

FCC ID: A3LSMN986U

## Power Density Simulation Report

Revision B

June 11, 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 final adaptive mesh of the device (cross-section of top view).

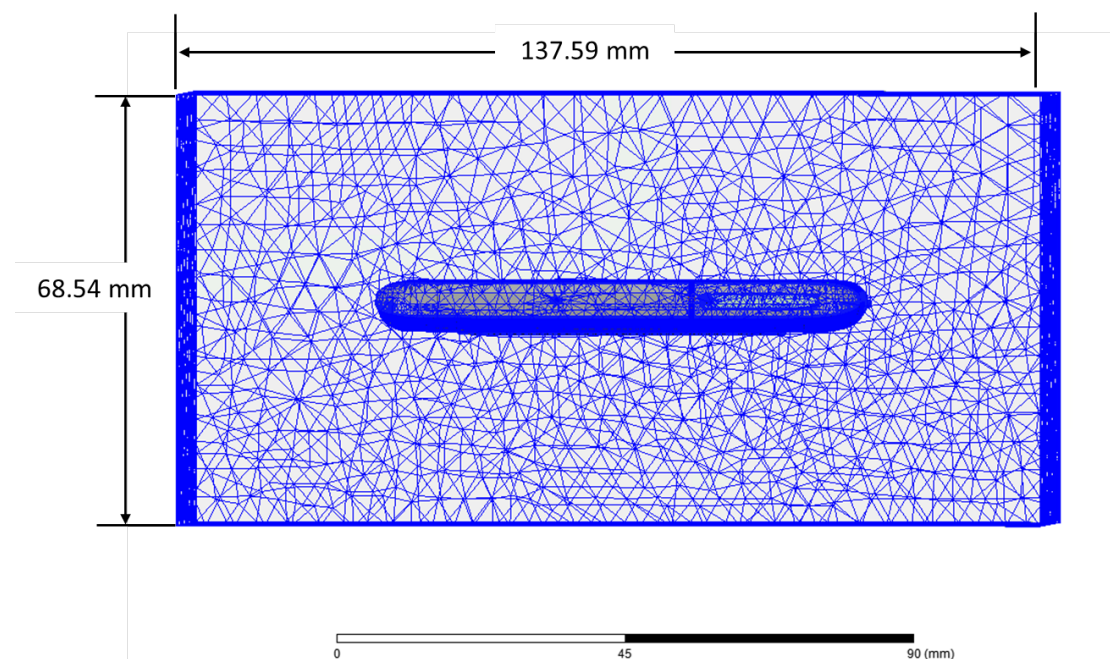


Figure 1 Example of the adaptive mesh technique (Top view)

### 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 2020.R1 (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  $4\text{cm}^2$ .

## 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. 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.

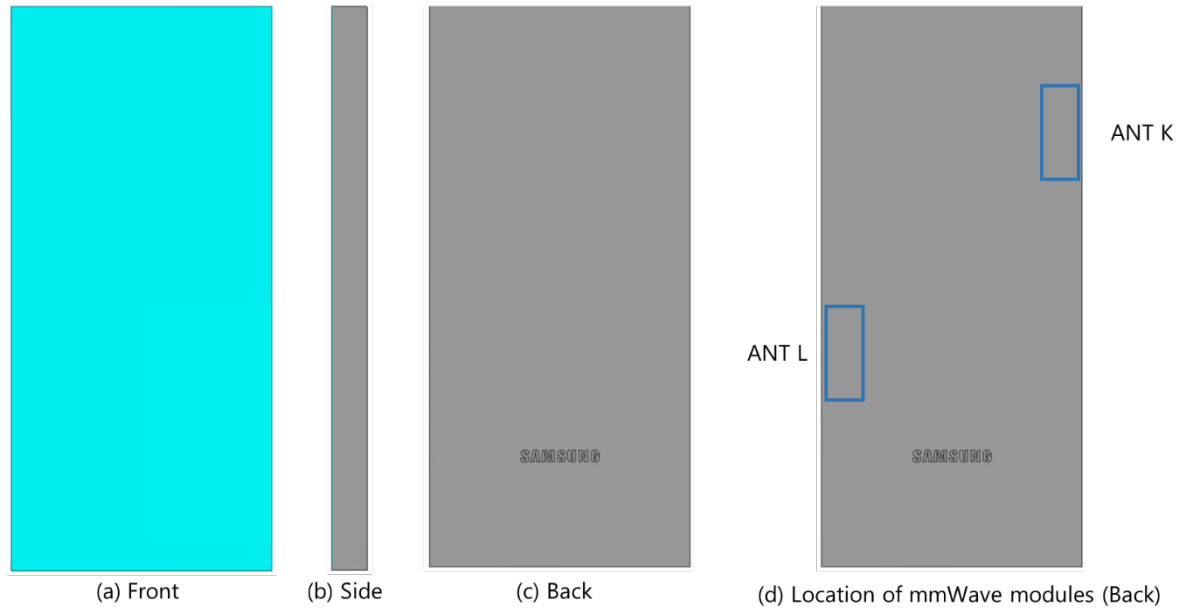


Figure 2 Simulation model which is mounted two mmWave antenna modules

### 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<br>From Front<br>View | Right<br>From Front<br>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      |

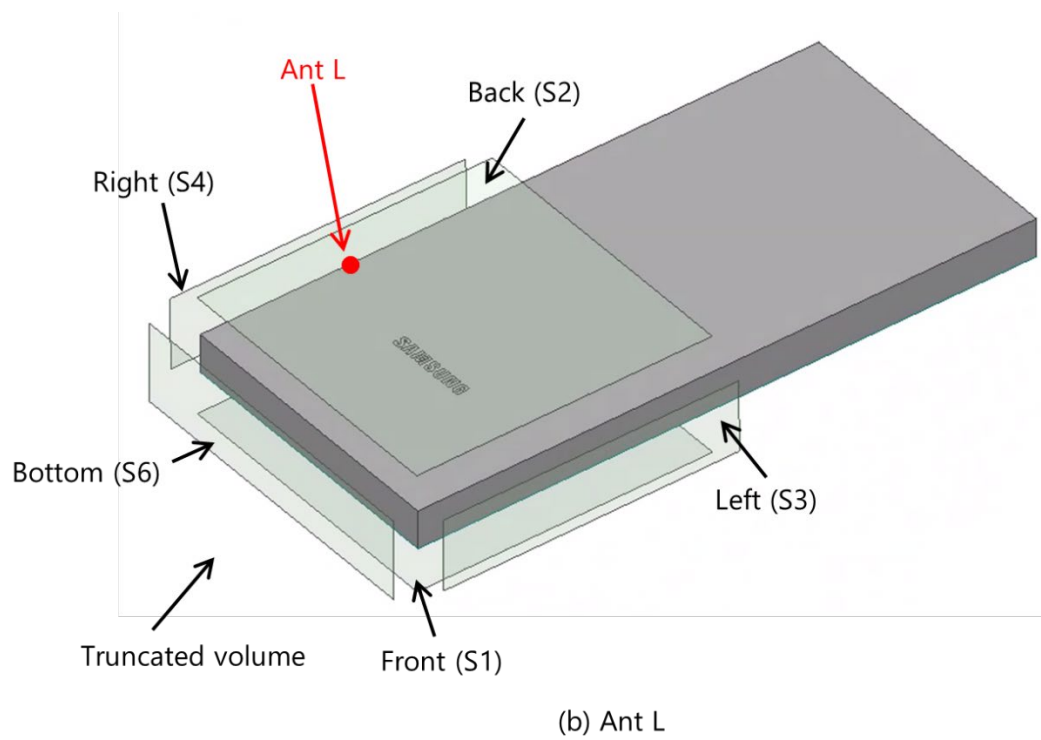
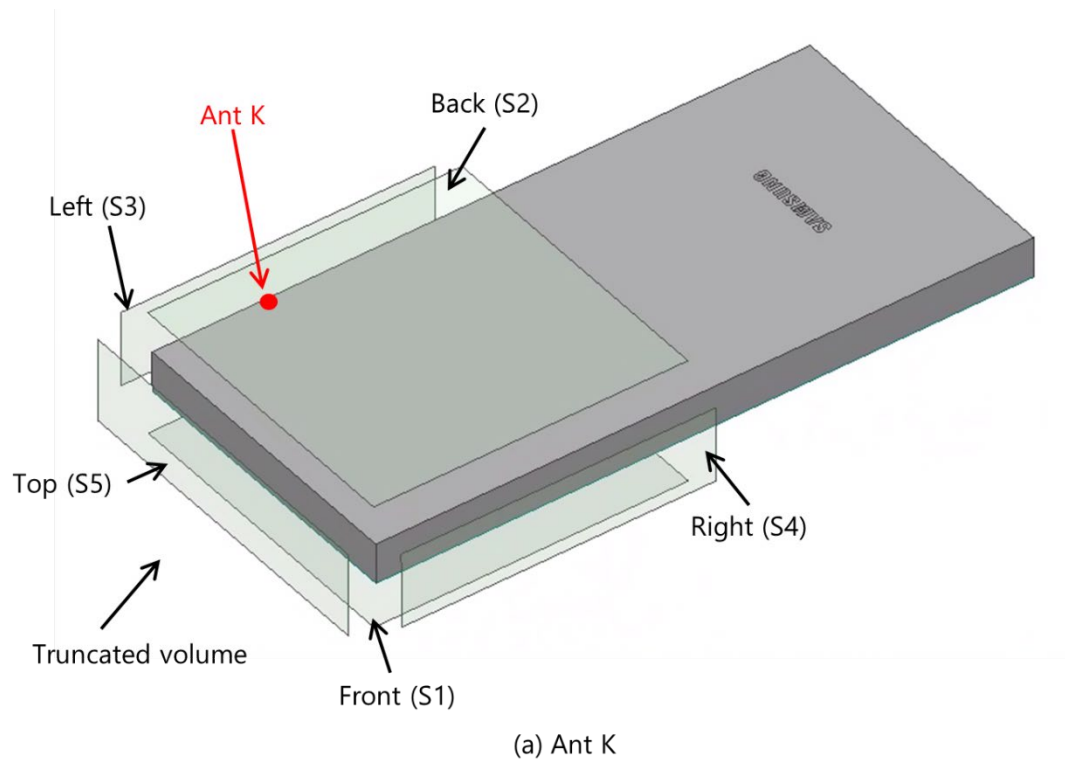


Figure 3. PD evaluation planes

### 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, the three wavelength spacing from the device is used.

### 1.2.4 Source excitation condition

The number of antenna ports of ANT K and ANT L for source excitation are the same as 16. The antenna port of ANT K and L is divided into 8 ports for n261 1 x 4 patch array antennas, 8 ports for n260 1 x 4 patch 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.

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.

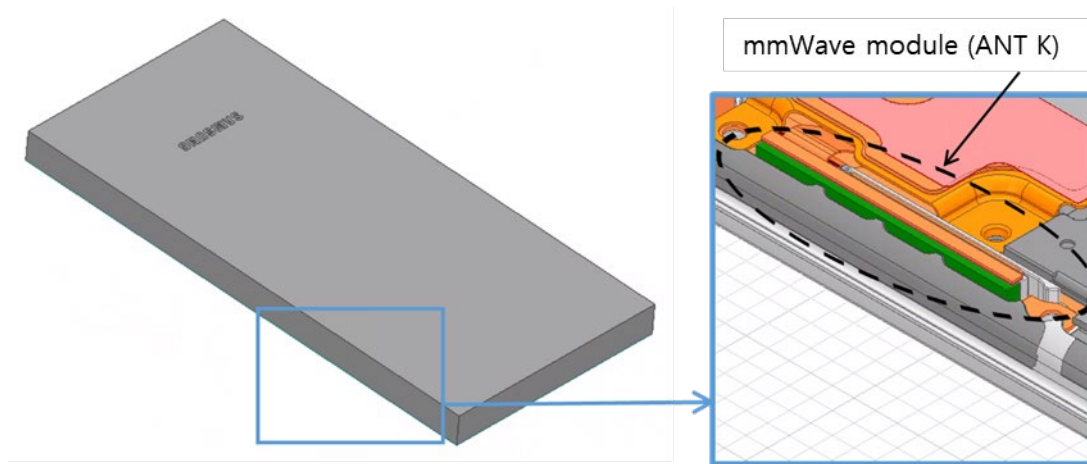


Figure 4. mmWave module (ANT K)

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.

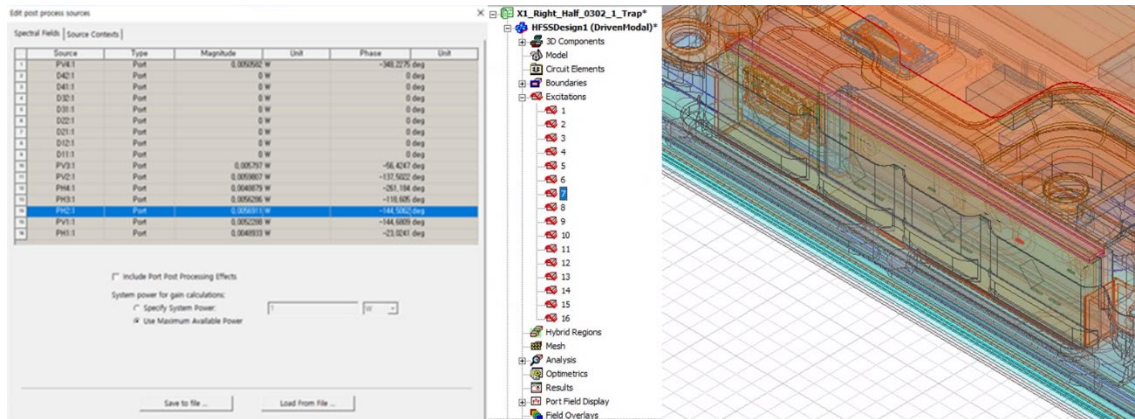


Figure 5. An example of port excitation (ANT K)

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

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.

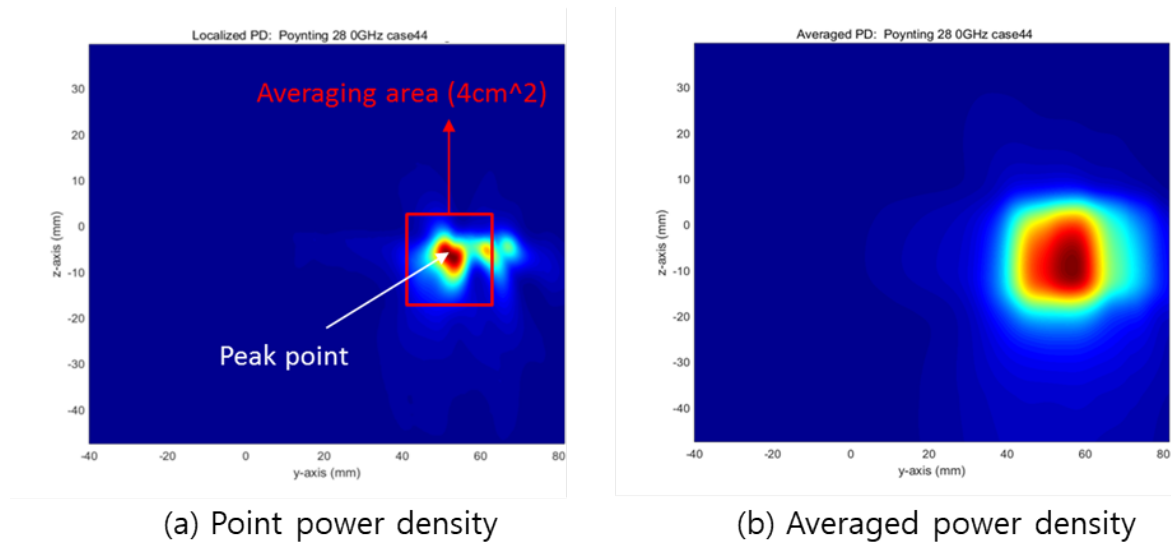


Figure 6. Power density distribution (Example)

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

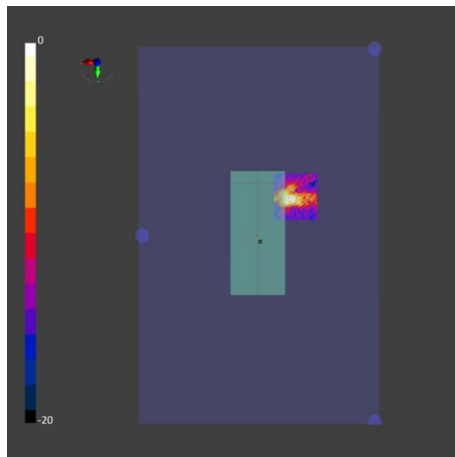
The input powers per each active port are listed below for both Simulation and Measurement validation and power density characterization. For Simulation, these values were entered directly into HFSS model. For measurement, FTM S/W was used to input these values for each active port also.

| 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               |

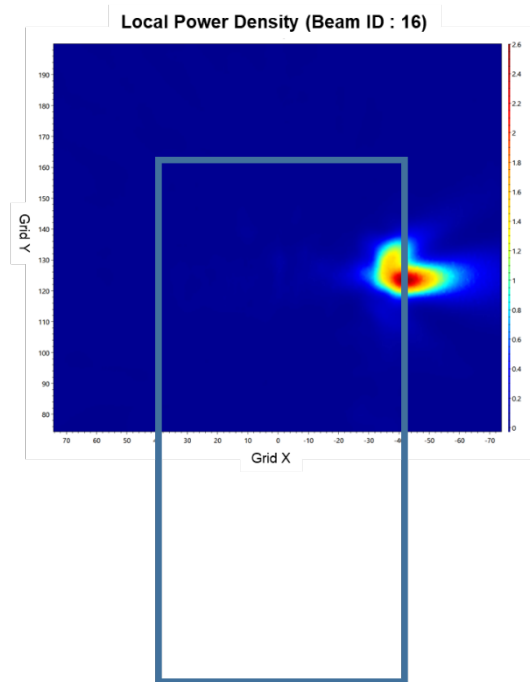
\* The below simulation and measurement result were performed at 2mm evaluation distance and 28GHz / 38.5GHz. The *input.power.limit* was determined based on below results.

|      |         |           |            |         | 4cm <sup>2</sup> avg. PD (mW/cm <sup>2</sup> ) |      |
|------|---------|-----------|------------|---------|------------------------------------------------|------|
| Band | Beam ID | Antenna   | Surface    | Channel | Meas.                                          | Sim  |
| n261 | 16      | K (patch) | Back (S2)  | Mid     | 0.42                                           | 1.06 |
|      |         |           | Left (S3)  | Mid     | 0.61                                           | 1.34 |
|      | 154     |           | Back (S2)  | Mid     | 0.41                                           | 1.02 |
|      |         |           | Left (S3)  | Mid     | 0.74                                           | 1.41 |
|      | 21      | L (patch) | Back (S2)  | Mid     | 0.49                                           | 1.37 |
|      |         |           | Right (S4) | Mid     | 0.60                                           | 1.38 |
|      | 140     |           | Back (S2)  | Mid     | 0.45                                           | 1.37 |
|      |         |           | Right (S4) | Mid     | 0.73                                           | 1.38 |
| n260 | 20      | K (patch) | Back (S2)  | Mid     | 0.26                                           | 0.77 |
|      |         |           | Left (S3)  | Mid     | 0.72                                           | 1.35 |
|      | 156     |           | Back (S2)  | Mid     | 0.19                                           | 0.75 |
|      |         |           | Left (S3)  | Mid     | 0.72                                           | 1.33 |
|      | 24      | L (patch) | Back (S2)  | Mid     | 0.64                                           | 1.38 |
|      |         |           | Right (S4) | Mid     | 0.84                                           | 1.44 |
|      | 143     |           | Back (S2)  | Mid     | 0.57                                           | 1.34 |
|      |         |           | Right (S4) | Mid     | 0.95                                           | 1.38 |

- n261 ANT K-Patch: Mid Channel, Beam ID 16, Back

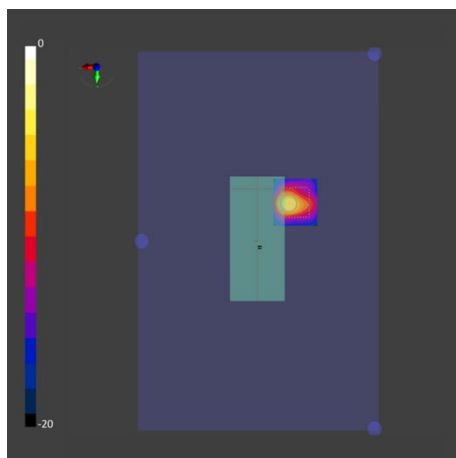


(a) measurement

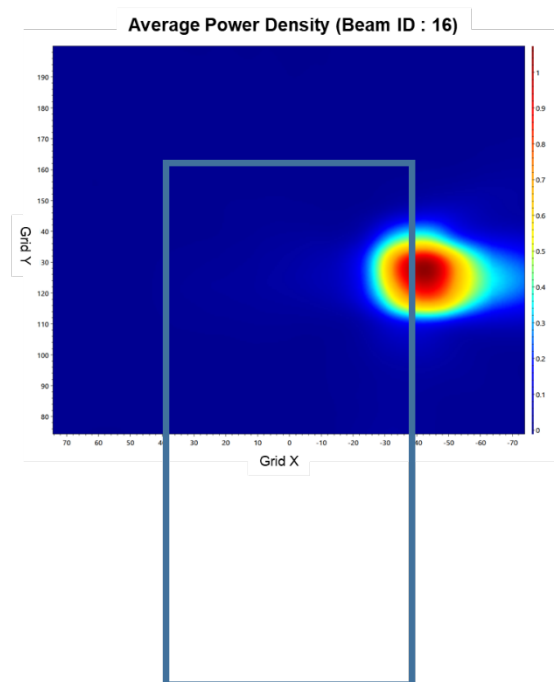


(b) simulation

ANT K-Patch: Mid Channel, Point power density



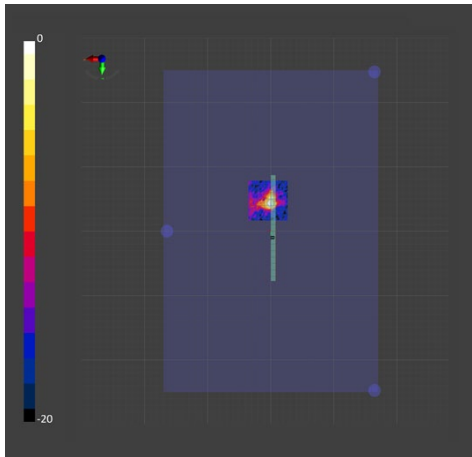
(a) measurement



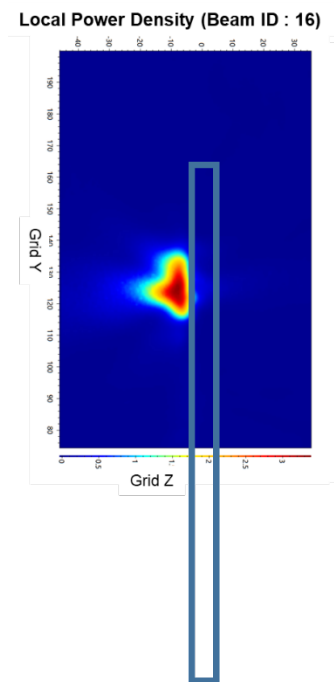
(b) simulation

ANT K-Patch: Mid Channel,  $4\text{cm}^2$  averaged power density

n261 ANT K-Patch: Mid Channel, Beam ID 16, Left

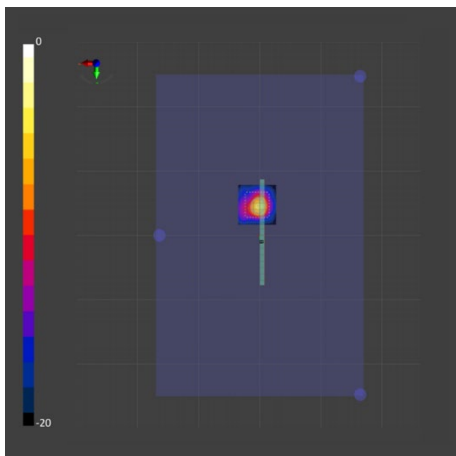


(a) measurement

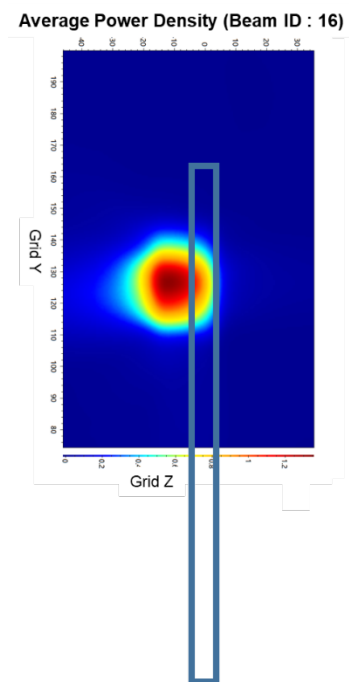


(b) simulation

ANT K-Patch: Mid Channel, Point power density



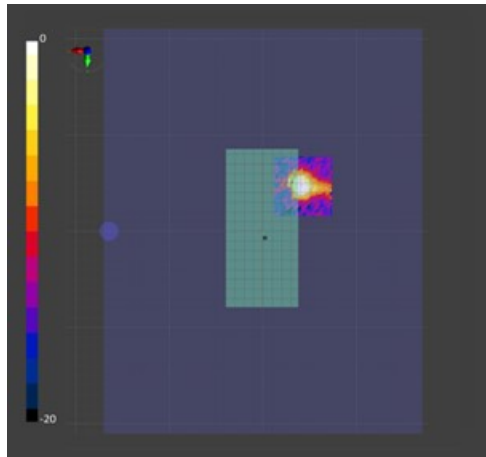
(a) measurement



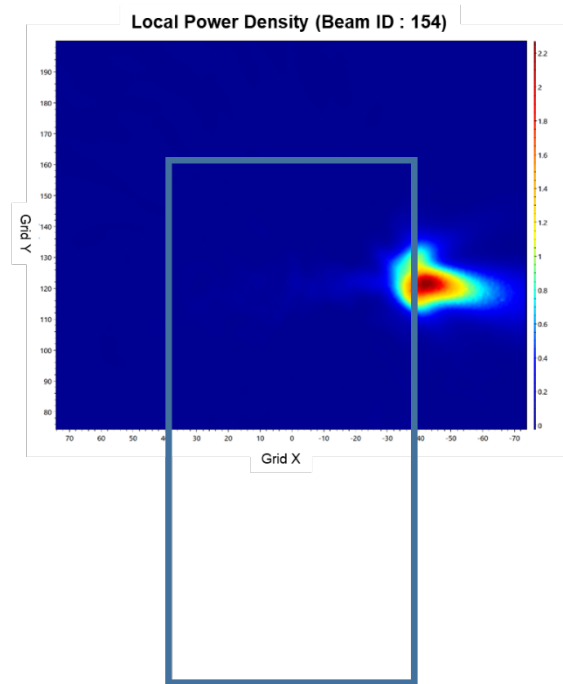
(b) simulation

ANT K-Patch: Mid Channel,  $4\text{cm}^2$  averaged power density

n261 ANT K-Patch: Mid Channel, Beam ID 154, Back

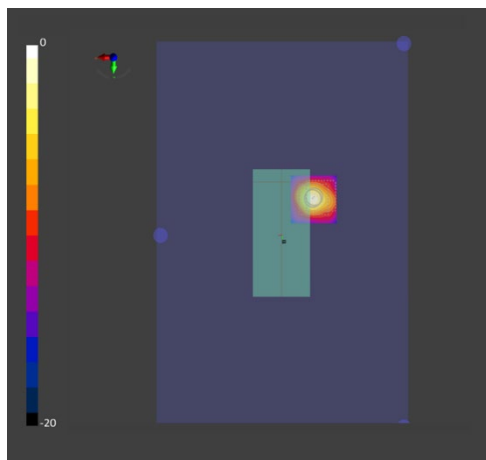


(a) measurement

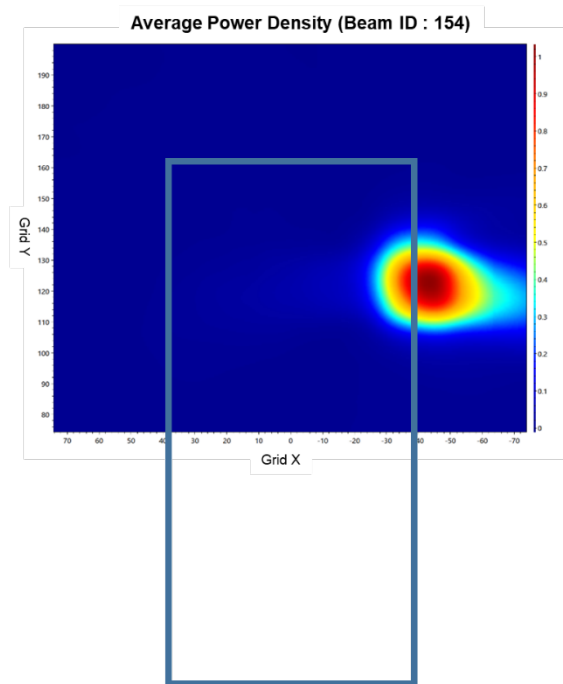


(b) simulation

ANT K-Patch: Mid Channel, Point power density



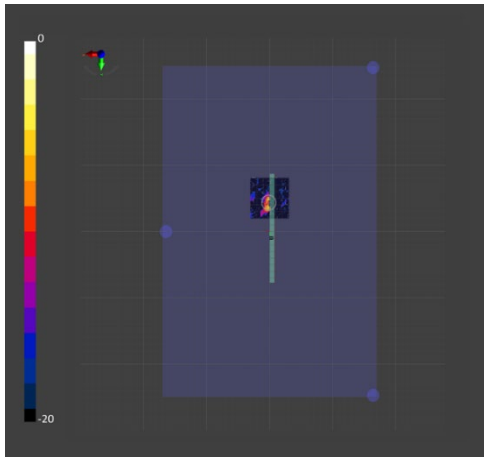
(a) measurement



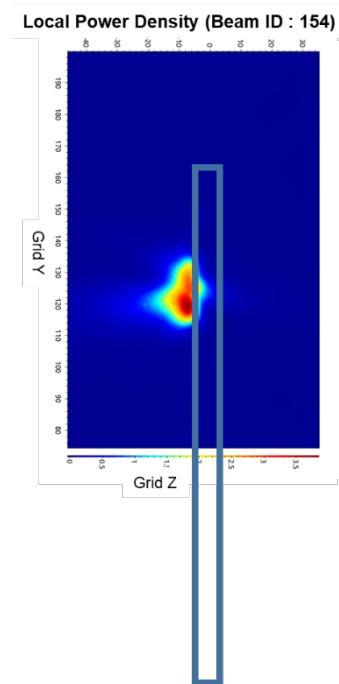
(b) simulation

ANT K-Patch: Mid Channel,  $4\text{cm}^2$  averaged power density

n261 ANT K-Patch: Mid Channel, Beam ID 154, Left

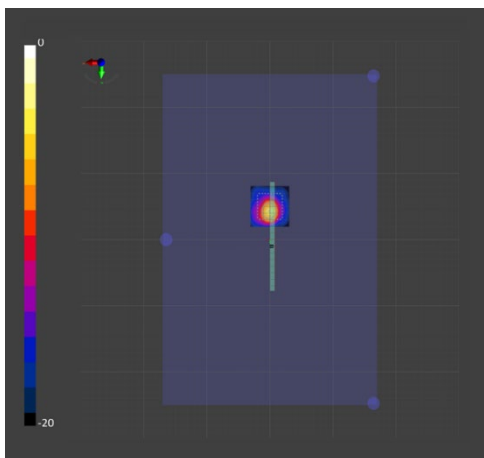


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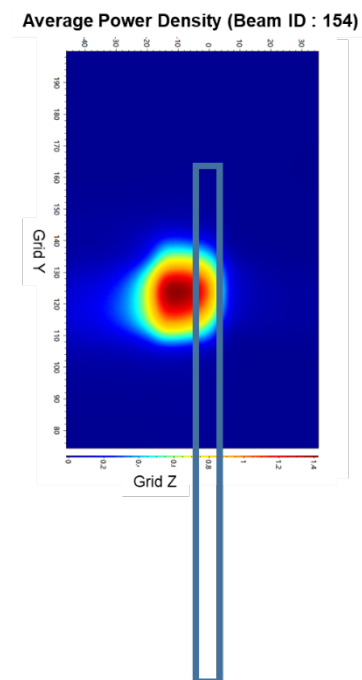


(b) simulation

ANT K-Patch: Mid Channel, Point power density



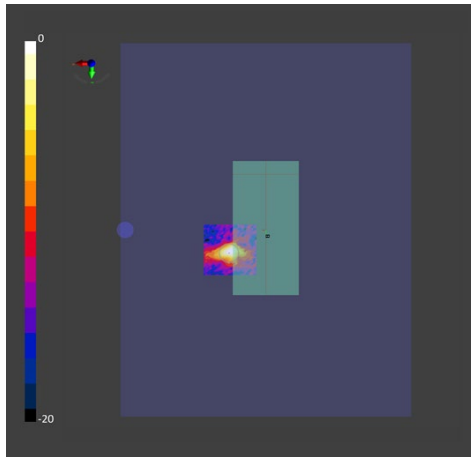
(a) measurement



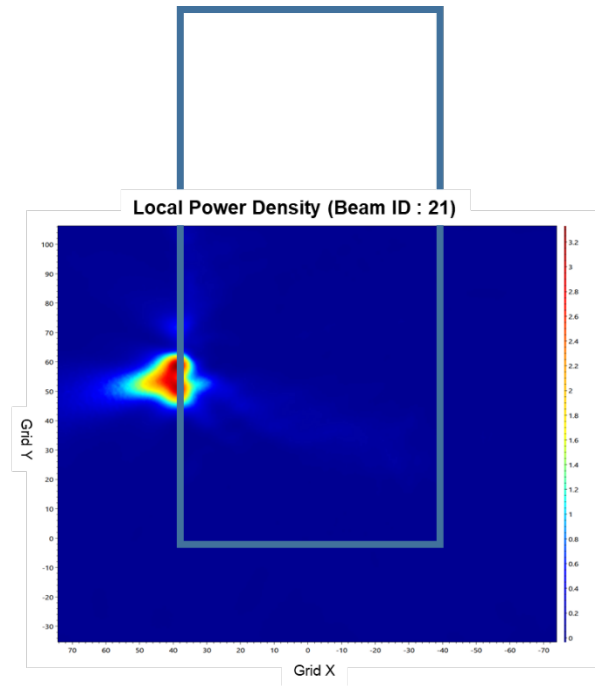
(b) simulation

ANT K-Patch: Mid Channel,  $4\text{cm}^2$  averaged power density

n261 ANT L-Patch: Mid Channel, Beam ID 21, Back

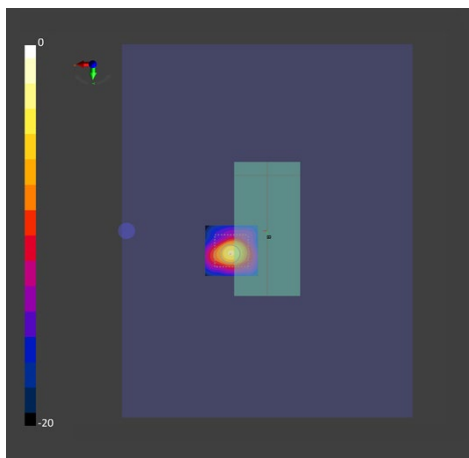


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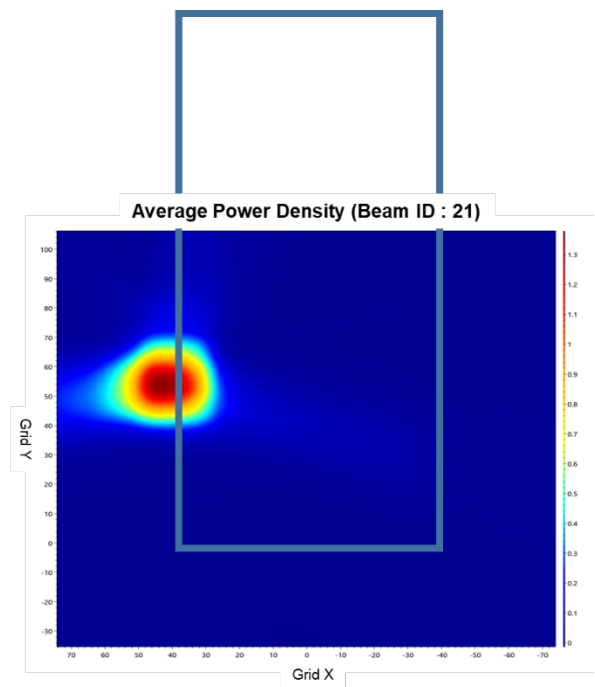


(b) simulation

ANT L-Patch: Mid Channel, Point power density



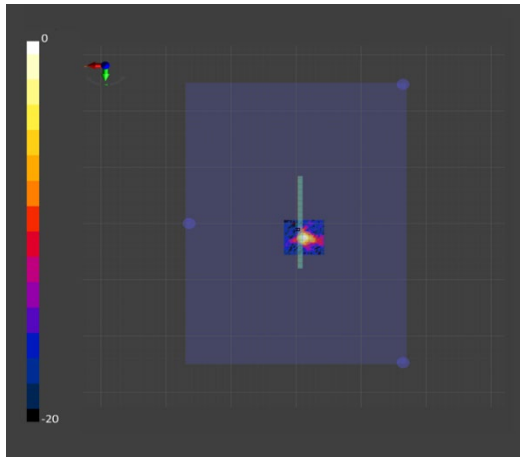
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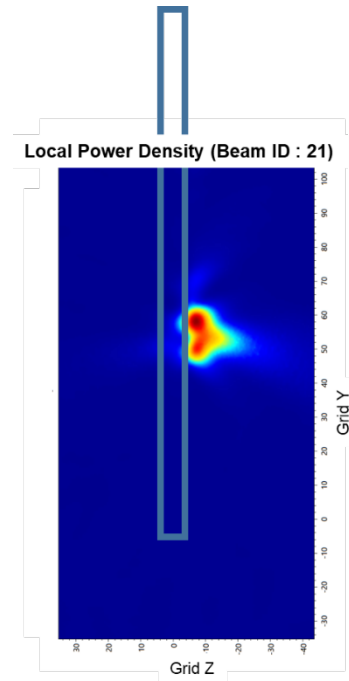
(b) simulation

ANT L-Patch: Mid Channel,  $4\text{cm}^2$  averaged power density

n261 ANT L-Patch: Mid Channel, Beam ID 21, Right

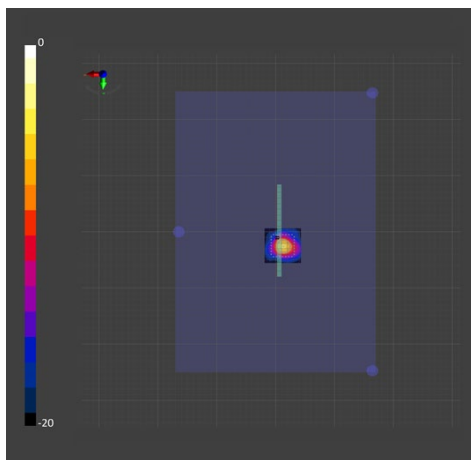


(a) measurement

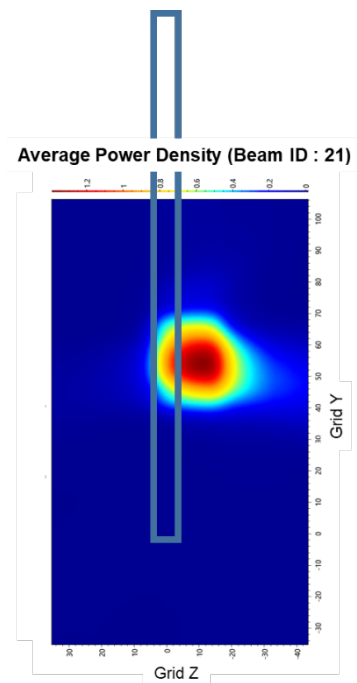


(b) simulation

ANT L-Patch: Mid Channel, Point power density



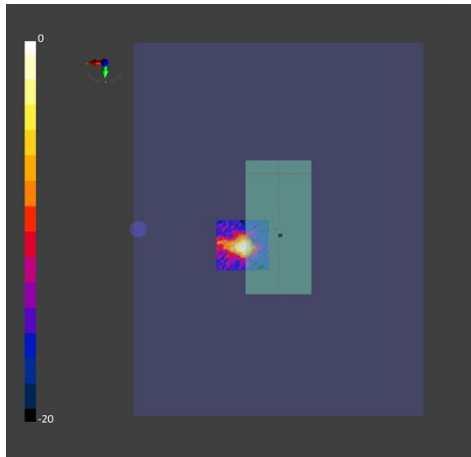
(a) measurement



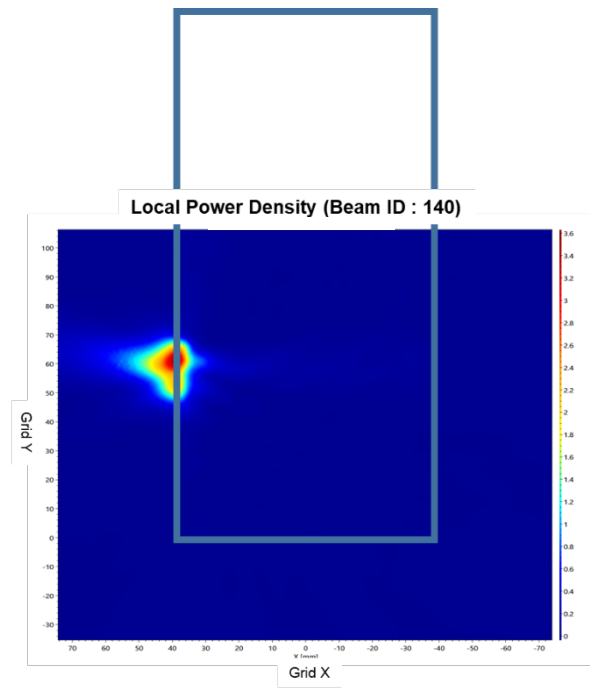
(b) simulation

ANT L-Patch: Mid Channel,  $4\text{cm}^2$  averaged power density

n261 ANT L-Patch: Mid Channel, Beam ID 140, Back

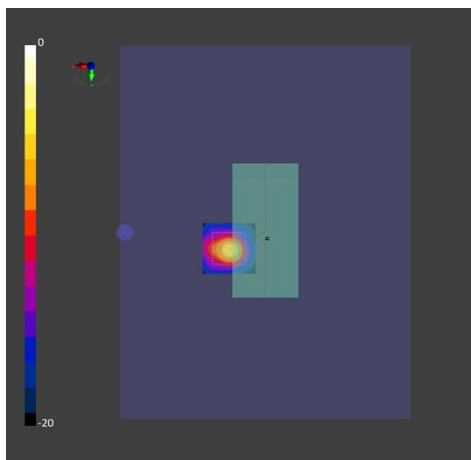


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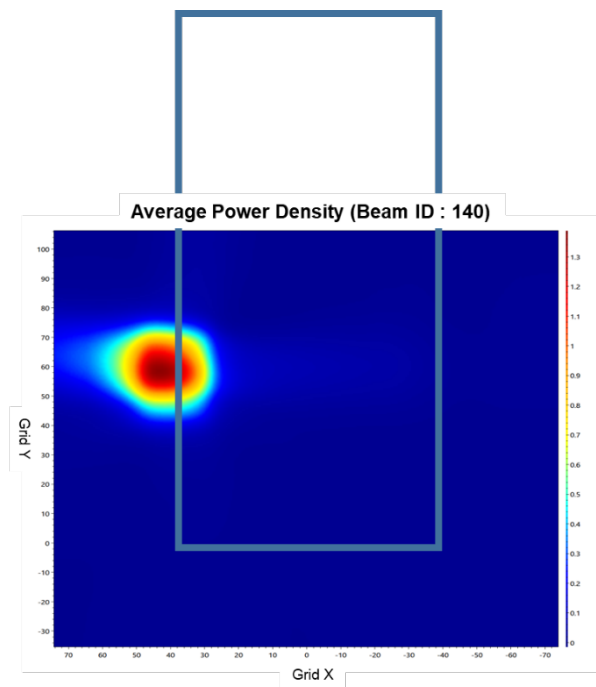


(b) simulation

ANT L-Patch: Mid Channel, Point power density



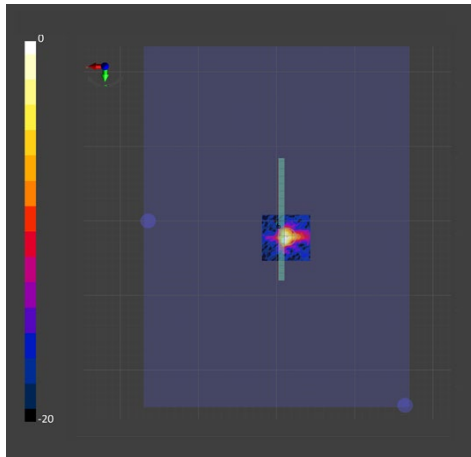
(a) measurement



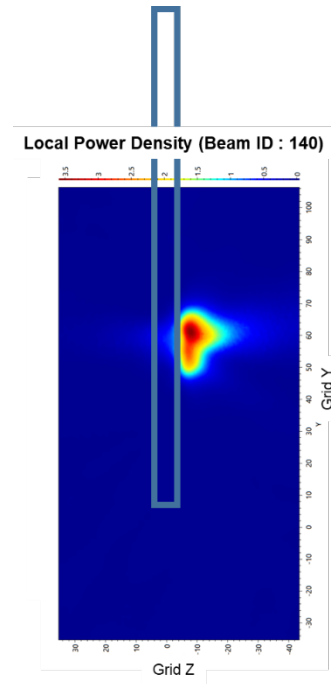
(b) simulation

ANT L-Patch: Mid Channel,  $4\text{cm}^2$  averaged power density

n261 ANT L-Patch: Mid Channel, Beam ID 140, Right

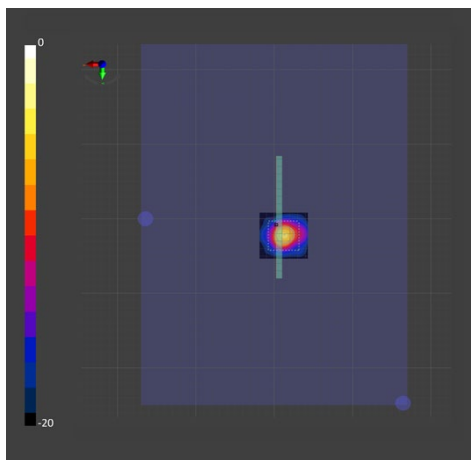


(a) measurement

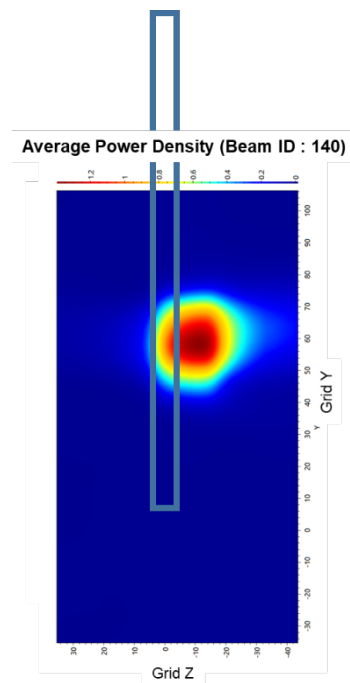


(b) simulation

ANT L-Patch: Mid Channel, Point power density



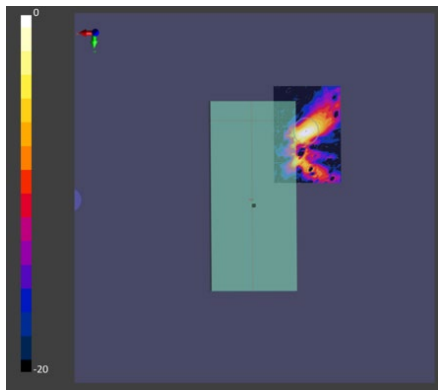
(a) measurement



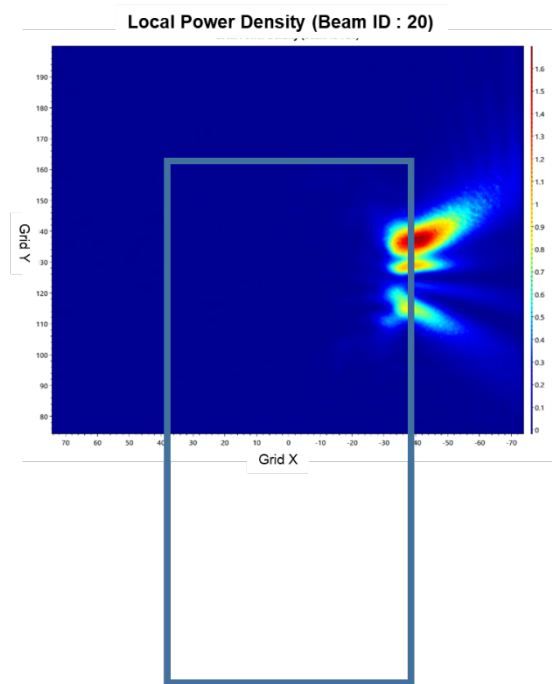
(b) simulation

ANT L-Patch: Mid Channel,  $4\text{cm}^2$  averaged power density

n260 ANT K-Patch: Mid Channel, Beam ID 20, Back

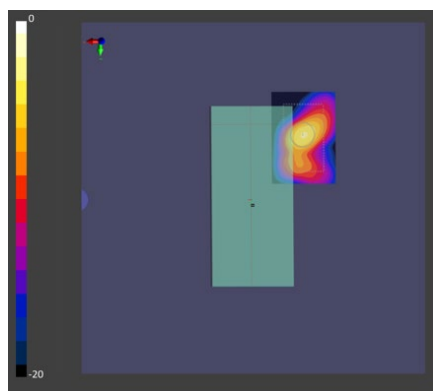


(a) measurement

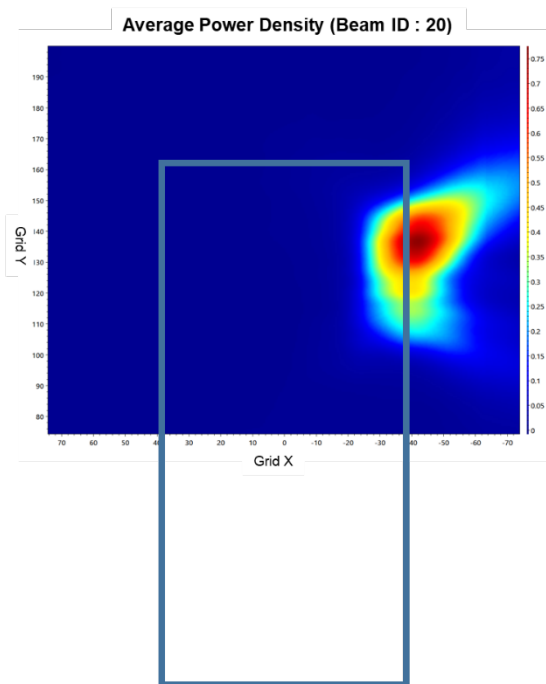


(b) simulation

ANT K-Patch: Mid Channel, Point power density



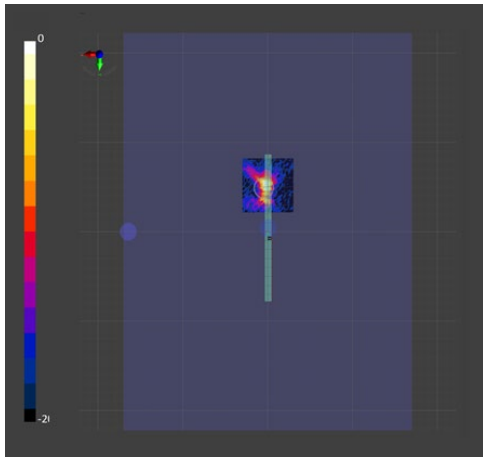
(a) measurement



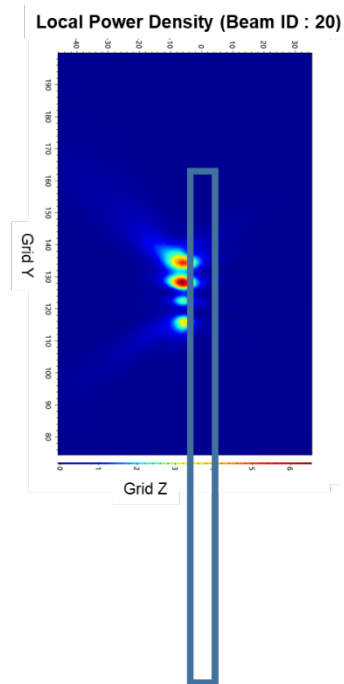
(b) simulation

ANT K-Patch: Mid Channel,  $4\text{cm}^2$  averaged power density

n260 ANT K-Patch: Mid Channel, Beam ID 20, Left

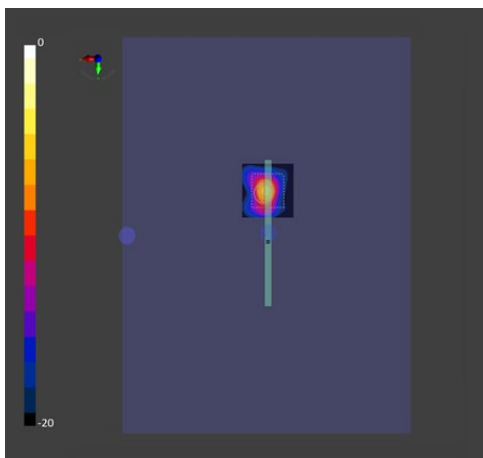


(a) measurement

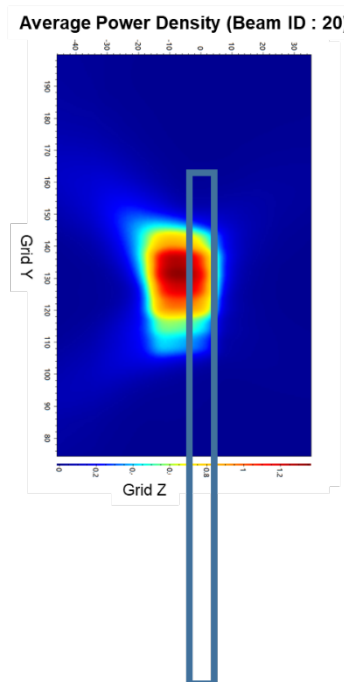


(b) simulation

ANT K-Patch: Mid Channel, Point power density



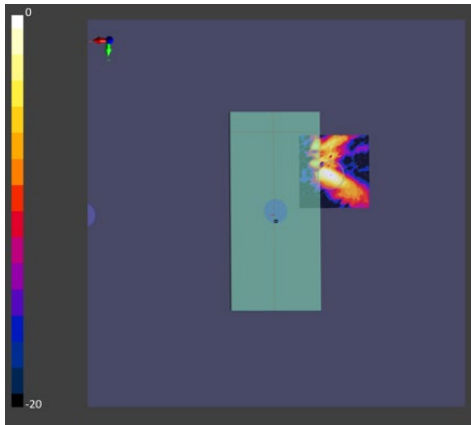
(a) measurement



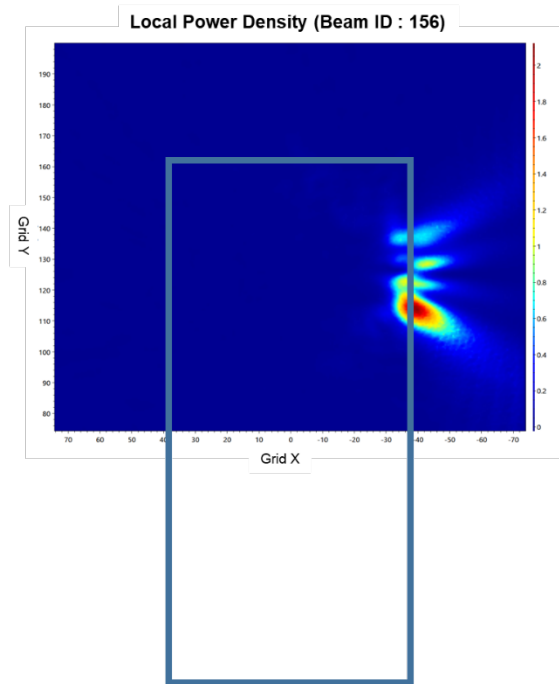
(b) simulation

ANT K-Patch: Mid Channel,  $4\text{cm}^2$  averaged power density

n260 ANT K-Patch: Mid Channel, Beam ID 156, Back

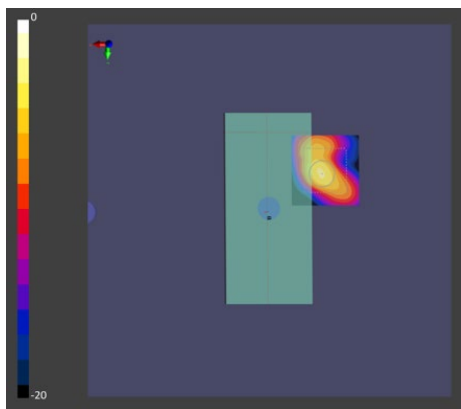


(a) measurement

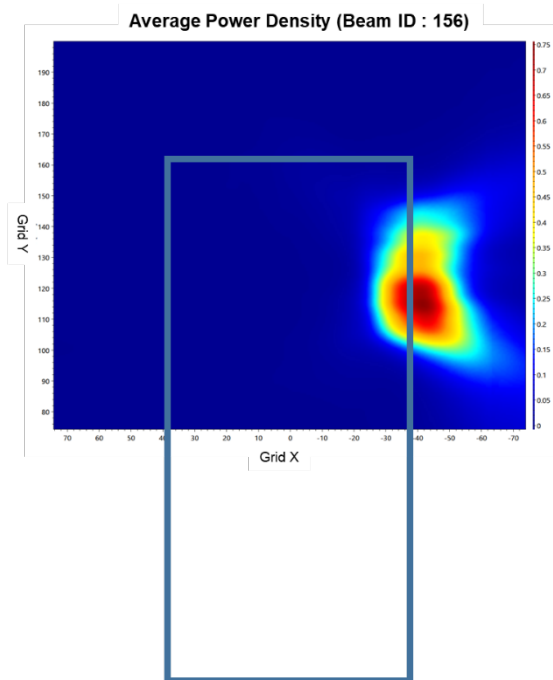


(b) simulation

ANT K-Patch: Mid Channel, Point power density



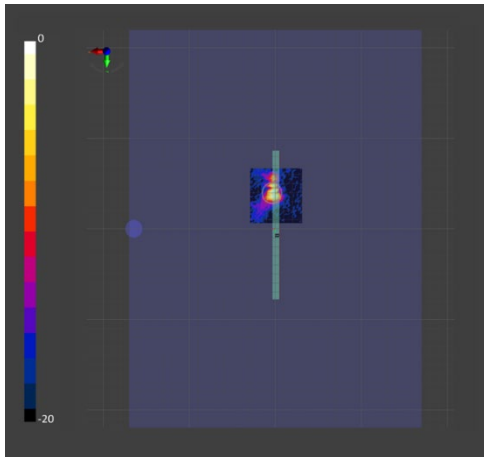
(a) measurement



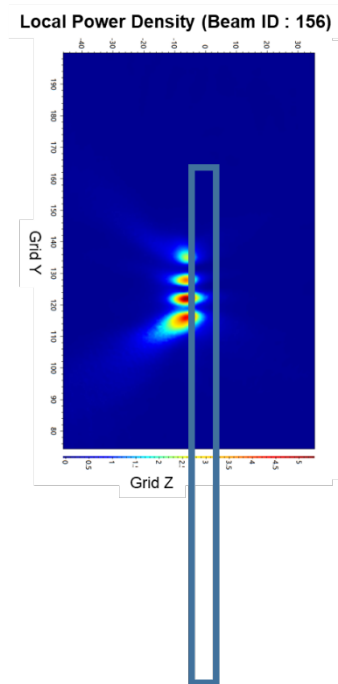
(b) simulation

ANT K-Patch: Mid Channel,  $4\text{cm}^2$  averaged power density

n260 ANT K-Patch: Mid Channel, Beam ID 156, Left

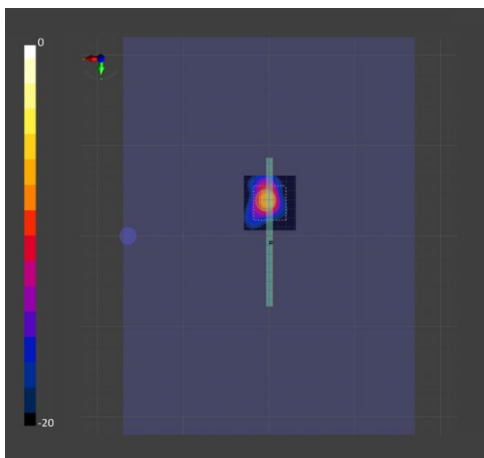


(a) measurement

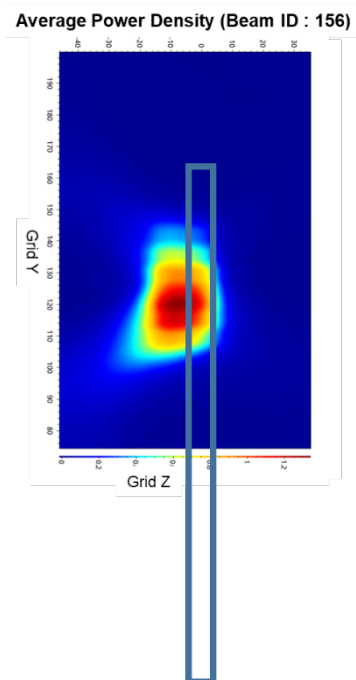


(b) simulation

ANT K-Patch: Mid Channel, Point power density



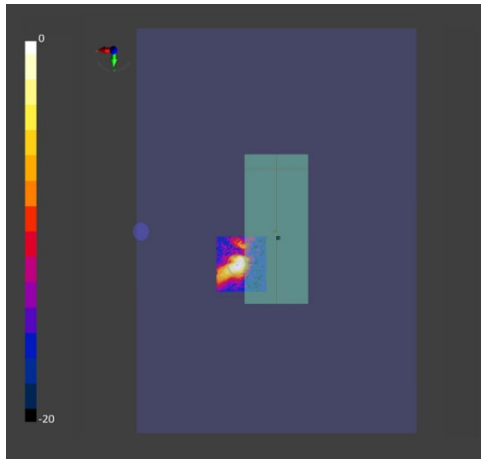
(a) measurement



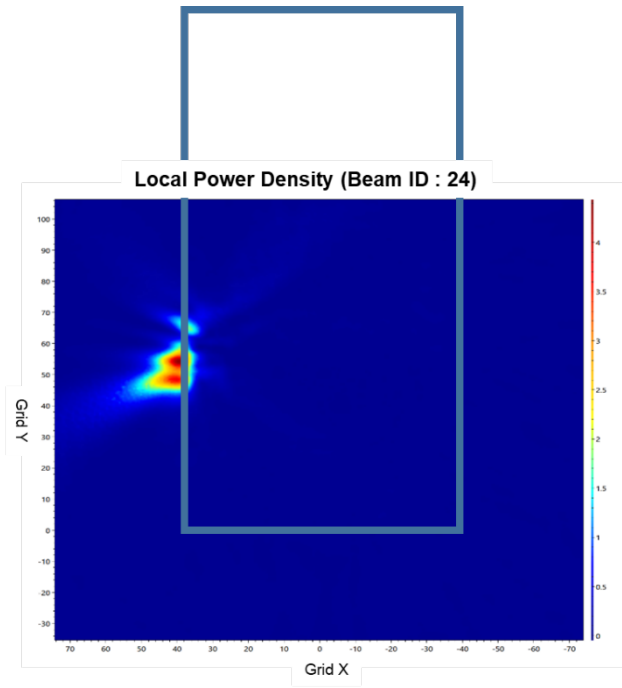
(b) simulation

ANT K-Patch: Mid Channel,  $4\text{cm}^2$  averaged power density

n260 ANT L-Patch: Mid Channel, Beam ID 24, Back

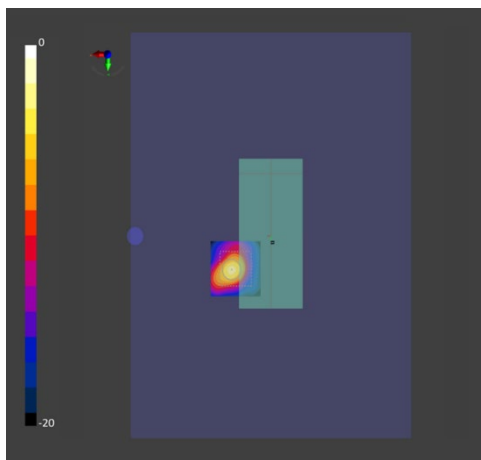


(a) measurement

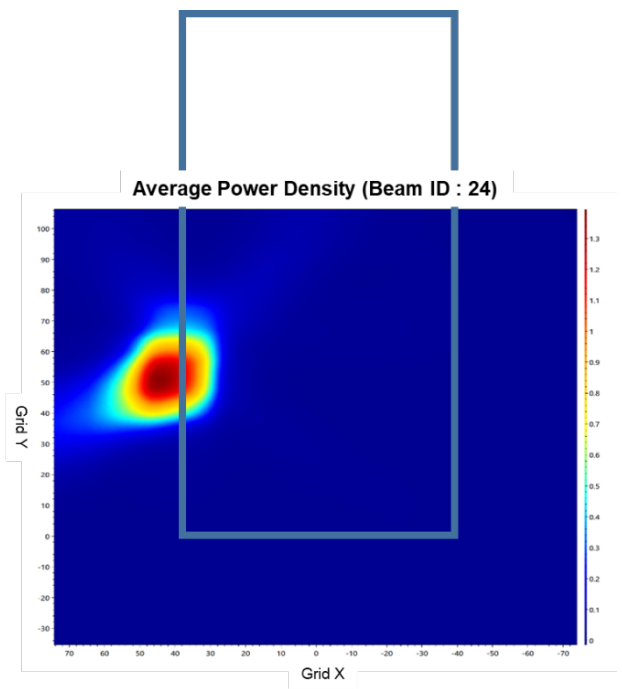


(b) simulation

ANT L-Patch: Mid Channel, Point power density



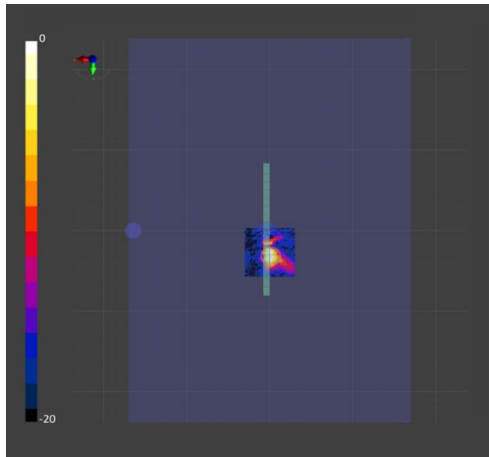
(a) measurement



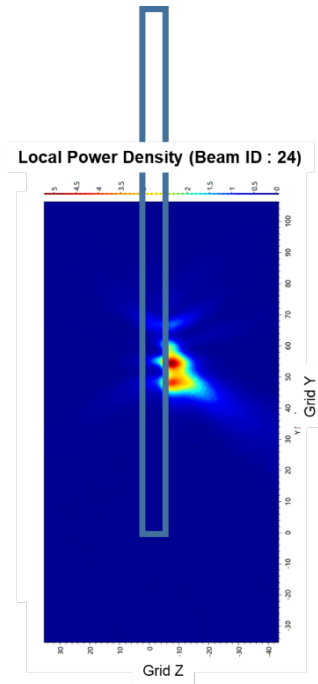
(b) simulation

ANT L-Patch: Mid Channel,  $4\text{cm}^2$  averaged power density

n260 ANT L-Patch: Mid Channel, Beam ID 24, Right

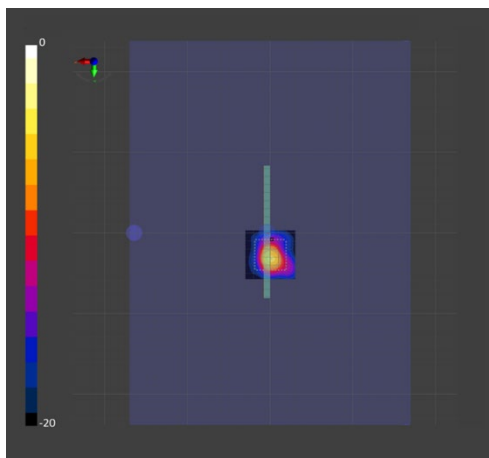


(a) measurement

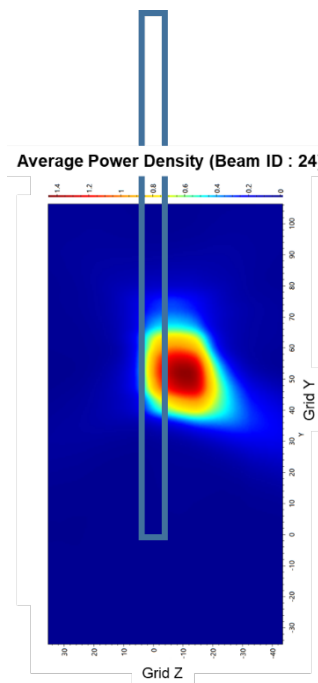


(b) simulation

ANT L-Patch: Mid Channel, Point power density



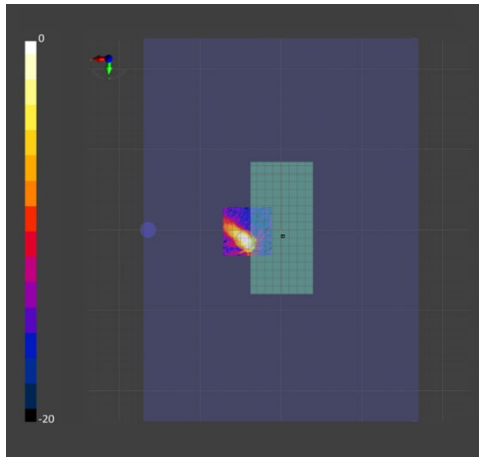
(a) measurement



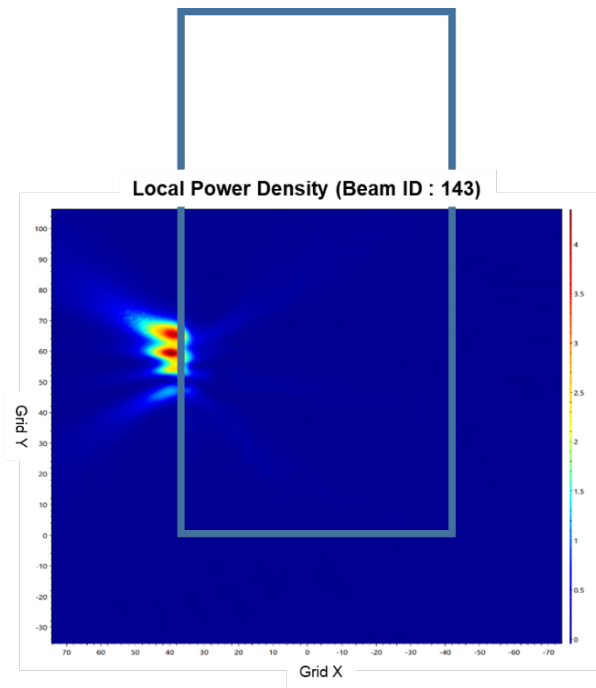
(b) simulation

ANT L-Patch: Mid Channel,  $4\text{cm}^2$  averaged power density

n260 ANT L-Patch: Mid Channel, Beam ID 143, Back

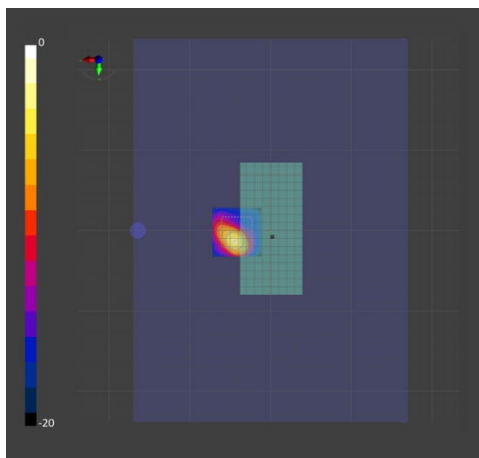


(a) measurement

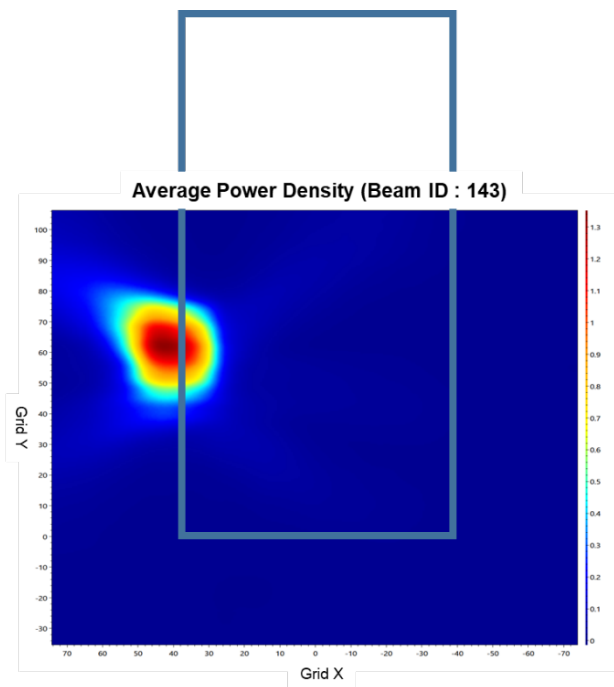


(b) simulation

ANT L-Patch: Mid Channel, Point power density



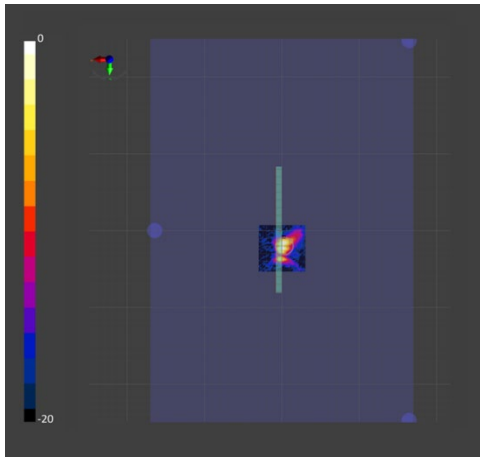
(a) measurement



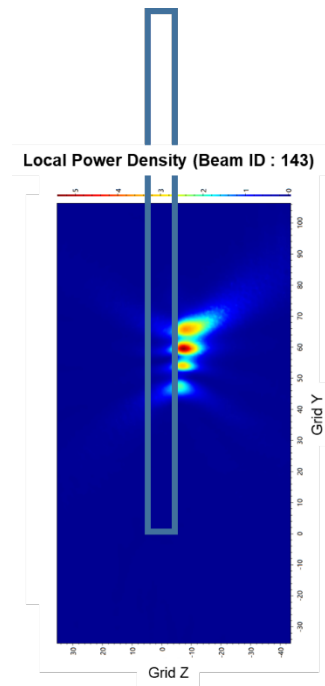
(b) simulation

ANT L-Patch: Mid Channel,  $4\text{cm}^2$  averaged power density

n260 ANT L-Patch: Mid Channel, Beam ID 143, Right

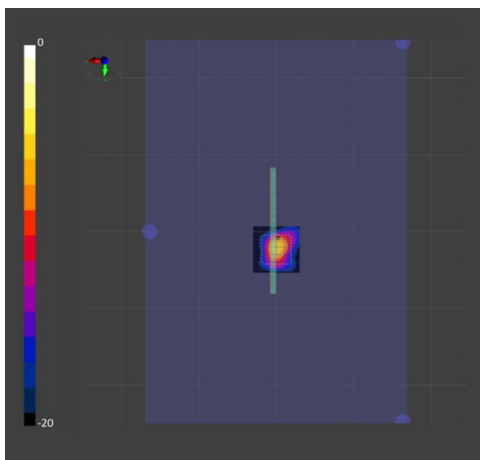


(a) measurement

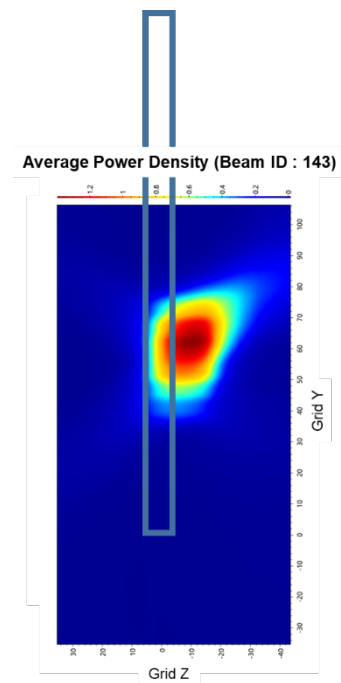


(b) simulation

ANT L-Patch: Mid Channel, Point power density



(a) measurement



(b) simulation

ANT L-Patch: Mid Channel,  $4\text{cm}^2$  averaged power density

### 3 Simulation results

This section shows the PD simulation results of 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, and the ratio of PD exposure from 2mm to 10mm evaluation distance for each beam are also reported in this section to support RF exposure analysis for simultaneous transmission scenarios performed in the 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 K– Patch Antenna

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

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

- K-patch Low CH

|     |        |       |           |            |          | max ratio out of<br>all beams |          |         |           |          |                                              |                                            |                                             |          |         | max ratio out of all beams |          |                                      |                                              |
|-----|--------|-------|-----------|------------|----------|-------------------------------|----------|---------|-----------|----------|----------------------------------------------|--------------------------------------------|---------------------------------------------|----------|---------|----------------------------|----------|--------------------------------------|----------------------------------------------|
| No. | Module | Type  | Beam ID_1 | Berna ID_2 | Feed no. | 4cm2 PD(mW/cm2)               |          |         |           |          | 27.9%                                        | 13.0%                                      | 4cm2 PD(mW/cm2) at 10mm evaluation distance |          |         |                            |          | 55.9%                                | 48.2%                                        |
|     |        |       |           |            |          | S4(Right)                     | S3(Left) | S5(Top) | S1(Front) | S2(Rear) | ratio<br>(Front 2mm)/(worst-<br>surface 2mm) | ratio<br>(Top 2mm)/(worst-<br>surface 2mm) | S4(Right)                                   | S3(Left) | S5(Top) | S1(Front)                  | S2(Rear) | ratio<br>worst-surface<br>(10mm/2mm) | ratio<br>(back 10mm)/(worst-<br>surface 2mm) |
| 1   | K      | Patch | 1         |            | 1        | 0.00                          | 0.34     | 0.01    | 0.04      | 0.25     | 12.2%                                        | 3.6%                                       | 0.00                                        | 0.13     | 0.01    | 0.01                       | 0.10     | 37.7%                                | 28.6%                                        |
| 2   |        |       | 4         |            | 2        | 0.01                          | 0.72     | 0.01    | 0.08      | 0.57     | 11.8%                                        | 2.0%                                       | 0.00                                        | 0.30     | 0.01    | 0.03                       | 0.27     | 42.2%                                | 37.2%                                        |
| 3   |        |       | 5         |            | 2        | 0.00                          | 0.61     | 0.01    | 0.11      | 0.42     | 18.1%                                        | 1.5%                                       | 0.00                                        | 0.31     | 0.01    | 0.04                       | 0.18     | 50.6%                                | 29.2%                                        |
| 4   |        |       | 6         |            | 2        | 0.00                          | 0.57     | 0.03    | 0.12      | 0.28     | 20.1%                                        | 4.7%                                       | 0.00                                        | 0.23     | 0.02    | 0.05                       | 0.12     | 39.6%                                | 20.4%                                        |
| 5   |        |       | 8         |            | 2        | 0.00                          | 0.56     | 0.00    | 0.09      | 0.45     | 15.3%                                        | 0.8%                                       | 0.00                                        | 0.28     | 0.00    | 0.04                       | 0.19     | 50.1%                                | 33.6%                                        |
| 6   |        |       | 9         |            | 2        | 0.00                          | 0.61     | 0.02    | 0.12      | 0.38     | 20.2%                                        | 3.2%                                       | 0.00                                        | 0.29     | 0.02    | 0.05                       | 0.16     | 47.9%                                | 26.2%                                        |
| 7   |        |       | 15        |            | 4        | 0.01                          | 1.23     | 0.03    | 0.14      | 1.02     | 11.6%                                        | 2.5%                                       | 0.01                                        | 0.64     | 0.02    | 0.07                       | 0.56     | 51.7%                                | 45.3%                                        |
| 8   |        |       | 16        |            | 4        | 0.01                          | 1.43     | 0.02    | 0.22      | 1.11     | 15.4%                                        | 1.1%                                       | 0.01                                        | 0.78     | 0.01    | 0.11                       | 0.58     | 54.6%                                | 40.9%                                        |
| 9   |        |       | 17        |            | 4        | 0.01                          | 1.42     | 0.01    | 0.32      | 0.98     | 22.2%                                        | 0.8%                                       | 0.01                                        | 0.78     | 0.01    | 0.16                       | 0.51     | 54.9%                                | 35.9%                                        |
| 10  |        |       | 18        |            | 4        | 0.01                          | 1.07     | 0.08    | 0.25      | 0.64     | 23.7%                                        | 7.7%                                       | 0.01                                        | 0.53     | 0.06    | 0.12                       | 0.32     | 49.1%                                | 29.7%                                        |
| 11  |        |       | 19        |            | 4        | 0.01                          | 0.78     | 0.07    | 0.16      | 0.44     | 20.1%                                        | 8.9%                                       | 0.00                                        | 0.29     | 0.05    | 0.06                       | 0.20     | 37.5%                                | 26.0%                                        |
| 12  |        |       | 24        |            | 4        | 0.01                          | 1.33     | 0.01    | 0.17      | 1.04     | 13.3%                                        | 1.1%                                       | 0.01                                        | 0.68     | 0.01    | 0.08                       | 0.55     | 53.1%                                | 43.4%                                        |
| 13  |        |       | 25        |            | 4        | 0.01                          | 1.44     | 0.01    | 0.26      | 1.08     | 18.1%                                        | 0.9%                                       | 0.01                                        | 0.80     | 0.01    | 0.13                       | 0.55     | 55.9%                                | 38.4%                                        |
| 14  |        |       | 26        |            | 4        | 0.01                          | 1.24     | 0.05    | 0.29      | 0.80     | 23.1%                                        | 3.8%                                       | 0.01                                        | 0.64     | 0.03    | 0.14                       | 0.40     | 52.1%                                | 32.3%                                        |
| 15  |        |       | 27        |            | 4        | 0.01                          | 0.97     | 0.09    | 0.22      | 0.57     | 22.8%                                        | 9.6%                                       | 0.00                                        | 0.45     | 0.07    | 0.10                       | 0.28     | 46.6%                                | 29.0%                                        |
| 16  |        |       | 129       |            | 1        | 0.00                          | 0.37     | 0.01    | 0.04      | 0.23     | 10.5%                                        | 3.3%                                       | 0.00                                        | 0.14     | 0.01    | 0.01                       | 0.10     | 39.1%                                | 26.2%                                        |
| 17  |        |       | 132       |            | 2        | 0.01                          | 0.65     | 0.05    | 0.09      | 0.44     | 14.4%                                        | 7.5%                                       | 0.00                                        | 0.23     | 0.03    | 0.04                       | 0.22     | 34.6%                                | 33.1%                                        |
| 18  |        |       | 133       |            | 2        | 0.00                          | 0.82     | 0.01    | 0.09      | 0.64     | 11.5%                                        | 1.3%                                       | 0.00                                        | 0.40     | 0.01    | 0.04                       | 0.29     | 48.8%                                | 35.8%                                        |
| 19  |        |       | 134       |            | 2        | 0.01                          | 0.48     | 0.04    | 0.11      | 0.26     | 23.1%                                        | 8.4%                                       | 0.00                                        | 0.21     | 0.03    | 0.05                       | 0.12     | 43.5%                                | 24.5%                                        |
| 20  |        |       | 136       |            | 2        | 0.00                          | 0.72     | 0.04    | 0.07      | 0.54     | 9.5%                                         | 6.2%                                       | 0.00                                        | 0.30     | 0.03    | 0.03                       | 0.25     | 41.6%                                | 34.4%                                        |
| 21  |        |       | 137       |            | 2        | 0.00                          | 0.83     | 0.01    | 0.13      | 0.61     | 15.1%                                        | 1.1%                                       | 0.00                                        | 0.42     | 0.00    | 0.05                       | 0.30     | 50.9%                                | 35.8%                                        |
| 22  |        |       | 143       |            | 4        | 0.01                          | 1.31     | 0.12    | 0.14      | 1.08     | 10.7%                                        | 9.4%                                       | 0.00                                        | 0.65     | 0.08    | 0.06                       | 0.60     | 49.9%                                | 46.1%                                        |
| 23  |        |       | 144       |            | 4        | 0.01                          | 1.37     | 0.01    | 0.19      | 1.06     | 14.0%                                        | 1.0%                                       | 0.01                                        | 0.73     | 0.01    | 0.09                       | 0.59     | 53.5%                                | 43.2%                                        |
| 24  |        |       | 145       |            | 4        | 0.01                          | 1.44     | 0.01    | 0.27      | 1.07     | 18.4%                                        | 0.7%                                       | 0.01                                        | 0.79     | 0.01    | 0.13                       | 0.56     | 55.1%                                | 38.7%                                        |
| 25  |        |       | 146       |            | 4        | 0.01                          | 0.86     | 0.09    | 0.19      | 0.59     | 21.9%                                        | 10.6%                                      | 0.01                                        | 0.43     | 0.05    | 0.09                       | 0.30     | 49.4%                                | 35.2%                                        |
| 26  |        |       | 147       |            | 4        | 0.02                          | 0.78     | 0.10    | 0.22      | 0.47     | 27.9%                                        | 13.0%                                      | 0.01                                        | 0.37     | 0.06    | 0.10                       | 0.24     | 47.6%                                | 30.6%                                        |
| 27  |        |       | 152       |            | 4        | 0.01                          | 1.33     | 0.05    | 0.16      | 1.02     | 11.9%                                        | 4.1%                                       | 0.01                                        | 0.68     | 0.03    | 0.08                       | 0.58     | 51.2%                                | 44.0%                                        |
| 28  |        |       | 153       |            | 4        | 0.01                          | 1.34     | 0.02    | 0.21      | 1.02     | 15.4%                                        | 1.6%                                       | 0.01                                        | 0.72     | 0.02    | 0.10                       | 0.54     | 54.1%                                | 40.7%                                        |
| 29  |        |       | 154       |            | 4        | 0.01                          | 1.45     | 0.01    | 0.28      | 1.05     | 19.4%                                        | 0.5%                                       | 0.01                                        | 0.79     | 0.00    | 0.14                       | 0.54     | 54.5%                                | 37.0%                                        |
| 30  |        |       | 155       |            | 4        | 0.02                          | 0.89     | 0.08    | 0.24      | 0.55     | 26.6%                                        | 9.5%                                       | 0.01                                        | 0.44     | 0.05    | 0.11                       | 0.29     | 49.9%                                | 32.9%                                        |
| 31  |        |       | 1         | 129        | 2        | 0.01                          | 0.55     | 0.03    | 0.06      | 0.42     | 11.2%                                        | 6.0%                                       | 0.00                                        | 0.25     | 0.02    | 0.02                       | 0.21     | 45.6%                                | 37.9%                                        |
| 32  |        |       | 4         | 134        | 4        | 0.02                          | 1.53     | 0.07    | 0.29      | 1.20     | 19.3%                                        | 4.6%                                       | 0.01                                        | 0.67     | 0.05    | 0.12                       | 0.60     | 49.3%                                | 39.5%                                        |
| 33  |        |       | 5         | 133        | 4        | 0.01                          | 1.93     | 0.03    | 0.26      | 1.53     | 13.4%                                        | 1.4%                                       | 0.01                                        | 0.91     | 0.02    | 0.11                       | 0.75     | 47.3%                                | 38.8%                                        |
| 34  |        |       | 6         | 132        | 4        | 0.01                          | 1.50     | 0.10    | 0.24      | 1.05     | 16.0%                                        | 6.7%                                       | 0.01                                        | 0.60     | 0.08    | 0.08                       | 0.49     | 39.8%                                | 32.4%                                        |
| 35  |        |       | 8         | 137        | 4        | 0.01                          | 1.86     | 0.02    | 0.31      | 1.50     | 16.5%                                        | 1.3%                                       | 0.01                                        | 0.86     | 0.01    | 0.13                       | 0.78     | 46.2%                                | 41.9%                                        |
| 36  |        |       | 9         | 136        | 4        | 0.01                          | 1.76     | 0.08    | 0.26      | 1.37     | 14.7%                                        | 4.7%                                       | 0.01                                        | 0.81     | 0.06    | 0.10                       | 0.64     | 45.8%                                | 36.5%                                        |
| 37  |        |       | 15        | 155        | 8        | 0.04                          | 2.59     | 0.11    | 0.47      | 2.23     | 18.1%                                        | 4.1%                                       | 0.02                                        | 1.25     | 0.06    | 0.23                       | 2.25     | 48.2%                                | 48.2%                                        |
| 38  |        |       | 16        | 145        | 8        | 0.05                          | 3.79     | 0.03    | 0.66      | 2.99     | 17.5%                                        | 0.8%                                       | 0.03                                        | 1.94     | 0.03    | 0.34                       | 1.73     | 51.1%                                | 45.6%                                        |
| 39  |        |       | 17        | 144        | 8        | 0.04                          | 3.69     | 0.04    | 0.72      | 2.94     | 19.4%                                        | 1.0%                                       | 0.03                                        | 1.92     | 0.03    | 0.36                       | 1.72     | 51.9%                                | 46.5%                                        |
| 40  |        |       | 18        | 143        | 8        | 0.02                          | 3.13     | 0.30    | 0.56      | 2.54     | 17.8%                                        | 9.6%                                       | 0.01                                        | 1.55     | 0.21    | 0.24                       | 1.39     | 49.6%                                | 44.4%                                        |
| 41  |        |       | 19        | 154        | 8        | 0.03                          | 2.50     | 0.09    | 0.44      | 1.66     | 17.7%                                        | 3.7%                                       | 0.02                                        | 1.09     | 0.07    | 0.21                       | 0.81     | 43.5%                                | 32.3%                                        |
| 42  |        |       | 24        | 146        | 8        | 0.03                          | 2.37     | 0.13    | 0.34      | 2.02     | 14.1%                                        | 5.3%                                       | 0.02                                        | 1.17     | 0.08    | 0.15                       | 1.11     | 49.5%                                | 46.9%                                        |
| 43  |        |       | 25        | 153        | 8        | 0.05                          | 3.66     | 0.06    | 0.66      | 2.90     | 18.0%                                        | 1.4%                                       | 0.03                                        | 1.87     | 0.04    | 0.33                       | 1.65     | 51.0%                                | 45.2%                                        |
| 44  |        |       | 26        | 152        | 8        | 0.02                          | 3.33     | 0.16    | 0.63      | 2.63     | 18.8%                                        | 4.7%                                       | 0.02                                        | 1.67     | 0.09    | 0.31                       | 1.50     | 50.1%                                | 45.1%                                        |
| 45  |        |       | 27        | 147        | 8        | 0.03                          | 1.70     | 0.19    | 0.35      | 1.05     | 20.3%                                        | 11.3%                                      | 0.01                                        | 0.59     | 0.14    | 0.13                       | 0.39     | 34.8%                                | 23.1%                                        |

- K-patch Mid CH

|     |        |       |           |           |          | max ratio out of all beams |          |         |           |          |                                            |                                           |                                             |          |         |           |          |                                      |                                             | max ratio out of all beams |  |  |  |
|-----|--------|-------|-----------|-----------|----------|----------------------------|----------|---------|-----------|----------|--------------------------------------------|-------------------------------------------|---------------------------------------------|----------|---------|-----------|----------|--------------------------------------|---------------------------------------------|----------------------------|--|--|--|
| No. | Module | Type  | Beam ID_1 | Bema ID_2 | Feed no. | 4cm2 PD(mW/cm2)            |          |         |           |          | 24.4%                                      | 13.8%                                     | 4cm2 PD(mW/cm2) at 10mm evaluation distance |          |         |           |          | 56.0%                                | 50.6%                                       |                            |  |  |  |
|     |        |       |           |           |          | S4(Right)                  | S3(Left) | S5(Top) | S1(Front) | S2(Rear) | ratio<br>(Font 2mm/(worst-<br>surface 2mm) | ratio<br>(Top 2mm/(worst-<br>surface 2mm) | S4(Right)                                   | S3(Left) | S5(Top) | S1(Front) | S2(Rear) | ratio<br>worst-surface<br>(10mm/2mm) | ratio<br>(back 10mm/(worst-<br>surface 2mm) |                            |  |  |  |
| 1   | K      | Patch | 1         |           | 1        | 0.00                       | 0.33     | 0.01    | 0.04      | 0.24     | 12.3%                                      | 2.9%                                      | 0.00                                        | 0.14     | 0.01    | 0.02      | 0.10     | 41.4%                                | 29.2%                                       |                            |  |  |  |
| 2   |        |       | 4         | 2         | 0.01     | 0.65                       | 0.01     | 0.08    | 0.54      | 13.0%    | 1.3%                                       | 0.00                                      | 0.27                                        | 0.01     | 0.03    | 0.25      | 42.2%    | 38.3%                                |                                             |                            |  |  |  |
| 3   |        |       | 5         | 2         | 0.00     | 0.58                       | 0.01     | 0.10    | 0.41      | 17.6%    | 1.6%                                       | 0.00                                      | 0.29                                        | 0.01     | 0.04    | 0.18      | 50.6%    | 30.6%                                |                                             |                            |  |  |  |
| 4   |        |       | 6         | 2         | 0.00     | 0.52                       | 0.02     | 0.10    | 0.29      | 19.0%    | 4.6%                                       | 0.00                                      | 0.21                                        | 0.02     | 0.04    | 0.12      | 40.6%    | 23.5%                                |                                             |                            |  |  |  |
| 5   |        |       | 8         | 2         | 0.00     | 0.54                       | 0.00     | 0.07    | 0.42      | 13.8%    | 0.5%                                       | 0.00                                      | 0.25                                        | 0.00     | 0.03    | 0.18      | 46.7%    | 34.1%                                |                                             |                            |  |  |  |
| 6   |        |       | 9         | 2         | 0.00     | 0.58                       | 0.02     | 0.11    | 0.38      | 19.3%    | 3.0%                                       | 0.00                                      | 0.28                                        | 0.01     | 0.05    | 0.16      | 48.8%    | 27.9%                                |                                             |                            |  |  |  |
| 7   |        |       | 15        | 4         | 0.01     | 1.16                       | 0.02     | 0.14    | 1.00      | 12.3%    | 1.3%                                       | 0.01                                      | 0.58                                        | 0.01     | 0.07    | 0.55      | 50.4%    | 47.0%                                |                                             |                            |  |  |  |
| 8   |        |       | 16        | 4         | 0.01     | 1.34                       | 0.02     | 0.20    | 1.06      | 14.8%    | 1.3%                                       | 0.01                                      | 0.71                                        | 0.01     | 0.10    | 0.56      | 53.0%    | 41.5%                                |                                             |                            |  |  |  |
| 9   |        |       | 17        | 4         | 0.01     | 1.32                       | 0.01     | 0.27    | 0.96      | 20.5%    | 0.6%                                       | 0.01                                      | 0.74                                        | 0.01     | 0.14    | 0.50      | 56.0%    | 37.6%                                |                                             |                            |  |  |  |
| 10  |        |       | 18        | 4         | 0.01     | 1.07                       | 0.08     | 0.25    | 0.67      | 23.0%    | 7.4%                                       | 0.01                                      | 0.53                                        | 0.05     | 0.12    | 0.32      | 49.9%    | 29.8%                                |                                             |                            |  |  |  |
| 11  |        |       | 19        | 4         | 0.01     | 0.74                       | 0.07     | 0.14    | 0.47      | 19.0%    | 9.5%                                       | 0.01                                      | 0.29                                        | 0.05     | 0.07    | 0.19      | 39.0%    | 26.2%                                |                                             |                            |  |  |  |
| 12  |        |       | 24        | 4         | 0.01     | 1.20                       | 0.01     | 0.16    | 1.02      | 13.6%    | 0.8%                                       | 0.01                                      | 0.61                                        | 0.01     | 0.08    | 0.55      | 51.4%    | 46.1%                                |                                             |                            |  |  |  |
| 13  |        |       | 25        | 4         | 0.01     | 1.33                       | 0.01     | 0.23    | 1.03      | 17.4%    | 1.0%                                       | 0.01                                      | 0.74                                        | 0.01     | 0.12    | 0.53      | 55.7%    | 39.8%                                |                                             |                            |  |  |  |
| 14  |        |       | 26        | 4         | 0.01     | 1.22                       | 0.05     | 0.27    | 0.83      | 21.8%    | 4.4%                                       | 0.01                                      | 0.65                                        | 0.02     | 0.13    | 0.41      | 53.6%    | 33.8%                                |                                             |                            |  |  |  |
| 15  |        |       | 27        | 4         | 0.01     | 0.95                       | 0.09     | 0.21    | 0.58      | 22.3%    | 9.4%                                       | 0.00                                      | 0.45                                        | 0.06     | 0.10    | 0.27      | 47.0%    | 28.6%                                |                                             |                            |  |  |  |
| 16  |        |       | 129       | 1         | 0.00     | 0.37                       | 0.01     | 0.04    | 0.23      | 11.6%    | 2.5%                                       | 0.00                                      | 0.15                                        | 0.01     | 0.02    | 0.10      | 40.7%    | 26.5%                                |                                             |                            |  |  |  |
| 17  |        |       | 132       | 2         | 0.01     | 0.56                       | 0.04     | 0.08    | 0.40      | 13.7%    | 7.3%                                       | 0.00                                      | 0.19                                        | 0.03     | 0.03    | 0.19      | 34.0%    | 33.6%                                |                                             |                            |  |  |  |
| 18  |        |       | 133       | 2         | 0.00     | 0.80                       | 0.01     | 0.09    | 0.63      | 11.2%    | 1.4%                                       | 0.00                                      | 0.39                                        | 0.01     | 0.04    | 0.30      | 48.7%    | 37.1%                                |                                             |                            |  |  |  |
| 19  |        |       | 134       | 2         | 0.01     | 0.45                       | 0.04     | 0.10    | 0.26      | 21.3%    | 8.2%                                       | 0.01                                      | 0.20                                        | 0.02     | 0.04    | 0.12      | 43.5%    | 25.8%                                |                                             |                            |  |  |  |
| 20  |        |       | 136       | 2         | 0.00     | 0.66                       | 0.04     | 0.06    | 0.54      | 8.5%     | 5.8%                                       | 0.00                                      | 0.28                                        | 0.03     | 0.02    | 0.24      | 42.5%    | 36.2%                                |                                             |                            |  |  |  |
| 21  |        |       | 137       | 2         | 0.00     | 0.79                       | 0.01     | 0.12    | 0.57      | 15.1%    | 1.2%                                       | 0.00                                      | 0.40                                        | 0.00     | 0.05    | 0.29      | 50.7%    | 36.5%                                |                                             |                            |  |  |  |
| 22  |        |       | 143       | 4         | 0.01     | 1.24                       | 0.11     | 0.12    | 1.06      | 9.9%     | 8.8%                                       | 0.00                                      | 0.63                                        | 0.07     | 0.05    | 0.60      | 50.8%    | 48.2%                                |                                             |                            |  |  |  |
| 23  |        |       | 144       | 4         | 0.01     | 1.27                       | 0.01     | 0.15    | 1.02      | 12.1%    | 1.0%                                       | 0.01                                      | 0.69                                        | 0.01     | 0.07    | 0.57      | 53.9%    | 45.0%                                |                                             |                            |  |  |  |
| 24  |        |       | 145       | 4         | 0.01     | 1.39                       | 0.01     | 0.24    | 1.05      | 16.9%    | 0.7%                                       | 0.01                                      | 0.75                                        | 0.01     | 0.12    | 0.57      | 53.8%    | 40.6%                                |                                             |                            |  |  |  |
| 25  |        |       | 146       | 4         | 0.02     | 0.76                       | 0.09     | 0.15    | 0.52      | 19.6%    | 11.6%                                      | 0.01                                      | 0.39                                        | 0.05     | 0.07    | 0.26      | 50.8%    | 34.3%                                |                                             |                            |  |  |  |
| 26  |        |       | 147       | 4         | 0.02     | 0.67                       | 0.09     | 0.16    | 0.45      | 24.4%    | 13.8%                                      | 0.01                                      | 0.32                                        | 0.05     | 0.08    | 0.21      | 48.4%    | 31.7%                                |                                             |                            |  |  |  |
| 27  |        |       | 152       | 4         | 0.01     | 1.27                       | 0.05     | 0.13    | 1.05      | 10.2%    | 3.6%                                       | 0.01                                      | 0.67                                        | 0.02     | 0.06    | 0.59      | 52.7%    | 46.8%                                |                                             |                            |  |  |  |
| 28  |        |       | 153       | 4         | 0.01     | 1.27                       | 0.02     | 0.18    | 0.99      | 14.0%    | 1.5%                                       | 0.01                                      | 0.68                                        | 0.01     | 0.09    | 0.54      | 53.9%    | 42.5%                                |                                             |                            |  |  |  |
| 29  |        |       | 154       | 4         | 0.01     | 1.41                       | 0.01     | 0.26    | 1.02      | 18.5%    | 0.4%                                       | 0.01                                      | 0.74                                        | 0.00     | 0.13    | 0.54      | 52.6%    | 38.4%                                |                                             |                            |  |  |  |
| 30  |        |       | 155       | 4         | 0.02     | 0.77                       | 0.08     | 0.18    | 0.51      | 23.5%    | 10.4%                                      | 0.01                                      | 0.40                                        | 0.05     | 0.09    | 0.25      | 51.2%    | 32.4%                                |                                             |                            |  |  |  |
| 31  |        |       | 1         | 129       | 2        | 0.01                       | 0.56     | 0.03    | 0.07      | 0.40     | 11.9%                                      | 5.1%                                      | 0.00                                        | 0.24     | 0.02    | 0.02      | 0.20     | 42.9%                                | 34.8%                                       |                            |  |  |  |
| 32  |        |       | 4         | 134       | 4        | 0.02                       | 1.41     | 0.06    | 0.27      | 1.10     | 19.2%                                      | 4.2%                                      | 0.01                                        | 0.63     | 0.04    | 0.12      | 0.55     | 44.8%                                | 39.2%                                       |                            |  |  |  |
| 33  |        |       | 5         | 133       | 4        | 0.01                       | 1.87     | 0.02    | 0.25      | 1.47     | 13.2%                                      | 1.3%                                      | 0.01                                        | 0.89     | 0.02    | 0.09      | 0.73     | 47.7%                                | 39.1%                                       |                            |  |  |  |
| 34  |        |       | 6         | 132       | 4        | 0.02                       | 1.40     | 0.08    | 0.20      | 0.96     | 14.2%                                      | 5.9%                                      | 0.01                                        | 0.55     | 0.06    | 0.07      | 0.45     | 39.1%                                | 32.2%                                       |                            |  |  |  |
| 35  |        |       | 8         | 137       | 4        | 0.01                       | 1.84     | 0.02    | 0.28      | 1.45     | 15.3%                                      | 1.0%                                      | 0.01                                        | 0.85     | 0.01    | 0.12      | 0.76     | 45.9%                                | 41.0%                                       |                            |  |  |  |
| 36  |        |       | 9         | 136       | 4        | 0.01                       | 1.66     | 0.07    | 0.22      | 1.29     | 13.4%                                      | 3.9%                                      | 0.01                                        | 0.76     | 0.05    | 0.09      | 0.62     | 46.1%                                | 37.6%                                       |                            |  |  |  |
| 37  |        |       | 15        | 155       | 8        | 0.04                       | 2.39     | 0.10    | 0.39      | 2.10     | 16.4%                                      | 4.0%                                      | 0.02                                        | 1.17     | 0.05    | 0.19      | 1.21     | 50.6%                                | 50.6%                                       |                            |  |  |  |
| 38  |        |       | 16        | 145       | 8        | 0.04                       | 3.58     | 0.03    | 0.59      | 2.81     | 16.4%                                      | 0.8%                                      | 0.03                                        | 1.83     | 0.02    | 0.31      | 1.63     | 51.0%                                | 45.5%                                       |                            |  |  |  |
| 39  |        |       | 17        | 144       | 8        | 0.03                       | 3.36     | 0.03    | 0.58      | 2.68     | 17.3%                                      | 1.0%                                      | 0.02                                        | 1.76     | 0.02    | 0.30      | 1.55     | 52.2%                                | 46.2%                                       |                            |  |  |  |
| 40  |        |       | 18        | 143       | 8        | 0.02                       | 3.02     | 0.27    | 0.48      | 2.43     | 16.1%                                      | 9.0%                                      | 0.01                                        | 1.49     | 0.18    | 0.23      | 1.33     | 49.2%                                | 44.0%                                       |                            |  |  |  |
| 41  |        |       | 19        | 154       | 8        | 0.03                       | 2.31     | 0.08    | 0.43      | 1.67     | 18.8%                                      | 3.6%                                      | 0.02                                        | 1.03     | 0.06    | 0.21      | 0.81     | 44.7%                                | 35.0%                                       |                            |  |  |  |
| 42  |        |       | 24        | 146       | 8        | 0.02                       | 2.17     | 0.10    | 0.32      | 1.89     | 14.8%                                      | 4.6%                                      | 0.02                                        | 1.10     | 0.06    | 0.14      | 1.09     | 50.7%                                | 50.3%                                       |                            |  |  |  |
| 43  |        |       | 25        | 153       | 8        | 0.04                       | 3.44     | 0.05    | 0.56      | 2.72     | 16.3%                                      | 1.5%                                      | 0.03                                        | 1.75     | 0.04    | 0.29      | 1.55     | 50.9%                                | 45.1%                                       |                            |  |  |  |
| 44  |        |       | 26        | 152       | 8        | 0.03                       | 3.14     | 0.14    | 0.53      | 2.49     | 16.8%                                      | 4.5%                                      | 0.02                                        | 1.60     | 0.07    | 0.27      | 1.40     | 50.8%                                | 44.6%                                       |                            |  |  |  |
| 45  |        |       | 27        | 147       | 8        | 0.03                       | 1.65     | 0.15    | 0.31      | 1.10     | 19.0%                                      | 9.3%                                      | 0.01                                        | 0.64     | 0.11    | 0.13      | 0.41     | 38.6%                                | 24.9%                                       |                            |  |  |  |

- K-patch High CH

|     |        |       |           |           |          | max ratio out of all beams |          |         |           |          |                                             |                                            |                                             |          |         |           |          | max ratio out of all beams           |                                              |  |  |
|-----|--------|-------|-----------|-----------|----------|----------------------------|----------|---------|-----------|----------|---------------------------------------------|--------------------------------------------|---------------------------------------------|----------|---------|-----------|----------|--------------------------------------|----------------------------------------------|--|--|
| No. | Module | Type  | Beam ID_1 | Bema ID_2 | Feed no. | 4cm2 PD(mW/cm2)            |          |         |           |          | 23.4%                                       | 12.0%                                      | 4cm2 PD(mW/cm2) at 10mm evaluation distance |          |         |           |          | 56.4%                                | 50.9%                                        |  |  |
|     |        |       |           |           |          | S4(Right)                  | S3(Left) | S5(Top) | S1(Front) | S2(Rear) | ratio<br>(Fomr 2mm)/(worst-<br>surface 2mm) | ratio<br>(Top 2mm)/(worst-<br>surface 2mm) | S4(Right)                                   | S3(Left) | S5(Top) | S1(Front) | S2(Rear) | ratio<br>worst-surface<br>(10mm/2mm) | ratio<br>(back 10mm)/(worst-<br>surface 2mm) |  |  |
| 1   | K      | Patch | 1         |           | 1        | 0.00                       | 0.30     | 0.01    | 0.04      | 0.22     | 12.4%                                       | 3.1%                                       | 0.00                                        | 0.13     | 0.01    | 0.01      | 0.09     | 42.6%                                | 28.9%                                        |  |  |
| 2   |        |       | 4         | 2         | 0.01     | 0.59                       | 0.01     | 0.07    | 0.49      | 11.9%    | 1.7%                                        | 0.00                                       | 0.25                                        | 0.01     | 0.03    | 0.23      | 42.5%    | 38.9%                                |                                              |  |  |
| 3   |        |       | 5         | 2         | 0.00     | 0.57                       | 0.01     | 0.10    | 0.40      | 17.9%    | 1.8%                                        | 0.00                                       | 0.29                                        | 0.01     | 0.04    | 0.18      | 50.3%    | 31.1%                                |                                              |  |  |
| 4   |        |       | 6         | 2         | 0.00     | 0.51                       | 0.02     | 0.09    | 0.30      | 18.1%    | 4.2%                                        | 0.00                                       | 0.21                                        | 0.02     | 0.04    | 0.13      | 40.5%    | 26.2%                                |                                              |  |  |
| 5   |        |       | 8         | 2         | 0.01     | 0.51                       | 0.00     | 0.08    | 0.40      | 15.0%    | 0.7%                                        | 0.00                                       | 0.23                                        | 0.00     | 0.03    | 0.18      | 45.5%    | 34.4%                                |                                              |  |  |
| 6   |        |       | 9         | 2         | 0.00     | 0.58                       | 0.02     | 0.11    | 0.38      | 18.6%    | 3.0%                                        | 0.00                                       | 0.28                                        | 0.01     | 0.04    | 0.17      | 48.4%    | 29.3%                                |                                              |  |  |
| 7   |        |       | 15        | 4         | 0.01     | 1.09                       | 0.01     | 0.13    | 0.94      | 11.8%    | 1.2%                                        | 0.01                                       | 0.54                                        | 0.01     | 0.06    | 0.52      | 49.5%    | 48.1%                                |                                              |  |  |
| 8   |        |       | 16        | 4         | 0.01     | 1.27                       | 0.02     | 0.20    | 0.97      | 15.4%    | 1.5%                                        | 0.01                                       | 0.66                                        | 0.01     | 0.10    | 0.52      | 52.4%    | 40.7%                                |                                              |  |  |
| 9   |        |       | 17        | 4         | 0.01     | 1.27                       | 0.01     | 0.25    | 0.94      | 19.7%    | 0.9%                                        | 0.01                                       | 0.72                                        | 0.01     | 0.13    | 0.49      | 56.4%    | 38.2%                                |                                              |  |  |
| 10  |        |       | 18        | 4         | 0.01     | 1.06                       | 0.08     | 0.23    | 0.68      | 21.5%    | 7.9%                                        | 0.01                                       | 0.52                                        | 0.05     | 0.11    | 0.32      | 49.3%    | 30.2%                                |                                              |  |  |
| 11  |        |       | 19        | 4         | 0.01     | 0.67                       | 0.07     | 0.12    | 0.47      | 18.0%    | 10.0%                                       | 0.00                                       | 0.26                                        | 0.05     | 0.06    | 0.19      | 38.8%    | 27.7%                                |                                              |  |  |
| 12  |        |       | 24        | 4         | 0.01     | 1.11                       | 0.01     | 0.15    | 0.93      | 13.7%    | 0.8%                                        | 0.01                                       | 0.56                                        | 0.01     | 0.08    | 0.53      | 50.8%    | 47.6%                                |                                              |  |  |
| 13  |        |       | 25        | 4         | 0.01     | 1.26                       | 0.01     | 0.22    | 0.97      | 17.2%    | 1.1%                                        | 0.01                                       | 0.70                                        | 0.01     | 0.11    | 0.51      | 55.4%    | 40.2%                                |                                              |  |  |
| 14  |        |       | 26        | 4         | 0.01     | 1.21                       | 0.06     | 0.26    | 0.82      | 21.2%    | 4.7%                                        | 0.01                                       | 0.65                                        | 0.02     | 0.13    | 0.41      | 53.7%    | 33.8%                                |                                              |  |  |
| 15  |        |       | 27        | 4         | 0.01     | 0.90                       | 0.09     | 0.19    | 0.57      | 20.8%    | 9.7%                                        | 0.00                                       | 0.41                                        | 0.06     | 0.09    | 0.27      | 45.6%    | 29.6%                                |                                              |  |  |
| 16  |        |       | 129       | 1         | 0.00     | 0.36                       | 0.01     | 0.05    | 0.22      | 12.8%    | 2.3%                                        | 0.00                                       | 0.15                                        | 0.01     | 0.02    | 0.10      | 41.5%    | 26.4%                                |                                              |  |  |
| 17  |        |       | 132       | 2         | 0.01     | 0.50                       | 0.03     | 0.06    | 0.37      | 12.6%    | 6.8%                                        | 0.00                                       | 0.17                                        | 0.02     | 0.03    | 0.18      | 35.1%    | 35.1%                                |                                              |  |  |
| 18  |        |       | 133       | 2         | 0.00     | 0.79                       | 0.01     | 0.09    | 0.60      | 11.5%    | 1.2%                                        | 0.00                                       | 0.38                                        | 0.01     | 0.04    | 0.29      | 48.2%    | 37.0%                                |                                              |  |  |
| 19  |        |       | 134       | 2         | 0.01     | 0.41                       | 0.03     | 0.08    | 0.25      | 19.7%    | 7.7%                                        | 0.01                                       | 0.18                                        | 0.02     | 0.04    | 0.11      | 43.1%    | 26.6%                                |                                              |  |  |
| 20  |        |       | 136       | 2         | 0.01     | 0.61                       | 0.03     | 0.05    | 0.51      | 7.9%     | 5.4%                                        | 0.00                                       | 0.26                                        | 0.02     | 0.02    | 0.23      | 42.7%    | 37.5%                                |                                              |  |  |
| 21  |        |       | 137       | 2         | 0.00     | 0.78                       | 0.01     | 0.12    | 0.56      | 15.6%    | 0.9%                                        | 0.00                                       | 0.39                                        | 0.00     | 0.05    | 0.28      | 50.3%    | 36.3%                                |                                              |  |  |
| 22  |        |       | 143       | 4         | 0.01     | 1.18                       | 0.10     | 0.11    | 0.98      | 9.6%     | 8.2%                                        | 0.01                                       | 0.60                                        | 0.06     | 0.05    | 0.57      | 50.9%    | 48.0%                                |                                              |  |  |
| 23  |        |       | 144       | 4         | 0.01     | 1.18                       | 0.02     | 0.14    | 0.94      | 11.9%    | 1.4%                                        | 0.01                                       | 0.63                                        | 0.01     | 0.07    | 0.53      | 53.7%    | 44.8%                                |                                              |  |  |
| 24  |        |       | 145       | 4         | 0.01     | 1.33                       | 0.01     | 0.23    | 0.98      | 17.0%    | 0.7%                                        | 0.01                                       | 0.70                                        | 0.01     | 0.12    | 0.54      | 52.6%    | 40.4%                                |                                              |  |  |
| 25  |        |       | 146       | 4         | 0.01     | 0.75                       | 0.07     | 0.14    | 0.49      | 19.1%    | 9.2%                                        | 0.01                                       | 0.37                                        | 0.04     | 0.07    | 0.24      | 49.0%    | 32.1%                                |                                              |  |  |
| 26  |        |       | 147       | 4         | 0.02     | 0.61                       | 0.07     | 0.14    | 0.42      | 23.4%    | 12.0%                                       | 0.01                                       | 0.28                                        | 0.05     | 0.07    | 0.20      | 46.2%    | 32.3%                                |                                              |  |  |
| 27  |        |       | 152       | 4         | 0.01     | 1.20                       | 0.04     | 0.13    | 0.98      | 10.5%    | 3.2%                                        | 0.01                                       | 0.64                                        | 0.02     | 0.06    | 0.56      | 53.3%    | 47.0%                                |                                              |  |  |
| 28  |        |       | 153       | 4         | 0.01     | 1.17                       | 0.02     | 0.16    | 0.90      | 13.7%    | 1.9%                                        | 0.01                                       | 0.62                                        | 0.02     | 0.08    | 0.49      | 52.7%    | 42.2%                                |                                              |  |  |
| 29  |        |       | 154       | 4         | 0.01     | 1.35                       | 0.01     | 0.24    | 0.96      | 18.1%    | 0.4%                                        | 0.01                                       | 0.70                                        | 0.00     | 0.13    | 0.52      | 51.7%    | 38.7%                                |                                              |  |  |
| 30  |        |       | 155       | 4         | 0.02     | 0.71                       | 0.07     | 0.16    | 0.48      | 23.0%    | 0.1%                                        | 0.01                                       | 0.35                                        | 0.04     | 0.08    | 0.23      | 49.4%    | 32.4%                                |                                              |  |  |
| 31  |        |       | 129       | 2         | 0.00     | 0.53                       | 0.02     | 0.06    | 0.37      | 11.5%    | 4.5%                                        | 0.00                                       | 0.23                                        | 0.02     | 0.02    | 0.19      | 43.7%    | 35.7%                                |                                              |  |  |
| 32  |        |       | 4         | 134       | 4        | 0.01                       | 1.29     | 0.05    | 0.22      | 0.99     | 17.3%                                       | 3.6%                                       | 0.01                                        | 0.57     | 0.03    | 0.10      | 0.51     | 44.5%                                | 39.5%                                        |  |  |
| 33  |        |       | 5         | 133       | 4        | 0.01                       | 1.77     | 0.02    | 0.25      | 13.8     | 14.3%                                       | 1.3%                                       | 0.01                                        | 0.84     | 0.02    | 0.10      | 0.69     | 47.7%                                | 39.0%                                        |  |  |
| 34  |        |       | 6         | 132       | 4        | 0.02                       | 1.28     | 0.07    | 0.19      | 0.85     | 14.7%                                       | 5.7%                                       | 0.01                                        | 0.49     | 0.06    | 0.07      | 0.42     | 38.2%                                | 32.8%                                        |  |  |
| 35  |        |       | 8         | 137       | 4        | 0.02                       | 1.76     | 0.01    | 0.29      | 1.38     | 16.7%                                       | 0.8%                                       | 0.01                                        | 0.80     | 0.01    | 0.13      | 0.71     | 45.3%                                | 40.2%                                        |  |  |
| 36  |        |       | 9         | 136       | 4        | 0.01                       | 1.53     | 0.06    | 0.21      | 1.18     | 14.1%                                       | 3.9%                                       | 0.02                                        | 0.70     | 0.05    | 0.09      | 0.58     | 46.0%                                | 38.2%                                        |  |  |
| 37  |        |       | 15        | 155       | 8        | 0.03                       | 2.22     | 0.08    | 0.32      | 1.18     | 14.5%                                       | 3.4%                                       | 0.07                                        | 1.02     | 0.03    | 0.16      | 1.12     | 50.2%                                | 45.0%                                        |  |  |
| 38  |        |       | 16        | 145       | 8        | 0.04                       | 3.31     | 0.04    | 0.60      | 2.58     | 18.2%                                       | 1.1%                                       | 0.03                                        | 1.67     | 0.02    | 0.32      | 1.49     | 50.5%                                | 45.0%                                        |  |  |
| 39  |        |       | 17        | 144       | 8        | 0.03                       | 3.08     | 0.04    | 0.56      | 2.45     | 18.1%                                       | 1.4%                                       | 0.02                                        | 1.62     | 0.03    | 0.29      | 1.41     | 52.5%                                | 45.7%                                        |  |  |
| 40  |        |       | 18        | 143       | 8        | 0.02                       | 2.86     | 0.25    | 0.47      | 2.23     | 16.4%                                       | 8.8%                                       | 0.02                                        | 1.40     | 0.15    | 0.22      | 1.25     | 49.0%                                | 43.7%                                        |  |  |
| 41  |        |       | 19        | 154       | 8        | 0.02                       | 2.11     | 0.08    | 0.39      | 1.58     | 18.3%                                       | 3.8%                                       | 0.01                                        | 0.98     | 0.06    | 0.20      | 0.79     | 46.2%                                | 37.6%                                        |  |  |
| 42  |        |       | 24        | 146       | 8        | 0.02                       | 2.02     | 0.06    | 0.33      | 1.74     | 16.2%                                       | 4.0%                                       | 0.02                                        | 1.02     | 0.06    | 0.15      | 1.03     | 50.9%                                | 50.9%                                        |  |  |
| 43  |        |       | 25        | 153       | 8        | 0.04                       | 3.16     | 0.06    | 0.54      | 2.50     | 17.1%                                       | 1.8%                                       | 0.01                                        | 1.61     | 0.05    | 0.29      | 1.42     | 44.8%                                | 44.8%                                        |  |  |
| 44  |        |       | 26        | 152       | 8        | 0.03                       | 2.84     | 0.13    | 0.42      | 2.30     | 17.5%                                       | 4.5%                                       | 0.02                                        | 1.50     | 0.06    | 0.26      | 1.31     | 51.0%                                | 44.5%                                        |  |  |
| 45  |        |       | 27        | 147       | 8        | 0.03                       | 1.52     | 0.11    | 0.29      | 1.01     | 19.0%                                       | 7.4%                                       | 0.02                                        | 0.60     | 0.09    | 0.12      | 0.38     | 39.3%                                | 25.1%                                        |  |  |

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

## - K-patch Low CH

| No. | Module | Type  | Beam ID_1 | Bema ID_2 | Feed no. | 4cm2 PD(mW/cm2) |          |         |           |          | max ratio out of all beams                  |                                                     | 4cm2 PD(mW/cm2) at 10mm evaluation distance |          |         |           |          | max ratio out of all beams           |                                                       |
|-----|--------|-------|-----------|-----------|----------|-----------------|----------|---------|-----------|----------|---------------------------------------------|-----------------------------------------------------|---------------------------------------------|----------|---------|-----------|----------|--------------------------------------|-------------------------------------------------------|
|     |        |       |           |           |          | S4(Right)       | S3(Left) | S5(Top) | S1(Front) | S2(Rear) | ratio<br>(Font 2mm)/(worst-<br>surface 2mm) | 15.5%<br>ratio<br>(Top 2mm)/(worst-<br>surface 2mm) | S4(Right)                                   | S3(Left) | S5(Top) | S1(Front) | S2(Rear) | ratio<br>worst-surface<br>(10mm/2mm) | 39.4%<br>ratio<br>(back 10mm)/(worst-<br>surface 2mm) |
|     |        |       |           |           |          |                 |          |         |           |          |                                             |                                                     |                                             |          |         |           |          |                                      |                                                       |
| 1   | K      | Patch | 1         |           | 1        | 0.00            | 0.33     | 0.02    | 0.06      | 0.19     | 19.0%                                       | 6.3%                                                | 0.00                                        | 0.14     | 0.01    | 0.02      | 0.07     | 43.4%                                | 20.7%                                                 |
| 2   |        |       | 5         |           | 2        | 0.01            | 0.61     | 0.05    | 0.10      | 0.29     | 16.9%                                       | 7.7%                                                | 0.01                                        | 0.22     | 0.03    | 0.04      | 0.11     | 36.3%                                | 18.9%                                                 |
| 3   |        |       | 6         |           | 2        | 0.00            | 0.60     | 0.02    | 0.13      | 0.42     | 22.1%                                       | 3.0%                                                | 0.00                                        | 0.33     | 0.01    | 0.06      | 0.20     | 55.5%                                | 33.5%                                                 |
| 4   |        |       | 7         |           | 2        | 0.01            | 0.61     | 0.05    | 0.10      | 0.29     | 16.9%                                       | 7.7%                                                | 0.01                                        | 0.22     | 0.03    | 0.04      | 0.11     | 36.3%                                | 18.9%                                                 |
| 5   |        |       | 10        |           | 2        | 0.01            | 0.52     | 0.03    | 0.13      | 0.31     | 24.8%                                       | 6.6%                                                | 0.01                                        | 0.27     | 0.02    | 0.06      | 0.14     | 52.0%                                | 26.6%                                                 |
| 6   |        |       | 11        |           | 2        | 0.00            | 0.67     | 0.04    | 0.13      | 0.38     | 19.0%                                       | 6.1%                                                | 0.00                                        | 0.30     | 0.03    | 0.05      | 0.16     | 44.8%                                | 23.6%                                                 |
| 7   |        |       | 17        |           | 4        | 0.01            | 1.23     | 0.17    | 0.22      | 0.84     | 13.9%                                       | 17.6%                                               | 0.01                                        | 0.46     | 0.01    | 0.09      | 0.41     | 37.6%                                | 33.0%                                                 |
| 8   |        |       | 18        |           | 4        | 0.01            | 1.08     | 0.02    | 0.27      | 0.66     | 24.9%                                       | 2.1%                                                | 0.01                                        | 0.61     | 0.01    | 0.12      | 0.34     | 56.1%                                | 31.0%                                                 |
| 9   |        |       | 19        |           | 4        | 0.01            | 1.23     | 0.04    | 0.28      | 0.79     | 22.7%                                       | 3.3%                                                | 0.00                                        | 0.67     | 0.03    | 0.14      | 0.39     | 54.6%                                | 31.8%                                                 |
| 10  |        |       | 20        |           | 4        | 0.01            | 1.44     | 0.17    | 0.31      | 0.97     | 21.6%                                       | 11.9%                                               | 0.01                                        | 0.67     | 0.13    | 0.15      | 0.50     | 46.6%                                | 34.7%                                                 |
| 11  |        |       | 21        |           | 4        | 0.01            | 1.08     | 0.17    | 0.21      | 0.73     | 19.2%                                       | 15.5%                                               | 0.01                                        | 0.34     | 0.12    | 0.09      | 0.31     | 31.9%                                | 28.5%                                                 |
| 12  |        |       | 26        |           | 4        | 0.01            | 1.10     | 0.06    | 0.23      | 0.57     | 20.5%                                       | 5.5%                                                | 0.01                                        | 0.47     | 0.04    | 0.10      | 0.26     | 42.9%                                | 23.8%                                                 |
| 13  |        |       | 27        |           | 4        | 0.01            | 1.05     | 0.04    | 0.22      | 0.72     | 21.0%                                       | 3.8%                                                | 0.01                                        | 0.59     | 0.02    | 0.11      | 0.34     | 56.1%                                | 32.5%                                                 |
| 14  |        |       | 28        |           | 4        | 0.01            | 1.44     | 0.13    | 0.26      | 0.98     | 18.2%                                       | 8.9%                                                | 0.00                                        | 0.73     | 0.07    | 0.12      | 0.54     | 50.3%                                | 37.5%                                                 |
| 15  |        |       | 29        |           | 4        | 0.01            | 1.24     | 0.16    | 0.27      | 0.86     | 21.6%                                       | 13.2%                                               | 0.01                                        | 0.49     | 0.12    | 0.12      | 0.39     | 39.3%                                | 31.3%                                                 |
| 16  |        |       | 129       |           | 1        | 0.00            | 0.30     | 0.01    | 0.05      | 0.17     | 17.6%                                       | 1.7%                                                | 0.00                                        | 0.12     | 0.00    | 0.02      | 0.07     | 39.5%                                | 22.5%                                                 |
| 17  |        |       | 133       |           | 2        | 0.00            | 0.45     | 0.01    | 0.09      | 0.24     | 20.0%                                       | 2.6%                                                | 0.00                                        | 0.20     | 0.01    | 0.04      | 0.12     | 43.4%                                | 27.0%                                                 |
| 18  |        |       | 134       |           | 2        | 0.01            | 0.84     | 0.01    | 0.15      | 0.55     | 17.4%                                       | 1.2%                                                | 0.01                                        | 0.38     | 0.01    | 0.06      | 0.28     | 45.6%                                | 33.9%                                                 |
| 19  |        |       | 135       |           | 2        | 0.01            | 0.59     | 0.01    | 0.09      | 0.41     | 21.4%                                       | 1.9%                                                | 0.00                                        | 0.20     | 0.01    | 0.03      | 0.19     | 27.1%                                | 25.1%                                                 |
| 20  |        |       | 138       |           | 2        | 0.01            | 0.67     | 0.01    | 0.15      | 0.43     | 22.4%                                       | 1.2%                                                | 0.01                                        | 0.36     | 0.01    | 0.07      | 0.22     | 54.0%                                | 32.2%                                                 |
| 21  |        |       | 139       |           | 2        | 0.01            | 0.59     | 0.01    | 0.10      | 0.32     | 17.9%                                       | 2.5%                                                | 0.00                                        | 0.23     | 0.01    | 0.04      | 0.14     | 38.4%                                | 23.5%                                                 |
| 22  |        |       | 145       |           | 4        | 0.01            | 0.90     | 0.01    | 0.23      | 0.50     | 25.4%                                       | 1.4%                                                | 0.00                                        | 0.49     | 0.01    | 0.10      | 0.24     | 54.4%                                | 26.1%                                                 |
| 23  |        |       | 146       |           | 4        | 0.02            | 0.99     | 0.02    | 0.22      | 0.61     | 22.0%                                       | 1.9%                                                | 0.02                                        | 0.54     | 0.01    | 0.10      | 0.27     | 54.1%                                | 26.8%                                                 |
| 24  |        |       | 147       |           | 4        | 0.01            | 1.46     | 0.04    | 0.27      | 1.02     | 18.6%                                       | 2.6%                                                | 0.01                                        | 0.68     | 0.02    | 0.13      | 0.56     | 46.5%                                | 36.3%                                                 |
| 25  |        |       | 148       |           | 4        | 0.01            | 1.22     | 0.04    | 0.21      | 0.87     | 17.1%                                       | 3.4%                                                | 0.01                                        | 0.45     | 0.02    | 0.08      | 0.45     | 37.2%                                | 36.6%                                                 |
| 26  |        |       | 149       |           | 4        | 0.02            | 1.01     | 0.03    | 0.14      | 0.64     | 13.9%                                       | 2.6%                                                | 0.01                                        | 0.39     | 0.01    | 0.06      | 0.32     | 38.4%                                | 31.2%                                                 |
| 27  |        |       | 154       |           | 4        | 0.01            | 0.86     | 0.02    | 0.22      | 0.51     | 25.9%                                       | 2.1%                                                | 0.01                                        | 0.48     | 0.01    | 0.10      | 0.24     | 55.3%                                | 28.1%                                                 |
| 28  |        |       | 155       |           | 4        | 0.02            | 1.20     | 0.01    | 0.27      | 0.74     | 22.7%                                       | 1.0%                                                | 0.02                                        | 0.62     | 0.01    | 0.14      | 0.32     | 51.6%                                | 27.0%                                                 |
| 29  |        |       | 156       |           | 4        | 0.01            | 1.36     | 0.04    | 0.25      | 0.95     | 18.1%                                       | 2.9%                                                | 0.01                                        | 0.54     | 0.02    | 0.11      | 0.50     | 39.8%                                | 37.1%                                                 |
| 30  |        |       | 157       |           | 4        | 0.02            | 1.11     | 0.04    | 0.16      | 0.75     | 14.7%                                       | 3.2%                                                | 0.01                                        | 0.37     | 0.01    | 0.06      | 0.38     | 34.2%                                | 34.2%                                                 |
| 31  |        |       | 1         | 129       | 2        | 0.01            | 0.58     | 0.04    | 0.13      | 0.37     | 22.3%                                       | 6.0%                                                | 0.00                                        | 0.28     | 0.03    | 0.05      | 0.15     | 48.3%                                | 25.7%                                                 |
| 32  |        |       | 5         | 134       | 4        | 0.04            | 1.91     | 0.07    | 0.33      | 1.13     | 17.4%                                       | 3.5%                                                | 0.03                                        | 0.82     | 0.05    | 0.14      | 0.57     | 42.6%                                | 30.0%                                                 |
| 33  |        |       | 6         | 133       | 4        | 0.01            | 1.07     | 0.04    | 0.23      | 0.66     | 21.9%                                       | 3.9%                                                | 0.01                                        | 0.49     | 0.03    | 0.11      | 0.32     | 46.1%                                | 29.8%                                                 |
| 34  |        |       | 7         | 139       | 4        | 0.01            | 1.12     | 0.09    | 0.20      | 0.61     | 17.9%                                       | 7.8%                                                | 0.01                                        | 0.46     | 0.07    | 0.09      | 0.26     | 41.2%                                | 22.8%                                                 |
| 35  |        |       | 10        | 138       | 4        | 0.04            | 1.73     | 0.06    | 0.40      | 1.23     | 23.1%                                       | 3.3%                                                | 0.03                                        | 0.96     | 0.04    | 0.20      | 0.63     | 55.4%                                | 36.2%                                                 |
| 36  |        |       | 11        | 135       | 4        | 0.02            | 1.85     | 0.09    | 0.28      | 1.00     | 14.8%                                       | 5.0%                                                | 0.01                                        | 0.72     | 0.07    | 0.11      | 0.42     | 38.7%                                | 22.8%                                                 |
| 37  |        |       | 17        | 147       | 8        | 0.04            | 2.96     | 0.28    | 0.63      | 2.09     | 18.0%                                       | 9.5%                                                | 0.03                                        | 1.45     | 0.20    | 0.23      | 1.08     | 49.0%                                | 36.5%                                                 |
| 38  |        |       | 18        | 155       | 8        | 0.07            | 3.12     | 0.05    | 0.78      | 2.07     | 25.1%                                       | 1.8%                                                | 0.05                                        | 1.57     | 0.04    | 0.39      | 1.05     | 50.4%                                | 33.7%                                                 |
| 39  |        |       | 19        | 154       | 8        | 0.03            | 2.78     | 0.06    | 0.72      | 1.86     | 25.8%                                       | 2.2%                                                | 0.02                                        | 1.45     | 0.04    | 0.35      | 0.98     | 52.3%                                | 35.2%                                                 |
| 40  |        |       | 20        | 156       | 8        | 0.03            | 3.05     | 0.34    | 0.53      | 1.92     | 17.3%                                       | 11.1%                                               | 0.02                                        | 1.35     | 0.25    | 0.25      | 0.93     | 44.2%                                | 30.6%                                                 |
| 41  |        |       | 21        | 157       | 8        | 0.02            | 2.05     | 0.21    | 0.39      | 1.22     | 18.9%                                       | 10.2%                                               | 0.02                                        | 0.70     | 0.15    | 0.17      | 0.59     | 34.3%                                | 28.6%                                                 |
| 42  |        |       | 26        | 145       | 8        | 0.02            | 2.20     | 0.09    | 0.52      | 1.23     | 23.5%                                       | 4.1%                                                | 0.02                                        | 0.99     | 0.07    | 0.22      | 0.56     | 44.8%                                | 25.5%                                                 |
| 43  |        |       | 27        | 146       | 8        | 0.06            | 2.14     | 0.06    | 0.60      | 1.85     | 21.9%                                       | 2.3%                                                | 0.04                                        | 1.43     | 0.04    | 0.28      | 0.92     | 52.3%                                | 33.4%                                                 |
| 44  |        |       | 28        | 149       | 8        | 0.03            | 3.29     | 0.26    | 0.53      | 2.40     | 16.2%                                       | 8.0%                                                | 0.02                                        | 1.73     | 0.11    | 0.24      | 1.30     | 52.4%                                | 39.4%                                                 |
| 45  |        |       | 29        | 148       | 8        | 0.02            | 2.62     | 0.28    | 0.47      | 1.63     | 17.9%                                       | 10.7%                                               | 0.02                                        | 1.02     | 0.21    | 0.22      | 0.81     | 39.0%                                | 31.1%                                                 |

## - K-patch Mid CH

|     |        |       |           |           |          | max ratio out of all beams |          |         |           |          |                                       | max ratio out of all beams          |                                             |          |         |           |          |                                |                                       |
|-----|--------|-------|-----------|-----------|----------|----------------------------|----------|---------|-----------|----------|---------------------------------------|-------------------------------------|---------------------------------------------|----------|---------|-----------|----------|--------------------------------|---------------------------------------|
| No. | Module | Type  | Beam ID_1 | Bema ID_2 | Feed no. | 4cm2 PD(mW/cm2)            |          |         |           |          | 27.2%                                 | 12.7%                               | 4cm2 PD(mW/cm2) at 10mm evaluation distance |          |         |           |          | 64.7%                          | 36.1%                                 |
|     |        |       |           |           |          | 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) |
| 1   | K      | Patch | 1         |           | 1        | 0.00                       | 0.32     | 0.01    | 0.06      | 0.16     | 17.2%                                 | 4.1%                                | 0.00                                        | 0.16     | 0.01    | 0.02      | 0.05     | 49.4%                          | 17.0%                                 |
| 2   |        |       | 5         |           | 2        | 0.01                       | 0.66     | 0.03    | 0.11      | 0.26     | 16.8%                                 | 4.5%                                | 0.00                                        | 0.24     | 0.02    | 0.04      | 0.10     | 36.6%                          | 15.3%                                 |
| 3   |        |       | 6         |           | 2        | 0.01                       | 0.54     | 0.01    | 0.12      | 0.36     | 22.0%                                 | 1.8%                                | 0.00                                        | 0.34     | 0.01    | 0.05      | 0.16     | 63.1%                          | 30.1%                                 |
| 4   |        |       | 7         |           | 2        | 0.01                       | 0.66     | 0.03    | 0.11      | 0.26     | 16.8%                                 | 4.5%                                | 0.00                                        | 0.24     | 0.02    | 0.04      | 0.10     | 36.6%                          | 15.3%                                 |
| 5   |        |       | 10        |           | 2        | 0.01                       | 0.55     | 0.03    | 0.12      | 0.29     | 21.0%                                 | 4.9%                                | 0.01                                        | 0.30     | 0.02    | 0.05      | 0.13     | 53.9%                          | 23.2%                                 |
| 6   |        |       | 11        |           | 2        | 0.00                       | 0.68     | 0.02    | 0.13      | 0.29     | 19.2%                                 | 3.5%                                | 0.00                                        | 0.28     | 0.02    | 0.05      | 0.11     | 41.7%                          | 16.4%                                 |
| 7   |        |       | 17        |           | 4        | 0.01                       | 1.22     | 0.13    | 0.24      | 0.63     | 19.6%                                 | 10.8%                               | 0.00                                        | 0.43     | 0.09    | 0.10      | 0.31     | 35.4%                          | 25.1%                                 |
| 8   |        |       | 18        |           | 4        | 0.01                       | 0.95     | 0.03    | 0.22      | 0.64     | 22.7%                                 | 3.2%                                | 0.01                                        | 0.62     | 0.02    | 0.10      | 0.31     | 64.7%                          | 32.5%                                 |
| 9   |        |       | 19        |           | 4        | 0.01                       | 1.14     | 0.03    | 0.25      | 0.72     | 21.7%                                 | 2.3%                                | 0.01                                        | 0.69     | 0.02    | 0.12      | 0.36     | 60.6%                          | 31.5%                                 |
| 10  |        |       | 20        |           | 4        | 0.01                       | 1.35     | 0.12    | 0.36      | 0.77     | 26.8%                                 | 8.8%                                | 0.01                                        | 0.66     | 0.08    | 0.17      | 0.34     | 49.0%                          | 25.2%                                 |
| 11  |        |       | 21        |           | 4        | 0.01                       | 1.10     | 0.14    | 0.24      | 0.64     | 21.4%                                 | 12.7%                               | 0.00                                        | 0.37     | 0.10    | 0.10      | 0.27     | 33.9%                          | 25.0%                                 |
| 12  |        |       | 26        |           | 4        | 0.01                       | 0.89     | 0.07    | 0.15      | 0.45     | 17.0%                                 | 8.2%                                | 0.01                                        | 0.45     | 0.05    | 0.06      | 0.21     | 50.2%                          | 24.1%                                 |
| 13  |        |       | 27        |           | 4        | 0.01                       | 1.09     | 0.02    | 0.24      | 0.72     | 21.9%                                 | 1.9%                                | 0.01                                        | 0.70     | 0.01    | 0.11      | 0.34     | 64.2%                          | 31.0%                                 |
| 14  |        |       | 28        |           | 4        | 0.00                       | 1.23     | 0.07    | 0.31      | 0.73     | 25.3%                                 | 5.5%                                | 0.00                                        | 0.67     | 0.03    | 0.15      | 0.34     | 54.2%                          | 27.7%                                 |
| 15  |        |       | 29        |           | 4        | 0.01                       | 1.26     | 0.13    | 0.30      | 0.71     | 23.9%                                 | 10.7%                               | 0.01                                        | 0.50     | 0.09    | 0.13      | 0.31     | 39.8%                          | 24.8%                                 |
| 16  |        |       | 129       |           | 1        | 0.00                       | 0.25     | 0.01    | 0.04      | 0.14     | 17.5%                                 | 4.4%                                | 0.00                                        | 0.10     | 0.01    | 0.01      | 0.05     | 39.1%                          | 19.8%                                 |
| 17  |        |       | 133       |           | 2        | 0.00                       | 0.46     | 0.01    | 0.09      | 0.28     | 18.5%                                 | 1.8%                                | 0.00                                        | 0.20     | 0.00    | 0.04      | 0.13     | 44.3%                          | 28.1%                                 |
| 18  |        |       | 134       |           | 2        | 0.01                       | 0.76     | 0.02    | 0.14      | 0.39     | 18.6%                                 | 2.2%                                | 0.00                                        | 0.35     | 0.01    | 0.06      | 0.17     | 45.4%                          | 22.5%                                 |
| 19  |        |       | 135       |           | 2        | 0.01                       | 0.77     | 0.02    | 0.12      | 0.41     | 15.7%                                 | 2.0%                                | 0.00                                        | 0.21     | 0.01    | 0.04      | 0.17     | 27.9%                          | 22.1%                                 |
| 20  |        |       | 138       |           | 2        | 0.01                       | 0.61     | 0.01    | 0.13      | 0.37     | 21.5%                                 | 2.0%                                | 0.01                                        | 0.35     | 0.01    | 0.05      | 0.18     | 56.8%                          | 29.6%                                 |
| 21  |        |       | 139       |           | 2        | 0.00                       | 0.57     | 0.02    | 0.10      | 0.24     | 17.6%                                 | 3.3%                                | 0.00                                        | 0.19     | 0.01    | 0.04      | 0.09     | 33.5%                          | 16.1%                                 |
| 22  |        |       | 145       |           | 4        | 0.01                       | 0.80     | 0.02    | 0.16      | 0.46     | 19.5%                                 | 2.4%                                | 0.01                                        | 0.43     | 0.01    | 0.07      | 0.24     | 54.4%                          | 29.9%                                 |
| 23  |        |       | 146       |           | 4        | 0.01                       | 1.07     | 0.02    | 0.25      | 0.66     | 22.8%                                 | 1.5%                                | 0.01                                        | 0.66     | 0.01    | 0.12      | 0.30     | 61.8%                          | 28.1%                                 |
| 24  |        |       | 147       |           | 4        | 0.01                       | 1.28     | 0.06    | 0.31      | 0.74     | 24.0%                                 | 4.0%                                | 0.01                                        | 0.58     | 0.04    | 0.15      | 0.37     | 45.2%                          | 28.5%                                 |
| 25  |        |       | 148       |           | 4        | 0.01                       | 1.27     | 0.06    | 0.28      | 0.72     | 22.0%                                 | 4.5%                                | 0.01                                        | 0.44     | 0.03    | 0.12      | 0.37     | 34.3%                          | 29.2%                                 |
| 26  |        |       | 149       |           | 4        | 0.01                       | 0.98     | 0.03    | 0.17      | 0.53     | 17.5%                                 | 2.7%                                | 0.01                                        | 0.35     | 0.01    | 0.07      | 0.24     | 35.6%                          | 24.4%                                 |
| 27  |        |       | 154       |           | 4        | 0.01                       | 0.99     | 0.01    | 0.21      | 0.62     | 21.3%                                 | 1.4%                                | 0.00                                        | 0.60     | 0.01    | 0.10      | 0.30     | 60.4%                          | 30.6%                                 |
| 28  |        |       | 155       |           | 4        | 0.01                       | 1.14     | 0.02    | 0.23      | 0.67     | 20.2%                                 | 2.1%                                | 0.01                                        | 0.62     | 0.02    | 0.11      | 0.31     | 54.7%                          | 27.4%                                 |
| 29  |        |       | 156       |           | 4        | 0.01                       | 1.33     | 0.06    | 0.31      | 0.75     | 23.0%                                 | 4.8%                                | 0.00                                        | 0.51     | 0.04    | 0.13      | 0.38     | 38.1%                          | 28.8%                                 |
| 30  |        |       | 157       |           | 4        | 0.01                       | 1.12     | 0.04    | 0.22      | 0.62     | 19.9%                                 | 3.7%                                | 0.00                                        | 0.35     | 0.02    | 0.09      | 0.30     | 31.3%                          | 27.1%                                 |
| 31  |        |       | 1         | 129       | 2        | 0.01                       | 0.52     | 0.03    | 0.11      | 0.31     | 20.8%                                 | 6.1%                                | 0.00                                        | 0.26     | 0.02    | 0.04      | 0.10     | 50.5%                          | 19.2%                                 |
| 32  |        |       | 5         | 134       | 4        | 0.02                       | 1.78     | 0.05    | 0.31      | 0.98     | 17.4%                                 | 2.9%                                | 0.01                                        | 0.76     | 0.04    | 0.14      | 0.46     | 42.5%                          | 25.9%                                 |
| 33  | 6      | 133   | 4         | 0.01      | 0.93     | 0.03                       | 0.19     | 0.56    | 19.9%     | 3.2%     | 0.01                                  | 0.54                                | 0.02                                        | 0.08     | 0.26    | 57.4%     | 27.7%    |                                |                                       |
| 34  | 7      | 139   | 4         | 0.01      | 1.11     | 0.08                       | 0.23     | 0.58    | 20.6%     | 7.1%     | 0.01                                  | 0.45                                | 0.06                                        | 0.10     | 0.26    | 41.0%     | 23.5%    |                                |                                       |
| 35  | 10     | 138   | 4         | 0.03      | 1.58     | 0.05                       | 0.30     | 1.04    | 19.2%     | 3.0%     | 0.02                                  | 0.90                                | 0.03                                        | 0.13     | 0.52    | 56.8%     | 33.0%    |                                |                                       |
| 36  | 11     | 135   | 4         | 0.01      | 1.27     | 0.06                       | 0.32     | 0.83    | 20.3%     | 3.1%     | 0.02                                  | 0.66                                | 0.03                                        | 0.12     | 0.38    | 21.6%     | 20.6%    |                                |                                       |
| 37  | 18     | 147   | 8         | 0.03      | 1.61     | 0.29                       | 0.68     | 1.70    | 26.2%     | 10.9%    | 0.1                                   | 1.25                                | 0.21                                        | 0.33     | 0.79    | 48.1%     | 31.7%    |                                |                                       |
| 38  | 18     | 155   | 8         | 0.04      | 2.64     | 0.10                       | 0.57     | 1.75    | 21.5%     | 3.6%     | 0.03                                  | 1.51                                | 0.07                                        | 0.29     | 0.83    | 57.1%     | 31.6%    |                                |                                       |
| 39  | 19     | 154   | 8         | 0.02      | 2.67     | 0.05                       | 0.59     | 1.77    | 22.2%     | 1.8%     | 0.01                                  | 1.57                                | 0.04                                        | 0.30     | 0.84    | 58.9%     | 31.5%    |                                |                                       |
| 40  | 20     | 156   | 8         | 0.03      | 2.82     | 0.29                       | 0.74     | 1.81    | 26.4%     | 10.2%    | 0.02                                  | 1.26                                | 0.20                                        | 0.35     | 0.85    | 44.7%     | 30.3%    |                                |                                       |
| 41  | 21     | 157   | 8         | 0.02      | 2.02     | 0.18                       | 0.50     | 1.16    | 24.7%     | 9.1%     | 0.01                                  | 0.70                                | 0.13                                        | 0.22     | 0.55    | 34.9%     | 27.2%    |                                |                                       |
| 42  | 26     | 145   | 8         | 0.03      | 1.85     | 0.13                       | 0.29     | 1.04    | 15.4%     | 6.8%     | 0.02                                  | 0.87                                | 0.08                                        | 0.11     | 0.53    | 47.3%     | 28.5%    |                                |                                       |
| 43  | 28     | 146   | 8         | 0.03      | 2.66     | 0.06                       | 0.60     | 1.85    | 22.7%     | 1.6%     | 0.01                                  | 1.61                                | 0.02                                        | 0.28     | 0.84    | 60.4%     | 31.6%    |                                |                                       |
| 44  | 28     | 149   | 8         | 0.03      | 2.60     | 0.15                       | 0.67     | 1.82    | 25.6%     | 5.7%     | 0.01                                  | 1.40                                | 0.06                                        | 0.33     | 0.94    | 53.7%     | 36.1%    |                                |                                       |
| 45  | 29     | 148   | 8         | 0.02      | 2.40     | 0.24                       | 0.65     | 1.51    | 27.2%     | 9.8%     | 0.01                                  | 0.91                                | 0.18                                        | 0.29     | 0.72    | 38.1%     | 30.2%    |                                |                                       |

- K-patch High CH

| No. | Module | Type | Beam ID_1 | Bema ID_2 | Feed no. | 4cm2 PD(mW/cm2) |             |         |           |          | max ratio out of all beams           |                                     | 4cm2 PD(mW/cm2) at 10mm evaluation distance |             |         |           |          | max ratio out of all beams     |                                       |
|-----|--------|------|-----------|-----------|----------|-----------------|-------------|---------|-----------|----------|--------------------------------------|-------------------------------------|---------------------------------------------|-------------|---------|-----------|----------|--------------------------------|---------------------------------------|
|     |        |      |           |           |          | S4(Right)       | S3(Left)    | S5(Top) | S1(Front) | S2(Rear) | 34.3%                                | 10.4%                               | S4(Right)                                   | S3(Left)    | S5(Top) | S1(Front) | S2(Rear) | 69.6%                          | 37.4%                                 |
|     |        |      |           |           |          |                 |             |         |           |          | ratio (Fomt 2mm)/(worst-surface 2mm) | ratio (Top 2mm)/(worst-surface 2mm) |                                             |             |         |           |          | ratio worst-surface (10mm/2mm) | ratio (back 10mm)/(worst-surface 2mm) |
| 1   |        |      | 1         |           | 1        | 0.00            | <b>0.31</b> | 0.01    | 0.06      | 0.13     | 18.6%                                | 3.3%                                | 0.00                                        | <b>0.15</b> | 0.01    | 0.02      | 0.05     | 46.9%                          | 16.4%                                 |
| 2   |        |      | 5         |           | 2        | 0.01            | <b>0.66</b> | 0.03    | 0.12      | 0.22     | 17.6%                                | 4.4%                                | 0.01                                        | <b>0.23</b> | 0.02    | 0.05      | 0.08     | 35.0%                          | 11.5%                                 |
| 3   |        |      | 6         |           | 2        | 0.01            | <b>0.45</b> | 0.01    | 0.10      | 0.27     | 21.8%                                | 2.6%                                | 0.01                                        | <b>0.27</b> | 0.01    | 0.04      | 0.14     | 60.0%                          | 30.8%                                 |
| 4   |        |      | 7         |           | 2        | 0.01            | <b>0.66</b> | 0.03    | 0.12      | 0.22     | 17.6%                                | 4.4%                                | 0.01                                        | <b>0.23</b> | 0.02    | 0.05      | 0.08     | 35.0%                          | 11.5%                                 |
| 5   |        |      | 10        |           | 2        | 0.01            | <b>0.51</b> | 0.03    | 0.09      | 0.21     | 17.9%                                | 5.8%                                | 0.01                                        | <b>0.22</b> | 0.02    | 0.04      | 0.10     | 43.7%                          | 19.7%                                 |
| 6   |        |      | 11        |           | 2        | 0.01            | <b>0.66</b> | 0.02    | 0.13      | 0.24     | 20.1%                                | 2.9%                                | 0.01                                        | <b>0.27</b> | 0.01    | 0.06      | 0.09     | 40.3%                          | 13.7%                                 |
| 7   |        |      | 17        |           | 4        | 0.01            | <b>1.11</b> | 0.10    | 0.23      | 0.44     | 21.0%                                | 9.0%                                | 0.01                                        | <b>0.41</b> | 0.07    | 0.11      | 0.17     | 36.9%                          | 14.9%                                 |
| 8   |        |      | 18        |           | 4        | 0.02            | <b>0.81</b> | 0.03    | 0.16      | 0.50     | 19.6%                                | 3.6%                                | 0.01                                        | <b>0.49</b> | 0.02    | 0.07      | 0.27     | 60.1%                          | 33.0%                                 |
| 9   |        |      | 19        |           | 4        | 0.01            | <b>0.89</b> | 0.02    | 0.21      | 0.61     | 23.7%                                | 2.1%                                | 0.01                                        | <b>0.62</b> | 0.01    | 0.10      | 0.31     | 69.6%                          | 34.6%                                 |
| 10  |        |      | 20        |           | 4        | 0.01            | <b>1.22</b> | 0.10    | 0.35      | 0.52     | 29.1%                                | 8.5%                                | 0.01                                        | <b>0.63</b> | 0.06    | 0.16      | 0.21     | 51.4%                          | 17.1%                                 |
| 11  |        |      | 21        |           | 4        | 0.01            | <b>1.13</b> | 0.11    | 0.25      | 0.44     | 21.9%                                | 9.7%                                | 0.01                                        | <b>0.43</b> | 0.07    | 0.11      | 0.15     | 37.6%                          | 13.3%                                 |
| 12  |        |      | 26        |           | 4        | 0.02            | <b>0.82</b> | 0.06    | 0.18      | 0.37     | 22.3%                                | 7.7%                                | 0.02                                        | <b>0.44</b> | 0.04    | 0.08      | 0.15     | 53.3%                          | 18.9%                                 |
| 13  |        |      | 27        |           | 4        | 0.01            | <b>0.94</b> | 0.02    | 0.18      | 0.66     | 19.3%                                | 2.4%                                | 0.01                                        | <b>0.64</b> | 0.02    | 0.09      | 0.35     | 68.4%                          | 37.4%                                 |
| 14  |        |      | 28        |           | 4        | 0.01            | <b>1.09</b> | 0.04    | 0.30      | 0.57     | 28.0%                                | 3.4%                                | 0.00                                        | <b>0.64</b> | 0.02    | 0.14      | 0.25     | 58.7%                          | 23.0%                                 |
| 15  |        |      | 29        |           | 4        | 0.01            | <b>1.22</b> | 0.13    | 0.31      | 0.49     | 25.1%                                | 10.4%                               | 0.01                                        | <b>0.53</b> | 0.08    | 0.14      | 0.19     | 43.8%                          | 15.2%                                 |
| 16  |        |      | 129       |           | 1        | 0.00            | <b>0.23</b> | 0.01    | 0.04      | 0.11     | 17.2%                                | 6.1%                                | 0.00                                        | <b>0.10</b> | 0.01    | 0.01      | 0.04     | 43.9%                          | 16.0%                                 |
| 17  |        |      | 133       |           | 2        | 0.00            | <b>0.49</b> | 0.01    | 0.09      | 0.24     | 18.2%                                | 3.1%                                | 0.00                                        | <b>0.21</b> | 0.01    | 0.04      | 0.09     | 42.4%                          | 19.2%                                 |
| 18  |        |      | 134       |           | 2        | 0.01            | <b>0.67</b> | 0.01    | 0.15      | 0.29     | 23.0%                                | 1.8%                                | 0.01                                        | <b>0.33</b> | 0.01    | 0.06      | 0.13     | 49.0%                          | 19.5%                                 |
| 19  |        |      | 135       |           | 2        | 0.01            | <b>0.70</b> | 0.01    | 0.11      | 0.30     | 15.1%                                | 2.1%                                | 0.00                                        | <b>0.25</b> | 0.01    | 0.04      | 0.10     | 35.5%                          | 13.8%                                 |
| 20  |        |      | 138       |           | 2        | 0.01            | <b>0.51</b> | 0.02    | 0.12      | 0.28     | 23.3%                                | 3.5%                                | 0.01                                        | <b>0.29</b> | 0.01    | 0.05      | 0.14     | 56.3%                          | 26.6%                                 |
| 21  |        |      | 139       |           | 2        | 0.00            | <b>0.57</b> | 0.03    | 0.10      | 0.22     | 18.1%                                | 5.5%                                | 0.00                                        | <b>0.19</b> | 0.02    | 0.04      | 0.11     | 33.9%                          | 19.1%                                 |
| 22  |        |      | 145       |           | 4        | 0.02            | <b>0.79</b> | 0.03    | 0.19      | 0.43     | 24.4%                                | 3.4%                                | 0.01                                        | <b>0.38</b> | 0.02    | 0.10      | 0.14     | 48.7%                          | 17.6%                                 |
| 23  |        |      | 146       |           | 4        | 0.02            | <b>0.87</b> | 0.03    | 0.19      | 0.58     | 21.6%                                | 3.0%                                | 0.01                                        | <b>0.59</b> | 0.02    | 0.08      | 0.29     | 67.6%                          | 33.0%                                 |
| 24  |        |      | 147       |           | 4        | 0.01            | <b>1.10</b> | 0.08    | 0.32      | 0.45     | 29.4%                                | 7.4%                                | 0.01                                        | <b>0.58</b> | 0.04    | 0.15      | 0.19     | 52.8%                          | 17.7%                                 |
| 25  |        |      | 148       |           | 4        | 0.01            | <b>1.10</b> | 0.04    | 0.24      | 0.45     | 21.7%                                | 3.8%                                | 0.01                                        | <b>0.43</b> | 0.02    | 0.11      | 0.21     | 38.6%                          | 18.7%                                 |
| 26  |        |      | 149       |           | 4        | 0.01            | <b>1.04</b> | 0.02    | 0.20      | 0.44     | 19.0%                                | 2.1%                                | 0.01                                        | <b>0.41</b> | 0.02    | 0.09      | 0.19     | 39.7%                          | 18.2%                                 |
| 27  |        |      | 154       |           | 4        | 0.02            | <b>0.83</b> | 0.02    | 0.18      | 0.48     | 21.2%                                | 2.7%                                | 0.01                                        | <b>0.50</b> | 0.02    | 0.08      | 0.23     | 60.2%                          | 27.5%                                 |
| 28  |        |      | 155       |           | 4        | 0.01            | <b>0.91</b> | 0.02    | 0.19      | 0.59     | 20.9%                                | 2.5%                                | 0.01                                        | <b>0.58</b> | 0.02    | 0.09      | 0.27     | 63.6%                          | 29.5%                                 |
| 29  |        |      | 156       |           | 4        | 0.01            | <b>1.10</b> | 0.07    | 0.28      | 0.44     | 25.6%                                | 6.0%                                | 0.01                                        | <b>0.49</b> | 0.03    | 0.13      | 0.21     | 44.4%                          | 18.9%                                 |
| 30  |        |      | 157       |           | 4        | 0.01            | <b>1.08</b> | 0.02    | 0.19      | 0.45     | 17.7%                                | 1.9%                                | 0.01                                        | <b>0.39</b> | 0.01    | 0.09      | 0.19     | 36.6%                          | 17.9%                                 |
| 31  |        |      | 1         | 129       | 2        | 0.01            | <b>0.49</b> | 0.03    | 0.10      | 0.25     | 20.1%                                | 5.8%                                | 0.00                                        | <b>0.25</b> | 0.02    | 0.04      | 0.10     | 51.2%                          | 20.7%                                 |
| 32  |        |      | 5         | 134       | 4        | 0.03            | <b>1.55</b> | 0.05    | 0.32      | 0.68     | 20.4%                                | 3.1%                                | 0.02                                        | <b>0.68</b> | 0.04    | 0.14      | 0.31     | 43.6%                          | 20.2%                                 |
| 33  |        |      | 6         | 133       | 4        | 0.02            | <b>0.82</b> | 0.03    | 0.18      | 0.49     | 22.0%                                | 3.8%                                | 0.01                                        | <b>0.49</b> | 0.02    | 0.08      | 0.21     | 60.3%                          | 26.0%                                 |
| 34  |        |      | 7         | 139       | 4        | 0.02            | <b>1.04</b> | 0.07    | 0.22      | 0.51     | 21.5%                                | 6.9%                                | 0.01                                        | <b>0.49</b> | 0.04    | 0.10      | 0.20     | 47.4%                          | 19.4%                                 |
| 35  |        |      | 10        | 138       | 4        | 0.04            | <b>1.28</b> | 0.07    | 0.28      | 0.68     | 21.8%                                | 5.2%                                | 0.03                                        | <b>0.67</b> | 0.05    | 0.11      | 0.33     | 52.5%                          | 25.6%                                 |
| 36  |        |      | 11        | 135       | 4        | 0.02            | <b>1.54</b> | 0.04    | 0.33      | 0.67     | 21.5%                                | 2.7%                                | 0.01                                        | <b>0.62</b> | 0.03    | 0.15      | 0.27     | 39.9%                          | 17.4%                                 |
| 37  |        |      | 17        | 147       | 8        | 0.04            | <b>2.31</b> | 0.21    | 0.79      | 1.17     | 34.3%                                | 8.9%                                | 0.03                                        | <b>1.20</b> | 0.12    | 0.40      | 0.51     | 51.8%                          | 21.9%                                 |
| 38  |        |      | 18        | 155       | 8        | 0.05            | <b>2.07</b> | 0.08    | 0.41      | 1.30     | 19.8%                                | 0.8%                                | 0.04                                        | <b>1.31</b> | 0.05    | 0.19      | 0.59     | 63.6%                          | 28.8%                                 |
| 39  |        |      | 19        | 154       | 8        | 0.05            | <b>2.04</b> | 0.06    | 0.45      | 1.22     | 22.0%                                | 3.0%                                | 0.03                                        | <b>1.27</b> | 0.05    | 0.23      | 0.56     | 62.2%                          | 27.2%                                 |
| 40  |        |      | 20        | 156       | 8        | 0.03            | <b>2.56</b> | 0.20    | 0.75      | 1.39     | 29.5%                                | 7.7%                                | 0.02                                        | <b>1.14</b> | 0.12    | 0.36      | 0.61     | 44.4%                          | 23.9%                                 |
| 41  |        |      | 21        | 157       | 8        | 0.03            | <b>2.17</b> | 0.13    | 0.55      | 0.90     | 25.5%                                | 5.9%                                | 0.02                                        | <b>0.93</b> | 0.08    | 0.23      | 0.35     | 42.7%                          | 15.9%                                 |
| 42  |        |      | 26        | 145       | 8        | 0.06            | <b>1.85</b> | 0.14    | 0.38      | 0.84     | 20.4%                                | 7.5%                                | 0.04                                        | <b>0.82</b> | 0.10    | 0.16      | 0.32     | 44.2%                          | 17.4%                                 |
| 43  |        |      | 27        | 146       | 8        | 0.04            | <b>2.06</b> | 0.06    | 0.38      | 1.31     | 18.7%                                | 2.9%                                | 0.03                                        | <b>1.32</b> | 0.05    | 0.18      | 0.68     | 64.0%                          | 33.1%                                 |
| 44  |        |      | 28        | 149       | 8        | 0.03            | <b>2.20</b> | 0.08    | 0.72      | 1.30     | 32.8%                                | 3.6%                                | 0.02                                        | <b>1.28</b> | 0.04    | 0.35      | 0.60     | 58.2%                          | 27.0%                                 |
| 45  |        |      | 29        | 148       | 8        | 0.03            | <b>2.24</b> | 0.18    | 0.69      | 1.17     | 30.9%                                | 8.0%                                | 0.02                                        | <b>0.99</b> | 0.12    | 0.31      | 0.50     | 44.3%                          | 22.5%                                 |

### 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 4. PD of Ant L – patch antenna (28GHz – n261)

- L-patch Low CH

|     |        |       |           |           |          | max ratio out of all beams |          |            |           |          |                                      |                                        |           |          |                                             |           |          | max ratio out of all beams     |                                       |       |       |       |  |
|-----|--------|-------|-----------|-----------|----------|----------------------------|----------|------------|-----------|----------|--------------------------------------|----------------------------------------|-----------|----------|---------------------------------------------|-----------|----------|--------------------------------|---------------------------------------|-------|-------|-------|--|
| No. | Module | Type  | Beam ID_1 | Bema ID_2 | Feed no. | 4cm2 PD(mW/cm2)            |          |            |           |          | 24.1%                                |                                        | 9.6%      |          | 4cm2 PD(mW/cm2) at 10mm evaluation distance |           |          |                                |                                       | 51.4% |       | 51.4% |  |
|     |        |       |           |           |          | S4(Right)                  | S3(Left) | S6(Bottom) | S1(Front) | S2(Rear) | ratio (Fomt 2mm)/(worst-surface 2mm) | ratio (Bottom 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) |       |       |       |  |
| 46  | L      | Patch | 0         |           | 1        | 0.36                       | 0.00     | 0.01       | 0.05      | 0.40     | 13.2%                                | 1.4%                                   | 0.14      | 0.00     | 0.00                                        | 0.02      | 0.14     | 35.9%                          | 35.9%                                 |       |       |       |  |
| 47  |        |       | 2         | 0.52      | 0.01     | 0.02                       | 0.07     | 0.50       | 13.7%     | 2.9%     | 0.20                                 | 0.00                                   | 0.01      | 0.03     | 0.17                                        | 38.5%     | 32.6%    |                                |                                       |       |       |       |  |
| 48  |        |       | 3         | 0.59      | 0.01     | 0.01                       | 0.08     | 0.67       | 11.8%     | 1.8%     | 0.23                                 | 0.00                                   | 0.01      | 0.03     | 0.28                                        | 41.8%     | 41.8%    |                                |                                       |       |       |       |  |
| 49  |        |       | 7         | 0.77      | 0.01     | 0.00                       | 0.12     | 0.82       | 15.2%     | 0.5%     | 0.37                                 | 0.01                                   | 0.00      | 0.06     | 0.39                                        | 47.4%     | 47.4%    |                                |                                       |       |       |       |  |
| 50  |        |       | 10        | 0.77      | 0.01     | 0.06                       | 0.17     | 0.76       | 22.5%     | 7.8%     | 0.24                                 | 0.00                                   | 0.04      | 0.07     | 0.29                                        | 39.5%     | 36.9%    |                                |                                       |       |       |       |  |
| 51  |        |       | 11        | 2         | 1.33     | 0.02                       | 0.01     | 0.25       | 1.32      | 18.4%    | 0.8%                                 | 0.67                                   | 0.01      | 0.01     | 0.12                                        | 0.63      | 50.2%    | 47.3%                          |                                       |       |       |       |  |
| 52  |        |       | 12        | 4         | 1.39     | 0.02                       | 0.01     | 0.26       | 1.42      | 18.5%    | 0.5%                                 | 0.71                                   | 0.01      | 0.01     | 0.13                                        | 0.69      | 49.8%    | 48.8%                          |                                       |       |       |       |  |
| 53  |        |       | 13        | 4         | 1.09     | 0.01                       | 0.01     | 0.15       | 1.29      | 11.5%    | 0.9%                                 | 0.52                                   | 0.01      | 0.01     | 0.07                                        | 0.62      | 47.8%    | 47.8%                          |                                       |       |       |       |  |
| 54  |        |       | 14        | 4         | 0.96     | 0.02                       | 0.02     | 0.10       | 1.23      | 8.5%     | 1.3%                                 | 0.38                                   | 0.01      | 0.01     | 0.04                                        | 0.46      | 37.0%    | 37.0%                          |                                       |       |       |       |  |
| 55  |        |       | 20        | 4         | 0.95     | 0.01                       | 0.06     | 0.20       | 0.91      | 20.8%    | 6.3%                                 | 0.44                                   | 0.01      | 0.03     | 0.09                                        | 0.40      | 45.9%    | 41.8%                          |                                       |       |       |       |  |
| 56  |        |       | 21        | 4         | 1.41     | 0.02                       | 0.01     | 0.25       | 1.42      | 17.6%    | 0.5%                                 | 0.71                                   | 0.02      | 0.00     | 0.13                                        | 0.68      | 50.1%    | 48.1%                          |                                       |       |       |       |  |
| 57  |        |       | 22        | 4         | 1.37     | 0.02                       | 0.01     | 0.24       | 1.43      | 16.8%    | 0.7%                                 | 0.70                                   | 0.01      | 0.01     | 0.12                                        | 0.71      | 50.0%    | 50.0%                          |                                       |       |       |       |  |
| 58  |        |       | 23        | 4         | 1.02     | 0.02                       | 0.01     | 0.12       | 1.27      | 9.6%     | 0.8%                                 | 0.45                                   | 0.01      | 0.01     | 0.05                                        | 0.56      | 44.3%    | 44.3%                          |                                       |       |       |       |  |
| 59  |        |       |           |           |          |                            |          |            |           |          |                                      |                                        |           |          |                                             |           |          |                                |                                       |       |       |       |  |
| 60  |        |       |           |           |          |                            |          |            |           |          |                                      |                                        |           |          |                                             |           |          |                                |                                       |       |       |       |  |
| 61  |        |       |           |           | 128      |                            | 4        | 0.36       | 0.00      | 0.01     | 0.04                                 | 0.37                                   | 10.9%     | 1.4%     | 0.13                                        | 0.00      | 0.00     | 0.01                           | 0.12                                  | 36.6% | 32.1% |       |  |
| 62  |        |       |           |           | 130      |                            | 4        | 0.63       | 0.01      | 0.02     | 0.09                                 | 0.65                                   | 13.2%     | 2.8%     | 0.21                                        | 0.00      | 0.01     | 0.03                           | 0.24                                  | 37.1% | 37.1% |       |  |
| 63  |        |       |           |           | 131      |                            | 1        | 0.52       | 0.01      | 0.02     | 0.09                                 | 0.48                                   | 17.0%     | 4.4%     | 0.22                                        | 0.00      | 0.02     | 0.03                           | 0.20                                  | 42.3% | 39.1% |       |  |
| 64  |        |       |           |           | 135      |                            | 2        | 0.84       | 0.00      | 0.00     | 0.13                                 | 0.87                                   | 15.5%     | 0.3%     | 0.41                                        | 0.00      | 0.00     | 0.06                           | 0.41                                  | 47.3% | 47.3% |       |  |
| 65  |        |       |           |           | 138      |                            | 2        | 1.23       | 0.01      | 0.04     | 0.13                                 | 1.43                                   | 8.9%      | 2.9%     | 0.56                                        | 0.01      | 0.03     | 0.05                           | 0.66                                  | 46.2% | 46.2% |       |  |
| 66  |        |       |           |           | 139      |                            | 2        | 1.35       | 0.01      | 0.01     | 0.19                                 | 1.42                                   | 13.0%     | 0.8%     | 0.70                                        | 0.01      | 0.01     | 0.09                           | 0.71                                  | 50.2% | 50.2% |       |  |
| 67  |        |       |           |           | 140      |                            | 2        | 1.41       | 0.02      | 0.00     | 0.29                                 | 1.41                                   | 20.2%     | 0.3%     | 0.71                                        | 0.01      | 0.00     | 0.14                           | 0.69                                  | 49.9% | 48.5% |       |  |
| 68  |        |       |           |           | 141      |                            | 2        | 1.17       | 0.01      | 0.01     | 0.21                                 | 1.19                                   | 17.4%     | 0.6%     | 0.54                                        | 0.01      | 0.00     | 0.10                           | 0.53                                  | 45.3% | 44.6% |       |  |
| 69  |        |       | 142       |           | 4        | 0.89                       | 0.01     | 0.09       | 0.22      | 0.77     | 24.1%                                | 9.6%                                   | 0.39      | 0.01     | 0.06                                        | 0.09      | 0.34     | 43.9%                          | 38.0%                                 |       |       |       |  |
| 70  |        |       | 148       |           | 4        | 1.28                       | 0.02     | 0.01       | 0.14      | 1.39     | 10.2%                                | 1.0%                                   | 0.63      | 0.01     | 0.01                                        | 0.07      | 0.68     | 48.6%                          | 48.6%                                 |       |       |       |  |
| 71  |        |       | 149       |           | 4        | 1.35                       | 0.02     | 0.01       | 0.24      | 1.39     | 17.5%                                | 0.7%                                   | 0.69      | 0.01     | 0.00                                        | 0.12      | 0.69     | 49.6%                          | 49.6%                                 |       |       |       |  |
| 72  |        |       | 150       |           | 4        | 1.30                       | 0.02     | 0.00       | 0.24      | 1.32     | 18.3%                                | 0.2%                                   | 0.62      | 0.01     | 0.01                                        | 0.12      | 0.61     | 46.7%                          | 45.9%                                 |       |       |       |  |
| 73  |        |       | 151       |           | 4        | 1.06                       | 0.01     | 0.04       | 0.22      | 1.00     | 20.7%                                | 3.6%                                   | 0.48      | 0.01     | 0.02                                        | 0.09      | 0.45     | 45.7%                          | 42.6%                                 |       |       |       |  |
| 74  |        |       |           |           |          |                            |          |            |           |          |                                      |                                        |           |          |                                             |           |          |                                |                                       |       |       |       |  |
| 75  |        |       |           |           |          |                            |          |            |           |          |                                      |                                        |           |          |                                             |           |          |                                |                                       |       |       |       |  |
| 76  |        |       | 0         | 128       | 2        | 0.72                       | 0.01     | 0.01       | 0.08      | 0.74     | 11.3%                                | 1.9%                                   | 0.24      | 0.00     | 0.01                                        | 0.03      | 0.24     | 32.8%                          | 32.7%                                 |       |       |       |  |
| 77  |        |       | 2         | 130       | 4        | 1.41                       | 0.01     | 0.05       | 0.19      | 1.44     | 13.1%                                | 3.3%                                   | 0.56      | 0.01     | 0.04                                        | 0.06      | 0.57     | 39.8%                          | 39.8%                                 |       |       |       |  |
| 78  |        |       | 3         | 131       | 4        | 1.50                       | 0.02     | 0.04       | 0.24      | 1.54     | 15.3%                                | 2.5%                                   | 0.62      | 0.01     | 0.03                                        | 0.09      | 0.67     | 43.1%                          | 43.1%                                 |       |       |       |  |
| 79  |        |       | 7         | 135       | 4        | 1.45                       | 0.02     | 0.01       | 0.22      | 0.87     | 14.6%                                | 0.5%                                   | 0.67      | 0.01     | 0.00                                        | 0.10      | 0.71     | 54.0%                          | 46.0%                                 |       |       |       |  |
| 80  |        |       | 10        | 150       | 4        | 2.15                       | 0.04     | 0.07       | 0.32      | 2.09     | 14.7%                                | 3.1%                                   | 1.02      | 0.02     | 0.14                                        | 0.17      | 39.2%    | 38.2%                          | 38.2%                                 |       |       |       |  |
| 81  |        |       | 11        | 148       | 4        | 3.42                       | 0.06     | 0.04       | 0.52      | 3.53     | 14.7%                                | 1.1%                                   | 1.71      | 0.05     | 0.02                                        | 0.26      | 1.78     | 50.4%                          | 50.4%                                 |       |       |       |  |
| 82  |        |       | 12        | 149       | 8        | 3.58                       | 0.07     | 0.03       | 0.74      | 3.72     | 19.9%                                | 0.7%                                   | 1.82      | 0.04     | 0.02                                        | 0.38      | 1.89     | 50.7%                          | 50.7%                                 |       |       |       |  |
| 83  |        |       | 13        | 141       | 8        | 3.24                       | 0.05     | 0.02       | 0.47      | 3.51     | 13.4%                                | 0.6%                                   | 1.53      | 0.04     | 0.02                                        | 0.23      | 1.72     | 49.1%                          | 49.1%                                 |       |       |       |  |
| 84  |        |       | 14        | 142       | 8        | 2.76                       | 0.05     | 0.15       | 0.48      | 2.83     | 16.9%                                | 0.4%                                   | 1.16      | 0.03     | 0.10                                        | 0.18      | 1.19     | 42.1%                          | 42.1%                                 |       |       |       |  |
| 85  |        |       | 20        | 138       | 8        | 2.82                       | 0.04     | 0.13       | 0.43      | 2.87     | 14.3%                                | 0.2%                                   | 1.34      | 0.03     | 0.13                                        | 0.19      | 1.47     | 47.8%                          | 47.8%                                 |       |       |       |  |
| 86  |        |       | 21        | 139       | 8        | 3.66                       | 0.06     | 0.03       | 0.60      | 3.80     | 15.8%                                | 0.7%                                   | 1.85      | 0.06     | 0.02                                        | 0.29      | 1.95     | 51.4%                          | 51.4%                                 |       |       |       |  |
| 87  |        |       | 22        | 140       | 8        | 3.73                       | 0.08     | 0.03       | 0.77      | 3.88     | 19.9%                                | 0.7%                                   | 1.87      | 0.05     | 0.02                                        | 0.39      | 1.97     | 50.8%                          | 50.8%                                 |       |       |       |  |
| 88  |        |       | 23        | 151       | 8        | 2.98                       | 0.05     | 0.07       | 0.46      | 3.20     | 14.4%                                | 2.3%                                   | 1.37      | 0.04     | 0.05                                        | 0.18      | 1.51     | 47.3%                          | 47.3%                                 |       |       |       |  |
| 89  |        |       |           |           |          |                            |          |            |           |          |                                      |                                        |           |          |                                             |           |          |                                |                                       |       |       |       |  |

- L-patch Mid CH

|     |        |      | max ratio out of all beams |           |          |                 |          |            |           |          |                                              |                                               | max ratio out of all beams                  |          |            |           |          |                                      |                                              |
|-----|--------|------|----------------------------|-----------|----------|-----------------|----------|------------|-----------|----------|----------------------------------------------|-----------------------------------------------|---------------------------------------------|----------|------------|-----------|----------|--------------------------------------|----------------------------------------------|
| No. | Module | Type | Beam ID_1                  | Bema ID_2 | Feed no. | 4cm2 PD(mW/cm2) |          |            |           |          | 24.0%                                        | 8.0%                                          | 4cm2 PD(mW/cm2) at 10mm evaluation distance |          |            |           |          | 51.3%                                | 51.3%                                        |
|     |        |      |                            |           |          | S4(Right)       | S3(Left) | S6(Bottom) | S1(Front) | S2(Rear) | ratio<br>(Fomnt 2mm)/(worst-<br>surface 2mm) | ratio<br>(Bottom 2mm)/(worst-<br>surface 2mm) | S4(Right)                                   | S3(Left) | S6(Bottom) | S1(Front) | S2(Rear) | ratio<br>worst-surface<br>(10mm/2mm) | ratio<br>(back 10mm)/(worst-<br>surface 2mm) |
| 46  |        |      | 0                          |           | 1        | 0.35            | 0.00     | 0.00       | 0.05      | 0.39     | 13.2%                                        | 0.9%                                          | 0.14                                        | 0.00     | 0.00       | 0.02      | 0.15     | 36.9%                                | 36.9%                                        |
| 47  |        |      | 2                          |           | 2        | 0.52            | 0.01     | 0.01       | 0.07      | 0.48     | 14.2%                                        | 2.3%                                          | 0.20                                        | 0.00     | 0.01       | 0.03      | 0.17     | 39.2%                                | 32.0%                                        |
| 48  |        |      | 3                          |           | 2        | 0.56            | 0.01     | 0.01       | 0.08      | 0.64     | 12.6%                                        | 1.6%                                          | 0.22                                        | 0.00     | 0.01       | 0.03      | 0.28     | 43.2%                                | 43.2%                                        |
| 49  |        |      | 7                          |           | 2        | 0.77            | 0.01     | 0.00       | 0.12      | 0.81     | 14.4%                                        | 0.3%                                          | 0.38                                        | 0.01     | 0.00       | 0.05      | 0.39     | 48.0%                                | 48.0%                                        |
| 50  |        |      | 10                         |           | 2        | 0.76            | 0.01     | 0.05       | 0.16      | 0.78     | 20.3%                                        | 5.8%                                          | 0.30                                        | 0.00     | 0.04       | 0.06      | 0.30     | 39.2%                                | 39.2%                                        |
| 51  |        |      | 11                         |           | 2        | 1.32            | 0.02     | 0.01       | 0.25      | 1.29     | 19.0%                                        | 0.6%                                          | 0.67                                        | 0.01     | 0.01       | 0.12      | 0.62     | 50.9%                                | 47.0%                                        |
| 52  |        |      | 12                         |           | 4        | 1.37            | 0.02     | 0.00       | 0.24      | 1.39     | 17.2%                                        | 0.3%                                          | 0.71                                        | 0.01     | 0.00       | 0.13      | 0.68     | 51.1%                                | 49.1%                                        |
| 53  |        |      | 13                         |           | 4        | 1.03            | 0.02     | 0.01       | 0.16      | 1.22     | 13.2%                                        | 1.0%                                          | 0.49                                        | 0.01     | 0.01       | 0.08      | 0.61     | 49.7%                                | 49.7%                                        |
| 54  |        |      | 14                         |           | 4        | 0.94            | 0.01     | 0.01       | 0.12      | 1.15     | 10.6%                                        | 1.2%                                          | 0.36                                        | 0.01     | 0.01       | 0.05      | 0.47     | 40.9%                                | 40.9%                                        |
| 55  |        |      | 20                         |           | 4        | 0.96            | 0.01     | 0.04       | 0.18      | 0.94     | 19.1%                                        | 4.2%                                          | 0.44                                        | 0.01     | 0.03       | 0.08      | 0.41     | 46.0%                                | 42.8%                                        |
| 56  |        |      | 21                         |           | 4        | 1.38            | 0.02     | 0.01       | 0.26      | 1.37     | 19.0%                                        | 0.4%                                          | 0.70                                        | 0.02     | 0.01       | 0.13      | 0.66     | 50.8%                                | 47.9%                                        |
| 57  |        |      | 22                         |           | 4        | 1.35            | 0.02     | 0.01       | 0.22      | 1.39     | 15.6%                                        | 0.5%                                          | 0.69                                        | 0.02     | 0.00       | 0.12      | 0.70     | 50.1%                                | 50.1%                                        |
| 58  |        |      | 23                         |           | 4        | 0.96            | 0.02     | 0.01       | 0.14      | 1.18     | 11.9%                                        | 0.9%                                          | 0.42                                        | 0.01     | 0.01       | 0.06      | 0.57     | 47.9%                                | 47.9%                                        |
| 59  |        |      |                            |           |          |                 |          |            |           |          |                                              |                                               |                                             |          |            |           |          |                                      |                                              |
| 60  |        |      |                            |           |          |                 |          |            |           |          |                                              |                                               |                                             |          |            |           |          |                                      |                                              |
| 61  |        |      | 128                        |           | 4        | 0.36            | 0.00     | 0.00       | 0.04      | 0.36     | 11.9%                                        | 1.2%                                          | 0.13                                        | 0.00     | 0.00       | 0.01      | 0.12     | 37.0%                                | 32.3%                                        |
| 62  |        |      | 130                        |           | 4        | 0.63            | 0.01     | 0.02       | 0.08      | 0.63     | 12.5%                                        | 0.2%                                          | 0.21                                        | 0.00     | 0.02       | 0.03      | 0.25     | 39.1%                                | 39.1%                                        |
| 63  |        |      | 131                        |           | 1        | 0.52            | 0.01     | 0.02       | 0.10      | 0.47     | 18.6%                                        | 3.5%                                          | 0.22                                        | 0.00     | 0.01       | 0.03      | 0.22     | 42.4%                                | 39.2%                                        |
| 64  |        |      | 135                        |           | 2        | 0.80            | 0.01     | 0.00       | 0.12      | 0.83     | 14.6%                                        | 0.2%                                          | 0.39                                        | 0.00     | 0.00       | 0.06      | 0.40     | 48.0%                                | 48.0%                                        |
| 65  |        |      | 138                        |           | 2        | 1.19            | 0.01     | 0.04       | 0.13      | 1.37     | 9.6%                                         | 3.0%                                          | 0.55                                        | 0.01     | 0.03       | 0.06      | 0.65     | 47.3%                                | 47.3%                                        |
| 66  |        |      | 139                        |           | 2        | 1.33            | 0.02     | 0.01       | 0.17      | 1.38     | 12.2%                                        | 0.5%                                          | 0.69                                        | 0.01     | 0.01       | 0.08      | 0.70     | 50.9%                                | 50.9%                                        |
| 67  |        |      | 140                        |           | 2        | 1.38            | 0.02     | 0.00       | 0.26      | 1.37     | 19.0%                                        | 0.3%                                          | 0.70                                        | 0.01     | 0.00       | 0.14      | 0.67     | 50.9%                                | 48.4%                                        |
| 68  |        |      | 141                        |           | 2        | 1.17            | 0.02     | 0.01       | 0.21      | 1.18     | 17.9%                                        | 0.7%                                          | 0.53                                        | 0.01     | 0.01       | 0.10      | 0.53     | 45.4%                                | 44.7%                                        |
| 69  |        |      | 142                        |           | 4        | 0.88            | 0.01     | 0.07       | 0.21      | 0.78     | 24.0%                                        | 8.0%                                          | 0.40                                        | 0.01     | 0.05       | 0.09      | 0.32     | 45.4%                                | 36.8%                                        |
| 70  |        |      | 148                        |           | 4        | 1.25            | 0.02     | 0.01       | 0.14      | 1.33     | 10.7%                                        | 0.8%                                          | 0.62                                        | 0.01     | 0.01       | 0.06      | 0.66     | 49.7%                                | 49.7%                                        |
| 71  |        |      | 149                        |           | 4        | 1.32            | 0.02     | 0.01       | 0.21      | 1.35     | 15.5%                                        | 0.8%                                          | 0.68                                        | 0.01     | 0.01       | 0.11      | 0.66     | 50.3%                                | 49.2%                                        |
| 72  |        |      | 150                        |           | 4        | 1.29            | 0.02     | 0.00       | 0.24      | 1.29     | 18.5%                                        | 0.2%                                          | 0.62                                        | 0.01     | 0.00       | 0.12      | 0.61     | 47.9%                                | 46.9%                                        |
| 73  |        |      | 151                        |           | 4        | 1.06            | 0.01     | 0.04       | 0.22      | 1.01     | 20.5%                                        | 3.4%                                          | 0.46                                        | 0.01     | 0.02       | 0.09      | 0.44     | 45.2%                                | 41.2%                                        |
| 74  |        |      |                            |           |          |                 |          |            |           |          |                                              |                                               |                                             |          |            |           |          |                                      |                                              |
| 75  |        |      |                            |           |          |                 |          |            |           |          |                                              |                                               |                                             |          |            |           |          |                                      |                                              |
| 76  |        |      | 0                          | 128       | 2        | 0.72            | 0.01     | 0.01       | 0.08      | 0.72     | 10.9%                                        | 1.6%                                          | 0.24                                        | 0.00     | 0.01       | 0.03      | 0.25     | 34.4%                                | 34.4%                                        |
| 77  |        |      | 2                          | 130       | 4        | 1.42            | 0.01     | 0.05       | 0.19      | 1.33     | 13.4%                                        | 3.4%                                          | 0.53                                        | 0.01     | 0.04       | 0.06      | 0.54     | 38.0%                                | 38.0%                                        |
| 78  |        |      | 3                          | 131       | 4        | 1.43            | 0.02     | 0.03       | 0.27      | 1.42     | 19.2%                                        | 2.2%                                          | 0.59                                        | 0.01     | 0.02       | 0.11      | 0.62     | 43.4%                                | 43.4%                                        |
| 79  |        |      | 7                          | 135       | 4        | 1.46            | 0.02     | 0.01       | 0.21      | 1.53     | 13.5%                                        | 0.5%                                          | 0.65                                        | 0.01     | 0.01       | 0.10      | 0.69     | 45.3%                                | 45.3%                                        |
| 80  |        |      | 10                         | 150       | 4        | 2.12            | 0.04     | 0.05       | 0.30      | 2.03     | 14.3%                                        | 2.4%                                          | 0.81                                        | 0.02     | 0.04       | 0.14      | 0.82     | 38.5%                                | 38.5%                                        |
| 81  |        |      | 11                         | 148       | 4        | 3.25            | 0.06     | 0.03       | 0.55      | 3.33     | 16.5%                                        | 1.0%                                          | 1.63                                        | 0.05     | 0.02       | 0.26      | 1.69     | 50.6%                                | 50.6%                                        |
| 82  |        |      | 12                         | 149       | 8        | 3.38            | 0.08     | 0.02       | 0.69      | 3.49     | 19.6%                                        | 0.6%                                          | 1.71                                        | 0.05     | 0.02       | 0.39      | 1.78     | 50.9%                                | 50.9%                                        |
| 83  |        |      | 13                         | 141       | 8        | 3.06            | 0.06     | 0.02       | 0.52      | 3.32     | 15.7%                                        | 0.7%                                          | 1.44                                        | 0.04     | 0.02       | 0.25      | 1.63     | 49.0%                                | 49.0%                                        |
| 84  |        |      | 14                         | 142       | 8        | 2.64            | 0.04     | 0.13       | 0.50      | 2.65     | 18.8%                                        | 4.9%                                          | 1.14                                        | 0.03     | 0.09       | 0.19      | 1.17     | 44.2%                                | 44.2%                                        |
| 85  |        |      | 20                         | 138       | 8        | 2.77            | 0.03     | 0.11       | 0.43      | 2.89     | 15.0%                                        | 3.9%                                          | 1.32                                        | 0.02     | 0.08       | 0.19      | 1.38     | 47.8%                                | 47.8%                                        |
| 86  |        |      | 21                         | 139       | 8        | 3.41            | 0.06     | 0.02       | 0.61      | 3.52     | 17.5%                                        | 0.4%                                          | 1.72                                        | 0.05     | 0.01       | 0.31      | 1.81     | 51.3%                                | 51.3%                                        |
| 87  |        |      | 22                         | 140       | 8        | 3.54            | 0.08     | 0.02       | 0.73      | 3.67     | 19.7%                                        | 0.5%                                          | 1.78                                        | 0.06     | 0.01       | 0.43      | 1.87     | 50.9%                                | 50.9%                                        |
| 88  |        |      | 23                         | 151       | 8        | 2.80            | 0.05     | 0.07       | 0.48      | 3.01     | 16.1%                                        | 2.4%                                          | 1.30                                        | 0.04     | 0.05       | 0.21      | 1.46     | 48.3%                                | 48.3%                                        |
| 89  |        |      |                            |           |          |                 |          |            |           |          |                                              |                                               |                                             |          |            |           |          |                                      |                                              |
| 90  |        |      |                            |           |          |                 |          |            |           |          |                                              |                                               |                                             |          |            |           |          |                                      |                                              |

- L-patch High CH

|     |        |      |           |           |          | max ratio out of all beams |          |            |           |          |                                      |                                        |                                             | max ratio out of all beams |            |           |          |                                |                                       |  |  |
|-----|--------|------|-----------|-----------|----------|----------------------------|----------|------------|-----------|----------|--------------------------------------|----------------------------------------|---------------------------------------------|----------------------------|------------|-----------|----------|--------------------------------|---------------------------------------|--|--|
| No. | Module | Type | Beam ID_1 | Bema ID_2 | Feed no. | 4cm2 PD(mW/cm2)            |          |            |           |          | 23.8%                                | 8.9%                                   | 4cm2 PD(mW/cm2) at 10mm evaluation distance |                            |            |           |          | 51.6%                          | 51.5%                                 |  |  |
|     |        |      |           |           |          | S4(Right)                  | S3(Left) | S6(Bottom) | S1(Front) | S2(Rear) | ratio (Font 2mm)/(worst-surface 2mm) | ratio (Bottom 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) |  |  |
| 46  |        |      | 0         |           | 1        | 0.33                       | 0.00     | 0.00       | 0.05      | 0.37     | 13.2%                                | 0.7%                                   | 0.13                                        | 0.00                       | 0.00       | 0.02      | 0.14     | 37.3%                          | 37.3%                                 |  |  |
| 47  |        |      | 2         |           | 2        | 0.49                       | 0.00     | 0.01       | 0.08      | 0.44     | 15.6%                                | 2.4%                                   | 0.19                                        | 0.00                       | 0.01       | 0.03      | 0.15     | 38.9%                          | 31.3%                                 |  |  |
| 48  |        |      | 3         |           | 2        | 0.51                       | 0.01     | 0.01       | 0.07      | 0.60     | 12.1%                                | 1.3%                                   | 0.20                                        | 0.01                       | 0.01       | 0.03      | 0.26     | 42.9%                          | 42.9%                                 |  |  |
| 49  |        |      | 7         |           | 2        | 0.76                       | 0.01     | 0.00       | 0.11      | 0.79     | 14.0%                                | 0.4%                                   | 0.37                                        | 0.01                       | 0.00       | 0.05      | 0.37     | 47.2%                          | 47.1%                                 |  |  |
| 50  |        |      | 10        |           | 2        | 0.78                       | 0.01     | 0.04       | 0.16      | 0.78     | 20.9%                                | 5.1%                                   | 0.32                                        | 0.01                       | 0.03       | 0.07      | 0.31     | 41.0%                          | 39.9%                                 |  |  |
| 51  |        |      | 11        |           | 2        | 1.24                       | 0.02     | 0.01       | 0.24      | 1.21     | 19.3%                                | 0.6%                                   | 0.63                                        | 0.01                       | 0.01       | 0.12      | 0.58     | 51.1%                          | 46.8%                                 |  |  |
| 52  |        |      | 12        |           | 4        | 1.36                       | 0.02     | 0.00       | 0.22      | 1.37     | 15.8%                                | 0.3%                                   | 0.71                                        | 0.02                       | 0.00       | 0.11      | 0.67     | 51.6%                          | 48.8%                                 |  |  |
| 53  |        |      | 13        |           | 4        | 0.99                       | 0.02     | 0.01       | 0.15      | 1.17     | 12.6%                                | 1.0%                                   | 0.49                                        | 0.01                       | 0.01       | 0.07      | 0.59     | 49.9%                          | 49.9%                                 |  |  |
| 54  |        |      | 14        |           | 4        | 0.88                       | 0.01     | 0.01       | 0.12      | 1.04     | 11.4%                                | 1.4%                                   | 0.33                                        | 0.01                       | 0.01       | 0.05      | 0.45     | 43.4%                          | 43.4%                                 |  |  |
| 55  |        |      | 20        |           | 4        | 0.96                       | 0.01     | 0.03       | 0.18      | 0.93     | 19.1%                                | 3.5%                                   | 0.45                                        | 0.01                       | 0.03       | 0.08      | 0.41     | 46.7%                          | 43.3%                                 |  |  |
| 56  |        |      | 21        |           | 4        | 1.31                       | 0.02     | 0.01       | 0.25      | 1.30     | 18.7%                                | 0.5%                                   | 0.67                                        | 0.01                       | 0.01       | 0.12      | 0.62     | 51.4%                          | 47.3%                                 |  |  |
| 57  |        |      | 22        |           | 4        | 1.34                       | 0.02     | 0.01       | 0.19      | 1.37     | 13.8%                                | 0.5%                                   | 0.69                                        | 0.02                       | 0.00       | 0.09      | 0.68     | 50.0%                          | 49.9%                                 |  |  |
| 58  |        |      | 23        |           | 4        | 0.89                       | 0.02     | 0.01       | 0.13      | 1.09     | 12.3%                                | 1.1%                                   | 0.40                                        | 0.01                       | 0.01       | 0.06      | 0.54     | 49.7%                          | 49.7%                                 |  |  |
| 59  |        |      |           |           |          |                            |          |            |           |          |                                      |                                        |                                             |                            |            |           |          |                                |                                       |  |  |
| 60  |        |      |           |           |          |                            |          |            |           |          |                                      |                                        |                                             |                            |            |           |          |                                |                                       |  |  |
| 61  |        |      | 128       |           | 4        | 0.36                       | 0.00     | 0.00       | 0.04      | 0.36     | 11.1%                                | 1.3%                                   | 0.14                                        | 0.00                       | 0.00       | 0.01      | 0.12     | 39.7%                          | 33.7%                                 |  |  |
| 62  |        |      | 130       |           | 4        | 0.58                       | 0.01     | 0.02       | 0.07      | 0.59     | 11.9%                                | 1.6%                                   | 0.20                                        | 0.00                       | 0.02       | 0.03      | 0.23     | 39.4%                          | 39.4%                                 |  |  |
| 63  |        |      | 131       |           | 1        | 0.50                       | 0.01     | 0.02       | 0.09      | 0.45     | 18.7%                                | 3.7%                                   | 0.22                                        | 0.00                       | 0.01       | 0.03      | 0.19     | 44.0%                          | 39.1%                                 |  |  |
| 64  |        |      | 135       |           | 2        | 0.79                       | 0.01     | 0.00       | 0.11      | 0.82     | 13.2%                                | 0.2%                                   | 0.39                                        | 0.00                       | 0.00       | 0.05      | 0.39     | 47.6%                          | 47.5%                                 |  |  |
| 65  |        |      | 138       |           | 2        | 1.12                       | 0.01     | 0.04       | 0.12      | 1.30     | 9.4%                                 | 2.8%                                   | 0.53                                        | 0.01                       | 0.03       | 0.05      | 0.63     | 48.5%                          | 48.5%                                 |  |  |
| 66  |        |      | 139       |           | 2        | 1.29                       | 0.01     | 0.01       | 0.15      | 1.34     | 11.4%                                | 0.5%                                   | 0.68                                        | 0.01                       | 0.01       | 0.07      | 0.68     | 50.6%                          | 50.4%                                 |  |  |
| 67  |        |      | 140       |           | 2        | 1.37                       | 0.02     | 0.00       | 0.24      | 1.36     | 17.3%                                | 0.3%                                   | 0.70                                        | 0.01                       | 0.00       | 0.12      | 0.66     | 51.2%                          | 48.2%                                 |  |  |
| 68  |        |      | 142       |           | 2        | 1.14                       | 0.01     | 0.01       | 0.19      | 1.15     | 16.9%                                | 0.8%                                   | 0.53                                        | 0.01                       | 0.01       | 0.09      | 0.52     | 46.0%                          | 45.2%                                 |  |  |
| 69  |        |      | 143       |           | 4        | 0.78                       | 0.01     | 0.01       | 0.19      | 0.73     | 8.2%                                 | 0.8%                                   | 0.36                                        | 0.01                       | 0.01       | 0.04      | 0.31     | 45.6%                          | 45.6%                                 |  |  |
| 70  |        |      | 148       |           | 4        | 1.19                       | 0.02     | 0.01       | 0.13      | 1.28     | 10.5%                                | 0.9%                                   | 0.60                                        | 0.01                       | 0.01       | 0.06      | 0.64     | 49.8%                          | 49.8%                                 |  |  |
| 71  |        |      | 149       |           | 4        | 1.31                       | 0.02     | 0.01       | 0.19      | 1.34     | 14.1%                                | 0.8%                                   | 0.68                                        | 0.01                       | 0.01       | 0.09      | 0.65     | 51.0%                          | 48.8%                                 |  |  |
| 72  |        |      | 150       |           | 4        | 1.26                       | 0.02     | 0.00       | 0.22      | 1.27     | 17.2%                                | 0.2%                                   | 0.62                                        | 0.01                       | 0.00       | 0.11      | 0.59     | 49.0%                          | 47.0%                                 |  |  |
| 73  |        |      | 151       |           | 4        | 1.00                       | 0.01     | 0.04       | 0.20      | 0.97     | 20.3%                                | 3.7%                                   | 0.45                                        | 0.01                       | 0.02       | 0.09      | 0.43     | 45.0%                          | 42.8%                                 |  |  |
| 74  |        |      |           |           |          |                            |          |            |           |          |                                      |                                        |                                             |                            |            |           |          |                                |                                       |  |  |
| 75  |        |      |           |           |          |                            |          |            |           |          |                                      |                                        |                                             |                            |            |           |          |                                |                                       |  |  |
| 76  |        |      | 0         | 128       | 2        | 0.72                       | 0.01     | 0.01       | 0.07      | 0.70     | 10.4%                                | 1.5%                                   | 0.25                                        | 0.00                       | 0.01       | 0.03      | 0.25     | 35.0%                          | 34.5%                                 |  |  |
| 77  |        |      | 2         | 130       | 4        | 1.34                       | 0.02     | 0.05       | 0.20      | 1.23     | 14.9%                                | 3.6%                                   | 0.51                                        | 0.01                       | 0.04       | 0.06      | 0.50     | 37.8%                          | 36.9%                                 |  |  |
| 78  |        |      | 3         | 131       | 4        | 1.30                       | 0.02     | 0.03       | 0.26      | 1.31     | 19.8%                                | 2.5%                                   | 0.55                                        | 0.02                       | 0.02       | 0.10      | 0.57     | 43.9%                          | 43.9%                                 |  |  |
| 79  |        |      | 7         | 135       | 4        | 1.45                       | 0.02     | 0.01       | 0.19      | 1.50     | 13.0%                                | 0.6%                                   | 0.67                                        | 0.01                       | 0.01       | 0.09      | 0.67     | 44.7%                          | 44.7%                                 |  |  |
| 80  |        |      | 10        | 150       | 4        | 2.14                       | 0.03     | 0.04       | 0.30      | 2.04     | 14.0%                                | 2.0%                                   | 0.81                                        | 0.02                       | 0.04       | 0.13      | 0.81     | 37.9%                          | 37.8%                                 |  |  |
| 81  |        |      | 11        | 148       | 4        | 2.98                       | 0.06     | 0.03       | 0.53      | 3.05     | 17.3%                                | 1.0%                                   | 1.49                                        | 0.05                       | 0.02       | 0.26      | 1.55     | 50.7%                          | 50.7%                                 |  |  |
| 82  |        |      | 12        | 149       | 8        | 3.16                       | 0.07     | 0.02       | 0.60      | 3.26     | 18.5%                                | 0.6%                                   | 1.60                                        | 0.06                       | 0.02       | 0.31      | 1.66     | 51.1%                          | 51.1%                                 |  |  |
| 83  |        |      | 13        | 141       | 8        | 2.86                       | 0.05     | 0.02       | 0.49      | 2.99     | 15.8%                                | 0.7%                                   | 1.34                                        | 0.04                       | 0.02       | 0.24      | 1.52     | 49.3%                          | 49.3%                                 |  |  |
| 84  |        |      | 14        | 142       | 8        | 2.38                       | 0.03     | 0.13       | 0.47      | 2.40     | 19.6%                                | 1.5%                                   | 1.03                                        | 0.02                       | 0.09       | 0.19      | 1.12     | 46.8%                          | 46.8%                                 |  |  |
| 85  |        |      | 20        | 138       | 8        | 2.63                       | 0.04     | 0.10       | 0.43      | 2.70     | 15.9%                                | 3.9%                                   | 1.26                                        | 0.03                       | 0.08       | 0.19      | 1.29     | 48.0%                          | 48.0%                                 |  |  |
| 86  |        |      | 21        | 139       | 8        | 3.15                       | 0.05     | 0.02       | 0.56      | 3.23     | 17.3%                                | 0.6%                                   | 1.59                                        | 0.04                       | 0.02       | 0.27      | 1.66     | 51.5%                          | 51.5%                                 |  |  |
| 87  |        |      | 22        | 140       | 8        | 3.35                       | 0.08     | 0.02       | 0.63      | 3.47     | 18.2%                                | 0.5%                                   | 1.69                                        | 0.06                       | 0.01       | 0.34      | 1.77     | 51.1%                          | 51.1%                                 |  |  |
| 88  |        |      | 23        | 151       | 8        | 2.54                       | 0.05     | 0.08       | 0.48      | 2.73     | 17.5%                                | 2.9%                                   | 1.19                                        | 0.04                       | 0.05       | 0.22      | 1.35     | 49.4%                          | 49.4%                                 |  |  |
| 89  |        |      |           |           |          |                            |          |            |           |          |                                      |                                        |                                             |                            |            |           |          |                                |                                       |  |  |
| 90  |        |      |           |           |          |                            |          |            |           |          |                                      |                                        |                                             |                            |            |           |          |                                |                                       |  |  |

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

## - L-patch Low CH

|     |        |      |           |           |          | max ratio out of all beams |          |            |           |          |                                      |                                        |           |          |                                             | max ratio out of all beams |          |                                |                                       |       |  |       |  |
|-----|--------|------|-----------|-----------|----------|----------------------------|----------|------------|-----------|----------|--------------------------------------|----------------------------------------|-----------|----------|---------------------------------------------|----------------------------|----------|--------------------------------|---------------------------------------|-------|--|-------|--|
| No. | Module | Type | Beam ID_1 | Bema ID_2 | Feed no. | 4cm2 PD(mW/cm2)            |          |            |           |          | 34.1%                                |                                        | 7.0%      |          | 4cm2 PD(mW/cm2) at 10mm evaluation distance |                            |          |                                |                                       | 54.3% |  | 53.2% |  |
|     |        |      |           |           |          | S4(Right)                  | S3(Left) | S6(Bottom) | S1(Front) | S2(Rear) | ratio (Fomt 2mm)/(worst-surface 2mm) | ratio (Bottom 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) |       |  |       |  |
| 46  |        |      | 0         |           | 1        | 0.28                       | 0.00     | 0.00       | 0.06      | 0.26     | 20.6%                                | 1.5%                                   | 0.11      | 0.00     | 0.00                                        | 0.02                       | 0.09     | 40.9%                          | 33.6%                                 |       |  |       |  |
| 47  |        |      | 2         |           | 2        | 0.62                       | 0.01     | 0.02       | 0.14      | 0.55     | 21.9%                                | 2.7%                                   | 0.24      | 0.01     | 0.01                                        | 0.06                       | 0.20     | 39.1%                          | 31.8%                                 |       |  |       |  |
| 48  |        |      | 3         |           | 2        | 0.62                       | 0.01     | 0.00       | 0.14      | 0.59     | 23.1%                                | 0.8%                                   | 0.32      | 0.01     | 0.00                                        | 0.07                       | 0.27     | 52.1%                          | 43.5%                                 |       |  |       |  |
| 49  |        |      | 4         |           | 2        | 0.67                       | 0.01     | 0.02       | 0.13      | 0.61     | 19.7%                                | 3.0%                                   | 0.21      | 0.00     | 0.02                                        | 0.05                       | 0.19     | 31.6%                          | 28.0%                                 |       |  |       |  |
| 50  |        |      | 8         |           | 2        | 0.58                       | 0.01     | 0.01       | 0.14      | 0.52     | 24.0%                                | 1.2%                                   | 0.28      | 0.01     | 0.01                                        | 0.07                       | 0.23     | 48.4%                          | 40.6%                                 |       |  |       |  |
| 51  |        |      | 9         |           | 2        | 0.68                       | 0.01     | 0.02       | 0.14      | 0.64     | 20.0%                                | 2.3%                                   | 0.28      | 0.00     | 0.01                                        | 0.06                       | 0.24     | 40.5%                          | 35.2%                                 |       |  |       |  |
| 52  |        |      | 12        |           | 4        | 1.04                       | 0.01     | 0.05       | 0.24      | 0.94     | 23.2%                                | 4.9%                                   | 0.54      | 0.01     | 0.04                                        | 0.12                       | 0.41     | 51.6%                          | 38.9%                                 |       |  |       |  |
| 53  |        |      | 13        |           | 4        | 1.04                       | 0.02     | 0.02       | 0.26      | 0.96     | 25.3%                                | 1.8%                                   | 0.56      | 0.02     | 0.01                                        | 0.14                       | 0.47     | 54.0%                          | 45.0%                                 |       |  |       |  |
| 54  |        |      | 14        |           | 4        | 1.35                       | 0.02     | 0.01       | 0.37      | 1.23     | 27.1%                                | 0.8%                                   | 0.72      | 0.01     | 0.01                                        | 0.20                       | 0.58     | 53.3%                          | 42.6%                                 |       |  |       |  |
| 55  |        |      | 15        |           | 4        | 1.36                       | 0.01     | 0.06       | 0.29      | 1.34     | 21.2%                                | 4.5%                                   | 0.65      | 0.01     | 0.04                                        | 0.14                       | 0.60     | 47.7%                          | 44.3%                                 |       |  |       |  |
| 56  |        |      | 16        |           | 4        | 1.03                       | 0.01     | 0.09       | 0.24      | 1.22     | 19.8%                                | 7.0%                                   | 0.42      | 0.01     | 0.07                                        | 0.12                       | 0.43     | 35.4%                          | 35.4%                                 |       |  |       |  |
| 57  |        |      | 22        |           | 4        | 1.11                       | 0.01     | 0.02       | 0.28      | 0.97     | 25.0%                                | 1.8%                                   | 0.58      | 0.01     | 0.02                                        | 0.14                       | 0.47     | 52.6%                          | 42.2%                                 |       |  |       |  |
| 58  |        |      | 23        |           | 4        | 1.08                       | 0.02     | 0.01       | 0.27      | 1.05     | 24.8%                                | 0.7%                                   | 0.59      | 0.01     | 0.01                                        | 0.14                       | 0.51     | 54.3%                          | 47.5%                                 |       |  |       |  |
| 59  |        |      | 24        |           | 4        | 1.45                       | 0.01     | 0.02       | 0.36      | 1.36     | 24.7%                                | 1.3%                                   | 0.76      | 0.01     | 0.01                                        | 0.19                       | 0.65     | 52.4%                          | 44.5%                                 |       |  |       |  |
| 60  |        |      | 25        |           | 4        | 1.13                       | 0.01     | 0.08       | 0.24      | 1.27     | 19.2%                                | 6.4%                                   | 0.45      | 0.01     | 0.06                                        | 0.12                       | 0.49     | 38.8%                          | 38.8%                                 |       |  |       |  |
| 61  |        |      | 128       |           | 1        | 0.35                       | 0.00     | 0.00       | 0.06      | 0.33     | 18.1%                                | 1.2%                                   | 0.13      | 0.00     | 0.00                                        | 0.02                       | 0.12     | 37.7%                          | 33.2%                                 |       |  |       |  |
| 62  |        |      | 130       |           | 2        | 0.61                       | 0.01     | 0.01       | 0.13      | 0.64     | 20.7%                                | 0.9%                                   | 0.27      | 0.01     | 0.00                                        | 0.06                       | 0.20     | 42.1%                          | 31.7%                                 |       |  |       |  |
| 63  |        |      | 131       |           | 2        | 0.69                       | 0.01     | 0.01       | 0.19      | 0.62     | 27.3%                                | 1.3%                                   | 0.33      | 0.01     | 0.01                                        | 0.09                       | 0.27     | 48.3%                          | 39.2%                                 |       |  |       |  |
| 64  |        |      | 132       |           | 2        | 0.78                       | 0.01     | 0.01       | 0.14      | 0.71     | 17.9%                                | 1.0%                                   | 0.27      | 0.00     | 0.01                                        | 0.06                       | 0.27     | 34.4%                          | 34.4%                                 |       |  |       |  |
| 65  |        |      | 136       |           | 2        | 0.62                       | 0.01     | 0.01       | 0.14      | 0.62     | 22.9%                                | 0.9%                                   | 0.34      | 0.01     | 0.00                                        | 0.06                       | 0.28     | 53.8%                          | 44.5%                                 |       |  |       |  |
| 66  |        |      | 137       |           | 2        | 0.68                       | 0.01     | 0.01       | 0.16      | 0.64     | 23.8%                                | 2.0%                                   | 0.23      | 0.00     | 0.01                                        | 0.06                       | 0.24     | 35.0%                          | 35.0%                                 |       |  |       |  |
| 67  |        |      | 140       |           | 4        | 1.00                       | 0.02     | 0.01       | 0.25      | 1.06     | 23.4%                                | 1.3%                                   | 0.45      | 0.01     | 0.01                                        | 0.12                       | 0.33     | 42.3%                          | 31.6%                                 |       |  |       |  |
| 68  |        |      | 141       |           | 4        | 1.04                       | 0.03     | 0.01       | 0.28      | 0.96     | 26.4%                                | 0.7%                                   | 0.54      | 0.02     | 0.00                                        | 0.13                       | 0.46     | 52.0%                          | 44.2%                                 |       |  |       |  |
| 69  |        |      | 142       |           | 4        | 1.30                       | 0.01     | 0.01       | 0.35      | 1.20     | 26.5%                                | 0.8%                                   | 0.68      | 0.01     | 0.01                                        | 0.18                       | 0.54     | 52.1%                          | 41.3%                                 |       |  |       |  |
| 70  |        |      | 143       |           | 4        | 1.31                       | 0.02     | 0.03       | 0.32      | 1.31     | 24.1%                                | 2.3%                                   | 0.56      | 0.01     | 0.02                                        | 0.15                       | 0.60     | 45.6%                          | 45.6%                                 |       |  |       |  |
| 71  |        |      | 144       |           | 4        | 1.10                       | 0.02     | 0.01       | 0.24      | 1.21     | 19.9%                                | 0.7%                                   | 0.40      | 0.01     | 0.01                                        | 0.12                       | 0.41     | 33.9%                          | 33.9%                                 |       |  |       |  |
| 72  |        |      | 150       |           | 4        | 1.08                       | 0.03     | 0.01       | 0.29      | 0.94     | 26.9%                                | 0.9%                                   | 0.55      | 0.02     | 0.01                                        | 0.14                       | 0.47     | 51.1%                          | 44.0%                                 |       |  |       |  |
| 73  |        |      | 151       |           | 4        | 1.18                       | 0.02     | 0.02       | 0.28      | 1.11     | 23.7%                                | 1.3%                                   | 0.61      | 0.02     | 0.01                                        | 0.14                       | 0.54     | 52.1%                          | 45.7%                                 |       |  |       |  |
| 74  |        |      | 152       |           | 4        | 1.34                       | 0.02     | 0.02       | 0.34      | 1.28     | 25.6%                                | 1.7%                                   | 0.67      | 0.01     | 0.02                                        | 0.17                       | 0.60     | 50.1%                          | 45.0%                                 |       |  |       |  |
| 75  |        |      | 153       |           | 4        | 1.22                       | 0.01     | 0.02       | 0.26      | 1.29     | 20.3%                                | 1.5%                                   | 0.46      | 0.01     | 0.01                                        | 0.12                       | 0.54     | 41.8%                          | 41.8%                                 |       |  |       |  |
| 76  |        |      | 0         | 128       | 2        | 0.59                       | 0.01     | 0.01       | 0.12      | 0.55     | 20.6%                                | 1.3%                                   | 0.25      | 0.01     | 0.01                                        | 0.05                       | 0.24     | 43.0%                          | 39.9%                                 |       |  |       |  |
| 77  |        |      | 2         | 131       | 4        | 1.71                       | 0.03     | 0.04       | 0.56      | 1.73     | 32.1%                                | 2.9%                                   | 0.77      | 0.03     | 0.03                                        | 0.26                       | 0.79     | 45.6%                          | 45.6%                                 |       |  |       |  |
| 78  |        |      | 3         | 136       | 4        | 1.75                       | 0.03     | 0.01       | 0.44      | 1.74     | 25.0%                                | 0.8%                                   | 0.92      | 0.02     | 0.01                                        | 0.20                       | 0.88     | 52.6%                          | 50.2%                                 |       |  |       |  |
| 79  |        |      | 4         | 137       | 4        | 1.68                       | 0.02     | 0.05       | 0.53      | 1.82     | 29.2%                                | 2.7%                                   | 0.54      | 0.01     | 0.04                                        | 0.20                       | 0.60     | 32.9%                          | 32.9%                                 |       |  |       |  |
| 80  |        |      | 8         | 132       | 4        | 1.60                       | 0.02     | 0.02       | 0.34      | 1.55     | 21.4%                                | 1.2%                                   | 0.61      | 0.01     | 0.01                                        | 0.13                       | 0.59     | 37.9%                          | 36.9%                                 |       |  |       |  |
| 81  |        |      | 9         | 130       | 4        | 1.60                       | 0.03     | 0.03       | 0.43      | 1.72     | 25.2%                                | 1.7%                                   | 0.70      | 0.02     | 0.02                                        | 0.21                       | 0.65     | 40.5%                          | 38.0%                                 |       |  |       |  |
| 82  |        |      | 12        | 142       | 8        | 2.96                       | 0.04     | 0.08       | 0.97      | 2.99     | 32.4%                                | 2.6%                                   | 1.48      | 0.03     | 0.06                                        | 0.50                       | 1.51     | 50.4%                          | 50.4%                                 |       |  |       |  |
| 83  |        |      | 13        | 151       | 8        | 3.26                       | 0.08     | 0.04       | 0.87      | 3.17     | 26.7%                                | 1.3%                                   | 1.75      | 0.06     | 0.03                                        | 0.45                       | 1.73     | 53.6%                          | 53.2%                                 |       |  |       |  |
| 84  |        |      | 14        | 140       | 8        | 3.01                       | 0.06     | 0.05       | 1.01      | 3.03     | 33.3%                                | 1.6%                                   | 1.54      | 0.03     | 0.03                                        | 0.53                       | 1.51     | 51.0%                          | 49.7%                                 |       |  |       |  |
| 85  |        |      | 15        | 153       | 8        | 2.91                       | 0.04     | 0.12       | 0.84      | 3.01     | 28.1%                                | 4.1%                                   | 1.32      | 0.03     | 0.08                                        | 0.43                       | 1.34     | 44.4%                          | 44.4%                                 |       |  |       |  |
| 86  |        |      | 16        | 152       | 8        | 2.88                       | 0.04     | 0.15       | 0.99      | 2.92     | 33.8%                                | 5.2%                                   | 1.37      | 0.03     | 0.12                                        | 0.50                       | 1.39     | 47.6%                          | 47.6%                                 |       |  |       |  |
| 87  |        |      | 22        | 150       | 8        | 2.44                       | 0.04     | 0.03       | 0.62      | 2.07     | 25.3%                                | 1.2%                                   | 1.28      | 0.03     | 0.02                                        | 0.29                       | 0.97     | 52.5%                          | 39.7%                                 |       |  |       |  |
| 88  |        |      | 23        | 141       | 8        | 3.34                       | 0.09     | 0.02       | 0.88      | 3.25     | 26.2%                                | 0.7%                                   | 1.79      | 0.07     | 0.02                                        | 0.44                       | 1.74     | 53.7%                          | 52.0%                                 |       |  |       |  |
| 89  |        |      | 24        | 144       | 8        | 2.97                       | 0.03     | 0.04       | 1.00      | 3.03     | 33.0%                                | 1.3%                                   | 1.47      | 0.02     | 0.02                                        | 0.52                       | 1.48     | 48.8%                          | 48.8%                                 |       |  |       |  |
| 90  |        |      | 25        | 143       | 8        | 2.78                       | 0.05     | 0.16       | 0.98      | 2.88     | 34.1%                                | 5.6%                                   | 1.21      | 0.04     | 0.12                                        | 0.48                       | 1.29     | 44.8%                          | 44.8%                                 |       |  |       |  |

## - L-patch Mid CH

|     |        |      |           |           |          | max ratio out of all beams |          |            |           |          |                                             |                                               |           |          |            |                                             |          | max ratio out of all beams           |                                              |       |  |       |  |       |  |
|-----|--------|------|-----------|-----------|----------|----------------------------|----------|------------|-----------|----------|---------------------------------------------|-----------------------------------------------|-----------|----------|------------|---------------------------------------------|----------|--------------------------------------|----------------------------------------------|-------|--|-------|--|-------|--|
| No. | Module | Type | Beam ID_1 | Bema ID_2 | Feed no. | 4cm2 PD(mW/cm2)            |          |            |           |          |                                             | 34.1%                                         |           | 8.0%     |            | 4cm2 PD(mW/cm2) at 10mm evaluation distance |          |                                      |                                              |       |  | 55.6% |  | 52.3% |  |
|     |        |      |           |           |          | S4(Right)                  | S3(Left) | S6(Bottom) | S1(Front) | S2(Rear) | ratio<br>(Fomt 2mm)/(worst-<br>surface 2mm) | ratio<br>(Bottom 2mm)/(worst-<br>surface 2mm) | S4(Right) | S3(Left) | S6(Bottom) | S1(Front)                                   | S2(Rear) | ratio<br>worst-surface<br>(10mm/2mm) | ratio<br>(back 10mm)/(worst-<br>surface 2mm) |       |  |       |  |       |  |
| 46  |        |      | 0         |           | 1        | 0.27                       | 0.00     | 0.01       | 0.05      | 0.30     | 16.2%                                       | 2.1%                                          | 0.10      | 0.00     | 0.00       | 0.01                                        | 0.10     | 34.7%                                | 34.7%                                        |       |  |       |  |       |  |
| 47  |        |      | 2         |           | 2        | 0.57                       | 0.01     | 0.02       | 0.11      | 0.60     | 18.9%                                       | 4.2%                                          | 0.20      | 0.01     | 0.02       | 0.05                                        | 0.20     | 33.8%                                | 33.8%                                        |       |  |       |  |       |  |
| 48  |        |      | 3         |           | 2        | 0.63                       | 0.01     | 0.01       | 0.11      | 0.61     | 17.8%                                       | 1.0%                                          | 0.33      | 0.00     | 0.00       | 0.05                                        | 0.29     | 51.7%                                | 46.6%                                        |       |  |       |  |       |  |
| 49  |        |      | 4         |           | 2        | 0.65                       | 0.01     | 0.02       | 0.14      | 0.67     | 21.3%                                       | 3.5%                                          | 0.23      | 0.01     | 0.02       | 0.05                                        | 0.20     | 34.1%                                | 29.4%                                        |       |  |       |  |       |  |
| 50  |        |      | 8         |           | 2        | 0.55                       | 0.01     | 0.02       | 0.09      | 0.54     | 16.9%                                       | 2.8%                                          | 0.27      | 0.00     | 0.01       | 0.04                                        | 0.24     | 48.7%                                | 44.1%                                        |       |  |       |  |       |  |
| 51  |        |      | 9         |           | 2        | 0.69                       | 0.01     | 0.02       | 0.14      | 0.69     | 20.9%                                       | 3.0%                                          | 0.29      | 0.01     | 0.01       | 0.05                                        | 0.26     | 42.7%                                | 37.3%                                        |       |  |       |  |       |  |
| 52  |        |      | 12        |           | 4        | 0.92                       | 0.02     | 0.06       | 0.21      | 1.01     | 20.4%                                       | 6.4%                                          | 0.42      | 0.01     | 0.05       | 0.09                                        | 0.37     | 41.2%                                | 36.3%                                        |       |  |       |  |       |  |
| 53  |        |      | 13        |           | 4        | 1.09                       | 0.02     | 0.02       | 0.17      | 1.07     | 15.5%                                       | 1.6%                                          | 0.60      | 0.01     | 0.01       | 0.08                                        | 0.53     | 55.5%                                | 49.1%                                        |       |  |       |  |       |  |
| 54  |        |      | 14        |           | 4        | 1.42                       | 0.01     | 0.01       | 0.29      | 1.32     | 20.1%                                       | 0.7%                                          | 0.75      | 0.01     | 0.01       | 0.14                                        | 0.65     | 53.2%                                | 46.0%                                        |       |  |       |  |       |  |
| 55  |        |      | 15        |           | 4        | 1.41                       | 0.02     | 0.07       | 0.29      | 1.38     | 20.7%                                       | 5.0%                                          | 0.67      | 0.02     | 0.04       | 0.12                                        | 0.67     | 47.6%                                | 47.4%                                        |       |  |       |  |       |  |
| 56  |        |      | 16        |           | 4        | 1.16                       | 0.03     | 0.10       | 0.24      | 1.30     | 18.3%                                       | 8.0%                                          | 0.47      | 0.02     | 0.08       | 0.11                                        | 0.52     | 40.4%                                | 40.4%                                        |       |  |       |  |       |  |
| 57  |        |      | 22        |           | 4        | 1.14                       | 0.01     | 0.02       | 0.22      | 1.08     | 19.0%                                       | 2.1%                                          | 0.61      | 0.01     | 0.02       | 0.10                                        | 0.52     | 53.7%                                | 46.0%                                        |       |  |       |  |       |  |
| 58  |        |      | 23        |           | 4        | 1.06                       | 0.02     | 0.01       | 0.21      | 1.00     | 19.5%                                       | 1.4%                                          | 0.56      | 0.01     | 0.01       | 0.11                                        | 0.49     | 52.7%                                | 45.7%                                        |       |  |       |  |       |  |
| 59  |        |      | 24        |           | 4        | 1.44                       | 0.01     | 0.02       | 0.27      | 1.38     | 18.9%                                       | 1.1%                                          | 0.74      | 0.01     | 0.01       | 0.12                                        | 0.70     | 51.1%                                | 48.7%                                        |       |  |       |  |       |  |
| 60  |        |      | 25        |           | 4        | 1.28                       | 0.03     | 0.10       | 0.27      | 1.34     | 19.9%                                       | 7.6%                                          | 0.55      | 0.02     | 0.07       | 0.12                                        | 0.58     | 43.0%                                | 43.0%                                        |       |  |       |  |       |  |
| 61  |        |      | 128       |           | 1        | 0.34                       | 0.00     | 0.01       | 0.06      | 0.33     | 17.5%                                       | 1.6%                                          | 0.14      | 0.00     | 0.00       | 0.02                                        | 0.12     | 40.0%                                | 34.4%                                        |       |  |       |  |       |  |
| 62  |        |      | 130       |           | 2        | 0.70                       | 0.01     | 0.00       | 0.12      | 0.74     | 16.3%                                       | 0.5%                                          | 0.28      | 0.01     | 0.00       | 0.05                                        | 0.21     | 37.5%                                | 29.1%                                        |       |  |       |  |       |  |
| 63  |        |      | 131       |           | 2        | 0.70                       | 0.01     | 0.01       | 0.14      | 0.65     | 19.6%                                       | 1.4%                                          | 0.34      | 0.01     | 0.01       | 0.06                                        | 0.29     | 48.7%                                | 41.3%                                        |       |  |       |  |       |  |
| 64  |        |      | 132       |           | 2        | 0.78                       | 0.01     | 0.01       | 0.14      | 0.74     | 17.4%                                       | 0.8%                                          | 0.27      | 0.00     | 0.00       | 0.06                                        | 0.28     | 35.6%                                | 35.6%                                        |       |  |       |  |       |  |
| 65  |        |      | 136       |           | 2        | 0.64                       | 0.01     | 0.01       | 0.12      | 0.65     | 19.2%                                       | 1.1%                                          | 0.34      | 0.00     | 0.00       | 0.05                                        | 0.28     | 53.2%                                | 43.0%                                        |       |  |       |  |       |  |
| 66  |        |      | 137       |           | 2        | 0.76                       | 0.01     | 0.01       | 0.13      | 0.74     | 17.7%                                       | 1.3%                                          | 0.28      | 0.01     | 0.01       | 0.05                                        | 0.27     | 36.4%                                | 35.7%                                        |       |  |       |  |       |  |
| 67  |        |      | 140       |           | 4        | 1.05                       | 0.02     | 0.01       | 0.20      | 1.19     | 16.5%                                       | 0.7%                                          | 0.41      | 0.01     | 0.01       | 0.09                                        | 0.34     | 34.6%                                | 28.5%                                        |       |  |       |  |       |  |
| 68  |        |      | 141       |           | 4        | 1.11                       | 0.02     | 0.01       | 0.21      | 1.20     | 16.7%                                       | 0.6%                                          | 0.62      | 0.02     | 0.01       | 0.09                                        | 0.52     | 46.9%                                | 46.9%                                        |       |  |       |  |       |  |
| 69  |        |      | 142       |           | 4        | 1.28                       | 0.02     | 0.03       | 0.25      | 1.21     | 19.8%                                       | 2.3%                                          | 0.66      | 0.01     | 0.02       | 0.13                                        | 0.57     | 51.8%                                | 44.5%                                        |       |  |       |  |       |  |
| 70  |        |      | 143       |           | 4        | 1.38                       | 0.02     | 0.02       | 0.27      | 1.34     | 19.5%                                       | 1.4%                                          | 0.63      | 0.02     | 0.01       | 0.11                                        | 0.67     | 48.3%                                | 48.3%                                        |       |  |       |  |       |  |
| 71  |        |      | 144       |           | 4        | 1.18                       | 0.02     | 0.01       | 0.22      | 1.29     | 17.3%                                       | 0.9%                                          | 0.41      | 0.01     | 0.01       | 0.10                                        | 0.47     | 36.6%                                | 36.6%                                        |       |  |       |  |       |  |
| 72  |        |      | 150       |           | 4        | 1.09                       | 0.02     | 0.01       | 0.21      | 1.03     | 19.3%                                       | 0.6%                                          | 0.60      | 0.01     | 0.00       | 0.10                                        | 0.50     | 54.7%                                | 46.2%                                        |       |  |       |  |       |  |
| 73  |        |      | 151       |           | 4        | 1.10                       | 0.01     | 0.13       | 0.21      | 1.03     | 18.9%                                       | 3.1%                                          | 0.61      | 0.01     | 0.02       | 0.10                                        | 0.49     | 55.5%                                | 44.9%                                        |       |  |       |  |       |  |
| 74  |        |      | 152       |           | 4        | 1.34                       | 0.02     | 0.02       | 0.22      | 1.30     | 16.6%                                       | 1.6%                                          | 0.67      | 0.02     | 0.02       | 0.10                                        | 0.66     | 49.6%                                | 48.9%                                        |       |  |       |  |       |  |
| 75  |        |      | 153       |           | 4        | 1.31                       | 0.01     | 0.01       | 0.27      | 1.33     | 20.2%                                       | 0.5%                                          | 0.51      | 0.01     | 0.01       | 0.11                                        | 0.58     | 43.3%                                | 43.3%                                        |       |  |       |  |       |  |
| 76  |        |      | 0         |           | 128      | 2                          | 0.58     | 0.01       | 0.01      | 0.10     | 0.56                                        | 17.4%                                         | 1.6%      | 0.25     | 0.01       | 0.01                                        | 0.03     | 0.26                                 | 44.1%                                        | 44.1% |  |       |  |       |  |
| 77  |        |      | 2         |           | 131      | 4                          | 1.82     | 0.04       | 0.06      | 0.42     | 1.82                                        | 23.0%                                         | 3.4%      | 0.82     | 0.03       | 0.05                                        | 0.18     | 0.82                                 | 55.3%                                        | 45.3% |  |       |  |       |  |
| 78  |        |      | 3         |           | 136      | 4                          | 1.80     | 0.02       | 0.10      | 0.39     | 19.0%                                       | 0.8%                                          | 0.97      | 0.02     | 0.01       | 0.15                                        | 0.89     | 54.8%                                | 49.8%                                        |       |  |       |  |       |  |
| 79  |        |      | 4         |           | 137      | 4                          | 1.82     | 0.05       | 0.06      | 0.51     | 1.92                                        | 26.2%                                         | 3.0%      | 0.61     | 0.04       | 0.04                                        | 0.20     | 0.68                                 | 35.4%                                        | 35.4% |  |       |  |       |  |
| 80  |        |      | 8         |           | 132      | 4                          | 1.59     | 0.02       | 0.04      | 0.29     | 15.8%                                       | 2.5%                                          | 0.62      | 0.01     | 0.03       | 0.12                                        | 0.64     | 40.1%                                | 40.1%                                        |       |  |       |  |       |  |
| 81  |        |      | 9         |           | 130      | 4                          | 1.66     | 0.03       | 0.03      | 0.44     | 1.78                                        | 24.7%                                         | 1.8%      | 0.75     | 0.02       | 0.02                                        | 0.16     | 0.68                                 | 42.0%                                        | 38.1% |  |       |  |       |  |
| 82  |        |      | 12        |           | 142      | 8                          | 3.19     | 0.06       | 0.13      | 0.74     | 3.16                                        | 23.2%                                         | 4.2%      | 1.61     | 0.04       | 0.11                                        | 0.37     | 1.58                                 | 50.4%                                        | 49.5% |  |       |  |       |  |
| 83  |        |      | 13        |           | 151      | 8                          | 3.37     | 0.05       | 0.09      | 0.91     | 3.27                                        | 15.3%                                         | 2.6%      | 0.94     | 0.04       | 0.25                                        | 1.75     | 54.0%                                | 51.9%                                        |       |  |       |  |       |  |
| 84  |        |      | 14        |           | 140      | 8                          | 3.37     | 0.07       | 0.02      | 0.70     | 3.31                                        | 20.9%                                         | 1.0%      | 1.25     | 0.03       | 0.12                                        | 1.63     | 52.1%                                | 49.2%                                        |       |  |       |  |       |  |
| 85  |        |      | 15        |           | 153      | 8                          | 3.03     | 0.07       | 0.09      | 1.03     | 2.98                                        | 34.1%                                         | 3.1%      | 1.43     | 0.05       | 0.06                                        | 0.41     | 1.39                                 | 47.2%                                        | 45.8% |  |       |  |       |  |
| 86  |        |      | 16        |           | 152      | 8                          | 2.99     | 0.08       | 0.19      | 0.79     | 3.03                                        | 26.2%                                         | 6.3%      | 1.48     | 0.07       | 0.14                                        | 0.34     | 1.45                                 | 48.8%                                        | 47.8% |  |       |  |       |  |
| 87  |        |      | 22        |           | 150      | 8                          | 2.50     | 0.03       | 0.03      | 0.54     | 2.27                                        | 21.7%                                         | 1.2%      | 1.35     | 0.02       | 0.02                                        | 0.26     | 1.10                                 | 53.9%                                        | 43.9% |  |       |  |       |  |
| 88  |        |      | 23        |           | 141      | 8                          | 3.37     | 0.07       | 0.04      | 0.60     | 3.27                                        | 17.9%                                         | 1.8%      | 1.84     | 0.06       | 0.03                                        | 0.29     | 1.76                                 | 54.5%                                        | 52.3% |  |       |  |       |  |
| 89  |        |      | 24        |           | 144      | 8                          | 2.29     | 0.05       | 0.04      | 0.81     | 2.26                                        | 24.8%                                         | 1.2%      | 1.26     | 0.03       | 0.08                                        | 0.35     | 1.20                                 | 49.7%                                        | 49.7% |  |       |  |       |  |
| 90  |        |      | 25        |           | 143      | 8                          | 2.83     | 0.09       | 0.15      | 0.95     | 2.86                                        | 33.2%                                         | 5.3%      | 1.31     | 0.08       | 0.11                                        | 0.42     | 1.33                                 | 46.4%                                        | 46.4% |  |       |  |       |  |

- L-patch High CH

| No. | Module | Type  | Beam ID_1 | Bema ID_2 | Feed no. | 4cm2 PD(mW/cm2) |          |            |           |          | max ratio out of all beams            |                                        | 4cm2 PD(mW/cm2) at 10mm evaluation distance |          |            |           |          | max ratio out of all beams     |                                       |
|-----|--------|-------|-----------|-----------|----------|-----------------|----------|------------|-----------|----------|---------------------------------------|----------------------------------------|---------------------------------------------|----------|------------|-----------|----------|--------------------------------|---------------------------------------|
|     |        |       |           |           |          | S4(Right)       | S3(Left) | S6(Bottom) | S1(Front) | S2(Rear) | ratio (Fomnt 2mm)/(worst-surface 2mm) | ratio (Bottom 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) |
|     |        |       |           |           |          |                 |          |            |           |          |                                       |                                        |                                             |          |            |           |          |                                |                                       |
| 46  | L      | Patch | 0         |           | 1        | 0.27            | 0.00     | 0.00       | 0.04      | 0.26     | 15.7%                                 | 1.8%                                   | 0.11                                        | 0.00     | 0.00       | 0.01      | 0.08     | 39.7%                          | 31.4%                                 |
| 47  |        |       | 2         |           | 2        | 0.51            | 0.01     | 0.02       | 0.09      | 0.50     | 17.7%                                 | 3.3%                                   | 0.22                                        | 0.01     | 0.01       | 0.04      | 0.17     | 42.3%                          | 32.6%                                 |
| 48  |        |       | 3         |           | 2        | 0.54            | 0.01     | 0.00       | 0.11      | 0.50     | 19.9%                                 | 0.8%                                   | 0.28                                        | 0.00     | 0.00       | 0.05      | 0.21     | 51.5%                          | 38.9%                                 |
| 49  |        |       | 4         |           | 2        | 0.58            | 0.01     | 0.02       | 0.10      | 0.53     | 17.1%                                 | 3.4%                                   | 0.18                                        | 0.01     | 0.01       | 0.04      | 0.15     | 31.7%                          | 26.1%                                 |
| 50  |        |       | 8         |           | 2        | 0.47            | 0.01     | 0.01       | 0.09      | 0.47     | 19.2%                                 | 2.1%                                   | 0.26                                        | 0.01     | 0.01       | 0.04      | 0.19     | 55.3%                          | 40.2%                                 |
| 51  |        |       | 9         |           | 2        | 0.60            | 0.01     | 0.02       | 0.10      | 0.54     | 17.3%                                 | 2.7%                                   | 0.23                                        | 0.01     | 0.01       | 0.04      | 0.18     | 37.6%                          | 29.7%                                 |
| 52  |        |       | 12        |           | 4        | 0.81            | 0.03     | 0.06       | 0.15      | 0.80     | 19.0%                                 | 6.9%                                   | 0.35                                        | 0.02     | 0.05       | 0.06      | 0.29     | 43.3%                          | 35.5%                                 |
| 53  |        |       | 13        |           | 4        | 0.90            | 0.03     | 0.02       | 0.16      | 0.92     | 17.3%                                 | 1.8%                                   | 0.52                                        | 0.02     | 0.01       | 0.08      | 0.43     | 56.9%                          | 47.2%                                 |
| 54  |        |       | 14        |           | 4        | 1.03            | 0.02     | 0.01       | 0.18      | 0.93     | 17.3%                                 | 1.4%                                   | 0.53                                        | 0.01     | 0.01       | 0.08      | 0.44     | 51.3%                          | 42.9%                                 |
| 55  |        |       | 15        |           | 4        | 1.18            | 0.01     | 0.03       | 0.31      | 1.02     | 26.5%                                 | 2.8%                                   | 0.55                                        | 0.01     | 0.02       | 0.15      | 0.45     | 46.9%                          | 38.5%                                 |
| 56  |        |       | 16        |           | 4        | 1.06            | 0.02     | 0.07       | 0.26      | 0.94     | 24.3%                                 | 6.7%                                   | 0.42                                        | 0.02     | 0.06       | 0.12      | 0.35     | 39.4%                          | 33.2%                                 |
| 57  |        |       | 22        |           | 4        | 0.83            | 0.03     | 0.02       | 0.15      | 0.86     | 17.1%                                 | 2.7%                                   | 0.45                                        | 0.02     | 0.02       | 0.06      | 0.40     | 53.1%                          | 46.9%                                 |
| 58  |        |       | 23        |           | 4        | 0.94            | 0.02     | 0.01       | 0.21      | 0.87     | 22.0%                                 | 1.3%                                   | 0.53                                        | 0.01     | 0.01       | 0.10      | 0.36     | 55.7%                          | 38.2%                                 |
| 59  |        |       | 24        |           | 4        | 1.09            | 0.01     | 0.01       | 0.24      | 0.98     | 22.0%                                 | 0.9%                                   | 0.56                                        | 0.01     | 0.01       | 0.12      | 0.50     | 50.8%                          | 45.6%                                 |
| 60  |        |       | 25        |           | 4        | 1.13            | 0.02     | 0.07       | 0.29      | 0.97     | 25.4%                                 | 5.8%                                   | 0.46                                        | 0.02     | 0.05       | 0.13      | 0.38     | 41.1%                          | 33.9%                                 |
| 61  |        |       | 128       |           | 1        | 0.23            | 0.00     | 0.01       | 0.06      | 0.22     | 24.0%                                 | 3.4%                                   | 0.09                                        | 0.00     | 0.00       | 0.02      | 0.07     | 40.7%                          | 29.9%                                 |
| 62  |        |       | 130       |           | 2        | 0.64            | 0.01     | 0.00       | 0.10      | 0.67     | 15.2%                                 | 0.5%                                   | 0.25                                        | 0.00     | 0.00       | 0.04      | 0.20     | 36.4%                          | 29.3%                                 |
| 63  |        |       | 131       |           | 2        | 0.62            | 0.01     | 0.01       | 0.11      | 0.52     | 17.7%                                 | 1.6%                                   | 0.30                                        | 0.00     | 0.01       | 0.04      | 0.22     | 48.0%                          | 36.1%                                 |
| 64  |        |       | 132       |           | 2        | 0.59            | 0.01     | 0.01       | 0.12      | 0.56     | 20.6%                                 | 1.2%                                   | 0.18                                        | 0.00     | 0.01       | 0.05      | 0.18     | 31.3%                          | 31.3%                                 |
| 65  |        |       | 136       |           | 2        | 0.54            | 0.01     | 0.01       | 0.11      | 0.58     | 19.0%                                 | 1.0%                                   | 0.29                                        | 0.01     | 0.00       | 0.05      | 0.22     | 49.3%                          | 38.0%                                 |
| 66  |        |       | 137       |           | 2        | 0.72            | 0.01     | 0.01       | 0.10      | 0.62     | 14.5%                                 | 1.1%                                   | 0.26                                        | 0.00     | 0.00       | 0.05      | 0.22     | 36.2%                          | 30.2%                                 |
| 67  |        |       | 140       |           | 4        | 0.86            | 0.02     | 0.01       | 0.17      | 0.96     | 18.1%                                 | 0.6%                                   | 0.41                                        | 0.01     | 0.00       | 0.07      | 0.34     | 42.5%                          | 35.2%                                 |
| 68  |        |       | 141       |           | 4        | 0.91            | 0.02     | 0.02       | 0.17      | 0.88     | 18.2%                                 | 1.9%                                   | 0.51                                        | 0.02     | 0.01       | 0.08      | 0.41     | 56.0%                          | 44.6%                                 |
| 69  |        |       | 142       |           | 4        | 1.00            | 0.02     | 0.04       | 0.16      | 0.91     | 15.8%                                 | 3.8%                                   | 0.52                                        | 0.01     | 0.02       | 0.08      | 0.42     | 51.4%                          | 41.8%                                 |
| 70  |        |       | 143       |           | 4        | 1.02            | 0.01     | 0.02       | 0.27      | 0.91     | 26.7%                                 | 2.0%                                   | 0.43                                        | 0.01     | 0.01       | 0.11      | 0.42     | 42.5%                          | 41.0%                                 |
| 71  |        |       | 144       |           | 4        | 0.98            | 0.01     | 0.01       | 0.20      | 0.99     | 20.6%                                 | 0.9%                                   | 0.38                                        | 0.01     | 0.01       | 0.09      | 0.36     | 38.4%                          | 36.2%                                 |
| 72  |        |       | 150       |           | 4        | 0.90            | 0.02     | 0.01       | 0.16      | 0.90     | 17.3%                                 | 0.9%                                   | 0.48                                        | 0.01     | 0.01       | 0.07      | 0.42     | 53.3%                          | 46.3%                                 |
| 73  |        |       | 151       |           | 4        | 0.88            | 0.02     | 0.04       | 0.19      | 0.81     | 21.6%                                 | 4.0%                                   | 0.52                                        | 0.01     | 0.02       | 0.10      | 0.35     | 59.4%                          | 39.2%                                 |
| 74  |        |       | 152       |           | 4        | 0.97            | 0.01     | 0.02       | 0.23      | 0.89     | 24.2%                                 | 2.5%                                   | 0.44                                        | 0.01     | 0.02       | 0.10      | 0.42     | 45.7%                          | 43.3%                                 |
| 75  |        |       | 153       |           | 4        | 1.05            | 0.01     | 0.01       | 0.25      | 0.98     | 23.6%                                 | 0.9%                                   | 0.41                                        | 0.01     | 0.01       | 0.11      | 0.42     | 40.1%                          | 40.1%                                 |
| 76  |        |       | 0         | 128       | 2        | 0.46            | 0.01     | 0.01       | 0.10      | 0.43     | 21.0%                                 | 2.5%                                   | 0.20                                        | 0.01     | 0.01       | 0.04      | 0.18     | 44.5%                          | 38.4%                                 |
| 77  |        |       | 2         | 131       | 4        | 1.47            | 0.03     | 0.03       | 0.31      | 1.40     | 20.8%                                 | 2.0%                                   | 0.73                                        | 0.02     | 0.02       | 0.13      | 0.60     | 49.9%                          | 40.6%                                 |
| 78  |        |       | 3         | 136       | 4        | 1.48            | 0.03     | 0.02       | 0.32      | 1.50     | 21.2%                                 | 1.2%                                   | 0.79                                        | 0.02     | 0.01       | 0.14      | 0.60     | 52.8%                          | 45.5%                                 |
| 79  |        |       | 4         | 137       | 4        | 1.59            | 0.03     | 0.03       | 0.34      | 1.56     | 21.4%                                 | 2.0%                                   | 0.57                                        | 0.02     | 0.02       | 0.14      | 0.56     | 35.8%                          | 35.0%                                 |
| 80  |        |       | 8         | 132       | 4        | 1.25            | 0.02     | 0.02       | 0.27      | 1.24     | 21.7%                                 | 1.5%                                   | 0.52                                        | 0.01     | 0.02       | 0.11      | 0.46     | 41.7%                          | 36.9%                                 |
| 81  |        |       | 9         | 130       | 4        | 1.52            | 0.02     | 0.02       | 0.33      | 1.57     | 20.8%                                 | 1.3%                                   | 0.65                                        | 0.01     | 0.02       | 0.12      | 0.57     | 41.3%                          | 36.3%                                 |
| 82  |        |       | 12        | 142       | 8        | 2.48            | 0.07     | 0.12       | 0.48      | 2.39     | 19.1%                                 | 4.8%                                   | 1.31                                        | 0.05     | 0.10       | 0.20      | 1.15     | 52.6%                          | 46.3%                                 |
| 83  |        |       | 13        | 151       | 8        | 2.38            | 0.09     | 0.10       | 0.51      | 2.36     | 21.4%                                 | 4.1%                                   | 1.32                                        | 0.06     | 0.05       | 0.25      | 1.16     | 55.4%                          | 48.8%                                 |
| 84  |        |       | 14        | 140       | 8        | 2.77            | 0.06     | 0.03       | 0.49      | 2.73     | 17.8%                                 | 1.1%                                   | 1.46                                        | 0.03     | 0.02       | 0.23      | 1.33     | 52.5%                          | 48.2%                                 |
| 85  |        |       | 15        | 153       | 8        | 2.39            | 0.04     | 0.06       | 0.97      | 2.38     | 40.5%                                 | 2.5%                                   | 1.16                                        | 0.03     | 0.03       | 0.45      | 1.06     | 48.3%                          | 44.4%                                 |
| 86  |        |       | 16        | 152       | 8        | 2.46            | 0.06     | 0.12       | 0.83      | 2.44     | 33.6%                                 | 5.1%                                   | 1.20                                        | 0.05     | 0.09       | 0.35      | 1.13     | 48.7%                          | 45.8%                                 |
| 87  |        |       | 22        | 150       | 8        | 1.81            | 0.05     | 0.05       | 0.39      | 1.77     | 21.8%                                 | 2.7%                                   | 0.96                                        | 0.04     | 0.03       | 0.18      | 0.84     | 52.9%                          | 46.3%                                 |
| 88  |        |       | 23        | 141       | 8        | 2.54            | 0.07     | 0.04       | 0.53      | 2.50     | 21.0%                                 | 1.7%                                   | 1.38                                        | 0.04     | 0.02       | 0.27      | 1.24     | 54.4%                          | 48.6%                                 |
| 89  |        |       | 24        | 144       | 8        | 2.60            | 0.04     | 0.03       | 0.73      | 2.58     | 28.0%                                 | 1.0%                                   | 1.37                                        | 0.02     | 0.02       | 0.35      | 1.27     | 52.5%                          | 48.8%                                 |
| 90  |        |       | 25        | 143       | 8        | 2.39            | 0.06     | 0.12       | 0.97      | 2.41     | 40.2%                                 | 5.1%                                   | 1.09                                        | 0.04     | 0.07       | 0.42      | 1.08     | 45.0%                          | 44.7%                                 |