



HL Global Antenna Proposal for CIG WF-186

Passive Measurement Report

Prepared by: Tina Zhou

Date: 2022-06-15

Introduction

- Brief Project Description
 - Project Name: CIG WF-186
 - Category: WiFi AP
- The AP supports IEEE 802.11 a/b/g/n/ac/ax wireless standards
- Antenna Configuration:
 - 2x Dual WLAN antennas
 - 1x BT antenna
- Antennas in HL proposal are
 - Off-board
 - Cable-fed
 - PCB type and Stamped metal
- Tooling housing and real PCB were received from CIG



Requirements Review

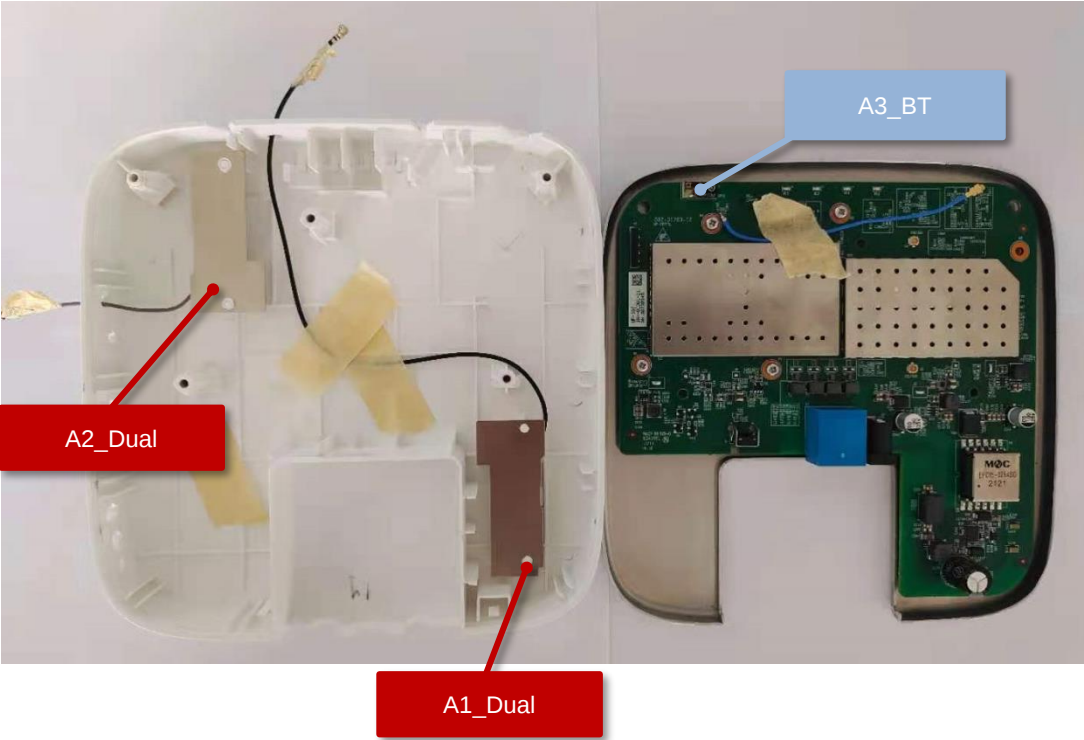
- Antenna Configuration of CIG WF-186
 - 2x Dual: 2400-2490MHz/5150-5850MHz
 - 1x BT antenna: 2400-2500MHz
- Basic Passive Requirements
 - RL for each antenna >10dB
 - Efficiency >60%
 - Isolation between each antenna: >=20dB



HL Antenna System Proposal



HL Antenna System



HL Antenna Designator	HL Antenna Dimensions	HL Antenna Part Number	Cable length
A1_Dual	/	/	/
A2_Dual	/	/	/
A3_BT	/	/	/

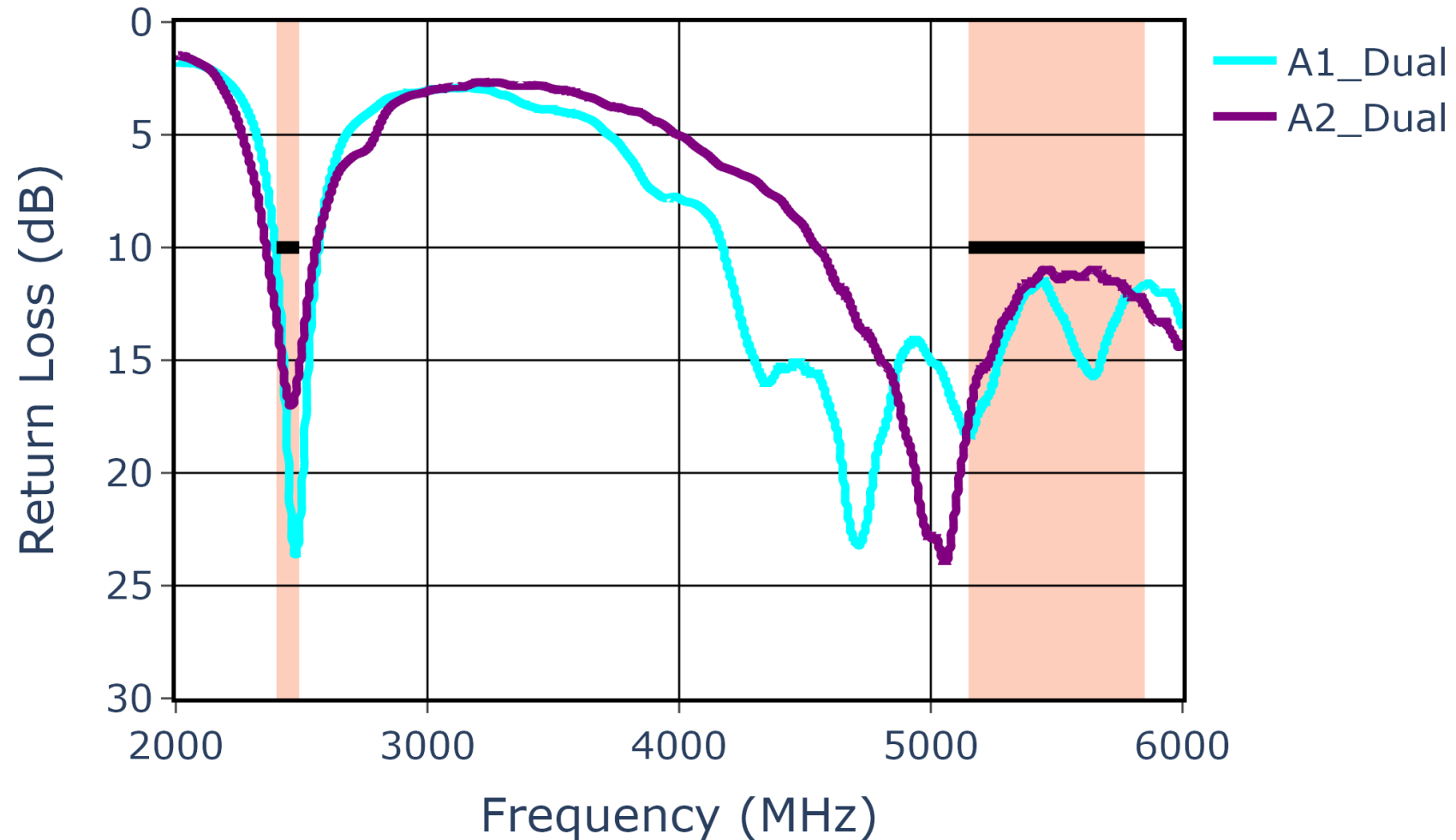


S-parameters

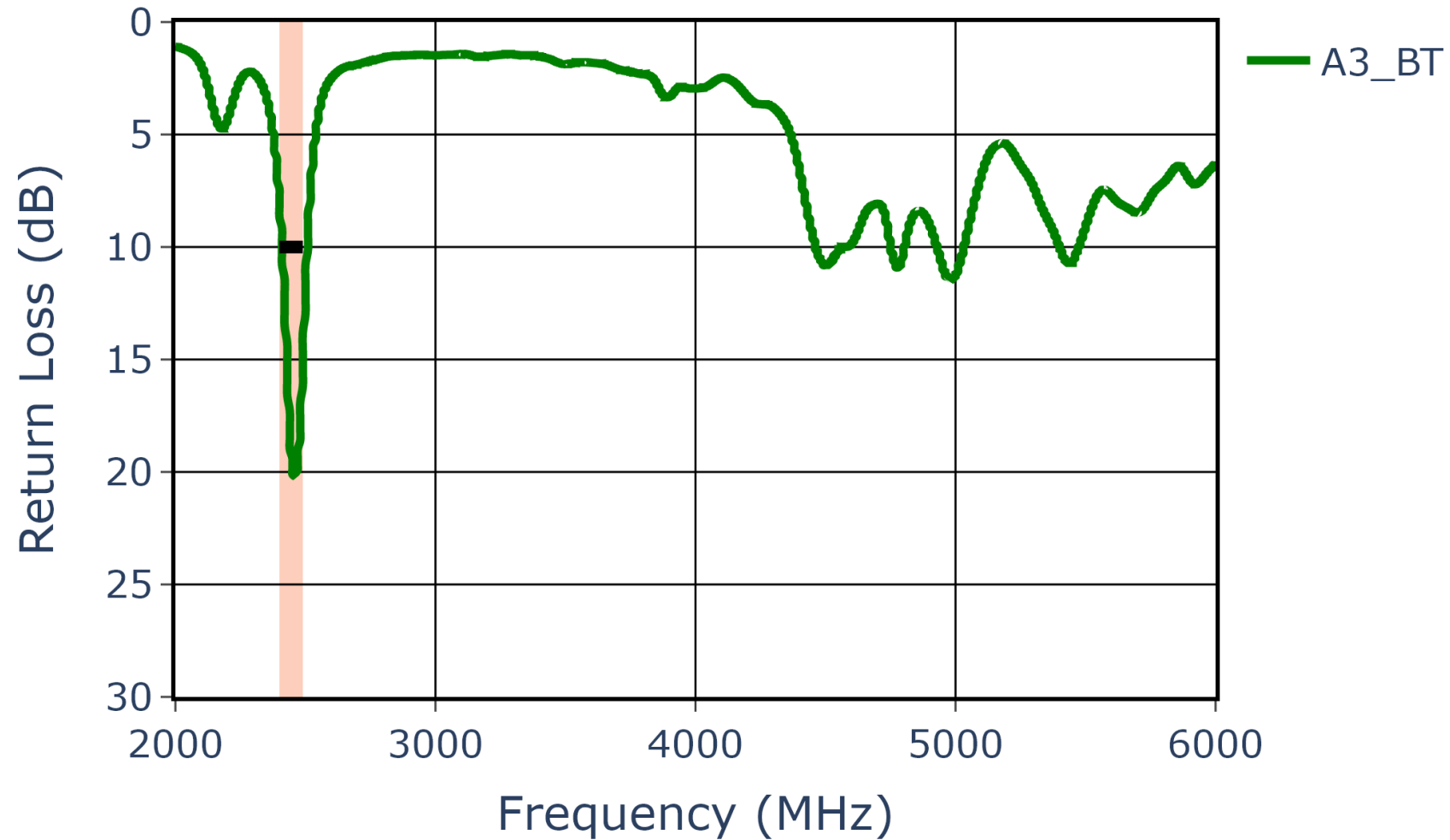
- Return Loss
- Isolation



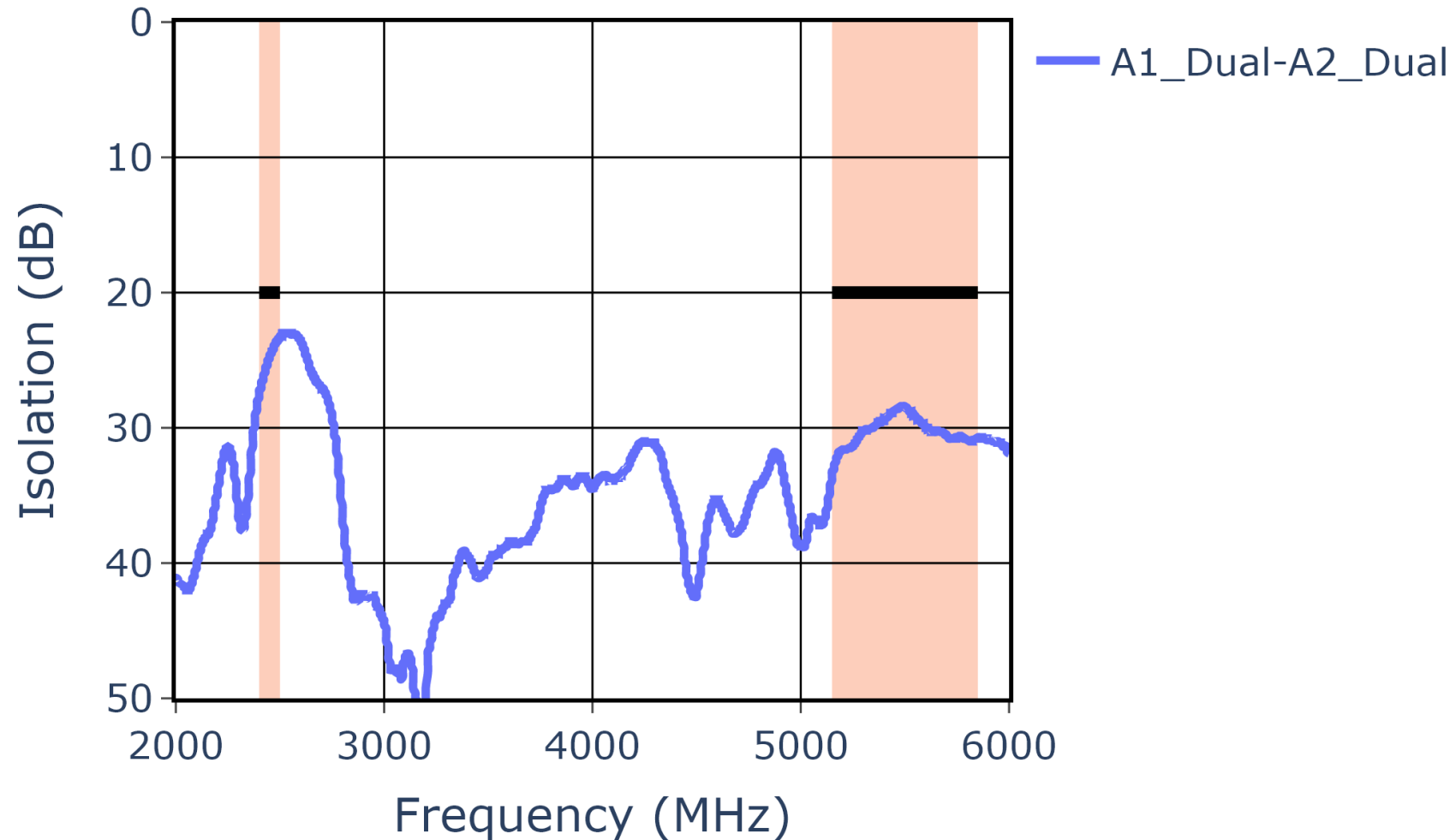
Return Loss of WLAN Antennas



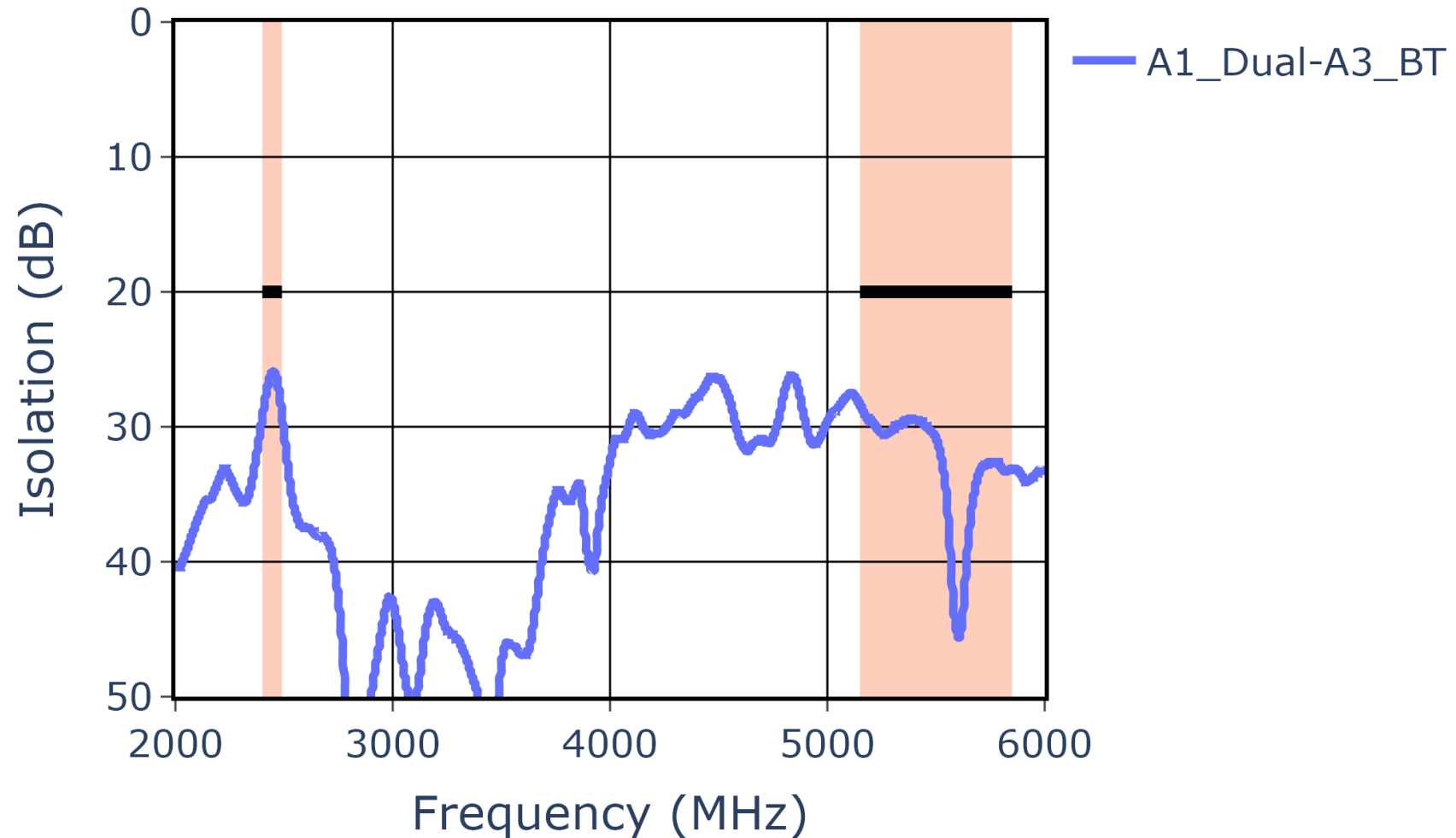
Return Loss of BT Antenna



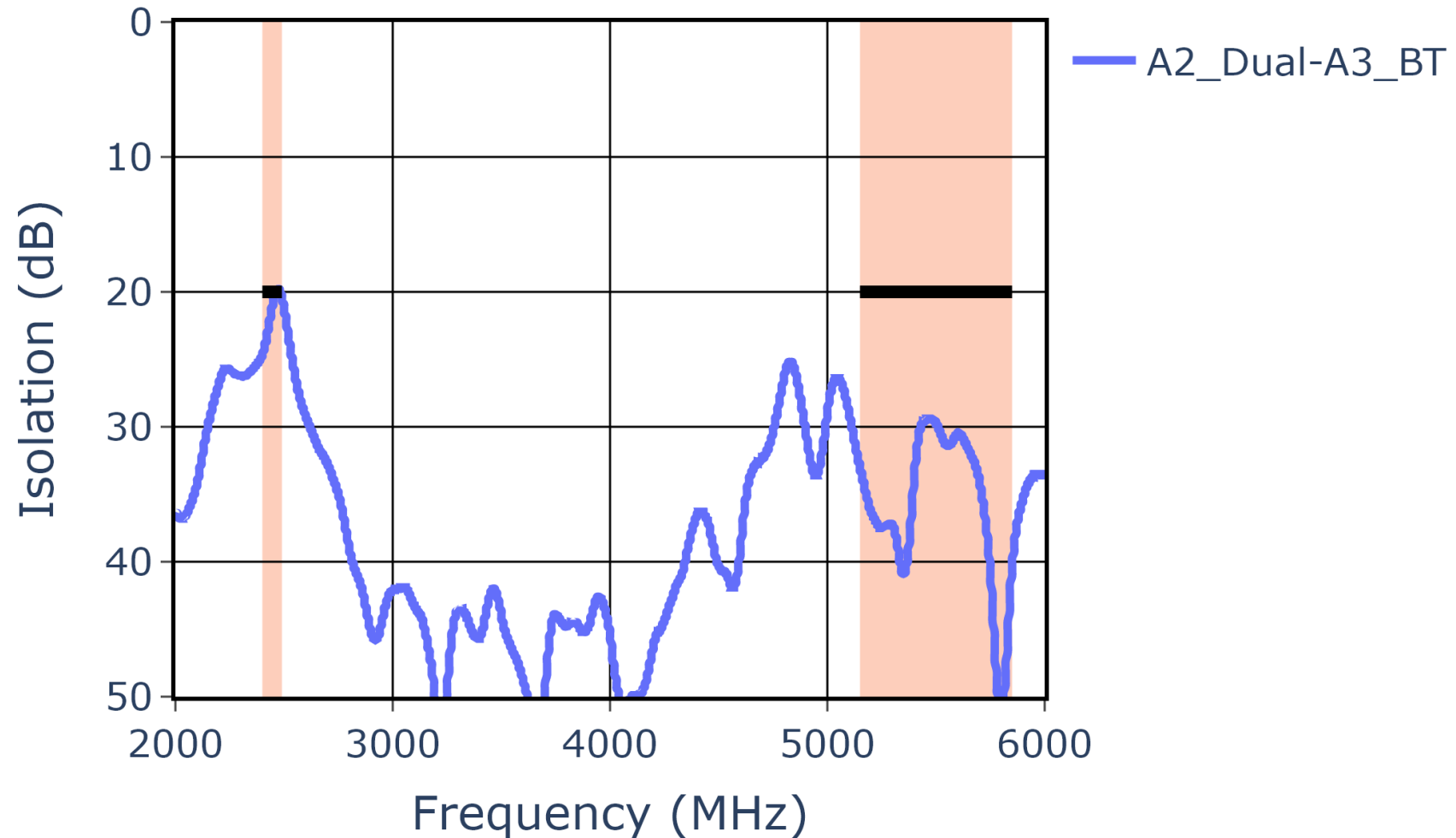
Isolation Between A1_Dual and Remaining Antennas



Isolation Between A1_Dual and Remaining Antennas



Isolation Between A2_Dual and Remaining Antennas



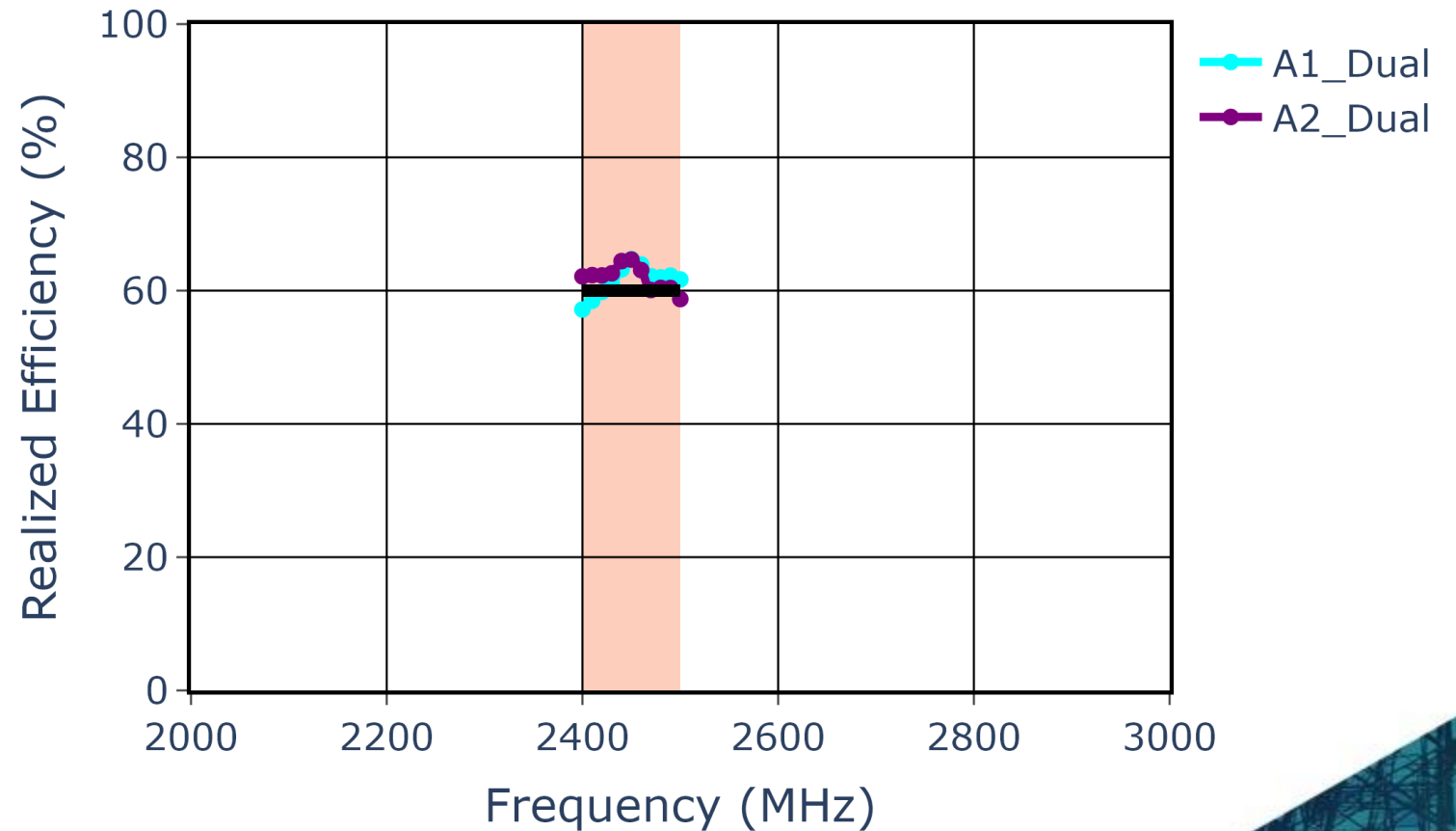
Radiated Performance: Grouped by Antennas, Polarization: Total

- Realized Efficiency
- Peak Realized Gain



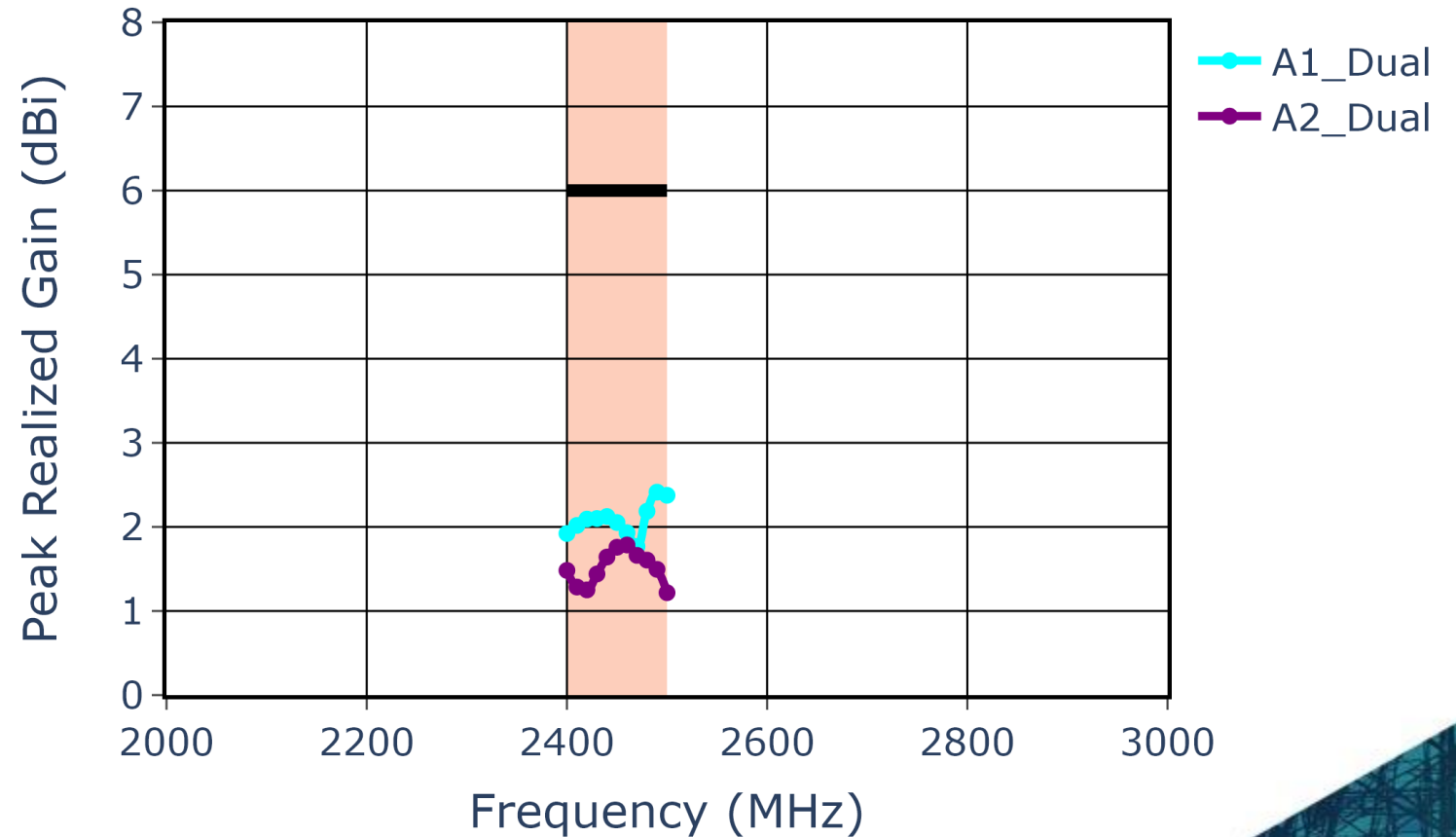
Realized Efficiency of Antennas in 2G4 Band

Frequency (MHz)	A1_Dual (%)	A2_Dual (%)
2400	57	62
2410	58	62
2419	60	62
2428	61	63
2437	63	64
2446	64	65
2455	64	64
2464	63	62
2473	62	60
2482	62	60
2491	62	60
2500	62	59



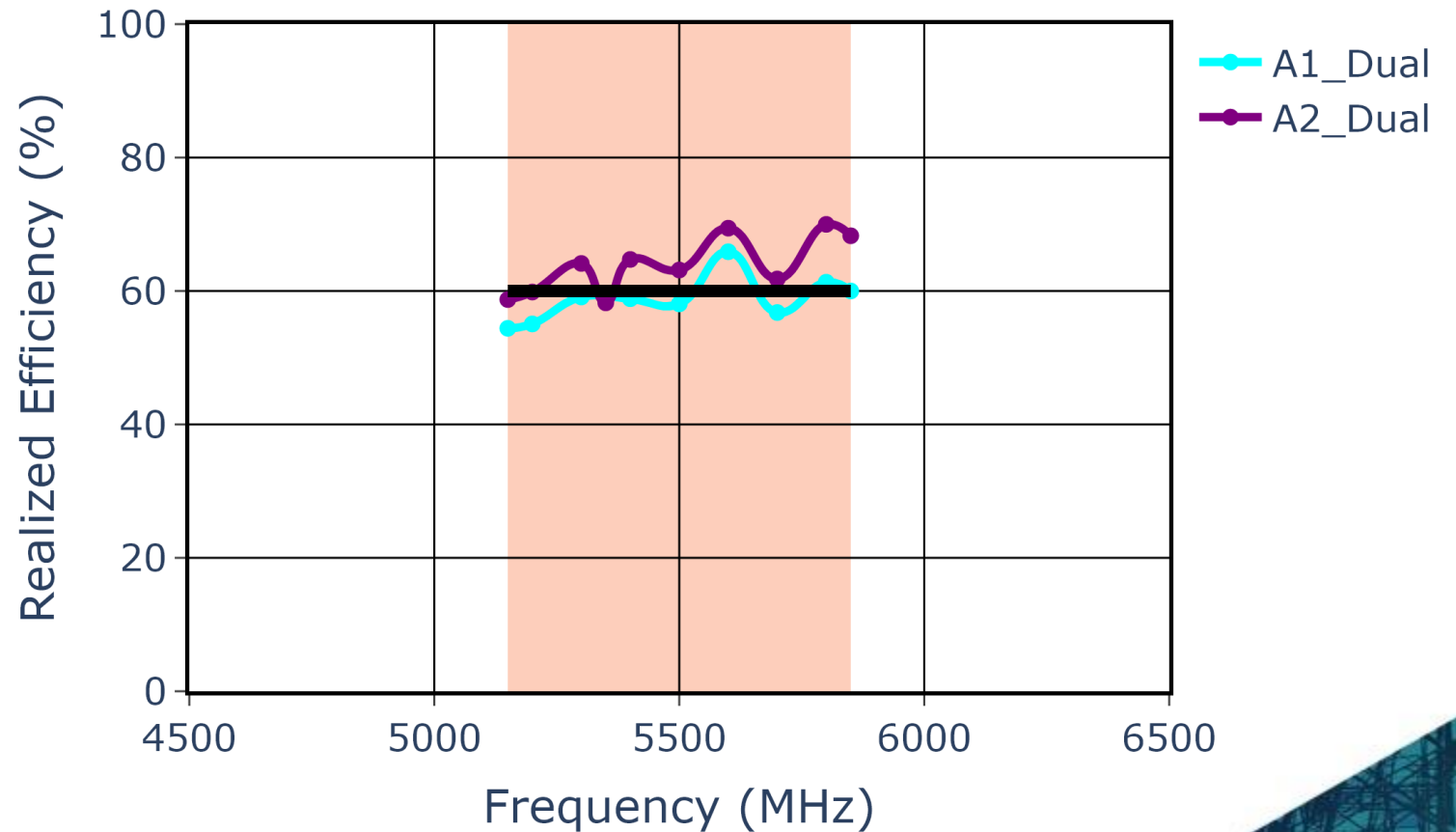
Peak Realized Gain of Antennas in 2G4 Band

Frequency (MHz)	A1_Dual (dBi)	A2_Dual (dBi)
2400	1.9	1.5
2410	2.0	1.3
2419	2.1	1.3
2428	2.1	1.4
2437	2.1	1.6
2446	2.1	1.7
2455	2.0	1.8
2464	1.9	1.7
2473	1.9	1.6
2482	2.2	1.6
2491	2.4	1.5
2500	2.4	1.2



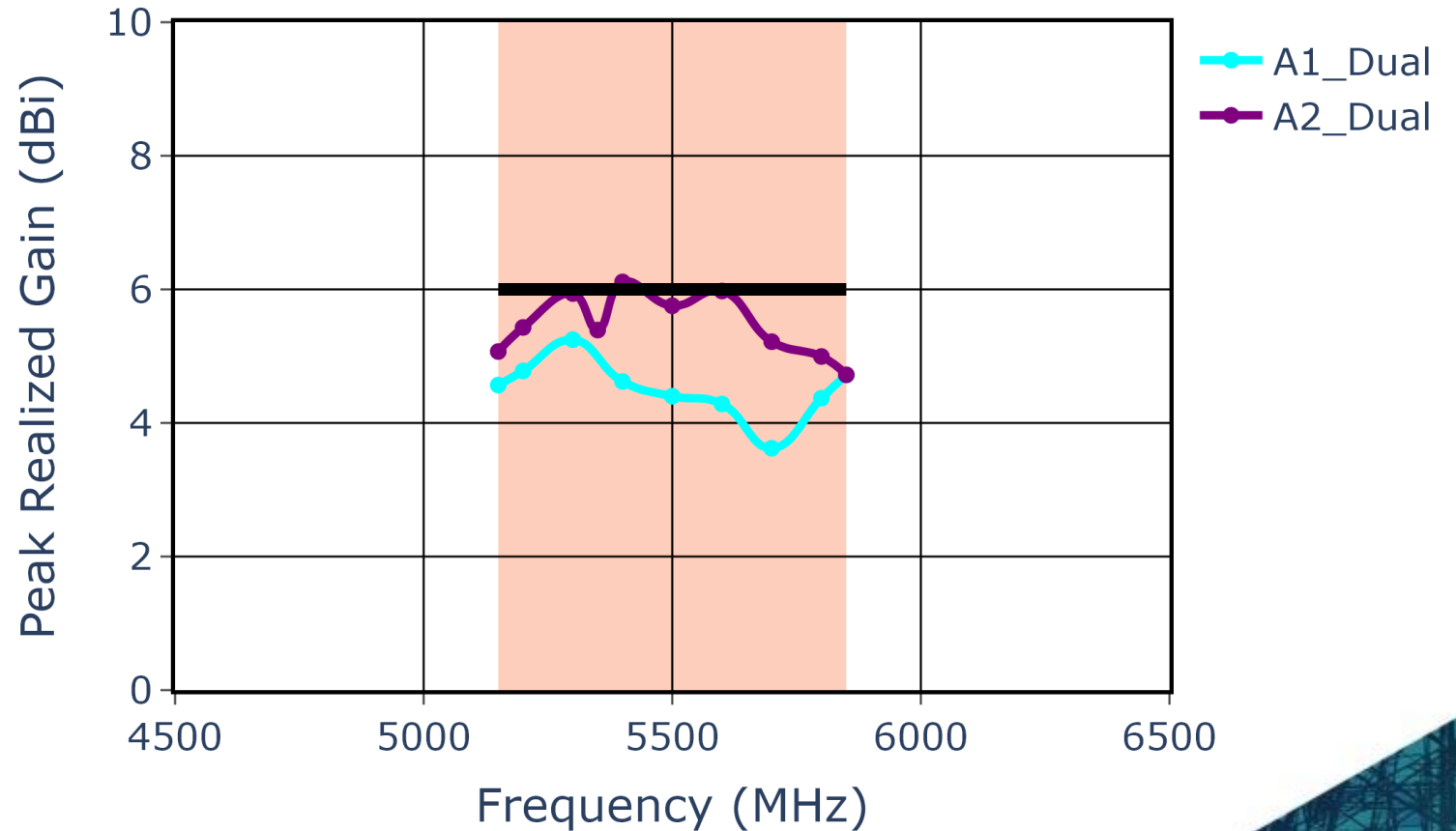
Realized Efficiency of Antennas in 5G Band

Frequency (MHz)	A1_Dual (%)	A2_Dual (%)
5150	54	59
5214	56	60
5278	58	63
5341	59	64
5405	59	65
5469	58	64
5532	61	65
5596	66	69
5660	60	65
5723	58	64
5787	61	69
5850	60	68



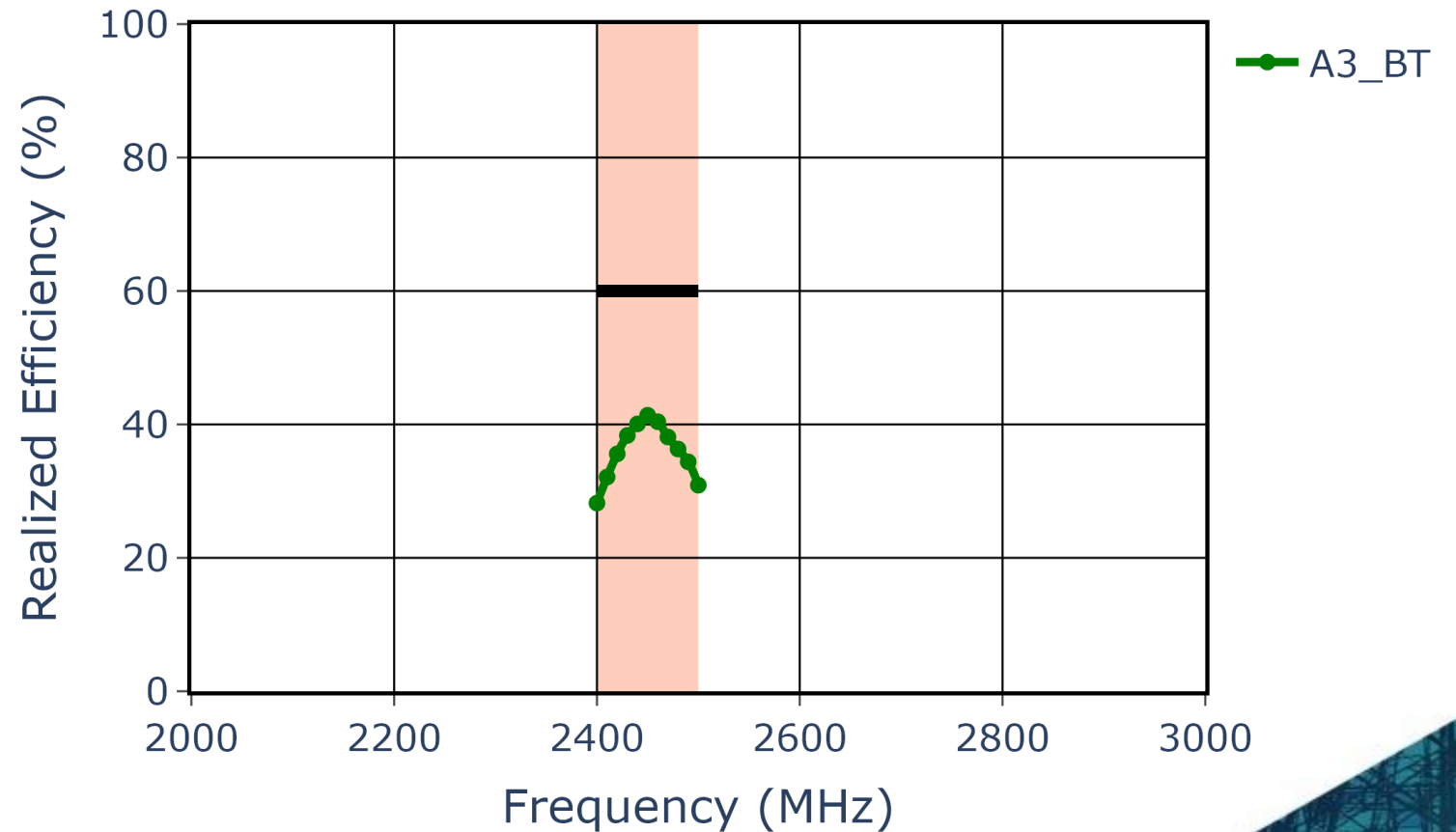
Peak Realized Gain of Antennas in 5G Band

Frequency (MHz)	A1_Dual (dBi)	A2_Dual (dBi)
5150	4.6	5.1
5214	4.8	5.5
5278	5.1	5.8
5341	5.0	6.0
5405	4.6	6.1
5469	4.5	5.9
5532	4.4	5.8
5596	4.3	6.0
5660	3.9	5.5
5723	3.8	5.2
5787	4.3	5.0
5850	4.7	4.7



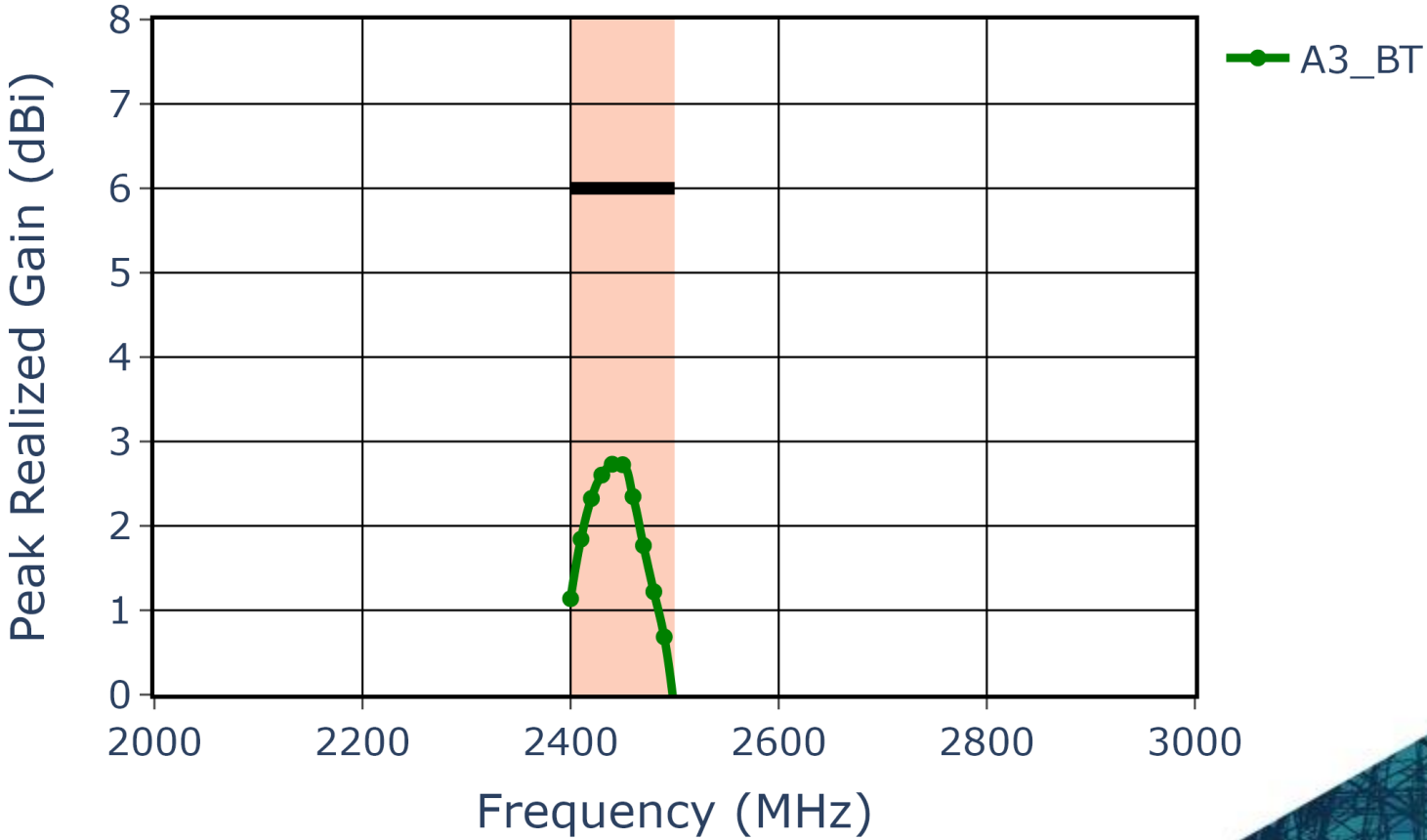
Realized Efficiency of Antennas in BT Band

Frequency (MHz)	A3_BT (%)
2400	28
2410	32
2419	35
2428	38
2437	40
2446	41
2455	41
2464	39
2473	38
2482	36
2491	34
2500	31



Peak Realized Gain of Antennas in BT Band

Frequency (MHz)	A3_BT (dBi)
2400	1.1
2410	1.8
2419	2.3
2428	2.5
2437	2.7
2446	2.7
2455	2.5
2464	2.1
2473	1.6
2482	1.1
2491	0.6
2500	-0.2

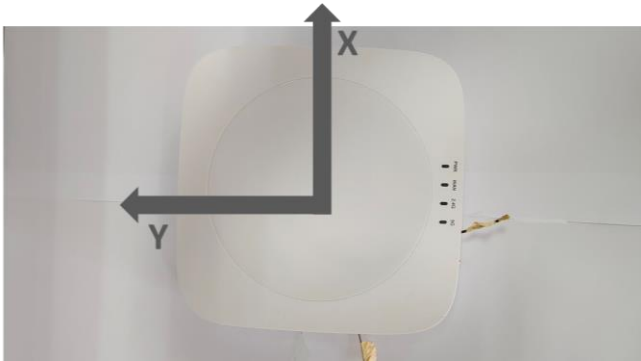


Radiation Patterns in Principal Planes: Grouped by Antennas, Polarization: Total

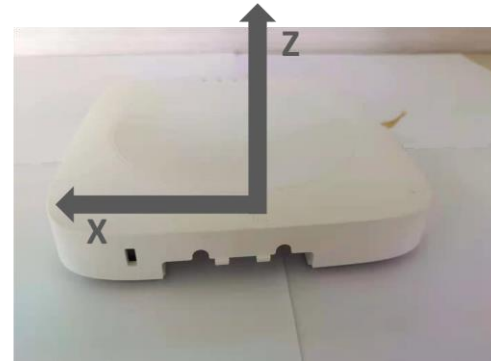
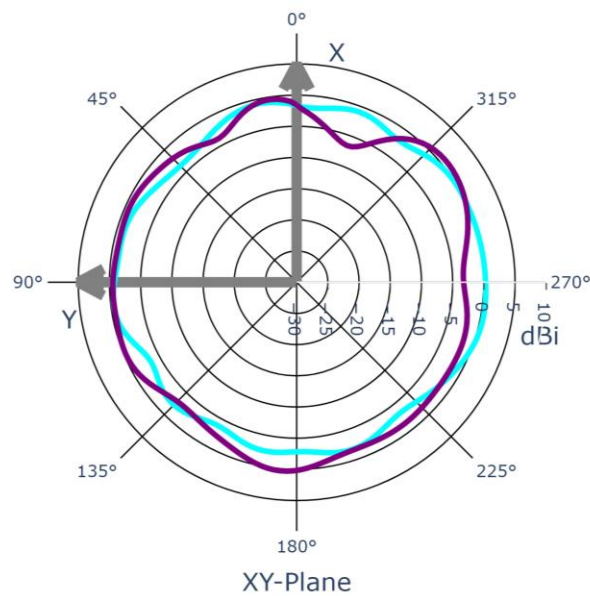
- Realized Gain



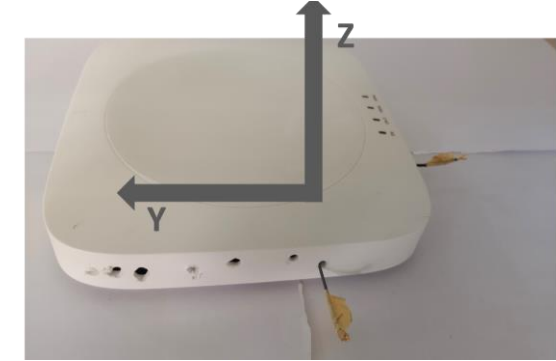
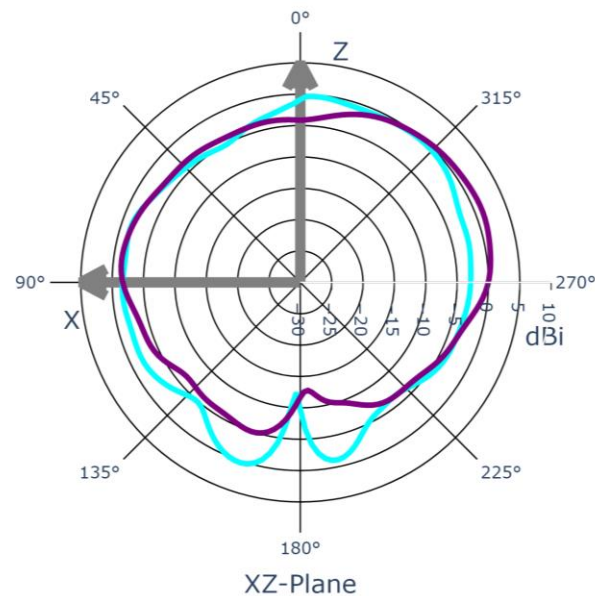
Realized Gain Radiation Patterns of Antennas in 2G4 Band at 2400 MHz



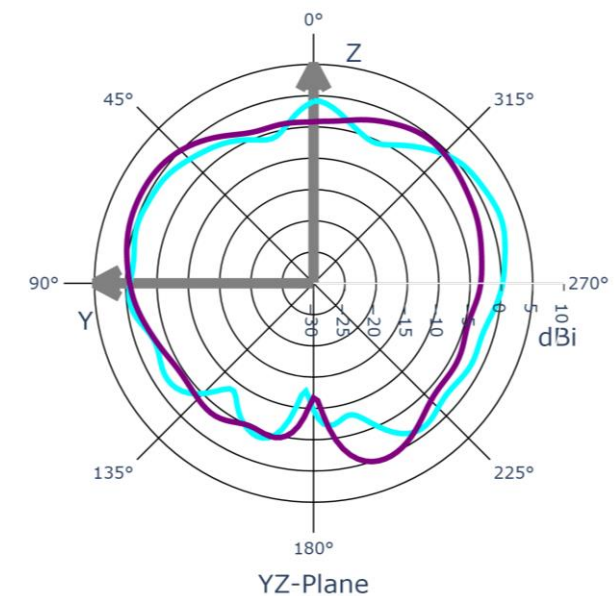
A1_Dual
A2_Dual



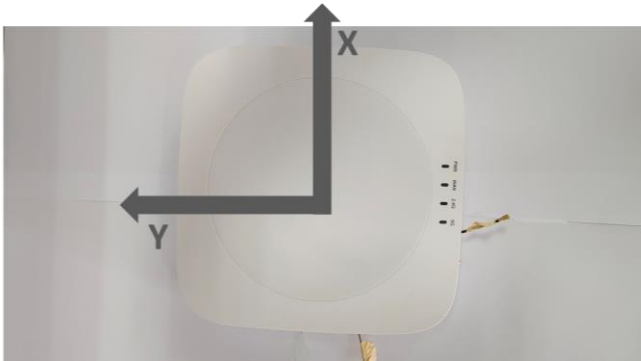
A1_Dual
A2_Dual



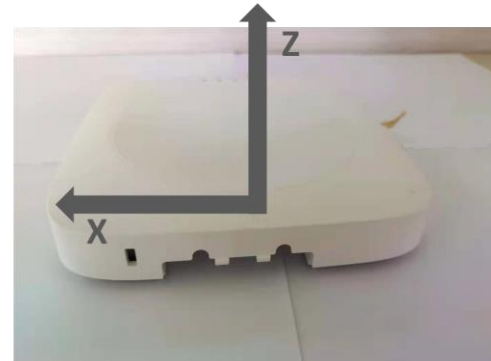
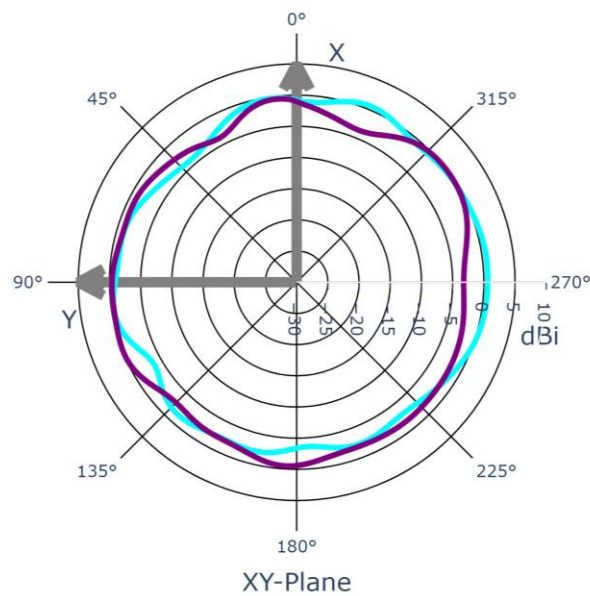
A1_Dual
A2_Dual



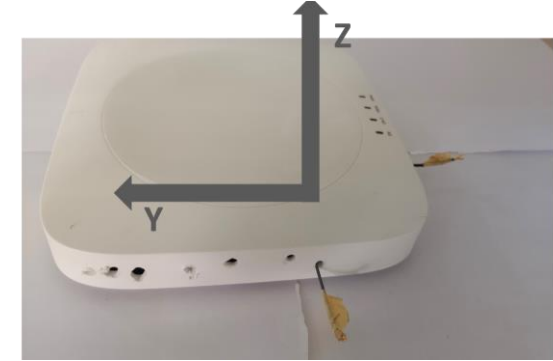
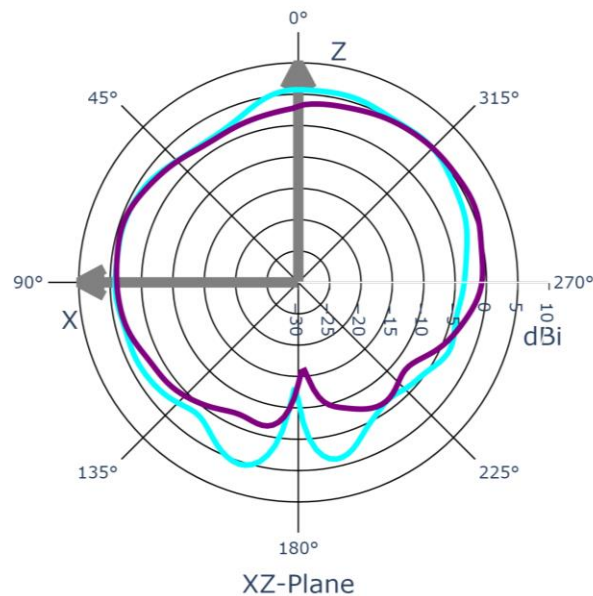
Realized Gain Radiation Patterns of Antennas in 2G4 Band at 2450 MHz



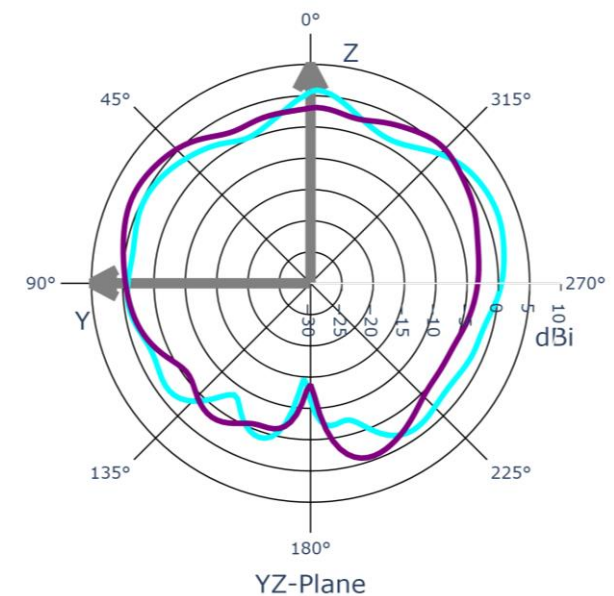
A1_Dual
A2_Dual



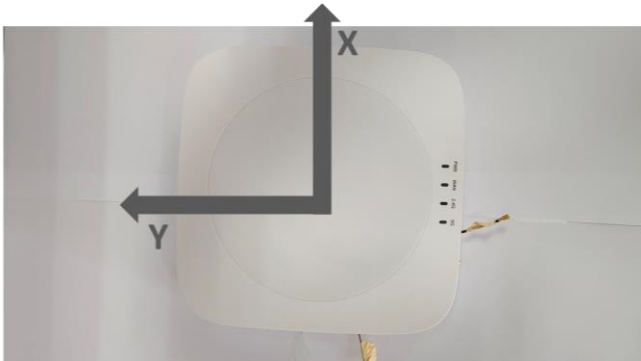
A1_Dual
A2_Dual



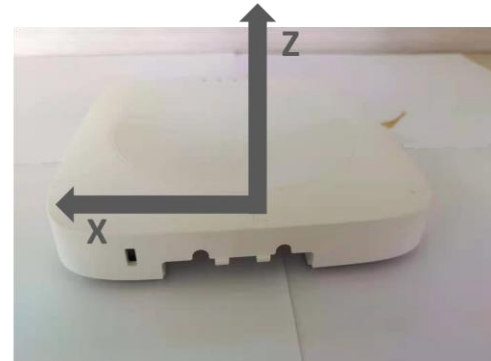
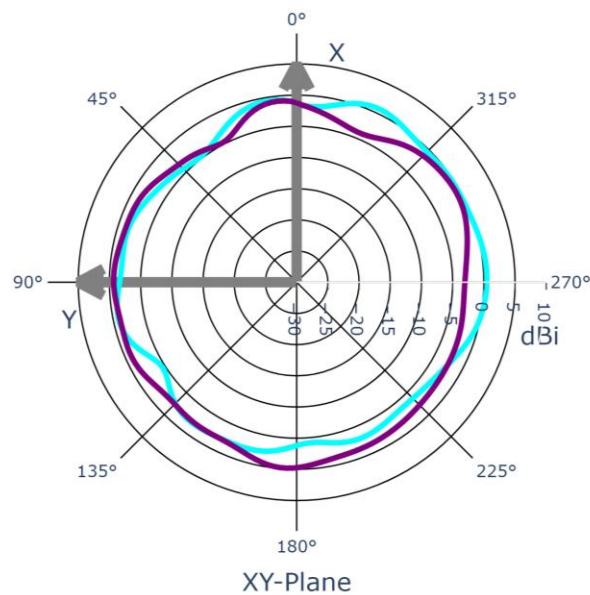
A1_Dual
A2_Dual



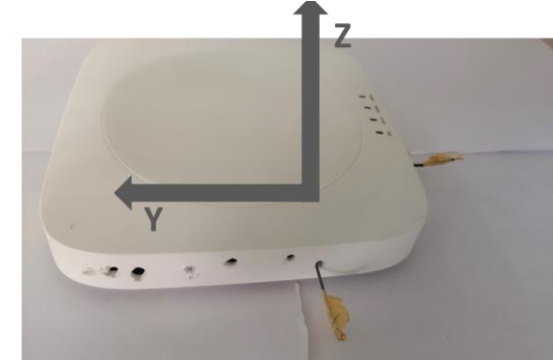
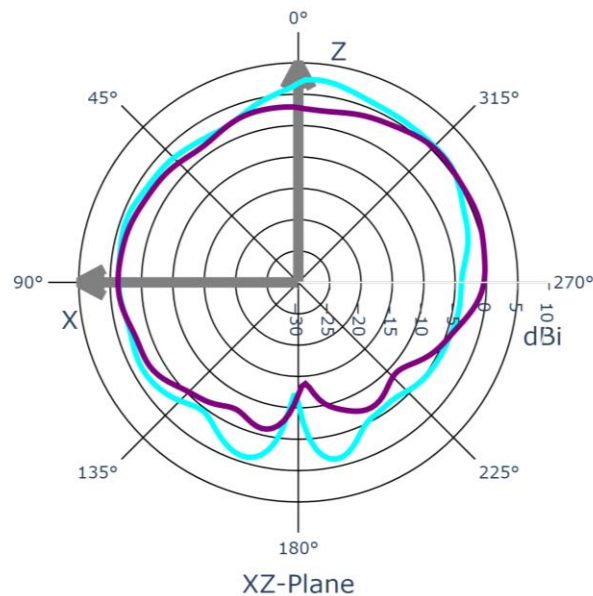
Realized Gain Radiation Patterns of Antennas in 2G4 Band at 2490 MHz



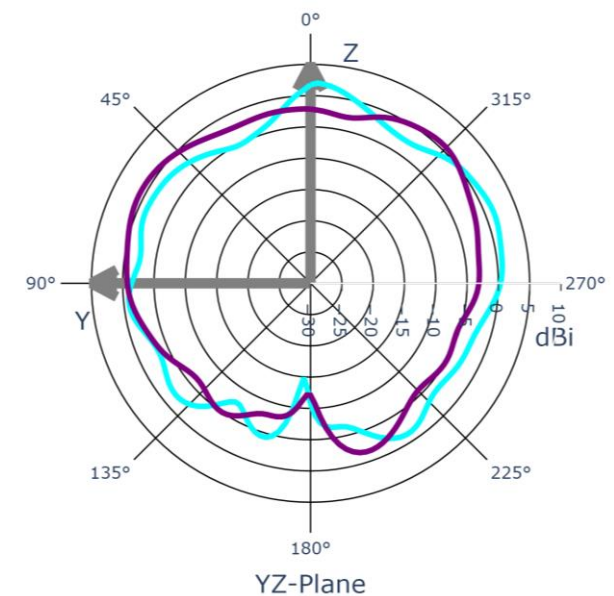
A1_Dual
A2_Dual



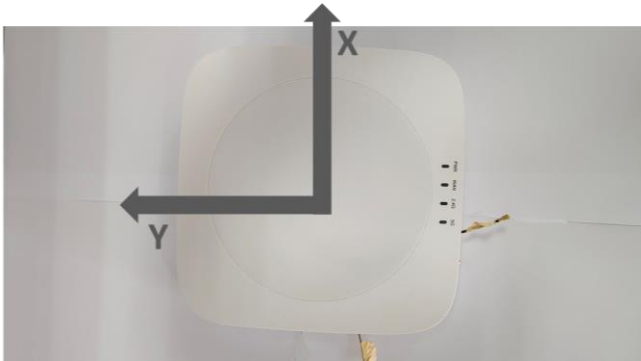
A1_Dual
A2_Dual



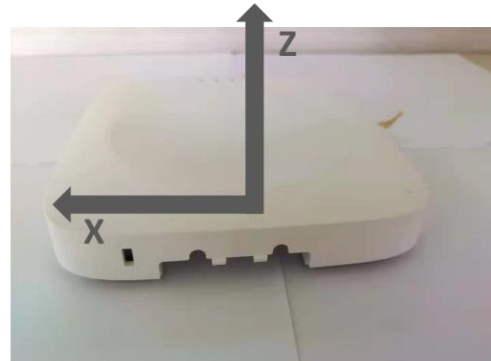
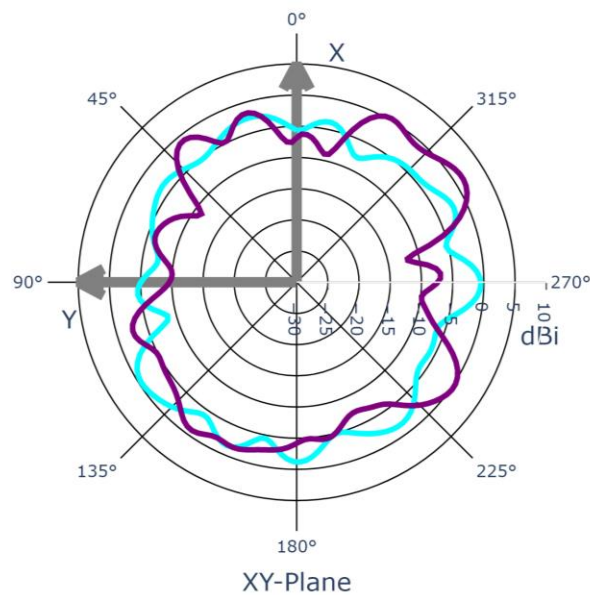
A1_Dual
A2_Dual



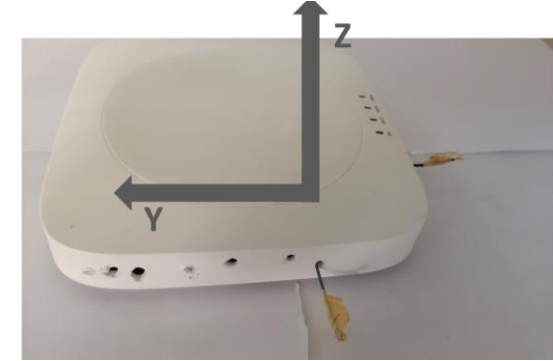
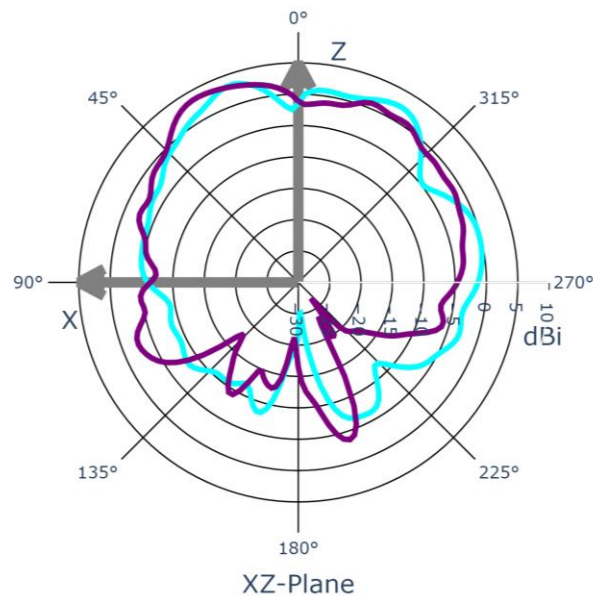
Realized Gain Radiation Patterns of Antennas in 5G Band at 5150 MHz



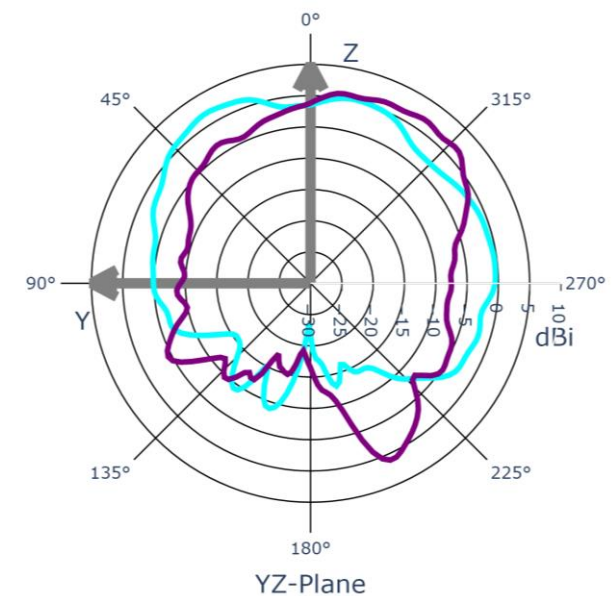
A1_Dual
A2_Dual



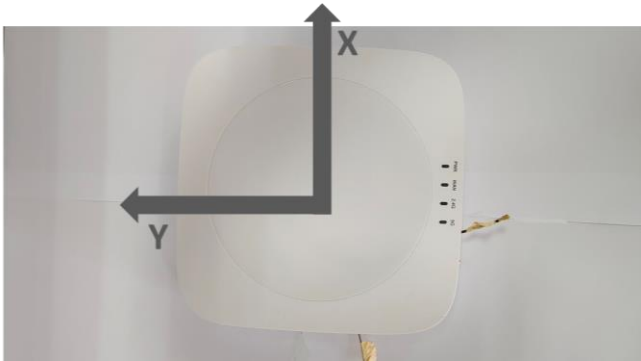
A1_Dual
A2_Dual



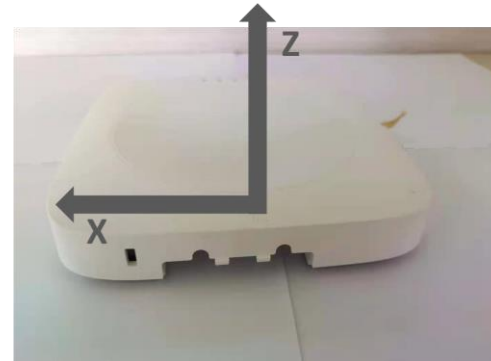
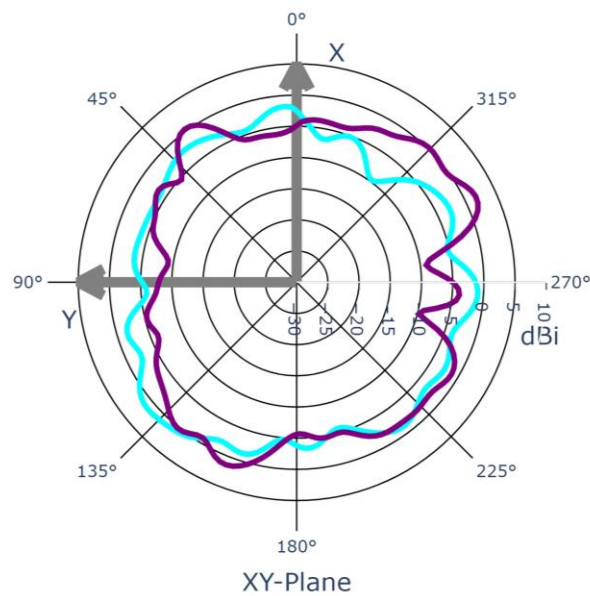
A1_Dual
A2_Dual



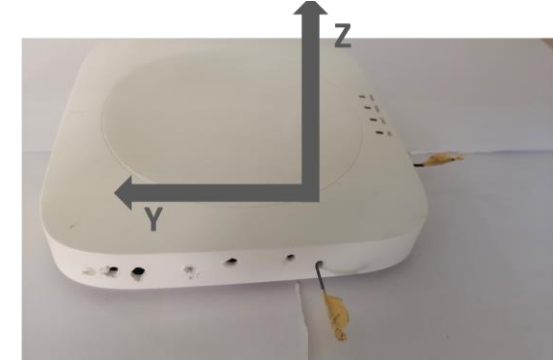
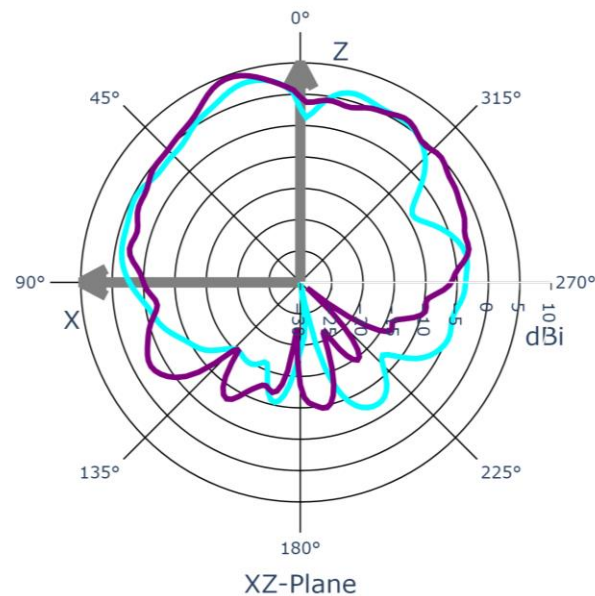
Realized Gain Radiation Patterns of Antennas in 5G Band at 5500 MHz



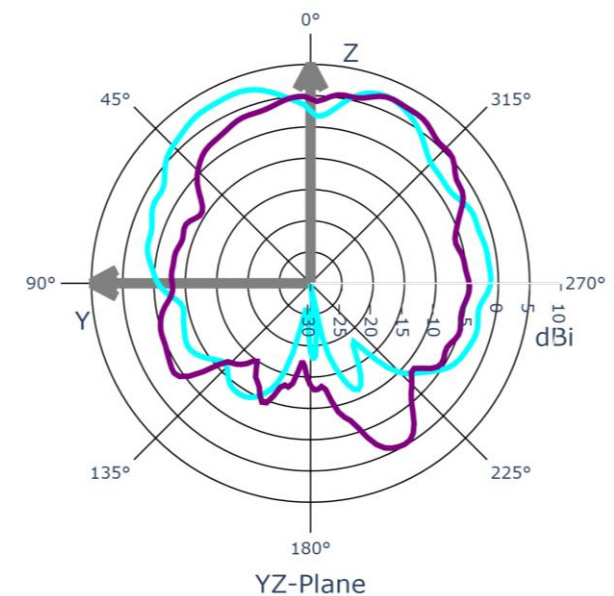
A1_Dual
A2_Dual



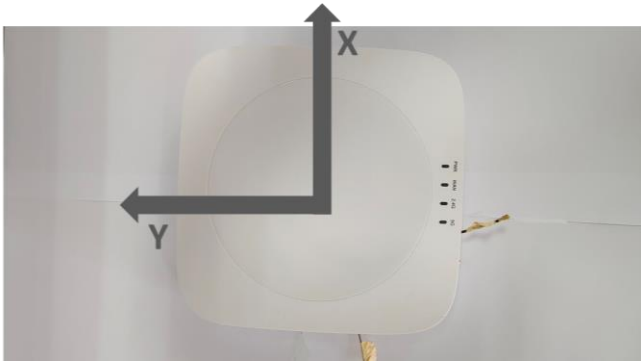
A1_Dual
A2_Dual



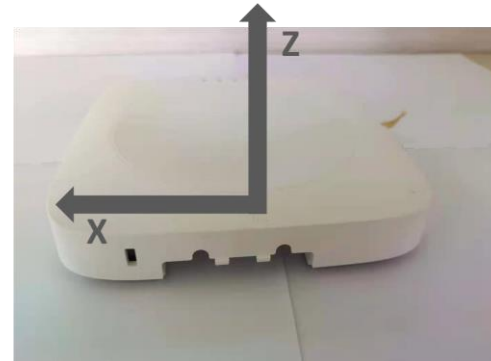
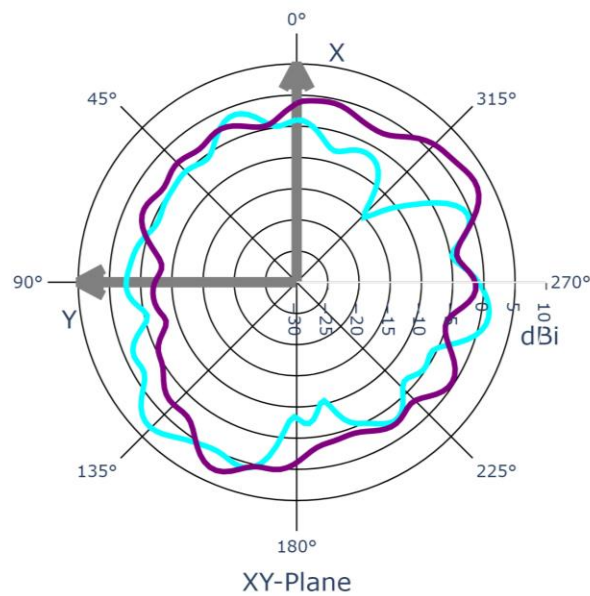
A1_Dual
A2_Dual



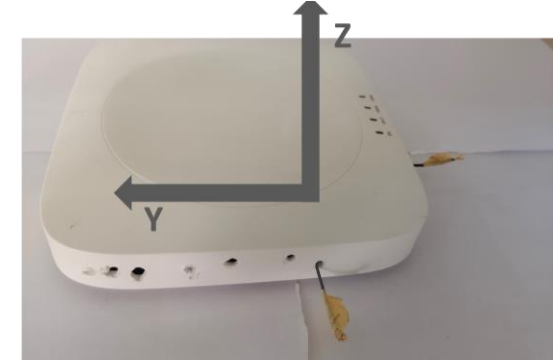
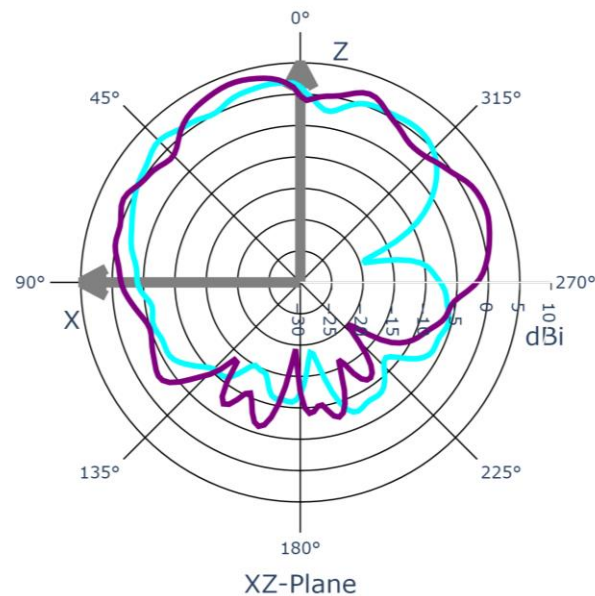
Realized Gain Radiation Patterns of Antennas in 5G Band at 5850 MHz



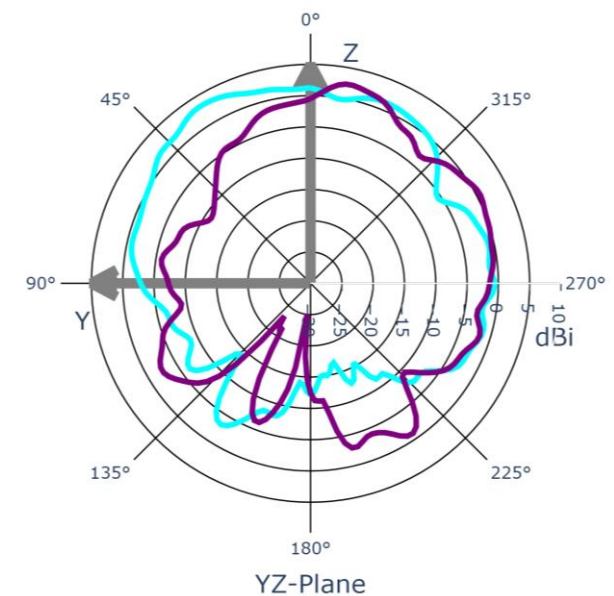
A1_Dual
A2_Dual



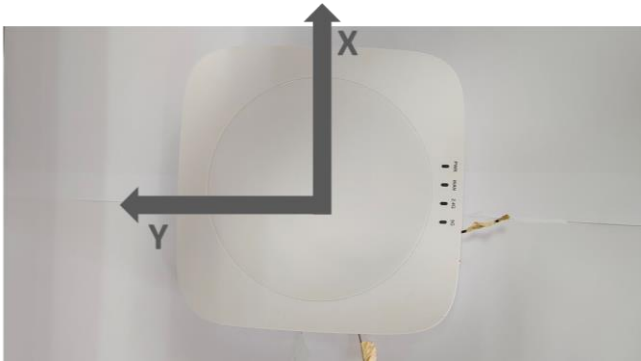
A1_Dual
A2_Dual



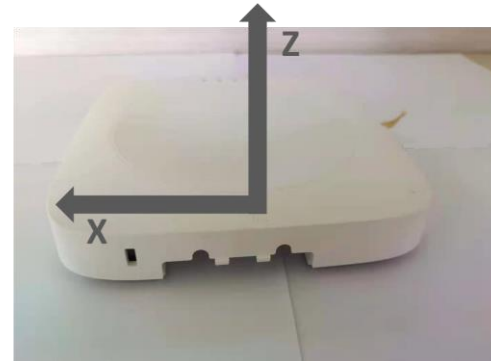
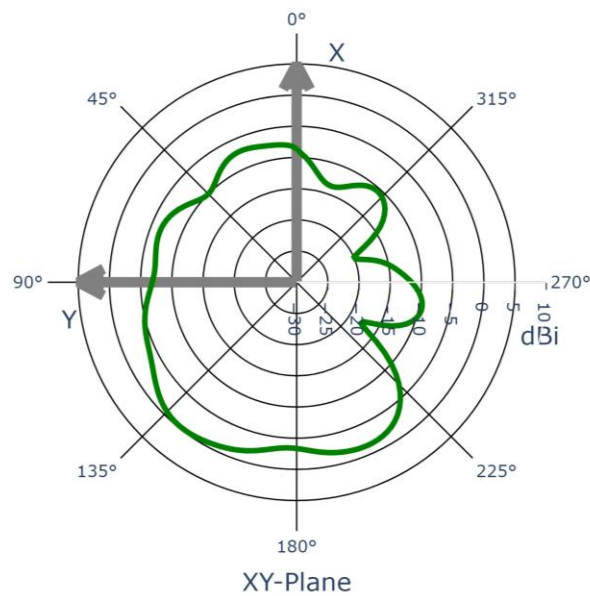
A1_Dual
A2_Dual



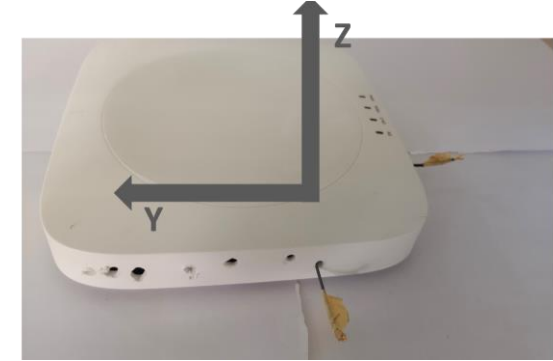
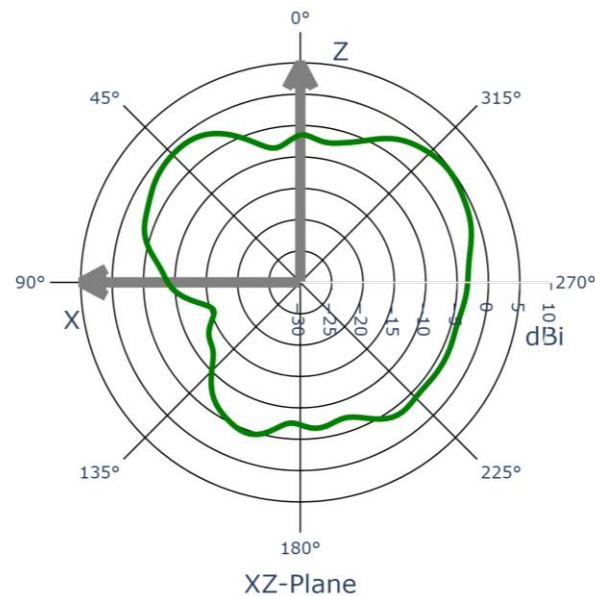
Realized Gain Radiation Patterns of Antennas in BT Band at 2400 MHz



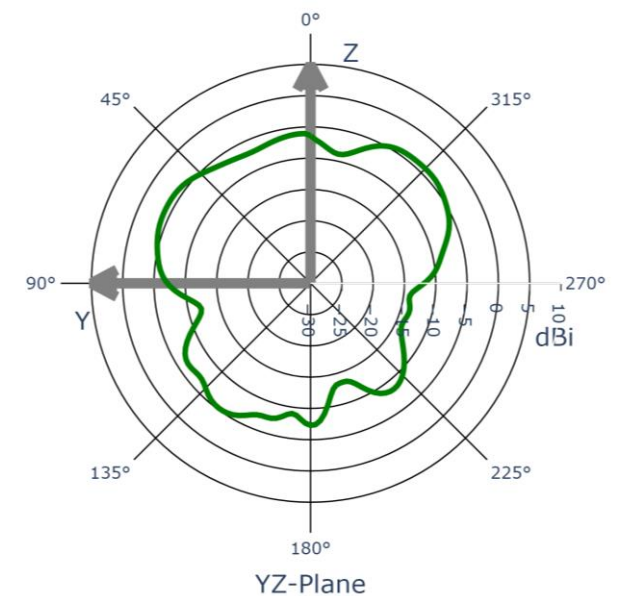
A3_BT



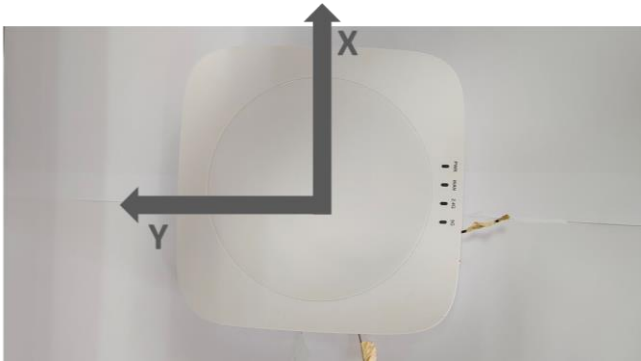
A3_BT



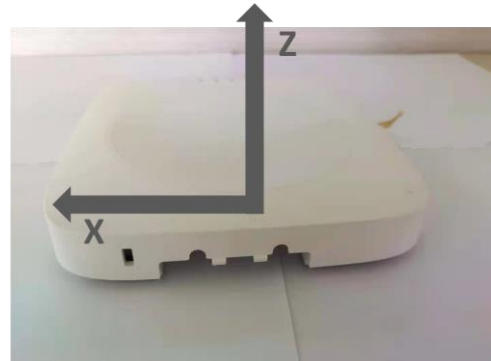
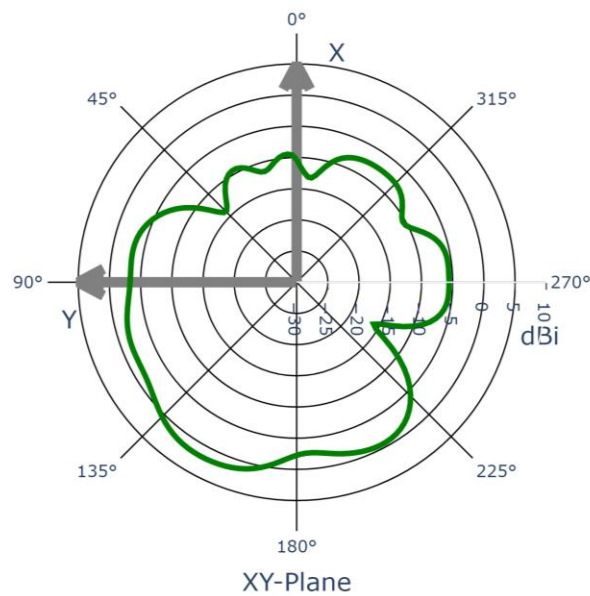
A3_BT



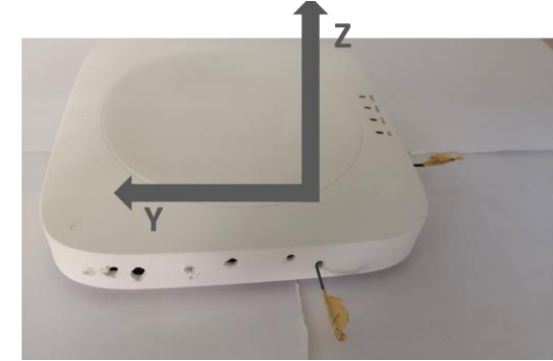
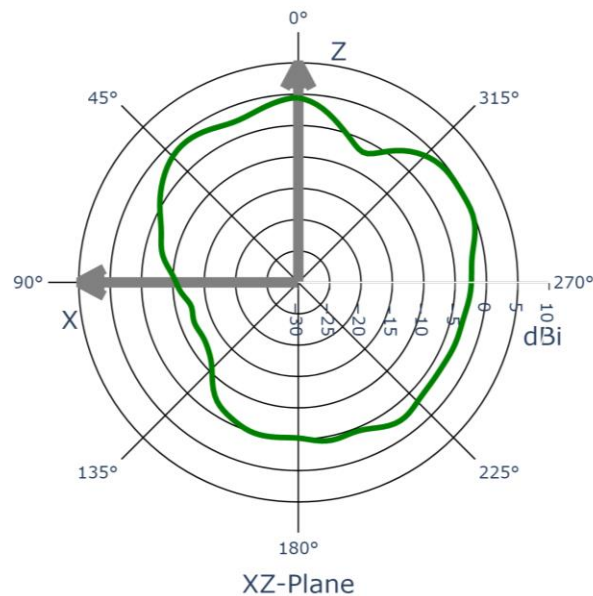
Realized Gain Radiation Patterns of Antennas in BT Band at 2450 MHz



A3_BT



A3_BT



A3_BT

