Regulatory WLAN Antenna Information

Platform	
Platform Owner	DELL
Brand Name	DELL
Model Name	AMG Bump
ODM	Wistron
Target Launch Date	2008-09-26
Antenna	
Brand Name	Amphenol Taiwan Corporation
Part Number	■ Tx1 Antenna: **WT1096-11-002-R**
	■ Tx2 Antenna: **WT1096-11-001-R**
	■ Tx3 (or Rx3) Antenna: **WT1096-11-001-R**
Module	
	■ Intel® WiFi Link 5100
(Check Box)	■ 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 and 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 photographs of antennas for approval submission). Taiwan requires pictures of each antenna type shown in the system.	Required	Required	Desired	Required (Photos)	Required (Photos)
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 3rd 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: WT1096-11-002 -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 -1.42dBi (peak)	2400-2500MHz 0.29dBi (peak)	2400-2500MHz 1.3 max	2400-2500MHz 1.71dBi (peak)
				5150-5350MHz -1.69 dBi (peak)	5150-5350MHz 1.12dBi (peak)	5150-5350MHz 2.2 max	5150-5350MHz 2.81 dBi (peak)
				5470-5725MHz -2.4dBi (peak)	5470-5725MHz 0.45dBi (peak)	5470-5725MHz 2.4max	5470-5725MHz 2.85 dBi (peak)
				5725-5850MHz -3.78 dBi (peak)	5725-5850MHz -0.88 dBi (peak)	5725-5850MHz 2.1 max	5725-5850MHz 2.9 dBi (peak)
(P/N: WT1096-11-001 -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 -0.44dBi (peak)	2400-2500MHz 1.14 dBi (peak)	2400-2500MHz 1.6 max	2400-2500MHz 1.58dBi (peak)
				5150-5350MHz -0.75 dBi (peak)	5150-5350MHz 1.71dBi (peak)	5150-5350MHz 1.4 max	5150-5350MHz 2.46dBi (peak)
				5470-5725MHz 0.07dBi (peak)	5470-5725MHz 2.54 dBi (peak)	5470-5725MHz 1.5max	5470-5725MHz 2.47dBi (peak)
				5725-5850MHz 0.08 dBi (peak)	5725-5850MHz 2.56 dBi (peak)	5725-5850MHz 1.86 max	5725-5850MHz 2.48 dBi (peak)
(P/N: WT1096-11-001 -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 -4.89dBi (peak) *	2400-2500MHz -3.39 dBi (peak) *	2400-2500MHz 1.5 max *	2400-2500MHz 1.50dBi (peak) *
				5150-5350MHz -3.3dBi (peak) *	5150-5350MHz -0.91dBi (peak) *	5150-5350MHz 1.5 max *	5150-5350MHz 2.39 dBi (peak) *
				5470-5725MHz -1.66 dBi (peak) *	5470-5725MHz 0.74dBi (peak) *	5470-5725MHz 1.4 max *	5470-5725MHz 2.40 dBi (peak) *
				5725-5850MHz -1.66 dBi (peak) *	5725-5850MHz 0.75 dBi (peak) *	5725-5850MHz 1.8 max *	5725-5850MHz 2.41 dBi (peak) *

NOTE:
(*) **If Rx3 only (3rd antenna receives only, e.g. for 4965AGN) then the information marked with * is not required**

Antenna Peak Gain Table:

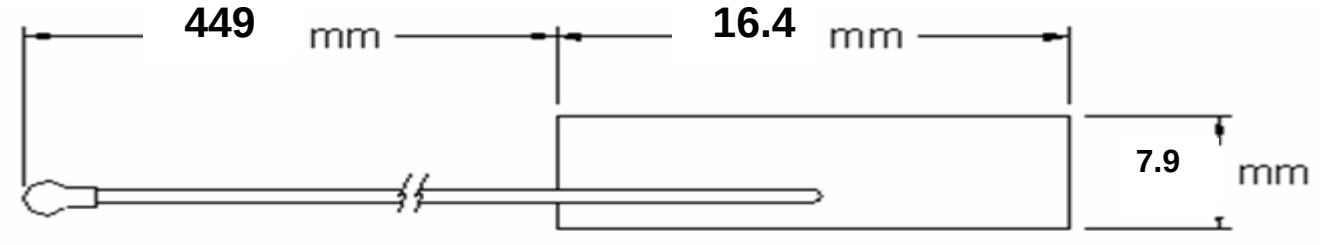
	Tx1 antenna		Tx2 Antenna		Tx3 (or Rx3) Antenna	
Frequency (MHz)	Horizontal (dBi)	Vertical (dBi)	Horizontal (dBi)	Vertical (dBi)	Horizontal (dBi)	Vertical (dBi)
2400	-2.96848	-4.36936	-1.85719	-4.35921	-6.55802	-6.66663
2450	-1.98796	-3.58503	-2.95443	-5.70695	-6.87284	-6.96627
2500	-1.42863	-3.46464	-0.44	-4.06313	-4.89543	-7.36274
5150	-4.03904	-1.69615	1.64481	-1.77825	-5.19041	-4.18451
5350	-3.18638	-3.90334	0.27145	-1.71945	-3.3006	-4.10846
5470	-2.40376	-4.00375	1.20104	-2.04788	-6.40614	-4.34775
5725	-5.49087	-4.99619	0.239444	-2.22532	-1.66938	-2.7728
5825	-4.90973	-3.78471	-1.27143	-4.64402	-3.30465	-4.1238

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

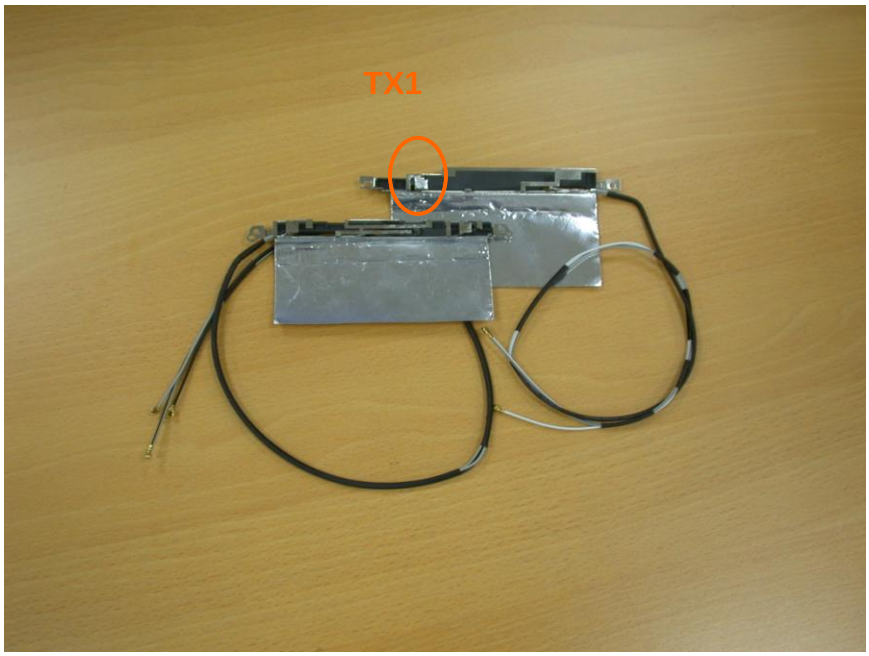
Section 2. Dimensioned Photos or Drawings of Antennas

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

Tx1 Antenna Dimensioned Drawing:

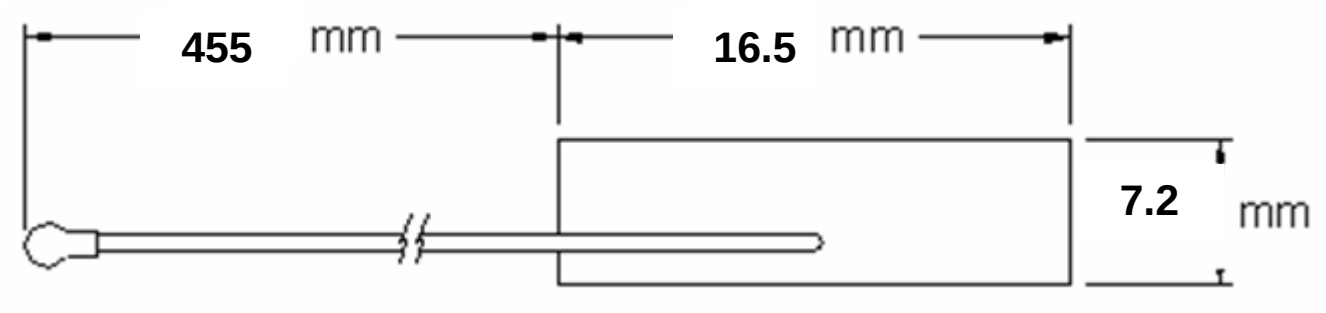


Tx1 Antenna Photo:



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

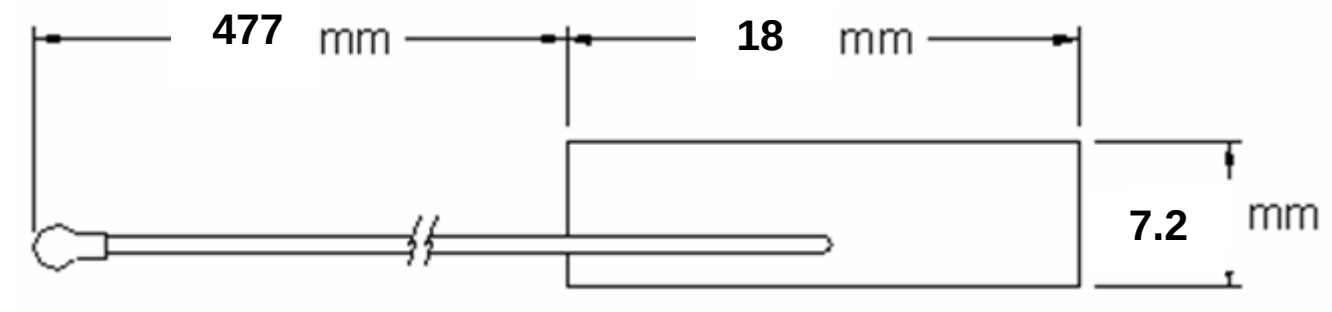
Tx2 Antenna Dimensioned Drawing:



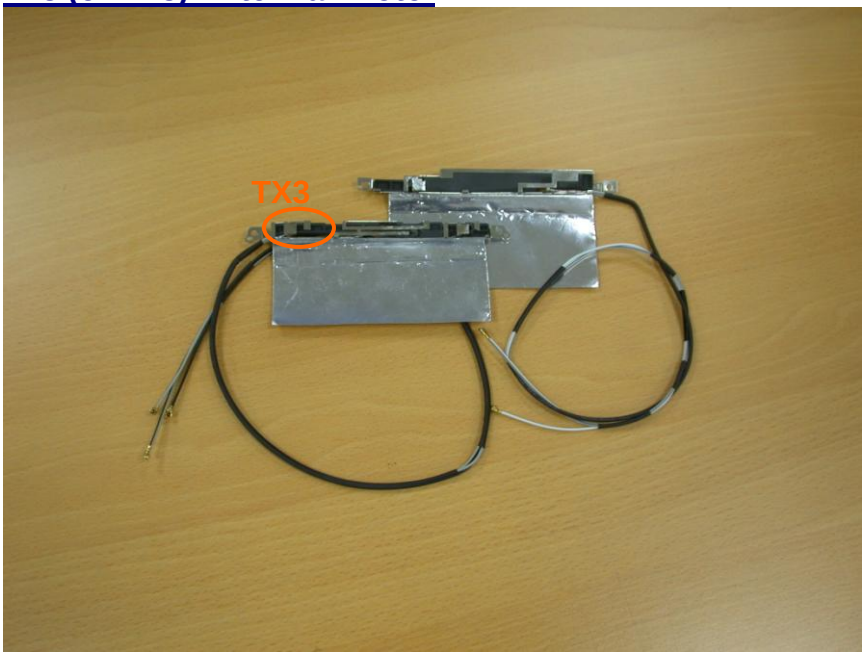
Tx2 Antenna Photo:

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

Tx3 (or Rx3) Antenna Dimensioned Drawing:



Tx3 (or Rx3) Antenna Photo:

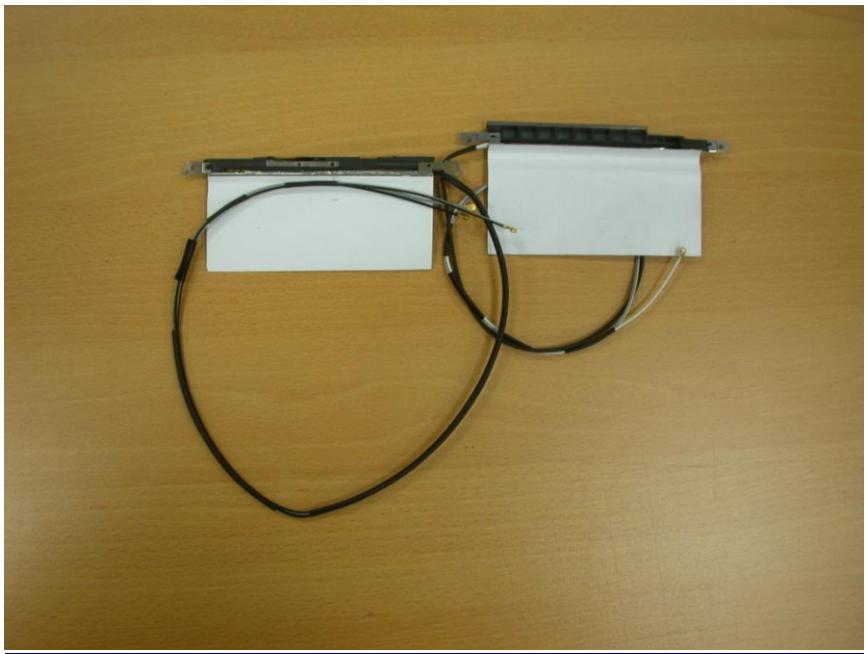


Include front view photo of all 3 antennas here.

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

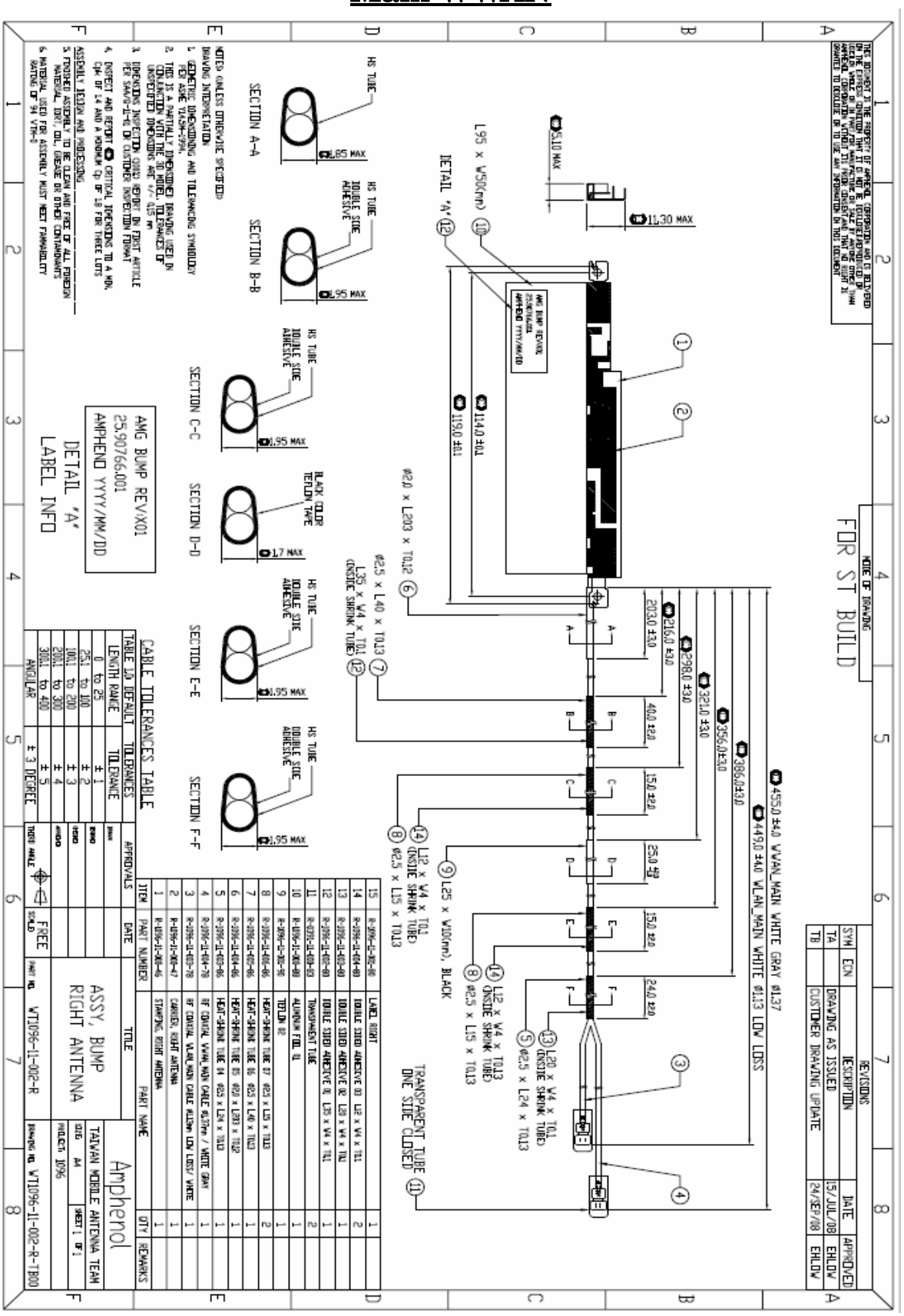
Include back view photo of all 3 antennas here.

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

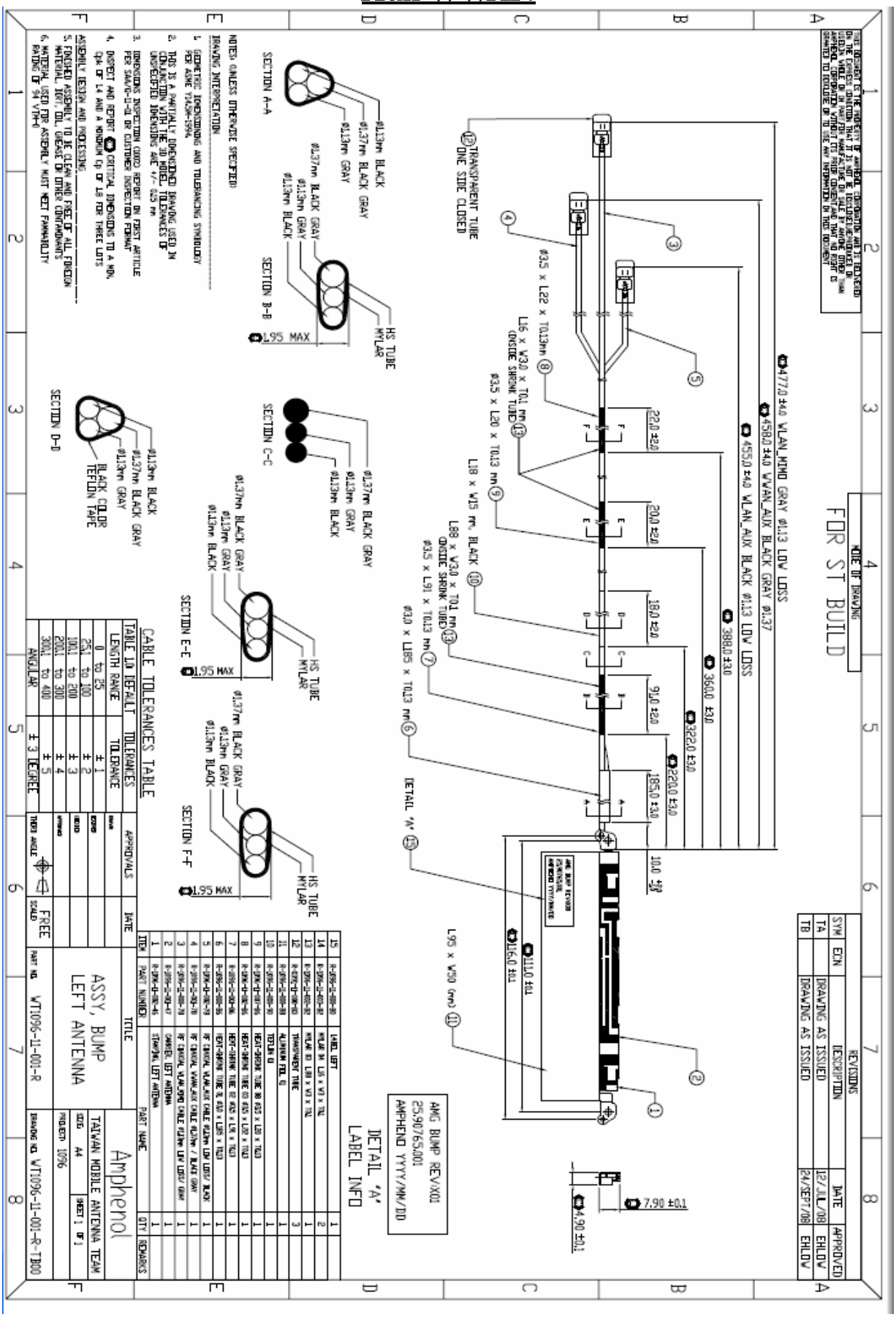


Mechanical Drawing of Antennas

Main WWAN

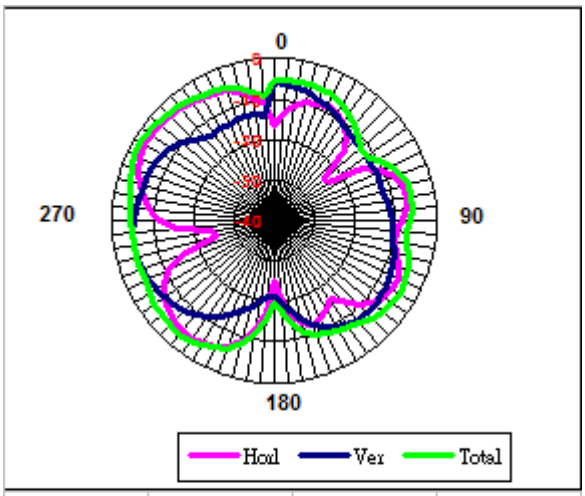


Aux WWAN


FOR ST BUILD
DETAIL 'A'
LABEL INFO
AMG BUMP REV:X01
25.90765.001
AMPHENO YYYY/MM/DD
CABLE TOLERANCES TABLE
TABLE 1.0 DEFAULT TOLERANCES
LENGTH RANGE
TOLERANCE
ASSY, BUMP
LEFT ANTENNA
Amphenol
TAIWAN MOBILE ANTENNA TEAM
WT1096-11-001-R
WT1096-11-001-R-TB00
SECTION A-A
SECTION B-B
SECTION C-C
SECTION D-D
SECTION E-E
SECTION F-F
DETAIL 'A'
TRANSPARENT TUBE ONE SIDE CLOSED
HS TUBE MYLAR
L95 MAX
REVISIONS
DRAWING AS ISSUED
12/JUL/08
24/SEPT/08
EHLOW

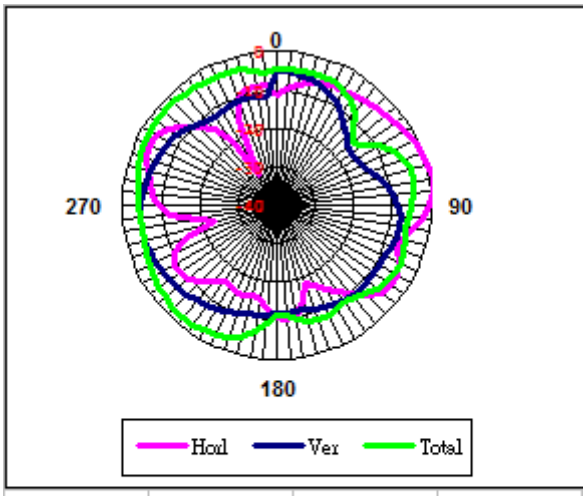
2400-2500MHz radiation characteristic

Tx1 antenna: 2400 MHz



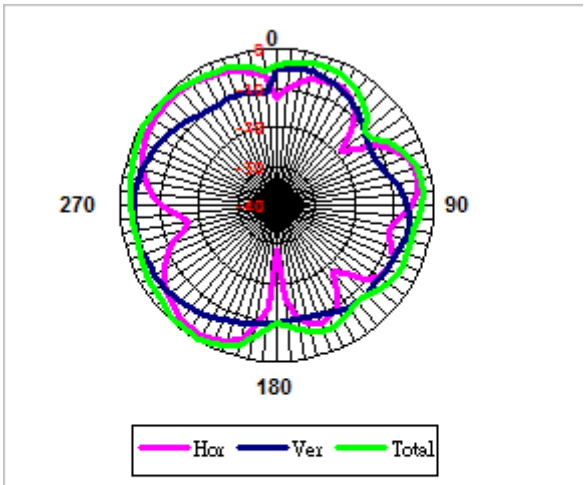
Frequency	2400MHz
Horizontal peak gain (dBi)	-2.96848
Vertical peak gain (dBi)	-5.00971
Hori + Veri peak gain (dBi)	-1.89012

Tx1 antenna: 2450 MHz



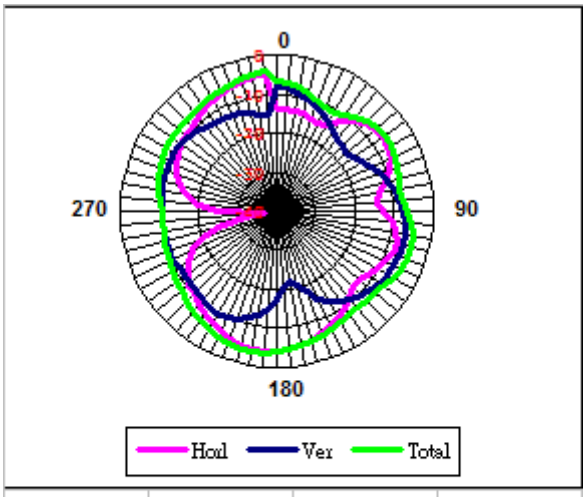
Frequency	2450 MHz
Horizontal peak gain (dBi)	-2.77196
Vertical peak gain (dBi)	-4.65831
Hori + Veri peak gain (dBi)	-1.81898

Tx1 antenna: 2500 MHz



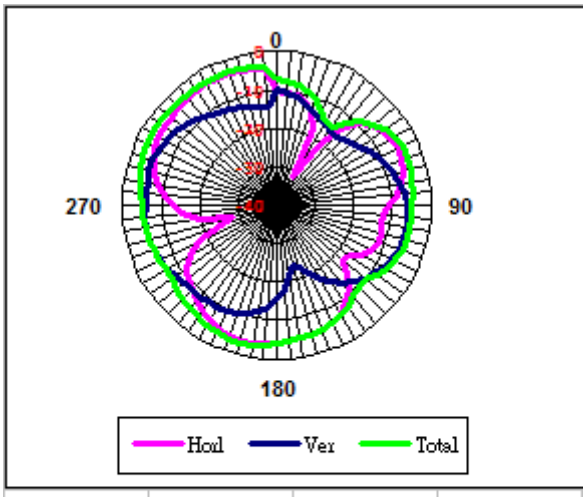
Frequency	2500 MHz
Horizontal peak gain (dBi)	-1.42863
Vertical peak gain (dBi)	-3.46464
Hori + Veri peak gain (dBi)	-0.36503

Tx2 antenna: 2400 MHz



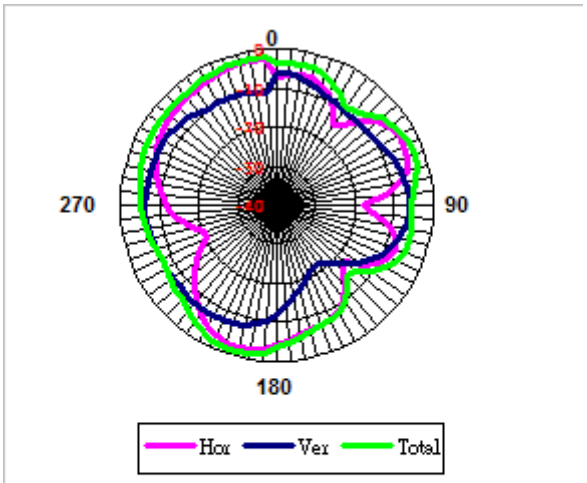
Frequency	2400 MHz
Horizontal peak gain (dBi)	-3.94587
Vertical peak gain (dBi)	-6.77069
Hori + Veri peak gain (dBi)	-3.49463

Tx2 antenna: 2450 MHz



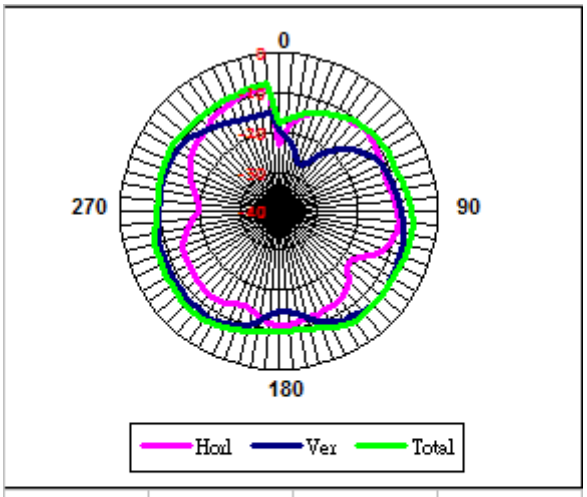
Frequency	2450 MHz
Horizontal peak gain (dBi)	-3.70131
Vertical peak gain (dBi)	-5.70695
Hori + Veri peak gain (dBi)	-2.63931

Tx2 antenna: 2500 MHz



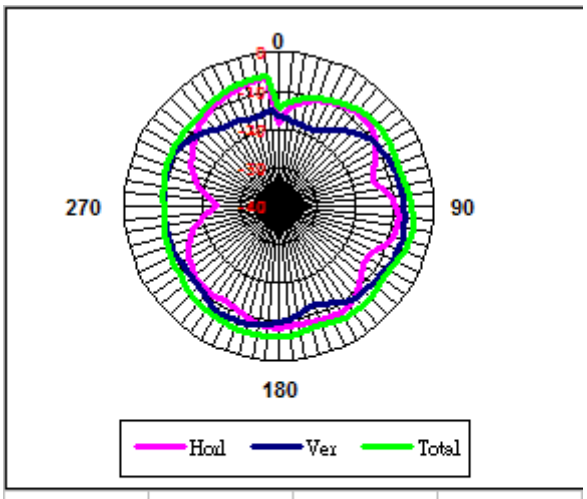
Frequency	2500 MHz
Horizontal peak gain (dBi)	-2.08884
Vertical peak gain (dBi)	-5.9475
Hori + Veri peak gain (dBi)	-1.14579

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



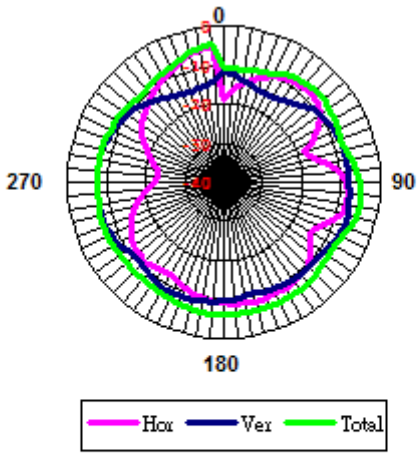
Frequency	2400 MHz
Horizontal peak gain (dBi)	-8.65524
Vertical peak gain (dBi)	-6.66663
Hori + Veri peak gain (dBi)	-5.87478

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



Frequency	2450 MHz
Horizontal peak gain (dBi)	-6.87284
Vertical peak gain (dBi)	-6.96627
Hori + Veri peak gain (dBi)	-4.87905

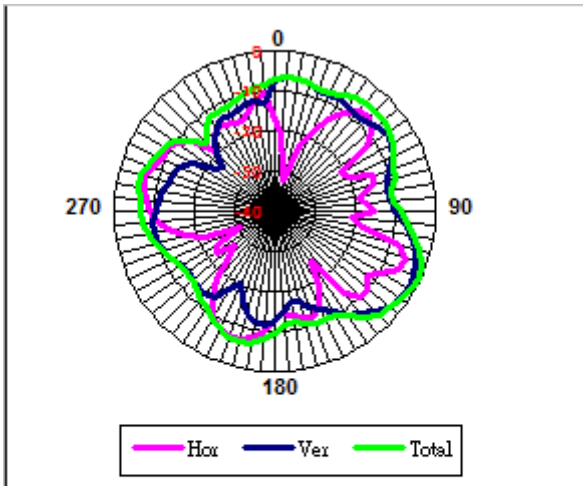
Tx3 (or Rx3) antenna: 2500 MHz (Plot is not required if 3rd Antenna is receive only e.g. Rx3 for 4965AGN)



Frequency	2500 MHz
Horizontal peak gain (dBi)	-5.10038
Vertical peak gain (dBi)	-7.38208
Hori + Veri peak gain (dBi)	-4.56159

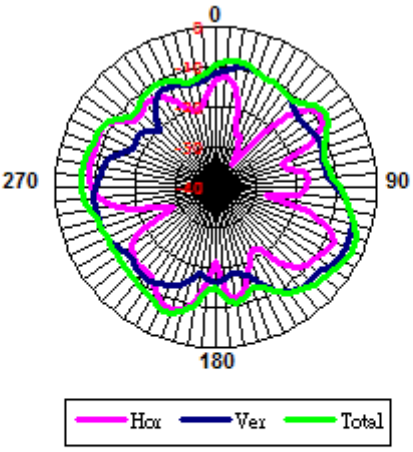
5150-5470 MHz radiation characteristic

Tx1 antenna: 5150 MHz



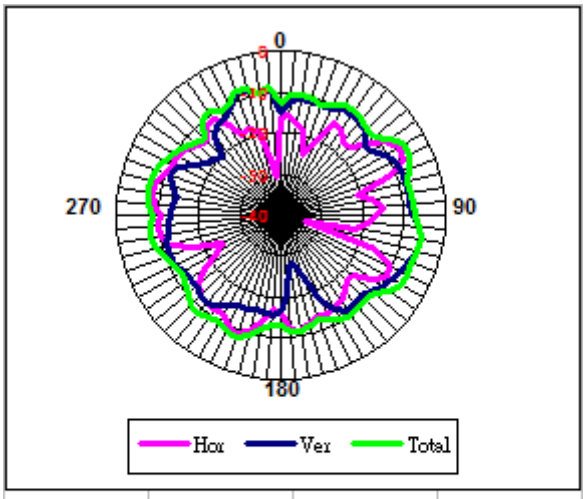
Frequency	5150 MHz
Horizontal peak gain (dBi)	-5.30163
Vertical peak gain (dBi)	-1.69615
Hori + Veri peak gain (dBi)	-0.45375

Tx1 antenna: 5350 MHz



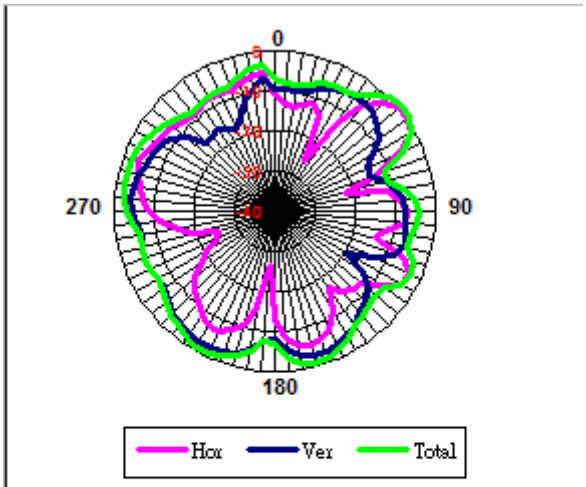
Frequency	5350 MHz
Horizontal peak gain (dBi)	-7.45967
Vertical peak gain (dBi)	-3.90334
Hori + Veri peak gain (dBi)	-2.31692

Tx1 antenna: 5470 MHz



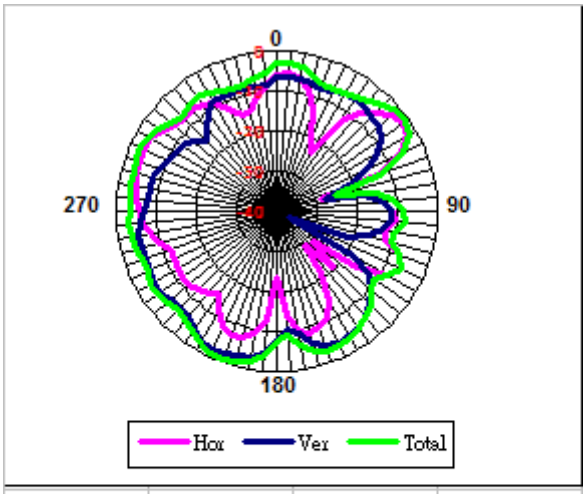
Frequency	5470 MHz
Horizontal peak gain (dBi)	-6.79981
Vertical peak gain (dBi)	-5.58547
Hori + Veri peak gain (dBi)	-5.2275

Tx2 antenna: 5150 MHz



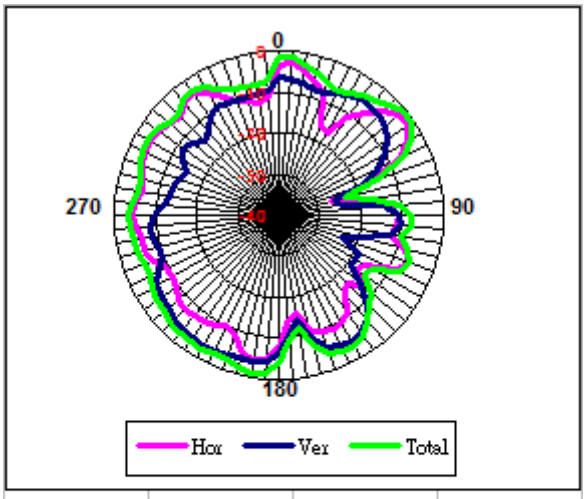
Frequency	5150 MHz
Horizontal peak gain (dBi)	0.455638
Vertical peak gain (dBi)	-2.2631
Hori + Veri peak gain (dBi)	1.17001

Tx2 antenna: 5350 MHz



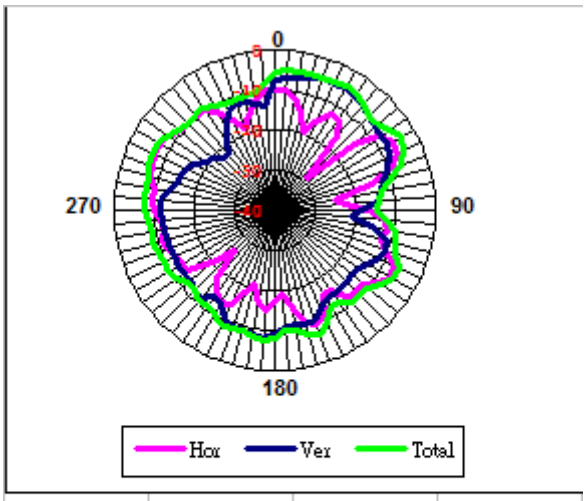
Frequency	5350 MHz
Horizontal peak gain (dBi)	-1.57367
Vertical peak gain (dBi)	-1.87333
Hori + Veri peak gain (dBi)	-0.73691

Tx2 antenna: 5470 MHz



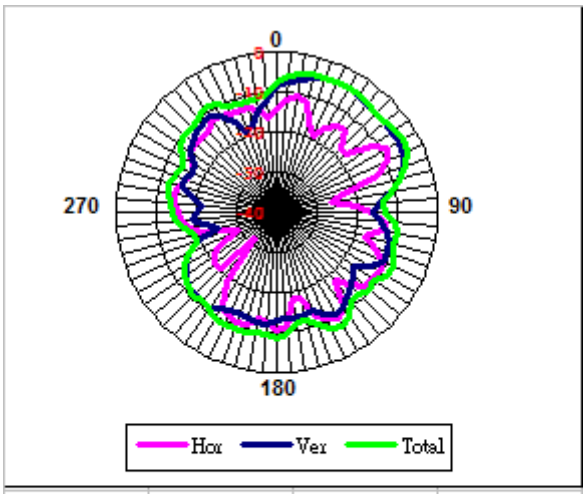
Frequency	5470 MHz
Horizontal peak gain (dBi)	-1.98118
Vertical peak gain (dBi)	-3.39852
Hori + Veri peak gain (dBi)	-0.68794

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



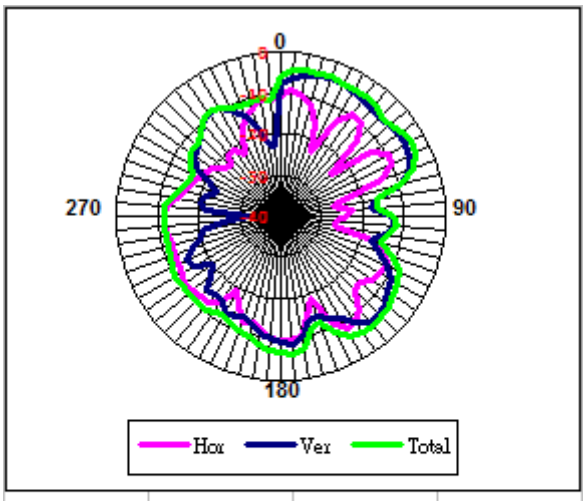
Frequency	5150(MHz)
Horizontal peak gain (dBi)	-5.95197
Vertical peak gain (dBi)	-4.82519
Hori + Veri peak gain (dBi)	-3.7145

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



Frequency	5350(MHz)
Horizontal peak gain (dBi)	-8.63421
Vertical peak gain (dBi)	-4.10846
Hori + Veri peak gain (dBi)	-3.30647

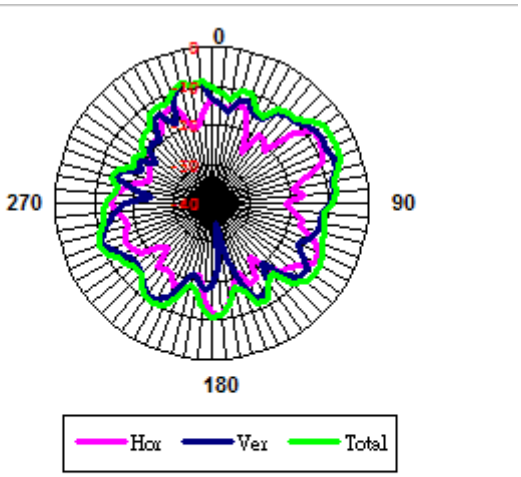
Tx3 (or Rx3) antenna: 5470 MHz (Plot is not required if 3rd Antenna is receive only e.g. Rx3 for 4965AGN)



Frequency	5470(MHz)
Horizontal peak gain (dBi)	-8.18579
Vertical peak gain (dBi)	-4.34775
Hori + Veri peak gain (dBi)	-3.48119

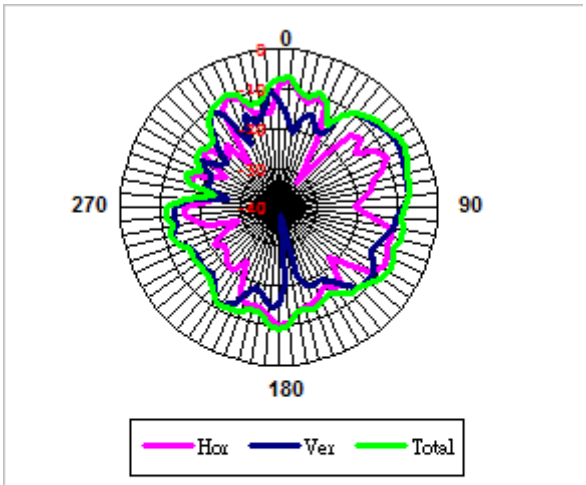
5725-5825MHz radiation characteristic

Tx1 antenna: 5725 MHz



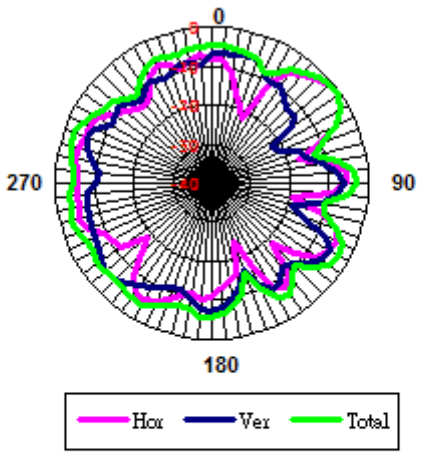
Frequency	5725 MHz
Horizontal peak gain (dBi)	-8.12286
Vertical peak gain (dBi)	-6.67054
Hori + Veri peak gain (dBi)	-4.92789

Tx1 antenna: 5825 MHz



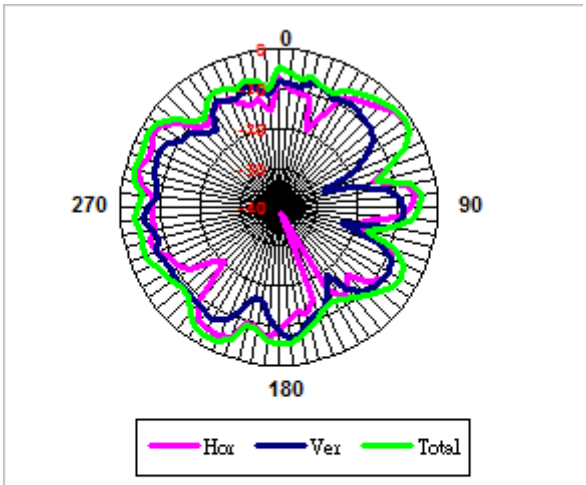
Frequency	5825 MHz
Horizontal peak gain (dBi)	-7.58776
Vertical peak gain (dBi)	-6.06647
Hori + Veri peak gain (dBi)	-4.68563

Tx2 antenna: 5725 MHz



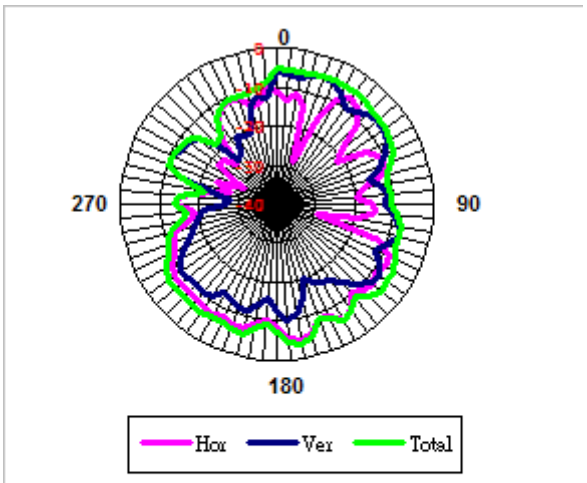
Frequency	5725 MHz
Horizontal peak gain (dBi)	-0.48609
Vertical peak gain (dBi)	-4.74003
Hori + Veri peak gain (dBi)	-0.33112

Tx2 antenna: 5825 MHz



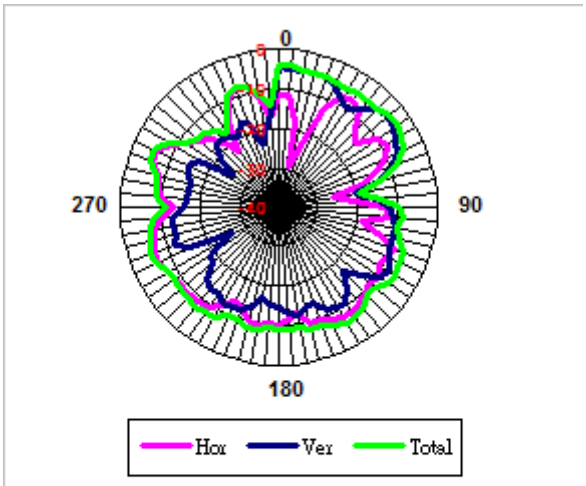
Frequency	5825 MHz
Horizontal peak gain (dBi)	-1.27143
Vertical peak gain (dBi)	-5.80005
Hori + Veri peak gain (dBi)	-0.84645

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



Frequency	5725(MHz)
Horizontal peak gain (dBi)	-4.60669
Vertical peak gain (dBi)	-4.97141
Hori + Veri peak gain (dBi)	-3.76055

Tx3 (or Rx3) antenna:5825 MHz (Plot is not required if 3rd Antenna is receive only e.g. Rx3 for 4965AGN)



Frequency	5825(MHz)
Horizontal peak gain (dBi)	-5.87571
Vertical peak gain (dBi)	-4.1238
Hori + Veri peak gain (dBi)	-3.40454

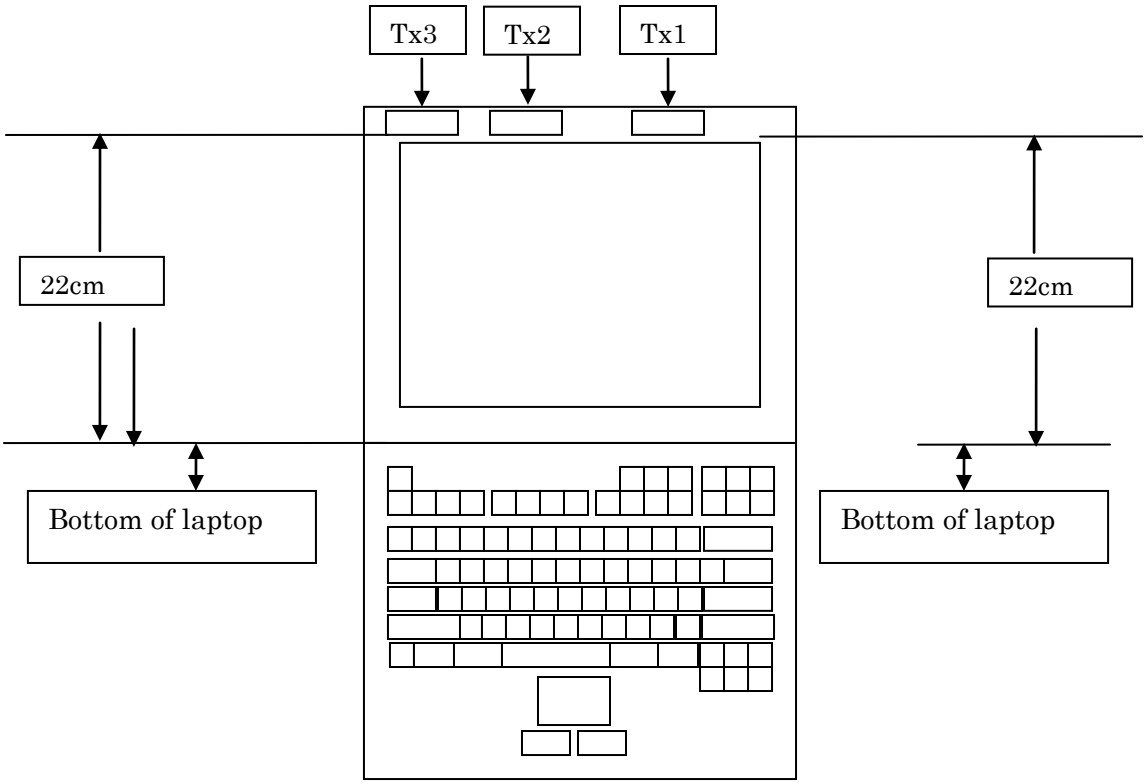
Section 4. Host Platform Information

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

Rating Label Photo:

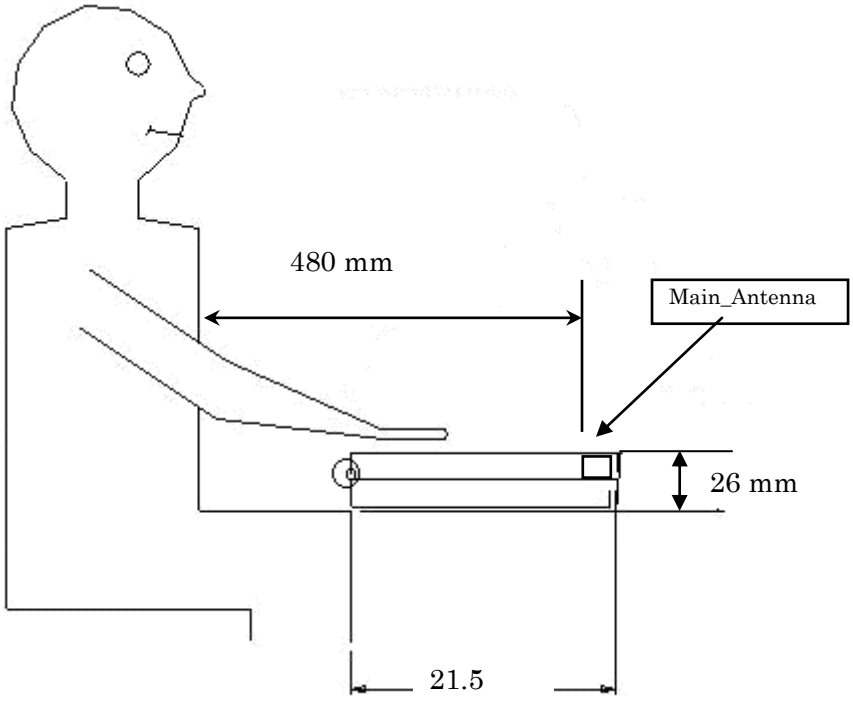
Section 5. Antenna Host Platform Location Information

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

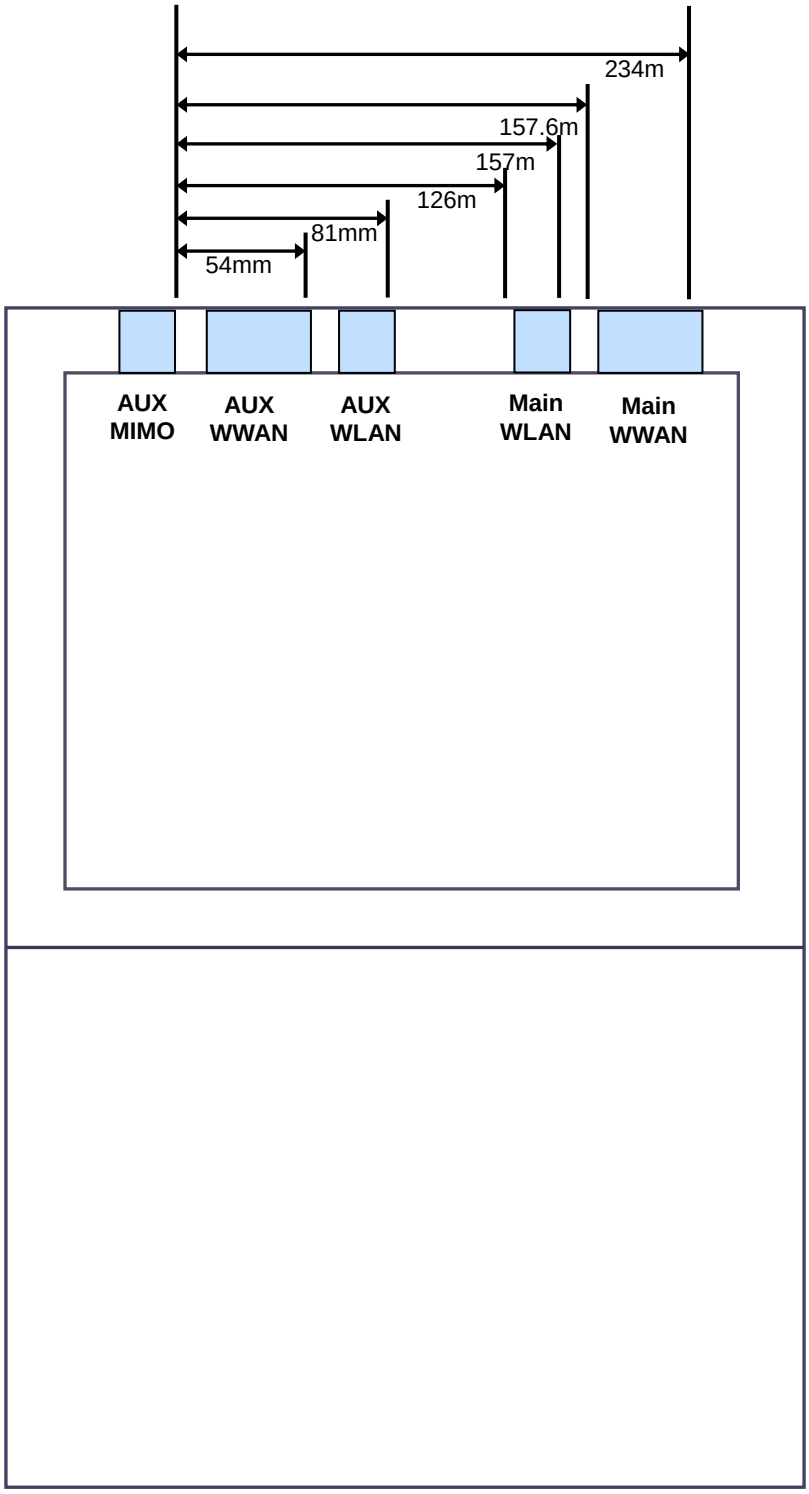
Include a **dimensioned photo or dimensioned drawing** showing the distance (mm) between the transmit antennas and the user (excluding hands, wrist, feet, lap/ thigh, and ankle)



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						