



Qualcomm Technologies, Inc.

# ZJY Myra SUB6 mmW Power Density Simulation Report

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## Revision history

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# 1 Electromagnetic simulation method for power density

## 1.1 EM simulation

### 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. 21.1 (2021 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. 21.1 (2021 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. 21.1 (2021 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. 21.1 (2021 R1) is used. ANSYS Electromagnetics suite HFSS ver. 21.1 (2021 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 iterations in ANSYS Electromagnetics suite HFSS ver. 21.1 (2021 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. 21.1 (2021 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).

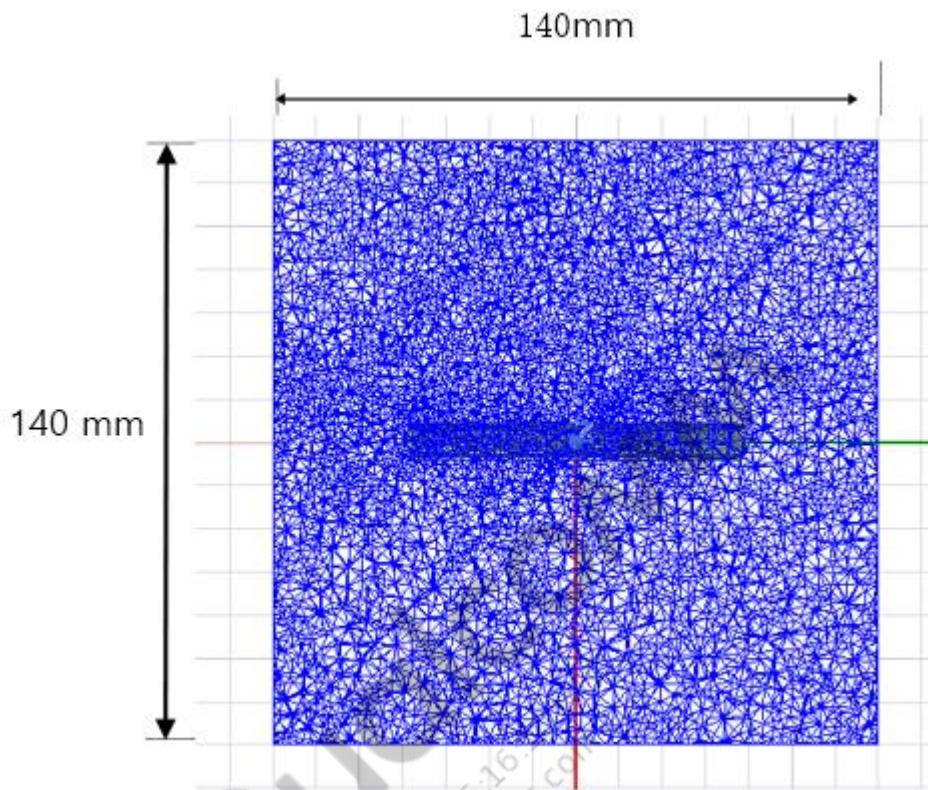


Figure 1-1: Example of HFSS mesh in a model of the device (Top view)

### 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 ( $S$ ) from the cross product of  $\vec{E}$  and complex conjugation of  $H^*$  as shown below:

$(S)$  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. 21.1 (2021 R1).

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

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

$$PD_{av} = \frac{1}{A} \int_A \vec{S} \cdot d\mathbf{s} = \frac{1}{2A} \int_A |\operatorname{Re}(\vec{E} \times \vec{H}^*)| \cdot d\mathbf{s}$$

## 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 two mmWave antenna modules. The simulation modeling includes most of the entire structure of device itself such as PCB, metal frame, battery, cables, and legacy antennas as well as mmWave antenna modules called as QMT0# and QMT1#. On the front side view, QMT0# is placed at the left side and antennas are facing the left side of the device. QMT1# is placed on the right side and antennas are facing the right side.



**Figure 1-2: HFSS simulation model which is mounted two mmWave antenna modules**

## 1.2.2 PD evaluation surfaces

Figure 1-3 shows the PD evaluation planes and truncation area of the simulation model to find worst case surfaces for evaluation. Table 1-1 shows the surfaces selected for PD evaluation planes for QTM#0 and QTM#1.

Please note that the “right” and “left” edge of mentioned in this report are defined from the perspective of looking at the device from the front side.

**Table 1-1: PD evaluation surfaces**

	Front	Back	Left From Front View	Right From Front View	Top	Bottom
	S1	S2	S3	S4	S5	S6
QTM#0	✓	✓	✓	✓	✓	✓
QTM#1	✓	✓	✓	✓	✓	✓

## 1.2.3 Radiation boundary condition

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

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

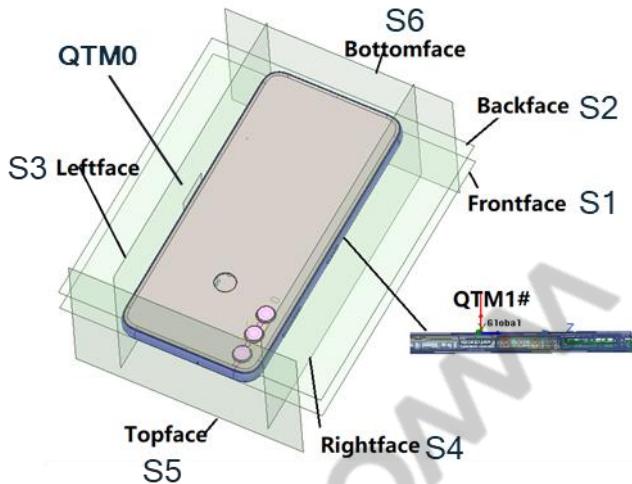
By changing convergence error (i.e., maximum magnitude delta S) from 2% to 4% and moving the radiation boundary closer towards the device by 20%, the combined influence in PD value is < 0.04 dB which confirms that the simulation model is reliable using this setup.

## 1.2.4 Source excitation condition

Each of the three 5G mmWave array modules is the same part containing a 1x4 element array of dual-polarization patch antennas. The number of antenna ports of QTM#0 and QTM#1 for source excitation is equal to 16. The port of each patch antenna is 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.

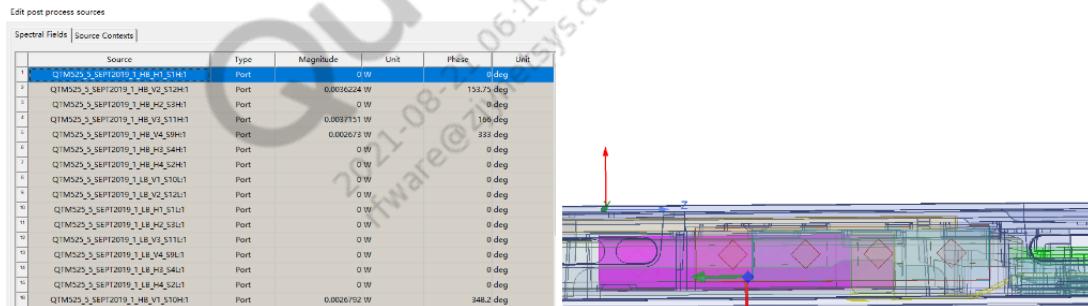
Figure 1-3 shows the QTM#1 module structure and surrounding structure. The QTM#1 module is encrypted in the ANSYS Electromagnetics suite (HFSS) and can only check the feeding position

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



**Figure 1-3: EUT simulation model**

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 4 shows an example of antenna port excitations.



**Figure 1-4: An example of port excitation (QTM#1)**

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 Codebook

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The codebook supported by this EUT is shown in Table 2-1 below.

**Table 2-1: EUT codebook**

- N261 codebook

Band	Beam_ID	Module	Ant_Type	Ant_Feed	Paired_With
261	0	1	PATCH	1	128
261	1	0	PATCH	1	129
261	2	1	PATCH	1	130
261	3	0	PATCH	1	131
261	4	0	PATCH	1	132
261	5	1	PATCH	2	133
261	6	1	PATCH	2	134
261	7	1	PATCH	2	135
261	8	1	PATCH	2	136
261	9	0	PATCH	2	137
261	10	0	PATCH	2	138
261	11	0	PATCH	2	139
261	12	0	PATCH	2	140
261	13	1	PATCH	2	141
261	14	1	PATCH	2	142
261	15	1	PATCH	2	143
261	16	0	PATCH	2	144
261	17	0	PATCH	2	145
261	18	0	PATCH	2	146
261	19	1	PATCH	4	147
261	20	1	PATCH	4	148
261	21	1	PATCH	4	149
261	22	1	PATCH	4	150
261	23	1	PATCH	4	151
261	24	0	PATCH	4	152
261	25	0	PATCH	4	153

<b>261</b>	<b>26</b>	<b>0</b>	<b>PATCH</b>	<b>4</b>	<b>154</b>
261	27	0	PATCH	4	155
261	28	0	PATCH	4	156
261	29	1	PATCH	4	157
<b>261</b>	<b>30</b>	<b>1</b>	<b>PATCH</b>	<b>4</b>	<b>158</b>
261	31	1	PATCH	4	159
261	32	1	PATCH	4	160
261	33	0	PATCH	4	161
261	34	0	PATCH	4	162
261	35	0	PATCH	4	163
261	36	0	PATCH	4	164
261	128	1	PATCH	1	0
261	129	0	PATCH	1	1
261	130	1	PATCH	1	2
261	131	0	PATCH	1	3
261	132	0	PATCH	1	4
261	133	1	PATCH	2	5
261	134	1	PATCH	2	6
261	135	1	PATCH	2	7
261	136	1	PATCH	2	8
261	137	0	PATCH	2	9
261	138	0	PATCH	2	10
261	139	0	PATCH	2	11
261	140	0	PATCH	2	12
261	141	1	PATCH	2	13
261	142	1	PATCH	2	14
261	143	1	PATCH	2	15
261	144	0	PATCH	2	16
261	145	0	PATCH	2	17
261	146	0	PATCH	2	18
261	147	1	PATCH	4	19
261	148	1	PATCH	4	20
261	149	1	PATCH	4	21
261	150	1	PATCH	4	22
261	151	1	PATCH	4	23
261	152	0	PATCH	4	24

261	153	0	PATCH	4	25
261	154	0	PATCH	4	26
261	155	0	PATCH	4	27
261	156	0	PATCH	4	28
261	157	1	PATCH	4	29
261	158	1	PATCH	4	30
261	159	1	PATCH	4	31
261	160	1	PATCH	4	32
261	161	0	PATCH	4	33
261	162	0	PATCH	4	34
261	163	0	PATCH	4	35
261	164	0	PATCH	4	36

- N260 codebook

Band	Beam_ID	Module	Ant_Type	Ant_Feed	Paired_With
260	0	1	PATCH	1	128
260	1	0	PATCH	1	129
260	2	1	PATCH	1	130
260	3	0	PATCH	1	131
260	4	0	PATCH	1	132
260	5	0	PATCH	1	133
260	6	1	PATCH	2	134
260	7	1	PATCH	2	135
260	8	1	PATCH	2	136
260	9	1	PATCH	2	137
260	10	0	PATCH	2	138
260	11	0	PATCH	2	139
260	12	0	PATCH	2	140
260	13	0	PATCH	2	141
260	14	1	PATCH	2	142
260	15	1	PATCH	2	143
260	16	1	PATCH	2	144
260	17	0	PATCH	2	145
260	18	0	PATCH	2	146
260	19	0	PATCH	2	147

260	20	1	PATCH	4	148
260	21	1	PATCH	4	149
260	22	1	PATCH	4	150
260	23	1	PATCH	4	151
260	24	1	PATCH	4	152
260	25	0	PATCH	4	153
260	26	0	PATCH	4	154
260	27	0	PATCH	4	155
260	28	0	PATCH	4	156
260	29	0	PATCH	4	157
260	30	1	PATCH	4	158
260	31	1	PATCH	4	159
260	32	1	PATCH	4	160
260	33	1	PATCH	4	161
260	34	0	PATCH	4	162
260	35	0	PATCH	4	163
260	36	0	PATCH	4	164
260	37	0	PATCH	4	165
260	128	1	PATCH	1	0
260	129	0	PATCH	1	1
260	130	1	PATCH	1	2
260	131	0	PATCH	1	3
260	132	0	PATCH	1	4
260	133	0	PATCH	1	5
260	134	1	PATCH	2	6
260	135	1	PATCH	2	7
260	136	1	PATCH	2	8
260	137	1	PATCH	2	9
260	138	0	PATCH	2	10
260	139	0	PATCH	2	11
260	140	0	PATCH	2	12
260	141	0	PATCH	2	13
260	142	1	PATCH	2	14
260	143	1	PATCH	2	15
260	144	1	PATCH	2	16
260	145	0	PATCH	2	17

260	146	0	PATCH	2	18
260	147	0	PATCH	2	19
260	148	1	PATCH	4	20
260	149	1	PATCH	4	21
260	150	1	PATCH	4	22
260	151	1	PATCH	4	23
260	152	1	PATCH	4	24
260	153	0	PATCH	4	25
260	154	0	PATCH	4	26
260	155	0	PATCH	4	27
260	156	0	PATCH	4	28
260	157	0	PATCH	4	29
260	158	1	PATCH	4	30
260	159	1	PATCH	4	31
260	160	1	PATCH	4	32
260	161	1	PATCH	4	33
260	162	0	PATCH	4	34
260	163	0	PATCH	4	35
260	164	0	PATCH	4	36
260	165	0	PATCH	4	37

## 3 Simulation verification

The beams selected for simulation verification are highlighted in yellow in Table 2-1. Input power level used for comparison is listed in Table 3-1.

**Table 3-1: Input power used in simulation validation**

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

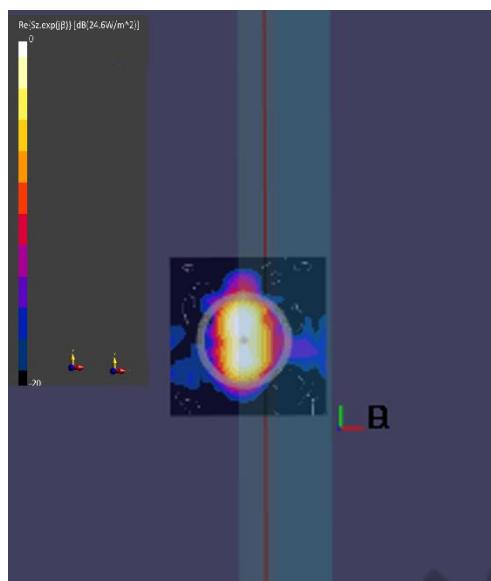
The simulation and measurement were performed at 2mm evaluation distance. The simulated and measured 4cm<sup>2</sup> averaged PD results are shown in Table 3-2.

**Table 3-2: Simulated and measured 4cm<sup>2</sup> averaged PD comparison**

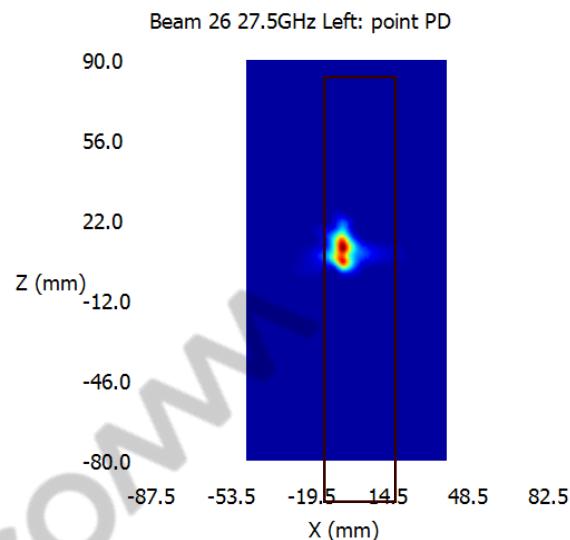
measured PD / simulated PD at 6dBm input power									
Band	Ant Type	Module	Ant Pol	beam ID	Surface	Channel	Measured	Simulated	Delta (dB) (Simulated-Measured)
n261	Patch	QTM0	AG0(V)	26	Leftface	Low	8.57	18	3.2
					Frontface	Low	3.8	7.71	3.1
					Backface	Low	5.73	7.9	1.4
			AG1(H)	155	Leftface	Mid	8.8	16.99	2.9
					Frontface	Mid	4.06	7.51	2.7
					Backface	Mid	6.14	7.16	0.7
		QTM1	AG0(V)	30	Rightface	Low	8.42	17.08	3.1
					Frontface	Low	3.13	8.36	4.1
					Backface	Low	3.65	6.83	3.4
			AG1(H)	158	RightFace	Mid	8.53	15.36	2.6
					Frontface	Mid	4.16	6.97	2.2
					Backface	Mid	3.75	6.36	2.3
n260	Patch	QTM0	AG0(V)	29	Leftface	Mid	9.17	18.31	3.0
					Frontface	Mid	2.54	4.95	2.9
					Backface	Mid	2.65	5.67	3.3
			AG1(H)	157	Leftface	Mid	6.4	16.69	4.2
					Frontface	Mid	2.65	4.85	2.6
					Backface	Mid	4.96	5.15	0.2
		QTM1	AG0(V)	24	Rightface	Mid	8.63	15.46	2.5
					Frontface	Mid	2.79	5.55	3.0
					Backface	Mid	2.64	5.61	3.3
			AG1(H)	161	Rightface	Mid	6.47	14.52	3.5
					Frontface	Mid	2.74	4.77	2.4
					Backface	Mid	3.92	5.17	1.2

Below Figures show Measured and simulated PD distributions for selected beams. As can be seen, the Simulated point PD distribution and Measured point PD distribution have good correlation on all surfaces evaluated.

- N261 QTM0: Low channel, Beam26, Left face, Point PD

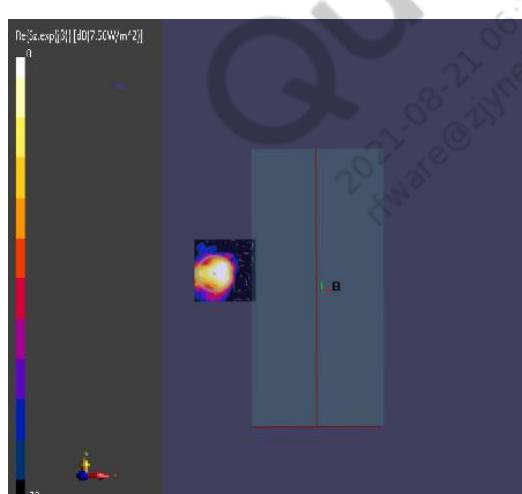


(a) Measurement

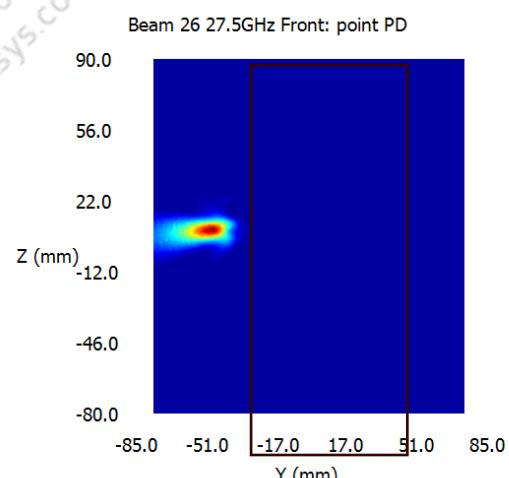


(b) Simulation

- N261 QTM0: Low channel, Beam26, Front face, Point PD

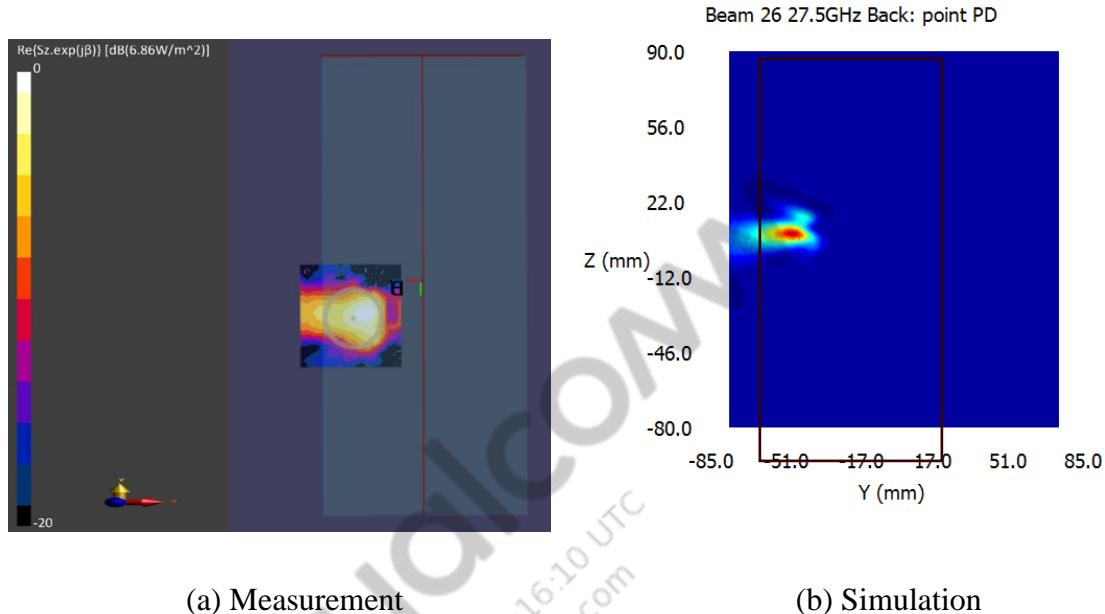


(a) Measurement

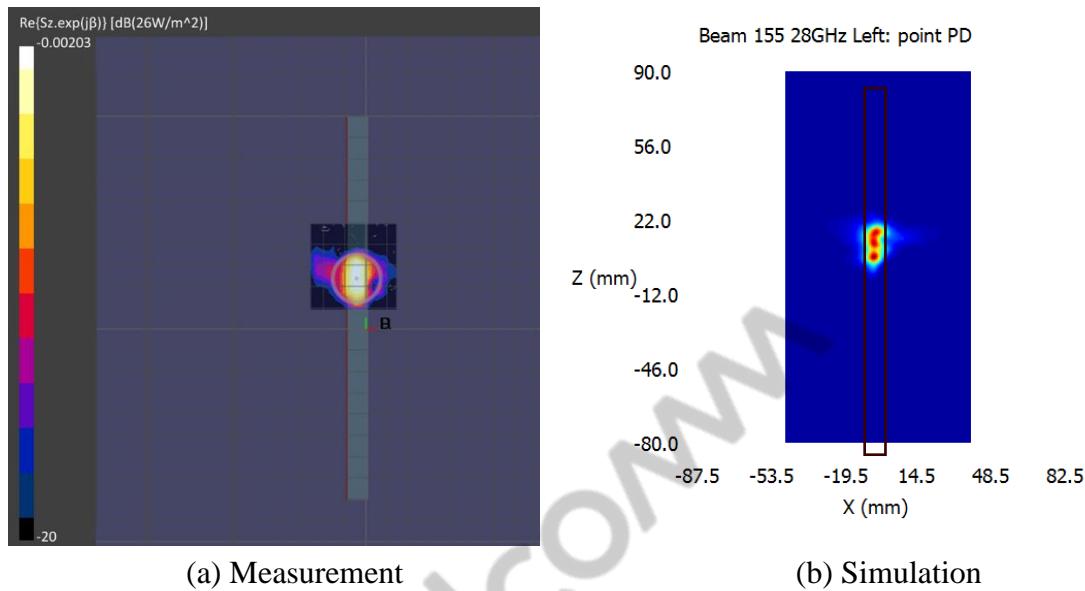


(b) Simulation

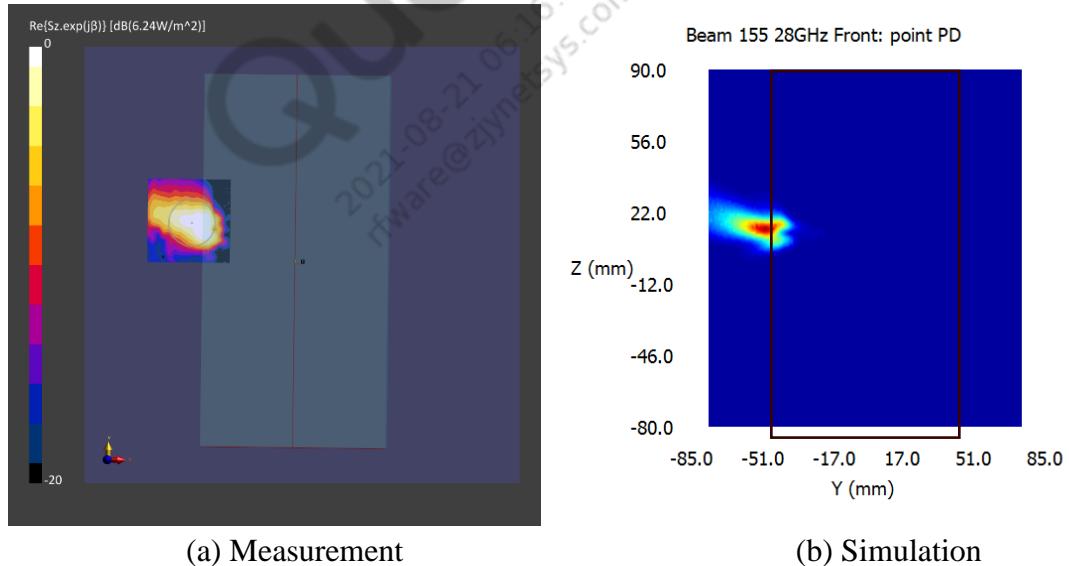
## N261 QTM0: Low channel, Beam26, Back face, Point PD



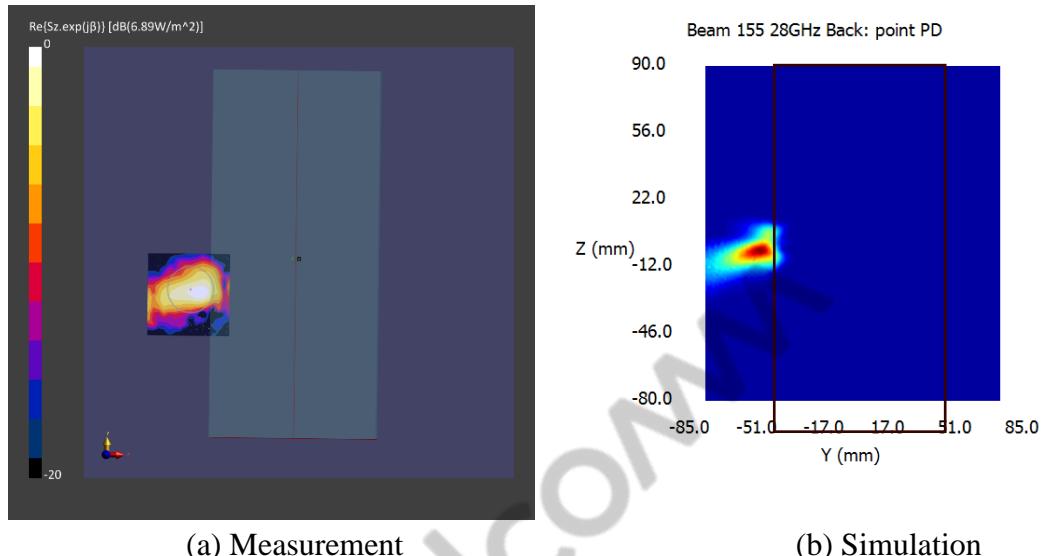
- N261 QTM0: Middle channel, Beam155, Left face, Point PD



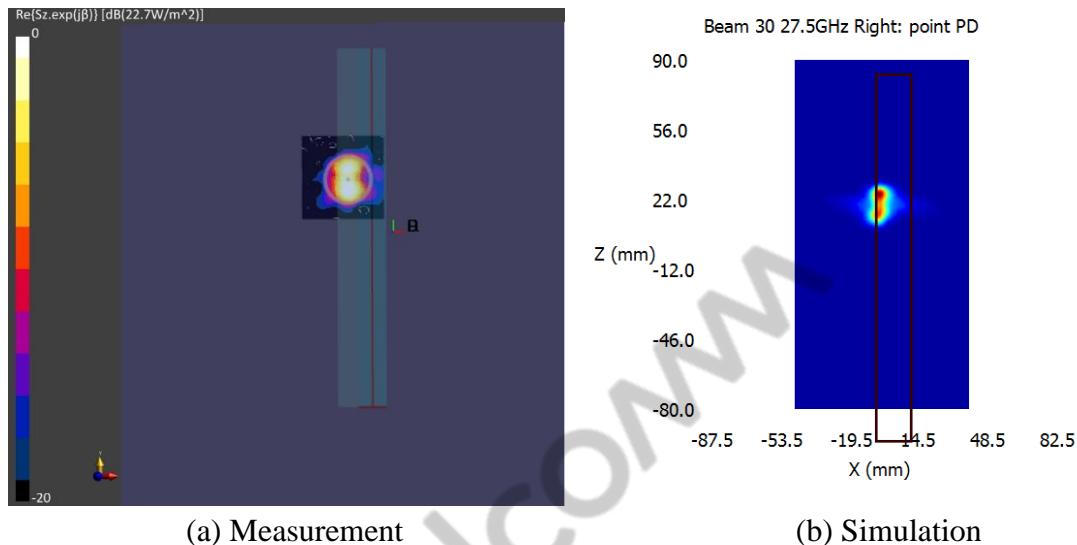
- N261 QTM0: Middle channel, Beam155, Front face, Point PD



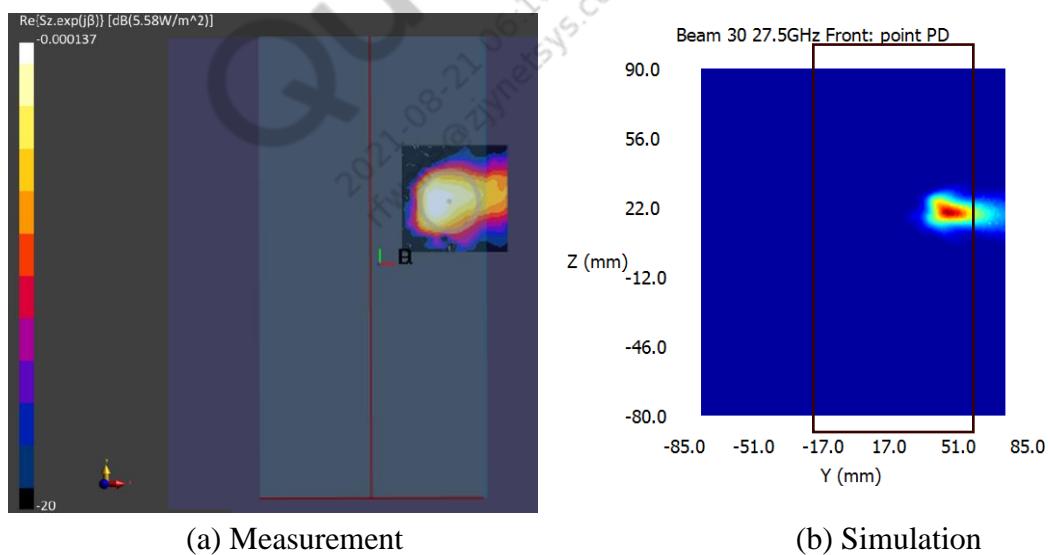
- N261 QTM0: Middle channel, Beam155, Back face, Point PD



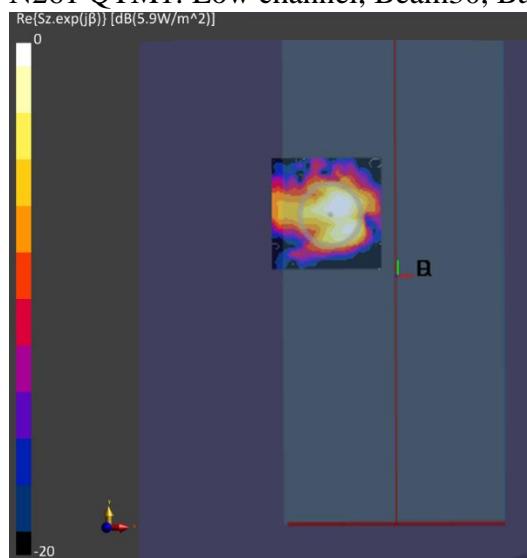
- N261 QTM1: Low channel, Beam30, right face, Point PD



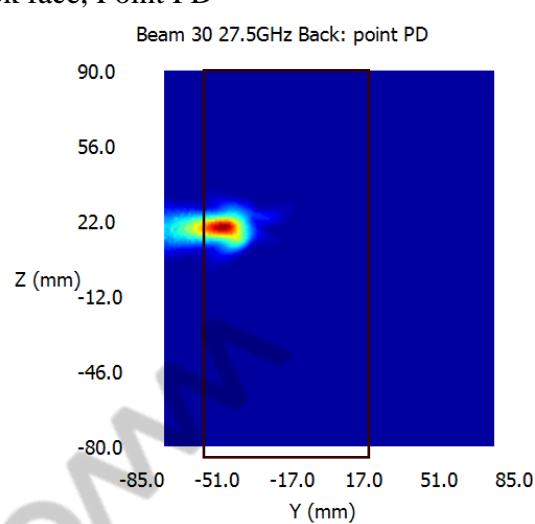
- N261 QTM1: Low channel, Beam30, Front face, Point PD



- N261 QTM1: Low channel, Beam30, Back face, Point PD

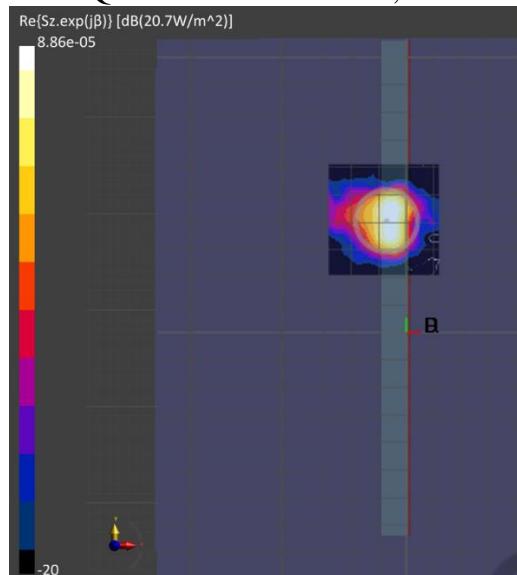


(a) Measurement

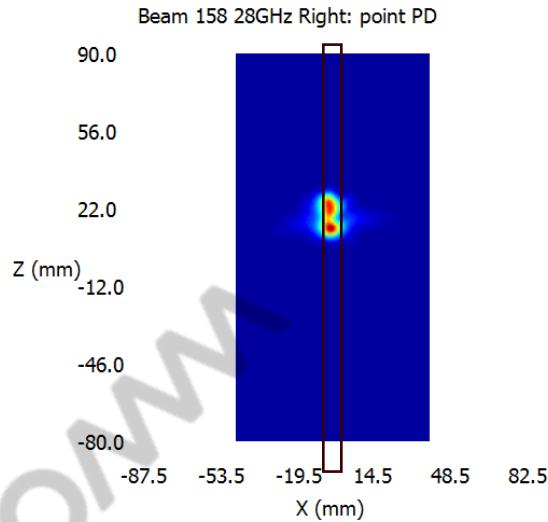


(b) Simulation

- N261 QTM1: Middle channel, Beam158, Right face, Point PD

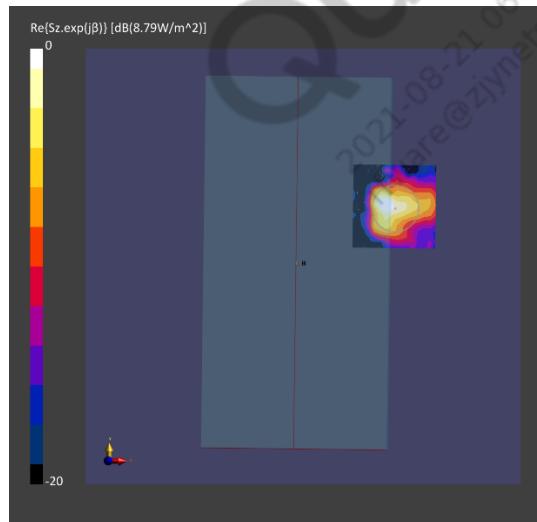


(a) Measurement

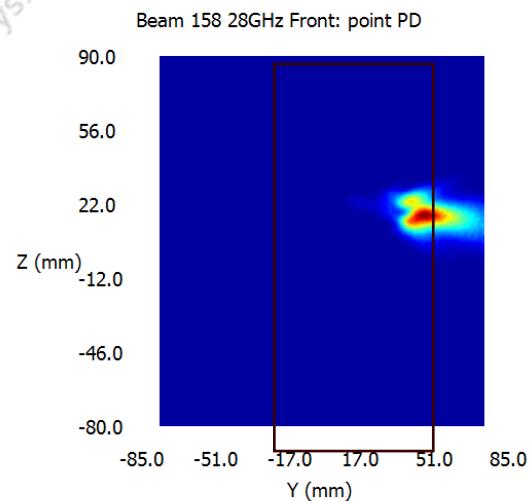


(b) Simulation

- N261 QTM1: Middle channel, Beam158, Front face, Point PD

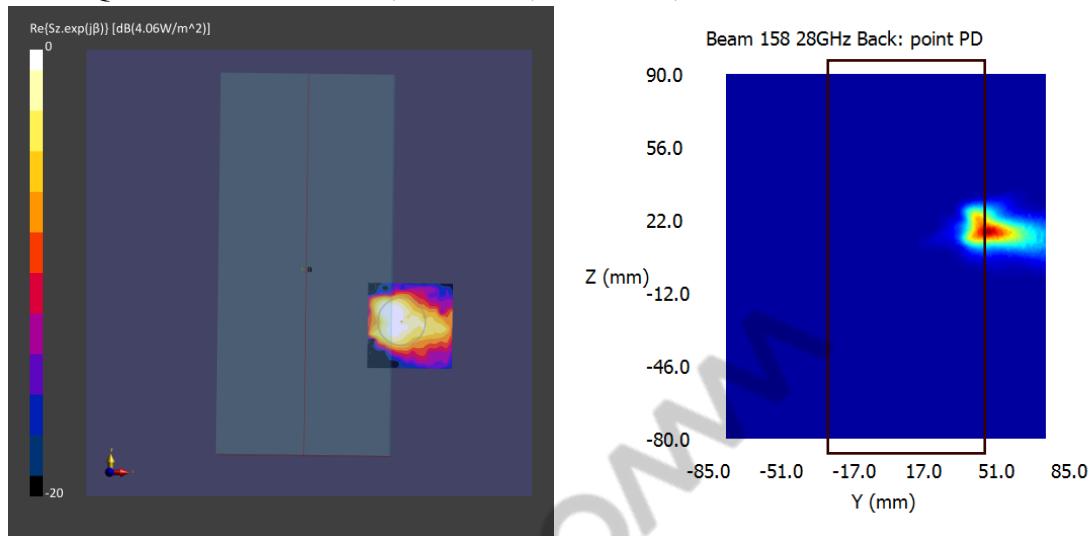


(a) Measurement



(b) Simulation

- N261 QT M1: Middle channel, Beam158, Back face, Point PD



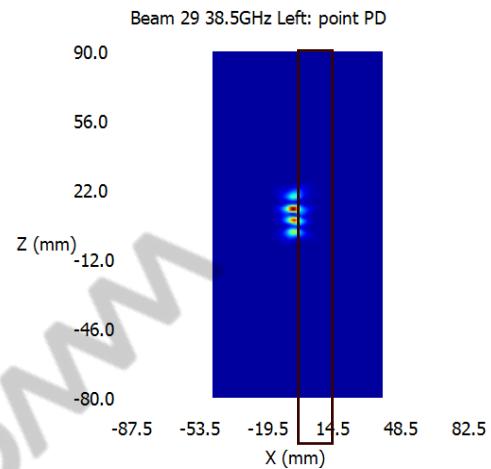
(a) Measurement

(b) Simulation

- N260 QTM0: Middle channel, Beam29, Left face, Point PD

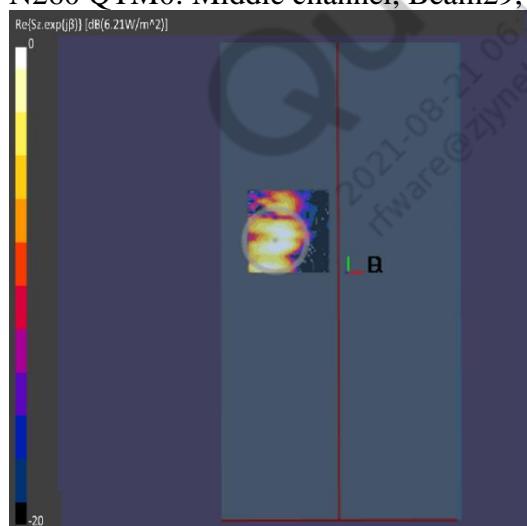


(a) Measurement

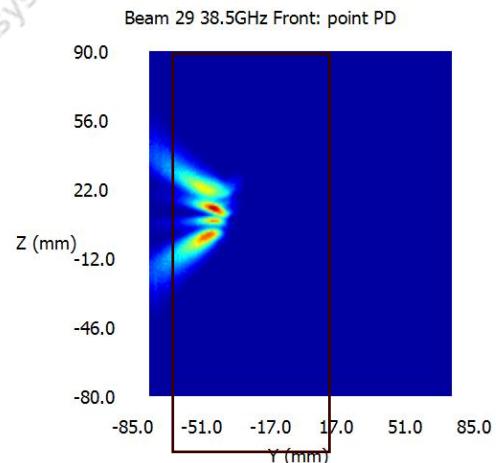


(b) Simulation

- N260 QTM0: Middle channel, Beam29, Front face, Point PD

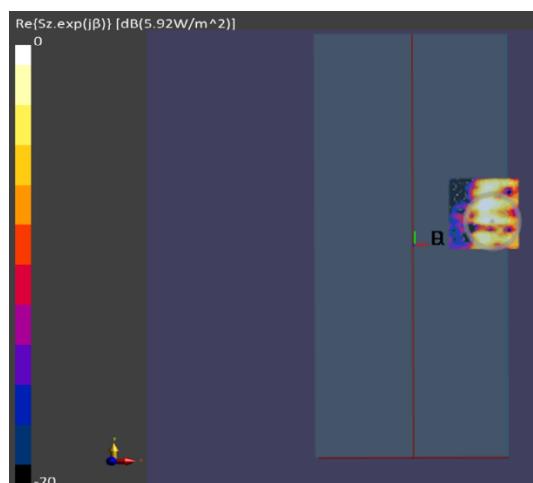


(a) Measurement

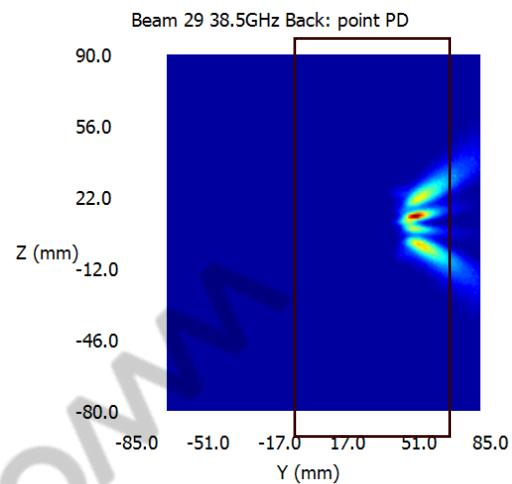


(b) Simulation

- N260 QTM0: Middle channel, Beam29, Back face, Point PD

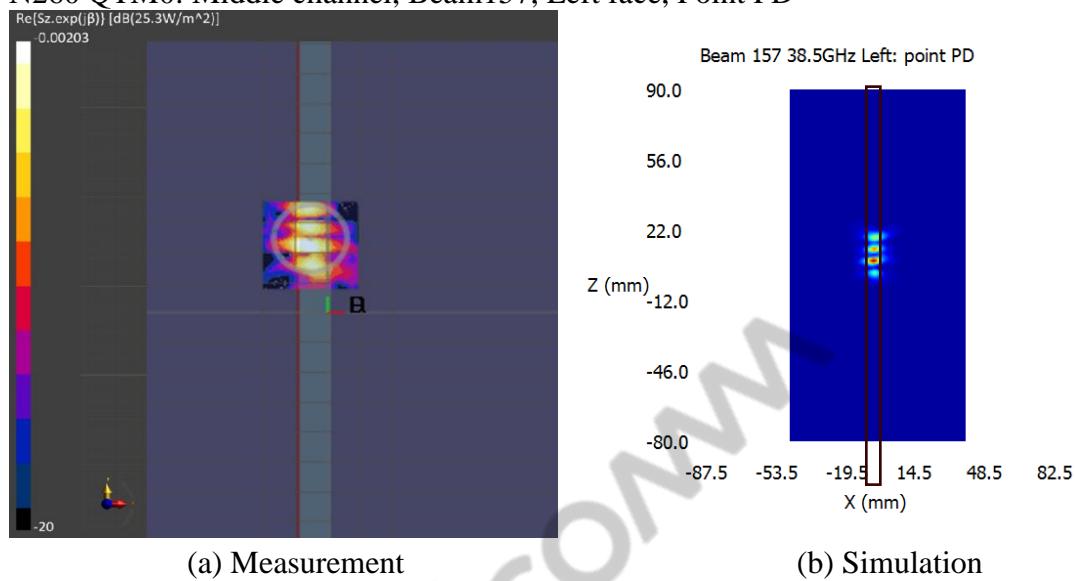


(a) Measurement

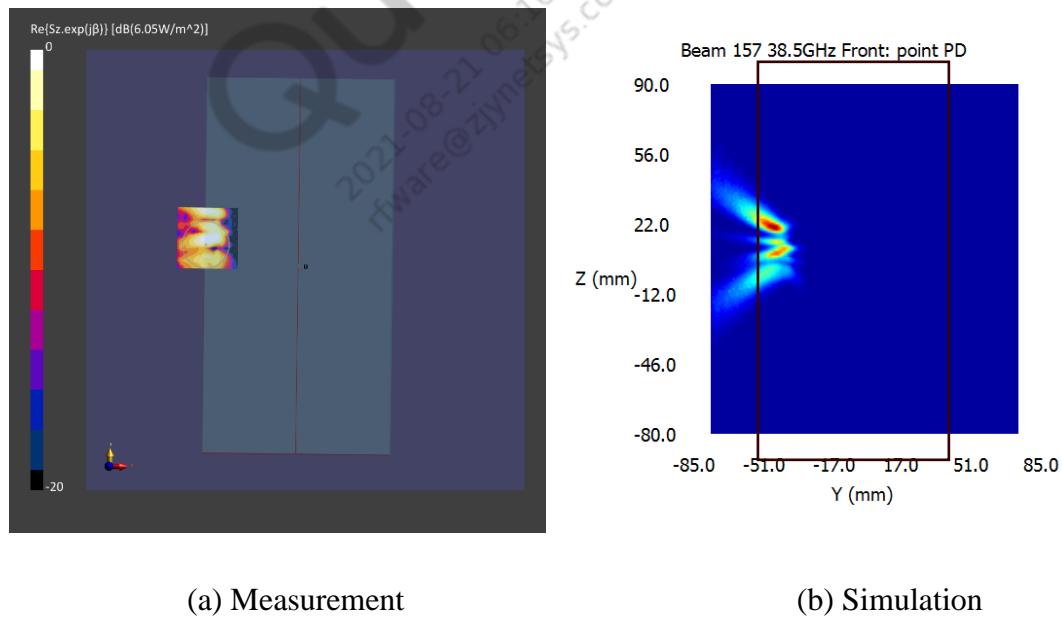


(b) Simulation

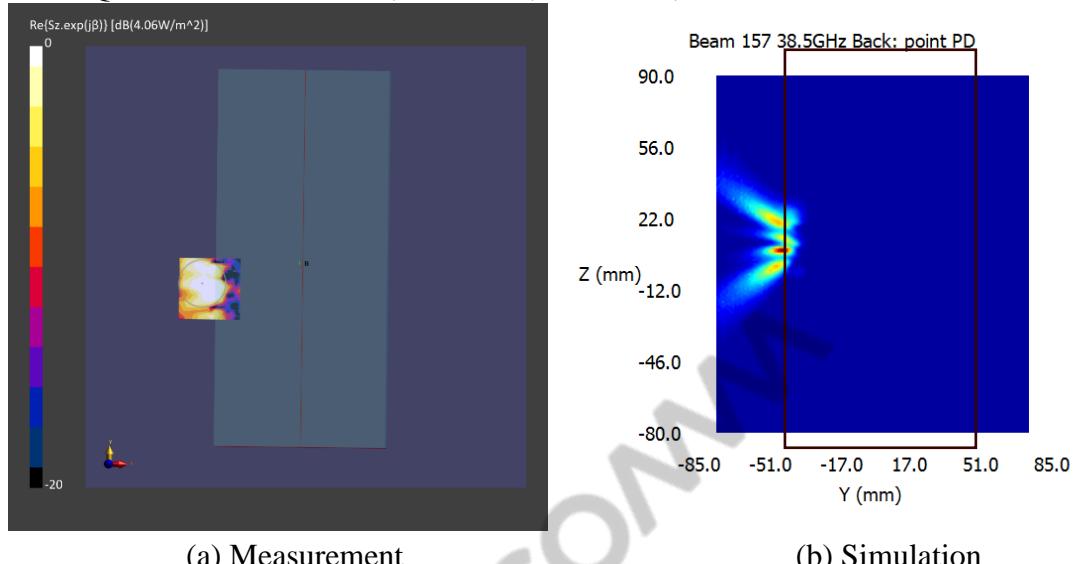
- N260 QTM0: Middle channel, Beam157, Left face, Point PD



- N260 QTM0: Middle channel, Beam157, Front face, Point PD



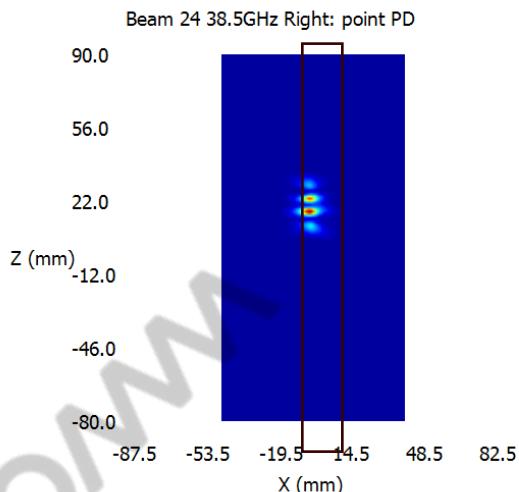
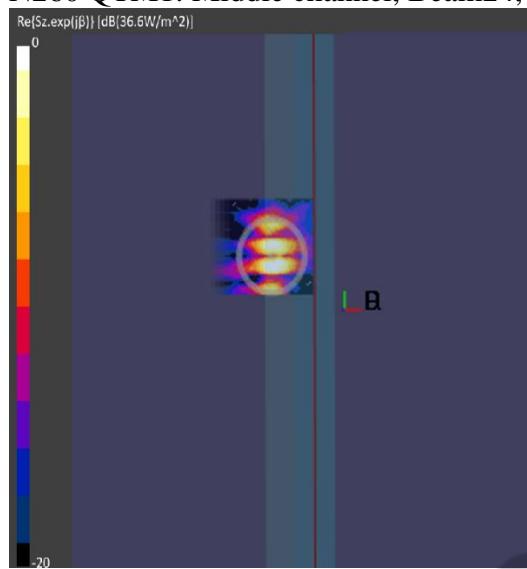
- N260 QTM0: Middle channel, Beam157, Back face, Point PD



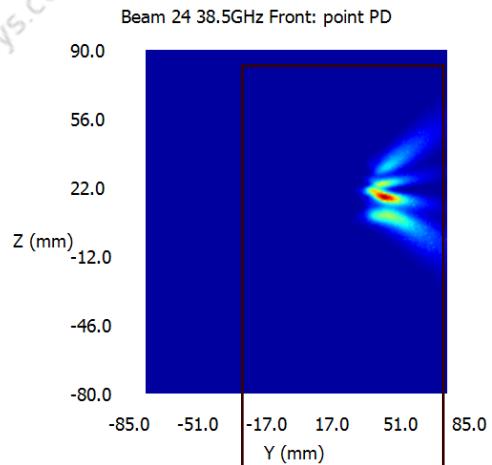
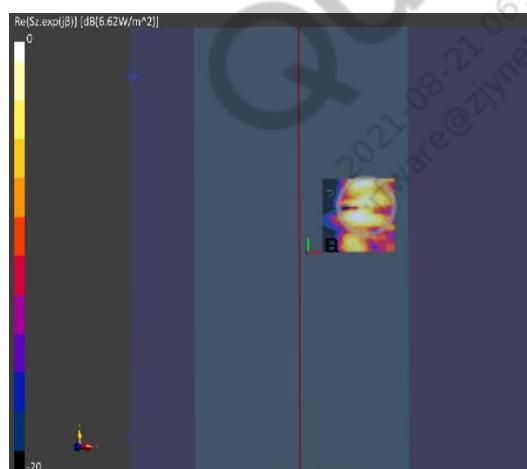
(a) Measurement

(b) Simulation

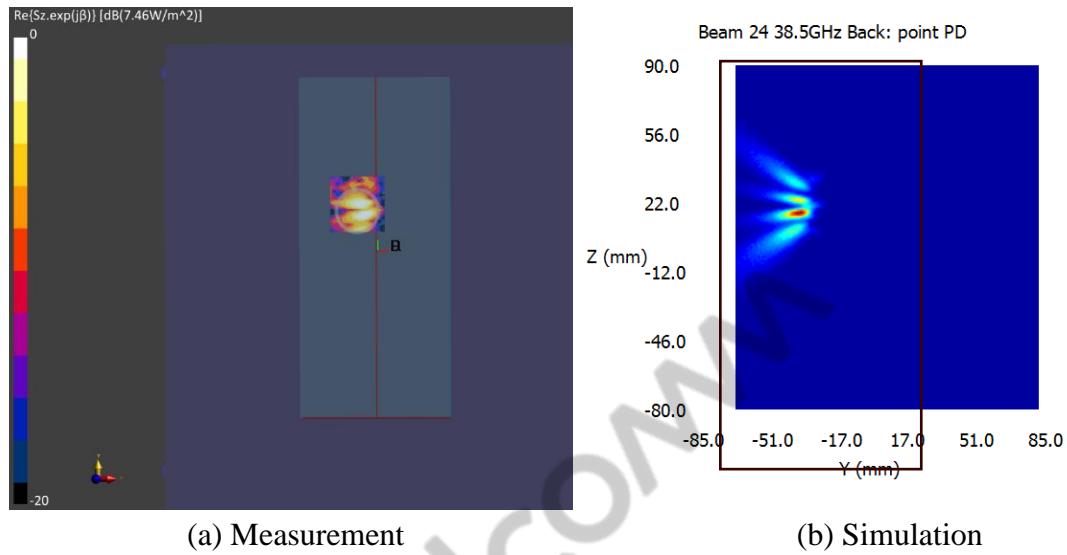
- N260 QTM1: Middle channel, Beam24, Right face, Point PD



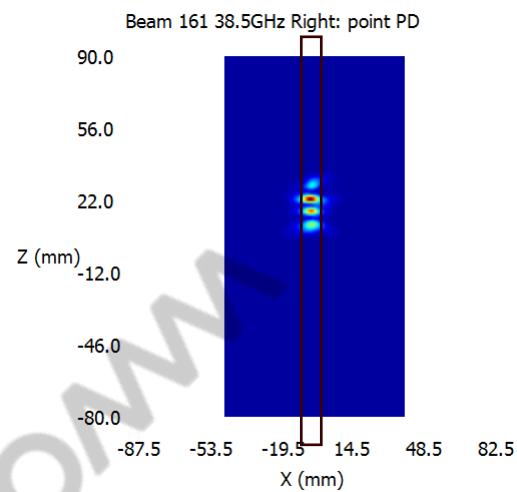
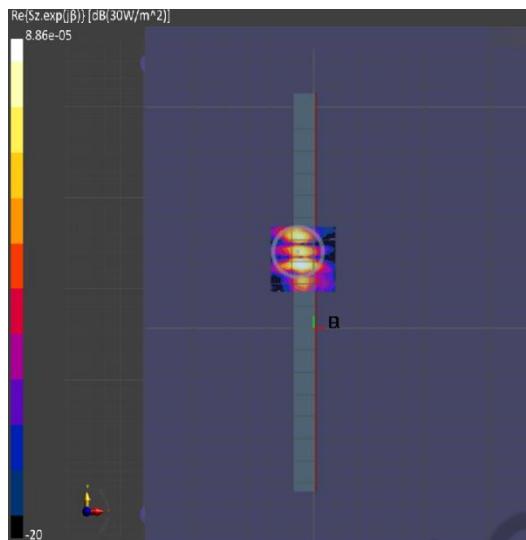
- N260 QTM1: Middle channel, Beam24, Front face, Point PD



- N260 QTM1: Middle channel, Beam24, Back face, Point PD

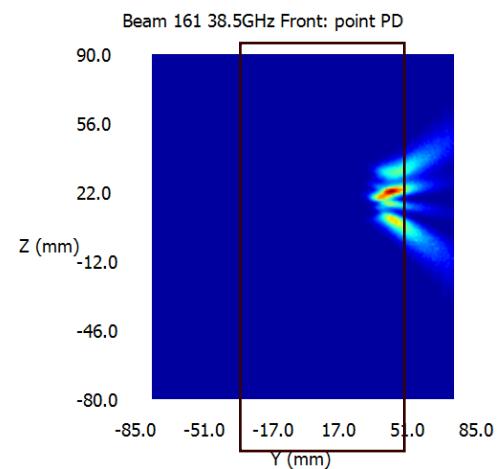
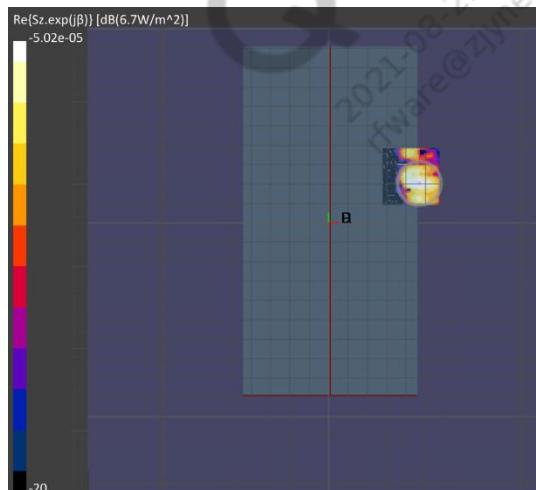


- N260 QTM1: Middle channel, Beam161, Right face, Point PD



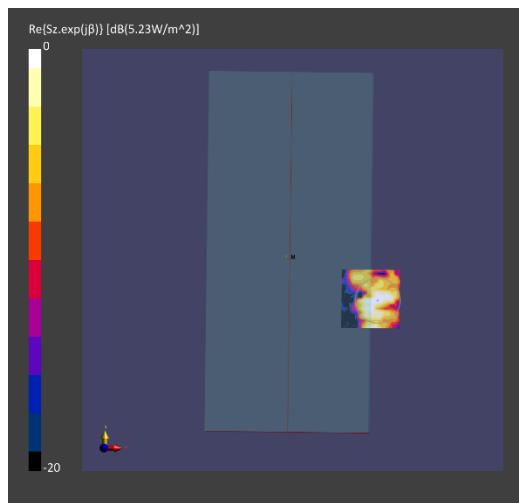
(b) Simulation

- N260 QTM1: Middle channel, Beam161, Front face, Point PD

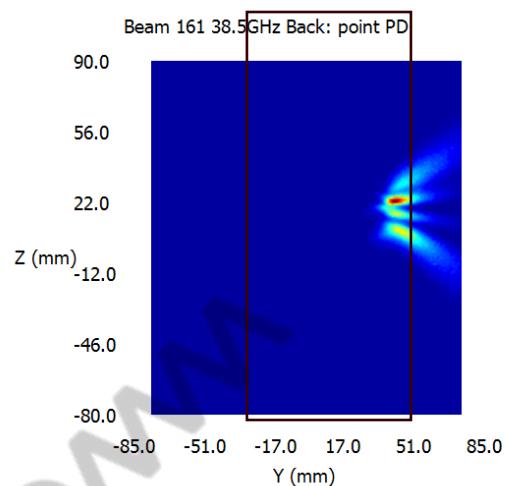


(b) Simulation

N260 QTM1: Middle channel, Beam161, Back face, Point PD



(a) Measurement



(b) Simulation

## 4 Simulation Result

The model is validated in Section 3, the PD exposure of EUT can be reliably assessed using the validated simulation approach. The PD simulation was performed at n261 and n260. The simulated PD results are reported in this section. The Ratio of PD exposure from front surface to the worst surface at 2mm, and the ratio of PD exposure from 2mm to 10mm evaluation distance for each beam are also reported for simultaneous transmission analysis in Part 1.

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 PD result for each MIMO beam represents the highest PD value after sweeping the relative phase between two SISO beams with a ‘5 degree’ step interval from 0 degree to 360 degree.

### 4.1 PD for Low/Mid/High Channel at n261 and n260

Below Tables show the PD simulation evaluation of QTM0 at N261 and N260 for all surfaces as shown in Figure 1-3.

## ■ QTM0 N261 Low channel SISO

												Max Ratio																	
												0.516	0.002	0.454	0.014	0.009	Max Ratio						0.240	0.214	0.572	0.002	0.014	0.008	
n261 Mid ch.(27.5GHz)				4cm <sup>2</sup> PD(W/m <sup>2</sup> ) at 2mm evaluation surfaces @6dBm										4cm <sup>2</sup> PD(W/m <sup>2</sup> ) at 10mm evaluation surfaces @6dBm															
				relative phase worst PD for MIMO						Front /	Right	back	TOP	Bottom	Front /	Back	Left	Right	Top	Bottom	Front /	back	left	Right	TOP	Bottom			
Band	Beam_ID	Ant module	Ant Type	Mumber of Feeds	Front	Back	Left	Right	Top	(worst surface)	Front	Back	Left	Right	Top	Bottom	surface 10mm/2mm												
N261	1	0	Patch	1	1.27	1.45	3.77	0	0.02	0.01	0.337	0.000	0.385	0.005	0.003	0.46	0.57	1.73	0.000	0.020	0.010	0.12202	0.15119	0.45889	0.000	0.005	0.003		
N261	3	0	Patch	1	1.91	1.74	5.2	0	0.02	0.01	0.367	0.000	0.335	0.004	0.002	0.68	0.68	2.33	0.000	0.020	0.010	0.13077	0.13077	0.44808	0.000	0.004	0.002		
N261	4	0	Patch	1	1.72	1.76	4.88	0.01	0.01	0.02	0.352	0.002	0.361	0.002	0.004	0.67	0.65	2.09	0.000	0.010	0.020	0.1373	0.1332	0.42828	0.000	0.002	0.004		
N261	9	0	Patch	2	2.33	2.44	7.75	0.01	0.05	0.04	0.301	0.001	0.315	0.006	0.005	0.84	1.06	2.99	0.000	0.040	0.030	0.10839	0.13677	0.38581	0.000	0.005	0.004		
N261	10	0	Patch	2	2.72	3.57	8.44	0.01	0.03	0.03	0.322	0.001	0.423	0.004	0.004	1.11	1.59	4.15	0.010	0.020	0.020	0.13152	0.18839	0.49171	0.001	0.002	0.002		
N261	11	0	Patch	2	4.28	4.03	10.13	0.01	0.02	0.02	0.423	0.001	0.398	0.002	0.002	1.87	1.73	5.47	0.010	0.020	0.020	0.1846	0.17078	0.53998	0.001	0.002	0.002		
N261	12	0	Patch	2	4.06	3.26	9.37	0.01	0.05	0.01	0.433	0.001	0.348	0.005	0.001	1.8	1.38	4.72	0.010	0.050	0.010	0.1921	0.14728	0.50374	0.001	0.005	0.001		
N261	16	0	Patch	2	3.71	3.52	9.74	0.01	0.04	0.03	0.381	0.001	0.361	0.004	0.003	1.63	1.49	4.75	0.010	0.040	0.020	0.16735	0.15298	0.48768	0.001	0.004	0.002		
N261	17	0	Patch	2	4.48	4.44	10.63	0.01	0.01	0.01	0.421	0.001	0.418	0.001	0.001	1.95	1.9	5.91	0.010	0.010	0.010	0.18344	0.17874	0.55597	0.001	0.001	0.001		
N261	18	0	Patch	2	4.05	3.7	9.54	0.01	0.04	0.01	0.425	0.001	0.388	0.004	0.001	1.77	1.59	5.09	0.010	0.040	0.010	0.18553	0.16667	0.53354	0.001	0.004	0.001		
N261	24	0	Patch	2	4.5	4.19	11.98	0.02	0.09	0.11	0.376	0.003	0.350	0.008	0.009	2.08	1.68	5.28	0.020	0.090	0.090	0.17362	0.14023	0.44073	0.002	0.008	0.008		
N261	25	0	Patch	4	6.35	7.27	16.71	0.02	0.04	0.04	0.380	0.001	0.435	0.002	0.002	3.04	3.31	8.81	0.020	0.040	0.030	0.18193	0.19808	0.52723	0.001	0.002	0.002		
N261	26	0	Patch	4	7.71	7.9	18	0.02	0.03	0.01	0.428	0.001	0.439	0.002	0.001	3.98	3.68	10.26	0.020	0.020	0.010	0.22111	0.20444	0.57	0.001	0.001	0.001		
N261	27	0	Patch	4	7.33	7.75	17.77	0.02	0.03	0.01	0.412	0.001	0.436	0.002	0.001	3.73	3.79	10.02	0.010	0.030	0.010	0.2099	0.21288	0.56387	0.001	0.002	0.001		
N261	28	0	Patch	4	7.25	5.34	15.74	0.02	0.1	0.04	0.461	0.001	0.339	0.006	0.003	3.53	2.61	7.69	0.010	0.100	0.040	0.22427	0.16582	0.48856	0.001	0.006	0.003		
N261	33	0	Patch	4	5.6	5.72	14.42	0.03	0.06	0.06	0.388	0.002	0.397	0.004	0.004	2.63	2.53	7.27	0.020	0.060	0.050	0.18239	0.17545	0.50416	0.001	0.004	0.003		
N261	34	0	Patch	4	7.06	8.12	17.89	0.03	0.04	0.03	0.395	0.002	0.454	0.002	0.002	3.5	3.82	9.78	0.020	0.030	0.030	0.19564	0.21353	0.54667	0.001	0.002	0.002		
N261	35	0	Patch	4	7.59	7.73	17.6	0.02	0.01	0.01	0.431	0.001	0.439	0.001	0.001	3.89	3.7	10.07	0.010	0.010	0.010	0.22102	0.21023	0.57216	0.001	0.001	0.001		
N261	36	0	Patch	4	7.48	6.8	17.36	0.02	0.03	0.02	0.431	0.001	0.392	0.002	0.001	3.74	3.32	9.45	0.010	0.030	0.020	0.21544	0.19124	0.54435	0.001	0.002	0.001		
N261	129	0	Patch	1	1.81	1.17	4.18	0.01	0.05	0.01	0.433	0.001	0.280	0.012	0.002	0.69	0.43	1.61	0.010	0.050	0.010	0.16507	0.10287	0.38517	0.002	0.012	0.002		
N261	131	0	Patch	1	1.77	1.63	4.66	0	0.02	0.01	0.380	0.000	0.350	0.004	0.002	0.68	0.58	2.18	0.000	0.020	0.010	0.14592	0.12446	0.46781	0.000	0.004	0.002		
N261	132	0	Patch	2	1.79	1.51	4.63	0	0.01	0.01	0.387	0.000	0.326	0.002	0.002	0.67	0.58	2.08	0.000	0.010	0.010	0.14471	0.12527	0.44924	0.000	0.002	0.002		
N261	137	0	Patch	2	2.99	1.87	7.31	0.01	0.1	0.04	0.409	0.001	0.256	0.014	0.005	1.25	0.73	2.75	0.010	0.100	0.040	0.171	0.09986	0.3762	0.001	0.018	0.005		
N261	138	0	Patch	2	4.3	2.49	8.34	0.02	0.04	0.02	0.516	0.002	0.299	0.005	0.002	1.97	1	4.33	0.010	0.040	0.020	0.23621	0.1195	0.51918	0.001	0.005	0.002		
N261	139	0	Patch	2	3.96	3.98	9.71	0.01	0.02	0.02	0.408	0.001	0.410	0.002	0.002	1.78	1.72	5.36	0.010	0.020	0.020	0.18332	0.17714	0.55201	0.001	0.003	0.002		
N261	140	0	Patch	2	2.35	2.33	7.57	0.01	0.03	0.03	0.310	0.001	0.301	0.004	0.004	0.97	0.98	3.16	0.000	0.030	0.030	0.12814	0.12946	0.41744	0.000	0.004	0.002		
N261	144	0	Patch	2	3.91	3.39	9.09	0.01	0.02	0.02	0.430	0.001	0.373	0.002	0.002	1.72	1.38	4.76	0.000	0.020	0.020	0.18922	0.15182	0.52365	0.000	0.002	0.002		
N261	145	0	Patch	2	4.72	3.07	9.34	0.02	0.01	0.01	0.505	0.002	0.329	0.001	0.001	2.19	1.24	5.17	0.010	0.010	0.010	0.23448	0.13276	0.55353	0.001	0.001	0.001		
N261	146	0	Patch	2	3.71	3.4	9.4	0.01	0.07	0.02	0.395	0.001	0.362	0.007	0.002	1.63	1.48	4.41	0.010	0.070	0.020	0.1734	0.15745	0.46915	0.001	0.007	0.002		
N261	152	0	Patch	2	6.72	4.08	13.02	0.02	0.07	0.08	0.516	0.002	0.313	0.005	0.006	2.93	1.72	6.14	0.010	0.070	0.070	0.22504	0.1321	0.47158	0.001	0.005	0.002		
N261	153	0	Patch	4	7.55	5.03	15.28	0.02	0.05	0.03	0.494	0.001	0.329	0.003	0.002	3.67	2.19	8.01	0.020	0.040	0.030	0.24018	0.14332	0.52421	0.001	0.003	0.002		
N261	154	0	Patch	4	8.05	6.78	17.28	0.03	0.01	0.01	0.466	0.002	0.392	0.001	0.001	4.05	3.19	9.79	0.020	0.010	0.010	0.23438	0.18461	0.56655	0.001	0.001	0.001		
N261	155	0	Patch	4	8	7.44	17.92	0.03	0.04	0.01	0.446	0.002	0.435	0.002	0.001	4.02	3.52	10.21	0.020	0.040	0.010	0.22433	0.19643	0.56975	0.002	0.002	0.001		
N261	156	0	Patch	4	5.63	5.4	13.99	0.02	0.08	0.06	0.402	0.001	0.388	0.006	0.004	2.72	2.46	7.26	0.020	0.080	0.050	0.19442	0.17584	0.51894	0.001	0.006	0.004		
N261	161	0	Patch	4	7.21	4.59	14.15	0.02	0.05	0.06	0.510	0.001	0.324	0.004	0.004	3.27	1.96	7.02	0.010	0.050	0.050	0.2311	0.13852	0.49611	0.001	0.004	0.004		
N261	162	0	Patch	4	7.73	5.84	16.43	0.03	0.04	0.02	0.470	0.002	0.355	0.002	0.001	3.87	2.66	8.99	0.020	0.040	0.020	0.23554	0.1619	0.54717	0.001	0.002	0.002		
N261	163	0																											

## ■ QTM1 N261 Low channel SISO

n261lowch.(2.7GHz)										Max Ratio												
4cm <sup>2</sup> PD(W/m <sup>2</sup> ) at 2mm evaluation surfaces @6dBm										Max Ratio												
relative phase worst PD for MIMO										relative phase worst PD for MIMO												
Front / back / left / right / top / bottom (worst surface)										Front / back / left / right / top / bottom (worst surface)												
Band	Beam_ID	Ant module	Ant Type	Number of Feeds	Front	Back	Left	Right	Top	Bottom	Front	Back	Left	Right	Top	Bottom	Front	Back	Left	Right		
N261	0	1	Patch	1	1.74	1.6	0.01	4.31	0.02	0.01	4.04	0.002	0.371	0.005	0.002	0.620	0.600	0.010	1.900	0.020	0.10	
N261	2	1	Patch	1	1.83	1.54	0.04	4.47	0.02	0.01	4.09	0.000	0.345	0.004	0.002	0.680	0.570	0.000	2.010	0.020	0.10	
N261	5	1	Patch	2	2.8	1.85	0.03	6.64	0.07	0.02	4.22	0.005	0.279	0.011	0.003	1.270	0.700	0.020	2.860	0.070	0.20	
N261	6	1	Patch	2	4.27	2.63	0.02	8.07	0.02	0.01	0.529	0.002	0.326	0.002	0.001	1.970	1.060	0.020	4.490	0.020	0.10	
N261	7	1	Patch	2	2.41	3.84	0.03	7.52	0.06	0.01	0.320	0.004	0.511	0.008	0.001	1.050	1.620	0.020	3.710	0.060	0.10	
N261	8	1	Patch	2	1.95	2.74	0.02	6.6	0.08	0.02	0.295	0.003	0.415	0.012	0.003	0.690	1.070	0.020	2.430	0.080	0.20	
N261	13	1	Patch	2	3.9	3.09	0.01	8.2	0.02	0.02	0.476	0.001	0.377	0.002	0.002	1.720	1.310	0.010	4.340	0.020	0.10	
N261	14	1	Patch	2	4.37	3.84	0.01	9.47	0.02	0.01	0.461	0.001	0.405	0.002	0.001	1.950	1.640	0.010	5.170	0.020	0.10	
N261	15	1	Patch	2	2.96	2.81	0.02	7.62	0.07	0.02	0.388	0.003	0.369	0.009	0.003	1.320	1.150	0.010	3.450	0.060	0.20	
N261	19	1	Patch	4	6.81	4.71	0.03	13.72	0.07	0.04	0.496	0.002	0.343	0.005	0.003	3.210	2.230	0.020	7.080	0.060	0.30	
N261	20	1	Patch	4	8.51	6.34	0.02	16.9	0.03	0.01	0.504	0.001	0.375	0.002	0.001	4.180	3.100	0.020	9.530	0.030	0.10	
N261	21	1	Patch	4	7.82	7.34	0.03	16.89	0.02	0.01	0.463	0.002	0.435	0.001	0.001	4.030	3.560	0.020	5.900	0.020	0.10	
N261	22	1	Patch	4	6.08	7.67	0.02	15.51	0.08	0.01	0.392	0.001	0.495	0.005	0.001	2.960	3.420	0.020	8.210	0.070	0.10	
N261	23	1	Patch	4	3.63	4.74	0.04	10.25	0.24	0.07	0.354	0.004	0.462	0.023	0.007	1.730	1.870	0.030	4.790	0.230	0.070	
N261	29	1	Patch	4	7.65	5.44	0.02	15.51	0.04	0.03	0.493	0.001	0.351	0.003	0.002	3.650	2.630	0.020	8.240	0.040	0.20	
N261	30	1	Patch	4	8.36	6.83	0.03	17.08	0.01	0.01	0.489	0.002	0.400	0.001	0.001	4.230	3.340	0.020	9.690	0.010	0.10	
N261	31	1	Patch	4	6.88	7.82	0.03	16.42	0.04	0.01	0.419	0.002	0.476	0.002	0.001	3.460	3.650	0.020	8.990	0.030	0.10	
N261	32	1	Patch	4	4.93	6.49	0.03	13.44	0.18	0.04	0.367	0.002	0.483	0.013	0.003	2.370	2.680	0.030	6.700	0.160	0.40	
N261	128	1	Patch	4	1.77	1.45	0.01	4.26	0.02	0.01	0.415	0.002	0.340	0.005	0.002	0.670	0.510	0.010	1.990	0.020	0.10	
N261	130	1	Patch	1	1.7	1.35	0.01	4.02	0.03	0.01	0.423	0.002	0.336	0.007	0.002	0.610	0.490	0.010	1.730	0.030	0.10	
N261	133	1	Patch	1	2.44	2.22	0.02	6.84	0.06	0.02	0.357	0.003	0.325	0.009	0.003	1.070	0.910	0.010	2.860	0.050	0.20	
N261	134	1	Patch	2	3.92	3.37	0.02	8.63	0.02	0.01	0.454	0.002	0.390	0.002	0.001	1.800	1.380	0.010	4.650	0.020	0.10	
N261	135	1	Patch	2	4.25	3.4	0.01	8.92	0.03	0.01	0.476	0.001	0.381	0.003	0.001	1.850	1.430	0.010	4.840	0.020	0.10	
N261	136	1	Patch	2	3.21	1.8	0.02	6.73	0.05	0.02	0.477	0.003	0.267	0.007	0.003	1.430	0.690	0.010	3.070	0.050	0.20	
N261	141	1	Patch	2	3.04	2.76	0.02	7.55	0.05	0.02	0.403	0.003	0.366	0.007	0.003	1.380	1.150	0.010	3.640	0.040	0.20	
N261	142	1	Patch	2	4.73	3.12	0.02	8.8	0.01	0.01	0.538	0.002	0.355	0.001	0.001	2.130	1.270	0.010	5.040	0.010	0.00	
N261	143	1	Patch	2	3.67	2.89	0.02	8.19	0.06	0.02	0.448	0.002	0.353	0.007	0.002	1.540	1.250	0.010	4.040	0.050	0.10	
N261	147	1	Patch	2	4.29	4.85	0.04	11.25	0.11	0.07	0.381	0.004	0.431	0.010	0.006	2.090	2.010	0.030	5.390	0.100	0.70	
N261	148	1	Patch	4	6.26	6.94	0.03	15.25	0.01	0.02	0.410	0.002	0.455	0.001	0.001	2.960	3.150	0.030	8.820	0.010	0.20	
N261	149	1	Patch	4	7.7	5.65	0.05	15.29	0.03	0.01	0.504	0.003	0.370	0.002	0.001	3.720	2.680	0.040	8.420	0.030	0.10	
N261	150	1	Patch	4	7.77	4.83	0.02	14.53	0.06	0.02	0.535	0.001	0.332	0.004	0.001	3.520	2.240	0.010	7.720	0.050	0.20	
N261	151	1	Patch	4	6.34	3.98	0.02	12.3	0.15	0.03	0.515	0.002	0.324	0.012	0.002	2.790	1.800	0.020	6.180	0.130	0.30	
N261	157	1	Patch	4	5.24	6.16	0.03	13.58	0.07	0.04	0.386	0.002	0.454	0.005	0.003	2.570	2.740	0.030	7.020	0.060	0.40	
N261	158	1	Patch	4	7.32	6.5	0.04	15.87	0.01	0.01	0.461	0.003	0.410	0.001	0.001	3.580	3.040	0.040	6.820	0.010	0.10	
N261	159	1	Patch	4	7.68	5.09	0.03	14.36	0.04	0.01	0.535	0.002	0.354	0.003	0.001	3.600	2.420	0.030	7.960	0.040	0.10	
N261	160	32	1	Patch	8	12.4	4.59	0.01	13.94	0.09	0.02	0.533	0.001	0.329	0.006	0.001	3.400	2.120	0.010	7.330	0.080	0.20

## ■ QTM1 N261 Low channel MIMO

Max Ratio										Max Ratio												
Front / back / left / right / top / bottom (worst surface)										Front / back / left / right / top / bottom (worst surface)												
Front / back / left / right / top / bottom (worst surface)										Front / back / left / right / top / bottom (worst surface)												
Band	Beam_ID	Ant module	Ant Type	Number of Feeds	Front	Back	Left	Right	Top	Bottom	Front	Back	Left	Right	Top	Bottom	Front	Back	Left	Right		
N261	128	0	1	Patch	2	4.42	3.82	0.03	9.07	0.07	0.03	0.487	0.003	0.421	0.008	0.003	1.700	1.520	0.020	3.990	0.060	0.020
N261	130	2	1	Patch	2	4.47	3.67	0.02	8.94	0.09	0.03	0.500	0.002	0.411	0.010	0.003	1.710	1.440	0.010	3.980	0.080	0.020
N261	133	5	1	Patch	2	6.32	4.47	0.06	14.7	0.15	0.06	0.430	0.004	0.304	0.010	0.004	2.750	1.830	0.040	6.360	0.150	0.050
N261	134	6	1	Patch	4	9.39	6.9	0.04	18.3	0.06	0.02	0.513	0.002	0.377	0.003	0.001	4.430	2.820	0.030	10.560	0.060	0.020
N261	135	7	1	Patch	4	7.3	8.21	0.04	16.9	0.11	0.03	0.432	0.002	0.486	0.007	0.002	3.160	3.780	0.030	9.330	0.110	0.030
N261	136	8	1	Patch	4	5.98	6.07	0.04	14.35	0.19	0.06	0.417	0.003	0.423	0.013	0.004	2.670	2.630	0.040	5.930	0.180	0.060
N261	141	13	1	Patch	4	8.84	6.24	0.05	17.22	0.08	0.05	0.513	0.003	0.362	0.005	0.003	3.880	2.84	0.040	8.600	0.080	0.050
N261	142	14	1	Patch	4	9.91	7.49	0.03	18.97	0.04	0.02	0.522	0.002	0.395	0.002	0.001	4.810	3.090	0.030	10.890	0.040	0.020
N261	143	15	1	Patch																		

## ■ QTM0 N261 Middle channel SISO

												Max Ratio																	
												0.501	0.003	0.461	0.014	0.009							0.236	0.216	0.567	0.003	0.013	0.009	
n261Md ch (28GHz)						4cm2 PD(W/m2) at 2mm evaluation surfaces @6dBm												4cm2 PD(W/m2) at 10mm evaluation surfaces @6dBm						Max Ratio					
Band	Beam_ID	Ant module	Ant Type	Mumers of Feeds	Front	Back	Left	Right	Top	Bottom	(worst surface)	Front / Right	Right	back	TOP	Bottom	(worst surface)	(worst surface)	Front / Right	Right	Top	Bottom	surface 10mm/2mm						
N261	1	0	Patch	1	1.37	1.31	3.72	0	0.01	0.01	0.368	0.000	0.352	0.003	0.003	0.52	0.52	1.71	0	0.01	0.01	0.13978	0.13978	0.45968	0	0.00269	0.00269		
N261	3	0	Patch	1	1.8	1.57	4.72	0	0.01	0.01	0.381	0.000	0.333	0.002	0.002	0.66	0.62	2.12	0	0.01	0.01	0.13983	0.13136	0.44915	0	0.00212	0.00212		
N261	4	0	Patch	1	1.55	1.74	4.51	0	0.01	0.02	0.344	0.000	0.386	0.002	0.003	0.62	0.66	1.94	0	0.01	0.02	0.13747	0.14634	0.43016	0	0.00222	0.00443		
N261	9	0	Patch	2	2.11	2.3	7.27	0.01	0.03	0.290	0.001	0.316	0.003	0.004	0.75	0.96	2.72	0	0.03	0.03	0.10316	0.12029	0.37414	0	0.00413	0.00413			
N261	10	0	Patch	2	2.53	3.35	8.05	0.01	0.02	0.314	0.001	0.416	0.002	0.004	1.04	1.44	3.87	0.01	0.02	0.02	0.12919	0.17888	0.48075	0.00124	0.00248	0.00248			
N261	11	0	Patch	2	1.02	3.93	9.63	0.01	0.01	0.417	0.001	0.408	0.001	0.002	1.78	1.71	5.22	0	0.01	0.02	0.18484	0.17757	0.54206	0	0.00104	0.00208			
N261	12	0	Patch	2	4.26	2.88	8.96	0.01	0.04	0.075	0.001	0.321	0.004	0.001	1.92	1.21	4.61	0.01	0.04	0.01	0.21429	0.13504	0.51451	0.00112	0.00446	0.00112			
N261	16	0	Patch	2	3.37	3.16	8.72	0.01	0.04	0.03	0.000	0.362	0.005	0.003	1.47	1.31	4.21	0.01	0.04	0.02	0.16858	0.15023	0.48282	0.00115	0.00459	0.00229			
N261	17	0	Patch	2	4.3	4.26	10.13	0.01	0.01	0.04	0.001	0.421	0.003	0.001	1.91	1.84	5.61	0.01	0.01	0.01	0.18855	0.18164	0.5538	0.00099	0.00099	0.00099			
N261	18	0	Patch	2	4.26	3.34	9.23	0.01	0.03	0	0.000	0.462	0.001	0.003	1.9	1.43	4.99	0.01	0.03	0	0.20585	0.15493	0.54063	0.00108	0.00325	0			
N261	24	0	Patch	2	3.83	4.15	11.15	0.02	0.09	0.1	0.343	0.002	0.372	0.008	0.009	1.74	1.56	4.83	0.02	0.09	0.01	0.15605	0.13991	0.43318	0.00179	0.00897	0.00897		
N261	25	0	Patch	4	5.63	6.51	14.91	0.02	0.04	0.04	0.000	0.437	0.003	0.003	2.69	2.96	7.77	0.02	0.03	0.04	0.18042	0.19852	0.52113	0.00134	0.00268	0.00268			
N261	26	0	Patch	4	7.18	7.74	17.43	0.03	0.02	0.02	0.412	0.002	0.444	0.000	0.003	3.68	3.55	9.81	0.02	0.02	0.02	0.21113	0.20367	0.56282	0.00115	0.00115	0.00115		
N261	27	0	Patch	4	7.37	7.2	17.14	0.02	0.02	0.01	0.430	0.000	0.420	0.000	0.003	3.76	3.52	9.6	0.01	0.02	0.01	0.21937	0.20537	0.56009	0.00058	0.00117	0.00117		
N261	28	0	Patch	4	6.73	4.92	14.63	0.03	0.08	0.04	0.460	0.002	0.336	0.005	0.003	3.3	2.38	7.3	0.02	0.07	0.04	0.22556	0.16268	0.49897	0.00137	0.00478	0.00273		
N261	33	0	Patch	4	4.85	5.3	12.98	0.03	0.05	0.06	0.374	0.002	0.408	0.004	0.005	2.24	2.28	6.35	0.02	0.05	0.06	0.17257	0.17565	0.48921	0.00154	0.00385	0.00462		
N261	34	0	Patch	4	6.37	7.61	16.51	0.02	0.03	0.03	0.386	0.001	0.461	0.002	0.002	3.14	3.56	8.94	0.02	0.02	0.03	0.19019	0.21563	0.54149	0.00121	0.00182	0.00182		
N261	35	0	Patch	4	7.4	7.36	17.17	0.02	0.01	0.01	0.431	0.001	0.429	0.000	0.001	3.79	3.47	9.7	0.01	0.01	0.01	0.22073	0.20211	0.56494	0.00058	0.00508	0.00508		
N261	36	0	Patch	4	7.27	6.55	16.75	0.02	0.03	0.02	0.434	0.000	0.391	0.000	0.003	3.68	3.19	9.12	0.02	0.03	0.02	0.2397	0.19045	0.54448	0.00119	0.00119	0.00119		
N261	129	0	Patch	1	1.67	1.23	3.89	0.01	0.04	0.049	0.000	0.316	0.010	0.003	0.66	0.48	1.5	0.01	0.04	0.01	0.10967	0.12339	0.3856	0.00257	0.01028	0.00257			
N261	131	0	Patch	1	1.5	1.61	4.19	0	0.02	0.01	0.358	0.000	0.384	0.005	0.002	0.58	0.61	1.96	0	0.02	0.01	0.13842	0.14558	0.46778	0	0.00477	0.00239		
N261	132	0	Patch	2	1.7	1.37	4.26	0	0.01	0.01	0.399	0.000	0.322	0.002	0.002	0.66	0.54	1.9	0	0.01	0.01	0.15493	0.12676	0.44601	0	0.00239	0.00239		
N261	137	0	Patch	2	2.48	1.86	6.4	0.01	0.09	0.03	0.388	0.002	0.291	0.014	0.005	1.07	0.73	2.31	0.01	0.08	0.01	0.16719	0.11406	0.36094	0.00156	0.0125	0.00469		
N261	138	0	Patch	2	3.8	2.42	7.59	0.02	0.03	0.01	0.501	0.003	0.319	0.000	0.003	1.79	0.99	3.83	0.02	0.03	0.01	0.23584	0.13043	0.50461	0.00264	0.00395	0.00312		
N261	139	0	Patch	2	3.73	3.7	9.07	0.01	0.02	0.02	0.411	0.000	0.400	0.000	0.002	1.67	1.63	4.99	0.01	0.02	0.02	0.18412	0.17971	0.55017	0.00111	0.00221	0.00221		
N261	140	0	Patch	2	2.16	2.09	6.89	0.01	0.02	0.03	0.313	0.001	0.303	0.003	0.003	0.91	0.89	2.84	0	0.02	0.03	0.13208	0.12917	0.41219	0	0.00293	0.00435		
N261	144	0	Patch	2	3.4	3.27	8.27	0.01	0.02	0.02	0.411	0.001	0.395	0.002	0.002	1.51	1.37	4.3	0	0.02	0.02	0.18259	0.16566	0.51995	0	0.00242	0.00242		
N261	145	0	Patch	2	4.29	3.15	8.87	0.02	0.01	0	0.484	0.002	0.355	0.001	0.000	2.01	1.29	4.83	0.02	0.01	0.01	0.22661	0.14545	0.54453	0.00223	0.00115	0		
N261	146	0	Patch	2	3.37	3.61	8.9	0.01	0.06	0.01	0.379	0.001	0.406	0.007	0.001	1.48	1.57	4.32	0.01	0.06	0.01	0.16629	0.1764	0.48539	0.00112	0.00674	0.00112		
N261	152	0	Patch	2	5.55	3.76	11.31	0.02	0.07	0.07	0.491	0.000	0.332	0.000	0.003	2.44	1.63	5.09	0.02	0.06	0.06	0.21574	0.14412	0.45004	0.00171	0.00531	0.00531		
N261	153	0	Patch	4	6.81	4.77	14.22	0.02	0.04	0.04	0.479	0.001	0.335	0.002	0.002	3.34	2.12	7.37	0.02	0.03	0.03	0.23488	0.14099	0.51828	0.00141	0.00211	0.00211		
N261	154	0	Patch	4	7.67	6.51	16.65	0.03	0.01	0.01	0.461	0.002	0.391	0.001	0.001	3.83	3.1	9.29	0.02	0.01	0.01	0.23003	0.18619	0.55796	0.00112	0.00066	0.00066		
N261	155	0	Patch	4	7.51	7.16	16.99	0.04	0.04	0.01	0.442	0.000	0.421	0.002	0.001	3.81	3.39	9.61	0.03	0.04	0.01	0.22425	0.19953	0.56563	0.00177	0.00293	0.00059		
N261	156	0	Patch	4	4.95	5.05	12.76	0.02	0.07	0.05	0.388	0.000	0.494	0.005	0.003	3.69	3.77	8.08	0.04	0.09	0.06	0.22216	0.22697	0.48465	0.00241	0.00542	0.00361		
N261	158	10	Patch	4	7.95	8.2	16.61	0.05	0.09	0.07	0.479	0.003	0.494	0.005	0.003	3.69	3.77	8.08	0.04	0.09	0.06	0.19796	0.17602	0.55847	0.00051	0.00255	0		
N261	139	11	Patch	4	8.59	8.07	19.6	0.02	0.04	0.06	0.438	0.001	0.412	0.002	0.003	3.88	3.45	11.73	0.01	0.04	0.05	0.19796	0.17602	0.55847	0.00051	0.00255	0		
N261	140	12	Patch	4	7.4	5.28	15.33	0.02	0.08	0.05	0.483	0.001	0.344	0.005	0.003	3.33	2.3	8.37	0.02	0.08	0.04	0.21722	0.15003	0.54599	0.0013	0.0052	0.00261		
N261	144	16	Patch	4	7.44	6.83	18.04	0.02	0.07	0.07																			

## ■ QTM1 N261 Middle channel SISO

										Max Ratio																	
										0.541	0.005	0.499	0.021	0.009						0.261	0.227	0.003	0.575	0.020	0.008		
										relative phase worst PD for MIMO					relative phase worst PD for MIMO					relative phase worst PD for MIMO							
Band	Beam_ID	Ant module	Ant Type	Mumers of Feeds	Front	Back	Left	Right	Top	Bottom	Front / (worst surface)	left / (worst surface)	back / (worst surface)	TOP / (worst surface)	Bottom / (worst surface)	Front	Back	Left	Right	Top	Bottom	Front / (mm/mm)	back / (mm/mm)	left / (mm/mm)	Right / (mm/mm)	TOP / (mm/mm)	Bottom / (mm/mm)
N261	0	1	Patch	1	1.67	1.37	0.01	3.83	0.02	0.01	0.436	0.003	0.358	0.005	0.003	0.62	0.53	0.01	1.75	0.01	0.01	0.16188	0.13888	0.00261	0.45692	0.00261	0.00261
N261	2	1	Patch	1	1.63	1.48	0.01	4.08	0.02	0.01	0.400	0.002	0.363	0.005	0.003	0.62	0.56	0	1.87	0.02	0.01	0.15196	0.13725	0	0.45833	0.0049	0.00245
N261	5	1	Patch	2	2.51	1.67	0.03	6.08	0.06	0.02	0.413	0.005	0.275	0.010	0.003	1.19	0.64	0.02	2.62	0.06	0.02	0.15972	0.10526	0.00329	0.43092	0.00987	0.00329
N261	6	1	Patch	2	3.83	2.45	0.02	7.31	0.02	0.01	0.524	0.003	0.335	0.005	0.001	1.82	0.99	0.02	4.11	0.02	0.02	0.24897	0.13543	0.00274	0.56224	0.00274	0
N261	7	1	Patch	2	2.33	3.44	0.03	7.01	0.06	0.01	0.332	0.004	0.491	0.009	0.001	1.04	1.45	0.02	3.51	0.05	0.01	0.14836	0.20685	0.00285	0.50071	0.00713	0.00143
N261	8	1	Patch	2	1.94	2.44	0.02	6.15	0.07	0.02	0.315	0.003	0.397	0.011	0.003	0.68	0.98	0.02	2.21	0.07	0.02	0.11057	0.15935	0.00325	0.35935	0.01138	0.00325
N261	13	1	Patch	2	4.06	2.71	0.02	7.84	0.01	0.01	0.518	0.003	0.346	0.001	0.001	1.86	1.13	0.01	4.24	0.01	0.01	0.23724	0.14412	0.00128	0.54082	0.00128	0.00128
N261	14	1	Patch	2	4.11	3.6	0.01	8.89	0.02	0.01	0.462	0.001	0.405	0.002	0.001	1.85	1.54	0.01	4.88	0.02	0.01	0.2081	0.13232	0.00112	0.54893	0.00225	0.00112
N261	15	1	Patch	2	2.61	2.47	0.01	6.56	0.05	0.02	0.398	0.002	0.377	0.008	0.003	1.15	1.04	0.01	3	0.05	0.02	0.1753	0.15854	0.00152	0.45734	0.00762	0.00305
N261	19	1	Patch	4	6.36	4.07	0.03	12.38	0.07	0.02	0.514	0.002	0.329	0.006	0.002	3.09	1.91	0.02	6.54	0.07	0.02	0.2496	0.15428	0.00162	0.52827	0.00569	0.00162
N261	20	1	Patch	4	8.38	5.99	0.03	16.27	0.03	0.01	0.515	0.002	0.368	0.002	0.003	4.15	2.91	0.02	9.23	0.03	0.01	0.25507	0.17886	0.00123	0.56731	0.00843	0.00163
N261	21	1	Patch	4	7.42	6.99	0.02	16.13	0.02	0.01	0.460	0.001	0.433	0.003	0.003	3.85	3.37	0.02	9.26	0.02	0.01	0.23869	0.20893	0.00124	0.57409	0.00124	0.00062
N261	22	1	Patch	4	5.6	7.07	0.03	14.19	0.06	0.01	0.395	0.002	0.498	0.001	0.001	2.71	3.22	0.02	7.56	0.06	0.01	0.19098	0.22692	0.00141	0.53277	0.00423	0.0007
N261	23	1	Patch	4	3.18	4.16	0.03	8.85	0.08	0.08	0.359	0.003	0.470	0.021	0.009	1.5	1.64	0.03	4.21	0.18	0.07	0.16849	0.18531	0.00339	0.47571	0.02394	0.00791
N261	29	1	Patch	4	7.31	4.92	0.03	14.38	0.04	0.01	0.508	0.002	0.342	0.003	0.001	3.59	2.37	0.02	7.75	0.03	0.01	0.24965	0.16481	0.00139	0.53894	0.00209	0.0007
N261	30	1	Patch	4	8.05	6.45	0.03	16.35	0.01	0.01	0.492	0.002	0.394	0.001	0.001	4.08	3.14	0.02	9.39	0.01	0.01	0.24954	0.19205	0.00122	0.57431	0.00361	0.00061
N261	31	1	Patch	4	6.54	7.36	0.03	15.57	0.04	0.01	0.420	0.002	0.473	0.003	0.001	3.29	3.47	0.02	8.67	0.04	0.01	0.2113	0.22286	0.00128	0.55684	0.00257	0.00064
N261	32	1	Patch	4	4.33	5.81	0.03	11.65	0.14	0.05	0.372	0.003	0.499	0.012	0.004	2.06	2.45	0.02	5.89	0.13	0.05	0.17682	0.21028	0.00172	0.50558	0.01116	0.00429
N261	128	1	Patch	4	1.57	1.39	0.01	3.87	0.02	0.01	0.406	0.003	0.359	0.005	0.003	0.6	0.51	0.01	1.85	0.03	0.01	0.15504	0.13178	0.00258	0.47804	0.00517	0.00258
N261	130	1	Patch	1	1.65	1.18	0.01	3.67	0.03	0.01	0.450	0.003	0.322	0.008	0.003	0.62	0.45	0.01	1.61	0.02	0.01	0.16894	0.12262	0.00277	0.43869	0.00545	0.00272
N261	133	1	Patch	1	2.18	1.97	0.02	5.93	0.05	0.02	0.368	0.003	0.332	0.008	0.003	0.93	0.82	0.02	2.51	0.05	0.01	0.15883	0.13828	0.00337	0.42327	0.00845	0.00169
N261	134	1	Patch	2	3.77	3.11	0.02	8.13	0.02	0.01	0.464	0.002	0.383	0.002	0.001	1.74	1.3	0.02	4.45	0.02	0.01	0.21402	0.15599	0.00246	0.54736	0.00246	0.00123
N261	135	1	Patch	2	4.01	3.2	0.01	8.41	0.01	0.01	0.477	0.001	0.380	0.003	0.001	1.77	1.36	0.01	4.63	0.02	0.01	0.21046	0.16171	0.00119	0.55054	0.00238	0.00119
N261	136	1	Patch	2	3.03	1.71	0.02	6.42	0.05	0.01	0.472	0.003	0.366	0.008	0.002	1.38	0.69	0.02	2.89	0.04	0.01	0.21495	0.10748	0.00312	0.45016	0.00623	0.00156
N261	141	1	Patch	2	2.79	2.46	0.02	6.79	0.04	0.01	0.411	0.003	0.362	0.008	0.003	1.26	1.05	0.02	3.31	0.04	0.01	0.18557	0.15464	0.00295	0.48748	0.00589	0.00147
N261	142	1	Patch	2	4.38	3.19	0.01	8.43	0.01	0	0.520	0.001	0.378	0.003	0.003	1.97	1.37	0.01	4.85	0.01	0.01	0.23369	0.16251	0.00119	0.57533	0.00119	0
N261	143	1	Patch	2	3.33	2.63	0.02	7.4	0.05	0.02	0.450	0.003	0.355	0.007	0.003	1.42	1.15	0.01	3.68	0.04	0.02	0.19189	0.15541	0.00135	0.4973	0.00541	0.0027
N261	147	1	Patch	2	3.66	4.39	0.04	9.84	0.11	0.05	0.372	0.003	0.446	0.011	0.005	1.8	1.88	0.02	4.94	0.1	0.01	0.18293	0.19106	0.00203	0.50203	0.01016	0.00508
N261	148	1	Patch	4	5.9	6.55	0.03	14.46	0.01	0.02	0.408	0.002	0.453	0.003	0.001	2.77	3.08	0.02	7.84	0.01	0.02	0.19156	0.213	0.00138	0.54219	0.00669	0.00138
N261	149	1	Patch	4	7.49	5.39	0.05	14.77	0.03	0.01	0.507	0.003	0.365	0.002	0.001	3.66	2.55	0.04	8.22	0.03	0.01	0.2478	0.17265	0.00271	0.55653	0.00203	0.00068
N261	150	1	Patch	4	7.36	4.58	0.02	13.64	0.05	0.01	0.540	0.001	0.336	0.003	0.001	3.4	2.1	0.02	7.29	0.09	0.01	0.24927	0.15396	0.00147	0.53446	0.00367	0.00073
N261	151	1	Patch	4	5.75	3.52	0.02	10.9	0.11	0.03	0.528	0.002	0.323	0.010	0.003	2.58	1.61	0.01	5.55	0.1	0.03	0.267	0.14771	0.00092	0.50917	0.00917	0.00275
N261	157	1	Patch	4	4.62	5.55	0.02	12.1	0.07	0.03	0.382	0.002	0.459	0.006	0.002	2.27	2.59	0.02	6.45	0.07	0.03	0.1876	0.21405	0.00165	0.53206	0.00579	0.00249
N261	158	1	Patch	4	6.97	6.36	0.04	15.36	0.01	0.01	0.454	0.003	0.414	0.001	0.001	3.42	3.02	0.03	8.4	0.01	0.01	0.22266	0.19663	0.00195	0.54688	0.00665	0.00065
N261	159	1	Patch	4	7.53	4.82	0.04	13.92	0.04	0.01	0.541	0.003	0.346	0.003	0.001	3.63	2.26	0.03	7.75	0.04	0.01	0.26078	0.16236	0.00216	0.55673	0.00287	0.00072
N261	160	1	Patch	8	4.27	0.01	12.83	0.07	0.02	0.539	0.001	0.333	0.005	0.002	3.19	1.98	0.01	6.8	0.06	0.02	0.24864	0.15433	0.00078	0.53001	0.00468	0.00142	

## ■ QTM1 N261 Middle channel MIMO

<table

- QTMO N261 High channel SISO

										Max Ratio										Max Ratio							
										0.494	0.003	0.467	0.013	0.010						0.232	0.232	0.567	0.003	0.013	0.010		
										4cm <sup>2</sup> PD(W/m <sup>2</sup> ) at 2mm evaluation surfaces @6dBm					4cm <sup>2</sup> PD(W/m <sup>2</sup> ) at 10mm evaluation surfaces @6dBm												
Band	Beam_ID	Ant module	Ant Type	Mumers of Feeds	Front	Back	Left	Right	Top	Bottom	(worst surface)	(worst surface)	back	(worst surface)	(worst surface)	Front	Back	Left	Right	Top	Bottom	Front / back	back	left	right	Top	Bottom
N261	1	0	Patch	1	1.390	1.190	3.640	0.000	0.010	0.010	0.382	0.000	0.327	0.003	0.003	0.540	0.450	1.690	0.000	0.010	0.010	0.14835	0.14835	0.46425	0	0.00275	0.00275
N261	3	0	Patch	1	1.660	1.440	4.310	0.000	0.010	0.010	0.385	0.000	0.334	0.002	0.002	0.620	0.570	1.940	0.000	0.010	0.010	0.14385	0.14385	0.45012	0	0.00232	0.00232
N261	4	0	Patch	1	1.360	1.700	4.140	0.000	0.010	0.020	0.329	0.000	0.411	0.002	0.005	0.540	0.650	1.750	0.000	0.010	0.010	0.13043	0.13043	0.42271	0	0.00242	0.00242
N261	9	0	Patch	2	2.000	2.280	7.040	0.010	0.030	0.030	0.284	0.001	0.324	0.003	0.004	0.760	0.900	2.700	0.000	0.030	0.030	0.10795	0.10795	0.38352	0	0.00426	0.00426
N261	10	0	Patch	2	2.510	3.220	7.860	0.010	0.020	0.020	0.319	0.000	0.410	0.003	0.003	1.060	1.340	3.830	0.010	0.020	0.020	0.13486	0.13486	0.48728	0.00127	0.00254	0.00254
N261	11	0	Patch	2	3.660	3.800	8.980	0.010	0.010	0.020	0.408	0.001	0.423	0.001	0.002	1.610	1.660	4.850	0.000	0.010	0.020	0.17929	0.17929	0.54009	0	0.00111	0.00223
N261	12	0	Patch	2	4.070	2.530	8.240	0.010	0.030	0.010	0.494	0.001	0.307	0.004	0.001	1.860	1.060	4.270	0.010	0.030	0.010	0.22573	0.22573	0.5182	0.00121	0.00364	0.00121
N261	16	0	Patch	2	3.060	2.870	7.830	0.010	0.030	0.030	0.391	0.001	0.367	0.004	0.004	1.320	1.160	3.750	0.010	0.030	0.020	0.16858	0.16858	0.47893	0.00128	0.00383	0.00259
N261	17	0	Patch	2	3.950	4.070	9.420	0.010	0.010	0.010	0.419	0.001	0.432	0.003	0.001	1.750	1.760	5.190	0.010	0.010	0.010	0.18577	0.18577	0.55096	0.00106	0.0106	0.0106
N261	18	0	Patch	2	4.130	2.990	8.600	0.010	0.030	0.000	0.480	0.001	0.348	0.003	0.003	1.860	1.680	4.010	0.020	0.020	0.020	0.21628	0.21628	0.54419	0.00116	0.0233	0
N261	24	0	Patch	2	3.420	4.110	10.490	0.020	0.010	0.010	0.326	0.002	0.392	0.009	0.010	1.480	1.560	4.490	0.020	0.050	0.010	0.14109	0.14109	0.42803	0.00191	0.00858	0.00953
N261	25	0	Patch	4	5.180	5.970	13.660	0.020	0.020	0.040	0.379	0.001	0.437	0.002	0.003	2.460	2.730	7.120	0.020	0.030	0.030	0.18009	0.18009	0.52123	0.00145	0.0022	0.0022
N261	26	0	Patch	4	6.640	7.500	16.570	0.030	0.020	0.020	0.401	0.002	0.453	0.001	0.001	3.370	3.420	9.290	0.020	0.020	0.020	0.20338	0.20338	0.56065	0.00121	0.00121	0.00121
N261	27	0	Patch	4	7.100	6.600	16.210	0.010	0.020	0.010	0.438	0.001	0.407	0.003	0.001	3.600	3.200	9.140	0.010	0.020	0.010	0.22099	0.22099	0.56385	0.00062	0.00062	0.00062
N261	28	0	Patch	4	6.120	4.500	13.270	0.030	0.060	0.030	0.461	0.002	0.339	0.005	0.002	3.010	2.160	6.620	0.020	0.060	0.030	0.22683	0.22683	0.49887	0.00151	0.00452	0.00226
N261	33	0	Patch	4	4.390	5.000	11.960	0.030	0.060	0.060	0.367	0.003	0.418	0.005	0.005	1.980	2.170	5.810	0.020	0.060	0.060	0.16555	0.16555	0.48579	0.00167	0.00502	0.00502
N261	34	0	Patch	4	5.880	7.180	15.390	0.020	0.020	0.030	0.382	0.001	0.467	0.001	0.002	2.910	3.350	8.340	0.020	0.020	0.020	0.18908	0.18908	0.54191	0.0013	0.0013	0.0013
N261	35	0	Patch	4	6.940	6.990	16.290	0.020	0.010	0.010	0.426	0.001	0.429	0.001	0.001	3.350	3.270	9.200	0.010	0.010	0.010	0.2167	0.2167	0.56476	0.00063	0.00063	0.00063
N261	36	0	Patch	4	6.840	6.100	15.660	0.020	0.030	0.020	0.437	0.001	0.390	0.002	0.001	3.450	2.970	8.510	0.020	0.030	0.020	0.22031	0.22031	0.54342	0.00128	0.00192	0.00128
N261	129	0	Patch	1	1.490	1.270	3.740	0.010	0.040	0.010	0.396	0.003	0.340	0.011	0.003	0.590	0.500	1.460	0.000	0.040	0.010	0.15775	0.15775	0.39037	0	0.00107	0.00267
N261	131	0	Patch	1	1.340	1.500	3.810	0.000	0.010	0.010	0.352	0.000	0.394	0.003	0.003	0.510	0.580	1.740	0.000	0.010	0.010	0.13386	0.13386	0.45669	0	0.00262	0.00262
N261	132	0	Patch	2	1.590	1.250	3.950	0.000	0.010	0.010	0.403	0.000	0.316	0.003	0.003	0.610	0.500	1.740	0.000	0.010	0.010	0.15443	0.15443	0.44051	0	0.00253	0.00253
N261	137	0	Patch	2	2.360	1.840	6.170	0.010	0.080	0.020	0.382	0.002	0.298	0.013	0.005	1.010	1.730	2.250	0.010	0.080	0.030	0.1627	0.1627	0.36467	0.00162	0.01297	0.00486
N261	138	0	Patch	2	3.550	2.390	7.300	0.020	0.030	0.010	0.486	0.003	0.327	0.004	0.001	1.660	1.960	3.670	0.020	0.030	0.010	0.2274	0.2274	0.50274	0.00274	0.00411	0.00137
N261	139	0	Patch	2	3.510	3.340	8.360	0.010	0.010	0.020	0.420	0.001	0.391	0.001	0.002	1.560	1.460	4.570	0.010	0.010	0.020	0.13866	0.13866	0.54665	0.0012	0.00239	0.00239
N261	140	0	Patch	2	1.970	1.870	6.280	0.010	0.020	0.030	0.314	0.000	0.295	0.005	0.005	0.840	0.800	2.570	0.010	0.020	0.020	0.13376	0.13376	0.40924	0.00159	0.00318	0.00318
N261	144	0	Patch	2	3.050	3.050	7.610	0.000	0.020	0.020	0.401	0.001	0.340	0.011	0.003	1.340	1.280	3.990	0.000	0.020	0.020	0.17608	0.17608	0.52431	0	0.00263	0.00263
N261	145	0	Patch	2	3.910	3.140	8.410	0.020	0.010	0.000	0.465	0.002	0.373	0.001	0.000	1.810	1.300	4.560	0.020	0.010	0.010	0.21522	0.21522	0.54221	0.00238	0.00119	0
N261	146	0	Patch	2	2.920	3.550	8.130	0.010	0.050	0.010	0.359	0.001	0.487	0.006	0.001	1.270	1.570	4.040	0.010	0.050	0.010	0.15621	0.15621	0.46992	0.00123	0.00615	0.00123
N261	152	0	Patch	2	5.010	3.450	10.580	0.030	0.060	0.070	0.474	0.003	0.326	0.006	0.005	2.190	1.510	4.780	0.020	0.060	0.060	0.20699	0.20699	0.45188	0.00189	0.00567	0.00567
N261	153	0	Patch	4	6.450	4.410	13.510	0.020	0.030	0.030	0.477	0.001	0.326	0.000	0.000	3.140	3.700	8.020	0.020	0.030	0.020	0.22342	0.22342	0.52406	0.00148	0.00222	0.00148
N261	154	0	Patch	4	7.160	6.120	15.670	0.030	0.010	0.010	0.457	0.002	0.391	0.001	0.003	3.540	2.860	8.740	0.020	0.010	0.010	0.18234	0.18234	0.55787	0.0019	0.00127	0
N261	155	0	Patch	4	7.000	6.810	15.950	0.030	0.010	0.049	0.427	0.002	0.301	0.540	0.310	0.050	0.030	0.030	0.22194	0.22194	0.5674	0.00188	0.00363	0.00363			
N261	156	0	Patch	4	4.250	4.540	11.270	0.020	0.060	0.050	0.377	0.002	0.403	0.005	0.004	1.970	2.010	5.760	0.020	0.060	0.040	0.1748	0.1748	0.51105	0.00177	0.00532	0.00355
N261	161	0	Patch	4	5.580	3.890	11.860	0.020	0.040	0.050	0.470	0.002	0.328	0.003	0.004	2.580	1.710	5.760	0.020	0.040	0.040	0.21754	0.21754	0.48657	0.00169	0.00337	0.00337
N261	162	0	Patch	4	7.110	5.180	15.010	0.030	0.020	0.020	0.474	0.003	0.345	0.005	0.001												

- QTM1 N261 High channel SISO

n261Md ch.(28.35GHz)										4cm <sup>2</sup> PD(W/m <sup>2</sup> ) at 2mm evaluation surfaces @6dBm										4cm <sup>2</sup> PD(W/m <sup>2</sup> ) at 10mm evaluation surfaces @6dBm									
Band	Beam_ID	Ant module	Ant Type	Number of Feeds	Max Ratio					Max Ratio					Max Ratio					Max Ratio									
					Front	Back	Left	Right	Top	Bottom	(worst surface)	Front	Back	Left	Right	Top	Bottom	(worst surface)	Front	Back	Left	Right	Top	Bottom	(worst surface)				
N261	0	1	Patch	1	1.59	1.19	0.01	3.41	0.01	0.01	0.466	0.003	0.349	0.003	0.003	0.600	0.460	0.010	1.570	0.010	0.010	0.17595	0.17595	0.00293	0.46041	0.00293	0.00293		
N261	2	1	Patch	1	1.43	1.4	0	3.69	0.02	0.01	0.388	0.000	0.379	0.005	0.003	0.540	0.530	0.000	1.660	0.020	0.018	0.14634	0.14634	0	0.44986	0.00542	0.00271		
N261	5	1	Patch	2	2.22	1.55	0.03	5.56	0.05	0.01	0.399	0.005	0.279	0.009	0.002	1.040	0.610	0.020	2.340	0.050	0.018	0.18705	0.18705	0.00396	0.42086	0.00895	0.00198		
N261	6	1	Patch	2	3.35	2.27	0.02	6.54	0.02	0	0.512	0.003	0.347	0.003	0.000	1.580	0.920	0.010	3.660	0.020	0.000	0.24159	0.24159	0.00153	0.55963	0.00306	0		
N261	7	1	Patch	2	2.28	3.1	0.02	6.58	0.05	0.01	0.347	0.003	0.471	0.008	0.002	1.020	1.270	0.020	3.330	0.050	0.010	0.15502	0.15502	0.00304	0.50608	0.0076	0.00152		
N261	8	1	Patch	2	1.96	2.21	0.02	5.79	0.07	0.02	0.339	0.003	0.382	0.012	0.003	0.680	0.860	0.020	2.090	0.060	0.020	0.11744	0.11744	0.00345	0.36097	0.01036	0.00345		
N261	13	1	Patch	2	3.87	2.37	0.02	7.19	0.01	0.01	0.538	0.003	0.330	0.001	0.001	1.800	0.990	0.010	3.870	0.010	0.010	0.25093	0.25093	0.00139	0.53825	0.00139	0.00139		
N261	14	1	Patch	2	3.83	3.33	0.01	8.19	0.02	0.01	0.468	0.001	0.407	0.002	0.001	1.680	1.410	0.010	4.500	0.020	0.010	0.20513	0.20513	0.00122	0.54945	0.00244	0.00122		
N261	15	1	Patch	2	2.34	2.15	0.01	5.67	0.04	0.02	0.413	0.002	0.379	0.007	0.004	1.010	0.910	0.010	2.580	0.040	0.020	0.17813	0.17813	0.00176	0.45503	0.00705	0.00353		
N261	19	1	Patch	4	5.7	3.54	0.02	10.8	0.08	0.01	0.528	0.002	0.328	0.007	0.001	2.780	1.630	0.010	5.710	0.070	0.010	0.25741	0.25741	0.00093	0.5287	0.00648	0.00093		
N261	20	1	Patch	4	7.82	5.56	0.02	15.05	0.03	0.01	0.520	0.001	0.369	0.002	0.001	3.810	2.710	0.020	8.550	0.030	0.010	0.25316	0.25316	0.00133	0.56811	0.01099	0.00060		
N261	21	1	Patch	4	6.84	6.58	0.02	14.98	0.02	0.01	0.457	0.001	0.439	0.005	0.001	3.490	3.140	0.020	8.690	0.020	0.010	0.23298	0.23298	0.00134	0.58011	0.00134	0.00067		
N261	22	1	Patch	4	5.16	6.4	0.02	12.86	0.06	0.01	0.401	0.002	0.459	0.005	0.001	2.460	2.940	0.020	6.930	0.050	0.010	0.19129	0.19129	0.00154	0.53888	0.00389	0.00078		
N261	23	1	Patch	4	2.84	3.73	0.03	7.86	0.16	0.08	0.361	0.004	0.475	0.020	0.010	1.330	1.470	0.020	3.710	0.150	0.070	0.16291	0.16291	0.00254	0.47201	0.01908	0.00891		
N261	29	1	Patch	4	6.63	4.4	0.02	12.76	0.04	0.01	0.520	0.002	0.345	0.003	0.001	3.250	2.110	0.010	6.880	0.040	0.018	0.2547	0.2547	0.00157	0.53918	0.00313	0.00708		
N261	30	1	Patch	4	7.49	6.07	0.03	15.25	0.01	0.01	0.491	0.002	0.399	0.001	0.001	3.730	2.960	0.020	8.820	0.018	0.018	0.24459	0.24459	0.00131	0.57836	0.00666	0.00666		
N261	31	1	Patch	4	6.06	6.8	0.03	14.41	0.05	0.01	0.421	0.002	0.472	0.003	0.001	3.010	3.180	0.020	8.140	0.040	0.018	0.20888	0.20888	0.00139	0.56489	0.00278	0.00069		
N261	32	1	Patch	4	3.87	5.16	0.03	10.19	0.11	0.05	0.380	0.003	0.506	0.011	0.005	1.800	2.220	0.020	5.150	0.100	0.050	0.17664	0.17664	0.00196	0.5054	0.00981	0.00491		
N261	128	1	Patch	4	1.39	1.31	0.01	3.48	0.01	0.01	0.399	0.003	0.376	0.003	0.003	0.530	0.480	0.005	1.670	0.018	0.000	0.1523	0.1523	0.1325	0	0.47889	0.00287	0	
N261	130	1	Patch	1	1.55	1.01	0.01	3.28	0.02	0.01	0.473	0.003	0.308	0.006	0.003	0.590	0.380	0.010	1.440	0.020	0.010	0.17888	0.17888	0.00305	0.43902	0.0063	0.00305		
N261	133	1	Patch	1	2.04	1.71	0.02	5.09	0.05	0.01	0.401	0.004	0.336	0.010	0.002	0.810	0.690	0.020	2.140	0.050	0.010	0.15914	0.15914	0.00393	0.42043	0.00882	0.00196		
N261	134	1	Patch	2	3.52	2.86	0.02	7.44	0.02	0	0.473	0.003	0.384	0.003	0.001	1.600	1.170	0.020	4.090	0.020	0.000	0.21505	0.21505	0.00269	0.54973	0.00265	0		
N261	135	1	Patch	2	3.68	2.98	0.01	7.72	0.02	0.01	0.477	0.001	0.366	0.003	0.001	1.620	1.240	0.010	4.280	0.020	0.010	0.20894	0.20894	0.0013	0.5544	0.00259	0.00193		
N261	136	1	Patch	2	2.87	1.63	0.02	6.11	0.04	0.01	0.470	0.003	0.267	0.007	0.002	1.310	0.670	0.020	2.740	0.040	0.010	0.21444	0.21444	0.00327	0.44845	0.00941	0.00164		
N261	141	1	Patch	2	2.56	2.17	0.02	5.99	0.04	0.01	0.427	0.003	0.362	0.007	0.002	1.130	0.900	0.020	2.910	0.040	0.018	0.18865	0.18865	0.00334	0.48581	0.00668	0.00167		
N261	142	1	Patch	2	4.02	3.14	0.01	7.91	0.01	0	0.508	0.001	0.397	0.007	0.001	1.780	1.380	0.010	4.550	0.018	0.008	0.22503	0.22503	0.00126	0.57522	0.00126	0		
N261	143	1	Patch	2	2.98	2.41	0.02	6.6	0.04	0.02	0.452	0.003	0.365	0.008	0.003	1.280	1.040	0.020	3.300	0.030	0.020	0.19394	0.19394	0.00152	0.5	0.00455	0.00303	0	
N261	147	1	Patch	2	3.02	3.91	0.04	8.88	0.1	0.04	0.360	0.005	0.467	0.012	0.005	1.080	1.650	0.020	4.300	0.100	0.030	0.17661	0.17661	0.00239	0.51313	0.00193	0.00358		
N261	148	1	Patch	4	5.42	5.89	0.03	13.07	0.01	0.03	0.415	0.002	0.451	0.001	0.002	2.490	2.730	0.020	7.130	0.010	0.020	0.19051	0.19051	0.00153	0.54552	0.00777	0.00153		
N261	149	1	Patch	4	7.05	5.08	0.04	13.88	0.03	0.01	0.508	0.003	0.366	0.002	0.003	1.300	2.360	0.040	7.760	0.030	0.018	0.24496	0.24496	0.00288	0.55908	0.00216	0.00702		
N261	150	1	Patch	4	6.81	4.26	0.02	12.55	0.04	0.01	0.543	0.002	0.339	0.003	0.001	3.170	1.920	0.010	6.730	0.040	0.018	0.25259	0.25259	0.0008	0.53625	0.00319	0.0008		
N261	151	1	Patch	4	5.16	3.13	0.02	9.65	0.08	0.03	0.535	0.002	0.324	0.003	0.003	2.380	1.420	0.010	4.920	0.080	0.020	0.24663	0.24663	0.00104	0.50884	0.00829	0.00311		
N261	157	1	Patch	4	3.99	4.87	0.02	10.42	0.06	0.02	0.388	0.003	0.467	0.006	0.002	1.930	2.260	0.020	5.630	0.060	0.020	0.18522	0.18522	0.00192	0.54031	0.00576	0.00192		
N261	158	1	Patch	4	6.45	6	0.04	14.28	0.01	0.08	0.452	0.003	0.420	0.001	0.001	3.100	2.810	0.030	7.850	0.010	0.010	0.21709	0.21709	0.0023	0.54972	0.0007	0.0007		
N261	159	30	1	Patch	8	17.33	13.48	0.07	33.62	0.09	0.02	0.515	0.002	0.401	0.003	0.001	8.950	6.560	0.060	20.760	0.080	0.020	0.26621	0.26621	0.00178	0.61749	0.00238	0.00059	
N261	160	32	1	Patch	8	10.85	10.8	0.05	24.22	0.2	0.11	0.448	0.002	0.446	0.008	0.005	5.070	4.620	0.040	11.750	0.180	0.100	0.20933	0.20933	0.00165	0.48514	0.00743	0.00413	

## ■ QTM0 N260 LOW channel SISO

n260 low ch.(3GHz)										4cm <sup>2</sup> PD(W/m <sup>2</sup> ) at 2mm evaluation surfaces @6dbm										4cm <sup>2</sup> PD(W/m <sup>2</sup> ) at 10mm evaluation surfaces @6dbm														
Band	Beam_ID	Ant module	Ant Type	Num. of ant	relative phase worst PDr for MIMO										relative phase worst PDr for MIMO										relative phase worst PDr for MIMO									
					Front	Back	Left	Right	Top	Bottom	(worst surface)	Front	Right	back	TOP	Bottom	(worst surface)	Front	Back	Left	Right	Top	Bottom	(worst surface)	Front	Back	left	Right	TOP	Bottom				
N260	1	0	Patch	1	1.15	1.2	3.71	0	0.02	0.01	0.310	0.000	0.323	0.005	0.003	0.410	0.400	1.510	0.000	0.020	0.010	0.11051	0.10782	0.40701	0	0.00405	0.00414	0.00539	0.0027					
N260	3	0	Patch	1	1.72	1.33	4.83	0	0.02	0.02	0.356	0.000	0.275	0.004	0.004	0.670	0.410	2.000	0.000	0.020	0.020	0.13872	0.08489	0.41408	0	0.00414	0.00414	0.00405	0.00204					
N260	4	0	Patch	1	1.27	1.87	4.89	0	0.02	0.01	0.260	0.000	0.382	0.004	0.002	0.380	0.620	2.060	0.000	0.020	0.010	0.07771	0.12679	0.41217	0	0.00405	0.00405	0.00405	0.00204					
N260	5	0	Patch	2	0.87	1.37	3.6	0	0.02	0.01	0.242	0.000	0.381	0.006	0.003	0.280	0.420	1.470	0.000	0.020	0.010	0.07778	0.11667	0.40833	0	0.00556	0.00278	0.00556	0.00278					
N260	10	0	Patch	2	2.23	3.15	8.54	0	0.03	0.05	0.261	0.000	0.369	0.004	0.006	0.910	1.370	3.490	0.000	0.030	0.040	0.10656	0.16042	0.40867	0	0.00351	0.00468	0.00351	0.00468					
N260	11	0	Patch	2	3.06	3.22	9.61	0	0.06	0.03	0.318	0.000	0.335	0.006	0.003	1.360	1.490	4.070	0.000	0.050	0.020	0.14152	0.15505	0.42352	0	0.0052	0.00208	0.0052	0.00208					
N260	12	0	Patch	2	2.36	2.5	7.72	0	0.01	0.04	0.306	0.000	0.324	0.001	0.005	1.120	1.170	3.350	0.000	0.010	0.040	0.14508	0.15155	0.43394	0	0.0013	0.00518	0.0013	0.00518					
N260	13	0	Patch	2	2.21	2.89	8.98	0	0.06	0.03	0.246	0.000	0.322	0.007	0.003	0.740	1.070	3.000	0.000	0.060	0.030	0.08241	0.11915	0.33408	0	0.00668	0.00334	0.00668	0.00334					
N260	17	0	Patch	2	2.94	2.33	8.5	0	0.06	0.02	0.346	0.000	0.274	0.007	0.002	1.310	0.980	3.480	0.000	0.050	0.020	0.15412	0.11529	0.40941	0	0.00588	0.00235	0.00588	0.00235					
N260	18	0	Patch	2	2.07	3.41	7.19	0	0.02	0.01	0.288	0.000	0.474	0.003	0.001	0.900	1.560	3.750	0.000	0.020	0.010	0.12557	0.2169	0.52156	0	0.00278	0.00139	0.00278	0.00139					
N260	19	0	Patch	2	2.5	2.29	8.72	0	0.02	0.04	0.287	0.000	0.263	0.002	0.005	1.020	0.830	2.940	0.000	0.020	0.040	0.11697	0.09518	0.33716	0	0.00229	0.00459	0.00229	0.00459					
N260	25	0	Patch	4	4.59	5.25	15.03	0.01	0.02	0.12	0.305	0.001	0.349	0.001	0.008	1.860	2.180	6.350	0.000	0.020	0.010	0.12375	0.1450	0.42249	0	0.00133	0.00732	0.00133	0.00732					
N260	26	0	Patch	4	5.07	6.02	14.21	0.01	0.14	0.01	0.357	0.001	0.424	0.010	0.001	2.420	2.910	7.230	0.010	0.140	0.010	0.1703	0.20479	0.5088	0	0.00985	0.0007	0.00985	0.0007					
N260	27	0	Patch	4	4.39	4.39	10.45	0	0.05	0.05	0.420	0.000	0.420	0.005	0.005	2.210	2.000	5.940	0.000	0.020	0.010	0.11448	0.19139	0.56842	0	0.00383	0.00383	0.00383	0.00383					
N260	28	0	Patch	4	4.57	6.38	13.67	0.01	0.02	0.11	0.334	0.001	0.467	0.001	0.008	2.230	3.110	7.100	0.010	0.040	0.020	0.100	0.16313	0.22751	0.51939	0	0.00146	0.00732	0.00146	0.00732				
N260	29	0	Patch	4	4.52	4.66	15.73	0.01	0.13	0.05	0.287	0.001	0.296	0.008	0.003	1.650	1.730	5.550	0.000	0.110	0.040	0.1046	0.10988	0.35283	0	0.00669	0.00254	0.00669	0.00254					
N260	34	0	Patch	4	5.04	6.44	15.18	0.01	0.21	0.01	0.332	0.001	0.306	0.014	0.001	2.130	1.860	6.320	0.000	0.200	0.010	0.1003	0.09422	0.3769	0	0.00304	0.00060	0.00304	0.00060					
N260	35	0	Patch	4	4.65	5.72	12.14	0.01	0.05	0.01	0.383	0.001	0.471	0.004	0.001	2.360	2.840	6.850	0.010	0.050	0.010	0.1944	0.23394	0.56425	0.00089	0.00412	0.00082	0.00412	0.00082					
N260	36	0	Patch	4	4.23	5.95	11.92	0.01	0.01	0.05	0.355	0.001	0.499	0.001	0.004	2.070	2.910	6.780	0.010	0.010	0.050	0.17366	0.24413	0.56879	0.00084	0.00084	0.00149	0.00084	0.00149					
N260	37	0	Patch	1	4.75	5.74	14.75	0.01	0.02	0.13	0.322	0.001	0.389	0.001	0.009	2.130	2.600	6.870	0.000	0.020	0.010	0.14441	0.17627	0.46576	0	0.00136	0.00814	0.00136	0.00814					
N260	129	0	Patch	1	1.23	1.61	4.05	0	0.02	0.01	0.304	0.000	0.398	0.005	0.002	0.430	0.56	1.630	0.000	0.010	0.010	0.10617	0.13827	0.40247	0	0.00247	0.00247	0.00247	0.00247					
N260	131	0	Patch	2	1.05	1.85	4.47	0	0.02	0.01	0.235	0.000	0.414	0.004	0.008	2.230	3.60	1.880	0.000	0.020	0.010	0.10759	0.15213	0.42058	0	0.00447	0.00224	0.00447	0.00224					
N260	132	0	Patch	2	1.4	1.19	3.93	0	0.02	0.01	0.356	0.000	0.303	0.005	0.003	0.500	0.390	1.700	0.000	0.020	0.010	0.12723	0.09924	0.43257	0	0.00509	0.00254	0.00509	0.00254					
N260	133	0	Patch	2	0.94	0.93	3.29	0	0.01	0.01	0.286	0.000	0.283	0.003	0.003	0.330	0.310	1.240	0.000	0.010	0.010	0.1003	0.09422	0.3769	0	0.00304	0.00030	0.00304	0.00030					
N260	138	0	Patch	2	2.46	2.71	8.6	0	0.02	0.04	0.286	0.000	0.315	0.002	0.005	0.820	1.100	2.950	0.000	0.020	0.040	0.09535	0.12791	0.34302	0	0.00233	0.00465	0.00233	0.00465					
N260	139	0	Patch	2	2.22	3.23	7.29	0	0.06	0.01	0.305	0.000	0.443	0.008	0.004	0.910	1.520	3.530	0.000	0.050	0.010	0.12483	0.2085	0.48422	0	0.00686	0.00137	0.00686	0.00137					
N260	140	0	Patch	2	2.28	3.44	7.68	0	0.02	0.02	0.297	0.000	0.448	0.003	0.003	1.040	1.580	3.680	0.000	0.020	0.020	0.13542	0.20573	0.47917	0	0.00262	0.00262	0.00262	0.00262					
N260	141	0	Patch	2	2.22	2.91	8.56	0	0.05	0.03	0.259	0.000	0.340	0.006	0.004	0.810	1.190	2.860	0.000	0.050	0.030	0.09463	0.13902	0.33411	0	0.00584	0.00305	0.00584	0.00305					
N260	145	0	Patch	2	2.03	1.8	6.99	0	0.06	0	0.320	0.000	0.258	0.009	0.006	0.860	0.770	2.500	0.000	0.060	0.000	0.12030	0.10106	0.35765	0	0.00858	0	0.00858	0					
N260	146	0	Patch	2	2.58	2.82	6.8	0	0.02	0.02	0.379	0.000	0.415	0.003	0.003	1.150	1.220	3.560	0.000	0.020	0.020	0.16912	0.17941	0.52353	0	0.00294	0.00294	0.00294	0.00294					
N260	147	0	Patch	4	4.24	2.31	7.5	0	0.04	0.03	0.323	0.000	0.308	0.005	0.004	1.050	0.930	3.100	0.000	0.040	0.020	0.11933	0.14134	0.40899	0	0.00471	0.00353	0.00471	0.00353					
N260	153	0	Patch	4	4.77	4.8	13.96	0.01	0.03	0.11	0.342	0.001	0.344	0.002	0.008	1.870	1.860	5.890	0.010	0.020	0.13395	0.13324	0.4219	0.00072	0.0143	0.00716	0.0143	0.00716						
N260	154	4	Patch	2	2.83	3.53	9.24	0	0.06	0.05	0.306	0.000	0.382	0.006	0.005	0.960	1.190	4.240	0.000	0.070	0.040	0.10296	0.13761	0.43221	0	0.00649	0.00433	0.00649	0.00433					
N260	155	0	Patch	2	2.09	2.65	7.25	0	0.04	0.04	0.288	0.000	0.366	0.006	0.006	0.740	1.000	3.120	0.000	0.040	0.040	0.10207	0.13793	0.43034	0	0.00652								

## ■ QTM1 N260 LOW channel SISO

4cm <sup>2</sup> PD(W/m <sup>2</sup> ) at 2mm evaluation surfaces @6dBm										4cm <sup>2</sup> PD(W/m <sup>2</sup> ) at 10mm evaluation surfaces @6dBm																
n260 low ch. (37GHz)				relative phase worst PDI for MIMO						relative phase worst PDI for MIMO						relative phase worst PDI for MIMO										
Band	Beam_ID	Ant module	Ant Type	Mums of Feeds	Front	Back	Left	Right	Top	Bottom	(worst surface)	Front	Back	Left	Right	Top	Bottom	(worst surface)	Front	Back	Left	Right	Top	Bottom	(worst surface)	
N260	0	1	Patch	1	1.7	1.45	0	4.5	0.02	0.01	0.378	0.000	0.322	0.004	0.002	0.62	0.43	0	1.94	0.02	0.01	0.13778	0.09556	0.04311	0.00444	0.00222
N260	2	1	Patch	1	1.44	1.64	0	4.35	0.02	0.01	0.331	0.000	0.377	0.005	0.002	0.43	0.54	0	1.94	0.02	0.01	0.09885	0.12414	0.04459	0.0046	0.0023
N260	6	1	Patch	2	2.55	2.78	0.01	7.9	0.05	0.02	0.323	0.001	0.352	0.006	0.003	1.06	1.17	0.01	3.3	0.05	0.02	0.13418	0.14811	0.0217	0.04772	0.00633
N260	7	1	Patch	2	2.41	2.88	0	6.73	0.05	0	0.358	0.000	0.428	0.007	0.000	1.05	1.29	0	3.58	0.05	0	0.15602	0.19168	0.05319	0.00743	0
N260	8	1	Patch	2	2.16	2.92	0	7.6	0.01	0.04	0.284	0.000	0.384	0.001	0.005	0.93	1.39	0	3.21	0.01	0.03	0.12237	0.18289	0.04227	0.00132	0.00395
N260	9	1	Patch	2	2.58	2.58	0.01	7.85	0.05	0.02	0.329	0.001	0.329	0.006	0.003	0.9	1.04	0	2.84	0.05	0.02	0.11592	0.13248	0.036179	0.00637	0.00255
N260	14	1	Patch	2	2.69	2.45	0.01	8.03	0.07	0.01	0.335	0.001	0.305	0.009	0.001	1.19	0.94	0.01	3.13	0.07	0	0.14819	0.11706	0.00125	0.03897	0.00872
N260	15	1	Patch	2	3.06	3.15	0.01	7.98	0.03	0.03	0.383	0.001	0.395	0.004	0.004	1.27	1.4	0.01	3.84	0.03	0.03	0.15915	0.17544	0.00125	0.04812	0.00376
N260	16	1	Patch	2	3.14	3.08	0.01	9.73	0.07	0.02	0.323	0.001	0.317	0.007	0.002	1.05	1.11	0.01	3.54	0.06	0.02	0.10791	0.11408	0.00103	0.03683	0.00617
N260	20	1	Patch	4	4.95	5.07	0.01	13.66	0.12	0.03	0.362	0.001	0.371	0.009	0.002	1.88	1.82	0.01	5.92	0.11	0.03	0.13836	0.13324	0.00073	0.04333	0.00892
N260	21	1	Patch	4	5.66	5.28	0.02	13.06	0.12	0.01	0.433	0.002	0.404	0.009	0.001	2.77	2.41	0.02	7.18	0.12	0.01	0.21211	0.18453	0.01515	0.04977	0.00919
N260	22	1	Patch	4	4.44	5.11	0.01	11.42	0.03	0.04	0.389	0.001	0.447	0.003	0.004	1.96	2.56	0.01	6.06	0.03	0.04	0.17426	0.22417	0.00086	0.53065	0.02651
N260	23	1	Patch	4	4.88	5.44	0.01	13.37	0.02	0.1	0.365	0.001	0.407	0.001	0.007	2.16	2.38	0.01	6.5	0.02	0.09	0.16156	0.17801	0.00075	0.48616	0.001673
N260	24	1	Patch	4	4.82	5.03	0.01	13.91	0.15	0.02	0.347	0.001	0.362	0.011	0.001	1.8	1.75	0.01	5.7	0.14	0.02	0.1294	0.12581	0.00077	0.46978	0.01006
N260	30	1	Patch	4	5.4	5.34	0.02	12.99	0.18	0.02	0.416	0.002	0.411	0.014	0.002	2.44	2.29	0.01	6.78	0.17	0.02	0.18784	0.17629	0.00077	0.52194	0.01309
N260	31	1	Patch	4	4.72	5.09	0.01	11.94	0.07	0.01	0.395	0.001	0.426	0.006	0.001	2.1	2.22	0.01	6.67	0.06	0.01	0.17588	0.18592	0.00064	0.55863	0.00503
N260	22	1	Patch	4	4.85	5.71	0.01	12.65	0.01	0.06	0.382	0.001	0.451	0.001	0.005	2.2	2.77	0.01	6.76	0.01	0.06	0.17281	0.12897	0.00073	0.53234	0.00617
N260	33	1	Patch	4	4.65	5.2	0.01	13.7	0.05	0.08	0.339	0.001	0.380	0.004	0.006	1.71	1.89	0.01	5.8	0.05	0.08	0.12482	0.13796	0.00073	0.42338	0.00858
N260	128	1	Patch	1	1.24	1.53	0	4.05	0.03	0.01	0.306	0.000	0.378	0.007	0.002	0.36	0.55	0	1.75	0.02	0.01	0.08889	0.13827	0	0.4321	0.00494
N260	130	1	Patch	1	1.35	1.29	0	3.72	0.02	0.01	0.363	0.000	0.347	0.005	0.003	0.47	0.38	0	1.63	0.02	0.01	0.12634	0.10215	0	0.4381	0.00536
N260	134	1	Patch	2	2.25	2.71	0.01	7.92	0.05	0.02	0.284	0.001	0.342	0.006	0.003	0.92	1.11	0	2.86	0.05	0.02	0.11616	0.14015	0	0.36111	0.00631
N260	135	1	Patch	2	2.62	2.81	0.01	6.75	0.04	0.01	0.388	0.001	0.416	0.006	0.001	1.1	1.24	0	3.49	0.04	0.01	0.16296	0.1837	0	0.51704	0.00599
N260	136	1	Patch	2	2.51	1.89	0	6.51	0.01	0.03	0.386	0.000	0.290	0.002	0.005	1.2	0.85	0	2.84	0.01	0.03	0.18433	0.13057	0	0.43625	0.00154
N260	137	1	Patch	2	2.33	2.61	0	8.09	0.07	0.01	0.288	0.000	0.323	0.009	0.001	0.79	0.88	0	2.75	0.06	0.01	0.09765	0.10878	0	0.33993	0.00742
N260	142	1	Patch	2	2.62	2.84	0.01	7.64	0.05	0.01	0.343	0.001	0.372	0.007	0.001	1.15	1.17	0	3.44	0.05	0.01	0.15052	0.15334	0	0.45026	0.00654
N260	143	1	Patch	2	2.34	2.76	0	6.55	0.01	0.02	0.357	0.000	0.421	0.002	0.003	1.07	1.23	0	3.22	0.01	0.02	0.16336	0.13879	0	0.4916	0.00153
N260	144	1	Patch	2	2.33	2.31	0	7.03	0.04	0.03	0.331	0.000	0.329	0.006	0.004	0.9	0.89	0	2.72	0.04	0.03	0.12802	0.1266	0	0.33691	0.00669
N260	148	1	Patch	4	4.58	4.86	0.01	12.43	0.17	0.01	0.368	0.001	0.391	0.014	0.001	1.92	1.92	0.01	5.85	0.17	0.01	0.15447	0.15447	0.00008	0.47064	0.01368
N260	149	1	Patch	4	4.65	5.19	0.02	11.68	0.09	0.01	0.398	0.002	0.444	0.008	0.001	2.19	2.56	0.01	6.32	0.09	0.01	0.1875	0.22089	0.00086	0.5411	0.00771
N260	150	1	Patch	4	4.6	4.27	0.01	10.27	0.02	0.04	0.448	0.001	0.416	0.002	0.002	2.33	2.07	0.01	5.68	0.02	0.03	0.26867	0.20156	0.00099	0.55307	0.00199
N260	151	1	Patch	4	4.7	4.65	0.01	12.67	0.03	0.09	0.371	0.001	0.367	0.002	0.007	2.14	2.14	0.01	5.87	0.03	0.08	0.1689	0.1689	0.00079	0.4633	0.00237
N260	152	1	Patch	4	4.26	4.74	0.01	13.09	0.16	0.02	0.325	0.001	0.362	0.012	0.002	1.65	1.72	0.01	5.3	0.15	0.02	0.12605	0.13134	0.00076	0.40489	0.01146
N260	158	1	Patch	4	4.81	4.83	0.01	12.3	0.17	0.01	0.391	0.001	0.399	0.014	0.001	2.18	2.16	0.01	6.12	0.16	0	0.17724	0.17561	0.00081	0.49756	0.01301
N260	159	1	Patch	4	4.37	4.4	0.01	10.42	0.05	0.02	0.419	0.001	0.422	0.005	0.002	2	2.19	0.01	5.63	0.05	0.02	0.19194	0.21017	0.00096	0.54031	0.00492
N260	160	1	Patch	4	5.1	4.59	0.01	11.51	0.03	0.06	0.443	0.001	0.399	0.003	0.005	2.53	2.24	0.01	6.13	0.02	0.06	0.21981	0.19461	0.00087	0.53250	0.00174
N260	161	1	Patch	4	4.08	4.69	0.01	13.11	0.11	0.05	0.311	0.001	0.358	0.008	0.004	1.66	1.62	0.01	4.93	0.1	0.04	0.12662	0.12357	0.00076	0.37605	0.00763

## ■ QTM1 N260 LOW channel MIMO

Max Ratio										Max Ratio														
Front					Back					Left					Right					Top				
0.234	0.223	0.002	0.600	0.015	0.007	0.234	0.223	0.002	0.600	0.015	0.007	0.234	0.223	0.002	0.600	0.015	0.007	0.234	0.223	0.002	0.600	0.015	0.007	
N260	128	0																						

## ■ QTM0 N260 Middle channel SISO

4cm <sup>2</sup> PD(W/m <sup>2</sup> ) at 2mm evaluation surfaces @6dBm										4cm <sup>2</sup> PD(W/m <sup>2</sup> ) at 10mm evaluation surfaces @6dBm																		
				Max Ratio						Max Ratio																		
				0.392	0.001	0.511	0.013	0.007							0.193	0.0251	0.574	0.001	0.012	0.006								
n260 Mid ch.(38.5GHz)				relative phase worst PDr for MIMO						relative phase worst PDr for MIMO						Ratio												
Band	Beam_ID	Ant module	Ant Type	Num. of antenna feeds	Front	Back	Left	Right	Top	Bottom	(worst surface)	Front	Right	back	TOP	Bottom	(worst surface)	Front	Back	Left	Right	TOP	Bottom					
N260	1	0	Patch	1	1.24	1.51	4.44	0	0.02	0.01	0.279	0.000	0.340	0.005	0.002	0.51	0.51	1.73	0	0.02	0.01	0.14866	0.14866	0.38964	0	0.00457	0.00225	
N260	3	0	Patch	1	1.72	1.82	5.5	0	0.02	0.02	0.313	0.000	0.331	0.004	0.004	0.6	0.61	2.44	0	0.01	0.02	0.10969	0.10969	0.44364	0	0.00187	0.00364	
N260	4	0	Patch	1	1.74	2.12	5.77	0	0.03	0.02	0.302	0.000	0.367	0.005	0.003	0.54	0.71	2.64	0	0.02	0.02	0.09359	0.12365	0.45754	0	0.00947	0.00347	
N260	5	0	Patch	2	1.1	1.48	4.32	0	0.02	0.02	0.255	0.000	0.343	0.005	0.005	0.35	0.44	1.71	0	0.02	0.01	0.08102	0.10185	0.39583	0	0.00461	0.00231	
N260	10	0	Patch	2	2.97	3.73	10.14	0	0.03	0.06	0.293	0.000	0.368	0.003	0.006	1.25	1.66	4.42	0	0.03	0.05	0.12327	0.16371	0.4359	0	0.00296	0.00493	
N260	11	0	Patch	2	3.45	4.03	11.12	0	0.05	0.03	0.310	0.000	0.362	0.004	0.006	1.52	1.8	5.05	0	0.04	0.03	0.13669	0.16187	0.45414	0	0.0036	0.0027	
N260	12	0	Patch	2	3.02	3.03	9.03	0	0.01	0.04	0.334	0.000	0.336	0.001	0.004	1.43	1.42	4.13	0	0.01	0.03	0.15836	0.15725	0.45736	0	0.00111	0.00332	
N260	13	0	Patch	2	2.91	3.45	10.84	0	0.06	0.03	0.268	0.000	0.318	0.006	0.003	1.05	1.26	4.04	0	0.05	0.02	0.09686	0.11624	0.37269	0	0.00461	0.00185	
N260	17	0	Patch	2	2.54	3.53	9.86	0	0.06	0.02	0.258	0.000	0.358	0.006	0.002	1.06	1.53	4.18	0	0.05	0.02	0.10751	0.15557	0.42394	0	0.00507	0.00203	
N260	18	0	Patch	2	2.59	3.62	8.24	0	0.04	0.03	0.314	0.000	0.439	0.005	0.004	1.17	1.61	4.27	0	0.04	0.05	0.14159	0.19553	0.5187	0	0.00485	0.00364	
N260	19	0	Patch	2	2.99	2.92	10.28	0	0.01	0.04	0.291	0.000	0.284	0.001	0.004	1.37	1.12	3.89	0	0.01	0.04	0.13327	0.10895	0.3784	0	0.00097	0.00389	
N260	25	0	Patch	4	5.87	6.13	17.56	0.01	0.02	0.1	0.334	0.001	0.349	0.001	0.006	2.61	2.6	8.01	0.01	0.02	0.09	0.14863	0.14863	0.45615	0.00057	0.00114	0.00513	
N260	26	0	Patch	4	5.82	7.13	16.03	0.01	0.17	0.01	0.363	0.001	0.445	0.011	0.001	2.86	3.8	8.79	0.01	0.16	0.01	0.17842	0.21085	0.54835	0.00062	0.00998	0.0062	
N260	27	0	Patch	4	4.01	6.12	12.6	0.01	0.09	0.07	0.318	0.001	0.486	0.007	0.006	1.9	3.02	6.67	0.01	0.09	0.06	0.15079	0.23968	0.52937	0.00079	0.00714	0.0476	
N260	28	0	Patch	4	6.54	7.27	16.68	0.01	0.02	0.11	0.392	0.001	0.436	0.001	0.007	3.22	3.62	9.23	0.01	0.02	0.1	0.19305	0.21703	0.55336	0.00062	0.00127	0.006	
N260	29	0	Patch	4	4.95	5.67	18.31	0.01	0.11	0.04	0.270	0.001	0.310	0.006	0.002	2.03	2.11	6.99	0	0.1	0.04	0.11067	0.1524	0.38176	0	0.00546	0.00218	
N260	34	0	Patch	4	5.17	6.14	17.42	0.01	0.23	0.02	0.297	0.001	0.352	0.013	0.001	2.29	2.43	7.94	0	0.21	0.01	0.13146	0.13946	0.4558	0	0.01206	0.00573	
N260	35	0	Patch	4	4.56	7.18	14.04	0.01	0.08	0.03	0.325	0.001	0.511	0.006	0.002	2.26	3.52	8.06	0.01	0.08	0.03	0.16097	0.20507	0.57407	0.00071	0.00571	0.00214	
N260	36	0	Patch	4	4.99	6.67	14.31	0.01	0.05	0.08	0.349	0.001	0.466	0.003	0.006	2.83	3.3	7.97	0.01	0.05	0.07	0.16632	0.2327	0.5569	0.00007	0.00349	0.00489	
N260	37	0	Patch	4	6.49	6.8	17.73	0.01	0.03	0.11	0.366	0.001	0.384	0.002	0.002	3.08	3.14	8.78	0.01	0.03	0.1	0.17372	0.1771	0.49521	0.00056	0.00169	0.00564	
N260	129	0	Patch	1	1.52	1.69	4.7	0	0.03	0.01	0.323	0.000	0.360	0.006	0.002	0.57	0.57	1.05	0	0.03	0.01	0.10471	0.08901	0.35602	0	0.00261	0.00262	
N260	131	0	Patch	2	1.38	2.25	5.24	0	0.02	0.01	0.263	0.000	0.429	0.004	0.002	0.41	0.83	2.43	0	0.02	0.01	0.07824	0.1584	0.46374	0	0.00387	0.00191	
N260	132	0	Patch	2	1.41	1.64	4.66	0	0.02	0.01	0.303	0.000	0.352	0.004	0.002	0.48	0.53	2.1	0	0.02	0.01	0.109	0.11372	0.45064	0	0.00429	0.00215	
N260	133	0	Patch	2	1.07	1.07	3.82	0	0.01	0.02	0.280	0.000	0.280	0.003	0.005	0.4	0.34	1.36	0	0.01	0.01	0.10471	0.08901	0.35602	0	0.00261	0.00262	
N260	138	0	Patch	2	3.23	3.29	10.14	0	0.02	0.03	0.319	0.000	0.324	0.002	0.006	1.17	1.43	3.89	0	0.01	0.03	0.15138	0.14103	0.38363	0	0.00099	0.00296	
N260	139	0	Patch	2	2.7	4	8.95	0	0.04	0.01	0.302	0.000	0.447	0.004	0.001	1.12	1.9	4.52	0	0.04	0.01	0.12514	0.21229	0.50503	0	0.00447	0.00112	
N260	140	0	Patch	2	2.56	4.28	8.89	0	0.03	0.02	0.288	0.000	0.481	0.003	0.002	1.23	1.95	4.32	0	0.02	0.02	0.13836	0.21935	0.48594	0	0.00225	0.00225	
N260	141	0	Patch	2	3.19	3.1	10.09	0.01	0.05	0.02	0.316	0.001	0.307	0.005	0.002	1.18	2.1	3.76	0	0.05	0.02	0.11695	0.1992	0.37265	0	0.00496	0.00198	
N260	145	0	Patch	2	2.39	2.42	8.6	0	0.06	0	0.278	0.000	0.281	0.007	0.000	1.1	1.03	3.22	0	0.06	0	0.17391	0.1977	0.37442	0	0.00698	0	
N260	146	0	Patch	2	2.78	4.08	8.61	0	0.03	0.01	0.323	0.000	0.474	0.003	0.001	1.22	1.78	4.57	0	0.03	0.01	0.1437	0.20674	0.53079	0	0.00348	0.00116	
N260	147	0	Patch	4	4.26	3.13	8.69	0	0.04	0.03	0.283	0.000	0.360	0.005	0.003	1.07	1.36	3.69	0	0.03	0.02	0.12331	0.1565	0.42463	0	0.00345	0.0023	
N260	153	0	Patch	4	4.97	5.98	15.93	0.01	0.03	0.1	0.312	0.001	0.375	0.002	0.006	2.11	2.53	6.98	0	0.02	0.09	0.13245	0.15882	0.48817	0.00069	0.00216	0.00565	
N260	154	0	Patch	4	5.68	6.41	14.97	0.01	0.12	0.02	0.379	0.001	0.428	0.008	0.001	2.81	3.21	8.07	0	0.01	0.12	0.18704	0.21443	0.53909	0.00067	0.00802	0.0134	
N260	155	0	Patch	4	3.61	5.77	11.61	0.01	0.08	0.05	0.311	0.001	0.497	0.007	0.004	1.68	2.87	6.14	0.01	0.08	0.04	0.1447	0.2477	0.52885	0.00089	0.00689	0.00345	
N260	156	0	Patch	4	6.07	7.67	16.02	0.01	0.04	0.06	0.379	0.001	0.479	0.002	0.004	3	3.73	8.68	0.01	0.04	0.05	0.18727	0.23283	0.51812	0.00062	0.002312	0	
N260	157	0	Patch	4	4.84	5.15	16.69	0.01	0.1	0.03	0.341	0.001	0.504	0.007	0.004	2.23	3.91	9.59	0.01	0.12	0.06	0.13164	0.23081	0.56612	0.00059	0.00708	0.00354	
N260	147	19	0	Patch	4	5.36	6.12	15.89	0.01	0.07	0.03	0.337	0.001	0.385	0.004	0.006	2.56	2.73	7.84	0.01	0.06	0.08	0.16111	0.17181	0.49339	0.00069	0.00376	0.00503
N260	153	25	0	Patch	8	12.02	13.41	36.32	0.02	0.07	0.26	0.331	0.001	0.369	0.002	0.007	5.62	5.6	15.64	0.02								

## ■ QTM1 N260 Middle channel SISO

										Max Ratio						Max Ratio																
										0.470	0.002	0.480	0.011	0.005	Front / (worst surface)	Left / (worst surface)	back / (worst surface)	TOP / (worst surface)	Bottom / (worst surface)	Front / (worst surface)	Back / (worst surface)	Left / (worst surface)	Right / (worst surface)	Top / (worst surface)	Bottom / (worst surface)							
n260 Mid ch.(38.5GHz)										4cm <sup>2</sup> PD(Wm2) at 2mm evaluation surfaces @6dBm																						
										relative phase worst PD for MIMO																						
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	Mumens of Feeds	Front	Back	Left	Right	Top	Bottom	Front	Left	back	TOP	Bottom	Front	Back	Left	Right	Top	Bottom	surface 0mm/2mm	surface 0mm/2mm	surface 0mm/2mm	surface 0mm/2mm	surface 0mm/2mm	surface 0mm/2mm				
N260	0	1	Patch	1	1.7	1.91	0	5.03	0.02	0.01	0.338	0.000	0.380	0.004	0.002	0.61	0.61	0	2.37	0.02	0.01	0.12127	0.12127	0	0.47117	0.00396	0.00199					
N260	2	1	Patch	1	1.73	1.62	0	4.75	0.02	0.01	0.364	0.000	0.341	0.004	0.002	0.53	0.52	0	2.16	0.02	0.01	0.1158	0.10947	0	0.45474	0.00421	0.00211					
N260	6	1	Patch	2	3.19	2.8	0.01	8.89	0.06	0.02	0.359	0.001	0.315	0.007	0.002	1.36	1.19	0.01	3.84	0.05	0.01	0.15298	0.13386	0.01112	0.00652	0.00112	0.00112					
N260	7	1	Patch	2	2.83	2.52	0.01	6.84	0.06	0	0.414	0.001	0.368	0.009	0.000	1.23	1.12	0.01	3.58	0.06	0.01	0.17982	0.16374	0.0146	0.52339	0.00877	0					
N260	8	1	Patch	2	2.75	3.15	0.01	8.81	0.01	0.03	0.312	0.000	0.358	0.001	0.003	1.22	1.47	0	3.87	0.01	0.03	0.13848	0.16686	0	0.43927	0.00114	0.00341					
N260	9	1	Patch	2	2.7	3.37	0.01	9.19	0.05	0.02	0.294	0.001	0.367	0.005	0.002	0.94	1.4	0	3.65	0.04	0.02	0.10229	0.15234	0	0.39717	0.00435	0.00218					
N260	14	1	Patch	2	3.06	3.2	0.01	8.97	0.06	0	0.341	0.001	0.357	0.007	0.000	1.41	1.3	0	4.1	0.06	0.01	0.15719	0.14493	0	0.45708	0.00669	0					
N260	15	1	Patch	2	3.38	3.87	0.01	9.07	0.04	0.03	0.373	0.001	0.427	0.004	0.000	1.47	1.69	0.04	4.59	0.03	0.02	0.16207	0.18633	0	0.56601	0.00331	0.0221					
N260	16	1	Patch	2	3.35	3.2	0.01	10.32	0.04	0.02	0.325	0.000	0.310	0.004	0.002	1.09	1.24	0	4.18	0.04	0.02	0.10562	0.12016	0	0.46050	0.00388	0.00194					
N260	20	1	Patch	4	5.57	5.77	0.01	15.28	0.11	0.04	0.365	0.001	0.378	0.007	0.003	2.26	2.1	0.01	7.12	0.1	0.03	0.14791	0.13743	0.00469	0.06561	0.00196	0					
N260	21	1	Patch	4	6.38	6.61	0.02	15.14	0.12	0.01	0.421	0.001	0.437	0.008	0.001	3.04	3.04	0.01	8.78	0.11	0.01	0.20079	0.20079	0.00066	0.5799	0.00727	0.00666					
N260	22	1	Patch	4	5.35	5.56	0.01	13.06	0.05	0.04	0.410	0.001	0.426	0.004	0.006	2.43	2.6	0.01	6.9	0.04	0.04	0.18606	0.19906	0.00077	0.52831	0.00308	0					
N260	23	1	Patch	4	5.11	6.56	0.01	15.05	0.01	0.08	0.340	0.001	0.436	0.001	0.005	2.26	3.01	0.01	7.77	0.01	0.08	0.15017	0.2	0.0066	0.51626	0.00066	0.0532					
N260	24	1	Patch	4	5.55	5.61	0.01	15.46	0.12	0.03	0.359	0.001	0.363	0.008	0.002	2.25	2.02	0.01	6.97	0.11	0.02	0.14554	0.13066	0.00065	0.45081	0.00712	0.00218					
N260	30	1	Patch	4	6.75	6.34	0.02	15.39	0.15	0.02	0.439	0.001	0.412	0.010	0.001	2.06	2.76	0.02	8.51	0.15	0.02	0.19883	0.17924	0.0013	0.55296	0.00975	0.001					
N260	31	1	Patch	4	4.54	5.5	0.03	12.37	0.09	0.02	0.367	0.002	0.445	0.007	0.002	2.05	2.35	0.01	6.67	0.08	0.03	0.16572	0.18998	0.00081	0.53921	0.00647	0.0162					
N260	22	1	Patch	4	5.51	7.22	0.01	16.05	0.02	0.06	0.366	0.001	0.480	0.001	0.004	2.53	2.5	0.01	8.39	0.02	0.05	0.16744	0.22356	0.00065	0.55743	0.00132	0.00322					
N260	33	1	Patch	4	4.99	5.78	0.01	15.2	0.04	0.07	0.328	0.001	0.380	0.003	0.005	1.7	2.22	0.01	6.89	0.04	0.07	0.11184	0.14605	0.00065	0.45322	0.00261	0.00461					
N260	128	1	Patch	1	1.56	1.65	0	4.45	0.02	0.01	0.351	0.000	0.371	0.004	0.002	0.49	0.58	0	2.1	0.02	0.01	0.10311	0.13034	0	0.47191	0.00445	0.00225					
N260	130	1	Patch	1	1.3	1.67	0	4.25	0.02	0.01	0.306	0.000	0.393	0.005	0.002	0.41	0.54	0	1.9	0.02	0.01	0.19667	0.12705	0	0.44708	0.00471	0.00235					
N260	134	1	Patch	2	3.19	2.73	0.01	9.19	0.04	0.02	0.347	0.001	0.297	0.004	0.002	1.35	1.02	0.01	3.53	0.04	0.02	0.14669	0.11059	0.00109	0.38411	0.00435	0.00218					
N260	135	1	Patch	2	2.91	3.38	0	7.89	0.06	0.01	0.369	0.000	0.428	0.008	0.001	1.22	1.44	0	4.06	0.06	0.01	0.15463	0.18251	0	0.51458	0.0076	0.00127					
N260	136	1	Patch	2	2.71	2.54	0	7.44	0.01	0.02	0.364	0.000	0.341	0.001	0.003	1.27	1.22	0.01	3.57	0.01	0.02	0.1707	0.16398	0	0.47984	0.00334	0.00269					
N260	137	1	Patch	2	3.15	2.91	0.01	9.25	0.06	0.01	0.341	0.001	0.315	0.006	0.004	1.09	1.14	0	3.69	0.06	0.01	0.1784	0.12324	0	0.38891	0.00649	0.00108					
N260	142	1	Patch	2	2.82	3.29	0	8.6	0.06	0.02	0.328	0.000	0.383	0.007	0.002	1.2	1.38	0	3.92	0.06	0.01	0.13953	0.16047	0	0.45581	0.00698	0.00116					
N260	143	1	Patch	2	3.01	2.7	0.01	7.6	0.01	0.04	0.396	0.001	0.355	0.001	0.001	1.36	1.13	0	3.67	0.01	0.01	0.17895	0.14867	0.00132	0.48289	0.00132	0.00526					
N260	144	1	Patch	2	2.45	3.03	0.01	8.28	0.04	0.02	0.296	0.001	0.366	0.005	0.002	0.92	1.26	0	3.2	0.04	0.02	0.11111	0.15217	0	0.38647	0.00483	0.00242					
N260	148	1	Patch	4	4.94	6.05	0.01	14.58	0.16	0.01	0.339	0.001	0.415	0.011	0.001	0.98	2.6	0.01	7.11	0.15	0.01	0.1358	0.17833	0.00069	0.48765	0.00709	0.00699					
N260	149	1	Patch	4	5.45	6.1	0.02	13.61	0.12	0.01	0.400	0.001	0.448	0.009	0.001	2.57	2.97	0.01	7.33	0.12	0.01	0.18369	0.21822	0.00073	0.35857	0.00882	0.00073					
N260	150	1	Patch	4	5.05	4.99	0.01	11.73	0.02	0.04	0.431	0.001	0.425	0.002	0.003	2.49	2.43	0.01	6.53	0.02	0.04	0.12228	0.20716	0.00085	0.55669	0.00171	0.00341					
N260	151	1	Patch	4	5.86	4.98	0.01	14.27	0.02	0.07	0.411	0.001	0.349	0.001	0.005	2.69	2.26	0.01	7.75	0.17	0.02	0.17267	0.19714	0.00068	0.52685	0.00116	0.00136					
N260	152	1	Patch	4	4.68	5.53	0.01	14.54	0.12	0.02	0.322	0.000	0.380	0.008	0.001	1.85	2.23	0.01	6.31	0.11	0.02	0.17274	0.15337	0.00069	0.43396	0.00167	0.00442					
N260	137	9	1	Patch	4	7.58	8	0	20.08	0.14	0.03	0.377	0.001	0.398	0.007	0.001	2.89	2.69	0.01	8.58	0.14	0.03	0.14392	0.13398	0.00065	0.42779	0.00697	0.00149				
N260	142	14	1	Patch	4	7.25	7.43	0.02	18.22	0.12	0.03	0.398	0.001	0.408	0.007	0.002	3.48	3.09	0.01	8.72	0.11	0.03	0.191	0.16959	0.00065	0.47859	0.00604	0.00165				
N260	143	15	1	Patch	4	6.69	6.96	0.02	16.8	0.05	0.01	0.398	0.001	0.414	0.003	0.006	2.85	2.92	0.01	8.18	0.05	0.09	0.16964	0.17381	0.00066	0.48467	0.00296	0.00536				
N260	144	16	1	Patch	4	6.08	7.02	0.01	19.03	0.13	0.06	0.319	0.001	0.369	0.007	0.002	2.33	2.72	0.01	7.74	0.12	0.06	0.12244	0.14293	0.00053	0.46073	0.00631	0.00315				
N260	148	20	1	Patch	8	11.11	13.36	0.03	32.13	0.32	0																					

## ▪ QTM0 N260 High channel SISO

4cm <sup>2</sup> PD(W/m <sup>2</sup> ) at 2mm evaluation surfaces @6dBm										Max Ratio																		
										Front / back					Top / Bottom					Max Ratio								
										Front	Back	Left	Right	Top	Bottom	(worst surface)	Front	Back	Left	Right	Top	Bottom						
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	Mumers of Feeds	Front	Back	Left	Right	Top	Bottom	(worst surface)	Front	Back	Left	Right	Top	Bottom	(worst surface)	Front	Back	Left	Right	Top	Bottom			
N260	1	0	Patch	1	1.19	1.64	4.62	0	0.02	0.01	0.258	0.000	0.355	0.004	0.002	0.45	0.54	1.8	0	0.02	0.01	0.0974	0.11688	0.38961	0	0.00433	0.00216	
N260	3	0	Patch	1	1.56	2.06	5.37	0	0.01	0.01	0.291	0.000	0.384	0.002	0.002	0.52	0.76	2.37	0	0.01	0.01	0.09683	0.14153	0.41324	0	0.00186	0.00186	
N260	4	0	Patch	1	1.9	1.66	5.23	0	0.02	0.01	0.363	0.000	0.317	0.004	0.002	0.66	0.52	2.38	0	0.02	0.01	0.1262	0.09945	0.45507	0	0.00582	0.00191	
N260	5	0	Patch	2	1.3	1.75	4.26	0	0.01	0.01	0.305	0.000	0.293	0.002	0.002	0.41	0.39	1.64	0	0.01	0.01	0.09624	0.09155	0.38498	0	0.00235	0.00235	
N260	10	0	Patch	2	3.39	2.87	9.7	0.01	0.02	0.04	0.349	0.001	0.296	0.002	0.004	1.54	1.29	4.14	0	0.02	0.04	0.15876	0.13299	0.4268	0	0.00206	0.00412	
N260	11	0	Patch	2	3.68	3.51	10.37	0	0.03	0.02	0.355	0.000	0.338	0.003	0.002	1.52	1.52	4.77	0	0.03	0.02	0.14658	0.14658	0.45998	0	0.00289	0.00193	
N260	12	0	Patch	2	2.88	3.14	9.08	0.01	0.02	0.04	0.317	0.001	0.346	0.002	0.004	1.32	1.41	4.01	0.01	0.03	0.03	0.14537	0.15529	0.41613	0.0011	0.0022	0.0033	
N260	13	0	Patch	2	3.33	3.06	10.71	0.01	0.04	0.02	0.311	0.001	0.286	0.004	0.002	1.21	1.06	3.99	0	0.04	0.02	0.12988	0.09897	0.37255	0	0.00373	0.00187	
N260	17	0	Patch	2	2.28	3.88	9.98	0	0.04	0.01	0.228	0.000	0.389	0.004	0.001	0.93	1.73	4.2	0	0.04	0.01	0.09339	0.17335	0.42084	0	0.00401	0.001	
N260	18	0	Patch	2	2.84	2.74	7.27	0.01	0.03	0.03	0.391	0.001	0.377	0.004	0.004	1.29	1.17	3.8	0	0.03	0.03	0.17744	0.1605	0.5227	0	0.00413	0.00413	
N260	19	0	Patch	2	2.69	3.25	10.32	0	0.01	0.04	0.261	0.000	0.315	0.001	0.004	1.29	1.19	3.81	0	0.01	0.04	0.125	0.15131	0.36919	0	0.00097	0.00388	
N260	25	0	Patch	4	5.84	5.5	16.52	0.01	0.03	0.07	0.354	0.001	0.333	0.002	0.004	2.68	2.85	7.65	0.01	0.03	0.06	0.16223	0.14225	0.4630	0.0061	0.0182	0.00363	
N260	26	0	Patch	4	6	6.65	15.55	0.01	0.16	0.01	0.386	0.001	0.428	0.010	0.001	2.88	3.09	8.43	0.01	0.15	0.01	0.18521	0.19871	0.54212	0.00604	0.00965	0.00604	
N260	27	0	Patch	4	4.16	5.92	12.69	0.02	0.06	0.05	0.329	0.002	0.468	0.005	0.004	1.88	2.85	6.66	0.01	0.06	0.05	0.14862	0.2253	0.52648	0.00079	0.00474	0.00395	
N260	28	0	Patch	4	6.22	6.52	16.7	0.01	0.03	0.1	0.384	0.001	0.402	0.002	0.006	3.01	3.14	8.54	0.01	0.03	0.09	0.1858	0.19383	0.57216	0.00067	0.01881	0.00556	
N260	29	0	Patch	4	4.77	5.63	17.51	0.01	0.07	0.03	0.272	0.001	0.322	0.004	0.002	2.05	2.18	7.04	0.01	0.06	0.03	0.11708	0.1245	0.40206	0.00057	0.00943	0.00171	
N260	34	0	Patch	4	5.06	6.5	16.86	0.01	0.15	0.01	0.300	0.001	0.386	0.009	0.001	2.31	2.7	8	0	0.04	0.01	0.13701	0.16024	0.4745	0	0.0085	0.00059	
N260	35	0	Patch	4	5.36	6.54	14.03	0.01	0.06	0.02	0.382	0.001	0.466	0.004	0.001	2.56	3.24	7.76	0.01	0.06	0.02	0.18247	0.23093	0.5531	0.00074	0.02428	0.00143	
N260	36	0	Patch	4	4.98	5.83	13.92	0.01	0.06	0.08	0.358	0.001	0.419	0.004	0.006	2.34	2.74	7.33	0.01	0.06	0.08	0.1681	0.1968	0.52658	0.00072	0.00431	0.00575	
N260	37	0	Patch	1	6.13	6.26	16.93	0.01	0.05	0.08	0.362	0.001	0.370	0.003	0.005	2.88	2.82	8.25	0.01	0.04	0.07	0.1707	0.16657	0.4873	0.00059	0.02306	0.00413	
N260	129	0	Patch	1	1.86	1.42	5.04	0	0.02	0.01	0.369	0.000	0.382	0.004	0.002	0.68	0.44	1.97	0	0.02	0.01	0.13492	0.0873	0.39087	0	0.00397	0.0198	
N260	131	0	Patch	2	1.68	1.79	4.93	0	0.01	0.01	0.341	0.000	0.363	0.002	0.002	0.57	0.63	2.3	0	0.01	0	0.1562	0.17779	0.46653	0	0.00205	0	
N260	132	0	Patch	2	1.22	1.71	4.41	0	0.01	0	0.277	0.000	0.388	0.002	0.000	0.38	0.61	1.97	0	0.01	0	0.08637	0.13832	0.44671	0	0.00227	0	
N260	133	0	Patch	2	0.96	1.2	3.71	0	0.01	0.01	0.259	0.000	0.323	0.003	0.003	0.35	0.38	1.35	0	0.01	0.01	0.09434	0.10243	0.36388	0	0.00259	0.0027	
N260	138	0	Patch	2	3.65	2.97	10.07	0.01	0.02	0.03	0.362	0.001	0.295	0.002	0.003	1.36	1.31	3.89	0	0.02	0.02	0.13505	0.13009	0.3863	0	0.00199	0.0199	
N260	139	0	Patch	2	2.64	3.7	8.54	0	0.03	0.01	0.309	0.000	0.433	0.004	0.001	1.1	1.69	4.23	0	0.03	0.01	0.12881	0.13789	0.49532	0	0.00351	0.0117	
N260	140	0	Patch	2	2.97	3.72	8.72	0.01	0.02	0.02	0.341	0.001	0.427	0.002	0.002	1.4	1.59	4.37	0	0.02	0.02	0.16055	0.18234	0.50115	0	0.00229	0.00229	
N260	141	0	Patch	2	3.94	2.45	10.27	0.01	0.05	0.01	0.384	0.001	0.329	0.005	0.001	1.51	0.91	3.96	0.01	0.04	0.01	0.14703	0.08861	0.38559	0.00097	0.00389	0.00097	
N260	145	0	Patch	2	2.31	2.7	8.82	0.01	0.05	0.01	0.262	0.000	0.306	0.006	0.001	1.08	1.13	3.36	0	0.05	0	0.12245	0.12812	0.38095	0	0.00657	0	
N260	146	0	Patch	2	3.01	3.67	8.44	0	0.03	0.02	0.357	0.000	0.435	0.004	0.002	1.3	1.59	4.34	0	0.03	0.01	0.15403	0.18839	0.51422	0	0.00355	0.00118	
N260	147	0	Patch	4	2.14	3.21	8.41	0	0.02	0.02	0.254	0.000	0.382	0.002	0.002	0.96	1.44	3.48	0	0.02	0.02	0.13415	0.17122	0.43179	0	0.00238	0	
N260	153	0	Patch	4	4.79	5.95	15.24	0.01	0.02	0.07	0.314	0.001	0.390	0.001	0.003	2.05	2.58	7.04	0.01	0.02	0.06	0.13451	0.16929	0.4619	0.00068	0.00311	0.00394	
N260	154	0	Patch	4	5.85	5.68	14.86	0.01	0.11	0.02	0.394	0.001	0.382	0.007	0.001	2.91	2.78	7.76	0.01	0.01	0.02	0.19583	0.18789	0.52221	0.00067	0.00315	0	
N260	155	0	Patch	4	4.37	6.05	13.03	0.01	0.07	0.03	0.335	0.001	0.464	0.005	0.006	1.97	2.97	6.83	0.01	0.07	0.02	0.15119	0.22794	0.52417	0.00077	0.00337	0.00153	
N260	156	0	Patch	4	5.93	6.56	15.02	0.01	0.04	0.05	0.395	0.001	0.437	0.003	0.003	2.94	3.1	7.89	0.01	0.04	0.04	0.19574	0.20639	0.5253	0.00067	0.00266	0	
N260	157	0	Patch	4	5	6.68	16.21	0.01	0.05	0.02	0.308	0.001	0.389	0.003	0.001	2.01	1.94	6.17	0.01	0.05	0.02	0.124	0.19668	0.43063	0.00067	0.00303	0.00123	
N260	162	0	Patch	8	11.96	12.26	33.61	0.03	0.05	0.18	0.356	0.001	0.365	0.001	0.005	5.87	5.74	16.58	0.02	0.04	0.02	0.17465	0.17078	0.49331	0.00068	0.00119	0.00446	
N260	154	26	0	Patch	8	13.23	13.8	31.43	0.04	0.49	0.05	0.421	0.001	0.439	0.016	0.002	6.54	7.13	17.12	0.03	0.47	0.04	0.20808	0.22685	0.54467	0.00095	0.04495	0.00327
N260	155	27	0	Patch	8	11.21	12.74	30.5	0.04	0.17	0.11	0.368	0.001	0.418	0.006	0.004	5.09	6.46	14.72	0.03	0.16	0.11						

- QTM1 N260 High channel SISO

Max Ratio										Max Ratio											
n260 high ch.(40GHz)					4cm2 PD(Wm2) at 2mm evaluation surfaces @6dBm					Ratio					4cm2 PD(Wm2) at 10mm evaluation surfaces @6dBm						
Band	Beam_ID	Ant module	Ant Type	Num. of Feed	Mumers of Feeds		relative phase worst PDR for MIMO					relative phase worst PDR for MIMO					relative phase worst PDR for MIMO				
					Front	Back	Left	Right	Top	Bottom	Front / west surface	Left / west surface	back / west surface	TOP / west surface	Bottom / west surface	Front	Back	Left	Right	Top	Bottom
N260	0	1	Patch	1	1.27	1.52	0	3.86	0.02	0.01	0.329	0.000	0.394	0.005	0.003	0.45	0.5	0	1.7	0.02	0.01
N260	2	1	Patch	1	1.41	1.06	0	3.56	0.01	0.01	0.396	0.000	0.298	0.003	0.003	0.46	0.36	0	1.54	0.01	0.01
N260	6	1	Patch	2	2.71	2.07	0.01	7.36	0.04	0.01	0.368	0.001	0.281	0.005	0.001	1.19	0.91	0	2.92	0.04	0.01
N260	7	1	Patch	2	1.83	1.49	0.01	4.47	0.04	0	0.409	0.002	0.333	0.009	0.000	0.79	0.65	0.01	2.12	0.04	0
N260	8	1	Patch	2	2.69	2.31	0	7.43	0.01	0.02	0.362	0.000	0.311	0.001	0.003	1.12	1.02	0	3.11	0.01	0.02
N260	9	1	Patch	2	2.32	3.29	0.01	8.24	0.04	0.01	0.282	0.001	0.399	0.005	0.001	0.88	1.28	0	3.34	0.04	0.01
N260	14	1	Patch	2	2.54	3.08	0.01	7.73	0.07	0	0.329	0.001	0.398	0.009	0.000	1.15	1.16	0	3.43	0.07	0
N260	15	1	Patch	2	2.94	2.24	0.01	6.69	0.01	0.02	0.439	0.001	0.335	0.001	0.003	1.21	0.93	0	3.09	0.01	0.02
N260	16	1	Patch	2	2.6	2.45	0	7.84	0.03	0.01	0.332	0.000	0.313	0.004	0.001	0.9	0.92	0	3.17	0.02	0.01
N260	20	1	Patch	4	4.78	4.74	0.01	12.85	0.07	0.03	0.372	0.001	0.369	0.005	0.002	2	1.79	0	6.08	0.06	0.03
N260	21	1	Patch	4	3.97	5.52	0.02	11.73	0.16	0.01	0.338	0.002	0.471	0.014	0.001	1.85	2.49	0	6.25	0.15	0.01
N260	22	1	Patch	4	4.56	3.17	0.02	9.46	0.03	0.04	0.482	0.002	0.335	0.003	0.004	2.05	1.45	0	4.65	0.03	0.04
N260	23	1	Patch	4	4.63	5.37	0.03	12.88	0.02	0.05	0.359	0.001	0.417	0.002	0.004	2.11	2.46	0	6.58	0.02	0.05
N260	24	1	Patch	4	4.97	4.67	0.01	13.07	0.07	0.02	0.380	0.001	0.357	0.005	0.002	2.12	1.73	0	6.06	0.07	0.02
N260	30	1	Patch	4	4.91	6.06	0.01	13.13	0.12	0.03	0.374	0.001	0.462	0.009	0.002	2.1	2.58	0	6.99	0.11	0.02
N260	31	1	Patch	4	3.5	3.58	0.02	8.95	0.1	0.01	0.391	0.002	0.400	0.011	0.001	1.56	1.48	0	4.25	0.1	0.01
N260	32	1	Patch	4	5.08	4.58	0.01	11.81	0.02	0.06	0.430	0.001	0.388	0.002	0.005	2.4	2.16	0	6.17	0.02	0.05
N260	33	1	Patch	4	4.23	5.03	0.01	12.89	0.03	0.04	0.328	0.001	0.390	0.002	0.003	1.53	1.97	0	6.11	0.02	0.04
N260	128	1	Patch	1	1.34	1.16	0	3.31	0.02	0.01	0.405	0.000	0.350	0.006	0.003	0.43	0.38	0	1.45	0.02	0.01
N260	130	1	Patch	1	0.89	1.38	0	3.27	0.02	0.01	0.272	0.000	0.422	0.006	0.003	0.27	0.47	0	1.46	0.02	0.01
N260	134	1	Patch	2	3.24	2.19	0.01	7.84	0.03	0.02	0.413	0.001	0.279	0.004	0.003	1.32	0.78	0	3.01	0.02	0.01
N260	135	1	Patch	2	2.45	2.24	0.01	5.97	0.06	0.01	0.410	0.002	0.375	0.010	0.002	0.9	0.93	0	2.73	0.06	0.01
N260	136	1	Patch	2	1.94	2.53	0	6.17	0.01	0.02	0.314	0.000	0.410	0.003	0.003	0.88	1.46	0	2.9	0.01	0.02
N260	137	1	Patch	2	3.45	2.42	0.01	8.26	0.05	0.01	0.418	0.001	0.293	0.006	0.001	1.22	1.05	0	3.28	0.05	0.01
N260	142	1	Patch	2	2.05	2.04	0	6.62	0.06	0.01	0.400	0.000	0.308	0.009	0.002	0.89	0.81	0	2.82	0.06	0.01
N260	143	1	Patch	2	2.32	2.05	0.01	5.89	0.03	0.04	0.394	0.002	0.348	0.005	0.007	0.95	0.82	0	2.85	0.03	0.03
N260	144	1	Patch	2	2.05	2.68	0.01	7.15	0.04	0.02	0.287	0.001	0.375	0.006	0.003	0.69	1.08	0	2.83	0.03	0.01
N260	148	1	Patch	4	4.64	4.87	0.01	12.23	0.1	0.01	0.377	0.001	0.396	0.008	0.001	1.65	2.09	0	5.93	0.1	0.01
N260	149	1	Patch	4	5.21	3.65	0.01	10.84	0.15	0.02	0.481	0.001	0.337	0.014	0.002	2.15	1.66	0	5.17	0.15	0.02
N260	150	1	Patch	4	2.61	4.16	0.01	8.21	0.02	0.07	0.318	0.001	0.507	0.002	0.009	1.23	2.04	0	4.27	0.02	0.07
N260	151	1	Patch	4	5.1	4.56	0.01	12.27	0.01	0.04	0.416	0.001	0.372	0.003	0.003	2.42	2.05	0	6.34	0.01	0.03
N260	152	1	Patch	4	4.25	4.72	0.01	12.35	0.08	0.01	0.344	0.001	0.382	0.006	0.001	1.74	2.01	0	5.47	0.07	0.01
N260	158	1	Patch	4	4.9	5.06	0.01	12.38	0.13	0.01	0.396	0.001	0.409	0.011	0.001	1.94	2.26	0	6.12	0.12	0.01
N260	159	1	Patch	4	4.14	3.14	0.02	8.93	0.11	0.02	0.464	0.002	0.352	0.012	0.002	1.56	1.49	0	4.08	0.11	0.02
N260	160	1	Patch	4	4.64	4.88	0.01	11.11	0.02	0.06	0.418	0.001	0.439	0.002	0.005	2.3	2.4	0	6.07	0.02	0.05
N260	161	1	Patch	4	4.43	4.43	0.01	12.32	0.05	0.02	0.360	0.001	0.360	0.004	0.002	1.94	1.71	0	5.24	0.04	0.01

- QTM1 N260 High channel MIMO

								Max Ratio								Max Ratio						
								0.487	0.002	0.502	0.015	0.009				0.216	0.243	0.001	0.557	0.015	0.008	
N260	128	0	1	Patch	2	3.63	3.75	0.01	7.57	0.04	0.02	0.480	0.001	0.495	0.005	0.003	1.22	1.290	0	3.560	0.04	0.020
N260	130	2	1	Patch	2	3.29	3.61	0.01	7.38	0.04	0.02	0.446	0.001	0.489	0.005	0.003	1.05	1.250	0	3.560	0.04	0.010
N260	134	6	1	Patch	4	6.13	4.4	0.01	13.27	0.11	0.04	0.462	0.001	0.332	0.008	0.003	2.34	1.590	0.01	6.650	0.030	0.0734
N260	135	7	1	Patch	4	5.97	4.71	0.02	12.26	0.18	0.02	0.487	0.002	0.384	0.015	0.002	2.35	2.100	0.01	6.060	0.18	0.020
N260	136	8	1	Patch	4	6.73	7.44	0.02	14.82	0.04	0.05	0.454	0.001	0.502	0.003	0.003	3.04	3.480	0.01	7.100	0.040	0.050
N260	137	9	1	Patch	4	7.66	7.44	0.02	17.85	0.09	0.03	0.429	0.001	0.417	0.005	0.002	2.7	2.770	0.01	7.670	0.08	0.030
N260	142	14	1	Patch	4	6.25	5.09	0.01	15.65	0.14	0.02	0.399	0.001	0.325	0.009	0.001	2.78	2.190	0.01	7.180	0.13	0.020
N260	143	15	1	Patch	4	7.07	4.99	0.01	14.7	0.05	0.09	0.481	0.001	0.339	0.003	0.006	2.86	2.200	0.01	6.750	0.050	0.080
N260	144	16	1	Patch	4	5.33	6.37	0.03	15.24	0.11	0.05	0.350	0.001	0.418	0.007	0.003	1.94	2.740	0.01	6.110	0.1	0.050
N260	148	20	1	Patch	8	9.76	10.94	0.02	26.42	0.21	0.05	0.369	0.001	0.414	0.008	0.002	4.3	4.750	0.02	12.720	0.2	0.050
N260	149	21	1	Patch	8	10.3	11	0.03	25.6	0.1	0.37	0.402	0.001	0.430	0.014	0.002	4.65	5.320	0.03	13.540	0.36	0.040
N260	150	22	1	Patch	8	9.38	9.65	0.04	22.67	0.06	0.05	0.414	0.002	0.426	0.003	0.007	4.37	4.680	0.03	11.510	0.05	0.130
N260	151	23	1	Patch	8	10.56	11.44	0.03	26.79	0.04	0.14	0.394	0.001	0.427	0.001	0.005	5.05	5.500	0.02	13.660	0.04	0.120
N260	152	24	1	Patch	8	9.98	10.22	0.02	27.44	0.16	0.03	0.364	0.001	0.372	0.006	0.001	4.03	4.310	0.02	12.690	0.15	0.030
N260	158	30	1	Patch	8	10.22	11.37	0.03	25.53	0.37	0.05	0.400	0.001	0.445	0.014	0.002	4.44	5.400	0.05	13.370	0.34	0.040
N260	159	31	1	Patch	8	10.22	8.99	0.03	24	0.26	0.05	0.426	0.001	0.375	0.011	0.002	4.19	4.160	0.03	11.470	0.25	0.040
N260	160	32	1	Patch	8	10.53	11.61	0.02	24.54	0.06	0.02	0.429	0.001	0.473	0.002	0.009	5.29	5.960	0.02	13.680	0.05	0.190
N260	161	33	1	Patch	8	9.35	9.98	0.02	27.14	0.09	0.08	0.345	0.001	0.368	0.003	0.003	3.67	3.780	0.01	11.650	0.09	0.070

# 5 Power Density Characterization

## 5.1 PD design target

For Qualcomm SDX55/QTM525, the total device uncertainty for mmW radio is 2.1dB.

To account for the total design related uncertainty, PD\_design\_target needs to be:

$$PD_{design\_target} < PD_{regulatory\_limit} \times 10^{\frac{-total\ uncertainty}{10}}$$

With FCC 4cm2-averaged PD requirement of 10 W/m<sup>2</sup> and the declared 2.1 dB device design related uncertainty, the PD\_design\_target for the EUT is determined as:

$$PD_{design\_target} = 6 \text{ W/m}^2$$

## 5.2 Worst-case housing influence determination

For non-metal material, the material property cannot be accurately characterized at mmW frequencies to date. The estimated material property for the device housing is used in the simulation model, which could influence the accuracy in simulation for PD amplitude quantification. Since the housing influence on PD could vary from surface to surface where the EM field propagates through, the most underestimated surface is used to quantify the worst-case housing influence for conservative assessment.

Since the mmW antenna modules are placed at different location as shown in Figure 1-3, only material/housing surrounded has impact on EM field propagation, in turn impact on power density. Therefore, only adjacent surfaces for each QTM (as listed in Table 3-2 ) were used to evaluate the worst-case housing influence for each frequency band. For this EUT, when comparing a simulated 4cm2-averaged PD and measured 4 cm2-avergerated PD, the worst error introduced for each antenna module operating at each band when using the estimated material property in the simulation is highlighted yellow in Table 3-2. Thus, the worst-case housing influence, denoted as  $\Delta min = Sim.PD - Meas.PD$ , is determined as:

**Table 5-1:  $\Delta min$  for QTM0 and QTM1**

Band	QTM	$\Delta min$ (dB)
N261	0	0.7
	1	2.2
N260	0	0.2
	1	1.2

$\Delta min$  represents the worst case where RF exposure is underestimated the most in simulation when using the estimated material property for glass/plastics of the housing. For conservative

assessment, the  $\Delta_{min}$  is used as the worst-case factor and applied to all the beams in the corresponding beam group to determine input power limits in PD char for compliance.

## 5.3 PD Char of the EUT

This section describes the PD Char generation that complies with the PD\_design\_target determined in Section 5.1 and is in compliance with the regulatory power density limit.

### 5.3.1 Scaling factor for SISO beams

Determine scaling factor for low, mid, high channel,  $s(i)_{low\_or\_mid\_or\_high}$  by:

$$s(i)_{low\_or\_mid\_or\_high} = \frac{PD \text{ design target}}{\text{sim.PD}_{surface(i)}}, i \in SISO \text{ beams}$$

Then finalize scaling factor,  $s(i)$ , by using equation below:

$$s(i) = \min\{slow(i), smid(i), shigh(i)\}, i \in SISO \text{ beams}$$

and this scaling factor,  $s(i)$ , is applied to the input power at each antenna port to determine *input.power.limit* for SISO beams.

### 5.3.2 Scaling factor for MIMO beams

The relative phase between beam pair is not controlled in the EUT and could vary from run to run. Therefore, for beam pair, based on the simulation results, the worst-case scaling factor needs to be determined mathematically to ensure the compliance.

For beam pair, extract the E-fields and H-fields from the corresponding single beams at low, mid and high channel for each supported band and for all identified surfaces of the EUT.

For a given beam pair containing *beam\_a* and *beam\_b*, and for a given channel, let relative phase between *beam\_a* and *beam\_b* =  $\emptyset$ , and the total PD of the beam pair can be expressed as:

$$\begin{aligned} \text{total PD } (\emptyset) &= \frac{1}{2} \sqrt{Re\{PD_x(\emptyset)\}^2 + Re\{PD_y(\emptyset)\}^2 + Re\{PD_z(\emptyset)\}^2} \\ &= \frac{1}{2} Re \left\{ \left( \overrightarrow{E_a} + \overrightarrow{E_b e^{j\omega\emptyset}} \right) \times \left( \overrightarrow{H_a} + \overrightarrow{H_b e^{j\omega\emptyset}} \right)^* \right\} \quad (4) \end{aligned}$$

where,  $PD_x(\emptyset)$ ,  $PD_y(\emptyset)$  and  $PD_z(\emptyset)$  are the three components of the *total PD* ( $\emptyset$ );  $E_a$  and  $H_a$  are the extracted E-fields and H-fields of *beam\_a*, while  $E_b$  and  $H_b$  are the extracted E-fields and H-fields of *beam\_b*. Sweep  $\emptyset$  with a  $5^\circ$  step from  $0^\circ$  to  $360^\circ$  to determine the worst-case,  $\emptyset_{worstcase}$ , which results in the highest *total PD* ( $\emptyset$ ) among all identified surfaces for this MIMO beam at this channel.

Follow the above procedure to determine  $\emptyset_{worstcase}$  for all three channels of all bands supported, and obtain the scaling factor given by the below equation for low, mid and high channels:

$$s(i)_{low\_or\_mid\_or\_high} = \frac{PD \text{ design target}}{\text{total PD } (\emptyset(i)_{worstcase})}, i \in MIMO \text{ beams}$$

Similar to SISO beam, the worst-case scaling factor,  $s(i)$ , for MIMO beam  $i$  is determined as:

$$s(i) = \min\{slow(i), smid(i), shigh(i)\}, i \in MIMO \text{ beams}$$

and this scaling factor,  $s(i)$ , is applied to the input power at each antenna port to determine  $input.power.limit$  for MIMO beams.

### 5.3.3 Input power limit when only mmW radio is ON

When only mmW radio is on, the power limit specifies the power level (denoted as  $input.power.limit$ ) at antenna port that corresponds to PD\_design\_target for all the beams. The reference power used in simulation is 6dBm and denoted as  $Pref$ .

The logic to determine  $input.power.limit$  is as shown below:

**If** -TxAGC uncertainty at reference power level  $< \Delta min <$  TxAGC uncertainty at reference power level, then

$$input.power.limit(i) = Pref + 10 * \log(s(i)), i \in \text{all beams} \quad (1)$$

**else if**  $\Delta min <$  -TxAGC uncertainty at reference power level,

$$input.power.limit(i) = Pref + 10 * \log(s(i)) + (\Delta min + \text{TxAGC uncertainty at reference power level}), i \in \text{all beams} \quad (2)$$

**else if**  $\Delta min >$  TxAGC uncertainty at reference power level,

$$input.power.limit(i) = Pref + 10 * \log(s(i)) + (\Delta min - \text{TxAGC uncertainty at reference power level}), i \in \text{all beams} \quad (3)$$

Following above logic, the  $input.power.limit$  for this EUT can be calculated as:

**Table 5-2: power.limit calculation**

Band#	QTM #	$\Delta min$ (dB)	$input.power.limit$ (dBm)	Notes
N261	0	0.7	6dBm + 10log(s(i)) + (0.7-0.5)	Using Eq.3
	1	2.2	6dBm + 10log(s(i)) + (2.2-0.5)	Using Eq.3
N260	0	0.2	6dBm + 10log(s(i))	Using Eq.1
	1	1.2	6dBm + 10log(s(i)) + (1.2-0.5)	Using Eq.3

Note the  **$\Delta min$  (dB)** used is the minimum of Hpol and Vpol per QTM per band (see Table 3-2).

Resulted  $input.power.limit$  for all beams is listed in Table below:

Table 5-3: *input.power.limit*

N261			N260		
(Beam Pair)	Beam ID	input.power.limit	(Beam Pair)	Beam ID	input.power.limit
NA	0	9.04	NA	0	7.37
	1	8.12		1	7.04
	2	8.88		2	7.61
	3	6.72		3	6.28
	4	7		4	6.07
	5	7.16		5	7.33
	6	6.31		6	4.89
	7	6.62		7	6.03
	8	7.18		8	4.93
	9	4.99		9	4.75
	10	4.62		10	3.62
	11	3.83		11	3.22
	12	4.16		12	4.1
	13	6.25		13	3.33
	14	5.62		14	4.85
	15	6.56		15	4.81
	16	4		16	4.24
	17	3.62		17	3.69
	18	4.08		18	4.52
	19	4.01		19	3.54
	20	3.1		20	2.54
	21	3.11		21	2.58
	22	3.47		22	3.22
	23	5.28		23	2.6
	24	3.1		24	2.49
	25	1.65		25	1.24
	26	1.33		26	1.63
	27	1.38		27	2.66
	28	1.91		28	1.46
	29	3.47		29	1.05
	30	3.06		30	2.51
	31	3.23		31	3.46
	32	4.1		32	2.61
	33	2.29		33	2.56
	34	1.36		34	1.27
	35	1.43		35	2.21
	36	1.49		36	2.13
	128	9.09		37	1.19
	129	7.67		128	7.9
	130	9.33		129	6.66
	131	7.2		130	8.1
	132	7.22		131	6.49
	133	7.03		132	6.99
	134	6.02		133	7.86
	135	5.88		134	4.75
	136	7.1		135	5.41
	137	5.24		136	5.67
	138	4.67		137	4.72
	139	4.01		138	3.62
	140	5.09		139	4.16
	141	6.6		140	4.19
	142	5.94		141	3.56
	143	6.25		142	5.03
	144	4.29		143	5.58
	145	4.18		144	5.2
	146	4.15		145	4.23
	147	4.87		146	4.33
	148	3.55		147	4.29
	149	3.54		148	2.74
	150	3.76		149	3.04
	151	4.48		150	3.69
	152	2.73		151	2.84
	153	2.04		152	2.76
	154	1.5		153	1.66
	155	1.35		154	1.93
	156	2.42		155	2.53
	157	4.05		156	1.64
	158	3.38		157	1.46
	159	3.81		158	2.72
	160	3.94		159	3.81
	161	2.37		160	2.92
	162	1.73		161	2.76
	163	1.45		162	1.65
	164	1.74		163	2.33
				164	1.99
				165	1.59

N261			N260		
(Beam Pair)	Beam ID	input.power.limit	(Beam Pair)	Beam ID	input.power.limit
129	1	4.45	129	1	3.71
131	3	3.68	131	3	3.19
132	4	3.84	132	4	3.29
137	9	1.68	133	5	4.23
138	10	1.41	138	10	1.2
139	11	0.72	139	11	0.49
140	12	1.9	140	12	0.98
144	16	0.93	141	13	1.09
145	17	0.84	145	17	1.53
146	18	0.77	146	18	1.39
152	24	-1.12	147	19	1.52
153	25	-1.3	153	25	-1.92
154	26	-1.87	154	26	-1.55
155	27	-2.04	155	27	-1.16
156	28	-1.25	156	28	-1.82
161	33	-1.18	157	29	-2.09
162	34	-1.84	162	34	-1.95
163	35	-1.85	163	35	-1.37
164	36	-1.58	164	36	-1.45
128	0	5.81	165	37	-1.87
130	2	5.87	128	0	4.27
133	5	3.71	130	2	4.47
134	6	2.76	134	6	2.52
135	7	3.1	135	7	2.71
136	8	3.81	136	8	1.8
141	13	3.02	137	9	1.35
142	14	2.6	142	14	1.78
143	15	3.25	143	15	2.13
147	19	0.92	144	16	1.59
148	20	-0.19	148	20	-0.69
149	21	-0.13	149	21	-0.26
150	22	0.31	150	22	0.28
151	23	0.99	151	23	-0.62
157	29	0.64	152	24	-0.78
158	30	-0.25	158	30	-0.58
159	31	-0.01	159	31	0.04
160	32	0.75	160	32	-0.49
			161	33	-0.69

### 5.3.4 Further limitation and power backoff consideration

This EUT will use the Legacy power backoff solution to limit mmW transmit power from all the beams. The mechanism in legacy power backoff solution can only control the transmit power per QTM per band per SISO or MIMO beam, therefore, in order to ensure compliance all times, for each band, the minimum of input.power.limit out of all SISO beams and minimum of input.power.limit out of all MIMO beams needs to be determined and applied via legacy backoff solution accordingly.

The minimum power limit, min.power.limit, is determined based on Table 5-3 and listed in Table 5-4. Note the min.power.limit data rounded to one decimal place.

**Table 5-4: SISO and MIMO min.power.limit for each band**

N261	min.power.limit
min input.power.limit out of all SISO beams from QTM0 (dBm)	1.3
min input.power.limit out of all MIMO beams from QTM0 (dBm)	-2.0
min input.power.limit out of all SISO beams from QTM1 (dBm)	3.1
min input.power.limit out of all MIMO beams from QTM1 (dBm)	-0.3
N260	min.power.limit
min input.power.limit out of all SISO beams from QTM0 (dBm)	1.1
min input.power.limit out of all MIMO beams from QTM0 (dBm)	-2.1
min input.power.limit out of all SISO beams from QTM1 (dBm)	2.5
min input.power.limit out of all MIMO beams from QTM1 (dBm)	-0.8

Furthermore, the additional power backoff needs to be added in order to comply with TER requirement when mmW NR, LTE and WLAN MIMO transmit simultaneously. The maximum allowed PD budget is provided based on simultaneous transmission *reported* SAR in Part 1 report. For a given exposure scenario, if the maximum PD contribution ratio is higher than the corresponding maximum allowed PD budget, then the additional power backoff for TER requirement is determined using equation:

$$\text{additional power backoff (dB)} = 10 * \log \left( \frac{\text{maximum PD contribution ratio (in linear)}}{\text{maximum allowed PD budget (in linear)}} \right)$$

Examples for n261:

1. For head exposure, the maximum allowed PD budget is 0.44, the maximum PD contribution from left surface (QTM0) at 2mm to front surface at 2mm out of all SISO beams of QTM0 is 0.516, then the additional power backoff is 0.9dB ( $=10*\log(0.516/0.44)$ ) for all SISO beams of QTM0.
2. For hotspot exposure where SAR measured at 10mm separation distance from front surface, the maximum allowed PD budget is 0.72, the maximum PD contribution from left surface (QTM0) at 2mm to front surface at 10mm out of all SISO beams of QTM0 is 0.240, then no additional power backoff is needed.

Following the similar steps described in the above examples, all additional power backoff required for TER requirement is listed in Table 5-5.

**Table 5-5: Additional power backoff required for TER requirement**

n261		SAR Test Distance (mm)	Max allowed PD budget (in linear)	max PD contribution ratio out of all SISO beams from QTMO (left)	max PD contribution ratio out of all MIMO beams from QTMO (left)	max PD contribution ratio out of all SISO beams from QTMI (right)	max PD contribution ratio out of all MIMO beams from QTMI(right)	dB			
RF Exposure Position								Additional backoff needed for QTMO SISO beams	Additional backoff needed for QTMO MIMO beams	Additional backoff needed for QTMI SISO beams	Additional backoff needed for QTMI MIMO beams
Head_worst-case (front)	0	0.44	0.516	0.505	0.546	0.551	0.7	0.6	0.9	0.9	
Flat phantom	Front	10	0.72	0.240	0.259	0.263	0.269	0.0	0.0	0.0	0.0
	Back		0.58	0.232	0.259	0.263	0.266	0.0	0.0	0.0	0.0
	Left		0.92	0.572	0.626	0.004	0.003	0.0	0.0	0.0	0.0
	Right		0.75	0.003	0.002	0.580	0.617	0.0	0.0	0.0	0.0
	Top		0.70	0.014	0.015	0.022	0.015	0.0	0.0	0.0	0.0
	Bottom		0.97	0.010	0.008	0.009	0.007	0.0	0.0	0.0	0.0
n260											
RF Exposure Position	SAR Test Distance (mm)	Max allowed PD budget (in linear)	max PD contribution ratio out of all SISO beams from QTMO (left)	max PD contribution ratio out of all MIMO beams from QTMO (left)	max PD contribution ratio out of all SISO beams from QTMI (right)	max PD contribution ratio out of all MIMO beams from QTMI(right)	Additional backoff needed for QTMO SISO beams	Additional backoff needed for QTMO MIMO beams	Additional backoff needed for QTMI SISO beams	Additional backoff needed for QTMI MIMO beams	
Head_worst-case	0	0.44	0.420	0.437	0.482	0.487	0.00	0.00	0.36	0.40	
Flat phantom	Front	10	0.72	0.211	0.208	0.233	0.240	0.00	0.00	0.00	0.00
	Back		0.58	0.262	0.248	0.248	0.247	0.00	0.00	0.00	0.00
	Left		0.92	0.580	0.606	0.002	0.002	0.00	0.00	0.00	0.00
	Right		0.75	0.001	0.001	0.580	0.600	0.00	0.00	0.00	0.00
	Top		0.70	0.013	0.015	0.014	0.015	0.00	0.00	0.00	0.00
	Bottom		0.97	0.008	0.008	0.009	0.008	0.00	0.00	0.00	0.00

### 5.3.5 PD char

Based on Table 5-4 and Table 5-5, the PD char for compliance via legacy power backoff solution can be finalized listed as Table 5-6 and will be implemented in production units.

**Table 5-6: Final PD Char**

n261		
QTM/beam type	additional backoff (dB) for TER	Final input.power.limit
QTMO SISO beam	0.7	0.7
QTMO MIMO beam	0.6	-2.6
QTMI SISO beam	0.9	2.2
QTMI MIMO beam	0.9	-1.2

n260		
QTM/beam type	additional backoff (dB) for TER	Final input.power.limit
QTMO SISO beam	0	0.7
QTMO MIMO beam	0	-2.4
QTMI SISO beam	0.36	2.1
QTMI MIMO beam	0.4	-1.2