Product Specification

Part No.	:	**GW.59.3153**
Product Name	:	2.4GHz / 5.1~5.85GHz Dual Band 3dBi Terminal Mount Dipole Antenna
Features	:	RP-SMA Male Straight Connector Hinged Connector IP65 Rated Enclosure TPU Housing Dimensions: 156 * Ø13 mm RoHS & REACH Compliant

1. Introduction

The Taoglas GW.59 dipole RP-SMA terminalL mount antenna is ideal for 2.4GHz/5.15~5.85GHz wireless applications such as Bluetooth and Wireless LAN. At 156mm in length, with and omnidirectional radiation pattern and 3dBi gain across all bands, it ensures constant reception and transmission. The antenna structure is designed for robust usage and the ruggedized 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 positioning.

Many module manufacturers specify peak gain requirements for any antennas that is to be connected to that module. Upon testing of any of our antenna 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 this selected WiFi 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.

2. Specification

2.4GHz/5.8GHz Dual Band Antenna*		
Frequency (MHz)	2400~2500	5150~5850
Peak Gain (dBi)	2.86	4.74
Average Gain (dB)	-1.13	-1.85
Efficiency (%)	77.12	65.28
Return loss (dB)	-10 Max	
Radiation	Omni-directional	
Impedance	50 Ω	
Power Handling	1W	
Polarization	Linear	
Mechanical		
Cable loss	0.17dB/2.4GHz, 0.28dB/5.8GHz	
Antenna Cover	TPE	
Antenna Base	PC & PBT	
Color	Black	
Connector	RP-SMA(M)	
IP rating	IP-65	
ENVIRONMENT		
Operation Temperature	-40°C ~ +85°C	
Storage Temperature	-40°C ~ +85°C	

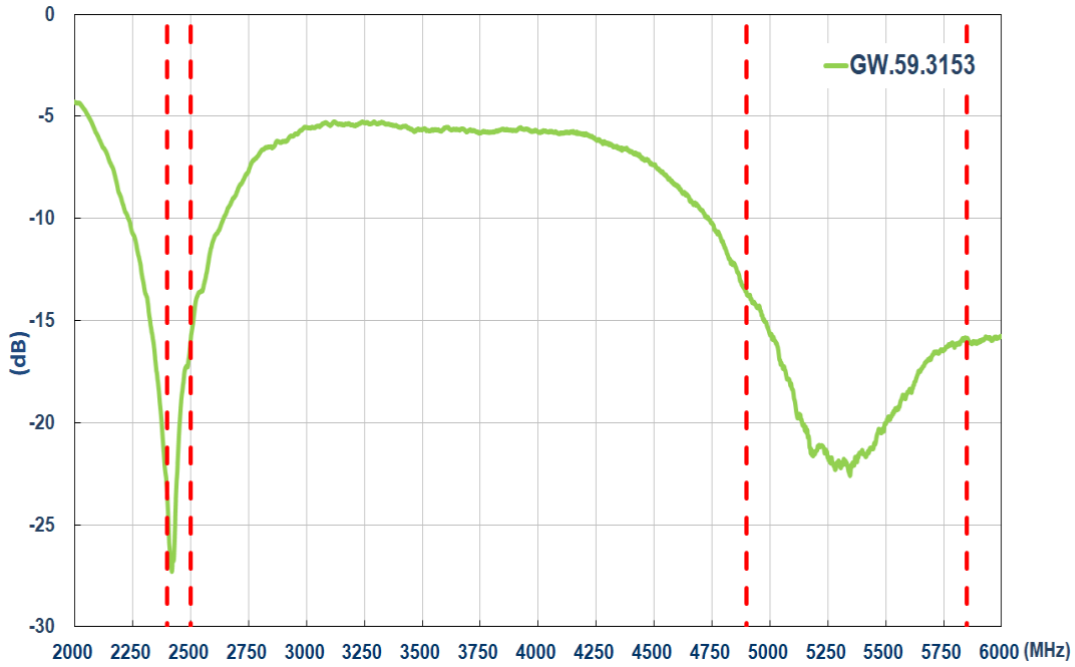
*The antenna was measured in free space.

2.1 Antenna Gain (Main)

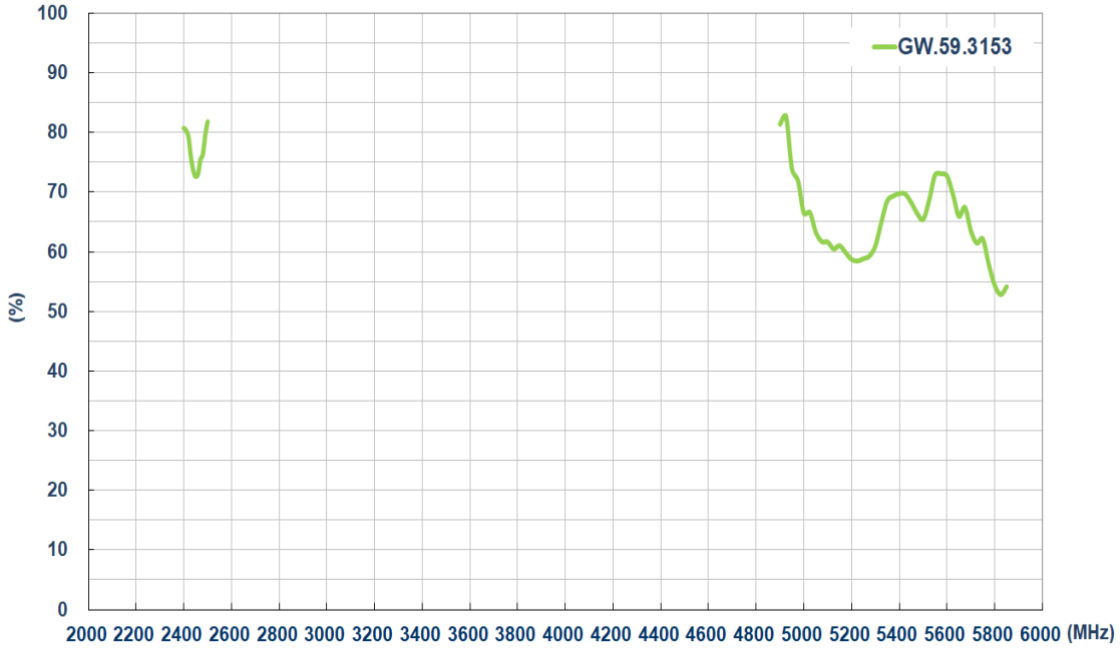
WLAN Main Antenna Gain								
Frequency	Max Value(dBi)			Average(dBi)				
	H-pol	V-pol	Total.	H-pol	V-pol	Total.	3D Gain	Efficiency (%)
2400MHz	2.2	2.6	2.8	-7.7	-4.9	-1.0	2.8	80.7
2450MHz	1.5	1.8	2.1	-8.4	-5.5	-1.5	2.1	72.5
2500MHz	1.6	2.2	2.6	-8.4	-5.1	-1.1	2.6	81.7
5150MHz	2.7	1.9	3.2	-8.8	-6.7	-2.5	3.2	61.0
5350MHz	2.9	2.8	3.8	-7.7	-6.9	-2.3	3.8	68.5
5475MHz	3.6	2.8	4.0	-8.3	-7.2	-2.8	4.0	66.4
5725MHz	3.5	2.9	4.1	-8.8	-7.9	-3.5	4.1	61.4
5850MHz	3.0	2.1	3.6	-9.6	-8.9	-4.5	3.6	54.1

3. Antenna Characteristics

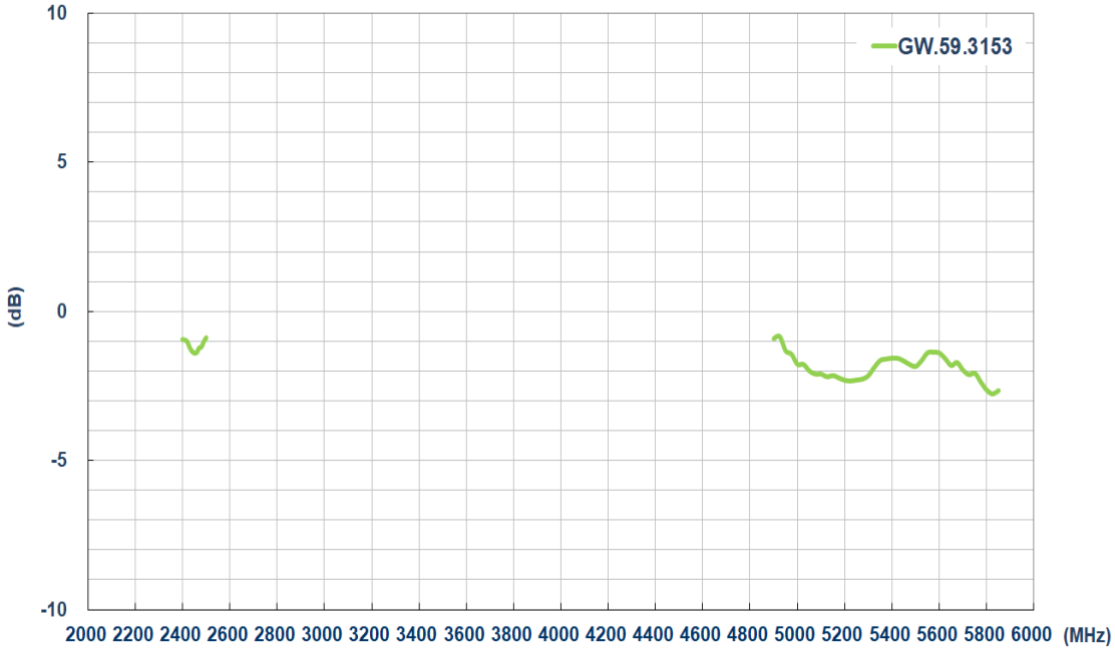
3.1 Return loss



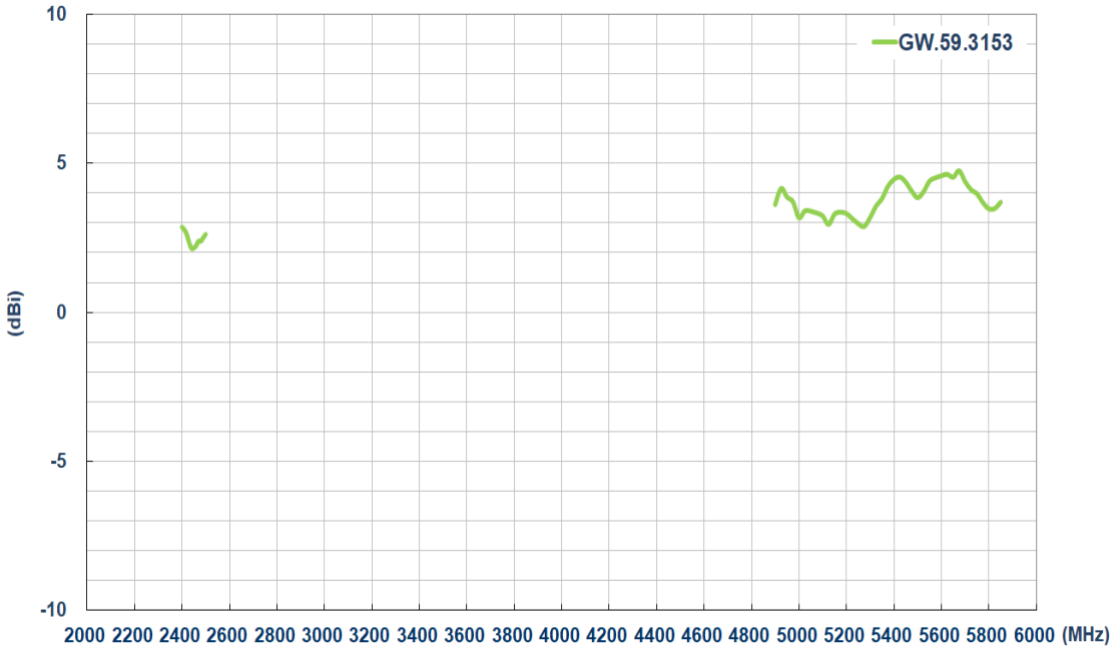
3.2 Efficiency



3.3 Average Gain

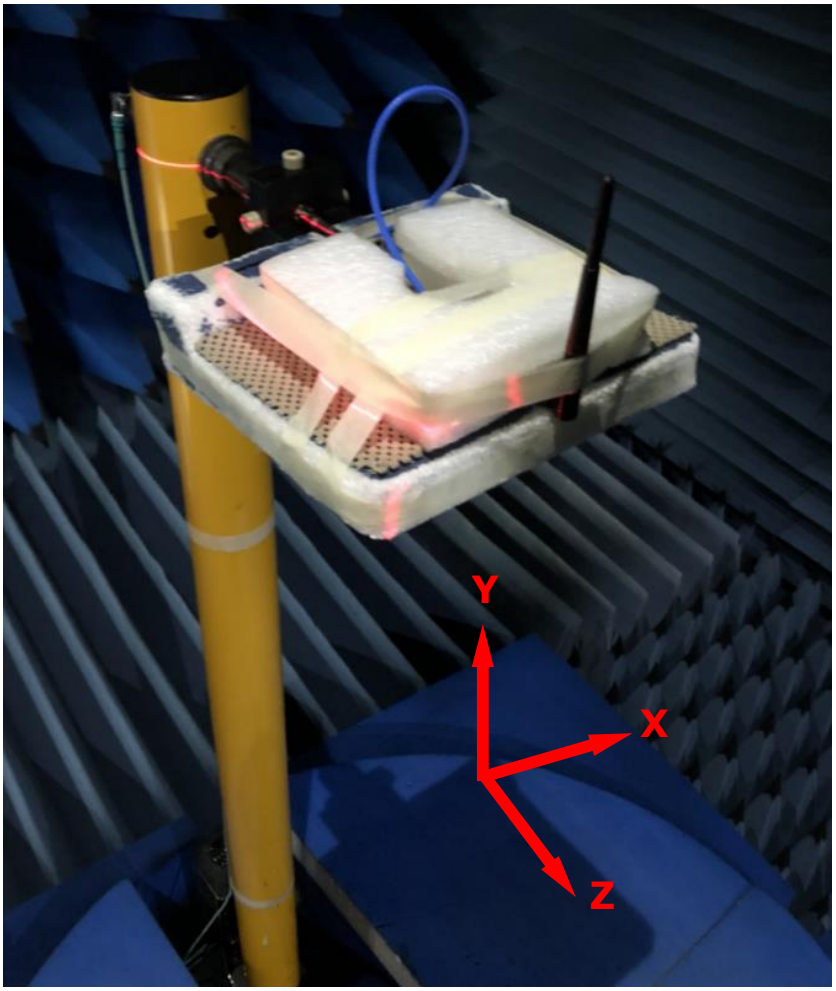


3.4 Peak Gain



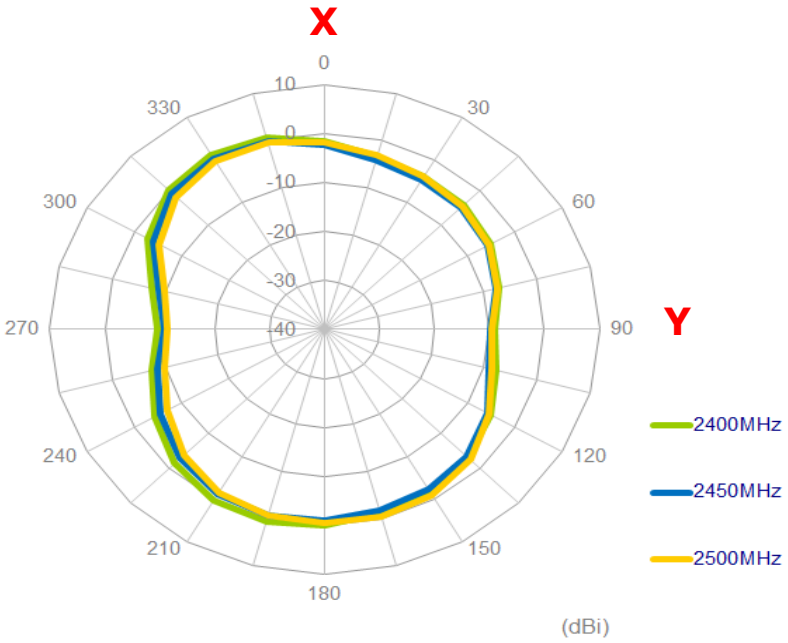
4. Antenna Radiation Patterns

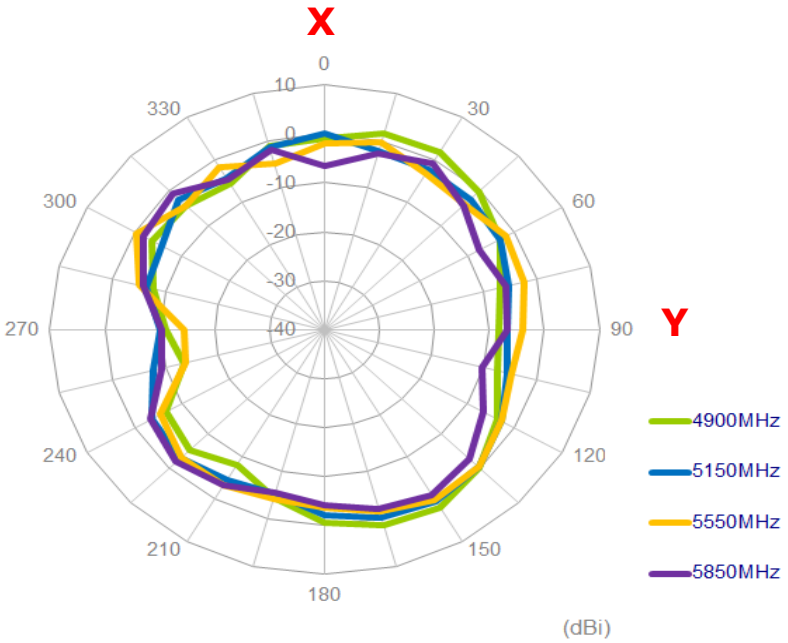
4.1 Antenna Setup (Antenna Test Setup in Anechoic Chamber)



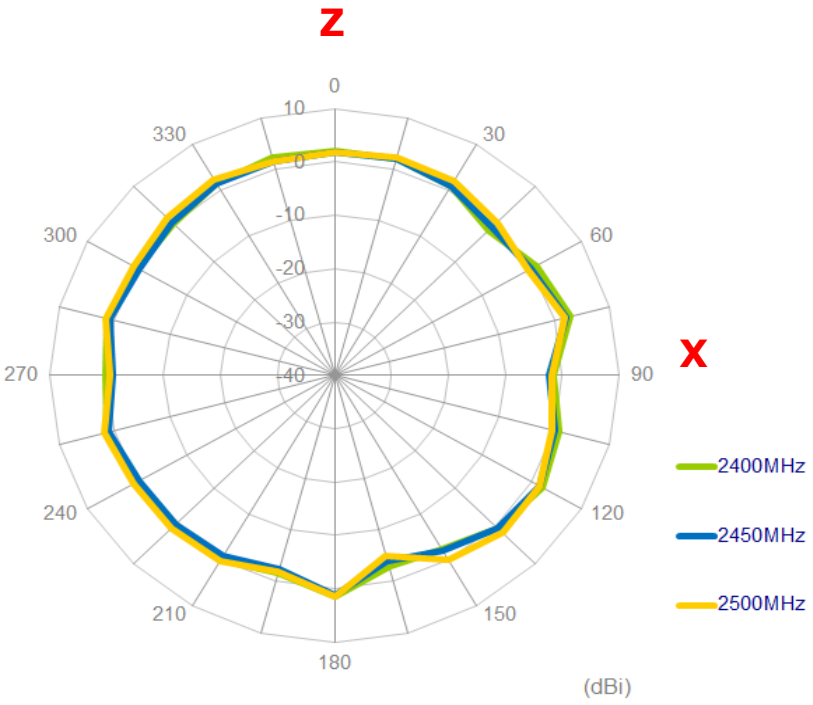
4.2 2D Radiation Patterns

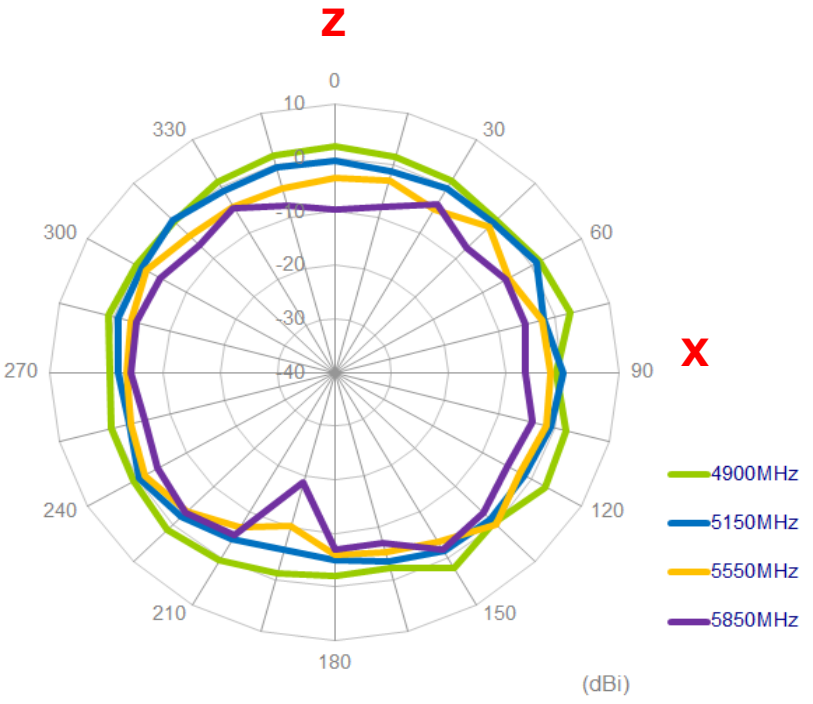
XY Plane



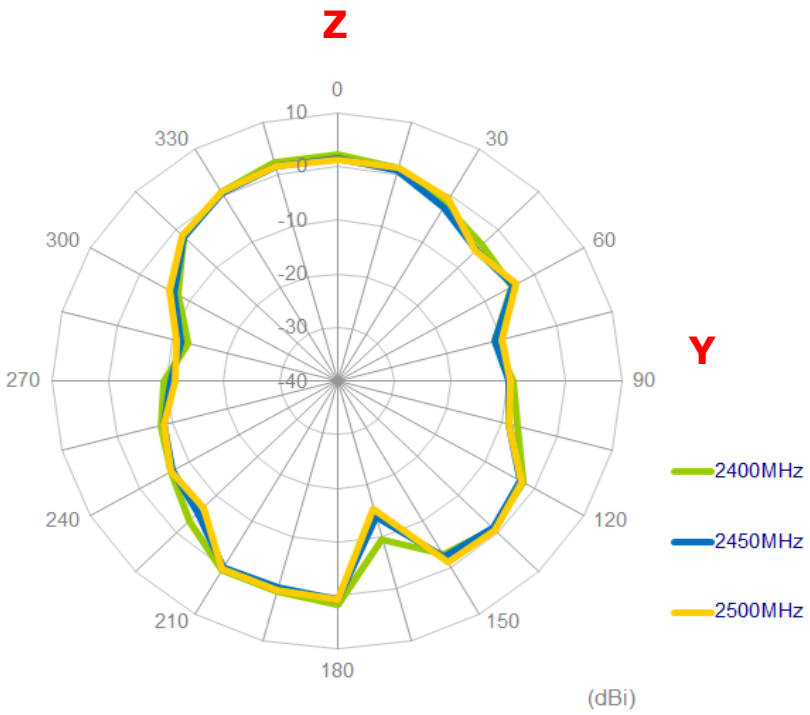


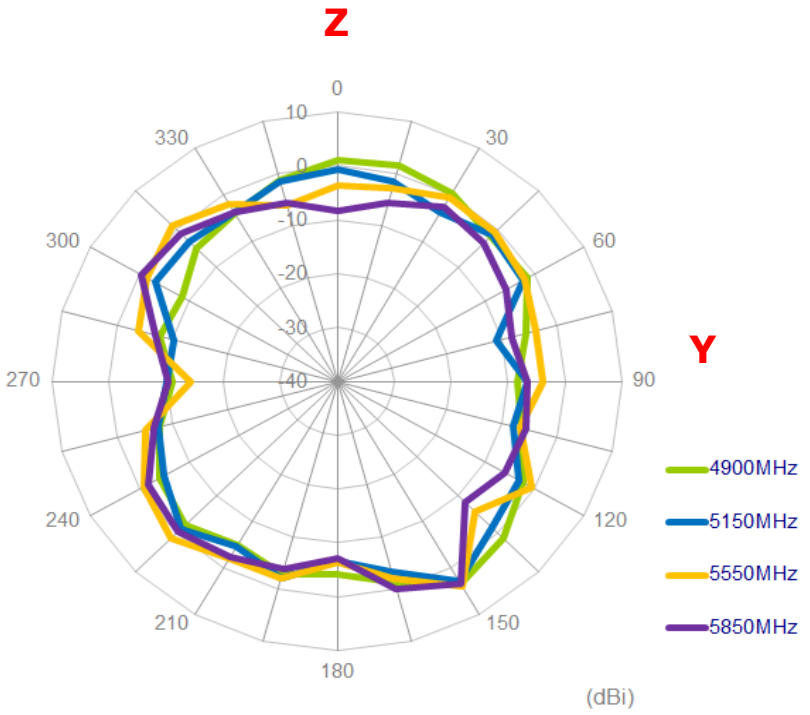
XZ Plane


Z
X
0
30
60
90
120
150
180
210
240
270
300
330
10
0
-10
-20
-30
-40
(dBi)
2400MHz
2450MHz
2500MHz

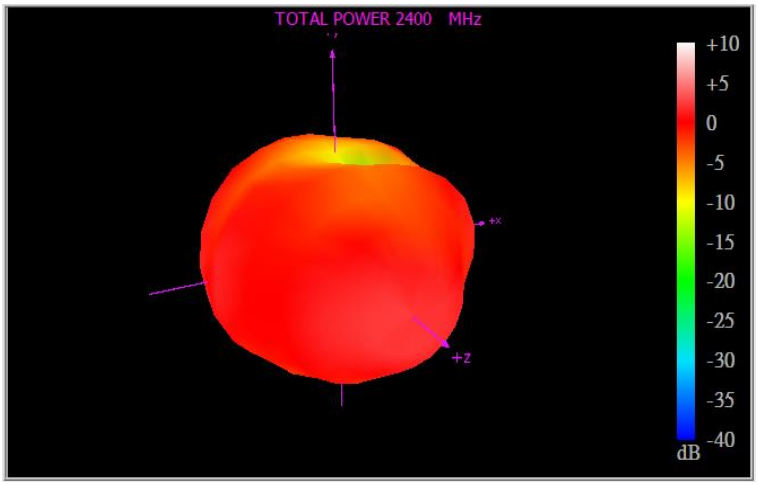

Z
X
0
30
60
90
120
150
180
210
240
270
300
330
10
0
-10
-20
-30
-40
(dBi)
4900MHz
5150MHz
5550MHz
5850MHz

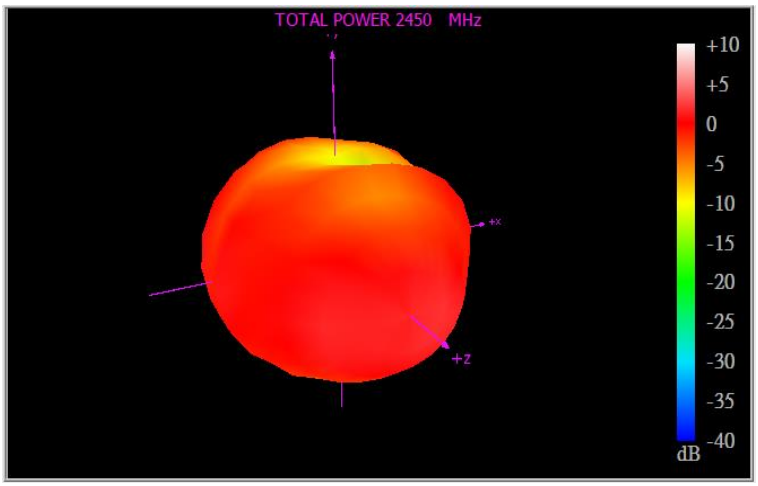
YZ Plane

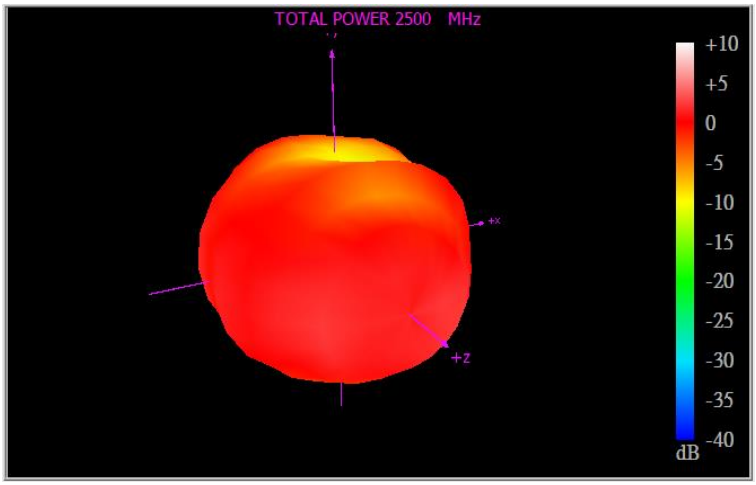

Z
Y
0
10
30
60
90
120
150
180
210
240
270
300
330
0
-10
-20
-30
-40
2400MHz
2450MHz
2500MHz
(dBi)

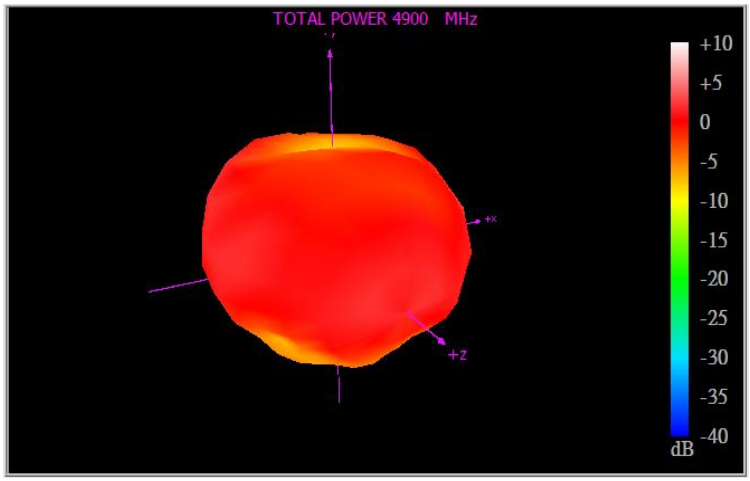

Z
Y
0
10
30
60
90
120
150
180
210
240
270
300
330
0
-10
-20
-30
-40
4900MHz
5150MHz
5550MHz
5850MHz
(dBi)

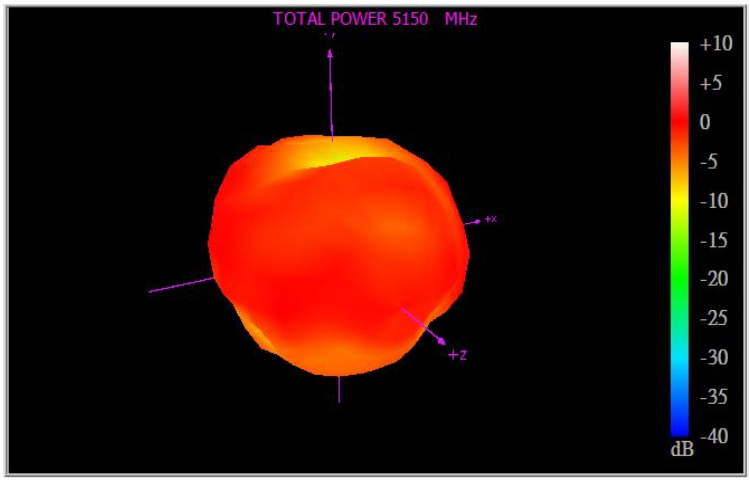
4.3 3D Radiation Patterns

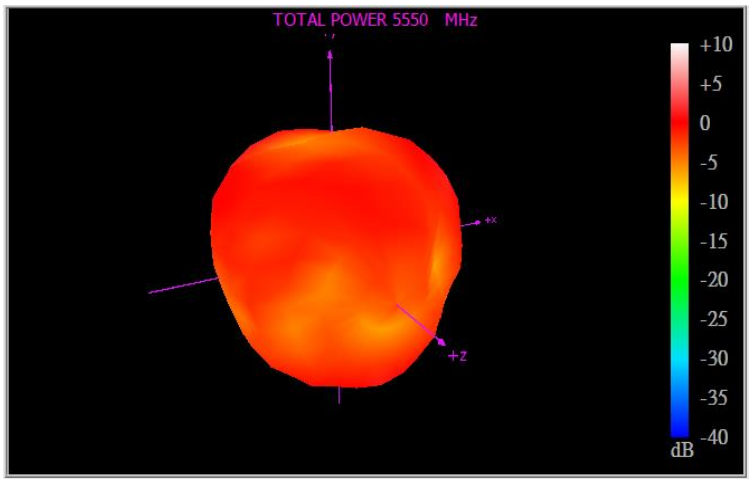


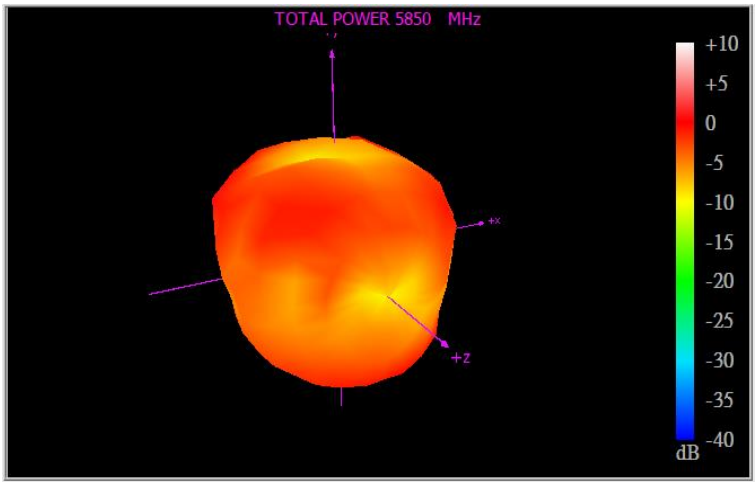




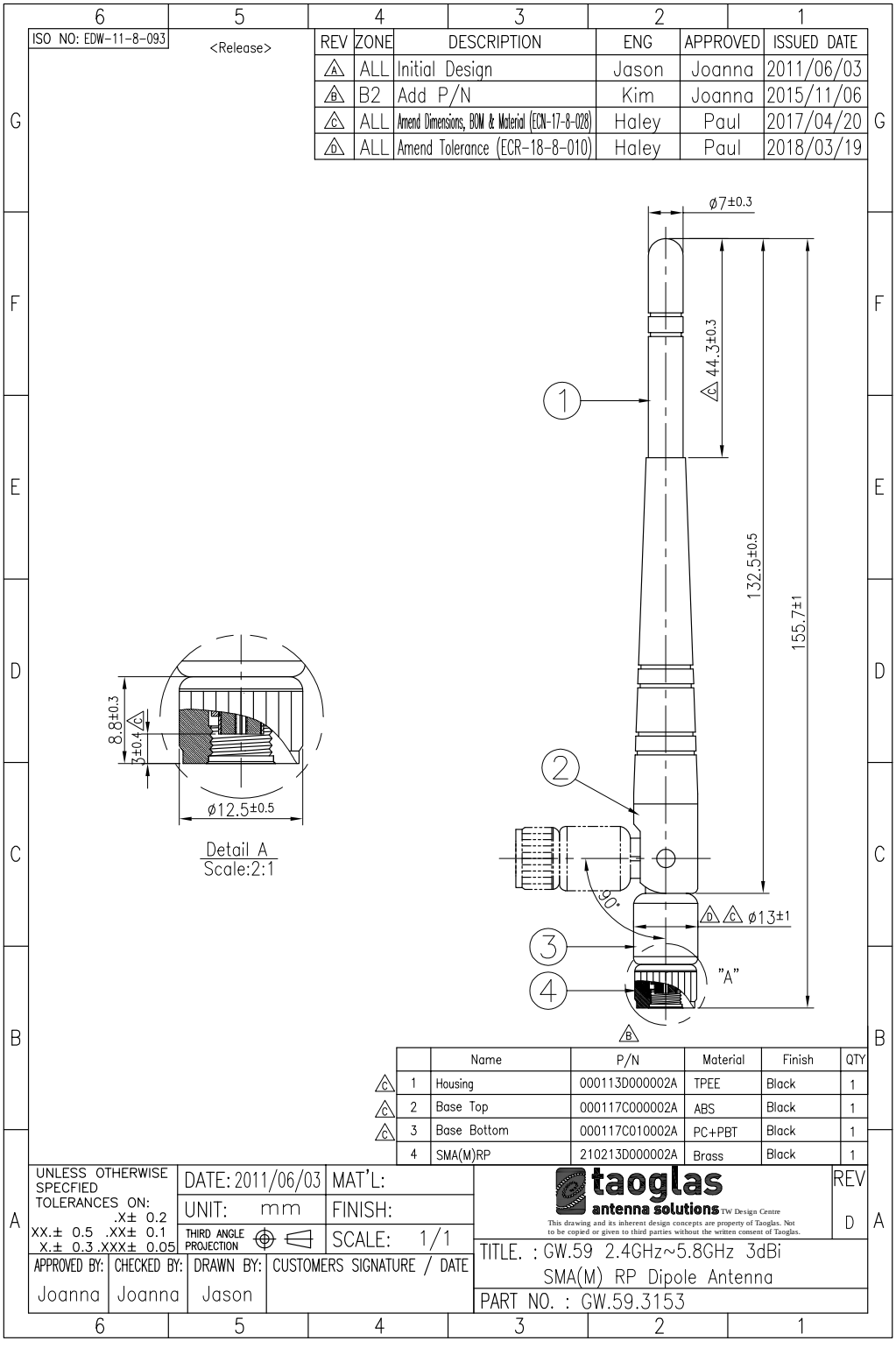

TOTAL POWER 4900 MHz
+10
+5
0
-5
-10
-15
-20
-25
-30
-35
-40
dB
+x
+z


TOTAL POWER 5150 MHz
+10
+5
0
-5
-10
-15
-20
-25
-30
-35
-40
dB
+x
+z


TOTAL POWER 5550 MHz
+10
+5
0
-5
-10
-15
-20
-25
-30
-35
-40
dB
+x
+z

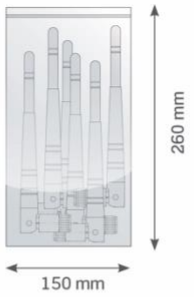

TOTAL POWER 5850 MHz
+10
+5
0
-5
-10
-15
-20
-25
-30
-35
-40
dB
+x
+z

5. Mechanical Drawing (Unit: mm)

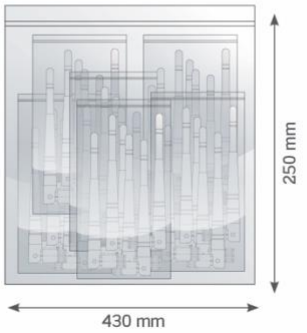


6. Packaging

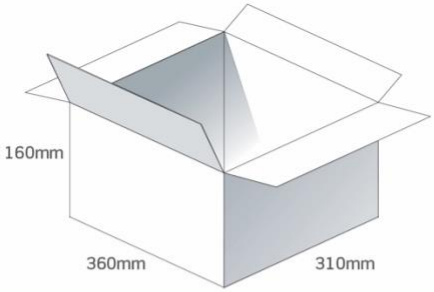
10 pcs GW.59.3153 per PE Bag
Bag Dimensions - 260 x 150 mm
Weight - 175g



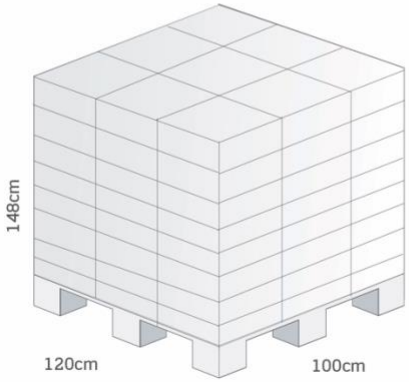
100 pcs GW.59.3153 per Large PE Large Bag
Bag Dimensions - 430 x 250mm
Weight - 1.78kg



400 pcs GW.59.3153 per carton
Carton - 360 x 310 x 160mm
Weight - 7.6Kg



Pallet Dimensions 120 x 100 x 148cm
72 Cartons per Pallet
9 Cartons per layer
8 Layers



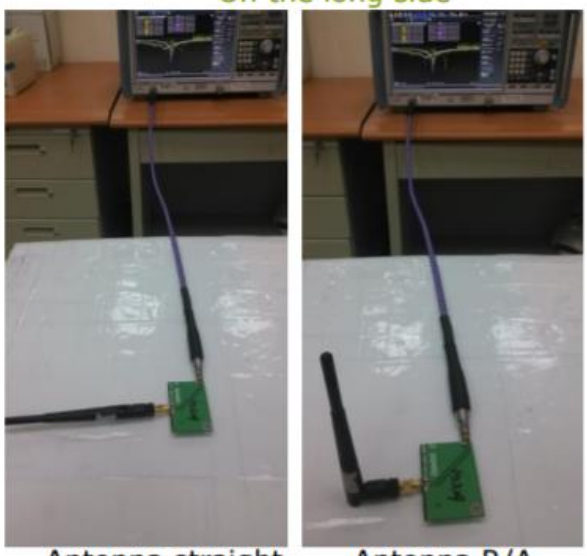
7. Application Note

7.1. 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

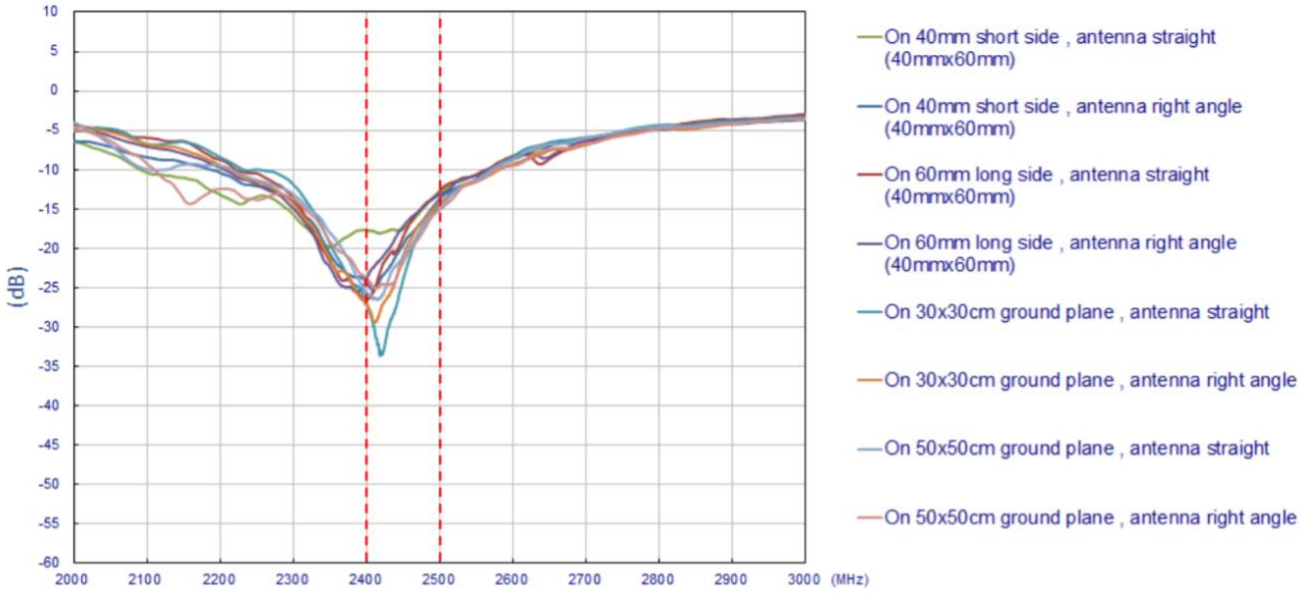
On the 30cmX30cm ground plane

Antenna straight Antenna R/A

On the 50cmX50cm ground plane

Antenna straight Antenna R/A

7.2. Return loss when antenna setup on different conditions.



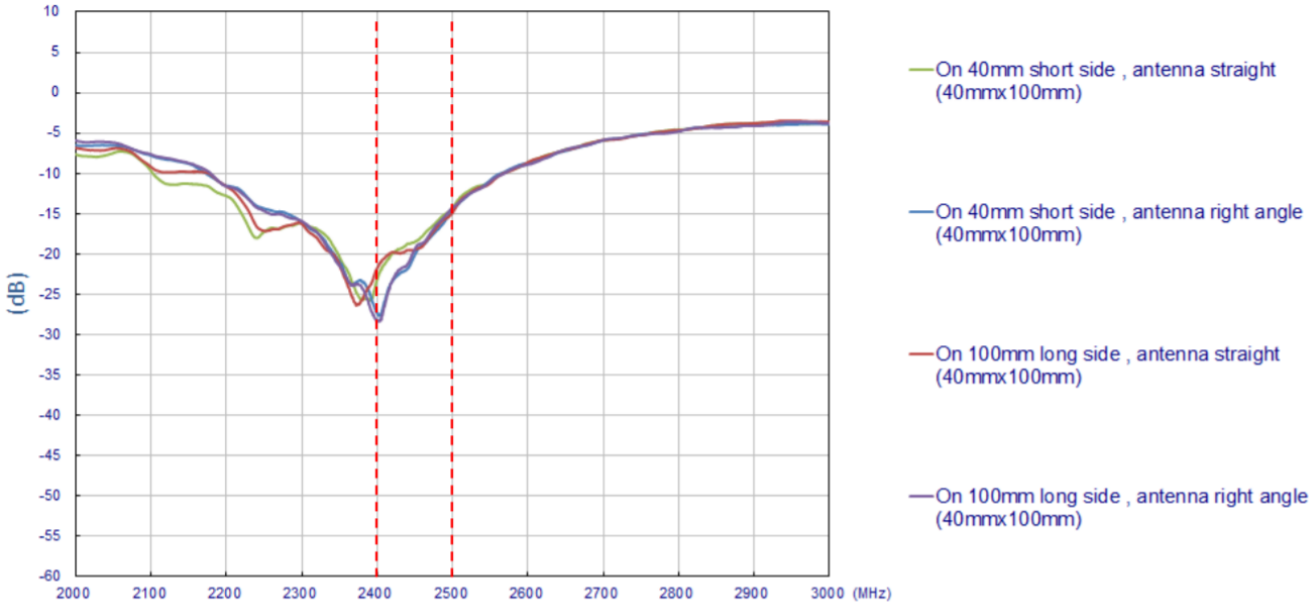
7.3. GW.59 antenna measurement (40x100mm PCB board)

On the short side

On the long side

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

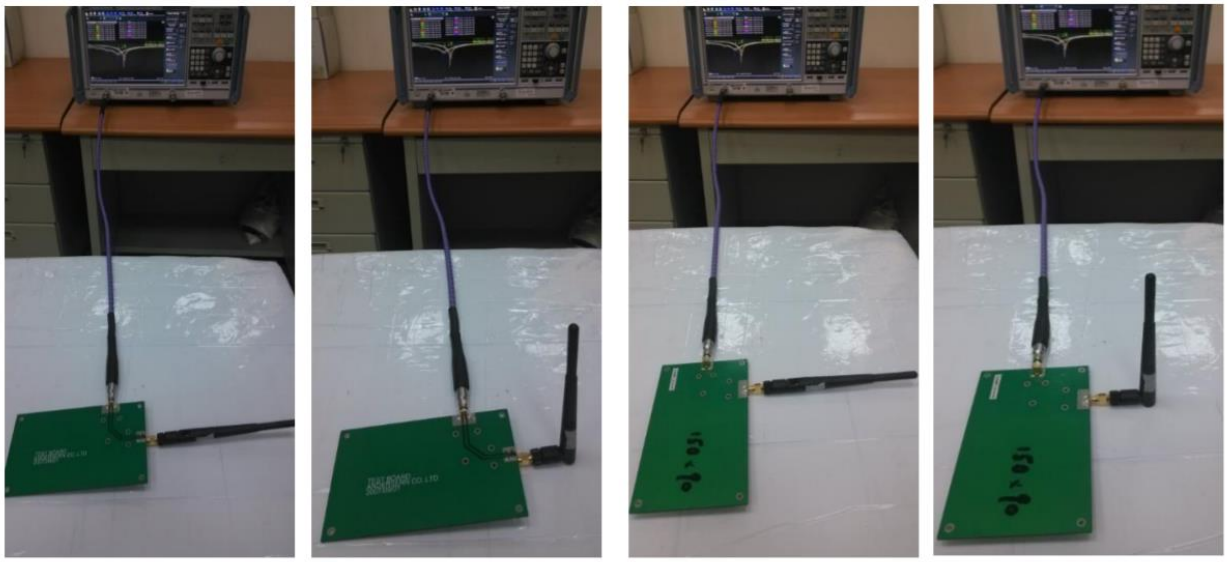
7.4. Return loss when antenna setup on different conditions.



7.5. 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

7.6. Return loss when antenna setup on different conditions.