

# Power Density Simulation Report

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# 1. Numerical modeling for Power Density (PD) calculations

## 1.1 Full-wave numerical computation tool

To calculate the Power Density (PD) of the phone at FR2 frequencies, a commercial software called HFSS [1], which is a part of ANSYS Electronics Desktop 2021 R2 package, is used. This software is a 3D full-wave electromagnetic (EM) computational solver based on the Finite Element Method (FEM).

## 1.2 Full-wave simulation setup

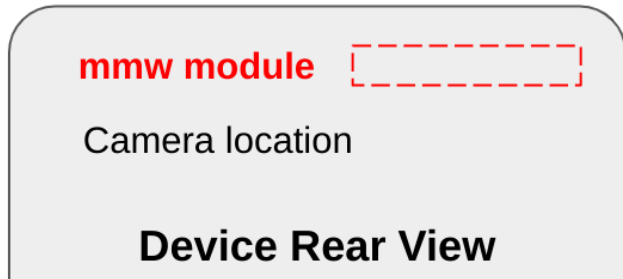
### 1.2.1 Simulation model

The device includes one flat type mmWave module that consists of one module (Plane B Module), located at the back side of the device, as shown in Figure 1-1. In order to obtain accurate PD calculations, it is necessary to have accurate modeling of the mmWave antennas, as well as all other components of the device in close proximity to the mmWave antennas. The simulation model therefore must include all components of the device located within a distance of at least one wavelength from the mmWave module. A list of the components included in the simulation model includes housing, mmWave antenna module, sub6 antennas, PCB, shield cans, Flexible Printed Circuits (FPCs), battery, all components having metallic parts, etc.

### 1.2.2 Mesh settings and solution setup

ANSYS HFSS features an automatic adaptive mesh refinement algorithm that refines the computational mesh iteratively in regions with strong EM fields and thereby generates very accurate high-frequency simulation results. The steps of adaptive mesh refinement algorithm execution are as follows. First, an initial computational mesh is created, based on the solution setup parameters entered by the user, and is then used to obtain the initial solution for the EM fields of the simulation model. The algorithm then adaptively refines the mesh in each subsequent iteration until a desired solution accuracy, specified by the user, is achieved. The solution accuracy is commonly defined by a convergence parameter called  $\Delta S$ , which is a variation in the magnitude of all S-parameters between the consecutive iterations of the algorithm [1]. The  $\Delta S$  parameter specified for all PD simulations presented in this report is 0.02. Figure 1-2 shows an example cut surface in the model showing a tetrahedral computational mesh created by the adaptive mesh refinement algorithm in one of the HFSS simulation models. A radiation boundary with Absorbing Boundary Condition (ABC) is assigned to the outer surface of an air-box surrounding the simulation model, which allows the EM waves to propagate outward from the boundary of the domain without generating any reflected EM waves.

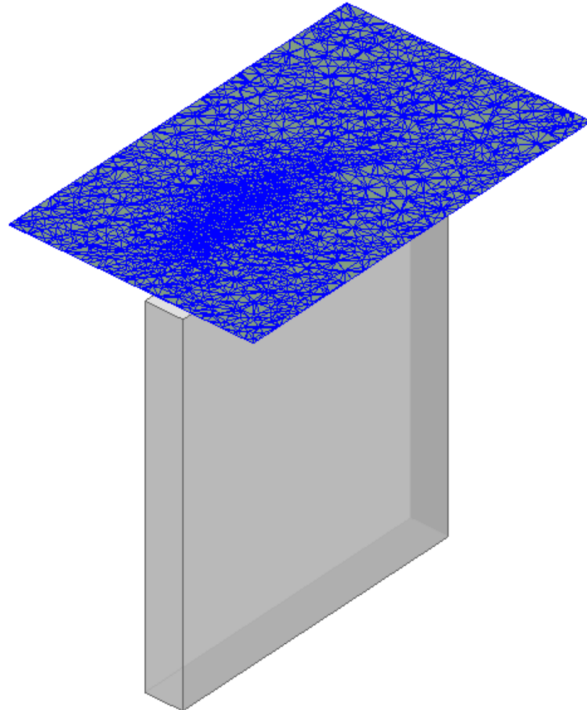
Close mode:



Open mode:



**Figure 1-1** Placement of the mmWave module in Closed and Open, at the back side of the device.



**Figure 1-2** An example cut surface in an HFSS simulation model showing the tetrahedral mesh created by the adaptive mesh refinement algorithm.

The FEM simulations are performed for the mmWave module as shown in Figure 1-1. In the simulation, 32 wave-ports are assigned to the feed points of the mmWave antenna arrays. Each sub-module has 16 feeding ports. Specifically, eight of them excite the vertical polarization on the antenna array, called V-pol, and the other eight wave-ports excite the horizontal polarization, called H-pol. After the FEM simulations are completed and full-wave EM solutions are obtained, the magnitude and phase values of the 32 wave-ports excitation signals are sequentially assigned for each of the beams in the codebook. This is accomplished as a post-processing step by using the “Edit post process sources” tab in the HFSS environment, as shown in Figure 1-3 for one of the beams from the codebook.

| Spectral Fields |                    | Source Contexts |           |      |       |      |
|-----------------|--------------------|-----------------|-----------|------|-------|------|
|                 | Source             | Type            | Magnitude | Unit | Phase | Unit |
| 1               | HFSSDesign1_1_1:1  | Port            | 0 W       |      | 0 deg |      |
| 2               | HFSSDesign1_1_2:1  | Port            | 0 W       |      | 0 deg |      |
| 3               | HFSSDesign1_1_3:1  | Port            | 0 W       |      | 0 deg |      |
| 4               | HFSSDesign1_1_4:1  | Port            | 0 W       |      | 0 deg |      |
| 5               | HFSSDesign1_1_5:1  | Port            | 0 W       |      | 0 deg |      |
| 6               | HFSSDesign1_1_6:1  | Port            | 0 W       |      | 0 deg |      |
| 7               | HFSSDesign1_1_7:1  | Port            | 0 W       |      | 0 deg |      |
| 8               | HFSSDesign1_1_8:1  | Port            | 0 W       |      | 0 deg |      |
| 9               | HFSSDesign1_1_9:1  | Port            | 0 W       |      | 0 deg |      |
| 10              | HFSSDesign1_1_10:1 | Port            | 0 W       |      | 0 deg |      |
| 11              | HFSSDesign1_1_11:1 | Port            | 0 W       |      | 0 deg |      |
| 12              | HFSSDesign1_1_12:1 | Port            | 0 W       |      | 0 deg |      |
| 13              | HFSSDesign1_1_13:1 | Port            | 0 W       |      | 0 deg |      |
| 14              | HFSSDesign1_1_14:1 | Port            | 0 W       |      | 0 deg |      |
| 15              | HFSSDesign1_1_15:1 | Port            | 0 W       |      | 0 deg |      |
| 16              | HFSSDesign1_1_16:1 | Port            | 0 W       |      | 0 deg |      |
| 17              | HFSSDesign1_1_17:1 | Port            | 0 W       |      | 0 deg |      |
| 18              | HFSSDesign1_1_18:1 | Port            | 0 W       |      | 0 deg |      |
| 19              | HFSSDesign1_1_19:1 | Port            | 0 W       |      | 0 deg |      |
| 20              | HFSSDesign1_1_20:1 | Port            | 0 W       |      | 0 deg |      |
| 21              | HFSSDesign1_1_21:1 | Port            | 0 W       |      | 0 deg |      |
| 22              | HFSSDesign1_1_22:1 | Port            | 0 W       |      | 0 deg |      |
| 23              | HFSSDesign1_1_23:1 | Port            | 0 W       |      | 0 deg |      |
| 24              | HFSSDesign1_1_24:1 | Port            | 0 W       |      | 0 deg |      |
| 25              | HFSSDesign1_1_25:1 | Port            | 0 W       |      | 0 deg |      |
| 26              | HFSSDesign1_1_26:1 | Port            | 0 W       |      | 0 deg |      |
| 27              | HFSSDesign1_1_27:1 | Port            | 0 W       |      | 0 deg |      |
| 28              | HFSSDesign1_1_28:1 | Port            | 0 W       |      | 0 deg |      |
| 29              | HFSSDesign1_1_29:1 | Port            | 0 W       |      | 0 deg |      |
| 30              | HFSSDesign1_1_30:1 | Port            | 1 W       |      | 0 deg |      |
| 31              | HFSSDesign1_1_31:1 | Port            | 0 W       |      | 0 deg |      |
| 32              | HFSSDesign1_1_32:1 | Port            | 0 W       |      | 0 deg |      |

**Figure 1-3** An example of magnitude and phase assignments to the wave-ports in the “Edit post process sources” tab in the HFSS environment.

### 1.2.3 Time-averaged PD calculation

After the convergence criterion is achieved in the last iterative pass, that is  $\text{Max}\{|\Delta S|\}$  is smaller than the specified value of the convergence parameter  $\Delta S$  (that being 0.02 in this report, as mentioned above), the values of the electric and magnetic field vectors  $\vec{E}$  and  $\vec{H}$  respectively, are calculated, and then used to calculate the *PD* by the following formula:

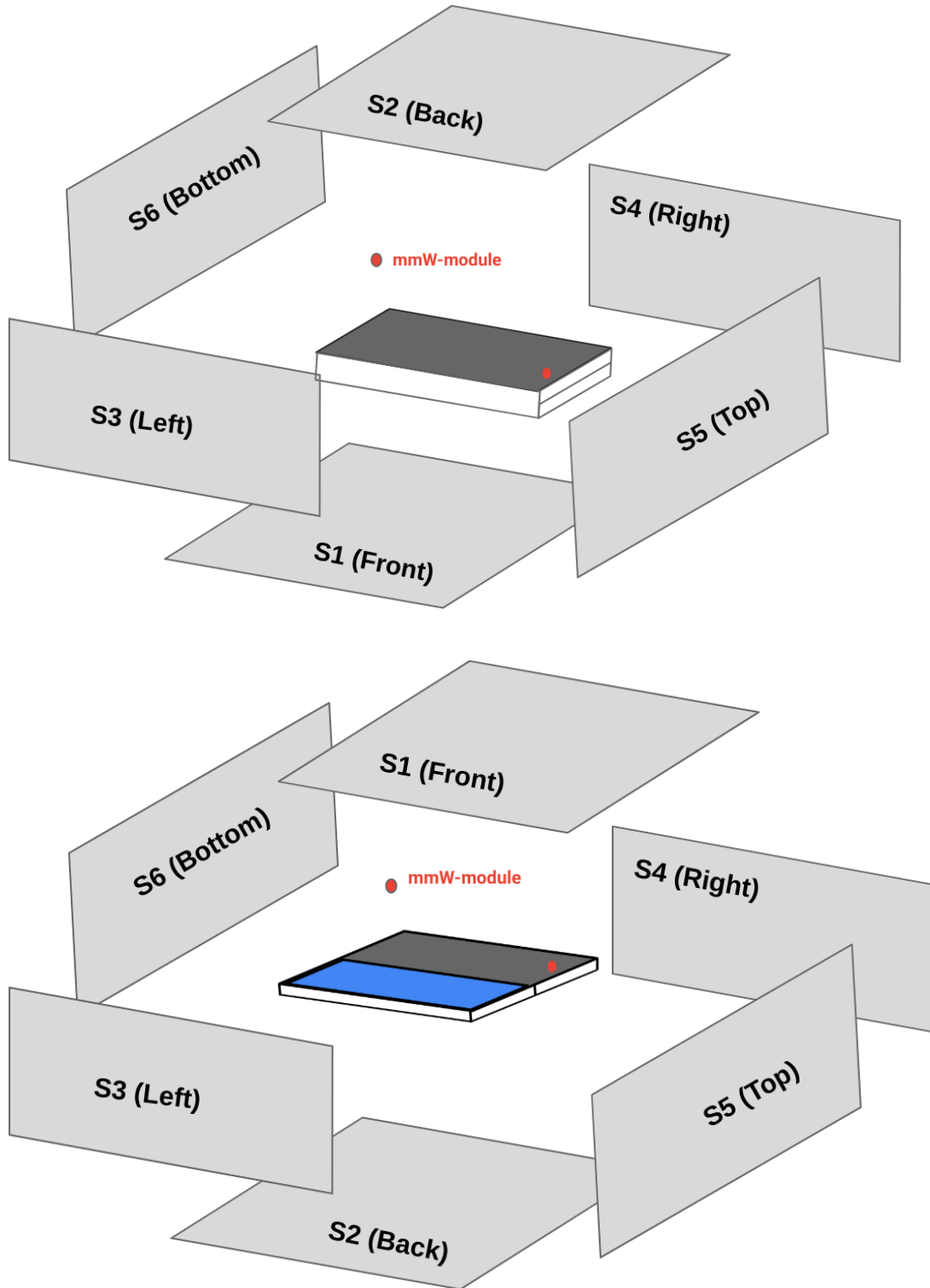
$$PD = \frac{1}{2} \left| \text{Re} \left\{ \vec{E} \times \vec{H}^* \right\} \right|$$

Based on the calculated  $PD$ , the time-averaged  $PD$  ( $PD_{ave}$ ) over a surface  $A$  can be obtained as:

$$PD_{ave} = \frac{1}{2A} \int_A \left| \text{Re} \left\{ \vec{E} \times \vec{H}^* \right\} \right| \cdot dS$$

In order to determine the RF exposure from the mmW antennas in the device, the values of the electric and magnetic field vectors at the six surfaces S1, S2, S3, S4, S5, and S6 shown in Figure 1-4 are needed. Depending on the simulation or measurement setting, the distance from these six surfaces to the device is set to be either 2 mm or 10 mm. As long as the distance between mmWave sub-module and any six surfaces is greater than 25mm, the surface integration terms in the above formula for the  $PD_{ave}$  corresponding to some of these six surfaces are negligible, and thus can be excluded from the  $PD_{ave}$  calculation. Using square markings, Table 1-1 specifies which one of the six surfaces needs to be used in the above formula for the  $PD_{ave}$  calculation. As seen, the surfaces S1, S2, S4, and S5 need to be used in the  $PD_{ave}$  calculations for both planes.

In the spatially averaged power density calculations, the surface  $A$  is a circle in the evaluation plane with an area of 4 cm<sup>2</sup>. Furthermore,  $PD_{ave}$  is calculated at the points of a grid with 0.1 mm step size defined in each evaluation plane.



**Figure 1-4** *PD* evaluation surfaces. Averaged power densities ( $PD_{ave}$ ) are calculated and measured on the specified surfaces (S1, S2, S4, and S5) surrounding the DUT.

**Table 1-1 (a) Closed mode  $PD$  evaluation surfaces considered for mmWave module in the device.**

|        | S1 (front) | S2 (back) | S3 (left) | S4 (right) | S5 (top) | S6 (bottom) |
|--------|------------|-----------|-----------|------------|----------|-------------|
| Module | □          | □         | □         | □          | □        | ✗           |

**Table 1-1 (b) Open mode  $PD$  evaluation surfaces considered for mmWave module in the device.**

|        | S1 (front) | S2 (back) | S3 (left) | S4 (right) | S5 (top) | S6 (bottom) |
|--------|------------|-----------|-----------|------------|----------|-------------|
| Module | □          | □         | ✗         | □          | □        | ✗           |

## 2. Simulation and modeling validation

### 2.1 Comparison between simulation and measurement

Following the time-average  $PD$  calculation procedure described in section 1.2.3, the distributions of  $PD$  and  $PD_{ave}$  are calculated in the evaluation planes and are compared with the measurements for a selected number of beams, with the highest  $PD_{ave}$  values compared to the other beams, whose IDs are listed in Table 2-1 (a),(b) for both closed and open mode. Also shown in this table are simulated and measured results for the  $PD_{ave}$  for n261, n260, and n258 frequency bands, as well as Horizontal, Vertical, and Horizontal + Vertical (Simultaneous Transmit) polarizations, denoted as H, V and H+V, respectively. For Plane B Module,  $PD_{ave}$  of 2mm from DUT is used for calculating minimum target power while  $PD_{ave}$  of 2mm from Camera Bump (CB) is used to derive the correction factor. Figure 2-1 (a),(b) shows orientation of the device for the  $PD$  and  $PD_{ave}$  distribution plots in both closed and open mode presented in Figures 2-2 to 2-73. The presented plots demonstrate a good agreement between simulated and measured results for both  $PD$  and  $PD_{ave}$ .

**(a) Closed mode**

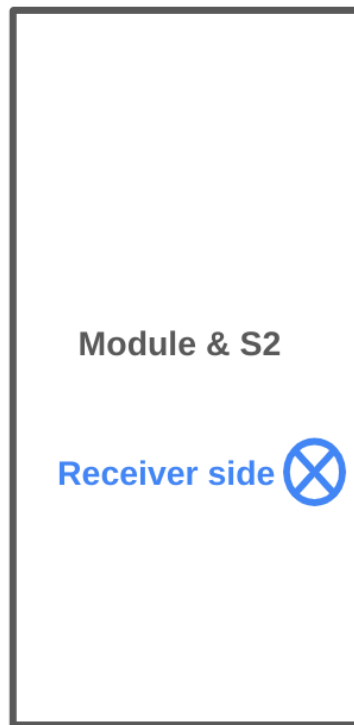
| Test Number | Antenna Module     | H Pol Beam ID | V Pol Beam ID | Band | Frequency (GHz) | Exposure Surface | Reference Plane | Test Separation | Measured results Savg @ 4cm <sup>2</sup> (W/m <sup>2</sup> ) | Simulated results Savg @ 4cm <sup>2</sup> (W/m <sup>2</sup> ) | Sim. – Meas. (dB) |
|-------------|--------------------|---------------|---------------|------|-----------------|------------------|-----------------|-----------------|--------------------------------------------------------------|---------------------------------------------------------------|-------------------|
| 1           | Plane B sub-module | 6             | -             | n258 | 24.75           | Back (S2)_Visor  | EUT Surface     | 2mm             | 5.28                                                         | 4.44                                                          | -0.75             |
| 2           | Plane B sub-module | -             | 3             | n258 | 24.75           | Back (S2)_Visor  | EUT Surface     | 2mm             | 3.84                                                         | 4.22                                                          | 0.41              |
| 3           | Plane B sub-module | 4             | 4             | n258 | 24.75           | Back (S2)_Visor  | EUT Surface     | 2mm             | 12.8                                                         | 11.01                                                         | -0.65             |
| 4           | Plane B sub-module | 4             | -             | n260 | 38.50           | Back (S2)_Visor  | EUT Surface     | 2mm             | 3.26                                                         | 3.97                                                          | 0.86              |
| 5           | Plane B sub-module | -             | 5             | n260 | 38.50           | Back (S2)_Visor  | EUT Surface     | 2mm             | 2.3                                                          | 3.72                                                          | 2.09              |
| 6           | Plane B sub-module | 3             | 3             | n260 | 38.50           | Back (S2)_Visor  | EUT Surface     | 2mm             | 7.71                                                         | 8.94                                                          | 0.64              |
| 7           | Plane B sub-module | 5             | -             | n261 | 27.925          | Back (S2)_Visor  | EUT Surface     | 2mm             | 7.25                                                         | 4.22                                                          | -2.35             |
| 8           | Plane B sub-module | -             | 3             | n261 | 27.925          | Back (S2)_Visor  | EUT Surface     | 2mm             | 5.8                                                          | 4.19                                                          | -1.41             |
| 9           | Plane B sub-module | 5             | 5             | n261 | 27.925          | Back (S2)_Visor  | EUT Surface     | 2mm             | 12.3                                                         | 9.07                                                          | -1.32             |

**(b) Open mode**

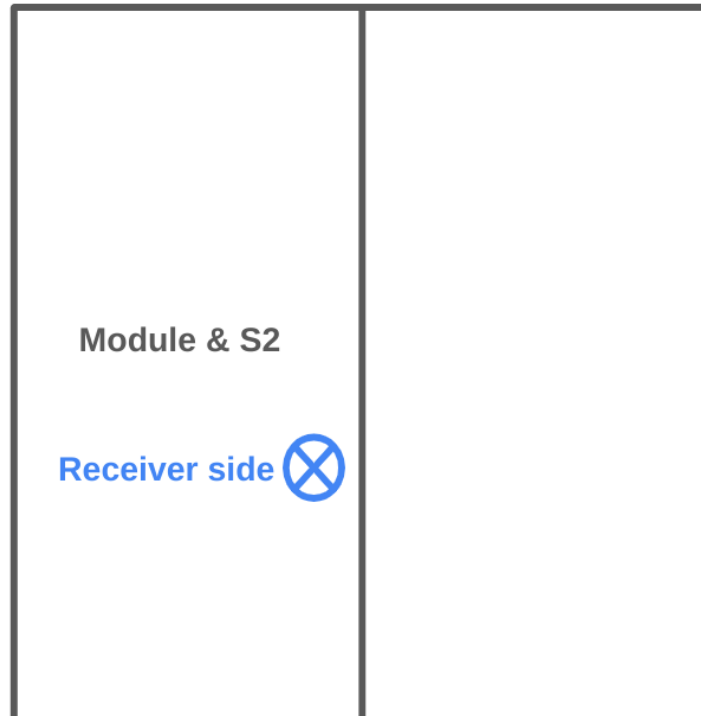
| Test Number | Antenna Module     | H Pol Beam ID | V Pol Beam ID | Band | Frequency (GHz) | Exposure Surface | Reference Plane | Test Separation | Measured results Savg @ 4cm <sup>2</sup> (W/m <sup>2</sup> ) | Simulated results Savg @ 4cm <sup>2</sup> (W/m <sup>2</sup> ) | Sim. – Meas. (dB) |
|-------------|--------------------|---------------|---------------|------|-----------------|------------------|-----------------|-----------------|--------------------------------------------------------------|---------------------------------------------------------------|-------------------|
| 10          | Plane B sub-module | 6             | -             | n258 | 24.75           | Front (S1)_Visor | Visor Surface   | 2mm             | 5.46                                                         | 4.49                                                          | -0.85             |
| 11          | Plane B sub-module | -             | 3             | n258 | 24.75           | Front (S1)_Visor | Visor Surface   | 2mm             | 7.52                                                         | 4.37                                                          | -2.36             |
| 12          | Plane B sub-module | 4             | 4             | n258 | 24.75           | Front (S1)_Visor | Visor Surface   | 2mm             | 14                                                           | 11                                                            | -1.05             |
| 13          | Plane B sub-module | 5             | -             | n260 | 38.50           | Front (S1)_Visor | Visor Surface   | 2mm             | 3.25                                                         | 3.97                                                          | 0.87              |
| 14          | Plane B sub-module | -             | 5             | n260 | 38.50           | Front (S1)_Visor | Visor Surface   | 2mm             | 1.94                                                         | 3.67                                                          | 2.77              |
| 15          | Plane B sub-module | 3             | 3             | n260 | 38.50           | Front (S1)_Visor | Visor Surface   | 2mm             | 7.24                                                         | 9.01                                                          | 0.95              |
| 16          | Plane B sub-module | 5             | -             | n261 | 27.925          | Front (S1)_Visor | Visor Surface   | 2mm             | 7.32                                                         | 3.91                                                          | -2.72             |
| 17          | Plane B sub-module | -             | 3             | n261 | 27.925          | Front (S1)_Visor | Visor Surface   | 2mm             | 5.57                                                         | 3.88                                                          | -1.57             |
| 18          | Plane B sub-module | 5             | 5             | n261 | 27.925          | Front (S1)_Visor | Visor Surface   | 2mm             | 11.8                                                         | 8.36                                                          | -1.50             |

**Table 2-1 (a),(b)** Simulated and measured  $PD_{ave}$  for selected beams with 17dBm and 20dBm target power at boresight for single and H+V polarization.

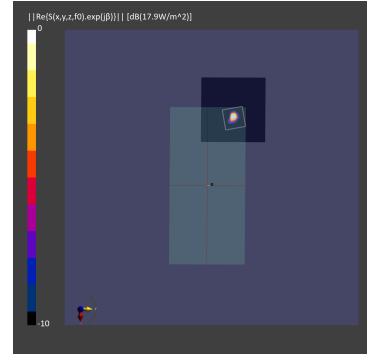
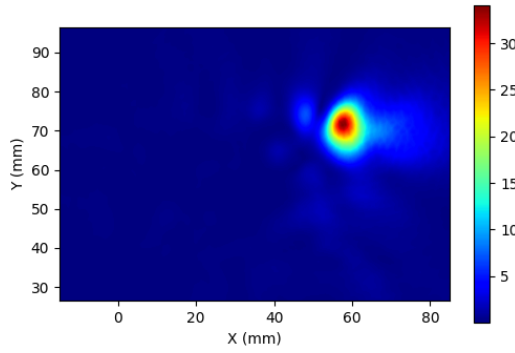
(a) Closed mode:



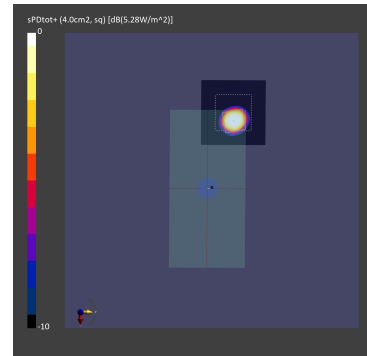
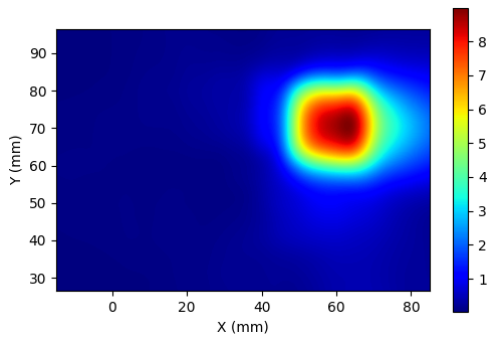
(b) Open mode



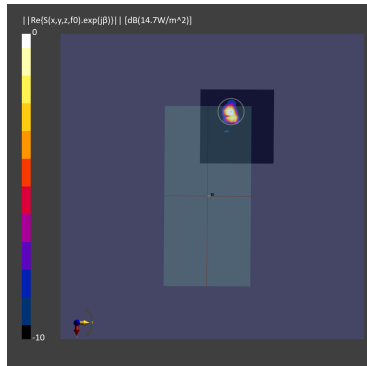
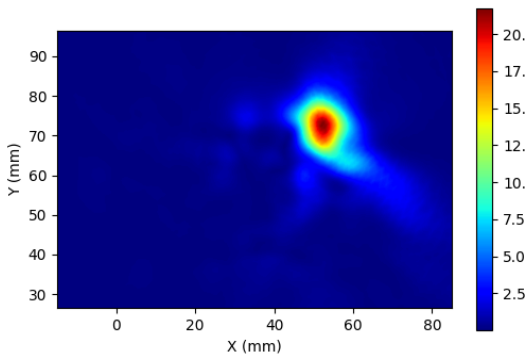
**Figure 2-1 (a),(b)** Orientation of the device for the *PD* distribution plots both closed & open mode.



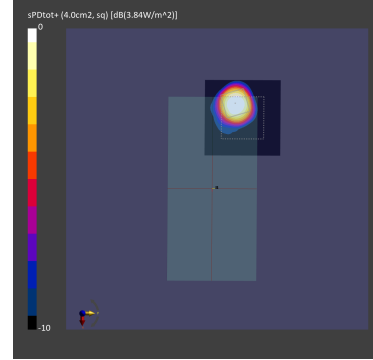
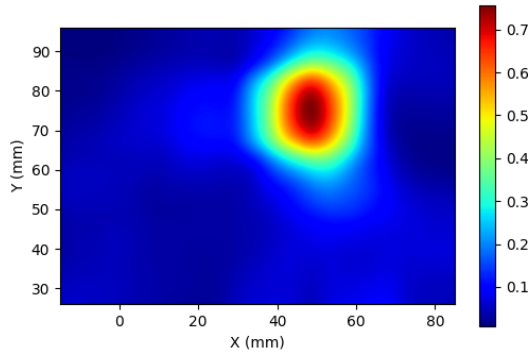
**Figure 2-2** Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n258, MID Channel, Beam ID 6, H polarization, Plane B Module, plotted on the surface S2 (Back) with 2mm separation distance to the DUT in the Closed Mode.



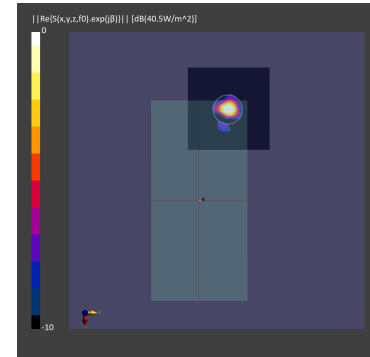
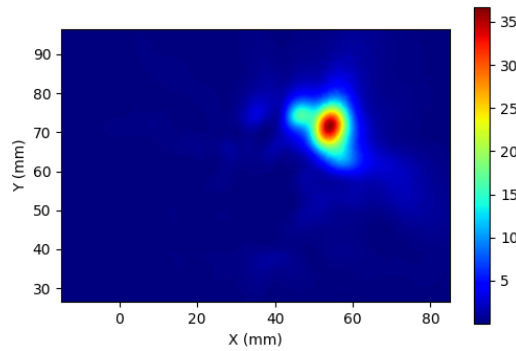
**Figure 2-3** Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n258, MID Channel, Beam ID 6, H polarization, Plane B Module, plotted on the surface S2 (Back) with 2mm separation distance to the DUT in the Closed Mode.



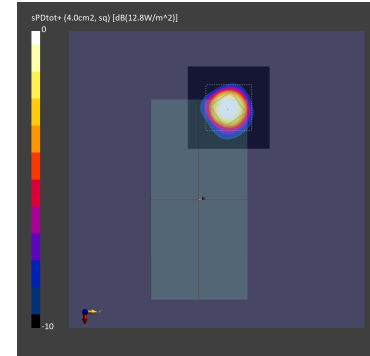
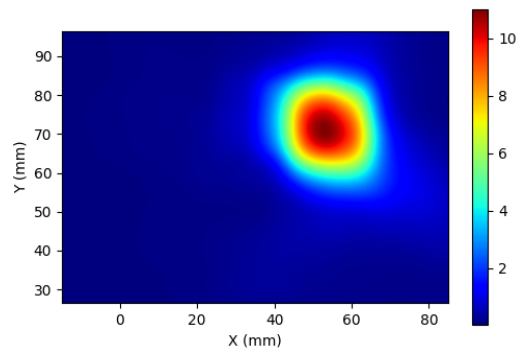
**Figure 2-4** Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n258, MID Channel, Beam ID 3, V polarization, Plane B Module, plotted on the surface S2 (Back) with 2mm separation distance to the DUT in the Closed Mode.



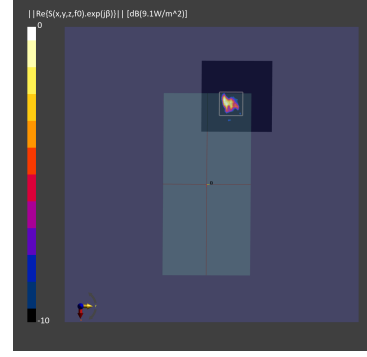
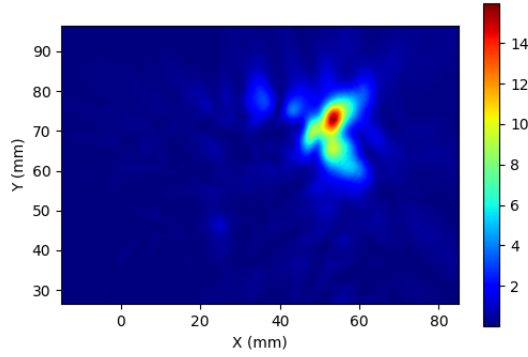
**Figure 2-5** Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n258, MID Channel, Beam ID 3, V polarization, Plane B Module, plotted on the surface S2 (Back) with 2mm separation distance to the DUT in the Closed Mode.



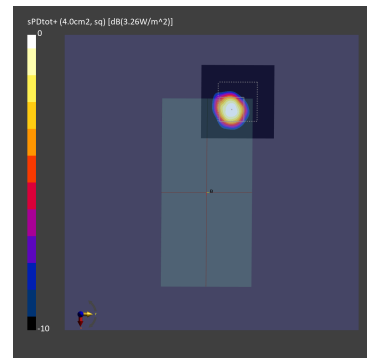
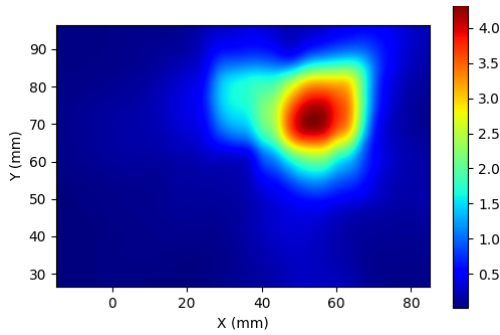
**Figure 2-6** Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n258, MID Channel, Beam ID 4, H+V polarization, Plane B Module, plotted on the surface S2 (Back) with 2mm separation distance to the DUT in the Closed Mode.



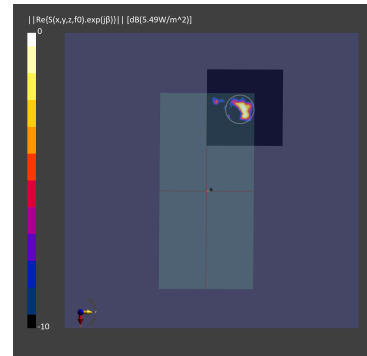
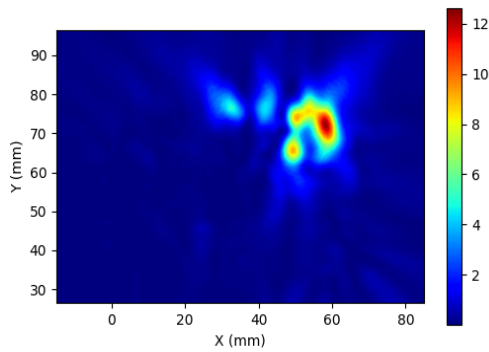
**Figure 2-7** Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n258, MID Channel, Beam ID 4, H+V polarization, Plane B Module, plotted on the surface S2 (Back) with 2mm separation distance to the DUT in the Closed Mode.



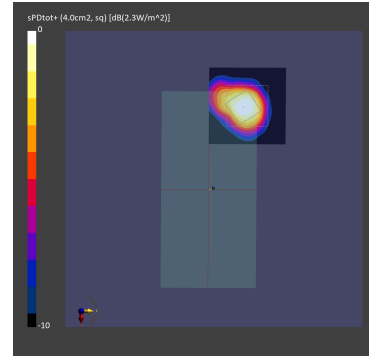
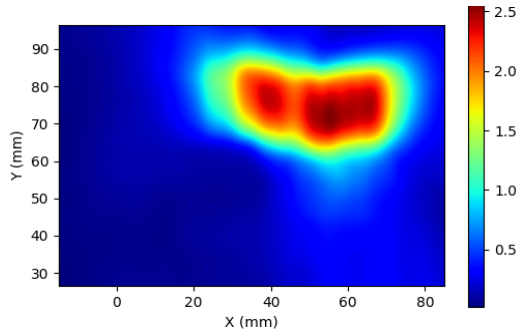
**Figure 2-8** Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 4, H polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Closed Mode.



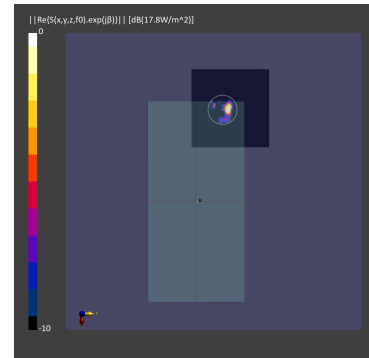
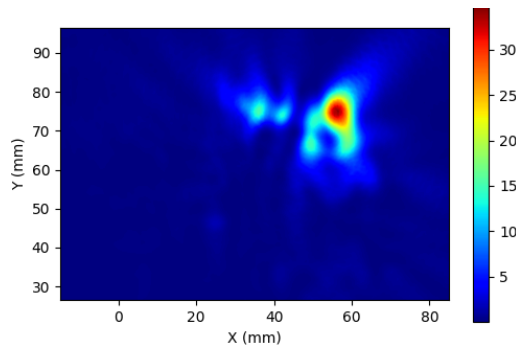
**Figure 2-9** Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 4, H polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Closed Mode.



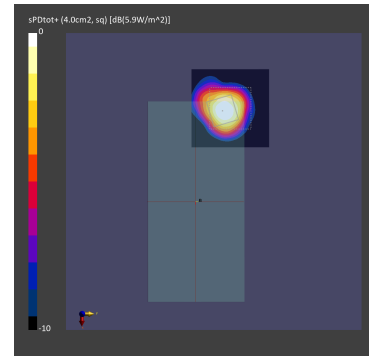
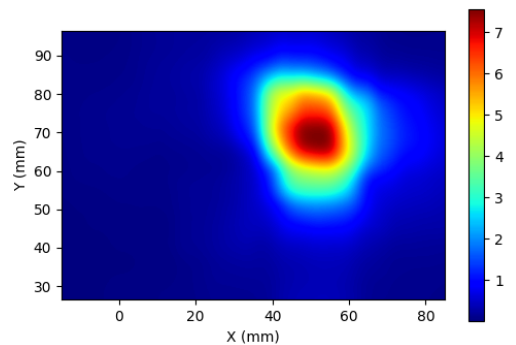
**Figure 2-10** Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 5, V polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Closed Mode.



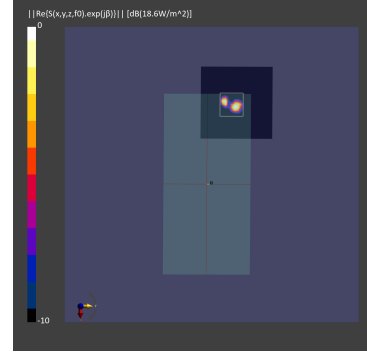
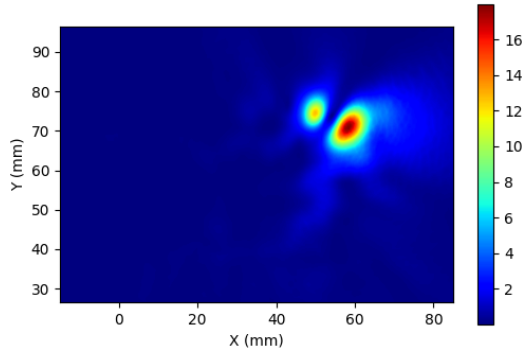
**Figure 2-11** Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 5, V polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Closed Mode



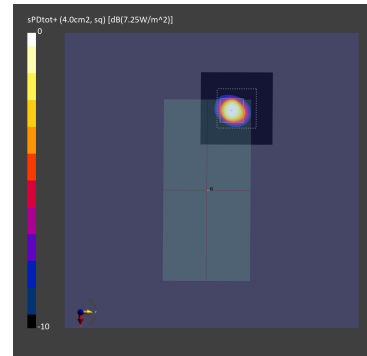
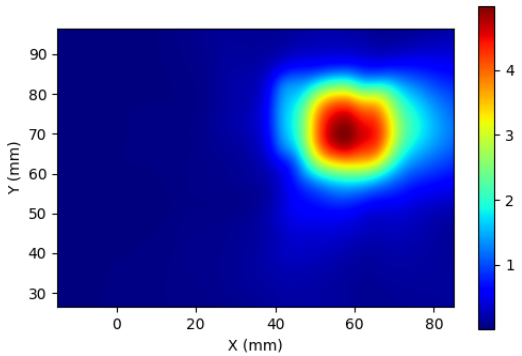
**Figure 2-12** Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 3, H+V polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Closed Mode.



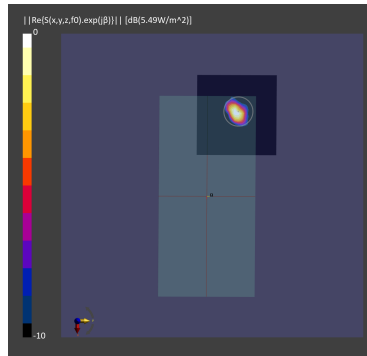
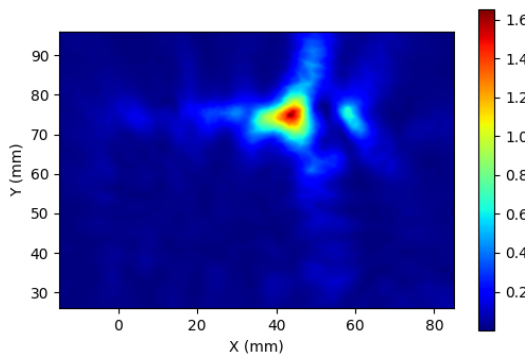
**Figure 2-13** Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 3, H+V polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Closed Mode.



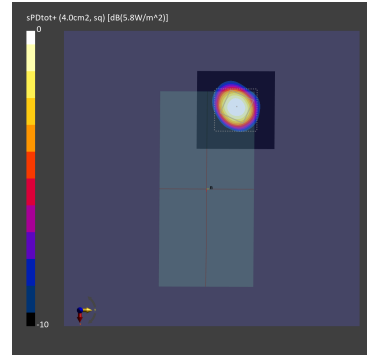
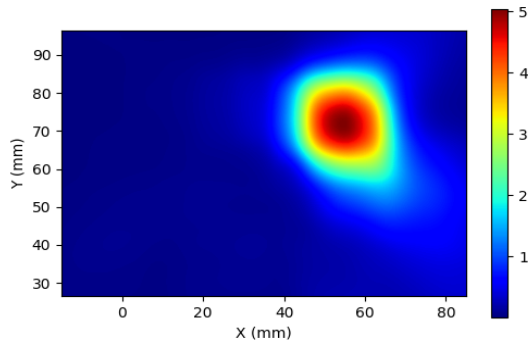
**Figure 2-14** Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 5, H polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Closed Mode .



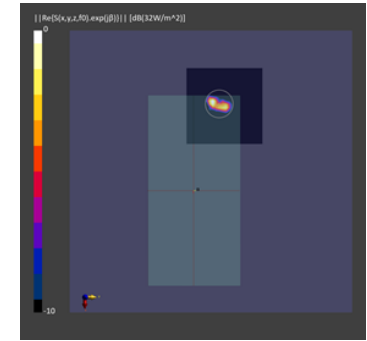
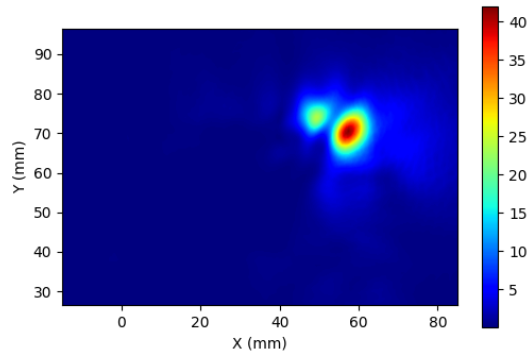
**Figure 2-15** Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 5, H polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Closed Mode .



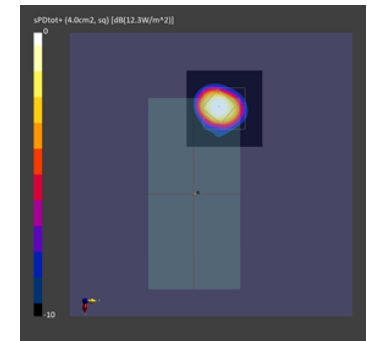
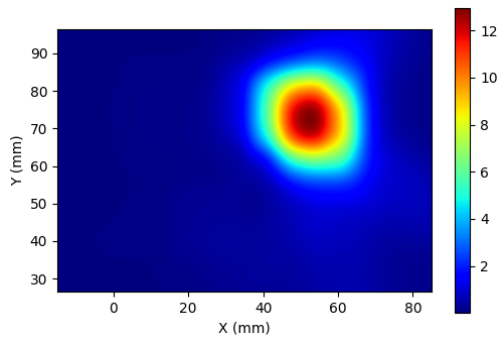
**Figure 2-16** Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 3, V polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Closed Mode.



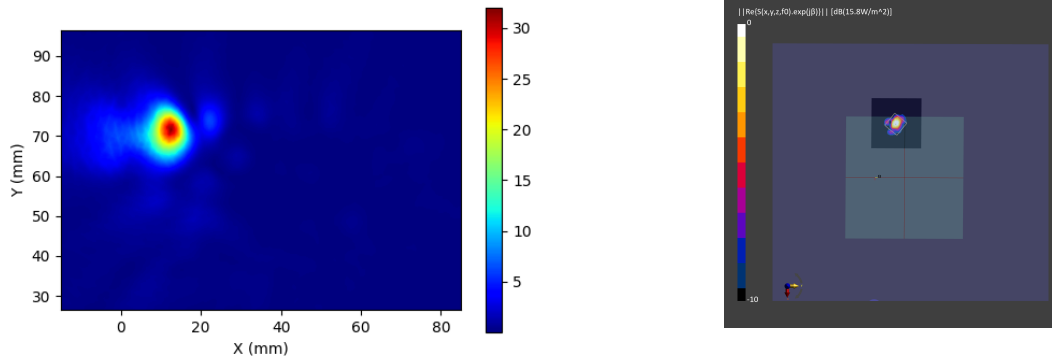
**Figure 2-17** Simulated (left) and measured (right) averaged  $PD$  distribution for the following configuration: Band n261, MID Channel, Beam ID 3, V polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Closed Mode.



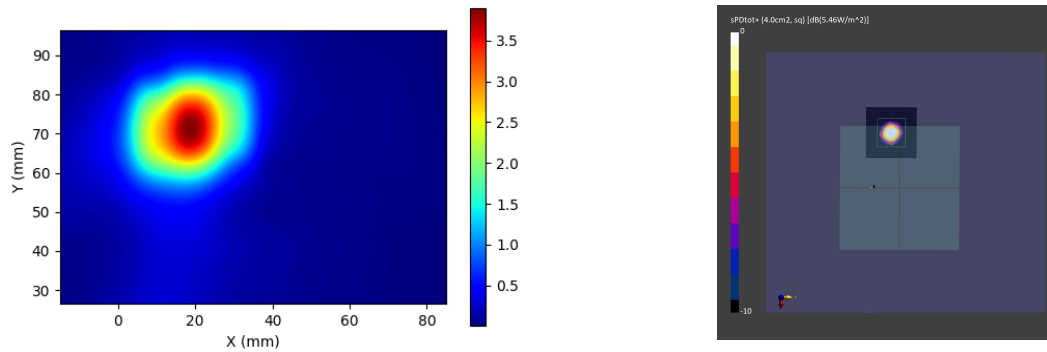
**Figure 2-18** Simulated (left) and measured (right)  $PD$  distribution for the following configuration: Band n261, MID Channel, Beam ID 5, H+V polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Closed Mode.



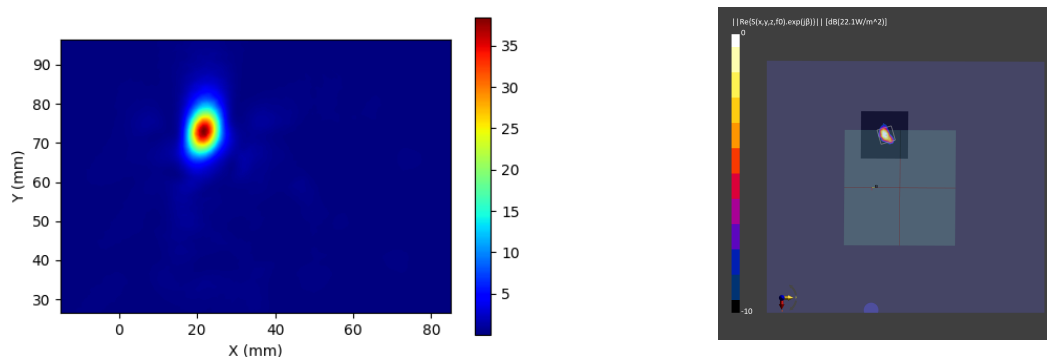
**Figure 2-19** Simulated (left) and measured (right) averaged  $PD$  distribution for the following configuration: Band n261, MID Channel, Beam ID 5, H+V polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Closed Mode.



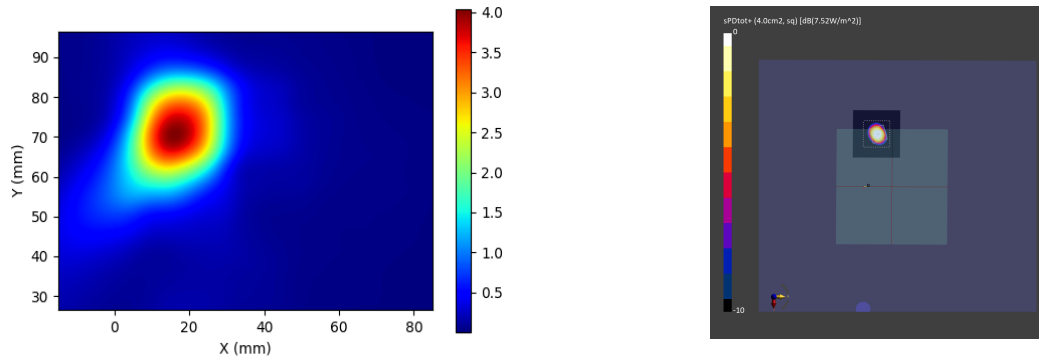
**Figure 2-20** Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n258, MID Channel, Beam ID 6, H polarization, Plane B Module, plotted on the surface S2 (Back) with 2mm separation distance to the DUT in the Open Mode.



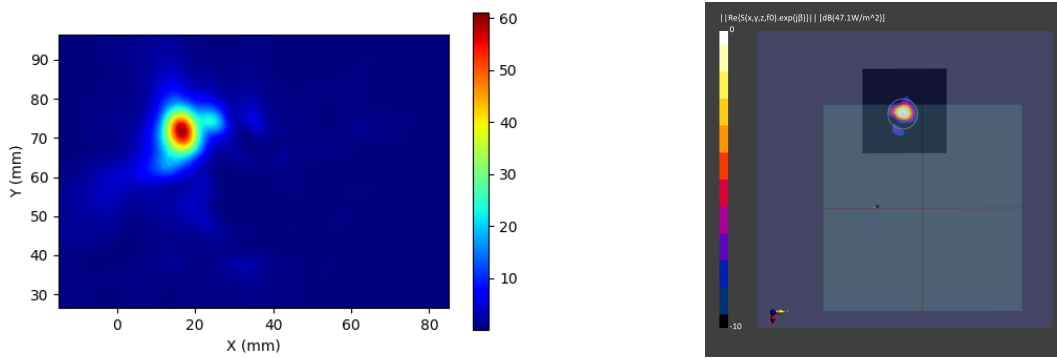
**Figure 2-21** Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n258, MID Channel, Beam ID 6, H polarization, Plane B Module, plotted on the surface S2 (Back) with 2mm separation distance to the DUT in the Open Mode.



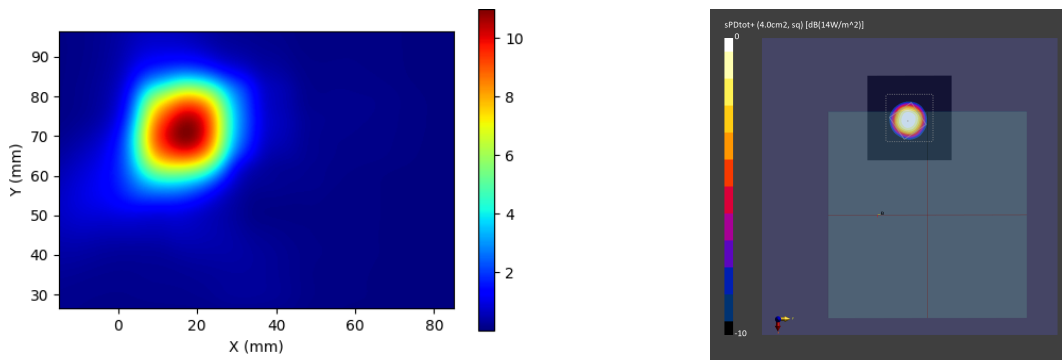
**Figure 2-22** Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n258, MID Channel, Beam ID 3, V polarization, Plane B Module, plotted on the surface S2 (Back) with 2mm separation distance to the DUT in the Open Mode.



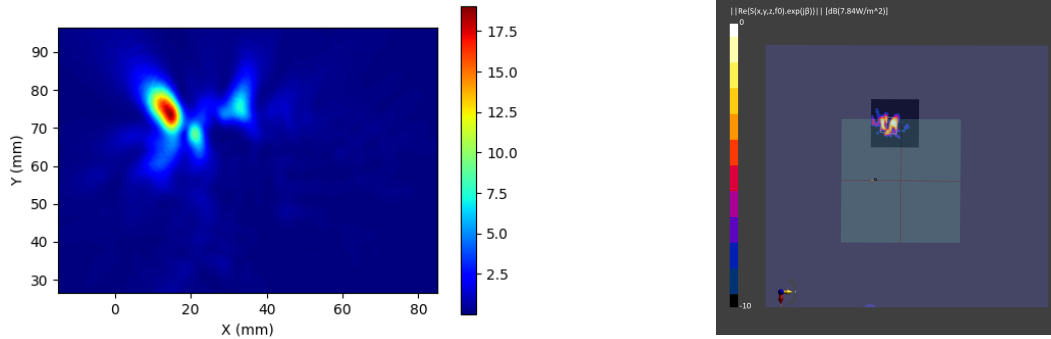
**Figure 2-23** Simulated (left) and measured (right) averaged  $PD$  distribution for the following configuration: Band n258, MID Channel, Beam ID 3, V polarization, Plane B Module, plotted on the surface S2 (Back) with 2mm separation distance to the DUT in the Open Mode.



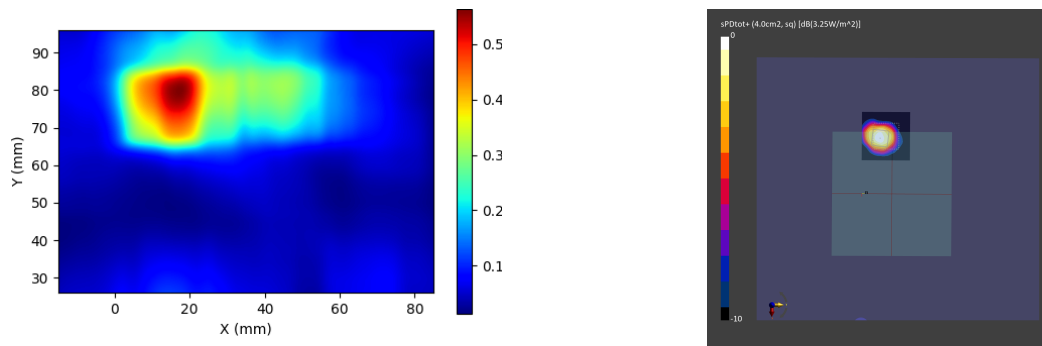
**Figure 2-24** Simulated (left) and measured (right)  $PD$  distribution for the following configuration: Band n258, MID Channel, Beam ID 4, H+V polarization, Plane B Module, plotted on the surface S2 (Back) with 2mm separation distance to the DUT in the Open Mode.



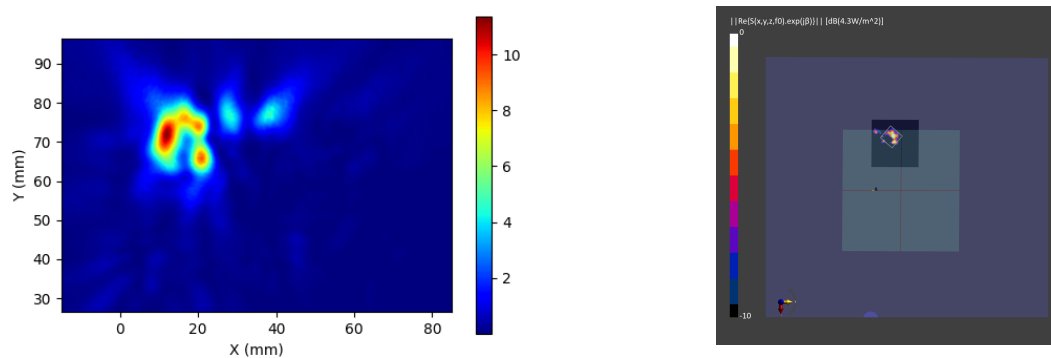
**Figure 2-25** Simulated (left) and measured (right) averaged  $PD$  distribution for the following configuration: Band n258, MID Channel, Beam ID 4, H+V polarization, Plane B Module, plotted on the surface S2 (Back) with 2mm separation distance to the DUT in the Open Mode.



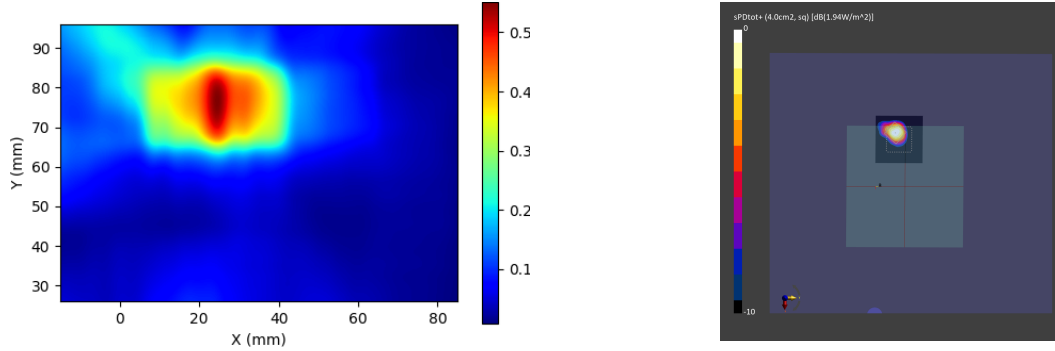
**Figure 2-26** Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 5, H polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Open Mode.



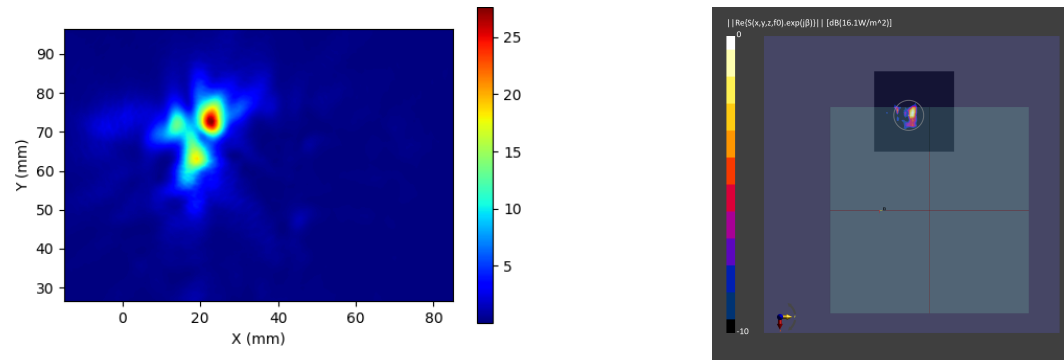
**Figure 2-27** Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 5, H polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Open Mode.



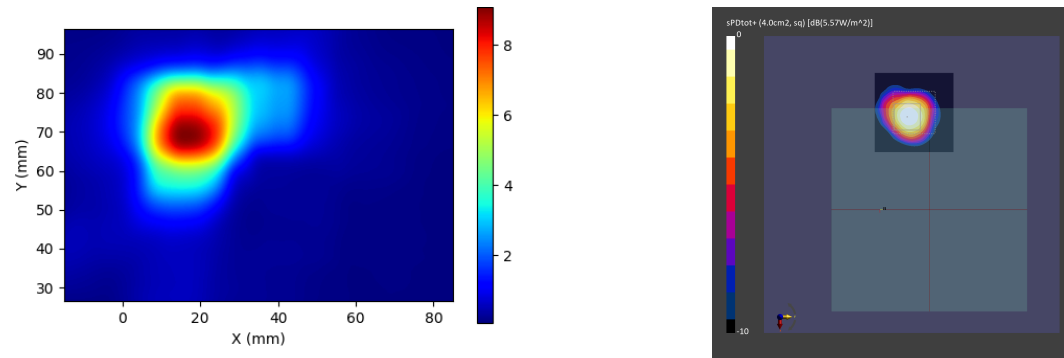
**Figure 2-28** Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 5, V polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Open Mode.



**Figure 2-29** Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 5, V polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Open Mode

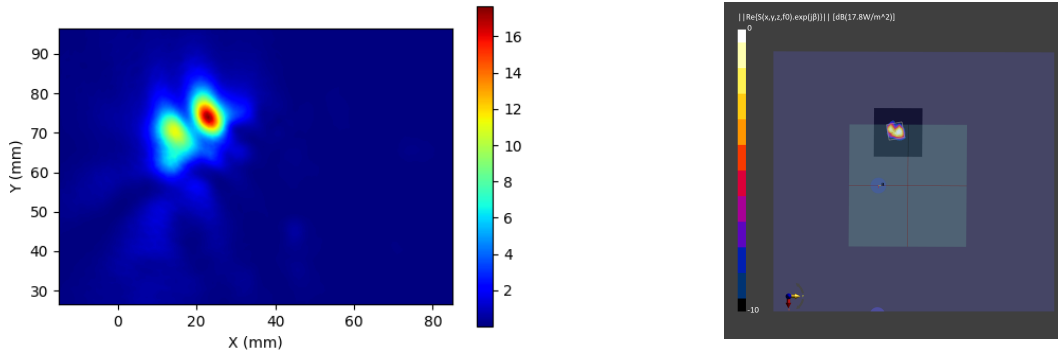


**Figure 2-30** Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 3, H+V polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Open Mode.

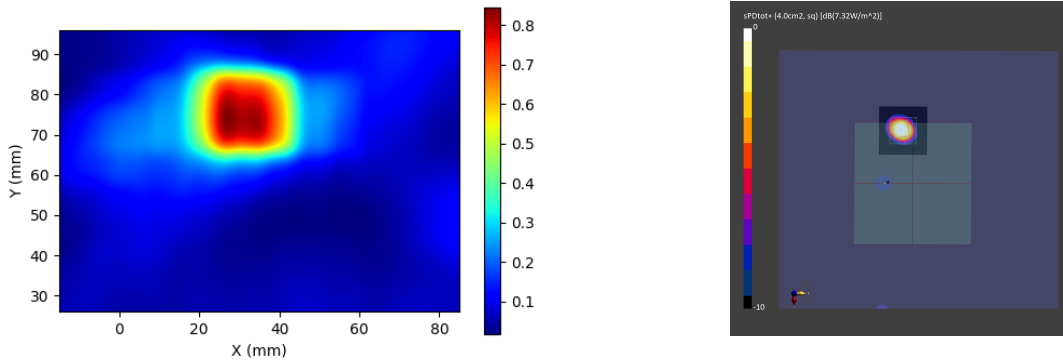


**Figure 2-31** Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 3, H+V polarization, Plane B Module, plotted

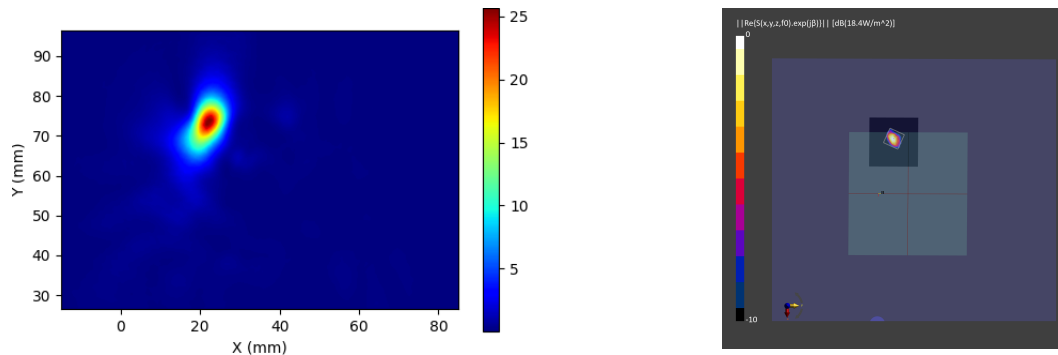
on the surface S2 (back) with 2mm separation distance to the DUT in the Open Mode.



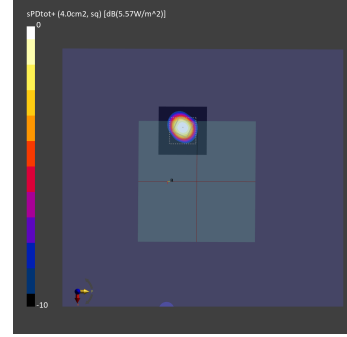
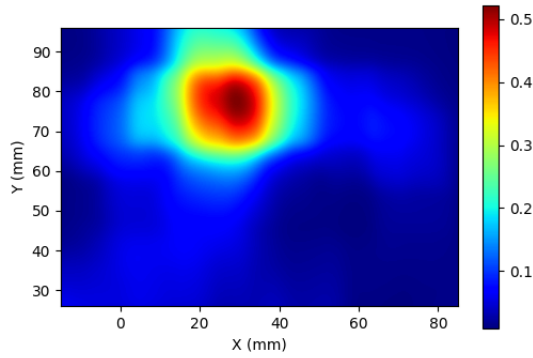
**Figure 2-32** Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 5, H polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Open Mode .



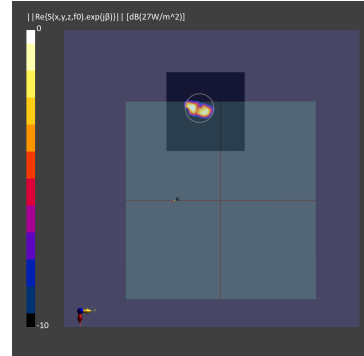
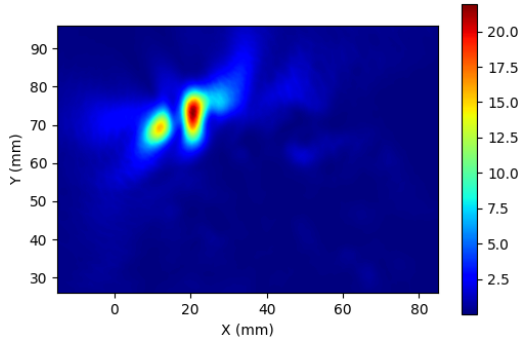
**Figure 2-33** Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 5, H polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Open Mode .



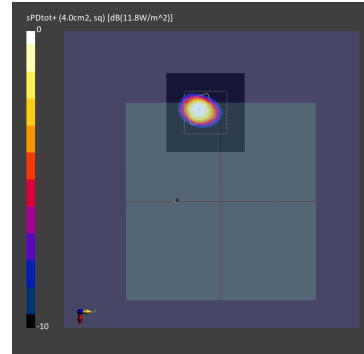
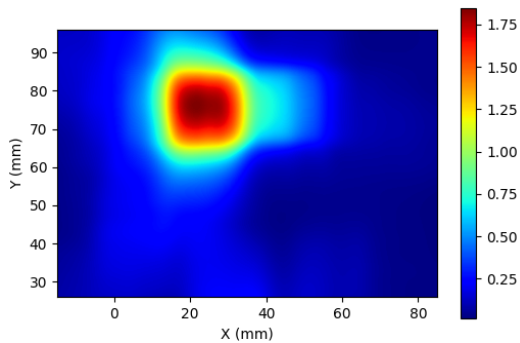
**Figure 2-34** Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 3, V polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Open Mode.



**Figure 2-35** Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 3, V polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Open Mode.



**Figure 2-36** Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 5, H+V polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Open Mode.



**Figure 2-37** Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 5, H+V polarization, Plane B Module, plotted on the surface S2 (back) with 2mm separation distance to the DUT in the Open Mode.

## 2.2 Calculated PD per beam ID

The simulated time-average  $PD$  calculated for the selected evaluation planes for all beams in the codebook are presented in this section. The calculations are done for the LOW, MID, and HIGH channels of n261, n260 and n258 frequency bands for both Plane A Module and Plane B Module in both closed and open mode. Since the beams of H+V configuration are not phase coherent, the relative phase difference between the corresponding H+V beams with vertical and horizontal polarizations is swept from  $0^\circ$  to  $360^\circ$  in  $5^\circ$  steps, and the  $PD_{ave}$  is calculated for all of these phase difference values in order to capture the largest possible  $PD_{ave}$  value. The  $PD_{ave}$  values for every beam ID are reported in the Tables 2-2 to Table 2-19. For H+V configuration, the largest possible  $PD_{ave}$  values calculated using this relative phase difference sweeping method are reported.

**Table 2-2** Simulated averaged PD over 4 [cm<sup>2</sup>] area on Plane B Module - n258 Low Channel.

| PD Simulation (W/m2)<br>PD Limit = 10 W/m2 |         | Low Ch |       |          |       |      |      |       |      |       |      |      |
|--------------------------------------------|---------|--------|-------|----------|-------|------|------|-------|------|-------|------|------|
|                                            |         | 2mm    |       |          |       |      |      | 10mm  |      |       |      |      |
|                                            |         | Close  |       |          |       |      |      |       |      |       |      |      |
|                                            |         | S1     | S2    | S2       | S3    | S4   | S5   | S1    | S2   | S3    | S4   | S5   |
| Pol                                        | Beam ID | Front  | Back  | Back(CB) | Right | Left | Top  | Front | Back | Right | Left | Top  |
| H                                          | 0       | 0.32   | 5.10  | 2.02     | 0.15  | 0.13 | 1.45 | 0.13  | 1.24 | 0.12  | 0.09 | 0.64 |
| H                                          | 1       | 0.20   | 6.26  | 2.35     | 0.11  | 0.17 | 1.33 | 0.14  | 1.44 | 0.08  | 0.14 | 0.62 |
| H                                          | 2       | 0.36   | 5.25  | 2.67     | 0.05  | 0.19 | 1.07 | 0.21  | 1.92 | 0.03  | 0.15 | 0.47 |
| H                                          | 3       | 0.28   | 5.75  | 2.38     | 0.05  | 0.14 | 1.06 | 0.13  | 1.75 | 0.03  | 0.07 | 0.50 |
| H                                          | 4       | 0.16   | 7.14  | 3.58     | 0.05  | 0.54 | 1.14 | 0.09  | 2.29 | 0.04  | 0.33 | 0.47 |
| H                                          | 5       | 0.15   | 7.14  | 2.98     | 0.06  | 0.50 | 1.25 | 0.10  | 1.94 | 0.04  | 0.35 | 0.53 |
| H                                          | 6       | 0.39   | 5.08  | 2.05     | 0.10  | 0.70 | 0.89 | 0.13  | 1.16 | 0.05  | 0.47 | 0.24 |
| V                                          | 0       | 0.13   | 5.05  | 1.88     | 0.13  | 0.58 | 0.94 | 0.07  | 1.02 | 0.04  | 0.37 | 0.24 |
| V                                          | 1       | 0.15   | 4.44  | 2.32     | 0.05  | 0.25 | 0.85 | 0.07  | 1.63 | 0.02  | 0.16 | 0.32 |
| V                                          | 2       | 0.14   | 6.37  | 2.07     | 0.04  | 0.26 | 1.44 | 0.09  | 1.42 | 0.03  | 0.17 | 0.68 |
| V                                          | 3       | 0.19   | 5.38  | 2.03     | 0.07  | 0.14 | 1.14 | 0.09  | 1.55 | 0.03  | 0.09 | 0.46 |
| V                                          | 4       | 0.32   | 4.21  | 2.34     | 0.05  | 0.33 | 1.02 | 0.17  | 1.64 | 0.03  | 0.17 | 0.42 |
| V                                          | 5       | 0.24   | 3.57  | 2.38     | 0.05  | 0.45 | 1.02 | 0.13  | 1.54 | 0.03  | 0.24 | 0.42 |
| V                                          | 6       | 0.26   | 5.54  | 1.76     | 0.16  | 0.86 | 1.08 | 0.11  | 0.96 | 0.06  | 0.55 | 0.29 |
| H+V                                        | 0       | 0.77   | 10.65 | 3.54     | 0.31  | 0.91 | 2.19 | 0.29  | 2.04 | 0.20  | 0.62 | 0.96 |
| H+V                                        | 1       | 0.53   | 14.76 | 5.18     | 0.19  | 0.59 | 2.92 | 0.26  | 3.51 | 0.15  | 0.38 | 1.38 |
| H+V                                        | 2       | 0.75   | 17.96 | 7.15     | 0.16  | 0.49 | 3.97 | 0.45  | 5.15 | 0.11  | 0.32 | 1.70 |
| H+V                                        | 3       | 0.59   | 14.30 | 6.45     | 0.17  | 0.33 | 3.30 | 0.28  | 5.14 | 0.07  | 0.20 | 1.49 |
| H+V                                        | 4       | 0.66   | 14.90 | 6.89     | 0.17  | 1.25 | 2.82 | 0.40  | 4.88 | 0.09  | 0.70 | 1.18 |
| H+V                                        | 5       | 0.50   | 14.82 | 7.78     | 0.15  | 1.24 | 2.45 | 0.32  | 5.13 | 0.10  | 0.76 | 1.11 |
| H+V                                        | 6       | 0.80   | 15.93 | 5.66     | 0.37  | 2.59 | 3.17 | 0.40  | 3.12 | 0.20  | 1.68 | 0.81 |

| PD Simulation (W/m2) PD<br>Limit = 10 W/m2 |         | Low Ch    |       |      |       |      |       |      |       |      |
|--------------------------------------------|---------|-----------|-------|------|-------|------|-------|------|-------|------|
|                                            |         | 2mm       |       |      |       |      | 10mm  |      |       |      |
|                                            |         | Open      |       |      |       |      |       |      |       |      |
|                                            |         | S1        | S1    | S2   | S3    | S5   | S1    | S2   | S3    | S5   |
| Pol                                        | Beam ID | Front(CB) | Front | Back | Right | Top  | Front | Back | Right | Top  |
| H                                          | 0       | 0.45      | 5.21  | 2.04 | 0.15  | 1.54 | 0.16  | 1.26 | 0.11  | 0.66 |
| H                                          | 1       | 0.31      | 6.41  | 2.39 | 0.10  | 1.42 | 0.13  | 1.49 | 0.08  | 0.67 |
| H                                          | 2       | 0.49      | 5.41  | 2.77 | 0.04  | 1.13 | 0.22  | 1.99 | 0.03  | 0.51 |
| H                                          | 3       | 0.52      | 5.79  | 2.37 | 0.06  | 1.06 | 0.19  | 1.73 | 0.03  | 0.49 |
| H                                          | 4       | 0.38      | 7.24  | 3.56 | 0.05  | 1.20 | 0.10  | 2.29 | 0.05  | 0.48 |
| H                                          | 5       | 0.27      | 7.25  | 2.98 | 0.06  | 1.32 | 0.09  | 1.93 | 0.05  | 0.57 |
| H                                          | 6       | 0.74      | 5.22  | 2.06 | 0.04  | 0.87 | 0.20  | 1.15 | 0.03  | 0.22 |
| V                                          | 0       | 0.30      | 4.93  | 1.86 | 0.12  | 0.93 | 0.11  | 1.01 | 0.05  | 0.27 |
| V                                          | 1       | 0.46      | 4.37  | 2.35 | 0.04  | 0.84 | 0.10  | 1.63 | 0.03  | 0.33 |
| V                                          | 2       | 0.27      | 6.22  | 2.03 | 0.03  | 1.40 | 0.10  | 1.38 | 0.03  | 0.66 |
| V                                          | 3       | 0.23      | 5.15  | 2.03 | 0.06  | 1.12 | 0.08  | 1.54 | 0.03  | 0.45 |
| V                                          | 4       | 0.39      | 4.41  | 2.41 | 0.03  | 1.02 | 0.16  | 1.68 | 0.02  | 0.41 |
| V                                          | 5       | 0.33      | 3.56  | 2.45 | 0.06  | 1.01 | 0.11  | 1.61 | 0.03  | 0.47 |
| V                                          | 6       | 0.44      | 5.31  | 1.76 | 0.14  | 1.00 | 0.12  | 0.93 | 0.06  | 0.28 |
| H+V                                        | 0       | 1.22      | 10.78 | 3.63 | 0.31  | 2.29 | 0.40  | 2.09 | 0.20  | 0.99 |
| H+V                                        | 1       | 1.06      | 14.73 | 5.24 | 0.20  | 3.07 | 0.31  | 3.63 | 0.15  | 1.45 |
| H+V                                        | 2       | 1.08      | 18.01 | 7.29 | 0.12  | 4.04 | 0.45  | 5.27 | 0.08  | 1.69 |
| H+V                                        | 3       | 1.11      | 14.46 | 6.47 | 0.18  | 3.34 | 0.40  | 5.17 | 0.06  | 1.49 |
| H+V                                        | 4       | 0.93      | 15.40 | 6.86 | 0.12  | 2.90 | 0.35  | 4.85 | 0.08  | 1.22 |
| H+V                                        | 5       | 0.76      | 15.04 | 7.87 | 0.20  | 2.55 | 0.29  | 5.20 | 0.11  | 1.17 |
| H+V                                        | 6       | 1.28      | 15.75 | 5.62 | 0.30  | 2.93 | 0.44  | 2.99 | 0.14  | 0.76 |

**Table 2-3** Simulated averaged PD over 4 [cm<sup>2</sup>] area on Plane B Module - n258 Mid Channel.

| PD Simulation (W/m2)<br>PD Limit = 10 W/m2 |         | Mid Ch |       |          |       |      |      |       |      |       |      |      |
|--------------------------------------------|---------|--------|-------|----------|-------|------|------|-------|------|-------|------|------|
|                                            |         | 2mm    |       |          |       |      |      | 10mm  |      |       |      |      |
|                                            |         | Close  |       |          |       |      |      |       |      |       |      |      |
|                                            |         | S1     | S2    | S2       | S3    | S4   | S5   | S1    | S2   | S3    | S4   | S5   |
| Pol                                        | Beam ID | Front  | Back  | Back(CB) | Right | Left | Top  | Front | Back | Right | Left | Top  |
| H                                          | 0       | 0.24   | 6.26  | 2.93     | 0.17  | 0.22 | 1.73 | 0.15  | 1.66 | 0.13  | 0.13 | 0.67 |
| H                                          | 1       | 0.34   | 5.60  | 2.61     | 0.10  | 0.24 | 1.05 | 0.16  | 1.72 | 0.06  | 0.15 | 0.42 |
| H                                          | 2       | 0.67   | 8.01  | 3.76     | 0.04  | 0.44 | 1.71 | 0.34  | 2.58 | 0.03  | 0.29 | 0.83 |
| H                                          | 3       | 0.57   | 8.45  | 3.54     | 0.04  | 0.26 | 1.76 | 0.33  | 2.49 | 0.02  | 0.16 | 0.84 |
| H                                          | 4       | 0.40   | 7.85  | 3.94     | 0.04  | 0.52 | 1.38 | 0.20  | 2.61 | 0.03  | 0.27 | 0.55 |
| H                                          | 5       | 0.33   | 8.54  | 3.59     | 0.08  | 0.54 | 1.45 | 0.19  | 2.17 | 0.05  | 0.34 | 0.66 |
| H                                          | 6       | 0.33   | 9.39  | 4.44     | 0.12  | 1.60 | 1.39 | 0.16  | 2.81 | 0.09  | 1.10 | 0.30 |
| V                                          | 0       | 0.24   | 7.11  | 2.47     | 0.06  | 0.84 | 1.16 | 0.08  | 1.35 | 0.04  | 0.53 | 0.35 |
| V                                          | 1       | 0.26   | 6.89  | 3.52     | 0.09  | 0.37 | 1.14 | 0.12  | 2.57 | 0.04  | 0.24 | 0.35 |
| V                                          | 2       | 0.35   | 9.61  | 3.58     | 0.04  | 0.36 | 1.96 | 0.17  | 2.69 | 0.04  | 0.22 | 0.70 |
| V                                          | 3       | 0.41   | 9.33  | 4.22     | 0.05  | 0.10 | 2.11 | 0.23  | 3.37 | 0.03  | 0.06 | 0.85 |
| V                                          | 4       | 0.35   | 8.28  | 3.91     | 0.04  | 0.66 | 1.60 | 0.23  | 2.75 | 0.02  | 0.40 | 0.65 |
| V                                          | 5       | 0.44   | 5.93  | 3.13     | 0.06  | 0.59 | 1.05 | 0.26  | 2.02 | 0.03  | 0.34 | 0.39 |
| V                                          | 6       | 0.18   | 8.02  | 2.47     | 0.07  | 1.03 | 1.47 | 0.07  | 1.25 | 0.03  | 0.62 | 0.43 |
| H+V                                        | 0       | 0.60   | 16.29 | 6.31     | 0.29  | 1.64 | 3.22 | 0.29  | 3.55 | 0.22  | 0.98 | 1.18 |
| H+V                                        | 1       | 0.80   | 15.17 | 6.63     | 0.24  | 0.94 | 2.26 | 0.39  | 4.57 | 0.16  | 0.56 | 0.86 |
| H+V                                        | 2       | 1.75   | 21.87 | 9.22     | 0.10  | 1.19 | 5.22 | 0.79  | 6.72 | 0.09  | 0.84 | 2.23 |
| H+V                                        | 3       | 1.67   | 19.74 | 8.72     | 0.14  | 0.62 | 4.66 | 1.01  | 6.77 | 0.09  | 0.39 | 2.10 |
| H+V                                        | 4       | 1.27   | 22.88 | 11.01    | 0.11  | 1.55 | 4.10 | 0.76  | 7.90 | 0.06  | 0.92 | 1.67 |
| H+V                                        | 5       | 1.25   | 17.36 | 10.01    | 0.20  | 1.49 | 2.96 | 0.71  | 6.38 | 0.11  | 0.81 | 1.26 |
| H+V                                        | 6       | 0.96   | 20.10 | 9.83     | 0.25  | 4.52 | 5.27 | 0.36  | 5.43 | 0.17  | 2.95 | 1.36 |

| PD Simulation (W/m2) PD<br>Limit = 10 W/m2 |         | Mid Ch    |       |       |       |      |       |      |       |      |
|--------------------------------------------|---------|-----------|-------|-------|-------|------|-------|------|-------|------|
|                                            |         | 2mm       |       |       |       |      | 10mm  |      |       |      |
|                                            |         | Open      |       |       |       |      |       |      |       |      |
|                                            |         | S1        | S1    | S2    | S4    | S5   | S1    | S2   | S4    | S5   |
| Pol                                        | Beam ID | Front(CB) | Front | Back  | Right | Top  | Front | Back | Right | Top  |
| H                                          | 0       | 0.34      | 6.09  | 2.90  | 0.19  | 1.63 | 0.18  | 1.63 | 0.14  | 0.66 |
| H                                          | 1       | 0.40      | 5.58  | 2.58  | 0.12  | 1.00 | 0.17  | 1.70 | 0.06  | 0.41 |
| H                                          | 2       | 0.73      | 8.48  | 3.94  | 0.04  | 1.77 | 0.28  | 2.68 | 0.03  | 0.85 |
| H                                          | 3       | 0.87      | 8.72  | 3.68  | 0.03  | 1.84 | 0.31  | 2.58 | 0.02  | 0.87 |
| H                                          | 4       | 0.62      | 7.90  | 3.90  | 0.03  | 1.38 | 0.16  | 2.56 | 0.03  | 0.54 |
| H                                          | 5       | 0.46      | 8.60  | 3.58  | 0.05  | 1.54 | 0.17  | 2.17 | 0.04  | 0.73 |
| H                                          | 6       | 0.36      | 9.61  | 4.49  | 0.07  | 1.46 | 0.15  | 2.79 | 0.04  | 0.35 |
| V                                          | 0       | 0.33      | 7.57  | 2.53  | 0.05  | 1.20 | 0.08  | 1.36 | 0.04  | 0.39 |
| V                                          | 1       | 0.39      | 7.18  | 3.64  | 0.05  | 1.17 | 0.15  | 2.63 | 0.03  | 0.39 |
| V                                          | 2       | 0.35      | 9.89  | 3.73  | 0.04  | 2.03 | 0.13  | 2.80 | 0.05  | 0.75 |
| V                                          | 3       | 0.52      | 9.54  | 4.37  | 0.04  | 2.27 | 0.21  | 3.50 | 0.03  | 0.90 |
| V                                          | 4       | 0.53      | 8.45  | 4.04  | 0.03  | 1.66 | 0.21  | 2.86 | 0.02  | 0.66 |
| V                                          | 5       | 0.55      | 6.11  | 3.24  | 0.05  | 1.07 | 0.21  | 2.07 | 0.03  | 0.37 |
| V                                          | 6       | 0.23      | 8.32  | 2.49  | 0.04  | 1.45 | 0.09  | 1.26 | 0.03  | 0.46 |
| H+V                                        | 0       | 0.79      | 16.94 | 6.31  | 0.33  | 3.16 | 0.38  | 3.55 | 0.23  | 1.17 |
| H+V                                        | 1       | 0.79      | 15.55 | 6.74  | 0.17  | 2.25 | 0.33  | 4.67 | 0.13  | 0.90 |
| H+V                                        | 2       | 1.81      | 22.14 | 9.30  | 0.10  | 5.17 | 0.67  | 6.76 | 0.11  | 2.20 |
| H+V                                        | 3       | 2.39      | 19.90 | 8.70  | 0.08  | 4.89 | 0.88  | 6.76 | 0.08  | 2.20 |
| H+V                                        | 4       | 1.88      | 22.75 | 11.00 | 0.09  | 4.12 | 0.68  | 7.92 | 0.07  | 1.63 |
| H+V                                        | 5       | 1.67      | 17.41 | 10.03 | 0.14  | 3.06 | 0.60  | 6.36 | 0.10  | 1.41 |
| H+V                                        | 6       | 0.89      | 21.09 | 10.13 | 0.15  | 5.39 | 0.39  | 5.52 | 0.10  | 1.47 |

**Table 2-4** Simulated averaged *PD* over 4 [cm<sup>2</sup>] area on Plane B Module - n258 High Channel.

| PD Simulation (W/m2)<br>PD Limit = 10 W/m2 |         | High Ch |       |          |       |      |      |       |      |       |      |      |
|--------------------------------------------|---------|---------|-------|----------|-------|------|------|-------|------|-------|------|------|
|                                            |         | 2mm     |       |          |       |      |      | 10mm  |      |       |      |      |
|                                            |         | Close   |       |          |       |      |      |       |      |       |      |      |
|                                            |         | S1      | S2    | S2       | S3    | S4   | S5   | S1    | S2   | S3    | S4   | S5   |
| Pol                                        | Beam ID | Front   | Back  | Back(CB) | Right | Left | Top  | Front | Back | Right | Left | Top  |
| H                                          | 0       | 0.61    | 6.82  | 2.43     | 0.15  | 0.13 | 1.91 | 0.26  | 1.36 | 0.13  | 0.09 | 0.99 |
| H                                          | 1       | 0.47    | 8.18  | 2.91     | 0.11  | 0.29 | 1.80 | 0.29  | 1.85 | 0.11  | 0.17 | 0.67 |
| H                                          | 2       | 0.54    | 9.95  | 4.11     | 0.06  | 0.22 | 2.13 | 0.37  | 2.81 | 0.04  | 0.15 | 1.09 |
| H                                          | 3       | 0.30    | 10.48 | 4.70     | 0.04  | 0.41 | 2.40 | 0.22  | 3.20 | 0.03  | 0.22 | 1.12 |
| H                                          | 4       | 0.35    | 9.58  | 4.56     | 0.04  | 0.71 | 1.87 | 0.24  | 3.08 | 0.04  | 0.30 | 0.71 |
| H                                          | 5       | 0.38    | 10.03 | 4.27     | 0.09  | 0.50 | 2.51 | 0.24  | 2.72 | 0.04  | 0.31 | 1.14 |
| H                                          | 6       | 0.54    | 9.79  | 4.25     | 0.11  | 1.48 | 1.50 | 0.20  | 2.52 | 0.06  | 0.98 | 0.38 |
| V                                          | 0       | 0.49    | 5.14  | 1.99     | 0.14  | 0.41 | 0.83 | 0.19  | 1.26 | 0.10  | 0.29 | 0.33 |
| V                                          | 1       | 0.31    | 7.53  | 3.65     | 0.09  | 0.28 | 1.27 | 0.15  | 2.68 | 0.06  | 0.17 | 0.50 |
| V                                          | 2       | 0.43    | 10.62 | 4.04     | 0.05  | 0.23 | 2.59 | 0.27  | 2.99 | 0.04  | 0.13 | 1.09 |
| V                                          | 3       | 0.28    | 10.14 | 4.65     | 0.04  | 0.11 | 2.33 | 0.19  | 3.59 | 0.03  | 0.08 | 1.00 |
| V                                          | 4       | 0.41    | 10.47 | 4.43     | 0.04  | 0.41 | 2.33 | 0.26  | 3.21 | 0.02  | 0.28 | 1.07 |
| V                                          | 5       | 0.48    | 7.80  | 4.10     | 0.06  | 0.72 | 1.51 | 0.27  | 2.62 | 0.03  | 0.37 | 0.61 |
| V                                          | 6       | 0.48    | 5.06  | 1.66     | 0.13  | 0.61 | 1.02 | 0.29  | 0.88 | 0.09  | 0.40 | 0.33 |
| H+V                                        | 0       | 1.57    | 16.13 | 6.35     | 0.40  | 0.89 | 3.88 | 0.67  | 3.61 | 0.25  | 0.63 | 1.75 |
| H+V                                        | 1       | 1.05    | 17.91 | 7.70     | 0.25  | 0.75 | 4.04 | 0.69  | 4.97 | 0.24  | 0.43 | 1.56 |
| H+V                                        | 2       | 1.75    | 21.89 | 8.89     | 0.12  | 0.50 | 5.10 | 1.14  | 6.29 | 0.07  | 0.34 | 2.39 |
| H+V                                        | 3       | 1.10    | 20.78 | 9.66     | 0.09  | 0.87 | 5.85 | 0.79  | 7.54 | 0.09  | 0.40 | 2.84 |
| H+V                                        | 4       | 1.29    | 22.59 | 11.04    | 0.11  | 1.49 | 5.52 | 0.88  | 7.81 | 0.08  | 0.69 | 2.24 |
| H+V                                        | 5       | 1.34    | 21.91 | 10.71    | 0.24  | 1.75 | 4.26 | 0.83  | 6.85 | 0.10  | 0.87 | 1.87 |
| H+V                                        | 6       | 1.78    | 22.27 | 7.41     | 0.40  | 3.41 | 4.11 | 0.64  | 3.84 | 0.29  | 2.32 | 1.07 |

| PD Simulation (W/m2) PD<br>Limit = 10 W/m2 |         | High Ch   |       |       |       |      |       |      |       |      |
|--------------------------------------------|---------|-----------|-------|-------|-------|------|-------|------|-------|------|
|                                            |         | 2mm       |       |       |       |      | 10mm  |      |       |      |
|                                            |         | Open      |       |       |       |      |       |      |       |      |
|                                            |         | S1        | S1    | S2    | S4    | S5   | S1    | S2   | S4    | S5   |
| Pol                                        | Beam ID | Front(CB) | Front | Back  | Right | Top  | Front | Back | Right | Top  |
| H                                          | 0       | 0.67      | 7.13  | 2.55  | 0.17  | 2.00 | 0.28  | 1.43 | 0.13  | 1.00 |
| H                                          | 1       | 0.57      | 8.27  | 2.93  | 0.13  | 1.78 | 0.27  | 1.85 | 0.10  | 0.66 |
| H                                          | 2       | 0.66      | 10.29 | 4.17  | 0.04  | 2.27 | 0.26  | 2.88 | 0.03  | 1.13 |
| H                                          | 3       | 0.38      | 10.58 | 4.73  | 0.05  | 2.44 | 0.15  | 3.24 | 0.03  | 1.11 |
| H                                          | 4       | 0.43      | 9.62  | 4.61  | 0.03  | 1.91 | 0.16  | 3.13 | 0.02  | 0.77 |
| H                                          | 5       | 0.50      | 11.00 | 4.25  | 0.09  | 2.52 | 0.20  | 2.71 | 0.04  | 1.22 |
| H                                          | 6       | 0.58      | 10.11 | 4.28  | 0.07  | 1.49 | 0.14  | 2.49 | 0.05  | 0.39 |
| V                                          | 0       | 0.71      | 5.13  | 1.97  | 0.09  | 0.85 | 0.14  | 1.27 | 0.06  | 0.34 |
| V                                          | 1       | 0.36      | 7.73  | 3.71  | 0.06  | 1.34 | 0.12  | 2.76 | 0.05  | 0.53 |
| V                                          | 2       | 0.50      | 11.02 | 4.14  | 0.04  | 2.68 | 0.19  | 3.06 | 0.03  | 1.13 |
| V                                          | 3       | 0.34      | 10.31 | 4.73  | 0.04  | 2.37 | 0.12  | 3.64 | 0.04  | 1.02 |
| V                                          | 4       | 0.55      | 10.71 | 4.54  | 0.04  | 2.47 | 0.21  | 3.30 | 0.02  | 1.16 |
| V                                          | 5       | 0.72      | 7.86  | 4.22  | 0.05  | 1.60 | 0.28  | 2.72 | 0.03  | 0.66 |
| V                                          | 6       | 0.62      | 5.17  | 1.77  | 0.06  | 1.09 | 0.24  | 0.98 | 0.04  | 0.33 |
| H+V                                        | 0       | 2.07      | 16.47 | 6.38  | 0.26  | 3.91 | 0.54  | 3.60 | 0.18  | 1.79 |
| H+V                                        | 1       | 1.33      | 18.15 | 7.78  | 0.27  | 4.14 | 0.53  | 5.12 | 0.23  | 1.62 |
| H+V                                        | 2       | 2.03      | 21.26 | 8.92  | 0.09  | 5.24 | 0.78  | 6.38 | 0.07  | 2.47 |
| H+V                                        | 3       | 1.31      | 21.34 | 9.70  | 0.09  | 6.05 | 0.49  | 7.56 | 0.08  | 2.89 |
| H+V                                        | 4       | 1.56      | 21.94 | 10.99 | 0.11  | 5.80 | 0.62  | 7.79 | 0.07  | 2.43 |
| H+V                                        | 5       | 1.89      | 21.89 | 10.75 | 0.24  | 4.55 | 0.65  | 6.95 | 0.10  | 2.19 |
| H+V                                        | 6       | 2.02      | 21.78 | 7.60  | 0.20  | 4.19 | 0.48  | 3.87 | 0.14  | 1.12 |

**Table 2-5** Simulated averaged *PD* over 4 [cm<sup>2</sup>] area on Plane B Module - n260 Low Channel.

| PD Simulation (W/m2)<br>PD Limit = 10 W/m2 |         | Low Ch |       |          |       |      |      |       |      |       |      |      |
|--------------------------------------------|---------|--------|-------|----------|-------|------|------|-------|------|-------|------|------|
|                                            |         | 2mm    |       |          |       |      |      | 10mm  |      |       |      |      |
|                                            |         | Close  |       |          |       |      |      |       |      |       |      |      |
|                                            |         | S1     | S2    | S2       | S3    | S4   | S5   | S1    | S2   | S3    | S4   | S5   |
| Pol                                        | Beam ID | Front  | Back  | Back(CB) | Right | Left | Top  | Front | Back | Right | Left | Top  |
| H                                          | 0       | 0.14   | 9.12  | 2.78     | 0.12  | 0.79 | 1.74 | 0.07  | 1.48 | 0.09  | 0.52 | 0.66 |
| H                                          | 1       | 0.14   | 8.26  | 2.84     | 0.05  | 0.87 | 1.90 | 0.09  | 1.86 | 0.04  | 0.51 | 0.88 |
| H                                          | 2       | 0.24   | 9.45  | 2.85     | 0.10  | 0.83 | 1.76 | 0.10  | 1.80 | 0.07  | 0.57 | 0.76 |
| H                                          | 3       | 0.14   | 6.90  | 3.10     | 0.04  | 0.25 | 2.22 | 0.08  | 2.32 | 0.03  | 0.16 | 1.10 |
| H                                          | 4       | 0.24   | 7.69  | 3.78     | 0.05  | 0.31 | 2.41 | 0.17  | 2.61 | 0.03  | 0.13 | 1.16 |
| H                                          | 5       | 0.20   | 8.98  | 3.27     | 0.08  | 0.57 | 2.16 | 0.13  | 1.77 | 0.06  | 0.35 | 1.00 |
| H                                          | 6       | 0.14   | 9.63  | 2.64     | 0.13  | 0.71 | 1.65 | 0.07  | 1.33 | 0.09  | 0.48 | 0.64 |
| V                                          | 0       | 0.30   | 6.39  | 2.35     | 0.06  | 0.44 | 1.37 | 0.17  | 1.16 | 0.04  | 0.26 | 0.58 |
| V                                          | 1       | 0.15   | 7.13  | 2.66     | 0.06  | 0.41 | 1.86 | 0.07  | 1.76 | 0.06  | 0.17 | 0.90 |
| V                                          | 2       | 0.18   | 7.30  | 3.19     | 0.10  | 0.41 | 1.77 | 0.10  | 2.11 | 0.09  | 0.24 | 0.86 |
| V                                          | 3       | 0.15   | 6.17  | 2.93     | 0.05  | 0.20 | 2.12 | 0.07  | 1.99 | 0.03  | 0.12 | 1.06 |
| V                                          | 4       | 0.16   | 8.84  | 2.98     | 0.07  | 0.29 | 1.62 | 0.10  | 2.25 | 0.06  | 0.18 | 0.65 |
| V                                          | 5       | 0.25   | 8.84  | 3.12     | 0.05  | 0.65 | 1.39 | 0.13  | 2.10 | 0.04  | 0.36 | 0.59 |
| V                                          | 6       | 0.23   | 6.57  | 2.08     | 0.08  | 0.59 | 1.45 | 0.12  | 1.26 | 0.07  | 0.37 | 0.55 |
| H+V                                        | 0       | 0.46   | 15.50 | 5.29     | 0.24  | 1.53 | 3.27 | 0.27  | 2.91 | 0.19  | 0.95 | 1.36 |
| H+V                                        | 1       | 0.32   | 20.20 | 6.94     | 0.20  | 1.28 | 5.18 | 0.17  | 4.69 | 0.17  | 0.77 | 2.55 |
| H+V                                        | 2       | 0.55   | 16.51 | 6.40     | 0.20  | 1.32 | 3.38 | 0.21  | 3.72 | 0.16  | 0.78 | 1.36 |
| H+V                                        | 3       | 0.34   | 15.84 | 6.45     | 0.10  | 0.58 | 5.23 | 0.19  | 4.94 | 0.07  | 0.39 | 2.48 |
| H+V                                        | 4       | 0.49   | 16.40 | 7.38     | 0.14  | 0.63 | 4.39 | 0.29  | 5.61 | 0.12  | 0.35 | 2.02 |
| H+V                                        | 5       | 0.51   | 16.77 | 7.05     | 0.17  | 1.72 | 4.79 | 0.30  | 4.23 | 0.13  | 1.06 | 2.07 |
| H+V                                        | 6       | 0.48   | 17.51 | 5.37     | 0.30  | 1.69 | 3.25 | 0.26  | 3.34 | 0.23  | 1.07 | 1.29 |

| PD Simulation (W/m2) PD<br>Limit = 10 W/m2 |         | Low Ch    |       |      |       |      |       |      |       |      |
|--------------------------------------------|---------|-----------|-------|------|-------|------|-------|------|-------|------|
|                                            |         | 2mm       |       |      |       |      | 10mm  |      |       |      |
|                                            |         | Open      |       |      |       |      |       |      |       |      |
|                                            |         | S1        | S1    | S2   | S3    | S5   | S1    | S2   | S3    | S5   |
| Pol                                        | Beam ID | Front(CB) | Front | Back | Right | Top  | Front | Back | Right | Top  |
| H                                          | 0       | 0.24      | 8.95  | 2.72 | 0.12  | 1.70 | 0.12  | 1.44 | 0.09  | 0.64 |
| H                                          | 1       | 0.33      | 7.77  | 2.67 | 0.05  | 1.83 | 0.13  | 1.78 | 0.03  | 0.80 |
| H                                          | 2       | 0.51      | 8.97  | 2.74 | 0.10  | 1.66 | 0.12  | 1.73 | 0.07  | 0.72 |
| H                                          | 3       | 0.33      | 6.87  | 3.13 | 0.04  | 2.28 | 0.12  | 2.36 | 0.02  | 1.12 |
| H                                          | 4       | 0.44      | 8.06  | 3.82 | 0.06  | 2.54 | 0.21  | 2.67 | 0.04  | 1.26 |
| H                                          | 5       | 0.37      | 8.89  | 3.31 | 0.08  | 2.15 | 0.16  | 1.77 | 0.07  | 0.96 |
| H                                          | 6       | 0.27      | 8.41  | 2.61 | 0.13  | 1.64 | 0.11  | 1.30 | 0.09  | 0.63 |
| V                                          | 0       | 0.59      | 6.02  | 2.28 | 0.06  | 1.34 | 0.23  | 1.10 | 0.04  | 0.58 |
| V                                          | 1       | 0.42      | 7.29  | 2.62 | 0.06  | 1.91 | 0.17  | 1.70 | 0.06  | 0.92 |
| V                                          | 2       | 0.39      | 7.40  | 3.21 | 0.10  | 1.76 | 0.18  | 2.13 | 0.09  | 0.86 |
| V                                          | 3       | 0.28      | 6.31  | 2.96 | 0.06  | 2.13 | 0.14  | 2.04 | 0.04  | 1.12 |
| V                                          | 4       | 0.36      | 8.59  | 2.98 | 0.06  | 1.63 | 0.15  | 2.28 | 0.06  | 0.66 |
| V                                          | 5       | 0.47      | 8.36  | 3.01 | 0.06  | 1.26 | 0.20  | 2.03 | 0.04  | 0.56 |
| V                                          | 6       | 0.56      | 6.37  | 2.15 | 0.08  | 1.47 | 0.20  | 1.27 | 0.08  | 0.57 |
| H+V                                        | 0       | 0.98      | 15.30 | 5.24 | 0.24  | 3.28 | 0.49  | 2.82 | 0.19  | 1.34 |
| H+V                                        | 1       | 0.94      | 19.52 | 6.72 | 0.20  | 5.15 | 0.34  | 4.56 | 0.15  | 2.44 |
| H+V                                        | 2       | 1.36      | 15.82 | 6.35 | 0.21  | 3.25 | 0.34  | 3.67 | 0.16  | 1.30 |
| H+V                                        | 3       | 0.71      | 15.93 | 6.51 | 0.10  | 5.32 | 0.31  | 5.00 | 0.06  | 2.61 |
| H+V                                        | 4       | 0.89      | 16.56 | 7.53 | 0.16  | 4.56 | 0.39  | 5.78 | 0.14  | 2.16 |
| H+V                                        | 5       | 0.89      | 16.22 | 6.99 | 0.19  | 4.67 | 0.42  | 4.29 | 0.15  | 2.00 |
| H+V                                        | 6       | 1.07      | 17.56 | 5.34 | 0.31  | 3.21 | 0.42  | 3.28 | 0.25  | 1.31 |

**Table 2-6** Simulated averaged *PD* over 4 [cm<sup>2</sup>] area on Plane B Module - n260 Mid Channel.

| PD Simulation (W/m2)<br>PD Limit = 10 W/m2 |         | Mid Ch |       |          |       |      |      |       |      |       |      |      |
|--------------------------------------------|---------|--------|-------|----------|-------|------|------|-------|------|-------|------|------|
|                                            |         | 2mm    |       |          |       |      |      | 10mm  |      |       |      |      |
|                                            |         | Close  |       |          |       |      |      |       |      |       |      |      |
|                                            |         | S1     | S2    | S2       | S3    | S4   | S5   | S1    | S2   | S3    | S4   | S5   |
| Pol                                        | Beam ID | Front  | Back  | Back(CB) | Right | Left | Top  | Front | Back | Right | Left | Top  |
| H                                          | 0       | 0.19   | 10.63 | 3.93     | 0.13  | 1.03 | 2.11 | 0.09  | 2.32 | 0.08  | 0.64 | 0.91 |
| H                                          | 1       | 0.22   | 6.91  | 3.19     | 0.05  | 1.11 | 1.87 | 0.15  | 1.87 | 0.03  | 0.66 | 0.85 |
| H                                          | 2       | 0.25   | 7.44  | 2.86     | 0.08  | 0.51 | 1.62 | 0.14  | 1.90 | 0.06  | 0.35 | 0.68 |
| H                                          | 3       | 0.32   | 5.71  | 3.13     | 0.05  | 0.61 | 1.69 | 0.17  | 1.84 | 0.03  | 0.35 | 0.77 |
| H                                          | 4       | 0.15   | 6.38  | 3.97     | 0.06  | 0.47 | 1.96 | 0.09  | 2.65 | 0.04  | 0.21 | 0.94 |
| H                                          | 5       | 0.24   | 9.90  | 3.91     | 0.11  | 0.97 | 2.51 | 0.15  | 2.48 | 0.07  | 0.47 | 1.00 |
| H                                          | 6       | 0.23   | 10.92 | 3.78     | 0.15  | 1.02 | 2.28 | 0.11  | 2.15 | 0.08  | 0.63 | 0.97 |
| V                                          | 0       | 0.29   | 7.16  | 2.67     | 0.07  | 0.60 | 1.51 | 0.14  | 1.34 | 0.03  | 0.40 | 0.51 |
| V                                          | 1       | 0.25   | 6.32  | 3.27     | 0.10  | 0.43 | 1.72 | 0.09  | 2.14 | 0.08  | 0.28 | 0.86 |
| V                                          | 2       | 0.18   | 6.45  | 3.16     | 0.10  | 0.35 | 1.53 | 0.09  | 2.15 | 0.07  | 0.22 | 0.73 |
| V                                          | 3       | 0.24   | 6.64  | 3.32     | 0.05  | 0.21 | 2.42 | 0.12  | 2.43 | 0.03  | 0.13 | 1.34 |
| V                                          | 4       | 0.21   | 8.98  | 3.44     | 0.09  | 0.55 | 1.81 | 0.13  | 2.33 | 0.05  | 0.38 | 0.70 |
| V                                          | 5       | 0.20   | 8.72  | 3.72     | 0.09  | 0.87 | 1.67 | 0.10  | 2.56 | 0.08  | 0.54 | 0.67 |
| V                                          | 6       | 0.22   | 7.82  | 2.31     | 0.12  | 0.93 | 1.70 | 0.11  | 1.43 | 0.08  | 0.63 | 0.74 |
| H+V                                        | 0       | 0.66   | 19.53 | 7.35     | 0.30  | 2.27 | 5.01 | 0.35  | 4.49 | 0.17  | 1.45 | 1.93 |
| H+V                                        | 1       | 0.65   | 15.65 | 7.32     | 0.20  | 1.88 | 4.38 | 0.32  | 4.02 | 0.18  | 1.27 | 2.06 |
| H+V                                        | 2       | 0.56   | 15.11 | 6.41     | 0.26  | 1.04 | 3.28 | 0.30  | 4.16 | 0.16  | 0.66 | 1.34 |
| H+V                                        | 3       | 0.89   | 15.44 | 8.94     | 0.13  | 1.16 | 5.43 | 0.51  | 4.94 | 0.08  | 0.66 | 3.04 |
| H+V                                        | 4       | 0.49   | 15.76 | 8.29     | 0.14  | 1.05 | 4.46 | 0.27  | 5.68 | 0.08  | 0.73 | 2.16 |
| H+V                                        | 5       | 0.59   | 19.58 | 8.39     | 0.25  | 2.52 | 5.23 | 0.37  | 6.02 | 0.16  | 1.31 | 2.11 |
| H+V                                        | 6       | 0.49   | 18.97 | 7.64     | 0.45  | 2.78 | 5.53 | 0.24  | 4.80 | 0.26  | 1.83 | 2.02 |

| PD Simulation (W/m2) PD<br>Limit = 10 W/m2 |         | Mid Ch    |       |      |       |      |       |      |       |      |
|--------------------------------------------|---------|-----------|-------|------|-------|------|-------|------|-------|------|
|                                            |         | 2mm       |       |      |       |      | 10mm  |      |       |      |
|                                            |         | Open      |       |      |       |      |       |      |       |      |
|                                            |         | S1        | S1    | S2   | S4    | S5   | S1    | S2   | S4    | S5   |
| Pol                                        | Beam ID | Front(CB) | Front | Back | Right | Top  | Front | Back | Right | Top  |
| H                                          | 0       | 0.38      | 9.38  | 3.87 | 0.14  | 2.10 | 0.16  | 2.29 | 0.08  | 0.89 |
| H                                          | 1       | 0.47      | 6.79  | 3.16 | 0.04  | 1.85 | 0.21  | 1.84 | 0.03  | 0.84 |
| H                                          | 2       | 0.53      | 7.54  | 2.90 | 0.09  | 1.63 | 0.18  | 1.92 | 0.08  | 0.67 |
| H                                          | 3       | 0.65      | 5.38  | 3.11 | 0.05  | 1.68 | 0.28  | 1.83 | 0.03  | 0.77 |
| H                                          | 4       | 0.32      | 6.06  | 3.92 | 0.06  | 1.90 | 0.14  | 2.64 | 0.04  | 0.92 |
| H                                          | 5       | 0.47      | 9.90  | 3.97 | 0.12  | 2.59 | 0.19  | 2.62 | 0.08  | 1.05 |
| H                                          | 6       | 0.50      | 9.63  | 3.71 | 0.16  | 2.22 | 0.19  | 2.12 | 0.09  | 0.91 |
| V                                          | 0       | 0.73      | 6.92  | 2.62 | 0.07  | 1.56 | 0.28  | 1.33 | 0.03  | 0.52 |
| V                                          | 1       | 0.52      | 6.04  | 3.28 | 0.12  | 1.69 | 0.19  | 2.15 | 0.09  | 0.80 |
| V                                          | 2       | 0.34      | 6.62  | 3.22 | 0.11  | 1.54 | 0.15  | 2.19 | 0.09  | 0.73 |
| V                                          | 3       | 0.58      | 6.21  | 3.32 | 0.05  | 2.35 | 0.20  | 2.39 | 0.03  | 1.28 |
| V                                          | 4       | 0.43      | 9.07  | 3.43 | 0.10  | 1.76 | 0.16  | 2.30 | 0.05  | 0.69 |
| V                                          | 5       | 0.72      | 8.23  | 3.67 | 0.10  | 1.62 | 0.30  | 2.50 | 0.08  | 0.65 |
| V                                          | 6       | 0.51      | 8.03  | 2.27 | 0.13  | 1.73 | 0.18  | 1.37 | 0.09  | 0.72 |
| H+V                                        | 0       | 1.29      | 19.13 | 7.29 | 0.32  | 5.23 | 0.52  | 4.48 | 0.17  | 2.01 |
| H+V                                        | 1       | 1.18      | 15.32 | 7.33 | 0.21  | 4.29 | 0.58  | 4.01 | 0.19  | 1.95 |
| H+V                                        | 2       | 1.14      | 15.09 | 6.59 | 0.29  | 3.26 | 0.42  | 4.34 | 0.20  | 1.30 |
| H+V                                        | 3       | 1.89      | 15.42 | 9.01 | 0.12  | 5.33 | 0.75  | 4.79 | 0.08  | 2.93 |
| H+V                                        | 4       | 0.89      | 14.94 | 8.18 | 0.19  | 4.28 | 0.42  | 5.55 | 0.10  | 2.10 |
| H+V                                        | 5       | 1.14      | 19.51 | 8.47 | 0.26  | 5.39 | 0.52  | 6.13 | 0.17  | 2.22 |
| H+V                                        | 6       | 1.08      | 19.20 | 7.44 | 0.48  | 5.32 | 0.49  | 4.53 | 0.28  | 1.87 |

**Table 2-7** Simulated averaged *PD* over 4 [cm<sup>2</sup>] area on Plane B Module - n260 High Channel.

| PD Simulation (W/m2)<br>PD Limit = 10 W/m2 |         | High Ch |       |          |       |      |      |       |      |       |      |      |
|--------------------------------------------|---------|---------|-------|----------|-------|------|------|-------|------|-------|------|------|
|                                            |         | 2mm     |       |          |       |      |      | 10mm  |      |       |      |      |
|                                            |         | Close   |       |          |       |      |      |       |      |       |      |      |
|                                            |         | S1      | S2    | S2       | S3    | S4   | S5   | S1    | S2   | S3    | S4   | S5   |
| Pol                                        | Beam ID | Front   | Back  | Back(CB) | Right | Left | Top  | Front | Back | Right | Left | Top  |
| H                                          | 0       | 0.27    | 8.14  | 3.33     | 0.11  | 0.80 | 1.62 | 0.13  | 2.05 | 0.08  | 0.51 | 0.77 |
| H                                          | 1       | 0.18    | 6.08  | 2.69     | 0.05  | 0.65 | 1.74 | 0.09  | 1.81 | 0.04  | 0.37 | 0.81 |
| H                                          | 2       | 0.28    | 7.46  | 2.76     | 0.10  | 0.63 | 1.50 | 0.15  | 1.44 | 0.06  | 0.40 | 0.62 |
| H                                          | 3       | 0.22    | 5.69  | 2.93     | 0.04  | 0.57 | 1.39 | 0.13  | 1.85 | 0.03  | 0.34 | 0.48 |
| H                                          | 4       | 0.32    | 6.40  | 3.86     | 0.08  | 0.49 | 1.70 | 0.16  | 2.55 | 0.06  | 0.20 | 0.68 |
| H                                          | 5       | 0.30    | 8.94  | 3.42     | 0.08  | 0.91 | 2.12 | 0.18  | 2.41 | 0.06  | 0.42 | 0.98 |
| H                                          | 6       | 0.26    | 8.77  | 3.20     | 0.12  | 0.87 | 1.83 | 0.12  | 1.89 | 0.08  | 0.46 | 0.86 |
| V                                          | 0       | 0.36    | 5.70  | 2.51     | 0.06  | 0.64 | 1.46 | 0.20  | 1.20 | 0.05  | 0.41 | 0.55 |
| V                                          | 1       | 0.22    | 6.49  | 3.22     | 0.09  | 0.39 | 2.08 | 0.10  | 2.01 | 0.07  | 0.19 | 0.80 |
| V                                          | 2       | 0.26    | 6.05  | 3.76     | 0.07  | 0.50 | 1.61 | 0.15  | 2.65 | 0.06  | 0.16 | 0.75 |
| V                                          | 3       | 0.23    | 6.44  | 3.45     | 0.05  | 0.27 | 2.34 | 0.14  | 2.26 | 0.04  | 0.16 | 1.10 |
| V                                          | 4       | 0.14    | 8.09  | 4.18     | 0.05  | 0.54 | 1.92 | 0.07  | 2.77 | 0.03  | 0.38 | 0.66 |
| V                                          | 5       | 0.29    | 7.09  | 3.40     | 0.13  | 0.49 | 1.78 | 0.14  | 2.09 | 0.10  | 0.25 | 0.74 |
| V                                          | 6       | 0.15    | 7.36  | 3.29     | 0.09  | 1.07 | 1.94 | 0.08  | 1.75 | 0.05  | 0.72 | 0.76 |
| H+V                                        | 0       | 0.77    | 15.63 | 7.30     | 0.25  | 1.87 | 4.51 | 0.40  | 4.17 | 0.17  | 1.17 | 2.13 |
| H+V                                        | 1       | 0.47    | 13.69 | 6.09     | 0.18  | 1.20 | 4.52 | 0.24  | 3.91 | 0.13  | 0.78 | 1.98 |
| H+V                                        | 2       | 0.65    | 14.05 | 7.19     | 0.22  | 1.35 | 3.47 | 0.38  | 4.55 | 0.14  | 0.70 | 1.30 |
| H+V                                        | 3       | 0.55    | 13.68 | 6.81     | 0.13  | 1.07 | 4.03 | 0.37  | 4.64 | 0.09  | 0.65 | 1.64 |
| H+V                                        | 4       | 0.54    | 16.18 | 8.88     | 0.14  | 0.95 | 4.14 | 0.28  | 6.02 | 0.11  | 0.62 | 1.44 |
| H+V                                        | 5       | 0.71    | 16.74 | 8.01     | 0.31  | 1.81 | 4.89 | 0.37  | 5.23 | 0.24  | 0.85 | 2.43 |
| H+V                                        | 6       | 0.51    | 19.37 | 8.42     | 0.38  | 2.52 | 5.70 | 0.25  | 4.90 | 0.20  | 1.58 | 2.39 |

| PD Simulation (W/m2) PD<br>Limit = 10 W/m2 |         | High Ch   |       |      |       |      |       |      |       |      |
|--------------------------------------------|---------|-----------|-------|------|-------|------|-------|------|-------|------|
|                                            |         | 2mm       |       |      |       |      | 10mm  |      |       |      |
|                                            |         | Open      |       |      |       |      |       |      |       |      |
|                                            |         | S1        | S1    | S2   | S4    | S5   | S1    | S2   | S4    | S5   |
| Pol                                        | Beam ID | Front(CB) | Front | Back | Right | Top  | Front | Back | Right | Top  |
| H                                          | 0       | 0.49      | 7.21  | 3.35 | 0.12  | 1.57 | 0.25  | 2.04 | 0.08  | 0.76 |
| H                                          | 1       | 0.42      | 6.37  | 2.80 | 0.04  | 1.87 | 0.18  | 1.91 | 0.03  | 0.90 |
| H                                          | 2       | 0.64      | 7.59  | 2.81 | 0.11  | 1.55 | 0.23  | 1.47 | 0.06  | 0.70 |
| H                                          | 3       | 0.56      | 5.66  | 2.91 | 0.04  | 1.37 | 0.23  | 1.84 | 0.03  | 0.48 |
| H                                          | 4       | 0.57      | 6.50  | 3.85 | 0.08  | 1.70 | 0.22  | 2.55 | 0.06  | 0.70 |
| H                                          | 5       | 0.55      | 8.66  | 3.40 | 0.09  | 2.07 | 0.23  | 2.33 | 0.06  | 0.99 |
| H                                          | 6       | 0.49      | 7.85  | 3.19 | 0.13  | 1.77 | 0.19  | 1.88 | 0.07  | 0.81 |
| V                                          | 0       | 0.65      | 5.35  | 2.54 | 0.05  | 1.39 | 0.30  | 1.25 | 0.03  | 0.54 |
| V                                          | 1       | 0.53      | 6.51  | 3.22 | 0.10  | 2.02 | 0.18  | 1.98 | 0.08  | 0.79 |
| V                                          | 2       | 0.37      | 5.93  | 3.84 | 0.08  | 1.54 | 0.19  | 2.73 | 0.06  | 0.70 |
| V                                          | 3       | 0.42      | 6.35  | 3.46 | 0.04  | 2.32 | 0.20  | 2.29 | 0.03  | 1.09 |
| V                                          | 4       | 0.34      | 8.32  | 4.10 | 0.06  | 1.89 | 0.18  | 2.72 | 0.03  | 0.68 |
| V                                          | 5       | 0.54      | 7.16  | 3.41 | 0.12  | 1.72 | 0.19  | 2.09 | 0.09  | 0.70 |
| V                                          | 6       | 0.39      | 7.48  | 3.29 | 0.10  | 1.87 | 0.20  | 1.72 | 0.05  | 0.71 |
| H+V                                        | 0       | 1.65      | 14.73 | 7.30 | 0.24  | 4.42 | 0.67  | 4.12 | 0.16  | 2.06 |
| H+V                                        | 1       | 1.25      | 13.60 | 6.25 | 0.19  | 4.65 | 0.49  | 4.08 | 0.12  | 2.11 |
| H+V                                        | 2       | 1.17      | 13.97 | 7.42 | 0.27  | 3.51 | 0.50  | 4.68 | 0.14  | 1.41 |
| H+V                                        | 3       | 1.24      | 13.22 | 6.81 | 0.12  | 3.98 | 0.57  | 4.63 | 0.10  | 1.72 |
| H+V                                        | 4       | 1.20      | 15.99 | 8.99 | 0.16  | 4.17 | 0.42  | 6.04 | 0.10  | 1.53 |
| H+V                                        | 5       | 1.47      | 16.65 | 7.95 | 0.31  | 4.71 | 0.61  | 5.01 | 0.22  | 2.31 |
| H+V                                        | 6       | 0.88      | 19.44 | 8.39 | 0.41  | 5.63 | 0.45  | 4.92 | 0.18  | 2.30 |

**Table 2-8** Simulated averaged PD over 4 [cm<sup>2</sup>] area on Plane B Module - n261 Low Channel.

| PD Simulation (W/m2)<br>PD Limit = 10 W/m2 |         | Low Ch |       |          |       |      |      |       |      |       |      |      |
|--------------------------------------------|---------|--------|-------|----------|-------|------|------|-------|------|-------|------|------|
|                                            |         | 2mm    |       |          |       |      |      | 10mm  |      |       |      |      |
|                                            |         | Close  |       |          |       |      |      |       |      |       |      |      |
|                                            |         | S1     | S2    | S2       | S3    | S4   | S5   | S1    | S2   | S3    | S4   | S5   |
| Pol                                        | Beam ID | Front  | Back  | Back(CB) | Right | Left | Top  | Front | Back | Right | Left | Top  |
| H                                          | 0       | 0.69   | 5.77  | 1.89     | 0.11  | 0.31 | 1.50 | 0.27  | 1.07 | 0.09  | 0.21 | 0.74 |
| H                                          | 1       | 0.69   | 9.39  | 3.45     | 0.07  | 0.27 | 1.93 | 0.45  | 2.20 | 0.05  | 0.17 | 0.79 |
| H                                          | 2       | 0.49   | 5.08  | 2.96     | 0.07  | 0.30 | 0.91 | 0.26  | 1.87 | 0.08  | 0.22 | 0.36 |
| H                                          | 3       | 0.35   | 7.12  | 3.32     | 0.05  | 0.34 | 1.32 | 0.20  | 2.31 | 0.04  | 0.23 | 0.60 |
| H                                          | 4       | 0.29   | 8.23  | 3.55     | 0.06  | 0.41 | 1.77 | 0.19  | 2.38 | 0.04  | 0.24 | 0.76 |
| H                                          | 5       | 0.38   | 8.38  | 3.87     | 0.05  | 0.71 | 1.61 | 0.25  | 2.60 | 0.03  | 0.34 | 0.58 |
| H                                          | 6       | 0.32   | 8.33  | 3.41     | 0.06  | 1.14 | 1.27 | 0.17  | 1.87 | 0.03  | 0.75 | 0.48 |
| V                                          | 0       | 0.24   | 6.72  | 2.48     | 0.06  | 0.28 | 1.27 | 0.14  | 1.62 | 0.04  | 0.15 | 0.42 |
| V                                          | 1       | 0.18   | 5.95  | 2.04     | 0.08  | 0.25 | 1.20 | 0.10  | 1.37 | 0.05  | 0.18 | 0.49 |
| V                                          | 2       | 0.34   | 8.89  | 3.20     | 0.05  | 0.17 | 2.08 | 0.15  | 2.39 | 0.03  | 0.11 | 0.91 |
| V                                          | 3       | 0.34   | 8.68  | 4.14     | 0.04  | 0.22 | 2.15 | 0.20  | 3.12 | 0.02  | 0.15 | 0.95 |
| V                                          | 4       | 0.25   | 7.02  | 3.27     | 0.04  | 0.58 | 1.45 | 0.15  | 2.12 | 0.03  | 0.37 | 0.56 |
| V                                          | 5       | 0.28   | 8.23  | 3.20     | 0.03  | 0.38 | 1.81 | 0.17  | 2.21 | 0.02  | 0.25 | 0.81 |
| V                                          | 6       | 0.52   | 5.46  | 2.26     | 0.11  | 0.44 | 1.14 | 0.27  | 1.37 | 0.07  | 0.30 | 0.40 |
| H+V                                        | 0       | 1.05   | 17.45 | 5.73     | 0.27  | 0.80 | 4.07 | 0.43  | 3.58 | 0.17  | 0.50 | 1.64 |
| H+V                                        | 1       | 1.06   | 20.42 | 6.16     | 0.22  | 0.66 | 4.42 | 0.72  | 4.10 | 0.16  | 0.40 | 1.92 |
| H+V                                        | 2       | 1.50   | 18.92 | 7.61     | 0.15  | 0.46 | 4.15 | 0.74  | 5.11 | 0.14  | 0.34 | 1.74 |
| H+V                                        | 3       | 1.20   | 17.07 | 7.89     | 0.12  | 0.63 | 3.97 | 0.74  | 6.07 | 0.08  | 0.40 | 1.83 |
| H+V                                        | 4       | 1.00   | 20.21 | 8.11     | 0.16  | 1.52 | 3.54 | 0.62  | 5.66 | 0.11  | 0.70 | 1.38 |
| H+V                                        | 5       | 1.09   | 21.70 | 9.08     | 0.13  | 1.53 | 4.58 | 0.75  | 6.15 | 0.08  | 0.72 | 1.73 |
| H+V                                        | 6       | 1.44   | 20.51 | 7.73     | 0.31  | 2.34 | 3.33 | 0.78  | 4.45 | 0.18  | 1.53 | 1.04 |

| PD Simulation (W/m2) PD<br>Limit = 10 W/m2 |         | Low Ch    |       |      |       |      |       |      |       |      |
|--------------------------------------------|---------|-----------|-------|------|-------|------|-------|------|-------|------|
|                                            |         | 2mm       |       |      |       |      | 10mm  |      |       |      |
|                                            |         | Open      |       |      |       |      |       |      |       |      |
|                                            |         | S1        | S1    | S2   | S3    | S5   | S1    | S2   | S3    | S5   |
| Pol                                        | Beam ID | Front(CB) | Front | Back | Right | Top  | Front | Back | Right | Top  |
| H                                          | 0       | 0.66      | 5.48  | 1.80 | 0.12  | 1.42 | 0.25  | 1.01 | 0.09  | 0.68 |
| H                                          | 1       | 0.80      | 8.93  | 3.25 | 0.05  | 1.84 | 0.31  | 2.09 | 0.04  | 0.74 |
| H                                          | 2       | 0.54      | 4.84  | 2.83 | 0.07  | 0.89 | 0.19  | 1.81 | 0.07  | 0.36 |
| H                                          | 3       | 0.39      | 6.77  | 3.15 | 0.03  | 1.29 | 0.14  | 2.20 | 0.04  | 0.57 |
| H                                          | 4       | 0.32      | 7.69  | 3.34 | 0.04  | 1.66 | 0.12  | 2.24 | 0.03  | 0.73 |
| H                                          | 5       | 0.46      | 7.82  | 3.59 | 0.05  | 1.53 | 0.18  | 2.43 | 0.03  | 0.60 |
| H                                          | 6       | 0.33      | 7.90  | 3.13 | 0.03  | 1.21 | 0.12  | 1.69 | 0.02  | 0.48 |
| V                                          | 0       | 0.40      | 6.29  | 2.33 | 0.02  | 1.24 | 0.14  | 1.55 | 0.02  | 0.41 |
| V                                          | 1       | 0.20      | 5.54  | 1.89 | 0.06  | 1.14 | 0.08  | 1.27 | 0.05  | 0.45 |
| V                                          | 2       | 0.41      | 8.18  | 2.96 | 0.05  | 1.92 | 0.11  | 2.19 | 0.04  | 0.83 |
| V                                          | 3       | 0.37      | 8.14  | 3.88 | 0.03  | 2.01 | 0.13  | 2.92 | 0.01  | 0.90 |
| V                                          | 4       | 0.38      | 6.48  | 3.04 | 0.04  | 1.38 | 0.13  | 1.99 | 0.03  | 0.52 |
| V                                          | 5       | 0.32      | 7.79  | 3.01 | 0.04  | 1.75 | 0.11  | 2.07 | 0.02  | 0.78 |
| V                                          | 6       | 0.62      | 4.93  | 2.06 | 0.08  | 1.03 | 0.16  | 1.26 | 0.06  | 0.33 |
| H+V                                        | 0       | 1.09      | 16.81 | 5.47 | 0.22  | 3.93 | 0.39  | 3.42 | 0.15  | 1.51 |
| H+V                                        | 1       | 1.26      | 19.51 | 5.89 | 0.17  | 4.19 | 0.48  | 3.88 | 0.16  | 1.76 |
| H+V                                        | 2       | 1.61      | 17.22 | 7.01 | 0.14  | 3.79 | 0.51  | 4.72 | 0.18  | 1.62 |
| H+V                                        | 3       | 1.39      | 15.89 | 7.57 | 0.07  | 3.89 | 0.47  | 5.77 | 0.07  | 1.79 |
| H+V                                        | 4       | 1.19      | 18.35 | 7.40 | 0.10  | 3.21 | 0.43  | 5.18 | 0.07  | 1.28 |
| H+V                                        | 5       | 1.20      | 20.44 | 8.36 | 0.14  | 4.48 | 0.48  | 5.66 | 0.08  | 1.73 |
| H+V                                        | 6       | 1.53      | 18.99 | 7.15 | 0.19  | 3.05 | 0.48  | 4.14 | 0.14  | 0.92 |

**Table 2-9** Simulated averaged PD over 4 [cm<sup>2</sup>] area on Plane B Module - n261 Mid Channel.

| PD Simulation (W/m2)<br>PD Limit = 10 W/m2 |         | Mid Ch |       |          |       |      |      |       |      |       |      |      |
|--------------------------------------------|---------|--------|-------|----------|-------|------|------|-------|------|-------|------|------|
|                                            |         | 2mm    |       |          |       |      |      | 10mm  |      |       |      |      |
|                                            |         | Close  |       |          |       |      |      |       |      |       |      |      |
|                                            |         | S1     | S2    | S2       | S3    | S4   | S5   | S1    | S2   | S3    | S4   | S5   |
| Pol                                        | Beam ID | Front  | Back  | Back(CB) | Right | Left | Top  | Front | Back | Right | Left | Top  |
| H                                          | 0       | 0.50   | 5.62  | 1.93     | 0.10  | 0.25 | 1.47 | 0.26  | 1.06 | 0.07  | 0.18 | 0.69 |
| H                                          | 1       | 0.61   | 9.59  | 3.61     | 0.07  | 0.27 | 2.08 | 0.38  | 2.33 | 0.04  | 0.17 | 0.88 |
| H                                          | 2       | 0.40   | 5.18  | 2.97     | 0.09  | 0.32 | 1.06 | 0.23  | 1.84 | 0.06  | 0.21 | 0.46 |
| H                                          | 3       | 0.32   | 6.78  | 3.52     | 0.04  | 0.31 | 1.30 | 0.19  | 2.47 | 0.03  | 0.22 | 0.57 |
| H                                          | 4       | 0.32   | 8.47  | 3.73     | 0.04  | 0.41 | 1.80 | 0.21  | 2.52 | 0.04  | 0.23 | 0.77 |
| H                                          | 5       | 0.36   | 9.50  | 4.22     | 0.03  | 0.69 | 1.85 | 0.25  | 2.79 | 0.01  | 0.29 | 0.71 |
| H                                          | 6       | 0.31   | 7.54  | 3.49     | 0.04  | 1.12 | 1.16 | 0.17  | 2.00 | 0.02  | 0.73 | 0.53 |
| V                                          | 0       | 0.27   | 6.67  | 2.61     | 0.06  | 0.27 | 1.30 | 0.15  | 1.71 | 0.04  | 0.15 | 0.41 |
| V                                          | 1       | 0.18   | 6.17  | 2.11     | 0.08  | 0.21 | 1.25 | 0.10  | 1.40 | 0.04  | 0.12 | 0.50 |
| V                                          | 2       | 0.21   | 8.31  | 3.40     | 0.05  | 0.19 | 2.08 | 0.10  | 2.56 | 0.04  | 0.13 | 0.92 |
| V                                          | 3       | 0.26   | 8.41  | 4.19     | 0.04  | 0.22 | 2.12 | 0.16  | 3.16 | 0.02  | 0.15 | 0.97 |
| V                                          | 4       | 0.26   | 7.92  | 3.53     | 0.04  | 0.58 | 1.71 | 0.13  | 2.27 | 0.03  | 0.35 | 0.65 |
| V                                          | 5       | 0.34   | 7.95  | 3.12     | 0.03  | 0.32 | 1.89 | 0.21  | 2.15 | 0.03  | 0.21 | 0.84 |
| V                                          | 6       | 0.47   | 5.87  | 2.54     | 0.10  | 0.56 | 1.24 | 0.26  | 1.46 | 0.06  | 0.39 | 0.36 |
| H+V                                        | 0       | 0.91   | 17.22 | 5.85     | 0.18  | 0.56 | 4.10 | 0.45  | 3.64 | 0.14  | 0.35 | 1.79 |
| H+V                                        | 1       | 0.98   | 20.85 | 6.57     | 0.14  | 0.67 | 4.94 | 0.60  | 4.48 | 0.11  | 0.43 | 2.15 |
| H+V                                        | 2       | 1.01   | 18.05 | 7.48     | 0.17  | 0.72 | 4.41 | 0.52  | 5.05 | 0.12  | 0.51 | 1.90 |
| H+V                                        | 3       | 0.99   | 17.43 | 8.26     | 0.09  | 0.60 | 3.85 | 0.64  | 6.30 | 0.06  | 0.40 | 1.76 |
| H+V                                        | 4       | 1.00   | 20.37 | 8.17     | 0.10  | 1.43 | 3.80 | 0.64  | 5.69 | 0.08  | 0.72 | 1.56 |
| H+V                                        | 5       | 1.21   | 22.05 | 9.07     | 0.09  | 1.33 | 4.96 | 0.83  | 6.09 | 0.07  | 0.57 | 1.92 |
| H+V                                        | 6       | 1.31   | 20.45 | 8.15     | 0.24  | 2.14 | 3.26 | 0.77  | 4.68 | 0.15  | 1.35 | 0.98 |

| PD Simulation (W/m2) PD<br>Limit = 10 W/m2 |         | Mid Ch    |       |      |       |      |       |      |       |      |
|--------------------------------------------|---------|-----------|-------|------|-------|------|-------|------|-------|------|
|                                            |         | 2mm       |       |      |       |      | 10mm  |      |       |      |
|                                            |         | Open      |       |      |       |      |       |      |       |      |
|                                            |         | S1        | S1    | S2   | S4    | S5   | S1    | S2   | S4    | S5   |
| Pol                                        | Beam ID | Front(CB) | Front | Back | Right | Top  | Front | Back | Right | Top  |
| H                                          | 0       | 0.52      | 5.17  | 1.76 | 0.10  | 1.35 | 0.22  | 0.94 | 0.07  | 0.63 |
| H                                          | 1       | 0.64      | 9.15  | 3.34 | 0.07  | 1.96 | 0.26  | 2.19 | 0.03  | 0.81 |
| H                                          | 2       | 0.43      | 4.82  | 2.76 | 0.08  | 1.02 | 0.16  | 1.76 | 0.06  | 0.43 |
| H                                          | 3       | 0.34      | 6.33  | 3.29 | 0.04  | 1.28 | 0.14  | 2.33 | 0.03  | 0.59 |
| H                                          | 4       | 0.37      | 7.84  | 3.46 | 0.04  | 1.68 | 0.14  | 2.34 | 0.03  | 0.75 |
| H                                          | 5       | 0.40      | 8.93  | 3.91 | 0.03  | 1.74 | 0.16  | 2.58 | 0.01  | 0.69 |
| H                                          | 6       | 0.33      | 7.09  | 3.16 | 0.03  | 1.15 | 0.14  | 1.81 | 0.02  | 0.55 |
| V                                          | 0       | 0.40      | 6.19  | 2.47 | 0.04  | 1.24 | 0.16  | 1.61 | 0.03  | 0.41 |
| V                                          | 1       | 0.22      | 5.54  | 1.92 | 0.06  | 1.14 | 0.09  | 1.29 | 0.05  | 0.46 |
| V                                          | 2       | 0.26      | 7.73  | 3.13 | 0.06  | 1.93 | 0.08  | 2.37 | 0.04  | 0.87 |
| V                                          | 3       | 0.31      | 7.79  | 3.88 | 0.03  | 1.95 | 0.11  | 2.92 | 0.03  | 0.92 |
| V                                          | 4       | 0.30      | 7.35  | 3.27 | 0.04  | 1.62 | 0.08  | 2.12 | 0.03  | 0.63 |
| V                                          | 5       | 0.35      | 7.45  | 2.92 | 0.02  | 1.79 | 0.13  | 2.02 | 0.01  | 0.80 |
| V                                          | 6       | 0.59      | 5.33  | 2.27 | 0.07  | 1.14 | 0.18  | 1.33 | 0.04  | 0.35 |
| H+V                                        | 0       | 1.05      | 16.07 | 5.45 | 0.17  | 3.82 | 0.42  | 3.37 | 0.14  | 1.64 |
| H+V                                        | 1       | 0.99      | 19.55 | 6.01 | 0.14  | 4.54 | 0.38  | 4.12 | 0.12  | 1.96 |
| H+V                                        | 2       | 1.10      | 16.73 | 6.96 | 0.18  | 4.13 | 0.38  | 4.74 | 0.13  | 1.79 |
| H+V                                        | 3       | 1.20      | 16.04 | 7.73 | 0.10  | 3.70 | 0.45  | 5.85 | 0.06  | 1.75 |
| H+V                                        | 4       | 1.14      | 18.66 | 7.45 | 0.08  | 3.48 | 0.39  | 5.21 | 0.07  | 1.48 |
| H+V                                        | 5       | 1.29      | 20.52 | 8.36 | 0.07  | 4.65 | 0.49  | 5.65 | 0.04  | 1.80 |
| H+V                                        | 6       | 1.43      | 18.91 | 7.30 | 0.17  | 3.09 | 0.48  | 4.21 | 0.10  | 0.99 |

**Table 2-10** Simulated averaged PD over 4 [cm<sup>2</sup>] area on Plane B Module - n261 High Channel.

| PD Simulation (W/m2)<br>PD Limit = 10 W/m2 |         | High Ch |       |          |       |      |      |       |      |       |      |      |
|--------------------------------------------|---------|---------|-------|----------|-------|------|------|-------|------|-------|------|------|
|                                            |         | 2mm     |       |          |       |      |      | 10mm  |      |       |      |      |
|                                            |         | Close   |       |          |       |      |      |       |      |       |      |      |
|                                            |         | S1      | S2    | S2       | S3    | S4   | S5   | S1    | S2   | S3    | S4   | S5   |
| Pol                                        | Beam ID | Front   | Back  | Back(CB) | Right | Left | Top  | Front | Back | Right | Left | Top  |
| H                                          | 0       | 0.42    | 6.27  | 2.19     | 0.08  | 0.18 | 1.70 | 0.20  | 1.29 | 0.08  | 0.12 | 0.73 |
| H                                          | 1       | 0.47    | 10.00 | 3.72     | 0.05  | 0.21 | 2.18 | 0.29  | 2.44 | 0.05  | 0.13 | 0.94 |
| H                                          | 2       | 0.34    | 5.96  | 3.26     | 0.10  | 0.25 | 1.22 | 0.19  | 2.00 | 0.06  | 0.18 | 0.55 |
| H                                          | 3       | 0.31    | 7.12  | 3.60     | 0.05  | 0.24 | 1.29 | 0.19  | 2.55 | 0.03  | 0.15 | 0.48 |
| H                                          | 4       | 0.26    | 8.96  | 3.81     | 0.04  | 0.37 | 1.74 | 0.18  | 2.62 | 0.03  | 0.21 | 0.76 |
| H                                          | 5       | 0.28    | 9.25  | 4.33     | 0.03  | 0.64 | 1.98 | 0.20  | 2.83 | 0.02  | 0.28 | 0.82 |
| H                                          | 6       | 0.30    | 7.02  | 3.31     | 0.03  | 1.10 | 1.04 | 0.18  | 1.92 | 0.03  | 0.71 | 0.41 |
| V                                          | 0       | 0.37    | 6.39  | 2.60     | 0.07  | 0.24 | 1.35 | 0.20  | 1.77 | 0.04  | 0.12 | 0.42 |
| V                                          | 1       | 0.26    | 6.15  | 2.12     | 0.07  | 0.19 | 1.28 | 0.10  | 1.49 | 0.04  | 0.11 | 0.50 |
| V                                          | 2       | 0.15    | 8.15  | 3.36     | 0.05  | 0.21 | 1.87 | 0.08  | 2.53 | 0.03  | 0.15 | 0.81 |
| V                                          | 3       | 0.16    | 8.16  | 4.10     | 0.04  | 0.24 | 2.06 | 0.11  | 3.15 | 0.02  | 0.16 | 1.00 |
| V                                          | 4       | 0.23    | 8.66  | 3.49     | 0.04  | 0.54 | 1.96 | 0.12  | 2.32 | 0.02  | 0.32 | 0.74 |
| V                                          | 5       | 0.25    | 8.29  | 3.12     | 0.03  | 0.29 | 2.02 | 0.16  | 2.18 | 0.03  | 0.18 | 0.87 |
| V                                          | 6       | 0.32    | 6.16  | 2.52     | 0.07  | 0.50 | 1.24 | 0.18  | 1.46 | 0.05  | 0.36 | 0.36 |
| H+V                                        | 0       | 1.08    | 17.35 | 6.06     | 0.20  | 0.47 | 4.57 | 0.51  | 3.90 | 0.17  | 0.32 | 1.98 |
| H+V                                        | 1       | 0.90    | 21.83 | 7.23     | 0.15  | 0.53 | 5.36 | 0.52  | 4.96 | 0.14  | 0.36 | 2.20 |
| H+V                                        | 2       | 0.76    | 18.32 | 7.89     | 0.24  | 0.75 | 4.34 | 0.43  | 5.42 | 0.12  | 0.58 | 1.85 |
| H+V                                        | 3       | 0.78    | 17.95 | 8.62     | 0.09  | 0.60 | 3.80 | 0.49  | 6.61 | 0.07  | 0.40 | 1.66 |
| H+V                                        | 4       | 0.78    | 19.67 | 8.11     | 0.08  | 1.27 | 3.90 | 0.50  | 5.69 | 0.06  | 0.67 | 1.67 |
| H+V                                        | 5       | 0.93    | 22.13 | 9.28     | 0.09  | 1.19 | 5.12 | 0.67  | 6.19 | 0.07  | 0.55 | 2.06 |
| H+V                                        | 6       | 1.11    | 21.07 | 8.12     | 0.17  | 2.19 | 3.33 | 0.61  | 4.69 | 0.12  | 1.34 | 0.89 |

| PD Simulation (W/m2) PD<br>Limit = 10 W/m2 |         | High Ch   |       |      |       |      |       |      |       |      |
|--------------------------------------------|---------|-----------|-------|------|-------|------|-------|------|-------|------|
|                                            |         | 2mm       |       |      |       |      | 10mm  |      |       |      |
|                                            |         | Open      |       |      |       |      |       |      |       |      |
|                                            |         | S1        | S1    | S2   | S4    | S5   | S1    | S2   | S4    | S5   |
| Pol                                        | Beam ID | Front(CB) | Front | Back | Right | Top  | Front | Back | Right | Top  |
| H                                          | 0       | 0.49      | 5.60  | 1.95 | 0.08  | 1.47 | 0.19  | 1.15 | 0.07  | 0.64 |
| H                                          | 1       | 0.47      | 9.28  | 3.42 | 0.05  | 2.02 | 0.19  | 2.25 | 0.05  | 0.83 |
| H                                          | 2       | 0.40      | 5.55  | 3.02 | 0.09  | 1.18 | 0.15  | 1.86 | 0.07  | 0.53 |
| H                                          | 3       | 0.32      | 6.48  | 3.29 | 0.05  | 1.21 | 0.13  | 2.33 | 0.03  | 0.47 |
| H                                          | 4       | 0.29      | 8.17  | 3.49 | 0.04  | 1.60 | 0.12  | 2.40 | 0.03  | 0.70 |
| H                                          | 5       | 0.32      | 9.52  | 4.00 | 0.02  | 1.84 | 0.15  | 2.60 | 0.02  | 0.78 |
| H                                          | 6       | 0.35      | 6.63  | 3.00 | 0.03  | 1.02 | 0.16  | 1.74 | 0.02  | 0.42 |
| V                                          | 0       | 0.55      | 5.98  | 2.46 | 0.05  | 1.30 | 0.21  | 1.68 | 0.03  | 0.43 |
| V                                          | 1       | 0.37      | 5.58  | 1.97 | 0.05  | 1.21 | 0.10  | 1.39 | 0.03  | 0.50 |
| V                                          | 2       | 0.20      | 7.44  | 3.10 | 0.05  | 1.73 | 0.08  | 2.34 | 0.03  | 0.76 |
| V                                          | 3       | 0.19      | 7.48  | 3.78 | 0.03  | 1.89 | 0.07  | 2.90 | 0.02  | 0.93 |
| V                                          | 4       | 0.30      | 8.02  | 3.25 | 0.04  | 1.82 | 0.09  | 2.15 | 0.02  | 0.69 |
| V                                          | 5       | 0.31      | 7.72  | 2.94 | 0.03  | 1.89 | 0.11  | 2.05 | 0.02  | 0.84 |
| V                                          | 6       | 0.43      | 5.74  | 2.34 | 0.06  | 1.14 | 0.13  | 1.35 | 0.05  | 0.34 |
| H+V                                        | 0       | 1.31      | 15.98 | 5.60 | 0.17  | 4.17 | 0.49  | 3.59 | 0.14  | 1.82 |
| H+V                                        | 1       | 1.00      | 20.03 | 6.66 | 0.14  | 4.93 | 0.37  | 4.56 | 0.10  | 2.01 |
| H+V                                        | 2       | 0.88      | 16.68 | 7.26 | 0.20  | 4.02 | 0.31  | 5.03 | 0.11  | 1.73 |
| H+V                                        | 3       | 0.89      | 16.38 | 7.94 | 0.08  | 3.55 | 0.33  | 6.07 | 0.07  | 1.62 |
| H+V                                        | 4       | 0.88      | 18.18 | 7.45 | 0.09  | 3.63 | 0.32  | 5.24 | 0.06  | 1.56 |
| H+V                                        | 5       | 1.12      | 21.38 | 8.51 | 0.05  | 4.82 | 0.45  | 5.68 | 0.04  | 1.94 |
| H+V                                        | 6       | 1.20      | 19.67 | 7.37 | 0.15  | 3.16 | 0.40  | 4.21 | 0.10  | 0.84 |

## Highest ratio

| Ratio   |                    | 2mm          |              |              |              | 10mm                     | 2mm         |             |             | 10mm                    |
|---------|--------------------|--------------|--------------|--------------|--------------|--------------------------|-------------|-------------|-------------|-------------------------|
| NR Band | Antenna Module     | S1/S2(Close) | S3/S2(Close) | S4/S2(Close) | S5/S2(Close) | Worst surface/S2 (Close) | S2/S1(Open) | S3/S1(Open) | S5/S1(Open) | Worst surface/S1 (Open) |
| n258    | Plane B sub-module | 0.08         | 0.02         | 0.20         | 0.26         | 0.35                     | 0.11        | 0.01        | 0.27        | 0.35                    |
| n260    | Plane B sub-module | 0.04         | 0.02         | 0.14         | 0.28         | 0.30                     | 0.10        | 0.02        | 0.29        | 0.31                    |
| n261    | Plane B sub-module | 0.07         | 0.01         | 0.11         | 0.24         | 0.30                     | 0.08        | 0.01        | 0.23        | 0.28                    |
| Ratio   |                    | 2mm          |              |              |              | 10mm                     | 2mm         |             |             | 10mm                    |
| NR Band | Antenna Module     | S1/S2(Close) | S3/S2(Close) | S4/S2(Close) | S5/S2(Close) | Worst surface/S2 (Close) | S2/S1(Open) | S3/S1(Open) | S5/S1(Open) | Worst surface/S1 (Open) |
| n258    | Plane B sub-module | 8%           | 2%           | 20%          | 26%          | 35%                      | 11%         | 1%          | 27%         | 35%                     |
| n260    | Plane B sub-module | 4%           | 2%           | 14%          | 28%          | 30%                      | 10%         | 2%          | 29%         | 31%                     |
| n261    | Plane B sub-module | 7%           | 1%           | 11%          | 24%          | 30%                      | 8%          | 1%          | 23%         | 28%                     |

### 3. References

- [1] [ANSYS HFSS for Antenna Simulation](#)