

FCC ID: A3LSMG988U

Power Density Simulation Report

Revision A

January 31, 2020

SAMSUNG ELECTRONICS

1. Simulation methodology for Power Density (PD)

1.1 Simulation tool

1.1.1 Tool description

For the simulation approach to calculating power density (PD) evaluation for mobile phone with mmWave antenna modules, ANSYS Electromagnetics suite version 19.3 (HFSS) is used. ANSYS HFSS is one of several commercial tools for 3D full-wave electromagnetic simulation used for antenna and RF structure design of high frequency component. ANSYS Electromagnetics suite version 19.3 (HFSS) is implemented based on Finite Element Method (FEM), which operates in the frequency domain.

1.1.2 Mesh and Convergence criteria

To solve the PD analysis using FEM, volume area containing simulated objects should be subdivided into electrically small parts that are called finite elements as the unknown functions. To subdivide system, the adaptive mesh technique in ANSYS Electromagnetics suite version 19.3 (HFSS) is used. ANSYS Electromagnetics suite version 19.3 (HFSS) starts to refine the initial mesh based on wavelength and calculate the error to iterative process for adaptive mesh refinement. The determination parameter of the number of iteration in ANSYS Electromagnetics suite version 19.3 (HFSS) is defined as convergence criteria, delta S, and the iterative adaptive mesh process repeats until the delta S is met. In ANSYS Electromagnetics suite version 19.3 (HFSS), the accuracy of converged results depends on the delta S. Figure 1 is an example of final adaptive mesh of the device (cross-section of top view).

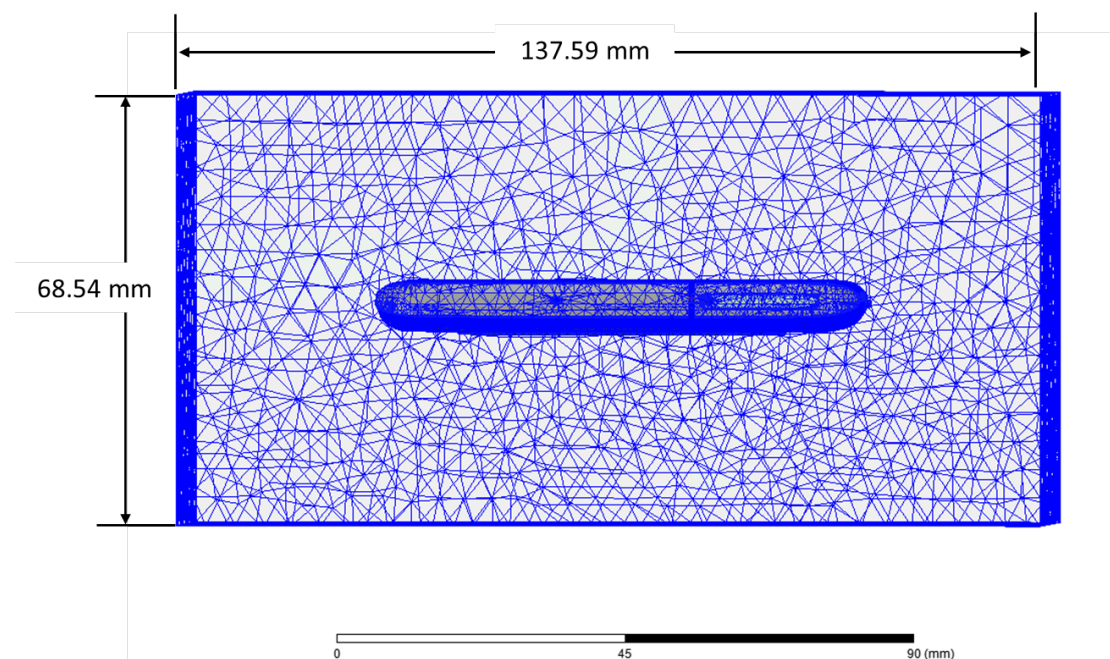


Figure 1 Example of the adaptive mesh technique (Top view)

1.1.3 Power density calculation

After solving 3D full-wave electromagnetic simulation, various kinds of physical quantities can be obtained. To calculate PD evaluation, two physical quantities, an electric field ($\vec{E}$) and a magnetic field ($\vec{H}$) are needed. The actual consumption power can be expressed as the real term of the Poynting vector ($\vec{S}$) from the cross product of $\vec{E}$ and complex conjugation of $\vec{H}$ as shown below:

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

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

From the point power density $\langle \vec{S} \rangle$, the spatial-averaged power density (PD_{av}) on an evaluated area (A) can be derived as shown below:

$$PD_{av} = \frac{1}{A} \int_A \langle \vec{S} \rangle \cdot d\vec{s} = \frac{1}{2A_{av}} \iint_{A_{av}} \| \text{Re}\{E \times H^*\} \| dA$$

, where the spatial-averaged power density (PD_{av}) is total power density value considering on x, y and z components of point power density $\langle \vec{S} \rangle$ and the evaluated area (A) is 4cm^2 .

1.2 Simulation setup

1.2.1 3D modeling

Figure 2 shows the simulation model which is mounted three mmWave antenna modules. The simulation modeling includes most of the entire structure of device itself such as PCB, metal frame, battery, cables, and legacy antennas as well as mmWave antenna modules called as Ant J, Ant K and Ant L. Ant J is placed at the top side and antennas are facing the backside of the device. Ant K is placed on the left side and antennas are facing the left side, and Ant L is placed on the right side and antennas are facing the right side of the device.

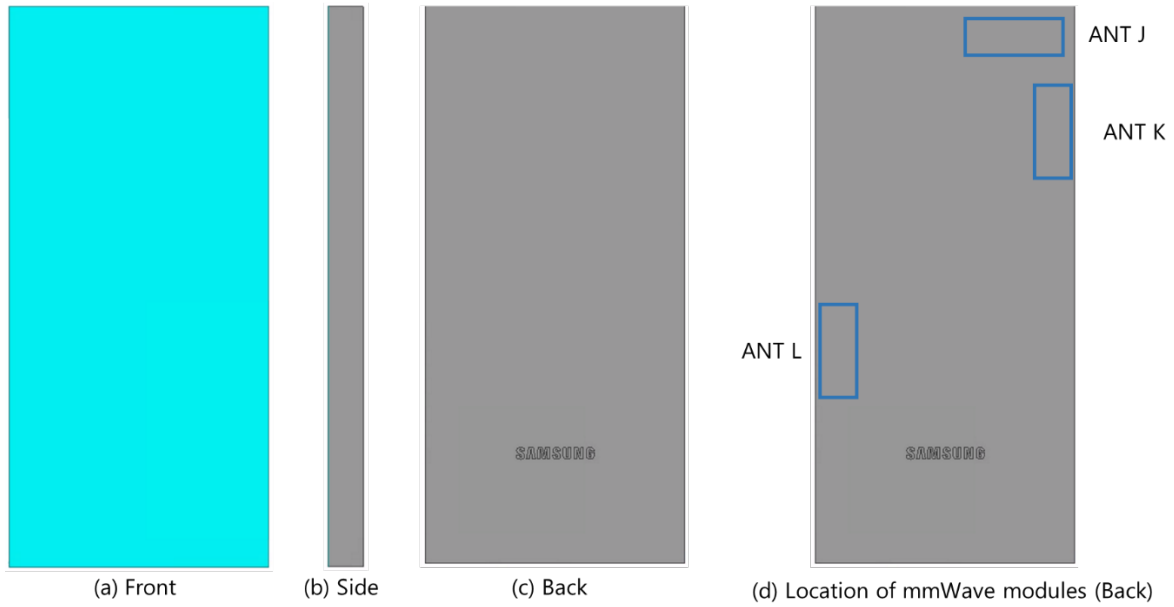


Figure 2 Simulation model which is mounted three mmWave antenna modules

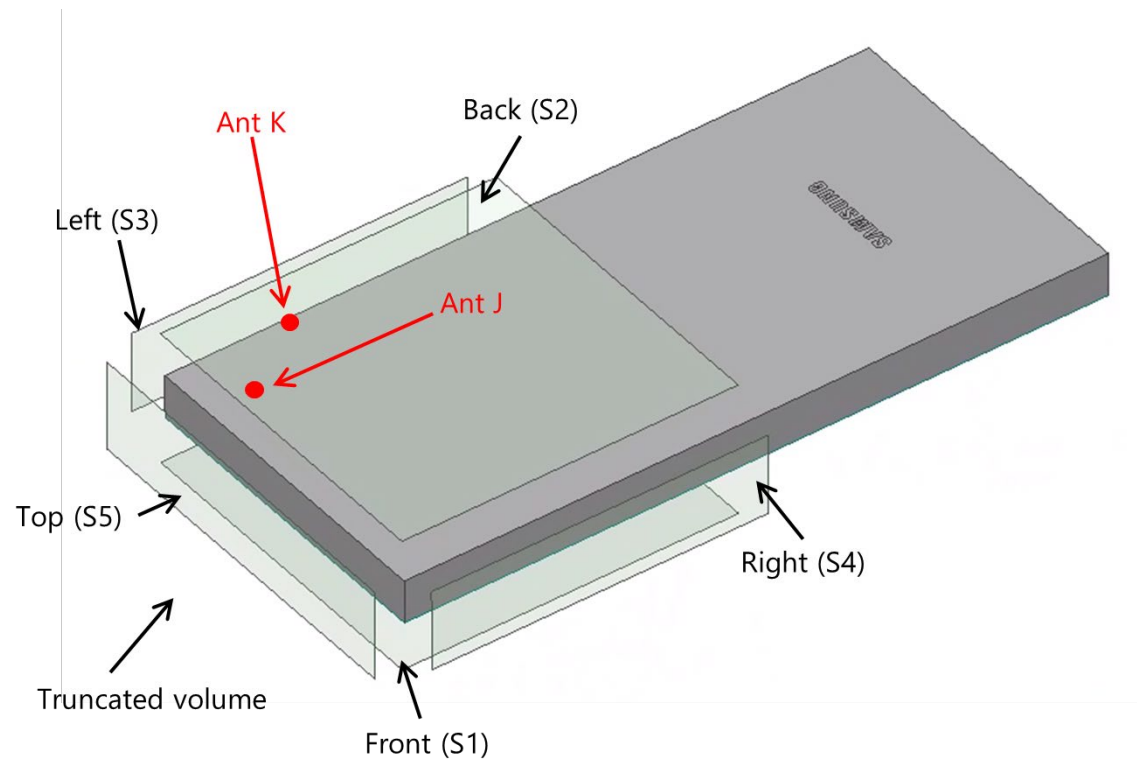
1.2.2 PD evaluation planes

Table 1 shows the PD evaluation planes for each mmWave antenna module and Figure 3 shows the PD evaluation planes and truncation area of the simulation model to find worst case of beamforming cases. In Ant J and Ant K cases, five PD evaluation planes except bottom side are set up. Ant J and Ant K are placed at the upper of the device and the bottom side is excluded from the worst case because the distance from the bottom side is more than 10 lambda at 28GHz and 39 GHz. In Ant L case, five PD evaluation planes except top side are set up, Ant L is placed at the lower of the device and the top side is excluded from the worst case for the same reason as Ant J and Ant K.

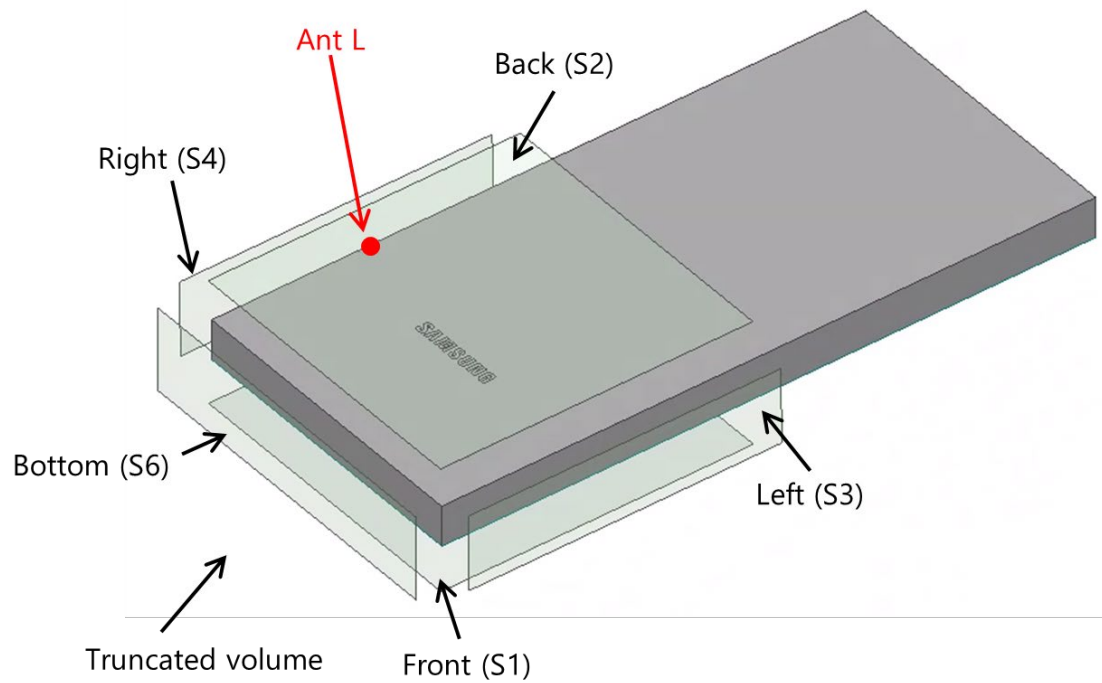
Please note that the “right” and “left” edge of mentioned in this report are defined from the perspective of looking at the device from the front side.

Table 1. PD evaluation planes

	Front	Back	Left From Front View	Right From Front View	Top	Bottom
	S1	S2	S3	S4	S5	S6
Ant J	O	O	O	O	O	X
Ant K	O	O	O	O	O	X
Ant L	O	O	O	O	X	O



(a) Ant J and Ant K



(b) Ant L

Figure 3. PD evaluation planes

1.2.3 Boundary condition

To simulate 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 version 19.3 (HFSS) can support the absorbing boundary condition (ABC) for radiation boundary and make normally 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 number of antenna ports of ANT J, ANT K, and ANT L for source excitation consists of 24, 16, and 16, respectively. The antenna port of ANT J is divided into 8 ports for n261 1 x 4 patch array antennas, 8 ports for n260 1 x 4 patch array antennas and 8 ports for 1 x 4 dipole array antennas. The antenna port of ANT J is divided into 8 ports for 1 x 4 patch array antennas and 8 ports for 1 x 4 dipole array antennas. In the 8 ports included in each patch antenna, 4 ports are divided into vertical polarization feeding, and the other 4 ports are divided into horizontal polarization feeding. The dipole array antennas consist of 4 antenna elements and each element uses two ports as a source excitation. All antenna ports of ANT K and ANT L are for patch array antennas and are similar to those of ANT J.

Figure 4 shows the ANT J module structure and surrounding structure. The ANT J module is encrypted in the ANSYS Electromagnetics suite (HFSS) and can only check the feeding position.

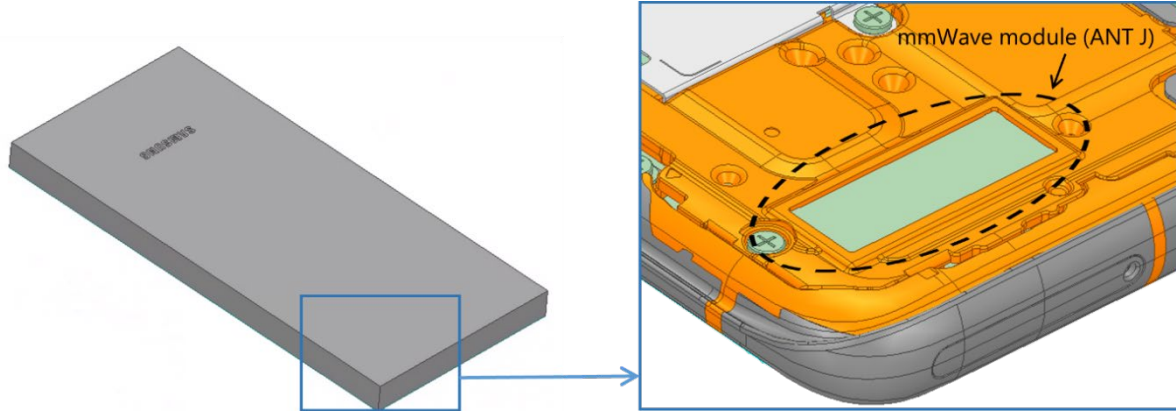


Figure 4. mmWave module (ANT J)

After finishing 3D full wave electromagnetic simulation of modeling structure, the magnitude and phase information can be loaded for each port by using “Edit Sources” function in ANSYS Electromagnetics suite (HFSS). Figure 5 shows an example of antenna port excitations.

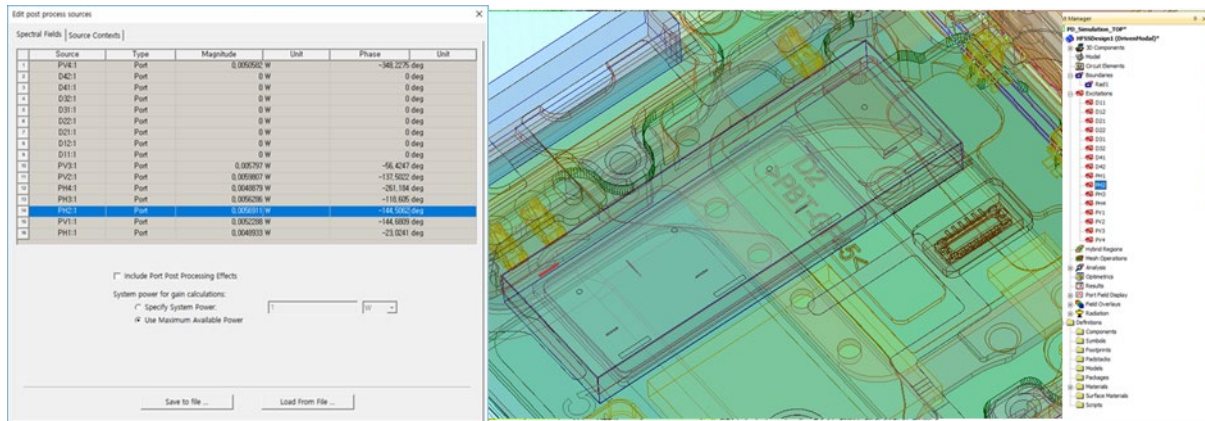


Figure 5. An example of port excitation (ANT J)

Since ANSYS Electromagnetics suite (HFSS) uses FEM solver based on frequency domain analysis method, the input source for the port excitation applies sinusoidal waveform for each frequency.

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. Simulation verification

2.1 Spatial-averaged power density

As mentioned in the previous chapter, the Poynting vector ($\vec{S}$) can be obtained through cross product of an electric field ($\vec{E}$) and complex conjugate of a magnetic field ($\vec{H}$). 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.

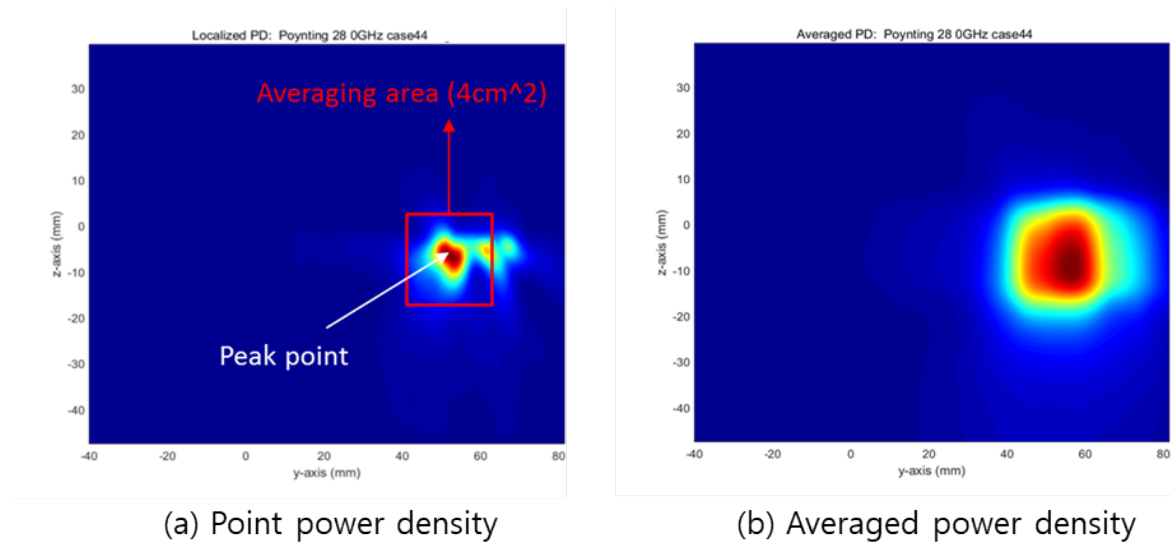


Figure 6. Power density distribution (Example)

2.2 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. The discrepancy in amplitude between simulated 4 cm^2 averaged power density and measured 4 cm^2 averaged power density is considered as housing influence and used in determining input power limit for each beam for RF exposure compliance (see RF Exposure Part 0 Report).

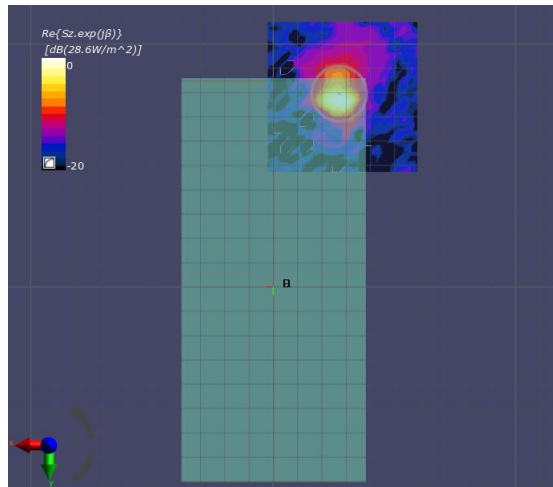
The input powers per each active port are listed below for both Simulation and Measurement validation and power density characterization. For Simulation, these values were entered directly into HFSS model. For measurement, FTM S/W was used to input these values for each active port also.

Mode/Band	Antenna	Input Power (dBm)	
		SISO	MIMO
5G NR n261	J Dipole	6.0	6.0
	J Patch	6.0	6.0
	K Patch	6.0	6.0
	L Patch	6.0	6.0
5G NR n260	J Dipole	6.0	6.0
	J Patch	6.0	6.0
	K Patch	6.0	6.0
	L Patch	6.0	6.0

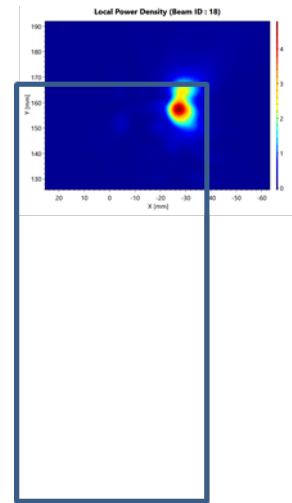
* The below simulation and measurement result were performed at 2mm evaluation distance and 28GHz / 38.5GHz. The *input.power.limit* was determined based on below results in RF Exposure Part 0 Report.

					4cm ² avg. PD (mw/cm ²)	
Band	Beam ID	Antenna	Surface	Channel	Meas.	Sim
n261	18	J (dipole)	Back (S2)	Mid	0.781	1.33
	146		Back (S2)	Mid	0.423	1.00
	25	J (patch)	Back (S2)	Mid	0.736	1.82
	156		Back (S2)	Mid	0.603	1.62
	36	K (patch)	Back (S2)	Mid	0.542	1.30
			Left (S3)	Mid	0.669	1.26
	176		Back (S2)	Mid	0.415	1.40
			Left (S3)	Mid	0.813	1.50
	45	L (patch)	Back (S2)	Mid	0.457	1.42
			Right (S4)	Mid	0.527	1.28
	171		Back (S2)	Mid	0.359	1.42
			Right (S4)	Mid	0.418	1.13
n260	18	J (dipole)	Back (S2)	Mid	0.201	0.704
	136		Back (S2)	Mid	0.294	0.932
	26	J (patch)	Back (S2)	Mid	0.594	1.55
	153		Back (S2)	Mid	0.588	1.54
	49	K (patch)	Back (S2)	Mid	0.511	0.984
			Left (S3)	Mid	0.825	1.62
	165		Back (S2)	Mid	0.493	0.921
			Left (S3)	Mid	1.010	1.64
	33	L (patch)	Back (S2)	Mid	0.432	0.871
			Right (S4)	Mid	0.659	1.52
	160		Back (S2)	Mid	0.614	1.02
			Right (S4)	Mid	1.110	1.65

- n261 ANT J-Dipole: Mid Channel, Beam ID:18, Back

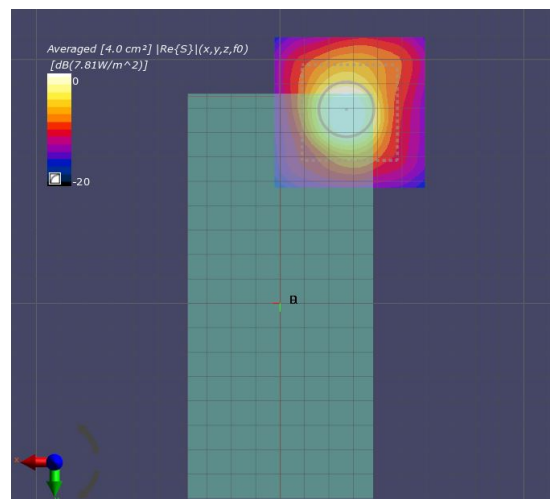


(a) measurement

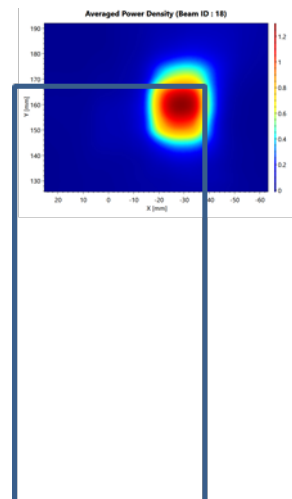


(b) simulation

ANT J Dipole: Mid Channel, Point power density



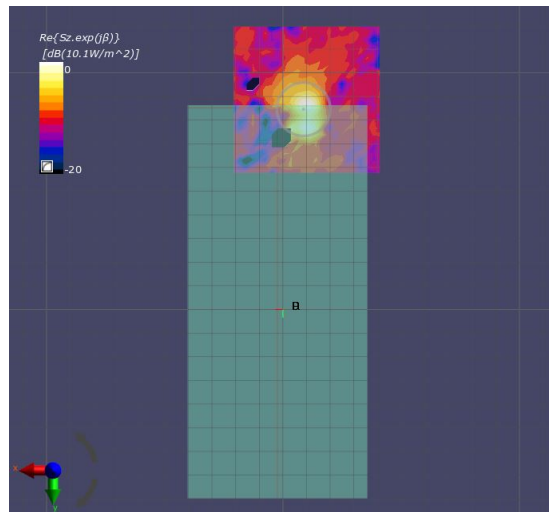
(a) measurement



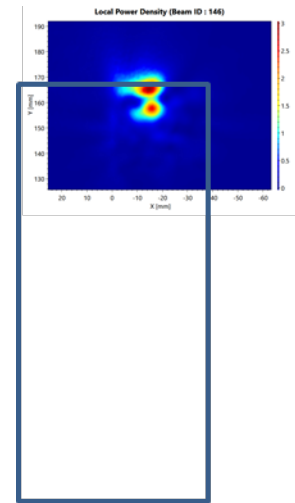
(b) simulation

ANT J Dipole: Mid Channel, 4cm² averaged power density

- n261 ANT J- Dipole : Mid Channel, Beam ID: 146, Back

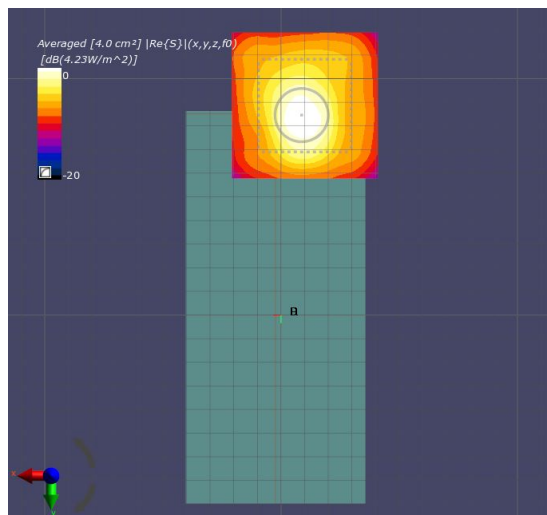


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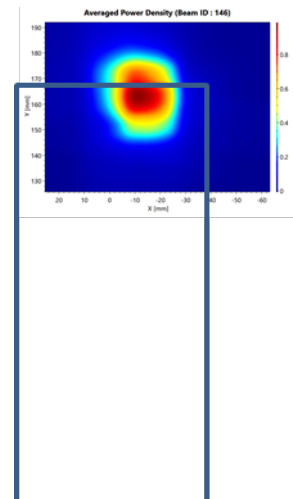


(b) simulation

ANT J- Dipole : Mid Channel, Point power density



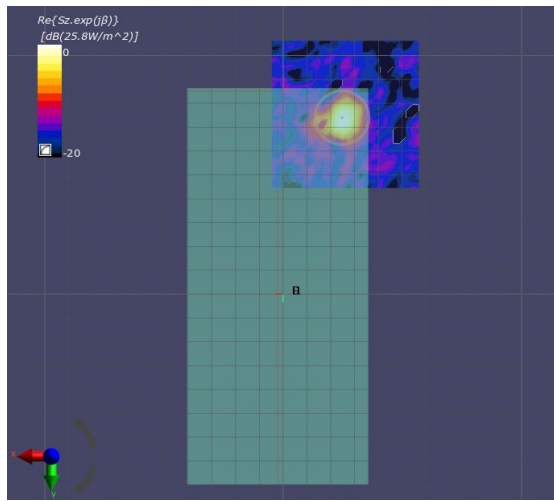
(a) measurement



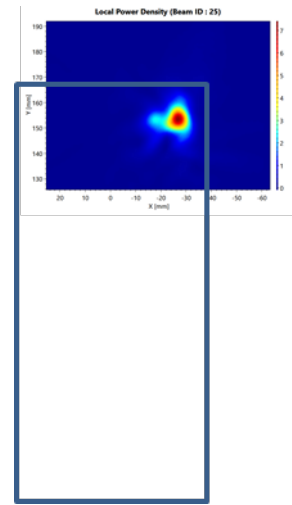
(b) simulation

ANT J- Dipole : Mid Channel, 4cm² averaged power density

- n261 ANT J-Patch: Mid Channel, Beam ID: 25, Back

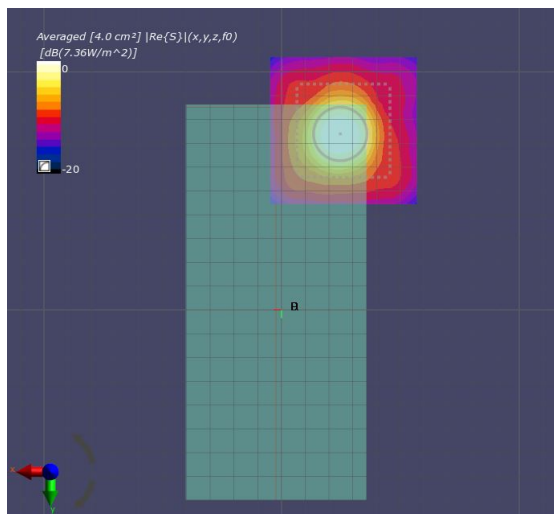


(a) measurement

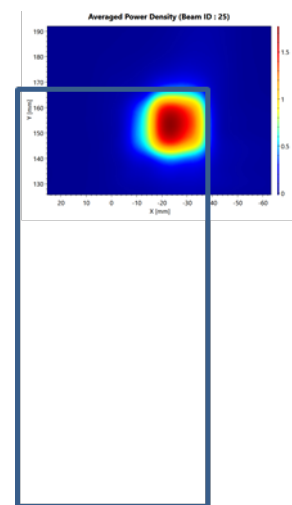


(b) simulation

ANT J-Patch: Mid Channel, Point power density



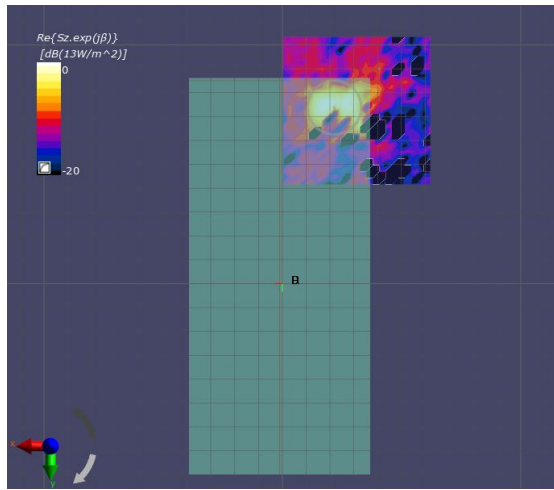
(a) measurement



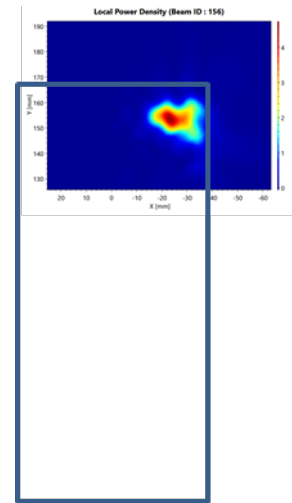
(b) simulation

ANT J-Patch: Mid Channel, 4cm² averaged power density

- n261 ANT J-Patch: Mid Channel, Beam ID : 156, Back

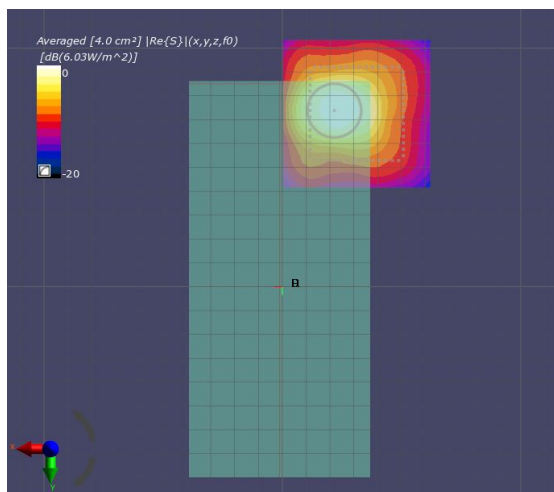


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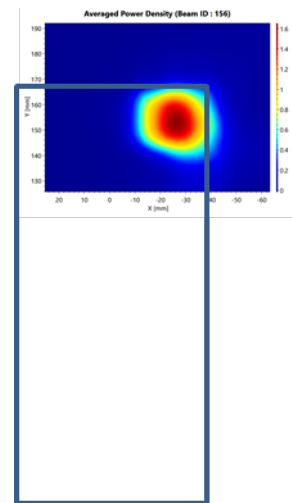


(b) simulation

ANT J-Patch: Mid Channel, Point power density



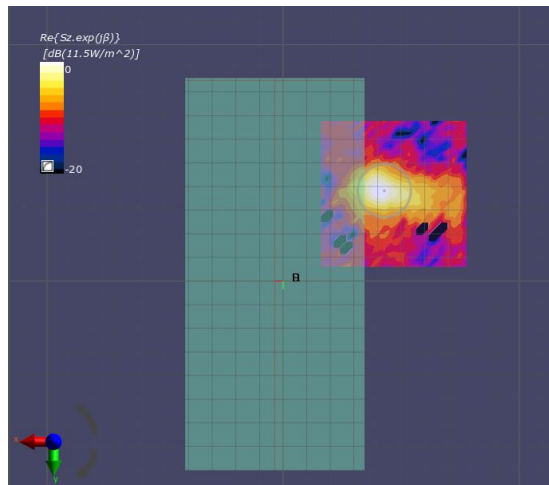
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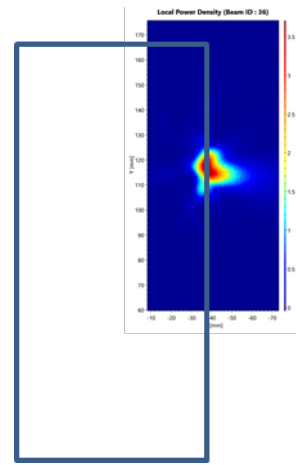
(b) simulation

ANT J-Patch: Mid Channel, 4cm² averaged power density

- n261 ANT K-Patch: Mid Channel, Beam ID 36, Back

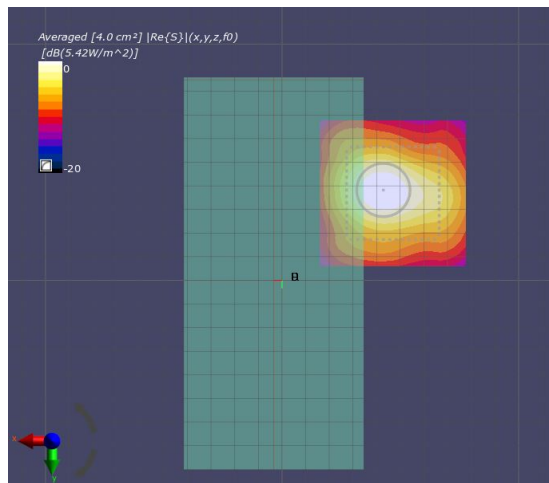


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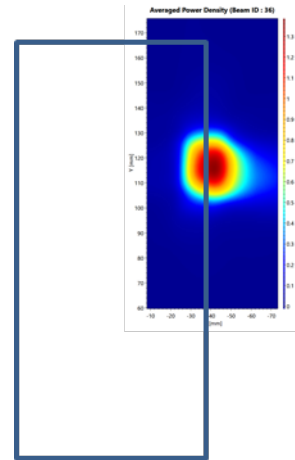


(b) simulation

ANT K-Patch: Mid Channel, Point power density



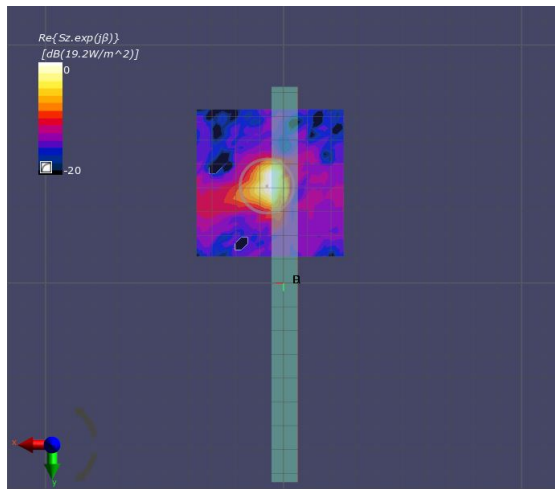
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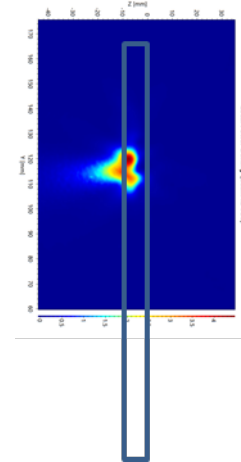
(b) simulation

ANT K-Patch: Mid Channel, 4cm² averaged power density

- n261 ANT K-Patch: Mid Channel, Beam ID 36, Left

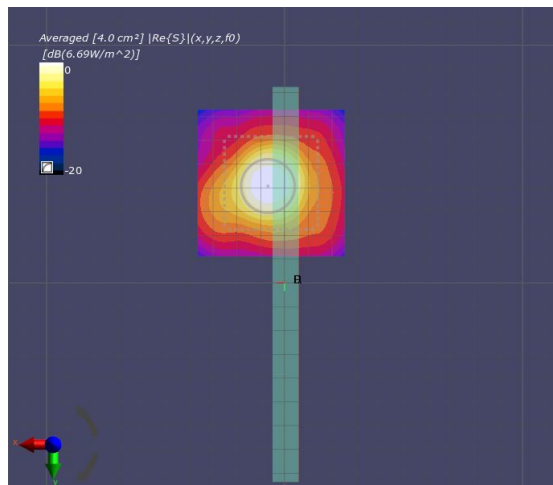


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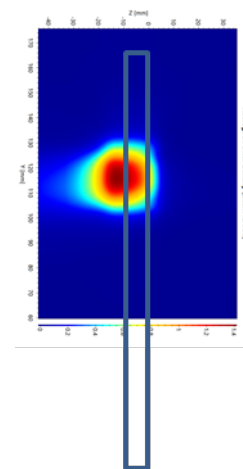


(b) simulation

ANT K-Patch: Mid Channel, Point power density



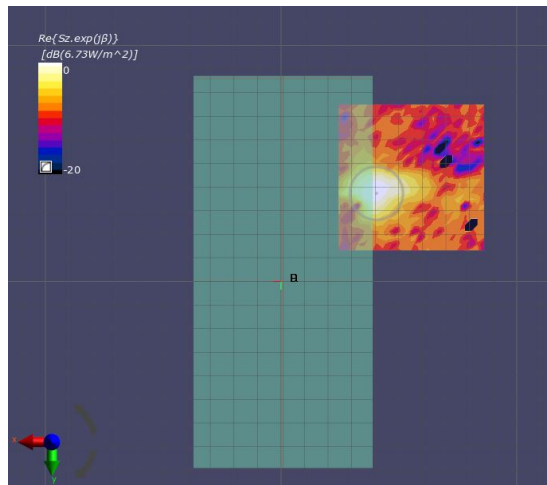
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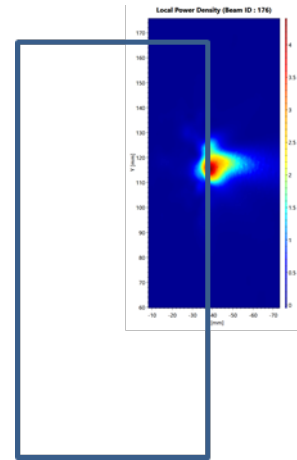
(b) simulation

ANT K-Patch: Mid Channel, 4cm² averaged power density

- n261 ANT K-Patch: Mid Channel, Beam ID 176, Back

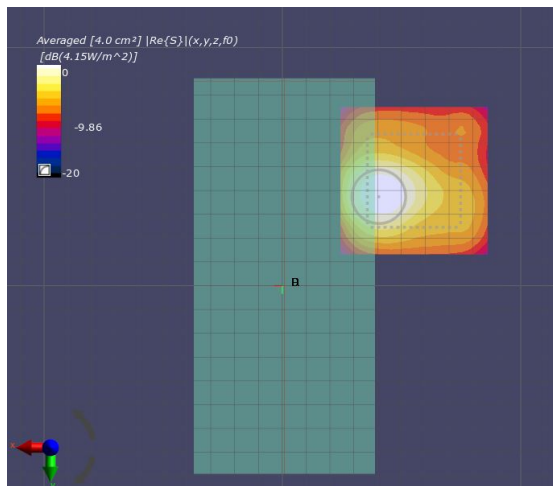


(a) measurement

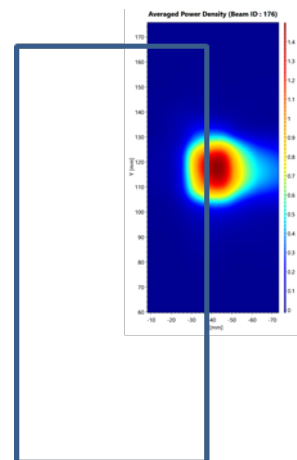


(b) simulation

ANT K-Patch: Mid Channel, Point power density



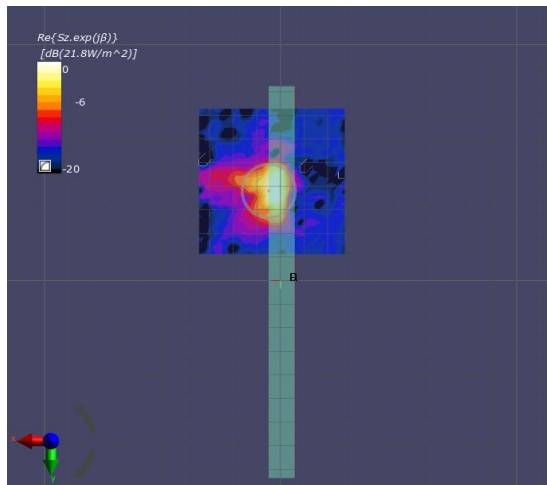
(a) measurement



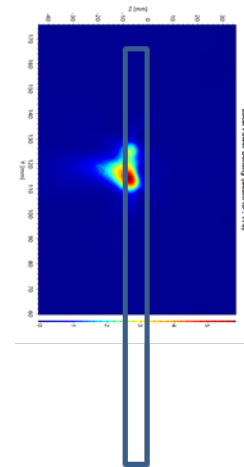
(b) simulation

ANT K-Patch: Mid Channel, 4cm² averaged power density

- n261 ANT K-Patch: Mid Channel, Beam ID 176, Left

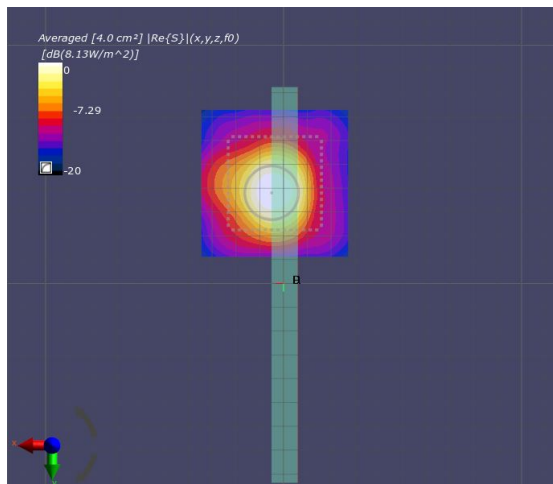


(a) measurement

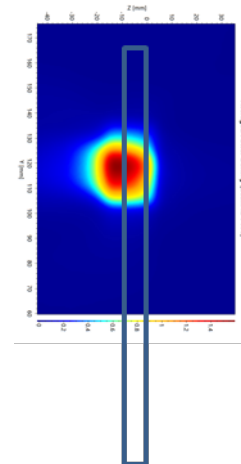


(b) simulation

ANT K-Patch: Mid Channel, Point power density



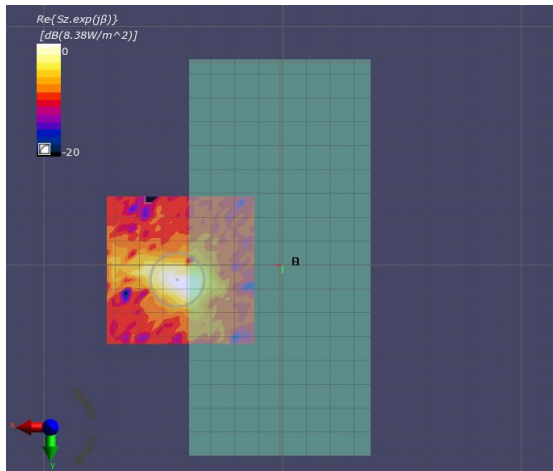
(a) measurement



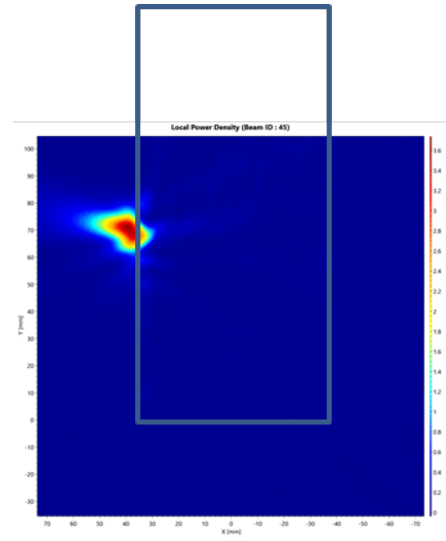
(b) simulation

ANT K-Patch: Mid Channel, 4cm² averaged power density

- n261 ANT L-Patch: Mid Channel, Beam ID 45, Back

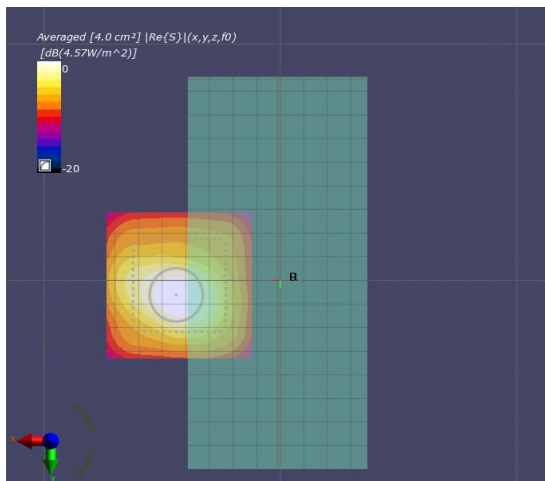


(a) measurement

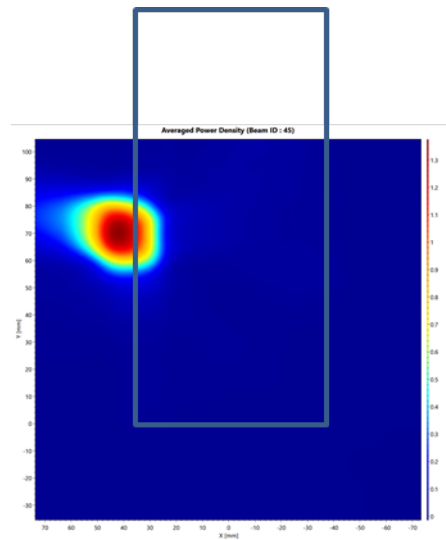


(b) simulation

ANT L-Patch: Mid Channel, Point power density



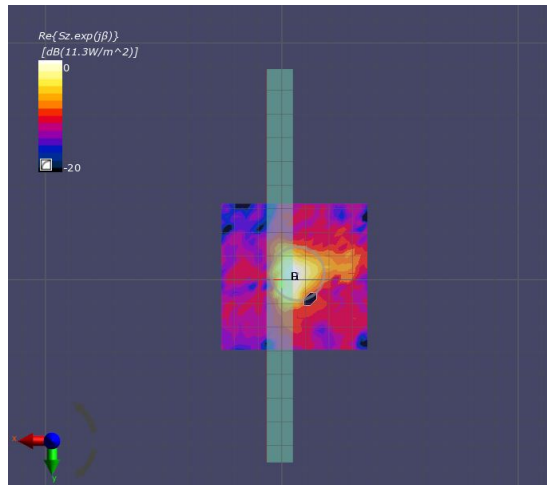
(a) measurement



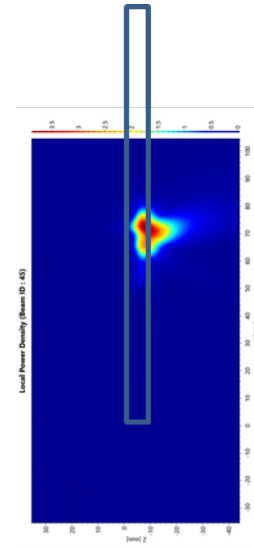
(b) simulation

ANT L-Patch: Mid Channel, 4cm² averaged power density

- n261 ANT L-Patch: Mid Channel, Beam ID 45, Right

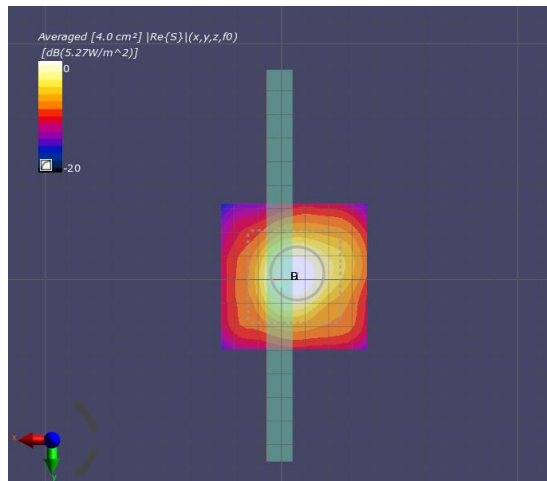


(a) measurement

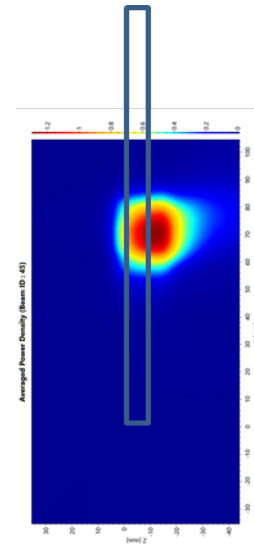


(b) simulation

ANT L-Patch: Mid Channel, Point power density



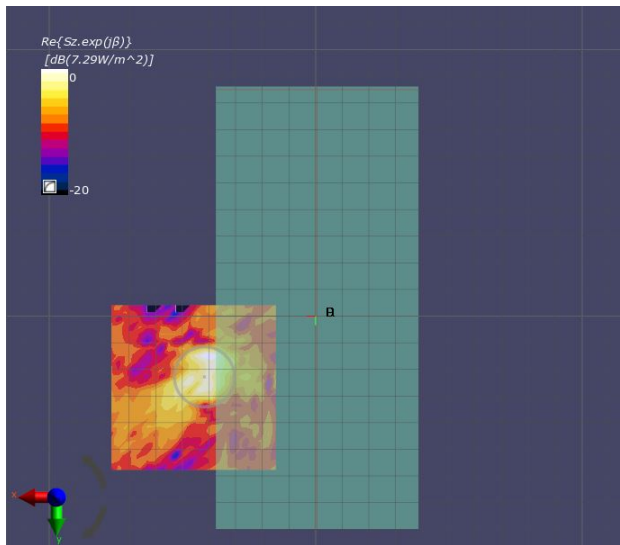
(a) measurement



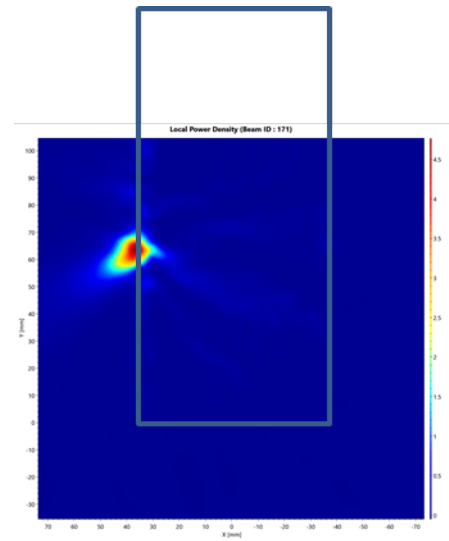
(b) simulation

ANT L-Patch: Mid Channel, 4cm² averaged power density

- n261 ANT L-Patch: Mid Channel, Beam ID171, Back

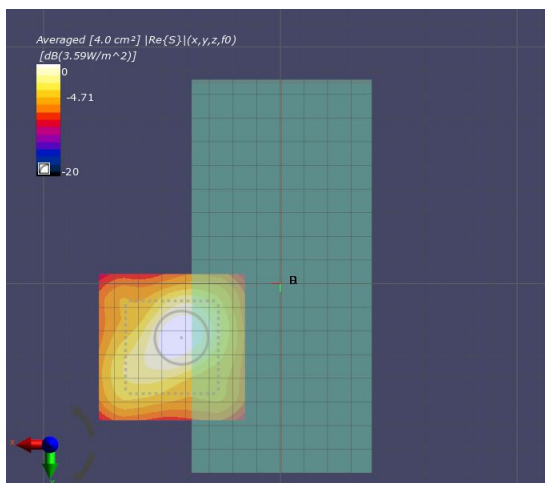


(a) measurement

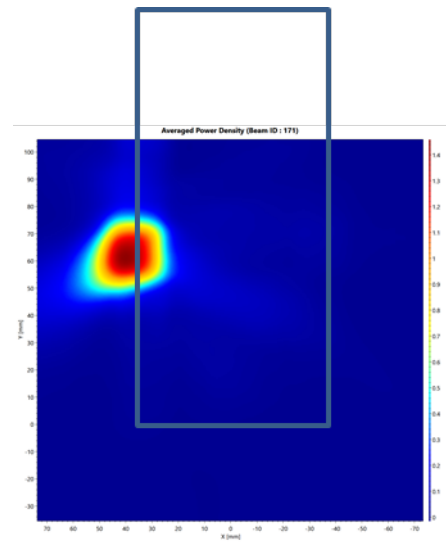


(b) simulation

ANT L-Patch: Mid Channel, Point power density



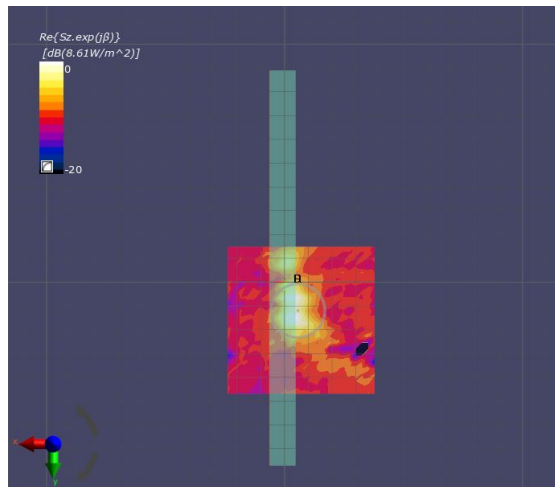
(a) measurement



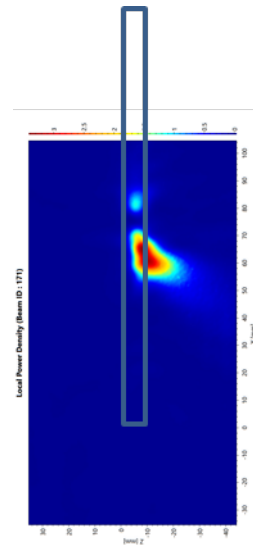
(b) simulation

ANT L-Patch: Mid Channel, 4cm² averaged power densit

- n261 ANT L-Patch: Mid Channel, Beam ID171, Right

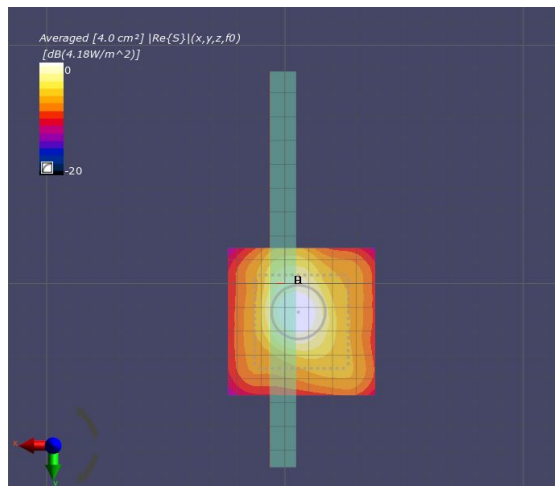


(a) measurement

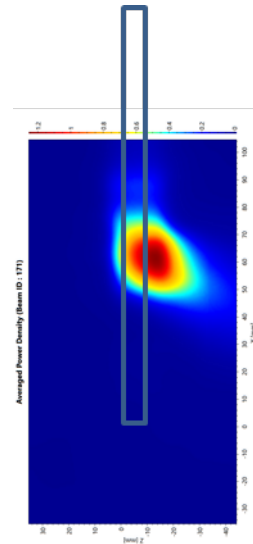


(b) simulation

ANT L-Patch: Mid Channel, Point power density



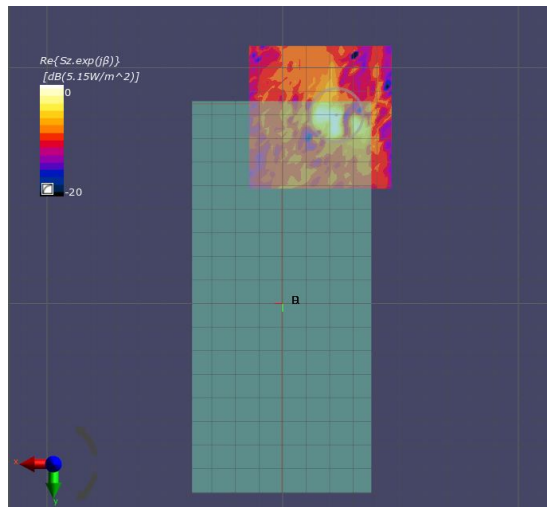
(a) measurement



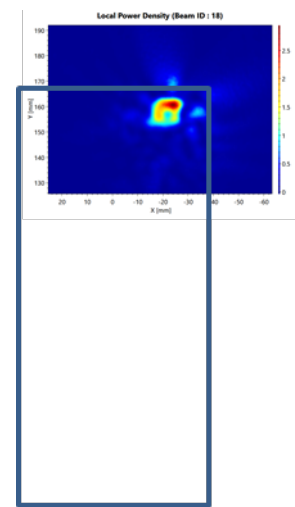
(b) simulation

ANT L-Patch: Mid Channel, 4cm² averaged power density

- n260 ANT J-Dipole: Mid Channel, Beam ID : 18, Back

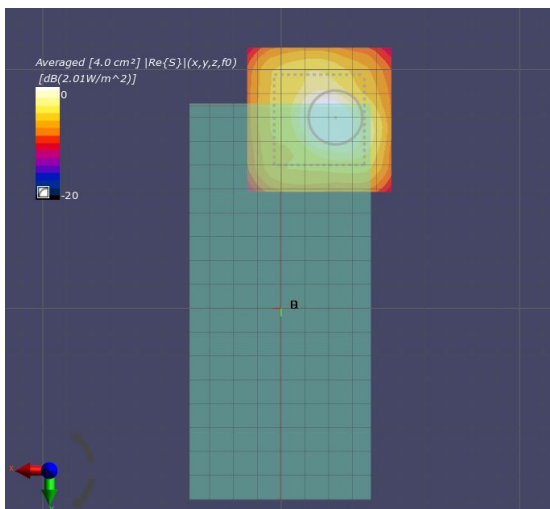


(a) measurement

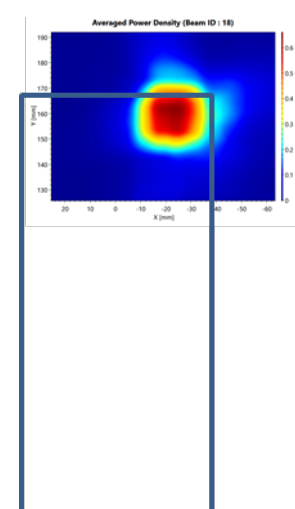


(b) simulation

ANT J Dipole: Mid Channel, Point power density



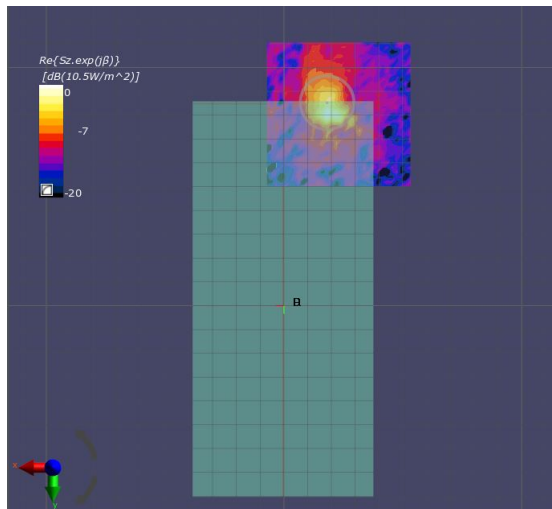
(a) measurement



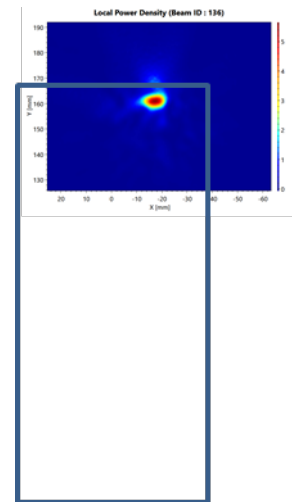
(b) simulation

ANT J Dipole: Mid Channel, 4cm² averaged power density

- n260 ANT J- Dipole : Mid Channel, Beam ID: 136, Back

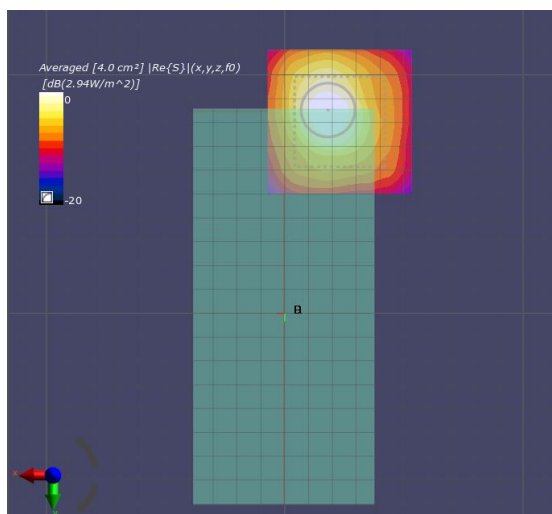


(a) measurement

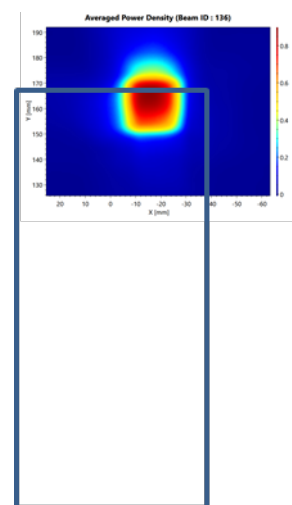


(b) simulation

ANT J- Dipole : Mid Channel, Point power density



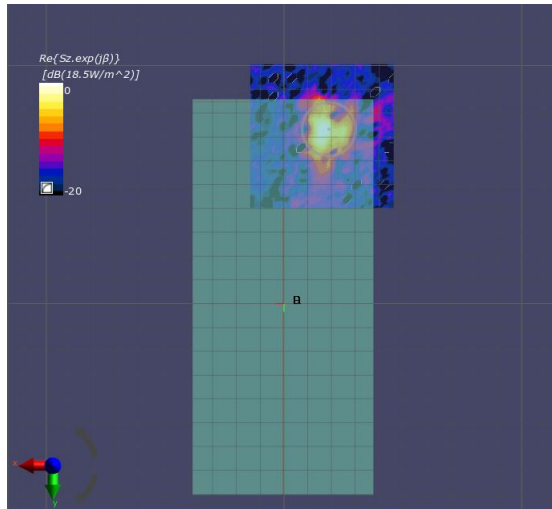
(a) measurement



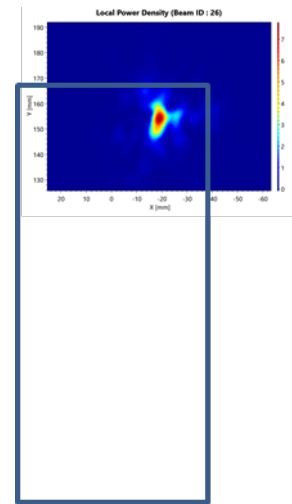
(b) simulation

ANT J- Dipole : Mid Channel, 4cm² averaged power density

- n260 ANT J-Patch: Mid Channel, Beam ID: 26, Back

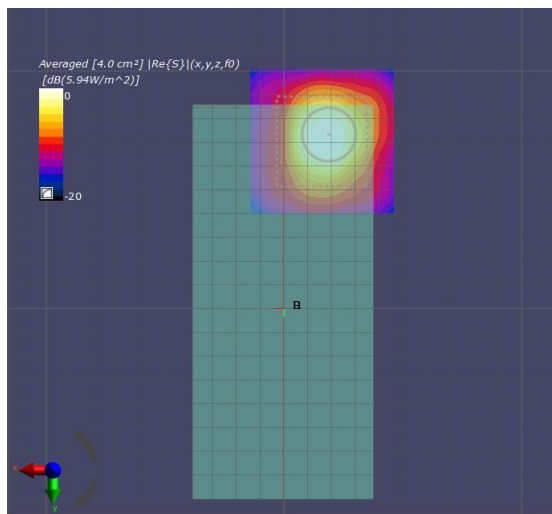


(a) measurement

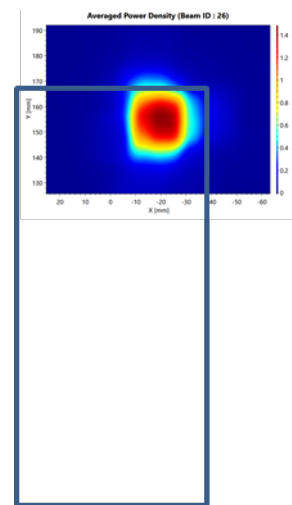


(b) simulation

ANT J-Patch: Mid Channel, Point power density



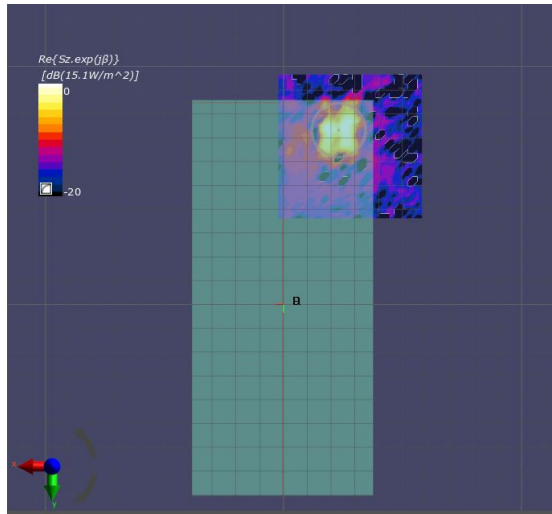
(a) measurement



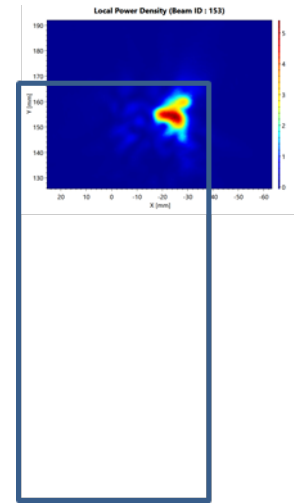
(b) simulation

ANT J-Patch: Mid Channel, 4cm^2 averaged power density

- n260 ANT J-Patch: Mid Channel, Beam ID : 153, Back

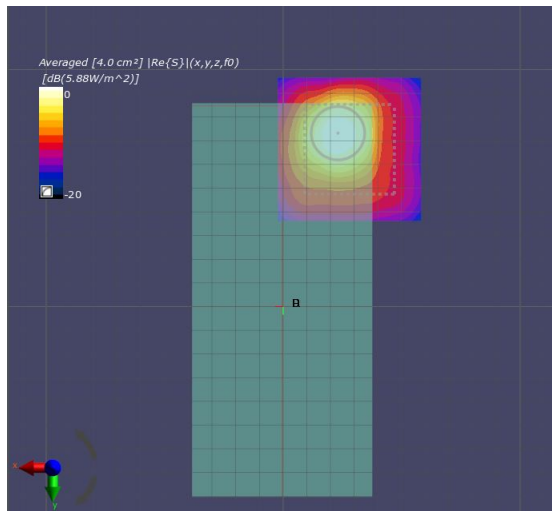


(a) measurement

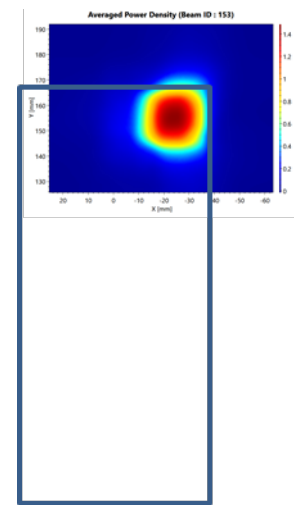


(b) simulation

ANT J-Patch: Mid Channel, Point power density



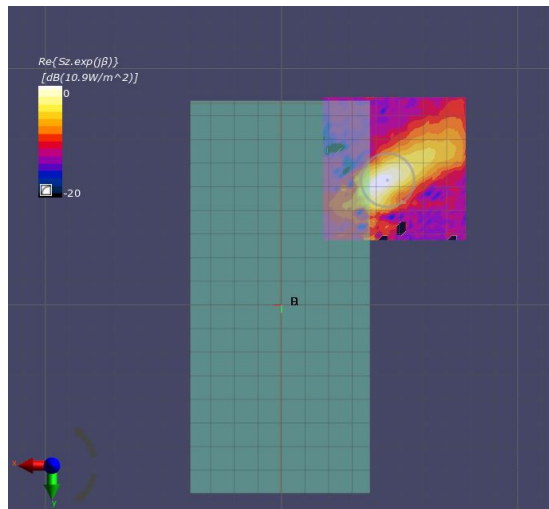
(a) measurement



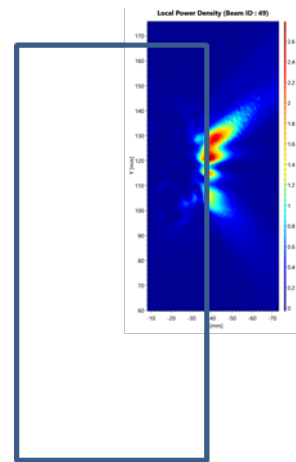
(b) simulation

ANT J-Patch: Mid Channel, 4cm² averaged power density

- n260 ANT K-Patch: Mid Channel, Beam ID 49, Back

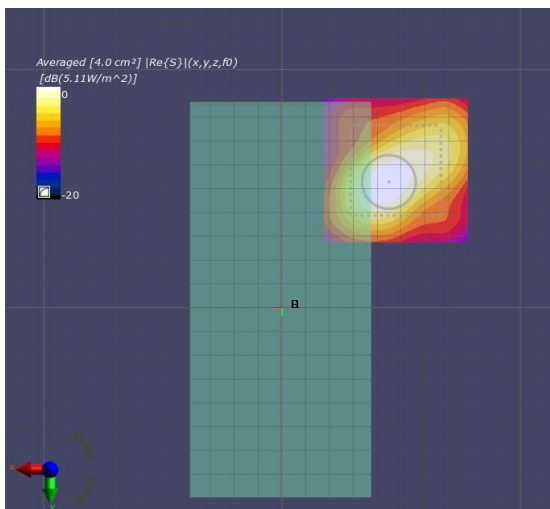


(a) measurement

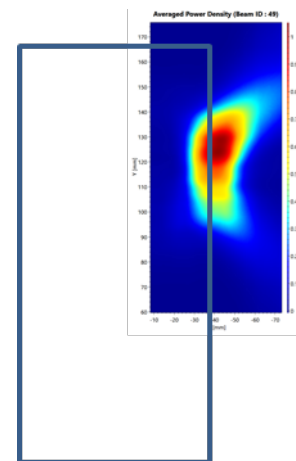


(b) simulation

ANT K-Patch: Mid Channel, Point power density



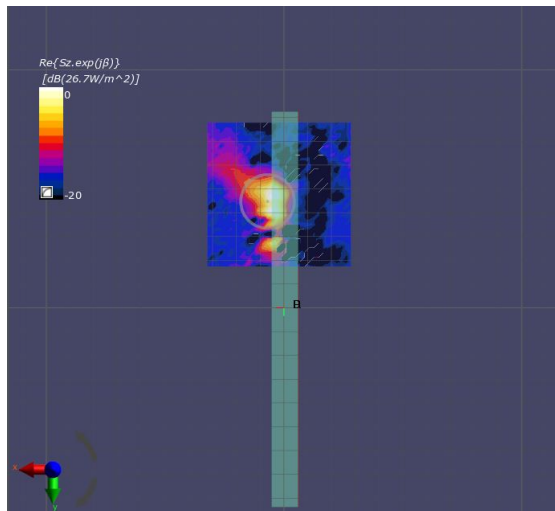
(a) measurement



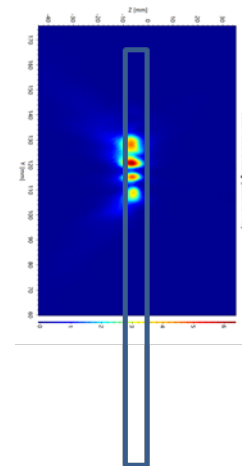
(b) simulation

ANT K-Patch: Mid Channel, 4cm² averaged power density

- n260 ANT K-Patch: Mid Channel, Beam ID 49, Left

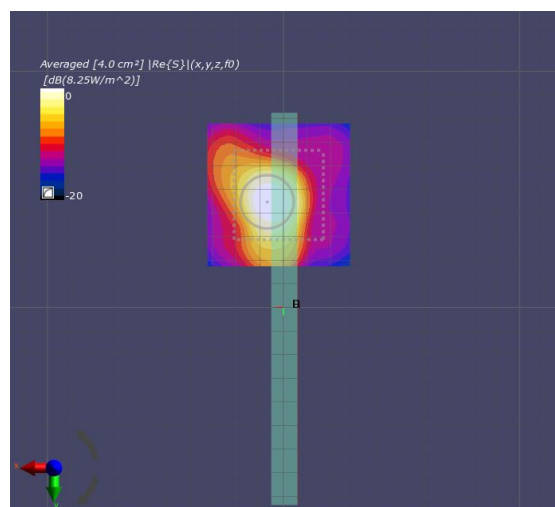


(a) measurement

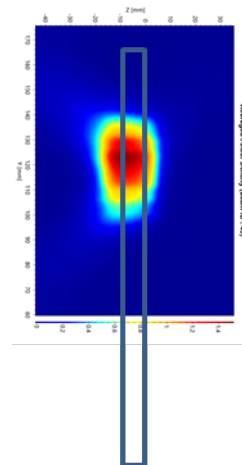


(b) simulation

ANT K-Patch: Mid Channel, Point power density



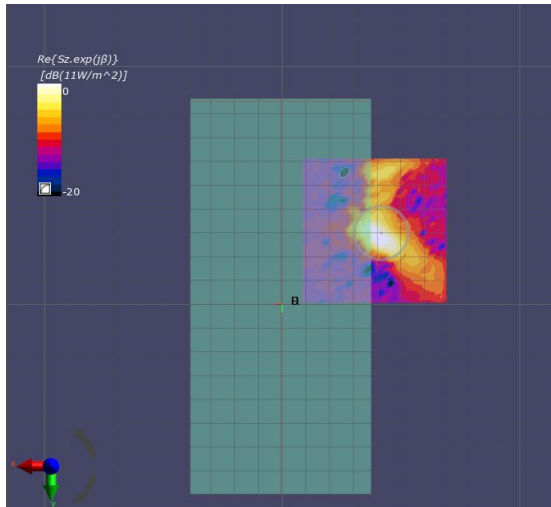
(a) measurement



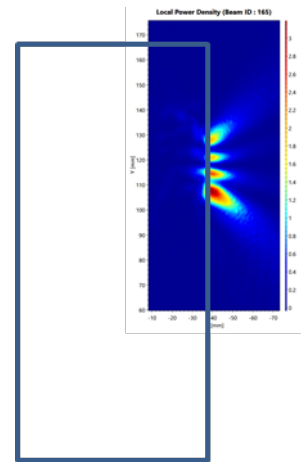
(b) simulation

ANT K-Patch: Mid Channel, 4cm² averaged power density

- n260 ANT K-Patch: Mid Channel, Beam ID 165, Back

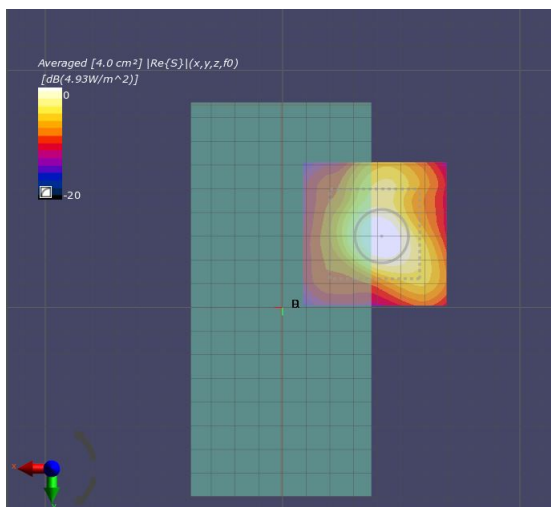


(a) measurement

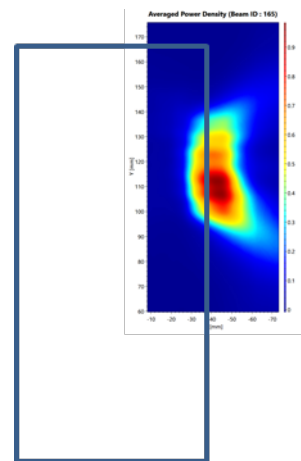


(b) simulation

ANT K-Patch: Mid Channel, Point power density



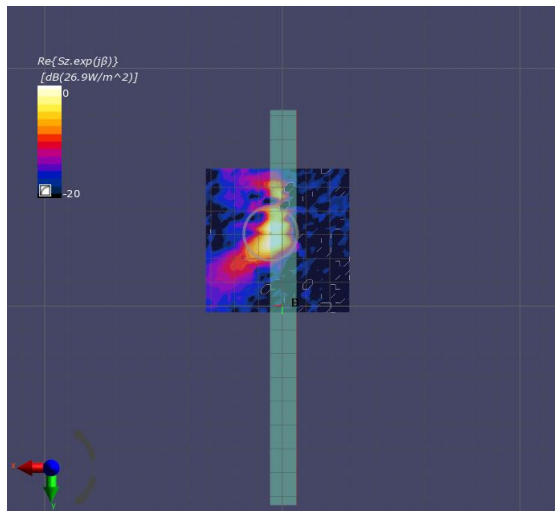
(a) measurement



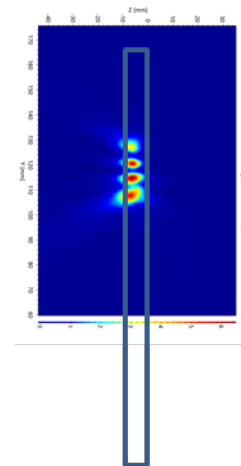
(b) simulation

ANT K-Patch: Mid Channel, 4cm² averaged power density

- n260 ANT K-Patch: Mid Channel, Beam ID 165, Left

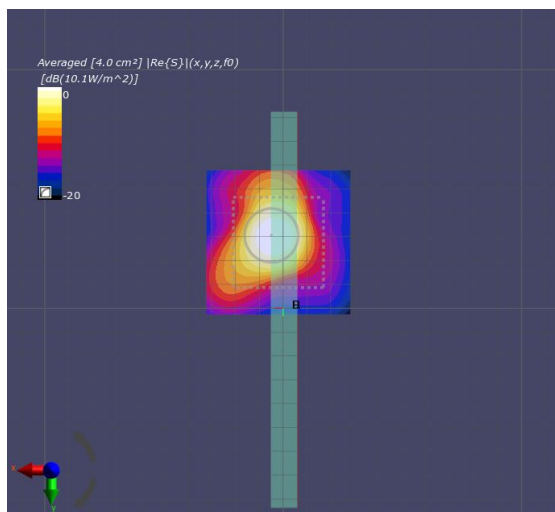


(a) measurement

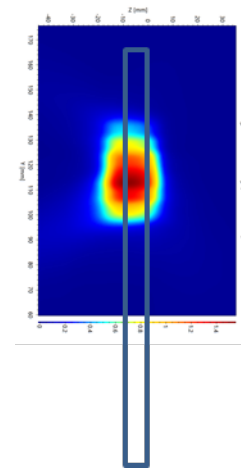


(b) simulation

ANT K-Patch: Mid Channel, Point power density



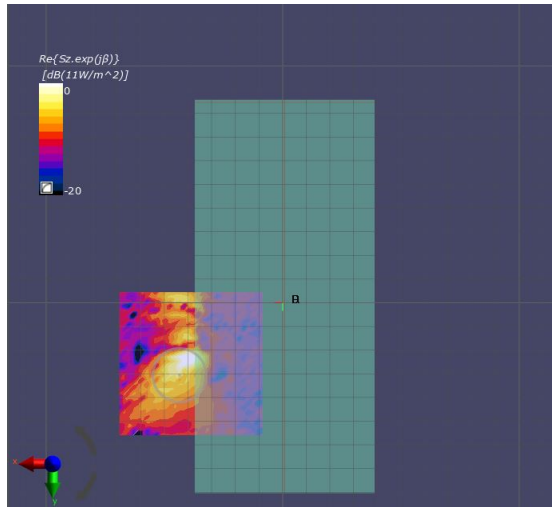
(a) measurement



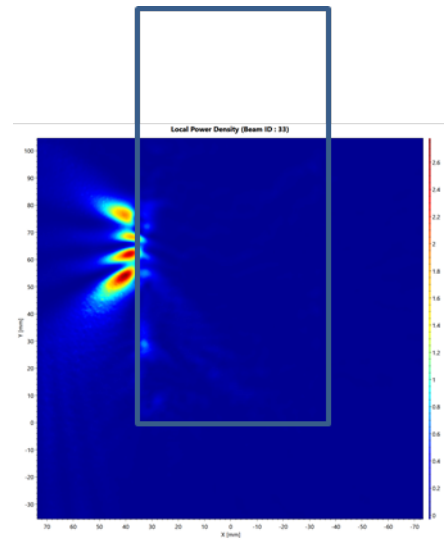
(b) simulation

ANT K-Patch: Mid Channel, 4cm² averaged power density

- n260 ANT L-Patch: Mid Channel, Beam ID 33, Back

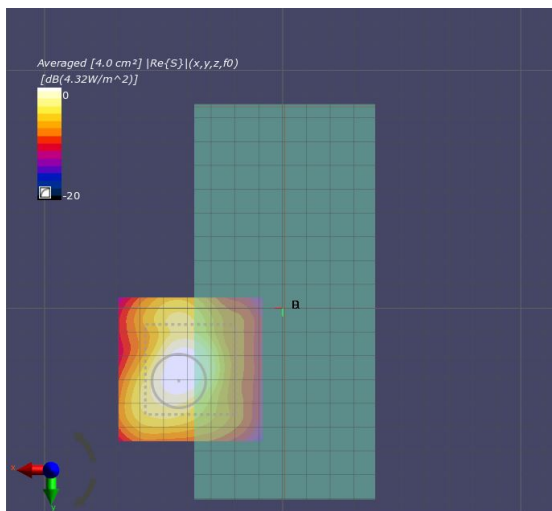


(a) measurement

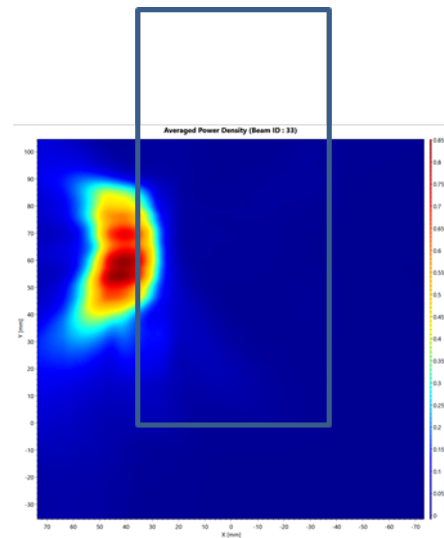


(b) simulation

ANT L-Patch: Mid Channel, Point power density



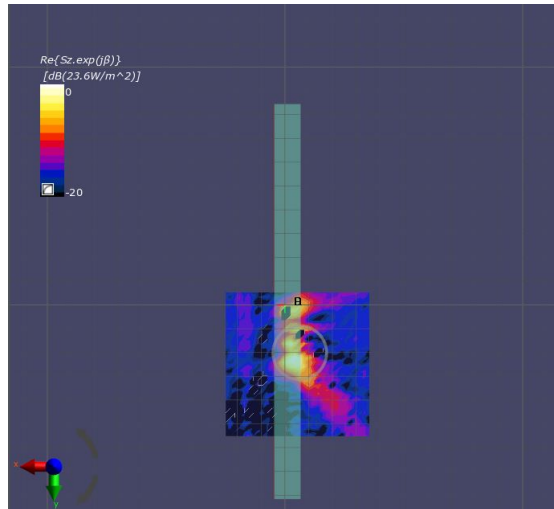
(a) measurement



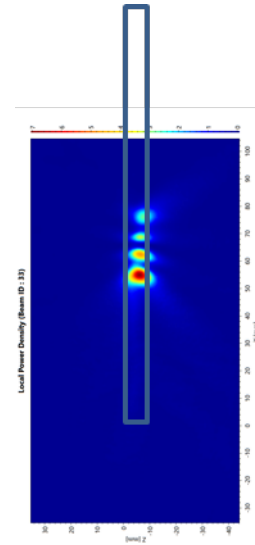
(b) simulation

ANT L-Patch: Mid Channel, 4cm² averaged power density

- n260 ANT L-Patch: Mid Channel, Beam ID 33, Right

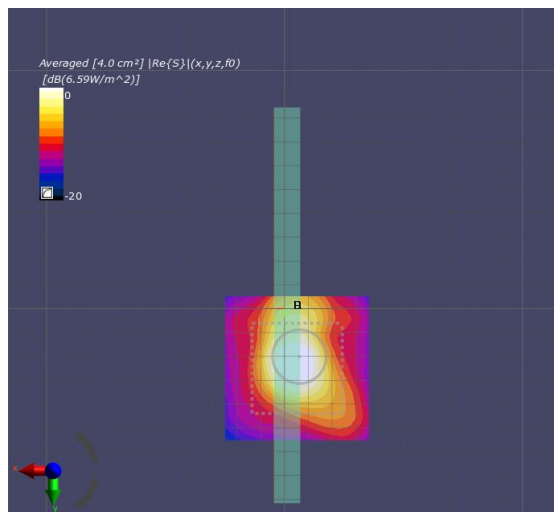


(a) measurement

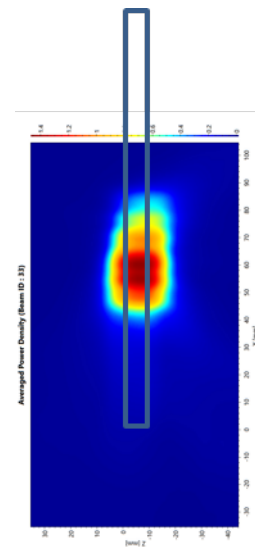


(b) simulation

ANT L-Patch: Mid Channel, Point power density



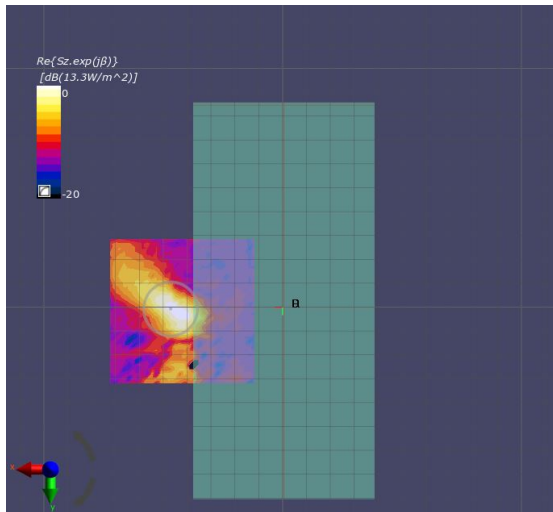
(a) measurement



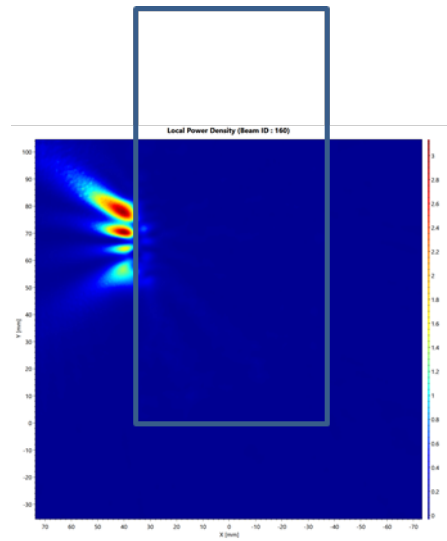
(b) simulation

ANT L-Patch: Mid Channel, 4cm² averaged power density

- n260 ANT L-Patch: Mid Channel, Beam ID160, Back

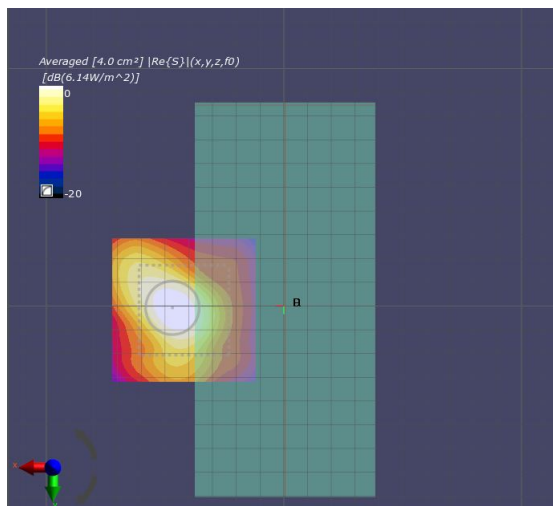


(a) measurement

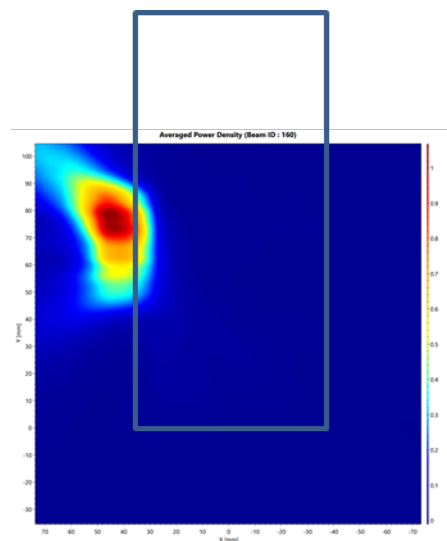


(b) simulation

ANT L-Patch: Mid Channel, Point power density



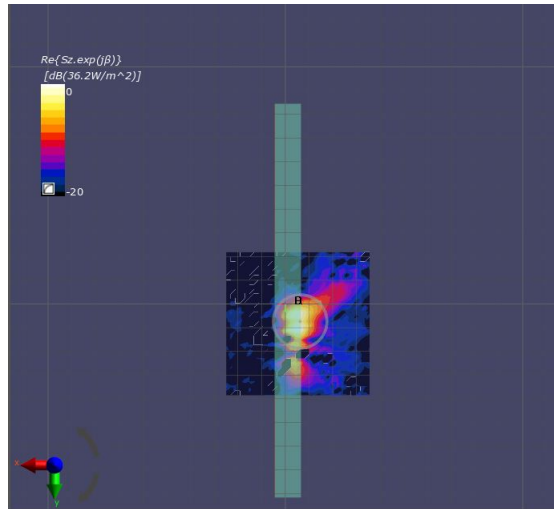
(a) measurement



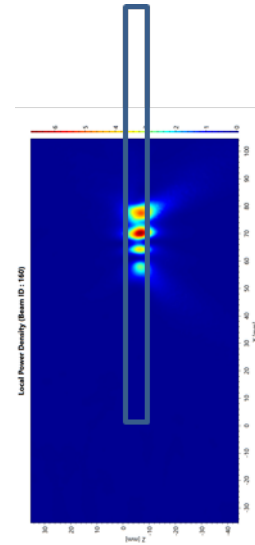
(b) simulation

ANT L-Patch: Mid Channel, 4cm² averaged power density

- n260 ANT L-Patch: Mid Channel, Beam ID160, Right

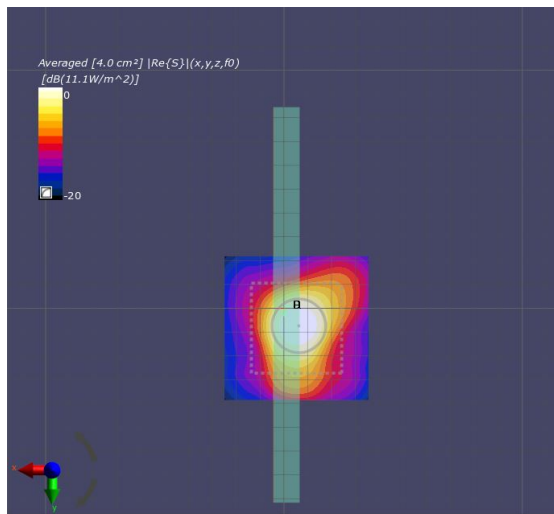


(a) measurement

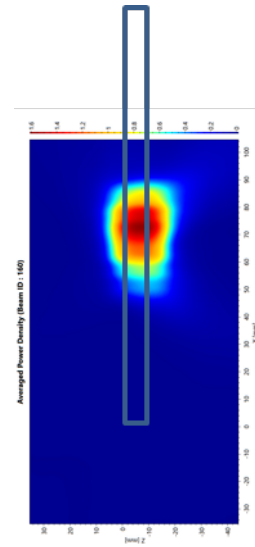


(b) simulation

ANT L-Patch: Mid Channel, Point power density



(a) measurement



(b) simulation

ANT L-Patch: Mid Channel, 4cm² averaged power density

3 Simulation results

This section shows the PD simulation results of Ant J, Ant K and Ant L at 28GHz and 39GHz for each evaluation plane specified in Table 1 at two separation distances of 2mm and 10mm. The ratio of PD exposure from front surface to the worst surface at 2mm, the ratio of top surface to the worst surface at 2mm, the ratio of PD exposure from worst surface 2mm to worst surface 10mm evaluation distance, and the ratio of PD exposure from worst surface 2mm to back side 10mm evaluation distance for each beam are also reported in this section to support RF exposure analysis for simultaneous transmission scenarios performed in Appendix D 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.

3.1 PD for Low/Mid/High Channel at 28GHz / 39GHz

3.1.1 Ant J – Patch/Dipole Antenna

Table 2 & Table 3 show the PD simulation evaluation of Ant J patch/dipole antenna at 28GHz / 39GHz for the corresponding evaluation planes specified in Table 1.

Table 2. PD of Ant J – dipole / patch antenna (28GHz – n261)

- J-dipole Low CH

						max ratio out of all beams												max ratio out of all beams			
						4cm² PD(mW/cm²)		22.3%		65.8%		4cm² PD(mW/cm²) at 10mm evaluation distance						48.7%		48.7%	
No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Top 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio (worst-surface 10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)		
1	J-D	DIPOLE	1	2	0.04	0.09	0.19	0.02	0.60	3.7%	30.9%	0.03	0.04	0.09	0.01	0.21	25.3%	25.3%			
2			7	4	0.06	0.19	0.38	0.04	1.24	3.0%	30.9%	0.02	0.11	0.20	0.02	0.54	43.3%	43.3%			
3			8	4	0.10	0.20	0.29	0.06	1.02	5.6%	28.9%	0.04	0.11	0.14	0.03	0.47	45.7%	45.7%			
4			9	4	0.18	0.16	0.21	0.08	0.71	11.2%	29.7%	0.07	0.09	0.10	0.04	0.31	43.9%	43.9%			
5			18	4	0.04	0.18	0.44	0.03	1.33	1.9%	32.9%	0.02	0.10	0.23	0.01	0.55	41.3%	41.3%			
6			19	4	0.14	0.19	0.16	0.07	0.86	8.2%	29.1%	0.06	0.10	0.11	0.04	0.40	45.9%	45.9%			
7			129	2	0.10	0.10	0.35	0.03	0.57	6.1%	62.0%	0.05	0.07	0.13	0.02	0.18	32.1%	32.1%			
8			135	4	0.24	0.12	0.49	0.10	0.81	12.1%	60.0%	0.14	0.10	0.21	0.04	0.25	31.0%	31.0%			
9			136	4	0.06	0.04	0.67	0.01	1.05	1.3%	63.7%	0.06	0.05	0.32	0.01	0.41	39.5%	39.5%			
10			137	4	0.17	0.13	0.51	0.07	0.85	8.2%	60.2%	0.08	0.16	0.25	0.03	0.34	39.8%	39.8%			
11			146	4	0.17	0.04	0.64	0.06	1.08	5.5%	59.0%	0.14	0.09	0.29	0.03	0.37	34.3%	34.3%			
12			147	4	0.15	0.23	0.53	0.06	0.89	6.9%	60.4%	0.07	0.16	0.26	0.03	0.35	39.5%	39.5%			
13			1	129	4	0.17	0.15	0.60	0.08	0.91	9.3%	65.8%	0.08	0.09	0.29	0.04	0.33	36.4%	36.4%		
14			7	136	8	0.13	0.36	1.05	0.06	2.01	3.1%	52.2%	0.07	0.16	0.60	0.03	0.85	42.0%	42.0%		
15			8	135	8	0.46	0.46	0.62	0.25	1.14	22.3%	54.6%	0.20	0.24	0.27	0.13	0.55	48.7%	48.7%		
16			9	137	8	0.51	0.40	0.62	0.24	1.09	22.0%	57.0%	0.22	0.21	0.24	0.12	0.43	39.2%	39.2%		
17			18	146	8	0.37	0.38	0.82	0.13	1.62	8.1%	50.7%	0.22	0.19	0.41	0.07	0.69	42.3%	42.3%		
18			19	147	8	0.42	0.35	0.69	0.21	1.23	16.7%	56.2%	0.19	0.18	0.34	0.11	0.53	42.8%	42.8%		

- J-dipole Mid CH

						max ratio out of all beams										max ratio out of all beams																			
						4cm ² PD(mW/cm ²)					16.0%					64.5%					4cm ² PD(mW/cm ²) at 10mm evaluation distance					45.8%					45.8%				
											ratio (Front 2mm)/(worst-surface 2mm)					ratio (Top 2mm)/(worst-surface 2mm)										ratio (worst-surface 10mm/2mm)					ratio (back 10mm)/(worst-surface 2mm)				
No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)		S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)		S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)													
1	J-D	DIPOLE	1	2	0.04	0.10	0.20	0.03	0.66	5.2%	30.8%	0.04	0.05	0.10	0.01	0.24	36.4%	36.4%	0.04	0.05	0.10	0.01	0.24	36.4%	36.4%	0.04	0.05	0.10	0.01	0.24					
2			7	4	0.08	0.22	0.48	0.04	1.25	2.8%	37.9%	0.04	0.12	0.24	0.02	0.54	42.8%	42.8%	0.04	0.12	0.24	0.02	0.54	42.8%	42.8%	0.04	0.12	0.24	0.02	0.54					
3			8	4	0.14	0.22	0.39	0.06	1.06	5.8%	36.6%	0.05	0.12	0.19	0.03	0.47	44.5%	44.5%	0.05	0.12	0.19	0.03	0.47	44.5%	44.5%	0.05	0.12	0.19	0.03	0.47					
4			9	4	0.20	0.19	0.35	0.09	0.78	11.6%	45.2%	0.09	0.09	0.13	0.04	0.32	41.5%	41.5%	0.09	0.09	0.13	0.04	0.32	41.5%	41.5%	0.09	0.09	0.13	0.04	0.32					
5			18	4	0.05	0.20	0.51	0.03	1.33	2.0%	38.7%	0.03	0.11	0.26	0.02	0.55	41.3%	41.3%	0.03	0.11	0.26	0.02	0.55	41.3%	41.3%	0.03	0.11	0.26	0.02	0.55					
6			19	4	0.17	0.21	0.32	0.08	0.82	8.5%	35.1%	0.07	0.11	0.16	0.04	0.40	44.1%	44.1%	0.07	0.11	0.16	0.04	0.40	44.1%	44.1%	0.07	0.11	0.16	0.04	0.40					
7			129	2	0.02	0.03	0.03	0.01	0.42	1.6%	7.5%	0.04	0.07	0.12	0.01	0.15	36.5%	36.5%	0.04	0.07	0.12	0.01	0.15	36.5%	36.5%	0.04	0.07	0.12	0.01	0.15					
8			135	4	0.20	0.10	0.38	0.06	0.68	8.9%	55.6%	0.11	0.12	0.16	0.03	0.18	26.3%	26.3%	0.11	0.12	0.16	0.03	0.18	26.3%	26.3%	0.11	0.12	0.16	0.03	0.18					
9			136	4	0.06	0.06	0.61	0.02	0.99	2.0%	61.4%	0.05	0.06	0.29	0.01	0.36	36.3%	36.3%	0.05	0.06	0.29	0.01	0.36	36.3%	36.3%	0.05	0.06	0.29	0.01	0.36					
10			137	4	0.13	0.13	0.49	0.06	0.75	7.5%	64.5%	0.06	0.18	0.21	0.02	0.38	37.3%	37.3%	0.06	0.18	0.21	0.02	0.38	37.3%	37.3%	0.06	0.18	0.21	0.02	0.38					
11			146	4	0.15	0.05	0.58	0.03	1.00	3.2%	57.6%	0.12	0.04	0.26	0.02	0.32	31.7%	31.7%	0.12	0.04	0.26	0.02	0.32	31.7%	31.7%	0.12	0.04	0.26	0.02	0.32					
12			147	4	0.11	0.25	0.48	0.05	0.76	7.0%	64.0%	0.05	0.17	0.21	0.02	0.29	37.8%	37.8%	0.05	0.17	0.21	0.02	0.29	37.8%	37.8%	0.05	0.17	0.21	0.02	0.29					
13			1	129	4	0.19	0.16	0.57	0.08	1.00	8.2%	57.4%	0.08	0.09	0.31	0.03	0.33	33.6%	33.6%	0.08	0.09	0.31	0.03	0.33	33.6%	33.6%	0.08	0.09	0.31	0.03	0.33				
14			7	136	8	0.13	0.37	1.03	0.05	1.99	2.5%	51.8%	0.07	0.14	0.57	0.03	0.81	40.8%	40.8%	0.07	0.14	0.57	0.03	0.81	40.8%	40.8%	0.07	0.14	0.57	0.03	0.81				
15			8	135	8	0.48	0.42	0.54	0.17	1.22	13.6%	43.9%	0.20	0.22	0.23	0.11	0.56	45.8%	45.8%	0.20	0.22	0.23	0.11	0.56	45.8%	45.8%	0.20	0.22	0.23	0.11	0.56				
16			9	137	8	0.52	0.38	0.65	0.19	1.18	16.0%	55.3%	0.21	0.23	0.26	0.11	0.45	38.6%	38.6%	0.21	0.23	0.26	0.11	0.45	38.6%	38.6%	0.21	0.23	0.26	0.11	0.45				
17			18	146	8	0.29	0.32	0.71	0.08	1.63	4.9%	44.5%	0.17	0.14	0.36	0.06	0.63	38.4%	38.4%	0.17	0.14	0.36	0.06	0.63	38.4%	38.4%	0.17	0.14	0.36	0.06	0.63				
18			19	147	8	0.43	0.36	0.58	0.15	1.29	11.8%	44.6%	0.18	0.19	0.21	0.09	0.56	43.5%	43.5%	0.18	0.19	0.21	0.09	0.56	43.5%	43.5%	0.18	0.19	0.21	0.09	0.56				

- J-dipole High CH

No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	4cm ² PD(mW/cm ²)					max ratio out of all beams		4cm ² PD(mW/cm ²) at 10mm evaluation distance					max ratio out of all beams	
						S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Top 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)
1	J-D	DIPOLE	1		2	0.05	0.12	0.22	0.04	0.63	6.3%	34.5%	0.04	0.06	0.10	0.01	0.21	33.3%	33.3%
2			7		4	0.12	0.28	0.49	0.05	1.14	4.2%	42.8%	0.05	0.15	0.26	0.02	0.47	41.4%	41.4%
3			8		4	0.16	0.29	0.41	0.05	0.96	5.4%	42.4%	0.06	0.15	0.20	0.03	0.42	43.4%	43.4%
4			9		4	0.20	0.25	0.33	0.08	0.70	11.1%	47.6%	0.08	0.13	0.13	0.03	0.29	41.1%	41.1%
5			18		4	0.09	0.25	0.52	0.04	1.24	3.2%	42.1%	0.04	0.13	0.28	0.02	0.49	39.2%	39.2%
6			19		4	0.18	0.28	0.34	0.06	0.83	7.0%	41.6%	0.07	0.15	0.16	0.03	0.36	43.3%	43.3%
7			129		2	0.06	0.03	0.31	0.03	0.50	6.4%	61.5%	0.04	0.05	0.12	0.01	0.14	29.0%	29.0%
8			135		4	0.18	0.10	0.42	0.07	0.66	10.2%	62.8%	0.13	0.10	0.17	0.03	0.19	28.2%	28.2%
9			136		4	0.05	0.04	0.56	0.02	0.91	2.6%	62.0%	0.04	0.03	0.28	0.01	0.35	38.1%	38.1%
10			137		4	0.12	0.12	0.42	0.06	0.66	9.4%	64.0%	0.07	0.14	0.19	0.02	0.25	38.2%	38.2%
11			146		4	0.13	0.04	0.53	0.04	0.88	4.9%	60.3%	0.12	0.09	0.25	0.02	0.28	31.7%	31.7%
12			147		4	0.13	0.11	0.41	0.06	0.70	8.4%	59.4%	0.06	0.13	0.19	0.02	0.26	36.9%	36.9%
13			1	129	4	0.16	0.16	0.53	0.09	0.91	9.5%	58.1%	0.07	0.10	0.26	0.03	0.30	33.6%	33.6%
14			7	136	8	0.13	0.38	0.97	0.06	1.75	3.3%	55.5%	0.06	0.14	0.55	0.02	0.75	43.1%	43.1%
15			8	135	8	0.48	0.52	0.54	0.18	1.20	14.8%	44.6%	0.21	0.30	0.23	0.09	0.54	44.9%	44.9%
16			9	137	8	0.47	0.45	0.55	0.16	1.16	13.6%	47.8%	0.22	0.27	0.22	0.08	0.43	37.3%	37.3%
17			18	146	8	0.29	0.33	0.69	0.11	1.49	7.4%	46.3%	0.17	0.15	0.35	0.05	0.58	39.3%	39.3%
18			19	147	8	0.40	0.40	0.56	0.14	1.24	11.2%	45.0%	0.18	0.23	0.21	0.07	0.51	41.0%	41.0%

- J-patch Low CH

						max ratio out of all beams								max ratio out of all beams					
No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	4cm ² PD(mW/cm ²)					6.7%	31.6%	4cm ² PD(mW/cm ²) at 10mm evaluation distance					62.5%	62.5%
						S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Top 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)
19	J-P	PATCH	0		1	0.01	0.09	0.04	0.02	0.43	3.7%	9.1%	0.02	0.04	0.03	0.01	0.17	38.8%	38.8%
20			4	2	0.03	0.05	0.07	0.02	0.84	1.9%	8.9%	0.02	0.10	0.06	0.01	0.43	51.1%	51.1%	
21			5	2	0.06	0.02	0.09	0.01	0.97	0.7%	8.9%	0.07	0.03	0.05	0.00	0.50	51.7%	51.7%	
22			6	2	0.18	0.03	0.09	0.01	0.77	1.3%	11.2%	0.16	0.04	0.05	0.01	0.33	42.3%	42.3%	
23			16	2	0.06	0.13	0.07	0.02	0.79	2.2%	8.8%	0.04	0.10	0.05	0.02	0.39	49.4%	49.4%	
24			17	2	0.17	0.02	0.09	0.01	0.87	1.7%	9.8%	0.16	0.02	0.05	0.01	0.41	46.8%	46.8%	
25			24	4	0.06	0.47	0.27	0.07	1.66	4.4%	16.3%	0.03	0.34	0.17	0.06	0.64	38.5%	38.5%	
26			25	4	0.02	0.09	0.22	0.02	1.89	1.2%	11.4%	0.03	0.15	0.18	0.02	1.06	56.2%	56.2%	
27			26	4	0.11	0.07	0.25	0.02	1.69	1.1%	14.7%	0.08	0.04	0.21	0.01	1.05	62.2%	62.2%	
28			27	4	0.20	0.13	0.11	0.03	1.83	1.6%	6.2%	0.28	0.07	0.10	0.01	0.95	51.6%	51.6%	
29			28	4	0.13	0.13	0.03	0.03	1.67	1.5%	7.6%	0.35	0.07	0.08	0.02	0.82	49.3%	49.3%	
30			39	4	0.04	0.40	0.30	0.06	1.81	3.2%	16.6%	0.03	0.34	0.20	0.04	0.74	41.2%	41.2%	
31			40	4	0.11	0.08	0.24	0.02	1.69	1.3%	14.3%	0.10	0.04	0.18	0.02	1.01	59.5%	59.5%	
32			41	4	0.04	0.09	0.17	0.02	1.79	1.0%	9.7%	0.04	0.07	0.18	0.01	1.02	57.3%	57.3%	
33			42	4	0.27	0.13	0.13	0.02	1.78	1.1%	7.1%	0.34	0.08	0.09	0.01	0.89	50.1%	50.1%	
34			128	1	0.03	0.02	0.04	0.01	0.41	2.0%	10.5%	0.03	0.04	0.04	0.00	0.18	44.6%	44.6%	
35			132	2	0.06	0.06	0.06	0.02	0.81	2.8%	7.7%	0.10	0.07	0.07	0.02	0.37	45.4%	45.4%	
36			133	2	0.02	0.05	0.08	0.01	1.12	1.1%	6.9%	0.01	0.07	0.09	0.01	0.61	54.4%	54.4%	
37			134	2	0.04	0.11	0.07	0.02	1.00	2.2%	6.7%	0.02	0.13	0.06	0.01	0.54	53.9%	53.9%	
38			144	2	0.04	0.03	0.08	0.03	1.00	2.8%	8.0%	0.08	0.02	0.08	0.02	0.53	53.1%	53.1%	
39			145	2	0.03	0.09	0.07	0.02	1.07	1.7%	6.5%	0.02	0.11	0.07	0.01	0.58	54.4%	54.4%	
40			152	4	0.07	0.14	0.11	0.04	1.66	2.4%	6.6%	0.20	0.10	0.19	0.02	0.84	50.5%	50.5%	
41			153	4	0.04	0.07	0.20	0.03	1.54	1.8%	13.0%	0.06	0.03	0.17	0.02	0.95	61.6%	61.6%	
42			154	4	0.05	0.15	0.17	0.02	1.48	1.2%	11.4%	0.04	0.07	0.10	0.01	0.92	62.2%	62.2%	
43			155	4	0.06	0.21	0.14	0.02	1.61	1.2%	9.0%	0.05	0.21	0.09	0.01	0.93	57.8%	57.8%	
44			156	4	0.03	0.54	0.15	0.04	1.59	2.3%	9.3%	0.03	0.49	0.08	0.02	0.79	49.7%	49.7%	
45			167	4	0.04	0.12	0.15	0.03	1.67	1.9%	9.0%	0.14	0.06	0.20	0.02	0.93	55.7%	55.7%	
46			168	4	0.07	0.07	0.18	0.03	1.52	1.8%	12.1%	0.03	0.03	0.16	0.02	0.95	62.5%	62.5%	
47			169	4	0.07	0.11	0.17	0.02	1.56	1.2%	10.9%	0.04	0.08	0.09	0.01	0.96	61.4%	61.4%	
48			170	4	0.04	0.35	0.14	0.02	1.63	1.3%	8.8%	0.04	0.36	0.09	0.01	0.88	53.8%	53.8%	
49			0	128	2	0.10	0.16	0.13	0.04	0.62	6.1%	21.6%	0.04	0.08	0.07	0.01	0.28	45.7%	45.7%
50			4	134	4	0.13	0.33	0.37	0.05	1.83	2.7%	20.3%	0.03	0.20	0.14	0.03	0.89	48.8%	48.8%
51			5	133	4	0.17	0.21	0.42	0.03	2.09	1.3%	20.1%	0.07	0.10	0.18	0.01	1.02	48.8%	48.8%
52			6	132	4	0.53	0.17	0.51	0.07	1.62	4.6%	31.6%	0.22	0.09	0.11	0.03	0.63	39.1%	39.1%
53			16	145	4	0.12	0.40	0.39	0.05	1.81	2.9%	21.6%	0.06	0.19	0.13	0.02	0.89	49.3%	49.3%
54			17	144	4	0.48	0.08	0.53	0.07	1.92	3.5%	27.4%	0.21	0.04	0.16	0.03	0.84	43.9%	43.9%
55			24	156	8	0.13	1.46	0.60	0.22	3.34	6.7%	17.9%	0.06	0.80	0.28	0.13	1.37	40.9%	40.9%
56			25	154	8	0.16	0.75	0.95	0.07	3.45	2.1%	27.5%	0.04	0.27	0.38	0.04	1.89	54.9%	54.9%
57			26	153	8	0.35	0.21	0.98	0.07	3.44	2.0%	28.6%	0.11	0.09	0.48	0.02	1.81	52.5%	52.5%
58			27	152	8	1.01	0.41	0.91	0.09	3.54	2.4%	25.6%	0.51	0.11	0.35	0.03	1.93	54.5%	54.5%
59			28	155	8	0.65	0.73	0.38	0.08	2.92	2.7%	13.2%	0.34	0.25	0.16	0.03	1.21	41.6%	41.6%
60			39	170	8	0.13	1.32	0.77	0.16	3.54	4.6%	21.7%	0.06	0.72	0.37	0.09	1.53	43.1%	43.1%
61			40	169	8	0.27	0.54	0.82	0.07	3.21	2.0%	25.6%	0.09	0.12	0.37	0.03	1.87	58.3%	58.3%
62			41	168	8	0.32	0.25	0.79	0.07	3.29	2.0%	23.9%	0.04	0.09	0.43	0.03	1.93	58.5%	58.5%
63	42	167	8	1.06	0.37	0.69	0.08	3.46	2.4%	19.9%	0.47	0.09	0.24	0.04	1.70	49.2%	49.2%		

- J-patch Mid CH

No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	4cm ² PD(mW/cm ²)						max ratio out of all beams		4cm ² PD(mW/cm ²) at 10mm evaluation distance						max ratio out of all beams	
												5.8%	31.2%							63.4%	63.4%
						S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Top 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)		
19	J-P	PATCH	0		1	0.02	0.09	0.05	0.02	0.39	4.4%	12.4%	0.02	0.05	0.03	0.01	0.14	36.2%	36.2%		
20			4		2	0.04	0.12	0.08	0.01	0.81	0.9%	3.3%	0.02	0.10	0.06	0.01	0.41	50.9%	50.9%		
21			5		2	0.02	0.02	0.08	0.01	0.94	0.8%	8.2%	0.06	0.03	0.05	0.00	0.47	50.4%	50.4%		
22			6		2	0.16	0.08	0.06	0.01	0.77	1.4%	8.4%	0.15	0.05	0.05	0.01	0.35	46.1%	46.1%		
23			16		2	0.07	0.13	0.07	0.02	0.80	2.6%	8.6%	0.05	0.13	0.04	0.01	0.41	51.0%	51.0%		
24			17		2	0.15	0.05	0.07	0.01	0.86	1.0%	8.6%	0.15	0.03	0.05	0.01	0.42	49.4%	49.4%		
25			24		4	0.11	0.54	0.23	0.07	1.61	4.2%	14.2%	0.06	0.39	0.15	0.04	0.69	42.8%	42.8%		
26			25		4	0.03	0.10	0.15	0.02	1.82	1.2%	8.4%	0.03	0.13	0.15	0.02	1.01	55.3%	55.3%		
27			26		4	0.08	0.04	0.18	0.02	1.64	1.0%	11.2%	0.07	0.03	0.19	0.01	1.02	62.0%	62.0%		
28			27		4	0.08	0.13	0.11	0.02	1.78	1.0%	6.2%	0.27	0.08	0.10	0.01	0.95	53.3%	53.3%		
29			28		4	0.26	0.19	0.12	0.03	1.64	2.1%	7.1%	0.33	0.09	0.06	0.02	0.84	51.2%	51.2%		
30			39		4	0.08	0.40	0.26	0.06	1.74	3.2%	15.0%	0.04	0.37	0.17	0.03	0.78	44.6%	44.6%		
31			40		4	0.09	0.04	0.18	0.02	1.62	1.1%	11.4%	0.10	0.03	0.16	0.01	0.96	59.1%	59.1%		
32			41		4	0.04	0.05	0.15	0.01	1.71	0.6%	8.6%	0.04	0.07	0.16	0.01	0.98	57.5%	57.5%		
33			42		4	0.23	0.14	0.12	0.02	1.75	1.3%	6.6%	0.32	0.08	0.08	0.01	0.91	51.7%	51.7%		
34			128		1	0.02	0.03	0.03	0.01	0.42	1.6%	7.5%	0.02	0.04	0.03	0.00	0.19	45.2%	45.2%		
35			132		2	0.05	0.07	0.11	0.04	0.80	4.5%	13.9%	0.09	0.07	0.08	0.01	0.38	47.6%	47.6%		
36			133		2	0.02	0.03	0.08	0.01	1.08	1.1%	7.7%	0.01	0.05	0.07	0.01	0.62	57.9%	57.9%		
37			134		2	0.04	0.10	0.05	0.02	0.97	1.6%	5.5%	0.02	0.11	0.06	0.01	0.56	57.4%	57.4%		
38			144		2	0.04	0.03	0.05	0.03	0.97	3.3%	5.2%	0.08	0.02	0.08	0.02	0.54	55.7%	55.7%		
39			145		2	0.03	0.07	0.07	0.01	1.02	1.3%	7.2%	0.02	0.09	0.06	0.01	0.60	58.3%	58.3%		
40			152		4	0.05	0.12	0.06	0.04	1.53	2.5%	3.7%	0.20	0.10	0.14	0.01	0.81	52.9%	52.9%		
41			153		4	0.04	0.07	0.10	0.03	1.48	1.7%	6.9%	0.05	0.03	0.08	0.02	0.94	63.4%	63.4%		
42			154		4	0.03	0.15	0.13	0.02	1.42	1.3%	9.2%	0.02	0.08	0.10	0.01	0.89	62.9%	62.9%		
43			155		4	0.04	0.17	0.11	0.02	1.54	1.5%	6.9%	0.05	0.18	0.09	0.01	0.90	58.1%	58.1%		
44			156		4	0.03	0.43	0.13	0.04	1.62	2.4%	8.0%	0.03	0.42	0.10	0.02	0.82	50.9%	50.9%		
45			167		4	0.04	0.11	0.12	0.03	1.58	1.9%	7.4%	0.15	0.07	0.12	0.02	0.92	58.4%	58.4%		
46			168		4	0.05	0.06	0.10	0.03	1.48	1.9%	6.8%	0.04	0.02	0.08	0.02	0.92	62.5%	62.5%		
47			169		4	0.03	0.11	0.12	0.02	1.45	1.6%	8.5%	0.04	0.08	0.09	0.01	0.90	61.7%	61.7%		
48			170		4	0.03	0.28	0.11	0.03	1.61	1.9%	6.9%	0.04	0.31	0.10	0.01	0.89	55.4%	55.4%		
49			0	128	2	0.11	0.17	0.13	0.04	0.61	5.8%	21.1%	0.05	0.09	0.05	0.01	0.29	48.4%	48.4%		
50			4	134	4	0.13	0.37	0.32	0.05	1.80	2.6%	17.7%	0.03	0.21	0.13	0.02	0.89	49.4%	49.4%		
51			5	133	4	0.16	0.23	0.37	0.02	2.00	1.2%	18.5%	0.06	0.11	0.17	0.01	1.04	52.1%	52.1%		
52			6	132	4	0.48	0.21	0.51	0.08	1.62	4.6%	31.2%	0.19	0.08	0.13	0.02	0.67	41.6%	41.6%		
53			16	145	4	0.10	0.45	0.31	0.05	1.77	3.0%	17.6%	0.06	0.21	0.13	0.02	0.91	51.4%	51.4%		
54			17	144	4	0.44	0.10	0.49	0.07	1.91	3.5%	25.9%	0.19	0.04	0.16	0.02	0.89	46.7%	46.7%		
55			24	156	8	0.15	1.45	0.63	0.16	3.48	4.7%	18.1%	0.08	0.76	0.26	0.09	1.29	37.2%	37.2%		
56			25	154	8	0.11	0.71	0.71	0.07	3.27	2.1%	21.7%	0.02	0.23	0.28	0.03	1.80	55.1%	55.1%		
57			26	153	8	0.28	0.16	0.64	0.05	3.21	1.7%	20.0%	0.08	0.05	0.31	0.02	1.85	57.5%	57.5%		
58			27	152	8	0.94	0.45	0.78	0.07	3.34	2.2%	23.5%	0.53	0.10	0.31	0.02	1.82	54.5%	54.5%		
59			28	155	8	0.65	0.66	0.31	0.07	2.88	2.4%	10.6%	0.42	0.25	0.13	0.03	1.23	42.7%	42.7%		
60			39	170	8	0.13	1.27	0.76	0.13	3.57	3.6%	21.2%	0.07	0.72	0.32	0.07	1.45	40.8%	40.8%		
61			40	169	8	0.25	0.49	0.65	0.07	3.17	2.2%	20.6%	0.09	0.12	0.33	0.03	1.69	53.3%	53.3%		
62			41	168	8	0.29	0.24	0.57	0.06	3.20	2.0%	17.9%	0.03	0.06	0.30	0.03	1.96	61.4%	61.4%		
63			42	167	8	1.09	0.39	0.57	0.07	3.34	2.2%	17.0%	0.43	0.13	0.21	0.03	1.72	51.4%	51.4%		

- J-patch High CH

No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	4cm ² PD(mW/cm ²)					max ratio out of all beams		4cm ² PD(mW/cm ²) at 10mm evaluation distance					max ratio out of all beams	
											5.4%	29.9%						65.1%	65.1%
						S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Top 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)
19	J-P	PATCH	0		1	0.01	0.09	0.03	0.02	0.36	5.3%	8.9%	0.01	0.05	0.02	0.01	0.13	37.4%	37.4%
20			4		2	0.03	0.11	0.06	0.01	0.78	1.7%	7.8%	0.02	0.09	0.05	0.01	0.41	52.3%	52.3%
21			5		2	0.05	0.01	0.07	0.01	0.90	0.6%	8.3%	0.06	0.03	0.05	0.00	0.45	50.0%	50.0%
22			6		2	0.15	0.04	0.06	0.02	0.72	2.4%	7.8%	0.13	0.05	0.05	0.01	0.34	46.5%	46.5%
23			16		2	0.07	0.15	0.07	0.02	0.75	3.0%	8.9%	0.05	0.11	0.04	0.01	0.39	51.7%	51.7%
24			2		2	0.13	0.03	0.07	0.01	0.80	1.7%	8.5%	0.13	0.03	0.05	0.01	0.40	49.9%	49.9%
25			24		4	0.10	0.47	0.23	0.08	1.52	5.0%	15.1%	0.04	0.36	0.14	0.04	0.68	44.6%	44.6%
26			25		4	0.03	0.06	0.17	0.02	1.76	1.2%	9.9%	0.02	0.13	0.15	0.01	1.01	57.4%	57.4%
27			26		4	0.08	0.04	0.17	0.01	1.55	0.9%	10.9%	0.06	0.02	0.16	0.01	0.97	62.9%	62.9%
28			27		4	0.05	0.15	0.10	0.03	1.70	1.8%	5.6%	0.22	0.08	0.10	0.01	0.88	51.6%	51.6%
29			28		4	0.23	0.18	0.09	0.05	1.53	3.0%	5.9%	0.28	0.08	0.06	0.01	0.74	48.4%	48.4%
30			39		4	0.08	0.42	0.24	0.06	1.67	3.5%	14.5%	0.04	0.35	0.15	0.03	0.77	46.3%	46.3%
31			40		4	0.08	0.04	0.17	0.02	1.57	1.1%	10.9%	0.08	0.03	0.16	0.01	0.93	59.1%	59.1%
32			41		4	0.03	0.08	0.13	0.01	1.59	0.8%	8.0%	0.05	0.08	0.14	0.01	0.95	59.4%	59.4%
33			42		4	0.20	0.15	0.09	0.04	1.66	2.4%	5.6%	0.27	0.08	0.08	0.02	0.81	49.2%	49.2%
34			128		1	0.02	0.02	0.03	0.00	0.42	1.0%	7.4%	0.02	0.03	0.02	0.00	0.19	45.8%	45.8%
35			132		2	0.07	0.06	0.11	0.03	0.78	3.2%	14.0%	0.09	0.07	0.08	0.01	0.36	46.6%	46.6%
36			133		2	0.02	0.03	0.08	0.01	1.07	0.7%	7.7%	0.02	0.05	0.08	0.00	0.61	57.2%	57.2%
37			134		2	0.05	0.09	0.08	0.02	0.95	1.8%	8.1%	0.03	0.11	0.07	0.01	0.54	57.0%	57.0%
38			144		2	0.04	0.03	0.10	0.02	0.97	1.8%	10.8%	0.08	0.02	0.09	0.01	0.53	54.7%	54.7%
39			145		2	0.04	0.07	0.07	0.01	1.02	1.4%	7.2%	0.02	0.08	0.08	0.01	0.58	57.1%	57.1%
40			152		4	0.05	0.11	0.15	0.02	1.43	1.7%	10.6%	0.17	0.10	0.13	0.01	0.74	51.8%	51.8%
41			153		4	0.03	0.08	0.10	0.02	1.49	1.3%	6.9%	0.04	0.04	0.12	0.01	0.91	61.2%	61.2%
42			154		4	0.05	0.13	0.12	0.02	1.35	1.5%	9.0%	0.03	0.08	0.14	0.01	0.84	62.2%	62.2%
43			155		4	0.04	0.11	0.10	0.01	1.46	1.0%	6.9%	0.05	0.14	0.10	0.01	0.85	58.2%	58.2%
44			156		4	0.04	0.22	0.10	0.03	1.61	1.7%	6.4%	0.02	0.36	0.10	0.01	0.80	49.4%	49.4%
45			167		4	0.03	0.11	0.13	0.02	1.51	1.3%	8.7%	0.12	0.06	0.12	0.01	0.87	57.5%	57.5%
46			168		4	0.04	0.08	0.12	0.02	1.39	1.5%	8.6%	0.04	0.04	0.12	0.01	0.91	65.1%	65.1%
47			169		4	0.06	0.12	0.11	0.02	1.36	1.6%	8.0%	0.05	0.08	0.11	0.01	0.83	61.5%	61.5%
48			170		4	0.03	0.15	0.08	0.02	1.57	1.2%	4.8%	0.03	0.25	0.10	0.01	0.87	55.3%	55.3%
49			0	128	2	0.08	0.17	0.11	0.03	0.60	5.4%	17.9%	0.04	0.09	0.04	0.01	0.29	48.4%	48.4%
50			4	134	4	0.13	0.40	0.30	0.05	1.75	3.0%	17.3%	0.03	0.19	0.13	0.02	0.90	51.6%	51.6%
51			5	133	4	0.14	0.19	0.43	0.02	1.93	0.8%	22.5%	0.06	0.10	0.21	0.01	1.06	55.1%	55.1%
52			6	132	4	0.47	0.22	0.47	0.07	1.57	4.3%	29.9%	0.16	0.08	0.13	0.01	0.65	41.2%	41.2%
53			16	145	4	0.11	0.37	0.34	0.05	1.73	3.1%	19.6%	0.06	0.20	0.16	0.02	0.90	52.0%	52.0%
54			17	144	4	0.43	0.09	0.47	0.05	1.87	2.5%	25.3%	0.16	0.04	0.17	0.01	0.86	46.1%	46.1%
55			24	156	8	0.18	1.36	0.63	0.16	3.37	4.7%	18.6%	0.06	0.66	0.25	0.09	1.23	36.6%	36.6%
56			25	154	8	0.12	0.80	0.78	0.05	3.22	1.6%	24.1%	0.02	0.17	0.35	0.02	1.82	56.5%	56.5%
57			26	153	8	0.23	0.18	0.72	0.04	3.02	1.4%	23.7%	0.06	0.07	0.27	0.02	1.88	62.2%	62.2%
58			27	152	8	0.79	0.45	0.77	0.07	3.19	2.3%	24.1%	0.41	0.11	0.30	0.02	1.63	51.2%	51.2%
59			28	155	8	0.55	0.75	0.29	0.07	2.76	2.6%	10.5%	0.37	0.21	0.14	0.02	1.09	39.6%	39.6%
60			39	170	8	0.15	1.17	0.74	0.11	3.46	3.3%	21.5%	0.06	0.63	0.30	0.07	1.42	41.1%	41.1%
61			40	169	8	0.25	0.56	0.63	0.05	3.00	1.7%	21.0%	0.09	0.10	0.34	0.02	1.60	53.2%	53.2%
62			41	168	8	0.26	0.25	0.70	0.05	3.18	1.6%	22.2%	0.05	0.08	0.31	0.02	1.94	61.1%	61.1%
63			42	167	8	0.85	0.41	0.64	0.07	3.15	2.3%	20.2%	0.33	0.14	0.27	0.03	1.62	51.3%	51.3%

Table 3. PD of Ant J –dipole/patch antenna (39GHz – n260)

- J-dipole Low CH

										max ratio out of all beams										max ratio out of all beams	
No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	4cm ² PD(mW/cm ²)					8.6%	43.5%	4cm ² PD(mW/cm ²) at 10mm evaluation distance					67.8%	67.8%		
						S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Top 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)		
1	J-D	DIPOLE	1	2	0.03	0.15	0.21	0.02	0.52	4.2%	40.3%	0.02	0.08	0.13	0.01	0.27	52.8%	52.8%			
2			7	4	0.11	0.11	0.36	0.03	0.94	3.2%	38.0%	0.07	0.15	0.27	0.02	0.54	57.3%	57.3%			
3			8	4	0.04	0.34	0.22	0.04	0.80	4.9%	27.0%	0.08	0.17	0.24	0.02	0.48	59.4%	59.4%			
4			9	4	0.05	0.36	0.26	0.04	0.73	5.5%	35.9%	0.10	0.19	0.20	0.03	0.35	48.5%	48.5%			
5			18	4	0.04	0.30	0.24	0.04	0.83	4.5%	28.6%	0.08	0.14	0.29	0.02	0.56	67.8%	67.8%			
6			19	4	0.04	0.36	0.18	0.04	0.69	5.9%	26.4%	0.09	0.18	0.22	0.02	0.42	60.8%	60.8%			
7			129	2	0.05	0.02	0.12	0.01	0.38	3.4%	30.5%	0.06	0.08	0.13	0.01	0.23	60.9%	60.9%			
8			135	4	0.15	0.05	0.28	0.07	0.78	8.5%	36.1%	0.18	0.11	0.18	0.03	0.42	53.4%	53.4%			
9			136	4	0.10	0.05	0.41	0.03	0.98	2.6%	41.9%	0.06	0.07	0.29	0.01	0.58	59.3%	59.3%			
10			137	4	0.14	0.07	0.24	0.07	0.87	8.6%	27.8%	0.11	0.18	0.13	0.03	0.46	53.6%	53.6%			
11			146	4	0.15	0.05	0.40	0.04	0.92	4.0%	43.5%	0.15	0.03	0.33	0.02	0.57	61.7%	61.7%			
12			147	4	0.12	0.04	0.26	0.06	1.00	5.7%	26.1%	0.09	0.19	0.14	0.03	0.49	49.6%	49.6%			
13			1	129	4	0.12	0.27	0.36	0.04	0.87	5.1%	41.9%	0.08	0.12	0.20	0.02	0.55	63.3%	63.3%		
14			7	136	8	0.34	0.30	0.67	0.08	1.73	4.4%	38.4%	0.20	0.13	0.45	0.04	1.07	61.9%	61.9%		
15			8	135	8	0.20	0.54	0.51	0.09	1.45	6.0%	35.0%	0.39	0.30	0.33	0.05	0.73	50.3%	50.3%		
16			9	137	8	0.37	0.89	0.67	0.12	1.59	7.2%	42.1%	0.32	0.35	0.32	0.04	0.66	41.5%	41.5%		
17			18	146	8	0.14	0.41	0.65	0.07	1.67	4.5%	38.8%	0.27	0.14	0.32	0.04	0.71	42.6%	42.6%		
18			19	147	8	0.29	0.78	0.54	0.10	1.63	6.4%	33.2%	0.30	0.32	0.29	0.04	0.68	42.0%	42.0%		

- J-dipole Mid CH

						max ratio out of all beams						max ratio out of all beams											
No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	4cm ² PD(mW/cm ²)					10.2%		45.8%		4cm ² PD(mW/cm ²) at 10mm evaluation distance					68.9%		68.9%	
						S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Top 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)				
1	J-D	DIPOLE	1	2	0.04	0.13	0.16	0.03	0.39	6.9%	42.5%	0.04	0.07	0.10	0.02	0.19	50.2%						
2			7	4	0.13	0.12	0.30	0.03	0.66	5.0%	44.8%	0.11	0.12	0.20	0.02	0.34	52.2%	52.2%					
3			8	4	0.05	0.26	0.18	0.04	0.68	6.5%	26.5%	0.14	0.14	0.18	0.02	0.28	41.8%	41.8%					
4			9	4	0.14	0.29	0.16	0.03	0.55	5.1%	28.7%	0.16	0.17	0.13	0.03	0.29	53.8%	53.8%					
5			18	4	0.04	0.24	0.19	0.04	0.70	5.6%	26.9%	0.08	0.11	0.22	0.02	0.38	53.8%	53.8%					
6			19	4	0.07	0.28	0.18	0.05	0.62	7.4%	28.4%	0.15	0.16	0.16	0.02	0.24	38.9%	38.9%					
7			129	2	0.05	0.05	0.12	0.01	0.30	4.0%	39.8%	0.05	0.06	0.11	0.01	0.21	68.9%	68.9%					
8			135	4	0.12	0.14	0.18	0.05	0.70	6.9%	26.2%	0.11	0.09	0.09	0.02	0.28	39.7%	39.7%					
9			136	4	0.10	0.07	0.39	0.03	0.93	3.2%	41.6%	0.07	0.06	0.30	0.01	0.52	56.2%	56.2%					
10			137	4	0.13	0.14	0.21	0.04	0.76	4.9%	27.8%	0.06	0.11	0.15	0.02	0.36	47.7%	47.7%					
11			146	4	0.10	0.09	0.32	0.04	0.85	4.7%	37.6%	0.11	0.05	0.23	0.02	0.47	55.1%	55.1%					
12			147	4	0.11	0.06	0.29	0.03	0.85	3.2%	34.3%	0.11	0.06	0.11	0.17	0.02	0.38	44.6%	44.6%				
13			1	129	4	0.13	0.23	0.27	0.07	0.64	10.2%	41.9%	0.11	0.09	0.17	0.02	0.43	66.3%	66.3%				
14			7	136	8	0.40	0.29	0.70	0.11	1.54	7.1%	45.8%	0.22	0.12	0.46	0.04	0.83	54.1%	54.1%				
15			8	135	8	0.25	0.43	0.47	0.08	1.40	6.3%	33.8%	0.42	0.25	0.22	0.04	0.67	47.9%	47.9%				
16			9	137	8	0.37	0.70	0.44	0.08	1.29	6.5%	34.5%	0.37	0.31	0.19	0.04	0.64	49.6%	49.6%				
17			18	146	8	0.16	0.39	0.62	0.11	1.58	6.7%	39.0%	0.28	0.13	0.28	0.04	0.63	40.0%	40.0%				
18			19	147	8	0.33	0.61	0.42	0.09	1.38	6.3%	30.4%	0.33	0.28	0.23	0.04	0.58	42.3%	42.3%				

- J-dipole High CH

						max ratio out of all beams						max ratio out of all beams													
						4cm² PD(mW/cm²)						4cm² PD(mW/cm²) at 10mm evaluation distance													
No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.							12.1%		56.3%								58.9%		58.9%	
						S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Top 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)						
1	J-D	DIPOLE	1		2	0.02	0.15	0.12	0.03	0.31	10.0%			37.0%	0.02	0.07	0.08	0.02	0.10	33.1%			33.1%		
2			7		4	0.05	0.14	0.27	0.03	0.60	4.6%			44.8%	0.04	0.09	0.19	0.02	0.22	37.3%			37.3%		
3			8		4	0.06	0.28	0.24	0.04	0.68	5.8%			35.3%	0.06	0.11	0.15	0.02	0.20	29.3%			29.3%		
4			9		4	0.07	0.26	0.18	0.03	0.56	6.1%			32.1%	0.07	0.13	0.12	0.03	0.24	41.9%			41.9%		
5			18		4	0.06	0.28	0.27	0.05	0.72	6.7%			37.3%	0.03	0.08	0.22	0.02	0.25	35.1%			35.1%		
6			19		4	0.06	0.27	0.21	0.04	0.62	6.0%			34.1%	0.07	0.13	0.12	0.03	0.19	30.7%			30.7%		
7			129		2	0.04	0.04	0.15	0.01	0.34	2.7%			43.6%	0.04	0.07	0.10	0.01	0.20	58.9%			58.9%		
8			135		4	0.08	0.09	0.25	0.04	0.67	6.2%			36.7%	0.08	0.08	0.18	0.02	0.26	38.4%			38.4%		
9			136		4	0.08	0.07	0.35	0.03	0.77	3.3%			45.6%	0.05	0.06	0.29	0.01	0.42	54.9%			54.9%		
10			137		4	0.07	0.07	0.27	0.04	0.86	4.6%			31.7%	0.06	0.10	0.16	0.02	0.39	45.0%			45.0%		
11			146		4	0.08	0.08	0.32	0.03	0.72	4.3%			44.5%	0.05	0.05	0.26	0.02	0.34	47.7%			47.7%		
12			147		4	0.09	0.06	0.35	0.03	0.91	3.6%			38.2%	0.05	0.09	0.18	0.02	0.41	44.9%			44.9%		
13			1	129	4	0.08	0.19	0.27	0.07	0.62	12.1%			44.1%	0.06	0.13	0.18	0.04	0.29	46.6%			46.6%		
14			7	136	8	0.22	0.27	0.63	0.05	1.23	4.5%			51.5%	0.09	0.16	0.53	0.03	0.69	56.2%			56.2%		
15			8	135	8	0.18	0.44	0.51	0.13	1.08	11.8%			47.6%	0.23	0.23	0.19	0.04	0.49	45.5%			45.5%		
16			9	137	8	0.28	0.61	0.60	0.11	1.34	7.9%			44.6%	0.22	0.28	0.26	0.04	0.61	45.1%			45.1%		
17			18	146	8	0.17	0.36	0.76	0.10	1.35	7.6%			56.3%	0.13	0.17	0.29	0.03	0.49	35.9%			35.9%		
18			19	147	8	0.24	0.55	0.53	0.11	1.37	7.7%			38.8%	0.18	0.26	0.27	0.03	0.64	46.6%			46.6%		

- J-patch Low CH

No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	4cm ² PD(mW/cm ²)					max ratio out of all beams		4cm ² PD(mW/cm ²) at 10mm evaluation distance					max ratio out of all beams	
						S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	8.9%	30.0%	S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	74.7%	74.7%
											ratio (Front 2mm)/(worst-surface 2mm)	ratio (Top 2mm)/(worst-surface 2mm)						ratio worst-surface (10mm/2mm)	ratio (Back 10mm)/(worst-surface 2mm)
19	J-P	PATCH	0		1	0.03	0.09	0.03	0.02	0.39	3.9%	6.7%	0.02	0.05	0.03	0.00	0.13	33.4%	33.4%
20			4		2	0.08	0.05	0.09	0.02	0.75	2.7%	11.9%	0.05	0.05	0.10	0.01	0.29	39.5%	39.5%
21			5		2	0.04	0.06	0.13	0.02	0.76	2.1%	17.5%	0.02	0.02	0.10	0.01	0.35	46.1%	46.1%
22			6		2	0.04	0.24	0.07	0.03	0.65	4.9%	11.5%	0.11	0.06	0.10	0.01	0.28	43.1%	43.1%
23			16		2	0.08	0.04	0.08	0.02	0.75	2.5%	10.8%	0.03	0.08	0.05	0.01	0.26	33.8%	33.8%
24			17		2	0.07	0.07	0.16	0.03	0.65	4.0%	24.3%	0.09	0.05	0.10	0.01	0.31	47.8%	47.8%
25			24		4	0.15	0.15	0.15	0.06	1.16	4.8%	13.0%	0.08	0.23	0.10	0.02	0.54	46.7%	46.7%
26			25		4	0.08	0.10	0.11	0.03	1.42	1.9%	7.7%	0.05	0.12	0.15	0.02	0.57	40.3%	40.3%
27			26		4	0.04	0.36	0.20	0.06	1.38	4.6%	14.3%	0.04	0.07	0.25	0.02	0.77	56.1%	56.1%
28			27		4	0.09	0.42	0.20	0.10	1.20	8.1%	16.5%	0.10	0.11	0.17	0.04	0.61	50.9%	50.9%
29			28		4	0.07	0.30	0.23	0.03	1.08	2.8%	21.7%	0.17	0.12	0.17	0.03	0.53	49.6%	49.6%
30			39		4	0.10	0.11	0.14	0.04	1.33	2.7%	10.8%	0.07	0.19	0.10	0.02	0.57	42.8%	42.8%
31			40		4	0.05	0.31	0.20	0.05	1.44	3.2%	14.2%	0.04	0.06	0.24	0.01	0.67	46.7%	46.7%
32			41		4	0.07	0.39	0.23	0.11	1.21	8.9%	18.8%	0.04	0.07	0.21	0.02	0.76	62.6%	62.6%
33			42		4	0.08	0.33	0.25	0.04	0.95	4.3%	25.9%	0.13	0.12	0.17	0.03	0.58	60.9%	60.9%
34			128		1	0.03	0.02	0.03	0.01	0.40	2.0%	7.1%	0.03	0.02	0.03	0.00	0.18	45.0%	45.0%
35			132		2	0.07	0.03	0.07	0.02	0.82	1.9%	8.7%	0.12	0.12	0.05	0.01	0.39	47.4%	47.4%
36			133		2	0.04	0.07	0.07	0.02	0.74	2.4%	9.7%	0.05	0.03	0.10	0.01	0.44	59.1%	59.1%
37			134		2	0.04	0.27	0.10	0.04	0.59	6.7%	16.5%	0.03	0.07	0.09	0.01	0.44	74.7%	74.7%
38			144		2	0.02	0.06	0.11	0.01	0.63	1.1%	17.0%	0.11	0.06	0.07	0.01	0.40	63.8%	63.8%
39			145		2	0.06	0.07	0.03	0.01	0.71	2.0%	4.2%	0.04	0.05	0.10	0.01	0.45	63.4%	63.4%
40			152		4	0.15	0.14	0.12	0.04	1.30	3.4%	9.0%	0.11	0.16	0.13	0.03	0.64	49.2%	49.2%
41			153		4	0.10	0.07	0.09	0.02	1.29	1.3%	6.8%	0.09	0.08	0.16	0.03	0.64	50.0%	50.0%
42			154		4	0.05	0.18	0.21	0.05	1.47	3.5%	14.2%	0.05	0.11	0.15	0.02	0.58	39.4%	39.4%
43			155		4	0.09	0.40	0.15	0.04	1.22	3.3%	12.5%	0.07	0.13	0.12	0.02	0.63	51.8%	51.8%
44			156		4	0.14	0.11	0.10	0.05	1.06	4.3%	9.6%	0.09	0.17	0.13	0.03	0.65	61.4%	61.4%
45			167		4	0.13	0.09	0.09	0.04	1.25	2.8%	7.3%	0.10	0.13	0.15	0.04	0.61	48.5%	48.5%
46			168		4	0.07	0.14	0.18	0.02	1.05	1.5%	17.3%	0.10	0.06	0.18	0.03	0.69	65.4%	65.4%
47			169		4	0.08	0.33	0.09	0.04	1.35	3.2%	6.7%	0.05	0.11	0.14	0.02	0.59	43.9%	43.9%
48			170		4	0.11	0.22	0.08	0.04	1.07	3.3%	7.6%	0.07	0.15	0.12	0.02	0.65	61.3%	61.3%
49			0	128	2	0.13	0.16	0.13	0.04	0.73	5.2%	18.3%	0.03	0.06	0.05	0.01	0.26	36.1%	36.1%
50			4	132	4	0.27	0.35	0.44	0.06	1.67	3.4%	26.0%	0.11	0.07	0.17	0.03	0.57	34.1%	34.1%
51			5	133	4	0.21	0.18	0.46	0.07	1.53	4.7%	30.0%	0.07	0.05	0.23	0.02	0.74	48.4%	48.4%
52			6	134	4	0.21	0.92	0.27	0.12	1.33	8.8%	20.3%	0.21	0.12	0.14	0.02	0.78	58.8%	58.8%
53			16	144	4	0.15	0.25	0.36	0.04	1.36	3.0%	26.4%	0.04	0.13	0.19	0.02	0.74	54.0%	54.0%
54			17	145	4	0.45	0.28	0.39	0.08	1.54	5.0%	25.2%	0.17	0.08	0.13	0.01	0.84	54.8%	54.8%
55			24	153	8	0.34	0.67	0.70	0.10	2.63	3.7%	26.5%	0.21	0.57	0.22	0.04	1.10	41.7%	41.7%
56			25	154	8	0.23	0.42	0.76	0.10	3.04	3.3%	24.9%	0.11	0.18	0.38	0.02	1.11	36.5%	36.5%
57			26	152	8	0.27	0.54	0.63	0.14	2.98	4.8%	21.3%	0.14	0.09	0.47	0.03	1.42	47.6%	47.6%
58			27	155	8	0.73	1.10	0.60	0.19	2.60	7.5%	23.3%	0.16	0.31	0.30	0.08	1.11	42.7%	42.7%
59			28	156	8	0.66	1.05	0.48	0.14	2.48	5.6%	19.3%	0.30	0.29	0.29	0.05	0.96	38.6%	38.6%
60			39	168	8	0.23	0.38	0.76	0.07	2.78	2.6%	27.4%	0.17	0.45	0.20	0.04	1.11	39.9%	39.9%
61			40	167	8	0.27	0.51	0.63	0.13	2.93	4.6%	21.4%	0.08	0.12	0.39	0.02	1.14	38.7%	38.7%
62			41	169	8	0.56	0.98	0.67	0.24	2.83	8.3%	23.6%	0.13	0.12	0.40	0.03	1.52	53.6%	53.6%
63			42	170	8	0.84	0.96	0.49	0.14	2.69	5.3%	18.1%	0.20	0.25	0.28	0.08	1.23	45.8%	45.8%

- J-patch Mid CH

No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	4cm ² PD(mW/cm ²)					max ratio out of all beams		4cm ² PD(mW/cm ²) at 10mm evaluation distance					max ratio out of all beams	
											7.3%	35.3%						72.4%	72.4%
						S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Top 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (Back 10mm)/(worst-surface 2mm)
19	J-P	PATCH	0		1	0.02	0.06	0.03	0.01	0.48	1.7%	6.4%	0.02	0.06	0.03	0.01	0.15	30.3%	30.3%
20			4		2	0.08	0.04	0.07	0.00	0.80	0.4%	8.3%	0.04	0.05	0.10	0.01	0.35	43.4%	43.4%
21			5		2	0.06	0.03	0.19	0.02	0.80	1.9%	23.5%	0.03	0.02	0.13	0.01	0.36	44.8%	44.8%
22			6		2	0.04	0.20	0.10	0.02	0.78	2.2%	12.3%	0.09	0.09	0.12	0.01	0.25	32.0%	32.0%
23			16		2	0.07	0.03	0.12	0.00	0.80	0.4%	15.0%	0.05	0.09	0.10	0.01	0.40	49.8%	49.8%
24			17		2	0.08	0.09	0.19	0.02	0.74	2.9%	25.2%	0.09	0.07	0.14	0.01	0.29	39.6%	39.6%
25			24		4	0.13	0.09	0.15	0.03	1.46	1.8%	10.3%	0.08	0.31	0.12	0.01	0.73	50.0%	50.0%
26			25		4	0.11	0.12	0.19	0.03	1.33	2.0%	14.0%	0.05	0.09	0.21	0.02	0.79	59.2%	59.2%
27			26		4	0.07	0.27	0.31	0.06	1.55	4.0%	20.0%	0.06	0.10	0.24	0.02	0.79	51.2%	51.2%
28			27		4	0.11	0.35	0.26	0.07	1.49	4.4%	17.3%	0.08	0.12	0.23	0.03	0.80	53.9%	53.9%
29			28		4	0.14	0.27	0.35	0.04	1.26	3.5%	27.6%	0.14	0.16	0.22	0.02	0.70	55.2%	55.2%
30			39		4	0.10	0.13	0.20	0.03	1.39	2.0%	14.3%	0.07	0.25	0.14	0.01	0.73	52.7%	52.7%
31			40		4	0.06	0.25	0.29	0.06	1.54	4.0%	18.9%	0.06	0.09	0.25	0.02	0.79	51.0%	51.0%
32			41		4	0.10	0.32	0.28	0.05	1.55	3.1%	18.2%	0.04	0.08	0.23	0.02	0.75	48.7%	48.7%
33			42		4	0.13	0.38	0.37	0.04	1.26	3.4%	29.2%	0.11	0.14	0.21	0.02	0.77	61.3%	61.3%
34			128		1	0.03	0.02	0.04	0.01	0.40	1.7%	9.8%	0.03	0.02	0.04	0.00	0.18	45.6%	45.6%
35			132		2	0.09	0.04	0.04	0.02	0.82	2.0%	5.4%	0.12	0.09	0.04	0.01	0.43	52.1%	52.1%
36			133		2	0.04	0.05	0.13	0.01	0.78	1.3%	16.4%	0.04	0.03	0.11	0.01	0.49	63.2%	63.2%
37			134		2	0.03	0.27	0.10	0.04	0.67	5.5%	14.2%	0.05	0.06	0.08	0.01	0.47	70.3%	70.3%
38			144		2	0.02	0.06	0.20	0.02	0.73	2.8%	27.3%	0.08	0.06	0.08	0.01	0.47	65.1%	65.1%
39			145		2	0.05	0.07	0.06	0.01	0.71	1.3%	7.9%	0.04	0.04	0.09	0.01	0.48	68.3%	68.3%
40			152		4	0.14	0.10	0.23	0.04	1.42	2.5%	15.9%	0.11	0.11	0.11	0.03	0.77	54.4%	54.4%
41			153		4	0.09	0.08	0.31	0.02	1.54	1.2%	19.9%	0.06	0.12	0.18	0.02	0.75	48.4%	48.4%
42			154		4	0.05	0.23	0.22	0.07	1.49	4.9%	14.5%	0.08	0.11	0.19	0.01	0.69	46.2%	46.2%
43			155		4	0.06	0.20	0.16	0.04	1.34	3.3%	11.6%	0.06	0.12	0.18	0.01	0.78	58.3%	58.3%
44			156		4	0.12	0.26	0.23	0.02	1.16	1.7%	19.8%	0.06	0.17	0.19	0.02	0.78	67.5%	67.5%
45			167		4	0.12	0.07	0.27	0.03	1.53	1.8%	17.9%	0.09	0.12	0.14	0.03	0.77	50.5%	50.5%
46			168		4	0.07	0.11	0.29	0.02	1.22	1.3%	23.3%	0.06	0.11	0.20	0.02	0.76	61.8%	61.8%
47			169		4	0.06	0.23	0.13	0.07	1.41	5.1%	9.2%	0.08	0.12	0.16	0.01	0.72	50.9%	50.9%
48			170		4	0.07	0.14	0.19	0.06	1.13	5.1%	16.6%	0.05	0.15	0.20	0.01	0.82	72.4%	72.4%
49			0	128	2	0.10	0.14	0.16	0.02	0.82	2.8%	19.3%	0.04	0.06	0.07	0.01	0.29	35.9%	35.9%
50			4	132	4	0.27	0.29	0.48	0.06	1.91	3.2%	25.2%	0.12	0.09	0.15	0.03	0.65	34.2%	34.2%
51			5	133	4	0.18	0.12	0.56	0.04	1.60	2.8%	35.3%	0.08	0.03	0.18	0.02	0.73	45.9%	45.9%
52			6	134	4	0.21	0.79	0.33	0.12	1.58	7.3%	21.1%	0.25	0.12	0.14	0.02	0.81	51.3%	51.3%
53			16	144	4	0.13	0.27	0.52	0.04	1.46	2.5%	35.3%	0.07	0.15	0.21	0.02	0.82	56.0%	56.0%
54			17	145	4	0.40	0.27	0.35	0.07	1.59	4.1%	21.8%	0.19	0.08	0.19	0.01	0.83	52.0%	52.0%
55			24	153	8	0.31	0.66	1.06	0.10	3.47	2.8%	30.4%	0.19	0.49	0.28	0.03	1.25	35.9%	35.9%
56			25	154	8	0.35	0.48	0.89	0.13	3.11	4.3%	28.5%	0.12	0.17	0.29	0.03	1.33	42.8%	42.8%
57			26	152	8	0.28	0.59	0.79	0.16	3.39	4.8%	23.4%	0.19	0.10	0.43	0.04	1.62	48.0%	48.0%
58			27	155	8	0.73	0.76	0.70	0.14	3.00	4.6%	23.2%	0.21	0.34	0.27	0.08	1.35	45.0%	45.0%
59			28	156	8	0.61	0.88	0.58	0.08	2.59	3.3%	22.5%	0.23	0.26	0.23	0.03	1.24	47.9%	47.9%
60			39	168	8	0.25	0.40	0.97	0.07	2.96	2.5%	32.9%	0.15	0.42	0.26	0.04	1.28	43.2%	43.2%
61			40	167	8	0.24	0.49	0.95	0.12	3.37	3.5%	28.2%	0.21	0.14	0.44	0.03	1.33	39.5%	39.5%
62			41	169	8	0.62	0.88	0.78	0.23	3.18	7.2%	24.4%	0.12	0.25	0.42	0.07	1.34	42.1%	42.1%
63			42	170	8	0.69	0.66	0.71	0.11	3.07	3.6%	23.1%	0.21	0.27	0.36	0.05	1.43	46.6%	46.6%

- J-patch High CH

No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	4cm ² PD(mW/cm ²)					max ratio out of all beams		4cm ² PD(mW/cm ²) at 10mm evaluation distance					max ratio out of all beams	
						S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	6.6%	42.5%	S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	71.1%	71.1%
											ratio (Front 2mm)/(worst-surface 2mm)	ratio (Top 2mm)/(worst-surface 2mm)						ratio worst-surface (10mm/2mm)	ratio (Back 10mm)/(worst-surface 2mm)
19	J-P	PATCH	0		1	0.03	0.04	0.05	0.01	0.50	1.9%	9.3%	0.01	0.04	0.02	0.01	0.14	28.6%	28.6%
20			4		2	0.12	0.04	0.08	0.02	0.59	2.6%	12.8%	0.08	0.04	0.07	0.01	0.24	40.9%	40.9%
21			5		2	0.05	0.06	0.19	0.02	0.65	3.2%	29.9%	0.02	0.02	0.10	0.01	0.30	46.5%	46.5%
22			6		2	0.04	0.16	0.10	0.02	0.83	2.5%	12.0%	0.06	0.10	0.09	0.02	0.22	26.7%	26.7%
23			16		2	0.11	0.04	0.07	0.01	0.60	2.4%	12.4%	0.04	0.09	0.08	0.01	0.37	62.3%	62.3%
24			17		2	0.08	0.08	0.17	0.03	0.63	5.3%	27.9%	0.04	0.08	0.11	0.02	0.26	41.9%	41.9%
25			24		4	0.14	0.10	0.16	0.02	1.30	1.7%	12.7%	0.11	0.18	0.13	0.02	0.62	47.5%	47.5%
26			25		4	0.20	0.09	0.13	0.03	1.05	3.1%	12.4%	0.06	0.08	0.17	0.01	0.73	69.4%	69.4%
27			26		4	0.05	0.28	0.25	0.06	1.43	4.3%	17.1%	0.05	0.06	0.20	0.02	0.64	44.9%	44.9%
28			27		4	0.14	0.27	0.29	0.04	1.42	2.8%	20.7%	0.09	0.11	0.20	0.03	0.71	49.7%	49.7%
29			28		4	0.17	0.20	0.22	0.04	1.11	4.0%	20.1%	0.13	0.10	0.20	0.03	0.63	56.0%	56.0%
30			39		4	0.19	0.09	0.11	0.03	1.17	2.7%	9.4%	0.09	0.15	0.15	0.01	0.67	56.9%	56.9%
31			40		4	0.06	0.25	0.23	0.06	1.36	4.5%	17.1%	0.05	0.05	0.19	0.02	0.62	45.6%	45.6%
32			41		4	0.07	0.29	0.31	0.04	1.42	2.9%	21.7%	0.03	0.06	0.17	0.02	0.66	46.7%	46.7%
33			42		4	0.16	0.20	0.26	0.02	1.16	2.0%	22.1%	0.12	0.10	0.21	0.03	0.68	58.8%	58.8%
34			128		1	0.03	0.02	0.06	0.01	0.43	1.4%	13.0%	0.02	0.03	0.04	0.00	0.18	41.6%	41.6%
35			132		2	0.06	0.02	0.08	0.02	0.81	1.9%	10.4%	0.07	0.10	0.07	0.01	0.40	48.8%	48.8%
36			133		2	0.04	0.04	0.08	0.01	0.85	1.4%	9.4%	0.02	0.03	0.12	0.01	0.46	54.3%	54.3%
37			134		2	0.02	0.20	0.09	0.02	0.55	4.0%	16.9%	0.05	0.07	0.11	0.01	0.33	60.2%	60.2%
38			144		2	0.02	0.09	0.22	0.02	0.64	3.5%	34.3%	0.04	0.05	0.08	0.00	0.38	59.4%	59.4%
39			145		2	0.05	0.10	0.08	0.01	0.81	1.3%	9.5%	0.04	0.05	0.12	0.01	0.44	54.6%	54.6%
40			152		4	0.07	0.13	0.33	0.03	1.49	1.8%	22.3%	0.08	0.12	0.16	0.01	0.72	48.5%	48.5%
41			153		4	0.09	0.10	0.36	0.02	1.33	1.5%	27.0%	0.04	0.10	0.18	0.02	0.66	49.4%	49.4%
42			154		4	0.09	0.26	0.24	0.04	1.21	3.5%	19.5%	0.05	0.07	0.17	0.02	0.57	47.3%	47.3%
43			155		4	0.04	0.15	0.17	0.03	1.33	2.2%	12.9%	0.04	0.10	0.18	0.01	0.67	50.7%	50.7%
44			156		4	0.07	0.28	0.25	0.02	1.33	1.2%	19.2%	0.05	0.21	0.20	0.01	0.69	52.2%	52.2%
45			167		4	0.06	0.09	0.38	0.02	1.44	1.1%	26.3%	0.05	0.08	0.17	0.01	0.75	52.4%	52.4%
46			168		4	0.09	0.11	0.26	0.03	0.93	2.7%	28.4%	0.05	0.12	0.18	0.03	0.62	66.5%	66.5%
47			169		4	0.06	0.17	0.16	0.03	1.33	2.5%	12.1%	0.05	0.07	0.17	0.02	0.61	45.9%	45.9%
48			170		4	0.04	0.17	0.20	0.03	1.43	2.3%	14.0%	0.04	0.16	0.21	0.01	0.71	49.9%	49.9%
49			0	128	2	0.17	0.15	0.15	0.02	0.89	2.0%	17.3%	0.03	0.07	0.05	0.01	0.27	30.7%	30.7%
50			4	132	4	0.27	0.25	0.40	0.05	1.52	3.2%	26.6%	0.13	0.15	0.15	0.02	0.64	41.9%	41.9%
51			5	133	4	0.13	0.11	0.51	0.05	1.49	3.1%	34.3%	0.05	0.06	0.17	0.02	0.79	52.8%	52.8%
52			6	134	4	0.28	0.66	0.34	0.10	1.49	6.6%	23.1%	0.15	0.11	0.13	0.02	0.72	48.1%	48.1%
53			16	144	4	0.14	0.18	0.49	0.07	1.14	6.2%	42.5%	0.06	0.17	0.13	0.02	0.81	71.1%	71.1%
54			17	145	4	0.26	0.24	0.30	0.09	1.45	6.0%	20.4%	0.11	0.08	0.19	0.02	0.83	57.1%	57.1%
55			24	153	8	0.31	0.51	0.93	0.10	2.98	3.2%	31.4%	0.19	0.36	0.31	0.02	1.13	37.9%	37.9%
56			25	154	8	0.38	0.42	0.81	0.14	2.42	5.8%	33.3%	0.11	0.15	0.31	0.03	1.21	50.2%	50.2%
57			26	152	8	0.35	0.60	0.94	0.19	3.14	6.1%	30.1%	0.10	0.14	0.37	0.04	1.47	46.7%	46.7%
58			27	155	8	0.78	0.66	0.76	0.12	2.95	4.2%	25.7%	0.16	0.24	0.30	0.05	1.11	37.5%	37.5%
59			28	156	8	0.52	0.94	0.65	0.10	2.53	4.0%	25.7%	0.21	0.19	0.25	0.03	1.03	40.7%	40.7%
60			39	168	8	0.36	0.32	0.69	0.09	2.51	3.4%	27.4%	0.14	0.25	0.32	0.03	1.13	45.0%	45.0%
61			40	167	8	0.28	0.50	1.05	0.16	3.11	5.3%	33.8%	0.09	0.12	0.25	0.03	1.26	40.4%	40.4%
62			41	169	8	0.66	0.71	0.76	0.19	2.92	6.5%	26.0%	0.09	0.29	0.32	0.08	1.19	40.5%	40.5%
63			42	170	8	0.72	0.68	0.70	0.12	2.86	4.1%	24.5%	0.15	0.22	0.41	0.04	1.34	46.7%	46.7%

3.1.2 Ant K – Patch Antenna

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

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

- K-patch Low CH

						max ratio out of all beams										max ratio out of all beams		
No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	4cm² PD(mW/cm²)		17.9%		30.9%		4cm² PD(mW/cm²) at 10mm evaluation distance		57.7%		51.4%		
						S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Top 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)
109	K	Patch	3	1	0.01	0.32	0.03	0.04	0.24	11.2%	8.0%	0.01	0.09	0.02	0.01	0.06	28.0%	
110			13	2	0.02	0.70	0.04	0.05	0.56	7.2%	5.1%	0.01	0.26	0.04	0.03	0.22	37.9%	
111			14	2	0.02	0.59	0.03	0.06	0.53	10.7%	5.4%	0.01	0.29	0.01	0.03	0.24	49.0%	
112			15	2	0.02	0.52	0.05	0.06	0.48	10.8%	8.7%	0.01	0.20	0.03	0.02	0.18	38.9%	
113			22	2	0.01	0.76	0.02	0.07	0.71	8.9%	2.2%	0.01	0.35	0.02	0.04	0.33	46.1%	
114			23	2	0.03	0.67	0.06	0.04	0.71	5.0%	7.9%	0.01	0.30	0.03	0.03	0.30	42.7%	
115			34	4	0.04	1.17	0.04	0.21	1.07	17.9%	3.4%	0.03	0.59	0.11	0.11	0.45	50.2%	
116			35	4	0.03	1.18	0.04	0.10	1.15	8.7%	3.3%	0.02	0.60	0.03	0.08	0.58	51.3%	
117			36	4	0.01	1.39	0.06	0.13	1.29	9.5%	4.2%	0.01	0.72	0.03	0.10	0.65	52.2%	
118			37	4	0.06	1.11	0.07	0.08	1.33	6.1%	5.5%	0.03	0.62	0.05	0.04	0.64	48.0%	
119			38	4	0.04	1.10	0.13	0.12	1.24	9.6%	10.5%	0.02	0.54	0.06	0.05	0.57	46.2%	
120			47	4	0.02	1.10	0.04	0.12	1.02	11.0%	3.6%	0.02	0.61	0.04	0.10	0.56	55.8%	
121			48	4	0.02	1.15	0.05	0.11	1.22	9.2%	4.2%	0.01	0.65	0.02	0.09	0.60	53.7%	
122			49	4	0.04	1.29	0.06	0.07	1.35	5.3%	4.5%	0.03	0.68	0.04	0.06	0.63	50.8%	
123			50	4	0.05	1.12	0.10	0.10	1.29	7.9%	7.9%	0.02	0.58	0.05	0.05	0.62	47.7%	
124			131	1	0.01	0.28	0.06	0.02	0.23	5.9%	20.0%	0.01	0.10	0.03	0.01	0.07	34.0%	
125			141	2	0.03	0.68	0.07	0.11	0.59	16.5%	10.5%	0.02	0.30	0.05	0.06	0.19	44.6%	
126			142	2	0.01	0.90	0.02	0.08	0.84	9.4%	2.4%	0.01	0.45	0.02	0.06	0.32	49.9%	
127			143	2	0.03	0.69	0.10	0.07	0.76	9.8%	12.9%	0.02	0.27	0.07	0.04	0.29	37.8%	
128			150	2	0.02	0.83	0.02	0.11	0.74	12.8%	2.7%	0.02	0.44	0.01	0.06	0.28	52.7%	
129			151	2	0.01	0.54	0.11	0.03	0.50	5.5%	20.4%	0.01	0.24	0.07	0.02	0.21	44.8%	
130			162	4	0.07	1.18	0.24	0.20	1.06	16.9%	20.4%	0.04	0.56	0.09	0.11	0.39	47.7%	
131			163	4	0.04	1.24	0.05	0.16	1.25	12.6%	3.8%	0.03	0.68	0.03	0.12	0.53	54.2%	
132			164	4	0.02	1.47	0.07	0.09	1.44	5.9%	4.7%	0.02	0.81	0.04	0.09	0.73	55.4%	
133			165	4	0.02	1.40	0.10	0.07	1.37	5.1%	7.1%	0.03	0.71	0.13	0.06	0.63	50.6%	
134			166	4	0.04	1.13	0.40	0.12	1.29	9.3%	30.9%	0.03	0.44	0.27	0.04	0.51	39.8%	
135			175	4	0.07	1.24	0.10	0.16	1.20	13.3%	8.4%	0.05	0.63	0.05	0.10	0.49	51.1%	
136			176	4	0.02	1.51	0.02	0.15	1.42	10.1%	1.2%	0.01	0.87	0.02	0.14	0.70	57.7%	
137			177	4	0.02	1.42	0.10	0.08	1.34	5.4%	6.7%	0.02	0.77	0.07	0.07	0.68	54.1%	
138			178	4	0.03	1.27	0.19	0.08	1.39	5.6%	13.8%	0.02	0.59	0.21	0.05	0.59	42.4%	
139			3	131	2	0.02	0.41	0.11	0.07	0.32	16.7%	27.5%	0.01	0.16	0.06	0.02	0.12	38.7%
140			13	143	4	0.06	1.67	0.21	0.22	1.61	13.2%	12.7%	0.03	0.45	0.09	0.10	0.42	27.1%
141			14	142	4	0.04	1.54	0.09	0.28	1.89	14.2%	4.7%	0.03	0.62	0.04	0.12	0.39	31.9%
142			15	141	4	0.07	1.38	0.20	0.24	1.32	17.6%	14.6%	0.04	0.46	0.06	0.10	0.25	33.4%
143			22	151	4	0.05	1.60	0.20	0.14	1.52	8.8%	12.8%	0.01	0.59	0.12	0.06	0.53	37.0%
144			23	150	4	0.09	1.59	0.15	0.25	1.51	15.7%	9.1%	0.01	0.67	0.04	0.08	0.53	42.2%
145			34	165	8	0.11	3.52	0.63	0.41	3.46	11.6%	17.9%	0.06	0.87	0.15	0.16	0.63	24.8%
146			35	164	8	0.13	3.62	0.21	0.35	3.47	9.7%	5.7%	0.06	1.06	0.08	0.19	0.84	29.3%
147			36	163	8	0.11	3.67	0.16	0.31	3.44	14.0%	4.5%	0.04	1.03	0.07	0.27	0.61	28.1%
148			37	162	8	0.24	3.07	0.41	0.36	3.12	11.6%	13.1%	0.12	0.89	0.14	0.13	0.69	28.4%
149			38	166	8	0.11	2.12	0.66	0.22	2.48	9.0%	26.4%	0.05	0.69	0.34	0.08	0.72	29.1%
150			47	177	8	0.12	3.57	0.37	0.36	3.43	10.1%	10.4%	0.04	1.07	0.07	0.18	0.85	30.1%
151			48	176	8	0.10	3.70	0.10	0.54	3.55	14.7%	2.6%	0.05	1.22	0.04	0.29	0.85	32.9%
152			49	175	8	0.17	3.45	0.28	0.40	3.26	11.5%	8.2%	0.11	0.98	0.12	0.16	0.69	28.3%
153			50	178	8	0.13	2.26	0.42	0.23	2.59	8.8%	16.2%	0.06	0.81	0.24	0.09	0.84	32.3%

- K-patch Mid CH

						max ratio out of all beams								max ratio out of all beams					
No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	4cm ² PD(mW/cm ²)					18.6%	33.1%	4cm ² PD(mW/cm ²) at 10mm evaluation distance					60.3%	53.6%
						S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Top 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)
109	K	Patch	3	1	0.01	0.28	0.03	0.04	0.23	14.9%	10.4%	0.01	0.09	0.01	0.01	0.07	31.7%	24.0%	
110			13	2	0.01	0.63	0.04	0.08	0.53	12.4%	6.6%	0.01	0.26	0.03	0.03	0.20	42.3%	32.5%	
111			14	2	0.02	0.56	0.04	0.04	0.57	6.7%	6.9%	0.01	0.28	0.01	0.03	0.25	49.5%	43.2%	
112			15	2	0.02	0.48	0.05	0.08	0.44	16.7%	10.7%	0.01	0.18	0.03	0.02	0.16	38.0%	33.8%	
113			22	2	0.01	0.77	0.01	0.07	0.71	8.7%	1.4%	0.01	0.38	0.02	0.03	0.34	48.6%	43.4%	
114			23	2	0.02	0.63	0.04	0.04	0.71	5.7%	5.4%	0.01	0.28	0.02	0.02	0.30	42.7%	42.7%	
115			34	4	0.03	1.26	0.05	0.21	1.12	16.3%	3.9%	0.03	0.63	0.10	0.11	0.49	49.8%	38.6%	
116			35	4	0.02	1.26	0.05	0.12	1.19	9.3%	3.9%	0.02	0.66	0.02	0.09	0.59	52.4%	46.9%	
117			36	4	0.03	1.26	0.05	0.06	1.30	4.7%	3.8%	0.02	0.73	0.02	0.08	0.70	55.8%	53.6%	
118			37	4	0.06	1.04	0.09	0.13	1.23	10.5%	7.3%	0.03	0.59	0.04	0.05	0.61	49.7%	49.7%	
119			38	0.07	0.94	0.15	0.18	1.15	16.1%	12.9%	0.03	0.50	0.06	0.06	0.06	0.55	48.1%	48.1%	
120			47	4	0.02	1.17	0.05	0.14	1.20	11.3%	4.2%	0.02	0.68	0.03	0.10	0.60	56.9%	50.3%	
121			48	4	0.04	1.20	0.05	0.06	1.20	4.9%	3.8%	0.02	0.68	0.02	0.07	0.63	56.2%	52.1%	
122			49	4	0.03	1.27	0.06	0.09	1.30	7.3%	4.4%	0.02	0.66	0.03	0.06	0.65	51.0%	50.0%	
123			50	4	0.07	0.97	0.12	0.17	1.19	13.8%	10.3%	0.03	0.55	0.05	0.06	0.59	49.6%	49.6%	
124			131	1	0.01	0.26	0.05	0.02	0.24	7.2%	19.7%	0.01	0.10	0.03	0.01	0.08	36.4%	29.0%	
125			141	2	0.04	0.72	0.09	0.09	0.64	13.1%	12.0%	0.03	0.33	0.05	0.05	0.21	46.0%	28.7%	
126			142	2	0.01	0.89	0.03	0.09	0.83	10.4%	3.0%	0.01	0.46	0.03	0.06	0.32	52.2%	35.5%	
127			143	2	0.03	0.64	0.12	0.06	0.77	8.1%	15.9%	0.02	0.26	0.07	0.03	0.28	35.8%	35.8%	
128			150	2	0.02	0.89	0.02	0.10	0.82	11.6%	2.1%	0.02	0.48	0.01	0.06	0.32	54.3%	36.5%	
129			151	2	0.02	0.55	0.08	0.03	0.56	5.4%	15.1%	0.01	0.25	0.06	0.02	0.24	45.0%	42.5%	
130			162	4	0.06	1.26	0.19	0.19	1.21	14.8%	14.9%	0.05	0.65	0.08	0.11	0.47	51.9%	37.6%	
131			163	4	0.04	1.49	0.05	0.17	1.43	11.3%	3.7%	0.03	0.81	0.03	0.12	0.62	54.0%	41.8%	
132			164	4	0.02	1.36	0.09	0.08	1.32	6.0%	6.5%	0.02	0.75	0.04	0.08	0.63	54.9%	46.6%	
133			165	4	0.03	1.32	0.09	0.09	1.37	6.9%	6.3%	0.02	0.76	0.15	0.06	0.70	55.5%	50.9%	
134			166	4	0.06	1.10	0.32	0.10	1.32	7.9%	24.1%	0.03	0.38	0.22	0.03	0.50	37.6%	37.6%	
135			175	4	0.06	1.43	0.07	0.19	1.38	13.1%	4.8%	0.05	0.77	0.04	0.12	0.57	53.7%	40.1%	
136			176	4	0.03	1.50	0.03	0.14	1.40	9.1%	1.9%	0.01	0.91	0.03	0.11	0.74	60.3%	49.3%	
137			177	4	0.02	1.32	0.13	0.08	1.29	6.4%	9.9%	0.02	0.74	0.09	0.07	0.64	56.2%	48.2%	
138			178	0.04	1.21	0.11	0.08	1.36	6.2%	8.2%	0.02	0.61	0.16	0.05	0.65	47.4%	47.4%		
139			3	131	2	0.02	0.36	0.12	0.06	0.34	17.6%	33.1%	0.01	0.17	0.05	0.02	0.14	45.8%	37.6%
140			13	143	4	0.05	1.55	0.23	0.19	1.56	12.5%	14.9%	0.02	0.42	0.07	0.06	0.35	26.8%	22.3%
141			14	142	4	0.05	1.81	0.12	0.29	1.75	15.9%	6.4%	0.02	0.70	0.03	0.13	0.40	38.9%	22.3%
142			15	141	4	0.10	1.35	0.23	0.25	1.27	18.6%	17.2%	0.05	0.54	0.04	0.11	0.28	40.0%	20.7%
143			22	151	4	0.06	1.54	0.20	0.14	1.48	9.1%	12.8%	0.02	0.59	0.12	0.05	0.54	38.1%	34.9%
144			23	150	4	0.07	1.58	0.10	0.23	1.55	14.7%	6.5%	0.01	0.69	0.04	0.08	0.49	43.4%	31.0%
145			34	165	8	0.10	3.33	0.65	0.41	3.29	12.4%	19.6%	0.06	1.08	0.13	0.16	0.78	32.5%	23.5%
146			35	164	8	0.14	3.54	0.20	0.37	3.41	10.4%	5.6%	0.03	1.06	0.06	0.18	0.78	29.9%	22.1%
147			36	163	8	0.12	3.55	0.16	0.54	3.34	15.3%	4.5%	0.07	1.29	0.06	0.26	0.90	36.4%	25.5%
148			37	162	8	0.21	2.90	0.39	0.37	2.97	12.4%	13.0%	0.14	1.09	0.08	0.17	0.84	36.6%	28.2%
149			38	166	8	0.17	1.96	0.61	0.26	2.36	10.9%	25.7%	0.08	0.65	0.34	0.09	0.65	27.7%	27.3%
150			47	177	8	0.12	3.51	0.39	0.41	3.37	11.8%	11.0%	0.05	1.14	0.07	0.20	0.82	32.5%	23.2%
151			48	176	8	0.10	3.64	0.13	0.44	3.51	12.2%	3.5%	0.06	1.31	0.03	0.22	0.96	35.9%	26.4%
152			49	175	8	0.14	3.33	0.18	0.53	3.20	15.8%	5.3%	0.11	1.26	0.08	0.22	0.89	37.8%	26.6%
153			50	178	8	0.15	2.14	0.33	0.25	2.40	10.3%	13.7%	0.08	0.77	0.20	0.10	0.76	32.0%	31.7%

- K-patch High CH

No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	4cm ² PD(mW/cm ²)						max ratio out of all beams		4cm ² PD(mW/cm ²) at 10mm evaluation distance					max ratio out of all beams	
												18.4%	24.4%						60.1%	53.0%
						S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Top 2mm)/(worst-surface 2mm)		S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)
109	K	Patch	3		1	0.00	0.32	0.03	0.04	0.23	12.6%	7.8%	0.00	0.10	0.01	0.01	0.07	0.07	32.5%	23.3%
110			13		2	0.01	0.66	0.03	0.09	0.51	13.7%	5.2%	0.01	0.27	0.03	0.04	0.20	0.41	41.3%	30.8%
111			14		2	0.01	0.62	0.04	0.06	0.60	10.2%	5.9%	0.01	0.32	0.02	0.04	0.26	0.51	51.0%	41.8%
112			15		2	0.02	0.56	0.06	0.06	0.47	9.9%	10.1%	0.01	0.21	0.04	0.03	0.18	0.36	36.6%	32.1%
113			22		2	0.01	0.77	0.01	0.07	0.67	9.7%	1.4%	0.01	0.39	0.03	0.04	0.31	0.48	48.8%	40.5%
114			23		2	0.02	0.62	0.04	0.04	0.68	5.6%	5.6%	0.01	0.27	0.02	0.02	0.29	0.42	42.3%	42.3%
115			34		4	0.03	1.29	0.05	0.22	1.08	16.9%	3.7%	0.03	0.64	0.11	0.11	0.49	0.50	50.0%	38.5%
116			35		4	0.01	1.33	0.03	0.14	1.21	10.6%	2.6%	0.01	0.70	0.01	0.10	0.60	0.52	52.3%	45.2%
117			36		4	0.03	1.35	0.04	0.11	1.27	8.4%	2.6%	0.03	0.75	0.02	0.08	0.68	0.55	55.1%	50.3%
118			37		4	0.05	1.04	0.11	0.11	1.16	9.4%	9.8%	0.03	0.58	0.04	0.05	0.61	0.52	52.4%	52.4%
119			38		4	0.06	0.98	0.17	0.14	1.07	13.2%	16.1%	0.03	0.51	0.08	0.05	0.56	0.51	51.7%	51.7%
120			47		4	0.02	1.23	0.03	0.14	1.18	11.6%	2.7%	0.02	0.68	0.03	0.10	0.59	0.55	55.2%	48.0%
121			48		4	0.02	1.30	0.04	0.12	1.21	8.9%	3.2%	0.02	0.71	0.02	0.09	0.63	0.54	54.9%	48.2%
122			49		4	0.03	1.22	0.04	0.09	1.34	6.8%	3.3%	0.02	0.68	0.03	0.07	0.64	0.50	50.5%	47.7%
123			50		4	0.05	1.01	0.16	0.13	1.11	12.0%	14.0%	0.03	0.55	0.06	0.05	0.59	0.53	53.0%	53.0%
124			131		1	0.01	0.25	0.04	0.02	0.22	9.7%	18.1%	0.01	0.10	0.02	0.01	0.07	0.38	28.7%	28.7%
125			141		2	0.03	0.76	0.08	0.10	0.65	13.1%	10.8%	0.03	0.34	0.05	0.05	0.24	0.44	44.8%	31.5%
126			142		2	0.01	0.85	0.02	0.08	0.78	9.4%	2.3%	0.01	0.45	0.03	0.05	0.32	0.52	52.4%	37.1%
127			143		2	0.03	0.61	0.10	0.07	0.70	9.7%	14.0%	0.02	0.23	0.06	0.02	0.25	0.35	35.3%	35.3%
128			150		2	0.01	0.89	0.02	0.10	0.80	10.9%	2.7%	0.01	0.47	0.01	0.05	0.34	0.53	53.3%	38.2%
129			151		2	0.02	0.55	0.08	0.04	0.54	6.6%	14.0%	0.01	0.24	0.06	0.02	0.23	0.43	43.5%	41.1%
130			162		4	0.04	1.14	0.17	0.18	1.15	15.6%	15.2%	0.04	0.64	0.08	0.11	0.49	0.55	55.6%	43.0%
131			163		4	0.04	1.50	0.04	0.15	1.41	10.3%	2.9%	0.03	0.83	0.03	0.11	0.66	0.55	55.1%	43.9%
132			164		4	0.02	1.40	0.07	0.09	1.35	6.6%	4.6%	0.02	0.79	0.04	0.09	0.65	0.56	56.3%	46.6%
133			165		4	0.03	1.18	0.10	0.09	1.25	7.1%	7.7%	0.02	0.67	0.15	0.06	0.64	0.53	53.8%	51.4%
134			166		4	0.04	1.01	0.21	0.12	1.22	10.2%	17.4%	0.04	0.36	0.18	0.04	0.45	0.36	36.8%	36.8%
135			175		4	0.05	1.40	0.05	0.17	1.32	11.9%	3.9%	0.04	0.76	0.04	0.12	0.58	0.54	54.4%	41.9%
136			176		4	0.01	1.41	0.03	0.11	1.36	8.1%	2.4%	0.01	0.85	0.02	0.11	0.71	0.60	60.1%	50.4%
137			177		4	0.02	1.34	0.12	0.10	1.30	7.4%	8.7%	0.02	0.74	0.09	0.08	0.65	0.55	55.2%	48.5%
138			178		4	0.03	1.12	0.07	0.10	1.21	8.1%	5.8%	0.03	0.54	0.15	0.05	0.56	0.46	46.7%	46.7%
139			3	131	2	0.02	0.39	0.09	0.06	0.34	16.3%	23.7%	0.01	0.19	0.04	0.02	0.14	0.44	44.8%	36.7%
140			13	143	4	0.07	1.63	0.21	0.21	1.49	12.9%	12.9%	0.03	0.34	0.06	0.06	0.28	0.21	21.0%	17.4%
141			14	142	4	0.04	1.74	0.09	0.27	1.67	15.7%	4.9%	0.03	0.75	0.03	0.11	0.41	0.42	42.9%	23.7%
142			15	141	4	0.08	1.51	0.24	0.28	1.33	18.4%	15.7%	0.06	0.65	0.03	0.12	0.36	0.43	43.1%	23.9%
143			22	151	4	0.06	1.44	0.16	0.17	1.39	11.6%	11.2%	0.01	0.60	0.10	0.05	0.52	0.42	42.0%	36.2%
144			23	150	4	0.03	1.56	0.11	0.21	1.52	13.6%	7.3%	0.01	0.68	0.05	0.08	0.51	0.43	43.8%	32.7%
145			34	165	8	0.12	3.23	0.64	0.41	3.05	12.7%	19.8%	0.06	0.98	0.15	0.14	0.74	0.40	40.4%	22.8%
146			35	164	8	0.13	3.50	0.17	0.48	3.34	13.8%	4.8%	0.04	1.20	0.06	0.24	0.82	0.34	34.4%	23.5%
147			36	163	8	0.12	3.41	0.11	0.53	3.22	15.5%	3.2%	0.11	1.45	0.04	0.24	1.03	0.42	42.4%	30.2%
148			37	162	8	0.16	2.90	0.47	0.41	2.89	14.0%	16.2%	0.12	1.25	0.06	0.18	0.93	0.43	43.0%	31.9%
149			38	166	8	0.16	1.96	0.56	0.23	2.28	10.0%	24.4%	0.09	0.63	0.31	0.07	0.67	0.29	29.3%	29.3%
150			47	177	8	0.11	3.43	0.36	0.46	3.24	13.3%	10.4%	0.05	1.14	0.09	0.21	0.81	0.33	33.1%	23.6%
151			48	176	8	0.09	3.49	0.13	0.50	3.35	14.3%	3.6%	0.06	1.36	0.02	0.24	0.98	0.39	39.0%	28.2%
152			49	175	8	0.12	3.13	0.17	0.53	3.05	17.0%	5.5%	0.09	1.40	0.05	0.24	0.98	0.44	44.8%	31.2%
153			50	178	8	0.15	2.09	0.31	0.25	2.28	11.1%	13.7%	0.08	0.82	0.19	0.11	0.77	0.35	35.8%	33.7%

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

- K-patch Low CH

						max ratio out of all beams								max ratio out of all beams					
No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	4cm ² PD(mW/cm ²)					20.7%	38.3%	4cm ² PD(mW/cm ²) at 10mm evaluation distance					68.5%	44.4%
						S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Top 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (Back 10mm)/(worst-surface 2mm)
109	K	Patch	3	1	0.01	0.46	0.05	0.02	0.32	4.1%	9.8%	0.01	0.20	0.03	0.02	0.12	43.3%	26.4%	
110			13	2	0.02	0.70	0.18	0.05	0.51	7.9%	26.2%	0.02	0.30	0.10	0.03	0.18	43.2%	26.2%	
111			14	2	0.01	0.86	0.03	0.08	0.64	9.6%	3.6%	0.01	0.40	0.03	0.07	0.28	47.3%	33.2%	
112			15	2	0.01	0.65	0.09	0.07	0.40	10.9%	14.1%	0.01	0.25	0.06	0.04	0.17	38.4%	25.6%	
113			22	2	0.01	0.72	0.07	0.03	0.55	4.0%	9.6%	0.01	0.38	0.04	0.06	0.25	52.4%	34.4%	
114			23	2	0.02	0.66	0.06	0.08	0.52	11.5%	9.1%	0.01	0.29	0.05	0.04	0.19	44.7%	29.4%	
115			34	4	0.03	1.22	0.46	0.13	0.85	10.6%	37.6%	0.03	0.45	0.24	0.09	0.27	36.6%	22.4%	
116			35	4	0.02	1.12	0.17	0.07	0.99	6.6%	15.3%	0.02	0.77	0.06	0.14	0.50	68.5%	44.4%	
117			36	4	0.02	1.56	0.06	0.13	1.18	8.4%	3.8%	0.02	0.87	0.18	0.13	0.62	55.7%	39.8%	
118			37	4	0.03	1.44	0.18	0.21	1.01	14.3%	12.6%	0.02	0.53	0.24	0.10	0.39	37.0%	27.0%	
119			38	4	0.03	1.23	0.47	0.13	0.85	10.4%	38.3%	0.03	0.45	0.25	0.09	0.28	36.6%	22.7%	
120			47	4	0.04	1.06	0.32	0.07	0.80	7.0%	30.4%	0.02	0.64	0.19	0.11	0.45	60.5%	42.2%	
121			48	4	0.02	1.39	0.06	0.10	1.06	7.1%	4.2%	0.03	0.85	0.04	0.13	0.61	61.3%	43.7%	
122			49	4	0.03	1.59	0.06	0.22	1.16	13.6%	3.8%	0.02	0.72	0.20	0.12	0.51	44.9%	31.9%	
123			50	4	0.03	1.30	0.38	0.15	0.92	11.6%	29.4%	0.03	0.44	0.21	0.08	0.27	33.6%	21.1%	
124			131	1	0.01	0.38	0.01	0.04	0.32	11.2%	2.8%	0.00	0.16	0.02	0.02	0.11	41.6%	29.3%	
125			141	2	0.01	0.59	0.03	0.08	0.38	13.2%	5.6%	0.01	0.25	0.06	0.04	0.13	42.2%	21.6%	
126			142	2	0.01	0.90	0.04	0.11	0.65	11.9%	4.0%	0.01	0.43	0.03	0.06	0.31	47.6%	34.2%	
127			143	2	0.01	0.88	0.02	0.07	0.63	8.0%	2.4%	0.01	0.34	0.03	0.04	0.23	38.6%	25.9%	
128			150	2	0.02	0.86	0.03	0.05	0.69	5.4%	3.0%	0.01	0.39	0.02	0.05	0.29	44.9%	33.4%	
129			151	2	0.01	0.96	0.02	0.10	0.71	10.3%	2.6%	0.01	0.38	0.03	0.06	0.30	39.1%	31.1%	
130			162	4	0.02	1.60	0.06	0.25	1.00	15.7%	3.7%	0.02	0.59	0.12	0.12	0.39	37.1%	24.3%	
131			163	4	0.03	1.18	0.04	0.09	1.04	7.6%	3.5%	0.02	0.72	0.05	0.10	0.52	60.6%	44.3%	
132			164	4	0.02	1.52	0.11	0.08	1.22	5.1%	7.0%	0.02	0.88	0.05	0.15	0.60	57.7%	39.5%	
133			165	4	0.02	1.58	0.07	0.23	1.14	14.4%	4.4%	0.02	0.65	0.14	0.13	0.47	41.4%	29.8%	
134			166	4	0.02	1.55	0.06	0.18	1.02	11.5%	3.8%	0.02	0.45	0.08	0.09	0.32	28.8%	20.3%	
135			175	4	0.03	1.18	0.03	0.11	0.90	9.5%	2.8%	0.02	0.58	0.04	0.09	0.40	49.5%	33.8%	
136			176	4	0.02	1.30	0.09	0.11	1.09	8.8%	7.0%	0.03	0.82	0.04	0.14	0.53	63.0%	41.1%	
137			177	4	0.02	1.60	0.09	0.20	1.19	12.7%	5.7%	0.01	0.78	0.09	0.12	0.57	49.0%	35.7%	
138			178	4	0.03	1.46	0.07	0.22	1.01	15.2%	5.0%	0.02	0.53	0.12	0.11	0.35	36.6%	24.3%	
139			3	131	2	0.02	0.80	0.07	0.14	0.66	17.5%	8.3%	0.01	0.31	0.04	0.04	0.23	38.4%	29.3%
140			13	141	4	0.04	1.72	0.36	0.23	1.17	13.1%	21.0%	0.02	0.57	0.13	0.07	0.35	32.8%	20.3%
141			14	143	4	0.05	2.18	0.15	0.34	1.96	15.3%	7.0%	0.02	1.04	0.09	0.07	0.83	47.4%	38.2%
142			15	142	4	0.03	2.16	0.18	0.37	1.73	17.3%	8.2%	0.01	0.99	0.13	0.06	0.78	45.7%	36.0%
143			22	150	4	0.03	2.04	0.11	0.31	1.81	15.2%	5.3%	0.02	1.08	0.06	0.09	0.84	53.1%	41.0%
144			23	151	4	0.05	2.16	0.16	0.37	1.80	17.2%	7.5%	0.01	0.77	0.09	0.05	0.67	35.5%	30.8%
145			34	162	8	0.06	2.72	0.73	0.49	1.97	17.9%	26.9%	0.04	1.03	0.19	0.14	0.61	37.7%	22.3%
146			35	163	8	0.09	3.54	0.28	0.53	3.00	15.1%	8.0%	0.07	1.59	0.08	0.21	1.22	44.8%	34.4%
147			36	166	8	0.07	3.19	0.70	0.54	2.74	17.0%	22.1%	0.02	1.64	0.44	0.16	1.27	51.5%	39.9%
148			37	165	8	0.09	3.16	0.89	0.62	2.63	19.7%	28.2%	0.04	1.34	0.43	0.14	1.02	42.5%	32.3%
149			38	164	8	0.07	3.53	0.70	0.64	3.13	18.3%	20.0%	0.02	1.86	0.25	0.16	1.40	52.6%	39.6%
150			47	176	8	0.06	4.05	0.52	0.60	3.56	14.8%	12.9%	0.03	2.17	0.16	0.23	1.59	53.7%	39.3%
151			48	175	8	0.09	3.81	0.35	0.49	3.40	13.0%	9.1%	0.02	2.10	0.10	0.20	1.57	55.1%	41.1%
152			49	178	8	0.08	3.16	0.82	0.65	2.59	20.7%	25.9%	0.03	1.24	0.40	0.16	0.94	39.3%	29.6%
153			50	177	8	0.07	3.32	0.76	0.60	2.89	18.1%	22.8%	0.03	1.58	0.41	0.14	1.23	47.6%	36.9%

- K-patch Mid CH

No.	Module	Type(For D)	Beam ID_1	Beam ID_2	Feed no.	4cm ² PD(mW/cm ²)						max ratio out of all beams		4cm ² PD(mW/cm ²) at 10mm evaluation distance						max ratio out of all beams	
						S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)		ratio (Front 2mm)/(worst-surface 2mm)	ratio (Top 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)		ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)
109	K	Patch	3		1	0.01	0.46	0.04	0.04	0.29		9.2%	8.8%	0.01	0.18	0.02	0.02	0.10		38.5%	21.9%
110			13		2	0.02	0.80	0.13	0.10	0.48		12.7%	15.8%	0.01	0.29	0.09	0.05	0.17		36.2%	21.5%
111			14		2	0.01	0.82	0.04	0.07	0.65		8.1%	4.8%	0.01	0.36	0.04	0.05	0.28		43.9%	34.0%
112			15		2	0.02	0.65	0.06	0.06	0.40		8.5%	8.9%	0.01	0.23	0.05	0.03	0.16		35.2%	24.5%
113			22		2	0.02	0.65	0.05	0.03	0.48		4.5%	8.4%	0.01	0.35	0.03	0.05	0.23		54.4%	35.7%
114			23		2	0.01	0.83	0.05	0.06	0.58		7.6%	5.5%	0.01	0.30	0.05	0.04	0.22		36.7%	26.1%
115			34		4	0.02	1.21	0.35	0.17	0.77		14.3%	28.7%	0.02	0.49	0.20	0.08	0.33		40.6%	27.7%
116			35		4	0.06	1.18	0.22	0.11	0.80		9.0%	18.6%	0.03	0.73	0.10	0.13	0.43		61.7%	36.4%
117			36		4	0.03	1.49	0.11	0.16	1.07		10.8%	7.3%	0.03	0.78	0.20	0.11	0.58		51.9%	39.0%
118			37		4	0.02	1.56	0.14	0.24	0.84		15.7%	8.7%	0.01	0.58	0.25	0.14	0.31		37.2%	19.8%
119			38		4	0.02	1.18	0.34	0.17	0.75		14.4%	29.1%	0.02	0.49	0.20	0.08	0.34		41.7%	28.6%
120			47		4	0.05	1.02	0.34	0.10	0.72		9.7%	33.0%	0.03	0.58	0.18	0.08	0.38		57.1%	37.2%
121			48		4	0.02	1.44	0.10	0.11	0.96		7.6%	6.7%	0.03	0.81	0.04	0.13	0.53		56.1%	36.6%
122			49		4	0.02	1.62	0.09	0.23	0.98		14.4%	5.7%	0.02	0.74	0.22	0.15	0.44		46.0%	27.0%
123			50		4	0.02	1.42	0.21	0.21	0.74		14.6%	14.7%	0.02	0.49	0.22	0.10	0.34		34.5%	23.7%
124			131		1	0.01	0.36	0.02	0.03	0.26		9.6%	4.5%	0.01	0.15	0.01	0.02	0.09		41.8%	23.9%
125			141		2	0.02	0.71	0.05	0.07	0.37		9.6%	6.7%	0.02	0.23	0.04	0.03	0.14		32.6%	20.0%
126			142		2	0.02	0.74	0.04	0.05	0.52		7.2%	5.7%	0.01	0.34	0.04	0.05	0.22		46.7%	30.1%
127			143		2	0.01	0.85	0.02	0.08	0.56		9.5%	2.5%	0.02	0.31	0.02	0.04	0.17		36.8%	20.5%
128			150		2	0.02	0.80	0.03	0.03	0.57		3.6%	3.8%	0.01	0.32	0.02	0.05	0.20		40.2%	25.1%
129			151		2	0.01	0.87	0.02	0.10	0.56		12.1%	2.8%	0.01	0.36	0.03	0.06	0.22		41.0%	25.4%
130			162		4	0.04	1.40	0.06	0.22	0.83		15.5%	4.0%	0.04	0.55	0.09	0.11	0.31		39.3%	22.5%
131			163		4	0.03	1.16	0.08	0.08	0.84		6.8%	7.2%	0.04	0.66	0.04	0.08	0.39		57.1%	33.7%
132			164		4	0.02	1.45	0.05	0.14	1.02		9.5%	3.4%	0.02	0.78	0.09	0.11	0.55		54.1%	38.1%
133			165		4	0.02	1.64	0.06	0.26	0.92		15.8%	3.8%	0.02	0.73	0.13	0.14	0.40		44.3%	24.1%
134			166		4	0.04	1.44	0.06	0.20	0.82		13.7%	4.2%	0.03	0.45	0.07	0.09	0.27		31.6%	19.1%
135			175		4	0.05	1.06	0.08	0.10	0.63		9.6%	7.3%	0.06	0.57	0.03	0.08	0.36		53.9%	33.8%
136			176		4	0.03	1.12	0.10	0.13	0.92		11.6%	8.9%	0.02	0.80	0.05	0.14	0.49		71.5%	44.1%
137			177		4	0.02	1.55	0.05	0.22	0.97		14.3%	2.9%	0.01	0.76	0.14	0.14	0.46		49.4%	30.0%
138			178		4	0.03	1.58	0.05	0.23	0.90		14.9%	3.3%	0.02	0.59	0.10	0.11	0.32		37.4%	20.3%
139			3	131	2	0.02	0.77	0.08	0.12	0.56		15.9%	10.5%	0.02	0.28	0.04	0.04	0.21		36.0%	26.9%
140			13	141	4	0.05	1.75	0.24	0.27	1.19		15.4%	13.9%	0.03	0.60	0.13	0.07	0.38		34.4%	21.5%
141			14	143	4	0.05	2.02	0.19	0.27	1.65		13.6%	9.2%	0.02	0.98	0.09	0.09	0.74		48.6%	36.9%
142			15	142	4	0.05	2.01	0.19	0.26	1.56		12.7%	9.5%	0.02	0.86	0.13	0.07	0.62		43.0%	31.2%
143			22	150	4	0.04	1.71	0.10	0.24	1.43		13.9%	6.1%	0.03	0.93	0.05	0.09	0.64		54.5%	37.3%
144			23	151	4	0.04	2.14	0.23	0.35	1.65		16.1%	10.6%	0.01	0.77	0.13	0.06	0.53		35.8%	25.8%
145			34	162	8	0.08	2.58	0.48	0.42	1.71		16.4%	18.6%	0.04	0.97	0.20	0.13	0.58		37.7%	22.6%
146			35	163	8	0.11	2.71	0.35	0.47	2.28		17.2%	12.8%	0.05	1.44	0.13	0.20	0.93		53.3%	34.4%
147			36	166	8	0.12	3.41	0.78	0.53	2.83		15.6%	22.8%	0.04	1.78	0.46	0.15	1.42		52.1%	41.6%
148			37	165	8	0.06	3.40	0.69	0.62	2.67		18.3%	20.4%	0.02	1.39	0.35	0.15	0.95		41.0%	28.0%
149			38	164	8	0.08	3.54	0.57	0.43	3.02		12.1%	16.1%	0.04	1.99	0.25	0.17	1.45		56.1%	40.8%
150			47	176	8	0.11	3.21	0.57	0.50	2.86		15.6%	17.9%	0.03	1.94	0.13	0.24	1.28		60.5%	39.7%
151			48	175	8	0.12	3.29	0.29	0.47	2.82		14.4%	8.8%	0.03	1.54	0.07	0.22	1.32		58.9%	40.0%
152			49	178	8	0.08	3.31	0.75	0.65	2.64		19.7%	22.8%	0.03	1.42	0.43	0.18	1.04		43.0%	31.5%
153			50	177	8	0.07	3.56	0.67	0.60	2.92		16.8%	18.7%	0.03	1.72	0.33	0.17	1.26		48.4%	35.4%

- K-patch High CH

						max ratio out of all beams								max ratio out of all beams					
No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	4cm ² PD(mW/cm ²)					24.3%	28.0%	4cm ² PD(mW/cm ²) at 10mm evaluation distance					66.4%	35.7%
						S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Top 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)
109	K	Patch	3	1	0.01	0.38	0.04	0.03	0.23	8.6%	9.5%	0.01	0.15	0.02	0.02	0.06	40.4%	16.2%	
110			13	2	0.01	0.79	0.08	0.11	0.39	13.5%	10.4%	0.01	0.27	0.08	0.05	0.11	33.9%	13.7%	
111			14	2	0.02	0.69	0.06	0.03	0.44	4.4%	8.9%	0.02	0.31	0.03	0.05	0.15	44.3%	21.3%	
112			15	2	0.01	0.72	0.05	0.08	0.41	10.8%	7.6%	0.01	0.24	0.07	0.04	0.11	33.1%	15.1%	
113			22	2	0.03	0.50	0.05	0.08	0.34	16.3%	9.3%	0.02	0.29	0.02	0.07	0.15	58.4%	30.9%	
114			23	2	0.02	0.78	0.06	0.09	0.46	11.4%	7.2%	0.02	0.29	0.06	0.04	0.13	37.1%	17.3%	
115			34	4	0.03	1.31	0.35	0.19	0.68	14.6%	26.7%	0.02	0.42	0.26	0.09	0.19	32.4%	14.5%	
116			35	4	0.07	0.96	0.22	0.08	0.34	8.3%	23.0%	0.06	0.62	0.09	0.16	0.30	64.3%	31.5%	
117			36	4	0.02	1.26	0.10	0.11	0.80	9.0%	7.9%	0.02	0.61	0.13	0.13	0.30	48.4%	24.2%	
118			37	4	0.03	1.53	0.17	0.24	0.85	15.8%	11.4%	0.02	0.64	0.22	0.13	0.26	41.8%	17.1%	
119			38	0.03	1.28	0.35	0.19	0.65	14.7%	27.3%	0.02	0.41	0.25	0.09	0.19	32.4%	15.2%		
120			47	4	0.05	0.85	0.20	0.10	0.40	11.7%	23.1%	0.05	0.42	0.10	0.08	0.21	49.6%	24.9%	
121			48	4	0.04	0.97	0.09	0.11	0.63	11.5%	9.5%	0.04	0.51	0.06	0.10	0.26	52.6%	26.5%	
122			49	4	0.02	1.43	0.07	0.21	0.87	15.0%	5.0%	0.02	0.68	0.25	0.16	0.32	47.4%	22.3%	
123			50	4	0.03	1.44	0.30	0.22	0.76	15.5%	21.2%	0.02	0.51	0.26	0.10	0.21	35.3%	14.3%	
124			131	1	0.01	0.31	0.02	0.02	0.23	7.6%	6.7%	0.01	0.12	0.01	0.01	0.07	40.7%	23.1%	
125			141	2	0.02	0.67	0.03	0.05	0.36	7.5%	3.9%	0.01	0.26	0.05	0.04	0.11	38.5%	16.6%	
126			142	2	0.03	0.64	0.05	0.05	0.44	7.5%	8.1%	0.02	0.31	0.04	0.05	0.15	48.5%	23.9%	
127			143	2	0.01	0.73	0.01	0.08	0.43	11.6%	1.7%	0.01	0.24	0.03	0.03	0.15	32.4%	19.9%	
128			150	2	0.02	0.59	0.03	0.03	0.40	4.6%	5.7%	0.02	0.25	0.02	0.05	0.13	42.5%	21.5%	
129			151	2	0.02	0.77	0.03	0.09	0.48	11.6%	3.3%	0.01	0.34	0.04	0.05	0.20	43.7%	25.2%	
130			162	4	0.03	1.59	0.06	0.25	0.87	15.5%	3.8%	0.02	0.62	0.08	0.11	0.36	39.3%	22.3%	
131			163	4	0.06	0.84	0.09	0.15	0.67	17.6%	10.7%	0.04	0.37	0.05	0.08	0.19	44.4%	22.6%	
132			164	4	0.04	0.86	0.04	0.12	0.49	13.8%	4.8%	0.04	0.57	0.13	0.10	0.31	66.4%	35.7%	
133			165	4	0.03	1.40	0.06	0.20	0.83	14.3%	4.1%	0.02	0.68	0.16	0.14	0.36	48.7%	25.7%	
134			166	4	0.03	1.49	0.06	0.23	0.81	15.2%	3.9%	0.02	0.54	0.05	0.08	0.28	36.6%	18.7%	
135			175	4	0.04	0.88	0.07	0.13	0.62	15.2%	7.8%	0.03	0.31	0.05	0.06	0.16	36.0%	18.4%	
136			176	4	0.06	0.90	0.09	0.16	0.41	17.8%	9.7%	0.05	0.54	0.05	0.12	0.24	59.9%	27.0%	
137			177	4	0.05	1.25	0.06	0.19	0.66	15.2%	4.7%	0.03	0.66	0.18	0.15	0.35	52.4%	27.8%	
138			178	0.03	1.53	0.05	0.17	0.86	11.3%	3.0%	0.02	0.65	0.10	0.11	0.33	42.2%	21.3%		
139			3	131	2	0.03	0.58	0.08	0.11	0.41	18.4%	13.5%	0.02	0.24	0.03	0.04	0.12	41.8%	20.3%
140			13	141	4	0.04	1.49	0.32	0.31	1.02	20.8%	21.2%	0.03	0.66	0.10	0.10	0.33	44.3%	21.9%
141			14	143	4	0.05	1.59	0.12	0.24	1.14	15.0%	7.4%	0.03	0.70	0.05	0.09	0.41	44.4%	25.8%
142			15	142	4	0.06	1.62	0.19	0.25	1.13	15.5%	11.9%	0.03	0.75	0.10	0.08	0.41	46.2%	25.6%
143			22	150	4	0.06	1.24	0.10	0.30	1.00	24.3%	8.3%	0.03	0.66	0.04	0.09	0.42	53.3%	33.5%
144			23	151	4	0.04	1.79	0.19	0.26	1.18	14.7%	10.8%	0.02	0.67	0.10	0.06	0.42	37.2%	23.3%
145			34	162	8	0.06	2.34	0.51	0.43	1.45	18.5%	22.0%	0.04	0.90	0.22	0.14	0.42	38.7%	18.1%
146			35	163	8	0.15	2.11	0.36	0.51	1.68	24.0%	17.2%	0.09	1.02	0.17	0.22	0.62	48.5%	29.2%
147			36	166	8	0.06	2.81	0.42	0.48	2.03	17.1%	15.0%	0.04	1.35	0.25	0.18	0.78	48.2%	27.8%
148			37	165	8	0.07	3.03	0.85	0.64	2.20	21.1%	27.9%	0.04	1.38	0.51	0.18	0.86	45.5%	28.3%
149			38	164	8	0.11	2.54	0.60	0.44	1.95	17.4%	23.7%	0.05	1.37	0.38	0.19	0.81	54.0%	31.9%
150			47	176	8	0.20	2.16	0.31	0.48	1.76	22.1%	14.4%	0.07	1.27	0.10	0.21	0.64	59.1%	29.7%
151			48	175	8	0.12	2.13	0.30	0.41	1.73	19.3%	13.9%	0.06	1.30	0.06	0.19	0.70	61.0%	32.7%
152			49	178	8	0.06	3.15	0.73	0.60	2.36	19.1%	23.2%	0.04	1.37	0.48	0.23	0.83	43.6%	26.5%
153			50	177	8	0.09	2.81	0.79	0.58	1.98	20.7%	28.0%	0.04	1.06	0.48	0.13	0.70	37.9%	24.8%

3.1.3 Ant L – Patch Antenna

Table 6 & Table 7 show the PD simulation evaluation of Ant L patch antenna at 28GHz / 39GHz for the corresponding evaluation plane specified in Table 1.

Table 6. PD of Ant L – patch antenna (28GHz – n261)

- L-patch Low CH

No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	4cm ² PD(mW/cm ²)					max ratio out of all beams	4cm ² PD(mW/cm ²) at 10mm evaluation distance					max ratio out of all beams	
						S4(Right)	S3(Left)	S6(Bottom)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S6(Bottom)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)
64	L	Patch	2		1	0.32	0.00	0.00	0.02	0.41	5.4%	0.13	0.00	0.00	0.01	0.15	36.2%	36.2%
65			10		2	0.48	0.00	0.01	0.08	0.50	15.9%	0.20	0.01	0.01	0.04	0.15	39.9%	29.3%
66			11		2	0.61	0.00	0.00	0.08	0.58	12.9%	0.32	0.01	0.00	0.04	0.24	51.7%	38.8%
67			12		2	0.45	0.00	0.01	0.05	0.45	10.1%	0.18	0.01	0.01	0.02	0.16	39.2%	34.8%
68			20		2	0.65	0.01	0.00	0.08	0.59	12.2%	0.30	0.01	0.01	0.03	0.24	45.5%	36.2%
69			21		2	0.47	0.01	0.00	0.05	0.50	10.3%	0.23	0.00	0.00	0.02	0.20	46.0%	41.1%
70			29		4	0.82	0.01	0.03	0.13	0.83	15.3%	0.34	0.01	0.04	0.06	0.27	41.4%	33.0%
71			30		4	1.10	0.01	0.01	0.19	1.07	17.7%	0.59	0.02	0.00	0.11	0.48	53.7%	43.3%
72			31		4	1.30	0.01	0.01	0.13	1.34	9.5%	0.70	0.01	0.00	0.09	0.65	52.2%	48.5%
73			32		4	0.97	0.01	0.01	0.07	1.26	5.2%	0.56	0.01	0.01	0.04	0.61	48.3%	48.3%
74			33		4	0.76	0.01	0.03	0.10	1.05	9.4%	0.28	0.01	0.02	0.03	0.37	34.7%	34.7%
75			43		4	1.09	0.02	0.01	0.19	1.06	17.5%	0.54	0.02	0.03	0.10	0.40	49.2%	37.1%
76			44		4	1.11	0.01	0.00	0.11	1.11	9.5%	0.61	0.01	0.01	0.07	0.56	54.5%	50.5%
77			45		4	1.25	0.01	0.01	0.13	1.36	9.4%	0.69	0.01	0.01	0.08	0.61	50.3%	45.1%
78			46		4	0.83	0.01	0.02	0.06	1.18	5.3%	0.43	0.02	0.01	0.03	0.56	47.1%	47.1%
79			130		1	0.30	0.00	0.00	0.04	0.27	12.8%	0.11	0.00	0.00	0.02	0.07	37.2%	23.6%
80			138		2	0.52	0.01	0.01	0.05	0.76	6.0%	0.21	0.01	0.01	0.02	0.27	36.2%	36.2%
81			139		2	0.82	0.00	0.00	0.09	0.78	11.1%	0.43	0.00	0.00	0.05	0.31	52.4%	38.3%
82			140		2	0.54	0.01	0.01	0.08	0.57	14.8%	0.21	0.01	0.01	0.04	0.16	36.3%	28.0%
83			148		2	0.69	0.00	0.00	0.06	0.81	7.7%	0.31	0.00	0.01	0.04	0.30	38.2%	37.2%
84			149		2	0.74	0.00	0.00	0.09	0.69	12.4%	0.37	0.01	0.00	0.05	0.26	49.8%	35.5%
85			157		4	0.84	0.01	0.02	0.07	1.29	5.5%	0.42	0.01	0.03	0.04	0.56	43.2%	43.2%
86			158		4	1.20	0.00	0.01	0.07	1.34	5.4%	0.69	0.01	0.01	0.06	0.68	51.4%	50.7%
87			159		4	1.26	0.01	0.00	0.13	1.25	10.6%	0.73	0.01	0.00	0.10	0.62	58.0%	49.2%
88			160		4	1.18	0.02	0.01	0.17	1.18	14.1%	0.65	0.02	0.01	0.12	0.52	54.9%	44.1%
89			161		4	0.57	0.01	0.03	0.08	0.99	8.0%	0.20	0.02	0.04	0.05	0.23	22.7%	22.7%
90			171		4	1.09	0.01	0.01	0.07	1.33	5.1%	0.62	0.01	0.01	0.05	0.66	49.1%	49.1%
91			172		4	1.22	0.00	0.01	0.09	1.24	7.3%	0.70	0.01	0.01	0.08	0.64	56.0%	51.9%
92			173		4	1.33	0.01	0.00	0.17	1.28	12.5%	0.74	0.01	0.00	0.11	0.58	55.7%	43.4%
93			174		4	0.84	0.01	0.02	0.12	0.94	13.0%	0.41	0.02	0.03	0.08	0.38	43.3%	40.4%
94			2	130	2	0.64	0.01	0.01	0.07	0.69	9.6%	0.18	0.00	0.01	0.02	0.18	25.6%	25.6%
95			10	138	4	1.07	0.03	0.03	0.17	1.34	12.8%	0.33	0.02	0.03	0.04	0.42	31.0%	31.0%
96			11	139	4	1.74	0.01	0.01	0.30	1.75	17.3%	0.70	0.01	0.00	0.13	0.36	39.8%	20.4%
97			12	140	4	1.13	0.03	0.03	0.21	1.23	16.9%	0.42	0.02	0.02	0.09	0.25	34.5%	20.2%
98			20	148	4	1.66	0.02	0.03	0.19	1.68	11.5%	0.49	0.01	0.02	0.09	0.41	28.9%	24.2%
99			21	149	4	1.54	0.02	0.01	0.27	1.53	17.4%	0.60	0.02	0.01	0.10	0.32	38.9%	20.7%
100			29	157	8	2.33	0.04	0.10	0.35	2.88	12.2%	0.52	0.03	0.07	0.11	0.60	20.7%	20.7%
101			30	158	8	3.16	0.04	0.02	0.38	3.18	11.8%	0.96	0.02	0.02	0.14	0.82	30.0%	25.8%
102			31	159	8	3.32	0.03	0.01	0.48	3.31	14.4%	1.18	0.02	0.01	0.23	0.84	35.4%	25.3%
103			32	160	8	2.76	0.06	0.05	0.38	2.91	12.9%	1.15	0.05	0.01	0.17	0.93	39.6%	32.1%
104			33	161	8	1.82	0.06	0.12	0.33	2.21	14.9%	0.41	0.04	0.04	0.10	0.42	18.9%	18.9%
105			43	171	8	3.03	0.05	0.07	0.44	3.15	14.0%	0.83	0.03	0.04	0.12	0.78	26.4%	24.9%
106			44	172	8	3.07	0.03	0.02	0.34	3.11	10.8%	1.03	0.02	0.02	0.16	0.85	33.2%	27.1%
107			45	173	8	3.29	0.03	0.02	0.53	3.29	16.1%	1.29	0.02	0.01	0.23	0.84	39.4%	25.4%
108			46	174	8	2.33	0.07	0.08	0.28	2.56	10.8%	0.72	0.06	0.01	0.13	0.67	28.2%	26.1%

- L-patch Mid CH

										max ratio out of all beams							max ratio out of all beams	
No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	4cm ² PD(mW/cm ²)					18.5%	4cm ² PD(mW/cm ²) at 10mm evaluation distance					59.0%	53.3%
						S4(Right)	S3(Left)	S6(Bottom)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S6(Bottom)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)
64	L	Patch	2		1	0.32	0.00	0.00	0.02	0.39	5.5%	0.13	0.00	0.00	0.01	0.15	37.6%	37.6%
65			10		2	0.54	0.01	0.01	0.07	0.53	13.6%	0.22	0.01	0.01	0.04	0.17	40.3%	30.7%
66			11		2	0.60	0.00	0.00	0.06	0.59	10.7%	0.32	0.01	0.00	0.03	0.25	52.4%	41.0%
67			12		2	0.49	0.01	0.00	0.04	0.49	8.4%	0.20	0.01	0.01	0.02	0.18	41.3%	36.2%
68			20		2	0.59	0.00	0.00	0.07	0.53	11.6%	0.27	0.00	0.01	0.03	0.23	46.2%	38.7%
69			21		2	0.55	0.01	0.00	0.05	0.58	8.0%	0.27	0.01	0.00	0.03	0.23	46.7%	40.4%
70			29		4	0.91	0.01	0.03	0.15	0.89	16.0%	0.39	0.01	0.04	0.07	0.29	42.4%	31.9%
71			30		4	1.07	0.02	0.00	0.16	1.04	15.1%	0.58	0.02	0.00	0.10	0.49	54.3%	45.2%
72			31		4	1.24	0.01	0.00	0.09	1.30	6.6%	0.67	0.01	0.00	0.07	0.62	51.6%	48.2%
73			32		4	1.05	0.02	0.01	0.06	1.28	4.3%	0.63	0.02	0.01	0.05	0.67	52.2%	52.2%
74			33		4	0.83	0.01	0.03	0.08	1.04	7.7%	0.34	0.02	0.03	0.03	0.39	37.6%	37.6%
75			43		4	1.13	0.02	0.01	0.19	1.07	16.4%	0.55	0.02	0.03	0.10	0.42	49.0%	37.4%
76			44		4	1.14	0.01	0.00	0.12	1.12	10.3%	0.62	0.01	0.01	0.08	0.58	54.2%	51.0%
77			45		4	1.28	0.01	0.01	0.10	1.42	7.0%	0.71	0.01	0.00	0.08	0.65	50.1%	46.0%
78			46		4	0.92	0.02	0.02	0.04	1.18	3.8%	0.52	0.02	0.02	0.05	0.59	50.0%	50.0%
79			130		1	0.32	0.00	0.00	0.03	0.30	10.3%	0.11	0.00	0.00	0.01	0.09	34.9%	28.0%
80			138		2	0.57	0.01	0.01	0.05	0.75	6.7%	0.24	0.01	0.01	0.02	0.29	39.0%	39.0%
81			139		2	0.83	0.00	0.00	0.08	0.81	9.7%	0.44	0.00	0.00	0.05	0.34	53.2%	41.5%
82			140		2	0.59	0.01	0.01	0.08	0.57	12.9%	0.21	0.01	0.01	0.03	0.18	36.0%	31.2%
83			148		2	0.72	0.00	0.00	0.06	0.83	6.6%	0.34	0.00	0.01	0.03	0.33	41.1%	40.3%
84			149		2	0.76	0.00	0.00	0.08	0.72	10.1%	0.38	0.01	0.00	0.04	0.31	50.0%	40.8%
85			157		4	0.86	0.02	0.01	0.07	1.37	4.9%	0.46	0.02	0.03	0.03	0.65	47.7%	47.7%
86			158		4	1.24	0.02	0.01	0.08	1.34	6.1%	0.72	0.01	0.01	0.07	0.69	53.6%	51.8%
87			159		4	1.26	0.01	0.00	0.10	1.26	7.9%	0.73	0.01	0.00	0.09	0.66	57.6%	52.5%
88			160		4	1.19	0.01	0.01	0.15	1.17	12.8%	0.63	0.01	0.01	0.10	0.53	52.4%	44.3%
89			161		4	0.67	0.02	0.03	0.12	0.91	13.4%	0.19	0.01	0.04	0.03	0.23	25.3%	25.3%
90			171		4	1.13	0.02	0.01	0.05	1.42	3.6%	0.63	0.01	0.01	0.05	0.74	51.9%	51.9%
91			172		4	1.23	0.00	0.00	0.08	1.23	6.8%	0.73	0.01	0.00	0.08	0.66	59.0%	53.3%
92			173		4	1.35	0.01	0.00	0.15	1.35	10.8%	0.75	0.01	0.00	0.10	0.63	55.7%	46.9%
93			174		4	0.95	0.01	0.02	0.08	0.94	8.5%	0.40	0.01	0.03	0.07	0.38	42.6%	40.2%
94			2	130	2	0.65	0.01	0.01	0.06	0.66	9.5%	0.21	0.00	0.01	0.02	0.22	32.9%	32.9%
95			10	138	4	1.15	0.04	0.03	0.19	1.25	14.9%	0.38	0.02	0.02	0.04	0.48	38.6%	38.6%
96			11	139	4	1.64	0.01	0.01	0.27	1.65	16.4%	0.70	0.01	0.00	0.10	0.46	42.2%	27.6%
97			12	140	4	1.23	0.03	0.02	0.19	1.26	15.2%	0.43	0.02	0.01	0.08	0.28	34.1%	22.2%
98			20	148	4	1.63	0.02	0.02	0.19	1.57	11.8%	0.52	0.01	0.02	0.07	0.48	32.0%	29.3%
99			21	149	4	1.57	0.03	0.01	0.25	1.54	15.9%	0.65	0.02	0.01	0.09	0.41	41.1%	26.5%
100			29	157	8	2.54	0.05	0.10	0.38	2.80	13.5%	0.62	0.04	0.07	0.10	0.79	28.2%	28.2%
101			30	158	8	3.08	0.06	0.02	0.38	3.10	12.4%	1.08	0.03	0.02	0.17	0.97	34.7%	31.2%
102			31	159	8	3.25	0.04	0.01	0.34	3.24	10.6%	1.10	0.03	0.01	0.16	0.91	33.7%	28.1%
103			32	160	8	2.82	0.06	0.05	0.43	2.86	14.9%	1.27	0.05	0.01	0.19	1.11	44.3%	38.9%
104			33	161	8	2.07	0.05	0.12	0.41	2.22	18.5%	0.43	0.03	0.04	0.07	0.45	20.1%	20.1%
105			43	171	8	3.02	0.07	0.06	0.39	3.07	12.6%	0.94	0.04	0.04	0.11	1.01	32.9%	32.9%
106			44	172	8	3.13	0.03	0.02	0.39	3.11	12.6%	1.07	0.02	0.01	0.18	0.90	34.2%	28.7%
107			45	173	8	3.14	0.04	0.01	0.46	3.15	14.7%	1.32	0.02	0.01	0.20	1.04	41.8%	33.0%
108			46	174	8	2.53	0.06	0.09	0.31	2.59	12.1%	0.86	0.05	0.02	0.15	0.79	33.3%	30.4%

- L-patch High CH

										max ratio out of all beams							max ratio out of all beams	
No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	4cm ² PD(mW/cm ²)					18.6%	4cm ² PD(mW/cm ²) at 10mm evaluation distance					57.5%	52.4%
						S4(Right)	S3(Left)	S6(Bottom)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S6(Bottom)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)
64	L	Patch	2		1	0.30	0.00	0.00	0.02	0.35	5.9%	0.12	0.00	0.00	0.01	0.14	40.0%	40.0%
65			10		2	0.54	0.01	0.01	0.08	0.54	13.9%	0.22	0.01	0.01	0.03	0.18	41.5%	33.3%
66			11		2	0.59	0.01	0.00	0.07	0.56	12.1%	0.32	0.01	0.00	0.04	0.23	53.6%	39.3%
67			12		2	0.45	0.00	0.01	0.03	0.48	7.3%	0.19	0.01	0.01	0.02	0.18	39.9%	37.0%
68			20		2	0.52	0.01	0.00	0.06	0.46	11.5%	0.23	0.00	0.00	0.03	0.19	45.1%	36.1%
69			21		2	0.54	0.00	0.01	0.05	0.57	8.6%	0.26	0.01	0.00	0.03	0.22	46.7%	39.7%
70			29		4	0.84	0.01	0.02	0.14	0.83	16.2%	0.37	0.01	0.03	0.06	0.28	44.3%	33.4%
71			30		4	1.01	0.03	0.00	0.14	0.98	14.0%	0.54	0.02	0.00	0.09	0.46	53.6%	45.7%
72			31		4	1.22	0.01	0.00	0.10	1.23	8.5%	0.65	0.01	0.00	0.08	0.61	53.1%	49.4%
73			32		4	1.06	0.01	0.01	0.05	1.17	4.3%	0.57	0.02	0.01	0.04	0.61	52.4%	52.4%
74			33		4	0.71	0.01	0.03	0.08	0.97	8.7%	0.33	0.01	0.03	0.03	0.39	40.2%	40.2%
75			43		4	1.09	0.02	0.01	0.18	1.01	16.2%	0.55	0.02	0.02	0.09	0.42	49.9%	38.1%
76			44		4	1.05	0.01	0.01	0.13	1.05	12.2%	0.60	0.01	0.01	0.09	0.54	57.0%	51.4%
77			45		4	1.23	0.01	0.00	0.10	1.34	7.4%	0.69	0.01	0.00	0.07	0.65	51.4%	48.4%
78			46		4	0.93	0.02	0.02	0.05	1.08	5.1%	0.46	0.02	0.02	0.04	0.54	49.8%	49.8%
79			130		1	0.32	0.00	0.00	0.03	0.29	8.9%	0.11	0.00	0.00	0.01	0.08	34.3%	25.5%
80			138		2	0.57	0.01	0.01	0.04	0.71	5.8%	0.24	0.01	0.01	0.02	0.26	36.4%	36.4%
81			139		2	0.80	0.00	0.00	0.08	0.74	10.4%	0.42	0.00	0.00	0.05	0.32	53.3%	39.7%
82			140		2	0.56	0.01	0.01	0.06	0.56	11.4%	0.20	0.01	0.01	0.03	0.19	35.4%	33.4%
83			148		2	0.71	0.00	0.00	0.06	0.76	7.7%	0.33	0.00	0.01	0.03	0.30	43.6%	39.0%
84			149		2	0.74	0.01	0.00	0.08	0.69	10.6%	0.38	0.00	0.00	0.04	0.30	50.9%	40.7%
85			157		4	0.89	0.02	0.00	0.05	1.36	3.6%	0.47	0.02	0.03	0.03	0.62	45.6%	45.6%
86			158		4	1.23	0.01	0.01	0.10	1.27	7.7%	0.70	0.01	0.01	0.08	0.66	55.5%	52.1%
87			159		4	1.24	0.01	0.00	0.11	1.18	8.9%	0.69	0.01	0.00	0.08	0.62	55.3%	50.1%
88			160		4	1.09	0.01	0.01	0.14	1.10	13.0%	0.58	0.01	0.01	0.09	0.50	53.1%	45.4%
89			161		4	0.71	0.01	0.03	0.11	0.76	15.1%	0.20	0.01	0.03	0.03	0.24	31.3%	31.3%
90			171		4	1.25	0.01	0.00	0.05	1.43	3.3%	0.64	0.01	0.01	0.04	0.72	50.3%	50.3%
91			172		4	1.19	0.01	0.00	0.11	1.12	9.5%	0.68	0.01	0.00	0.09	0.58	57.5%	49.0%
92			173		4	1.31	0.02	0.00	0.14	1.27	10.6%	0.73	0.01	0.00	0.10	0.62	55.9%	47.5%
93			174		4	0.94	0.01	0.02	0.12	0.96	12.1%	0.41	0.01	0.02	0.07	0.38	42.3%	39.8%
94			2	130	2	0.62	0.01	0.01	0.07	0.62	10.7%	0.20	0.01	0.00	0.02	0.20	31.6%	31.5%
95			10	138	4	1.18	0.03	0.03	0.19	1.20	15.6%	0.39	0.02	0.02	0.04	0.46	38.2%	38.2%
96			11	139	4	1.56	0.02	0.01	0.29	1.56	18.6%	0.69	0.01	0.00	0.11	0.42	44.4%	26.9%
97			12	140	4	1.22	0.03	0.02	0.18	1.24	14.5%	0.41	0.02	0.01	0.07	0.32	33.1%	26.0%
98			20	148	4	1.60	0.02	0.02	0.20	1.51	12.6%	0.45	0.01	0.01	0.07	0.35	27.9%	21.8%
99			21	149	4	1.55	0.03	0.01	0.26	1.50	16.6%	0.66	0.01	0.01	0.10	0.44	42.9%	28.4%
100			29	157	8	2.52	0.07	0.10	0.35	2.73	12.8%	0.64	0.05	0.06	0.08	0.71	26.1%	26.1%
101			30	158	8	2.90	0.05	0.02	0.36	2.93	12.3%	1.05	0.03	0.01	0.16	0.95	35.8%	32.5%
102			31	159	8	3.11	0.05	0.01	0.40	3.08	13.0%	1.06	0.03	0.01	0.18	0.89	34.2%	28.5%
103			32	160	8	2.84	0.05	0.05	0.37	2.83	13.1%	1.14	0.04	0.01	0.16	1.04	40.3%	36.8%
104			33	161	8	2.01	0.05	0.13	0.35	2.23	15.6%	0.42	0.03	0.04	0.06	0.51	22.9%	22.9%
105			43	171	8	2.97	0.08	0.06	0.37	3.01	12.2%	1.00	0.06	0.03	0.12	1.01	33.6%	33.6%
106			44	172	8	2.99	0.04	0.01	0.47	2.95	15.9%	1.04	0.02	0.01	0.23	0.77	34.9%	25.8%
107			45	173	8	3.02	0.05	0.01	0.43	3.02	14.4%	1.26	0.03	0.01	0.20	1.04	41.7%	34.5%
108			46	174	8	2.52	0.06	0.09	0.31	2.60	11.8%	0.78	0.04	0.02	0.12	0.78	30.2%	30.2%

Table 7. PD of Ant L – patch antenna (39GHz – n260)

- L-patch Low CH

No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	4cm ² PD(mW/cm ²)					max ratio out of all beams	4cm ² PD(mW/cm ²) at 10mm evaluation distance					max ratio out of all beams	
						S4(Right)	S3(Left)	S6(Bottom)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S6(Bottom)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)
64	L	Patch	2		1	0.46	0.00	0.01	0.06	0.34	12.4%	0.20	0.00	0.00	0.03	0.13	43.2%	28.6%
65			10		2	0.54	0.01	0.01	0.07	0.40	13.1%	0.25	0.00	0.01	0.05	0.14	46.6%	26.5%
66			11		2	0.75	0.01	0.00	0.09	0.57	12.0%	0.36	0.01	0.00	0.08	0.25	47.7%	33.8%
67			12		2	0.56	0.01	0.01	0.08	0.43	14.5%	0.23	0.00	0.01	0.05	0.16	40.6%	29.0%
68			20		2	0.64	0.00	0.01	0.09	0.49	13.7%	0.35	0.01	0.01	0.05	0.24	55.5%	38.1%
69			21		2	0.59	0.01	0.00	0.09	0.52	15.2%	0.29	0.01	0.01	0.05	0.21	48.8%	36.4%
70			29		4	1.06	0.01	0.03	0.14	0.86	13.7%	0.57	0.01	0.02	0.08	0.41	53.7%	38.7%
71			30		4	1.12	0.01	0.01	0.14	0.94	12.6%	0.79	0.01	0.01	0.15	0.56	71.0%	50.4%
72			31		4	1.47	0.01	0.01	0.14	1.14	9.7%	0.81	0.01	0.00	0.14	0.60	55.0%	41.1%
73			32		4	1.44	0.01	0.01	0.24	1.06	16.9%	0.66	0.01	0.03	0.14	0.41	45.6%	28.5%
74			33		4	1.31	0.01	0.04	0.21	0.84	16.0%	0.44	0.01	0.05	0.09	0.28	33.8%	21.4%
75			43		4	0.93	0.02	0.03	0.16	0.78	16.6%	0.68	0.01	0.02	0.11	0.48	73.1%	52.0%
76			44		4	1.50	0.01	0.01	0.20	1.12	13.3%	0.84	0.01	0.01	0.17	0.60	56.1%	40.2%
77			45		4	1.43	0.01	0.01	0.22	1.13	15.3%	0.74	0.01	0.01	0.14	0.50	51.8%	34.6%
78			46		4	1.35	0.01	0.02	0.24	0.93	17.9%	0.58	0.01	0.04	0.13	0.33	43.3%	24.4%
79			130		1	0.31	0.00	0.00	0.05	0.23	15.7%	0.15	0.00	0.00	0.03	0.08	48.3%	25.8%
80			138		2	0.57	0.01	0.00	0.08	0.42	13.8%	0.21	0.00	0.01	0.04	0.13	36.3%	23.1%
81			139		2	0.82	0.01	0.01	0.13	0.60	15.3%	0.39	0.01	0.01	0.07	0.28	47.2%	34.0%
82			140		2	0.80	0.01	0.00	0.10	0.57	12.7%	0.31	0.00	0.00	0.04	0.19	38.3%	23.6%
83			148		2	0.64	0.01	0.01	0.03	0.52	4.2%	0.35	0.01	0.00	0.05	0.23	54.4%	36.4%
84			149		2	0.85	0.01	0.00	0.13	0.63	15.9%	0.35	0.01	0.01	0.07	0.26	41.5%	30.7%
85			157		4	1.50	0.02	0.01	0.28	0.95	18.4%	0.52	0.01	0.01	0.13	0.34	34.8%	22.5%
86			158		4	1.18	0.01	0.01	0.05	1.02	4.4%	0.75	0.01	0.01	0.13	0.53	63.5%	44.7%
87			159		4	1.43	0.01	0.01	0.18	1.07	12.5%	0.77	0.01	0.01	0.13	0.55	54.0%	38.3%
88			160		4	1.44	0.02	0.01	0.28	1.01	19.8%	0.60	0.01	0.02	0.14	0.38	41.4%	26.2%
89			161		4	1.43	0.01	0.00	0.24	0.94	16.6%	0.45	0.01	0.01	0.11	0.31	31.5%	21.8%
90			171		4	1.09	0.01	0.01	0.05	0.76	4.8%	0.53	0.00	0.01	0.09	0.37	48.8%	34.3%
91			172		4	1.25	0.01	0.02	0.16	0.87	12.9%	0.73	0.01	0.01	0.13	0.50	58.3%	39.8%
92			173		4	1.41	0.01	0.00	0.25	1.02	17.4%	0.73	0.01	0.02	0.16	0.48	51.5%	34.4%
93			174		4	1.42	0.02	0.00	0.28	0.96	19.8%	0.51	0.01	0.01	0.13	0.33	35.7%	23.3%
94			2	130	2	0.86	0.01	0.01	0.17	0.65	19.5%	0.30	0.00	0.01	0.07	0.16	35.2%	18.4%
95			10	139	4	1.90	0.03	0.04	0.43	1.68	22.8%	0.92	0.00	0.03	0.07	0.73	48.5%	38.6%
96			11	140	4	1.92	0.03	0.01	0.43	1.77	22.2%	0.89	0.00	0.01	0.08	0.73	46.2%	37.8%
97			12	138	4	1.15	0.02	0.04	0.25	0.86	21.7%	0.47	0.01	0.03	0.08	0.28	41.2%	24.5%
98			20	148	4	1.95	0.03	0.02	0.25	1.64	12.9%	0.45	0.02	0.01	0.10	0.24	22.9%	12.3%
99			21	149	4	1.86	0.04	0.03	0.44	1.67	23.5%	0.64	0.00	0.03	0.06	0.57	34.5%	30.6%
100			29	159	8	2.96	0.04	0.05	0.53	2.63	17.7%	1.20	0.01	0.03	0.21	0.92	40.4%	31.1%
101			30	158	8	4.09	0.04	0.03	0.65	3.85	15.9%	2.43	0.01	0.01	0.25	1.88	59.5%	45.8%
102			31	161	8	2.97	0.05	0.03	0.66	2.70	22.4%	1.49	0.01	0.01	0.15	1.22	50.4%	41.2%
103			32	160	8	2.93	0.05	0.09	0.76	2.65	25.8%	1.23	0.01	0.06	0.13	1.04	42.1%	35.5%
104			33	157	8	2.46	0.05	0.09	0.58	1.93	23.7%	0.94	0.01	0.06	0.19	0.55	38.2%	22.5%
105			43	172	8	3.64	0.05	0.07	0.63	3.39	17.2%	1.68	0.01	0.02	0.22	1.24	46.3%	34.2%
106			44	171	8	3.46	0.03	0.04	0.71	3.14	20.6%	2.01	0.01	0.02	0.21	1.57	58.1%	45.5%
107			45	174	8	3.03	0.05	0.05	0.76	2.74	25.1%	1.34	0.01	0.02	0.15	1.06	44.4%	34.9%
108			46	173	8	3.02	0.05	0.11	0.72	2.86	23.9%	1.66	0.01	0.09	0.15	1.34	55.1%	44.3%

- L-patch Mid CH

											max ratio out of all beams								max ratio out of all beams	
No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	4cm ² PD(mW/cm ²)					28.2%	4cm ² PD(mW/cm ²) at 10mm evaluation distance					71.9%	44.0%		
						S4(Right)	S3(Left)	S6(Bottom)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S6(Bottom)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)		
64	L	Patch	2	1	0.45	0.01	0.00	0.05	0.31	11.3%	0.19	0.00	0.01	0.03	0.10	41.1%	22.0%			
65			10	2	0.61	0.01	0.01	0.09	0.38	14.9%	0.21	0.00	0.02	0.05	0.14	34.3%	23.7%			
66			11	2	0.74	0.00	0.01	0.09	0.56	12.3%	0.31	0.00	0.01	0.06	0.24	41.2%	31.7%			
67			12	2	0.64	0.01	0.01	0.10	0.48	15.7%	0.24	0.00	0.02	0.05	0.15	37.1%	24.1%			
68			20	2	0.63	0.00	0.01	0.10	0.45	15.3%	0.33	0.00	0.01	0.07	0.22	52.5%	35.3%			
69			21	2	0.70	0.01	0.01	0.09	0.55	13.4%	0.27	0.00	0.01	0.05	0.21	38.1%	29.4%			
70			29	4	1.07	0.02	0.03	0.09	0.72	8.3%	0.54	0.01	0.02	0.08	0.32	50.5%	29.6%			
71			30	4	1.21	0.02	0.02	0.17	0.93	13.7%	0.84	0.01	0.01	0.20	0.49	69.7%	40.5%			
72			31	4	1.37	0.01	0.01	0.19	0.97	13.8%	0.67	0.01	0.01	0.15	0.49	49.4%	36.1%			
73			32	4	1.41	0.01	0.01	0.31	0.92	22.1%	0.73	0.01	0.03	0.18	0.37	52.0%	26.5%			
74			33	4	1.52	0.01	0.04	0.28	0.87	18.4%	0.60	0.01	0.05	0.14	0.26	39.5%	16.8%			
75			43	4	1.13	0.02	0.03	0.03	0.71	2.2%	0.67	0.01	0.02	0.13	0.39	59.1%	34.8%			
76			44	4	1.27	0.02	0.01	0.17	0.95	13.3%	0.70	0.01	0.01	0.14	0.48	55.1%	37.5%			
77			45	4	1.45	0.01	0.01	0.27	0.91	18.3%	0.73	0.01	0.01	0.18	0.44	50.3%	30.6%			
78			46	4	1.40	0.01	0.02	0.28	0.82	20.0%	0.70	0.01	0.04	0.16	0.28	49.8%	20.4%			
79			130	1	0.35	0.00	0.00	0.05	0.22	14.2%	0.16	0.00	0.00	0.03	0.07	45.4%	20.6%			
80			138	2	0.73	0.01	0.00	0.12	0.44	16.0%	0.30	0.00	0.00	0.06	0.14	40.8%	18.9%			
81			139	2	0.75	0.01	0.01	0.10	0.57	13.6%	0.36	0.00	0.01	0.06	0.23	47.2%	30.6%			
82			140	2	0.78	0.00	0.00	0.10	0.56	12.2%	0.31	0.00	0.00	0.06	0.18	40.2%	22.6%			
83			148	2	0.62	0.01	0.01	0.10	0.48	16.4%	0.37	0.01	0.01	0.07	0.19	58.6%	29.7%			
84			149	2	0.79	0.00	0.01	0.11	0.59	13.4%	0.36	0.00	0.01	0.07	0.23	45.4%	29.5%			
85			157	4	1.46	0.01	0.00	0.28	0.90	19.1%	0.63	0.01	0.01	0.16	0.33	43.4%	22.6%			
86			158	4	0.88	0.01	0.01	0.19	0.85	21.3%	0.61	0.01	0.01	0.16	0.39	68.7%	44.0%			
87			159	4	1.39	0.01	0.01	0.16	1.02	11.6%	0.73	0.00	0.02	0.11	0.50	52.7%	35.8%			
88			160	4	1.65	0.01	0.00	0.22	1.02	13.1%	0.83	0.01	0.01	0.19	0.40	50.3%	24.5%			
89			161	4	1.34	0.01	0.00	0.25	0.85	18.2%	0.53	0.01	0.01	0.13	0.28	39.1%	21.1%			
90			171	4	0.98	0.02	0.01	0.15	0.74	15.8%	0.51	0.01	0.01	0.09	0.30	51.5%	30.3%			
91			172	4	0.98	0.02	0.03	0.14	0.83	14.0%	0.70	0.01	0.01	0.16	0.38	71.9%	38.4%			
92			173	4	1.52	0.01	0.01	0.26	0.97	17.0%	0.79	0.01	0.02	0.17	0.45	52.0%	29.6%			
93			174	4	1.60	0.01	0.00	0.29	0.98	18.2%	0.72	0.01	0.01	0.17	0.34	44.9%	21.5%			
94			2	130	2	0.77	0.01	0.01	0.17	0.55	22.1%	0.29	0.01	0.01	0.06	0.16	38.3%	20.4%		
95			10	139	4	1.85	0.02	0.04	0.30	1.56	16.3%	0.85	0.00	0.03	0.07	0.64	45.8%	34.4%		
96			11	140	4	1.81	0.01	0.02	0.32	1.61	17.6%	0.85	0.00	0.01	0.09	0.64	47.1%	35.2%		
97			12	138	4	1.31	0.02	0.02	0.26	0.88	19.8%	0.56	0.00	0.02	0.09	0.30	42.6%	22.9%		
98			20	148	4	1.58	0.02	0.03	0.36	1.30	23.0%	0.58	0.01	0.02	0.17	0.25	36.6%	15.7%		
99			21	149	4	1.89	0.02	0.03	0.36	1.63	19.3%	0.68	0.00	0.02	0.06	0.54	36.2%	28.5%		
100			29	159	8	2.93	0.03	0.06	0.49	2.66	16.6%	1.38	0.02	0.02	0.18	0.94	47.1%	32.2%		
101			30	158	8	3.16	0.07	0.03	0.89	2.99	28.2%	1.97	0.01	0.01	0.23	1.36	62.4%	43.1%		
102			31	161	8	2.94	0.04	0.03	0.64	2.58	21.8%	1.50	0.01	0.01	0.14	1.21	51.0%	41.1%		
103			32	160	8	2.95	0.03	0.06	0.82	2.51	27.7%	1.33	0.01	0.03	0.15	0.95	45.0%	32.2%		
104			33	157	8	2.64	0.02	0.09	0.56	1.86	21.3%	1.02	0.01	0.04	0.22	0.50	38.5%	19.0%		
105			43	172	8	2.95	0.05	0.09	0.76	2.67	25.8%	1.54	0.02	0.03	0.27	0.95	52.2%	32.1%		
106			44	171	8	2.84	0.06	0.05	0.59	2.59	20.9%	1.70	0.01	0.02	0.19	1.16	59.9%	40.8%		
107			45	174	8	2.91	0.03	0.03	0.77	2.48	26.4%	1.29	0.01	0.01	0.15	1.05	44.3%	36.2%		
108			46	173	8	3.09	0.02	0.10	0.78	2.71	25.2%	1.61	0.01	0.07	0.15	1.18	52.1%	38.3%		

- L-patch High CH

										max ratio out of all beams							max ratio out of all beams	
No.	Module	Type(P or D)	Beam ID_1	Beam ID_2	Feed no.	4cm ² PD(mW/cm ²)					33.4%	4cm ² PD(mW/cm ²) at 10mm evaluation distance					70.4%	52.6%
						S4(Right)	S3(Left)	S6(Bottom)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S6(Bottom)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)
64	L	Patch	2	1	0.35	0.00	0.00	0.03	0.23	10.1%	0.13	0.00	0.00	0.02	0.06	37.8%	17.9%	
65			10	2	0.59	0.01	0.01	0.09	0.35	14.7%	0.22	0.01	0.01	0.04	0.10	36.7%	17.0%	
66			11	2	0.60	0.01	0.00	0.09	0.36	14.7%	0.28	0.00	0.01	0.06	0.12	46.1%	19.5%	
67			12	2	0.65	0.01	0.01	0.10	0.40	15.2%	0.28	0.00	0.01	0.06	0.12	42.5%	18.6%	
68			20	2	0.47	0.01	0.01	0.10	0.32	22.3%	0.29	0.01	0.01	0.07	0.13	61.4%	28.5%	
69			21	2	0.66	0.00	0.01	0.10	0.39	14.5%	0.29	0.00	0.01	0.06	0.13	43.2%	19.4%	
70			29	4	0.95	0.01	0.01	0.12	0.62	12.7%	0.41	0.01	0.02	0.06	0.23	43.2%	24.1%	
71			30	4	0.73	0.02	0.02	0.16	0.62	22.4%	0.47	0.02	0.01	0.16	0.38	65.0%	52.6%	
72			31	4	1.07	0.01	0.01	0.21	0.56	19.8%	0.58	0.01	0.02	0.16	0.28	54.0%	25.7%	
73			32	4	1.34	0.01	0.01	0.25	0.77	19.0%	0.65	0.00	0.01	0.17	0.32	48.3%	23.7%	
74			33	4	1.34	0.01	0.01	0.24	0.78	18.0%	0.58	0.01	0.03	0.12	0.25	43.1%	18.7%	
75			43	4	0.95	0.02	0.01	0.10	0.55	10.8%	0.52	0.01	0.01	0.10	0.29	55.1%	30.5%	
76			44	4	0.80	0.02	0.01	0.13	0.61	16.2%	0.37	0.01	0.02	0.07	0.19	46.0%	23.9%	
77			45	4	1.24	0.01	0.01	0.25	0.73	20.5%	0.65	0.00	0.01	0.18	0.31	52.5%	25.3%	
78			46	4	1.15	0.01	0.01	0.25	0.77	22.0%	0.60	0.01	0.03	0.14	0.28	52.2%	24.6%	
79			130	1	0.29	0.00	0.00	0.06	0.16	21.8%	0.13	0.00	0.00	0.03	0.05	43.5%	17.1%	
80			138	2	0.53	0.01	0.00	0.08	0.32	14.8%	0.22	0.00	0.01	0.05	0.09	41.6%	17.7%	
81			139	2	0.62	0.01	0.01	0.11	0.40	18.2%	0.33	0.01	0.01	0.06	0.15	52.6%	23.5%	
82			140	2	0.64	0.01	0.00	0.08	0.41	13.0%	0.24	0.01	0.01	0.04	0.13	36.8%	21.0%	
83			148	2	0.53	0.01	0.01	0.03	0.40	5.9%	0.26	0.00	0.01	0.04	0.16	48.8%	29.8%	
84			149	2	0.66	0.01	0.00	0.12	0.42	17.8%	0.33	0.00	0.01	0.06	0.16	49.2%	24.4%	
85			157	4	1.35	0.02	0.00	0.22	0.83	16.0%	0.59	0.01	0.01	0.13	0.31	44.0%	22.9%	
86			158	4	0.79	0.02	0.02	0.14	0.59	17.3%	0.42	0.01	0.01	0.09	0.26	53.5%	33.1%	
87			159	4	0.69	0.01	0.01	0.14	0.59	20.0%	0.48	0.01	0.03	0.11	0.25	69.3%	36.1%	
88			160	4	1.21	0.01	0.00	0.22	0.77	17.8%	0.64	0.01	0.01	0.16	0.31	52.5%	25.5%	
89			161	4	1.33	0.02	0.00	0.20	0.83	14.7%	0.53	0.01	0.01	0.10	0.28	39.9%	20.8%	
90			171	4	0.78	0.02	0.00	0.13	0.51	16.2%	0.30	0.01	0.01	0.06	0.16	38.0%	20.0%	
91			172	4	0.77	0.02	0.01	0.15	0.41	18.9%	0.51	0.02	0.01	0.11	0.25	66.6%	32.2%	
92			173	4	1.03	0.01	0.01	0.17	0.68	16.7%	0.58	0.01	0.03	0.14	0.30	56.1%	29.2%	
93			174	4	1.31	0.01	0.00	0.21	0.81	15.8%	0.61	0.01	0.00	0.13	0.30	46.7%	22.8%	
94			2	130	2	0.63	0.01	0.01	0.17	0.42	27.6%	0.27	0.01	0.01	0.05	0.14	42.6%	22.1%
95			10	139	4	1.44	0.03	0.04	0.35	1.02	24.3%	0.66	0.01	0.03	0.08	0.37	46.2%	26.0%
96			11	140	4	1.44	0.03	0.02	0.29	1.09	20.3%	0.60	0.01	0.01	0.08	0.34	41.9%	23.5%
97			12	138	4	1.25	0.01	0.03	0.35	0.78	27.7%	0.54	0.01	0.02	0.11	0.27	42.9%	21.7%
98			20	148	4	1.21	0.02	0.03	0.26	0.94	21.7%	0.42	0.01	0.01	0.10	0.19	34.6%	16.1%
99			21	149	4	1.54	0.02	0.03	0.35	1.08	22.9%	0.60	0.00	0.02	0.07	0.39	39.1%	25.4%
100			29	159	8	1.90	0.05	0.06	0.40	1.59	21.1%	0.82	0.03	0.05	0.14	0.52	43.3%	27.2%
101			30	158	8	2.11	0.05	0.05	0.56	1.91	26.3%	1.49	0.02	0.01	0.27	0.89	70.4%	42.2%
102			31	161	8	2.49	0.05	0.04	0.75	2.06	30.1%	1.23	0.01	0.02	0.23	0.74	49.3%	29.7%
103			32	160	8	2.81	0.03	0.06	0.86	2.13	30.5%	1.18	0.01	0.03	0.17	0.87	42.1%	30.9%
104			33	157	8	2.52	0.04	0.07	0.68	1.60	26.9%	1.04	0.01	0.05	0.29	0.51	41.2%	20.1%
105			43	172	8	2.10	0.07	0.04	0.57	1.77	27.2%	0.93	0.02	0.03	0.16	0.49	44.3%	23.4%
106			44	171	8	1.77	0.06	0.06	0.39	1.48	22.2%	0.98	0.01	0.03	0.13	0.55	55.1%	31.1%
107			45	174	8	2.64	0.03	0.03	0.88	2.15	33.4%	1.28	0.01	0.01	0.24	0.83	48.5%	31.6%
108			46	173	8	2.65	0.03	0.10	0.67	2.11	25.3%	1.21	0.01	0.05	0.17	0.76	45.7%	28.7%