

# Regulatory WLAN Antenna Information (TB)

(English Language Required for Module Vendor Regulatory Review / Approval)

(OEM/ODM or antenna vendor is required to complete this document with platform antenna information.

Remove Intel references and make this your own document)

| Platform information                                                                                                                                                                                   |                                                                                    |                           |                                                            |                        |                        |                                |                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------------|------------------------------------------------------------|------------------------|------------------------|--------------------------------|------------------------|
| Brand                                                                                                                                                                                                  | ODM                                                                                | Platform model name (RMN) | Platform type (ex: Notebook PC, convertible PC, AIO...etc) |                        |                        | SAR minimum separation (mm)    |                        |
| HP Inc.                                                                                                                                                                                                | Wistron                                                                            | TPN-W147                  | Notebook PC                                                |                        |                        | 2.6                            |                        |
|                                                                                                                                                                                                        |                                                                                    |                           |                                                            |                        |                        |                                |                        |
| Antenna information                                                                                                                                                                                    |                                                                                    |                           |                                                            |                        |                        |                                |                        |
| Vendor                                                                                                                                                                                                 |                                                                                    | Type                      | Antenna Part number (Main/TX1)                             |                        |                        | Antenna Part number (Aux/ TX2) |                        |
| WNC                                                                                                                                                                                                    |                                                                                    | PIFA                      | 025.901SL.0001 (81EABD15.G29)                              |                        |                        | 025.901SL.0011 (81EABD15.G30)  |                        |
| Peak gain w/ cable loss (dBi)                                                                                                                                                                          |                                                                                    |                           |                                                            |                        |                        |                                |                        |
| 2.4GHz<br>2400-2500MHz                                                                                                                                                                                 | 5.2&5.3GHz<br>5150-5350MHz                                                         | 5.5GHz<br>5470-5725MHz    | 5.8GHz<br>5725-5850MHz                                     | 6.2GHz<br>5925-6425MHz | 6.5GHz<br>6425-6525MHz | 6.7GHz<br>6525-6875MHz         | 6.9GHz<br>6875-7125MHz |
| -0.02                                                                                                                                                                                                  | 1.08                                                                               | 0.25                      | 0.07                                                       | 0.70                   | -0.85                  | 0.91                           | -1.31                  |
|                                                                                                                                                                                                        |                                                                                    |                           |                                                            |                        |                        |                                |                        |
| Module information                                                                                                                                                                                     |                                                                                    |                           |                                                            |                        |                        |                                |                        |
| Model                                                                                                                                                                                                  | Form factor and suffixes ( NGW/ HMW AND AN/ NB/ BN....)                            |                           |                                                            |                        |                        |                                |                        |
| AX211NGW<br>(Garfield Peak 2)                                                                                                                                                                          | Intel Wi-Fi 6E AX211 + BT5.2 (802.11ax 2x2, MU-MIMO, supporting gigabit data rate) |                           |                                                            |                        |                        |                                |                        |
|                                                                                                                                                                                                        |                                                                                    |                           |                                                            |                        |                        |                                |                        |
|                                                                                                                                                                                                        |                                                                                    |                           |                                                            |                        |                        |                                |                        |
|                                                                                                                                                                                                        |                                                                                    |                           |                                                            |                        |                        |                                |                        |
|                                                                                                                                                                                                        |                                                                                    |                           |                                                            |                        |                        |                                |                        |
|                                                                                                                                                                                                        |                                                                                    |                           |                                                            |                        |                        |                                |                        |
| Notes (marked with *)                                                                                                                                                                                  |                                                                                    |                           |                                                            |                        |                        |                                |                        |
| * SAR minimum separation (mm)<br>- Regular NB: Minimum antenna-to-body (from antenna bottom to the bottom of the device)<br>- Tablet / Convertible PC: Minimum antenna-to-edge (5 sides of the device) |                                                                                    |                           |                                                            |                        |                        |                                |                        |

## 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                      |

# Antenna Information

## Section 1. Antenna Assembly Specifications

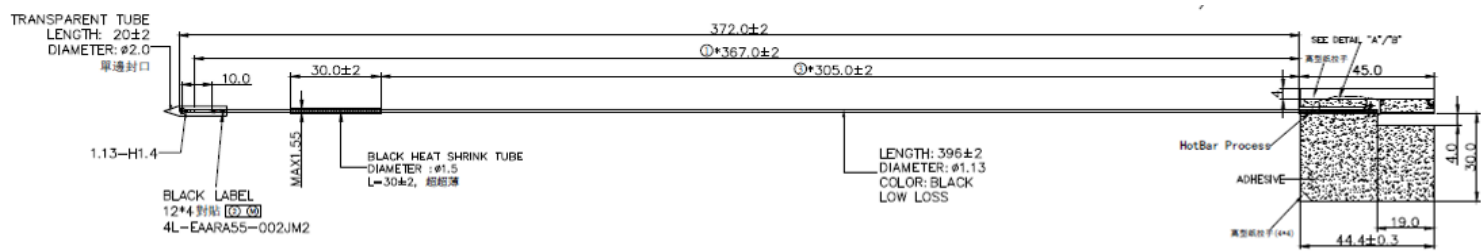
| 1A<br>Antenna Part Number           | 1B<br>Manu-facturer | 1C<br>Antenna Type | 1D<br>Cable Assembly Part Number and Information                                                                   | Freq Range MHz | 1E<br>*Peak Gain W/ Cable loss (dBi) | 1F<br>Peak Gain w/o Cable Loss (dBi) | 1G<br>Max VSWR | 1H<br>Cable Loss (dB) |
|-------------------------------------|---------------------|--------------------|--------------------------------------------------------------------------------------------------------------------|----------------|--------------------------------------|--------------------------------------|----------------|-----------------------|
| (P/N: 81EABD15.G29)<br>Main Antenna | WNC                 | PIFA               | Example:<br>(P/N: U.FL-2LP-XXX)<br>50 ohm Coaxial<br>length: 372mm<br>diameter: 1.13mm<br><br>Connector Type: IPEX | 2400-2500      | -0.02                                | 1.01                                 | 3.0            | 1.03                  |
|                                     |                     |                    |                                                                                                                    | 5150-5250      | 1.08                                 | 2.60                                 | 3.0            | 1.52                  |
|                                     |                     |                    |                                                                                                                    | 5250-5350      | 1.08                                 | 2.62                                 | 3.0            | 1.54                  |
|                                     |                     |                    |                                                                                                                    | 5470-5725      | 0.25                                 | 1.83                                 | 3.0            | 1.58                  |
|                                     |                     |                    |                                                                                                                    | 5725-5850      | -0.36                                | 1.25                                 | 3.0            | 1.61                  |
|                                     |                     |                    |                                                                                                                    | 5925-6425      | 0.70                                 | 2.37                                 | 3.0            | 1.67                  |
|                                     |                     |                    |                                                                                                                    | 6425-6525      | -0.97                                | 0.75                                 | 3.0            | 1.72                  |
|                                     |                     |                    |                                                                                                                    | 6525-6875      | -1.73                                | 0.03                                 | 3.0            | 1.76                  |
|                                     |                     |                    |                                                                                                                    | 6875-7125      | -1.86                                | -0.05                                | 3.0            | 1.81                  |
| (P/N: 81EABD15.G30)<br>Aux Antenna  | WNC                 | PIFA               | Example:<br>(P/N: U.FL-2LP-XXX)<br>50 ohm Coaxial<br>length: 442mm<br>diameter: 1.13mm<br>Connector Type: IPEX     | 2400-2500      | -0.58                                | 0.92                                 | 3.0            | 1.23                  |
|                                     |                     |                    |                                                                                                                    | 5150-5250      | 0.05                                 | 1.86                                 | 3.0            | 1.81                  |
|                                     |                     |                    |                                                                                                                    | 5250-5350      | 0.05                                 | 1.88                                 | 3.0            | 1.83                  |
|                                     |                     |                    |                                                                                                                    | 5470-5725      | 0.19                                 | 2.07                                 | 3.0            | 1.88                  |
|                                     |                     |                    |                                                                                                                    | 5725-5850      | 0.07                                 | 1.98                                 | 3.0            | 1.91                  |
|                                     |                     |                    |                                                                                                                    | 5925-6425      | -0.18                                | 1.80                                 | 3.0            | 1.98                  |
|                                     |                     |                    |                                                                                                                    | 6425-6525      | -0.85                                | 1.20                                 | 3.0            | 2.05                  |
|                                     |                     |                    |                                                                                                                    | 6525-6875      | 0.91                                 | 3.00                                 | 3.0            | 2.09                  |
|                                     |                     |                    |                                                                                                                    | 6875-7125      | -1.31                                | 0.85                                 | 3.0            | 2.16                  |

- Antenna Peak Gain required being test in system basis.  
The antenna gain was measured in Anechoic Chamber.
- 1E frame contend absolutely peak antenna gain include H/V

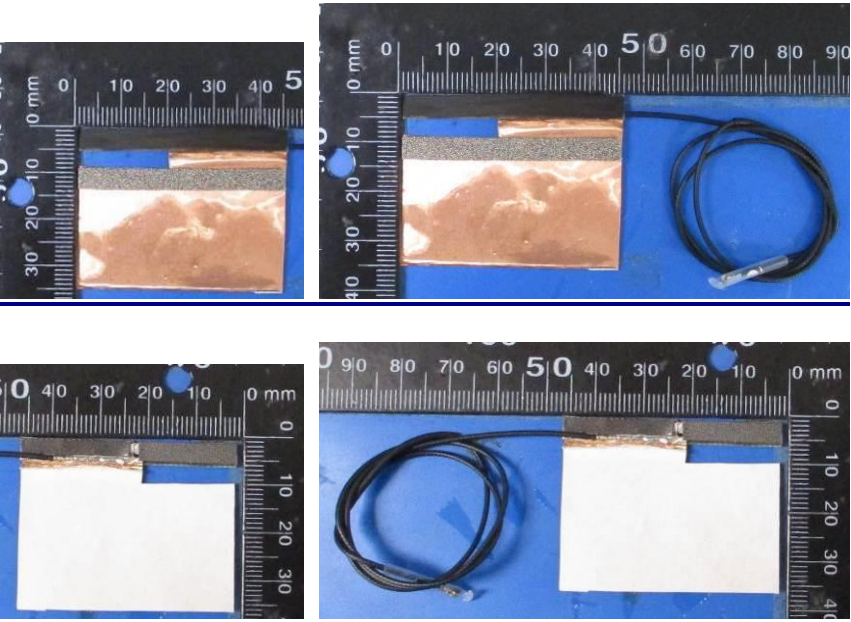
Section 2. Dimensioned Photos or Drawings of Antennas

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

Tx1 Antenna Dimensioned Drawing:

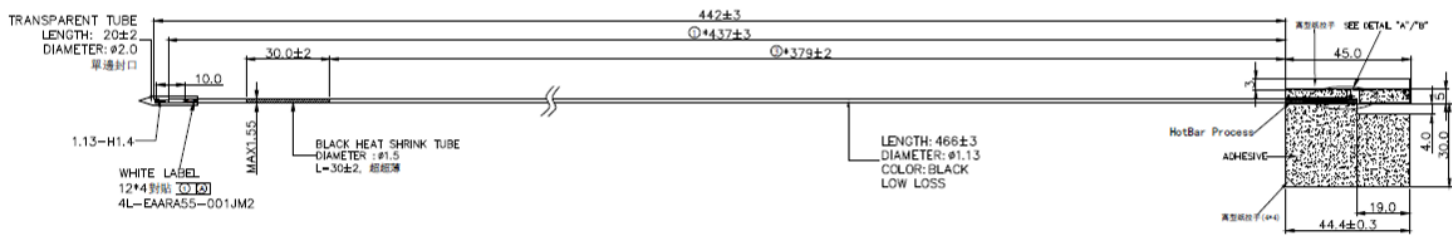


Tx1 Antenna Photo:

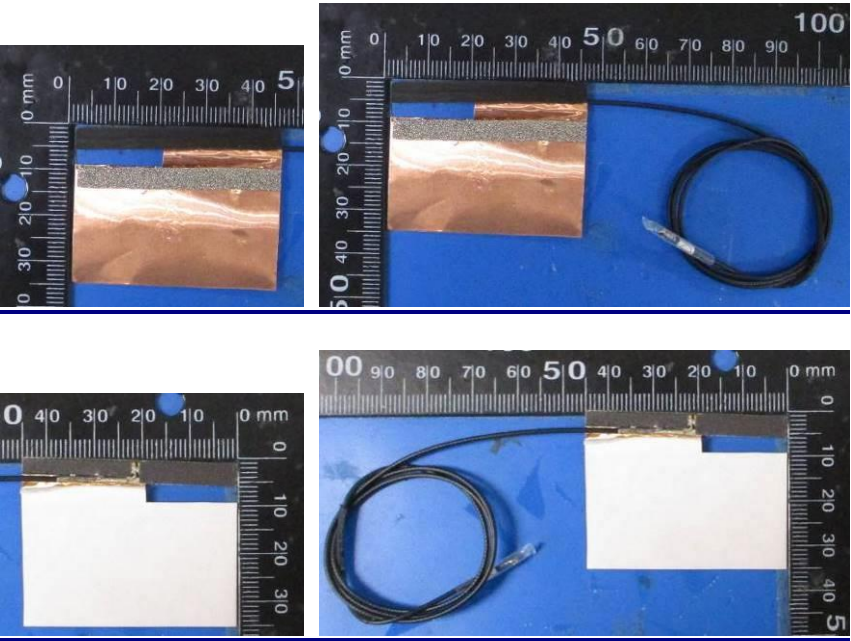


Include a dimensioned photo and dimensioned drawing of Tx2 (or Rx2) antenna here.

Tx2 (or Rx2) Antenna Dimensioned Drawing:



Tx2 (or Rx2) Antenna Photo:



Note: antenna photo should include L type ruler

Include front view photo of all 2 antennas here.

Antenna Manufacturer: WNC

Antenna Part Number: 81EABD15.G29 (Tx1), 81EABD15.G30 (Tx2 or Rx2)

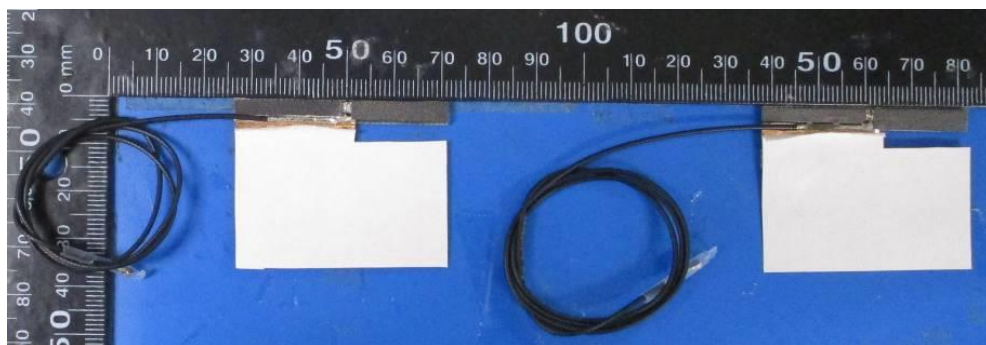


Note: antenna photo should include L type ruler

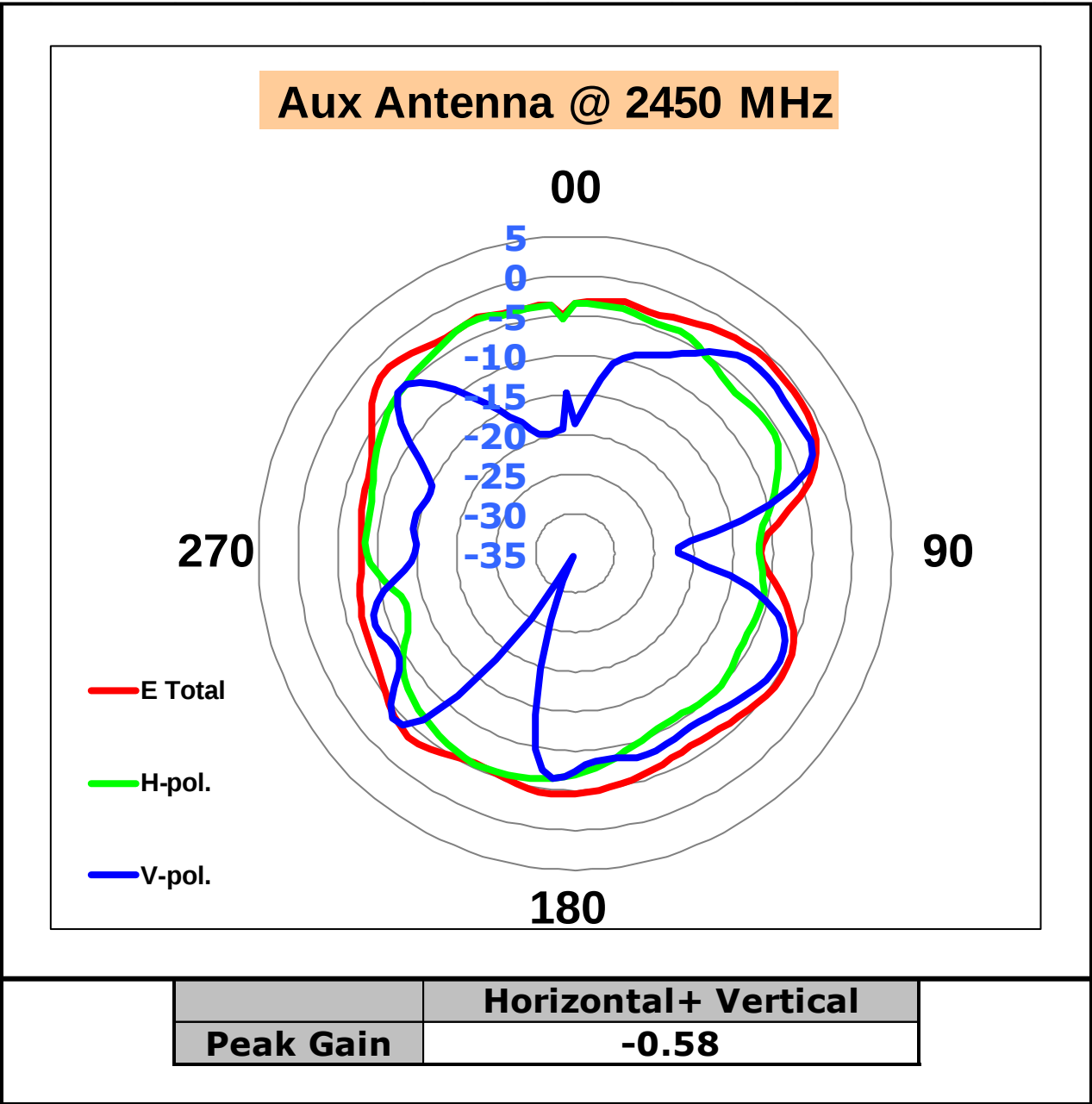
Include back view photo of all 2 antennas here.

Antenna Manufacturer: WNC

Antenna Part Number: 81EABD15.G29 (Tx1), 81EABD15.G30 (Tx2)

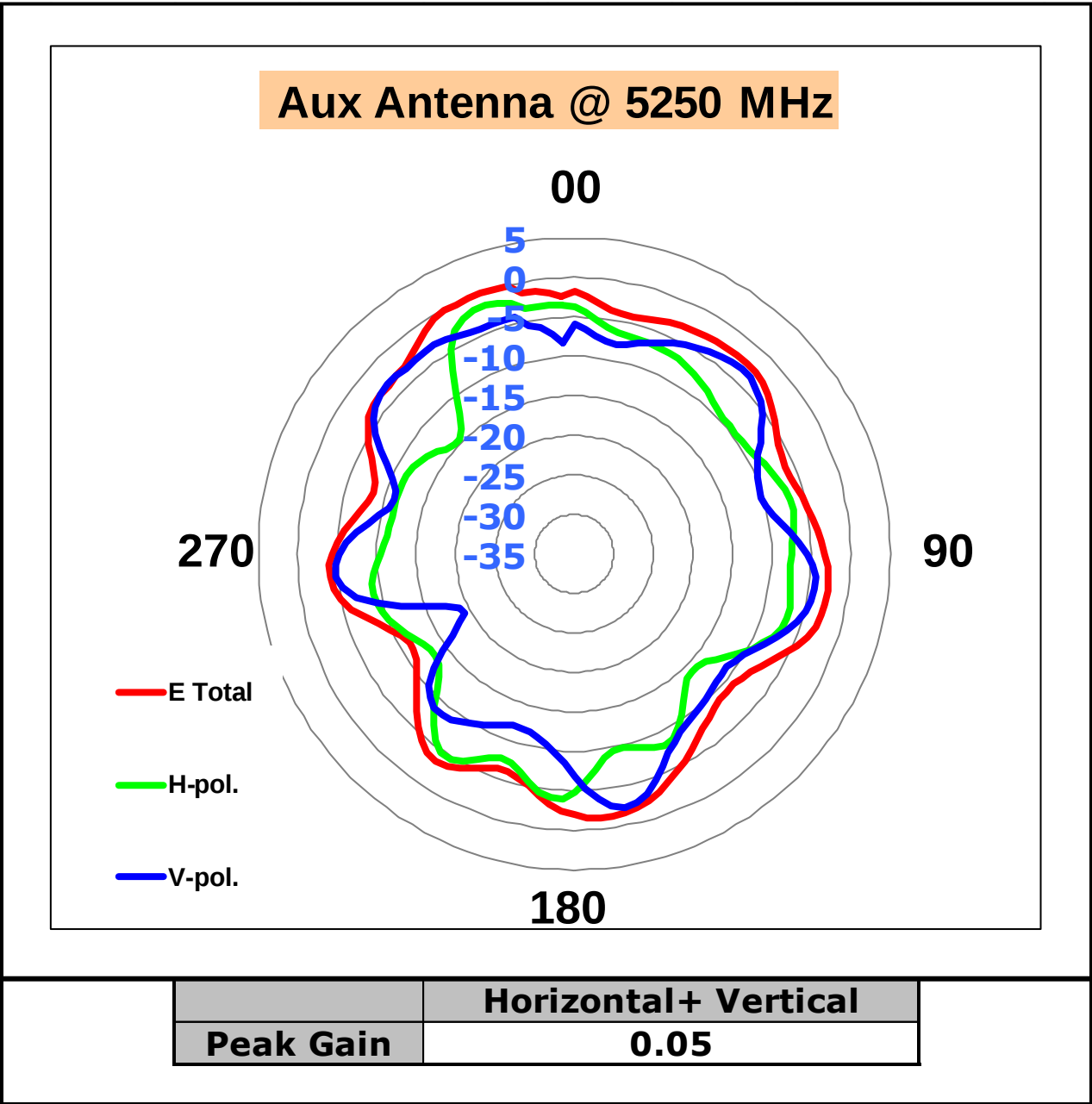


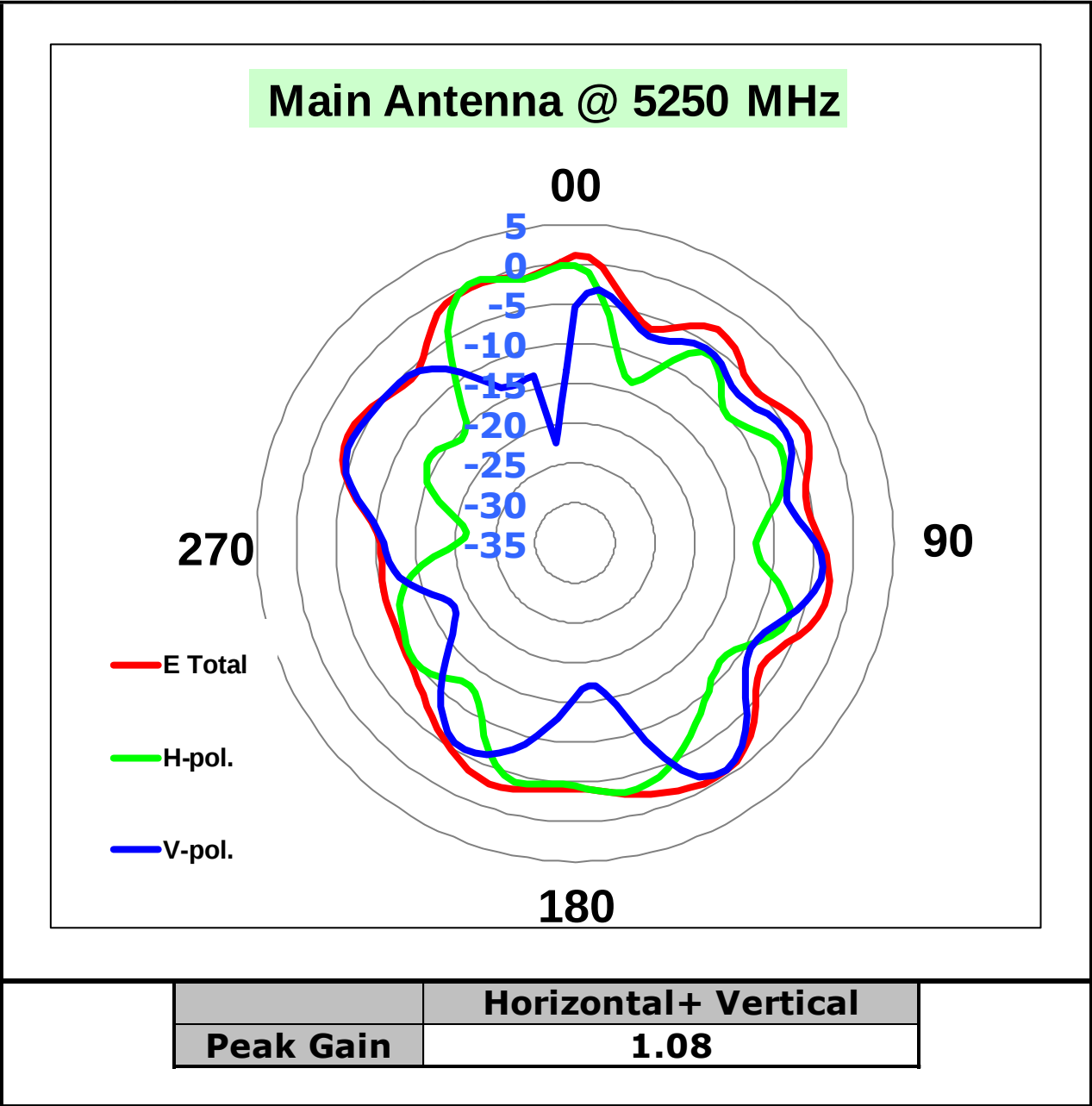


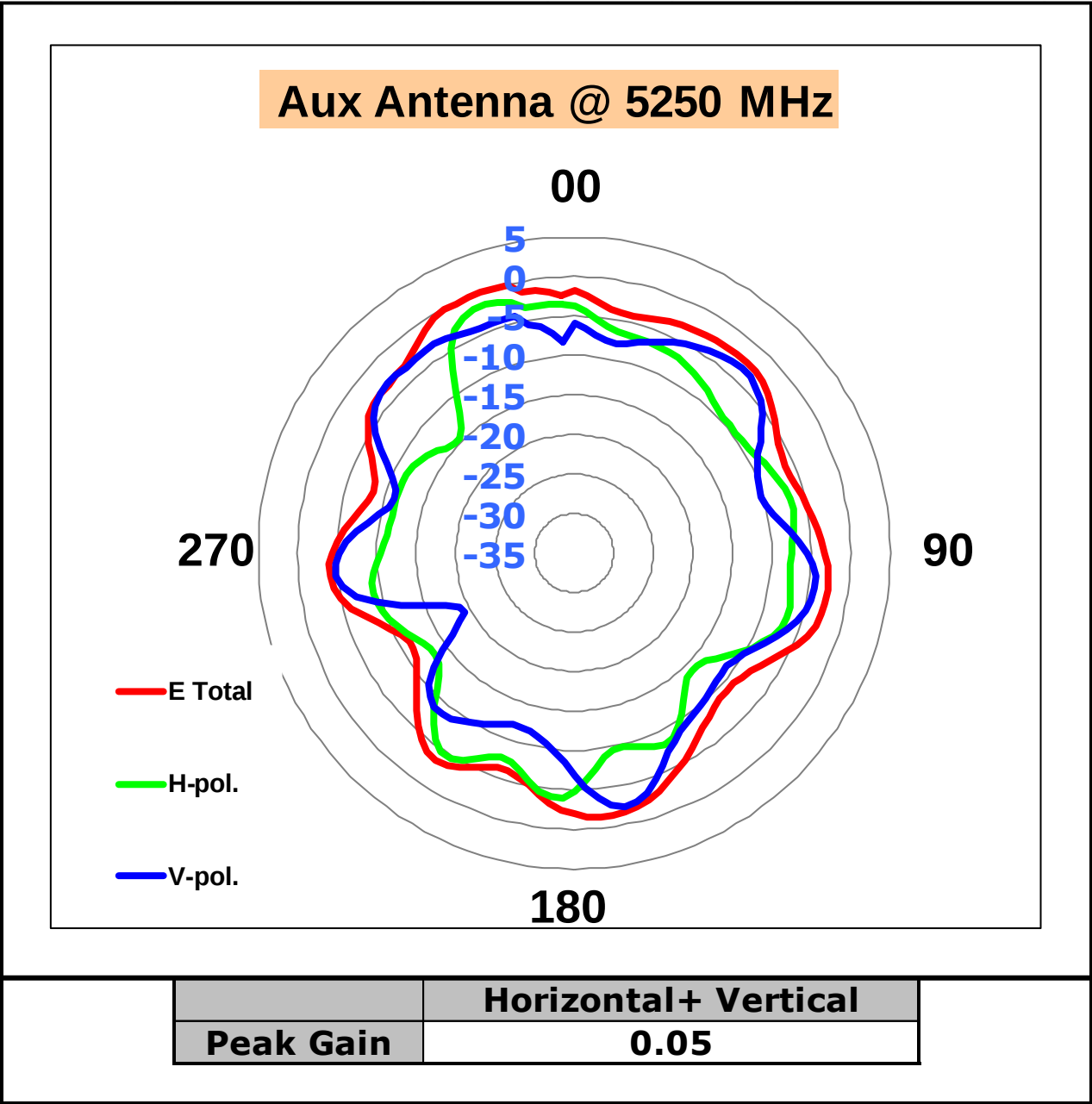


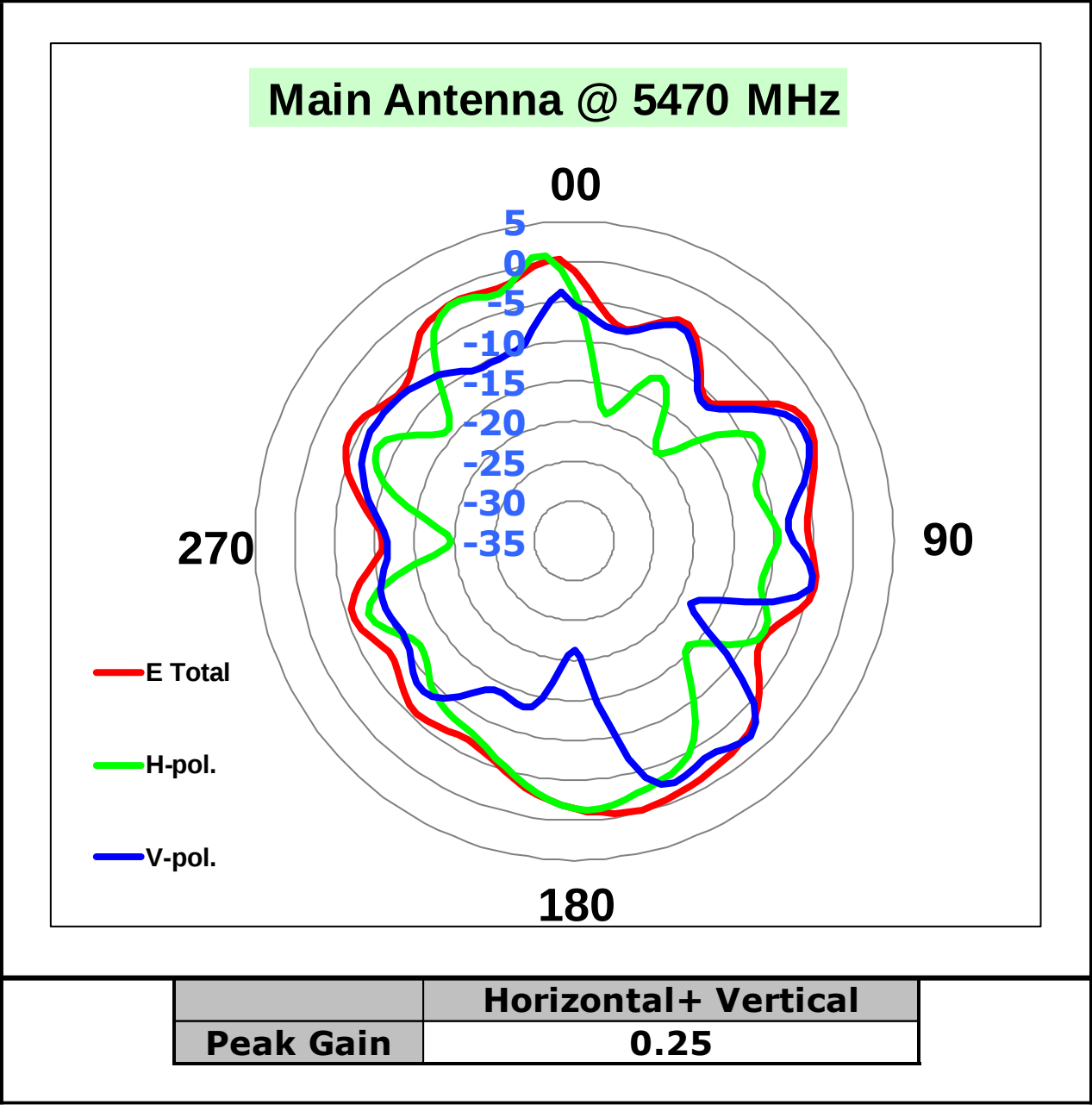


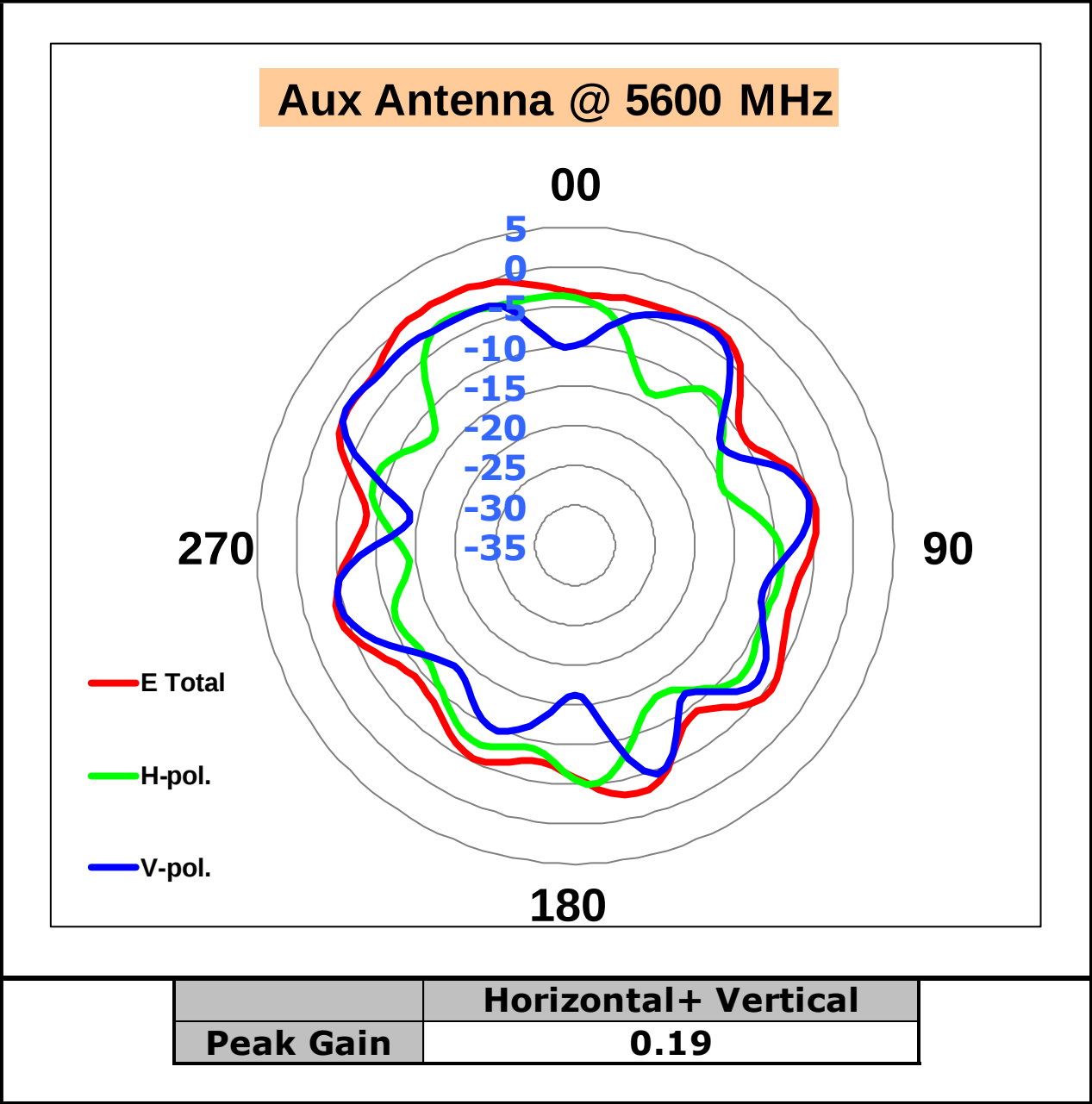
|                  |                             |
|------------------|-----------------------------|
|                  | <b>Horizontal+ Vertical</b> |
| <b>Peak Gain</b> | <b>1.08</b>                 |



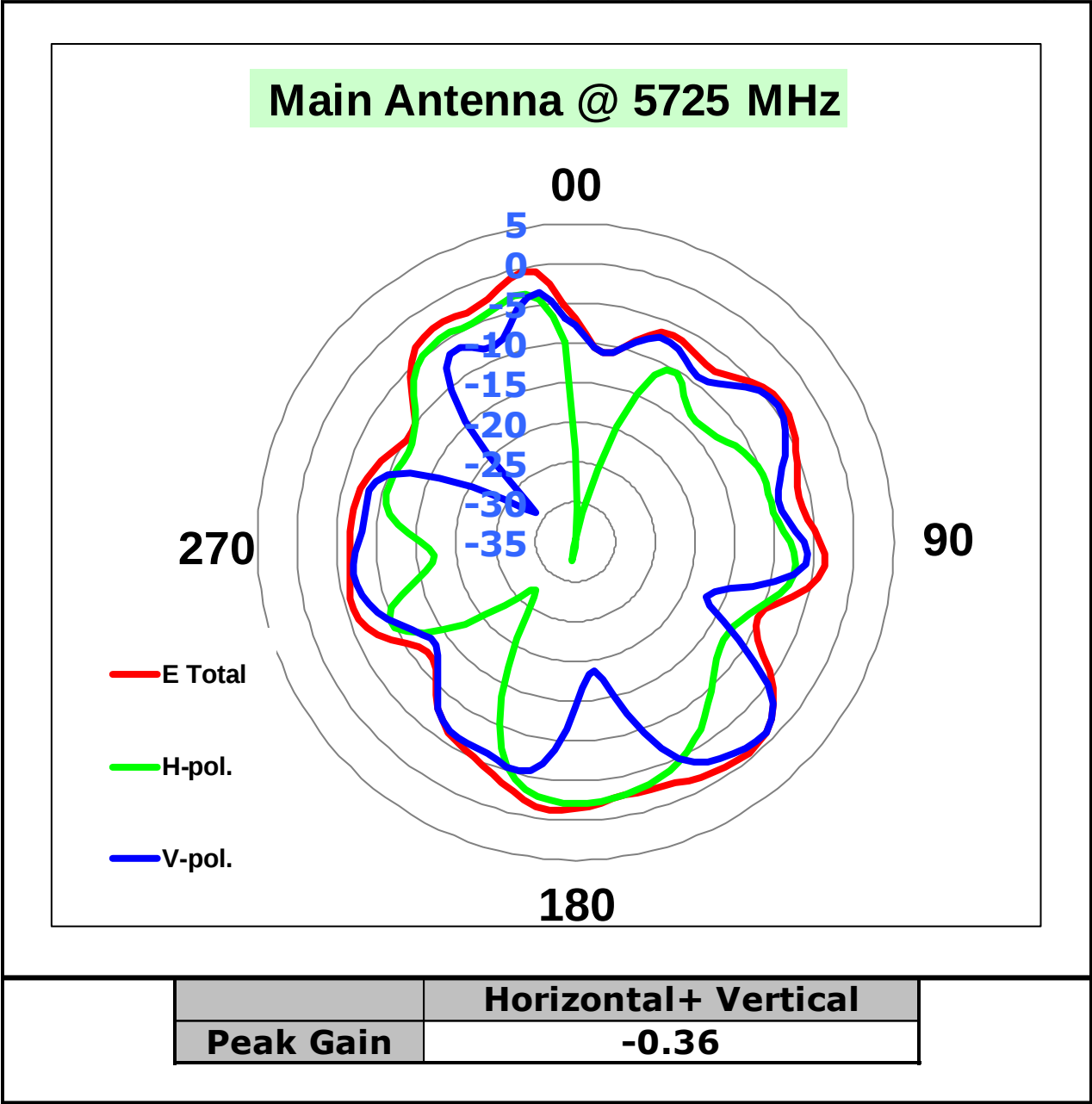


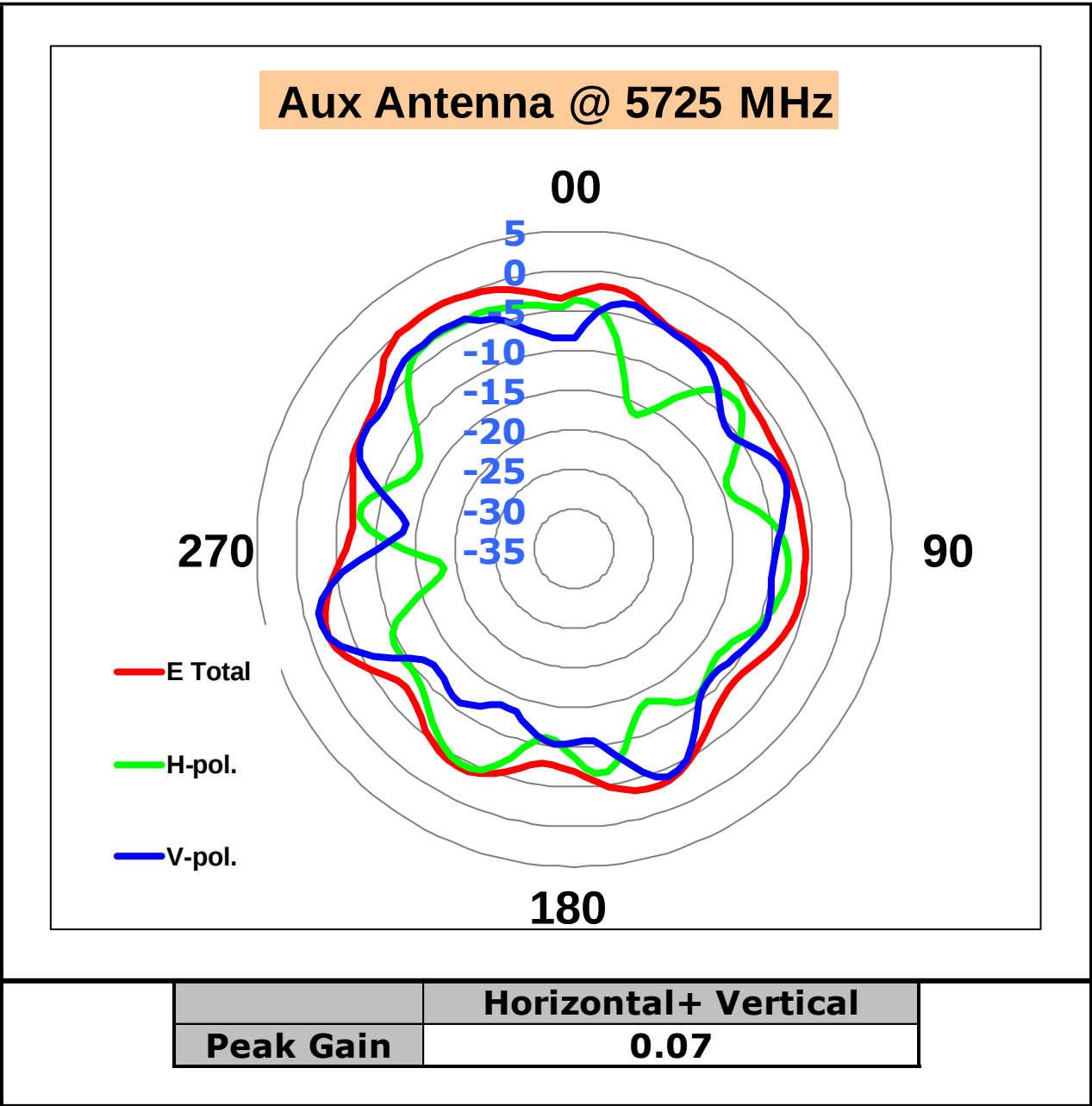




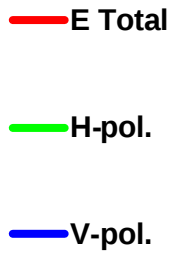


Main antenna:

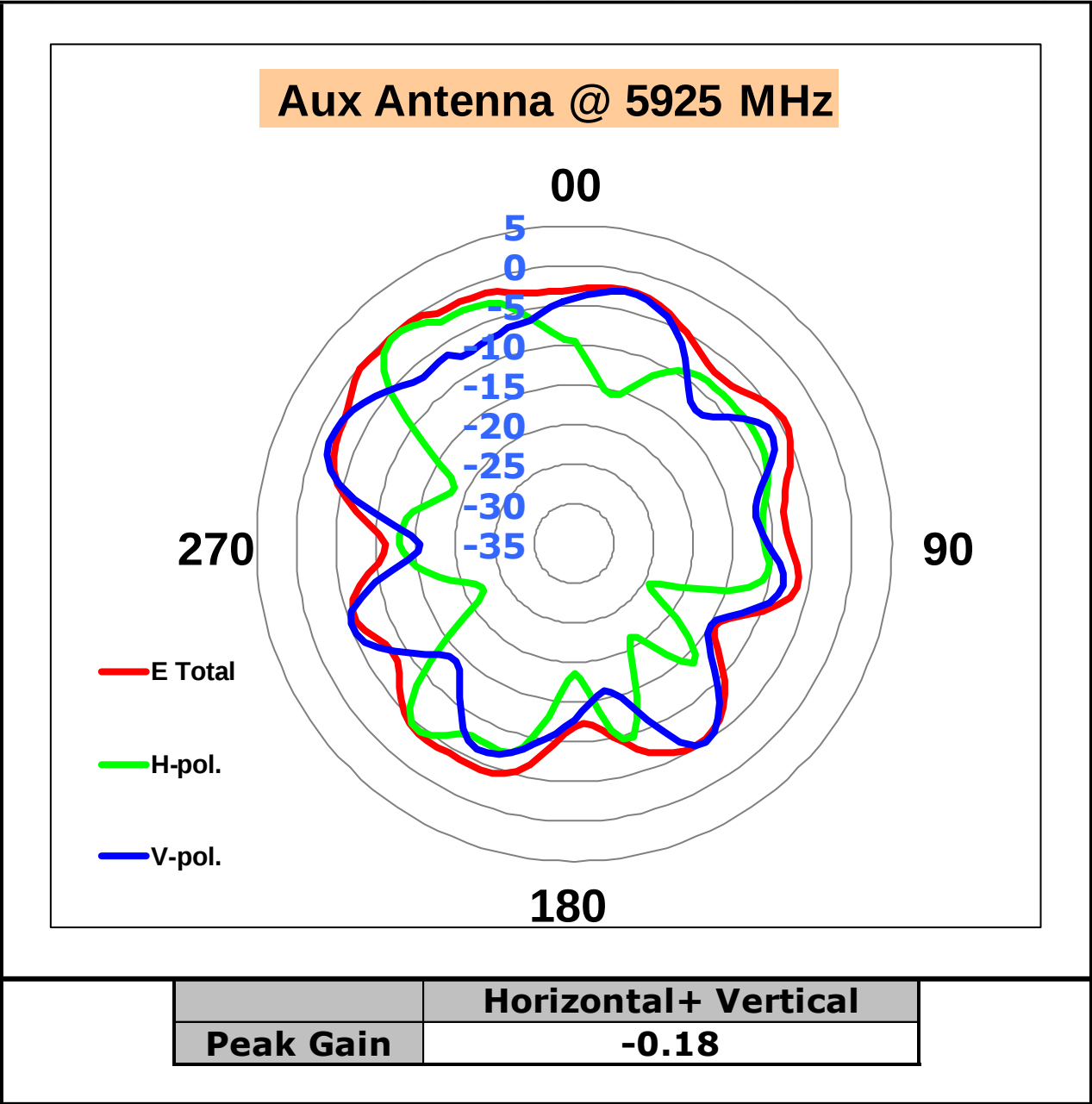




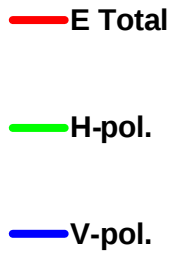
## Main Antenna @ 6325 MHz



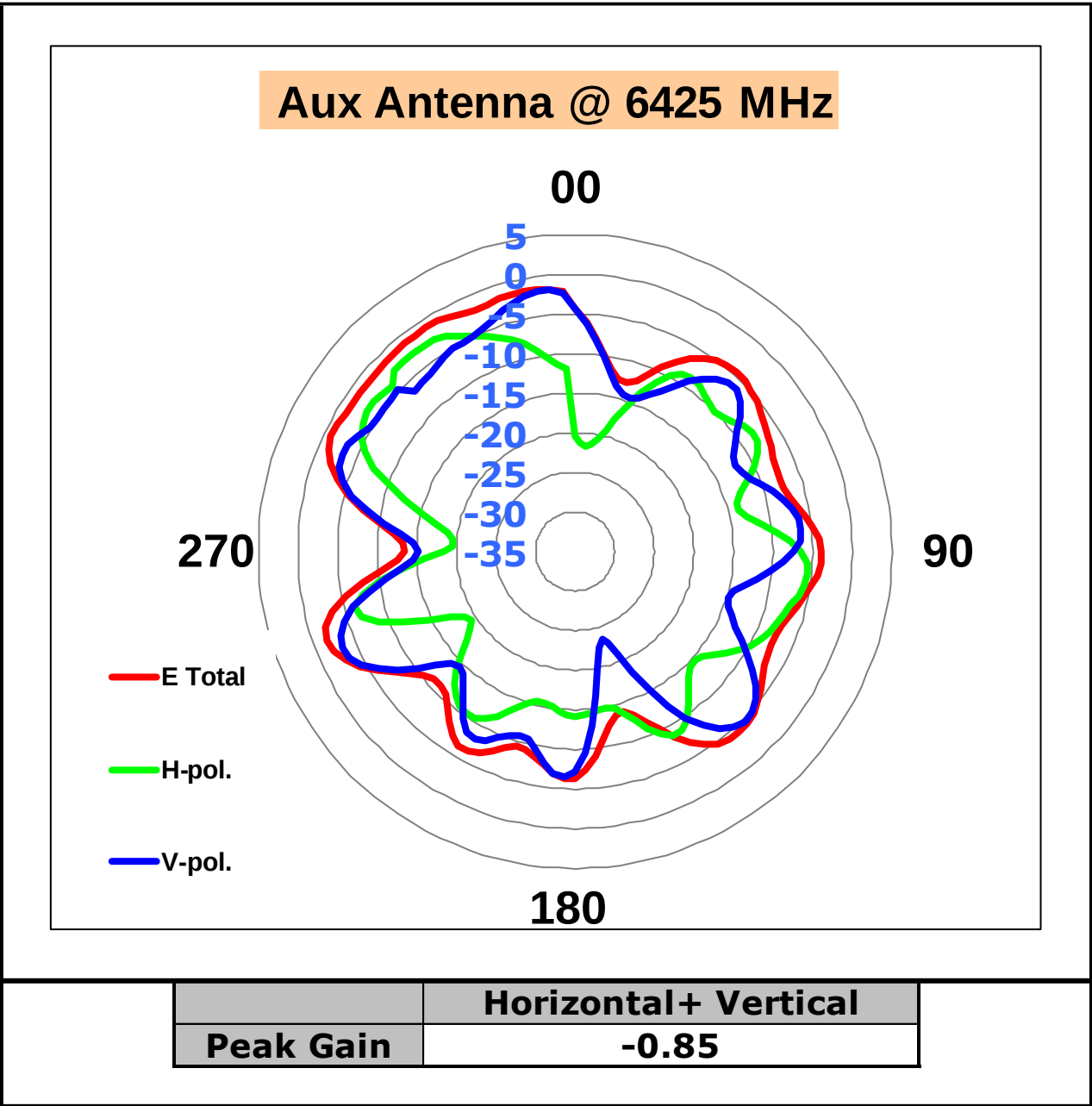
|                  |                             |
|------------------|-----------------------------|
|                  | <b>Horizontal+ Vertical</b> |
| <b>Peak Gain</b> | <b>0.70</b>                 |



## Main Antenna @ 6425 MHz

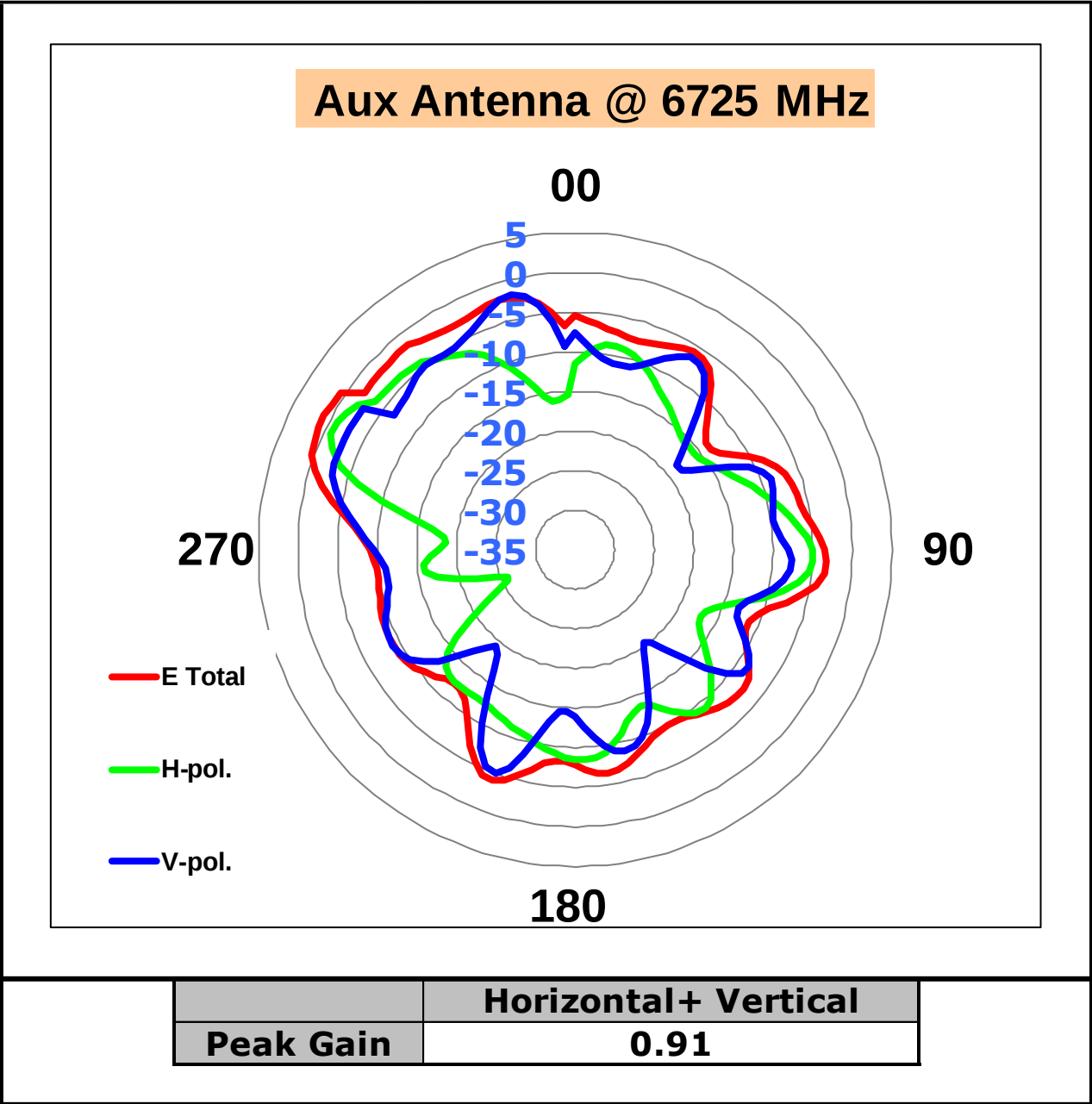


|                  |                             |
|------------------|-----------------------------|
|                  | <b>Horizontal+ Vertical</b> |
| <b>Peak Gain</b> | <b>-0.97</b>                |



## Main Antenna @ 6725 MHz

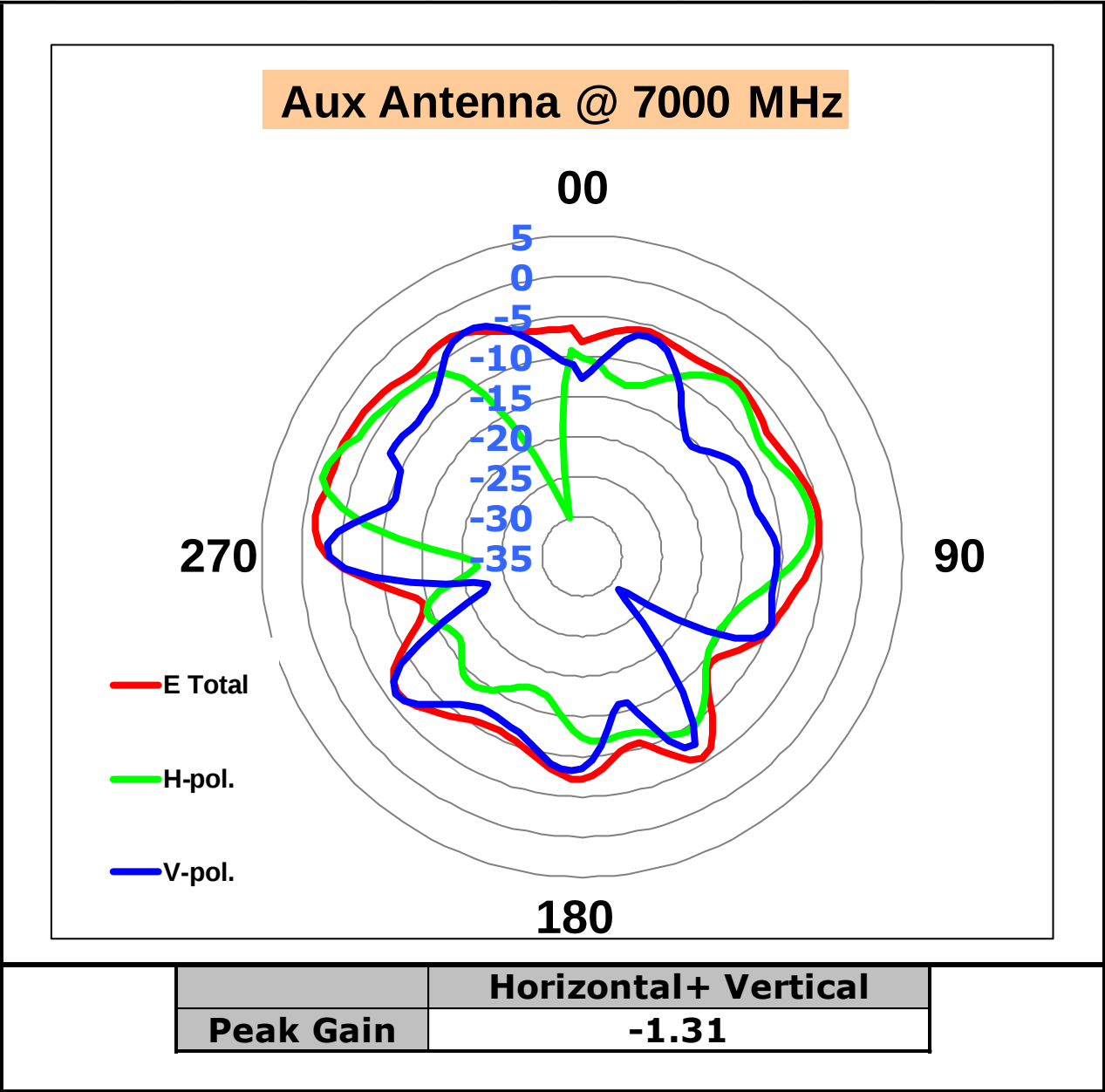




## Main Antenna @ 7000 MHz

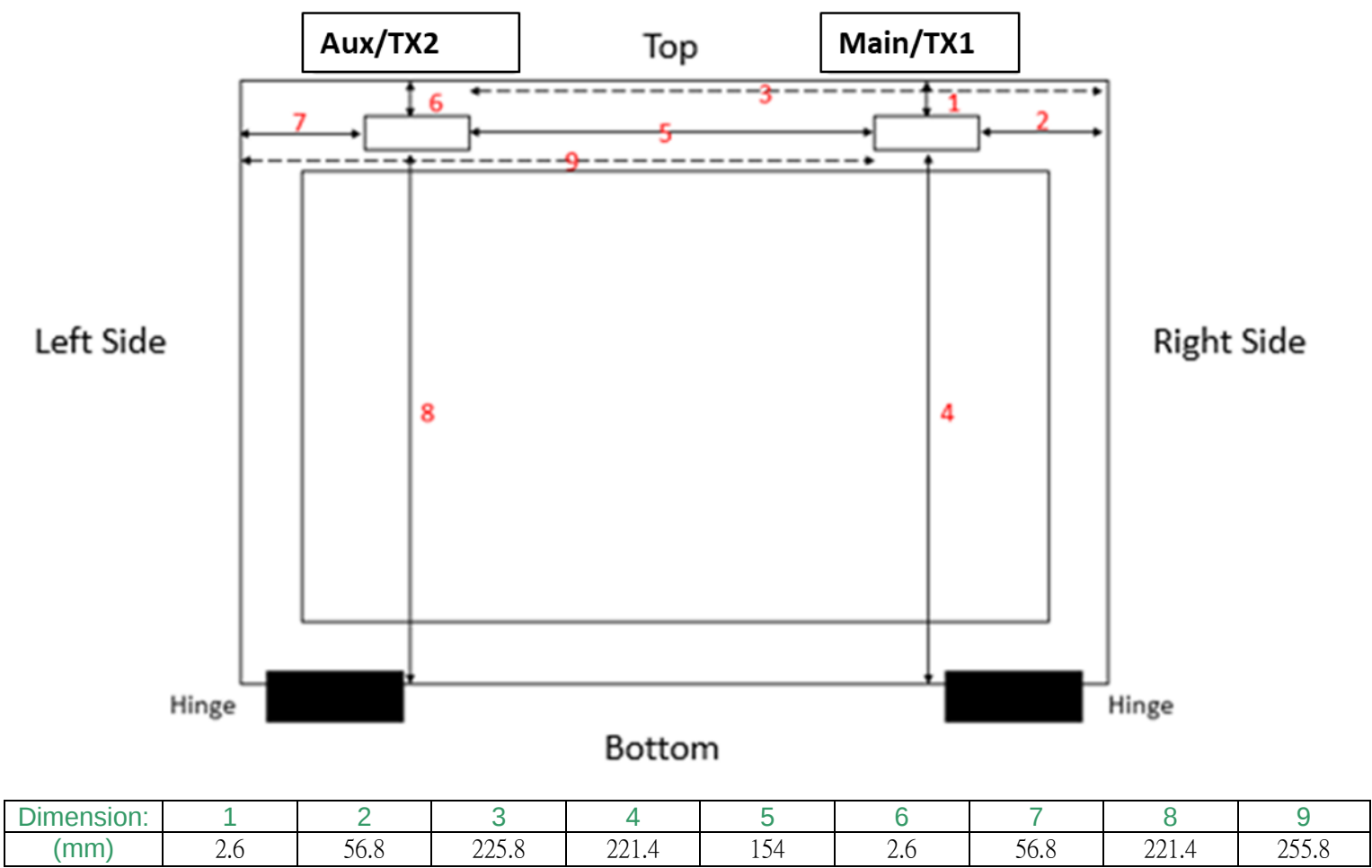


|                  |                             |
|------------------|-----------------------------|
|                  | <b>Horizontal+ Vertical</b> |
| <b>Peak Gain</b> | <b>-1.86</b>                |



Section 4. Antenna Host Platform Location Information

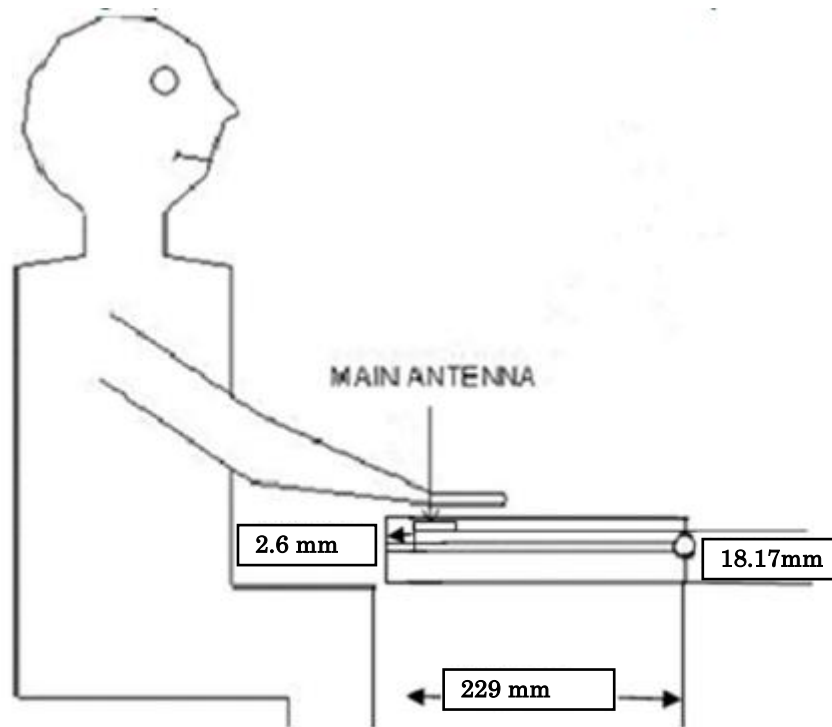
Include a **dimensioned photo(s) or dimensioned drawing(s)** of Main and Aux antenna placements (measurements are not required for receive-only antenna). Any antenna that transmits must show dimensions to bottom of laptop. Provide a description of the materials that are used for supporting or surrounding transmit antennas; for example, non-conductive plastics vs. conductive coated plastic or metallic materials.



Tx1 to Right side:(5)+TX2 width+(2) =(3)= 225.8mm  
TX2 to Left side:(5)+Tx1 width +(7)=(9)= 255.8mm

## Section 5. Antenna dimensional information for SAR evaluation

Include a **dimensioned photo(s) or dimensioned drawing(s)** showing the distance (mm) between the transmit antennas and the user. For notebook/laptop hosts show lapheld position (example below). For tablet hosts show all orientations including lapheld, primary & secondary portrait, primary & secondary landscape positions. Include a description of any proximity sensors or power throttling implementations that limit or exclude use of any host orientation.



Section 6. 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)

