

FCC ID: A3LSMX828U

Power Density Simulation Report

August 5, 2024

SAMSUNG ELECTRONICS

1. Simulation methodology for Power Density (PD)

1.1 Simulation tool

1.1.1 Tool description

For the simulation approach to calculating power density (PD) evaluation for mobile phone with mmWave antenna modules, ANSYS Electromagnetics suite version 2023.R1 (HFSS) is used. ANSYS HFSS is one of several commercial tools for 3D full-wave electromagnetic simulation used for antenna and RF structure design of high frequency component. ANSYS Electromagnetics suite version 2023.R1 (HFSS) is implemented based on Finite Element Method (FEM), which operates in the frequency domain.

1.1.2 Mesh and Convergence criteria

To solve the PD analysis using FEM, volume area containing simulated objects should be subdivided into electrically small parts that are called finite elements as the unknown functions. To subdivide system, the adaptive mesh technique in ANSYS Electromagnetics suite version 2023.R1 (HFSS) is used. ANSYS Electromagnetics suite version 2023.R1 (HFSS) starts to refine the initial mesh based on wavelength and calculate the error to iterative process for adaptive mesh refinement. The determination parameter of the number of iteration in ANSYS Electromagnetics suite version 2023.R1 (HFSS) is defined as convergence criteria, delta S, and the iterative adaptive mesh process repeats until the delta S is met. In ANSYS Electromagnetics suite version 2023.R1 (HFSS), the accuracy of converged results depends on the delta S. Figure 1 is an example of adaptive mesh of the device (cross-section of top view).

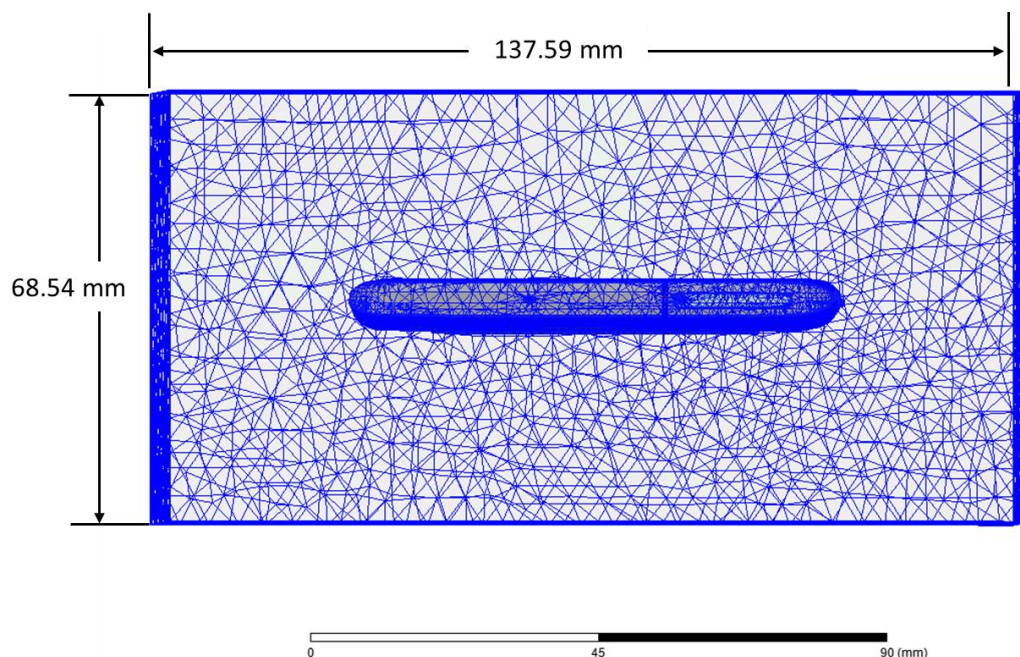


Figure 1 Example of the adaptive mesh technique (Top view)

1.1.3 Power density calculation

After solving 3D full-wave electromagnetic simulation, various kinds of physical quantities can be obtained. To calculate PD evaluation, two physical quantities, an electric field (\vec{E}) and a magnetic field (\vec{H}) are needed. The actual consumption power can be expressed as the real term of the Poynting vector (\vec{S}) from the cross product of \vec{E} and complex conjugation of \vec{H} as shown below:

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

$\langle \vec{S} \rangle$ can be expressed as point power density based on a peak value of each spatial point on mesh grids, and obtained directly from ANSYS Electromagnetics suite version 2023.R1 (HFSS).

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

$$PD_{av} = \frac{1}{A} \int_A \langle \vec{S} \rangle \cdot ds = \frac{1}{2A_{av}} \iint_{A_{av}} \| \text{Re}\{E \times H^*\} \| dA$$

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

1.2 Simulation setup

1.2.1 3D modeling

Figure 2 shows the simulation model which is mounted two mmWave antenna modules. The simulation modeling includes most of the entire structure of device itself such as PCB, metal frame, battery, cables, and legacy antennas as well as mmWave antenna modules called as Ant L and Ant K. The modeling contains the entire EUT to enable MediaTek TA 1.0, as well. Ant L is placed on the right side and antennas are facing the back side, and Ant K is placed on the right side and antennas are facing the front side of the device.

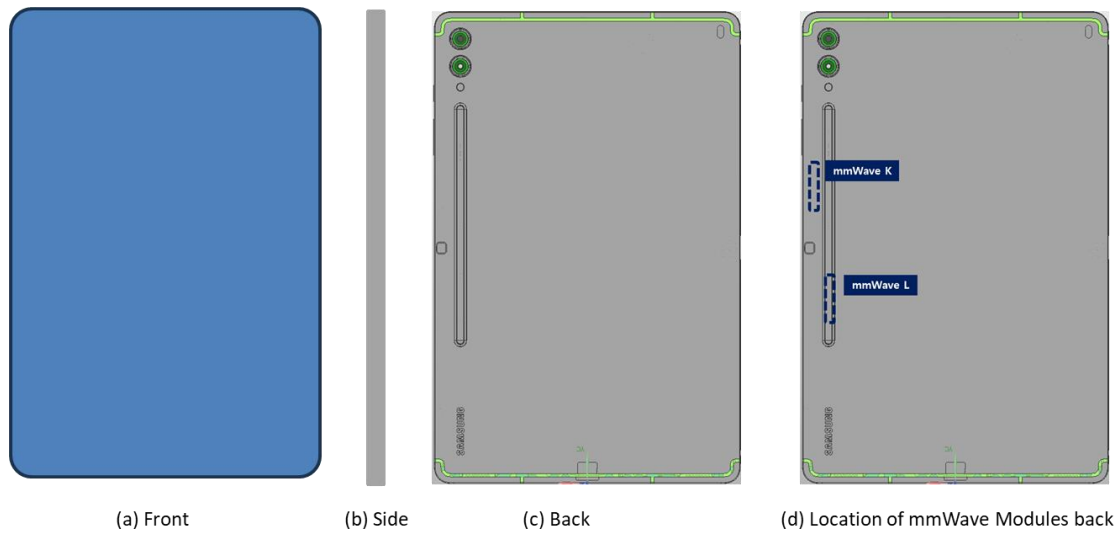


Figure 2 Simulation model which is mounted two mmWave antenna modules

1.2.2 PD evaluation planes

Table 1 shows the PD evaluation planes for each mmWave antenna module and Figure 3 shows the PD evaluation planes and truncation area of the simulation model to find worst case of beamforming cases.

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

Table 1. PD evaluation planes

Module	Front	Back	Left From Front View	Right From Front View	Top	Bottom
	S1	S2	S3	S4	S5	S6
Ant L	O	O	X	O	X	X
Ant K	O	O	X	O	X	X

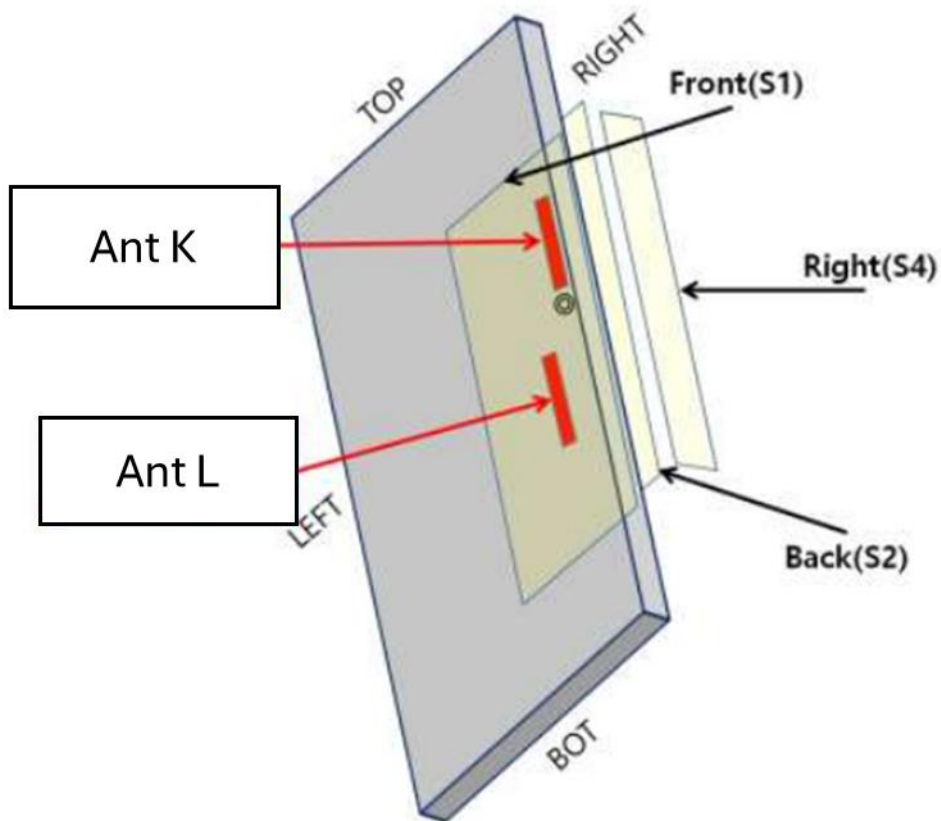


Figure 3. PD evaluation planes

1.2.3 Boundary condition

To simulate electromagnetic tool based on FEM, the boundary condition allows electromagnetic waves to be electrically open at the boundary and radiated far away without reflection. ANSYS Electromagnetics suite version 2023.R1 (HFSS) can support the absorbing boundary condition (ABC) for radiation boundary and make normally a quarter wave length from the radiating structure. In this report, to cover all beamforming cases of mmWave antenna modules 40 mm spacing from the device for each surfaces were adopted.

1.2.4 Source excitation condition

The number of antenna ports of Ant L and Ant K for source excitation are the same. The antenna port of Ant L and Ant K is divided into 8 ports for n261 and n258 1 x 4 patch array antennas, 8 ports for n260 1 x 4 patch array antennas. In the 8 ports included in each patch antenna, 4 ports are divided into vertical polarization feeding, and the other 4 ports are divided into horizontal polarization feeding.

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).

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 ΔS . 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 ΔS , and the ΔS generally sets 0.02. The simulation result of this report is the result of setting ΔS to 0.02.

2. Simulation verification

2.1 Spatial-averaged power density and $\text{sim.power}_{\text{limit}}$

As mentioned in the previous chapter, the Poynting vector (\vec{S}) can be obtained through cross product of an electric field (\vec{E}) and complex conjugate of a magnetic field (\vec{H}). The real term of the Poynting vector can be described as the point power density or peak power density. Using the point power density, the spatial-averaged power density can be obtained by the integral of 4 cm^2 at 2.5 mm intervals of the point power density result. Figure 4 shows examples of the distribution plot of point power density and the averaged power density.

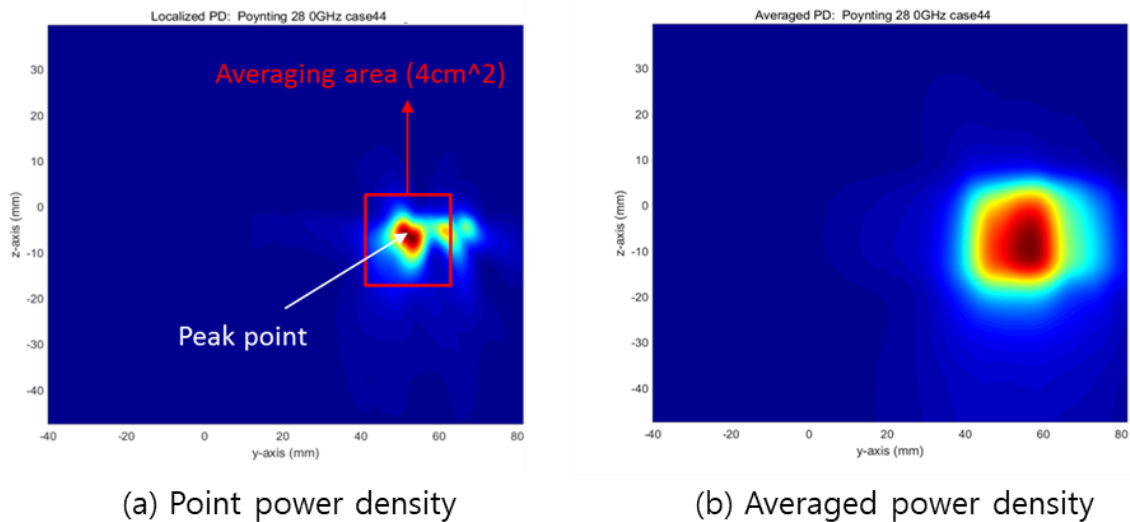


Figure 4. Power density distribution (Example)

2.2 Comparison between simulation, measurement

In this section, the simulated-power density distributions and measured-power density distributions are compared to each mmWave antenna.

Based on comparison of power density distributions, the power densities of simulated, and measured have a good correlation. The discrepancy in amplitude between the simulated 4cm² averaged power density and measured 4cm² averaged power density is considered as housing influence and used in determining input power limit for each beam for RF exposure compliance.

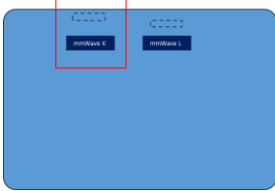
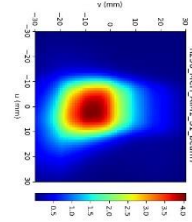
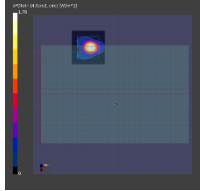

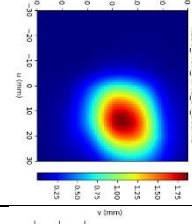
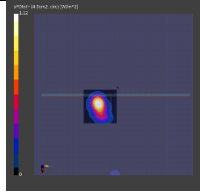
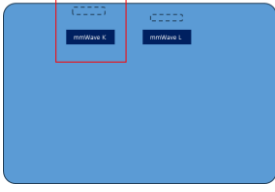
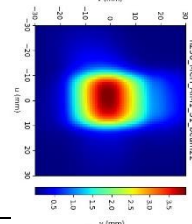
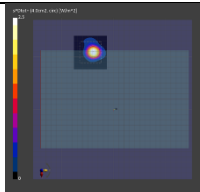

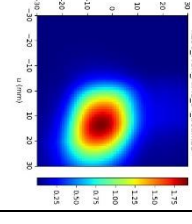
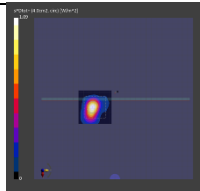
The input powers per each active port are listed below for both Simulation and Measurement validation and power density characterization. For Simulation, these values were entered directly into HFSS model. For measurement, FTM S/W was used to input these values for each active port also.

Mode/Band	Antenna	Input Power (dBm) SISO	Input Power (dBm) MIMO
5G NR n261	L Patch	0.0	0.0
	K Patch	0.0	0.0
5G NR n260	L Patch	0.0	0.0
	K Patch	0.0	0.0
5G NR n258	L Patch	0.0	0.0
	K Patch	0.0	0.0

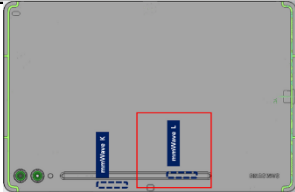
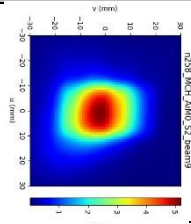
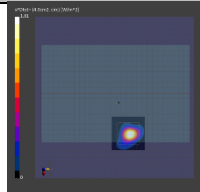
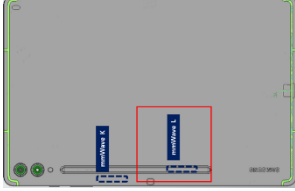
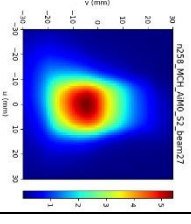
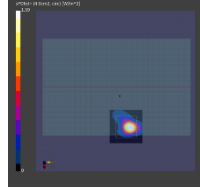
* The below simulation and measurement result were performed at 2mm evaluation distance and 28GHz / 38.5GHz / 24.8 GHz. The *input.power.limit* was determined based on below results.

Band	Channel	Module	Type(P or D)	Side	Beam ID	PLS	Sim. PD (mW/cm ²)	Meas. PD (mW/cm ²) * Circle Avg
n258	Mid Ch. 2025833 (24800.04 MHz)	K	Patch	Front	7(V-POL)	0	0.406	0.178
				Right	1(V-POL)		0.188	0.112
				Front	22(H-POL)		0.394	0.250
				Right	22(H-POL)		0.192	0.109
		L	Patch	Rear	9(V-POL)		0.519	0.182
				Rear	27(H-POL)		0.541	0.159
n261	Mid Ch. 2077915 (27924.96 MHz)	K	Patch	Front	11(V-POL)	0	0.415	0.188
				Right	11(V-POL)		0.198	0.092
				Front	27(H-POL)		0.438	0.128
				Right	21(H-POL)		0.185	0.099
		L	Patch	Rear	11(V-POL)		0.399	0.234
				Rear	16(H-POL)		0.395	0.272
n260	Mid Ch. 2254165 (38499.96 MHz)	K	Patch	Front	12(V-POL)	0	0.360	0.226
				Right	7(V-POL)		0.235	0.090
				Front	25(H-POL)		0.384	0.151
				Right	27(H-POL)		0.254	0.100
		L	Patch	Rear	3(V-POL)		0.399	0.232
				Rear	26(H-POL)		0.413	0.227


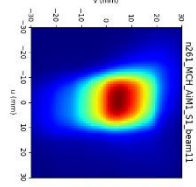
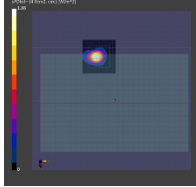

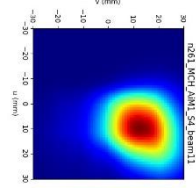
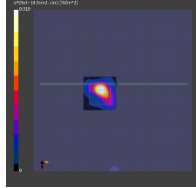

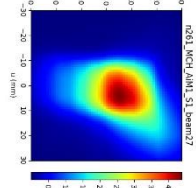
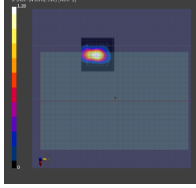

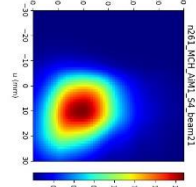
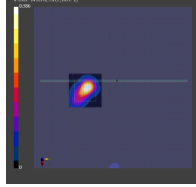
n258 ANT K-Patch

Beam	Surface	View	Simulated PD	Measured PD
7	Front			
1	Right			
22	Front			
22	Right			

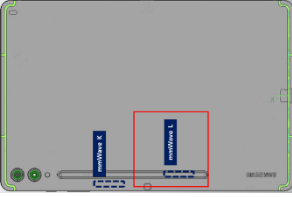
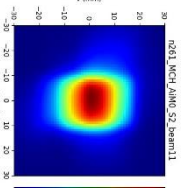
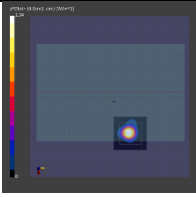
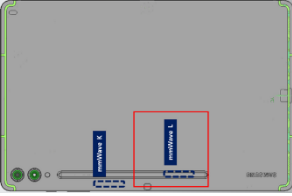
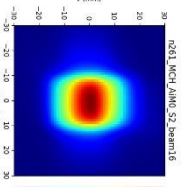
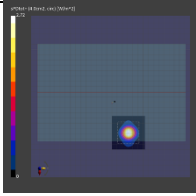
n258 ANT L-Patch

Beam	Surface	View	Simulated PD	Measured PD
9	Rear			
27	Rear			

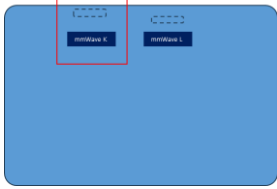
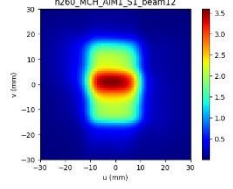
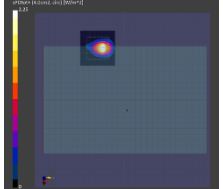
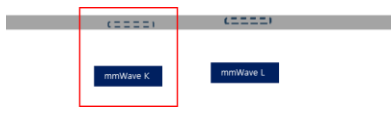
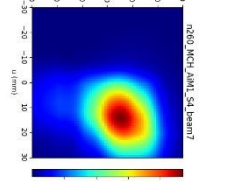
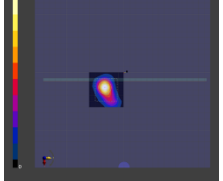

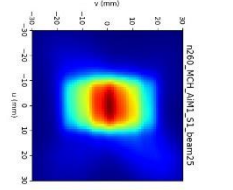
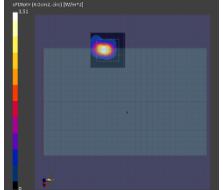

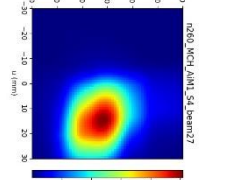
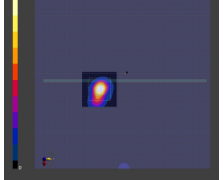
n261 ANT K-Patch

Beam	Surface	View	Simulated PD	Measured PD
11	Front			
11	Right			
27	Front			
21	Right			

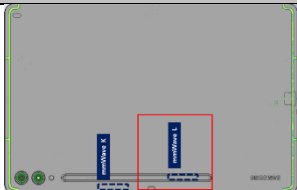
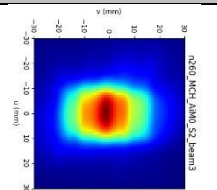
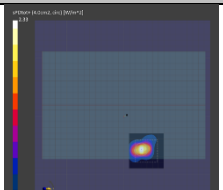
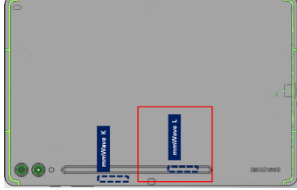
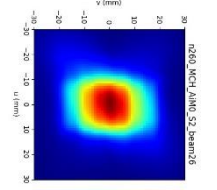
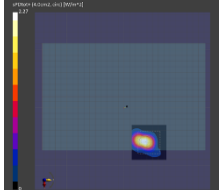
n261 ANT L-Patch

Beam	Surface	View	Simulated PD	Measured PD
11	Rear			
16	Rear			

n260 ANT K-Patch

Beam	Surface	View	Simulated PD	Measured PD
12	Front			
7	Right			
25	Front			
27	Right			

n260 ANT L-Patch

Beam	Surface	View	Simulated PD	Measured PD
3	Rear			
26	Rear			

3. Simulations Results

This section shows the PD simulation results of Ant L and Ant K at 28GHz, 39GHz and 24GHz for each evaluation plane specified in Table 1. The worst case for each beam and plane are reported in this section to support RF exposure analysis for simultaneous transmission scenarios performed in the Part 1 Near Field PD report.

The worst-case simulated PD determined from the tables in this section were used for conservativeness in *input.power.limit* determination in RF Exposure Part 0 Report.

Table 2. PD of Ant L and Ant K – patch antenna n258 Low Ch

PD Simulation										
Module	Type(P or D)	Beam ID_1	POL	Feed no	4cm2 PD(mW/cm2)					Max
					S4(Right)	S3(Left)	S5(Top)	S1(Front)	S2(Rear)	
Back L	Patch	0	V	4	0.07	0.00	0.00	0.01	0.44	0.44
		1	V	4	0.09	0.00	0.00	0.01	0.48	0.48
		2	V	4	0.06	0.00	0.00	0.01	0.42	0.42
		3	V	4	0.07	0.00	0.00	0.01	0.41	0.41
		4	V	4	0.08	0.00	0.00	0.01	0.45	0.45
		5	V	4	0.03	0.00	0.00	0.01	0.41	0.41
		6	V	4	0.05	0.00	0.00	0.01	0.43	0.43
		7	V	4	0.02	0.00	0.00	0.01	0.35	0.35
		8	V	4	0.05	0.00	0.00	0.00	0.50	0.50
		9	V	4	0.09	0.00	0.00	0.01	0.54	0.54
		10	V	4	0.04	0.00	0.00	0.01	0.44	0.44
		11	V	4	0.07	0.00	0.00	0.01	0.54	0.54
		12	V	4	0.05	0.00	0.00	0.01	0.44	0.44
		13	V	4	0.02	0.00	0.00	0.01	0.38	0.38
		14	V	4	0.05	0.00	0.00	0.01	0.50	0.50
		15	V	4	0.05	0.00	0.00	0.01	0.48	0.48
		16	H	4	0.06	0.00	0.00	0.01	0.42	0.42
		17	H	4	0.07	0.00	0.00	0.01	0.47	0.47
		18	H	4	0.07	0.00	0.00	0.01	0.42	0.42
		19	H	4	0.07	0.00	0.00	0.01	0.42	0.42
		20	H	4	0.07	0.00	0.00	0.01	0.45	0.45
		21	H	4	0.03	0.00	0.00	0.01	0.38	0.38
		22	H	4	0.06	0.00	0.00	0.01	0.42	0.42
		23	H	4	0.02	0.00	0.00	0.01	0.37	0.37
		24	H	4	0.08	0.00	0.00	0.01	0.50	0.50
		25	H	4	0.05	0.00	0.00	0.01	0.52	0.52
		26	H	4	0.04	0.00	0.00	0.01	0.42	0.42
		27	H	4	0.05	0.00	0.00	0.00	0.54	0.54
		28	H	4	0.07	0.00	0.00	0.01	0.45	0.45
		29	H	4	0.03	0.00	0.00	0.01	0.36	0.36
		30	H	4	0.06	0.00	0.00	0.01	0.49	0.49
		31	H	4	0.05	0.00	0.00	0.01	0.48	0.48
		32	V+H	8	0.17	0.00	0.00	0.03	0.88	0.88
		33	V+H	8	0.22	0.00	0.00	0.03	0.98	0.98
		34	V+H	8	0.17	0.00	0.00	0.04	0.86	0.86
		35	V+H	8	0.19	0.00	0.00	0.03	0.87	0.87
		36	V+H	8	0.20	0.00	0.00	0.03	0.93	0.93
		37	V+H	8	0.10	0.00	0.00	0.02	0.89	0.89
		38	V+H	8	0.14	0.00	0.00	0.02	0.95	0.95
		39	V+H	8	0.06	0.00	0.00	0.02	0.77	0.77
		40	V+H	8	0.20	0.00	0.00	0.02	1.05	1.05
		41	V+H	8	0.22	0.00	0.00	0.02	1.14	1.14
		42	V+H	8	0.13	0.00	0.00	0.02	0.96	0.96
		43	V+H	8	0.20	0.00	0.00	0.02	1.20	1.20
		44	V+H	8	0.16	0.00	0.00	0.04	0.92	0.92
		45	V+H	8	0.08	0.00	0.00	0.03	0.87	0.87
		46	V+H	8	0.19	0.00	0.00	0.02	1.09	1.09
47	V+H	8	0.12	0.00	0.00	0.02	1.02	1.02		
Front K	Patch	0	V	4	0.17	0.00	0.00	0.38	0.01	0.38
		1	V	4	0.18	0.00	0.00	0.39	0.01	0.39
		2	V	4	0.14	0.00	0.00	0.37	0.01	0.37
		3	V	4	0.07	0.00	0.02	0.37	0.00	0.37
		4	V	4	0.09	0.00	0.00	0.35	0.00	0.35
		5	V	4	0.11	0.00	0.01	0.32	0.01	0.32
		6	V	4	0.15	0.00	0.00	0.38	0.01	0.38
		7	V	4	0.10	0.00	0.01	0.43	0.01	0.43
		8	V	4	0.15	0.00	0.00	0.36	0.02	0.36
		9	V	4	0.08	0.00	0.02	0.38	0.01	0.38
		10	V	4	0.05	0.00	0.02	0.29	0.00	0.29
		11	V	4	0.13	0.00	0.00	0.37	0.01	0.37
		12	V	4	0.18	0.00	0.00	0.39	0.02	0.39
		13	V	4	0.07	0.00	0.02	0.35	0.00	0.35
		14	V	4	0.07	0.00	0.02	0.30	0.01	0.30
		15	V	4	0.10	0.00	0.01	0.31	0.01	0.31
		16	H	4	0.16	0.00	0.00	0.37	0.01	0.37
		17	H	4	0.14	0.00	0.00	0.38	0.01	0.38
		18	H	4	0.12	0.00	0.00	0.35	0.01	0.35
		19	H	4	0.07	0.00	0.01	0.29	0.01	0.29
		20	H	4	0.13	0.00	0.00	0.33	0.01	0.33
		21	H	4	0.09	0.00	0.01	0.38	0.01	0.38
		22	H	4	0.19	0.00	0.00	0.39	0.02	0.39
		23	H	4	0.12	0.00	0.00	0.31	0.01	0.31
		24	H	4	0.12	0.00	0.00	0.37	0.01	0.37
		25	H	4	0.07	0.00	0.01	0.26	0.01	0.26
		26	H	4	0.06	0.00	0.01	0.30	0.00	0.30
		27	H	4	0.18	0.00	0.00	0.39	0.02	0.39
		28	H	4	0.14	0.00	0.00	0.38	0.01	0.38
		29	H	4	0.08	0.00	0.01	0.28	0.01	0.28
		30	H	4	0.06	0.00	0.01	0.34	0.00	0.34
		31	H	4	0.08	0.00	0.01	0.37	0.00	0.37
		32	V+H	8	0.35	0.00	0.00	0.81	0.03	0.81
		33	V+H	8	0.39	0.00	0.00	0.90	0.03	0.90
		34	V+H	8	0.30	0.00	0.00	0.81	0.03	0.81
		35	V+H	8	0.24	0.00	0.06	1.00	0.02	1.00
		36	V+H	8	0.37	0.00	0.01	0.96	0.03	0.96
		37	V+H	8	0.34	0.00	0.02	1.07	0.03	1.07
		38	V+H	8	0.42	0.00	0.00	0.93	0.04	0.93
		39	V+H	8	0.41	0.00	0.03	1.15	0.04	1.15
		40	V+H	8	0.40	0.00	0.00	1.01	0.03	1.01
		41	V+H	8	0.28	0.00	0.05	1.02	0.02	1.02
		42	V+H	8	0.19	0.00	0.05	0.87	0.01	0.87
		43	V+H	8	0.40	0.00	0.00	0.96	0.03	0.96
		44	V+H	8	0.41	0.00	0.00	0.94	0.03	0.94
		45	V+H	8	0.28	0.00	0.04	0.94	0.03	0.94
		46	V+H	8	0.22	0.00	0.05	0.97	0.01	0.97
47	V+H	8	0.30	0.00	0.04	1.04	0.02	1.04		

Table 3. PD of Ant L and Ant K – patch antenna n258 Mid Ch

Module	Type(P or D)	PD Simulation									
		Beam ID_1	Bema ID_2	Feed no.	4cm2 PD(mW/cm2)						Max
					S4(Right)	S3(Left)	S5(Top)	S6(Bottom)	S1(Front)	S2(Rear)	
Back L	Patch	0	V	4	0.06	0.00	0.00	0.00	0.01	0.40	0.40
		1	V	4	0.09	0.00	0.00	0.00	0.01	0.45	0.45
		2	V	4	0.05	0.00	0.00	0.00	0.01	0.39	0.39
		3	V	4	0.07	0.00	0.00	0.00	0.01	0.38	0.38
		4	V	4	0.07	0.00	0.00	0.00	0.01	0.42	0.42
		5	V	4	0.03	0.00	0.00	0.00	0.01	0.42	0.42
		6	V	4	0.05	0.00	0.00	0.00	0.01	0.42	0.42
		7	V	4	0.03	0.00	0.00	0.00	0.01	0.37	0.37
		8	V	4	0.05	0.00	0.00	0.00	0.01	0.47	0.47
		9	V	4	0.09	0.00	0.00	0.00	0.01	0.52	0.52
		10	V	4	0.03	0.00	0.00	0.00	0.01	0.43	0.43
		11	V	4	0.08	0.00	0.00	0.00	0.01	0.51	0.51
		12	V	4	0.05	0.00	0.00	0.00	0.01	0.42	0.42
		13	V	4	0.02	0.00	0.00	0.00	0.01	0.39	0.39
		14	V	4	0.04	0.00	0.00	0.00	0.00	0.49	0.49
		15	V	4	0.05	0.00	0.00	0.00	0.01	0.46	0.46
		16	H	4	0.06	0.00	0.00	0.00	0.01	0.40	0.40
		17	H	4	0.07	0.00	0.00	0.00	0.01	0.44	0.44
		18	H	4	0.06	0.00	0.00	0.00	0.01	0.41	0.41
		19	H	4	0.06	0.00	0.00	0.00	0.01	0.40	0.40
		20	H	4	0.06	0.00	0.00	0.00	0.01	0.42	0.42
		21	H	4	0.03	0.00	0.00	0.01	0.01	0.39	0.39
		22	H	4	0.06	0.00	0.00	0.00	0.01	0.43	0.43
		23	H	4	0.02	0.00	0.00	0.01	0.01	0.39	0.39
		24	H	4	0.08	0.00	0.00	0.00	0.01	0.48	0.48
		25	H	4	0.05	0.00	0.00	0.00	0.00	0.51	0.51
		26	H	4	0.04	0.00	0.00	0.01	0.01	0.42	0.42
		27	H	4	0.05	0.00	0.00	0.00	0.00	0.54	0.54
		28	H	4	0.06	0.00	0.00	0.00	0.01	0.43	0.43
		29	H	4	0.03	0.00	0.00	0.01	0.01	0.37	0.37
		30	H	4	0.07	0.00	0.00	0.00	0.01	0.48	0.48
		31	H	4	0.05	0.00	0.00	0.00	0.01	0.46	0.46
		32	V+H	8	0.14	0.00	0.00	0.00	0.05	0.85	0.85
		33	V+H	8	0.20	0.00	0.00	0.00	0.04	0.93	0.93
		34	V+H	8	0.13	0.00	0.00	0.00	0.04	0.84	0.84
		35	V+H	8	0.15	0.00	0.00	0.00	0.05	0.83	0.83
		36	V+H	8	0.17	0.00	0.00	0.00	0.04	0.87	0.87
		37	V+H	8	0.10	0.00	0.00	0.02	0.03	0.95	0.95
		38	V+H	8	0.13	0.00	0.00	0.00	0.03	0.99	0.99
		39	V+H	8	0.08	0.00	0.00	0.02	0.03	0.82	0.82
		40	V+H	8	0.19	0.00	0.00	0.00	0.03	1.00	1.00
		41	V+H	8	0.22	0.00	0.00	0.00	0.02	1.13	1.13
		42	V+H	8	0.13	0.00	0.00	0.02	0.03	0.99	0.99
		43	V+H	8	0.21	0.00	0.00	0.01	0.02	1.19	1.19
		44	V+H	8	0.15	0.00	0.00	0.00	0.04	0.88	0.88
		45	V+H	8	0.08	0.00	0.00	0.02	0.03	0.89	0.89
		46	V+H	8	0.18	0.00	0.00	0.01	0.02	1.08	1.08
47	V+H	8	0.11	0.00	0.00	0.00	0.04	0.96	0.96		
Front K	Patch	0	V	4	0.17	0.00	0.00	0.00	0.39	0.01	0.39
		1	V	4	0.19	0.00	0.00	0.00	0.40	0.01	0.40
		2	V	4	0.14	0.00	0.00	0.00	0.37	0.01	0.37
		3	V	4	0.07	0.00	0.02	0.00	0.37	0.01	0.37
		4	V	4	0.10	0.00	0.00	0.00	0.35	0.01	0.35
		5	V	4	0.11	0.00	0.01	0.00	0.27	0.01	0.27
		6	V	4	0.15	0.00	0.00	0.00	0.40	0.01	0.40
		7	V	4	0.09	0.00	0.01	0.00	0.41	0.01	0.41
		8	V	4	0.15	0.00	0.00	0.00	0.34	0.02	0.34
		9	V	4	0.07	0.00	0.02	0.00	0.37	0.01	0.37
		10	V	4	0.06	0.00	0.02	0.00	0.31	0.01	0.31
		11	V	4	0.14	0.00	0.00	0.00	0.40	0.01	0.40
		12	V	4	0.18	0.00	0.00	0.00	0.39	0.02	0.39
		13	V	4	0.07	0.00	0.01	0.00	0.34	0.01	0.34
		14	V	4	0.07	0.00	0.02	0.00	0.32	0.01	0.32
		15	V	4	0.10	0.00	0.01	0.00	0.29	0.01	0.29
		16	H	4	0.17	0.00	0.00	0.00	0.39	0.01	0.39
		17	H	4	0.15	0.00	0.00	0.00	0.38	0.01	0.38
		18	H	4	0.13	0.00	0.00	0.00	0.36	0.01	0.36
		19	H	4	0.08	0.00	0.01	0.00	0.30	0.01	0.30
		20	H	4	0.15	0.00	0.00	0.00	0.35	0.02	0.35
		21	H	4	0.09	0.00	0.01	0.00	0.38	0.01	0.38
		22	H	4	0.19	0.00	0.00	0.00	0.39	0.02	0.39
		23	H	4	0.15	0.00	0.00	0.00	0.33	0.02	0.33
		24	H	4	0.11	0.00	0.00	0.00	0.37	0.01	0.37
		25	H	4	0.09	0.00	0.01	0.00	0.28	0.01	0.28
		26	H	4	0.06	0.00	0.01	0.00	0.32	0.01	0.32
		27	H	4	0.18	0.00	0.00	0.00	0.39	0.02	0.39
		28	H	4	0.14	0.00	0.00	0.00	0.38	0.01	0.38
		29	H	4	0.09	0.00	0.01	0.00	0.31	0.01	0.31
		30	H	4	0.07	0.00	0.01	0.00	0.35	0.00	0.35
		31	H	4	0.08	0.00	0.01	0.00	0.38	0.00	0.38
		32	V+H	8	0.37	0.00	0.00	0.00	0.86	0.03	0.86
		33	V+H	8	0.41	0.00	0.00	0.00	0.94	0.03	0.94
		34	V+H	8	0.31	0.00	0.00	0.00	0.85	0.02	0.85
		35	V+H	8	0.26	0.00	0.06	0.01	1.06	0.02	1.06
		36	V+H	8	0.38	0.00	0.00	0.00	0.98	0.03	0.98
		37	V+H	8	0.35	0.00	0.03	0.01	1.03	0.03	1.03
		38	V+H	8	0.44	0.00	0.00	0.00	0.95	0.04	0.95
		39	V+H	8	0.42	0.00	0.03	0.00	1.17	0.04	1.17
		40	V+H	8	0.40	0.00	0.00	0.00	1.01	0.03	1.01
		41	V+H	8	0.30	0.00	0.05	0.01	1.05	0.03	1.05
		42	V+H	8	0.21	0.00	0.05	0.01	0.85	0.02	0.85
		43	V+H	8	0.41	0.00	0.00	0.00	0.98	0.04	0.98
		44	V+H	8	0.43	0.00	0.00	0.00	0.97	0.03	0.97
		45	V+H	8	0.29	0.00	0.04	0.00	0.96	0.03	0.96
		46	V+H	8	0.24	0.00	0.05	0.01	0.93	0.02	0.93
47	V+H	8	0.32	0.00	0.04	0.01	1.01	0.03	1.01		

Table 4. PD of Ant L and Ant K – patch antenna n258 High Ch

PD Simulation												
Module	Type(P or D)	Beam ID_1	POL	Feed no.	4cm2 PD(mW/cm2)							Max
					S4(Right)	S3(Left)	S5(Top)	S6(Bottom)	S1(Front)	S2(Rear)		
Back L	Patch	0	V	4	0.06	0.00	0.00	0.00	0.02	0.38	0.38	
		1	V	4	0.08	0.00	0.00	0.00	0.01	0.43	0.43	
		2	V	4	0.05	0.00	0.00	0.00	0.01	0.38	0.38	
		3	V	4	0.06	0.00	0.00	0.00	0.02	0.35	0.35	
		4	V	4	0.07	0.00	0.00	0.00	0.01	0.39	0.39	
		5	V	4	0.03	0.00	0.00	0.01	0.01	0.40	0.40	
		6	V	4	0.05	0.00	0.00	0.00	0.01	0.42	0.42	
		7	V	4	0.02	0.00	0.00	0.01	0.02	0.35	0.35	
		8	V	4	0.05	0.00	0.00	0.00	0.01	0.44	0.44	
		9	V	4	0.08	0.00	0.00	0.00	0.00	0.50	0.50	
		10	V	4	0.03	0.00	0.00	0.01	0.01	0.41	0.41	
		11	V	4	0.07	0.00	0.00	0.00	0.01	0.50	0.50	
		12	V	4	0.05	0.00	0.00	0.00	0.01	0.40	0.40	
		13	V	4	0.02	0.00	0.00	0.01	0.01	0.37	0.37	
		14	V	4	0.04	0.00	0.00	0.00	0.01	0.45	0.45	
		15	V	4	0.05	0.00	0.00	0.00	0.01	0.43	0.43	
		16	H	4	0.05	0.00	0.00	0.00	0.02	0.38	0.38	
		17	H	4	0.06	0.00	0.00	0.00	0.01	0.42	0.42	
		18	H	4	0.05	0.00	0.00	0.00	0.01	0.38	0.38	
		19	H	4	0.05	0.00	0.00	0.00	0.01	0.37	0.37	
		20	H	4	0.06	0.00	0.00	0.00	0.01	0.39	0.39	
		21	H	4	0.03	0.00	0.00	0.01	0.01	0.39	0.39	
		22	H	4	0.06	0.00	0.00	0.00	0.01	0.42	0.42	
		23	H	4	0.02	0.00	0.00	0.01	0.01	0.39	0.39	
		24	H	4	0.07	0.00	0.00	0.00	0.01	0.45	0.45	
		25	H	4	0.05	0.00	0.00	0.00	0.00	0.49	0.49	
		26	H	4	0.04	0.00	0.00	0.00	0.01	0.41	0.41	
		27	H	4	0.05	0.00	0.00	0.00	0.01	0.52	0.52	
		28	H	4	0.05	0.00	0.00	0.00	0.01	0.40	0.40	
		29	H	4	0.03	0.00	0.00	0.01	0.01	0.37	0.37	
		30	H	4	0.06	0.00	0.00	0.00	0.01	0.45	0.45	
		31	H	4	0.04	0.00	0.00	0.00	0.01	0.43	0.43	
		32	V+H	8	0.13	0.00	0.00	0.00	0.06	0.87	0.87	
		33	V+H	8	0.18	0.00	0.00	0.00	0.04	0.93	0.93	
		34	V+H	8	0.12	0.00	0.00	0.00	0.05	0.85	0.85	
		35	V+H	8	0.14	0.00	0.00	0.00	0.06	0.85	0.85	
		36	V+H	8	0.15	0.00	0.00	0.00	0.05	0.89	0.89	
		37	V+H	8	0.09	0.00	0.00	0.02	0.04	0.93	0.93	
		38	V+H	8	0.12	0.00	0.00	0.00	0.04	0.95	0.95	
		39	V+H	8	0.07	0.00	0.00	0.02	0.05	0.81	0.81	
		40	V+H	8	0.17	0.00	0.00	0.00	0.04	0.97	0.97	
		41	V+H	8	0.20	0.00	0.00	0.00	0.01	1.09	1.09	
		42	V+H	8	0.13	0.00	0.00	0.02	0.04	0.97	0.97	
		43	V+H	8	0.20	0.00	0.00	0.01	0.03	1.13	1.13	
		44	V+H	8	0.13	0.00	0.00	0.00	0.04	0.88	0.88	
		45	V+H	8	0.08	0.00	0.00	0.02	0.05	0.86	0.86	
		46	V+H	8	0.18	0.00	0.00	0.01	0.03	1.05	1.05	
47	V+H	8	0.10	0.00	0.00	0.00	0.05	0.93	0.93			
Front K	Patch	0	v	4	0.17	0.00	0.00	0.00	0.38	0.01	0.38	
		1	v	4	0.18	0.00	0.00	0.00	0.39	0.01	0.39	
		2	v	4	0.14	0.00	0.00	0.00	0.36	0.01	0.36	
		3	v	4	0.05	0.00	0.02	0.00	0.34	0.00	0.34	
		4	v	4	0.09	0.00	0.00	0.00	0.36	0.01	0.36	
		5	v	4	0.13	0.00	0.01	0.00	0.29	0.02	0.29	
		6	v	4	0.15	0.00	0.00	0.00	0.41	0.01	0.41	
		7	v	4	0.08	0.00	0.01	0.00	0.41	0.01	0.41	
		8	v	4	0.16	0.00	0.00	0.00	0.34	0.02	0.34	
		9	v	4	0.06	0.00	0.02	0.00	0.36	0.01	0.36	
		10	v	4	0.06	0.00	0.02	0.00	0.31	0.01	0.31	
		11	v	4	0.14	0.00	0.00	0.00	0.40	0.01	0.40	
		12	v	4	0.18	0.00	0.00	0.00	0.37	0.01	0.37	
		13	v	4	0.06	0.00	0.01	0.00	0.36	0.01	0.36	
		14	v	4	0.08	0.00	0.02	0.00	0.30	0.01	0.30	
		15	v	4	0.12	0.00	0.01	0.00	0.29	0.01	0.29	
		16	H	4	0.16	0.00	0.00	0.00	0.38	0.01	0.38	
		17	H	4	0.15	0.00	0.00	0.00	0.39	0.01	0.39	
		18	H	4	0.12	0.00	0.00	0.00	0.35	0.01	0.35	
		19	H	4	0.06	0.00	0.01	0.00	0.32	0.01	0.32	
		20	H	4	0.15	0.00	0.00	0.00	0.35	0.02	0.35	
		21	H	4	0.09	0.00	0.00	0.00	0.42	0.00	0.42	
		22	H	4	0.18	0.00	0.00	0.00	0.38	0.01	0.38	
		23	H	4	0.14	0.00	0.00	0.00	0.34	0.02	0.34	
		24	H	4	0.12	0.00	0.00	0.00	0.41	0.00	0.41	
		25	H	4	0.08	0.00	0.01	0.00	0.29	0.01	0.29	
		26	H	4	0.06	0.00	0.01	0.00	0.35	0.00	0.35	
		27	H	4	0.17	0.00	0.00	0.00	0.37	0.01	0.37	
		28	H	4	0.15	0.00	0.00	0.00	0.40	0.01	0.40	
		29	H	4	0.08	0.00	0.01	0.00	0.32	0.01	0.32	
		30	H	4	0.07	0.00	0.01	0.00	0.39	0.00	0.39	
		31	H	4	0.08	0.00	0.01	0.00	0.41	0.00	0.41	
		32	V+H	8	0.38	0.00	0.00	0.00	0.86	0.03	0.86	
		33	V+H	8	0.41	0.00	0.00	0.00	0.93	0.03	0.93	
		34	V+H	8	0.31	0.00	0.00	0.00	0.84	0.02	0.84	
		35	V+H	8	0.21	0.00	0.05	0.01	0.99	0.02	0.99	
		36	V+H	8	0.34	0.00	0.00	0.00	0.96	0.02	0.96	
		37	V+H	8	0.36	0.00	0.03	0.00	1.03	0.04	1.03	
		38	V+H	8	0.43	0.00	0.00	0.00	0.95	0.03	0.95	
		39	V+H	8	0.37	0.00	0.02	0.00	1.19	0.04	1.19	
		40	V+H	8	0.39	0.00	0.01	0.00	0.96	0.03	0.96	
		41	V+H	8	0.25	0.00	0.04	0.01	1.04	0.02	1.04	
		42	V+H	8	0.22	0.00	0.04	0.01	0.89	0.02	0.89	
		43	V+H	8	0.40	0.00	0.00	0.00	0.96	0.03	0.96	
		44	V+H	8	0.42	0.00	0.00	0.00	0.95	0.03	0.95	
		45	V+H	8	0.25	0.00	0.03	0.00	1.02	0.02	1.02	
		46	V+H	8	0.26	0.00	0.04	0.01	0.99	0.02	0.99	
47	V+H	8	0.34	0.00	0.04	0.00	1.04	0.03	1.04			

Table 5. PD of Ant L and Ant K – patch antenna n261 Low Ch

PD Simulation												
Module	Type(P or D)	Beam ID_1	POL	Feed no.	4cm2 PD(mW/cm2)							Max
					S4(Right)	S3(Left)	S5(Top)	S6(Bottom)	S1(Front)	S2(Rear)		
Back L	Patch	0	V	4	0.07	0.00	0.00	0.00	0.02	0.40	0.40	
		1	V	4	0.06	0.00	0.00	0.00	0.01	0.36	0.36	
		2	V	4	0.07	0.00	0.00	0.00	0.01	0.39	0.39	
		3	V	4	0.06	0.00	0.00	0.00	0.01	0.36	0.36	
		4	V	4	0.06	0.00	0.00	0.00	0.02	0.39	0.39	
		5	V	4	0.06	0.00	0.00	0.00	0.02	0.40	0.40	
		6	V	4	0.03	0.00	0.00	0.00	0.01	0.35	0.35	
		7	V	4	0.04	0.00	0.00	0.00	0.02	0.39	0.39	
		8	V	4	0.02	0.00	0.00	0.00	0.01	0.37	0.37	
		9	V	4	0.02	0.00	0.00	0.00	0.02	0.32	0.32	
		10	V	4	0.05	0.00	0.00	0.00	0.01	0.35	0.35	
		11	V	4	0.05	0.00	0.00	0.00	0.02	0.41	0.41	
		12	V	4	0.02	0.00	0.00	0.00	0.02	0.33	0.33	
		13	V	4	0.03	0.00	0.00	0.00	0.02	0.39	0.39	
		14	V	4	0.04	0.00	0.00	0.00	0.01	0.37	0.37	
		15	V	4	0.04	0.00	0.00	0.00	0.01	0.36	0.36	
		16	H	4	0.07	0.00	0.00	0.00	0.02	0.42	0.42	
		17	H	4	0.04	0.00	0.00	0.00	0.01	0.37	0.37	
		18	H	4	0.05	0.00	0.00	0.00	0.01	0.40	0.40	
		19	H	4	0.04	0.00	0.00	0.00	0.01	0.38	0.38	
		20	H	4	0.05	0.00	0.00	0.00	0.02	0.40	0.40	
		21	H	4	0.06	0.00	0.00	0.00	0.02	0.41	0.41	
		22	H	4	0.02	0.00	0.00	0.00	0.01	0.33	0.33	
		23	H	4	0.07	0.00	0.00	0.00	0.02	0.36	0.36	
		24	H	4	0.02	0.00	0.00	0.01	0.01	0.32	0.32	
		25	H	4	0.04	0.00	0.00	0.00	0.01	0.32	0.32	
		26	H	4	0.04	0.00	0.00	0.00	0.01	0.38	0.38	
		27	H	4	0.07	0.00	0.00	0.00	0.02	0.40	0.40	
		28	H	4	0.05	0.00	0.00	0.00	0.01	0.32	0.32	
		29	H	4	0.06	0.00	0.00	0.00	0.02	0.36	0.36	
		30	H	4	0.03	0.00	0.00	0.00	0.01	0.38	0.38	
		31	H	4	0.03	0.00	0.00	0.00	0.01	0.36	0.36	
		32	V+H	8	0.15	0.00	0.00	0.00	0.07	0.87	0.87	
		33	V+H	8	0.15	0.00	0.00	0.00	0.04	0.90	0.90	
		34	V+H	8	0.14	0.00	0.00	0.00	0.06	0.89	0.89	
		35	V+H	8	0.15	0.00	0.00	0.00	0.04	0.99	0.99	
		36	V+H	8	0.13	0.00	0.00	0.00	0.06	0.86	0.86	
		37	V+H	8	0.14	0.00	0.00	0.00	0.07	0.87	0.87	
		38	V+H	8	0.06	0.00	0.00	0.01	0.04	0.94	0.94	
		39	V+H	8	0.14	0.00	0.00	0.00	0.08	0.87	0.87	
		40	V+H	8	0.05	0.00	0.01	0.01	0.04	0.92	0.92	
		41	V+H	8	0.07	0.00	0.00	0.01	0.04	0.76	0.76	
		42	V+H	8	0.14	0.00	0.00	0.00	0.03	1.06	1.06	
		43	V+H	8	0.15	0.00	0.00	0.00	0.08	0.89	0.89	
		44	V+H	8	0.09	0.00	0.00	0.01	0.04	0.85	0.85	
		45	V+H	8	0.12	0.00	0.00	0.00	0.07	0.89	0.89	
		46	V+H	8	0.11	0.00	0.00	0.01	0.03	1.09	1.09	
47	V+H	8	0.09	0.00	0.00	0.00	0.05	0.84	0.84			
Front K	Patch	0	v	4	0.16	0.00	0.00	0.00	0.33	0.01	0.33	
		1	v	4	0.16	0.00	0.00	0.00	0.35	0.01	0.35	
		2	v	4	0.10	0.00	0.00	0.00	0.31	0.00	0.31	
		3	v	4	0.15	0.00	0.00	0.00	0.34	0.02	0.34	
		4	v	4	0.11	0.00	0.00	0.00	0.32	0.01	0.32	
		5	v	4	0.08	0.00	0.00	0.00	0.40	0.00	0.40	
		6	v	4	0.18	0.00	0.00	0.00	0.36	0.02	0.36	
		7	v	4	0.11	0.00	0.00	0.00	0.35	0.00	0.35	
		8	v	4	0.10	0.00	0.00	0.00	0.31	0.01	0.31	
		9	v	4	0.18	0.00	0.00	0.00	0.38	0.02	0.38	
		10	v	4	0.13	0.00	0.00	0.00	0.35	0.01	0.35	
		11	v	4	0.19	0.00	0.00	0.00	0.40	0.02	0.40	
		12	v	4	0.17	0.00	0.00	0.00	0.32	0.01	0.32	
		13	v	4	0.10	0.00	0.00	0.00	0.39	0.00	0.39	
		14	v	4	0.06	0.00	0.00	0.00	0.38	0.00	0.38	
		15	v	4	0.12	0.00	0.00	0.00	0.34	0.00	0.34	
		16	H	4	0.14	0.00	0.00	0.00	0.35	0.00	0.35	
		17	H	4	0.16	0.00	0.00	0.00	0.34	0.01	0.34	
		18	H	4	0.13	0.00	0.00	0.00	0.31	0.01	0.31	
		19	H	4	0.09	0.00	0.00	0.00	0.37	0.01	0.37	
		20	H	4	0.11	0.00	0.00	0.00	0.33	0.01	0.33	
		21	H	4	0.19	0.00	0.00	0.00	0.41	0.02	0.41	
		22	H	4	0.11	0.00	0.00	0.00	0.38	0.00	0.38	
		23	H	4	0.16	0.00	0.00	0.00	0.34	0.01	0.34	
		24	H	4	0.12	0.00	0.00	0.00	0.33	0.01	0.33	
		25	H	4	0.07	0.00	0.00	0.00	0.42	0.00	0.42	
		26	H	4	0.13	0.00	0.00	0.00	0.33	0.01	0.33	
		27	H	4	0.07	0.00	0.00	0.00	0.43	0.00	0.43	
		28	H	4	0.12	0.00	0.00	0.00	0.35	0.00	0.35	
		29	H	4	0.17	0.00	0.00	0.00	0.37	0.01	0.37	
		30	H	4	0.17	0.00	0.00	0.00	0.40	0.02	0.40	
		31	H	4	0.17	0.00	0.00	0.00	0.32	0.01	0.32	
		32	V+H	8	0.37	0.00	0.00	0.00	0.76	0.02	0.76	
		33	V+H	8	0.36	0.00	0.00	0.00	0.76	0.02	0.76	
		34	V+H	8	0.28	0.00	0.00	0.00	0.72	0.01	0.72	
		35	V+H	8	0.31	0.00	0.01	0.00	1.01	0.03	1.01	
		36	V+H	8	0.24	0.00	0.00	0.00	0.77	0.02	0.77	
		37	V+H	8	0.36	0.00	0.00	0.00	1.06	0.04	1.06	
		38	V+H	8	0.38	0.00	0.00	0.00	0.86	0.02	0.86	
		39	V+H	8	0.35	0.00	0.00	0.00	0.79	0.02	0.79	
		40	V+H	8	0.23	0.00	0.01	0.01	0.94	0.02	0.94	
		41	V+H	8	0.37	0.00	0.01	0.00	1.09	0.04	1.09	
		42	V+H	8	0.29	0.00	0.00	0.00	0.77	0.02	0.77	
		43	V+H	8	0.38	0.00	0.01	0.00	1.11	0.04	1.11	
		44	V+H	8	0.37	0.00	0.00	0.00	0.75	0.02	0.75	
		45	V+H	8	0.35	0.00	0.00	0.00	0.91	0.02	0.91	
		46	V+H	8	0.33	0.00	0.01	0.00	1.06	0.03	1.06	
47	V+H	8	0.36	0.00	0.00	0.00	0.75	0.02	0.75			

Table 6. PD of Ant L and Ant K – patch antenna n261 Mid Ch

PD Simulation											
Module	Type(P or D)	Beam ID_1	Bema ID_2	Feed no.	4cm2 PD(mW/cm2)						Max
					S4(Right)	S3(Left)	S5(Top)	S6(Bottom)	S1(Front)	S2(Rear)	
Back L	Patch	0	V	4	0.07	0.00	0.00	0.00	0.02	0.39	0.39
		1	V	4	0.06	0.00	0.00	0.00	0.01	0.35	0.35
		2	V	4	0.07	0.00	0.00	0.00	0.02	0.39	0.39
		3	V	4	0.05	0.00	0.00	0.00	0.01	0.34	0.34
		4	V	4	0.06	0.00	0.00	0.00	0.01	0.38	0.38
		5	V	4	0.06	0.00	0.00	0.00	0.02	0.38	0.38
		6	V	4	0.02	0.00	0.00	0.01	0.01	0.34	0.34
		7	V	4	0.04	0.00	0.00	0.00	0.02	0.38	0.38
		8	V	4	0.02	0.00	0.00	0.01	0.01	0.35	0.35
		9	V	4	0.01	0.00	0.00	0.00	0.02	0.30	0.30
		10	V	4	0.04	0.00	0.00	0.00	0.01	0.33	0.33
		11	V	4	0.05	0.00	0.00	0.00	0.02	0.40	0.40
		12	V	4	0.02	0.00	0.00	0.00	0.02	0.30	0.30
		13	V	4	0.03	0.00	0.00	0.00	0.02	0.36	0.36
		14	V	4	0.04	0.00	0.00	0.01	0.01	0.35	0.35
		15	V	4	0.05	0.00	0.00	0.00	0.01	0.36	0.36
		16	H	4	0.07	0.00	0.00	0.00	0.02	0.39	0.39
		17	H	4	0.04	0.00	0.00	0.00	0.01	0.37	0.37
		18	H	4	0.05	0.00	0.00	0.00	0.01	0.39	0.39
		19	H	4	0.04	0.00	0.00	0.00	0.01	0.36	0.36
		20	H	4	0.06	0.00	0.00	0.00	0.01	0.38	0.38
		21	H	4	0.06	0.00	0.00	0.00	0.01	0.39	0.39
		22	H	4	0.02	0.00	0.00	0.00	0.01	0.28	0.28
		23	H	4	0.06	0.00	0.00	0.00	0.01	0.36	0.36
		24	H	4	0.02	0.00	0.00	0.01	0.01	0.28	0.28
		25	H	4	0.03	0.00	0.00	0.00	0.01	0.31	0.31
		26	H	4	0.03	0.00	0.00	0.00	0.01	0.35	0.35
		27	H	4	0.08	0.00	0.00	0.00	0.02	0.39	0.39
		28	H	4	0.04	0.00	0.00	0.00	0.01	0.33	0.33
		29	H	4	0.05	0.00	0.00	0.00	0.01	0.36	0.36
		30	H	4	0.02	0.00	0.00	0.00	0.01	0.33	0.33
		31	H	4	0.03	0.00	0.00	0.00	0.01	0.35	0.35
		32	V+H	8	0.15	0.00	0.00	0.00	0.06	0.83	0.83
		33	V+H	8	0.14	0.00	0.00	0.00	0.05	0.85	0.85
		34	V+H	8	0.14	0.00	0.00	0.00	0.06	0.85	0.85
		35	V+H	8	0.14	0.00	0.00	0.00	0.05	0.94	0.94
		36	V+H	8	0.14	0.00	0.00	0.00	0.05	0.81	0.81
		37	V+H	8	0.14	0.00	0.00	0.00	0.06	0.82	0.82
		38	V+H	8	0.04	0.00	0.00	0.01	0.04	0.81	0.81
		39	V+H	8	0.13	0.00	0.00	0.00	0.06	0.83	0.83
		40	V+H	8	0.03	0.00	0.00	0.02	0.05	0.79	0.79
		41	V+H	8	0.06	0.00	0.00	0.01	0.05	0.75	0.75
		42	V+H	8	0.12	0.00	0.00	0.01	0.04	0.99	0.99
		43	V+H	8	0.16	0.00	0.00	0.00	0.07	0.85	0.85
		44	V+H	8	0.08	0.00	0.00	0.01	0.04	0.86	0.86
		45	V+H	8	0.12	0.00	0.00	0.00	0.06	0.87	0.87
		46	V+H	8	0.09	0.00	0.00	0.01	0.04	0.99	0.99
47	V+H	8	0.11	0.00	0.00	0.00	0.05	0.80	0.80		
Front K	Patch	0	V	4	0.16	0.00	0.00	0.00	0.33	0.01	0.33
		1	V	4	0.16	0.00	0.00	0.00	0.35	0.01	0.35
		2	V	4	0.10	0.00	0.00	0.00	0.31	0.00	0.31
		3	V	4	0.15	0.00	0.00	0.00	0.36	0.02	0.36
		4	V	4	0.11	0.00	0.00	0.00	0.33	0.01	0.33
		5	V	4	0.08	0.00	0.00	0.00	0.40	0.00	0.40
		6	V	4	0.19	0.00	0.00	0.00	0.37	0.02	0.37
		7	V	4	0.11	0.00	0.00	0.00	0.35	0.00	0.35
		8	V	4	0.12	0.00	0.00	0.00	0.33	0.01	0.33
		9	V	4	0.19	0.00	0.00	0.00	0.39	0.02	0.39
		10	V	4	0.13	0.00	0.00	0.00	0.35	0.00	0.35
		11	V	4	0.20	0.00	0.00	0.00	0.41	0.02	0.41
		12	V	4	0.17	0.00	0.00	0.00	0.33	0.01	0.33
		13	V	4	0.10	0.00	0.00	0.00	0.38	0.00	0.38
		14	V	4	0.07	0.00	0.00	0.00	0.38	0.00	0.38
		15	V	4	0.12	0.00	0.00	0.00	0.34	0.00	0.34
		16	H	4	0.14	0.00	0.00	0.00	0.35	0.00	0.35
		17	H	4	0.16	0.00	0.00	0.00	0.34	0.01	0.34
		18	H	4	0.13	0.00	0.00	0.00	0.31	0.01	0.31
		19	H	4	0.09	0.00	0.00	0.00	0.38	0.01	0.38
		20	H	4	0.12	0.00	0.00	0.00	0.34	0.01	0.34
		21	H	4	0.19	0.00	0.00	0.00	0.39	0.02	0.39
		22	H	4	0.11	0.00	0.00	0.00	0.39	0.00	0.39
		23	H	4	0.18	0.00	0.00	0.00	0.35	0.01	0.35
		24	H	4	0.12	0.00	0.00	0.00	0.33	0.01	0.33
		25	H	4	0.07	0.00	0.00	0.00	0.42	0.00	0.42
		26	H	4	0.13	0.00	0.00	0.00	0.32	0.01	0.32
		27	H	4	0.08	0.00	0.00	0.00	0.44	0.00	0.44
		28	H	4	0.12	0.00	0.00	0.00	0.36	0.00	0.36
		29	H	4	0.18	0.00	0.00	0.00	0.38	0.02	0.38
		30	H	4	0.16	0.00	0.00	0.00	0.38	0.02	0.38
		31	H	4	0.17	0.00	0.00	0.00	0.34	0.01	0.34
		32	V+H	8	0.37	0.00	0.00	0.00	0.75	0.02	0.75
		33	V+H	8	0.36	0.00	0.00	0.00	0.75	0.02	0.75
		34	V+H	8	0.29	0.00	0.00	0.00	0.72	0.02	0.72
		35	V+H	8	0.33	0.00	0.01	0.00	1.03	0.03	1.03
		36	V+H	8	0.25	0.00	0.00	0.00	0.81	0.02	0.81
		37	V+H	8	0.36	0.00	0.00	0.00	1.02	0.03	1.02
		38	V+H	8	0.38	0.00	0.00	0.00	0.88	0.03	0.88
		39	V+H	8	0.36	0.00	0.00	0.00	0.80	0.02	0.80
		40	V+H	8	0.25	0.00	0.01	0.00	0.94	0.02	0.94
		41	V+H	8	0.39	0.00	0.01	0.00	1.10	0.04	1.10
		42	V+H	8	0.30	0.00	0.00	0.00	0.78	0.01	0.78
		43	V+H	8	0.40	0.00	0.01	0.00	1.11	0.04	1.11
		44	V+H	8	0.37	0.00	0.00	0.00	0.77	0.02	0.77
		45	V+H	8	0.37	0.00	0.00	0.00	0.89	0.02	0.89
		46	V+H	8	0.31	0.00	0.00	0.00	1.04	0.03	1.04
47	V+H	8	0.37	0.00	0.00	0.00	0.75	0.02	0.75		

Table 7. PD of Ant L and Ant K – patch antenna n261 High Ch

PD Simulation												
Module	Type(P or D)	Beam ID_1	POL	Feed no.	4cm2 PD(mW/cm2)							Max
					S4(Right)	S3(Left)	S5(Top)	S6(Bottom)	S1(Front)	S2(Rear)		
Back L	Patch	0	V	4	0.07	0.00	0.00	0.00	0.02	0.37	0.37	
		1	V	4	0.06	0.00	0.00	0.00	0.01	0.34	0.34	
		2	V	4	0.07	0.00	0.00	0.00	0.01	0.37	0.37	
		3	V	4	0.05	0.00	0.00	0.00	0.01	0.33	0.33	
		4	V	4	0.07	0.00	0.00	0.00	0.01	0.37	0.37	
		5	V	4	0.06	0.00	0.00	0.00	0.01	0.37	0.37	
		6	V	4	0.02	0.00	0.00	0.00	0.01	0.32	0.32	
		7	V	4	0.04	0.00	0.00	0.00	0.02	0.35	0.35	
		8	V	4	0.02	0.00	0.00	0.01	0.01	0.32	0.32	
		9	V	4	0.01	0.00	0.00	0.00	0.01	0.29	0.29	
		10	V	4	0.04	0.00	0.00	0.00	0.01	0.32	0.32	
		11	V	4	0.05	0.00	0.00	0.00	0.02	0.38	0.38	
		12	V	4	0.02	0.00	0.00	0.00	0.02	0.29	0.29	
		13	V	4	0.03	0.00	0.00	0.00	0.02	0.33	0.33	
		14	V	4	0.03	0.00	0.00	0.00	0.01	0.35	0.35	
		15	V	4	0.05	0.00	0.00	0.00	0.01	0.35	0.35	
		16	H	4	0.06	0.00	0.00	0.00	0.01	0.38	0.38	
		17	H	4	0.04	0.00	0.00	0.00	0.01	0.35	0.35	
		18	H	4	0.05	0.00	0.00	0.00	0.01	0.38	0.38	
		19	H	4	0.04	0.00	0.00	0.00	0.01	0.34	0.34	
		20	H	4	0.05	0.00	0.00	0.00	0.01	0.37	0.37	
		21	H	4	0.06	0.00	0.00	0.00	0.01	0.38	0.38	
		22	H	4	0.02	0.00	0.00	0.00	0.01	0.28	0.28	
		23	H	4	0.06	0.00	0.00	0.00	0.01	0.34	0.34	
		24	H	4	0.02	0.00	0.00	0.01	0.01	0.28	0.28	
		25	H	4	0.03	0.00	0.00	0.00	0.01	0.30	0.30	
		26	H	4	0.03	0.00	0.00	0.00	0.01	0.33	0.33	
		27	H	4	0.07	0.00	0.00	0.00	0.01	0.37	0.37	
		28	H	4	0.04	0.00	0.00	0.00	0.01	0.31	0.31	
		29	H	4	0.05	0.00	0.00	0.00	0.01	0.33	0.33	
		30	H	4	0.02	0.00	0.00	0.00	0.01	0.32	0.32	
		31	H	4	0.04	0.00	0.00	0.00	0.01	0.34	0.34	
		32	V+H	8	0.15	0.00	0.00	0.00	0.05	0.80	0.80	
		33	V+H	8	0.14	0.00	0.00	0.00	0.04	0.81	0.81	
		34	V+H	8	0.14	0.00	0.00	0.00	0.05	0.81	0.81	
		35	V+H	8	0.13	0.00	0.00	0.00	0.04	0.89	0.89	
		36	V+H	8	0.15	0.00	0.00	0.00	0.04	0.79	0.79	
		37	V+H	8	0.15	0.00	0.00	0.00	0.05	0.80	0.80	
		38	V+H	8	0.04	0.00	0.00	0.01	0.03	0.79	0.79	
		39	V+H	8	0.13	0.00	0.00	0.00	0.06	0.81	0.81	
		40	V+H	8	0.03	0.00	0.00	0.01	0.03	0.78	0.78	
		41	V+H	8	0.06	0.00	0.00	0.01	0.03	0.77	0.77	
		42	V+H	8	0.12	0.00	0.00	0.00	0.04	0.96	0.96	
		43	V+H	8	0.15	0.00	0.00	0.00	0.06	0.81	0.81	
		44	V+H	8	0.08	0.00	0.00	0.01	0.03	0.88	0.88	
		45	V+H	8	0.12	0.00	0.00	0.00	0.05	0.84	0.84	
		46	V+H	8	0.08	0.00	0.00	0.01	0.03	0.98	0.98	
47	V+H	8	0.13	0.00	0.00	0.00	0.04	0.77	0.77			
Front K	Patch	0	V	4	0.17	0.00	0.00	0.00	0.34	0.01	0.34	
		1	V	4	0.17	0.00	0.00	0.00	0.35	0.01	0.35	
		2	V	4	0.10	0.00	0.00	0.00	0.32	0.00	0.32	
		3	V	4	0.16	0.00	0.00	0.00	0.36	0.02	0.36	
		4	V	4	0.12	0.00	0.00	0.00	0.35	0.01	0.35	
		5	V	4	0.08	0.00	0.00	0.00	0.39	0.00	0.39	
		6	V	4	0.19	0.00	0.00	0.00	0.37	0.02	0.37	
		7	V	4	0.11	0.00	0.00	0.00	0.36	0.00	0.36	
		8	V	4	0.12	0.00	0.00	0.00	0.34	0.01	0.34	
		9	V	4	0.19	0.00	0.00	0.00	0.38	0.02	0.38	
		10	V	4	0.13	0.00	0.00	0.00	0.34	0.01	0.34	
		11	V	4	0.20	0.00	0.00	0.00	0.40	0.02	0.40	
		12	V	4	0.18	0.00	0.00	0.00	0.34	0.01	0.34	
		13	V	4	0.11	0.00	0.00	0.00	0.38	0.00	0.38	
		14	V	4	0.07	0.00	0.00	0.00	0.37	0.00	0.37	
		15	V	4	0.12	0.00	0.00	0.00	0.35	0.00	0.35	
		16	H	4	0.16	0.00	0.00	0.00	0.35	0.01	0.35	
		17	H	4	0.16	0.00	0.00	0.00	0.34	0.01	0.34	
		18	H	4	0.14	0.00	0.00	0.00	0.31	0.01	0.31	
		19	H	4	0.11	0.00	0.00	0.00	0.35	0.01	0.35	
		20	H	4	0.12	0.00	0.00	0.00	0.33	0.01	0.33	
		21	H	4	0.19	0.00	0.00	0.00	0.39	0.02	0.39	
		22	H	4	0.11	0.00	0.00	0.00	0.39	0.00	0.39	
		23	H	4	0.18	0.00	0.00	0.00	0.35	0.01	0.35	
		24	H	4	0.14	0.00	0.00	0.00	0.36	0.01	0.36	
		25	H	4	0.07	0.00	0.00	0.00	0.39	0.01	0.39	
		26	H	4	0.13	0.00	0.00	0.00	0.32	0.01	0.32	
		27	H	4	0.08	0.00	0.00	0.00	0.42	0.01	0.42	
		28	H	4	0.12	0.00	0.00	0.00	0.36	0.00	0.36	
		29	H	4	0.19	0.00	0.00	0.00	0.38	0.02	0.38	
		30	H	4	0.17	0.00	0.00	0.00	0.38	0.02	0.38	
		31	H	4	0.18	0.00	0.00	0.00	0.33	0.01	0.33	
		32	V+H	8	0.38	0.00	0.00	0.00	0.75	0.02	0.75	
		33	V+H	8	0.36	0.00	0.00	0.00	0.75	0.02	0.75	
		34	V+H	8	0.30	0.00	0.00	0.00	0.73	0.02	0.73	
		35	V+H	8	0.33	0.00	0.01	0.00	1.00	0.03	1.00	
		36	V+H	8	0.27	0.00	0.00	0.00	0.81	0.02	0.81	
		37	V+H	8	0.36	0.00	0.00	0.00	0.99	0.03	0.99	
		38	V+H	8	0.38	0.00	0.00	0.00	0.89	0.02	0.89	
		39	V+H	8	0.37	0.00	0.00	0.00	0.82	0.02	0.82	
		40	V+H	8	0.26	0.00	0.01	0.00	0.96	0.03	0.96	
		41	V+H	8	0.38	0.00	0.01	0.00	1.04	0.04	1.04	
		42	V+H	8	0.30	0.00	0.00	0.00	0.78	0.02	0.78	
		43	V+H	8	0.39	0.00	0.01	0.00	1.05	0.04	1.05	
		44	V+H	8	0.37	0.00	0.00	0.00	0.80	0.02	0.80	
		45	V+H	8	0.38	0.00	0.00	0.00	0.90	0.02	0.90	
		46	V+H	8	0.31	0.00	0.00	0.00	1.01	0.03	1.01	
47	V+H	8	0.38	0.00	0.00	0.00	0.77	0.02	0.77			

Table 8. PD of Ant L and Ant K – patch antenna n260 Low Ch

PD Simulation												
Module	Type(P or D)	Beam ID_1	POL	Feed no.	4cm ² PD(mW/cm ²)							Max
					S4(Right)	S3(Left)	S5(Top)	S6(Bottom)	S1(Front)	S2(Rear)		
Back L	Patch	0	V	4	0.04	0.00	0.00	0.00	0.01	0.30	0.30	
		1	V	4	0.05	0.00	0.00	0.00	0.01	0.32	0.32	
		2	V	4	0.04	0.00	0.00	0.00	0.01	0.30	0.30	
		3	V	4	0.02	0.00	0.00	0.00	0.02	0.36	0.36	
		4	V	4	0.04	0.00	0.00	0.01	0.02	0.33	0.33	
		5	V	4	0.03	0.00	0.00	0.00	0.01	0.33	0.33	
		6	V	4	0.03	0.00	0.00	0.00	0.02	0.32	0.32	
		7	V	4	0.04	0.00	0.00	0.01	0.01	0.33	0.33	
		8	V	4	0.03	0.00	0.00	0.00	0.01	0.33	0.33	
		9	V	4	0.04	0.00	0.00	0.01	0.01	0.33	0.33	
		10	V	4	0.03	0.00	0.00	0.00	0.01	0.37	0.37	
		11	V	4	0.05	0.00	0.00	0.01	0.01	0.31	0.31	
		12	V	4	0.03	0.00	0.00	0.00	0.01	0.35	0.35	
		13	V	4	0.04	0.00	0.00	0.00	0.02	0.37	0.37	
		14	V	4	0.03	0.00	0.00	0.00	0.01	0.32	0.32	
		15	V	4	0.02	0.00	0.00	0.00	0.01	0.32	0.32	
		16	H	4	0.04	0.00	0.00	0.00	0.01	0.29	0.29	
		17	H	4	0.04	0.00	0.00	0.00	0.00	0.32	0.32	
		18	H	4	0.04	0.00	0.00	0.00	0.01	0.29	0.29	
		19	H	4	0.04	0.00	0.00	0.01	0.01	0.36	0.36	
		20	H	4	0.03	0.00	0.00	0.01	0.01	0.36	0.36	
		21	H	4	0.04	0.00	0.00	0.00	0.01	0.36	0.36	
		22	H	4	0.03	0.00	0.00	0.00	0.01	0.35	0.35	
		23	H	4	0.04	0.00	0.00	0.01	0.01	0.35	0.35	
		24	H	4	0.05	0.00	0.00	0.00	0.01	0.33	0.33	
		25	H	4	0.03	0.00	0.00	0.01	0.01	0.34	0.34	
		26	H	4	0.04	0.00	0.00	0.00	0.01	0.39	0.39	
		27	H	4	0.04	0.00	0.00	0.01	0.01	0.32	0.32	
		28	H	4	0.04	0.00	0.00	0.00	0.01	0.33	0.33	
		29	H	4	0.03	0.00	0.00	0.00	0.01	0.39	0.39	
		30	H	4	0.03	0.00	0.00	0.00	0.01	0.36	0.36	
		31	H	4	0.03	0.00	0.00	0.00	0.01	0.36	0.36	
		32	V+H	8	0.13	0.00	0.00	0.00	0.03	0.70	0.70	
		33	V+H	8	0.14	0.00	0.00	0.01	0.02	0.74	0.74	
		34	V+H	8	0.12	0.00	0.00	0.00	0.03	0.68	0.68	
		35	V+H	8	0.08	0.00	0.01	0.01	0.04	0.92	0.92	
		36	V+H	8	0.11	0.00	0.00	0.03	0.04	0.87	0.87	
		37	V+H	8	0.09	0.00	0.01	0.00	0.03	0.86	0.86	
		38	V+H	8	0.09	0.00	0.00	0.01	0.04	0.85	0.85	
		39	V+H	8	0.12	0.00	0.00	0.03	0.03	0.83	0.83	
		40	V+H	8	0.10	0.00	0.01	0.00	0.04	0.81	0.81	
		41	V+H	8	0.12	0.00	0.00	0.04	0.03	0.84	0.84	
		42	V+H	8	0.11	0.00	0.00	0.00	0.04	0.98	0.98	
		43	V+H	8	0.13	0.00	0.00	0.04	0.02	0.77	0.77	
		44	V+H	8	0.09	0.00	0.01	0.00	0.03	0.75	0.75	
		45	V+H	8	0.12	0.00	0.00	0.01	0.04	0.97	0.97	
		46	V+H	8	0.10	0.00	0.00	0.01	0.04	0.82	0.82	
47	V+H	8	0.09	0.00	0.00	0.00	0.03	0.87	0.87			
Front K	Patch	0	V	4	0.16	0.00	0.00	0.00	0.26	0.01	0.26	
		1	V	4	0.15	0.00	0.00	0.00	0.26	0.01	0.26	
		2	V	4	0.15	0.00	0.00	0.00	0.27	0.01	0.27	
		3	V	4	0.15	0.00	0.00	0.00	0.27	0.00	0.27	
		4	V	4	0.14	0.00	0.00	0.00	0.27	0.01	0.27	
		5	V	4	0.13	0.00	0.00	0.00	0.26	0.00	0.26	
		6	V	4	0.12	0.00	0.00	0.00	0.29	0.01	0.29	
		7	V	4	0.16	0.00	0.00	0.00	0.27	0.01	0.27	
		8	V	4	0.13	0.00	0.00	0.00	0.27	0.00	0.27	
		9	V	4	0.12	0.00	0.00	0.00	0.28	0.01	0.28	
		10	V	4	0.13	0.00	0.00	0.00	0.27	0.01	0.27	
		11	V	4	0.13	0.00	0.00	0.00	0.27	0.00	0.27	
		12	V	4	0.13	0.00	0.00	0.00	0.28	0.01	0.28	
		13	V	4	0.13	0.00	0.00	0.00	0.28	0.01	0.28	
		14	V	4	0.13	0.00	0.00	0.00	0.27	0.00	0.27	
		15	V	4	0.13	0.00	0.00	0.00	0.27	0.01	0.27	
		16	H	4	0.17	0.00	0.00	0.00	0.26	0.01	0.26	
		17	H	4	0.16	0.00	0.00	0.00	0.25	0.01	0.25	
		18	H	4	0.17	0.00	0.00	0.00	0.26	0.01	0.26	
		19	H	4	0.18	0.00	0.00	0.00	0.27	0.01	0.27	
		20	H	4	0.12	0.00	0.00	0.00	0.26	0.01	0.26	
		21	H	4	0.15	0.00	0.00	0.00	0.29	0.01	0.29	
		22	H	4	0.13	0.00	0.00	0.00	0.30	0.01	0.30	
		23	H	4	0.12	0.00	0.00	0.00	0.25	0.00	0.25	
		24	H	4	0.15	0.00	0.00	0.00	0.27	0.01	0.27	
		25	H	4	0.14	0.00	0.00	0.00	0.32	0.01	0.32	
		26	H	4	0.12	0.00	0.00	0.00	0.26	0.00	0.26	
		27	H	4	0.17	0.00	0.00	0.00	0.26	0.01	0.26	
		28	H	4	0.13	0.00	0.00	0.00	0.26	0.00	0.26	
		29	H	4	0.12	0.00	0.00	0.00	0.27	0.01	0.27	
		30	H	4	0.16	0.00	0.00	0.00	0.26	0.01	0.26	
		31	H	4	0.15	0.00	0.00	0.00	0.30	0.01	0.30	
		32	V+H	8	0.35	0.00	0.00	0.00	0.55	0.02	0.55	
		33	V+H	8	0.33	0.00	0.00	0.00	0.56	0.02	0.56	
		34	V+H	8	0.34	0.00	0.00	0.00	0.55	0.02	0.55	
		35	V+H	8	0.34	0.00	0.00	0.00	0.57	0.02	0.57	
		36	V+H	8	0.28	0.00	0.01	0.00	0.58	0.02	0.58	
		37	V+H	8	0.34	0.00	0.00	0.00	0.64	0.02	0.64	
		38	V+H	8	0.32	0.00	0.01	0.00	0.70	0.02	0.70	
		39	V+H	8	0.34	0.00	0.01	0.00	0.58	0.02	0.58	
		40	V+H	8	0.35	0.00	0.00	0.00	0.61	0.02	0.61	
		41	V+H	8	0.32	0.00	0.00	0.00	0.71	0.02	0.71	
		42	V+H	8	0.32	0.00	0.01	0.00	0.59	0.02	0.59	
		43	V+H	8	0.35	0.00	0.00	0.00	0.57	0.02	0.57	
		44	V+H	8	0.30	0.00	0.00	0.00	0.61	0.02	0.61	
		45	V+H	8	0.33	0.00	0.01	0.00	0.65	0.02	0.65	
		46	V+H	8	0.35	0.00	0.00	0.00	0.59	0.02	0.59	
47	V+H	8	0.36	0.00	0.00	0.00	0.68	0.02	0.68			

Table 9. PD of Ant L and Ant K – patch antenna n260 Mid Ch

PD Simulation												
Module	Type (P or D)	Beam ID_1	Bema ID_2	Feed no.	4cm2 PD(mW/cm2)							Max
					S4(Right)	S3(Left)	S5(Top)	S6(Bottom)	S1(Front)	S2(Rear)		
Back L	Patch	0	V	4	0.04	0.00	0.00	0.00	0.01	0.30	0.30	
		1	V	4	0.04	0.00	0.00	0.00	0.01	0.30	0.30	
		2	V	4	0.03	0.00	0.00	0.00	0.01	0.31	0.31	
		3	V	4	0.03	0.00	0.00	0.00	0.02	0.40	0.40	
		4	V	4	0.05	0.00	0.00	0.01	0.02	0.35	0.35	
		5	V	4	0.03	0.00	0.00	0.00	0.01	0.37	0.37	
		6	V	4	0.03	0.00	0.00	0.00	0.02	0.34	0.34	
		7	V	4	0.05	0.00	0.00	0.01	0.01	0.35	0.35	
		8	V	4	0.03	0.00	0.00	0.00	0.01	0.35	0.35	
		9	V	4	0.06	0.00	0.00	0.01	0.01	0.35	0.35	
		10	V	4	0.04	0.00	0.00	0.00	0.02	0.36	0.36	
		11	V	4	0.06	0.00	0.00	0.01	0.01	0.34	0.34	
		12	V	4	0.03	0.00	0.00	0.00	0.01	0.35	0.35	
		13	V	4	0.05	0.00	0.00	0.00	0.02	0.35	0.35	
		14	V	4	0.04	0.00	0.00	0.00	0.01	0.35	0.35	
		15	V	4	0.03	0.00	0.00	0.00	0.01	0.36	0.36	
		16	H	4	0.05	0.00	0.00	0.00	0.01	0.28	0.28	
		17	H	4	0.04	0.00	0.00	0.00	0.01	0.28	0.28	
		18	H	4	0.05	0.00	0.00	0.00	0.01	0.28	0.28	
		19	H	4	0.04	0.00	0.00	0.00	0.01	0.40	0.40	
		20	H	4	0.04	0.00	0.00	0.01	0.01	0.38	0.38	
		21	H	4	0.04	0.00	0.00	0.00	0.01	0.38	0.38	
		22	H	4	0.03	0.00	0.00	0.00	0.01	0.38	0.38	
		23	H	4	0.04	0.00	0.00	0.01	0.01	0.37	0.37	
		24	H	4	0.05	0.00	0.00	0.00	0.01	0.35	0.35	
		25	H	4	0.04	0.00	0.00	0.01	0.01	0.37	0.37	
		26	H	4	0.04	0.00	0.00	0.00	0.01	0.41	0.41	
		27	H	4	0.04	0.00	0.00	0.01	0.01	0.35	0.35	
		28	H	4	0.05	0.00	0.00	0.00	0.01	0.35	0.35	
		29	H	4	0.04	0.00	0.00	0.00	0.01	0.40	0.40	
		30	H	4	0.04	0.00	0.00	0.00	0.01	0.37	0.37	
		31	H	4	0.03	0.00	0.00	0.00	0.01	0.39	0.39	
		32	V+H	8	0.13	0.00	0.00	0.00	0.03	0.72	0.72	
		33	V+H	8	0.14	0.00	0.00	0.01	0.04	0.74	0.74	
		34	V+H	8	0.13	0.00	0.00	0.00	0.03	0.71	0.71	
		35	V+H	8	0.10	0.00	0.00	0.01	0.04	0.88	0.88	
		36	V+H	8	0.13	0.00	0.00	0.02	0.03	0.84	0.84	
		37	V+H	8	0.10	0.00	0.01	0.00	0.04	0.83	0.83	
		38	V+H	8	0.10	0.00	0.00	0.00	0.04	0.84	0.84	
		39	V+H	8	0.14	0.00	0.00	0.03	0.03	0.79	0.79	
		40	V+H	8	0.12	0.00	0.01	0.00	0.03	0.78	0.78	
		41	V+H	8	0.15	0.00	0.00	0.03	0.03	0.81	0.81	
		42	V+H	8	0.11	0.00	0.00	0.00	0.04	0.92	0.92	
		43	V+H	8	0.16	0.00	0.00	0.03	0.02	0.76	0.76	
		44	V+H	8	0.10	0.00	0.01	0.00	0.04	0.75	0.75	
		45	V+H	8	0.11	0.00	0.00	0.01	0.05	0.91	0.91	
		46	V+H	8	0.12	0.00	0.00	0.01	0.05	0.83	0.83	
47	V+H	8	0.09	0.00	0.00	0.00	0.04	0.86	0.86			
Front K	Patch	0	V	4	0.22	0.00	0.00	0.00	0.33	0.01	0.33	
		1	V	4	0.22	0.00	0.00	0.00	0.34	0.01	0.34	
		2	V	4	0.20	0.00	0.00	0.00	0.35	0.01	0.35	
		3	V	4	0.21	0.00	0.00	0.00	0.34	0.01	0.34	
		4	V	4	0.21	0.00	0.00	0.00	0.35	0.01	0.35	
		5	V	4	0.18	0.00	0.00	0.00	0.34	0.01	0.34	
		6	V	4	0.18	0.00	0.00	0.00	0.35	0.02	0.35	
		7	V	4	0.24	0.00	0.00	0.00	0.35	0.01	0.35	
		8	V	4	0.19	0.00	0.00	0.00	0.34	0.01	0.34	
		9	V	4	0.16	0.00	0.00	0.00	0.36	0.02	0.36	
		10	V	4	0.19	0.00	0.00	0.00	0.34	0.01	0.34	
		11	V	4	0.20	0.00	0.00	0.00	0.34	0.00	0.34	
		12	V	4	0.20	0.00	0.00	0.00	0.36	0.01	0.36	
		13	V	4	0.19	0.00	0.00	0.00	0.35	0.02	0.35	
		14	V	4	0.19	0.00	0.00	0.00	0.34	0.01	0.34	
		15	V	4	0.18	0.00	0.00	0.00	0.35	0.01	0.35	
		16	H	4	0.20	0.00	0.00	0.00	0.34	0.01	0.34	
		17	H	4	0.22	0.00	0.00	0.00	0.34	0.01	0.34	
		18	H	4	0.21	0.00	0.00	0.00	0.34	0.01	0.34	
		19	H	4	0.23	0.00	0.00	0.00	0.34	0.01	0.34	
		20	H	4	0.18	0.00	0.00	0.00	0.33	0.01	0.33	
		21	H	4	0.20	0.00	0.00	0.00	0.37	0.02	0.37	
		22	H	4	0.15	0.00	0.00	0.00	0.36	0.02	0.36	
		23	H	4	0.18	0.00	0.00	0.00	0.33	0.00	0.33	
		24	H	4	0.24	0.00	0.00	0.00	0.37	0.01	0.37	
		25	H	4	0.17	0.00	0.00	0.00	0.38	0.01	0.38	
		26	H	4	0.17	0.00	0.00	0.00	0.33	0.01	0.33	
		27	H	4	0.25	0.00	0.00	0.00	0.35	0.01	0.35	
		28	H	4	0.19	0.00	0.00	0.00	0.34	0.00	0.34	
		29	H	4	0.16	0.00	0.00	0.00	0.34	0.01	0.34	
		30	H	4	0.25	0.00	0.00	0.00	0.35	0.01	0.35	
		31	H	4	0.20	0.00	0.00	0.00	0.38	0.01	0.38	
		32	V+H	8	0.44	0.00	0.00	0.00	0.70	0.02	0.70	
		33	V+H	8	0.48	0.00	0.00	0.00	0.74	0.02	0.74	
		34	V+H	8	0.45	0.00	0.00	0.00	0.72	0.02	0.72	
		35	V+H	8	0.46	0.00	0.00	0.00	0.71	0.02	0.71	
		36	V+H	8	0.41	0.00	0.01	0.00	0.71	0.02	0.71	
		37	V+H	8	0.46	0.00	0.00	0.00	0.78	0.02	0.78	
		38	V+H	8	0.44	0.00	0.00	0.00	0.80	0.03	0.80	
		39	V+H	8	0.49	0.00	0.01	0.00	0.74	0.02	0.74	
		40	V+H	8	0.49	0.00	0.00	0.00	0.78	0.03	0.78	
		41	V+H	8	0.41	0.00	0.00	0.00	0.85	0.03	0.85	
		42	V+H	8	0.44	0.00	0.01	0.00	0.73	0.02	0.73	
		43	V+H	8	0.53	0.00	0.00	0.00	0.76	0.03	0.76	
		44	V+H	8	0.44	0.00	0.01	0.00	0.76	0.02	0.76	
		45	V+H	8	0.45	0.00	0.01	0.00	0.76	0.02	0.76	
		46	V+H	8	0.51	0.00	0.00	0.00	0.77	0.03	0.77	
47	V+H	8	0.45	0.00	0.00	0.00	0.82	0.02	0.82			

Table 10. PD of Ant L and Ant K – patch antenna n260 High Ch

PD Simulation											
Module	Type(P or D)	Beam ID_1	POL	Feed no.	4cm2 PD(mW/cm2)						
					S4(Right)	S3(Left)	S5(Top)	S6(Bottom)	S1(Front)	S2(Rear)	Max
Back L	Patch	0	V	4	0.02	0.00	0.00	0.00	0.01	0.20	0.20
		1	V	4	0.03	0.00	0.00	0.00	0.01	0.23	0.23
		2	V	4	0.02	0.00	0.00	0.00	0.01	0.23	0.23
		3	V	4	0.03	0.00	0.00	0.00	0.01	0.39	0.39
		4	V	4	0.05	0.00	0.00	0.01	0.01	0.37	0.37
		5	V	4	0.03	0.00	0.00	0.00	0.01	0.38	0.38
		6	V	4	0.04	0.00	0.00	0.00	0.01	0.35	0.35
		7	V	4	0.06	0.00	0.00	0.01	0.01	0.36	0.36
		8	V	4	0.04	0.00	0.00	0.00	0.01	0.37	0.37
		9	V	4	0.06	0.00	0.00	0.01	0.01	0.35	0.35
		10	V	4	0.05	0.00	0.00	0.00	0.01	0.35	0.35
		11	V	4	0.06	0.00	0.00	0.01	0.01	0.34	0.34
		12	V	4	0.03	0.00	0.00	0.00	0.01	0.37	0.37
		13	V	4	0.06	0.00	0.00	0.00	0.01	0.37	0.37
		14	V	4	0.04	0.00	0.00	0.00	0.01	0.34	0.34
		15	V	4	0.03	0.00	0.00	0.00	0.01	0.35	0.35
		16	H	4	0.03	0.00	0.00	0.00	0.01	0.21	0.21
		17	H	4	0.03	0.00	0.00	0.00	0.01	0.23	0.23
		18	H	4	0.03	0.00	0.00	0.00	0.01	0.21	0.21
		19	H	4	0.04	0.00	0.00	0.00	0.01	0.41	0.41
		20	H	4	0.04	0.00	0.00	0.01	0.01	0.37	0.37
		21	H	4	0.06	0.00	0.00	0.00	0.01	0.36	0.36
		22	H	4	0.03	0.00	0.00	0.00	0.01	0.36	0.36
		23	H	4	0.04	0.00	0.00	0.01	0.01	0.36	0.36
		24	H	4	0.05	0.00	0.00	0.00	0.01	0.34	0.34
		25	H	4	0.04	0.00	0.00	0.01	0.01	0.36	0.36
		26	H	4	0.05	0.00	0.00	0.00	0.01	0.39	0.39
		27	H	4	0.04	0.00	0.00	0.01	0.01	0.34	0.34
		28	H	4	0.05	0.00	0.00	0.00	0.01	0.35	0.35
		29	H	4	0.04	0.00	0.00	0.00	0.01	0.39	0.39
		30	H	4	0.03	0.00	0.00	0.00	0.01	0.37	0.37
		31	H	4	0.05	0.00	0.00	0.00	0.01	0.37	0.37
		32	V+H	8	0.07	0.00	0.00	0.01	0.03	0.45	0.45
		33	V+H	8	0.09	0.00	0.00	0.01	0.03	0.49	0.49
		34	V+H	8	0.08	0.00	0.00	0.01	0.03	0.49	0.49
		35	V+H	8	0.12	0.00	0.00	0.01	0.02	0.84	0.84
		36	V+H	8	0.15	0.00	0.00	0.02	0.03	0.80	0.80
		37	V+H	8	0.14	0.00	0.01	0.00	0.03	0.79	0.79
		38	V+H	8	0.12	0.00	0.00	0.00	0.04	0.79	0.79
		39	V+H	8	0.16	0.00	0.00	0.02	0.02	0.79	0.79
		40	V+H	8	0.14	0.00	0.01	0.00	0.03	0.75	0.75
		41	V+H	8	0.16	0.00	0.00	0.03	0.02	0.78	0.78
		42	V+H	8	0.12	0.00	0.00	0.00	0.03	0.83	0.83
		43	V+H	8	0.16	0.00	0.00	0.03	0.02	0.75	0.75
		44	V+H	8	0.13	0.00	0.01	0.00	0.03	0.76	0.76
		45	V+H	8	0.15	0.00	0.00	0.00	0.04	0.83	0.83
		46	V+H	8	0.13	0.00	0.00	0.01	0.04	0.78	0.78
47	V+H	8	0.11	0.00	0.00	0.00	0.03	0.80	0.80		
Front K	Patch	0	V	4	0.19	0.00	0.00	0.00	0.35	0.01	0.35
		1	V	4	0.20	0.00	0.00	0.00	0.36	0.01	0.36
		2	V	4	0.19	0.00	0.00	0.00	0.36	0.01	0.36
		3	V	4	0.18	0.00	0.00	0.00	0.35	0.01	0.35
		4	V	4	0.21	0.00	0.00	0.00	0.35	0.01	0.35
		5	V	4	0.15	0.00	0.00	0.00	0.37	0.01	0.37
		6	V	4	0.20	0.00	0.00	0.00	0.38	0.02	0.38
		7	V	4	0.24	0.00	0.00	0.00	0.35	0.02	0.35
		8	V	4	0.16	0.00	0.00	0.00	0.37	0.00	0.37
		9	V	4	0.14	0.00	0.00	0.00	0.38	0.01	0.38
		10	V	4	0.21	0.00	0.00	0.00	0.37	0.02	0.37
		11	V	4	0.17	0.00	0.00	0.00	0.36	0.00	0.36
		12	V	4	0.18	0.00	0.00	0.00	0.35	0.01	0.35
		13	V	4	0.23	0.00	0.00	0.00	0.37	0.02	0.37
		14	V	4	0.16	0.00	0.00	0.00	0.36	0.00	0.36
		15	V	4	0.14	0.00	0.00	0.00	0.38	0.01	0.38
		16	H	4	0.18	0.00	0.00	0.00	0.35	0.01	0.35
		17	H	4	0.19	0.00	0.00	0.00	0.34	0.01	0.34
		18	H	4	0.18	0.00	0.00	0.00	0.35	0.01	0.35
		19	H	4	0.21	0.00	0.00	0.00	0.34	0.01	0.34
		20	H	4	0.18	0.00	0.00	0.00	0.33	0.01	0.33
		21	H	4	0.21	0.00	0.00	0.00	0.37	0.02	0.37
		22	H	4	0.16	0.00	0.00	0.00	0.36	0.02	0.36
		23	H	4	0.15	0.00	0.00	0.00	0.33	0.01	0.33
		24	H	4	0.23	0.00	0.00	0.00	0.37	0.02	0.37
		25	H	4	0.18	0.00	0.00	0.00	0.38	0.01	0.38
		26	H	4	0.14	0.00	0.00	0.00	0.33	0.01	0.33
		27	H	4	0.25	0.00	0.00	0.00	0.35	0.02	0.35
		28	H	4	0.18	0.00	0.00	0.00	0.34	0.00	0.34
		29	H	4	0.14	0.00	0.00	0.00	0.34	0.01	0.34
		30	H	4	0.24	0.00	0.00	0.00	0.36	0.02	0.36
		31	H	4	0.20	0.00	0.00	0.00	0.38	0.01	0.38
		32	V+H	8	0.44	0.01	0.00	0.00	0.72	0.03	0.72
		33	V+H	8	0.44	0.01	0.00	0.00	0.77	0.02	0.77
		34	V+H	8	0.43	0.01	0.00	0.00	0.76	0.02	0.76
		35	V+H	8	0.45	0.01	0.00	0.00	0.73	0.03	0.73
		36	V+H	8	0.36	0.00	0.00	0.00	0.73	0.02	0.73
		37	V+H	8	0.38	0.00	0.00	0.00	0.79	0.02	0.79
		38	V+H	8	0.36	0.00	0.00	0.00	0.80	0.02	0.80
		39	V+H	8	0.39	0.00	0.00	0.00	0.73	0.02	0.73
		40	V+H	8	0.40	0.00	0.00	0.00	0.75	0.02	0.75
		41	V+H	8	0.35	0.00	0.00	0.00	0.84	0.02	0.84
		42	V+H	8	0.37	0.00	0.00	0.00	0.73	0.02	0.73
		43	V+H	8	0.45	0.00	0.00	0.00	0.73	0.03	0.73
		44	V+H	8	0.39	0.00	0.00	0.00	0.75	0.02	0.75
		45	V+H	8	0.39	0.00	0.00	0.00	0.76	0.02	0.76
		46	V+H	8	0.43	0.00	0.00	0.00	0.74	0.03	0.74
47	V+H	8	0.36	0.00	0.00	0.00	0.82	0.02	0.82		