

Regulatory WLAN Antenna Information

Yageo WLAN Antennae exclusively for DELL Tiger (Combo) Platform

Platform	
Platform Owner	DELL Corporation
Brand Name	DELL
Model Name	Tiger (WiMax-WLAN Only)
ODM	Compal Corporation
Target Launch Date	2008/ 11/ 11
Antenna	
Brand Name	Yageo
Part Number	■ Tx1 Antenna: CAN4313811022701B
	■ Tx2 Antenna: CAN4313811022701B
	.
Module	
With WLAN Module	· WM3B2200BG
(Check Box)	· WM3B2915ABG
	· WM3945ABG
	· 4965AGN
	· 4965AG_
	· 533ANX Family
	· 512ANX Family
	· 533AN Family
	· 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 <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

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 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)
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	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)
				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)

NOTE:

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

Antenna Peak Gain Table:

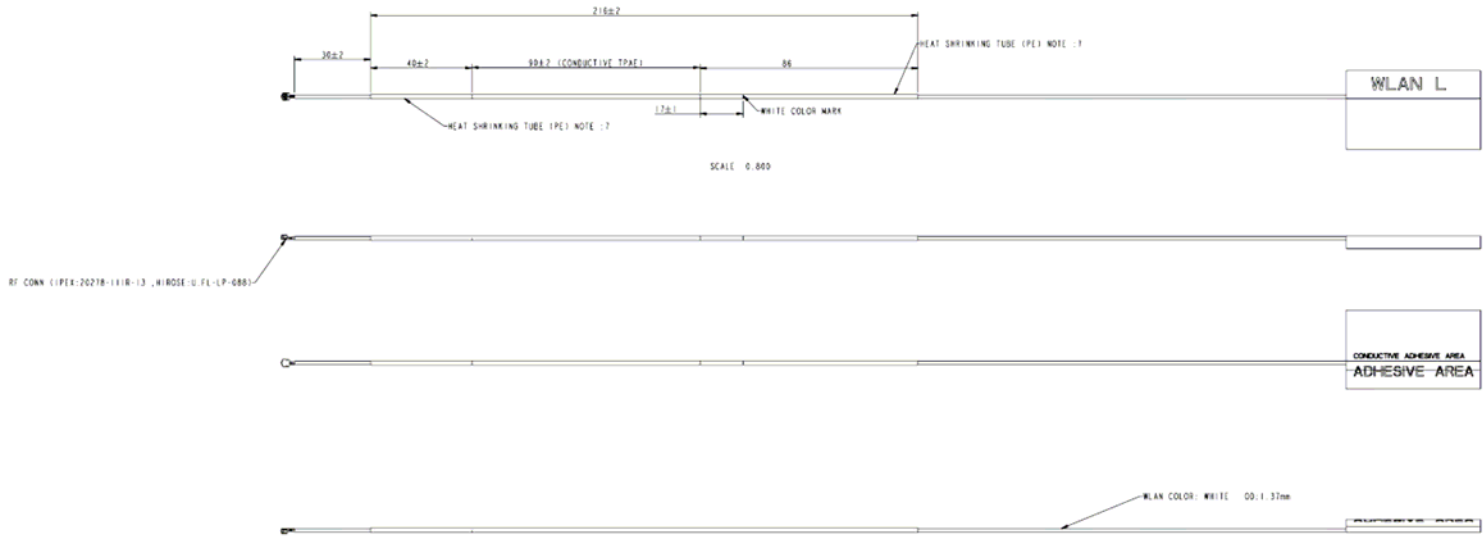
Frequency (MHz)	Tx1 Antenna		Tx2 Antenna	
	Horizontal (dBi)	Vertical (dBi)	Horizontal (dBi)	Vertical (dBi)
2400	0.07	0.80	-1.81	-1.70
2450	0.13	-0.23	-0.96	-1.66
2500	0.59	-1.23	-1.07	-2.22
2501	0.59	-1.25	-1.03	-2.27
2593	0.55	-0.40	1.55	-2.60
2685	0.36	0.04	0.51	-1.55
5150	-2.09	-1.58	-0.78	-0.57
5250	-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 (3rd antenna receives only, e.g. for 4965AGN) then the information is not required for Rx3.

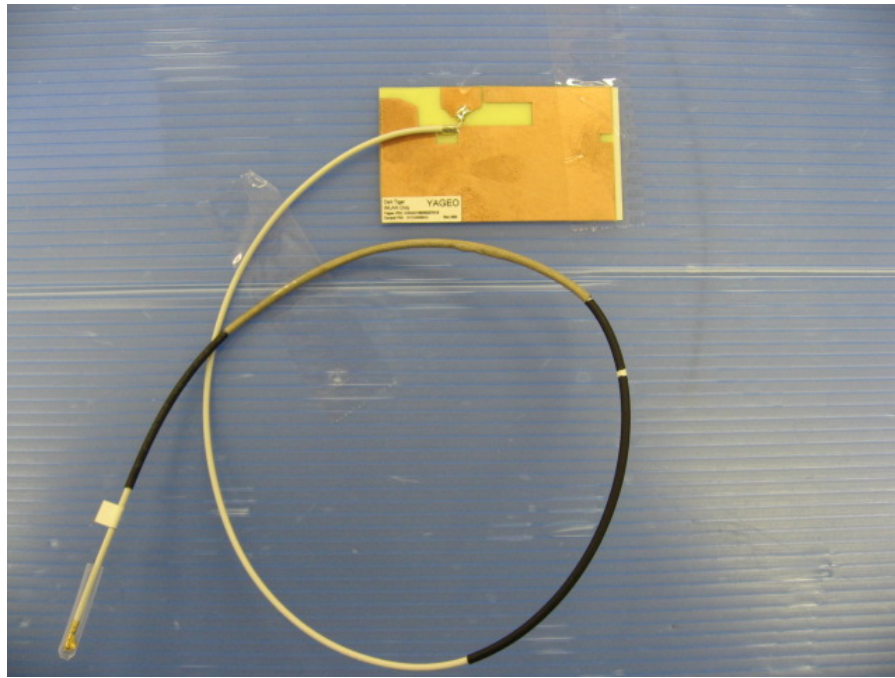
Section 2. Dimensioned Photos or Drawings of Antennas

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

Tx1 Antenna Dimensioned Drawing:



Tx1 Antenna Photo:

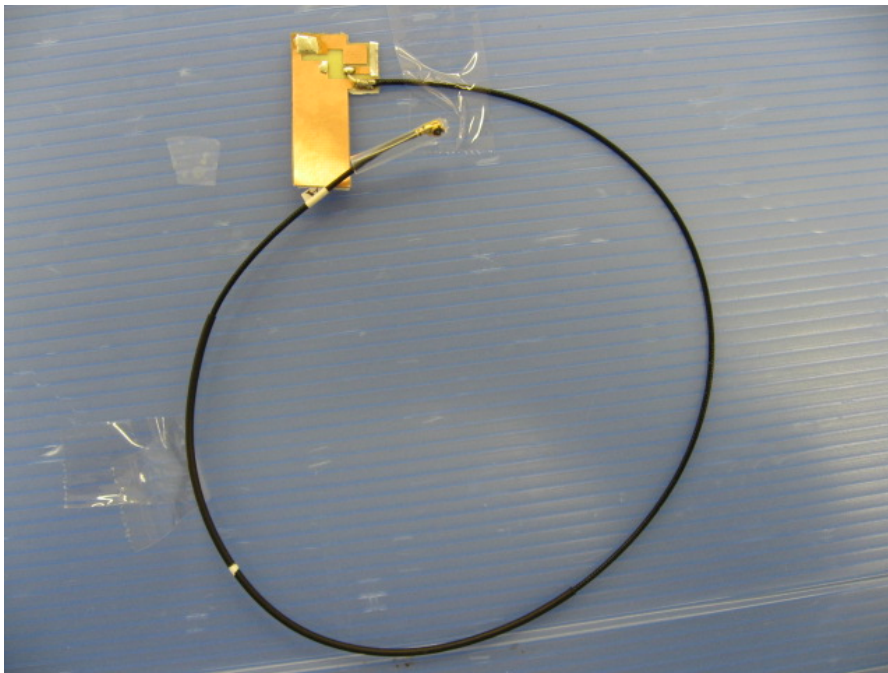


Include a dimensioned photo and dimensioned drawing of Tx2 antenna here.

Tx2 Antenna Dimensioned Drawing:

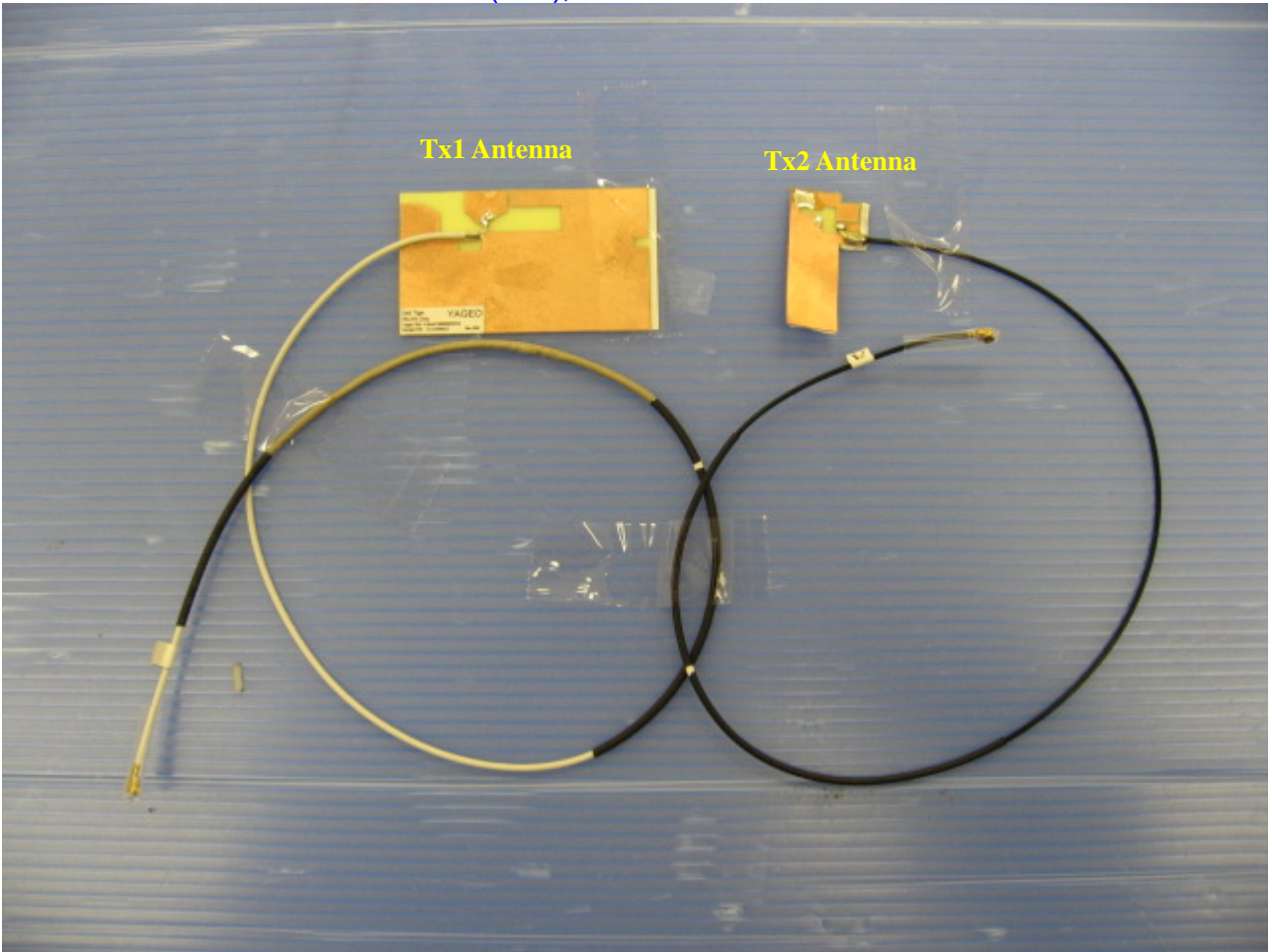


Tx2 Antenna Photo:



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.

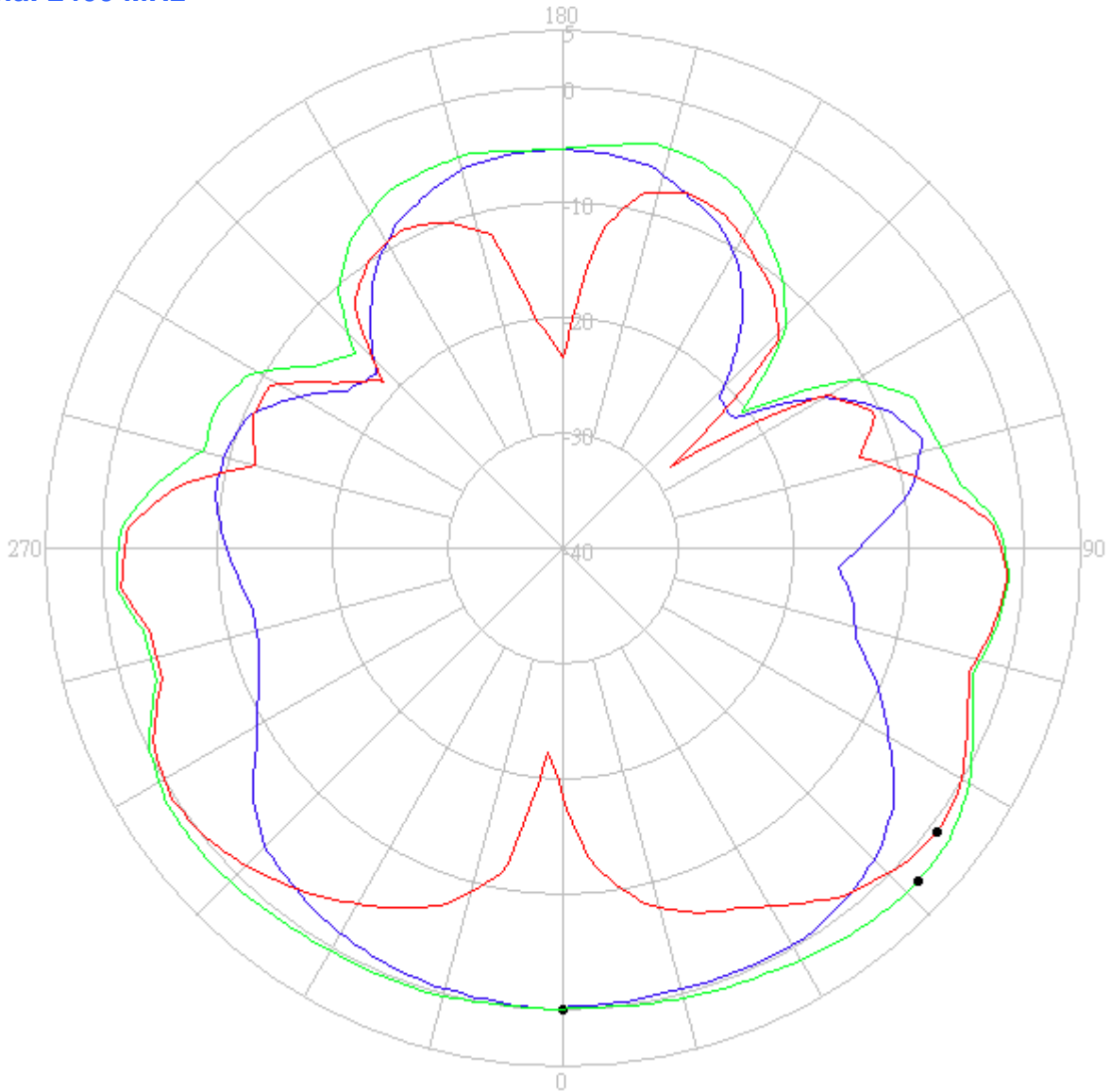
Antenna Manufacturer: Yageo Corporation
Antenna Part Number: CAN4313811022701B (Tx1),
CAN4313811022701B (Tx2),



Section 3. Radiation characteristics of antennae Loaded in Host Platform

2400-2500MHz radiation characteristic

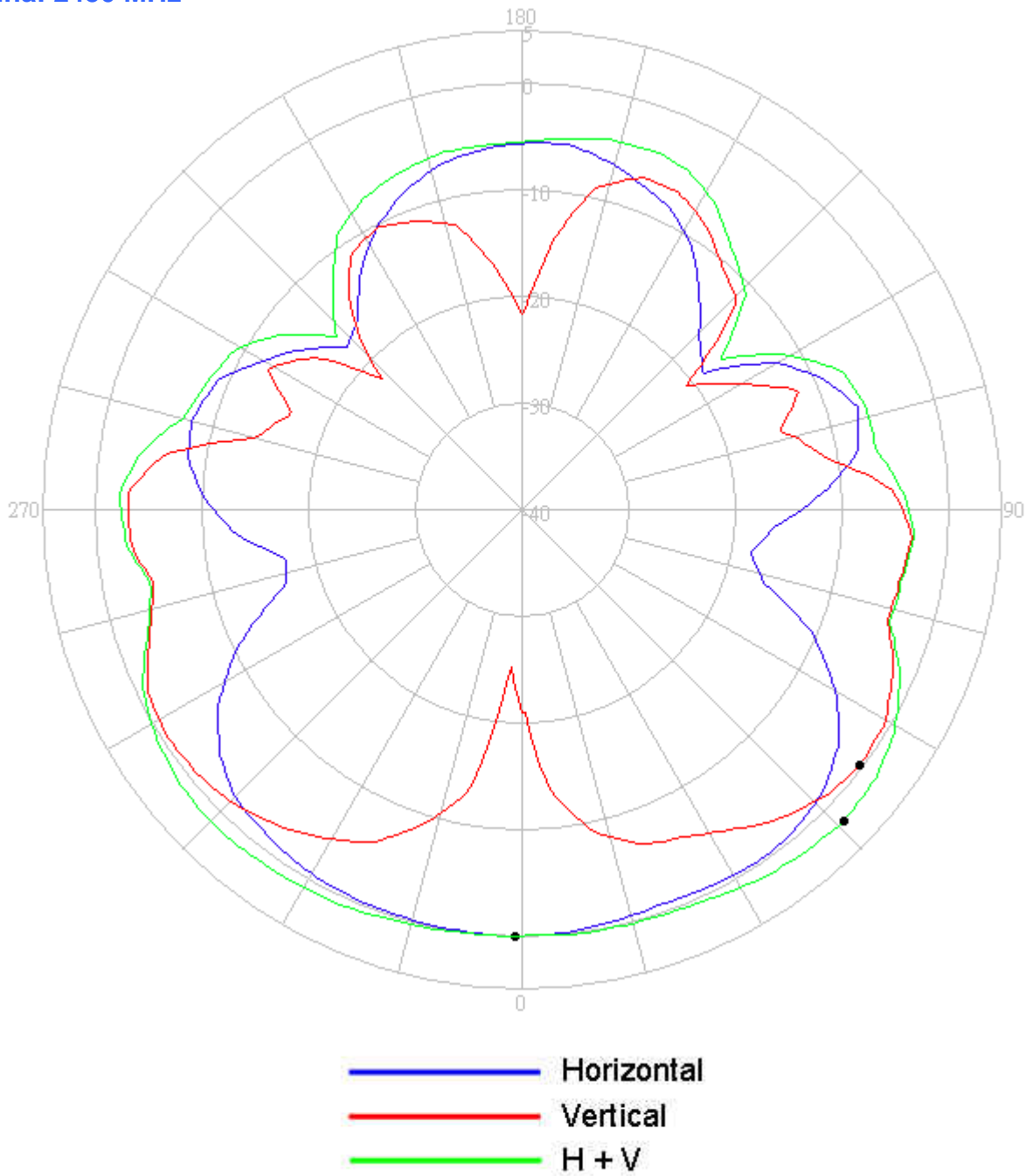
Tx1 antenna: 2400 MHz



- Horizontal
- Vertical
- H + V

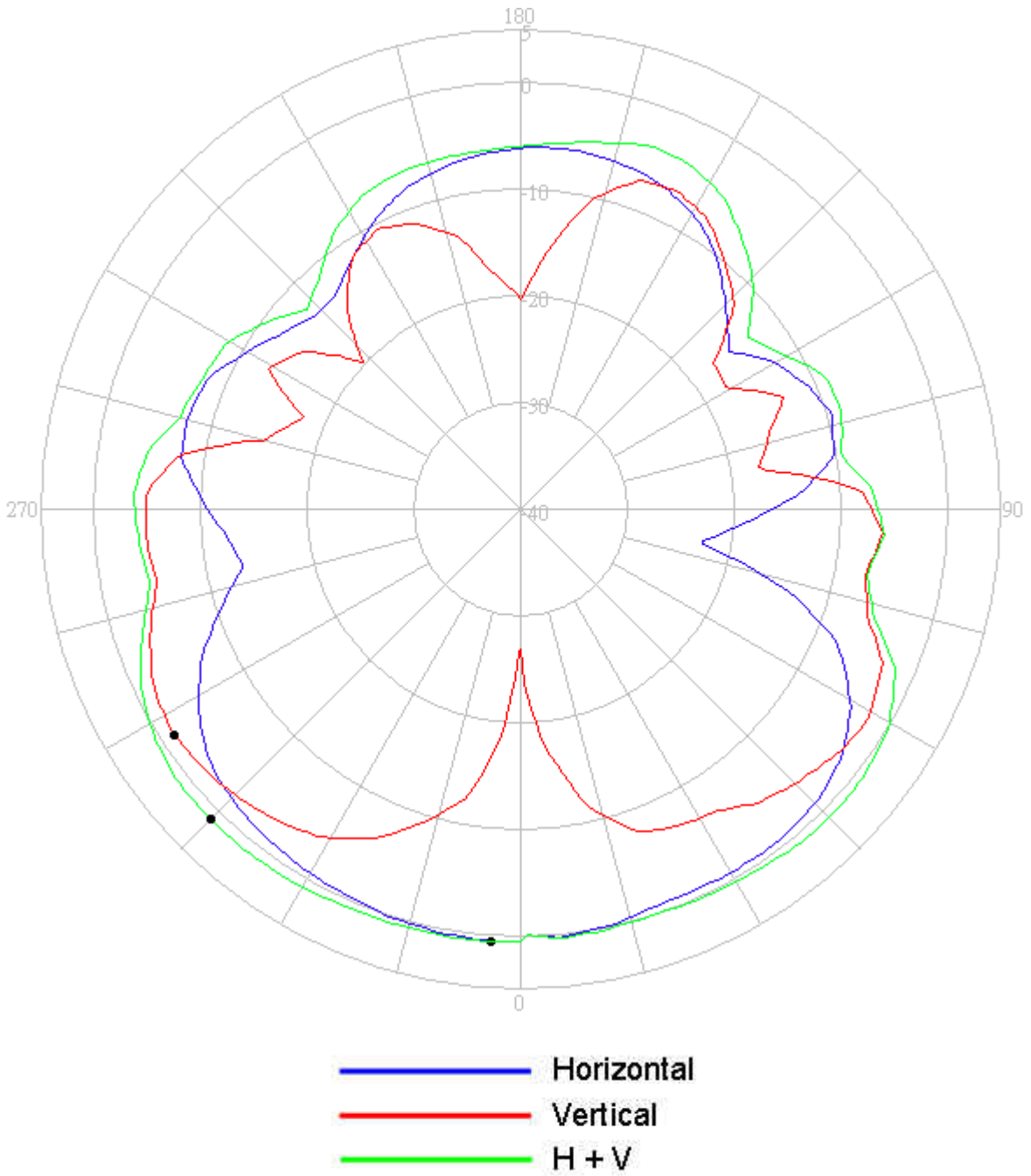
Center Frequency	2400 MHz
Horizontal (dBi) Peak	0.07
Vertical (dBi) Peak	0.80

Tx1 antenna: 2450 MHz



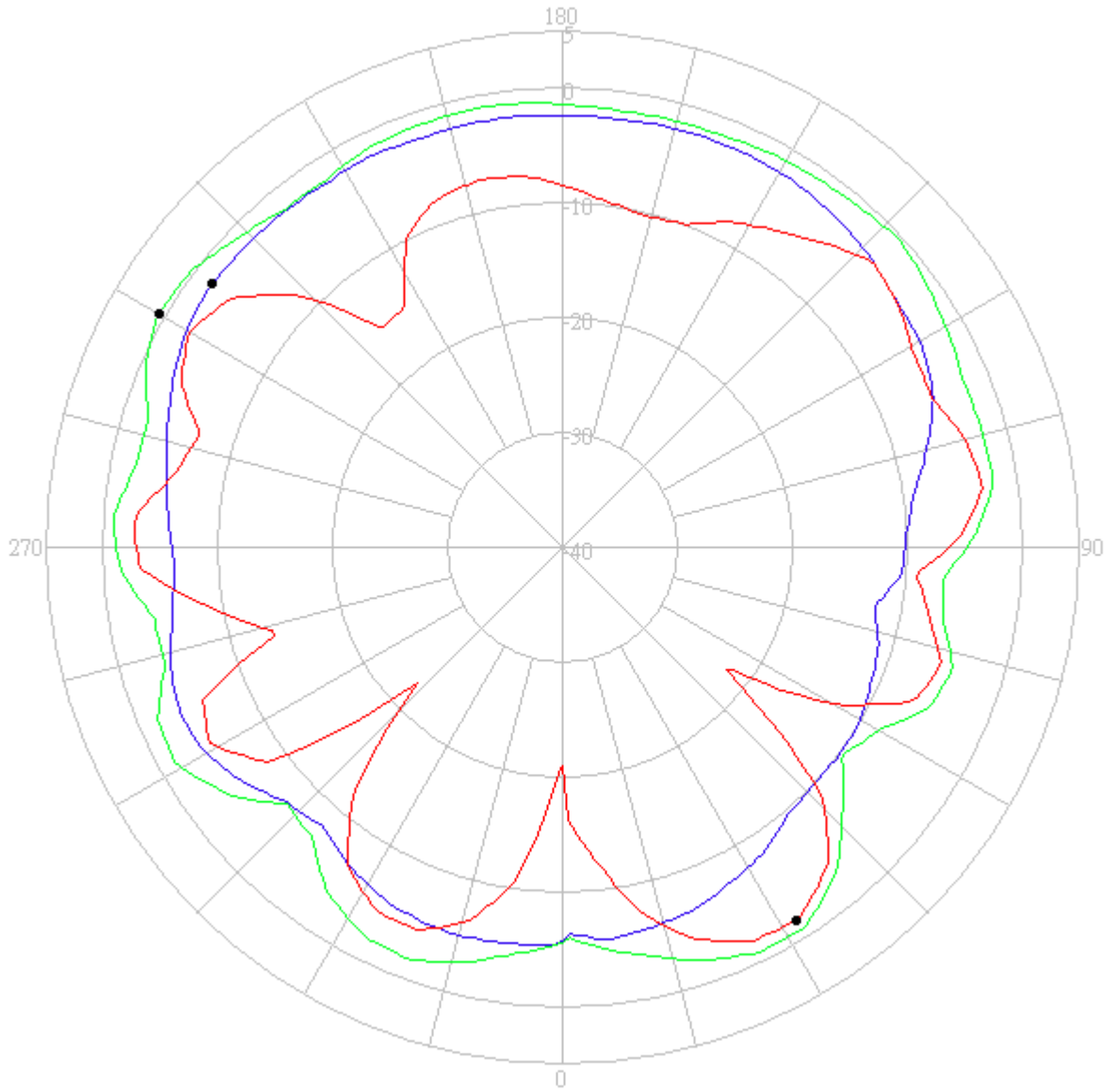
Center Frequency	2450 MHz
Horizontal (dBi) Peak	0.13
Vertical (dBi) Peak	-0.23

Tx1 antenna: 2500 MHz



Center Frequency	2500 MHz
Horizontal (dBi) Peak	0.59
Vertical (dBi) Peak	-1.23

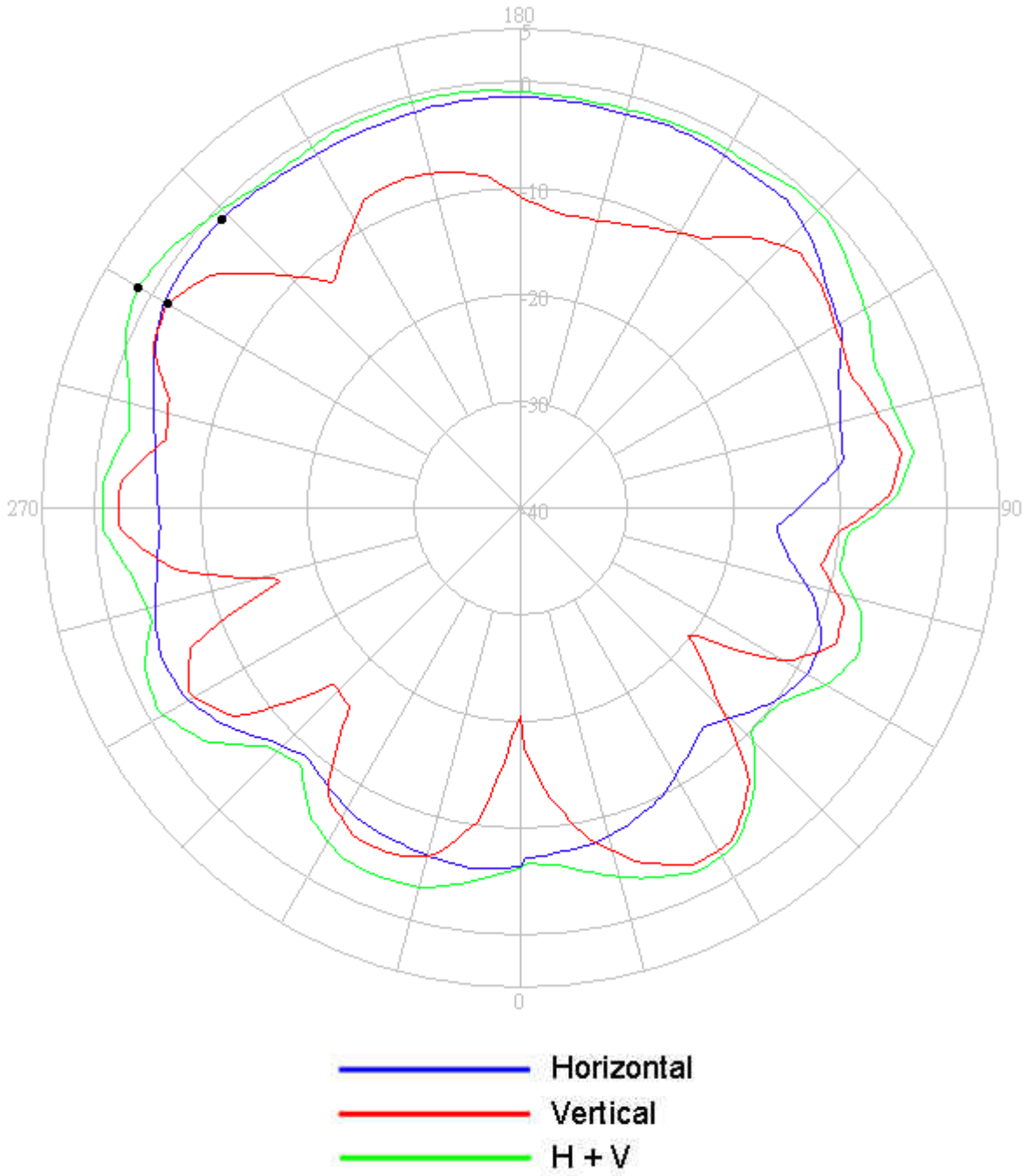
Tx2 antenna: 2400 MHz



- Horizontal
- Vertical
- H + V

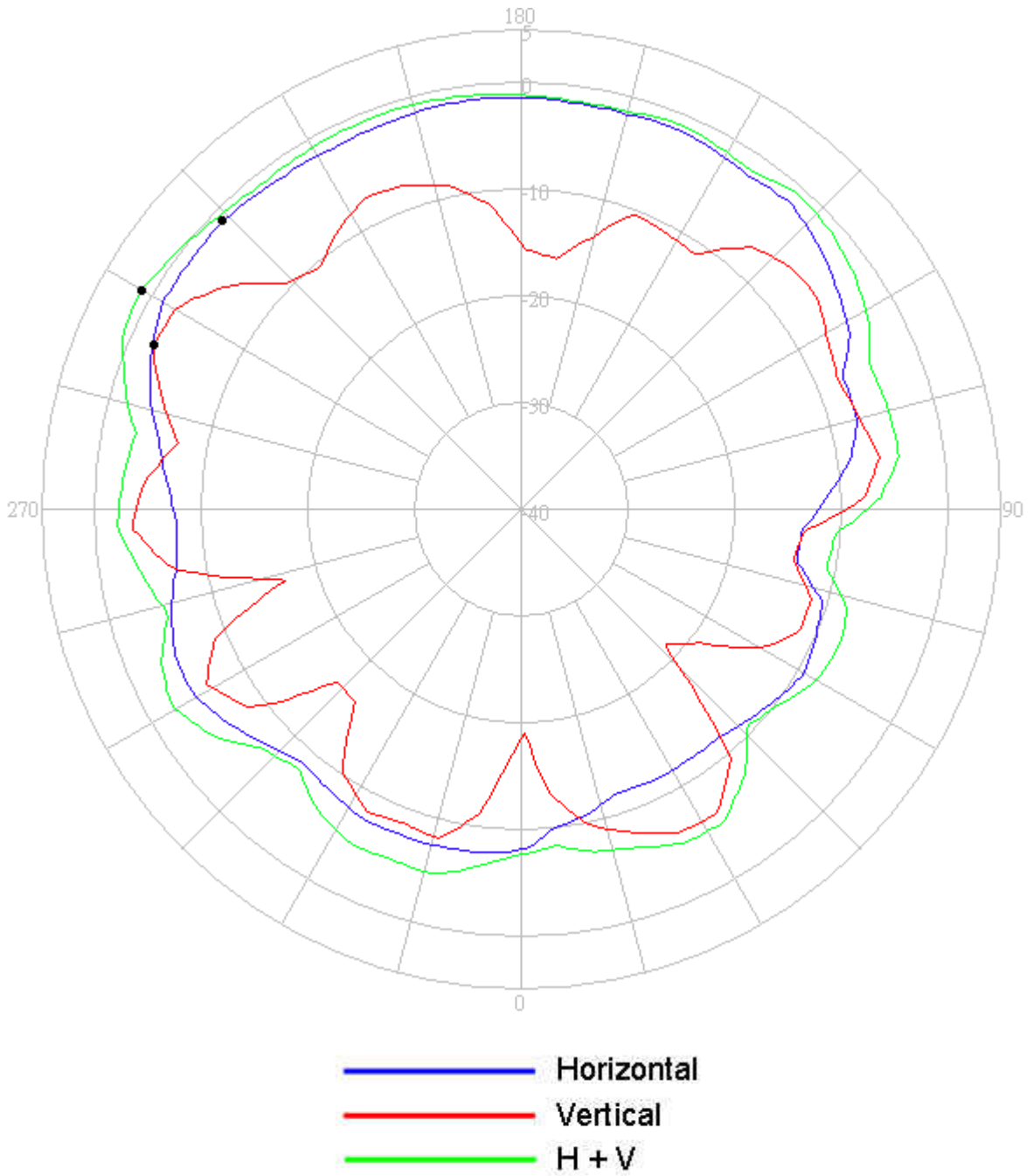
Center Frequency	2400 MHz
Horizontal (dBi) Peak	-1.81
Vertical (dBi) Peak	-1.70

Tx2 antenna: 2450 MHz



Center Frequency	2450 MHz
Horizontal (dBi) Peak	-0.96
Vertical (dBi) Peak	-1.66

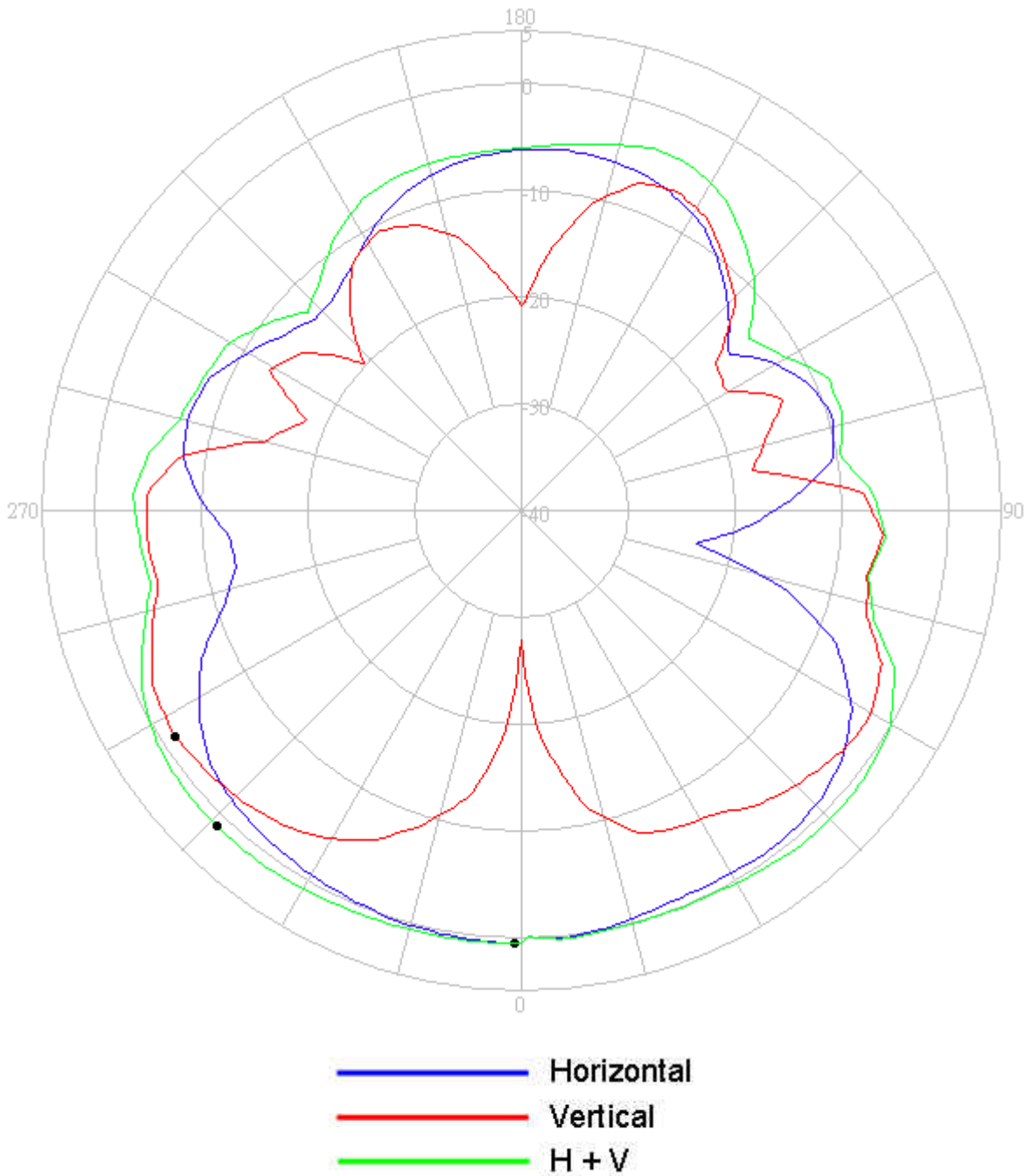
Tx2 antenna: 2500 MHz



Center Frequency	2500 MHz
Horizontal (dBi) Peak	-1.07
Vertical (dBi) Peak	-2.22

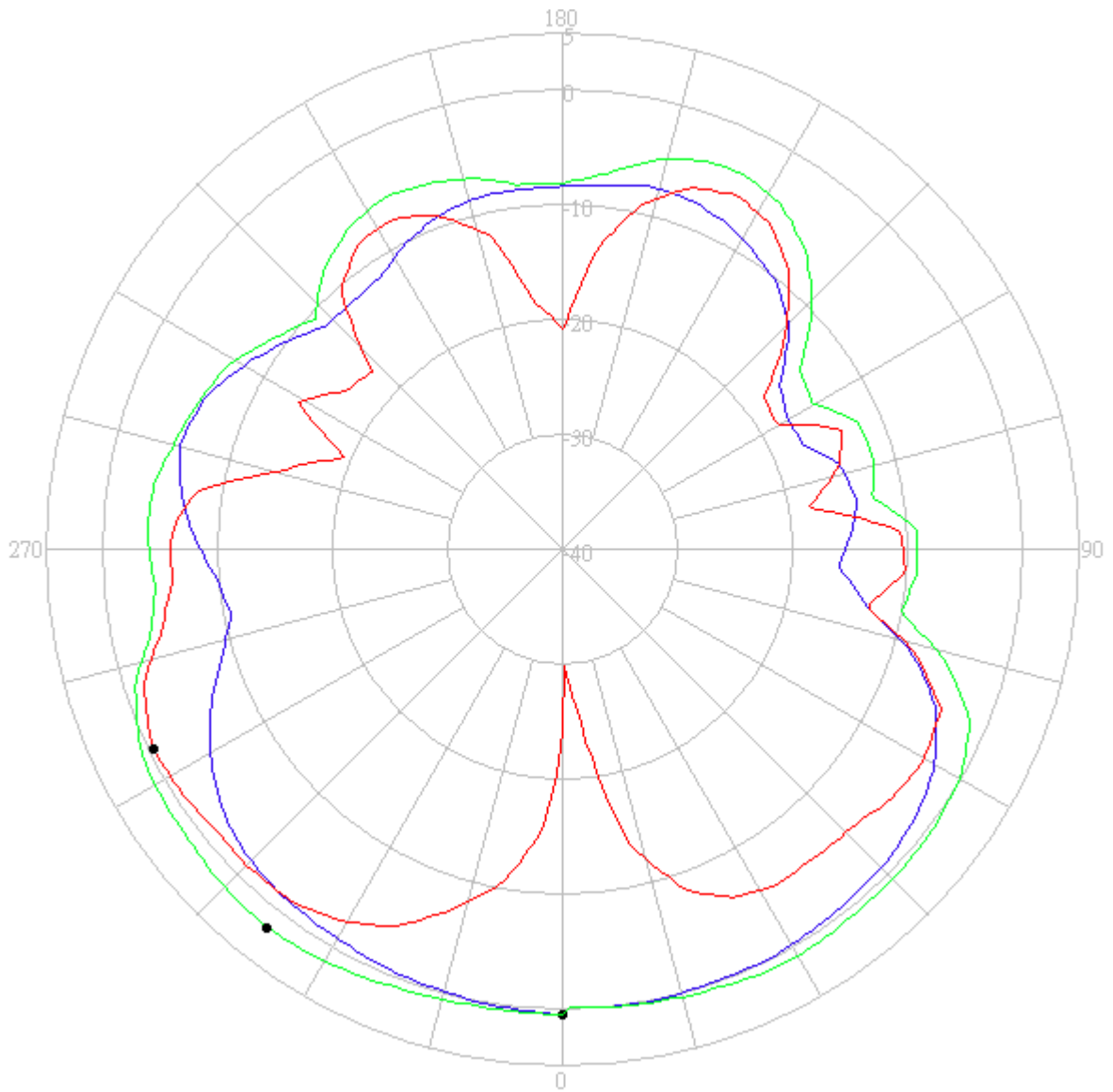
2490-2700MHz radiation characteristic

Tx1 antenna: 2501MHz



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

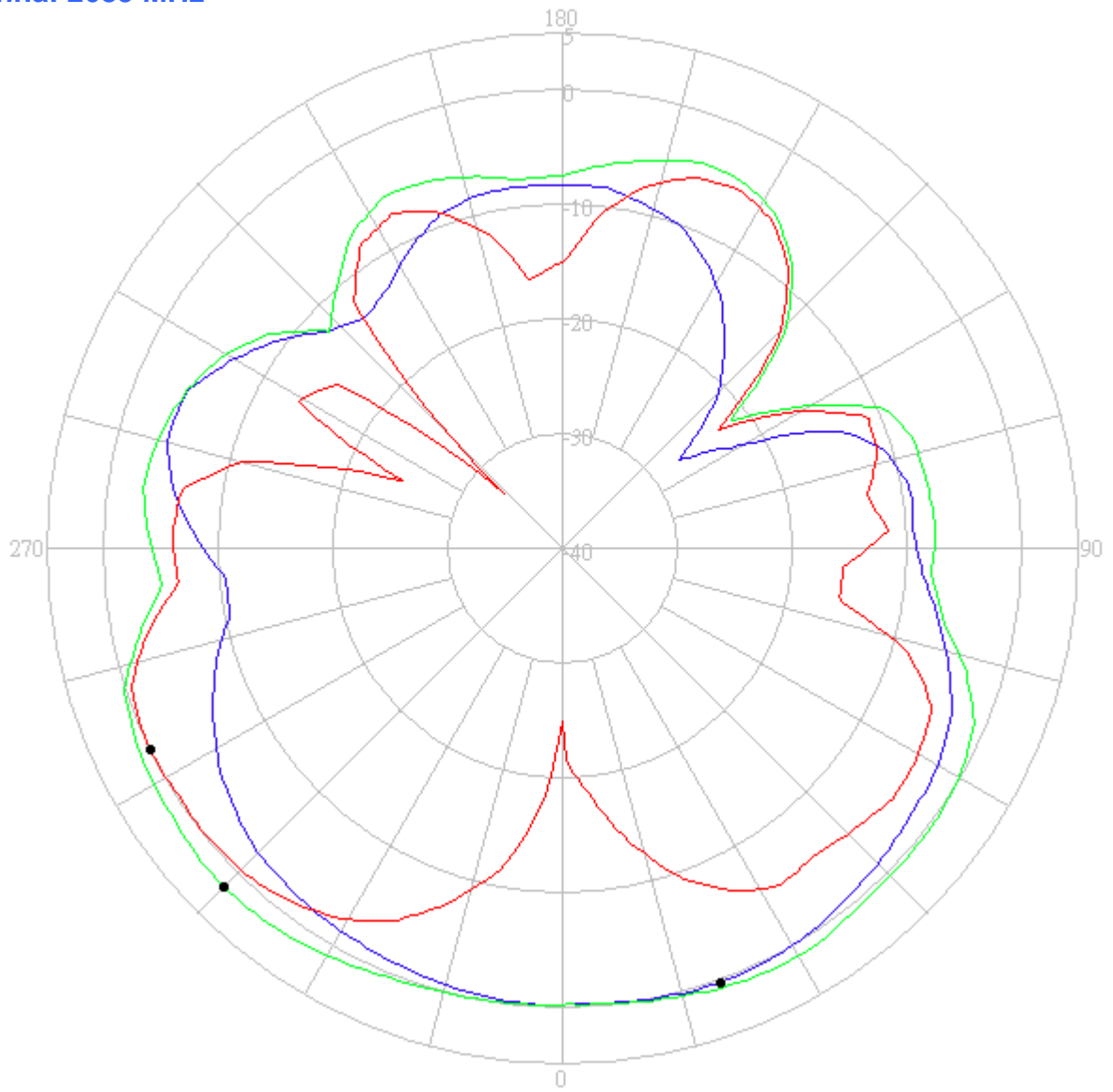
Tx1 antenna: 2593MHz



- Horizontal
- Vertical
- H + V

Center Frequency	2593 MHz
Horizontal (dBi) Peak	0.55
Vertical (dBi) Peak	-0.40

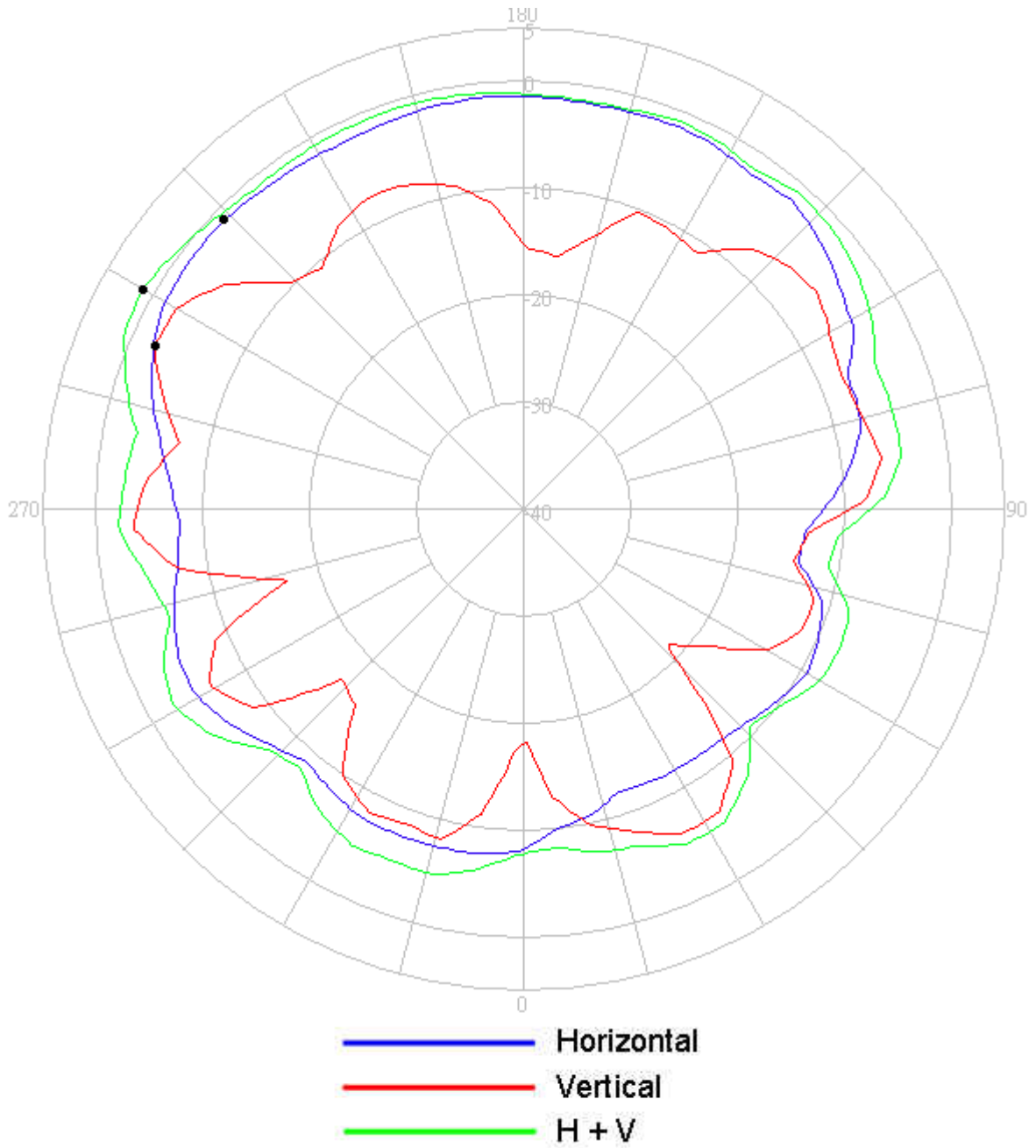
Tx1 antenna: 2685 MHz



- Horizontal
- Vertical
- H + V

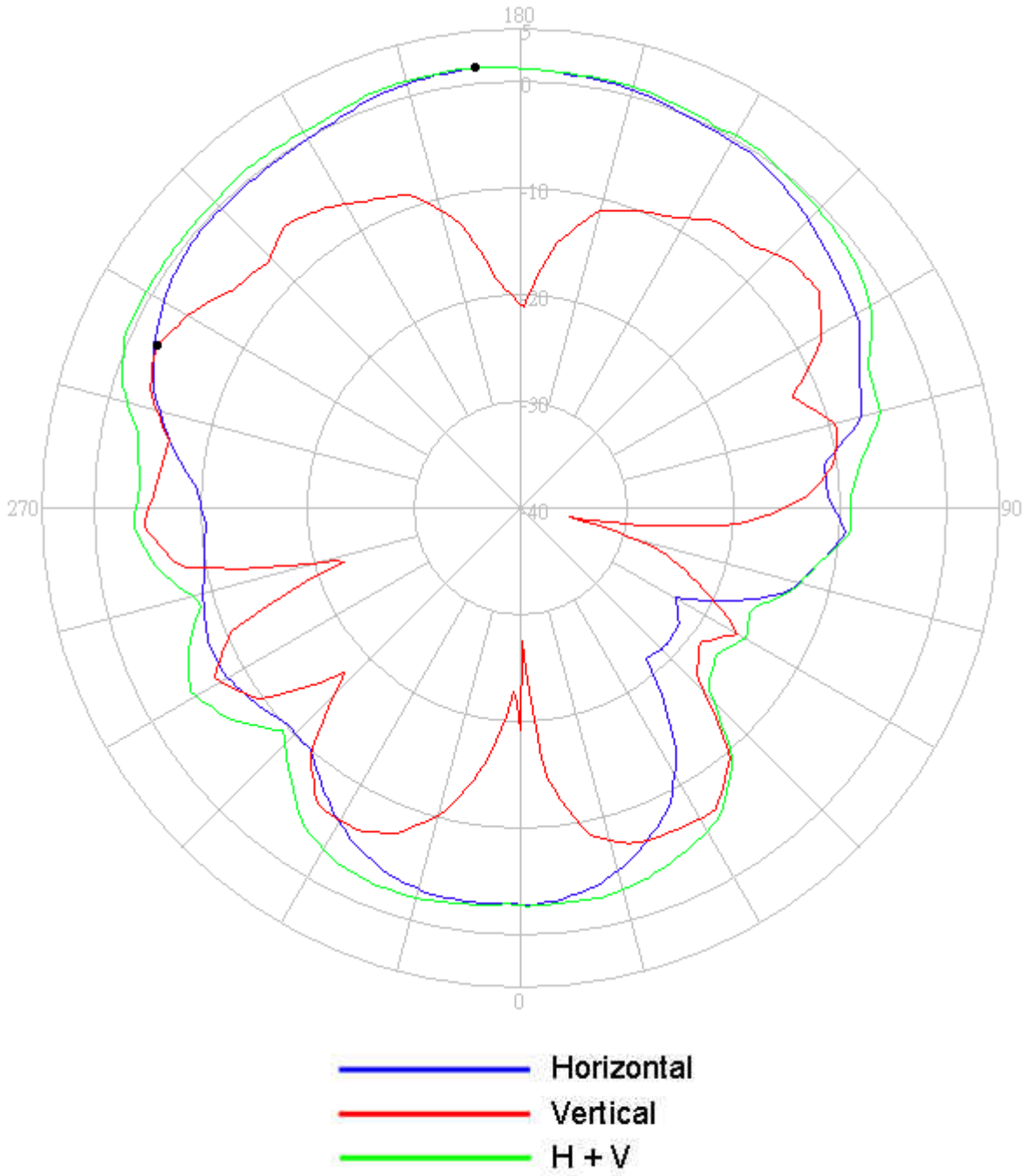
Center Frequency	2685 MHz
Horizontal (dBi) Peak	0.36
Vertical (dBi) Peak	0.04

Tx2 antenna: 2501MHz



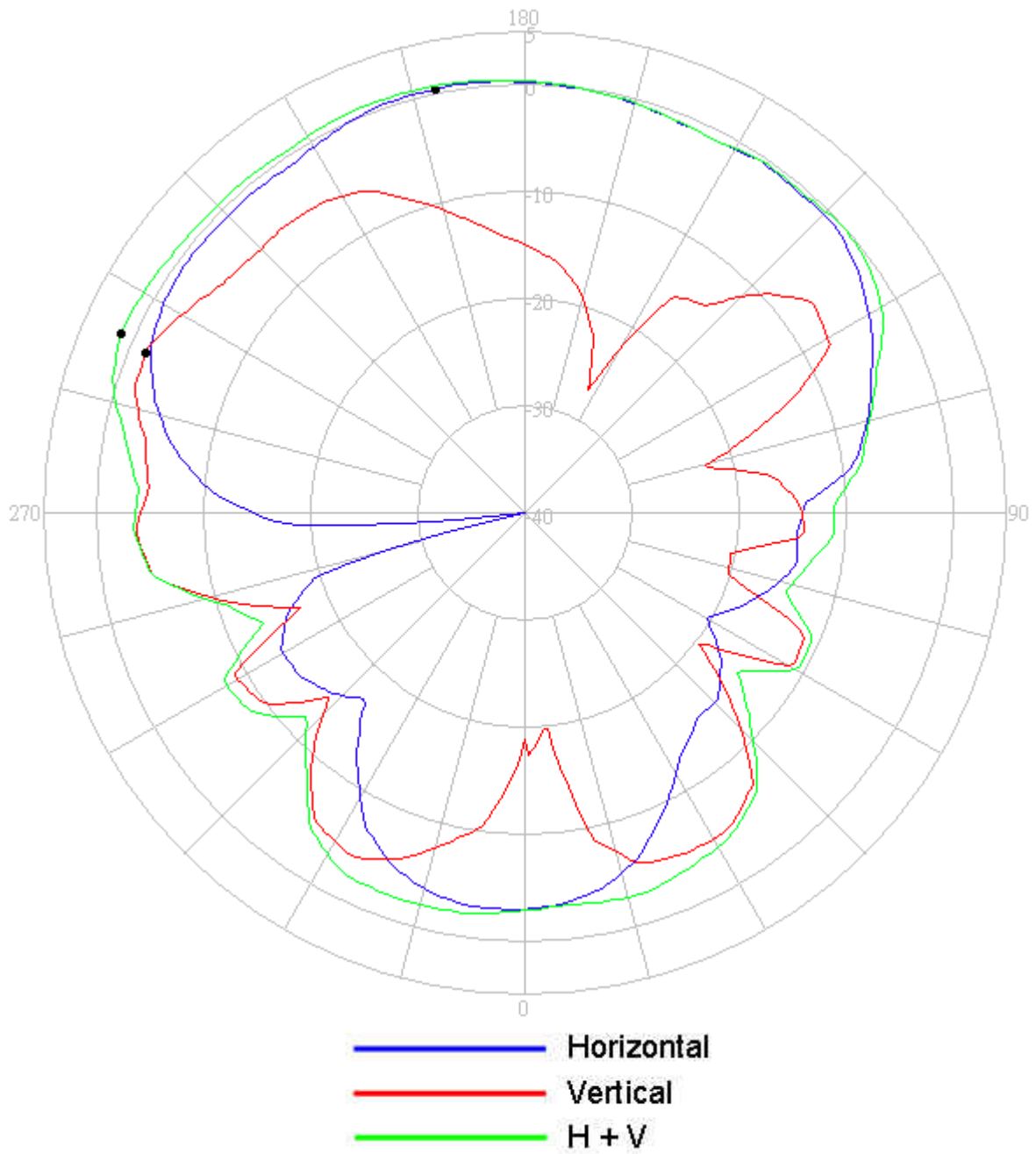
Center Frequency	2501 MHz
Horizontal (dBi) Peak	-1.03
Vertical (dBi) Peak	-2.27

Tx2 antenna: 2593MHz



Center Frequency	2593 MHz
Horizontal (dBi) Peak	1.55
Vertical (dBi) Peak	-2.60

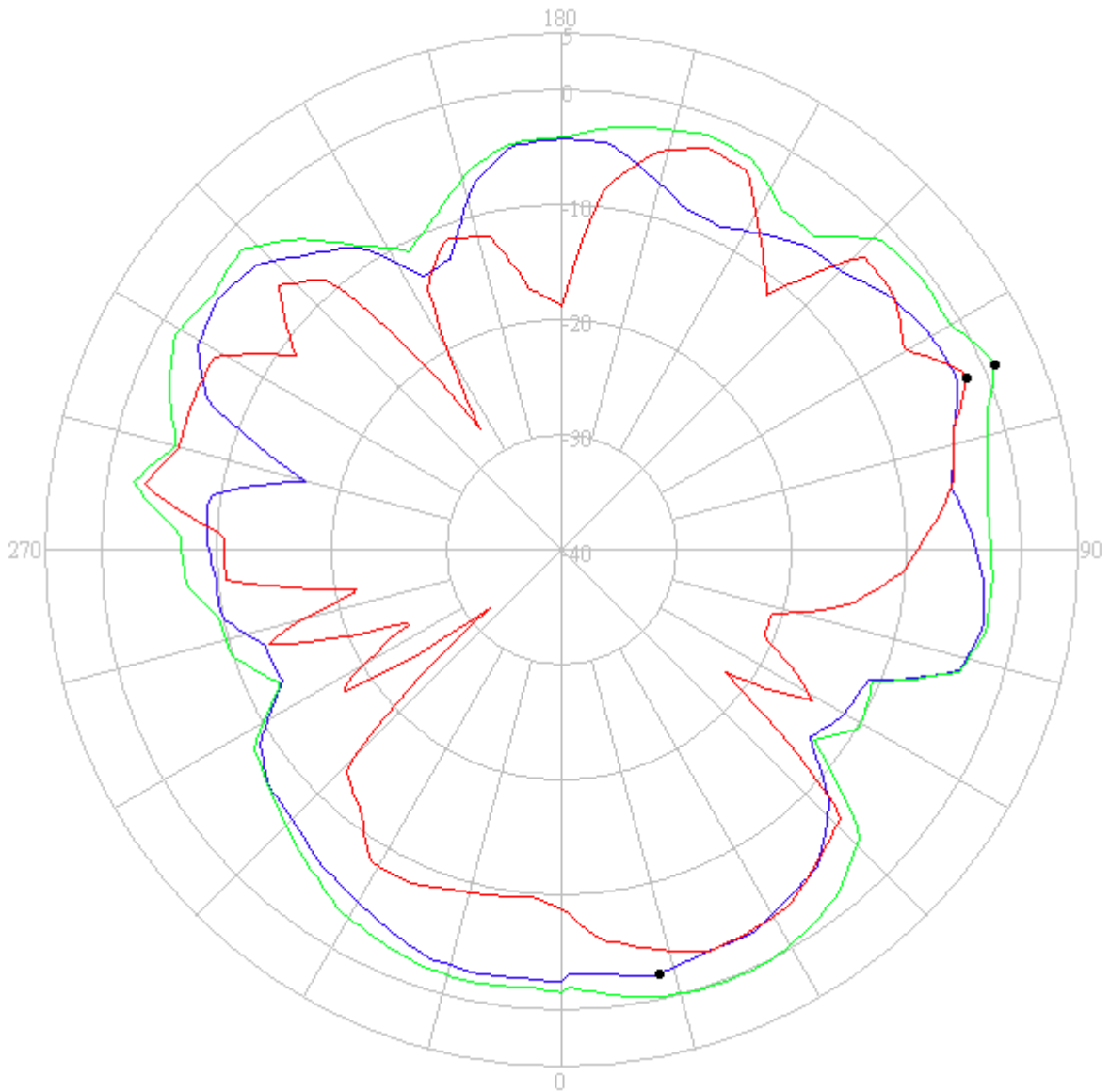
Tx2 antenna: 2685 MHz



Center Frequency	2685 MHz
Horizontal (dBi) Peak	0.51
Vertical (dBi) Peak	-1.55

5150-5350 MHz radiation characteristic

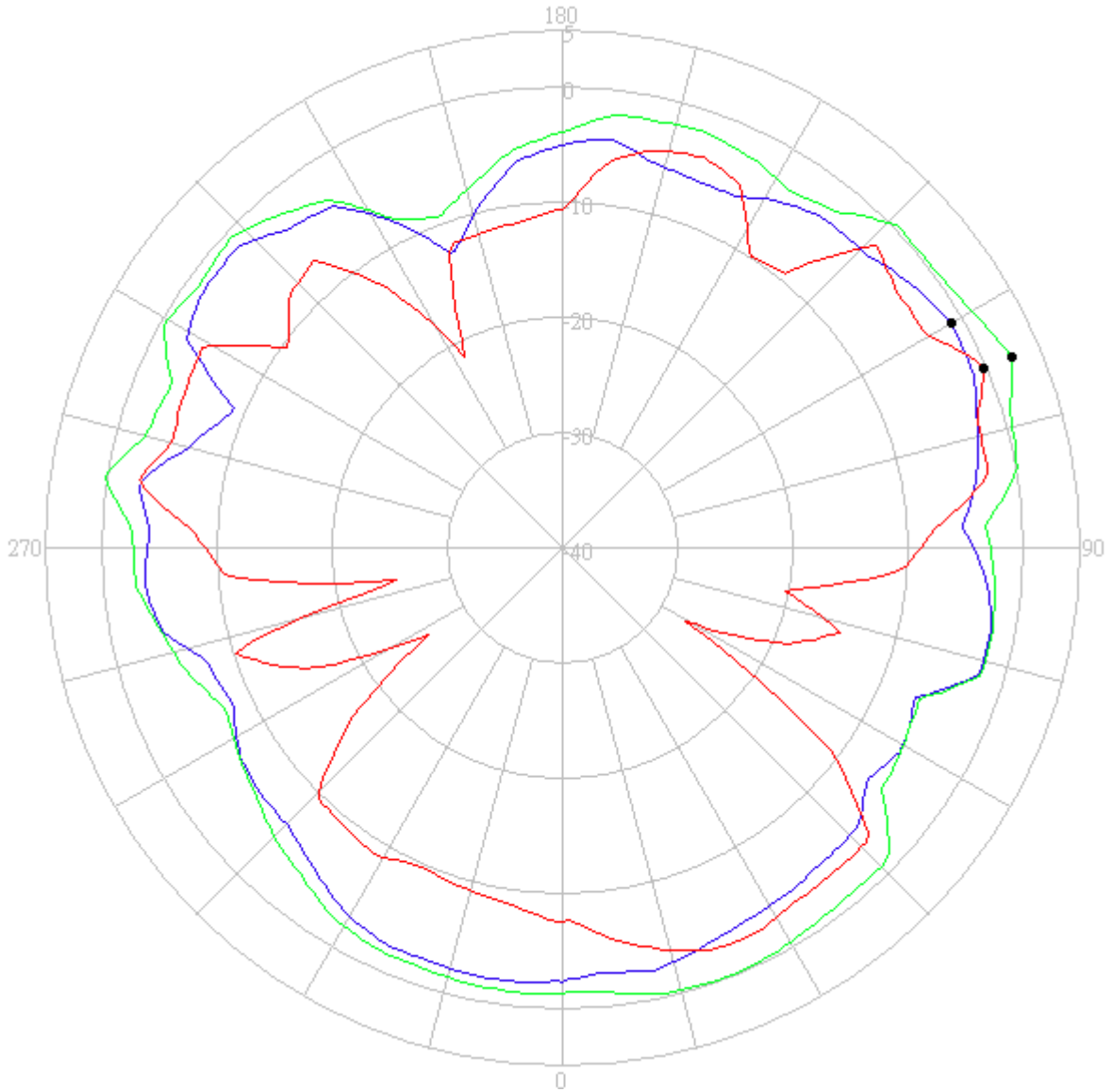
Tx1 antenna: 5150 MHz



- Horizontal
- Vertical
- H + V

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

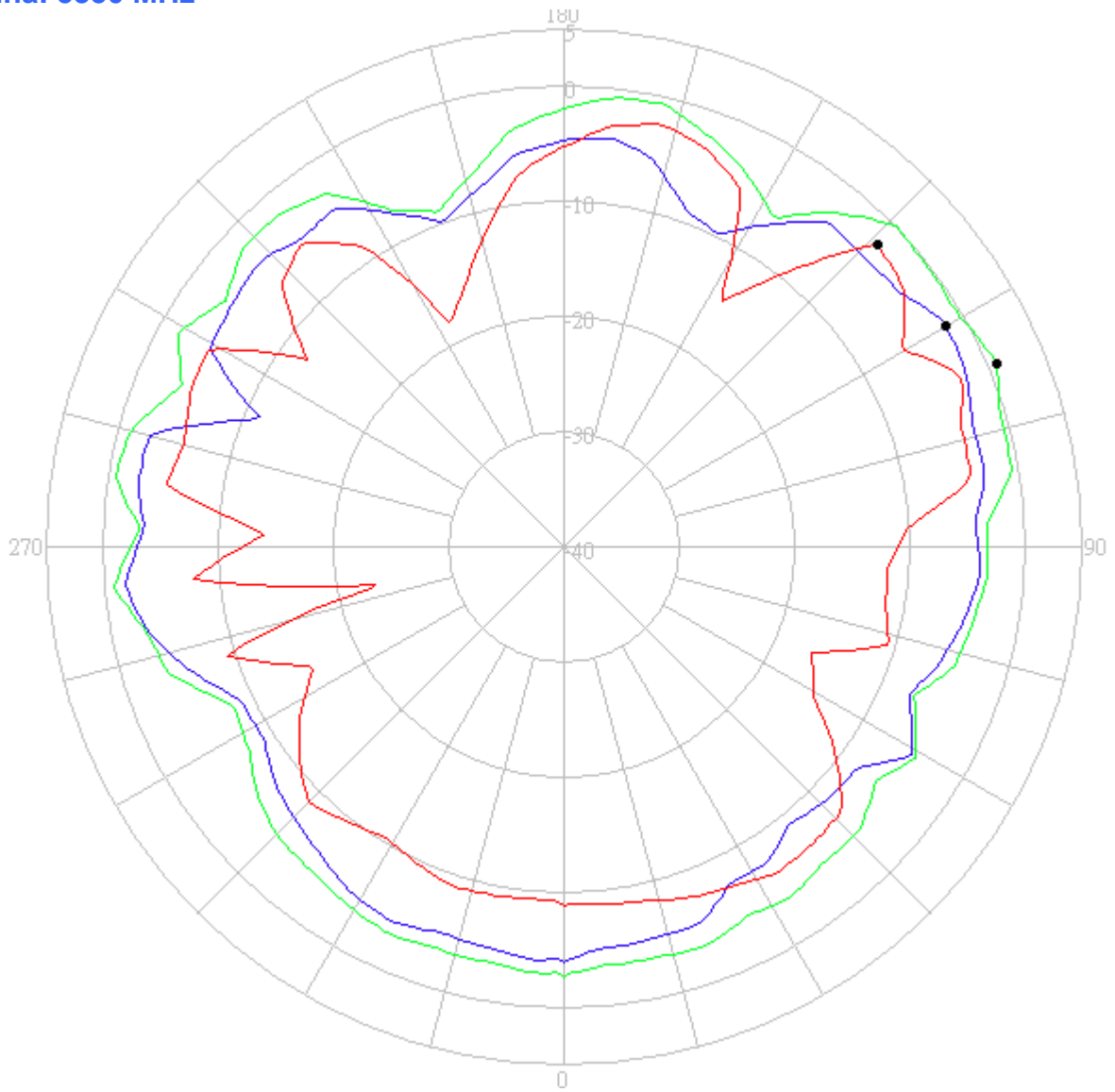
Tx1 antenna: 5250 MHz



- Horizontal
- Vertical
- H + V

Center Frequency	5250 MHz
Horizontal (dBi) Peak	-0.97
Vertical (dBi) Peak	-0.13

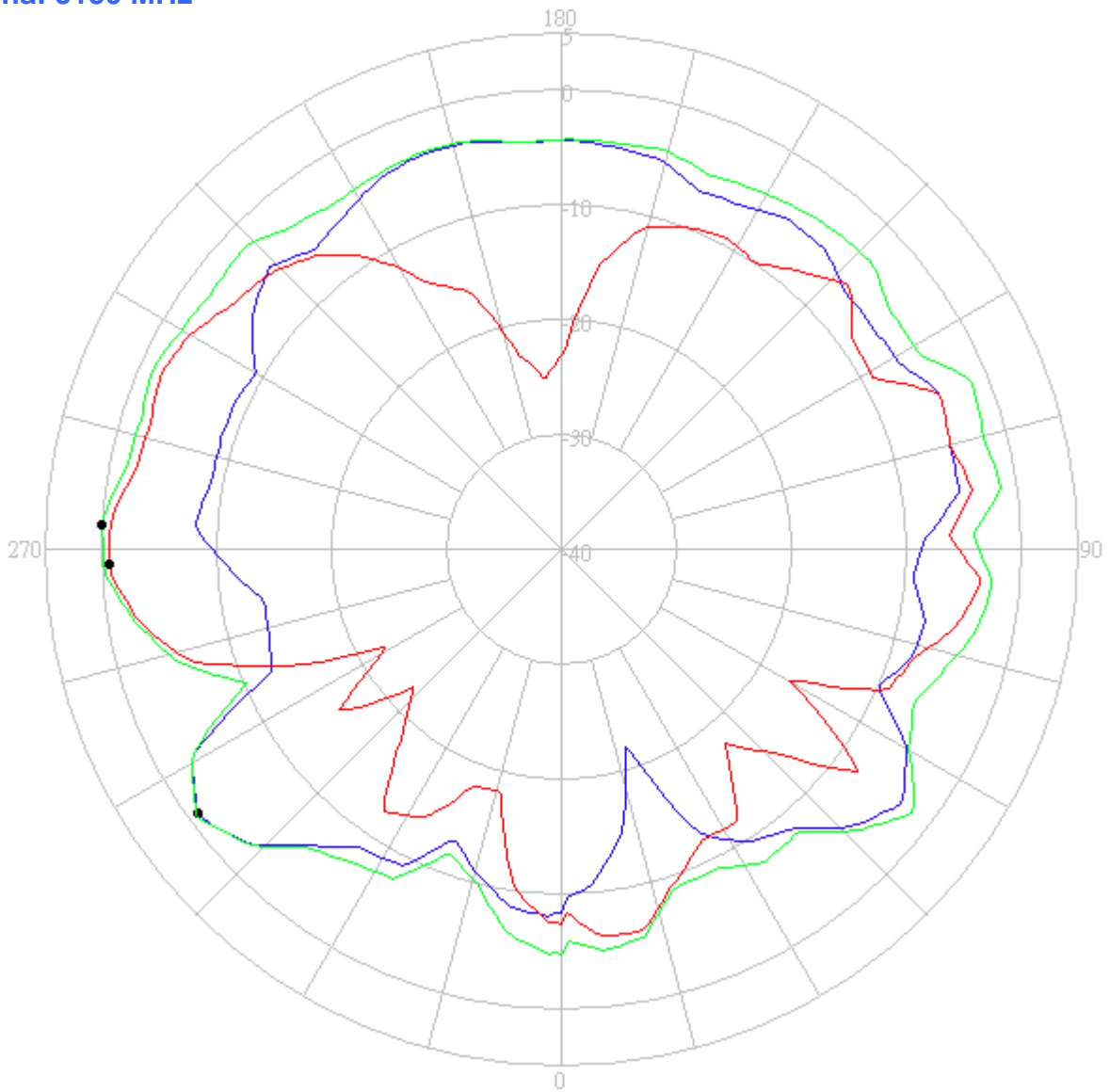
Tx1 antenna: 5350 MHz



- Horizontal
- Vertical
- H + V

Center Frequency	5350 MHz
Horizontal (dBi) Peak	-1.61
Vertical (dBi) Peak	-2.11

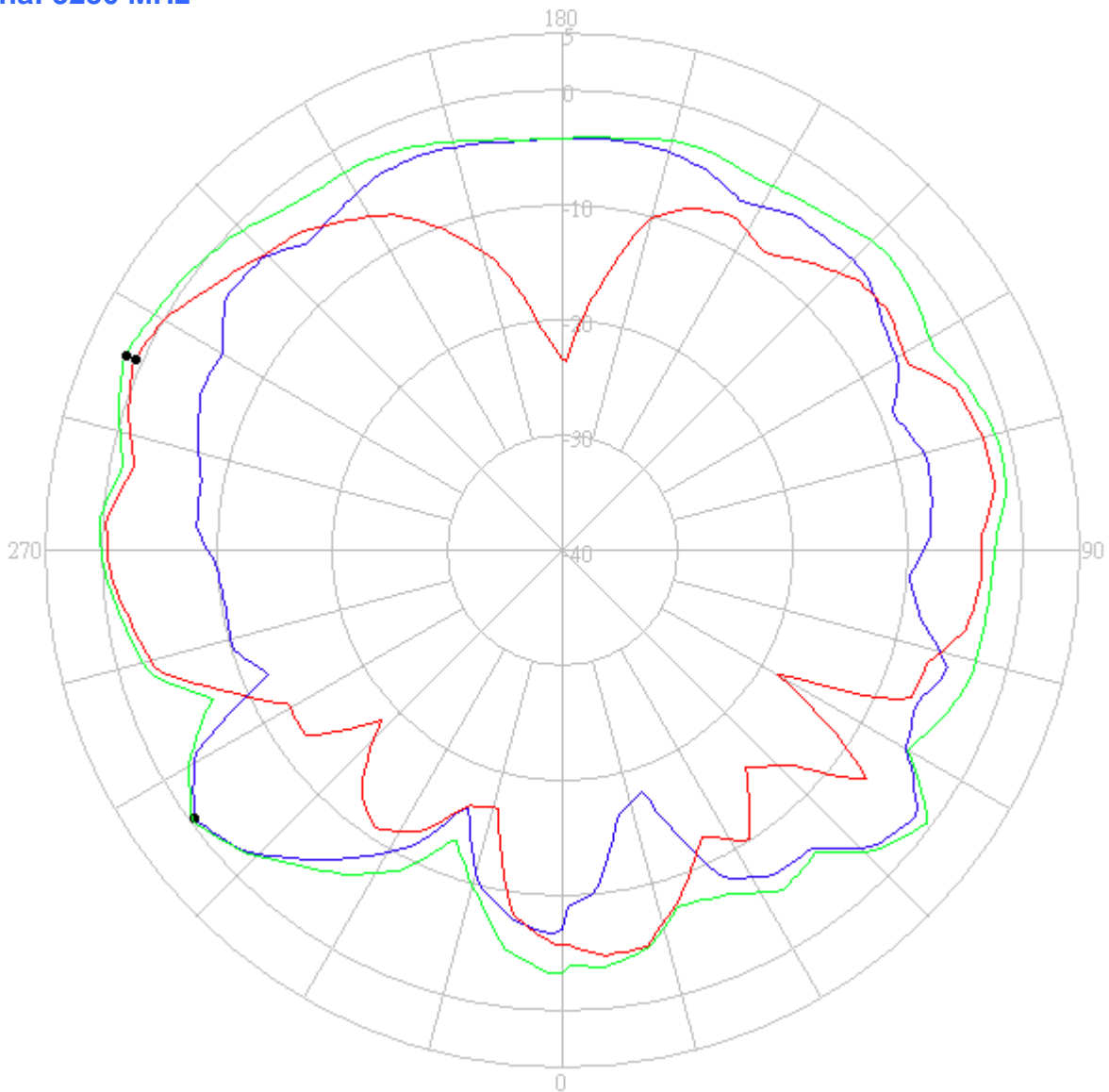
Tx2 antenna: 5150 MHz



- Horizontal
- Vertical
- H + V

Center Frequency	5150 MHz
Horizontal (dBi) Peak	-0.78
Vertical (dBi) Peak	-0.57

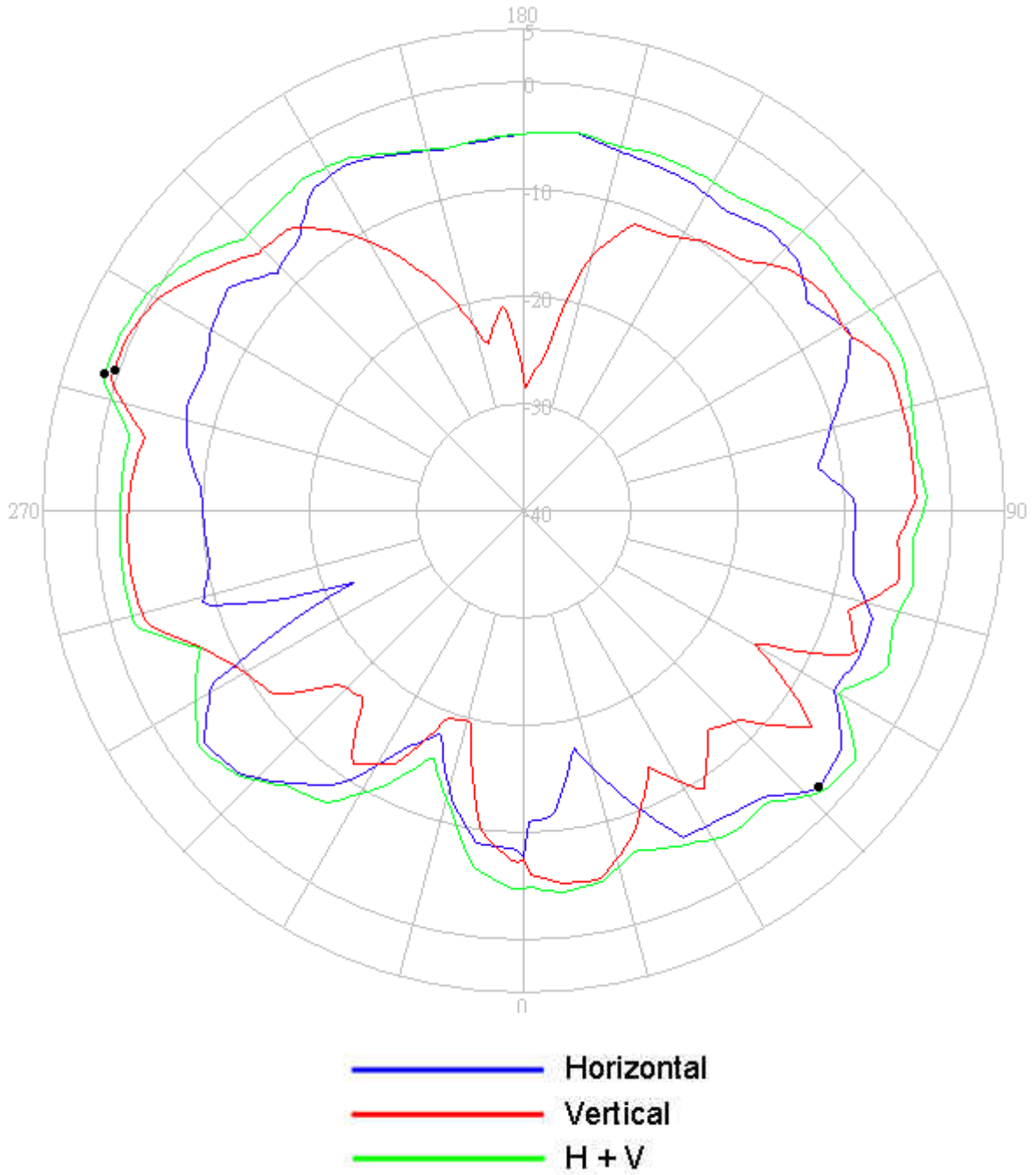
Tx2 antenna: 5250 MHz



- Horizontal
- Vertical
- H + V

Center Frequency	5250 MHz
Horizontal (dBi) Peak	-0.43
Vertical (dBi) Peak	0.70

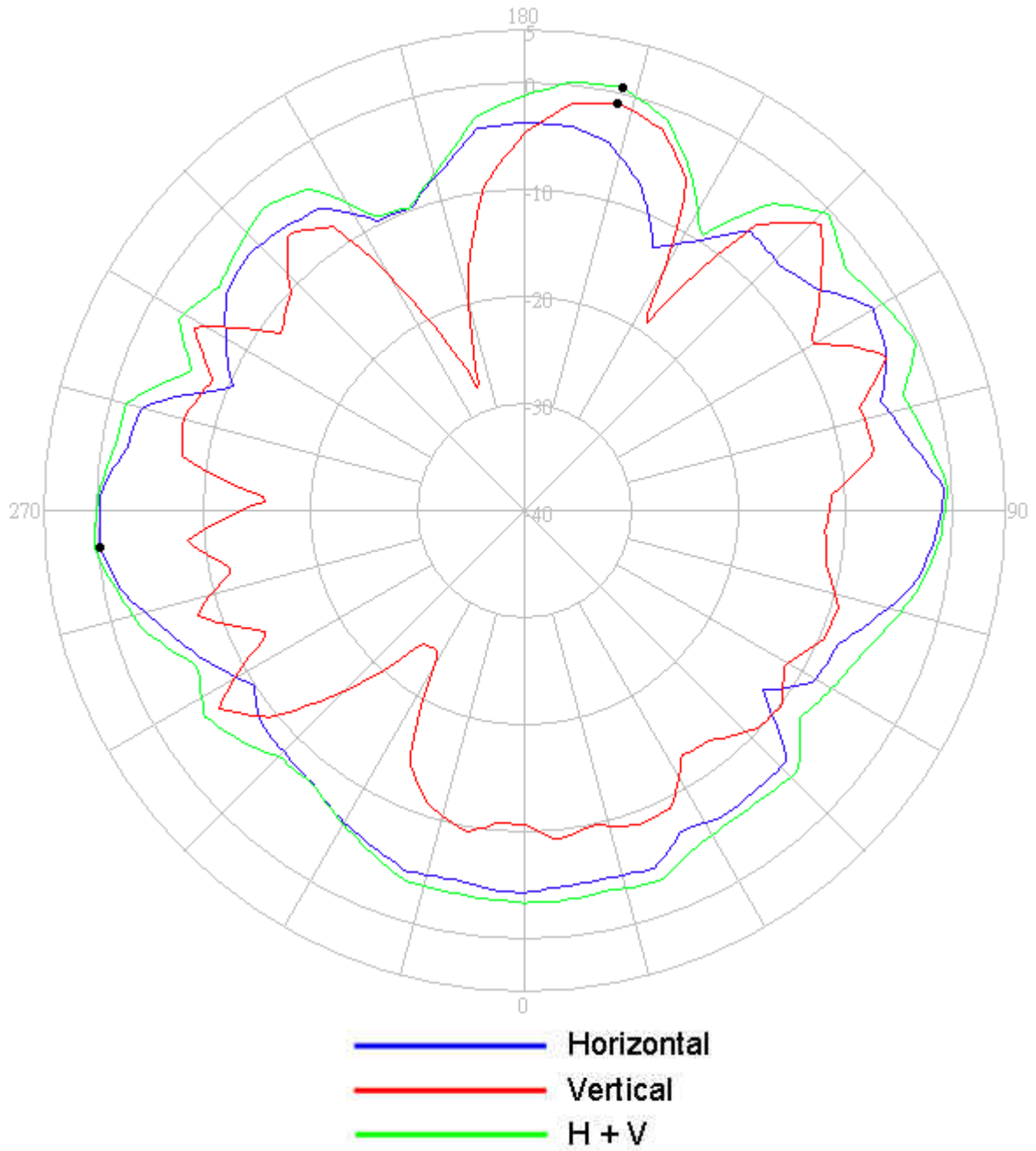
Tx2 antenna: 5350 MHz



Center Frequency	5350 MHz
Horizontal (dBi) Peak	-2.22
Vertical (dBi) Peak	0.51

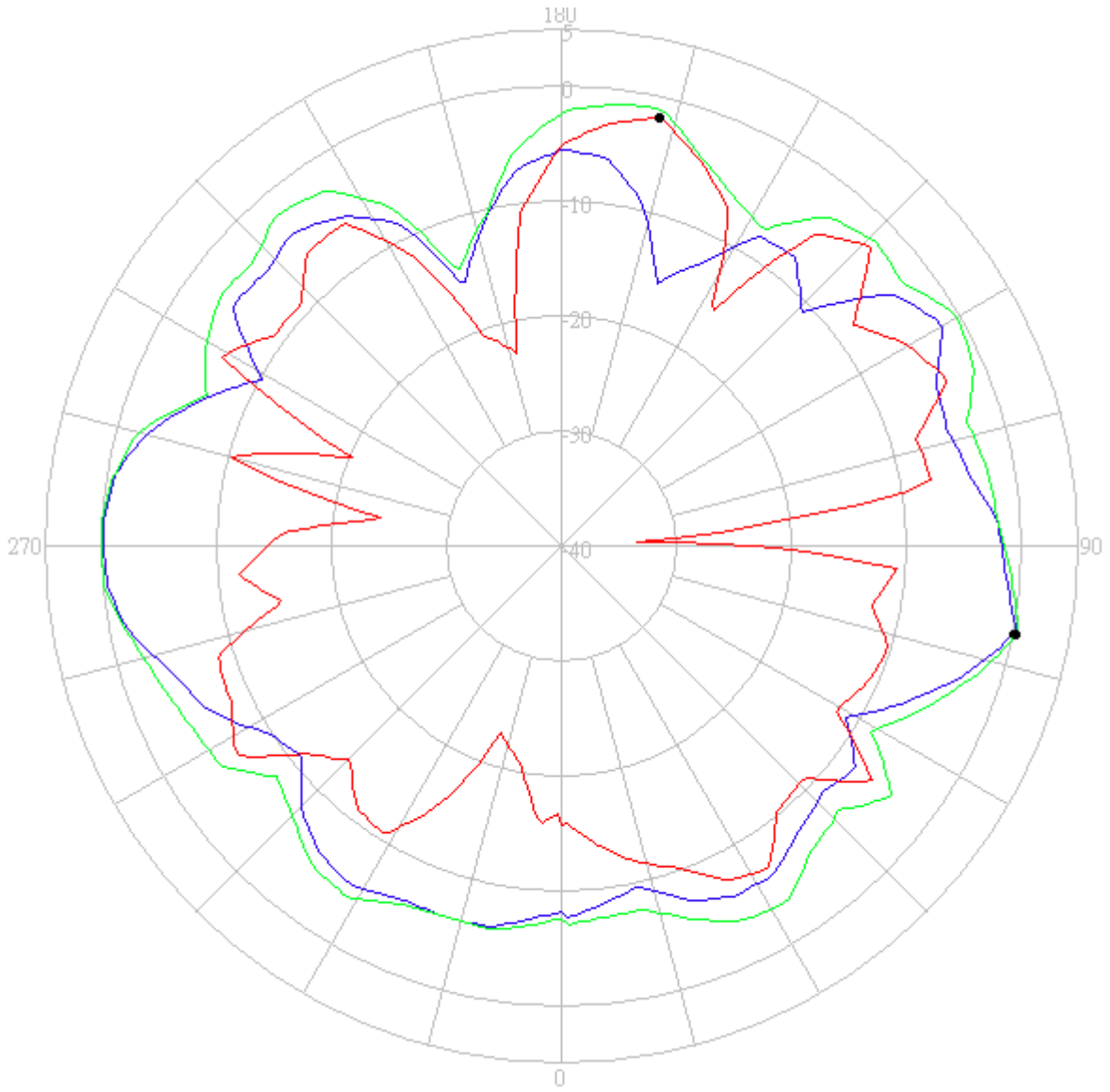
5470-5725MHz radiation characteristic

Tx1 antenna: 5470 MHz



Center Frequency	5470 MHz
Horizontal (dBi) Peak	-0.17
Vertical (dBi) Peak	-0.95

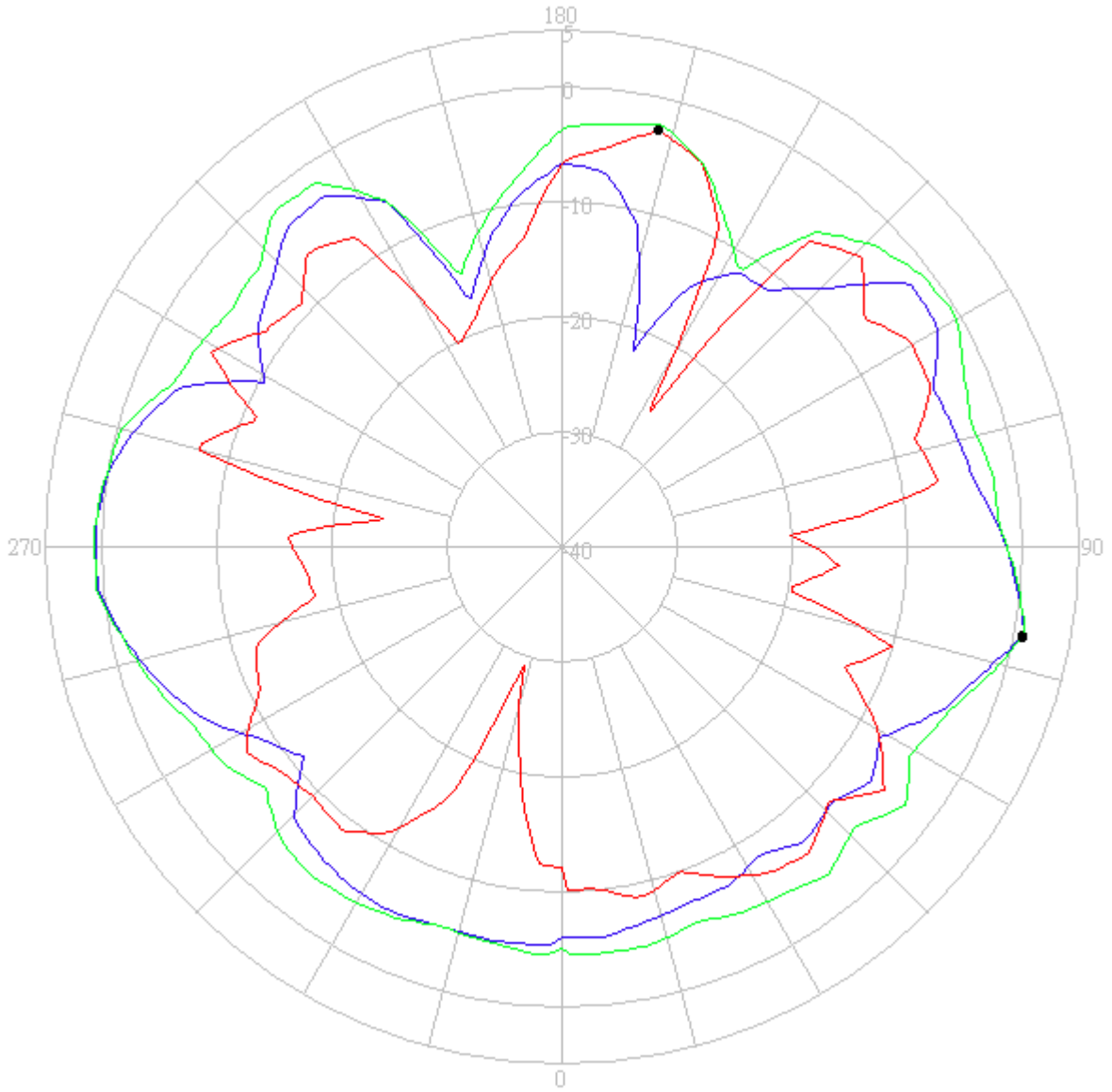
Tx1 antenna: 5600 MHz



- Horizontal
- Vertical
- H + V

Center Frequency	5600 MHz
Horizontal (dBi) Peak	0.14
Vertical (dBi) Peak	-1.72

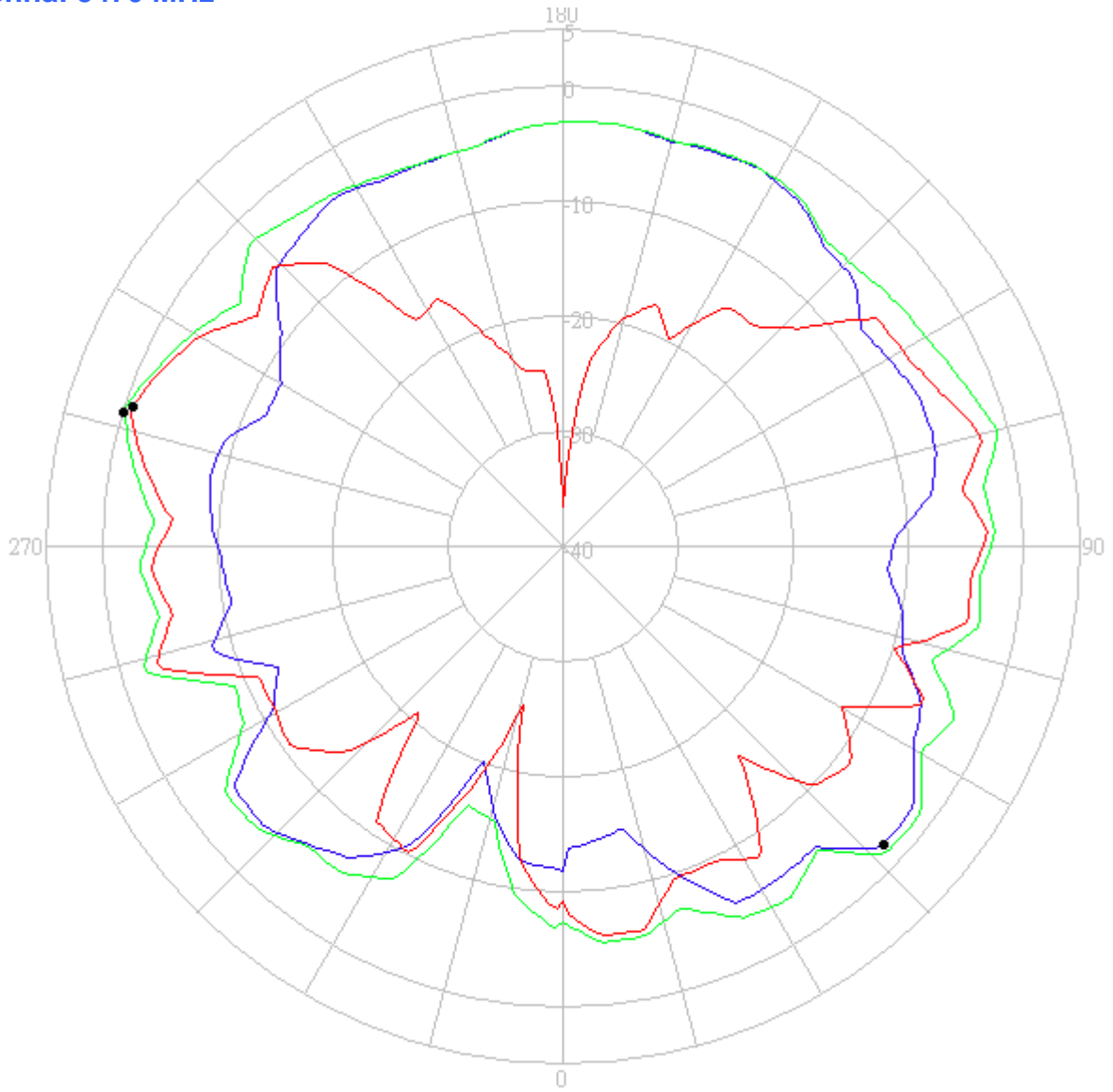
Tx1 antenna: 5725 MHz



- Horizontal
- Vertical
- H + V

Center Frequency	5725 MHz
Horizontal (dBi) Peak	0.83
Vertical (dBi) Peak	-2.83

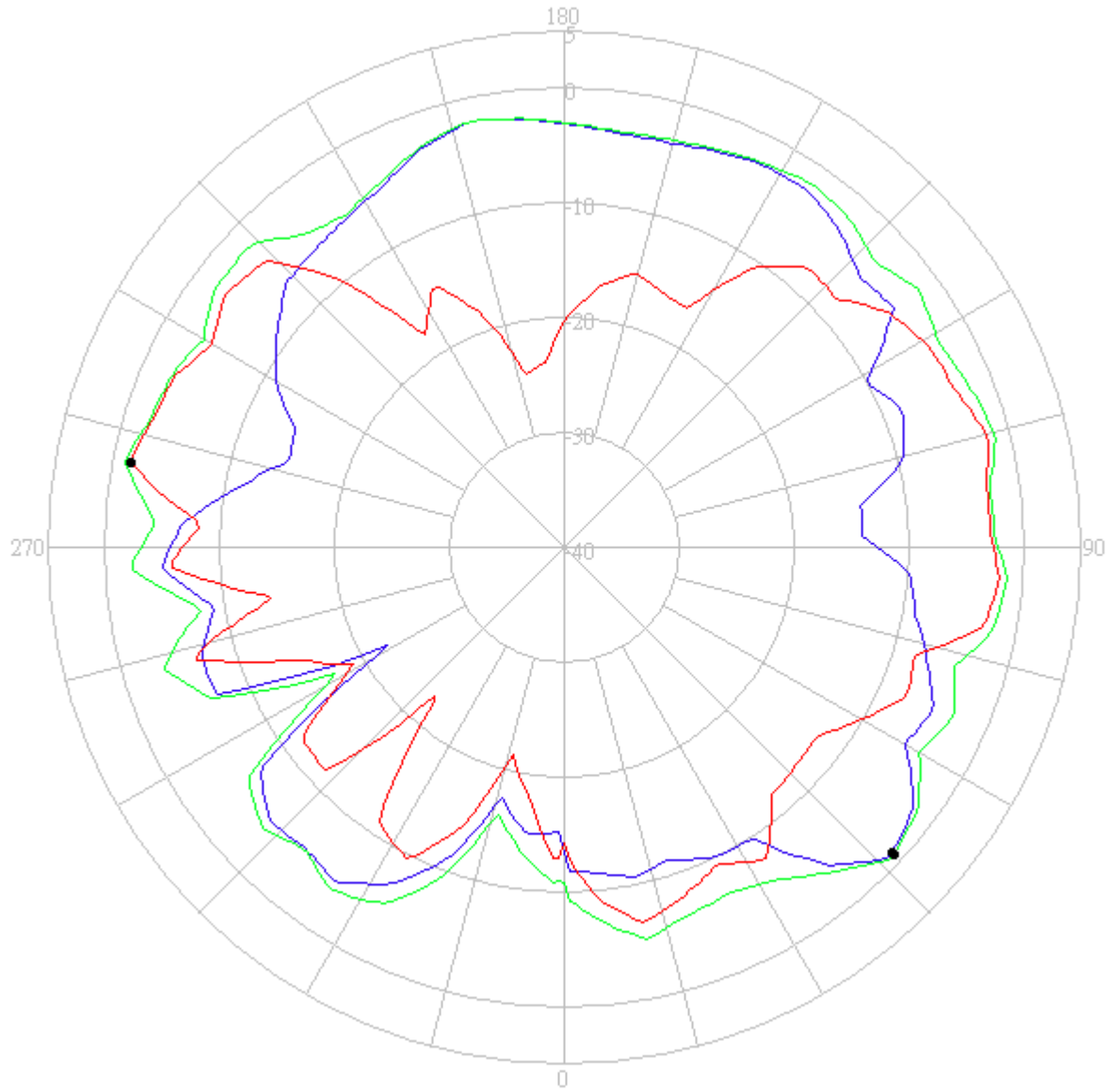
Tx2 antenna: 5470 MHz



- Horizontal
- Vertical
- H + V

Center Frequency	5470 MHz
Horizontal (dBi) Peak	-1.89
Vertical (dBi) Peak	-0.64

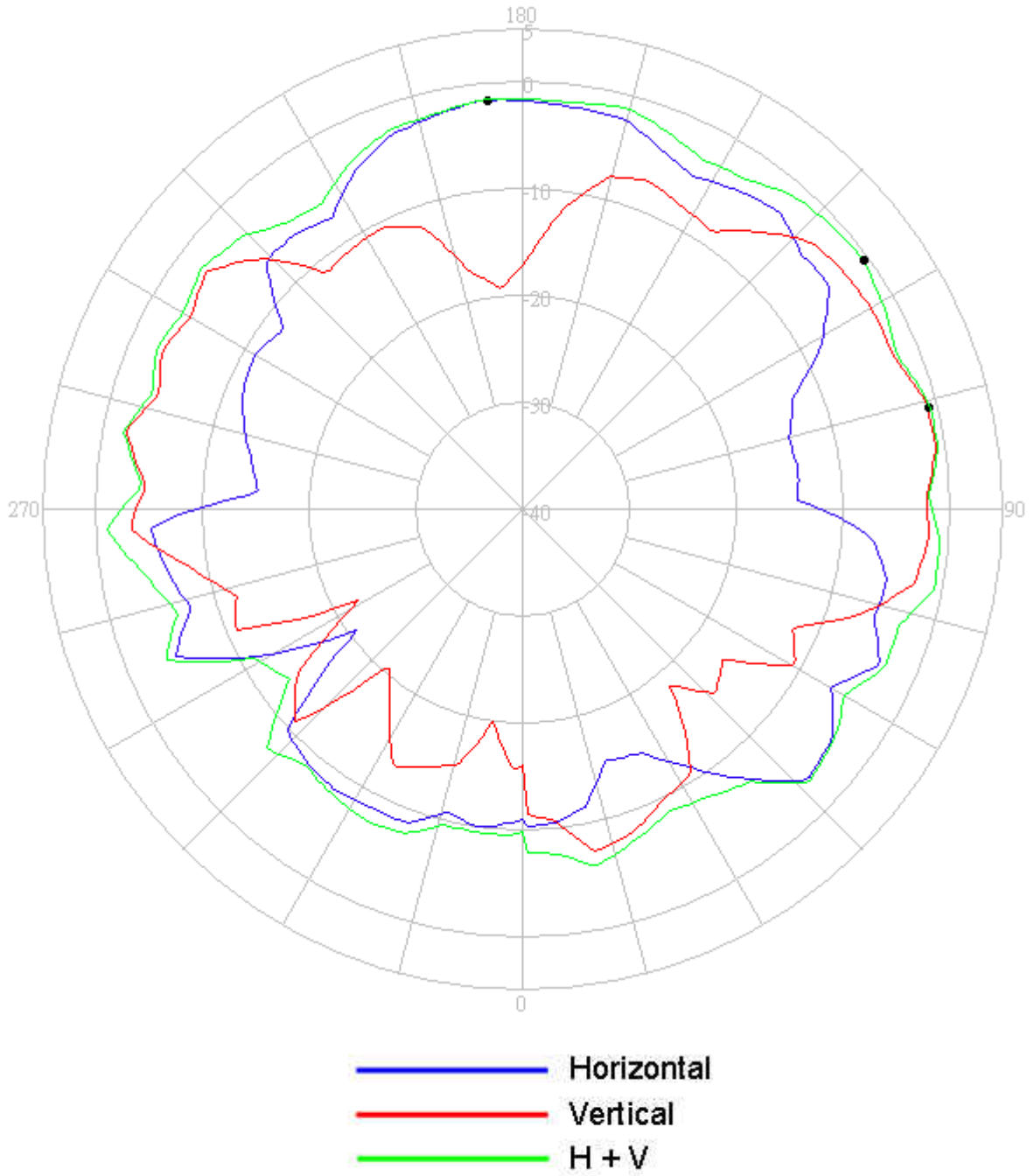
Tx2 antenna: 5600 MHz



- Horizontal
- Vertical
- H + V

Center Frequency	5600 MHz
Horizontal (dBi) Peak	-0.96
Vertical (dBi) Peak	-1.50

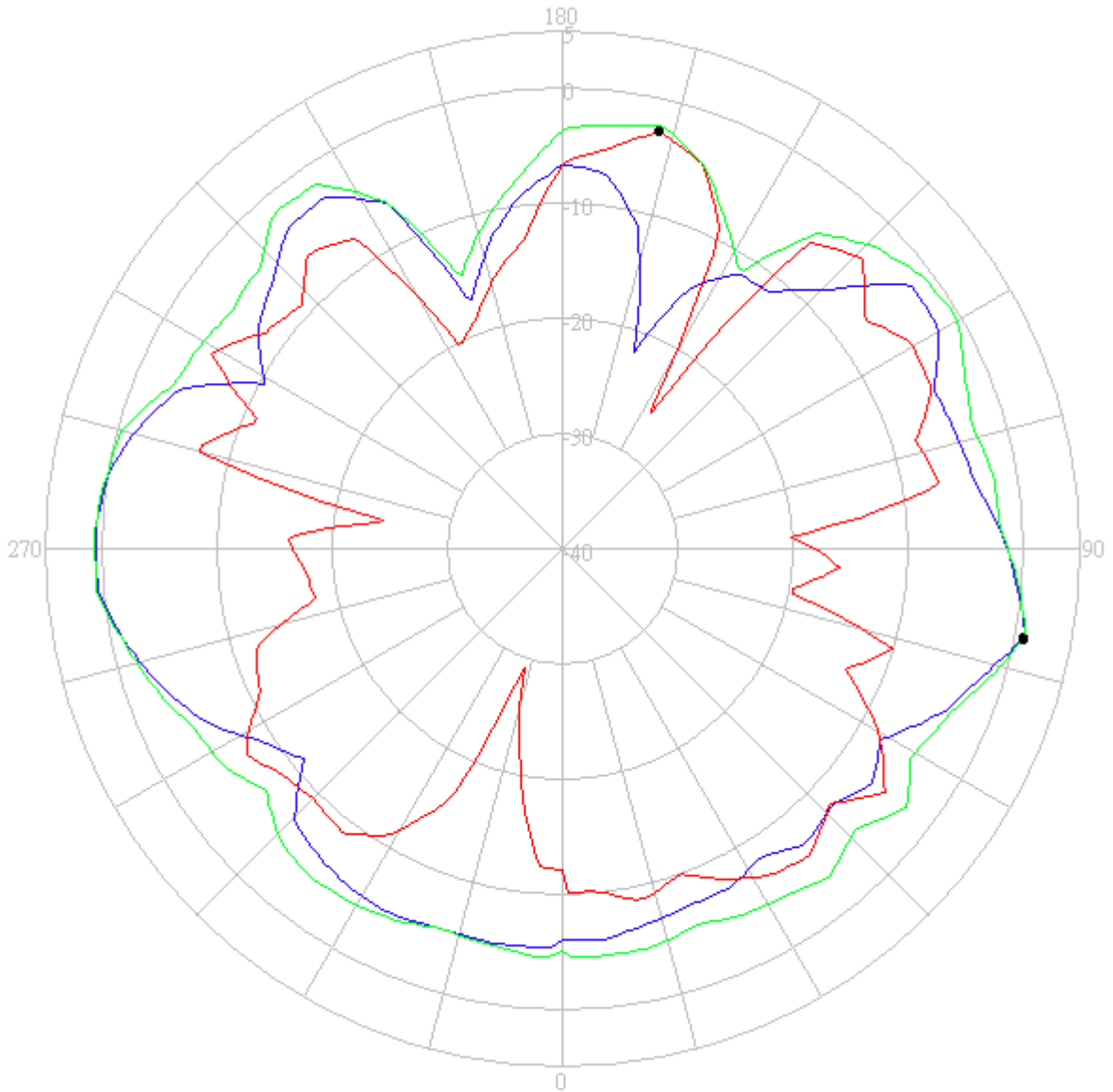
Tx2 antenna: 5725 MHz



Center Frequency	5725 MHz
Horizontal (dBi) Peak	-1.52
Vertical (dBi) Peak	-0.81

5725-5850 MHz radiation characteristic

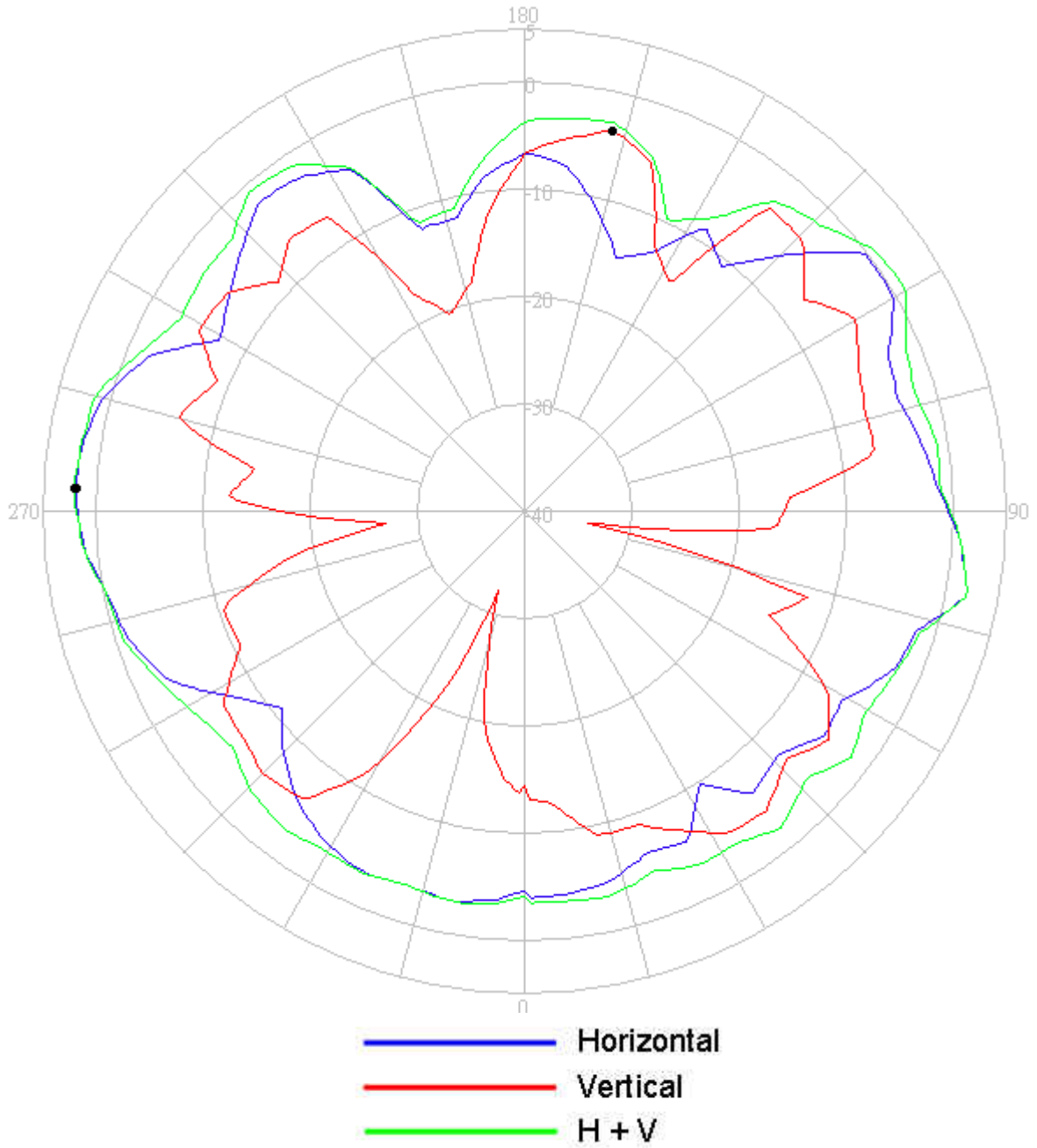
Tx1 antenna: 5725 MHz



- Horizontal
- Vertical
- H + V

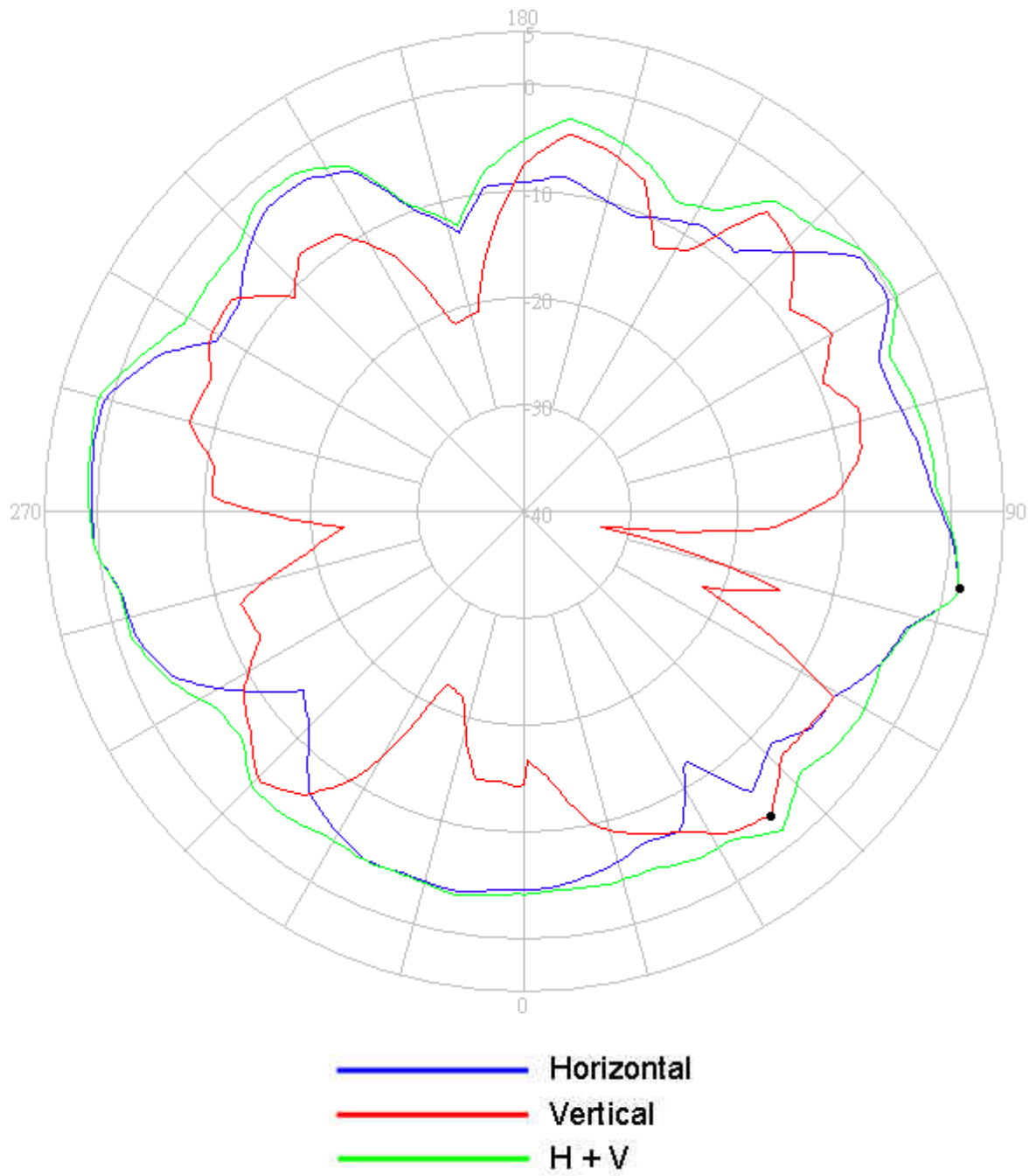
Center Frequency	5725 MHz
Horizontal (dBi) Peak	0.83
Vertical (dBi) Peak	-2.83

Tx1 antenna: 5785 MHz



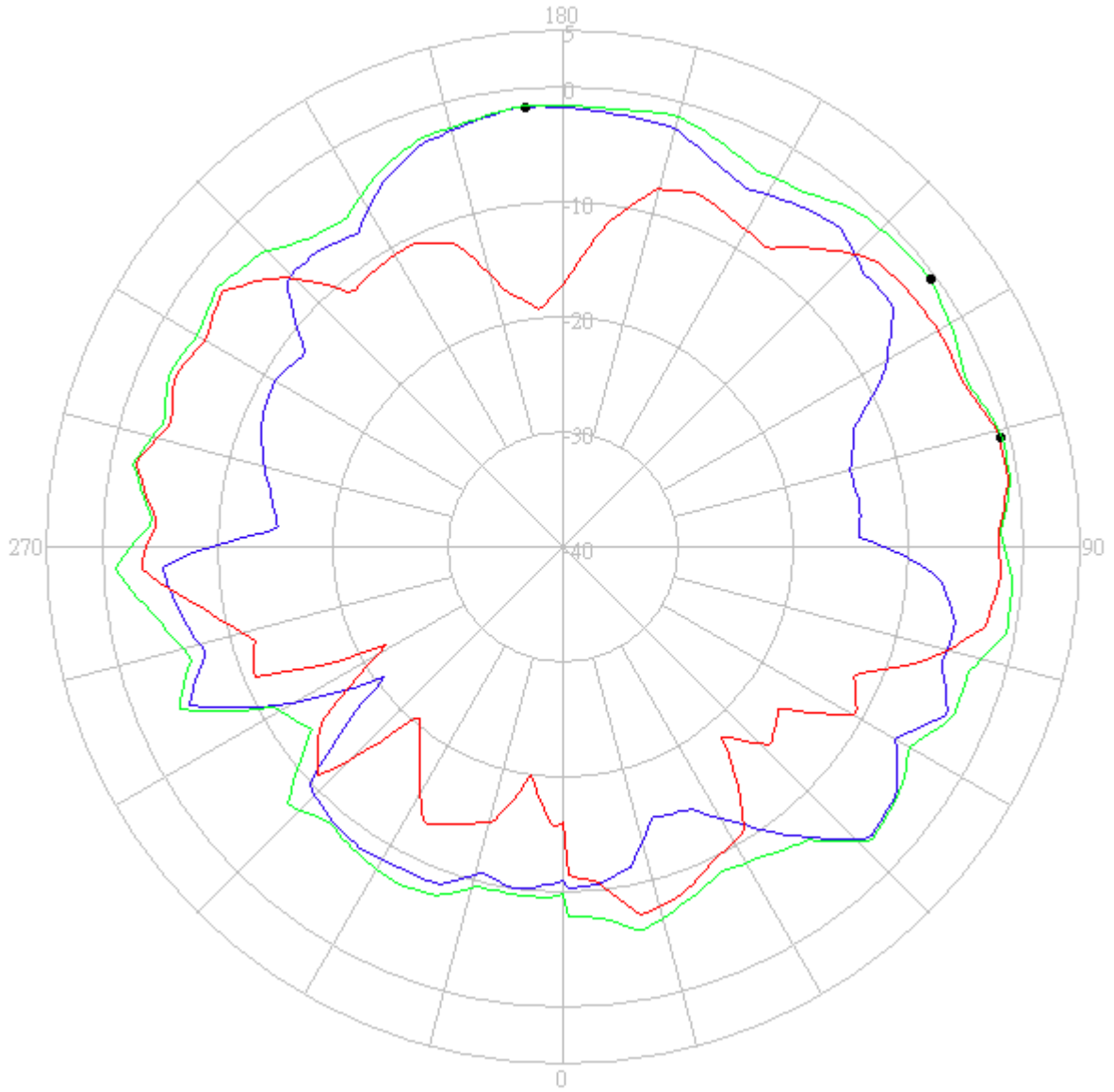
Center Frequency	5785 MHz
Horizontal (dBi) Peak	2.01
Vertical (dBi) Peak	-3.55

Tx1 antenna: 5850 MHz



Center Frequency	5850 MHz
Horizontal (dBi) Peak	1.45
Vertical (dBi) Peak	-3.33

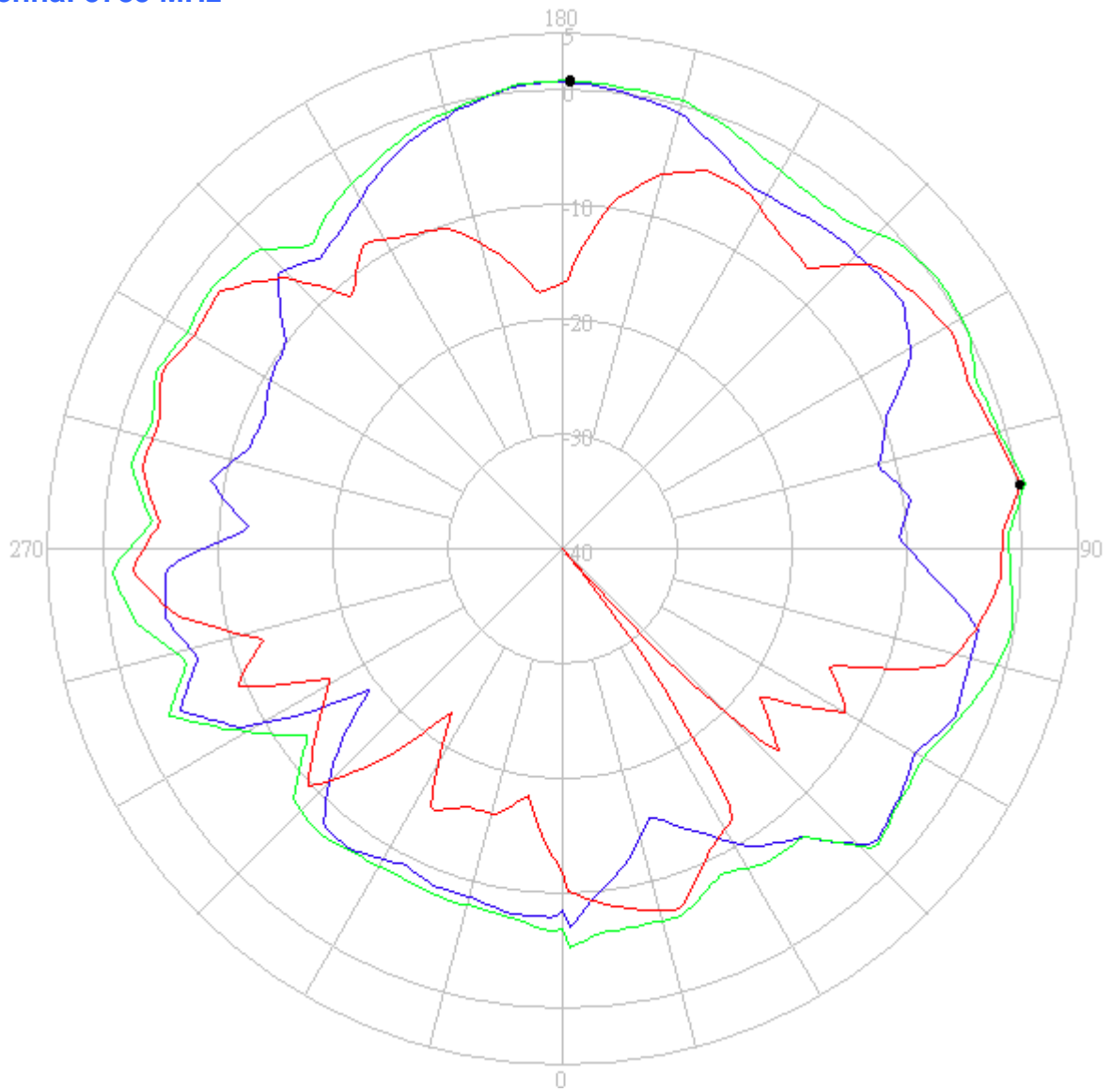
Tx2 antenna: 5725 MHz



- Horizontal
- Vertical
- H + V

Center Frequency	5725 MHz
Horizontal (dBi) Peak	-1.52
Vertical (dBi) Peak	-0.81

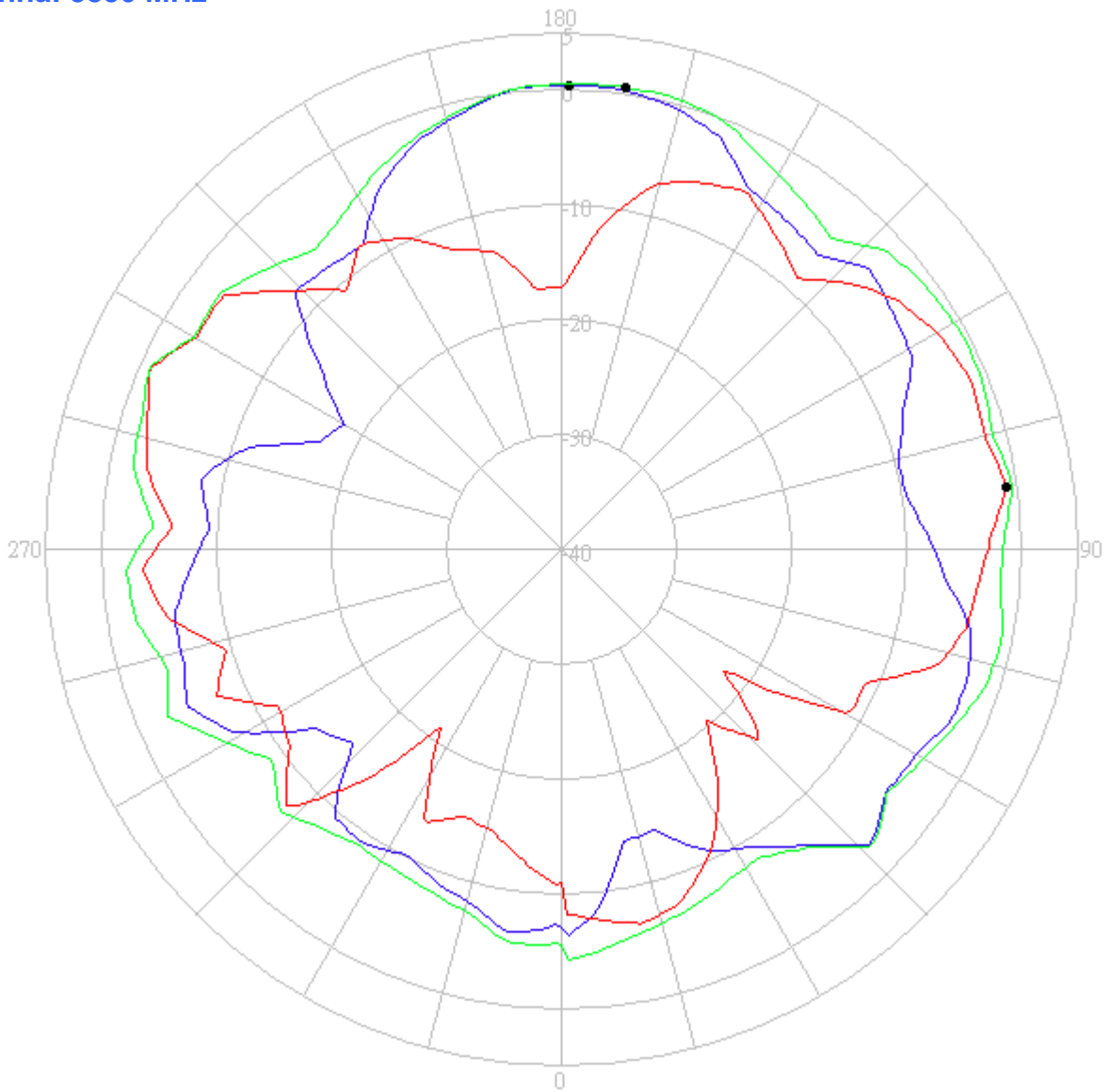
Tx2 antenna: 5785 MHz



- Horizontal
- Vertical
- H + V

Center Frequency	5785 MHz
Horizontal (dBi) Peak	0.77
Vertical (dBi) Peak	0.29

Tx2 antenna: 5850 MHz



- Horizontal
- Vertical
- H + V

Center Frequency	5850 MHz
Horizontal (dBi) Peak	0.48
Vertical (dBi) Peak	-0.86

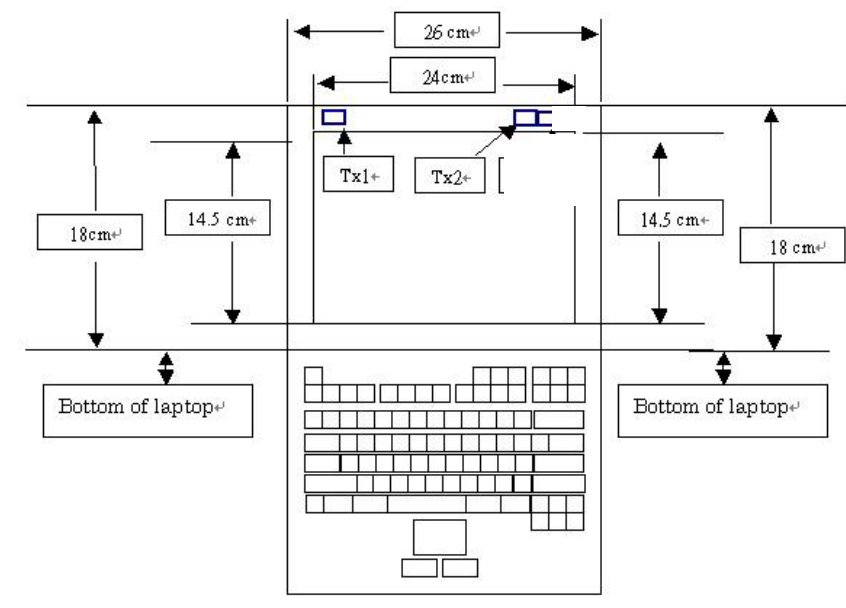
Section 4. Host Platform Information

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

Rating Label Photo:

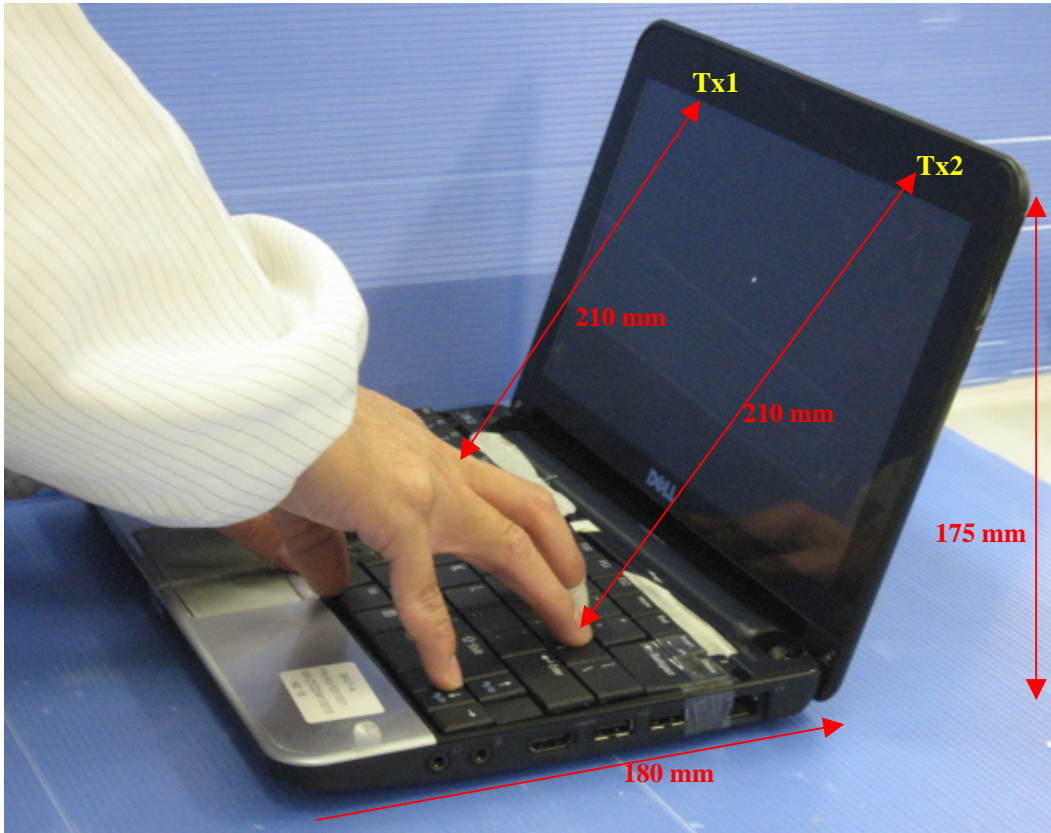
Section 5. Antenna Host Platform Location Information

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)



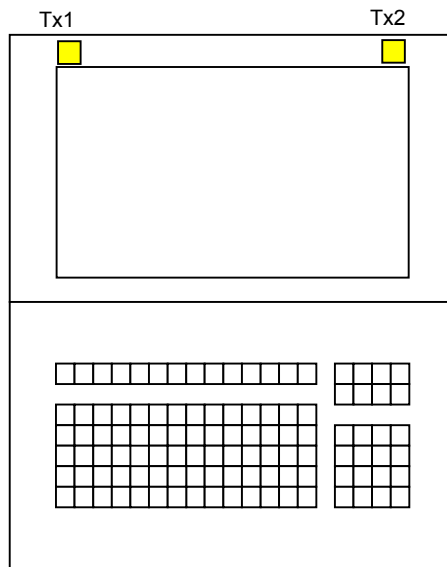
Section 7. Diagram Example of Co-Location Antenna Separation

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)

■ WLAN Antenna

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						
Brazil						
Indonesia						
Israel						
Malaysia						
Mexico						
Singapore						Telecommunication Equipment Dealer License Required
South Africa						
USA, Canada						