

# Regulatory WLAN Antenna Information 2.4/5GHz DELL Latitude 2000 Multiple Band Antenna with Cable and Connector for IEEE 802.11a/g/n

<b>Platform</b>	
Platform Owner	Dell
Brand Name	Dell
Model Name	Latitude 2000
ODM	Quanta
Target Launch Date	(2009/ 01/ 21)
<b>Antenna</b>	
Brand Name	Foxconn
Part Number	<input checked="" type="checkbox"/> Tx1 Antenna: WDAN-DQZM1001-DF
	<input checked="" type="checkbox"/> Tx2 Antenna: WDAN-DQZM1001-DF
<b>Module</b>	
With WLAN Module	<input checked="" type="checkbox"/> Intel 5100 AG
(Check Box)	<input checked="" type="checkbox"/> Intel 5100 AN
	<input checked="" type="checkbox"/> Intel 5300 AN
	<input checked="" type="checkbox"/> Broadcom DW1397
	<input checked="" type="checkbox"/> Broadcom DW1510
	<input checked="" type="checkbox"/> QMI EM108
	<input type="checkbox"/>
	<input type="checkbox"/>
	<input type="checkbox"/>

## 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. <u>(S. Korea requires photographs of antennas for approval submission). 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: WDAN-DQZM1001-DF)  Tx1 Antenna Main Antenna	HON HAI PRECISION IND. CO.,LTD	PIFA	1. Cable P/N: FOXCONN: 703-3009-513 2. Diameter:1.37mm 50 ohm coaxial cable 3. Cable length: 385 mm 4. Connector P/N: FOXCONN: SGX0003-02	2400-2500MHz 1.67 dBi (peak)	2400-2500MHz 2.497 dBi (peak)	2400-2500MHz 2.0 max	2400-2500MHz 0.827 dBi (peak)
				2496-2690MHz 1.80dBi (peak)	2496-2690MHz 2.633 dBi (peak)	2496-2690MHz 2.0 max	2496-2690MHz 0.833 dBi (peak)
				5150-5350MHz 0.62 dBi (peak)	5150-5350MHz 2.069 dBi (peak)	5150-5350MHz 2.0 max	5150-5350MHz 1.449 dBi (peak)
				5470-5725MHz 1.12 dBi (peak)	5470-5725MHz 2.722 dBi (peak)	5470-5725MHz 2.0 max	5470-5725MHz 1.607 dBi (peak)
				5725-5850MHz 0.15 dBi (peak)	5725-5850MHz 1.836 dBi (peak)	5725-5850MHz 2.0 max	5725-5850MHz 1.686 dBi (peak)
(P/N: WDAN-DQZM1001-DF)  Tx2 (or Rx2 for 512 family) Antenna Aux Antenna	HON HAI PRECISION IND. CO.,LTD	PIFA	1. Cable P/N: FOXCONN: 703-3000-513 2. Diameter:1.37mm 50 ohm coaxial cable 3. Cable length: 395 mm 4. Connector P/N: FOXCONN: SGX0003-02	2400-2500MHz -0.10 dBi (peak)	2400-2500MHz 0.749 dBi (peak)	2400-2500MHz 2.0 max	2400-2500MHz 0.849 dBi (peak)
				2496-2690MHz 1.25 dBi (peak)	2496-2690MHz 2.105 dBi (peak)	2496-2690MHz 2.0 max	2496-2690MHz 0.855 dBi (peak)
				5150-5350MHz 2.60 dBi (peak)	5150-5350MHz 4.086 dBi (peak)	5150-5350MHz 2.0 max	5150-5350MHz 1.486 dBi (peak)
				5470-5725MHz 2.06 dBi (peak)	5470-5725MHz 3.708 dBi (peak)	5470-5725MHz 2.0 max	5470-5725MHz 1.648 dBi (peak)
				5725-5850MHz 2.15 dBi (peak)	5725-5850MHz 3.879 dBi (peak)	5725-5850MHz 2.0 max	5725-5850MHz 1.729 dBi (peak)

### NOTE:

(\*) If Rx2/Rx3 only (2<sup>nd</sup> or 3<sup>rd</sup> antenna receives only, e.g. for 512 family & 4965AGN) then the information marked with \* is not required

### Antenna Peak Gain Table:

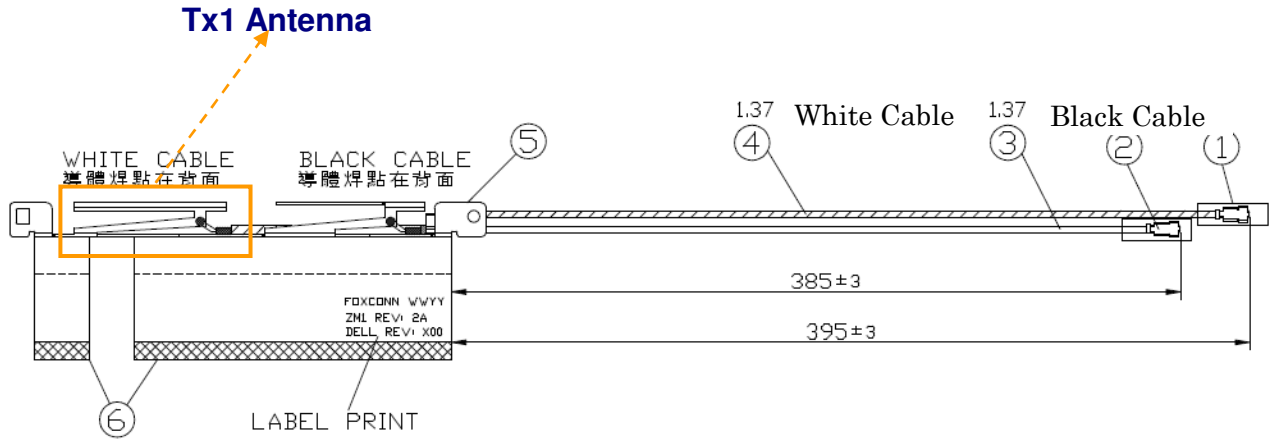
Frequency (MHz)	Tx1 antenna		Tx2 (or Rx2) Antenna	
	Horizontal (dBi)	Vertical (dBi)	Horizontal (dBi)	Vertical (dBi)
2400	1.58	-0.47	-1.03	-0.10
2450	1.58	-0.18	-0.73	-1.36
2500	1.67	0.26	-0.49	-1.76
2501	1.66	0.27	-0.46	-1.78
2593	1.80	0.17	1.25	-2.67
2685	1.12	0.21	-0.33	-1.17
5150	0.53	-4.07	2.60	-4.79
5250	0.62	-3.72	2.19	-2.92
5350	-0.32	-3.25	1.58	-3.34
5470	0.43	-2.83	2.06	-3.11
5600	1.12	-1.44	1.15	-2.45
5725	0.15	-1.53	2.15	-1.64
5785	-0.24	-1.26	1.59	-1.62
5850	-0.63	-1.33	1.23	-2.10

- Antenna Peak Gain required being test in system basis.
- 1E frame contend absolutely peak antenna gain include H/V
- If Rx2 only (2<sup>nd</sup> antenna receives only, e.g. for 512 family) then the information is not required for Rx2.
- If Rx3 only (3<sup>rd</sup> antenna receives only, e.g. for 4965AGN) then the information is not required for Rx3

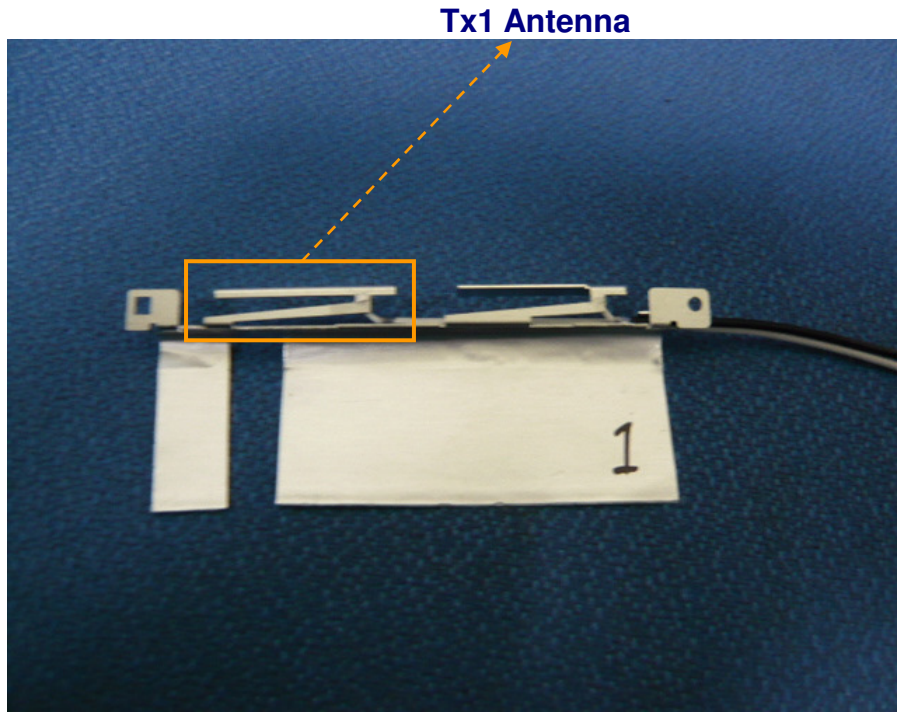
## Section 2. Dimensioned Photos or Drawings of Antennas

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

### Tx1 Antenna Dimensioned Drawing:

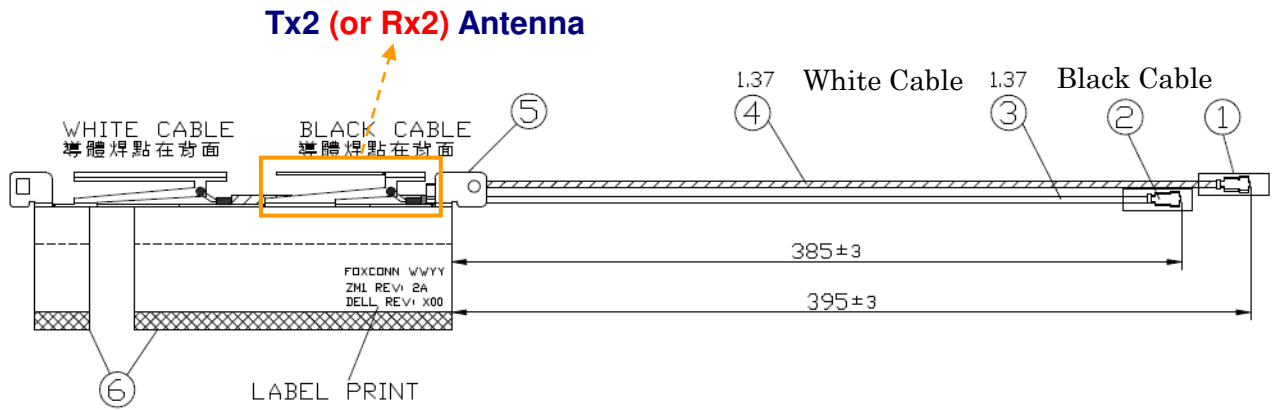


### Tx1 Antenna Photo:



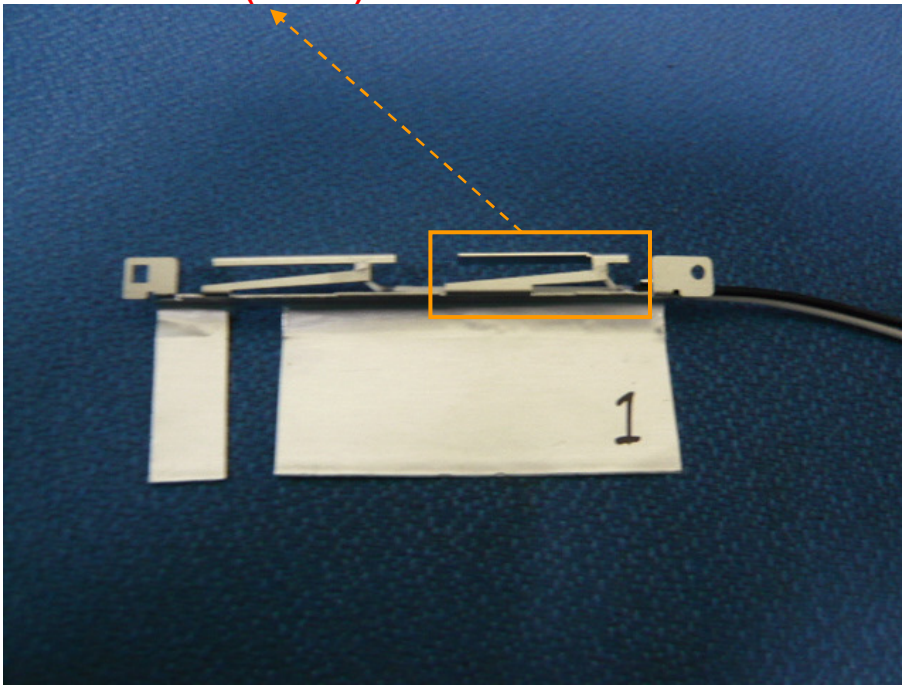
Include a dimensioned photo and dimensioned drawing of Tx2 (or Rx2) antenna here.

**Tx2 (or Rx2) Antenna Dimensioned Drawing:**



**Tx2 (or Rx2) Antenna Photo:**

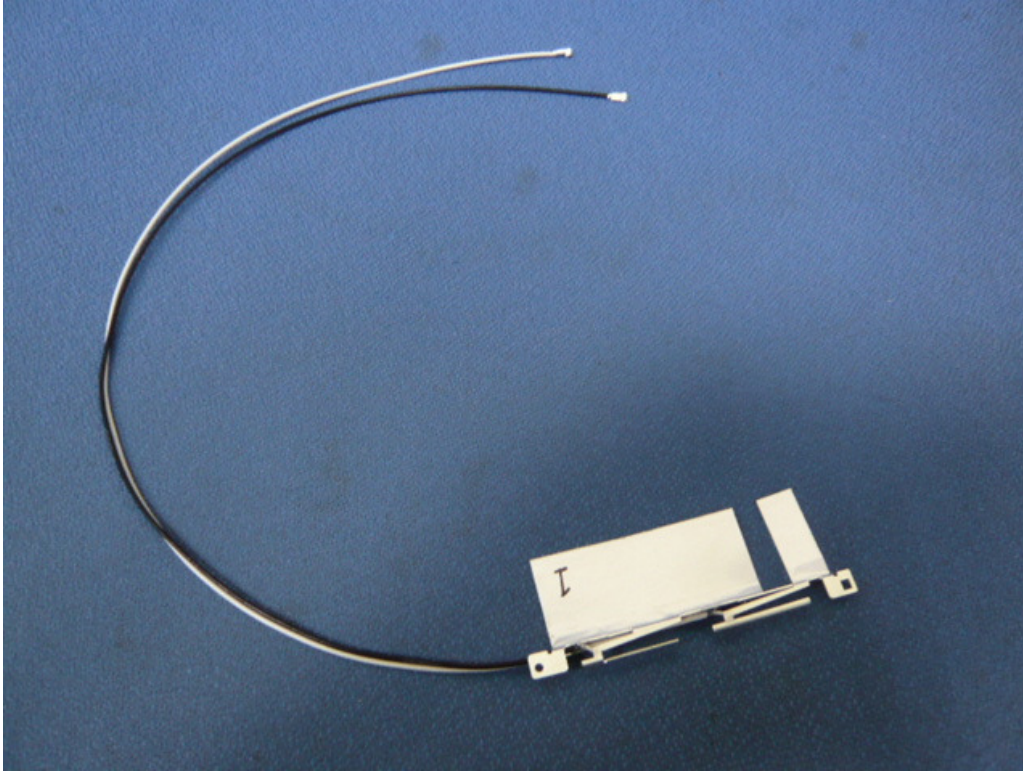
**Tx2 (or Rx2) Antenna**



**Include front view photo of all 2 antennas here.**

Antenna Manufacturer: **HON HAI PRECISION IND. CO.,LTD**

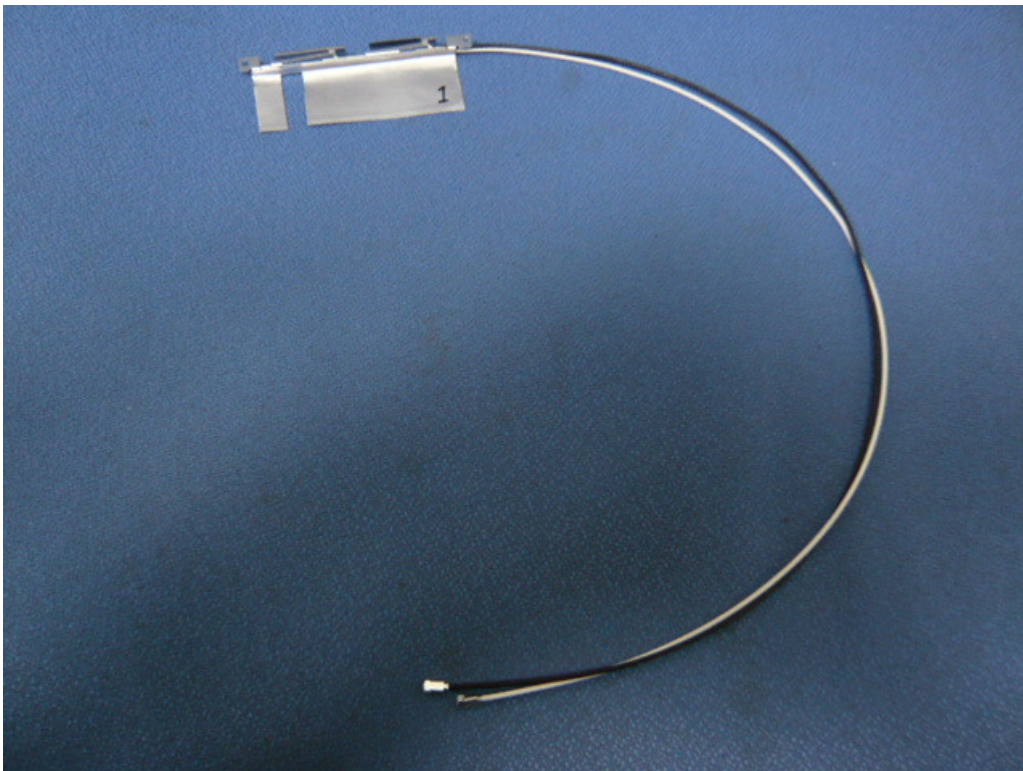
Antenna Part Number: **WDAN-DQZM1001-DF** (Tx1), **WDAN-DQZM1001-DF** (Tx2 or Rx2),



**Include back view photo of all 2 antennas here.**

Antenna Manufacturer: **HON HAI PRECISION IND. CO.,LTD**

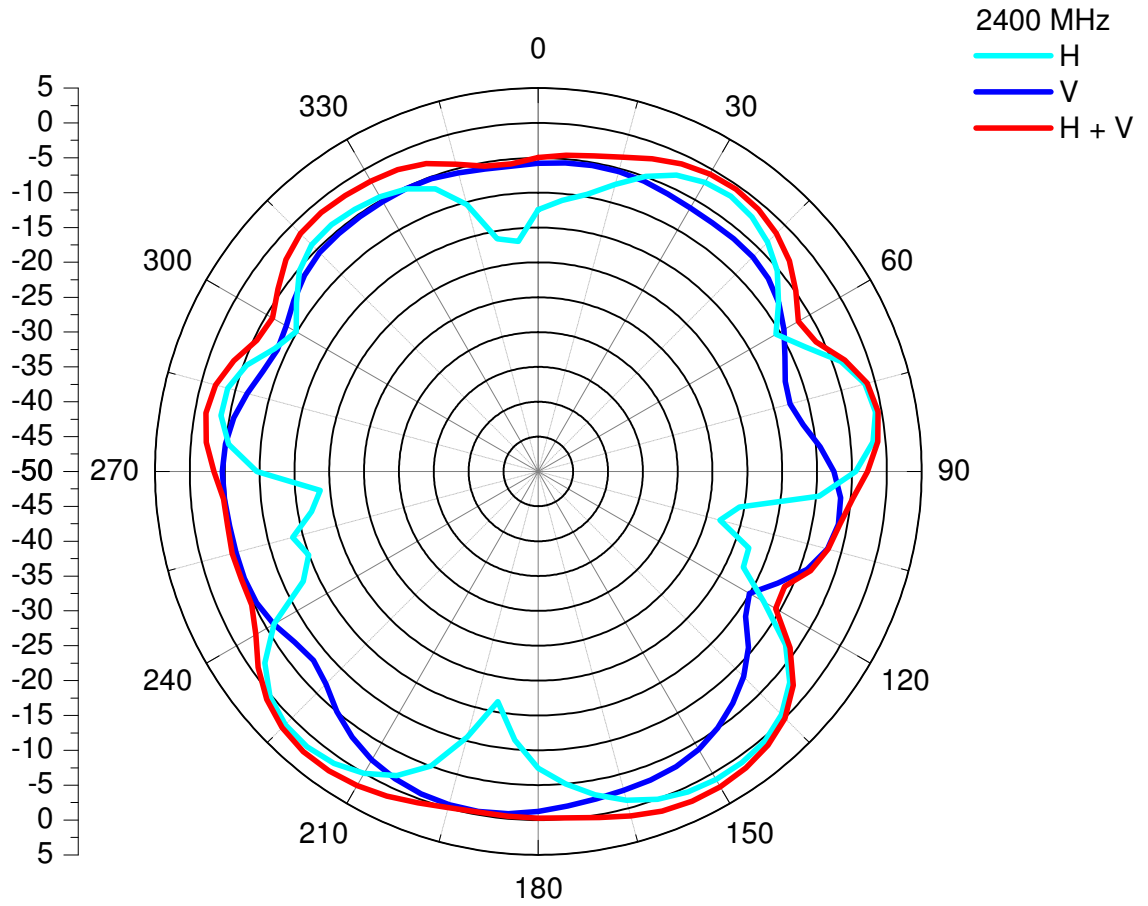
Antenna Part Number: **WDAN-DQZM1001-DF** (Tx1), **WDAN-DQZM1001-DF** (Tx2 or Rx2),



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

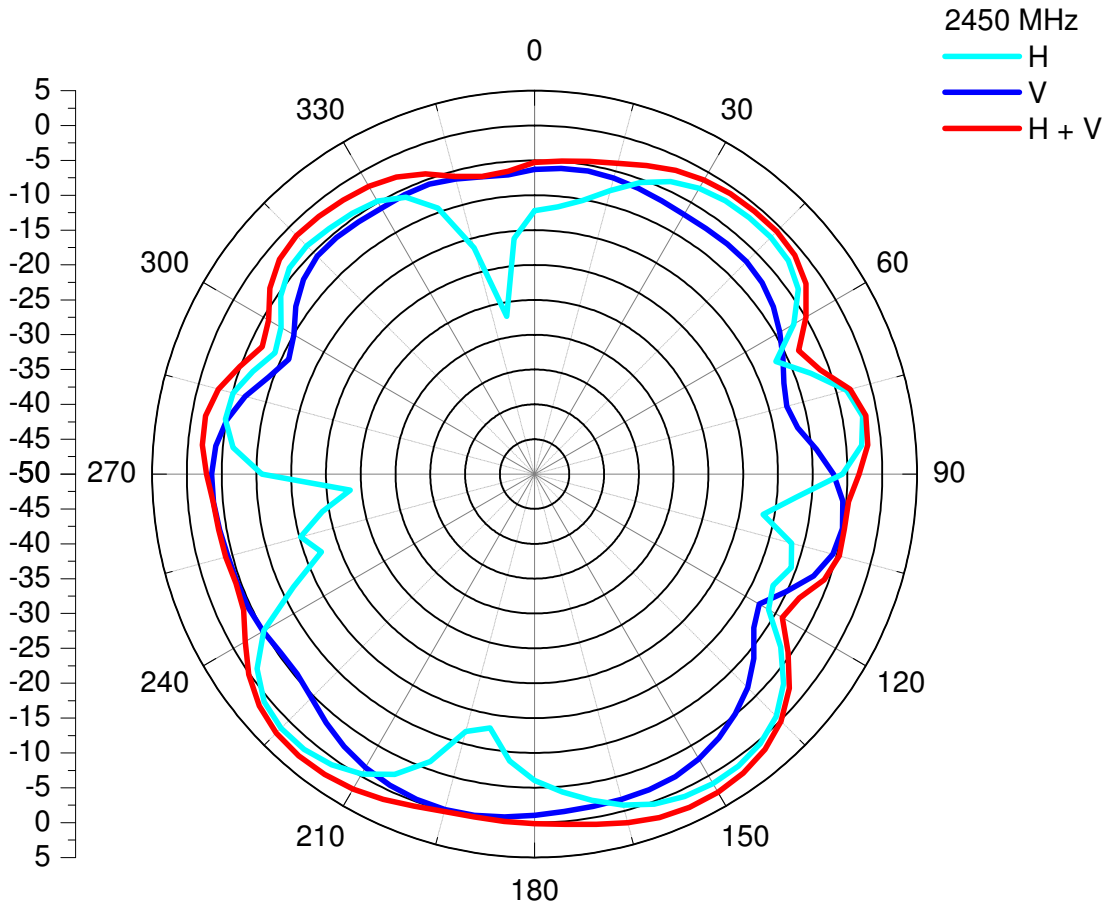
### 2400-2500MHz radiation characteristic

#### Tx1 antenna: 2400 MHz



Center Frequency	<b>2400 MHz</b>
Horizontal (dBi) peak	<b>1.58</b>
Vertical (dBi) peak	<b>-0.47</b>

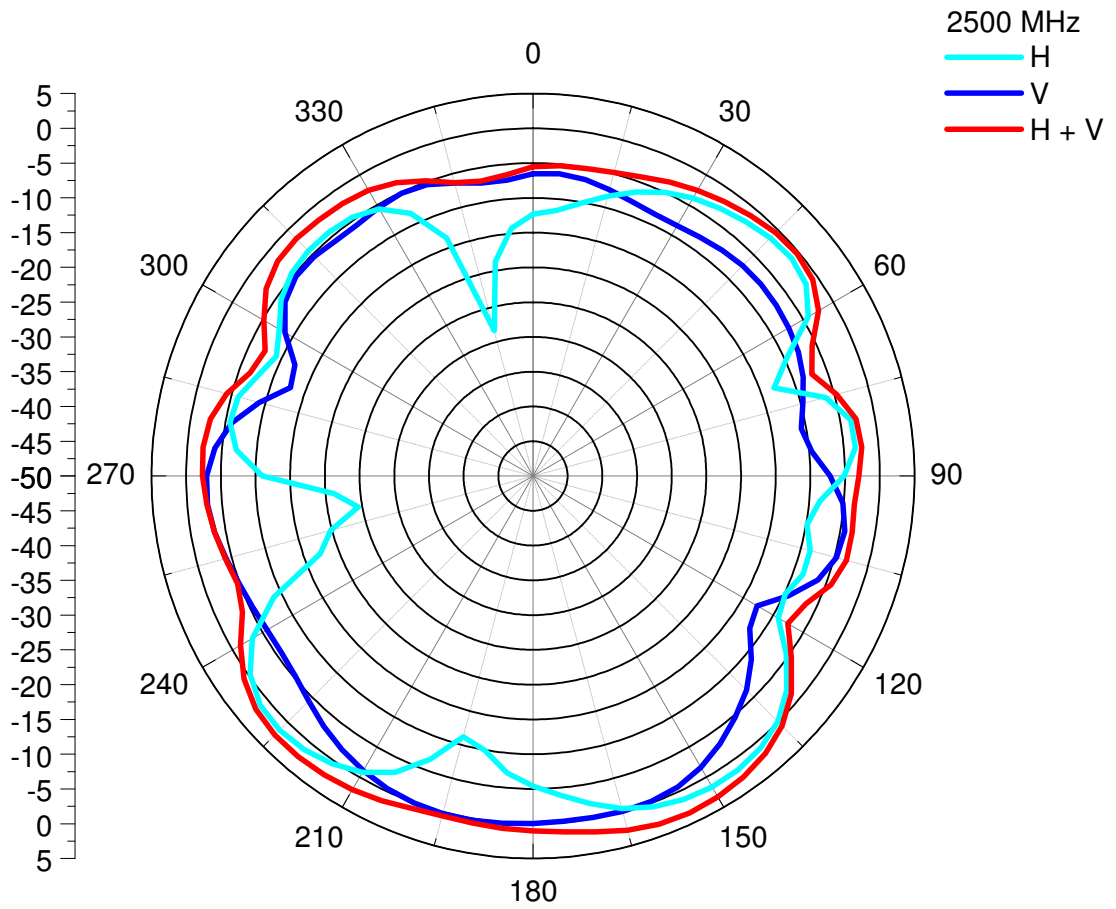
**Tx1 antenna: 2450 MHz**



Center Frequency	<b>2450 MHz</b>
Horizontal (dBi) peak	<b>1.58</b>
Vertical (dBi) peak	<b>-0.18</b>

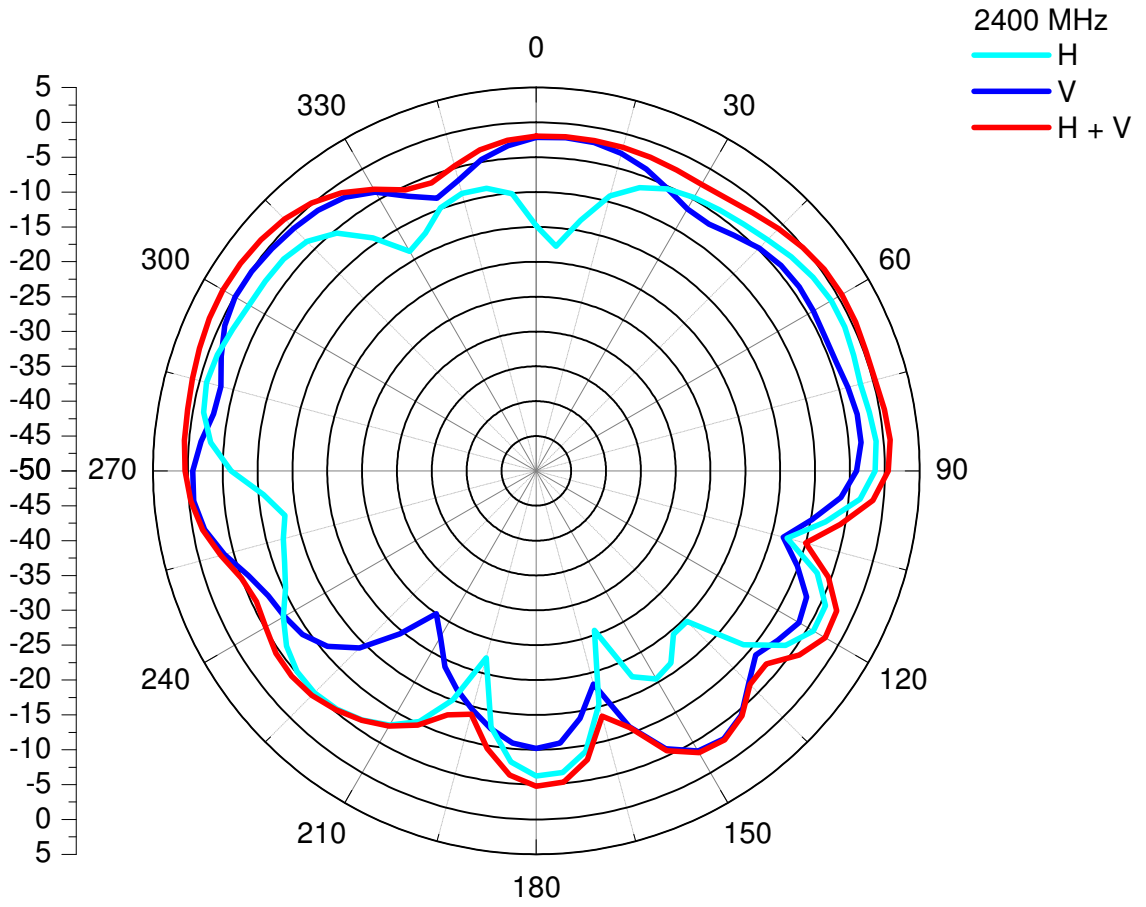


**Tx1 antenna: 2500 MHz**



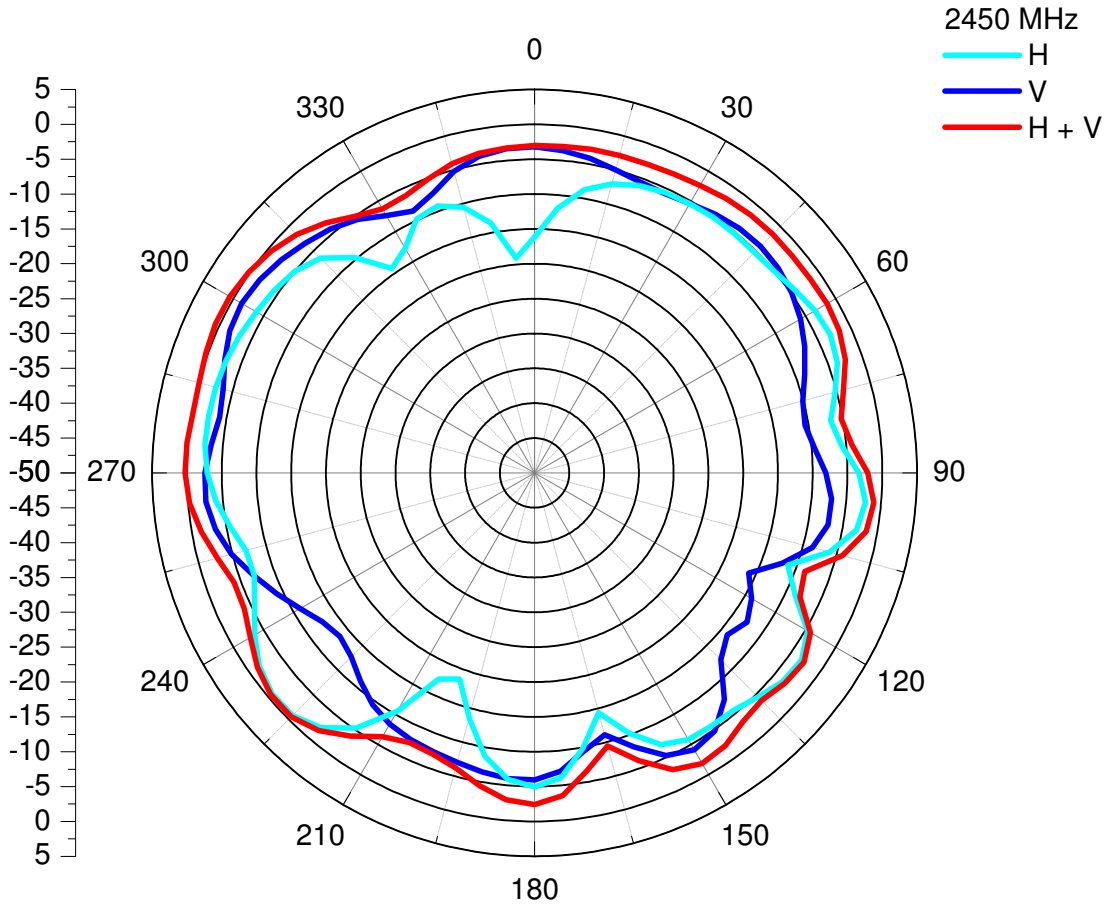
Center Frequency	<b>2500 MHz</b>
Horizontal (dBi) peak	<b>1.67</b>
Vertical (dBi) peak	<b>0.26</b>

**Tx2 (or Rx2) antenna: 2400 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



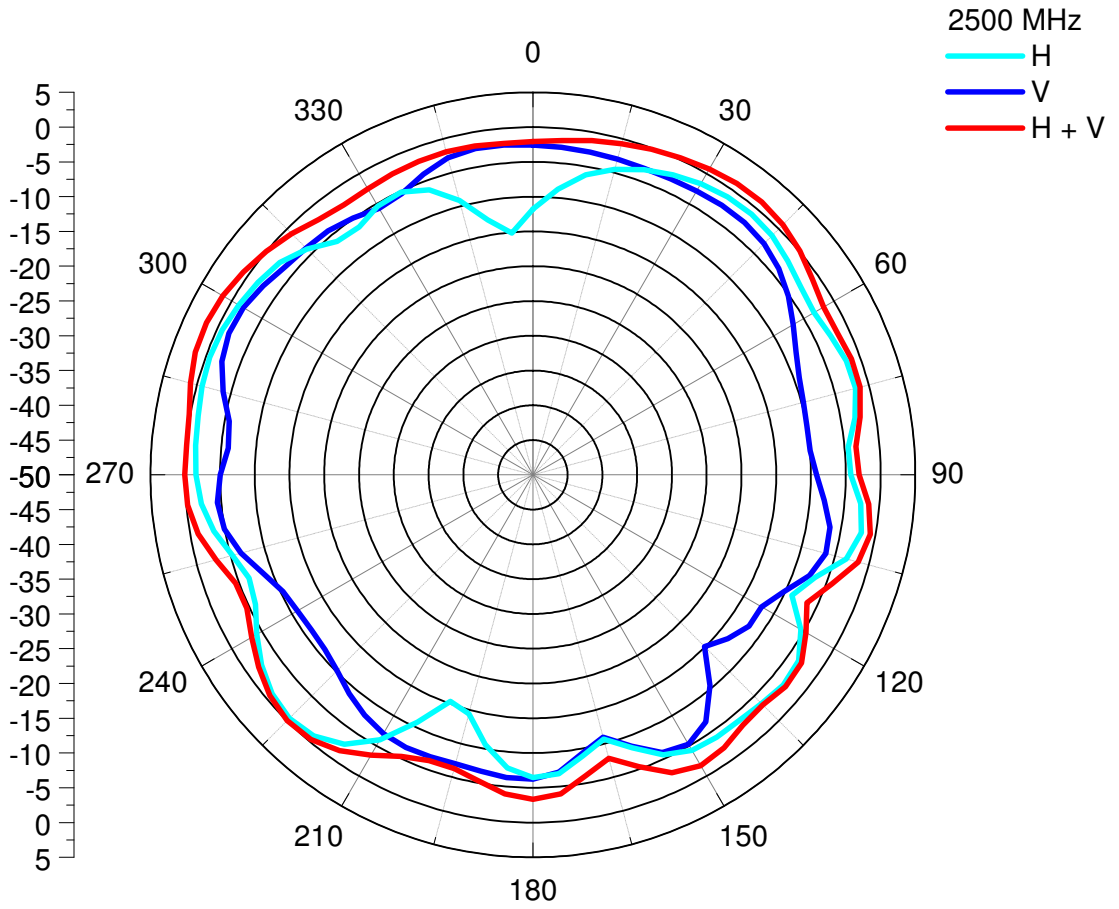
Center Frequency	<b>2400 MHz</b>
Horizontal (dBi) peak	<b>-1.03</b>
Vertical (dBi) peak	<b>-0.1</b>

**Tx2 (or Rx2) antenna: 2450 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



Center Frequency	<b>2450 MHz</b>
Horizontal (dBi) peak	<b>-0.73</b>
Vertical (dBi) peak	<b>-1.36</b>

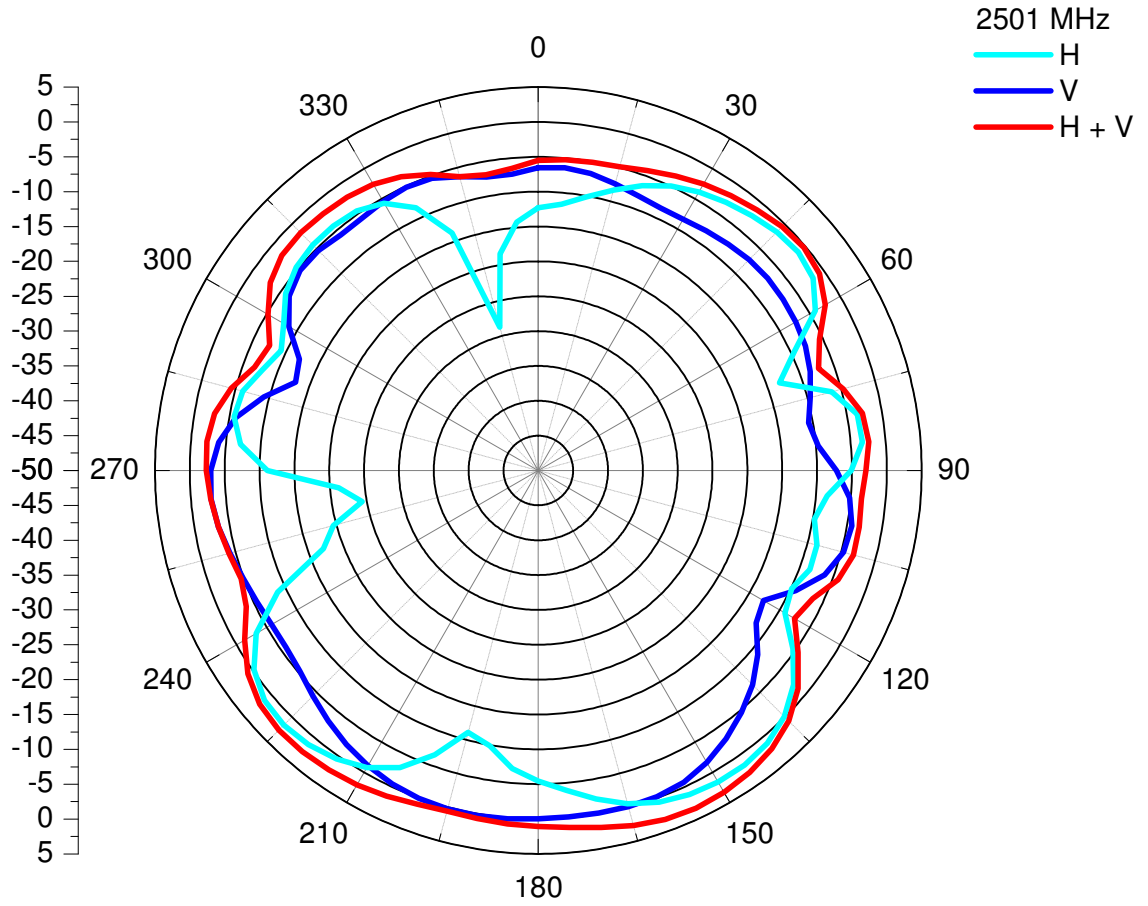
**Tx2 (or Rx2) antenna: 2500 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



Center Frequency	<b>2500 MHz</b>
Horizontal (dBi) peak	<b>-0.49</b>
Vertical (dBi) peak	<b>-1.76</b>

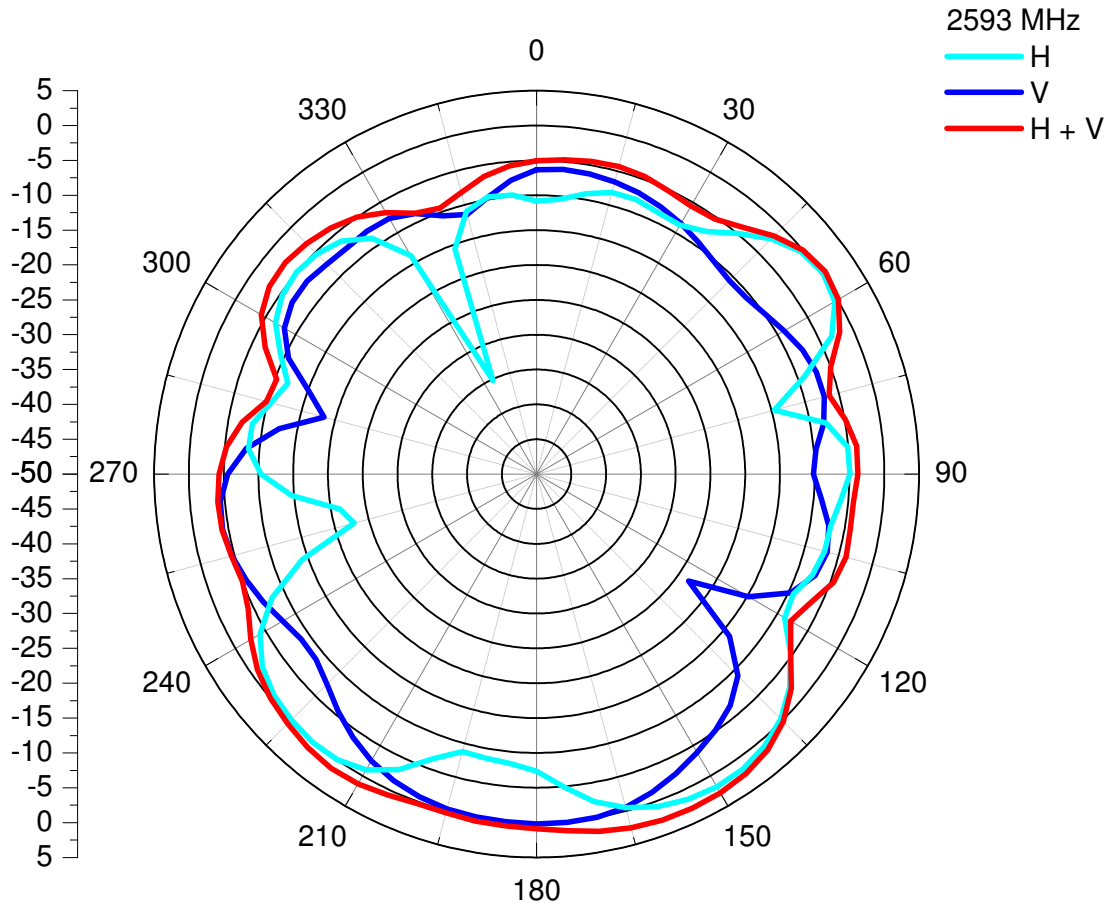
**2490-2700MHz radiation characteristic**

**Tx1antenna: 2501MHz**



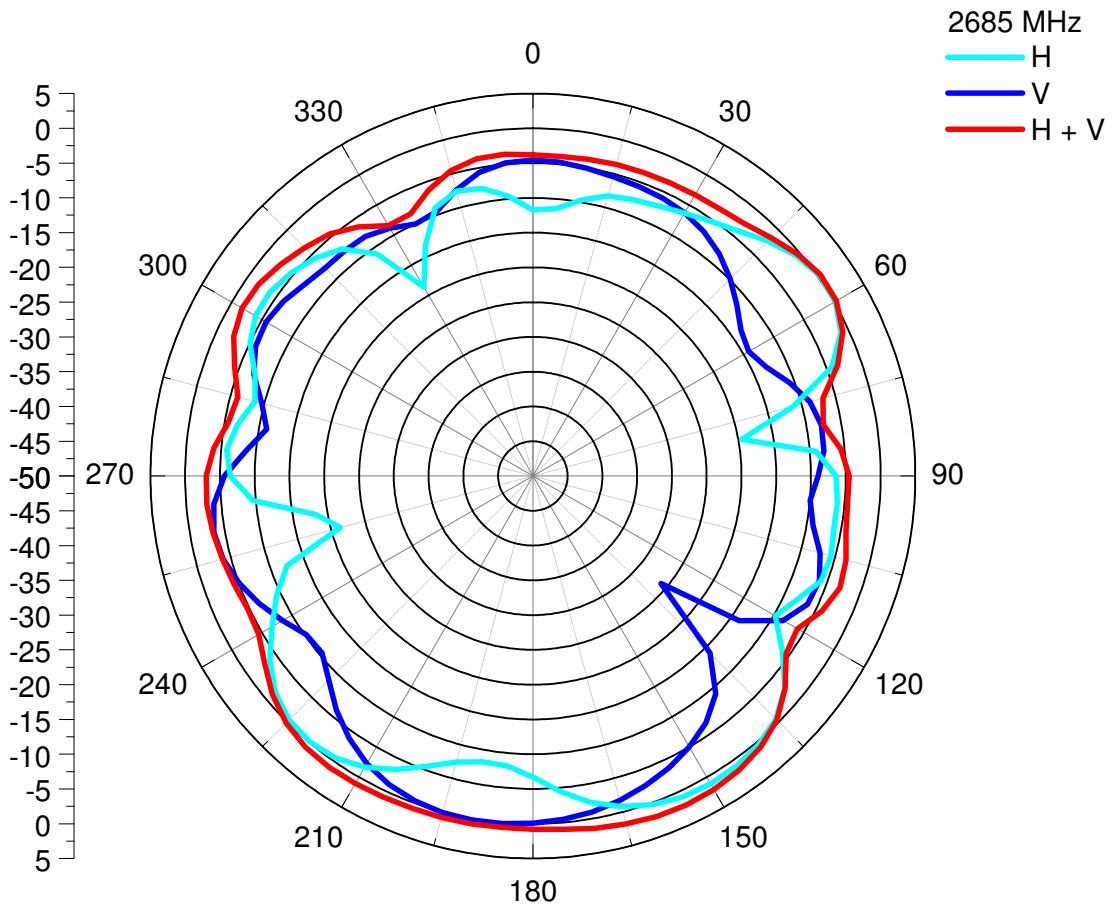
Center Frequency	<b>2501MHz</b>
Horizontal (dBi) peak	<b>1.66</b>
Vertical (dBi) peak	<b>0.27</b>

**Tx1 antenna: 2593MHz**



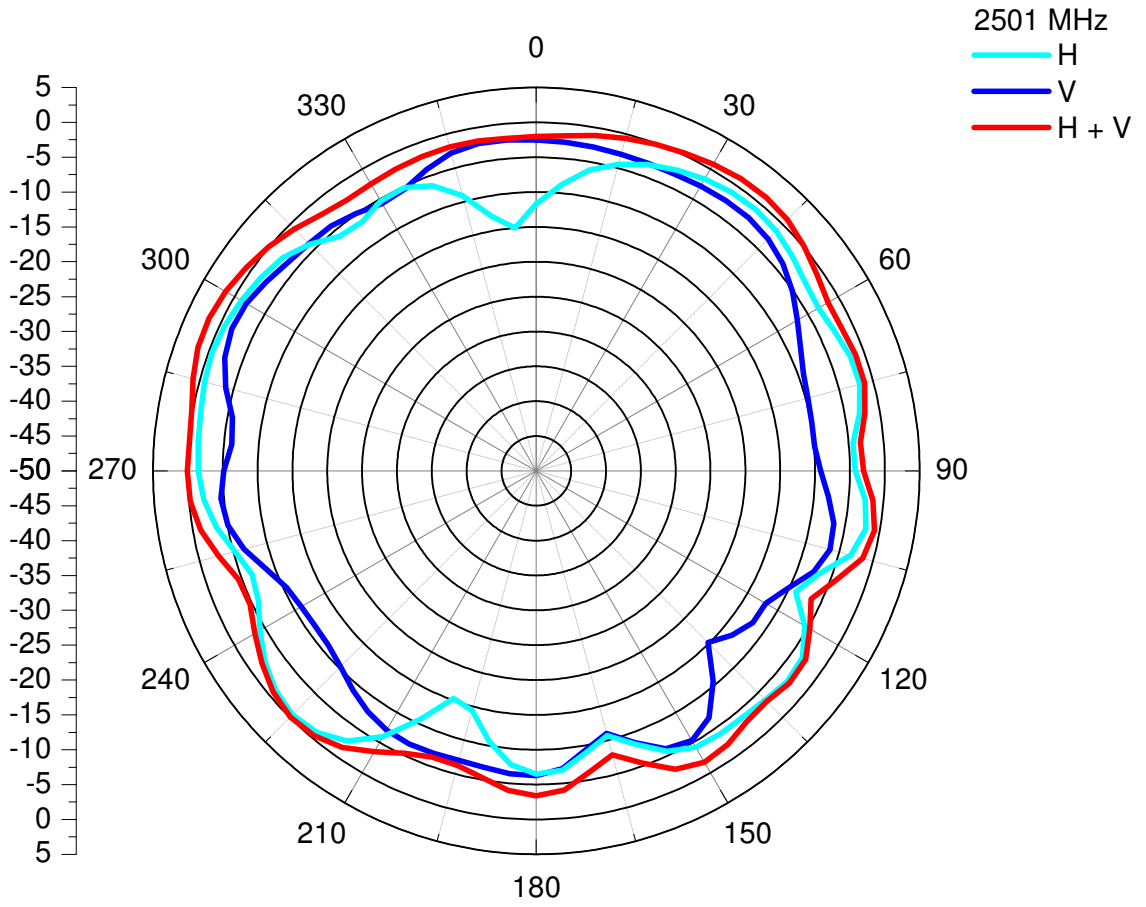
Center Frequency	<b>2593 MHz</b>
Horizontal (dBi) peak	<b>1.80</b>
Vertical (dBi) peak	<b>0.17</b>

**Tx1 antenna: 2685 MHz**



Center Frequency	<b>2685 MHz</b>
Horizontal (dBi) peak	<b>1.12</b>
Vertical (dBi) peak	<b>0.21</b>

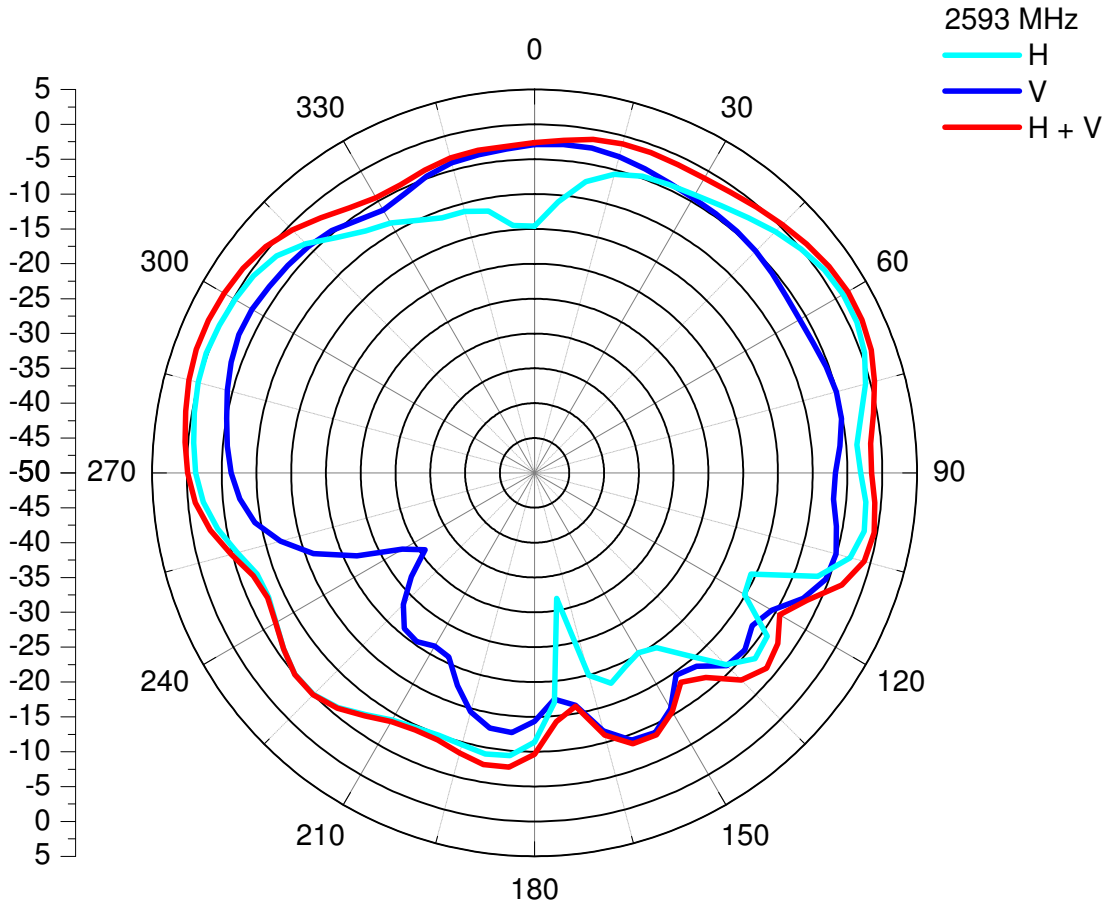
**Tx2 (or Rx2) antenna: 2501MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



Center Frequency	<b>2501 MHz</b>
Horizontal (dBi) peak	<b>-0.46</b>
Vertical (dBi) peak	<b>-1.78</b>

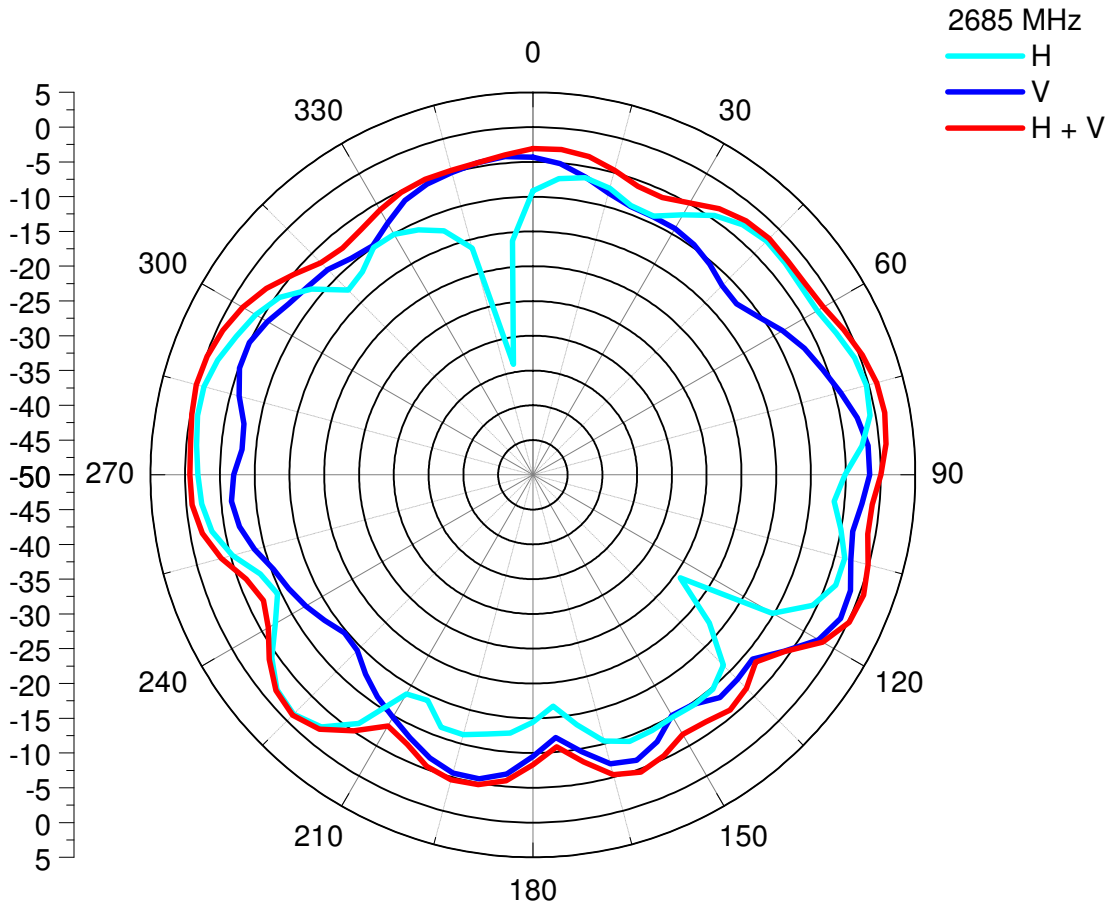


**Tx2 (or Rx2) antenna: 2593MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



Center Frequency	<b>2593 MHz</b>
Horizontal (dBi) peak	<b>1.25</b>
Vertical (dBi) peak	<b>-2.67</b>

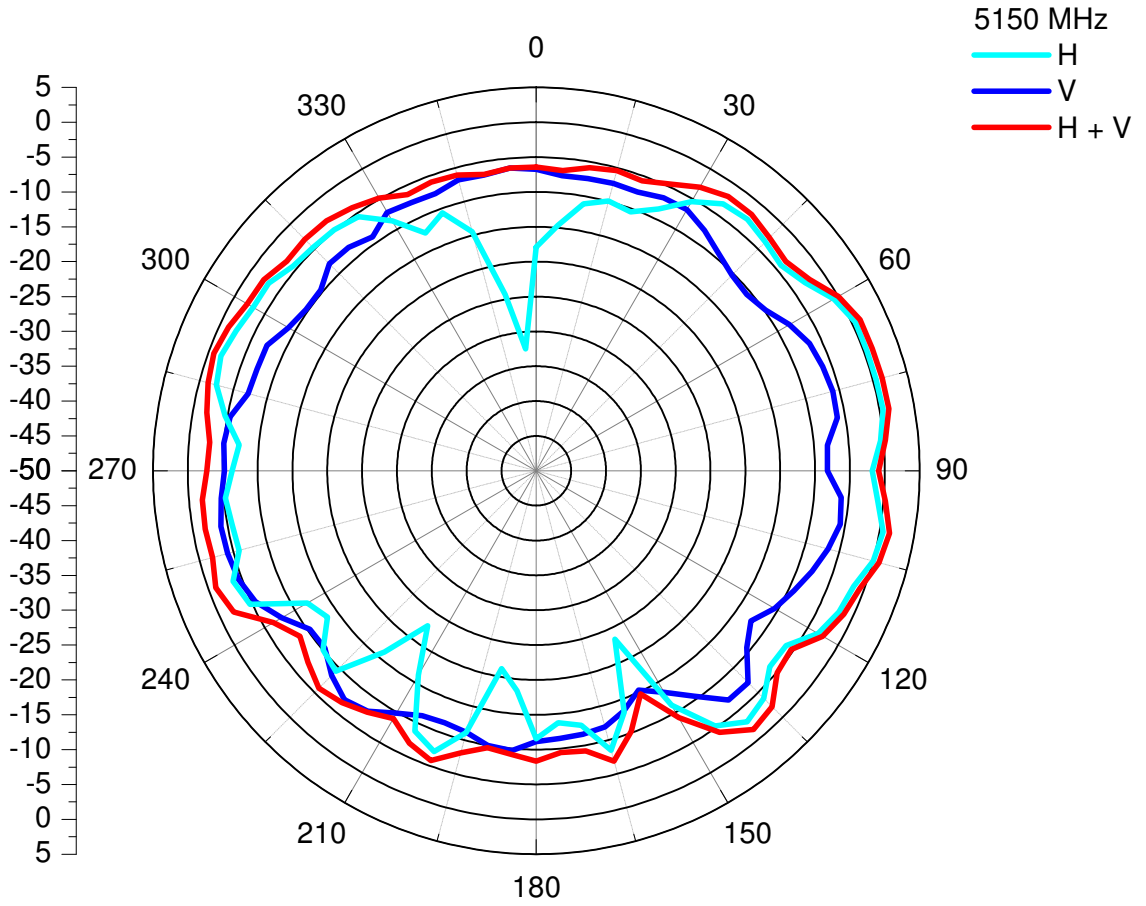
**Tx2 (or Rx2) antenna: 2685 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



Center Frequency	<b>2685 MHz</b>
Horizontal (dBi) peak	<b>-0.33</b>
Vertical (dBi) peak	<b>-1.17</b>

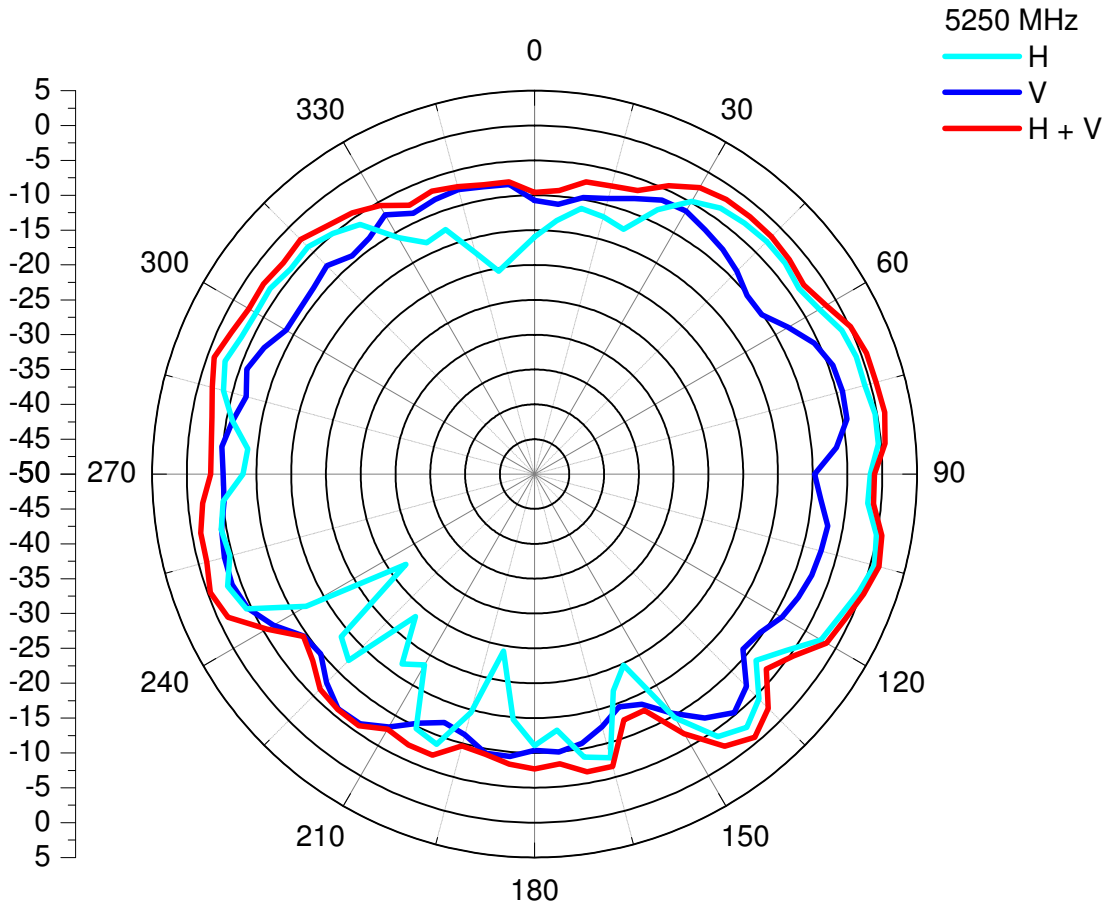
**5150-5350 MHz radiation characteristic**

**Tx1 antenna: 5150 MHz**



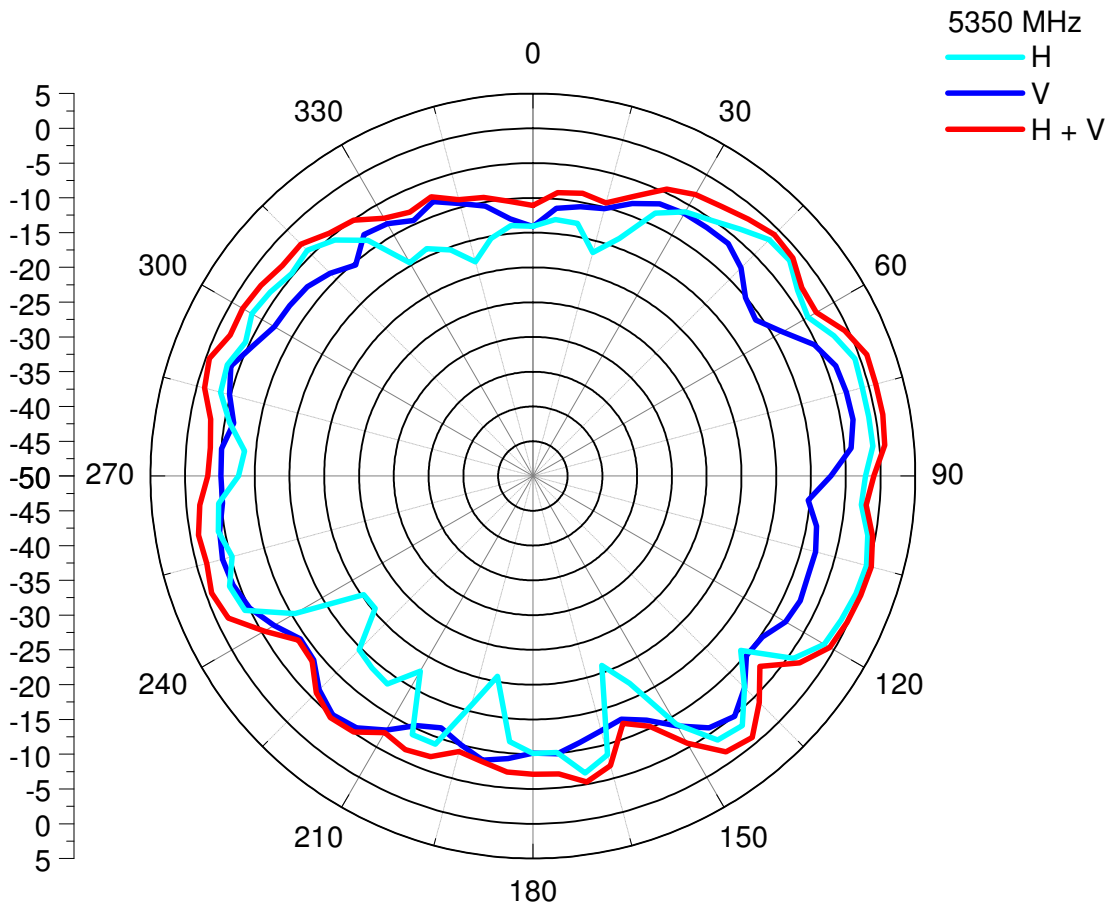
Center Frequency	<b>5150 MHz</b>
Horizontal (dBi) peak	<b>0.53</b>
Vertical (dBi) peak	<b>-4.07</b>

**Tx1 antenna: 5250 MHz**



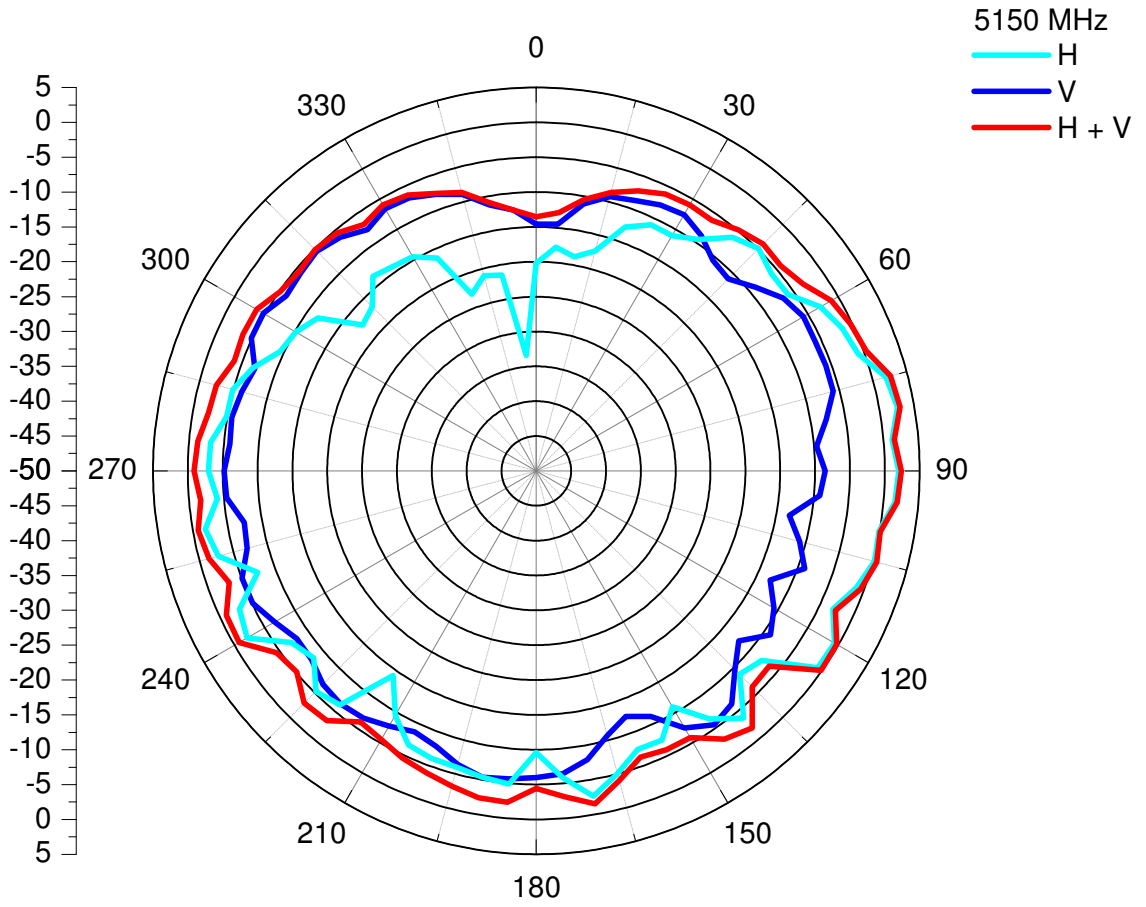
Center Frequency	<b>5250 MHz</b>
Horizontal (dBi) peak	<b>0.62</b>
Vertical (dBi) peak	<b>-3.72</b>

**Tx1 antenna: 5350 MHz**



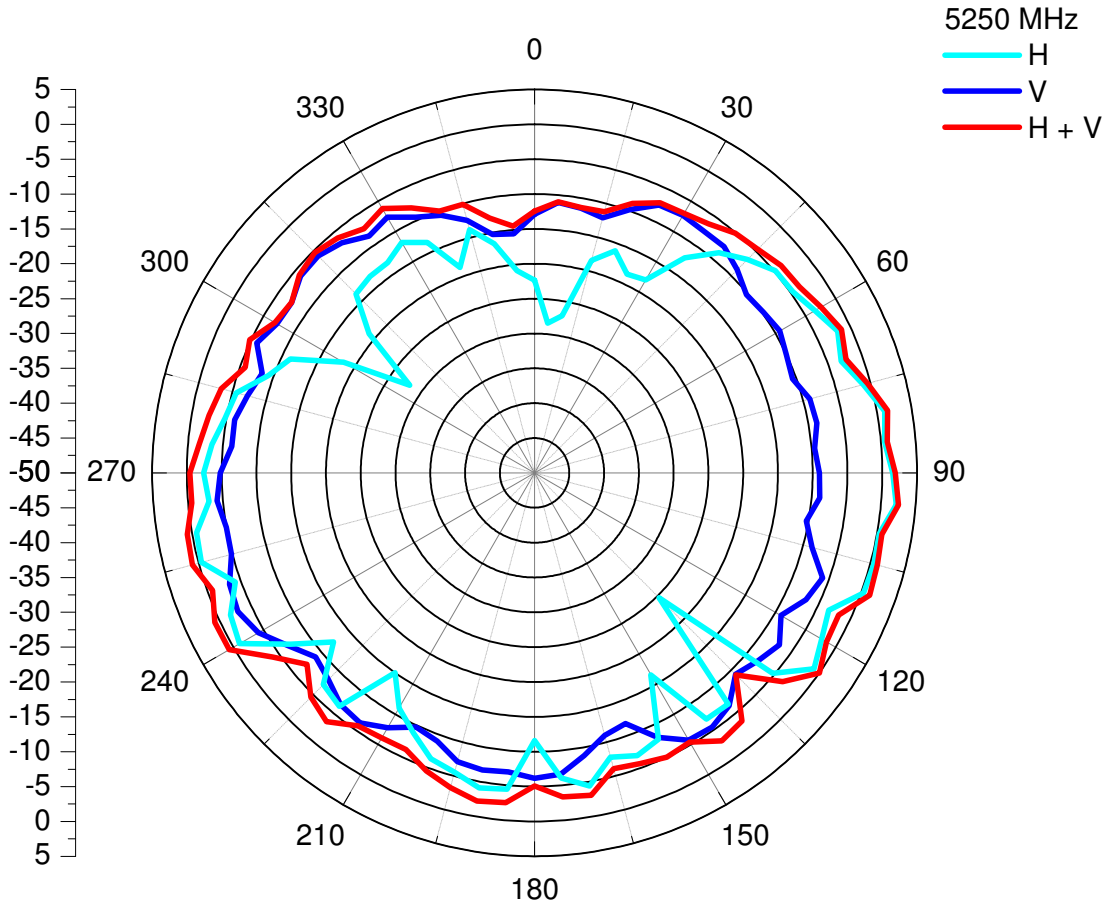
Center Frequency	<b>5350 MHz</b>
Horizontal (dBi) peak	<b>-0.32</b>
Vertical (dBi) peak	<b>-3.25</b>

**Tx2 (or Rx2) antenna: 5150 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



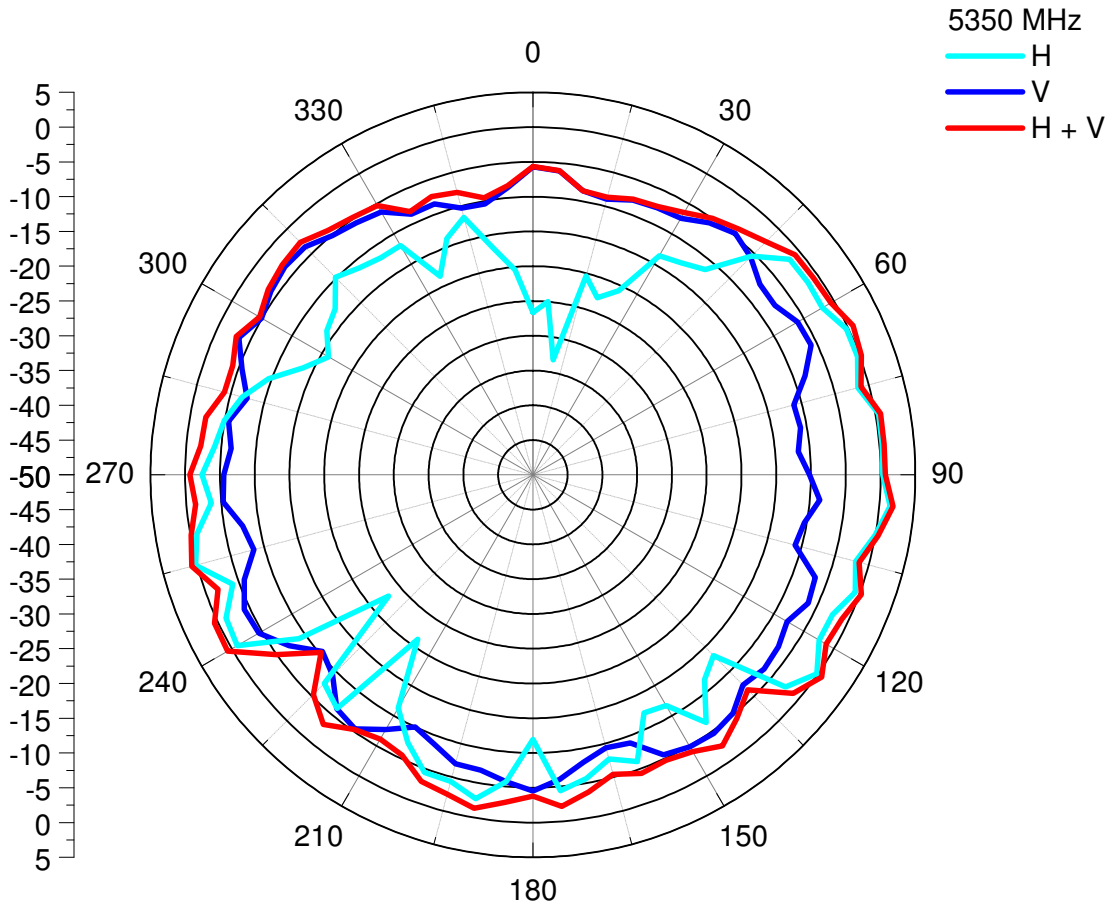
Center Frequency	<b>5150 MHz</b>
Horizontal (dBi) peak	<b>2.60</b>
Vertical (dBi) peak	<b>-4.79</b>

**Tx2 (or Rx2) antenna: 5250 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



Center Frequency	<b>5250 MHz</b>
Horizontal (dBi) peak	<b>2.19</b>
Vertical (dBi) peak	<b>-2.92</b>

**Tx2 (or Rx2) antenna: 5350 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**

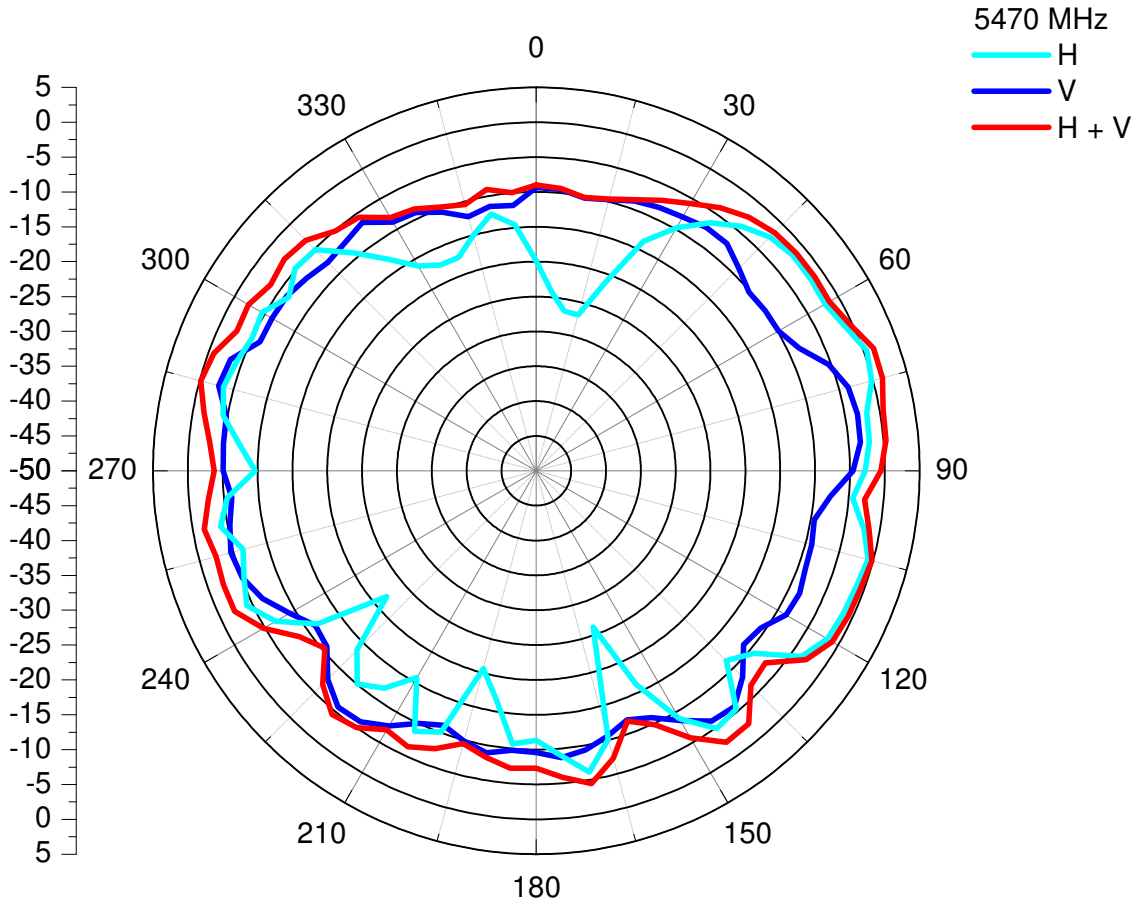


Center Frequency	<b>5350 MHz</b>
Horizontal (dBi) peak	<b>1.58</b>
Vertical (dBi) peak	<b>-3.34</b>



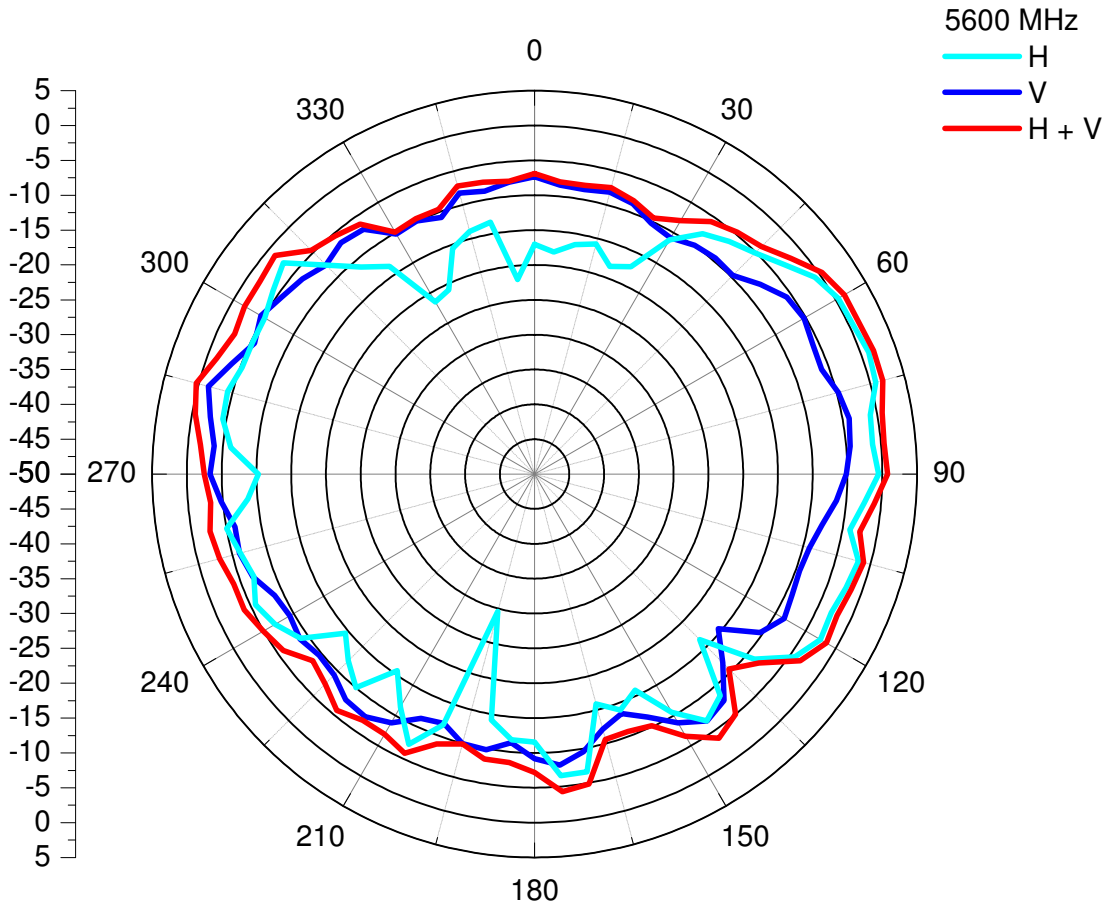
**5470-5725MHz radiation characteristic**

**Tx1 antenna: 5470 MHz**



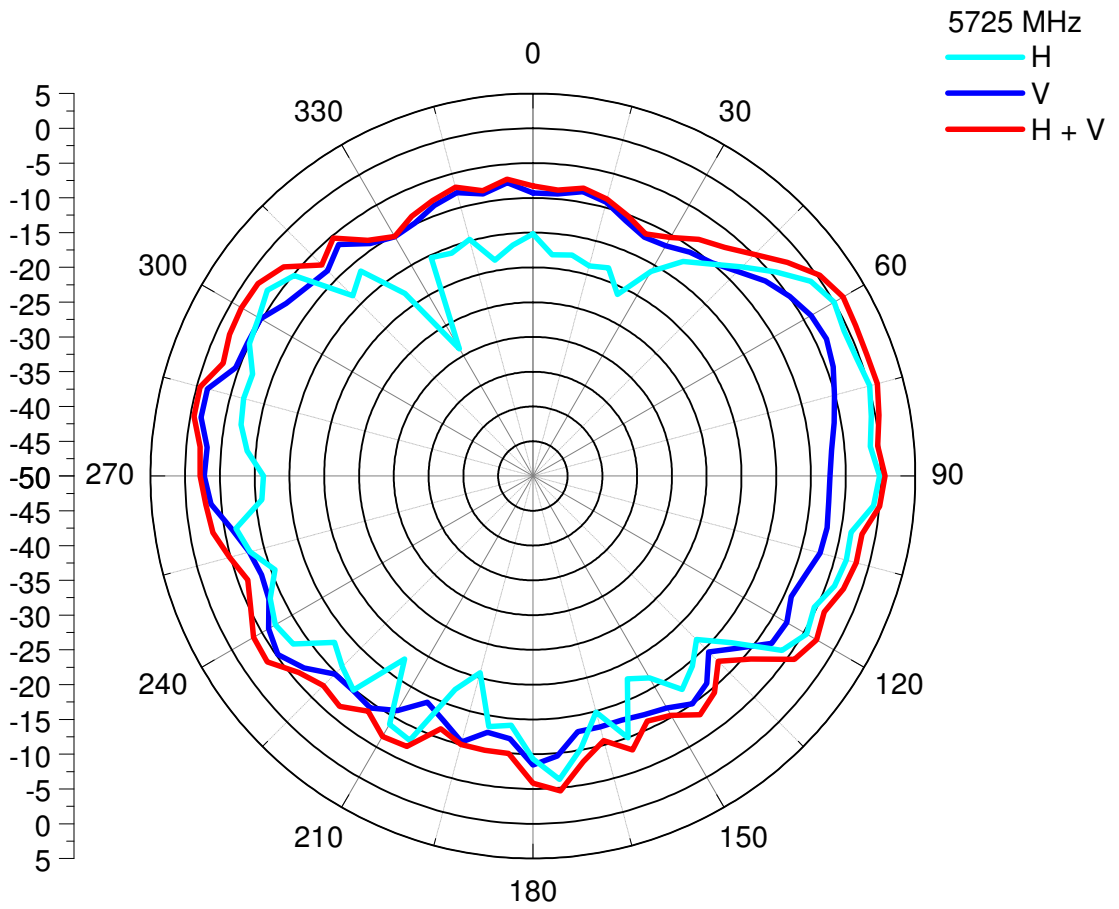
Center Frequency	<b>5470 MHz</b>
Horizontal (dBi) peak	<b>0.43</b>
Vertical (dBi) peak	<b>-2.83</b>

**Tx1 antenna: 5597.5 MHz**



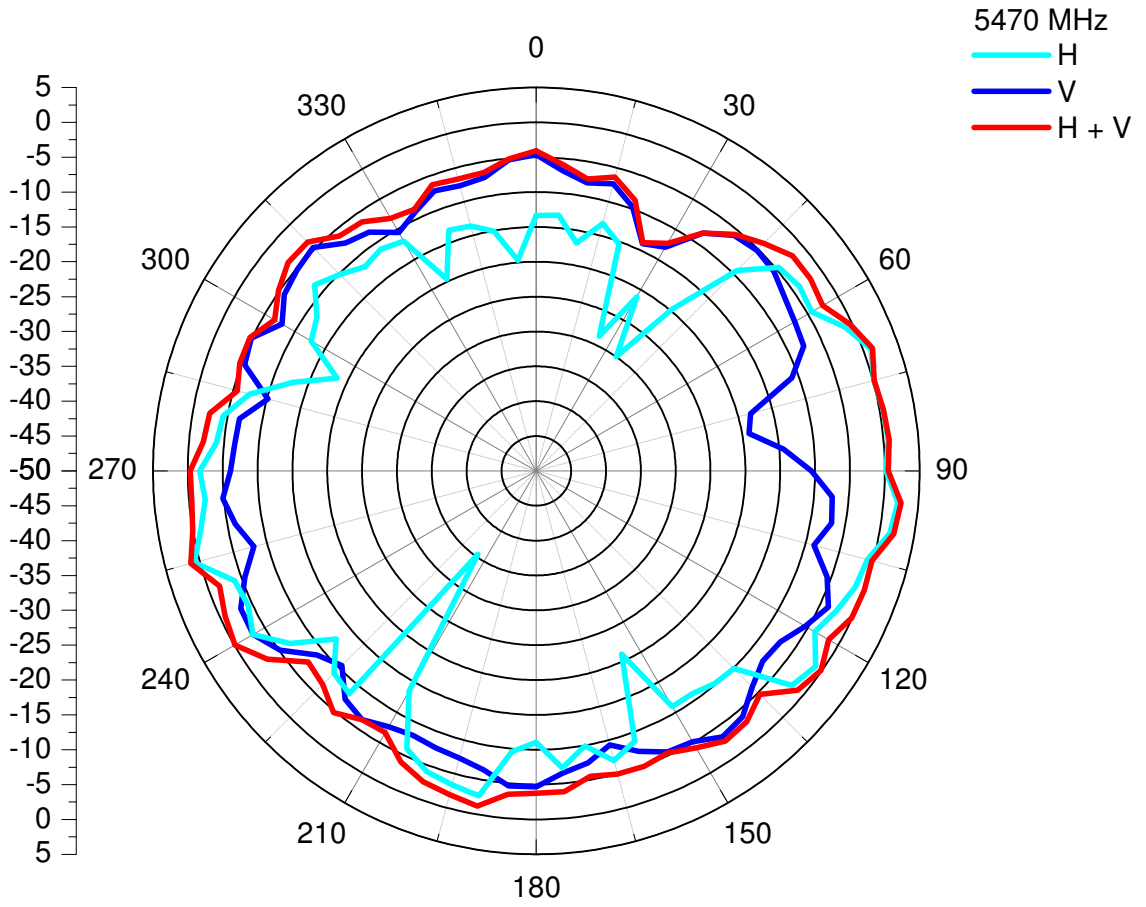
Center Frequency	<b>5597.5 MHz</b>
Horizontal (dBi) peak	<b>1.12</b>
Vertical (dBi) peak	<b>-1.44</b>

**Tx1 antenna: 5725 MHz**



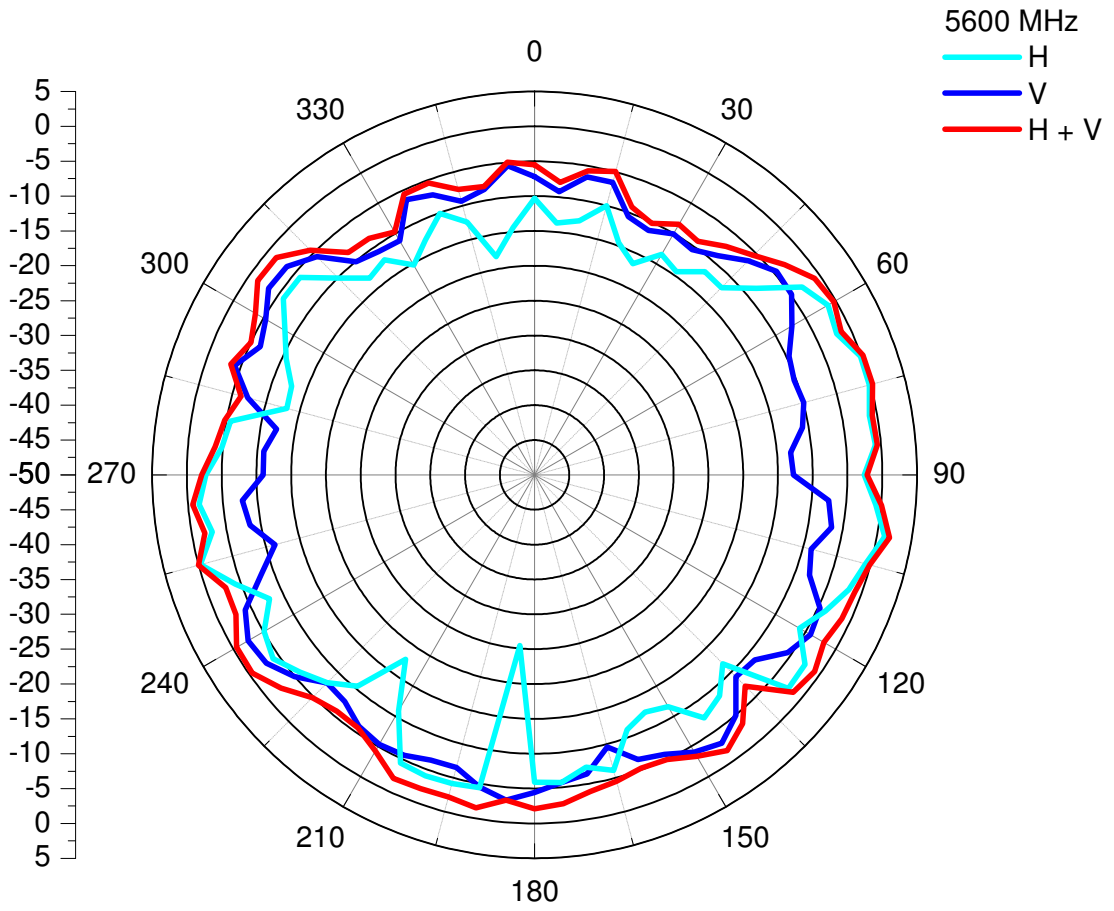
Center Frequency	<b>5725 MHz</b>
Horizontal (dBi) peak	<b>0.15</b>
Vertical (dBi) peak	<b>-1.53</b>

**Tx2 (or Rx2) antenna: 5470 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



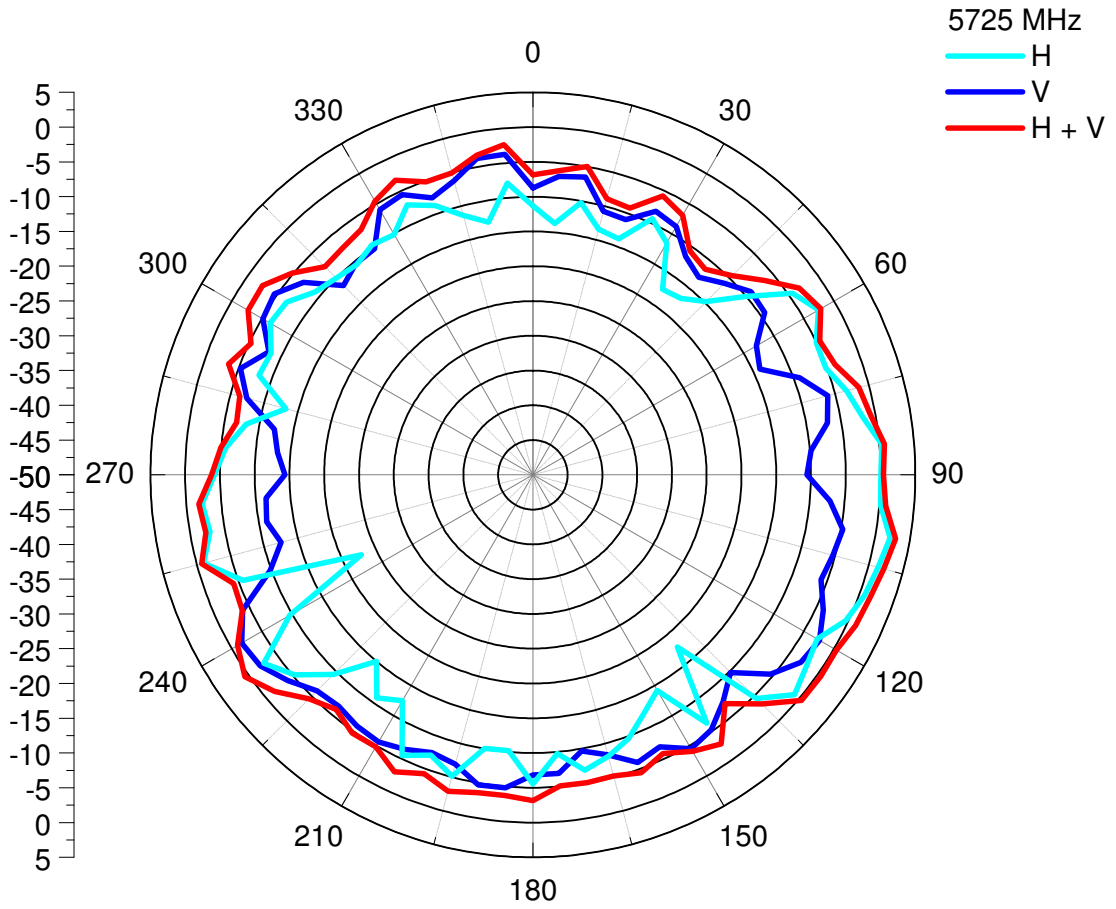
Center Frequency	<b>5470 MHz</b>
Horizontal (dBi) peak	<b>2.06</b>
Vertical (dBi) peak	<b>-3.11</b>

**Tx2 (or Rx2) antenna: 5597.5 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



Center Frequency	<b>5597.5 MHz</b>
Horizontal (dBi) peak	<b>1.15</b>
Vertical (dBi) peak	<b>-2.45</b>

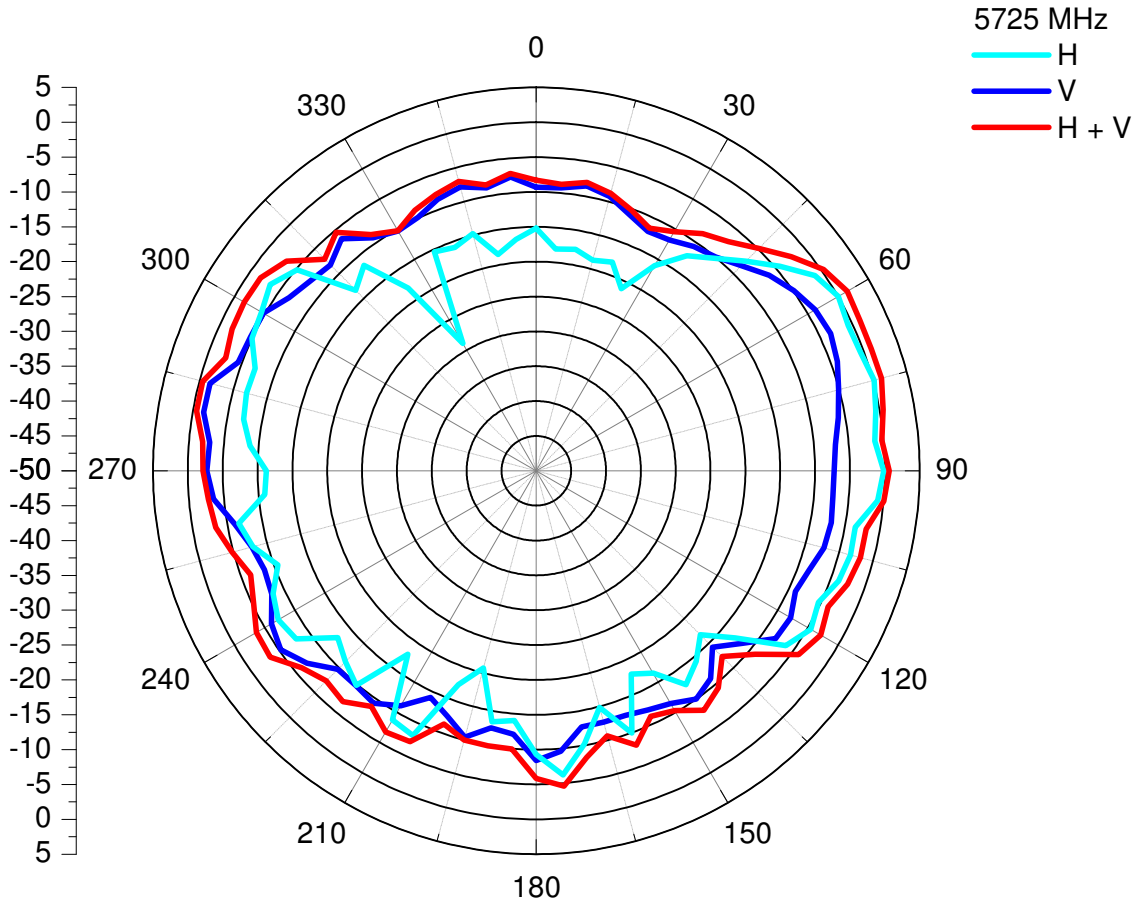
**Tx2 (or Rx2) antenna: 5725 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



Center Frequency	<b>5725 MHz</b>
Horizontal (dBi) peak	<b>2.15</b>
Vertical (dBi) peak	<b>-1.64</b>

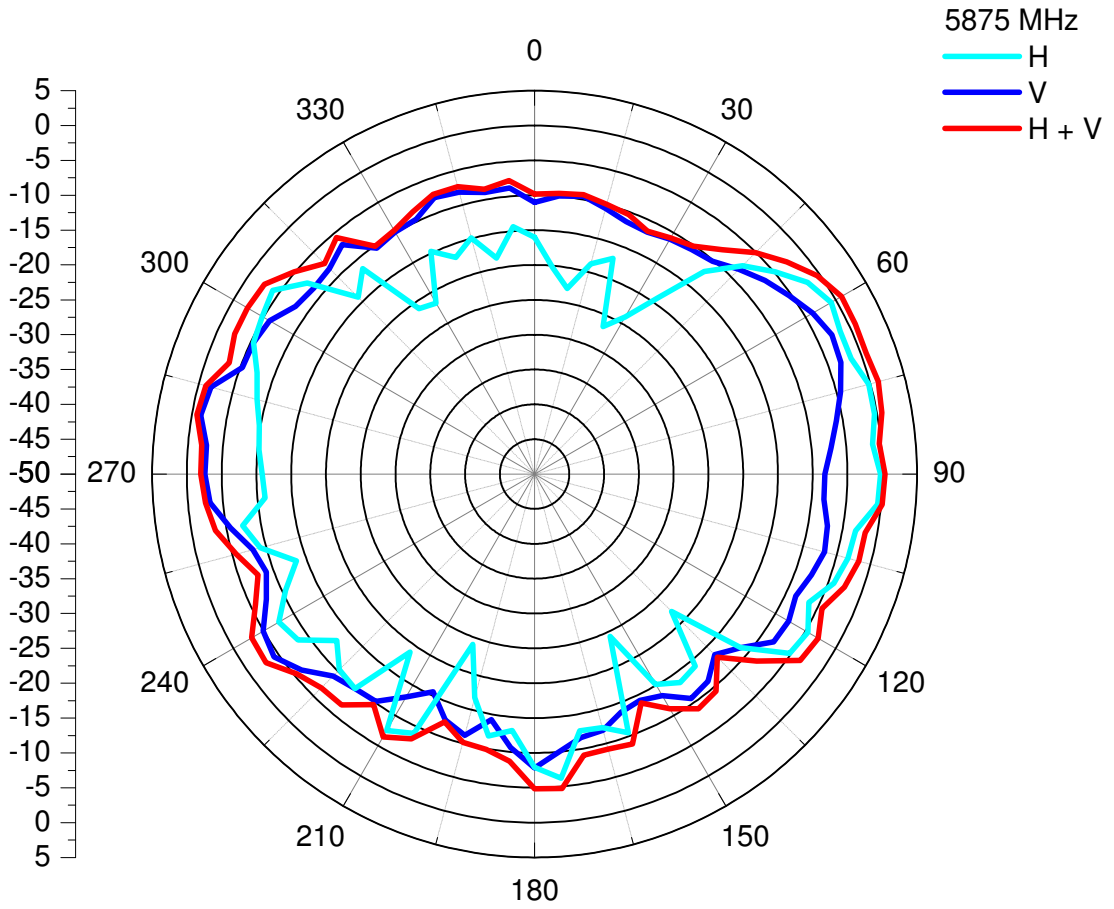
**5725-5850 MHz radiation characteristic**

**Tx1 antenna: 5725 MHz**



Center Frequency	<b>5725 MHz</b>
Horizontal (dBi) peak	<b>0.15</b>
Vertical (dBi) peak	<b>-1.53</b>

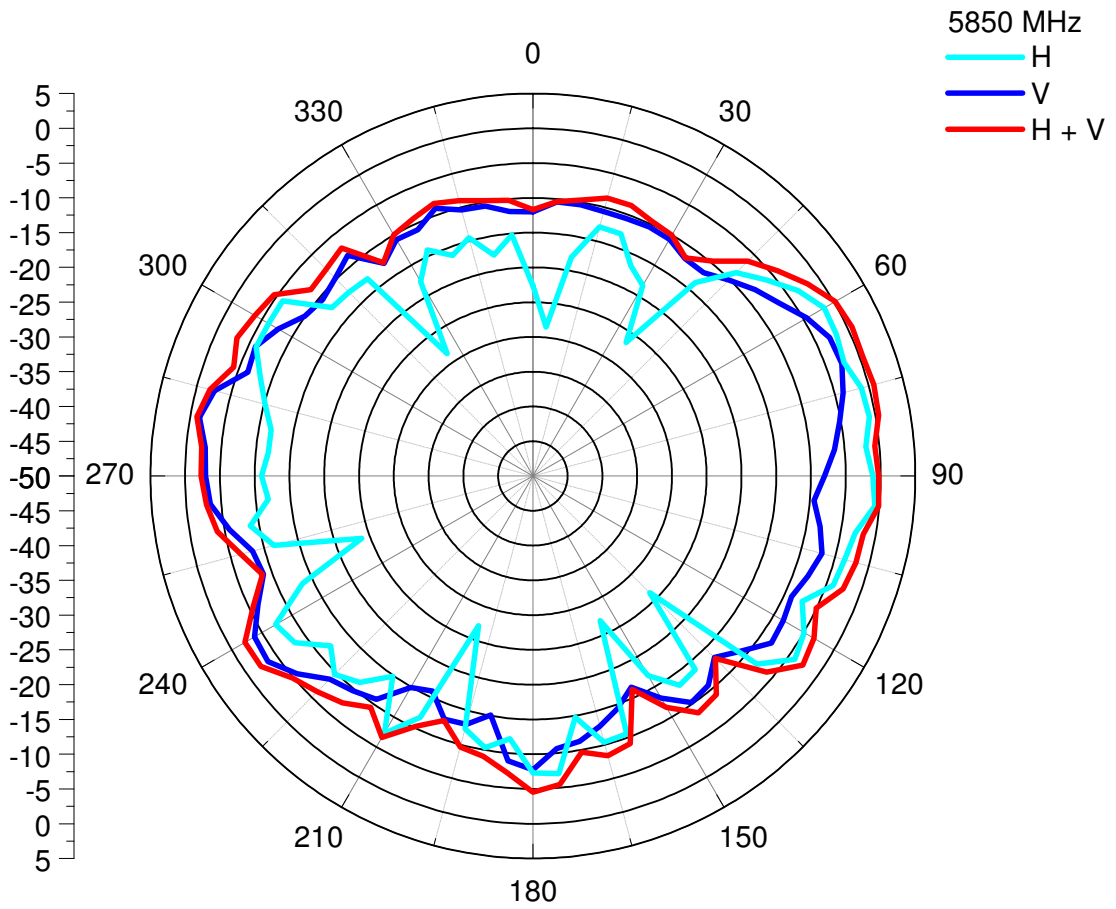
**Tx1 antenna: 5785 MHz**



Center Frequency	<b>5785 MHz</b>
Horizontal (dBi) peak	<b>-0.24</b>
Vertical (dBi) peak	<b>-1.26</b>

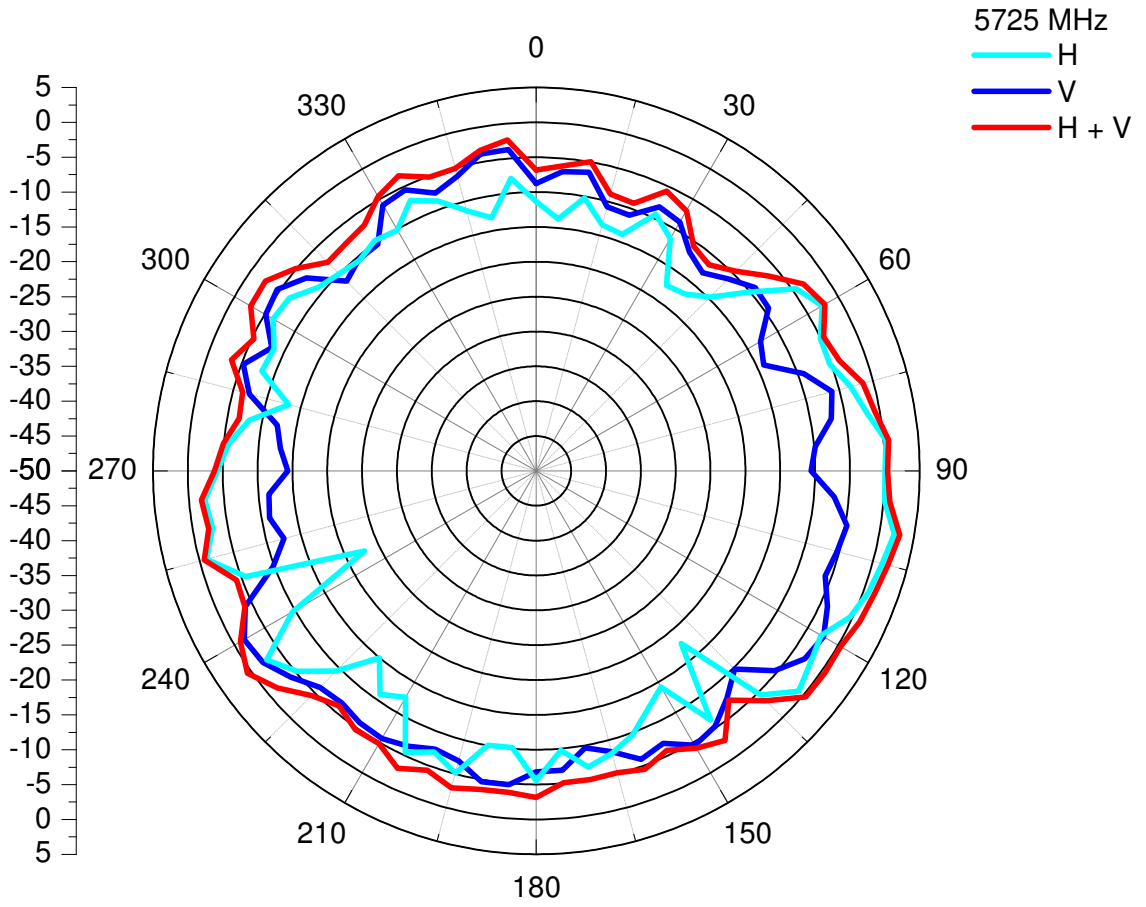


**Tx1 antenna: 5850 MHz**



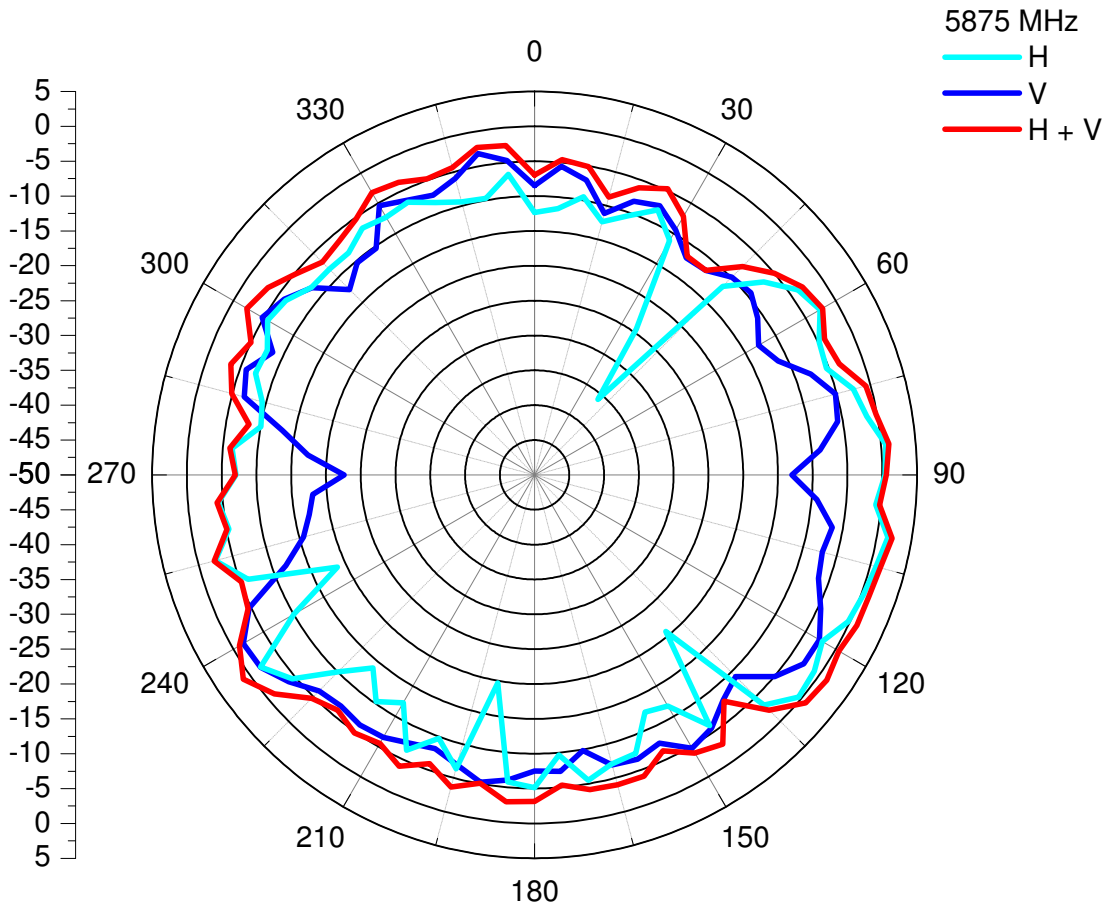
Center Frequency	<b>5850 MHz</b>
Horizontal (dBi) peak	<b>-0.63</b>
Vertical (dBi) peak	<b>-1.33</b>

**Tx2 (or Rx2) antenna: 5725 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



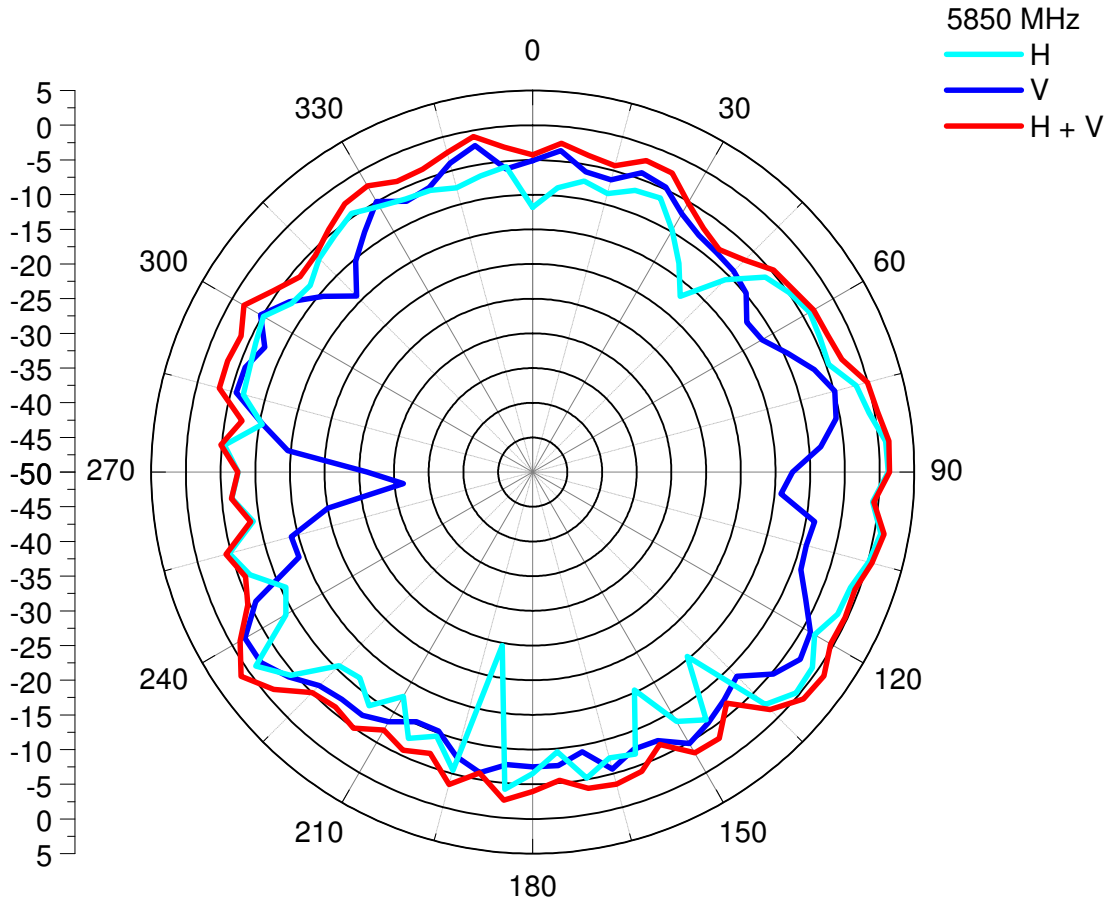
Center Frequency	<b>5725 MHz</b>
Horizontal (dBi) peak	<b>2.15</b>
Vertical (dBi) peak	<b>-1.64</b>

**Tx2 (or Rx2) antenna: 5785 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



Center Frequency	<b>5785 MHz</b>
Horizontal (dBi) peak	<b>1.59</b>
Vertical (dBi) peak	<b>-1.62</b>

**Tx2 (or Rx2) antenna: 5850 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**

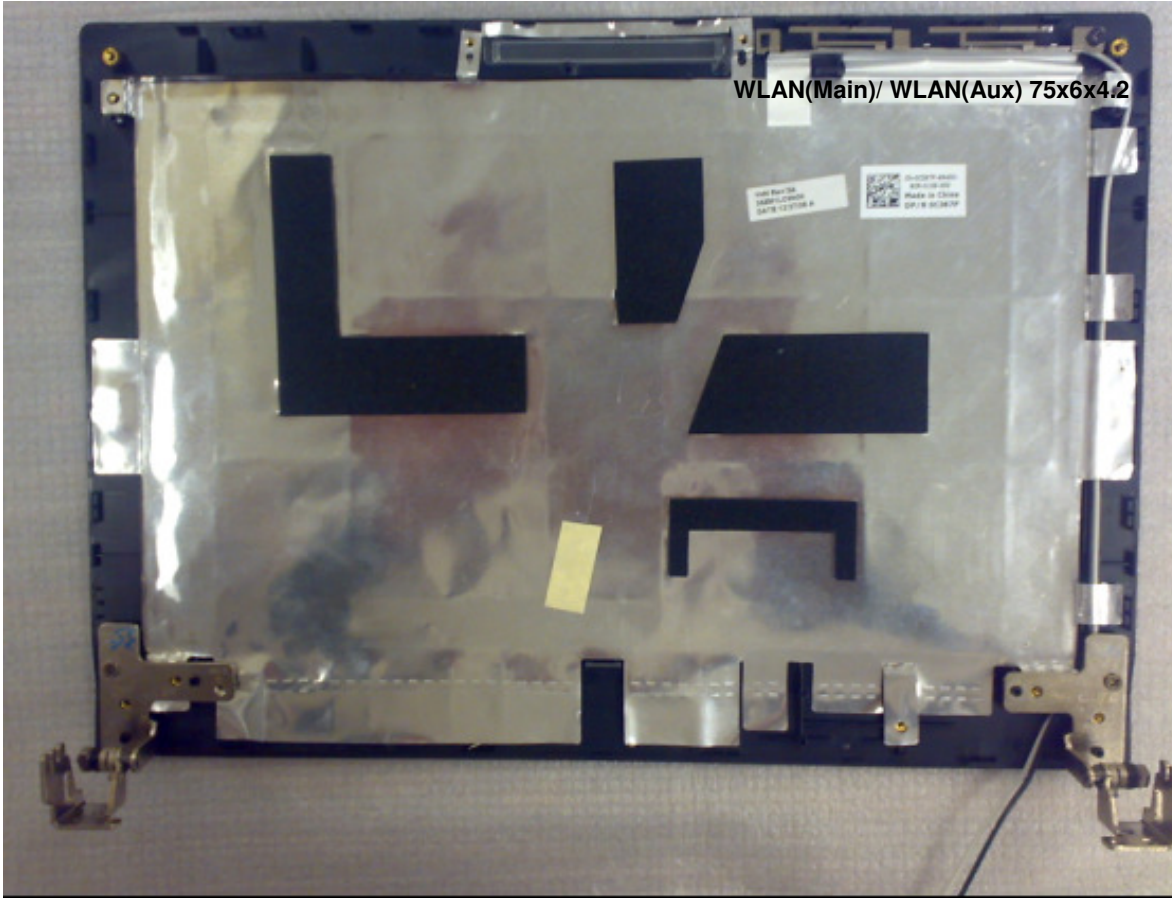


Center Frequency	<b>5850 MHz</b>
Horizontal (dBi) peak	<b>1.23</b>
Vertical (dBi) peak	<b>-2.10</b>

## Section 4. Host Platform Information

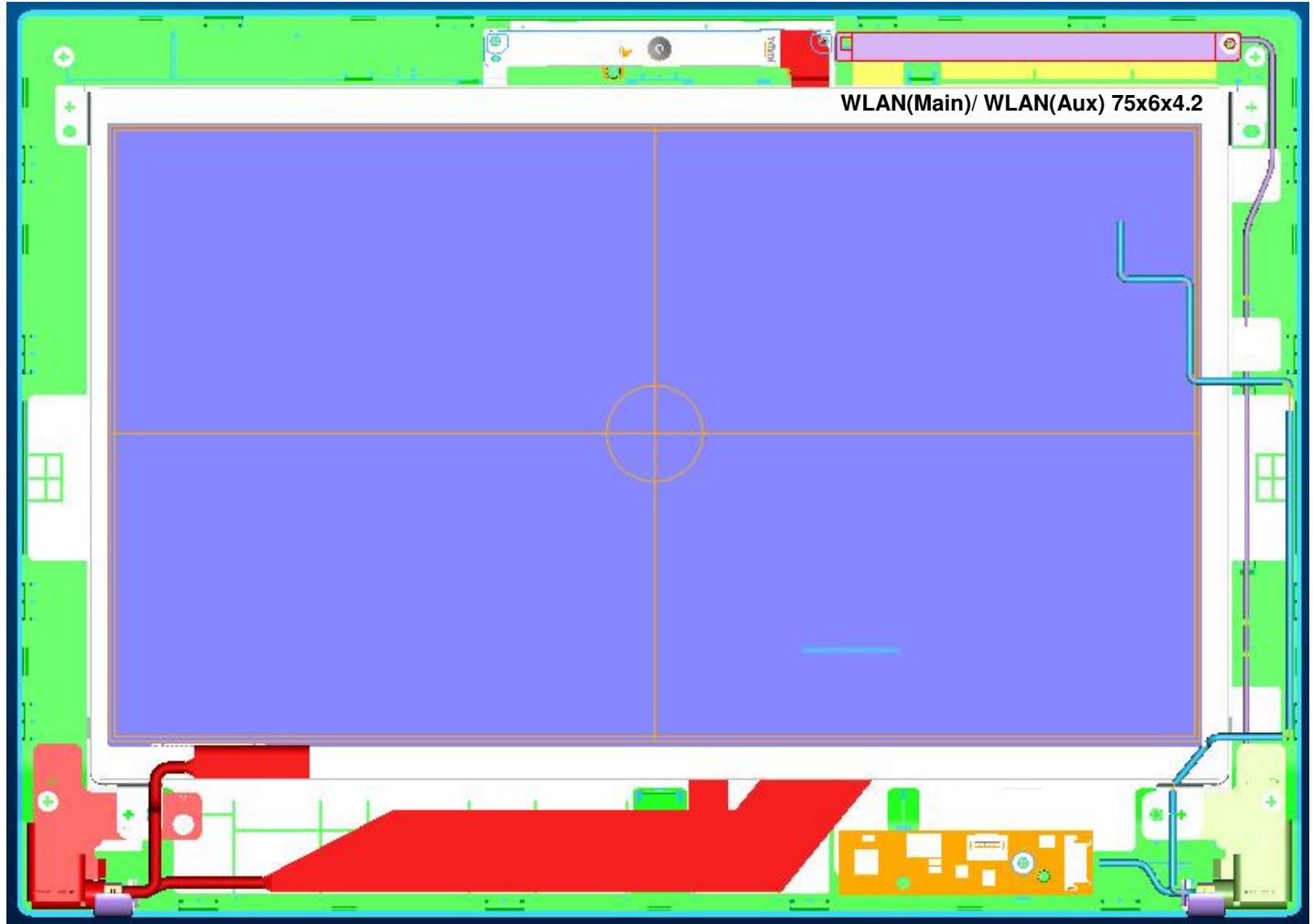
OEM / ODM Host platform: (DELL Latitude 2000) platform correlated to antenna data

### Rating Label Photo:



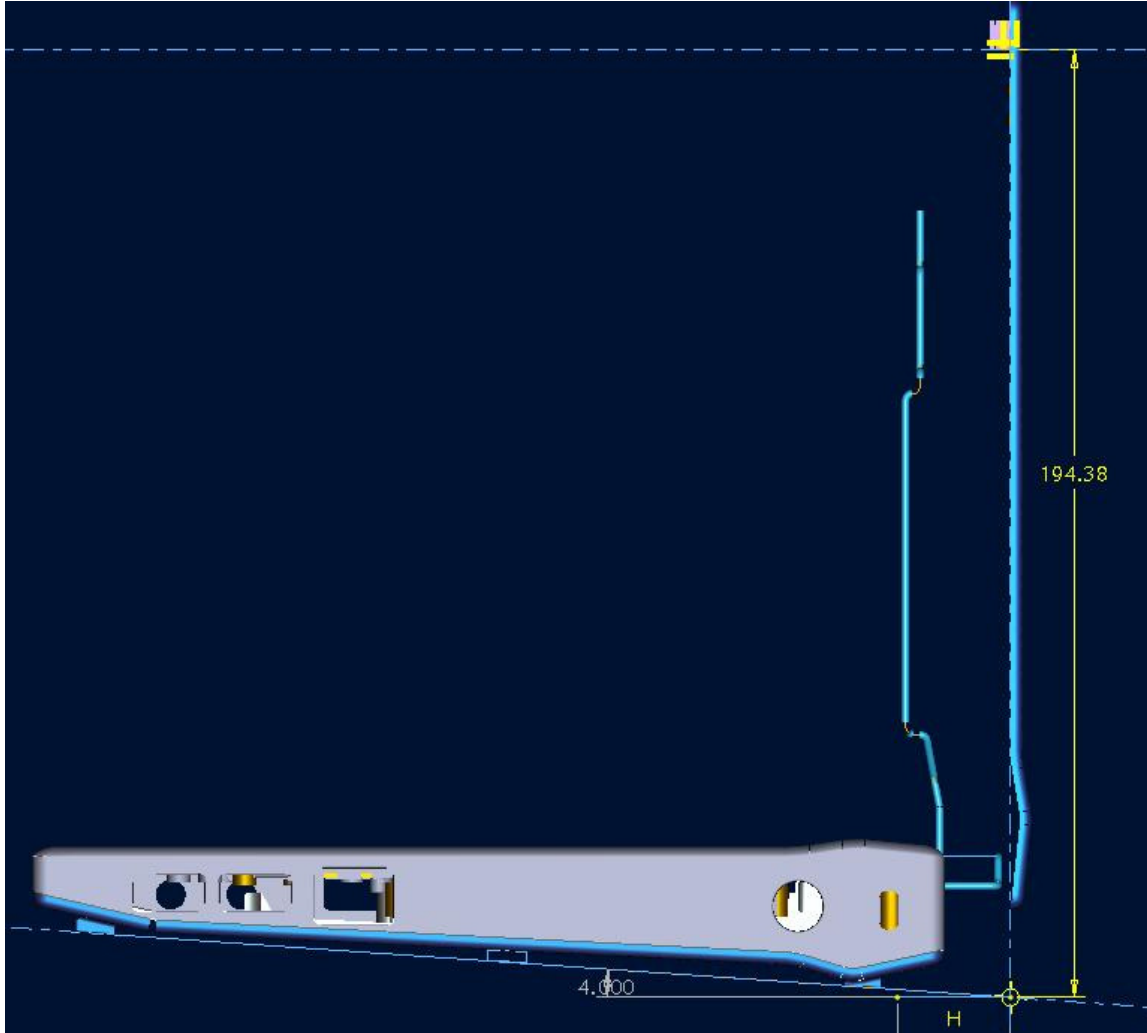
## Section 5. Antenna Host Platform Location Information

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						