

Regulatory Wireless Antenna Information

Platform	
Platform Owner	Lenovo (Beijing) Limited.
Brand Name	Lenovo
Model Name	ThinkPad Edge E145
ODM	Quanta
Target Launch Date	(2012/ 05/ 15)
Antenna	
Manufacturer	Zhan Yun (shanghai) Electronics Co.
Part Number	■Tx1/Rx1 Antenna: DQ60QTLI200
	■Tx2/Rx2 Antenna: DQ60QTLI201
Module	
With WLAN Module	RTL8188EE

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	Required	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>). Taiwan requires pictures of each antenna type shown in the system.	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

Antenna Information

Section 1. Antenna Assembly Specifications

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)
Main Antenna Antenna P/N: DQ60QTLI200 (QTLI2-EQL0102A)	Zhan Yun (shanghai) Electronics Co.	PIFA	50 ohm Coaxial length: 562mm diameter: 1.13mm Connector: FAF	2300-2500MHz -0.70 dBi (peak)	2300-2500MHz 0.92 dBi (peak)	2300-2500MHz 2.0 max	2300-2500MHz 1.62 dBi (peak)
				2500-2700MHz 0.37 dBi (peak)	2500-2700MHz 2.03 dBi (peak)	2500-2700MHz 2.0 max	2500-2700MHz 1.66 dBi (peak)
				5150-5350MHz -0.44 dBi (peak)	5150-5350MHz 1.77 dBi (peak)	5150-5350MHz 2.0 max	5150-5350MHz 2.21 dBi (peak)
				5470-5725MHz -0.53 dBi (peak)	5470-5725MHz 1.75 dBi (peak)	5470-5725MHz 2.0 max	5470-5725MHz 2.28 dBi (peak)
				5725-5850MHz -0.13 dBi (peak)	5725-5850MHz 2.18 dBi (peak)	5725-5850MHz 2.0 max	5725-5850MHz 2.31 dBi (peak)
Aux Antenna Antenna P/N: DQ60QTLI201 (QTLI2-EQL0202A)	Zhan Yun (shanghai) Electronics Co.	PIFA	50 ohm Coaxial length: 567mm diameter: 1.13mm Connector: FAF	2300-2500MHz -1.20 dBi (peak)	2300-2500MHz 0.40 dBi (peak)	2300-2500MHz 2.0 max	2300-2500MHz 1.60 dBi (peak)
				2500-2700MHz 0.46 dBi (peak)	2500-2700MHz 2.10 dBi (peak)	2500-2700MHz 2.0 max	2500-2700MHz 1.64 dBi (peak)
				5150-5350MHz 0.80 dBi (peak)	5150-5350MHz 2.99 dBi (peak)	5150-5350MHz 2.0 max	5150-5350MHz 2.19 dBi (peak)
				5470-5725MHz 0.55 dBi (peak)	5470-5725MHz 2.81 dBi (peak)	5470-5725MHz 2.0 max	5470-5725MHz 2.26 dBi (peak)
				5725-5850MHz 0.44 dBi (peak)	5725-5850MHz 2.73 dBi (peak)	5725-5850MHz 2.0 max	5725-5850MHz 2.29 dBi (peak)

- Antenna Peak Gain required being test in system basis.
- 1E frame contend absolutely peak antenna gain include H/V

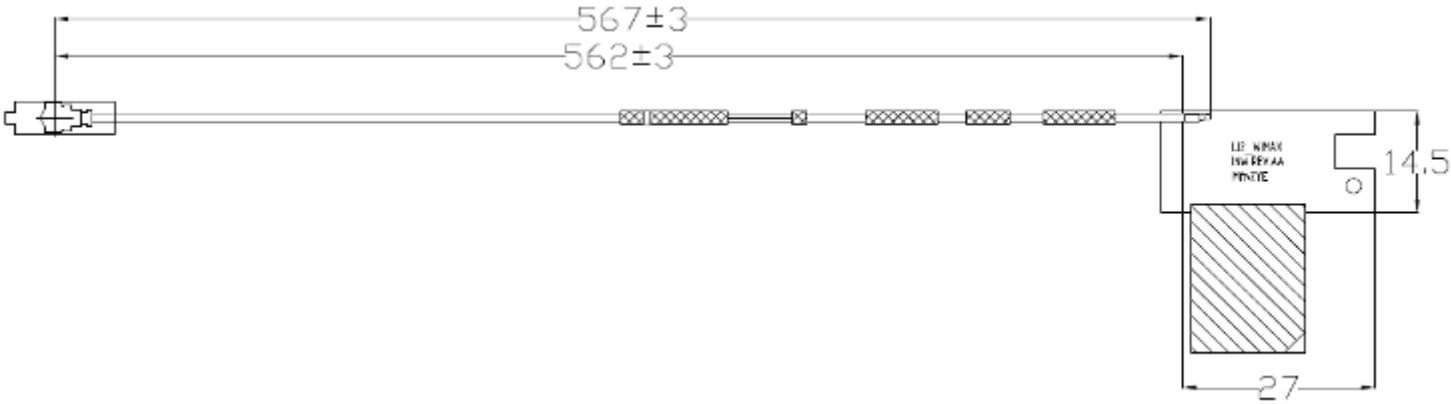
Antenna Peak Gain Table:

	Main antenna			Aux antenna	
Frequency (MHz)	Horizontal (dBi)	Vertical (dBi)	Frequency (MHz)	Horizontal (dBi)	Vertical (dBi)
2300	-2.91	-1.14	2300	0.26	-7.54
2350	-1.27	-1.28	2350	-2.22	-7.56
2400	-0.70	-2.66	2400	-2.23	-4.54
2450	-3.51	-2.78	2450	-1.48	-4.24
2500	-1.11	-2.12	2500	-1.20	-3.12
2600	-3.58	-5.22	2600	-0.28	-1.48
2700	0.37	-2.81	2700	0.46	-4.88
5150	-0.44	-2.27	5150	-1.13	-4.00
5250	-0.83	-3.63	5250	-1.28	-1.20
5350	-0.77	-1.16	5350	0.80	-0.68
5470	-0.53	-1.99	5470	0.55	-1.44
5600	-2.35	-2.24	5600	-0.13	-4.98
5725	-0.57	-3.22	5725	0.16	-2.54
5785	-0.24	-3.31	5785	-0.10	-1.59
5850	-0.13	-3.00	5850	0.44	-2.74

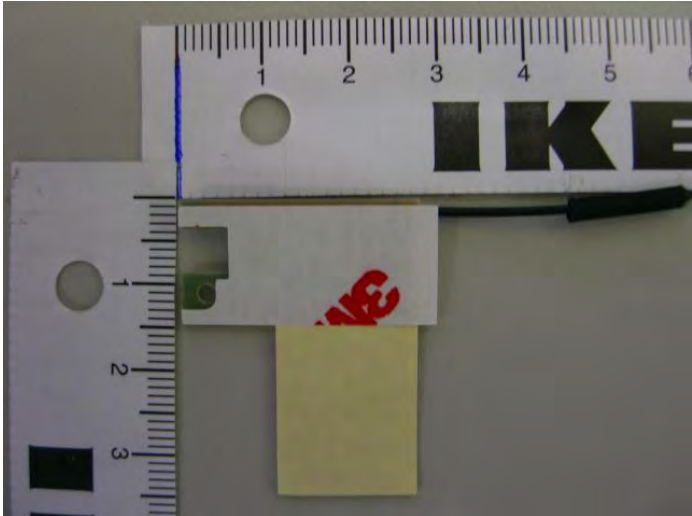
Section 2. Dimensioned Photos or Drawings of Antennas

Include a dimensioned photo and dimensioned drawing of Tx1/Rx1 antenna here.

Tx1/Rx1 Antenna Dimensioned Drawing:

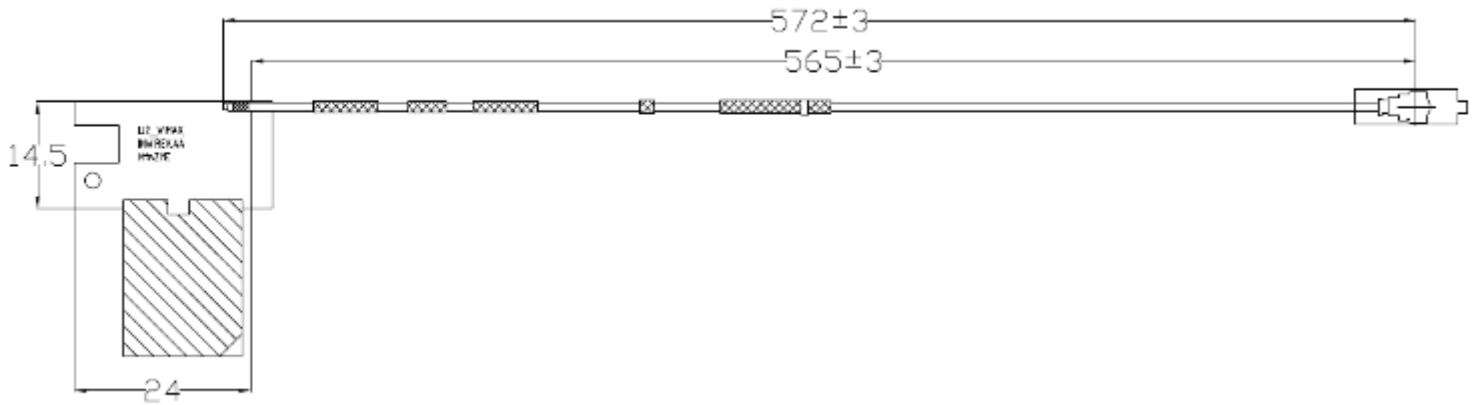


Tx1/Rx1 Antenna Photo:

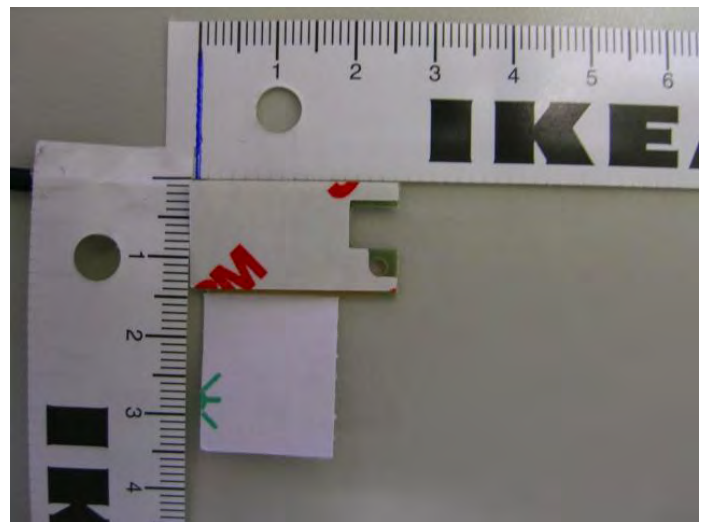
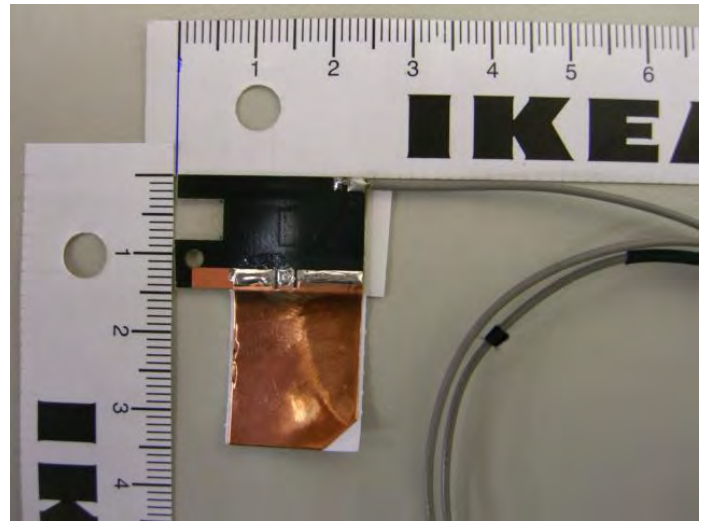


Include a dimensioned photo and dimensioned drawing of Rx2 antenna here.

Tx2/Rx2 Antenna Dimensioned Drawing:



Tx2/Rx2 Antenna Photo:



Include front view photo of all 3 antennas here.

Antenna Manufacturer: Zhan Yun (shanghai) Electronics Co.
Antenna Part Number: DQ60QTLI200 (Tx1/Rx1) , DQ60QTLI201 (Tx2/Rx2)



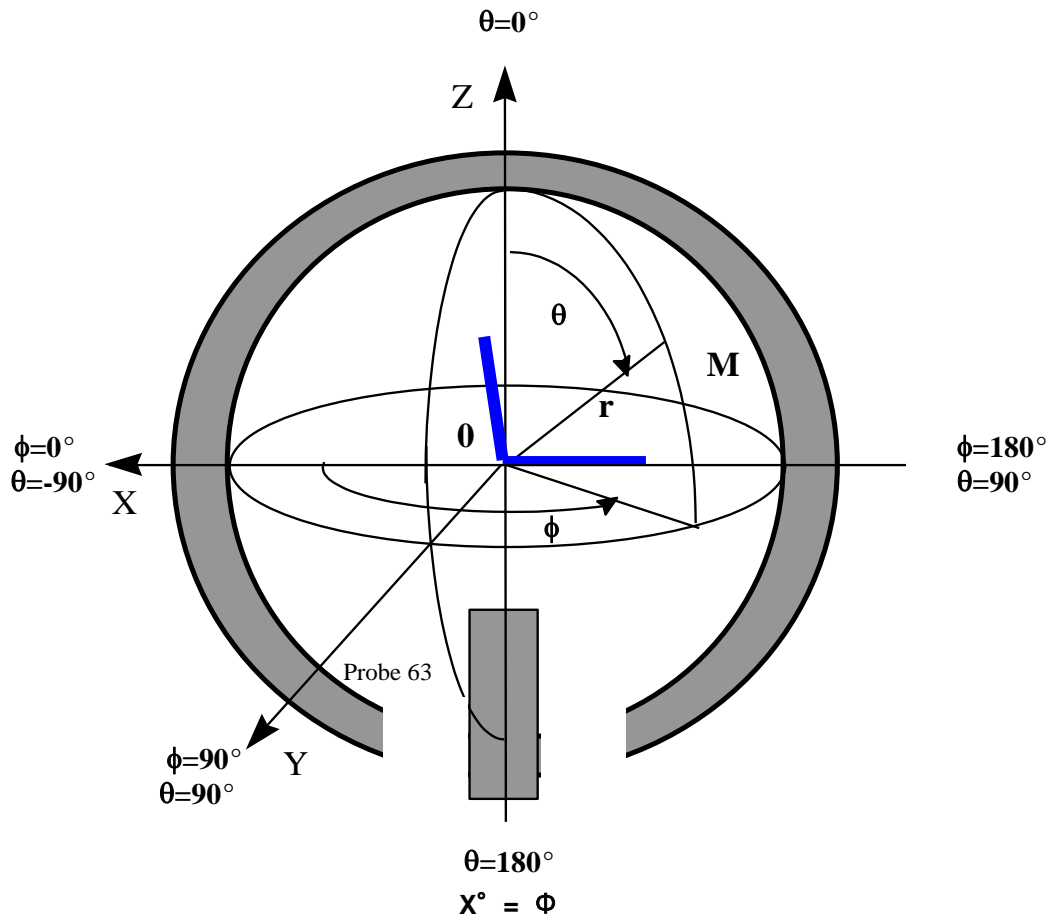
Include back view photo of all 3 antennas here.

Antenna Manufacturer: Zhan Yun (shanghai) Electronics Co.
Antenna Part Number: DQ60QTLI200(Tx1/Rx1) , DQ60QTLI201 (Tx2/Rx2)



Section 3. Radiation characteristics of antennae Loaded in Host Platform 2300-2500MHz radiation characteristic

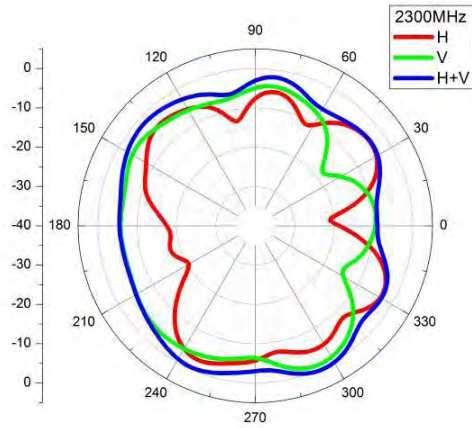
Antenna Gain and Radiation Pattern Measuring Structure Diagram



Section 3. Radiation characteristics of antennae Loaded in Host Platform

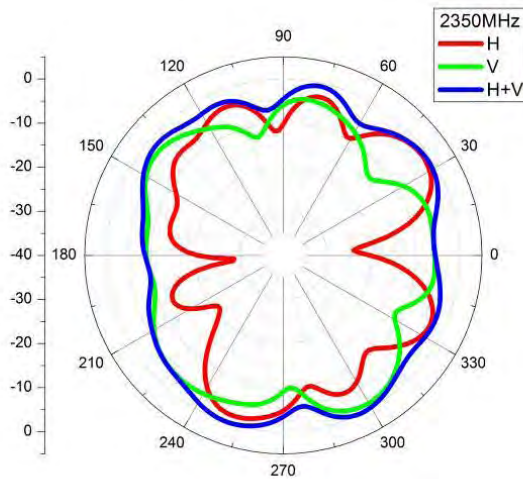
2300-2700MHz radiation characteristic

Tx1 antenna: 2300 MHz



Center Frequency	2300 MHz
Horizontal (dBi) peak	-2.91
Vertical (dBi) peak	-1.14

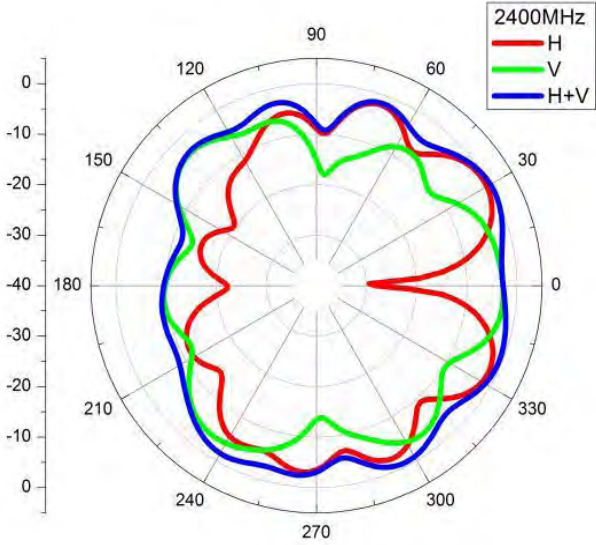
Tx1 antenna: 2350 MHz



Center Frequency	2350 MHz
Horizontal (dBi) peak	-1.27
Vertical (dBi) peak	-1.28

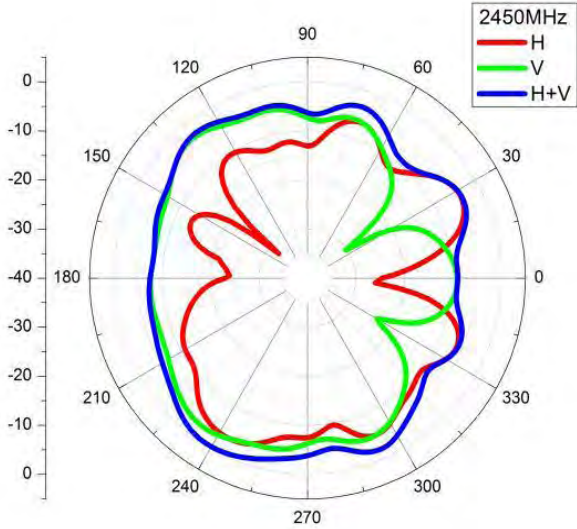
2400-2700MHz radiation characteristic

Tx1 antenna: 2400 MHz



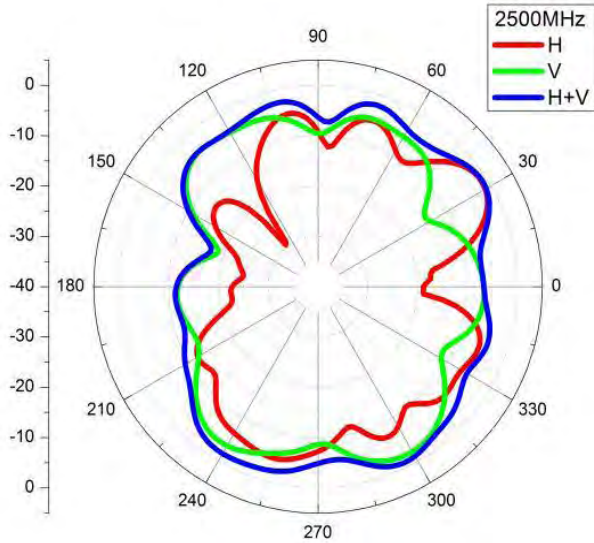
Center Frequency	2400 MHz
Horizontal (dBi) peak	-0.70
Vertical (dBi) peak	-2.66

Tx1 antenna: 2450 MHz



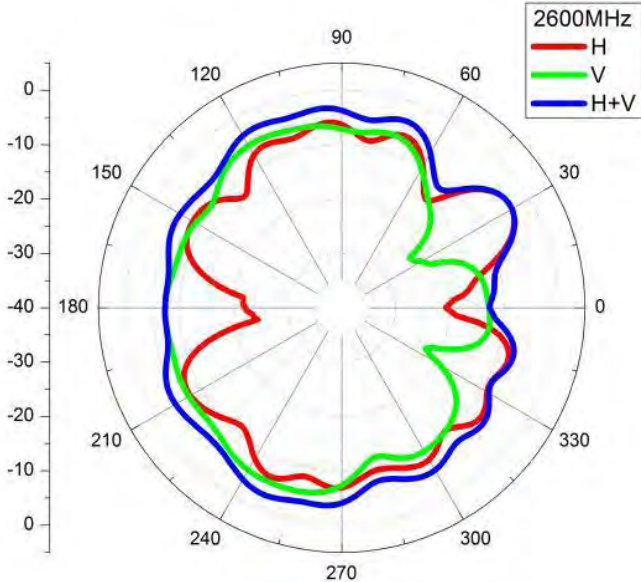
Center Frequency	2450 MHz
Horizontal (dBi) peak	-3.51
Vertical (dBi) peak	-2.78

Tx1 antenna: 2500 MHz



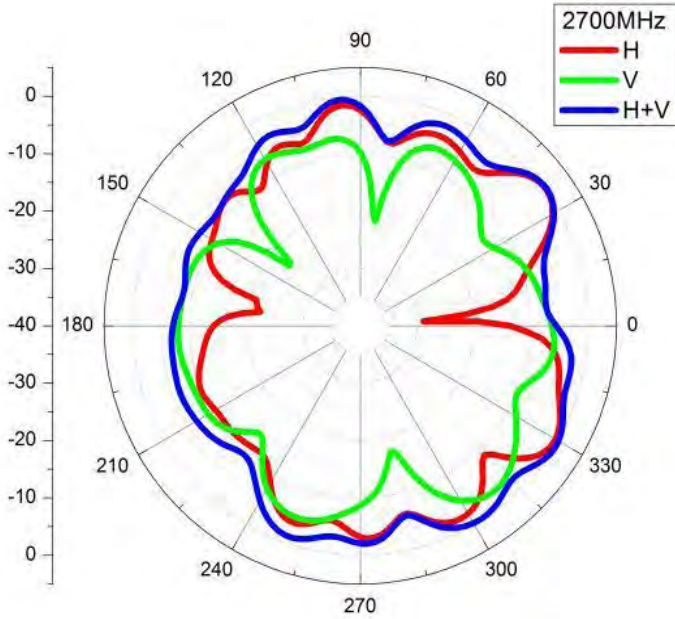
Center Frequency	2500 MHz
Horizontal (dBi) peak	-1.11
Vertical (dBi) peak	-2.12

Tx1 antenna: 2600 MHz



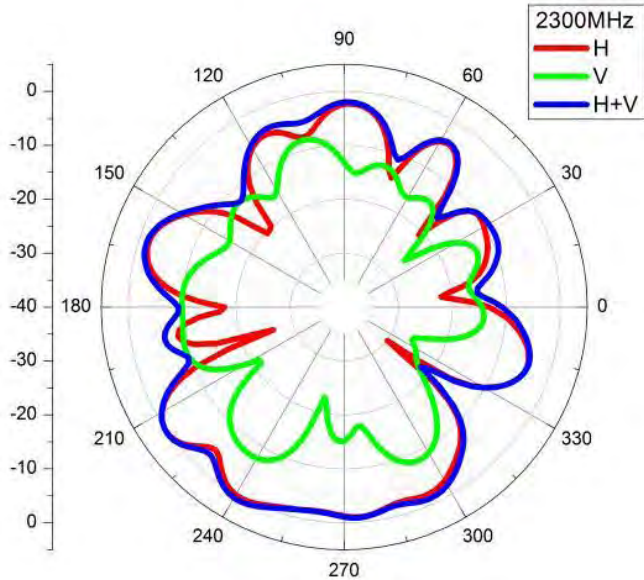
Center Frequency	2600 MHz
Horizontal (dBi) peak	-3.58
Vertical (dBi) peak	-5.22

Tx1 antenna: 2700 MHz



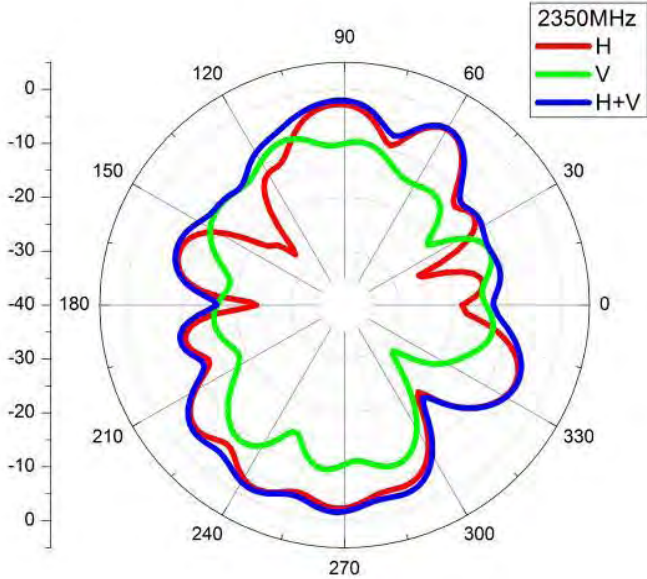
Center Frequency	2700 MHz
Horizontal (dBi) peak	0.37
Vertical (dBi) peak	-2.81

Rx2 antenna: 2300 MHz



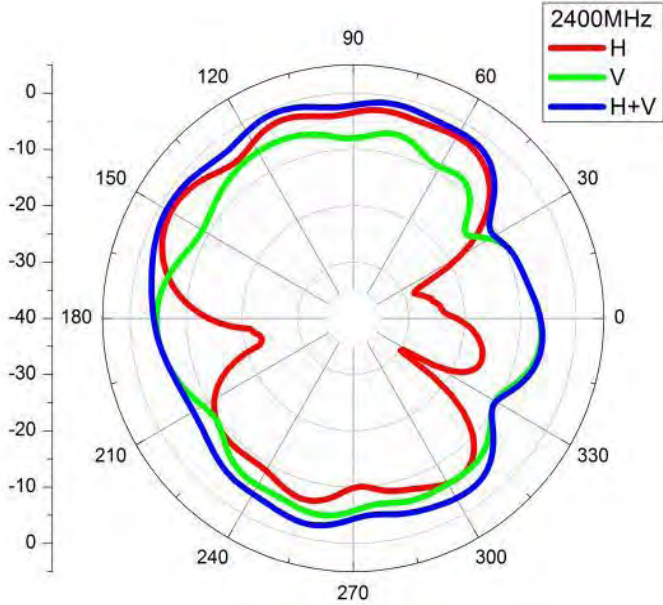
Center Frequency	2300 MHz
Horizontal (dBi) peak	0.26
Vertical (dBi) peak	-7.54

Rx2 antenna: 2350 MHz



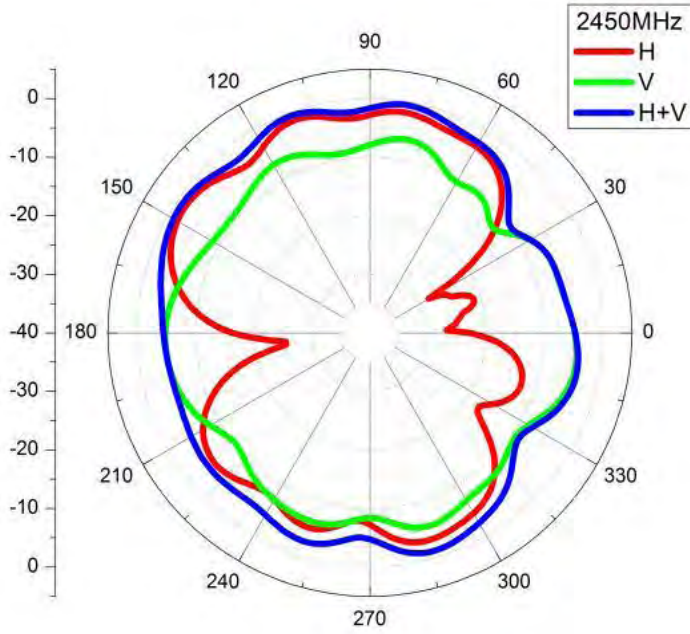
Center Frequency	2350 MHz
Horizontal (dBi) peak	-2.22
Vertical (dBi) peak	-7.56

Rx2 antenna: 2400 MHz



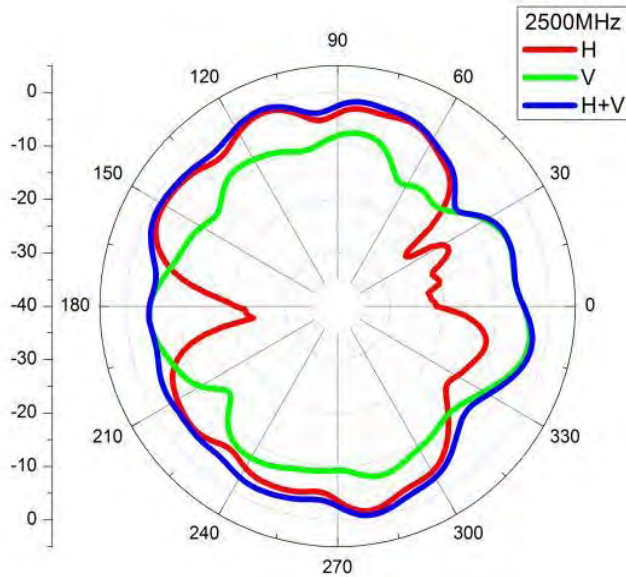
Center Frequency	2400 MHz
Horizontal (dBi) peak	-2.23
Vertical (dBi) peak	-4.54

Rx2 antenna: 2450 MHz



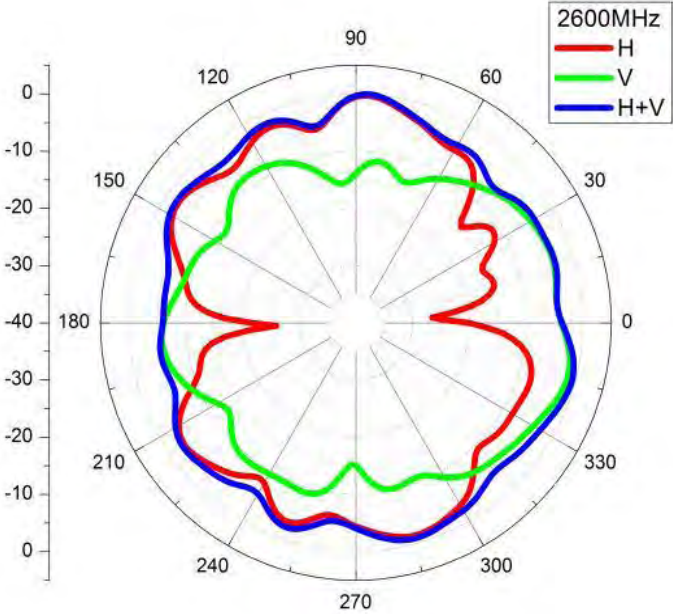
Center Frequency	2450 MHz
Horizontal (dBi) peak	-1.48
Vertical (dBi) peak	-4.24

Rx2 antenna: 2500 MHz



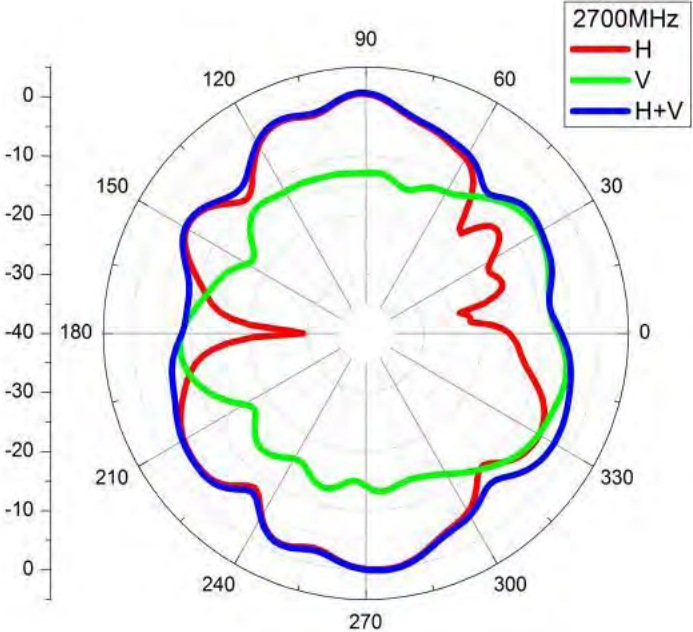
Center Frequency	2500 MHz
Horizontal (dBi) peak	-1.20
Vertical (dBi) peak	-3.12

Rx2 antenna: 2600 MHz



Center Frequency	2600 MHz
Horizontal (dBi) peak	-0.28
Vertical (dBi) peak	-1.48

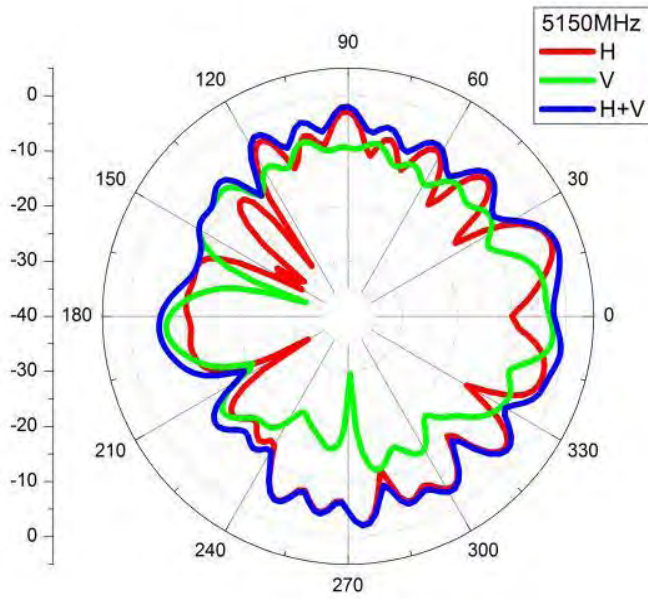
Rx2 antenna: 2700 MHz



Center Frequency	2700 MHz
Horizontal (dBi) peak	0.46
Vertical (dBi) peak	-4.88

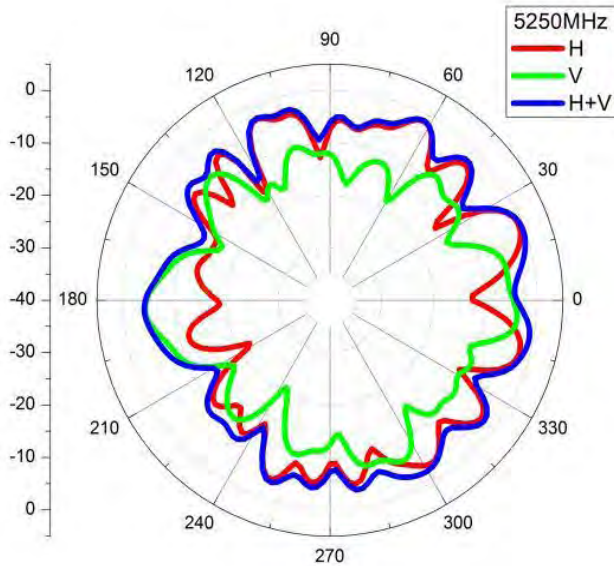
5150-5350 MHz radiation characteristic

Tx1 antenna: 5150 MHz



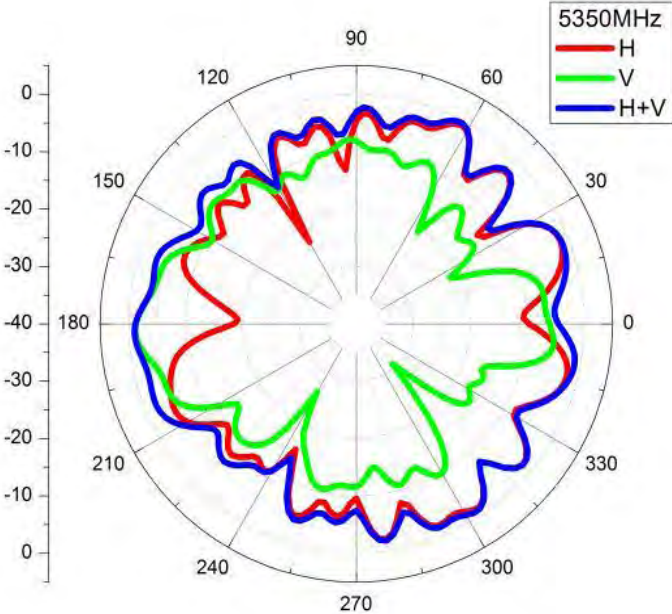
Center Frequency	5150 MHz
Horizontal (dBi) peak	-0.44
Vertical (dBi) peak	-2.27

Tx1 antenna: 5250 MHz



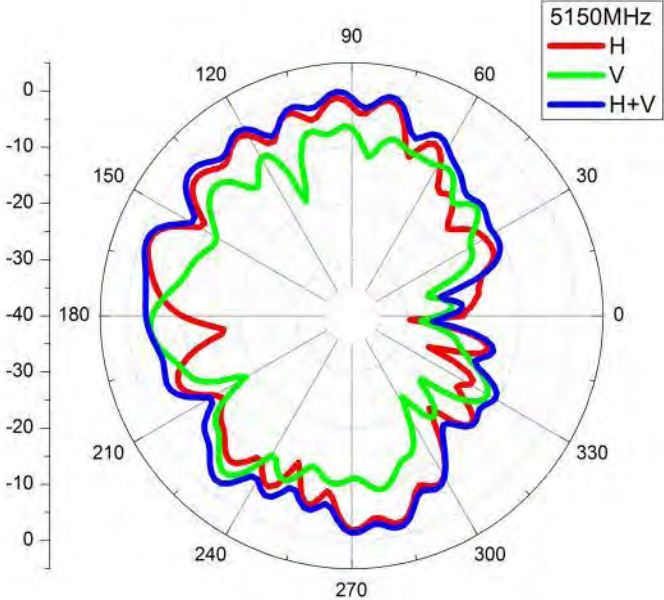
Center Frequency	5250 MHz
Horizontal (dBi) peak	-0.83
Vertical (dBi) peak	-3.63

Tx1 antenna: 5350 MHz



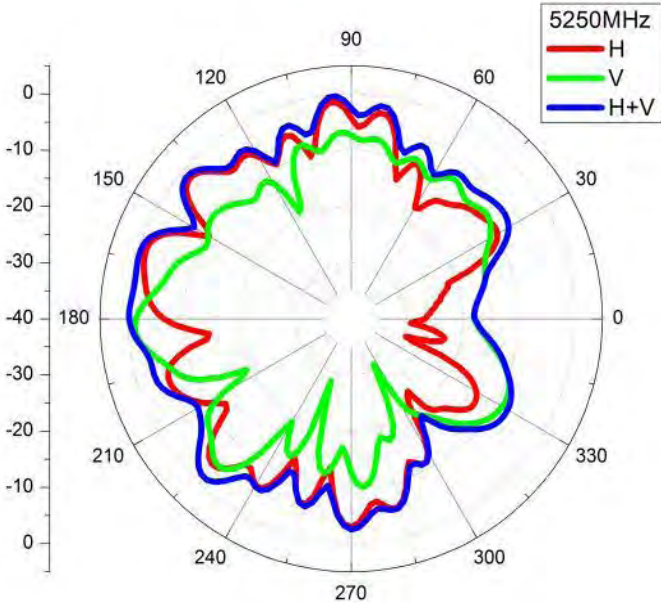
Center Frequency	5350 MHz
Horizontal (dBi) peak	-0.77
Vertical (dBi) peak	-1.16

Rx2 antenna: 5150 MHz



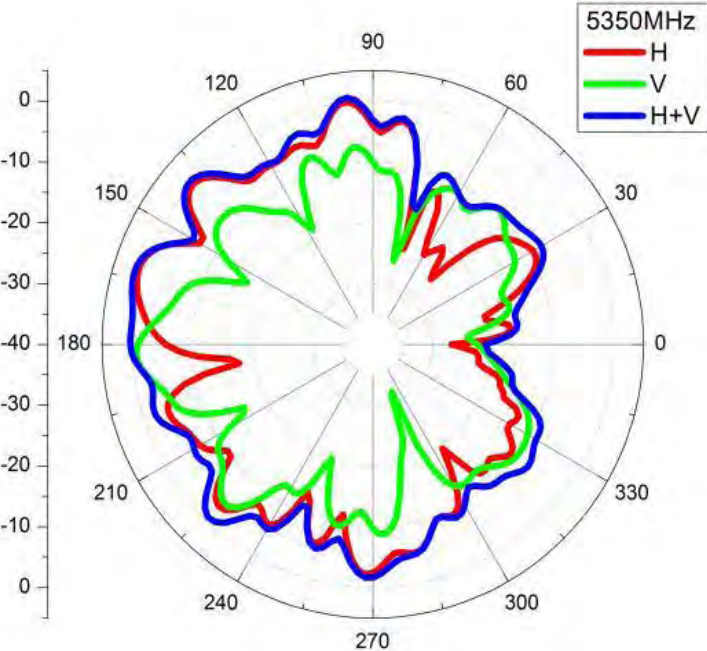
Center Frequency	5150 MHz
Horizontal (dBi) peak	-1.13
Vertical (dBi) peak	-4.00

Rx2 antenna: 5250 MHz



Center Frequency	5250 MHz
Horizontal (dBi) peak	-1.28
Vertical (dBi) peak	-1.20

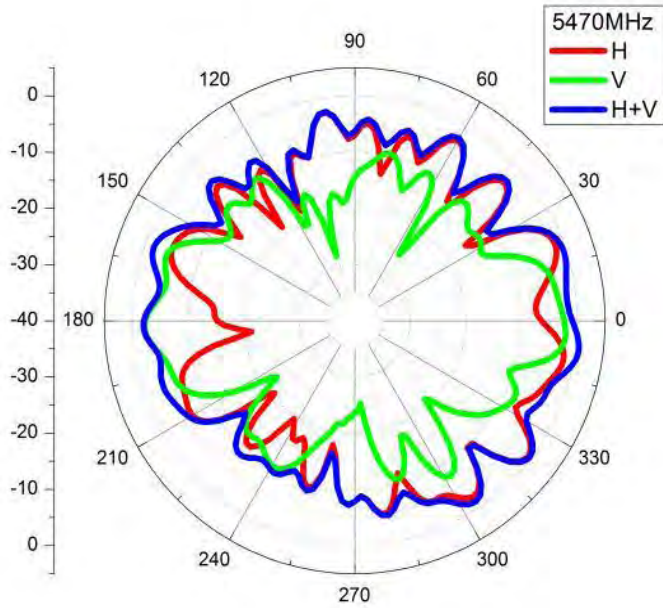
Rx2 antenna: 5350 MHz



Center Frequency	5350 MHz
Horizontal (dBi) peak	0.80
Vertical (dBi) peak	-0.68

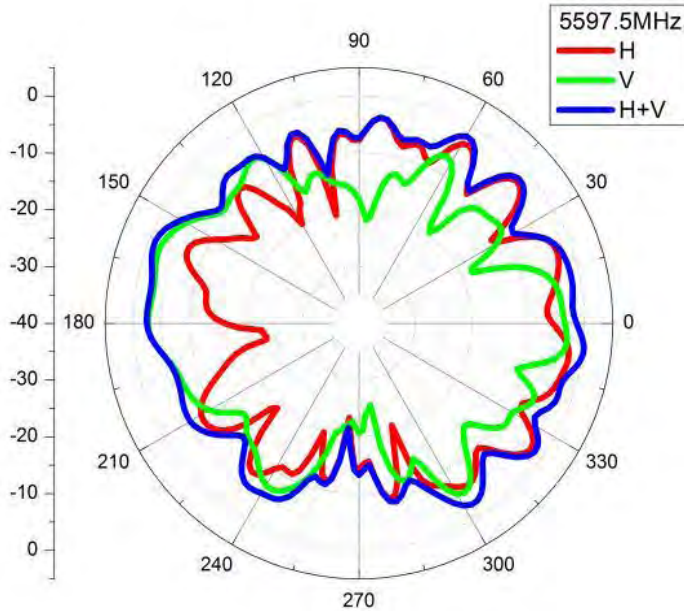
5470-5725MHz radiation characteristic

Tx1 antenna: 5470 MHz



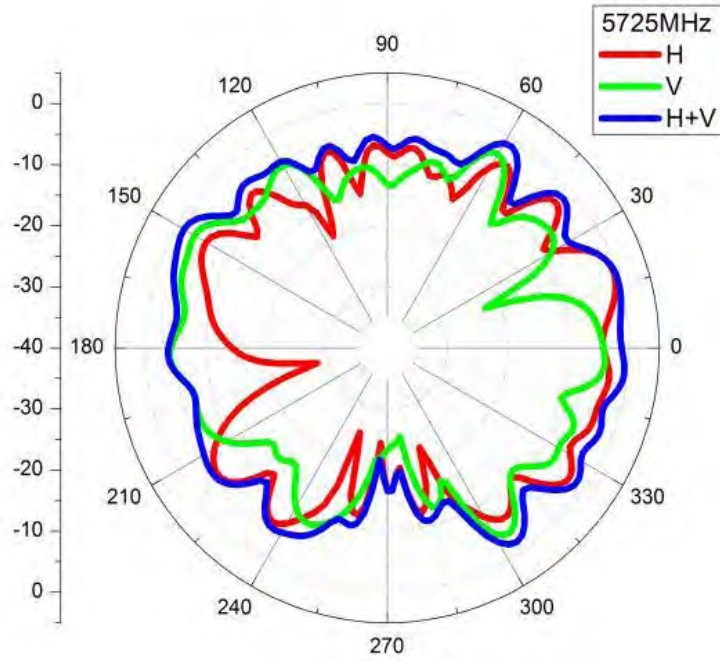
Center Frequency	5470 MHz
Horizontal (dBi) peak	-0.53
Vertical (dBi) peak	-1.99

Tx1 antenna: 5597.5 MHz



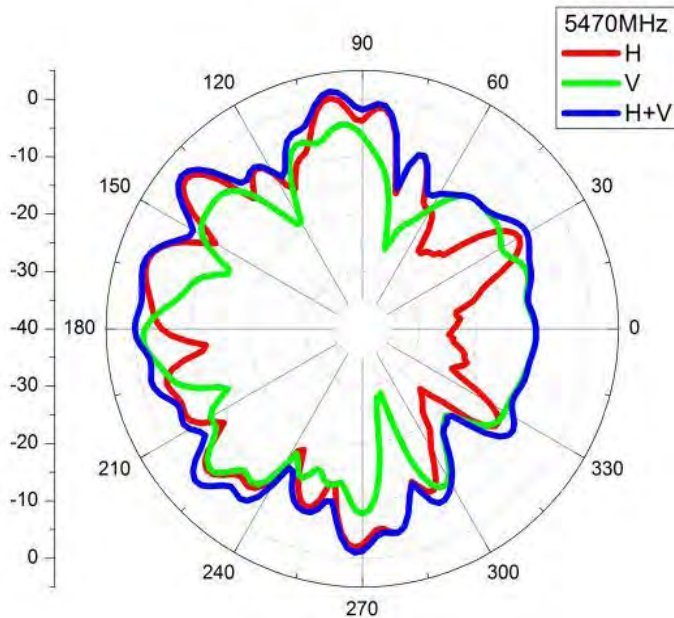
Center Frequency	5597.5 MHz
Horizontal (dBi) peak	-2.35
Vertical (dBi) peak	-2.24

Tx1 antenna: 5725 MHz



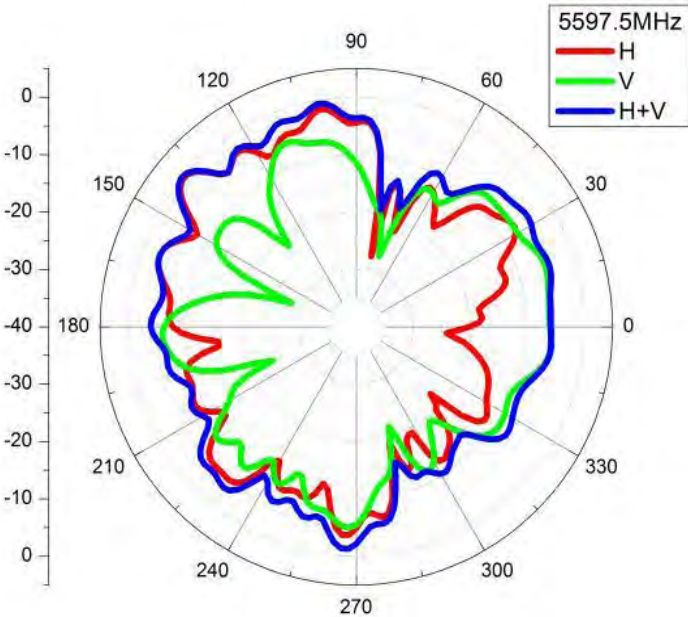
Center Frequency	5725 MHz
Horizontal (dBi) peak	-0.57
Vertical (dBi) peak	-3.22

Rx2 antenna: 5470 MHz



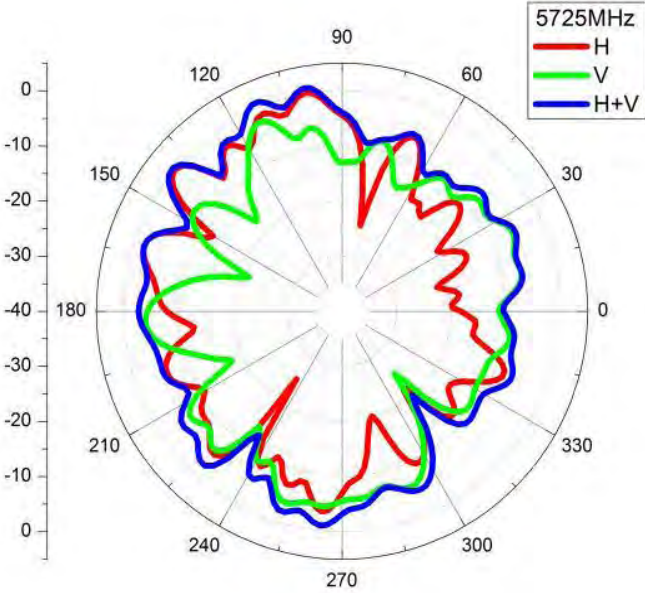
Center Frequency	5470 MHz
Horizontal (dBi) peak	0.55
Vertical (dBi) peak	-1.44

Rx2 antenna: 5597.5 MHz



Center Frequency	5597.5 MHz
Horizontal (dBi) peak	-0.13
Vertical (dBi) peak	-4.98

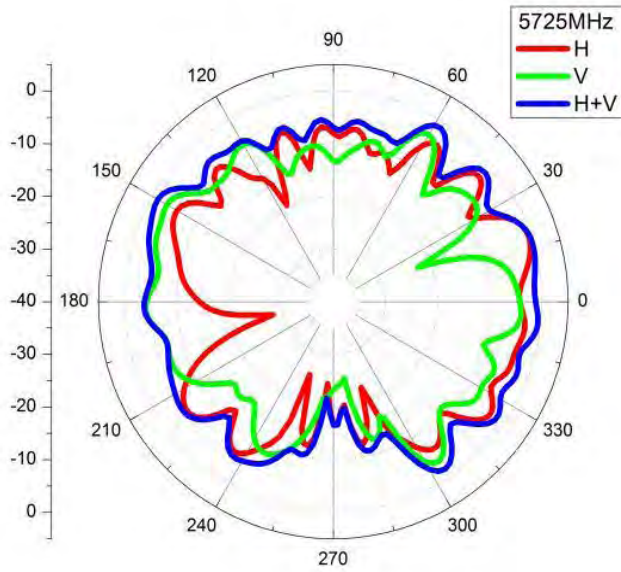
Rx2 antenna: 5725 MHz



Center Frequency	5725 MHz
Horizontal (dBi) peak	0.16
Vertical (dBi) peak	-2.54

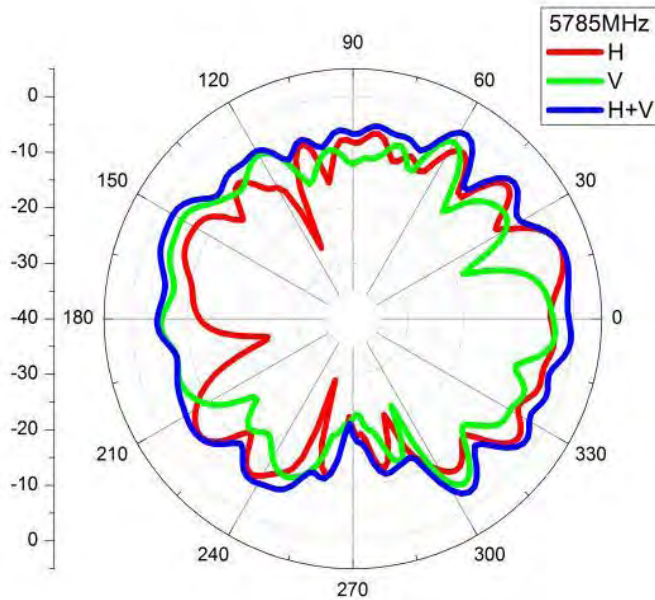
5725-5850 MHz radiation characteristic

Tx1 antenna: 5725 MHz



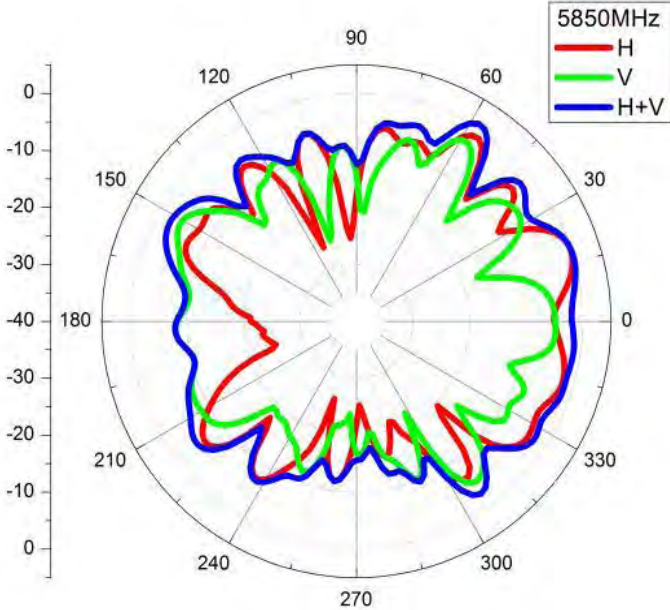
Center Frequency	5725 MHz
Horizontal (dBi) peak	-0.57
Vertical (dBi) peak	-3.22

Tx1 antenna: 5785 MHz



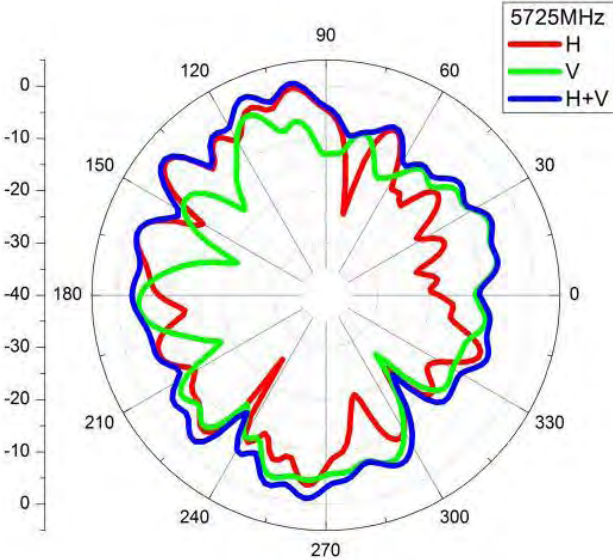
Center Frequency	5785 MHz
Horizontal (dBi) peak	-0.24
Vertical (dBi) peak	-3.31

Tx1 antenna: 5850 MHz



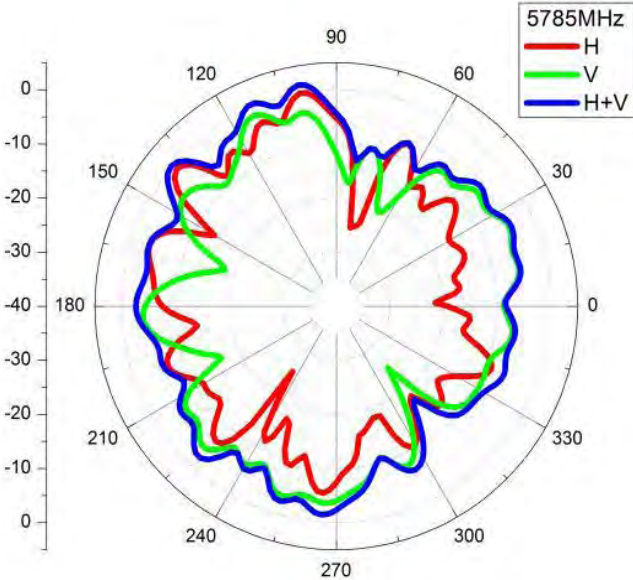
Center Frequency	5850 MHz
Horizontal (dBi) peak	-0.13
Vertical (dBi) peak	-3.00

Rx2 antenna: 5725 MHz



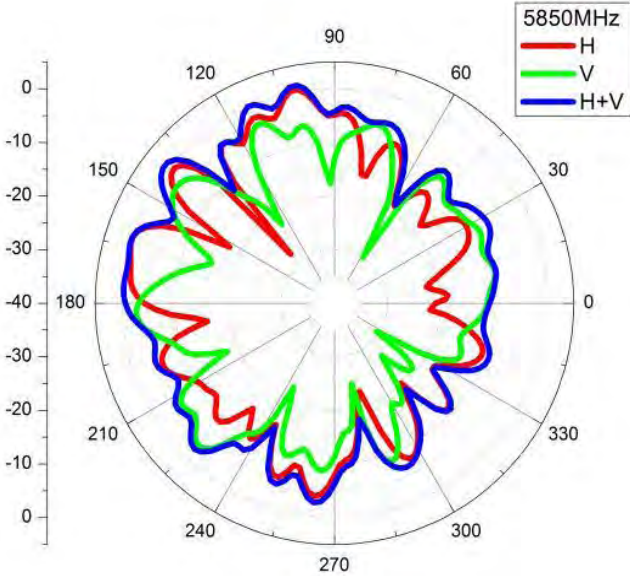
Center Frequency	5725 MHz
Horizontal (dBi) peak	0.16
Vertical (dBi) peak	-2.54

Rx2 antenna: 5785 MHz



Center Frequency	5785 MHz
Horizontal (dBi) peak	-0.10
Vertical (dBi) peak	-1.59

Rx2 antenna: 5850 MHz



Center Frequency	5850 MHz
Horizontal (dBi) peak	0.44
Vertical (dBi) peak	-2.74

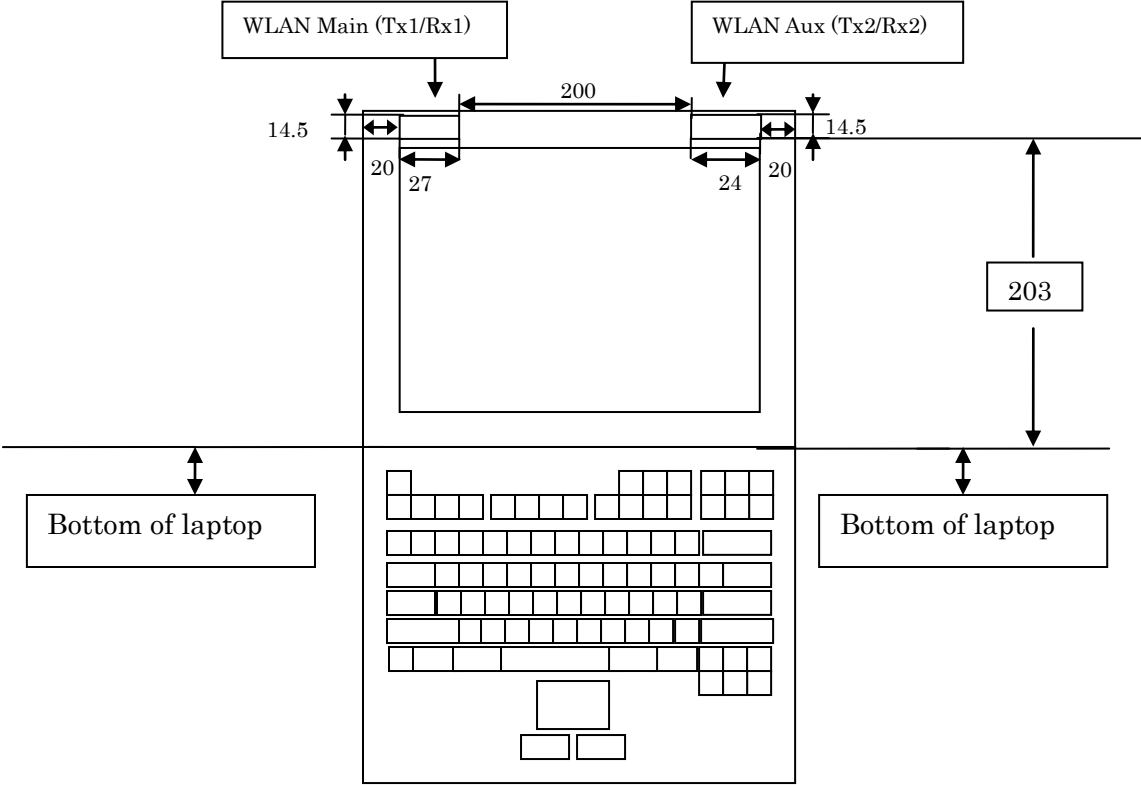
Section 4. Host Platform Information

OEM / ODM Host platform: (ThinkPad Edge E130) platform correlated to antenna data
Rating Label Photo:



Section 5. Antenna Host Platform Location Information

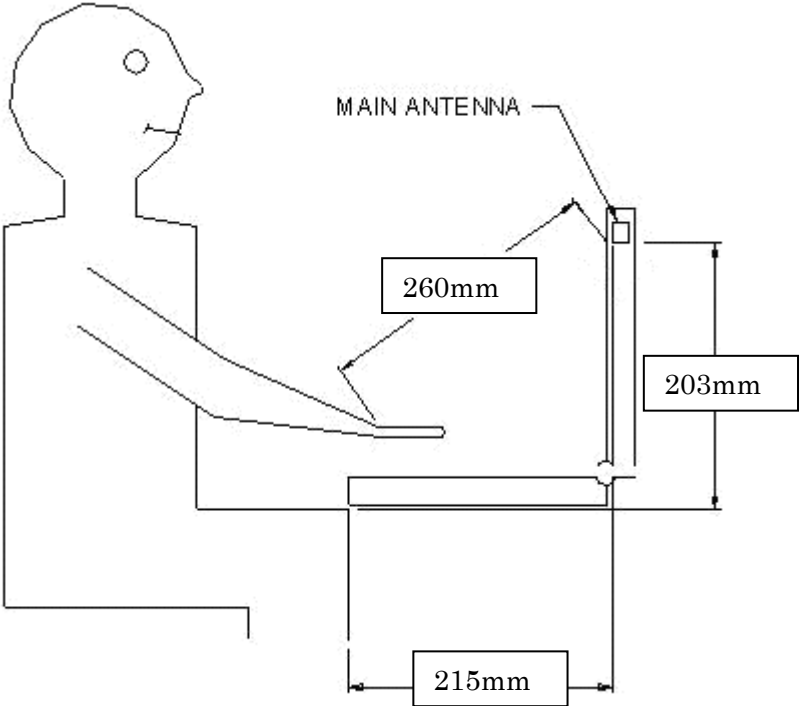
Include a **dimensioned photo or dimensioned drawing** of Tx1/Rx1, Rx2 antenna placements (measurements are not required for receive-only antenna). Any antenna that transmits must show dimensions to bottom of laptop.



Unit : mm

Section 6. Antenna dimensional information for SAR evaluation

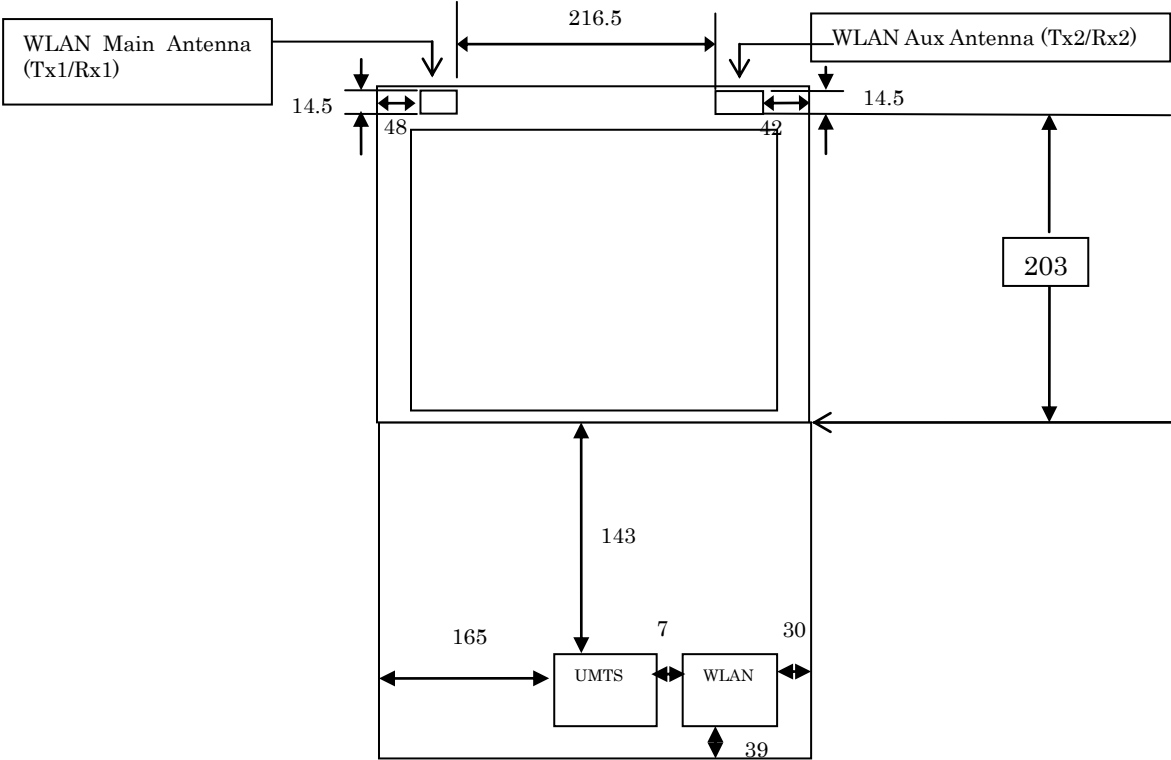
Include a **dimensioned photo or dimensioned drawing** showing the distance (mm) between the transmit antennas and the user (excluding hands, wrist, feet, and ankle)



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)



Unit : mm

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						
Azerbaijan						
Cambodia						
Canada						
Croatia						
Indonesia						
Israel						
Malaysia						
Moldova						
Philippines						
Singapore						Telecommunication Equipment Dealer License Required
South Africa						
Taiwan						
USA						
Vietnam						