

FCC ID: A3LSMG996U

Power Density Simulation Report

Revision A

November 25, 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 2020.R2 (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 2020.R2 (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 2020.R2 (HFSS) is used. ANSYS Electromagnetics suite version 2020.R2 (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 2020.R2 (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 2020.R2 (HFSS), the accuracy of converged results depends on the delta S. Figure 1 is an example of adaptive mesh of the device (cross-section of top view).

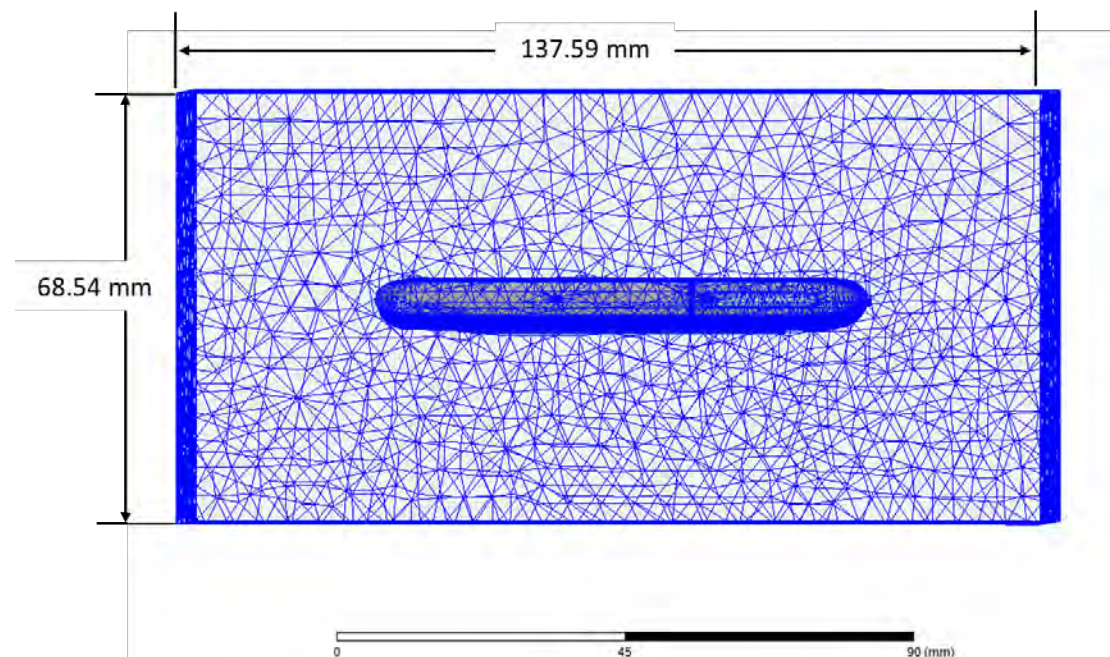


Figure 1 Example of the adaptive mesh technique (Top view)

### 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 2020.R2 (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:

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

, 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  $4\text{cm}^2$ .

## 1.2 Simulation setup

### 1.2.1 3D modeling

Figure 2 shows the simulation model which is mounted two 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 K and Ant L. The modeling contains the entire EUT to enable a Smart transmit GEN2, as well. 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.

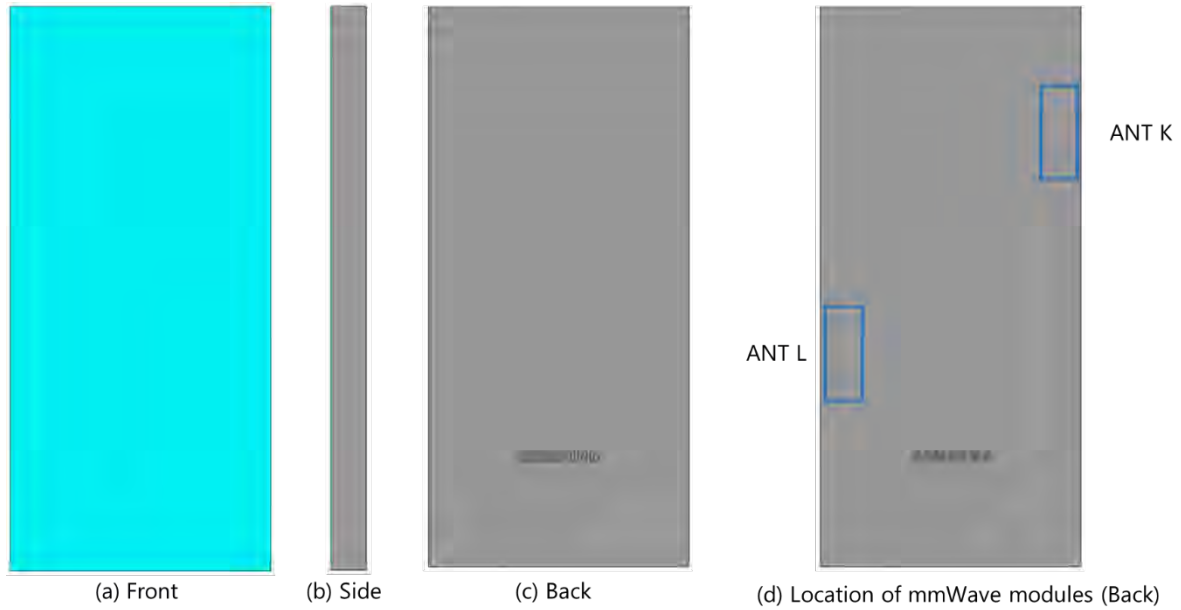


Figure 2 Simulation model which is mounted two mmWave antenna modules

### 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 K case, five PD evaluation planes except bottom side are set up. The Ant K is 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 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

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

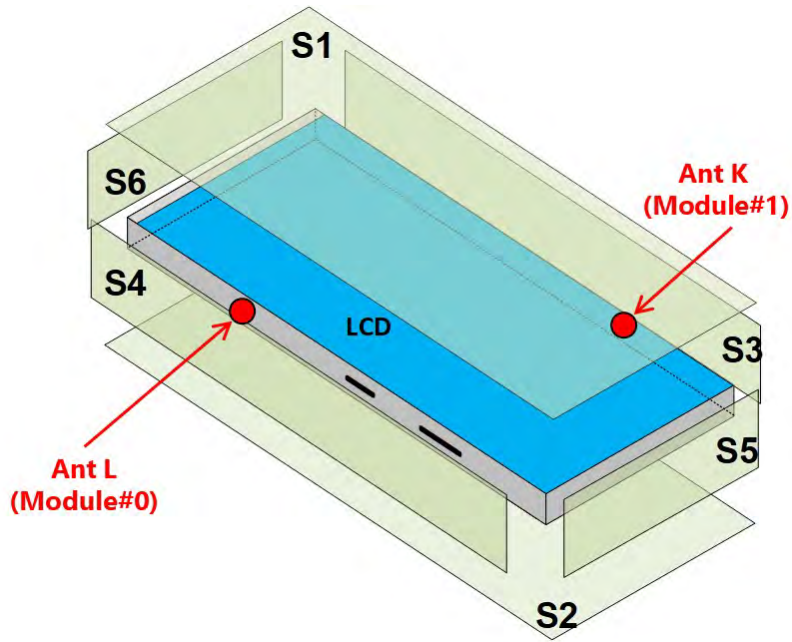


Figure 3. PD evaluation planes

### 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 2020.R2 (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, 40 mm spacing from the device for each surfaces were adopted. This distance is sufficiently large enough for “Qualcomm MG script” to extract valid E- and H-fields from all adjacent exposure surfaces of the EUT.

### 1.2.4 Source excitation condition

The number of antenna ports of ANT K and ANT L for source excitation are the same. The antenna port of ANT K and L is divided into 10 ports for n261 1 x 5 patch array antennas, 10 ports for n260 1 x 5 patch array antennas. In the 10 ports included in each patch antenna, 5 ports are divided into vertical polarization feeding, and the other 5 ports are divided into horizontal polarization feeding.

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

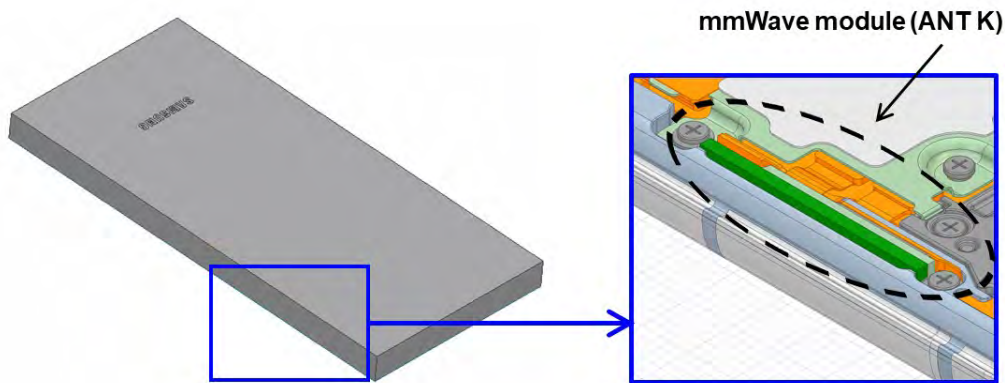


Figure 4. mmWave module (ANT K)

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.

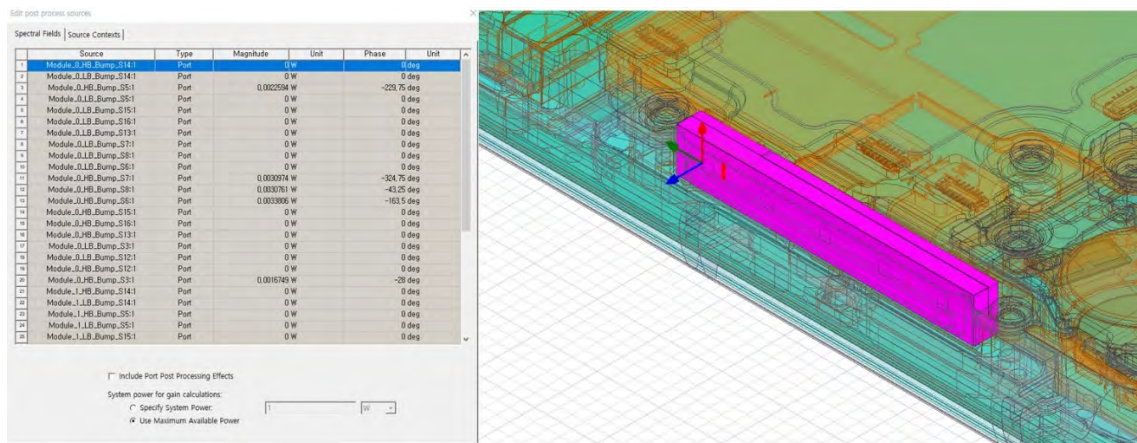


Figure 5. An example of port excitation (ANT K)

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 and $\text{sim.power}_{\text{limit}}$

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  $4 \text{ cm}^2$  at  $2.5 \text{ mm}$  intervals of the point power density result. Figure 6 shows examples of the distribution plot of point power density and the averaged power density.

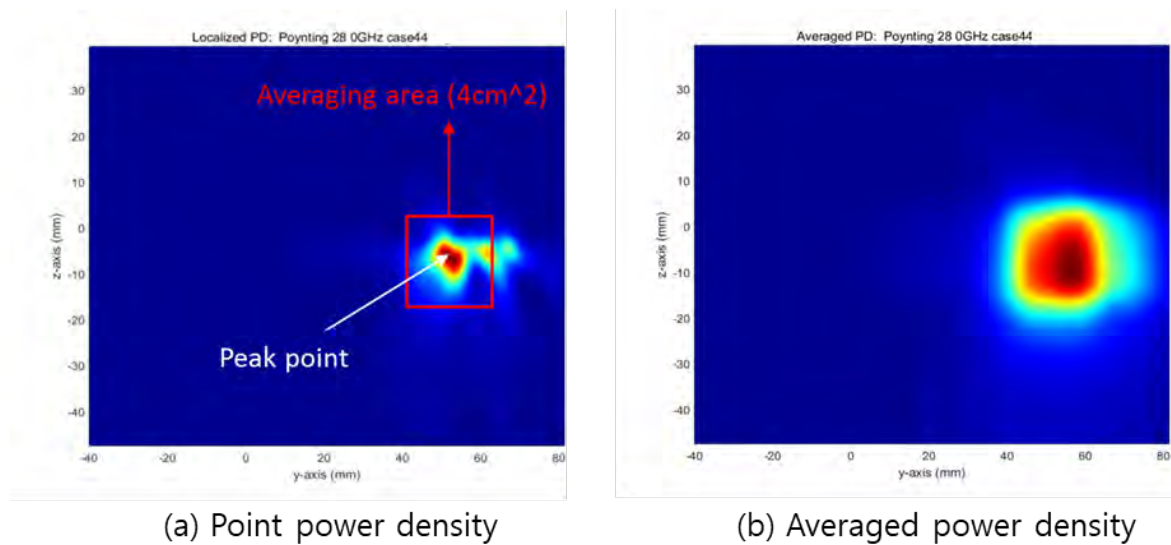


Figure 6. Power density distribution (Example)

For the Smart transmit GEN2, the “Qualcomm MG script” were used to extract E- and H-fields from the validated simulation and to assess the mutual coupling between all the mmWave antenna modules and all the beams in the codebook to determine the backoff value for each mmWave module. Note the assessment and backoff value derivation are automated with “Qualcomm MG script”. Once the script is done with assessment, it will provide the  $\text{sim.power}_{\text{limit}}$  (backoff is already included) for all the beams for all three channels for the specified  $\text{PD\_design\_target}$ . This mode takes the minimum  $\text{sim.power}_{\text{limit}}$  out of all three channels (low, mid and high) and uses the resulted  $\text{sim.power}_{\text{limit}}$ .

### 2.2 Comparison between simulation, measurement

In this section, the simulated-power density distributions and measured-power density distributions are compared to each mmWave antenna. Furthermore, to verify the Smart transmit GEN2, the PD distributions printing out from the “Qualcomm MG script” are added.

Based on comparison of power density distributions, the power densities of simulated, measured and the “Qualcomm MG Script” have a good correlation. The discrepancy in amplitude between the “Qualcomm MG Script”  $4 \text{ cm}^2$  averaged power density and measured  $4 \text{ cm}^2$  averaged power density is

considered as housing influence and used in determining input power limit for each beam for RF exposure compliance.

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.


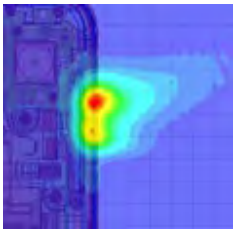
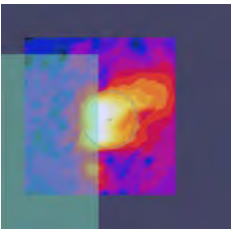
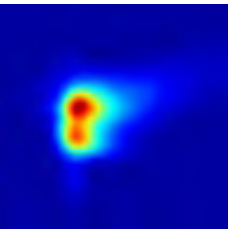

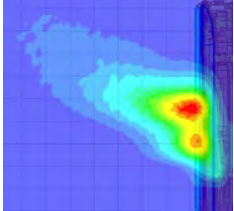
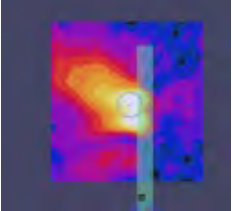
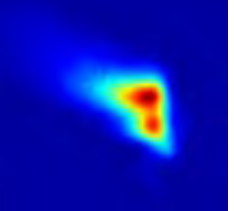
Mode/Band	Antenna	Input Power (dBm)	Input Power (dBm)
		SISO	MIMO
5G NR n261	K Patch	6.0	6.0
	L Patch	6.0	6.0
5G NR n260	K Patch	6.0	6.0
	L Patch	6.0	6.0

\* 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.


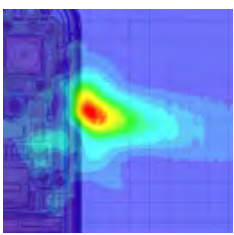
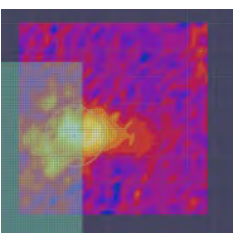
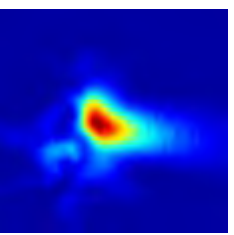

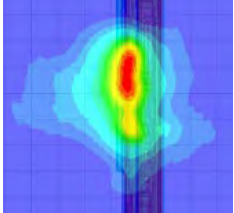
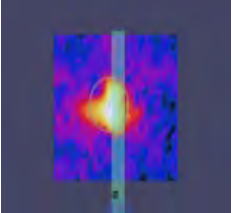
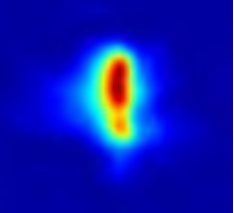
Band	Beam ID	Antenna	Surface	Channel	4cm <sup>2</sup> avg. PD (mW/cm <sup>2</sup> )	
					Meas.	Sim
n261	21	K	Rear	Mid Ch. 2077891 (27923.5 MHz)	0.962	1.585
			Left		0.926	1.549
	Rear		0.438		0.783	
	Left		0.675		1.074	
	25	L	Rear		0.889	1.649
			Right		0.859	1.497
	Rear		0.423		0.762	
	Right		0.750		1.120	
n260	31	K	Rear	Mid Ch. 2253331 (38449.9 MHz)	0.413	0.491
			Left		0.477	0.936
	Rear		0.567		0.760	
	Left		0.762		0.928	
	27	L	Rear		0.516	0.800
			Right		0.685	1.174
	156		Rear		0.723	1.136
	147		Right		0.853	1.074




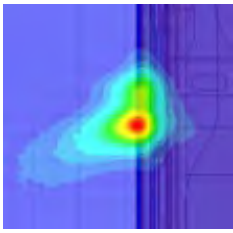
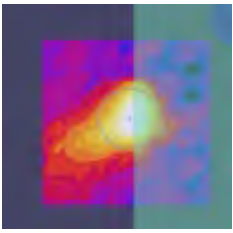
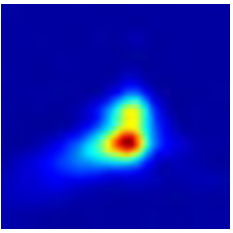
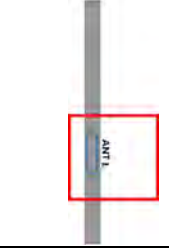
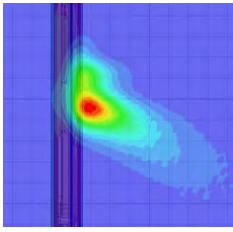
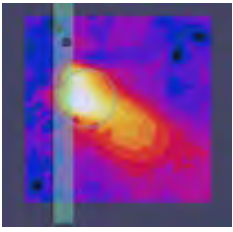
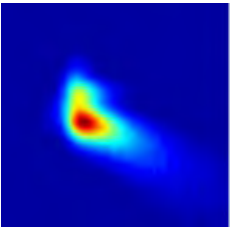
- Table 2-1, n261 ANT K-Patch: Mid Channel, Beam ID 21

Beam ID	Surface	View	Simulated PD	Measured PD	Print out from Qualcomm MG Script
21	S2 (Rear)				
	S3 (Left)				


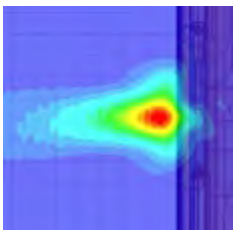
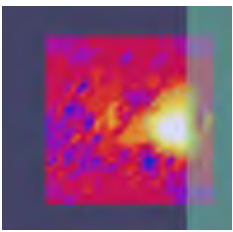
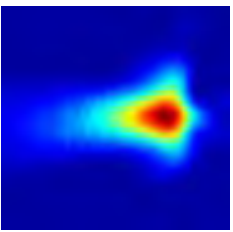
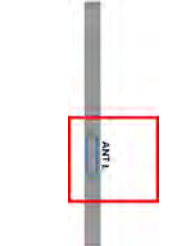
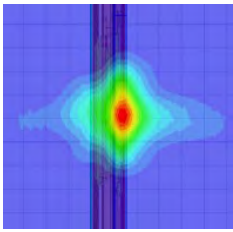
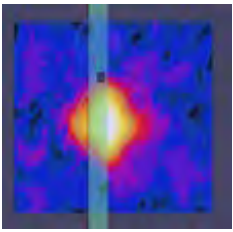
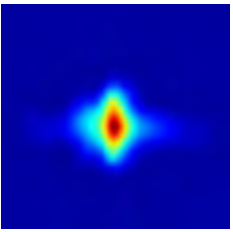
- Table 2-2, n261 ANT K-Patch: Mid Channel, Beam ID 150 for Rear and 159 for Left surfaces

Beam ID	Surface	View	Simulated PD	Measured PD	Print out from Qualcomm MG Script
150	S2 (Rear)				
159	S3 (Left)				


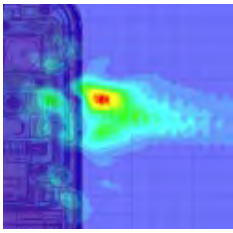
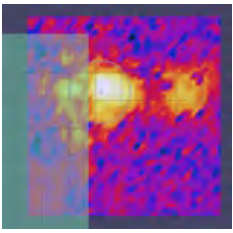
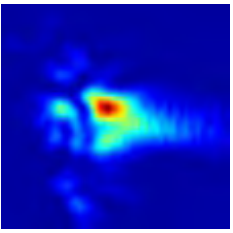

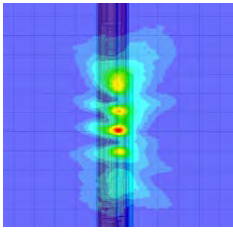
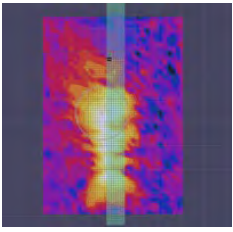
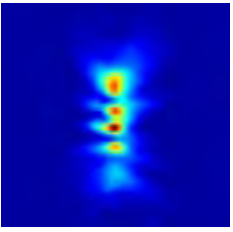
● Table 2-3, n261 ANT L-Patch: Mid Channel, Beam ID 25

Beam ID	Surface	View	Simulated PD	Measured PD	Print out from Qualcomm MG Script
25	S2 (Rear)				
	S4 (Right)				

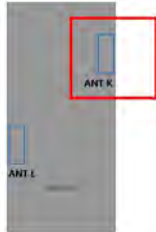
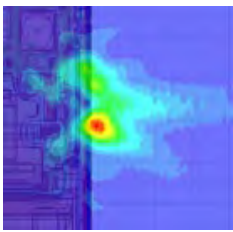
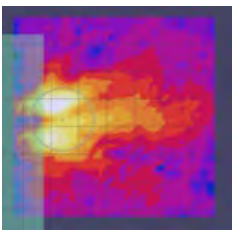
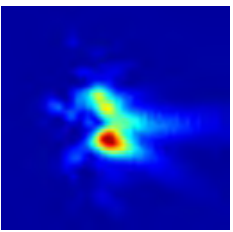

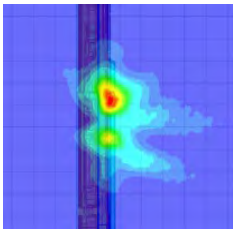
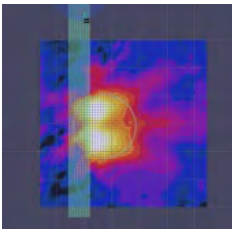
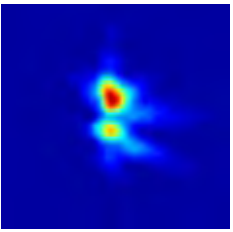
● Table 2-4, n261 ANT L-Patch: Mid Channel, Beam ID 145

Beam ID	Surface	View	Simulated PD	Measured PD	Print out from Qualcomm MG Script
145	S2 (Rear)				
	S4 (Right)				


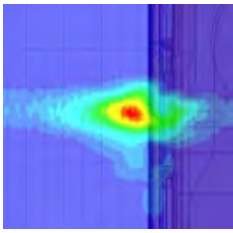
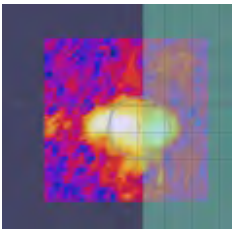
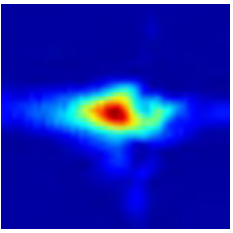
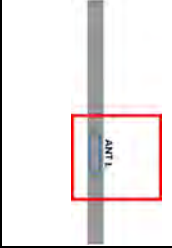
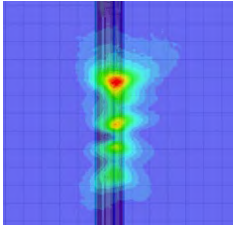
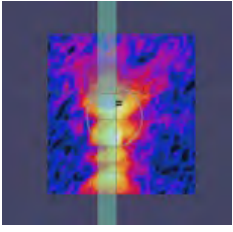
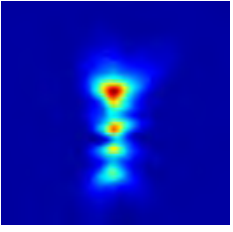
- Table 2-5, n260 ANT K-Patch: Mid Channel, Beam ID 31 for Rear and 33 for Left surfaces

Beam ID	Surface	View	Simulated PD	Measured PD	Print out from Qualcomm MG Script
31	S2 (Rear)				
	S3 (Left)				


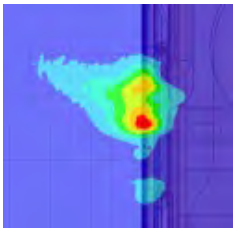
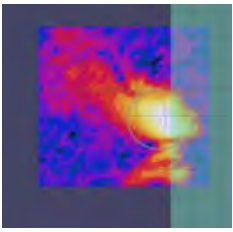
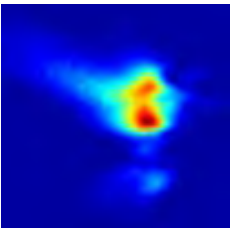

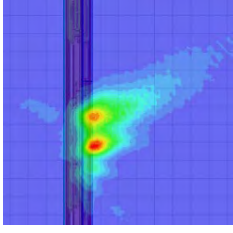
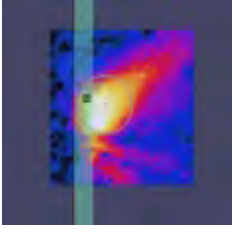
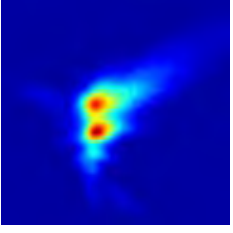
- Table 2-6, n260 ANT K-Patch: Mid Channel, Beam ID 159

Beam ID	Surface	View	Simulated PD	Measured PD	Print out from Qualcomm MG Script
159	S2 (Rear)				
	S3 (Left)				

- Table 2-7, n260 ANT L-Patch: Mid Channel, Beam ID 27 for Rear and 20 for Right surfaces

Beam ID	Surface	View	Simulated PD	Measured PD	Print out from Qualcomm MG Script
27	S2 (Rear)				
20	S4 (Right)				

- Table 2-8, n260 ANT L-Patch: Mid Channel, Beam ID 156 for Rear and 147 for Right surfaces

Beam ID	Surface	View	Simulated PD	Measured PD	Print out from Qualcomm MG Script
156	S2 (Rear)				
147	S4 (Right)				

The Smart transmit GEN2 cannot be finalized until the additional verifications are performed and passed. Follow the below steps for verifications in the mid channel:

**VERIFICATION 1:** Use “Qualcomm MG script” to print the PD plots for all the beams selected and evaluated for model validation.

- Throughout above comparisons (Table 2-1 to 2-8), the model validation including MG script were verified.

**VERIFICATION 2:** Contribution factors from Qualcomm MG script and from HFSS for selected beams, and normalized combined PD verification, for A3LSMG996U device with 2 QTM. The printed contribution factor from Qualcomm MG Script was within 2% numerical tolerance of the simulated contribution factor. Additionally, the normalized combined PD is < 1.0.

[n261 band]

Worst-case surface:					S2 (Back surface)	
Worst-case location (x,y,z) in meters:					Worst 4cm2 PD value location is -0.04780m, 0.10911m, -0.01098m	
PD_design_target (W/m <sup>2</sup> )					6.166	
Values printed from Qualcomm MG Script					Values obtained by OEM using EM simulation tool	
QTM #	Beam ID	c(i,j) i = beam ID j = QTM #	Backoff factor b <sub>j</sub>	verification.sim. power limit (before backoffs) [dBm]	simulated 4cm2 PD(i,j) at (-0.04780, 0.10911, -0.01098) at verification.sim.power limit on S2	C <sub>simulated(i,j)</sub> = 4cm <sup>2</sup> PD(i,j)/ PD_design_target
0	128	0.039	0.955	11.7	0.24323	0.039
1	24	1.000	0.933	2.85	6.17456	1.001
<b>Verify 1:</b> $C(i,j) = C_{simulated}(i,j), i = 128, 24; j = 0, 1$						
<b>Verify 2:</b> $b_0 * c(128,0) + b_1 * c(24,1) = 0.955 * 0.039 + 0.933 * 1.000 = 0.970 \leq 1$						

[n260 band]

Worst-case surface:					S3 (Left surface)	
Worst-case location (x,y,z) in meters:					Worst 4cm2 PD value location is -0.03980m, 0.09811m, -0.01798m	
PD_design_target (W/m <sup>2</sup> )					6.166	
Values printed from Qualcomm MG Script					Values obtained by OEM using EM simulation tool	
QTM #	Beam ID	c(i,j) i = beam ID j = QTM #	Backoff factor b <sub>j</sub>	verification.sim. power limit (before backoffs) [dBm]	simulated 4cm2 PD(i,j) at (-0.03980, 0.09811, -0.01798) at verification.sim.power limit on S3	C <sub>simulated(i,j)</sub> = 4cm <sup>2</sup> PD(i,j)/ PD_design_target
0	19	0.008	0.977	3.42	0.04815	0.008
1	143	1.000	0.977	6.34	6.15802	0.999
<b>Verify 1:</b> $C(i,j) = C_{simulated}(i,j), i = 19, 143; j = 0, 1$						
<b>Verify 2:</b> $b_0 * c(19,0) + b_1 * c(143,1) = 0.977 * 0.008 + 0.977 * 1.000 = 0.985 \leq 1$						

**VERIFICATION3:** Measured 4cm<sup>2</sup> PD on worst surface and combined PD at worst-case location for A3LSMG996U device with 2 QTMS. The device should be measured at the reference power level and scaled to the input.power.limit. The combined PD should be less than or equal to the *PD\_Design\_Target* within the uncertainty at the reference power level.

[n261 band]

QTM #	Beam ID	c(i,j) i = beam ID j = QTM #	Dominant surface	4cm <sup>2</sup> PD at input.power.limit on QTM dominant surface (W/m <sup>2</sup> )	input.power.limit (before permanent backoff)	Measured PD at reference power power level on Beam Dominant Surface (W/m <sup>2</sup> )
0	128	0.039	S4 (Right)	5.119	12.6	0.112
1	24	1.000	S3 (Back)	4.114	4.0	0.652
combined PD at the worst-case location (x,y,z)				c(128,0)*meas.4cm <sup>2</sup> PD(128,0) + c(24,1)*meas.4cm <sup>2</sup> PD(24,1) = 0.039*5.119 + 1.000*4.114 = 4.313 W/m <sup>2</sup>		
PD_design_target + uncertainty at reference power level of 0.5 dB				= 6.166*10 <sup>(0.5/10)</sup> = 6.918 W/m <sup>2</sup>		
<b>Verify</b>				combined PD < PD_design_target + uncertainty at reference power level		

[n260 band]

QTM #	Beam ID	c(i,j) i = beam ID j = QTM #	Dominant surface	4cm <sup>2</sup> PD at input.power.limit on QTM dominant surface (W/m <sup>2</sup> )	input.power.limit (before permanent backoff)	Measured PD at reference power power level on Beam Dominant Surface (W/m <sup>2</sup> )
0	19	0.008	S4 (Right)	4.632	3.6	0.805
1	143	1.000	S3 (Left)	4.039	6.5	0.360
combined PD at the worst-case location (x,y,z)				c(19,0)*meas.4cm <sup>2</sup> PD(19,0) + c(143,1)*meas.4cm <sup>2</sup> PD(143,1) = 0.008*4.632 + 1.000*4.039 = 4.076 W/m <sup>2</sup>		
PD_design_target + uncertainty at reference power level of 0.5 dB				= 6.166*10 <sup>(0.5/10)</sup> = 6.918 W/m <sup>2</sup>		
<b>Verify</b>				combined PD < PD_design_target + uncertainty at reference power level		







Table 4. PD of Ant K – patch antenna (39GHz – n260)

- K-patch Low CH

No.	Module	Type	Beam ID_1	Berna ID_2	Feed no.	max ratio out of all beams											max ratio out of all beams								
						4cm2 PD(mW/cm2)						51.9%		23.7%		4cm2 PD(mW/cm2) at 10mm evaluation distance						58.0%		45.3%	
						S4(Right)	S3(Left)	S5(Top)	S6(Bottom)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Top 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S5(Top)	S6(Bottom)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)				
1			3		1	0.00	0.08	0.01	0.00	0.03	0.07	32.5%	7.2%	0.00	0.03	0.00	0.00	0.01	0.02	38.6%	26.5%				
2			4		1	0.00	0.19	0.01	0.00	0.08	0.13	43.3%	5.9%	0.00	0.08	0.01	0.00	0.03	0.05	45.3%	25.1%				
3			5		1	0.00	0.19	0.02	0.00	0.06	0.10	31.9%	5.9%	0.00	0.08	0.01	0.00	0.02	0.04	44.1%	19.1%				
4			9		2	0.00	0.27	0.01	0.00	0.12	0.24	43.4%	4.1%	0.00	0.12	0.01	0.00	0.06	0.11	43.4%	39.3%				
5			10		2	0.00	0.20	0.01	0.00	0.07	0.11	37.1%	4.6%	0.00	0.10	0.01	0.00	0.03	0.04	50.8%	20.8%				
6			11		2	0.01	0.27	0.03	0.00	0.12	0.18	45.9%	9.8%	0.00	0.08	0.02	0.00	0.04	0.07	31.2%	26.3%				
7			14		2	0.00	0.14	0.01	0.00	0.06	0.10	44.8%	3.5%	0.00	0.07	0.00	0.00	0.03	0.04	49.7%	16.6%				
8			15		2	0.00	0.23	0.03	0.00	0.09	0.14	36.8%	14.5%	0.00	0.08	0.02	0.00	0.03	0.05	32.1%	21.8%				
9			21		5	0.01	0.55	0.08	0.01	0.24	0.38	44.1%	14.4%	0.01	0.24	0.06	0.01	0.12	0.18	43.9%	33.1%				
10			22		5	0.02	0.77	0.03	0.00	0.36	0.48	47.4%	3.3%	0.01	0.42	0.01	0.00	0.19	0.17	54.0%	21.9%				
11			23		5	0.01	0.71	0.02	0.00	0.30	0.44	42.5%	2.5%	0.01	0.40	0.01	0.00	0.16	0.20	56.7%	27.6%				
12			24		5	0.01	0.56	0.08	0.00	0.21	0.33	37.0%	14.7%	0.00	0.22	0.05	0.00	0.09	0.13	40.1%	22.4%				
13			25		5	0.01	0.54	0.11	0.01	0.21	0.29	38.8%	21.2%	0.01	0.21	0.08	0.01	0.10	0.11	39.8%	20.4%				
14			30		5	0.01	0.62	0.05	0.00	0.26	0.41	42.3%	8.1%	0.01	0.30	0.03	0.00	0.13	0.18	47.9%	29.5%				
15			31		5	0.01	0.72	0.02	0.00	0.31	0.45	42.8%	3.0%	0.01	0.42	0.02	0.00	0.18	0.22	58.0%	30.4%				
16			32		5	0.01	0.57	0.04	0.00	0.29	0.35	51.9%	7.4%	0.01	0.30	0.03	0.00	0.16	0.15	53.4%	26.8%				
17			33		5	0.01	0.54	0.11	0.01	0.20	0.29	37.4%	20.8%	0.01	0.21	0.07	0.01	0.10	0.10	39.8%	17.7%				
18			131		1	0.00	0.25	0.01	0.00	0.04	0.21	14.6%	4.7%	0.00	0.09	0.01	0.00	0.01	0.08	36.4%	32.8%				
19			132		1	0.00	0.16	0.02	0.00	0.02	0.14	12.7%	11.4%	0.00	0.06	0.01	0.00	0.01	0.05	38.6%	30.4%				
20			133		1	0.00	0.17	0.01	0.00	0.02	0.14	14.2%	4.7%	0.00	0.07	0.01	0.00	0.01	0.05	41.4%	29.0%				
21			137		2	0.00	0.30	0.03	0.00	0.05	0.24	15.9%	8.5%	0.00	0.15	0.01	0.00	0.02	0.10	49.8%	33.6%				
22			138		2	0.00	0.43	0.02	0.00	0.05	0.37	10.8%	4.6%	0.00	0.21	0.01	0.00	0.02	0.20	49.1%	45.2%				
23			139		2	0.00	0.37	0.04	0.00	0.05	0.31	13.1%	9.2%	0.00	0.18	0.03	0.00	0.02	0.11	33.0%	30.0%				
24			142		2	0.00	0.37	0.03	0.00	0.06	0.32	15.3%	8.3%	0.00	0.18	0.02	0.00	0.02	0.14	47.3%	36.3%				
25			143		2	0.00	0.45	0.03	0.00	0.08	0.35	17.0%	7.2%	0.00	0.19	0.02	0.00	0.03	0.14	43.0%	30.5%				
26			149		5	0.01	0.75	0.07	0.01	0.09	0.66	11.7%	9.9%	0.00	0.40	0.03	0.00	0.03	0.31	53.9%	41.8%				
27			150		5	0.01	0.65	0.06	0.00	0.13	0.71	15.9%	7.4%	0.00	0.45	0.04	0.00	0.05	0.32	52.6%	37.3%				
28			151		5	0.01	0.83	0.04	0.01	0.11	0.68	13.5%	4.7%	0.00	0.40	0.02	0.01	0.05	0.36	48.8%	43.7%				
29			152		5	0.00	0.70	0.06	0.00	0.13	0.58	18.6%	8.5%	0.00	0.34	0.04	0.00	0.06	0.27	48.6%	38.1%				
30			153		5	0.01	0.69	0.16	0.02	0.12	0.63	17.7%	23.7%	0.00	0.25	0.11	0.02	0.05	0.25	36.2%	35.6%				
31			158		5	0.00	0.77	0.06	0.00	0.10	0.66	12.7%	7.3%	0.00	0.51	0.04	0.00	0.04	0.31	54.0%	40.3%				
32			159		5	0.00	0.99	0.03	0.00	0.12	0.91	12.1%	3.5%	0.00	0.50	0.02	0.00	0.05	0.45	50.8%	50.8%				
33			160		5	0.00	0.78	0.05	0.01	0.14	0.64	18.1%	6.8%	0.00	0.39	0.03	0.01	0.06	0.33	50.2%	42.7%				
34			161		5	0.01	0.70	0.13	0.01	0.13	0.56	18.4%	18.8%	0.00	0.28	0.09	0.01	0.05	0.20	39.7%	27.9%				
35			3	131	2	0.00	0.47	0.03	0.00	0.09	0.35	19.7%	6.4%	0.00	0.17	0.02	0.00	0.03	0.12	37.0%	26.5%				
36			4	132	2	0.00	0.45	0.03	0.00	0.13	0.34	29.6%	8.4%	0.00	0.18	0.03	0.00	0.01	0.14	38.9%	34.4%				
37			5	133	2	0.00	0.41	0.02	0.00	0.10	0.27	24.3%	5.1%	0.00	0.18	0.01	0.00	0.04	0.10	43.9%	24.3%				
38			9	137	4	0.01	0.59	0.03	0.01	0.20	0.47	34.4%	5.8%	0.01	0.31	0.02	0.01	0.10	0.18	52.1%	30.5%				
39			10	138	4	0.01	0.78	0.04	0.00	0.15	0.61	19.2%	5.6%	0.00	0.37	0.03	0.00	0.06	0.28	47.2%	35.9%				
40			11	139	4	0.01	0.76	0.10	0.00	0.20	0.50	26.2%	12.4%	0.00	0.35	0.02	0.00	0.07	0.21	33.2%	32.2%				
41			14	142	4	0.01	0.61	0.05	0.01	0.14	0.47	23.5%	7.4%	0.01	0.30	0.03	0.01	0.06	0.20	48.8%	32.6%				
42			15	143	4	0.00	0.69	0.09	0.01	0.21	0.50	29.9%	13.1%	0.00	0.28	0.06	0.01	0.07	0.21	40.9%	29.8%				
43			21	149	10	0.02	1.48	0.15	0.02	0.26	1.14	24.3%	10.0%	0.02	0.65	0.10	0.01	0.18	0.62	43.7%	41.7%				
44			22	150	10	0.02	1.56	0.12	0.00	0.24	1.24	32.5%	12.4%	0.02	0.61	0.08	0.01	0.14	0.61	54.5%	45.5%				
45			23	151	10	0.02	1.90	0.07	0.01	0.51	1.49	26.9%	3.8%	0.02	0.89	0.05	0.01	0.28	0.76	52.0%	40.0%				
46			24	152	10	0.01	1.55	0.17	0.01	0.49	1.09	31.3%	10.8%	0.01	0.77	0.11	0.00	0.25	0.53	49.9%	34.4%				
47			25	153	10	0.02	1.65	0.29	0.04	0.48	1.30	28.8%	17.6%	0.01	0.64	0.20	0.04	0.20	0.50	38.8%	30.5%				
48			30	158	2	0.00	1.47	0.11	0.00	0.14	0.94	29.2%	7.2%	0.02	0.62	0.02	0.00	0.14	0.61	53.6%	34.4%				
49			31	159	10	0.02	2.03	0.09	0.01	0.52	1.61	25.6%	4.2%	0.02	1.13	0.06	0.00	0.28	0.79	55.4%	38.7%				
50			32	160	10	0.01	1.84	0.12	0.01	0.61	1.36	33.2%	6.4%	0.01	0.95	0.08	0.01	0.33	0.67	51.6%	36.4%				
51			33	161	10	0.02	1.63	0.27	0.03	0.50	1.12	30.8%	16.4%	0.01	0.68	0.18	0.03	0.23	0.38	41.6%	23.4%				

- K-patch Mid CH

No.	Module	Type	Beam ID_1	Berna ID_2	Feed no.	max ratio out of all beams											max ratio out of all beams								
						4cm2 PD(mW/cm2)						48.3%		14.7%		4cm2 PD(mW/cm2) at 10mm evaluation distance						59.3%		44.9%	
						S4(Right)	S3(Left)	S5(Top)	S6(Bottom)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Top 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S5(Top)	S6(Bottom)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)				
1			3		1	0.00	0.13	0.00	0.00	0.04	0.07	32.0%	3.2%	0.00	0.05	0.00	0.00	0.02	0.02	36.0%	12.8%				
2			4		1	0.00	0.22	0.01	0.00	0.08	0.13	38.5%	5.5%	0.00	0.08	0.01	0.00	0.03	0.03	36.2%	15.1%				
3			5		1	0.00	0.21	0.01	0.00	0.07	0.11	31.3%	4.3%	0.00	0.08	0.01	0.00	0.03	0.04	39.3%	19.0%				
4			9		2	0.00	0.31	0.02	0.00	0.15	0.18	47.2%	6.8%	0.00	0.15	0.01	0.00	0.07	0.06	48.5%	20.2%				
5			10		2	0.00	0.29	0.01	0.00	0.09	0.13	42.6%	4.0%	0.00	0.11	0.01	0.00	0.04	0.05	52.0%	24.3%				
6			11		2	0.01	0.38	0.01	0.00	0.12	0.20	37.2%	7.2%	0.00	0.12	0.01	0.00	0.04	0.05	33.0%	23.0%				
7			14		2	0.01	0.18	0.01	0.00	0.08	0.12	43.6%	3.4%	0.00	0.09	0.00	0.00	0.03	0.04	49.7%	29.7%				
8			15		2	0.00	0.42	0.02	0.00	0.13	0.21	32.1%	4.8%	0.00	0.15	0.01	0.00	0.05	0.08	36.8%	19.4%				
9			21		5	0.01	0.79	0.10	0.01	0.34	0.42	48.3%	14.4%	0.01	0.34	0.06	0.01	0.20	0.15	48.6%	20.9%				
10			22		5	0.01	0.73	0.04	0.00	0.14	0.43	47.2%	4.7%	0.01	0.41	0.05	0.01	0.17	0.16	55.0%	33.0%				
11			23		5	0.01	0.72	0.02	0.00	0.30	0.45	41.5%	2.8%	0.01	0.40	0.01	0.00	0.15	0.23	56.0%	32.5%				
12			24		5	0.01	0.81	0.08	0.00	0.37	0.41	45.8%													

- K-patch High CH

No.	Module	Type	Beam ID_1	Berna ID_2	Feed no.	4cm2 PD(mW/cm2)						max ratio out of all beams						max ratio out of all beams					
						4cm2 PD(mW/cm2)						46.3%		13.4%		4cm2 PD(mW/cm2) at 10mm evaluation distance						60.8%	41.1%
						S4(Right)	S3(Left)	SS(Top)	S6(Bottom)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Top 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	SS(Top)	S6(Bottom)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (Back 10mm)/(worst-surface 2mm)		
1			3		1	0.00	0.13	0.01	0.00	0.04	0.08	29.5%	4.7%	0.00	0.05	0.00	0.00	0.02	0.02	34.9%	16.3%		
2			4		1	0.00	0.23	0.01	0.00	0.08	0.13	34.3%	3.9%	0.00	0.09	0.01	0.00	0.03	0.04	38.6%	17.2%		
3			3		1	0.00	0.23	0.01	0.00	0.07	0.12	29.7%	3.1%	0.00	0.09	0.01	0.00	0.03	0.04	37.1%	19.2%		
4			9		2	0.01	0.35	0.02	0.00	0.14	0.22	39.3%	4.3%	0.01	0.16	0.01	0.00	0.07	0.07	47.1%	20.5%		
5			10		2	0.00	0.17	0.01	0.00	0.08	0.10	45.2%	4.8%	0.00	0.08	0.01	0.00	0.02	0.04	49.4%	23.5%		
6			11		2	0.00	0.34	0.02	0.00	0.09	0.19	27.4%	6.1%	0.00	0.12	0.02	0.00	0.05	0.06	34.1%	17.5%		
7			14		2	0.00	0.16	0.01	0.00	0.05	0.12	29.6%	3.7%	0.00	0.07	0.00	0.00	0.02	0.05	42.6%	30.2%		
8			15		2	0.00	0.52	0.03	0.00	0.16	0.26	29.9%	5.2%	0.00	0.17	0.02	0.00	0.06	0.08	32.2%	16.1%		
9			21		5	0.01	0.70	0.07	0.02	0.28	0.38	39.1%	10.5%	0.01	0.32	0.04	0.01	0.15	0.17	45.8%	23.6%		
10			22		5	0.01	0.70	0.03	0.00	0.25	0.50	36.5%	3.7%	0.01	0.37	0.02	0.00	0.13	0.20	53.4%	29.4%		
11			22		5	0.01	0.84	0.02	0.00	0.35	0.52	41.3%	2.1%	0.01	0.45	0.01	0.00	0.20	0.23	53.6%	26.8%		
12			24		5	0.01	0.99	0.08	0.01	0.38	0.47	42.7%	8.5%	0.01	0.59	0.05	0.00	0.19	0.20	44.2%	22.7%		
13			25		5	0.01	1.04	0.10	0.01	0.33	0.53	31.5%	9.4%	0.00	0.46	0.07	0.01	0.14	0.20	44.0%	18.8%		
14			30		5	0.01	0.64	0.05	0.01	0.26	0.41	39.8%	7.8%	0.01	0.32	0.02	0.01	0.13	0.16	50.0%	25.6%		
15			31		5	0.01	0.86	0.02	0.00	0.38	0.52	43.6%	2.2%	0.01	0.47	0.01	0.00	0.23	0.23	54.4%	26.8%		
16			32		5	0.02	0.93	0.02	0.00	0.38	0.47	46.3%	2.2%	0.01	0.58	0.01	0.00	0.21	0.20	45.4%	24.0%		
17			33		5	0.01	1.02	0.11	0.01	0.33	0.52	32.2%	10.3%	0.00	0.45	0.07	0.01	0.15	0.20	44.7%	19.8%		
18			131		1	0.00	0.26	0.01	0.00	0.05	0.17	19.5%	4.3%	0.00	0.10	0.01	0.00	0.02	0.07	40.5%	26.1%		
19			132		1	0.00	0.16	0.01	0.00	0.04	0.11	22.9%	8.9%	0.00	0.07	0.01	0.00	0.01	0.04	45.9%	24.2%		
20			133		1	0.00	0.13	0.01	0.00	0.03	0.13	20.9%	4.5%	0.00	0.07	0.00	0.00	0.01	0.05	48.5%	34.3%		
21			137		2	0.00	0.34	0.03	0.00	0.06	0.24	18.5%	9.1%	0.00	0.17	0.02	0.00	0.03	0.10	48.7%	27.9%		
22			138		2	0.00	0.39	0.01	0.00	0.09	0.29	24.2%	3.1%	0.00	0.21	0.01	0.00	0.03	0.13	52.7%	33.2%		
23			139		2	0.00	0.39	0.02	0.01	0.05	0.25	13.5%	5.6%	0.00	0.13	0.02	0.01	0.02	0.09	32.1%	21.9%		
24			142		2	0.00	0.39	0.03	0.00	0.07	0.26	17.9%	8.7%	0.00	0.17	0.02	0.00	0.02	0.09	43.1%	23.2%		
25			143		2	0.00	0.47	0.02	0.01	0.09	0.34	18.7%	4.7%	0.00	0.19	0.02	0.01	0.03	0.12	40.3%	25.9%		
26			149		5	0.01	0.78	0.08	0.01	0.12	0.68	15.4%	10.1%	0.01	0.43	0.05	0.01	0.05	0.29	54.8%	36.6%		
27			150		5	0.01	0.74	0.03	0.00	0.14	0.62	18.4%	4.6%	0.01	0.39	0.03	0.00	0.06	0.28	52.5%	38.2%		
28			151		5	0.01	0.79	0.03	0.00	0.18	0.63	23.9%	3.9%	0.01	0.39	0.02	0.00	0.08	0.29	49.4%	37.2%		
29			152		5	0.01	0.82	0.05	0.00	0.20	0.64	23.8%	6.2%	0.00	0.46	0.03	0.00	0.07	0.28	55.5%	34.3%		
30			153		5	0.00	0.63	0.08	0.01	0.14	0.37	21.7%	13.4%	0.00	0.21	0.06	0.01	0.06	0.15	33.0%	23.9%		
31			158		5	0.01	0.78	0.06	0.01	0.12	0.70	15.7%	7.8%	0.01	0.43	0.04	0.01	0.05	0.29	54.5%	37.2%		
32			159		5	0.01	0.90	0.03	0.00	0.20	0.64	24.8%	3.2%	0.01	0.40	0.02	0.00	0.08	0.28	49.8%	34.2%		
33			160		5	0.01	0.84	0.04	0.00	0.22	0.69	25.9%	5.1%	0.00	0.47	0.02	0.00	0.09	0.35	56.0%	41.1%		
34			161		5	0.01	0.70	0.07	0.01	0.17	0.46	24.7%	9.3%	0.00	0.32	0.04	0.01	0.07	0.14	45.3%	20.7%		
35			3	131	2	0.00	0.59	0.02	0.00	0.13	0.35	22.8%	4.1%	0.00	0.22	0.02	0.00	0.05	0.12	38.1%	19.7%		
36			4	132	2	0.00	0.53	0.03	0.00	0.14	0.29	27.0%	6.2%	0.00	0.23	0.02	0.00	0.06	0.10	42.6%	18.3%		
37			5	133	2	0.00	0.47	0.02	0.00	0.13	0.26	28.6%	3.4%	0.00	0.19	0.01	0.00	0.06	0.12	39.7%	24.9%		
38			9	137	4	0.01	0.84	0.06	0.01	0.25	0.52	29.7%	7.5%	0.01	0.40	0.03	0.01	0.12	0.18	47.3%	21.4%		
39			10	138	4	0.01	0.77	0.02	0.00	0.25	0.54	32.5%	2.7%	0.01	0.40	0.01	0.00	0.09	0.23	52.2%	30.0%		
40			11	139	4	0.01	1.12	0.07	0.02	0.27	0.57	23.7%	6.2%	0.01	0.44	0.05	0.02	0.09	0.21	38.9%	18.5%		
41			14	142	4	0.01	0.67	0.04	0.01	0.14	0.48	20.5%	6.1%	0.01	0.31	0.03	0.01	0.05	0.18	46.4%	26.0%		
42			15	143	4	0.01	1.08	0.08	0.02	0.30	0.64	27.9%	7.6%	0.01	0.45	0.06	0.01	0.12	0.24	41.7%	22.6%		
43			21	149	10	0.03	1.73	0.23	0.04	0.57	1.14	32.9%	13.1%	0.03	0.91	0.12	0.04	0.31	0.56	52.3%	32.2%		
44			22	150	10	0.03	1.68	0.10	0.01	0.54	1.31	32.0%	5.8%	0.03	0.97	0.07	0.01	0.30	0.60	57.5%	35.5%		
45			23	151	10	0.02	1.94	0.07	0.01	0.67	1.44	34.6%	3.3%	0.02	1.05	0.04	0.01	0.36	0.65	53.9%	33.6%		
46			24	152	10	0.02	2.58	0.19	0.01	0.93	1.54	36.0%	7.5%	0.02	1.39	0.13	0.01	0.44	0.70	53.9%	27.0%		
47			25	153	10	0.01	2.76	0.21	0.05	0.71	1.46	25.7%	7.7%	0.01	1.20	0.15	0.04	0.27	0.50	43.4%	17.9%		
48			30	158	10	0.03	1.55	0.17	0.02	0.51	1.20	32.9%	11.1%	0.03	0.88	0.09	0.02	0.28	0.55	57.0%	35.5%		
49			31	159	10	0.04	1.93	0.05	0.01	0.74	1.45	38.3%	2.8%	0.03	1.17	0.03	0.00	0.42	0.63	60.8%	32.5%		
50			160	10	0.03	2.37	0.10	0.01	0.94	1.56	39.8%	4.1%	0.02	1.32	0.05	0.01	0.49	0.77	55.7%	32.6%			
51			33	161	10	0.02	2.84	0.23	0.04	0.78	1.60	27.6%	8.0%	0.01	1.34	0.16	0.03	0.32	0.58	47.1%	20.6%		

### 3.1.2 Ant L – Patch Antenna

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

Table 5. PD of Ant L – patch antenna (28GHz – n261)

#### - L-patch Low CH

No.	Module	Type	Beam ID_1	Bema ID_2	Feed no.	max ratio out of all beams															
						4cm2 PD(mW/cm2)						47.8%		5.1%		4cm2 PD(mW/cm2) at 10mm evaluation distance					
						S4(Right)	S3(Left)	S5(Top)	S6(Bottom)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Bottom 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S5(Top)	S6(Bottom)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)
52			0		1	0.19	0.00	0.00	0.00	0.01	<b>0.24</b>	3.3%	1.3%	0.07	0.00	0.00	0.00	<b>0.09</b>	36.4%	36.4%	
53			1		1	0.28	0.00	0.00	0.01	0.02	<b>0.34</b>	4.4%	1.8%	0.10	0.00	0.00	0.01	<b>0.13</b>	38.2%	38.2%	
54			5		2	0.59	0.00	0.00	0.01	0.05	<b>0.66</b>	7.0%	2.1%	0.25	0.00	0.00	0.01	<b>0.31</b>	47.2%	47.2%	
55			6		2	0.45	0.00	0.00	0.00	0.03	<b>0.53</b>	5.3%	2.0%	0.20	0.00	0.00	0.01	<b>0.26</b>	48.6%	48.6%	
56			7		2	0.33	0.00	0.01	0.01	0.03	<b>0.42</b>	6.4%	1.2%	0.13	0.00	0.01	0.00	<b>0.16</b>	42.2%	42.2%	
57			11		2	0.48	0.00	0.00	0.01	0.03	<b>0.54</b>	5.3%	0.9%	0.21	0.00	0.00	0.00	<b>0.29</b>	47.7%	47.7%	
58			12		2	0.60	0.00	0.00	0.00	0.04	<b>0.72</b>	6.1%	0.6%	0.26	0.00	0.00	0.00	<b>0.34</b>	46.3%	46.3%	
59			15		5	1.27	0.01	0.00	0.07	0.16	<b>1.48</b>	10.8%	4.5%	0.61	0.01	0.00	0.05	<b>0.74</b>	49.6%	49.6%	
60			16		5	1.47	0.01	0.00	0.01	0.12	<b>1.61</b>	7.1%	0.4%	0.72	0.01	0.00	0.01	<b>0.86</b>	53.6%	53.6%	
61			17		5	1.41	0.01	0.00	0.01	0.10	<b>1.49</b>	6.6%	0.5%	0.73	0.00	0.00	0.01	<b>0.86</b>	57.8%	57.8%	
62			18		5	1.40	0.01	0.00	0.00	0.11	<b>1.57</b>	7.1%	0.3%	0.70	0.00	0.00	0.00	<b>0.87</b>	55.3%	55.3%	
63			19		5	1.18	0.01	0.01	0.01	0.13	<b>1.52</b>	8.6%	0.4%	0.55	0.01	0.01	0.01	<b>0.73</b>	48.1%	48.1%	
64			25		5	1.46	0.01	0.00	0.04	0.15	<b>1.63</b>	9.1%	2.4%	0.73	0.01	0.00	0.03	<b>0.87</b>	53.3%	53.3%	
65			26		5	1.44	0.01	0.00	0.01	0.10	<b>1.54</b>	6.8%	0.3%	0.73	0.01	0.00	0.00	<b>0.86</b>	55.3%	55.3%	
66			27		5	1.41	0.01	0.00	0.01	0.10	<b>1.52</b>	6.7%	0.3%	0.72	0.00	0.00	0.00	<b>0.86</b>	56.2%	56.2%	
67			28		5	1.36	0.01	0.00	0.01	0.13	<b>1.59</b>	8.2%	0.3%	0.67	0.01	0.00	0.00	<b>0.85</b>	53.3%	53.3%	
68			128		1	<b>0.17</b>	0.00	0.00	0.00	0.05	<b>0.10</b>	30.5%	1.7%	<b>0.07</b>	0.00	0.00	0.00	<b>0.02</b>	37.4%	17.8%	
69			129		1	<b>0.17</b>	0.00	0.00	0.01	0.05	<b>0.11</b>	28.5%	3.0%	<b>0.07</b>	0.00	0.00	0.00	<b>0.02</b>	42.4%	26.1%	
70			133		2	<b>0.38</b>	0.01	0.00	0.01	0.11	<b>0.26</b>	29.9%	2.1%	<b>0.16</b>	0.01	0.00	0.01	<b>0.05</b>	43.7%	27.5%	
71			134		2	<b>0.33</b>	0.02	0.00	0.00	0.12	<b>0.21</b>	36.0%	1.2%	<b>0.15</b>	0.01	0.00	0.00	<b>0.05</b>	44.4%	22.2%	
72			135		2	<b>0.38</b>	0.01	0.01	0.00	0.13	<b>0.24</b>	34.6%	1.0%	<b>0.18</b>	0.01	0.01	0.00	<b>0.06</b>	46.1%	24.5%	
73			139		2	<b>0.28</b>	0.01	0.00	0.01	0.10	<b>0.18</b>	34.0%	2.4%	<b>0.12</b>	0.01	0.01	0.00	<b>0.07</b>	41.1%	24.5%	
74			140		2	<b>0.36</b>	0.02	0.00	0.00	0.13	<b>0.23</b>	36.6%	0.6%	<b>0.17</b>	0.01	0.00	0.00	<b>0.05</b>	46.8%	26.6%	
75			143		5	<b>0.79</b>	0.02	0.01	0.03	0.23	<b>0.62</b>	29.6%	3.9%	<b>0.37</b>	0.01	0.01	0.02	<b>0.13</b>	47.1%	34.3%	
76			144		5	<b>0.96</b>	0.03	0.00	0.01	0.32	<b>0.67</b>	33.0%	0.8%	<b>0.49</b>	0.01	0.00	0.01	<b>0.17</b>	50.6%	32.8%	
77			145		5	<b>0.90</b>	0.07	0.00	0.01	0.43	<b>0.72</b>	47.8%	0.6%	<b>0.45</b>	0.02	0.00	0.01	<b>0.20</b>	56.6%	49.1%	
78			146		5	<b>0.95</b>	0.04	0.00	0.00	0.35	<b>0.61</b>	36.7%	0.4%	<b>0.48</b>	0.02	0.00	0.00	<b>0.18</b>	50.3%	29.8%	
79			147		5	<b>0.92</b>	0.04	0.01	0.01	0.28	<b>0.64</b>	30.0%	1.0%	<b>0.45</b>	0.02	0.01	0.01	<b>0.14</b>	48.8%	36.5%	
80			153		5	<b>0.85</b>	0.02	0.01	0.02	0.26	<b>0.64</b>	30.5%	2.7%	<b>0.41</b>	0.01	0.00	0.02	<b>0.14</b>	47.9%	33.8%	
81			154		5	<b>0.89</b>	0.04	0.00	0.01	0.38	<b>0.72</b>	38.3%	0.7%	<b>0.42</b>	0.02	0.00	0.01	<b>0.17</b>	53.4%	45.4%	
82			155		5	<b>0.90</b>	0.07	0.00	0.00	0.41	<b>0.56</b>	45.9%	0.4%	<b>0.50</b>	0.04	0.00	0.00	<b>0.20</b>	55.0%	27.7%	
83			156		5	<b>0.99</b>	0.04	0.01	0.01	0.32	<b>0.66</b>	32.4%	0.5%	<b>0.49</b>	0.02	0.00	0.00	<b>0.18</b>	49.4%	34.1%	
84			0		128	2	<b>0.37</b>	0.01	0.01	0.01	<b>0.07</b>	<b>0.38</b>	17.8%	2.7%	<b>0.12</b>	0.01	0.00	0.01	<b>0.03</b>	<b>0.13</b>	34.5%
85			1		129	2	<b>0.39</b>	0.01	0.00	0.01	<b>0.18</b>	<b>0.25</b>	15.8%	2.8%	<b>0.15</b>	0.01	0.00	0.00	<b>0.07</b>	<b>0.18</b>	38.8%
86			5		133	4	<b>1.10</b>	0.02	0.01	0.03	<b>0.21</b>	<b>1.03</b>	18.9%	2.6%	<b>0.44</b>	0.01	0.00	0.02	<b>0.09</b>	<b>0.50</b>	45.4%
87			6		134	4	<b>0.81</b>	0.03	0.01	0.01	<b>0.16</b>	<b>0.81</b>	19.6%	0.6%	<b>0.33</b>	0.02	0.00	0.00	<b>0.07</b>	<b>0.36</b>	44.8%
88			7		135	4	<b>0.73</b>	0.02	0.01	0.01	<b>0.16</b>	<b>0.69</b>	22.3%	1.5%	<b>0.28</b>	0.01	0.01	0.01	<b>0.07</b>	<b>0.31</b>	42.6%
89			11		139	4	<b>0.81</b>	0.02	0.01	0.01	<b>0.16</b>	<b>0.82</b>	19.5%	2.1%	<b>0.31</b>	0.02	0.00	0.01	<b>0.07</b>	<b>0.27</b>	45.3%
90			12		140	4	<b>0.97</b>	0.02	0.01	0.01	<b>0.23</b>	<b>0.93</b>	23.9%	0.7%	<b>0.44</b>	0.01	0.01	0.01	<b>0.09</b>	<b>0.43</b>	44.8%
91			15		143	10	<b>2.49</b>	0.04	0.01	0.13	<b>0.61</b>	<b>2.49</b>	24.4%	5.1%	<b>1.19</b>	0.03	0.01	0.09	<b>0.29</b>	<b>1.25</b>	50.2%
92			16		144	10	<b>2.69</b>	0.05	0.01	0.02	<b>0.57</b>	<b>2.61</b>	21.3%	0.7%	<b>1.30</b>	0.03	0.01	0.02	<b>0.30</b>	<b>1.41</b>	52.2%
93			17		145	2	<b>0.39</b>	0.03	0.00	0.01	<b>0.26</b>	<b>0.24</b>	36.2%	0.7%	<b>0.14</b>	0.01	0.00	0.00	<b>0.31</b>	<b>1.18</b>	51.0%
94			18		146	10	<b>2.41</b>	0.05	0.01	0.01	<b>0.60</b>	<b>2.25</b>	25.0%	0.5%	<b>1.22</b>	0.04	0.00	0.01	<b>0.31</b>	<b>1.18</b>	50.5%
95			19		147	10	<b>2.50</b>	0.07	0.03	0.03	<b>0.62</b>	<b>2.34</b>	24.9%	1.1%	<b>1.19</b>	0.04	0.02	0.02	<b>0.30</b>	<b>1.24</b>	49.4%
96			25		153	10	<b>2.69</b>	0.04	0.01	0.08	<b>0.61</b>	<b>2.60</b>	22.7%	3.0%	<b>1.30</b>	0.03	0.01	0.05	<b>0.31</b>	<b>1.41</b>	52.4%
97			26		154	10	<b>2.48</b>	0.07	0.00	0.08	<b>0.58</b>	<b>2.42</b>	24.6%	0.6%	<b>1.19</b>	0.04	0.00	0.02	<b>0.29</b>	<b>1.34</b>	51.8%
98			27		155	10	<b>2.38</b>	0.09	0.01	0.01	<b>0.63</b>	<b>2.18</b>	26.3%	0.4%	<b>1.22</b>	0.05	0.00	0.01	<b>0.31</b>	<b>1.14</b>	51.3%
99			28		156	10	<b>2.51</b>	0.05	0.01	0.02	<b>0.64</b>	<b>2.33</b>	25.7%	0.7%	<b>1.25</b>	0.03	0.01	0.01	<b>0.33</b>	<b>1.27</b>	50.7%

#### - L-patch Mid CH

No.	Module	Type	Beam ID_1	Bema ID_2	Feed no.	max ratio out of all beams															
						4cm2 PD(mW/cm2)						41.5%		5.3%		4cm2 PD(mW/cm2) at 10mm evaluation distance					
						S4(Right)	S3(Left)	S5(Top)	S6(Bottom)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Bottom 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S5(Top)	S6(Bottom)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)
52			0		1	0.19	0.00	0.00	0.00	0.01	<b>0.24</b>	3.8%	1.3%	0.07	0.00	0.00	0.00	<b>0.09</b>	37.3%	37.3%	
53			1		1	0.28	0.00	0.00	0.01	0.02	<b>0.34</b>	4.7%	1.8%	0.10	0.00	0.00	0.00	<b>0.11</b>	37.9%	37.9%	
54			5		2	0.60	0.00	0.00	0.01	0.05	<b>0.67</b>	6.7%	2.1%	0.25	0.00	0.00	0.01	<b>0.31</b>	47.3%	47.3%	
55			6		2	0.40	0.00	0.00	0.00	0.03	<b>0.46</b>	5.9%	0.2%	0.17	0.00	0.00	0.00	<b>0.12</b>	48.7%	48.7%	
56			7		2	0.29	0.00	0.01	0.01	0.03	<b>0.36</b>	7.8%	1.4%	0.11	0.00	0.00	0.00	<b>0.16</b>	44.8%	44.8%	
57			12		2	0.44	0.01	0.00	0.00	0.03	<b>0.50</b>	5.8%	0.8%	0.19	0.00	0.00	0.00	<b>0.24</b>	47.4%	47.4%	
58			12		2	0.52	0.00	0.00	0.00	0.05	<b>0.73</b>	6.3%	0.5%	0.23	0.00	0.00	0.00	<b>0.30</b>	46.8%	46.8%	
59			15		5	1.33	0.02	0.00	0.07	0.15	<b>1.52</b>	10.0%	4.4%	0.65	0.01	0.00	0.05	<b>0.06</b>	<b>0.71</b>	51.1%	
60			16		5	1.47	0.01	0.00	0.01	0.12	<b>1.60</b>	7.3%	0.5%	0.73	0.01	0.00	0.01	<b>0.06</b>	<b>0.86</b>	53.5%	
61			17		5	1.37	0.01	0.00	0.01	0.10	<b>1.45</b>	6.9%	0.5%	0.71	0.01	0.00	0.01	<b>0.05</b>	<b>0.83</b>	57.4%	
62			18		5	1.36	0.01	0.00	0.01	0.11	<b>1.47</b>	7.4%	0.3%	0.68	0.01	0.00	0.00	<b>0.05</b>	<b>0.84</b>	55.4%	
63			19		5	1.14	0.01	0.01	0.01	0.13	<b>1.44</b>	8.9%	0.7%	0.55	0.01	0.01	0.01	<b>0.06</b>	<b>0.74</b>	48.8%	
64			25		5																

- L-patch High CH

No.	Module	Type	Beam ID_1	Berna ID_2	Feed no.	max ratio out of all beams											max ratio out of all beams						
						4cm2 PD(mW/cm2)						42.3%		5.0%		4cm2 PD(mW/cm2) at 10mm evaluation distance						57.6%	57.6%
						S4(Right)	S3(Left)	SS(Top)	S6(Bottom)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Bottom 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	SS(Top)	S6(Bottom)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)		
52			0		1	0.17	0.00	0.00	0.00	0.01	0.21	4.2%	1.4%	0.06	0.00	0.00	0.00	0.00	0.00	0.08	37.3%	37.3%	
53			1		1	0.26	0.00	0.00	0.01	0.02	0.31	4.9%	1.6%	0.09	0.00	0.00	0.00	0.01	0.12	0.12	38.7%	38.7%	
54			2		1	0.58	0.00	0.00	0.02	0.04	0.63	6.9%	2.4%	0.24	0.00	0.00	0.01	0.02	0.30	48.1%	48.1%		
55			6		2	0.34	0.00	0.00	0.00	0.03	0.39	6.6%	0.3%	0.15	0.00	0.00	0.00	0.01	0.19	48.1%	48.1%		
56			7		2	0.25	0.00	0.00	0.01	0.03	0.30	8.3%	2.0%	0.10	0.00	0.00	0.00	0.01	0.14	45.2%	45.2%		
57			11		2	0.39	0.01	0.00	0.01	0.03	0.43	6.2%	1.2%	0.17	0.00	0.00	0.00	0.01	0.21	48.4%	48.4%		
58			12		2	0.57	0.00	0.00	0.01	0.04	0.67	6.6%	0.7%	0.25	0.00	0.00	0.00	0.02	0.31	46.5%	46.5%		
59			15		5	1.28	0.01	0.00	0.07	0.15	1.40	10.5%	4.6%	0.62	0.01	0.00	0.04	0.06	0.73	51.9%	51.9%		
60			16		5	1.36	0.01	0.00	0.01	0.11	1.47	7.4%	0.5%	0.67	0.01	0.00	0.01	0.05	0.79	53.6%	53.6%		
61			17		5	1.24	0.01	0.00	0.01	0.10	1.31	7.8%	0.7%	0.64	0.01	0.00	0.01	0.05	0.75	57.6%	57.6%		
62			18		5	1.23	0.01	0.00	0.00	0.11	1.37	7.8%	0.3%	0.62	0.01	0.00	0.00	0.05	0.75	54.8%	54.8%		
63			19		5	1.03	0.01	0.01	0.01	0.12	1.28	9.6%	0.9%	0.50	0.01	0.01	0.01	0.06	0.64	50.5%	50.5%		
64			25		5	1.41	0.01	0.00	0.04	0.14	1.53	9.2%	2.3%	0.70	0.01	0.00	0.02	0.06	0.83	54.2%	54.2%		
65			26		5	1.31	0.01	0.00	0.01	0.10	1.38	7.5%	0.4%	0.67	0.01	0.00	0.00	0.05	0.77	56.0%	56.0%		
66			27		5	1.23	0.01	0.00	0.01	0.11	1.32	8.2%	0.4%	0.64	0.01	0.00	0.00	0.05	0.74	56.3%	56.3%		
67			28		5	1.18	0.01	0.00	0.01	0.13	1.27	9.3%	0.4%	0.59	0.01	0.00	0.00	0.06	0.73	53.4%	53.4%		
68			128		1	0.15	0.01	0.00	0.00	0.05	0.08	33.1%	2.7%	0.06	0.00	0.00	0.00	0.02	0.03	37.8%	17.6%		
69			129		1	0.14	0.00	0.00	0.00	0.04	0.09	29.1%	2.1%	0.06	0.00	0.00	0.00	0.02	0.04	43.3%	25.5%		
70			133		2	0.27	0.01	0.00	0.01	0.09	0.15	34.6%	2.9%	0.12	0.01	0.00	0.01	0.05	0.05	43.8%	18.4%		
71			134		2	0.30	0.02	0.00	0.00	0.11	0.18	35.9%	1.4%	0.14	0.01	0.00	0.00	0.05	0.08	46.3%	22.7%		
72			135		2	0.34	0.01	0.01	0.01	0.12	0.21	36.1%	1.5%	0.15	0.01	0.00	0.00	0.05	0.08	44.2%	22.7%		
73			139		2	0.24	0.02	0.00	0.01	0.09	0.14	37.5%	2.5%	0.11	0.01	0.00	0.01	0.05	0.05	44.2%	22.1%		
74			140		2	0.33	0.01	0.00	0.00	0.11	0.21	34.0%	0.9%	0.15	0.01	0.00	0.00	0.06	0.09	45.4%	28.5%		
75			143		5	0.55	0.02	0.01	0.02	0.21	0.37	37.5%	3.8%	0.28	0.01	0.00	0.02	0.11	0.15	51.3%	27.8%		
76			144		5	0.65	0.03	0.00	0.01	0.27	0.39	42.3%	1.4%	0.35	0.02	0.00	0.01	0.15	0.18	53.9%	27.7%		
77			145		5	0.83	0.04	0.00	0.00	0.33	0.56	39.0%	0.5%	0.46	0.03	0.00	0.00	0.21	0.26	55.1%	31.3%		
78			146		5	0.77	0.05	0.00	0.01	0.30	0.48	39.2%	0.9%	0.40	0.03	0.00	0.01	0.19	0.23	52.5%	30.6%		
79			147		5	0.71	0.04	0.01	0.01	0.22	0.45	31.4%	1.0%	0.32	0.02	0.00	0.01	0.12	0.23	46.4%	24.8%		
80			153		5	0.58	0.02	0.00	0.01	0.23	0.36	39.9%	2.4%	0.31	0.02	0.00	0.01	0.12	0.16	53.0%	27.4%		
81			154		5	0.74	0.04	0.00	0.01	0.31	0.47	41.8%	1.1%	0.40	0.02	0.00	0.01	0.19	0.22	54.4%	29.8%		
82			155		5	0.82	0.04	0.00	0.00	0.32	0.55	38.9%	0.5%	0.45	0.02	0.00	0.00	0.21	0.26	54.7%	32.1%		
83			156		5	0.73	0.04	0.01	0.01	0.28	0.44	37.8%	1.0%	0.37	0.03	0.00	0.01	0.16	0.23	51.1%	29.5%		
84			0 128		2	0.36	0.01	0.01	0.01	0.07	0.30	19.4%	2.8%	0.13	0.01	0.00	0.01	0.03	0.10	36.0%	28.9%		
85			1 129		2	0.46	0.01	0.00	0.01	0.08	0.40	16.6%	1.6%	0.17	0.00	0.00	0.01	0.03	0.16	37.0%	35.7%		
86			5 133		4	0.95	0.02	0.01	0.03	0.19	0.91	20.2%	3.5%	0.38	0.01	0.01	0.03	0.08	0.44	46.0%	46.0%		
87			6 134		4	0.64	0.03	0.01	0.01	0.22	0.45	32.4%	1.4%	0.30	0.02	0.00	0.01	0.07	0.27	46.3%	41.8%		
88			7 135		4	0.56	0.02	0.01	0.01	0.15	0.57	25.6%	1.9%	0.24	0.01	0.01	0.01	0.06	0.28	45.0%	45.0%		
89			11 139		4	0.72	0.03	0.01	0.02	0.15	0.65	21.3%	2.1%	0.30	0.02	0.00	0.01	0.07	0.30	42.0%	41.6%		
90			12 140		4	0.93	0.02	0.01	0.01	0.21	0.89	22.5%	0.8%	0.43	0.01	0.01	0.00	0.11	0.38	46.2%	41.2%		
91			15 143		5	2.23	0.03	0.01	0.11	0.54	1.97	24.4%	5.0%	1.08	0.03	0.01	0.08	0.26	1.04	48.6%	48.6%		
92			16 144		10	2.21	0.08	0.01	0.02	0.54	2.00	24.2%	1.0%	1.12	0.06	0.01	0.02	0.29	1.08	50.8%	49.0%		
93			17 145		10	2.24	0.10	0.00	0.01	0.55	1.96	24.6%	0.4%	1.23	0.06	0.00	0.01	0.31	1.05	54.6%	46.7%		
94			18 146		10	2.11	0.08	0.01	0.02	0.56	1.90	26.5%	0.8%	1.11	0.05	0.01	0.01	0.31	0.96	52.7%	45.6%		
95			19 147		10	2.40	0.07	0.02	0.02	0.63	1.85	26.3%	1.1%	1.25	0.03	0.02	0.02	0.25	1.06	52.7%	52.7%		
96			25 153		10	2.32	0.05	0.01	0.06	0.57	2.04	24.4%	2.8%	1.18	0.04	0.01	0.04	0.29	1.12	50.8%	48.3%		
97			26 154		10	2.22	0.10	0.01	0.01	0.53	1.96	23.9%	0.6%	1.17	0.06	0.01	0.01	0.30	1.09	52.5%	49.0%		
98			27 155		10	2.22	0.08	0.01	0.01	0.56	1.99	25.3%	0.5%	1.23	0.05	0.01	0.01	0.32	0.98	55.2%	44.3%		
99			28 156		10	1.99	0.07	0.01	0.02	0.58	1.82	29.1%	0.8%	1.02	0.05	0.01	0.01	0.29	1.01	51.4%	50.8%		

Table 6. PD of Ant L – patch antenna (39GHz – n260)

- L-patch Low CH

No.	Module	Type	Beam ID_1	Berna ID_2	Feed no.	max ratio out of all beams											max ratio out of all beams						
						4cm2 PD(mW/cm2)						48.5%		7.4%		4cm2 PD(mW/cm2) at 10mm evaluation distance						57.3%	57.3%
						S4(Right)	S3(Left)	SS(Top)	S6(Bottom)	S1(Front)	S2(Rear)	ratio (Front 2mm)/(worst-surface 2mm)	ratio (Bottom 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	SS(Top)	S6(Bottom)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)		
52			0		1	0.24	0.00	0.00	0.00	0.07	0.15	28.6%	0.8%	0.08	0.00	0.00	0.00	0.03	0.05	33.2%	20.2%		
53			1		1	0.19	0.00	0.00	0.00	0.06	0.14	30.9%	1.5%	0.07	0.00	0.00	0.00	0.03	0.04	35.1%	19.1%		
54			2		1	0.13	0.00	0.00	0.00	0.05	0.09	36.6%	3.1%	0.06	0.00	0.00	0.00	0.02	0.03	44.3%	21.4%		
55			6		2	0.25	0.00	0.00	0.00	0.03	0.39	6.6%	0.3%	0.15	0.00	0.00	0.00	0.01	0.19	48.1%	48.1%		
56			7		2	0.39	0.01	0.00	0.00	0.15	0.25	37.8%	0.3%	0.17	0.00	0.00	0.00	0.07	0.11	42.7%	29.0%		
57			8		2	0.36	0.00	0.01	0.01	0.11	0.23	29.8%	2.5%	0.11	0.00	0.01	0.01	0.05	0.09	31.5%	23.5%		
58			12		2	0.35	0.00	0.00	0.00	0.13	0.26	36.6%	0.9%	0.14	0.00	0.00	0.00	0.06	0.13	39.5%	37.8%		
59			15		5	1.23	0.01	0.00	0.01	0.13	0.27	30.6%	2.1%	0.16	0.00	0.01	0.01	0.05	0.09	36.5%	21.0%		
60			16		5	0.54	0.01	0.01	0.03	0.25	0.43	46.9%	5.0%	0.24	0.01	0.01	0.02	0.11	0.16	44.8%	29.4%		
61			17		5	0.84	0.01	0.00	0.01	0.35	0.64	41.3%	0.7%	0.39	0.01	0.00	0.00	0.19	0.28	46.7%	33.3%		
62			18		5	1.00	0.02	0.00	0.01	0.43	0.68	43.4%	0.8%	0.49	0.02	0.00	0.01	0.24	0.31	49.4%	31.4%		
63			19		5	0.69	0.01	0.00	0.01	0.31	0.41	44.2%	0.9%	0.33	0.01	0.00	0.01	0.15	0.19	47.9%	27.8%		
64			20		5	0.72	0.01	0.02	0.05	0.22	0.47	31.0%	7.4%	0.30	0.01	0.02	0.04	0.09	0.17	41.3%	24.3%		
65			26		5	0.48	0.01	0.01	0.01	0.23	0.35	48.5%	2.1%	0.22	0.01	0.01	0.01	0.13	0.18	46.7%	36.9%		
66			27		5	0.98	0.02	0.00	0.01	0.45	0.70	45.2%	0.5%										

- L-patch Mid CH

No.	Module	Type	Beam ID_1	Berna ID_2	Feed no.	max ratio out of all beams												max ratio out of all beams							
						4cm2 PD(mW/cm2)						51.3%		5.1%		4cm2 PD(mW/cm2) at 10mm evaluation distance						60.3%		52.2%	
						S4(Right)	S3(Left)	S5(Top)	S6(Bottom)	S1(Front)	S2(Rear)	ratio (Font 2mm)/(worst-surface 2mm)	ratio (Bottom 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S5(Top)	S6(Bottom)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)				
52			0		1	0.26	0.00	0.00	0.00	0.09	0.17	32.2%	0.4%	0.09	0.00	0.00	0.00	0.03	0.06	33.0%	24.2%				
53			1		1	0.32	0.00	0.00	0.00	0.10	0.21	32.7%	0.6%	0.11	0.00	0.00	0.00	0.04	0.06	34.3%	20.3%				
54			2		1	0.22	0.00	0.00	0.00	0.07	0.15	32.6%	1.8%	0.08	0.00	0.00	0.00	0.03	0.05	33.9%	21.4%				
55			6		2	0.50	0.00	0.00	0.01	0.20	0.34	40.7%	1.4%	0.21	0.00	0.00	0.01	0.10	0.13	40.0%	26.3%				
56			7		2	0.42	0.01	0.00	0.00	0.17	0.29	40.3%	0.5%	0.18	0.01	0.00	0.00	0.08	0.14	43.1%	32.2%				
57			8		2	0.54	0.00	0.01	0.01	0.17	0.34	30.5%	1.1%	0.17	0.00	0.01	0.00	0.09	0.11	30.9%	19.6%				
58			12		2	0.42	0.01	0.00	0.00	0.17	0.28	40.6%	0.2%	0.16	0.00	0.00	0.00	0.09	0.14	39.1%	32.2%				
59			13		2	0.59	0.00	0.01	0.00	0.23	0.34	39.0%	0.7%	0.24	0.00	0.01	0.00	0.09	0.15	41.0%	25.9%				
60			16		5	0.91	0.01	0.02	0.04	0.43	0.56	47.5%	3.9%	0.43	0.01	0.02	0.02	0.22	0.22	46.9%	24.6%				
61			17		5	0.94	0.02	0.00	0.01	0.42	0.71	45.1%	0.6%	0.41	0.02	0.00	0.01	0.22	0.33	43.4%	35.2%				
62			18		5	1.13	0.03	0.00	0.01	0.50	0.77	43.8%	0.6%	0.57	0.03	0.00	0.01	0.27	0.39	50.1%	34.4%				
63			19		5	1.12	0.02	0.00	0.01	0.50	0.75	45.0%	0.8%	0.51	0.02	0.00	0.01	0.27	0.36	45.5%	32.3%				
64			20		5	1.17	0.01	0.02	0.05	0.42	0.64	36.0%	4.1%	0.50	0.01	0.02	0.04	0.19	0.25	21.0%	21.0%				
65			26		5	0.95	0.01	0.01	0.01	0.49	0.70	51.3%	0.8%	0.47	0.01	0.00	0.01	0.27	0.32	49.6%	33.8%				
66			27		5	1.14	0.03	0.00	0.01	0.52	0.80	45.9%	0.6%	0.58	0.03	0.00	0.01	0.31	0.42	50.6%	37.2%				
67			28		5	1.07	0.02	0.00	0.01	0.46	0.73	42.6%	0.5%	0.51	0.02	0.00	0.00	0.24	0.35	47.5%	32.7%				
68			29		5	1.16	0.01	0.01	0.03	0.47	0.71	40.7%	2.7%	0.49	0.01	0.01	0.03	0.23	0.31	42.5%	26.4%				
69			128		1	0.24	0.00	0.00	0.00	0.03	0.24	11.9%	0.8%	0.11	0.00	0.00	0.00	0.01	0.10	43.0%	42.2%				
70			129		1	0.23	0.00	0.00	0.00	0.03	0.22	11.1%	1.3%	0.10	0.00	0.00	0.00	0.01	0.09	45.8%	39.6%				
71			130		1	0.19	0.00	0.00	0.00	0.03	0.18	16.2%	1.6%	0.08	0.00	0.00	0.00	0.01	0.07	44.9%	37.3%				
72			134		2	0.41	0.01	0.00	0.01	0.07	0.40	16.1%	1.5%	0.14	0.00	0.00	0.00	0.02	0.13	33.3%	31.9%				
73			135		2	0.53	0.01	0.00	0.00	0.09	0.56	15.3%	0.5%	0.28	0.00	0.00	0.00	0.04	0.28	50.9%	50.9%				
74			136		2	0.39	0.00	0.00	0.01	0.06	0.38	14.1%	2.3%	0.16	0.00	0.00	0.01	0.02	0.15	39.6%	39.1%				
75			140		2	0.46	0.01	0.00	0.00	0.09	0.47	19.3%	1.6%	0.23	0.00	0.00	0.00	0.04	0.23	49.5%	45.5%				
76			141		2	0.52	0.01	0.00	0.01	0.07	0.52	13.4%	1.0%	0.23	0.00	0.00	0.00	0.03	0.25	47.9%	47.9%				
77			144		5	0.55	0.01	0.01	0.03	0.13	0.53	23.2%	5.1%	0.32	0.00	0.01	0.02	0.06	0.24	58.2%	43.2%				
78			145		5	0.94	0.01	0.00	0.01	0.14	0.94	15.3%	1.1%	0.57	0.01	0.00	0.01	0.06	0.47	60.3%	49.3%				
79			146		5	0.99	0.02	0.00	0.01	0.11	1.02	10.8%	0.7%	0.55	0.02	0.00	0.01	0.06	0.51	53.5%	45.5%				
80			147		5	1.07	0.01	0.00	0.00	0.18	1.14	15.7%	0.4%	0.58	0.00	0.00	0.00	0.09	0.58	51.5%	51.0%				
81			148		5	0.77	0.01	0.01	0.03	0.15	0.69	19.1%	3.9%	0.35	0.00	0.01	0.03	0.05	0.31	46.3%	40.5%				
82			154		5	0.86	0.01	0.00	0.01	0.12	0.83	13.9%	1.1%	0.50	0.01	0.00	0.01	0.05	0.41	58.3%	48.0%				
83			155		5	0.91	0.01	0.00	0.01	0.13	0.93	14.4%	0.8%	0.51	0.01	0.00	0.01	0.06	0.41	58.4%	51.3%				
84			156		5	1.05	0.01	0.00	0.01	0.16	1.14	14.0%	0.7%	0.56	0.00	0.00	0.01	0.08	0.57	50.1%	50.1%				
85			157		5	1.04	0.01	0.00	0.01	0.17	1.08	16.1%	0.5%	0.56	0.01	0.00	0.00	0.08	0.55	51.9%	50.8%				
86			0		128	2	0.60	0.01	0.00	0.00	0.14	0.44	24.0%	0.7%	0.23	0.01	0.00	0.00	0.05	0.21	38.8%	34.4%			
87			1		129	2	0.67	0.04	0.01	0.02	0.66	0.49	23.3%	1.0%	0.40	0.01	0.01	0.02	0.12	0.32	47.4%	41.4%			
88			2		130	2	0.44	0.00	0.00	0.01	0.13	0.39	29.1%	2.5%	0.18	0.00	0.00	0.01	0.05	0.15	41.1%	34.1%			
89			6		134	4	0.89	0.01	0.01	0.02	0.25	0.69	28.0%	2.0%	0.35	0.01	0.01	0.01	0.12	0.27	39.7%	30.7%			
90			7		135	4	1.09	0.02	0.00	0.01	0.33	0.90	29.9%	0.7%	0.57	0.01	0.00	0.01	0.13	0.51	52.0%	46.6%			
91			8		136	4	1.21	0.01	0.01	0.02	0.28	0.78	23.6%	1.6%	0.48	0.01	0.01	0.02	0.12	0.32	39.4%	26.9%			
92			12		140	4	1.01	0.02	0.01	0.01	0.32	0.88	32.1%	0.8%	0.44	0.02	0.00	0.01	0.13	0.50	49.1%	49.1%			
93			13		141	4	1.45	0.01	0.02	0.02	0.37	1.05	25.3%	1.1%	0.63	0.01	0.01	0.01	0.14	0.47	43.7%	32.5%			
94			16		144	10	1.80	0.02	0.05	0.06	0.66	1.58	36.7%	3.4%	0.87	0.01	0.04	0.04	0.34	0.74	48.2%	41.1%			
95			17		145	10	2.07	0.04	0.06	0.07	0.66	1.97	31.8%	1.8%	1.03	0.04	0.01	0.01	0.31	0.68	52.1%	52.1%			
96			18		146	10	2.53	0.08	0.00	0.02	0.77	2.11	30.6%	0.9%	1.46	0.06	0.00	0.02	0.40	1.11	57.5%	44.0%			
97			19		147	10	3.07	0.03	0.01	0.01	1.05	2.39	34.2%	0.5%	1.69	0.02	0.01	0.01	0.57	1.20	55.0%	38.9%			
98			20		148	10	3.19	0.02	0.05	0.10	0.91	2.06	28.6%	3.1%	1.41	0.01	0.05	0.08	0.40	0.86	44.2%	26.9%			
99			26		154	10	2.16	0.03	0.01	0.02	0.70	2.04	32.2%	1.1%	1.05	0.03	0.00	0.02	0.31	0.68	50.7%	50.7%			
100			27		155	10	2.67	0.05	0.01	0.02	0.67	2.30	31.7%	1.2%	1.18	0.04	0.01	0.02	0.39	0.97	56.8%	46.8%			
101			28		156	10	2.62	0.05	0.01	0.02	0.81	2.11	30.9%	0.8%	1.36	0.04	0.01	0.02	0.40	1.05	51.8%	40.3%			
102			29		157	10	3.16	0.02	0.02	0.04	0.98	2.39	31.0%	1.3%	1.64	0.02	0.01	0.03	0.50	1.12	51.9%	35.2%			

- L-patch High CH

No.	Module	Type	Beam ID_1	Berna ID_2	Feed no.	max ratio out of all beams												max ratio out of all beams							
						4cm2 PD(mW/cm2)						51.8%		5.3%		4cm2 PD(mW/cm2) at 10mm evaluation distance						58.8%		51.8%	
						S4(Right)	S3(Left)	S5(Top)	S6(Bottom)	S1(Front)	S2(Rear)	ratio (Font 2mm)/(worst-surface 2mm)	ratio (Bottom 2mm)/(worst-surface 2mm)	S4(Right)	S3(Left)	S5(Top)	S6(Bottom)	S1(Front)	S2(Rear)	ratio worst-surface (10mm/2mm)	ratio (back 10mm)/(worst-surface 2mm)				
52			0		1	0.23	0.00	0.00	0.00	0.10	0.15	43.1%	1.1%	0.07	0.00	0.00	0.00	0.03	0.06	32.9%	26.7%				
53			1		1	0.31	0.00	0.00	0.00	0.11	0.20	34.6%	0.9%	0.12	0.00	0.00	0.00	0.03	0.08	37.8%	27.8%				
54			2		1	0.24	0.00	0.00	0.00	0.08	0.17	31.8%	1.3%	0.09	0.00	0.00	0.00	0.03	0.06	36.4%	24.6%				
55			6		2	0.51	0.00	0.01	0.00	0.20	0.34	38.6%	1.8%	0.22	0.00	0.01	0.01	0.09	0.14	43.7%	27.1%				
56			7		2	0.45	0.01	0.00	0.01	0.22	0.29	49.3%	1.1%	0.20	0.01	0.00	0.00	0.09	0.13	44.4%	30.0%				
57			8		2	0.37	0.00	0.00	0.01	0.15	0.30	33.0%	1.0%	0.15	0.00	0.00	0.00	0.06	0.10	31.3%	24.3%				
58			12		2	0.41	0.01	0.00	0.00	0.19	0.26	46.2%	0.5%	0.18	0.01	0.00	0.00	0.09	0.12	43.5%	29.1%				
59			13		2	0.57	0.01	0.01	0.01	0.24	0.34	42.6%	1.4%	0.23	0.01	0.01	0.01	0.09	0.16	40.0%	28.0%				
60			16		5	0.93	0.01	0.03	0.03	0.41	0.57	43.8%	3.3%	0.45	0.01	0.02	0.02	0.21	0.23	48.9%	24.9%				
61			17		5	1.02	0.01	0.00	0.01	0.46	0.69	46.3%	0.7%	0.48	0.02	0.00	0.01	0.26	0.36	46.9%	34.7%				
62			18		5	1.16	0.02	0.00	0.01	0.55	0.77	47.6%	0.8%	0.56	0.02	0.00	0.01	0.30	0.40	48.4%	34.0%				
63			19		5	1.18	0.02	0.00	0.01	0.51	0.82														