Power Density Simulation Report

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Google LLC

1. Numerical modeling for Power Density (PD) calculations

1.1 Full-wave numerical computation tool

1.1.1 Tool description

Ansys is the first to offer a novel solution for accurate and reliable analysis of antenna arrays used in such diverse applications as 5G mmWave, radar design including automotive radar sensors, and satellite communications.

Ansys HFSS is a 3D electromagnetic (EM) simulation software for designing and simulating high-frequency electronic products such as antennas, antenna arrays, RF or microwave components, high-speed interconnects, filters, connectors, IC packages and printed circuit boards. ANSYS Electromagnetics suite HFSS (2019 R3) is implemented based on Finite Element Method (FEM), which operates in the frequency domain.

1.1.2 Mesh and Convergence criteria

The Ansys HFSS simulation suite consists of a comprehensive set of solvers to address diverse electromagnetic problems ranging in mobile phone. Its reliable automatic adaptive mesh refinement, which focuses on the design instead of spending time determining and creating the best mesh. This automation and guaranteed accuracy differentiates HFSS from all other EM simulators, which require manual user control and multiple solutions to ensure that the generated mesh is suitable and accurate. The determination parameter of the number of iterations in Ansys HFSS (2019 R3) is defined as convergence criteria, delta S, and the iterative adaptive mesh process repeats until the delta S is met. In Ansys HFSS (2019 R3), the accuracy of converged results depends on the delta S. Figure 1 is an example of mobile phone device adaptive mesh (Top view).

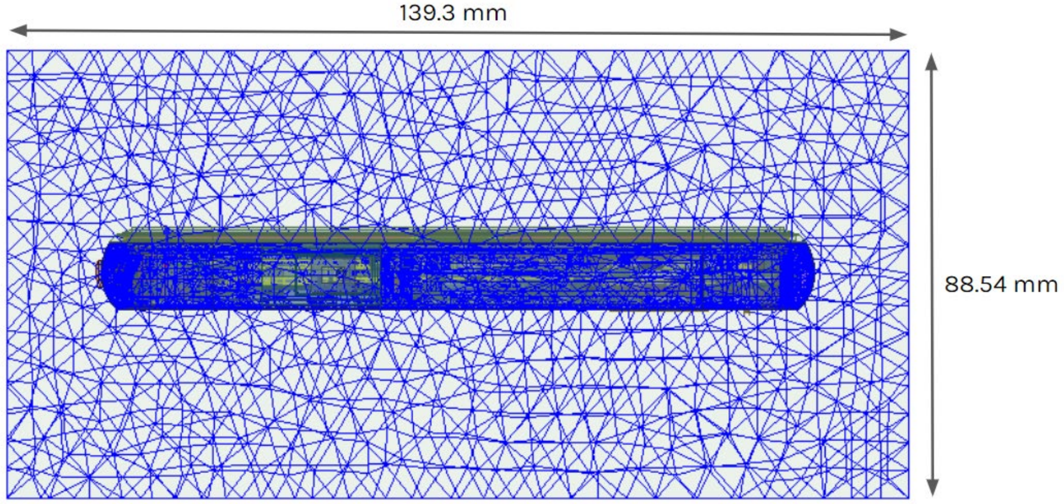


Figure 1 Example of the adaptive mesh technique (Top view)

1.2.3 Time-average PD calculation

When dealing with electromagnetic fields which are needed to relate the concept of energy to the fields. This is done by means of the Poynting vector which is found to be the power density in the electromagnetic field. The conservation of energy is then established by means of the Poynting theorem.

To calculate PD evaluation, two physical quantities, an electric field ($\underline{E}$) and a magnetic field ($\underline{H}$) are needed. The actual consumption power can be expressed as the real term of the Poynting vector ($\underline{S}$) from the cross product of $\underline{E}$nd complex conjugation of$\underline{H}$s shown below:

$$\langle \vec{S} \rangle = \mathrm{Re}\left(\frac{1}{2}\vec{E} \times \vec{H}^*\right)$$

($\underline{S}$) can be expressed as point power density based on a peak value of each spatial point on mesh grids, and obtained directly from Ansys HFSS (version 19.3).

The total power density (all X, Y, Z components) through any given surface is used to calculate the averaged power density. Hence the spatially averaged power density on a given surface is calculated as the surface integral of the Poynting vector over a 4 square cm averaging area.From the point power density ($\underline{S}$), the spatial-averaged power density (PD?v) on an evaluated area (A) can be derived as shown below:

$$\mathrm{PD}_{av} = \frac{1}{A}\int_A \langle \vec{S} \rangle \cdot ds = \frac{1}{2A_{av}}\iint_{A_{av}} \|Re\{ExH^*\}\|\, dA$$

1.2 Simulation setup

1.2.1 Simulation model

The simulation approach to perform PD assessment for a smartphone requires accurate modeling for mmWave antenna module as well as the smartphone itself. Figure 2 shows the simulation model which is mounted on two mmWave antenna modules. The simulation modeling includes most of the entire structure of the device itself such as PCB, metal frame, battery, flex cables, large components and legacy antennas as well as mmWave Ant 1 and Ant 2. On the back side view, mmWave Ant 1 is placed on the left side and antennas are facing the left side of the device. mmWave Ant 2 is placed right side and antennas are facing the right and back side of the device.

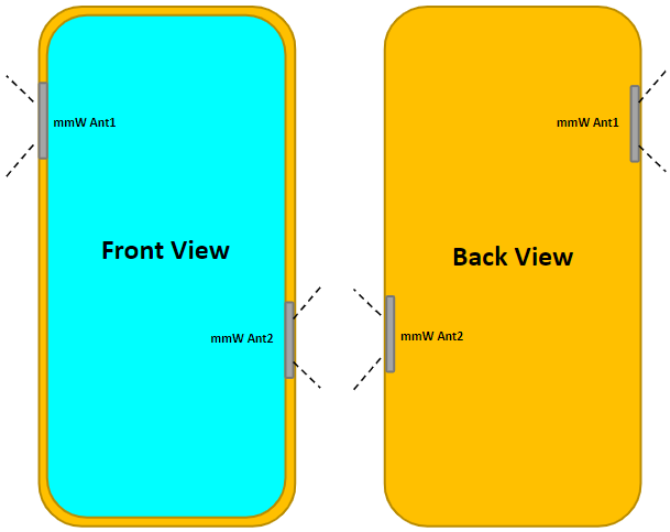


Figure 2. HFSS simulation model which is mounted two mmWave antenna modules

1.2.2 PD evaluation surfaces

Table 1 shows the PD evaluation planes for each mmWave antenna module and Fig.2 shows FCC defines 6 surfaces for PD simulation and measurement and will be positioned based on distance in setting parameters.the spatial-averaged power density can be obtained by the integral of 4 cm^2. Figure 3 shows where the mmWave Ant 1 and mmWave Ant 2 located on the device, PD evaluation planes except the bottom side are set up.
Ansys HFSS (version 19.3) can support the absorbing boundary condition (ABC) for radiation boundary and normally make a quarter wavelength from the radiating structure. In this report, to cover all beamforming cases of mmWave antenna modules, the three wavelength spacing from the device is used.

Table 1. PD evaluation surfaces

	Front	Back	Left (from front view)	Right (from front view)	Top	Bottom
	S1	S2	S3	S4	S5	S6
mmWave Ant_1	O	O	O	O	O	X
mmWave Ant_2	O	O	O	O	O	X

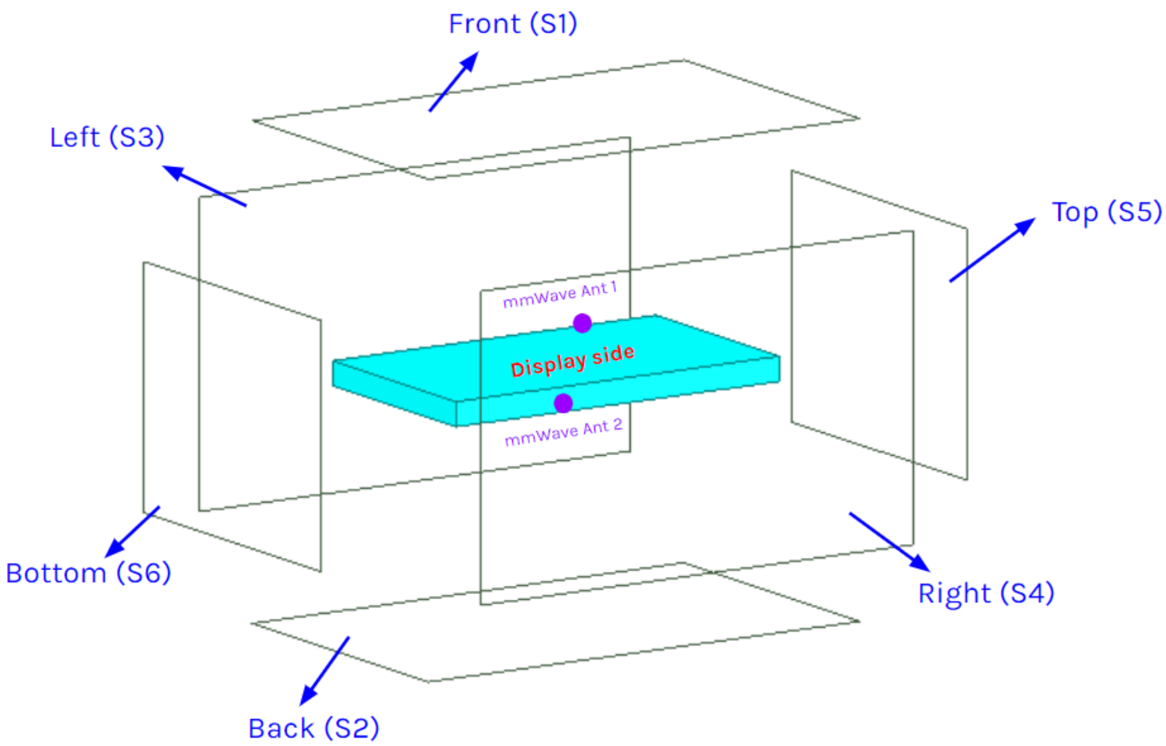


Figure 3. PD evaluation planes

1.2.3 Boundary condition

To simulate an electromagnetic tool based on FEM, the boundary condition allows electromagnetic waves to be electrically open at the boundary and radiated far away without reflection. ANSYS Electromagnetics suite HFSS (2019 R3) can support the absorbing boundary condition (ABC) for radiation boundary and normally make a quarter wave length from the radiating structure. In this report, to cover all beamforming cases of mmWave antenna modules, the three wavelength spacing from the device is used.

1.2.4 Source excitation condition

The QTM 525-5 mmWave simulation model (mmWave Ant1 and mmWave Ant2) have 16 source ports. There are 8 ports are divided into vertical polarization feeding, and the other 8 ports are divided into horizontal polarization feeding.The QTM 525-5 mmWave simulation model is encrypted in the Ansys HFSS (2019 R3) and can only check the feeding position. After finishing 3D full wave electromagnetic simulation of modeling structure, the magnitude and phase information can be loaded for each port by using the “Edit Sources” function in Ansys HFSS (2019 R3).

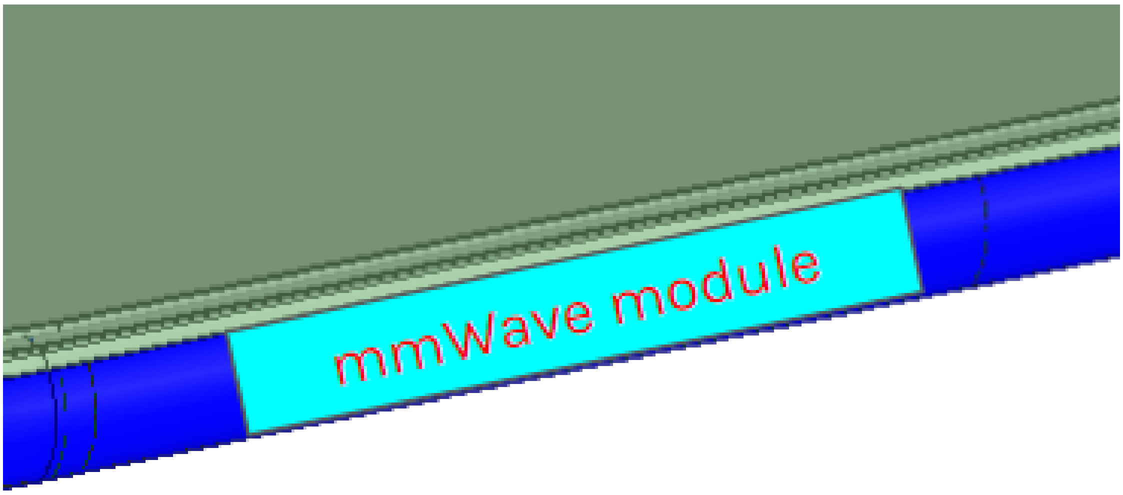


Figure 4. Example mmWave module

Figure 4 shows the mmWave module structure and surrounding structure. The mmWave module is encrypted in the Ansys HFSS (2019 R3) and can only check the feeding position. After finishing 3D full wave electromagnetic simulation of modeling structure, the magnitude and phase information can be loaded for each port by using the “Edit Sources” function in Ansys HFSS (2019 R3). Figure 5 shows an example of antenna port excitations.Since Ansys HFSS (2019 R3) uses FEM solver based on frequency domain analysis method, the input source for the port excitation applies sinusoidal waveform for each frequency.

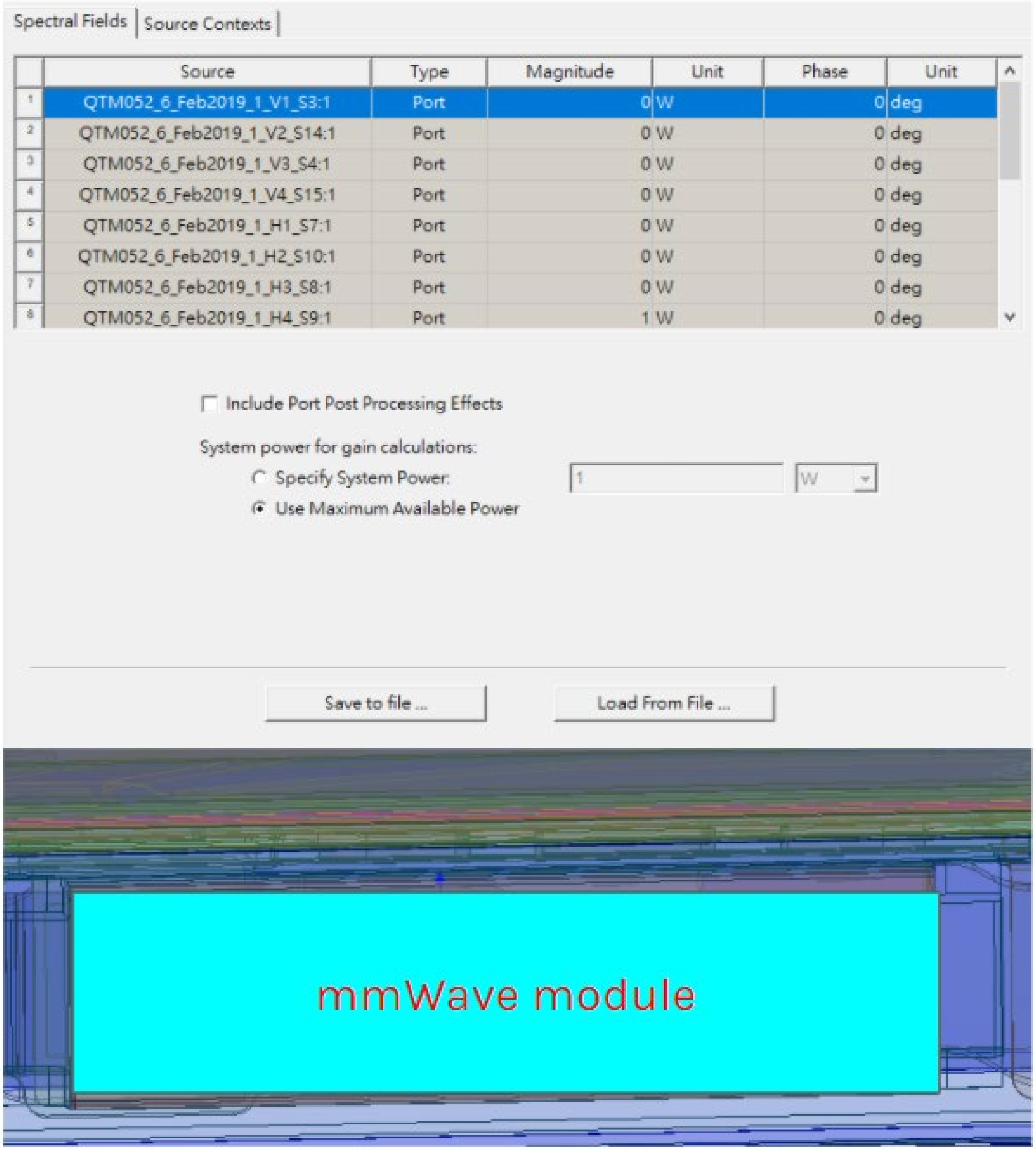


Figure 5. An example of port excitation

1.2.5 Condition of simulation completion

The simulation completion condition of ANSYS Electromagnetics suite (HFSS) is defined as delta S. The ANSYS Electromagnetics suite (HFSS) calculates the S-parameter for the mesh conditions of each step and determines whether to proceed with the operation of the next step by comparing the difference between the S-parameters in the previous step. A difference between the previous step and the current step of S-parameter is expressed as delta S, and the delta S generally sets 0.02. The simulation result of this report is the result of setting delta S to 0.02.

2. Codebook for all beams

Band/Antenna	Ant. Type	SISO/MIMO & Polarization	Feed no.	Beam ID	
mmWave Ant1 /n260	Patch	Single Beam H-pol (AG0)	1		1
			2		5
			2		6
			2		7
			2		10
			2		11
			4		17
			4		18
			4		19
			4		20
			4		21
			4		26
			4		27
			4		28
			4		29
		Single Beam V-pol (AG1)	1		129
			2		133
			2		134
			2		135
			2		138
			2		139
			4		145
			4		146
			4		147
			4		148
			4		149
			4		154
			4		155
			4		156
			4		157
		Beam Pair (AG0+AG1)	1	1	129
			2	5	135
			2	6	133
			2	7	134
			2	10	139
			2	11	138
			4	17	148
			4	18	147
			4	19	146
			4	20	149
			4	21	145
			4	26	156
			4	27	155
			4	28	154
			4	29	157

Band/Antenna	Ant. Type	SISO/MIMO & Polarization	Feed no.	Beam ID	
mmWave Ant2 /n260	Patch	Single Beam H-pol (AG0)	1		0
			2		2
			2		3
			2		4
			2		8
			2		9
			4		12
			4		13
			4		14
			4		15
			4		16
			4		22
			4		23
			4		24
			4		25
		Single Beam V-pol (AG1)	1		128
			2		130
			2		131
			2		132
			2		136
			2		137
			4		140
			4		141
			4		142
			4		143
			4		144
			4		150
			4		151
			4		152
			4		153
		Beam Pair (AG0+AG1)	1	0	128
			2	2	130
			2	3	131
			2	4	132
			2	8	137
			2	9	136
			4	12	144
			4	13	143
			4	14	142
			4	15	141
			4	16	140
			4	22	153
			4	23	152
			4	24	151
			4	25	150

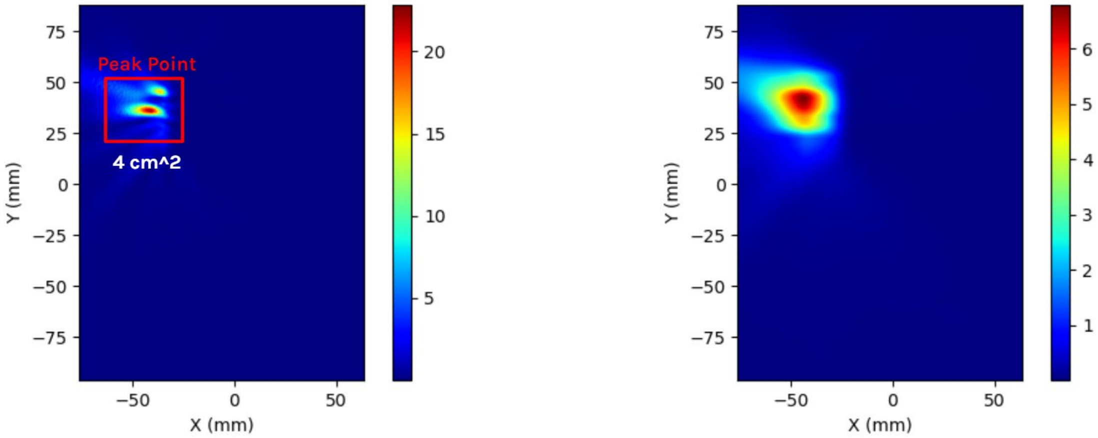
Band/Antenna	Ant. Type	SISO/MIMO & Polarization	Feed no.	Beam ID	
mmWave Ant1 /n261	Patch	Single Beam H-pol (AG0)	1		1
			2		5
			2		6
			2		7
			2		10
			2		11
			4		17
			4		18
			4		19
			4		20
			4		21
			4		26
			4		27
			4		28
			4		29
		Single Beam V-pol (AG1)	1		129
			2		133
			2		134
			2		135
			2		138
			2		139
			4		145
			4		146
			4		147
			4		148
			4		149
			4		154
			4		155
			4		156
			4		157
		Beam Pair (AG0+AG1)	1	1	129
			2	5	133
			2	6	134
			2	7	135
			2	10	138
			2	11	139
			4	17	145
			4	18	146
			4	19	147
			4	20	148
			4	21	149
			4	26	154
			4	27	155
			4	28	156
			4	29	157

Band/Antenna	**Ant. Type**	**SISO/MIMO & Polarization**	**Feed no.**	**Beam ID**	
mmWave Ant2 /n261	Patch	Single Beam H-pol (AG0)	1		0
			2		2
			2		3
			2		4
			2		8
			2		9
			4		12
			4		13
			4		14
			4		15
			4		16
			4		22
			4		23
			4		24
			4		25
		Single Beam V-pol (AG1)	1		128
			2		130
			2		131
			2		132
			2		136
			2		137
			4		140
			4		141
			4		142
			4		143
			4		144
			4		150
			4		151
			4		152
			4		153
		Beam Pair (AG0+AG1)	1	0	128
			2	2	130
			2	3	131
			2	4	132
			2	8	136
			2	9	137
			4	12	140
			4	13	141
			4	14	142
			4	15	143
			4	16	144
			4	22	150
			4	23	151
			4	24	152
			4	25	153

3. Simulation and modeling validation

3.1 Spatial-averaged power density

As mentioned in the previous chapter, the Poynting vector ($\underline{S}$) can be obtained through cross product of an electric field ($\underline{E}$) and complex conjugate of a magnetic field ($\underline{H}$). The real term of the Poynting vector can be described as the point power density or peak power density. Using the point power density, the spatial-averaged power density can be obtained by the integral of 4 cm^2 at 2.5 mm intervals of the point power density result. Figure 6 shows examples of the distribution plot of point power density and the averaged power density.



(a) Peak power density (b) Averaged power density

Figure 6. Power density distribution

3.2 Comparison between simulation and measurement

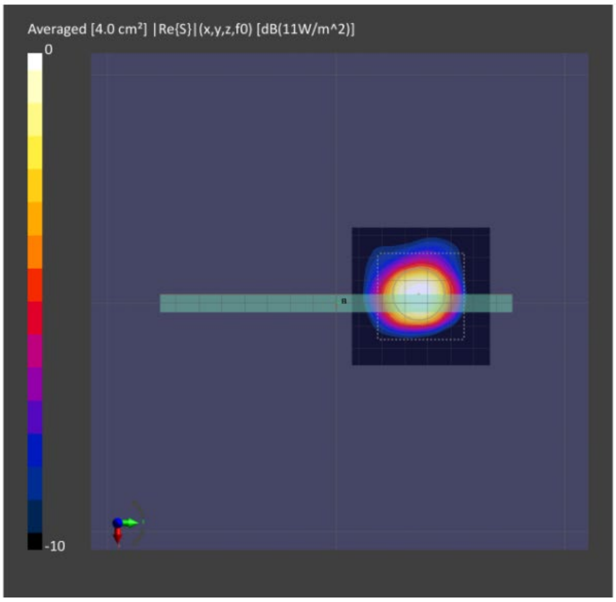
In this section, the simulated-power density distributions and measured-power density distributions are compared to each mmWave antenna. Based on comparison of power density distributions, simulated power density and measured power density have a good correlation. Measurement uncertainty in mmWave frequency in measurement side and inaccuracy of material properties in mmWave frequency in the simulation side are considered as error factors.

The input powers per each active port are below for both Simulation and Measurement. For Simulation, these values were entered directly into the HFSS model. For measurement, FTM S/W was used to input these values for each active port also. The maximum device output rating was determined to meet regulatory limits.

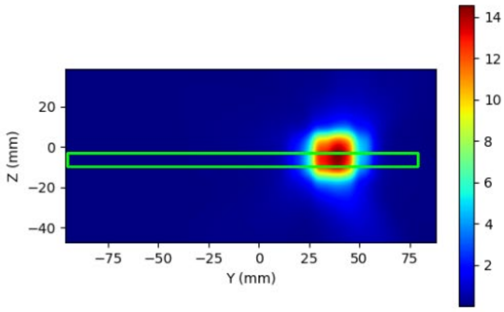
The below simulation and measurement result were performed at 2mm evaluation distance and 28GHz / 38.5GHz. The input.power.limit was determined based on below results in RF Exposure Part 0 Report.

				PD (W/m^2)		
Band	Beam ID	Antenna	Surface	Meas.	Sim.	Delta=Sim vs Meas
n260	28	Ant 1	Left	10.4	16.58	2.02
			Front	2.84	6.80	3.79
	149		Left	8.96	13.72	1.85
			Front	5.02	7.76	1.89
	25	Ant 2	Right	8.76	15.86	2.58
			Front	2.32	6.52	4.49
	150		Right	8.25	15.31	2.69
			Front	4.27	7.94	2.69
				PD (W/m^2)		
Band	Beam ID	Antenna	Surface	Meas.	Sim.	Delta
n261	27	Ant 1	Left	10.5	16.78	2.04
			Front	3.64	9.15	4.01
	155		Left	10.1	15.74	1.93
			Front	3.74	8.77	3.70
	24	Ant 2	Right	8.01	16.70	3.19
			Front	3.52	8.47	3.81
	152		Right	8.23	15.97	2.88
			Front	4.11	8.53	3.17

- n260_mmWave Ant1：Mid Channel, Beam ID：28, Left

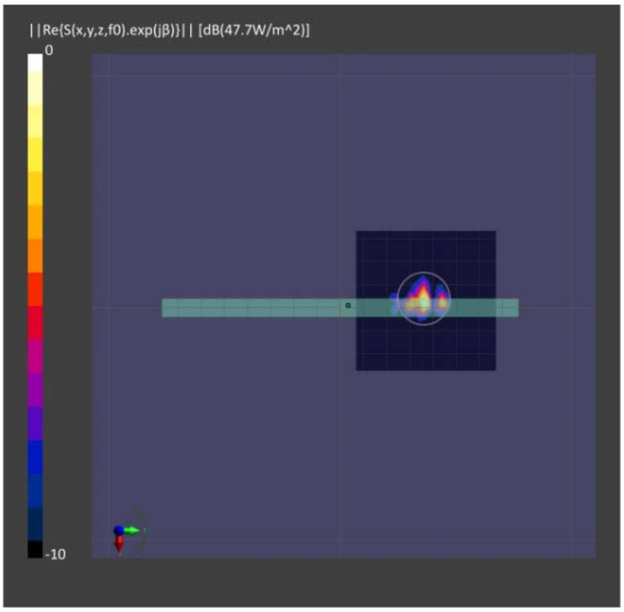


(a) measurement

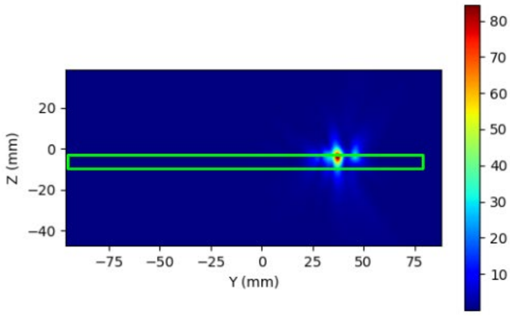


(b) simulation

mmW Ant1 Mid Channel, Averaged power density



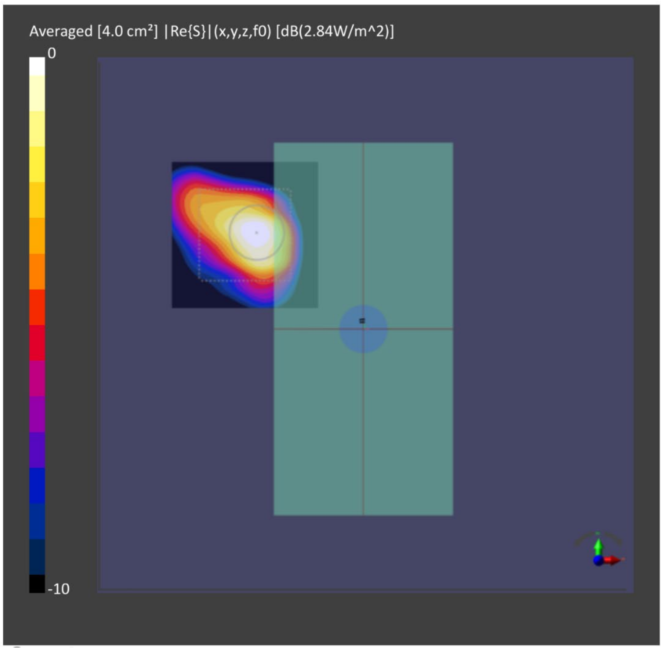
(a) measurement

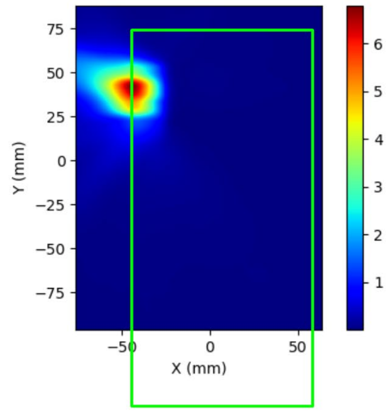


(b) simulation

mmW Ant1 Mid Channel, Point power density

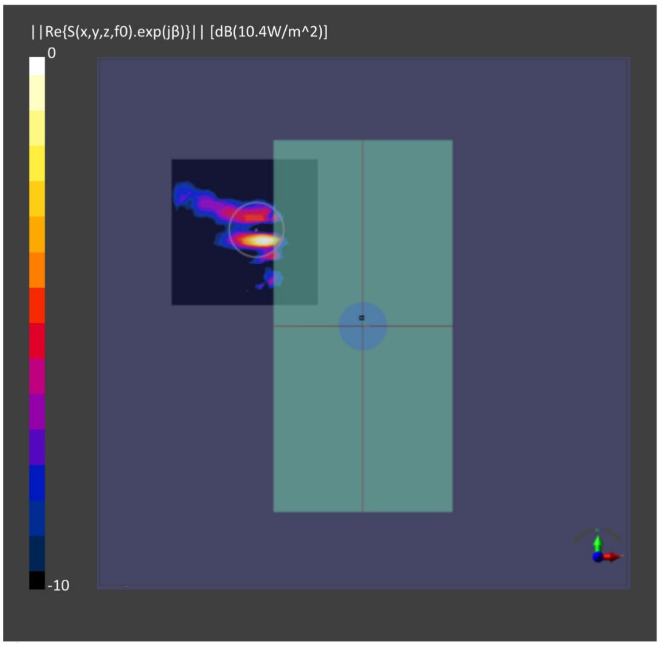
- n260_mmWave Ant1 : Mid channel, Beam ID : 28, Front

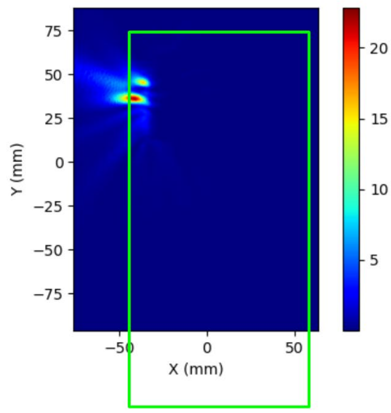




(a) measurement (b) simulation

mmW Ant1 Mid Channel, Averaged power density

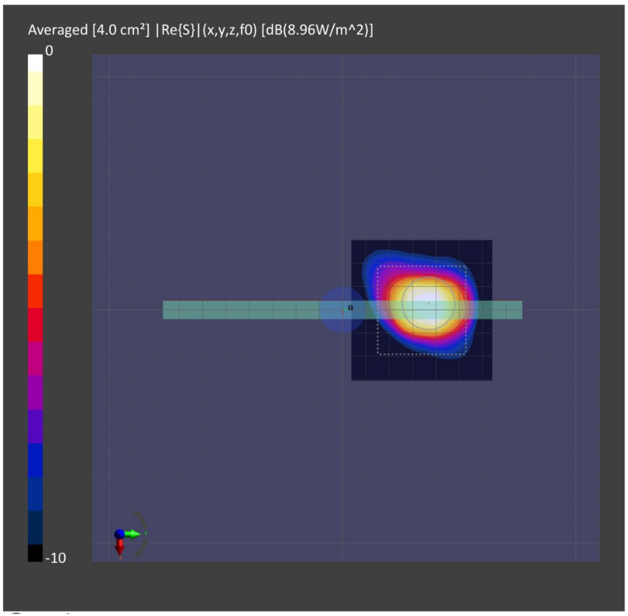


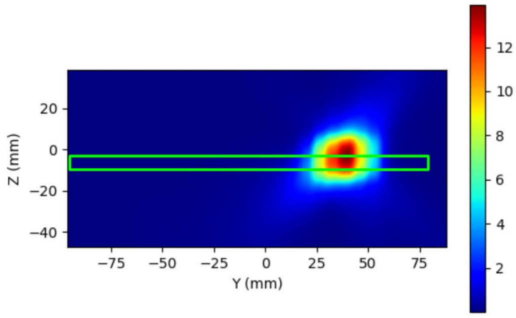


(a) measurement (b) simulation

mmW Ant1 Mid Channel, Point power density

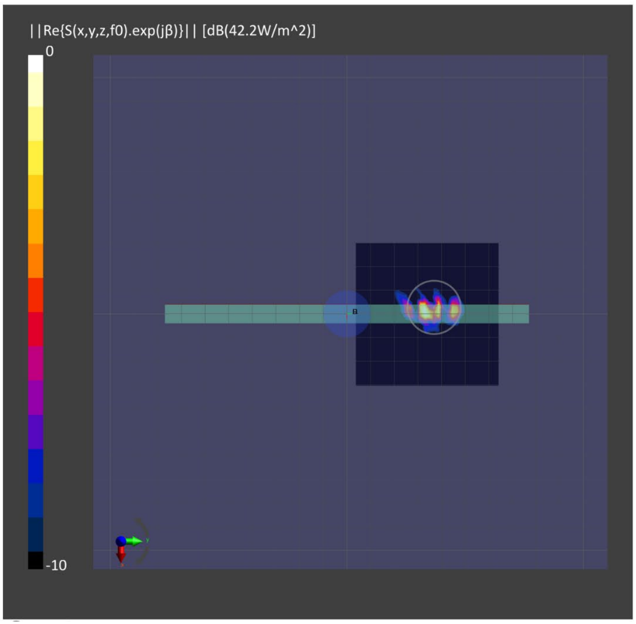
- n260_mmWave Ant1：Mid channel, Beam ID：149, Left

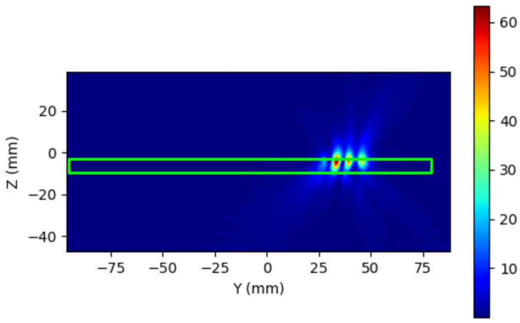




(a) measurement (b) simulation

mmW Ant1 Mid Channel, Averaged power density

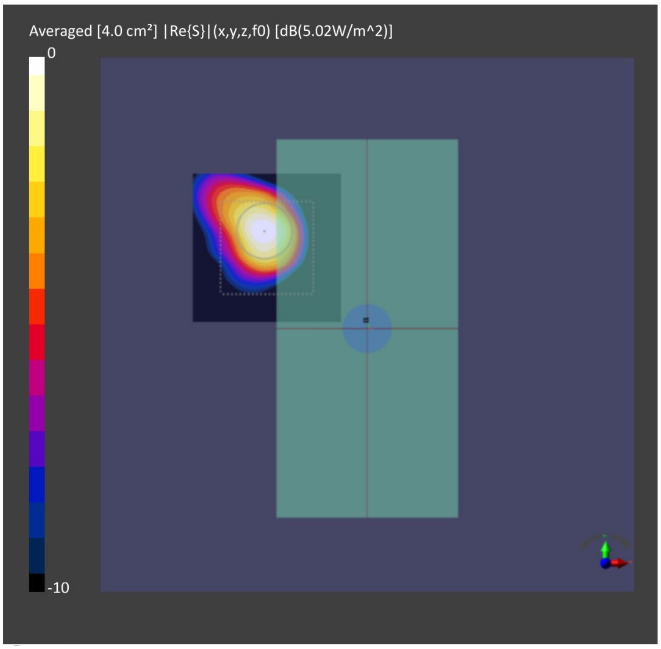


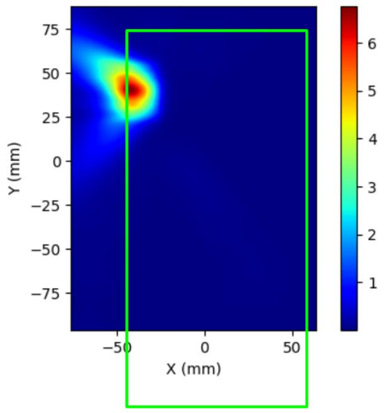


(a) measurement (b) simulation

mmW Ant1 Mid Channel, Point power density

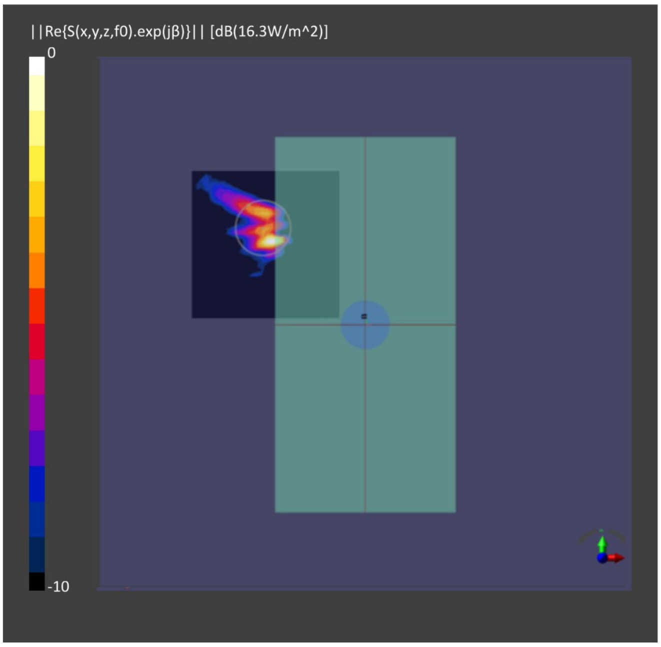
- n260_mmWave Ant1 : Mid channel, Beam ID : 149, Front

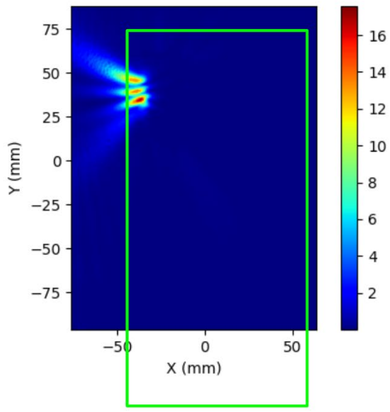




(a) measurement (b) simulation

mmW Ant1 Mid Channel, Averaged power density

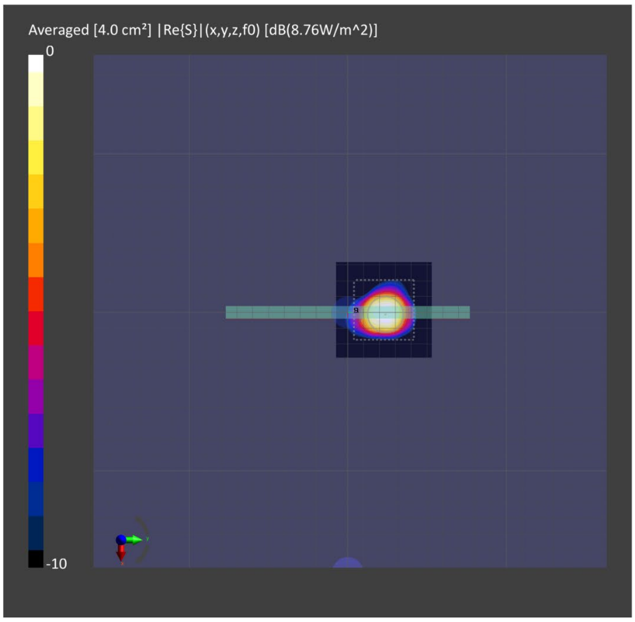


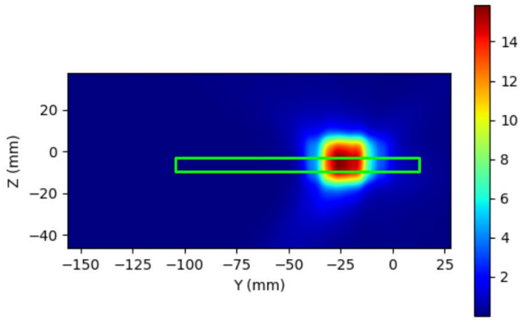


(a) measurement (b) simulation

mmW Ant1 Mid Channel, Point power density

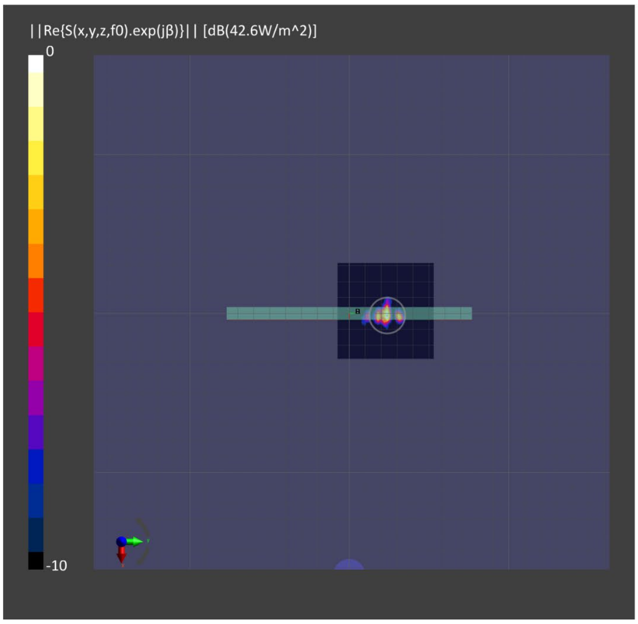
- n260_mmWave Ant2 ： Mid channel, Beam ID ： 25, Right

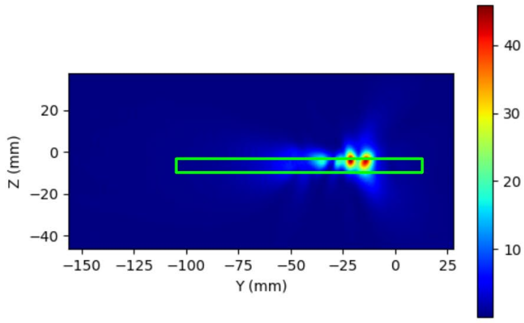




(a) measurement (b) simulation

mmW Ant2 Mid Channel, Averaged power density

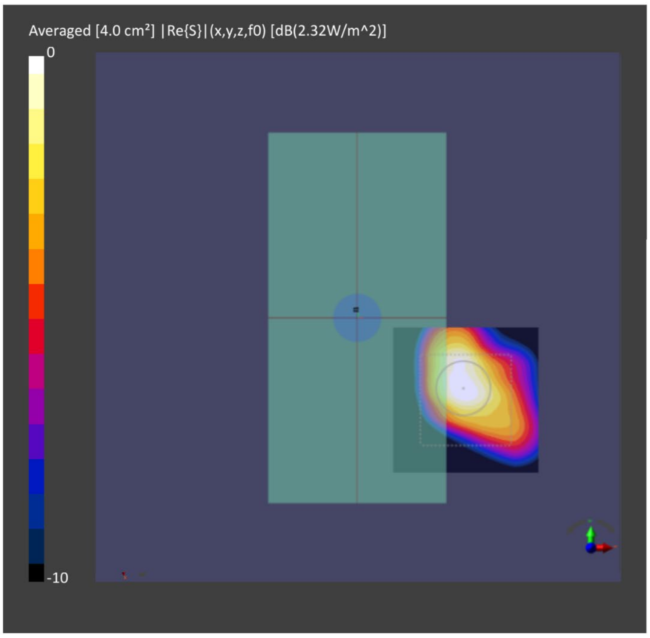




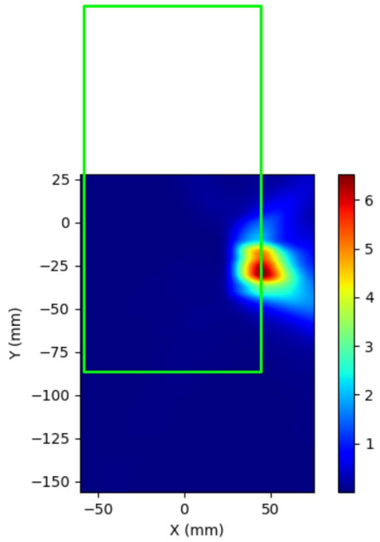
(a) measurement (b) simulation

mmW Ant2 Mid Channel, Point power density

- n260_mmWave Ant2 ： Mid channel, Beam ID ： 25, Front

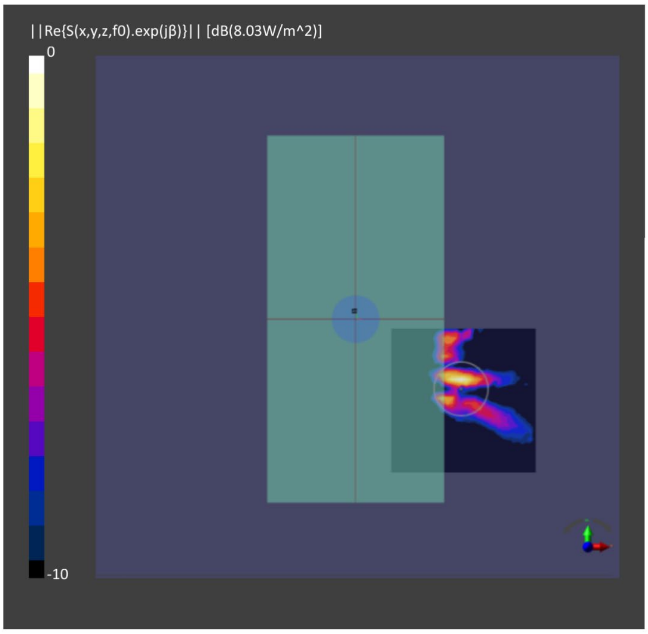


(a) measurement

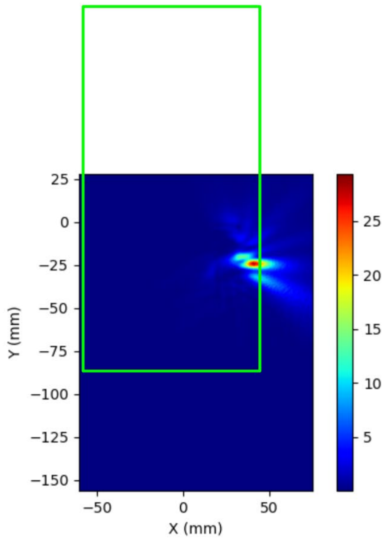


(b) simulation

mmW Ant2 Mid Channel, Averaged power density



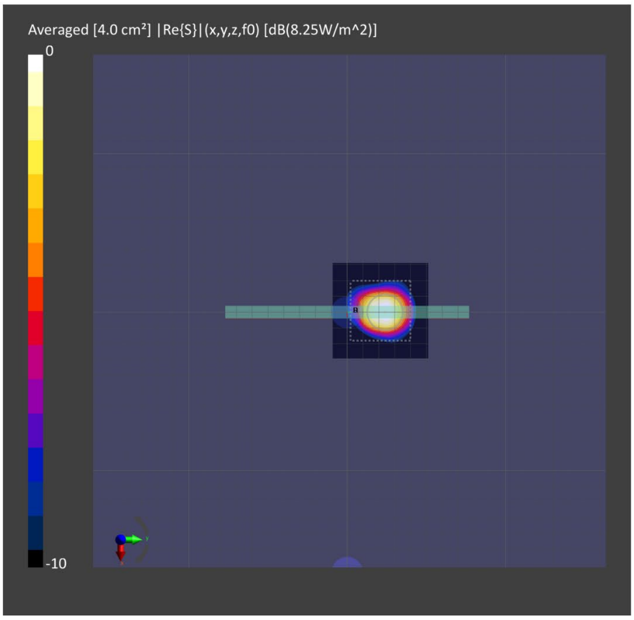
(a) measurement

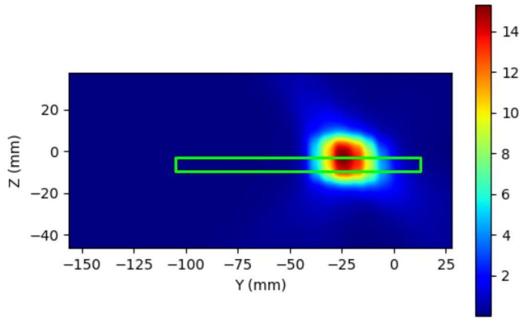


(b) simulation

mmW Ant2 Mid Channel, Point power density

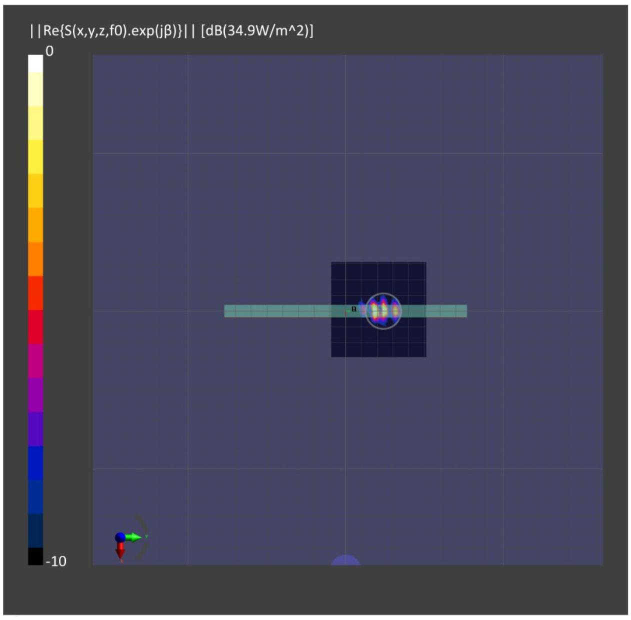
- n260_mmWave Ant2 ： Mid channel, Beam ID ： 150, Right

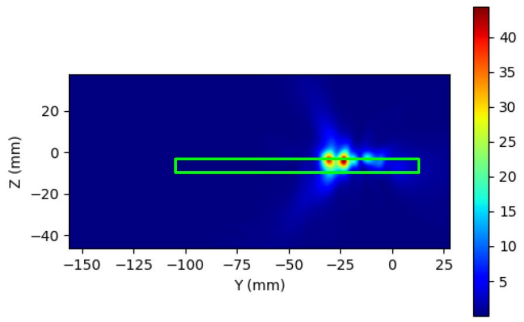




(a) measurement (b) simulation

mmW Ant2 Mid Channel, Averaged power density

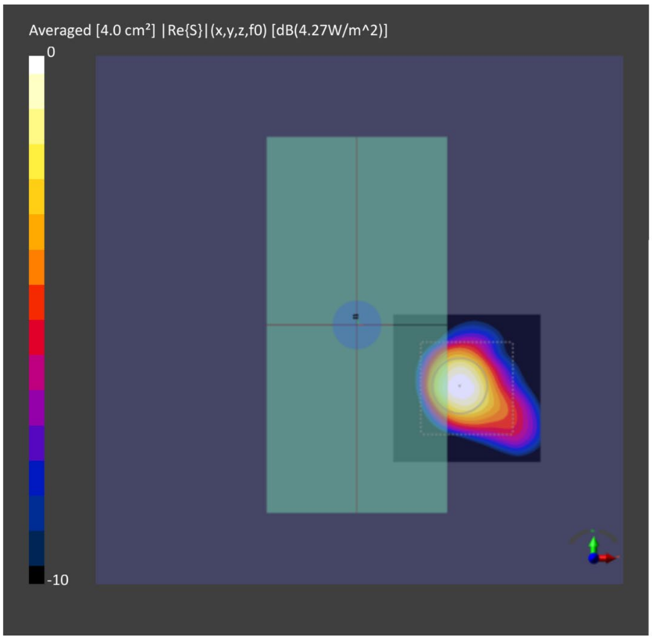


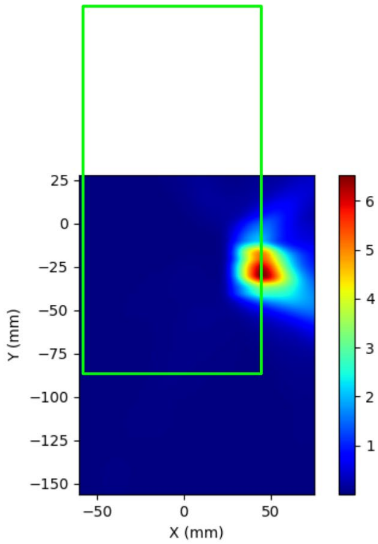


(a) measurement (b) simulation

mmW Ant2 Mid Channel, Point power density

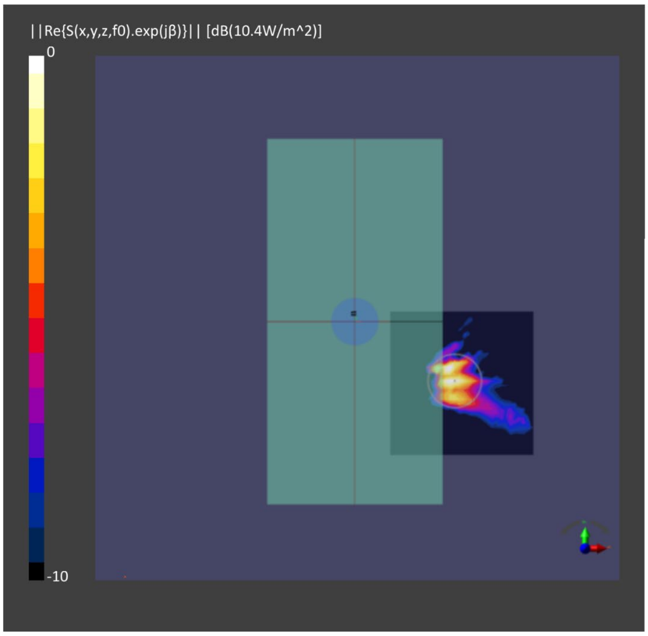
- n260_mmWave Ant2 : Mid channel, Beam ID : 150, Front

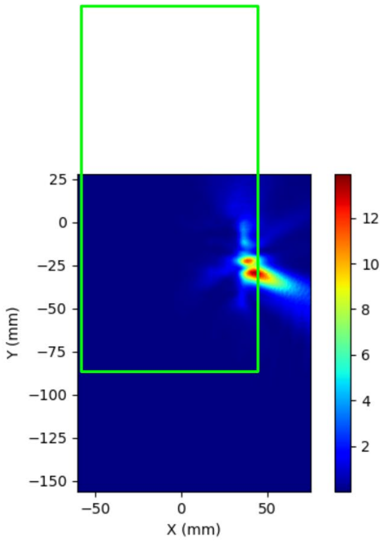




(a) measurement (b) simulation

mmW Ant2 Mid Channel, Averaged power density

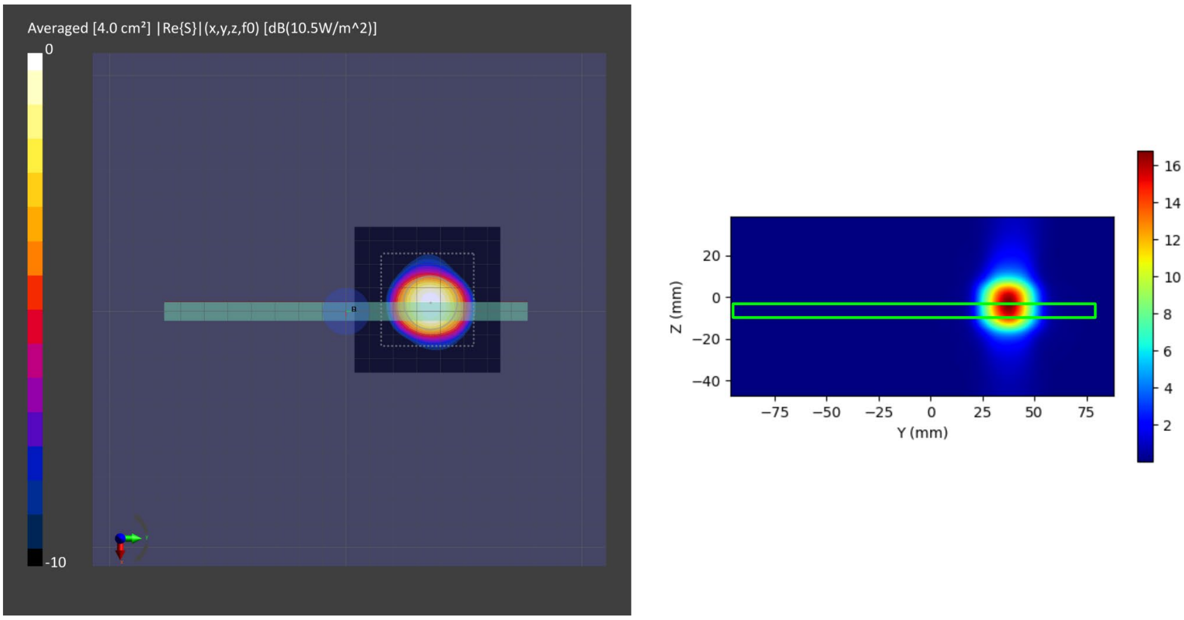




(a) measurement (b) simulation

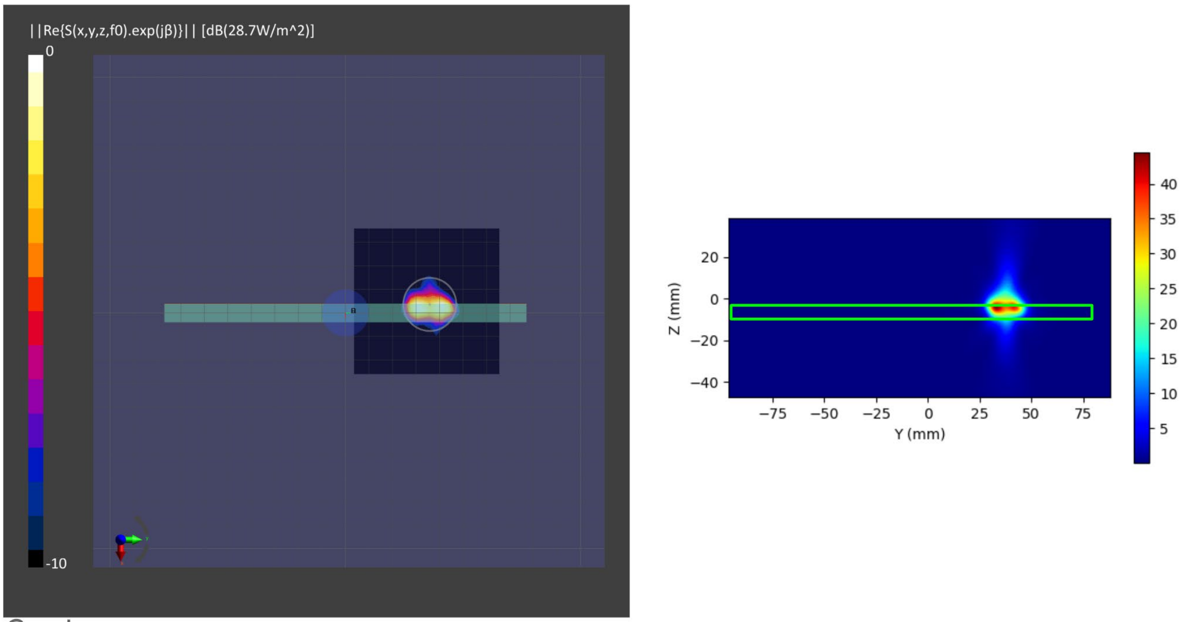
mmW Ant2 Mid Channel, Point power density

- n261_mmWave Ant1 ： Mid Channel, Beam ID ： 27, Left



(a) measurement (b) simulation

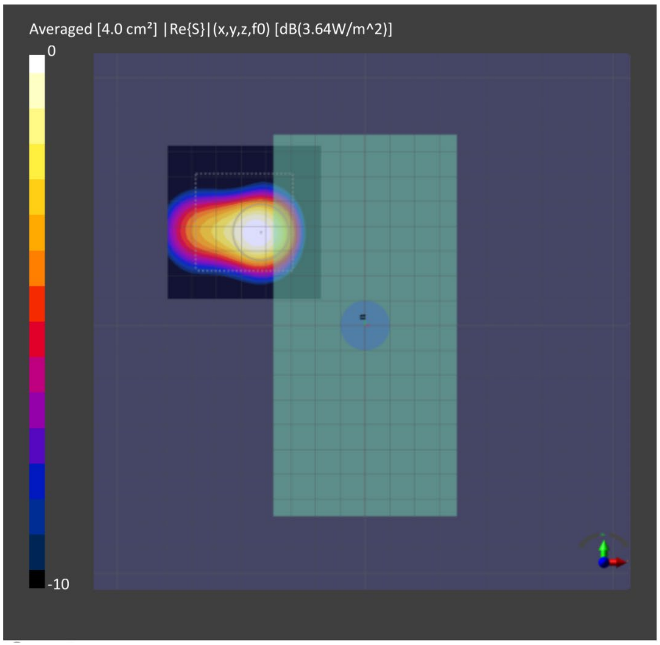
mmW Ant1 Mid Channel, Averaged power density



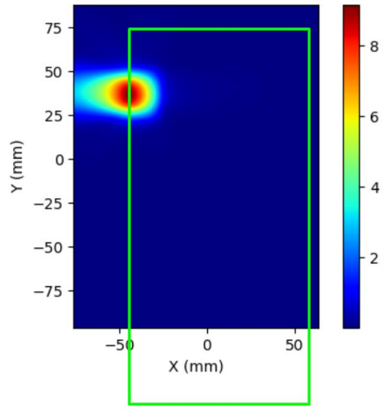
(a) measurement (b) simulation

mmW Ant1 Mid Channel, Point power density

- n261_mmWave Ant1：Mid Channel, Beam ID：27, Front

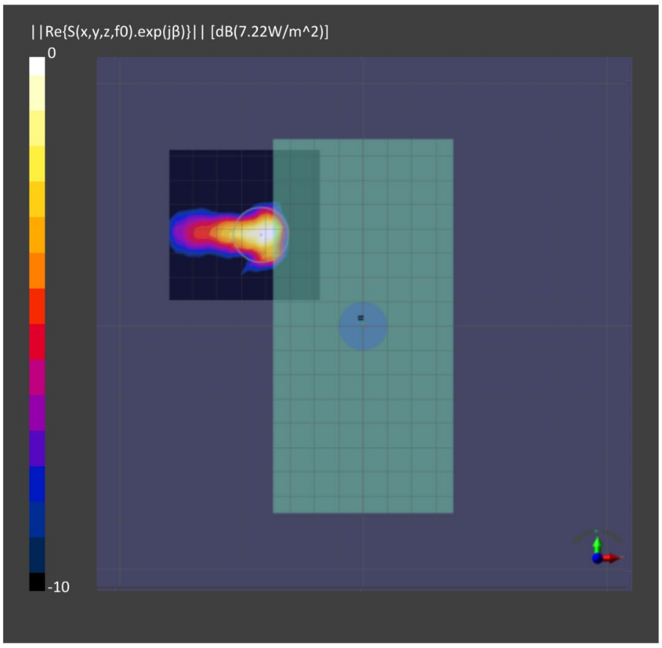


(a) measurement

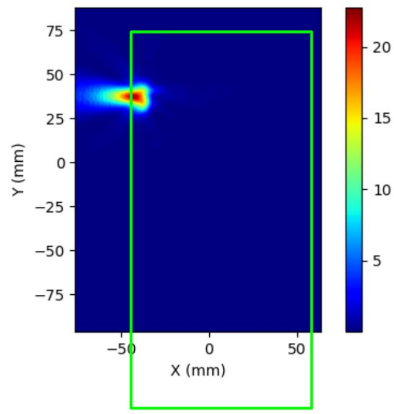


(b) simulation

mmW Ant1 Mid Channel, Averaged power density



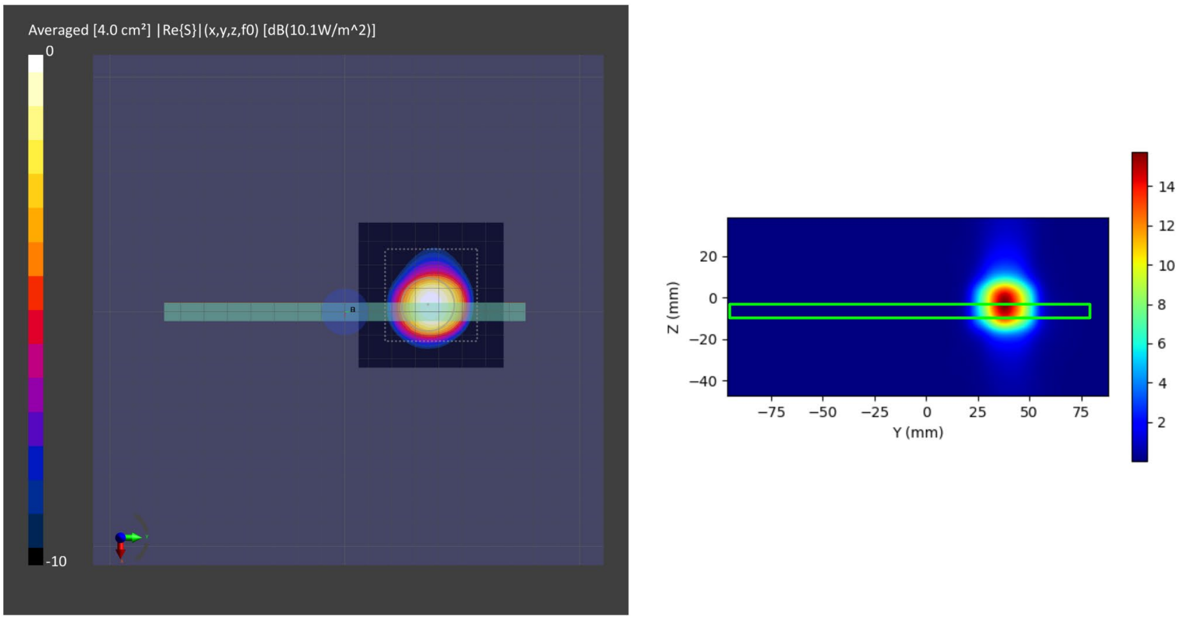
(a) measurement



(b) simulation

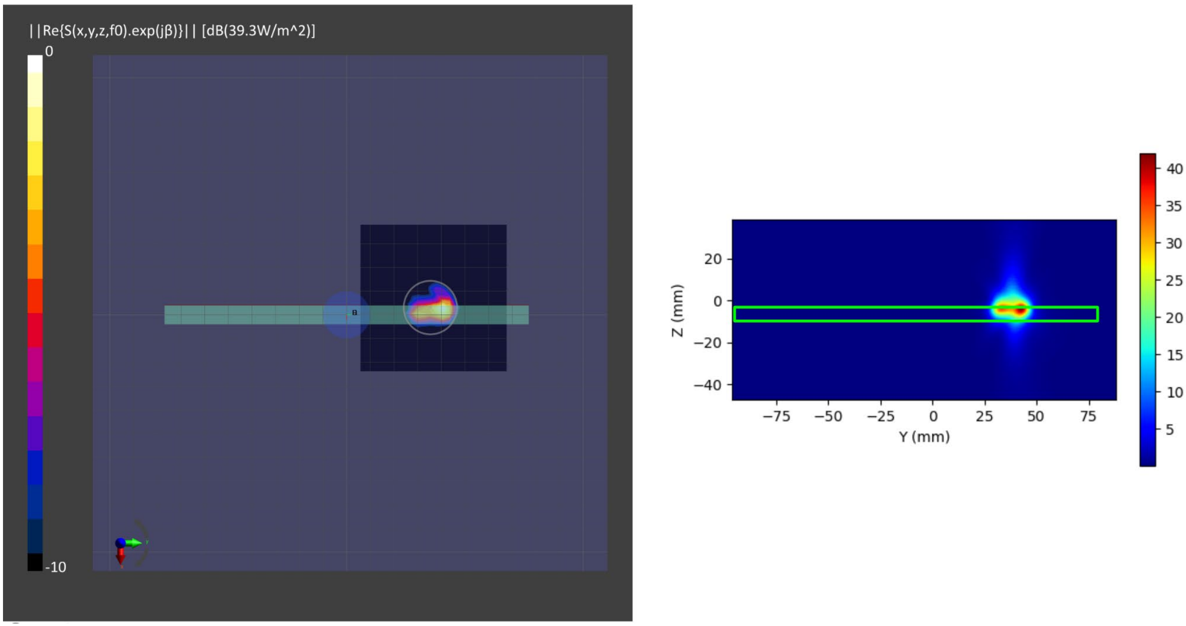
mmW Ant1 Mid Channel, Point power density

● n261_mmWave Ant1 : Mid Channel, Beam ID : 155, Left



(a) measurement (b) simulation

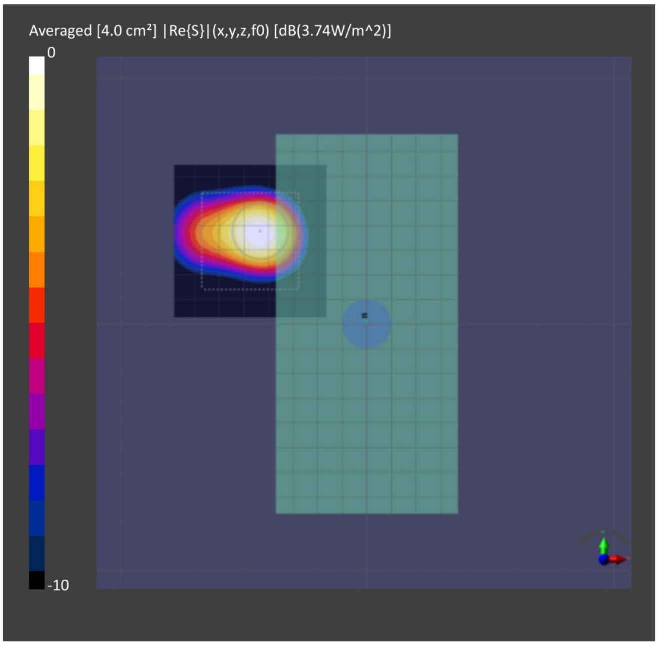
mmW Ant1 Mid Channel, Averaged power density



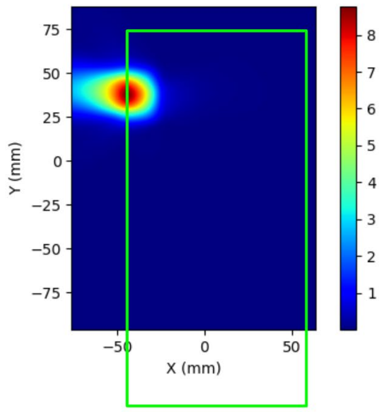
(a) measurement (b) simulation

mmW Ant1 Mid Channel, Point power density

- n261_mmWave Ant1 ： Mid Channel, Beam ID ： 155, Front

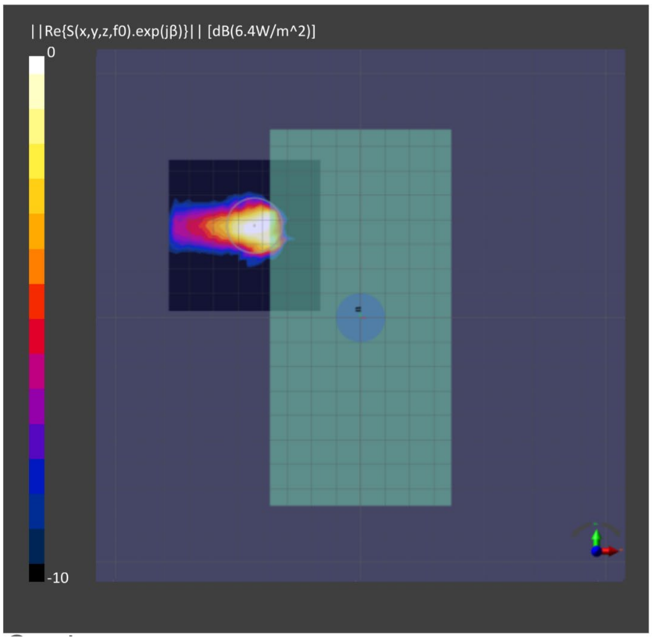


(a) measurement

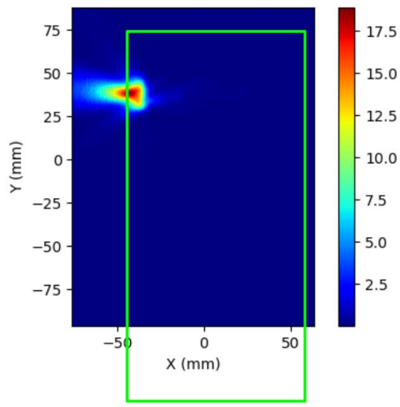


(b) simulation

mmW Ant1 Mid Channel, Averaged power density



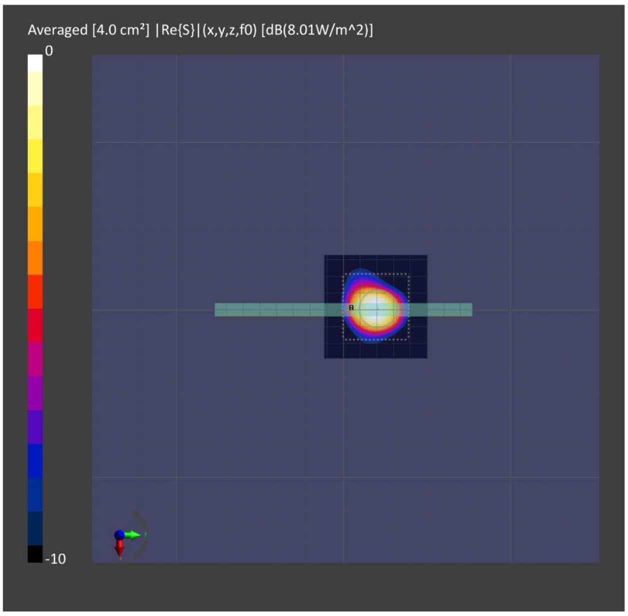
(a) measurement

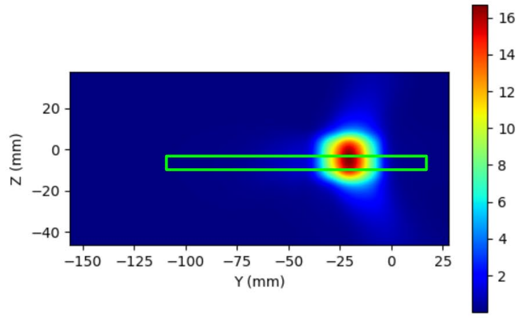


(b) simulation

mmW Ant1 Mid Channel, Point power density

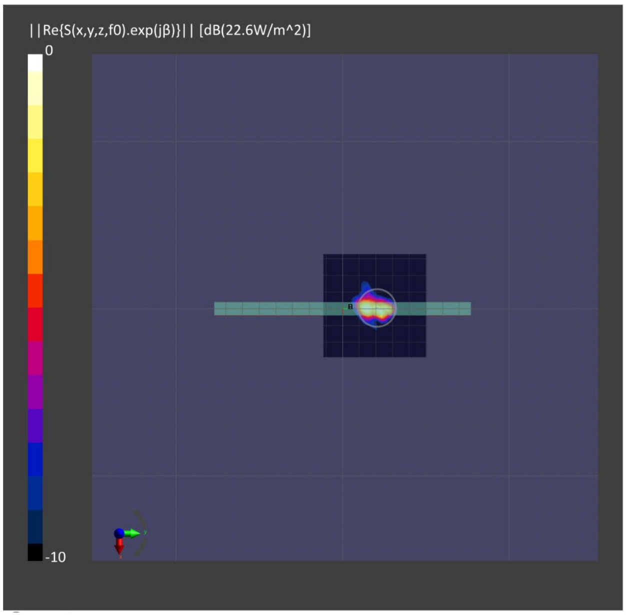
- n261_mmWave Ant2：Mid Channel, Beam ID：24, Right

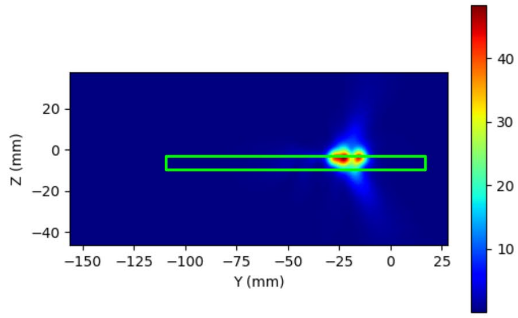




(a) measurement (b) simulation

mmW Ant2 Mid Channel, Averaged power density

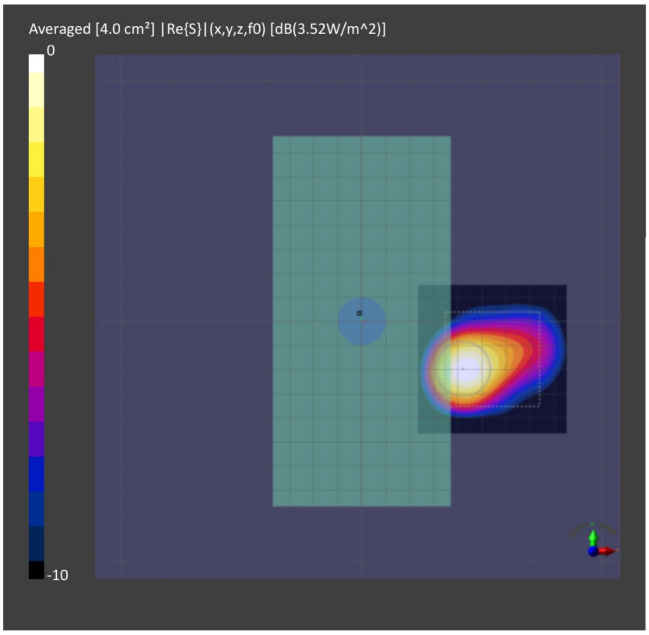


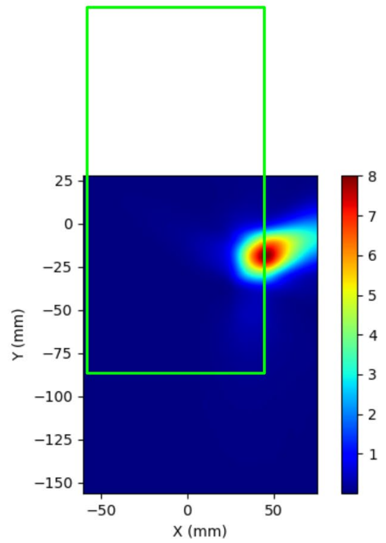


(a) measurement (b) simulation

mmW Ant2 Mid Channel, Point power density

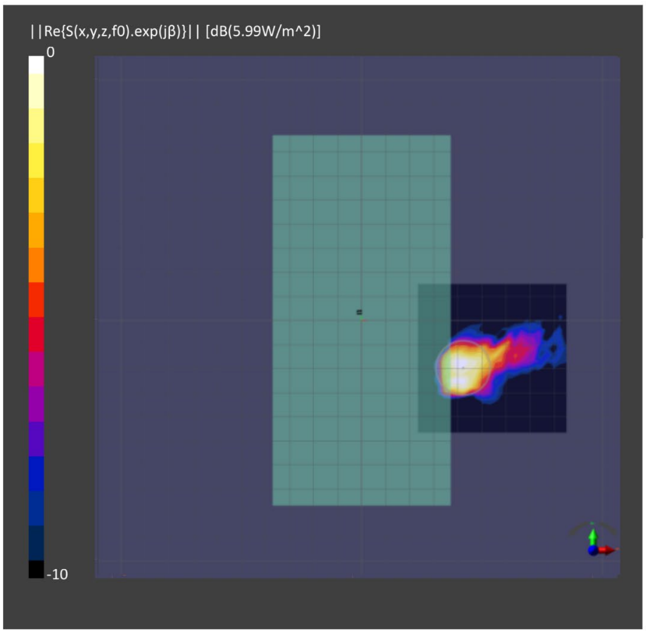
- n261_mmWave Ant2：Mid Channel, Beam ID：24, Front

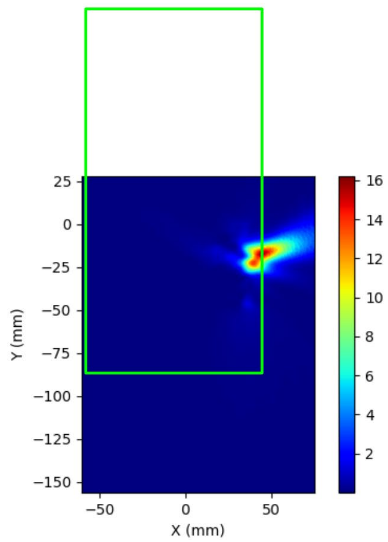




(a) measurement (b) simulation

mmW Ant2 Mid Channel, Averaged power density

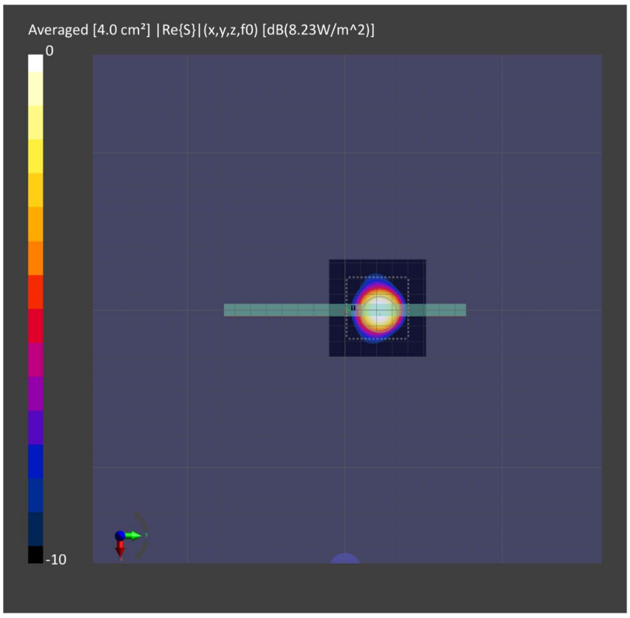


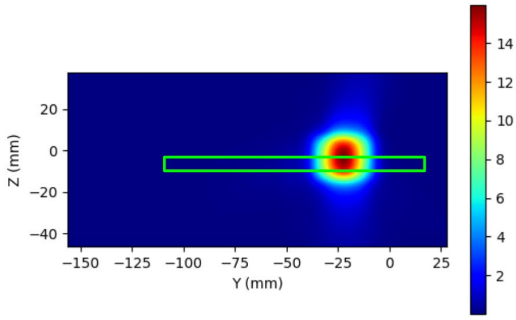


(a) measurement (b) simulation

mmW Ant2 Mid Channel, Point power density

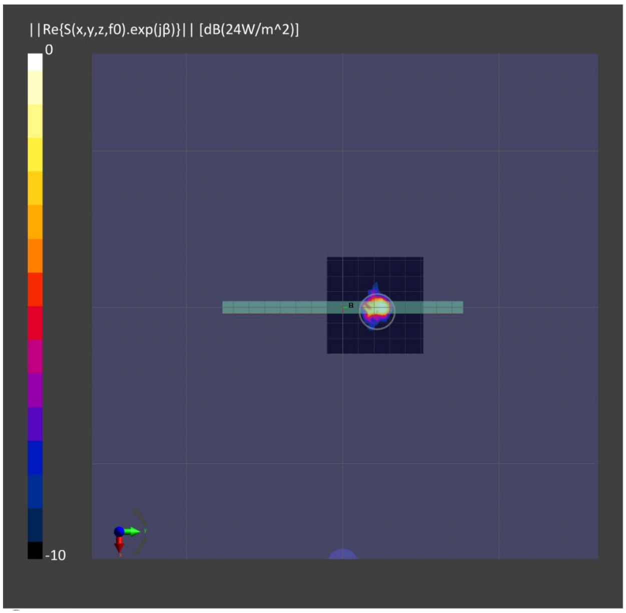
- n261_mmWave Ant2：Mid Channel, Beam ID：152, Right

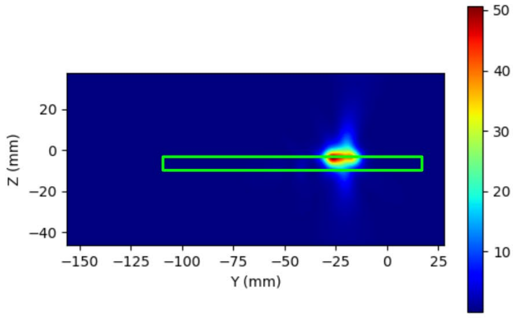




(a) measurement (b) simulation

mmW Ant2 Mid Channel, Averaged power density

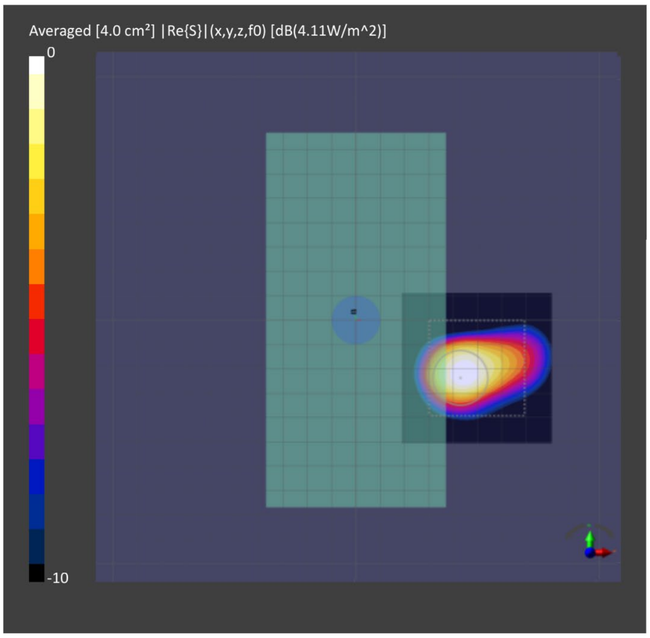


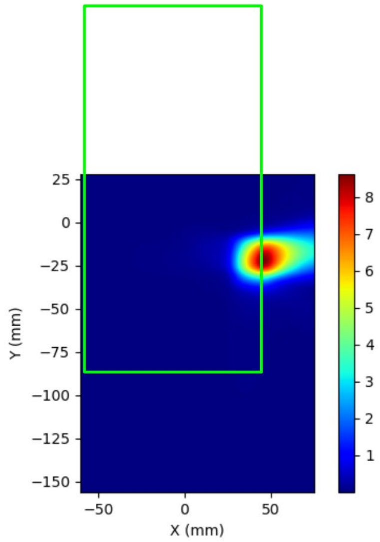


(a) measurement (b) simulation

mmW Ant2 Mid Channel, Point power density

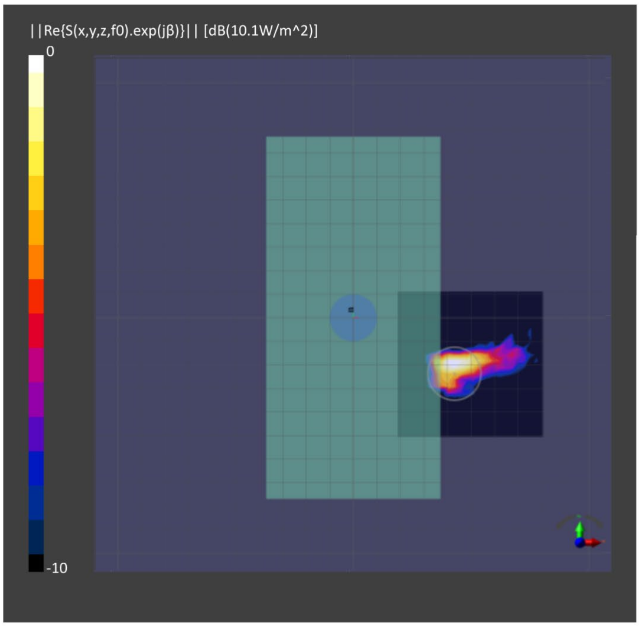
- n261_mmWave Ant2：Mid Channel, Beam ID：152, Front

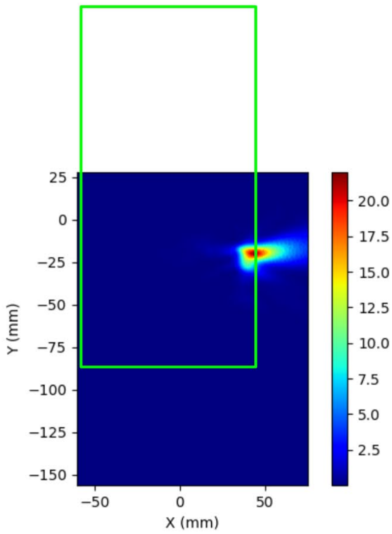




(a) measurement (b) simulation

mmW Ant2 Mid Channel, Averaged power density





(a) measurement (b) simulation

mmW Ant2 Mid Channel, Point power density

4 Simulation results

This section shows the PD simulation results of mmWave Ant 1 and Ant 2 at 28 GHz and 39 GHz for each evaluation plane specified in Table 1 at two separation distances of 2 mm and 10mm. The ratio of PD exposure from front surface to the worst surface at 2mm, and the ratio of PD exposure from 2mm to 10mm evaluation distance for each beam are also reported in this section to support RF exposure analysis for simultaneous transmission scenarios performed in Chapter 12 of Part 1 Near Field PD report. The relative phase between beam pairs is not controlled in the chipset design. Therefore, the relative phase between each beam pair was considered mathematically to identify the worst case conditions. The below MIMO results represent the highest reported MIMO simulation results after sweeping across the relative phase between beams a 5° step interval from 0° to 360°, the worst-case simulated PD determined from the tables in this section were used for conservativeness in input.power.limit determination in RF Exposure Part 0 Report.

4.1 Calculated PD per beam ID for Low/Mid/High Channel at 28GHz / 39GHz

4.1.1 mmWave Ant 1 – Patch Antenna

Table 2 & Table 3 show the PD simulation evaluation of mmWave Ant1 at 28 GHz / 39 GHz for the corresponding evaluation planes specified in Table 1.

Table 2. PD of mmWave Ant 1 patch antenna (28GHz – n261)

Low Channel

PD Simulation(W/m^2) Limit = 10 W/m^2		Operating Target Tx Power			L-channel														
					2 mm					63.46%	57.77%	0.54%	6.34%	10 mm					59.85%
					S1	S2	S3	S4	S5				Top/wrost-case	S1	S2	S3	S4	S5	10mm/2mm
	SISO/MIMO & Polarization	Power setting (dBm)		Beam ID	Front	Back	Left	Right	Top	Front/wrost-case	Back/wrost-case	Right/wrost-case		Front	Back	Left	Right	Top	S3
mmWave Ant1 /n261	Single Beam H-pol (AG0)	6		1	2.13	2.05	4.75	0.01	0.05	44.81%	43.02%	0.13%	1.08%	0.743	0.749	1.909	0.007	0.057	40.16%
		6		5	4.13	2.91	7.90	0.02	0.18	52.24%	36.88%	0.23%	2.31%	1.660	1.110	3.312	0.024	0.208	41.90%
		6		6	4.52	3.98	8.38	0.01	0.09	53.95%	47.47%	0.16%	1.12%	2.041	1.602	4.573	0.017	0.096	54.54%
		6		7	4.07	3.50	8.82	0.01	0.17	46.21%	39.73%	0.14%	1.95%	1.714	1.302	3.889	0.016	0.187	44.12%
		6		10	4.61	4.12	8.38	0.01	0.04	54.98%	49.22%	0.15%	0.49%	2.139	1.796	4.604	0.015	0.055	54.97%
		6		11	3.77	3.44	8.05	0.01	0.19	46.80%	42.74%	0.16%	2.31%	1.570	1.184	3.654	0.016	0.192	45.37%
		6		17	8.59	6.61	16.02	0.02	0.55	53.61%	41.25%	0.13%	3.44%	4.114	3.099	7.578	0.027	0.674	47.30%
		6		18	9.34	8.11	16.74	0.03	0.05	55.78%	48.47%	0.17%	0.31%	4.703	3.886	9.024	0.038	0.054	53.91%
		6		19	9.34	8.34	16.78	0.04	0.11	55.63%	49.73%	0.23%	0.67%	4.692	4.033	9.574	0.051	0.114	57.06%
		6		20	7.94	7.58	16.14	0.03	0.39	49.22%	46.98%	0.20%	2.45%	3.595	3.376	8.226	0.049	0.409	50.98%
		6		21	5.90	6.53	13.38	0.03	0.69	44.10%	48.82%	0.22%	5.15%	2.462	2.469	6.195	0.043	0.725	46.30%
		6		26	9.28	7.84	16.73	0.03	0.15	55.46%	46.90%	0.21%	0.92%	4.590	3.741	8.663	0.045	0.204	51.79%
		6		27	9.43	8.06	16.79	0.03	0.06	56.17%	48.01%	0.20%	0.34%	4.834	3.943	9.261	0.049	0.062	55.17%
		6		28	9.22	8.31	16.95	0.04	0.08	54.40%	49.00%	0.26%	0.50%	4.471	3.971	9.509	0.055	0.091	56.09%
		6		29	7.26	7.04	15.00	0.03	0.55	48.37%	46.94%	0.20%	3.70%	3.087	2.969	7.390	0.047	0.577	49.26%
	Single Beam V-pol (AG1)	6		129	2.15	2.14	4.94	0.00	0.07	43.50%	43.25%	0.09%	1.32%	0.749	0.695	1.969	0.008	0.071	39.84%
		6		133	3.88	3.99	8.48	0.02	0.24	45.69%	47.02%	0.20%	2.86%	1.583	1.509	3.889	0.024	0.274	45.85%
		6		134	4.90	4.17	9.02	0.01	0.04	54.37%	46.25%	0.11%	0.49%	2.162	1.754	4.745	0.011	0.045	52.62%
		6		135	3.14	3.01	8.07	0.02	0.28	38.91%	37.31%	0.21%	3.43%	1.113	1.142	2.680	0.032	0.299	33.22%
		6		138	4.45	4.26	8.79	0.01	0.17	50.67%	48.44%	0.17%	1.88%	1.872	1.688	4.458	0.021	0.199	50.74%
		6		139	4.24	3.82	8.72	0.01	0.17	48.60%	43.85%	0.12%	1.99%	1.821	1.594	3.994	0.018	0.176	45.83%
		6		145	7.75	7.31	15.36	0.02	0.61	50.46%	47.61%	0.15%	3.97%	3.563	3.071	7.981	0.034	0.735	51.96%
		6		146	9.13	6.99	15.47	0.04	0.12	59.04%	45.16%	0.25%	0.78%	4.367	3.120	8.725	0.046	0.123	56.39%
		6		147	8.90	7.45	15.79	0.03	0.10	56.37%	47.17%	0.19%	0.64%	4.524	3.589	8.470	0.042	0.102	53.64%
		6		148	8.80	6.37	15.21	0.04	0.28	57.83%	41.87%	0.26%	1.87%	4.211	2.894	7.406	0.056	0.288	48.68%
		6		149	5.13	4.21	10.17	0.05	0.64	50.41%	41.38%	0.54%	6.34%	1.824	1.581	3.874	0.093	0.651	38.08%
		6		154	8.64	7.22	15.53	0.03	0.29	55.62%	46.46%	0.22%	1.86%	4.022	3.175	8.448	0.047	0.392	54.40%
		6		155	9.18	7.37	16.06	0.03	0.06	57.20%	45.89%	0.20%	0.38%	4.572	3.483	8.799	0.040	0.069	54.80%
		6		156	9.10	7.34	15.99	0.03	0.05	56.93%	45.92%	0.18%	0.32%	4.555	3.515	8.378	0.040	0.056	52.40%
		6		157	7.12	5.36	13.22	0.04	0.65	53.88%	40.59%	0.32%	4.95%	3.053	2.295	5.703	0.070	0.660	43.15%
	Beam Pair (AG0+AG1)	6	1	129	4.17	4.82	9.98	0.01	0.13	41.81%	48.30%	0.14%	1.35%	1.526	1.556	3.999	0.018	0.150	40.08%
		6	5	133	8.07	7.51	16.88	0.04	0.52	47.84%	44.52%	0.25%	3.07%	3.308	2.750	7.507	0.052	0.597	44.49%
		6	6	134	11.14	9.89	18.15	0.03	0.22	61.38%	54.49%	0.18%	1.22%	5.041	4.364	10.078	0.043	0.224	55.52%
		6	7	135	7.70	7.08	16.66	0.03	0.50	46.24%	42.51%	0.17%	2.98%	2.965	2.693	7.175	0.058	0.512	43.07%
		6	10	138	11.39	10.37	17.95	0.03	0.24	63.46%	57.77%	0.16%	1.35%	5.096	4.582	9.959	0.041	0.309	55.49%
		6	11	139	8.82	8.19	18.00	0.03	0.45	48.99%	45.53%	0.17%	2.51%	3.637	3.324	8.311	0.050	0.461	46.18%
		6	17	145	19.56	17.85	35.41	0.06	1.27	55.24%	50.42%	0.18%	3.58%	9.390	8.180	17.940	0.082	1.550	50.66%
		6	18	146	21.86	16.05	35.62	0.11	0.24	61.38%	45.07%	0.30%	0.67%	10.765	7.487	20.844	0.124	0.242	58.52%
		6	19	147	21.08	16.62	34.73	0.12	0.28	60.69%	47.85%	0.33%	0.80%	10.332	8.033	20.785	0.146	0.282	59.85%
		6	20	148	20.87	17.02	35.27	0.07	0.82	59.17%	48.25%	0.21%	2.33%	9.741	7.849	17.824	0.121	0.838	50.54%
		6	21	149	12.54	13.72	25.80	0.09	1.60	48.59%	53.15%	0.36%	6.20%	4.981	4.891	10.589	0.166	1.648	41.03%
		6	26	154	22.04	16.74	36.80	0.10	0.49	59.88%	45.47%	0.27%	1.33%	10.817	7.939	20.273	0.115	0.643	55.08%
		6	27	155	21.46	16.37	35.11	0.10	0.15	61.12%	46.62%	0.30%	0.43%	10.544	7.929	20.813	0.134	0.175	59.28%
		6	28	156	21.52	17.50	35.56	0.10	0.17	60.54%	49.22%	0.28%	0.49%	10.596	8.402	20.499	0.125	0.197	57.65%
		6	29	157	16.77	15.32	31.98	0.08	1.47	52.45%	47.89%	0.25%	4.59%	7.246	6.438	14.664	0.138	1.498	45.85%

Mid Channel

PD Simulation(W/m^2) Limit = 10 W/m^2		Operating Target Tx Power			M-channel														
					2 mm					63.72%	61.00%	0.55%	6.45%	10 mm					59.45%
					S1	S2	S3	S4	S5					S1	S2	S3	S4	S5	10mm/2mm
	SISO/MIMO & Polarization	Power setting (dBm)		Beam ID	Front	Back	Left	Right	Top	Front/wrost-case	Back/wrost-case	Right/wrost-case	Top/wrost-case	Front	Back	Left	Right	Top	S3
mmWave Ant1 /n261	Single Beam H-pol (AG0)	6		1	1.940	2.135	4.637	0.007	0.056	41.84%	46.04%	0.15%	1.20%	0.678	0.792	1.864	0.009	0.063	40.18%
		6		5	3.735	3.124	7.742	0.024	0.185	48.24%	40.35%	0.31%	2.39%	1.509	1.159	3.294	0.031	0.205	42.55%
		6		6	4.593	3.803	8.298	0.013	0.091	55.35%	45.83%	0.16%	1.09%	2.090	1.524	4.527	0.017	0.092	54.56%
		6		7	4.035	3.347	8.600	0.011	0.189	46.92%	38.92%	0.12%	2.20%	1.702	1.297	3.745	0.014	0.204	43.55%
		6		10	4.731	3.862	8.254	0.014	0.039	57.32%	46.79%	0.17%	0.47%	2.226	1.693	4.499	0.016	0.053	54.50%
		6		11	3.790	3.248	8.016	0.011	0.191	47.27%	40.52%	0.14%	2.38%	1.586	1.122	3.633	0.014	0.196	45.32%
		6		17	8.228	6.480	15.360	0.032	0.505	53.56%	42.19%	0.21%	3.29%	3.990	2.964	7.270	0.038	0.630	47.33%
		6		18	8.892	8.216	16.446	0.027	0.050	54.06%	49.95%	0.16%	0.31%	4.450	3.962	8.839	0.037	0.052	53.75%
		6		19	9.052	8.312	16.507	0.035	0.101	54.84%	50.35%	0.21%	0.61%	4.553	4.013	9.378	0.048	0.104	56.81%
		6		20	7.791	7.434	15.724	0.030	0.530	49.55%	47.27%	0.19%	3.37%	3.529	3.377	8.103	0.040	0.552	51.53%
		6		21	5.656	6.104	12.508	0.026	0.807	45.22%	48.80%	0.21%	6.45%	2.409	2.374	5.888	0.044	0.853	47.08%
		6		26	8.726	7.750	16.014	0.033	0.127	54.49%	48.39%	0.20%	0.79%	4.338	3.715	8.264	0.042	0.172	51.61%
		6		27	9.154	8.262	16.783	0.030	0.062	54.54%	49.23%	0.18%	0.37%	4.673	4.066	9.225	0.044	0.070	54.97%
		6		28	9.034	8.100	16.642	0.037	0.083	54.28%	48.67%	0.22%	0.50%	4.339	3.847	9.335	0.046	0.091	56.09%
		6		29	7.078	6.793	14.364	0.028	0.721	49.27%	47.29%	0.20%	5.02%	3.027	2.941	7.219	0.041	0.753	50.25%
	Single Beam V-pol (AG1)	6		129	1.962	2.248	4.808	0.005	0.060	40.82%	46.76%	0.11%	1.24%	0.689	0.760	1.949	0.007	0.064	40.53%
		6		133	3.385	4.281	8.102	0.016	0.240	41.78%	52.83%	0.20%	2.96%	1.399	1.720	3.556	0.023	0.271	43.89%
		6		134	4.487	4.537	8.901	0.011	0.045	50.40%	50.98%	0.12%	0.50%	1.961	2.038	4.660	0.013	0.048	52.35%
		6		135	2.761	3.335	7.689	0.015	0.297	35.91%	43.37%	0.20%	3.87%	0.987	1.276	2.654	0.027	0.317	34.51%
		6		138	3.989	4.581	8.531	0.015	0.170	46.76%	53.71%	0.17%	1.99%	1.690	1.938	4.205	0.019	0.211	49.29%
		6		139	3.866	4.122	8.485	0.011	0.187	45.56%	48.58%	0.13%	2.21%	1.613	1.806	3.949	0.016	0.190	46.54%
		6		145	7.154	7.438	14.426	0.028	0.568	49.59%	51.56%	0.20%	3.93%	3.302	3.303	7.338	0.038	0.680	50.87%
		6		146	8.796	6.764	14.953	0.036	0.119	58.83%	45.23%	0.24%	0.80%	4.224	2.972	8.402	0.049	0.122	56.19%
		6		147	8.459	7.454	15.394	0.030	0.095	54.95%	48.42%	0.19%	0.61%	4.283	3.580	8.133	0.045	0.097	52.84%
		6		148	8.248	6.346	14.472	0.043	0.325	57.00%	43.85%	0.29%	2.25%	3.994	2.929	6.966	0.056	0.330	48.14%
		6		149	5.077	4.333	10.124	0.056	0.601	50.15%	42.80%	0.55%	5.93%	1.709	1.725	3.879	0.094	0.608	38.32%
		6		154	8.206	6.976	14.637	0.031	0.294	56.06%	47.66%	0.21%	2.01%	3.833	3.145	7.933	0.040	0.394	54.20%
		6		155	8.773	7.365	15.740	0.031	0.071	55.74%	46.79%	0.20%	0.45%	4.345	3.491	8.465	0.039	0.082	53.78%
		6		156	8.644	7.506	15.675	0.034	0.072	55.14%	47.88%	0.22%	0.46%	4.295	3.606	8.211	0.047	0.076	52.38%
		6		157	6.813	5.322	12.589	0.042	0.646	54.12%	42.27%	0.33%	5.13%	2.907	2.314	5.355	0.070	0.651	42.54%
	Beam Pair (AG0+AG1)	6	1	129	3.930	5.171	9.986	0.020	0.156	39.35%	51.78%	0.20%	1.57%	1.360	1.724	4.011	0.024	0.164	40.17%
		6	5	133	7.315	8.340	16.729	0.053	0.553	43.73%	49.85%	0.32%	3.30%	2.886	3.170	7.302	0.066	0.634	43.65%
		6	6	134	11.031	10.265	18.021	0.031	0.211	61.21%	56.96%	0.17%	1.17%	5.009	4.698	10.044	0.041	0.215	55.74%
		6	7	135	7.452	7.447	16.690	0.036	0.570	44.65%	44.62%	0.22%	3.41%	2.803	2.895	7.166	0.048	0.605	42.94%
		6	10	138	11.131	10.657	17.469	0.027	0.248	63.72%	61.00%	0.15%	1.42%	5.084	4.866	9.674	0.039	0.340	55.38%
		6	11	139	8.595	8.335	17.387	0.029	0.431	49.44%	47.94%	0.16%	2.48%	3.540	3.485	8.124	0.048	0.448	46.73%
		6	17	145	18.256	18.196	33.982	0.097	1.190	53.72%	53.55%	0.29%	3.50%	8.912	8.569	16.843	0.122	1.487	49.57%
		6	18	146	21.017	15.686	34.764	0.094	0.247	60.46%	45.12%	0.27%	0.71%	10.350	7.327	20.201	0.117	0.251	58.11%
		6	19	147	20.476	16.765	34.074	0.104	0.269	60.09%	49.20%	0.31%	0.79%	10.058	8.062	20.258	0.137	0.276	59.45%
		6	20	148	19.686	17.188	34.256	0.088	1.021	57.47%	50.18%	0.26%	2.98%	9.285	8.256	17.290	0.108	1.067	50.47%
		6	21	149	11.540	13.884	25.889	0.110	1.531	44.57%	53.63%	0.43%	5.91%	4.654	5.344	10.998	0.192	1.601	42.48%
		6	26	154	20.752	16.228	35.237	0.107	0.471	58.89%	46.05%	0.30%	1.34%	10.222	7.964	19.240	0.124	0.617	54.60%
		6	27	155	20.879	16.478	34.796	0.090	0.175	60.00%	47.36%	0.26%	0.50%	10.289	8.060	20.388	0.119	0.214	58.59%
		6	28	156	21.042	17.540	35.052	0.091	0.190	60.03%	50.04%	0.26%	0.54%	10.306	8.489	20.106	0.113	0.215	57.36%
		6	29	157	15.292	15.708	31.284	0.081	1.401	48.88%	50.21%	0.26%	4.48%	6.721	6.988	14.467	0.138	1.446	46.24%

High Channel

PD Simulation(W/m^2) Limit = 10 W/m^2		Operating Target Tx Power			M-channel														
					2 mm					66.93%	62.22%	1.09%	9.17%	10 mm					59.25%
					S1	S2	S3	S4	S5					S1	S2	S3	S4	S5	10mm/2mm
	SISO/MIMO & Polarization	Power setting (dBm)		Beam ID	Front	Back	Left	Right	Top	Front/wrost-case	Back/wrost-case	Right/wrost-case	Top/wrost-case	Front	Back	Left	Right	Top	S3
mmWave Ant1 /n261	Single Beam H-pol (AG0)	6		1	1.716	2.227	4.473	0.010	0.086	38.36%	49.79%	0.22%	1.92%	0.605	0.843	1.782	0.008	0.059	39.84%
		6		5	3.274	3.331	7.493	0.031	0.284	43.70%	44.45%	0.41%	3.79%	1.342	1.260	3.170	0.025	0.200	42.30%
		6		6	4.519	3.646	8.068	0.018	0.127	56.01%	45.19%	0.23%	1.58%	2.088	1.469	4.399	0.016	0.091	54.52%
		6		7	3.790	3.196	8.150	0.020	0.256	46.50%	39.21%	0.25%	3.14%	1.595	1.297	3.517	0.016	0.187	43.15%
		6		10	4.674	3.641	8.002	0.019	0.082	58.41%	45.50%	0.24%	1.03%	2.234	1.597	4.330	0.016	0.049	54.12%
		6		11	3.727	3.081	7.875	0.018	0.274	47.32%	39.12%	0.23%	3.48%	1.575	1.060	3.564	0.013	0.194	45.26%
		6		17	7.540	6.424	14.296	0.047	0.815	52.74%	44.94%	0.33%	5.70%	3.639	2.933	6.755	0.043	0.549	47.25%
		6		18	8.330	8.226	15.996	0.043	0.082	52.07%	51.43%	0.27%	0.51%	4.151	3.993	8.535	0.038	0.060	53.36%
		6		19	8.604	8.302	16.101	0.055	0.109	53.44%	51.56%	0.34%	0.68%	4.350	4.032	9.047	0.045	0.080	56.19%
		6		20	7.159	7.184	14.625	0.044	0.834	48.95%	49.12%	0.30%	5.70%	3.220	3.327	7.661	0.037	0.603	52.38%
		6		21	5.141	5.847	11.550	0.056	1.059	44.51%	50.62%	0.48%	9.17%	2.207	2.379	5.561	0.044	0.782	48.15%
		6		26	8.196	7.639	15.352	0.047	0.281	53.39%	49.76%	0.31%	1.83%	4.055	3.681	7.829	0.040	0.151	51.00%
		6		27	8.583	8.279	16.320	0.050	0.125	52.60%	50.73%	0.31%	0.76%	4.394	4.108	8.914	0.043	0.081	54.62%
		6		28	8.628	7.933	16.085	0.053	0.129	53.64%	49.32%	0.33%	0.80%	4.142	3.774	8.993	0.039	0.092	55.91%
		6		29	6.431	6.534	13.198	0.047	1.054	48.73%	49.51%	0.35%	7.98%	2.733	2.908	6.781	0.038	0.771	51.38%
	Single Beam V-pol (AG1)	6		129	1.737	2.295	4.601	0.010	0.085	37.76%	49.87%	0.22%	1.85%	0.606	0.797	1.874	0.008	0.059	40.73%
		6		133	3.111	3.793	7.328	0.027	0.296	42.46%	51.77%	0.37%	4.04%	1.309	1.581	3.142	0.022	0.210	42.88%
		6		134	4.199	4.218	8.211	0.021	0.087	51.13%	51.37%	0.25%	1.06%	1.853	1.961	4.240	0.017	0.052	51.64%
		6		135	2.579	3.206	7.193	0.029	0.465	35.86%	44.56%	0.40%	6.46%	0.895	1.255	2.522	0.023	0.317	35.06%
		6		138	3.672	4.137	7.715	0.027	0.273	47.59%	53.62%	0.34%	3.54%	1.578	1.814	3.746	0.021	0.186	48.56%
		6		139	3.619	3.845	7.901	0.022	0.287	45.80%	48.67%	0.28%	3.64%	1.513	1.739	3.674	0.018	0.199	46.50%
		6		145	6.567	6.395	12.455	0.046	0.782	52.72%	51.34%	0.37%	6.28%	3.064	2.872	6.392	0.039	0.533	51.32%
		6		146	8.358	6.186	13.933	0.057	0.190	59.98%	44.40%	0.41%	1.36%	4.028	2.641	7.837	0.048	0.115	56.25%
		6		147	8.127	6.982	14.614	0.053	0.140	55.61%	47.77%	0.36%	0.96%	4.122	3.296	7.671	0.045	0.096	52.49%
		6		148	7.507	6.006	13.218	0.067	0.521	56.79%	45.44%	0.51%	3.94%	3.644	2.783	6.329	0.057	0.388	47.88%
		6		149	4.877	4.231	9.661	0.105	0.798	50.48%	43.80%	1.09%	8.26%	1.602	1.705	3.670	0.088	0.559	37.98%
		6		154	7.720	6.100	13.213	0.045	0.484	58.42%	46.17%	0.34%	3.66%	3.628	2.673	7.296	0.038	0.313	55.22%
		6		155	8.445	6.798	14.825	0.049	0.101	56.96%	45.85%	0.33%	0.68%	4.205	3.165	7.879	0.041	0.072	53.14%
		6		156	8.100	7.165	14.753	0.060	0.130	54.90%	48.57%	0.41%	0.88%	3.996	3.405	7.772	0.052	0.091	52.68%
		6		157	6.273	4.916	11.473	0.070	0.877	54.68%	42.85%	0.61%	7.64%	2.723	2.147	4.838	0.060	0.655	42.17%
	Beam Pair (AG0+AG1)	6	1	129	3.648	5.467	9.832	0.032	0.243	37.10%	55.60%	0.33%	2.47%	1.214	1.904	3.986	0.026	0.168	40.53%
		6	5	133	6.731	8.518	15.772	0.075	0.829	42.68%	54.01%	0.48%	5.26%	2.646	3.212	6.891	0.062	0.591	43.69%
		6	6	134	11.035	10.169	16.998	0.050	0.275	64.92%	59.82%	0.29%	1.62%	5.155	4.764	9.377	0.043	0.200	55.16%
		6	7	135	6.981	7.341	16.013	0.058	0.922	43.60%	45.85%	0.37%	5.76%	2.695	2.916	6.765	0.052	0.656	42.25%
		6	10	138	10.850	10.085	16.211	0.047	0.513	66.93%	62.22%	0.29%	3.17%	5.091	4.739	8.937	0.040	0.328	55.13%
		6	11	139	8.476	8.311	16.472	0.053	0.745	51.46%	50.45%	0.32%	4.52%	3.634	3.531	7.817	0.046	0.516	47.46%
		6	17	145	16.103	16.895	30.146	0.153	1.977	53.42%	56.04%	0.51%	6.56%	8.014	8.234	14.755	0.135	1.308	48.94%
		6	18	146	19.735	14.768	32.700	0.119	0.331	60.35%	45.16%	0.37%	1.01%	9.799	6.721	18.981	0.106	0.261	58.05%
		6	19	147	19.393	15.983	31.966	0.144	0.355	60.67%	50.00%	0.45%	1.11%	9.627	7.528	18.941	0.122	0.257	59.25%
		6	20	148	17.168	16.358	30.799	0.144	1.792	55.74%	53.11%	0.47%	5.82%	8.180	8.078	15.630	0.123	1.283	50.75%
		6	21	149	10.950	14.003	25.311	0.225	2.178	43.26%	55.32%	0.89%	8.60%	4.420	5.788	11.143	0.190	1.496	44.02%
		6	26	154	19.208	15.011	32.625	0.140	0.818	58.88%	46.01%	0.43%	2.51%	9.493	7.474	17.801	0.121	0.498	54.56%
		6	27	155	19.767	15.364	32.683	0.127	0.372	60.48%	47.01%	0.39%	1.14%	9.913	7.493	19.024	0.108	0.260	58.21%
		6	28	156	19.554	16.756	32.865	0.114	0.406	59.50%	50.99%	0.35%	1.24%	9.605	8.094	18.937	0.097	0.270	57.62%
		6	29	157	13.346	15.175	28.736	0.147	2.129	46.44%	52.81%	0.51%	7.41%	5.912	7.054	13.398	0.121	1.484	46.62%

Table 3. PD of mmWave Ant 1 patch antenna (39GHz – n260)

Low Channel

PD Simulation(W/m^2) Limit = 10 W/m^2		Operating Target Tx Power			L-channel														
					2 mm					50.43%	70.00%	0.53%	6.66%	10 mm					65.08%
					S1	S2	S3	S4	S5					S1	S2	S3	S4	S5	10mm/2mm
	SISO/MIMO & Polarization	Power setting (dBm)	Beam ID		Front	Back	Left	Right	Top	Front/wrost-case	Back/wrost-case	Right/wrost-case	Top/wrost-case	Front	Back	Left	Right	Top	S3
mmWave Ant1 /n260	Single Beam H-pol (AG0)	6		1	1.397	2.210	4.013	0.011	0.095	34.81%	55.08%	0.28%	2.36%	0.434	0.830	1.593	0.014	0.114	39.71%
		6		5	2.265	3.830	6.881	0.017	0.269	32.91%	55.66%	0.25%	3.90%	0.893	1.529	2.147	0.023	0.304	31.21%
		6		6	2.517	2.876	5.878	0.009	0.122	42.82%	48.94%	0.15%	2.07%	1.069	1.339	3.200	0.020	0.122	54.45%
		6		7	2.579	2.836	6.536	0.010	0.201	39.47%	43.39%	0.16%	3.08%	1.017	1.196	3.052	0.014	0.204	46.69%
		6		10	3.144	3.404	7.597	0.017	0.185	41.38%	44.81%	0.23%	2.43%	1.326	1.222	3.433	0.021	0.202	45.20%
		6		11	2.632	2.691	6.471	0.010	0.129	40.67%	41.59%	0.15%	2.00%	0.830	1.111	2.367	0.017	0.184	36.58%
		6		17	5.262	6.163	12.005	0.024	0.699	43.83%	51.34%	0.20%	5.83%	2.344	2.223	5.067	0.031	0.792	42.21%
		6		18	4.364	5.613	10.656	0.029	0.287	40.96%	52.68%	0.27%	2.70%	1.749	2.435	5.848	0.036	0.295	54.88%
		6		19	4.700	5.436	10.280	0.019	0.071	45.72%	52.88%	0.19%	0.69%	1.978	2.620	6.147	0.029	0.084	59.80%
		6		20	4.205	6.804	11.000	0.021	0.287	38.23%	61.85%	0.19%	2.61%	1.328	3.402	5.786	0.030	0.453	52.60%
		6		21	4.324	7.121	12.262	0.020	0.490	35.26%	58.07%	0.16%	3.99%	1.403	2.968	5.187	0.026	0.562	42.30%
		6		26	4.824	5.538	11.167	0.032	0.494	43.20%	49.59%	0.29%	4.43%	2.068	2.169	5.502	0.048	0.515	49.27%
		6		27	4.683	5.152	10.169	0.031	0.118	46.05%	50.66%	0.30%	1.16%	1.968	2.316	5.991	0.033	0.115	58.92%
		6		28	4.694	5.704	10.670	0.019	0.084	43.99%	53.45%	0.18%	0.79%	1.767	2.808	5.947	0.024	0.095	55.73%
		6		29	4.785	8.099	11.890	0.023	0.792	40.24%	68.12%	0.20%	6.66%	1.817	3.466	4.858	0.026	0.989	40.86%
	Single Beam V-pol (AG1)	6		129	1.290	2.054	3.700	0.012	0.046	34.87%	55.52%	0.33%	1.25%	0.385	0.769	1.555	0.018	0.048	42.04%
		6		133	3.001	3.896	7.496	0.023	0.140	40.03%	51.97%	0.30%	1.87%	1.135	1.428	2.358	0.034	0.171	31.46%
		6		134	2.470	2.988	5.996	0.017	0.251	41.20%	49.84%	0.28%	4.18%	1.038	1.272	3.391	0.019	0.246	56.55%
		6		135	2.447	3.672	7.395	0.020	0.144	33.09%	49.65%	0.27%	1.95%	0.790	1.607	2.594	0.032	0.187	35.08%
		6		138	2.438	3.326	5.928	0.026	0.098	41.12%	56.11%	0.44%	1.65%	1.048	1.073	2.719	0.029	0.093	45.87%
		6		139	2.406	3.266	6.777	0.013	0.233	35.50%	48.20%	0.19%	3.43%	0.914	1.429	3.326	0.020	0.230	49.08%
		6		145	5.401	5.991	11.329	0.035	0.326	47.67%	52.88%	0.31%	2.88%	2.523	2.338	4.610	0.066	0.436	40.69%
		6		146	4.375	5.074	9.485	0.039	0.137	46.13%	53.50%	0.41%	1.44%	1.961	2.395	5.698	0.045	0.129	60.08%
		6		147	4.581	4.727	9.084	0.023	0.352	50.43%	52.04%	0.25%	3.88%	2.129	2.344	5.912	0.027	0.353	65.08%
		6		148	4.238	5.721	10.592	0.015	0.334	40.01%	54.01%	0.14%	3.15%	1.650	2.733	5.716	0.022	0.341	53.96%
		6		149	5.398	6.026	11.408	0.035	0.313	47.32%	52.82%	0.31%	2.74%	2.493	2.373	4.460	0.066	0.418	39.09%
		6		154	4.845	5.203	10.614	0.026	0.101	45.64%	49.02%	0.25%	0.96%	2.214	1.733	4.982	0.044	0.155	46.94%
		6		155	4.380	4.705	9.044	0.038	0.164	48.44%	52.02%	0.42%	1.82%	1.954	2.215	5.720	0.046	0.163	63.25%
		6		156	4.618	5.048	9.586	0.018	0.410	48.18%	52.65%	0.19%	4.28%	2.113	2.495	6.021	0.021	0.409	62.81%
		6		157	5.096	6.782	11.527	0.037	0.456	44.21%	58.84%	0.32%	3.96%	2.126	3.119	4.228	0.057	0.570	36.68%
	Beam Pair (AG0+AG1)	6	1	129	2.691	4.500	7.703	0.031	0.146	34.93%	58.42%	0.40%	1.90%	0.769	1.943	3.232	0.039	0.158	41.96%
		6	5	135	4.251	8.001	12.748	0.051	0.403	33.35%	62.76%	0.40%	3.16%	1.586	3.301	5.222	0.063	0.459	40.96%
		6	6	133	5.989	6.929	13.801	0.040	0.213	43.39%	50.21%	0.29%	1.55%	2.537	2.131	5.870	0.085	0.209	42.53%
		6	7	134	5.719	7.056	13.557	0.039	0.591	42.19%	52.05%	0.29%	4.36%	2.274	3.054	7.517	0.046	0.616	55.45%
		6	10	139	5.737	7.126	14.422	0.043	0.672	39.78%	49.41%	0.30%	4.66%	2.221	2.958	7.302	0.048	0.699	50.63%
		6	11	138	6.614	7.051	13.354	0.052	0.236	49.52%	52.80%	0.39%	1.77%	2.809	2.112	5.942	0.068	0.267	44.50%
		6	17	148	10.247	13.462	24.564	0.054	1.279	41.72%	54.81%	0.22%	5.21%	4.863	5.996	11.664	0.068	1.442	47.48%
		6	18	147	9.942	11.020	20.075	0.085	1.054	49.52%	54.89%	0.42%	5.25%	4.532	4.835	12.174	0.097	1.089	60.64%
		6	19	146	9.595	11.864	20.872	0.078	0.315	45.97%	56.84%	0.37%	1.51%	4.468	5.537	13.068	0.094	0.301	62.61%
		6	20	149	10.038	15.737	24.054	0.081	0.563	41.73%	65.42%	0.34%	2.34%	4.330	6.394	10.949	0.126	0.797	45.52%
		6	21	145	11.410	15.124	24.826	0.062	0.918	45.96%	60.92%	0.25%	3.70%	5.048	5.981	10.085	0.126	0.971	40.62%
		6	26	156	10.407	10.935	22.425	0.079	1.349	46.41%	48.76%	0.35%	6.02%	4.643	5.110	12.833	0.104	1.418	57.23%
		6	27	155	10.130	10.245	20.262	0.107	0.429	49.99%	50.56%	0.53%	2.12%	4.645	5.093	12.129	0.125	0.426	59.86%
		6	28	154	10.332	11.877	22.210	0.058	0.253	46.52%	53.47%	0.26%	1.14%	4.425	4.935	12.015	0.109	0.368	54.10%
		6	29	157	10.228	18.366	26.239	0.076	1.357	38.98%	70.00%	0.29%	5.17%	4.392	7.187	8.788	0.104	1.670	33.49%

Mid Channel

PD Simulation(W/m^2) Limit = 10 W/m^2		Operating Target Tx Power			M-channel														
					2 mm					56.61%	68.85%	0.96%	6.24%	10 mm					60.70%
					S1	S2	S3	S4	S5					S1	S2	S3	S4	S5	10mm/2mm
	SISO/MIMO & Polarization	Power setting (dBm)	Beam ID		Front	Back	Left	Right	Top	Front/wrost-case	Back/wrost-case	Right/wrost-case	Top/wrost-case	Front	Back	Left	Right	Top	S3
mmWave Ant1 /n260	Single Beam H-pol (AG0)	6		1	1.761	2.548	4.801	0.014	0.073	36.67%	53.08%	0.29%	1.53%	0.514	1.060	1.995	0.017	0.094	41.55%
		6		5	2.799	4.587	8.441	0.017	0.295	33.16%	54.34%	0.20%	3.50%	0.894	1.847	2.660	0.021	0.356	31.51%
		6		6	3.338	3.120	7.160	0.020	0.153	46.62%	43.57%	0.27%	2.13%	1.528	1.389	3.567	0.022	0.150	49.82%
		6		7	3.539	3.639	8.252	0.010	0.169	42.89%	44.10%	0.12%	2.05%	1.499	1.577	3.784	0.014	0.210	45.85%
		6		10	4.081	4.238	9.295	0.020	0.130	43.90%	45.60%	0.22%	1.40%	1.582	1.507	4.291	0.033	0.142	46.17%
		6		11	3.523	3.144	8.046	0.013	0.131	43.78%	39.07%	0.17%	1.63%	1.153	1.073	2.807	0.021	0.202	34.88%
		6		17	6.124	7.325	13.944	0.027	0.729	43.92%	52.53%	0.20%	5.23%	2.733	2.363	5.625	0.044	0.815	40.34%
		6		18	5.381	6.775	12.817	0.090	0.264	41.98%	52.86%	0.70%	2.06%	1.949	2.879	6.792	0.100	0.265	52.99%
		6		19	6.753	6.757	13.848	0.063	0.154	48.76%	48.79%	0.45%	1.11%	2.825	3.089	7.893	0.066	0.147	57.00%
		6		20	6.301	8.227	14.541	0.030	0.267	43.34%	56.58%	0.20%	1.84%	1.900	4.050	7.196	0.039	0.422	49.49%
		6		21	5.015	8.700	13.785	0.033	0.647	36.38%	63.11%	0.24%	4.70%	1.946	3.488	5.587	0.047	0.714	40.53%
		6		26	6.330	6.508	13.323	0.071	0.472	47.51%	48.85%	0.53%	3.55%	2.738	2.561	6.467	0.078	0.523	48.54%
		6		27	5.796	6.279	12.977	0.050	0.219	44.66%	48.39%	0.39%	1.69%	2.264	2.526	7.222	0.053	0.219	55.65%
		6		28	6.796	6.369	16.577	0.051	0.128	40.99%	38.42%	0.31%	0.78%	2.539	3.419	7.762	0.058	0.169	46.82%
		6		29	5.065	9.300	13.671	0.033	0.853	37.05%	68.03%	0.24%	6.24%	1.942	4.096	5.265	0.044	1.043	38.51%
	Single Beam V-pol (AG1)	6		129	1.665	2.400	4.523	0.014	0.065	36.82%	53.08%	0.30%	1.45%	0.492	0.953	2.014	0.015	0.070	44.54%
		6		133	3.588	4.235	8.197	0.023	0.121	43.77%	51.66%	0.28%	1.48%	1.238	1.508	2.890	0.026	0.146	35.26%
		6		134	2.869	4.427	7.573	0.040	0.214	37.88%	58.46%	0.53%	2.82%	1.166	1.935	3.897	0.046	0.229	51.45%
		6		135	3.108	4.413	9.281	0.014	0.200	33.49%	47.55%	0.15%	2.15%	0.896	1.835	3.467	0.022	0.262	37.35%
		6		138	3.195	3.618	7.840	0.059	0.094	40.75%	46.15%	0.75%	1.20%	1.323	1.258	3.377	0.064	0.091	43.07%
		6		139	2.847	4.656	8.445	0.028	0.212	33.71%	55.14%	0.34%	2.50%	1.031	2.126	3.935	0.034	0.264	46.59%
		6		145	6.776	6.081	13.866	0.023	0.297	48.87%	43.86%	0.17%	2.14%	3.042	2.036	5.851	0.052	0.405	42.20%
		6		146	6.202	5.919	12.373	0.079	0.208	50.13%	47.84%	0.64%	1.68%	2.780	2.684	7.165	0.088	0.206	57.91%
		6		147	5.719	6.173	12.065	0.039	0.390	47.40%	51.17%	0.32%	3.24%	2.642	2.878	7.201	0.045	0.432	59.69%
		6		148	5.289	7.938	13.148	0.035	0.331	40.23%	60.38%	0.26%	2.52%	2.022	3.717	6.848	0.042	0.379	52.08%
		6		149	7.765	6.130	13.715	0.027	0.275	56.61%	44.70%	0.20%	2.01%	2.986	2.071	5.638	0.055	0.379	41.11%
		6		154	6.898	5.776	13.885	0.063	0.098	49.68%	41.60%	0.45%	0.70%	3.045	2.134	6.303	0.072	0.120	45.40%
		6		155	5.698	5.883	11.958	0.039	0.429	47.65%	49.20%	0.33%	3.59%	2.525	2.668	7.259	0.039	0.451	60.70%
		6		156	5.922	6.481	12.508	0.048	0.306	47.35%	51.82%	0.38%	2.45%	2.707	3.044	7.297	0.055	0.325	58.33%
		6		157	5.744	7.592	13.004	0.032	0.427	44.17%	58.38%	0.25%	3.29%	2.344	3.454	4.957	0.049	0.531	38.12%
	Beam Pair (AG0+AG1)	6	1	129	4.013	5.225	10.182	0.048	0.219	39.41%	51.32%	0.47%	2.15%	1.176	2.412	4.700	0.053	0.248	46.16%
		6	5	135	5.821	8.794	15.478	0.044	0.700	37.61%	56.82%	0.29%	4.52%	1.941	4.012	6.963	0.055	0.829	44.98%
		6	6	133	8.520	8.155	18.186	0.073	0.342	46.85%	44.84%	0.40%	1.88%	3.645	2.661	8.053	0.083	0.342	44.29%
		6	7	134	9.037	11.739	18.000	0.076	0.627	50.21%	65.21%	0.42%	3.48%	3.655	5.097	8.811	0.082	0.676	48.95%
		6	10	139	8.202	10.966	18.317	0.062	0.647	44.78%	59.86%	0.34%	3.53%	3.235	4.848	8.508	0.093	0.765	46.45%
		6	11	138	9.652	8.298	18.056	0.121	0.249	53.45%	45.96%	0.67%	1.38%	4.102	2.691	8.807	0.135	0.338	48.77%
		6	17	148	13.044	17.910	29.087	0.116	1.512	44.85%	61.57%	0.40%	5.20%	6.068	8.238	13.601	0.148	1.809	46.76%
		6	18	147	11.877	13.255	25.954	0.222	1.099	45.76%	51.07%	0.85%	4.24%	5.474	6.002	15.171	0.248	1.166	58.46%
		6	19	146	14.549	15.039	26.801	0.258	0.598	54.28%	56.11%	0.96%	2.23%	6.812	7.032	15.732	0.282	0.574	58.70%
		6	20	149	14.351	16.822	29.551	0.094	0.717	48.56%	56.92%	0.32%	2.43%	5.434	7.814	13.608	0.106	0.997	46.05%
		6	21	145	13.622	17.047	30.141	0.077	1.524	45.20%	56.56%	0.25%	5.06%	6.280	6.712	12.128	0.138	1.706	40.24%
		6	26	156	13.889	15.789	28.360	0.217	1.423	48.97%	55.67%	0.77%	5.02%	6.094	7.785	15.969	0.234	1.572	56.31%
		6	27	155	12.177	12.457	26.361	0.129	0.841	46.19%	47.26%	0.49%	3.19%	5.436	5.578	15.272	0.137	0.844	57.93%
		6	28	154	14.813	14.799	29.521	0.219	0.334	50.18%	50.13%	0.74%	1.13%	6.376	6.898	15.360	0.246	0.487	52.03%
		6	29	157	10.739	19.769	28.714	0.082	1.641	37.40%	68.85%	0.29%	5.72%	4.602	7.418	11.147	0.125	1.953	38.82%

High Channel

PD Simulation(W/m^2) Limit = 10 W/m^2		Operating Target Tx Power			H-channel														
					2 mm					57.38%	67.16%	0.73%	5.29%	10 mm					63.96%
					S1	S2	S3	S4	S5					S1	S2	S3	S4	S5	10mm/2mm
	SISO/MIMO & Polarization	Power setting (dBm)	Beam ID		Front	Back	Left	Right	Top	Front/wrost-case	Back/wrost-case	Right/wrost-case	Top/wrost-case	Front	Back	Left	Right	Top	S3
mmWave Ant1 /n260	Single Beam H-pol (AG0)	6		1	1.706	2.699	4.685	0.010	0.087	36.41%	57.62%	0.22%	1.85%	0.548	0.873	2.098	0.016	0.091	44.79%
		6		5	3.065	4.543	8.370	0.018	0.264	36.62%	54.28%	0.21%	3.15%	1.055	1.628	3.303	0.027	0.302	39.47%
		6		6	3.492	3.118	7.237	0.017	0.058	48.24%	43.08%	0.23%	0.81%	1.548	1.244	3.259	0.018	0.059	45.03%
		6		7	3.703	3.673	7.836	0.012	0.190	47.26%	46.88%	0.16%	2.42%	1.419	1.716	3.725	0.015	0.201	47.54%
		6		10	4.341	3.958	9.396	0.023	0.226	46.20%	42.12%	0.24%	2.41%	1.630	1.249	4.297	0.040	0.242	45.74%
		6		11	3.509	3.793	8.485	0.013	0.100	41.36%	44.71%	0.15%	1.18%	1.162	1.189	2.868	0.024	0.128	33.80%
		6		17	5.914	6.734	13.361	0.033	0.649	44.26%	50.40%	0.24%	4.86%	2.543	2.163	6.213	0.060	0.763	46.50%
		6		18	5.495	5.996	12.214	0.049	0.205	44.99%	49.10%	0.40%	1.68%	1.937	2.275	6.369	0.050	0.214	52.15%
		6		19	6.343	7.675	13.638	0.054	0.083	46.51%	56.28%	0.40%	0.61%	2.614	3.204	7.010	0.062	0.099	51.40%
		6		20	5.719	8.992	14.514	0.033	0.240	39.40%	61.95%	0.23%	1.65%	1.813	3.975	6.533	0.040	0.270	45.01%
		6		21	4.784	7.433	13.549	0.038	0.489	35.31%	54.86%	0.28%	3.61%	1.840	3.074	5.328	0.045	0.563	39.33%
		6		26	6.456	6.901	14.115	0.040	0.472	45.74%	48.89%	0.28%	3.35%	2.669	2.697	7.276	0.044	0.505	51.55%
		6		27	5.329	6.208	12.036	0.032	0.195	44.28%	51.58%	0.26%	1.62%	1.882	2.158	6.245	0.043	0.195	51.89%
		6		28	6.254	8.461	14.119	0.050	0.172	44.29%	59.92%	0.35%	1.22%	2.301	3.675	6.968	0.059	0.204	49.35%
		6		29	4.849	7.675	13.098	0.025	0.575	37.02%	58.60%	0.19%	4.39%	1.805	3.421	5.484	0.040	0.733	41.87%
	Single Beam V-pol (AG1)	6		129	1.557	2.470	4.379	0.020	0.097	35.57%	56.41%	0.45%	2.21%	0.488	0.874	1.995	0.023	0.100	45.57%
		6		133	3.306	3.689	8.048	0.020	0.121	41.07%	45.84%	0.25%	1.51%	1.058	1.272	3.052	0.024	0.132	37.92%
		6		134	3.279	4.374	8.116	0.057	0.255	40.41%	53.90%	0.71%	3.14%	1.355	1.874	4.145	0.065	0.265	51.08%
		6		135	3.403	4.335	9.050	0.015	0.202	37.61%	47.90%	0.17%	2.23%	0.964	1.634	3.381	0.020	0.254	37.36%
		6		138	3.797	3.558	8.440	0.038	0.112	44.99%	42.16%	0.45%	1.33%	1.723	1.291	4.121	0.039	0.113	48.83%
		6		139	3.133	4.601	8.625	0.047	0.238	36.33%	53.35%	0.54%	2.76%	1.190	1.962	3.926	0.054	0.286	45.52%
		6		145	6.279	5.599	13.474	0.030	0.219	46.60%	41.55%	0.22%	1.62%	2.743	2.161	6.031	0.049	0.311	44.76%
		6		146	6.874	5.628	13.248	0.044	0.323	51.89%	42.48%	0.33%	2.44%	3.105	2.521	7.597	0.050	0.327	57.35%
		6		147	6.116	6.593	12.338	0.057	0.352	49.57%	53.44%	0.46%	2.85%	2.810	2.765	7.134	0.069	0.364	57.82%
		6		148	4.753	7.624	12.563	0.052	0.395	37.83%	60.68%	0.42%	3.14%	1.782	3.583	6.288	0.064	0.455	50.05%
		6		149	6.213	5.626	13.520	0.031	0.205	45.95%	41.61%	0.23%	1.52%	2.697	2.183	5.867	0.051	0.293	43.39%
		6		154	7.048	5.521	14.215	0.055	0.062	49.58%	38.84%	0.38%	0.44%	3.072	2.148	6.737	0.059	0.092	47.39%
		6		155	5.718	5.828	12.054	0.049	0.405	47.43%	48.35%	0.41%	3.36%	2.508	2.675	6.882	0.053	0.433	57.09%
		6		156	6.486	6.743	12.556	0.065	0.349	51.66%	53.70%	0.52%	2.78%	2.950	2.647	7.269	0.074	0.379	57.89%
		6		157	5.374	6.392	12.408	0.027	0.390	43.31%	51.51%	0.22%	3.14%	2.253	2.779	5.314	0.040	0.516	42.83%
	Beam Pair (AG0+AG1)	6	1	129	3.643	5.609	9.279	0.037	0.268	39.26%	60.45%	0.40%	2.88%	1.227	1.884	4.160	0.043	0.297	44.84%
		6	5	135	5.605	9.111	14.524	0.048	0.674	38.59%	62.73%	0.33%	4.64%	1.969	3.525	6.805	0.076	0.790	46.86%
		6	6	133	8.470	8.587	17.350	0.054	0.287	48.82%	49.49%	0.31%	1.66%	3.459	2.737	8.025	0.060	0.304	46.26%
		6	7	134	10.570	12.593	18.752	0.108	0.616	56.37%	67.16%	0.58%	3.29%	4.194	5.798	9.657	0.126	0.714	51.50%
		6	10	139	9.248	10.523	18.492	0.064	0.850	50.01%	56.91%	0.35%	4.59%	3.725	4.450	9.008	0.102	0.958	48.71%
		6	11	138	10.412	9.013	19.505	0.080	0.202	53.38%	46.21%	0.41%	1.03%	4.508	3.018	10.031	0.086	0.303	51.43%
		6	17	148	11.702	15.915	29.378	0.130	1.555	39.83%	54.17%	0.44%	5.29%	5.316	7.307	14.994	0.148	1.898	51.04%
		6	18	147	12.987	13.523	26.190	0.192	0.861	49.59%	51.63%	0.73%	3.29%	5.957	5.888	16.272	0.202	0.887	62.13%
		6	19	146	16.102	16.256	28.063	0.167	0.453	57.38%	57.93%	0.60%	1.62%	7.594	7.266	17.688	0.177	0.449	63.03%
		6	20	149	14.009	16.473	30.205	0.081	0.654	46.38%	54.54%	0.27%	2.16%	5.356	7.078	14.866	0.097	0.883	49.22%
		6	21	145	12.412	13.911	29.788	0.078	1.078	41.67%	46.70%	0.26%	3.62%	5.773	5.256	11.824	0.128	1.282	39.70%
		6	26	156	14.967	16.224	29.551	0.176	1.510	50.65%	54.90%	0.59%	5.11%	7.032	8.040	17.313	0.206	1.667	58.59%
		6	27	155	12.280	13.456	25.155	0.148	0.841	48.82%	53.49%	0.59%	3.34%	5.480	5.183	16.090	0.162	0.831	63.96%
		6	28	154	14.133	15.270	30.493	0.194	0.385	46.35%	50.08%	0.64%	1.26%	6.194	7.419	16.559	0.216	0.468	54.30%
		6	29	157	11.326	15.024	27.923	0.082	1.048	40.56%	53.80%	0.29%	3.75%	4.505	5.505	12.408	0.142	1.337	44.44%

4.1.2 mmWave Ant 2 – Patch Antenna

Table 4 & Table 5 show the PD simulation evaluation of mmWave Ant 2 at 28 GHz / 39 GHz for the corresponding evaluation planes specified in Table 1.

Table 4. PD of mmWave Ant 2 patch antenna (28GHz – n261)

Low Channel

PD Simulation(W/m^2) Limit = 10 W/m^2		Operating Target Tx Power			L-channel														
					2 mm					60.22%	58.11%	0.38%	1.76%	10 mm					61.38%
					S1	S2	S3	S4	S5					S1	S2	S3	S4	S5	10mm/2mm
	SISO/MIMO & Polarization	Power setting (dBm)	Beam ID		Front	Back	Left	Right	Top	Front/wrost-case	Back/wrost-case	Right/wrost-case	Top/wrost-case	Front	Back	Left	Right	Top	S4
mmWave Ant2 /n261	Single Beam H-pol (AG0)	6		0	1.611	1.509	0.006	3.997	0.014	40.31%	37.75%	0.14%	0.34%	0.537	1.510	0.010	1.644	0.054	41.14%
		6		2	3.951	3.868	0.011	8.654	0.025	45.65%	44.70%	0.13%	0.29%	1.604	3.857	0.014	4.563	0.106	52.73%
		6		3	3.976	4.542	0.013	8.527	0.024	46.62%	53.27%	0.15%	0.28%	1.656	4.527	0.017	5.081	0.106	59.59%
		6		4	2.555	3.037	0.013	7.905	0.073	32.32%	38.41%	0.16%	0.92%	0.896	3.026	0.016	2.758	0.271	34.89%
		6		8	4.385	4.447	0.011	8.917	0.004	49.17%	49.87%	0.13%	0.05%	1.783	4.434	0.014	5.291	0.048	59.34%
		6		9	3.302	4.098	0.016	8.142	0.056	40.55%	50.33%	0.20%	0.69%	1.341	4.083	0.020	4.142	0.224	50.87%
		6		12	7.852	7.419	0.013	16.330	0.031	48.08%	45.43%	0.08%	0.19%	3.416	7.407	0.032	9.129	0.329	55.90%
		6		13	9.240	8.519	0.020	17.493	0.013	52.82%	48.70%	0.12%	0.07%	4.306	8.531	0.025	10.736	0.038	61.38%
		6		14	8.556	8.857	0.035	17.223	0.023	49.68%	51.43%	0.20%	0.13%	4.133	8.855	0.043	10.253	0.091	59.53%
		6		15	7.445	8.263	0.049	16.161	0.076	46.07%	51.13%	0.31%	0.47%	3.251	8.263	0.058	8.678	0.341	53.69%
		6		16	3.736	5.820	0.030	10.950	0.192	34.12%	53.15%	0.28%	1.76%	1.308	5.802	0.058	3.968	0.696	36.24%
		6		22	9.035	8.285	0.014	17.679	0.022	51.11%	46.86%	0.08%	0.12%	4.075	8.290	0.020	10.489	0.102	59.33%
		6		23	8.854	8.556	0.027	17.037	0.016	51.97%	50.22%	0.16%	0.09%	4.273	8.566	0.034	10.346	0.070	60.73%
		6		24	8.353	8.933	0.048	17.480	0.020	47.79%	51.10%	0.28%	0.11%	3.877	8.935	0.056	9.924	0.079	56.77%
		6		25	5.888	7.475	0.039	14.061	0.152	41.88%	53.17%	0.27%	1.08%	2.485	7.473	0.049	7.016	0.672	49.90%
	Single Beam V-pol (AG1)	6		128	1.701	1.565	0.006	3.980	0.017	42.74%	39.33%	0.15%	0.43%	0.589	1.576	0.007	1.650	0.064	41.45%
		6		130	3.069	3.477	0.015	7.782	0.037	39.44%	44.69%	0.19%	0.47%	1.236	3.483	0.018	2.965	0.150	38.11%
		6		131	4.814	4.246	0.008	9.339	0.004	51.55%	45.47%	0.08%	0.04%	2.011	4.256	0.009	5.412	0.018	57.95%
		6		132	3.147	3.276	0.012	8.091	0.047	38.89%	40.50%	0.15%	0.57%	1.011	3.276	0.016	3.513	0.178	43.43%
		6		136	4.105	4.003	0.010	8.527	0.018	48.14%	46.95%	0.11%	0.21%	1.734	4.018	0.012	4.308	0.103	50.52%
		6		137	4.112	3.948	0.009	8.933	0.026	46.03%	44.19%	0.10%	0.29%	1.574	3.949	0.012	4.736	0.101	53.02%
		6		140	4.797	5.475	0.029	10.175	0.112	47.14%	53.80%	0.28%	1.10%	1.733	5.468	0.036	4.217	0.364	41.44%
		6		141	8.215	7.989	0.037	16.241	0.016	50.58%	49.19%	0.23%	0.10%	3.968	7.990	0.052	9.115	0.113	56.12%
		6		142	8.674	7.702	0.036	16.182	0.009	53.60%	47.60%	0.22%	0.06%	4.244	7.693	0.047	9.632	0.040	59.52%
		6		143	8.834	7.904	0.019	16.903	0.018	52.26%	46.76%	0.11%	0.10%	4.002	7.887	0.024	10.049	0.077	59.45%
		6		144	6.831	5.661	0.030	14.052	0.101	48.61%	40.29%	0.21%	0.72%	2.359	5.650	0.043	6.769	0.380	48.17%
		6		150	7.117	7.495	0.039	14.564	0.023	48.87%	51.46%	0.27%	0.16%	3.436	7.498	0.051	7.920	0.231	54.38%
		6		151	8.865	8.191	0.038	16.971	0.015	52.23%	48.27%	0.22%	0.09%	4.311	8.190	0.051	9.911	0.058	58.40%
		6		152	8.905	7.993	0.029	16.518	0.017	53.91%	48.39%	0.17%	0.10%	4.203	7.981	0.035	10.072	0.066	60.97%
		6		153	7.934	6.818	0.032	15.938	0.036	49.78%	42.78%	0.20%	0.23%	3.344	6.803	0.046	8.770	0.155	55.03%
	Beam Pair (AG0+AG1)	6	0	128	2.615	2.424	0.017	5.527	0.046	47.31%	43.85%	0.30%	0.83%	1.004	2.437	0.024	2.917	0.156	52.77%
		6	2	130	9.355	10.243	0.030	17.627	0.082	53.08%	58.11%	0.17%	0.47%	3.978	10.218	0.036	8.272	0.360	46.93%
		6	3	131	10.226	10.611	0.034	18.973	0.034	53.90%	55.92%	0.18%	0.18%	4.551	10.591	0.046	11.287	0.148	59.49%
		6	4	132	6.393	7.378	0.045	16.913	0.150	37.80%	43.62%	0.26%	0.89%	2.159	7.382	0.060	7.399	0.540	43.75%
		6	8	136	10.773	10.734	0.030	18.474	0.031	58.32%	58.10%	0.16%	0.17%	4.727	10.718	0.041	10.077	0.229	54.55%
		6	9	137	8.137	9.399	0.034	18.117	0.104	44.92%	51.88%	0.19%	0.57%	3.453	9.387	0.047	10.082	0.375	55.65%
		6	12	140	14.806	15.626	0.057	28.245	0.204	52.42%	55.32%	0.20%	0.72%	6.337	15.642	0.109	13.875	0.913	49.12%
		6	13	141	21.300	18.297	0.094	35.370	0.034	60.22%	51.73%	0.26%	0.10%	10.573	18.288	0.130	20.230	0.180	57.20%
		6	14	142	20.308	19.045	0.132	34.775	0.038	58.40%	54.77%	0.38%	0.11%	10.299	19.015	0.173	21.101	0.153	60.68%
		6	15	143	19.394	19.593	0.118	34.277	0.123	56.58%	57.16%	0.34%	0.36%	9.085	19.587	0.134	20.330	0.506	59.31%
		6	16	144	12.322	14.470	0.091	28.644	0.418	43.02%	50.52%	0.32%	1.46%	4.358	14.455	0.130	12.658	1.528	44.19%
		6	22	150	20.004	18.329	0.084	33.237	0.061	60.19%	55.15%	0.25%	0.18%	9.627	18.322	0.110	18.947	0.346	57.01%
		6	23	151	20.442	18.467	0.111	34.367	0.038	59.48%	53.73%	0.32%	0.11%	10.407	18.454	0.146	20.612	0.138	59.98%
		6	24	152	20.196	19.797	0.115	35.048	0.054	57.62%	56.49%	0.33%	0.15%	10.060	19.761	0.145	21.359	0.214	60.94%
		6	25	153	15.937	18.366	0.113	33.063	0.223	48.20%	55.55%	0.34%	0.67%	7.152	18.374	0.143	18.242	1.021	55.17%

Mid Channel

PD Simulation(W/m^2) Limit = 10 W/m^2		Operating Target Tx Power			M-channel														
					2 mm					60.54%	58.41%	0.44%	1.66%	10 mm					61.10%
					S1	S2	S3	S4	S5					S1	S2	S3	S4	S5	10mm/2mm
	SISO/MIMO & Polarization	Power setting (dBm)	Beam ID		Front	Back	Left	Right	Top	Front/wrost-case	Back/wrost-case	Right/wrost-case	Top/wrost-case	Front	Back	Left	Right	Top	S4
mmWave Ant2 /n261	Single Beam H-pol (AG0)	6		0	1.4991	1.5554	0.0048	3.9095	0.0120	38.35%	39.79%	0.12%	0.31%	0.498	1.554	0.009	1.616	0.051	41.34%
		6		2	4.0196	3.5402	0.0138	8.3435	0.0249	48.18%	42.43%	0.17%	0.30%	1.652	3.525	0.017	4.390	0.101	52.62%
		6		3	4.0012	4.2472	0.0176	8.2825	0.0249	48.31%	51.28%	0.21%	0.30%	1.651	4.241	0.023	4.952	0.114	59.79%
		6		4	2.5243	2.9408	0.0140	7.8522	0.0749	32.15%	37.45%	0.18%	0.95%	0.884	2.932	0.017	2.739	0.292	34.89%
		6		8	4.4727	4.0416	0.0137	8.5746	0.0037	52.16%	47.13%	0.16%	0.04%	1.836	4.034	0.017	5.105	0.044	59.54%
		6		9	3.2620	3.9119	0.0171	8.0323	0.0591	40.61%	48.70%	0.21%	0.74%	1.322	3.903	0.021	4.062	0.242	50.57%
		6		12	7.2635	6.9046	0.0139	15.0526	0.0254	48.25%	45.87%	0.09%	0.17%	3.225	6.881	0.028	8.461	0.273	56.21%
		6		13	8.9229	8.0242	0.0213	16.7751	0.0117	53.19%	47.83%	0.13%	0.07%	4.160	8.036	0.031	10.250	0.035	61.10%
		6		14	8.4717	8.6877	0.0339	16.9803	0.0205	49.89%	51.16%	0.20%	0.12%	4.051	8.695	0.040	10.199	0.083	60.07%
		6		15	6.9812	7.8835	0.0455	15.2111	0.0906	45.90%	51.83%	0.30%	0.60%	3.019	7.881	0.053	8.377	0.425	55.07%
		6		16	3.8575	5.7458	0.0300	10.9536	0.1822	35.22%	52.46%	0.27%	1.66%	1.237	5.738	0.052	4.044	0.669	36.92%
		6		22	8.7034	7.8316	0.0220	16.7228	0.0183	52.05%	46.83%	0.13%	0.11%	3.963	7.835	0.030	9.996	0.077	59.77%
		6		23	8.5261	8.3793	0.0251	16.6087	0.0175	51.33%	50.45%	0.15%	0.11%	4.077	8.388	0.035	10.065	0.081	60.60%
		6		24	8.0106	8.5165	0.0459	16.7030	0.0257	47.96%	50.99%	0.28%	0.15%	3.682	8.523	0.052	9.611	0.116	57.54%
		6		25	5.5375	7.1764	0.0345	13.2957	0.1634	41.65%	53.98%	0.26%	1.23%	2.304	7.173	0.042	6.823	0.754	51.32%
	Single Beam V-pol (AG1)	6		128	1.6404	1.6804	0.0072	3.8874	0.0166	42.20%	43.23%	0.19%	0.43%	0.558	1.671	0.008	1.582	0.064	40.68%
		6		130	2.8401	3.4312	0.0174	7.5105	0.0363	37.82%	45.68%	0.23%	0.48%	1.129	3.417	0.019	2.753	0.154	36.65%
		6		131	4.5089	4.3978	0.0080	9.1143	0.0036	49.47%	48.25%	0.09%	0.04%	1.884	4.380	0.009	5.268	0.017	57.80%
		6		132	2.9911	3.3364	0.0169	7.9433	0.0459	37.66%	42.00%	0.21%	0.58%	0.984	3.326	0.022	3.413	0.179	42.96%
		6		136	3.7627	4.0320	0.0115	8.2273	0.0178	45.73%	49.01%	0.14%	0.22%	1.589	4.023	0.013	4.097	0.099	49.79%
		6		137	3.9038	4.0201	0.0111	8.7288	0.0254	44.72%	46.06%	0.13%	0.29%	1.480	4.001	0.014	4.609	0.102	52.80%
		6		140	4.5434	5.2868	0.0321	9.8890	0.0949	45.94%	53.46%	0.32%	0.96%	1.666	5.270	0.042	4.062	0.325	41.07%
		6		141	7.6329	7.3785	0.0366	14.8868	0.0182	51.27%	49.56%	0.25%	0.12%	3.695	7.354	0.053	8.452	0.093	56.78%
		6		142	8.3879	7.4570	0.0337	15.6913	0.0101	53.46%	47.52%	0.21%	0.06%	4.066	7.430	0.042	9.343	0.042	59.54%
		6		143	8.4751	7.4903	0.0242	16.1037	0.0155	52.63%	46.51%	0.15%	0.10%	3.842	7.466	0.030	9.508	0.083	59.04%
		6		144	6.2993	5.2628	0.0505	12.8598	0.1021	48.98%	40.92%	0.39%	0.79%	2.287	5.246	0.065	6.361	0.389	49.46%
		6		150	6.4116	6.7764	0.0379	12.9377	0.0231	49.56%	52.38%	0.29%	0.18%	3.107	6.748	0.053	7.157	0.191	55.32%
		6		151	8.5274	7.7903	0.0345	16.2575	0.0140	52.45%	47.92%	0.21%	0.09%	4.101	7.768	0.046	9.497	0.050	58.42%
		6		152	8.6144	7.6263	0.0276	15.9658	0.0162	53.96%	47.77%	0.17%	0.10%	4.043	7.601	0.036	9.627	0.066	60.30%
		6		153	7.4328	6.3544	0.0469	14.8288	0.0371	50.12%	42.85%	0.32%	0.25%	3.215	6.332	0.061	8.162	0.161	55.04%
	Beam Pair (AG0+AG1)	6	0	128	2.4313	2.5180	0.0171	5.4123	0.0443	44.92%	46.52%	0.32%	0.82%	0.960	2.510	0.023	2.760	0.159	51.00%
		6	2	130	9.1949	9.9132	0.0361	17.0146	0.0806	54.04%	58.26%	0.21%	0.47%	3.891	9.861	0.037	7.752	0.342	45.56%
		6	3	131	10.1440	10.6573	0.0331	18.4869	0.0339	54.87%	57.65%	0.18%	0.18%	4.481	10.617	0.043	10.640	0.156	57.55%
		6	4	132	6.3468	7.4157	0.0578	16.7061	0.1575	37.99%	44.39%	0.35%	0.94%	2.257	7.393	0.074	7.083	0.566	42.40%
		6	8	136	10.5415	10.4596	0.0298	17.9083	0.0277	58.86%	58.41%	0.17%	0.15%	4.648	10.414	0.038	9.572	0.213	53.45%
		6	9	137	8.2332	9.2219	0.0459	17.7738	0.1081	46.32%	51.88%	0.26%	0.61%	3.433	9.181	0.061	9.509	0.415	53.50%
		6	12	140	14.0056	15.3464	0.0689	27.5670	0.1729	50.81%	55.67%	0.25%	0.63%	6.043	15.312	0.106	13.521	0.824	49.05%
		6	13	141	20.2840	16.8386	0.0938	33.6534	0.0309	60.27%	50.04%	0.28%	0.09%	10.125	16.805	0.128	19.427	0.167	57.73%
		6	14	142	20.0581	18.3585	0.1214	33.7583	0.0402	59.42%	54.38%	0.36%	0.12%	10.077	18.323	0.155	20.340	0.163	60.25%
		6	15	143	18.4556	18.2542	0.1114	32.6717	0.1311	56.49%	55.87%	0.34%	0.40%	8.680	18.214	0.124	19.216	0.580	58.81%
		6	16	144	11.5242	14.5800	0.1188	28.7593	0.4061	40.07%	50.70%	0.41%	1.41%	4.013	14.567	0.145	12.818	1.552	44.57%
		6	22	150	18.4665	17.0498	0.0804	30.5039	0.0467	60.54%	55.89%	0.26%	0.15%	9.016	17.010	0.107	17.683	0.265	57.97%
		6	23	151	19.7758	17.7437	0.0995	33.4558	0.0378	59.11%	53.04%	0.30%	0.11%	9.985	17.707	0.131	20.018	0.145	59.83%
		6	24	152	19.9366	18.4753	0.1069	33.5515	0.0638	59.42%	55.07%	0.32%	0.19%	9.823	18.427	0.133	20.053	0.278	59.77%
		6	25	153	14.4144	17.5419	0.1397	31.6252	0.2443	45.58%	55.47%	0.44%	0.77%	6.576	17.516	0.172	17.621	1.127	55.72%

High Channel

PD Simulation(W/m^2) Limit = 10 W/m^2		Operating Target Tx Power			H-channel														
					2 mm					61.44%	58.45%	0.55%	1.51%	10 mm					60.95%
					S1	S2	S3	S4	S5					S1	S2	S3	S4	S5	10mm/2mm
	SISO/MIMO & Polarization	Power setting (dBm)	Beam ID		Front	Back	Left	Right	Top	Front/wrost-case	Back/wrost-case	Right/wrost-case	Top/wrost-case	Front	Back	Left	Right	Top	S4
mmWave Ant2 /n261	Single Beam H-pol (AG0)	6		0	1.366	1.567	0.005	3.733	0.010	36.61%	41.98%	0.14%	0.28%	0.450	1.561	0.009	1.566	0.044	41.94%
		6		2	3.999	3.169	0.015	7.922	0.025	50.48%	40.00%	0.19%	0.32%	1.634	3.155	0.017	4.139	0.092	52.25%
		6		3	3.850	3.973	0.020	7.861	0.027	48.97%	50.54%	0.26%	0.35%	1.576	3.961	0.026	4.700	0.124	59.79%
		6		4	2.552	2.881	0.013	7.697	0.077	33.15%	37.42%	0.17%	1.00%	0.834	2.860	0.017	2.639	0.309	34.29%
		6		8	4.381	3.663	0.015	8.061	0.004	54.35%	45.44%	0.18%	0.04%	1.809	3.654	0.018	4.832	0.040	59.94%
		6		9	3.075	3.741	0.018	7.765	0.062	39.60%	48.17%	0.23%	0.80%	1.244	3.723	0.023	3.876	0.259	49.92%
		6		12	6.536	6.318	0.019	13.552	0.021	48.23%	46.62%	0.14%	0.15%	2.907	6.292	0.026	7.586	0.209	55.98%
		6		13	8.397	7.517	0.026	15.735	0.011	53.37%	47.78%	0.16%	0.07%	3.890	7.521	0.036	9.591	0.046	60.95%
		6		14	8.112	8.476	0.031	16.387	0.019	49.50%	51.72%	0.19%	0.11%	3.825	8.474	0.039	9.878	0.075	60.28%
		6		15	6.203	7.488	0.036	13.780	0.104	45.02%	54.34%	0.26%	0.75%	2.682	7.464	0.047	7.835	0.492	56.86%
		6		16	4.327	5.724	0.028	10.915	0.165	39.64%	52.44%	0.26%	1.51%	1.137	5.681	0.045	3.933	0.600	36.03%
		6		22	8.111	7.282	0.031	15.409	0.016	52.64%	47.26%	0.20%	0.10%	3.685	7.276	0.040	9.246	0.055	60.01%
		6		23	8.025	8.092	0.033	15.904	0.020	50.46%	50.88%	0.21%	0.13%	3.791	8.089	0.045	9.572	0.092	60.19%
		6		24	7.329	8.092	0.039	15.458	0.035	47.41%	52.35%	0.26%	0.23%	3.332	8.085	0.047	9.066	0.164	58.65%
		6		25	4.930	6.899	0.025	12.127	0.166	40.65%	56.89%	0.21%	1.37%	2.057	6.865	0.041	6.401	0.783	52.78%
	Single Beam V-pol (AG1)	6		128	1.711	1.489	0.009	3.637	0.015	47.05%	40.95%	0.25%	0.42%	0.569	1.477	0.011	1.474	0.061	40.54%
		6		130	2.794	3.156	0.022	7.301	0.033	38.27%	43.22%	0.30%	0.46%	1.081	3.151	0.021	2.697	0.127	36.95%
		6		131	4.279	3.996	0.009	8.413	0.003	50.87%	47.49%	0.11%	0.04%	1.796	3.961	0.011	4.867	0.016	57.84%
		6		132	2.890	3.025	0.021	7.634	0.043	37.85%	39.63%	0.27%	0.56%	0.995	2.999	0.026	3.176	0.169	41.61%
		6		136	3.566	3.669	0.015	7.755	0.017	45.99%	47.31%	0.19%	0.22%	1.478	3.660	0.013	3.832	0.079	49.42%
		6		137	3.767	3.632	0.013	8.177	0.024	46.08%	44.41%	0.16%	0.29%	1.459	3.594	0.016	4.296	0.097	52.54%
		6		140	4.062	4.794	0.032	9.761	0.077	41.61%	49.12%	0.33%	0.79%	1.710	4.773	0.046	4.037	0.258	41.36%
		6		141	6.972	6.246	0.040	13.065	0.020	53.36%	47.81%	0.31%	0.15%	3.339	6.223	0.058	7.552	0.065	57.81%
		6		142	8.156	6.798	0.031	14.806	0.010	55.08%	45.91%	0.21%	0.07%	3.902	6.760	0.043	8.851	0.044	59.78%
		6		143	8.030	6.676	0.036	14.779	0.013	54.33%	45.17%	0.24%	0.09%	3.645	6.637	0.044	8.701	0.071	58.87%
		6		144	5.813	4.710	0.064	11.659	0.097	49.86%	40.40%	0.55%	0.83%	2.215	4.696	0.079	5.890	0.370	50.52%
		6		150	5.831	5.620	0.041	11.275	0.024	51.72%	49.84%	0.37%	0.21%	2.785	5.598	0.056	6.368	0.123	56.48%
		6		151	8.047	6.896	0.033	14.870	0.014	54.11%	46.38%	0.22%	0.09%	3.802	6.866	0.046	8.708	0.054	58.56%
		6		152	8.289	6.883	0.030	14.920	0.014	55.55%	46.13%	0.20%	0.09%	3.875	6.843	0.042	8.985	0.063	60.22%
		6		153	6.974	5.608	0.051	13.423	0.037	51.96%	41.78%	0.38%	0.28%	3.062	5.581	0.066	7.373	0.163	54.93%
	Beam Pair (AG0+AG1)	6	0	128	2.254	2.205	0.016	4.941	0.043	45.62%	44.62%	0.31%	0.87%	0.929	2.188	0.021	2.444	0.163	49.46%
		6	2	130	9.134	9.047	0.043	16.392	0.075	55.72%	55.19%	0.26%	0.46%	3.741	9.012	0.041	7.576	0.276	46.22%
		6	3	131	9.788	10.004	0.036	17.115	0.037	57.19%	58.45%	0.21%	0.22%	4.321	9.946	0.051	9.955	0.167	58.16%
		6	4	132	6.690	7.220	0.064	16.054	0.159	41.67%	44.97%	0.40%	0.99%	2.309	7.184	0.082	6.587	0.586	41.03%
		6	8	136	10.183	9.493	0.033	16.847	0.027	60.45%	56.35%	0.19%	0.16%	4.422	9.448	0.038	9.135	0.171	54.22%
		6	9	137	8.020	8.833	0.054	16.746	0.112	47.90%	52.75%	0.32%	0.67%	3.375	8.776	0.070	8.917	0.442	53.25%
		6	12	140	13.196	15.015	0.076	26.684	0.145	49.45%	56.27%	0.28%	0.54%	5.728	14.993	0.101	12.924	0.672	48.43%
		6	13	141	18.644	14.819	0.091	30.634	0.031	60.86%	48.38%	0.30%	0.10%	9.273	14.795	0.123	17.905	0.135	58.45%
		6	14	142	19.271	17.622	0.104	31.838	0.040	60.53%	55.35%	0.33%	0.13%	9.580	17.593	0.136	19.281	0.163	60.56%
		6	15	143	16.739	16.707	0.086	29.849	0.151	56.08%	55.97%	0.29%	0.50%	7.937	16.628	0.103	17.730	0.685	59.40%
		6	16	144	11.917	14.407	0.122	27.832	0.362	42.82%	51.76%	0.44%	1.30%	3.944	14.366	0.146	12.440	1.433	44.70%
		6	22	150	16.516	15.253	0.089	26.882	0.043	61.44%	56.74%	0.33%	0.16%	8.128	15.220	0.116	16.093	0.185	59.87%
		6	23	151	18.710	16.465	0.088	31.364	0.040	59.65%	52.50%	0.28%	0.13%	9.338	16.429	0.122	18.612	0.155	59.34%
		6	24	152	18.773	17.165	0.095	31.188	0.078	60.19%	55.04%	0.30%	0.25%	9.153	17.115	0.115	18.572	0.362	59.55%
		6	25	153	12.824	16.206	0.135	28.969	0.257	44.27%	55.94%	0.47%	0.89%	5.927	16.129	0.165	16.253	1.158	56.10%

Table 5. PD of mmWave Ant 2 patch antenna (39GHz – n260)

Low Channel

PD Simulation(W/m^2) Limit = 10 W/m^2		Operating Target Tx Power			L-channel														
					2 mm					55.46%	59.47%	0.51%	0.81%	10 mm					68.37%
					S1	S2	S3	S4	S5					S1	S2	S3	S4	S5	10mm/2mm
	SISO/MIMO & Polarization	Power setting (dBm)	Beam ID		Front	Back	Left	Right	Top	Front/wrost-case	Back/wrost-case	Right/wrost-case	Top/wrost-case	Front	Back	Left	Right	Top	S4
mmWave Ant2 /n260	Single Beam H-pol (AG0)	6		0	1.770	1.309	0.005	3.900	0.008	45.37%	33.57%	0.13%	0.20%	0.589	1.311	0.007	1.791	0.031	45.93%
		6		2	3.415	3.571	0.016	8.792	0.023	38.84%	40.61%	0.18%	0.26%	1.337	3.578	0.018	3.269	0.184	37.18%
		6		3	2.658	2.660	0.007	5.770	0.015	46.07%	46.11%	0.12%	0.26%	1.173	2.678	0.014	3.350	0.066	58.07%
		6		4	2.723	2.433	0.008	7.164	0.018	38.00%	33.95%	0.12%	0.25%	1.057	2.447	0.012	2.795	0.101	39.02%
		6		8	2.760	2.557	0.010	6.709	0.030	41.14%	38.11%	0.14%	0.44%	1.132	2.573	0.010	3.294	0.122	49.09%
		6		9	2.593	2.380	0.007	6.378	0.004	40.65%	37.32%	0.12%	0.06%	1.056	2.397	0.021	2.970	0.023	46.56%
		6		12	4.868	6.055	0.033	12.789	0.024	38.06%	47.35%	0.26%	0.18%	1.896	6.087	0.040	5.521	0.248	43.17%
		6		13	5.228	5.051	0.023	11.505	0.060	45.44%	43.90%	0.20%	0.53%	2.210	5.070	0.026	5.923	0.331	51.48%
		6		14	4.379	4.855	0.028	9.715	0.029	45.08%	49.97%	0.29%	0.30%	1.837	4.880	0.033	5.855	0.089	60.26%
		6		15	4.974	5.464	0.017	11.067	0.012	44.94%	49.37%	0.16%	0.11%	1.901	5.498	0.022	6.514	0.057	58.86%
		6		16	4.457	6.760	0.037	12.400	0.056	35.95%	54.52%	0.29%	0.45%	1.352	6.787	0.043	5.791	0.347	46.70%
		6		22	5.585	5.307	0.029	12.560	0.072	44.47%	42.25%	0.23%	0.57%	2.464	5.326	0.030	5.985	0.506	47.65%
		6		23	4.758	5.307	0.034	10.939	0.048	43.49%	48.51%	0.31%	0.44%	2.010	5.336	0.042	6.287	0.217	57.47%
		6		24	4.732	4.821	0.027	10.229	0.007	46.26%	47.13%	0.27%	0.07%	1.956	4.848	0.038	6.103	0.031	59.67%
		6		25	4.514	6.071	0.031	11.404	0.022	39.59%	53.23%	0.27%	0.19%	1.561	6.108	0.038	6.325	0.086	55.46%
	Single Beam V-pol (AG1)	6		128	1.249	1.313	0.009	3.243	0.013	38.50%	40.47%	0.28%	0.39%	0.427	1.322	0.013	1.325	0.052	40.86%
		6		130	2.405	2.120	0.012	5.744	0.020	41.86%	36.90%	0.21%	0.34%	0.843	2.140	0.010	2.029	0.109	35.33%
		6		131	2.359	2.633	0.025	5.143	0.025	45.88%	51.20%	0.49%	0.48%	1.044	2.643	0.034	2.876	0.110	55.92%
		6		132	2.540	3.274	0.014	7.851	0.008	32.35%	41.70%	0.18%	0.10%	0.876	3.279	0.018	2.579	0.068	32.85%
		6		136	2.744	2.798	0.011	6.733	0.013	40.76%	41.55%	0.16%	0.20%	1.149	2.811	0.020	3.261	0.074	48.42%
		6		137	2.426	2.981	0.013	6.920	0.035	35.05%	43.08%	0.19%	0.51%	0.990	3.000	0.020	3.333	0.131	48.17%
		6		140	4.531	4.979	0.026	10.597	0.037	42.76%	46.99%	0.25%	0.35%	1.900	5.010	0.040	5.303	0.282	50.04%
		6		141	4.787	4.594	0.020	10.050	0.008	47.63%	45.71%	0.20%	0.08%	2.186	4.633	0.035	5.726	0.082	56.97%
		6		142	4.847	4.190	0.036	8.740	0.033	55.46%	47.94%	0.41%	0.38%	2.304	4.243	0.048	5.976	0.170	68.37%
		6		143	4.654	4.922	0.022	10.865	0.088	42.84%	45.30%	0.20%	0.81%	1.912	4.950	0.033	6.136	0.257	56.47%
		6		144	4.693	5.095	0.022	12.365	0.020	37.95%	41.21%	0.18%	0.16%	1.926	5.117	0.028	5.900	0.075	47.72%
		6		150	5.544	5.094	0.014	12.189	0.014	45.48%	41.79%	0.12%	0.12%	2.500	5.085	0.028	5.517	0.093	45.26%
		6		151	4.305	4.325	0.040	8.904	0.035	48.35%	48.57%	0.45%	0.39%	1.858	4.347	0.049	5.521	0.105	62.01%
		6		152	5.211	4.473	0.030	9.611	0.045	54.22%	46.54%	0.31%	0.47%	2.387	4.525	0.039	6.371	0.183	66.28%
		6		153	4.182	5.828	0.029	12.487	0.049	33.49%	46.67%	0.23%	0.39%	1.494	5.844	0.037	5.664	0.277	45.36%
	Beam Pair (AG0+AG1)	6	0	128	3.024	2.843	0.017	7.324	0.030	41.28%	38.81%	0.23%	0.40%	1.015	2.846	0.024	3.499	0.121	47.77%
		6	2	130	5.916	7.637	0.038	15.328	0.053	38.60%	49.82%	0.25%	0.35%	2.301	7.660	0.039	5.686	0.463	37.09%
		6	3	131	5.924	5.923	0.035	11.662	0.057	50.80%	50.79%	0.30%	0.49%	2.724	5.966	0.049	6.809	0.256	58.39%
		6	4	132	6.120	7.751	0.027	16.285	0.031	37.58%	47.59%	0.17%	0.19%	2.106	7.732	0.049	6.749	0.235	41.44%
		6	8	137	5.817	7.245	0.028	15.104	0.086	38.52%	47.97%	0.18%	0.57%	2.294	7.290	0.033	7.999	0.356	52.96%
		6	9	136	6.015	6.036	0.028	13.950	0.023	43.12%	43.27%	0.20%	0.16%	2.757	6.072	0.064	7.044	0.161	50.50%
		6	12	144	11.202	13.125	0.052	26.612	0.043	42.09%	49.32%	0.20%	0.16%	4.454	13.134	0.104	12.902	0.409	48.48%
		6	13	143	11.083	11.525	0.075	24.417	0.184	45.39%	47.20%	0.31%	0.75%	4.884	11.612	0.096	12.951	0.711	53.04%
		6	14	142	10.090	9.787	0.098	18.993	0.087	53.12%	51.53%	0.51%	0.46%	4.735	9.894	0.126	12.453	0.394	65.56%
		6	15	141	10.443	12.063	0.065	22.172	0.028	47.10%	54.40%	0.29%	0.13%	4.605	12.101	0.085	12.599	0.155	56.82%
		6	16	140	10.644	16.541	0.074	27.814	0.124	38.27%	59.47%	0.27%	0.45%	4.063	16.639	0.088	13.048	1.079	46.91%
		6	22	153	11.514	14.807	0.089	28.847	0.168	39.91%	51.33%	0.31%	0.58%	4.819	14.855	0.068	13.547	1.048	46.96%
		6	23	152	10.222	10.586	0.104	21.326	0.146	47.93%	49.64%	0.49%	0.68%	4.641	10.689	0.130	12.895	0.666	60.47%
		6	24	151	9.540	9.449	0.085	19.759	0.054	48.28%	47.82%	0.43%	0.28%	4.091	9.533	0.106	12.105	0.195	61.26%
		6	25	150	10.480	15.016	0.060	26.052	0.058	40.23%	57.64%	0.23%	0.22%	4.502	15.030	0.090	12.547	0.310	48.16%

Mid Channel

PD Simulation(W/m^2) Limit = 10 W/m^2		Operating Target Tx Power			M-channel														
					2 mm					59.31%	62.68%	0.48%	0.69%	10 mm					64.41%
					S1	S2	S3	S4	S5					S1	S2	S3	S4	S5	10mm/2mm
	SISO/MIMO & Polarization	Power setting (dBm)	Beam ID		Front	Back	Left	Right	Top	Front/wrost-case	Back/wrost-case	Right/wrost-case	Top/wrost-case	Front	Back	Left	Right	Top	S4
mmWave Ant2 /n260	Single Beam H-pol (AG0)	6		0	2.146	1.882	0.007	5.170	0.005	41.51%	36.41%	0.13%	0.10%	0.771	1.884	0.009	2.443	0.041	47.26%
		6		2	3.974	3.950	0.013	10.220	0.024	38.89%	38.65%	0.13%	0.24%	1.478	3.919	0.038	3.966	0.238	38.80%
		6		3	3.512	3.061	0.012	7.261	0.013	48.37%	42.16%	0.16%	0.18%	1.582	3.079	0.014	4.109	0.050	56.60%
		6		4	3.558	3.258	0.007	9.400	0.015	37.85%	34.66%	0.07%	0.16%	1.373	3.257	0.011	3.824	0.147	40.67%
		6		8	3.558	3.554	0.007	8.807	0.022	40.40%	40.36%	0.08%	0.25%	1.532	3.578	0.009	4.521	0.135	51.34%
		6		9	3.480	2.797	0.009	8.188	0.007	42.50%	34.16%	0.11%	0.08%	1.408	2.797	0.022	3.645	0.049	44.52%
		6		12	5.918	6.815	0.026	15.350	0.020	38.56%	44.40%	0.17%	0.13%	2.250	6.800	0.071	6.723	0.289	43.80%
		6		13	6.780	6.706	0.032	14.647	0.075	46.29%	45.78%	0.22%	0.51%	2.902	6.727	0.041	7.834	0.455	53.48%
		6		14	5.500	6.244	0.018	13.039	0.044	42.18%	47.89%	0.14%	0.34%	2.325	6.280	0.049	7.210	0.139	55.30%
		6		15	7.033	7.335	0.031	15.487	0.012	45.41%	47.36%	0.20%	0.08%	2.710	7.304	0.039	8.873	0.089	57.30%
		6		16	5.259	8.616	0.034	15.694	0.062	33.51%	54.90%	0.22%	0.39%	1.705	8.576	0.036	7.730	0.434	49.26%
		6		22	6.834	7.152	0.025	15.274	0.095	44.74%	46.83%	0.17%	0.62%	3.062	7.167	0.032	7.833	0.659	51.28%
		6		23	6.156	6.771	0.033	13.885	0.054	44.33%	48.76%	0.24%	0.39%	2.652	6.807	0.044	7.880	0.142	56.75%
		6		24	6.372	5.968	0.031	13.802	0.018	46.17%	43.24%	0.22%	0.13%	2.609	5.975	0.040	7.644	0.067	55.38%
		6		25	6.524	6.909	0.028	15.864	0.028	41.12%	43.56%	0.17%	0.18%	2.255	7.872	0.030	8.928	0.122	56.28%
	Single Beam V-pol (AG1)	6		128	1.669	1.847	0.010	4.527	0.012	36.87%	40.81%	0.23%	0.26%	0.534	1.851	0.013	1.933	0.047	42.71%
		6		130	2.971	2.698	0.012	7.954	0.027	37.35%	33.93%	0.16%	0.34%	1.091	2.693	0.008	2.966	0.104	37.29%
		6		131	3.118	3.449	0.036	7.350	0.030	42.42%	46.92%	0.48%	0.41%	1.322	3.455	0.046	4.029	0.142	54.81%
		6		132	3.297	4.302	0.016	9.816	0.007	33.58%	43.82%	0.17%	0.07%	1.157	4.318	0.019	3.715	0.057	37.85%
		6		136	3.922	3.758	0.017	9.088	0.024	43.16%	41.35%	0.19%	0.27%	1.581	3.765	0.014	4.541	0.125	49.97%
		6		137	3.107	4.514	0.019	9.294	0.030	33.43%	48.57%	0.21%	0.33%	1.307	4.522	0.022	4.471	0.141	48.11%
		6		140	5.934	6.660	0.040	14.187	0.050	41.83%	46.94%	0.28%	0.35%	2.412	6.673	0.028	7.026	0.340	49.52%
		6		141	7.416	6.176	0.029	14.811	0.012	50.07%	41.70%	0.20%	0.08%	3.391	6.191	0.039	8.496	0.052	57.36%
		6		142	6.180	5.822	0.038	12.430	0.048	49.72%	46.84%	0.30%	0.39%	2.891	5.818	0.046	7.844	0.268	63.10%
		6		143	5.683	7.322	0.035	14.153	0.080	40.16%	51.73%	0.25%	0.57%	2.298	7.354	0.042	7.796	0.234	55.08%
		6		144	5.824	6.260	0.032	15.161	0.025	38.41%	41.29%	0.21%	0.17%	2.360	6.307	0.039	6.817	0.113	44.96%
		6		150	7.938	6.038	0.027	15.313	0.018	51.84%	39.43%	0.18%	0.12%	3.129	6.031	0.022	7.402	0.105	48.34%
		6		151	5.623	5.867	0.038	12.225	0.057	46.00%	48.00%	0.31%	0.47%	2.326	5.879	0.042	7.304	0.203	59.75%
		6		152	7.268	6.398	0.049	13.988	0.051	51.96%	45.74%	0.35%	0.36%	3.304	6.430	0.062	8.686	0.161	62.09%
		6		153	4.792	7.414	0.033	14.927	0.050	32.11%	49.67%	0.22%	0.34%	1.682	7.420	0.029	7.041	0.284	47.17%
	Beam Pair (AG0+AG1)	6	0	128	4.008	4.090	0.022	9.263	0.028	43.27%	44.15%	0.23%	0.30%	1.298	4.106	0.027	4.918	0.117	53.09%
		6	2	130	7.333	7.898	0.032	18.808	0.083	38.99%	41.99%	0.17%	0.44%	2.743	7.831	0.053	7.650	0.515	40.67%
		6	3	131	9.584	8.837	0.070	16.159	0.057	59.31%	54.69%	0.43%	0.36%	4.447	8.898	0.093	10.002	0.303	61.90%
		6	4	132	9.463	10.126	0.032	20.332	0.035	46.54%	49.80%	0.16%	0.17%	3.156	10.186	0.043	8.675	0.325	42.66%
		6	8	137	9.176	11.141	0.034	19.273	0.091	47.61%	57.80%	0.18%	0.47%	3.928	11.195	0.039	10.056	0.409	52.18%
		6	9	136	8.432	7.870	0.033	18.031	0.036	46.77%	43.65%	0.18%	0.20%	3.801	7.870	0.057	9.795	0.232	54.32%
		6	12	144	12.894	17.307	0.074	31.674	0.055	40.71%	54.64%	0.23%	0.18%	5.165	17.409	0.164	14.380	0.550	45.40%
		6	13	143	14.938	17.961	0.113	30.910	0.193	48.33%	58.11%	0.37%	0.62%	6.713	18.045	0.132	17.000	0.860	55.00%
		6	14	142	13.326	13.924	0.077	26.852	0.141	49.63%	51.85%	0.29%	0.52%	6.205	13.963	0.090	16.751	0.680	62.38%
		6	15	141	15.930	16.956	0.099	31.845	0.038	50.02%	53.25%	0.31%	0.12%	7.384	16.943	0.134	17.633	0.170	55.37%
		6	16	140	12.412	22.173	0.107	35.373	0.191	35.09%	62.68%	0.30%	0.54%	4.714	22.183	0.077	16.469	1.333	46.56%
		6	22	153	13.119	19.991	0.088	32.449	0.223	40.43%	61.61%	0.27%	0.69%	5.928	20.066	0.078	15.999	1.068	49.31%
		6	23	152	15.758	15.928	0.139	29.239	0.097	53.89%	54.48%	0.47%	0.33%	7.314	16.019	0.175	18.833	0.436	64.41%
		6	24	151	13.155	13.776	0.087	26.508	0.101	49.63%	51.97%	0.33%	0.38%	5.814	13.854	0.116	16.139	0.392	60.88%
		6	25	150	14.389	16.952	0.080	33.727	0.078	42.66%	50.26%	0.24%	0.23%	5.856	16.881	0.084	18.045	0.343	53.50%

High Channel

PD Simulation(W/m^2) Limit = 10 W/m^2		Operating Target Tx Power			H-channel														
					2 mm					63.59%	67.75%	0.47%	0.73%	10 mm					67.94%
					S1	S2	S3	S4	S5					S1	S2	S3	S4	S5	10mm/2mm
	SISO/MIMO & Polarization	Power setting (dBm)	Beam ID		Front	Back	Left	Right	Top	Front/wrost-case	Back/wrost-case	Right/wrost-case	Top/wrost-case	Front	Back	Left	Right	Top	S4
mmWave Ant2 /n260	Single Beam H-pol (AG0)	6		0	2.274	2.011	0.004	5.550	0.008	40.96%	36.23%	0.08%	0.15%	0.790	2.006	0.009	2.467	0.045	36.14%
		6		2	4.012	3.844	0.015	10.236	0.027	39.20%	37.55%	0.15%	0.27%	1.408	3.839	0.024	4.287	0.216	37.50%
		6		3	3.424	3.145	0.015	7.668	0.013	44.65%	41.02%	0.20%	0.18%	1.418	3.130	0.020	3.815	0.066	40.82%
		6		4	3.437	4.233	0.006	10.035	0.022	34.25%	42.19%	0.06%	0.22%	1.302	4.255	0.011	4.212	0.130	42.40%
		6		8	3.540	4.081	0.006	8.636	0.027	40.99%	47.25%	0.07%	0.31%	1.468	4.067	0.008	4.499	0.124	47.10%
		6		9	3.333	3.508	0.011	9.192	0.007	36.26%	38.16%	0.12%	0.08%	1.268	3.524	0.026	3.407	0.030	38.34%
		6		12	5.843	7.665	0.025	15.785	0.020	37.01%	48.56%	0.16%	0.13%	2.167	7.666	0.070	7.701	0.270	48.57%
		6		13	6.834	7.427	0.024	15.403	0.090	44.37%	48.22%	0.16%	0.58%	2.813	7.407	0.035	8.461	0.372	48.09%
		6		14	5.789	7.043	0.023	14.749	0.057	39.25%	47.75%	0.16%	0.38%	2.359	7.034	0.050	7.430	0.200	47.69%
		6		15	6.067	8.342	0.027	16.058	0.019	37.78%	51.95%	0.17%	0.12%	2.133	8.346	0.035	8.375	0.112	51.97%
		6		16	5.316	8.401	0.023	16.171	0.045	32.87%	51.95%	0.14%	0.28%	1.741	8.365	0.038	7.753	0.371	51.73%
		6		22	6.604	7.404	0.026	15.444	0.090	42.76%	47.94%	0.17%	0.58%	2.761	7.402	0.043	8.115	0.540	47.93%
		6		23	6.604	6.766	0.031	14.455	0.062	45.68%	46.81%	0.21%	0.43%	2.766	6.698	0.033	7.925	0.154	46.34%
		6		24	5.647	8.421	0.039	15.622	0.032	36.15%	53.91%	0.25%	0.20%	2.281	8.446	0.053	7.663	0.096	54.07%
		6		25	5.753	8.557	0.029	16.161	0.031	35.60%	52.95%	0.18%	0.19%	1.867	8.541	0.035	8.656	0.151	52.85%
	Single Beam V-pol (AG1)	6		128	2.117	1.920	0.013	4.908	0.009	43.14%	39.13%	0.27%	0.19%	0.698	1.909	0.018	2.328	0.042	38.89%
		6		130	3.045	3.172	0.009	9.208	0.027	33.07%	34.45%	0.10%	0.30%	1.082	3.180	0.005	3.427	0.131	34.53%
		6		131	3.948	3.694	0.036	8.206	0.032	48.12%	45.02%	0.44%	0.39%	1.742	3.698	0.046	4.924	0.154	45.07%
		6		132	3.653	4.481	0.020	9.866	0.007	37.03%	45.41%	0.20%	0.07%	1.292	4.495	0.027	4.057	0.085	45.56%
		6		136	4.188	3.602	0.014	9.244	0.027	45.31%	38.96%	0.15%	0.29%	1.634	3.610	0.014	4.626	0.145	39.05%
		6		137	3.352	4.864	0.024	9.337	0.022	35.90%	52.09%	0.26%	0.23%	1.364	4.868	0.029	4.653	0.104	52.14%
		6		140	6.464	6.454	0.036	15.162	0.035	42.64%	42.57%	0.24%	0.23%	2.576	6.458	0.023	7.807	0.255	42.59%
		6		141	7.679	6.093	0.030	15.120	0.020	50.79%	40.29%	0.20%	0.14%	3.461	6.079	0.039	8.652	0.136	40.21%
		6		142	6.222	6.591	0.047	13.449	0.048	46.26%	49.01%	0.35%	0.36%	2.722	6.607	0.059	8.062	0.254	49.12%
		6		143	5.222	7.474	0.032	14.495	0.064	36.03%	51.56%	0.22%	0.44%	2.036	7.474	0.038	7.867	0.370	51.57%
		6		144	4.806	6.136	0.030	14.493	0.024	33.16%	42.34%	0.21%	0.16%	1.780	6.155	0.040	5.843	0.163	42.47%
		6		150	6.800	5.931	0.022	14.919	0.009	45.58%	39.76%	0.15%	0.06%	2.936	5.946	0.030	7.623	0.057	39.86%
		6		151	6.750	5.761	0.035	13.561	0.060	49.78%	42.48%	0.26%	0.44%	2.842	5.799	0.042	8.207	0.232	42.77%
		6		152	6.189	7.054	0.058	13.778	0.062	44.92%	51.20%	0.42%	0.45%	2.679	7.057	0.072	8.062	0.173	51.22%
		6		153	5.127	6.998	0.024	15.104	0.030	33.95%	46.33%	0.16%	0.20%	2.096	7.034	0.024	6.779	0.359	46.57%
	Beam Pair (AG0+AG1)	6	0	128	4.245	4.251	0.028	9.821	0.032	43.22%	43.29%	0.29%	0.32%	1.536	4.220	0.039	5.370	0.133	42.96%
		6	2	130	8.435	8.682	0.021	19.874	0.086	42.44%	43.69%	0.11%	0.44%	2.693	8.701	0.051	8.580	0.549	43.78%
		6	3	131	11.130	9.968	0.083	17.504	0.070	63.59%	56.94%	0.47%	0.40%	5.038	9.942	0.111	11.225	0.372	56.80%
		6	4	132	10.061	12.101	0.036	21.199	0.047	47.46%	57.08%	0.17%	0.22%	3.235	12.150	0.047	9.211	0.359	57.31%
		6	8	137	10.176	13.097	0.038	19.331	0.077	52.64%	67.75%	0.20%	0.40%	4.240	13.133	0.046	11.023	0.407	67.94%
		6	9	136	8.946	8.415	0.028	18.471	0.052	48.43%	45.56%	0.15%	0.28%	3.629	8.429	0.051	9.877	0.249	45.63%
		6	12	144	12.401	17.674	0.097	33.027	0.056	37.55%	53.51%	0.29%	0.17%	4.801	17.636	0.121	14.150	0.512	53.40%
		6	13	143	15.367	18.825	0.082	30.854	0.225	49.80%	61.01%	0.27%	0.73%	6.650	18.774	0.100	17.637	0.736	60.85%
		6	14	142	14.932	17.072	0.108	28.734	0.137	51.97%	59.41%	0.37%	0.48%	6.381	17.077	0.135	17.979	0.649	59.43%
		6	15	141	15.415	17.740	0.082	32.232	0.049	47.83%	55.04%	0.25%	0.15%	6.805	17.720	0.103	18.070	0.367	55.00%
		6	16	140	14.048	21.050	0.091	32.999	0.114	42.57%	63.79%	0.28%	0.34%	5.131	20.966	0.085	16.793	0.959	63.54%
		6	22	153	13.395	18.925	0.070	31.319	0.196	42.77%	60.43%	0.22%	0.63%	5.629	18.944	0.102	15.614	0.901	60.49%
		6	23	152	16.230	17.162	0.103	29.560	0.153	54.91%	58.06%	0.35%	0.52%	7.266	17.062	0.132	19.168	0.462	57.72%
		6	24	151	14.916	17.401	0.100	30.479	0.153	48.94%	57.09%	0.33%	0.50%	6.664	17.445	0.133	17.672	0.505	57.24%
		6	25	150	13.356	16.338	0.077	32.855	0.048	40.65%	49.73%	0.23%	0.15%	5.465	16.281	0.096	18.434	0.242	49.55%