

Regulatory WLAN Antenna Information 2.45/5GHz Multiple Band Antennas with Cable & Connector For IEEE802.11b/g, UNII

(English Language Required for Intel Regulatory Review / Approval)

| | |
|--------------------|--|
| Platform | |
| Platform Owner | HP |
| Brand Name | HP |
| Model Name | Harbour 10.2" |
| ODM | Inventec |
| Target Launch Date | (YYYY/ MM/ DD) |
| | |
| Antenna | |
| Brand Name | Yageo |
| Part Number | <input checked="" type="checkbox"/> Tx1 LCD Antenna: 6036B0044401 |
| | <input checked="" type="checkbox"/> Tx2 LCD Antenna: 6036B0044501 |
| | <input type="checkbox"/> Tx3 (or Rx3) Antenna (Rx3 for 4965AGN ONLY) |
| | |
| Module | |
| 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 |
| | <input checked="" type="checkbox"/> Demi (Broadcom 4312) |

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 | Required (Photos) | Required (Photos) |
| 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 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) |
|--|-------------------|-----------------------|--|---|--|--------------------------|---------------------------------|
| Inventec P/N: 6036B0044401 P/N: CAN4313 795 012501B Tx1 Antenna | Yageo Corporation | PIFA | P/N: CAN4313795012501B Connector: (Technova, Hirose or Ipex) (Ipex MHF) 50 ohm Coaxial. Length: 355mm diameter: 1.37mm | 2400-2500MHz -1.07 dBi (peak) | 2400-2500MHz 0.88 dBi (peak) | 2400-2500MHz 1.70 max | 2400-2500MHz 1.95 dBi (peak) |
| | | | | 5150-5350MHz 1.29 dBi (peak) | 5150-5350MHz 4.21 dBi (peak) | 5150-5350MHz 1.54 max | 5150-5350MHz 2.92 dBi (peak) |
| | | | | 5470-5725MHz 1.95 dBi (peak) | 5350-5725MHz 4.99 dBi (peak) | 5470-5725MHz 1.54 max | 5470-5725MHz 3.04 dBi (peak) |
| | | | | 5725-5850MHz 0.26 dBi (peak) | 5725-5850MHz 3.33 dBi (peak) | 5725-5850MHz 1.54 max | 5725-5850MHz 3.07 dBi (peak) |
| Inventec P/N: 6036B0044501 P/N: CAN4313 795 022501B Tx2 Antenna | Yageo Corporation | PIFA | P/N: CAN4313795022501B Connector: (Technova, Hirose or Ipex) (Ipex MHF) 50 ohm Coaxial. Length: 525mm diameter: 1.37mm | 2400-2500MHz 0.91 dBi (peak) | 2400-2500MHz 2.29 dBi (peak) | 2400-2500MHz 1.70 max | 2400-2500MHz 1.38 dBi (peak) |
| | | | | 5150-5350MHz -0.03 dBi (peak) | 5150-5350MHz 2.03 dBi (peak) | 5150-5350MHz 1.54 max | 5150-5350MHz 2.06 dBi (peak) |
| | | | | 5470-5725MHz -0.95 dBi (peak) | 5470-5725MHz 1.19 dBi (peak) | 5470-5725MHz 1.54 max | 5470-5725MHz 2.14 dBi (peak) |
| | | | | 5725-5850MHz -0.29 dBi (peak) | 5725-5850MHz 1.88 dBi (peak) | 5725-5850MHz 1.54 max | 5725-5850MHz 2.17 dBi (peak) |

NOTE:d

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

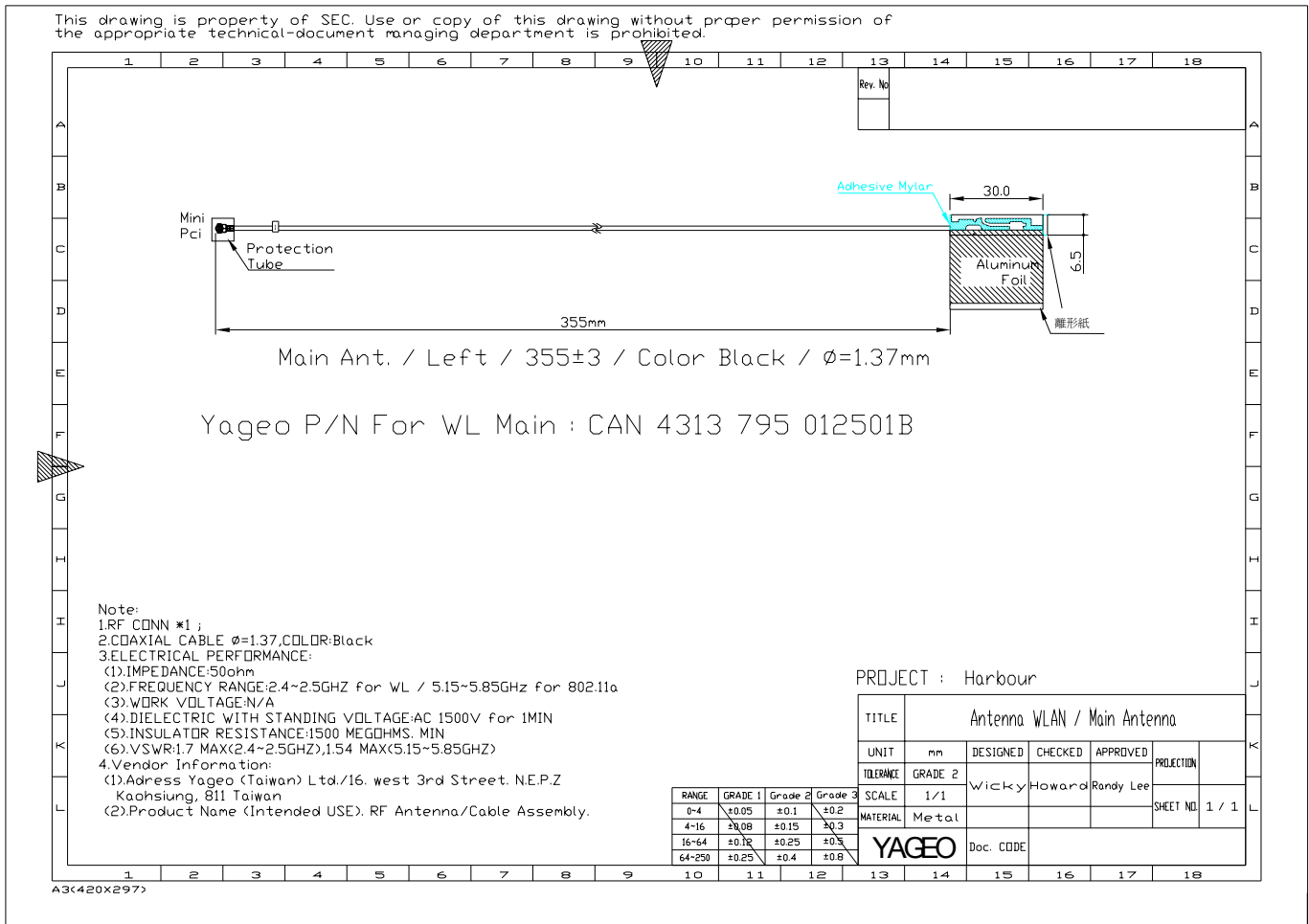
Antenna Peak Gain Table:

| Frequency (MHz) | Tx1 antenna | | | Tx2 antenna | | | Tx3 (or Rx3) Antenna | | |
|-----------------|------------------|----------------|-----------|------------------|----------------|-----------|----------------------|----------------|-----------|
| | Horizontal (dBi) | Vertical (dBi) | H+V (dBi) | Horizontal (dBi) | Vertical (dBi) | H+V (dBi) | Horizontal (dBi) | Vertical (dBi) | H+V (dBi) |
| 2400 | -1.07 | -2.07 | -0.18 | 0.23 | -2.04 | 2.21 | | | |
| 2450 | -1.59 | -1.55 | 0.1 | 0.41 | -1.25 | 2.46 | | | |
| 2500 | -1.75 | -2.64 | -0.87 | 0.91 | -0.9 | 2.36 | | | |
| 5150 | -1.35 | 1.29 | 2.36 | -0.64 | -1.5 | 0.96 | | | |
| 5250 | -0.16 | 1.22 | 2.28 | -0.03 | -1.98 | 0.9 | | | |
| 5350 | -1.18 | -0.08 | 1.9 | -0.45 | -2.33 | 0.71 | | | |
| 5470 | -0.03 | 1.95 | 4.07 | -0.95 | -1.81 | 0.71 | | | |
| 5600 | -0.11 | 1.16 | 3.5 | -1.1 | -2.19 | -0.06 | | | |
| 5725 | -1.98 | -0.43 | 1.05 | -1.5 | -1.55 | 0.22 | | | |
| 5785 | -1.36 | 0.26 | 2.36 | -3.06 | -0.29 | 0.6 | | | |
| 5850 | -2.38 | -1.04 | -0.14 | -1.39 | -0.63 | 0.15 | | | |

- 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

Tx1 Antenna Dimensioned Drawing:

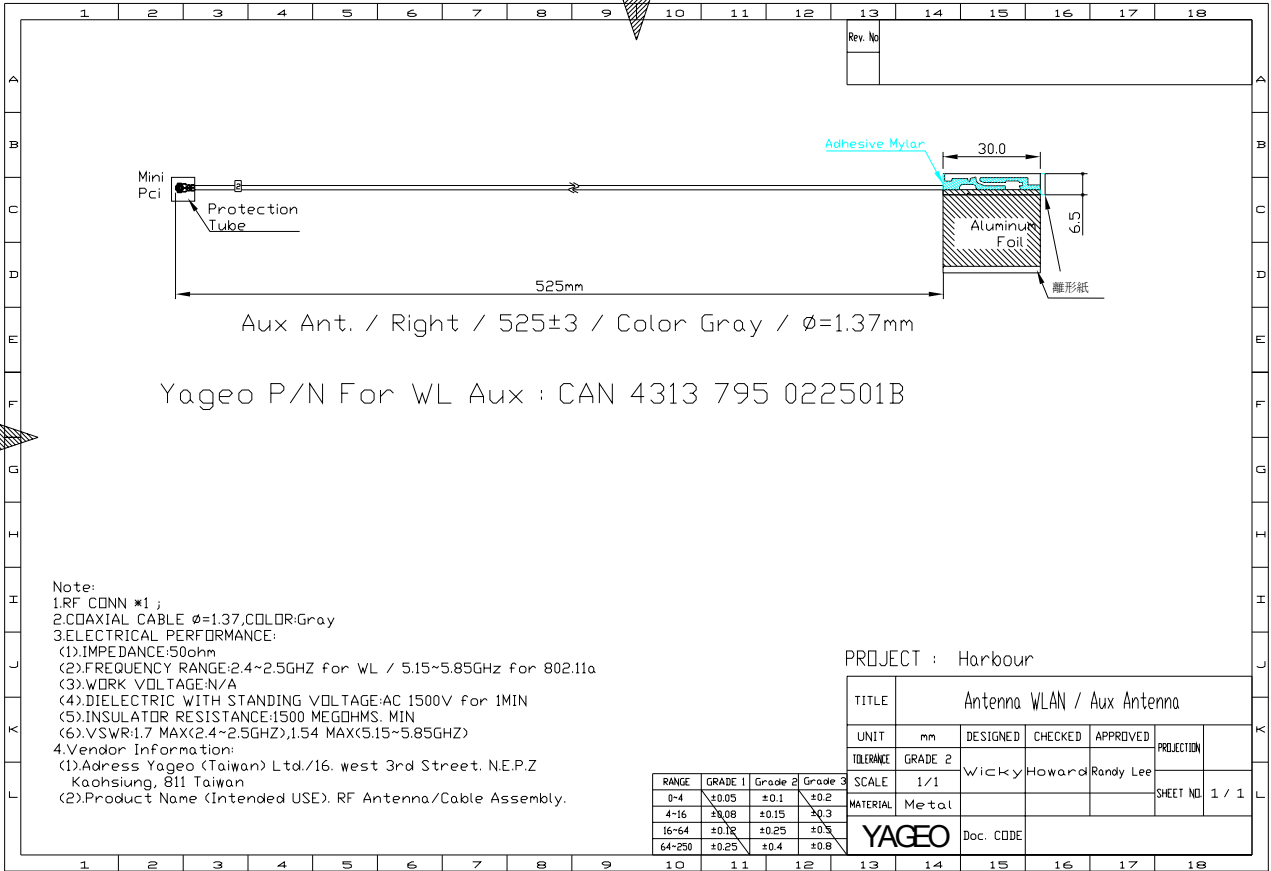


Tx1 Antenna Photo:



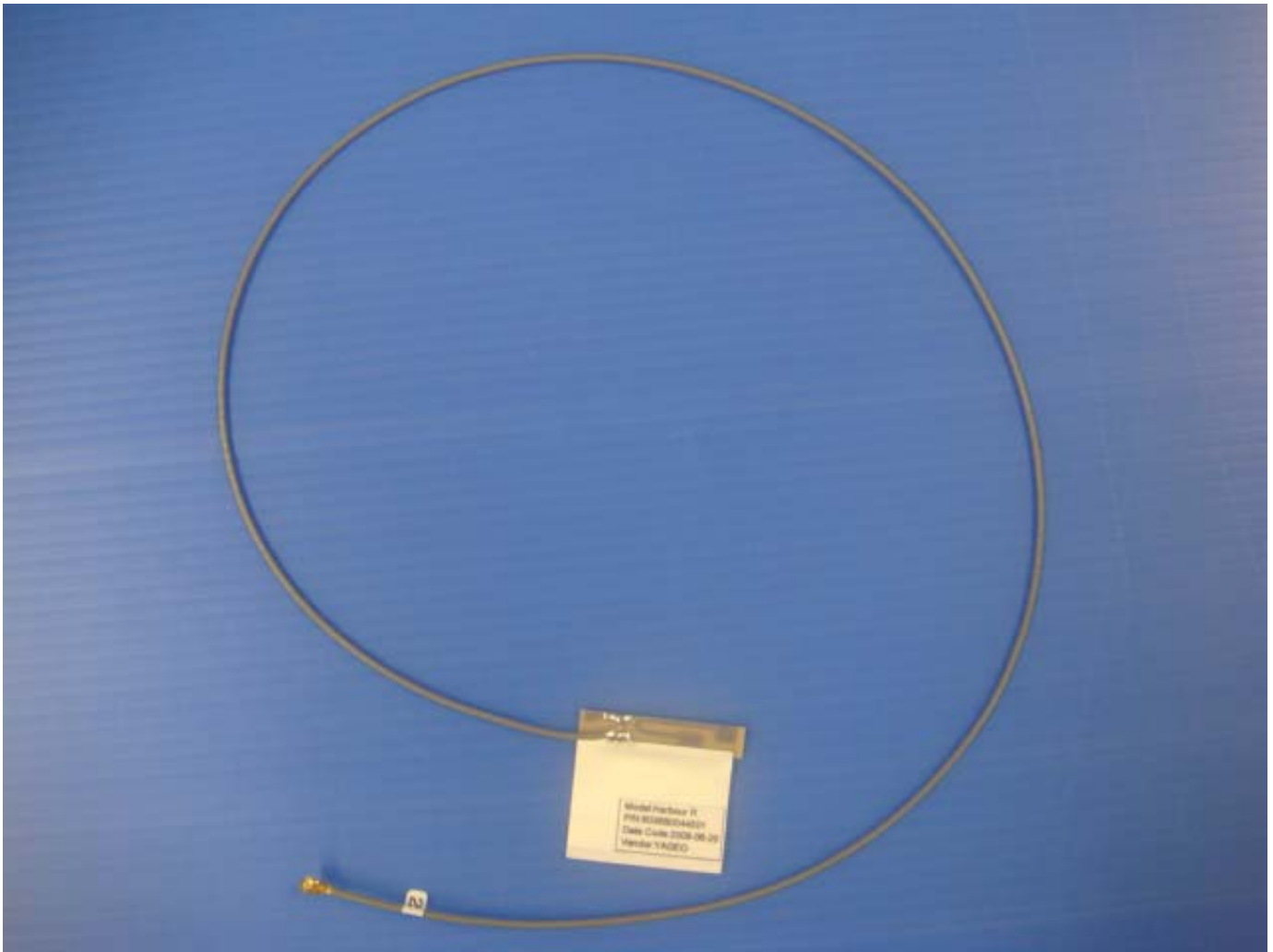
Tx2 Antenna Dimensioned Drawing:

This drawing is property of SEC. Use or copy of this drawing without proper permission of the appropriate technical-document managing department is prohibited.



A3(420x297)

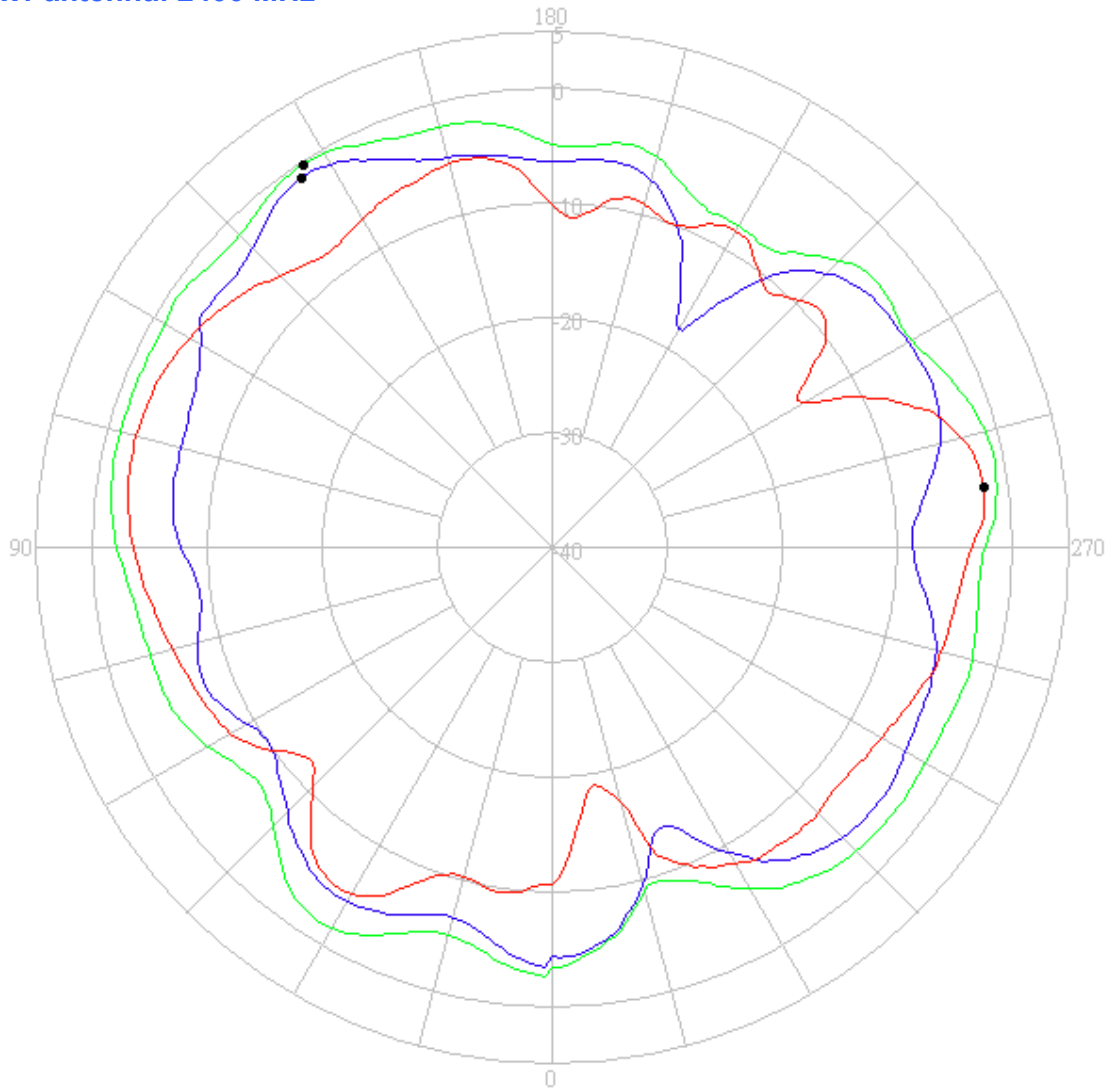
Tx2 Antenna Photo:



Section 3. Radiation characteristics of antennae Loaded in Host Platform

2400-2500MHz radiation characteristic

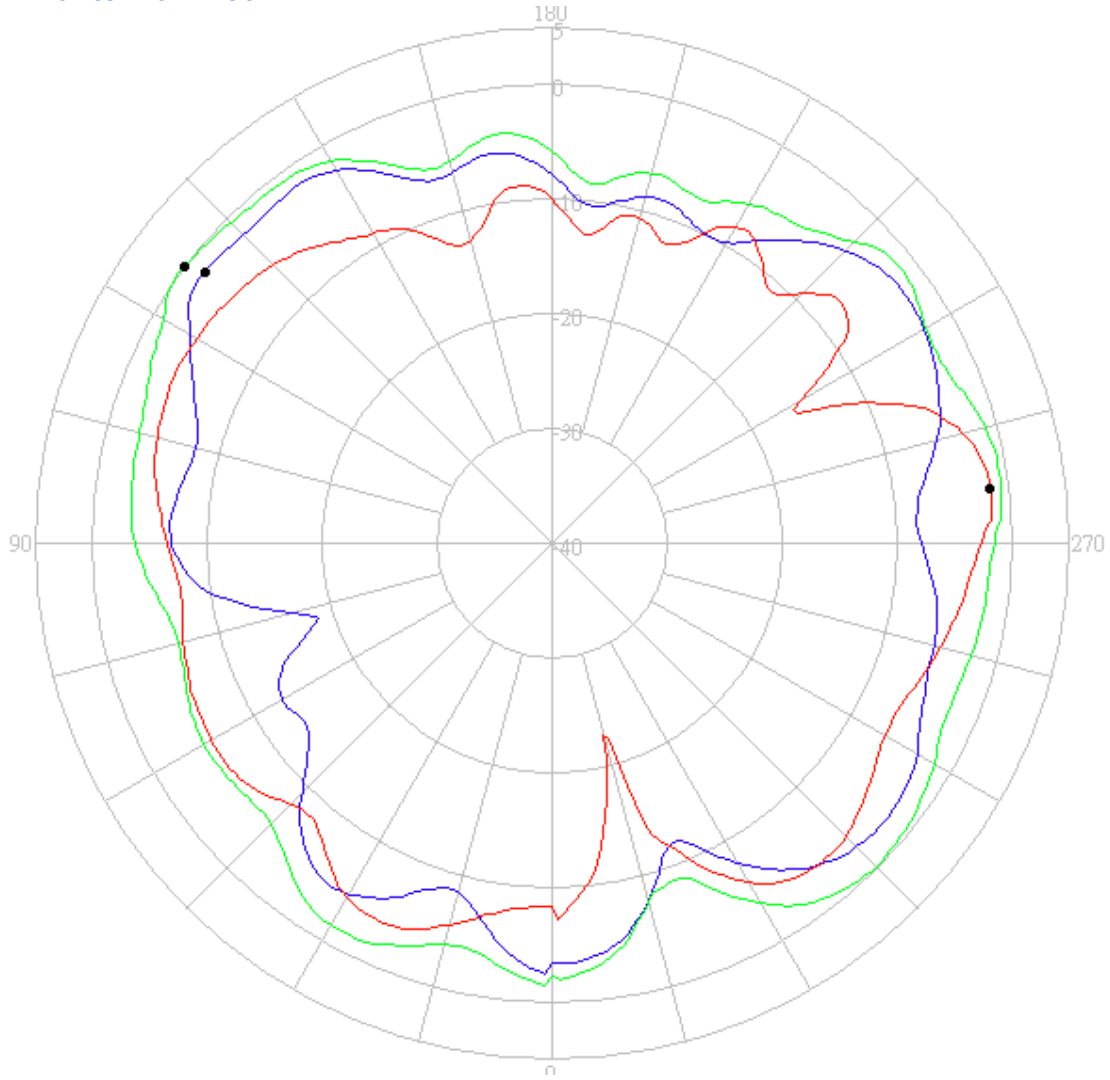
Tx1 antenna: 2400 MHz



2.40GHz

- **Horizontal**
- **Vertical**
- **H+V**

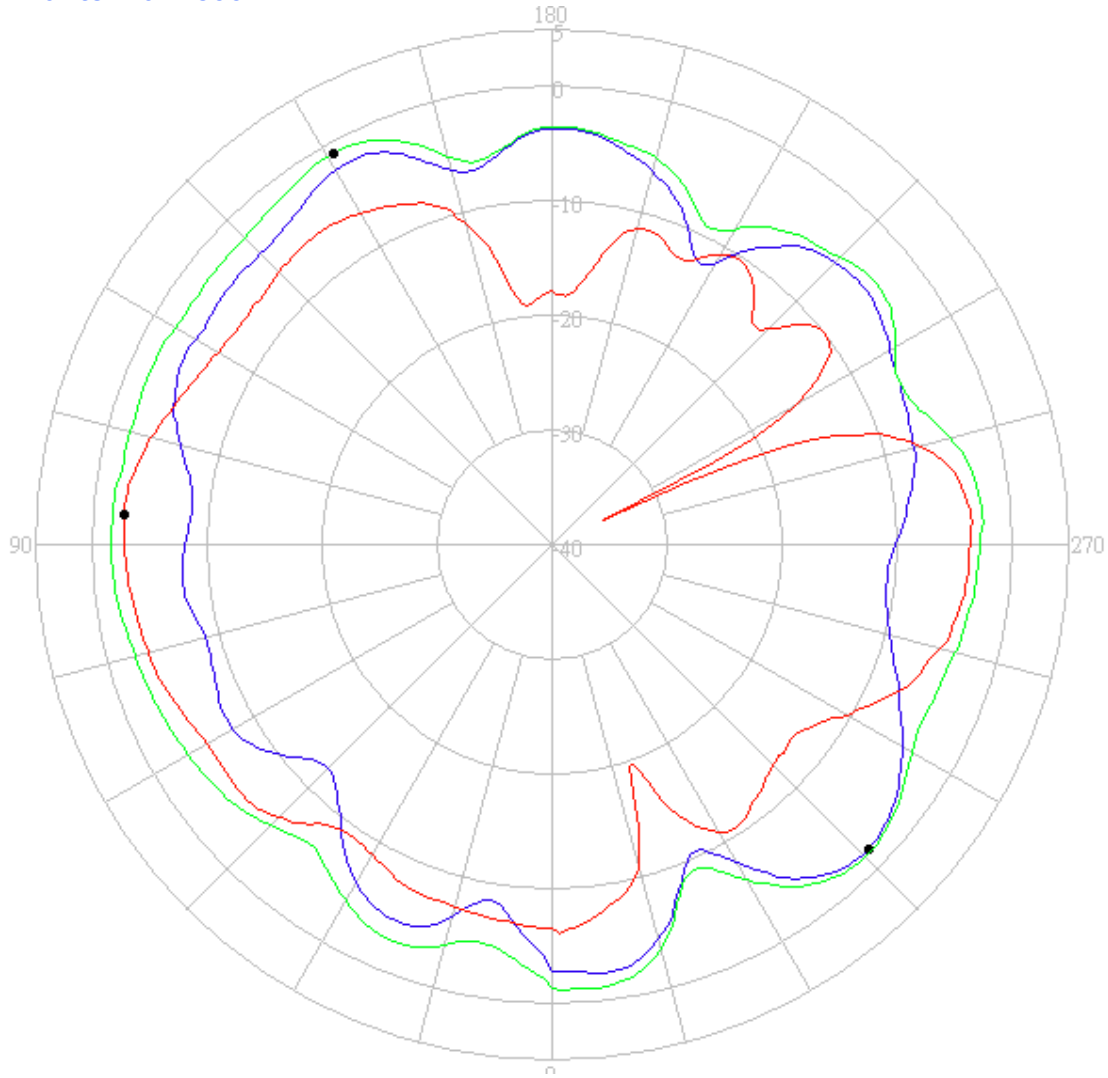
| | |
|-----------------------|-----------------|
| Center Frequency | 2400 MHz |
| Horizontal (dBi) peak | -1.07 |
| Vertical (dBi) peak | -2.07 |
| Horz+Vert (dBi) peak | -0.18 |



2.45GHz

- **Horizontal**
- **Vertical**
- **H+V**

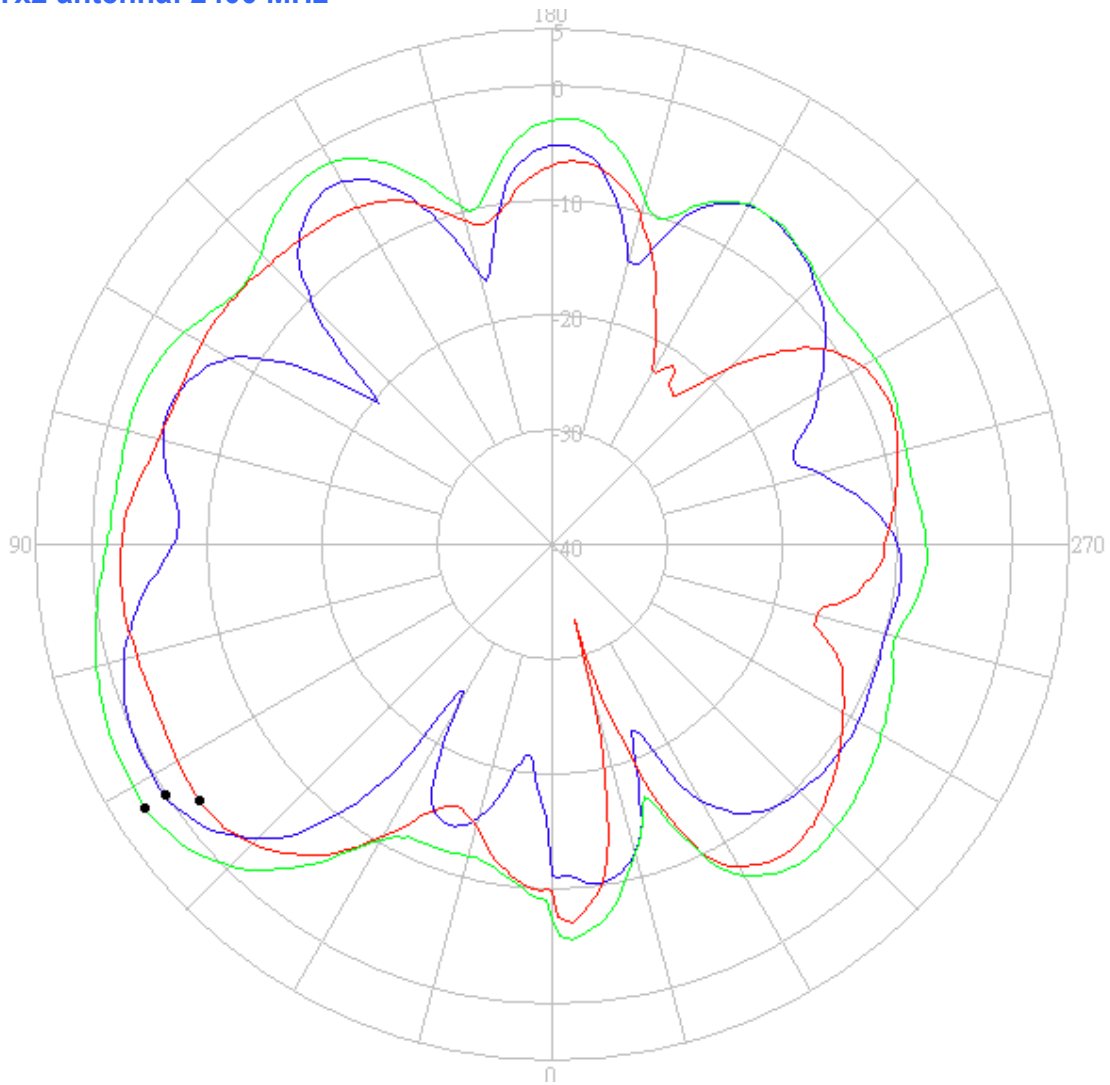
| | |
|-----------------------|-----------------|
| Center Frequency | 2450 MHz |
| Horizontal (dBi) peak | -1.59 |
| Vertical (dBi) peak | -1.55 |
| Horz+Vert (dBi) peak | 0.10 |



2.50GHz

- **Horizontal**
- **Vertical**
- **H+V**

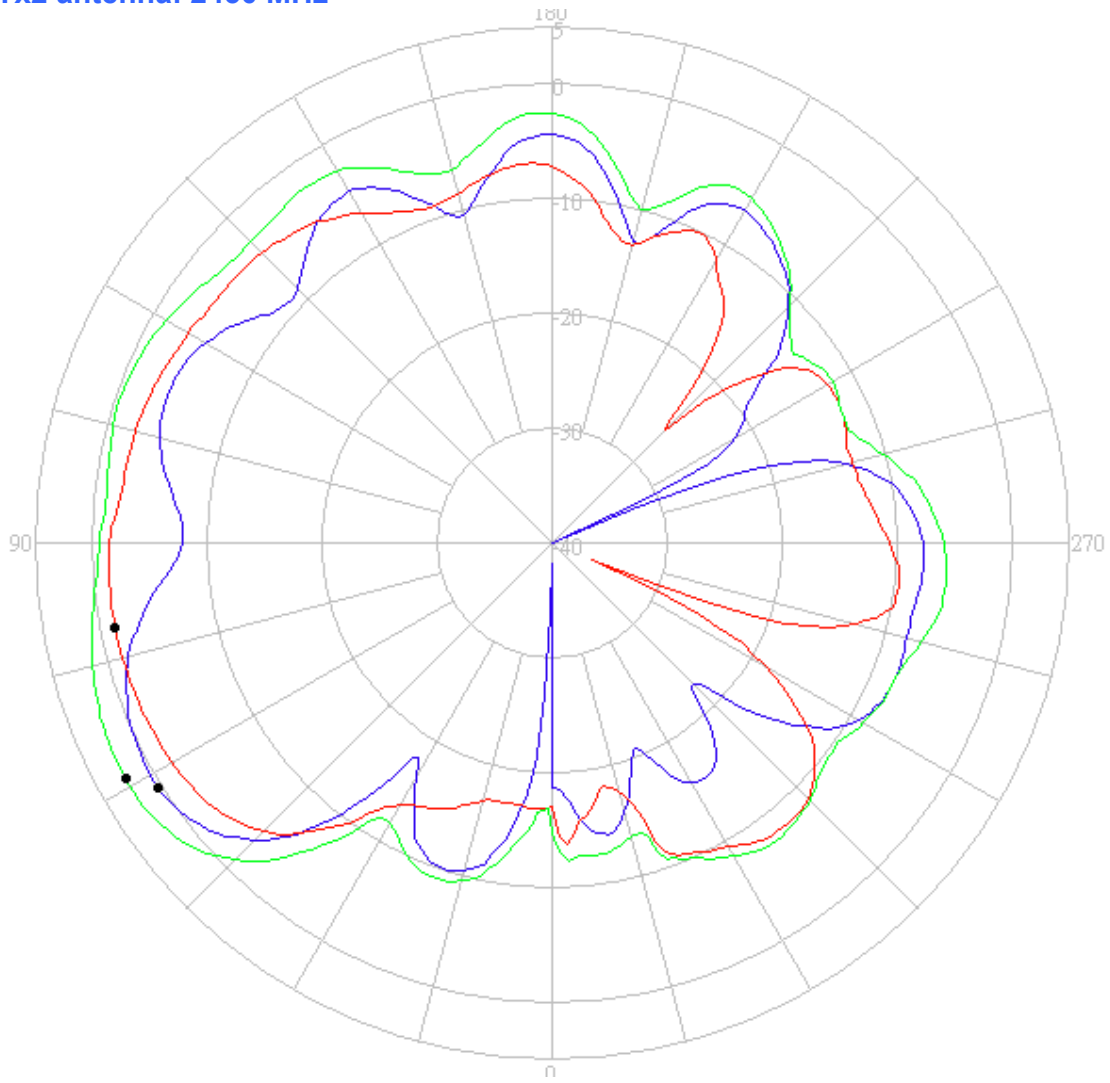
| | |
|-----------------------|-----------------|
| Center Frequency | 2500 MHz |
| Horizontal (dBi) peak | -1.75 |
| Vertical (dBi) peak | -2.64 |
| Horz+Vert (dBi) peak | -0.87 |



2.40GHz

- **Horizontal**
- **Vertical**
- **H+V**

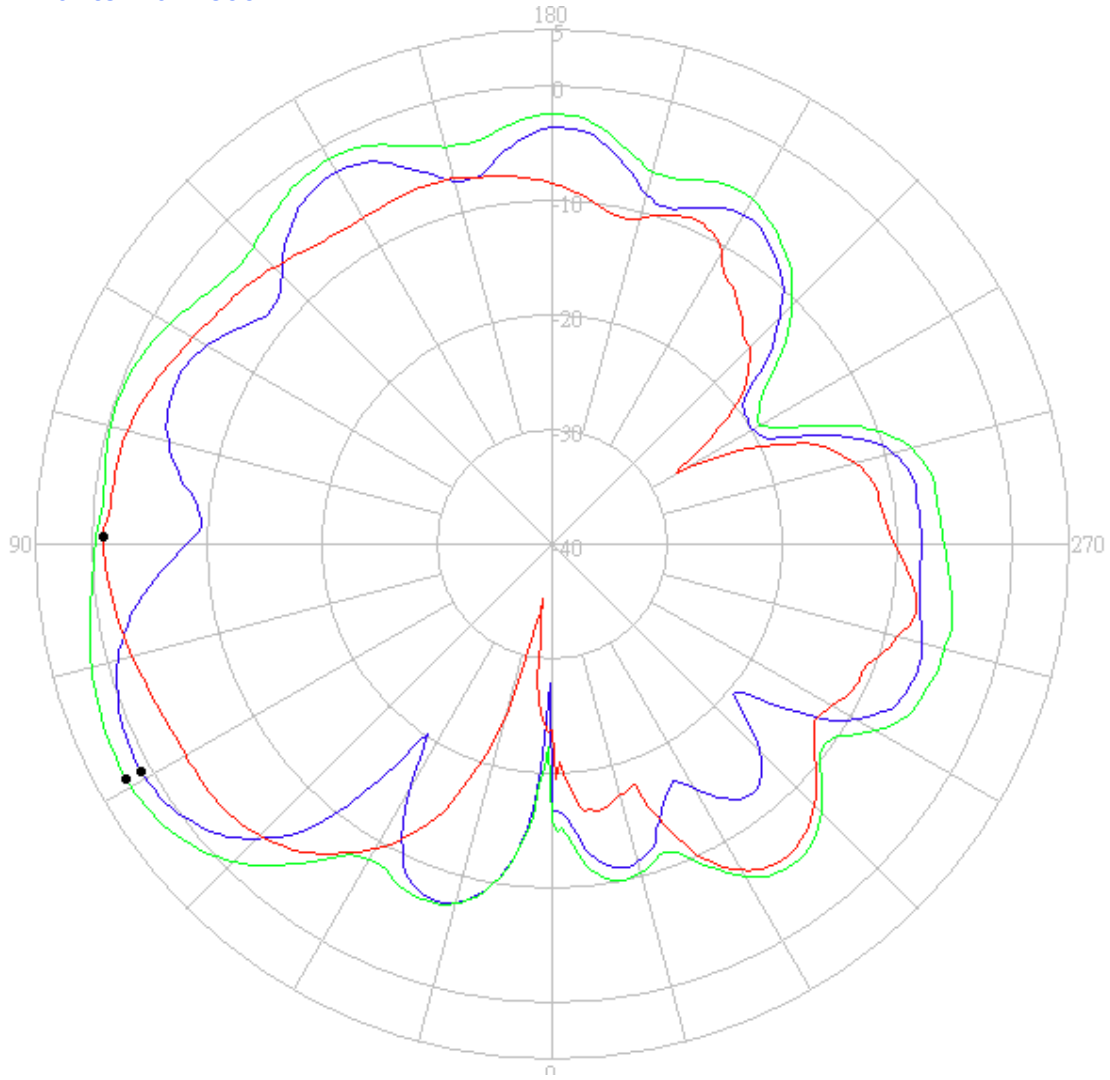
| | |
|-----------------------|-----------------|
| Center Frequency | 2400 MHz |
| Horizontal (dBi) peak | 0.23 |
| Vertical (dBi) peak | -2.04 |
| Horz+Vert (dBi) peak | 2.21 |



2.450GHz

- **Horizontal**
- **Vertical**
- **H+V**

| | |
|-----------------------|----------------|
| Center Frequency | 2450MHz |
| Horizontal (dBi) peak | 0.41 |
| Vertical (dBi) peak | -1.25 |
| Horz+Vert (dBi) peak | 2.46 |



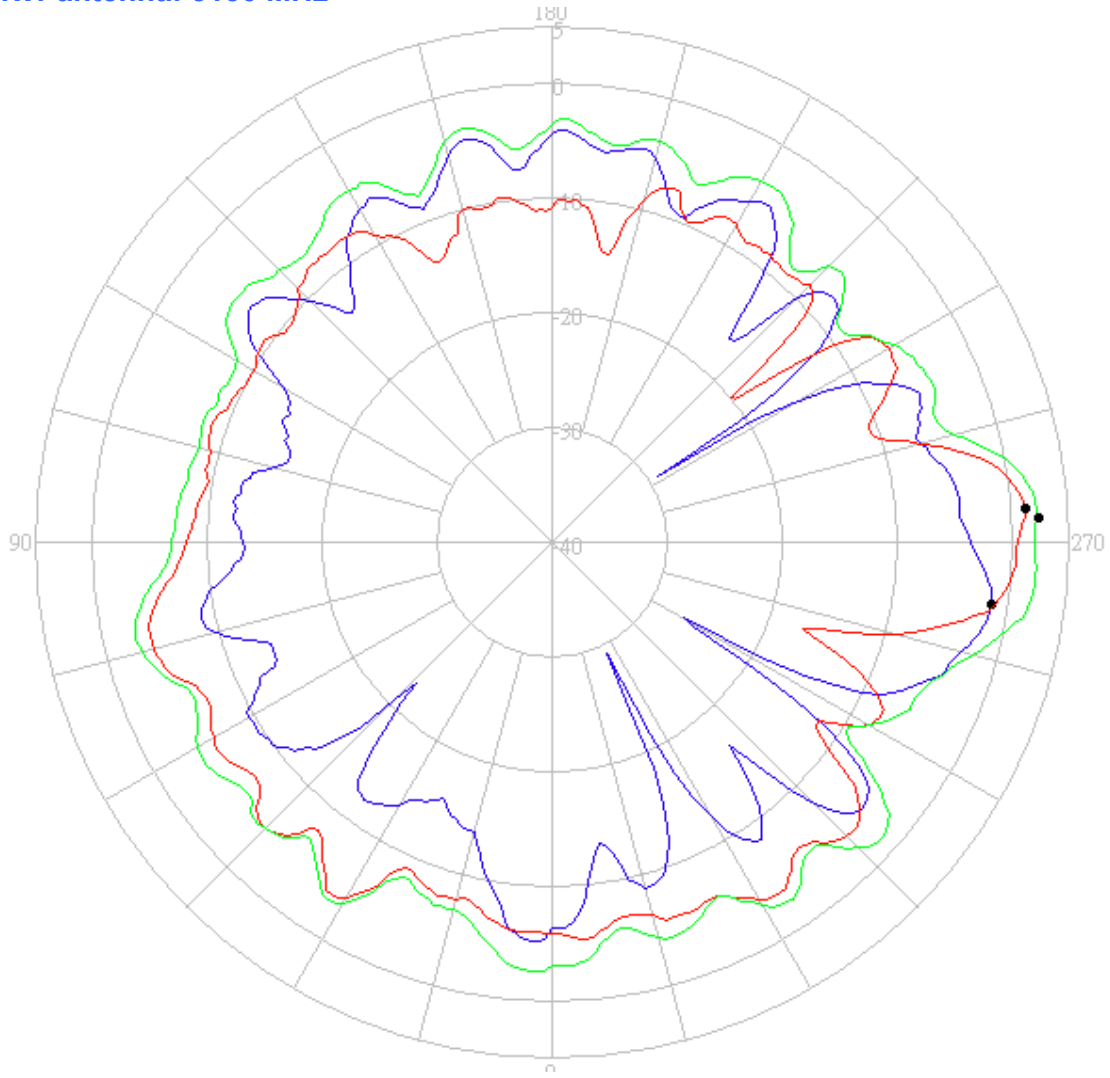
2.50GHz

- **Horizontal**
- **Vertical**
- **H+V**

| | |
|-----------------------|-----------------|
| Center Frequency | 2500 MHz |
| Horizontal (dBi) peak | 0.91 |
| Vertical (dBi) peak | -0.90 |
| Horz+Vert (dBi) peak | 0.23 |

5150-5350 MHz radiation characteristic

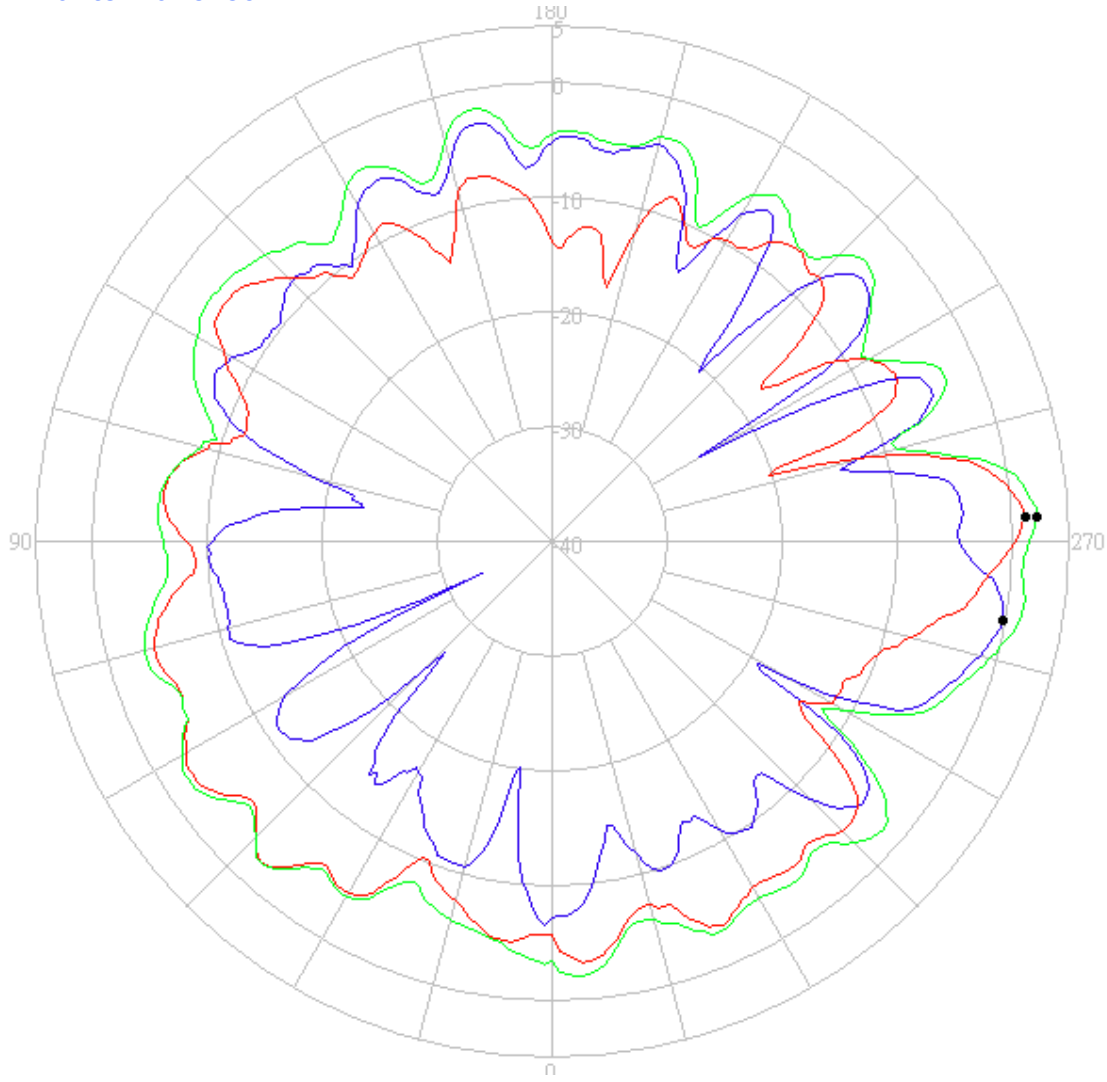
Tx1 antenna: 5150 MHz



5.15GHz

- Horizontal**
- Vertical**
- H+V**

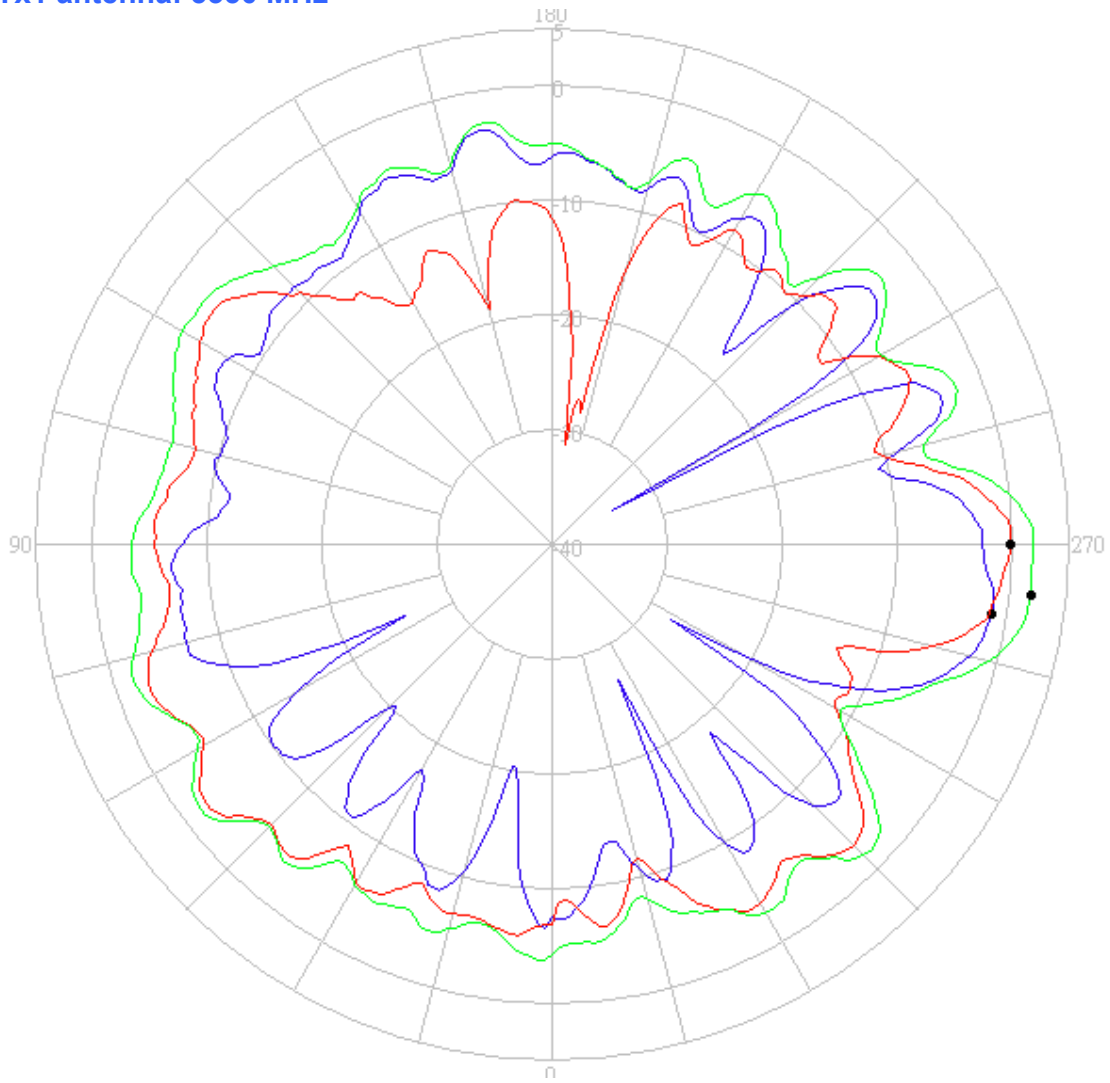
| | |
|-----------------------|-----------------|
| Center Frequency | 5150 MHz |
| Horizontal (dBi) peak | -1.35 |
| Vertical (dBi) peak | 1.29 |
| Horz+Vert (dBi) peak | 2.36 |



5.25GHz

- **Horizontal**
- **Vertical**
- **H+V**

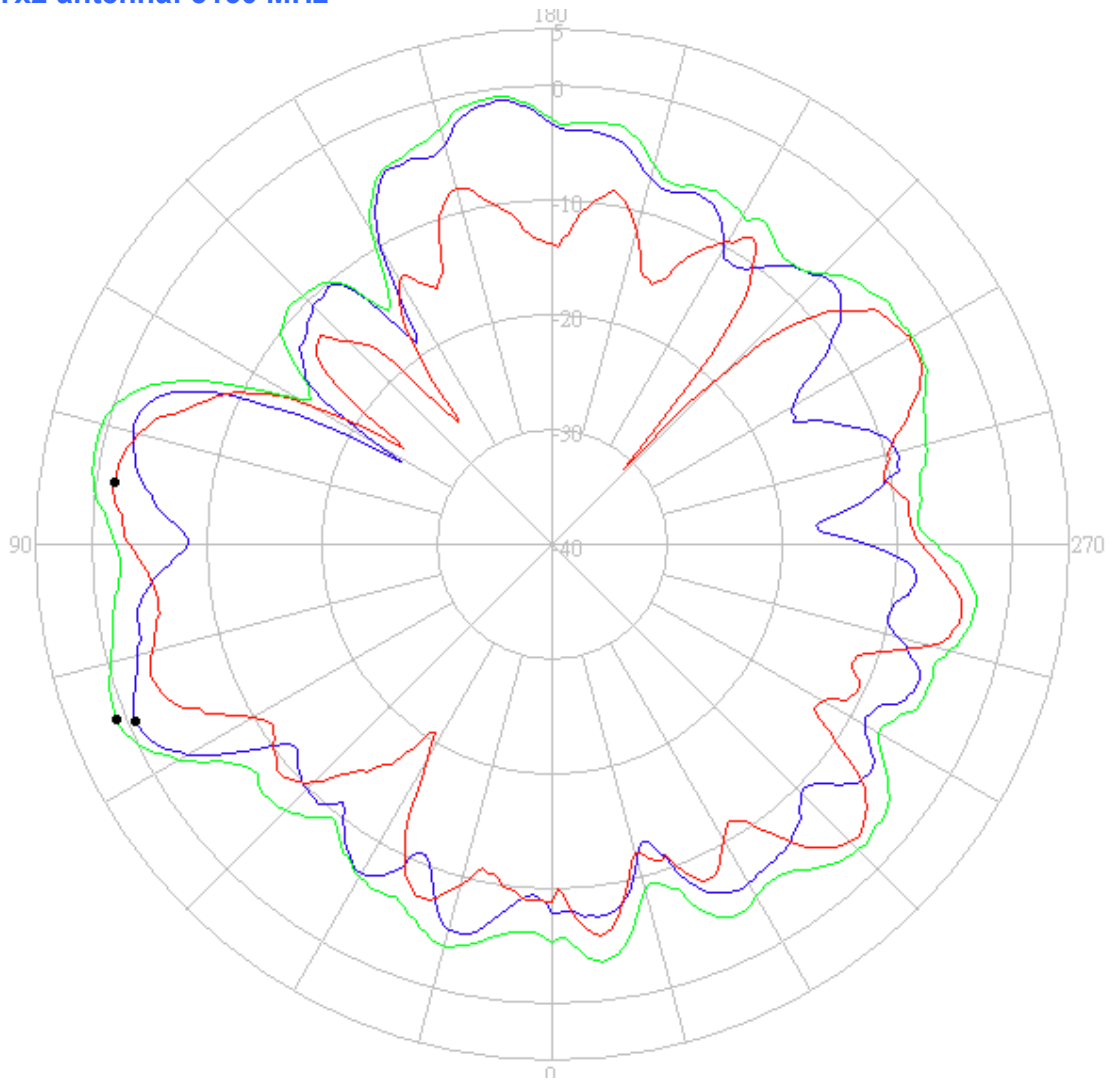
| | |
|-----------------------|-----------------|
| Center Frequency | 5250 MHz |
| Horizontal (dBi) peak | -0.16 |
| Vertical (dBi) peak | 1.22 |
| Horz+Vert (dBi) peak | 2.28 |



5.35GHz

- **Horizontal**
- **Vertical**
- **H+V**

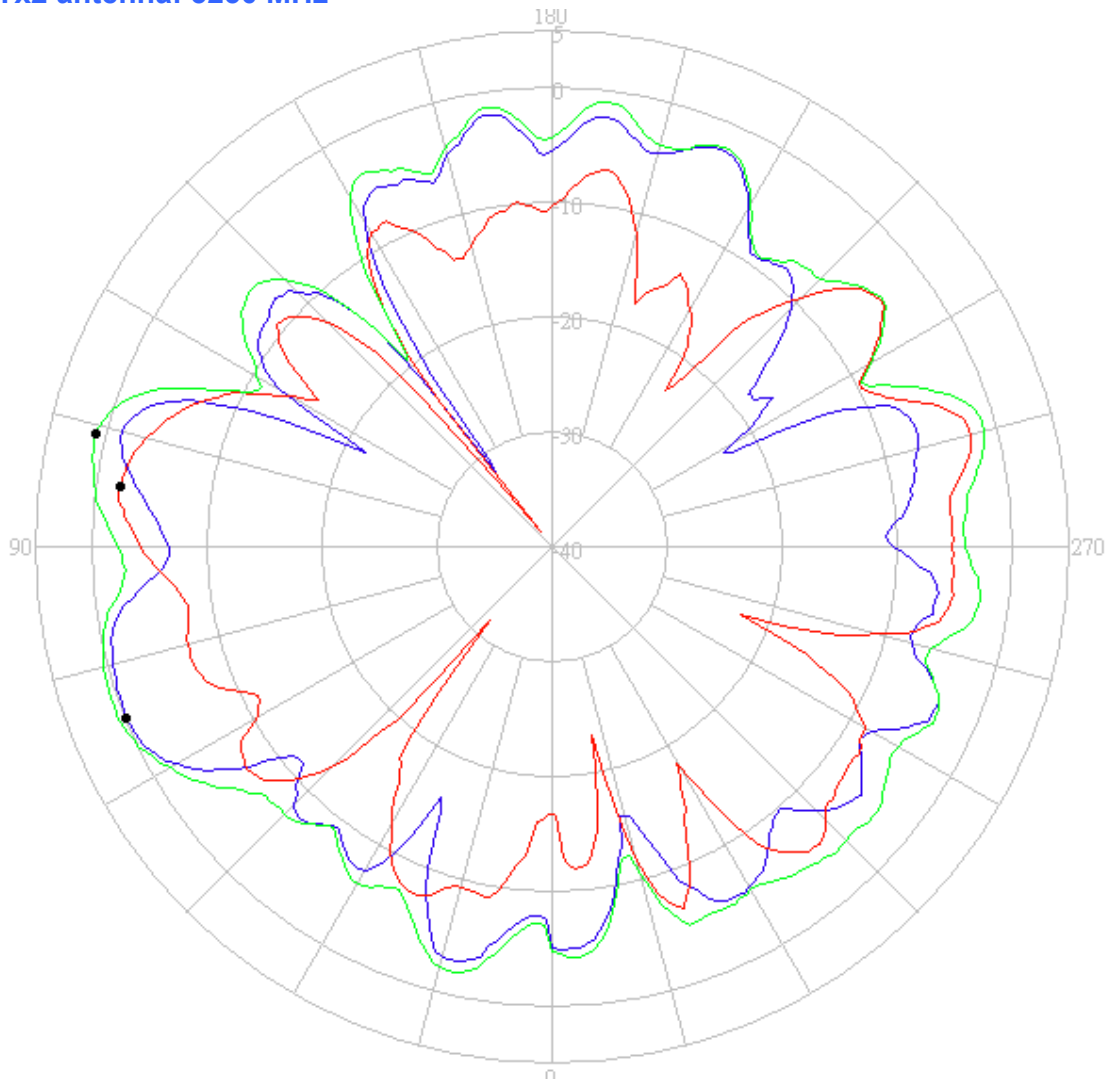
| | |
|-----------------------|-----------------|
| Center Frequency | 5350 MHz |
| Horizontal (dBi) peak | -1.18 |
| Vertical (dBi) peak | -0.08 |
| Horz+Vert (dBi) peak | 1.90 |



5.15GHz

- **Horizontal**
- **Vertical**
- **H+V**

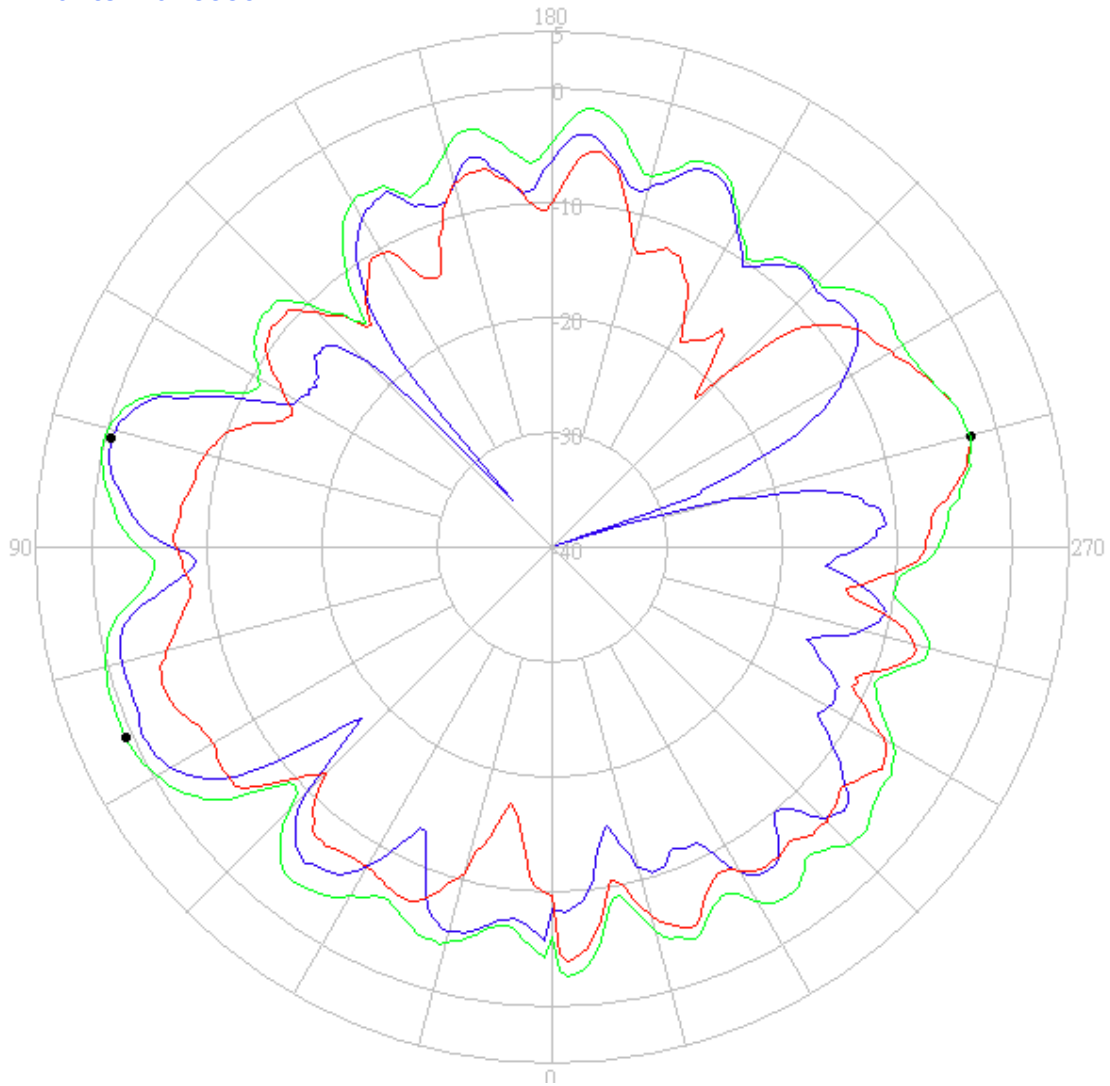
| | |
|-----------------------|-----------------|
| Center Frequency | 5150 MHz |
| Horizontal (dBi) peak | -0.64 |
| Vertical (dBi) peak | -1.50 |
| Horz+Vert (dBi) peak | 0.96 |



5.250GHz

- **Horizontal**
- **Vertical**
- **H+V**

| | |
|-----------------------|----------------|
| Center Frequency | 5250MHz |
| Horizontal (dBi) peak | -0.13 |
| Vertical (dBi) peak | -1.98 |
| Horz+Vert (dBi) peak | 0.90 |



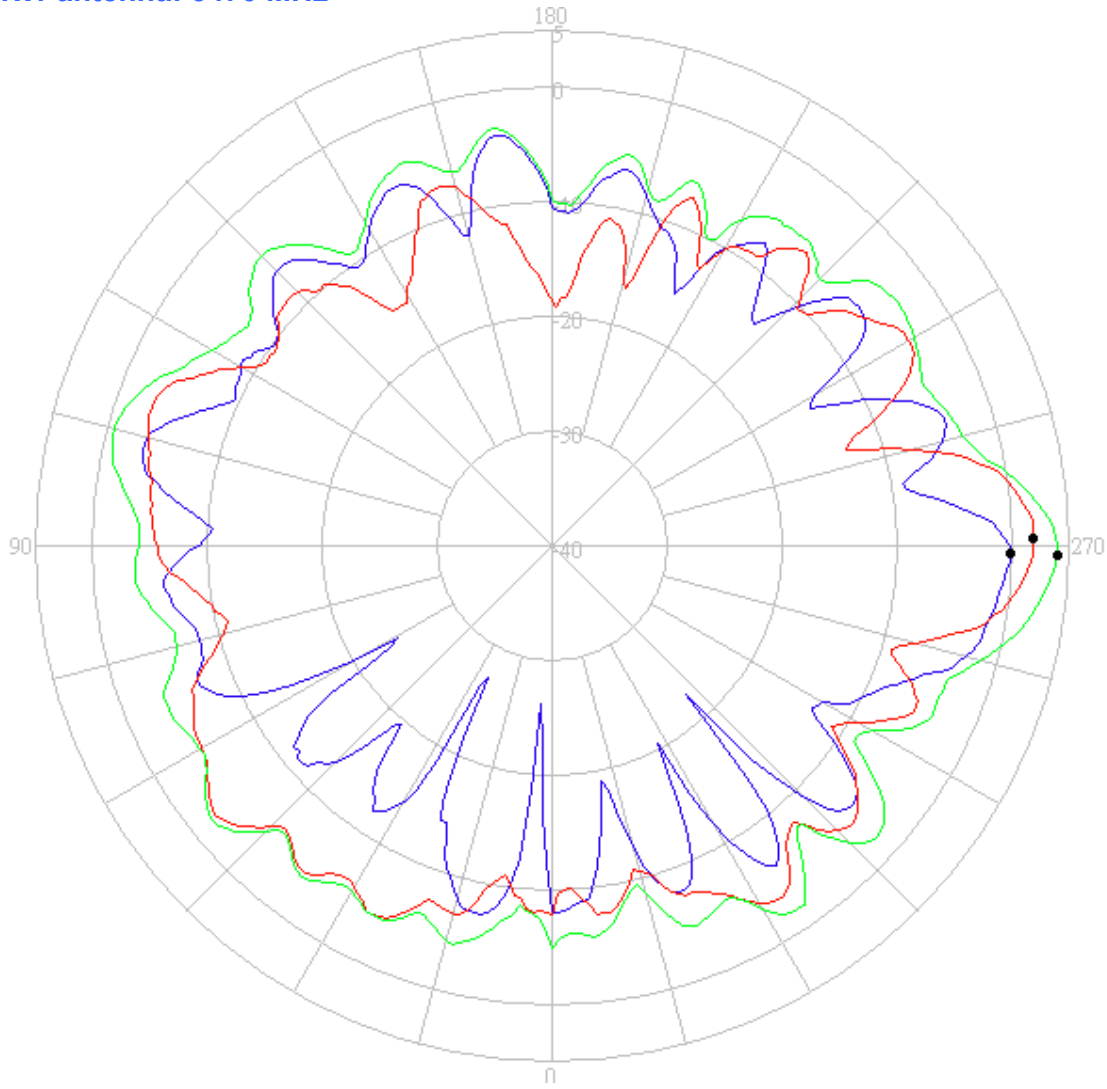
5.35GHz

- **Horizontal**
- **Vertical**
- **H+V**

| | |
|-----------------------|-----------------|
| Center Frequency | 5350 MHz |
| Horizontal (dBi) peak | -0.45 |
| Vertical (dBi) peak | -2.33 |
| Horz+Vert (dBi) peak | 0.71 |

5470-5725MHz radiation characteristic

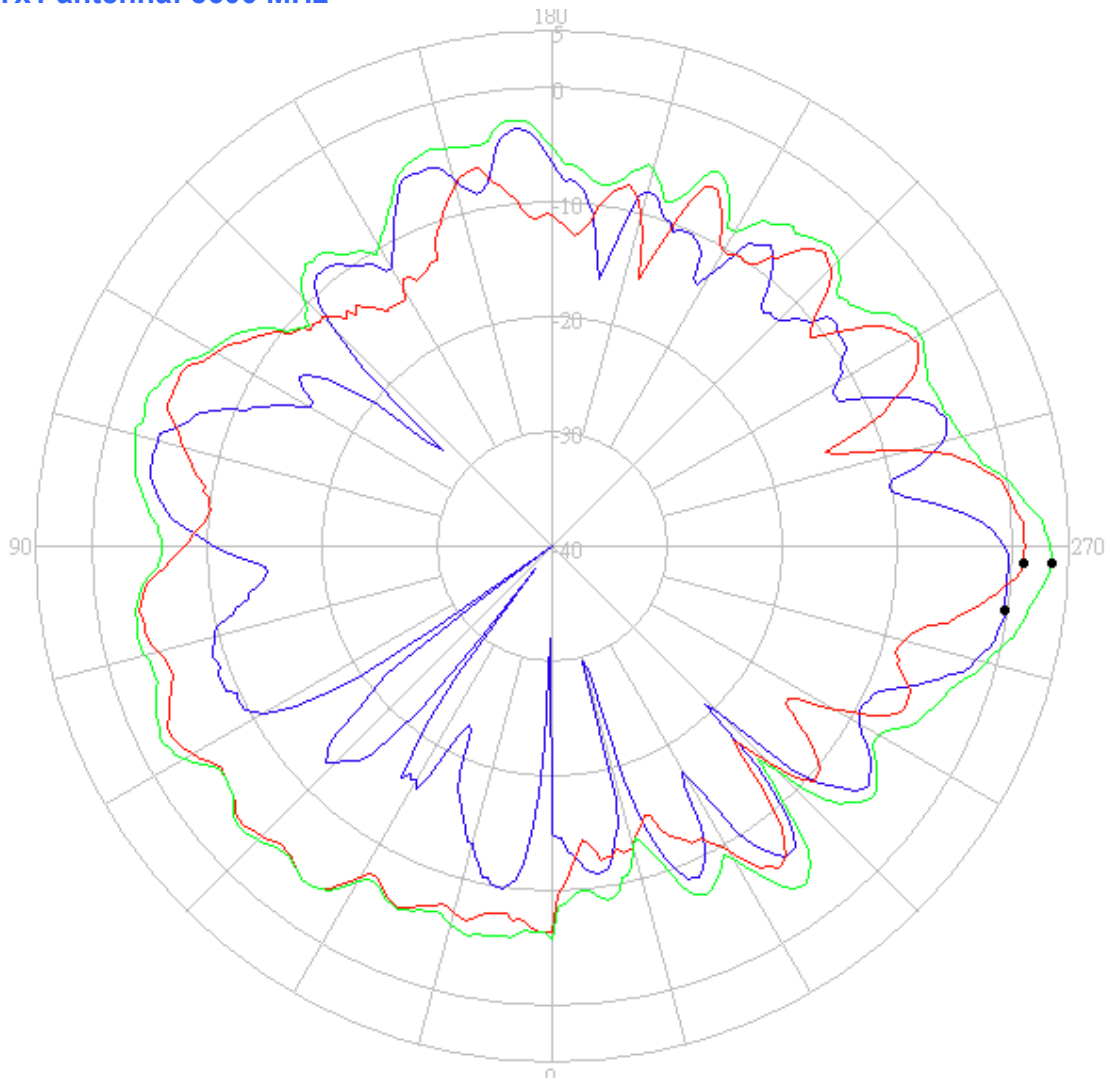
Tx1 antenna: 5470 MHz



5.47GHz

- Horizontal**
- Vertical**
- H+V**

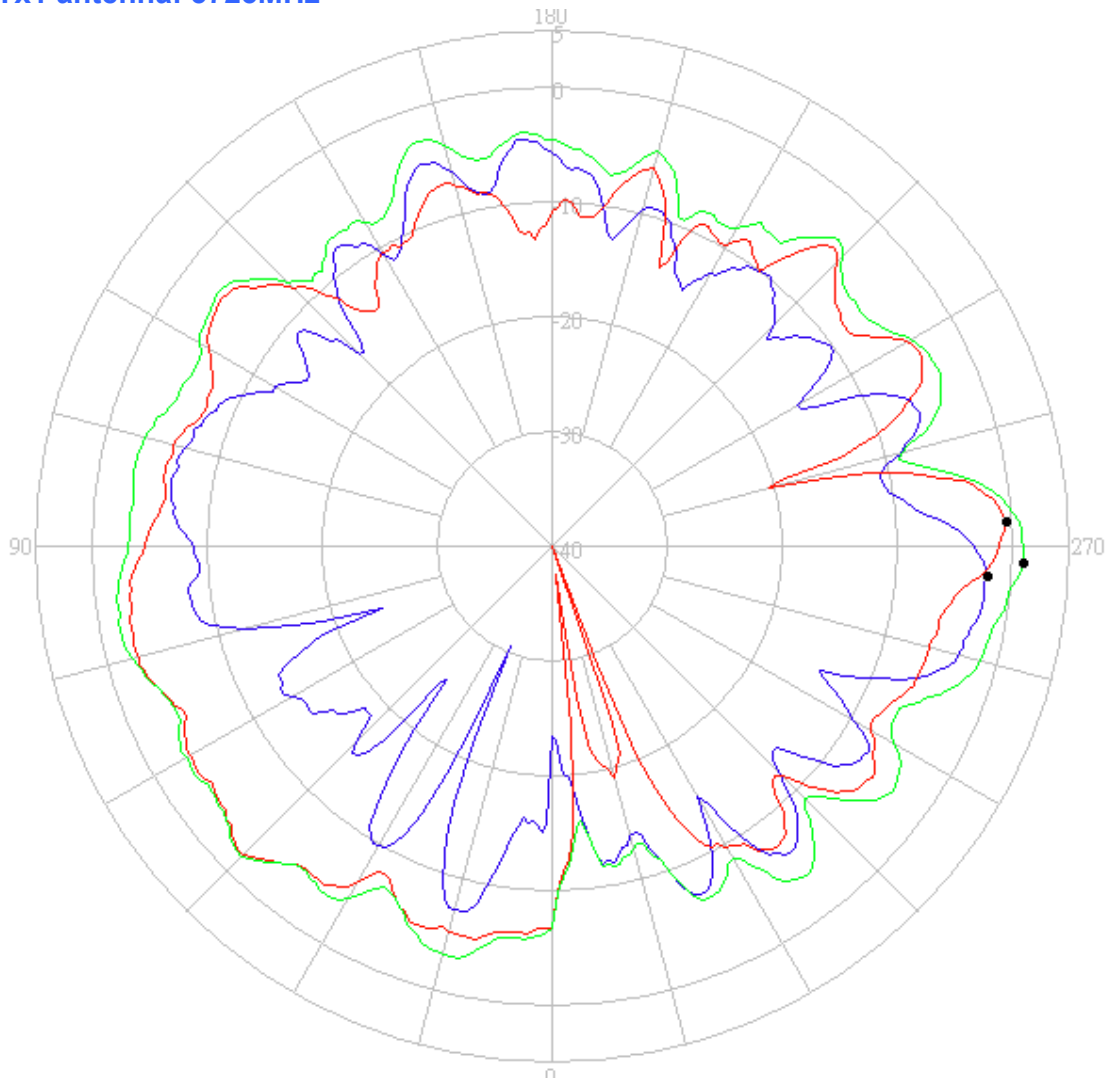
| | |
|-----------------------|-----------------|
| Center Frequency | 5470 MHz |
| Horizontal (dBi) peak | -0.03 |
| Vertical (dBi) peak | 1.95 |
| Horz+Vert (dBi) peak | 4.07 |



5.60GHz

- **Horizontal**
- **Vertical**
- **H+V**

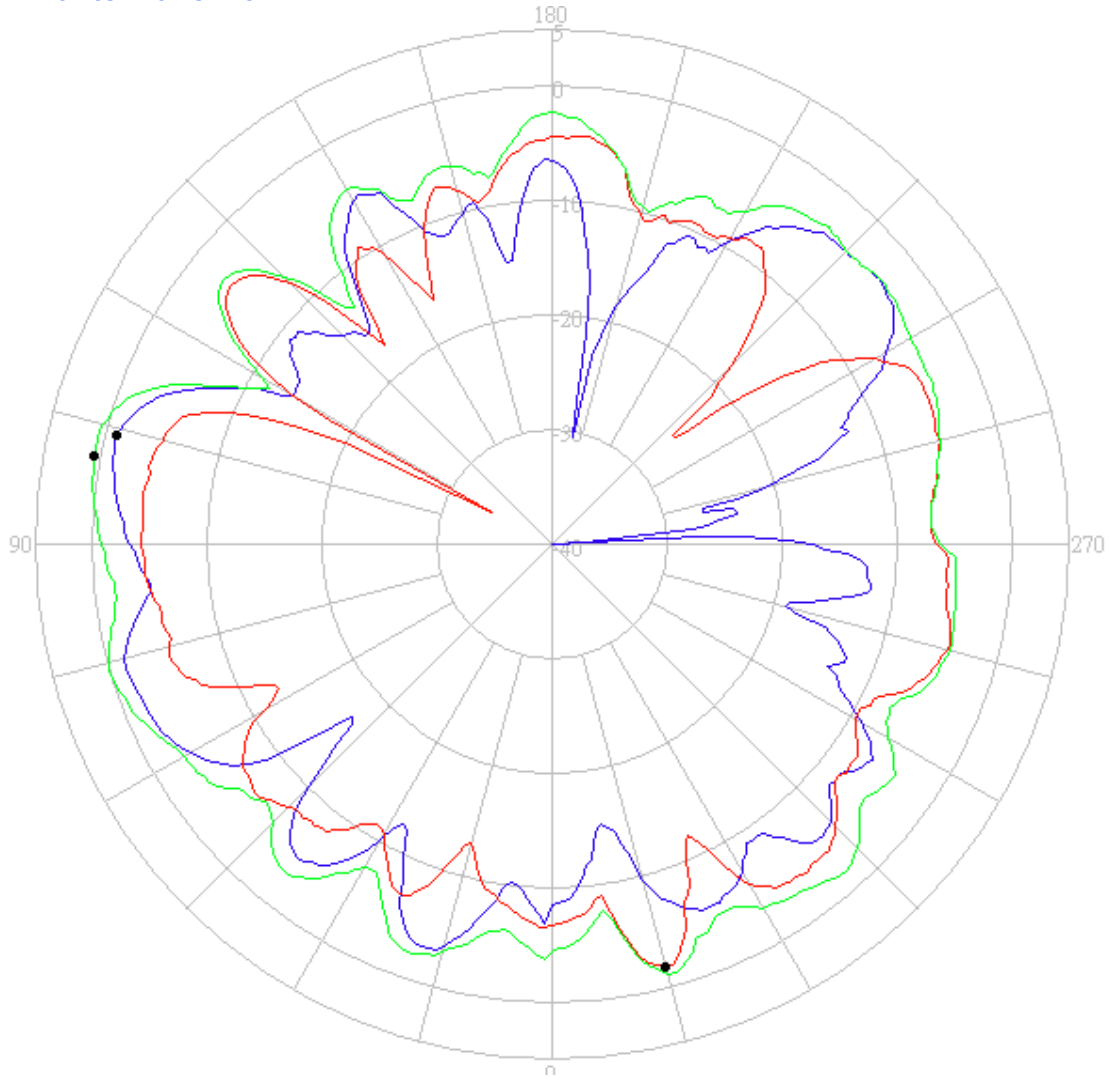
| | |
|-----------------------|----------------|
| Center Frequency | 5600MHz |
| Horizontal (dBi) peak | -0.11 |
| Vertical (dBi) peak | 1.16 |
| Horz+Vert (dBi) peak | 3.50 |



5.725GHz

- Horizontal**
- Vertical**
- H+V**

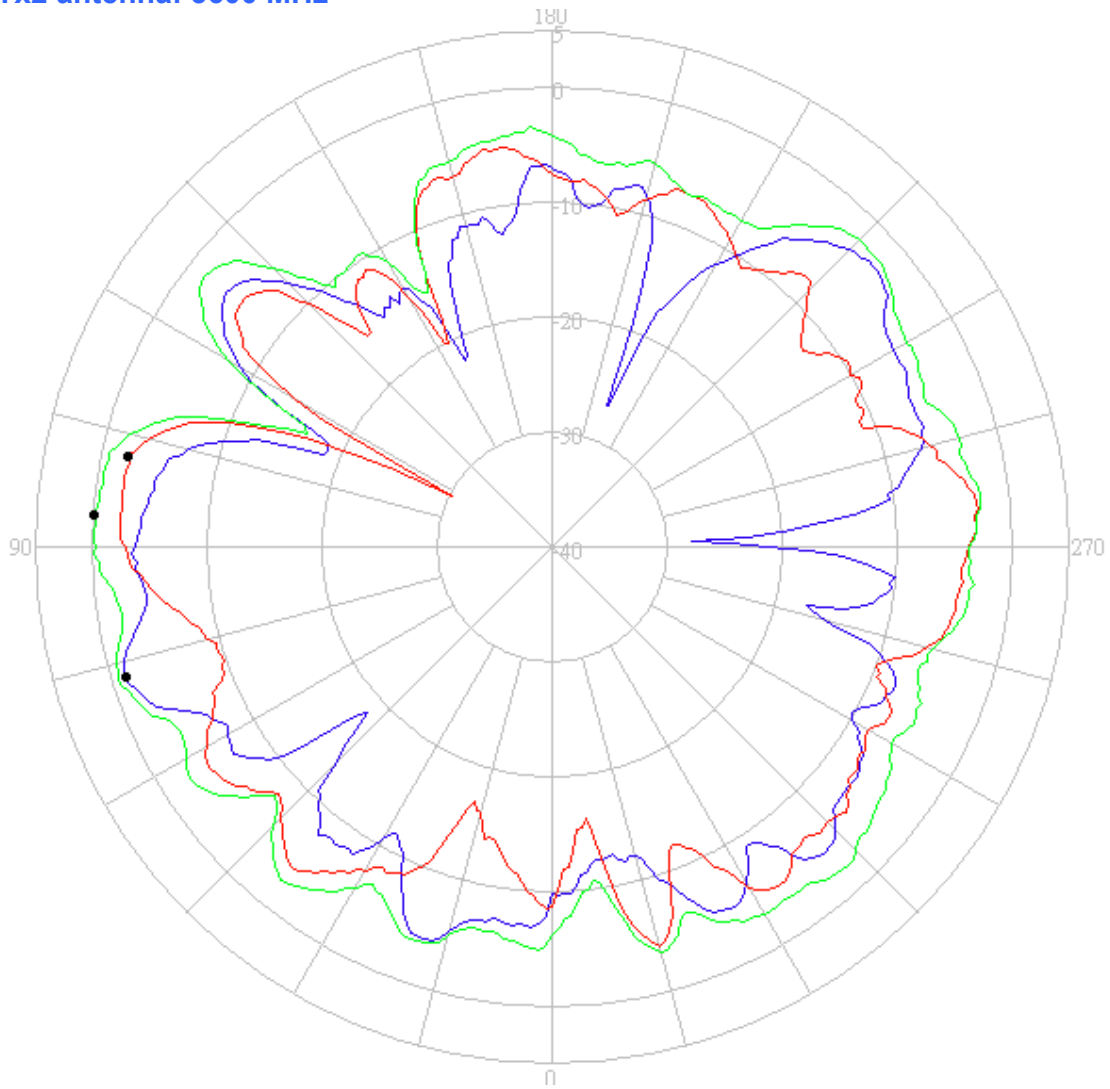
| | |
|-----------------------|-----------------|
| Center Frequency | 5725 MHz |
| Horizontal (dBi) peak | -1.98 |
| Vertical (dBi) peak | -0.43 |
| Horz+Vert (dBi) peak | 1.05 |



5.47GHz

- **Horizontal**
- **Vertical**
- **H+V**

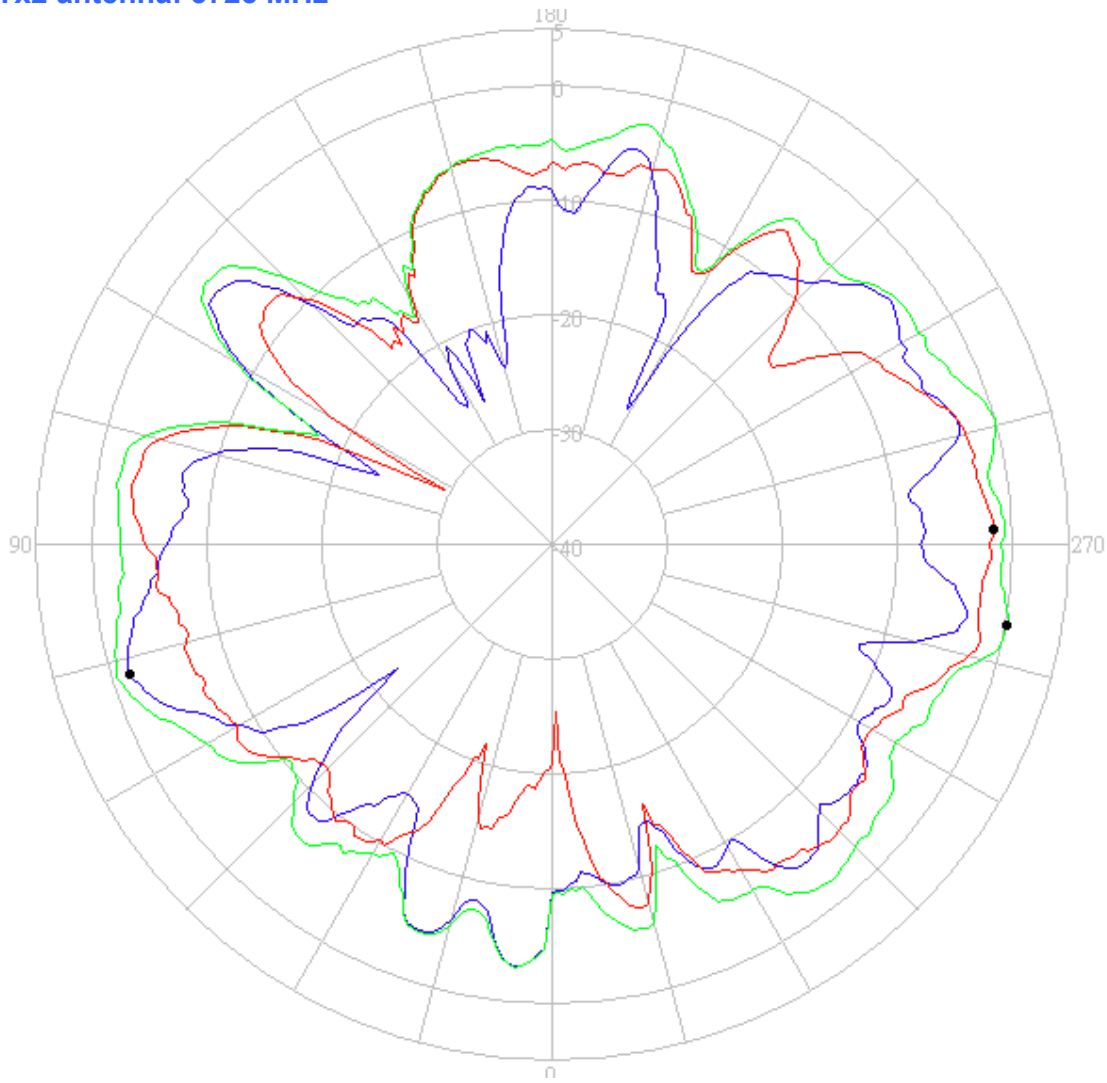
| | |
|-----------------------|-----------------|
| Center Frequency | 5470 MHz |
| Horizontal (dBi) peak | -0.95 |
| Vertical (dBi) peak | -1.81 |
| Horz+Vert (dBi) peak | 0.71 |



5.60GHz

- **Horizontal**
- **Vertical**
- **H+V**

| | |
|-----------------------|----------------|
| Center Frequency | 5600MHz |
| Horizontal (dBi) peak | -1.10 |
| Vertical (dBi) peak | -2.19 |
| Horz+Vert (dBi) peak | -0.06 |



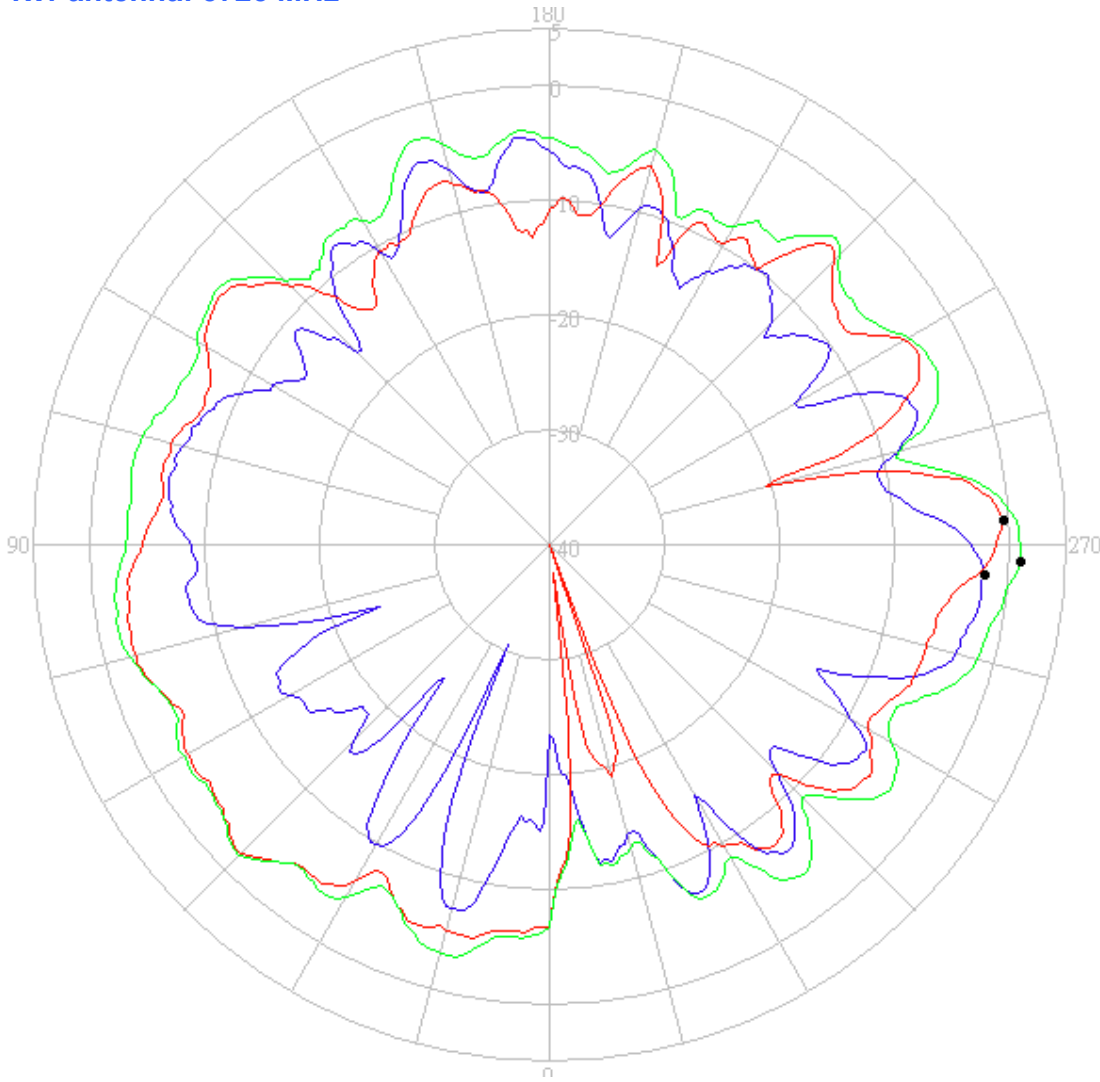
5.725GHz

- Horizontal**
- Vertical**
- H+V**

| | |
|-----------------------|-----------------|
| Center Frequency | 5725 MHz |
| Horizontal (dBi) peak | -1.50 |
| Vertical (dBi) peak | -1.55 |
| Horz+Vert (dBi) peak | 0.22 |

5725-5850 MHz radiation characteristic

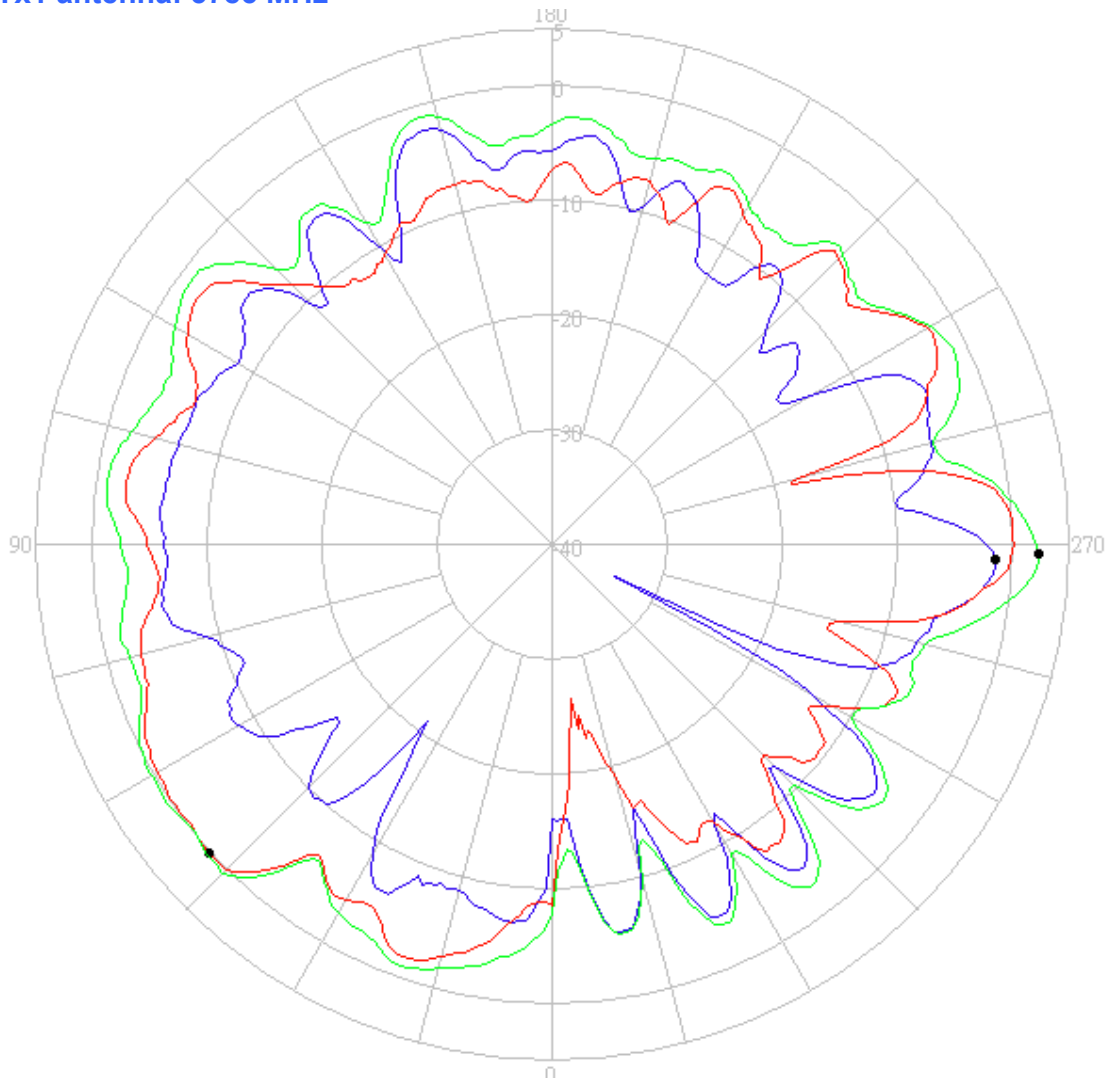
Tx1 antenna: 5725 MHz



5.725GHz

- Horizontal**
- Vertical**
- H+V**

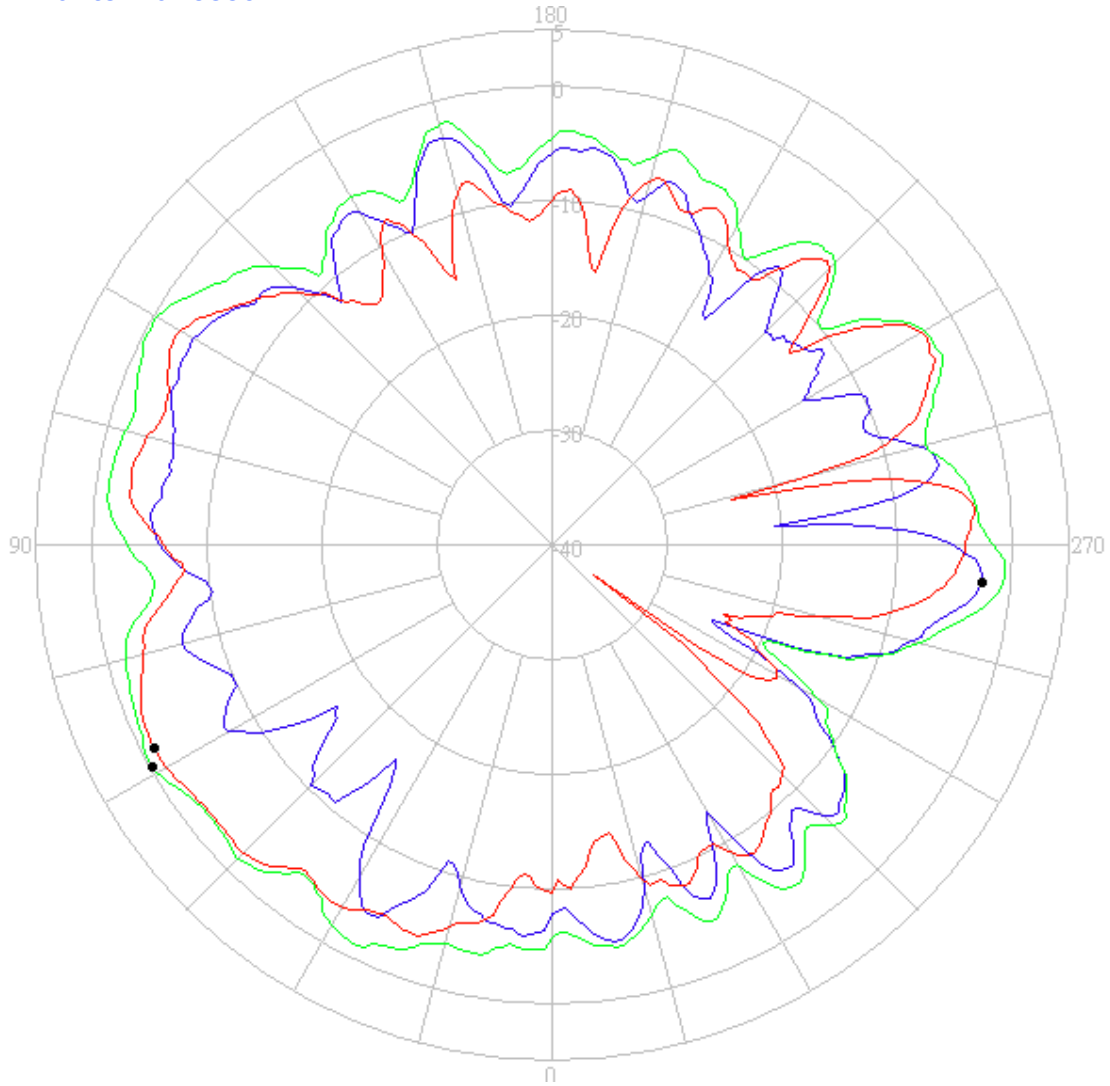
| Center Frequency | 5725 MHz |
|-----------------------|----------|
| Horizontal (dBi) peak | -1.98 |
| Vertical (dBi) peak | -0.43 |
| Horz+Vert (dBi) peak | 1.05 |



5.785GHz

- **Horizontal**
- **Vertical**
- **H+V**

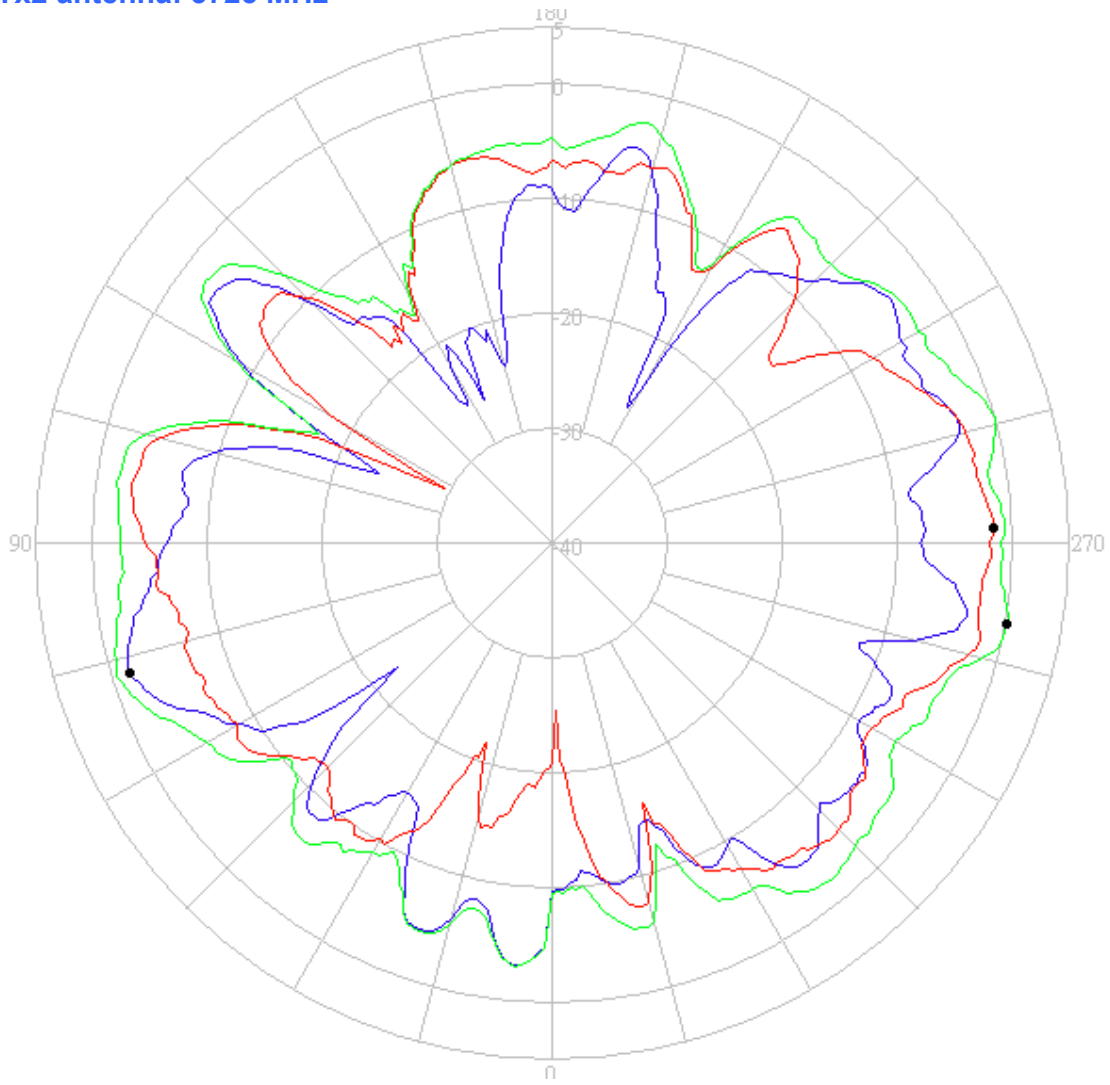
| | |
|-----------------------|----------------|
| Center Frequency | 5785MHz |
| Horizontal (dBi) peak | -1.36 |
| Vertical (dBi) peak | 0.26 |
| Horz+Vert (dBi) peak | 2.36 |



5.85GHz

- Horizontal**
- Vertical**
- H+V**

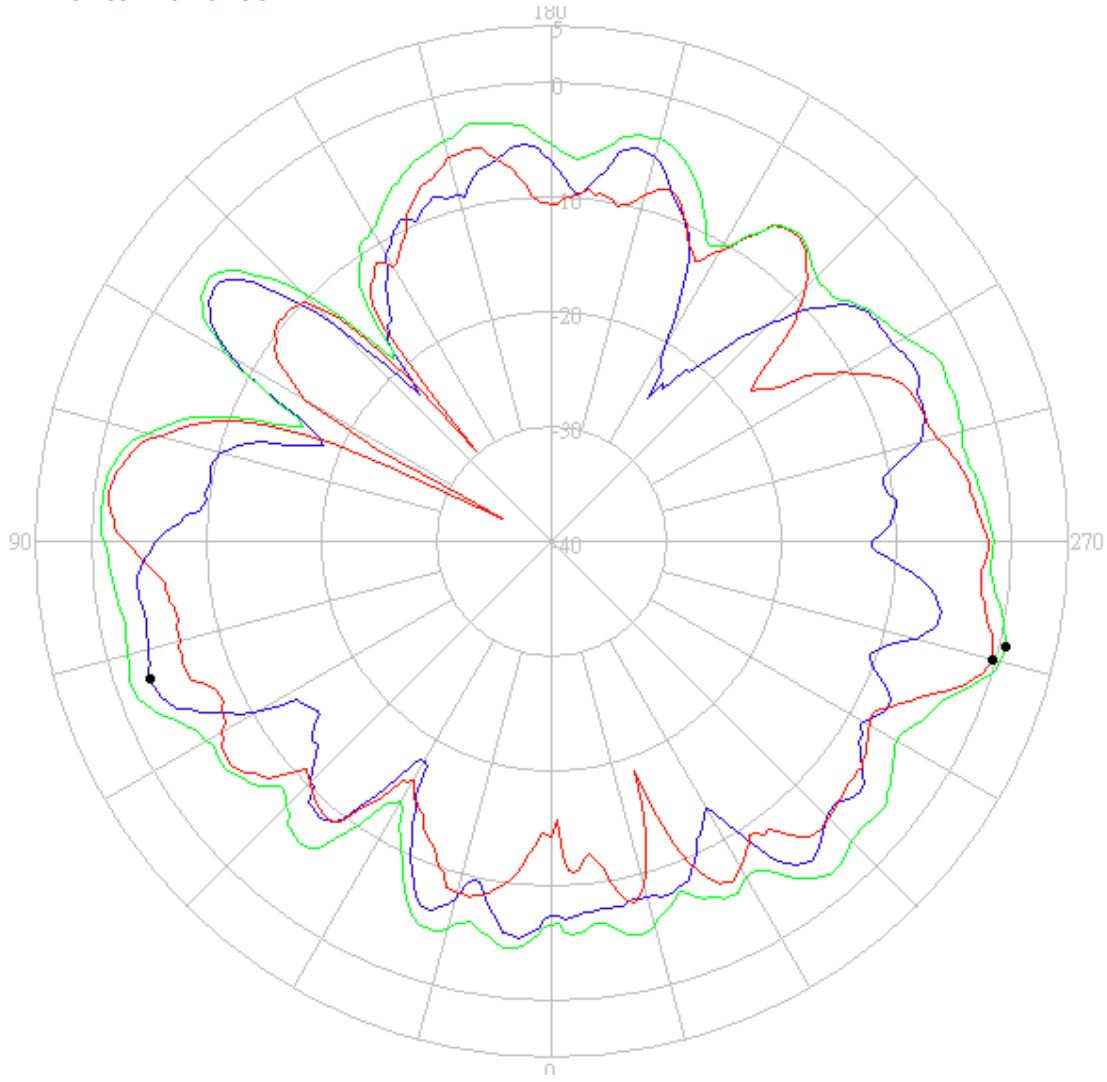
| | |
|-----------------------|-----------------|
| Center Frequency | 5850 MHz |
| Horizontal (dBi) peak | -2.38 |
| Vertical (dBi) peak | -1.04 |
| Horz+Vert (dBi) peak | -0.14 |



5.725GHz

- **Horizontal**
- **Vertical**
- **H+V**

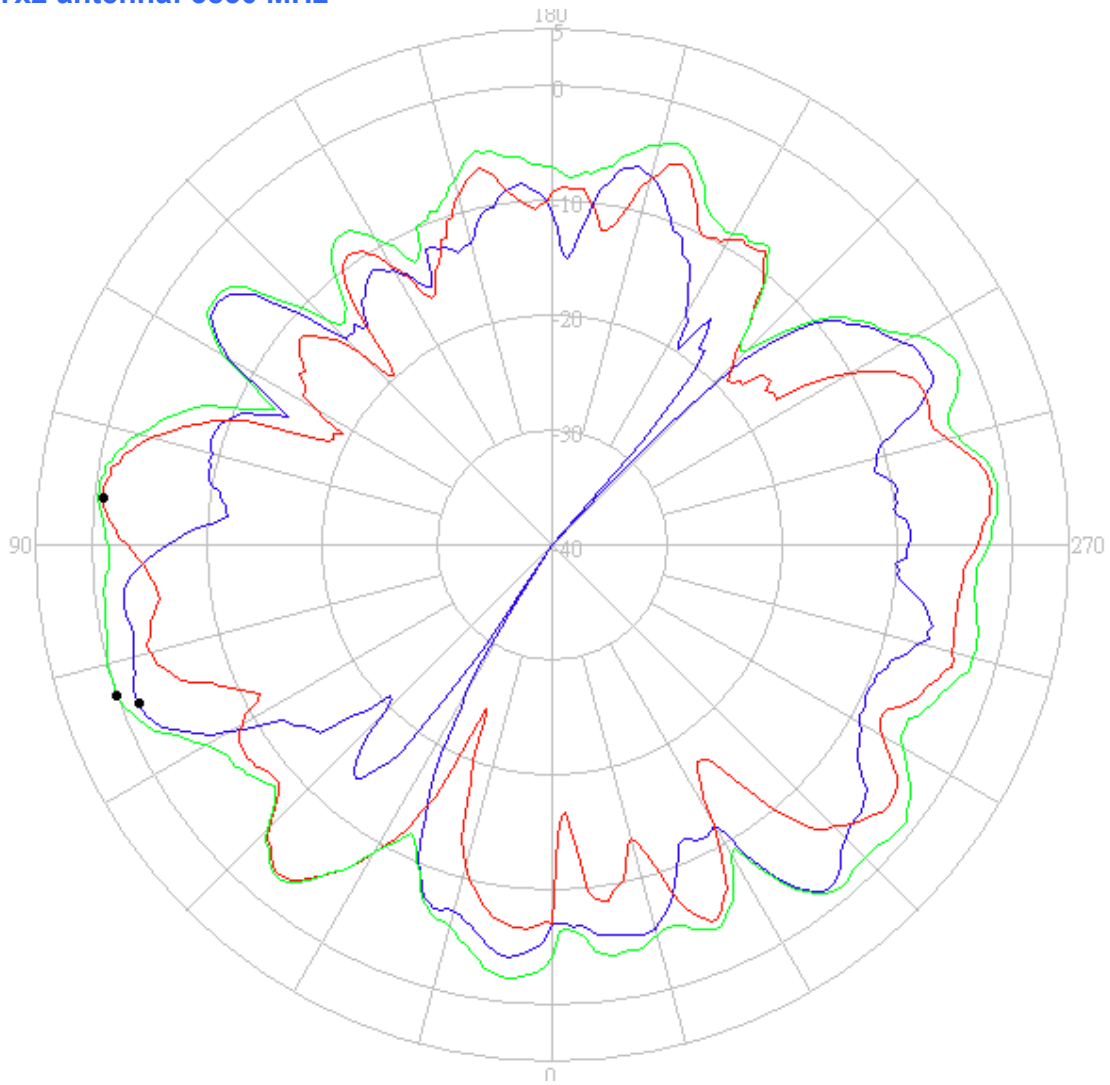
| | |
|-----------------------|-----------------|
| Center Frequency | 5725 MHz |
| Horizontal (dBi) peak | -1.50 |
| Vertical (dBi) peak | -1.55 |
| Horz+Vert (dBi) peak | 0.22 |



5.785GHz

-  **Horizontal**
-  **Vertical**
-  **H+V**

| | |
|-----------------------|----------------|
| Center Frequency | 5785MHz |
| Horizontal (dBi) peak | -3.06 |
| Vertical (dBi) peak | -0.29 |
| Horz+Vert (dBi) peak | 0.60 |



5.85GHz

- **Horizontal**
- **Vertical**
- **H+V**

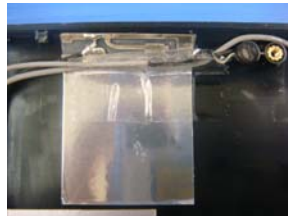
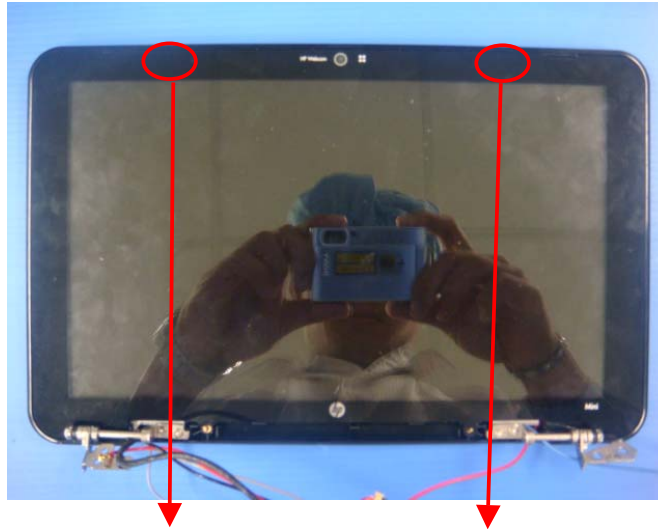
| | |
|-----------------------|-----------------|
| Center Frequency | 5850 MHz |
| Horizontal (dBi) peak | -1.39 |
| Vertical (dBi) peak | -0.63 |
| Horz+Vert (dBi) peak | 0.15 |

Section 4. Host Platform Information

OEM / ODM Host platform: Inventec HARBOUR 10.2 Platform

Section 5. Antenna Host Platform Location Information

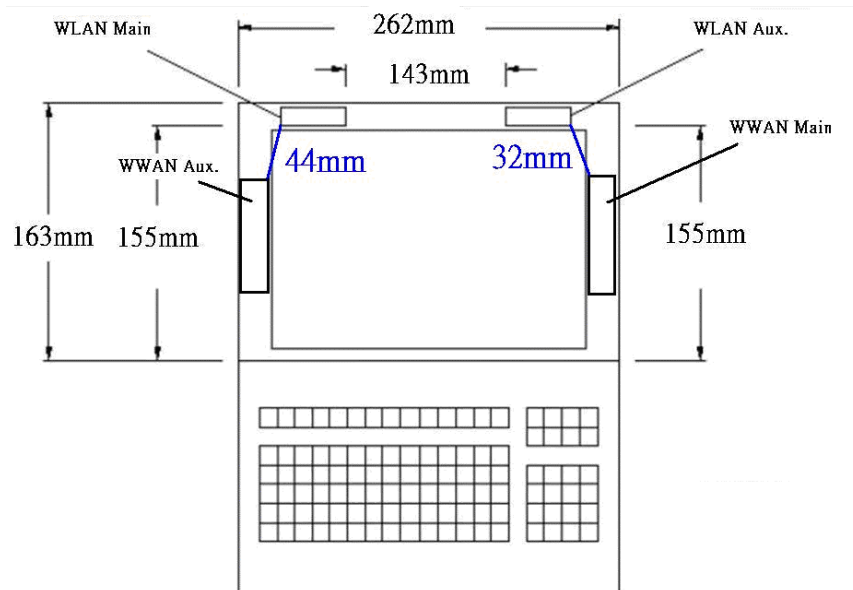
Include a dimensioned photos or dimensioned drawings of main and auxiliary antenna placements.



L-Main

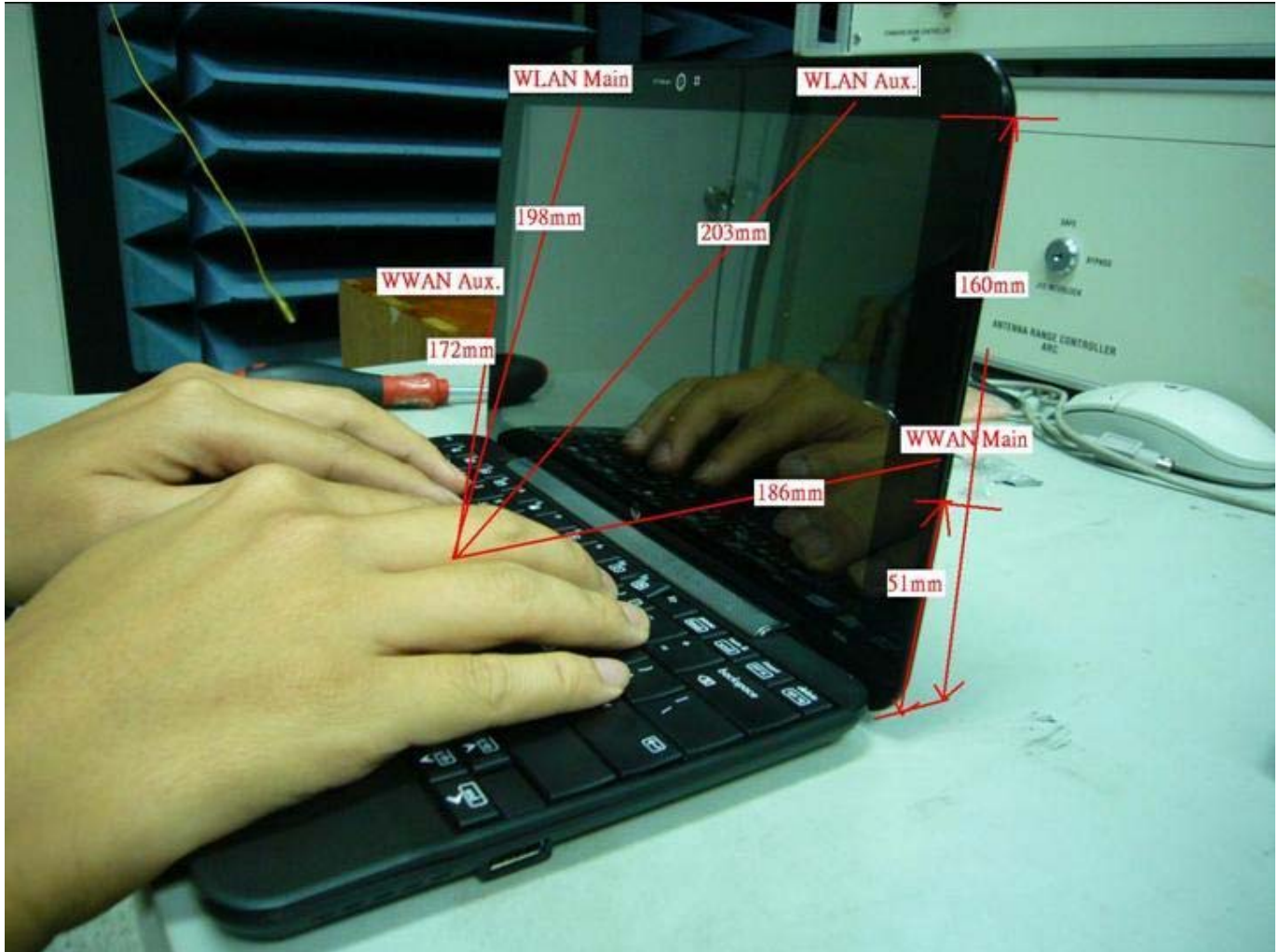


R-Aux



Section 6. Antenna dimensional information for SAR evaluation

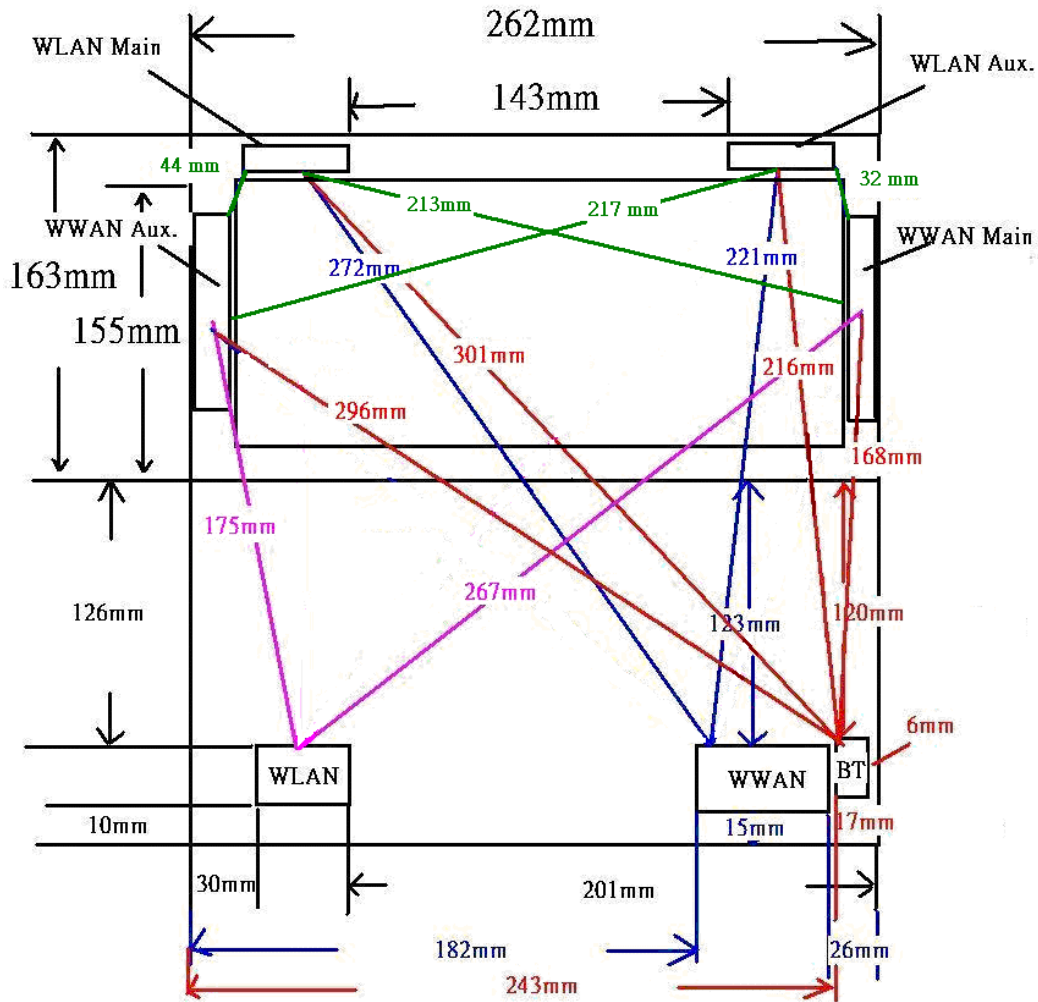
Include a dimensioned photos or dimensioned drawings showing the distance (mm) between the transmit (main) antenna and the user (excluding hands, wrist, feet, and ankle)



Section 7. Diagram Example of Co-Location Antenna Separation

Indicate distance between WLAN module antennas and Bluetooth/other radio antenna element.

(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 |
| USA, Canada | | | | | | |