1000*1430mm
63 Cartons per Pallet
12 Cartons per layer
6 Layers



Changelog for the datasheet

SPE-11-8-134- GW.15.2113

Revision: H	
Date:	2024-11-24
Changes:	Updated specifications
Changes Made by:	Cesar Sousa

Previous Revisions

Revision: G	
Date:	2018-12-14
Changes:	Updated Gain
Changes Made by:	Jack Conroy

Revision: B	
Date:	2014-06-06
Changes:	updated IP65
Changes Made by:	Aine Doyle

Revision: F	
Date:	2018-05-10
Changes:	Update Specifications
Changes Made by:	Peter Monahan

Revision: A (Original First Release)	
Date:	2013-04-25
Notes:	First Release
Author:	Aine Doyle

Revision: E	
Date:	2016-04-26
Changes:	Amended connector
Changes Made by:	Aine Doyle

Revision: D	
Date:	2015-08-27
Changes:	Added note on Gain.
Changes Made by:	Aine Doyle

Revision: C	
Date:	2015-02-18
Changes:	added note on Gain
Changes Made by:	Aine Doyle



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