

# Antenova Ltd

## Regulatory WLAN Antenna Information

(English Language Required for Intel 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)**

|                    |                                                           |
|--------------------|-----------------------------------------------------------|
| <b>Platform</b>    |                                                           |
| Platform Owner     | Dell Inc.                                                 |
| Brand Name         | Dell                                                      |
| Model Name         |                                                           |
| ODM                | Compal                                                    |
| Target Launch Date | (YYYY/ MM/ DD)                                            |
|                    |                                                           |
| <b>Antenna</b>     | Antenova Ltd                                              |
| Brand Name         |                                                           |
| Part Number        | <input type="checkbox"/> Tx3 Antenna: WLAN MIMO A10237-R2 |
|                    |                                                           |
|                    |                                                           |
|                    |                                                           |
| <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 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 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:

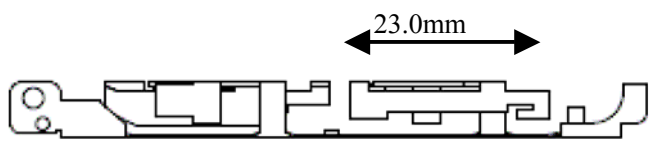
| 1A<br>Antenna Part Number                          | 1B<br>Manufacture | 1C<br>Antenna Type | 1D<br>Cable Assembly Part Number and Information                                                     | 1E<br>*Peak Gain W/<br>Cable loss (dBi) | 1F<br>Peak Gain w/o<br>Cable Loss (dBi) | 1G<br>VSWR                  | 1H<br>Cable Loss (dB)             |
|----------------------------------------------------|-------------------|--------------------|------------------------------------------------------------------------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------|-----------------------------------|
| (P/N:<br>A10237-R2)<br>Tx3<br>antenna<br>WLAN MIMO | Antenova Ltd      | PIFA               | (P/N:<br>A10237-R2-Cable)<br>50 ohm Coaxial.<br>length: 35.7cm<br>diameter: 1.13mm<br>Connector IPEX | 2400-2500MHz<br>-1.30dBi (peak) *       | 2400-2500MHz<br>-0.26 dBi (peak) *      | 2400-2500MHz<br>3.386 max * | 2400-2500MHz<br>-1.04 dB (peak) * |
|                                                    |                   |                    |                                                                                                      | 2496-2690MHz<br>-0.20 dBi (peak) *      | 2496-2690MHz<br>0.88 dBi (peak) *       | 2496-2690MHz<br>2.907 max * | 2496-2690MHz<br>-1.08 dB (peak) * |
|                                                    |                   |                    |                                                                                                      | 5150-5350MHz<br>3.40 dBi (peak) *       | 5150-5350MHz<br>4.96 dBi (peak) *       | 5150-5350MHz<br>1.930 max * | 5150-5350MHz<br>-1.56 dB (peak) * |
|                                                    |                   |                    |                                                                                                      | 5470-5725MHz<br>0.50 dBi (peak) *       | 5470-5725MHz<br>2.10 dBi (peak) *       | 5470-5725MHz<br>1.646 max * | 5470-5725MHz<br>-1.60 dB (peak) * |
|                                                    |                   |                    |                                                                                                      | 5725-5850MHz<br>0.90 dBi (peak) *       | 5725-5850MHz<br>2.58 dBi (peak) *       | 5725-5850MHz<br>1.805 max * | 5725-5850MHz<br>-1.68 dB (peak) * |

### Antenna Peak Gain Table:

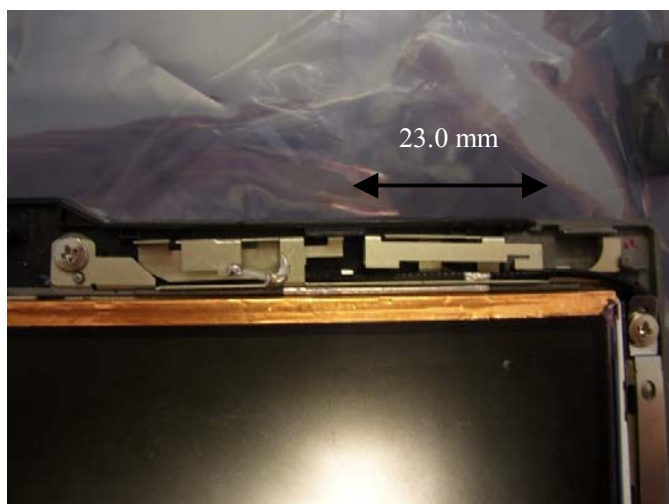
|                 | Tx3 Antenna<br>WLAN MIMO |                   |
|-----------------|--------------------------|-------------------|
| Frequency (MHz) | Horizontal<br>(dBi)      | Vertical<br>(dBi) |
| 2400            | -3.3                     | -5.7              |
| 2450            | -3.1                     | -6.1              |
| 2500            | -1.7                     | -5.3              |
| 2501            | -1.6                     | -5.5              |
| 2593            | -2.0                     | -4.1              |
| 2685            | -1.7                     | -2.9              |
| 5150            | 1.1                      | 1.7               |
| 5250            | -1.2                     | -3.6              |
| 5350            | -0.6                     | -3.1              |
| 5470            | -1.3                     | -1.4              |
| 5600            | -0.7                     | -5.8              |
| 5725            | -0.6                     | -2.6              |
| 5785            | -1.4                     | -0.7              |
| 5850            | -2.2                     | -0.2              |

## Section 2. Dimensioned Photos or Drawings of Antennas

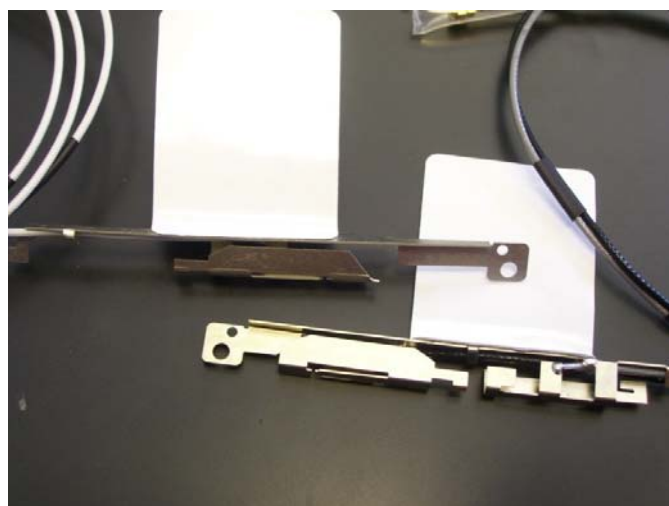
### Tx3 (or Rx3) Antenna Dimensioned Drawing:



### Tx3 (or Rx3) Antenna Photo:



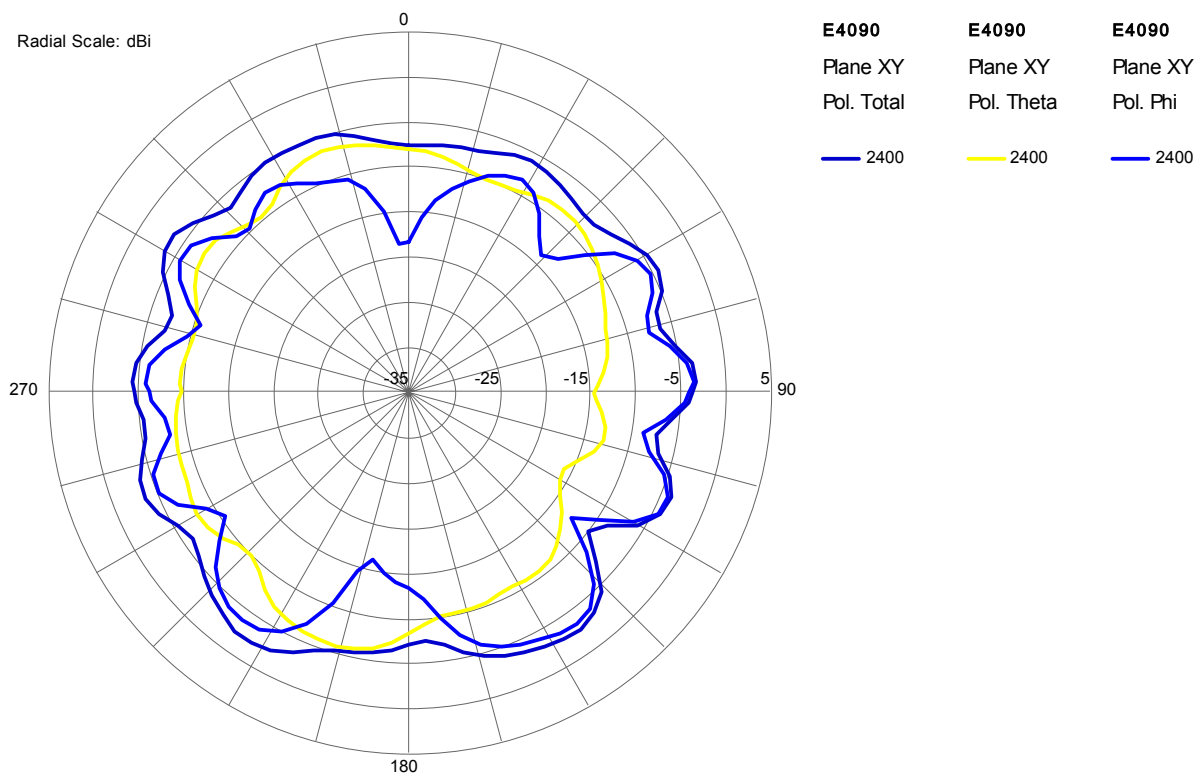
Antenna Manufacturer: Antenova Ltd  
Antenna Part Number: A10237-R2 (Tx2 & Tx3 )



Section 3. Radiation characteristics of antennae Loaded in Host Platform

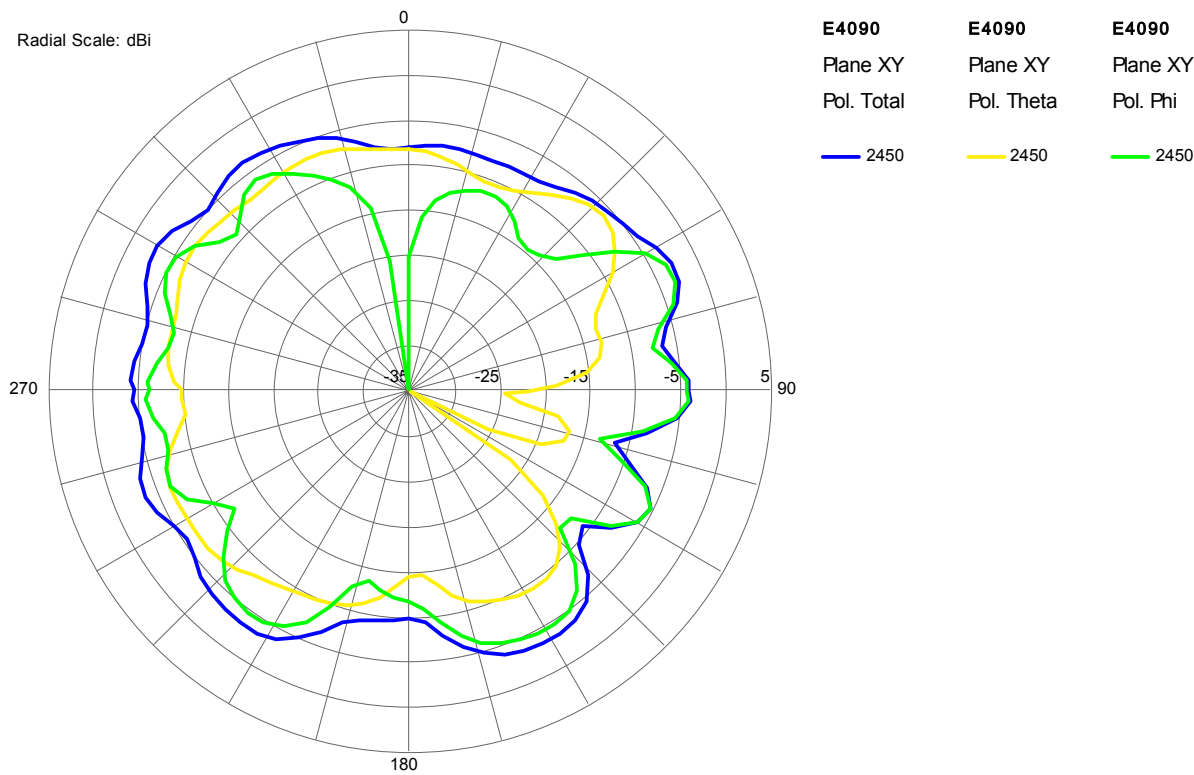
2400-2500MHz radiation characteristic

Tx3 (or Rx3) antenna: 2400 MHz



|                       |          |
|-----------------------|----------|
| Center Frequency      | 2400 MHz |
| Horizontal (dBi) peak | -3.30    |
| Vertical (dBi) peak   | -5.70    |

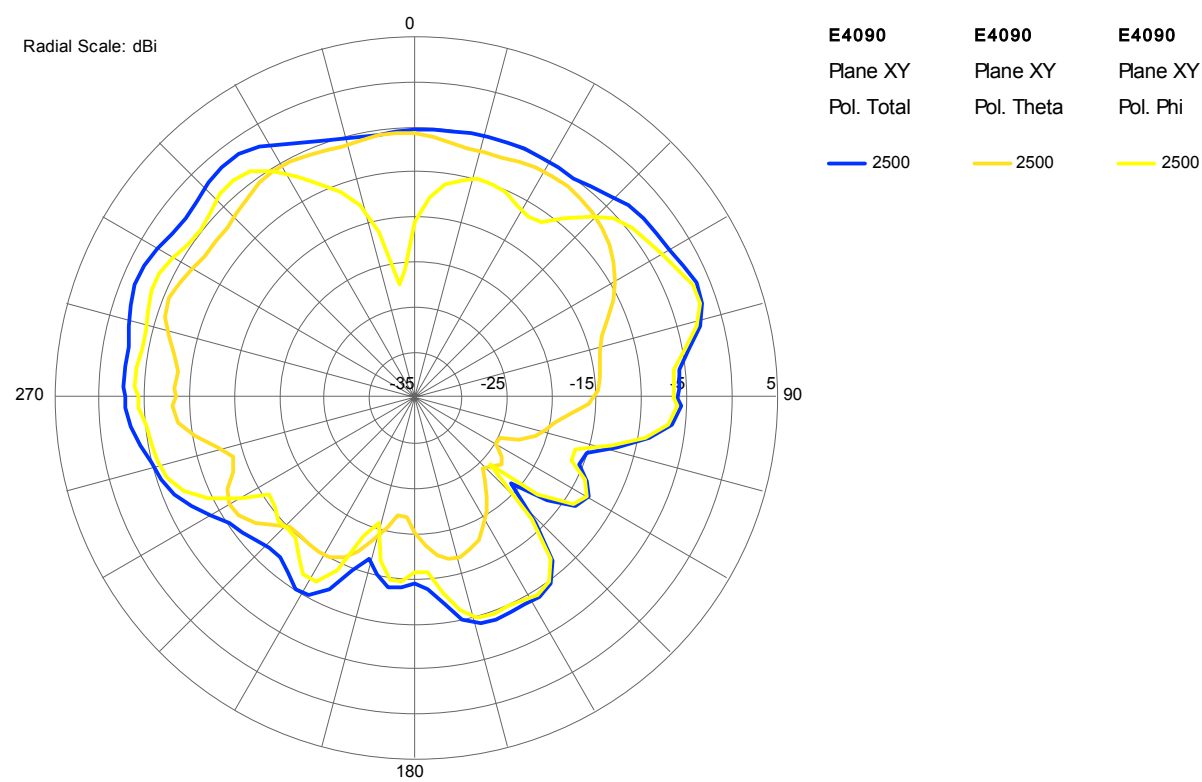
Tx3 (or Rx3) antenna: 2450 MHz



|                       |          |
|-----------------------|----------|
| Center Frequency      | 2450 MHz |
| Horizontal (dBi) peak | -3.10    |
| Vertical (dBi) peak   | -6.10    |

2490-2700MHz radiation characteristic

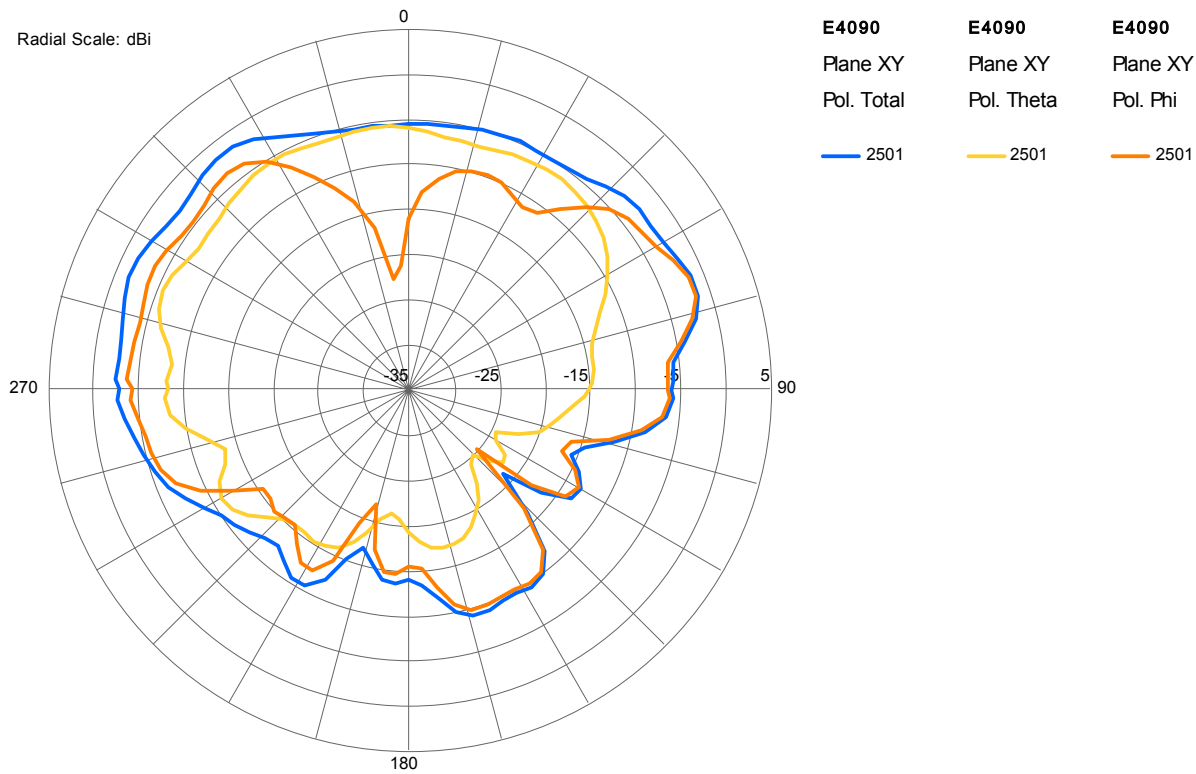
Tx3 (or Rx3) antenna: 2500 MHz



| Center Frequency      | 2500 MHz |
|-----------------------|----------|
| Horizontal (dBi) peak | -1.70    |
| Vertical (dBi) peak   | -5.30    |

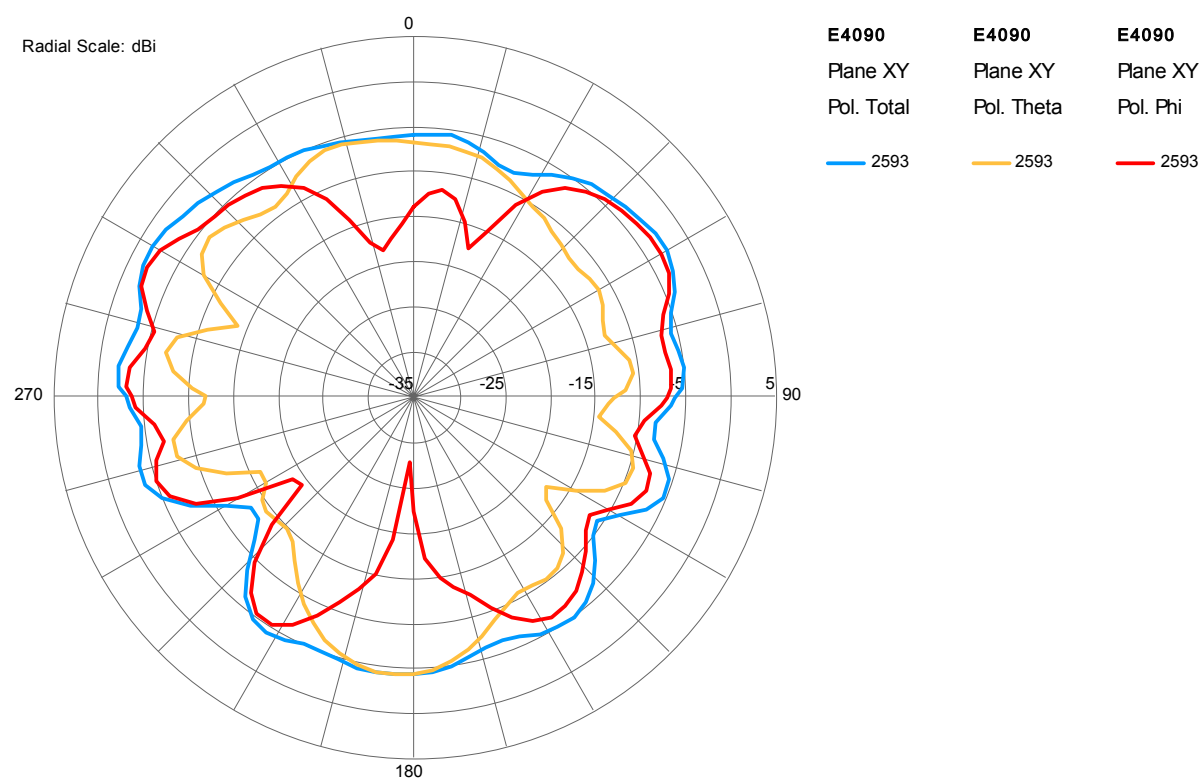


Tx3 (or Rx3) antenna: 2501 MHz



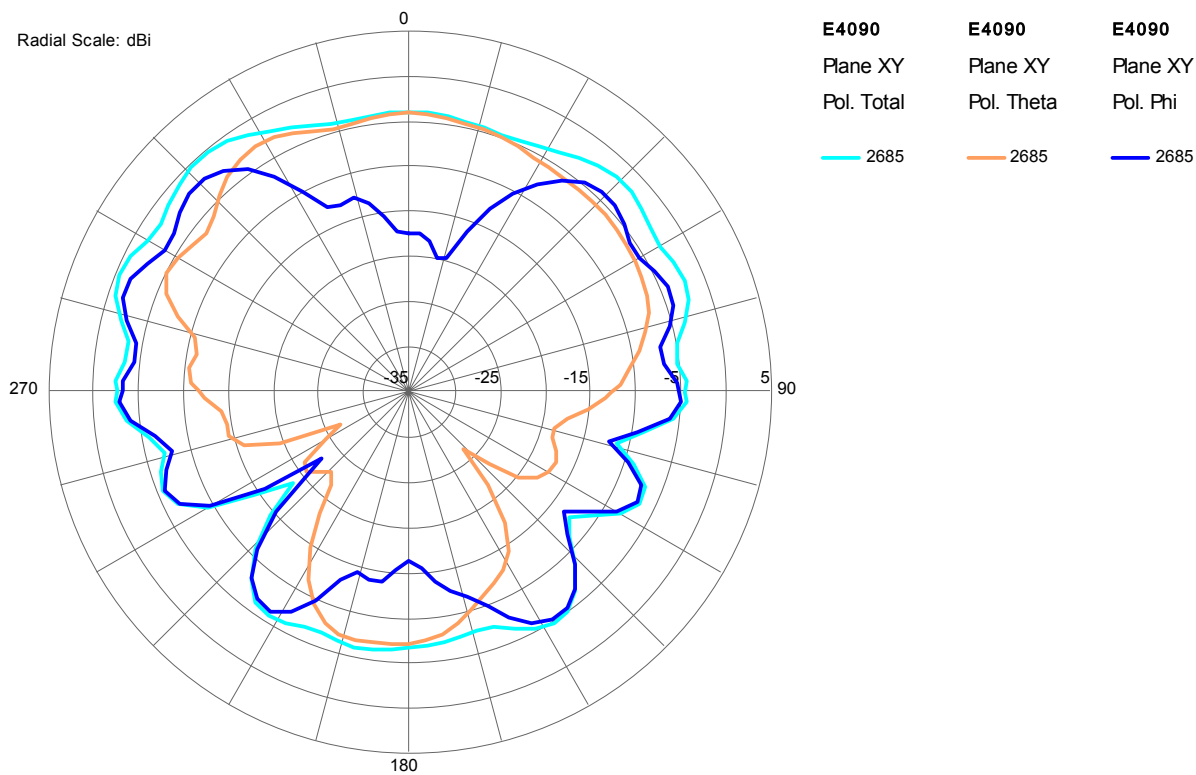
|                       |          |
|-----------------------|----------|
| Center Frequency      | 2501 MHz |
| Horizontal (dBi) peak | -1.60    |
| Vertical (dBi) peak   | -5.50    |

Tx3 (or Rx3) antenna: 2593MHz



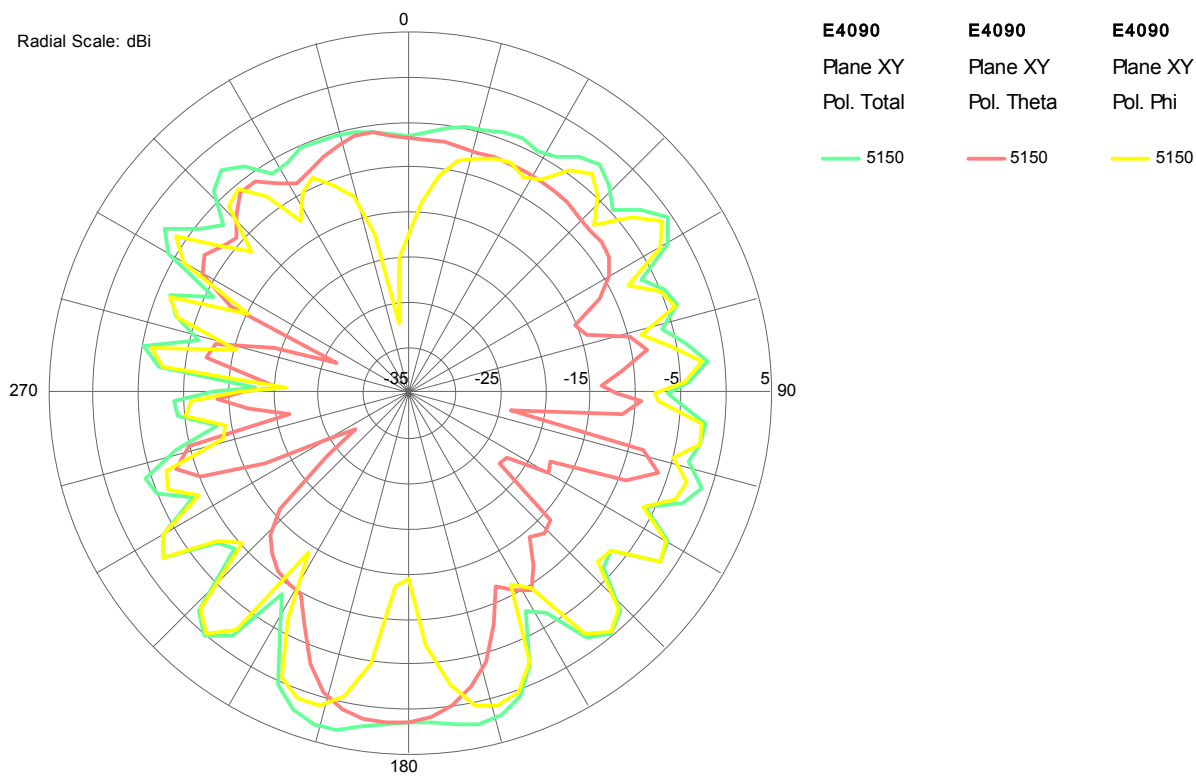
|                       |          |
|-----------------------|----------|
| Center Frequency      | 2593 MHz |
| Horizontal (dBi) peak | -2.00    |
| Vertical (dBi) peak   | -4.10    |

Tx3 (or Rx3) antenna: 2685 MHz



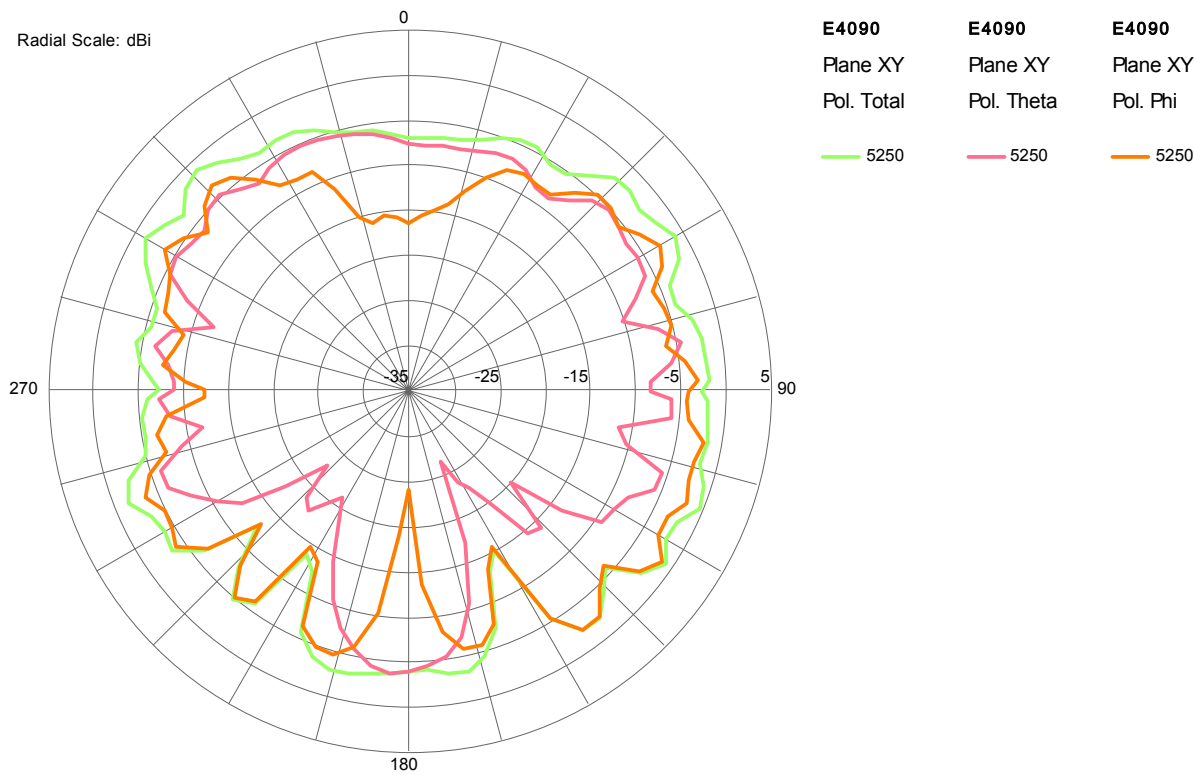
|                       |          |
|-----------------------|----------|
| Center Frequency      | 2685 MHz |
| Horizontal (dBi) peak | -1.70    |
| Vertical (dBi) peak   | -2.90    |

**Tx3 (or Rx3) antenna: 5150 MHz**



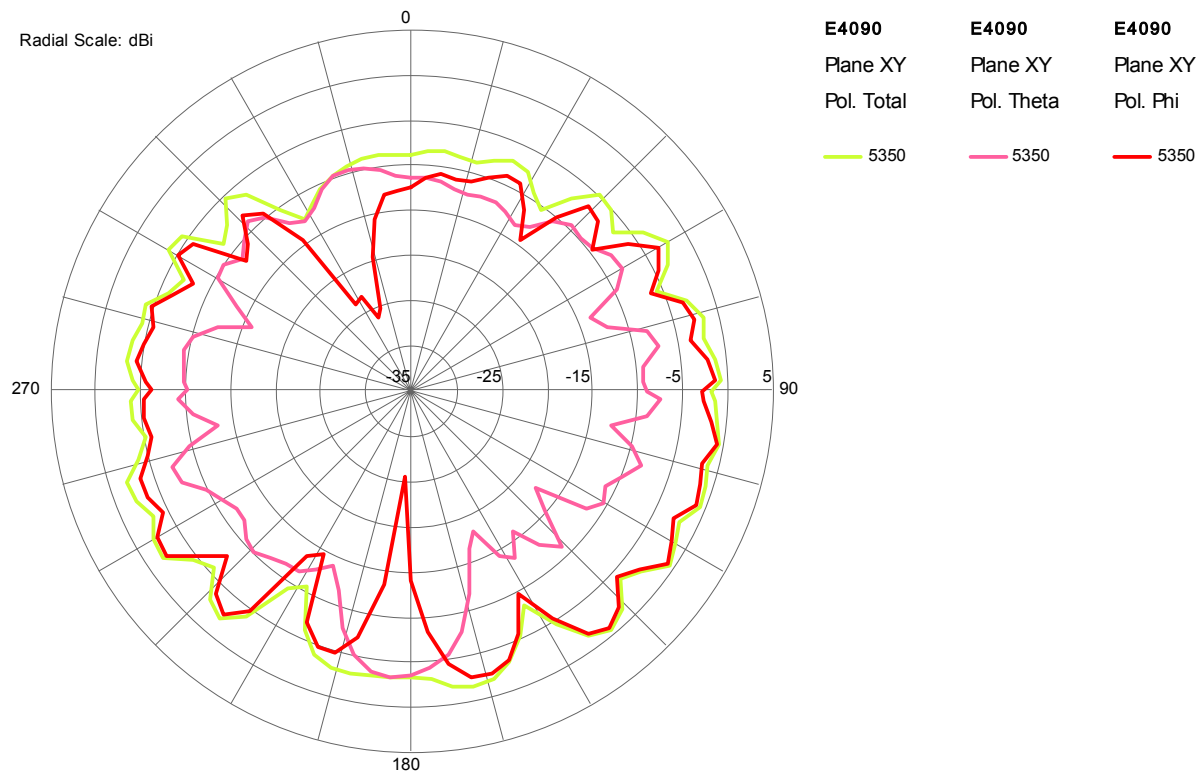
|                       |          |
|-----------------------|----------|
| Center Frequency      | 5150 MHz |
| Horizontal (dBi) peak | 1.10     |
| Vertical (dBi) peak   | 1.70     |

Tx3 (or Rx3) antenna: 5250 MHz



|                       |          |
|-----------------------|----------|
| Center Frequency      | 5250 MHz |
| Horizontal (dBi) peak | -1.20    |
| Vertical (dBi) peak   | -3.60    |

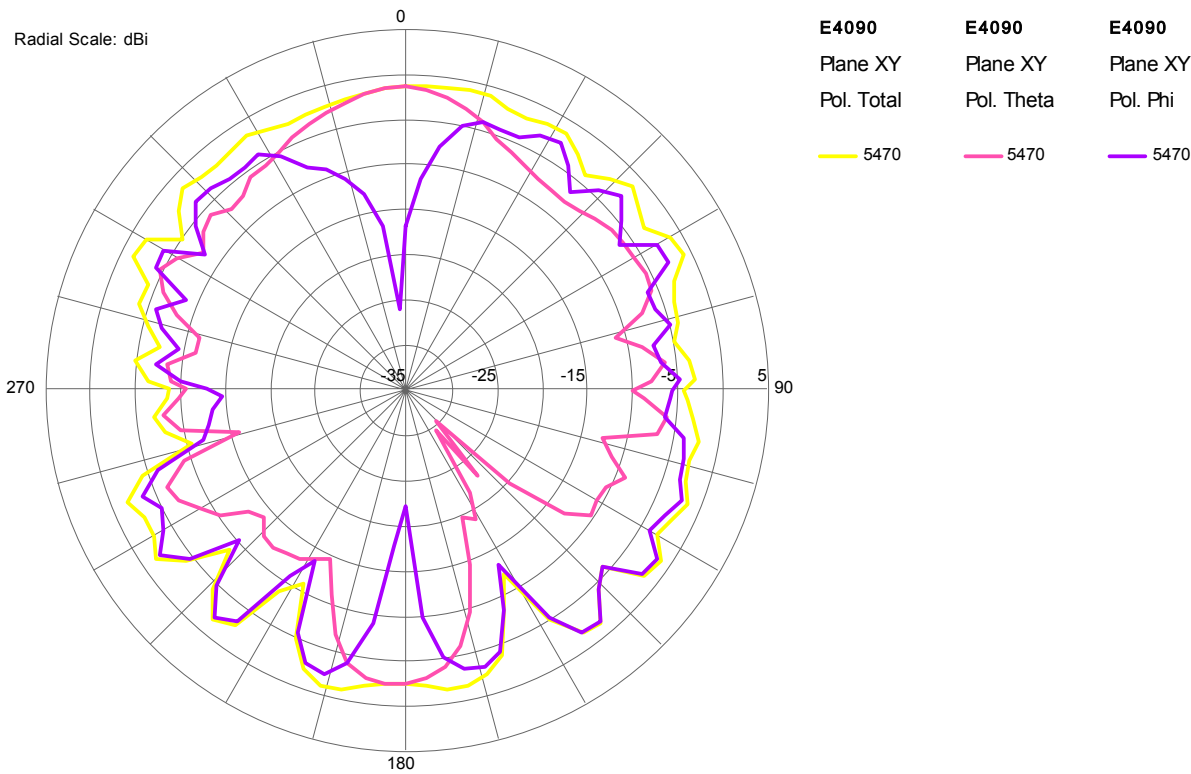
Tx3 (or Rx3) antenna: 5350 MHz



|                       |          |
|-----------------------|----------|
| Center Frequency      | 5350 MHz |
| Horizontal (dBi) peak | -0.60    |
| Vertical (dBi) peak   | -3.10    |

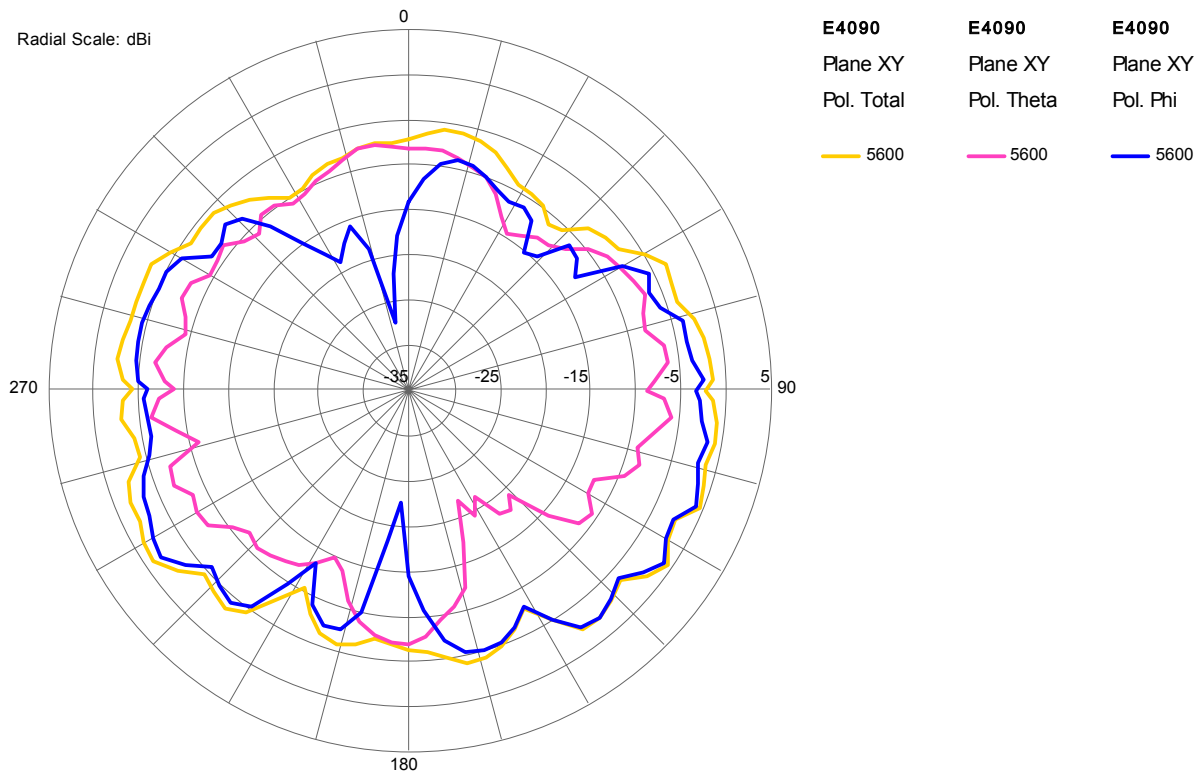
5470-5725MHz radiation characteristic

Tx3 (or Rx3): 5470 MHz



|                       |          |
|-----------------------|----------|
| Center Frequency      | 5470 MHz |
| Horizontal (dBi) peak | -1.30    |
| Vertical (dBi) peak   | -1.40    |

Tx3 (or Rx3) antenna: 5600 MHz

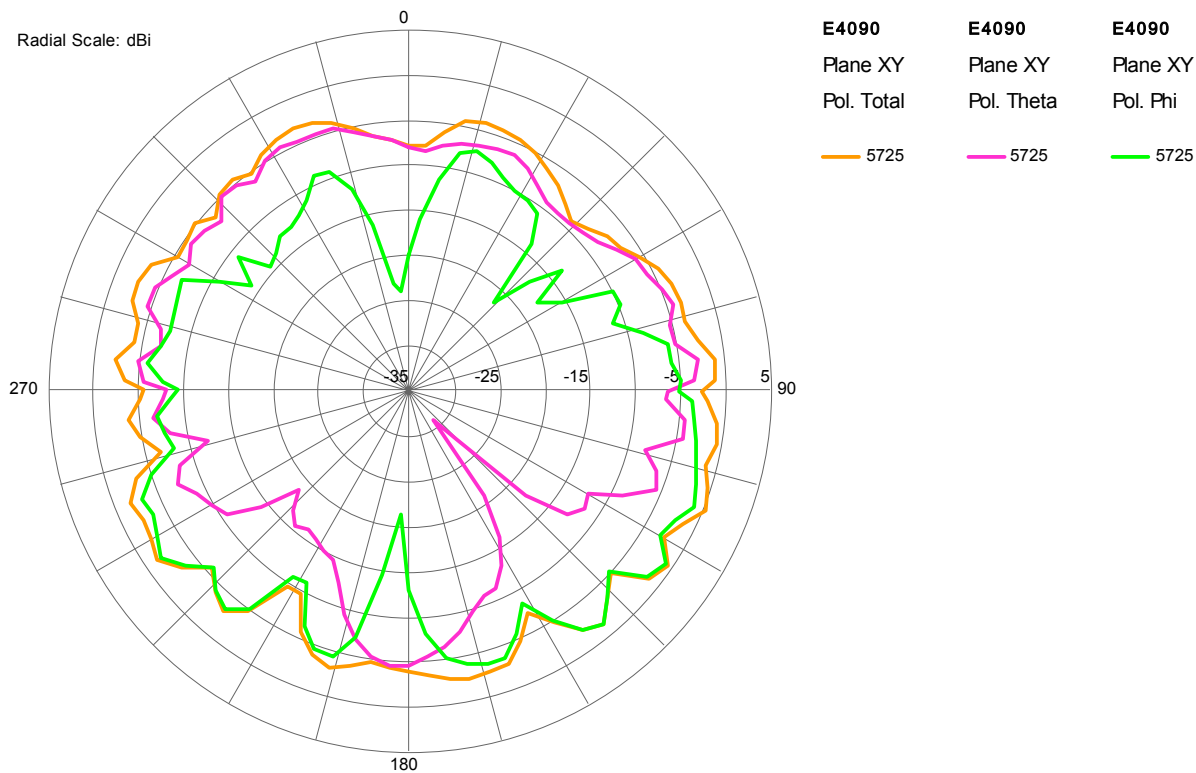


|                       |          |
|-----------------------|----------|
| Center Frequency      | 5600 MHz |
| Horizontal (dBi) peak | -0.70    |
| Vertical (dBi) peak   | -5.80    |





Tx3 (or Rx3) antenna: 5725 MHz

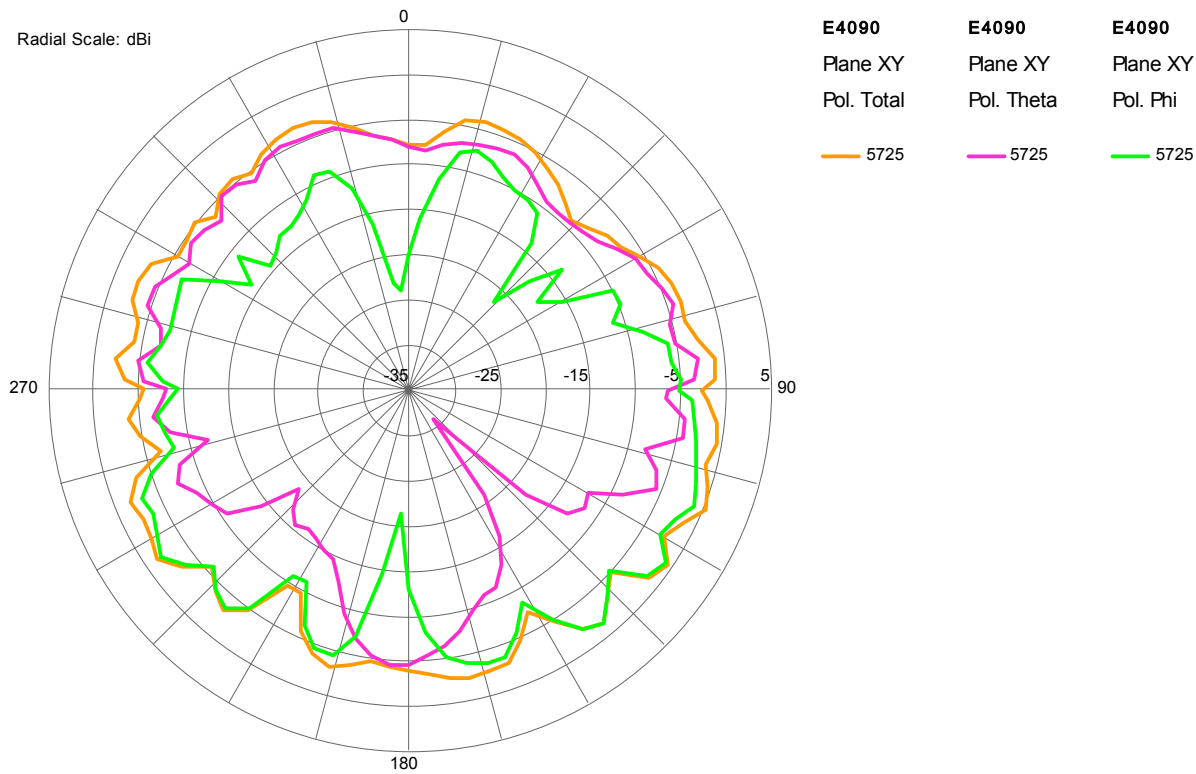


|                       |          |
|-----------------------|----------|
| Center Frequency      | 5725 MHz |
| Horizontal (dBi) peak | -0.60    |
| Vertical (dBi) peak   | -2.60    |



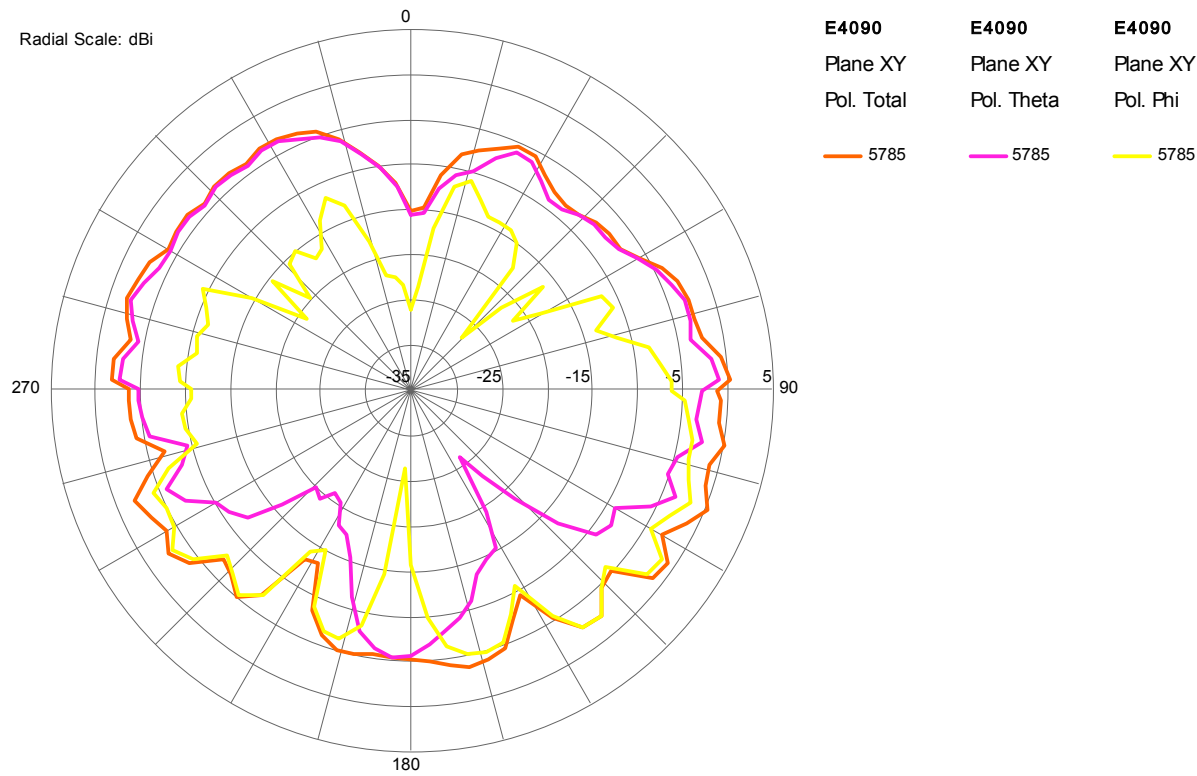
5725-5850 MHz radiation characteristic

Tx3 (or Rx3) antenna: 5725 MHz



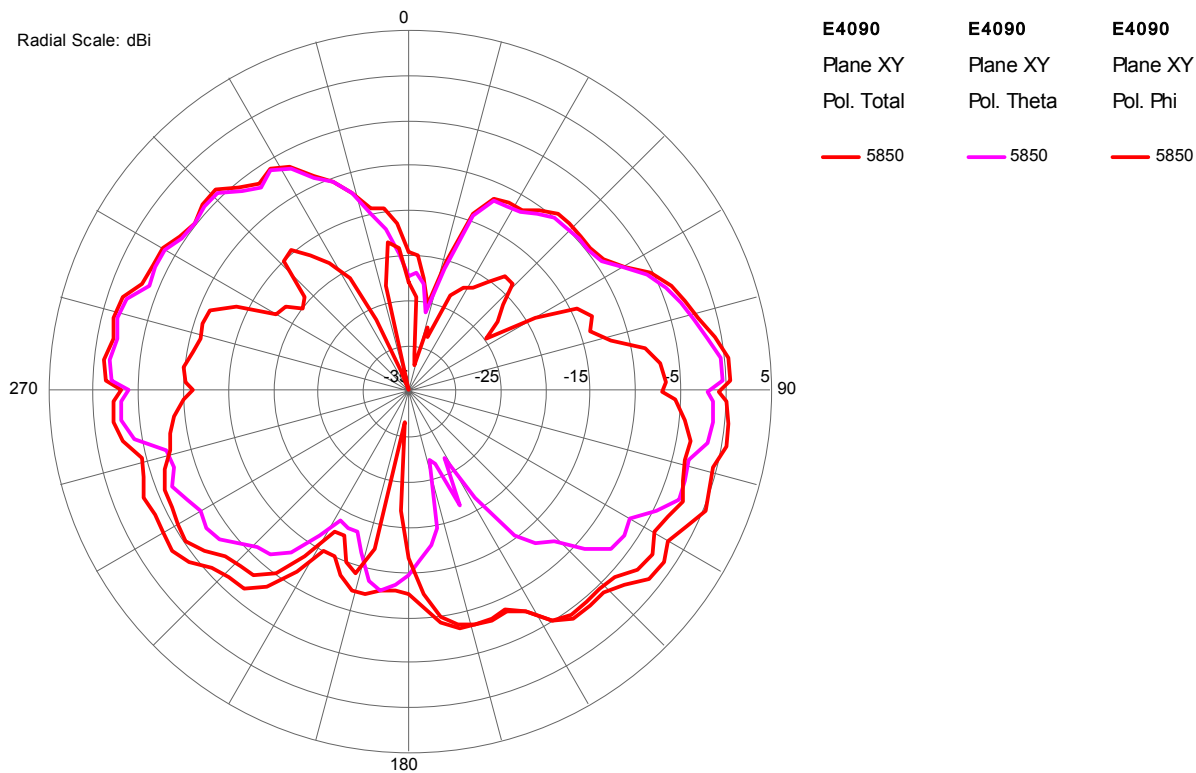
|                       |          |
|-----------------------|----------|
| Center Frequency      | 5725 MHz |
| Horizontal (dBi) peak | -0.60    |
| Vertical (dBi) peak   | -2.70    |

Tx3 (or Rx3) antenna: 5785 MHz



|                       |          |
|-----------------------|----------|
| Center Frequency      | 5785 MHz |
| Horizontal (dBi) peak | -1.40    |
| Vertical (dBi) peak   | -0.70    |

Tx3 (or Rx3) antenna: 5850 MHz



|                       |          |
|-----------------------|----------|
| Center Frequency      | 5850 MHz |
| Horizontal (dBi) peak | -2.20    |
| Vertical (dBi) peak   | -0.20    |