

## Regulatory WLAN Antenna Information

### Yageo WLAN Antennae exclusively for DELL Tiger (Combo) Platform

<b>Platform</b>	
Platform Owner	DELL Corporation
Brand Name	DELL
Model Name	Tiger (WiMax-WLAN Only)
ODM	Compal Corporation
Target Launch Date	2008/ 11/ 11
<b>Antenna</b>	
Brand Name	Yageo
Part Number	<input checked="" type="checkbox"/> Tx1 Antenna: CAN4313811022701B
	<input checked="" type="checkbox"/> Tx2 Antenna: CAN4313811022701B
	<input type="checkbox"/>
<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 <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 Manufacturer	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)
CAN4313811022701B  Tx1 antenna	YAGEO Corporation	PIFA	50 ohm Coaxial length: 41.5 cm diameter: 1.37 mm Connector: Hirose U.FL-LP IPEX MHF or equivalent	2400-2500MHz 0.80 dBi (peak)	2400-2500MHz 1.89 dBi (peak)	2400-2500MHz 3.00 max	2400-2500MHz 1.09 dBi (peak)
				2496-2690MHz 0.59 dBi (peak)	2496-2690MHz 1.71 dBi (peak)	2496-2690MHz 3.00 max	2496-2690MHz 1.12 dBi (peak)
				5150-5350MHz -0.13 dBi (peak)	5150-5350MHz 1.54 dBi (peak)	5150-5350MHz 3.00 max	5150-5350MHz 1.67 dBi (peak)
				5470-5725MHz 0.83 dBi (peak)	5470-5725MHz 2.56 dBi (peak)	5470-5725MHz 3.00 max	5470-5725MHz 1.73 dBi (peak)
				5725-5850MHz 2.01 dBi (peak)	5725-5850MHz 3.77 dBi (peak)	5725-5850MHz 3.00 max	5725-5850MHz 1.76 dBi (peak)
				2400-2500MHz -0.96 dBi (peak)	2400-2500MHz 0.15 dBi (peak)	2400-2500MHz 3.00 max	2400-2500MHz 1.11 dBi (peak)
CAN4313811022701B  Tx2 antenna	YAGEO Corporation	PIFA	50 ohm Coaxial length: 33.3 cm diameter: 1.13 mm Connector: Hirose U.FL-LP IPEX MHF or equivalent	2496-2690MHz 1.55 dBi (peak)	2496-2690MHz 2.69 dBi (peak)	2496-2690MHz 3.00 max	2496-2690MHz 1.14 dBi (peak)
				5150-5350MHz 0.70 dBi (peak)	5150-5350MHz 2.38 dBi (peak)	5150-5350MHz 3.00 max	5150-5350MHz 1.68 dBi (peak)
				5470-5725MHz -0.64 dBi (peak)	5470-5725MHz 1.10 dBi (peak)	5470-5725MHz 3.00 max	5470-5725MHz 1.74 dBi (peak)
				5725-5850MHz 0.77 dBi (peak)	5725-5850MHz 2.54 dBi (peak)	5725-5850MHz 3.00 max	5725-5850MHz 1.77 dBi (peak)
				2400-2500MHz -0.96 dBi (peak)	2400-2500MHz 0.15 dBi (peak)	2400-2500MHz 3.00 max	2400-2500MHz 1.11 dBi (peak)
				2496-2690MHz 1.55 dBi (peak)	2496-2690MHz 2.69 dBi (peak)	2496-2690MHz 3.00 max	2496-2690MHz 1.14 dBi (peak)

**NOTE:**

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

**Antenna Peak Gain Table:**

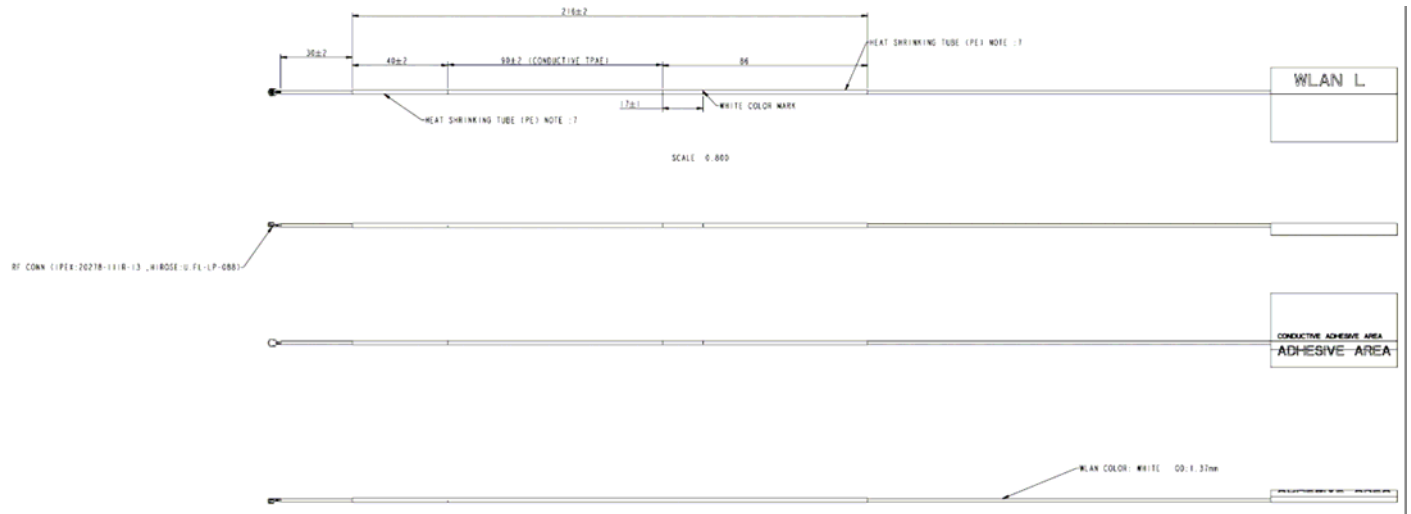
Frequency (MHz)	Tx1 Antenna		Tx2 Antenna	
	Horizontal	Vertical	Horizontal	Vertical
	(dBi)	(dBi)	(dBi)	(dBi)
2400	0.07	0.80	-1.81	-1.70
2450	0.13	-0.23	-0.96	-1.66
2500	0.59	-1.23	-1.07	-2.22
2501	0.59	-1.25	-1.03	-2.27
2593	0.55	-0.40	1.55	-2.60
2685	0.36	0.04	0.51	-1.55
5150	-2.09	-1.58	-0.78	-0.57
5250	-0.97	-0.13	-0.43	0.70
5350	-1.61	-2.11	-2.22	0.51
5470	-0.17	-0.95	-1.89	-0.64
5600	0.14	-1.72	-0.96	-1.50
5725	0.83	-2.83	-1.52	-0.81
5785	2.01	-3.55	0.77	0.29
5850	1.45	-3.33	0.48	-0.86

- 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.

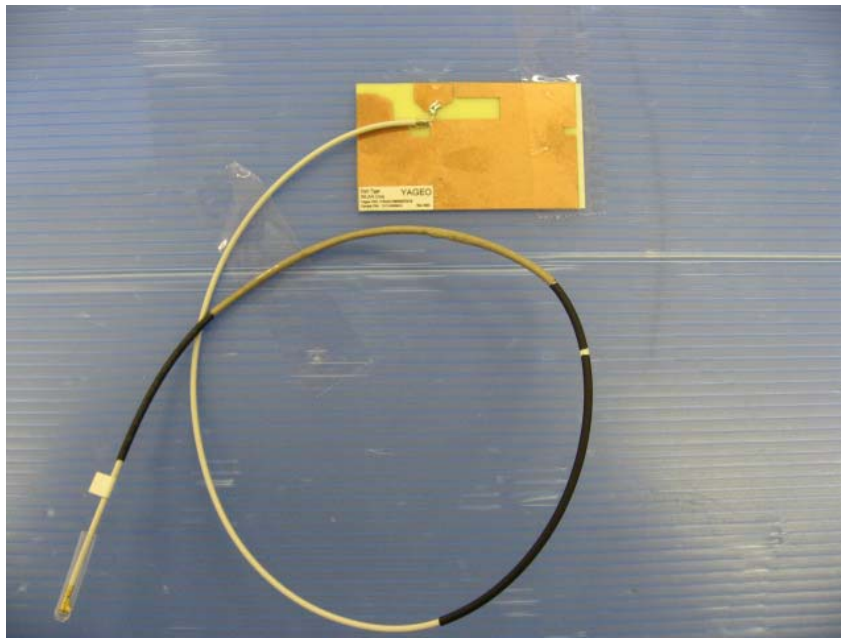
## Section 2. Dimensioned Photos or Drawings of Antennas

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

### Tx1 Antenna Dimensioned Drawing:

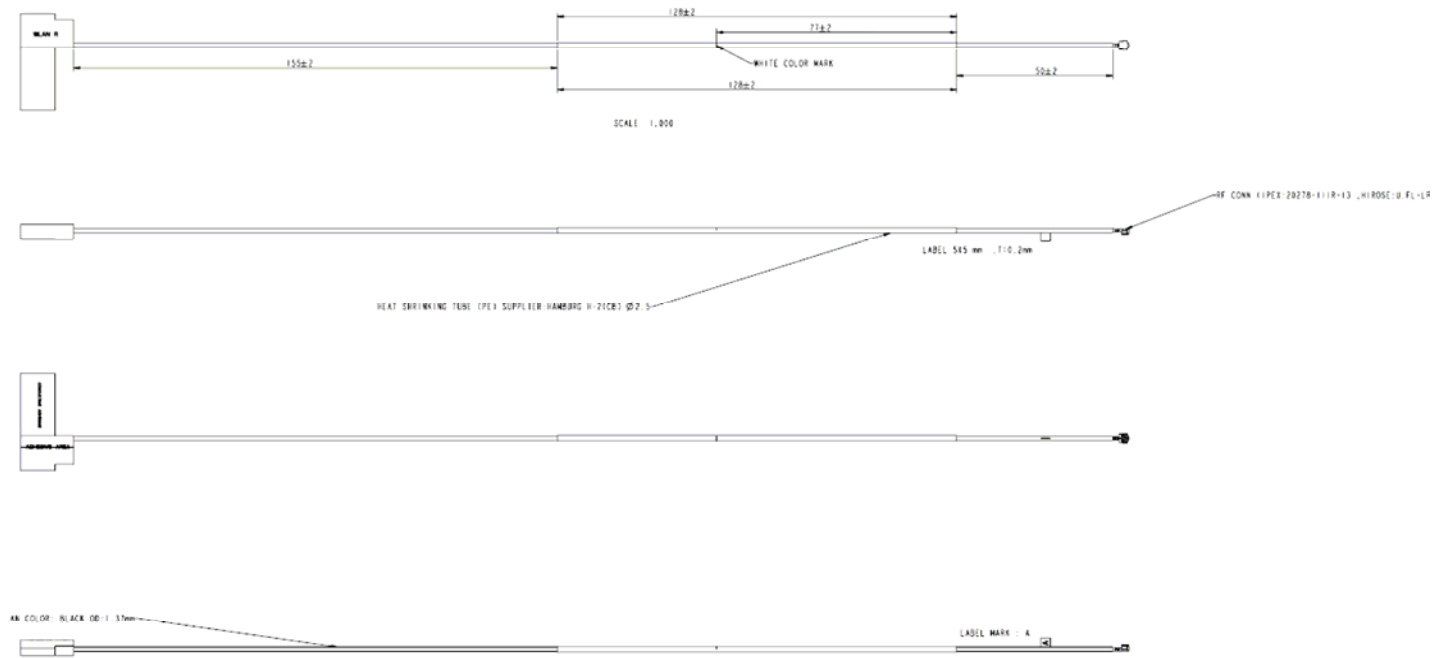


### Tx1 Antenna Photo:

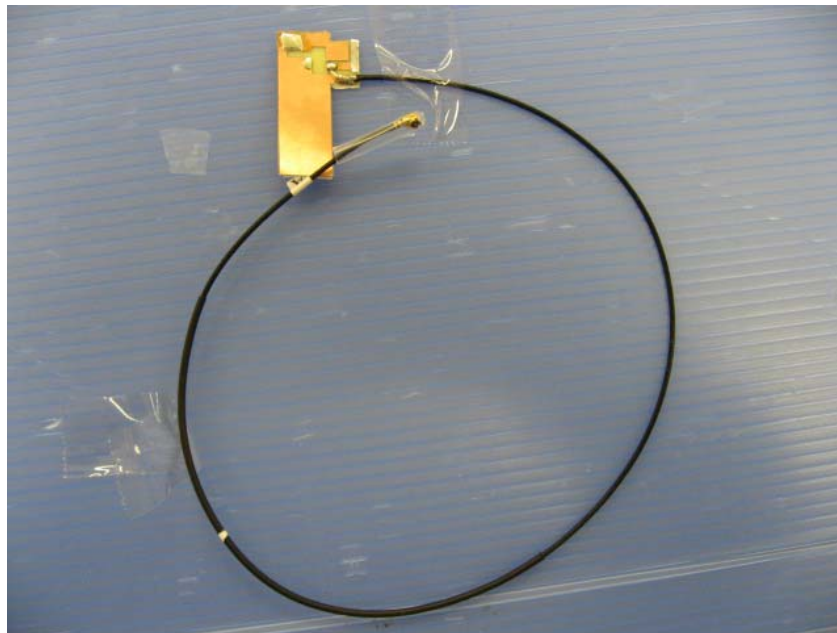


**Include a dimensioned photo and dimensioned drawing of Tx2 antenna here.**

**Tx2 Antenna Dimensioned Drawing:**

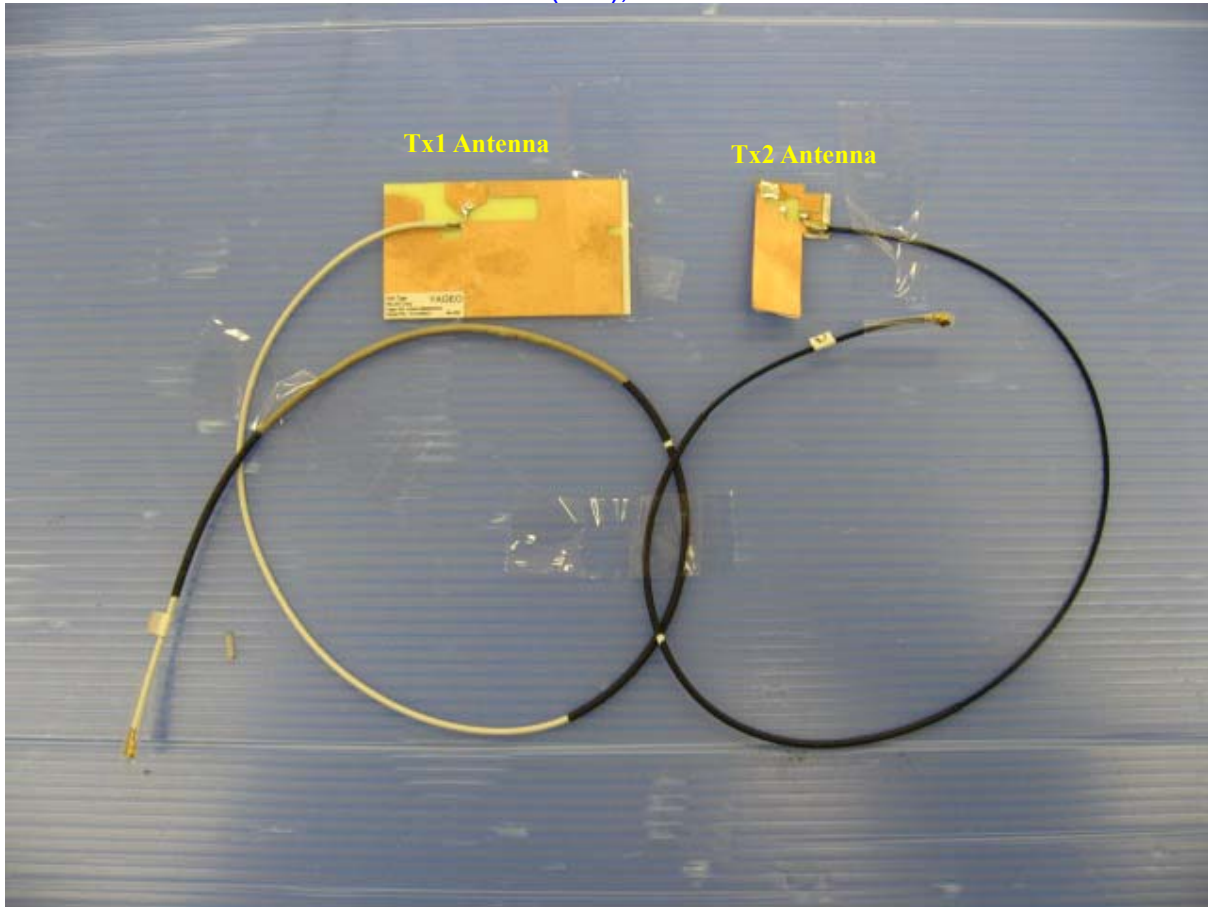


**Tx2 Antenna Photo:**



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

Antenna Manufacturer: Yageo Corporation  
Antenna Part Number: CAN4313811022701B (Tx1),  
CAN4313811022701B (Tx2),



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

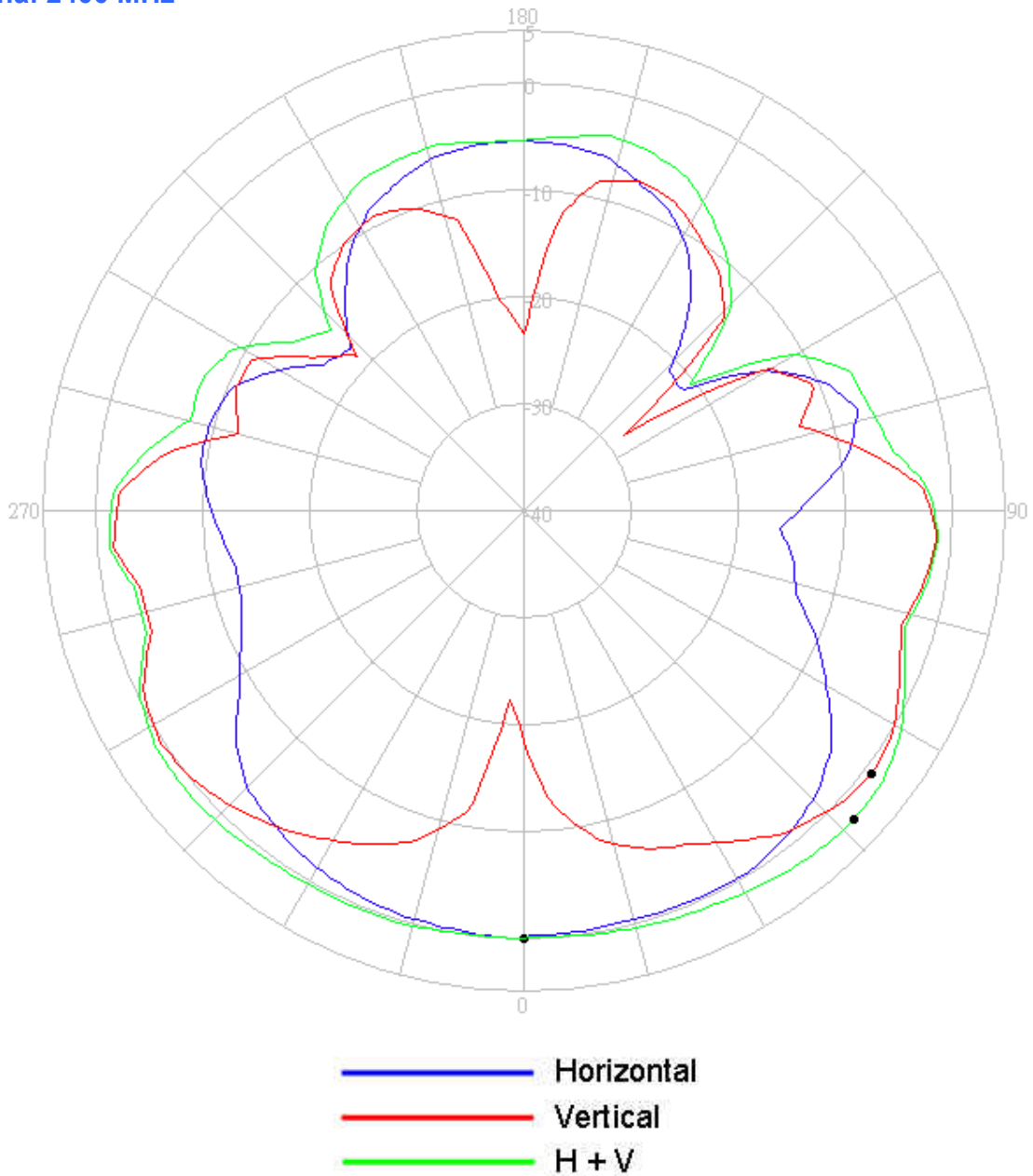
Antenna Manufacturer: Yageo Corporation  
Antenna Part Number: CAN4313811022701B (Tx1),  
CAN4313811022701B (Tx2),



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

### 2400-2500MHz radiation characteristic

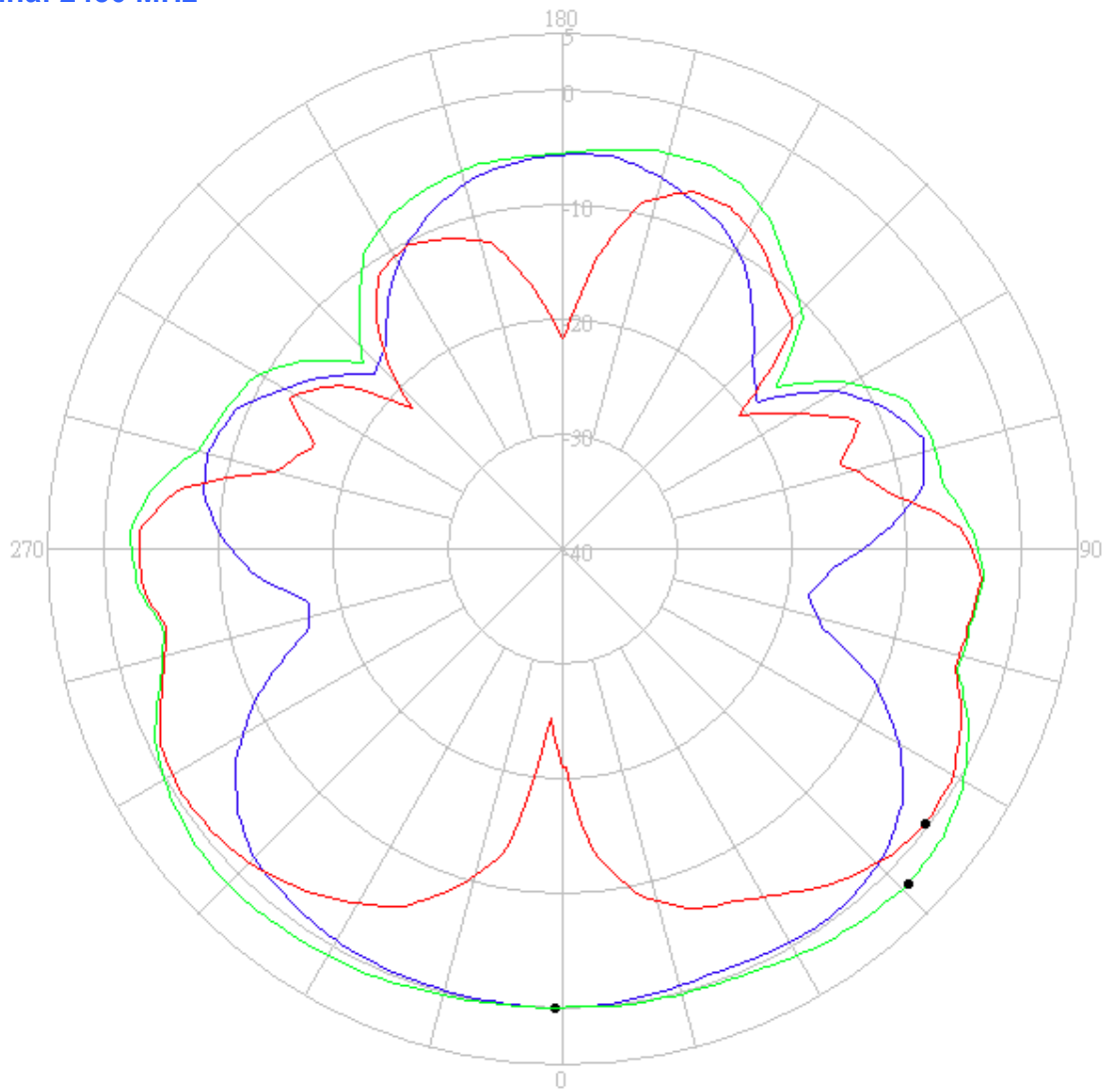
Tx1 antenna: 2400 MHz



Center Frequency	<b>2400 MHz</b>
Horizontal (dBi) Peak	<b>0.07</b>
Vertical (dBi) Peak	<b>0.80</b>



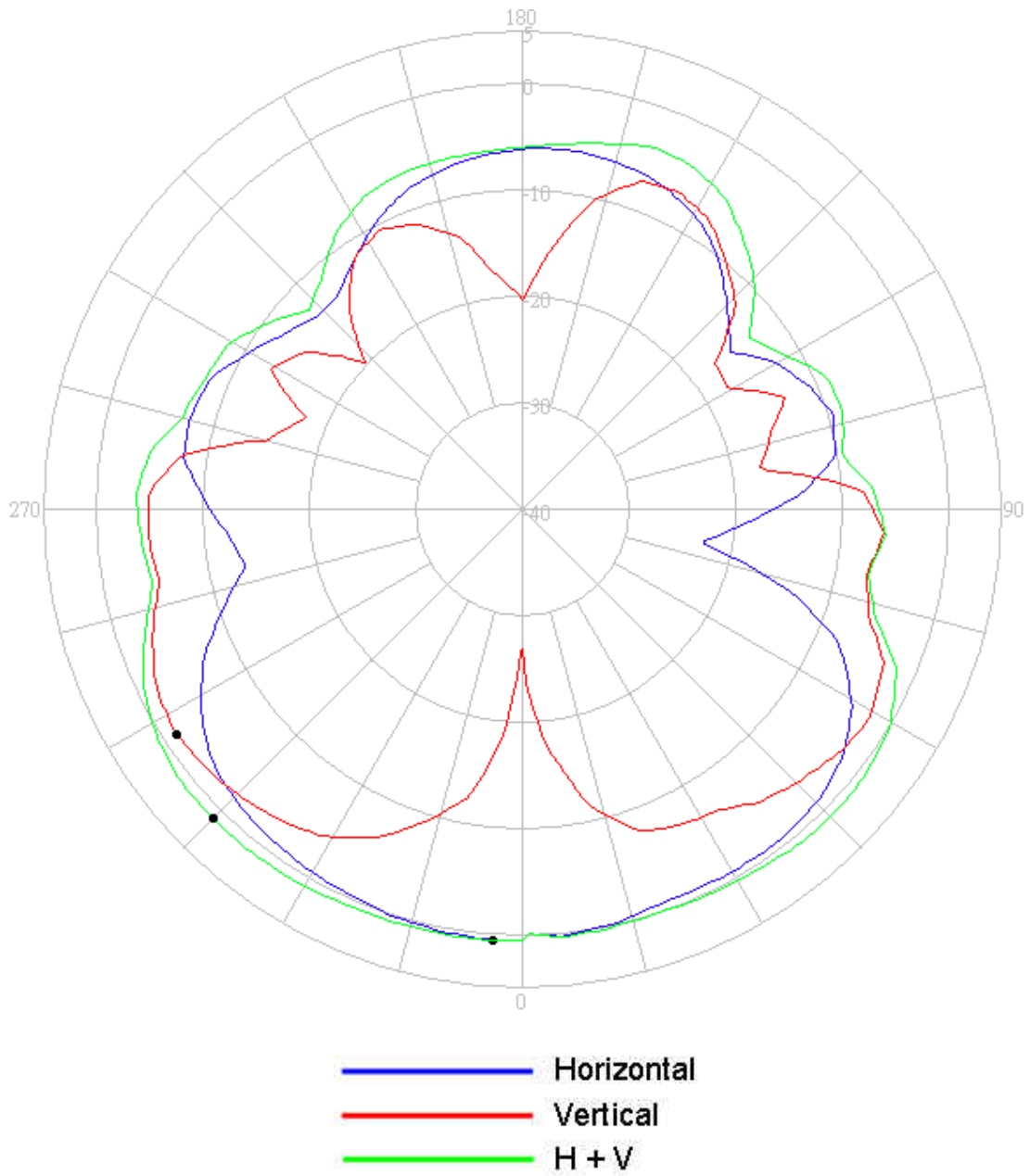
**Tx1 antenna: 2450 MHz**



- Horizontal
- Vertical
- H + V

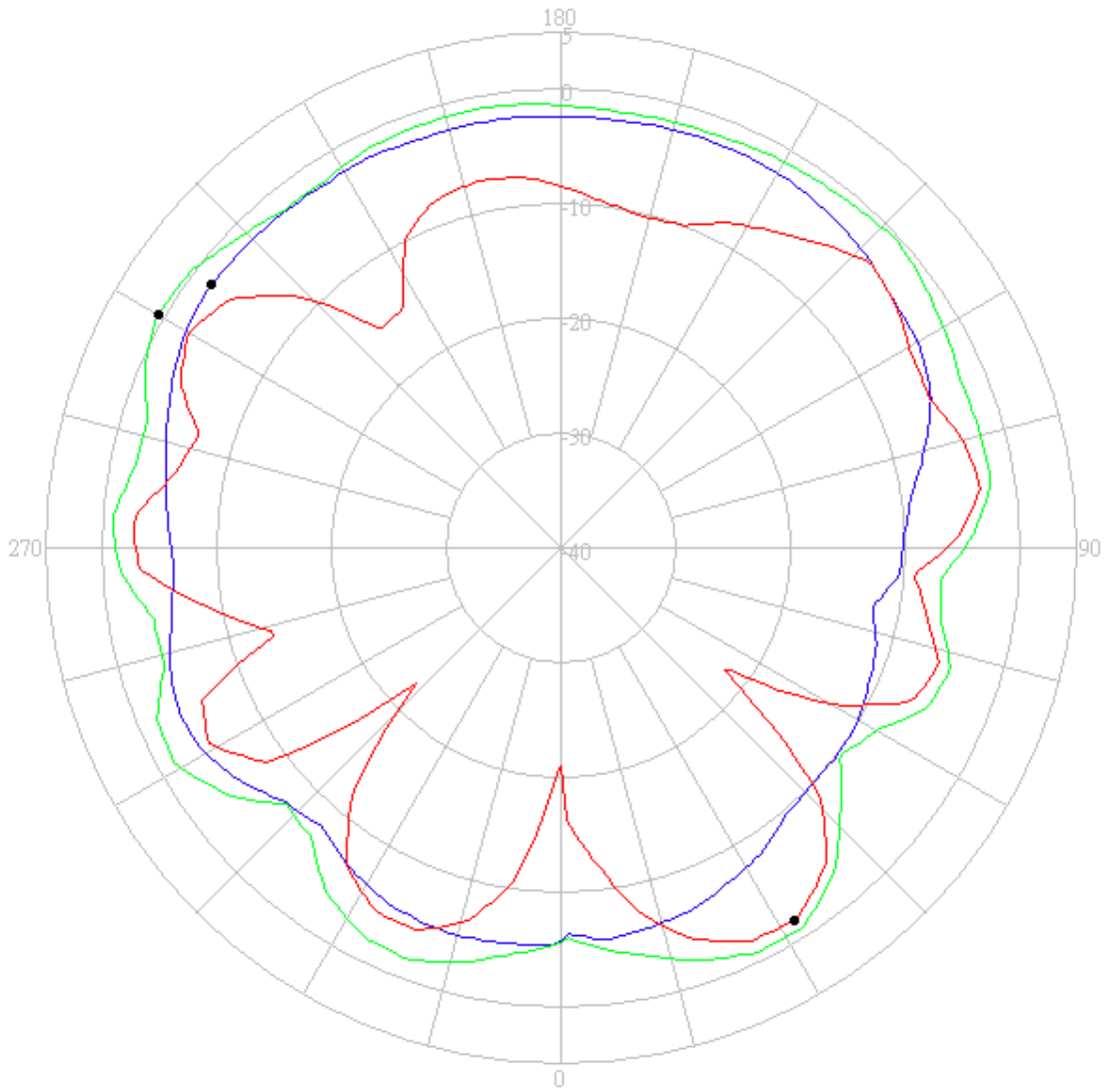
Center Frequency	<b>2450 MHz</b>
Horizontal (dBi) Peak	<b>0.13</b>
Vertical (dBi) Peak	<b>-0.23</b>

**Tx1 antenna: 2500 MHz**



Center Frequency	<b>2500 MHz</b>
Horizontal (dBi) Peak	<b>0.59</b>
Vertical (dBi) Peak	<b>-1.23</b>

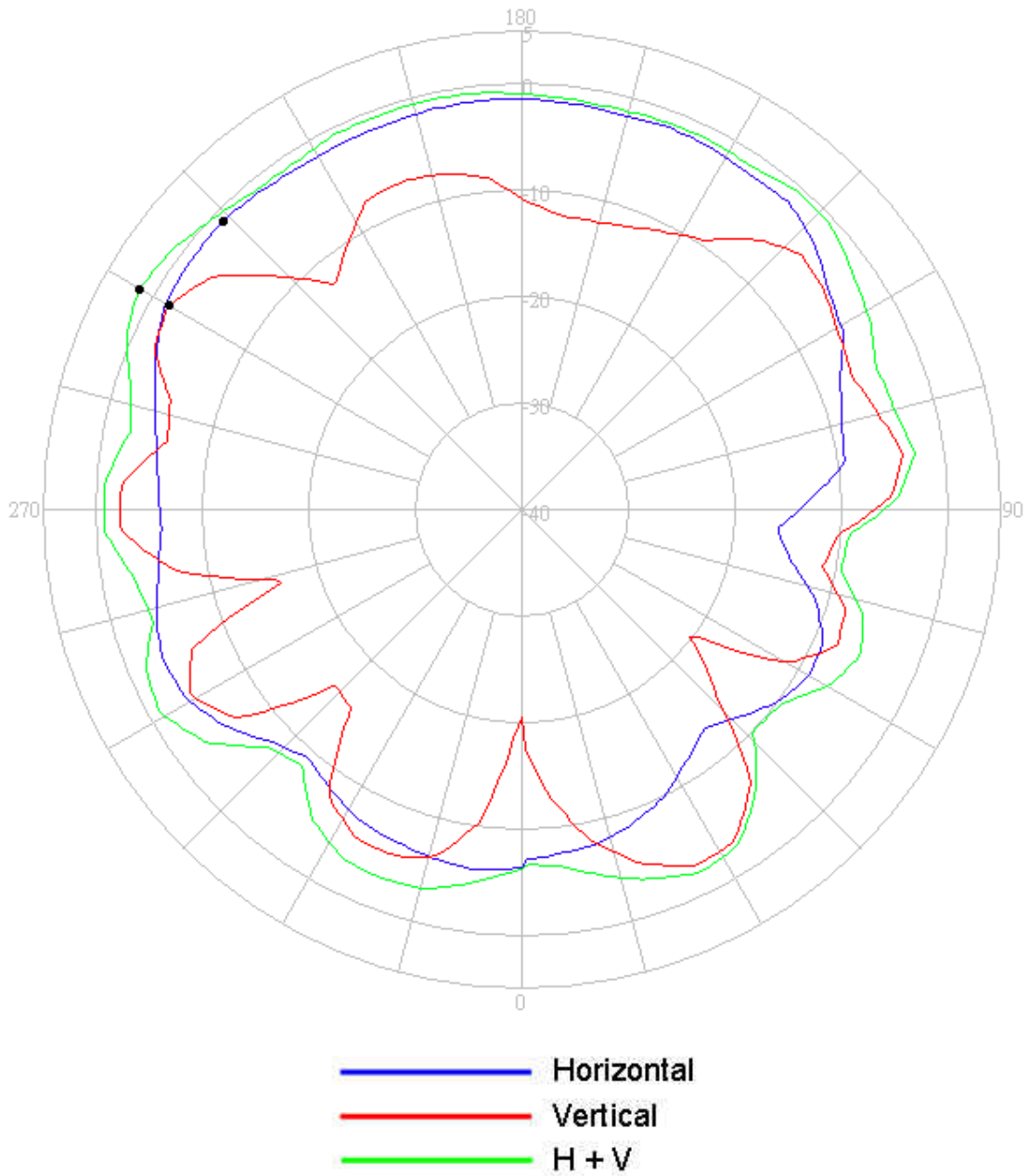
**Tx2 antenna: 2400 MHz**



- Horizontal
- Vertical
- H + V

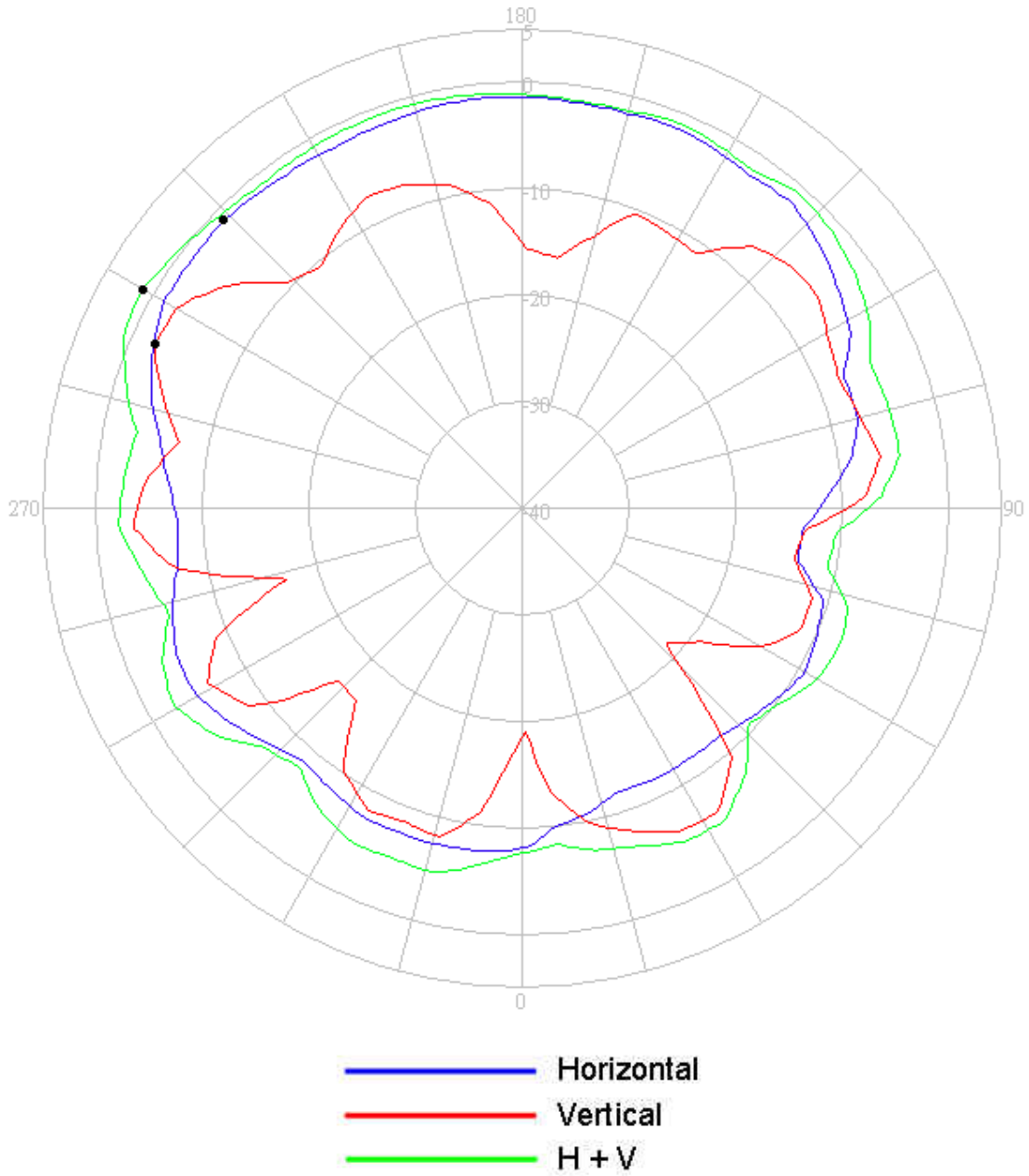
Center Frequency	<b>2400 MHz</b>
Horizontal (dBi) Peak	<b>-1.81</b>
Vertical (dBi) Peak	<b>-1.70</b>

### Tx2 antenna: 2450 MHz



Center Frequency	<b>2450 MHz</b>
Horizontal (dBi) Peak	<b>-0.96</b>
Vertical (dBi) Peak	<b>-1.66</b>

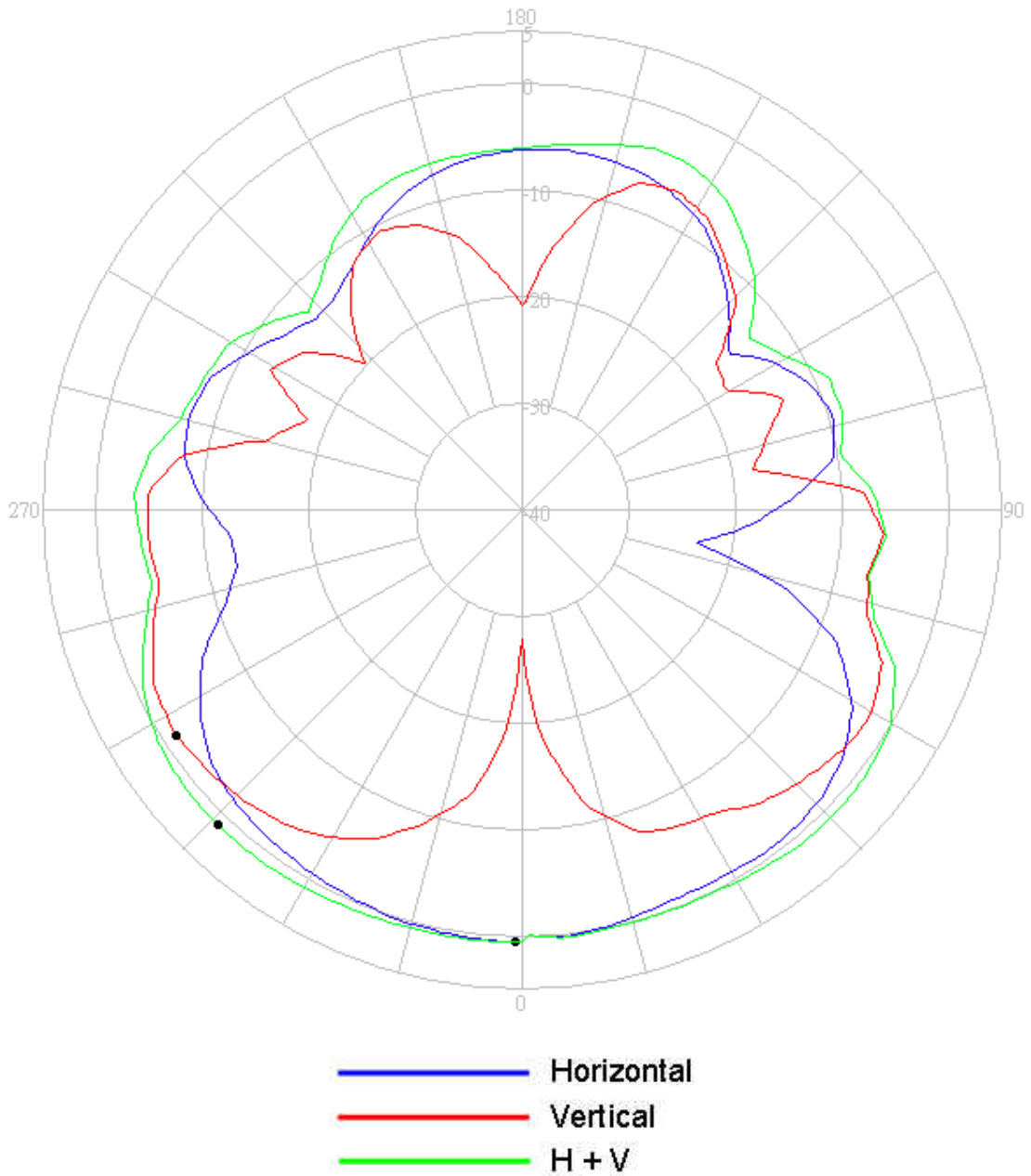
### Tx2 antenna: 2500 MHz



Center Frequency	<b>2500 MHz</b>
Horizontal (dBi) Peak	<b>-1.07</b>
Vertical (dBi) Peak	<b>-2.22</b>

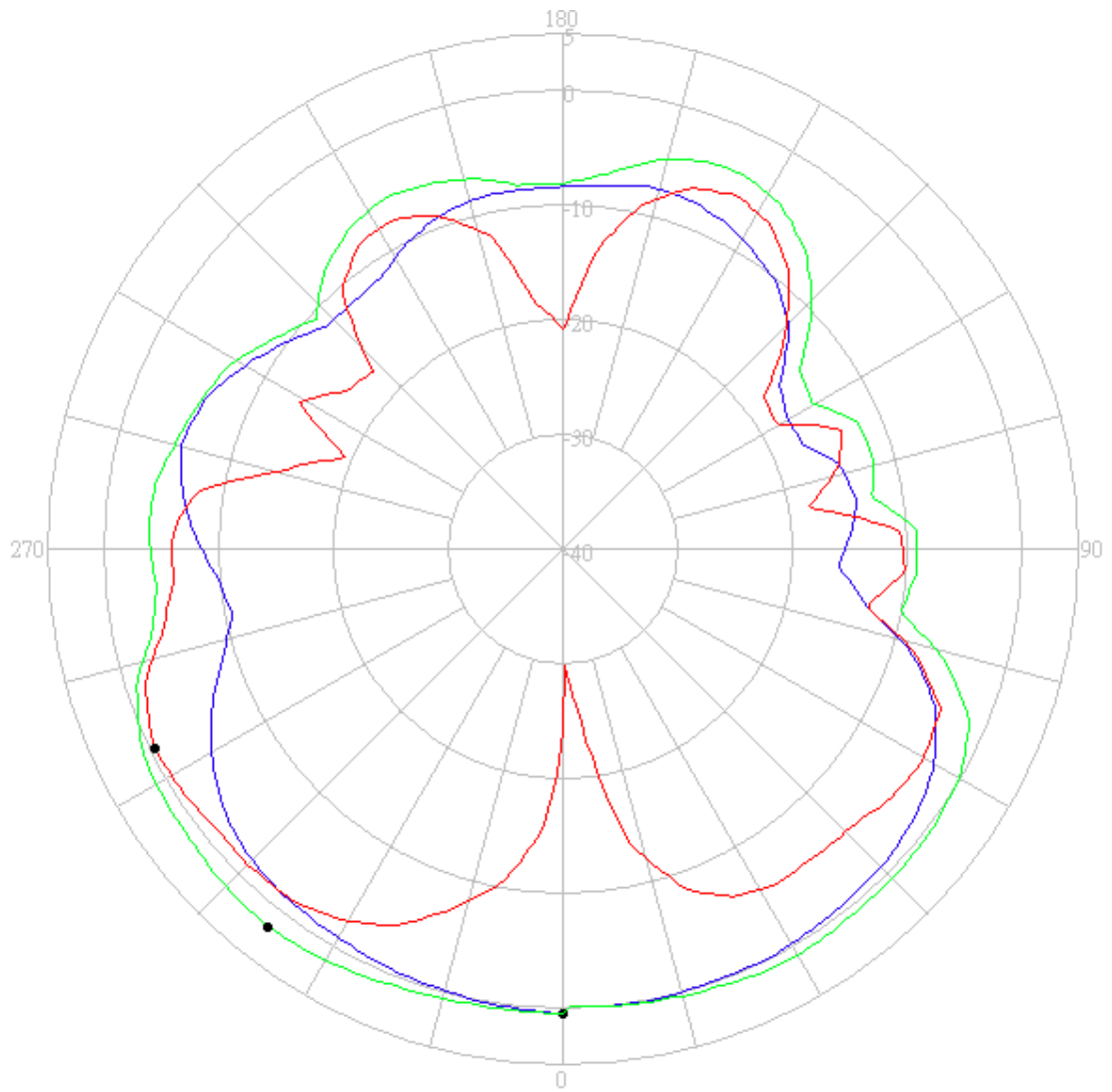
**2490-2700MHz radiation characteristic**

**Tx1 antenna: 2501MHz**



Center Frequency	2501 MHz
Horizontal (dBi) Peak	0.59
Vertical (dBi) Peak	-1.25

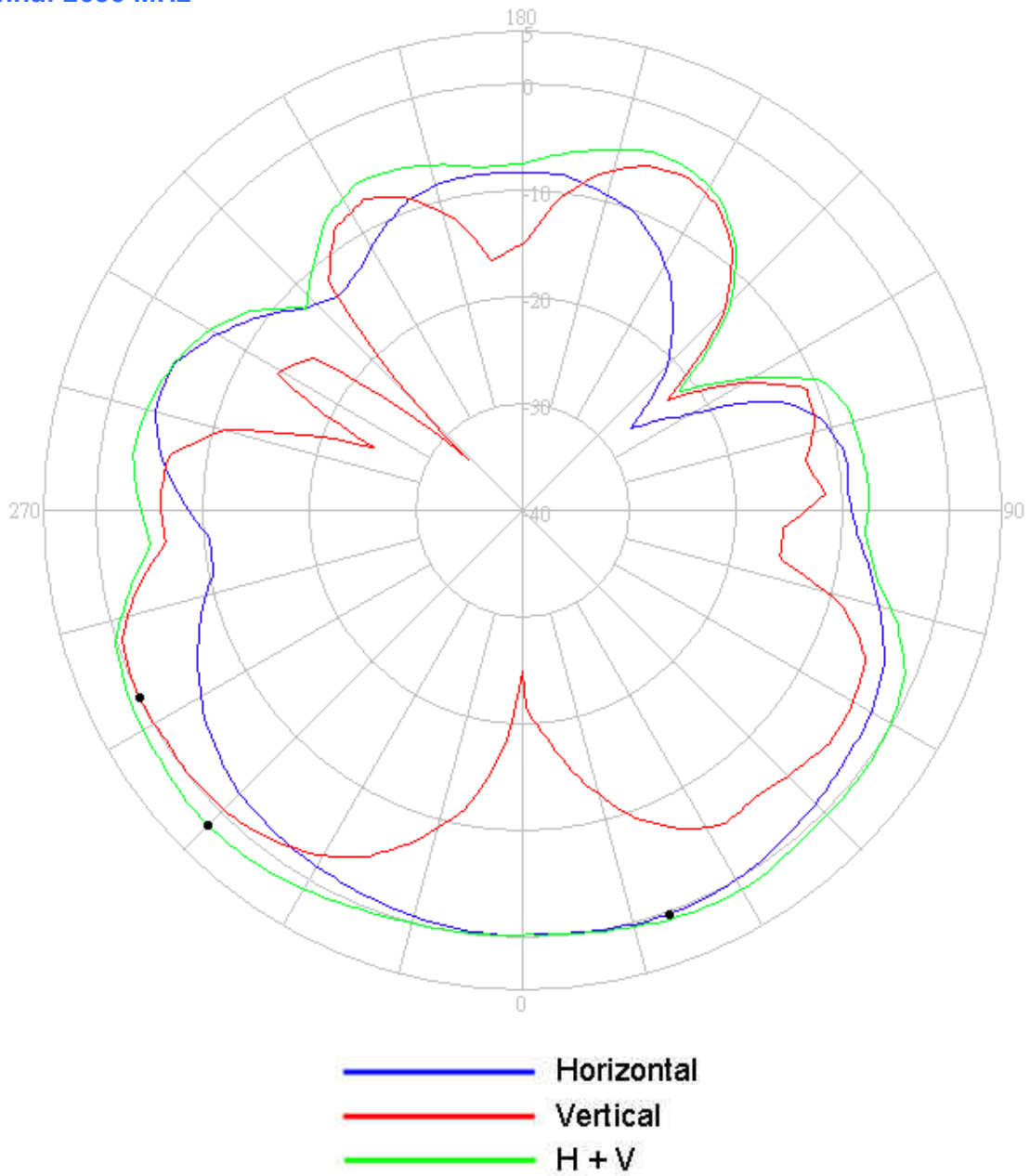
**Tx1 antenna: 2593MHz**



- Horizontal
- Vertical
- H + V

Center Frequency	<b>2593 MHz</b>
Horizontal (dBi) Peak	<b>0.55</b>
Vertical (dBi) Peak	<b>-0.40</b>

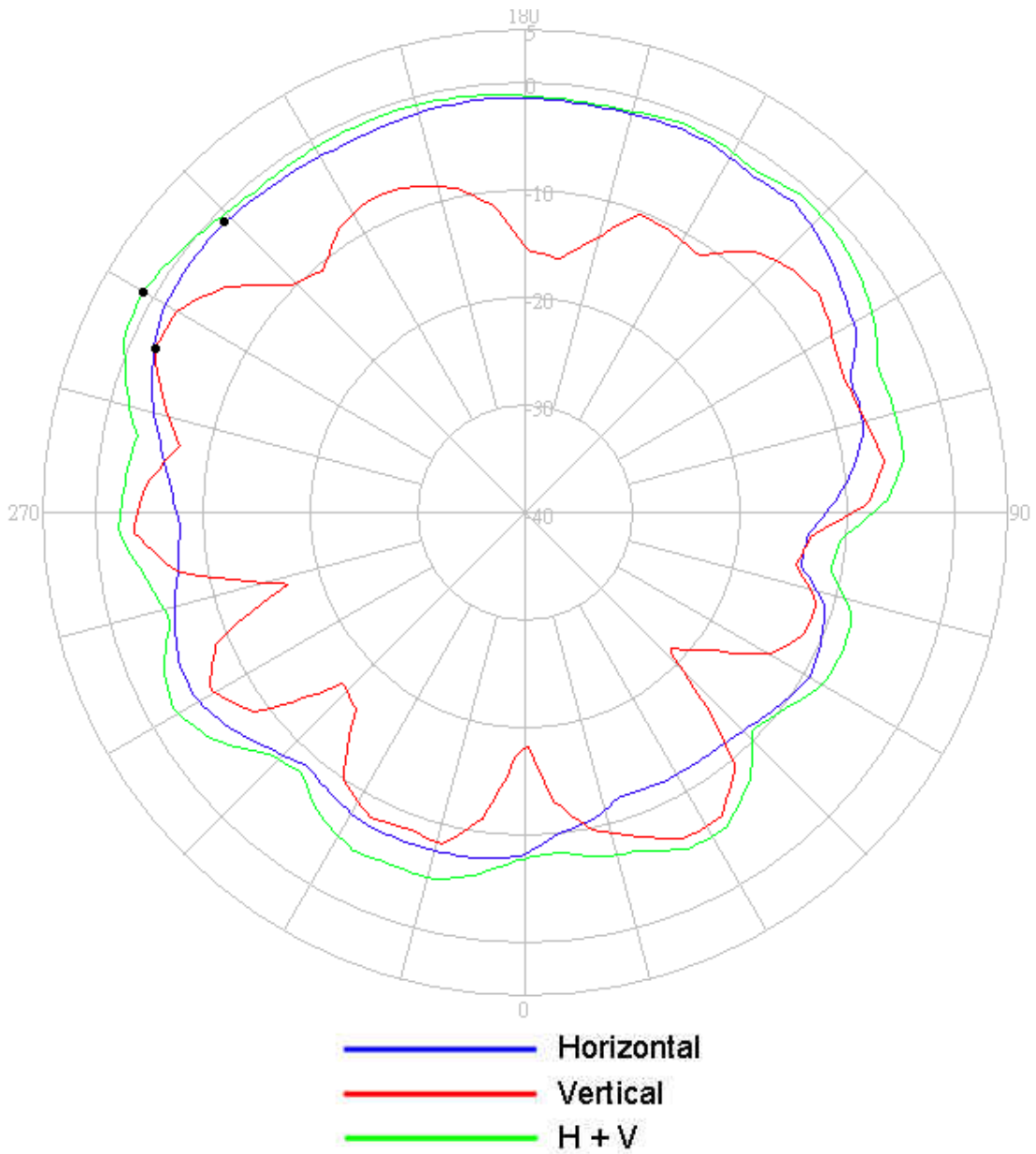
### Tx1 antenna: 2685 MHz



Center Frequency	<b>2685 MHz</b>
Horizontal (dBi) Peak	<b>0.36</b>
Vertical (dBi) Peak	<b>0.04</b>

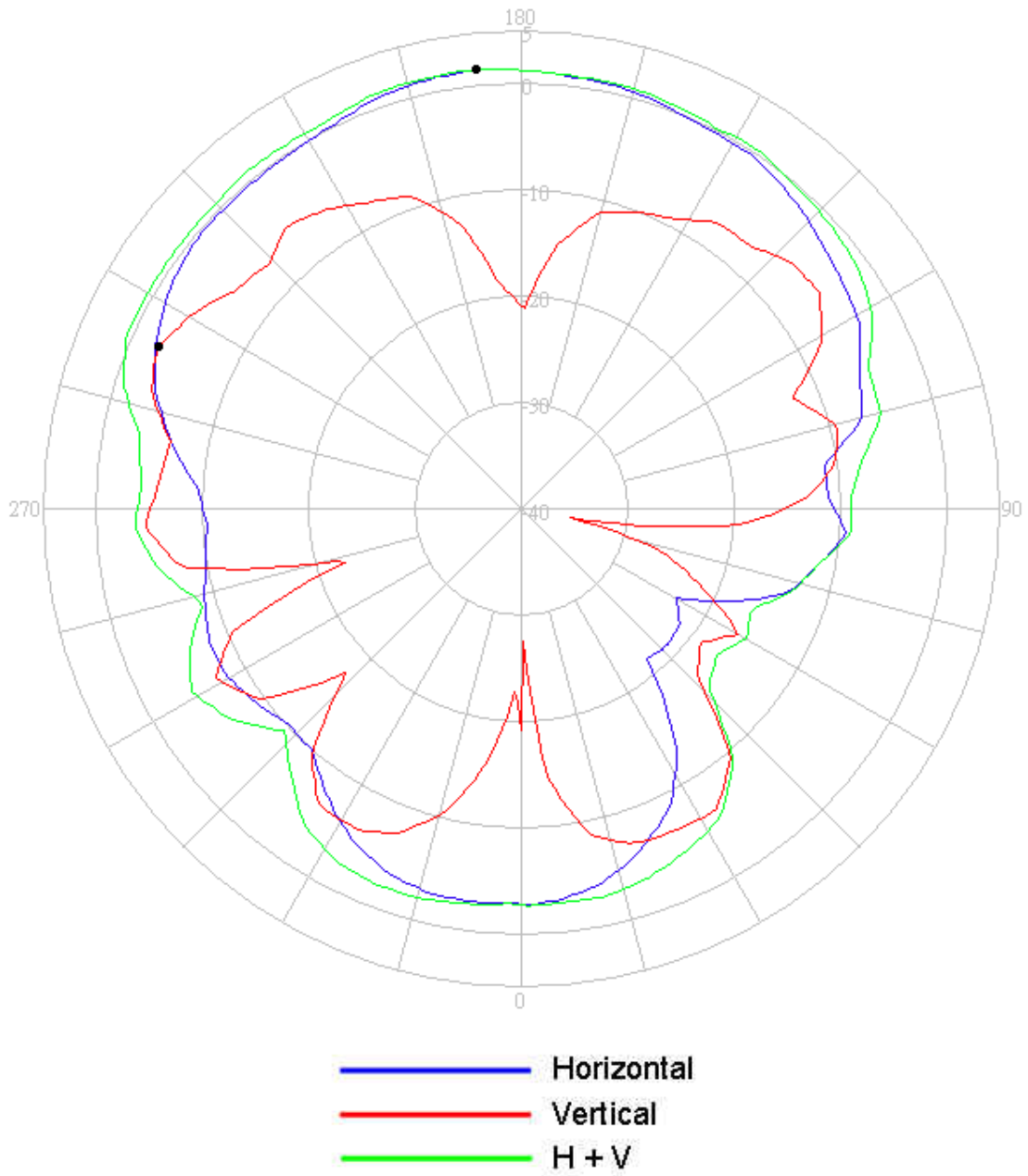


**Tx2 antenna: 2501MHz**



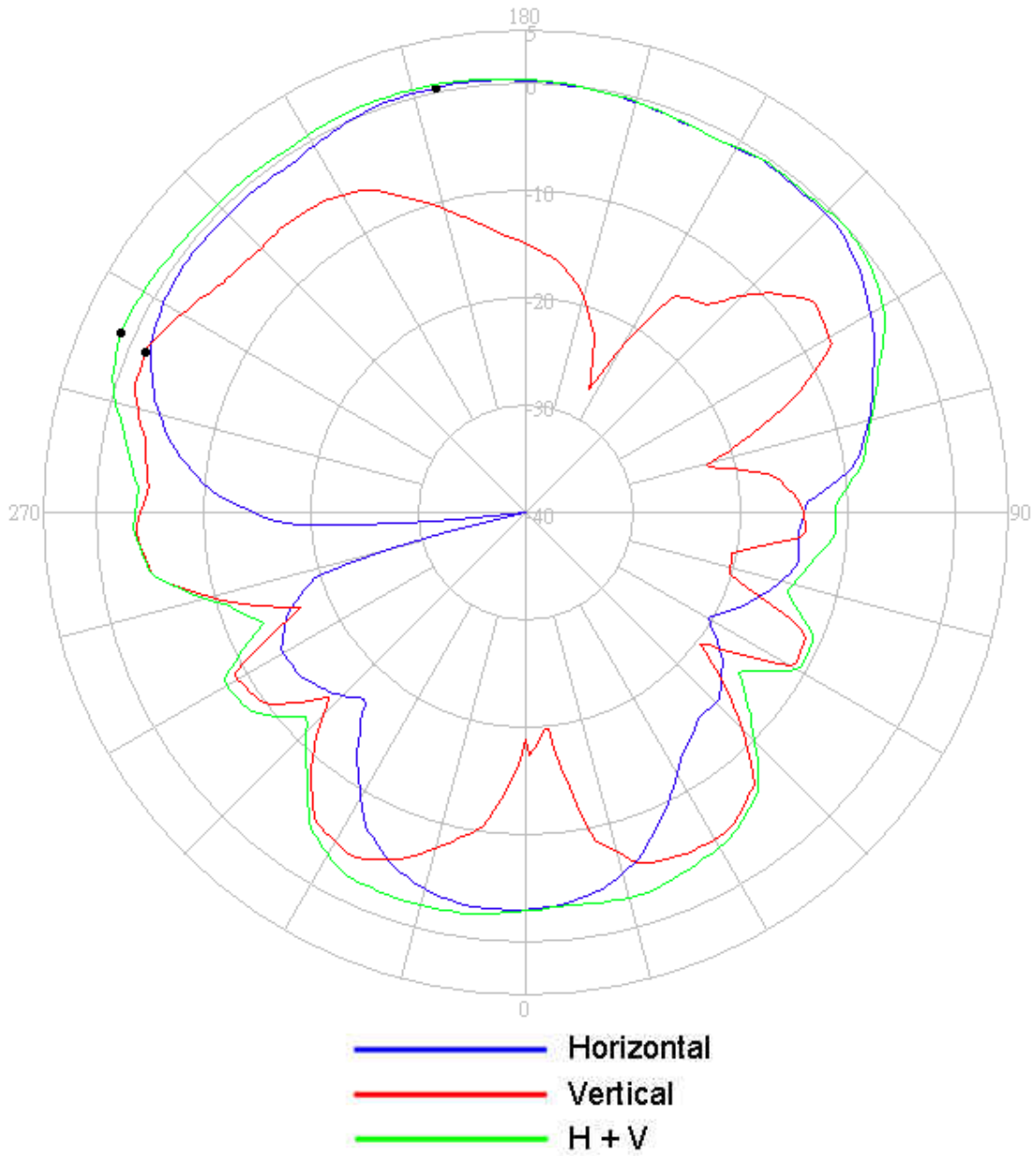
Center Frequency	<b>2501 MHz</b>
Horizontal (dBi) Peak	<b>-1.03</b>
Vertical (dBi) Peak	<b>-2.27</b>

**Tx2 antenna: 2593MHz**



Center Frequency	<b>2593 MHz</b>
Horizontal (dBi) Peak	<b>1.55</b>
Vertical (dBi) Peak	<b>-2.60</b>

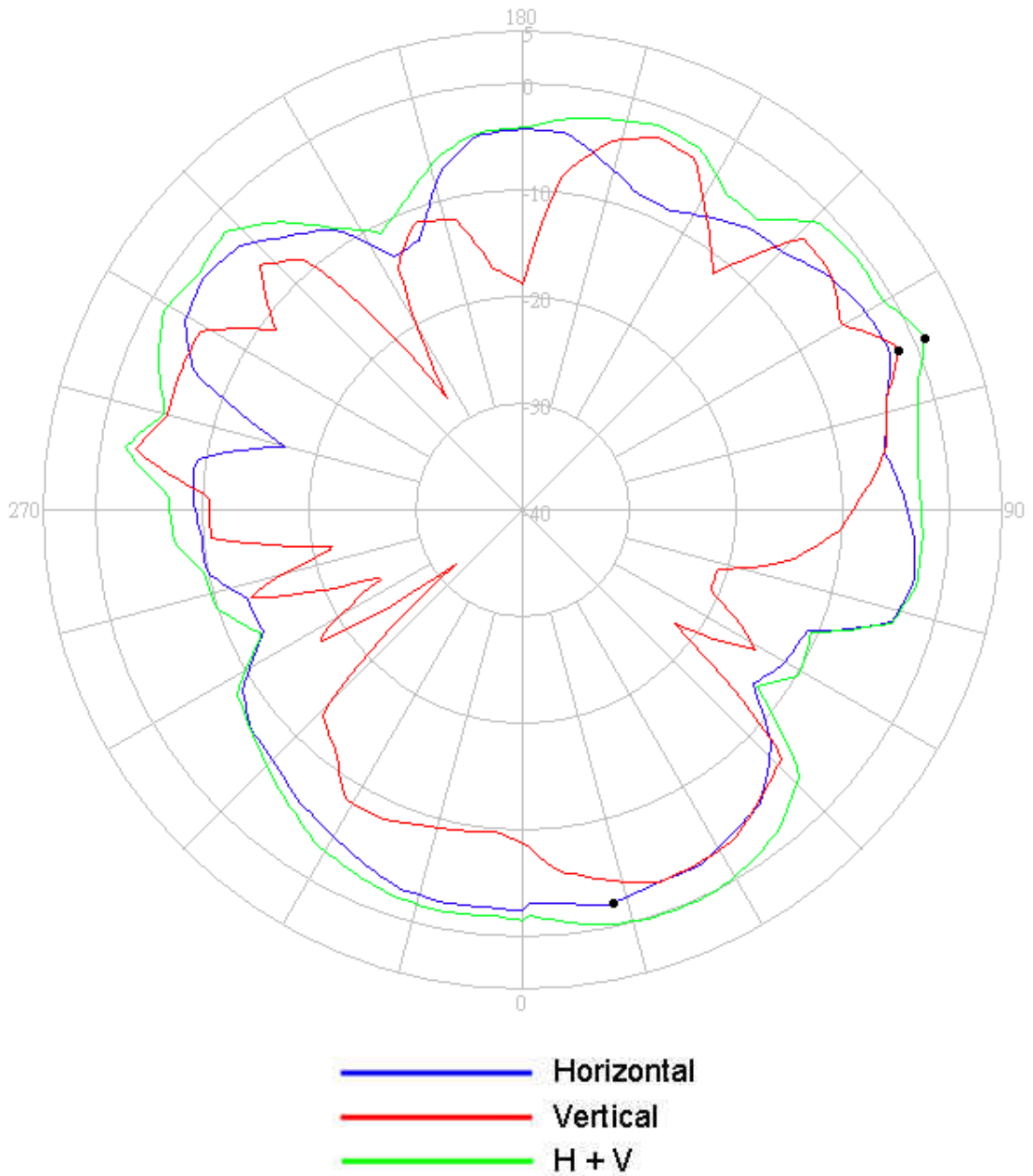
**Tx2 antenna: 2685 MHz**



Center Frequency	<b>2685 MHz</b>
Horizontal (dBi) Peak	<b>0.51</b>
Vertical (dBi) Peak	<b>-1.55</b>

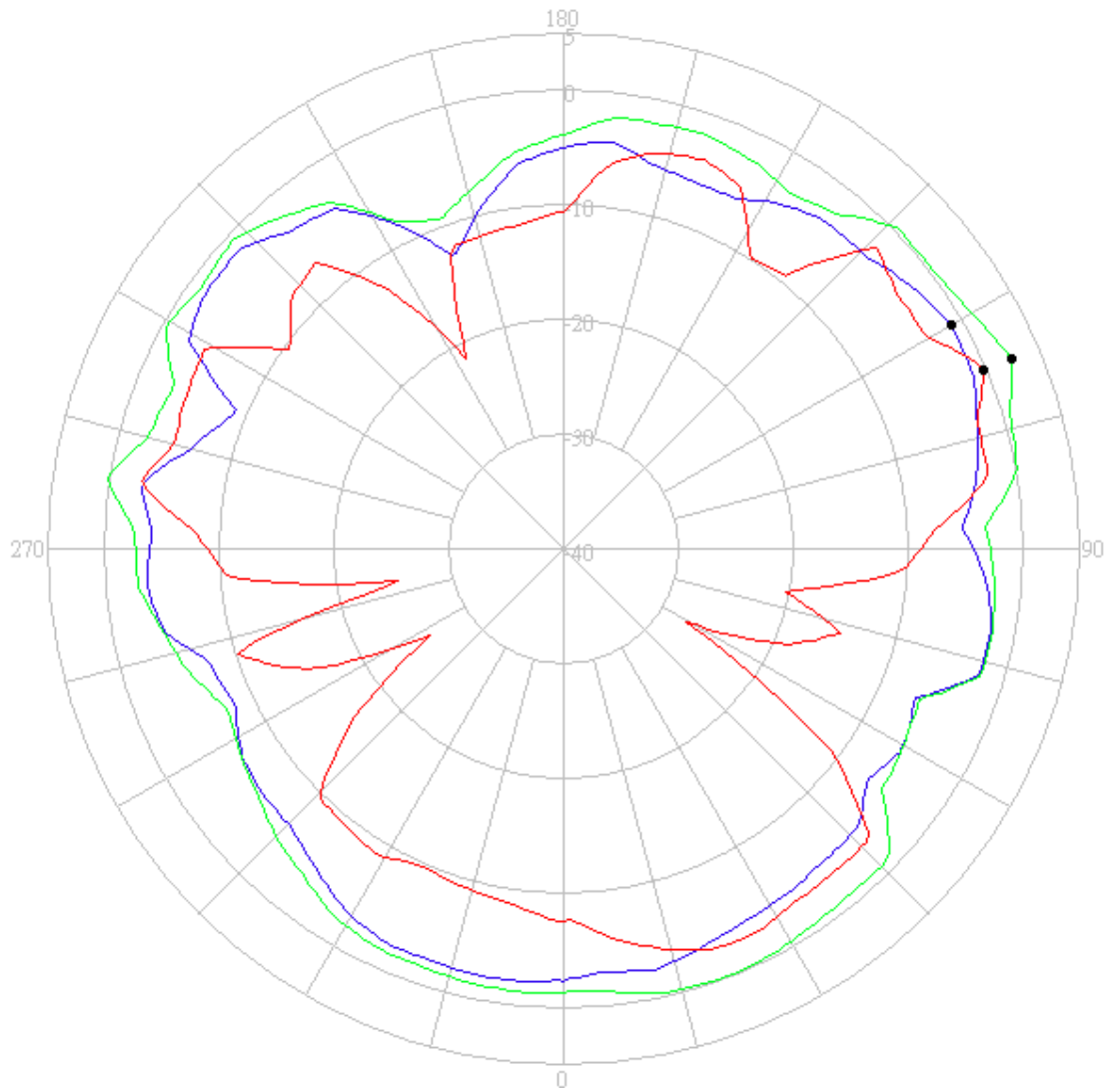
### 5150-5350 MHz radiation characteristic

Tx1 antenna: 5150 MHz



Center Frequency	5150 MHz
Horizontal (dBi) Peak	-2.09
Vertical (dBi) Peak	-1.58

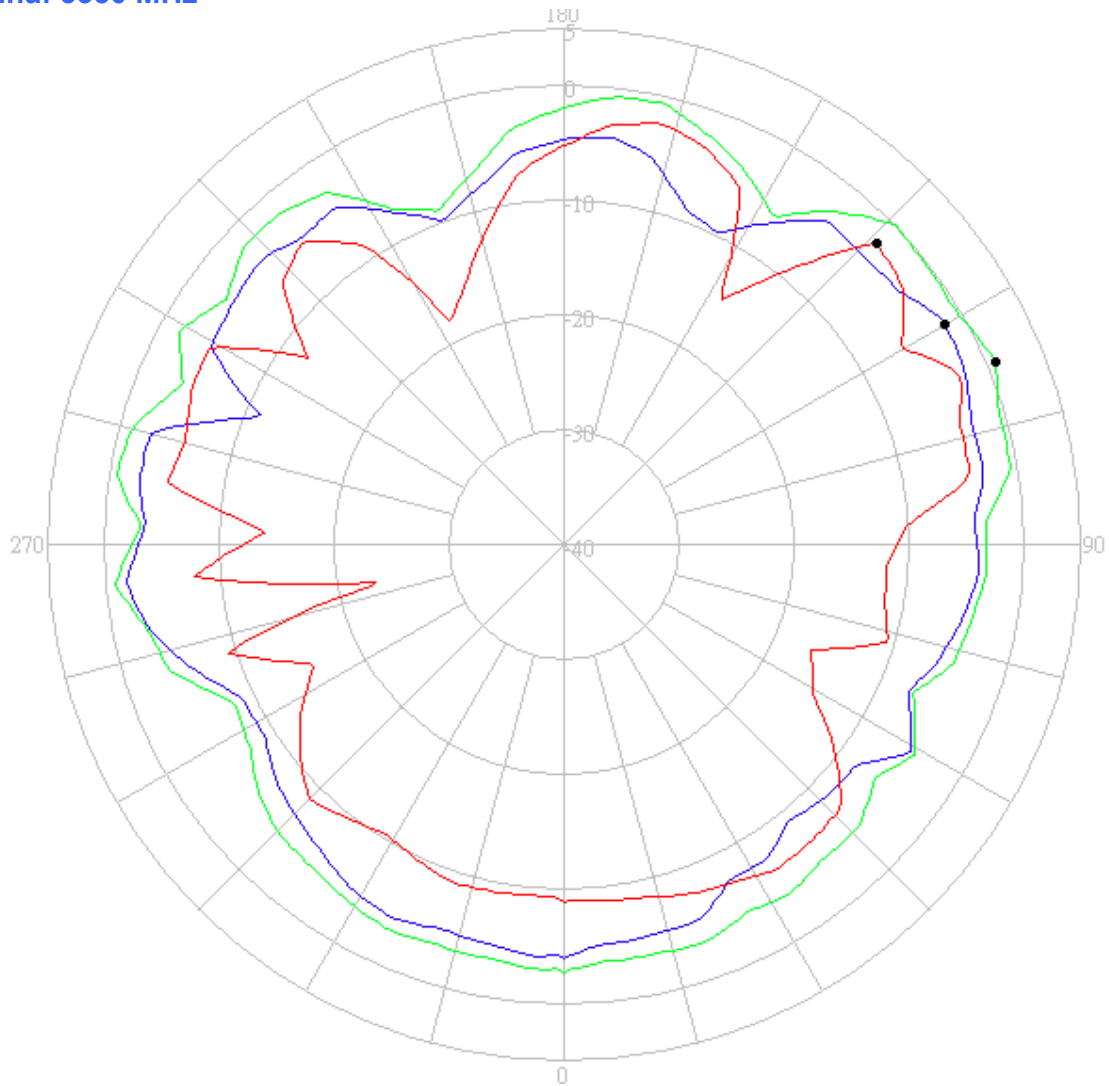
**Tx1 antenna: 5250 MHz**



— Horizontal  
— Vertical  
— H + V

Center Frequency	<b>5250 MHz</b>
Horizontal (dBi) Peak	<b>-0.97</b>
Vertical (dBi) Peak	<b>-0.13</b>

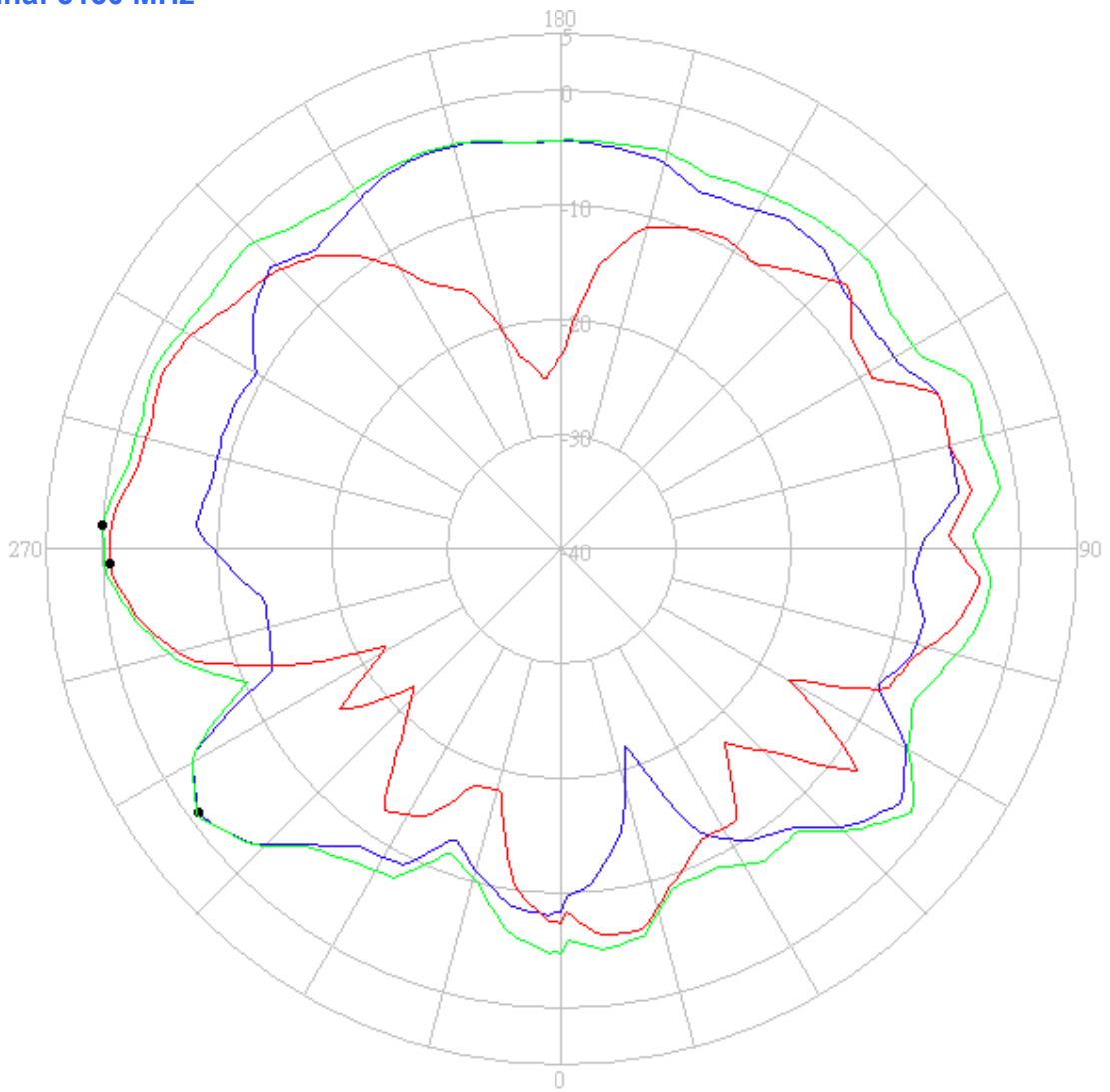
**Tx1 antenna: 5350 MHz**



- Horizontal
- Vertical
- H + V

Center Frequency	<b>5350 MHz</b>
Horizontal (dBi) Peak	<b>-1.61</b>
Vertical (dBi) Peak	<b>-2.11</b>

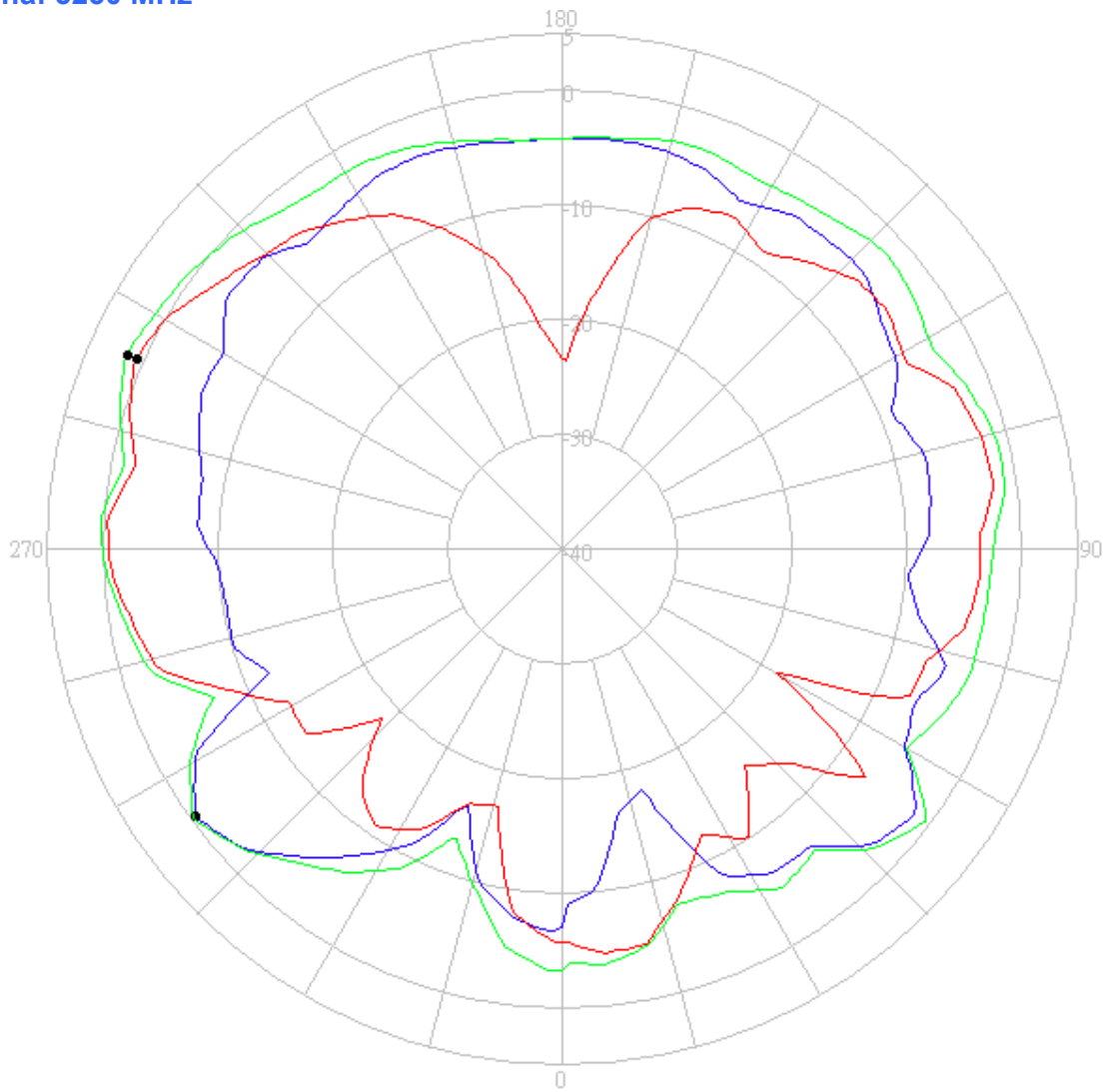
**Tx2 antenna: 5150 MHz**



- Horizontal
- Vertical
- H + V

Center Frequency	<b>5150 MHz</b>
Horizontal (dBi) Peak	<b>-0.78</b>
Vertical (dBi) Peak	<b>-0.57</b>

### Tx2 antenna: 5250 MHz

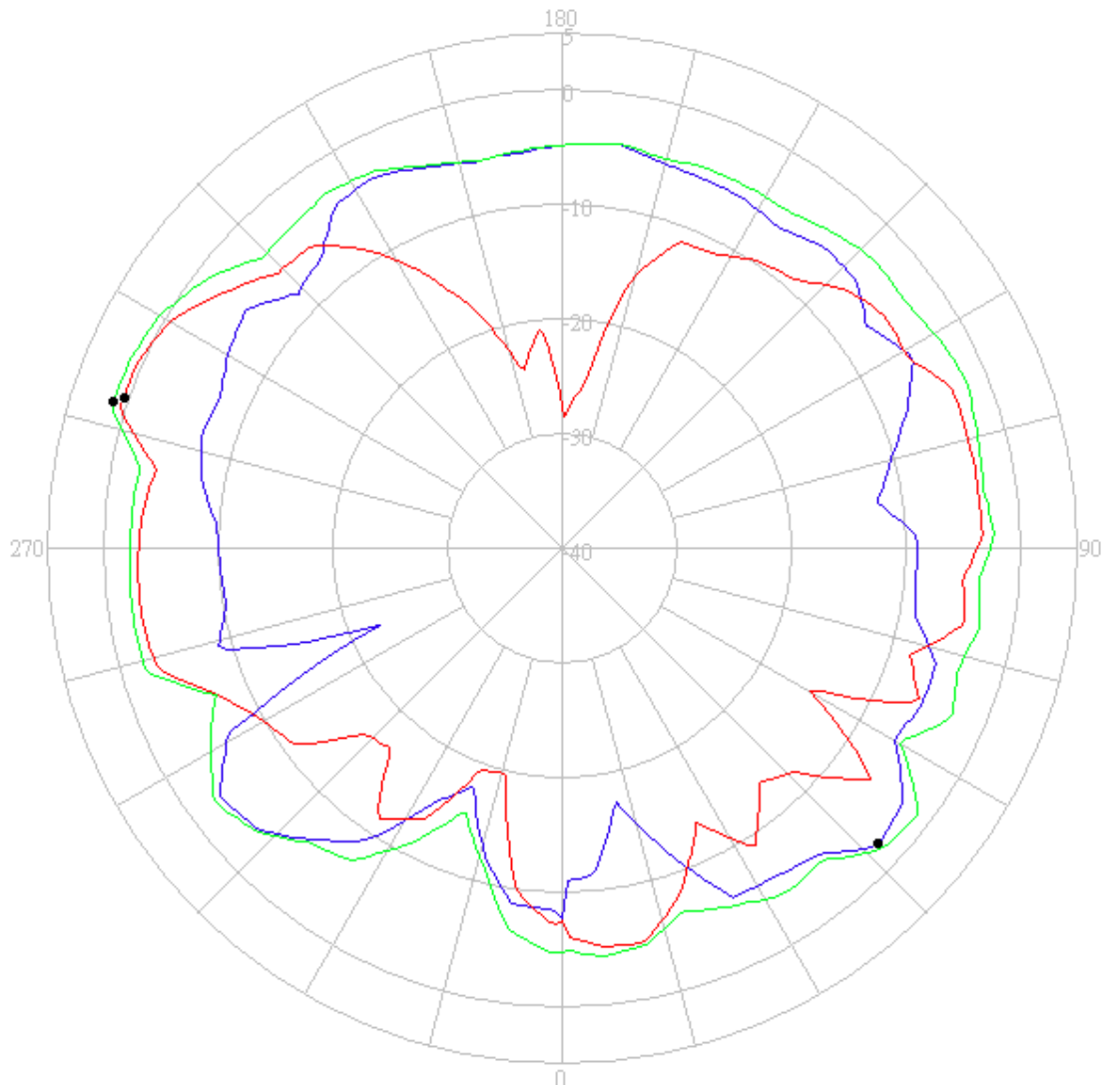


- Horizontal
- Vertical
- H + V

Center Frequency	<b>5250 MHz</b>
Horizontal (dBi) Peak	<b>-0.43</b>
Vertical (dBi) Peak	<b>0.70</b>



**Tx2 antenna: 5350 MHz**

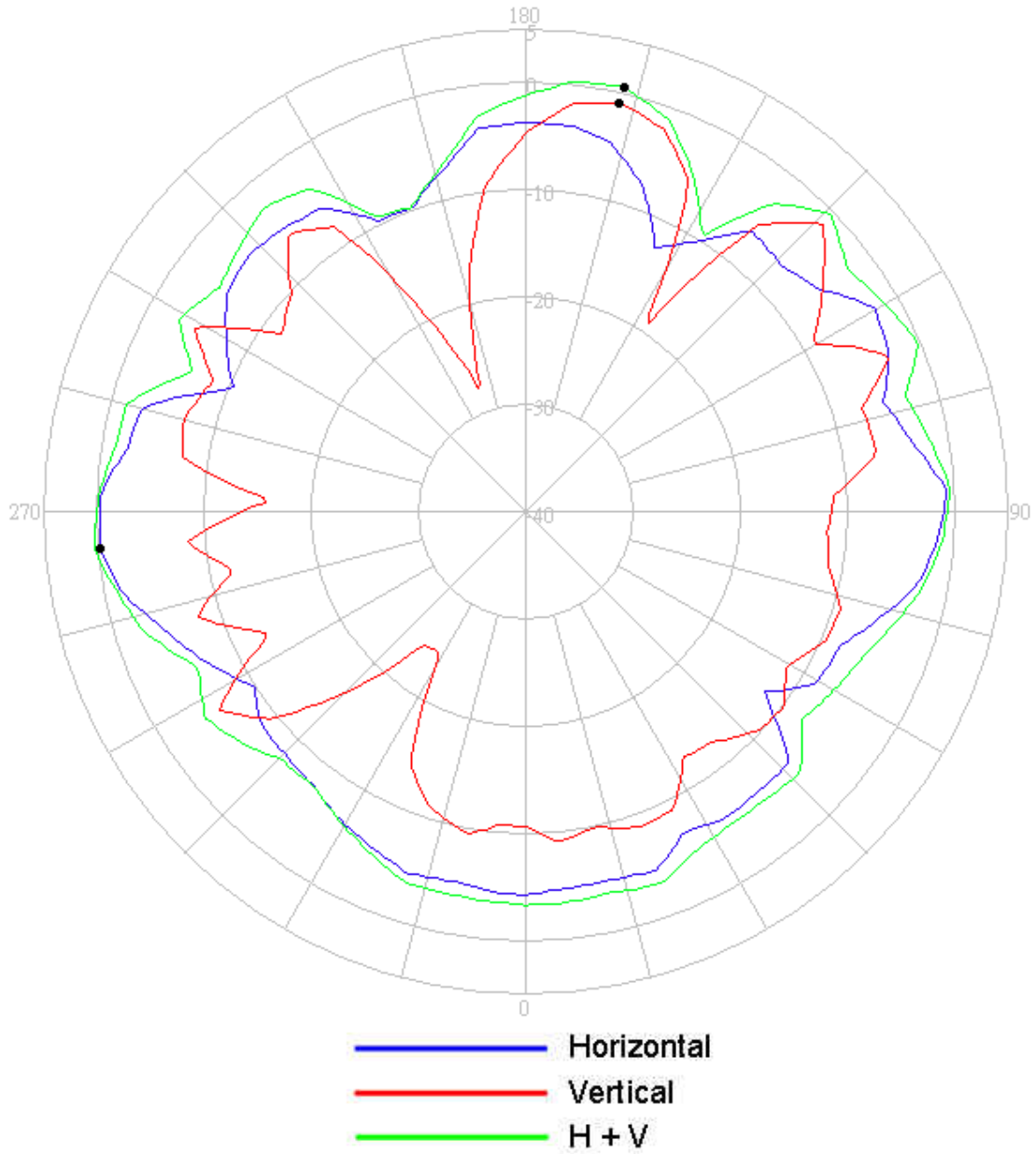


- Horizontal
- Vertical
- H + V

Center Frequency	<b>5350 MHz</b>
Horizontal (dBi) Peak	<b>-2.22</b>
Vertical (dBi) Peak	<b>0.51</b>

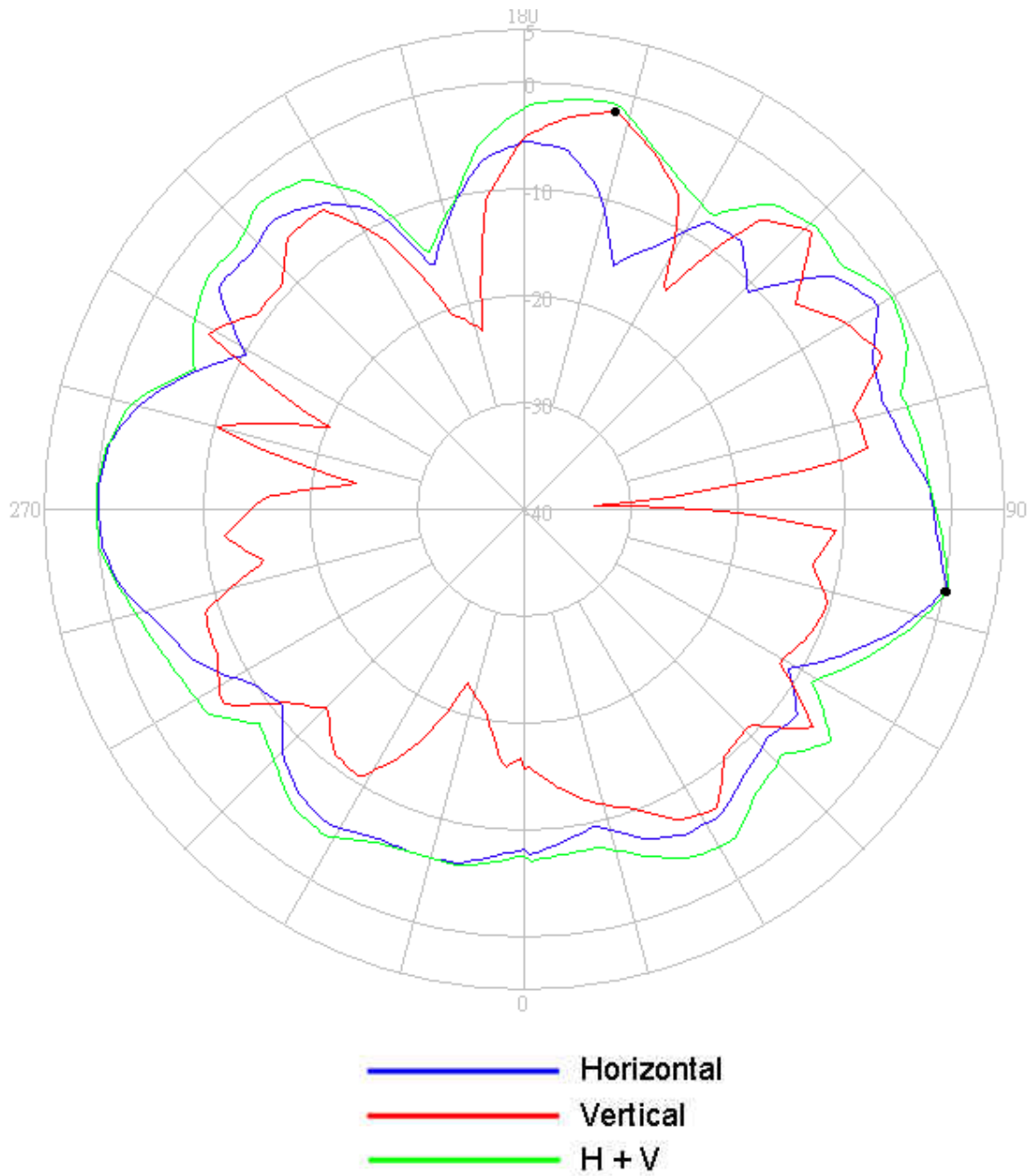
5470-5725MHz radiation characteristic

**Tx1 antenna: 5470 MHz**



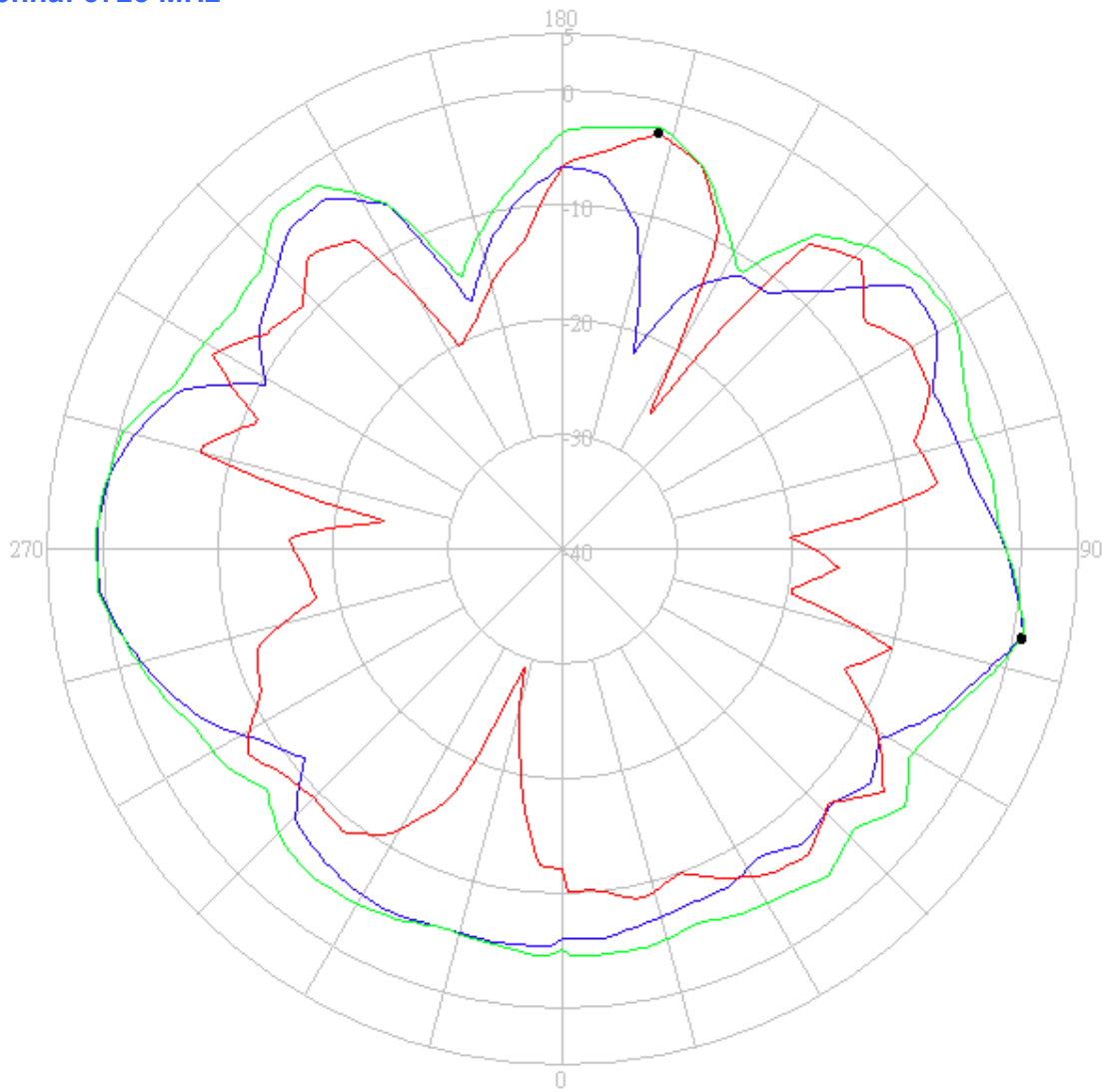
Center Frequency	<b>5470 MHz</b>
Horizontal (dBi) Peak	<b>-0.17</b>
Vertical (dBi) Peak	<b>-0.95</b>

### Tx1 antenna: 5600 MHz



Center Frequency	<b>5600 MHz</b>
Horizontal (dBi) Peak	<b>0.14</b>
Vertical (dBi) Peak	<b>-1.72</b>

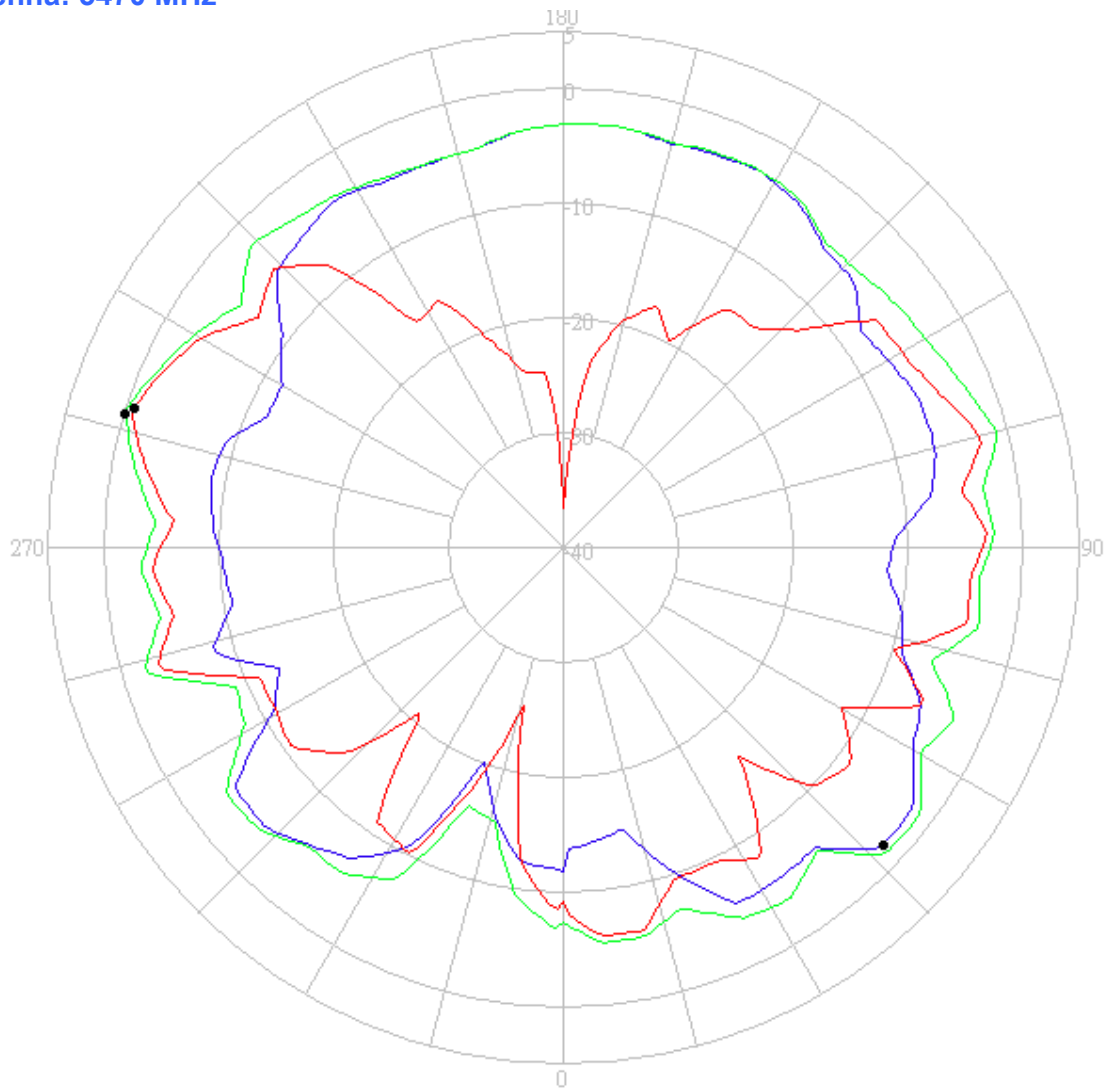
### Tx1 antenna: 5725 MHz



- Horizontal
- Vertical
- H + V

Center Frequency	<b>5725 MHz</b>
Horizontal (dBi) Peak	<b>0.83</b>
Vertical (dBi) Peak	<b>-2.83</b>

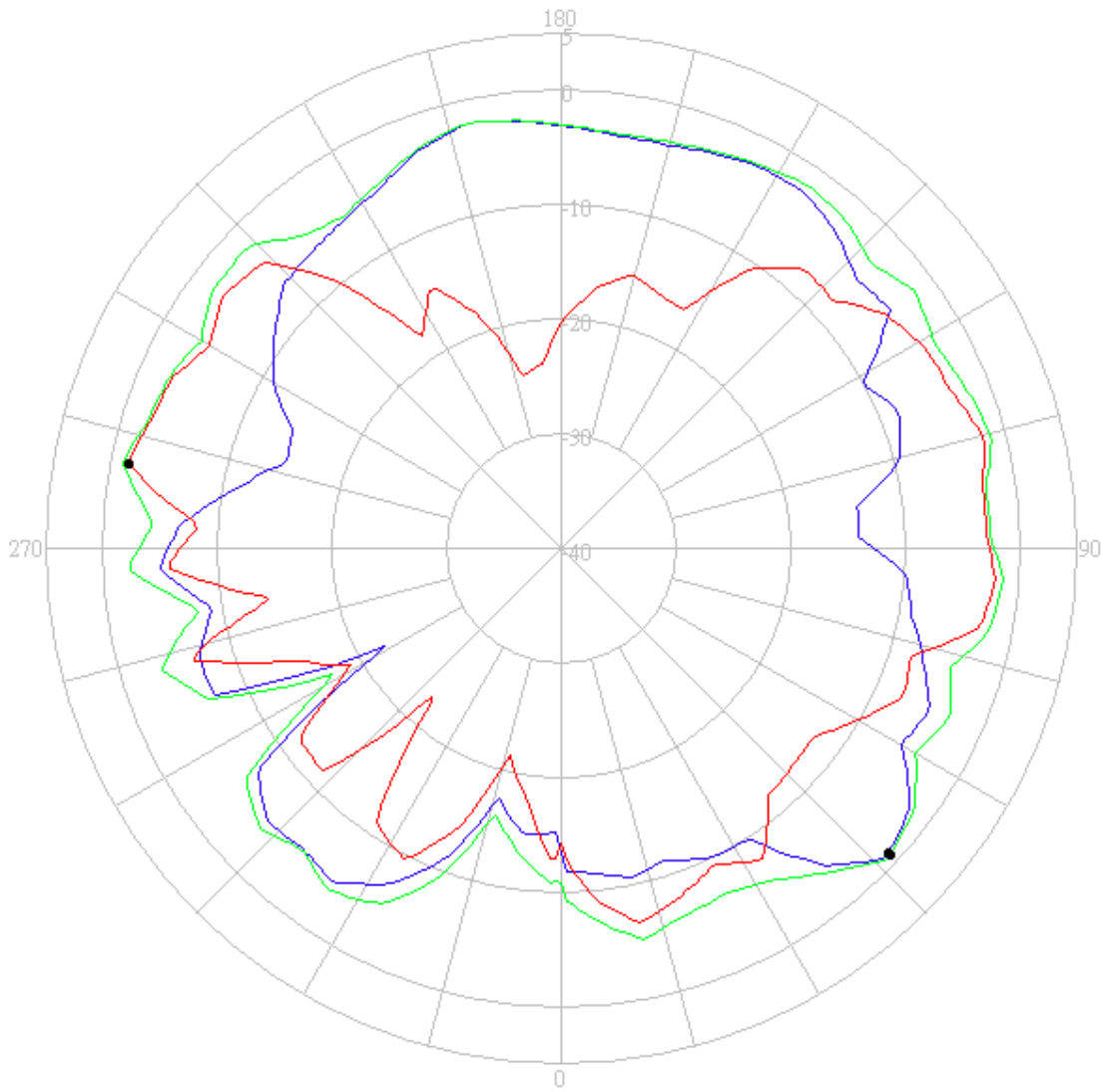
### Tx2 antenna: 5470 MHz



- Horizontal
- Vertical
- H + V

Center Frequency	<b>5470 MHz</b>
Horizontal (dBi) Peak	<b>-1.89</b>
Vertical (dBi) Peak	<b>-0.64</b>

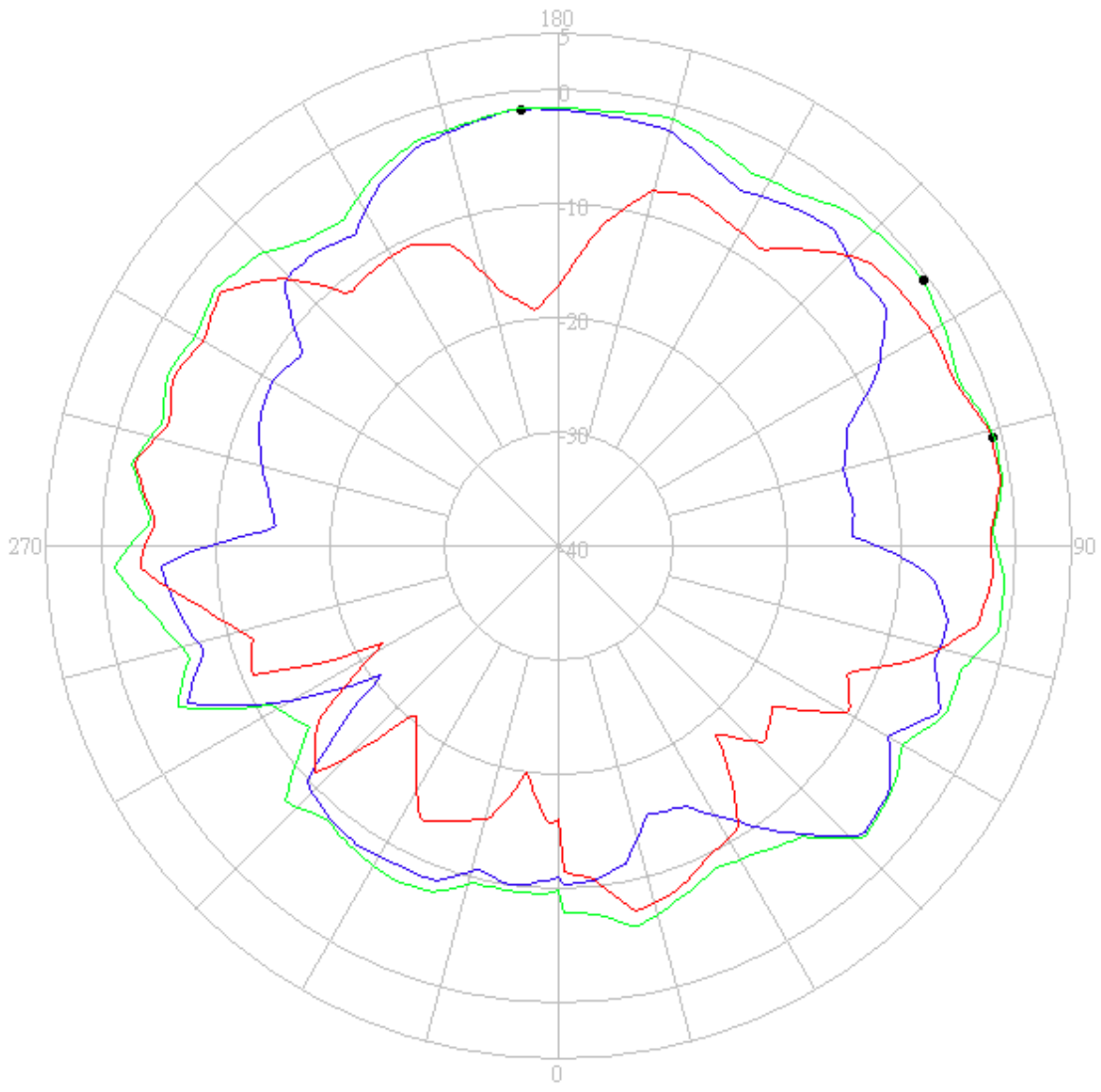
### Tx2 antenna: 5600 MHz



- Horizontal
- Vertical
- H + V

Center Frequency	<b>5600 MHz</b>
Horizontal (dBi) Peak	<b>-0.96</b>
Vertical (dBi) Peak	<b>-1.50</b>

### Tx2 antenna: 5725 MHz

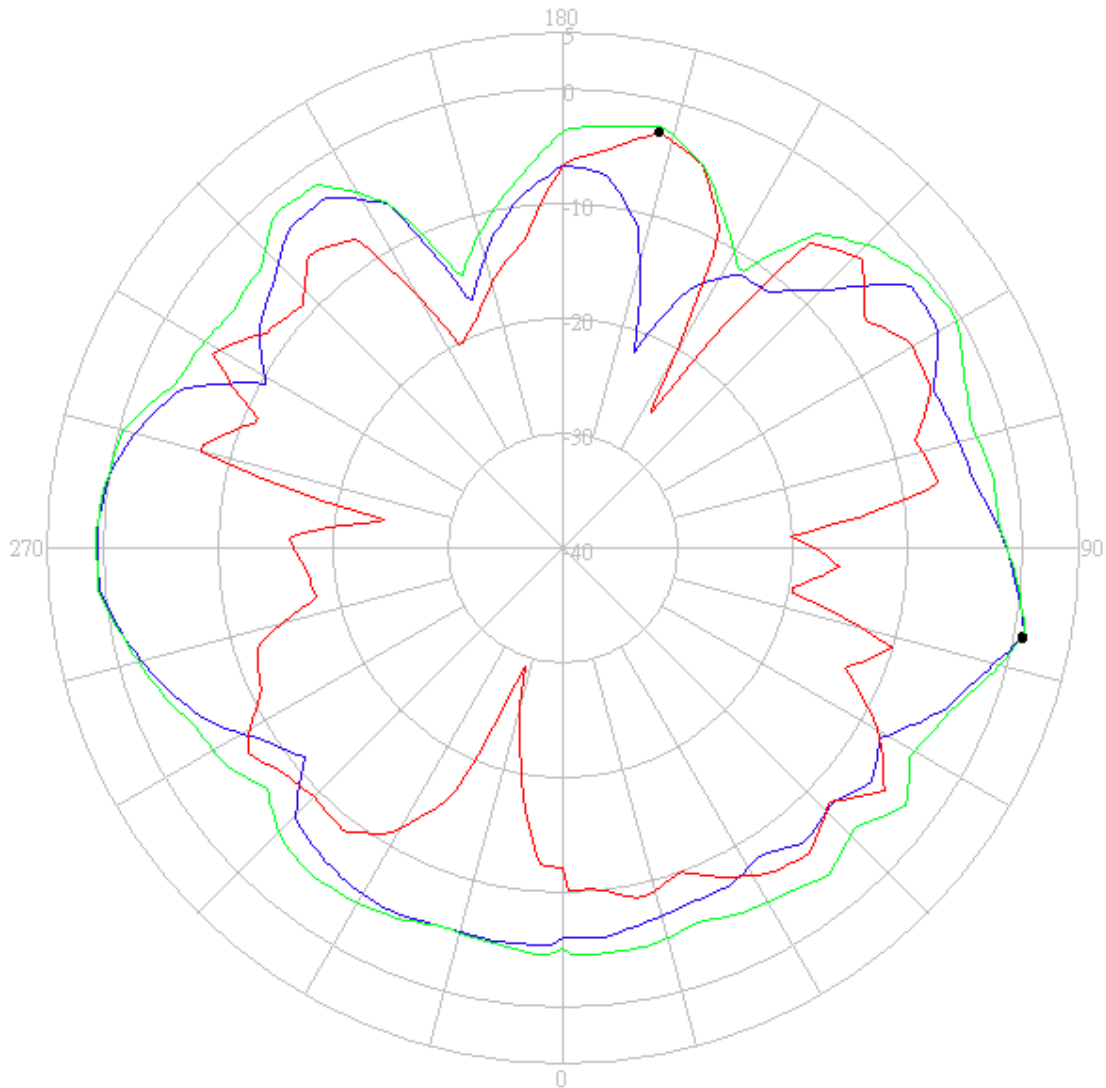


- Horizontal
- Vertical
- H + V

Center Frequency	<b>5725 MHz</b>
Horizontal (dBi) Peak	<b>-1.52</b>
Vertical (dBi) Peak	<b>-0.81</b>

**5725-5850 MHz radiation characteristic**

**Tx1 antenna: 5725 MHz**

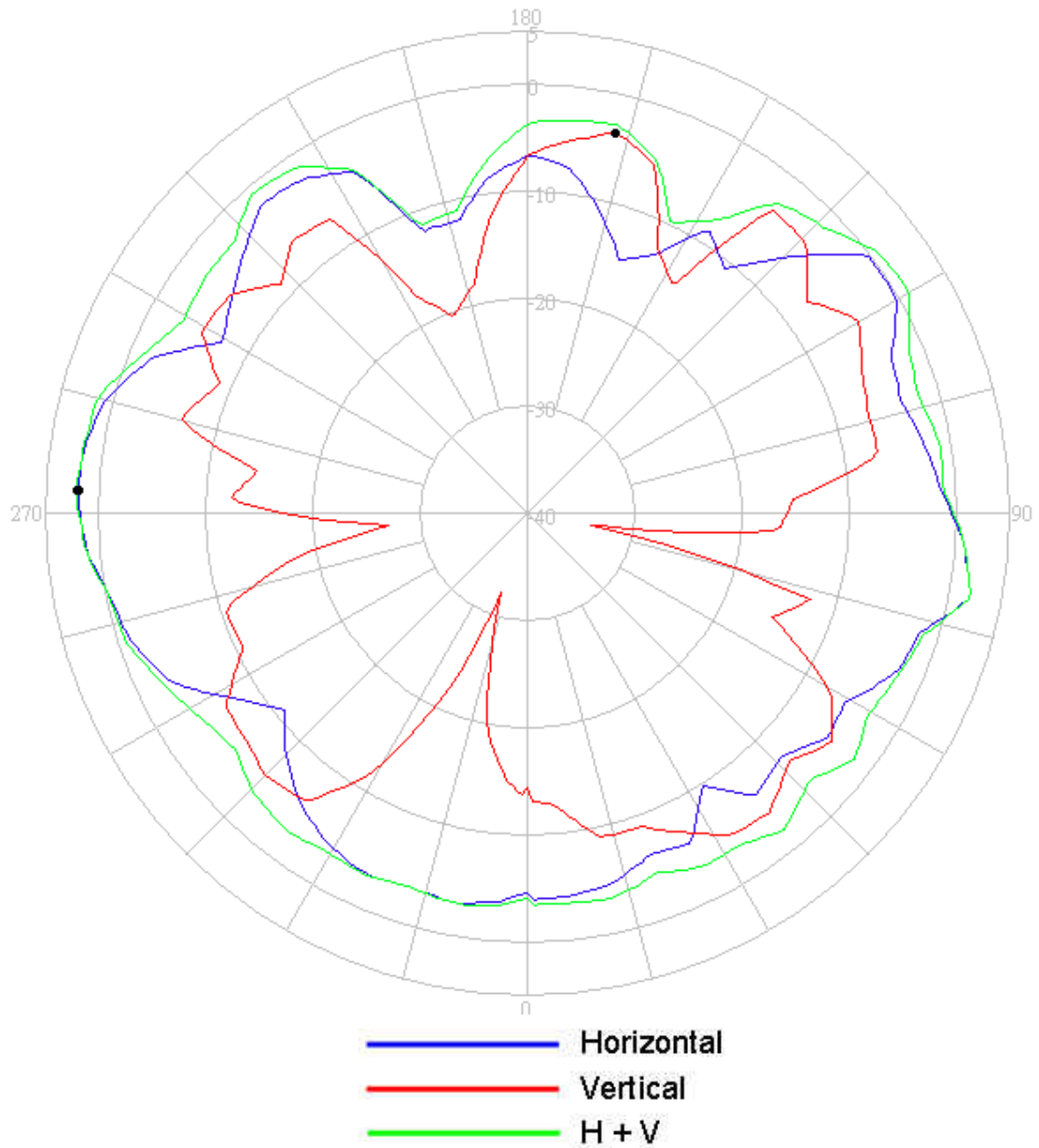


- Horizontal
- Vertical
- H + V

Center Frequency	<b>5725 MHz</b>
Horizontal (dBi) Peak	<b>0.83</b>
Vertical (dBi) Peak	<b>-2.83</b>

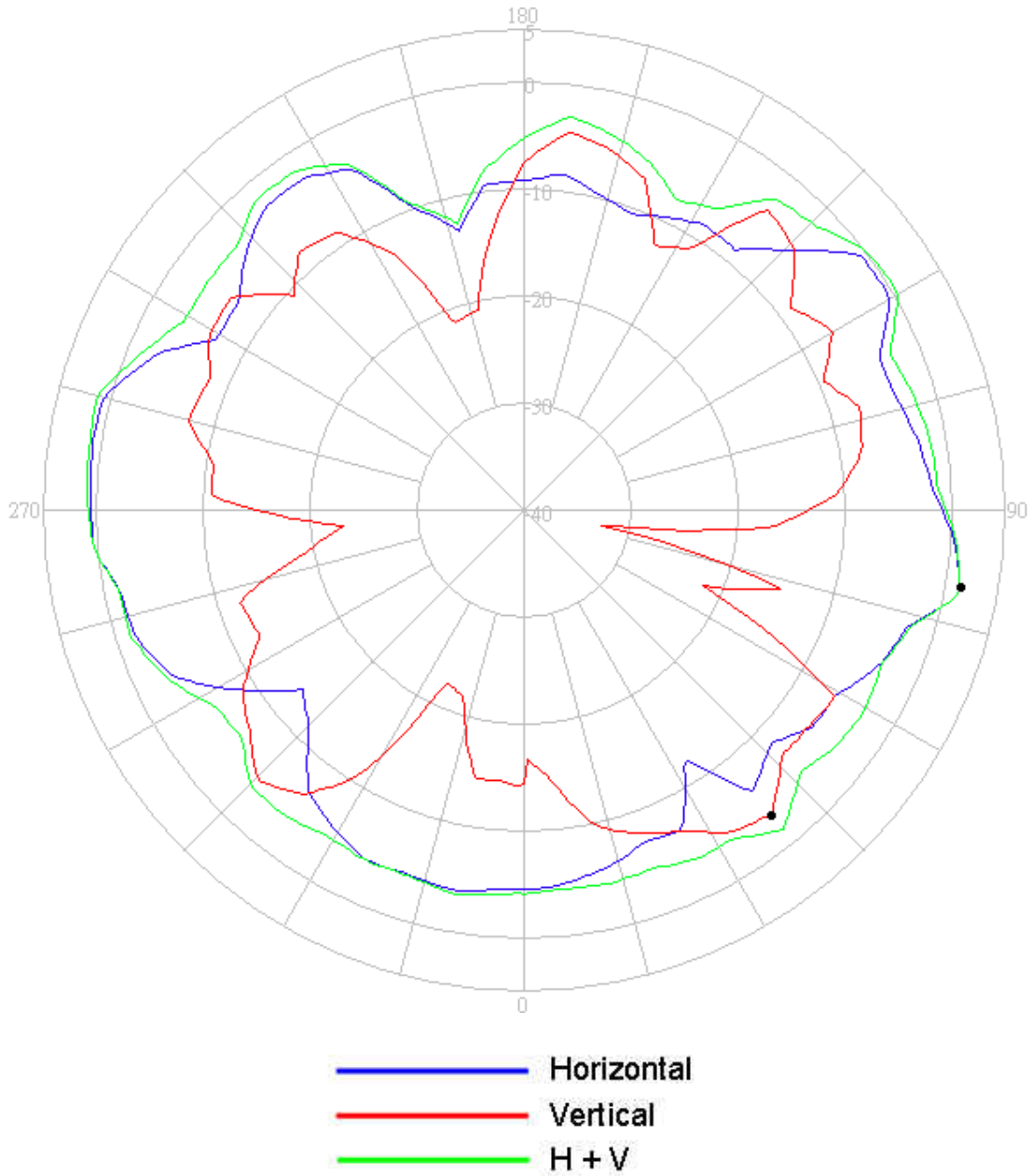


### Tx1 antenna: 5785 MHz



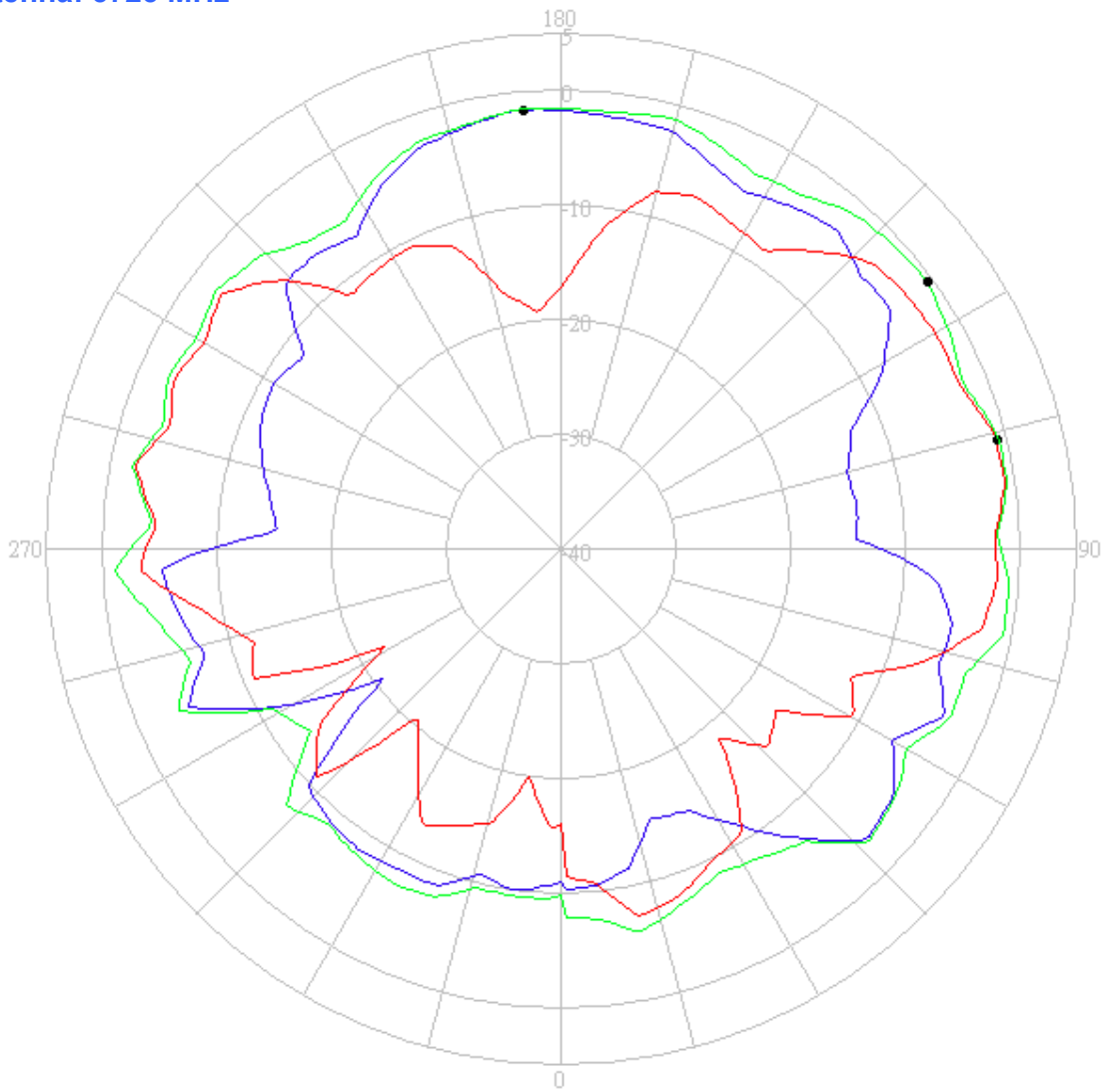
Center Frequency	<b>5785 MHz</b>
Horizontal (dBi) Peak	<b>2.01</b>
Vertical (dBi) Peak	<b>-3.55</b>

### Tx1 antenna: 5850 MHz



Center Frequency	<b>5850 MHz</b>
Horizontal (dBi) Peak	<b>1.45</b>
Vertical (dBi) Peak	<b>-3.33</b>

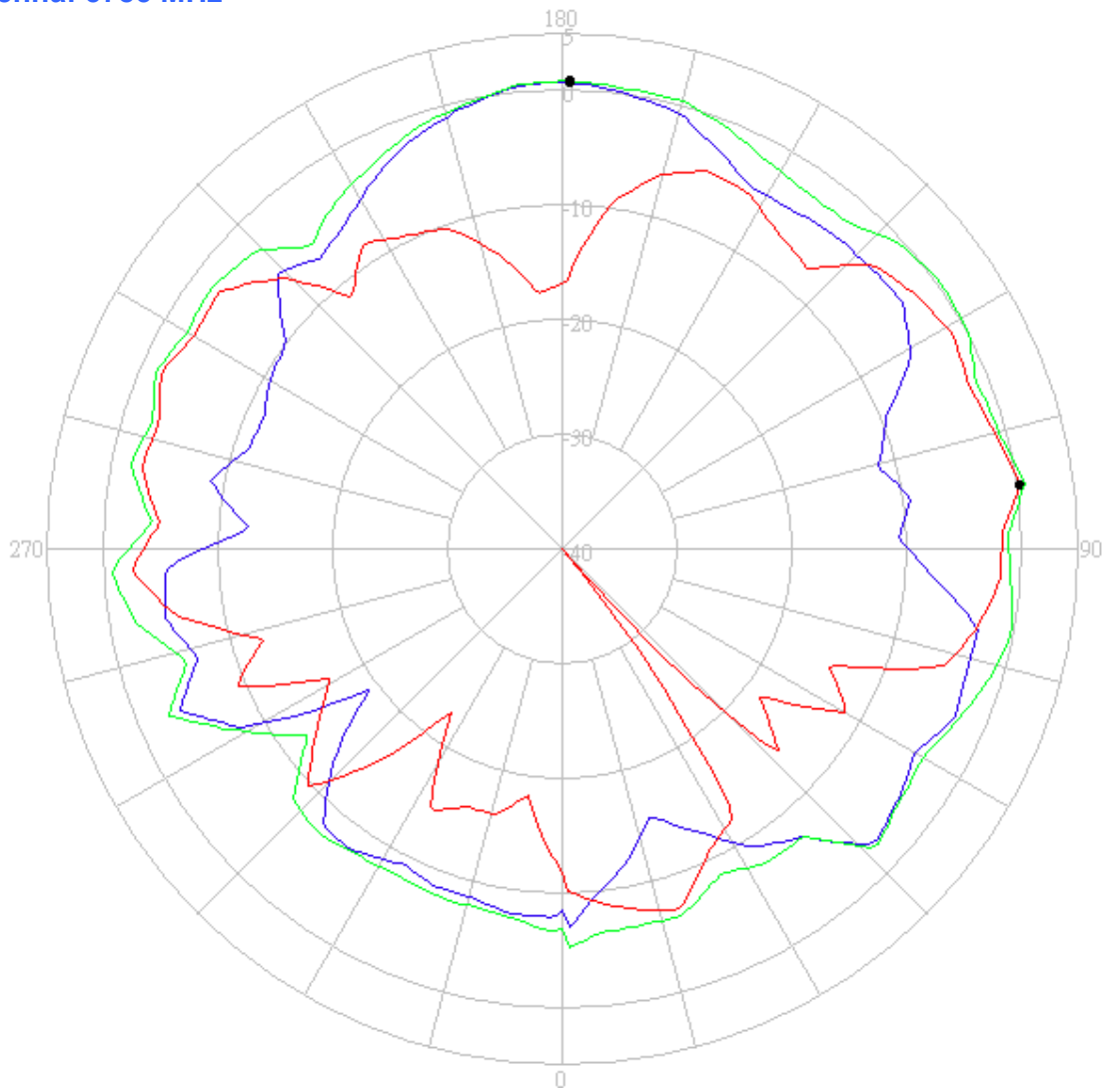
### Tx2 antenna: 5725 MHz



- Horizontal
- Vertical
- H + V

Center Frequency	<b>5725 MHz</b>
Horizontal (dBi) Peak	<b>-1.52</b>
Vertical (dBi) Peak	<b>-0.81</b>

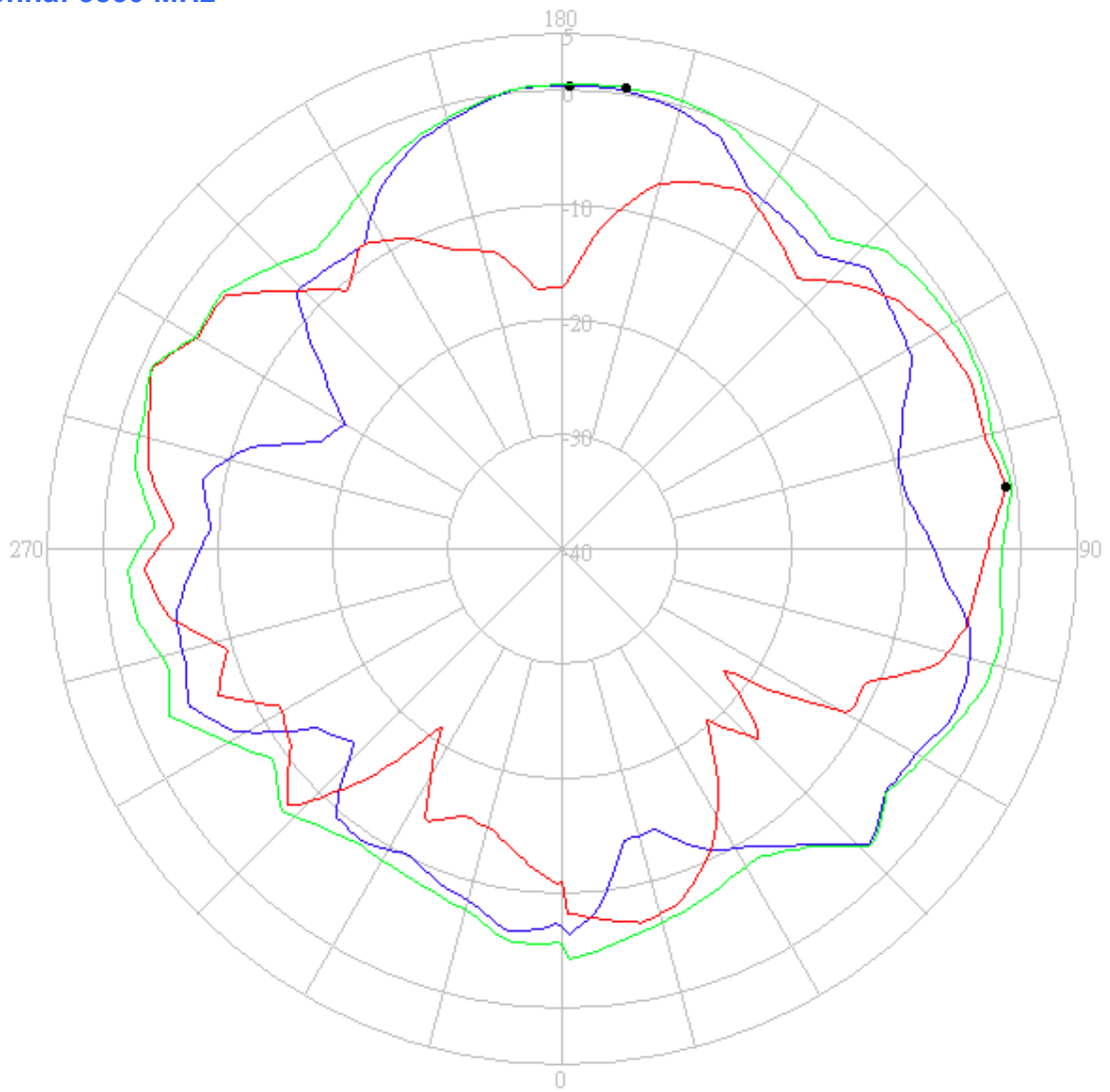
### Tx2 antenna: 5785 MHz



- Horizontal
- Vertical
- H + V

Center Frequency	<b>5785 MHz</b>
Horizontal (dBi) Peak	<b>0.77</b>
Vertical (dBi) Peak	<b>0.29</b>

### Tx2 antenna: 5850 MHz



- Horizontal
- Vertical
- H + V

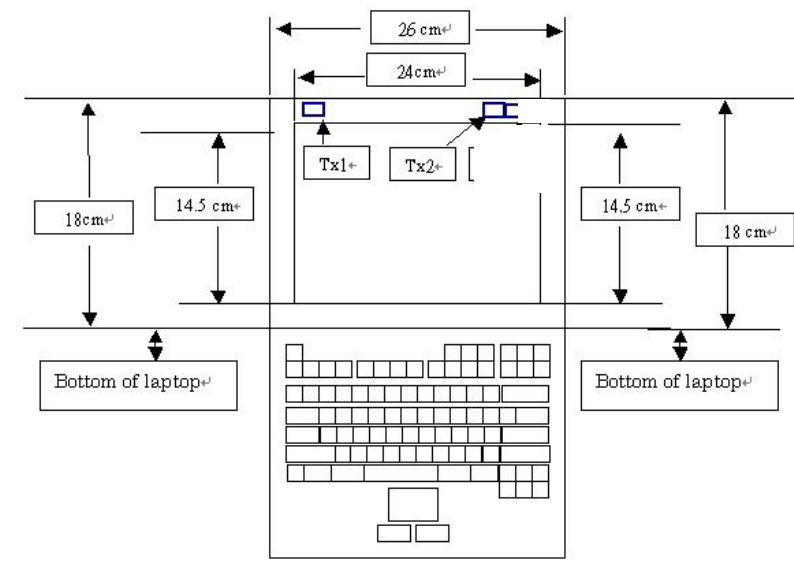
Center Frequency	<b>5850 MHz</b>
Horizontal (dBi) Peak	<b>0.48</b>
Vertical (dBi) Peak	<b>-0.86</b>

## Section 4. Host Platform Information

OEM / ODM Host platform: Tiger (Combo) platform correlated to antenna data  
Rating Label Photo:

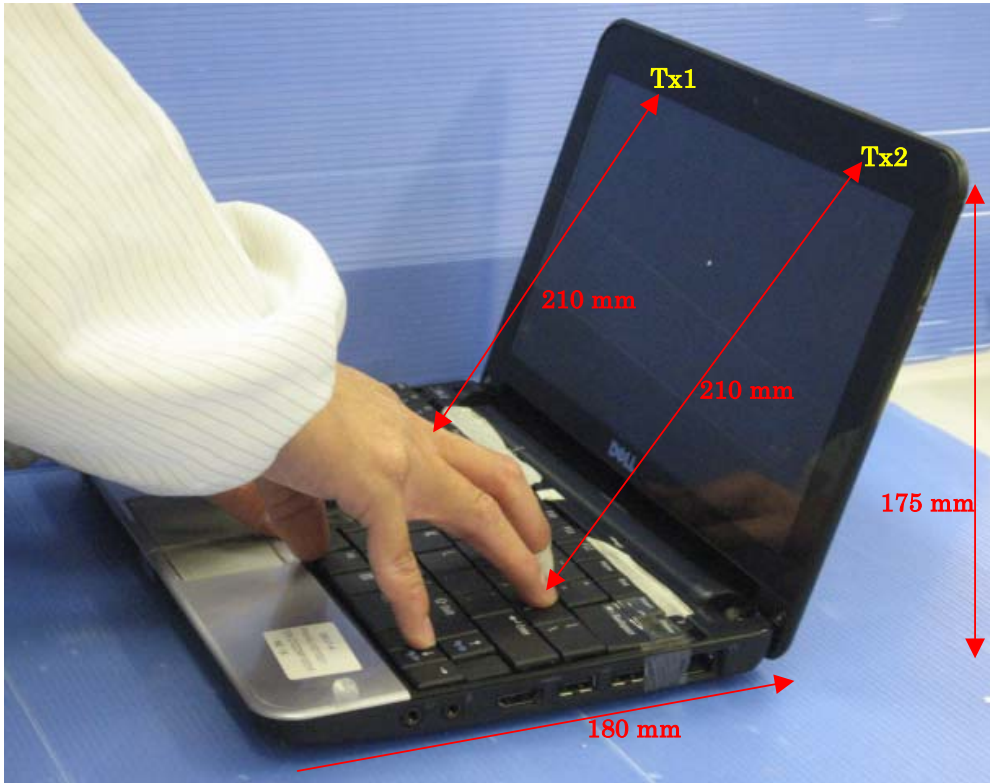
## Section 5. Antenna Host Platform Location Information

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

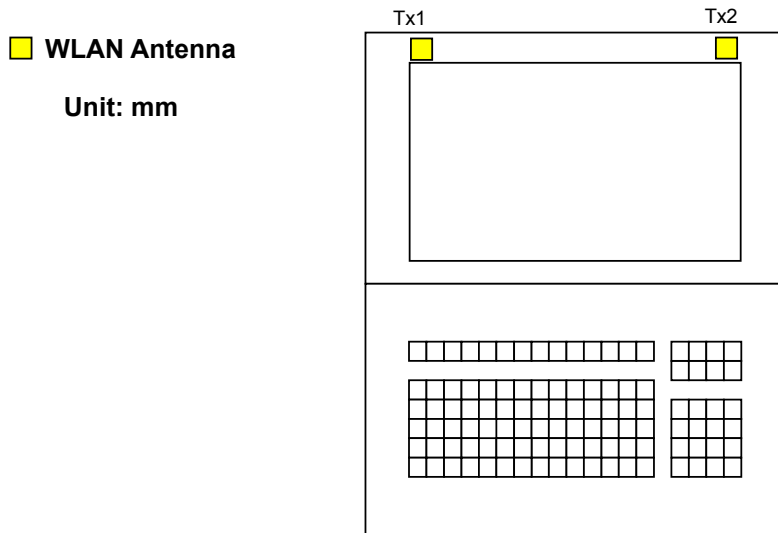
Include a **dimensioned photo or dimensioned drawing** showing the distance (mm) between the transmit antennas and the user (excluding hands, wrist, feet, lap/ thigh, and ankle)



## 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						