

**LXE**

**VM3 System**

**VM3 WIFI INTERNAL Antenna Measurement  
Report (EVT2)**

**ANTENNA P/N: FIT-VM3-ANT-21Y and FIT-  
VM3-ANT-028**

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## Signature Sheet

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## 1. INTRODUCTION

The following report describes the results of the Internal Dual Band WIFI Antenna for the VM3 EVT2 Terminal. The test is based on the Section 1 of the RF Hardware Validation Test Plan Version 1.0. The Antenna 2D Radiation Plots measurement is being performed in the Full Anechoic Chamber.

## 2. WIFI INTERNAL DUAL BAND ANTENNA

Figure 1 shows the WIFI Internal Dual Band Antenna designed for VM3 Terminal. Figure 2 describes the location of Top Antenna and Side Antenna. Figure 3 describes the test setup for the Antenna Return Loss measurement. Figure 4 to 7 shows the Return Loss of both Antenna in the 2.4GHz band and 5GHz band.

The Part Number of the antenna is FIT-VM3-ANT-21Y and FIT-VM3-ANT-028



Figure 1 WIFI Internal Dual Band Antenna

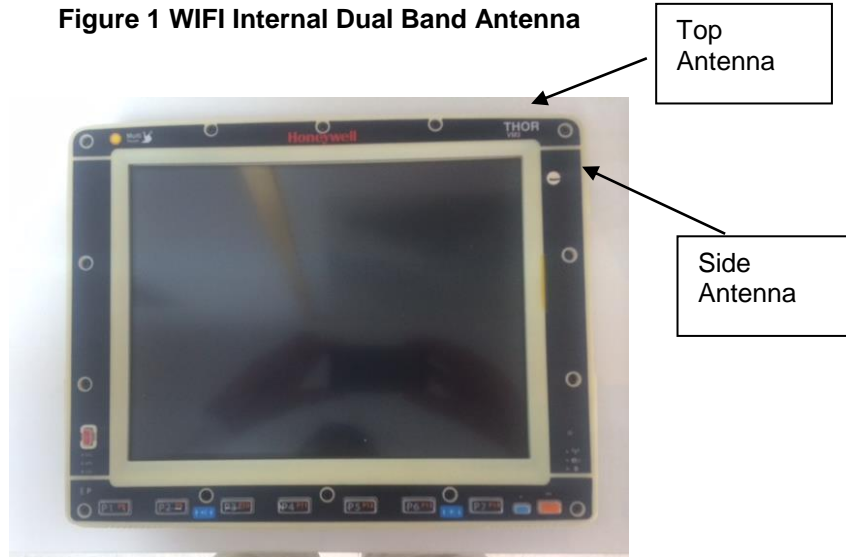


Figure 2 Antenna Definition

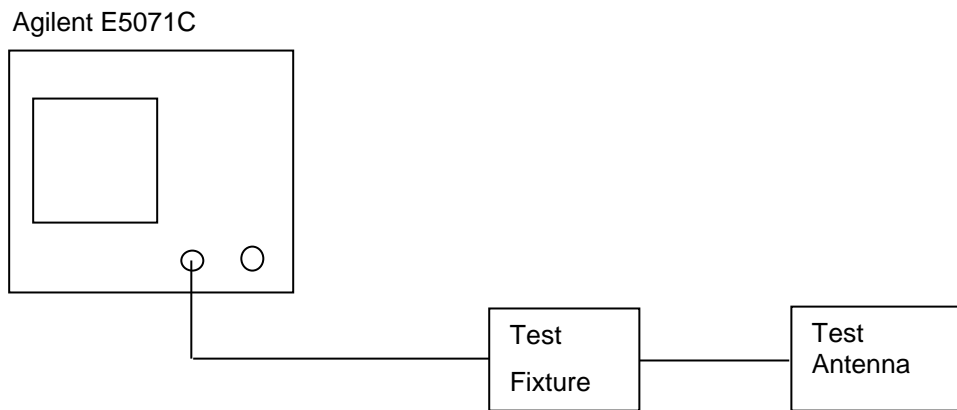


Figure 3 Return Loss Test Setup

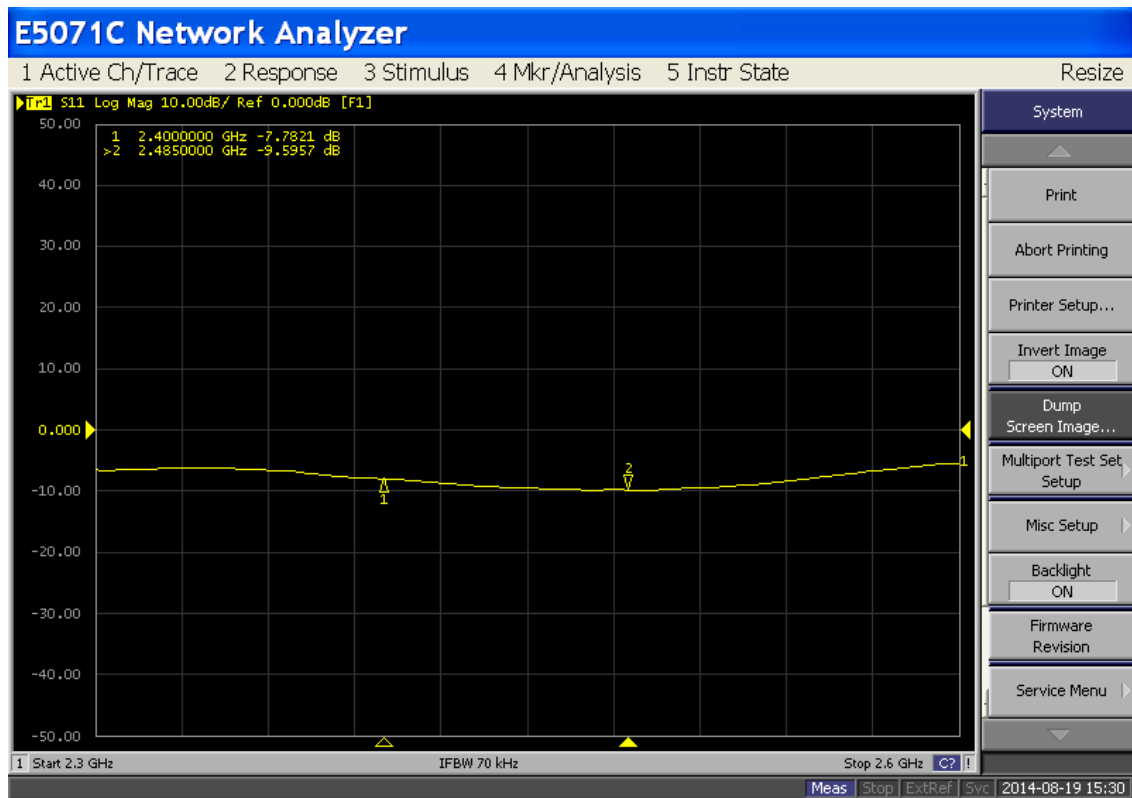


Figure 4 Top Antenna 2.4GHz Return Loss

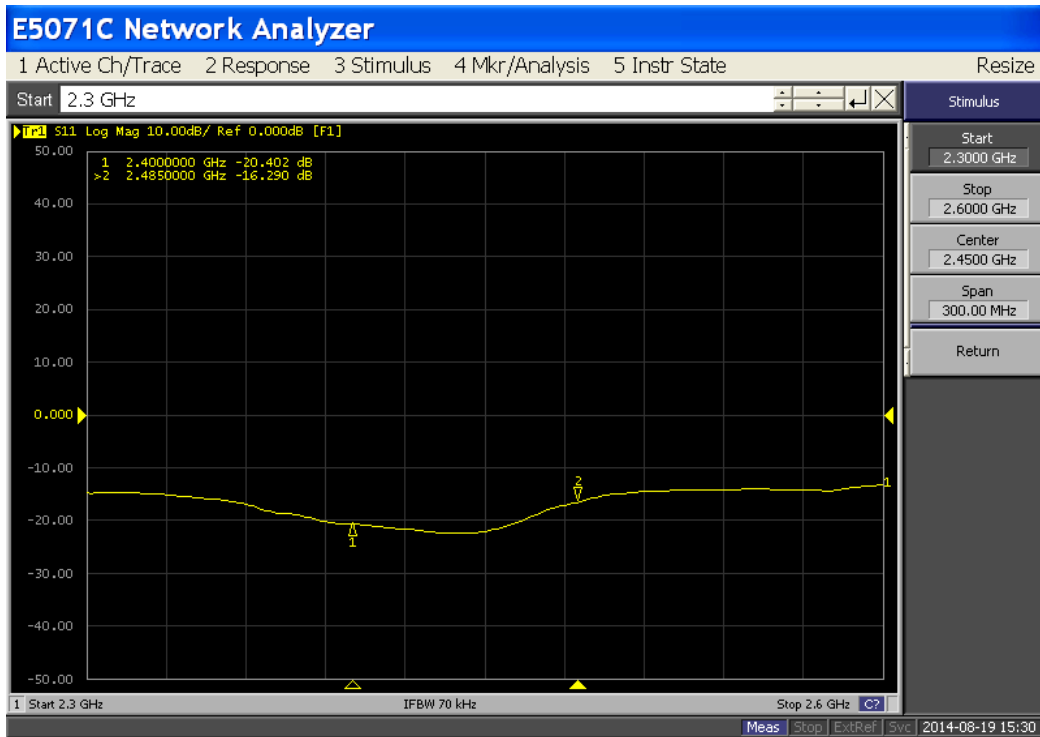


Figure 5 Side Antenna 2.4GHz Return Loss

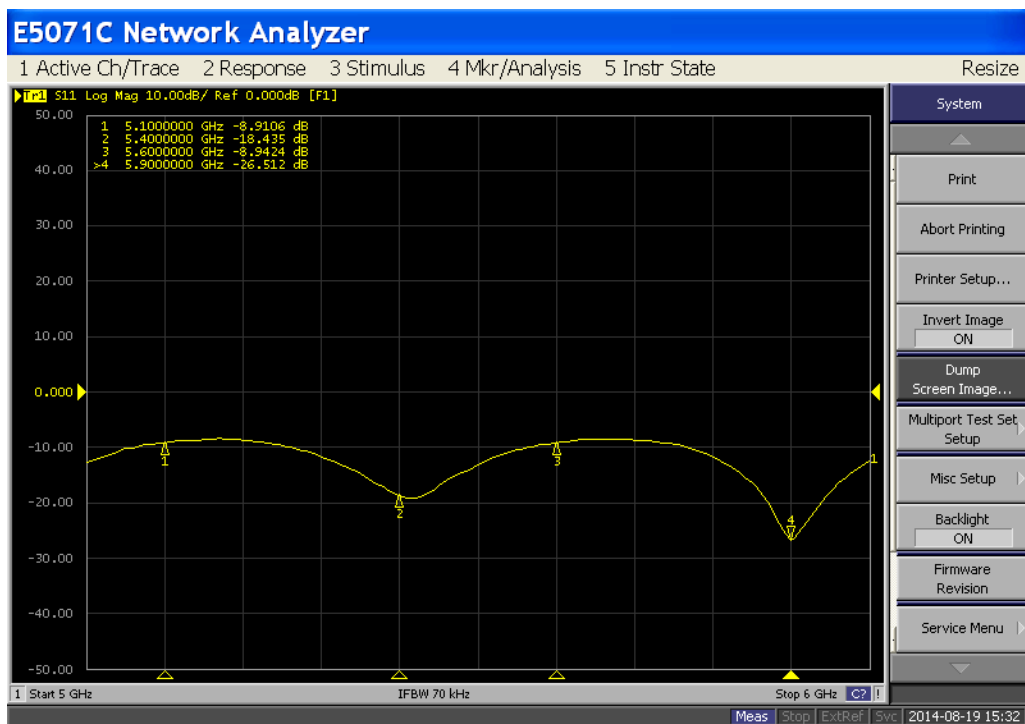
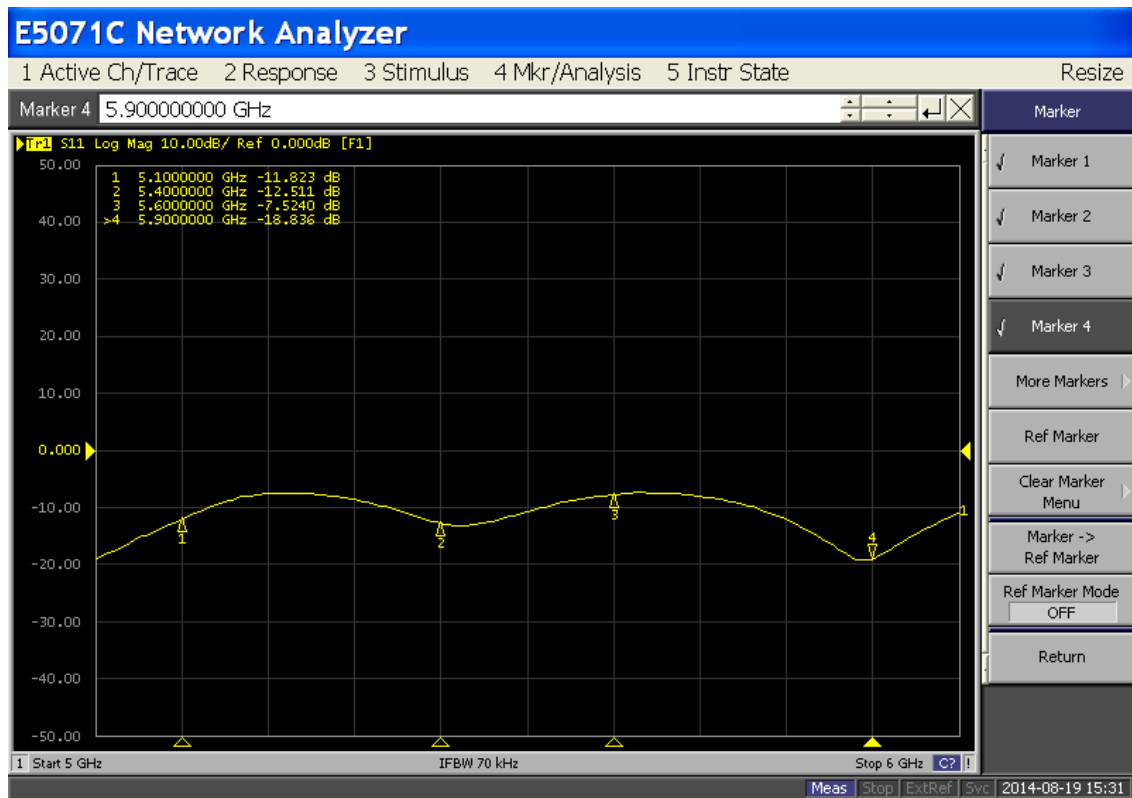


Figure 6 Top Antenna 5GHz Return Loss



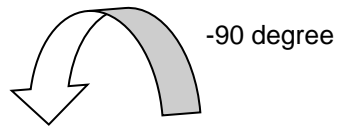
**Figure 7 Side Antenna 5GHz Return Loss**



Figure 8 to 10 describes the definition of the various plane cut for the Antenna measurement.



**Figure 8 Definition of H- Plane Cut**

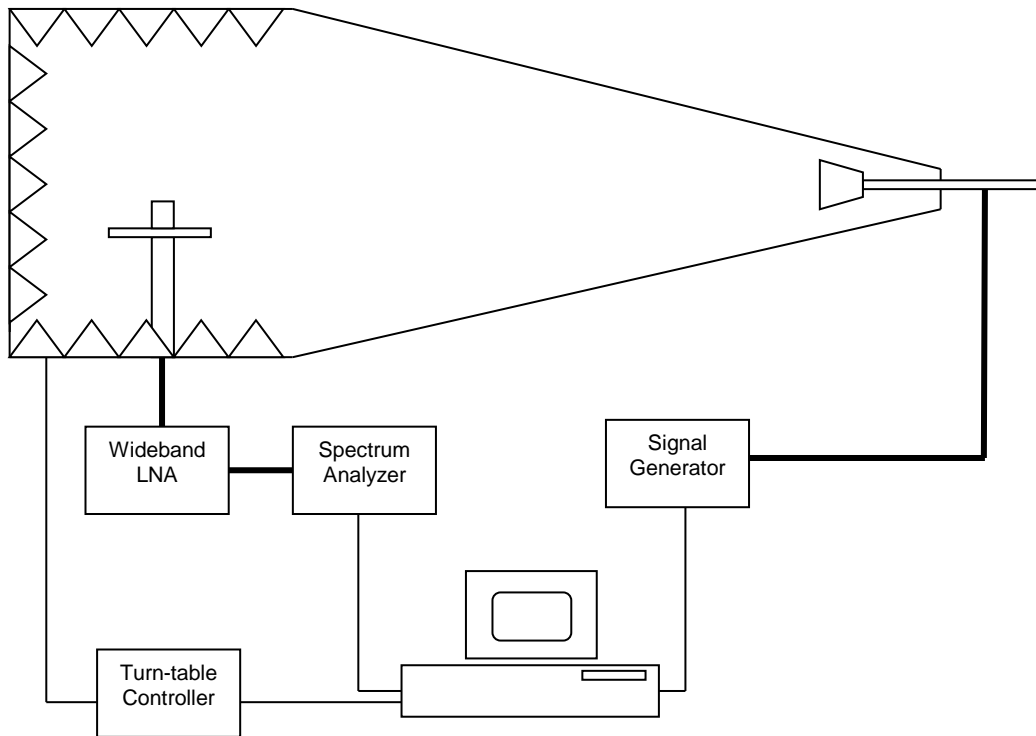


**Figure 9 Definition of E1 Plane Cut**



**Figure 10 Definition of E2 Plane Cut**

Figure 11 shows the setup of the Full Anechoic Chamber used for the Antenna Measurement.



**Figure 11 Anechoic Chamber Setup**

Figure 12 shows the interior view of the Full Anechoic Chamber.



**Figure 12 Interior View of the Full Anechoic Chamber**

### 3. 2.4GHz WIFI ANTENNA RADIATION PLOTS

The following plots describe the 2D Radiation pattern for both the Top and Side WIFI Internal Antenna in the 2.4GHz Band.

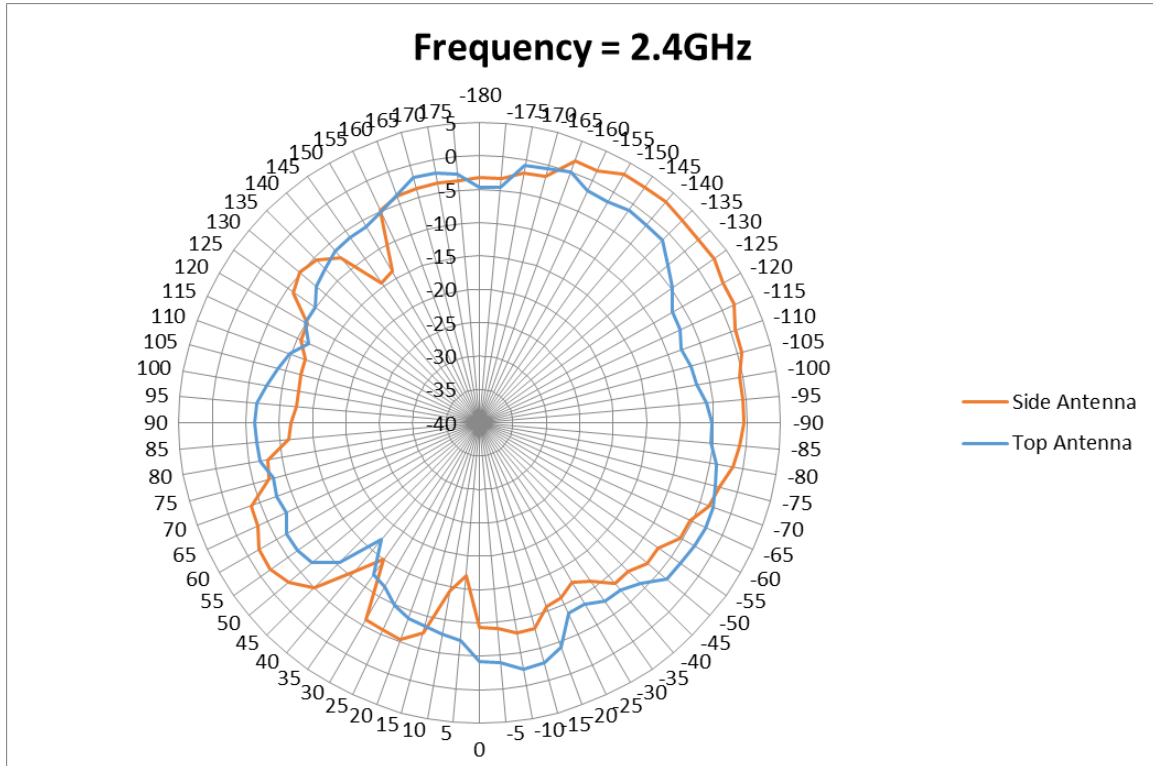
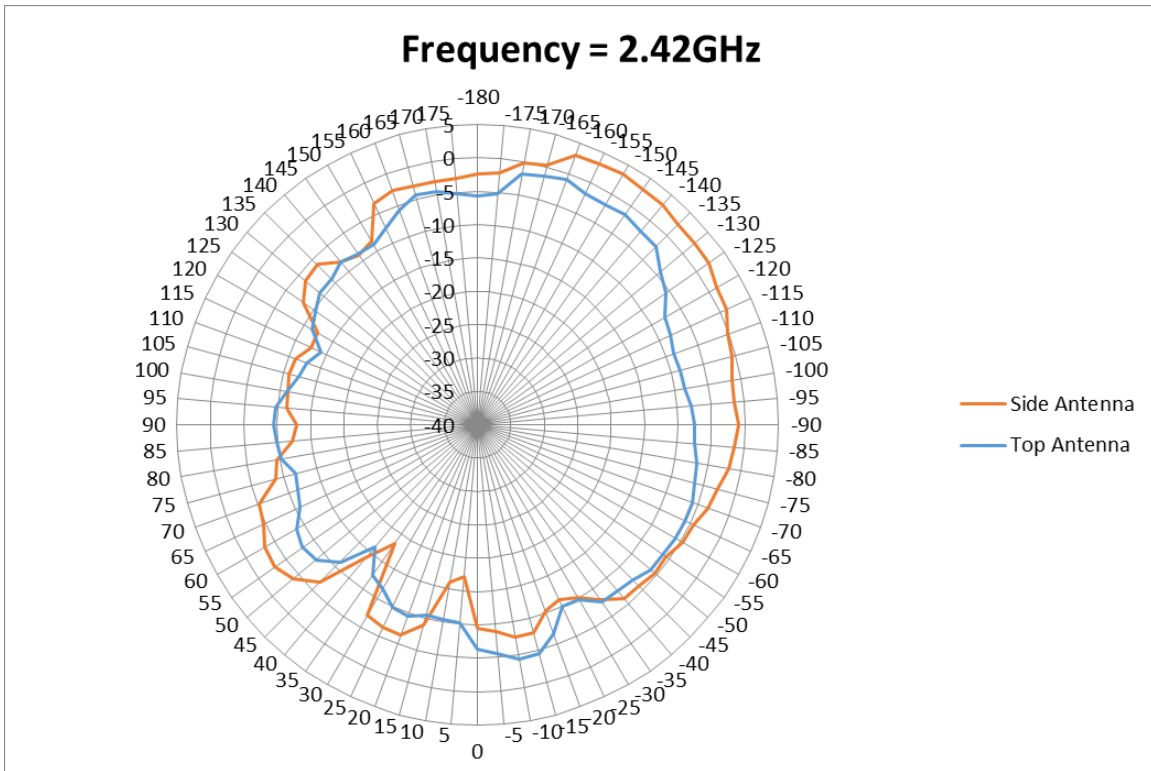
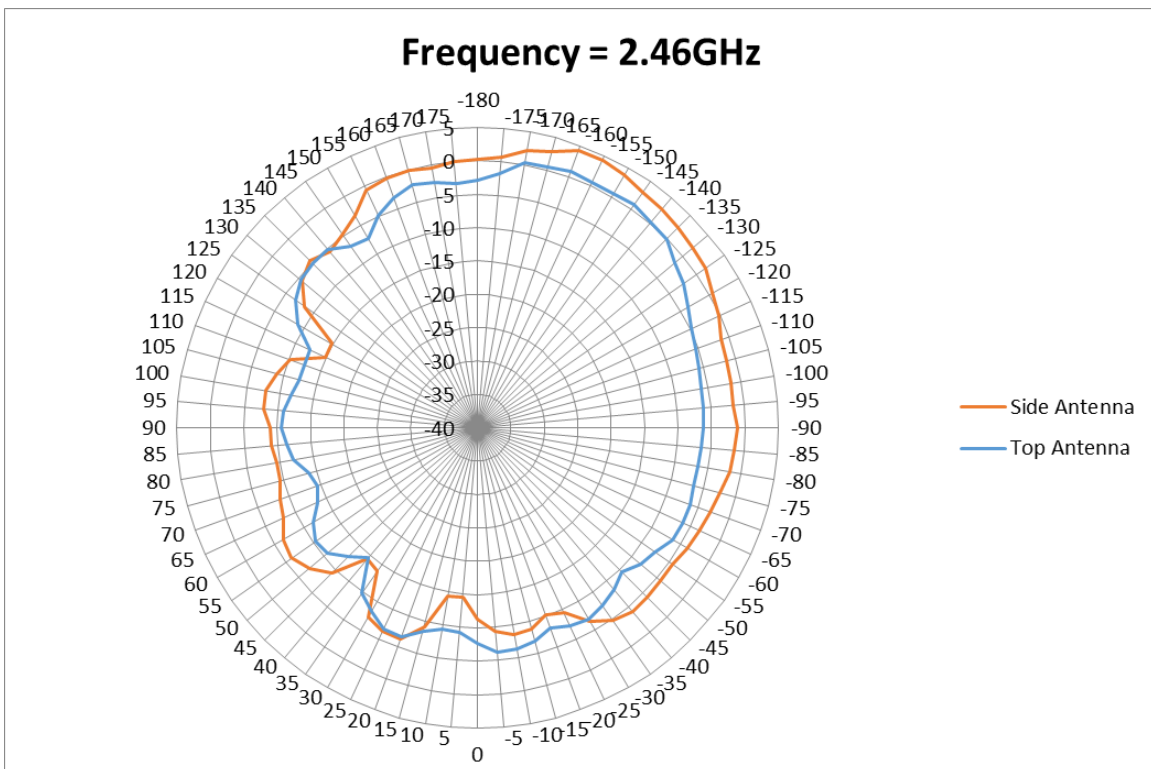


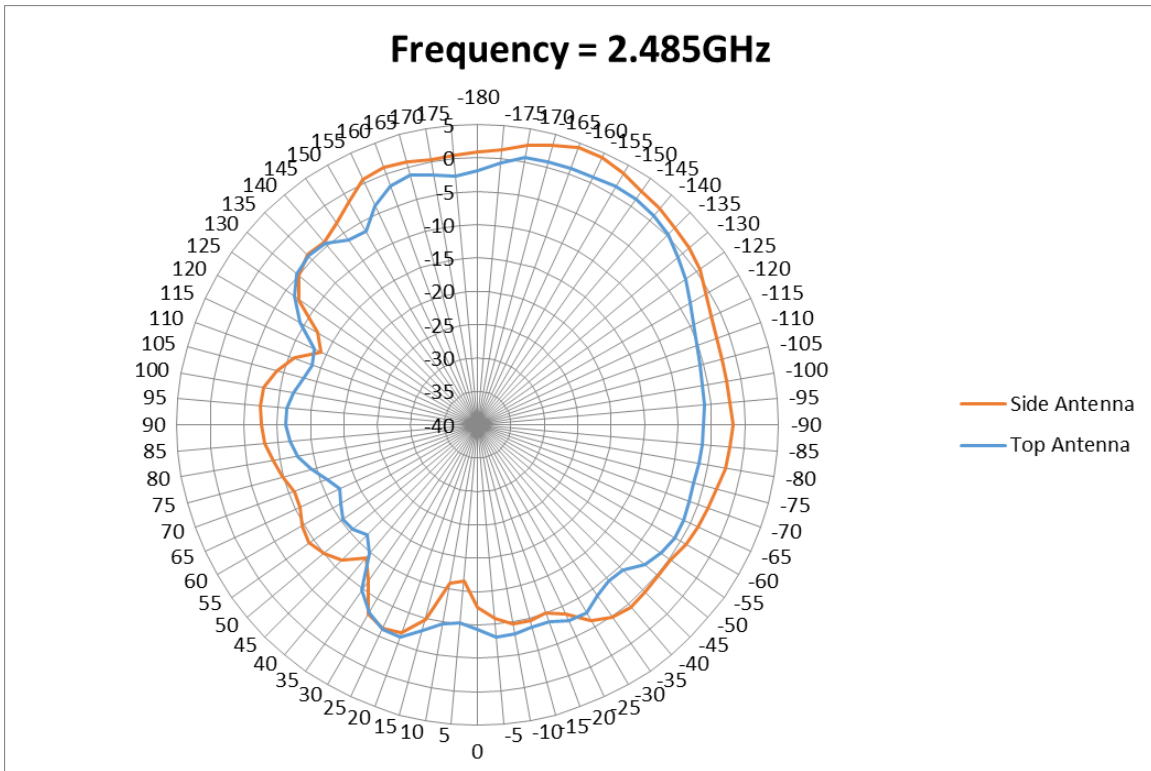
Figure 13 Radiation Plots for 2.400GHz (H-Plane)



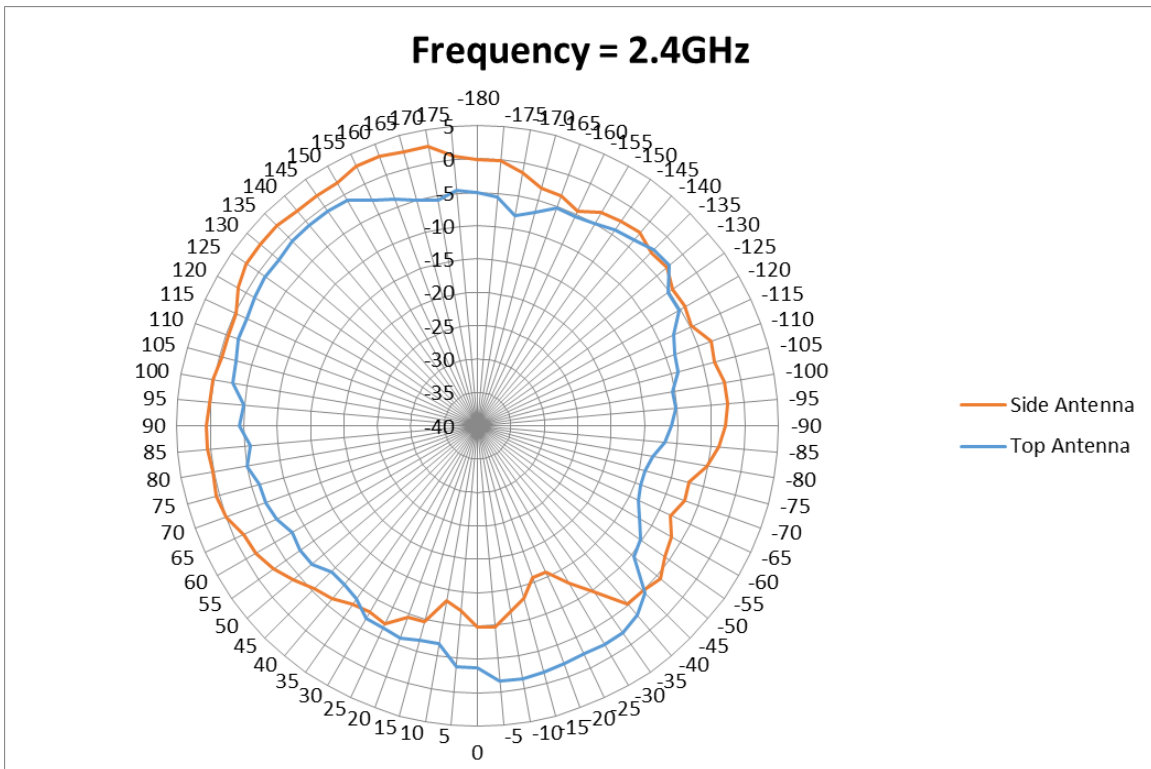
**Figure 14 Radiation Plots for 2.420GHz (H-Plane)**



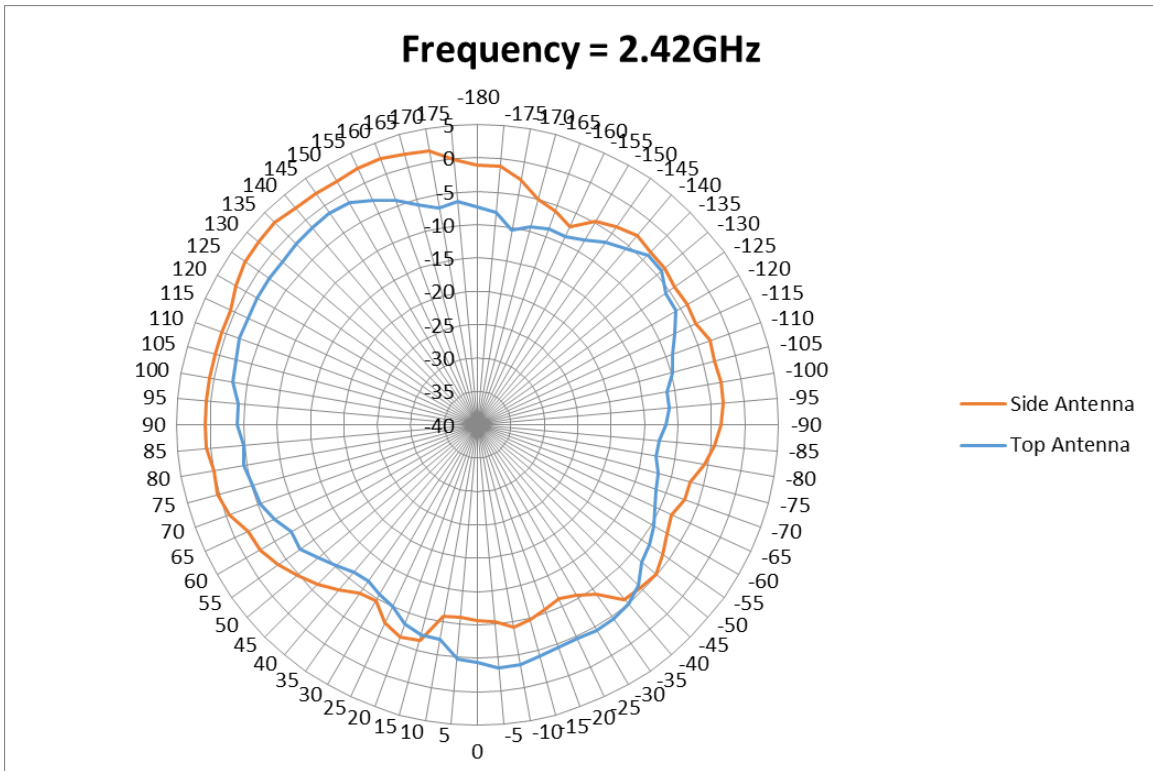
**Figure 15 Radiation Plots for 2.460GHz (H-Plane)**



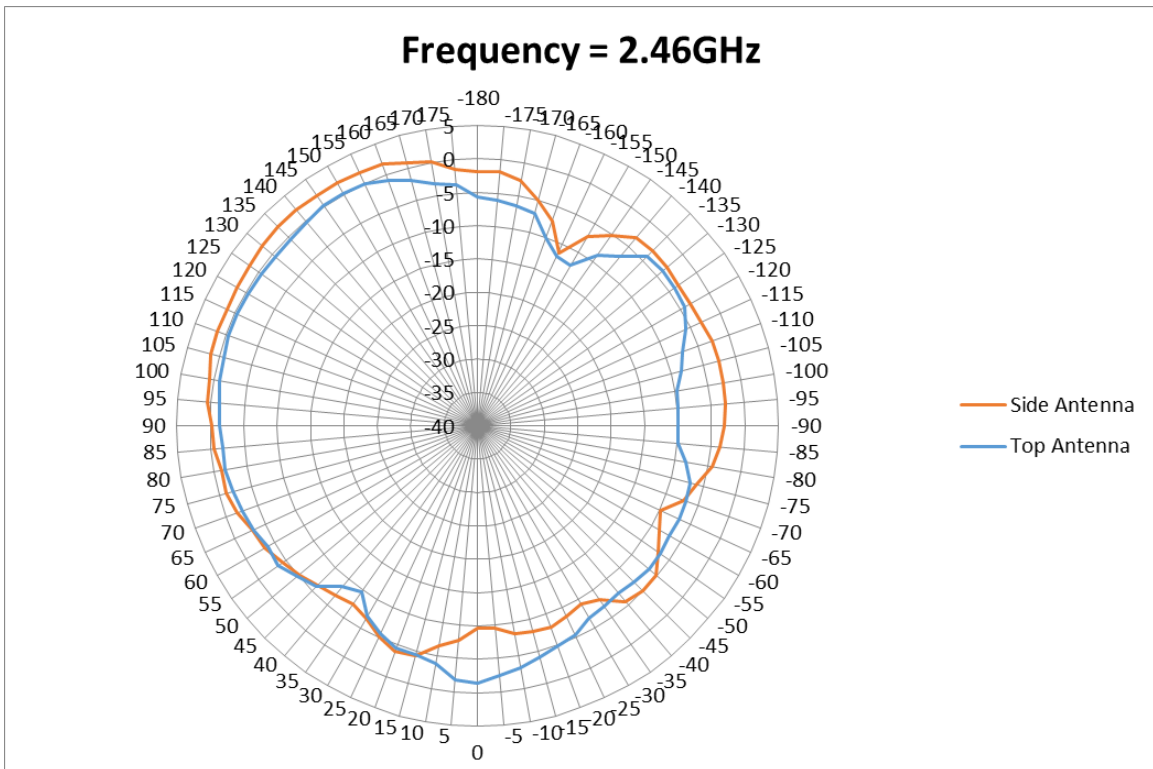
**Figure 16 Radiation Plots for 2.485GHz (H-Plane)**



**Figure 17 Radiation Plots for 2.400GHz (E1-Plane)**

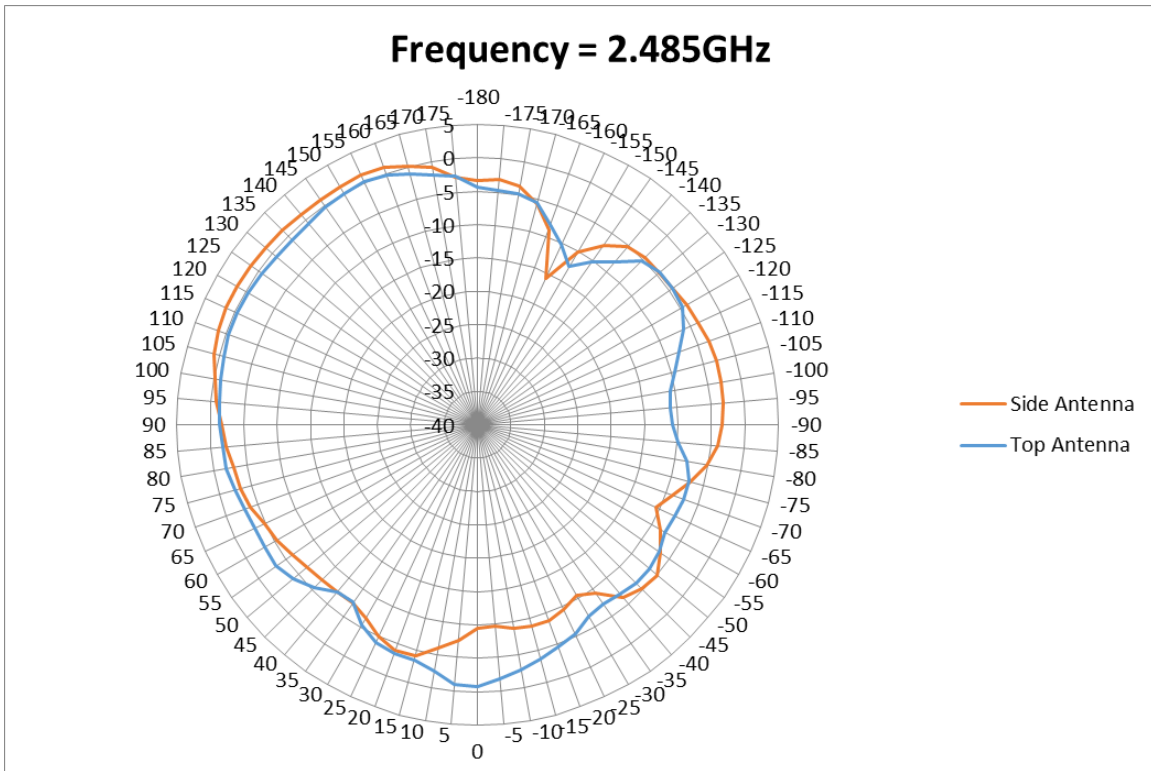


**Figure 18 Radiation Plots for 2.420GHz (E1-Plane)**

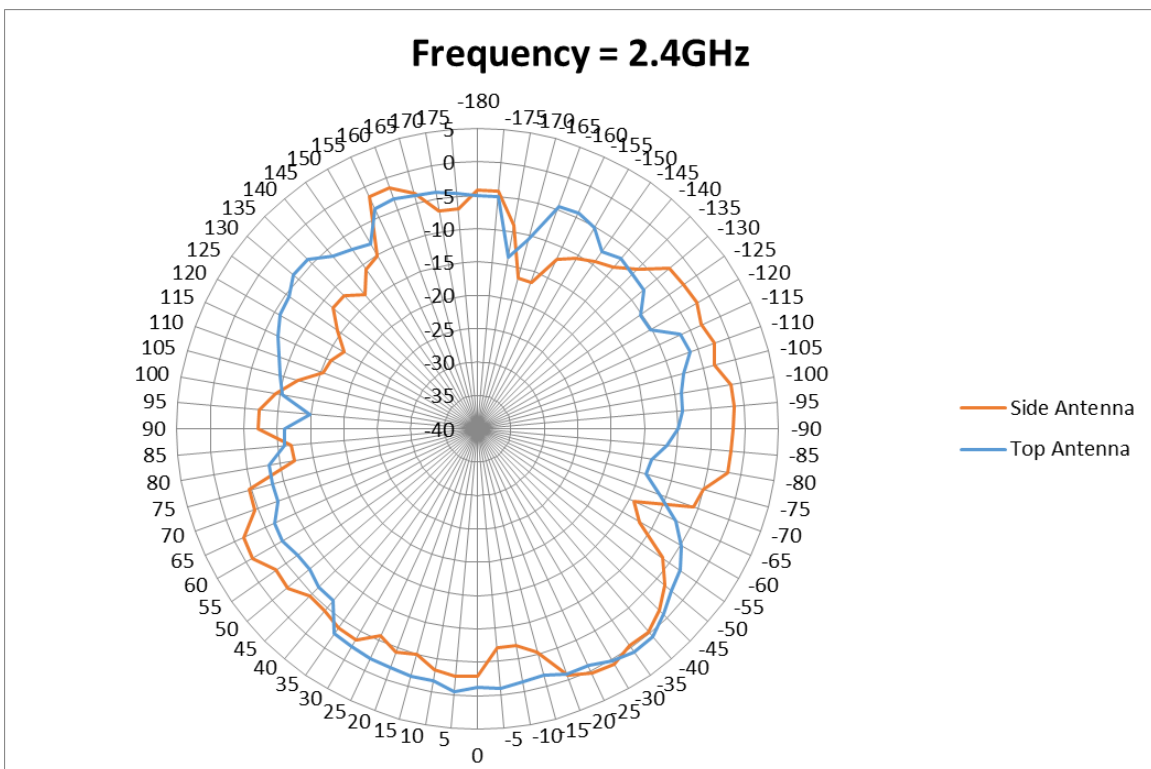


**Figure 19 Radiation Plots for 2.460GHz (E1-Plane)**

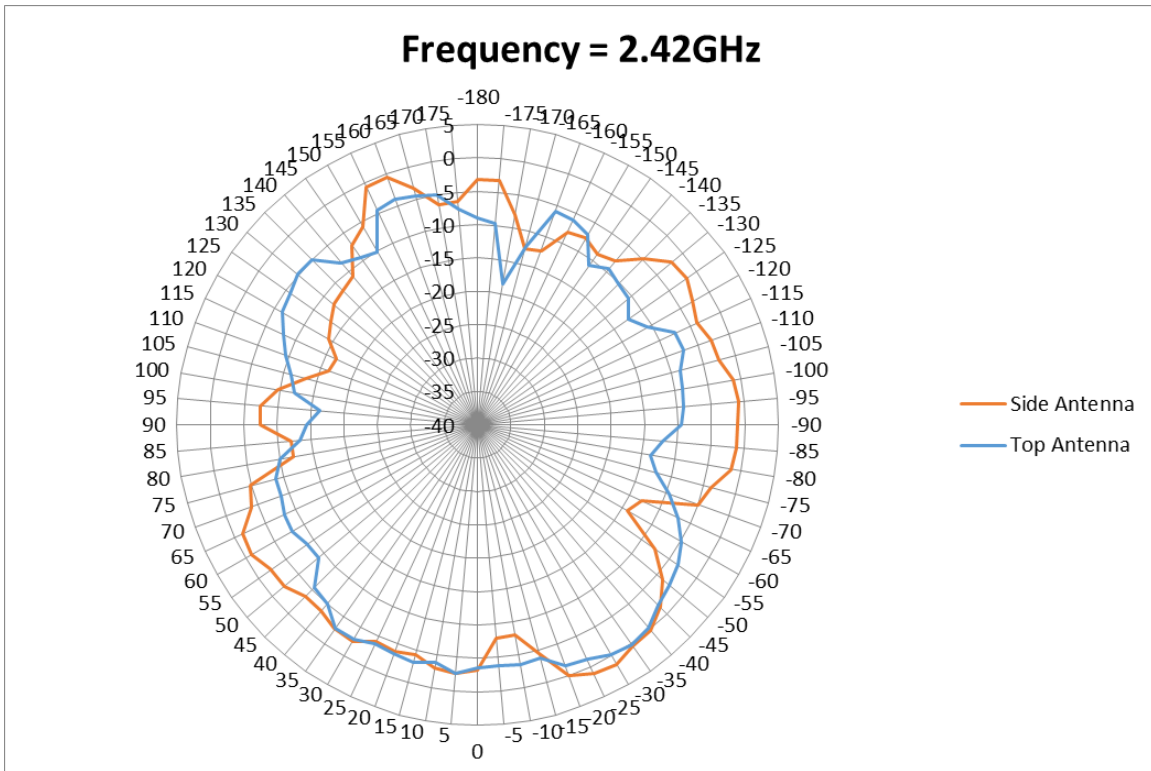




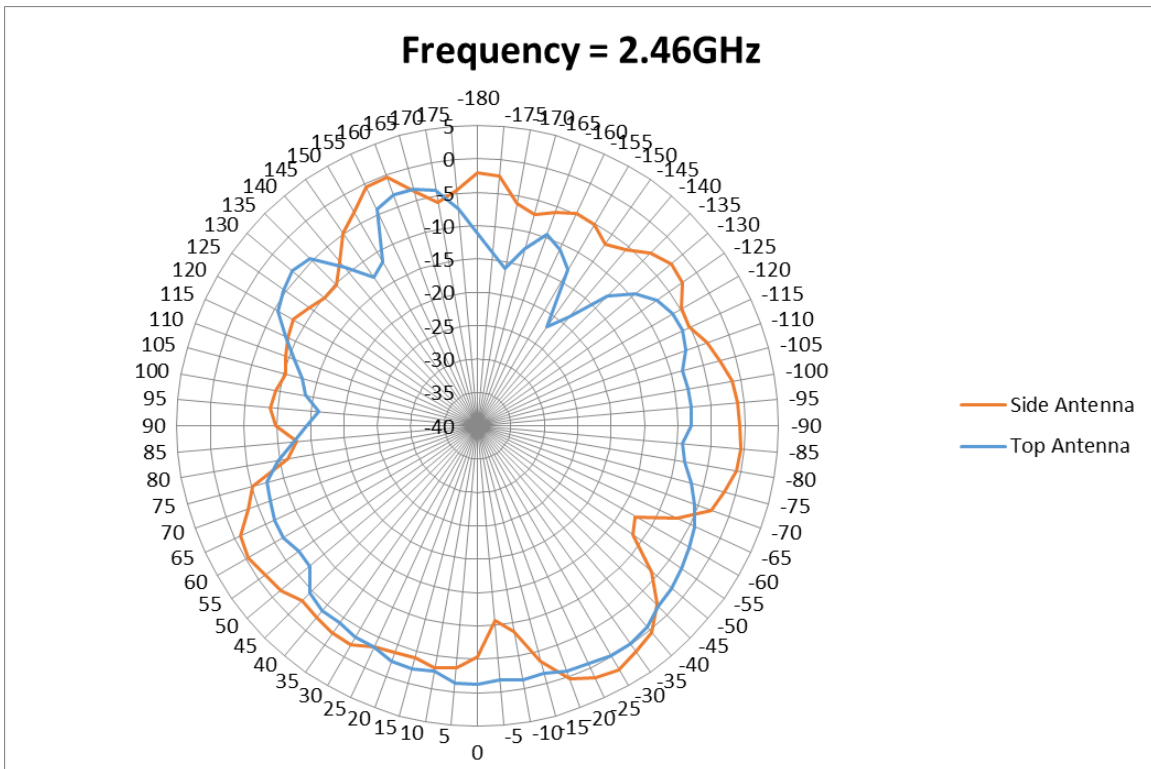
**Figure 20 Radiation Plots for 2.485GHz (E1-Plane)**



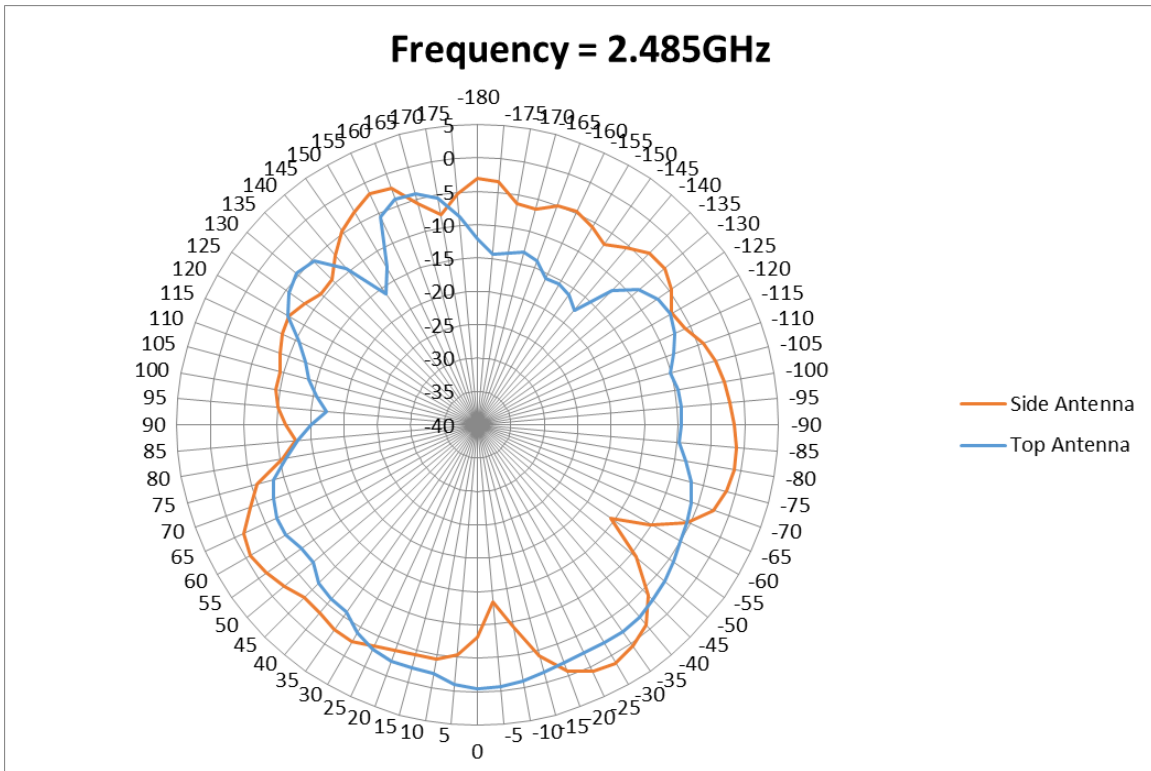
**Figure 21 Radiation Plots for 2.400GHz (E2-Plane)**



**Figure 22 Radiation Plots for 2.420GHz (E2-Plane)**



**Figure 23 Radiation Plots for 2.460GHz (E2-Plane)**



The following Plots shall describe the peak gain of the antenna for various planes with respect to frequency.

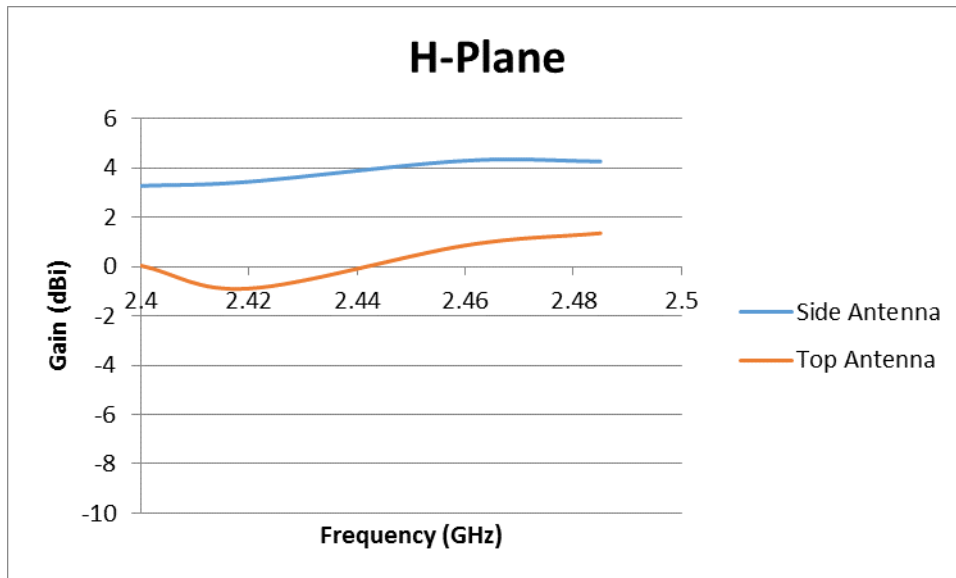


Figure 25 Peak Gain for Bluetooth Printed Antenna (H-Plane)

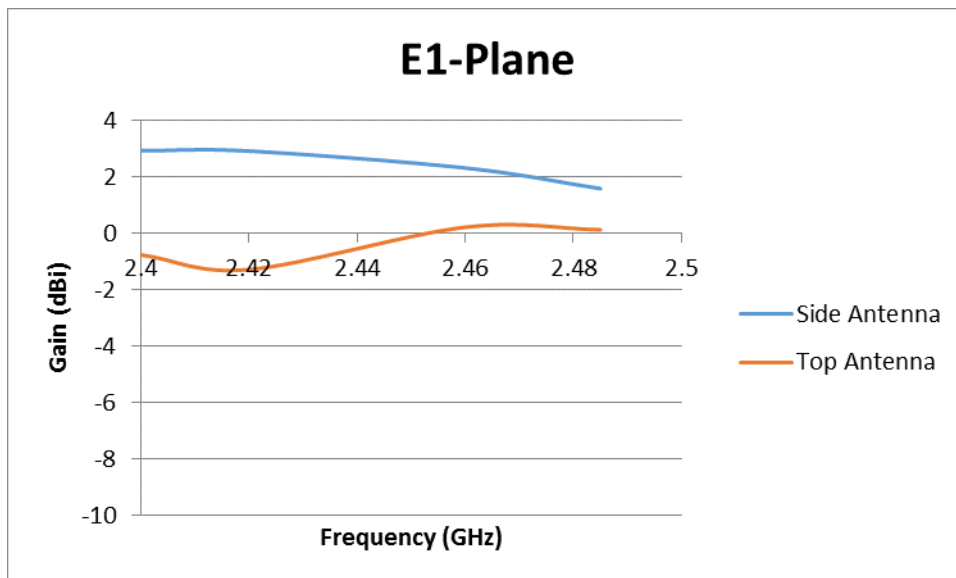


Figure 26 Peak Gain for Bluetooth Printed Antenna (E1-Plane)

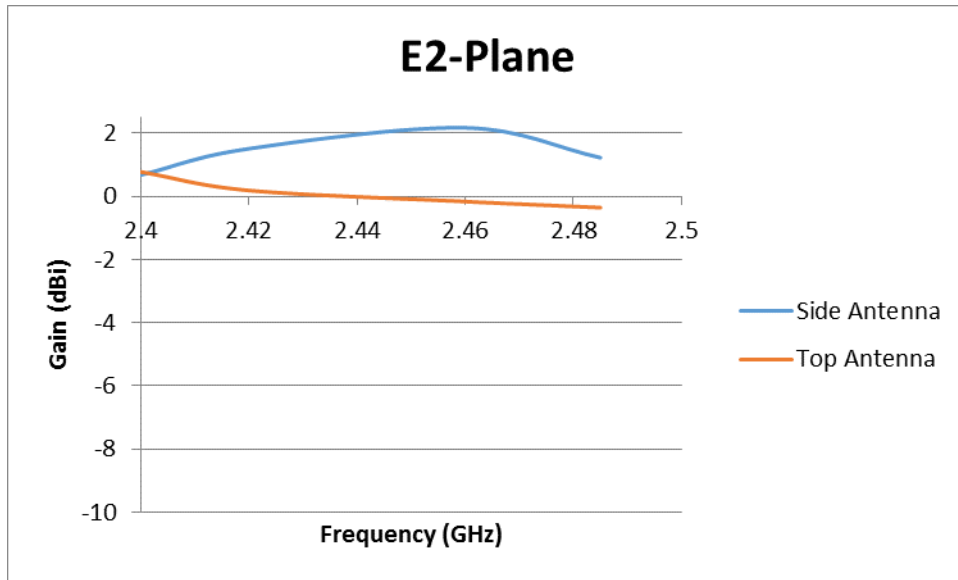


Figure 27 Peak Gain for Bluetooth Printed Antenna (E2-Plane)

#### 4. 5GHz WIFI ANTENNA RADIATION PLOTS

The following plots describe the 2D Radiation pattern for both the Top and Side WIFI Internal Antenna in the 5GHz Band.

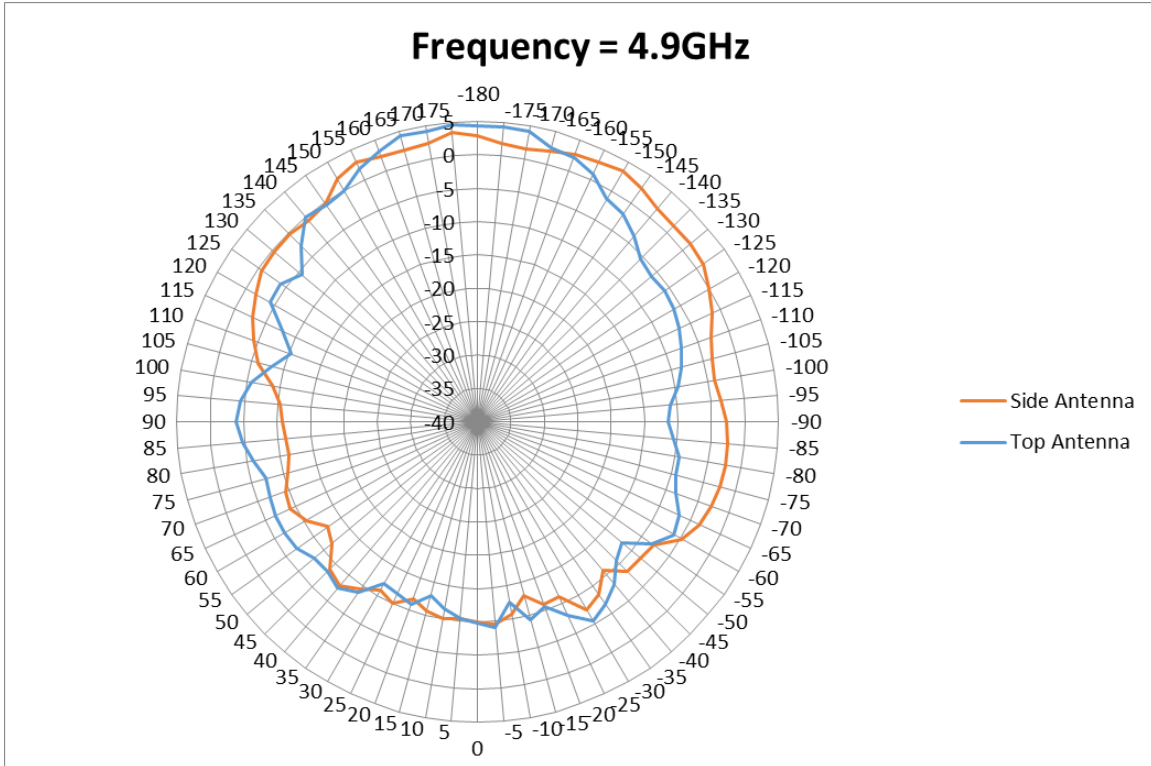


Figure 28 Radiation Plots for 4.900GHz (H-Plane)

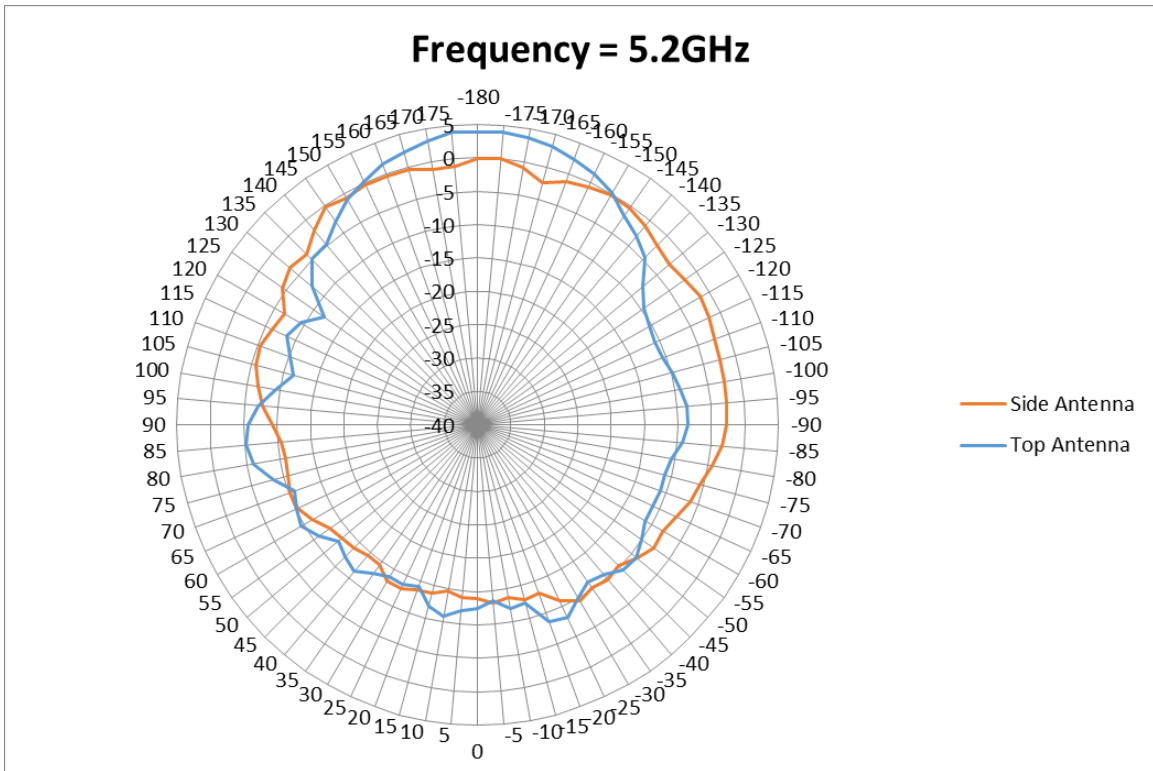


Figure 29 Radiation Plots for 5.200GHz (H-Plane)

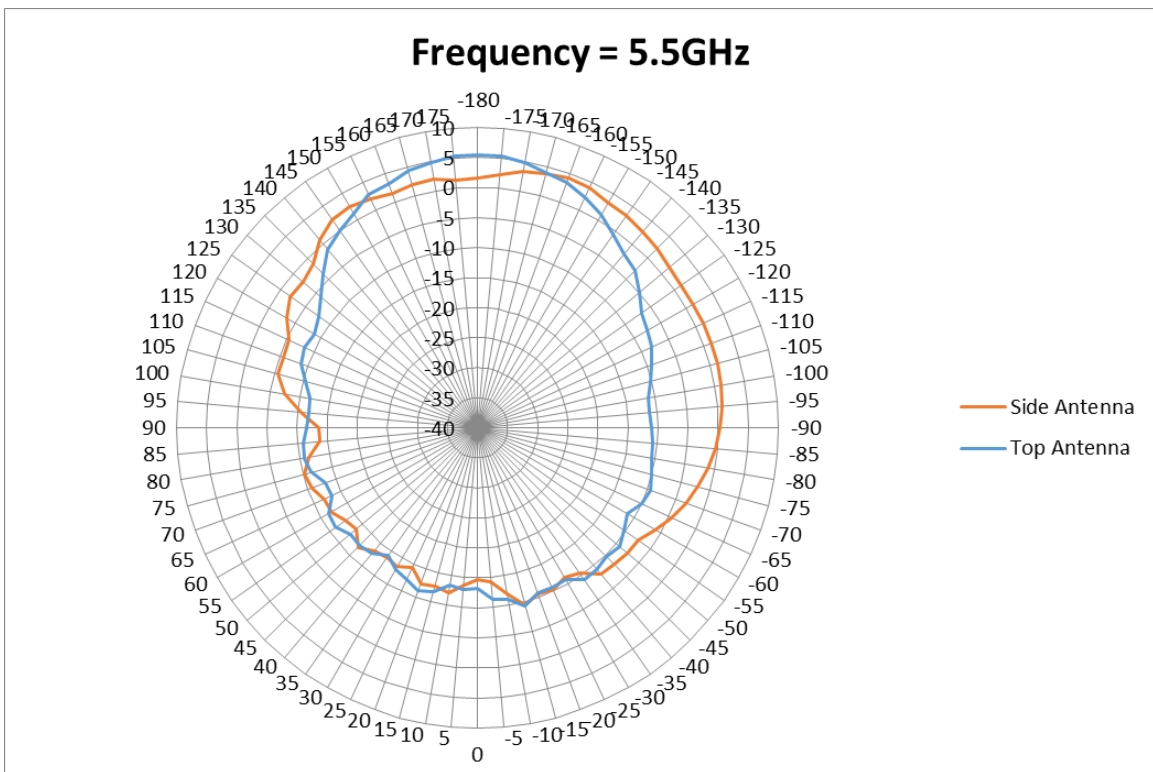


Figure 30 Radiation Plots for 5.500GHz (H-Plane)

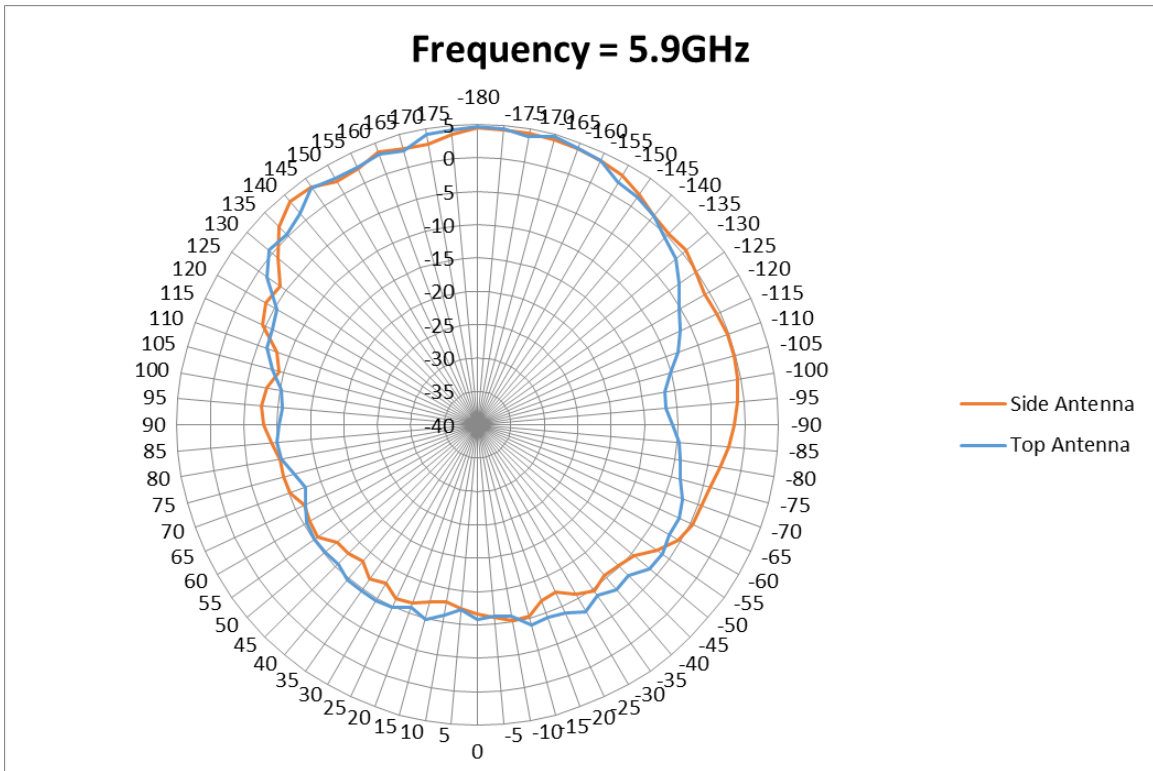


Figure 31 Radiation Plots for 5.900GHz (H-Plane)

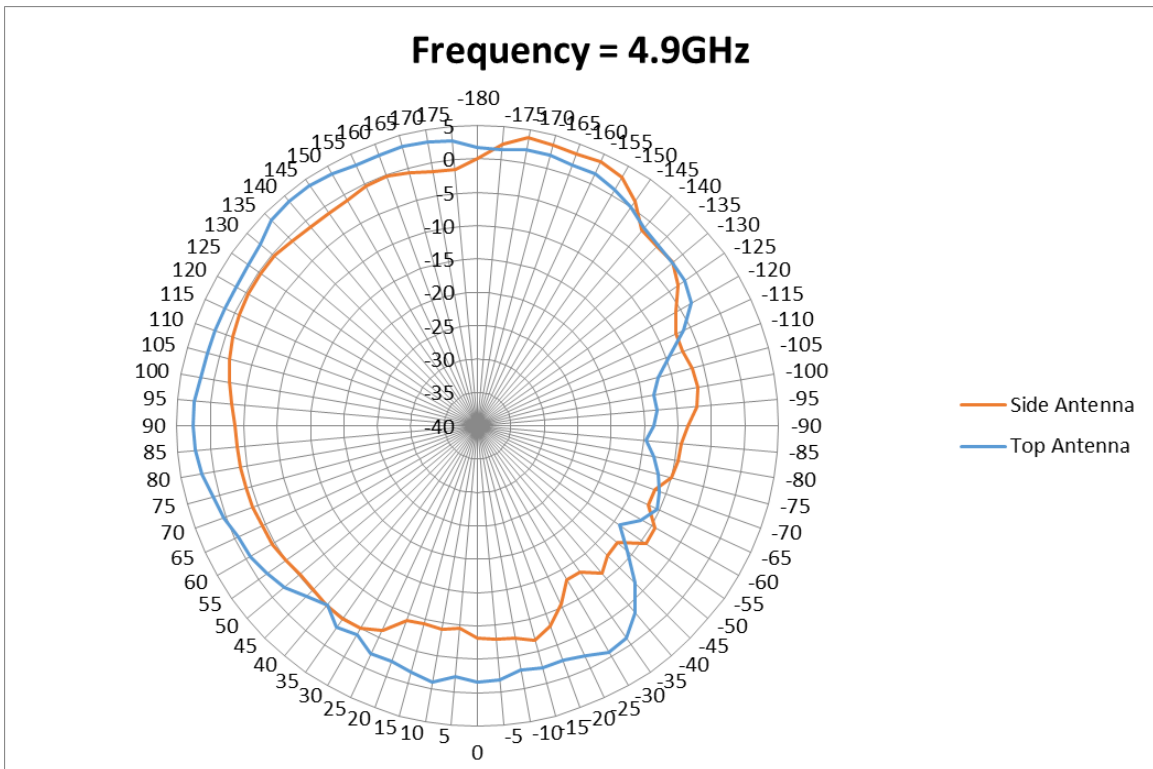
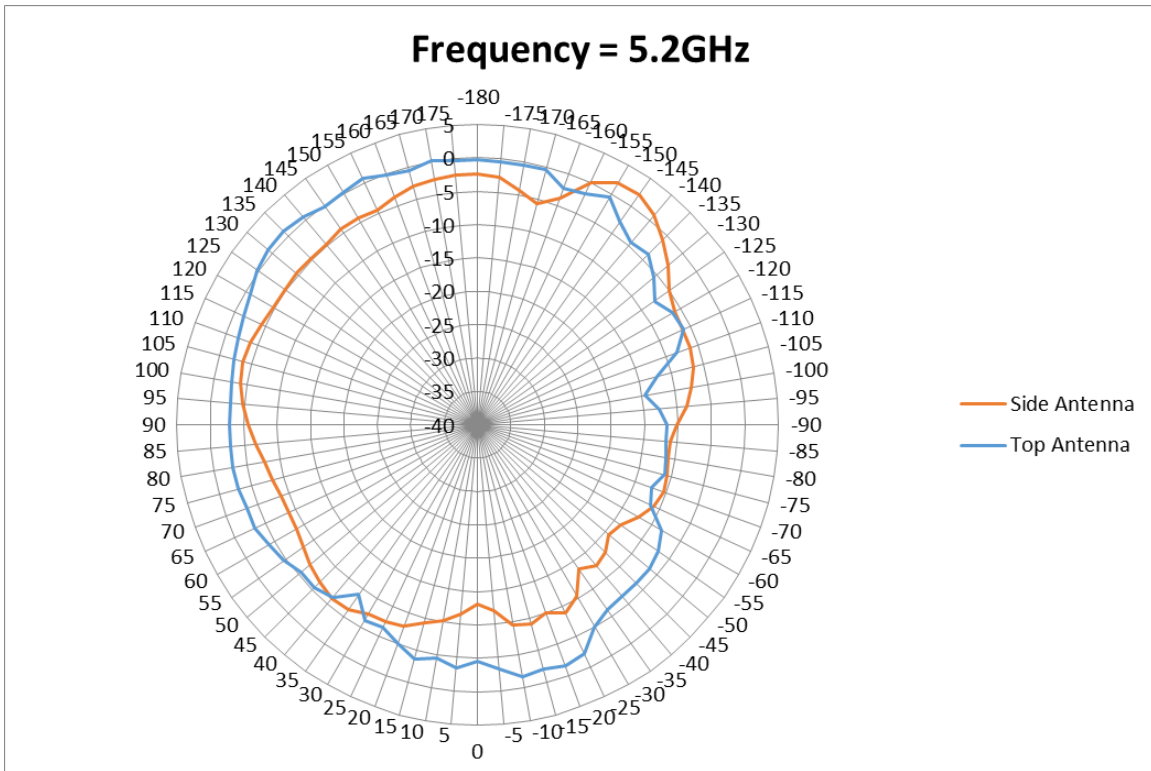
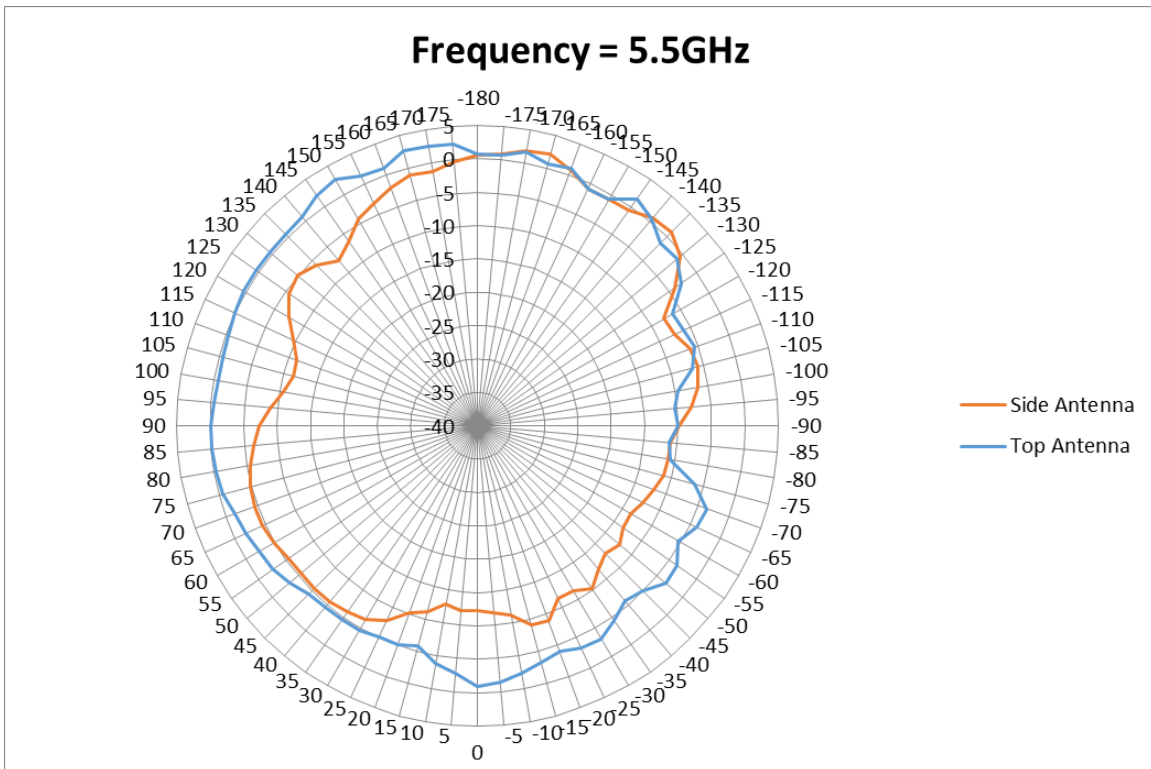


Figure 32 Radiation Plots for 4.900GHz (E1-Plane)





**Figure 33 Radiation Plots for 5.200GHz (E1-Plane)**



**Figure 34 Radiation Plots for 5.500GHz (E1-Plane)**

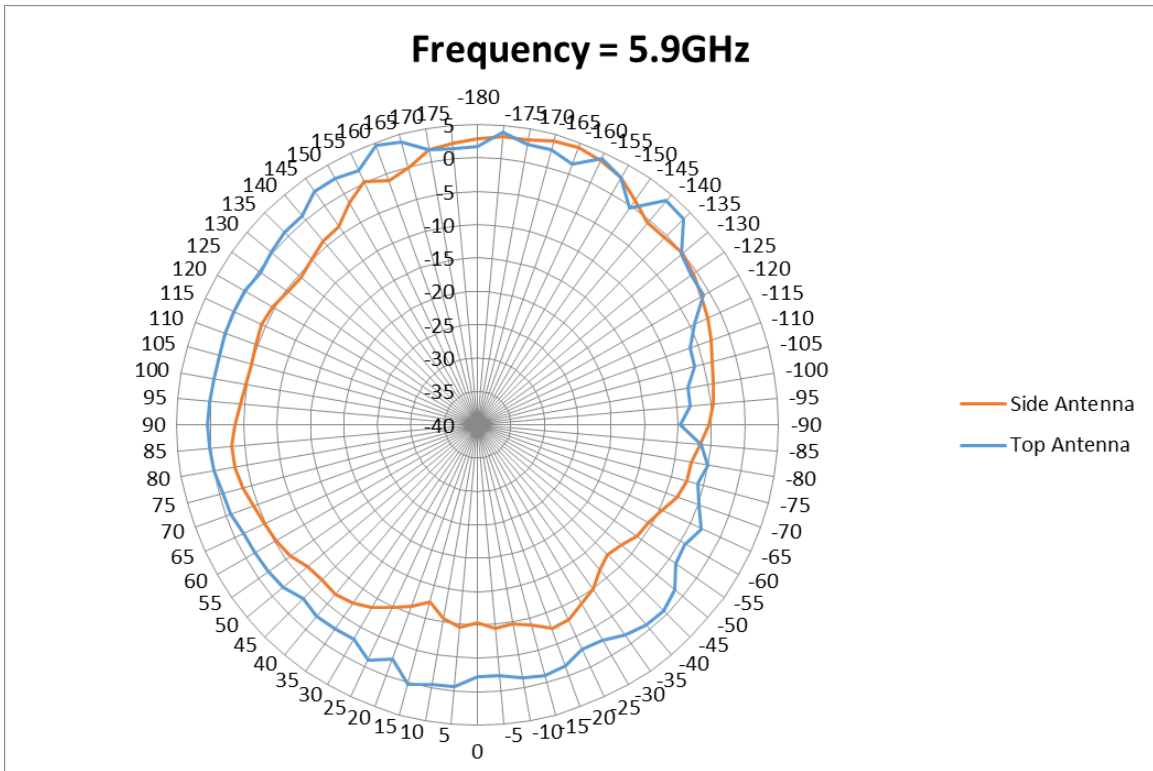


Figure 35 Radiation Plots for 5.900GHz (E1-Plane)

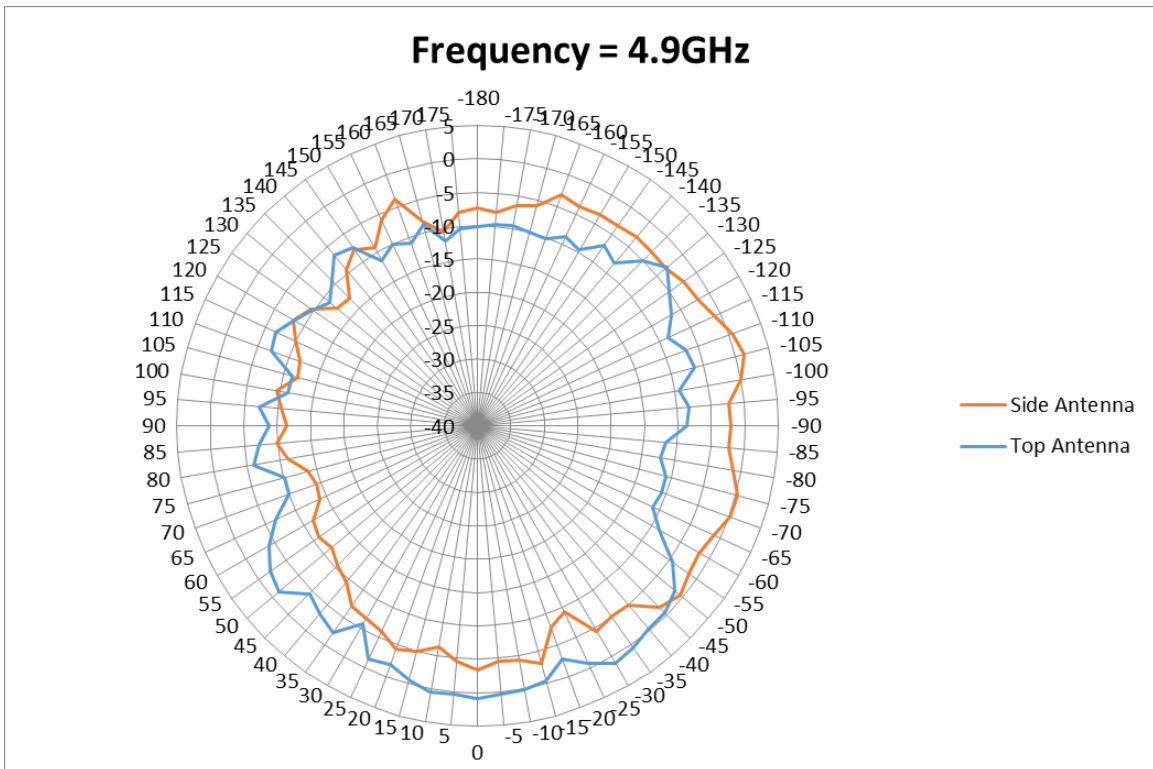
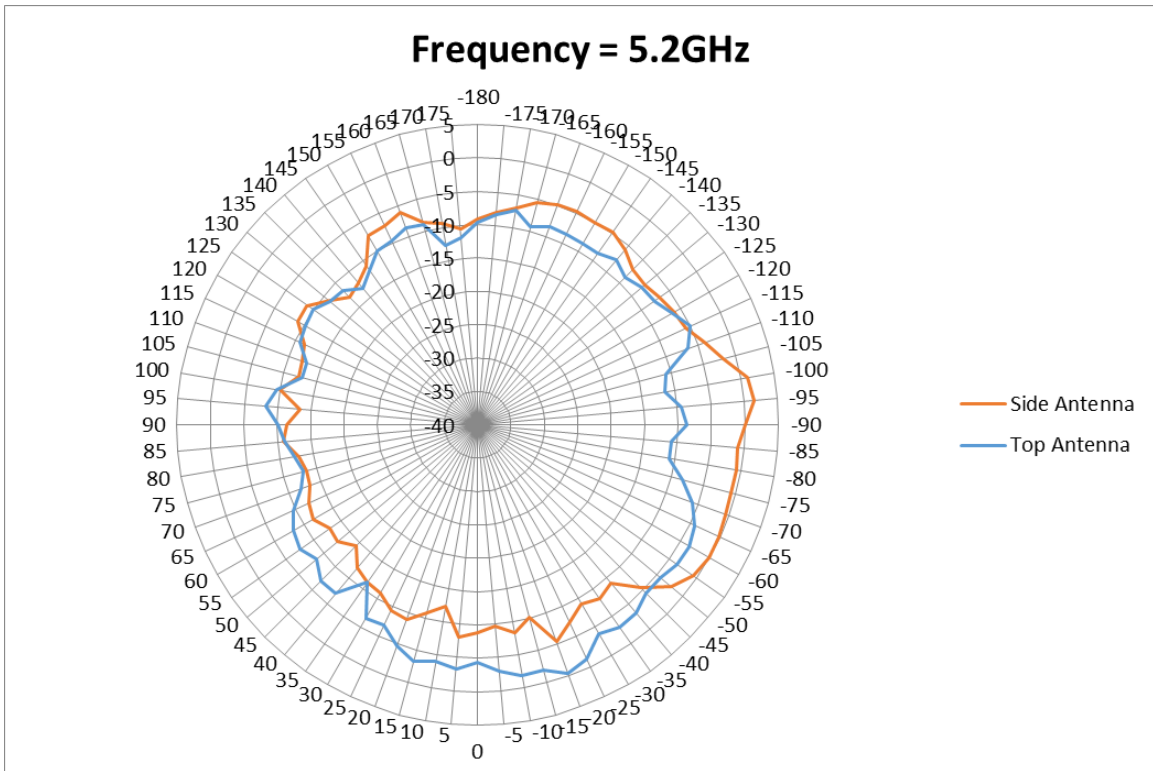
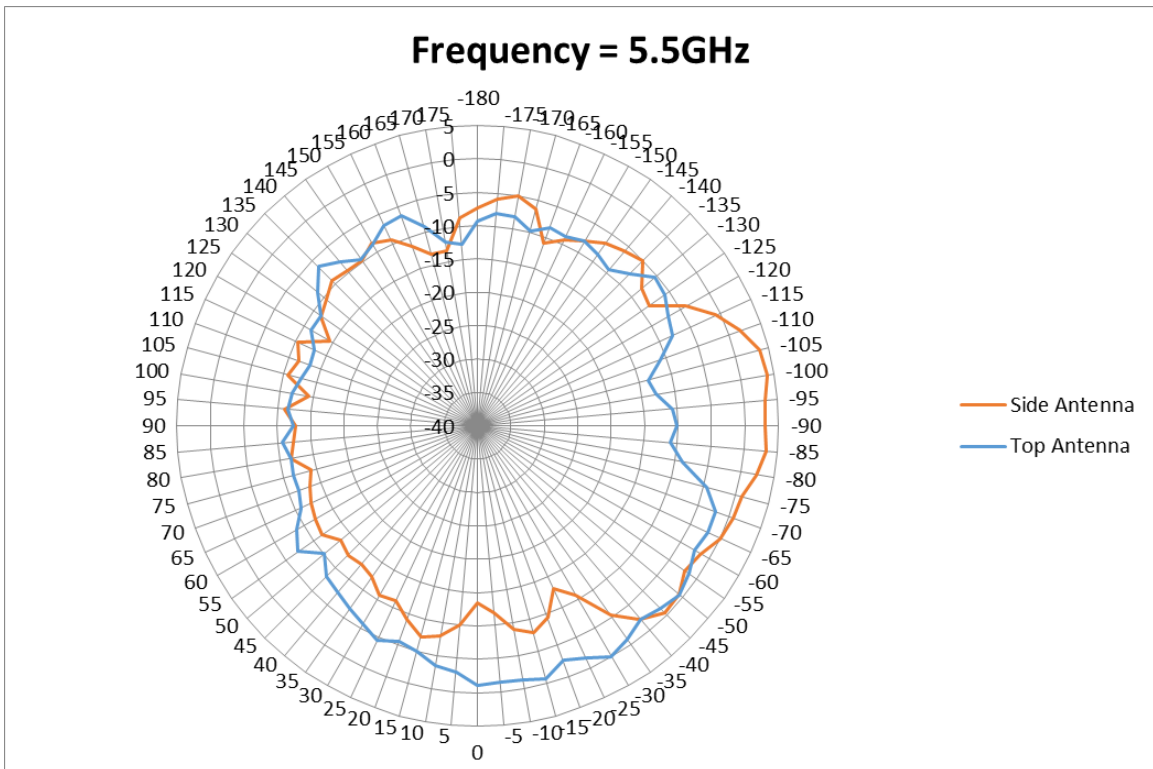


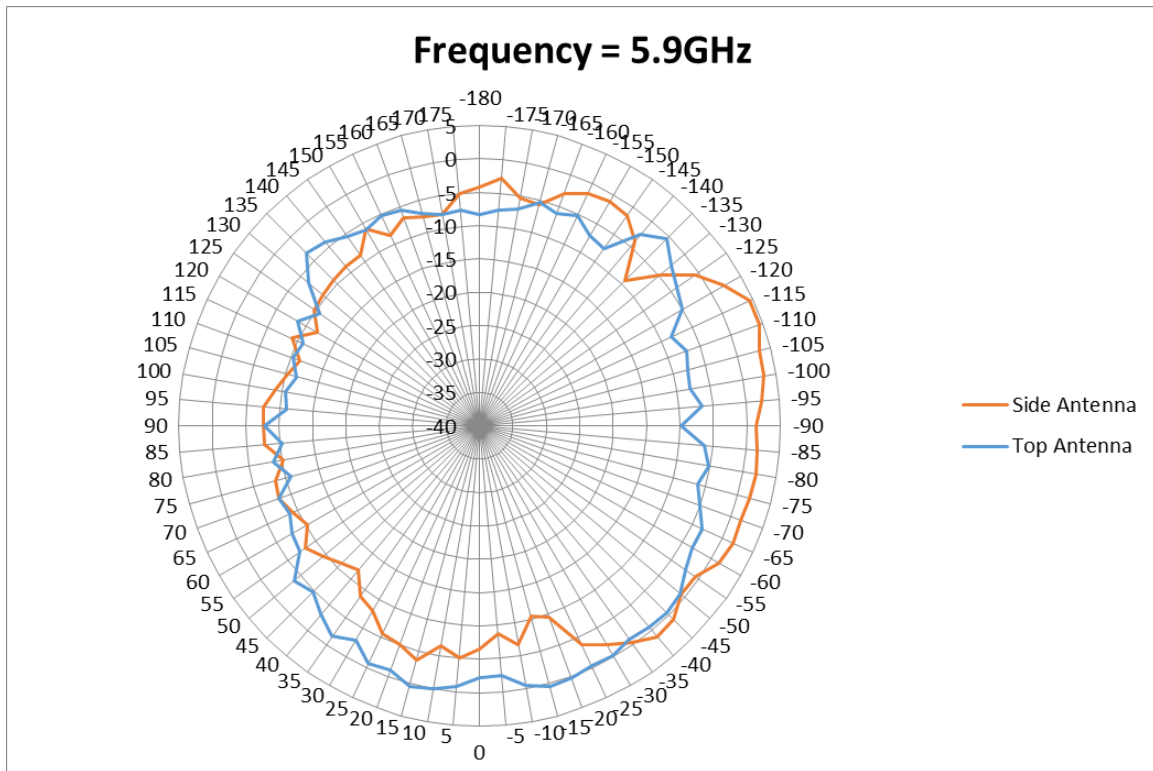
Figure 36 Radiation Plots for 4.900GHz (E2-Plane)



**Figure 37 Radiation Plots for 5.200GHz (E2-Plane)**



**Figure 38 Radiation Plots for 5.500GHz (E2-Plane)**



**Figure 39 Radiation Plots for 5.900GHz (E2-Plane)**

The following Plots shall describe the peak gain of the antenna for various planes with respect to frequency.

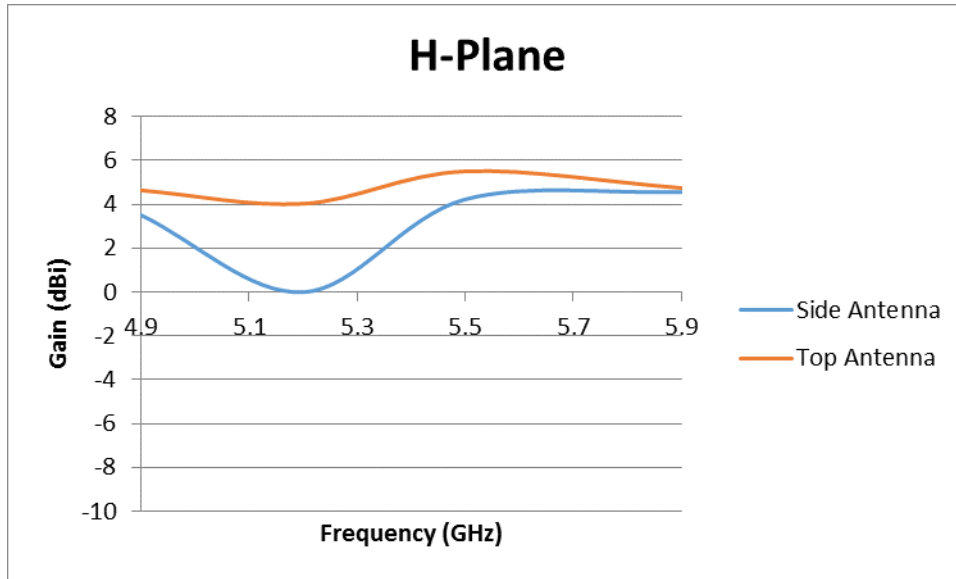


Figure 40 Peak Gain for Bluetooth Printed Antenna (H-Plane)

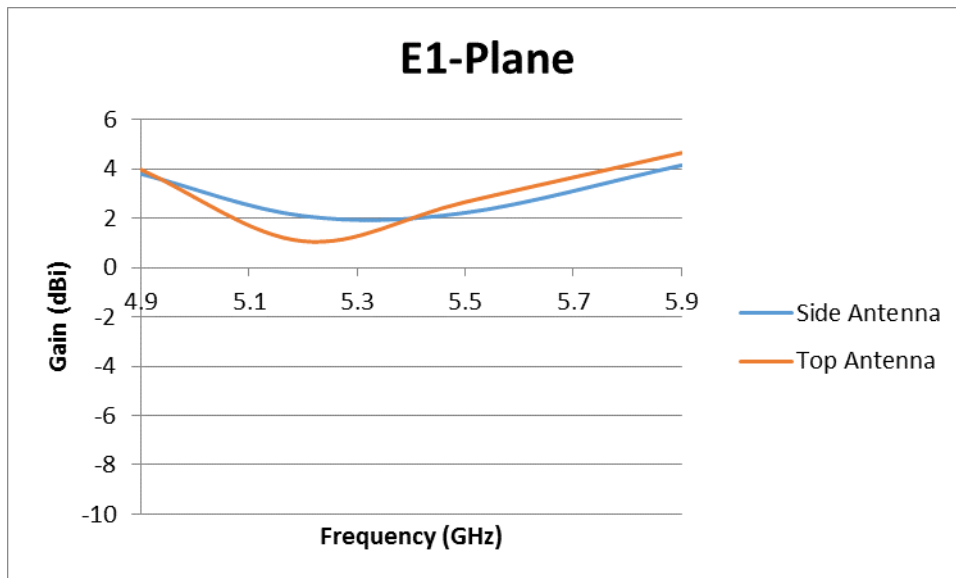


Figure 41 Peak Gain for Bluetooth Printed Antenna (E1-Plane)

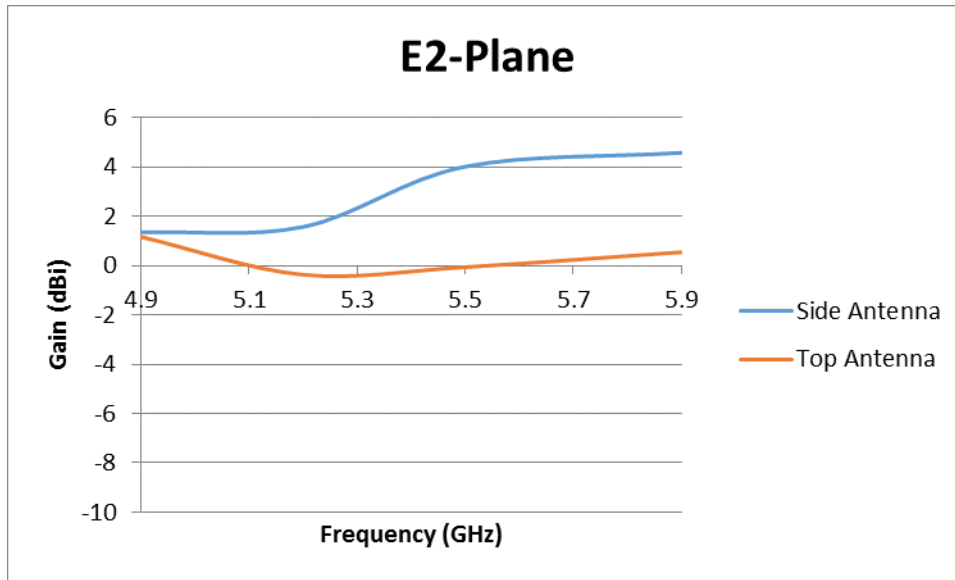


Figure 42 Peak Gain for Bluetooth Printed Antenna (E2-Plane)

## 5. CONCLUSION

The various results above showed that both the WIFI Internal Antenna is operating within the required Specifications. Table 1 below is a summary of the peak gain.

Peak Antenna Gain for Internal Antenna									
		2.4Ghz	2.42Ghz	2.46Ghz	2.485Ghz	4.9Ghz	5.2Ghz	5.5Ghz	5.9Ghz
Top Antenna	H-Plane	0dB	-1.0dB	1.0dB	1.5dB	4.5dB	4dB	<b>5.5dB</b>	4.5dB
	E1-Plane	-0.8dB	-1.5dB	0.8dB	0.5dB	3.9dB	1.0dB	2.5dB	4.2dB
	E2-Plane	0.5dB	0.2dB	-0.2dB	-0.5dB	1.0dB	-1.5dB	0 dB	0.5dB
Side Antenna	H-Plane	3.0dB	3.2dB	<b>4.25dB</b>	4.2dB	3.4dB	0dB	4.2dB	4.4dB
	E1-Plane	3.0dB	3.0dB	2.5dB	2.0dB	3.8dB	2.0dB	2.1dB	4.1dB
	E2-Plane	0.5dB	1.5dB	2.2dB	1.5dB	1.2dB	1.5dB	4.0dB	4.5dB

Table 1 Peak Gain