FCC ID : V65E7110
Power Density Simulation Report

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KYOCERA CORPORATION

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. 19.5(2019 R3) is used. ANSYS HFSS is one of several commercial tools for 3D full-wave electromagnetic simulation used for antenna and RF structure design of high frequency component. ANSYS Electromagnetics suite HFSS ver. 19.5(2019 R3) is implemented based on Finite Element Method(FEM), which operates in the frequency domain.

1.1.2 Mesh and convergence criteria

ANSYS Electromagnetic suite HFSS ver. 19.5(2019 R3) uses the Finite Element Method(FEM) to solve the structure for 3D EM simulations to analyze power density. The volume area containing the simulated object should be subdivided into electrically small parts called finite elements with unknown functions. To subdivide system, the adaptive mesh technique in ANSYS Electromagnetics suite HFSS ver. 19.5(2019 R3) is used. ANSYS Electromagnetics suite HFSS ver. 19.5(2019 R3) starts to refine the initial mesh based on wavelength and calculate the error to iterative process for adaptive mesh refinement. The determination parameter of the number of iteration in ANSYS Electromagnetics suite HFSS ver. 19.5(2019 R3) is defined as convergence criteria, delta S, and the iterative adaptive mesh process repeats until the delta S is met. In ANSYS Electromagnetics suite HFSS ver. 19.5(2019 R3), the accuracy of converged results depends on the delta S.

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:

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

($\vec{S}$) 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. 19.5(2019 R3) .

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 ($\vec{S}$) and the evaluated are (A) is $4cm^2$.

1.2 Simulation setup

1.2.1 Modeling for simulation

The simulation approach to perform PD assessment for a smartphone requires accurate modeling for mmWave antenna module as well as the smartphone itself. Figure 1 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, large components and legacy antennas as well as mmWave antenna modules QTM#0, QTM#1 and QTM#2. On the back side view , QTM#0 is placed on the right side and antennas are facing the right side of the device. QTM#1 is placed on the left side and antennas are facing the left side of the device. QTM#2 is placed on the top side and antennas are facing the back side of the device.

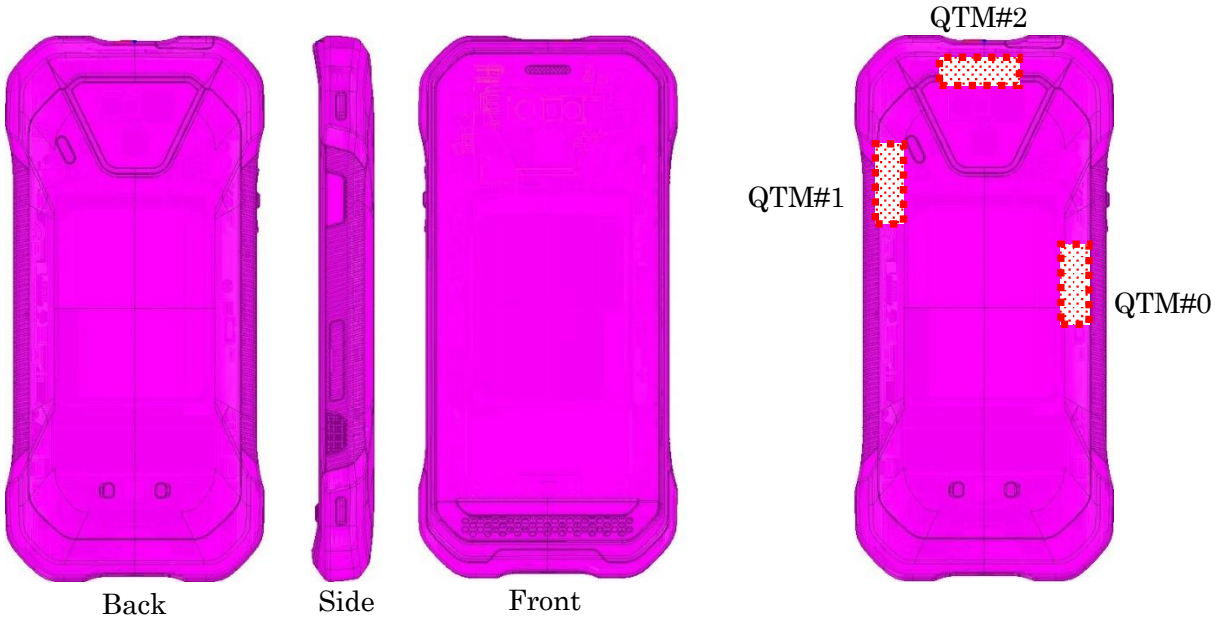


Figure 1. HFSS simulation model which is mounted three mmWave antenna modules.

1.2.2 PD evaluation surfaces

Table 1 shows the PD evaluation surfaces for each mmWave antenna module and Figure 2 shows the PD evaluation planes and truncation area of the simulation model to find worst case of beam forming cases. In QTM#0, 6 evaluation surfaces are set up . QTM#0 is placed at the middle of the device . In QTM#1 and QTM#2 cases, 5 PD evaluation surfaces except bottom side are set up. QTM#1 and QTM#2 are placed at the top of the device and the bottom side is excluded from the worst case because the distance from the bottom side is more than 10λ at 28GHz and 39GHz..

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 view.

Table 1. PD evaluation surfaces

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

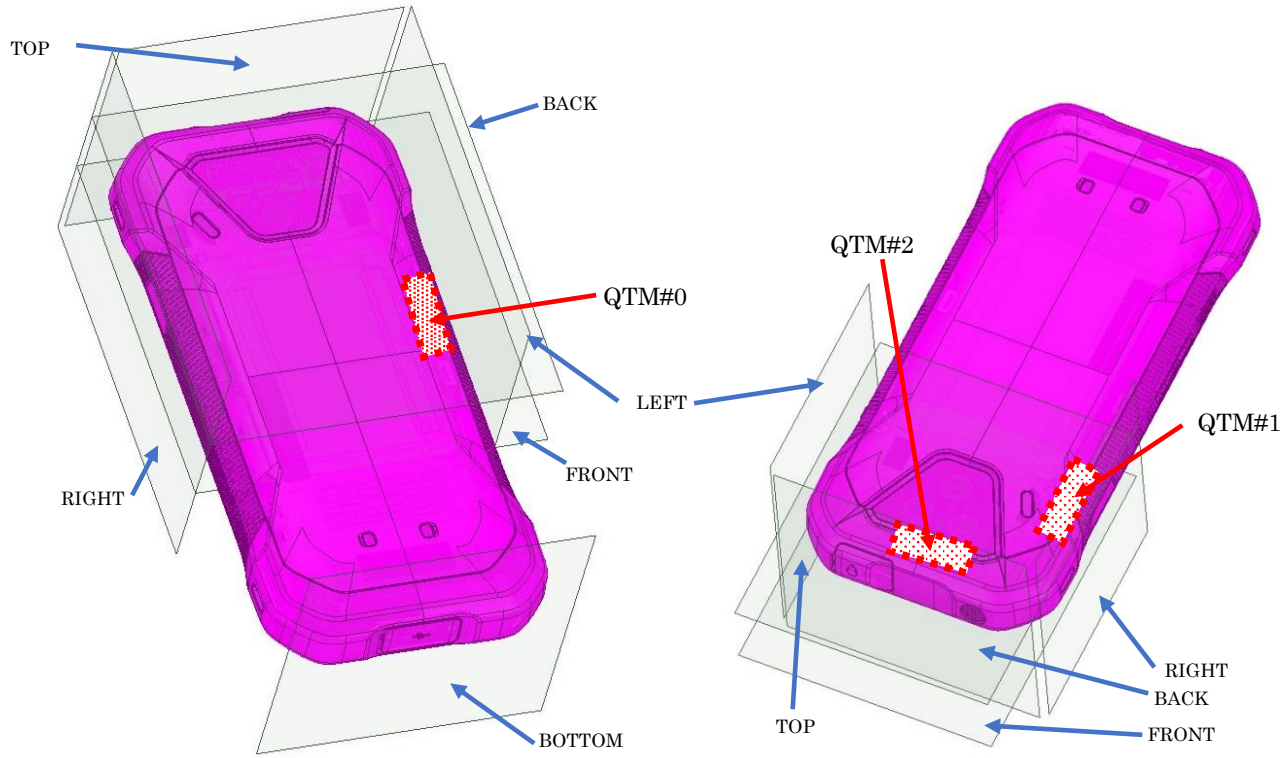


Figure 2. PD evaluation Surfaces

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 3 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 < 0.04dB which confirms that the simulation model is reliable using this setup.

1.2.4 Source excitation condition

Each of the three 5G mmWave array modules is the same part containing a 1x4 element array of dual-polarization patch antennas. The number of antenna ports of QTM#0, QTM#1, and QTM#2 for

source excitation is equal to 16. The port of each patch antenna are separated in frequency and polarization. That is , the ports of each patch antenna are divided into a feed for 28 GHz and a feed for 39 GHz, and a vertical polarity feed and a horizontal polarity feed are divided.

Figure 3 shows the QTM#2 module structure and surrounding structure. The QTM#2 module is encrypted in the ANSYS Electromagnetics suite (HFSS) and can only check the feeding position.

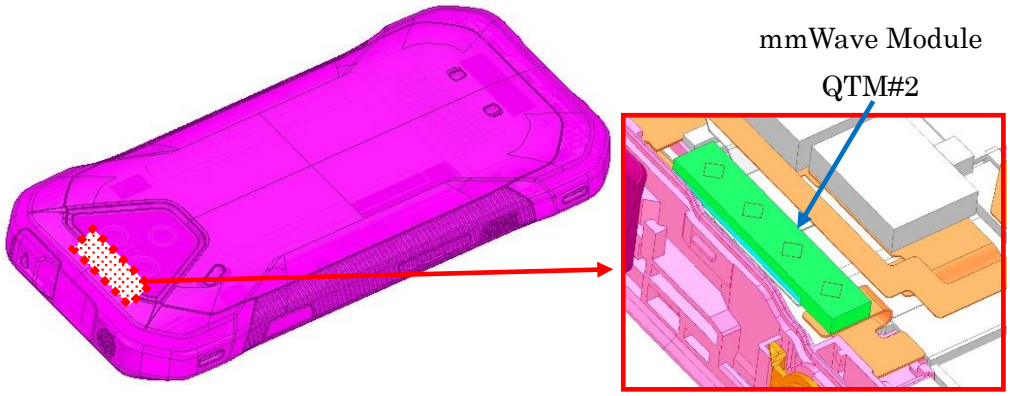


Figure 3. mmWave module(QTM#2)

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). Figure4 shows an example of antenna port excitations.

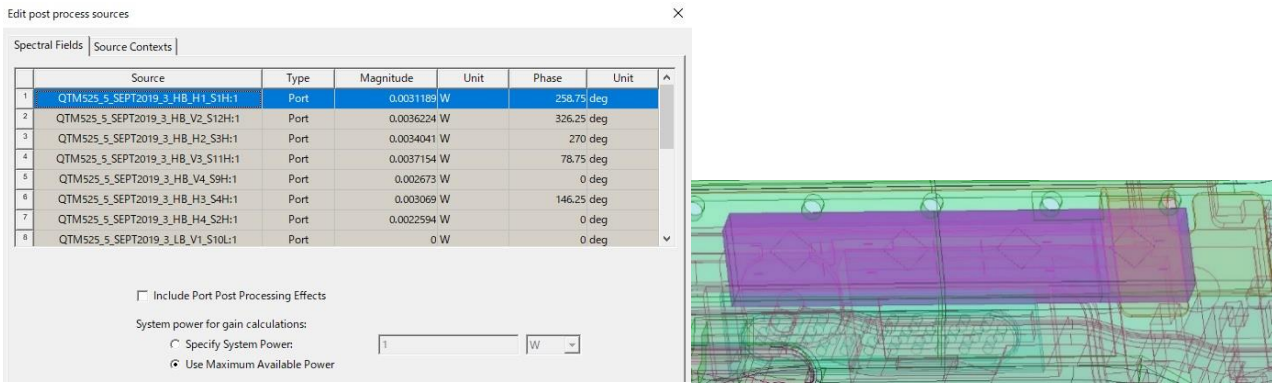


Figure 4. An example of port excitation (QTM#2)

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.

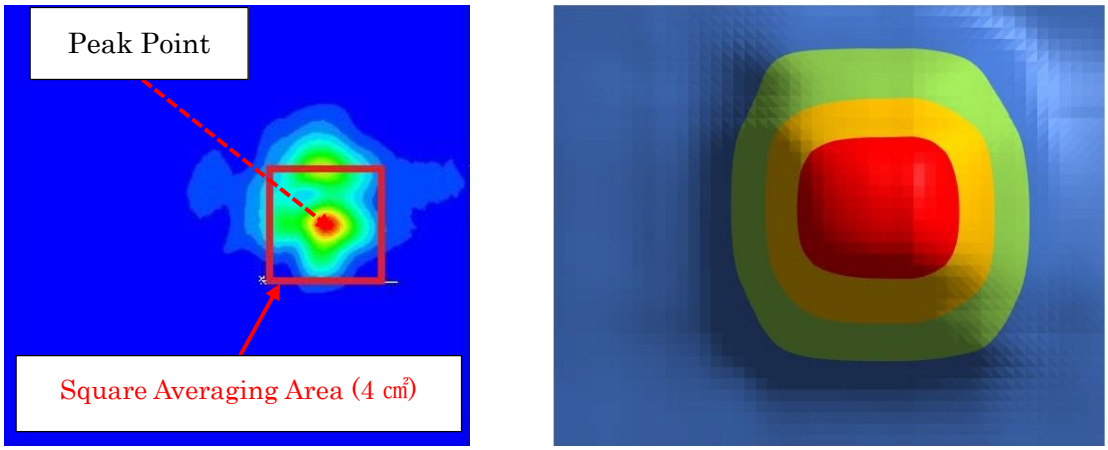
1.2.5 Condition of simulation completion

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 set 0.02. The simulation result of this report is the result of setting delta S to 0.02.

2. Simulation verification

2.1 Spatial-averaged power density

As mentioned in the previous chapter, the Poynting vector ($\vec{S}$) can be obtained through cross product of an electric field ($\vec{E}$) and complex conjugate of a magnetic field ($\overrightarrow{H}$). 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 5 shows examples of the distribution plot of point power density and the averaged power density.



(a)Point Power Density (b)Averaged Power Density

Figure 5. 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

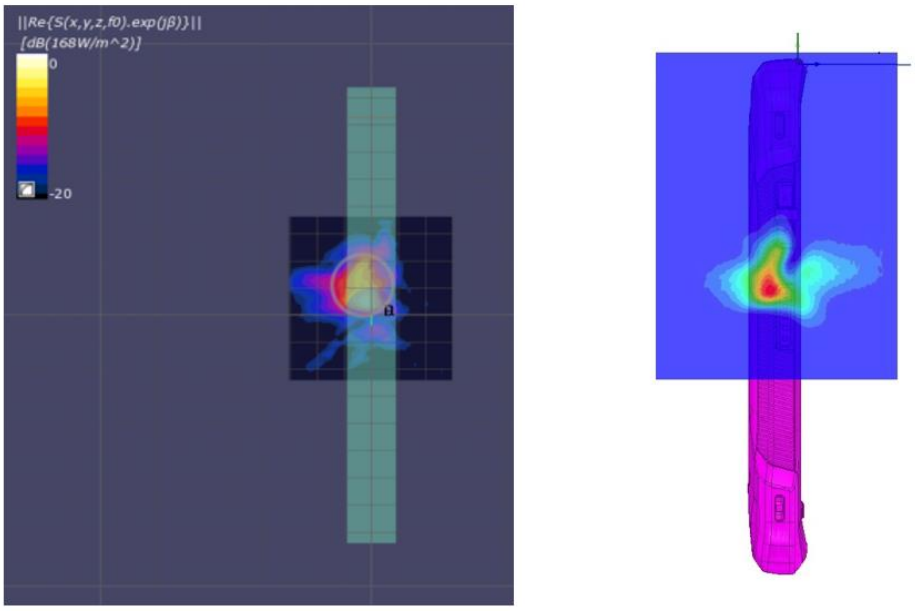
the simulated $4cm^2$ average power density and the measured $4cm^2$ average power density is considered a housing influence. Input power per each active port is listed below for both simulation and measurement verification and power density characterization. For simulation, these values were entered directly into the HFSS model. For measurement, it was used to input these values for each active port using Factory Test Mode S/W.

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

The simulation and measurement results below were performed at 2mm evaluation distance and 28 GHz / 39GHz.

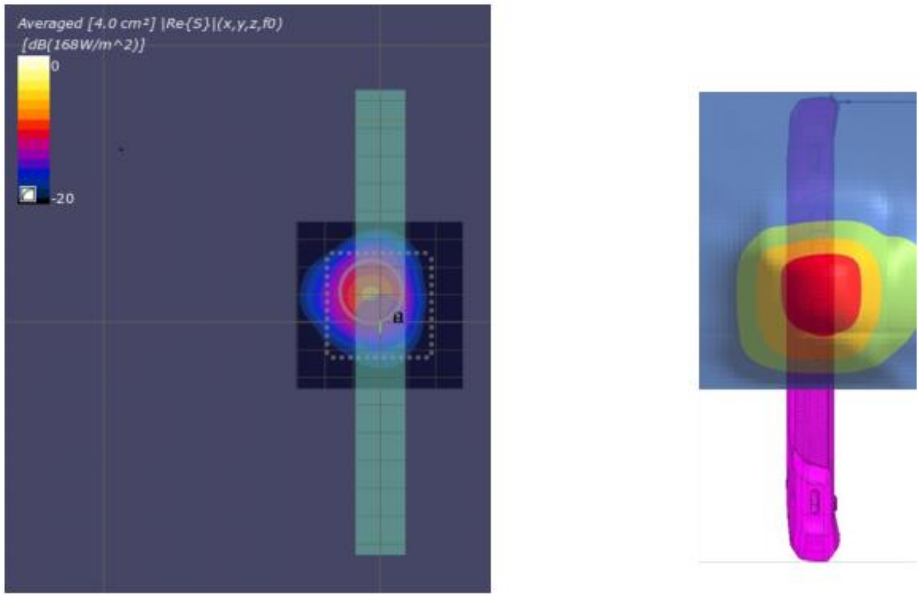
6dBm input measurement/ simulation							4cm² avg.PD(mW/cm²)		Δ	Δmim
Band	Ant Type	Module	Ant Group (Ant Polarization)	beam ID	Surface	Channel	Measured	Simulated		
n261	Patch	QTM0	AG0(V)	39	Right	Mid	1.71	2.01	0.70	0.70
			AG1(H)	151	Right	Mid	1.62	2.48	1.85	
		QTM1	AG0(V)	20	Left	Mid	2.60	2.98	0.59	0.59
			AG1(H)	150	Left	Mid	1.51	3.57	3.74	
		QTM2	AG0(V)	30	Back	Mid	1.92	2.41	1.00	1.00
			AG1(H)	160	Back	Mid	1.56	2.05	1.19	
n260	Patch	QTM0	AG0(V)	25	Right	Mid	2.33	3.70	2.00	0.76
			AG1(H)	167	Right	Mid	2.70	3.22	0.76	
		QTM1	AG0(V)	20	Left	Mch	2.55	5.07	2.98	2.81
			AG1(H)	163	Left	Mch	2.71	5.18	2.81	
		QTM2	AG0(V)	42	Back	Mid	3.00	4.20	1.47	0.10
			AG1(H)	156	Back	Mid	3.01	3.08	0.10	

n261 Patch antenna QTM#0 Ant_Group0(V-polarization) beam ID 39 Right-side Mid ch.



(a)Measurement (b)Simulation

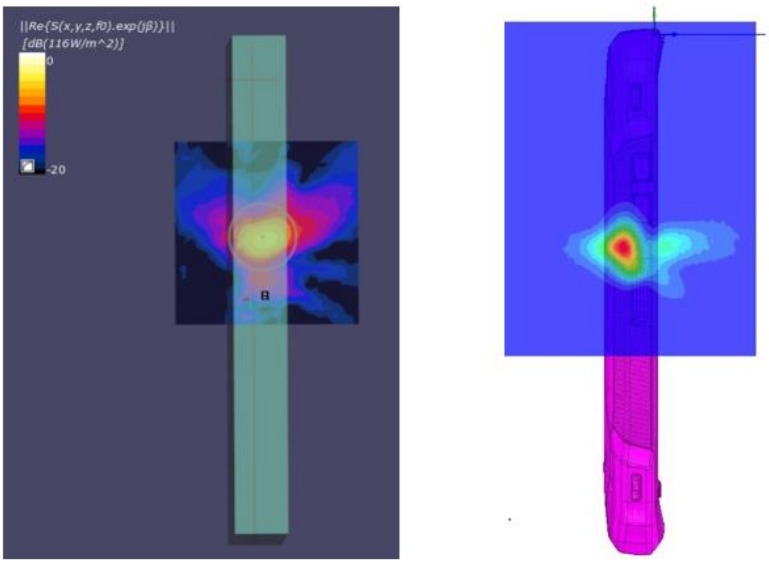
Patch antenna QTM#0 AG0(V-polarization) beam ID 39, Point power density



(a)Measurement (b)Simulation

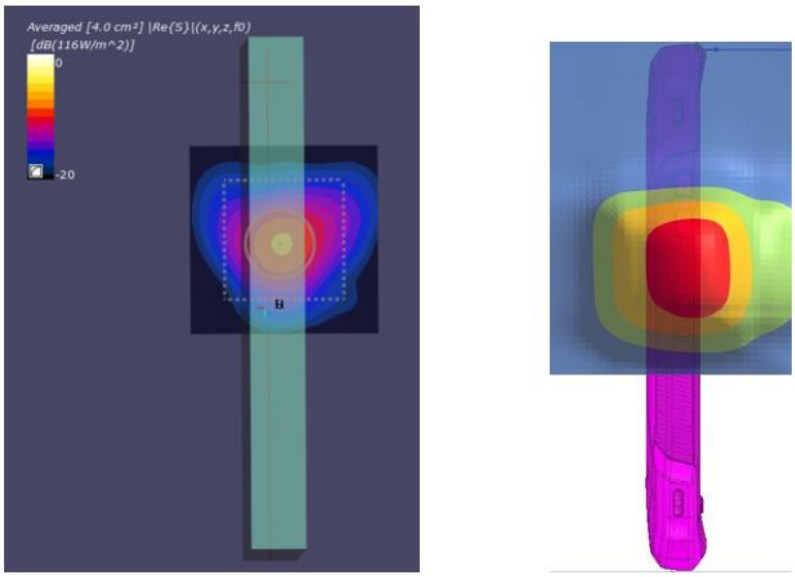
Patch antenna QTM#0 AG0(V-polarization) beam ID 39, 4cm² Averaged power density

n261 Patch antenna QTM#0 Ant_Group1(H-polarization) beam ID 151 Right-side Mid ch.



(a)Measurement (b)Simulation

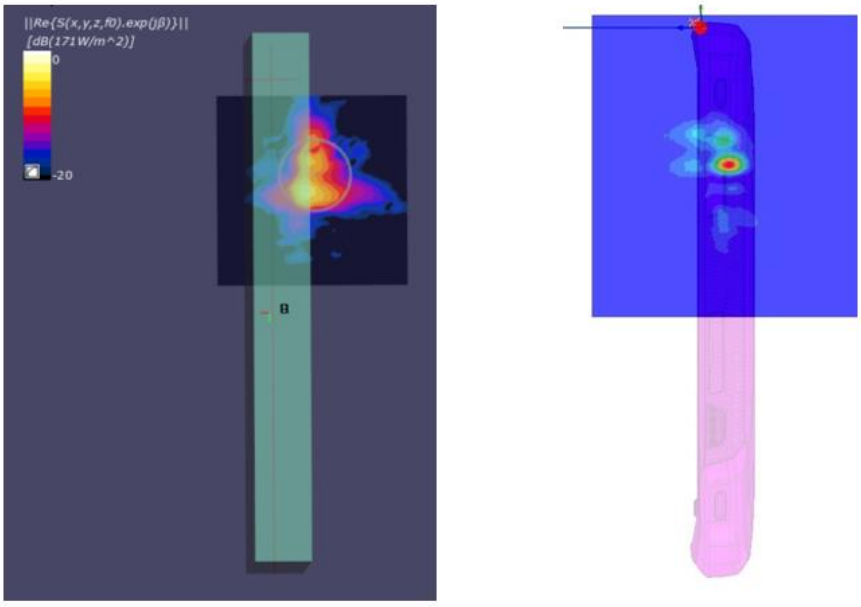
Patch antenna QTM#0 AG1(H-polarization) beam ID 151, Point power density



(a)Measurement (b)Simulation

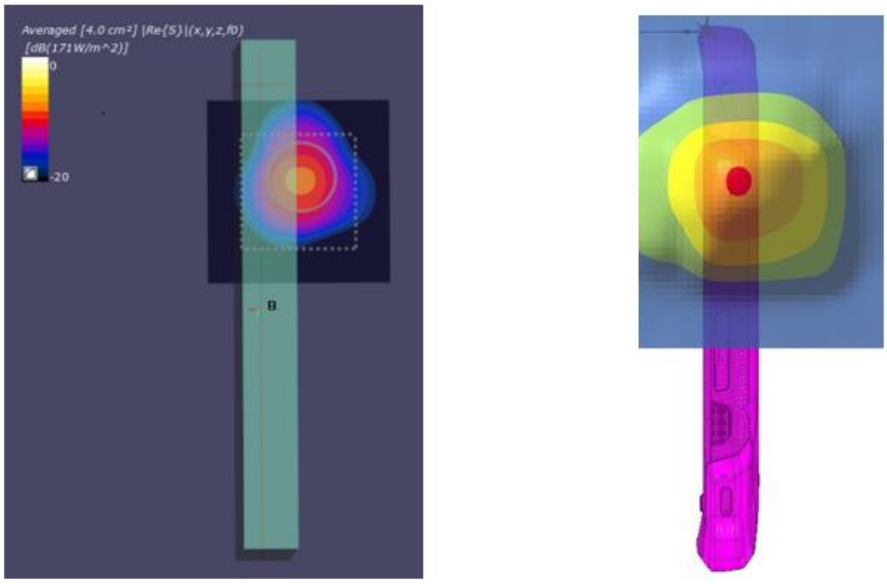
Patch antenna QTM#0 AG1(H-polarization) beam ID 151, 4cm² Averaged power density

n261 Patch antenna QTM1 Ant_Group0(V-polarization) beam ID 20 Left-side Mid ch.



(a)Measurement (b)Simulation

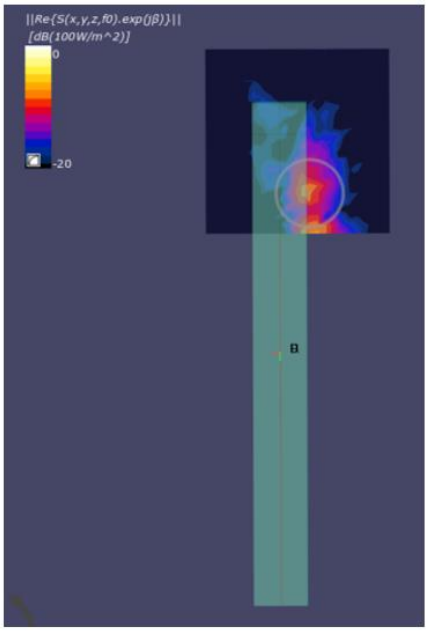
Patch antenna QTM1 AG0(V-polarization) beam ID 20, Point power density

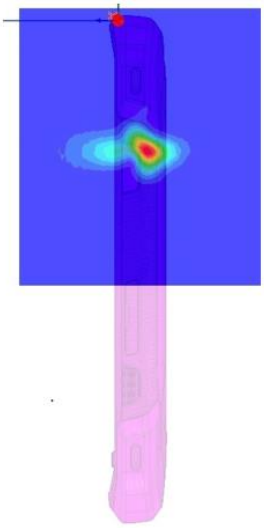


(a)Measurement (b)Simulation

Patch antenna QTM1 AG0(V-polarization) beam ID 20, 4cm² Averaged power density

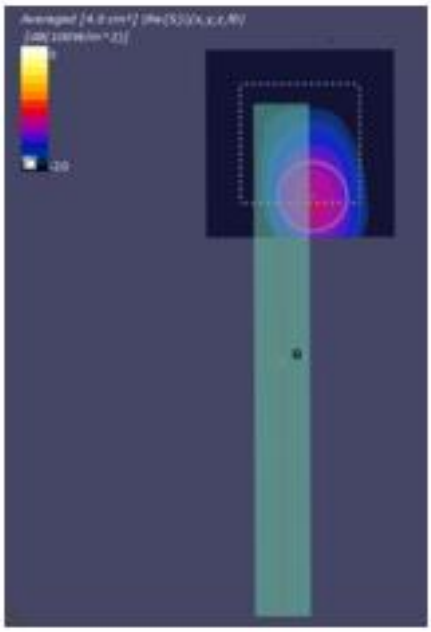
n261 Patch antenna QTM1 Ant_Group1(H-polarization) beam ID 150 Left-side Mid ch.

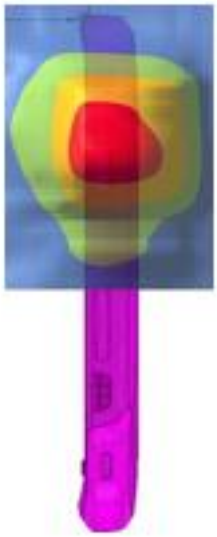




(a)Measurement (b)Simulation

Patch antenna QTM1 AG1(H-polarization) beam ID 150, Point power density

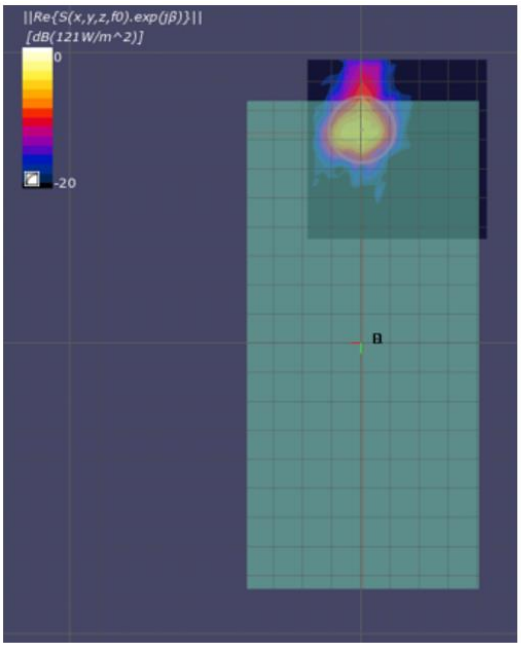




(a)Measurement (b)Simulation

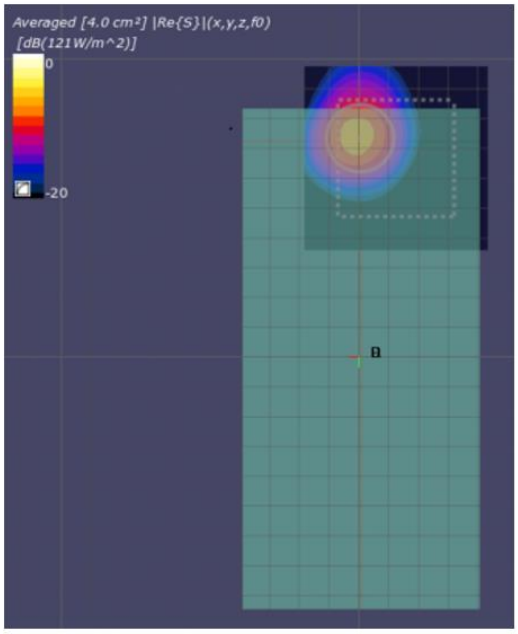
Patch antenna QTM1 AG1(H-polarization) beam ID 150, 4cm² Averaged power density

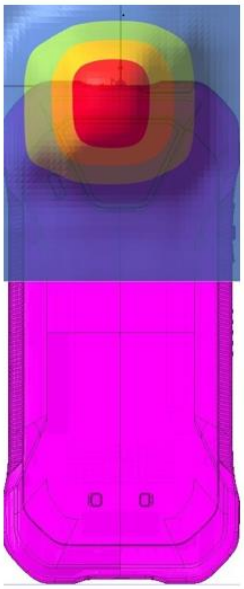
n261 Patch antenna QTM2 Ant_Group0(V-polarization) beam ID 30 Back-side Mid ch.



(a)Measurement (b)Simulation

Patch antenna QTM2 AG0(V-polarization) beam ID 30, Point power density

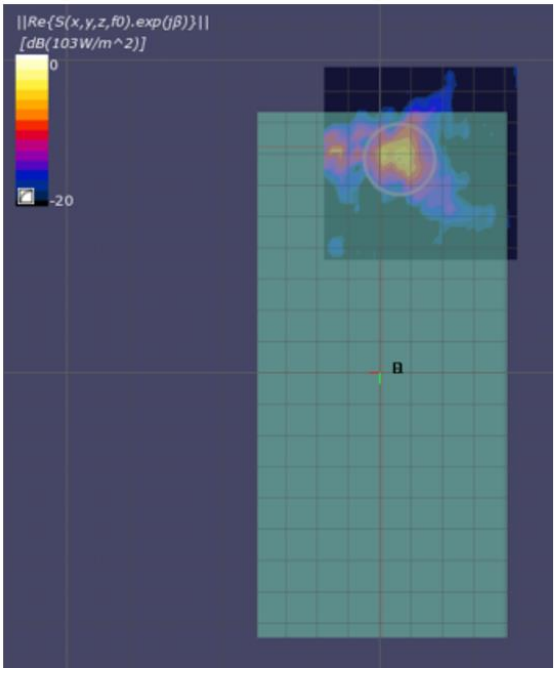




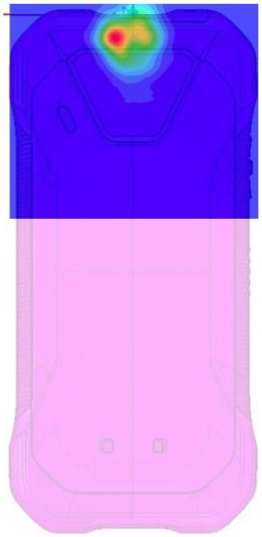
(a)Measurement (b)Simulation

Patch antenna QTM2 AG0(V-polarization) beam ID 30, 4cm² Averaged power density

n261 Patch antenna QTM2 Ant_Group1(H-polarization) beam ID 160 Back-side Mid ch.

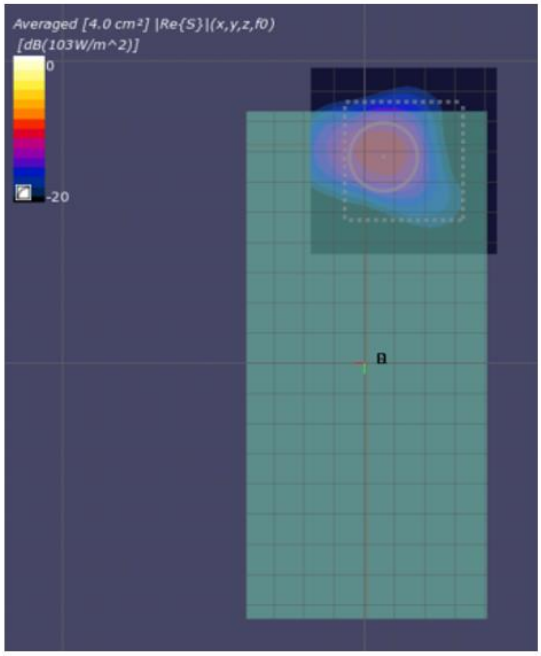


(a)Measurement

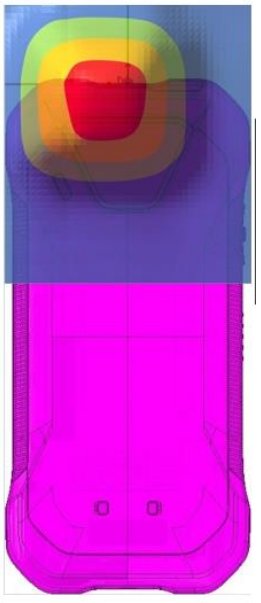


(b)Simulation

Patch antenna QTM2 AG1(H-polarization) beam ID 160, Point power density



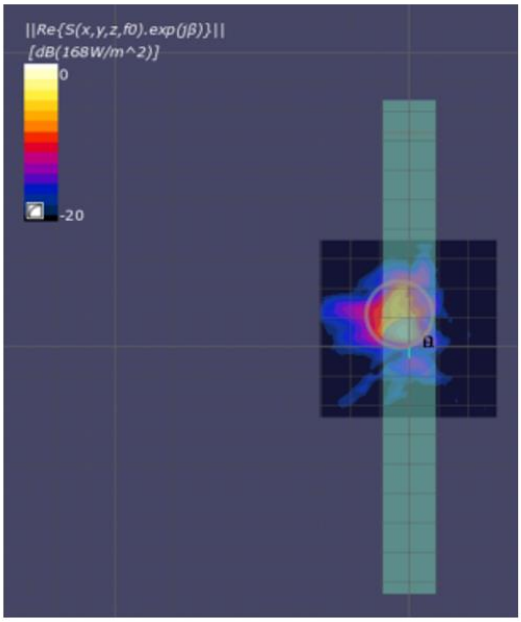
(a)Measurement

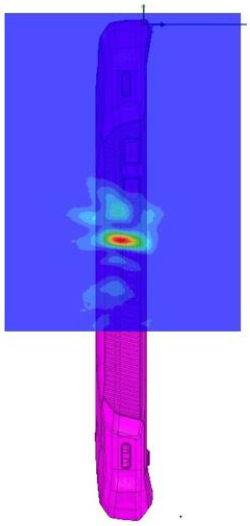


(b)Simulation

Patch antenna QTM2 AG1(H-polarization) beam ID 160, 4cm² Averaged power density

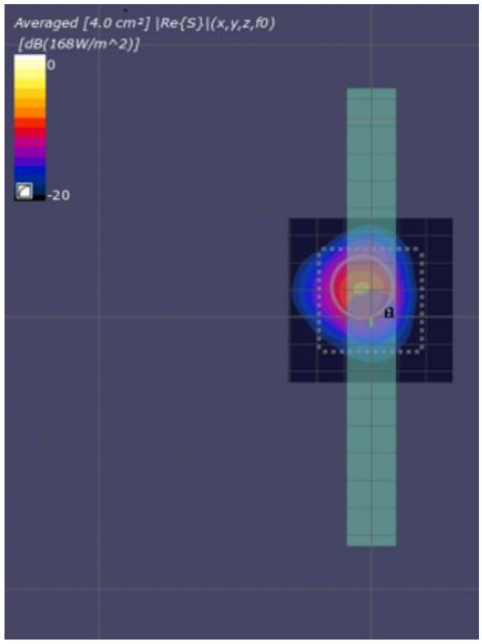
n260 Patch antenna QTM#0 Ant_Group0(V-polarization) beam ID 25 Right-side Mid ch.

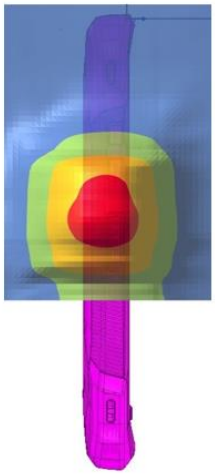




(a)Measurement (b)Simulation

Patch antenna QTM#0 AG0(V-polarization) beam ID 25, Point power density

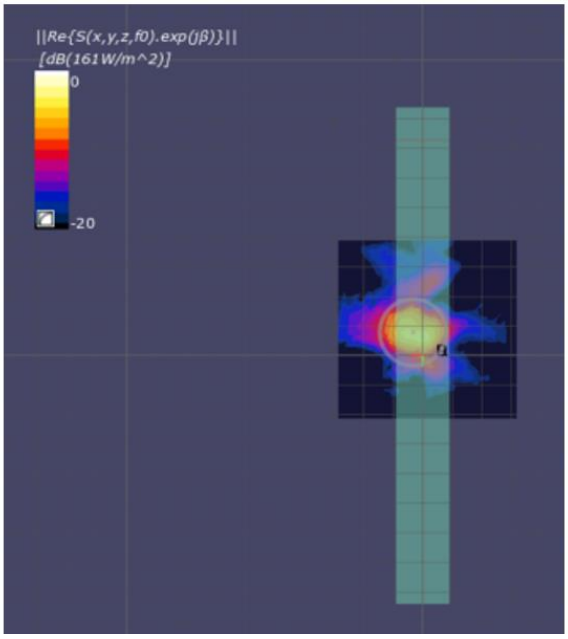


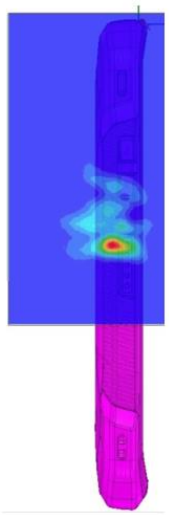


(a)Measurement (b)Simulation

Patch antenna QTM#0 AG0(V-polarization) beam ID 25, 4cm^2 Averaged power density

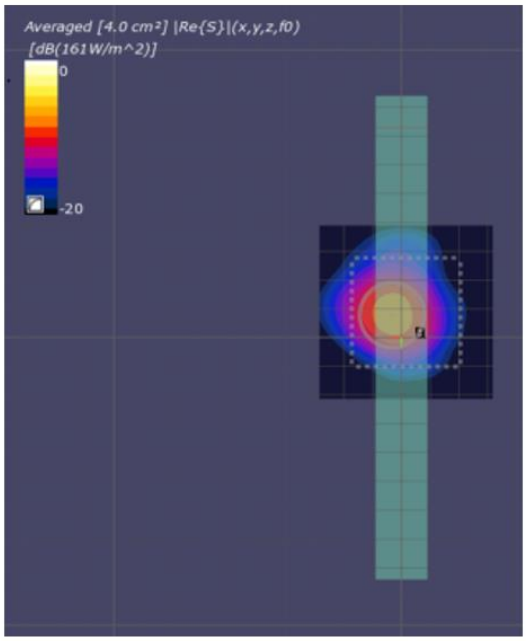
n260 Patch antenna QTM#0 Ant_Group1(H-polarization) beam ID 167 Right-side Mid ch.

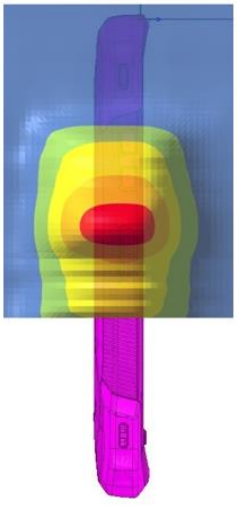




(a)Measurement (b)Simulation

Patch antenna QTM#0 AG1(H-polarization) beam ID 167, Point power density

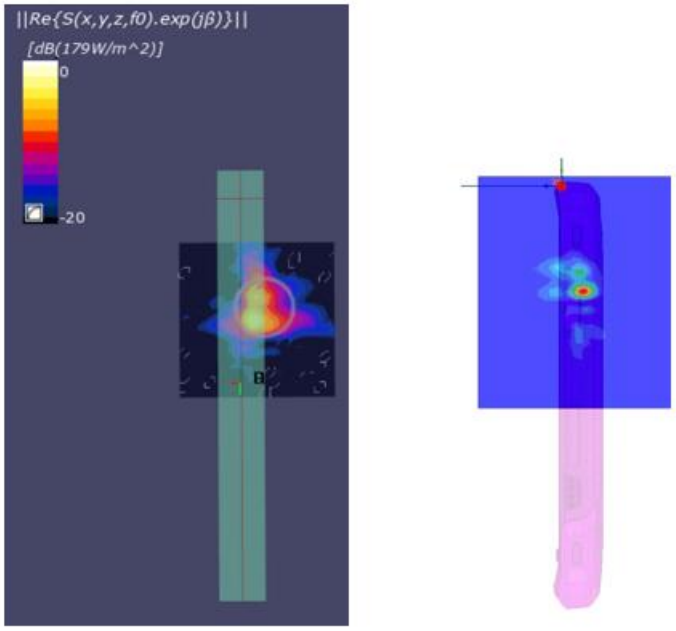




(a)Measurement (b)Simulation

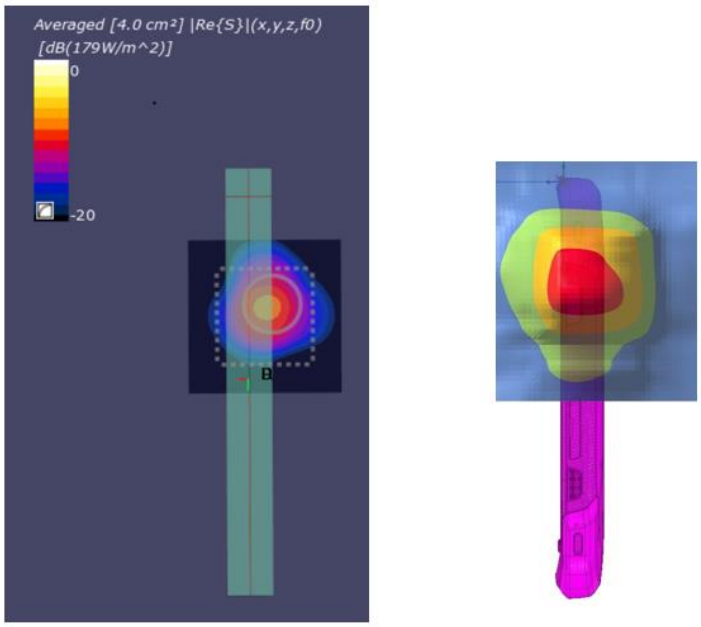
Patch antenna QTM#0 AG1(H-polarization) beam ID 167, 4cm² Averaged power density

n260 Patch antenna QTM1 Ant_Group0(V-polarization) beam ID 20 Left-side Mid ch.



(a)Measurement (b)Simulation

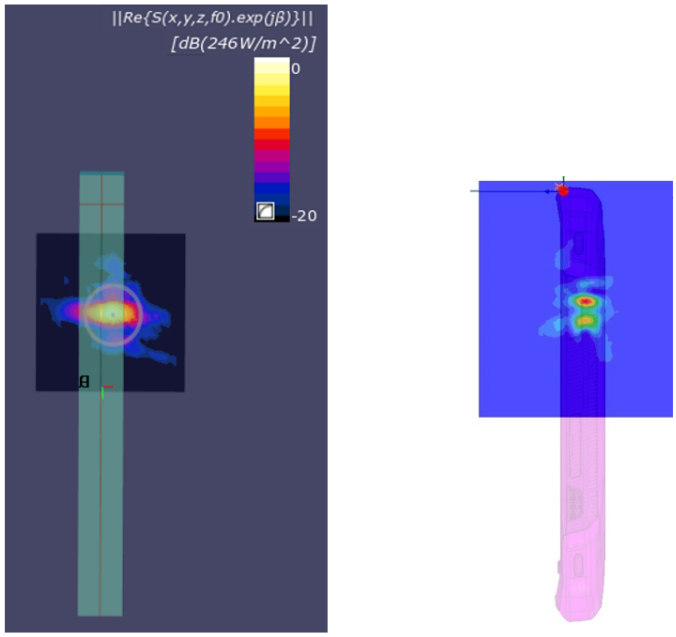
Patch antenna QTM1 AG0(V-polarization) beam ID 20, Point power density



(a)Measurement (b)Simulation

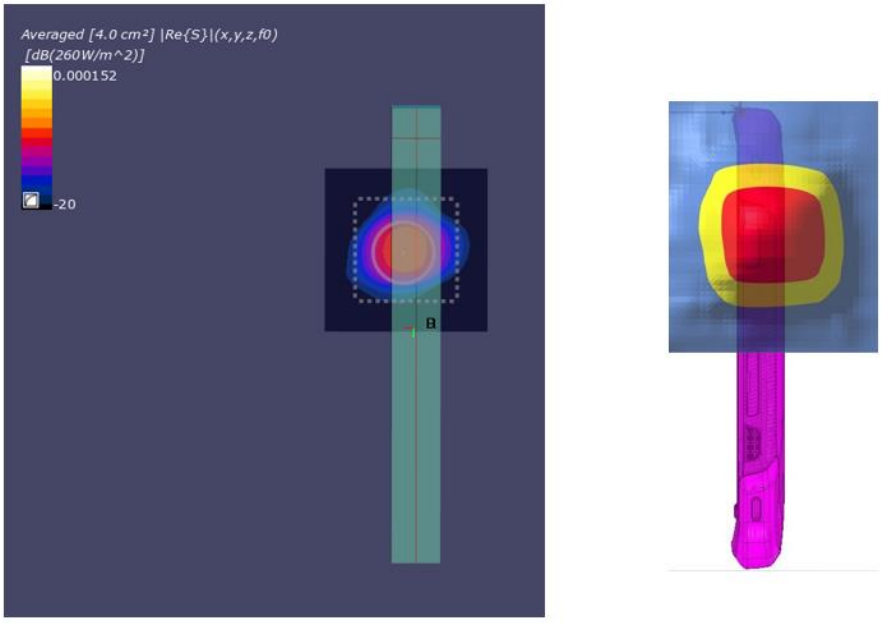
Patch antenna QTM1 AG0(V-polarization) beam ID 20, 4cm² Averaged power density

n260 Patch antenna QTM1 Ant_Group1(H-polarization) beam ID 163 Left-side Mid ch.



(a)Measurement (b)Simulation

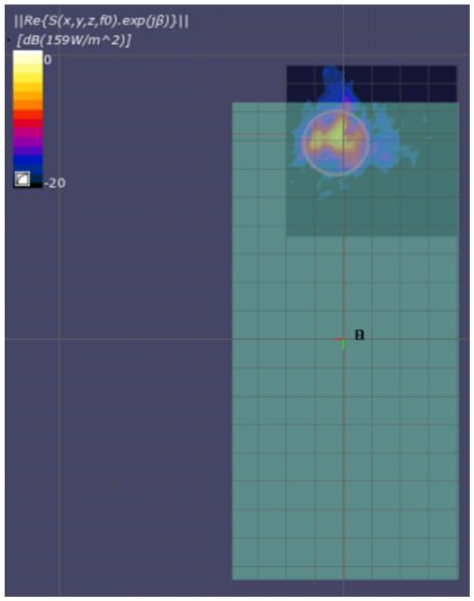
Patch antenna QTM1 AG1(H-polarization) beam ID 163, Point power density

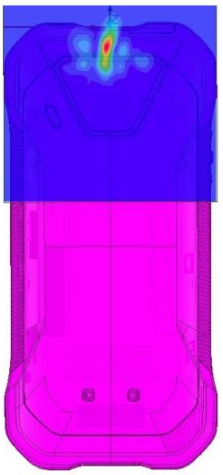


(a)Measurement (b)Simulation

Patch antenna QTM1 AG1(H-polarization) beam ID 163, 4cm² Averaged power density

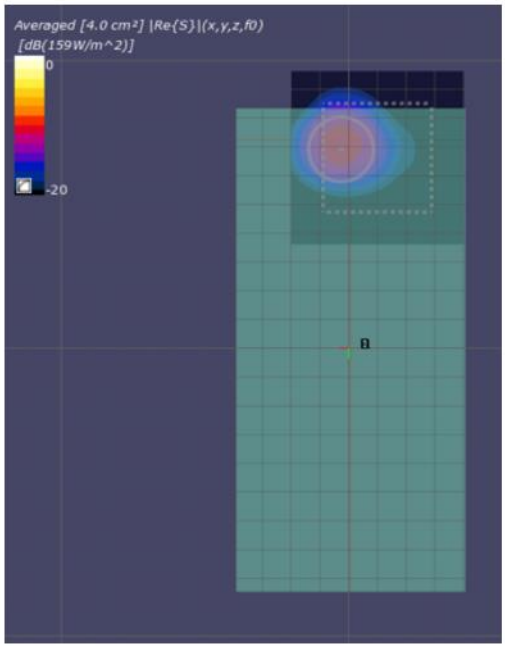
n260 Patch antenna QTM2 Ant_Group0(V-polarization) beam ID 42 Back-side Mid ch.

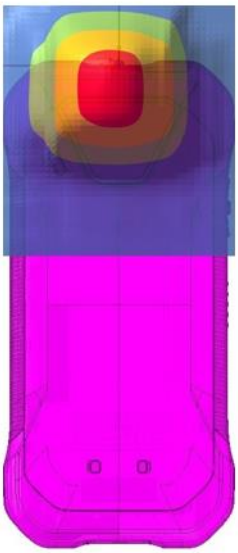




(a)Measurement (b)Simulation

Patch antenna QTM2 AG0(V-polarization) beam ID 42, Point power density

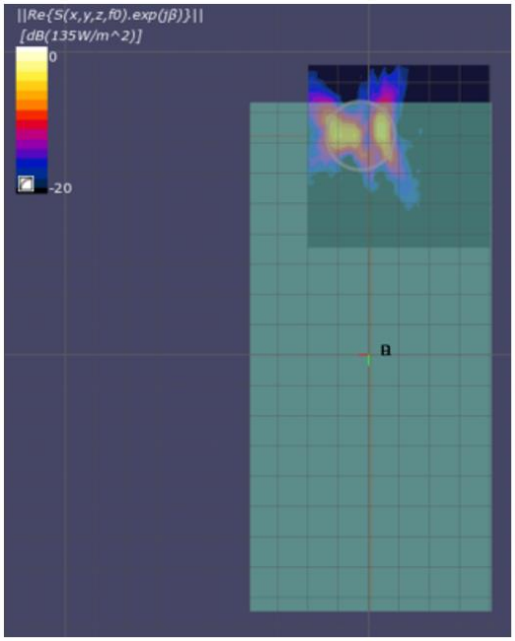


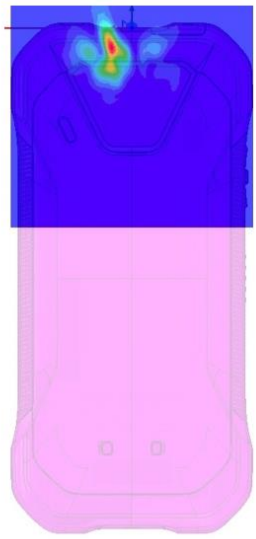


(a)Measurement (b)Simulation

Patch antenna QTM2 AG0(V-polarization) beam ID 42, 4cm² Averaged power density

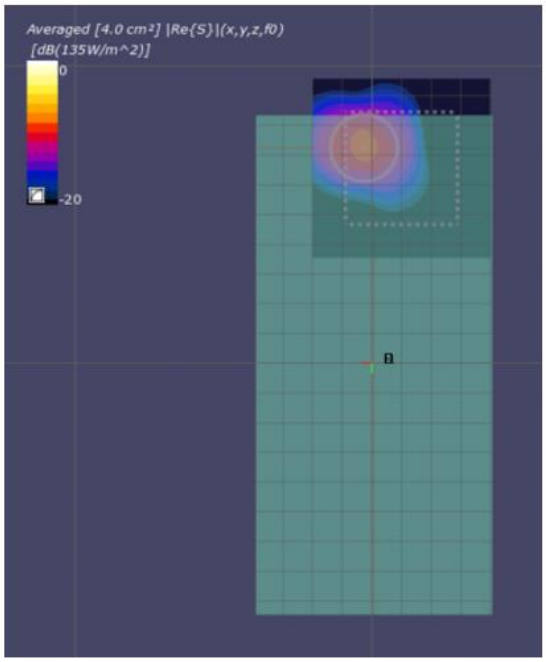
n260 Patch antenna QTM2 Ant_Group1(H-polarization) beam ID 156 Back-side Mid ch.





(a)Measurement (b)Simulation

Patch antenna QTM2 AG1(H-polarization) beam ID 156, Point power density



(a)Measurement (b)Simulation

Patch antenna QTM2 AG1(H-polarization) beam ID 156, 4cm² Averaged power density

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.

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

2.3.1 QTM#0 – Patch Antenna

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

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

QTM#0 Low Ch.

n261 Low ch(27.56GHz)						4cm2 PD(mW/cm2) at 2mm evaluation surfaces@6dBm						Ratio		
Band	Beam ID		ANT modue	ANT Type	Num.of Feed	relative phase worst PD for MIMO						Left/ (worst surface)	Front/ (worst surface)	Back/ (worst surface)
						Left	Right	Top	Bottom	Front	Back			
261	1		QTM0	PATCH	1	0.007	0.388	0.007	0.001	0.209	0.161	0.018	0.539	0.414
261	6		QTM0	PATCH	2	0.009	1.384	0.008	0.004	0.690	0.557	0.006	0.499	0.403
261	7		QTM0	PATCH	2	0.006	1.557	0.005	0.003	0.735	0.460	0.004	0.472	0.295
261	8		QTM0	PATCH	2	0.009	0.621	0.027	0.008	0.315	0.303	0.015	0.507	0.488
261	14		QTM0	PATCH	2	0.015	1.181	0.013	0.006	0.414	0.454	0.013	0.351	0.385
261	15		QTM0	PATCH	2	0.011	1.478	0.011	0.005	0.547	0.524	0.007	0.370	0.355
261	23		QTM0	PATCH	4	0.021	1.452	0.028	0.012	0.634	0.542	0.014	0.437	0.373
261	24		QTM0	PATCH	4	0.014	1.864	0.017	0.005	0.823	0.792	0.008	0.442	0.425
261	25		QTM0	PATCH	4	0.017	2.098	0.011	0.004	0.798	0.843	0.008	0.380	0.402
261	26		QTM0	PATCH	4	0.025	1.651	0.023	0.007	0.848	0.686	0.015	0.514	0.415
261	27		QTM0	PATCH	4	0.041	1.485	0.048	0.013	0.979	0.722	0.027	0.659	0.486
261	37		QTM0	PATCH	4	0.021	1.415	0.025	0.010	0.814	0.660	0.015	0.575	0.466
261	38		QTM0	PATCH	4	0.012	1.908	0.010	0.004	0.767	0.767	0.007	0.402	0.402
261	39		QTM0	PATCH	4	0.021	2.049	0.023	0.004	0.944	0.972	0.010	0.461	0.474
261	40		QTM0	PATCH	4	0.036	1.752	0.032	0.010	0.874	0.797	0.020	0.499	0.455
261		129	QTM0	PATCH	1	0.003	0.371	0.004	0.002	0.214	0.110	0.008	0.577	0.296
261		134	QTM0	PATCH	2	0.006	1.316	0.009	0.005	0.438	0.377	0.005	0.333	0.286
261		135	QTM0	PATCH	2	0.006	0.865	0.017	0.010	0.322	0.251	0.007	0.373	0.291
261		136	QTM0	PATCH	2	0.008	1.161	0.026	0.005	0.565	0.321	0.007	0.486	0.276
261		142	QTM0	PATCH	2	0.008	1.269	0.007	0.007	0.513	0.412	0.006	0.404	0.325
261		143	QTM0	PATCH	2	0.009	0.831	0.025	0.007	0.453	0.283	0.010	0.545	0.341
261		151	QTM0	PATCH	4	0.012	2.512	0.007	0.003	1.267	1.038	0.005	0.504	0.413
261		152	QTM0	PATCH	4	0.016	2.238	0.016	0.008	1.260	0.974	0.007	0.563	0.435
261		153	QTM0	PATCH	4	0.010	1.615	0.031	0.019	1.049	0.761	0.006	0.650	0.471
261		154	QTM0	PATCH	4	0.012	1.398	0.039	0.014	1.063	0.708	0.008	0.760	0.507
261		155	QTM0	PATCH	4	0.013	1.770	0.031	0.009	1.052	0.796	0.007	0.595	0.450
261		165	QTM0	PATCH	4	0.017	2.357	0.008	0.005	1.263	1.068	0.007	0.536	0.453
261		166	QTM0	PATCH	4	0.013	2.069	0.025	0.013	1.175	0.830	0.006	0.568	0.401
261		167	QTM0	PATCH	4	0.012	1.084	0.042	0.020	0.747	0.707	0.011	0.689	0.652
261		168	QTM0	PATCH	4	0.011	1.592	0.036	0.012	1.070	0.760	0.007	0.673	0.477
261	1	129	QTM0	PATCH	1	0.007	0.794	0.008	0.003	0.534	0.272	0.009	0.672	0.343
261	6	134	QTM0	PATCH	2	0.011	1.891	0.014	0.008	1.049	0.823	0.006	0.555	0.435
261	7	135	QTM0	PATCH	2	0.007	2.014	0.020	0.013	1.164	0.759	0.003	0.578	0.377
261	8	136	QTM0	PATCH	2	0.016	1.471	0.058	0.014	0.820	0.533	0.011	0.557	0.362
261	14	142	QTM0	PATCH	2	0.022	1.415	0.021	0.013	0.476	0.693	0.016	0.336	0.490
261	15	143	QTM0	PATCH	2	0.027	1.898	0.030	0.015	0.751	0.851	0.014	0.396	0.448
261	23	151	QTM0	PATCH	4	0.032	3.805	0.038	0.012	1.456	1.314	0.008	0.383	0.345
261	24	152	QTM0	PATCH	4	0.028	3.164	0.035	0.010	1.703	1.256	0.009	0.538	0.397
261	25	153	QTM0	PATCH	4	0.035	2.830	0.042	0.019	1.771	1.305	0.012	0.626	0.461
261	26	154	QTM0	PATCH	4	0.055	2.868	0.062	0.017	1.272	1.060	0.019	0.443	0.370
261	27	155	QTM0	PATCH	4	0.055	3.210	0.069	0.017	1.282	1.058	0.017	0.399	0.330
261	37	165	QTM0	PATCH	4	0.042	3.521	0.041	0.013	1.576	1.375	0.012	0.448	0.391
261	38	166	QTM0	PATCH	4	0.028	2.969	0.039	0.013	1.875	1.221	0.009	0.632	0.411
261	39	167	QTM0	PATCH	4	0.040	2.576	0.064	0.023	1.261	0.972	0.016	0.489	0.377
261	40	168	QTM0	PATCH	4	0.058	3.414	0.065	0.015	1.129	1.132	0.017	0.331	0.332

QTM#0 Mid Ch.

n261 Mid ch(27.925GHz)						4cm2 PD(mW/cm2) at 2mm evaluation surfaces@6dBm						Ratio		
Band	Beam ID		ANT modue	ANT Type	Num.of Feed	relative phase worst PD for MIMO						Left/ (worst surface)	Front/ (worst surface)	Back/ (worst surface)
						Left	Right	Top	Bottom	Front	Back			
261	1		QTM0	PATCH	1	0.006	0.400	0.008	0.002	0.194	0.142	0.015	0.486	0.354
261	6		QTM0	PATCH	2	0.009	1.401	0.008	0.005	0.689	0.427	0.006	0.492	0.305
261	7		QTM0	PATCH	2	0.005	1.642	0.007	0.003	0.734	0.366	0.003	0.447	0.223
261	8		QTM0	PATCH	2	0.009	0.660	0.032	0.009	0.330	0.250	0.013	0.500	0.379
261	14		QTM0	PATCH	2	0.009	1.140	0.019	0.007	0.427	0.403	0.008	0.374	0.353
261	15		QTM0	PATCH	2	0.013	1.524	0.008	0.005	0.502	0.521	0.008	0.329	0.342
261	23		QTM0	PATCH	4	0.019	1.470	0.033	0.012	0.746	0.569	0.013	0.508	0.387
261	24		QTM0	PATCH	4	0.014	1.775	0.016	0.004	0.896	0.735	0.008	0.505	0.414
261	25		QTM0	PATCH	4	0.020	2.004	0.011	0.004	0.708	0.848	0.010	0.353	0.423
261	26		QTM0	PATCH	4	0.028	1.673	0.029	0.008	0.782	0.783	0.017	0.467	0.468
261	27		QTM0	PATCH	4	0.041	1.614	0.038	0.016	0.904	0.726	0.025	0.560	0.450
261	37		QTM0	PATCH	4	0.016	1.427	0.031	0.010	0.920	0.652	0.011	0.645	0.457
261	38		QTM0	PATCH	4	0.017	1.755	0.010	0.004	0.809	0.693	0.010	0.461	0.395
261	39		QTM0	PATCH	4	0.019	2.011	0.026	0.005	0.848	0.832	0.009	0.422	0.414
261	40		QTM0	PATCH	4	0.038	1.810	0.023	0.011	0.789	0.834	0.021	0.436	0.461
261		129	QTM0	PATCH	1	0.003	0.362	0.003	0.002	0.230	0.098	0.007	0.636	0.271
261		134	QTM0	PATCH	2	0.010	1.254	0.008	0.005	0.464	0.341	0.008	0.370	0.272
261		135	QTM0	PATCH	2	0.006	0.816	0.012	0.010	0.274	0.260	0.007	0.336	0.318
261		136	QTM0	PATCH	2	0.009	1.192	0.024	0.005	0.514	0.283	0.007	0.431	0.238
261		142	QTM0	PATCH	2	0.011	1.203	0.007	0.007	0.427	0.374	0.009	0.355	0.311
261		143	QTM0	PATCH	2	0.007	0.847	0.023	0.007	0.418	0.277	0.008	0.493	0.327
261		151	QTM0	PATCH	4	0.013	2.483	0.005	0.004	1.086	0.942	0.005	0.437	0.380
261		152	QTM0	PATCH	4	0.017	2.229	0.013	0.012	1.052	0.921	0.008	0.472	0.413
261		153	QTM0	PATCH	4	0.016	1.611	0.027	0.020	0.889	0.786	0.010	0.551	0.487
261		154	QTM0	PATCH	4	0.017	1.321	0.033	0.014	1.005	0.635	0.013	0.760	0.480
261		155	QTM0	PATCH	4	0.014	1.775	0.027	0.008	0.990	0.727	0.008	0.558	0.410
261		165	QTM0	PATCH	4	0.012	2.346	0.008	0.006	1.087	0.886	0.005	0.463	0.378
261		166	QTM0	PATCH	4	0.017	2.098	0.021	0.017	1.017	0.883	0.008	0.485	0.421
261		167	QTM0	PATCH	4	0.014	1.047	0.032	0.020	0.662	0.688	0.014	0.633	0.658
261		168	QTM0	PATCH	4	0.015	1.541	0.030	0.011	1.022	0.669	0.010	0.663	0.434
261	1	129	QTM0	PATCH	1	0.008	0.792	0.010	0.004	0.518	0.238	0.010	0.654	0.300
261	6	134	QTM0	PATCH	2	0.015	1.882	0.013	0.007	1.214	0.784	0.008	0.645	0.416
261	7	135	QTM0	PATCH	2	0.009	1.986	0.014	0.013	1.218	0.657	0.005	0.613	0.331
261	8	136	QTM0	PATCH	2	0.017	1.594	0.058	0.016	0.819	0.582	0.011	0.514	0.365
261	14	142	QTM0	PATCH	2	0.018	1.499	0.023	0.015	0.459	0.602	0.012	0.306	0.401
261	15	143	QTM0	PATCH	2	0.021	1.971	0.027	0.015	0.697	0.830	0.011	0.354	0.421
261	23	151	QTM0	PATCH	4	0.027	3.929	0.038	0.012	1.316	1.213	0.007	0.335	0.309
261	24	152	QTM0	PATCH	4	0.036	3.265	0.030	0.013	1.546	1.178	0.011	0.474	0.361
261	25	153	QTM0	PATCH	4	0.051	2.953	0.037	0.023	1.589	1.190	0.017	0.538	0.403
261	26	154	QTM0	PATCH	4	0.062	2.817	0.059	0.015	1.174	0.978	0.022	0.417	0.347
261	27	155	QTM0	PATCH	4	0.056	3.474	0.067	0.020	1.349	1.062	0.016	0.388	0.306
261	37	165	QTM0	PATCH	4	0.030	3.560	0.037	0.016	1.404	1.120	0.008	0.394	0.314
261	38	166	QTM0	PATCH	4	0.040	3.106	0.028	0.018	1.597	1.242	0.013	0.514	0.400
261	39	167	QTM0	PATCH	4	0.053	2.608	0.064	0.027	1.159	0.932	0.020	0.444	0.357
261	40	168	QTM0	PATCH	4	0.068	3.578	0.072	0.014	1.125	1.123	0.019	0.314	0.314

QTM#0 High Ch

n261 High ch(28.29GHz)						4cm2 PD(mW/cm2) at 2mm evaluation surfaces@6dBm						Ratio		
Band	Beam ID		ANT modue	ANT Type	Num.of Feed	relative phase worst PD for MIMO						Left/ (worst surface)	Front/ (worst surface)	Back/ (worst surface)
						Left	Right	Top	Bottom	Front	Back			
261	1		QTM0	PATCH	1	0.007	0.399	0.008	0.002	0.193	0.132	0.017	0.483	0.330
261	6		QTM0	PATCH	2	0.017	1.097	0.026	0.005	0.387	0.321	0.015	0.353	0.293
261	7		QTM0	PATCH	2	0.010	1.040	0.028	0.002	0.466	0.220	0.010	0.448	0.212
261	8		QTM0	PATCH	2	0.012	1.216	0.014	0.009	0.282	0.488	0.010	0.232	0.402
261	14		QTM0	PATCH	2	0.008	1.605	0.011	0.006	0.764	0.348	0.005	0.476	0.216
261	15		QTM0	PATCH	2	0.006	0.668	0.027	0.006	0.295	0.310	0.010	0.442	0.464
261	23		QTM0	PATCH	4	0.020	2.409	0.017	0.011	0.816	0.878	0.008	0.339	0.364
261	24		QTM0	PATCH	4	0.024	2.556	0.006	0.004	1.034	0.922	0.010	0.405	0.361
261	25		QTM0	PATCH	4	0.025	1.709	0.034	0.006	0.873	0.802	0.015	0.511	0.469
261	26		QTM0	PATCH	4	0.038	1.183	0.073	0.009	0.874	0.535	0.032	0.739	0.452
261	27		QTM0	PATCH	4	0.023	1.906	0.026	0.016	0.734	0.822	0.012	0.385	0.432
261	37		QTM0	PATCH	4	0.019	2.419	0.010	0.009	0.914	0.833	0.008	0.378	0.344
261	38		QTM0	PATCH	4	0.035	2.147	0.022	0.004	1.036	0.969	0.016	0.483	0.451
261	39		QTM0	PATCH	4	0.048	1.692	0.028	0.005	0.908	0.724	0.028	0.537	0.428
261	40		QTM0	PATCH	4	0.027	1.288	0.066	0.012	0.596	0.791	0.021	0.463	0.614
261		129	QTM0	PATCH	1	0.003	0.348	0.004	0.002	0.237	0.093	0.009	0.679	0.268
261		134	QTM0	PATCH	2	0.013	1.611	0.005	0.005	0.430	0.414	0.008	0.267	0.257
261		135	QTM0	PATCH	2	0.010	0.792	0.016	0.010	0.247	0.366	0.012	0.312	0.462
261		136	QTM0	PATCH	2	0.015	1.700	0.016	0.005	0.445	0.384	0.009	0.262	0.226
261		142	QTM0	PATCH	2	0.010	1.615	0.007	0.006	0.400	0.458	0.006	0.248	0.284
261		143	QTM0	PATCH	2	0.013	1.097	0.021	0.005	0.469	0.259	0.012	0.427	0.236
261		151	QTM0	PATCH	4	0.021	2.715	0.019	0.005	1.234	0.878	0.008	0.455	0.323
261		152	QTM0	PATCH	4	0.016	3.161	0.009	0.012	1.052	0.952	0.005	0.333	0.301
261		153	QTM0	PATCH	4	0.019	1.854	0.032	0.019	0.756	0.900	0.010	0.407	0.485
261		154	QTM0	PATCH	4	0.017	1.106	0.033	0.012	0.983	0.506	0.016	0.889	0.457
261		155	QTM0	PATCH	4	0.015	1.691	0.013	0.007	0.666	0.667	0.009	0.394	0.395
261		165	QTM0	PATCH	4	0.018	2.898	0.013	0.007	1.184	0.959	0.006	0.409	0.331
261		166	QTM0	PATCH	4	0.023	2.746	0.013	0.017	0.931	0.989	0.008	0.339	0.360
261		167	QTM0	PATCH	4	0.019	1.086	0.045	0.024	0.690	0.746	0.017	0.636	0.687
261		168	QTM0	PATCH	4	0.018	1.654	0.025	0.009	0.921	0.664	0.011	0.557	0.401
261	1	129	QTM0	PATCH	1	0.010	0.829	0.009	0.006	0.505	0.215	0.013	0.610	0.259
261	6	134	QTM0	PATCH	2	0.023	2.080	0.039	0.006	0.776	0.605	0.011	0.373	0.291
261	7	135	QTM0	PATCH	2	0.019	1.706	0.017	0.014	0.620	0.585	0.011	0.363	0.343
261	8	136	QTM0	PATCH	2	0.026	2.031	0.025	0.015	0.711	0.536	0.013	0.350	0.264
261	14	142	QTM0	PATCH	2	0.018	3.147	0.014	0.016	0.891	1.030	0.006	0.283	0.327
261	15	143	QTM0	PATCH	2	0.023	1.273	0.022	0.012	0.887	0.459	0.018	0.697	0.360
261	23	151	QTM0	PATCH	4	0.061	3.919	0.029	0.013	2.005	1.118	0.015	0.512	0.285
261	24	152	QTM0	PATCH	4	0.041	4.791	0.015	0.012	1.832	1.362	0.008	0.382	0.284
261	25	153	QTM0	PATCH	4	0.055	3.241	0.031	0.028	1.372	1.396	0.017	0.423	0.431
261	26	154	QTM0	PATCH	4	0.047	2.051	0.084	0.013	1.551	0.980	0.023	0.756	0.478
261	27	155	QTM0	PATCH	4	0.050	3.817	0.030	0.026	1.324	0.934	0.013	0.347	0.245
261	37	165	QTM0	PATCH	4	0.056	4.385	0.028	0.015	1.849	1.289	0.013	0.422	0.294
261	38	166	QTM0	PATCH	4	0.050	4.380	0.018	0.017	1.651	1.440	0.011	0.377	0.329
261	39	167	QTM0	PATCH	4	0.056	1.888	0.050	0.032	1.339	1.176	0.029	0.709	0.623
261	40	168	QTM0	PATCH	4	0.053	3.143	0.053	0.018	1.218	1.079	0.017	0.388	0.343

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

QTM#0 Low Ch

n260 Low ch(37.05GHz)						4cm2 PD(mW/cm2) at 2mm evaluation surfaces@6dBm						Ratio		
Band	Beam ID		ANT modue	ANT Type	Num.of Feed	relative phase worst PD for MIMO						Left/ (worst surface)	Front/ (worst surface)	Back/ (worst surface)
						Left	Right	Top	Bottom	Front	Back			
260	1		QTM0	PATCH	1	0.009	0.456	0.005	0.001	0.146	0.259	0.019	0.321	0.568
260	6		QTM0	PATCH	2	0.013	1.563	0.019	0.011	0.374	0.473	0.008	0.239	0.303
260	7		QTM0	PATCH	2	0.007	1.157	0.011	0.012	0.255	0.392	0.006	0.221	0.339
260	8		QTM0	PATCH	2	0.016	1.524	0.032	0.003	0.320	0.680	0.011	0.210	0.446
260	14		QTM0	PATCH	2	0.007	1.368	0.012	0.014	0.256	0.498	0.005	0.187	0.364
260	15		QTM0	PATCH	2	0.009	1.309	0.013	0.008	0.225	0.382	0.007	0.172	0.292
260	23		QTM0	PATCH	4	0.030	2.457	0.032	0.009	0.781	0.854	0.012	0.318	0.348
260	24		QTM0	PATCH	4	0.026	2.241	0.026	0.014	0.773	1.031	0.012	0.345	0.460
260	25		QTM0	PATCH	4	0.022	2.897	0.016	0.024	0.599	0.773	0.008	0.207	0.267
260	26		QTM0	PATCH	4	0.015	2.618	0.021	0.021	0.707	1.217	0.006	0.270	0.465
260	27		QTM0	PATCH	4	0.024	2.252	0.047	0.008	0.686	1.220	0.011	0.305	0.542
260	37		QTM0	PATCH	4	0.033	2.477	0.028	0.010	0.875	0.888	0.013	0.353	0.358
260	38		QTM0	PATCH	4	0.029	2.354	0.019	0.017	0.718	1.051	0.012	0.305	0.446
260	39		QTM0	PATCH	4	0.022	3.066	0.016	0.018	0.787	0.956	0.007	0.257	0.312
260	40		QTM0	PATCH	4	0.021	2.573	0.043	0.008	0.594	1.430	0.008	0.231	0.556
260		129	QTM0	PATCH	1	0.003	0.309	0.005	0.001	0.166	0.218	0.011	0.537	0.705
260		134	QTM0	PATCH	2	0.015	1.369	0.020	0.001	0.190	0.548	0.011	0.139	0.400
260		135	QTM0	PATCH	2	0.010	1.286	0.010	0.011	0.146	0.471	0.008	0.113	0.366
260		136	QTM0	PATCH	2	0.010	1.967	0.021	0.005	0.283	0.611	0.005	0.144	0.310
260		142	QTM0	PATCH	2	0.012	1.700	0.018	0.012	0.274	0.573	0.007	0.161	0.337
260		143	QTM0	PATCH	2	0.008	1.583	0.022	0.006	0.192	0.500	0.005	0.121	0.316
260		151	QTM0	PATCH	4	0.017	2.190	0.045	0.011	0.783	0.946	0.008	0.358	0.432
260		152	QTM0	PATCH	4	0.019	2.911	0.026	0.011	0.932	1.063	0.007	0.320	0.365
260		153	QTM0	PATCH	4	0.021	2.782	0.015	0.020	0.738	0.894	0.008	0.265	0.321
260		154	QTM0	PATCH	4	0.010	2.190	0.050	0.008	0.672	0.849	0.005	0.307	0.388
260		155	QTM0	PATCH	4	0.014	2.287	0.060	0.011	0.674	0.681	0.006	0.295	0.298
260		165	QTM0	PATCH	4	0.018	2.249	0.039	0.012	0.756	0.947	0.008	0.336	0.421
260		166	QTM0	PATCH	4	0.017	2.990	0.020	0.022	0.928	0.842	0.006	0.310	0.282
260		167	QTM0	PATCH	4	0.014	2.610	0.025	0.016	0.451	0.874	0.005	0.173	0.335
260		168	QTM0	PATCH	4	0.013	1.888	0.049	0.008	0.801	0.694	0.007	0.424	0.367
260	1	129	QTM0	PATCH	1	0.011	0.765	0.015	0.001	0.425	0.636	0.014	0.555	0.832
260	6	134	QTM0	PATCH	2	0.029	1.981	0.013	0.034	0.744	1.009	0.014	0.375	0.509
260	7	135	QTM0	PATCH	2	0.015	3.450	0.021	0.018	0.495	0.935	0.004	0.143	0.271
260	8	136	QTM0	PATCH	2	0.025	2.167	0.043	0.015	0.539	1.097	0.012	0.249	0.506
260	14	142	QTM0	PATCH	2	0.017	3.447	0.037	0.030	0.632	0.679	0.005	0.183	0.197
260	15	143	QTM0	PATCH	2	0.015	2.713	0.065	0.011	0.325	1.313	0.006	0.120	0.484
260	23	151	QTM0	PATCH	4	0.053	2.821	0.115	0.012	1.172	1.768	0.019	0.415	0.627
260	24	152	QTM0	PATCH	4	0.054	3.579	0.074	0.009	1.699	1.789	0.015	0.475	0.500
260	25	153	QTM0	PATCH	4	0.035	4.322	0.024	0.035	1.525	2.723	0.008	0.353	0.630
260	26	154	QTM0	PATCH	4	0.037	5.467	0.087	0.040	1.035	2.919	0.007	0.189	0.534
260	27	155	QTM0	PATCH	4	0.041	2.899	0.192	0.012	0.924	2.733	0.014	0.319	0.943
260	37	165	QTM0	PATCH	4	0.056	3.226	0.088	0.013	1.344	1.802	0.017	0.417	0.559
260	38	166	QTM0	PATCH	4	0.041	4.440	0.058	0.022	1.690	2.046	0.009	0.381	0.461
260	39	167	QTM0	PATCH	4	0.025	5.306	0.051	0.037	1.626	3.196	0.005	0.306	0.602
260	40	168	QTM0	PATCH	4	0.034	3.549	0.171	0.015	0.994	3.030	0.010	0.280	0.854

QTM#0 Mid Ch

n260 Mid ch(38.5GHz)						4cm2 PD(mW/cm2) at 2mm evaluation surfaces@6dBm						Ratio		
Band	Beam ID		ANT modue	ANT Type	Num.of Feed	relative phase worst PD for MIMO						Left/ (worst surface)	Front/ (worst surface)	Back/ (worst surface)
						Left	Right	Top	Bottom	Front	Back			
260	1		QTM0	PATCH	1	0.005	0.440	0.006	0.001	0.206	0.284	0.012	0.468	0.645
260	6		QTM0	PATCH	2	0.021	1.896	0.022	0.012	0.436	0.609	0.011	0.230	0.321
260	7		QTM0	PATCH	2	0.014	1.249	0.011	0.011	0.250	0.557	0.011	0.201	0.446
260	8		QTM0	PATCH	2	0.018	1.616	0.030	0.006	0.387	0.798	0.011	0.240	0.494
260	14		QTM0	PATCH	2	0.022	1.568	0.013	0.009	0.335	0.725	0.014	0.214	0.462
260	15		QTM0	PATCH	2	0.010	1.431	0.023	0.006	0.236	0.405	0.007	0.165	0.283
260	23		QTM0	PATCH	4	0.038	2.525	0.042	0.014	0.943	1.151	0.015	0.374	0.456
260	24		QTM0	PATCH	4	0.064	3.019	0.029	0.015	0.862	1.252	0.021	0.286	0.415
260	25		QTM0	PATCH	4	0.033	3.696	0.020	0.018	0.782	0.982	0.009	0.211	0.266
260	26		QTM0	PATCH	4	0.025	2.783	0.027	0.015	0.624	1.648	0.009	0.224	0.592
260	27		QTM0	PATCH	4	0.037	2.207	0.055	0.009	0.878	1.056	0.017	0.398	0.478
260	37		QTM0	PATCH	4	0.044	2.721	0.039	0.016	0.972	1.379	0.016	0.357	0.507
260	38		QTM0	PATCH	4	0.053	3.481	0.021	0.018	0.767	0.937	0.015	0.220	0.269
260	39		QTM0	PATCH	4	0.020	3.192	0.023	0.018	0.603	1.560	0.006	0.189	0.489
260	40		QTM0	PATCH	4	0.036	2.450	0.051	0.010	0.833	1.277	0.015	0.340	0.521
260		129	QTM0	PATCH	1	0.005	0.324	0.007	0.001	0.173	0.207	0.014	0.534	0.639
260		134	QTM0	PATCH	2	0.010	1.542	0.015	0.011	0.228	0.556	0.007	0.148	0.360
260		135	QTM0	PATCH	2	0.009	1.591	0.009	0.015	0.240	0.601	0.005	0.151	0.378
260		136	QTM0	PATCH	2	0.010	1.537	0.029	0.007	0.296	0.616	0.007	0.193	0.401
260		142	QTM0	PATCH	2	0.012	1.582	0.020	0.014	0.315	0.768	0.007	0.199	0.485
260		143	QTM0	PATCH	2	0.010	1.493	0.025	0.007	0.231	0.631	0.007	0.155	0.423
260		151	QTM0	PATCH	4	0.022	2.018	0.043	0.017	0.906	1.027	0.011	0.449	0.509
260		152	QTM0	PATCH	4	0.026	2.053	0.029	0.015	1.002	1.233	0.013	0.488	0.601
260		153	QTM0	PATCH	4	0.025	3.151	0.015	0.023	0.832	1.174	0.008	0.264	0.372
260		154	QTM0	PATCH	4	0.022	2.625	0.039	0.008	0.749	0.948	0.009	0.285	0.361
260		155	QTM0	PATCH	4	0.029	2.179	0.048	0.022	0.754	0.730	0.013	0.346	0.335
260		165	QTM0	PATCH	4	0.025	1.782	0.045	0.016	0.898	1.072	0.014	0.504	0.601
260		166	QTM0	PATCH	4	0.032	2.581	0.019	0.028	1.028	1.301	0.013	0.398	0.504
260		167	QTM0	PATCH	4	0.017	3.219	0.014	0.013	0.726	0.979	0.005	0.226	0.304
260		168	QTM0	PATCH	4	0.026	2.049	0.069	0.015	0.881	0.943	0.013	0.430	0.460
260	1	129	QTM0	PATCH	1	0.009	0.975	0.014	0.002	0.459	0.583	0.009	0.470	0.598
260	6	134	QTM0	PATCH	2	0.023	2.610	0.012	0.041	0.928	0.994	0.009	0.355	0.381
260	7	135	QTM0	PATCH	2	0.020	3.938	0.021	0.020	0.682	1.400	0.005	0.173	0.355
260	8	136	QTM0	PATCH	2	0.035	2.097	0.054	0.020	0.717	1.457	0.017	0.342	0.695
260	14	142	QTM0	PATCH	2	0.023	3.845	0.039	0.030	0.908	0.858	0.006	0.236	0.223
260	15	143	QTM0	PATCH	2	0.026	3.361	0.094	0.010	0.420	1.383	0.008	0.125	0.411
260	23	151	QTM0	PATCH	4	0.096	3.664	0.145	0.023	1.432	1.896	0.026	0.391	0.518
260	24	152	QTM0	PATCH	4	0.085	5.058	0.086	0.026	1.813	2.066	0.017	0.358	0.408
260	25	153	QTM0	PATCH	4	0.039	6.130	0.035	0.039	1.790	2.522	0.006	0.292	0.411
260	26	154	QTM0	PATCH	4	0.067	6.224	0.083	0.025	1.204	3.419	0.011	0.193	0.549
260	27	155	QTM0	PATCH	4	0.093	3.635	0.183	0.022	1.202	2.868	0.026	0.331	0.789
260	37	165	QTM0	PATCH	4	0.106	4.294	0.103	0.023	1.555	1.895	0.025	0.362	0.441
260	38	166	QTM0	PATCH	4	0.082	5.062	0.070	0.035	2.031	2.640	0.016	0.401	0.521
260	39	167	QTM0	PATCH	4	0.034	6.651	0.049	0.044	1.844	3.178	0.005	0.277	0.478
260	40	168	QTM0	PATCH	4	0.092	4.701	0.162	0.018	0.955	3.234	0.020	0.203	0.688

QTM#0 High Ch

n260 High ch(39.95GHz)						4cm2 PD(mW/cm2) at 2mm evaluation surfaces@6dBm						Ratio		
Band	Beam ID		ANT modue	ANT Type	Num.of Feed	relative phase worst PD for MIMO						Left/ (worst surface)	Front/ (worst surface)	Back/ (worst surface)
						Left	Right	Top	Bottom	Front	Back			
260	1		QTM0	PATCH	1	0.003	0.477	0.004	0.002	0.228	0.271	0.006	0.477	0.567
260	6		QTM0	PATCH	2	0.013	2.061	0.021	0.009	0.535	0.806	0.006	0.260	0.391
260	7		QTM0	PATCH	2	0.016	1.089	0.016	0.009	0.226	0.894	0.015	0.208	0.821
260	8		QTM0	PATCH	2	0.009	1.597	0.016	0.005	0.554	1.071	0.005	0.347	0.671
260	14		QTM0	PATCH	2	0.019	1.451	0.036	0.010	0.331	1.227	0.013	0.228	0.846
260	15		QTM0	PATCH	2	0.011	1.476	0.019	0.005	0.280	0.721	0.008	0.190	0.489
260	23		QTM0	PATCH	4	0.032	2.308	0.034	0.010	1.017	1.334	0.014	0.441	0.578
260	24		QTM0	PATCH	4	0.025	2.829	0.022	0.018	1.038	1.250	0.009	0.367	0.442
260	25		QTM0	PATCH	4	0.023	3.832	0.032	0.021	0.828	1.402	0.006	0.216	0.366
260	26		QTM0	PATCH	4	0.031	3.390	0.023	0.011	0.555	1.520	0.009	0.164	0.448
260	27		QTM0	PATCH	4	0.028	2.246	0.058	0.008	0.972	1.035	0.012	0.433	0.461
260	37		QTM0	PATCH	4	0.035	2.493	0.023	0.011	1.007	1.405	0.014	0.404	0.564
260	38		QTM0	PATCH	4	0.026	3.164	0.044	0.019	0.905	1.458	0.008	0.286	0.461
260	39		QTM0	PATCH	4	0.028	4.118	0.021	0.021	0.760	1.469	0.007	0.185	0.357
260	40		QTM0	PATCH	4	0.020	2.704	0.060	0.006	0.928	1.328	0.007	0.343	0.491
260		129	QTM0	PATCH	1	0.006	0.320	0.004	0.002	0.172	0.236	0.018	0.538	0.739
260		134	QTM0	PATCH	2	0.007	2.001	0.019	0.010	0.270	0.595	0.003	0.135	0.297
260		135	QTM0	PATCH	2	0.011	1.393	0.009	0.013	0.319	0.692	0.008	0.229	0.497
260		136	QTM0	PATCH	2	0.009	1.631	0.036	0.005	0.238	0.583	0.005	0.146	0.357
260		142	QTM0	PATCH	2	0.008	1.405	0.026	0.010	0.306	0.800	0.006	0.218	0.569
260		143	QTM0	PATCH	2	0.010	1.601	0.022	0.006	0.182	0.531	0.006	0.113	0.331
260		151	QTM0	PATCH	4	0.025	2.346	0.050	0.014	0.756	0.830	0.011	0.322	0.354
260		152	QTM0	PATCH	4	0.025	2.420	0.057	0.012	0.875	0.942	0.010	0.361	0.389
260		153	QTM0	PATCH	4	0.017	2.607	0.013	0.015	0.978	1.183	0.006	0.375	0.454
260		154	QTM0	PATCH	4	0.015	2.045	0.033	0.009	0.802	1.056	0.007	0.392	0.517
260		155	QTM0	PATCH	4	0.019	2.129	0.038	0.017	0.929	1.022	0.009	0.436	0.480
260		165	QTM0	PATCH	4	0.021	2.149	0.063	0.013	0.780	0.967	0.010	0.363	0.450
260		166	QTM0	PATCH	4	0.020	2.183	0.023	0.017	0.929	1.065	0.009	0.425	0.488
260		167	QTM0	PATCH	4	0.019	2.571	0.013	0.011	0.819	1.152	0.007	0.319	0.448
260		168	QTM0	PATCH	4	0.018	2.076	0.034	0.013	1.106	1.070	0.008	0.533	0.516
260	1	129	QTM0	PATCH	1	0.006	0.769	0.014	0.003	0.546	0.527	0.008	0.709	0.685
260	6	134	QTM0	PATCH	2	0.020	3.156	0.021	0.026	1.104	0.826	0.006	0.350	0.262
260	7	135	QTM0	PATCH	2	0.030	3.753	0.025	0.013	0.755	1.395	0.008	0.201	0.372
260	8	136	QTM0	PATCH	2	0.021	2.270	0.037	0.011	1.023	1.494	0.009	0.451	0.658
260	14	142	QTM0	PATCH	2	0.023	2.544	0.049	0.021	0.774	0.951	0.009	0.304	0.374
260	15	143	QTM0	PATCH	2	0.035	3.042	0.062	0.009	0.440	1.389	0.012	0.145	0.457
260	23	151	QTM0	PATCH	4	0.086	3.876	0.137	0.022	1.441	2.312	0.022	0.372	0.596
260	24	152	QTM0	PATCH	4	0.059	4.727	0.087	0.023	1.775	3.035	0.012	0.376	0.642
260	25	153	QTM0	PATCH	4	0.033	4.497	0.046	0.038	1.613	3.046	0.007	0.359	0.677
260	26	154	QTM0	PATCH	4	0.054	4.408	0.071	0.017	1.225	3.893	0.012	0.278	0.883
260	27	155	QTM0	PATCH	4	0.065	4.233	0.145	0.019	1.977	2.522	0.015	0.467	0.596
260	37	165	QTM0	PATCH	4	0.065	4.699	0.116	0.024	1.534	2.536	0.014	0.326	0.540
260	38	166	QTM0	PATCH	4	0.046	4.012	0.077	0.031	1.846	3.006	0.011	0.460	0.749
260	39	167	QTM0	PATCH	4	0.045	4.904	0.039	0.026	1.585	3.440	0.009	0.323	0.701
260	40	168	QTM0	PATCH	4	0.031	3.911	0.109	0.017	1.703	3.403	0.008	0.435	0.870

2.3.2 QTM#1 – Patch Antenna

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

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

QTM#1 Low Ch

n261 Low ch(27.56GHz)						4cm2 PD(mW/cm2) at 2mm evaluation surfaces@6dBm						Ratio		
Band	Beam ID		ANT modue	ANT Type	Num.of Feed	relative phase worst PD for MIMO						Top/ (worst surface)	Front/ (worst surface)	Back/ (worst surface)
						Left	Right	Top	Bottom	Front	Back			
261	0		QTM1	PATCH	1	0.292	0.008	0.019	-	0.148	0.152	0.066	0.507	0.522
261	3		QTM1	PATCH	2	0.942	0.017	0.081	-	0.186	0.299	0.086	0.198	0.317
261	4		QTM1	PATCH	2	1.298	0.024	0.044	-	0.636	0.415	0.034	0.490	0.320
261	5		QTM1	PATCH	2	1.546	0.014	0.056	-	0.535	0.423	0.036	0.346	0.274
261	12		QTM1	PATCH	2	0.791	0.018	0.080	-	0.353	0.307	0.101	0.446	0.389
261	13		QTM1	PATCH	2	1.704	0.028	0.030	-	0.426	0.414	0.018	0.250	0.243
261	18		QTM1	PATCH	4	1.439	0.039	0.169	-	0.569	0.601	0.117	0.396	0.418
261	19		QTM1	PATCH	4	2.478	0.108	0.096	-	0.618	0.584	0.039	0.249	0.236
261	20		QTM1	PATCH	4	2.964	0.108	0.038	-	0.919	0.717	0.013	0.310	0.242
261	21		QTM1	PATCH	4	2.227	0.043	0.037	-	0.664	0.608	0.017	0.298	0.273
261	22		QTM1	PATCH	4	1.881	0.027	0.178	-	0.605	0.556	0.095	0.322	0.296
261	33		QTM1	PATCH	4	2.221	0.093	0.121	-	0.767	0.558	0.055	0.345	0.251
261	34		QTM1	PATCH	4	2.537	0.092	0.054	-	0.656	0.652	0.021	0.259	0.257
261	35		QTM1	PATCH	4	2.538	0.070	0.042	-	0.724	0.582	0.016	0.285	0.229
261	36		QTM1	PATCH	4	2.188	0.030	0.112	-	0.603	0.566	0.051	0.276	0.259
261		128	QTM1	PATCH	1	0.501	0.016	0.010	-	0.091	0.266	0.021	0.182	0.532
261		131	QTM1	PATCH	2	1.603	0.045	0.025	-	0.326	0.507	0.016	0.203	0.316
261		132	QTM1	PATCH	2	0.641	0.024	0.047	-	0.279	0.309	0.073	0.435	0.481
261		133	QTM1	PATCH	2	1.911	0.044	0.023	-	0.351	0.638	0.012	0.184	0.334
261		140	QTM1	PATCH	2	1.283	0.039	0.034	-	0.232	0.390	0.026	0.181	0.304
261		141	QTM1	PATCH	2	1.160	0.037	0.036	-	0.403	0.470	0.031	0.347	0.405
261		146	QTM1	PATCH	4	2.173	0.070	0.025	-	0.853	0.855	0.012	0.392	0.393
261		147	QTM1	PATCH	4	1.759	0.074	0.050	-	0.584	0.771	0.028	0.332	0.438
261		148	QTM1	PATCH	4	0.900	0.058	0.087	-	0.540	0.562	0.096	0.600	0.624
261		149	QTM1	PATCH	4	2.148	0.045	0.115	-	0.771	0.767	0.054	0.359	0.357
261		150	QTM1	PATCH	4	3.715	0.091	0.021	-	1.027	1.116	0.006	0.276	0.300
261		161	QTM1	PATCH	4	1.795	0.070	0.043	-	0.761	0.846	0.024	0.424	0.471
261		162	QTM1	PATCH	4	1.602	0.071	0.054	-	0.599	0.667	0.033	0.374	0.416
261		163	QTM1	PATCH	4	1.243	0.043	0.124	-	0.618	0.515	0.100	0.497	0.415
261		164	QTM1	PATCH	4	2.891	0.066	0.066	-	0.825	0.962	0.023	0.285	0.333
261	0	128	QTM1	PATCH	1	0.915	0.020	0.041	-	0.234	0.626	0.045	0.255	0.685
261	3	131	QTM1	PATCH	2	3.349	0.058	0.115	-	0.387	1.083	0.034	0.116	0.323
261	4	132	QTM1	PATCH	2	1.973	0.052	0.064	-	0.908	0.657	0.032	0.460	0.333
261	5	133	QTM1	PATCH	2	2.730	0.042	0.070	-	0.768	0.761	0.026	0.281	0.279
261	12	140	QTM1	PATCH	2	1.913	0.075	0.173	-	0.628	0.584	0.091	0.328	0.305
261	13	141	QTM1	PATCH	2	2.365	0.073	0.089	-	0.427	0.621	0.038	0.180	0.262
261	18	146	QTM1	PATCH	4	3.876	0.115	0.233	-	1.450	1.229	0.060	0.374	0.317
261	19	147	QTM1	PATCH	4	4.392	0.118	0.200	-	0.955	0.984	0.046	0.217	0.224
261	20	148	QTM1	PATCH	4	3.283	0.108	0.171	-	0.997	1.073	0.052	0.304	0.327
261	21	149	QTM1	PATCH	4	3.694	0.074	0.157	-	1.359	1.095	0.043	0.368	0.296
261	22	150	QTM1	PATCH	4	4.791	0.101	0.205	-	1.186	1.292	0.043	0.247	0.270
261	33	161	QTM1	PATCH	4	4.615	0.201	0.226	-	1.333	1.004	0.049	0.289	0.218
261	34	162	QTM1	PATCH	4	3.648	0.117	0.122	-	1.005	1.031	0.033	0.276	0.283
261	35	163	QTM1	PATCH	4	2.849	0.141	0.208	-	1.264	1.002	0.073	0.444	0.352
261	36	164	QTM1	PATCH	4	3.734	0.093	0.209	-	1.526	1.174	0.056	0.409	0.315

QTM#1 Mid Ch

n261 Mid ch(27.925GHz)						4cm2 PD(mW/cm2) at 2mm evaluation surfaces@6dBm						Ratio		
Band	Beam ID		ANT modue	ANT Type	Num.of Feed	relative phase worst PD for MIMO						Top/ (worst surface)	Front/ (worst surface)	Back/ (worst surface)
						Left	Right	Top	Bottom	Front	Back			
261	0		QTM1	PATCH	1	0.287	0.006	0.018	-	0.149	0.186	0.064	0.519	0.650
261	3		QTM1	PATCH	2	1.007	0.016	0.080	-	0.218	0.305	0.079	0.216	0.303
261	4		QTM1	PATCH	2	1.327	0.020	0.046	-	0.625	0.501	0.035	0.471	0.378
261	5		QTM1	PATCH	2	1.606	0.014	0.050	-	0.527	0.423	0.031	0.328	0.263
261	12		QTM1	PATCH	2	0.781	0.018	0.081	-	0.333	0.345	0.104	0.426	0.442
261	13		QTM1	PATCH	2	1.546	0.023	0.026	-	0.430	0.333	0.017	0.278	0.215
261	18		QTM1	PATCH	4	1.563	0.044	0.122	-	0.620	0.459	0.078	0.396	0.293
261	19		QTM1	PATCH	4	2.548	0.104	0.092	-	0.733	0.595	0.036	0.288	0.233
261	20		QTM1	PATCH	4	2.980	0.137	0.039	-	0.911	0.725	0.013	0.306	0.243
261	21		QTM1	PATCH	4	2.009	0.040	0.040	-	0.643	0.552	0.020	0.320	0.275
261	22		QTM1	PATCH	4	1.844	0.025	0.135	-	0.582	0.442	0.073	0.316	0.240
261	33		QTM1	PATCH	4	2.345	0.102	0.097	-	0.839	0.511	0.041	0.358	0.218
261	34		QTM1	PATCH	4	2.492	0.132	0.063	-	0.684	0.689	0.025	0.275	0.277
261	35		QTM1	PATCH	4	2.553	0.067	0.044	-	0.760	0.612	0.017	0.298	0.240
261	36		QTM1	PATCH	4	1.934	0.032	0.110	-	0.594	0.543	0.057	0.307	0.281
261		128	QTM1	PATCH	1	0.492	0.018	0.011	-	0.132	0.250	0.023	0.269	0.507
261		131	QTM1	PATCH	2	1.450	0.052	0.028	-	0.366	0.518	0.019	0.252	0.357
261		132	QTM1	PATCH	2	0.709	0.031	0.046	-	0.307	0.281	0.064	0.433	0.396
261		133	QTM1	PATCH	2	1.699	0.053	0.026	-	0.435	0.602	0.015	0.256	0.355
261		140	QTM1	PATCH	2	1.107	0.043	0.034	-	0.273	0.393	0.031	0.246	0.355
261		141	QTM1	PATCH	2	1.107	0.041	0.038	-	0.504	0.435	0.035	0.455	0.393
261		146	QTM1	PATCH	4	2.195	0.078	0.021	-	0.863	0.892	0.010	0.393	0.406
261		147	QTM1	PATCH	4	1.703	0.082	0.055	-	0.633	0.876	0.032	0.372	0.515
261		148	QTM1	PATCH	4	0.837	0.047	0.100	-	0.478	0.557	0.120	0.572	0.666
261		149	QTM1	PATCH	4	2.017	0.044	0.103	-	0.809	0.719	0.051	0.401	0.356
261		150	QTM1	PATCH	4	3.574	0.085	0.020	-	1.021	1.201	0.006	0.286	0.336
261		161	QTM1	PATCH	4	1.821	0.075	0.030	-	0.767	0.821	0.016	0.421	0.451
261		162	QTM1	PATCH	4	1.529	0.077	0.061	-	0.496	0.785	0.040	0.324	0.513
261		163	QTM1	PATCH	4	1.385	0.047	0.129	-	0.647	0.500	0.093	0.467	0.361
261		164	QTM1	PATCH	4	2.626	0.079	0.066	-	0.937	0.933	0.025	0.357	0.355
261	0	128	QTM1	PATCH	1	0.896	0.025	0.035	-	0.248	0.610	0.039	0.277	0.680
261	3	131	QTM1	PATCH	2	3.210	0.074	0.099	-	0.377	1.033	0.031	0.117	0.322
261	4	132	QTM1	PATCH	2	2.110	0.056	0.067	-	0.956	0.788	0.032	0.453	0.373
261	5	133	QTM1	PATCH	2	2.910	0.044	0.062	-	0.747	0.862	0.021	0.257	0.296
261	12	140	QTM1	PATCH	2	1.840	0.084	0.160	-	0.554	0.501	0.087	0.301	0.272
261	13	141	QTM1	PATCH	2	2.243	0.070	0.072	-	0.571	0.533	0.032	0.255	0.237
261	18	146	QTM1	PATCH	4	3.852	0.122	0.215	-	1.642	1.232	0.056	0.426	0.320
261	19	147	QTM1	PATCH	4	4.285	0.130	0.225	-	1.121	1.023	0.053	0.262	0.239
261	20	148	QTM1	PATCH	4	3.159	0.133	0.190	-	1.016	1.174	0.060	0.322	0.372
261	21	149	QTM1	PATCH	4	3.460	0.074	0.170	-	1.554	1.046	0.049	0.449	0.302
261	22	150	QTM1	PATCH	4	4.536	0.084	0.189	-	1.404	1.329	0.042	0.310	0.293
261	33	161	QTM1	PATCH	4	4.517	0.198	0.180	-	1.557	1.153	0.040	0.345	0.255
261	34	162	QTM1	PATCH	4	3.445	0.122	0.125	-	1.206	1.205	0.036	0.350	0.350
261	35	163	QTM1	PATCH	4	2.978	0.112	0.209	-	1.268	1.041	0.070	0.426	0.350
261	36	164	QTM1	PATCH	4	3.256	0.093	0.195	-	1.810	1.066	0.060	0.556	0.327

QTM#1 High Ch

n261 High ch(28.29GHz)						4cm2 PD(mW/cm2) at 2mm evaluation surfaces@6dBm						Ratio		
Band	Beam ID		ANT modue	ANT Type	Num.of Feed	relative phase worst PD for MIMO						Top/ (worst surface)	Front/ (worst surface)	Back/ (worst surface)
						Left	Right	Top	Bottom	Front	Back			
261	0		QTM1	PATCH	1	0.742	0.013	0.034	-	0.221	0.167	0.046	0.297	0.225
261	3		QTM1	PATCH	2	1.534	0.019	0.033	-	0.648	0.610	0.021	0.422	0.398
261	4		QTM1	PATCH	2	0.719	0.022	0.075	-	0.318	0.340	0.104	0.442	0.473
261	5		QTM1	PATCH	2	1.839	0.045	0.016	-	0.419	0.468	0.009	0.228	0.254
261	12		QTM1	PATCH	2	1.254	0.028	0.052	-	0.550	0.587	0.041	0.439	0.468
261	13		QTM1	PATCH	2	1.542	0.015	0.060	-	0.286	0.401	0.039	0.186	0.260
261	18		QTM1	PATCH	4	3.110	0.064	0.048	-	0.672	0.824	0.015	0.216	0.265
261	19		QTM1	PATCH	4	3.031	0.176	0.044	-	0.972	0.828	0.015	0.321	0.273
261	20		QTM1	PATCH	4	2.185	0.089	0.082	-	0.889	0.678	0.038	0.407	0.310
261	21		QTM1	PATCH	4	2.074	0.029	0.119	-	0.437	0.484	0.057	0.211	0.233
261	22		QTM1	PATCH	4	2.902	0.052	0.094	-	0.673	0.790	0.032	0.232	0.272
261	33		QTM1	PATCH	4	3.047	0.101	0.053	-	0.891	0.835	0.018	0.292	0.274
261	34		QTM1	PATCH	4	2.113	0.091	0.078	-	0.984	0.736	0.037	0.466	0.348
261	35		QTM1	PATCH	4	2.255	0.064	0.088	-	0.551	0.495	0.039	0.245	0.220
261	36		QTM1	PATCH	4	2.198	0.030	0.108	-	0.469	0.603	0.049	0.213	0.274
261		128	QTM1	PATCH	1	0.566	0.028	0.022	-	0.191	0.100	0.039	0.338	0.177
261		131	QTM1	PATCH	2	1.515	0.057	0.031	-	0.378	0.385	0.020	0.250	0.254
261		132	QTM1	PATCH	2	1.217	0.063	0.031	-	0.383	0.384	0.025	0.314	0.315
261		133	QTM1	PATCH	2	1.134	0.057	0.035	-	0.356	0.364	0.030	0.314	0.321
261		140	QTM1	PATCH	2	1.446	0.077	0.025	-	0.422	0.443	0.017	0.292	0.306
261		141	QTM1	PATCH	2	1.134	0.057	0.035	-	0.356	0.364	0.030	0.314	0.321
261		146	QTM1	PATCH	4	1.899	0.098	0.063	-	0.634	0.701	0.033	0.334	0.369
261		147	QTM1	PATCH	4	1.972	0.093	0.050	-	0.656	0.854	0.025	0.333	0.433
261		148	QTM1	PATCH	4	1.335	0.110	0.074	-	0.404	0.664	0.056	0.303	0.498
261		149	QTM1	PATCH	4	2.665	0.091	0.035	-	0.940	0.984	0.013	0.353	0.369
261		150	QTM1	PATCH	4	2.682	0.136	0.073	-	0.687	0.633	0.027	0.256	0.236
261		161	QTM1	PATCH	4	2.030	0.096	0.056	-	0.781	0.784	0.027	0.385	0.386
261		162	QTM1	PATCH	4	2.019	0.073	0.073	-	0.338	0.623	0.036	0.167	0.308
261		163	QTM1	PATCH	4	2.005	0.093	0.038	-	0.746	0.968	0.019	0.372	0.483
261		164	QTM1	PATCH	4	2.666	0.088	0.037	-	0.915	1.007	0.014	0.343	0.378
261	0	128	QTM1	PATCH	1	1.375	0.063	0.074	-	0.541	0.343	0.054	0.393	0.249
261	3	131	QTM1	PATCH	2	2.913	0.106	0.068	-	0.902	1.140	0.023	0.310	0.391
261	4	132	QTM1	PATCH	2	1.500	0.057	0.061	-	0.369	0.694	0.041	0.246	0.463
261	5	133	QTM1	PATCH	2	2.811	0.047	0.067	-	1.148	0.772	0.024	0.408	0.274
261	12	140	QTM1	PATCH	2	2.177	0.081	0.050	-	0.692	0.538	0.023	0.318	0.247
261	13	141	QTM1	PATCH	2	2.393	0.094	0.123	-	0.997	0.654	0.051	0.417	0.273
261	18	146	QTM1	PATCH	4	4.601	0.109	0.090	-	0.801	1.363	0.020	0.174	0.296
261	19	147	QTM1	PATCH	4	5.941	0.175	0.102	-	2.113	1.313	0.017	0.356	0.221
261	20	148	QTM1	PATCH	4	3.484	0.224	0.193	-	1.070	1.347	0.055	0.307	0.387
261	21	149	QTM1	PATCH	4	3.194	0.166	0.136	-	0.798	1.847	0.043	0.250	0.578
261	22	150	QTM1	PATCH	4	3.913	0.293	0.141	-	0.911	1.970	0.036	0.233	0.504
261	33	161	QTM1	PATCH	4	4.444	0.128	0.103	-	1.777	1.363	0.023	0.400	0.307
261	34	162	QTM1	PATCH	4	3.849	0.228	0.185	-	1.210	1.326	0.048	0.314	0.344
261	35	163	QTM1	PATCH	4	3.535	0.167	0.155	-	0.346	2.398	0.044	0.098	0.678
261	36	164	QTM1	PATCH	4	3.700	0.186	0.125	-	1.312	1.908	0.034	0.355	0.516

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

QTM#1 Low Ch

n260 Low ch(37.05GHz)						4cm2 PD(mW/cm2) at 2mm evaluation surfaces@6dBm						Ratio		
Band	Beam ID		ANT modue	ANT Type	Num.of Feed	relative phase worst PD for MIMO						Top/ (worst surface)	Front/ (worst surface)	Back/ (worst surface)
						Left	Right	Top	Bottom	Front	Back			
260	0		QTM1	PATCH	1	0.715	0.013	0.016	-	0.116	0.281	0.022	0.162	0.393
260	3		QTM1	PATCH	2	1.540	0.032	0.025	-	0.357	0.323	0.016	0.232	0.210
260	4		QTM1	PATCH	2	1.225	0.016	0.064	-	0.213	0.383	0.052	0.174	0.312
260	5		QTM1	PATCH	2	1.343	0.029	0.072	-	0.254	0.369	0.053	0.189	0.275
260	12		QTM1	PATCH	2	1.181	0.028	0.035	-	0.255	0.279	0.030	0.216	0.236
260	13		QTM1	PATCH	2	1.611	0.023	0.063	-	0.362	0.455	0.039	0.225	0.283
260	18		QTM1	PATCH	4	2.228	0.049	0.118	-	0.629	0.492	0.053	0.282	0.221
260	19		QTM1	PATCH	4	3.743	0.063	0.044	-	0.400	0.854	0.012	0.107	0.228
260	20		QTM1	PATCH	4	3.417	0.041	0.072	-	0.613	1.025	0.021	0.179	0.300
260	21		QTM1	PATCH	4	2.429	0.050	0.120	-	0.514	0.544	0.049	0.212	0.224
260	22		QTM1	PATCH	4	2.488	0.044	0.124	-	0.359	0.661	0.050	0.144	0.266
260	33		QTM1	PATCH	4	2.614	0.077	0.090	-	0.424	0.582	0.035	0.162	0.223
260	34		QTM1	PATCH	4	3.351	0.041	0.061	-	0.549	1.072	0.018	0.164	0.320
260	35		QTM1	PATCH	4	2.836	0.048	0.130	-	0.757	0.640	0.046	0.267	0.226
260	36		QTM1	PATCH	4	2.086	0.048	0.126	-	0.422	0.643	0.060	0.202	0.308
260		128	QTM1	PATCH	1	0.486	0.015	0.027	-	0.117	0.136	0.055	0.240	0.279
260		131	QTM1	PATCH	2	1.553	0.026	0.043	-	0.241	0.360	0.027	0.155	0.232
260		132	QTM1	PATCH	2	1.635	0.032	0.024	-	0.228	0.369	0.015	0.140	0.226
260		133	QTM1	PATCH	2	1.596	0.031	0.026	-	0.225	0.341	0.017	0.141	0.214
260		140	QTM1	PATCH	2	1.733	0.031	0.023	-	0.237	0.431	0.013	0.137	0.249
260		141	QTM1	PATCH	2	1.596	0.031	0.026	-	0.225	0.341	0.017	0.141	0.214
260		146	QTM1	PATCH	4	2.556	0.068	0.089	-	0.375	0.577	0.035	0.147	0.226
260		147	QTM1	PATCH	4	3.165	0.124	0.039	-	0.332	0.450	0.012	0.105	0.142
260		148	QTM1	PATCH	4	2.881	0.041	0.109	-	0.582	0.495	0.038	0.202	0.172
260		149	QTM1	PATCH	4	2.029	0.136	0.034	-	0.421	0.568	0.017	0.208	0.280
260		150	QTM1	PATCH	4	2.737	0.037	0.055	-	0.432	0.901	0.020	0.158	0.329
260		161	QTM1	PATCH	4	2.313	0.060	0.091	-	0.389	0.545	0.040	0.168	0.235
260		162	QTM1	PATCH	4	3.883	0.052	0.113	-	0.595	0.656	0.029	0.153	0.169
260		163	QTM1	PATCH	4	2.145	0.113	0.052	-	0.406	0.471	0.024	0.189	0.219
260		164	QTM1	PATCH	4	2.157	0.138	0.036	-	0.412	0.545	0.017	0.191	0.253
260	0	128	QTM1	PATCH	1	1.381	0.024	0.018	-	0.278	0.573	0.013	0.201	0.415
260	3	131	QTM1	PATCH	2	3.004	0.058	0.057	-	0.838	0.624	0.019	0.279	0.208
260	4	132	QTM1	PATCH	2	2.052	0.052	0.083	-	0.304	0.566	0.040	0.148	0.276
260	5	133	QTM1	PATCH	2	1.692	0.049	0.097	-	0.399	0.591	0.057	0.236	0.349
260	12	140	QTM1	PATCH	2	2.309	0.099	0.054	-	0.392	0.883	0.024	0.170	0.383
260	13	141	QTM1	PATCH	2	3.329	0.044	0.074	-	0.576	1.055	0.022	0.173	0.317
260	18	146	QTM1	PATCH	4	3.207	0.054	0.376	-	0.849	1.013	0.117	0.265	0.316
260	19	147	QTM1	PATCH	4	5.460	0.178	0.068	-	0.642	1.039	0.012	0.118	0.190
260	20	148	QTM1	PATCH	4	4.736	0.065	0.190	-	1.217	1.670	0.040	0.257	0.353
260	21	149	QTM1	PATCH	4	3.498	0.137	0.225	-	0.860	1.659	0.064	0.246	0.474
260	22	150	QTM1	PATCH	4	4.500	0.098	0.184	-	0.882	1.529	0.041	0.196	0.340
260	33	161	QTM1	PATCH	4	4.892	0.048	0.241	-	0.960	1.211	0.049	0.196	0.248
260	34	162	QTM1	PATCH	4	5.211	0.058	0.168	-	1.090	1.644	0.032	0.209	0.316
260	35	163	QTM1	PATCH	4	5.700	0.151	0.183	-	1.170	1.237	0.032	0.205	0.217
260	36	164	QTM1	PATCH	4	4.175	0.127	0.251	-	0.899	1.852	0.060	0.215	0.444

QTM#1 Mid Ch

n260 Mid ch(38.5GHz)						4cm2 PD(mW/cm2) at 2mm evaluation surfaces@6dBm						Ratio		
Band	Beam ID		ANT modue	ANT Type	Num.of Feed	relative phase worst PD for MIMO						Top/ (worst surface)	Front/ (worst surface)	Back/ (worst surface)
						Left	Right	Top	Bottom	Front	Back			
260	0		QTM1	PATCH	1	4.695	0.148	0.227	-	1.042	1.956	0.048	0.222	0.417
260	3		QTM1	PATCH	2	0.876	0.012	0.017	-	0.164	0.244	0.019	0.187	0.278
260	4		QTM1	PATCH	2	1.998	0.032	0.021	-	0.309	0.343	0.010	0.154	0.172
260	5		QTM1	PATCH	2	1.791	0.019	0.064	-	0.370	0.356	0.036	0.207	0.199
260	12		QTM1	PATCH	2	2.151	0.038	0.052	-	0.308	0.452	0.024	0.143	0.210
260	13		QTM1	PATCH	2	1.693	0.033	0.050	-	0.380	0.250	0.030	0.225	0.148
260	18		QTM1	PATCH	4	2.259	0.034	0.055	-	0.489	0.421	0.024	0.216	0.186
260	19		QTM1	PATCH	4	3.434	0.090	0.068	-	0.668	0.914	0.020	0.195	0.266
260	20		QTM1	PATCH	4	5.069	0.063	0.049	-	0.496	0.943	0.010	0.098	0.186
260	21		QTM1	PATCH	4	4.633	0.067	0.075	-	0.881	1.134	0.016	0.190	0.245
260	22		QTM1	PATCH	4	2.829	0.080	0.108	-	0.488	0.545	0.038	0.172	0.193
260	33		QTM1	PATCH	4	3.474	0.079	0.112	-	0.455	0.834	0.032	0.131	0.240
260	34		QTM1	PATCH	4	4.192	0.066	0.056	-	0.445	0.859	0.013	0.106	0.205
260	35		QTM1	PATCH	4	4.564	0.066	0.069	-	0.767	1.226	0.015	0.168	0.269
260	36		QTM1	PATCH	4	4.173	0.066	0.109	-	0.830	0.721	0.026	0.199	0.173
260		128	QTM1	PATCH	1	2.492	0.070	0.120	-	0.450	0.588	0.048	0.181	0.236
260		131	QTM1	PATCH	2	0.741	0.020	0.021	-	0.137	0.189	0.029	0.185	0.254
260		132	QTM1	PATCH	2	2.207	0.026	0.039	-	0.272	0.471	0.018	0.123	0.213
260		133	QTM1	PATCH	2	2.025	0.024	0.031	-	0.291	0.319	0.016	0.144	0.158
260		140	QTM1	PATCH	2	1.999	0.025	0.033	-	0.304	0.318	0.016	0.152	0.159
260		141	QTM1	PATCH	2	2.153	0.022	0.028	-	0.321	0.414	0.013	0.149	0.192
260		146	QTM1	PATCH	4	1.999	0.025	0.033	-	0.304	0.318	0.016	0.152	0.159
260		147	QTM1	PATCH	4	3.733	0.068	0.081	-	0.395	0.650	0.022	0.106	0.174
260		148	QTM1	PATCH	4	4.029	0.154	0.052	-	0.523	0.581	0.013	0.130	0.144
260		149	QTM1	PATCH	4	3.758	0.065	0.153	-	0.508	0.691	0.041	0.135	0.184
260		150	QTM1	PATCH	4	2.551	0.153	0.041	-	0.476	0.741	0.016	0.187	0.290
260		161	QTM1	PATCH	4	3.897	0.042	0.085	-	0.434	0.821	0.022	0.111	0.211
260		162	QTM1	PATCH	4	3.465	0.056	0.080	-	0.431	0.652	0.023	0.124	0.188
260		163	QTM1	PATCH	4	5.179	0.058	0.151	-	0.611	0.720	0.029	0.118	0.139
260		164	QTM1	PATCH	4	2.967	0.129	0.051	-	0.398	0.711	0.017	0.134	0.240
260	0	128	QTM1	PATCH	1	2.629	0.154	0.042	-	0.499	0.740	0.016	0.190	0.282
260	3	131	QTM1	PATCH	2	2.144	0.032	0.024	-	0.291	0.593	0.011	0.136	0.277
260	4	132	QTM1	PATCH	2	4.336	0.077	0.114	-	0.828	0.676	0.026	0.191	0.156
260	5	133	QTM1	PATCH	2	1.984	0.053	0.113	-	0.552	0.510	0.057	0.278	0.257
260	12	140	QTM1	PATCH	2	2.666	0.063	0.090	-	0.503	0.732	0.034	0.189	0.274
260	13	141	QTM1	PATCH	2	2.884	0.047	0.066	-	0.589	0.802	0.023	0.204	0.278
260	18	146	QTM1	PATCH	4	4.926	0.058	0.074	-	0.660	1.200	0.015	0.134	0.244
260	19	147	QTM1	PATCH	4	4.528	0.069	0.221	-	1.109	1.736	0.049	0.245	0.383
260	20	148	QTM1	PATCH	4	6.926	0.261	0.097	-	0.991	1.649	0.014	0.143	0.238
260	21	149	QTM1	PATCH	4	5.247	0.112	0.184	-	1.605	2.111	0.035	0.306	0.402
260	22	150	QTM1	PATCH	4	3.476	0.146	0.208	-	1.156	1.587	0.060	0.333	0.456
260	33	161	QTM1	PATCH	4	5.693	0.120	0.127	-	0.878	1.574	0.022	0.154	0.276
260	34	162	QTM1	PATCH	4	6.078	0.082	0.195	-	0.985	2.060	0.032	0.162	0.339
260	35	163	QTM1	PATCH	4	6.639	0.131	0.175	-	1.352	2.177	0.026	0.204	0.328
260	36	164	QTM1	PATCH	4	6.792	0.135	0.244	-	1.796	1.648	0.036	0.264	0.243

QTM#1 High Ch

n260 High ch(39.95GHz)						4cm2 PD(mW/cm2) at 2mm evaluation surfaces@6dBm						Ratio		
Band	Beam ID		ANT	ANT	Num.of	relative phase worst PD for MIMO						Top/	Front/	Back/
			modue	Type	Feed	Left	Right	Top	Bottom	Front	Back	(worst surface)	(worst surface)	(worst surface)
260	0		QTM1	PATCH	1	0.783	0.010	0.018	-	0.168	0.126	0.023	0.215	0.161
260	3		QTM1	PATCH	2	2.003	0.023	0.027	-	0.325	0.322	0.013	0.162	0.161
260	4		QTM1	PATCH	2	1.456	0.026	0.065	-	0.376	0.326	0.045	0.258	0.224
260	5		QTM1	PATCH	2	2.188	0.033	0.037	-	0.354	0.347	0.017	0.162	0.159
260	12		QTM1	PATCH	2	1.520	0.027	0.050	-	0.393	0.289	0.033	0.258	0.190
260	13		QTM1	PATCH	2	2.009	0.038	0.051	-	0.364	0.216	0.026	0.181	0.108
260	18		QTM1	PATCH	4	3.394	0.081	0.058	-	0.661	0.625	0.017	0.195	0.184
260	19		QTM1	PATCH	4	4.206	0.112	0.052	-	0.690	0.844	0.012	0.164	0.201
260	20		QTM1	PATCH	4	4.533	0.047	0.085	-	0.628	0.808	0.019	0.139	0.178
260	21		QTM1	PATCH	4	3.370	0.086	0.083	-	0.482	0.631	0.025	0.143	0.187
260	22		QTM1	PATCH	4	3.283	0.095	0.092	-	0.617	0.530	0.028	0.188	0.161
260	33		QTM1	PATCH	4	3.834	0.079	0.047	-	0.581	0.651	0.012	0.152	0.170
260	34		QTM1	PATCH	4	4.482	0.050	0.075	-	0.617	0.794	0.017	0.138	0.177
260	35		QTM1	PATCH	4	4.638	0.064	0.123	-	0.591	0.821	0.027	0.127	0.177
260	36		QTM1	PATCH	4	2.756	0.095	0.086	-	0.564	0.656	0.031	0.205	0.238
260		128	QTM1	PATCH	1	0.729	0.017	0.013	-	0.113	0.146	0.018	0.155	0.201
260		131	QTM1	PATCH	2	2.337	0.022	0.042	-	0.297	0.360	0.018	0.127	0.154
260		132	QTM1	PATCH	2	1.999	0.034	0.038	-	0.289	0.504	0.019	0.144	0.252
260		133	QTM1	PATCH	2	1.909	0.033	0.036	-	0.268	0.516	0.019	0.141	0.270
260		140	QTM1	PATCH	2	2.179	0.031	0.040	-	0.325	0.417	0.019	0.149	0.191
260		141	QTM1	PATCH	2	1.909	0.033	0.036	-	0.268	0.516	0.019	0.141	0.270
260		146	QTM1	PATCH	4	3.706	0.052	0.053	-	0.444	0.442	0.014	0.120	0.119
260		147	QTM1	PATCH	4	4.003	0.072	0.060	-	0.513	0.811	0.015	0.128	0.203
260		148	QTM1	PATCH	4	3.528	0.092	0.093	-	0.575	0.938	0.026	0.163	0.266
260		149	QTM1	PATCH	4	2.435	0.095	0.044	-	0.445	0.944	0.018	0.183	0.388
260		150	QTM1	PATCH	4	4.046	0.055	0.042	-	0.504	0.741	0.010	0.125	0.183
260		161	QTM1	PATCH	4	3.397	0.044	0.056	-	0.419	0.412	0.017	0.123	0.121
260		162	QTM1	PATCH	4	4.860	0.092	0.080	-	0.629	1.160	0.016	0.129	0.239
260		163	QTM1	PATCH	4	2.831	0.094	0.064	-	0.466	0.861	0.023	0.165	0.304
260		164	QTM1	PATCH	4	2.633	0.093	0.043	-	0.467	0.910	0.016	0.178	0.345
260	0	128	QTM1	PATCH	1	1.952	0.021	0.013	-	0.260	0.362	0.007	0.133	0.185
260	3	131	QTM1	PATCH	2	3.761	0.050	0.122	-	0.965	0.604	0.033	0.257	0.161
260	4	132	QTM1	PATCH	2	2.031	0.044	0.130	-	0.481	0.717	0.064	0.237	0.353
260	5	133	QTM1	PATCH	2	2.899	0.090	0.053	-	0.543	0.608	0.018	0.187	0.210
260	12	140	QTM1	PATCH	2	2.511	0.050	0.068	-	0.532	0.595	0.027	0.212	0.237
260	13	141	QTM1	PATCH	2	4.906	0.107	0.063	-	0.520	0.775	0.013	0.106	0.158
260	18	146	QTM1	PATCH	4	4.348	0.057	0.120	-	1.212	1.807	0.028	0.279	0.416
260	19	147	QTM1	PATCH	4	5.654	0.166	0.064	-	1.398	1.326	0.011	0.247	0.234
260	20	148	QTM1	PATCH	4	5.986	0.169	0.160	-	1.544	2.366	0.027	0.258	0.395
260	21	149	QTM1	PATCH	4	3.760	0.100	0.208	-	0.938	1.279	0.055	0.249	0.340
260	22	150	QTM1	PATCH	4	4.835	0.139	0.119	-	1.285	1.226	0.025	0.266	0.254
260	33	161	QTM1	PATCH	4	5.607	0.067	0.157	-	1.216	1.014	0.028	0.217	0.181
260	34	162	QTM1	PATCH	4	7.755	0.166	0.139	-	1.267	2.653	0.018	0.163	0.342
260	35	163	QTM1	PATCH	4	6.427	0.133	0.240	-	1.854	1.233	0.037	0.288	0.192
260	36	164	QTM1	PATCH	4	4.286	0.099	0.181	-	1.172	1.384	0.042	0.274	0.323

2.3.3 QTM#2 – Patch Antenna

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

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

QTM#2 Low Ch

n261 Low ch(27.56GHz)						4cm2 PD(mW/cm2) at 2mm evaluation surfaces@6dBm						Ratio		
Band	Beam ID		ANT modue	ANT Type	Num.of Feed	relative phase worst PD for MIMO						Right/ (worst surface)	Top/ (worst surface)	Front/ (worst surface)
						Left	Right	Top	Bottom	Front	Back			
261	2		QTM2	PATCH	1	0.008	0.010	0.139	-	0.010	0.545	0.0176	0.2549	0.0177
261	9		QTM2	PATCH	2	0.016	0.006	0.490	-	0.041	1.808	0.0035	0.2710	0.0228
261	10		QTM2	PATCH	2	0.024	0.039	0.315	-	0.026	1.381	0.0280	0.2280	0.0185
261	11		QTM2	PATCH	2	0.028	0.030	0.309	-	0.024	1.139	0.0267	0.2716	0.0214
261	16		QTM2	PATCH	2	0.008	0.019	0.364	-	0.037	1.714	0.0111	0.2121	0.0214
261	17		QTM2	PATCH	2	0.031	0.042	0.245	-	0.022	0.886	0.0469	0.2760	0.0244
261	28		QTM2	PATCH	4	0.078	0.043	0.844	-	0.074	1.615	0.0269	0.5230	0.0456
261	29		QTM2	PATCH	4	0.021	0.018	0.651	-	0.061	2.178	0.0081	0.2988	0.0280
261	30		QTM2	PATCH	4	0.025	0.031	0.485	-	0.077	2.268	0.0135	0.2137	0.0339
261	31		QTM2	PATCH	4	0.073	0.092	0.484	-	0.110	1.627	0.0565	0.2974	0.0676
261	32		QTM2	PATCH	4	0.065	0.111	0.455	-	0.085	1.746	0.0638	0.2604	0.0487
261	41		QTM2	PATCH	4	0.034	0.021	0.718	-	0.079	1.975	0.011	0.364	0.040
261	42		QTM2	PATCH	4	0.033	0.033	0.604	-	0.067	2.163	0.015	0.279	0.031
261	43		QTM2	PATCH	4	0.053	0.042	0.559	-	0.084	1.749	0.024	0.320	0.048
261	44		QTM2	PATCH	4	0.054	0.113	0.447	-	0.104	1.693	0.067	0.264	0.061
261		130	QTM2	PATCH	1	0.009	0.020	0.112	-	0.011	0.744	0.027	0.151	0.015
261		137	QTM2	PATCH	2	0.010	0.048	0.415	-	0.017	1.901	0.026	0.219	0.009
261		138	QTM2	PATCH	2	0.022	0.059	0.268	-	0.037	0.935	0.063	0.286	0.039
261		139	QTM2	PATCH	2	0.016	0.012	0.403	-	0.044	1.382	0.008	0.292	0.032
261		144	QTM2	PATCH	2	0.013	0.061	0.386	-	0.019	1.433	0.042	0.269	0.013
261		145	QTM2	PATCH	2	0.018	0.035	0.339	-	0.034	1.844	0.019	0.184	0.018
261		156	QTM2	PATCH	4	0.012	0.028	0.927	-	0.059	2.021	0.014	0.459	0.029
261		157	QTM2	PATCH	4	0.033	0.101	0.987	-	0.073	1.947	0.052	0.507	0.038
261		158	QTM2	PATCH	4	0.063	0.117	0.501	-	0.069	1.002	0.116	0.500	0.068
261		159	QTM2	PATCH	4	0.052	0.085	0.633	-	0.128	1.657	0.051	0.382	0.077
261		160	QTM2	PATCH	4	0.014	0.011	0.810	-	0.117	1.985	0.006	0.408	0.059
261		169	QTM2	PATCH	4	0.013	0.049	0.878	-	0.071	1.796	0.027	0.489	0.040
261		170	QTM2	PATCH	4	0.055	0.137	0.786	-	0.057	1.682	0.081	0.467	0.034
261		171	QTM2	PATCH	4	0.073	0.101	0.416	-	0.085	1.256	0.080	0.331	0.068
261		172	QTM2	PATCH	4	0.016	0.021	0.712	-	0.142	1.858	0.011	0.383	0.077
261	2	130	QTM2	PATCH	1	0.019	0.051	0.255	-	0.028	1.285	0.039	0.199	0.022
261	9	137	QTM2	PATCH	2	0.031	0.051	0.981	-	0.086	3.258	0.016	0.301	0.026
261	10	138	QTM2	PATCH	2	0.042	0.057	0.576	-	0.066	2.224	0.025	0.259	0.030
261	11	139	QTM2	PATCH	2	0.038	0.040	0.974	-	0.081	1.772	0.023	0.549	0.046
261	16	144	QTM2	PATCH	2	0.018	0.099	0.516	-	0.032	3.165	0.031	0.163	0.010
261	17	145	QTM2	PATCH	2	0.035	0.083	0.359	-	0.042	2.743	0.030	0.131	0.015
261	28	156	QTM2	PATCH	4	0.062	0.048	1.270	-	0.110	4.125	0.012	0.308	0.027
261	29	157	QTM2	PATCH	4	0.037	0.144	1.162	-	0.108	3.423	0.042	0.339	0.031
261	30	158	QTM2	PATCH	4	0.085	0.214	1.033	-	0.116	3.747	0.057	0.276	0.031
261	31	159	QTM2	PATCH	4	0.096	0.132	0.723	-	0.176	4.160	0.032	0.174	0.042
261	32	160	QTM2	PATCH	4	0.064	0.109	0.741	-	0.115	4.639	0.023	0.160	0.025
261	41	169	QTM2	PATCH	4	0.040	0.076	1.354	-	0.110	3.290	0.023	0.412	0.033
261	42	170	QTM2	PATCH	4	0.064	0.201	1.045	-	0.123	3.280	0.061	0.319	0.037
261	43	171	QTM2	PATCH	4	0.079	0.213	0.661	-	0.145	3.229	0.066	0.205	0.045
261	44	172	QTM2	PATCH	4	0.076	0.123	0.725	-	0.122	4.443	0.028	0.163	0.027

QTM#2 Mid Ch

n261 Mid ch(27.925GHz)						4cm2 PD(mW/cm2) at 2mm evaluation surfaces@6dBm						Ratio		
Band	Beam ID		ANT modue	ANT Type	Num.of Feed	relative phase worst PD for MIMO						Right/ (worst surface)	Top/ (worst surface)	Front/ (worst surface)
						Left	Right	Top	Bottom	Front	Back			
261	2		QTM2	PATCH	1	0.009	0.012	0.140	-	0.010	0.613	0.020	0.228	0.017
261	9		QTM2	PATCH	2	0.017	0.008	0.514	-	0.044	1.774	0.005	0.289	0.025
261	10		QTM2	PATCH	2	0.022	0.047	0.340	-	0.028	1.488	0.031	0.229	0.019
261	11		QTM2	PATCH	2	0.030	0.032	0.331	-	0.020	1.224	0.026	0.271	0.017
261	16		QTM2	PATCH	2	0.008	0.023	0.377	-	0.037	1.733	0.013	0.218	0.021
261	17		QTM2	PATCH	2	0.030	0.047	0.266	-	0.024	1.021	0.046	0.260	0.024
261	28		QTM2	PATCH	4	0.072	0.043	0.726	-	0.070	1.626	0.026	0.446	0.043
261	29		QTM2	PATCH	4	0.025	0.021	0.510	-	0.058	2.189	0.010	0.233	0.027
261	30		QTM2	PATCH	4	0.026	0.037	0.508	-	0.064	2.415	0.015	0.210	0.026
261	31		QTM2	PATCH	4	0.067	0.108	0.445	-	0.094	1.723	0.063	0.258	0.055
261	32		QTM2	PATCH	4	0.075	0.109	0.434	-	0.087	1.790	0.061	0.243	0.049
261	41		QTM2	PATCH	4	0.034	0.025	0.588	-	0.066	1.939	0.013	0.303	0.034
261	42		QTM2	PATCH	4	0.043	0.041	0.457	-	0.059	2.256	0.018	0.203	0.026
261	43		QTM2	PATCH	4	0.058	0.043	0.526	-	0.075	1.894	0.023	0.278	0.040
261	44		QTM2	PATCH	4	0.052	0.123	0.427	-	0.100	1.735	0.071	0.246	0.058
261		130	QTM2	PATCH	1	0.009	0.016	0.103	-	0.011	0.774	0.021	0.133	0.014
261		137	QTM2	PATCH	2	0.010	0.056	0.376	-	0.017	1.908	0.029	0.197	0.009
261		138	QTM2	PATCH	2	0.023	0.055	0.285	-	0.033	0.959	0.057	0.297	0.034
261		139	QTM2	PATCH	2	0.017	0.011	0.400	-	0.043	1.338	0.008	0.299	0.032
261		144	QTM2	PATCH	2	0.014	0.069	0.370	-	0.019	1.484	0.047	0.250	0.013
261		145	QTM2	PATCH	2	0.019	0.031	0.340	-	0.030	1.919	0.016	0.177	0.015
261		156	QTM2	PATCH	4	0.015	0.030	0.941	-	0.052	2.012	0.015	0.468	0.026
261		157	QTM2	PATCH	4	0.044	0.116	0.858	-	0.066	1.936	0.060	0.443	0.034
261		158	QTM2	PATCH	4	0.066	0.112	0.527	-	0.072	1.076	0.104	0.490	0.067
261		159	QTM2	PATCH	4	0.047	0.080	0.630	-	0.131	1.617	0.050	0.389	0.081
261		160	QTM2	PATCH	4	0.017	0.011	0.836	-	0.104	2.053	0.006	0.407	0.051
261		169	QTM2	PATCH	4	0.018	0.051	0.847	-	0.059	1.802	0.028	0.470	0.033
261		170	QTM2	PATCH	4	0.070	0.155	0.759	-	0.064	1.729	0.090	0.439	0.037
261		171	QTM2	PATCH	4	0.078	0.097	0.412	-	0.090	1.223	0.079	0.337	0.074
261		172	QTM2	PATCH	4	0.018	0.027	0.756	-	0.128	1.931	0.014	0.391	0.066
261	2	130	QTM2	PATCH	1	0.018	0.044	0.240	-	0.027	1.279	0.034	0.188	0.021
261	9	137	QTM2	PATCH	2	0.032	0.057	1.000	-	0.075	3.313	0.017	0.302	0.023
261	10	138	QTM2	PATCH	2	0.046	0.066	0.590	-	0.065	2.283	0.029	0.258	0.028
261	11	139	QTM2	PATCH	2	0.035	0.039	0.933	-	0.092	1.662	0.023	0.562	0.055
261	16	144	QTM2	PATCH	2	0.020	0.111	0.490	-	0.030	3.346	0.033	0.147	0.009
261	17	145	QTM2	PATCH	2	0.030	0.079	0.368	-	0.037	2.926	0.027	0.126	0.013
261	28	156	QTM2	PATCH	4	0.065	0.043	1.155	-	0.118	4.348	0.010	0.266	0.027
261	29	157	QTM2	PATCH	4	0.054	0.148	1.084	-	0.123	3.375	0.044	0.321	0.037
261	30	158	QTM2	PATCH	4	0.093	0.178	1.187	-	0.111	4.025	0.044	0.295	0.028
261	31	159	QTM2	PATCH	4	0.106	0.134	0.695	-	0.152	4.248	0.031	0.164	0.036
261	32	160	QTM2	PATCH	4	0.072	0.130	0.746	-	0.126	4.850	0.027	0.154	0.026
261	41	169	QTM2	PATCH	4	0.042	0.081	1.291	-	0.120	3.435	0.024	0.376	0.035
261	42	170	QTM2	PATCH	4	0.081	0.217	1.031	-	0.124	3.412	0.064	0.302	0.036
261	43	171	QTM2	PATCH	4	0.082	0.194	0.818	-	0.138	3.340	0.058	0.245	0.041
261	44	172	QTM2	PATCH	4	0.064	0.140	0.705	-	0.135	4.653	0.030	0.151	0.029

QTM#2 High Ch

n261 High ch(28.29GHz)						4cm2 PD(mW/cm2) at 2mm evaluation surfaces@6dBm						Ratio		
Band	Beam ID		ANT modue	ANT Type	Num.of Feed	relative phase worst PD for MIMO						Right/ (worst surface)	Top/ (worst surface)	Front/ (worst surface)
						Left	Right	Top	Bottom	Front	Back			
261	2		QTM2	PATCH	1	0.010	0.014	0.118	-	0.013	0.616	0.023	0.192	0.021
261	9		QTM2	PATCH	2	0.015	0.013	0.508	-	0.041	1.722	0.007	0.295	0.024
261	10		QTM2	PATCH	2	0.023	0.045	0.298	-	0.035	1.432	0.032	0.208	0.025
261	11		QTM2	PATCH	2	0.030	0.035	0.330	-	0.026	1.260	0.028	0.262	0.021
261	16		QTM2	PATCH	2	0.010	0.024	0.360	-	0.038	1.649	0.014	0.218	0.023
261	17		QTM2	PATCH	2	0.030	0.048	0.238	-	0.027	1.031	0.046	0.231	0.027
261	28		QTM2	PATCH	4	0.062	0.044	0.609	-	0.071	1.576	0.028	0.386	0.045
261	29		QTM2	PATCH	4	0.031	0.021	0.479	-	0.051	2.256	0.009	0.212	0.023
261	30		QTM2	PATCH	4	0.029	0.044	0.469	-	0.060	2.416	0.018	0.194	0.025
261	31		QTM2	PATCH	4	0.051	0.122	0.355	-	0.096	1.747	0.070	0.203	0.055
261	32		QTM2	PATCH	4	0.078	0.105	0.364	-	0.084	1.837	0.057	0.198	0.046
261	41		QTM2	PATCH	4	0.030	0.032	0.500	-	0.064	1.965	0.016	0.254	0.033
261	42		QTM2	PATCH	4	0.048	0.038	0.432	-	0.058	2.246	0.017	0.192	0.026
261	43		QTM2	PATCH	4	0.056	0.045	0.463	-	0.076	1.934	0.024	0.240	0.039
261	44		QTM2	PATCH	4	0.056	0.127	0.347	-	0.092	1.759	0.072	0.197	0.052
261		130	QTM2	PATCH	1	0.008	0.019	0.094	-	0.011	0.741	0.026	0.127	0.015
261		137	QTM2	PATCH	2	0.011	0.060	0.338	-	0.015	1.846	0.032	0.183	0.008
261		138	QTM2	PATCH	2	0.021	0.059	0.286	-	0.028	0.990	0.060	0.289	0.028
261		139	QTM2	PATCH	2	0.016	0.007	0.389	-	0.045	1.299	0.005	0.299	0.034
261		144	QTM2	PATCH	2	0.015	0.075	0.342	-	0.019	1.477	0.051	0.232	0.013
261		145	QTM2	PATCH	2	0.018	0.031	0.311	-	0.026	1.955	0.016	0.159	0.013
261		156	QTM2	PATCH	4	0.017	0.034	0.842	-	0.049	1.989	0.017	0.423	0.025
261		157	QTM2	PATCH	4	0.051	0.112	0.745	-	0.052	1.726	0.065	0.432	0.030
261		158	QTM2	PATCH	4	0.072	0.106	0.510	-	0.069	1.156	0.091	0.441	0.060
261		159	QTM2	PATCH	4	0.038	0.069	0.612	-	0.133	1.518	0.045	0.403	0.088
261		160	QTM2	PATCH	4	0.019	0.019	0.764	-	0.088	2.114	0.009	0.361	0.042
261		169	QTM2	PATCH	4	0.021	0.054	0.758	-	0.056	1.786	0.030	0.424	0.032
261		170	QTM2	PATCH	4	0.074	0.162	0.710	-	0.055	1.710	0.095	0.415	0.032
261		171	QTM2	PATCH	4	0.072	0.103	0.385	-	0.098	1.153	0.090	0.334	0.085
261		172	QTM2	PATCH	4	0.020	0.035	0.744	-	0.109	1.947	0.018	0.382	0.056
261	2	130	QTM2	PATCH	1	0.020	0.048	0.218	-	0.027	1.252	0.038	0.174	0.022
261	9	137	QTM2	PATCH	2	0.029	0.071	0.920	-	0.056	3.024	0.023	0.304	0.018
261	10	138	QTM2	PATCH	2	0.047	0.070	0.528	-	0.056	2.092	0.033	0.252	0.027
261	11	139	QTM2	PATCH	2	0.030	0.044	0.866	-	0.100	1.532	0.029	0.565	0.065
261	16	144	QTM2	PATCH	2	0.023	0.109	0.450	-	0.037	3.331	0.033	0.135	0.011
261	17	145	QTM2	PATCH	2	0.033	0.090	0.338	-	0.038	2.970	0.030	0.114	0.013
261	28	156	QTM2	PATCH	4	0.064	0.041	1.075	-	0.144	4.385	0.009	0.245	0.033
261	29	157	QTM2	PATCH	4	0.063	0.128	0.971	-	0.146	3.355	0.038	0.289	0.044
261	30	158	QTM2	PATCH	4	0.103	0.205	1.205	-	0.130	4.020	0.051	0.300	0.032
261	31	159	QTM2	PATCH	4	0.092	0.151	0.587	-	0.159	4.255	0.036	0.138	0.037
261	32	160	QTM2	PATCH	4	0.071	0.130	0.715	-	0.145	5.037	0.026	0.142	0.029
261	41	169	QTM2	PATCH	4	0.045	0.076	1.111	-	0.139	3.568	0.021	0.311	0.039
261	42	170	QTM2	PATCH	4	0.080	0.205	1.025	-	0.132	3.367	0.061	0.304	0.039
261	43	171	QTM2	PATCH	4	0.082	0.185	0.897	-	0.127	3.316	0.056	0.271	0.038
261	44	172	QTM2	PATCH	4	0.057	0.140	0.640	-	0.155	4.756	0.029	0.135	0.033

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

QTM#2 Low Ch

n260 Low ch(37.05GHz)						4cm2 PD(mW/cm2) at 2mm evaluation surfaces@6dBm						Ratio		
Band	Beam ID		ANT modue	ANT Type	Num.of Feed	relative phase worst PD for MIMO						Right/ (worst surface)	Top/ (worst surface)	Front/ (worst surface)
						Left	Right	Top	Bottom	Front	Back			
260	2		QTM2	PATCH	1	0.014	0.018	0.137	-	0.020	0.632	0.028	0.217	0.031
260	9		QTM2	PATCH	2	0.015	0.017	0.301	-	0.018	1.599	0.011	0.189	0.011
260	10		QTM2	PATCH	2	0.031	0.043	0.247	-	0.033	0.998	0.043	0.247	0.033
260	11		QTM2	PATCH	2	0.020	0.033	0.267	-	0.036	1.469	0.023	0.182	0.025
260	16		QTM2	PATCH	2	0.020	0.016	0.244	-	0.018	1.769	0.009	0.138	0.010
260	17		QTM2	PATCH	2	0.023	0.051	0.233	-	0.035	1.561	0.033	0.149	0.022
260	28		QTM2	PATCH	4	0.020	0.057	0.435	-	0.036	1.855	0.031	0.235	0.020
260	29		QTM2	PATCH	4	0.018	0.026	0.528	-	0.056	2.171	0.012	0.243	0.026
260	30		QTM2	PATCH	4	0.071	0.036	0.363	-	0.070	2.748	0.013	0.132	0.026
260	31		QTM2	PATCH	4	0.051	0.165	0.582	-	0.092	2.618	0.063	0.222	0.035
260	32		QTM2	PATCH	4	0.042	0.066	0.438	-	0.061	2.825	0.023	0.155	0.021
260	41		QTM2	PATCH	4	0.016	0.033	0.459	-	0.038	1.717	0.019	0.267	0.022
260	42		QTM2	PATCH	4	0.026	0.032	0.417	-	0.077	2.526	0.013	0.165	0.031
260	43		QTM2	PATCH	4	0.070	0.155	0.572	-	0.072	2.319	0.067	0.247	0.031
260	44		QTM2	PATCH	4	0.022	0.105	0.414	-	0.068	2.243	0.047	0.185	0.030
260		130	QTM2	PATCH	1	0.019	0.014	0.090	-	0.014	0.635	0.022	0.142	0.022
260		137	QTM2	PATCH	2	0.035	0.021	0.160	-	0.029	1.372	0.016	0.117	0.021
260		138	QTM2	PATCH	2	0.049	0.037	0.265	-	0.033	1.295	0.029	0.205	0.026
260		139	QTM2	PATCH	2	0.013	0.012	0.164	-	0.019	1.339	0.009	0.122	0.014
260		144	QTM2	PATCH	2	0.040	0.038	0.181	-	0.032	1.108	0.035	0.164	0.029
260		145	QTM2	PATCH	2	0.034	0.029	0.294	-	0.030	0.770	0.038	0.381	0.039
260		156	QTM2	PATCH	4	0.028	0.060	0.485	-	0.070	2.723	0.022	0.178	0.026
260		157	QTM2	PATCH	4	0.043	0.045	0.397	-	0.043	1.539	0.029	0.258	0.028
260		158	QTM2	PATCH	4	0.095	0.087	0.468	-	0.056	2.618	0.033	0.179	0.021
260		159	QTM2	PATCH	4	0.025	0.052	0.482	-	0.079	1.670	0.031	0.288	0.047
260		160	QTM2	PATCH	4	0.033	0.035	0.439	-	0.046	1.381	0.026	0.318	0.033
260		169	QTM2	PATCH	4	0.037	0.042	0.377	-	0.057	2.243	0.019	0.168	0.025
260		170	QTM2	PATCH	4	0.084	0.061	0.384	-	0.057	2.698	0.022	0.142	0.021
260		171	QTM2	PATCH	4	0.047	0.082	0.492	-	0.066	2.093	0.039	0.235	0.031
260		172	QTM2	PATCH	4	0.026	0.029	0.347	-	0.040	1.514	0.019	0.229	0.026
260	2	130	QTM2	PATCH	1	0.031	0.018	0.211	-	0.021	1.405	0.013	0.150	0.015
260	9	137	QTM2	PATCH	2	0.063	0.019	0.369	-	0.048	2.323	0.008	0.159	0.021
260	10	138	QTM2	PATCH	2	0.089	0.066	0.799	-	0.051	2.536	0.026	0.315	0.020
260	11	139	QTM2	PATCH	2	0.033	0.026	0.467	-	0.030	1.948	0.013	0.240	0.015
260	16	144	QTM2	PATCH	2	0.056	0.048	0.353	-	0.040	2.245	0.022	0.157	0.018
260	17	145	QTM2	PATCH	2	0.032	0.092	0.455	-	0.039	2.106	0.044	0.216	0.018
260	28	156	QTM2	PATCH	4	0.045	0.118	0.838	-	0.080	3.700	0.032	0.227	0.022
260	29	157	QTM2	PATCH	4	0.045	0.048	0.704	-	0.072	2.493	0.019	0.282	0.029
260	30	158	QTM2	PATCH	4	0.095	0.170	0.911	-	0.077	4.195	0.040	0.217	0.018
260	31	159	QTM2	PATCH	4	0.066	0.197	0.982	-	0.106	3.860	0.051	0.254	0.027
260	32	160	QTM2	PATCH	4	0.042	0.097	0.648	-	0.100	3.711	0.026	0.175	0.027
260	41	169	QTM2	PATCH	4	0.031	0.079	0.755	-	0.080	3.306	0.024	0.228	0.024
260	42	170	QTM2	PATCH	4	0.077	0.119	0.930	-	0.078	4.051	0.029	0.230	0.019
260	43	171	QTM2	PATCH	4	0.110	0.220	1.274	-	0.111	3.924	0.056	0.325	0.028
260	44	172	QTM2	PATCH	4	0.041	0.150	0.646	-	0.115	4.238	0.035	0.152	0.027

QTM#2 Mid Ch

n260 Mid ch(38.5GHz)						4cm2 PD(mW/cm2) at 2mm evaluation surfaces@6dBm						Ratio		
Band	Beam ID		ANT modue	ANT Type	Num.of Feed	relative phase worst PD for MIMO						Right/ (worst surface)	Top/ (worst surface)	Front/ (worst surface)
						Left	Right	Top	Bottom	Front	Back			
260	2		QTM2	PATCH	1	0.021	0.015	0.312	-	0.027	0.557	0.027	0.559	0.048
260	9		QTM2	PATCH	2	0.038	0.026	0.387	-	0.055	2.042	0.013	0.190	0.027
260	10		QTM2	PATCH	2	0.037	0.050	0.457	-	0.042	1.278	0.039	0.357	0.033
260	11		QTM2	PATCH	2	0.040	0.042	0.492	-	0.046	1.282	0.033	0.384	0.036
260	16		QTM2	PATCH	2	0.042	0.039	0.377	-	0.026	1.984	0.020	0.190	0.013
260	17		QTM2	PATCH	2	0.021	0.072	0.174	-	0.046	1.386	0.052	0.125	0.033
260	28		QTM2	PATCH	4	0.041	0.074	0.461	-	0.089	2.233	0.033	0.207	0.040
260	29		QTM2	PATCH	4	0.073	0.065	0.670	-	0.085	3.133	0.021	0.214	0.027
260	30		QTM2	PATCH	4	0.088	0.069	0.582	-	0.073	3.857	0.018	0.151	0.019
260	31		QTM2	PATCH	4	0.049	0.176	0.780	-	0.115	2.257	0.078	0.346	0.051
260	32		QTM2	PATCH	4	0.079	0.079	0.532	-	0.115	3.509	0.023	0.152	0.033
260	41		QTM2	PATCH	4	0.041	0.108	0.501	-	0.064	2.217	0.049	0.226	0.029
260	42		QTM2	PATCH	4	0.073	0.049	0.614	-	0.064	4.204	0.012	0.146	0.015
260	43		QTM2	PATCH	4	0.080	0.247	0.520	-	0.082	2.884	0.086	0.180	0.028
260	44		QTM2	PATCH	4	0.037	0.124	0.787	-	0.110	2.356	0.053	0.334	0.047
260		130	QTM2	PATCH	1	0.032	0.022	0.084	-	0.018	0.683	0.032	0.123	0.026
260		137	QTM2	PATCH	2	0.051	0.041	0.226	-	0.025	1.771	0.023	0.127	0.014
260		138	QTM2	PATCH	2	0.045	0.040	0.386	-	0.047	1.112	0.036	0.347	0.042
260		139	QTM2	PATCH	2	0.033	0.044	0.243	-	0.031	1.776	0.025	0.137	0.018
260		144	QTM2	PATCH	2	0.042	0.055	0.253	-	0.032	1.522	0.036	0.166	0.021
260		145	QTM2	PATCH	2	0.029	0.045	0.495	-	0.058	1.258	0.036	0.393	0.046
260		156	QTM2	PATCH	4	0.042	0.125	0.708	-	0.083	3.080	0.040	0.230	0.027
260		157	QTM2	PATCH	4	0.051	0.098	0.835	-	0.061	2.090	0.047	0.400	0.029
260		158	QTM2	PATCH	4	0.073	0.102	0.788	-	0.092	2.114	0.048	0.373	0.044
260		159	QTM2	PATCH	4	0.058	0.051	0.684	-	0.106	2.431	0.021	0.281	0.044
260		160	QTM2	PATCH	4	0.050	0.105	0.788	-	0.063	1.782	0.059	0.442	0.036
260		169	QTM2	PATCH	4	0.053	0.116	0.696	-	0.071	2.802	0.041	0.248	0.025
260		170	QTM2	PATCH	4	0.070	0.068	0.833	-	0.078	2.190	0.031	0.380	0.036
260		171	QTM2	PATCH	4	0.046	0.077	0.776	-	0.094	2.251	0.034	0.345	0.042
260		172	QTM2	PATCH	4	0.046	0.092	0.523	-	0.069	2.304	0.040	0.227	0.030
260	2	130	QTM2	PATCH	1	0.066	0.033	0.472	-	0.038	1.449	0.023	0.326	0.026
260	9	137	QTM2	PATCH	2	0.137	0.038	0.490	-	0.105	3.610	0.010	0.136	0.029
260	10	138	QTM2	PATCH	2	0.092	0.067	1.606	-	0.091	2.209	0.030	0.727	0.041
260	11	139	QTM2	PATCH	2	0.086	0.104	0.683	-	0.075	2.278	0.046	0.300	0.033
260	16	144	QTM2	PATCH	2	0.086	0.084	0.529	-	0.045	2.958	0.029	0.179	0.015
260	17	145	QTM2	PATCH	2	0.018	0.183	0.915	-	0.095	3.393	0.054	0.270	0.028
260	28	156	QTM2	PATCH	4	0.052	0.300	2.234	-	0.122	6.812	0.044	0.328	0.018
260	29	157	QTM2	PATCH	4	0.091	0.171	1.782	-	0.171	4.903	0.035	0.363	0.035
260	30	158	QTM2	PATCH	4	0.069	0.215	1.963	-	0.202	4.177	0.051	0.470	0.048
260	31	159	QTM2	PATCH	4	0.086	0.208	2.452	-	0.141	4.716	0.044	0.520	0.030
260	32	160	QTM2	PATCH	4	0.071	0.127	1.286	-	0.150	5.082	0.025	0.253	0.030
260	41	169	QTM2	PATCH	4	0.050	0.195	1.935	-	0.109	5.651	0.035	0.342	0.019
260	42	170	QTM2	PATCH	4	0.055	0.159	1.461	-	0.159	4.625	0.034	0.316	0.034
260	43	171	QTM2	PATCH	4	0.123	0.274	2.228	-	0.119	3.845	0.071	0.580	0.031
260	44	172	QTM2	PATCH	4	0.072	0.187	1.711	-	0.155	4.176	0.045	0.410	0.037

QTM#2 High Ch

n260 High ch(39.95GHz)						4cm2 PD(mW/cm2) at 2mm evaluation surfaces@6dBm						Ratio		
Band	Beam ID		ANT modue	ANT Type	Num.of Feed	relative phase worst PD for MIMO						Right/ (worst surface)	Top/ (worst surface)	Front/ (worst surface)
						Left	Right	Top	Bottom	Front	Back			
260	2		QTM2	PATCH	1	0.025	0.020	0.277	-	0.035	0.736	0.027	0.376	0.047
260	9		QTM2	PATCH	2	0.068	0.032	0.369	-	0.061	2.254	0.014	0.164	0.027
260	10		QTM2	PATCH	2	0.045	0.037	0.399	-	0.044	1.389	0.026	0.287	0.031
260	11		QTM2	PATCH	2	0.034	0.052	0.487	-	0.058	1.068	0.048	0.456	0.054
260	16		QTM2	PATCH	2	0.044	0.032	0.244	-	0.031	1.911	0.017	0.128	0.016
260	17		QTM2	PATCH	2	0.015	0.072	0.198	-	0.033	1.383	0.052	0.143	0.024
260	28		QTM2	PATCH	4	0.036	0.094	0.719	-	0.124	2.128	0.044	0.338	0.058
260	29		QTM2	PATCH	4	0.087	0.083	0.591	-	0.067	2.411	0.034	0.245	0.028
260	30		QTM2	PATCH	4	0.094	0.073	0.571	-	0.045	4.687	0.016	0.122	0.010
260	31		QTM2	PATCH	4	0.051	0.182	0.791	-	0.138	2.491	0.073	0.318	0.055
260	32		QTM2	PATCH	4	0.037	0.067	0.659	-	0.126	3.810	0.018	0.173	0.033
260	41		QTM2	PATCH	4	0.037	0.090	0.650	-	0.094	1.927	0.046	0.337	0.049
260	42		QTM2	PATCH	4	0.109	0.045	0.531	-	0.069	4.001	0.011	0.133	0.017
260	43		QTM2	PATCH	4	0.067	0.191	0.611	-	0.087	2.764	0.069	0.221	0.031
260	44		QTM2	PATCH	4	0.020	0.129	0.916	-	0.120	2.566	0.050	0.357	0.047
260		130	QTM2	PATCH	1	0.025	0.022	0.108	-	0.016	0.926	0.024	0.117	0.017
260		137	QTM2	PATCH	2	0.039	0.058	0.324	-	0.037	1.602	0.036	0.202	0.023
260		138	QTM2	PATCH	2	0.047	0.032	0.353	-	0.048	1.227	0.026	0.287	0.039
260		139	QTM2	PATCH	2	0.044	0.065	0.286	-	0.031	2.283	0.028	0.125	0.013
260		144	QTM2	PATCH	2	0.048	0.047	0.252	-	0.023	1.394	0.034	0.181	0.016
260		145	QTM2	PATCH	2	0.027	0.048	0.625	-	0.063	1.267	0.038	0.494	0.050
260		156	QTM2	PATCH	4	0.041	0.142	0.785	-	0.097	2.686	0.053	0.292	0.036
260		157	QTM2	PATCH	4	0.048	0.110	0.810	-	0.061	2.053	0.053	0.395	0.030
260		158	QTM2	PATCH	4	0.080	0.091	0.946	-	0.091	2.262	0.040	0.418	0.040
260		159	QTM2	PATCH	4	0.053	0.093	0.674	-	0.082	3.006	0.031	0.224	0.027
260		160	QTM2	PATCH	4	0.050	0.170	0.806	-	0.066	1.866	0.091	0.432	0.035
260		169	QTM2	PATCH	4	0.050	0.182	0.811	-	0.079	2.542	0.072	0.319	0.031
260		170	QTM2	PATCH	4	0.083	0.073	1.017	-	0.077	2.398	0.030	0.424	0.032
260		171	QTM2	PATCH	4	0.063	0.059	0.859	-	0.100	2.317	0.025	0.371	0.043
260		172	QTM2	PATCH	4	0.048	0.115	0.563	-	0.054	2.394	0.048	0.235	0.023
260	2	130	QTM2	PATCH	1	0.080	0.037	0.522	-	0.042	1.796	0.021	0.291	0.023
260	9	137	QTM2	PATCH	2	0.188	0.076	0.555	-	0.083	3.693	0.021	0.150	0.022
260	10	138	QTM2	PATCH	2	0.105	0.061	1.408	-	0.079	2.453	0.025	0.574	0.032
260	11	139	QTM2	PATCH	2	0.082	0.137	0.841	-	0.068	2.735	0.050	0.308	0.025
260	16	144	QTM2	PATCH	2	0.068	0.110	0.427	-	0.042	3.238	0.034	0.132	0.013
260	17	145	QTM2	PATCH	2	0.019	0.202	1.113	-	0.135	3.058	0.066	0.364	0.044
260	28	156	QTM2	PATCH	4	0.073	0.254	2.619	-	0.246	6.613	0.038	0.396	0.037
260	29	157	QTM2	PATCH	4	0.089	0.252	1.877	-	0.176	3.929	0.064	0.478	0.045
260	30	158	QTM2	PATCH	4	0.050	0.208	1.849	-	0.210	4.590	0.045	0.403	0.046
260	31	159	QTM2	PATCH	4	0.089	0.236	2.119	-	0.144	5.291	0.045	0.400	0.027
260	32	160	QTM2	PATCH	4	0.053	0.175	1.792	-	0.174	5.566	0.031	0.322	0.031
260	41	169	QTM2	PATCH	4	0.086	0.255	2.807	-	0.156	5.378	0.047	0.522	0.029
260	42	170	QTM2	PATCH	4	0.072	0.183	1.552	-	0.187	4.292	0.043	0.362	0.044
260	43	171	QTM2	PATCH	4	0.120	0.182	1.670	-	0.142	3.992	0.046	0.418	0.036
260	44	172	QTM2	PATCH	4	0.068	0.218	2.016	-	0.152	5.748	0.038	0.351	0.026