

Regulatory WLAN Antenna Information

Platform	
Platform Owner	Hewlett-Packard Company
Brand Name	Hewlett-Packard Company
Model Name	Dogwood
ODM	Compal Electronics, Inc.
Target Launch Date	2013/8/28
Antenna	
Brand Name	<i>Shanghai Amphenol Airwave Communication Electronics Co., Ltd.</i>
Part Number	■ WLAN Main antenna: HP4589-12-000-C (DC33001FV30)
	■ WLAN Aux antenna: HP4590-12-000-C (DC33001FV40)
	*Dogwood BT and WLAN Main share the WLAN Main Antenna.
Module	
With WLAN Module	
(Check Box)	

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	<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 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	1B	1C	1D	1E	1F	1G	1H
Antenna Part Number	Manufacture	Antenna Type	Cable Assembly Part Number and Information	*Peak Gain W/ Cable loss (dBi)	Peak Gain w/o Cable Loss (dBi)	VSWR	Cable Loss (dBi)
Main antenna HP4589-12-000-C	Shanghai Amphenol Airwave Communication Electronics Co. Ltd	PIFA	1) cable p/n: shenyu, SY113/50-055 2) O,D. 1.13mm 50 ohm coaxial cable 3) length: 171.5 mm 4) Connector P/N: I-PEX MHF A13 20428-001R	2400-2500 MHz -0.34 dBi (peak)	2400-2500MHz -0.04dBi (peak)	2400-2500MHz 2.0 max	2400-2500MHz 0.3 dBi (peak)
				5150-5350 MHz 0.56 dBi (peak)	5150-5350MHz 1.06dBi (peak)	5150-5350MHz 2.0 max	5150-5350MHz 0.5 dBi (peak)
				5470-5725 MHz 0.56 dBi (peak)	5470-5725 MHz 1.08dBi (peak)	5470-5725MHz 2.0 max	5470-5725MHz 0.52 dBi (peak)
				5725-5850 MHz -0.04 dBi (peak)	5725-5850MHz 0.51 dBi (peak)	5725-5850 MHz 2.0 max	5725-5850MHz 0.55 dBi (peak)
Aux antenna HP4590-12-000-C	Shanghai Amphenol Airwave Communication Electronics Co. Ltd	PIFA	1) cable p/n: shenyu, SY113/50-063 2) O,D. 1.13mm 50 ohm coaxial cable 3) length: 259mm 4) Connector P/N: I-PEX MHF A13 20428-001R	2400-2500 MHz -1.94 dBi (peak)	2400-2500MHz -1.34 dBi (peak)	2400-2500MHz 2.0 max	2400-2500MHz 0.6 dBi (peak)
				5150-5350 MHz -0.35 dBi (peak)	5150-5350MHz 0.65 dBi (peak)	5150-5350MHz 2.0 max	5150-5350MHz 1.0 dBi (peak)
				5470-5725 MHz 0.27 dBi (peak)	5470-5725 MHz 1.33 dBi (peak)	5470-5725MHz 2.0 max	5470-5725MHz 1.06 dBi (peak)
				5725-5850 MHz -0.04dBi (peak)	5725-5850MHz 1.06dBi (peak)	5725-5850 MHz 2.0 max	5725-5850MHz 1.1 dBi (peak)

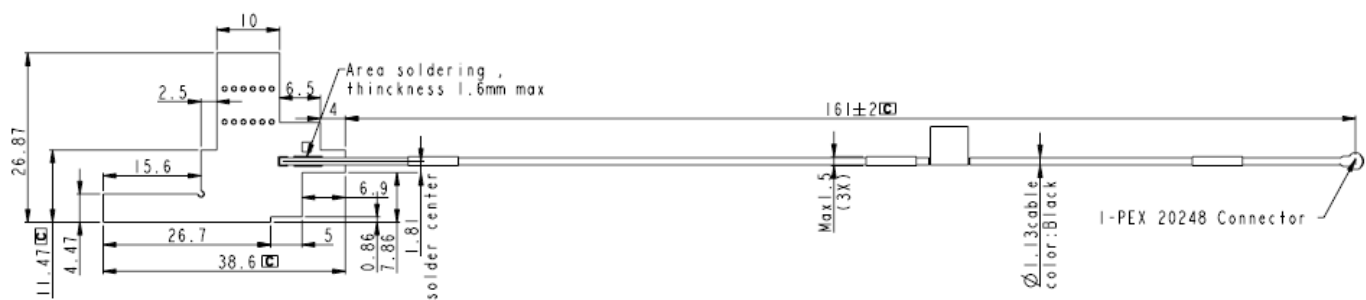
Antenna Peak Gain Table:

	Tx1 antenna		Tx2 antenna	
Frequency	Horizontal	Vertical	Horizontal	Vertical
(MHz)	(dBi)	(dBi)	(dBi)	(dBi)
2400	-5.23	-1.31	-1.94	-3.59
2450	-5.65	-0.34	-2.05	-3.25
2500	-5.82	-0.79	-2.49	-2.55
5150	-2.97	-0.73	-0.94	-1.04
5250	-2.9	-0.93	-0.51	-1.46
5350	-3.55	0.56	-0.35	-2.07
5470	-3.79	0.56	0.27	-1.46
5600	-3.85	-0.55	-1.19	-3.0
5725	-4.05	-0.11	-1.04	-4.03
5785	-3.55	-0.04	-0.04	-3.11
5850	-4.53	-0.48	-0.82	-4.12

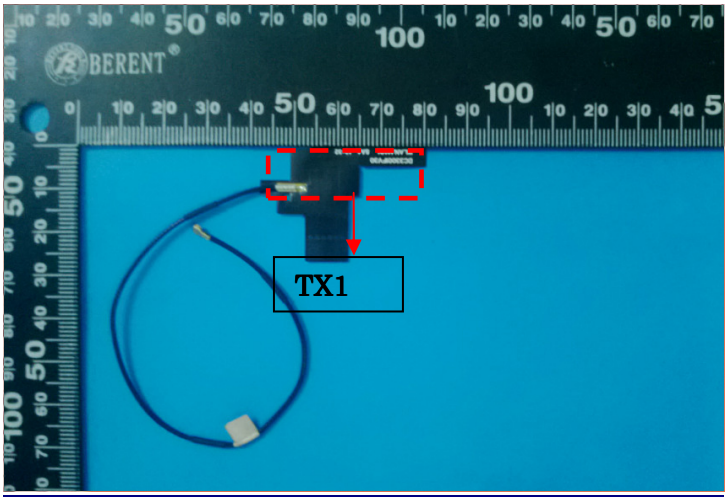
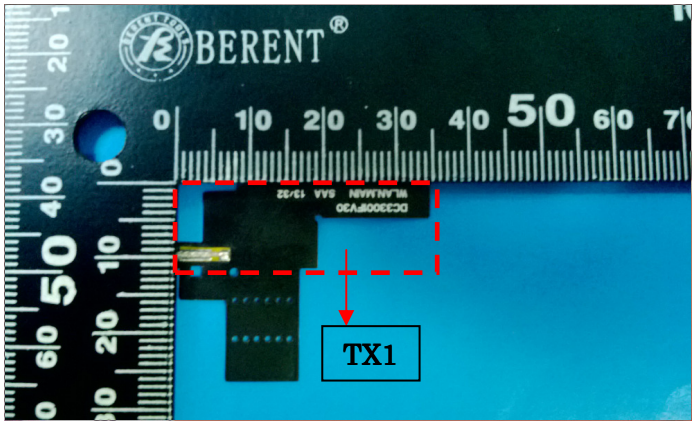
Section 2. Dimensioned Photos or Drawings of Antennas

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

Tx1 Antenna Dimensioned Drawing:

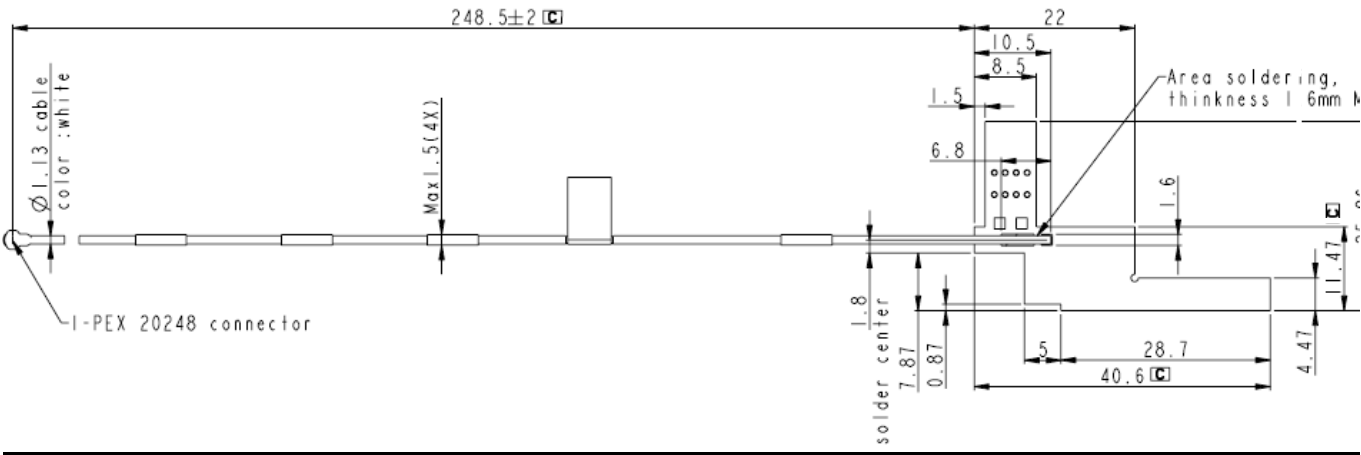


Tx1 Antenna Photo:

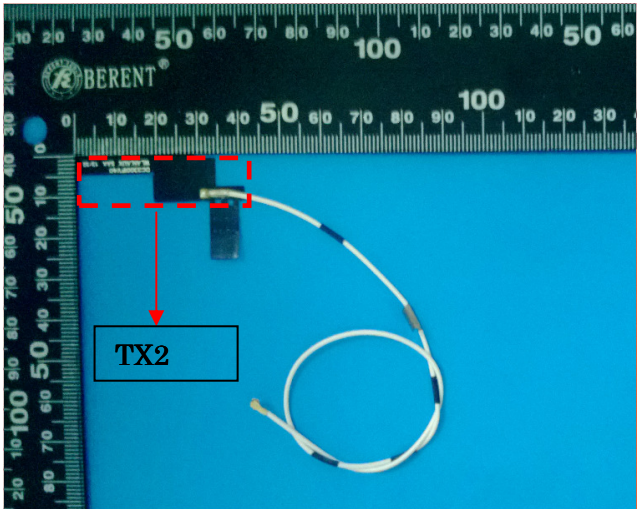
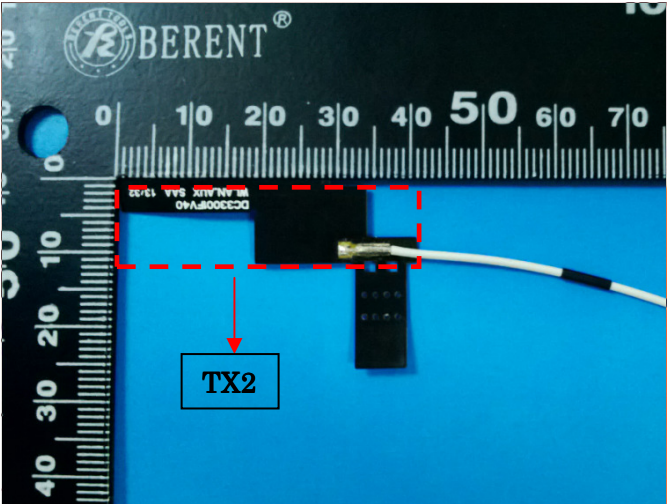


Include a dimensioned photo and dimensioned drawing of Tx2 (or Rx2) antenna here.

Tx2 (or Rx2) Antenna Dimensioned Drawing:

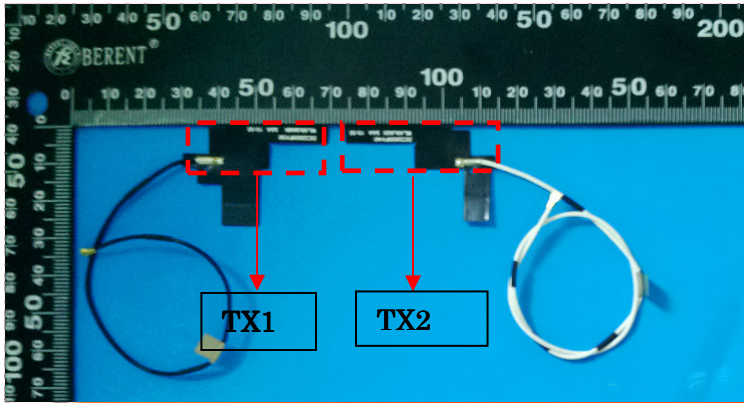


Tx2 (or Rx2) Antenna Photo:



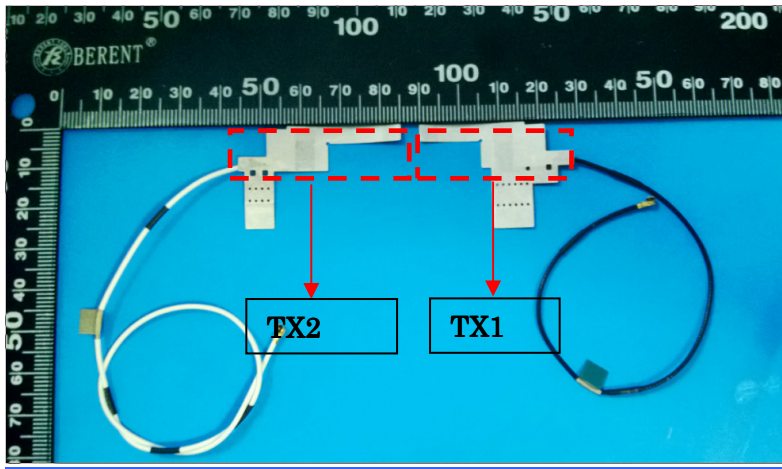
Include front view photo of all 2 antennas here.

Antenna Part Number : HP4589-12-000-C (TX1), HP4590-12-000-C (TX2)



Include back view photo of all 2 antennas here.

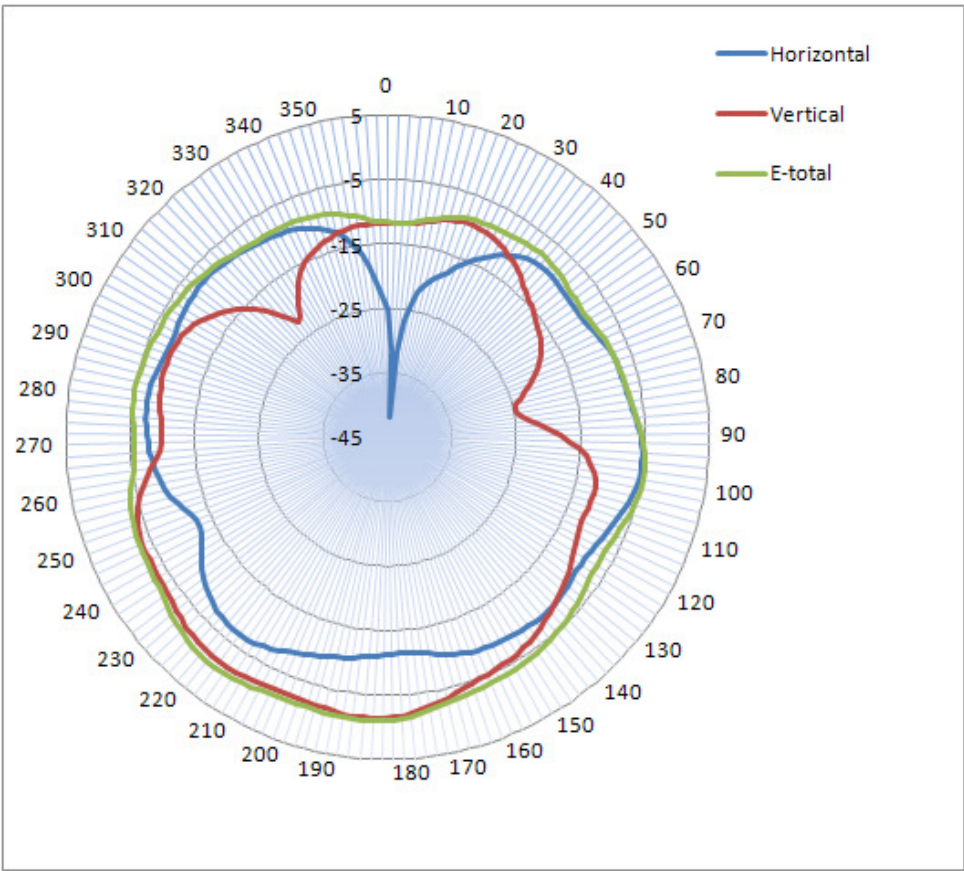
Antenna Part Number : HP4589-12-000-C (TX1), HP4590-12-000-C (TX2)



Section 3. Radiation characteristics of antennae Loaded in Host Platform

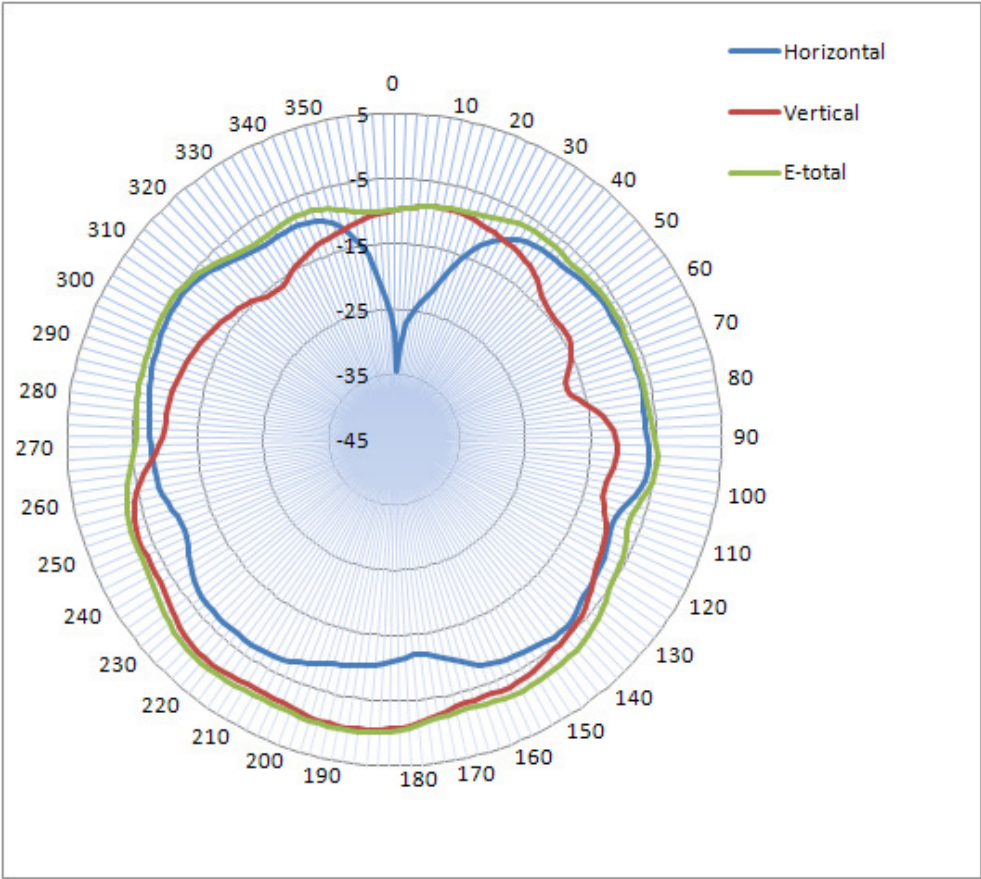
2400-2500 MHz radiation characteristic

Tx1 antenna: 2400 MHz



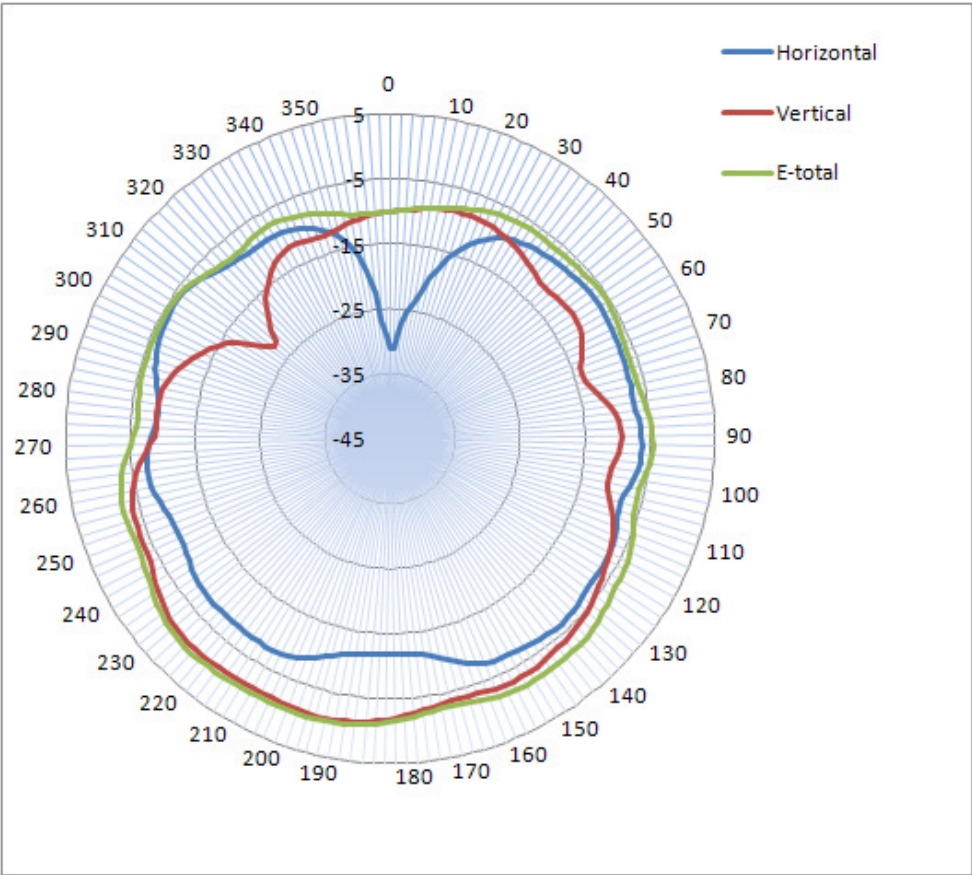
Center Frequency	2400MHz
Horizontal (dBi) peak	-5.23
Vertical (dBi) peak	-1.31

Tx1 antenna: 2450 MHz



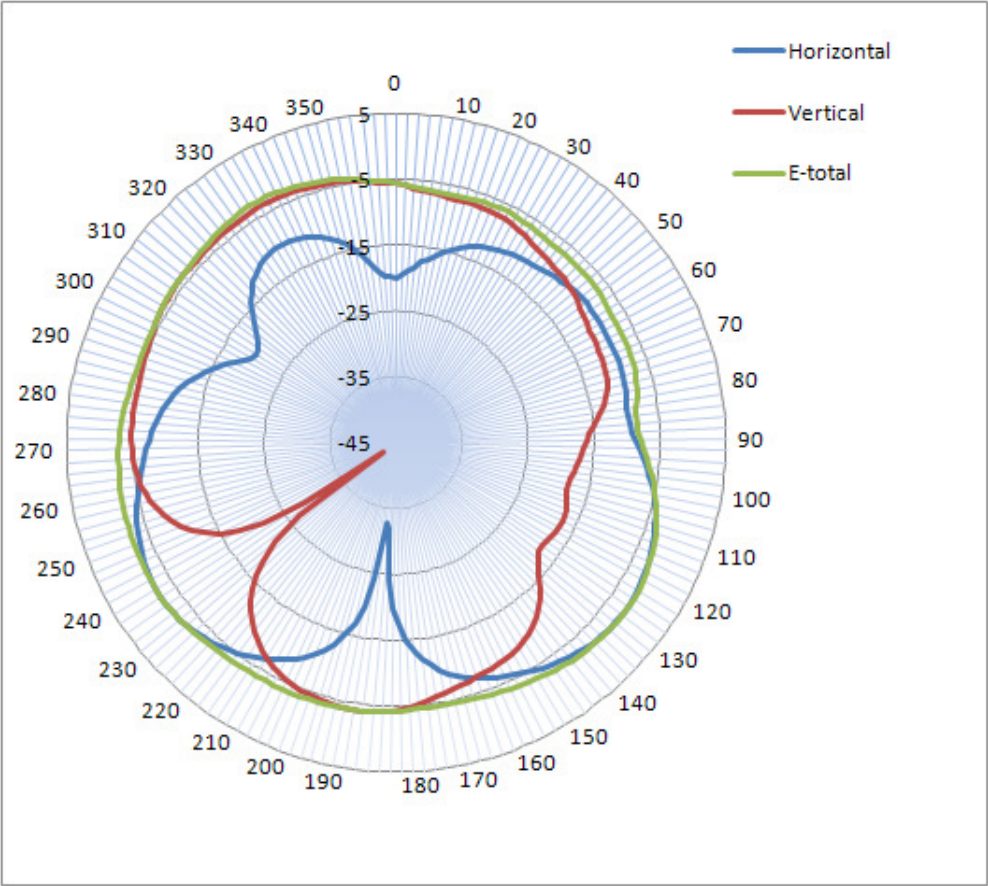
Center Frequency	2450MHz
Horizontal (dBi) peak	-5.65
Vertical (dBi) peak	-0.34

Tx1 antenna: 2500 MHz



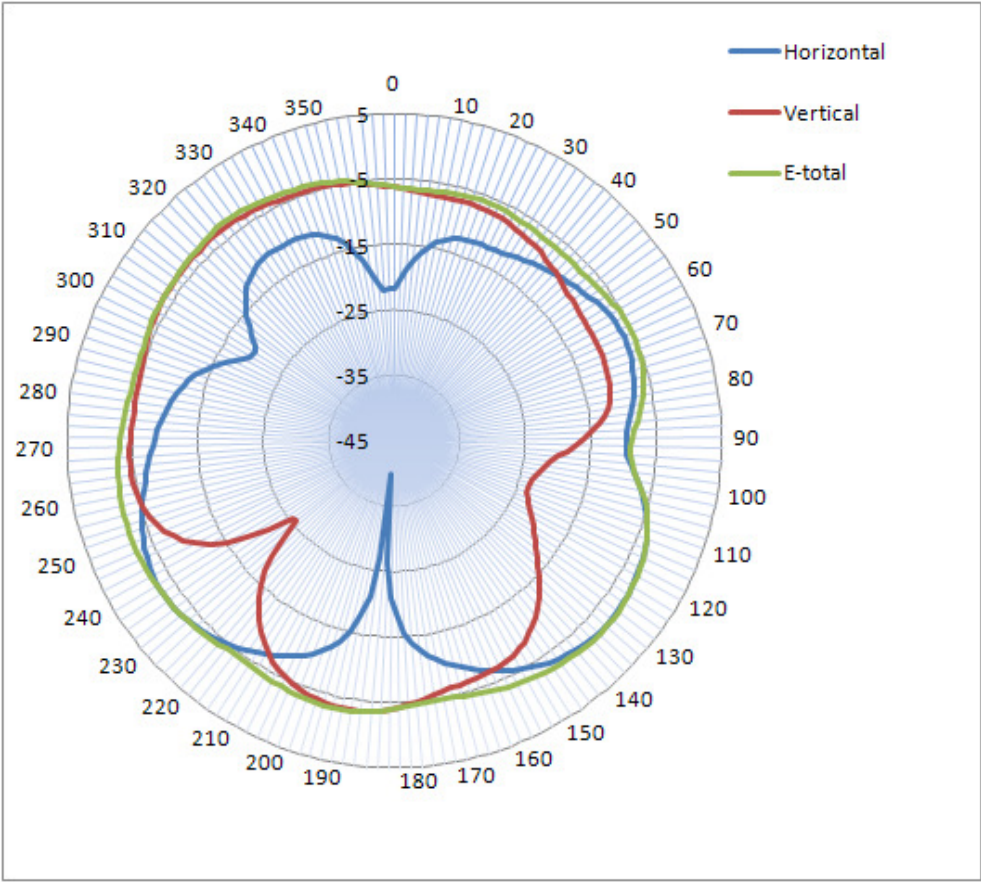
Center Frequency	2500MHz
Horizontal (dBi) peak	-5.82
Vertical (dBi) peak	-0.79

Tx2 antenna: 2400 MHz



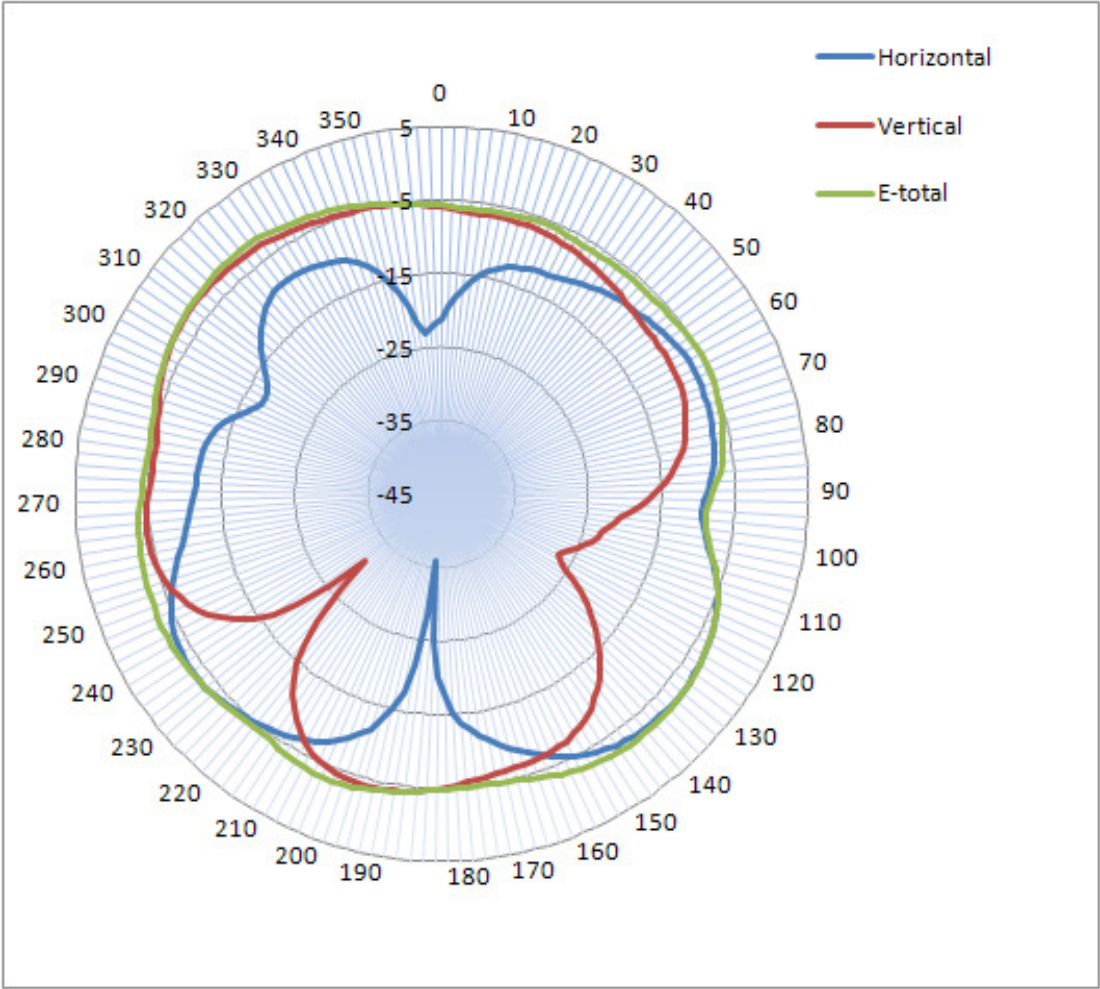
Center Frequency	2400MHz
Horizontal (dBi) peak	-1.94
Vertical (dBi) peak	-3.59

Tx2 antenna: 2450 MHz



Center Frequency	2450MHz
Horizontal (dBi) peak	-2.05
Vertical (dBi) peak	-3.25

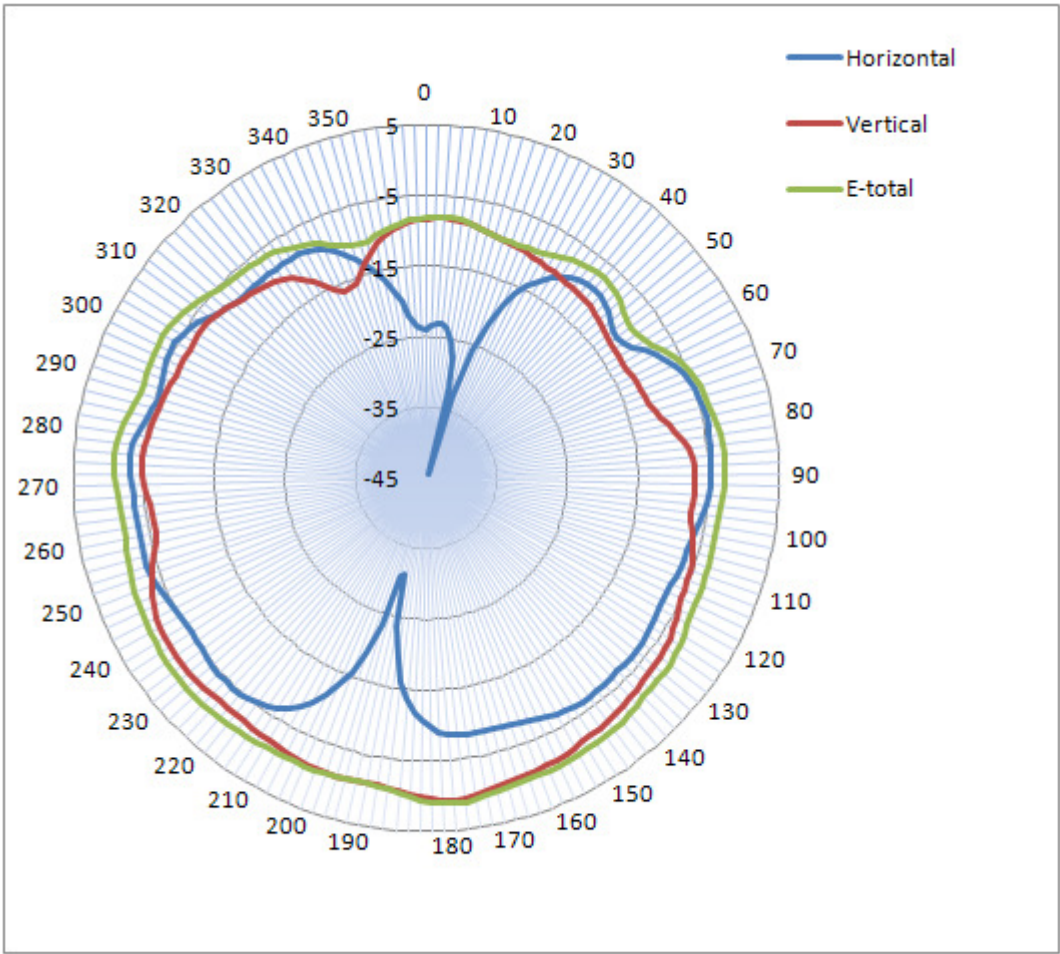
Tx2 antenna: 2500 MHz



Center Frequency	2500MHz
Horizontal (dBi) peak	-2.49
Vertical (dBi) peak	-2.55

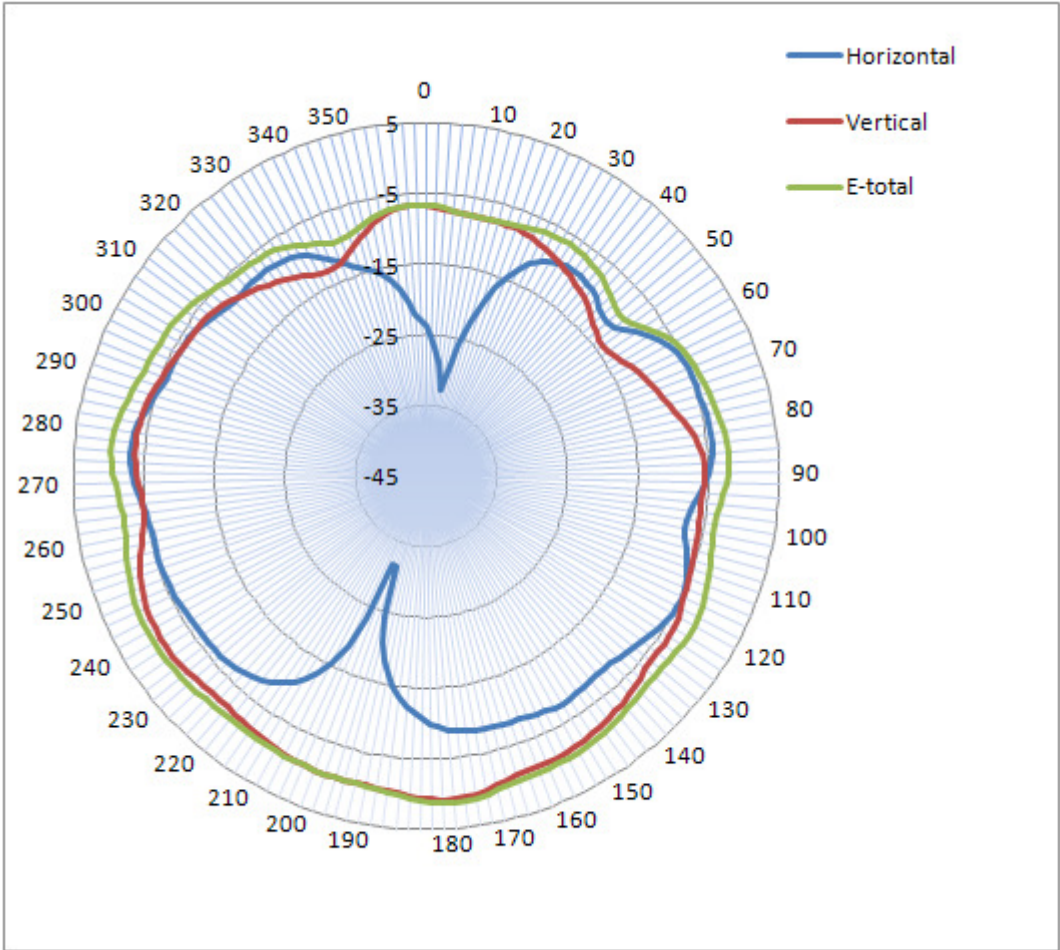
5150-5350 MHz radiation characteristic

Tx1 antenna: 5150 MHz



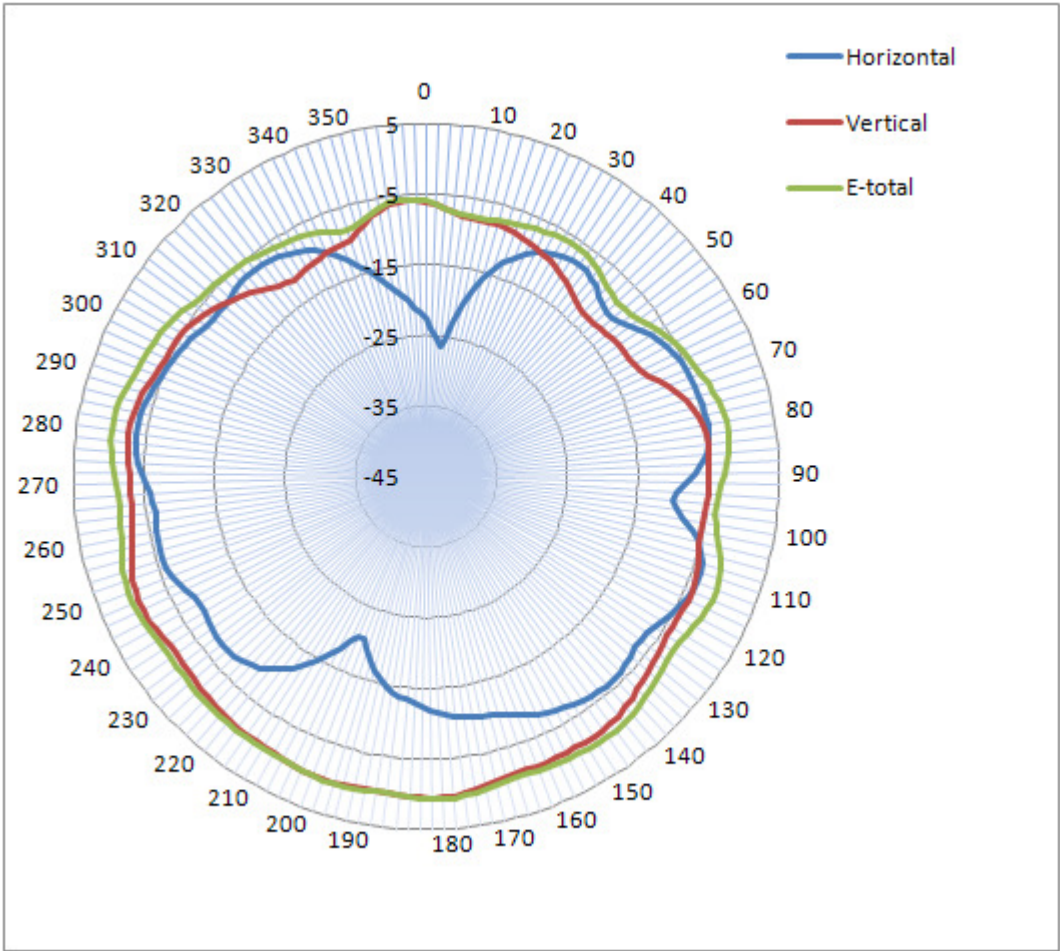
Center Frequency	5150MHz
Horizontal (dBi) peak	-2.97
Vertical (dBi) peak	-0.73

Tx1 antenna: 5250 MHz



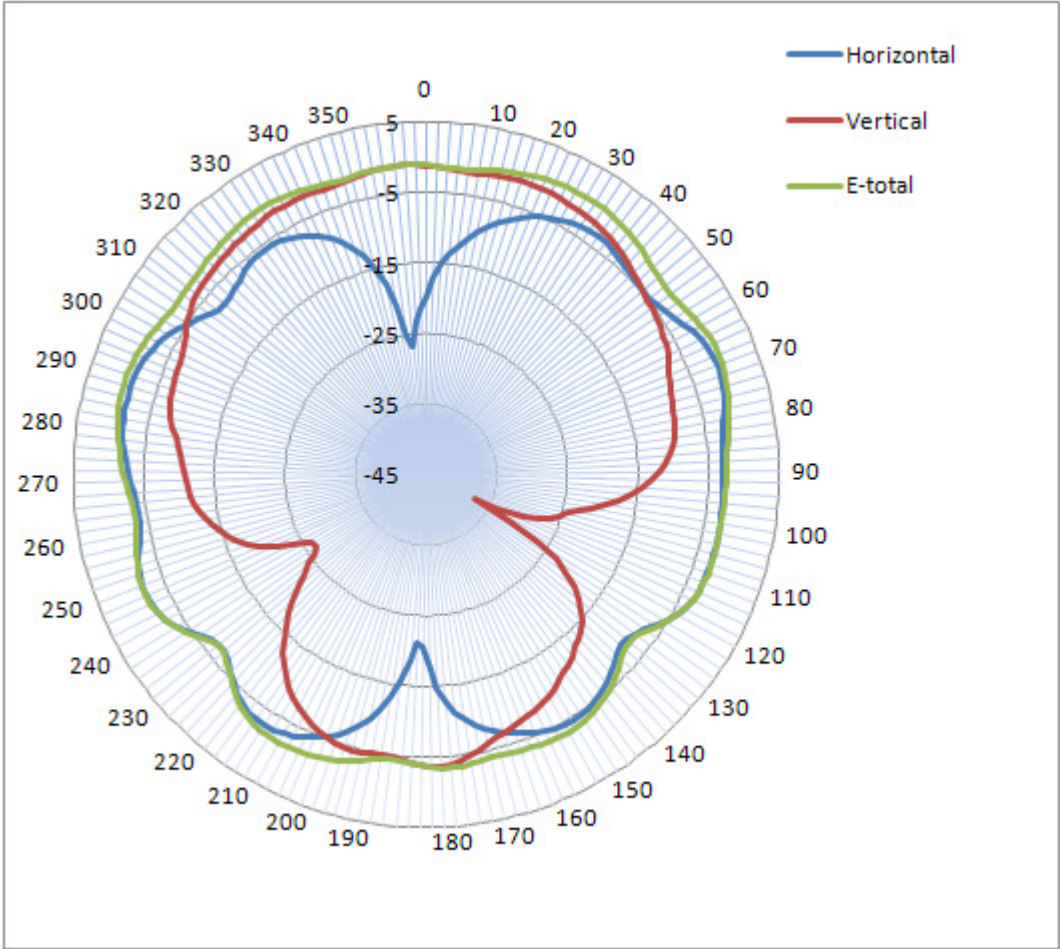
Center Frequency	5250MHz
Horizontal (dBi) peak	-2.9
Vertical (dBi) peak	-0.93

Tx1 antenna: 5350 MHz



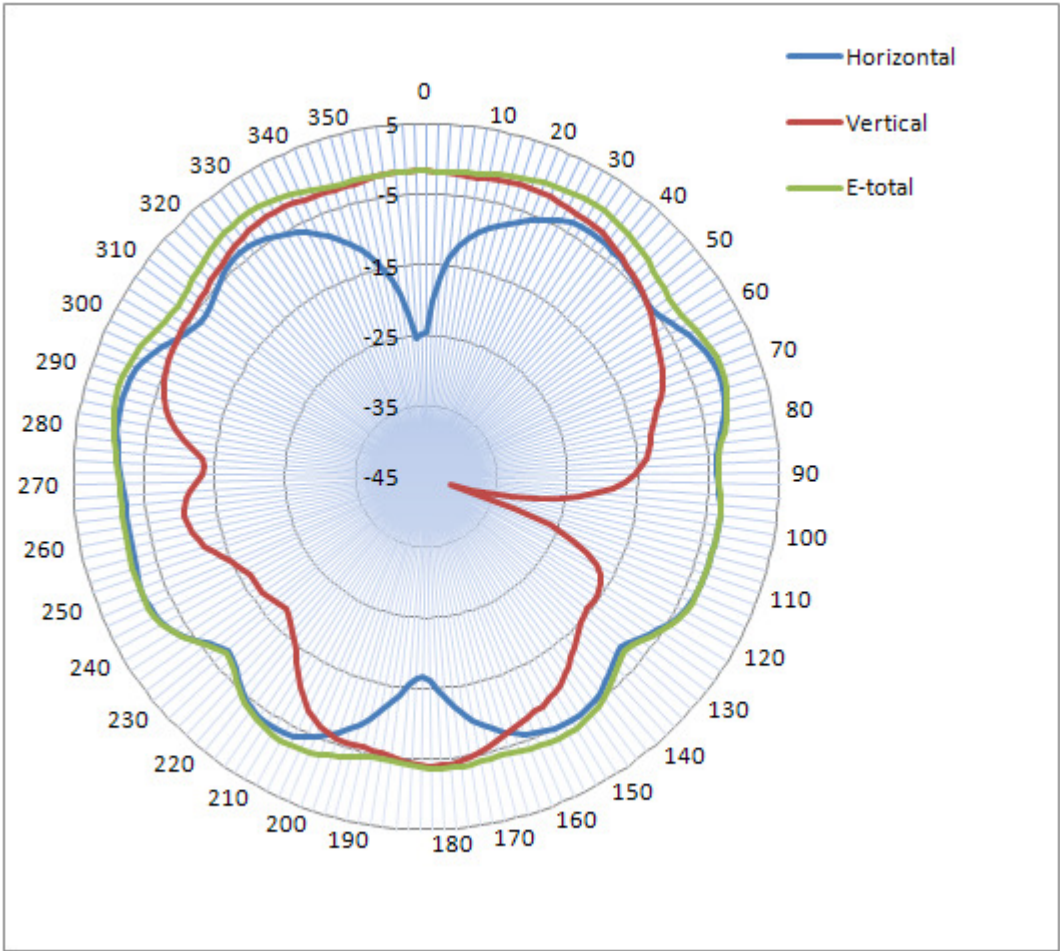
Center Frequency	5350MHz
Horizontal (dBi) peak	-3.55
Vertical (dBi) peak	0.56

Tx2 antenna: 5150 MHz



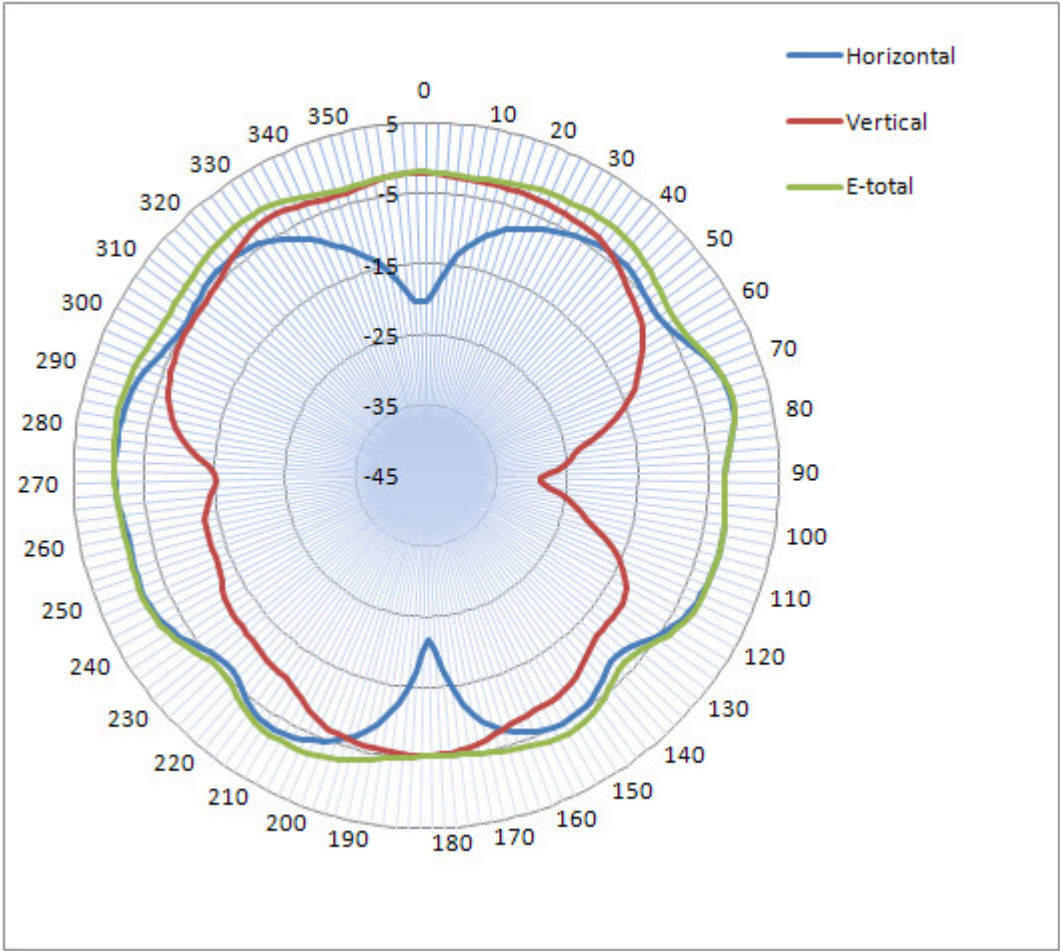
Center Frequency	5150MHz
Horizontal (dBi) peak	-0.94
Vertical (dBi) peak	-1.04

Tx2 antenna: 5250 MHz



Center Frequency	5250MHz
Horizontal (dBi) peak	-0.51
Vertical (dBi) peak	-1.46

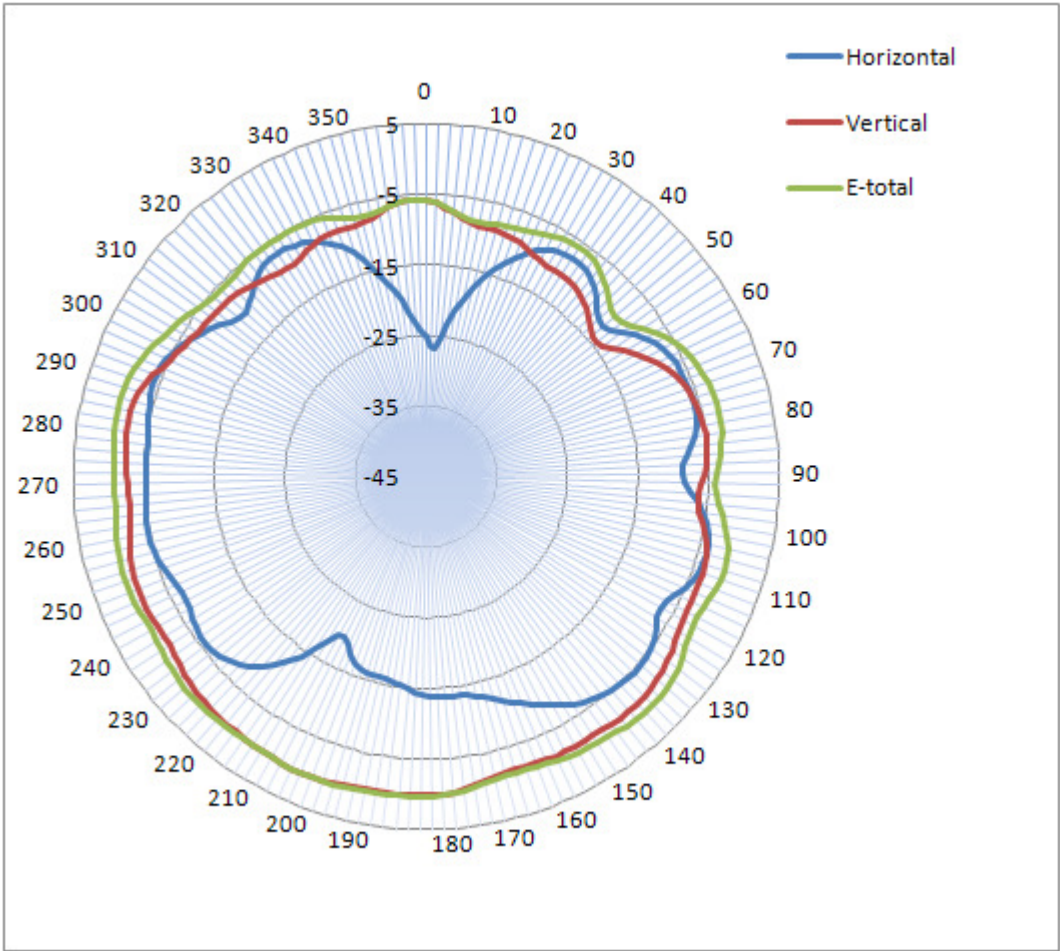
Tx2 antenna: 5350 MHz



Center Frequency	5350MHz
Horizontal (dBi) peak	-0.35
Vertical (dBi) peak	-2.07

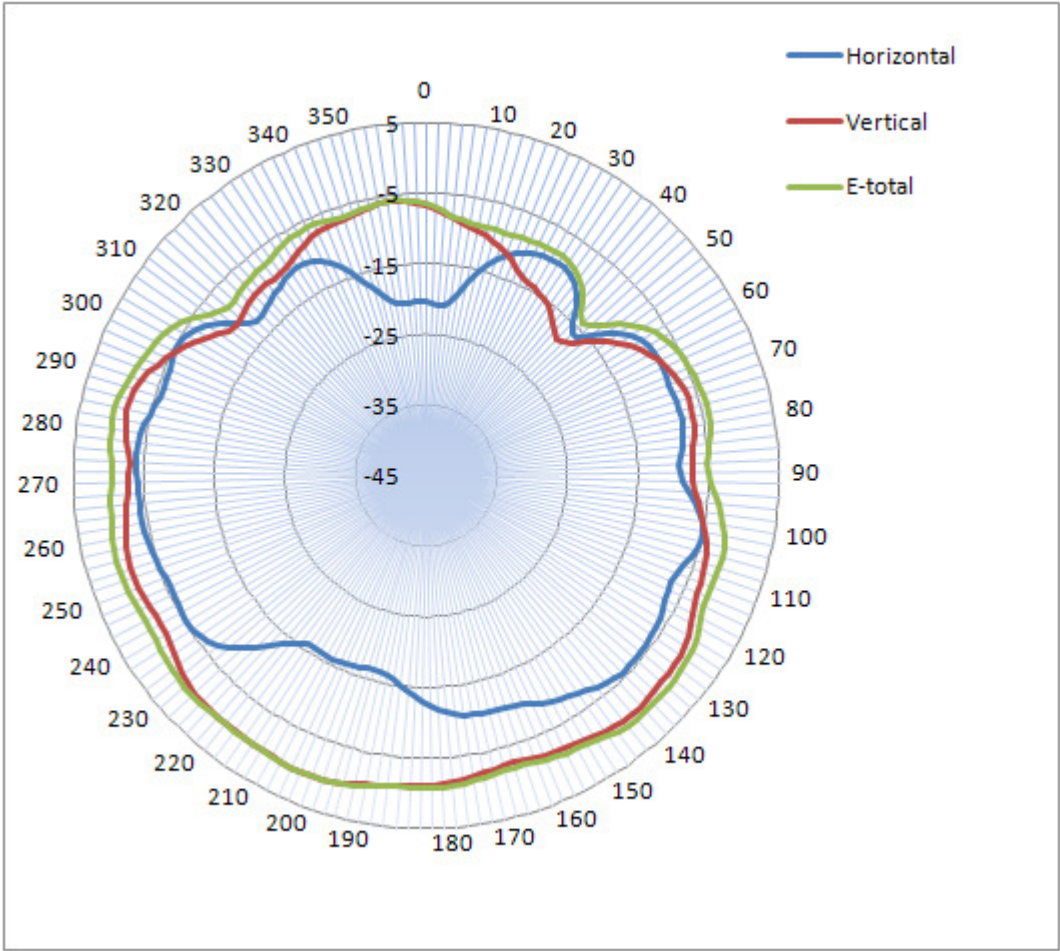
5470-5725 MHz radiation characteristic

Tx1 antenna: 5470 MHz



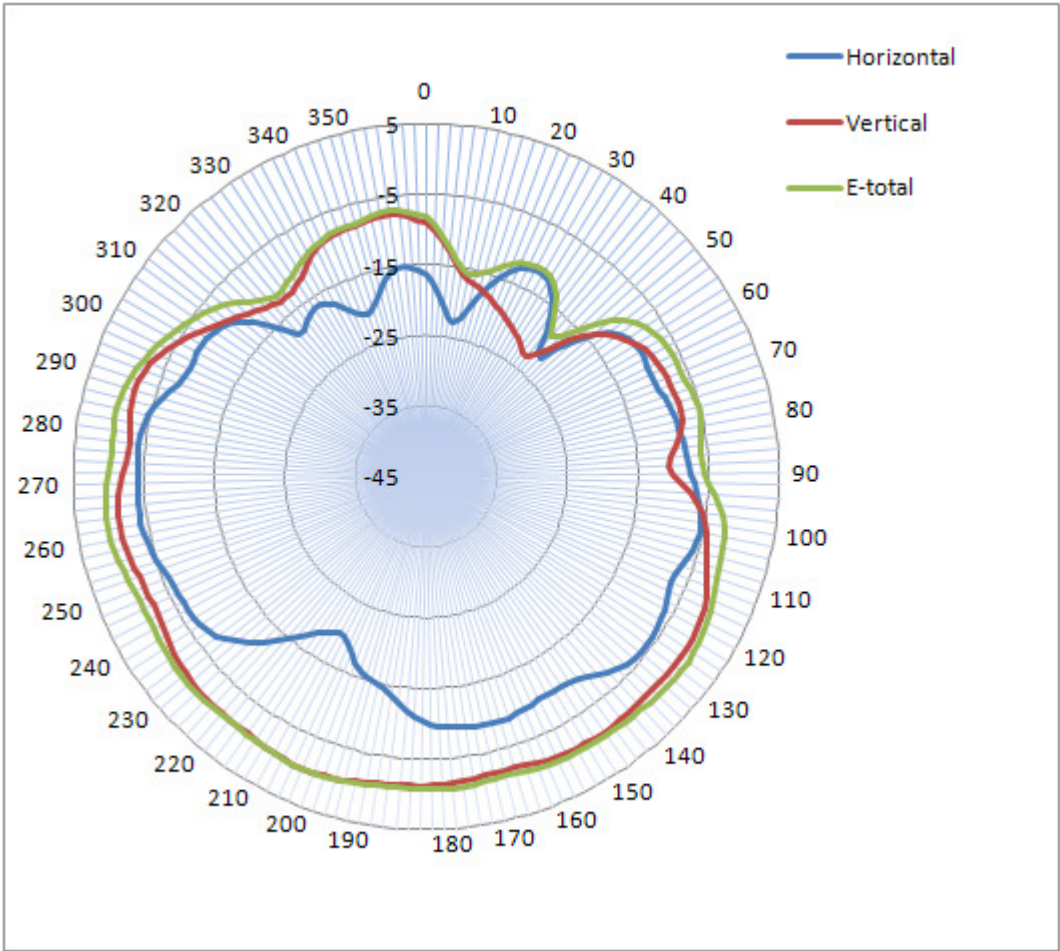
Center Frequency	5470MHz
Horizontal (dBi) peak	-3.79
Vertical (dBi) peak	0.56

Tx1 antenna: 5600 MHz



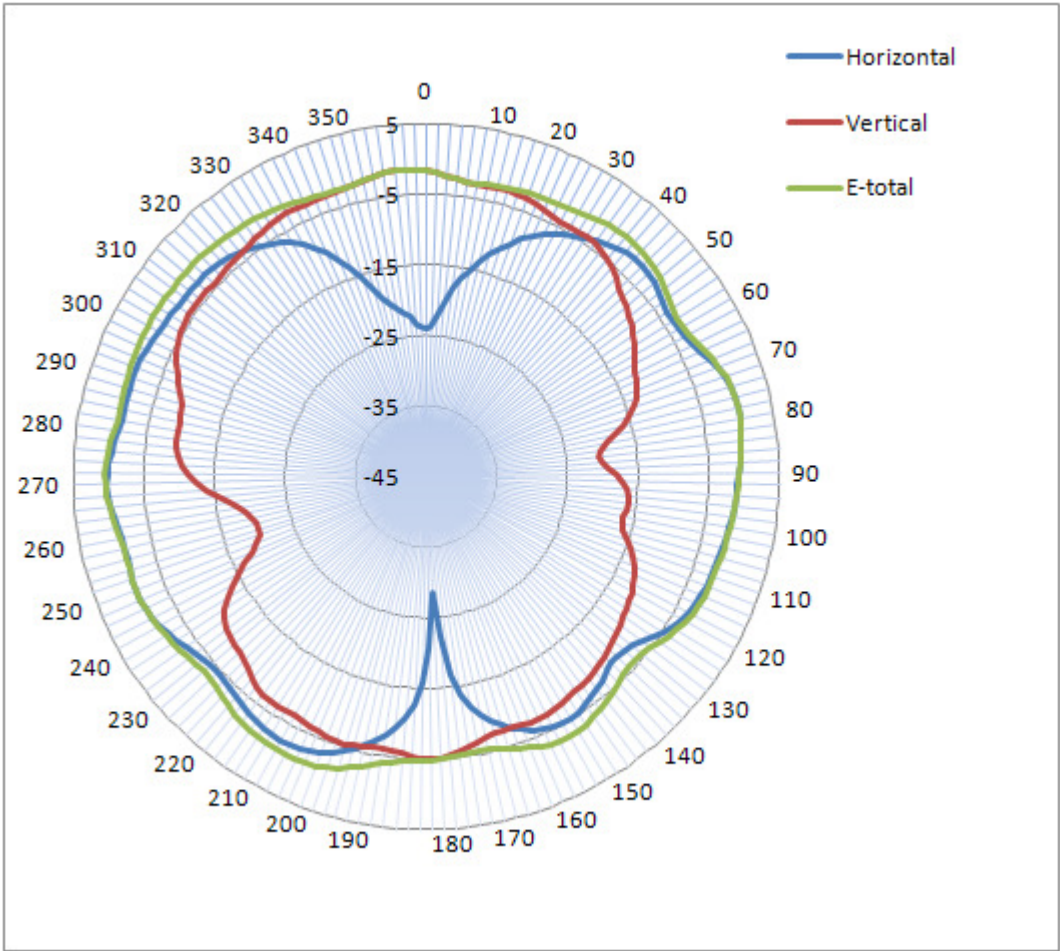
Center Frequency	5600MHz
Horizontal (dBi) peak	-3.85
Vertical (dBi) peak	-0.55

Tx1 antenna: 5725 MHz



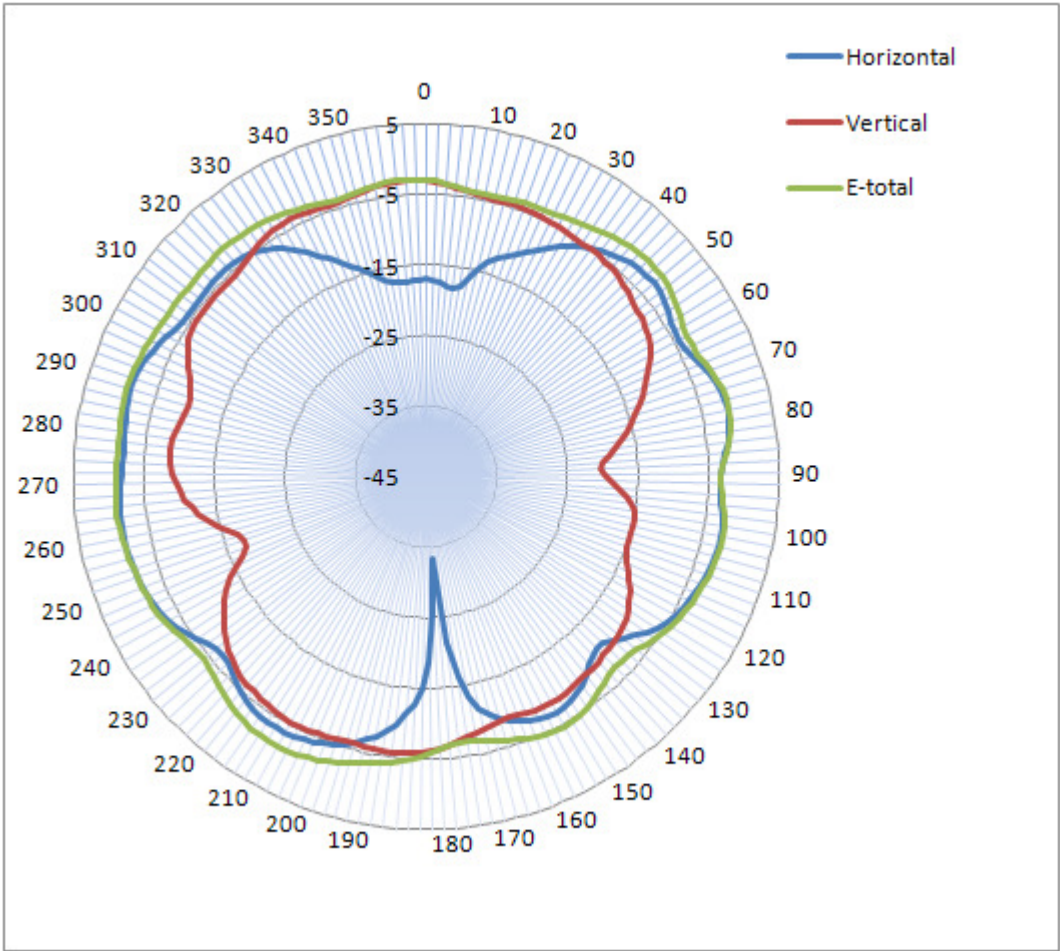
Center Frequency	5725MHz
Horizontal (dBi) peak	-4.05
Vertical (dBi) peak	-0.11

Tx2 antenna: 5470 MHz



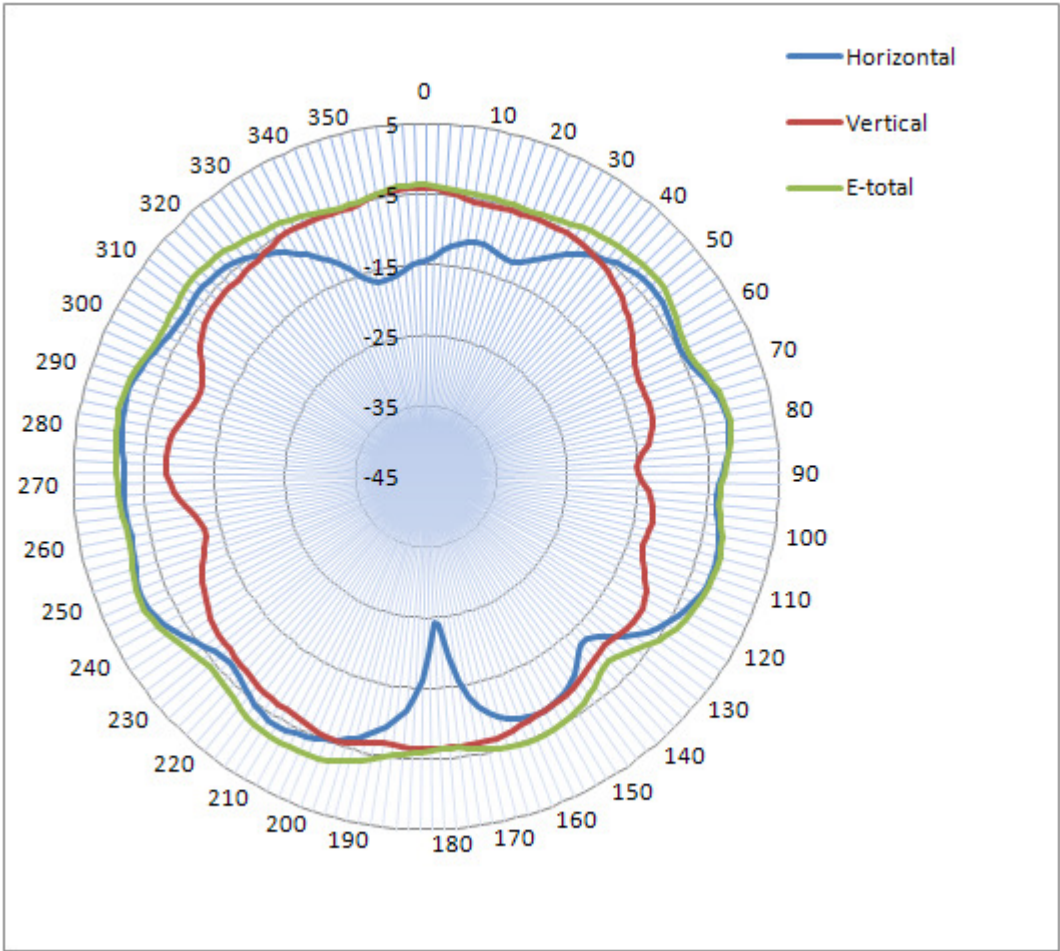
Center Frequency	5470MHz
Horizontal (dBi) peak	0.27
Vertical (dBi) peak	-1.46

Tx2 antenna: 5600 MHz



Center Frequency	5600MHz
Horizontal (dBi) peak	-1.19
Vertical (dBi) peak	-3.0

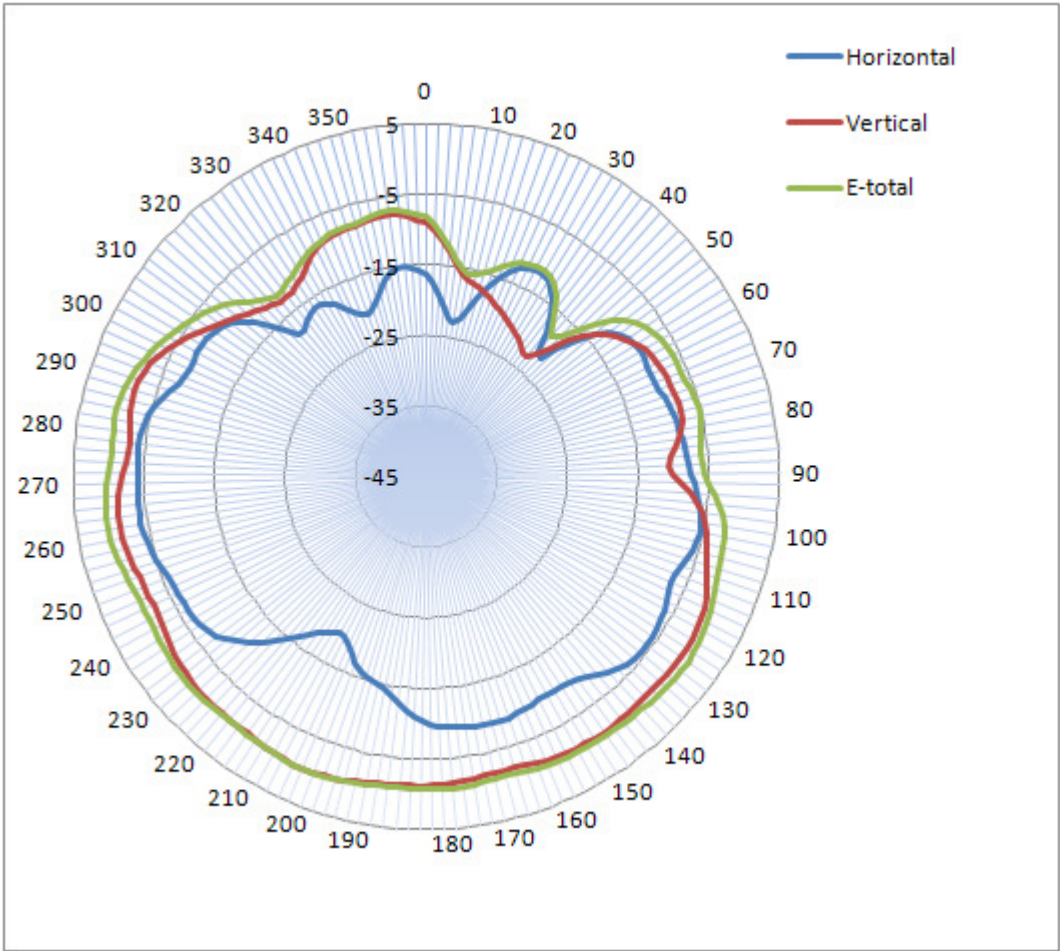
Tx2 antenna: 5725 MHz



Center Frequency	5725MHz
Horizontal (dBi) peak	-1.04
Vertical (dBi) peak	-4.03

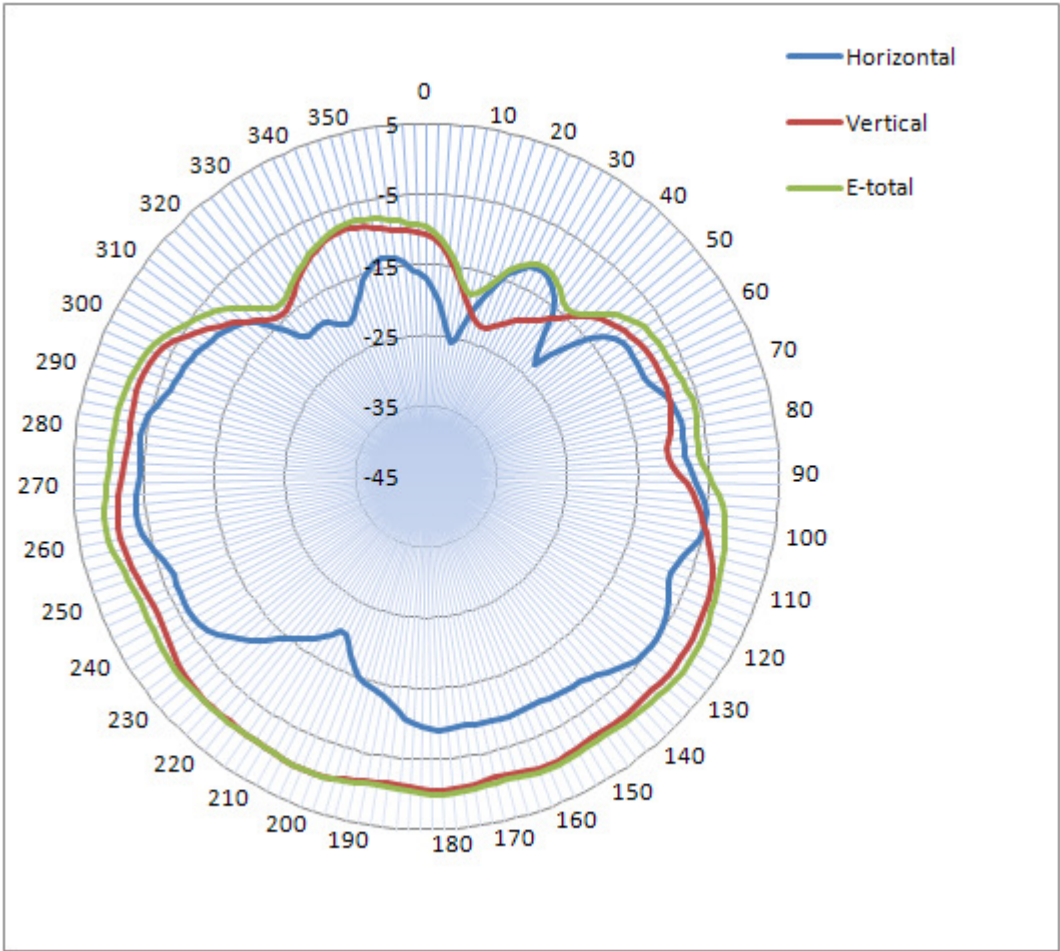
5725-5850 MHz radiation characteristic

Tx1 antenna: 5725 MHz



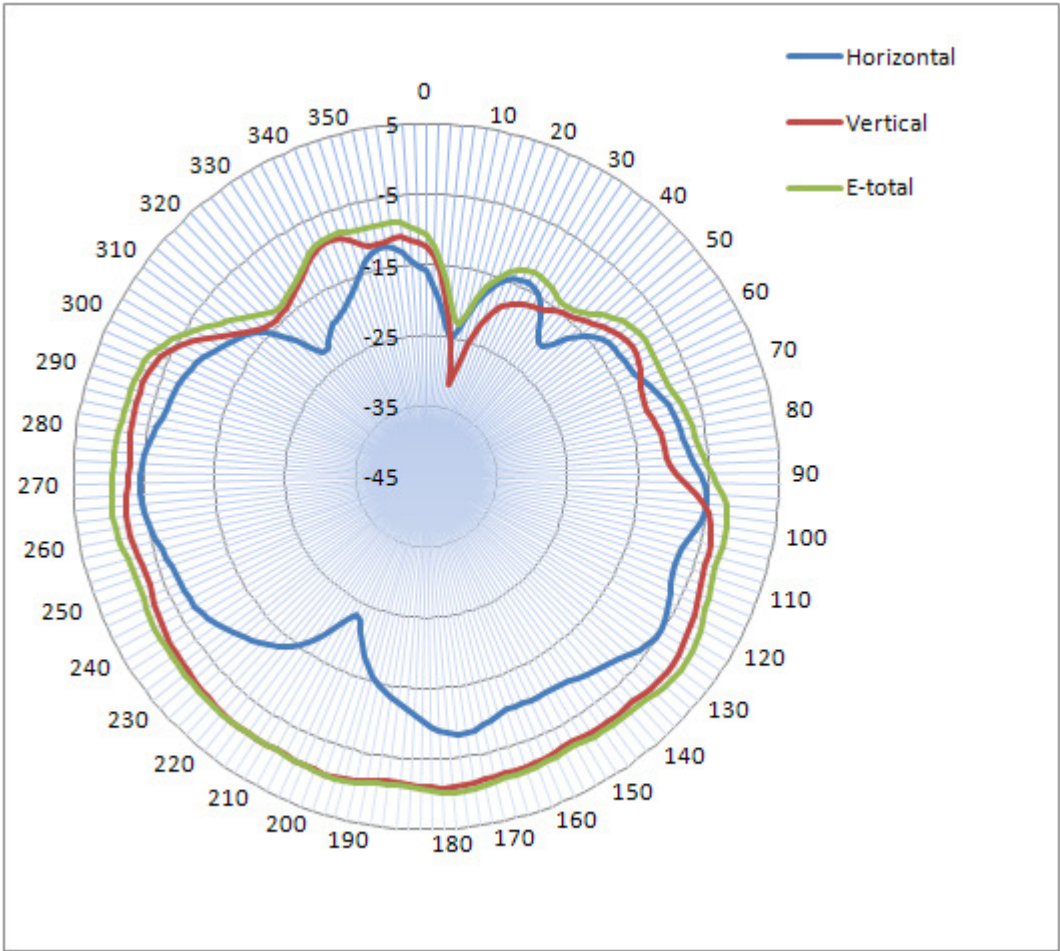
Center Frequency	5725MHz
Horizontal (dBi) peak	-4.05
Vertical (dBi) peak	-0.11

Tx1 antenna: 5785 MHz



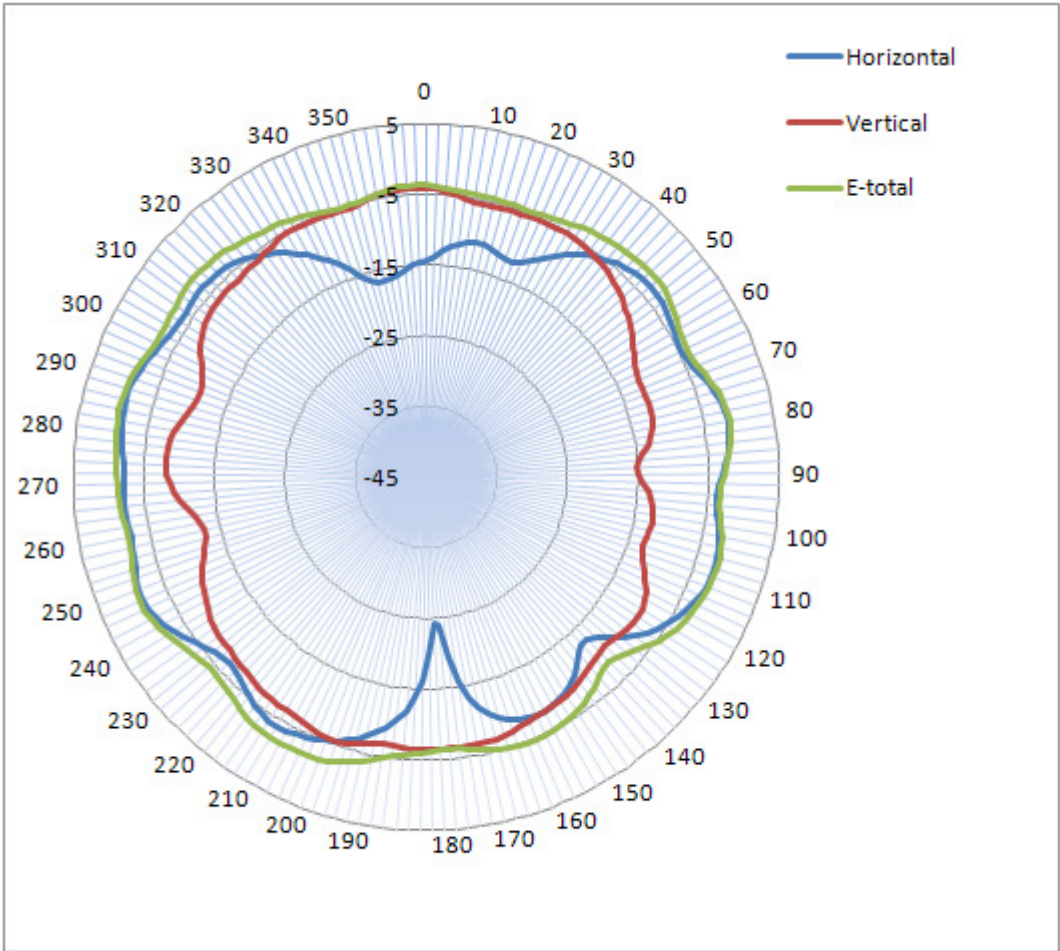
Center Frequency	5785MHz
Horizontal (dBi) peak	-3.55
Vertical (dBi) peak	-0.04

Tx1 antenna: 5850 MHz



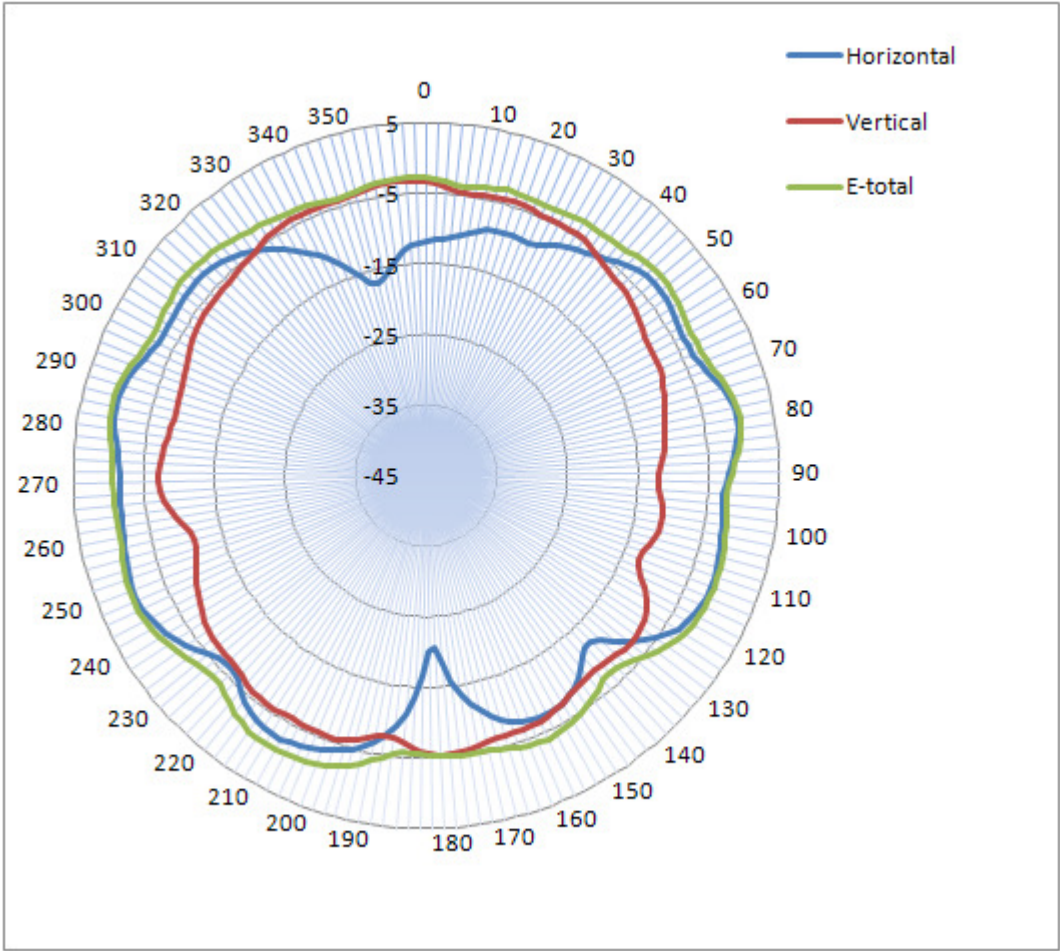
Center Frequency	5850MHz
Horizontal (dBi) peak	-4.53
Vertical (dBi) peak	-0.48

Tx2 antenna: 5725 MHz



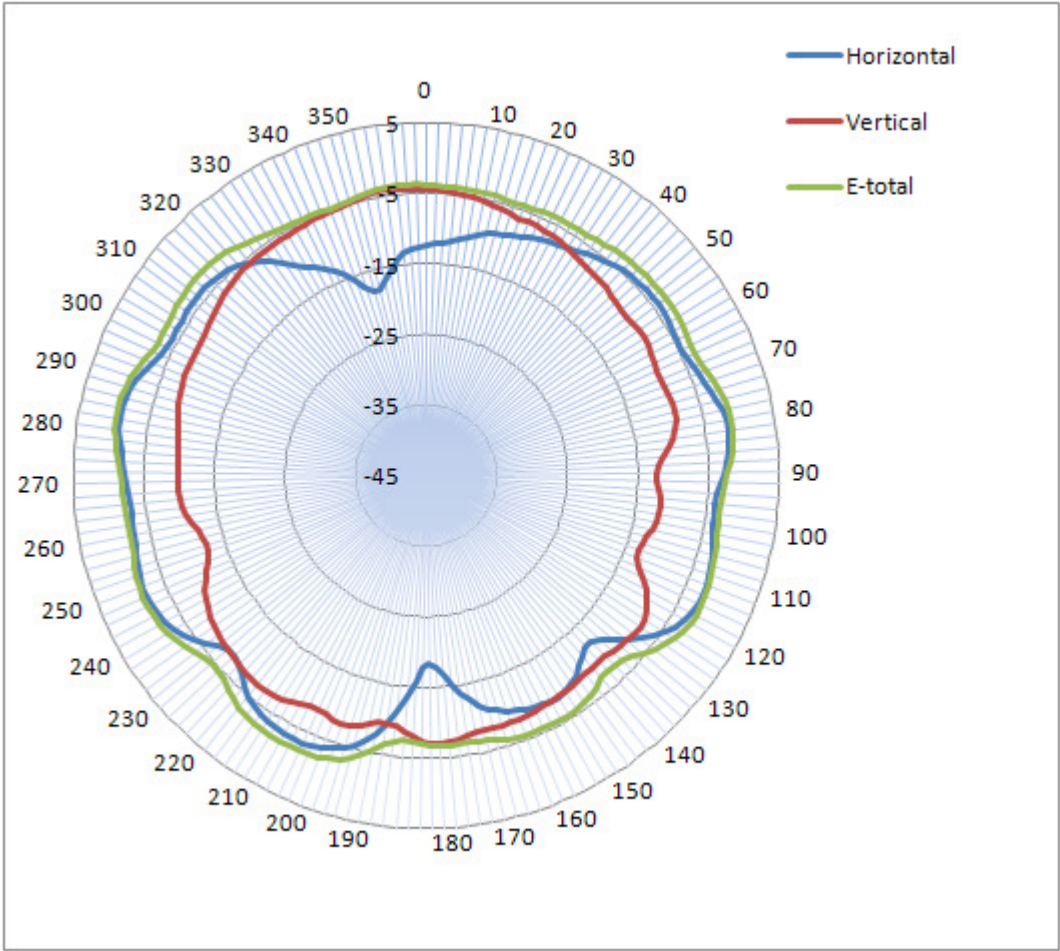
Center Frequency	5725MHz
Horizontal (dBi) peak	-1.04
Vertical (dBi) peak	-4.03

Tx2 antenna: 5785 MHz



Center Frequency	5785MHz
Horizontal (dBi) peak	-0.04
Vertical (dBi) peak	-3.11

Tx2 antenna: 5850 MHz

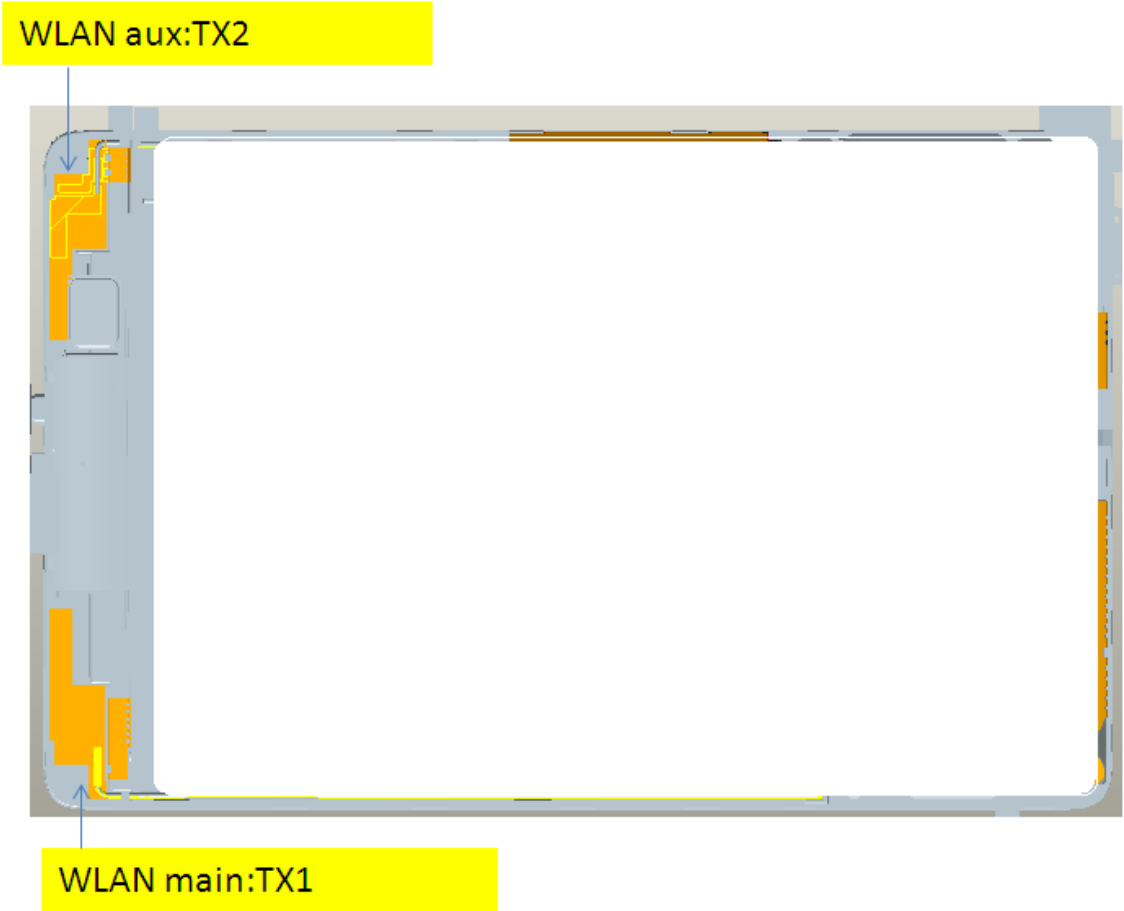


Center Frequency	5850MHz
Horizontal (dBi) peak	-0.82
Vertical (dBi) peak	-4.12

Section 4. Host Platform Information

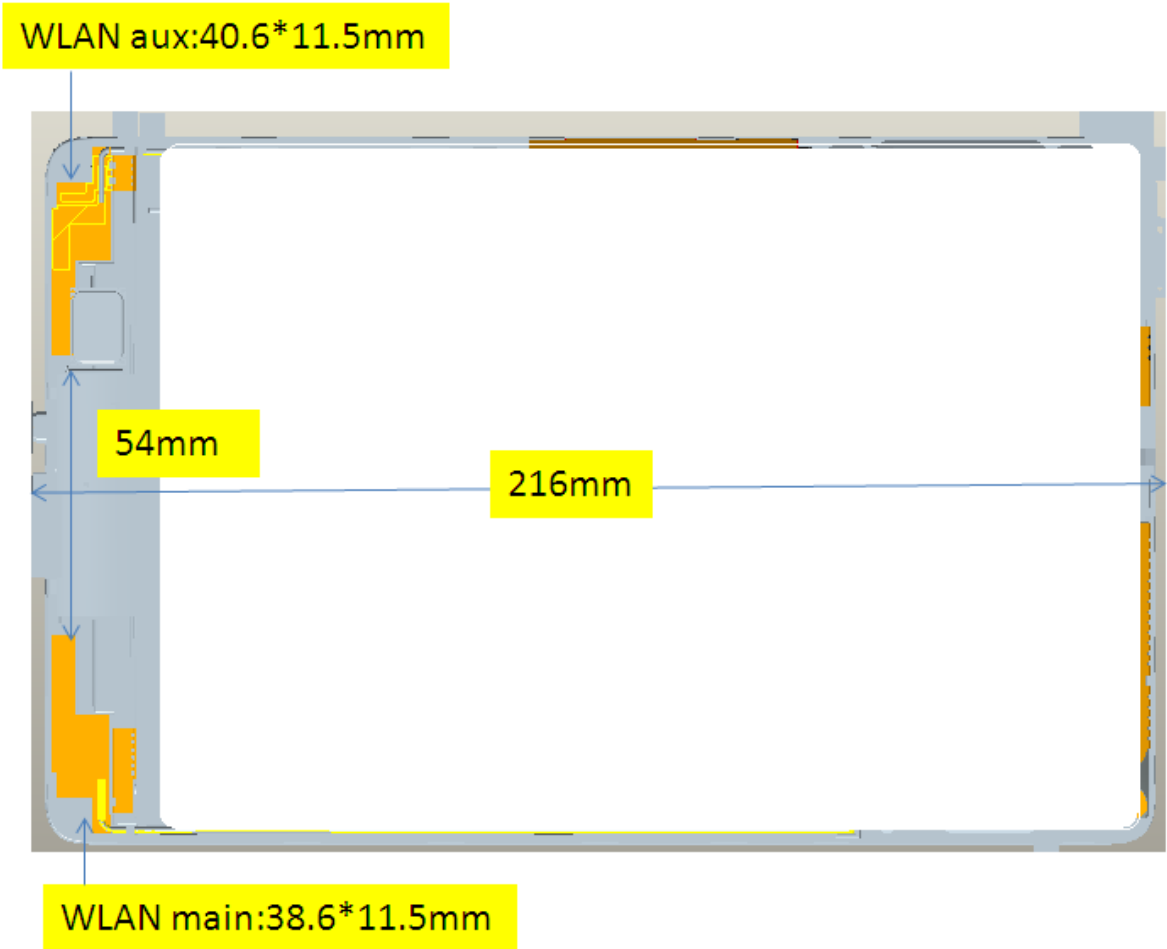
OEM / ODM Host platform: platform correlated to antenna data

Rating Label Photo:



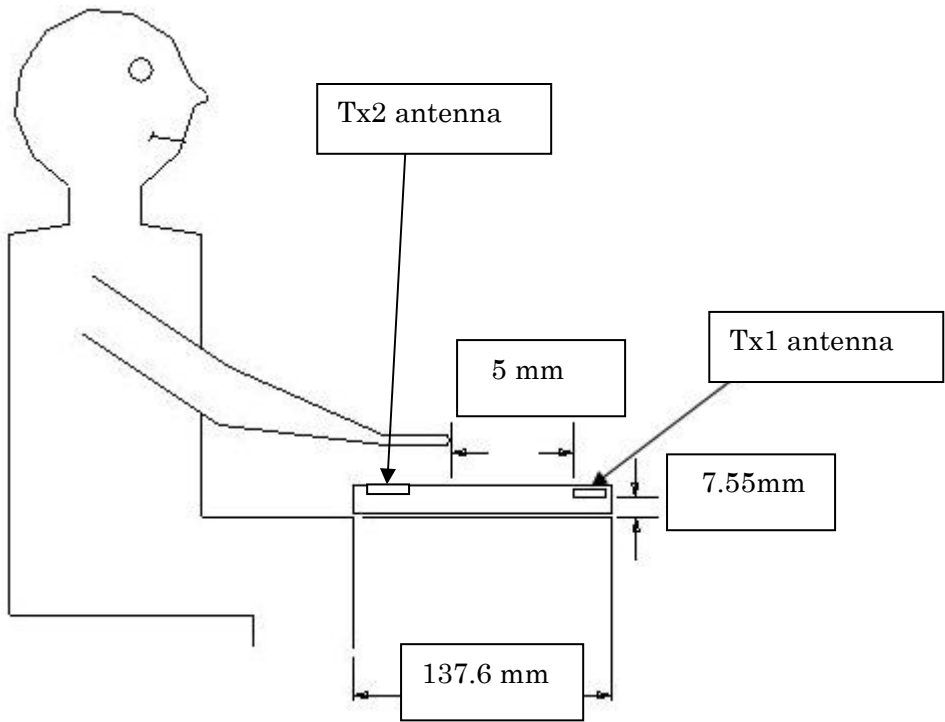
Section 5. Antenna Host Platform Location Information

Include a **dimensioned photo or dimensioned drawing** of Tx1 and Tx2 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

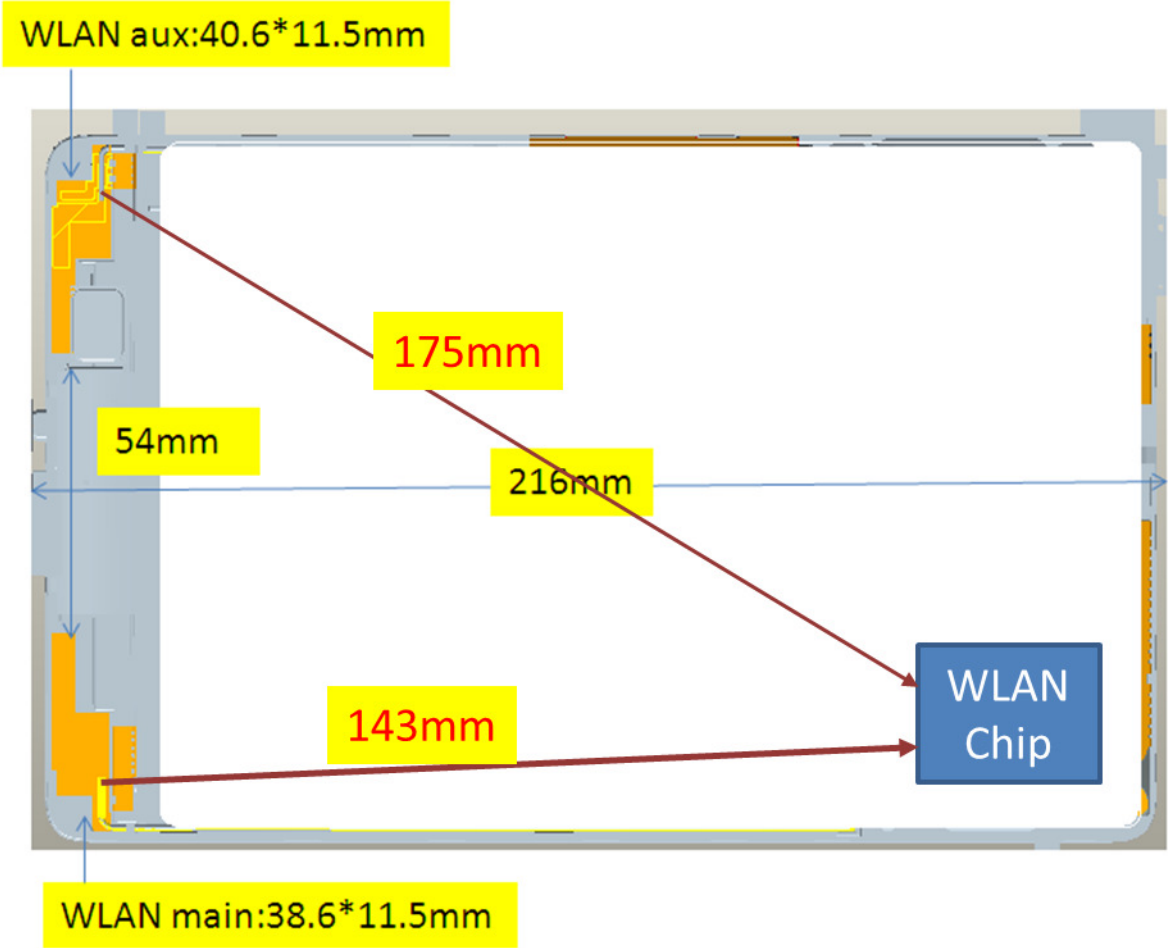
Include a **dimensioned photo or dimensioned drawing** showing the distance (mm) between the transmit antennas and the user (excluding hands, wrist, feet, and ankle)



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