

# Regulatory WLAN Antenna Information

<b>Platform</b>	
Platform Owner	DELL
Brand Name	DELL
Model Name	AMG Bump
ODM	Wistron
Target Launch Date	2008-09-26
<b>Antenna</b>	
Brand Name	Amphenol Taiwan Corporation
Part Number	<input type="checkbox"/> Tx1 Antenna: <b>WT1096-11-002-R</b>
	<input type="checkbox"/> Tx2 Antenna: <b>WT1096-11-001-R</b>
	<input type="checkbox"/> Tx3 (or Rx3) Antenna: <b>WT1096-11-001-R</b>
<b>Module</b>	
	<input type="checkbox"/> Intel® WiFi Link 5100
(Check Box)	<input type="checkbox"/> Intel® WiFi Link 5300

## Antenna Sample / Antenna Data Requirements for worldwide regulatory approval

Section	Description of Required OEM / ODM Antenna Information	US / IC	EU	Japan	Taiwan	S.Korea
1A	Part Number for Antenna only	Required	Required	Required	Required	Required
1B	Antenna Manufacturer Name	Required	Required	Required	Required	Required
1C	Description of Antenna Type	Required	N/A	N/A	N/A	N/A
1D	Part number of Antenna Assembly / cable impedance, length & diameter.	Required	Desired	Desired	Desired	Desired
1E	Tx1, Tx2 & Tx3 antenna (Peak Gain W/ cable loss) *	Required	Required	Required	Required	Required
	1E OR 1F, 1G, 1H					
1F	Tx1, Tx2 & Tx3 antenna (Peak Gain only) *	Required	Required	Required	Required	Required
1G	VSWR of cable including connector	Required	Required	Required	Required	Required
1H	Tx1, Tx2 & Tx3 antenna (Cable loss W/ connector) *	Required	Required	Required	Required	Required
2	Dimensioned Photographs <u>and</u> Drawings of Tx1, Tx2, and Tx3 (or Rx3) antennas	Required	Required	Required	Required	Required
3	Radiation patterns of antennas loaded in the host platform.	Required	Desired	Required	N/A	Required
4	Platform model name / number - correlated to antenna manufacturer and antenna part number	Required	Required	Desired	Required	Desired
5	Photograph(s) or Drawings showing location of antennas in platform. (S. Korea requires <u>photographs of antennas for approval submission</u> ). <u>Taiwan requires pictures of each antenna type shown in the system.</u>	Required	Required	Desired	<u>Required (Photos)</u>	<u>Required (Photos)</u>
6	Mech. drawings / photos with dimensions of antenna locations and distance from end-user (For evaluation of SAR testing requirement).	Required	N/A	N/A	N/A	N/A
7	Photograph(s) or Drawings showing the location of all antennas (WLAN, other) and distance between those transmitting antennas. Information will be used to evaluate whether co-location testing is required.	Required	N/A	N/A	N/A	N/A
8	Local representative contact information for LMA/ PARS process.	Required	N/A	N/A	N/A	N/A

**NOTE:**

(\* ) if 3<sup>rd</sup> antenna is Rx only (e.g. receive only for 4965AGN) then peak gain and cable loss not required

# Antenna Information

## Section 1. Antenna Assembly Specifications

### Antenna Assembly Summary:

1A Antenna Part Number	1B Manufacture	1C Antenna Type	1D Cable Assembly Part Number and Information	1E *Peak Gain W/ Cable loss (dBi)	1F Peak Gain w/o Cable Loss (dBi)	1G VSWR	1H Cable Loss (dBi)
(P/N: WT1096-11-0 02-R) Tx1 antenna	Example: Amphenol Taiwan Corp.	Example:  PIFA/metal stamping,carrier	Example: (P/N: GBE R113XL5) 50 ohm Coaxial. length: 44.9 cm diameter: 1.13mm Connector: IPEX	2400-2500MHz 0.671 dBi (peak)	2400-2500MHz 2.3811dBi (peak)	2400-2500MHz 1.3 max	2400-2500MHz 1.71dBi (peak)
				2496-2690MHz 0.62119dBi (peak)	2496-2690MHz 2.38119 dBi (peak)	2496-2690MHz 2.4 max	2496-2690MHz 1.76 dBi (peak)
				5150-5350MHz -1.43508 dBi (peak)	5150-5350MHz 1.37492dBi (peak)	5150-5350MHz 2.2 max	5150-5350MHz 2.81 dBi (peak)
				5470-5725MHz -2.639296dBi (peak)	5470-5725MHz 0.210704dBi (peak)	5470-5725MHz 2.4max	5470-5725MHz 2.85 dBi (peak)
				5725-5850MHz -4.1115 dBi (peak)	5725-5850MHz -1.2115 dBi (peak)	5725-5850MHz 2.1 max	5725-5850MHz 2.9 dBi (peak)
(P/N: WT1096-11-0 01-R) Tx2 antenna	Example: Amphenol Taiwan Corp.	Example:  PIFA/metal stamping,carrier	Example: (P/N: GBE R113XL5) 50 ohm Coaxial. length: 45.5cm diameter: 1.13mm Connector: IPEX	2400-2500MHz -1.369403dBi (peak)	2400-2500MHz 0.210597 dBi (peak)	2400-2500MHz 1.6 max	2400-2500MHz 1.58dBi (peak)
				2496-2690MHz -1.389403 dBi (peak)	2496-2690MHz 0.210597 dBi (peak)	2496-2690MHz 2.5 max	2496-2690MHz 1.60dBi (peak)
				5150-5350MHz -1.742883 dBi (peak)	5150-5350MHz 0.717117 dBi (peak)	5150-5350MHz 1.4 max	5150-5350MHz 2.46dBi (peak)
				5470-5725MHz -1.42238dBi (peak)	5470-5725MHz 1.04762 dBi (peak)	5470-5725MHz 1.5max	5470-5725MHz 2.47dBi (peak)
				5725-5850MHz -1.43238 dBi (peak)	5725-5850MHz 1.04762 dBi (peak)	5725-5850MHz 1.86 max	5725-5850MHz 2.48 dBi (peak)
(P/N: WT1096-11-0 01-R) Tx3 (or Rx3) antenna	Example: Amphenol Taiwan Corp.	Example:  PIFA/metal stamping,carrier	Example: (P/N: GBE R113XL5) 50 ohm Coaxial. length: 47.7cm diameter: 1.13mm Connector: IPEX	2400-2500MHz -2.33585dBi (peak) *	2400-2500MHz -0.83585 dBi (peak) *	2400-2500MHz 1.5 max *	2400-2500MHz 1.50dBi (peak) *
				2496-2690MHz -2.35585 dBi (peak) *	2496-2690MHz -0.83585 dBi (peak) *	2496-2690MHz 1.8 max*	2496-2690MHz 1.52 dBi (peak) *
				5150-5350MHz -0.82965dBi (peak) *	5150-5350MHz 1.56035dBi (peak) *	5150-5350MHz 1.5 max *	5150-5350MHz 2.39 dBi (peak) *
				5470-5725MHz -0.47271 dBi (peak) *	5470-5725MHz 1.92729dBi (peak) *	5470-5725MHz 1.4 max *	5470-5725MHz 2.40 dBi (peak) *
				5725-5850MHz -1.882428 dBi (peak) *	5725-5850MHz 0.527572 dBi (peak) *	5725-5850MHz 1.8 max *	5725-5850MHz 2.41 dBi (peak) *

#### NOTE:

(\*) If Rx3 only (3<sup>rd</sup> antenna receives only, e.g. for 4965AGN) then the information marked with \* is not required

**Antenna Peak Gain Table:**

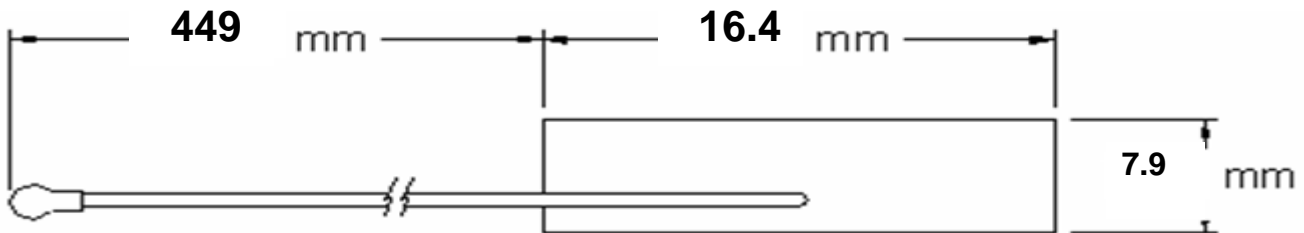
Frequency (MHz)	Tx1 antenna		Tx2 Antenna		Tx3 (or Rx3) Antenna	
	Horizontal (dBi)	Vertical (dBi)	Horizontal (dBi)	Vertical (dBi)	Horizontal (dBi)	Vertical (dBi)
2400	-0.234067	-0.057183	-1.39515	-3.0376	-5.24286	-1.97474
2450	-1.19719	1.30922	-1.60989	-3.34611	-4.29475	-1.6437
2500	-0.88449	2.38119	-1.69444	0.210597	-3.0632	-0.83585
5150	-1.47115	-0.88242	-0.90503	0.115739	-2.19985	-0.59463
5350	1.37492	0.326261	0.543206	0.717117	0.258025	1.56035
5470	-0.93817	0.210704	-1.56563	0.137969	-1.75302	1.92729
5725	-1.52627	-1.2115	-0.16263	1.04762	0.527572	0.460893
5785	-1.31897	-2.00195	-0.55245	-1.47042	-1.8394	-0.3726

- Antenna Peak Gain required being test in system basis.
- 1E frame contend absolutely peak antenna gain include H/V
- If Rx3 only (3<sup>rd</sup> antenna receives only, e.g. for 4965AGN) then the information is not required for Rx3.

**Section 2. Dimensioned Photos or Drawings of Antennas**

**Include a dimensioned photo and dimensioned drawing of Tx1 antenna here.**

**Tx1 Antenna Dimensioned Drawing:**

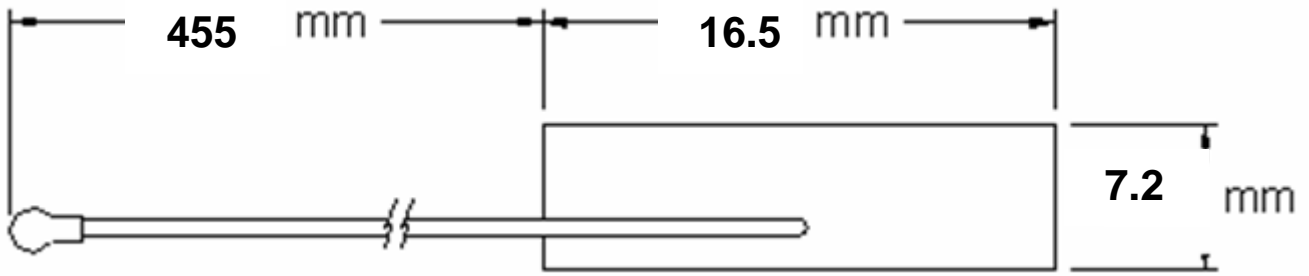


**Tx1 Antenna Photo:**



**Include a dimensioned photo and dimensioned drawing of Tx2 antenna here.**

**Tx2 Antenna Dimensioned Drawing:**

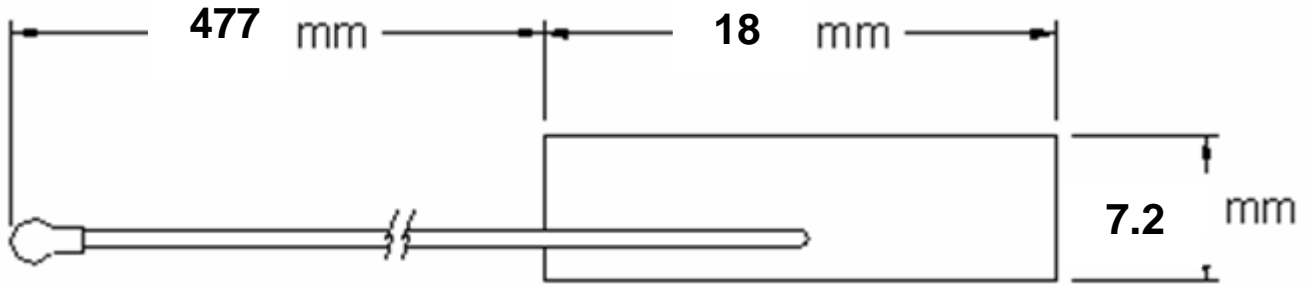


**Tx2 Antenna Photo:**



Include a dimensioned photo and dimensioned drawing of Tx3 (or Rx3) antenna here.

**Tx3 (or Rx3) Antenna Dimensioned Drawing:**



**Tx3 (or Rx3) Antenna Photo:**



**Include front view photo of all 3 antennas here.**

Antenna Manufacturer: Amphenol

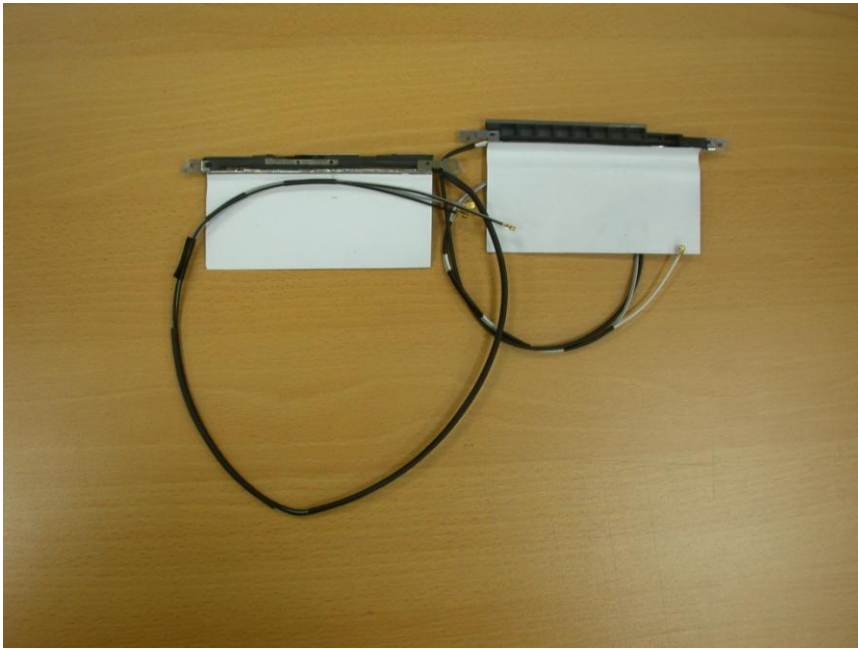
Antenna Part Number: WT1096-11-000-R (Tx1, Tx2, Tx3 or Rx3)



**Include back view photo of all 3 antennas here.**

Antenna Manufacturer: Amphenol

Antenna Part Number: WT1096-11-000-R (Tx1, Tx2, Tx3 or Rx3)





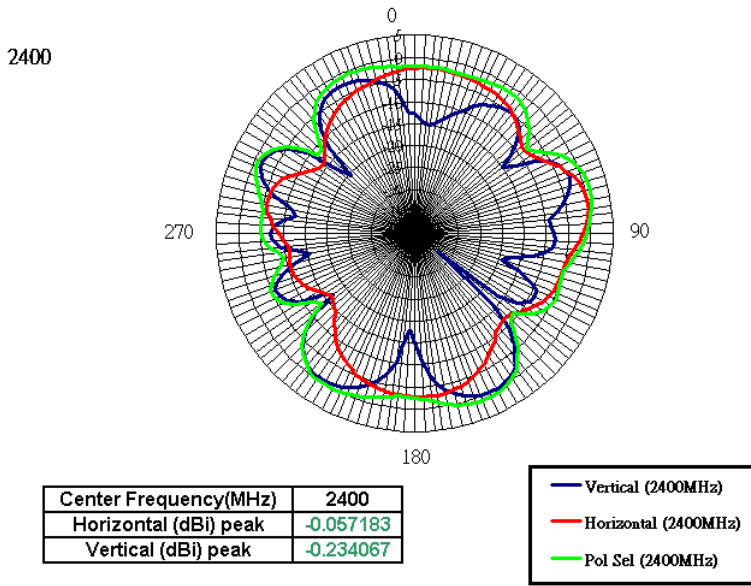




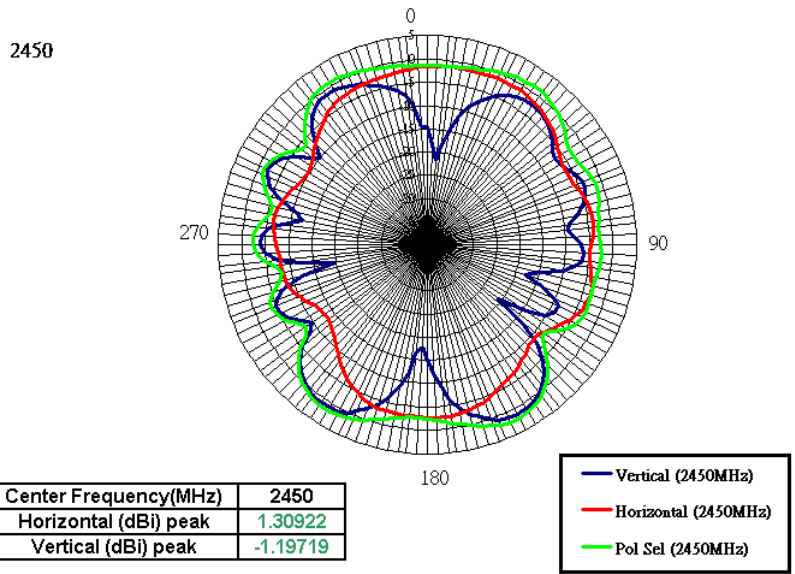


## 2400-2500MHz radiation characteristic

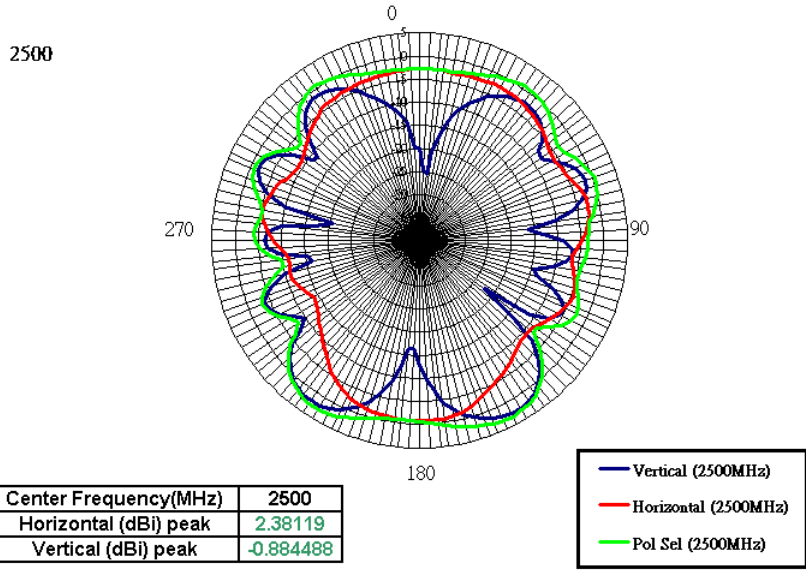
### Tx1 antenna: 2400 MHz



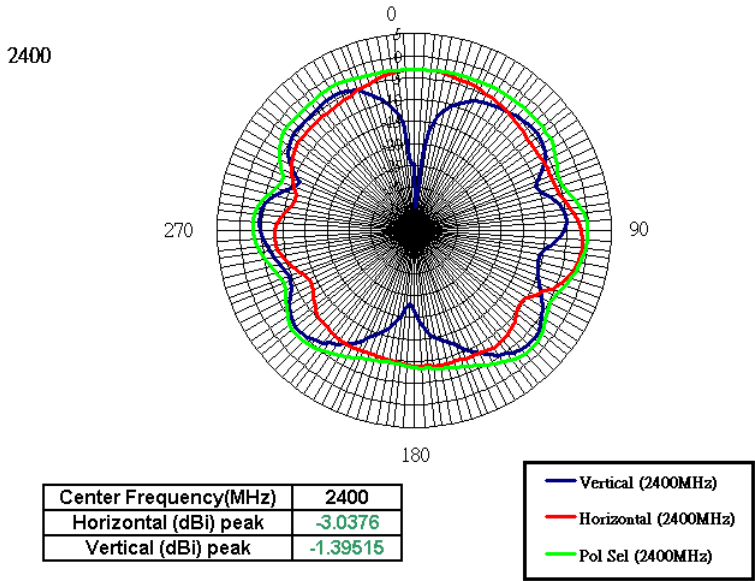
### Tx1 antenna: 2450 MHz



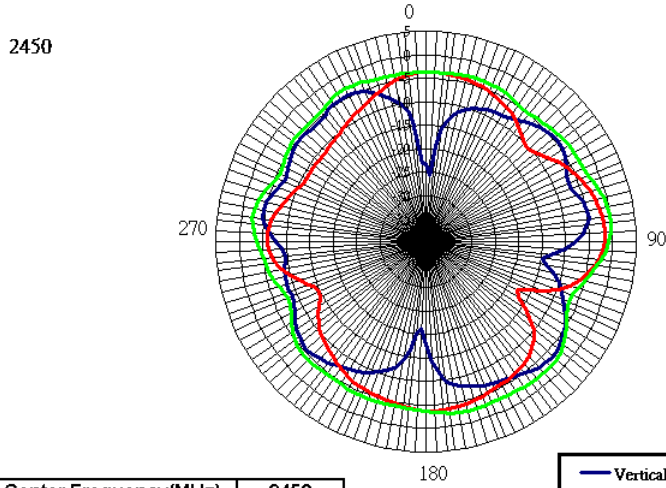
### Tx1 antenna: 2500 MHz



### Tx2 antenna: 2400 MHz



### Tx2 antenna: 2450 MHz

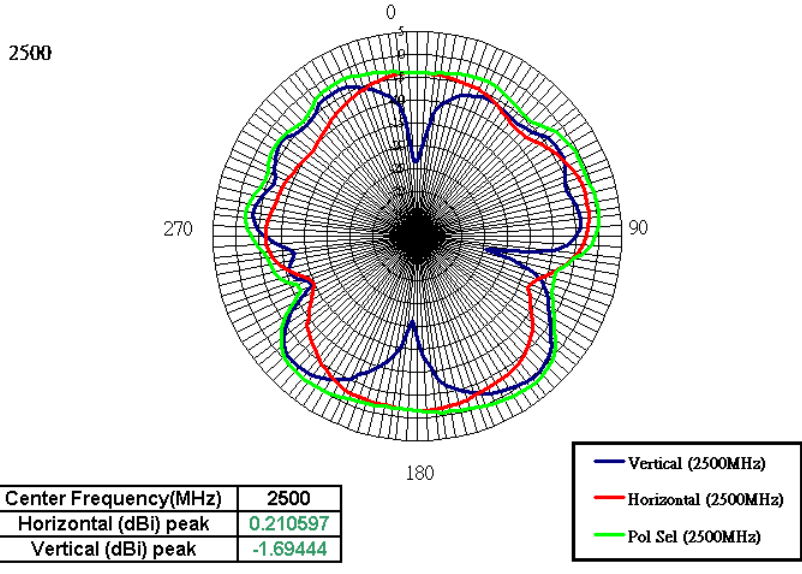


Center Frequency(MHz)	2450
Horizontal (dBi) peak	-3.34611
Vertical (dBi) peak	-1.60989

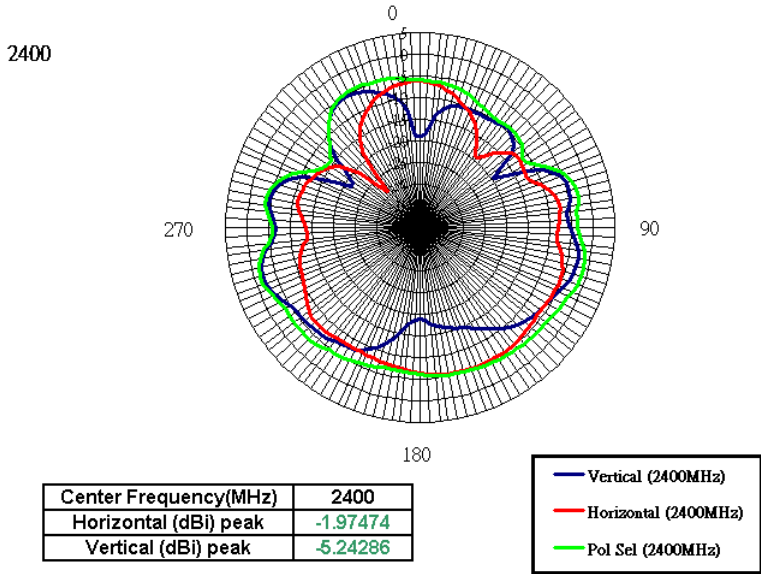
- Vertical (2450MHz)
- Horizontal (2450MHz)
- Pol Sel (2450MHz)



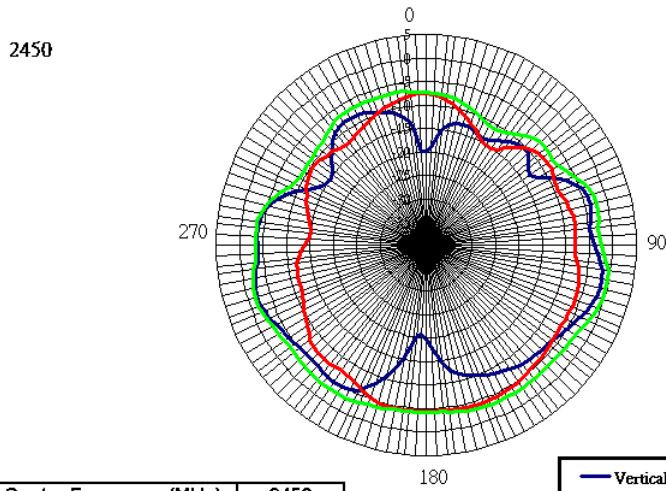
### Tx2 antenna: 2500 MHz



**Tx3 (or Rx3) antenna: 2400 MHz (Plot is not required if 3<sup>rd</sup> Antenna is receive only e.g. Rx3 for 4965AGN)**



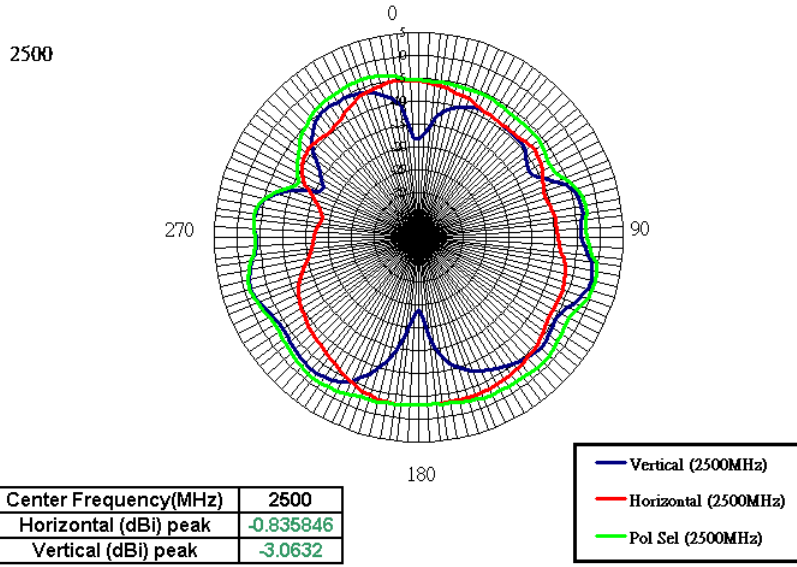
**Tx3 (or Rx3) antenna: 2450 MHz (Plot is not required if 3<sup>rd</sup> Antenna is receive only e.g. Rx3 for 4965AGN)**



Center Frequency(MHz)	2450
Horizontal (dBi) peak	-1.6437
Vertical (dBi) peak	-4.29475

<span style="color: blue;">—</span> Vertical (2450MHz)
<span style="color: red;">—</span> Horizontal (2450MHz)
<span style="color: green;">—</span> Pol Sel (2450MHz)

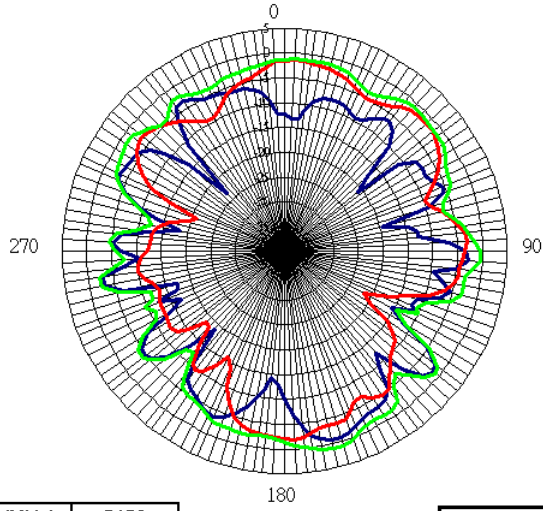
**Tx3 (or Rx3) antenna: 2500 MHz (Plot is not required if 3<sup>rd</sup> Antenna is receive only e.g. Rx3 for 4965AGN)**



## 5150-5470 MHz radiation characteristic

### Tx1 antenna: 5150 MHz

5150

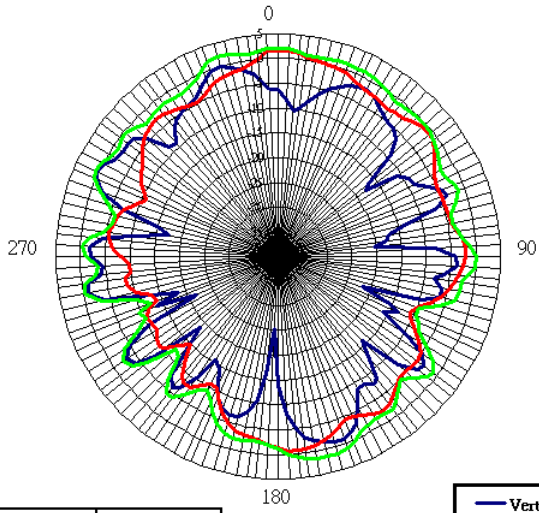


Center Frequency(MHz)	5150
Horizontal (dBi) peak	-0.882423
Vertical (dBi) peak	-1.47115

Vertical (5150MHz)
Horizontal (5150MHz)
Pol Sel (5150MHz)

### Tx1 antenna: 5350 MHz

5350

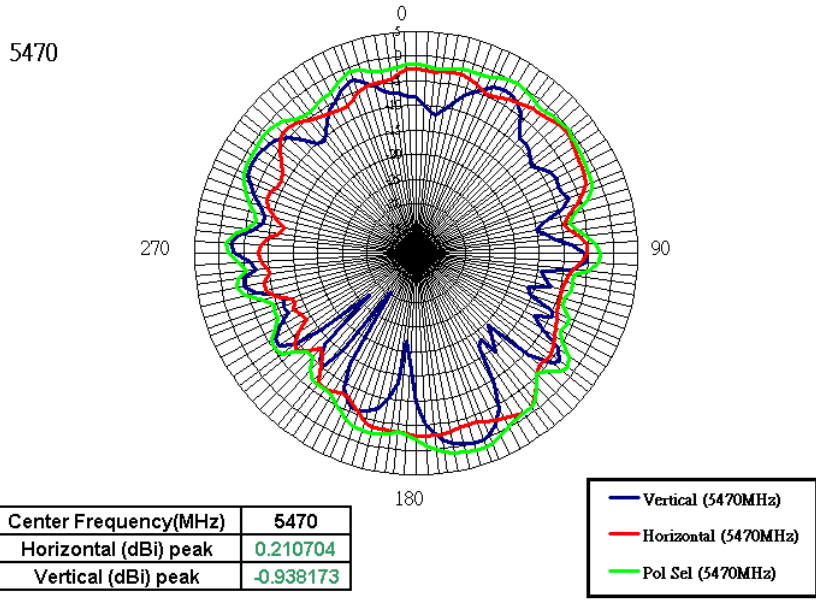


Center Frequency(MHz)	5350
Horizontal (dBi) peak	0.326261
Vertical (dBi) peak	1.37492

Vertical (5350MHz)
Horizontal (5350MHz)
Pol Sel (5350MHz)

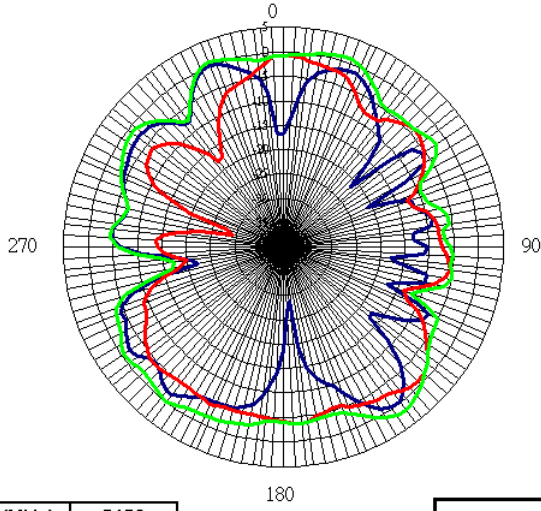


### Tx1 antenna: 5470 MHz



### Tx2 antenna: 5150 MHz

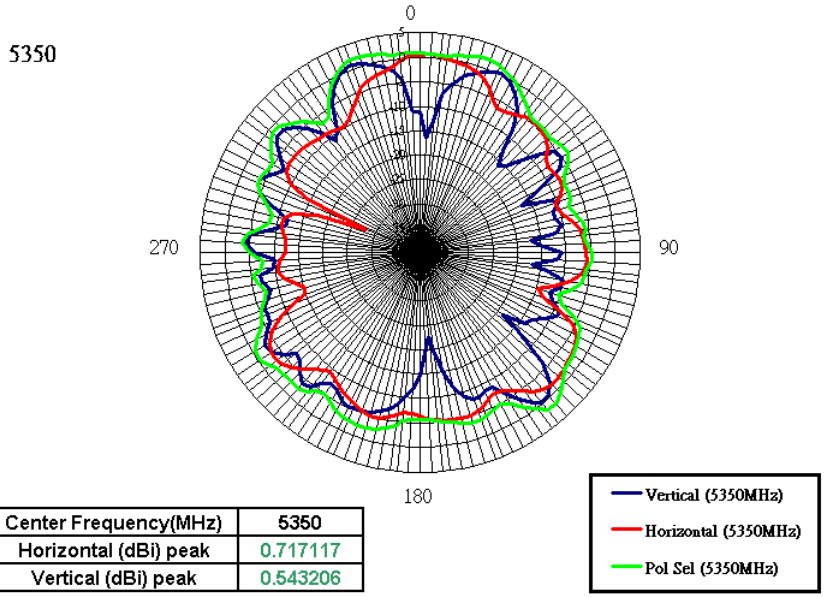
5150



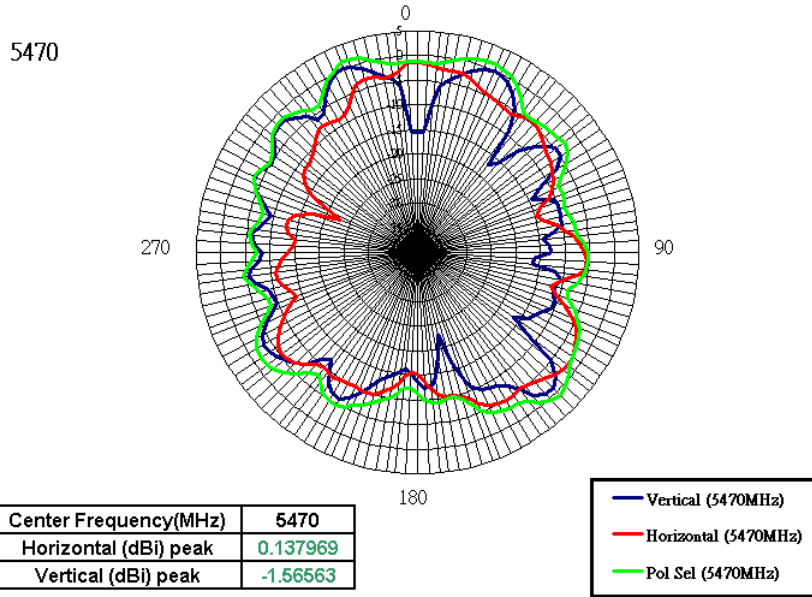
Center Frequency(MHz)	5150
Horizontal (dBi) peak	0.115739
Vertical (dBi) peak	-0.905032

Vertical (5150MHz)
Horizontal (5150MHz)
Pol Sel (5150MHz)

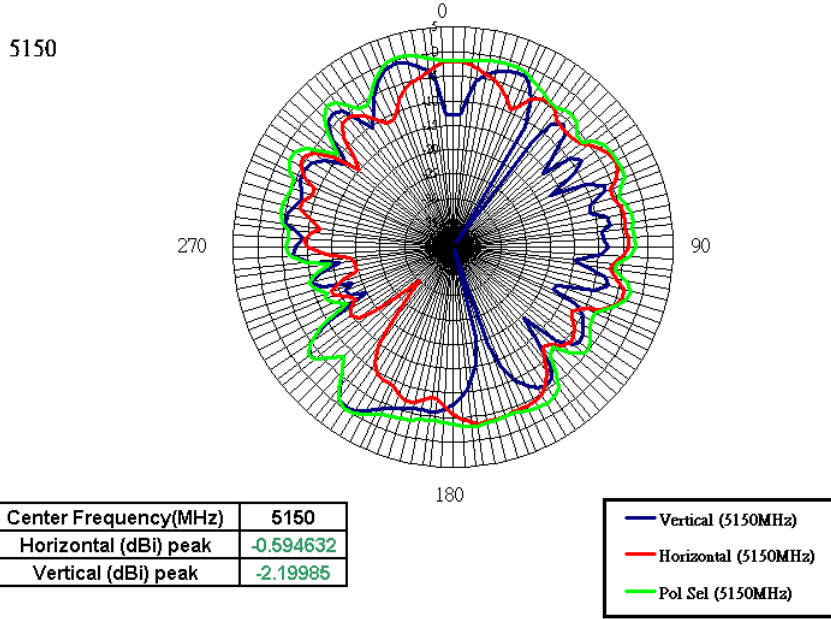
### Tx2 antenna: 5350 MHz



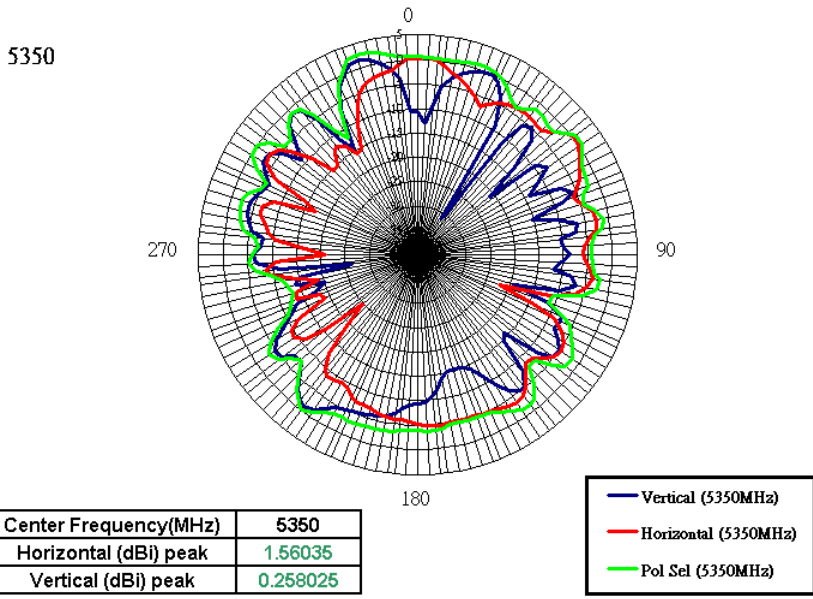
### Tx2 antenna: 5470 MHz



**Tx3 (or Rx3) antenna: 5150 MHz (Plot is not required if 3<sup>rd</sup> Antenna is receive only e.g. Rx3 for 4965AGN)**

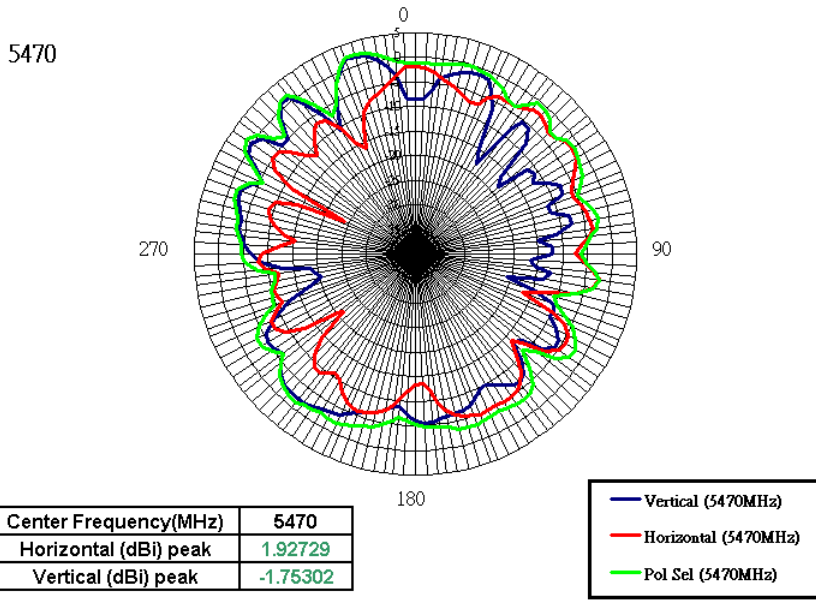


**Tx3 (or Rx3) antenna: 5350 MHz (Plot is not required if 3<sup>rd</sup> Antenna is receive only e.g. Rx3 for 4965AGN)**



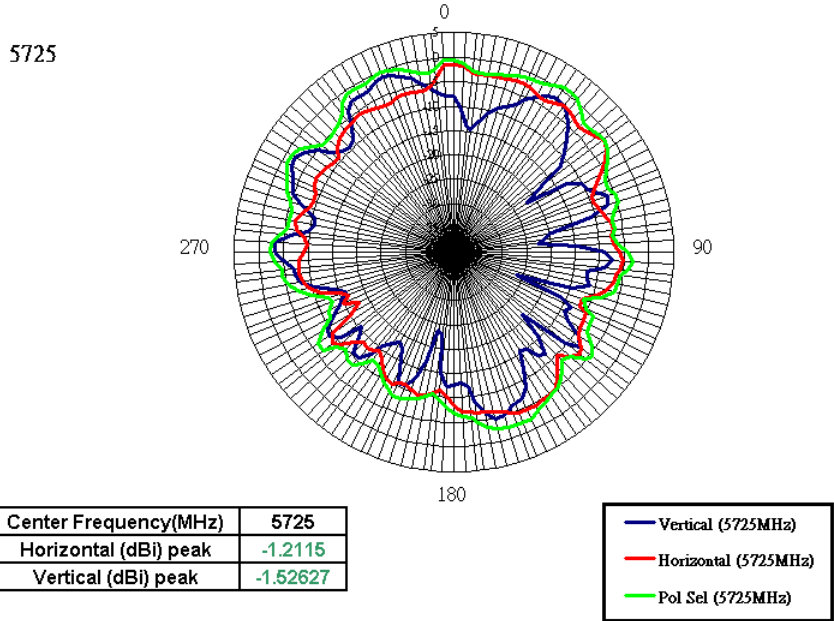


**Tx3 (or Rx3) antenna: 5470 MHz (Plot is not required if 3<sup>rd</sup> Antenna is receive only e.g. Rx3 for 4965AGN)**

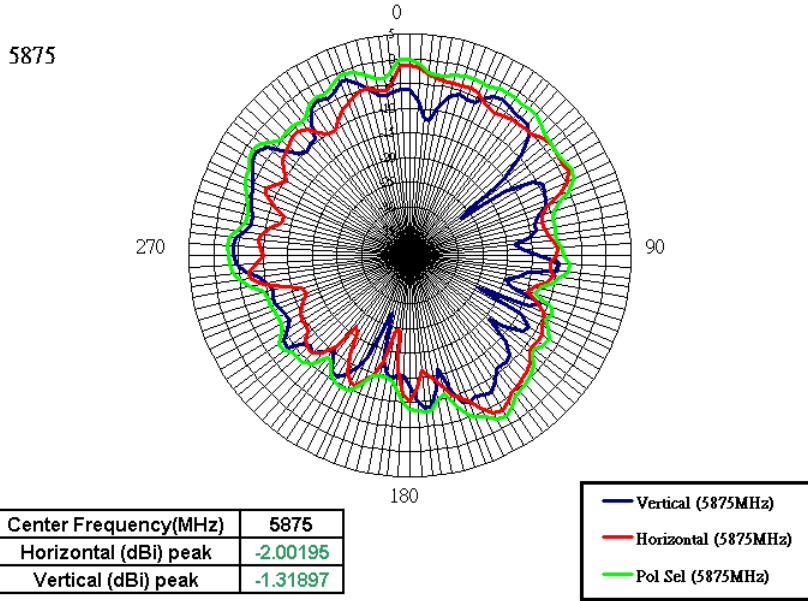


## 5725-5825MHz radiation characteristic

### Tx1 antenna: 5725 MHz

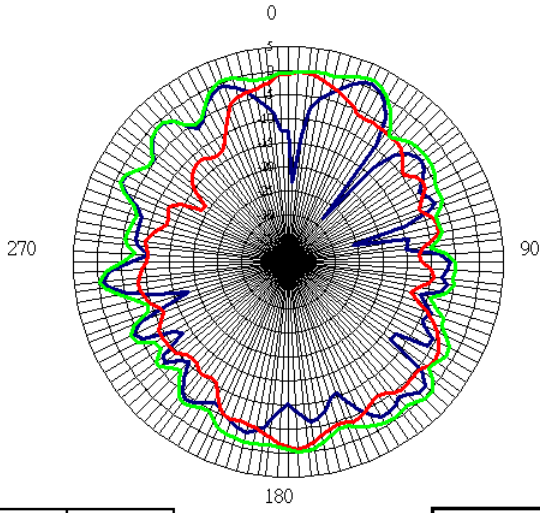


### Tx1 antenna: 5875 MHz



### Tx2 antenna: 5725 MHz

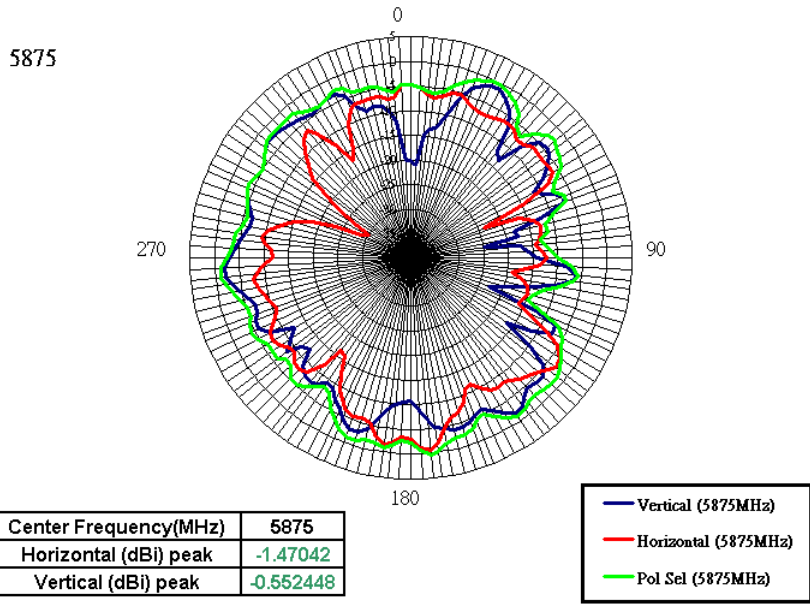
5725



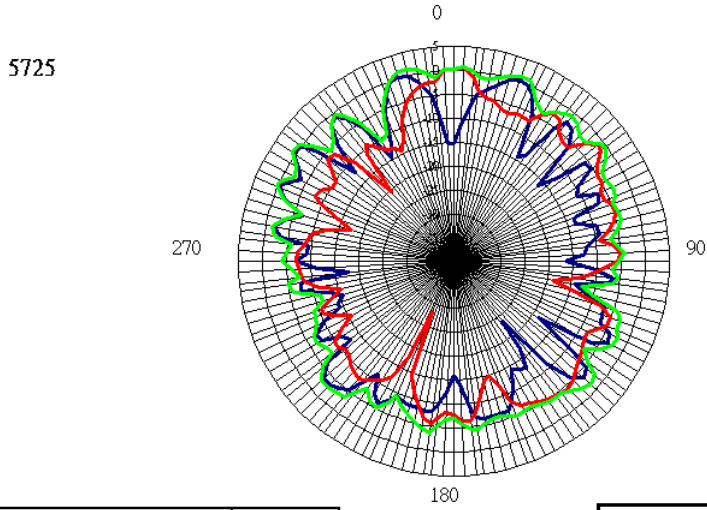
Center Frequency(MHz)	5725
Horizontal (dBi) peak	1.04762
Vertical (dBi) peak	-0.162627

— Vertical (5725MHz)
— Horizontal (5725MHz)
— Pol Sel (5725MHz)

### Tx2 antenna: 5875 MHz



**Tx3 (or Rx3): 5725 MHz (Plot is not required if 3<sup>rd</sup> Antenna is receive only e.g. Rx3 for 4965AGN)**

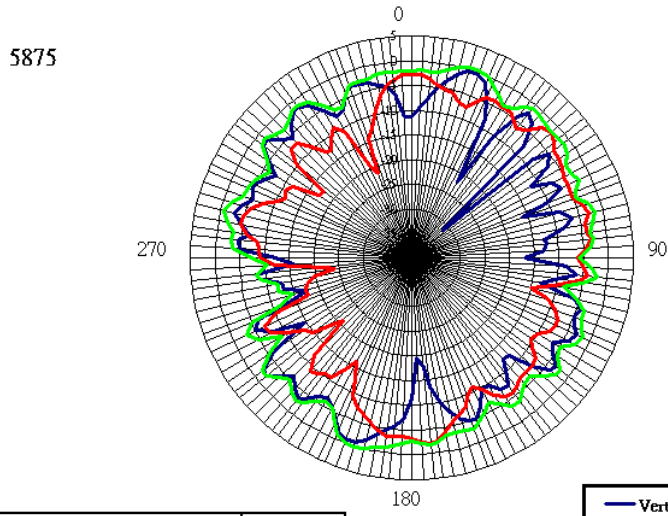


Center Frequency(MHz)	5725
Horizontal (dBi) peak	0.460893
Vertical (dBi) peak	0.527572

Vertical (5725MHz)
Horizontal (5725MHz)
Pol Sel (5725MHz)



**Tx3 (or Rx3) antenna:5875 MHz (Plot is not required if 3<sup>rd</sup> Antenna is receive only e.g. Rx3 for 4965AGN)**



Center Frequency(MHz)	5875
Horizontal (dBi) peak	-0.372603
Vertical (dBi) peak	-1.8394

Vertical (5875MHz)
Horizontal (5875MHz)
Pol Sel (5875MHz)

## Section 4. Host Platform Information

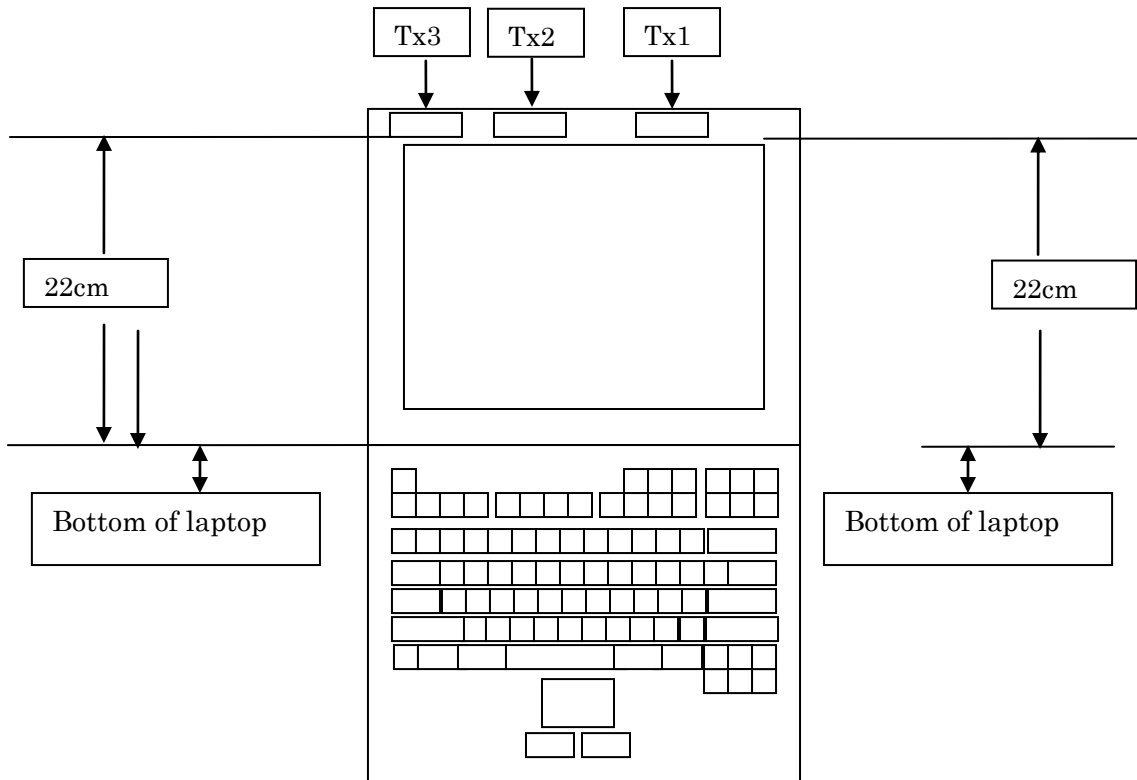
OEM / ODM Host platform: (XXXXXXX) platform correlated to antenna data

### Rating Label Photo:



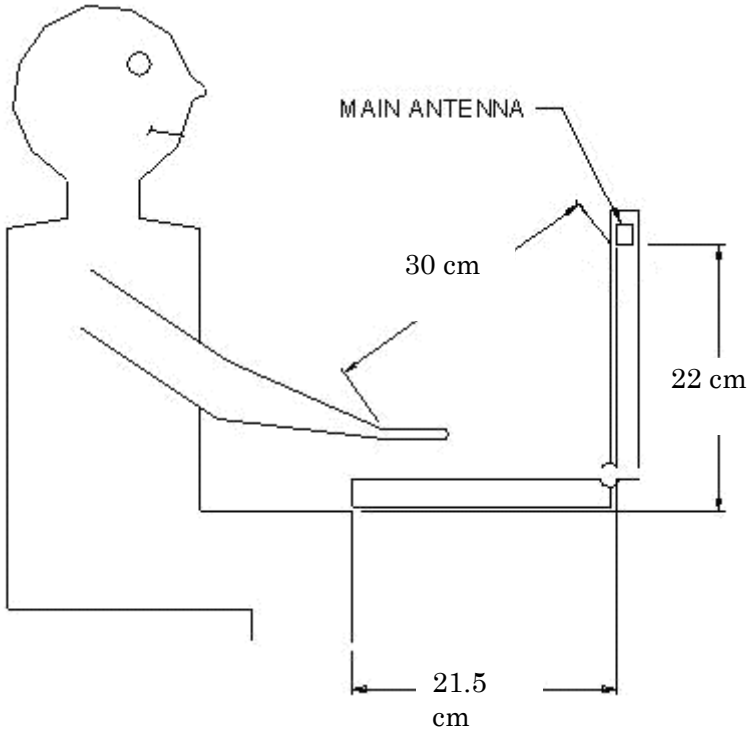
## Section 5. Antenna Host Platform Location Information

Include a **dimensioned photo or dimensioned drawing** of Tx1, Tx2 and Tx3 antenna placements (measurements are not required for receive-only antenna). Any antenna that transmits must show dimensions to bottom of laptop.



## Section 6. Antenna dimensional information for SAR evaluation

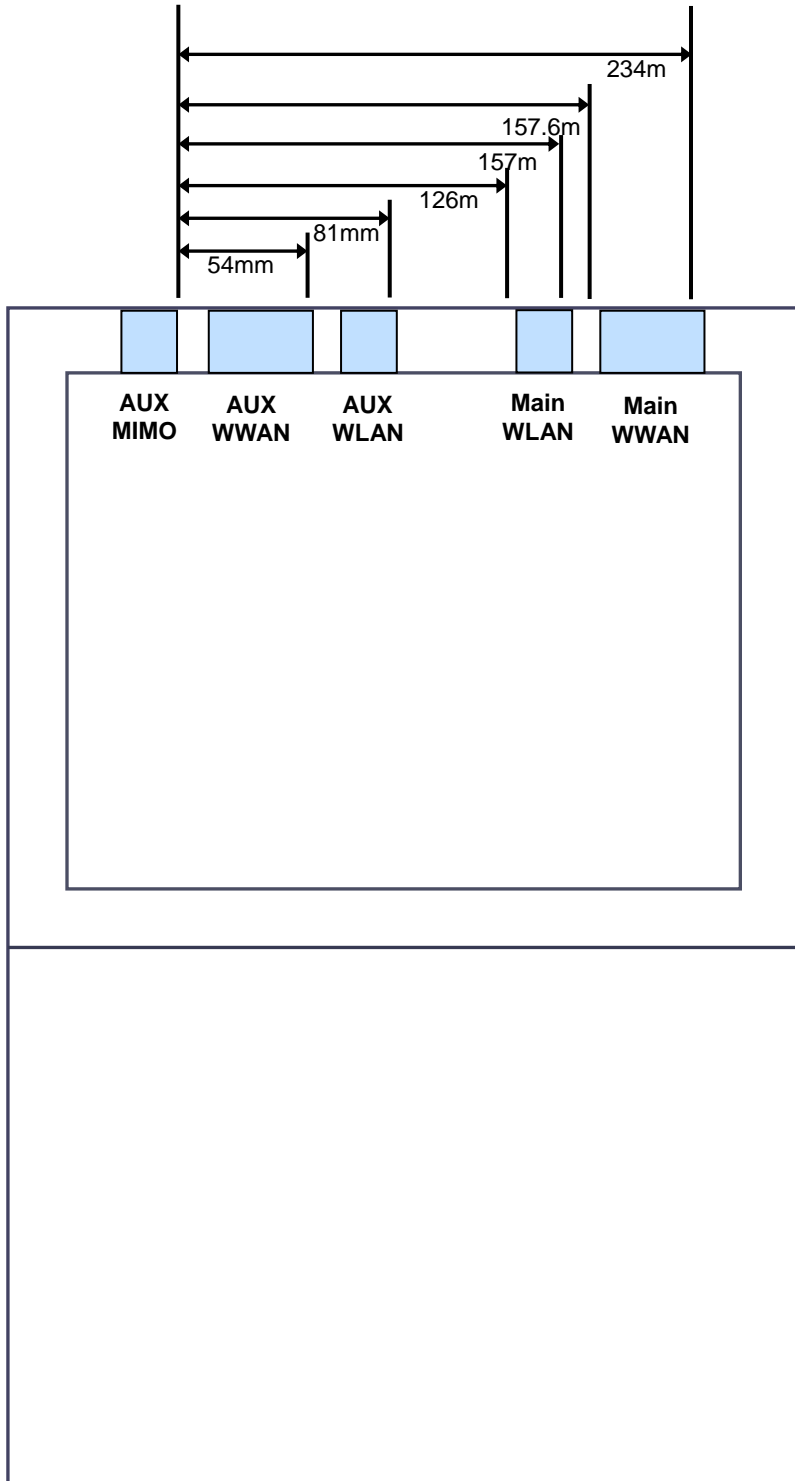
Include a **dimensioned photo or dimensioned drawing** showing the distance (mm) between the transmit antennas and the user (excluding hands, wrist, feet, lap/ thigh, and ankle)



## Section 7. Diagram Example of Co-Location Antenna Separation

Include a **dimensioned photo or dimensioned drawing** showing the distance (mm) between all WLAN transmit antennas and other co-located radiator transmit antenna such as Bluetooth, WWAN,..

(Note: Due to the evolving rules regarding co-location, each platform will need to be reviewed on a case by case basis)



## Section 8. Local representative contact information

Local representative contact information is required for regulatory support for target countries below.

	Local company name	Contact name	Phone number	FAX Number	e-Mail Address	Notes
Argentina						
Brazil						
Indonesia						
Israel						
Malaysia						
Mexico						
Singapore						Telecommunication Equipment Dealer License Required
South Africa						
USA, Canada						