TA-1257

Power Density Simulation Report

Revision: Version C

2020.09. 07

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 (Power Density) for mobile phones with mmWave antenna modules is available in ANSYS Electromagnetics suite HFSS ver. 20.1 (2020 R1) 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. 20.1 (2020 R1) 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. 20.1 (2020 R1) 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. 20.1 (2020 R1) is used. ANSYS Electromagnetics suite HFSS ver. 20.1 (2020 R1) 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. 20.1 (2020 R1) 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. 20.1 (2020 R1), 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).
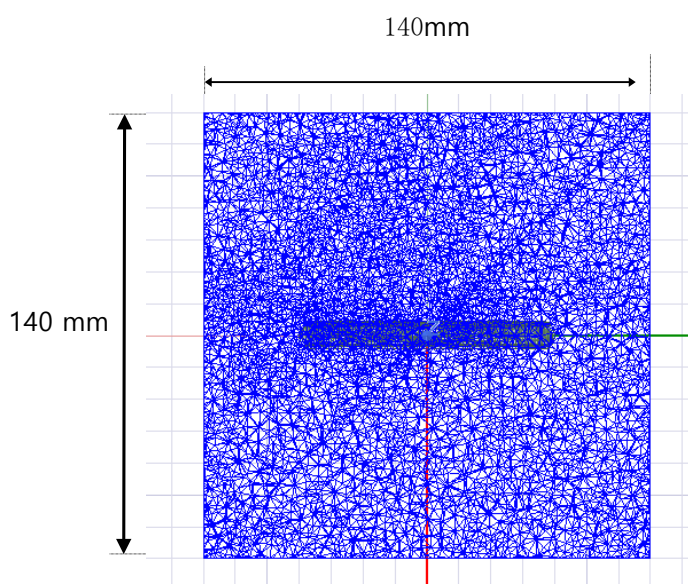

Figure 1. Example of HFSS mesh in a model of the device (Top view)

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.

$$|\vec{S}| = Re(\vec{S} \times \vec{H})$$

$|\vec{S}|$ can be expressed as point power density based on a peak value of each spatial point on

mesh grids, and obtained directly from ANSYS Electromagnetics suite HFSS ver. 20.1 (2020

R1).

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

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

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

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, cables, and legacy antennas as well as mmWave antenna modules called as QMT0# QMT1# and QTM2#. On the back side view, QMT0# is placed at the back side and antennas are facing the backside of the device. QMT1# is placed on the left side and antennas are facing the left side. QMT2# is placed on the left side and antennas are facing the right side.
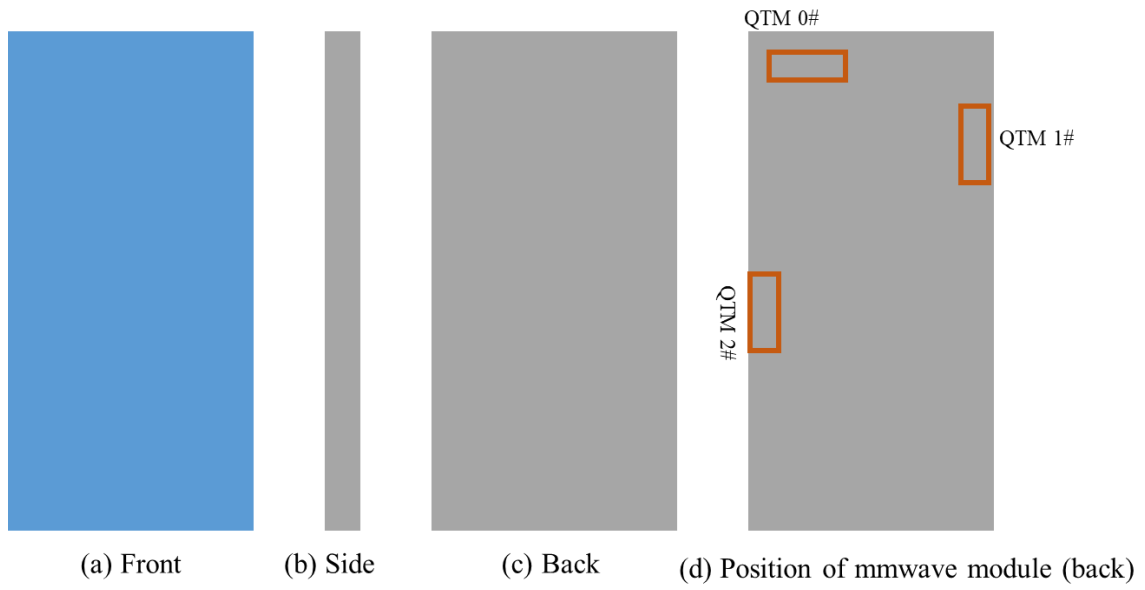
(a) Front   (b) Side   (c) Back   (d) Position of mmwave module (back)

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

1.2.2   PD evaluation surfaces

Table 1 shows the PD evaluation planes for each mmWave antenna module and Figure 3 shows the PD evaluation planes and truncation area of the simulation model to find worst case of beamforming cases. In QTM#0 , 5 PD evaluation planes except bottom side are set up. QTM0# is placed at the upper of the device and the bottom side is excluded from the worst case because the distance from the bottom side is more than 10 lambda at 28GHz and 39 GHz. QTM1# is placed at the leftside of device and the Top side is exculeded from the worst case as the same reason of QTM0#, QTM2# is placed at the rightside of the device and the bottom side is exclueded from the worst case as the same reason of QTM0#

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 back side.

Table 1. PD evaluation surfaces

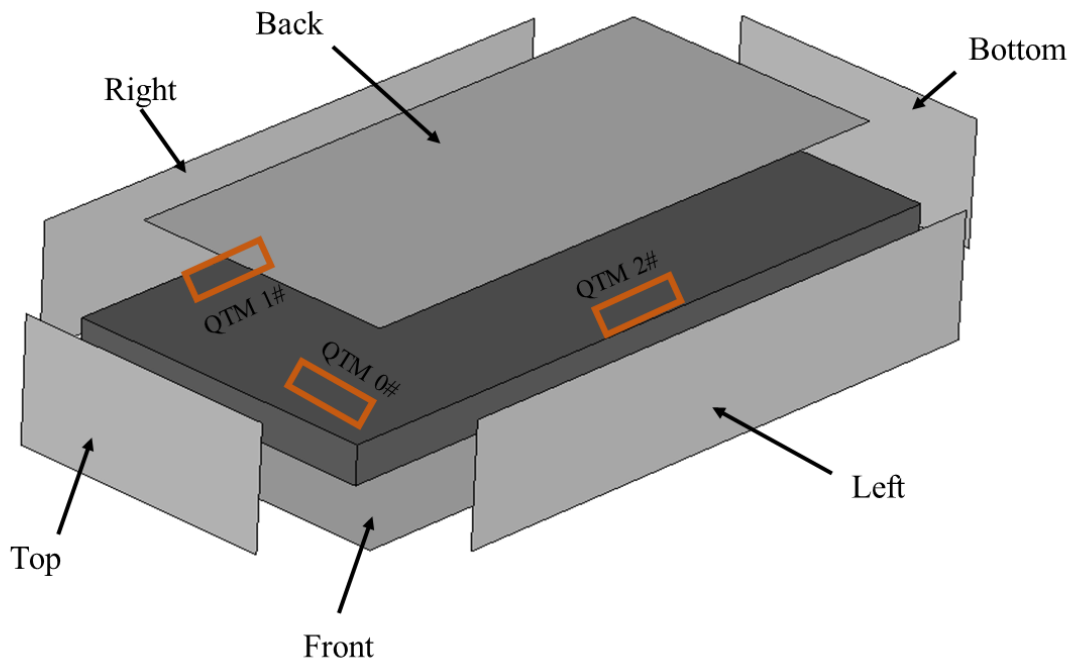|	Front	Back	Left From Front View	Right From Front View	Top	Bottom
	S1	S2	S3	S4	S5	S6
QTM#0	O	O	O	O	O	X
QTM#1	O	O	O	O	X	O
QTM#2	O	O	O	O	O	X

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 QTM0#, QTM1# and QTM2# 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#2 module structure and surrounding structure. The QTM1# module

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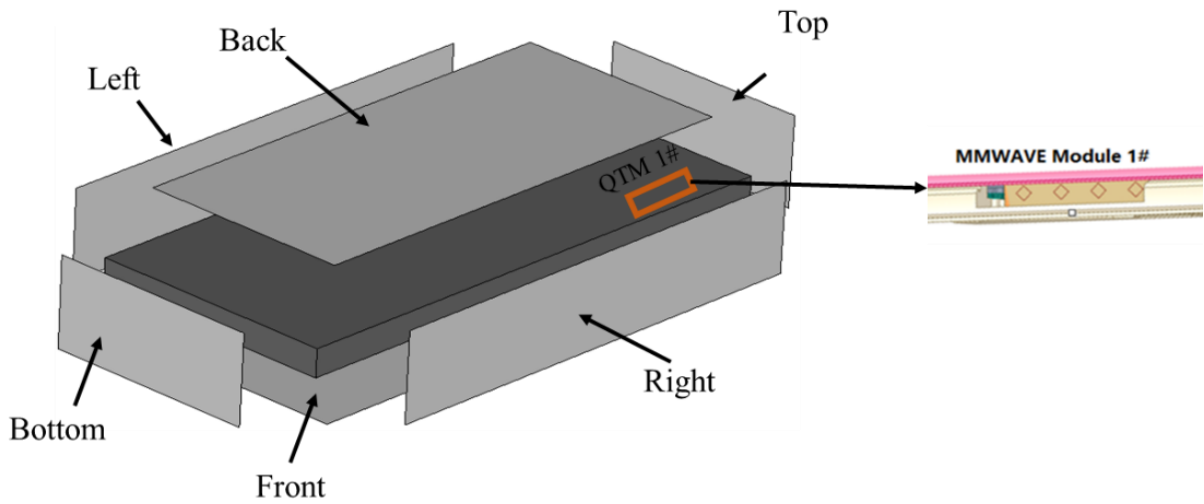

Figure 4. mmWave module (QTM#1)

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.
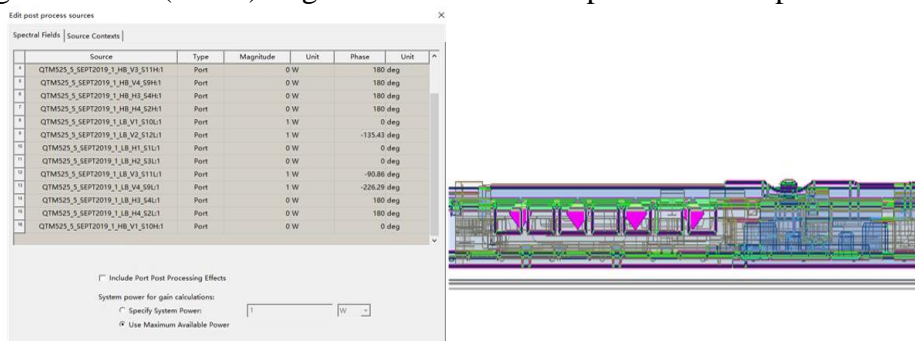
Figure 5. An example of port excitation (QTM1#)

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 (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.

(a) Point power density   (b) Averaged power density
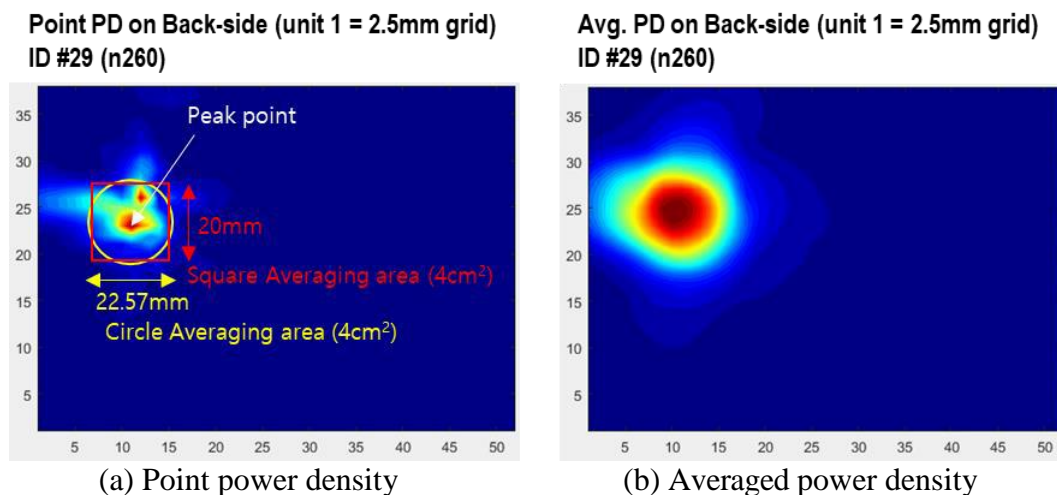
Figure 6. Power density distribution (Example)

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.

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Mode/Band	Antenna	Input Power (dBm) SISO	Input Power (dBm) MIMO
5G NR n261 (28 GHz)	QTM#0 Patch	6	6
	QTM#1 Patch	6	6
	QTM#2 Patch	6	6
5G NR n260 (39 GHz)	QTM#0 Patch	6	6
	QTM#1 Patch	6	6
	QTM#2 Patch	6	6

6dBm input measurement / simulation							4cm² avg. PD(W/m²)		BeamID
Band	Ant Type	Module	Ant Group (Ant Polarization)	beam ID	Surface	Channel	Measured	Simulated	ID number
n261	Patch	QTM0	AG0(V)	worst beam ID	Back	Mid	6.36	9.34	43
				2nd worst beam ID	top	Mid	2.73	3.48	40
			AG1(H)	worst beam ID	Back	Mid	9.36	8.66	158
				2nd worst beam ID	Top	Mid	2.6	3.19	155
		QTM1	AG0(V)	worst beam ID	Right	Mid	5.41	11.39	23
				2nd worst beam ID	Back	Mid	3.01	5.42	39
			AG1(H)	worst beam ID	Right	Mid	5.63	11.49	149
				2nd worst beam ID	Back	Mid	3.31	5.43	149
		QTM2	AG0(V)	worst beam ID	Left	Mid	5.27	11.17	45
				2nd worst beam ID	Front	Mid	1.16	4	45
			AG1(H)	worst beam ID	Left	Mid	4.72	10.83	163
				2nd worst beam ID	Front	Mid	1.83	4.6	163
n260	Patch	QTM0	AG0(V)	worst beam ID	Back	Mid	5.3	12.98	41
				2nd worst beam ID	Front	Mid	0.639	5.2	42
			AG1(H)	worst beam ID	Back	Mid	5.61	12.18	154
				2nd worst beam ID	Left	Mid	1.07	5.57	156
		QTM1	AG0(V)	worst beam ID	Right	Mid	7.77	15.86	38
				2nd worst beam ID	Back	Mid	2.99	7.36	25
			AG1(H)	worst beam ID	Right	Mid	7.72	15.25	164
				2nd worst beam ID	back	Mid	3.56	6.95	164
		QTM2	AG0(V)	worst beam ID	Left	Mid	7.71	50.18	45
				2nd worst beam ID	back	Mid	4.59	31.025	33
			AG1(H)	worst beam ID	Left	Mid	6.51	52.49	174
				2nd worst beam ID	back	Mid	2.60	24.8	160

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.

n261 Patch antenna QTM0 Ant_Group0(V-polarization) beam ID 43 Back-side Mid ch.
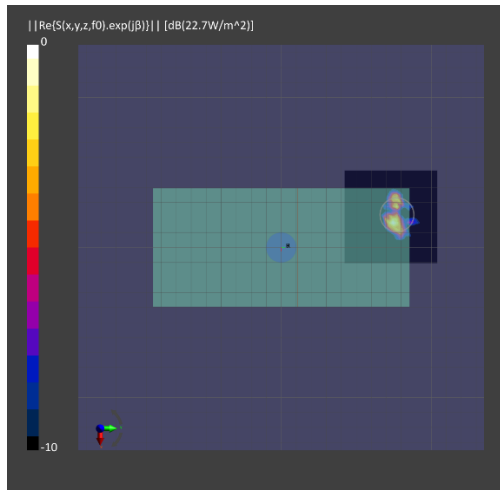
(a) Measurement
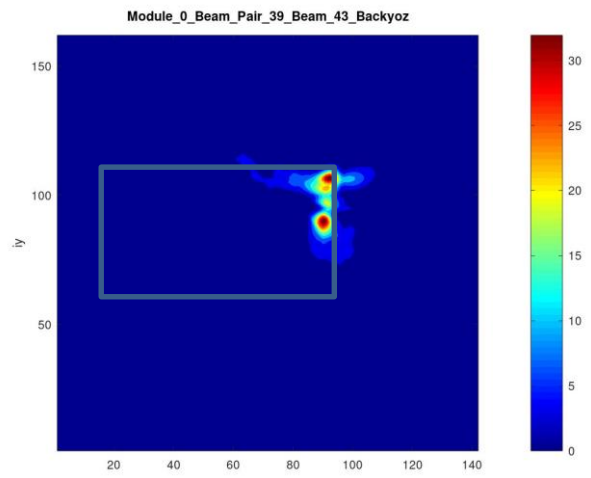
(b) Simulation

Patch antenna QTM0 AG0(V-polarization) beam ID 43, Point power density

(a) Measurement

(b) Simulation

Patch antenna QTM0 AG0(V-polarization) beam ID 43, 4cm^2 Averaged power density

n261 Patch antenna QTM0 Ant_Group0(V-polarization) beam ID 40 Top-side Mid ch.

(a) Measurement   (b) Simulation

Patch antenna QTM0 AG0(V-polarization) beam ID 40, Point power density

(a) Measurement   (b) Simulation

Patch antenna QTM0 AG0(V-polarization) beam ID 40, 4cm^2 Averaged power density

n261 Patch antenna QTM0 Ant_Group1(H-polarization) beam ID 158 Back-side Mid ch.

(a) Measurement   (b) Simulation

Patch antenna QTM0 AG1(H-polarization) beam ID 158, Point power density

(a) Measurement   (b) Simulation

Patch antenna QTM0 AG1(H-polarization) beam ID 158, 4cm^2 Averaged power density

n261 Patch antenna QTM0 Ant_Group1(H-polarization) beam ID 155 Top-side Mid ch.

(a) Measurement   (b) Simulation

Patch antenna QTM0 AG1(H-polarization) beam ID 155, Point power density

(a) Measurement   (b) Simulation

Patch antenna QTM0 AG1(H-polarization) beam ID 155, 4cm^2 Averaged power density

n261 Patch antenna QTM1 Ant_Group0(V-polarization) beam ID 23 Right-side Mid ch.

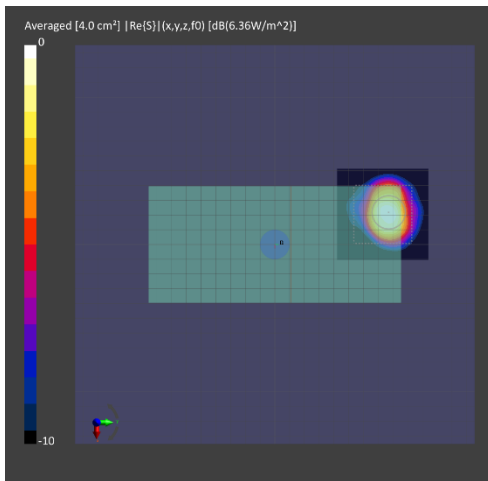<div align="center">(b) Measurement   (b) Simulation</div>

<div align="center">Patch antenna QTM1 AG0(V-polarization) beam ID 23, Point power density</div>

<div align="center">(a) Measurement   (b) Simulation</div>

<div align="center">Patch antenna QTM1 AG0(V-polarization) beam ID 23, 4cm^2 Averaged power density</div>

n261 Patch antenna QTM1 Ant_Group0(V-polarization) beam ID 39 Back-side Mid ch.

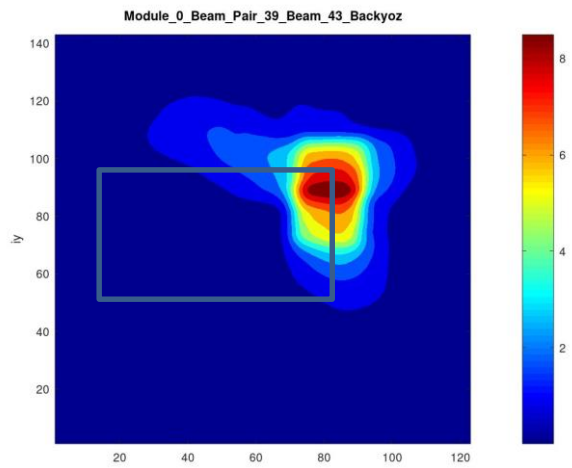(a) Measurement   (b) Simulation

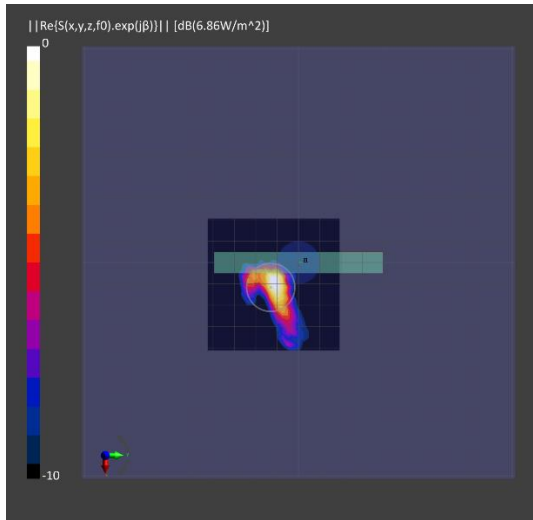Patch antenna QTM1 AG0(V-polarization) beam ID 39, Point power density
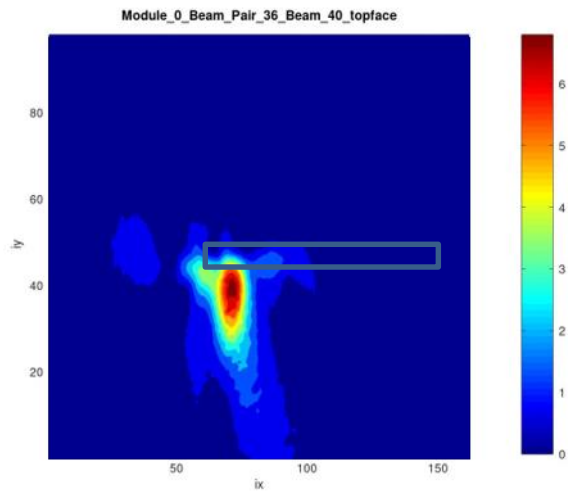

(a) Measurement   (b) Simulation

Patch antenna QTM1 AG0(V-polarization) beam ID 39, 4cm^2 Averaged power density

n261 Patch antenna QTM1 Ant_Group1(H-polarization) beam ID 149 Right-side Mid ch.

(b) Measurement   (b) Simulation

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

(a) Measurement   (b) Simulation

Patch antenna QTM1 AG1(H-polarization) beam ID 149, 4cm^2 Averaged power density

n261 Patch antenna QTM1 Ant_Group1(H-polarization) beam ID 149 Back-side Mid ch.
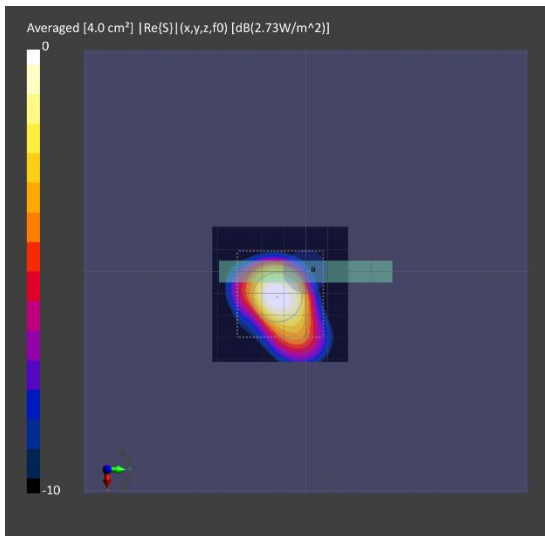

(a) Measurement   (b) Simulation

Patch antenna QTM1AG1(H-polarization) beam ID 149, Point power density

(a) Measurement   (b) Simulation

Patch antenna QTM1AG1(H-polarization) beam ID 149 4cm^2 Averaged power density

n261 Patch antenna QTM2 Ant_Group0(V-polarization) beam ID 45 Left-side Mid ch.
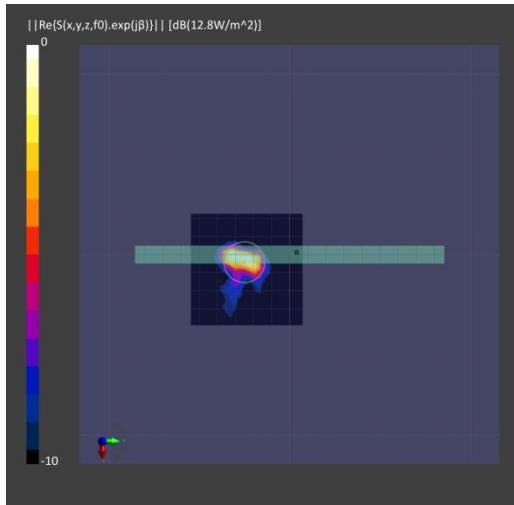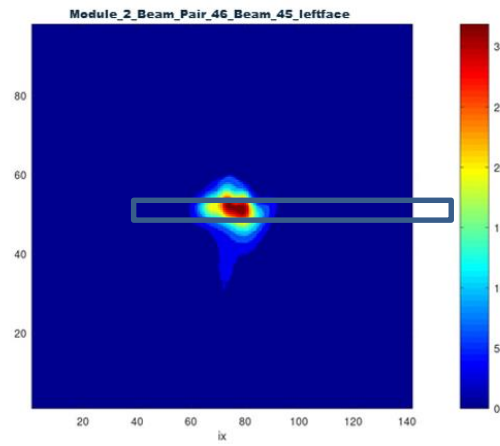
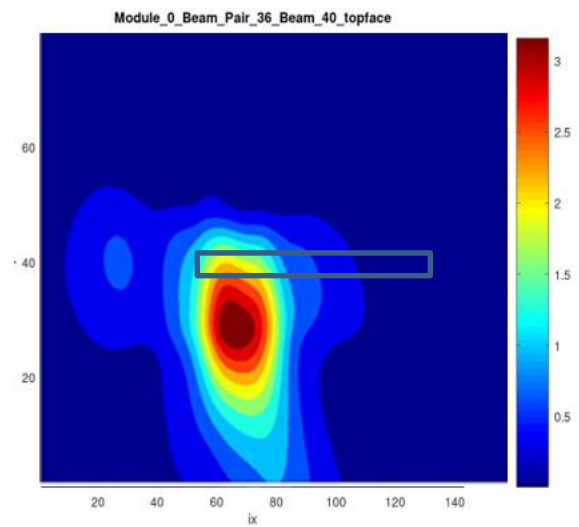

(c) Measurement   (b) Simulation

Patch antenna QTM2 AG0(V-polarization) beam ID 45, Point power density

(a) Measurement   (b) Simulation

Patch antenna QTM2 AG0(V-polarization) beam ID 45, 4cm^2 Averaged power density

n261 Patch antenna QTM2 Ant_Group0(V-polarization) beam ID 45 Front-side Mid ch.
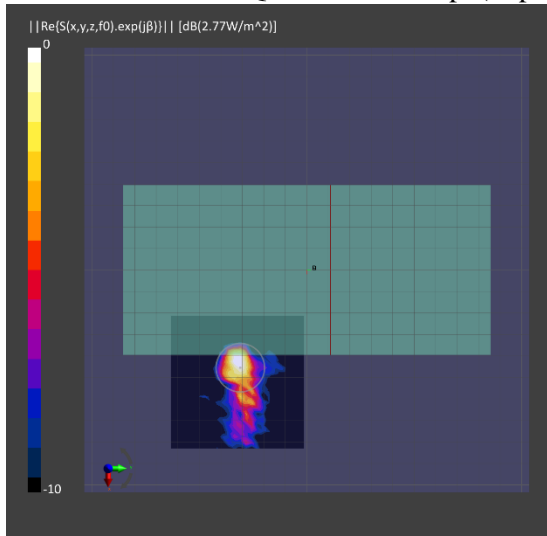
(b) Measurement
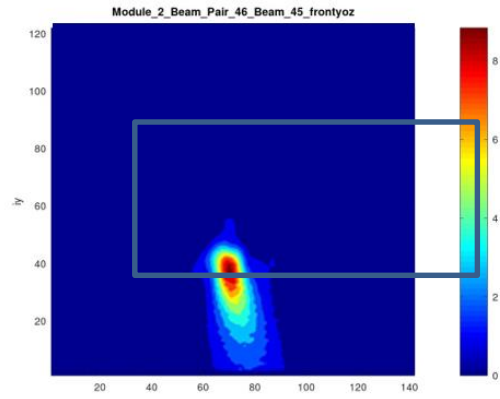
(b) Simulation

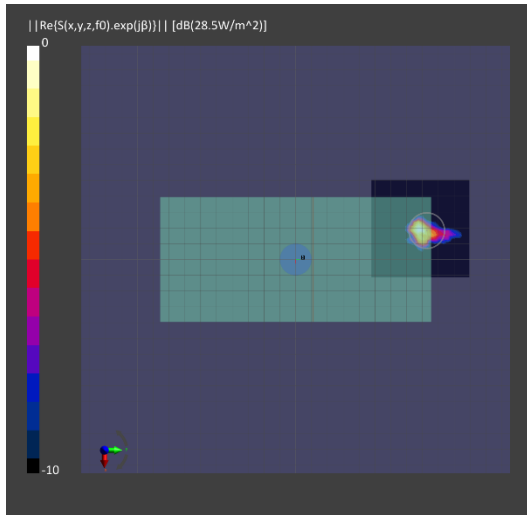Patch antenna QTM2 AG0(V-polarization) beam ID 45, Point power density
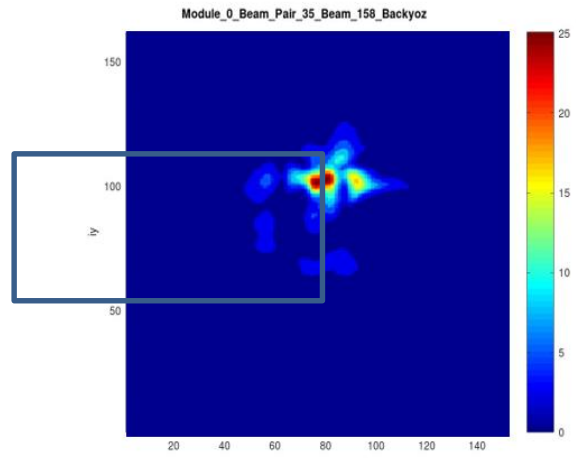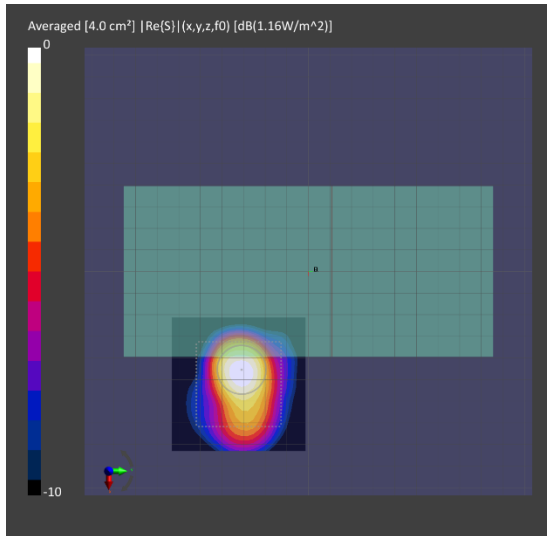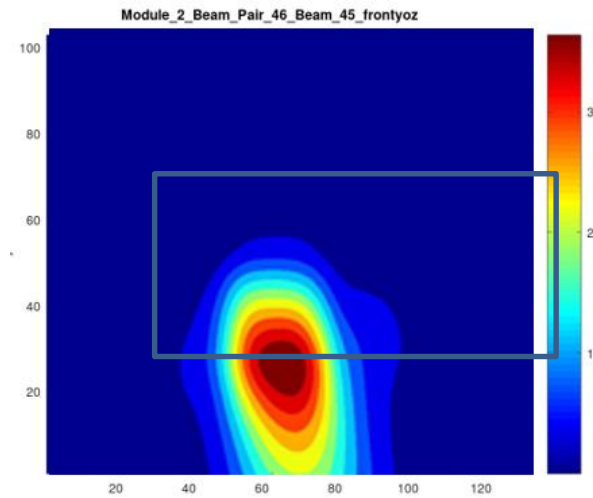

(a) Measurement

(b) Simulation

Patch antenna QTM2 AG0(V-polarization) beam ID 45, 4cm^2 Averaged power density

n261 Patch antenna QTM2 Ant_Group1(H-polarization) beam ID 163 Left-side Mid ch.
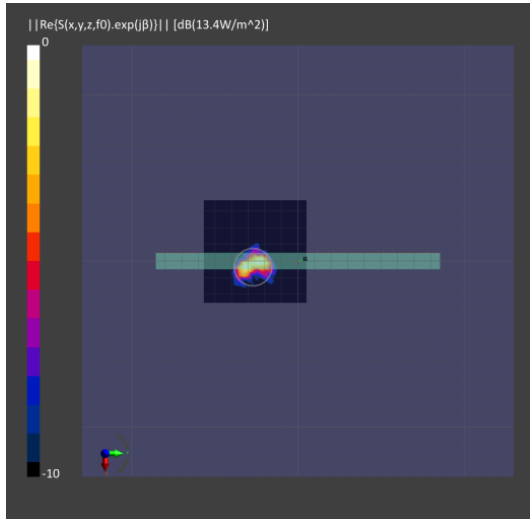
(c) Measurement   (b) Simulation
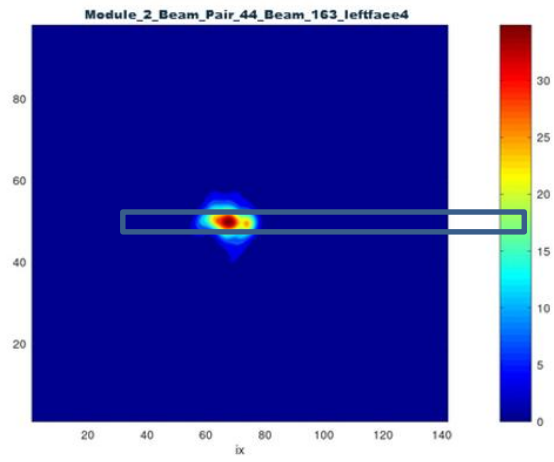
Patch antenna QTM2 AG1(H-polarization) beam ID 163, Point power density
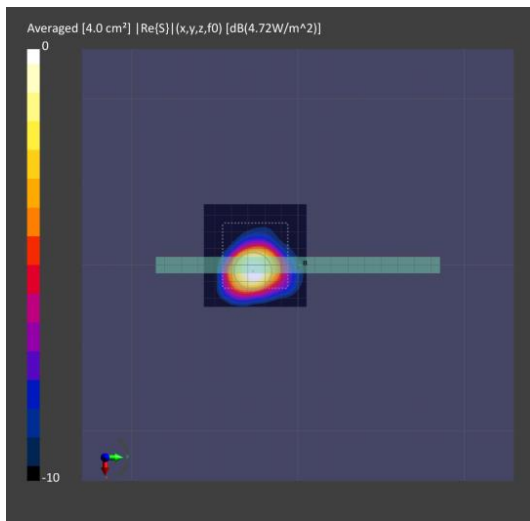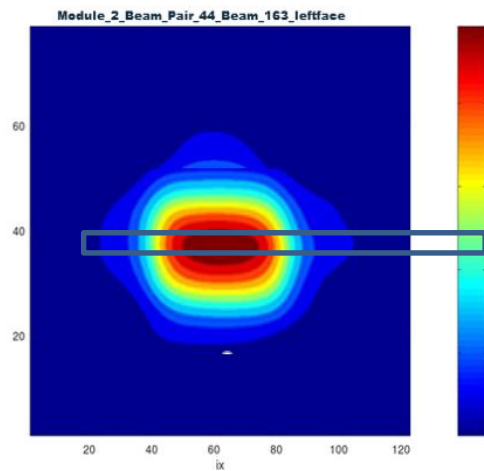
(a) Measurement   (b) Simulation

Patch antenna QTM2 AG1(H-polarization) beam ID 163, 4cm^2 Averaged power density

n261 Patch antenna QTM2 Ant_Group1(H-polarization) beam ID 163 Front-side Mid ch.
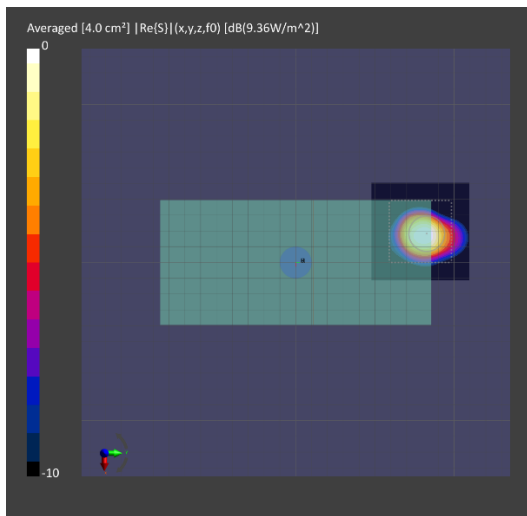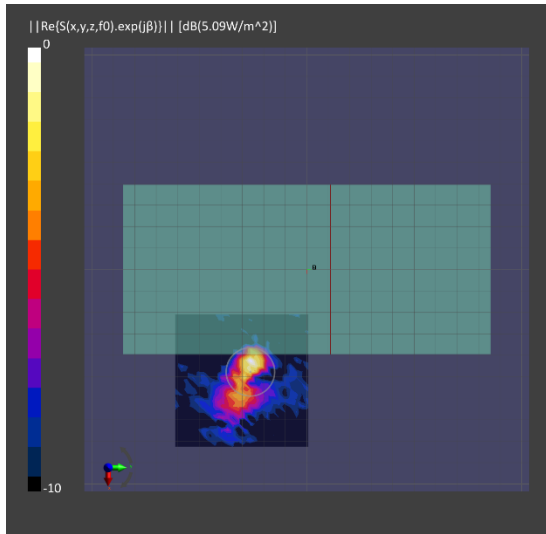

(b) Measurement   (b) Simulation
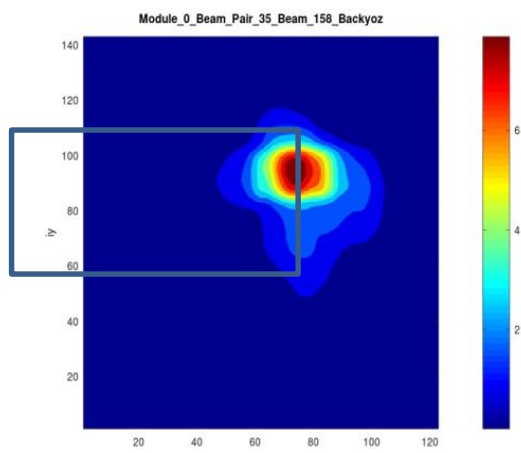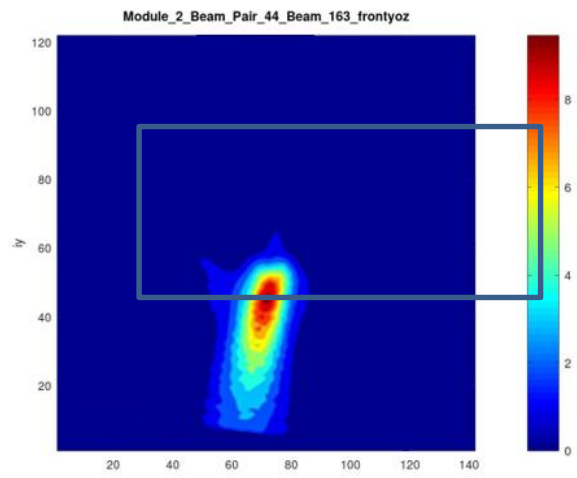
Patch antenna QTM2AG1(H-polarization) beam ID 163, Point power density
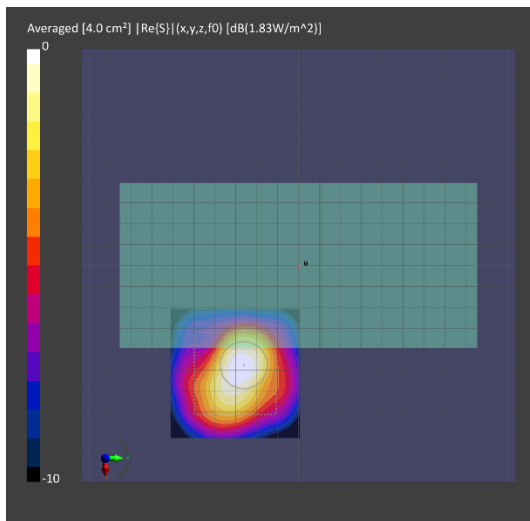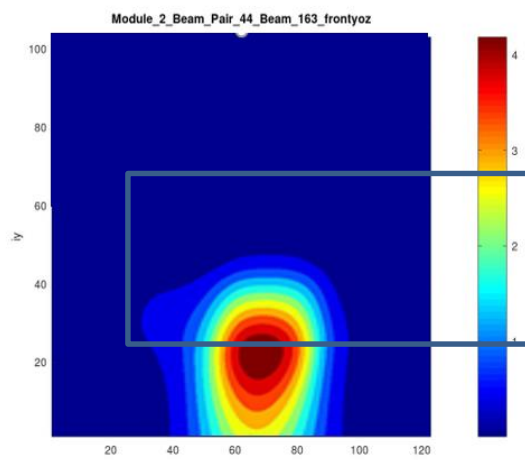
(a) Measurement   (b) Simulation

Patch antenna QTM2 AG1(H-polarization) beam ID 163 4cm^2 Averaged power density

n260 Patch antenna QTM0 Ant_Group0(V-polarization) beam ID 41 Back-side Mid ch.
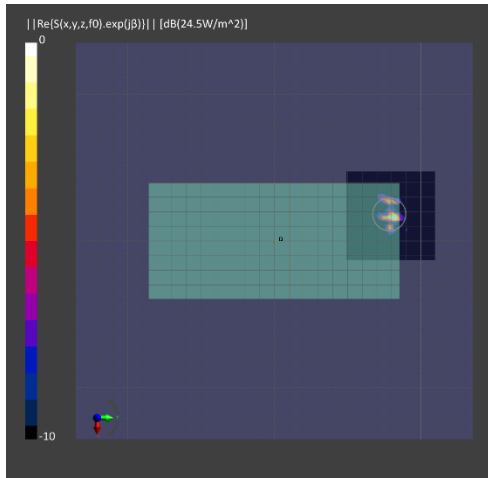
(a) Measurement
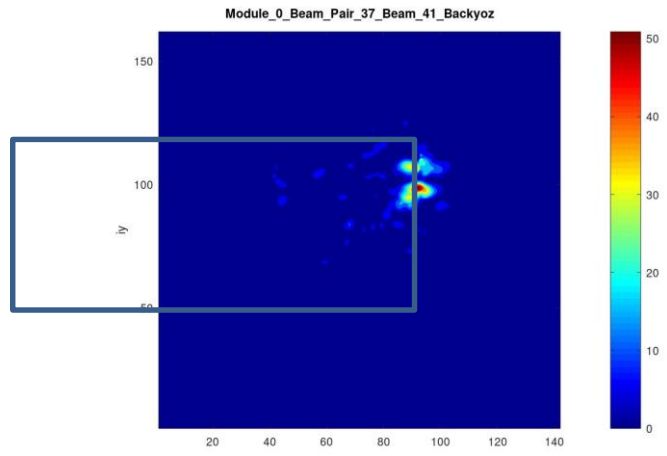
(b) Simulation

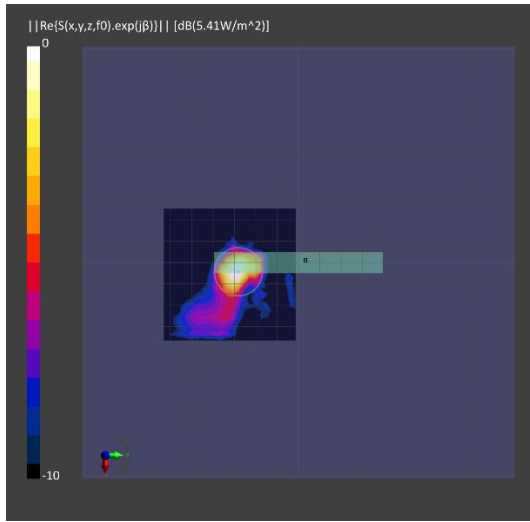Patch antenna QTM0 AG0(V-polarization) beam ID 41, Point power density
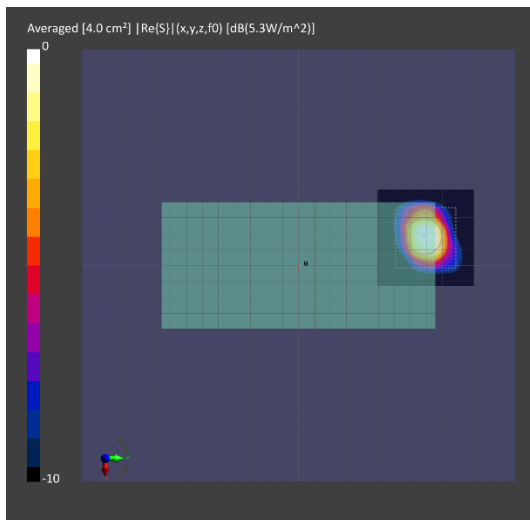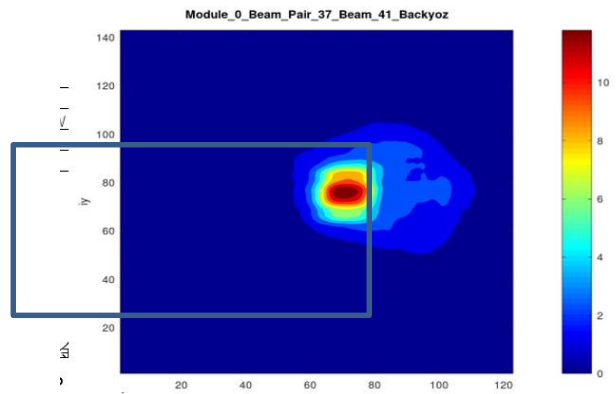
(a) Measurement

(b) Simulation

Patch antenna QTM0 AG0(V-polarization) beam ID 41, 4cm^2 Averaged power density

n260 Patch antenna QTM0 Ant_Group0(V-polarization) beam ID 42 Front-side Mid ch.
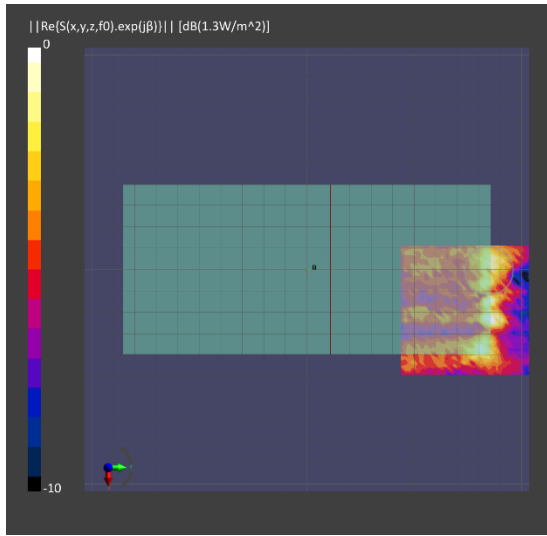
(a) Measurement   (b) Simulation
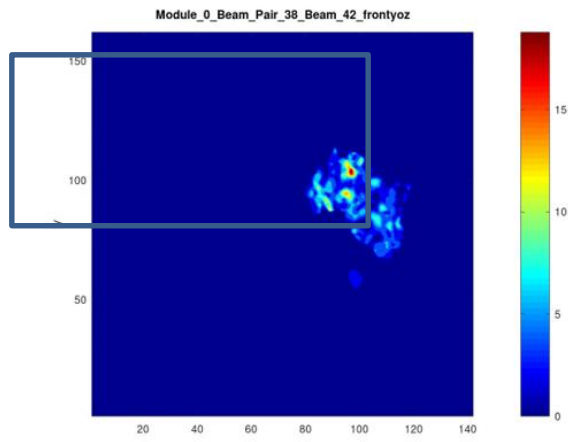
Patch antenna QTM0 AG0(V-polarization) beam ID 42, Point power density
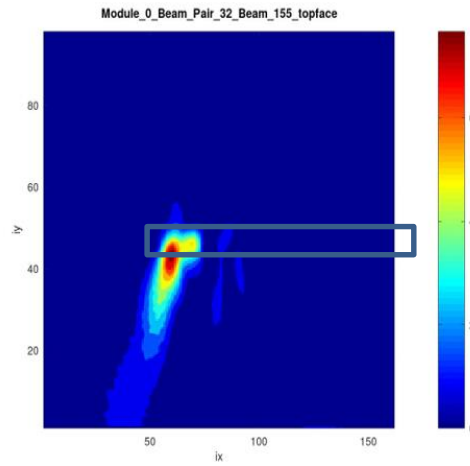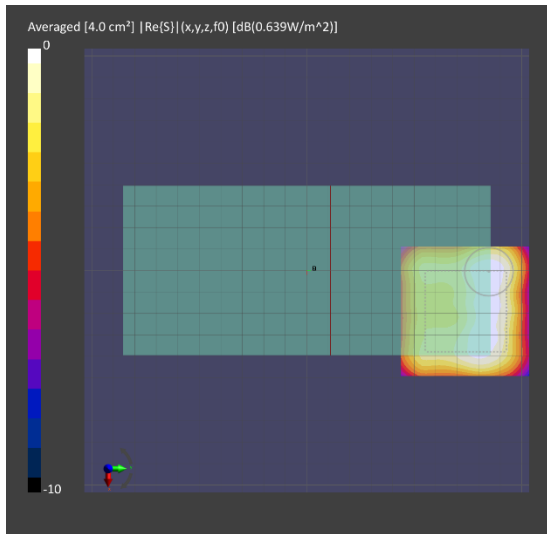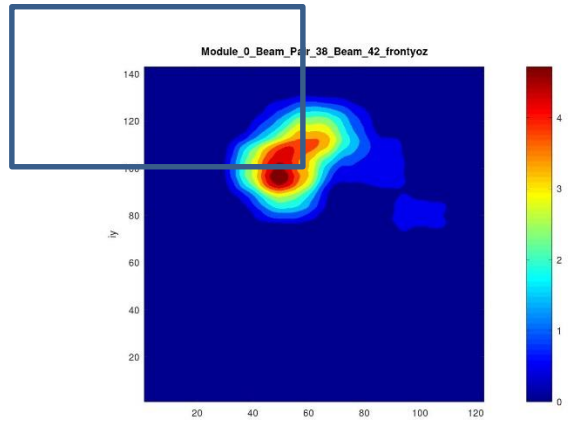

(a) Measurement   (b) Simulation

Patch antenna QTM0 AG0(V-polarization) beam ID 42, 4cm^2 Averaged power density

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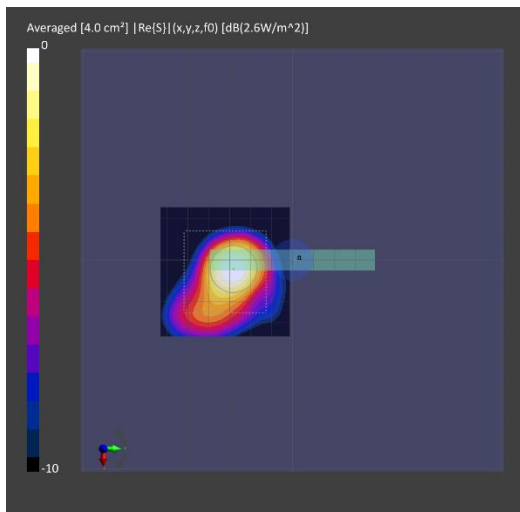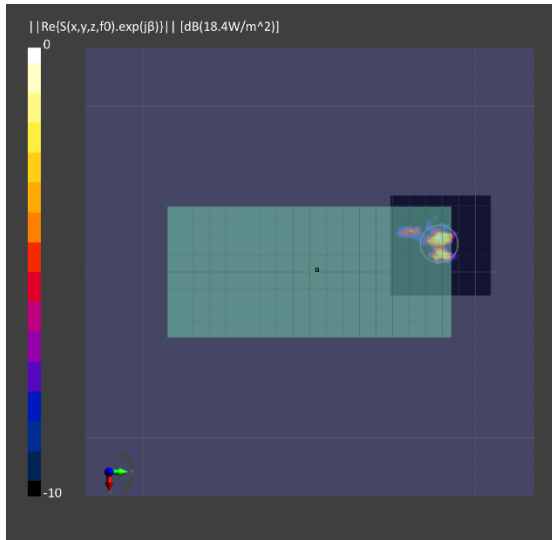

(a) Measurement   (b) Simulation
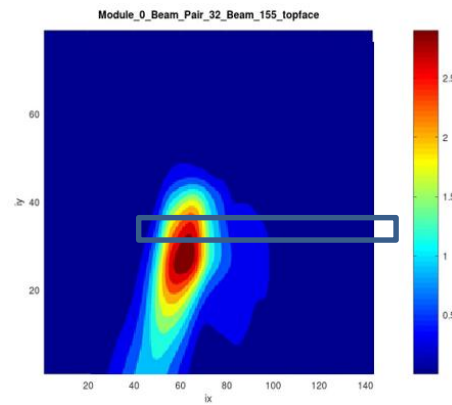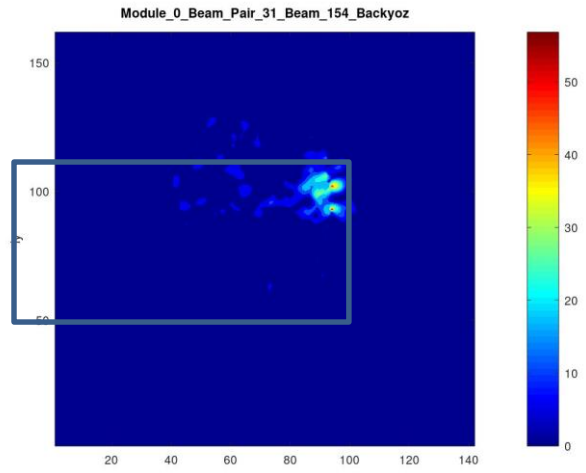
Patch antenna QTM0 AG1(H-polarization) beam ID 154, Point power density
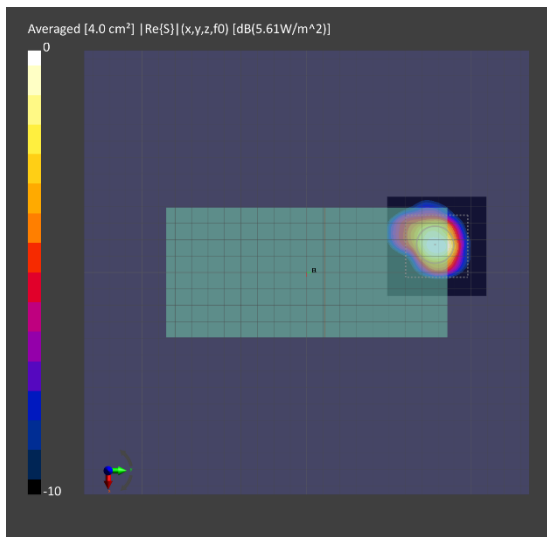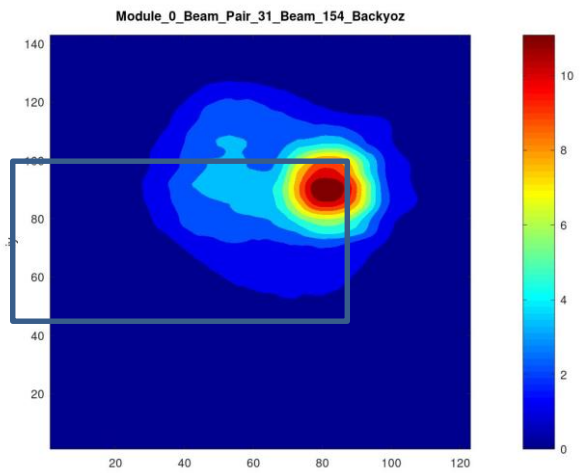
(a) Measurement   (b) Simulation

Patch antenna QTM0 AG1(H-polarization) beam ID 154, 4cm^2 Averaged power density

n260 Patch antenna QTM0 Ant_Group1(H-polarization) beam ID 156 Left-side Mid ch.
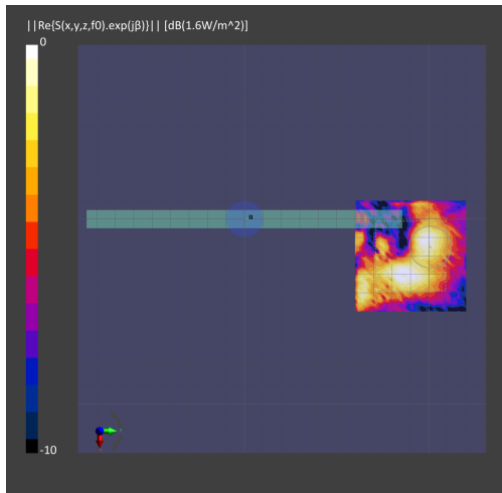
(a) Measurement   (b) Simulation
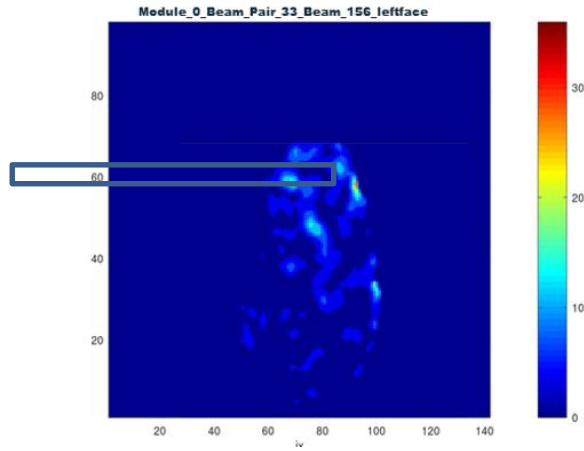
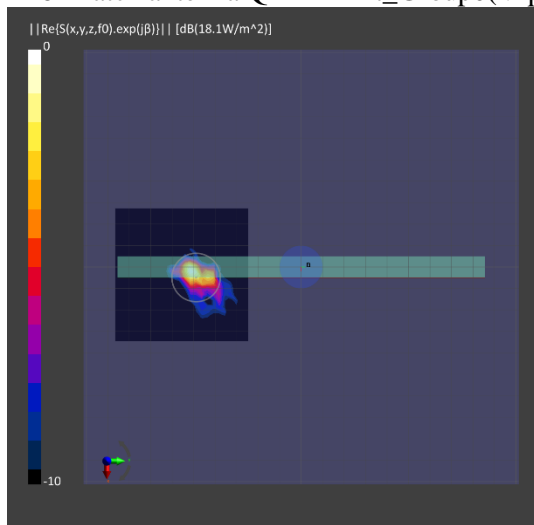Patch antenna QTM0 AG1(H-polarization) beam ID 156, Point power density
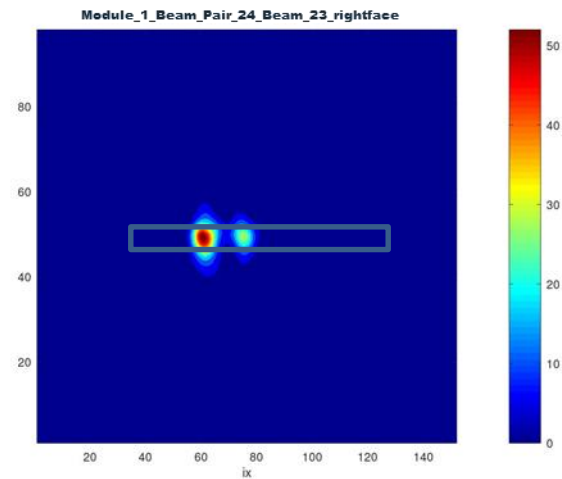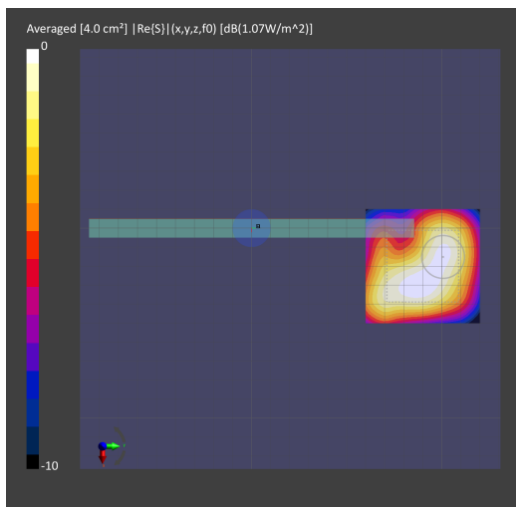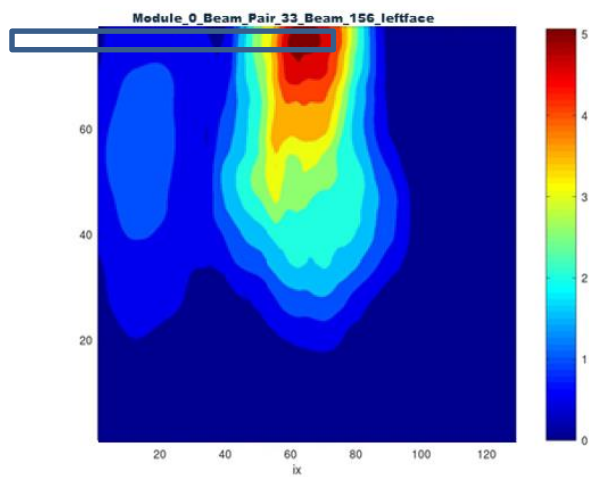

(a) Measurement   (b) Simulation

Patch antenna QTM0 AG1(H-polarization) beam ID 156, 4cm^2 Averaged power density

n260 Patch antenna QTM1_ Ant_Group0(V-polarization) beam ID 38 Right-side Mid ch.
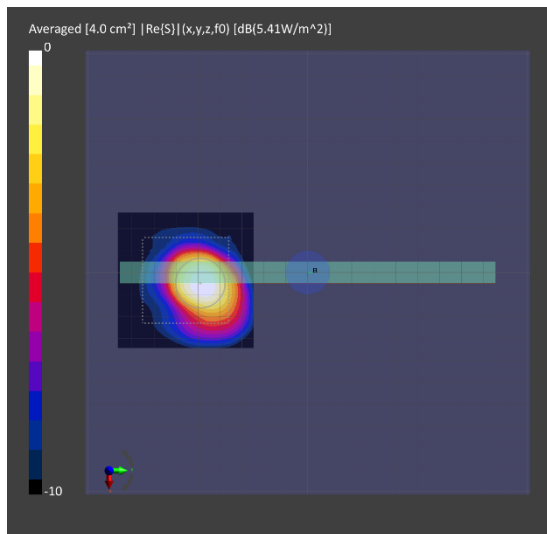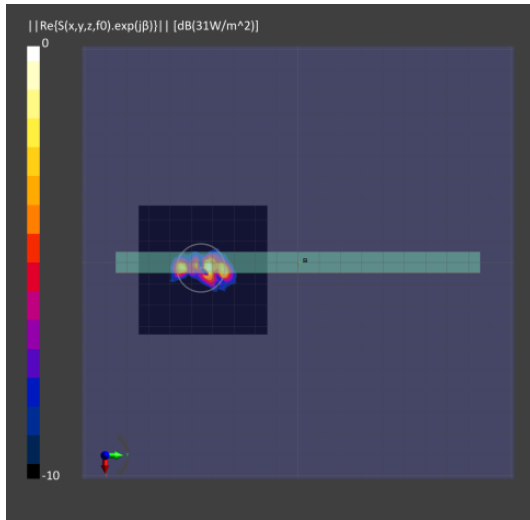

(b) Measurement   (b) Simulation
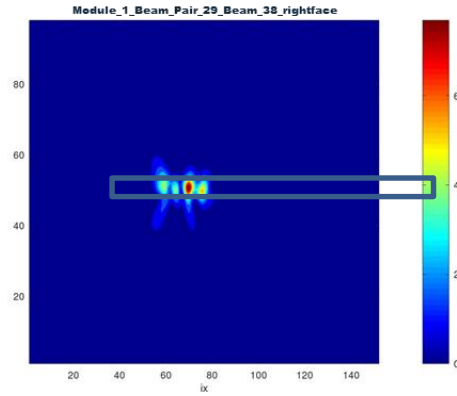
Patch antenna QTM1 AG0(V-polarization) beam ID 38, Point power density
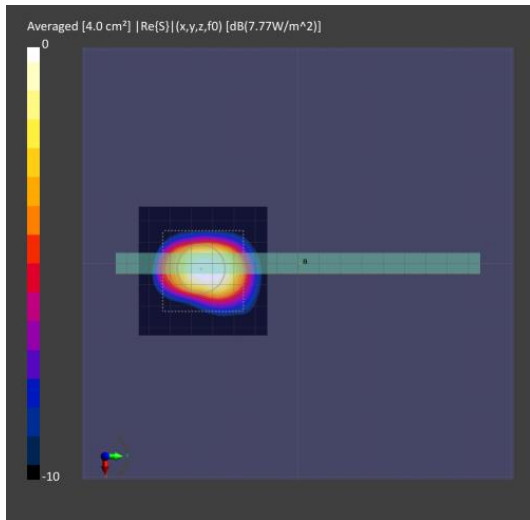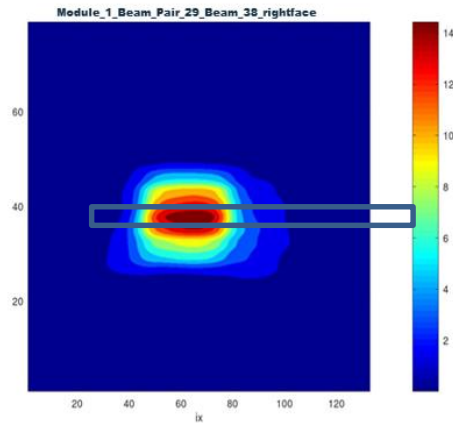
(a) Measurement   (b) Simulation

Patch antenna QTM1 AG0(V-polarization) beam ID 38, 4cm^2 Averaged power density

n260 Patch antenna QTM1 Ant_Group0(V-polarization) beam ID 25 Back-side Mid ch.
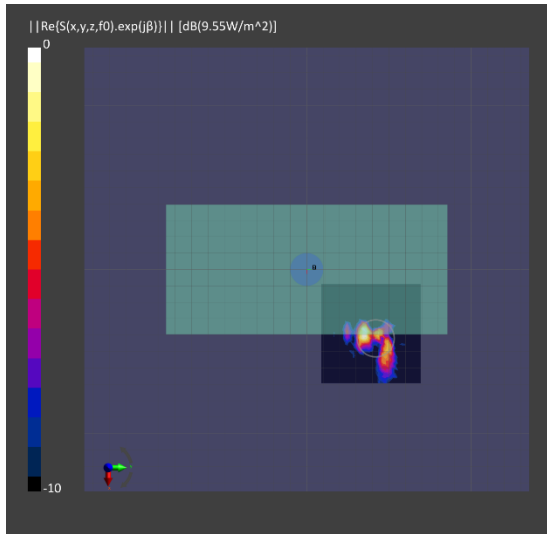
| (b) Measurement | (b) Simulation |
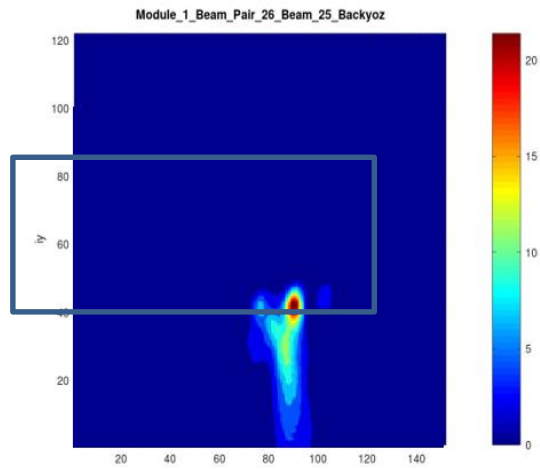
Patch antenna QTM1 AG0(V-polarization) beam ID 25, Point power density
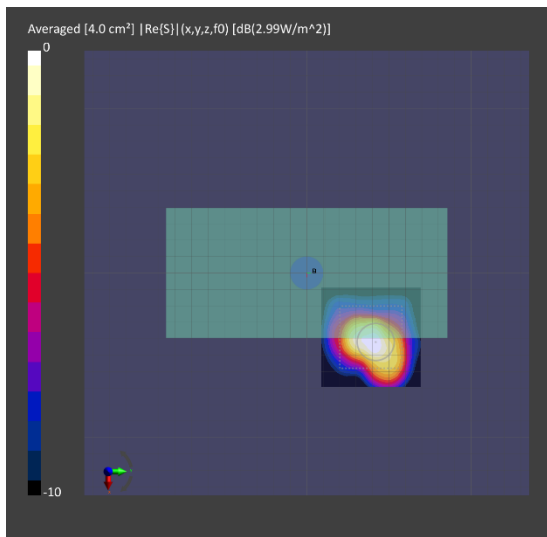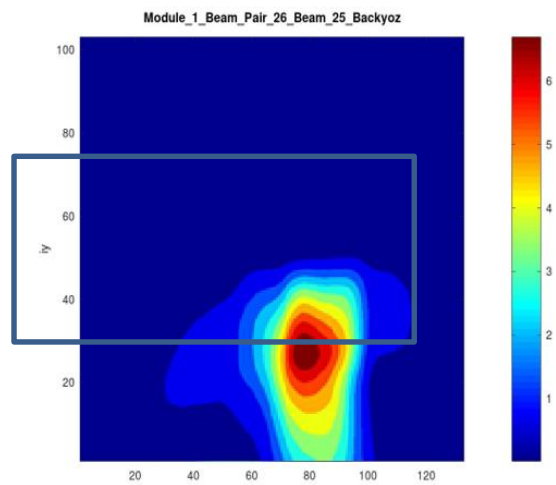
| (a) Measurement | (b) Simulation |

Patch antenna QTM1 AG0(V-polarization) beam ID 25, 4cm^2 Averaged power density

n260 Patch antenna QTM1 Ant_Group1(H-polarization) beam ID 164 Right_side Mid ch.
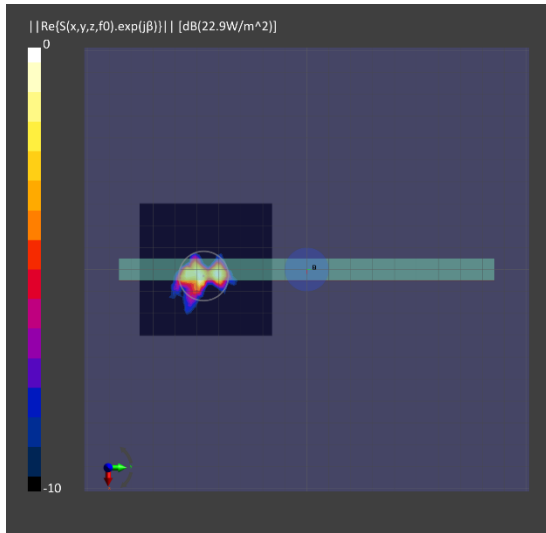
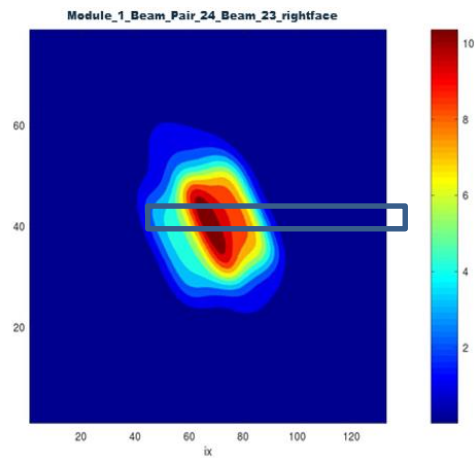(b) Measurement   (b) Simulation
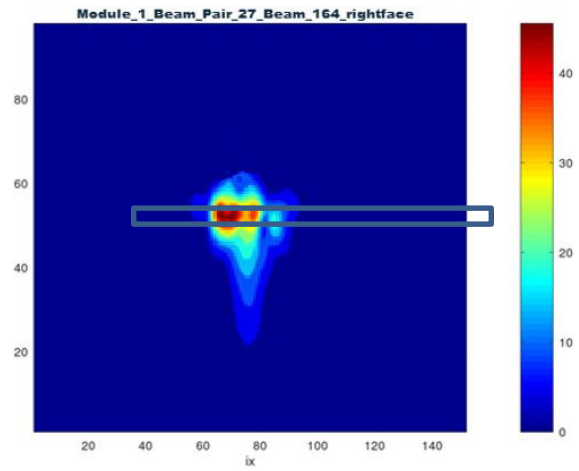
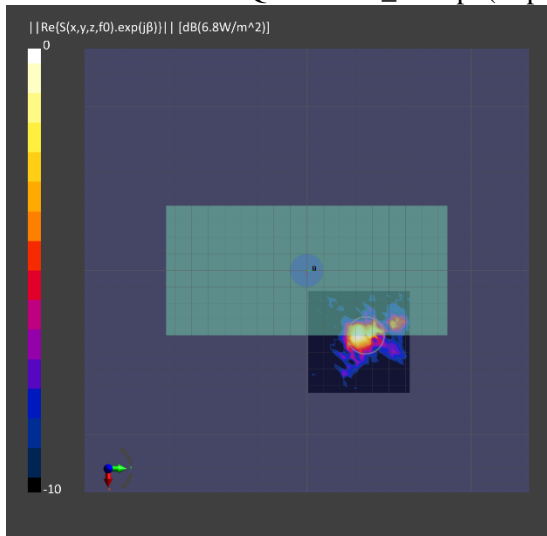Patch antenna QTM1 AG1(H-polarization) beam ID 164, Point power density
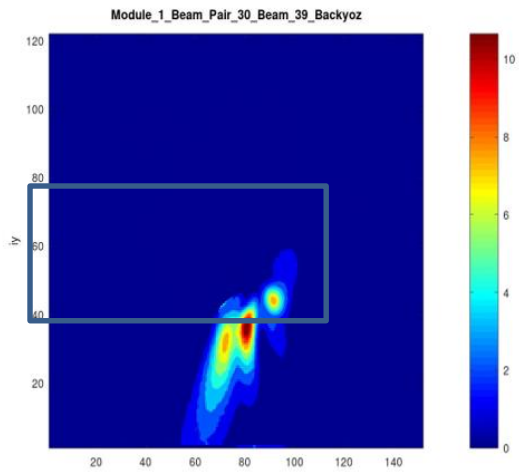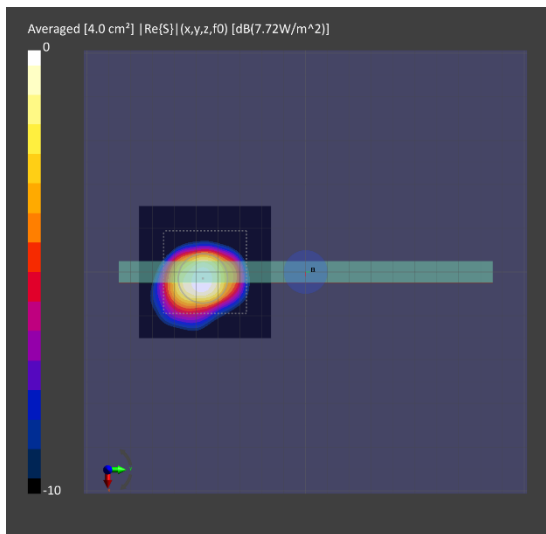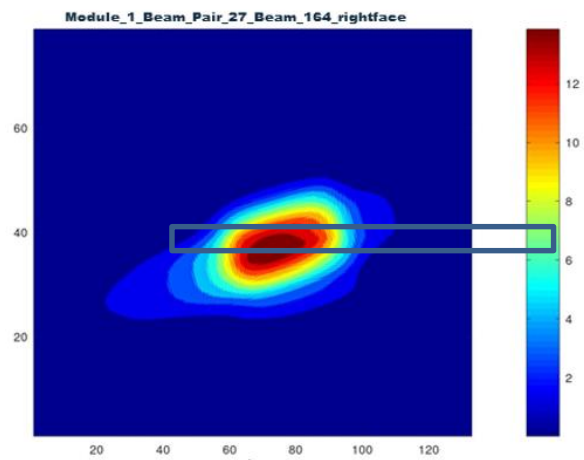

(a) Measurement   (b) Simulation

Patch antenna QTM1 AG1(H-polarization) beam ID 164, 4cm^2 Averaged power density

n260 Patch antenna QTM1 Ant_Group1(H-polarization) beam ID 164 Back-side Mid ch.
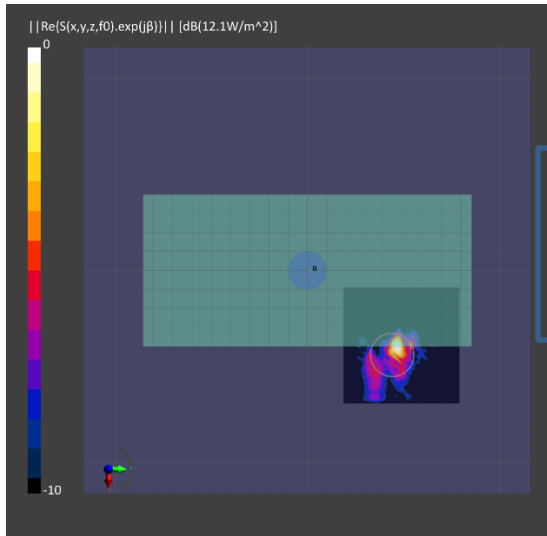
(b) Measurement
(b) Simulation
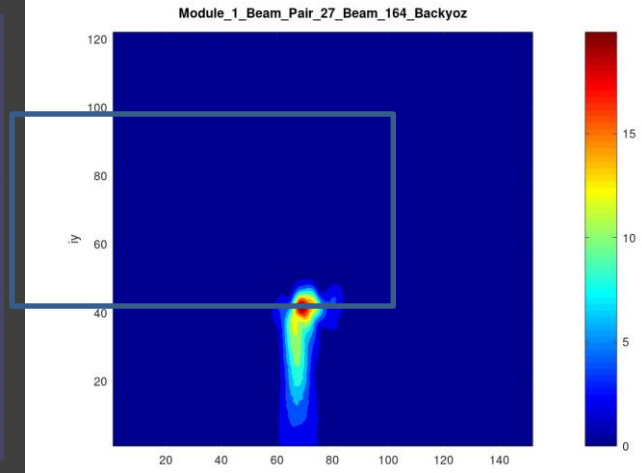
Patch antenna QTM1 AG1(H-polarization) beam ID 164, Point power density

(a) Measurement
(b) Simulation

Patch antenna QTM1 AG1(H-polarization) beam ID 164, 4cm^2 Averaged power density

n260 Patch antenna QTM2 Ant_Group0(V-polarization) beam ID 45 Left-side Mid ch.
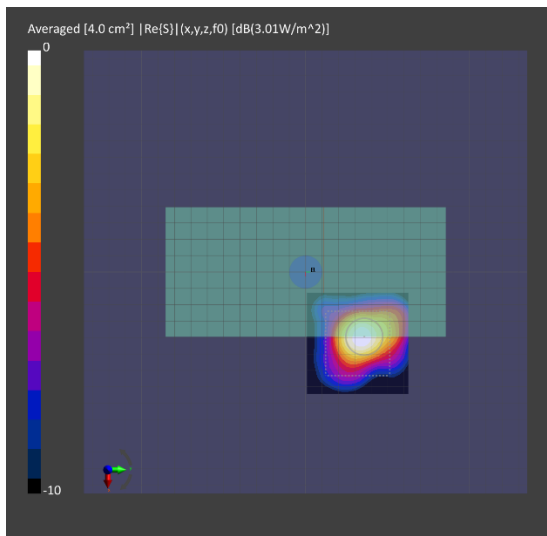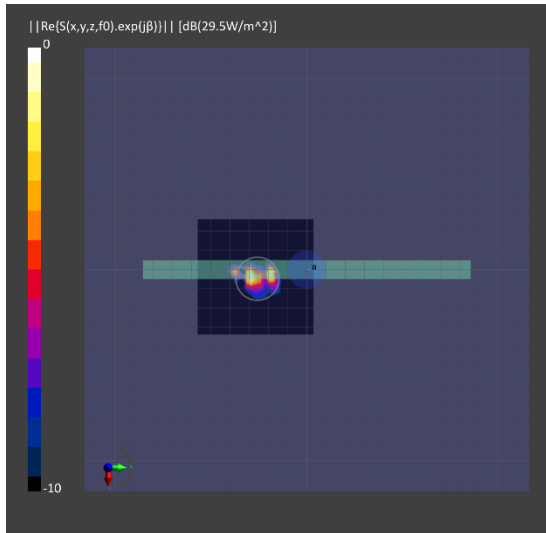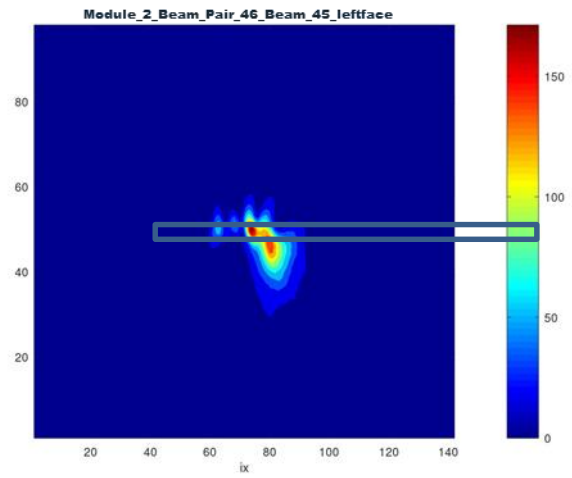

(c) Measurement   (b) Simulation

Patch antenna QTM2 AG0(V-polarization) beam ID 45, Point power density

(a) Measurement   (b) Simulation

Patch antenna QTM2 AG0(V-polarization) beam ID 45, 4cm^2 Averaged power density

n260 Patch antenna QTM2 Ant_Group0(V-polarization) beam ID 33 Back-side Mid ch.
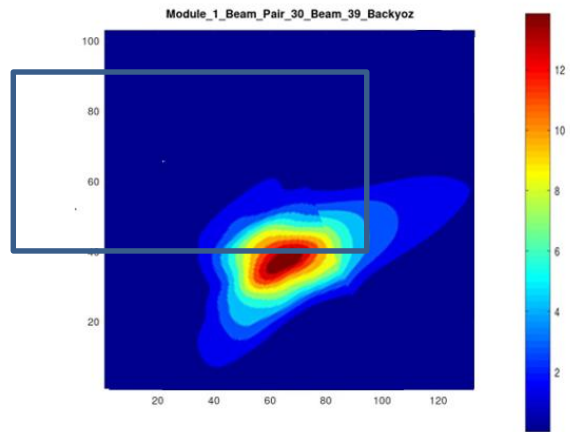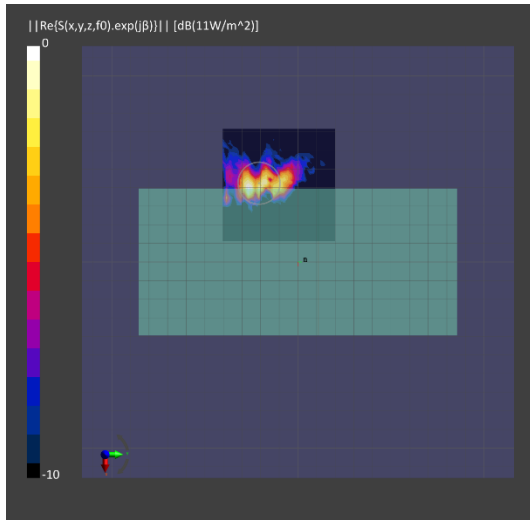

(c) Measurement
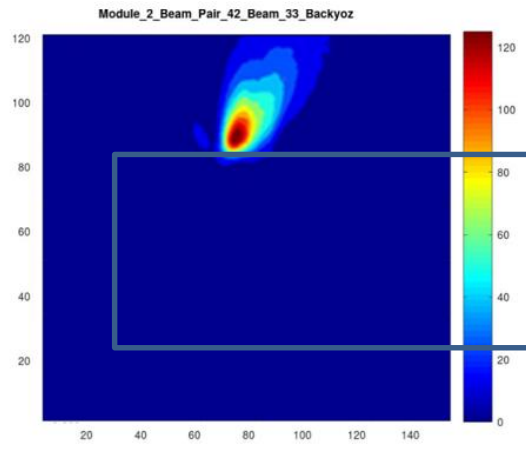
(b) Simulation

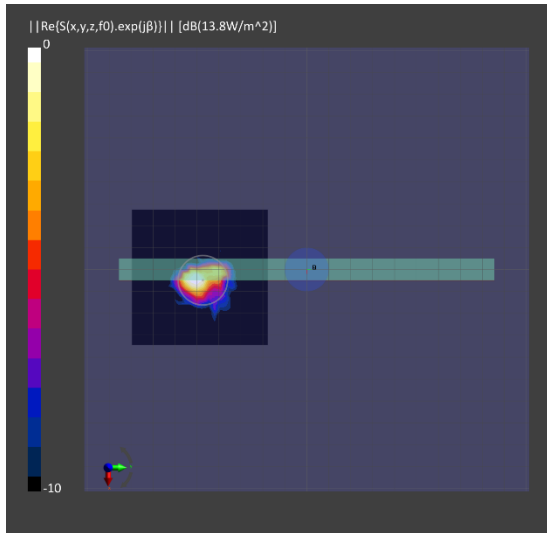Patch antenna QTM2 AG0(V-polarization) beam ID 33, Point power density
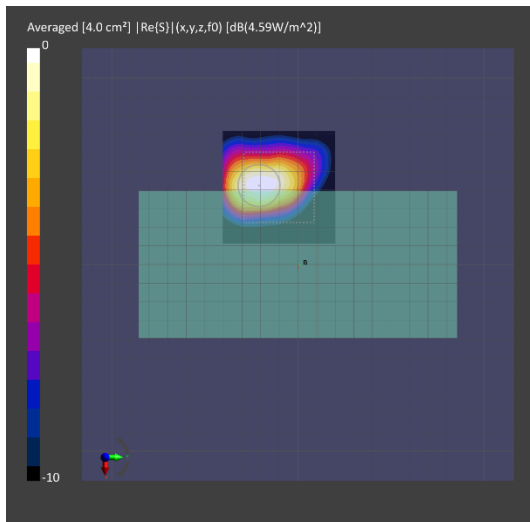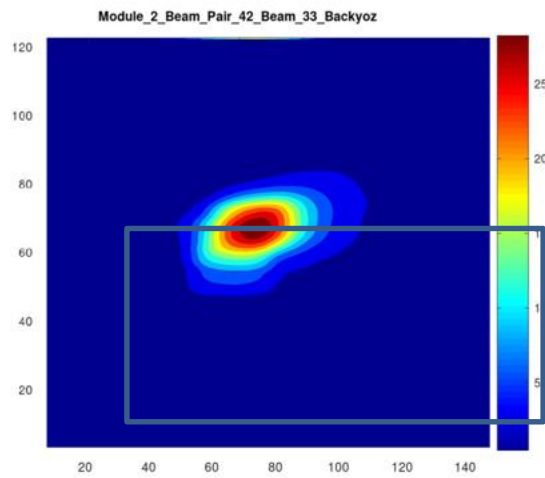
(a) Measurement

(b) Simulation

Patch antenna QTM2 AG0(V-polarization) beam ID 33, 4cm^2 Averaged power density

n260 Patch antenna QTM2 Ant_Group1(H-polarization) beam ID 174 Left-side Mid ch.
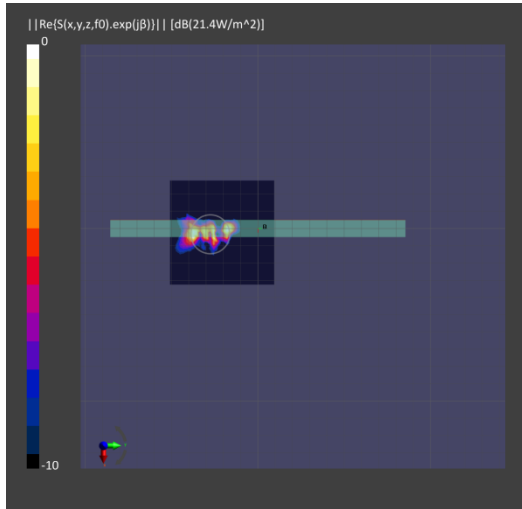
(c) Measurement   (b) Simulation
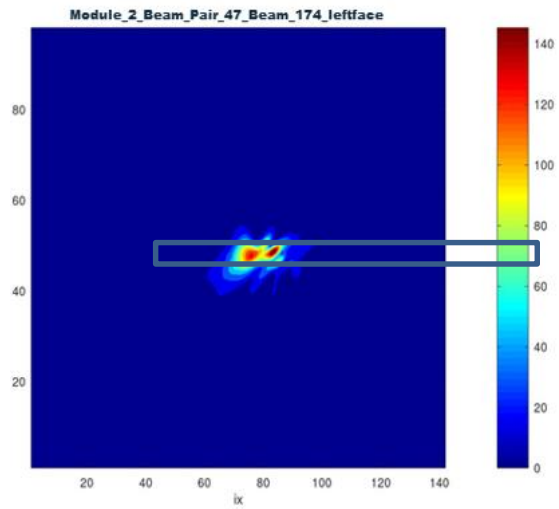
Patch antenna QTM2 AG1(H-polarization) beam ID 174, Point power density
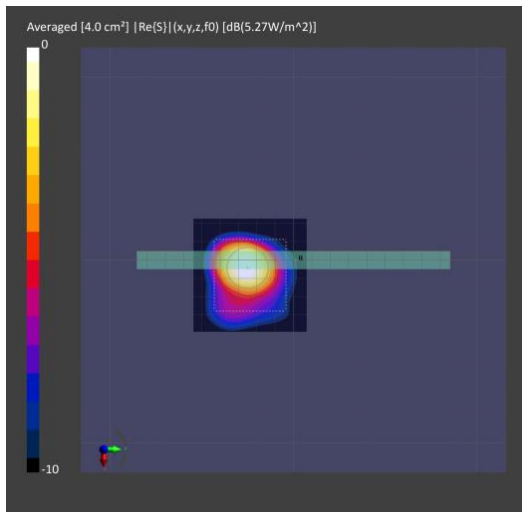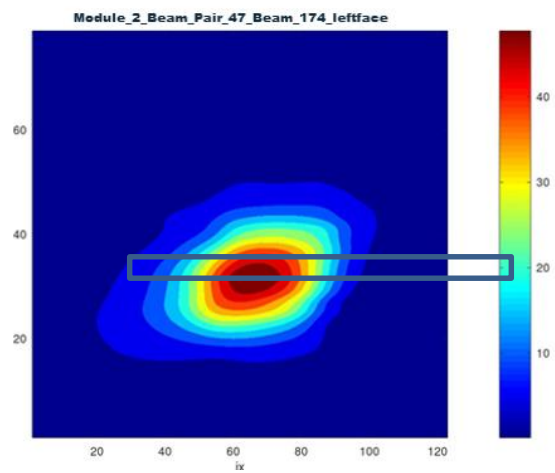
(a) Measurement   (b) Simulation

Patch antenna QTM1 AG2(H-polarization) beam ID 174, 4cm^2 Averaged power density

n260 Patch antenna QTM2 Ant_Group1(H-polarization) beam ID 160 Back-side Mid ch.
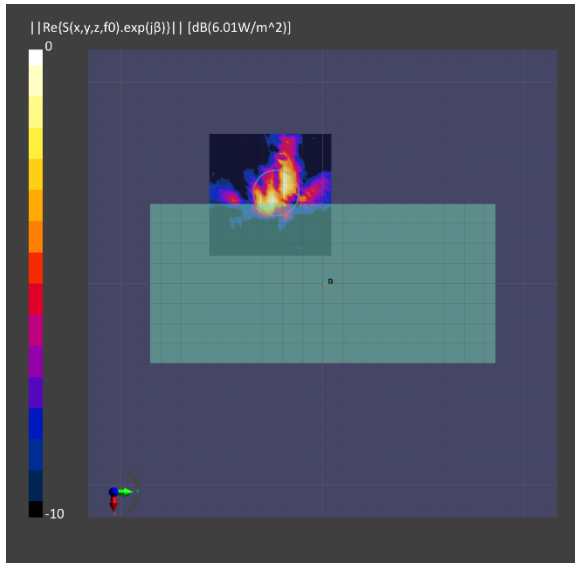
<div align="center">(c) Measurement   (b) Simulation</div>
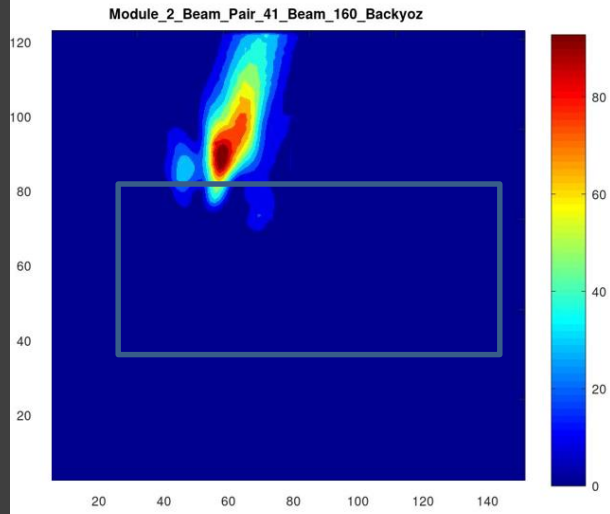
<div align="center">Patch antenna QTM2 AG1(H-polarization) beam ID 160, Point power density</div>
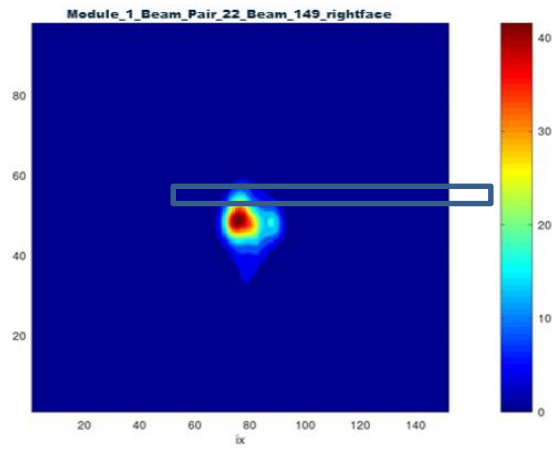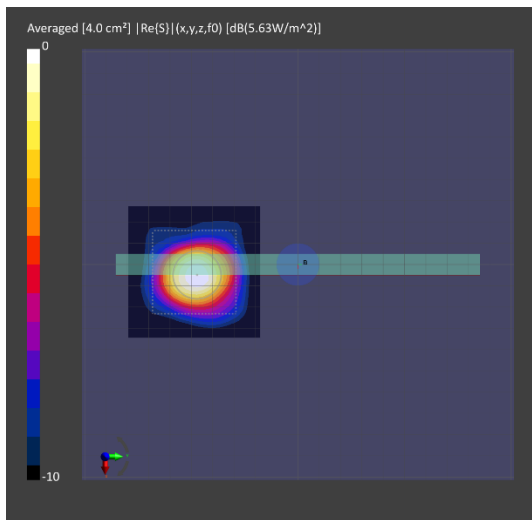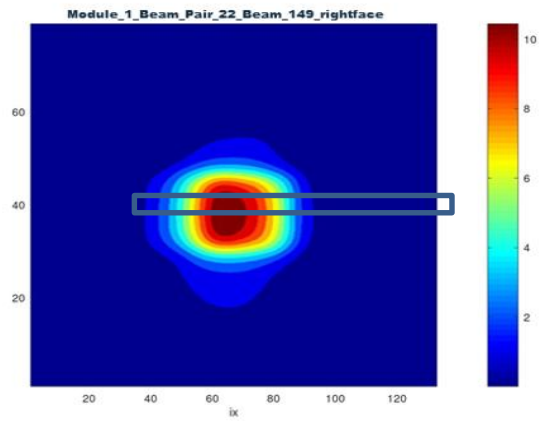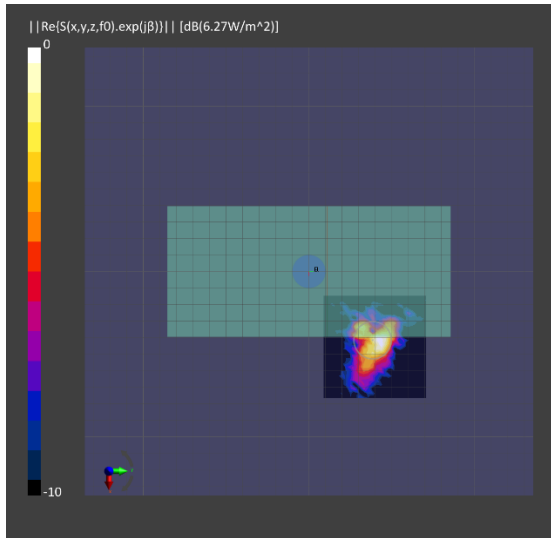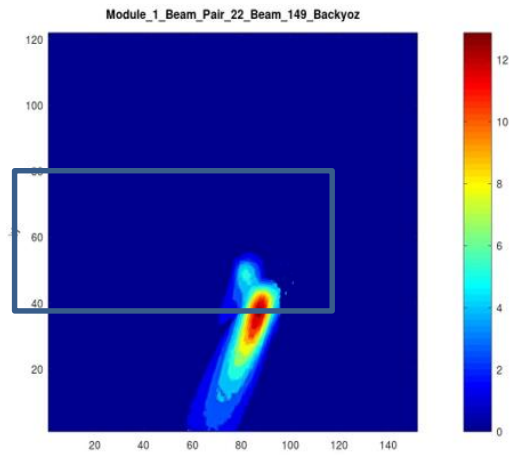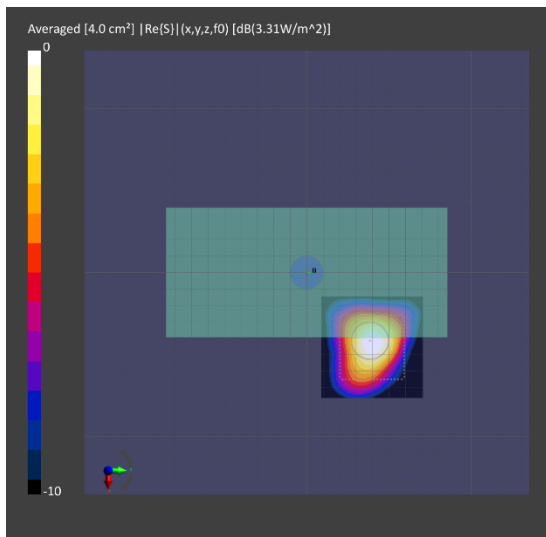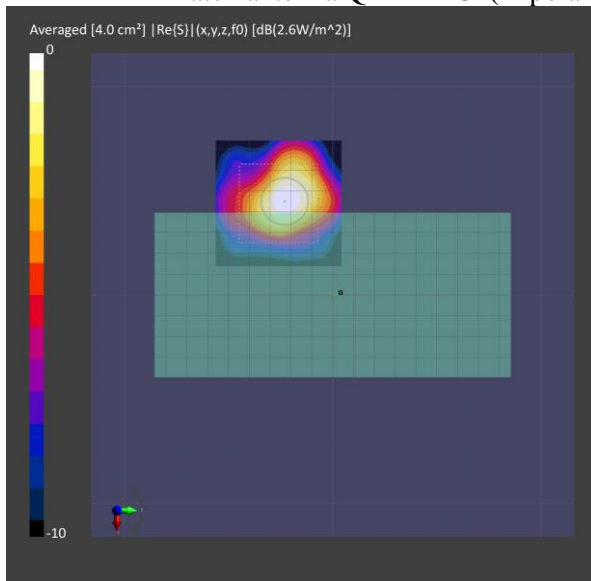

<div align="center">(a) Measurement   (b) Simulation</div>
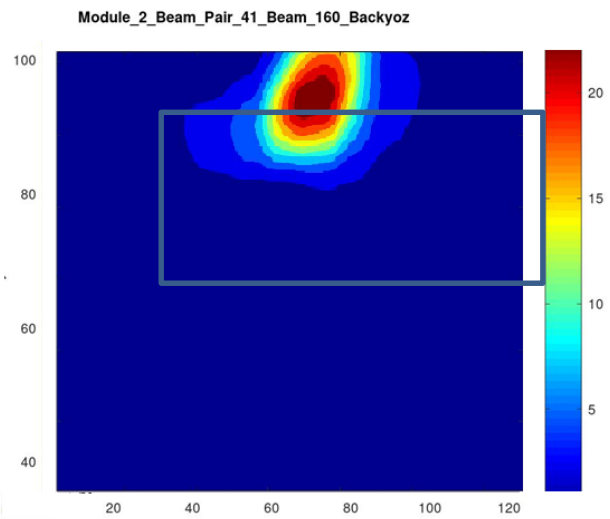
<div align="center">Patch antenna QTM2 AG1(H-polarization) beam ID 160, 4cm^2 Averaged power density</div>

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

Table2-Table7 show the PD simulation evaluation of QTM#0 patch antenna at n261/ n260 for the corresponding evaluation surfaces specified in Table 1.

Table 2. PD of QTM#0 – patch antenna -n261 Mid channel

Band	Beam_ID		Ant module	Ant Type	Num. of Feed	Front	Back	Right	Left	Top	Bottom	Ratio Front / (worst surface)
	n261 Middle ch.(27.92GHz)					4cm2 PD(W/m2) at 2mm evaluation surfaces @6dBm						Front /
						relative phase worst PD for MIMO						(worst surface)
261	2		QTM0	PATCH	1	0.12205	3.2461	0.066527	0.27368	0.43127	-	0.0376
261	3		QTM0	PATCH	2	0.14446	2.5164	0.088014	0.49693	0.66785	-	0.0574
261	9		QTM0	PATCH	2	0.36238	4.6605	0.059409	1.0176	1.5291	-	0.0778
261	10		QTM0	PATCH	2	0.26881	5.4103	0.14513	0.52887	1.2497	-	0.0497
261	11		QTM0	PATCH	2	0.27436	5.8313	0.23933	0.81609	0.92006	-	0.0470
261	17		QTM0	PATCH	2	0.24966	5.1897	0.088239	1.2003	1.4745	-	0.0481
261	18		QTM0	PATCH	4	0.30184	5.8943	0.24133	0.65076	0.79243	-	0.0512
261	26		QTM0	PATCH	4	0.73187	8.3651	0.25235	1.6828	3.1542	-	0.0875
261	27		QTM0	PATCH	4	0.65529	9.0772	0.13287	2.1555	2.8651	-	0.0722
261	28		QTM0	PATCH	4	0.69796	9.2688	0.13397	0.74126	2.7566	-	0.0753
261	29		QTM0	PATCH	4	0.45424	9.2854	0.37037	1.7152	2.0695	-	0.0489
261	30		QTM0	PATCH	4	0.73413	8.0045	0.30883	2.3562	1.3904	-	0.0917
261	40		QTM0	PATCH	4	0.68739	8.7216	0.18741	2.0233	3.4774	-	0.0788
261	41		QTM0	PATCH	4	0.63503	8.9762	0.11825	1.6572	2.5855	-	0.0707
261	42		QTM0	PATCH	4	0.70901	8.9349	0.28716	1.1874	2.5449	-	0.0794
261	43		QTM0	PATCH	1	0.48848	9.3444	0.3685	1.8698	2.104	-	0.0523
261		130	QTM0	PATCH	2	0.15427	2.0668	0.088086	0.20778	0.38628	-	0.0746
261		131	QTM0	PATCH	2	0.161	2.3238	0.069917	0.33558	0.66463	-	0.0693
261		137	QTM0	PATCH	2	0.30521	4.8994	0.14205	0.72932	1.6524	-	0.0623
261		138	QTM0	PATCH	2	0.30319	4.209	0.23276	0.54883	0.97811	-	0.0720
261		139	QTM0	PATCH	2	0.32913	4.1643	0.13871	0.58718	0.92765	-	0.0790
261		145	QTM0	PATCH	4	0.29694	4.0924	0.19383	0.44447	1.3617	-	0.0726
261		146	QTM0	PATCH	4	0.32161	4.1345	0.17604	0.61289	0.74051	-	0.0778
261		154	QTM0	PATCH	4	0.50214	8.5656	0.1356	1.0098	3.1195	-	0.0586
261		155	QTM0	PATCH	4	0.42816	8.4077	0.15749	1.4526	3.191	-	0.0509
261		156	QTM0	PATCH	4	0.76818	7.099	0.48556	2.7726	2.7235	-	0.1082
261		157	QTM0	PATCH	4	0.71504	6.5753	0.24207	2.3262	1.9142	-	0.1087
261		158	QTM0	PATCH	4	0.56918	8.6568	0.14403	1.5663	2.2631	-	0.0657
261		168	QTM0	PATCH	4	0.47779	8.6217	0.14033	1.2058	3.1489	-	0.0554
261		169	QTM0	PATCH	4	0.47118	7.8709	0.20141	1.9886	3.0161	-	0.0599
261		170	QTM0	PATCH	1	0.70965	6.2937	0.42048	2.9738	2.8651	-	0.1128
261		171	QTM0	PATCH	2	0.54426	8.0959	0.1822	1.463	1.9122	-	0.0672
261	2	130	QTM0	PATCH	2	0.20004	5.5788	0.23444	0.41734	0.94185	-	0.0359
261	3	131	QTM0	PATCH	2	0.21678	4.4802	0.11298	1.0009	1.2417	-	0.0484
261	9	137	QTM0	PATCH	2	0.87352	10.8942	0.11687	1.2521	4.1661	-	0.0802
261	10	138	QTM0	PATCH	2	0.46103	10.2719	0.52295	1.406	1.6534	-	0.0449
261	11	139	QTM0	PATCH	4	0.62595	10.617	0.36581	1.3812	1.6132	-	0.0590
261	17	145	QTM0	PATCH	4	0.65068	8.861	0.24873	1.7283	2.7905	-	0.0734
261	18	146	QTM0	PATCH	4	0.71831	9.0461	0.32224	1.5556	1.8446	-	0.0794
261	26	154	QTM0	PATCH	4	0.82728	14.7252	0.38471	2.9764	5.153	-	0.0562
261	27	155	QTM0	PATCH	4	0.64377	15.678	0.26943	3.3856	3.8615	-	0.0411
261	28	156	QTM0	PATCH	4	2.1187	14.1785	0.48228	3.0935	3.8658	-	0.1494
261	29	157	QTM0	PATCH	4	1.1171	15.5579	0.48368	3.2098	4.2526	-	0.0718
261	30	158	QTM0	PATCH	4	0.96886	16.8172	0.52575	3.3015	3.6723	-	0.0576
261	40	168	QTM0	PATCH	4	0.65689	14.5719	0.31478	3.386	4.6366	-	0.0451
261	41	169	QTM0	PATCH	4	0.62637	16.72	0.36635	2.455	3.4929		0.0375
261	42	170	QTM0	PATCH	4	1.8791	14.5069	0.51061	3.1832	4.6383		0.1295
261	43	171	QTM0	PATCH	4	1.1565	16.6347	0.57962	2.4165	3.9012		0.0695

Table 3. PD of QTM#0 – patch antenna -n261 Low channel

| n261 Low ch.(27.56GHz) | | | | | 4cm2 PD(W/m2) at 2mm evaluation surfaces @6dBm | | | | | | Ratio |
| | | | | | relative phase worst PD for MIMO | | | | | | Front / |
Band	Beam_ID		Ant module	Ant Type	Num. of Feed	Front	Back	Right	Left	Top	Bottom	(worst surface)
261	2		QTM0	PATCH	1	0.25303	3.7004	0.094651	0.44603	0.49284	-	0.0684
261	3		QTM0	PATCH	2	0.09734	3.2081	0.080936	0.94193	0.79585	-	0.0303
261	9		QTM0	PATCH	2	0.41992	5.0219	0.063027	0.89029	1.6681	-	0.0836
261	10		QTM0	PATCH	2	0.2656	5.6551	0.13766	0.62318	1.26365	-	0.0470
261	11		QTM0	PATCH	2	0.28485	6.0313	0.253691	0.67769	1.09486	-	0.0472
261	17		QTM0	PATCH	2	0.31333	5.9848	0.101909	1.17037	1.5652	-	0.0524
261	18		QTM0	PATCH	4	0.29899	5.6912	0.28112	0.71196	0.90273	-	0.0525
261	26		QTM0	PATCH	4	0.49722	8.8236	0.21257	1.8422	3.3343	-	0.0564
261	27		QTM0	PATCH	4	0.55317	10.255	0.121147	2.23022	2.9286	-	0.0539
261	28		QTM0	PATCH	4	0.60898	9.4364	0.14335	0.83236	2.452	-	0.0645
261	29		QTM0	PATCH	4	0.3016	10.8692	0.35448	2.493	2.0892	-	0.0277
261	30		QTM0	PATCH	4	0.74036	8.0955	0.32684	2.4159	1.443	-	0.0915
261	40		QTM0	PATCH	4	0.53036	9.6115	0.19862	1.9815	3.7989	-	0.0552
261	41		QTM0	PATCH	4	0.57715	9.9527	0.08992	1.72805	2.4807	-	0.0580
261	42		QTM0	PATCH	4	0.53594	9.81	0.29477	1.4473	2.3838	-	0.0546
261	43		QTM0	PATCH	1	0.36445	9.8121	0.34607	1.92623	2.3424	-	0.0371
261		130	QTM0	PATCH	2	0.11312	2.3402	0.090487	0.39783	0.50766	-	0.0483
261		131	QTM0	PATCH	2	0.13214	2.9207	0.066267	0.65648	0.60413	-	0.0452
261		137	QTM0	PATCH	2	0.41822	5.6396	0.167112	0.75421	1.7554	-	0.0742
261		138	QTM0	PATCH	2	0.32057	4.9953	0.25258	0.68108	1.12761	-	0.0642
261		139	QTM0	PATCH	2	0.37328	4.8298	0.1412	0.69151	0.87357	-	0.0773
261		145	QTM0	PATCH	4	0.37602	4.9489	0.23305	0.41311	1.5309	-	0.0760
261		146	QTM0	PATCH	4	0.33909	4.5582	0.21351	1.15219	0.81471	-	0.0744
261		154	QTM0	PATCH	4	0.45218	9.1797	0.10718	1.3817	2.9358	-	0.0493
261		155	QTM0	PATCH	4	0.51854	9.3138	0.193913	1.80481	3.2098	-	0.0557
261		156	QTM0	PATCH	4	0.8694	7.9437	0.53346	2.76199	2.9593	-	0.1094
261		157	QTM0	PATCH	4	0.75647	7.6966	0.24968	2.5139	2.4267	-	0.0983
261		158	QTM0	PATCH	4	0.43606	9.414	0.20226	2.1245	2.2934	-	0.0463
261		168	QTM0	PATCH	4	0.46188	9.4036	0.11584	1.4732	2.9892	-	0.0491
261		169	QTM0	PATCH	4	0.57554	8.7893	0.23726	2.28284	3.1312	-	0.0655
261		170	QTM0	PATCH	1	0.80991	7.1823	0.43349	2.8157	3.2694	-	0.1128
261		171	QTM0	PATCH	2	0.67831	8.96344	0.20561	1.2396	2.2578	-	0.0757
261	2	130	QTM0	PATCH	2	0.31511	6.0797	0.26451	0.67197	1.10708	-	0.0518
261	3	131	QTM0	PATCH	2	0.10184	6.0924	0.11406	1.8608	1.0047	-	0.0167
261	9	137	QTM0	PATCH	2	0.89425	11.3083	0.12784	1.2401	3.9258	-	0.0791
261	10	138	QTM0	PATCH	2	0.53641	10.573	0.53419	1.56298	1.4689	-	0.0507
261	11	139	QTM0	PATCH	4	0.49051	10.939	0.31981	1.59091	1.6033	-	0.0448
261	17	145	QTM0	PATCH	4	0.6515	9.7803	0.31813	1.63888	2.6682	-	0.0666
261	18	146	QTM0	PATCH	4	0.60471	9.9002	0.28278	1.4598	1.983	-	0.0611
261	26	154	QTM0	PATCH	4	0.28805	15.5649	0.3658	4.0928	4.6433	-	0.0185
261	27	155	QTM0	PATCH	4	0.32477	16.7943	0.28489	3.7054	3.004	-	0.0193
261	28	156	QTM0	PATCH	4	1.83134	14.8945	0.48457	2.9567	3.1535	-	0.1230
261	29	157	QTM0	PATCH	4	0.875	17.5018	0.53215	3.5316	4.3939	-	0.0500
261	30	158	QTM0	PATCH	4	0.88956	17.9005	0.59047	3.7356	3.7421	-	0.0497
261	40	168	QTM0	PATCH	4	0.21589	15.3583	0.22707	3.7247	4.1532	-	0.0141
261	41	169	QTM0	PATCH	4	0.26697	17.6688	0.43329	2.7728	2.5373		0.0151
261	42	170	QTM0	PATCH	4	1.713	15.9794	0.59179	3.0955	4.7947		0.1072
261	43	171	QTM0	PATCH	4	0.9251	17.9799	0.69196	2.3411	4.1026		0.0515

Table 4. PD of QTM#0 – patch antenna -n261 High channel

| n261 High ch.(28.29GHz) | | | | | 4cm2 PD(W/m2) at 2mm evaluation surfaces @6dBm | | | | | | Ratio |
| | | | | | relative phase worst PD for MIMO | | | | | | Front / |
Band	Beam_ID		Ant module	Ant Type	Num. of Feed	Front	Back	Right	Left	Top	Bottom	(worst surface)
261	2		QTM0	PATCH	1	0.12159	3.0816	0.069043	0.25553	0.48248	-	0.0395
261	3		QTM0	PATCH	2	0.15272	2.3594	0.091947	0.11003	0.78895	-	0.0647
261	9		QTM0	PATCH	2	0.38946	4.2488	0.072262	0.9703	1.5051	-	0.0917
261	10		QTM0	PATCH	2	0.25736	5.1357	0.11292	0.4582	1.34897	-	0.0501
261	11		QTM0	PATCH	2	0.27079	5.4634	0.249208	0.77099	0.88376	-	0.0496
261	17		QTM0	PATCH	2	0.2663	4.6955	0.094679	1.14793	1.432	-	0.0567
261	18		QTM0	PATCH	4	0.21602	5.5465	0.23493	0.24406	0.69993	-	0.0389
261	26		QTM0	PATCH	4	0.73943	7.8446	0.25451	1.7891	3.1681	-	0.0943
261	27		QTM0	PATCH	4	0.6111	7.9164	0.17835	2.17547	2.444	-	0.0772
261	28		QTM0	PATCH	4	0.63377	8.953	0.12506	0.69586	2.8205	-	0.0708
261	29		QTM0	PATCH	4	0.52296	8.6795	0.35095	1.2569	2.3525	-	0.0603
261	30		QTM0	PATCH	4	0.6578	7.432	0.31798	2.1364	1.1603	-	0.0885
261	40		QTM0	PATCH	4	0.78413	8.1575	0.20112	1.8825	3.3783	-	0.0961
261	41		QTM0	PATCH	4	0.60251	7.8345	0.16392	1.67975	2.2181	-	0.0769
261	42		QTM0	PATCH	4	0.68154	8.7405	0.24621	1.2827	2.6958	-	0.0780
261	43		QTM0	PATCH	1	0.46083	9.732	0.33594	1.91309	2.4253	-	0.0474
261		130	QTM0	PATCH	2	0.18154	1.7394	0.081079	0.12489	0.38841	-	0.1044
261		131	QTM0	PATCH	2	0.14154	2.2438	0.076111	0.07098	0.75593	-	0.0631
261		137	QTM0	PATCH	2	0.27651	4.5697	0.131119	0.67921	1.5144	-	0.0605
261		138	QTM0	PATCH	2	0.38415	3.9778	0.20717	0.51669	1.02501	-	0.0966
261		139	QTM0	PATCH	2	0.28316	3.9076	0.12309	0.53527	0.84537	-	0.0725
261		145	QTM0	PATCH	4	0.30896	3.7836	0.171672	0.41254	1.2439	-	0.0817
261		146	QTM0	PATCH	4	0.48277	3.5747	0.16582	0.15009	0.39761	-	0.1351
261		154	QTM0	PATCH	4	0.42002	8.1629	0.16167	0.7247	3.1881	-	0.0515
261		155	QTM0	PATCH	4	0.51923	7.5074	0.144872	1.42314	2.9286	-	0.0692
261		156	QTM0	PATCH	4	0.84208	6.396	0.46047	2.80125	2.6481	-	0.1317
261		157	QTM0	PATCH	4	0.7598	6.1426	0.23735	2.1095	1.8362	-	0.1237
261		158	QTM0	PATCH	4	0.55841	8.8573	0.11625	1.1085	1.9439	-	0.0630
261		168	QTM0	PATCH	4	0.5008	8.112	0.16011	0.937	3.1982	-	0.0617
261		169	QTM0	PATCH	4	0.56058	6.899	0.18667	1.97419	2.7844	-	0.0813
261		170	QTM0	PATCH	1	0.74911	5.8151	0.42742	2.9389	2.8111	-	0.1288
261		171	QTM0	PATCH	2	0.65671	8.87243	0.28454	1.1389	2.2136	-	0.0740
261	2	130	QTM0	PATCH	2	0.18903	5.2134	0.20606	0.34369	1.06498	-	0.0363
261	3	131	QTM0	PATCH	2	0.21588	4.2883	0.16157	0.3323	1.852	-	0.0503
261	9	137	QTM0	PATCH	2	0.96508	10.5901	0.1322	1.1528	4.1516	-	0.0911
261	10	138	QTM0	PATCH	2	0.52461	9.9855	0.52119	1.39149	1.9879	-	0.0525
261	11	139	QTM0	PATCH	4	0.67614	10.2218	0.39267	1.33232	1.5327	-	0.0661
261	17	145	QTM0	PATCH	4	0.79314	8.5884	0.22772	1.62758	2.8455	-	0.0924
261	18	146	QTM0	PATCH	4	0.86501	8.7635	0.36519	1.2085	1.6045	-	0.0987
261	26	154	QTM0	PATCH	4	0.77668	14.3017	0.47831	2.6183	5.9802	-	0.0543
261	27	155	QTM0	PATCH	4	1.07527	13.9581	0.33759	3.4124	2.9625	-	0.0770
261	28	156	QTM0	PATCH	4	2.1929	13.5472	0.44634	2.8387	4.183	-	0.1619
261	29	157	QTM0	PATCH	4	1.2062	15.1695	0.45757	2.7034	4.899	-	0.0795
261	30	158	QTM0	PATCH	4	1.12936	16.417	0.59763	3.1288	3.7725	-	0.0688
261	40	168	QTM0	PATCH	4	0.81259	13.7734	0.31478	3.0762	4.8276	-	0.0590
261	41	169	QTM0	PATCH	4	1.06807	15.0993	0.4435	2.412	2.8637		0.0707
261	42	170	QTM0	PATCH	4	1.8743	14.0543	0.4313	3.1131	4.7276		0.1334
261	43	171	QTM0	PATCH	4	0.8541	17.847	0.65616	2.35308	4.2135		0.0479

Table 5. PD of QTM#0 – patch antenna -n260 Mid channel

					4cm2 PD(W/m2) at 2mm evaluation surfaces @6dBm						Ratio
n260 middle ch.(38.5 GHz)					relative phase worst PD for MIMO						Front /
Band	Beam_ID		Ant module	Ant Type	Num. of Feed	Front	Back	Right	Left	Top	Bottom	(worst surface)
260	2		QTM0	PATCH	1	0.9096	2.6014	0.00125	0.83215	0.85333	-	0.3497
260	3		QTM0	PATCH	2	1.1714	4.2337	0.01524	1.017	0.81307	-	0.2767
260	9		QTM0	PATCH	2	1.3103	6.8027	0.02457	1.5348	1.6245	-	0.1926
260	10		QTM0	PATCH	2	1.5559	6.9519	0.12487	1.9551	1.2806	-	0.2238
260	11		QTM0	PATCH	2	2.0341	6.3306	0.6894	1.8277	1.6036	-	0.3213
260	17		QTM0	PATCH	2	1.2089	7.834	0.6594	1.3055	2.0699	-	0.1543
260	18		QTM0	PATCH	4	2.5413	6.9135	0.1254	2.3917	1.7447	-	0.3676
260	26		QTM0	PATCH	4	3.6423	11.0787	0.2548	3.311	2.5712	-	0.3288
260	27		QTM0	PATCH	4	1.8923	12.3304	0.0215	1.8292	2.8472	-	0.1535
260	28		QTM0	PATCH	4	4.2444	12.0075	0.3654	4.4533	2.5022	-	0.3535
260	29		QTM0	PATCH	4	4.7712	11.2633	2.1205	4.4367	2.8296	-	0.4236
260	30		QTM0	PATCH	4	3.7709	11.0669	1.1025	3.3959	2.6911	-	0.3407
260	40		QTM0	PATCH	4	1.9154	10.9953	0.8524	2.1626	2.9304	-	0.1742
260	41		QTM0	PATCH	4	2.2506	12.9812	1.1202	2.4507	2.6249	-	0.1734
260	42		QTM0	PATCH	4	5.1854	12.6505	1.2542	4.7974	2.6524	-	0.4099
260	43		QTM0	PATCH	1	4.6191	11.045	2.0125	4.1681	2.7759	-	0.4182
260		130	QTM0	PATCH	2	0.33637	2.5275	0.0582	0.43037	0.68123	-	0.1331
260		131	QTM0	PATCH	2	0.73602	3.465	0.0254	0.90783	0.79317	-	0.2124
260		137	QTM0	PATCH	2	0.69064	5.6919	0.2458	1.0486	1.691	-	0.1213
260		138	QTM0	PATCH	2	1.436	5.958	0.965	1.5288	1.562	-	0.2410
260		139	QTM0	PATCH	2	2.0099	6.7792	1.258	2.5235	1.3517	-	0.2965
260		145	QTM0	PATCH	4	0.94861	6.1132	0.8524	1.1166	1.9034	-	0.1552
260		146	QTM0	PATCH	4	1.3523	5.7581	0.5684	1.5555	1.0816	-	0.2349
260		154	QTM0	PATCH	4	2.8612	12.1885	1.3524	3.7964	2.6968	-	0.2347
260		155	QTM0	PATCH	4	2.744	10.6902	1.9520	3.7538	3.6948	-	0.2567
260		156	QTM0	PATCH	4	2.2506	11.6582	1.0254	5.5716	3.4748	-	0.1930
260		157	QTM0	PATCH	4	3.1205	9.7098	0.5824	3.8525	1.9702	-	0.3214
260		158	QTM0	PATCH	4	2.6604	10.2073	1.5628	4.0779	2.4397	-	0.2606
260		168	QTM0	PATCH	4	3.2477	10.4193	2.8542	4.0002	3.2048	-	0.3117
260		169	QTM0	PATCH	4	2.2005	10.6614	1.8652	3.2527	3.6954	-	0.2064
260		170	QTM0	PATCH	1	2.7015	11.7899	2.1258	5.0417	2.9543	-	0.2291
260		171	QTM0	PATCH	2	3.2263	11.2934	1.1526	3.8181	2.2281	-	0.2857
260	2	130	QTM0	PATCH	2	1.6161	5.4548	0.5245	1.6987	1.3808	-	0.2963
260	3	131	QTM0	PATCH	2	2.9406	6.5773	0.628	2.6792	1.0824	-	0.4471
260	9	137	QTM0	PATCH	2	2.2647	12.5058	1.1254	2.3462	2.6561	-	0.1811
260	10	138	QTM0	PATCH	2	4.0981	11.6683	2.1205	4.2023	2.8864	-	0.3512
260	11	139	QTM0	PATCH	4	5.7044	12.5621	2.1025	5.8305	2.7721	-	0.4541
260	17	145	QTM0	PATCH	4	2.1106	14.827	1.2578	2.0375	5.084	-	0.1423
260	18	146	QTM0	PATCH	4	4.839	14.5862	2.0125	5.1567	2.4891	-	0.3318
260	26	154	QTM0	PATCH	4	6.5954	28.618	4.9652	8.9443	4.9901	-	0.2305
260	27	155	QTM0	PATCH	4	5.7795	23.106	3.1025	6.6262	4.9626	-	0.2501
260	28	156	QTM0	PATCH	4	4.3562	21.2052	2.9687	8.947	6.7714	-	0.2054
260	29	157	QTM0	PATCH	4	8.5689	24.5511	2.9645	9.5221	3.8189	-	0.3490
260	30	158	QTM0	PATCH	4	6.3243	22.1744	3.5245	8.7319	4.3478	-	0.2852
260	40	168	QTM0	PATCH	4	5.2429	21.3595	3.7501	7.9155	4.3519	-	0.2455
260	41	169	QTM0	PATCH	4	5.7627	24.2907	3.9658	7.4539	4.6485	-	0.2372
260	42	170	QTM0	PATCH	4	4.8069	20.9322	4.4512	6.4529	5.5461	-	0.2296
260	43	171	QTM0	PATCH	4	9.1403	27.7855	2.1203	10.849	4.101	-	0.3290

Table 6. PD of QTM#0 – patch antenna -n260 Low channel

Band	Beam_ID		Ant module	Ant Type	Num. of Feed	4cm2 PD(W/m2) at 2mm evaluation surfaces @6dBm						Ratio Front /(worst surface)
n260 Low ch.(37.05GHz)						relative phase worst PD for MIMO						
						Front	Back	Right	Left	Top	Bottom	
260	2		QTM0	PATCH	1	0.83503	2.3772	0.09117	0.33351	0.23956	-	0.3513
260	3		QTM0	PATCH	2	2.8448	7.042	0.51534	3.1449	1.13457	-	0.4040
260	9		QTM0	PATCH	2	2.7086	7.6842	0.49667	1.9331	1.9995	-	0.3525
260	10		QTM0	PATCH	2	3.3619	9.9149	0.82447	4.3274	1.6292	-	0.3391
260	11		QTM0	PATCH	2	2.00462	6.6125	0.6624	0.8529	0.5425	-	0.3032
260	17		QTM0	PATCH	2	3.2384	9.8911	0.04878	1.8084	1.0047	-	0.3274
260	18		QTM0	PATCH	4	3.6675	8.4402	3.12343	4.31517	2.28433	-	0.4345
260	26		QTM0	PATCH	4	6.1319	14.4881	3.91875	6.80047	.42831	-	0.4232
260	27		QTM0	PATCH	4	0.9216	12.4191	0.48952	6.4439	2.1602	-	0.0742
260	28		QTM0	PATCH	4	5.3854	13.9143	0.53658	6.7818	1.3703	-	0.3870
260	29		QTM0	PATCH	4	4.2438	10.7562	2.20729	2.348	2.7056	-	0.3945
260	30		QTM0	PATCH	4	6.1063	14.7238	3.94588	4.8994	2.375	-	0.4147
260	40		QTM0	PATCH	4	4.2475	12.4718	2.853	4.4596	4.4777	-	0.3406
260	41		QTM0	PATCH	4	1.0468	13.6539	0.27113	5.0086	2.9254	-	0.0767
260	42		QTM0	PATCH	4	6.2799	14.7369	0.91964	7.4356	1.7355	-	0.4261
260	43		QTM0	PATCH	1	5.0545	12.1573	1.55889	5.2578	2.2086	-	0.4158
260		130	QTM0	PATCH	2	0.58055	2.8363	0.327	2.13983	0.81211	-	0.2047
260		131	QTM0	PATCH	2	0.82722	3.9691	0.0695	1.76657	1.41733	-	0.2084
260		137	QTM0	PATCH	2	0.87496	6.0342	0.6658	1.5005	1.653	-	0.1450
260		138	QTM0	PATCH	2	1.3769	6.6986	1.14404	2.1712	1.1013	-	0.2056
260		139	QTM0	PATCH	2	2.4946	7.1092	1.5384	2.3661	0.5746	-	0.3509
260		145	QTM0	PATCH	4	0.90814	6.7342	0.88237	0.9738	2.426	-	0.1349
260		146	QTM0	PATCH	4	2.8236	7.5609	0.47074	3.7135	0.4012	-	0.3734
260		154	QTM0	PATCH	4	2.786	10.4452	0.66991	3.2862	1.5558	-	0.2667
260		155	QTM0	PATCH	4	3.4925	12.8285	3.38025	3.1637	5.3678	-	0.2722
260		156	QTM0	PATCH	4	2.4669	12.9543	2.2015	7.4002	6.3162	-	0.1904
260		157	QTM0	PATCH	4	4.1689	9.9957	3.2957	7.6975	4.9779	-	0.4171
260		158	QTM0	PATCH	4	5.3674	13.4833	2.2318	8.7174	3.1556	-	0.3981
260		168	QTM0	PATCH	4	4.8178	9.0604	3.82048	6.6611	4.2331	-	0.5317
260		169	QTM0	PATCH	4	2.264	12.9565	3.1309	4.6593	6.448	-	0.1747
260		170	QTM0	PATCH	1	2.8668	11.7465	2.30631	5.8895	6.0608	-	0.2441
260		171	QTM0	PATCH	2	3.43614	11.50727	1.27213	3.5198	4.0115	-	0.2986
260	2	130	QTM0	PATCH	2	1.6294	5.0325	0.60148	2.7526	1.6573	-	0.3238
260	3	131	QTM0	PATCH	2	4.9816	10.8507	0.449802	7.9396	1.0549	-	0.4591
260	9	137	QTM0	PATCH	2	4.2528	12.3247	2.2837	4.6897	3.5595	-	0.3451
260	10	138	QTM0	PATCH	2	5.4154	15.7237	3.3766	10.4844	3.1941	-	0.3444
260	11	139	QTM0	PATCH	4	5.4136	12.9795	1.77952	2.9735	3.4312	-	0.4171
260	17	145	QTM0	PATCH	4	4.5796	17.0777	1.7577	3.819	5.7369	-	0.2682
260	18	146	QTM0	PATCH	4	8.3428	17.9014	2.90109	7.8669	3.3607	-	0.4660
260	26	154	QTM0	PATCH	4	8.1987	29.6866	6.41142	10.2672	6.1724	-	0.2762
260	27	155	QTM0	PATCH	4	7.2281	24.7152	4.49129	5.6722	6.6655	-	0.2925
260	28	156	QTM0	PATCH	4	5.6731	25.5289	5.40934	16.7419	8.5379	-	0.2222
260	29	157	QTM0	PATCH	4	6.9309	25.1514	1.96232	6.8387	4.3856	-	0.2756
260	30	158	QTM0	PATCH	4	10.5062	27.093	5.0872	12.5182	6.176	-	0.3878
260	40	168	QTM0	PATCH	4	8.2572	20.5781	7.12257	13.3867	4.2857	-	0.4013
260	41	169	QTM0	PATCH	4	6.544	28.5346	4.61585	6.4153	6.7048	-	0.2293
260	42	170	QTM0	PATCH	4	0.5019	21.252	7.05123	8.4353	9.5155	-	0.0236
260	43	171	QTM0	PATCH	4	8.9089	29.1307	2.23264	10.7736	4.3024	-	0.3058

Table 7. PD of QTM#0 – patch antenna -n260 High channel

Band	Beam_ID		Ant module	Ant Type	Num. of Feed	4cm2 PD(W/m2) at 2mm evaluation surfaces @6dBm						Ratio
						relative phase worst PD for MIMO						Front /
						Front	Back	Right	Left	Top	Bottom	(worst surface)
260	2		QTM0	PATCH	1	0.99902	1.2949	0.243139	0.20983	0.52787	-	0.2326
260	3		QTM0	PATCH	2	0.5574	1.6941	0.13694	1.1218	0.69437	-	0.1187
260	9		QTM0	PATCH	2	0.91148	4.2734	0.37513	1.01246	1.6674	-	0.2133
260	10		QTM0	PATCH	2	0.977	4.5406	0.22694	2.3806	1.2903	-	0.2152
260	11		QTM0	PATCH	2	2.49469	4.4638	1.06237	0.5428	0.3102	-	0.5589
260	17		QTM0	PATCH	2	0.7481	5.9307	0.10891	0.7201	0.9253	-	0.1261
260	18		QTM0	PATCH	4	0.7543	6.758	2.12494	2.84387	3.10643	-	0.1116
260	26		QTM0	PATCH	4	3.1114	7.1526	1.38579	4.99047	4.96871	-	0.4350
260	27		QTM0	PATCH	4	1.2796	6.8053	0.49728	1.3414	3.0896	-	0.1880
260	28		QTM0	PATCH	4	2.3486	6.4266	0.15784	4.2434	1.0481	-	0.3654
260	29		QTM0	PATCH	4	3.8773	6.489	0.32827	2.0899	1.1986	-	0.5975
260	30		QTM0	PATCH	4	2.7747	8.1129	1.29133	2.614	2.9787	-	0.3420
260	40		QTM0	PATCH	4	2.1834	6.6299	0.85242	0.4647	3.2691	-	0.3293
260	41		QTM0	PATCH	4	1.2709	7.9237	0.81635	1.2426	2.0214	-	0.1604
260	42		QTM0	PATCH	4	3.5133	7.4297	0.5317	4.4208	1.375	-	0.4729
260	43		QTM0	PATCH	1	3.24019	6.6991	0.898	4.5133	1.5414	-	0.4837
260		130	QTM0	PATCH	2	0.21419	2.075	0.1466	1.21153	1.24324	-	0.1032
260		131	QTM0	PATCH	2	0.16897	2.206	0.653156	1.08737	1.71673	-	0.0766
260		137	QTM0	PATCH	2	0.79327	2.9702	0.220826	0.79084	0.146	-	0.2671
260		138	QTM0	PATCH	2	1.03059	4.307	0.455749	0.0319	0.3979	-	0.2393
260		139	QTM0	PATCH	2	1.65991	3.5255	1.205552	1.8125	1.03025	-	0.4708
260		145	QTM0	PATCH	4	0.86778	3.9832	0.41781	1.219	1.1517	-	0.2179
260		146	QTM0	PATCH	4	0.1509	2.8292	0.6887	1.2512	0.8426	-	0.0312
260		154	QTM0	PATCH	4	1.7248	4.8857	0.07783	2.8434	1.0105	-	0.3530
260		155	QTM0	PATCH	4	2.2027	6.0635	1.45195	1.3833	3.0532	-	0.3633
260		156	QTM0	PATCH	4	3.023	7.782	2.2356	4.8683	4.1613	-	0.3885
260		157	QTM0	PATCH	4	2.9414	7.3858	1.4616	3.7688	3.3369	-	0.3983
260		158	QTM0	PATCH	4	1.7233	7.3525	1.9561	5.5545	3.3101	-	0.2344
260		168	QTM0	PATCH	4	2.5525	7.6288	2.85967	4.5679	3.5416	-	0.3346
260		169	QTM0	PATCH	4	2.5723	6.4973	2.526	4.8838	4.267	-	0.3959
260		170	QTM0	PATCH	1	3.475	9.2343	2.6187	7.3453	4.044	-	0.3763
260		171	QTM0	PATCH	2	3.7935	9.41817	1.5513	5.6004	2.9013	-	0.4028
260	2	130	QTM0	PATCH	2	1.27708	3.2346	0.3044	0.5365	1.01052	-	0.3948
260	3	131	QTM0	PATCH	2	0.2779	4.8244	0.1724	0.8581	0.3742	-	0.0576
260	9	137	QTM0	PATCH	2	0.8479	6.6541	0.2944	1.9815	2.1069	-	0.1274
260	10	138	QTM0	PATCH	2	1.3326	8.9621	2.9704	5.7832	2.6195	-	0.1487
260	11	139	QTM0	PATCH	4	1.5659	7.8661	1.1485	3.1618	1.7106	-	0.1991
260	17	145	QTM0	PATCH	4	0.2948	11.7673	0.5805	3.6998	3.0753	-	0.0251
260	18	146	QTM0	PATCH	4	1.7712	7.745	0.87596	3.4247	0.8144	-	0.2287
260	26	154	QTM0	PATCH	4	1.7187	19.4129	3.25662	3.9547	2.3822	-	0.0885
260	27	155	QTM0	PATCH	4	3.7635	14.3399	1.22393	4.6709	3.3582	-	0.2624
260	28	156	QTM0	PATCH	4	1.4116	9.8482	3.26892	3.141	3.0846	-	0.1433
260	29	157	QTM0	PATCH	4	8.7877	12.505	2.1208	3.9882	1.6276	-	0.7027
260	30	158	QTM0	PATCH	4	4.4523	15.9651	1.8508	3.5226	3.3787	-	0.2789
260	40	168	QTM0	PATCH	4	3.671	10.4186	3.76327	7.4345	1.7158	-	0.3524
260	41	169	QTM0	PATCH	4	3.6757	17.8103	2.13135	6.0103	3.0988	-	0.2064
260	42	170	QTM0	PATCH	4	1.1017	17.0183	4.2819	10.7771	5.7347	-	0.0647
260	43	171	QTM0	PATCH	4	6.2669	24.5389	1.8858	14.0162	4.33559	-	0.2554

3.1.2 QTM#1 – Patch Antenna

Table 8 - Table 13 show the PD simulation evaluation of QTM#1 patch antenna at 28GHz / 39GHz for the corresponding evaluation planes specified in Table 1.

Table 8. PD of QTM#1 – patch antenna -n261 Mid channel

Band	Beam_ID		Ant module	Ant Type	Num. of Feed	Front	Back	Right	Left	Top	Bottom	Ratio Front / (worst surface)
n261 Middle ch.(27.92GHz)						4cm2 PD(W/m2) at 2mm evaluation surfaces @6dBm						Ratio
						relative phase worst PD for MIMO						Front / (worst surface)
261	0		QTM1	PATCH	1	1.0101	1.1121	2.946	0.020785	0.090007	-	0.3429
261	1		QTM1	PATCH	2	0.81551	1.7233	3.5919	0.0047519	0.070183	-	0.2270
261	6		QTM1	PATCH	2	1.2339	3.6485	6.3693	0.013943	0.20648	-	0.1937
261	7		QTM1	PATCH	2	2.06	2.2479	5.4065	0.035377	0.086638	-	0.3810
261	8		QTM1	PATCH	2	1.1623	1.7366	4.5939	0.035666	0.28723	-	0.2530
261	15		QTM1	PATCH	2	2.3811	2.3278	5.4514	0.037571	0.021642	-	0.4368
261	16		QTM1	PATCH	4	1.5054	1.8727	4.9221	0.042539	0.21847	-	0.3058
261	21		QTM1	PATCH	4	1.7989	4.9137	8.6491	0.057346	0.72393	-	0.2080
261	22		QTM1	PATCH	4	2.5776	4.7993	9.5399	0.071951	0.2698	-	0.2702
261	23		QTM1	PATCH	4	3.4027	5.1173	11.392	0.040299	0.12406	-	0.2987
261	24		QTM1	PATCH	4	3.5615	5.2157	10.4434	0.061978	0.32576	-	0.3410
261	25		QTM1	PATCH	4	3.0075	4.9635	9.2264	0.039826	0.23733	-	0.3260
261	36		QTM1	PATCH	4	2.0858	4.8329	9.0466	0.069792	0.52244	-	0.2306
261	37		QTM1	PATCH	4	3.2334	4.9377	10.966	0.048611	0.12042	-	0.2949
261	38		QTM1	PATCH	4	3.6104	5.1328	11.2365	0.054848	0.20053	-	0.3213
261	39		QTM1	PATCH	1	3.424	5.4155	9.9781	0.056372	0.1904	-	0.3432
261		128	QTM1	PATCH	2	0.81624	1.5848	3.6061	0.0054042	0.090919	-	0.2263
261		129	QTM1	PATCH	2	0.88006	0.96995	2.5792	0.017988	0.019246	-	0.3412
261		134	QTM1	PATCH	2	2.0253	3.7478	7.2671	0.016966	0.11886	-	0.2787
261		135	QTM1	PATCH	2	1.1055	2.4586	5.4605	0.026796	0.2643	-	0.2025
261		136	QTM1	PATCH	2	1.721	3.4995	6.6728	0.020061	0.092034	-	0.2579
261		143	QTM1	PATCH	4	1.4407	1.4869	3.6729	0.033343	0.058006	-	0.3923
261		144	QTM1	PATCH	4	1.2724	2.7033	5.9037	0.026545	0.16727	-	0.2155
261		149	QTM1	PATCH	4	4.4803	5.4342	11.493	0.052874	0.12062	-	0.3898
261		150	QTM1	PATCH	4	3.0216	5.1288	9.9116	0.074996	0.29164	-	0.3049
261		151	QTM1	PATCH	4	2.2455	3.4313	7.1036	0.046954	0.44353	-	0.3161
261		152	QTM1	PATCH	4	2.7728	4.0561	8.0679	0.056114	0.19953	-	0.3437
261		153	QTM1	PATCH	4	3.8966	5.3652	10.5033	0.055724	0.052995	-	0.3710
261		164	QTM1	PATCH	4	3.9351	4.985	10.5628	0.069195	0.13069	-	0.3725
261		165	QTM1	PATCH	4	2.2249	4.8028	8.8639	0.068991	0.43541	-	0.2510
261		166	QTM1	PATCH	1	2.1986	3.0872	7.2287	0.050058	0.28584	-	0.3041
261		167	QTM1	PATCH	2	3.7043	5.1845	9.94	0.061854	0.11587	-	0.3727
261	0	128	QTM1	PATCH	2	1.4801	3.9787	7.3815	0.019739	0.15181	-	0.2005
261	1	129	QTM1	PATCH	2	1.9514	1.4577	5.3552	0.018922	0.093662	-	0.3644
261	6	134	QTM1	PATCH	2	2.4002	4.3206	9.3576	0.039479	0.35015	-	0.2565
261	7	135	QTM1	PATCH	2	2.4719	6.3792	12.6458	0.051395	0.45014	-	0.1955
261	8	136	QTM1	PATCH	4	2.226	4.9658	10.4244	0.064578	0.43592	-	0.2135
261	15	143	QTM1	PATCH	4	3.6095	3.8988	8.4989	0.04386	0.060456	-	0.4247
261	16	144	QTM1	PATCH	4	2.1219	5.2725	10.5025	0.070122	0.40052	-	0.2020
261	21	149	QTM1	PATCH	4	6.7183	8.2335	18.6376	0.10181	0.98016	-	0.3605
261	22	150	QTM1	PATCH	4	6.0666	6.1003	16.8291	0.09432	0.39561	-	0.3605
261	23	151	QTM1	PATCH	4	3.8877	6.1995	16.733	0.10714	0.53563	-	0.2323
261	24	152	QTM1	PATCH	4	5.1575	7.9634	15.7752	0.11063	0.31894	-	0.3269
261	25	153	QTM1	PATCH	4	6.5708	9.3913	18.6373	0.071768	0.20263	-	0.3526
261	36	164	QTM1	PATCH	4	6.7599	6.8349	17.6941	0.10605	0.87826	-	0.3820
261	37	165	QTM1	PATCH	4	4.7653	7.0581	17.7411	0.098416	0.44715	-	0.2686
261	38	166	QTM1	PATCH	4	5.0925	6.9032	16.6638	0.10611	0.42323	-	0.3056
261	39	167	QTM1	PATCH	4	6.419	8.5547	18.1794	0.10779	0.18013	-	0.3531

Table 9. PD of QTM#1 – patch antenna -n261 Low channel

| n261 Low ch.(27.56GHz) | | | | | 4cm2 PD(W/m2) at 2mm evaluation surfaces @6dBm | | | | | | Ratio |
| | | | | | relative phase worst PD for MIMO | | | | | | Front / |
Band	Beam_ID		Ant module	Ant Type	Num. of Feed	Front	Back	Right	Left	Top	Bottom	(worst surface)
261	0		QTM1	PATCH	1	1.8799	1.0521	4.7804	0.0781445	0.295732	-	0.3933
261	1		QTM1	PATCH	2	1.23971	1.4756	1.3756	0.7846539	0.185783	-	0.2306
261	6		QTM1	PATCH	2	1.3042	3.9727	6.6631	0.126607	0.215254	-	0.1957
261	7		QTM1	PATCH	2	2.5608	2.2016	7.5671	0.95535	0.128359	-	0.3384
261	8		QTM1	PATCH	2	0.1571	2.098	4.7242	0.782209	0.460803	-	0.0234
261	15		QTM1	PATCH	2	1.6744	2.375	5.9543	0.730705	0.094882	-	0.2812
261	16		QTM1	PATCH	4	1.1503	1.8678	2.3346	0.93063	0.67827	-	0.2156
261	21		QTM1	PATCH	4	-0.375	5.1008	3.6166	0.297765	0.81538	-	0.0668
261	22		QTM1	PATCH	4	0.4463	5.1857	5.8622	0.99478	0.25127	-	0.0761
261	23		QTM1	PATCH	4	1.9533	5.1854	5.8447	0.191006	0.063188	-	0.3342
261	24		QTM1	PATCH	4	2.7609	5.3446	12.4146	0.389522	0.017367	-	0.2224
261	25		QTM1	PATCH	4	3.8664	5.0205	10.9686	0.747147	0.552645	-	0.3525
261	36		QTM1	PATCH	4	2.2003	5.1106	9.4444	0.90172	0.50848	-	0.2330
261	37		QTM1	PATCH	4	2.7526	5.2468	11.5927	0.27196	0.17659	-	0.2374
261	38		QTM1	PATCH	4	3.424	5.2086	9.3201	0.220363	0.2544	-	0.3674
261	39		QTM1	PATCH	1	3.7485	5.52784	9.68465	0.178712	0.4288	-	0.3871
261		128	QTM1	PATCH	2	2.99262	1.50392	12.367	0.5277302	0.606178	-	0.2420
261		129	QTM1	PATCH	2	1.43476	0.85105	4.5716	0.165885	0.170936	-	0.3138
261		134	QTM1	PATCH	2	1.9587	3.3119	8.1066	0.341005	0.803733	-	0.2416
261		135	QTM1	PATCH	2	2.5614	2.3352	11.9081	0.825721	0.392758	-	0.2151
261		136	QTM1	PATCH	2	4.3162	3.3551	10.9001	0.100729	0.097724	-	0.3960
261		143	QTM1	PATCH	4	0.31472	0.8418	-1.5799	0.836235	0.075441	-	0.0297
261		144	QTM1	PATCH	4	0.26007	2.6391	0.7341	0.047112	0.100041	-	0.0242
261		149	QTM1	PATCH	4	6.1907	5.3349	13.1907	0.058409	0.05591	-	0.4693
261		150	QTM1	PATCH	4	3.4325	5.0639	10.9249	0.144186	0.317907	-	0.3142
261		151	QTM1	PATCH	4	1.8359	3.4359	5.6806	0.66128	0.33304	-	0.3232
261		152	QTM1	PATCH	4	3.305	3.7257	10.6296	0.327142	0.3657	-	0.3109
261		153	QTM1	PATCH	4	5.5605	5.3562	13.0878	0.784146	0.109685	-	0.4249
261		164	QTM1	PATCH	4	4.4714	4.9172	10.908	0.902428	0.111294	-	0.4099
261		165	QTM1	PATCH	4	0.202	4.5919	6.224	0.594006	0.53698	-	0.0325
261		166	QTM1	PATCH	1	0.4055	3.059	5.7501	0.386343	0.70229	-	0.0705
261		167	QTM1	PATCH	2	3.93774	5.41844	9.95223	0.184224	0.46147	-	0.3957
261	0	128	QTM1	PATCH	2	1.57273	3.5572	9.2572	0.388046	0.535281	-	0.1699
261	1	129	QTM1	PATCH	2	1.8345	1.2789	4.0337	0.122408	0.201059	-	0.4548
261	6	134	QTM1	PATCH	2	2.4016	4.5595	9.1599	0.375811	0.525178	-	0.2622
261	7	135	QTM1	PATCH	2	2.4939	6.0068	15.6348	0.272955	0.2702	-	0.1595
261	8	136	QTM1	PATCH	4	2.4278	5.4016	11.1569	0.014411	0.39048	-	0.2176
261	15	143	QTM1	PATCH	4	3.0649	3.5186	17.4255	0.435957	0.088054	-	0.1759
261	16	144	QTM1	PATCH	4	2.1209	6.5454	15.0324	0.845271	0.6804	-	0.1411
261	21	149	QTM1	PATCH	4	7.2404	8.426	16.2417	0.948502	1.1632	-	0.4458
261	22	150	QTM1	PATCH	4	6.1449	6.5514	14.1338	0.241953	1.20115	-	0.4348
261	23	151	QTM1	PATCH	4	3.6677	6.0442	15.3483	0.85694	0.72798	-	0.2390
261	24	152	QTM1	PATCH	4	5.6167	6.3871	5.4597	0.92033	0.100207	-	0.3633
261	25	153	QTM1	PATCH	4	6.6645	10.4897	22.1812	0.007399	0.72425	-	0.3005
261	36	164	QTM1	PATCH	4	6.737	7.4738	19.0515	0.880379	0.86956	-	0.3536
261	37	165	QTM1	PATCH	4	4.9545	7.2244	15.6537	0.834856	0.56646	-	0.3165
261	38	166	QTM1	PATCH	4	5.4755	6.7173	16.3563	0.26163	0.82784	-	0.3348
261	39	167	QTM1	PATCH	4	6.65773	9.65293	18.21281	0.1311	0.38153	-	0.3656

Table 10. PD of QTM#1 – patch antenna -n261 High channel

| n261 High ch.(28.29GHz) | | | | | 4cm2 PD(W/m2) at 2mm evaluation surfaces @6dBm | | | | | | Ratio |
| | | | | | relative phase worst PD for MIMO | | | | | | Front / |
Band	Beam_ID		Ant module	Ant Type	Num. of Feed	Front	Back	Right	Left	Top	Bottom	(worst surface)
261	0		QTM1	PATCH	1	0.99757	1.1435	2.9437	0.0229057	0.110802	-	0.3389
261	1		QTM1	PATCH	2	0.83881	1.7015	3.8741	0.0083769	0.114213	-	0.2165
261	6		QTM1	PATCH	2	1.127	3.3376	5.9845	0.020705	0.20648	-	0.1883
261	7		QTM1	PATCH	2	2.0869	2.3579	5.1518	0.042938	0.112728	-	0.4051
261	8		QTM1	PATCH	2	1.0057	1.5879	4.2638	0.032851	0.292651	-	0.2359
261	15		QTM1	PATCH	2	2.3665	2.113	5.1297	0.046457	0.033722	-	0.4613
261	16		QTM1	PATCH	4	1.48	1.9439	5.2823	0.03407	0.33027	-	0.2802
261	21		QTM1	PATCH	4	1.4859	4.8401	8.095	0.042461	0.73045	-	0.1836
261	22		QTM1	PATCH	4	2.3631	4.7391	9.7254	0.076658	0.28043	-	0.2430
261	23		QTM1	PATCH	4	3.0826	4.7143	10.6508	0.042396	0.123481	-	0.2894
261	24		QTM1	PATCH	4	3.4089	5.2311	9.9901	0.085326	0.3175	-	0.3412
261	25		QTM1	PATCH	4	3.0544	5.1579	9.8413	0.010981	0.36139	-	0.3104
261	36		QTM1	PATCH	4	1.9393	4.7462	9.0628	0.074344	0.56625	-	0.2140
261	37		QTM1	PATCH	4	2.9992	4.6561	10.5375	0.066607	0.098693	-	0.2846
261	38		QTM1	PATCH	4	3.3472	4.9807	10.5472	0.072441	0.14906	-	0.3174
261	39		QTM1	PATCH	1	3.39635	5.8031	9.94554	0.099662	0.5117	-	0.3415
261		128	QTM1	PATCH	2	0.80508	1.6842	3.5963	0.0109512	0.093604	-	0.2239
261		129	QTM1	PATCH	2	0.87686	1.10695	2.3829	0.013096	0.044724	-	0.3680
261		134	QTM1	PATCH	2	2.0012	4.0254	7.3499	0.020319	0.103206	-	0.2723
261		135	QTM1	PATCH	2	1.0083	2.8351	5.1606	0.033215	0.286968	-	0.1954
261		136	QTM1	PATCH	2	1.7056	3.7379	6.7032	0.025463	0.074685	-	0.2544
261		143	QTM1	PATCH	4	1.4761	1.798	3.9142	0.030541	0.036926	-	0.3771
261		144	QTM1	PATCH	4	1.159	3.0936	5.4942	0.024721	0.07466	-	0.2109
261		149	QTM1	PATCH	4	4.2939	5.5718	11.0424	0.065797	0.08167	-	0.3889
261		150	QTM1	PATCH	4	2.7604	5.252	9.7705	0.091246	0.291016	-	0.2825
261		151	QTM1	PATCH	4	2.0091	3.4199	6.8149	0.046733	0.41392	-	0.2948
261		152	QTM1	PATCH	4	2.5956	4.1593	7.6998	0.05287	0.18075	-	0.3371
261		153	QTM1	PATCH	4	3.8122	5.6683	9.9843	0.059584	0.001275	-	0.3818
261		164	QTM1	PATCH	4	3.6771	5.0525	10.3997	0.089413	0.097726	-	0.3536
261		165	QTM1	PATCH	4	1.9921	4.91	8.6148	0.071614	0.40872	-	0.2312
261		166	QTM1	PATCH	1	1.9827	3.0985	6.9616	0.054487	0.29111	-	0.2848
261		167	QTM1	PATCH	2	3.7371	5.7236	9.9638	0.059244	0.35127	-	0.3751
261	0	128	QTM1	PATCH	2	1.49646	4.3499	7.7246	0.034415	0.189831	-	0.1937
261	1	129	QTM1	PATCH	2	1.9977	1.8138	5.7614	0.012667	0.142032	-	0.3467
261	6	134	QTM1	PATCH	2	2.2503	4.2524	8.8976	0.031292	0.328637	-	0.2529
261	7	135	QTM1	PATCH	2	2.3034	6.7247	12.1548	0.073115	0.39998	-	0.1895
261	8	136	QTM1	PATCH	4	2.2077	5.0974	10.1833	0.054718	0.3971	-	0.2168
261	15	143	QTM1	PATCH	4	3.6176	4.0811	8.531	0.043745	0.090486	-	0.4241
261	16	144	QTM1	PATCH	4	2.7495	5.3729	10.2326	0.068828	0.40132	-	0.2687
261	21	149	QTM1	PATCH	4	6.5203	8.066	17.7633	0.112806	0.89399	-	0.3671
261	22	150	QTM1	PATCH	4	5.8272	6.6309	17.7019	0.128583	0.37442	-	0.3292
261	23	151	QTM1	PATCH	4	3.3224	6.5065	16.2845	0.12448	0.53763	-	0.2040
261	24	152	QTM1	PATCH	4	4.7849	8.3929	15.2374	0.12098	0.29697	-	0.3140
261	25	153	QTM1	PATCH	4	6.5875	9.7548	18.5518	0.070547	0.17213	-	0.3551
261	36	164	QTM1	PATCH	4	6.6948	7.2081	18.4064	0.142009	0.83058	-	0.3637
261	37	165	QTM1	PATCH	4	4.4217	7.0403	17.4309	0.134536	0.41699	-	0.2537
261	38	166	QTM1	PATCH	4	4.733	7.4079	16.2335	0.11713	0.43741	-	0.2916
261	39	167	QTM1	PATCH	4	5.96379	8.27129	18.05653	-0.65742	0.52433	-	0.3303

Table 11. PD of QTM#1 – patch antenna -n260 Mid channel

| n260 middle ch.(38.5 GHz) | | | | | 4cm2 PD(W/m2) at 2mm evaluation surfaces @6dBm | | | | | | Ratio |
| | | | | | relative phase worst PD for MIMO | | | | | | Front / |
Band	Beam_ID		Ant module	Ant Type	Num. of Feed	Front	Back	Right	Left	Top	Bottom	(worst surface)
260	0		QTM1	PATCH	1	1.3087	1.5574	3.8351	0.011841	0.043415	-	0.3412
260	1		QTM1	PATCH	2	1.6804	1.4391	5.0159	0.023393	0.13673	-	0.3350
260	6		QTM1	PATCH	2	3.3137	3.1992	8.2157	0.030522	0.21977	-	0.4033
260	7		QTM1	PATCH	2	2.4997	2.4586	8.9914	0.046155	0.17572	-	0.2780
260	8		QTM1	PATCH	2	3.3337	3.2224	8.152	0.026358	0.2031	-	0.4089
260	15		QTM1	PATCH	2	2.8464	2.8169	8.668	0.014369	0.073488	-	0.3284
260	16		QTM1	PATCH	4	3.106	2.9963	8.4495	0.047585	0.27626	-	0.3676
260	21		QTM1	PATCH	4	5.9969	6.1212	14.1367	0.072183	0.31848	-	0.4242
260	22		QTM1	PATCH	4	6.3892	6.6134	15.6253	0.03035	0.21935	-	0.4089
260	23		QTM1	PATCH	4	4.2969	5.3906	14.8628	0.08171	0.40207	-	0.2891
260	24		QTM1	PATCH	4	4.6626	5.1714	14.6439	0.10483	1.011	-	0.3184
260	25		QTM1	PATCH	4	5.7421	7.3559	14.6232	0.038092	0.42285	-	0.3927
260	36		QTM1	PATCH	4	6.7743	6.1017	15.4127	0.044499	0.3273	-	0.4395
260	37		QTM1	PATCH	4	4.9202	5.7964	13.8285	0.073036	0.24685	-	0.3558
260	38		QTM1	PATCH	4	5.0019	5.2909	15.8666	0.079329	0.79616	-	0.3152
260	39		QTM1	PATCH	1	4.4979	6.3831	14.1302	0.054977	0.76153	-	0.3183
260		128	QTM1	PATCH	2	1.3327	2.4587	4.1499	0.017255	0.070748	-	0.3211
260		129	QTM1	PATCH	2	1.3278	1.8738	4.5919	0.010563	0.1402	-	0.2892
260		134	QTM1	PATCH	2	2.9805	4.1959	8.1011	0.035803	0.23444	-	0.3679
260		135	QTM1	PATCH	2	2.7634	4.05	8.6647	0.025421	0.22841	-	0.3189
260		136	QTM1	PATCH	2	2.957	4.2635	8.0137	0.032235	0.20655	-	0.3690
260		143	QTM1	PATCH	4	2.5221	4.3624	8.1438	0.027547	0.11992	-	0.3097
260		144	QTM1	PATCH	4	2.7961	3.8401	8.6365	0.047076	0.34228	-	0.3238
260		149	QTM1	PATCH	4	6.8747	6.3701	14.6178	0.061252	0.22992	-	0.4703
260		150	QTM1	PATCH	4	6.3205	6.5354	14.4085	0.061603	0.2462	-	0.4387
260		151	QTM1	PATCH	4	5.9591	6.6027	15.1	0.043756	0.73948	-	0.3946
260		152	QTM1	PATCH	4	4.6181	4.9522	13.8952	0.054397	0.69909	-	0.3324
260		153	QTM1	PATCH	4	5.3427	6.6817	13.5301	0.080718	0.21382	-	0.3949
260		164	QTM1	PATCH	4	6.8947	6.9541	15.2458	0.03258	0.21957	-	0.4522
260		165	QTM1	PATCH	4	5.1501	6.2245	14.2702	0.085841	0.20267	-	0.3609
260		166	QTM1	PATCH	1	4.535	4.8775	14.2601	0.056368	0.6524	-	0.3180
260		167	QTM1	PATCH	2	5.2926	5.6525	13.1077	0.089288	0.37314	-	0.4038
260	0	128	QTM1	PATCH	2	2.5724	4.5886	8.5028	0.020128	0.17058	-	0.3025
260	1	129	QTM1	PATCH	2	2.9441	3.1679	10.3384	0.020138	0.4256	-	0.2848
260	6	134	QTM1	PATCH	2	6.8008	5.4604	14.443	0.068731	0.4427	-	0.4709
260	7	135	QTM1	PATCH	2	5.4473	8.4564	18.5756	0.063613	0.28514	-	0.2933
260	8	136	QTM1	PATCH	4	5.8393	9.3898	16.4095	0.078391	0.17839	-	0.3558
260	15	143	QTM1	PATCH	4	7.0352	4.6696	15.6572	0.029384	0.16533	-	0.4493
260	16	144	QTM1	PATCH	4	6.814	8.7054	17.2646	0.13775	0.25807	-	0.3947
260	21	149	QTM1	PATCH	4	13.5191	7.344	25.2193	0.10148	0.40021	-	0.5361
260	22	150	QTM1	PATCH	4	13.873	9.9753	28.0947	0.091139	0.37547	-	0.4938
260	23	151	QTM1	PATCH	4	10.2343	9.5045	28.8453	0.17429	0.83763	-	0.3548
260	24	152	QTM1	PATCH	4	8.5995	9.0025	27.0128	0.21057	1.7709	-	0.3183
260	25	153	QTM1	PATCH	4	11.9616	7.7958	25.1269	0.086538	0.98203	-	0.4760
260	36	164	QTM1	PATCH	4	14.0209	9.4424	27.2388	0.11428	0.60396	-	0.5147
260	37	165	QTM1	PATCH	4	8.4696	16.8921	30.7025	0.19617	0.60627	-	0.2759
260	38	166	QTM1	PATCH	4	9.3812	7.8693	29.8909	0.12692	1.8596	-	0.3138
260	39	167	QTM1	PATCH	4	10.2966	7.2026	27.2952	0.070253	1.8206	-	0.3772

Table 12. PD of QTM#1 – patch antenna -n260 Low channel

Band	Beam_ID		Ant module	Ant Type	Num. of Feed	Front	Back	Right	Left	Top	Bottom	Front / (worst surface)
260	0		QTM1	PATCH	1	1.4218	1.1364	3.5116	0.008926	0.041365	-	0.4049
260	1		QTM1	PATCH	2	1.536	0.8065	3.7867	0.004369	0.17307	-	0.4056
260	6		QTM1	PATCH	2	3.7918	2.4465	8.0752	0.027859	0.16793	-	0.4696
260	7		QTM1	PATCH	2	2.9847	1.9358	8.858	0.04791	0.24353	-	0.3369
260	8		QTM1	PATCH	2	3.483	2.8665	7.5731	0.021221	0.20467	-	0.4599
260	15		QTM1	PATCH	2	2.7184	2.1304	8.3106	0.014928	0.022868	-	0.3271
260	16		QTM1	PATCH	4	3.5267	1.5474	7.5808	0.027223	0.56906	-	0.4652
260	21		QTM1	PATCH	4	6.7981	5.3881	13.2584	0.078819	0.34735	-	0.5127
260	22		QTM1	PATCH	4	5.8408	5.8461	13.9047	0.033815	0.02231	-	0.4201
260	23		QTM1	PATCH	4	4.6735	4.2802	14.075	0.017483	0.23151	-	0.3320
260	24		QTM1	PATCH	4	6.3223	4.7915	15.6327	0.096067	0.96665	-	0.4044
260	25		QTM1	PATCH	4	6.5785	6.7431	14.2482	0.035899	0.45062	-	0.4617
260	36		QTM1	PATCH	4	6.7249	5.121	13.9129	0.058622	0.2555	-	0.4834
260	37		QTM1	PATCH	4	5.1427	5.1116	13.0009	0.006486	0.13389	-	0.3956
260	38		QTM1	PATCH	4	5.1023	3.9011	14.869	0.052375	0.9942	-	0.3432
260	39		QTM1	PATCH	1	3.40426	5.3968	13.89145	0.453677	0.19423	-	0.2451
260		128	QTM1	PATCH	2	0.94713	1.6761	3.1048	0.010135	0.04889	-	0.3051
260		129	QTM1	PATCH	2	0.7481	0.806	4.3935	0.005841	0.11005	-	0.1703
260		134	QTM1	PATCH	2	2.6563	2.7973	7.4399	0.03087	0.19653	-	0.3570
260		135	QTM1	PATCH	2	2.7012	3.8288	8.2034	0.007133	0.21934	-	0.3293
260		136	QTM1	PATCH	2	2.6917	2.7071	6.7432	0.029692	0.139283	-	0.3992
260		143	QTM1	PATCH	4	2.8613	3.7513	6.9016	0.019579	0.06415	-	0.4146
260		144	QTM1	PATCH	4	3.5699	3.0192	8.5358	0.00663	0.15601	-	0.4182
260		149	QTM1	PATCH	4	6.5571	4.0102	12.4031	0.060901	0.02378	-	0.5287
260		150	QTM1	PATCH	4	5.885	5.3462	12.8023	0.063383	0.0389	-	0.4597
260		151	QTM1	PATCH	4	5.935	4.8786	14.4496	0.006051	0.73839	-	0.4107
260		152	QTM1	PATCH	4	3.8443	4.4884	13.7122	0.007285	0.51891	-	0.2804
260		153	QTM1	PATCH	4	5.9976	5.6625	13.2615	0.049226	0.04736	-	0.4523
260		164	QTM1	PATCH	4	6.5464	5.8358	13.3598	0.04859	0.15963	-	0.4900
260		165	QTM1	PATCH	4	4.54	5.3167	13.3605	0.045216	0.25543	-	0.3398
260		166	QTM1	PATCH	1	3.8209	4.4036	13.5892	0.054982	0.49572	-	0.2812
260		167	QTM1	PATCH	2	5.75221	4.97659	13.34634	0.398322	2.15654	-	0.4310
260	0	128	QTM1	PATCH	2	2.6996	3.4387	7.7779	0.018729	0.25247	-	0.3471
260	1	129	QTM1	PATCH	2	3.529	1.0606	9.3293	0.010279	0.5244	-	0.3783
260	6	134	QTM1	PATCH	2	7.5101	3.8432	14.8347	0.035095	0.53003	-	0.5063
260	7	135	QTM1	PATCH	2	6.1235	6.4978	17.638	0.024326	0.42739	-	0.3472
260	8	136	QTM1	PATCH	4	6.4872	7.3076	16.1376	0.057755	0.08061	-	0.4020
260	15	143	QTM1	PATCH	4	7.0533	2.9954	13.6027	0.057352	0.28193	-	0.5185
260	16	144	QTM1	PATCH	4	6.1855	7.0639	14.641	0.197579	0.27387	-	0.4225
260	21	149	QTM1	PATCH	4	13.212	5.5433	23.8337	0.088524	0.39859	-	0.5543
260	22	150	QTM1	PATCH	4	11.7802	9.2735	25.1224	0.115318	0.29736	-	0.4689
260	23	151	QTM1	PATCH	4	9.7321	7.2883	25.1392	0.209427	0.09923	-	0.3871
260	24	152	QTM1	PATCH	4	11.7844	7.4712	28.1258	0.20387	1.4785	-	0.4190
260	25	153	QTM1	PATCH	4	11.7123	4.9973	23.8649	0.029936	1.42385	-	0.4908
260	36	164	QTM1	PATCH	4	14.1365	5.6931	22.8789	0.130186	0.52637	-	0.6179
260	37	165	QTM1	PATCH	4	8.2048	15.7027	26.9053	0.21007	0.32113	-	0.3050
260	38	166	QTM1	PATCH	4	8.7916	5.6835	26.3167	0.17508	1.5394	-	0.3341
260	39	167	QTM1	PATCH	4	12.2789	5.5294	27.6167	4.054353	2.022	-	0.4446

Note: Header spanning — "n260 Low ch.(37.05GHz)" over Band/Beam_ID/Ant module/Ant Type/Num. of Feed; "4cm2 PD(W/m2) at 2mm evaluation surfaces @6dBm" / "relative phase worst PD for MIMO" over Front/Back/Right/Left/Top/Bottom; "Ratio" / "Front /" over the last column.

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Table 13. PD of QTM#1 – patch antenna -n260 High channel

Band	Beam_ID		Ant module	Ant Type	Num. of Feed	Front	Back	Right	Left	Top	Bottom	Ratio Front / (worst surface)
						4cm2 PD(W/m2) at 2mm evaluation surfaces @6dBm						
						relative phase worst PD for MIMO						
260	0		QTM1	PATCH	1	1.0563	1.9786	3.6523	0.005026	0.02772	-	0.2892
260	1		QTM1	PATCH	2	2.2145	1.5651	5.1246	0.00544	0.1209	-	0.4321
260	6		QTM1	PATCH	2	2.6499	4.0955	6.9582	0.02605	0.06672	-	0.3808
260	7		QTM1	PATCH	2	1.7354	3.1865	8.3225	0.033665	0.14608	-	0.2085
260	8		QTM1	PATCH	2	2.8663	4.1278	7.2743	0.025879	0.223	-	0.3940
260	15		QTM1	PATCH	2	3.2174	2.726	9.1156	0.014927	0.113528	-	0.3530
260	16		QTM1	PATCH	4	2.7967	3.7664	6.7381	0.004278	0.04842	-	0.4151
260	21		QTM1	PATCH	4	6.4056	7.4943	14.4304	0.079318	0.31699	-	0.4439
260	22		QTM1	PATCH	4	4.2251	7.6497	13.1535	0.035533	0.15529	-	0.3212
260	23		QTM1	PATCH	4	4.9871	6.4032	13.4946	0.029931	0.14996	-	0.3696
260	24		QTM1	PATCH	4	4.3159	6.4257	14.7449	0.051631	0.95196	-	0.2927
260	25		QTM1	PATCH	4	5.36	8.3886	13.3781	0.015179	0.38977	-	0.4007
260	36		QTM1	PATCH	4	5.6161	7.1464	13.7871	0.053118	0.30359	-	0.4073
260	37		QTM1	PATCH	4	5.6633	6.7088	12.4739	0.025876	0.00587	-	0.4540
260	38		QTM1	PATCH	4	4.6217	5.5969	14.2497	0.041067	0.66102	-	0.3243
260	39		QTM1	PATCH	1	3.8417	5.64	14.10679	0.818123	0.47297	-	0.2723
260		128	QTM1	PATCH	2	1.3147	2.0468	4.3751	0.010166	0.11185	-	0.3005
260		129	QTM1	PATCH	2	0.9013	2.0455	4.2208	0.015456	0.13412	-	0.2135
260		134	QTM1	PATCH	2	2.8087	4.0262	7.6776	0.030621	0.24507	-	0.3658
260		135	QTM1	PATCH	2	2.5386	3.9721	8.2181	0.007548	0.16475	-	0.3089
260		136	QTM1	PATCH	2	2.8659	3.9416	7.7814	0.023028	0.17728	-	0.3683
260		143	QTM1	PATCH	4	2.1089	4.7544	8.4776	0.015582	0.1032	-	0.2488
260		144	QTM1	PATCH	4	2.9859	5.1075	8.737	0.002085	0.03329	-	0.3418
260		149	QTM1	PATCH	4	6.0223	5.9327	12.6839	0.057118	0.06627	-	0.4748
260		150	QTM1	PATCH	4	5.3757	6.4114	13.412	0.060701	0.04052	-	0.4008
260		151	QTM1	PATCH	4	5.822	5.6195	14.1011	0.023847	0.62638	-	0.4129
260		152	QTM1	PATCH	4	4.0589	5.2604	13.7769	0.012757	0.6873	-	0.2946
260		153	QTM1	PATCH	4	5.5461	7.8641	13.7012	0.045279	0.13742	-	0.4048
260		164	QTM1	PATCH	4	5.9626	6.7256	14.4097	0.034171	0.25584	-	0.4138
260		165	QTM1	PATCH	4	4.4429	7.2746	13.749	0.071679	0.23287	-	0.3231
260		166	QTM1	PATCH	1	3.3843	4.859	13.3834	0.045555	0.50721	-	0.2529
260		167	QTM1	PATCH	2	4.79699	5.3398	12.92436	0.332632	1.04634	-	0.3712
260	0	128	QTM1	PATCH	2	2.2334	4.2152	7.8138	0.016369	0.09493	-	0.2858
260	1	129	QTM1	PATCH	2	2.704	3.6883	8.6647	0.011784	0.33008	-	0.3121
260	6	134	QTM1	PATCH	2	6.5269	6.4594	14.0306	0.036171	0.17222	-	0.4652
260	7	135	QTM1	PATCH	2	3.5908	7.832	16.3541	0.024257	0.32669	-	0.2196
260	8	136	QTM1	PATCH	4	5.0095	9.0006	15.4331	0.063681	0.00268	-	0.3246
260	15	143	QTM1	PATCH	4	6.6885	5.1026	14.959	0.026797	0.14593	-	0.4471
260	16	144	QTM1	PATCH	4	3.7932	8.6802	13.0076	0.119201	0.07433	-	0.2916
260	21	149	QTM1	PATCH	4	15.6151	8.1276	24.2129	0.089367	0.34697	-	0.6449
260	22	150	QTM1	PATCH	4	8.8125	9.933	21.0005	0.106286	0.72757	-	0.4196
260	23	151	QTM1	PATCH	4	10.8089	10.8217	24.4096	0.197457	0.10653	-	0.4428
260	24	152	QTM1	PATCH	4	7.7256	8.0483	24.9923	0.140689	1.4174	-	0.3091
260	25	153	QTM1	PATCH	4	9.0721	9.3974	21.5266	0.040058	0.76194	-	0.4214
260	36	164	QTM1	PATCH	4	11.6641	10.6921	25.3171	0.098197	0.44153	-	0.4607
260	37	165	QTM1	PATCH	4	9.2772	18.0944	27.3129	0.19346	0.30643	-	0.3397
260	38	166	QTM1	PATCH	4	5.0047	5.892	23.4056	0.100514	1.4281	-	0.2138
260	39	167	QTM1	PATCH	4	9.0582	6.81639	27.060859	1.193647	2.05519	-	0.3347

The table header uses n260 High ch.(39.95GHz).

3.1.3 QTM#2 – Patch Antenna

Table 14 - Table 19 show the PD simulation evaluation of QTM#2 patch antenna at 28GHz / 39GHz for the corresponding evaluation planes specified in Table 1.

Table 14 PD of QTM#2 – patch antenna -n261 Mid channel

| n261 Middle ch.(27.92GHz) | | | | | | 4cm2 PD(W/m2) at 2mm evaluation surfaces @6dBm | | | | | | Ratio |
| | | | | | | relative phase worst PD for MIMO | | | | | | Front / |
Band	Beam_ID		Ant module	Ant Type	Num. of Feed	Front	Back	Right	Left	Top	Bottom	(worst surface)
261	4		QTM2	PATCH	1	0.50877	0.74344	0.011733	2.7948	-	0.026279	0.1820
261	5		QTM2	PATCH	2	0.90923	0.67303	0.013302	2.7524	-	0.063642	0.3303
261	12		QTM2	PATCH	2	1.0946	1.2611	0.020756	5.4321	-	0.095368	0.2015
261	13		QTM2	PATCH	2	1.3537	0.81954	0.020491	6.6722	-	0.060941	0.2029
261	14		QTM2	PATCH	2	1.0878	1.3732	0.006671	6.6066	-	0.082777	0.1647
261	19		QTM2	PATCH	2	1.2023	0.85013	0.028285	5.9809	-	0.089728	0.2010
261	20		QTM2	PATCH	4	2.2546	0.90779	0.023136	6.162	-	0.06135	0.3659
261	31		QTM2	PATCH	4	2.5259	1.6989	0.054642	8.4689	-	0.26381	0.2983
261	32		QTM2	PATCH	4	3.0882	2.0403	0.073534	9.066	-	0.102	0.3406
261	33		QTM2	PATCH	4	3.9894	1.9273	0.083016	10.9771	-	0.10841	0.3634
261	34		QTM2	PATCH	4	3.1432	1.7939	0.079699	10.3936	-	0.10742	0.3024
261	35		QTM2	PATCH	4	1.9694	2.3483	0.033131	7.5236	-	0.22297	0.2618
261	44		QTM2	PATCH	4	2.8778	1.8402	0.04387	9.0254	-	0.11155	0.3189
261	45		QTM2	PATCH	4	4.0007	2.014	0.08526	11.1736	-	0.069402	0.3580
261	46		QTM2	PATCH	4	3.7043	1.8815	0.086147	10.4417	-	0.068384	0.3548
261	47		QTM2	PATCH	1	2.7001	1.7728	0.064094	9.7882	-	0.1799	0.2759
261		132	QTM2	PATCH	2	1.0769	0.59882	0.0083371	2.5135	-	0.034196	0.4284
261		133	QTM2	PATCH	2	0.71567	0.34017	0.003432	3.2652	-	0.067401	0.2192
261		140	QTM2	PATCH	2	1.8329	1.2732	0.0192	4.5518	-	0.07026	0.4027
261		141	QTM2	PATCH	2	1.6922	1.0272	0.028982	4.7962	-	0.069077	0.3528
261		142	QTM2	PATCH	2	2.6331	1.2581	0.025297	6.2144	-	0.036348	0.4237
261		147	QTM2	PATCH	4	1.3365	1.0894	0.012939	4.0045	-	0.073747	0.3337
261		148	QTM2	PATCH	4	2.2145	1.062	0.034255	5.6667	-	0.052988	0.3908
261		159	QTM2	PATCH	4	2.6356	1.6183	0.038462	8.993	-	0.19681	0.2931
261		160	QTM2	PATCH	4	1.7892	1.8969	0.033636	6.4909	-	0.33996	0.2756
261		161	QTM2	PATCH	4	2.5467	1.2577	0.029806	8.1783	-	0.14289	0.3114
261		162	QTM2	PATCH	4	3.9489	1.4509	0.050496	10.2593	-	0.091762	0.3849
261		163	QTM2	PATCH	4	4.6042	1.5855	0.032703	10.8348	-	0.082162	0.4249
261		172	QTM2	PATCH	4	2.2437	1.604	0.031356	7.6275	-	0.23981	0.2942
261		173	QTM2	PATCH	4	1.7724	1.7013	0.018483	6.8866	-	0.2262	0.2574
261		174	QTM2	PATCH	1	3.4799	1.2966	0.036424	9.7193	-	0.13502	0.3580
261		175	QTM2	PATCH	2	4.5494	1.5991	0.032114	10.8282	-	0.083413	0.4201
261	4	132	QTM2	PATCH	2	1.386	0.50811	0.018633	4.871	-	0.06688	0.2845
261	5	133	QTM2	PATCH	2	1.8927	0.51666	0.019468	5.1499	-	0.050789	0.3675
261	12	140	QTM2	PATCH	2	3.3699	3.3772	0.045384	9.9852	-	0.17802	0.3375
261	13	141	QTM2	PATCH	2	2.6654	2.1696	0.038938	12.2251	-	0.16004	0.2180
261	14	142	QTM2	PATCH	4	3.6931	1.9967	0.04165	12.2656	-	0.13909	0.3011
261	19	147	QTM2	PATCH	4	2.2784	2.4563	0.056184	10.0824	-	0.19012	0.2260
261	20	148	QTM2	PATCH	4	4.0253	1.9571	0.057242	11.6171	-	0.09666	0.3465
261	31	159	QTM2	PATCH	4	5.2412	3.1455	0.12426	12.9716	-	0.30014	0.4041
261	32	160	QTM2	PATCH	4	5.0319	4.0502	0.10953	13.9934	-	0.43464	0.3596
261	33	161	QTM2	PATCH	4	4.7998	2.635	0.10574	18.7926	-	0.35035	0.2554
261	34	162	QTM2	PATCH	4	6.0404	2.9346	0.14347	20.3608	-	0.24136	0.2967
261	35	163	QTM2	PATCH	4	5.5022	4.8925	0.099523	17.1021	-	0.52955	0.3217
261	44	172	QTM2	PATCH	4	5.3899	3.7466	0.095604	14.301	-	0.29534	0.3769
261	45	173	QTM2	PATCH	4	4.7517	3.4424	0.15052	16.2615	-	0.30144	0.2922
261	46	174	QTM2	PATCH	4	5.3723	2.9304	0.11237	20.2163	-	0.14433	0.2657
261	47	175	QTM2	PATCH	4	6.6596	3.6034	0.13295	19.812	-	0.33285	0.3361

Table 15 PD of QTM#2 – patch antenna -n261 Low channel

| n261 Low ch.(27.56GHz) | | | | | | 4cm2 PD(W/m2) at 2mm evaluation surfaces @6dBm | | | | | | Ratio |
| | | | | | | relative phase worst PD for MIMO | | | | | | Front / |
Band	Beam_ID		Ant module	Ant Type	Num. of Feed	Front	Back	Right	Left	Top	Bottom	(worst surface)
261	4		QTM2	PATCH	1	0.51723	0.5869	0.012226	2.8679	-	0.021327	0.1804
261	5		QTM2	PATCH	2	0.96763	0.37293	0.013326	2.8118	-	0.046102	0.3441
261	12		QTM2	PATCH	2	1.2894	1.4783	0.017773	6.0096	-	0.086288	0.2146
261	13		QTM2	PATCH	2	1.3978	0.66914	0.007567	7.001	-	0.051944	0.1997
261	14		QTM2	PATCH	2	1.2825	0.8978	0.0011721	6.3591	-	0.086537	0.2017
261	19		QTM2	PATCH	2	1.3058	0.31073	0.015824	5.7751	-	0.101618	0.2261
261	20		QTM2	PATCH	4	2.1689	0.46269	0.016854	6.23	-	0.00246	0.3481
261	31		QTM2	PATCH	4	2.8969	1.5596	0.047515	8.7869	-	0.24791	0.3297
261	32		QTM2	PATCH	4	3.1619	1.8968	0.058121	9.3399	-	0.082518	0.3385
261	33		QTM2	PATCH	4	4.4084	1.977	0.05834	11.7971	-	0.10593	0.3737
261	34		QTM2	PATCH	4	3.4658	1.7074	0.083839	11.2236	-	0.069289	0.3088
261	35		QTM2	PATCH	4	2.002	2.1826	0.027028	7.6322	-	0.1419	0.2623
261	44		QTM2	PATCH	4	3.0815	1.5552	0.041551	9.4261	-	0.134535	0.3269
261	45		QTM2	PATCH	4	4.2593	2.1204	0.05898	11.8983	-	0.042314	0.3580
261	46		QTM2	PATCH	4	4.0646	1.8409	0.085465	11.3481	-	0.038364	0.3582
261	47		QTM2	PATCH	1	2.8194	1.90775	-0.170806	9.91054	-	0.14425	0.2845
261		132	QTM2	PATCH	2	1.1124	0.67039	0.0148709	2.8059	-	0.036236	0.3965
261		133	QTM2	PATCH	2	0.99657	0.07737	0.014425	3.8236	-	0.08709	0.2606
261		140	QTM2	PATCH	2	1.7654	1.5305	0.017831	4.6724	-	0.070516	0.3778
261		141	QTM2	PATCH	2	1.5251	1.1965	0.053679	4.8423	-	0.074728	0.3150
261		142	QTM2	PATCH	2	2.9148	1.1599	0.018764	6.8788	-	0.054729	0.4237
261		147	QTM2	PATCH	4	1.1698	1.4214	0.023888	3.9534	-	0.067802	0.2959
261		148	QTM2	PATCH	4	2.6445	1.5428	0.046923	6.5654	-	0.120378	0.4028
261		159	QTM2	PATCH	4	3.4858	2.1852	0.030638	10.5932	-	0.19704	0.3291
261		160	QTM2	PATCH	4	2.0727	2.3798	0.01897	7.5129	-	0.370998	0.2759
261		161	QTM2	PATCH	4	2.5001	1.3981	0.051282	8.4083	-	0.096612	0.2973
261		162	QTM2	PATCH	4	3.871	1.7326	0.068769	10.4046	-	0.130842	0.3720
261		163	QTM2	PATCH	4	5.4691	2.0891	0.034153	12.4342	-	0.112642	0.4398
261		172	QTM2	PATCH	4	2.7067	1.9482	0.018454	8.6229	-	0.272055	0.3139
261		173	QTM2	PATCH	4	1.8089	2.2255	0.014695	7.5919	-	0.211838	0.2383
261		174	QTM2	PATCH	1	3.5193	1.6143	0.057563	10.0554	-	0.147782	0.3500
261		175	QTM2	PATCH	2	4.78284	1.83304	0.044344	10.95057	-	0.317533	0.4368
261	4	132	QTM2	PATCH	2	1.4584	0.47691	0.012658	5.4038	-	0.028035	0.2699
261	5	133	QTM2	PATCH	2	2.5438	0.08986	0.008775	5.9157	-	0.125239	0.4300
261	12	140	QTM2	PATCH	2	3.2878	3.7439	0.018375	10.0022	-	0.153829	0.3287
261	13	141	QTM2	PATCH	2	2.5476	2.4011	0.069188	12.5165	-	0.16264	0.2035
261	14	142	QTM2	PATCH	4	4.3431	1.5758	0.026907	13.0521	-	0.178065	0.3328
261	19	147	QTM2	PATCH	4	2.4556	2.2501	0.028514	9.7094	-	0.15608	0.2529
261	20	148	QTM2	PATCH	4	4.6965	2.1702	0.049752	11.2969	-	0.22499	0.4157
261	31	159	QTM2	PATCH	4	7.3682	3.7356	0.097902	16.2677	-	0.30813	0.4529
261	32	160	QTM2	PATCH	4	5.9379	4.4978	0.07796	15.7082	-	0.432278	0.3780
261	33	161	QTM2	PATCH	4	5.1989	2.9424	0.107243	19.8704	-	0.29958	0.2616
261	34	162	QTM2	PATCH	4	6.4683	3.9184	0.145894	21.7574	-	0.27183	0.2973
261	35	163	QTM2	PATCH	4	7.0791	5.5497	0.084968	18.9759	-	0.6723	0.3731
261	44	172	QTM2	PATCH	4	6.9074	4.0628	0.040274	16.9293	-	0.320584	0.4080
261	45	173	QTM2	PATCH	4	5.2257	3.9302	0.13085	17.4775	-	0.33528	0.2990
261	46	174	QTM2	PATCH	4	5.8764	3.8794	0.112144	21.6794	-	0.114546	0.2711
261	47	175	QTM2	PATCH	4	6.89833	4.70163	0.16636	20.83531	-	0.30973	0.3311

Table 16 PD of QTM#2 – patch antenna -n261 High channel

n261 High ch.(28.29GHz)						4cm2 PD(W/m2) at 2mm evaluation surfaces @6dBm						Ratio
						relative phase worst PD for MIMO						Front /
Band	Beam_ID		Ant module	Ant Type	Num. of Feed	Front	Back	Right	Left	Top	Bottom	(worst surface)
261	4		QTM2	PATCH	1	0.47254	0.86857	0.013968	2.6799	-	0.018373	0.1763
261	5		QTM2	PATCH	2	0.80963	0.84993	0.011412	2.597	-	0.031242	0.3118
261	12		QTM2	PATCH	2	0.9655	1.0316	0.031299	4.9615	-	0.09516	0.1946
261	13		QTM2	PATCH	2	1.2411	1.09894	0.017762	6.4036	-	0.053508	0.1938
261	14		QTM2	PATCH	2	1.0708	1.4662	0.007663	6.5997	-	0.100528	0.1622
261	19		QTM2	PATCH	2	1.0831	1.26173	0.034639	6.2494	-	0.078739	0.1733
261	20		QTM2	PATCH	4	2.2494	1.00729	0.029928	6.472	-	0.0719	0.3476
261	31		QTM2	PATCH	4	2.4048	1.6966	0.061445	7.9974	-	0.22074	0.3007
261	32		QTM2	PATCH	4	3.0447	1.7821	0.071477	8.6371	-	0.149894	0.3525
261	33		QTM2	PATCH	4	3.7725	2.0175	0.107402	10.5044	-	0.09544	0.3591
261	34		QTM2	PATCH	4	2.98	2.1371	0.10107	10.1022	-	0.13296	0.2950
261	35		QTM2	PATCH	4	1.8586	2.4162	0.032702	7.5023	-	0.1975	0.2477
261	44		QTM2	PATCH	4	2.9848	1.776	0.039531	8.743	-	0.156435	0.3414
261	45		QTM2	PATCH	4	3.7151	1.8133	0.070894	10.562	-	0.079765	0.3517
261	46		QTM2	PATCH	4	3.5103	2.135	0.113956	10.0731	-	0.097164	0.3485
261	47		QTM2	PATCH	1	2.67245	2.1604	0.031534	9.83149	-	0.05755	0.2718
261		132	QTM2	PATCH	2	1.2073	0.7564	0.008336	2.7501	-	0.039474	0.4390
261		133	QTM2	PATCH	2	0.72487	0.65557	0.007032	3.3289	-	0.067127	0.2178
261		140	QTM2	PATCH	2	1.927	1.4396	0.025536	4.5299	-	0.064367	0.4254
261		141	QTM2	PATCH	2	1.7436	1.2873	0.029326	4.9709	-	0.082746	0.3508
261		142	QTM2	PATCH	2	2.5958	1.5004	0.030854	6.0255	-	0.030655	0.4308
261		147	QTM2	PATCH	4	1.566	1.2439	0.008008	4.226	-	0.083712	0.3706
261		148	QTM2	PATCH	4	2.0613	1.4572	0.040053	5.3777	-	0.046628	0.3833
261		159	QTM2	PATCH	4	2.7701	1.5568	0.043818	9.0839	-	0.18105	0.3049
261		160	QTM2	PATCH	4	1.3711	1.5046	0.068235	5.6611	-	0.383378	0.2422
261		161	QTM2	PATCH	4	2.6943	1.399	0.01974	8.3338	-	0.15724	0.3233
261		162	QTM2	PATCH	4	3.9477	1.7144	0.057002	10.2066	-	0.087772	0.3868
261		163	QTM2	PATCH	4	4.5947	1.6823	0.03778	10.7002	-	0.060472	0.4294
261		172	QTM2	PATCH	4	2.0358	1.3361	0.052505	7.0573	-	0.272205	0.2885
261		173	QTM2	PATCH	4	1.6284	1.4759	0.032886	6.3959	-	0.252427	0.2546
261		174	QTM2	PATCH	1	3.5275	1.5358	0.042884	9.7117	-	0.141172	0.3632
261		175	QTM2	PATCH	2	4.5822	2.1382	0.055914	10.82559	-	0.051223	0.4233
261	4	132	QTM2	PATCH	2	1.4571	0.63381	0.018633	4.9839	-	0.08604	0.2924
261	5	133	QTM2	PATCH	2	2.0846	0.99356	0.026443	5.269	-	0.037259	0.3956
261	12	140	QTM2	PATCH	2	3.2719	3.2062	0.076272	9.6083	-	0.21871	0.3405
261	13	141	QTM2	PATCH	2	2.7328	2.6794	0.043291	12.3089	-	0.15384	0.2220
261	14	142	QTM2	PATCH	4	3.7607	1.6726	0.042912	12.0171	-	0.127713	0.3129
261	19	147	QTM2	PATCH	4	2.238	2.6964	0.088196	10.3192	-	0.22536	0.2169
261	20	148	QTM2	PATCH	4	3.7268	1.6682	0.072724	11.2702	-	0.02718	0.3307
261	31	159	QTM2	PATCH	4	5.3441	2.1914	0.13573	12.3447	-	0.20926	0.4329
261	32	160	QTM2	PATCH	4	4.392	3.2853	0.13182	12.4911	-	0.440216	0.3516
261	33	161	QTM2	PATCH	4	4.6581	2.58	0.094812	18.4077	-	0.38152	0.2531
261	34	162	QTM2	PATCH	4	5.6276	2.2987	0.141017	19.3241	-	0.29166	0.2912
261	35	163	QTM2	PATCH	4	5.4385	4.4243	0.111939	16.715	-	0.48138	0.3254
261	44	172	QTM2	PATCH	4	5.3229	3.0184	0.110944	13.3218	-	0.303129	0.3996
261	45	173	QTM2	PATCH	4	4.2293	2.666	0.17743	14.8348	-	0.31303	0.2851
261	46	174	QTM2	PATCH	4	5.0401	2.468	0.102503	19.3284	-	0.184747	0.2608
261	47	175	QTM2	PATCH	4	6.20439	3.31999	0.01008	19.04679	-	0.30967	0.3257

Table 17. PD of QTM#2 – patch antenna -n260 Mid channel

| n260 middle ch.(38.5 GHz) | | | | | | 4cm2 PD(W/m2) at 2mm evaluation surfaces @6dBm | | | | | | Ratio |
| | | | | | | relative phase worst PD for MIMO | | | | | | Front / |
Band	Beam_ID		Ant module	Ant Type	Num. of Feed	Front	Back	Right	Left	Top	Bottom	(worst surface)
260	4		QTM2	PATCH	1	1.3841	24.0037	0.32439	43.79	-	0.82884	0.0577
260	5		QTM2	PATCH	2	1.7786	24.1281	0.32679	40.2919	-	0.40824	0.0737
260	12		QTM2	PATCH	2	2.6566	24.4712	0.25171	39.0391	-	0.43861	0.1086
260	13		QTM2	PATCH	2	2.4385	23.9573	0.28801	47.4624	-	0.80478	0.1018
260	14		QTM2	PATCH	2	2.212	26.2919	0.28209	40.959	-	0.60572	0.0841
260	19		QTM2	PATCH	2	3.1758	25.1953	0.37306	45.7762	-	0.78025	0.1260
260	20		QTM2	PATCH	4	1.8539	26.9551	0.35747	46.16	-	1.1499	0.0688
260	31		QTM2	PATCH	4	4.0604	26.0538	0.25212	41.1289	-	0.66962	0.1558
260	32		QTM2	PATCH	4	4.7187	25.0625	0.30969	46.1747	-	0.42288	0.1883
260	33		QTM2	PATCH	4	6.3521	31.0258	0.30296	45.8581	-	0.74655	0.2047
260	34		QTM2	PATCH	4	6.5776	26.6	0.42717	48.3439	-	1.0745	0.2473
260	35		QTM2	PATCH	4	6.1709	20.5443	0.41191	46.0133	-	0.549	0.3004
260	44		QTM2	PATCH	4	3.9786	28.7215	0.2813	42.2894	-	0.6005	0.1385
260	45		QTM2	PATCH	4	6.1766	22.2246	0.31151	50.1841	-	0.41046	0.2779
260	46		QTM2	PATCH	4	6.096	20.9717	0.33458	48.5113	-	0.87083	0.2907
260	47		QTM2	PATCH	1	6.4637	24.3523	0.45991	47.4686	-	0.94662	0.2654
260		132	QTM2	PATCH	2	1.6568	22.6732	0.3468	42.4716	-	0.82341	0.0731
260		133	QTM2	PATCH	2	1.2275	22.9742	0.25509	40.7444	-	0.57395	0.0534
260		140	QTM2	PATCH	2	3.2223	23.4792	0.27762	40.8037	-	0.34165	0.1372
260		141	QTM2	PATCH	2	3.6338	20.7729	0.38344	44.3054	-	0.67628	0.1749
260		142	QTM2	PATCH	2	2.3418	23.5208	0.26765	39.2557	-	0.91904	0.0996
260		147	QTM2	PATCH	4	3.6374	22.7327	0.30372	45.3886	-	0.51438	0.1600
260		148	QTM2	PATCH	4	3.3489	23.6487	0.37169	49.2709	-	0.81387	0.1416
260		159	QTM2	PATCH	4	5.401	21.0111	0.338	42.4607	-	0.76387	0.2571
260		160	QTM2	PATCH	4	5.5162	24.8002	0.3948	48.6623	-	1.3426	0.2224
260		161	QTM2	PATCH	4	4.8241	19.9341	0.40828	47.6468	-	0.73149	0.2420
260		162	QTM2	PATCH	4	5.1482	24.1701	0.23924	43.9618	-	0.81781	0.2130
260		163	QTM2	PATCH	4	6.4338	22.0178	0.30853	46.5695	-	0.70964	0.2922
260		172	QTM2	PATCH	4	5.5305	22.5304	0.37802	45.2177	-	1.2356	0.2455
260		173	QTM2	PATCH	4	5.1691	23.4771	0.32615	48.6595	-	0.92941	0.2202
260		174	QTM2	PATCH	1	5.5292	24.134	0.42409	52.486	-	0.73928	0.2291
260		175	QTM2	PATCH	2	5.9437	23.3779	0.3059	46.9372	-	0.99878	0.2542
260	4	132	QTM2	PATCH	2	3.3641	24.0068	0.38135	46.336	-	1.279	0.1401
260	5	133	QTM2	PATCH	2	3.1415	24.7647	0.35628	43.3908	-	0.48227	0.1269
260	12	140	QTM2	PATCH	2	6.1019	25.3402	0.27122	41.7865	-	0.2707	0.2408
260	13	141	QTM2	PATCH	2	6.7924	22.1263	0.38514	51.0578	-	1.0255	0.3070
260	14	142	QTM2	PATCH	4	5.014	27.1972	0.28753	43.8157	-	0.99922	0.1844
260	19	147	QTM2	PATCH	4	6.6208	25.7155	0.31756	52.7481	-	0.73767	0.2575
260	20	148	QTM2	PATCH	4	5.1191	28.1885	0.43268	56.6631	-	1.5085	0.1816
260	31	159	QTM2	PATCH	4	11.0718	23.0355	0.30402	49.3307	-	0.60993	0.4806
260	32	160	QTM2	PATCH	4	10.8149	27.4381	0.43865	60.6013	-	1.0879	0.3942
260	33	161	QTM2	PATCH	4	12.815	27.1509	0.44246	56.6249	-	1.2139	0.4720
260	34	162	QTM2	PATCH	4	12.1184	28.8269	0.32795	52.3698	-	1.4496	0.4204
260	35	163	QTM2	PATCH	4	13.6909	19.4708	0.36899	48.6917	-	0.85184	0.7032
260	44	172	QTM2	PATCH	4	10.965	27.9103	0.41089	53.9659	-	1.1381	0.3929
260	45	173	QTM2	PATCH	4	12.3998	23.7505	0.27853	62.6981	-	0.77815	0.5221
260	46	174	QTM2	PATCH	4	12.7196	21.6404	0.47173	63.1257	-	1.1721	0.5878
260	47	175	QTM2	PATCH	4	13.7326	25.1383	0.42472	51.5791	-	1.6781	0.5463

Table 18. PD of QTM#2 – patch antenna -n260 Low channel

| Band | Beam_ID | | Ant module | Ant Type | Num. of Feed | 4cm2 PD(W/m2) at 2mm evaluation surfaces @6dBm | | | | | | Ratio Front / |
| | | | | | | relative phase worst PD for MIMO | | | | | | (worst surface) |
						Front	Back	Right	Left	Top	Bottom	
260	4		QTM2	PATCH	1	0.9974	23.8949	0.31650	43.3871	-	0.80231	0.0417
260	5		QTM2	PATCH	2	1.5786	23.7596	0.31905	39.4253	-	0.39326	0.0664
260	12		QTM2	PATCH	2	2.6812	23.4178	0.25243	37.8188	-	0.45656	0.1145
260	13		QTM2	PATCH	2	2.2828	23.5803	0.31145	47.4992	-	0.87287	0.0968
260	14		QTM2	PATCH	2	1.7931	26.0161	0.27859	40.2694	-	0.52004	0.0689
260	19		QTM2	PATCH	2	3.5006	24.3712	0.39034	45.7948	-	0.86341	0.1436
260	20		QTM2	PATCH	4	2.0207	26.4342	0.35192	46.0406	-	1.13756	0.0764
260	31		QTM2	PATCH	4	3.5091	24.0975	0.23612	40.37	-	0.82179	0.1456
260	32		QTM2	PATCH	4	4.5665	23.907	0.32313	44.9158	-	0.35	0.1910
260	33		QTM2	PATCH	4	6.2051	30.2069	0.30883	46.1119	-	0.73253	0.2054
260	34		QTM2	PATCH	4	5.7425	24.9656	0.43045	48.4026	-	1.04513	0.2300
260	35		QTM2	PATCH	4	4.8937	19.8892	0.45214	46.6482	-	0.80504	0.2460
260	44		QTM2	PATCH	4	3.6625	27.0574	0.26981	41.495	-	0.72975	0.1354
260	45		QTM2	PATCH	4	5.9868	21.4352	0.32109	49.0102	-	0.37941	0.2793
260	46		QTM2	PATCH	4	4.8152	19.7954	0.36544	48.7175	-	1.11799	0.2432
260	47		QTM2	PATCH	1	5.37006	23.366	0.22116	47.8673	-	1.65892	0.2298
260		132	QTM2	PATCH	2	1.5948	22.2517	0.34907	42.2949	-	0.819649	0.0717
260		133	QTM2	PATCH	2	1.1889	22.6839	0.25711	40.3772	-	0.59728	0.0524
260		140	QTM2	PATCH	2	3.0684	22.6992	0.27701	39.9685	-	0.41938	0.1352
260		141	QTM2	PATCH	2	4.4004	20.7766	0.39371	44.9188	-	0.66938	0.2118
260		142	QTM2	PATCH	2	2.1924	22.9141	0.26998	38.2714	-	0.858433	0.0957
260		147	QTM2	PATCH	4	4.1981	22.6676	0.31221	46.1163	-	0.52169	0.1852
260		148	QTM2	PATCH	4	3.9485	23.2665	0.37813	49.6773	-	0.95063	0.1697
260		159	QTM2	PATCH	4	6.3612	20.4304	0.37548	43.1472	-	0.60761	0.3114
260		160	QTM2	PATCH	4	5.5956	23.6989	0.40582	47.6118	-	1.33026	0.2361
260		161	QTM2	PATCH	4	4.7056	18.9459	0.37501	48.4145	-	0.71716	0.2484
260		162	QTM2	PATCH	4	4.8582	23.0958	0.26221	42.6438	-	0.71839	0.2103
260		163	QTM2	PATCH	4	6.7406	21.4443	0.30766	46.7272	-	0.84742	0.3143
260		172	QTM2	PATCH	4	5.3539	21.4339	0.38927	43.2833	-	1.20834	0.2498
260		173	QTM2	PATCH	4	5.082	21.9299	0.31852	48.2929	-	1.02785	0.2317
260		174	QTM2	PATCH	1	5.8557	23.8634	0.43024	53.2456	-	0.85849	0.2454
260		175	QTM2	PATCH	2	6.403	22.701	0.54454	46.449	-	0.92266	0.2821
260	4	132	QTM2	PATCH	2	3.1621	23.7341	0.373625	46.2154	-	1.26117	0.1332
260	5	133	QTM2	PATCH	2	3.9894	24.6236	0.366923	42.7155	-	0.458326	0.1620
260	12	140	QTM2	PATCH	2	5.4197	24.5851	0.288405	41.0063	-	0.42283	0.2204
260	13	141	QTM2	PATCH	2	6.84	21.1876	0.382803	50.5956	-	1.10392	0.3228
260	14	142	QTM2	PATCH	4	3.958	26.5281	0.281932	41.6066	-	1.01534	0.1492
260	19	147	QTM2	PATCH	4	6.8398	24.187	0.350822	53.2777	-	0.7651	0.2828
260	20	148	QTM2	PATCH	4	6.3067	27.5186	0.39084	56.8776	-	1.39239	0.2292
260	31	159	QTM2	PATCH	4	10.4848	20.0722	0.25598	47.9465	-	0.67823	0.5224
260	32	160	QTM2	PATCH	4	10.4087	25.2832	0.45085	57.5368	-	0.80417	0.4117
260	33	161	QTM2	PATCH	4	12.9386	27.5755	0.484817	55.6142	-	1.00797	0.4692
260	34	162	QTM2	PATCH	4	11.7764	27.6606	0.306846	51.824	-	1.6138	0.4257
260	35	163	QTM2	PATCH	4	14.0431	18.1364	0.38255	50.3096	-	0.94702	0.7743
260	44	172	QTM2	PATCH	4	10.5499	24.8337	0.417784	50.5868	-	1.24736	0.4248
260	45	173	QTM2	PATCH	4	12.7798	22.0665	0.2853	63.1738	-	0.83391	0.5791
260	46	174	QTM2	PATCH	4	14.8142	19.6292	0.490013	67.6896	-	1.435	0.7547
260	47	175	QTM2	PATCH	4	15.7149	23.4651	0.74622	55.5632	-	1.86542	0.6697

Table 19. PD of QTM#2 – patch antenna -n260 High channel

| n260 High ch.(39.95GHz) | | | | | 4cm2 PD(W/m2) at 2mm evaluation surfaces @6dBm | | | | | | Ratio |
| | | | | | relative phase worst PD for MIMO | | | | | | Front / |
Band	Beam_ID		Ant module	Ant Type	Num. of Feed	Front	Back	Right	Left	Top	Bottom	(worst surface)
260	4		QTM2	PATCH	1	1.5795	24.196	0.32096	44.4884	-	0.81923	0.0653
260	5		QTM2	PATCH	2	1.7164	24.1519	0.31962	40.3402	-	0.41344	0.0711
260	12		QTM2	PATCH	2	2.6884	24.6383	0.24651	39.681	-	0.54315	0.1091
260	13		QTM2	PATCH	2	2.0677	24.1611	0.27252	48.3771	-	0.717	0.0856
260	14		QTM2	PATCH	2	2.3228	26.159	0.28505	41.5131	-	0.59921	0.0888
260	19		QTM2	PATCH	2	2.9457	25.892	0.36770	46.1668	-	0.71563	0.1138
260	20		QTM2	PATCH	4	2.0073	28.3714	0.29897	47.1694	-	1.1195	0.0708
260	31		QTM2	PATCH	4	3.8427	25.9786	0.26014	41.1102	-	0.7114	0.1479
260	32		QTM2	PATCH	4	4.2339	25.0858	0.30919	46.3324	-	0.78975	0.1688
260	33		QTM2	PATCH	4	7.0342	33.0553	0.29819	46.792	-	0.78629	0.2128
260	34		QTM2	PATCH	4	6.705	26.2639	0.43077	48.657	-	0.8719	0.2553
260	35		QTM2	PATCH	4	5.4961	20.1973	0.41421	45.1809	-	0.54886	0.2721
260	44		QTM2	PATCH	4	3.5726	28.6712	0.27029	42.5812	-	0.89669	0.1246
260	45		QTM2	PATCH	4	6.7187	23.5224	0.29625	51.6079	-	0.45495	0.2856
260	46		QTM2	PATCH	4	5.3332	20.4953	0.33653	47.5152	-	0.88269	0.2602
260	47		QTM2	PATCH	1	5.8075	23.6092	0.4365	46.5955	-	1.25685	0.2460
260		132	QTM2	PATCH	2	1.3659	23.011	0.34091	42.5807	-	0.80733	0.0594
260		133	QTM2	PATCH	2	1.2544	23.5271	0.24204	41.1172	-	0.43794	0.0533
260		140	QTM2	PATCH	2	3.195	24.1144	0.28606	41.6602	-	0.30536	0.1325
260		141	QTM2	PATCH	2	3.0123	21.2938	0.37428	44.274	-	0.67243	0.1415
260		142	QTM2	PATCH	2	1.8607	23.8803	0.26027	39.1869	-	0.88852	0.0779
260		147	QTM2	PATCH	4	2.9786	23.339	0.29712	45.1693	-	0.49551	0.1276
260		148	QTM2	PATCH	4	3.1174	23.7838	0.35178	48.615	-	0.81201	0.1311
260		159	QTM2	PATCH	4	5.8807	22.1223	0.3332	43.8845	-	0.57906	0.2658
260		160	QTM2	PATCH	4	4.4007	25.2941	0.37568	48.4874	-	1.25424	0.1740
260		161	QTM2	PATCH	4	4.1841	19.6291	0.38465	47.5561	-	0.69051	0.2132
260		162	QTM2	PATCH	4	4.3708	25.2175	0.24038	43.8093	-	0.8122	0.1733
260		163	QTM2	PATCH	4	6.2492	22.9289	0.28447	47.4091	-	0.57083	0.2725
260		172	QTM2	PATCH	4	3.9921	23.4825	0.37275	44.2269	-	1.2541	0.1700
260		173	QTM2	PATCH	4	5.0645	24.0021	0.34840	48.95	-	0.93901	0.2110
260		174	QTM2	PATCH	1	5.2711	24.0557	0.3999	52.1999	-	0.75714	0.2191
260		175	QTM2	PATCH	2	5.4480	23.0652	0.12256	46.5152	-	0.87483	0.2362
260	4	132	QTM2	PATCH	2	3.1073	25.0709	0.37332	47.251	-	1.33194	0.1239
260	5	133	QTM2	PATCH	2	0.6569	25.2066	0.33422	42.925	-	0.58266	0.0261
260	12	140	QTM2	PATCH	2	6.7641	26.0471	0.26641	44.4401	-	0.26246	0.2597
260	13	141	QTM2	PATCH	2	5.6198	22.9934	0.34975	51.5681	-	0.77737	0.2444
260	14	142	QTM2	PATCH	4	4.6042	28.1366	0.28580	44.0816	-	0.99079	0.1636
260	19	147	QTM2	PATCH	4	4.9012	25.728	0.32695	50.9821	-	0.74846	0.1905
260	20	148	QTM2	PATCH	4	4.3164	31.2942	0.41317	57.1306	-	1.35604	0.1379
260	31	159	QTM2	PATCH	4	12.095	25.2114	0.30329	51.8348	-	0.25756	0.4797
260	32	160	QTM2	PATCH	4	10.146	27.734	0.39121	61.6158	-	0.9262	0.3658
260	33	161	QTM2	PATCH	4	14.503	28.9192	0.48985	58.1813	-	1.08491	0.5015
260	34	162	QTM2	PATCH	4	9.6019	30.4635	0.31826	51.2478	-	1.06834	0.3152
260	35	163	QTM2	PATCH	4	11.152	19.2278	0.35975	49.193	-	0.79761	0.5800
260	44	172	QTM2	PATCH	4	10.575	29.3979	0.42142	56.1513	-	1.14113	0.3597
260	45	173	QTM2	PATCH	4	12.551	24.9882	0.25118	63.6295	-	0.80349	0.5023
260	46	174	QTM2	PATCH	4	11.264	21.8773	0.48121	64.5343	-	1.07975	0.5149
260	47	175	QTM2	PATCH	4	12.494	24.7520	0.19039	52.7024	-	1.33517	0.5048