

FCC ID : ZNFG900VM

Power Density Simulation Report

Rev. A (Ver. 1.6)

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LG Electronics

1. Electromagnetic simulation method for power density

1.1 EM simulation tool

1.1.1 EM simulation tool description

The mmWave power density (PD) simulation method for calculating PD of mobile phones with mmWave antenna modules is available in ANSYS Electromagnetics suite HFSS ver. 19.4 (2019 R2) 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 HFSS ver. 19.4 (2019 R2) is implemented based on Finite Element Method (FEM), which operates in the frequency domain.

1.1.2 Mesh and convergence criteria

ANSYS Electromagnetic suite HFSS ver. 19.4 (2019 R2) uses the Finite Element Method (FEM) to solve the structure for 3D EM simulations to analyze power density. The volume area containing the simulated object should be subdivided into electrically small parts called finite elements with unknown functions. To subdivide system, the adaptive mesh technique in ANSYS Electromagnetics suite HFSS ver. 19.4 (2019 R2) is used. ANSYS Electromagnetics suite HFSS ver. 19.4 (2019 R2) 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 HFSS ver. 19.4 (2019 R2) is defined as convergence criteria, delta S, and the iterative adaptive mesh process repeats until the delta S is met. In ANSYS Electromagnetics suite HFSS ver. 19.4 (2019 R2), 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).

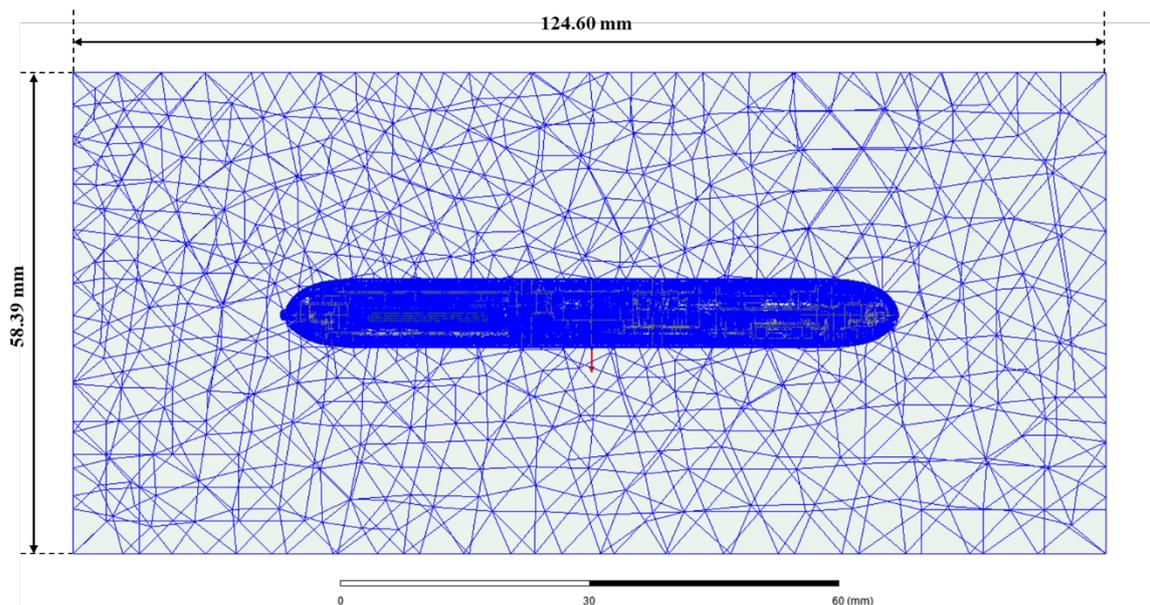


Figure 1. Example of HFSS mesh in a model of the device (Top view)

1.1.3 Time-averaged power density calculation

It is possible to get various kinds of physical quantities can be obtained after finishing 3D full-wave electromagnetic simulation. 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 time-averaged 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 HFSS ver. 19.4 (2019 R2).

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

$$PD_{av} = \frac{1}{A} \int_A \langle \vec{S} \rangle \cdot ds = \frac{1}{2A} \int_A |Re(\vec{E} \times \vec{H})| \cdot ds,$$

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

1.2 Simulation setup

1.2.1 Modeling for simulation

The simulation approach to perform PD assessment for a smartphone requires accurate modeling for mmWave antenna module as well as the smartphone itself. Figure 2 shows the simulation model which is mounted three mmWave antenna modules. The simulation modeling includes most of the entire structure of device itself such as PCB, metal frame, battery, flex cables, large components and legacy antennas as well as mmWave antenna modules QTM#0, QTM#1 and QTM#2. On the front side view, QTM#0 is placed on the left side and antennas are facing the left side of the device. QTM#1 is placed on the right side and antennas are facing the right and back side of the device. QTM#2 is placed right side and antennas are facing the back side of the device.

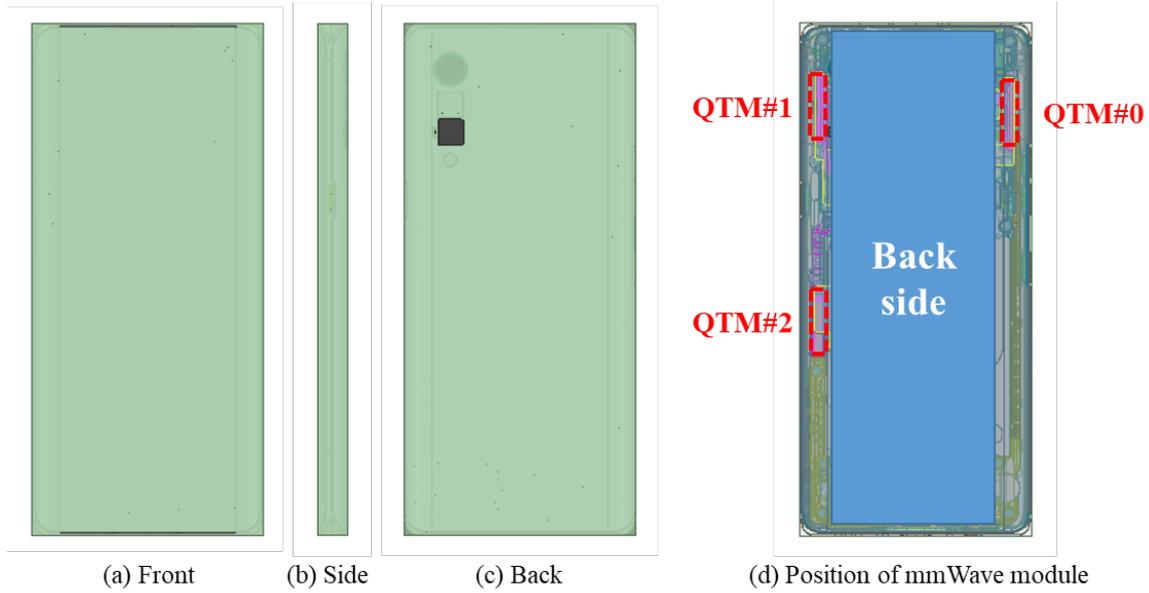


Figure 2. HFSS simulation model which is mounted three mmWave antenna modules

1.2.2 PD evaluation surfaces

Table 1 shows the PD evaluation surfaces 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 beam forming cases. In QTM#2, 5 evaluation surfaces except top side are set up. QTM#2 is placed at the lower of the device and the top side is excluded from the worst case because the distance from the bottom side is more than 10λ at 28 GHz and 39 GHz. In QTM#0 and QTM#1 cases, five PD evaluation surfaces except bottom side are set up. QTM#0 and QTM#1 are placed at the upper of the device and the bottom side is excluded from the worst case for the same reason as QTM#2.

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 view.

Table 1. PD evaluation surfaces

Module	Front	Back	Right From Front View	Left From Front View	Top	Bottom
QTM#0	O	O	O	O	O	X
QTM#1	O	O	O	O	O	X
QTM#2	O	O	O	O	X	O

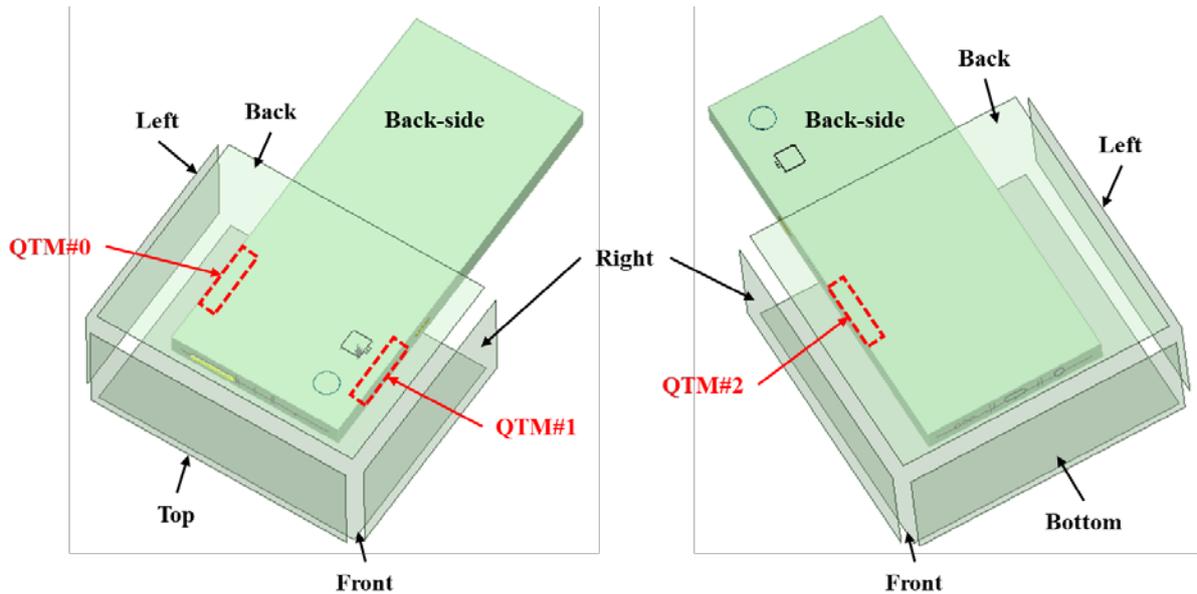


Figure 3. PD evaluation Surfaces

1.2.3 Radiation boundary condition

For radiation boundary, the 2nd order absorbing boundary condition (ABC) is used for all simulations in this report. This radiation boundary simulates an electrically open surface that allows waves to radiate infinitely far into space. The system absorbs the wave via the 2nd order radiation boundary, essentially ballooning the boundary infinitely far away from the structure and into space. The radiation boundaries may also be placed relatively close to a structure and can be of arbitrary shape.

Per ANSYS recommendations for their simulation tool, the radiation boundary plane must be located at least a quarter wavelength from strongly radiating structure, or at least a tenth of a wavelength from a weakly radiating structure. In this simulation report, about two or three wavelengths spacing from the device surfaces in all main beam directions are applied to ensure convergence.

By changing convergence error (i.e., maximum magnitude delta S) from 2% to 4% and moving the radiation boundary closer towards the device by 20%, the combined influence in PD value is < 0.04 dB which confirms that the simulation model is reliable using this setup.

1.2.4 Source excitation condition

Each of the three 5G mmWave array modules is the same part containing a 1x4 element array of dual-polarization patch antennas. The number of antenna ports of QTM#0, QTM#1, and QTM#2 for source excitation is equal to 16. The port of each patch antenna are separated in frequency and polarization. That is, the ports of each patch antenna are divided into a feed for 28 GHz and a feed for 39 GHz, and a vertical polarity feed and a horizontal polarity feed are divided.

Figure 4 shows the QTM#0 module structure and surrounding structure. The QTM#0 module

is encrypted in the ANSYS Electromagnetics suite (HFSS) and can only check the feeding position.

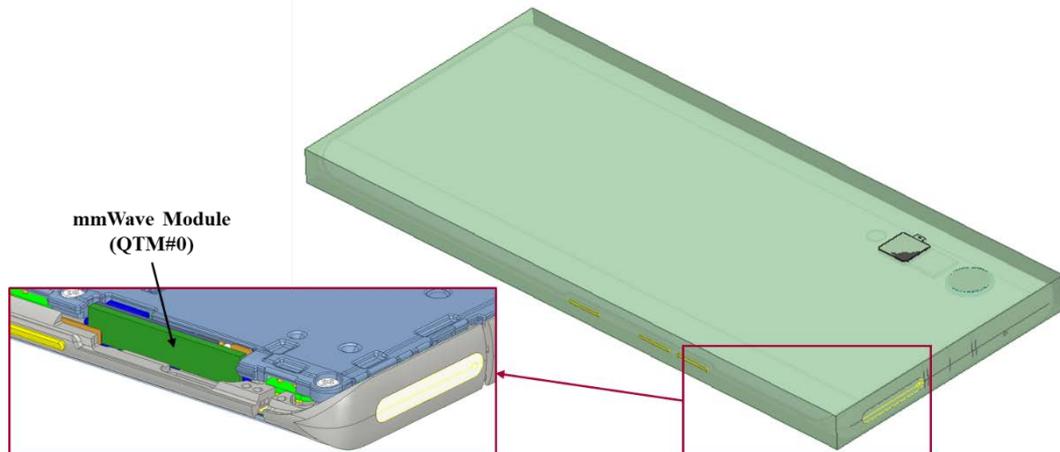


Figure 4. mmWave module (QTM#0)

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.

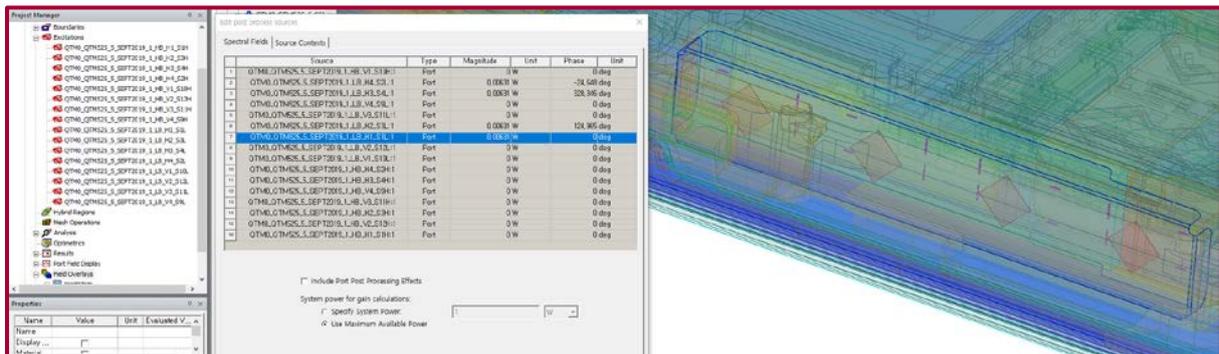


Figure 5. An example of port excitation (QTM#0)

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

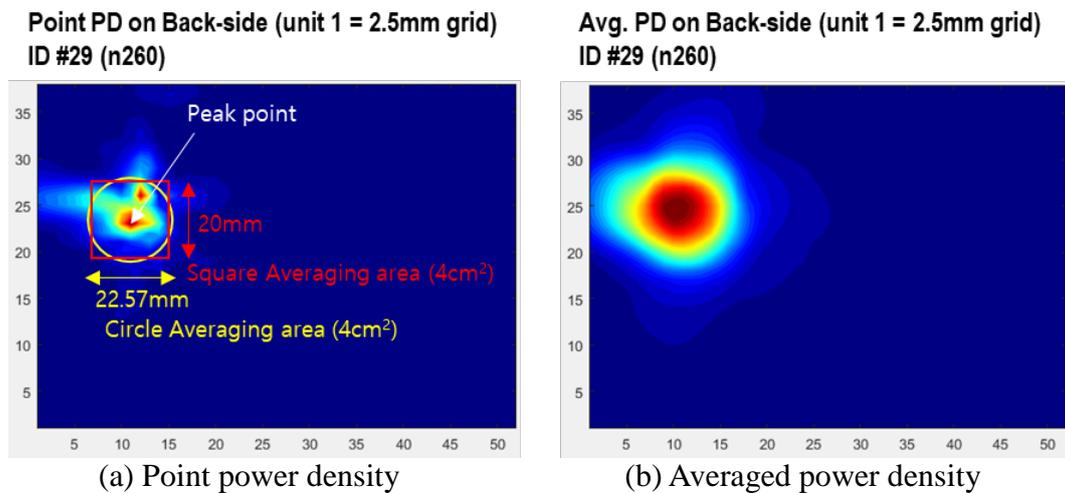


Figure 6. Power density distribution (Example)

2.2 Comparison between simulation and measurement

In this section, the simulated and measured power density distributions are compared with each mmWave antenna. Based on the comparison of the power density distribution, the simulated power density and the measured power density have a good correlation. The amplitude mismatch between the simulated 4 cm^2 average power density and the measured 4 cm^2 average power density is considered a housing influence and is used to determine the input power limit of each beam for RF exposure compliance (see RF Exposure Part 0 Report).

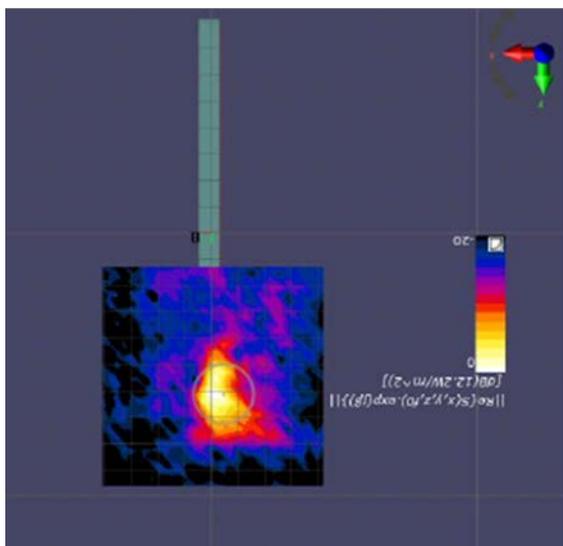
Input power per each active port is listed below for both simulation and measurement verification and power density characterization. For simulation, these values were entered directly into the HFSS model. For measurement, it was used to input these values for each active port using Factory Test Mode S/W.

Mode/Band	Antenna	Input Power (dBm) SISO	Input Power (dBm) MIMO
5G NR n261 (28 GHz)	QTM#0 Patch	6.0	6.0
	QTM#1 Patch	6.0	6.0
	QTM#2 Patch	6.0	6.0
5G NR n260 (39 GHz)	QTM#0 Patch	6.0	6.0
	QTM#1 Patch	6.0	6.0
	QTM#2 Patch	6.0	6.0

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

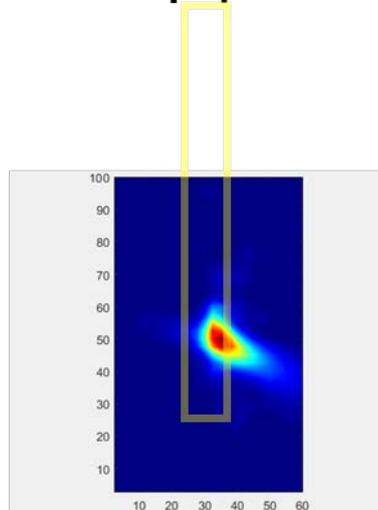
6dBm input measurement / simulation							4cm ² avg. PD(W/m ²)	
Band	Ant Type	Module	Ant Group (Ant Polarization)	beam ID	Surface	Channel	Measured	Simulated
n261	Patch	QTM#0	AG0(V)	37	Left	Mid	3.63	9.31
					Back	Mid	3.63	9.85
			AG1(H)	165	Left	Mid	4.77	11.91
					Back	Mid	4.35	13.10
		QTM#1	AG0(V)	19	Right	Mid	3.93	8.29
					Back	Mid	3.84	7.84
			AG1(H)	148	Right	Mid	3.85	8.78
					Back	Mid	4.21	8.65
		QTM#2	AG0(V)	43	Back	Mid	8.71	14.28
					Right	Mid	5.00	7.98
			AG1(H)	171	Back	Mid	8.01	12.39
					Right	Mid	4.16	6.26
n260	Patch	QTM#0	AG0(V)	24	Left	Mid	5.81	11.57
					Back	Mid	5.05	11.45
			AG1(H)	154	Left	Mid	5.48	10.96
					Back	Mid	5.75	10.90
		QTM#1	AG0(V)	36	Right	Mid	5.02	9.66
					Back	Mid	4.85	11.91
			AG1(H)	149	Right	Mid	5.64	9.16
					Back	Mid	4.53	11.30
		QTM#2	AG0(V)	29	Back	Mid	6.76	18.27
					Right	Mid	4.89	10.51
			AG1(H)	171	Back	Mid	5.95	16.93
					Right	Mid	1.99	8.51

n261 Patch antenna QTM0 Ant_Group0(V-polarization) beam ID 37 Left-side Mid ch.



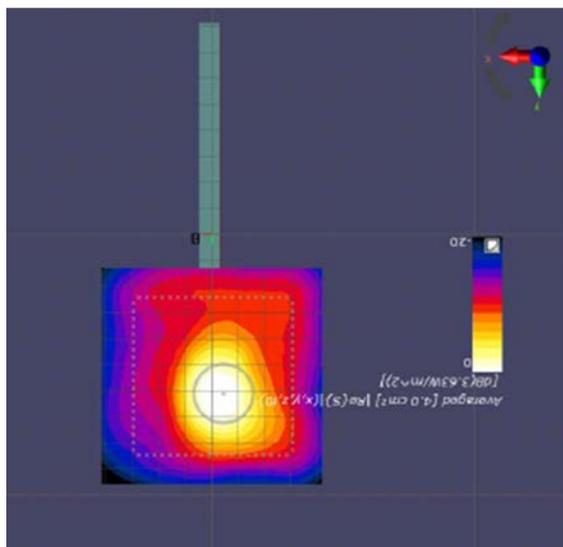
(a) Measurement

Point PD on Left-side [mm] beam ID #37



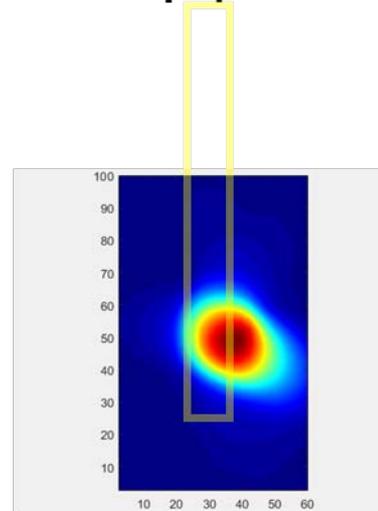
(b) Simulation

Patch antenna QTM0 AG0(V-polarization) beam ID 37, Point power density



(a) Measurement

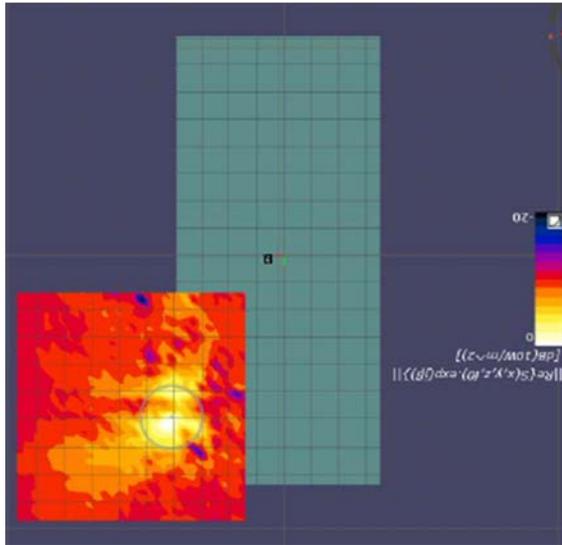
Avg. PD on Left-side [mm] beam ID #37



(b) Simulation

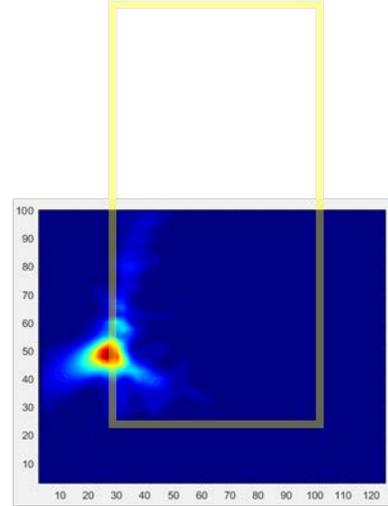
Patch antenna QTM0 AG0(V-polarization) beam ID 37, 4cm² Averaged power density

n261 Patch antenna QTM0 Ant_Group0(V-polarization) beam ID 37 Back-side Mid ch.



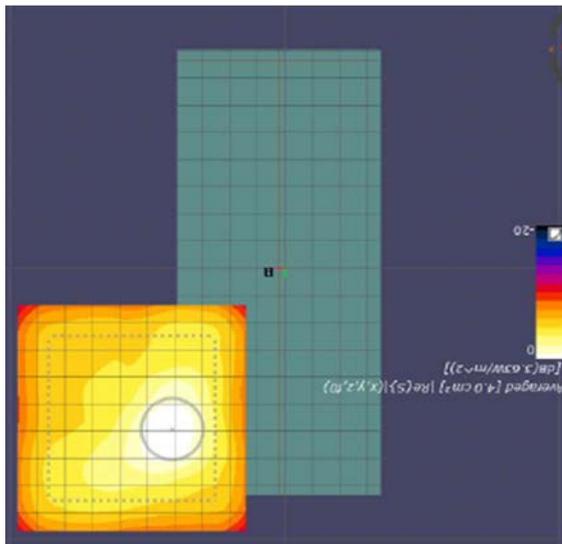
(a) Measurement

Point PD on Back-side [mm] beam ID #37



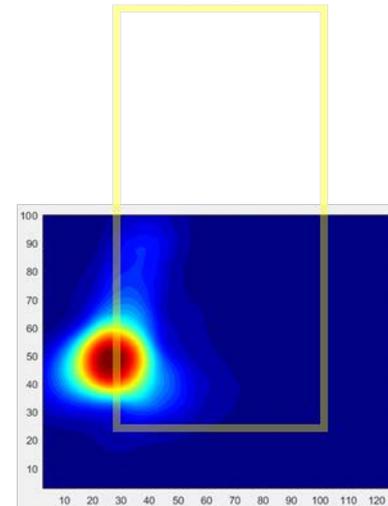
(b) Simulation

Patch antenna QTM0 AG0(V-polarization) beam ID 37, Point power density



(a) Measurement

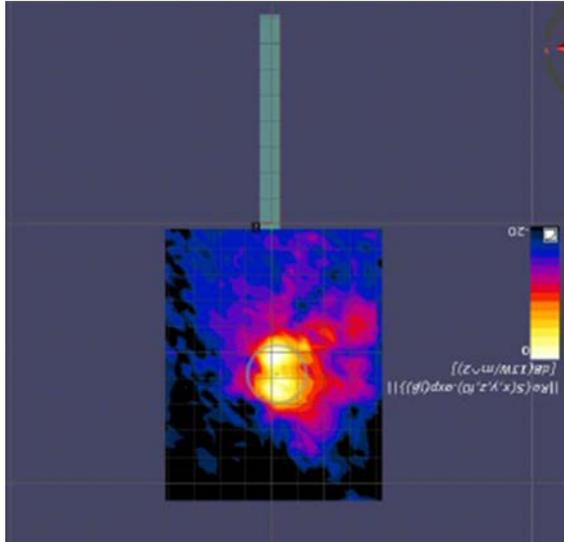
Avg. PD on Back-side [mm] beam ID #37



(b) Simulation

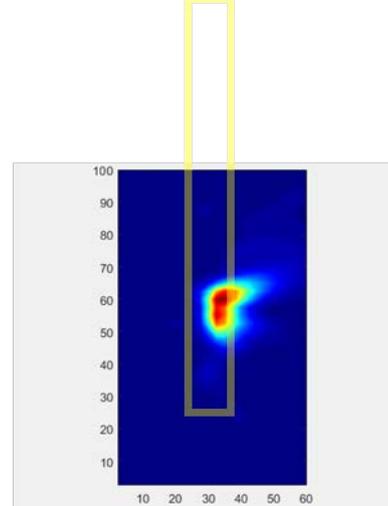
Patch antenna QTM0 AG0(V-polarization) beam ID 37, 4cm² Averaged power density

n261 Patch antenna QTM0 Ant_Group1(H-polarization) beam ID 165 Left-side Mid ch.



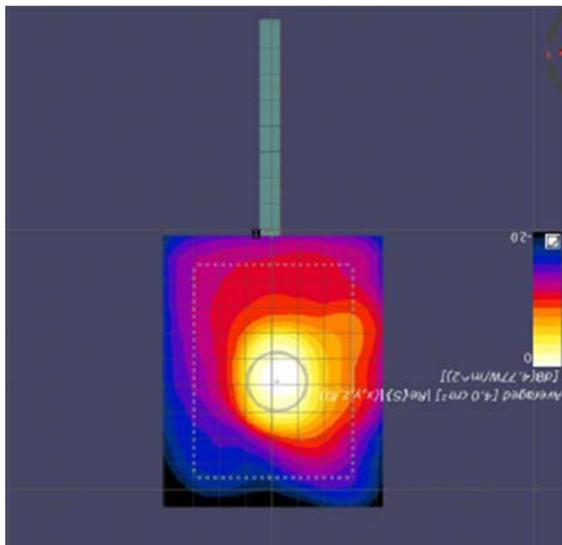
(a) Measurement

Point PD on Left-side [mm] beam ID #165



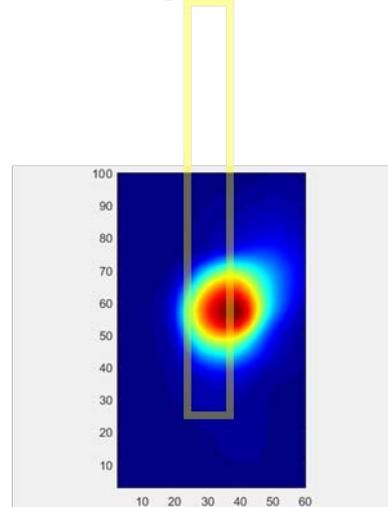
(b) Simulation

Patch antenna QTM0 AG1(H-polarization) beam ID 165, Point power density



(a) Measurement

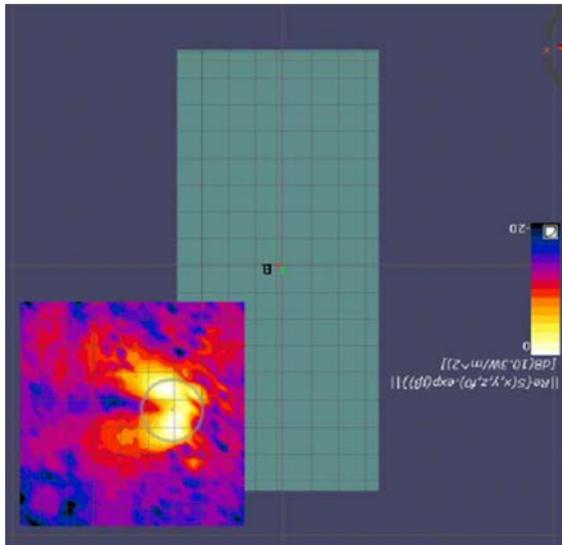
Avg. PD on Left-side [mm] beam ID #165



(b) Simulation

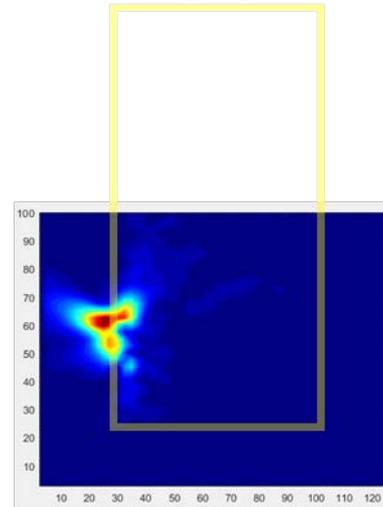
Patch antenna QTM0 AG1(H-polarization) beam ID 165, 4cm² Averaged power density

n261 Patch antenna QTM0 Ant_Group1(H-polarization) beam ID 165 Back-side Mid ch.



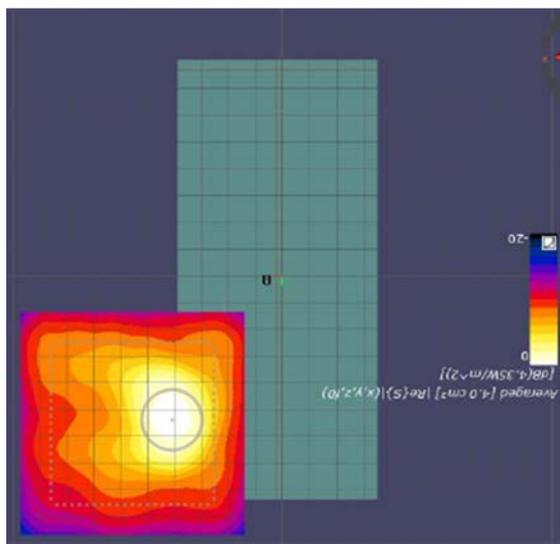
(a) Measurement

Point PD on Back-side [mm] beam ID #165



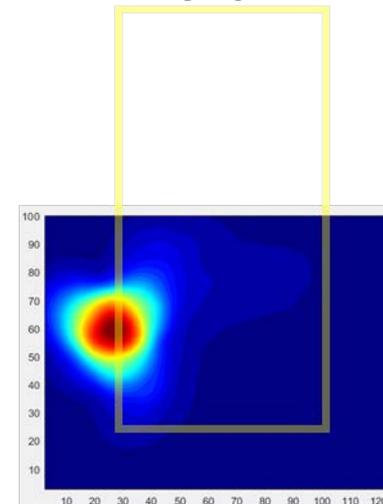
(b) Simulation

Patch antenna QTM0 AG1(H-polarization) beam ID 165, Point power density



(a) Measurement

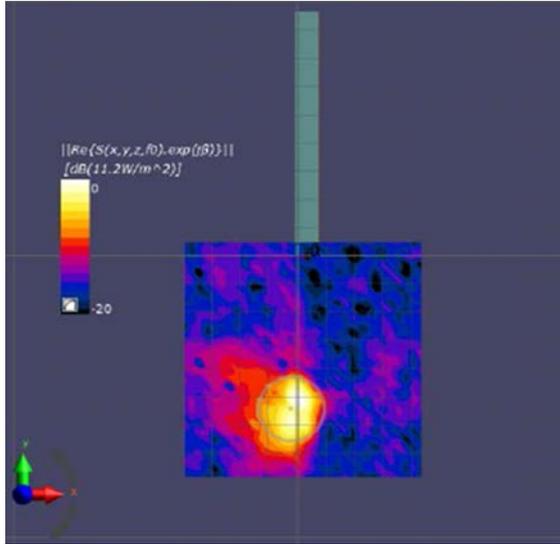
Avg. PD on Back-side [mm] beam ID #165



(b) Simulation

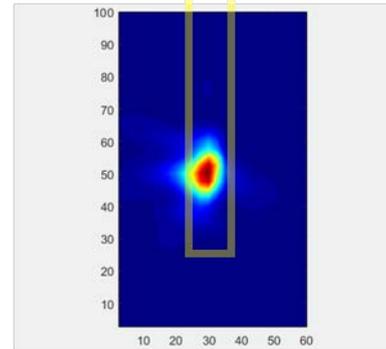
Patch antenna QTM0 AG1(H-polarization) beam ID 165, 4cm² Averaged power density

n261 Patch antenna QTM1 Ant_Group0(V-polarization) beam ID 19 Right-side Mid ch.



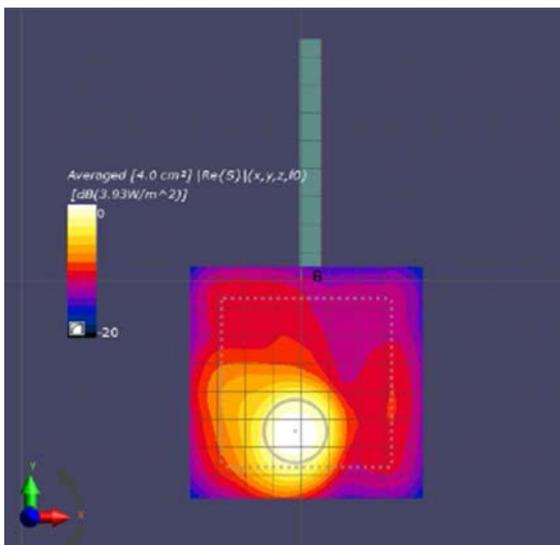
(a) Measurement

Point PD on Right-side [mm] beam ID #19



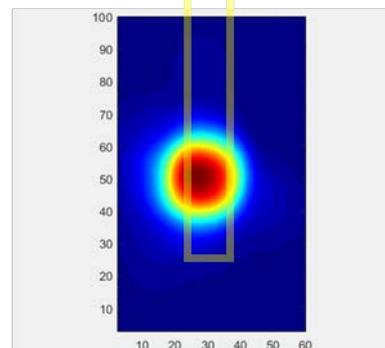
(b) Simulation

Patch antenna QTM1 AG0(V-polarization) beam ID 19, Point power density



(a) Measurement

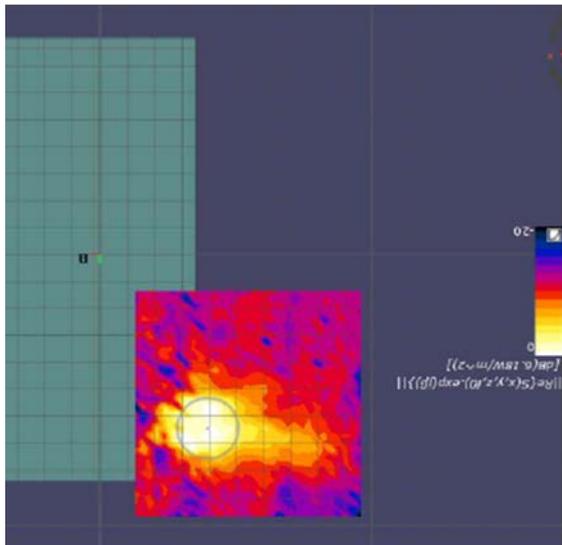
Avg. PD on Right-side [mm] beam ID #19



(b) Simulation

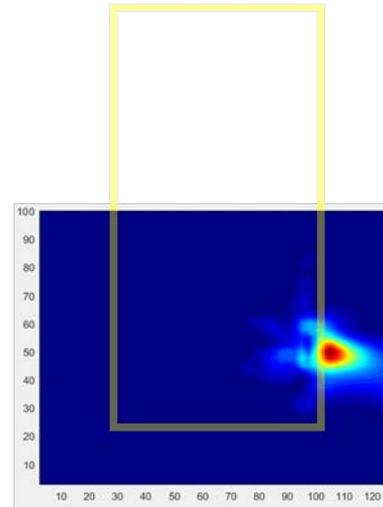
Patch antenna QTM1 AG0(V-polarization) beam ID 19, 4cm² Averaged power density

n261 Patch antenna QTM1 Ant_Group0(V-polarization) beam ID 19 Back-side Mid ch.



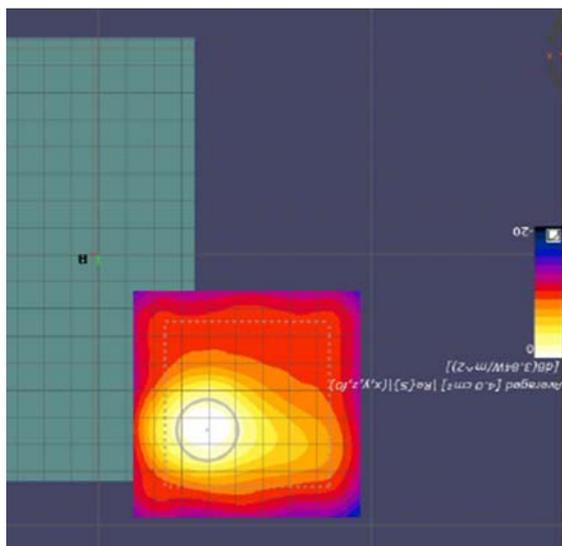
(a) Measurement

Point PD on Back-side [mm] beam ID #19



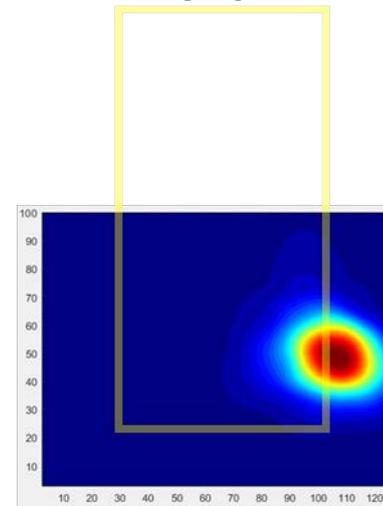
(b) Simulation

Patch antenna QTM1 AG0(V-polarization) beam ID 19, Point power density



(a) Measurement

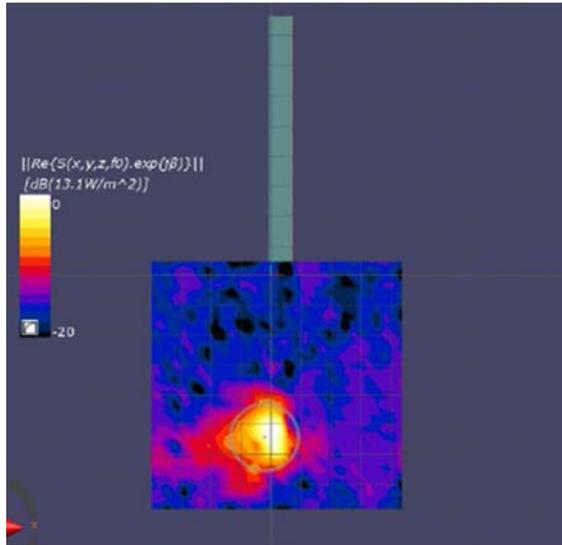
Avg. PD on Back-side [mm] beam ID #19



(b) Simulation

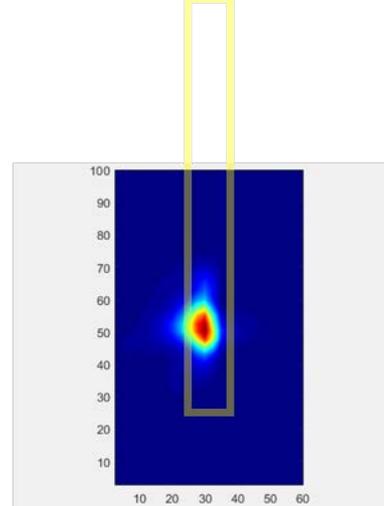
Patch antenna QTM1 AG0(V-polarization) beam ID 19, 4cm² Averaged power density

n261 Patch antenna QTM1 Ant_Group1(H-polarization) beam ID 148 Right-side Mid ch.



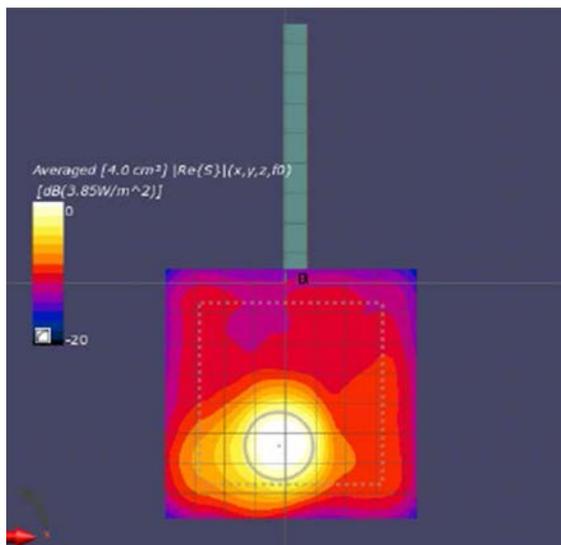
(a) Measurement

Point PD on Right-side [mm] beam ID #148



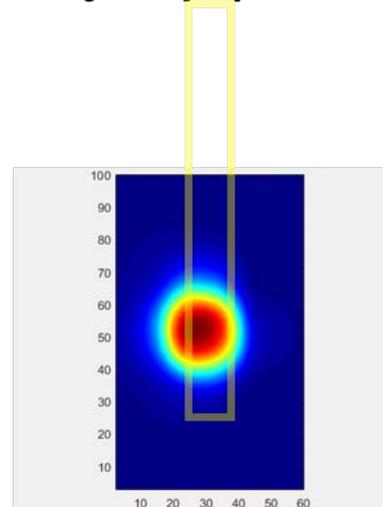
(b) Simulation

Patch antenna QTM1 AG1(H-polarization) beam ID 148, Point power density



(a) Measurement

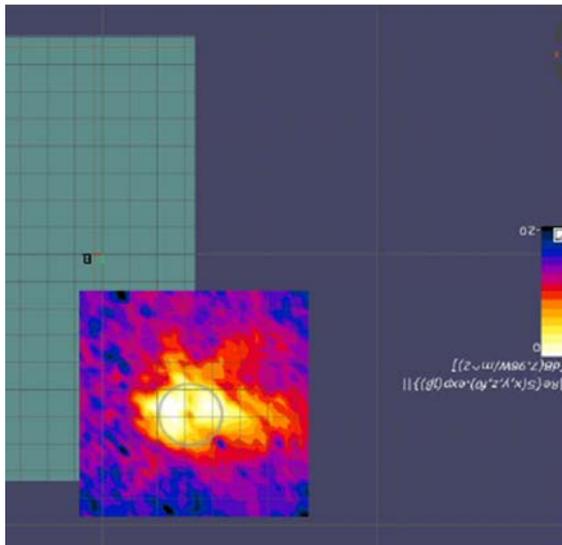
Avg. PD on Right-side [mm] beam ID #148



(b) Simulation

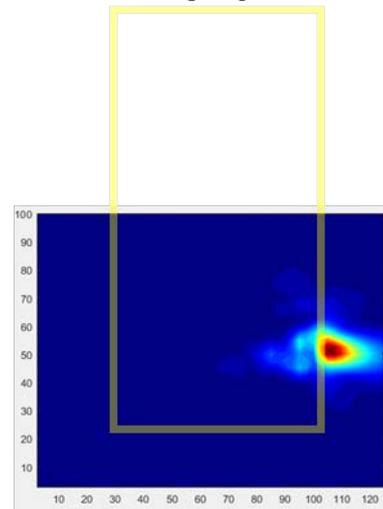
Patch antenna QTM1 AG1(H-polarization) beam ID 148, 4cm² Averaged power density

n261 Patch antenna QTM1 Ant_Group1(H-polarization) beam ID 148 Back-side Mid ch.



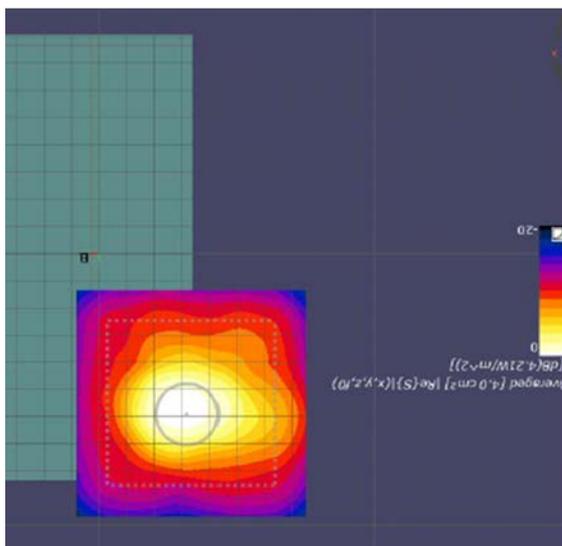
(a) Measurement

Point PD on Back-side [mm] beam ID #148



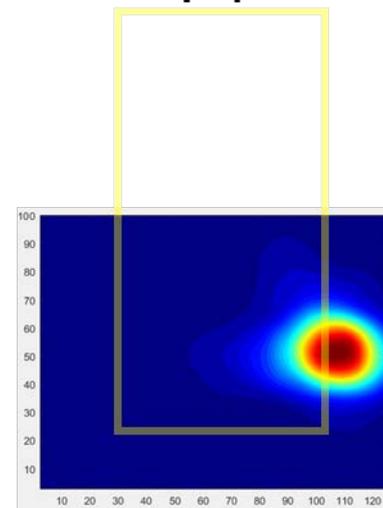
(b) Simulation

Patch antenna QTM1 AG1(H-polarization) beam ID 148, Point power density



(a) Measurement

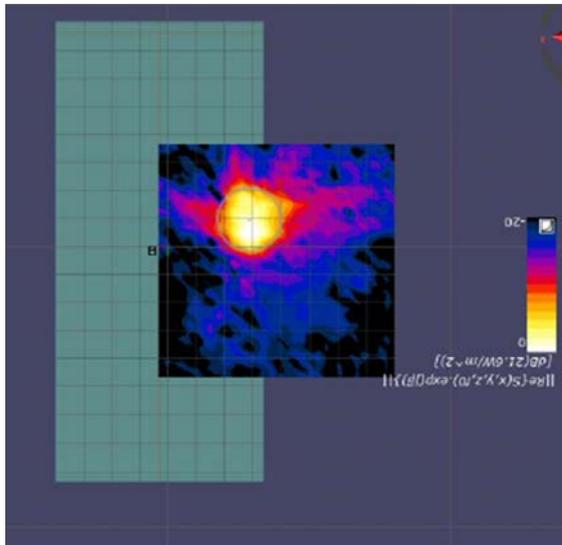
Avg. PD on Back-side [mm] beam ID #148



(b) Simulation

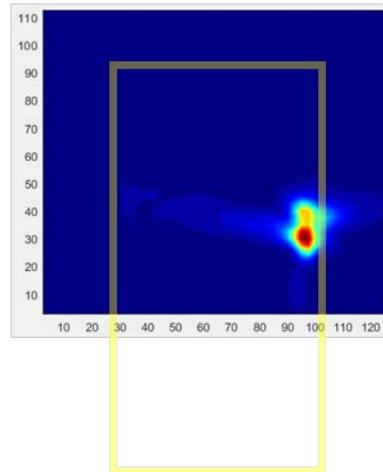
Patch antenna QTM1 AG1(H-polarization) beam ID 148, 4cm² Averaged power density

n261 Patch antenna QTM2 Ant_Group0(V-polarization) beam ID 43 Back-side Mid ch.



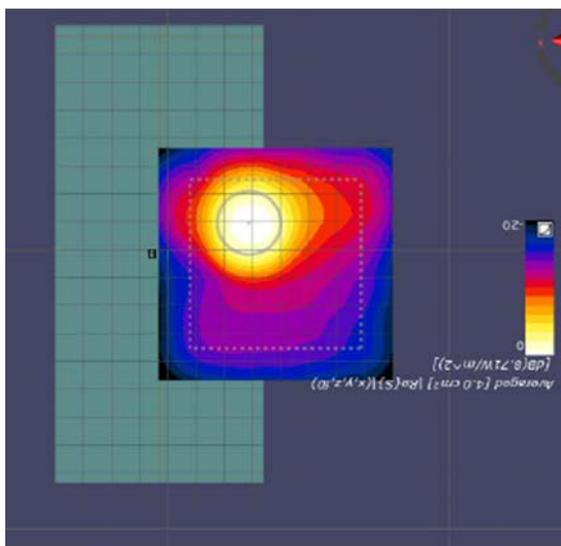
(a) Measurement

Point PD on Back-side [mm] beam ID #43



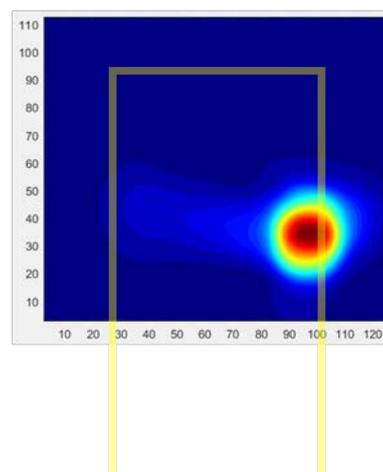
(b) Simulation

Patch antenna QTM2 AG0(V-polarization) beam ID 43, Point power density



(a) Measurement

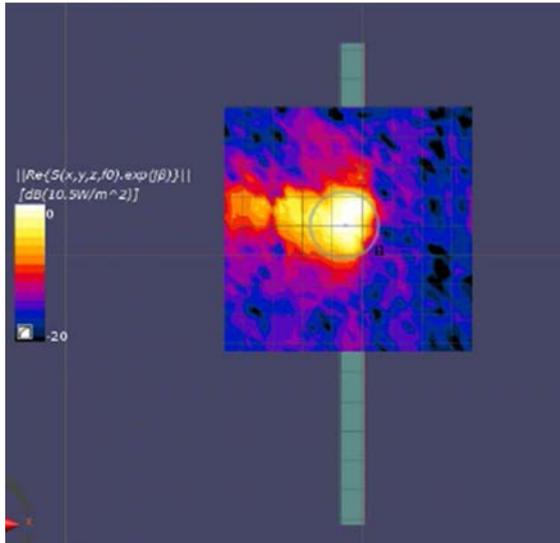
Avg. PD on Back-side [mm] beam ID #43



(b) Simulation

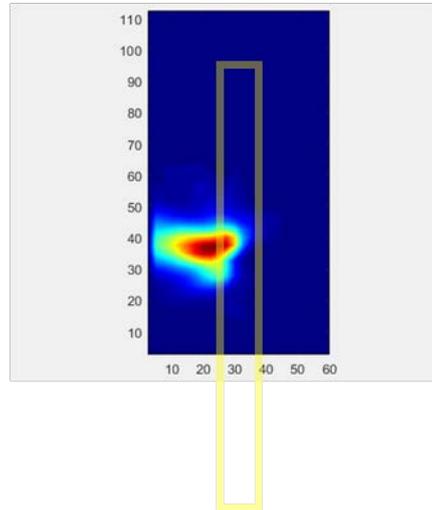
Patch antenna QTM2 AG0(V-polarization) beam ID 43, 4cm² Averaged power density

n261 Patch antenna QTM2 Ant_Group0(V-polarization) beam ID 43 Right-side Mid ch.



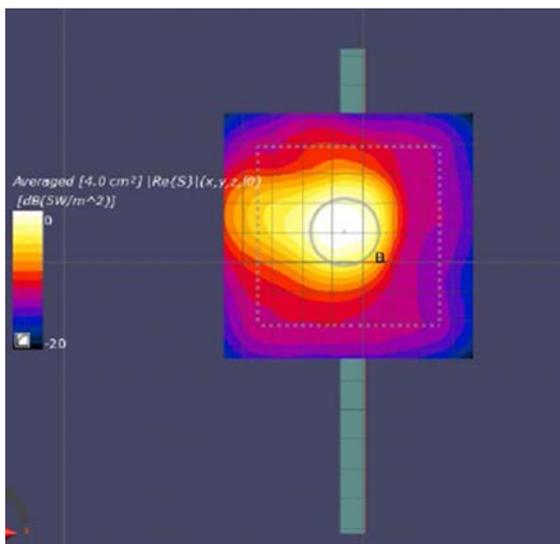
(a) Measurement

Point PD on Right-side [mm] beam ID #43



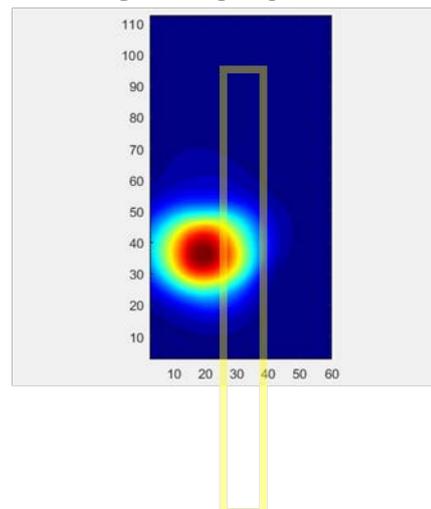
(b) Simulation

Patch antenna QTM2 AG0(V-polarization) beam ID 43, Point power density



(a) Measurement

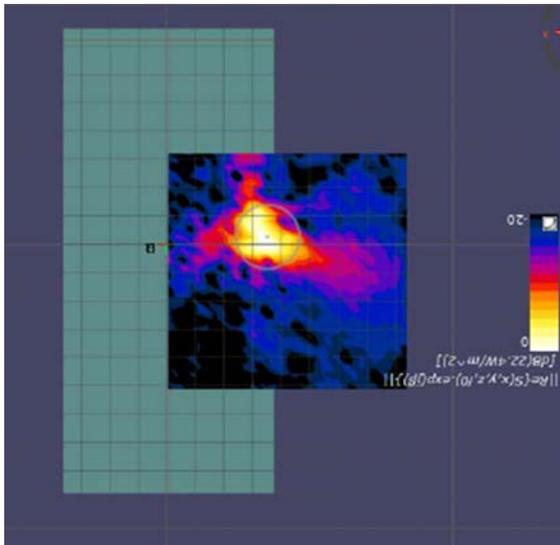
Avg. PD on Right-side [mm] beam ID #43



(b) Simulation

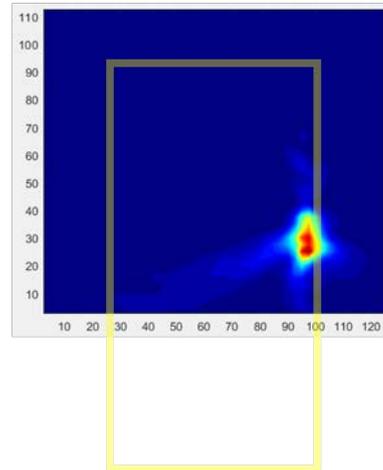
Patch antenna QTM2 AG0(V-polarization) beam ID 43, 4cm^2 Averaged power density

n261 Patch antenna QTM2 Ant_Group1(H-polarization) beam ID 171 Back-side Mid ch.



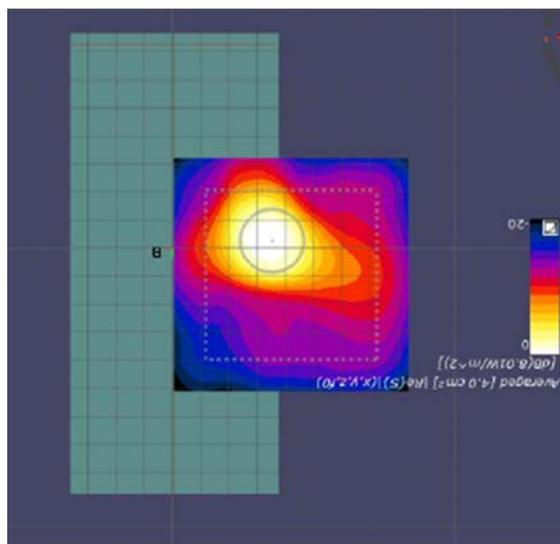
(a) Measurement

Point PD on Back-side [mm] beam ID #171



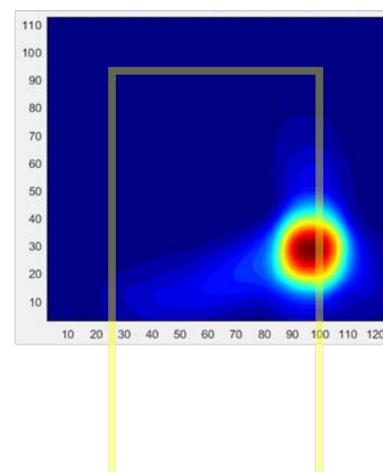
(b) Simulation

Patch antenna QTM2 AG1(H-polarization) beam ID 171, Point power density



(a) Measurement

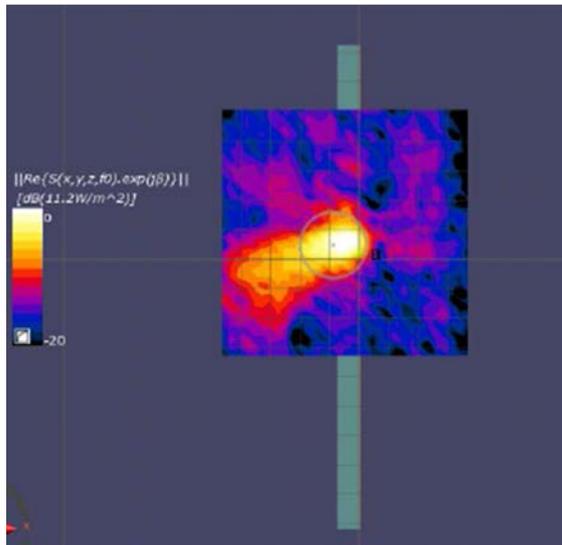
Avg. PD on Back-side [mm] beam ID #171



(b) Simulation

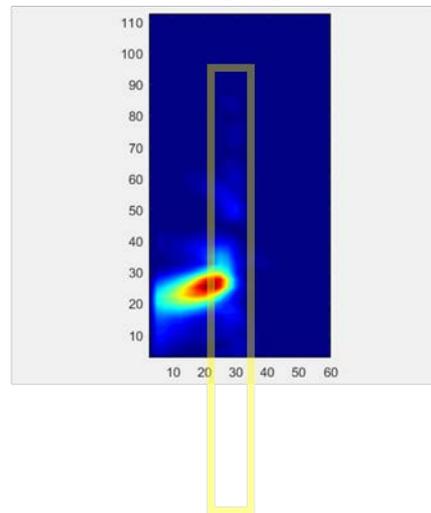
Patch antenna QTM2 AG1(H-polarization) beam ID 171, 4cm² Averaged power density

n261 Patch antenna QTM2 Ant_Group1(H-polarization) beam ID 171 Right-side Mid ch.



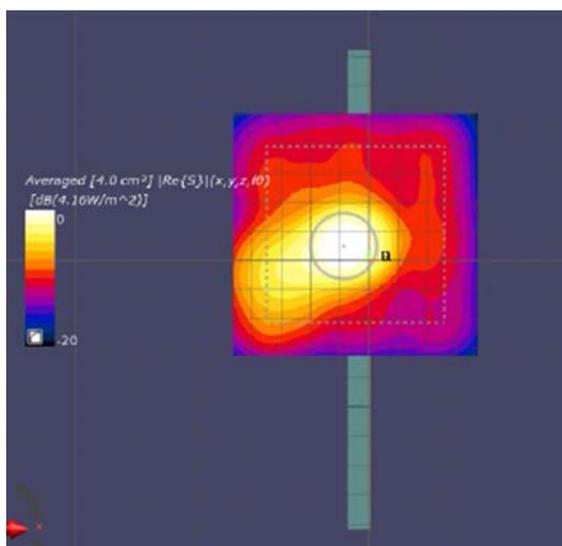
(a) Measurement

Point PD on Right-side [mm] beam ID #171



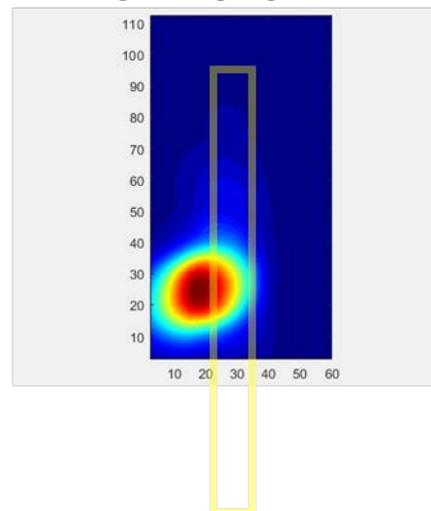
(b) Simulation

Patch antenna QTM2 AG1(H-polarization) beam ID 171, Point power density



(a) Measurement

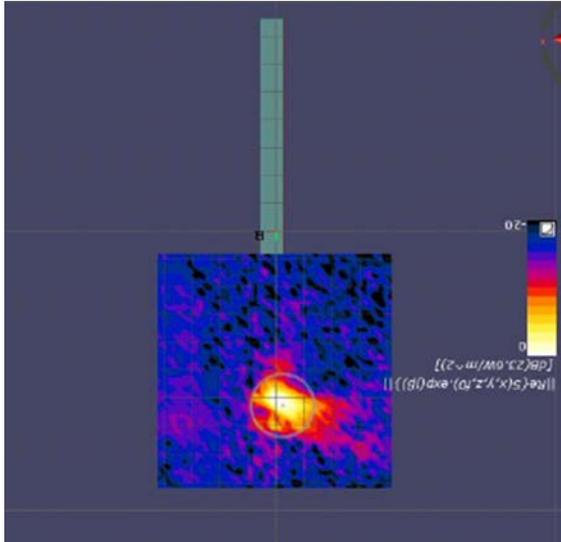
Avg. PD on Right-side [mm] beam ID #171



(b) Simulation

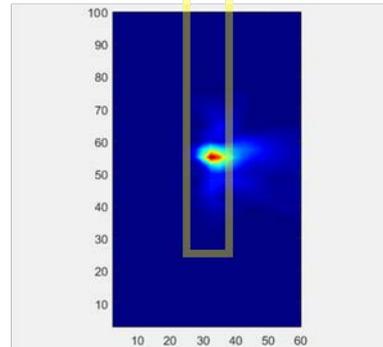
Patch antenna QTM2 AG1(H-polarization) beam ID 171, 4cm² Averaged power density

n260 Patch antenna QTM0 Ant_Group0(V-polarization) beam ID 24 Left-side Mid ch.



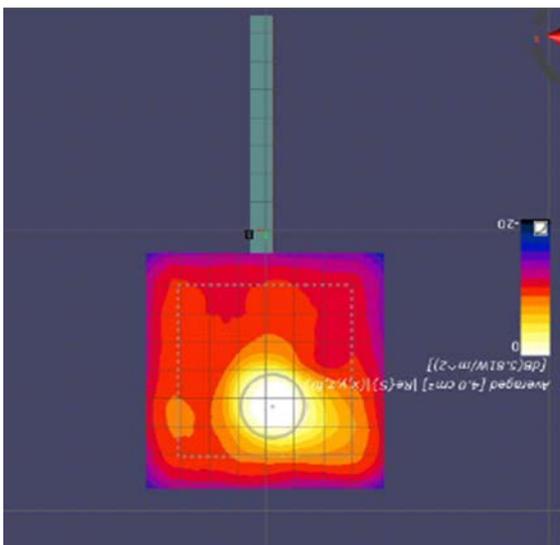
(a) Measurement

Point PD on Left-side [mm] beam ID #24



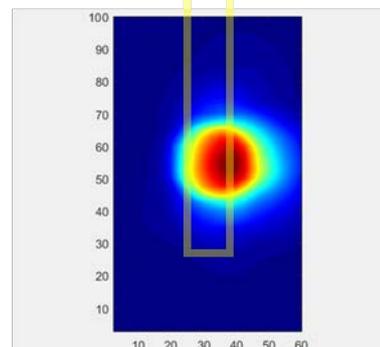
(b) Simulation

Patch antenna QTM0 AG0(V-polarization) beam ID 24, Point power density



(a) Measurement

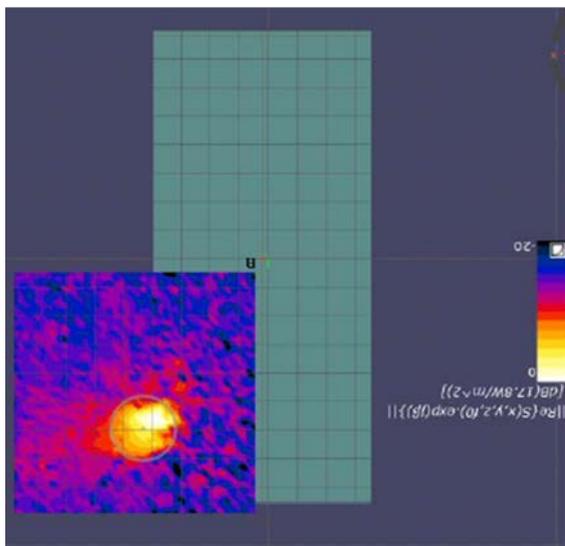
Avg. PD on Left-side [mm] beam ID #24



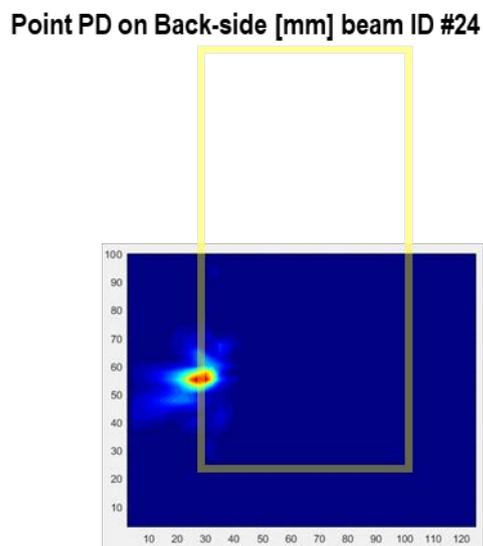
(b) Simulation

Patch antenna QTM0 AG0(V-polarization) beam ID 24, 4cm² Averaged power density

n260 Patch antenna QTM0 Ant_Group0(V-polarization) beam ID 24 Back-side Mid ch.

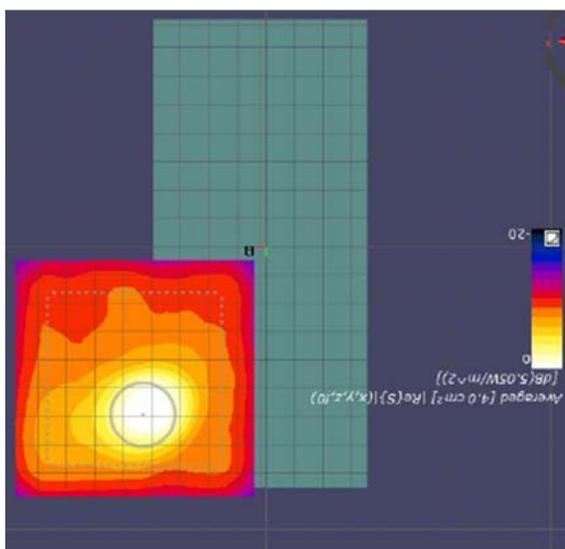


(a) Measurement

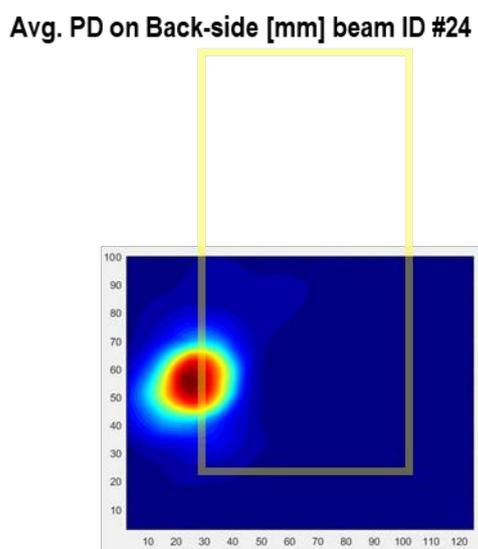


(b) Simulation

Patch antenna QTM0 AG0(V-polarization) beam ID 24, Point power density



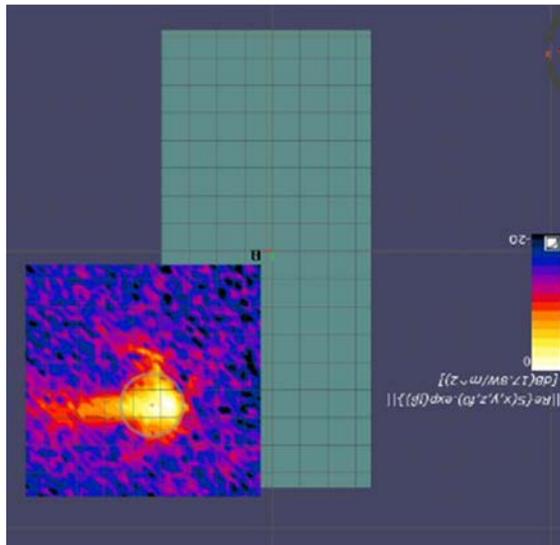
(a) Measurement



(b) Simulation

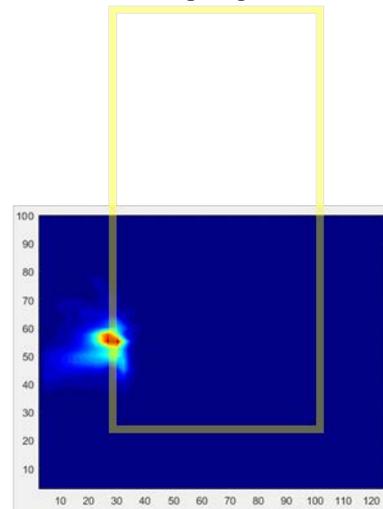
Patch antenna QTM0 AG0(V-polarization) beam ID 24, 4cm² Averaged power density

n260 Patch antenna QTM0 Ant_Group1(H-polarization) beam ID 154 Back-side Mid ch.



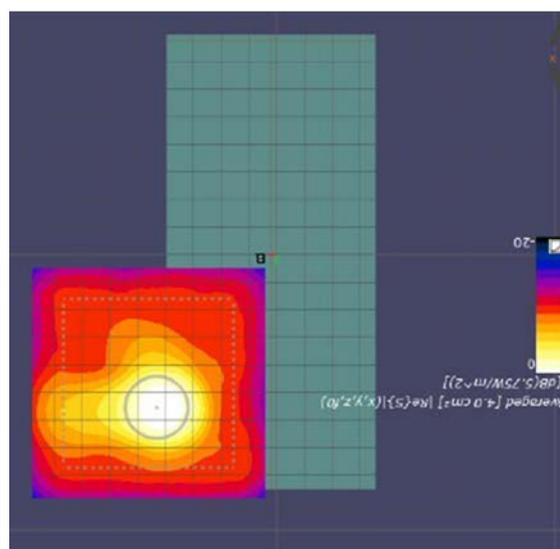
(a) Measurement

Point PD on Back-side [mm] beam ID #154



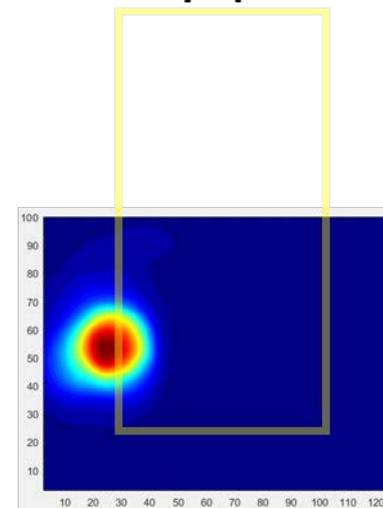
(b) Simulation

Patch antenna QTM0 AG1(H-polarization) beam ID 154, Point power density



(a) Measurement

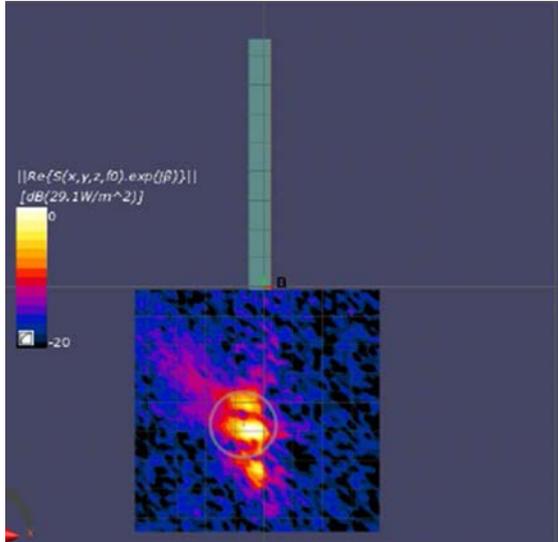
Avg. PD on Back-side [mm] beam ID #154



(b) Simulation

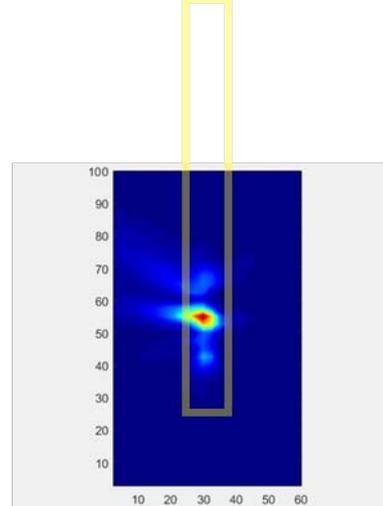
Patch antenna QTM0 AG1(H-polarization) beam ID 154, 4cm² Averaged power density

n260 Patch antenna QTM1 Ant_Group0(V-polarization) beam ID 36 Right-side Mid ch.



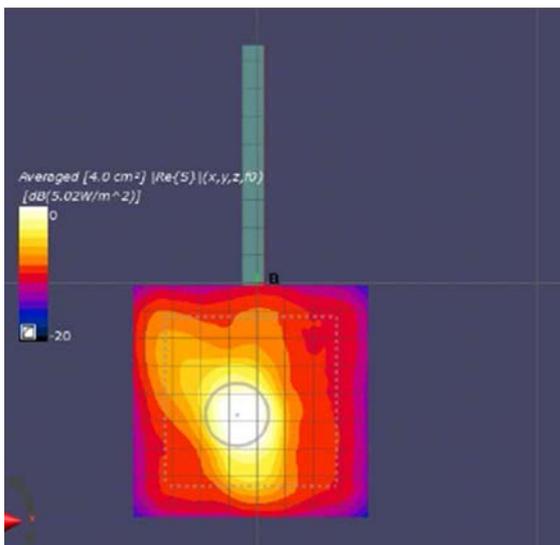
(a) Measurement

Point PD on Right-side [mm] beam ID #36



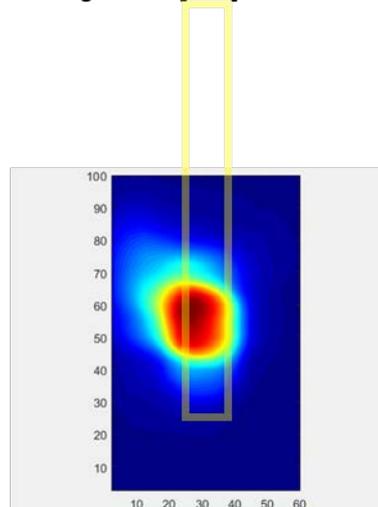
(b) Simulation

Patch antenna QTM1 AG0(V-polarization) beam ID 36, Point power density



(a) Measurement

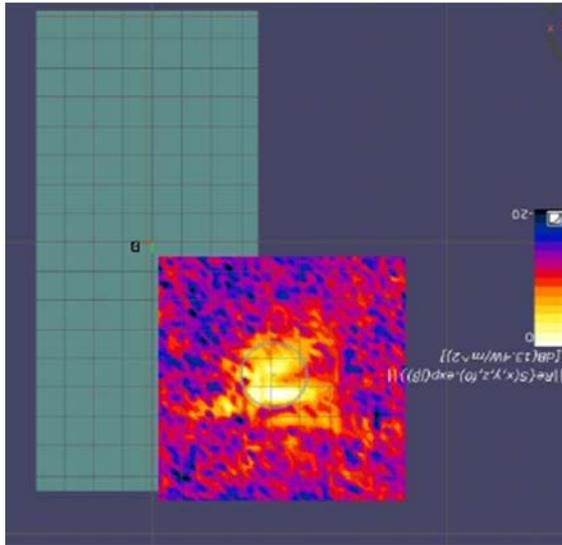
Avg. PD on Right-side [mm] beam ID #36



(b) Simulation

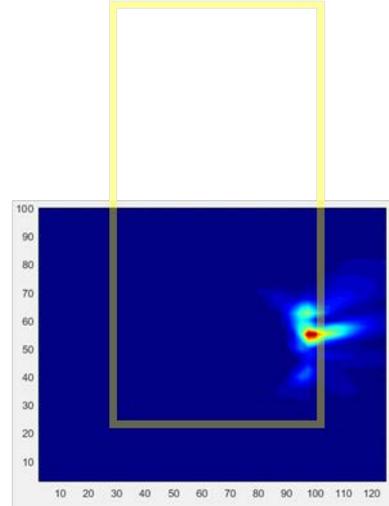
Patch antenna QTM1 AG0(V-polarization) beam ID 36, 4cm² Averaged power density

n260 Patch antenna QTM1 Ant_Group0(V-polarization) beam ID 36 Back-side Mid ch.



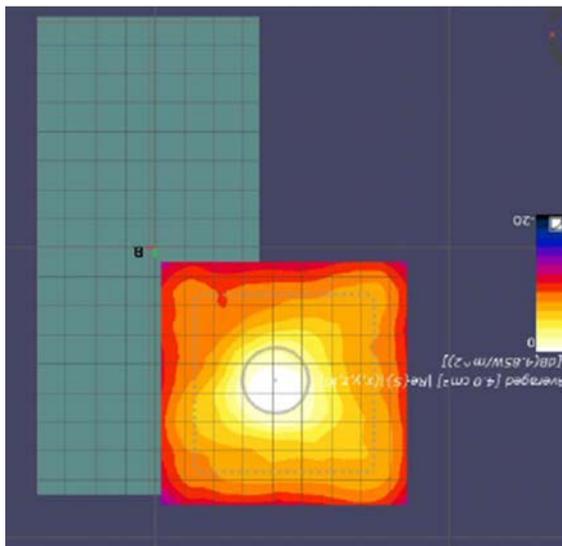
(a) Measurement

Point PD on Back-side [mm] beam ID #36



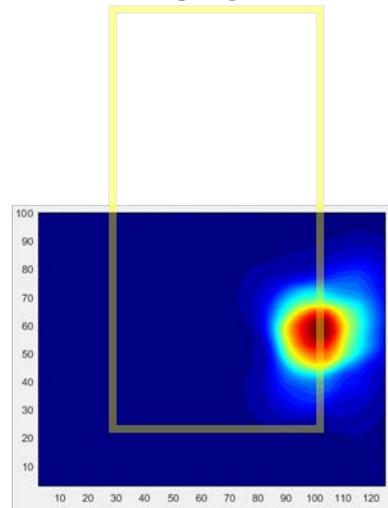
(b) Simulation

Patch antenna QTM1 AG0(V-polarization) beam ID 36, Point power density



(a) Measurement

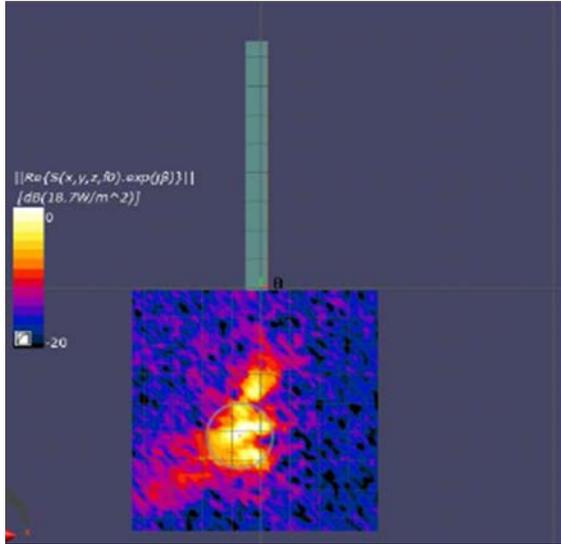
Avg. PD on Back-side [mm] beam ID #36



(b) Simulation

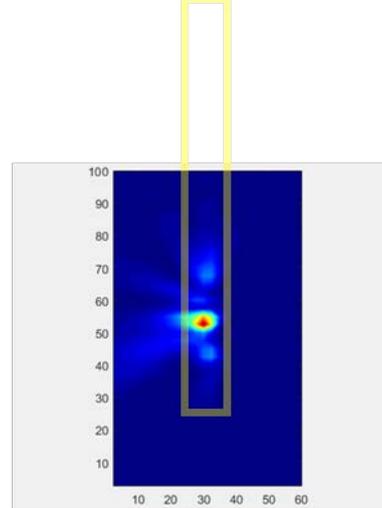
Patch antenna QTM1 AG0(V-polarization) beam ID 36, 4cm² Averaged power density

n260 Patch antenna QTM1 Ant_Group1(H-polarization) beam ID 149 Right-side Mid ch.



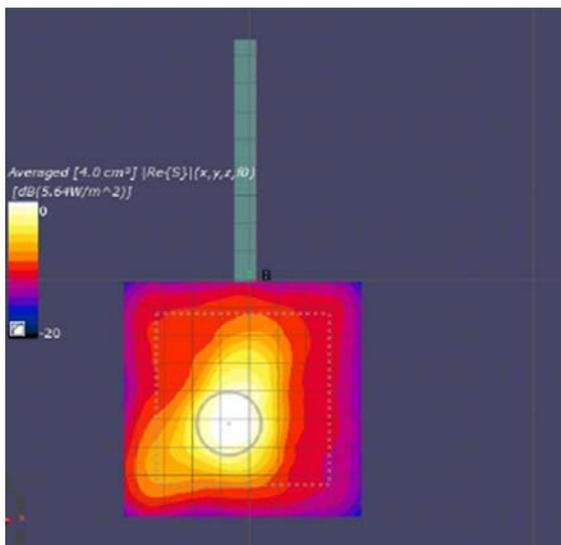
(a) Measurement

Point PD on Right-side [mm] beam ID #149



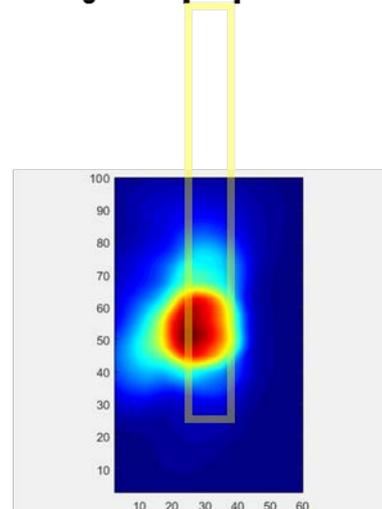
(b) Simulation

Patch antenna QTM1 AG1(H-polarization) beam ID 149, Point power density



(a) Measurement

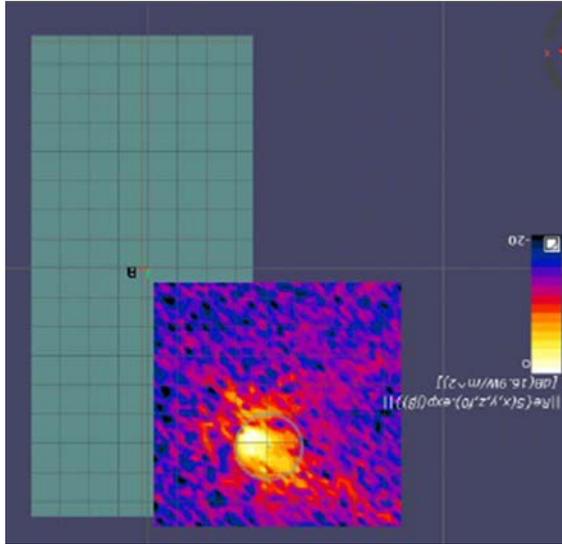
Avg. PD on Right-side [mm] beam ID #149



(b) Simulation

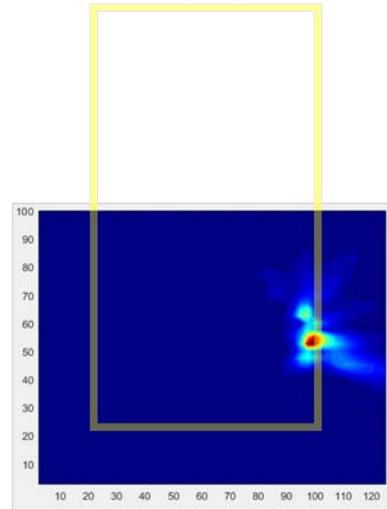
Patch antenna QTM1 AG1(H-polarization) beam ID 149, 4cm² Averaged power density

n260 Patch antenna QTM1 Ant_Group1(H-polarization) beam ID 149 Back-side Mid ch.



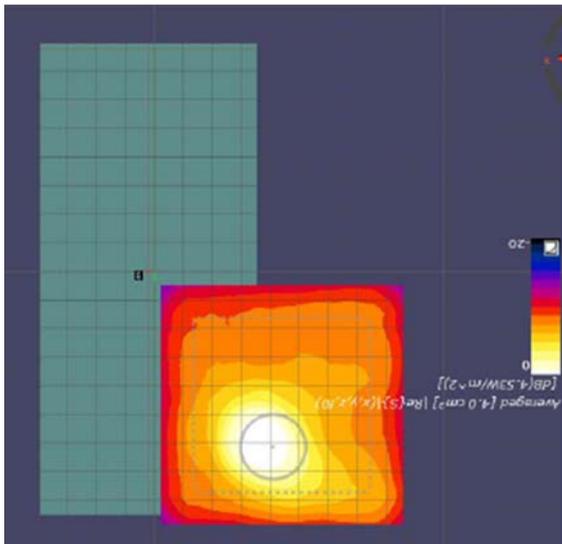
(a) Measurement

Point PD on Back-side [mm] beam ID #149



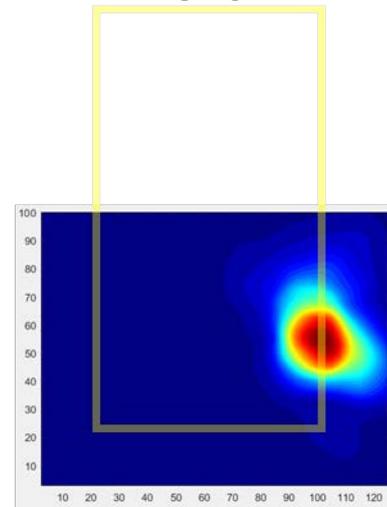
(b) Simulation

Patch antenna QTM1 AG1(H-polarization) beam ID 149, Point power density



(a) Measurement

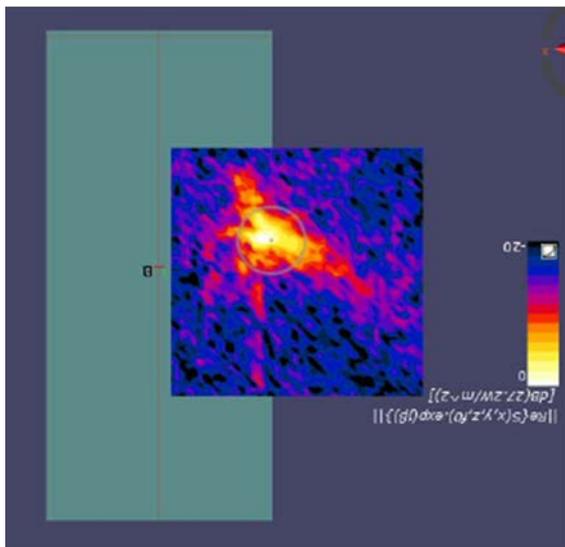
Avg. PD on Back-side [mm] beam ID #149



(b) Simulation

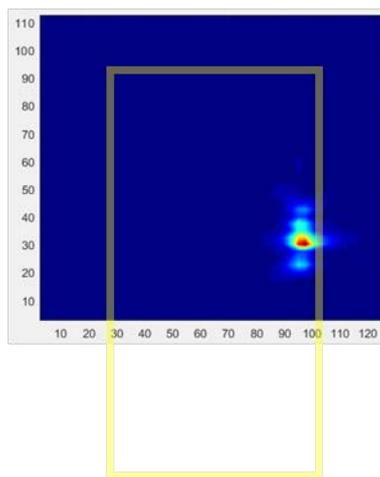
Patch antenna QTM1 AG1(H-polarization) beam ID 149, 4cm² Averaged power density

n260 Patch antenna QTM2 Ant_Group0(V-polarization) beam ID 29 Back-side Mid ch.



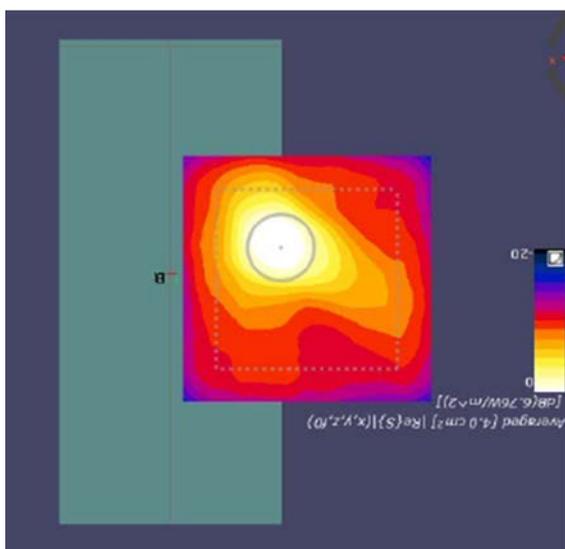
(a) Measurement

Point PD on Back-side [mm] beam ID #29



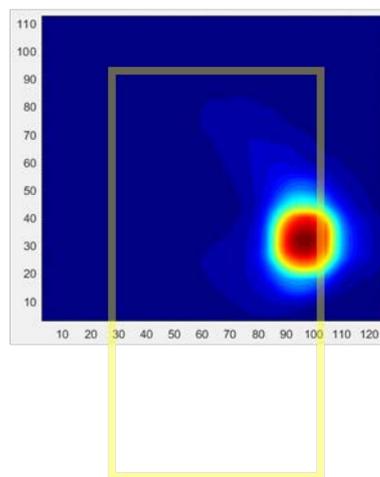
(b) Simulation

Patch antenna QTM2 AG0(V-polarization) beam ID 29, Point power density



(a) Measurement

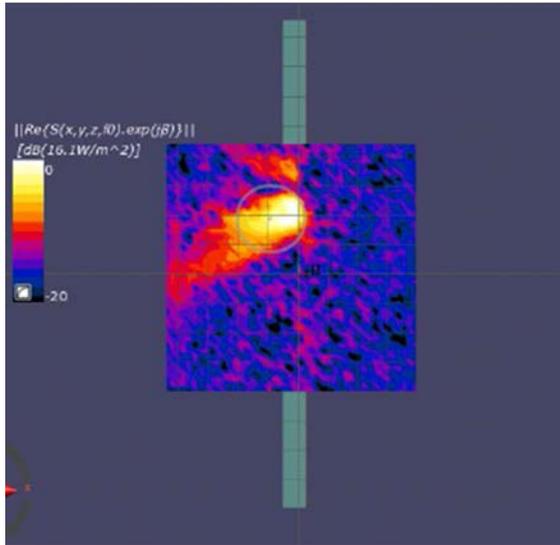
Avg. PD on Back-side [mm] beam ID #29



(b) Simulation

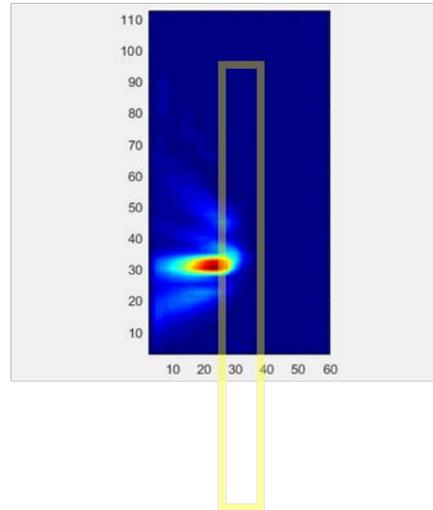
Patch antenna QTM2 AG0(V-polarization) beam ID 29, 4cm² Averaged power density

n260 Patch antenna QTM2 Ant_Group0(V-polarization) beam ID 29 Right-side Mid ch.



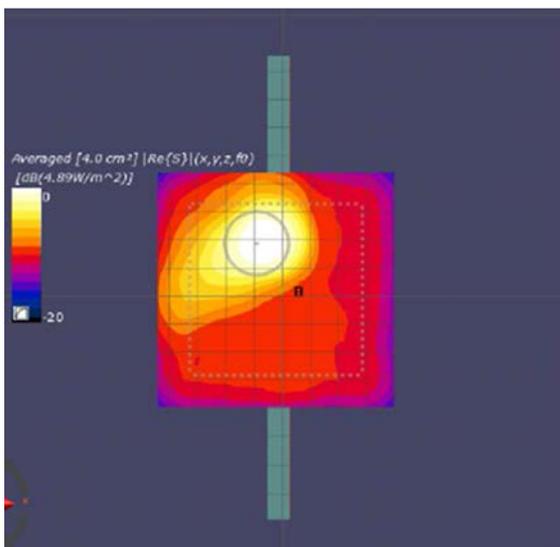
(a) Measurement

Point PD on Right-side [mm] beam ID #29



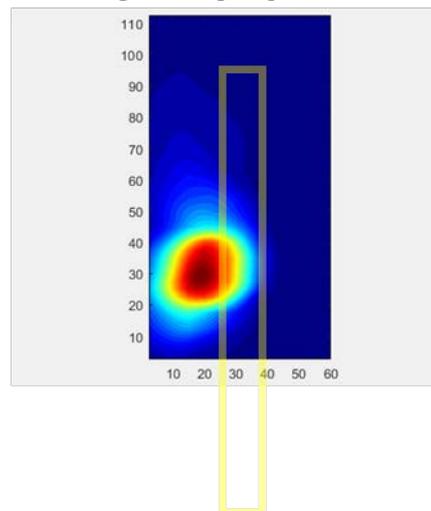
(b) Simulation

Patch antenna QTM2 AG0(V-polarization) beam ID 29, Point power density



(a) Measurement

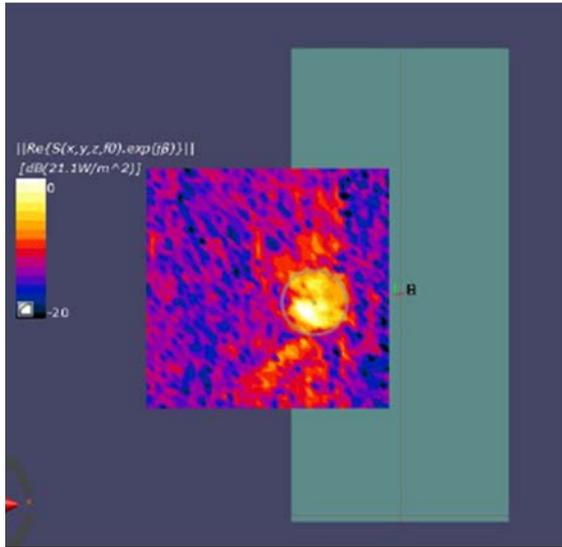
Avg. PD on Right-side [mm] beam ID #29



(b) Simulation

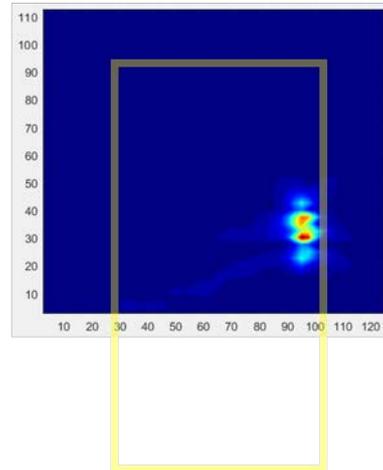
Patch antenna QTM2 AG0(V-polarization) beam ID 29, 4cm² Averaged power density

n260 Patch antenna QTM2 Ant_Group1(H-polarization) beam ID 171 Back-side Mid ch.



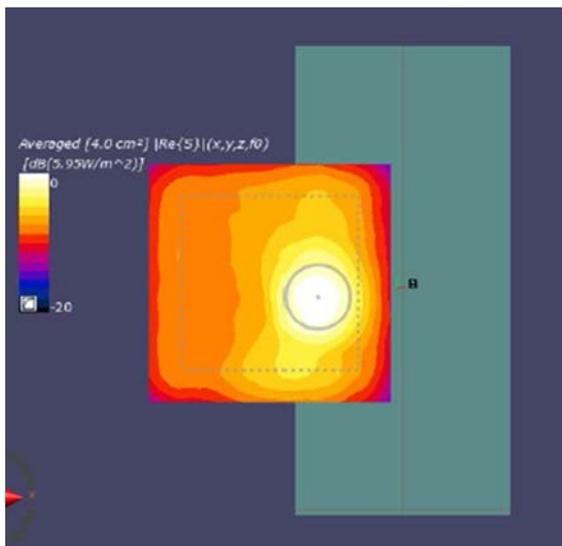
(a) Measurement

Point PD on Back-side [mm] beam ID #171



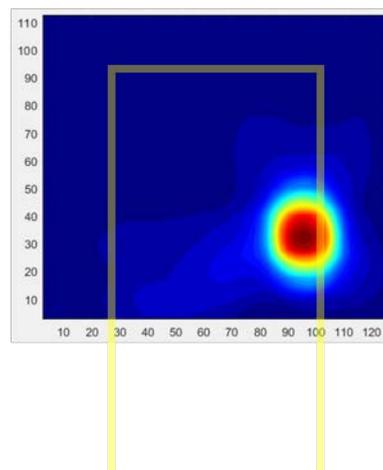
(b) Simulation

Patch antenna QTM2 AG1(H-polarization) beam ID 171, Point power density



(a) Measurement

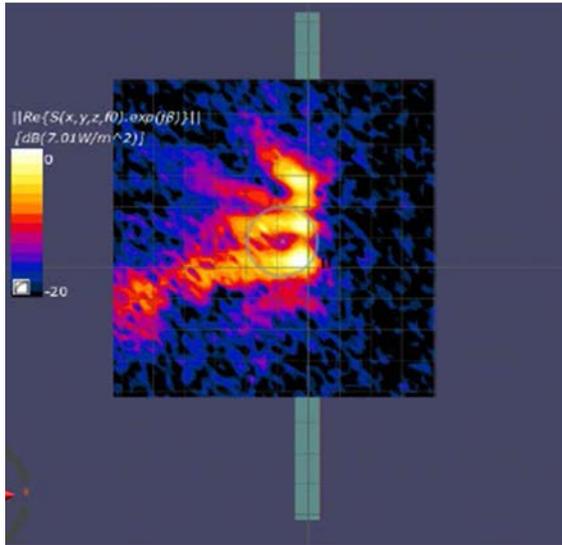
Avg. PD on Back-side [mm] beam ID #171



(b) Simulation

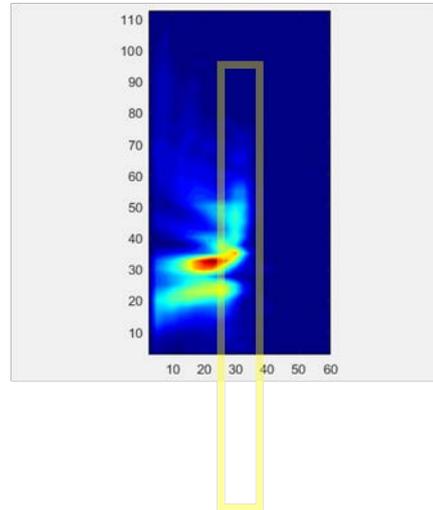
Patch antenna QTM2 AG1(H-polarization) beam ID 171, 4cm² Averaged power density

n260 Patch antenna QTM2 Ant_Group1(H-polarization) beam ID 171 Right-side Mid ch.



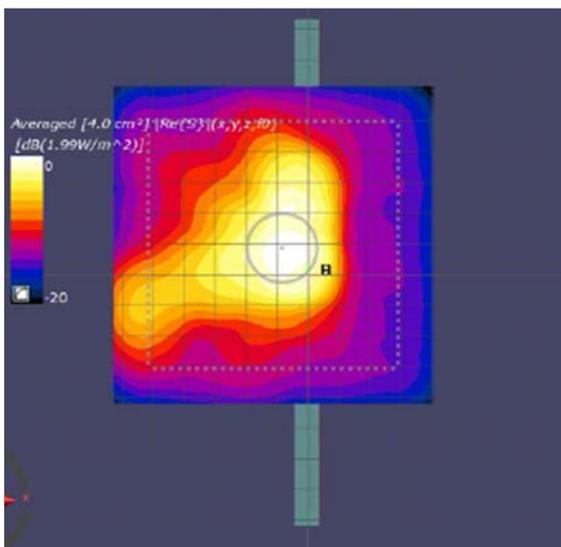
(a) Measurement

Point PD on Right-side [mm] beam ID #171



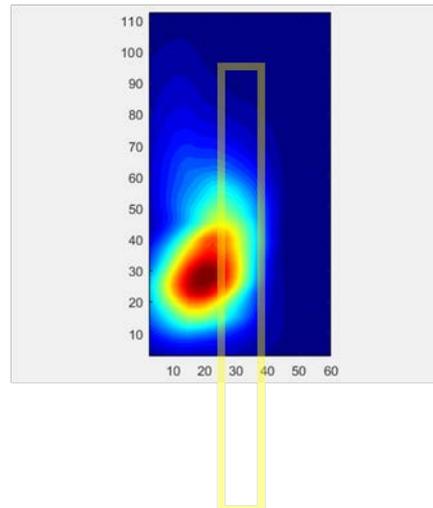
(b) Simulation

Patch antenna QTM2 AG1(H-polarization) beam ID 171, Point power density



(a) Measurement

Avg. PD on Right-side [mm] beam ID #171



(b) Simulation

Patch antenna QTM2 AG1(H-polarization) beam ID 171, 4cm² Averaged power density

3. Simulation results

This section shows the PD simulation results of QTM#0, QTM#1 and QTM#2 at 28GHz and 39GHz for each evaluation surface specified in Table 1 at 2mm distance.

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 tables MIMO results represent worst case of MIMO. After sweeping the relative phase between beams at 5° intervals from 0° to 360°, the highest value is attached to the MIMO simulation results. 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 QTM#0 – Patch Antenna

Table 2 & Table 3 show the PD simulation evaluation of QTM#0 patch antenna at 28GHz / 39GHz for the corresponding evaluation surfaces specified in Table 1.

Table 2. PD of QTM#0 – patch antenna (28GHz)
QTM#0 Low Ch.

n261 Low ch.(27.56GHz)					4cm ² PD(W/m ²) at 2mm evaluation surfaces @6dBm						Ratio [%]		
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	relative phase worst PD for MIMO						Front / (worst surface)	Top / (worst surface)	
					Front	Back	Right	Left	Top	Bottom			
261	1		QTM0	PATCH	1	0.18	2.50	0.02	1.99	0.07	0.00	7.22	2.87
261	6		QTM0	PATCH	2	0.36	2.91	0.04	2.49	0.15	0.00	12.51	5.05
261	7		QTM0	PATCH	2	0.29	5.06	0.03	4.09	0.03	0.00	5.79	0.51
261	8		QTM0	PATCH	2	0.45	3.31	0.05	2.04	0.09	0.00	13.57	2.78
261	14		QTM0	PATCH	2	0.26	3.64	0.04	3.31	0.16	0.00	7.17	4.35
261	15		QTM0	PATCH	2	0.37	4.03	0.04	2.57	0.06	0.00	9.23	1.45
261	23		QTM0	PATCH	4	1.16	6.58	0.04	5.87	0.22	0.00	17.63	3.38
261	24		QTM0	PATCH	4	1.60	9.24	0.07	8.60	0.29	0.00	17.36	3.13
261	25		QTM0	PATCH	4	1.63	8.07	0.09	7.64	0.16	0.00	20.23	1.98
261	26		QTM0	PATCH	4	1.29	5.91	0.08	5.53	0.16	0.00	21.88	2.73
261	27		QTM0	PATCH	4	1.91	6.66	0.08	6.15	0.06	0.00	28.73	0.84
261	37		QTM0	PATCH	4	1.05	9.38	0.05	8.77	0.25	0.00	11.17	2.69
261	38		QTM0	PATCH	4	1.87	8.89	0.08	7.87	0.04	0.00	21.04	0.49
261	39		QTM0	PATCH	4	1.42	6.82	0.07	5.94	0.05	0.00	20.88	0.77
261	40		QTM0	PATCH	4	1.70	6.91	0.09	6.42	0.04	0.00	24.55	0.65
261		129	QTM0	PATCH	1	0.47	4.03	0.01	4.03	0.22	0.00	11.58	5.57
261		143	QTM0	PATCH	2	0.75	5.00	0.04	4.14	0.05	0.00	14.94	1.07
261		142	QTM0	PATCH	2	0.60	6.12	0.11	5.11	0.06	0.00	9.83	1.03
261		135	QTM0	PATCH	2	0.68	6.48	0.12	5.17	0.05	0.00	10.55	0.73
261		136	QTM0	PATCH	2	1.53	7.17	0.02	7.47	0.61	0.00	20.50	8.17
261		134	QTM0	PATCH	2	0.47	5.61	0.09	4.78	0.09	0.00	8.32	1.54
261		155	QTM0	PATCH	4	2.64	9.12	0.07	8.66	0.75	0.00	28.98	8.25
261		167	QTM0	PATCH	4	2.01	10.48	0.11	11.42	0.43	0.00	17.57	3.76
261		152	QTM0	PATCH	4	1.40	8.62	0.09	8.75	0.23	0.00	16.02	2.63
261		165	QTM0	PATCH	4	0.78	12.76	0.20	12.15	0.25	0.00	6.14	1.98
261		151	QTM0	PATCH	4	0.83	11.73	0.17	12.09	0.45	0.00	6.89	3.75
261		154	QTM0	PATCH	4	1.97	8.46	0.04	10.05	0.27	0.00	19.58	2.68
261		153	QTM0	PATCH	4	1.96	10.43	0.17	11.66	0.11	0.00	16.82	0.91
261		168	QTM0	PATCH	4	2.52	9.50	0.03	9.26	0.26	0.00	26.55	2.73
261		166	QTM0	PATCH	4	1.49	10.59	0.08	11.89	0.15	0.00	12.57	1.26
261	1	129	QTM0	PATCH	1	0.60	4.94	0.03	4.51	0.32	0.00	12.08	6.41
261	6	143	QTM0	PATCH	2	1.16	6.40	0.09	6.40	0.38	0.00	18.19	5.99
261	7	142	QTM0	PATCH	2	1.04	10.87	0.15	9.90	0.27	0.00	9.60	2.45
261	8	135	QTM0	PATCH	2	0.88	8.17	0.17	6.01	0.17	0.00	10.72	2.08
261	14	136	QTM0	PATCH	2	1.72	7.35	0.07	7.37	1.15	0.00	23.31	15.56
261	15	134	QTM0	PATCH	2	0.79	9.24	0.14	7.19	0.17	0.00	8.53	1.85
261	23	155	QTM0	PATCH	4	4.55	18.78	0.14	15.60	3.54	0.00	24.23	18.85
261	24	167	QTM0	PATCH	4	4.84	21.54	0.15	19.86	1.09	0.00	22.47	5.07
261	25	152	QTM0	PATCH	4	4.24	16.03	0.19	14.82	1.06	0.00	26.43	6.64
261	26	165	QTM0	PATCH	4	3.49	17.68	0.26	17.83	0.49	0.00	19.57	2.75
261	27	151	QTM0	PATCH	4	2.92	17.35	0.22	17.25	0.51	0.00	16.85	2.94
261	37	154	QTM0	PATCH	4	4.32	19.25	0.12	18.96	2.14	0.00	22.42	11.11
261	38	153	QTM0	PATCH	4	5.35	20.22	0.20	18.17	0.82	0.00	26.47	4.04
261	39	168	QTM0	PATCH	4	3.03	14.03	0.13	11.69	1.56	0.00	21.59	11.14
261	40	166	QTM0	PATCH	4	5.15	19.41	0.19	17.42	0.65	0.00	26.51	3.34

QTM#0 Mid Ch.

n261 Mid ch.(27.925GHz)					4cm ² PD(W/m ²) at 2mm evaluation surfaces @6dBm						Ratio [%]		
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	relative phase worst PD for MIMO						Front / (worst surface)	Top / (worst surface)	
					Front	Back	Right	Left	Top	Bottom			
261	1		QTM0	PATCH	1	0.27	2.64	0.01	2.05	0.12	0.00	10.36	4.45
261	6		QTM0	PATCH	2	0.35	3.45	0.02	2.77	0.22	0.00	10.16	6.41
261	7		QTM0	PATCH	2	0.40	5.04	0.03	4.05	0.09	0.00	7.90	1.74
261	8		QTM0	PATCH	2	0.22	3.68	0.03	2.33	0.17	0.00	5.88	4.49
261	14		QTM0	PATCH	2	0.46	3.92	0.03	3.47	0.21	0.00	11.66	5.31
261	15		QTM0	PATCH	2	0.18	4.33	0.03	2.80	0.12	0.00	4.09	2.85
261	23		QTM0	PATCH	4	1.12	7.25	0.04	6.22	0.28	0.00	15.47	3.85
261	24		QTM0	PATCH	4	1.86	9.61	0.07	8.64	0.46	0.00	19.32	4.74
261	25		QTM0	PATCH	4	1.91	7.64	0.09	7.19	0.16	0.00	25.01	2.16
261	26		QTM0	PATCH	4	1.15	6.53	0.05	5.94	0.25	0.00	17.65	3.80
261	27		QTM0	PATCH	4	1.91	6.76	0.07	6.28	0.12	0.00	28.27	1.74
261	37		QTM0	PATCH	4	1.11	9.85	0.04	9.31	0.39	0.00	11.30	3.98
261	38		QTM0	PATCH	4	1.70	9.03	0.10	7.91	0.41	0.00	18.82	4.49
261	39		QTM0	PATCH	4	1.77	7.09	0.05	5.89	0.15	0.00	24.95	2.05
261	40		QTM0	PATCH	4	1.66	7.15	0.08	6.35	0.27	0.00	23.24	3.74
261		129	QTM0	PATCH	1	0.34	4.29	0.01	4.07	0.28	0.00	8.03	6.47
261		143	QTM0	PATCH	2	1.05	4.91	0.06	4.41	0.05	0.00	21.46	0.97
261		142	QTM0	PATCH	2	0.72	6.06	0.10	4.97	0.05	0.00	11.84	0.90
261		135	QTM0	PATCH	2	0.84	5.69	0.11	5.02	0.03	0.00	14.71	0.49
261		136	QTM0	PATCH	2	1.18	7.92	0.03	7.70	0.57	0.00	14.92	7.25
261		134	QTM0	PATCH	2	0.54	5.59	0.07	4.69	0.08	0.00	9.59	1.43
261		155	QTM0	PATCH	4	2.38	10.02	0.07	8.91	0.66	0.00	23.77	6.62
261		167	QTM0	PATCH	4	2.05	10.99	0.12	12.25	0.45	0.00	16.73	3.66
261		152	QTM0	PATCH	4	1.13	9.49	0.11	8.36	0.24	0.00	11.88	2.50
261		165	QTM0	PATCH	4	1.05	13.10	0.21	11.91	0.37	0.00	8.05	2.84
261		151	QTM0	PATCH	4	0.34	11.83	0.18	11.44	0.64	0.00	2.91	5.37
261		154	QTM0	PATCH	4	2.02	10.75	0.04	11.10	0.26	0.00	18.24	2.32
261		153	QTM0	PATCH	4	1.95	11.11	0.21	12.42	0.08	0.00	15.73	0.68
261		168	QTM0	PATCH	4	2.34	10.35	0.05	9.86	0.23	0.00	22.63	2.25
261		166	QTM0	PATCH	4	1.67	10.94	0.10	12.29	0.13	0.00	13.60	1.06
261	1	129	QTM0	PATCH	1	0.56	4.85	0.03	4.32	0.47	0.00	11.55	9.74
261	6	143	QTM0	PATCH	2	1.61	7.05	0.10	7.12	0.39	0.00	22.56	5.50
261	7	142	QTM0	PATCH	2	1.03	10.80	0.12	9.90	0.26	0.00	9.51	2.45
261	8	135	QTM0	PATCH	2	0.96	8.41	0.13	6.18	0.23	0.00	11.43	2.77
261	14	136	QTM0	PATCH	2	1.59	8.65	0.06	7.96	1.23	0.00	18.41	14.17
261	15	134	QTM0	PATCH	2	0.81	9.51	0.10	7.44	0.26	0.00	8.47	2.72
261	23	155	QTM0	PATCH	4	4.57	20.07	0.12	16.00	3.60	0.00	22.76	17.94
261	24	167	QTM0	PATCH	4	4.68	21.61	0.17	19.24	1.42	0.00	21.65	6.59
261	25	152	QTM0	PATCH	4	4.49	16.10	0.19	14.96	1.01	0.00	27.91	6.26
261	26	165	QTM0	PATCH	4	3.87	18.23	0.25	17.88	0.89	0.00	21.24	4.90
261	27	151	QTM0	PATCH	4	2.97	17.99	0.18	17.45	0.88	0.00	16.52	4.90
261	37	154	QTM0	PATCH	4	4.23	21.77	0.15	19.56	1.96	0.00	19.42	9.02
261	38	153	QTM0	PATCH	4	5.07	20.56	0.23	17.64	1.15	0.00	24.68	5.58
261	39	168	QTM0	PATCH	4	3.35	14.39	0.14	12.26	1.59	0.00	23.25	11.03
261	40	166	QTM0	PATCH	4	5.27	19.48	0.17	17.88	0.58	0.00	27.06	2.95

QTM#0 High Ch.

n261 High ch.(28.29GHz)					4cm ² PD(W/m ²) at 2mm evaluation surfaces @6dBm						Ratio [%]		
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	relative phase worst PD for MIMO						Front / (worst surface)	Top / (worst surface)	
					Front	Back	Right	Left	Top	Bottom			
261	1		QTM0	PATCH	1	0.29	2.61	0.01	2.12	0.10	0.00	11.30	3.96
261	6		QTM0	PATCH	2	0.36	3.32	0.04	2.57	0.20	0.00	10.96	5.96
261	7		QTM0	PATCH	2	0.45	5.02	0.02	4.19	0.08	0.00	8.99	1.52
261	8		QTM0	PATCH	2	0.28	3.68	0.02	2.50	0.16	0.00	7.59	4.35
261	14		QTM0	PATCH	2	0.44	3.79	0.03	3.25	0.18	0.00	11.54	4.86
261	15		QTM0	PATCH	2	0.31	4.45	0.02	3.03	0.08	0.00	6.93	1.76
261	23		QTM0	PATCH	4	0.87	7.40	0.04	5.95	0.34	0.00	11.71	4.56
261	24		QTM0	PATCH	4	1.84	8.71	0.08	8.08	0.45	0.00	21.08	5.15
261	25		QTM0	PATCH	4	2.11	7.26	0.08	7.07	0.23	0.00	29.03	3.17
261	26		QTM0	PATCH	4	1.53	6.95	0.04	6.52	0.42	0.00	21.96	6.09
261	27		QTM0	PATCH	4	1.82	6.77	0.06	6.36	0.26	0.00	26.93	3.77
261	37		QTM0	PATCH	4	1.32	9.33	0.04	8.28	0.53	0.00	14.13	5.63
261	38		QTM0	PATCH	4	1.63	8.68	0.10	7.52	0.37	0.00	18.82	4.29
261	39		QTM0	PATCH	4	1.69	7.64	0.04	6.30	0.25	0.00	22.12	3.23
261	40		QTM0	PATCH	4	1.62	6.43	0.08	5.92	0.28	0.00	25.24	4.32
261		129	QTM0	PATCH	1	0.34	4.19	0.01	4.02	0.24	0.00	8.14	5.72
261		143	QTM0	PATCH	2	1.17	4.99	0.06	4.57	0.07	0.00	23.53	1.36
261		142	QTM0	PATCH	2	0.85	5.10	0.11	4.87	0.07	0.00	16.71	1.40
261		135	QTM0	PATCH	2	1.02	5.35	0.12	5.02	0.05	0.00	19.15	0.93
261		136	QTM0	PATCH	2	1.11	7.38	0.03	7.13	0.49	0.00	15.02	6.67
261		134	QTM0	PATCH	2	0.60	5.19	0.07	4.47	0.11	0.00	11.55	2.15
261		155	QTM0	PATCH	4	2.33	9.48	0.06	8.56	0.20	0.00	24.54	2.14
261		167	QTM0	PATCH	4	2.08	10.66	0.11	11.93	0.16	0.00	17.44	1.36
261		152	QTM0	PATCH	4	1.26	8.82	0.16	7.71	0.29	0.00	14.24	3.30
261		165	QTM0	PATCH	4	1.29	12.50	0.19	11.50	0.27	0.00	10.35	2.13
261		151	QTM0	PATCH	4	0.93	11.25	0.20	10.54	0.52	0.00	8.23	4.60
261		154	QTM0	PATCH	4	2.06	10.56	0.04	10.68	0.26	0.00	19.27	2.45
261		153	QTM0	PATCH	4	2.04	10.61	0.26	12.20	0.07	0.00	16.70	0.58
261		168	QTM0	PATCH	4	2.14	9.85	0.05	9.30	0.23	0.00	21.76	2.31
261		166	QTM0	PATCH	4	1.86	9.99	0.15	11.65	0.14	0.00	15.96	1.22
261	1	129	QTM0	PATCH	1	0.53	4.85	0.03	4.36	0.39	0.00	10.85	7.95
261	6	143	QTM0	PATCH	2	1.57	7.11	0.08	6.90	0.38	0.00	22.02	5.34
261	7	142	QTM0	PATCH	2	1.19	10.71	0.11	10.10	0.20	0.00	11.13	1.84
261	8	135	QTM0	PATCH	2	1.19	8.38	0.13	6.55	0.22	0.00	14.25	2.67
261	14	136	QTM0	PATCH	2	1.27	8.78	0.06	8.27	1.25	0.00	14.45	14.22
261	15	134	QTM0	PATCH	2	0.94	9.63	0.09	7.93	0.25	0.00	9.80	2.55
261	23	155	QTM0	PATCH	4	4.39	19.73	0.11	16.07	3.47	0.00	22.27	17.58
261	24	167	QTM0	PATCH	4	5.07	20.58	0.14	16.93	1.49	0.00	24.66	7.26
261	25	152	QTM0	PATCH	4	4.45	15.32	0.22	14.59	0.90	0.00	29.07	5.87
261	26	165	QTM0	PATCH	4	4.21	17.97	0.21	17.81	1.22	0.00	23.43	6.76
261	27	151	QTM0	PATCH	4	3.14	18.25	0.19	17.44	1.02	0.00	17.23	5.60
261	37	154	QTM0	PATCH	4	4.46	21.16	0.09	18.30	1.87	0.00	21.08	8.81
261	38	153	QTM0	PATCH	4	5.34	19.90	0.25	16.08	1.19	0.00	26.84	5.97
261	39	168	QTM0	PATCH	4	3.54	13.48	0.15	11.88	1.34	0.00	26.27	9.93
261	40	166	QTM0	PATCH	4	5.38	18.38	0.21	17.19	0.69	0.00	29.29	3.76

Table 3. PD of QTM#0 – patch antenna (39GHz)
QTM#0 Low Ch.

n260 Low ch.(37.05GHz)					4cm ² PD(W/m ²) at 2mm evaluation surfaces @6dBm						Ratio [%]		
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	relative phase worst PD for MIMO						Front / (worst surface)	Top / (worst surface)	
					Front	Back	Right	Left	Top	Bottom			
260	1		QTM0	PATCH	1	0.40	1.51	0.01	1.95	0.11	0.00	20.61	5.48
260	6		QTM0	PATCH	2	0.94	3.92	0.02	4.93	0.25	0.00	19.14	5.13
260	7		QTM0	PATCH	2	0.87	5.81	0.04	6.53	0.12	0.00	13.25	1.82
260	8		QTM0	PATCH	2	0.63	5.34	0.07	6.44	0.27	0.00	9.77	4.18
260	14		QTM0	PATCH	2	0.74	6.09	0.05	6.76	0.14	0.00	10.89	2.07
260	15		QTM0	PATCH	2	0.63	5.73	0.07	6.48	0.27	0.00	9.71	4.15
260	23		QTM0	PATCH	4	0.68	9.87	0.10	11.13	0.36	0.00	6.10	3.22
260	24		QTM0	PATCH	4	1.38	11.31	0.04	11.63	0.36	0.00	11.85	3.09
260	25		QTM0	PATCH	4	1.65	9.39	0.08	10.83	0.16	0.00	15.25	1.49
260	26		QTM0	PATCH	4	0.23	7.08	0.09	9.17	0.80	0.00	2.46	8.76
260	27		QTM0	PATCH	4	1.87	9.03	0.06	9.81	0.47	0.00	19.10	4.80
260	37		QTM0	PATCH	4	0.60	10.31	0.07	11.12	0.47	0.00	5.41	4.19
260	38		QTM0	PATCH	4	1.94	9.94	0.07	12.44	0.30	0.00	15.60	2.43
260	39		QTM0	PATCH	4	2.06	8.23	0.11	10.33	0.33	0.00	19.97	3.18
260	40		QTM0	PATCH	4	2.56	8.93	0.12	10.61	0.74	0.00	24.10	6.95
260		129	QTM0	PATCH	1	0.60	2.95	0.03	3.56	0.08	0.00	16.85	2.37
260		142	QTM0	PATCH	2	0.78	5.30	0.05	6.26	0.21	0.00	12.49	3.31
260		135	QTM0	PATCH	2	0.79	4.45	0.10	4.75	0.09	0.00	16.73	1.93
260		136	QTM0	PATCH	2	0.64	5.78	0.04	5.59	0.09	0.00	11.11	1.64
260		143	QTM0	PATCH	2	0.70	5.74	0.07	5.80	0.04	0.00	12.15	0.63
260		134	QTM0	PATCH	2	1.33	5.00	0.03	5.81	0.08	0.00	22.92	1.42
260		155	QTM0	PATCH	4	1.79	11.35	0.05	12.14	0.16	0.00	14.71	1.28
260		154	QTM0	PATCH	4	1.83	11.33	0.07	11.18	0.13	0.00	16.16	1.19
260		166	QTM0	PATCH	4	1.66	8.23	0.17	9.90	0.43	0.00	16.78	4.35
260		152	QTM0	PATCH	4	1.11	8.41	0.07	9.61	0.61	0.00	11.59	6.30
260		165	QTM0	PATCH	4	1.52	9.28	0.15	10.17	0.16	0.00	14.93	1.58
260		168	QTM0	PATCH	4	1.75	11.81	0.04	11.85	0.19	0.00	14.80	1.58
260		167	QTM0	PATCH	4	1.87	10.52	0.14	10.35	0.09	0.00	17.76	0.89
260		153	QTM0	PATCH	4	2.15	10.27	0.21	10.95	0.12	0.00	19.67	1.07
260		151	QTM0	PATCH	4	2.01	8.74	0.10	9.71	0.12	0.00	20.66	1.22
260	1	129	QTM0	PATCH	1	0.97	3.66	0.04	4.47	0.29	0.00	21.66	6.55
260	6	142	QTM0	PATCH	2	2.53	8.45	0.07	9.63	0.47	0.00	26.27	4.84
260	7	135	QTM0	PATCH	2	2.30	10.55	0.12	9.72	0.23	0.00	21.76	2.14
260	8	136	QTM0	PATCH	2	1.68	10.19	0.12	10.94	0.99	0.00	15.40	9.02
260	14	143	QTM0	PATCH	2	1.75	12.46	0.13	11.80	0.63	0.00	14.01	5.04
260	15	134	QTM0	PATCH	2	1.67	7.93	0.10	8.78	0.75	0.00	19.00	8.59
260	23	155	QTM0	PATCH	4	3.47	21.23	0.14	21.91	1.79	0.00	15.82	8.15
260	24	154	QTM0	PATCH	4	3.86	22.61	0.13	21.99	0.55	0.00	17.06	2.43
260	25	166	QTM0	PATCH	4	4.38	16.34	0.17	15.44	0.62	0.00	26.80	3.81
260	26	152	QTM0	PATCH	4	3.41	14.59	0.13	17.08	1.64	0.00	19.97	9.63
260	27	165	QTM0	PATCH	4	3.43	17.60	0.20	17.44	0.95	0.00	19.47	5.43
260	37	168	QTM0	PATCH	4	3.70	22.03	0.09	21.29	0.90	0.00	16.81	4.09
260	38	167	QTM0	PATCH	4	5.54	21.91	0.15	19.63	0.46	0.00	25.30	2.08
260	39	153	QTM0	PATCH	4	5.83	19.07	0.26	17.80	0.44	0.00	30.58	2.29
260	40	151	QTM0	PATCH	4	4.26	14.59	0.23	18.45	1.80	0.00	23.09	9.76

QTM#0 Mid Ch.

n260 Mid ch.(38.5GHz)					4cm ² PD(W/m ²) at 2mm evaluation surfaces @6dBm						Ratio [%]		
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	relative phase worst PD for MIMO						Front / (worst surface)	Top / (worst surface)	
					Front	Back	Right	Left	Top	Bottom			
260	1		QTM0	PATCH	1	0.53	1.87	0.01	2.36	0.11	0.00	22.45	4.81
260	6		QTM0	PATCH	2	1.14	4.72	0.02	5.83	0.22	0.00	19.62	3.79
260	7		QTM0	PATCH	2	0.65	5.95	0.04	4.78	0.06	0.00	10.99	1.00
260	8		QTM0	PATCH	2	0.72	5.36	0.05	5.58	0.16	0.00	12.96	2.84
260	14		QTM0	PATCH	2	0.53	5.99	0.05	5.78	0.08	0.00	8.85	1.35
260	15		QTM0	PATCH	2	0.72	5.36	0.05	5.58	0.16	0.00	12.96	2.93
260	23		QTM0	PATCH	4	1.25	9.53	0.16	10.28	0.16	0.00	12.20	1.53
260	24		QTM0	PATCH	4	0.93	11.45	0.05	11.57	0.32	0.00	8.04	2.79
260	25		QTM0	PATCH	4	0.36	9.15	0.04	9.18	0.24	0.00	3.87	2.64
260	26		QTM0	PATCH	4	1.29	6.56	0.03	6.86	0.74	0.00	18.87	10.78
260	27		QTM0	PATCH	4	2.25	9.60	0.03	9.95	0.23	0.00	22.62	2.32
260	37		QTM0	PATCH	4	0.97	10.33	0.05	10.95	0.36	0.00	8.90	3.26
260	38		QTM0	PATCH	4	1.46	10.68	0.07	10.79	0.24	0.00	13.50	2.22
260	39		QTM0	PATCH	4	0.55	9.30	0.05	9.18	0.40	0.00	5.94	4.25
260	40		QTM0	PATCH	4	2.64	7.09	0.11	10.46	0.74	0.00	25.22	7.06
260		129	QTM0	PATCH	1	0.65	2.43	0.02	3.23	0.13	0.00	20.10	3.96
260		142	QTM0	PATCH	2	0.69	6.23	0.01	6.88	0.14	0.00	10.07	1.99
260		135	QTM0	PATCH	2	0.57	4.82	0.08	5.01	0.02	0.00	11.33	0.35
260		136	QTM0	PATCH	2	0.41	6.11	0.03	5.83	0.07	0.00	6.71	1.07
260		143	QTM0	PATCH	2	0.42	6.15	0.05	5.90	0.03	0.00	6.89	0.52
260		134	QTM0	PATCH	2	1.64	4.05	0.04	5.68	0.10	0.00	28.90	1.72
260		155	QTM0	PATCH	4	1.80	10.25	0.09	10.78	0.14	0.00	16.67	1.28
260		154	QTM0	PATCH	4	1.96	10.90	0.05	10.96	0.15	0.00	17.92	1.37
260		166	QTM0	PATCH	4	1.69	9.81	0.13	9.94	0.28	0.00	17.05	2.79
260		152	QTM0	PATCH	4	1.05	9.11	0.12	10.01	0.32	0.00	10.45	3.15
260		165	QTM0	PATCH	4	1.93	10.08	0.17	10.57	0.16	0.00	18.22	1.47
260		168	QTM0	PATCH	4	1.79	10.56	0.07	10.64	0.20	0.00	16.84	1.87
260		167	QTM0	PATCH	4	1.81	10.67	0.11	10.60	0.20	0.00	17.00	1.84
260		153	QTM0	PATCH	4	1.91	9.49	0.13	10.02	0.26	0.00	19.02	2.57
260		151	QTM0	PATCH	4	2.09	8.13	0.14	8.99	0.12	0.00	23.26	1.37
260	1	129	QTM0	PATCH	1	1.01	3.48	0.03	4.71	0.50	0.00	21.38	10.63
260	6	142	QTM0	PATCH	2	1.87	9.31	0.08	10.30	0.57	0.00	18.13	5.58
260	7	135	QTM0	PATCH	2	1.66	10.95	0.14	7.06	0.11	0.00	15.12	1.02
260	8	136	QTM0	PATCH	2	1.53	11.14	0.09	10.44	0.86	0.00	13.75	7.71
260	14	143	QTM0	PATCH	2	1.15	12.31	0.11	11.16	0.53	0.00	9.34	4.29
260	15	134	QTM0	PATCH	2	1.99	7.20	0.10	7.70	0.58	0.00	25.90	7.56
260	23	155	QTM0	PATCH	4	3.10	20.52	0.26	20.60	1.63	0.00	15.05	7.94
260	24	154	QTM0	PATCH	4	4.01	22.48	0.10	22.22	0.72	0.00	17.85	3.20
260	25	166	QTM0	PATCH	4	3.04	17.32	0.19	15.21	0.72	0.00	17.54	4.15
260	26	152	QTM0	PATCH	4	3.21	12.99	0.21	14.59	0.93	0.00	22.00	6.38
260	27	165	QTM0	PATCH	4	3.68	18.72	0.27	18.48	1.08	0.00	19.66	5.80
260	37	168	QTM0	PATCH	4	3.63	21.54	0.18	20.98	0.77	0.00	16.84	3.55
260	38	167	QTM0	PATCH	4	3.88	21.28	0.16	19.74	0.55	0.00	18.23	2.60
260	39	153	QTM0	PATCH	4	4.24	19.01	0.13	16.56	0.84	0.00	22.30	4.41
260	40	151	QTM0	PATCH	4	4.03	14.97	0.24	17.06	1.46	0.00	23.61	8.56

QTM#0 High Ch.

n260 High ch.(39.95GHz)					4cm ² PD(W/m ²) at 2mm evaluation surfaces @6dBm						Ratio [%]		
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	relative phase worst PD for MIMO						Front / (worst surface)	Top / (worst surface)	
					Front	Back	Right	Left	Top	Bottom			
260	1		QTM0	PATCH	1	0.29	1.93	0.01	2.52	0.15	0.00	11.70	5.91
260	6		QTM0	PATCH	2	0.51	4.48	0.02	4.52	0.26	0.00	11.38	5.84
260	7		QTM0	PATCH	2	0.41	4.11	0.04	3.46	0.03	0.00	10.01	0.76
260	8		QTM0	PATCH	2	0.62	3.97	0.04	4.01	0.10	0.00	15.42	2.52
260	14		QTM0	PATCH	2	0.51	4.07	0.04	3.79	0.04	0.00	12.60	0.92
260	15		QTM0	PATCH	2	0.62	3.97	0.04	4.01	0.10	0.00	15.42	2.52
260	23		QTM0	PATCH	4	1.12	8.89	0.11	7.23	0.26	0.00	12.57	2.95
260	24		QTM0	PATCH	4	0.72	9.31	0.05	7.15	0.45	0.00	7.77	4.81
260	25		QTM0	PATCH	4	0.74	7.87	0.04	6.90	0.17	0.00	9.42	2.14
260	26		QTM0	PATCH	4	0.79	7.20	0.04	7.22	0.35	0.00	10.87	4.90
260	27		QTM0	PATCH	4	1.05	7.16	0.07	6.85	0.26	0.00	14.70	3.58
260	37		QTM0	PATCH	4	0.99	9.30	0.05	7.23	0.43	0.00	10.66	4.63
260	38		QTM0	PATCH	4	1.04	9.15	0.05	8.88	0.22	0.00	11.40	2.37
260	39		QTM0	PATCH	4	0.63	7.80	0.08	5.99	0.21	0.00	8.05	2.70
260	40		QTM0	PATCH	4	1.20	6.23	0.04	7.64	0.43	0.00	15.66	5.60
260		129	QTM0	PATCH	1	0.45	2.22	0.01	2.48	0.06	0.00	18.02	2.35
260		142	QTM0	PATCH	2	0.42	5.35	0.03	5.75	0.10	0.00	7.35	1.74
260		135	QTM0	PATCH	2	0.50	4.98	0.05	4.77	0.07	0.00	9.99	1.34
260		136	QTM0	PATCH	2	0.24	5.84	0.01	5.72	0.09	0.00	4.08	1.50
260		143	QTM0	PATCH	2	0.19	5.98	0.03	5.52	0.03	0.00	3.21	0.44
260		134	QTM0	PATCH	2	1.37	4.52	0.03	4.63	0.07	0.00	29.55	1.60
260		155	QTM0	PATCH	4	1.62	10.94	0.04	11.48	0.20	0.00	14.10	1.75
260		154	QTM0	PATCH	4	1.39	10.41	0.02	8.90	0.14	0.00	13.33	1.38
260		166	QTM0	PATCH	4	1.12	9.82	0.06	10.42	0.35	0.00	10.72	3.36
260		152	QTM0	PATCH	4	0.86	10.15	0.08	10.46	0.50	0.00	8.27	4.78
260		165	QTM0	PATCH	4	1.45	10.50	0.09	10.05	0.19	0.00	13.83	1.83
260		168	QTM0	PATCH	4	1.51	10.94	0.04	10.60	0.15	0.00	13.77	1.34
260		167	QTM0	PATCH	4	1.15	9.99	0.06	8.75	0.20	0.00	11.49	1.98
260		153	QTM0	PATCH	4	1.31	8.99	0.06	8.28	0.24	0.00	14.55	2.69
260		151	QTM0	PATCH	4	1.72	9.01	0.10	9.43	0.13	0.00	18.21	1.35
260	1	129	QTM0	PATCH	1	0.66	3.24	0.02	3.69	0.40	0.00	18.03	10.85
260	6	142	QTM0	PATCH	2	1.20	8.02	0.07	8.71	0.75	0.00	13.78	8.66
260	7	135	QTM0	PATCH	2	1.23	8.54	0.09	7.37	0.17	0.00	14.44	2.00
260	8	136	QTM0	PATCH	2	1.37	9.25	0.05	9.24	0.58	0.00	14.79	6.24
260	14	143	QTM0	PATCH	2	1.31	9.46	0.06	8.75	0.31	0.00	13.81	3.22
260	15	134	QTM0	PATCH	2	1.86	6.31	0.07	6.24	0.58	0.00	29.43	9.26
260	23	155	QTM0	PATCH	4	3.28	18.30	0.18	18.18	1.38	0.00	17.92	7.56
260	24	154	QTM0	PATCH	4	2.78	18.52	0.12	17.42	0.74	0.00	14.98	4.01
260	25	166	QTM0	PATCH	4	2.33	17.80	0.12	16.53	0.79	0.00	13.11	4.44
260	26	152	QTM0	PATCH	4	1.94	12.80	0.11	12.38	1.06	0.00	15.18	8.31
260	27	165	QTM0	PATCH	4	2.30	15.27	0.17	16.82	1.34	0.00	13.70	7.98
260	37	168	QTM0	PATCH	4	2.96	19.15	0.15	18.26	0.91	0.00	15.46	4.73
260	38	167	QTM0	PATCH	4	2.29	18.67	0.09	16.86	0.58	0.00	12.29	3.13
260	39	153	QTM0	PATCH	4	2.92	17.10	0.15	16.09	0.65	0.00	17.10	3.78
260	40	151	QTM0	PATCH	4	3.05	12.98	0.16	15.63	1.66	0.00	19.49	10.62

3.1.2 QTM#1 – Patch Antenna

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

Table 4. PD of QTM#1 – patch antenna (28GHz)
QTM#1 Low Ch.

n261 Low ch.(27.56GHz)					4cm ² PD(W/m ²) at 2mm evaluation surfaces @6dBm						Ratio [%]		
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	relative phase worst PD for MIMO						Front / (worst surface)	Top / (worst surface)	
					Front	Back	Right	Left	Top	Bottom			
261	0		QTM1	PATCH	1	0.02	1.08	1.44	0.01	0.14	0.00	1.33	9.63
261	3		QTM1	PATCH	2	0.06	3.27	2.66	0.01	0.48	0.00	1.72	14.79
261	4		QTM1	PATCH	2	0.55	3.84	3.84	0.02	0.02	0.00	14.40	0.61
261	5		QTM1	PATCH	2	0.10	2.82	2.84	0.04	0.49	0.00	3.46	17.15
261	12		QTM1	PATCH	2	0.32	3.78	3.53	0.02	0.21	0.00	8.45	5.52
261	13		QTM1	PATCH	2	0.17	3.28	3.60	0.04	0.26	0.00	4.66	7.30
261	18		QTM1	PATCH	4	0.62	4.20	3.58	0.02	0.58	0.00	14.85	13.83
261	19		QTM1	PATCH	4	1.23	7.97	8.15	0.04	0.09	0.00	15.14	1.09
261	20		QTM1	PATCH	4	1.00	8.63	7.99	0.05	0.19	0.00	11.62	2.23
261	21		QTM1	PATCH	4	0.76	6.71	6.88	0.09	0.49	0.00	11.05	7.06
261	22		QTM1	PATCH	4	0.39	5.26	5.04	0.08	0.66	0.00	7.33	12.58
261	33		QTM1	PATCH	4	1.03	5.79	6.65	0.04	0.37	0.00	15.47	5.56
261	34		QTM1	PATCH	4	1.05	8.43	8.17	0.05	0.33	0.00	12.48	3.96
261	35		QTM1	PATCH	4	0.88	7.52	7.04	0.06	0.21	0.00	11.68	2.76
261	36		QTM1	PATCH	4	0.71	6.24	6.94	0.08	0.70	0.00	10.21	10.06
261	128		QTM1	PATCH	1	0.13	2.43	2.30	0.01	0.08	0.00	5.23	3.48
261	141		QTM1	PATCH	2	0.16	3.29	3.43	0.01	0.15	0.00	4.66	4.31
261	133		QTM1	PATCH	2	0.42	3.73	4.03	0.02	0.02	0.00	10.54	0.56
261	131		QTM1	PATCH	2	0.40	2.95	2.57	0.01	0.26	0.00	13.60	8.80
261	132		QTM1	PATCH	2	0.22	4.47	4.37	0.02	0.03	0.00	4.96	0.57
261	140		QTM1	PATCH	2	0.49	4.15	4.25	0.03	0.32	0.00	11.47	7.46
261	150		QTM1	PATCH	4	0.55	6.03	6.41	0.03	0.19	0.00	8.54	2.97
261	148		QTM1	PATCH	4	1.05	8.67	9.11	0.06	0.03	0.00	11.49	0.30
261	147		QTM1	PATCH	4	1.08	8.17	8.52	0.10	0.05	0.00	12.69	0.63
261	149		QTM1	PATCH	4	0.78	7.23	8.02	0.04	0.25	0.00	9.74	3.14
261	164		QTM1	PATCH	4	0.66	4.24	6.78	0.04	0.18	0.00	9.74	2.71
261	163		QTM1	PATCH	4	0.94	7.92	8.27	0.05	0.07	0.00	11.36	0.88
261	162		QTM1	PATCH	4	1.08	8.42	8.78	0.09	0.03	0.00	12.31	0.35
261	161		QTM1	PATCH	4	1.12	7.00	7.19	0.08	0.07	0.00	15.59	0.96
261	146		QTM1	PATCH	4	0.99	5.93	5.95	0.05	0.59	0.00	16.71	9.91
261	0	128	QTM1	PATCH	1	0.28	2.35	2.40	0.02	0.35	0.00	11.85	14.40
261	3	141	QTM1	PATCH	2	0.65	5.52	5.41	0.03	1.16	0.00	11.69	20.95
261	4	133	QTM1	PATCH	2	1.16	4.78	5.67	0.06	0.48	0.00	20.46	8.51
261	5	131	QTM1	PATCH	2	0.69	5.57	4.72	0.07	1.12	0.00	12.33	20.14
261	12	132	QTM1	PATCH	2	0.79	6.24	6.06	0.05	0.76	0.00	12.60	12.24
261	13	140	QTM1	PATCH	2	1.32	6.21	6.97	0.08	0.75	0.00	18.98	10.73
261	18	150	QTM1	PATCH	4	1.81	9.25	7.87	0.08	1.86	0.00	19.59	20.07
261	19	148	QTM1	PATCH	4	3.35	13.76	15.08	0.14	0.50	0.00	22.18	3.32
261	20	147	QTM1	PATCH	4	2.64	12.93	13.51	0.13	0.45	0.00	19.56	3.33
261	21	149	QTM1	PATCH	4	1.44	9.66	11.40	0.10	0.93	0.00	12.65	8.18
261	22	164	QTM1	PATCH	4	1.20	8.06	8.44	0.09	1.60	0.00	14.28	19.02
261	33	163	QTM1	PATCH	4	3.06	11.70	13.25	0.13	1.14	0.00	23.12	8.62
261	34	162	QTM1	PATCH	4	2.72	12.88	13.89	0.14	0.54	0.00	19.60	3.90
261	35	161	QTM1	PATCH	4	2.42	12.13	11.70	0.14	0.58	0.00	19.98	4.77
261	36	146	QTM1	PATCH	4	2.48	9.28	11.27	0.12	1.75	0.00	21.98	15.52

QTM#1 Mid Ch.

n261 Mid ch.(27.925GHz)					4cm ² PD(W/m ²) at 2mm evaluation surfaces @6dBm						Ratio [%]		
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	relative phase worst PD for MIMO						Front / (worst surface)	Top / (worst surface)	
					Front	Back	Right	Left	Top	Bottom			
261	0		QTM1	PATCH	1	0.02	1.14	1.33	0.01	0.19	0.00	1.14	14.11
261	3		QTM1	PATCH	2	0.20	3.36	2.67	0.02	0.50	0.00	5.97	15.02
261	4		QTM1	PATCH	2	0.56	2.98	3.72	0.02	0.02	0.00	15.07	0.47
261	5		QTM1	PATCH	2	0.12	2.80	2.75	0.04	0.60	0.00	4.23	21.27
261	12		QTM1	PATCH	2	0.29	3.91	3.43	0.03	0.26	0.00	7.53	6.71
261	13		QTM1	PATCH	2	0.19	3.38	3.48	0.03	0.26	0.00	5.47	7.45
261	18		QTM1	PATCH	4	0.60	4.35	3.85	0.02	0.54	0.00	13.67	12.39
261	19		QTM1	PATCH	4	1.24	7.84	8.29	0.05	0.08	0.00	14.95	0.93
261	20		QTM1	PATCH	4	0.95	8.26	7.48	0.05	0.14	0.00	11.45	1.73
261	21		QTM1	PATCH	4	0.73	6.89	6.76	0.09	0.59	0.00	10.65	8.56
261	22		QTM1	PATCH	4	0.41	5.32	4.98	0.10	0.71	0.00	7.72	13.31
261	33		QTM1	PATCH	4	1.01	6.28	6.74	0.04	0.07	0.00	14.97	1.03
261	34		QTM1	PATCH	4	1.01	8.00	7.66	0.05	0.33	0.00	12.63	4.11
261	35		QTM1	PATCH	4	0.82	7.51	6.71	0.06	0.21	0.00	10.97	2.83
261	36		QTM1	PATCH	4	0.36	6.28	6.78	0.08	0.87	0.00	5.32	12.87
261	128		QTM1	PATCH	1	0.13	2.36	2.30	0.01	0.08	0.00	5.38	3.55
261	141		QTM1	PATCH	2	0.18	3.44	3.74	0.02	0.16	0.00	4.68	4.35
261	133		QTM1	PATCH	2	0.41	3.57	3.84	0.02	0.03	0.00	10.71	0.67
261	131		QTM1	PATCH	2	0.34	2.96	2.63	0.02	0.26	0.00	11.63	8.85
261	132		QTM1	PATCH	2	0.27	4.63	4.51	0.05	0.02	0.00	5.75	0.40
261	140		QTM1	PATCH	2	0.49	4.06	4.19	0.03	0.32	0.00	11.80	7.61
261	150		QTM1	PATCH	4	0.55	6.00	6.34	0.04	0.24	0.00	8.67	3.75
261	148		QTM1	PATCH	4	1.01	8.65	8.78	0.10	0.03	0.00	11.45	0.39
261	147		QTM1	PATCH	4	1.11	8.07	8.35	0.13	0.04	0.00	13.28	0.48
261	149		QTM1	PATCH	4	0.80	6.98	7.79	0.06	0.30	0.00	10.30	3.81
261	164		QTM1	PATCH	4	0.66	6.62	7.00	0.06	0.23	0.00	9.47	3.34
261	163		QTM1	PATCH	4	0.92	8.04	8.19	0.06	0.08	0.00	11.28	0.95
261	162		QTM1	PATCH	4	0.96	8.45	8.71	0.11	0.16	0.00	10.98	1.82
261	161		QTM1	PATCH	4	1.08	6.87	7.30	0.12	0.06	0.00	14.87	0.79
261	146		QTM1	PATCH	4	1.15	5.94	6.33	0.06	0.54	0.00	18.11	8.57
261	0	128	QTM1	PATCH	1	0.24	2.43	2.43	0.02	0.39	0.00	10.02	16.10
261	3	141	QTM1	PATCH	2	0.58	5.71	5.56	0.03	1.22	0.00	10.21	21.32
261	4	133	QTM1	PATCH	2	1.12	4.63	5.47	0.07	0.52	0.00	20.43	9.53
261	5	131	QTM1	PATCH	2	0.65	5.82	4.77	0.07	1.27	0.00	11.14	21.85
261	12	132	QTM1	PATCH	2	0.70	6.60	6.34	0.07	0.70	0.00	10.63	10.59
261	13	140	QTM1	PATCH	2	1.22	6.23	6.79	0.08	0.76	0.00	17.93	11.16
261	18	150	QTM1	PATCH	4	1.82	9.12	8.14	0.10	2.06	0.00	20.00	22.58
261	19	148	QTM1	PATCH	4	3.08	13.57	14.92	0.14	0.57	0.00	20.62	3.84
261	20	147	QTM1	PATCH	4	2.43	12.56	13.07	0.15	0.56	0.00	18.60	4.28
261	21	149	QTM1	PATCH	4	1.39	9.94	11.23	0.09	1.07	0.00	12.40	9.48
261	22	164	QTM1	PATCH	4	1.12	8.83	8.79	0.09	1.63	0.00	12.70	18.51
261	33	163	QTM1	PATCH	4	2.91	11.82	13.53	0.14	1.09	0.00	21.52	8.07
261	34	162	QTM1	PATCH	4	2.48	12.31	13.12	0.15	0.68	0.00	18.91	5.15
261	35	161	QTM1	PATCH	4	2.35	12.09	11.75	0.17	0.62	0.00	19.47	5.15
261	36	146	QTM1	PATCH	4	2.58	9.60	11.81	0.12	1.96	0.00	21.84	16.56

QTM#1 High Ch.

n261 High ch.(28.29GHz) /					4cm ² PD(W/m ²) at 2mm evaluation surfaces @6dBm						Ratio [%]		
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	relative phase worst PD for MIMO						Front / (worst surface)	Top / (worst surface)	
					Front	Back	Right	Left	Top	Bottom			
261	0		QTM1	PATCH	1	0.08	1.19	1.23	0.01	0.19	0.00	6.75	15.76
261	3		QTM1	PATCH	2	0.18	3.44	2.48	0.01	0.53	0.00	5.11	15.43
261	4		QTM1	PATCH	2	0.54	2.96	3.60	0.03	0.02	0.00	15.07	0.46
261	5		QTM1	PATCH	2	0.19	2.70	2.50	0.03	0.62	0.00	7.03	22.82
261	12		QTM1	PATCH	2	0.22	3.94	3.26	0.04	0.25	0.00	5.71	6.42
261	13		QTM1	PATCH	2	0.20	3.32	3.22	0.03	0.24	0.00	5.99	7.10
261	18		QTM1	PATCH	4	0.55	4.46	3.61	0.03	0.65	0.00	12.35	14.53
261	19		QTM1	PATCH	4	1.08	7.65	7.98	0.06	0.09	0.00	13.52	1.11
261	20		QTM1	PATCH	4	0.88	7.78	7.05	0.06	0.15	0.00	11.33	1.98
261	21		QTM1	PATCH	4	0.70	6.68	6.37	0.08	0.60	0.00	10.54	9.02
261	22		QTM1	PATCH	4	0.40	5.13	4.71	0.10	0.64	0.00	7.84	12.56
261	33		QTM1	PATCH	4	0.80	3.93	6.62	0.08	0.08	0.00	12.14	1.19
261	34		QTM1	PATCH	4	0.92	7.47	7.18	0.06	0.29	0.00	12.35	3.95
261	35		QTM1	PATCH	4	0.77	7.33	6.37	0.07	0.20	0.00	10.49	2.77
261	36		QTM1	PATCH	4	0.51	5.92	6.33	0.06	0.90	0.00	8.14	14.16
261	128		QTM1	PATCH	1	0.14	2.42	2.36	0.01	0.07	0.00	5.70	2.99
261	141		QTM1	PATCH	2	0.20	3.63	3.94	0.03	0.16	0.00	5.01	4.17
261	133		QTM1	PATCH	2	0.38	3.31	3.52	0.03	0.02	0.00	10.91	0.60
261	131		QTM1	PATCH	2	0.36	3.31	2.92	0.02	0.23	0.00	10.84	6.81
261	132		QTM1	PATCH	2	0.30	4.45	4.27	0.06	0.02	0.00	6.68	0.54
261	140		QTM1	PATCH	2	0.53	4.05	4.23	0.03	0.26	0.00	12.43	6.23
261	150		QTM1	PATCH	4	0.54	5.77	5.94	0.07	0.30	0.00	9.09	5.08
261	148		QTM1	PATCH	4	0.80	8.05	8.18	0.11	0.03	0.00	9.72	0.38
261	147		QTM1	PATCH	4	1.10	7.39	7.75	0.14	0.03	0.00	14.21	0.43
261	149		QTM1	PATCH	4	0.78	6.58	7.12	0.08	0.26	0.00	10.94	3.61
261	164		QTM1	PATCH	4	0.66	6.37	6.55	0.08	0.26	0.00	10.07	4.04
261	163		QTM1	PATCH	4	0.86	7.67	7.10	0.10	0.07	0.00	11.27	0.95
261	162		QTM1	PATCH	4	0.93	7.80	8.07	0.10	0.11	0.00	11.46	1.40
261	161		QTM1	PATCH	4	1.15	6.53	7.04	0.11	0.05	0.00	16.35	0.76
261	146		QTM1	PATCH	4	1.11	5.78	6.26	0.07	0.40	0.00	17.76	6.35
261	0	128	QTM1	PATCH	1	0.21	2.45	2.42	0.02	0.47	0.00	8.41	19.40
261	3	141	QTM1	PATCH	2	0.51	5.66	5.39	0.05	1.29	0.00	9.05	22.74
261	4	133	QTM1	PATCH	2	1.06	4.53	5.22	0.07	0.45	0.00	20.33	8.71
261	5	131	QTM1	PATCH	2	0.64	6.14	4.87	0.05	1.28	0.00	10.41	20.81
261	12	132	QTM1	PATCH	2	0.61	6.60	6.19	0.09	0.70	0.00	9.19	10.58
261	13	140	QTM1	PATCH	2	1.14	6.30	6.59	0.07	0.69	0.00	17.36	10.53
261	18	150	QTM1	PATCH	4	1.71	9.21	7.86	0.14	2.03	0.00	18.52	22.04
261	19	148	QTM1	PATCH	4	2.77	12.78	14.07	0.14	0.58	0.00	19.67	4.12
261	20	147	QTM1	PATCH	4	2.24	11.55	12.18	0.15	0.57	0.00	18.40	4.64
261	21	149	QTM1	PATCH	4	1.37	9.94	10.61	0.10	1.02	0.00	12.92	9.64
261	22	164	QTM1	PATCH	4	1.09	9.40	8.59	0.12	1.58	0.00	11.61	16.79
261	33	163	QTM1	PATCH	4	2.66	11.38	12.66	0.14	1.06	0.00	21.00	8.41
261	34	162	QTM1	PATCH	4	2.29	11.11	12.10	0.14	0.69	0.00	18.95	5.72
261	35	161	QTM1	PATCH	4	2.21	11.71	11.30	0.16	0.69	0.00	18.85	5.89
261	36	146	QTM1	PATCH	4	2.55	9.31	11.75	0.13	1.91	0.00	21.69	16.22

Table 5. PD of QTM#1 – patch antenna (39GHz)
QTM#1 Low Ch.

n260 Low ch.(37.05GHz)					4cm ² PD(W/m ²) at 2mm evaluation surfaces @6dBm						Ratio [%]		
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	relative phase worst PD for MIMO						Front / (worst surface)	Top / (worst surface)	
					Front	Back	Right	Left	Top	Bottom			
260	0		QTM1	PATCH	1	0.40	3.15	3.10	0.01	0.09	0.00	12.66	2.93
260	3		QTM1	PATCH	2	0.34	4.10	4.91	0.02	0.11	0.00	6.97	2.27
260	4		QTM1	PATCH	2	0.74	4.95	5.32	0.01	0.07	0.00	14.00	1.30
260	5		QTM1	PATCH	2	0.61	4.97	3.83	0.02	0.13	0.00	12.28	2.61
260	12		QTM1	PATCH	2	0.72	4.39	4.59	0.01	0.08	0.00	15.70	1.80
260	13		QTM1	PATCH	2	0.96	6.04	6.56	0.03	0.05	0.00	14.59	0.84
260	18		QTM1	PATCH	4	0.71	7.67	7.78	0.04	0.35	0.00	9.16	4.51
260	19		QTM1	PATCH	4	1.48	7.95	8.61	0.05	0.29	0.00	17.15	3.33
260	20		QTM1	PATCH	4	1.63	7.15	8.35	0.04	0.22	0.00	19.49	2.66
260	21		QTM1	PATCH	4	1.59	10.67	10.88	0.07	0.19	0.00	14.58	1.79
260	22		QTM1	PATCH	4	1.22	9.48	8.10	0.02	0.14	0.00	12.91	1.50
260	33		QTM1	PATCH	4	1.71	6.61	8.05	0.05	0.29	0.00	21.29	3.57
260	34		QTM1	PATCH	4	1.36	8.40	8.89	0.04	0.32	0.00	15.34	3.61
260	35		QTM1	PATCH	4	1.22	8.82	10.40	0.03	0.16	0.00	11.73	1.56
260	36		QTM1	PATCH	4	1.28	10.13	9.01	0.04	0.25	0.00	12.61	2.43
260	128		QTM1	PATCH	1	0.28	1.81	2.33	0.01	0.12	0.00	11.96	4.97
260	131		QTM1	PATCH	2	0.43	5.59	4.74	0.01	0.01	0.00	7.70	0.22
260	132		QTM1	PATCH	2	1.36	3.24	4.79	0.03	0.25	0.00	28.43	5.16
260	133		QTM1	PATCH	2	0.50	3.45	2.53	0.02	0.21	0.00	14.56	6.08
260	141		QTM1	PATCH	2	1.05	5.18	5.56	0.02	0.16	0.00	18.81	2.94
260	140		QTM1	PATCH	2	1.21	3.55	4.84	0.02	0.10	0.00	24.97	2.00
260	164		QTM1	PATCH	4	0.56	10.39	7.86	0.02	0.04	0.00	5.43	0.36
260	147		QTM1	PATCH	4	2.48	6.95	7.59	0.05	0.38	0.00	32.71	5.07
260	148		QTM1	PATCH	4	1.81	7.81	9.95	0.04	0.59	0.00	18.23	5.95
260	161		QTM1	PATCH	4	1.31	6.75	7.50	0.03	0.28	0.00	17.50	3.69
260	150		QTM1	PATCH	4	0.95	9.32	7.51	0.03	0.04	0.00	10.22	0.47
260	149		QTM1	PATCH	4	0.79	9.72	7.67	0.02	0.26	0.00	8.08	2.63
260	163		QTM1	PATCH	4	2.07	7.19	9.33	0.05	0.76	0.00	22.15	8.11
260	162		QTM1	PATCH	4	2.48	7.53	9.89	0.04	0.35	0.00	25.11	3.56
260	146		QTM1	PATCH	4	0.64	8.08	7.42	0.03	0.21	0.00	7.91	2.58
260	0	128	QTM1	PATCH	1	1.40	4.94	4.38	0.02	0.35	0.00	28.26	7.18
260	3	131	QTM1	PATCH	2	2.25	9.29	8.14	0.03	0.72	0.00	24.27	7.78
260	4	132	QTM1	PATCH	2	3.55	7.29	7.93	0.04	0.33	0.00	44.74	4.11
260	5	133	QTM1	PATCH	2	1.54	8.71	6.44	0.04	0.73	0.00	17.70	8.35
260	12	141	QTM1	PATCH	2	1.49	7.43	7.54	0.03	0.38	0.00	19.76	5.03
260	13	140	QTM1	PATCH	2	3.46	8.53	8.74	0.07	0.48	0.00	39.52	5.50
260	18	164	QTM1	PATCH	4	3.46	14.77	12.42	0.09	1.53	0.00	23.43	10.36
260	19	147	QTM1	PATCH	4	4.56	12.31	15.24	0.10	1.45	0.00	29.89	9.51
260	20	148	QTM1	PATCH	4	6.42	14.86	16.43	0.09	1.00	0.00	39.07	6.07
260	21	161	QTM1	PATCH	4	4.05	17.22	15.65	0.12	1.30	0.00	23.53	7.58
260	22	150	QTM1	PATCH	4	2.34	14.81	11.74	0.09	1.29	0.00	15.82	8.68
260	33	149	QTM1	PATCH	4	4.71	14.93	12.93	0.07	0.88	0.00	31.54	5.89
260	34	163	QTM1	PATCH	4	5.84	14.83	14.81	0.08	1.26	0.00	39.34	8.50
260	35	162	QTM1	PATCH	4	6.55	16.48	16.07	0.10	0.80	0.00	39.74	4.83
260	36	146	QTM1	PATCH	4	2.39	16.96	13.67	0.08	1.64	0.00	14.10	9.67

QTM#1 Mid Ch.

n260 Mid ch.(38.5GHz)					4cm ² PD(W/m ²) at 2mm evaluation surfaces @6dBm						Ratio [%]		
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	relative phase worst PD for MIMO						Front / (worst surface)	Top / (worst surface)	
					Front	Back	Right	Left	Top	Bottom			
260	0		QTM1	PATCH	1	0.41	3.25	2.76	0.01	0.22	0.00	12.63	6.76
260	3		QTM1	PATCH	2	1.00	3.33	4.57	0.06	0.16	0.00	21.80	3.48
260	4		QTM1	PATCH	2	0.93	4.89	5.20	0.02	0.27	0.00	17.90	5.16
260	5		QTM1	PATCH	2	0.68	6.18	5.23	0.01	0.02	0.00	11.02	0.29
260	12		QTM1	PATCH	2	0.85	4.73	4.79	0.02	0.17	0.00	17.71	3.47
260	13		QTM1	PATCH	2	0.78	6.57	5.82	0.03	0.23	0.00	11.83	3.50
260	18		QTM1	PATCH	4	1.32	7.11	6.12	0.02	0.45	0.00	18.53	6.28
260	19		QTM1	PATCH	4	2.30	7.55	10.26	0.05	0.31	0.00	22.37	2.98
260	20		QTM1	PATCH	4	1.37	7.73	8.31	0.04	0.51	0.00	16.48	6.14
260	21		QTM1	PATCH	4	1.72	11.33	11.30	0.11	0.27	0.00	15.16	2.43
260	22		QTM1	PATCH	4	1.23	10.74	6.76	0.03	0.23	0.00	11.48	2.14
260	33		QTM1	PATCH	4	1.96	7.15	9.89	0.06	0.34	0.00	19.82	3.44
260	34		QTM1	PATCH	4	2.19	7.57	10.89	0.02	0.32	0.00	20.13	2.96
260	35		QTM1	PATCH	4	0.98	8.37	10.03	0.07	0.55	0.00	9.81	5.50
260	36		QTM1	PATCH	4	1.17	11.91	9.66	0.03	0.24	0.00	9.81	2.00
260	128		QTM1	PATCH	1	0.31	1.73	2.86	0.01	0.12	0.00	10.74	4.25
260	131		QTM1	PATCH	2	0.56	5.04	5.57	0.01	0.15	0.00	10.05	2.65
260	132		QTM1	PATCH	2	1.17	3.59	4.99	0.01	0.12	0.00	23.53	2.48
260	133		QTM1	PATCH	2	0.64	3.55	4.65	0.04	0.23	0.00	13.69	4.94
260	141		QTM1	PATCH	2	1.03	5.92	5.90	0.02	0.09	0.00	17.40	1.52
260	140		QTM1	PATCH	2	0.82	4.23	5.24	0.03	0.10	0.00	15.72	1.97
260	164		QTM1	PATCH	4	1.40	10.34	8.99	0.06	0.41	0.00	13.59	3.95
260	147		QTM1	PATCH	4	2.76	7.37	8.28	0.05	0.43	0.00	33.29	5.24
260	148		QTM1	PATCH	4	1.86	8.05	10.76	0.04	0.40	0.00	17.31	3.71
260	161		QTM1	PATCH	4	2.35	7.22	9.90	0.04	0.58	0.00	23.74	5.90
260	150		QTM1	PATCH	4	1.54	9.22	8.20	0.05	0.31	0.00	16.73	3.39
260	149		QTM1	PATCH	4	1.05	11.30	9.16	0.06	0.39	0.00	9.32	3.44
260	163		QTM1	PATCH	4	1.80	9.03	11.20	0.04	0.31	0.00	16.03	2.75
260	162		QTM1	PATCH	4	2.48	7.58	8.20	0.05	0.52	0.00	30.24	6.33
260	146		QTM1	PATCH	4	1.83	6.98	10.19	0.04	0.38	0.00	17.93	3.77
260	0	128	QTM1	PATCH	1	1.26	5.02	4.72	0.03	0.50	0.00	25.09	9.90
260	3	131	QTM1	PATCH	2	2.27	10.37	9.49	0.06	0.71	0.00	21.86	6.85
260	4	132	QTM1	PATCH	2	3.43	7.84	8.16	0.05	0.46	0.00	42.01	5.69
260	5	133	QTM1	PATCH	2	1.96	10.40	9.03	0.04	0.84	0.00	18.85	8.04
260	12	141	QTM1	PATCH	2	1.74	7.76	8.04	0.03	0.47	0.00	21.69	5.87
260	13	140	QTM1	PATCH	2	3.09	9.16	9.21	0.07	0.83	0.00	33.59	9.02
260	18	164	QTM1	PATCH	4	3.84	15.12	13.09	0.12	1.41	0.00	25.42	9.33
260	19	147	QTM1	PATCH	4	4.49	13.58	17.73	0.09	1.64	0.00	25.33	9.28
260	20	148	QTM1	PATCH	4	5.53	13.74	15.79	0.09	1.16	0.00	35.04	7.34
260	21	161	QTM1	PATCH	4	4.33	19.39	18.78	0.12	2.06	0.00	22.33	10.63
260	22	150	QTM1	PATCH	4	2.54	15.66	13.25	0.13	1.27	0.00	16.20	8.13
260	33	149	QTM1	PATCH	4	4.78	16.36	15.02	0.11	0.99	0.00	29.23	6.08
260	34	163	QTM1	PATCH	4	5.10	15.02	18.36	0.10	0.72	0.00	27.76	3.93
260	35	162	QTM1	PATCH	4	5.76	15.93	16.17	0.12	1.33	0.00	35.62	8.25
260	36	146	QTM1	PATCH	4	3.27	18.74	17.30	0.10	1.63	0.00	17.44	8.71

QTM#1 High Ch.

n260 High ch.(39.95GHz)					4cm ² PD(W/m ²) at 2mm evaluation surfaces @6dBm						Ratio [%]		
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	relative phase worst PD for MIMO						Front / (worst surface)	Top / (worst surface)	
					Front	Back	Right	Left	Top	Bottom			
260	0		QTM1	PATCH	1	0.28	2.61	2.96	0.01	0.05	0.00	9.28	1.55
260	3		QTM1	PATCH	2	0.50	4.51	4.44	0.06	0.01	0.00	11.15	0.18
260	4		QTM1	PATCH	2	0.55	3.93	3.79	0.01	0.08	0.00	13.94	2.10
260	5		QTM1	PATCH	2	0.42	5.10	5.05	0.01	0.01	0.00	8.32	0.20
260	12		QTM1	PATCH	2	0.48	4.46	3.79	0.01	0.01	0.00	10.74	0.24
260	13		QTM1	PATCH	2	0.31	5.72	4.73	0.01	0.01	0.00	5.47	0.26
260	18		QTM1	PATCH	4	0.88	9.32	9.67	0.06	0.11	0.00	9.10	1.19
260	19		QTM1	PATCH	4	1.54	6.50	8.35	0.03	0.20	0.00	18.50	2.36
260	20		QTM1	PATCH	4	0.86	7.63	7.09	0.02	0.54	0.00	11.33	7.12
260	21		QTM1	PATCH	4	1.09	10.02	8.36	0.08	0.19	0.00	10.86	1.90
260	22		QTM1	PATCH	4	0.87	9.58	8.10	0.04	0.01	0.00	9.04	0.09
260	33		QTM1	PATCH	4	1.37	8.17	8.67	0.06	0.09	0.00	15.81	1.04
260	34		QTM1	PATCH	4	1.33	5.72	6.59	0.03	0.37	0.00	20.23	5.56
260	35		QTM1	PATCH	4	0.55	9.14	8.83	0.04	0.41	0.00	6.01	4.51
260	36		QTM1	PATCH	4	0.69	9.94	8.10	0.02	0.02	0.00	6.98	0.16
260	128		QTM1	PATCH	1	0.54	1.88	2.59	0.01	0.14	0.00	20.88	5.59
260	131		QTM1	PATCH	2	0.58	5.22	5.67	0.01	0.20	0.00	10.30	3.50
260	132		QTM1	PATCH	2	0.43	2.19	3.32	0.01	0.05	0.00	13.04	1.57
260	133		QTM1	PATCH	2	1.19	3.64	4.53	0.02	0.12	0.00	26.16	2.75
260	141		QTM1	PATCH	2	0.68	4.60	5.18	0.02	0.04	0.00	13.07	0.76
260	140		QTM1	PATCH	2	0.76	3.02	3.86	0.01	0.09	0.00	19.68	2.42
260	164		QTM1	PATCH	4	1.49	9.13	9.65	0.02	0.26	0.00	15.47	2.69
260	147		QTM1	PATCH	4	1.54	4.90	7.86	0.05	0.83	0.00	19.56	10.57
260	148		QTM1	PATCH	4	1.19	6.27	8.63	0.03	0.26	0.00	13.79	3.01
260	161		QTM1	PATCH	4	2.11	7.01	8.83	0.04	0.56	0.00	23.86	6.30
260	150		QTM1	PATCH	4	1.72	8.13	8.03	0.03	0.19	0.00	21.19	2.39
260	149		QTM1	PATCH	4	1.56	9.03	9.66	0.01	0.28	0.00	16.18	2.94
260	163		QTM1	PATCH	4	1.26	7.99	9.14	0.05	0.09	0.00	13.81	0.96
260	162		QTM1	PATCH	4	1.03	4.72	5.56	0.04	0.53	0.00	18.52	9.56
260	146		QTM1	PATCH	4	2.19	8.09	10.03	0.02	0.30	0.00	21.83	2.95
260	0	128	QTM1	PATCH	1	0.97	4.81	5.11	0.02	0.35	0.00	18.99	6.76
260	3	131	QTM1	PATCH	2	2.40	10.01	9.51	0.07	0.47	0.00	23.99	4.72
260	4	132	QTM1	PATCH	2	1.94	6.00	6.43	0.04	0.24	0.00	30.12	3.67
260	5	133	QTM1	PATCH	2	2.58	9.14	9.09	0.03	0.54	0.00	28.20	5.92
260	12	141	QTM1	PATCH	2	1.15	6.55	6.96	0.04	0.31	0.00	16.56	4.39
260	13	140	QTM1	PATCH	2	2.14	8.22	7.24	0.05	0.64	0.00	26.03	7.81
260	18	164	QTM1	PATCH	4	3.51	15.49	17.14	0.08	0.74	0.00	20.46	4.32
260	19	147	QTM1	PATCH	4	3.46	10.45	13.29	0.10	1.18	0.00	26.02	8.85
260	20	148	QTM1	PATCH	4	2.73	13.09	15.06	0.09	0.95	0.00	18.14	6.33
260	21	161	QTM1	PATCH	4	4.05	13.32	13.99	0.12	1.58	0.00	28.93	11.28
260	22	150	QTM1	PATCH	4	3.49	13.15	15.16	0.07	1.08	0.00	23.01	7.13
260	33	149	QTM1	PATCH	4	3.54	14.25	15.76	0.09	0.43	0.00	22.47	2.74
260	34	163	QTM1	PATCH	4	2.58	13.24	15.90	0.11	0.44	0.00	16.23	2.80
260	35	162	QTM1	PATCH	4	3.99	11.40	12.44	0.09	1.03	0.00	32.04	8.29
260	36	146	QTM1	PATCH	4	3.63	14.61	16.25	0.10	1.35	0.00	22.36	8.31

3.1.3 QTM#2 – Patch Antenna

Table 6 & Table 7 show the PD simulation evaluation of QTM#2 patch antenna at 28GHz / 39GHz for the corresponding evaluation plane specified in Table 1.

Table 6. PD of QTM#2 – patch antenna (28GHz)
QTM#2 Low Ch.

n261 Low ch.(27.56GHz)					4cm ² PD(W/m ²) at 2mm evaluation surfaces @6dBm						Ratio [%]		
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	relative phase worst PD for MIMO						Front / (worst surface)	Top / (worst surface)	
					Front	Back	Right	Left	Top	Bottom			
261	2		QTM2	PATCH	1	0.01	3.27	1.39	0.04	0.00	0.02	0.21	-
261	9		QTM2	PATCH	2	0.02	7.27	2.21	0.03	0.00	0.03	0.27	-
261	10		QTM2	PATCH	2	0.04	8.13	4.58	0.06	0.00	0.05	0.44	-
261	11		QTM2	PATCH	2	0.02	6.76	2.95	0.06	0.00	0.03	0.24	-
261	16		QTM2	PATCH	2	0.03	7.98	3.60	0.04	0.00	0.05	0.40	-
261	17		QTM2	PATCH	2	0.02	8.05	4.19	0.10	0.00	0.01	0.30	-
261	28		QTM2	PATCH	4	0.12	9.09	4.65	0.11	0.00	0.07	1.27	-
261	29		QTM2	PATCH	4	0.05	13.74	8.84	0.07	0.00	0.08	0.38	-
261	30		QTM2	PATCH	4	0.04	12.62	7.70	0.19	0.00	0.04	0.30	-
261	31		QTM2	PATCH	4	0.08	14.51	6.99	0.33	0.00	0.16	0.58	-
261	32		QTM2	PATCH	4	0.11	8.60	4.44	0.13	0.00	0.07	1.29	-
261	41		QTM2	PATCH	4	0.12	11.24	6.97	0.07	0.00	0.05	1.05	-
261	42		QTM2	PATCH	4	0.04	12.12	8.28	0.17	0.00	0.08	0.35	-
261	43		QTM2	PATCH	4	0.02	14.19	8.14	0.27	0.00	0.01	0.12	-
261	44		QTM2	PATCH	4	0.12	14.19	6.25	0.42	0.00	0.19	0.84	-
261		130	QTM2	PATCH	1	0.01	3.98	2.26	0.02	0.00	0.01	0.25	-
261		139	QTM2	PATCH	2	0.02	5.19	2.37	0.05	0.00	0.04	0.42	-
261		138	QTM2	PATCH	2	0.04	6.58	3.56	0.04	0.00	0.02	0.62	-
261		137	QTM2	PATCH	2	0.02	6.54	4.35	0.05	0.00	0.02	0.28	-
261		145	QTM2	PATCH	2	0.04	6.19	2.88	0.06	0.00	0.02	0.62	-
261		144	QTM2	PATCH	2	0.04	7.97	3.39	0.12	0.00	0.03	0.53	-
261		160	QTM2	PATCH	4	0.11	9.31	6.34	0.07	0.00	0.03	1.20	-
261		159	QTM2	PATCH	4	0.06	10.47	4.71	0.14	0.00	0.08	0.60	-
261		170	QTM2	PATCH	4	0.19	11.86	7.04	0.26	0.00	0.03	1.64	-
261		156	QTM2	PATCH	4	0.05	10.42	6.19	0.15	0.00	0.04	0.47	-
261		171	QTM2	PATCH	4	0.11	13.12	6.46	0.40	0.00	0.08	0.85	-
261		172	QTM2	PATCH	4	0.11	8.20	5.37	0.04	0.00	0.04	1.38	-
261		158	QTM2	PATCH	4	0.19	13.40	7.47	0.35	0.00	0.04	1.44	-
261		157	QTM2	PATCH	4	0.02	10.71	7.65	0.23	0.00	0.04	0.20	-
261		169	QTM2	PATCH	4	0.03	10.37	6.64	0.15	0.00	0.05	0.28	-
261	2	130	QTM2	PATCH	1	0.31	4.81	3.47	0.07	0.00	0.08	6.45	-
261	9	139	QTM2	PATCH	2	0.43	9.49	5.49	0.15	0.00	0.19	4.58	-
261	10	138	QTM2	PATCH	2	0.73	11.07	6.66	0.11	0.00	0.10	6.59	-
261	11	137	QTM2	PATCH	2	0.52	10.26	7.33	0.18	0.00	0.14	5.08	-
261	16	145	QTM2	PATCH	2	0.46	10.34	5.49	0.13	0.00	0.12	4.47	-
261	17	144	QTM2	PATCH	2	0.35	10.08	5.52	0.22	0.00	0.11	3.52	-
261	28	160	QTM2	PATCH	4	1.56	12.98	12.07	0.29	0.00	0.44	11.99	-
261	29	159	QTM2	PATCH	4	1.27	19.53	12.13	0.25	0.00	0.23	6.52	-
261	30	170	QTM2	PATCH	4	0.91	21.78	14.63	0.60	0.00	0.09	4.18	-
261	31	156	QTM2	PATCH	4	0.82	21.44	12.70	0.77	0.00	0.38	3.83	-
261	32	171	QTM2	PATCH	4	0.87	17.32	9.80	0.43	0.00	0.29	5.00	-
261	41	172	QTM2	PATCH	4	1.47	15.43	10.66	0.17	0.00	0.41	9.51	-
261	42	158	QTM2	PATCH	4	0.91	22.10	15.38	0.64	0.00	0.17	4.10	-
261	43	157	QTM2	PATCH	4	1.33	21.19	14.37	0.63	0.00	0.11	6.27	-
261	44	169	QTM2	PATCH	4	1.02	20.47	12.95	0.67	0.00	0.29	4.96	-

QTM#2 Mid Ch.

n261 Mid ch.(27.925GHz)					4cm ² PD(W/m ²) at 2mm evaluation surfaces @6dBm						Ratio [%]		
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	relative phase worst PD for MIMO						Front / (worst surface)	Top / (worst surface)	
					Front	Back	Right	Left	Top	Bottom			
261	2		QTM2	PATCH	1	0.01	3.30	1.51	0.03	0.00	0.01	0.29	-
261	9		QTM2	PATCH	2	0.03	7.24	2.50	0.05	0.00	0.02	0.38	-
261	10		QTM2	PATCH	2	0.02	8.43	4.87	0.06	0.00	0.01	0.23	-
261	11		QTM2	PATCH	2	0.02	6.89	3.11	0.04	0.00	0.03	0.34	-
261	16		QTM2	PATCH	2	0.03	8.19	3.86	0.04	0.00	0.02	0.34	-
261	17		QTM2	PATCH	2	0.01	7.95	4.43	0.10	0.00	0.01	0.15	-
261	28		QTM2	PATCH	4	0.11	9.40	5.17	0.07	0.00	0.05	1.17	-
261	29		QTM2	PATCH	4	0.06	13.41	8.45	0.13	0.00	0.02	0.42	-
261	30		QTM2	PATCH	4	0.03	12.80	6.98	0.22	0.00	0.01	0.21	-
261	31		QTM2	PATCH	4	0.08	13.56	8.38	0.19	0.00	0.02	0.58	-
261	32		QTM2	PATCH	4	0.10	9.09	4.95	0.08	0.00	0.04	1.14	-
261	41		QTM2	PATCH	4	0.14	10.84	6.39	0.08	0.00	0.04	1.29	-
261	42		QTM2	PATCH	4	0.02	12.54	8.34	0.17	0.00	0.01	0.17	-
261	43		QTM2	PATCH	4	0.01	14.28	7.98	0.34	0.00	0.01	0.08	-
261	44		QTM2	PATCH	4	0.10	13.06	7.56	0.18	0.00	0.02	0.75	-
261		130	QTM2	PATCH	1	0.01	3.74	2.10	0.02	0.00	0.01	0.28	-
261		139	QTM2	PATCH	2	0.04	4.83	1.75	0.07	0.00	0.02	0.81	-
261		138	QTM2	PATCH	2	0.04	6.27	3.55	0.04	0.00	0.01	0.56	-
261		137	QTM2	PATCH	2	0.01	6.81	4.44	0.04	0.00	0.01	0.17	-
261		145	QTM2	PATCH	2	0.04	5.69	2.75	0.04	0.00	0.01	0.75	-
261		144	QTM2	PATCH	2	0.04	8.53	3.45	0.18	0.00	0.01	0.47	-
261		160	QTM2	PATCH	4	0.12	8.77	4.35	0.09	0.00	0.03	1.33	-
261		159	QTM2	PATCH	4	0.07	10.93	5.07	0.16	0.00	0.02	0.60	-
261		170	QTM2	PATCH	4	0.14	11.51	5.88	0.42	0.00	0.02	1.22	-
261		156	QTM2	PATCH	4	0.05	10.66	6.91	0.13	0.00	0.09	0.44	-
261		171	QTM2	PATCH	4	0.09	12.39	6.26	0.39	0.00	0.02	0.72	-
261		172	QTM2	PATCH	4	0.12	8.76	3.92	0.10	0.00	0.03	1.33	-
261		158	QTM2	PATCH	4	0.15	12.06	6.76	0.44	0.00	0.02	1.21	-
261		157	QTM2	PATCH	4	0.02	11.71	7.22	0.31	0.00	0.01	0.18	-
261		169	QTM2	PATCH	4	0.03	11.33	7.81	0.18	0.00	0.01	0.27	-
261	2	130	QTM2	PATCH	1	0.29	4.62	3.10	0.05	0.00	0.10	6.24	-
261	9	139	QTM2	PATCH	2	0.42	9.58	5.26	0.17	0.00	0.25	4.36	-
261	10	138	QTM2	PATCH	2	0.75	10.73	6.86	0.11	0.00	0.13	7.01	-
261	11	137	QTM2	PATCH	2	0.53	10.56	7.23	0.15	0.00	0.15	4.98	-
261	16	145	QTM2	PATCH	2	0.55	10.15	5.33	0.10	0.00	0.22	5.44	-
261	17	144	QTM2	PATCH	2	0.33	10.26	5.52	0.26	0.00	0.07	3.20	-
261	28	160	QTM2	PATCH	4	1.48	12.74	10.04	0.22	0.00	0.56	11.58	-
261	29	159	QTM2	PATCH	4	1.31	19.83	11.81	0.27	0.00	0.28	6.63	-
261	30	170	QTM2	PATCH	4	0.70	21.64	14.56	0.81	0.00	0.09	3.24	-
261	31	156	QTM2	PATCH	4	1.25	21.24	12.51	0.51	0.00	0.25	5.86	-
261	32	171	QTM2	PATCH	4	0.88	16.34	9.62	0.49	0.00	0.37	5.37	-
261	41	172	QTM2	PATCH	4	1.53	15.36	10.01	0.19	0.00	0.59	9.96	-
261	42	158	QTM2	PATCH	4	0.79	21.67	15.10	0.76	0.00	0.13	3.65	-
261	43	157	QTM2	PATCH	4	1.19	21.36	13.27	0.74	0.00	0.08	5.58	-
261	44	169	QTM2	PATCH	4	1.22	20.37	13.48	0.43	0.00	0.17	6.00	-

QTM#2 High Ch.

n261 High ch.(28.29GHz)					4cm ² PD(W/m ²) at 2mm evaluation surfaces @6dBm						Ratio [%]		
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	relative phase worst PD for MIMO						Front / (worst surface)	Top / (worst surface)	
					Front	Back	Right	Left	Top	Bottom			
261	2		QTM2	PATCH	1	0.01	3.27	1.76	0.03	0.00	0.01	0.35	-
261	9		QTM2	PATCH	2	0.02	6.82	3.07	0.03	0.00	0.03	0.29	-
261	10		QTM2	PATCH	2	0.03	8.08	4.52	0.07	0.00	0.01	0.35	-
261	11		QTM2	PATCH	2	0.02	6.92	3.55	0.06	0.00	0.02	0.22	-
261	16		QTM2	PATCH	2	0.03	7.67	3.88	0.03	0.00	0.03	0.37	-
261	17		QTM2	PATCH	2	0.02	7.71	4.03	0.05	0.00	0.02	0.22	-
261	28		QTM2	PATCH	4	0.07	8.58	4.83	0.08	0.00	0.06	0.86	-
261	29		QTM2	PATCH	4	0.06	12.57	7.73	0.13	0.00	0.03	0.47	-
261	30		QTM2	PATCH	4	0.02	13.75	7.66	0.19	0.00	0.02	0.17	-
261	31		QTM2	PATCH	4	0.08	12.71	7.62	0.24	0.00	0.03	0.62	-
261	32		QTM2	PATCH	4	0.07	8.24	4.79	0.09	0.00	0.06	0.83	-
261	41		QTM2	PATCH	4	0.11	9.63	5.49	0.06	0.00	0.05	1.18	-
261	42		QTM2	PATCH	4	0.02	12.70	8.80	0.11	0.00	0.02	0.14	-
261	43		QTM2	PATCH	4	0.01	14.26	7.17	0.45	0.00	0.01	0.05	-
261	44		QTM2	PATCH	4	0.10	12.49	7.24	0.18	0.00	0.03	0.82	-
261		130	QTM2	PATCH	1	0.01	3.71	1.67	0.02	0.00	0.01	0.26	-
261		139	QTM2	PATCH	2	0.03	5.27	1.29	0.05	0.00	0.03	0.54	-
261		138	QTM2	PATCH	2	0.03	6.16	2.98	0.07	0.00	0.01	0.51	-
261		137	QTM2	PATCH	2	0.01	6.67	3.39	0.06	0.00	0.01	0.09	-
261		145	QTM2	PATCH	2	0.04	5.79	2.39	0.06	0.00	0.02	0.63	-
261		144	QTM2	PATCH	2	0.04	8.23	4.05	0.12	0.00	0.02	0.51	-
261		160	QTM2	PATCH	4	0.08	7.65	3.84	0.12	0.00	0.03	0.99	-
261		159	QTM2	PATCH	4	0.03	10.21	4.90	0.13	0.00	0.03	0.25	-
261		170	QTM2	PATCH	4	0.13	11.11	6.88	0.32	0.00	0.01	1.15	-
261		156	QTM2	PATCH	4	0.04	10.53	5.80	0.10	0.00	0.03	0.35	-
261		171	QTM2	PATCH	4	0.09	12.11	7.16	0.23	0.00	0.04	0.78	-
261		172	QTM2	PATCH	4	0.06	8.52	3.98	0.13	0.00	0.06	0.72	-
261		158	QTM2	PATCH	4	0.14	11.77	7.56	0.31	0.00	0.02	1.22	-
261		157	QTM2	PATCH	4	0.02	11.53	6.59	0.27	0.00	0.01	0.19	-
261		169	QTM2	PATCH	4	0.02	11.53	6.66	0.14	0.00	0.02	0.21	-
261	2	130	QTM2	PATCH	1	0.27	4.67	3.07	0.06	0.00	0.07	5.68	-
261	9	139	QTM2	PATCH	2	0.42	9.87	5.16	0.15	0.00	0.23	4.30	-
261	10	138	QTM2	PATCH	2	0.62	10.77	6.41	0.19	0.00	0.08	5.71	-
261	11	137	QTM2	PATCH	2	0.58	10.42	6.73	0.17	0.00	0.14	5.55	-
261	16	145	QTM2	PATCH	2	0.54	10.39	5.22	0.10	0.00	0.15	5.16	-
261	17	144	QTM2	PATCH	2	0.34	10.15	5.64	0.21	0.00	0.05	3.38	-
261	28	160	QTM2	PATCH	4	1.42	13.61	8.94	0.31	0.00	0.46	10.40	-
261	29	159	QTM2	PATCH	4	1.14	19.02	11.68	0.25	0.00	0.21	5.97	-
261	30	170	QTM2	PATCH	4	0.91	21.37	14.23	0.65	0.00	0.08	4.24	-
261	31	156	QTM2	PATCH	4	1.06	19.93	12.29	0.50	0.00	0.32	5.32	-
261	32	171	QTM2	PATCH	4	0.86	15.02	9.87	0.23	0.00	0.40	5.71	-
261	41	172	QTM2	PATCH	4	1.49	14.78	9.06	0.24	0.00	0.40	10.06	-
261	42	158	QTM2	PATCH	4	1.08	21.37	14.77	0.48	0.00	0.10	5.05	-
261	43	157	QTM2	PATCH	4	0.98	21.50	13.24	0.77	0.00	0.06	4.56	-
261	44	169	QTM2	PATCH	4	1.08	19.41	13.01	0.47	0.00	0.15	5.54	-

Table 7. PD of QTM#2 – patch antenna (39GHz)
QTM#2 Low Ch.

n260 Low ch.(37.05GHz)					4cm ² PD(W/m ²) at 2mm evaluation surfaces @6dBm						Ratio [%]		
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	relative phase worst PD for MIMO						Front / (worst surface)	Top / (worst surface)	
					Front	Back	Right	Left	Top	Bottom			
260	2		QTM2	PATCH	1	0.01	4.74	2.81	0.02	0.00	0.02	0.27	-
260	9		QTM2	PATCH	2	0.01	9.16	4.04	0.12	0.00	0.10	0.13	-
260	10		QTM2	PATCH	2	0.01	7.72	4.62	0.04	0.00	0.05	0.16	-
260	11		QTM2	PATCH	2	0.03	9.16	5.13	0.03	0.00	0.05	0.27	-
260	16		QTM2	PATCH	2	0.02	9.03	5.33	0.03	0.00	0.06	0.26	-
260	17		QTM2	PATCH	2	0.02	7.17	4.64	0.05	0.00	0.01	0.25	-
260	28		QTM2	PATCH	4	0.02	13.72	8.10	0.14	0.00	0.06	0.16	-
260	29		QTM2	PATCH	4	0.03	15.08	8.33	0.09	0.00	0.12	0.17	-
260	30		QTM2	PATCH	4	0.02	8.98	7.23	0.13	0.00	0.06	0.26	-
260	31		QTM2	PATCH	4	0.07	14.62	8.13	0.12	0.00	0.03	0.47	-
260	32		QTM2	PATCH	4	0.06	16.32	9.79	0.10	0.00	0.21	0.34	-
260	41		QTM2	PATCH	4	0.03	14.74	8.75	0.12	0.00	0.09	0.18	-
260	42		QTM2	PATCH	4	0.02	14.62	7.20	0.20	0.00	0.19	0.15	-
260	43		QTM2	PATCH	4	0.05	10.15	8.02	0.10	0.00	0.05	0.48	-
260	44		QTM2	PATCH	4	0.07	16.37	8.94	0.16	0.00	0.07	0.45	-
260		130	QTM2	PATCH	1	0.01	4.10	1.26	0.06	0.00	0.01	0.34	-
260		144	QTM2	PATCH	2	0.01	6.51	2.81	0.13	0.00	0.04	0.15	-
260		138	QTM2	PATCH	2	0.03	7.21	4.32	0.10	0.00	0.10	0.48	-
260		139	QTM2	PATCH	2	0.04	6.57	2.51	0.14	0.00	0.03	0.57	-
260		145	QTM2	PATCH	2	0.04	7.57	3.22	0.16	0.00	0.04	0.50	-
260		137	QTM2	PATCH	2	0.02	8.37	3.17	0.12	0.00	0.02	0.24	-
260		172	QTM2	PATCH	4	0.09	13.66	6.29	0.08	0.00	0.05	0.62	-
260		171	QTM2	PATCH	4	0.04	15.42	7.46	0.30	0.00	0.17	0.27	-
260		157	QTM2	PATCH	4	0.06	10.71	6.95	0.23	0.00	0.15	0.55	-
260		156	QTM2	PATCH	4	0.05	13.38	6.61	0.19	0.00	0.04	0.37	-
260		170	QTM2	PATCH	4	0.08	11.43	6.73	0.20	0.00	0.19	0.69	-
260		159	QTM2	PATCH	4	0.07	14.89	6.86	0.11	0.00	0.05	0.48	-
260		158	QTM2	PATCH	4	0.09	12.50	7.02	0.29	0.00	0.23	0.69	-
260		169	QTM2	PATCH	4	0.04	9.71	3.04	0.33	0.00	0.01	0.37	-
260		160	QTM2	PATCH	4	0.09	13.41	6.29	0.14	0.00	0.05	0.64	-
260	2	130	QTM2	PATCH	1	0.35	8.20	5.91	0.09	0.00	0.14	4.23	-
260	9	144	QTM2	PATCH	2	0.23	13.88	8.26	0.37	0.00	0.27	1.63	-
260	10	138	QTM2	PATCH	2	0.46	11.89	8.79	0.18	0.00	0.48	3.84	-
260	11	139	QTM2	PATCH	2	0.96	14.68	12.32	0.19	0.00	0.22	6.54	-
260	16	145	QTM2	PATCH	2	0.98	15.69	13.08	0.16	0.00	0.31	6.21	-
260	17	137	QTM2	PATCH	2	0.59	14.12	9.95	0.22	0.00	0.07	4.17	-
260	28	172	QTM2	PATCH	4	1.13	24.41	18.58	0.30	0.00	0.21	4.64	-
260	29	171	QTM2	PATCH	4	0.77	27.87	22.18	0.42	0.00	0.86	2.75	-
260	30	157	QTM2	PATCH	4	0.75	18.98	16.37	0.52	0.00	0.37	3.98	-
260	31	156	QTM2	PATCH	4	1.27	25.02	19.67	0.45	0.00	0.15	5.06	-
260	32	170	QTM2	PATCH	4	1.38	27.07	18.47	0.55	0.00	0.80	5.10	-
260	41	159	QTM2	PATCH	4	1.06	27.01	22.03	0.33	0.00	0.39	3.91	-
260	42	158	QTM2	PATCH	4	0.80	25.34	21.52	0.67	0.00	0.94	3.14	-
260	43	169	QTM2	PATCH	4	0.66	23.60	19.64	0.46	0.00	0.12	2.79	-
260	44	160	QTM2	PATCH	4	1.53	29.02	21.93	0.45	0.00	0.20	5.28	-

QTM#2 Mid Ch.

n260 Mid ch.(38.5GHz)					4cm ² PD(W/m ²) at 2mm evaluation surfaces @6dBm						Ratio [%]		
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	relative phase worst PD for MIMO						Front / (worst surface)	Top / (worst surface)	
					Front	Back	Right	Left	Top	Bottom			
260	2		QTM2	PATCH	1	0.01	5.49	3.24	0.02	0.00	0.03	0.23	-
260	9		QTM2	PATCH	2	0.01	11.12	5.36	0.16	0.00	0.09	0.13	-
260	10		QTM2	PATCH	2	0.02	8.30	5.42	0.09	0.00	0.08	0.19	-
260	11		QTM2	PATCH	2	0.03	10.41	5.89	0.05	0.00	0.03	0.27	-
260	16		QTM2	PATCH	2	0.02	10.09	5.89	0.04	0.00	0.04	0.25	-
260	17		QTM2	PATCH	2	0.03	8.44	5.44	0.05	0.00	0.02	0.33	-
260	28		QTM2	PATCH	4	0.02	15.94	10.30	0.11	0.00	0.04	0.15	-
260	29		QTM2	PATCH	4	0.05	18.27	10.51	0.15	0.00	0.15	0.28	-
260	30		QTM2	PATCH	4	0.03	11.10	6.51	0.19	0.00	0.10	0.30	-
260	31		QTM2	PATCH	4	0.08	17.09	10.71	0.28	0.00	0.03	0.48	-
260	32		QTM2	PATCH	4	0.05	16.50	10.51	0.18	0.00	0.12	0.33	-
260	41		QTM2	PATCH	4	0.04	17.52	10.54	0.08	0.00	0.06	0.23	-
260	42		QTM2	PATCH	4	0.03	17.38	10.50	0.27	0.00	0.18	0.15	-
260	43		QTM2	PATCH	4	0.07	11.62	7.84	0.32	0.00	0.03	0.58	-
260	44		QTM2	PATCH	4	0.06	16.96	9.96	0.22	0.00	0.06	0.32	-
260		130	QTM2	PATCH	1	0.01	4.88	2.00	0.11	0.00	0.02	0.18	-
260		144	QTM2	PATCH	2	0.01	7.98	3.46	0.26	0.00	0.03	0.18	-
260		138	QTM2	PATCH	2	0.04	8.55	4.31	0.16	0.00	0.08	0.50	-
260		139	QTM2	PATCH	2	0.03	8.25	3.08	0.15	0.00	0.03	0.38	-
260		145	QTM2	PATCH	2	0.03	9.09	4.29	0.13	0.00	0.04	0.28	-
260		137	QTM2	PATCH	2	0.01	10.02	4.90	0.17	0.00	0.03	0.14	-
260		172	QTM2	PATCH	4	0.09	14.17	8.26	0.26	0.00	0.02	0.65	-
260		171	QTM2	PATCH	4	0.03	16.93	8.51	0.35	0.00	0.10	0.18	-
260		157	QTM2	PATCH	4	0.08	12.44	7.10	0.27	0.00	0.16	0.63	-
260		156	QTM2	PATCH	4	0.05	15.67	8.48	0.36	0.00	0.02	0.33	-
260		170	QTM2	PATCH	4	0.10	13.69	5.61	0.37	0.00	0.15	0.71	-
260		159	QTM2	PATCH	4	0.07	15.62	7.83	0.14	0.00	0.03	0.46	-
260		158	QTM2	PATCH	4	0.10	14.80	8.09	0.44	0.00	0.15	0.66	-
260		169	QTM2	PATCH	4	0.07	11.54	7.80	0.63	0.00	0.05	0.62	-
260		160	QTM2	PATCH	4	0.09	13.85	9.02	0.29	0.00	0.02	0.66	-
260	2	130	QTM2	PATCH	1	0.29	9.21	7.11	0.14	0.00	0.12	3.14	-
260	9	144	QTM2	PATCH	2	0.48	16.27	11.72	0.60	0.00	0.32	2.93	-
260	10	138	QTM2	PATCH	2	0.55	13.22	9.46	0.28	0.00	0.32	4.14	-
260	11	139	QTM2	PATCH	2	1.03	16.88	13.12	0.24	0.00	0.14	6.09	-
260	16	145	QTM2	PATCH	2	0.93	17.44	14.72	0.23	0.00	0.24	5.32	-
260	17	137	QTM2	PATCH	2	0.73	16.95	11.32	0.34	0.00	0.09	4.29	-
260	28	172	QTM2	PATCH	4	1.75	26.92	22.84	0.40	0.00	0.18	6.52	-
260	29	171	QTM2	PATCH	4	0.93	32.37	26.34	0.64	0.00	0.63	2.87	-
260	30	157	QTM2	PATCH	4	1.20	22.21	18.96	0.61	0.00	0.48	5.42	-
260	31	156	QTM2	PATCH	4	1.47	28.35	23.89	0.86	0.00	0.15	5.18	-
260	32	170	QTM2	PATCH	4	1.52	29.81	15.23	0.74	0.00	0.48	5.11	-
260	41	159	QTM2	PATCH	4	1.42	30.51	25.09	0.28	0.00	0.28	4.67	-
260	42	158	QTM2	PATCH	4	1.28	30.17	26.68	1.00	0.00	0.80	4.24	-
260	43	169	QTM2	PATCH	4	1.49	27.05	21.23	1.16	0.00	0.13	5.51	-
260	44	160	QTM2	PATCH	4	2.01	28.49	25.65	0.81	0.00	0.22	7.07	-

QTM#2 High Ch.

n260 High ch.(39.95GHz)					4cm ² PD(W/m ²) at 2mm evaluation surfaces @6dBm						Ratio [%]		
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	relative phase worst PD for MIMO						Front / (worst surface)	Top / (worst surface)	
					Front	Back	Right	Left	Top	Bottom			
260	2		QTM2	PATCH	1	0.01	5.06	2.88	0.04	0.00	0.03	0.18	-
260	9		QTM2	PATCH	2	0.02	10.43	7.73	0.12	0.00	0.03	0.23	-
260	10		QTM2	PATCH	2	0.02	7.63	5.06	0.05	0.00	0.11	0.20	-
260	11		QTM2	PATCH	2	0.01	10.07	4.30	0.09	0.00	0.02	0.13	-
260	16		QTM2	PATCH	2	0.01	9.79	4.29	0.06	0.00	0.05	0.12	-
260	17		QTM2	PATCH	2	0.03	7.93	4.48	0.13	0.00	0.03	0.32	-
260	28		QTM2	PATCH	4	0.03	15.64	11.65	0.16	0.00	0.05	0.22	-
260	29		QTM2	PATCH	4	0.05	16.43	11.55	0.16	0.00	0.10	0.30	-
260	30		QTM2	PATCH	4	0.03	12.92	6.19	0.18	0.00	0.18	0.21	-
260	31		QTM2	PATCH	4	0.07	14.64	5.69	0.50	0.00	0.01	0.48	-
260	32		QTM2	PATCH	4	0.06	15.78	10.39	0.15	0.00	0.12	0.37	-
260	41		QTM2	PATCH	4	0.05	16.37	12.21	0.14	0.00	0.06	0.29	-
260	42		QTM2	PATCH	4	0.04	16.54	10.37	0.31	0.00	0.12	0.25	-
260	43		QTM2	PATCH	4	0.07	13.92	5.96	0.38	0.00	0.10	0.51	-
260	44		QTM2	PATCH	4	0.05	16.13	9.20	0.21	0.00	0.04	0.28	-
260		130	QTM2	PATCH	1	0.01	4.87	2.24	0.08	0.00	0.00	0.28	-
260		144	QTM2	PATCH	2	0.02	7.93	3.48	0.25	0.00	0.01	0.27	-
260		138	QTM2	PATCH	2	0.04	7.71	3.87	0.18	0.00	0.06	0.52	-
260		139	QTM2	PATCH	2	0.03	7.86	3.45	0.09	0.00	0.03	0.43	-
260		145	QTM2	PATCH	2	0.02	9.10	4.65	0.13	0.00	0.03	0.27	-
260		137	QTM2	PATCH	2	0.04	9.05	5.93	0.13	0.00	0.03	0.41	-
260		172	QTM2	PATCH	4	0.12	15.70	6.44	0.14	0.00	0.03	0.75	-
260		171	QTM2	PATCH	4	0.07	15.12	6.72	0.28	0.00	0.09	0.46	-
260		157	QTM2	PATCH	4	0.09	11.30	5.14	0.35	0.00	0.11	0.78	-
260		156	QTM2	PATCH	4	0.09	15.09	9.54	0.22	0.00	0.03	0.57	-
260		170	QTM2	PATCH	4	0.09	11.78	5.73	0.42	0.00	0.10	0.74	-
260		159	QTM2	PATCH	4	0.10	16.54	6.17	0.16	0.00	0.04	0.59	-
260		158	QTM2	PATCH	4	0.08	12.31	6.03	0.48	0.00	0.11	0.68	-
260		169	QTM2	PATCH	4	0.10	13.74	8.55	0.50	0.00	0.05	0.73	-
260		160	QTM2	PATCH	4	0.11	14.87	6.94	0.15	0.00	0.04	0.77	-
260	2	130	QTM2	PATCH	1	0.27	8.93	8.00	0.12	0.00	0.11	3.08	-
260	9	144	QTM2	PATCH	2	0.53	16.03	15.09	0.55	0.00	0.31	3.29	-
260	10	138	QTM2	PATCH	2	0.43	11.76	9.53	0.24	0.00	0.27	3.67	-
260	11	139	QTM2	PATCH	2	0.58	17.29	12.34	0.26	0.00	0.12	3.38	-
260	16	145	QTM2	PATCH	2	0.49	17.60	14.28	0.31	0.00	0.15	2.78	-
260	17	137	QTM2	PATCH	2	0.76	15.94	13.44	0.20	0.00	0.11	4.75	-
260	28	172	QTM2	PATCH	4	1.12	27.62	20.15	0.28	0.00	0.18	4.04	-
260	29	171	QTM2	PATCH	4	0.79	29.01	23.19	0.53	0.00	0.42	2.73	-
260	30	157	QTM2	PATCH	4	0.68	23.15	18.85	0.70	0.00	0.55	2.92	-
260	31	156	QTM2	PATCH	4	1.43	24.51	19.50	0.87	0.00	0.10	5.83	-
260	32	170	QTM2	PATCH	4	1.00	26.83	21.69	0.83	0.00	0.32	3.73	-
260	41	159	QTM2	PATCH	4	1.07	29.65	22.38	0.27	0.00	0.27	3.61	-
260	42	158	QTM2	PATCH	4	1.07	28.14	25.69	0.96	0.00	0.44	3.80	-
260	43	169	QTM2	PATCH	4	1.54	25.01	19.47	1.30	0.00	0.22	6.17	-
260	44	160	QTM2	PATCH	4	1.39	26.34	19.42	0.64	0.00	0.15	5.28	-