

# Regulatory WLAN Antenna Information

(English Language Required for Intel Regulatory Review / Approval)

<b>Platform</b>	
Platform Owner	Dell
Brand Name	Dell
Model Name	Inspiron mini 1012.
ODM	Compal
Target Launch Date	2009/7/29
<b>Antenna</b>	
Brand Name	Smart Approach.,Co,Ltd
Part Number	<ul style="list-style-type: none"> <li>■ Tx1 Antenna: SE-024A0-ECM10</li> </ul>
	<ul style="list-style-type: none"> <li>■ Tx2 Antenna: SE-024B0-ECM10</li> </ul>
<b>Module</b>	
With WLAN Module	<input type="checkbox"/> WM3B2200BG
(Check Box)	<input type="checkbox"/> WM3B2915ABG
	<input type="checkbox"/> WM3945ABG
	<input type="checkbox"/> 4965AGN
	<input type="checkbox"/> 4965AG_
	<input type="checkbox"/> 533ANX Family
	<input type="checkbox"/> 512ANX Family

	<input type="checkbox"/> 533AN Family
	<input type="checkbox"/> 512AN Family

## 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 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)
<b>SE-024A0-E</b> <b>CM10</b> Tx1 antenna	<i>Smart-App roach Co., Ltd</i>	PIFA (RHoS:Yes), Stamped Metal	50 ohm Coaxial. length:580mm diameter: 1.13mm Connector: IPX (RHoS:Yes)	2400-2484MHz 1.81dBi (peak)	2400-2484MHz 3.71dBi (peak)	2400-2484MHz 2.5 max	2400-2484MHz 1.90dBi (peak)
				2500-2700MHz 1.91dBi (peak)	2500-2700MHz 4.07dBi (peak)	2500-2700MHz 2.5 max	2500-2700MHz 2.16dBi (peak)
				5150-5350MHz 1.54dBi (peak)	5150-5350MHz 4.55dBi (peak)	5150-5350MHz 2.5 max	5150-5350MHz 3.01dBi (peak)
				5470-5725MHz 1.19dBi (peak)	5470-5725MHz 4.37dBi (peak)	5470-5725MHz 2.5 max	5470-5725MHz 3.18dBi (peak)
				5725-5850MHz 1.18dBi (peak)	5725-5850MHz 4.41dBi (peak)	5725-5850MHz 2.5 max	5725-5850MHz 3.23dBi (peak)
<b>SE-024B0-E</b> <b>CM10</b> Tx2 antenna	<i>Smart-App roach Co., Ltd</i>	PIFA (RHoS:Yes), Stamped Metal	50 ohm Coaxial. length:405mm diameter: 1.13mm Connector: IPX (RHoS:Yes)	2400-2484MHz 1.00dBi (peak)	2400-2484MHz 3.69dBi (peak)	2400-2484MHz 2.5 max	2400-2484MHz 2.69dBi (peak)
				2500-2700MHz 1.73dBi (peak)	2500-2700MHz 4.80dBi (peak)	2500-2700MHz 2.5 max	2500-2700MHz 3.07dBi (peak)
				5150-5350MHz 1.20dBi (peak)	5150-5350MHz 5.50dBi (peak)	5150-5350MHz 2.5 max	5150-5350MHz 4.30dBi (peak)
				5470-5725MHz 2.39dBi (peak)	5470-5725MHz 6.94dBi (peak)	5470-5725MHz 2.5 max	5470-5725MHz 4.55dBi (peak)
				5725-5850MHz 2.42dBi (peak)	5725-5850MHz 7.04dBi (peak)	5725-5850MHz 2.5 max	5725-5850MHz 4.62dBi (peak)

**Antenna Peak Gain Table:**

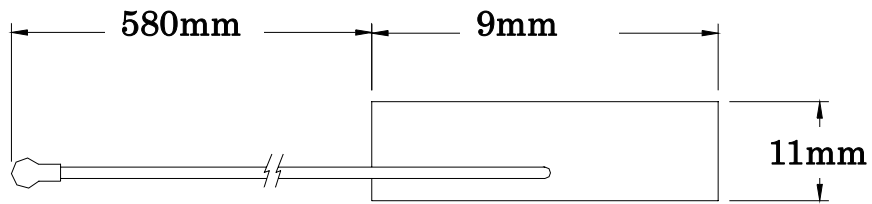
Freq. (MHz)	WLAN Antenna-White(MAIN)			WLAN Antenna-Black(AUX)		
	H	V	H + V	H	V	H + V
	dBi	dBi	dBi	dBi	dBi	dBi
2400	-1.46	-3.19	-0.50	0.58	-0.09	1.85
2442	0.36	-1.54	1.25	0.43	-1.88	1.29
2484	1.81	-0.50	2.06	1.00	-0.26	4.02
2500	1.43	-0.36	2.66	1.18	-0.25	4.29
2550	1.75	0.69	2.93	1.73	0.19	3.82
2600	1.91	0.61	1.97	1.06	0.15	2.98
2700	0.98	1.68	1.72	1.31	-0.12	1.78
5150	1.19	-1.80	1.38	0.42	-0.99	1.50
5350	1.54	-0.99	1.64	1.20	-1.21	1.58
5470	1.19	-0.19	1.40	1.31	-1.58	1.70
5725	1.18	-0.43	1.38	2.39	-0.65	2.48
5875	0.41	-1.82	0.74	2.42	0.05	2.45

- 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:

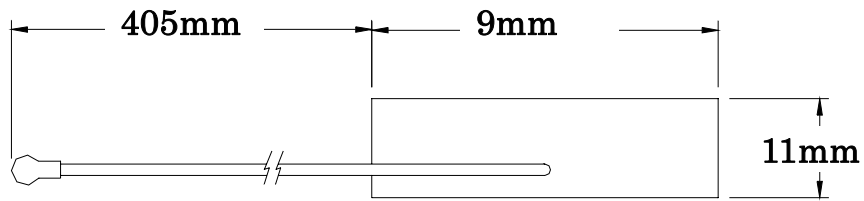


### Tx1 Antenna Photo:



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

Tx2 Antenna Dimensioned Drawing:



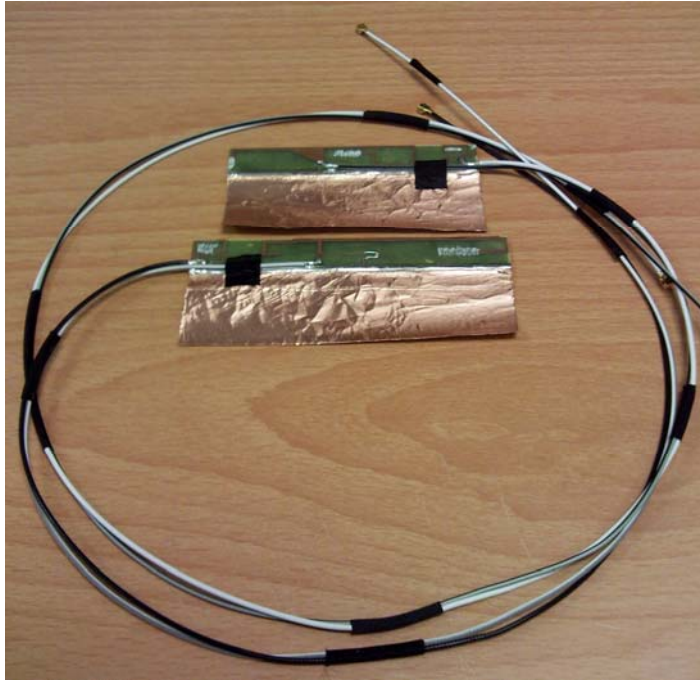
Tx2 Antenna Photo:



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

Antenna Manufacturer: Smart-Approach Co., Ltd

Antenna Part Number: SE-024A0-ECM10 (Tx1), SE-024B0-ECM10 (Tx2 )

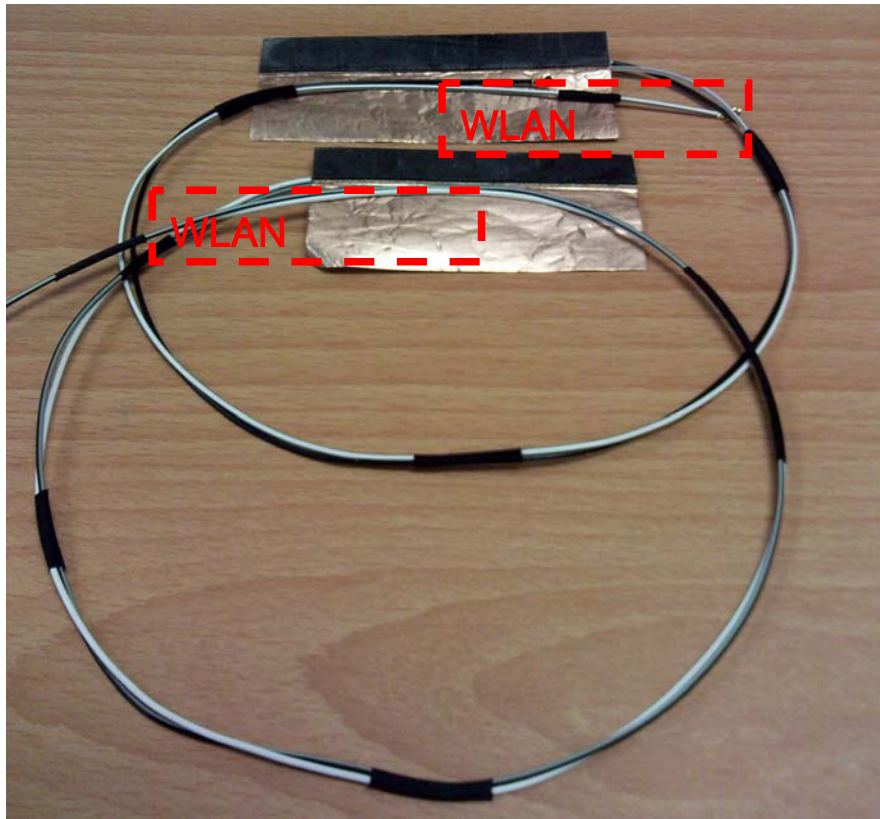


**Include back view photo of all 3 antennas here.**

Antenna Manufacturer: Smart-Approach Co., Ltd

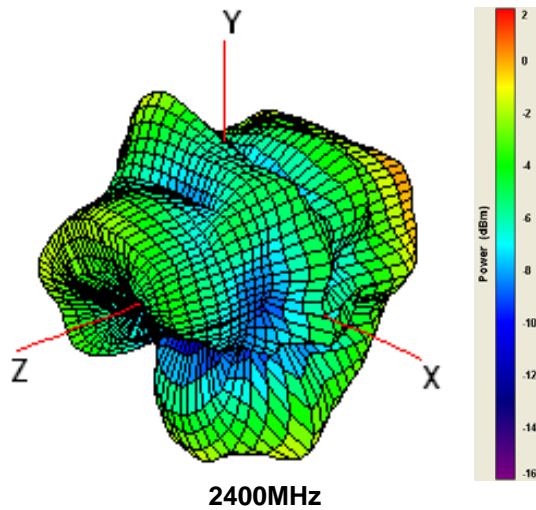
Antenna Part Number: SE-024A0-ECM10 (Tx1), SE-024B0-ECM10 (Tx2 )





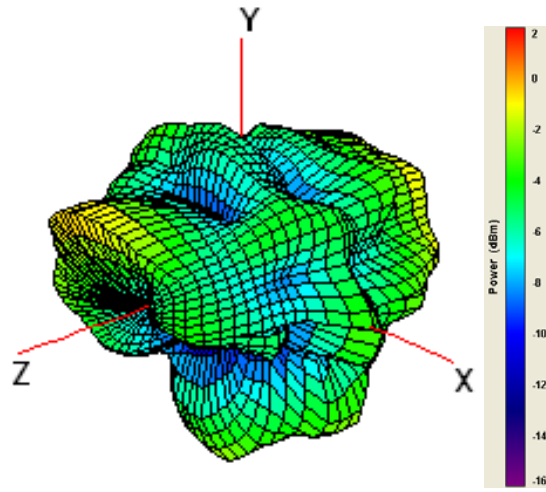
### Section 3. Radiation characteristics of antennae Loaded in Host Platform

#### WLAN Main Antenna 2400-2700MHz radiation characteristic

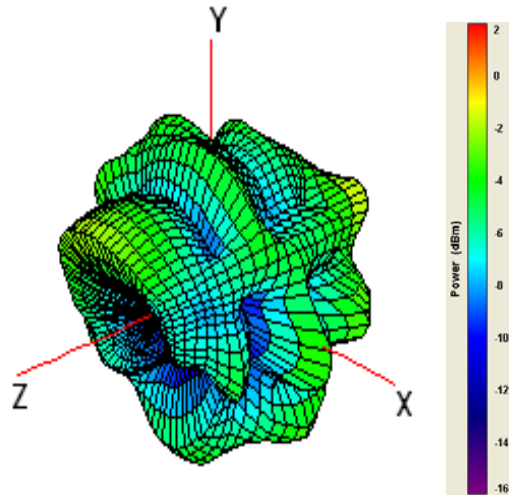


Frequency	H (Peak)	V (Peak)	H+V (Avg)
2400MHz	-1.46	-3.19	-5.02

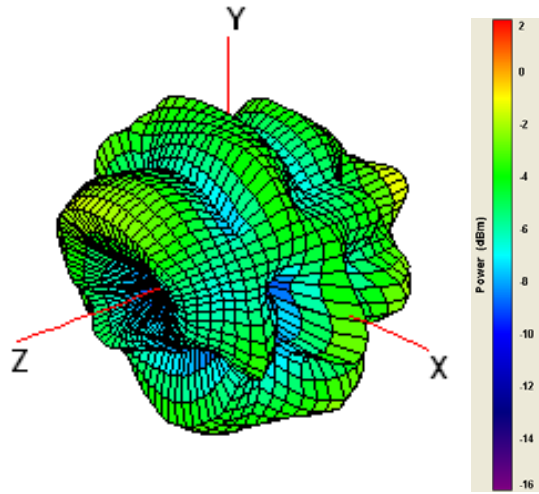




Frequency	H (Peak)	V (Peak)	H+V (Avg)
2442MHz	0.36	-1.54	-3.99

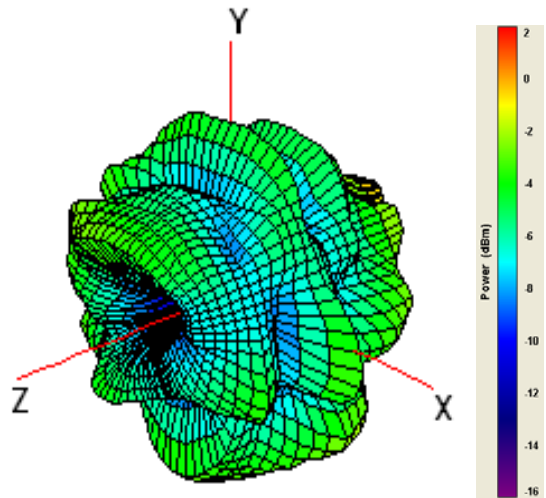


Frequency	H (Peak)	V (Peak)	H+V (Avg)
2484MHz	1.81	-0.50	-3.09



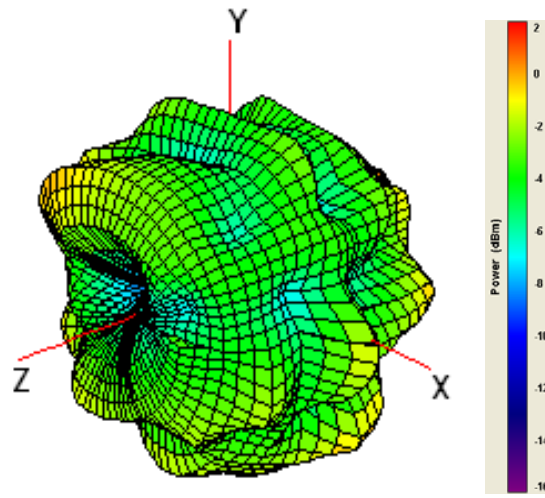
2500MHz

Frequency	H (Peak)	V (Peak)	H+V (Avg)
2500MHz	1.43	-0.36	-2.83



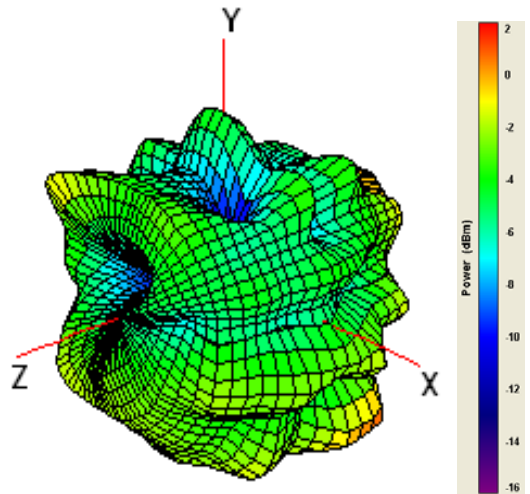
2550MHz

Frequency	H (Peak)	V (Peak)	H+V (Avg)
2550MHz	1.75	0.69	-2.76



2600MHz

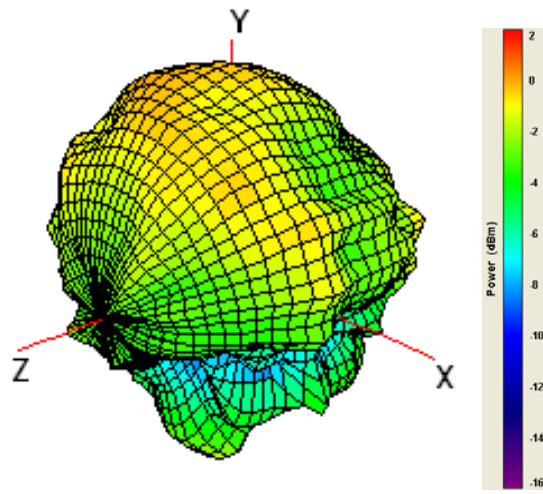
Frequency	H (Peak)	V (Peak)	H+V (Avg)
2600MHz	1.91	0.61	-2.93



2700MHz

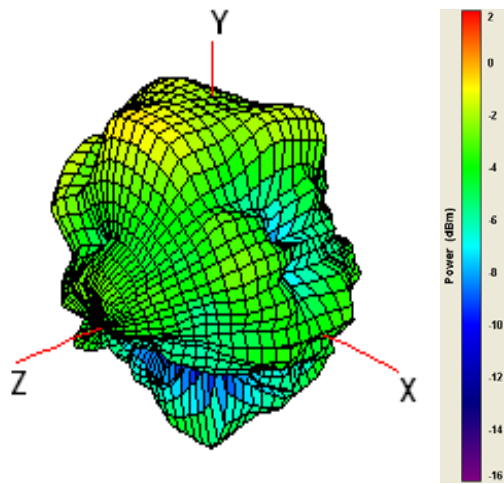
Frequency	H (Peak)	V (Peak)	H+V (Avg)
2700MHz	0.98	1.68	-3.48

WLAN Main Antenna 5150-5875MHz radiation characteristic



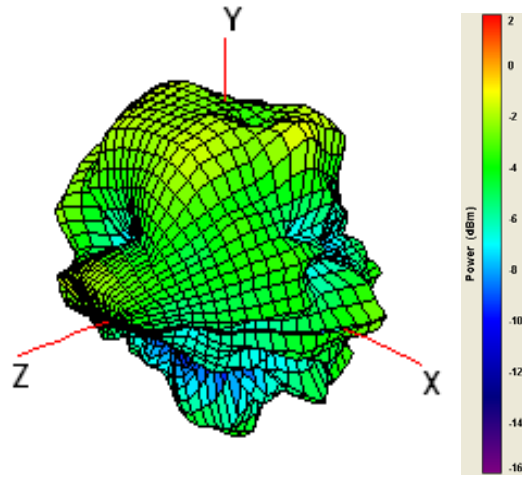
5150MHz

Frequency	H (Peak)	V (Peak)	H+V (Avg)
5150MHz	1.19	-1.80	-3.93



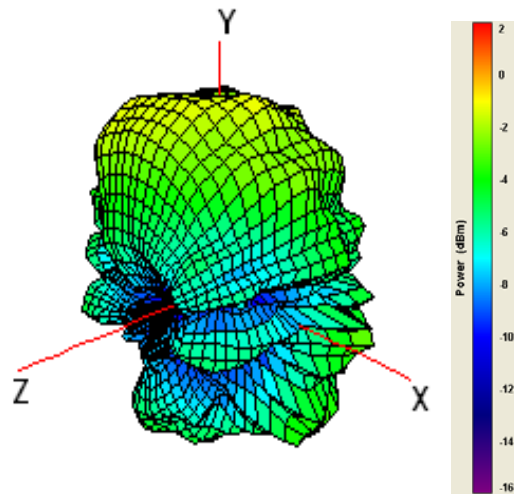
5350MHz

Frequency	H (Peak)	V (Peak)	H+V (Avg)
5350MHz	1.54	-0.99	-3.73



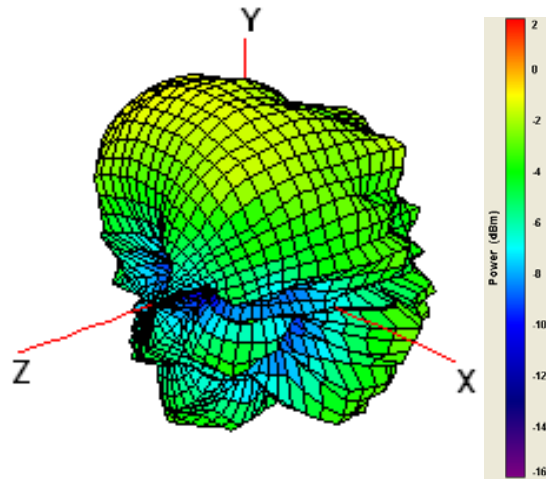
5470MHz

Frequency	H (Peak)	V (Peak)	H+V (Avg)
5470MHz	1.19	-0.19	-3.83



5725MHz

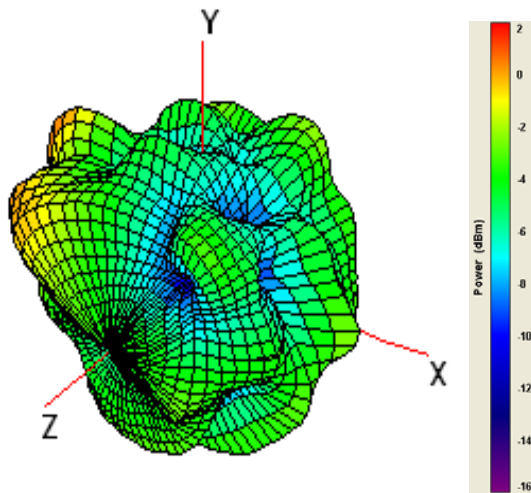
Frequency	H (Peak)	V (Peak)	H+V (Avg)
5725MHz	1.18	-0.43	-4.04



5875MHz

Frequency	H (Peak)	V (Peak)	H+V (Avg)
5875MHz	0.41	-1.82	-4.65

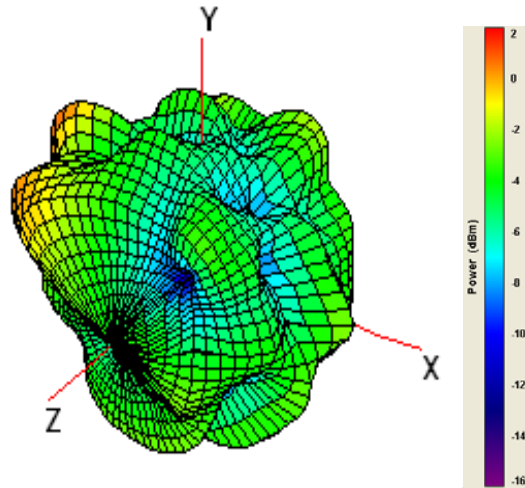
WLAN AUX Antenna 2400-2700MHz radiation characteristic



2400MHz

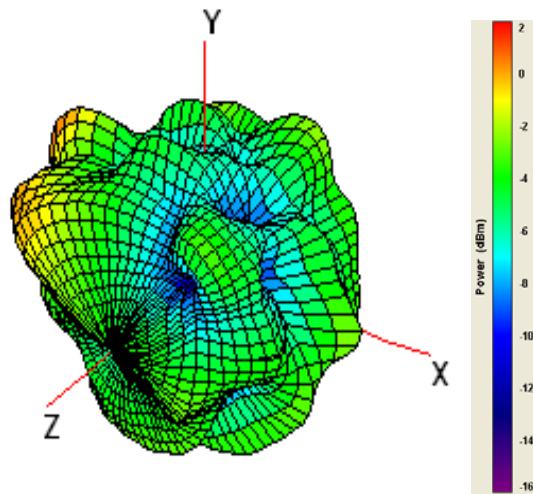
Frequency	H (Peak)	V (Peak)	H+V (Avg)
2400MHz	0.41	-1.82	-4.65

<b>2400MHz</b>	0.58	-0.09	-3.62
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**2442MHz**

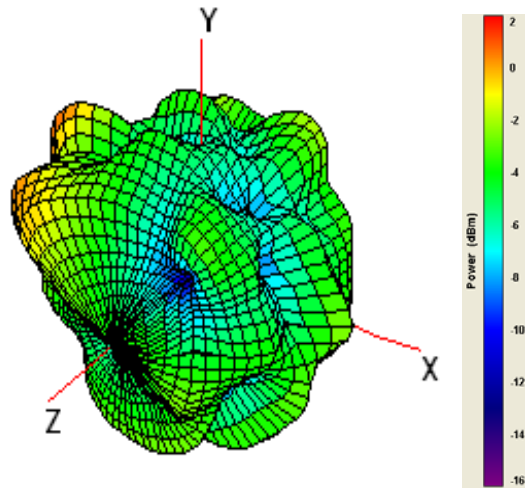
<i>Frequency</i>	<i>H (Peak)</i>	<i>V (Peak)</i>	<i>H+V (Avg)</i>
<b>2442MHz</b>	0.43	-1.88	-3.87



**2484MHz**

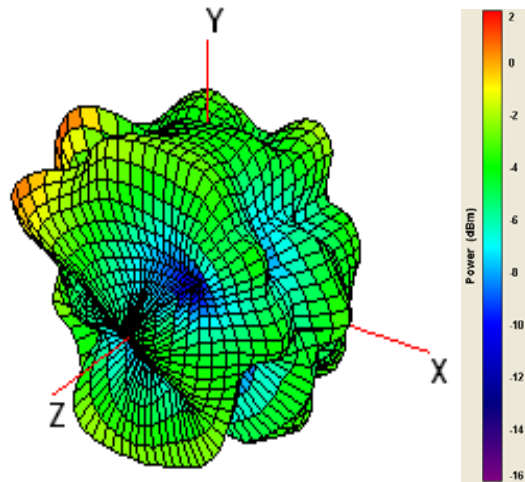
<i>Frequency</i>	<i>H (Peak)</i>	<i>V (Peak)</i>	<i>H+V (Avg)</i>
<b>2484MHz</b>	3.00	-0.26	-2.50





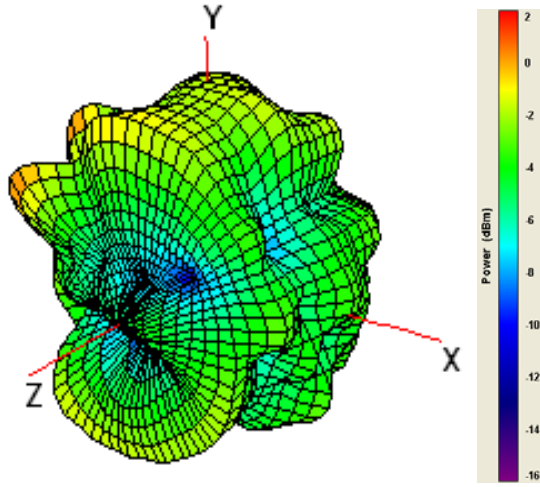
2500MHz

Frequency	H (Peak)	V (Peak)	H+V (Avg)
2500MHz	3.18	-0.25	-2.37



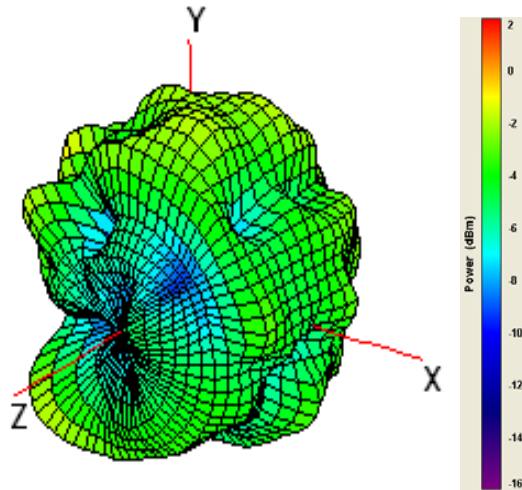
2550MHz

Frequency	H (Peak)	V (Peak)	H+V (Avg)
2550MHz	2.73	0.19	-2.55



2600MHz

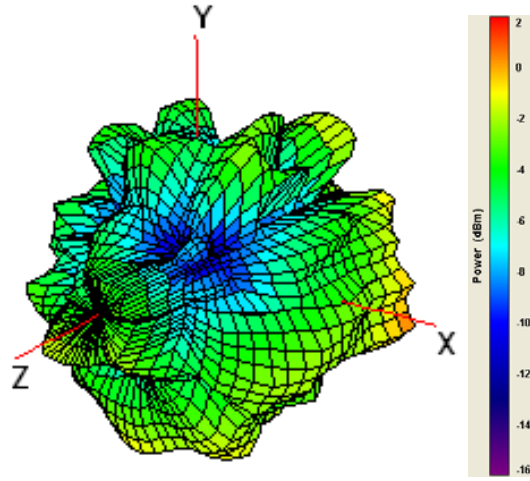
Frequency	H (Peak)	V (Peak)	H+V (Avg)
2600MHz	2.06	0.15	-2.76



2700MHz

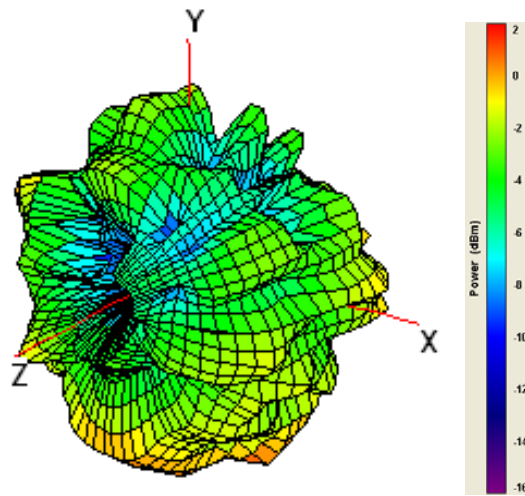
Frequency	H (Peak)	V (Peak)	H+V (Avg)
2700MHz	1.31	-0.12	-3.30

[X Antenna 5150-5875MHz radiation characteristic](#)



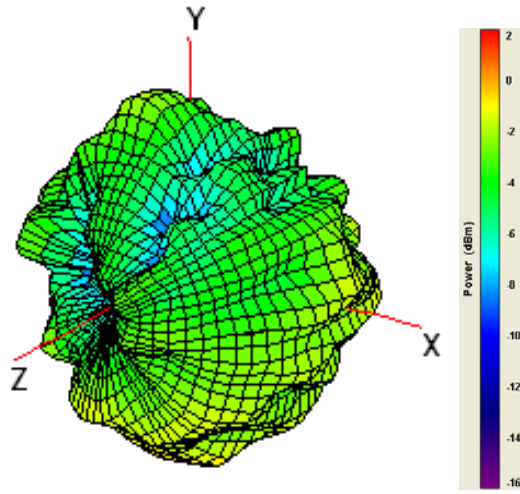
5150MHz

Frequency	H (Peak)	V (Peak)	H+V (Avg)
5150MHz	0.42	-0.99	-4.06



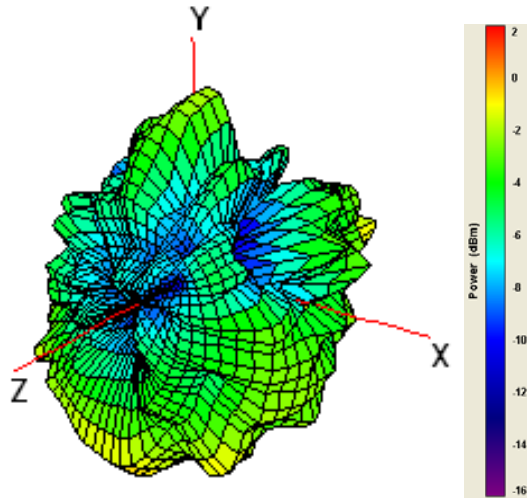
5350MHz

Frequency	H (Peak)	V (Peak)	H+V (Avg)
5350MHz	1.20	-1.21	-2.96



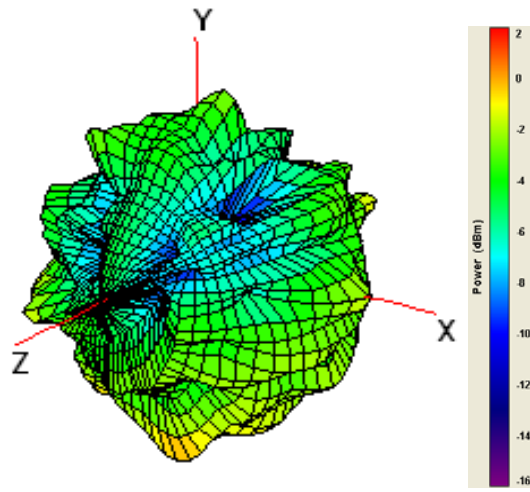
5470MHz

Frequency	H (Peak)	V (Peak)	H+V (Avg)
5470MHz	1.31	-1.58	-3.32



5725MHz

Frequency	H (Peak)	V (Peak)	H+V (Avg)
5725MHz	2.39	-0.65	-2.95



5875MHz

Frequency	H (Peak)	V (Peak)	H+V (Avg)
5875MHz	2.42	0.05	-2.95

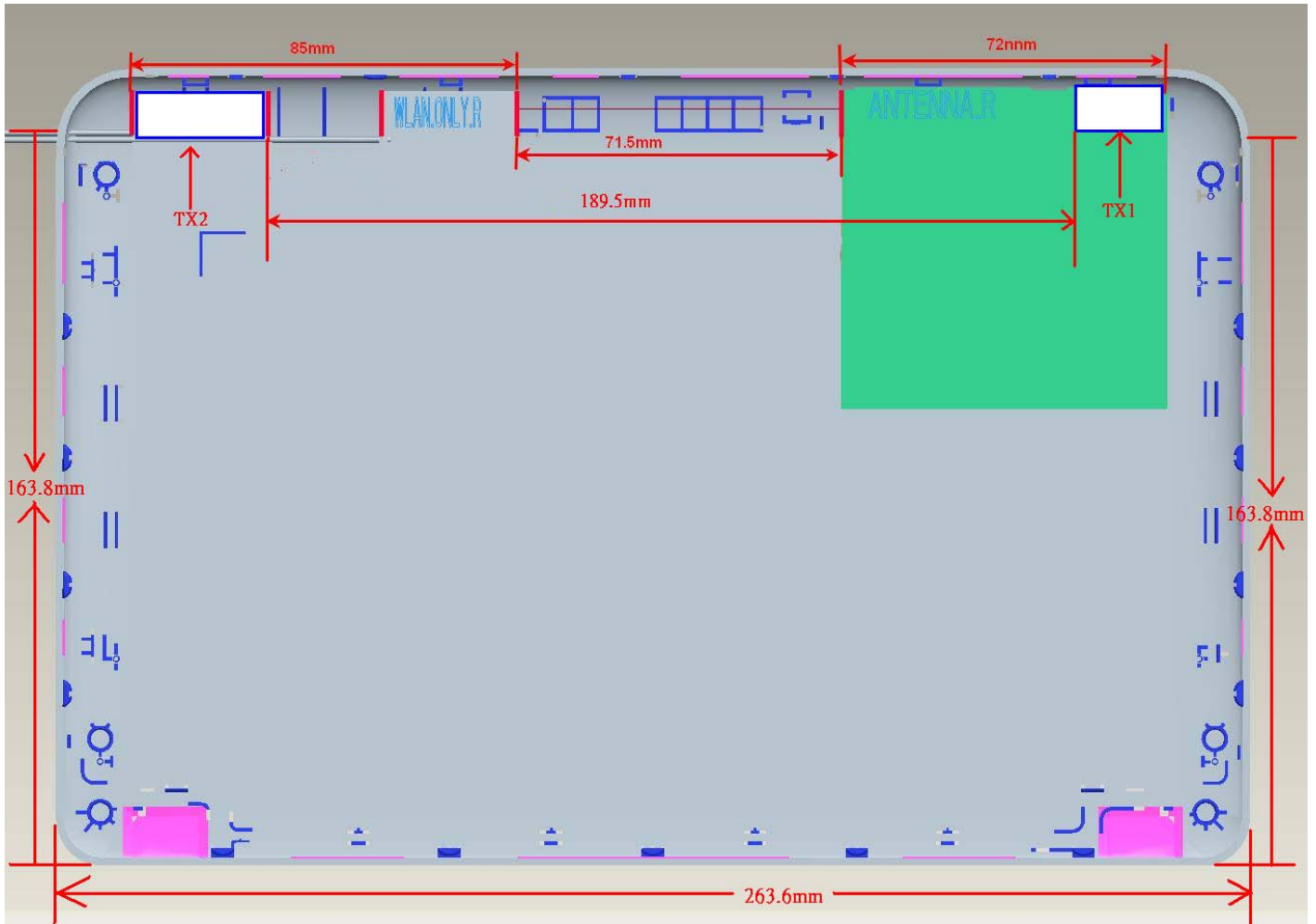
## Section 4. Host Platform Information

OEM / ODM Host platform: platform correlated to antenna data

Label Photo:

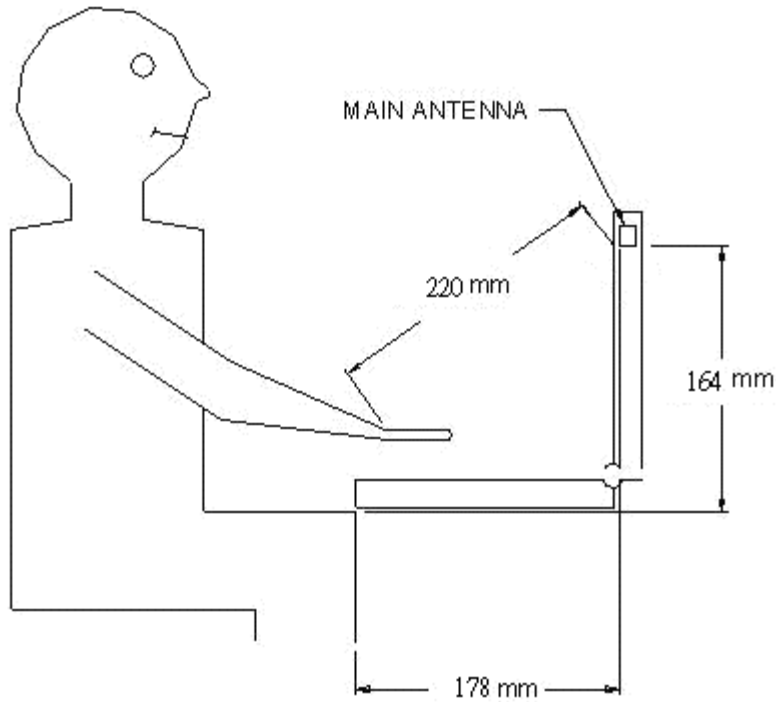
## Section 5. Antenna Host Platform Location Information

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)

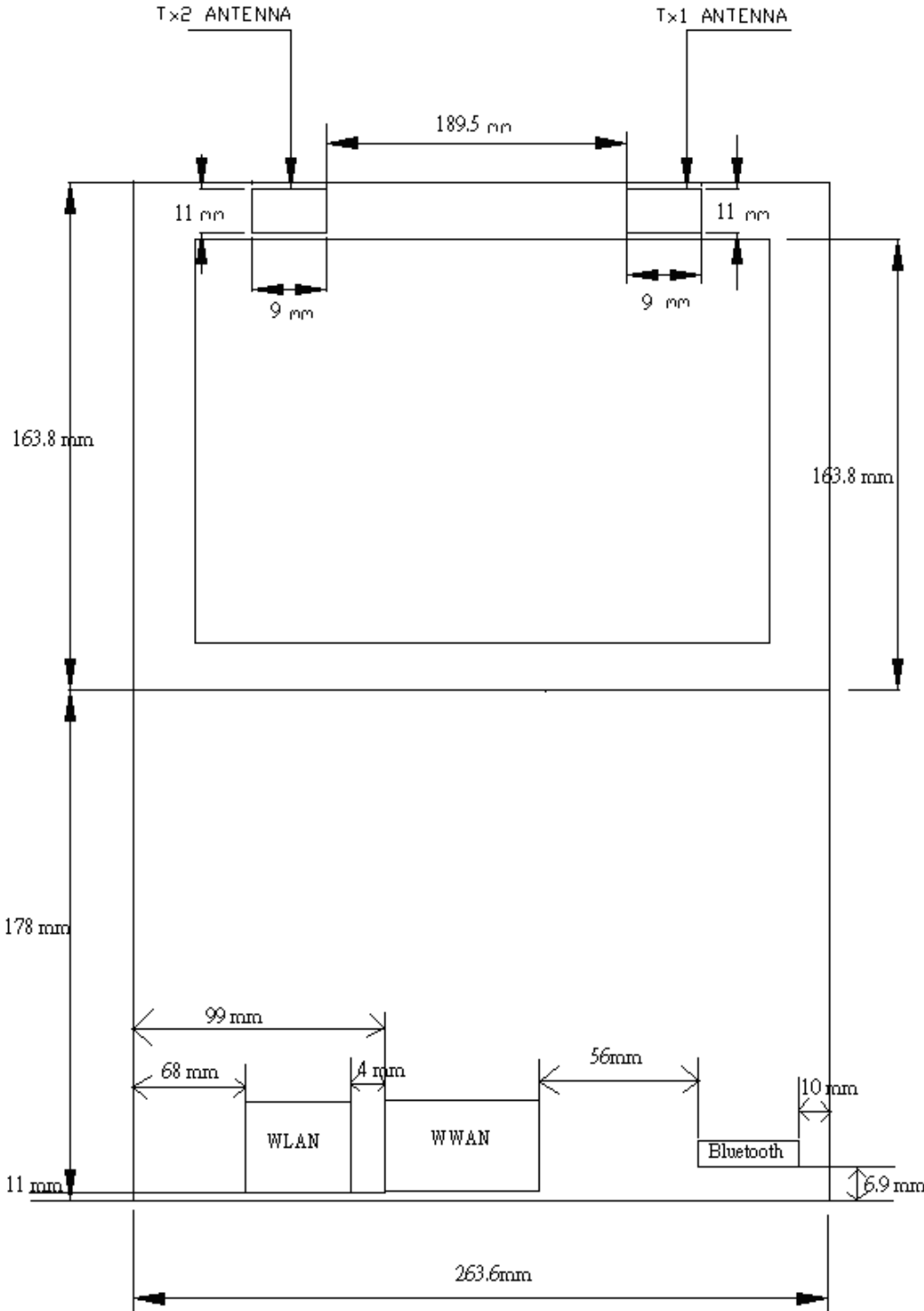




## Section 7. Diagram Example of Co-Location Antenna Separation

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						