SPECIFICATION

Part No.	:	**GW.59.3153**
Product Name	:	2.4GHz/5.1~5.85GHz 3dBi Screw mount Dipole Antenna
Description	:	RP-SMA Male Straight Connector Hinged IP-65 TPU Housing Length 156mm **RoHS Compliant**

1. Introduction

The GW.59 dipole RP-SMA plug mount antenna is ideal for 2.4GHz/5.15~5.85GHz wireless applications such as Bluetooth and Wireless LAN. At 156mm in length omni-directional 3dBi gain across all bands ensures constant reception and transmission. The antenna structure is designed for robust handling and the housing is made with 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 limits for any antennas that are to be connected to that module. Those peak gain limits are based on free-space conditions. In practice, the peak gain of an antenna tested in free-space can degrade by at least 1 or 2dBi when put inside a device. So ideally you should go for a slightly higher peak gain antenna than mentioned on the module specification to compensate for this effect, giving you better performance.

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 limits. Taoglas can then issue a specification and/or report for the selected antenna in your device that will clearly show it complying with the peak gain limits, so you can be assured you are meeting regulatory requirements for that module.

For example, a module manufacturer may state that the antenna must have less than 2dBi peak gain, but you don't need to select an embedded antenna that has a peak gain of less than 2dBi in free-space. This will give you a less optimized solution. It is better to go for a slightly higher free-space peak gain of 3dBi or more if available. Once that antenna gets integrated into your device, performance will degrade below this 2dBi peak gain due to the effects of GND plane, surrounding components, and device housing. If you want to be absolutely sure, contact Taoglas and we will test.

Choosing a Taoglas antenna with a higher peak gain than what is specified by the module manufacturer and enlisting our help will ensure you are getting the best performance possible without exceeding the peak gain limits.

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.

2. Specification Table

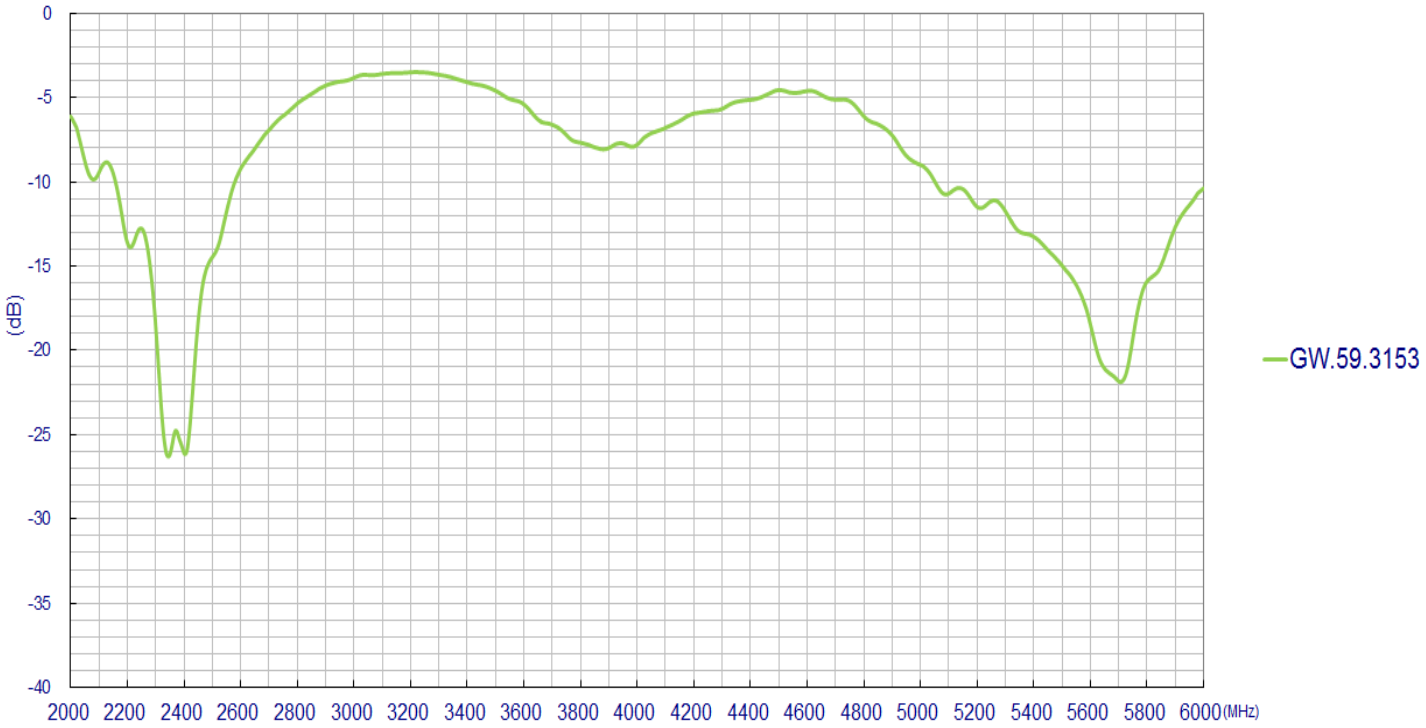
Parameter	GSM Band	
Frequency	2.4 ~ 2.5GHz,	5.15 ~ 5.85GHz
Peak Gain (dBi)*	2.37	2.93
Average Gain (dBi)*	-1.21	-1.32
Efficiency (%)*	75	73
Return Loss (dB)*	- 10 dB Maximum	

Radiation	Omni-directional
Polarization	Linear Vertical
Power Handling	1W
Impedance	50 Ω
	MECHANICAL
Cable	RG-178 Coaxial Cable
Antenna Cover	TPE
Antenna Base	PC & PBT
Color	Black
Connector	RP-SMA(M)
IP rating	IP65
	ENVIRONMENTAL
Operation Temperature	-40°C ~ + 85°C
Storage Temperature	-40°C ~ + 85°C

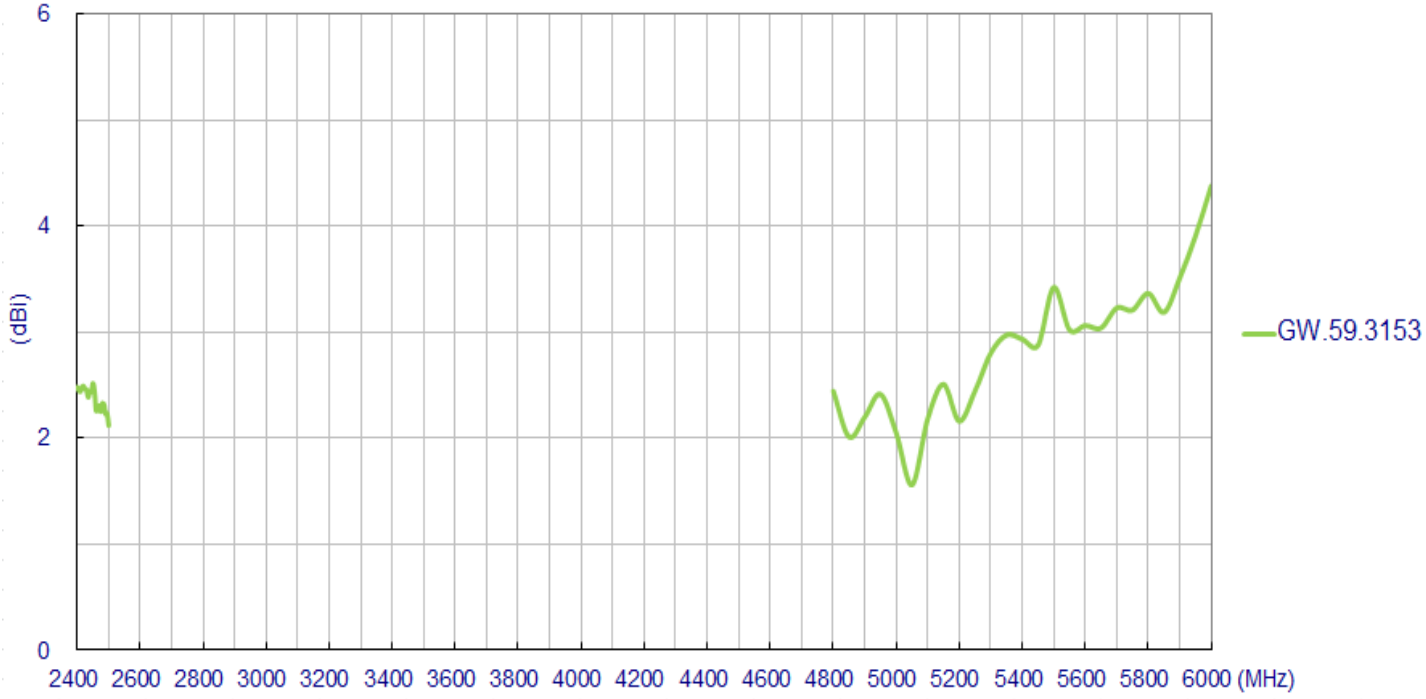
*The antenna was measured in free space.

3. Antenna Characteristics

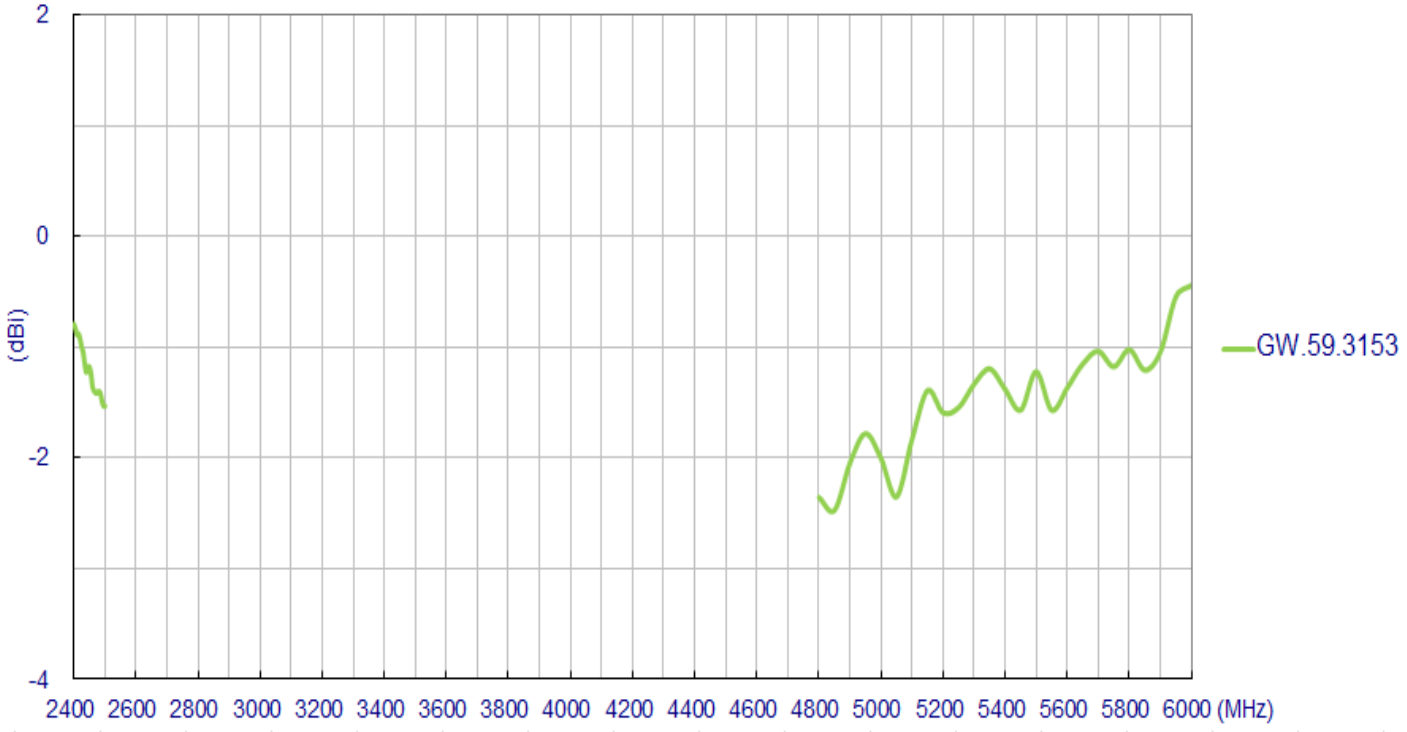
3.1. Return Loss



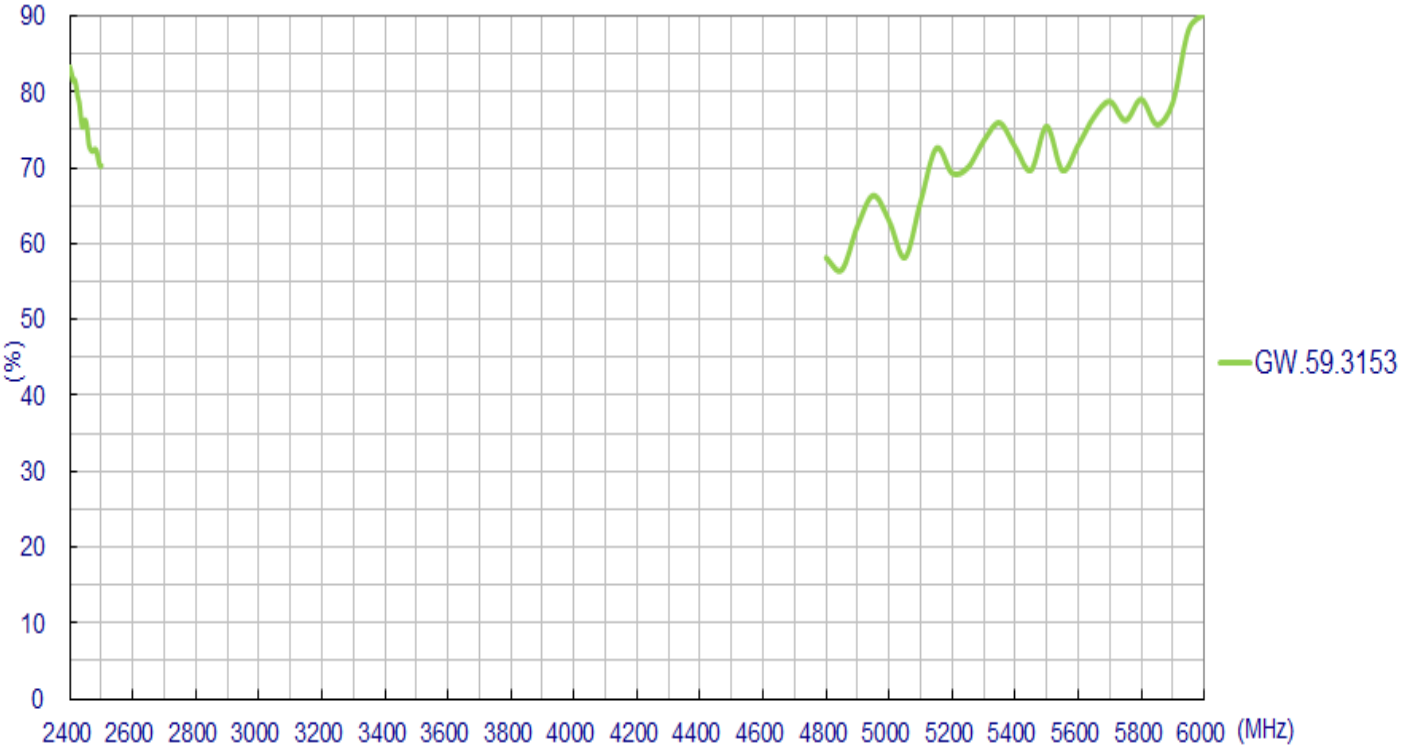
3.2. Peak Gain



3.3. Average Gain

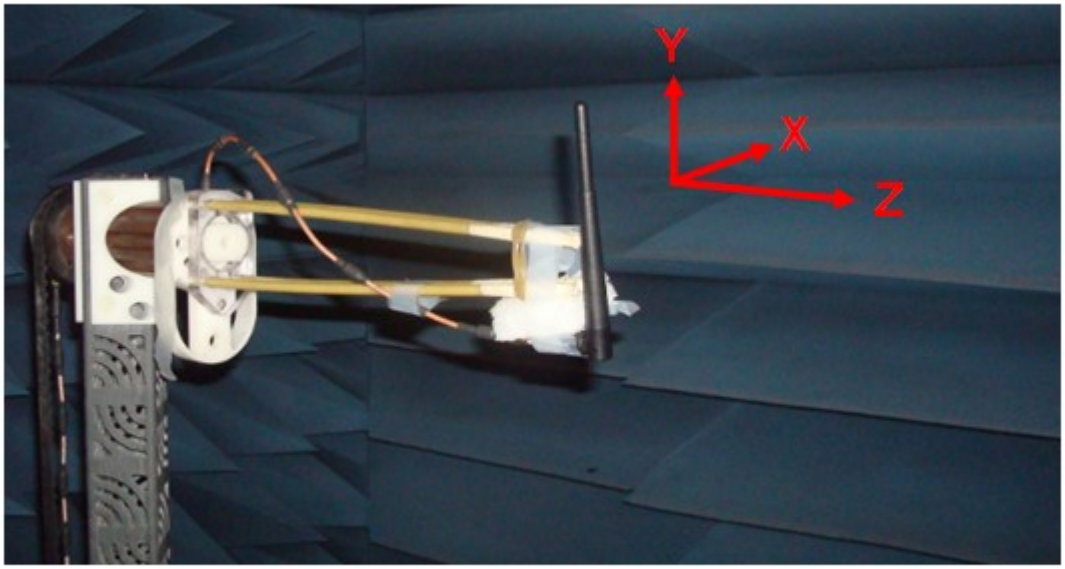


3.4. Efficiency

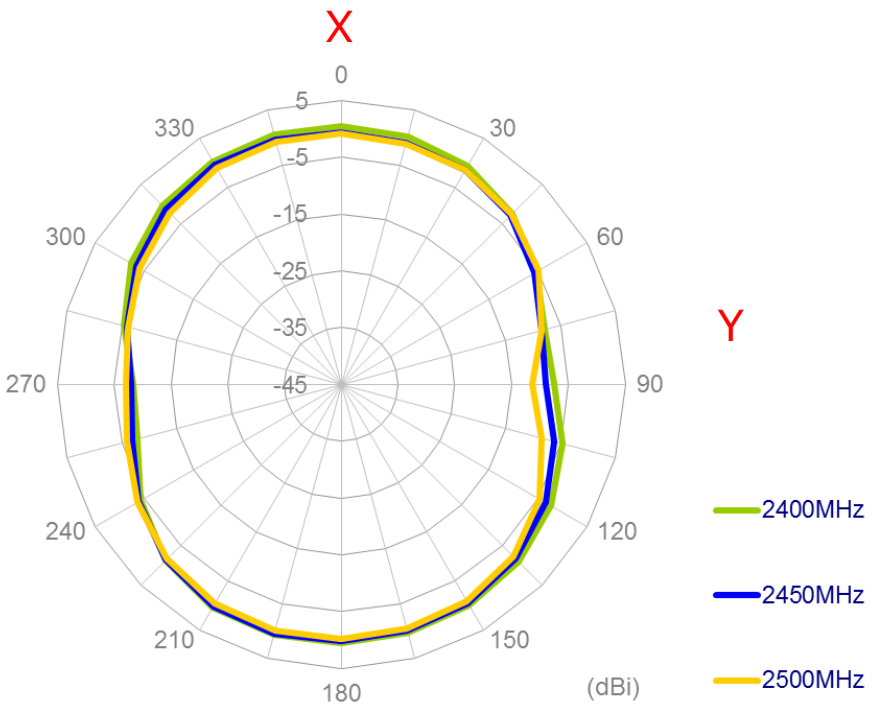


4. Radiation Patterns

The antenna radiation pattern was measured in ETS Anechoic Chamber. The testing setup is as below. The antenna was measured in free space.



XY Plane


X
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5
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330
-5
-15
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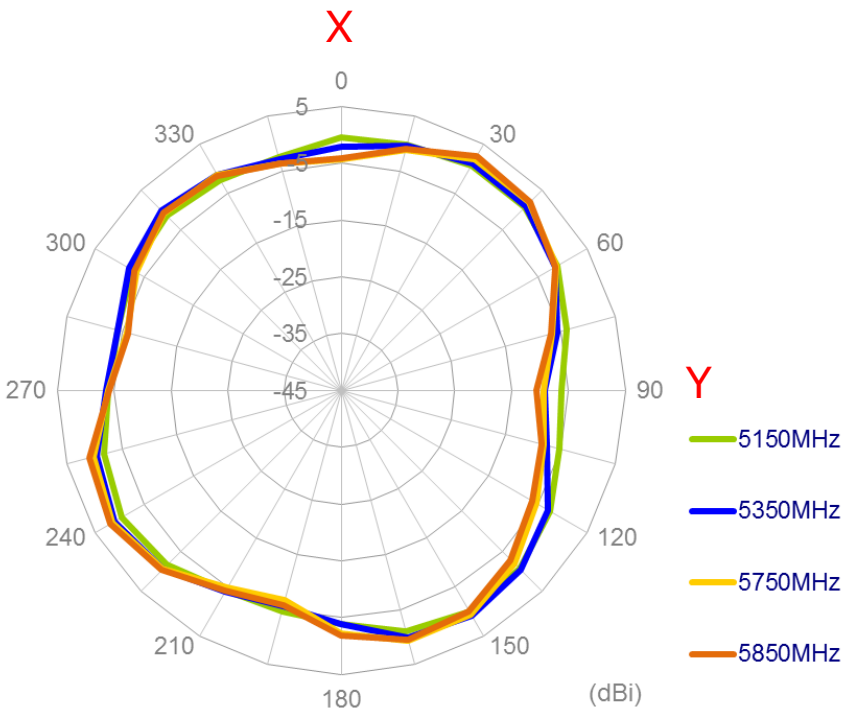
-35
270
-45
90
Y
240
120
210
150
180
(dBi)
2400MHz
2450MHz
2500MHz


X
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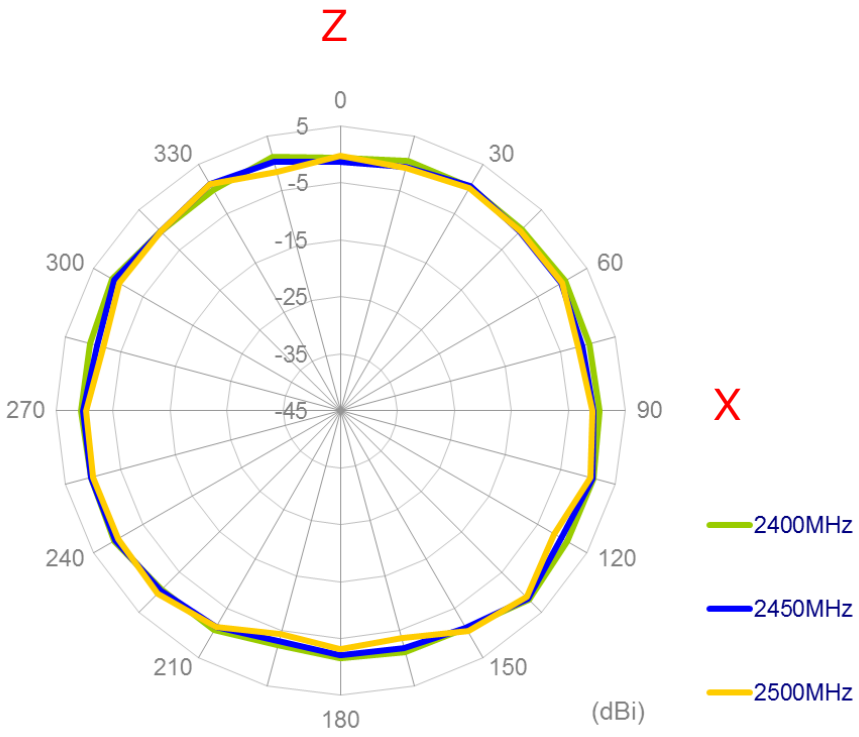
(dBi)
5150MHz
5350MHz
5750MHz
5850MHz

XZ Plane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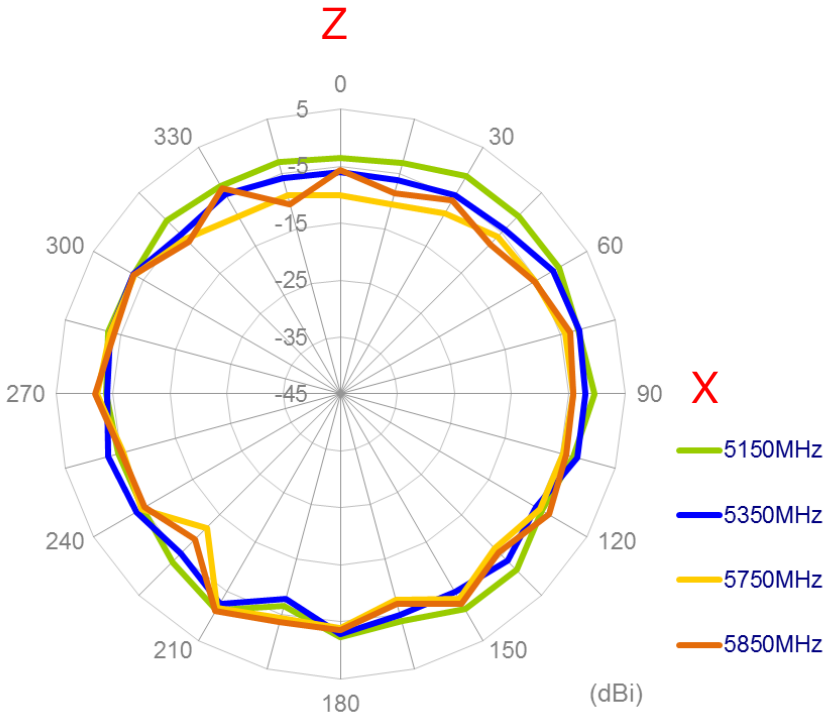
(dBi)
2400MHz
2450MHz
2500MHz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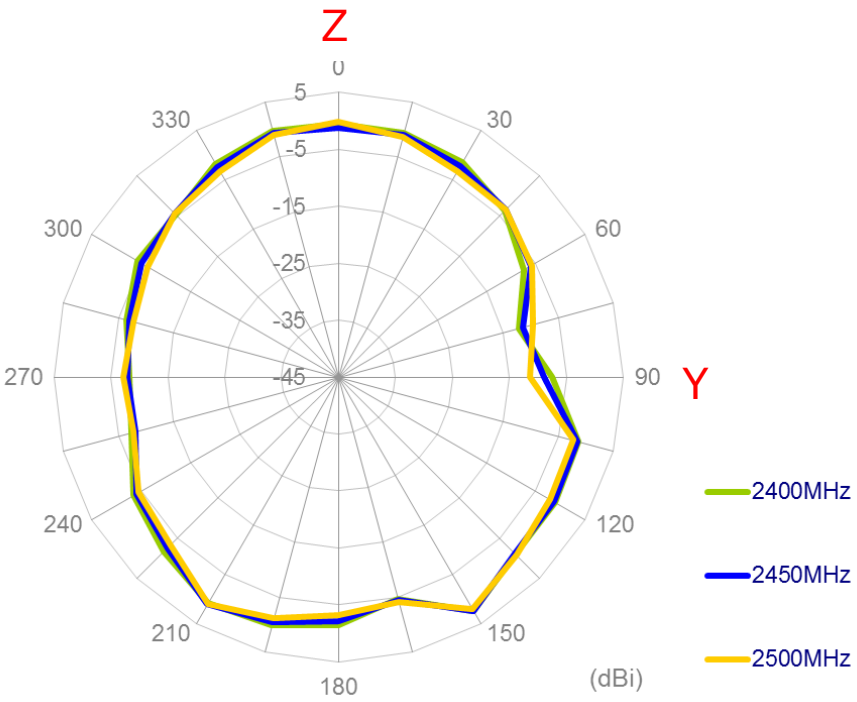
X
(dBi)
5150MHz
5350MHz
5750MHz
5850MHz

YZ Plane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Y
(dBi)
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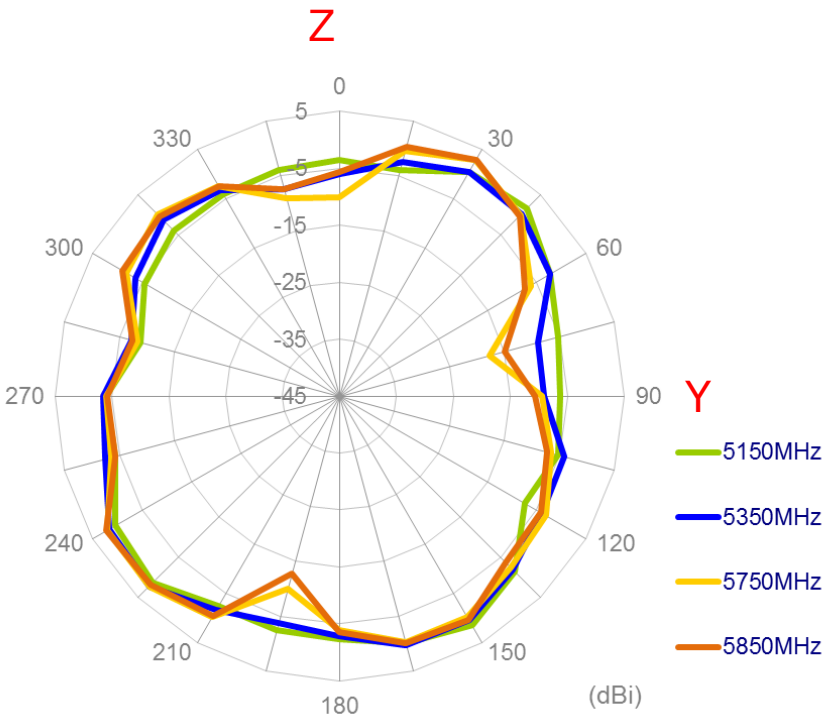
2450MHz
2500MHz


Z
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5
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-15
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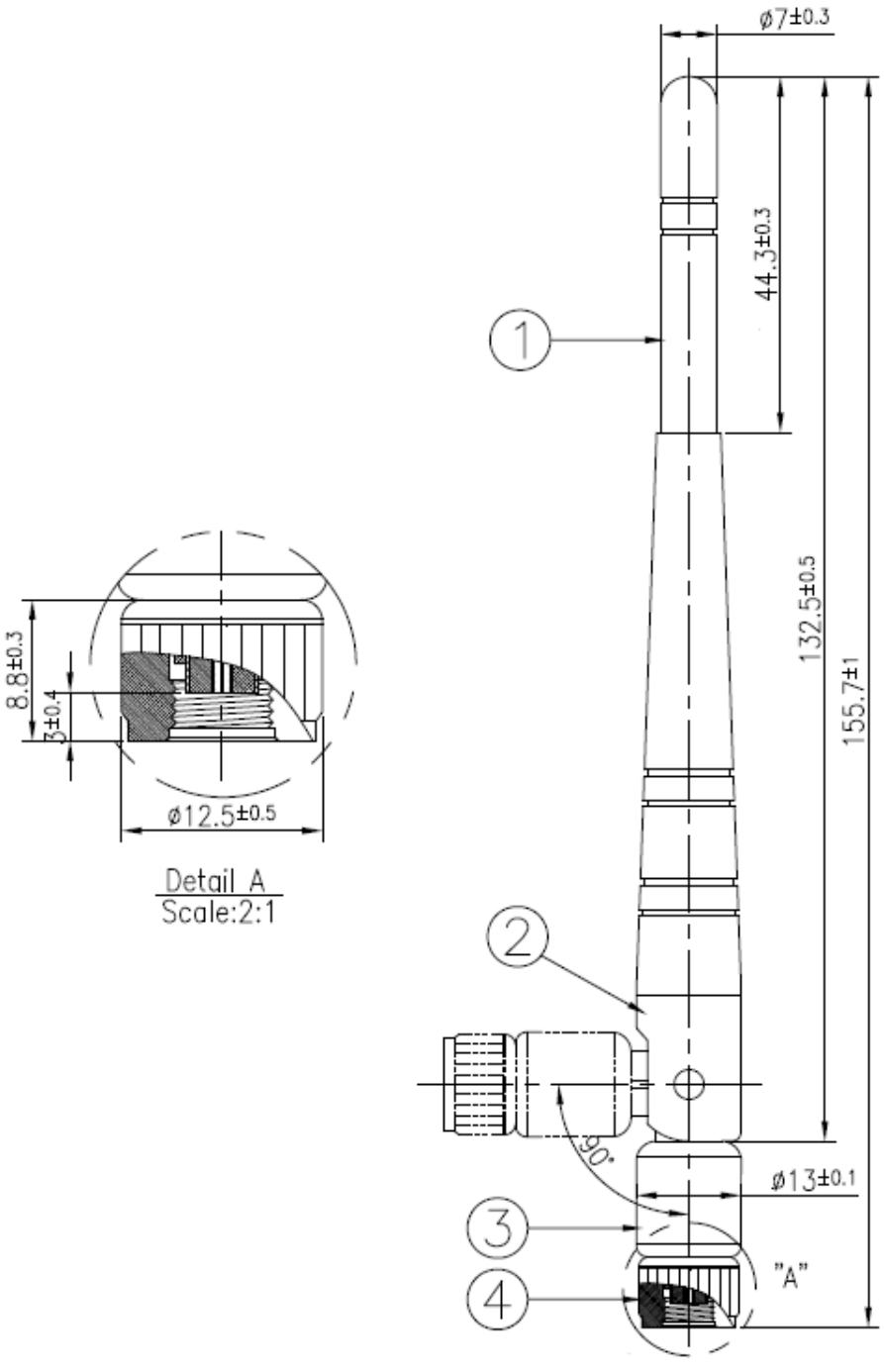
-35
-45
Y
(dBi)
5150MHz
5350MHz
5750MHz
5850MHz

5. Drawing (Unit: mm)

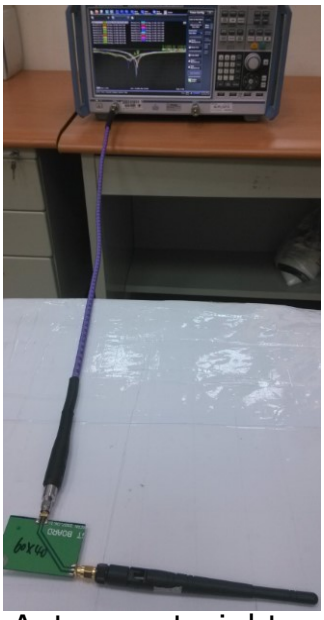


	Name	P/N	Material	Finish	QTY
1	Housing	000113D000002A	TPEE	Black	1
2	Base Top	000117C000002A	ABS	Black	1
3	Base Bottom	000117C010002A	PC+PBT	Black	1
4	SMA(M)RP	210213D000002A	Brass	Black	1

6. Application Note

6.1. GW.59 antenna measurement setup as shown the below ,(40mmx60mm PCB board)

On the short side

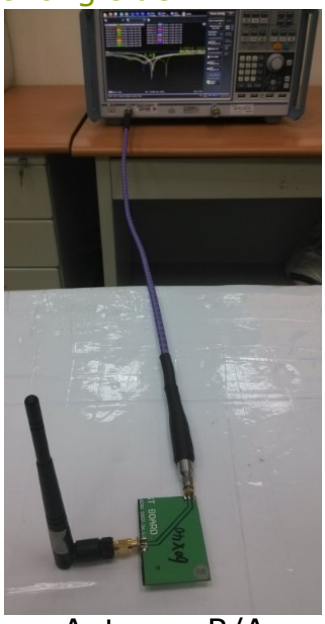


Antenna straight

Antenna R/A

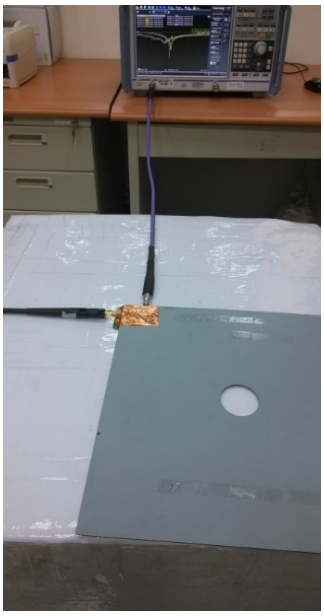
On the long side

Antenna straight



Antenna R/A

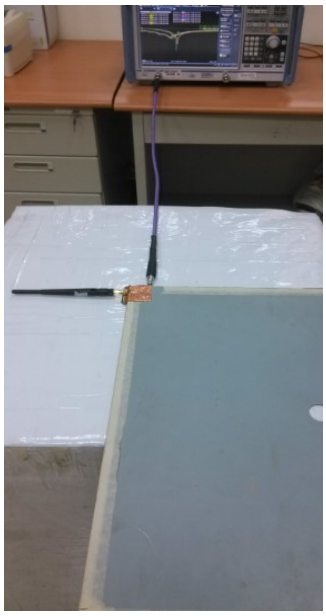
On the 30cmX30cm ground plane



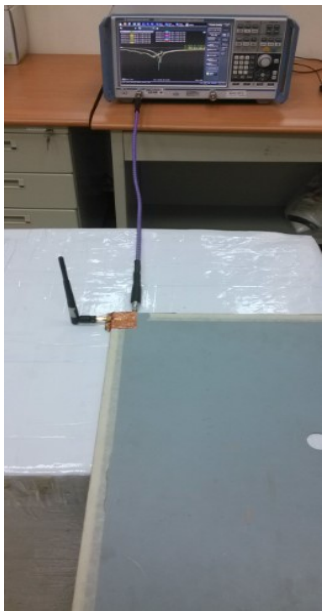
Antenna straight

Antenna R/A

On the 50cmX50cm ground plane

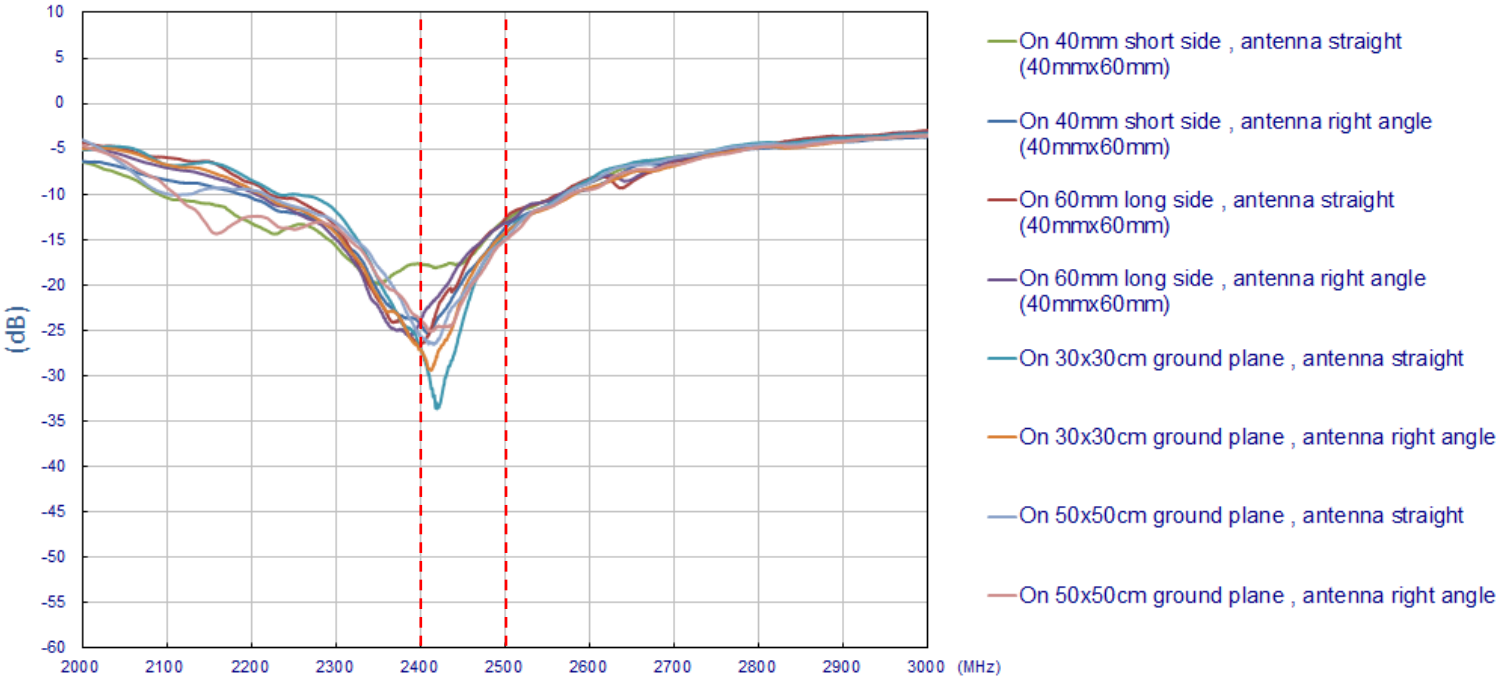


Antenna straight



Antenna R/A

6.2. Return Loss when antenna setup on different conditions



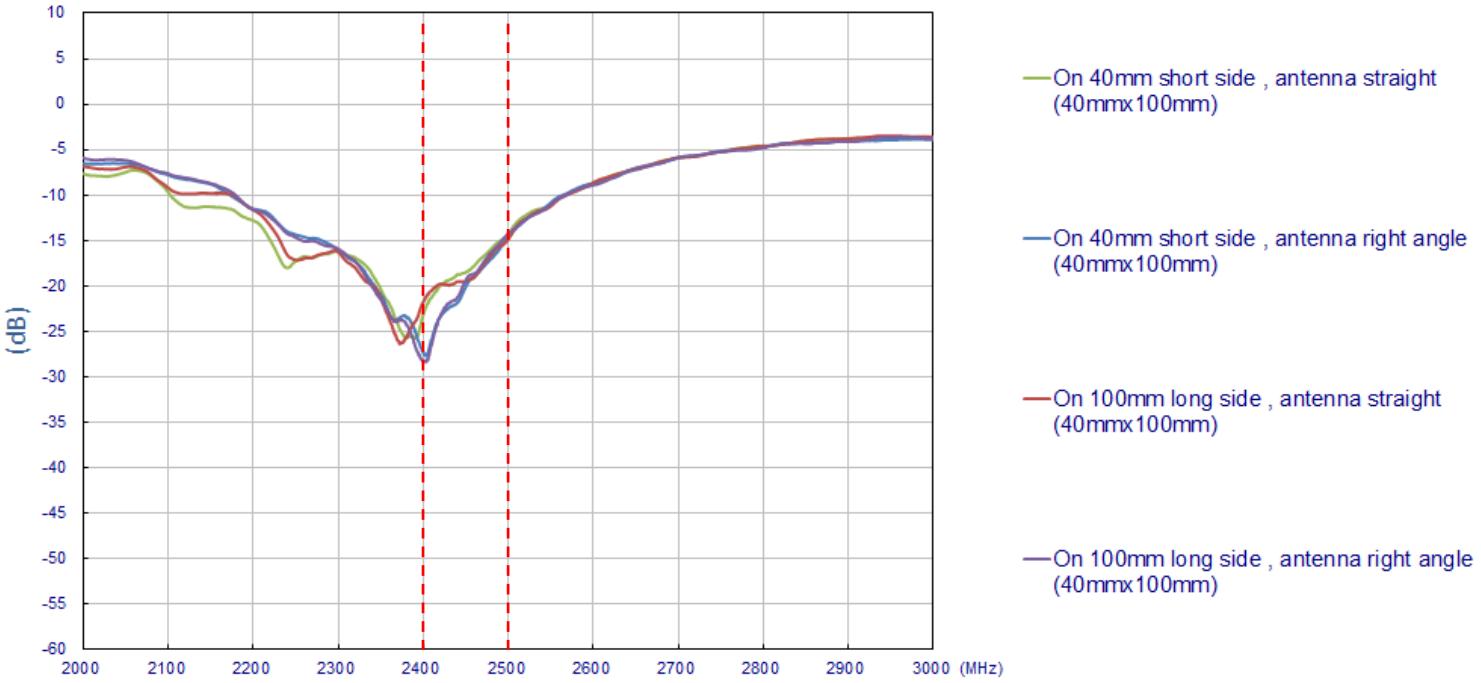
6.3. GW.59 antenna measurement,(40mmx100mm PCB board)

On the short side

On the long side

Antenna straight Antenna R/A Antenna straight Antenna R/A

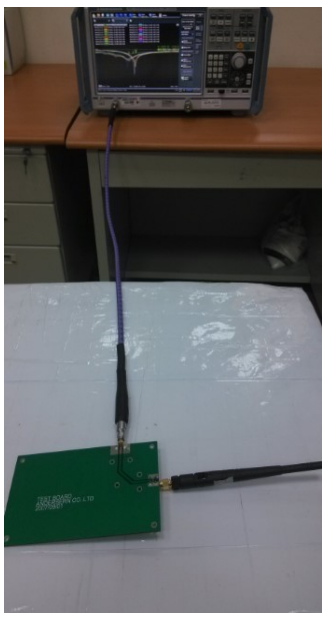
6.4. Return Loss when antenna setup on different conditions



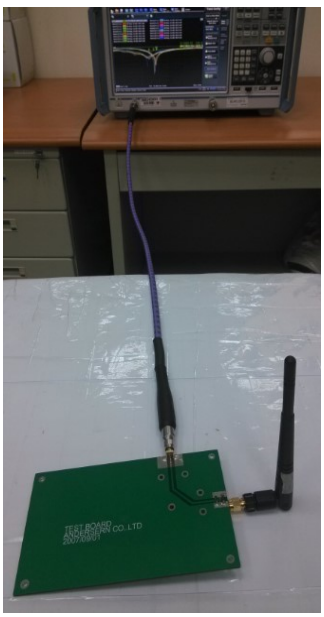
6.5. GW.59 antenna measurement,(90mmx150mm PCB board)

On the short side

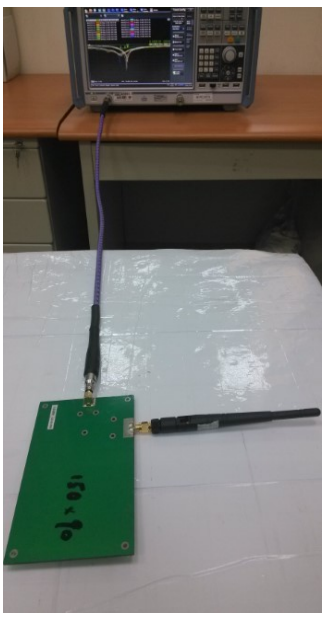
On the long side



Antenna straight



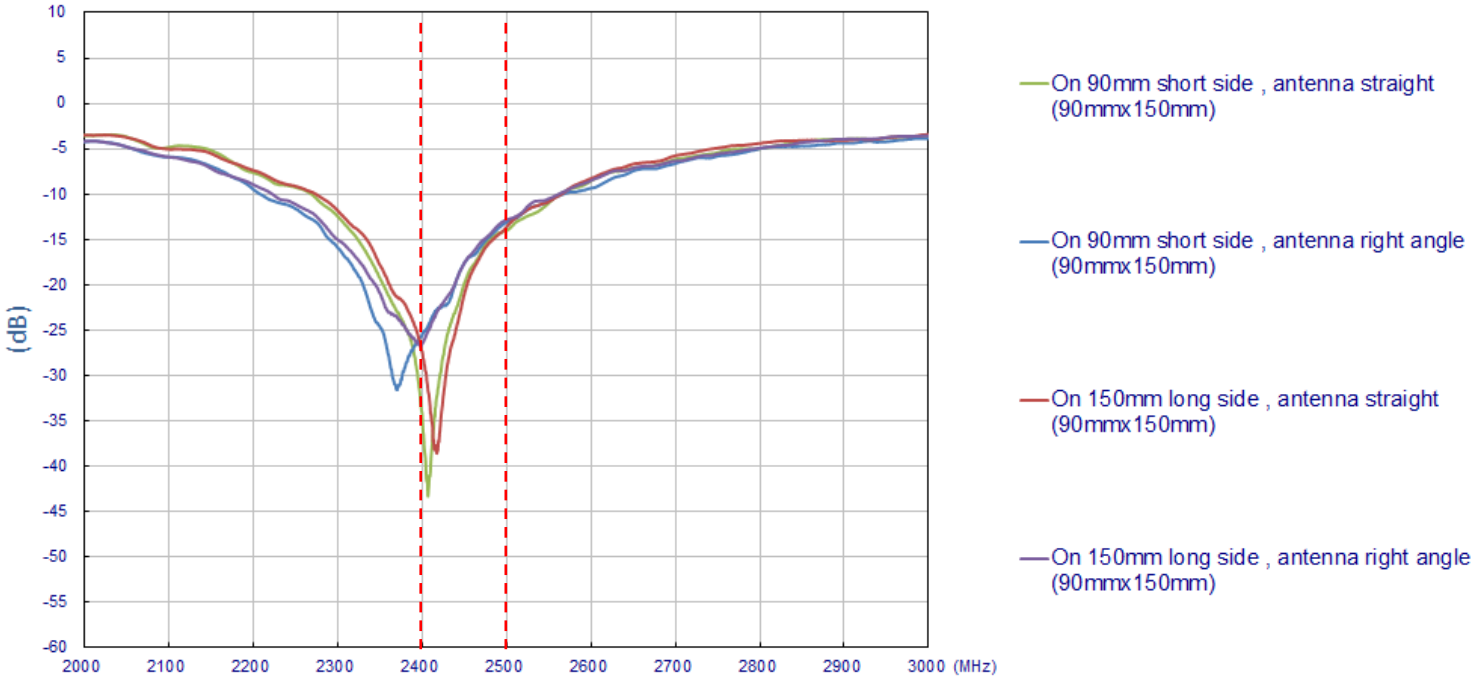
Antenna R/A



Antenna straight

Antenna R/A

6.6. Return Loss when antenna setup on different conditions



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