RF EXPOSURE REPORT
(Part 0: SAR and PD Char Evaluation)

No. I21Z61482-SEM01

For

TCL Communication Ltd.

5G NR/ LTE/WCDMA/GSM Mobile Phone

T781S，T781SPP

With

Hardware Version: 03

Software Version: 3D4Y

FCC ID: 2ACCJN056

Issued Date: 2021-10-15

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

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REPORT HISTORY

Report Number	Revision	Issue Date	Description
I21Z61482-SEM01	Rev.0	2021-10-11	Initial creation of test report
I21Z61482-SEM01	Rev.1	2021-10-15	1. Revise the P_{max} value for GSM850 and 1900 on page7.

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1 Introduction

The FCC RF exposure limit is defined based on time-averaged RF exposure. The product implements Qualcomm Smart Transmit feature which controls the instantaneous transmitting power for WWAN transmitter sto ensure the product in compliance with FCC RF exposure limit over a defined time window, for SAR (transmit frequency ≤ 6GHz) and power density (transmit frequency > 6GHz), to control and manage transmitting power in real time and to ensure at all times the time-averaged RF exposure is in compliance to the regulation requirement.

This report describes the procedures for the SAR char and PD char generation, and the parameters obtained from SAR and PD characterization (refer to as SAR char and PD char) will be used as input for Smart Transmit. Both SAR char and PD char will be entered via the Embedded File System (EFS) to enable the Smart Transmit Feature.

Terminologies in this Report

Term	**Description**
P_{limit}	The time-averaged RF power which corresponds to SAR_design_target.
P_{max}	Maximum target power level
SAR_design_target:	The design target for SAR compliance. It should be less than regulatory power density limit to account for all device design related uncertainties.
SAR Char	P_{limit} for all the technologies/bands for all applicable DSI
PD_design_target:	The design target for PD compliance. It should be less than regulatory power density limit to account for all device design related uncertainties.
Input.power.limit	For a PD characterized wireless device, the input power level at antenna port(s) for each beam corresponding to PD_design_targe.
PD Char	The table that contains input.power.limit fed to antenna port(s) for all supported beams.

2 Equipment Under Test (EUT) Overview

Description:	5G NR/ LTE/WCDMA/GSM Mobile Phone
Model name:	T781S,T781SPP
Operating mode(s):	GSM850/900/1800/1900, WCDMA B1/B2/B5/B8 LTE Band2/3/4/5/7/12/13/20/28/46/48/66 5G NR n2/n5/n66/n77/n260/261 BT, Wi-Fi(2.4G), Wi-Fi(5G)
Tested Tx Frequency:	824 – 849 MHz (GSM 850)
	1850 – 1910 MHz (GSM 1900)
	824 – 849 MHz (WCDMA 850 Band V)
	1710-1755 MHz (WCDMA1700 Band II)
	1850.7 – 1909.3 MHz (LTE Band 2)
	824.7 – 848.3 MHz (LTE Band 5)
	2500 – 2570 MHz (LTE Band 7)
	699.7 – 715.3 MHz (LTE Band 12)
	779.5 – 784.5 MHz (LTE Band 13)
	3550 – 3700 MHz (LTE Band 48)
	1710.7 –1779.3 MHz (LTE Band 66)
	2412 – 2462 MHz (Wi-Fi 2.4G)
	2400 – 2483.5 MHz (Bluetooth)
	5180 – 5240 MHz (Wi-Fi 5.2G)
	5260 – 5320 MHz (Wi-Fi 5.3G)
	5500 – 5720 MHz (Wi-Fi 5.5G)
	5745 – 5825 MHz (Wi-Fi 5.8G)
	1850 – 1910 MHz(n2)
	824 – 849 MHz(n5)
	1710 – 1780 MHz (n66)
	3700– 3980 MHz (n77)
	37000– 40000 MHz (n260)
	27500– 28350 MHz (n261)
GPRS/EGPRS Multislot Class:	12
Test device production information:	Production unit
Device type:	Portable device
Antenna type:	Integrated antenna
Hotspot mode:	Support

3 SAR Characterization

3.1 DSI and SAR Determination

This device uses different Device State Index (DSI) to configure different time averaged power levels based on certain exposure scenarios. Depending on the detection scheme implemented in the smartphone, the worst-case SAR is further grouped and determined for each or combined exposure scenario

DSI and Corresponding Exposure Scenarios

Exposure conditions	DSI	SAR design target W/kg(1g)	Remark
Body worn scenario 0/15mm	1	1.0	/
Hotspot scenario 10mm	2	1.0	/
Head scenario 0mm	3	1.0	/

	Band	DSI		
		1	2	3
Total uncertainty	GSM850	1	1	1
	GSM1900	1	1	1
	WCDMA1900	1	1	1
	WCDMA850	1	1	1
	LTE Band2-ANT2	1	1	1
	LTE Band2-ANT3	1	1	1
	LTE Band5	1	1	1
	LTE Band7	1	1	1
	LTE Band12	1	1	1
	LTE Band13	1	1	1
	LTE Band48	1	1	1
	LTE Band66-ANT2	1	1	1
	LTE Band66-ANT3	1	1	1
	Sub6G n2	1	1	1
	Sub6G n5	1	1	1
	Sub6G n66	1	1	1
	Sub6G n77	1	1	1

To account for total uncertainty, SAR_design_target should be determined as:

$$SAR\_design\_target < SAR_{regulatory\_limit} \times 10^{\frac{-total\ uncertainty}{10}}$$

3.2 SAR Char Table

SAR char must be generated to cover all radio configurations and usage scenarios that the wireless device supports for operating. P_{limit} is calculated by linearly scaling with the measured SAR at the P_{part0} to correspond to the SAR_design_target. When P_{limit} < P_{max}, P_{part0} was used as P_{limit} in the Smart Transmit EFS. When P_{limit} >P_{max} and P_{part0}=P_{max}, calculated Pmax was used in the Smart Transmit EFS. All reported SAR obtained from the P_{part0} SAR tests was less than SAR_Design_target+ device uncertainty.

<P_{limit} for supported technologies and bands (P_{limit} in EFS file)>

For FCC				
Band	**Body worn scenario 0/15mm**	**Hotspot scenario 10mm**	**Head scenario 0mm**	**P_{max}***
	DSI1	**DSI2**	**DSI3**	
GSM850 (1 Tx slots)**	32	32	32	32
GSM1900 (1 Tx slots)**	29	29	29	29
WCDMA II	20	20	20	24
WCDMA V	24	24	22.5	24
LTE Band 2-ANT2	20.5	20.5	20	24
LTE Band 2-ANT3	21.5	21.5	24	24
LTE Band 5	24	24	22.5	24
LTE Band 7	24	24	24	24
LTE Band 12	24	24	24	24
LTE Band 13	24	24	24	24
LTE Band 48**	24	24	21.5	24
LTE Band 66-ANT2	21	21	20	24
LTE Band 66-ANT3	24	24	24	24
FR1 N2	19.5	19.5	19.5	24
FR1 N5	24	24	23.5	24
FR1 N66	20	20	19	24
FR1 N77**	20.5	20.5	18.5	23

*P_{max} is used for RF tune up procedure. The maximum allowed output power is equal to P_{max} + 1dB uncertainty.

**All P_{limit} power levels entered in the Table correspond to average power levels after accounting for duty cycle in the case TDD modulation schemes (for e.g., GSM & LTE TDD & NR TDD).

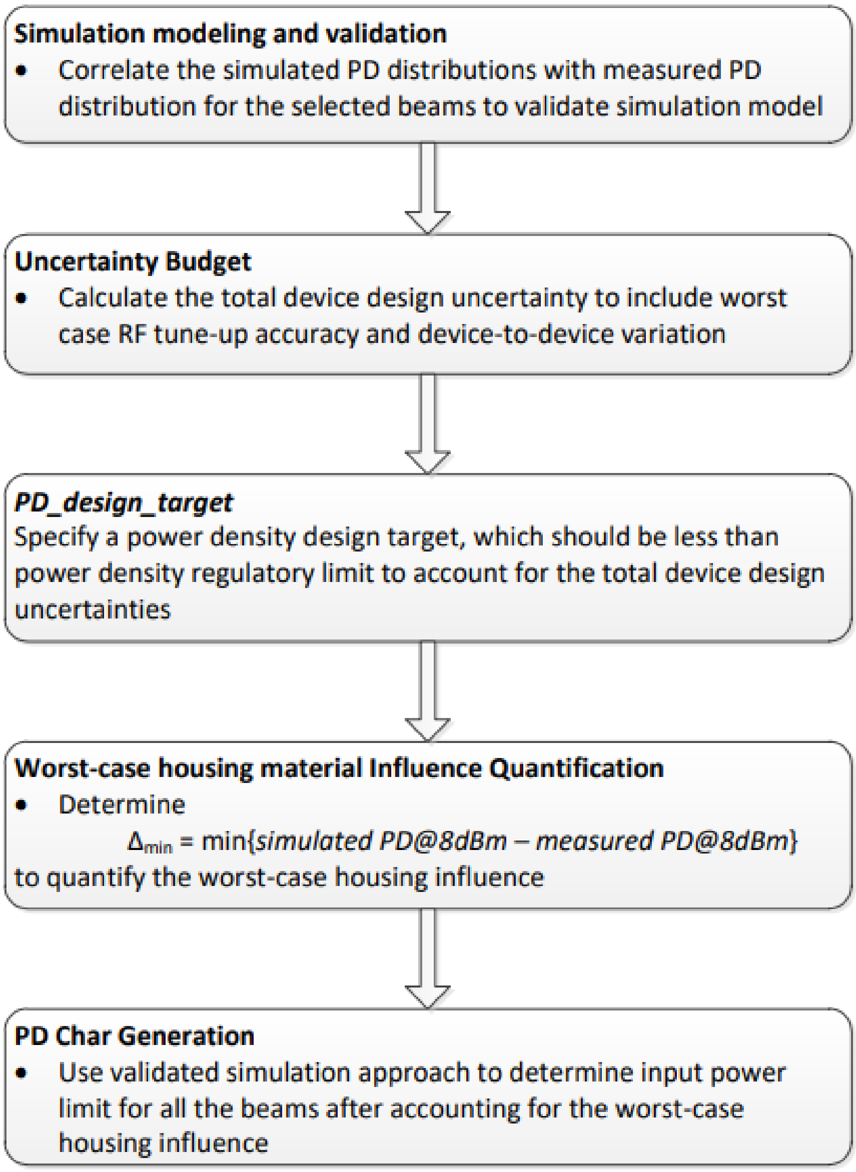
The max allowed output power is the P_{limit} + 1dB device uncertainty, and if P_{limit} is higher than P_{max}, the device output power will be P_{max} instead.

4 Power Density Characterization

The device with 5G mmW NR typically supports many beams and contains multiple mmW antenna arrays installed at different locations to achieve good coverage in the field. The power density (PD) measurement is a time-consuming test, and it is not practical to measure the power density for all the beams on all the surfaces of the device, thus a hybrid approach using electromagnetic (EM) simulation in combination with measurement is recommended for PD char generation.

4.1 PD Char Table

The mmW device supports total N beams, where M out of N are single beams and the rest of (N-M) are beam pairs (where 2 single beams are excited at the same time).
The following figure outlines the PD char process.



4.2 Codebook for all beams

All the beams that the device supports are specified in the pre-defined codebook, The codebook for this device is specified as below.

Band	Beam_ID		Ant module	Ant Type	Num. of Feed
261	1		QTM0	PATCH	1
261	6		QTM0	PATCH	2
261	7		QTM0	PATCH	2
261	8		QTM0	PATCH	2
261	9		QTM0	PATCH	2
261	13		QTM0	PATCH	2
261	14		QTM0	PATCH	2
261	15		QTM0	PATCH	2
261	21		QTM0	PATCH	4
261	22		QTM0	PATCH	4
261	23		QTM0	PATCH	4
261	24		QTM0	PATCH	4
261	25		QTM0	PATCH	4
261	30		QTM0	PATCH	4
261	31		QTM0	PATCH	4
261	32		QTM0	PATCH	4
261	33		QTM0	PATCH	4
261		129	QTM0	PATCH	1
261		134	QTM0	PATCH	2
261		135	QTM0	PATCH	2
261		136	QTM0	PATCH	2
261		137	QTM0	PATCH	2
261		141	QTM0	PATCH	2
261		142	QTM0	PATCH	2
261		143	QTM0	PATCH	2
261		149	QTM0	PATCH	4
261		150	QTM0	PATCH	4
261		151	QTM0	PATCH	4
261		152	QTM0	PATCH	4
261		153	QTM0	PATCH	4
261		158	QTM0	PATCH	4
261		159	QTM0	PATCH	4
261		160	QTM0	PATCH	4
261		161	QTM0	PATCH	4
261	129	1	QTM0	PATCH	1
261	134	6	QTM0	PATCH	2

261	135	7	QTM0	PATCH	2
261	136	8	QTM0	PATCH	2
261	137	9	QTM0	PATCH	2
261	141	13	QTM0	PATCH	2
261	142	14	QTM0	PATCH	2
261	143	15	QTM0	PATCH	2
261	149	21	QTM0	PATCH	4
261	150	22	QTM0	PATCH	4
261	151	23	QTM0	PATCH	4
261	152	24	QTM0	PATCH	4
261	153	25	QTM0	PATCH	4
261	158	30	QTM0	PATCH	4
261	159	31	QTM0	PATCH	4
261	160	32	QTM0	PATCH	4
261	161	33	QTM0	PATCH	4

Band	Beam_ID		Ant module	Ant Type	Num. of Feed
260	1		QTM0	PATCH	1
260	3		QTM0	PATCH	1
260	8		QTM0	PATCH	2
260	9		QTM0	PATCH	2
260	10		QTM0	PATCH	2
260	11		QTM0	PATCH	2
260	15		QTM0	PATCH	2
260	16		QTM0	PATCH	2
260	17		QTM0	PATCH	2
260	23		QTM0	PATCH	4
260	24		QTM0	PATCH	4
260	25		QTM0	PATCH	4
260	26		QTM0	PATCH	4
260	27		QTM0	PATCH	4
260	32		QTM0	PATCH	4
260	33		QTM0	PATCH	4
260	34		QTM0	PATCH	4
260	35		QTM0	PATCH	4
260		129	QTM0	PATCH	1
260		131	QTM0	PATCH	1
260		136	QTM0	PATCH	2
260		137	QTM0	PATCH	2
260		138	QTM0	PATCH	2
260		139	QTM0	PATCH	2

260		143	QTM0	PATCH	2
260		144	QTM0	PATCH	2
260		145	QTM0	PATCH	2
260		151	QTM0	PATCH	4
260		152	QTM0	PATCH	4
260		153	QTM0	PATCH	4
260		154	QTM0	PATCH	4
260		155	QTM0	PATCH	4
260		160	QTM0	PATCH	4
260		161	QTM0	PATCH	4
260		162	QTM0	PATCH	4
260		163	QTM0	PATCH	4
260	129	1	QTM0	PATCH	1
260	131	3	QTM0	PATCH	1
260	136	8	QTM0	PATCH	2
260	137	9	QTM0	PATCH	2
260	138	10	QTM0	PATCH	2
260	139	11	QTM0	PATCH	2
260	143	15	QTM0	PATCH	2
260	144	16	QTM0	PATCH	2
260	145	17	QTM0	PATCH	2
260	151	23	QTM0	PATCH	4
260	152	24	QTM0	PATCH	4
260	153	25	QTM0	PATCH	4
260	154	26	QTM0	PATCH	4
260	155	27	QTM0	PATCH	4
260	160	32	QTM0	PATCH	4
260	161	33	QTM0	PATCH	4
260	162	34	QTM0	PATCH	4
260	163	35	QTM0	PATCH	4

Band	Beam_ID		Ant module	Ant Type	Num. of Feed
261	0		QTM1	PATCH	1
261	2		QTM1	PATCH	2
261	3		QTM1	PATCH	2
261	4		QTM1	PATCH	2
261	5		QTM1	PATCH	2
261	10		QTM1	PATCH	2
261	11		QTM1	PATCH	2
261	12		QTM1	PATCH	2
261	16		QTM1	PATCH	2
261	17		QTM1	PATCH	4
261	18		QTM1	PATCH	4
261	19		QTM1	PATCH	4
261	20		QTM1	PATCH	4
261	26		QTM1	PATCH	4
261	27		QTM1	PATCH	4
261	28		QTM1	PATCH	4
261	29		QTM1	PATCH	4
261		128	QTM1	PATCH	1
261		130	QTM1	PATCH	2
261		131	QTM1	PATCH	2
261		132	QTM1	PATCH	2
261		133	QTM1	PATCH	2
261		138	QTM1	PATCH	2
261		139	QTM1	PATCH	2
261		140	QTM1	PATCH	2
261		144	QTM1	PATCH	4
261		145	QTM1	PATCH	4
261		146	QTM1	PATCH	4
261		147	QTM1	PATCH	4
261		148	QTM1	PATCH	4
261		154	QTM1	PATCH	4
261		155	QTM1	PATCH	4
261		156	QTM1	PATCH	4
261		157	QTM1	PATCH	4
261	128	0	QTM1	PATCH	1
261	130	2	QTM1	PATCH	2
261	131	3	QTM1	PATCH	2
261	132	4	QTM1	PATCH	2
261	133	5	QTM1	PATCH	2
261	138	10	QTM1	PATCH	2

261	139	11	QTM1	PATCH	2
261	140	12	QTM1	PATCH	2
261	144	16	QTM1	PATCH	4
261	145	17	QTM1	PATCH	4
261	146	18	QTM1	PATCH	4
261	147	19	QTM1	PATCH	4
261	148	20	QTM1	PATCH	4
261	154	26	QTM1	PATCH	4
261	155	27	QTM1	PATCH	4
261	156	28	QTM1	PATCH	4
261	157	29	QTM1	PATCH	4

Band	Beam_ID		Ant module	Ant Type	Num. of Feed
260	0		QTM1	PATCH	1
260	2		QTM1	PATCH	1
260	4		QTM1	PATCH	2
260	5		QTM1	PATCH	2
260	6		QTM1	PATCH	2
260	7		QTM1	PATCH	2
260	12		QTM1	PATCH	2
260	13		QTM1	PATCH	2
260	14		QTM1	PATCH	2
260	18		QTM1	PATCH	4
260	19		QTM1	PATCH	4
260	20		QTM1	PATCH	4
260	21		QTM1	PATCH	4
260	22		QTM1	PATCH	4
260	28		QTM1	PATCH	4
260	29		QTM1	PATCH	4
260	30		QTM1	PATCH	4
260	31		QTM1	PATCH	4
260		128	QTM1	PATCH	1
260		130	QTM1	PATCH	1
260		132	QTM1	PATCH	2
260		133	QTM1	PATCH	2
260		134	QTM1	PATCH	2
260		135	QTM1	PATCH	2
260		140	QTM1	PATCH	2
260		141	QTM1	PATCH	2
260		142	QTM1	PATCH	2
260		146	QTM1	PATCH	4

260		147	QTM1	PATCH	4
260		148	QTM1	PATCH	4
260		149	QTM1	PATCH	4
260		150	QTM1	PATCH	4
260		156	QTM1	PATCH	4
260		157	QTM1	PATCH	4
260		158	QTM1	PATCH	4
260		159	QTM1	PATCH	4
260	128	0	QTM1	PATCH	1
260	130	2	QTM1	PATCH	1
260	132	4	QTM1	PATCH	2
260	133	5	QTM1	PATCH	2
260	134	6	QTM1	PATCH	2
260	135	7	QTM1	PATCH	2
260	140	12	QTM1	PATCH	2
260	141	13	QTM1	PATCH	2
260	142	14	QTM1	PATCH	2
260	146	18	QTM1	PATCH	4
260	147	19	QTM1	PATCH	4
260	148	20	QTM1	PATCH	4
260	149	21	QTM1	PATCH	4
260	150	22	QTM1	PATCH	4
260	156	28	QTM1	PATCH	4
260	157	29	QTM1	PATCH	4
260	158	30	QTM1	PATCH	4
260	159	31	QTM1	PATCH	4

4.3 PD design target determination

To account for total uncertainty, PD_design_target should meet the criteria:

$$PD\_design\_target < PD_{regulatory\_limit} \times 10^{\frac{-totaluncertainty}{10}}$$

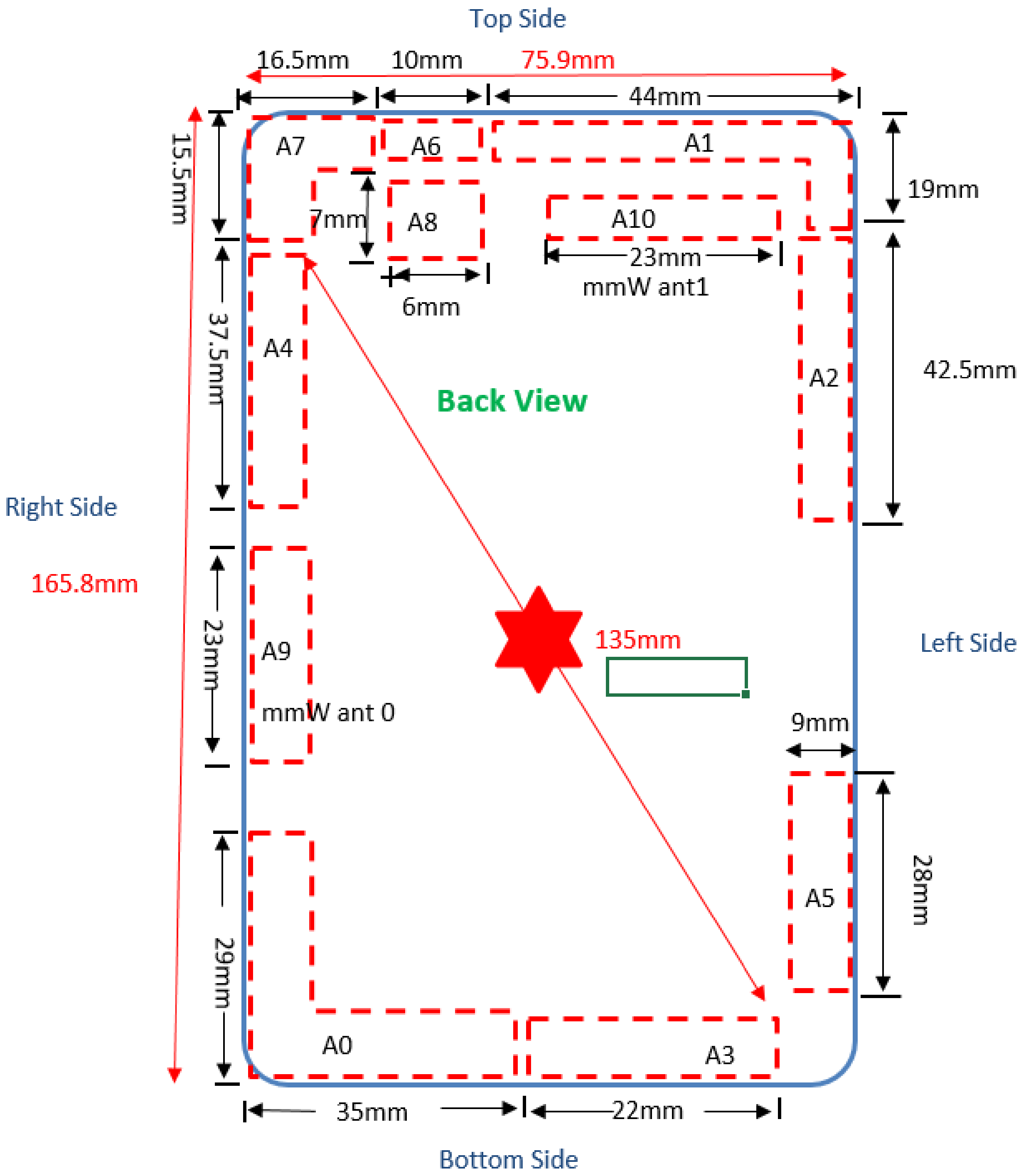
For this EUT, the PD design target and the uncertainty value are listed below

N260	PD design target	Antenna Module	W/m²
		Antenna Module 0/1	6

N261	PD design target	Antenna Module	W/m²
		Antenna Module 0/1	6

Item	Uncertainty db (k=2)
Total uncertainty	1

4.4 Exposure positions for PD evaluation



Evaluation surfaces

	Front	Back	Left from Front View	Right from Front View	Top	Bottom
QTM#0	O	O	O	O	O	O
QTM#1	O	O	O	O	O	O

Note:

1. Referring to the PD simulation report for the reason of selecting surfaces/edges.
2. The exposure positions selection is based on the all edges and surfaces of the device with a transmitting antenna located within 25 mm from that surface or edge.

4.5 Simulation and modeling validation

Power density simulations of all beams and surfaces were performed by the manufacturer. Details of these simulations and modeling validation can be found in the Power Density Simulation Report. A summary of the validation results to support worst-case housing influence quantification in power density characterization for this model can be seen below.

With an input power of 6 dBm for n261 band and 6 dBm for n260 band, PD measurements are conducted for at least one single beam per antenna type and per antenna module on worst-surface(s). PD measurements are performed at mid channel of each mmW band and with CW modulation. All measured PD values are listed below along with corresponding simulated PD values for the same configuration. Beams are chosen based on worst case simulation value of mid channel only.

PD value will be used to determine worst-case housing influence for conservative assessment.

Band	Beam ID		Antenna		Selected Surface	4cm^2 psPD(W/m^2)	
			Moudule	Type		Meas. PD	Sim. PD
n261	23		QTM0	PATCH	Right	6.34	14.67
n261	23		QTM0	PATCH	Front	3	9.75
n261		151	QTM0	PATCH	Right	7.14	13.99
n261		160	QTM0	PATCH	Front	3.98	8.91
n261	18		QTM1	PATCH	Back	8.32	16.12
n261	29		QTM1	PATCH	Top	0.963	3.31
n261		155	QTM1	PATCH	Back	8.36	15.24
n261		144	QTM1	PATCH	Top	0.629	3.49
n260	27		QTM0	PATCH	Right	7.78	15.94
n260	35		QTM0	PATCH	Front	3.99	10.09
n260		151	QTM0	PATCH	Right	5.64	14.65
n260		151	QTM0	PATCH	Front	3.24	8.93
n260	31		QTM1	PATCH	Back	6.83	13.85
n260	22		QTM1	PATCH	Left	1.88	3.4
n260		159	QTM1	PATCH	Back	5.49	12.97
n260		146	QTM1	PATCH	Left	1.19	3.05

4.6 Worst-case housing Influence Determination:△min

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 propagated 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 locations, only surrounding material/housing has impact on EM field propagation, and in turn power density. Furthermore, depending on the type of antenna array, i.e., dipole antenna array or patch antenna array, the nature of EM field propagation in the near field is different. Therefore, the worst-case housing influence is determined per antenna module and per antenna type.

1. Based on PD simulation, for each module and antenna type, determine one or more worst-surface(s) that has highest $4cm^2$ PD for all the single beams per antenna module and per antenna type in the mid channel of each band.
2. For identified worst surface(s) per antenna module and per antenna type group,
   a. First determine △min based on identified worst surface(s), and derive input.power.linit
   b. Then prove all other near-by surface(s), i.e., non-selected surface(s), is not required for housing material loss quantification (in other words, these non-evaluated surfaces have no influence on the determined input.power.limit) bu:
      i. re-scale all simulated $4cm^2$PD values to *input.power.limit* to identify the worst-PD beam per each non-evaluated surface
      ii. Measure $4cm^2$PD at *input.power.limit* on identified worst-PD beam per each non-evaluated surface
      iii. Demonstrate all measured $4cm^2$PD values are below *PD_design_target*
3. If any of the above surface(s) in Step (2.b.iii) have measured $4cm^2$ PD ≥ PD_design_target, then those surfaces must e included in the △min determination in Setp (2.a), and re-evaluate input.power.limit with these added surfaces.

Therefore, when comparing a simulated 4cm2 averaged PD and measured 4cm2 averaged PD for the above identified surfaces, the worst errors introduced when using the estimated material property in the simulation per module and per antenna type (worst out of both polarizations) is highlighted in bolded numbers in section4.5. thus, the worst-case housing influence, denoted as △min (= minimum of (sim.PD –MEAS.pd) for the same antenna type of each module), is determined as:

Band	Antenna Module	Polariaztion	Delta Min
n261	0	AG0	3.64
		AG1	2.92
	1	AG0	2.87
		AG1	2.61
n260	0	AG0	3.12
		AG1	4.15
	1	AG0	2.57
		AG1	3.73

△min represents the worst case where RF exposure is underestimated the most by simulation upon using the estimated material property for glass/plastics of the housing. For conservative assessment, the △min is used as the worst case correction and applied to each corresponding beam group to determine power limits in PD char for compliance. To ensure that condition described in Step (2.b.iii) is met, apply the correct input.power.limit to derive the PD simulated results for all beams, and select the worst beams (yellow highlighted in the PD table) for each of non-selected applicable surface(s).

The PD test results for non-selected surfaces are less the PD_design_target, and meets condition in step (2.b.iii), thus performing step (3) is not needed.

Simulated 4cm^2 averaged PD at input.power.limit

Determine the worst beam for each of non-selected surface(s)

Band	Beam ID		Polarization	Antenna							
				Moudule	Type	Front	Back	Left	Right	Top	Bottom
n261	1		AG0	QTM0	PATCH	3.696	2.080	0.000	5.966	0.017	0.034
n261	6		AG0	QTM0	PATCH	3.571	1.357	0.027	5.643	0.027	0.134
n261	7		AG0	QTM0	PATCH	3.797	2.016	0.016	5.585	0.008	0.033
n261	8		AG0	QTM0	PATCH	3.643	2.195	0.023	5.615	0.000	0.046
n261	9		AG0	QTM0	PATCH	3.023	2.602	0.009	5.817	0.037	0.064
n261	13		AG0	QTM0	PATCH	4.154	1.606	0.017	5.975	0.017	0.041
n261	14		AG0	QTM0	PATCH	4.187	1.798	0.015	5.954	0.008	0.008
n261	15		AG0	QTM0	PATCH	3.535	1.915	0.016	5.665	0.016	0.128
n261	21		AG0	QTM0	PATCH	3.826	1.683	0.024	5.725	0.042	0.084
n261	22		AG0	QTM0	PATCH	3.690	1.843	0.018	5.746	0.009	0.027
n261	23		AG0	QTM0	PATCH	3.801	1.906	0.016	5.719	0.004	0.004
n261	24		AG0	QTM0	PATCH	4.086	1.919	0.009	5.837	0.004	0.060
n261	25		AG0	QTM0	PATCH	4.108	1.708	0.014	5.708	0.024	0.175
n261	30		AG0	QTM0	PATCH	3.716	1.794	0.020	5.699	0.015	0.036
n261	31		AG0	QTM0	PATCH	3.802	1.857	0.016	5.770	0.004	0.012
n261	32		AG0	QTM0	PATCH	3.923	1.931	0.012	5.797	0.004	0.016
n261	33		AG0	QTM0	PATCH	4.126	1.748	0.014	5.766	0.014	0.126
n261		129	AG1	QTM0	PATCH	3.507	1.567	0.015	6.000	0.015	0.045
n261		134	AG1	QTM0	PATCH	3.220	2.073	0.016	6.000	0.033	0.081
n261		135	AG1	QTM0	PATCH	3.642	2.351	0.015	6.000	0.015	0.030
n261		136	AG1	QTM0	PATCH	3.912	1.956	0.015	5.839	0.007	0.015
n261		137	AG1	QTM0	PATCH	3.884	1.405	0.016	5.724	0.024	0.047
n261		141	AG1	QTM0	PATCH	3.415	2.225	0.016	6.000	0.023	0.063
n261		142	AG1	QTM0	PATCH	3.780	2.256	0.015	5.935	0.007	0.007
n261		143	AG1	QTM0	PATCH	3.933	1.517	0.015	5.737	0.015	0.039
n261		149	AG1	QTM0	PATCH	3.929	1.819	0.014	6.000	0.029	0.038
n261		150	AG1	QTM0	PATCH	3.833	2.074	0.018	5.862	0.013	0.013
n261		151	AG1	QTM0	PATCH	3.674	2.211	0.017	5.781	0.004	0.033
n261		152	AG1	QTM0	PATCH	3.668	2.062	0.026	5.804	0.004	0.035
n261		153	AG1	QTM0	PATCH	4.083	1.549	0.045	5.621	0.017	0.085
n261		158	AG1	QTM0	PATCH	3.962	1.955	0.014	6.000	0.014	0.014
n261		159	AG1	QTM0	PATCH	3.607	2.209	0.017	5.735	0.013	0.013
n261		160	AG1	QTM0	PATCH	3.736	2.147	0.017	5.811	0.004	0.034
n261		161	AG1	QTM0	PATCH	3.764	1.809	0.038	5.676	0.009	0.052

Band	Beam ID	Polarization	Antenna		Front	Back	Left	Right	Top	Bottom
			Moudule	Type						
n260	1	AG0	QTM0	PATCH	3.019	1.195	0.025	5.824	0.025	0.063
n260	3	AG0	QTM0	PATCH	3.711	1.089	0.012	6.000	0.037	0.161
n260	8	AG0	QTM0	PATCH	3.203	0.981	0.029	6.000	0.035	0.106
n260	9	AG0	QTM0	PATCH	3.656	1.412	0.014	6.000	0.029	0.093
n260	10	AG0	QTM0	PATCH	3.806	1.417	0.022	5.950	0.029	0.144
n260	11	AG0	QTM0	PATCH	3.069	1.256	0.021	6.000	0.014	0.082
n260	15	AG0	QTM0	PATCH	2.822	1.355	0.021	6.000	0.028	0.049
n260	16	AG0	QTM0	PATCH	3.518	1.153	0.050	6.000	0.033	0.050
n260	17	AG0	QTM0	PATCH	3.482	1.114	0.019	5.950	0.031	0.132
n260	23	AG0	QTM0	PATCH	3.560	1.227	0.027	5.973	0.015	0.141
n260	24	AG0	QTM0	PATCH	3.705	1.375	0.026	6.000	0.064	0.043
n260	25	AG0	QTM0	PATCH	3.959	1.532	0.030	6.000	0.025	0.064
n260	26	AG0	QTM0	PATCH	3.973	1.468	0.024	6.000	0.020	0.211
n260	27	AG0	QTM0	PATCH	3.583	1.144	0.026	6.000	0.019	0.128
n260	32	AG0	QTM0	PATCH	3.269	1.305	0.031	6.000	0.039	0.054
n260	33	AG0	QTM0	PATCH	4.100	1.252	0.032	6.000	0.045	0.023
n260	34	AG0	QTM0	PATCH	3.769	1.298	0.027	5.698	0.018	0.176
n260	35	AG0	QTM0	PATCH	3.817	1.320	0.026	6.000	0.023	0.189
n260	129	AG1	QTM0	PATCH	3.682	1.077	0.014	6.000	0.041	0.095
n260	131	AG1	QTM0	PATCH	3.275	1.176	0.015	6.000	0.030	0.104
n260	136	AG1	QTM0	PATCH	3.402	0.936	0.013	6.000	0.026	0.152
n260	137	AG1	QTM0	PATCH	3.713	1.344	0.022	6.000	0.052	0.067
n260	138	AG1	QTM0	PATCH	3.733	1.431	0.017	5.957	0.026	0.121
n260	139	AG1	QTM0	PATCH	2.917	1.368	0.015	6.000	0.015	0.113
n260	143	AG1	QTM0	PATCH	3.362	1.271	0.014	6.000	0.041	0.041
n260	144	AG1	QTM0	PATCH	4.083	1.402	0.027	6.000	0.036	0.080
n260	145	AG1	QTM0	PATCH	3.242	1.240	0.015	6.000	0.015	0.169
n260	151	AG1	QTM0	PATCH	3.657	1.306	0.016	6.000	0.029	0.094
n260	152	AG1	QTM0	PATCH	3.847	1.477	0.022	6.000	0.071	0.031
n260	153	AG1	QTM0	PATCH	3.524	1.559	0.055	6.000	0.038	0.055
n260	154	AG1	QTM0	PATCH	4.009	1.238	0.019	6.000	0.005	0.216
n260	155	AG1	QTM0	PATCH	3.566	1.448	0.017	6.000	0.013	0.176
n260	160	AG1	QTM0	PATCH	3.664	1.357	0.017	6.000	0.051	0.038
n260	161	AG1	QTM0	PATCH	3.859	1.434	0.024	6.000	0.062	0.038
n260	162	AG1	QTM0	PATCH	3.896	1.355	0.036	5.664	0.010	0.117
n260	163	AG1	QTM0	PATCH	3.567	1.367	0.017	6.000	0.008	0.259

Band	Beam ID	Polarization	Antenna							
			Moudule	Type	Front	Back	Left	Right	Top	Bottom
n261	0		QTM1	PATCH	0.213	6.000	0.329	0.310	0.735	0.039
n261	2		QTM1	PATCH	0.160	5.720	0.641	0.481	0.701	0.040
n261	3		QTM1	PATCH	0.131	5.904	0.411	0.324	0.682	0.026
n261	4		QTM1	PATCH	0.249	6.000	0.088	0.073	0.768	0.029
n261	5		QTM1	PATCH	0.271	6.000	0.147	0.066	0.989	0.029
n261	10		QTM1	PATCH	0.153	5.790	0.554	0.430	0.717	0.029
n261	11		QTM1	PATCH	0.165	5.975	0.306	0.240	0.678	0.033
n261	12		QTM1	PATCH	0.271	6.000	0.147	0.066	0.989	0.029
n261	16		QTM1	PATCH	0.240	5.640	1.479	0.455	0.854	0.025
n261	17		QTM1	PATCH	0.185	5.840	1.225	0.194	0.968	0.029
n261	18		QTM1	PATCH	0.166	5.963	0.174	0.096	1.176	0.030
n261	19		QTM1	PATCH	0.191	5.746	0.355	0.108	1.174	0.026
n261	20		QTM1	PATCH	0.289	5.862	0.616	0.134	1.305	0.017
n261	26		QTM1	PATCH	0.203	5.705	1.627	0.285	0.981	0.015
n261	27		QTM1	PATCH	0.166	5.980	0.595	0.134	0.978	0.032
n261	28		QTM1	PATCH	0.147	5.872	0.260	0.132	1.141	0.026
n261	29		QTM1	PATCH	0.283	5.838	0.530	0.117	1.338	0.016
n261	128		QTM1	PATCH	0.149	6.000	0.358	0.254	0.836	0.030
n261	130		QTM1	PATCH	0.172	5.754	0.737	0.385	1.342	0.016
n261	131		QTM1	PATCH	0.139	5.944	0.188	0.160	1.233	0.021
n261	132		QTM1	PATCH	0.146	6.000	0.140	0.127	0.860	0.019
n261	133		QTM1	PATCH	0.121	5.872	0.533	0.227	0.668	0.021
n261	138		QTM1	PATCH	0.137	5.899	0.309	0.216	1.322	0.022
n261	139		QTM1	PATCH	0.144	5.973	0.144	0.137	1.182	0.021
n261	140		QTM1	PATCH	0.132	6.000	0.329	0.191	0.730	0.020
n261	144		QTM1	PATCH	0.169	6.000	1.206	0.174	1.553	0.040
n261	145		QTM1	PATCH	0.123	5.996	0.648	0.123	1.275	0.037
n261	146		QTM1	PATCH	0.166	5.865	0.251	0.108	1.247	0.035
n261	147		QTM1	PATCH	0.199	6.000	0.342	0.085	0.901	0.030
n261	148		QTM1	PATCH	0.156	5.766	0.698	0.371	0.844	0.034
n261	154		QTM1	PATCH	0.159	6.000	1.134	0.164	1.497	0.035
n261	155		QTM1	PATCH	0.127	5.865	0.366	0.092	1.216	0.038
n261	156		QTM1	PATCH	0.200	5.867	0.172	0.106	1.089	0.024
n261	157		QTM1	PATCH	0.181	6.000	0.466	0.190	0.806	0.036

Band	Beam ID	Polarization	Antenna							
			Moudule	Type	Front	Back	Left	Right	Top	Bottom
n260	0		QTM1	PATCH	0.087	6.000	0.314	0.262	0.645	0.017
n260	2		QTM1	PATCH	0.113	5.702	0.610	0.184	0.709	0.014
n260	4		QTM1	PATCH	0.117	5.632	0.501	0.235	0.751	0.016
n260	5		QTM1	PATCH	0.182	5.864	1.017	0.191	0.654	0.027
n260	6		QTM1	PATCH	0.137	6.000	0.659	0.231	0.745	0.026
n260	7		QTM1	PATCH	0.106	5.709	1.106	0.213	0.475	0.021
n260	12		QTM1	PATCH	0.106	5.771	0.370	0.352	0.792	0.018
n260	13		QTM1	PATCH	0.262	6.000	1.215	0.112	0.785	0.028
n260	14		QTM1	PATCH	0.126	5.733	0.683	0.097	0.616	0.022
n260	18		QTM1	PATCH	0.116	5.464	1.247	0.176	0.831	0.026
n260	19		QTM1	PATCH	0.095	5.124	0.728	0.351	0.750	0.022
n260	20		QTM1	PATCH	0.133	6.000	1.221	0.455	0.888	0.022
n260	21		QTM1	PATCH	0.203	5.806	0.955	0.157	0.757	0.028
n260	22		QTM1	PATCH	0.105	5.509	1.426	0.164	0.767	0.029
n260	28		QTM1	PATCH	0.105	5.225	1.069	0.253	0.699	0.017
n260	29		QTM1	PATCH	0.115	5.760	0.559	0.354	1.043	0.040
n260	30		QTM1	PATCH	0.182	5.856	1.086	0.187	1.048	0.021
n260	31		QTM1	PATCH	0.134	6.000	1.317	0.130	0.563	0.022
n260	128		QTM1	PATCH	0.097	6.000	0.275	0.210	1.067	0.032
n260	130		QTM1	PATCH	0.199	5.954	0.673	0.184	0.765	0.015
n260	132		QTM1	PATCH	0.075	5.789	0.678	0.211	0.836	0.038
n260	133		QTM1	PATCH	0.143	6.000	0.375	0.295	1.196	0.018
n260	134		QTM1	PATCH	0.234	5.925	0.653	0.126	1.013	0.033
n260	135		QTM1	PATCH	0.089	5.733	0.691	0.186	0.787	0.037
n260	140		QTM1	PATCH	0.294	5.905	1.043	0.198	0.507	0.015
n260	141		QTM1	PATCH	0.228	6.000	0.605	0.167	1.140	0.026
n260	142		QTM1	PATCH	0.188	5.678	0.660	0.090	0.788	0.045
n260	146		QTM1	PATCH	0.187	5.832	1.387	0.309	0.773	0.027
n260	147		QTM1	PATCH	0.371	5.953	0.632	0.152	0.899	0.021
n260	148		QTM1	PATCH	0.298	6.000	0.862	0.303	1.101	0.032
n260	149		QTM1	PATCH	0.215	5.712	0.897	0.078	1.135	0.037
n260	150		QTM1	PATCH	0.276	5.894	0.938	0.218	0.894	0.024
n260	156		QTM1	PATCH	0.263	5.945	1.377	0.441	0.664	0.025
n260	157		QTM1	PATCH	0.304	6.000	0.837	0.272	1.141	0.033
n260	158		QTM1	PATCH	0.287	6.000	0.742	0.195	0.978	0.026
n260	159		QTM1	PATCH	0.257	5.739	1.217	0.097	0.978	0.027

4cm2 average PD for the selected beams on non-selected surfaces for △min determination

Band	Beam ID		Antenna		Selected Surface	Input power limit	Measured results 4cm^2 psPD(W/m^2)
			Moudule	Type			
n261	9		QTM0	PATCH	Rear	8.26	1.56
		153			Left	5.45	0.04
	21				Top	6.42	0.059
	25				Bottom	5.38	0.079
	20		QTM1	PATCH	Front	4.21	0.275
	26				Left	4.94	1.88
	2				Right	7.88	0.216
	2				Bottom	7.88	0.046
n260		153	QTM0	PATCH	Rear	6.54	1.3
		153			Left	6.54	0.03
		152			Top	5.60	0.014
		163			Bottom	5.43	0.138
		147	QTM1	PATCH	Front	5.92	0.128
	20				Right	5.02	0.123
		133			Top	8.24	0.877
		142			Bottom	7.48	0.016

4.7 PD Char

4.7.1 Scaling Factor for Single Beams

To determine the input power limit at each antenna port, simulation was performed at low, mid, and high channel for each mmW band supported, with 6 dBm input power per active port for n261 and 6 dBm input power per active port for n260 band:

1. Obtained $PD_{surface}$ value (the worst PD among all identified surfaces of the DUT) at all three channels for all single beams specified in the codebook.
2. Derived a scaling factor at low, mid and high channel, $s(i)_{low\_or\_mid\_or\_high}$, by:

$$s(i)_{low\_or\_mid\_or\_high} = \frac{PD\ design\ target}{sim.PD_{surface}(i)},\ i \in single\ beams \qquad (1)$$

3. Determined the worst-case scaling factor, $\boldsymbol{s(i)}$, among low, mid and high channels:

$$\boldsymbol{s(i)} = min\{s_{low}(i), s_{mid}(i), s_{high}(i)\},\ i \in single\ beams \qquad (2)$$

And this scaling factor applies to the input power at each antenna port.

4.7.2 Scaling Factor for Beams Pairs

Per the manufacturer, the relative phase between beam pair is not controlled in the chipset design and could vary from run to run. Therefore, for each beam pair, based on the simulation results, the worst-case scaling factor was determined mathematically to ensure the compliance. The worst-case PD for MIMO operations was found by sweeping the relative phase for all possible angles to ensure a conservative assessment. The power density simulation report contains the worst-case power density for each surface after sweeping through all relative phases between beams.

Once the power density was determined for the worst-case ∅, the scaling factor was obtained by the below equation for low, mid and high channels:

$$s(i)_{low\_or\_mid\_or\_high} = \frac{PD\ design\ target}{total\ PD\ (\emptyset(i)_{worstcase})}, i \in beam\ pairs \qquad (3)$$

The $total\ PD\ (\emptyset_{worstcase})$ varies with channel and beam pair, the lowest scaling factor among all three channels, $s(i)$, is determined for the beam pair *i*:

$$\boldsymbol{s(i)} - min\{s_{low}(i), s_{mid}(i), s_{high}(i)\},\ i \in beam\ pairs \qquad (4)$$

4.7.3 Input.Power.Limit calculations

The PD Char specifies the limit of input power at antenna port that corresponds to PD_design_target for all the beams.

Ideally, if there is no uncertainty associated with hardware design, the input.power.limit, denoted as input.power.limit (i), for beam i can be obtained after accounting for the housing influence (△min), given by:

- For n260 and n261

$$input.power.limit(i) = 6\ dBm + 10 * \log(s(i)) + \Delta_{min},\ i \in all\ beams \qquad (5)$$

Where 6dBm is the input power used in simulation for n261 and n260, respectively; s(i) is the scaling factor obtained from Eq. (2) or Eq. (4) for beam i; △min is the worst-case housing influence factor for beam i.

If simulation overestimates the housing influence, then △min (=simulated PD – measured PD) is negative, which means that the measured PD would be higher than the simulated PD. The input power to antenna elements determined via simulation must be decreased for compliance.

Similarly, if simulation underestimates the loss, the loss, then △min is positive (measured PD would be lower than the simulated value). Input power to antenna elements determined via simulation can be increased and still be PD compliant.

In reality the hardware design has uncertainty which must be properly considered. The device design related uncertainty is embedded in the process of △min determination. Since the device uncertainty is already accounted for in PD_design_target, it needs to be removed to avoid double counting this uncertainty.

Thus, Equation 5 is modified to:

If -TxAGC uncertainty < Δ_{min} < TxAGC uncertainty,

$$input.power.limit(i) = 6\ dBm + 10 * \log\big(s(i)\big),\ i \in all\ beams, \text{ for n260 and n261} \quad (6)$$

else if Δ_{min} < -TxAGC uncertainty,

$$input.power.limit(i) = 6\ dBm + 10 * \log\big(s(i)\big) + \ (\Delta_{min} + \text{TxAGC uncertainty}),$$
$$i \in all\ beams, \text{ for n260 and n261} \quad (7)$$

else if Δ_{min} > TxAGC uncertainty,

$$input.power.limit(i) = 6\ dBm + 10 * \log\big(s(i)\big) + (\Delta_{min} - \text{TxAGC uncertainty}),$$
$$i \in all\ beams, \text{ for n260 and n261} \quad (8)$$

Following above logic, the input.power.limit for this DUT can be calculated suing Equations (6), (7), and (8), i.e.,

Band	Antenna Module	Polariaztion	Delta Min	TxAGC uncertainty (dB)	Input power limit (db)
n261	0	AG0	3.64	1	Input power limit(i)=6dbm+10*log(s(i))+2.64
		AG1	2.92	1	Input power limit(i)=6dbm+10*log(s(i))+1.92
	1	AG0	2.87	1	Input power limit(i)=6dbm+10*log(s(i))+1.87
		AG1	2.61	1	Input power limit(i)=6dbm+10*log(s(i))+1.61
n260	0	AG0	3.12	1	Input power limit(i)=6dbm+10*log(s(i))+2.12
		AG1	4.15	1	Input power limit(i)=6dbm+10*log(s(i))+3.15
	1	AG0	2.57	1	Input power limit(i)=6dbm+10*log(s(i))+1.57
		AG1	3.73	1	Input power limit(i)=6dbm+10*log(s(i))+2.73

5G NR n261 Antenna 0 input.power.limit

Band	Beam ID		Antenna		Input Power Limit
			Moudule	Type	6+10log(S(i))+Delta min
n261	1		QTM0	PATCH	11.00
n261	6		QTM0	PATCH	8.15
n261	7		QTM0	PATCH	7.74
n261	8		QTM0	PATCH	7.51
n261	9		QTM0	PATCH	8.26
n261	13		QTM0	PATCH	7.82
n261	14		QTM0	PATCH	7.50
n261	15		QTM0	PATCH	7.66
n261	21		QTM0	PATCH	6.42
n261	22		QTM0	PATCH	5.13
n261	23		QTM0	PATCH	4.55
n261	24		QTM0	PATCH	4.96
n261	25		QTM0	PATCH	5.38
n261	30		QTM0	PATCH	5.72
n261	31		QTM0	PATCH	4.63
n261	32		QTM0	PATCH	4.73
n261	33		QTM0	PATCH	5.18
n261		129	QTM0	PATCH	9.66
n261		134	QTM0	PATCH	7.02
n261		135	QTM0	PATCH	6.62
n261		136	QTM0	PATCH	6.57
n261		137	QTM0	PATCH	6.89
n261		141	QTM0	PATCH	6.86
n261		142	QTM0	PATCH	6.53
n261		143	QTM0	PATCH	6.81
n261		149	QTM0	PATCH	4.69
n261		150	QTM0	PATCH	4.40
n261		151	QTM0	PATCH	4.08
n261		152	QTM0	PATCH	4.31
n261		153	QTM0	PATCH	5.45
n261		158	QTM0	PATCH	4.56
n261		159	QTM0	PATCH	4.15
n261		160	QTM0	PATCH	4.15
n261		161	QTM0	PATCH	4.64
n261	129	1	QTM0	PATCH	6.55
n261	134	6	QTM0	PATCH	4.34
n261	135	7	QTM0	PATCH	3.73
n261	136	8	QTM0	PATCH	3.51
n261	137	9	QTM0	PATCH	3.41
n261	141	13	QTM0	PATCH	3.52
n261	142	14	QTM0	PATCH	3.23
n261	143	15	QTM0	PATCH	3.63
n261	149	21	QTM0	PATCH	1.10
n261	150	22	QTM0	PATCH	1.01
n261	151	23	QTM0	PATCH	0.56
n261	152	24	QTM0	PATCH	0.89
n261	153	25	QTM0	PATCH	1.09
n261	158	30	QTM0	PATCH	1.03
n261	159	31	QTM0	PATCH	0.87
n261	160	32	QTM0	PATCH	0.66
n261	161	33	QTM0	PATCH	0.82

5G NR n261 Antenna 1 input.power.limit

Band	Beam ID		Antenna		Input Power Limit
			Moudule	Type	6+10log(S(i))+Delta min
n261	0		QTM1	PATCH	10.74
n261	2		QTM1	PATCH	7.88
n261	3		QTM1	PATCH	7.29
n261	4		QTM1	PATCH	6.52
n261	5		QTM1	PATCH	6.52
n261	10		QTM1	PATCH	7.67
n261	11		QTM1	PATCH	7.04
n261	12		QTM1	PATCH	6.52
n261	16		QTM1	PATCH	5.88
n261	17		QTM1	PATCH	4.12
n261	18		QTM1	PATCH	3.55
n261	19		QTM1	PATCH	3.60
n261	20		QTM1	PATCH	4.21
n261	26		QTM1	PATCH	4.94
n261	27		QTM1	PATCH	3.83
n261	28		QTM1	PATCH	3.63
n261	29		QTM1	PATCH	3.94
n261		128	QTM1	PATCH	9.35
n261		130	QTM1	PATCH	6.74
n261		131	QTM1	PATCH	6.04
n261		132	QTM1	PATCH	5.65
n261		133	QTM1	PATCH	6.13
n261		138	QTM1	PATCH	6.17
n261		139	QTM1	PATCH	5.98
n261		140	QTM1	PATCH	5.79
n261		144	QTM1	PATCH	4.09
n261		145	QTM1	PATCH	3.73
n261		146	QTM1	PATCH	3.47
n261		147	QTM1	PATCH	3.87
n261		148	QTM1	PATCH	4.49
n261		154	QTM1	PATCH	4.07
n261		155	QTM1	PATCH	3.46
n261		156	QTM1	PATCH	3.54
n261		157	QTM1	PATCH	4.17
n261	128	0	QTM1	PATCH	6.48
n261	130	2	QTM1	PATCH	3.76
n261	131	3	QTM1	PATCH	3.21
n261	132	4	QTM1	PATCH	2.42
n261	133	5	QTM1	PATCH	2.45
n261	138	10	QTM1	PATCH	3.52
n261	139	11	QTM1	PATCH	3.01
n261	140	12	QTM1	PATCH	2.34
n261	144	16	QTM1	PATCH	1.16
n261	145	17	QTM1	PATCH	0.52
n261	146	18	QTM1	PATCH	0.24
n261	147	19	QTM1	PATCH	0.43
n261	148	20	QTM1	PATCH	0.85
n261	154	26	QTM1	PATCH	0.81
n261	155	27	QTM1	PATCH	0.36
n261	156	28	QTM1	PATCH	0.34
n261	157	29	QTM1	PATCH	0.59

5G NR n260 Antenna 0 input.power.limit

Band	Beam ID		Antenna		Input Power Limit
			Moudule	Type	6+10log(S(i))+Delta min
n260	1		QTM0	PATCH	9.11
n260	3		QTM0	PATCH	9.04
n260	8		QTM0	PATCH	5.81
n260	9		QTM0	PATCH	6.67
n260	10		QTM0	PATCH	6.68
n260	11		QTM0	PATCH	6.48
n260	15		QTM0	PATCH	6.56
n260	16		QTM0	PATCH	7.34
n260	17		QTM0	PATCH	6.11
n260	23		QTM0	PATCH	3.93
n260	24		QTM0	PATCH	4.41
n260	25		QTM0	PATCH	5.05
n260	26		QTM0	PATCH	4.12
n260	27		QTM0	PATCH	3.87
n260	32		QTM0	PATCH	4.00
n260	33		QTM0	PATCH	4.68
n260	34		QTM0	PATCH	4.65
n260	35		QTM0	PATCH	3.89
n260		129	QTM0	PATCH	10.49
n260		131	QTM0	PATCH	10.87
n260		136	QTM0	PATCH	7.34
n260		137	QTM0	PATCH	7.85
n260		138	QTM0	PATCH	8.50
n260		139	QTM0	PATCH	7.93
n260		143	QTM0	PATCH	7.49
n260		144	QTM0	PATCH	8.63
n260		145	QTM0	PATCH	7.80
n260		151	QTM0	PATCH	5.27
n260		152	QTM0	PATCH	5.60
n260		153	QTM0	PATCH	6.54
n260		154	QTM0	PATCH	5.87
n260		155	QTM0	PATCH	5.37
n260		160	QTM0	PATCH	5.42
n260		161	QTM0	PATCH	5.91
n260		162	QTM0	PATCH	6.22
n260		163	QTM0	PATCH	5.43
n260	129	1	QTM0	PATCH	6.10
n260	131	3	QTM0	PATCH	6.12
n260	136	8	QTM0	PATCH	2.87
n260	137	9	QTM0	PATCH	3.22
n260	138	10	QTM0	PATCH	3.59
n260	139	11	QTM0	PATCH	4.44
n260	143	15	QTM0	PATCH	3.28
n260	144	16	QTM0	PATCH	4.04
n260	145	17	QTM0	PATCH	3.16
n260	151	23	QTM0	PATCH	0.67
n260	152	24	QTM0	PATCH	1.13
n260	153	25	QTM0	PATCH	1.72
n260	154	26	QTM0	PATCH	1.02
n260	155	27	QTM0	PATCH	0.49
n260	160	32	QTM0	PATCH	0.84
n260	161	33	QTM0	PATCH	1.56
n260	162	34	QTM0	PATCH	1.39
n260	163	35	QTM0	PATCH	0.65

5G NR n260 Antenna 1 input.power.limit

Band	Beam ID		Antenna		Input Power Limit
			Moudule	Type	6+10log(S(i))+Delta min
n260	0		QTM1	PATCH	9.99
n260	2		QTM1	PATCH	9.09
n260	4		QTM1	PATCH	6.51
n260	5		QTM1	PATCH	7.15
n260	6		QTM1	PATCH	6.90
n260	7		QTM1	PATCH	6.08
n260	12		QTM1	PATCH	7.02
n260	13		QTM1	PATCH	7.28
n260	14		QTM1	PATCH	6.28
n260	18		QTM1	PATCH	3.89
n260	19		QTM1	PATCH	3.94
n260	20		QTM1	PATCH	5.02
n260	21		QTM1	PATCH	4.22
n260	22		QTM1	PATCH	3.80
n260	28		QTM1	PATCH	3.82
n260	29		QTM1	PATCH	4.56
n260	30		QTM1	PATCH	4.85
n260	31		QTM1	PATCH	3.94
n260		128	QTM1	PATCH	10.82
n260		130	QTM1	PATCH	10.58
n260		132	QTM1	PATCH	7.50
n260		133	QTM1	PATCH	8.24
n260		134	QTM1	PATCH	7.96
n260		135	QTM1	PATCH	7.44
n260		140	QTM1	PATCH	7.39
n260		141	QTM1	PATCH	8.16
n260		142	QTM1	PATCH	7.48
n260		146	QTM1	PATCH	5.31
n260		147	QTM1	PATCH	5.92
n260		148	QTM1	PATCH	5.99
n260		149	QTM1	PATCH	5.34
n260		150	QTM1	PATCH	5.58
n260		156	QTM1	PATCH	5.68
n260		157	QTM1	PATCH	6.09
n260		158	QTM1	PATCH	5.83
n260		159	QTM1	PATCH	5.19
n260	128	0	QTM1	PATCH	6.50
n260	130	2	QTM1	PATCH	5.99
n260	132	4	QTM1	PATCH	3.05
n260	133	5	QTM1	PATCH	4.28
n260	134	6	QTM1	PATCH	3.63
n260	135	7	QTM1	PATCH	3.85
n260	140	12	QTM1	PATCH	3.54
n260	141	13	QTM1	PATCH	4.28
n260	142	14	QTM1	PATCH	3.08
n260	146	18	QTM1	PATCH	0.65
n260	147	19	QTM1	PATCH	0.92
n260	148	20	QTM1	PATCH	1.41
n260	149	21	QTM1	PATCH	0.99
n260	150	22	QTM1	PATCH	0.85
n260	156	28	QTM1	PATCH	0.81
n260	157	29	QTM1	PATCH	1.43
n260	158	30	QTM1	PATCH	1.50
n260	159	31	QTM1	PATCH	0.69

5 Measurement Uncertainty

The budget is valid for evaluation distance >λ/2π. For specific tests and configurations, the uncertainty can be considered smaller.

Error Description		Unc. Value (±dB)	Prob. Dist.	Div.	(C_i)	Std.Unc. (±dB)	(V_i) V_{eff}
Uncertainty terms dependent on the measurement system							
CAL	Calibration	0.49	N	1	1	0.49	∞
FRS	Frequency response	0.20	R	√3	1	0.12	∞
ISO	Isotropy	0.50	R	√3	1	0.29	∞
LIN	Linearity	0.20	R	√3	1	0.12	∞
PPO	Probe positioning offset	0.30	R	√3	1	0.17	∞
PPR	Probe positioning repeatability	0.04	R	√3	1	0.02	∞
APN	Amplitude and phase noise	0.04	R	√3	1	0.02	∞
DAQ	Data acquisition	0.03	N	1	1	0.03	∞
REC	Field reconstruction	0.60	R	√3	1	0.35	∞
SAV	Spatial averaging	0.10	R	√3	1	0.06	∞
SDL	System detection limit	0.04	R	√3	1	0.02	∞
Uncertainty terms dependent on the DUT and environmental factors							
MOD	Modulation response	0.40	R	√3	1	0.23	∞
DH	Device holder influence	0.10	R	√3	1	0.06	∞
AC	RF ambient conditions	0.04	R	√3	1	0.02	∞
AR	Ambient reflections	0.04	R	√3	1	0.02	∞
DRI	Drift of the DUT	0.02	R	√3	1	0.01	∞
Combined Standard Uncertainty						0.76	∞
Expanded Standard Uncertainty (95%)						1.52	