Power Density Simulation Report

FCC ID: A4RG0DZQ
10/22/2022

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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, has been used. This software is a 3D full-wave electromagnetic (EM) computational solver based on Finite Element Method (FEM).

1.2 Full-wave simulation setup

1.2.1 Simulation model

The device includes one L-shaped mmWave module which consists of Plane-A sub-module (Plane-A Module) and Plane-B sub-module (Plane-B Module), located at the top and the back side of the device, respectively, 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 which 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 ΔS, which is a variation in the magnitude of all S-parameters between the consecutive iterations of the algorithm [1]. The ΔS parameter specified for all PD simulations presented in this report is 0.02. Figure 1-1 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.

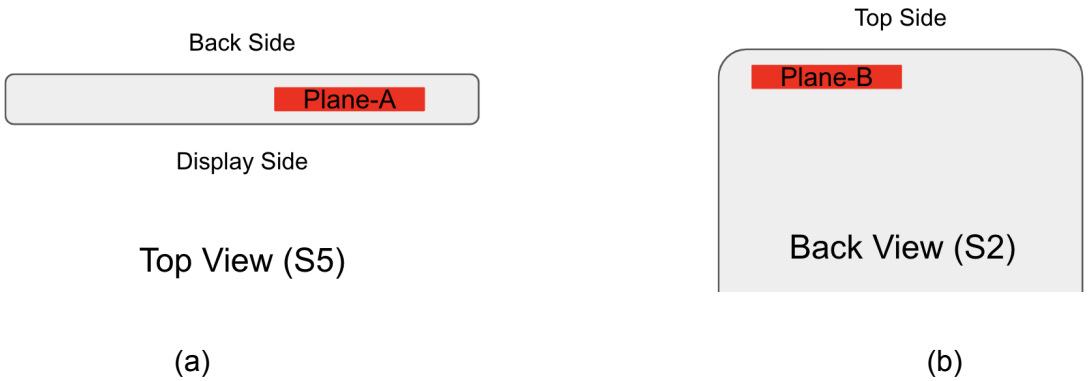

Figure 1-1 Placement of the L-shaped mmWave module, called Plane-A sub-module and Plane-B sub-module, at (a) the top side and (b) the back side of the device, respectively.

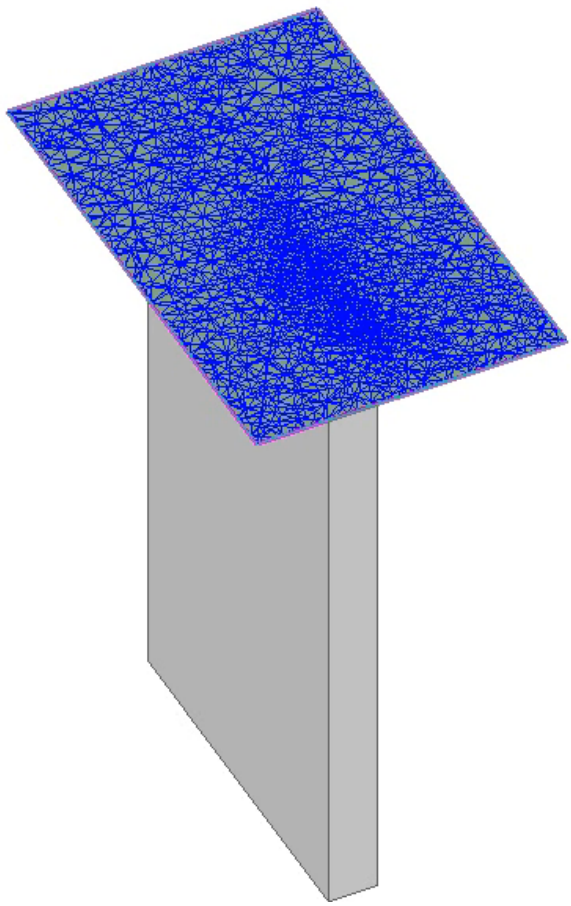

Figure 1-2 An example cut surface in an HFSS simulation model showing the tetrahedral mesh created by the adaptive mesh refinement algorithm.

The FEM simulations are performed for the mmWave module which includes Plane-A sub-module and Plane-B sub-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, 8 of them excite the vertical polarization on the antenna array, called vertical polarization (V-pol), and the other 8 wave-ports excite the horizontal polarization, called horizontal polarization (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 Max{|ΔS|} is smaller than the specified value of the convergence parameter ΔS (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:

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

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

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

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 or 10 mm. As long as the distance between mmWave 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^2]. Furthermore, PD_{ave} is calculated at the points of a grid with 0.1 mm step size defined in each evaluation plane.

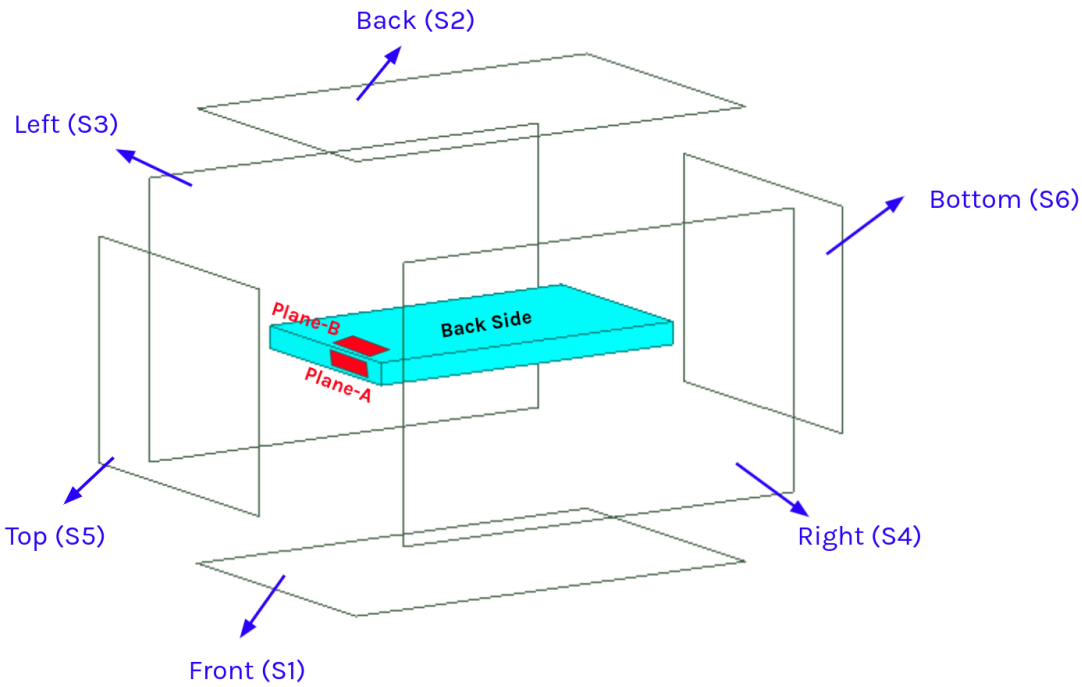

Figure 1-4 *PD* evaluation surfaces. Averaged power densities (PD_{ave}) are calculated and measured on the specified surfaces (S1, S2, S4, and S5) surrounding the phone.

	S1 (front)	S2 (back)	S3 (left from front view)	S4 (right from front view)	S5 (top)	S6 (bottom)
Plane-A Module			✗			✗
Plane-B Module			✗			✗

Table 1-1 *PD* evaluation surfaces considered for each mmWave module in our device.

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 from the worst cases, whose IDs are listed in Table 2-1. Also shown in this table are simulated and measured results for the PD_{ave} for both n260 and n261 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 EUT is used for calculating minimum target power while PD_{ave} of 2mm from Camera Bump (CB) is to derive correction factor. Figure 2-1 shows orientation of the device for the *PD* and PD_{ave} distribution plots presented in Figures 2-2 to 2-37. The presented plots demonstrate a good agreement between simulated and measured results for both *PD* and PD_{ave}.

Test Number	Antenna Module	Polarization		Band	Frequency (GHz)	Exposure Surface	Reference Plane	Test Separation	Modulation	4cm^2 PD (W/m^2)		Correlation Sim-Meas(dB)
		H	V							Meas.	Sim.	
1	Plane-A sub-module	0	-	n260	38.5	Top (S5)	EUT surface	2mm	CW	4.79	8.21	2.340
2	Plane-A sub-module	-	4	n260	38.5	Top (S5)	EUT surface	2mm	CW	6.92	7.80	0.520
3	Plane-A sub-module	2	2	n260	38.5	Top (S5)	EUT surface	2mm	CW	8.16	16.56	3.074
4	Plane-B sub-module	0	-	n260	38.5	Back (S2)	CB surface	2mm	CW	3.24	6.75	3.188
5	Plane-B sub-module	-	6	n260	38.5	Back (S2)	CB surface	2mm	CW	3.51	6.80	2.872
6	Plane-B sub-module	3	3	n260	38.5	Back (S2)	CB surface	2mm	CW	7.21	14.74	3.106
7	Plane-A sub-module	0	-	n261	27.925	Top (S5)	EUT surface	2mm	CW	8.36	10.37	0.936
8	Plane-A sub-module	-	4	n261	27.925	Top (S5)	EUT surface	2mm	CW	8.32	9.59	0.617
9	Plane-A sub-module	3	3	n261	27.925	Top (S5)	EUT surface	2mm	CW	13.80	22.39	2.102
10	Plane-B sub-module	3	-	n261	27.925	Back (S2)	CB surface	2mm	CW	7.78	11.78	1.802
11	Plane-B sub-module	-	4	n261	27.925	Back (S2)	CB surface	2mm	CW	11.00	13.71	0.956
12	Plane-B sub-module	4	4	n261	27.925	Back (S2)	CB surface	2mm	CW	18.60	30.26	2.114

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

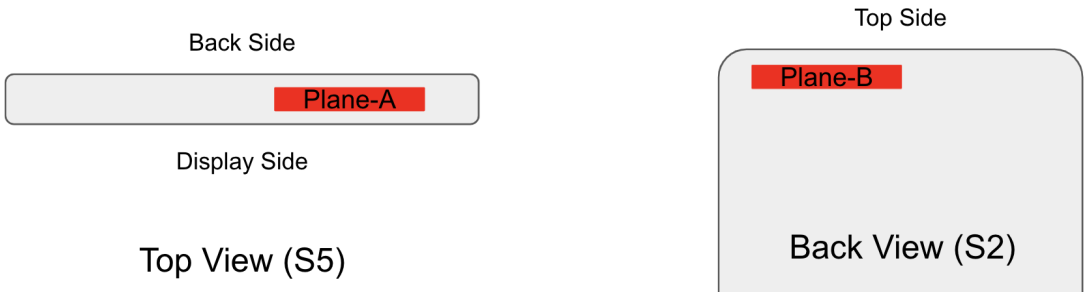

Figure 2-1 Orientation of the device for the *PD* distribution plots.

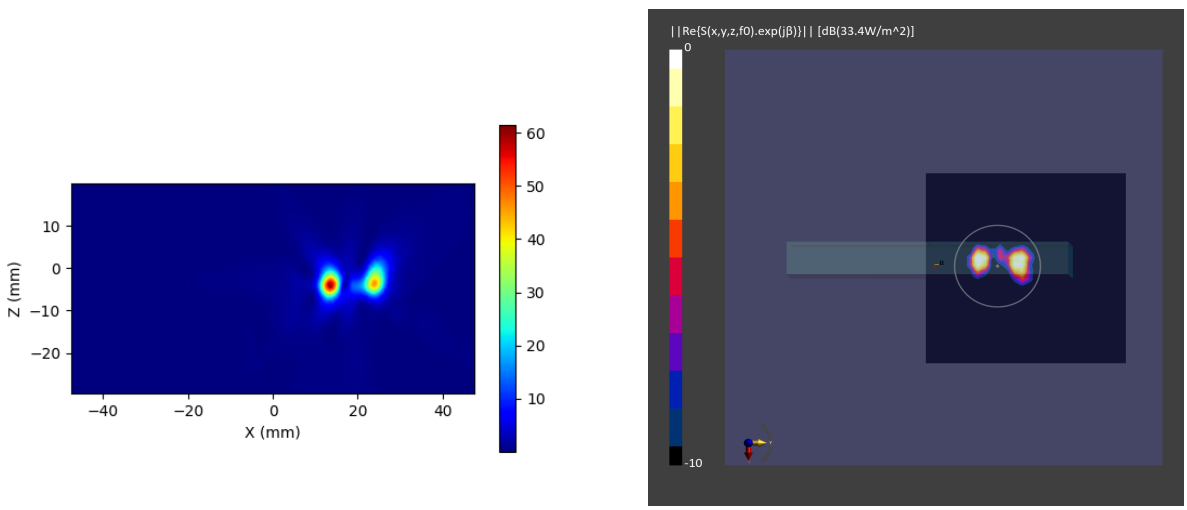

Figure 2-2 Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 0, H polarization, Plane-A Module, plotted on the surface S5 (top) with 2mm separation distance to the DUT.

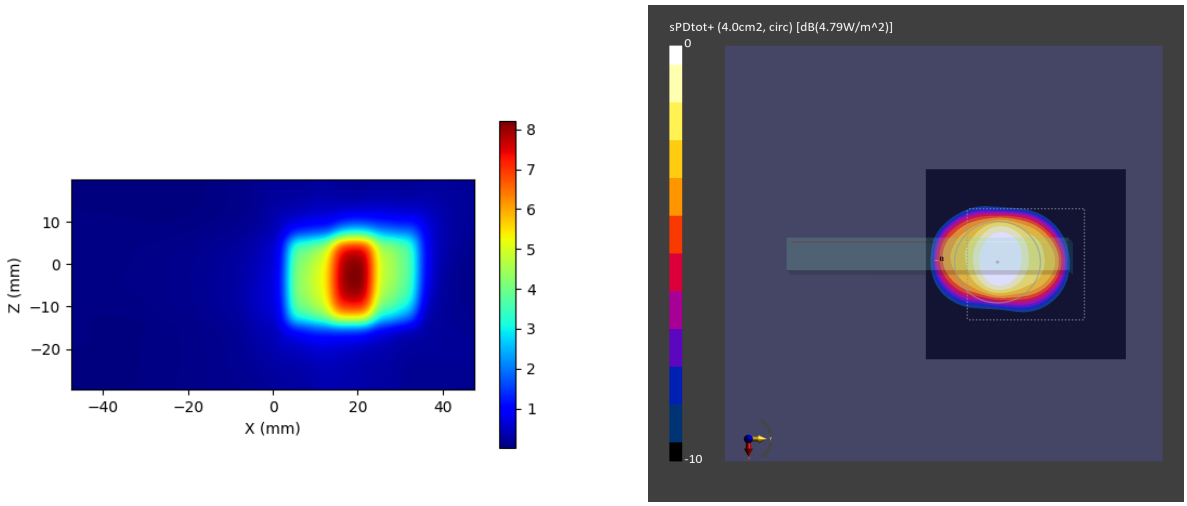

Figure 2-3 Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 0, H polarization, Plane-A Module, plotted on the surface S5 (top) with 2mm separation distance to the DUT.

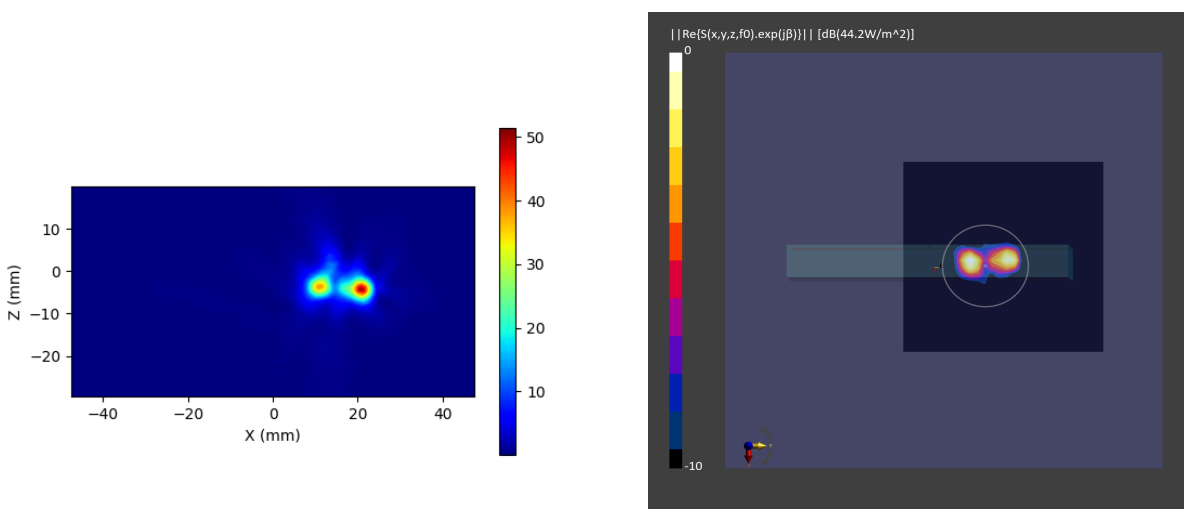

Figure 2-4 Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 4, V polarization, Plane-A Module, plotted on the surface S5 (top) with 2mm separation distance to the DUT.

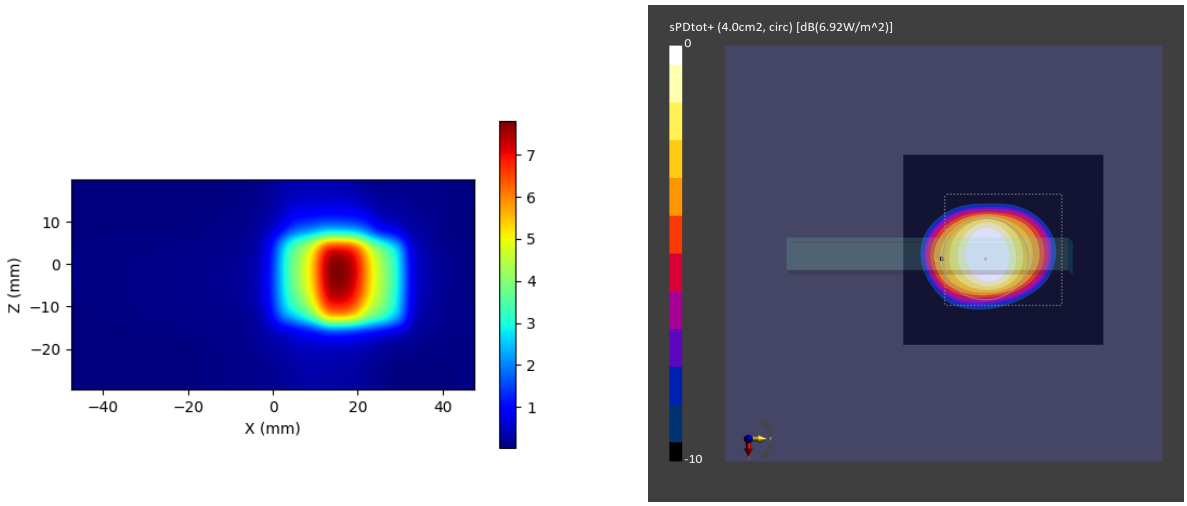

Figure 2-5 Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 4, V polarization, Plane-A Module, plotted on the surface S5 (top) with 2mm separation distance to the DUT.

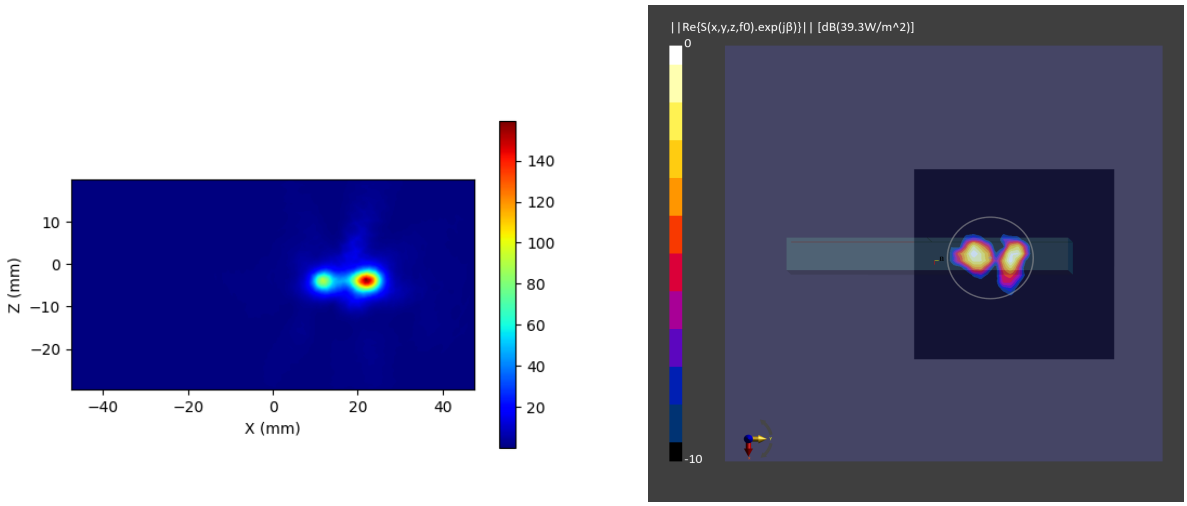

Figure 2-6 Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 2, H+V polarization, Plane-A Module, plotted on the surface S5 (top) with 2mm separation distance to the DUT.

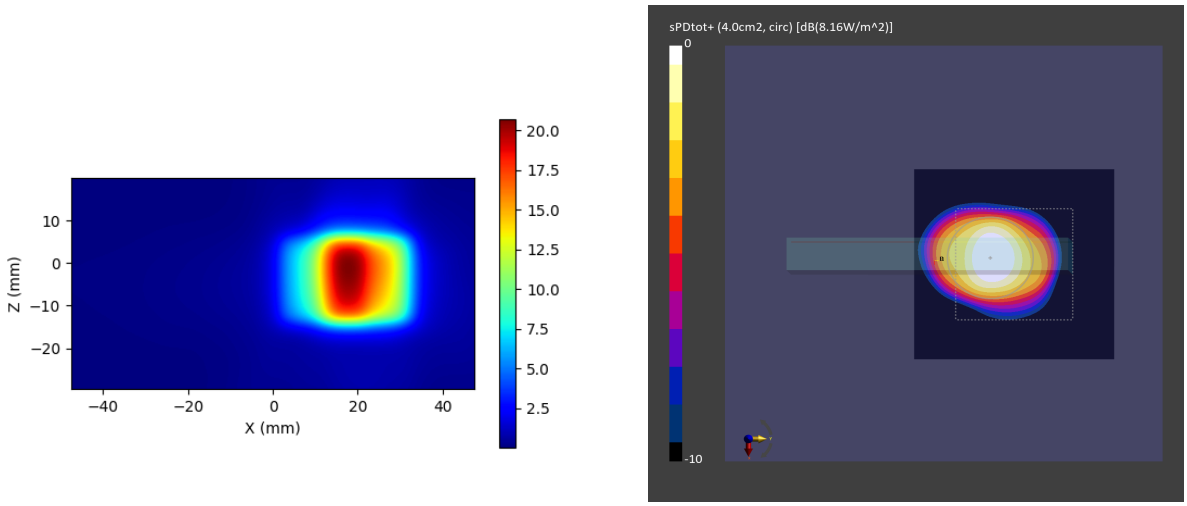

Figure 2-7 Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 2, H+V polarization, Plane-A Module, plotted on the surface S5 (top) with 2mm separation distance to the DUT.

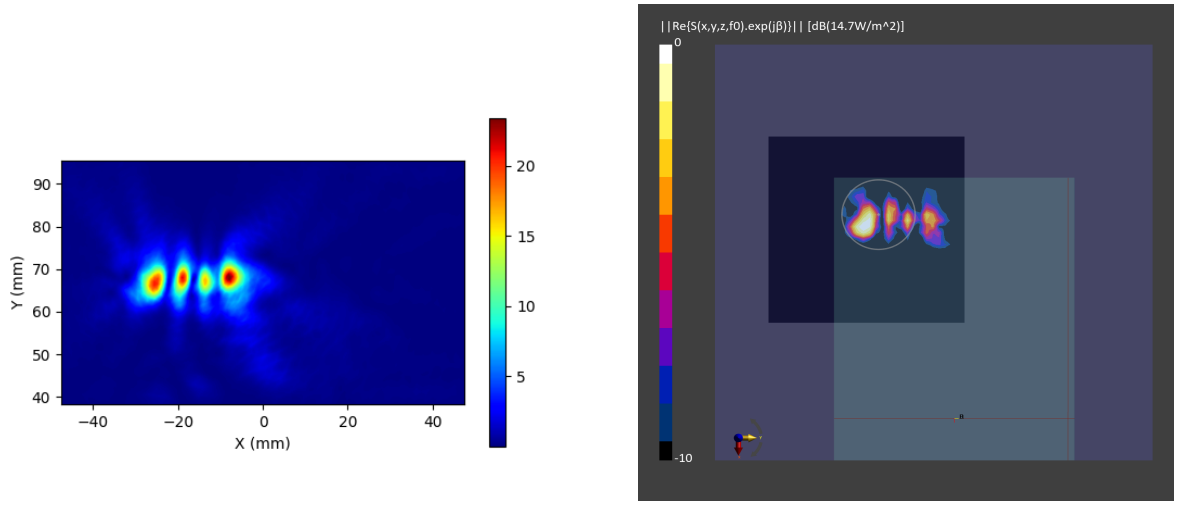

Figure 2-8 Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 0, H polarization, Plane-B Module, plotted on the surface S2 (back) with 2mm separation distance to the camera bump.

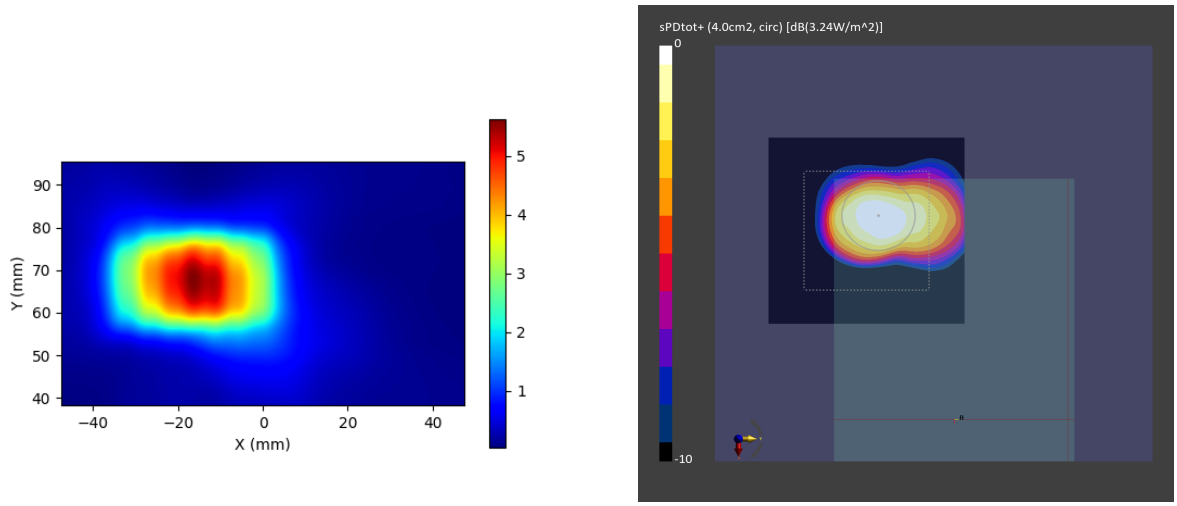

Figure 2-9 Simulated (left) and measured (right) averagged *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 0, H polarization, Plane-B Module, plotted on the surface S2 (back) with 2mm separation distance to the camera bump.

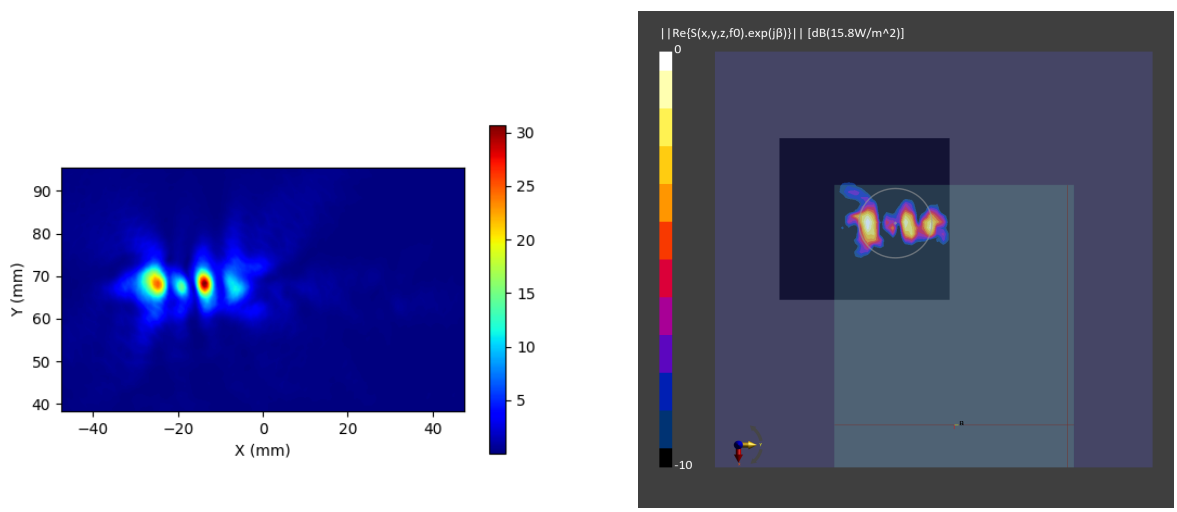

Figure 2-10 Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 6, V polarization, Plane-B Module, plotted on the surface S2 (back) with 2mm separation distance to the camera bump.

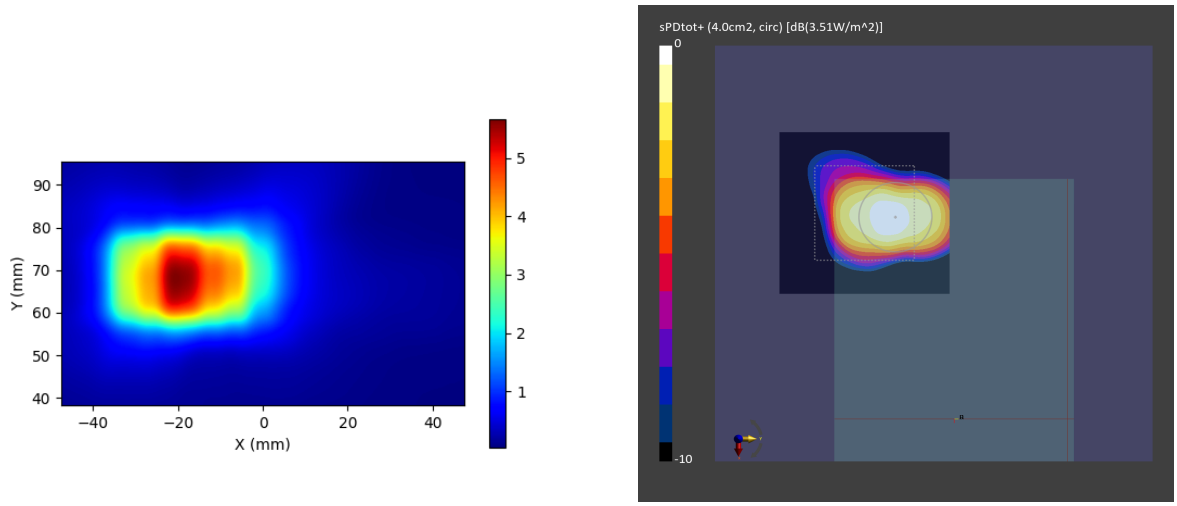

Figure 2-11 Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 6, V polarization, Plane-B Module, plotted on the surface S2 (back) with 2mm separation distance to the camera bump.

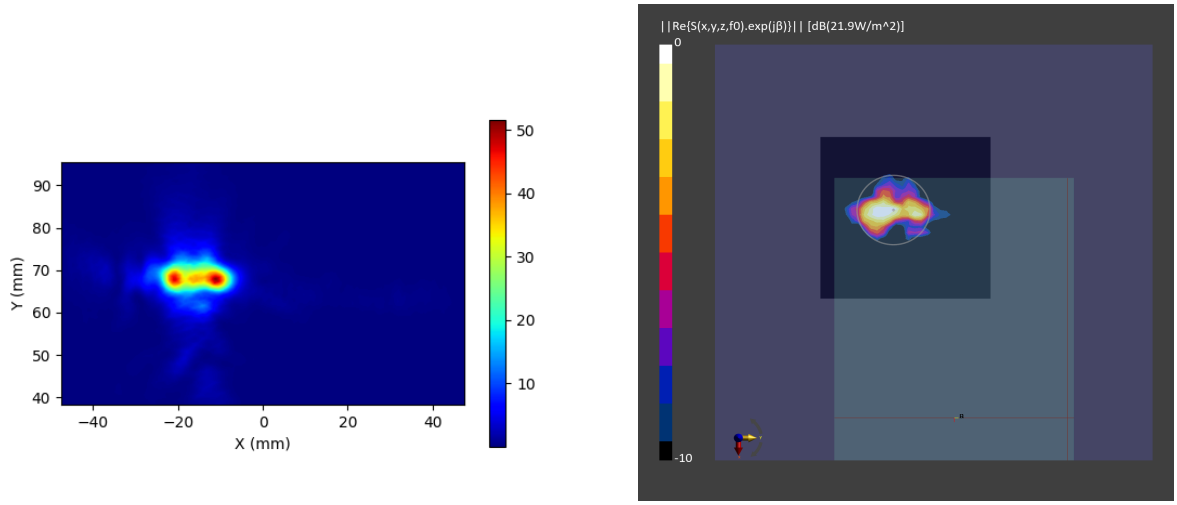

Figure 2-12 Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 3, H+V polarization, Plane-B Module, plotted on the surface S2 (back) with 2mm separation distance to the camera bump.

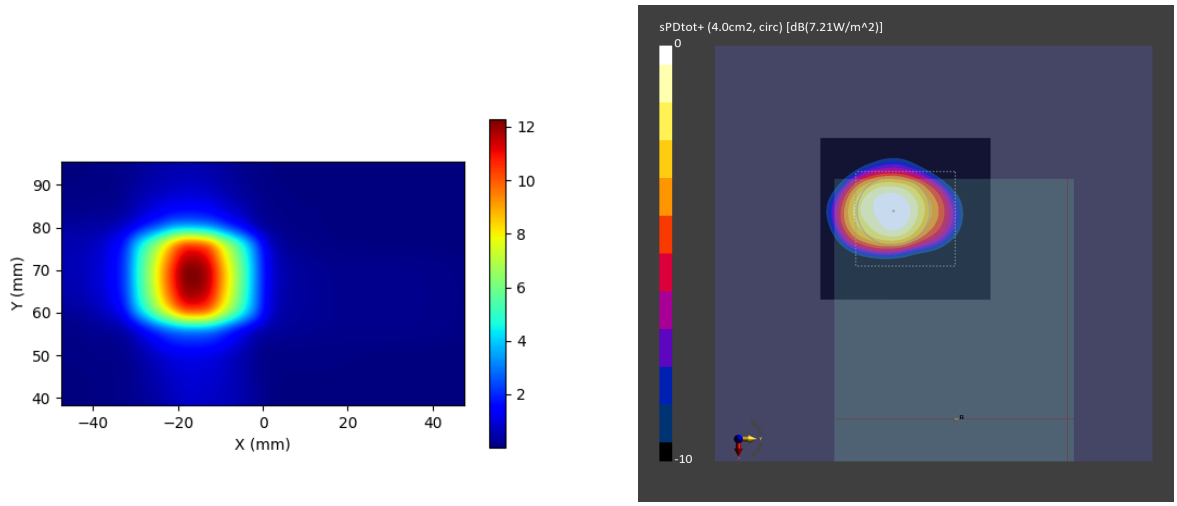

Figure 2-13 Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n260, MID Channel, Beam ID 3, H+V polarization, Plane-B Module, plotted on the surface S2 (back) with 2mm separation distance to the camera bump.

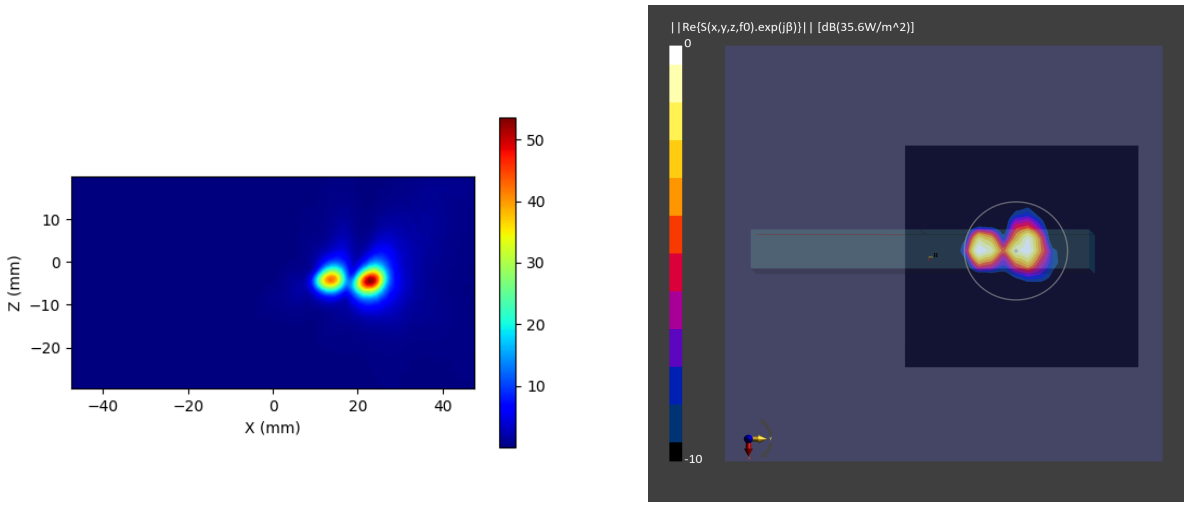

Figure 2-14 Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 0, H polarization, Plane-A Module, plotted on the surface S5 (top) with 2mm separation distance to the DUT.

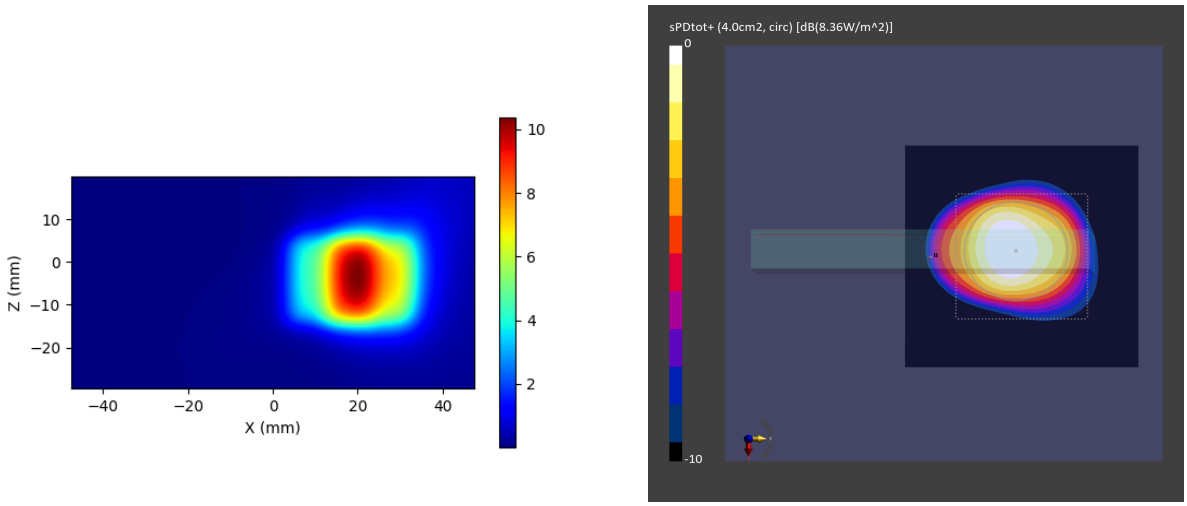

Figure 2-15 Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 0, H polarization, Plane-A Module, plotted on the surface S5 (top) with 2mm separation distance to the DUT.

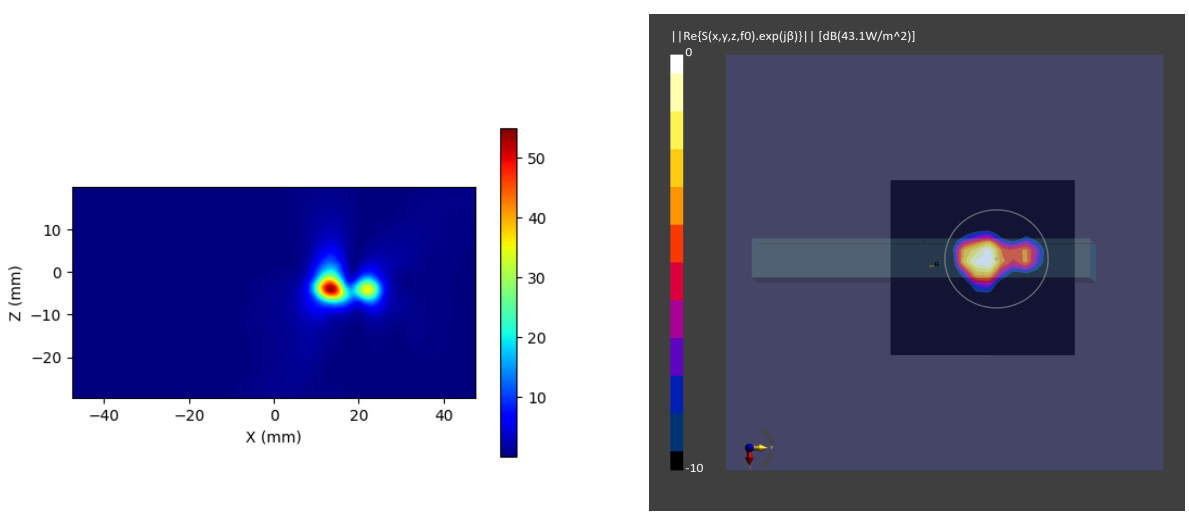

Figure 2-16 Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 4, V polarization, Plane-A Module, plotted on the surface S5 (top) with 2mm separation distance to the DUT.

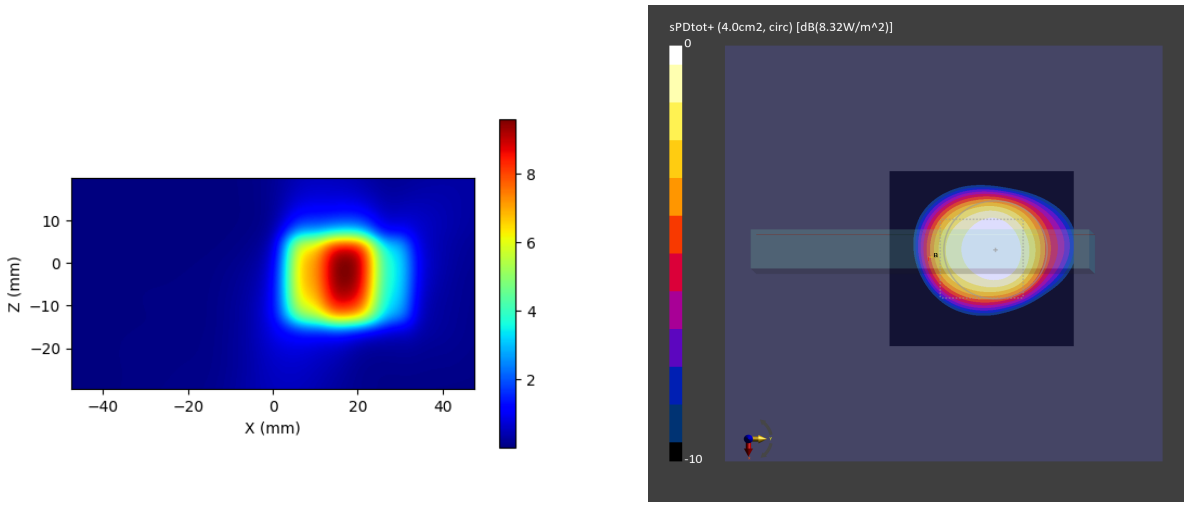

Figure 2-17 Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 4, V polarization, Plane-A Module, plotted on the surface S5 (top) with 2mm separation distance to the DUT.

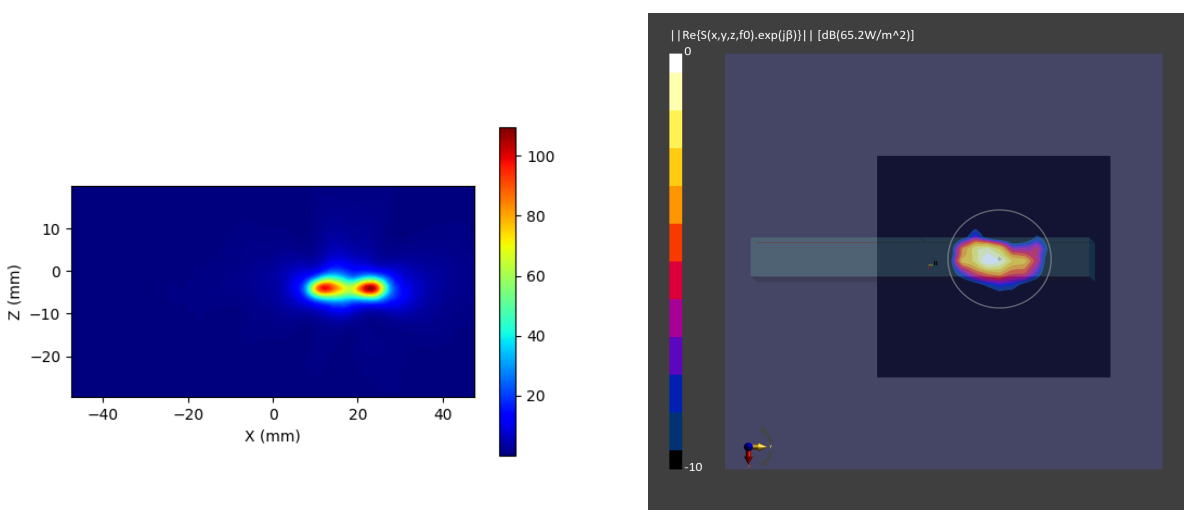

Figure 2-18 Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 3, H+V polarization, Plane-A Module, plotted on the surface S5 (top) with 2mm separation distance to the DUT.

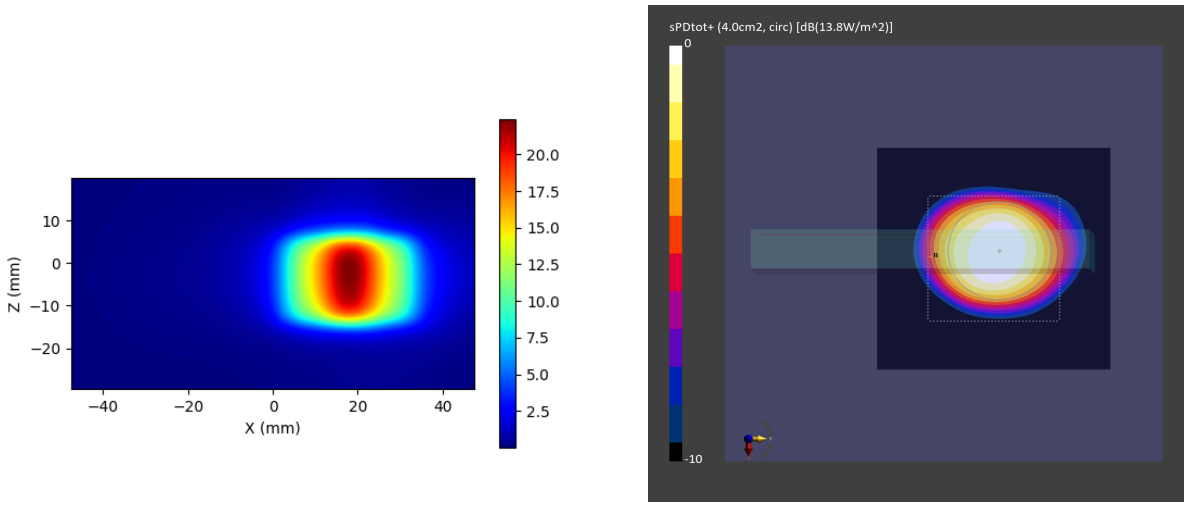

Figure 2-19 Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 3, H+V polarization, Plane-A Module, plotted on the surface S5 (top) with 2mm separation distance to the DUT.

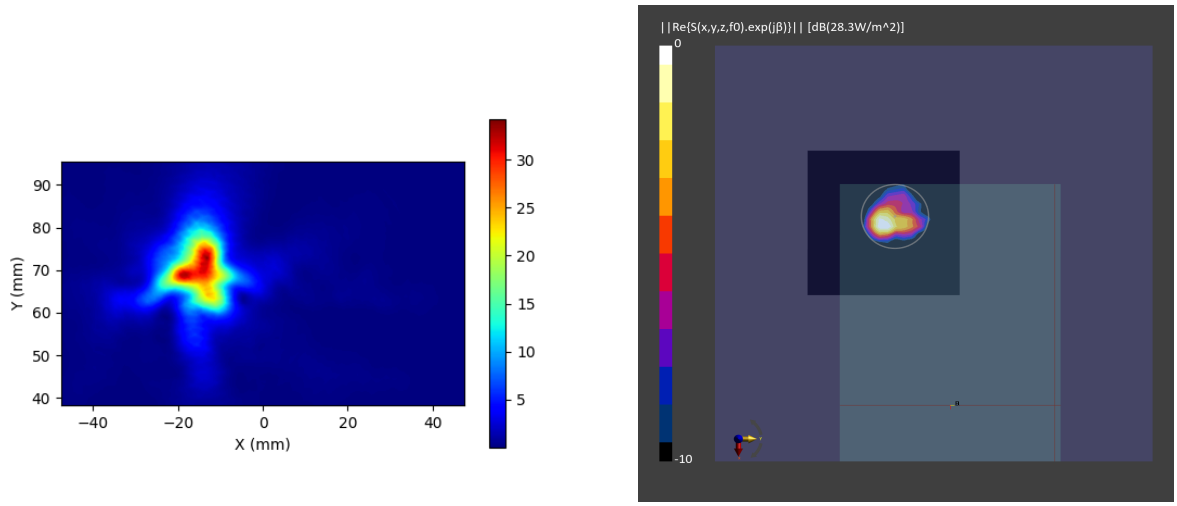

Figure 2-20 Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 3, H polarization, Plane-B Module, plotted on the surface S2 (back) with 2mm separation distance to the camera bump.

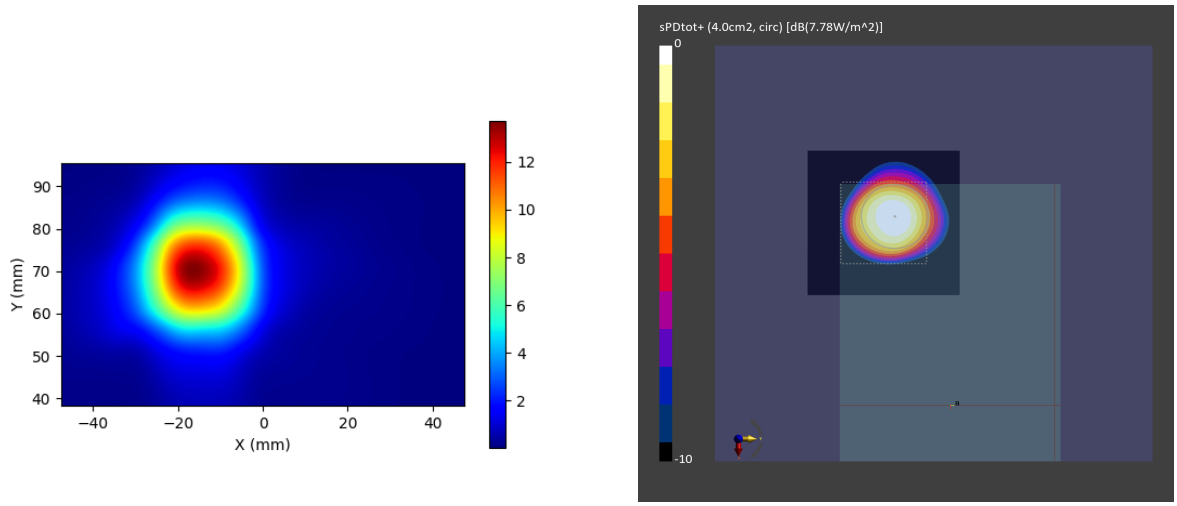

Figure 2-21 Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 3, H polarization, Plane-B Module, plotted on the surface S2 (back) with 2mm separation distance to the camera bump.

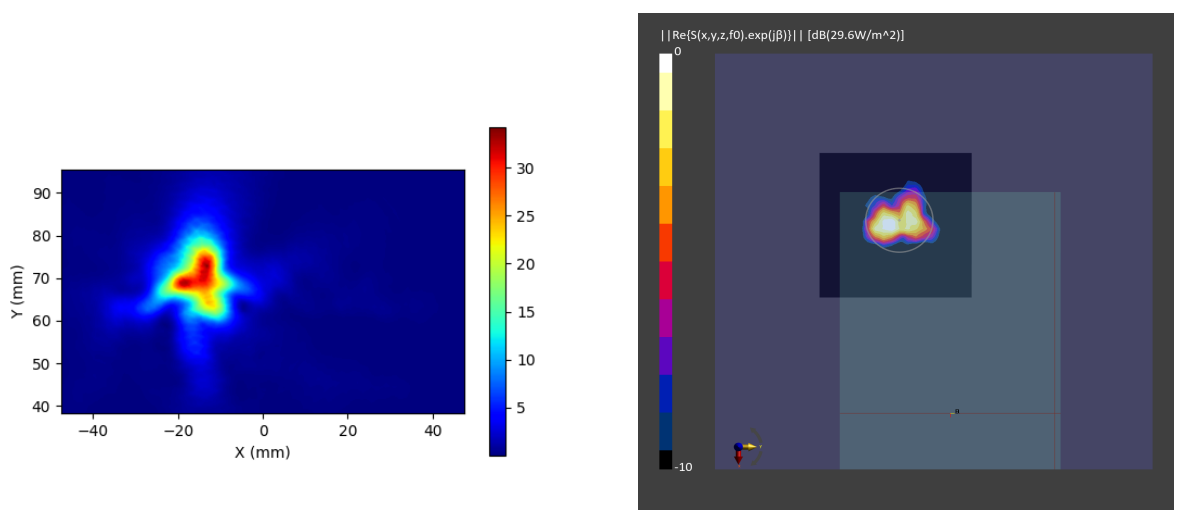

Figure 2-22 Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 4, V polarization, Plane-B Module, plotted on the surface S2 (back) with 2mm separation distance to the camera bump.

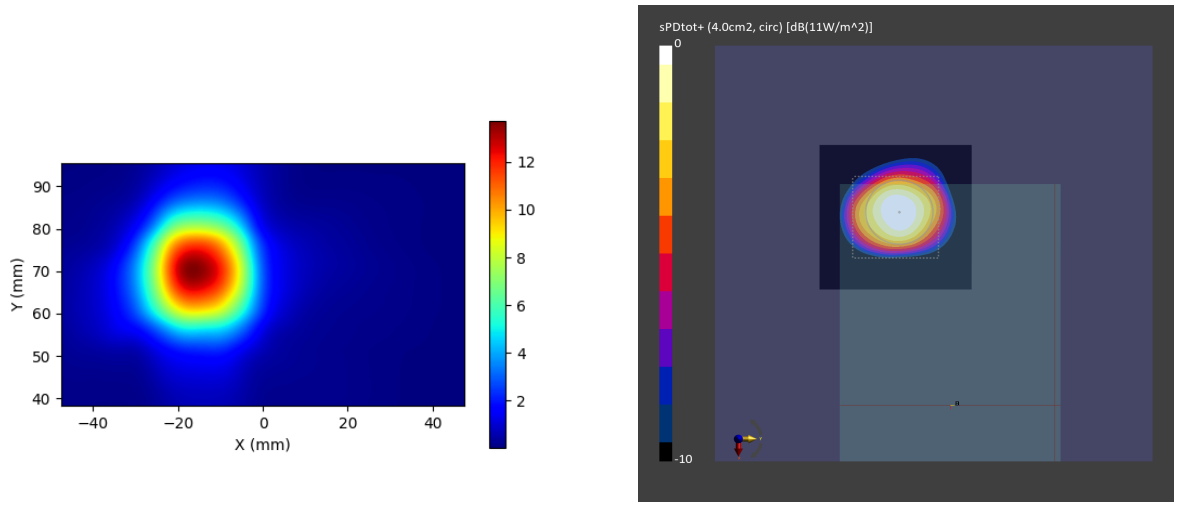

Figure 2-23 Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 4, V polarization, Plane-B Module, plotted on the surface S2 (back) with 2mm separation distance to the camera bump.

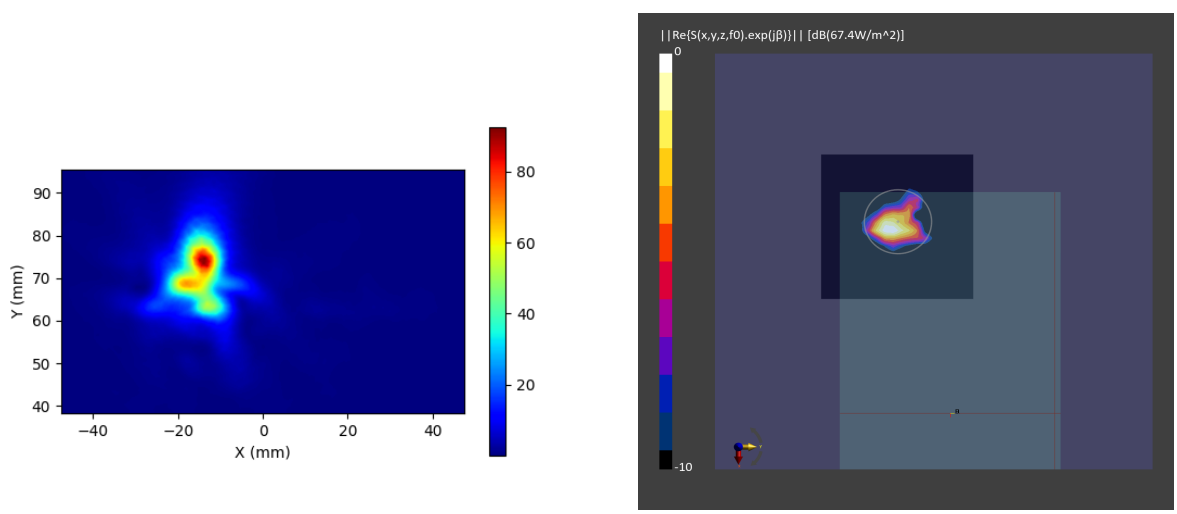

Figure 2-24 Simulated (left) and measured (right) *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 4, H+V polarization, Plane-B Module, plotted on the surface S2 (back) with 2mm separation distance to the camera bump.

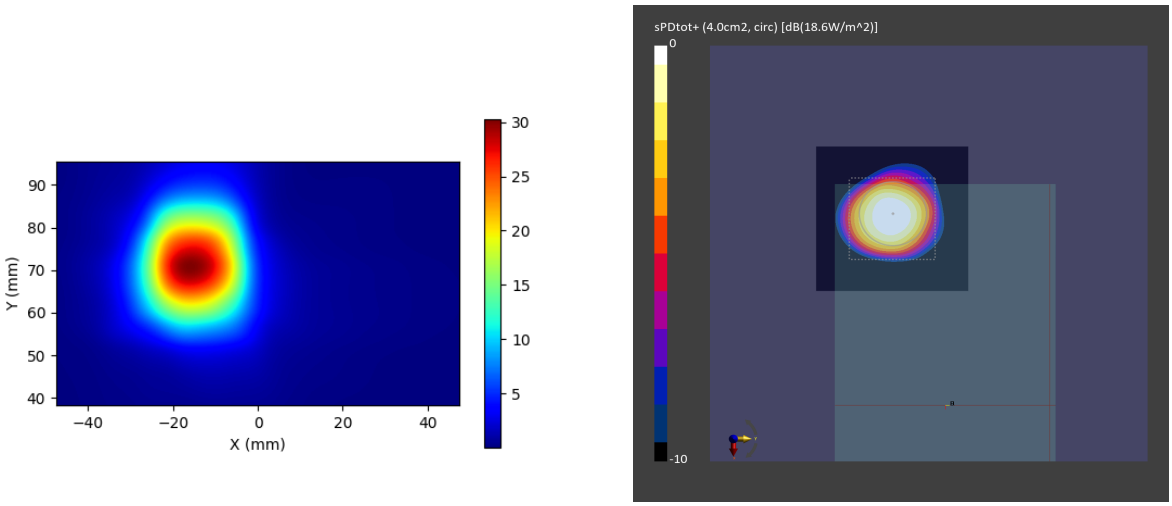

Figure 2-25 Simulated (left) and measured (right) averaged *PD* distribution for the following configuration: Band n261, MID Channel, Beam ID 4, H+V polarization, Plane-B Module, plotted on the surface S2 (back) with 2mm separation distance to the camera bump.

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 n260 and n261 frequency bands for both Plane-A Module and Plane-B Module. 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 sweeped from 0° to 360° in 5° 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^2] area on Plane-A Module - n260 Low Channel.

PD Simulation(W/m^2) Limit = 10 W/m^2		Low channel												
		2mm					76.51%	49.46%	25.90%	10mm				73.23%
		S1	S2	S2	S4	S5	S1/S5	S2/S5	S4/S5	S1	S2	S4	S5	10mm/2mm
Pol	Beam ID	Front	Back	Back(CB)	Right	Top				Front	Back	Right	Top	S5/S5
H	0	4 362	2.397	2.142	2.095	9.198	0.474	0.261	0.228	1.598	0.772	1.087	3.569	0 388
H	1	5.141	2.781	2.507	0.787	8 096	0.635	0.343	0.097	1.814	0 997	0.198	4.328	0 535
H	2	4.714	2.247	2.027	0.485	8 243	0 572	0.273	0.059	2.197	0 951	0.262	3.982	0.483
H	3	4 516	2.723	2.595	0.317	8 222	0 549	0.331	0.039	2.237	1 077	0.157	4.113	0 500
H	4	4 270	2.791	2.528	0.328	6.715	0.636	0.416	0.049	2.010	1.142	0.118	3.901	0 581
H	5	4 021	2.683	2.427	0.678	6 989	0 575	0.384	0.097	1.638	1 022	0.356	3.983	0 570
H	6	3 599	3.191	2.881	1.016	7 896	0.456	0.404	0.129	1.262	0.786	0.536	3.713	0.470
V	0	3 516	3.105	2.828	2.223	8 809	0 399	0.353	0.252	1.309	1 072	1.396	3.529	0.401
V	1	3 327	2.937	2.678	0.838	6.146	0 541	0.478	0.136	1.639	1 212	0.268	3.569	0 581
V	2	4 585	2.894	2.610	0.715	8.191	0 560	0.353	0.087	2.018	1.132	0.487	4.482	0 547
V	3	4 944	2.895	2.603	0.746	8.783	0 563	0.330	0.085	2.147	1 064	0.493	4.403	0 501
V	4	5.624	2.639	2.397	0.349	9.162	0.614	0.288	0.038	2.651	0 910	0.198	4.786	0 522
V	5	5 036	2.069	1.852	0.753	8.146	0.618	0.254	0.092	2.409	0 828	0.474	4.618	0 567
V	6	4 013	2.549	2.277	0.614	9 085	0.442	0.281	0.068	1.481	0.742	0.394	3.497	0 385
H+V	0	8 334	5.612	5.087	4.325	16.925	0.492	0.332	0.256	3.856	2 913	3.359	8.650	0 511
H+V	1	8 034	6.056	5.534	1.740	12.244	0.656	0.495	0.142	4.503	3 564	0.605	8.476	0.692
H+V	2	9 968	6.475	5.867	1.152	13.757	0.725	0.471	0.084	5.922	3.437	0.898	9.875	0.718
H+V	3	9 994	6.365	6.108	0.934	14.010	0.713	0.454	0.067	6.006	3.448	0.746	9.449	0.674
H+V	4	10.694	6.200	5.589	0.640	13.978	0.765	0.444	0.046	6.757	3 268	0.388	10.237	0.732
H+V	5	8.670	5.108	4.661	1.616	13.417	0.646	0.381	0.120	5.156	2 817	1.300	9.117	0.680
H+V	6	7 826	5.183	4.601	1.535	14.493	0 540	0.358	0.106	3.984	1.614	1.232	7.560	0 522

Table 2-3 Simulated averaged PD over 4 [cm^2] area on Plane-A Module - n260 Mid Channel.

PD Simulation(W/m^2) Limit = 10 W/m^2		Middle channel												
		2mm					55.13%	57.23%	24.42%	10mm				74.57%
		S1	S2	S2	S4	S5	S1/S5	S2/S5	S4/S5	S1	S2	S4	S5	10mm/2mm
Pol	Beam ID	Front	Back	Back(CB)	Right	Top				Front	Back	Right	Top	S5/S5
H	0	3 810	2.689	2.407	1.739	8 209	0.464	0.328	0.212	1.418	0 832	0.895	3.270	0 398
H	1	3.608	3.287	3.009	0.462	7 376	0.489	0.446	0.063	1.487	1.115	0.110	3.929	0 533
H	2	3.681	2.996	2.742	0.287	7 865	0.468	0.381	0.037	1.688	1 259	0.154	3.837	0.488
H	3	3.491	2.605	2.382	0.250	7.106	0.491	0.367	0.035	1.706	1.173	0.142	3.730	0 525
H	4	2 932	3.257	3.074	0.346	6.678	0.439	0.488	0.052	1.426	1 549	0.185	3.798	0 569
H	5	3.163	3.063	2.782	0.775	6 949	0.455	0.441	0.111	1.385	1 070	0.470	3.809	0 548
H	6	3 240	2.764	2.507	1.172	7 592	0.427	0.364	0.154	1.133	0 982	0.871	3.295	0.434
V	0	2 997	3.014	2.741	1.816	7.447	0.402	0.405	0.244	1.180	1.174	1.071	3.213	0.431
V	1	2.433	3.365	3.051	0.654	5 884	0.413	0.572	0.111	1.141	1.199	0.203	3.579	0.608
V	2	3.469	3.022	2.760	0.724	7.751	0.448	0.390	0.093	1.566	1.441	0.480	4.146	0 535
V	3	3.686	3.076	2.830	0.506	7.635	0.483	0.403	0.066	1.724	1.483	0.292	4.057	0 531
V	4	3 939	3.076	2.916	0.178	7 804	0 505	0.394	0.023	1.945	1 523	0.092	4.322	0 554
V	5	3 592	2.656	2.395	0.546	6 585	0 545	0.403	0.083	1.721	1 051	0.366	3.702	0 562
V	6	3 272	2.703	2.442	0.562	7.671	0.427	0.352	0.073	1.250	0 995	0.360	3.166	0.413
H+V	0	6.161	6.388	5.719	3.639	14.898	0.414	0.429	0.244	3.238	3.115	2.452	8.008	0 538
H+V	1	4 808	7.396	6.730	1.353	12.922	0 372	0.572	0.105	2.446	3 389	0.441	9.458	0.732
H+V	2	6.168	7.785	7.107	1.040	16.558	0 373	0.470	0.063	3.464	5.107	0.822	11.354	0.686
H+V	3	6 295	6.976	6.654	0.697	15.730	0.400	0.443	0.044	3.728	4 974	0.557	11.079	0.704
H+V	4	6 092	8.790	8.525	0.486	15.922	0 383	0.552	0.031	3.720	5 850	0.380	11.872	0.746
H+V	5	6 245	6.450	5.859	1.366	11.327	0 551	0.569	0.121	3.628	3 350	1.080	8.263	0.729
H+V	6	5 889	5.193	4.682	1.701	12.701	0.464	0.409	0.134	2.966	2.166	1.466	7.133	0 562

Table 2-4 Simulated averaged PD over 4 [cm^2] area on Plane-A Module - n260 High Channel.

PD Simulation(W/m^2) Limit = 10 W/m^2		High channel												
		2mm					52.57%	46.00%	24.34%	10mm				59.08%
		S1	S2	S2	S4	S5	S1/S5	S2/S5	S4/S5	S1	S2	S4	S5	10mm/2mm
Pol	Beam ID	Front	Back	Back(CB)	Right	Top				Front	Back	Right	Top	S5/S5
H	0	2.610	2.048	1.807	0.807	5 095	0 512	0.402	0.158	0.933	0.669	0.411	2.367	0.465
H	1	2 956	1.967	1.804	0.368	5 924	0.499	0.332	0.062	1.162	0.674	0.117	3.125	0 528
H	2	2 954	2.240	2.072	0.293	6 001	0.492	0.373	0.049	1.385	0 951	0.124	2.937	0.489
H	3	2 036	1.603	1.457	0.173	4.421	0.461	0.363	0.039	0.882	0.673	0.082	2.390	0 541
H	4	2.189	1.985	1.838	0.441	5 005	0.437	0.397	0.088	0.921	1 039	0.263	2.739	0 547
H	5	2 265	1.958	1.773	0.636	5.184	0.437	0.378	0.123	1.004	0.730	0.384	2.719	0 524
H	6	2.484	1.791	1.607	0.521	5 395	0.460	0.332	0.097	0.937	0 589	0.322	2.481	0.460
V	0	2.103	2.123	1.915	1.340	5 503	0 382	0.386	0.243	0.840	0.737	0.523	2.653	0.482
V	1	2.113	2.270	2.097	0.433	5.186	0.407	0.438	0.083	1.017	1.138	0.210	2.807	0 541
V	2	2 524	2.314	2.132	0.477	5.657	0.446	0.409	0.084	1.223	0 974	0.319	3.066	0 542
V	3	2.712	2.443	2.254	0.332	5.767	0.470	0.424	0.058	1.215	0 897	0.144	3.303	0 573
V	4	2.640	2.080	1.923	0.269	4 983	0 530	0.417	0.054	1.290	0 860	0.149	2.890	0 580
V	5	2 518	1.890	1.696	0.439	5 097	0.494	0.371	0.086	1.128	0.686	0.285	2.746	0 539
V	6	2 022	1.752	1.580	0.409	4.649	0.435	0.377	0.088	0.761	0.643	0.242	2.065	0.444
H+V	0	5 287	5.728	5.053	2.865	12.451	0.425	0.460	0.230	2.044	2 027	1.175	6.039	0.485
H+V	1	5 528	5.421	5.039	1.251	13.914	0 397	0.390	0.090	2.260	2 840	0.383	7.839	0 563
H+V	2	6 321	5.736	5.265	0.802	15.643	0.404	0.367	0.051	2.934	2.709	0.487	8.505	0 544
H+V	3	5.194	5.182	4.848	0.600	13.403	0 388	0.387	0.045	2.233	2.180	0.271	7.551	0 563
H+V	4	5.644	5.979	5.729	0.971	14.261	0 396	0.419	0.068	2.555	3 351	0.568	8.425	0 591
H+V	5	5 347	5.106	4.635	1.484	11.701	0.457	0.436	0.127	2.568	2 021	0.989	6.791	0 580
H+V	6	4 988	4.536	4.046	1.149	10.679	0.467	0.425	0.108	2.112	1.418	0.695	5.221	0.489

Table 2-5 Simulated averaged PD over 4 [cm^2] area on Plane-B Module - n260 Low Channel.

PD Simulation(W/m^2) Limit = 10 W/m^2		Low channel												
		2mm					3.79%	26.05%	43.01%	10mm				56.91%
		S1	S2	S2	S4	S5	S1/S2	S4/S2	S5/S2	S1	S2	S4	S5	10mm/2mm
Pol	Beam ID	Front	Back	Back(CB)	Right	Top				Front	Back	Right	Top	S2/S2
H	0	0 232	7.565	6.746	1.898	1 880	0 031	0.251	0.249	0.092	2.452	1.011	0.758	0 324
H	1	0 205	6.852	6.227	1.361	2.145	0 030	0.199	0.313	0.119	2.715	0.455	1.004	0 396
H	2	0.122	6.816	6.550	0.400	2.183	0 018	0.059	0.320	0.051	3.420	0.203	1.145	0 502
H	3	0.118	7.276	6.990	0.236	2 542	0 016	0.032	0.349	0.047	3.755	0.088	1.294	0 516
H	4	0.176	6.609	6.323	0.507	2.143	0 027	0.077	0.324	0.060	3 279	0.212	1.136	0.496
H	5	0 204	7.186	6.645	0.926	1.769	0 028	0.129	0.246	0.084	2 085	0.401	0.751	0 290
H	6	0.197	7.543	6.820	0.851	1 840	0 026	0.113	0.244	0.084	2.714	0.270	0.840	0 360
V	0	0.107	6.443	6.012	0.992	1.668	0 017	0.154	0.259	0.046	3.180	0.418	0.876	0.494
V	1	0.150	6.509	6.031	0.973	1.718	0 023	0.149	0.264	0.051	2 388	0.405	0.822	0 367
V	2	0.131	7.296	7.016	0.142	2.102	0 018	0.020	0.288	0.051	3 822	0.084	1.069	0 524
V	3	0.109	6.809	6.584	0.249	2 300	0 016	0.037	0.338	0.043	3 875	0.086	1.241	0 569
V	4	0.114	6.824	6.565	0.570	1 895	0 017	0.084	0.278	0.070	3.660	0.215	0.980	0 536
V	5	0.171	6.861	6.281	1.398	1 569	0 025	0.204	0.229	0.071	2 320	0.748	0.649	0 338
V	6	0 249	7.275	6.486	1.581	1 853	0 034	0.217	0.255	0.109	1 881	0.904	0.789	0 259
H+V	0	0.408	14 567	13.221	3.468	3 280	0 028	0.238	0.225	0.142	4.639	1.930	1.355	0 318
H+V	1	0.470	14 316	13.191	2.855	4.426	0 033	0.199	0.309	0.209	5.603	1.199	1.989	0 391
H+V	2	0 354	14.645	13.972	0.656	5.115	0 024	0.045	0.349	0.134	7.491	0.324	2.583	0 512
H+V	3	0 335	14.662	14.186	0.546	6 305	0 023	0.037	0.430	0.125	8.174	0.216	3.162	0 557
H+V	4	0.404	14.443	13.840	1.420	4.410	0 028	0.098	0.305	0.202	7 282	0.587	2.392	0 504
H+V	5	0.432	14 925	13.662	2.752	3.792	0 029	0.184	0.254	0.179	4.791	1.237	1.637	0 321
H+V	6	0 580	15 287	13.634	2.162	3 911	0 038	0.141	0.256	0.290	4.632	1.285	2.087	0 303

Table 2-6 Simulated averaged PD over 4 [cm^2] area on Plane-B Module - n260 Mid Channel.

PD Simulation(W/m^2) Limit = 10 W/m^2		Middle channel												
		2mm					2.93%	25.05%	41.74%	10mm				56.14%
		S1	S2	S2	S4	S5	S1/S2	S4/S2	S5/S2	S1	S2	S4	S5	10mm/2mm
Pol	Beam ID	Front	Back	Back(CB)	Right	Top				Front	Back	Right	Top	S2/S2
H	0	0.133	7.444	6.749	1.865	1 383	0 018	0.251	0.186	0.057	2 239	0.701	0.507	0 301
H	1	0.151	6.432	5.801	1.254	1.690	0 024	0.195	0.263	0.044	2.469	0.288	0.699	0 384
H	2	0.163	6.101	5.805	0.495	1 849	0 027	0.081	0.303	0.072	2 868	0.131	0.868	0.470
H	3	0.133	6.781	6.471	0.323	2 223	0 020	0.048	0.328	0.038	3 253	0.119	1.053	0.480
H	4	0.125	6.326	6.010	0.543	2 017	0 020	0.086	0.319	0.048	2.789	0.230	0.939	0.441
H	5	0.164	6.912	6.521	0.697	1 575	0 024	0.101	0.228	0.060	2.199	0.420	0.659	0 318
H	6	0.134	7.182	6.661	0.882	1.759	0 019	0.123	0.245	0.055	2 585	0.171	0.669	0 360
V	0	0.116	5.951	5.585	1.042	1 595	0 019	0.175	0.268	0.050	2.745	0.449	0.645	0.461
V	1	0.160	5.705	5.347	1.285	1 204	0 028	0.225	0.211	0.048	2.407	0.367	0.465	0.422
V	2	0.115	6.312	6.027	0.263	1 840	0 018	0.042	0.291	0.040	3 009	0.067	0.809	0.477
V	3	0.135	6.524	6.231	0.384	2.103	0 021	0.059	0.322	0.051	3 260	0.153	0.922	0 500
V	4	0.137	6.020	5.724	0.689	1 885	0 023	0.114	0.313	0.051	2.765	0.270	0.898	0.459
V	5	0.159	6.744	6.312	1.434	1 510	0 024	0.213	0.224	0.048	2 206	0.797	0.693	0 327
V	6	0.157	7.356	6.804	1.787	1 545	0 021	0.243	0.210	0.074	1 947	0.798	0.665	0 265
H+V	0	0 325	13 302	12.344	2.687	2 848	0 024	0.202	0.214	0.109	4.662	1.366	0.929	0 351
H+V	1	0 386	13 202	12.357	2.853	3 522	0 029	0.216	0.267	0.115	6.654	0.818	1.595	0 504
H+V	2	0 294	12.196	11.682	0.998	4.416	0 024	0.082	0.362	0.124	6 847	0.289	2.145	0 561
H+V	3	0 283	15 223	14.737	0.790	6 354	0 019	0.052	0.417	0.118	8 505	0.308	2.619	0 559
H+V	4	0 329	12.479	11.913	1.264	4 877	0 026	0.101	0.391	0.133	6.443	0.586	2.546	0 516
H+V	5	0 391	14 910	13.893	2.172	3 014	0 026	0.146	0.202	0.119	5.428	1.323	1.342	0 364
H+V	6	0 320	15.608	14.451	2.794	3 356	0 020	0.179	0.215	0.126	5 223	1.073	1.551	0 335

Table 2-7 Simulated averaged PD over 4 [cm^2] area on Plane-B Module - n260 High Channel.

PD		High channel												
		2mm					3.42%	24.62%	38.49%	10mm				53.29%
		S1	S2	S2	S4	S5	S1/S2	S4/S2	S5/S2	S1	S2	S4	S5	10mm/2mm
Pol	Beam ID	Front	Back	Back(CB)	Right	Top				Front	Back	Right	Top	S2/S2
H	0	0.120	6.511	5.957	1.603	1.142	0 018	0.246	0.175	0.042	2 035	0.467	0.499	0 312
H	1	0.166	5.749	5.141	0.977	1 218	0 029	0.170	0.212	0.037	2 024	0.191	0.415	0 352
H	2	0.135	4.829	4.533	0.375	1 567	0 028	0.078	0.325	0.061	2 258	0.128	0.509	0.468
H	3	0.179	5.591	5.276	0.378	1.689	0 032	0.068	0.302	0.076	2.414	0.154	0.715	0.432
H	4	0.131	5.384	5.082	0.653	1 556	0 024	0.121	0.289	0.062	2.426	0.298	0.656	0.451
H	5	0.152	6.268	5.887	0.665	1 038	0 024	0.106	0.166	0.065	2 099	0.357	0.366	0 335
H	6	0.170	6.236	5.746	0.627	1 261	0 027	0.101	0.202	0.057	2 041	0.148	0.469	0 327
V	0	0.144	5.588	5.209	0.857	1 930	0 026	0.153	0.345	0.052	2 274	0.296	0.818	0.407
V	1	0.187	5.465	5.116	0.699	1.478	0 034	0.128	0.270	0.074	2 346	0.154	0.577	0.429
V	2	0.123	5.216	4.952	0.264	1 826	0 024	0.051	0.350	0.052	2.147	0.105	0.876	0.412
V	3	0.158	5.672	5.369	0.505	2.176	0 028	0.089	0.384	0.076	2.423	0.220	1.025	0.427
V	4	0.158	5.212	4.940	0.657	1.741	0 030	0.126	0.334	0.069	2 325	0.229	0.774	0.446
V	5	0.113	5.753	5.362	1.269	1 581	0 020	0.221	0.275	0.044	2.178	0.631	0.703	0 379
V	6	0 098	6.508	6.047	1.532	1.430	0 015	0.235	0.220	0.035	1 873	0.556	0.549	0 288
H+V	0	0 283	13.704	12.837	2.441	3 358	0 021	0.178	0.245	0.112	4 945	0.772	1.229	0 361
H+V	1	0.432	13 070	12.177	2.137	3 814	0 033	0.163	0.292	0.123	5 994	0.405	1.488	0.459
H+V	2	0 323	10.702	10.205	0.914	3 951	0 030	0.085	0.369	0.133	5.413	0.330	1.613	0 506
H+V	3	0 365	11 589	11.079	1.128	4.461	0 031	0.097	0.385	0.160	6.147	0.498	2.010	0 530
H+V	4	0 368	11.797	11.379	1.735	4 294	0 031	0.147	0.364	0.170	6 287	0.702	1.739	0 533
H+V	5	0 365	14 290	13.543	2.272	3 008	0 026	0.159	0.210	0.173	5 802	1.266	1.277	0.406
H+V	6	0 344	14.665	13.600	2.947	3 240	0 023	0.201	0.221	0.111	4.607	0.886	1.243	0 314

Table 2-8 Simulated averaged PD over 4 [cm^2] area on Plane-A Module - n261 Low Channel.

PD Simulation(W/m^2) Limit = 10 W/m^2		Low channel												
		2mm					55.09%	40.07%	22.48%	10mm				55.93%
		S1	S2	S2	S4	S5	S1/S5	S2/S5	S4/S5	S1	S2	S4	S5	10mm/2mm
Pol	Beam ID	Front	Back	Back(CB)	Right	Top				Front	Back	Right	Top	S5/S5
H	0	3 510	2.781	2.595	1.783	10.091	0 348	0.276	0.177	1.392	1 077	0.867	3.928	0 389
H	1	3 536	2.907	2.665	1.059	9 237	0 383	0.315	0.115	1.479	1 227	0.381	4.256	0.461
H	2	3.714	2.939	2.718	0.440	8.781	0.423	0.335	0.050	1.704	1 305	0.179	4.339	0.494
H	3	4 316	2.934	2.771	0.709	9.192	0.470	0.319	0.077	2.153	1 214	0.410	4.724	0 514
H	4	3 902	2.560	2.410	0.783	8 335	0.468	0.307	0.094	1.797	0 992	0.443	4.161	0.499
H	5	4 233	2.846	2.586	0.414	7.712	0 549	0.369	0.054	1.882	1 055	0.168	4.082	0 529
H	6	4 033	2.683	2.438	0.385	7 913	0 510	0.339	0.049	1.707	0 951	0.169	3.788	0.479
V	0	3 086	1.974	1.739	1.372	6 526	0.473	0.302	0.210	1.102	0.673	0.746	2.803	0.429
V	1	3 240	1.754	1.596	0.845	7 077	0.458	0.248	0.119	1.251	0.731	0.394	3.087	0.436
V	2	4 205	2.058	1.893	0.766	7.116	0 591	0.289	0.108	1.811	1 008	0.366	3.804	0 535
V	3	5 071	2.619	2.460	0.718	8 950	0 567	0.293	0.080	2.568	1 041	0.324	4.887	0 546
V	4	4 269	2.820	2.589	0.544	9 387	0.455	0.300	0.058	1.916	1 213	0.311	4.411	0.470
V	5	3.125	2.554	2.352	0.321	8.723	0 358	0.293	0.037	1.262	0 971	0.136	3.762	0.431
V	6	2.705	2.379	2.186	0.483	7.125	0 380	0.334	0.068	0.966	0.787	0.226	2.892	0.406
H+V	0	8.746	6.487	6.055	4.406	19.600	0.446	0.331	0.225	3.550	2.615	2.384	8.328	0.425
H+V	1	8.159	6.241	5.905	2.524	18.803	0.434	0.332	0.134	3.338	2 908	1.180	8.567	0.456
H+V	2	8.620	6.977	6.576	1.732	18.168	0.474	0.384	0.095	3.765	3.187	0.802	10.107	0 556
H+V	3	9.776	8.658	8.233	2.004	21.607	0.452	0.401	0.093	5.092	3.753	1.178	12.085	0 559
H+V	4	8.777	8.300	7.900	1.968	21.360	0.411	0.389	0.092	3.945	3.641	1.143	10.801	0 506
H+V	5	8 287	7.561	7.148	0.654	19.961	0.415	0.379	0.033	3.585	3 275	0.357	10.293	0 516
H+V	6	9 245	6.484	6.074	1.141	17.180	0 538	0.377	0.066	3.856	2 571	0.512	7.671	0.447

Table 2-9 Simulated averaged PD over 4 [cm^2] area on Plane-A Module - n261 Mid Channel.

PD Simulation(W/m^2) Limit = 10 W/m^2		Middle channel												
		2mm					56.55%	41.43%	22.32%	10mm				55.80%
		S1	S2	S2	S4	S5	S1/S5	S2/S5	S4/S5	S1	S2	S4	S5	10mm/2mm
Pol	Beam ID	Front	Back	Back(CB)	Right	Top				Front	Back	Right	Top	S5/S5
H	0	3.655	2.907	2.704	1.881	10.374	0 352	0.280	0.181	1.487	1 082	0.807	4.228	0.408
H	1	3.681	3.002	2.758	1.115	9 513	0 387	0.316	0.117	1.611	1 281	0.346	4.475	0.470
H	2	3.782	2.912	2.734	0.504	8 979	0.421	0.324	0.056	1.767	1 357	0.205	4.462	0.497
H	3	4 207	3.089	2.924	0.763	9.196	0.457	0.336	0.083	2.056	1 249	0.439	4.757	0 517
H	4	3.735	2.701	2.543	0.763	8.190	0.456	0.330	0.093	1.639	1.146	0.394	4.097	0 500
H	5	3.771	2.840	2.589	0.390	7 093	0 532	0.400	0.055	1.718	1.154	0.165	3.593	0 507
H	6	3 586	2.595	2.366	0.371	7 207	0.498	0.360	0.052	1.551	0 937	0.189	3.287	0.456
V	0	3.130	2.102	1.832	1.400	6.706	0.467	0.313	0.209	1.073	0.632	0.765	2.897	0.432
V	1	3 233	1.852	1.682	0.877	7.171	0.451	0.258	0.122	1.234	0.684	0.351	3.201	0.446
V	2	4 051	2.199	1.996	0.854	7.163	0 566	0.307	0.119	1.691	1 016	0.441	3.942	0 550
V	3	4 853	2.897	2.733	0.672	8 964	0 541	0.323	0.075	2.400	1.133	0.362	4.936	0 551
V	4	4.411	2.772	2.605	0.549	9 592	0.460	0.289	0.057	1.971	1 087	0.288	4.643	0.484
V	5	3 373	2.777	2.566	0.307	8 988	0 375	0.309	0.034	1.341	0 908	0.149	4.060	0.452
V	6	2 962	2.737	2.518	0.386	7.420	0 399	0.369	0.052	1.072	0 915	0.192	3.071	0.414
H+V	0	8 855	6.749	6.289	4.510	20.202	0.438	0.334	0.223	3.542	2.602	2.381	8.846	0.438
H+V	1	8 057	6.547	6.190	2.700	19.395	0.415	0.338	0.139	3.273	2 974	1.057	9.264	0.478
H+V	2	8 233	7.474	7.043	2.121	19.170	0.429	0.390	0.111	3.673	3 347	0.976	10.704	0 558
H+V	3	9 577	9.276	8.841	2.129	22.391	0.428	0.414	0.095	4.639	4 018	1.270	12.505	0 558
H+V	4	8.407	8.792	8.399	1.901	22.033	0 382	0.399	0.086	3.689	4 054	0.994	11.462	0 520
H+V	5	8 390	7.926	7.505	0.769	20.149	0.416	0.393	0.038	3.642	3 511	0.380	10.578	0 525
H+V	6	8 878	6.491	6.099	0.986	17.047	0 521	0.381	0.058	3.925	2.653	0.512	7.754	0.455

Table 2-10 Simulated averaged *PD* over 4 [cm^2] area on Plane-A Module - n261 High Channel.

PD Simulation(W/m^2) Limit = 10 W/m^2		High channel												
		2mm					55.13%	41.52%	21.17%	10mm				56.49%
		S1	S2	S2	S4	S5	S1/S5	S2/S5	S4/S5	S1	S2	S4	S5	10mm/2mm
Pol	Beam ID	Front	Back	Back(CB)	Right	Top				Front	Back	Right	Top	S5/S5
H	0	3.720	3.049	2.819	1.858	10.245	0 363	0.298	0.181	1.505	1.139	0.698	4.424	0.432
H	1	3 804	3.013	2.809	1.080	9 549	0 398	0.316	0.113	1.693	1 342	0.330	4.633	0.485
H	2	3 871	2.901	2.742	0.628	9.108	0.425	0.319	0.069	1.843	1 370	0.280	4.529	0.497
H	3	4.195	3.147	2.992	0.763	9 223	0.455	0.341	0.083	2.036	1 318	0.449	4.727	0 513
H	4	3.785	2.741	2.512	0.783	8 265	0.458	0.332	0.095	1.662	1 215	0.308	4.166	0 504
H	5	3.774	2.652	2.417	0.480	6 882	0 548	0.385	0.070	1.767	1 019	0.241	3.430	0.498
H	6	3 532	2.418	2.201	0.452	6 846	0 516	0.353	0.066	1.565	0 813	0.242	3.123	0.456
V	0	3 076	2.119	1.855	1.395	6 810	0.452	0.311	0.205	1.065	0.613	0.762	2.861	0.420
V	1	3 231	2.011	1.798	0.894	7 322	0.441	0.275	0.122	1.263	0.705	0.321	3.318	0.453
V	2	4 054	2.392	2.176	0.801	7 354	0 551	0.325	0.109	1.707	1 008	0.420	4.095	0 557
V	3	4 556	3.157	2.991	0.696	8 881	0 513	0.355	0.078	2.227	1 297	0.378	4.895	0 551
V	4	4.433	3.047	2.877	0.580	9.676	0.458	0.315	0.060	1.952	1 243	0.265	4.858	0 502
V	5	3.619	2.784	2.597	0.299	9 086	0 398	0.306	0.033	1.403	0 955	0.128	4.340	0.478
V	6	3 015	2.701	2.486	0.326	7 595	0 397	0.356	0.043	1.138	0 939	0.178	3.089	0.407
H+V	0	8.739	7.113	6.652	4.333	20.472	0.427	0.347	0.212	3.485	2.713	2.168	8.984	0.439
H+V	1	8 059	6.887	6.527	2.742	19.951	0.404	0.345	0.137	3.284	3 222	0.967	9.780	0.490
H+V	2	8.404	7.932	7.492	2.188	19.827	0.424	0.400	0.110	3.836	3.740	1.019	11.062	0 558
H+V	3	9 507	9.870	9.431	2.068	22.680	0.419	0.435	0.091	4.514	4.466	1.251	12.812	0 565
H+V	4	8.623	9.094	8.714	1.862	22.481	0 384	0.405	0.083	3.801	4.409	0.813	12.148	0 540
H+V	5	8.608	7.791	7.397	1.013	20.064	0.429	0.388	0.051	3.820	3 548	0.468	10.510	0 524
H+V	6	8.720	6.117	5.720	1.187	16.808	0 519	0.364	0.071	3.981	2 503	0.636	7.596	0.452

Table 2-11 Simulated averaged PD over 4 [cm^2] area on Plane-B Module - n261 Low Channel.

PD Simulation(W/m^2) Limit = 10 W/m^2		Low channel												
		2mm					6.90%	31.73%	56.38%	10mm				45.16%
		S1	S2	S2	S4	S5	S1/S2	S4/S2	S5/S2	S1	S2	S4	S5	10mm/2mm
Pol	Beam ID	Front	Back	Back(CB)	Right	Top				Front	Back	Right	Top	S2/S2
H	0	0 365	9.090	8.145	3.066	1 566	0 040	0.337	0.172	0.187	3.430	1.891	0.811	0 377
H	1	0 391	9.384	8.644	1.806	2.684	0 042	0.192	0.286	0.186	3 552	1.048	1.434	0 379
H	2	0 352	10 899	10.185	0.783	4 894	0 032	0.072	0.449	0.148	4.445	0.270	2.931	0.408
H	3	0 397	12.709	11.907	0.792	5 234	0 031	0.062	0.412	0.197	5 044	0.451	3.197	0 397
H	4	0 342	12.414	11.652	0.397	5 337	0 028	0.032	0.430	0.145	5 304	0.107	3.130	0.427
H	5	0.402	11.154	10.322	0.324	4 209	0 036	0.029	0.377	0.160	4 264	0.147	2.400	0 382
H	6	0.432	9.933	9.052	0.517	3.680	0 043	0.052	0.371	0.136	3.616	0.283	1.693	0 364
V	0	0 572	12.607	11.621	4.133	4.775	0 045	0.328	0.379	0.222	4.685	2.765	1.688	0 372
V	1	0.423	11.663	10.731	1.934	4.408	0 036	0.166	0.378	0.136	4 209	1.186	2.264	0 361
V	2	0 296	13 322	12.391	0.753	5 838	0 022	0.057	0.438	0.140	5 054	0.201	3.490	0 379
V	3	0.469	13.137	12.247	0.799	6 265	0 036	0.061	0.477	0.216	5.140	0.466	3.926	0 391
V	4	0 561	14 359	13.360	0.608	6 241	0 039	0.042	0.435	0.315	5 002	0.272	3.947	0 348
V	5	0.449	12.701	11.788	0.591	5 334	0 035	0.047	0.420	0.253	4 344	0.304	3.178	0 342
V	6	0.658	9.533	8.665	0.991	2 957	0 069	0.104	0.310	0.368	3 002	0.683	1.225	0 315
H+V	0	1.495	31 361	28.489	9.549	7 829	0 048	0.304	0.250	0.557	11.618	6.305	3.090	0 370
H+V	1	1 297	28 880	26.660	5.830	10.129	0 045	0.202	0.351	0.470	11.641	3.398	5.081	0.403
H+V	2	0.797	29.159	27.354	2.869	16.208	0 027	0.098	0.556	0.318	13.227	0.898	9.614	0.454
H+V	3	0 978	30.799	28.858	2.417	17.364	0 032	0.078	0.564	0.461	13.956	1.217	10.964	0.453
H+V	4	1 293	32.796	30.571	1.627	16.923	0 039	0.050	0.516	0.631	13.028	0.560	10.369	0 397
H+V	5	1.145	29 849	27.695	1.116	13.525	0 038	0.037	0.453	0.512	10.429	0.579	7.940	0 349
H+V	6	1 376	26.431	23.977	1.715	8.186	0 052	0.065	0.310	0.753	9 398	1.154	3.449	0 356

Table 2-12 Simulated averaged PD over 4 [cm^2] area on Plane-B Module - n261 Mid Channel.

PD Simulation(W/m^2) Limit = 10 W/m^2		Middle channel												
		2mm					5.46%	26.10%	53.74%	10mm				44.84%
		S1	S2	S2	S4	S5	S1/S2	S4/S2	S5/S2	S1	S2	S4	S5	10mm/2mm
Pol	Beam ID	Front	Back	Back(CB)	Right	Top				Front	Back	Right	Top	S2/S2
H	0	0.409	8.159	7.350	2.864	1.616	0 050	0.351	0.198	0.223	3 345	1.748	0.786	0.410
H	1	0 342	9.466	8.743	1.826	2 841	0 036	0.193	0.300	0.163	3.775	1.035	1.405	0 399
H	2	0 250	10 954	10.297	0.708	4.714	0 023	0.065	0.430	0.129	4 912	0.293	2.768	0.448
H	3	0 346	12 512	11.778	0.769	5.115	0 028	0.061	0.409	0.195	5 297	0.433	3.127	0.423
H	4	0 363	12 020	11.167	0.380	4.731	0 030	0.032	0.394	0.138	4.653	0.119	2.881	0 387
H	5	0.472	11 007	10.106	0.272	3 927	0 043	0.025	0.357	0.156	3 850	0.117	2.293	0 350
H	6	0 567	10 387	9.440	0.560	3.709	0 055	0.054	0.357	0.158	3.730	0.292	1.795	0 359
V	0	0 574	12 232	11.163	3.835	4.651	0 047	0.314	0.380	0.230	4 213	2.627	1.746	0 344
V	1	0.419	11.649	10.673	1.712	4 288	0 036	0.147	0.368	0.149	3 888	1.064	2.308	0 334
V	2	0 324	13 002	12.084	0.704	5.497	0 025	0.054	0.423	0.143	4.759	0.194	3.365	0 366
V	3	0.462	13 279	12.457	0.840	6 325	0 035	0.063	0.476	0.217	5 377	0.497	4.111	0.405
V	4	0.489	14.671	13.715	0.713	6.184	0 033	0.049	0.422	0.284	5 297	0.322	3.927	0 361
V	5	0 384	12 885	11.975	0.565	5.110	0 030	0.044	0.397	0.223	4 583	0.316	3.052	0 356
V	6	0.488	9.879	8.933	0.932	3.101	0 049	0.094	0.314	0.239	2 940	0.687	1.216	0 298
H+V	0	1.413	28.164	25.578	8.553	7 357	0 050	0.304	0.261	0.569	10.268	5.667	3.090	0 365
H+V	1	1.120	28.619	26.342	5.444	10.441	0 039	0.190	0.365	0.483	11.132	3.211	5.337	0 389
H+V	2	0.739	28.765	26.931	2.637	15.216	0 026	0.092	0.529	0.354	12.430	0.776	9.219	0.432
H+V	3	0 895	30.426	28.574	2.573	16.351	0 029	0.085	0.537	0.514	13.457	1.461	10.670	0.442
H+V	4	1 210	32.467	30.262	1.436	15.945	0 037	0.044	0.491	0.592	12.598	0.599	10.305	0 388
H+V	5	1.131	29.794	27.597	0.923	13.161	0 038	0.031	0.442	0.517	10.053	0.521	7.844	0 337
H+V	6	1.149	26 838	24.255	1.650	9.112	0 043	0.061	0.340	0.558	8 894	1.129	3.715	0 331

Table 2-13 Simulated averaged *PD* over 4 [cm^2] area on Plane-B Module - n261 High Channel.

PD Simulation(W/m^2) Limit = 10 W/m^2		High channel												
		2mm					6.05%	36.78%	50.29%	10mm				43.77%
		S1	S2	S2	S4	S5	S1/S2	S4/S2	S5/S2	S1_10mm	S2_10mm	S4_10mm	S5_10mm	10mm/2mm
Pol	Beam ID	Front	Back	Back(CB)	Right	Top				Front	Back	Right	Top	S2/S2
H	0	0 328	7.635	6.925	2.808	1.775	0 043	0.368	0.232	0.186	3.171	1.729	0.888	0.415
H	1	0 303	9.837	9.058	1.805	3 077	0 031	0.183	0.313	0.144	3.752	1.037	1.461	0 381
H	2	0 253	11.771	11.055	0.573	4 811	0 021	0.049	0.409	0.155	5.147	0.250	2.781	0.437
H	3	0 300	12.756	12.032	0.668	5.179	0 024	0.052	0.406	0.182	5 560	0.373	3.172	0.436
H	4	0 397	12 245	11.373	0.296	4.771	0 032	0.024	0.390	0.150	4.611	0.109	3.007	0 377
H	5	0 531	11.119	10.197	0.249	3 931	0 048	0.022	0.354	0.191	3.671	0.109	2.361	0 330
H	6	0.644	10.647	9.684	0.598	3 515	0 061	0.056	0.330	0.222	3.660	0.336	1.800	0 344
V	0	0.494	11.468	10.462	3.201	4.131	0 043	0.279	0.360	0.201	3.781	2.272	1.589	0 330
V	1	0.413	11 856	10.918	1.345	4 050	0 035	0.113	0.342	0.157	3 958	0.840	2.217	0 334
V	2	0 335	12 846	11.985	0.729	5.171	0 026	0.057	0.403	0.149	5 003	0.190	3.181	0 389
V	3	0.417	13.439	12.662	0.758	5 953	0 031	0.056	0.443	0.205	5 528	0.446	3.919	0.411
V	4	0.433	14 541	13.679	0.704	5 917	0 030	0.048	0.407	0.259	5.609	0.346	3.792	0 386
V	5	0 372	12 532	11.658	0.535	4 826	0 030	0.043	0.385	0.228	4 556	0.302	2.849	0 364
V	6	0 532	9.867	8.912	0.821	3.467	0 054	0.083	0.351	0.273	2.769	0.602	1.520	0 281
H+V	0	1 204	25.422	23.122	7.588	6 514	0 047	0.298	0.256	0.477	9 035	5.048	2.835	0 355
H+V	1	0 989	28 533	26.277	4.492	9 885	0 035	0.157	0.346	0.438	10.343	2.788	5.301	0 362
H+V	2	0 864	28 816	27.034	2.463	13.871	0 030	0.085	0.481	0.427	11.522	0.684	8.574	0.400
H+V	3	0 861	30.619	28.844	2.285	15.397	0 028	0.075	0.503	0.482	12.974	1.393	10.101	0.424
H+V	4	1 056	31 927	29.850	1.116	15.090	0 033	0.035	0.473	0.515	12.256	0.559	9.906	0 384
H+V	5	1.143	29 013	26.928	0.904	12.926	0 039	0.031	0.446	0.543	9 827	0.498	7.719	0 339
H+V	6	1 397	26 296	23.731	1.549	9 594	0 053	0.059	0.365	0.729	8 045	0.908	4.311	0 306