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PART 0 SAR AND POWER DENSITY CHAR REPORT

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A3LSMG986U

APPLICANT:

SAMSUNG ELECTRONICS CO., LTD

Report Type:

Part 0 SAR and Power Density Characterization

DUT Type:

Portable Handset

Model:

SM-G986U

Additional Model(s):

SM-G986U1, SM-G986XU

Note: This revised test report (S/N: 1M1910220166-22-R1.A3L) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Test results reported herein relate only to the item(s) tested.


Randy Ortanez
President



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1 DEVICE UNDER TEST

1.1 Device Overview

This device uses the Qualcomm® Smart Transmit feature to control and manage transmitting power in real time and to ensure the time-averaged RF exposure is in compliance with the FCC requirement at all times for 2G/3G/4G/5G WWAN operations. Additionally, this device supports WLAN/BT/NFC/ANT+/MST technologies, but the output power of these modems is not controlled by the Smart Transmit algorithm.

1.2 Time-Averaging for SAR and Power Density

This device is enabled with Qualcomm® Smart Transmit algorithm to control and manage transmitting power in real time and to ensure that the time-averaged RF exposure from 2G/3G/4G/5G NR WWAN is in compliance with FCC requirements. This Part 0 report shows SAR and Power Density characterization of WWAN radios for 2G/3G/4G/5G Sub-6 NR and 5G mmW NR respectively. Characterization is achieved by determining P_{Limit} for 2G/3G/4G/5G Sub-6 NR and input.power.limit for 5G mmW NR that correspond to the exposure design targets after accounting for all device design related uncertainties, i.e., SAR_design_target (< FCC SAR limit) for sub-6 radio and PD_design_target (< FCC PD limit) for mmW radio. The SAR characterization and PD characterization are denoted as SAR Char and PD Char in this report. Section 1.3 includes a nomenclature of the specific terms used in this report.

The compliance test under the static transmission scenario and simultaneous transmission analysis are reported in Part 1 report. The validation of the time-averaging algorithm and compliance under the dynamic (time-varying) transmission scenario for WWAN technologies are reported in Part 2 report (report SN could be found in Section 1.4 – Bibliography).

1.3 Nomenclature for Part 0 Report

Technology	Term	Description
2G/3G/4G/5G Sub 6 NR	P_{limit}	Power level that corresponds to the exposure design target (SAR_design_target) after accounting for all device design related uncertainties
	P_{max}	Maximum tune up output power
	SAR_design_target	Target SAR level < FCC SAR limit after accounting for all device design related uncertainties
	SAR Char	Table containing P_{limit} for all technologies and bands
5G mmW NR	input.power.limit	Power level at antenna element for each beam corresponding to the exposure design target (PD_design_target)
	PD_design_target	Target PD level < FCC PD limit after accounting for all device design related uncertainties
	Δ_{min}	Housing material influence
	PD Char	Table containing input.power.limit for all beams and bands

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1.4 Bibliography

Report Type	Report Serial Number
FCC SAR Evaluation Report (Part 1)	1M1910220166-01-R1.A3L
FCC PD Evaluation Report (Part 1)	1M1910220166-23.A3L
RF Exposure Part 2 Test Report	80-W5681-4 Rev.B
Power Density Simulation Report	Revision A

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2.1 SAR Definition

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy (dU) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Equation 2-1).

Equation 2-1
SAR Mathematical Equation

$$SAR = \frac{d}{dt} \left(\frac{dU}{dm} \right) = \frac{d}{dt} \left(\frac{dU}{\rho dv} \right)$$

SAR is expressed in units of Watts per Kilogram (W/kg).

$$SAR = \frac{\sigma \cdot E^2}{\rho}$$

where:

σ	=	conductivity of the tissue-simulating material (S/m)
ρ	=	mass density of the tissue-simulating material (kg/m ³)
E	=	Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relation to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.[6]

2.2 SAR Measurement Procedure

The evaluation was performed using the following procedure compliant to FCC KDB Publication 865664 D01v01r04 and IEEE 1528-2013:

1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head and body interface and the horizontal grid resolution was determined per FCC KDB Publication 865664 D01v01r04 (See Table 2-1) and IEEE 1528-2013.
2. Table 2-1) and IEEE 1528-2013.
3. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1g/10g cube evaluation. SAR at this fixed point was measured and used as a reference value.

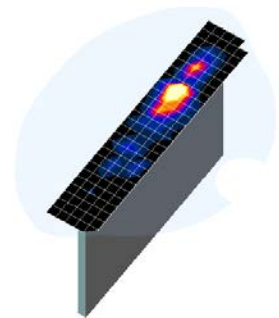


Figure 2-1
Sample SAR Area Scan

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4. Based on the area scan data, the peak of the region with maximum SAR was determined by spline interpolation. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB Publication 865664 D01v01r04 (See
5. Table 2-1) and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):
 - a. SAR values at the inner surface of the phantom are extrapolated from the measured values along the line away from the surface with spacing no greater than that in
 - b. Table 2-1. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).
 - c. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the “Not a knot” condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.
 - d. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
6. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

Table 2-1
Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v01r04*

Frequency	Maximum Area Scan Resolution (mm) ($\Delta x_{\text{area}}, \Delta y_{\text{area}}$)	Maximum Zoom Scan Resolution (mm) ($\Delta x_{\text{zoom}}, \Delta y_{\text{zoom}}$)	Maximum Zoom Scan Spatial Resolution (mm)			Minimum Zoom Scan Volume (mm) (x,y,z)
			Uniform Grid	Graded Grid		
			$\Delta z_{\text{zoom}}(n)$	$\Delta z_{\text{zoom}}(1)^*$	$\Delta z_{\text{zoom}}(n>1)^*$	
≤2 GHz	≤15	≤8	≤5	≤4	≤1.5* $\Delta z_{\text{zoom}}(n-1)$	≥30
2-3 GHz	≤12	≤5	≤5	≤4	≤1.5* $\Delta z_{\text{zoom}}(n-1)$	≥30
3-4 GHz	≤12	≤5	≤4	≤3	≤1.5* $\Delta z_{\text{zoom}}(n-1)$	≥28
4-5 GHz	≤10	≤4	≤3	≤2.5	≤1.5* $\Delta z_{\text{zoom}}(n-1)$	≥25
5-6 GHz	≤10	≤4	≤2	≤2	≤1.5* $\Delta z_{\text{zoom}}(n-1)$	≥22

*Also compliant to IEEE 1528-2013 Table 6

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2.3 Power Density Measurement Setup

Power Density measurements for mmWave frequencies were performed using the DASY6 with cDASY6 5G module. The DASY6 is made by Schmid & Partner Engineering AG (SPEAG) in Zurich, Switzerland and consists of a high precision robotics system (Staubli), robot controller, desktop computer, near-field probe, probe alignment sensor, and the 5G phantom. The robot is a six-axis industrial robot, performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF).

2.4 SPEAG EUmWV3 Probe / E-Field 5G Probe

The EUmWV3 probe consists of two dipoles optimally arranged to obtain pseudo-vector information.

Frequency Range	750 MHz – 110 GHz
Dynamic Range	< 20 V/m – 10,000 V/m with PRE-10 (min < 50 V/m – 3,000 V/m)
Position Precision	< 0.2 mm (cDASY6)
Dimensions	Probe Overall Length: 320 mm Probe Body Diameter: 8 mm Probe Tip Length: 23 mm Probe Tip Diameter: Encapsulation 8 mm Distance from Probe Tip to Sensor X Calibration Point: 1.5 mm Distance from Probe Tip to Sensor Y Calibration Point: 1.5 mm
Applications	E-field measurements of 5G devices and other mm-wave transmitters operating above 10 GHz in < 2 mm distance from device (free-space) Power density, H-field and far-field analysis using total field reconstruction
Compatibility	cDASY6 + 5G-Module SW2.0.0.23

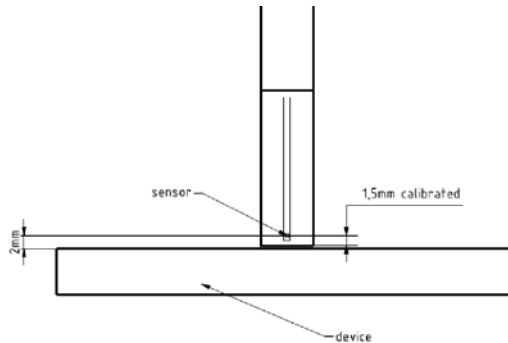


Figure 2-2
EUmWV3 Probe

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2.5 Power Density Assessment Based on E-field Measurements

Within a short distance from the transmitting source, power density was determined based on both electric and magnetic fields. Generally, the magnitude and phase of two components of either the E-field or H-field were needed on a sufficiently large surface to fully characterize the total E-field and H-field distributions. Nevertheless, solutions based on direct measurement of E-field and H-field can be used to compute power density. The general measurement approach used for this device was:

- a) The local E field on the measurement surface was measured at a reference location where the field is well above the noise level. This reference level was used at the end of this procedure to assess output power drift of the DUT during the measurement.
- b) The electric field on the measurement surface was scanned. Measurements are conducted according to the instructions provided by the measurement system manufacturer. Measurement spatial resolution can depend on the measured field characteristic and measurement methodology used by the system. The planar scan step size was configured at $\lambda/4$.
- c) For cDASY6, H-field was calculated from the measured E-field using a reconstruction algorithm. As the power density calculation requires knowledge of both amplitude and phase, reconstruction algorithms can also be used to obtain field information from the measured E-field data (e.g. the phase from the amplitude if only the amplitude is measured). H-field and phase data was reconstructed from repeated measurements (three per measurement point) on two measurement planes separated by $\lambda/4$.
- d) The total peak spatial-averaged power density (psPD) distribution on the evaluation surface is determined per the below equation. The spatial averaging area, A , is specified by the applicable exposure limits or regulatory requirements. A circular shape was used.

Equation 2-2
psPD Mathematical Equation

$$psPD = \frac{1}{2A_{av}} \iint_{A_{av}} || Re\{E \times H^*\} || dA$$

- e) The maximum peak spatial-average on the evaluation surface is the final quantity to determine compliance against applicable limits.
- f) The local E field reference value, at the same location as step 2, was re-measured after the scan was complete to calculate the power drift. If the drift deviated by more than 5%, the power density test and drift measurements were repeated.

2.6 Reconstruction Algorithm

Computation of the power density in general requires measurement information from the both E-field and H-field amplitudes and phases in the plane of incidence. Reconstruction of these quantities from pseudo-vector E-field measurements is feasible according to the manufacturer, as they are determined via Maxwell's equations. As such, the SPEAG reconstruction approach was based on the Gerchberg-Saxton algorithm, which benefits from the availability of the E-field polarization ellipse information obtained with the EUmWV3 probe.

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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 was determined by measurements for the relevant exposure conditions for that DSI. Detailed descriptions of the detection mechanisms are included in the operational description.

When 1g SAR and 10g SAR exposure comparison is needed, the worst-case was determined from SAR normalized to 1g or 10g SAR limit.

The device state index (DSI) conditions used in Table 3-1 represent different exposure scenarios.

Table 3-1
DSI and Corresponding Exposure Scenarios

Scenario	Description	SAR Test Cases
Head (DSI = 2)	- Device positioned next to head - Receiver Active	Head SAR per KDB Publication 648474 D04
Hotspot mode (DSI = 3)	- Device transmits in hotspot mode near body - Hotspot Mode Active	Hotspot SAR per KDB Publication 941225 D06
Phablet Grip (DSI=1 or 4)	- Device is held with hand and grip sensor is triggered - Grip sensor triggered or earjack is active	Phablet SAR per KDB Publication 648474 D04 & KDB Publication 616217 D04
Phablet (DSI = 0)	- Device is held with hand and grip sensor is not triggered - Distance grip sensor not triggered	Phablet SAR per KDB Publication 648474 D04 & KDB Publication 616217 D04
Body-worn (DSI = 0)	Device being used with a body-worn accessory	Body-worn SAR per KDB Publication 648474 D04

3.2 SAR Design Target

SAR_design_target is determined by ensuring that it is less than FCC SAR limit after accounting for total device designed related uncertainties specified by the manufacturer (see Table 3-2).

Table 3-2
***SAR_design_target* Calculations**

<i>SAR_design_target</i>			
$SAR_design_target < SAR_regulatory_limit \times 10^{\frac{-Total\ Uncertainty}{10}}$			
1g SAR (W/kg)		10g SAR (W/kg)	
<i>Total Uncertainty</i>	1.0 dB	<i>Total Uncertainty</i>	1.0 dB
<i>SAR_regulatory_limit</i>	1.6 W/kg	<i>SAR_regulatory_limit</i>	4.0 W/kg
<i>SAR_design_target</i>	1.0 W/kg	<i>SAR_design_target</i>	2.5 W/kg

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3.3 SAR Char

SAR test results corresponding to P_{max} for each antenna/technology/band/DSI can be found in Appendix A.

P_{limit} is calculated by linearly scaling with the measured SAR at the P_{max} to correspond to the SAR_{design_target} . P_{limit} determination for each exposure scenario corresponding to SAR_{design_target} are shown in Table 3-3.

Table 3-3
 P_{Limit} Determination

Device State Index (DSI)	P_{Limit} Determination Scenarios
0	The worst-case SAR exposure is determined as maximum SAR normalized to the limit among: 1. Body Worn SAR 2. Extremity SAR measured at 8, 6 and 11 mm spacing for back, front, bottom respectively 3. Extremity SAR measured at 0 mm for left and right surfaces
1 or 4	P_{limit} is calculated based on 10g Extremity SAR at 0 mm for back, front, and bottom surfaces
2	P_{limit} is calculated based on 1g Head SAR
3	P_{limit} is calculated based on 1g Hotspot SAR at 10 mm

Note:

For DSI = 0, P_{limit} is calculated by:

$$P_{limit} = \min\{P_{limit} \text{ corresponding to 1g Body Worn SAR evaluation at 15 mm spacing, } P_{limit} \text{ corresponding to 10g Extremity SAR evaluation at 7~12 mm spacing, } P_{limit} \text{ corresponding to 10g Extremity SAR evaluation at 0 mm for left and right surfaces}\}$$

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Table 3-4
SAR Characterizations

Device State Index (DSI)	0			1	2	3	4
Exposure Scenario	Body-Worn 1g SAR at 15 mm	Phablet 10g SAR at Max Power	Body-Worn 1g SAR at 15 mm Phablet 10g SAR at Max Power	Phablet 10g SAR at Red Power	Head 1g SAR	Hotspot 1g SAR	Phablet 10g SAR at Red Power
Mode/Band	(dBm)	(dBm)	PLimit (dBm)	PLimit (dBm)	PLimit (dBm)	PLimit (dBm)	PLimit (dBm)
GSM/GPRS/EDGE 850 MHz	30.9	33.0	30.9	26.1	31.1	26.1	26.1
GSM/GPRS/EDGE 1900 MHz	25.5	28.7	25.5	18.8	34.0	18.8	18.8
UMTS B5	30.6	32.3	30.6	26.0	31.6	26.0	26.0
UMTS B4	25.0	26.1	25.0	19.0	32.6	19.0	19.0
UMTS B2	24.9	26.6	24.9	18.5	32.9	18.5	18.5
CDMA/EVDO BC10	31.6	33.1	31.6	26.2	32.0	26.2	26.2
CDMA/EVDO BC0	30.8	32.1	30.8	26.2	31.1	26.2	26.2
CDMA/EVDO BC1	24.8	27.0	24.8	19.0	32.6	18.5	19.0
LTE FDD B71	32.6	36.7	32.6	29.8	34.9	29.8	29.8
LTE FDD B12	32.2	36.1	32.2	29.6	34.1	29.6	29.6
LTE FDD B13	30.9	33.6	30.9	27.2	32.9	27.2	27.2
LTE FDD B14	30.3	32.4	30.3	26.7	31.5	26.7	26.7
LTE FDD B26	30.5	31.9	30.5	25.8	31.6	25.8	25.8
LTE FDD B5	30.9	32.1	30.9	26.1	31.8	26.1	26.1
LTE FDD B66/4	24.8	26.8	24.8	19.8	32.7	19.5	19.8
LTE FDD B25	25.2	27.1	25.2	18.5	33.0	18.5	18.5
LTE FDD B2	25.2	26.7	25.2	18.5	33.0	18.5	18.5
LTE FDD B30	24.7	26.2	24.7	20.5	32.8	18.2	20.5
LTE FDD B7	27.5	29.2	27.5	20.5	32.6	19.5	20.5
LTE TDD B48	28.2	22.5	22.5	22.5	16.5	22.5	22.5
LTE TDD B38	28.0	31.7	28.0	19.0	28.0	19.0	19.0
LTE TDD B41	29.5	31.7	29.5	21.5	34.6	19.0	21.5
NR FDD n71	31.9	36.3	31.9	29.4	34.3	29.4	29.4
NR FDD n5	31.0	32.1	31.0	25.8	31.7	25.8	25.8
NR FDD n66	25.4	27.6	25.4	19.8	32.8	19.8	19.8
NR FDD n2	26.1	26.9	26.1	18.5	32.5	18.5	18.5
NR TDD n41	29.3	22.9	22.9	22.9	18.2	22.9	22.9

Notes:

- For all modes/bands, when Hotspot Mode (DSI=3) and Extremity sensor (DSI=1) are triggered at the same time, DSI=3 takes priority, thus the P_{limit} for DSI=1 is set to be less or equal to P_{limit} for DSI=3.
- For LTE Band 48, when RCV is active, DSI=2 takes priority over all levels.
- When $P_{max} < P_{limit}$, the DUT will operate at a power level up to P_{max} .
- P_{limit} for DSI=1 and DSI =4 are the same.

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4 POWER DENSITY CHARACTERIZATION

4.1 Exposure Scenarios in Power Density Evaluation

At frequencies > 6 GHz, the total peak spatial averaged power density (psPD) is required to be assessed for all antenna configurations (beams) from all mmW antenna modules installed inside the device. This device has 3 patch antenna arrays (J Patch, K Patch, L Patch) and 1 dipole antenna array (J Dipole). Per each supported band, there are a total of 153 beams: 102 SISO beams and 51 MIMO beam pairs.

As showed in Figure 4-1, the surfaces near-by each mmW antenna module for PD characterization are identified and listed in Table 4-1.

Table 4-1
Evaluation Surfaces for PD Characterization

Band & Mode	Antenna	Back (S2)	Front (S1)	Top (S5)	Bottom (S6)	Right (S4)	Left (S3)
5G NR Band n261	J Dipole	Yes	Yes	Yes	No	No	Yes
	J Patch	Yes	No	Yes	No	No	Yes
	K Patch	Yes	Yes	No	No	No	Yes
	L Patch	Yes	Yes	No	No	Yes	No
5G NR Band n260	J Dipole	Yes	Yes	Yes	No	No	Yes
	J Patch	Yes	No	Yes	No	No	Yes
	K Patch	Yes	Yes	No	No	No	Yes
	L Patch	Yes	Yes	No	No	Yes	No

Note: The J Patch antenna, located on the back surface, is constructed with its dedicated ground plane behind the entire patch array and can only propagate outward. Therefore, the front surface (S1) is excluded in Table 4-1 for the J Patch antenna.

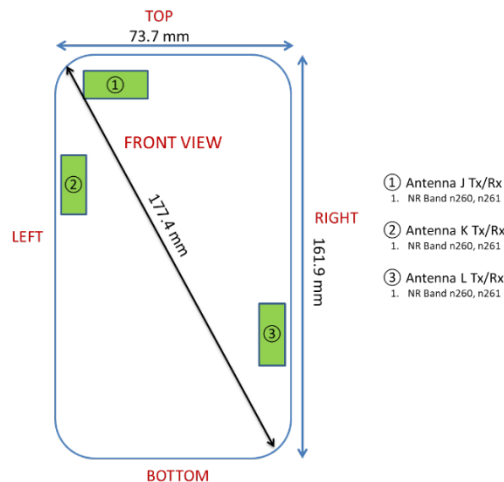


Figure 4-1: Location of mmW antenna modules looking from front of the DUT

Particular DUT edges were not required to be evaluated for power density if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v02r01 Section III and FCC KDB Publication 648474 D04v01r03. The distances between the transmit antennas and the edges of the device are included in the filing. Per FCC guidance, additional edges with negligible psPD results could be excluded from testing towards Δ_{min} calculations.

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4.2 Power Density Characterization Method

An overview of power density characterization method could be found in Figure 4-2 below.

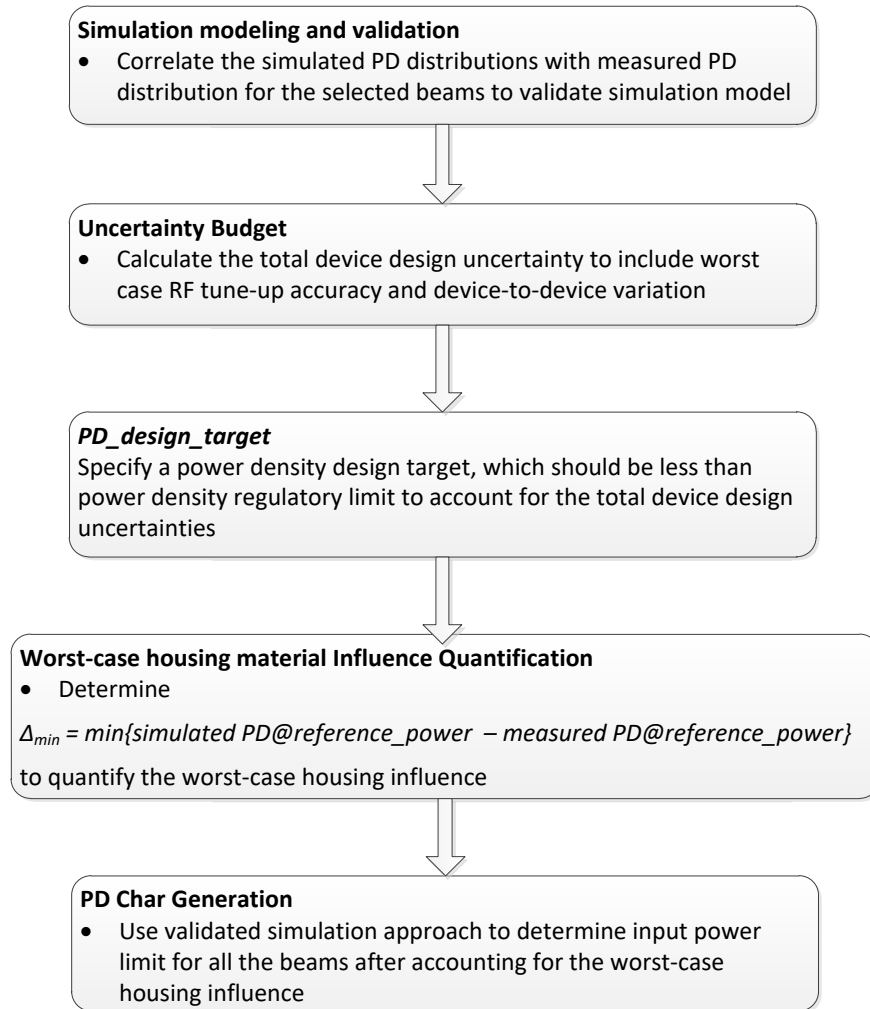


Figure 4-3
Flow Chart for Power Density Characterization

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4.3 Codebook for all supported beams

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

Table 4-2
5G mmW NR Band n261 Ant J Codebook

Band	Beam ID	Antenna	Ant_Type	Paired_With	# of Antenna Feed
261	0	J	PATCH	128	1
261	1	J	DIPOLE	129	2
261	4	J	PATCH	134	2
261	5	J	PATCH	133	2
261	6	J	PATCH	132	2
261	7	J	DIPOLE	137	4
261	8	J	DIPOLE	136	4
261	9	J	DIPOLE	135	4
261	16	J	PATCH	144	2
261	17	J	PATCH	145	2
261	18	J	DIPOLE	147	4
261	19	J	DIPOLE	146	4
261	24	J	PATCH	155	4
261	25	J	PATCH	154	4
261	26	J	PATCH	153	4
261	27	J	PATCH	152	4
261	28	J	PATCH	156	4
261	39	J	PATCH	169	4
261	40	J	PATCH	168	4
261	41	J	PATCH	167	4
261	42	J	PATCH	170	4
261	128	J	PATCH	0	1
261	129	J	DIPOLE	1	2
261	132	J	PATCH	6	2
261	133	J	PATCH	5	2
261	134	J	PATCH	4	2
261	135	J	DIPOLE	9	4
261	136	J	DIPOLE	8	4
261	137	J	DIPOLE	7	4
261	144	J	PATCH	16	2
261	145	J	PATCH	17	2
261	146	J	DIPOLE	19	4
261	147	J	DIPOLE	18	4
261	152	J	PATCH	27	4
261	153	J	PATCH	26	4
261	154	J	PATCH	25	4
261	155	J	PATCH	24	4
261	156	J	PATCH	28	4
261	167	J	PATCH	41	4
261	168	J	PATCH	40	4
261	169	J	PATCH	39	4
261	170	J	PATCH	42	4

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Table 4-3
5G mmW NR Band n260 Ant J Codebook

Band	Beam ID	Antenna	Ant_Type	Paired_With	# of Antenna Feed
260	0	J	PATCH	128	1
260	1	J	DIPOLE	129	2
260	4	J	PATCH	132	2
260	5	J	PATCH	133	2
260	6	J	PATCH	134	2
260	7	J	DIPOLE	135	4
260	8	J	DIPOLE	136	4
260	9	J	DIPOLE	137	4
260	16	J	PATCH	144	2
260	17	J	PATCH	145	2
260	18	J	DIPOLE	146	4
260	19	J	DIPOLE	147	4
260	24	J	PATCH	152	4
260	25	J	PATCH	153	4
260	26	J	PATCH	154	4
260	27	J	PATCH	155	4
260	28	J	PATCH	156	4
260	39	J	PATCH	167	4
260	40	J	PATCH	168	4
260	41	J	PATCH	169	4
260	42	J	PATCH	170	4
260	128	J	PATCH	0	1
260	129	J	DIPOLE	1	2
260	132	J	PATCH	4	2
260	133	J	PATCH	5	2
260	134	J	PATCH	6	2
260	135	J	DIPOLE	7	4
260	136	J	DIPOLE	8	4
260	137	J	DIPOLE	9	4
260	144	J	PATCH	16	2
260	145	J	PATCH	17	2
260	146	J	DIPOLE	18	4
260	147	J	DIPOLE	19	4
260	152	J	PATCH	24	4
260	153	J	PATCH	25	4
260	154	J	PATCH	26	4
260	155	J	PATCH	27	4
260	156	J	PATCH	28	4
260	167	J	PATCH	39	4
260	168	J	PATCH	40	4
260	169	J	PATCH	41	4
260	170	J	PATCH	42	4

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Table 4-4
5G mmW NR Band n261 Ant K Codebook

Band	Beam ID	Antenna	Ant_Type	Paired_With	# of Antenna Feed
261	3	K	PATCH	131	1
261	13	K	PATCH	143	2
261	14	K	PATCH	142	2
261	15	K	PATCH	141	2
261	22	K	PATCH	151	2
261	23	K	PATCH	150	2
261	34	K	PATCH	166	4
261	35	K	PATCH	164	4
261	36	K	PATCH	163	4
261	37	K	PATCH	162	4
261	38	K	PATCH	165	4
261	47	K	PATCH	177	4
261	48	K	PATCH	178	4
261	49	K	PATCH	176	4
261	50	K	PATCH	175	4
261	131	K	PATCH	3	1
261	141	K	PATCH	15	2
261	142	K	PATCH	14	2
261	143	K	PATCH	13	2
261	150	K	PATCH	23	2
261	151	K	PATCH	22	2
261	162	K	PATCH	37	4
261	163	K	PATCH	36	4
261	164	K	PATCH	35	4
261	165	K	PATCH	38	4
261	166	K	PATCH	34	4
261	175	K	PATCH	50	4
261	176	K	PATCH	49	4
261	177	K	PATCH	47	4
261	178	K	PATCH	48	4

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Table 4-5
5G mmW NR Band n260 Ant K Codebook

Band	Beam ID	Antenna	Ant_Type	Paired_With	# of Antenna Feed
260	3	K	PATCH	131	1
260	13	K	PATCH	142	2
260	14	K	PATCH	141	2
260	15	K	PATCH	143	2
260	22	K	PATCH	150	2
260	23	K	PATCH	151	2
260	34	K	PATCH	164	4
260	35	K	PATCH	163	4
260	36	K	PATCH	162	4
260	37	K	PATCH	166	4
260	38	K	PATCH	165	4
260	47	K	PATCH	177	4
260	48	K	PATCH	176	4
260	49	K	PATCH	175	4
260	50	K	PATCH	178	4
260	131	K	PATCH	3	1
260	141	K	PATCH	14	2
260	142	K	PATCH	13	2
260	143	K	PATCH	15	2
260	150	K	PATCH	22	2
260	151	K	PATCH	23	2
260	162	K	PATCH	36	4
260	163	K	PATCH	35	4
260	164	K	PATCH	34	4
260	165	K	PATCH	38	4
260	166	K	PATCH	37	4
260	175	K	PATCH	49	4
260	176	K	PATCH	48	4
260	177	K	PATCH	47	4
260	178	K	PATCH	50	4

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Table 4-6
5G mmW NR Band n261 Ant L Codebook

Band	Beam ID	Antenna	Ant_Type	Paired_With	# of Antenna Feed
261	2	L	PATCH	130	1
261	10	L	PATCH	140	2
261	11	L	PATCH	139	2
261	12	L	PATCH	138	2
261	20	L	PATCH	149	2
261	21	L	PATCH	148	2
261	29	L	PATCH	161	4
261	30	L	PATCH	159	4
261	31	L	PATCH	158	4
261	32	L	PATCH	157	4
261	33	L	PATCH	160	4
261	43	L	PATCH	174	4
261	44	L	PATCH	172	4
261	45	L	PATCH	171	4
261	46	L	PATCH	173	4
261	130	L	PATCH	2	1
261	138	L	PATCH	12	2
261	139	L	PATCH	11	2
261	140	L	PATCH	10	2
261	148	L	PATCH	21	2
261	149	L	PATCH	20	2
261	157	L	PATCH	32	4
261	158	L	PATCH	31	4
261	159	L	PATCH	30	4
261	160	L	PATCH	33	4
261	161	L	PATCH	29	4
261	171	L	PATCH	45	4
261	172	L	PATCH	44	4
261	173	L	PATCH	46	4
261	174	L	PATCH	43	4

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Table 4-7
5G mmW NR Band n260 Ant L Codebook

Band	Beam ID	Antenna	Ant_Type	Paired_With	# of Antenna Feed
260	2	L	PATCH	130	1
260	10	L	PATCH	139	2
260	11	L	PATCH	138	2
260	12	L	PATCH	140	2
260	20	L	PATCH	148	2
260	21	L	PATCH	149	2
260	29	L	PATCH	159	4
260	30	L	PATCH	157	4
260	31	L	PATCH	158	4
260	32	L	PATCH	161	4
260	33	L	PATCH	160	4
260	43	L	PATCH	173	4
260	44	L	PATCH	172	4
260	45	L	PATCH	171	4
260	46	L	PATCH	174	4
260	130	L	PATCH	2	1
260	138	L	PATCH	11	2
260	139	L	PATCH	10	2
260	140	L	PATCH	12	2
260	148	L	PATCH	20	2
260	149	L	PATCH	21	2
260	157	L	PATCH	30	4
260	158	L	PATCH	31	4
260	159	L	PATCH	29	4
260	160	L	PATCH	33	4
260	161	L	PATCH	32	4
260	171	L	PATCH	45	4
260	172	L	PATCH	44	4
260	173	L	PATCH	43	4
260	174	L	PATCH	46	4

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4.4 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 (report SN could be found in Section 1-4 – Bibliography). Table 4-8 includes a summary of the validation results to support worst-case housing influence quantification in power density characterization for this model.

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 (dipole vs. patch) and per antenna module (J, K, L) on worst-surface(s) listed in Section 4.6. PD measurements are performed at mid channel of each mmW band and with CW modulation. All measured PD values are listed in Table 4-8 along with corresponding simulated PD values for the same configuration.

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

Table 4-8
Measured and Simulated 4cm² psPD for Selected Beams
with 6 dBm Input Power for n261 and 6 dBm Input Power for n260

				4cm ² psPD (mW/cm ²)		Delta = Sim. - Meas. (dB)
Band	Antenna	Beam ID	Surface	Meas.	Sim	
n261	J (Dipole)	9	Back	0.45	1.18	4.21
		136	Back	0.52	1.15	3.45
	J (Patch)	25	Back	1.33	1.70	1.07
		155	Back	0.79	1.42	2.53
	K (Patch)	49	Back	0.49	1.23	4.00
			Left	0.61	1.45	3.80
		164	Back	0.46	0.82	2.52
			Left	0.58	1.55	4.25
	L (Patch)	31	Back	0.72	1.39	2.86
			Right	0.80	1.35	2.24
		172	Back	0.61	1.47	3.81
			Right	1.04	1.47	1.49
n260	J (Dipole)	18	Back	0.29	0.90	4.88
		146	Back	0.39	0.85	3.41
	J (Patch)	26	Back	0.55	1.53	4.47
		168	Back	0.85	1.33	1.93
	K (Patch)	36	Back	0.93	1.13	0.86
			Left	0.99	1.48	1.78
		177	Back	0.87	1.19	1.35
			Left	1.14	1.47	1.12
	L (Patch)	31	Back	0.77	1.34	2.39
			Right	1.03	1.43	1.42
		173	Back	1.01	1.35	1.26
			Right	1.36	1.41	0.15

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4.5 PD_design_target

PD_design_target is determined by ensuring that it is less than FCC PD limit after accounting for total device design uncertainties including TxAGC and device-to-device variation, specified by the manufacturer (see Table 4-9).

Table 4-9
PD_design_target Calculations

<i>PD_design_target</i>	
$PD_design_target < PD_regulatory_limit \times 10^{\frac{-Total\ Uncertainty}{10}}$	
psPD over 4 cm ² Averaging Area (mW/cm ²)	
<i>Total Uncertainty</i>	2.1 dB
<i>PD_regulatory_limit</i>	1.0 mW/cm ²
<i>PD_design_target</i>	0.6166 mW/cm ²

4.6 Worst-case Housing Influence Determination: Δ_{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 propagates through, the most underestimated surface is used to quantify the worst-case housing influence for conservative assessment.

Since the mmW antenna modules are placed at different location as shown in Figure 4-1, 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.

For this DUT, the below procedure was used to determine worst-case housing influence, Δ_{min} :

1. Based on PD simulation, for each module and antenna type, determine one or more worst-surface(s) that has highest 4cm² 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 Δ_{min} based on identified worst surface(s), and derive *input.power.limit*
 - 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*) by:
 - i. re-scale all simulated 4cm²PD values to *input.power.limit* to identify the worst-PD beam per each non-evaluated surface
 - ii. Measure 4cm²PD at *input.power.limit* on identified worst-PD beam per each non-evaluated surface
 - iii. Demonstrate all measured 4cm²PD values are below *PD_design_target*

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3. If any of the above surface(s) in Step (2.b.iii) have measured $4\text{cm}^2 \text{ PD} \geq PD_design_target$, then those surfaces must be included in the Δ_{min} determination in Step (2.a), and re-evaluate *input.power.limit* with these added surfaces.

Following above procedure, based on Table 2 ~ Table 7 in Samsung PD simulation report, the worst-surface(s) having highest $4\text{cm}^2 \text{PD}$ for all the single beams per each antenna type and each antenna module group in the mid channel of n261 and n260 bands are identified as:

- a. for J dipole: Back (S2)
- b. for J patch: Back (S2)
- c. for K patch: Back (S2) & Left (S3)
- d. for L patch: Back (S2) & Right (S4)

Thus, when comparing a simulated 4cm^2 -averaged PD and measured 4cm^2 -averaged PD for the identified worst surface(s), the worst error introduced for each antenna type and each antenna module group when using the estimated material property in the simulation is highlighted in bold numbers in Table 4-8. Thus, the worst-case housing influence, denoted as $\Delta_{min} = \text{Sim. PD} - \text{Meas. PD}$, is determined as

Table 4-10
 Δ_{min} for Ant J, Ant K and Ant L

Band	Ant	Δ_{min} (dB)
n261	J (Dipole Beam)	3.45
	J (Patch Beam)	1.07
	K (Patch Beam)	2.52
	L (Patch Beam)	1.49
n260	J (Dipole Beam)	3.41
	J (Patch Beam)	1.93
	K (Patch Beam)	0.86
	L (Patch Beam)	0.15

Δ_{min} represents the worst case where RF exposure is underestimated the most in simulation when using the estimated material property of the housing. For conservative assessment, the Δ_{min} is used as the worst-case factor and applied to all the beams in the corresponding antenna type and antenna module group to determine input power limits in PD char for compliance.

The detail *input.power.limit* derivation is described in Section 4.7.

Simulated $4\text{cm}^2 \text{PD}$ values in Table 2 ~ Table 7 in Power Density Simulation Report are scaled to *input.power.limit* and are listed in Tables 4-11 ~ 4-18 for all single beams for all identified surfaces (shown in Table 4-1), when assuming the simulation is performed with correct housing influence.

Determine the worst beam for each of non-selected surface(s), i.e.,

- a. for J dipole: Left (S3), Top (S5), Front (S1)
- b. for J patch: Left (S3), Top (S5)
- c. for K patch: Front (S1)
- d. for L patch: Front (S1)

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Then perform PD measurement for all determined worst-case beams, highlighted in orange in Tables 4-11 – 4-18, on the corresponding surface. Measurement is performed in the mid channel of each band with CW modulation. The evaluation distance is at 2 mm.

The test results in Table 4-19 shows that the all measured 4cm² PD values are less than *PD_design_target* of 0.6166 mW/cm², thus, the non-selected surfaces have no influence on the determined Δ_{min} and *input.power.limit* in Section 4.7.

Table 4-11: n261/mid channel, J Dipole simulated 4cm² PD at *PD_Design_Target* (if simulation performed with correct housing material properties) (Δ_{min})

No.	Module	Type (P or D)	Beam ID_1	Simulated 4cm ² PD(mW/cm ²) Corresponding to <i>PD_design_target</i> if the simulation was performed with correct No. Module Type housing material properties			
				S3(Left)	S5(Top)	S1(Front)	S2(Back)
1	J	DIPOLE	1	0.106	0.197	0.012	0.552
2			7	0.184	0.209	0.021	0.582
3			8	0.070	0.256	0.010	0.569
4			9	0.061	0.264	0.014	0.607
5			18	0.127	0.231	0.014	0.555
6			19	0.046	0.266	0.011	0.592
7			129	0.086	0.236	0.022	0.602
8			135	0.059	0.275	0.042	0.571
9			136	0.030	0.303	0.017	0.598
10			137	0.174	0.228	0.050	0.596
11			146	0.025	0.294	0.029	0.583
12			147	0.116	0.304	0.024	0.617

Please note the above scaled simulation values correspond to *PD_design_target* if the simulation was performed with correct housing material properties.

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**Table 4-12: n261/mid channel J Patch simulated 4cm² PD at PD_Design_Target
(if simulation performed with correct housing material properties) (Δ_{min})**

No.	Module	Type (P or D)	Beam ID_1	Simulated 4cm ² PD(mW/cm ²) Corresponding to PD_design_target if the simulation was performed with correct No. Module Type housing material properties		
				S3(Left)	S5(Top)	S2(Back)
19	J	PATCH	0	0.075	0.055	0.617
20			4	0.132	0.060	0.617
21			5	0.035	0.079	0.598
22			6	0.054	0.074	0.607
23			16	0.120	0.066	0.575
24			17	0.024	0.088	0.608
25			24	0.161	0.081	0.586
26			25	0.090	0.095	0.595
27			26	0.030	0.103	0.570
28			27	0.023	0.074	0.549
29			28	0.025	0.061	0.617
30			39	0.138	0.080	0.589
31			40	0.073	0.099	0.586
32			41	0.025	0.102	0.561
33			42	0.027	0.065	0.585
34			128	0.078	0.049	0.535
35			132	0.036	0.089	0.599
36			133	0.038	0.082	0.580
37			134	0.153	0.039	0.511
38			144	0.021	0.088	0.582
39			145	0.071	0.079	0.600
40			152	0.030	0.111	0.537
41			153	0.034	0.104	0.556
42			154	0.040	0.091	0.526
43			155	0.128	0.051	0.560
44			156	0.164	0.047	0.573
45			167	0.025	0.122	0.569
46			168	0.043	0.093	0.536
47			169	0.080	0.078	0.540
48			170	0.154	0.046	0.572

Please note the above scaled simulation values correspond to PD_design_target if the simulation was performed with correct housing material properties.

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Table 4-13: n261/mid channel, K Patch simulated 4cm² PD at PD_Design_Target (if simulation performed with correct housing material properties) (Δ_{min})

No.	Module	Type (P or D)	Beam ID_1	Simulated 4cm ² PD(mW/cm ²) Corresponding to PD_design_target if the simulation was performed with correct No. Module Type housing material properties		
				S3(Left)	S1(Front)	S2(Back)
109	K	PATCH	3	0.617	0.065	0.515
110			13	0.617	0.104	0.485
111			14	0.594	0.106	0.481
112			15	0.604	0.082	0.469
113			22	0.617	0.085	0.485
114			23	0.617	0.058	0.585
115			34	0.614	0.141	0.448
116			35	0.617	0.100	0.506
117			36	0.617	0.099	0.511
118			37	0.565	0.049	0.537
119			38	0.598	0.112	0.590
120			47	0.617	0.120	0.471
121			48	0.612	0.100	0.505
122			49	0.616	0.090	0.524
123			50	0.584	0.080	0.571
124			131	0.617	0.107	0.436
125			141	0.612	0.117	0.243
126			142	0.617	0.100	0.502
127			143	0.545	0.071	0.520
128			150	0.617	0.105	0.499
129			151	0.565	0.076	0.482
130			162	0.606	0.123	0.341
131			163	0.617	0.108	0.363
132			164	0.617	0.087	0.328
133			165	0.550	0.054	0.286
134			166	0.580	0.069	0.414
135			175	0.617	0.112	0.327
136			176	0.617	0.110	0.349
137			177	0.557	0.068	0.290
138			178	0.587	0.062	0.359

Note: Even though the worst surface having the highest 4cm² PD values is left surface (S3), as shown in Table 4-8, the back surface (S2) was also selected for Δ_{min} determination. Therefore, the worst-case beam for remaining non-selected surfaces (identified in Table 4-1) is from front surface (S1) only.

Please note the above scaled simulation values correspond to PD_design_target if the simulation was performed with correct housing material properties.

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Table 4-14: n261/mid channel, L Patch simulated 4cm² PD at PD_Design_Target (if simulation performed with correct housing material properties) (Δ_{min})

No.	Module	Type (P or D)	Beam ID_1	Simulated 4cm ² PD(mW/cm ²) Corresponding to PD_design_target if the simulation was performed with correct No. Module Type housing material properties		
				S4(Right)	S1(Front)	S2(Back)
64	L	PATCH	2	0.617	0.127	0.580
65			10	0.617	0.130	0.609
66			11	0.581	0.095	0.589
67			12	0.571	0.077	0.614
68			20	0.617	0.089	0.614
69			21	0.507	0.054	0.608
70			29	0.617	0.143	0.582
71			30	0.617	0.114	0.611
72			31	0.598	0.080	0.617
73			32	0.551	0.049	0.617
74			33	0.511	0.083	0.617
75			43	0.614	0.125	0.584
76			44	0.603	0.083	0.613
77			45	0.588	0.078	0.617
78			46	0.527	0.064	0.617
79			130	0.603	0.083	0.601
80			138	0.617	0.112	0.577
81			139	0.605	0.096	0.617
82			140	0.442	0.056	0.547
83			148	0.609	0.101	0.596
84			149	0.507	0.072	0.570
85			157	0.611	0.119	0.589
86			158	0.617	0.110	0.615
87			159	0.615	0.083	0.617
88			160	0.499	0.061	0.532
89			161	0.435	0.056	0.556
90			171	0.610	0.111	0.600
91			172	0.615	0.090	0.617
92			173	0.552	0.075	0.559
93			174	0.478	0.052	0.564

Please note the above scaled simulation values correspond to PD_design_target if the simulation was performed with correct housing material properties.

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**Table 4-15: n260/mid channel, J Dipole simulated 4cm² PD at PD_Design_Target
(if simulation performed with correct housing material properties) (Δ_{min})**

No.	Module	Type (P or D)	Beam ID_1	Simulated 4cm ² PD(mW/cm ²) Corresponding to PD_design_target if the simulation was performed with correct No. Module Type housing material properties			
				S3(Left)	S5(Top)	S1(Front)	S2(Back)
1	J	DIPOLE	1	0.109	0.191	0.025	0.601
2			7	0.179	0.157	0.027	0.617
3			8	0.046	0.258	0.013	0.604
4			9	0.140	0.163	0.026	0.590
5			18	0.173	0.168	0.026	0.617
6			19	0.111	0.191	0.021	0.569
7			129	0.078	0.175	0.028	0.617
8			135	0.102	0.173	0.013	0.583
9			136	0.067	0.187	0.046	0.595
10			137	0.123	0.149	0.023	0.587
11			146	0.064	0.204	0.011	0.579
12			147	0.128	0.140	0.031	0.588

Please note the above scaled simulation values correspond to PD_design_target if the simulation was performed with correct housing material properties.

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**Table 4-16: n260/mid channel, J Patch simulated 4cm² PD at PD_Design_Target
(if simulation performed with correct housing material properties) (Δ_{min})**

No.	Module	Type (P or D)	Beam ID_1	Simulated 4cm ² PD(mW/cm ²) Corresponding to PD_design_target if the simulation was performed with correct No. Module Type housing material properties		
				S3(Left)	S5(Top)	S2(Back)
19	J	PATCH	0	0.152	0.109	0.617
20			4	0.074	0.112	0.617
21			5	0.031	0.170	0.617
22			6	0.156	0.122	0.617
23			16	0.053	0.134	0.617
24			17	0.057	0.151	0.617
25			24	0.183	0.102	0.617
26			25	0.103	0.179	0.614
27			26	0.043	0.208	0.617
28			27	0.099	0.208	0.603
29			28	0.129	0.144	0.617
30			39	0.169	0.132	0.617
31			40	0.048	0.178	0.606
32			41	0.082	0.216	0.617
33			42	0.096	0.204	0.592
34			128	0.085	0.107	0.574
35			132	0.187	0.136	0.617
36			133	0.037	0.193	0.617
37			134	0.071	0.075	0.602
38			144	0.043	0.193	0.617
39			145	0.061	0.120	0.596
40			152	0.163	0.142	0.617
41			153	0.082	0.174	0.612
42			154	0.105	0.159	0.554
43			155	0.108	0.118	0.617
44			156	0.128	0.102	0.617
45			167	0.151	0.153	0.597
46			168	0.036	0.159	0.584
47			169	0.145	0.142	0.526
48			170	0.107	0.096	0.617

Please note the above scaled simulation values correspond to PD_design_target if the simulation was performed with correct housing material properties.

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Table 4-17: n260/mid channel, K Patch simulated 4cm² PD at *PD_Design_Target* (if simulation performed with correct housing material properties) (Δ_{min})

No.	Module	Type (P or D)	Beam ID_1	Simulated 4cm ² PD(mW/cm ²) Corresponding to <i>PD_design_target</i> if the simulation was performed with correct No. Module Type housing material properties		
				S3(Left)	S1(Front)	S2(Back)
109	K	PATCH	3	0.617	0.062	0.402
110			13	0.617	0.098	0.385
111			14	0.617	0.132	0.441
112			15	0.617	0.086	0.390
113			22	0.617	0.124	0.410
114			23	0.617	0.084	0.399
115			34	0.617	0.084	0.398
116			35	0.617	0.108	0.474
117			36	0.617	0.099	0.469
118			37	0.591	0.083	0.428
119			38	0.617	0.110	0.365
120			47	0.617	0.094	0.448
121			48	0.617	0.129	0.481
122			49	0.602	0.088	0.467
123			50	0.607	0.099	0.390
124			131	0.617	0.058	0.395
125			141	0.617	0.079	0.366
126			142	0.617	0.115	0.481
127			143	0.617	0.074	0.343
128			150	0.617	0.115	0.438
129			151	0.617	0.102	0.399
130			162	0.617	0.110	0.371
131			163	0.597	0.106	0.471
132			164	0.617	0.099	0.497
133			165	0.612	0.098	0.461
134			166	0.617	0.112	0.345
135			175	0.593	0.103	0.455
136			176	0.610	0.112	0.477
137			177	0.617	0.088	0.496
138			178	0.616	0.113	0.373

Note: Even though the worst surface having the highest 4cm² PD values is left surface (S3), as shown in Table 4-8, the back surface (S2) was also selected for Δ_{min} determination. Therefore, the worst-case beam for remaining non-selected surfaces (identified in Table 4-1) is from front surface (S1) only.

Please note the above scaled simulation values correspond to *PD_design_target* if the simulation was performed with correct housing material properties.

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Table 4-18: n260/mid channel, L Patch simulated 4cm²PD at PD_Design_Target (if simulation performed with correct housing material properties) (Δ_{min})

No.	Module	Type (P or D)	Beam ID_1	Simulated 4cm ² PD(mW/cm ²) Corresponding to PD_design_target if the simulation was performed with correct No. Module Type housing material properties		
				S4(Right)	S1(Front)	S2(Back)
64	L	PATCH	2	0.617	0.063	0.547
65			10	0.614	0.072	0.529
66			11	0.617	0.095	0.591
67			12	0.617	0.083	0.515
68			20	0.617	0.087	0.565
69			21	0.617	0.065	0.572
70			29	0.616	0.085	0.559
71			30	0.617	0.087	0.599
72			31	0.617	0.095	0.578
73			32	0.593	0.078	0.534
74			33	0.617	0.120	0.518
75			43	0.615	0.090	0.582
76			44	0.617	0.091	0.583
77			45	0.617	0.075	0.580
78			46	0.611	0.103	0.510
79			130	0.617	0.069	0.550
80			138	0.617	0.074	0.518
81			139	0.617	0.073	0.559
82			140	0.617	0.070	0.558
83			148	0.617	0.083	0.602
84			149	0.617	0.076	0.549
85			157	0.617	0.098	0.579
86			158	0.617	0.088	0.596
87			159	0.617	0.090	0.580
88			160	0.603	0.081	0.562
89			161	0.594	0.106	0.539
90			171	0.617	0.080	0.583
91			172	0.602	0.091	0.562
92			173	0.617	0.081	0.594
93			174	0.604	0.098	0.545

Note: Even though the worst surface having the highest 4cm² PD values is right surface (S4), as shown in Table 4-8, the back surface (S2) was also selected for Δ_{min} determination. Therefore, the worst-case beam for remaining non-selected surfaces (identified in Table 4-1) is from front surface (S1) only.

Please note the above scaled simulation values correspond to PD_design_target if the simulation was performed with correct housing material properties.

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Table 4-19: 4cm² PD of the selected beams measured on the corresponding surfaces that are not selected for $\Delta_{\min}$ determination

Band	Antenna	Beam ID	Surface	input.power.limit (dBm)	Meas. 4cm ² PD (mW/cm ²)
n261	J (Dipole)	137	Front	8	0.09
		147	Top	7.1	0.25
		7	Left	7.1	0.26
	J (Patch)	167	Top	2.8	0.19
		156	Left	2.9	0.21
	K (Patch)	34	Front	5.1	0.27
	L (Patch)	29	Front	3.9	0.22
n260	J (Dipole)	136	Front	7.9	0.12
		8	Top	7	0.18
		7	Left	7.1	0.15
	J (Patch)	41	Top	3.7	0.11
		132	Left	7.2	0.17
	K (Patch)	14	Front	5.6	0.15
	L (Patch)	33	Front	3.2	0.18

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 band 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:

$$s(i)_{low_or_mid_or_high} = \frac{PD_{design\ target}}{sim.PD_{surface(i)}}, i \in \text{single beams} \quad (1)$$

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

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

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

4.7.2 Scaling Factor for Beam 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

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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 $\emptyset$, the scaling factor was obtained by the below equation for low, mid and high channels:

$$s(i)_{low_or_mid_or_high} = \frac{PD\ design\ target}{total\ PD\ (\emptyset(i)_{worstcase})}, i \in beam\ pairs \quad (3)$$

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 :

$$s(i) = \min\{s_{low}(i), s_{mid}(i), s_{high}(i)\}, i \in beam\ pairs \quad (4)$$

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 (Δ_{min}) determined in Table 4-11, given by:

- For n260 and n261

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

where $6\ dBm$ 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 ; Δ_{min} is the worst-case housing influence factor (determined in Table 4-10) for beam i .

If simulation overestimates the housing influence, then Δ_{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, then Δ_{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 Δ_{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.

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Thus, Equation 5 is modified to:

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

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

else if Δ_{min} < -TxAGC uncertainty,

$$input.power.limit(i) = 6 \text{ dBm} + 10 * \log(s(i)) + (\Delta_{min} + \text{TxAGC uncertainty}),$$

$$i \in \text{all beams, for n260 and n261} \quad (7)$$

else if Δ_{min} > TxAGC uncertainty,

$$input.power.limit(i) = 6 \text{ dBm} + 10 * \log(s(i)) + (\Delta_{min} - \text{TxAGC uncertainty}),$$

$$i \in \text{all beams, for n260 and n261} \quad (8)$$

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

Table 4-20
***input.power.limit* Calculation**

Band	Antenna	Δ_{min} (dB)	TxAGC Uncertainty (dB)	<i>input.power.limit</i> (dBm) =	Notes
n261	J (dipole beam)	3.45	0.7	$6 \text{ dBm} + 10 * \log(s(i)) + 2.75$	Using Eq. 8
	J (patch beam)	1.07	0.5	$6 \text{ dBm} + 10 * \log(s(i)) + 0.57$	Using Eq. 8
	K (patch beam)	2.52	0.5	$6 \text{ dBm} + 10 * \log(s(i)) + 2.02$	Using Eq. 8
	L (patch beam)	1.49	0.5	$6 \text{ dBm} + 10 * \log(s(i)) + 0.99$	Using Eq. 8
n260	J (dipole beam)	3.41	0.7	$6 \text{ dBm} + 10 * \log(s(i)) + 2.71$	Using Eq. 8
	J (patch beam)	1.93	0.5	$6 \text{ dBm} + 10 * \log(s(i)) + 1.43$	Using Eq. 8
	K (patch beam)	0.86	0.5	$6 \text{ dBm} + 10 * \log(s(i)) + 0.36$	Using Eq. 8
	L (patch beam)	0.15	0.5	$6 \text{ dBm} + 10 * \log(s(i))$	Using Eq. 6

Thus, the DUT PD Char for n261 and n260 bands is as shown in the tables 4-21 – 4-28 below. The full simulation results used to support this calculation can be found in the Power Density Simulation Report.

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Table 4-21
5G NR n261 J Dipole *input.power.limit*

Antenna	Beam ID_1	Beam ID_2	input.power.limit (dBm)
J Dipole	1		8.7
	7		7.1
	8		6.1
	9		5.9
	18		6.3
	19		5.9
	129		11.4
	135		6.5
	136		5.9
	137		8.0
	146		6.0
	147		7.1
	1	129	7.8
	7	137	6.1
	8	136	3.4
	9	135	3.7
	18	147	3.7
	19	146	3.0

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Table 4-22
5G NR n261 J Patch *input.power.limit*

Antenna	Beam ID_1	Beam ID_2	input.power.limit (dBm)
J Patch	0		8.4
	4		5.6
	5		5.2
	6		6.1
	16		4.4
	17		5.5
	24		2.5
	25		2.0
	26		2.1
	27		2.3
	28		2.7
	39		2.2
	40		2.0
	41		2.1
	42		2.6
	128		9.6
	132		5.7
	133		4.4
	134		7.1
	144		4.5
	145		4.7
	152		3.0
	153		2.7
	154		2.6
	155		2.5
	156		2.9
	167		2.8
	168		2.7
	169		2.5
	170		2.8
	0	128	5.8
	4	134	3.5
	5	133	1.6
	6	132	2.3
	16	144	2.2
	17	145	2.0
	24	155	-0.7
	25	154	-1.0
	26	153	-0.8
	27	152	-0.7
	28	156	0.1
	39	169	-0.9
	40	168	-0.9
	41	167	-0.8
	42	170	-0.3

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Table 4-23
5G NR n261 K Patch *input.power.limit*

Antenna	Beam ID_1	Beam ID_2	input.power.limit (dBm)
K Patch	3		9.9
	13		8.3
	14		7.6
	15		9.0
	22		7.2
	23		7.8
	34		5.1
	35		4.6
	36		4.3
	37		4.8
	38		5.5
	47		4.6
	48		4.4
	49		4.3
	50		5.1
	131		10.3
	141		9.0
	142		6.5
	143		7.6
	150		6.4
	151		6.9
	162		5.5
	163		4.7
	164		4.0
	165		4.2
	166		5.1
	175		4.7
	176		4.6
	177		4.1
	178		4.6
	3	131	7.3
	13	143	3.9
	14	142	3.0
	15	141	6.2
	22	151	3.8
	23	150	3.9
	34	166	1.0
	35	164	0.4
	36	163	0.4
	37	162	1.1
	38	165	2.4
	47	177	0.8
	48	178	1.5
	49	176	0.2
	50	175	1.0

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Table 4-24
5G NR n261 L Patch *input.power.limit*

Antenna	Beam ID_1	Beam ID_2	input.power.limit (dBm)
L Patch	2		10.6
	10		7.4
	11		6.9
	12		8.1
	20		6.6
	21		6.5
	29		3.9
	30		3.8
	31		3.5
	32		3.9
	33		4.2
	43		3.6
	44		3.7
	45		3.6
	46		4.0
	130		9.6
	138		8.0
	139		5.8
	140		6.1
	148		5.9
	149		5.8
	157		4.5
	158		3.5
	159		3.2
	160		3.3
	161		3.3
	171		3.7
	172		3.2
	173		3.1
	174		3.4
	2	130	8.2
	10	140	2.8
	11	139	2.2
	12	138	5.3
	20	149	2.8
	21	148	2.9
	29	161	-0.3
	30	159	-0.4
	31	158	-0.6
	32	157	-0.2
	33	160	0.8
	43	174	-0.5
	44	172	-0.7
	45	171	-0.5
	46	173	0.9

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Table 4-25
5G NR n260 J Dipole *input.power.limit*

Antenna	Beam ID_1	Beam ID_2	input.power.limit (dBm)
J Dipole	1		9.2
	7		7.1
	8		7.0
	9		6.9
	18		7.0
	19		6.8
	129		11.3
	135		7.1
	136		7.9
	137		7.3
	146		7.1
	147		7.5
	1	129	7.7
	7	135	4.4
	8	136	4.9
	9	137	4.6
	18	146	4.3
	19	147	4.5

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Table 4-26
5G NR n260 J Patch *input.power.limit*

Antenna	Beam ID_1	Beam ID_2	input.power.limit (dBm)
J Patch	0		9.7
	4		6.4
	5		6.6
	6		6.3
	16		6.4
	17		6.1
	24		3.6
	25		3.9
	26		3.5
	27		3.8
	28		3.7
	39		3.6
	40		3.9
	41		3.7
	42		3.7
	128		9.9
	132		7.2
	133		6.9
	134		6.8
	144		6.6
	145		6.8
	152		4.1
	153		4.2
	154		4.1
	155		4.8
	156		4.5
	167		4.0
	168		3.9
	169		4.6
	170		4.6
	0	128	6.5
	4	132	4.4
	5	133	3.4
	6	134	3.8
	16	144	2.9
	17	145	3.4
	24	152	0.5
	25	153	0.4
	26	154	0.5
	27	155	0.6
	28	156	0.7
	39	167	0.2
	40	168	0.6
	41	169	0.6
	42	170	0.5

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Table 4-27
5G NR n260 K Patch *input.power.limit*

Antenna	Beam ID_1	Beam ID_2	input.power.limit (dBm)
K Patch	3		7.9
	13		5.6
	14		5.6
	15		5.0
	22		6.1
	23		4.9
	34		3.5
	35		3.7
	36		2.5
	37		2.6
	38		3.0
	47		3.7
	48		3.5
	49		2.6
	50		2.7
	131		8.3
	141		4.7
	142		5.6
	143		4.8
	150		5.5
	151		4.8
	162		3.2
	163		3.4
	164		2.8
	165		2.7
	166		2.9
	175		3.6
	176		3.4
	177		2.6
	178		2.8
	3	131	4.6
	13	142	1.4
	14	141	1.5
	15	143	1.9
	22	150	1.6
	23	151	1.5
	34	164	-0.9
	35	163	-1.1
	36	162	-1.2
	37	166	-0.8
	38	165	-0.8
	47	177	-0.4
	48	176	-1.5
	49	175	-0.6
	50	178	-0.5

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Table 4-28
5G NR n260 L Patch *input.power.limit*

Antenna	Beam ID_1	Beam ID_2	input.power.limit (dBm)
L Patch	2		7.8
	10		5.6
	11		5.7
	12		4.7
	20		6.0
	21		5.0
	29		3.5
	30		3.4
	31		2.4
	32		2.5
	33		3.2
	43		3.5
	44		3.2
	45		2.5
	46		2.8
	130		8.3
	138		5.2
	139		5.4
	140		4.7
	148		5.7
	149		4.7
	157		3.5
	158		3.3
	159		2.6
	160		2.5
	161		3.0
	171		3.5
	172		3.3
	173		2.4
	174		2.8
	2	130	4.7
	10	139	2.9
	11	138	1.6
	12	140	1.8
	20	148	1.5
	21	149	1.3
	29	159	-1.0
	30	157	0.1
	31	158	-0.9
	32	161	-0.9
	33	160	-1.0
	43	173	-0.8
	44	172	-1.3
	45	171	-0.8
	46	174	-0.6

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5 EQUIPMENT LIST

For SAR measurements

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	8733ES	S-Parameter Network Analyzer	3/11/2019	Annual	3/11/2020	US39170122
Agilent	8735ES	S-Parameter Network Analyzer	8/26/2019	Annual	8/26/2020	MH4000670
Agilent	8735ES	S-Parameter Vector Network Analyzer	9/19/2019	Annual	9/19/2020	MH40003841
Agilent	E4438C	ESG Vector Signal Generator	5/22/2019	Annual	5/22/2020	MH45091346
Agilent	E4438C	ESG Vector Signal Generator	5/23/2019	Annual	5/23/2020	MH47270002
Agilent	E4438C	ESG Vector Signal Generator	3/8/2019	Biennial	3/8/2021	MH42082385
Agilent	E4438C	ESG Vector Signal Generator	3/11/2019	Biennial	3/11/2021	MH45090700
Agilent	E5515C	Wireless Communications Test Set	6/26/2019	Annual	6/26/2020	MY50267125
Agilent	E5515C	Wireless Communications Test Set	9/25/2019	Annual	9/25/2020	GB4304278
Agilent	E5515C	Wireless Communications Test Set	3/7/2018	Triennial	3/7/2021	GB4304447
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170664
Agilent	N5182A	MKG Vector Signal Generator	7/10/2019	Annual	7/10/2020	MH47420800
Agilent	N9020A	MKA Signal Analyzer	4/20/2019	Annual	4/20/2020	US46470561
Agilent	N9020B	PXA Signal Analyzer (44GHz)	6/12/2019	Annual	6/12/2020	MY52901586
Amplifier Research	1551G6	Amplifier	CBT	N/A	CBT	433972
Amplifier Research	1551G6	Amplifier	CBT	N/A	CBT	433974
Amplifier Research	1551G6	Amplifier	CBT	N/A	CBT	433976
Anritsu	MA24106A	USB Power Sensor	1/31/2019	Annual	1/31/2020	1344524
Anritsu	MA24106A	USB Power Sensor	3/5/2019	Annual	3/5/2020	1344555
Anritsu	MA24106A	USB Power Sensor	4/17/2019	Annual	4/17/2020	1344556
Anritsu	MA24106A	USB Power Sensor	7/15/2019	Annual	7/15/2020	1349513
Anritsu	MA2411B	Pulse Power Sensor	3/6/2019	Annual	3/6/2020	1338018
Anritsu	MA2411B	Pulse Power Sensor	6/11/2019	Annual	6/11/2020	1207364
Anritsu	NA3411B	Pulse Power Sensor	8/8/2019	Annual	8/8/2020	1339008
Anritsu	MT8820C	Radio Communication Analyzer	3/26/2019	Annual	3/26/2020	6201300731
Anritsu	MT8821C	Radio Communication Analyzer	1/25/2019	Annual	1/25/2020	6261895213
Anritsu	MT8821C	Radio Communication Analyzer	3/6/2019	Annual	3/6/2020	6201381794
Anritsu	MT8821C	Radio Communication Analyzer	5/13/2019	Annual	5/13/2020	6205246037
Anritsu	MT8821C	Radio Communication Analyzer	11/22/2019	Annual	11/22/2020	6261344715
Anritsu	MT8862A	Wireless Connectivity Test Set	8/8/2019	Annual	8/8/2020	6261783395
Anritsu	ML246A	Power Meter	11/6/2019	Annual	11/6/2020	1405003
Control Company	4040	Therm./Clock/Humidity Monitor	6/29/2019	Biennial	6/29/2021	19229470
Control Company	4040	Therm./Clock/Humidity Monitor	6/29/2019	Biennial	6/29/2021	19229455
Control Company	4040	Therm./Clock/Humidity Monitor	6/29/2019	Biennial	6/29/2021	19229469
Control Company	4040	Therm./Clock/Humidity Monitor	6/29/2019	Biennial	6/29/2021	19229463
Control Company	4352	Long Stem Thermometer	6/26/2019	Biennial	6/26/2021	192282744
Control Company	4352	Long Stem Thermometer	6/26/2019	Biennial	6/26/2021	192282753
Control Company	4352	Ultra Long Stem Thermometer	11/29/2018	Biennial	11/29/2020	18176680
Control Company	4352	Ultra Long Stem Thermometer	11/29/2018	Biennial	11/29/2020	18176677
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
Keysight Technologies	85038C	Standard Mechanical Calibration Kit (DC to 90GHz, 3.5mm)	7/27/2019	Annual	7/27/2020	MY53401181
Keysight Technologies	N6705B	DC Power Analyzer	4/27/2019	Biennial	4/27/2021	MY53004059
MEL	BW-N40-N40P	6dB Attenuator	CBT	N/A	CBT	4338
Mini-Circuits	PWR-SEN-4G40S	USB Power Sensor	4/19/2019	Annual	4/19/2020	11401010386
Mini-Circuits	SFP-3400+	Low Pass Filter	CBT	N/A	CBT	R857950903
Mini-Circuits	VLF-600A+	Low Pass Filter	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20M5	Power Attenuator	CBT	N/A	CBT	1226
Mini-Circuits	NLP-350+	Low Pass Filter DC to 3500 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-3550+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Pasternack	NC-100	Torque Wrench	5/23/2018	Biennial	5/23/2020	N/A
Pasternack	PE2208-10	Bi-directional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2208-6	Bi-directional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	CMM500	Radio Communication Tester	8/26/2019	Annual	8/26/2020	165976
Rohde & Schwarz	CMM500	Radio Communication Tester	8/27/2019	Annual	8/27/2020	116743
Rohde & Schwarz	CMM500	Radio Communication Tester	10/4/2019	Annual	10/4/2020	166462
Rohde & Schwarz	ZNL16	Vector Network Analyzer	10/11/2019	Annual	10/11/2020	101307
Rohde & Schwarz	CMM500	Wideband Radio Communication Tester	7/12/2019	Annual	7/12/2020	164945
Rohde & Schwarz	CMM500	Wideband Radio Communication Tester	7/24/2019	Annual	7/24/2020	153849
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/7/2019	Annual	5/7/2020	3070
SPEAG	DAK-3.5	Dielectric Assessment Kit	10/22/2019	Annual	10/22/2020	3591
SPEAG	D2300V2	2300 MHz SAR Dipole	11/12/2019	Annual	11/12/2020	1064
SPEAG	D2600V2	2600 MHz SAR Dipole	6/24/2019	Annual	6/24/2020	1064
SPEAG	D2450V2	2450 MHz SAR Dipole	5/11/2017	Triennial	5/11/2020	797
SPEAG	D2450V2	2450 MHz SAR Dipole	8/16/2018	Biennial	8/16/2020	981
SPEAG	D2600V2	2600 MHz SAR Dipole	4/11/2018	Biennial	4/11/2020	1004
SPEAG	D3500V2	3500 MHz SAR Dipole	1/11/2018	Biennial	1/11/2020	1059
SPEAG	D3700V2	3700 MHz SAR Dipole	1/11/2018	Biennial	1/11/2020	1018
SPEAG	D5G16V2	5 GHz SAR Dipole	9/17/2019	Annual	9/17/2020	1193
SPEAG	D750V3	750 MHz SAR Dipole	1/15/2019	Biennial	1/15/2020	1003
SPEAG	D750V3	750 MHz SAR Dipole	10/19/2018	Biennial	10/19/2020	1161
SPEAG	D835V2	835 MHz SAR Dipole	10/19/2018	Biennial	10/19/2020	44133
SPEAG	D1760V2	1760 MHz SAR Dipole	5/15/2019	Annual	5/15/2020	1148
SPEAG	D1900V2	1900 MHz SAR Dipole	10/23/2018	Biennial	10/23/2020	56149
SPEAG	D1900V2	1900 MHz SAR Dipole	10/23/2018	Biennial	10/23/2020	56080
SPEAG	D1900V2	1900 MHz SAR Dipole	2/21/2019	Annual	2/21/2020	56148
SPEAG	D2300V2	2300 MHz SAR Dipole	8/13/2018	Biennial	8/13/2020	1073
SPEAG	D2450V2	2450 MHz SAR Dipole	8/14/2018	Annual	8/14/2020	719
SPEAG	D750V3	750 MHz SAR Dipole	3/18/2019	Annual	3/18/2020	1054
SPEAG	D835V2	835 MHz SAR Dipole	3/13/2019	Annual	3/13/2020	46047
SPEAG	D1760V2	1760 MHz SAR Dipole	5/23/2018	Biennial	5/23/2020	1008
SPEAG	D1760V2	1760 MHz SAR Dipole	10/22/2018	Biennial	10/22/2020	1150
SPEAG	EX30V4	SAR Probe	9/19/2019	Annual	9/19/2020	7619
SPEAG	EX30V4	SAR Probe	2/19/2019	Annual	2/19/2020	3914
SPEAG	EX30V4	SAR Probe	2/19/2019	Annual	2/19/2020	7417
SPEAG	EX30V4	SAR Probe	1/25/2019	Annual	1/25/2020	3589
SPEAG	EX30V4	SAR Probe	6/29/2019	Annual	6/29/2020	7409
SPEAG	EX30V4	SAR Probe	7/16/2019	Annual	7/16/2020	7420
SPEAG	EX30V4	SAR Probe	4/24/2019	Annual	4/24/2020	7357
SPEAG	EX30V4	SAR Probe	1/24/2019	Annual	1/24/2020	7488
SPEAG	EX30V4	SAR Probe	5/16/2019	Annual	5/16/2020	7406
SPEAG	EX30V4	SAR Probe	7/15/2019	Annual	7/15/2020	7547
SPEAG	EX30V4	SAR Probe	8/16/2019	Annual	8/16/2020	7308
SPEAG	EX30V4	SAR Probe	12/11/2019	Annual	12/11/2020	7571
SPEAG	DAE4	Daily Data Acquisition Electronics	4/18/2019	Annual	4/18/2020	1407
SPEAG	DAE4	Daily Data Acquisition Electronics	1/15/2019	Annual	1/15/2020	1530
SPEAG	DAE4	Daily Data Acquisition Electronics	9/17/2019	Annual	9/17/2020	1331
SPEAG	DAE4	Daily Data Acquisition Electronics	8/14/2019	Annual	8/14/2020	1450
SPEAG	DAE4	Daily Data Acquisition Electronics	6/20/2019	Annual	6/20/2020	1334
SPEAG	DAE4	Daily Data Acquisition Electronics	2/14/2019	Annual	2/14/2020	1272
SPEAG	DAE4	Daily Data Acquisition Electronics	2/13/2019	Annual	2/13/2020	865
SPEAG	DAE4	Daily Data Acquisition Electronics	5/8/2019	Annual	5/8/2020	859
SPEAG	DAE4	Daily Data Acquisition Electronics	5/8/2019	Annual	5/8/2020	728
SPEAG	DAE4	Daily Data Acquisition Electronics	7/11/2019	Annual	7/11/2020	1322
SPEAG	DAE4	Daily Data Acquisition Electronics	7/11/2019	Annual	7/11/2020	1323
SPEAG	DAE4	Daily Data Acquisition Electronics	12/5/2019	Annual	12/5/2020	1533

Note:

1. CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path. The power meter offset was then adjusted to compensate for the measurement system losses. This level offset is stored within the power meter before measurements are made. This calibration verification procedure applies to the system verification and output power measurements. The calibrated reading is then taken directly from the power meter after compensation of the losses for all final power measurements.
2. Each equipment item was used solely within its respective calibration period.

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For PD measurements

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	WL25-1	Conducted Cable Set (25GHz)	10/30/2019	Annual	10/30/2020	WL25-1
-	WL40-1	Conducted Cable Set (40GHz)	10/30/2019	Annual	10/30/2020	WL40-1
Agilent	N9038A	MXE EMI Receiver	7/17/2019	Annual	7/17/2020	MY51210133
Agilent	N9030A	PXA Signal Analyzer (44GHz)	6/12/2019	Annual	6/12/2020	MY52350166
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	5/10/2019	Annual	5/10/2020	441112
EMCO	3160-09	Small Horn (18 - 26.5GHz)	8/9/2018	Biennial	8/9/2020	135427
Emco	3116	Horn Antenna (18 - 40GHz)	6/7/2018	Triennial	6/7/2021	9203-2178
OML	M19HWA	40 - 60GHz Mixer/Antenna	1/16/2018	Biennial	1/16/2020	U00228-1
OML	M12HWA	60 - 90GHz Mixer/Antenna	1/16/2018	Biennial	1/16/2020	E00228-1
OML	M08HWA	90 - 140GHz Mixer/Antenna	1/16/2018	Biennial	1/16/2020	F00228-1
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	9/23/2019	Annual	9/23/2020	100348
Rohde & Schwarz	TS-PR8	Preamplifier	1/7/2019	Annual	1/7/2020	102325
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/8/2019	Annual	7/8/2020	102133
Rohde & Schwarz	FSW67	Signal / Spectrum Analyzer	5/6/2019	Annual	5/6/2020	103200
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	4/19/2018	Biennial	4/19/2020	A051107
SPEAG	EUmmWV3	EUmmWV3 Probe	10/21/2019	Annual	10/21/2020	9405
SPEAG	EUmmWV3	EUmmWV3 Probe	12/7/2018	Annual	12/7/2019	9407
SPEAG	SM 003 100 AA	30GHz System Verification Ka- Band Source Antenna	4/29/2019	Annual	4/29/2020	1043
SPEAG	SM 003 100 AA	30GHz System Verification Ka- Band Source Antenna	4/29/2019	Annual	4/29/2020	1044
SPEAG	SM 003 100 AA	30GHz System Verification Ka- Band Source Antenna	10/15/2019	Annual	10/15/2020	1015
SPEAG	SM 003 100 AA	30GHz System Verification Ka- Band Source Antenna	4/30/2019	Annual	4/30/2020	1045
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/3/2019	Annual	5/3/2020	1583
Agilent	N9030A	PXA Signal Analyzer (44GHz)	6/12/2019	Annual	6/12/2020	MY52350166
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	10/10/2019	Biennial	10/10/2021	121034
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	5/10/2019	Annual	5/10/2020	441112
Emco	3115	Horn Antenna (1-18GHz)	3/28/2018	Biennial	3/28/2020	9704-5182
Keysight Technologies	N9030A	3Hz-44GHz PXA Signal Analyzer	5/2/2019	Annual	5/2/2020	MY49430494
Keysight Technologies	N9030A	3Hz-44GHz PXA Signal Analyzer	3/13/2019	Annual	3/13/2020	MY49430244
Rohde & Schwarz	180-442-KF	Horn (Small)	8/21/2018	Biennial	8/21/2020	U157403-01
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	6/5/2019	Annual	6/5/2020	100342
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/11/2019	Annual	7/11/2020	102134
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	4/19/2018	Biennial	4/19/2020	A051107
Virginia Diodes Inc	SAX252	Spectrum Analyzer Extension Module	9/30/2019	Annual	9/30/2020	SAX252
Virginia Diodes Inc	SAX253	Spectrum Analyzer Extension Module	9/30/2019	Annual	9/30/2020	SAX253
Virginia Diodes Inc	SAX254	Spectrum Analyzer Extension Module	9/30/2019	Annual	9/30/2020	SAX254

Note:

- Each equipment item was used solely within its respective calibration period.

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MEASUREMENT UNCERTAINTIES

For SAR Measurements

a	c	d	e = f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	Tol. (± %)	Prob. Dist.	Div.	c _i 1gm	c _i 10 gms	1gm u _i (± %)	10gms u _i (± %)	v _i
Measurement System								
Probe Calibration	6.55	N	1	1.0	1.0	6.6	6.6	∞
Axial Isotropy	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	1.3	N	1	0.7	0.7	0.9	0.9	∞
Boundary Effect	2.0	R	1.73	1.0	1.0	1.2	1.2	∞
Linearity	0.3	N	1	1.0	1.0	0.3	0.3	∞
System Detection Limits	0.25	R	1.73	1.0	1.0	0.1	0.1	∞
Readout Electronics	0.3	N	1	1.0	1.0	0.3	0.3	∞
Response Time	0.8	R	1.73	1.0	1.0	0.5	0.5	∞
Integration Time	2.6	R	1.73	1.0	1.0	1.5	1.5	∞
RF Ambient Conditions - Noise	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
RF Ambient Conditions - Reflections	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	0.4	R	1.73	1.0	1.0	0.2	0.2	∞
Probe Positioning w/ respect to Phantom	6.7	R	1.73	1.0	1.0	3.9	3.9	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	4.0	R	1.73	1.0	1.0	2.3	2.3	∞
Test Sample Related								
Test Sample Positioning	2.7	N	1	1.0	1.0	2.7	2.7	35
Device Holder Uncertainty	1.67	N	1	1.0	1.0	1.7	1.7	5
Output Power Variation - SAR drift measurement	5.0	R	1.73	1.0	1.0	2.9	2.9	∞
SAR Scaling	0.0	R	1.73	1.0	1.0	0.0	0.0	∞
Phantom & Tissue Parameters								
Phantom Uncertainty (Shape & Thickness tolerances)	7.6	R	1.73	1.0	1.0	4.4	4.4	∞
Liquid Conductivity - measurement uncertainty	4.2	N	1	0.78	0.71	3.3	3.0	10
Liquid Permittivity - measurement uncertainty	4.1	N	1	0.23	0.26	1.0	1.1	10
Liquid Conductivity - Temperature Uncertainty	3.4	R	1.73	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature Uncertainty	0.6	R	1.73	0.23	0.26	0.1	0.1	∞
Liquid Conductivity - deviation from target values	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Permittivity - deviation from target values	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Combined Standard Uncertainty (k=1)	RSS					11.5	11.3	60
Expanded Uncertainty (95% CONFIDENCE LEVEL)	k=2					23.0	22.6	

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For PD Measurements

a	b	c	d	e	f = b x e/d	g
					ui	
Uncertainty Component	Unc. (± dB)	Prob. Dist.	Div.	ci	(± dB)	vi
Calibration	0.49	N	1	1.0	0.49	∞
Probe correction	0	R	1.73	1.0	0.00	∞
Frequency Response (BW ≤ 1 GHz)	0.20	R	1.73	1.0	0.12	∞
Sensor cross coupling	0	R	1.73	1.0	0.00	∞
Isotropy	0.50	R	1.73	1.0	0.29	∞
Linearity	0.20	R	1.73	1.0	0.12	∞
Probe Scattering	0	R	1.73	1.0	0	∞
Probe Positioning Offset	0	R	1.73	1.0	0.17	∞
Probe Positioning Repeatability	0	R	1.73	1.0	0.02	∞
Sensor Mechanical Offset	0	R	1.73	1.0	0	∞
Probe Spatial Resolution	0	R	1.73	1.0	0	∞
Field Impedance Dependence	0	R	1.73	1.0	0	∞
Amplitude and phase drift	0	R	1.73	1.0	0	∞
Amplitude and phase noise	0.04	R	1.73	1.0	0.02	∞
Measurement area truncation	0	R	1.73	1.0	0	∞
Data acquisition	0.03	N	1	1.0	0.03	∞
Sampling	0	R	1.73	1.0	0	∞
Field Reconstruction	0.60	R	1.73	1.0	0.35	∞
Forward Transformation	0	R	1.73	1.0	0	∞
Power Density Scaling	-	R	1.73	1.0	-	∞
Spatial Averaging	0.1	R	1.73	1.0	0.06	∞
System Detection Limit	0.04	R	1.73	1.0	0.02	∞
Test Sample and Environmental Factors						
Probe Coupling with DUT	0	R	1.73	1.0	0	∞
Modulation Response	0.40	R	1.73	1.0	0.23	∞
Integration Time	0	R	1.73	1.0	0	∞
Response Time	0	R	1.73	1.0	0	∞
Device Holder Influence	0.10	R	1.73	1.0	0.06	∞
DUT Alignment	0	R	1.73	1.0	0	∞
RF Ambient Conditions	0.04	R	1.73	1.0	0.02	∞
Ambient Reflections	0.04	R	1.73	1.0	0.02	∞
Immunity / Secondary Reception	0	R	1.73	1.0	0	∞
Drift of the DUT	0.22	R	1.73	1.0	0.13	∞
Combined Standard Uncertainty (k=1)		RSS			0.76	∞
Expanded Uncertainty	k=2				1.53	
(95% CONFIDENCE LEVEL)						

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APPENDIX A: SAR TEST RESULTS FOR P_{LIMIT} CALCULATIONS

Table A-1
DSI = 2 P_{Limit} Calculations – 2G/3G Head SAR

MEASUREMENT RESULTS										
FREQUENCY		Mode/Band	Service	Conducted Power [dBm]	Side	Test Position	Duty Cycle	SAR (1g)	Plimit	Minimum Plimit
MHz	Ch.							(W/kg)	[dBm]	[dBm]
836.60	190	GSM 850	GSM	31.54	Right	Cheek	1:8.3	0.132	31.13	31.13
836.60	190	GSM 850	GSM	31.54	Right	Tilt	1:8.3	0.057	34.78	
836.60	190	GSM 850	GSM	31.54	Left	Cheek	1:8.3	0.096	32.52	
836.60	190	GSM 850	GSM	31.54	Left	Tilt	1:8.3	0.060	34.56	
1880.00	661	GSM 1900	GSM	29.02	Right	Cheek	1:8.3	0.023	36.20	34.02
1880.00	661	GSM 1900	GSM	29.02	Right	Tilt	1:8.3	0.022	36.39	
1880.00	661	GSM 1900	GSM	29.02	Left	Cheek	1:8.3	0.038	34.02	
1880.00	661	GSM 1900	GSM	29.02	Left	Tilt	1:8.3	0.027	35.51	
836.60	4183	UMTS 850	RMC	23.80	Right	Cheek	1:1	0.166	31.60	31.60
836.60	4183	UMTS 850	RMC	23.80	Right	Tilt	1:1	0.075	35.05	
836.60	4183	UMTS 850	RMC	23.80	Left	Cheek	1:1	0.110	33.39	
836.60	4183	UMTS 850	RMC	23.80	Left	Tilt	1:1	0.077	34.94	
1732.40	1412	UMTS 1750	RMC	23.39	Right	Cheek	1:1	0.081	34.31	32.56
1732.40	1412	UMTS 1750	RMC	23.39	Right	Tilt	1:1	0.115	32.78	
1732.40	1412	UMTS 1750	RMC	23.39	Left	Cheek	1:1	0.121	32.56	
1732.40	1412	UMTS 1750	RMC	23.39	Left	Tilt	1:1	0.118	32.67	
1880.00	9400	UMTS 1900	RMC	23.24	Right	Cheek	1:1	0.085	33.95	32.91
1880.00	9400	UMTS 1900	RMC	23.24	Right	Tilt	1:1	0.058	35.61	
1880.00	9400	UMTS 1900	RMC	23.24	Left	Cheek	1:1	0.108	32.91	
1880.00	9400	UMTS 1900	RMC	23.24	Left	Tilt	1:1	0.062	35.32	
820.10	564	CDMA BC10 (S90S)	RC3 / SO55	24.53	Right	Cheek	1:1	0.160	32.49	32.00
820.10	564	CDMA BC10 (S90S)	RC3 / SO55	24.53	Right	Tilt	1:1	0.075	35.78	
820.10	564	CDMA BC10 (S90S)	RC3 / SO55	24.53	Left	Cheek	1:1	0.144	32.95	
820.10	564	CDMA BC10 (S90S)	RC3 / SO55	24.53	Left	Tilt	1:1	0.093	34.85	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. A	24.58	Right	Cheek	1:1	0.181	32.00	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. A	24.58	Right	Tilt	1:1	0.082	35.44	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. A	24.58	Left	Cheek	1:1	0.158	32.59	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. A	24.58	Left	Tilt	1:1	0.098	34.67	
836.52	384	CDMA BC0 (S22H)	RC3 / SO55	24.47	Right	Cheek	1:1	0.163	32.35	31.08
836.52	384	CDMA BC0 (S22H)	RC3 / SO55	24.47	Right	Tilt	1:1	0.084	35.23	
836.52	384	CDMA BC0 (S22H)	RC3 / SO55	24.47	Left	Cheek	1:1	0.136	33.13	
836.52	384	CDMA BC0 (S22H)	RC3 / SO55	24.47	Left	Tilt	1:1	0.086	35.13	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. A	24.54	Right	Cheek	1:1	0.222	31.08	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. A	24.54	Right	Tilt	1:1	0.096	34.72	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. A	24.54	Left	Cheek	1:1	0.150	32.78	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. A	24.54	Left	Tilt	1:1	0.103	34.41	
1880.00	600	PCS CDMA	RC3 / SO55	23.00	Right	Cheek	1:1	0.050	36.01	32.55
1880.00	600	PCS CDMA	RC3 / SO55	23.00	Right	Tilt	1:1	0.045	36.47	
1880.00	600	PCS CDMA	RC3 / SO55	23.00	Left	Cheek	1:1	0.111	32.55	
1880.00	600	PCS CDMA	RC3 / SO55	23.00	Left	Tilt	1:1	0.059	35.29	
1880.00	600	PCS CDMA	EVDO Rev. A	23.10	Right	Cheek	1:1	0.053	35.86	
1880.00	600	PCS CDMA	EVDO Rev. A	23.10	Right	Tilt	1:1	0.057	35.54	
1880.00	600	PCS CDMA	EVDO Rev. A	23.10	Left	Cheek	1:1	0.110	32.69	
1880.00	600	PCS CDMA	EVDO Rev. A	23.10	Left	Tilt	1:1	0.075	34.35	

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Table A-2
DSI = 2 P_{Limit} Calculations – 4G Head SAR

MEASUREMENT RESULTS															
FREQUENCY			Mode	Bandwidth [MHz]	Conducted Power [dBm]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Duty Cycle	SAR (1g)	PLimit	Minimum PLimit [dBm]
MHz	Ch.	[W/kg]											[dBm]		
680.50	133297	Mid	LTE Band 71	20	24.86	0	Right	Cheek	QPSK	1	0	1:1	0.086	35.52	34.90
680.50	133297	Mid	LTE Band 71	20	23.88	1	Right	Cheek	QPSK	50	0	1:1	0.077	35.02	
680.50	133297	Mid	LTE Band 71	20	24.86	0	Right	Tilt	QPSK	1	0	1:1	0.039	38.95	
680.50	133297	Mid	LTE Band 71	20	23.88	1	Right	Tilt	QPSK	50	0	1:1	0.033	38.69	
680.50	133297	Mid	LTE Band 71	20	24.86	0	Left	Cheek	QPSK	1	0	1:1	0.088	35.42	
680.50	133297	Mid	LTE Band 71	20	23.88	1	Left	Cheek	QPSK	50	0	1:1	0.079	34.90	
680.50	133297	Mid	LTE Band 71	20	24.86	0	Left	Tilt	QPSK	1	0	1:1	0.056	37.38	
680.50	133297	Mid	LTE Band 71	20	23.88	1	Left	Tilt	QPSK	50	0	1:1	0.050	36.89	
707.50	23095	Mid	LTE Band 12	10	24.92	0	Right	Cheek	QPSK	1	0	1:1	0.103	34.79	34.09
707.50	23095	Mid	LTE Band 12	10	23.82	1	Right	Cheek	QPSK	25	12	1:1	0.094	34.09	
707.50	23095	Mid	LTE Band 12	10	24.92	0	Right	Tilt	QPSK	1	0	1:1	0.043	38.59	
707.50	23095	Mid	LTE Band 12	10	23.82	1	Right	Tilt	QPSK	25	12	1:1	0.037	38.14	
707.50	23095	Mid	LTE Band 12	10	24.92	0	Left	Cheek	QPSK	1	0	1:1	0.106	34.67	
707.50	23095	Mid	LTE Band 12	10	23.82	1	Left	Cheek	QPSK	25	12	1:1	0.087	34.42	
707.50	23095	Mid	LTE Band 12	10	24.92	0	Left	Tilt	QPSK	1	0	1:1	0.057	37.36	
707.50	23095	Mid	LTE Band 12	10	23.82	1	Left	Tilt	QPSK	25	12	1:1	0.051	36.74	
782.00	23230	Mid	LTE Band 13	10	24.99	0	Right	Cheek	QPSK	1	0	1:1	0.145	33.38	32.90
782.00	23230	Mid	LTE Band 13	10	23.97	1	Right	Cheek	QPSK	25	0	1:1	0.128	32.90	
782.00	23230	Mid	LTE Band 13	10	24.99	0	Right	Tilt	QPSK	1	0	1:1	0.070	36.54	
782.00	23230	Mid	LTE Band 13	10	23.97	1	Right	Tilt	QPSK	25	0	1:1	0.059	36.26	
782.00	23230	Mid	LTE Band 13	10	24.99	0	Left	Cheek	QPSK	1	0	1:1	0.122	34.13	
782.00	23230	Mid	LTE Band 13	10	23.97	1	Left	Cheek	QPSK	25	0	1:1	0.119	33.21	
782.00	23230	Mid	LTE Band 13	10	24.99	0	Left	Tilt	QPSK	1	0	1:1	0.084	35.75	
782.00	23230	Mid	LTE Band 13	10	23.97	1	Left	Tilt	QPSK	25	0	1:1	0.074	35.28	
793.00	23330	Mid	LTE Band 14	10	24.78	0	Right	Cheek	QPSK	1	0	1:1	0.203	31.71	31.49
793.00	23330	Mid	LTE Band 14	10	23.64	1	Right	Cheek	QPSK	25	0	1:1	0.164	31.49	
793.00	23330	Mid	LTE Band 14	10	24.78	0	Right	Tilt	QPSK	1	0	1:1	0.096	34.96	
793.00	23330	Mid	LTE Band 14	10	23.64	1	Right	Tilt	QPSK	25	0	1:1	0.076	34.83	
793.00	23330	Mid	LTE Band 14	10	24.78	0	Left	Cheek	QPSK	1	0	1:1	0.137	33.41	
793.00	23330	Mid	LTE Band 14	10	23.64	1	Left	Cheek	QPSK	25	0	1:1	0.112	33.15	
793.00	23330	Mid	LTE Band 14	10	24.78	0	Left	Tilt	QPSK	1	0	1:1	0.090	35.24	
793.00	23330	Mid	LTE Band 14	10	23.64	1	Left	Tilt	QPSK	25	0	1:1	0.073	35.01	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.72	0	Right	Cheek	QPSK	1	36	1:1	0.183	32.10	31.59
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.89	1	Right	Cheek	QPSK	36	37	1:1	0.170	31.59	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.72	0	Right	Tilt	QPSK	1	36	1:1	0.101	34.68	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.89	1	Right	Tilt	QPSK	36	37	1:1	0.084	34.65	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.72	0	Left	Cheek	QPSK	1	36	1:1	0.134	33.45	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.89	1	Left	Cheek	QPSK	36	37	1:1	0.111	33.44	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.72	0	Left	Tilt	QPSK	1	36	1:1	0.083	35.53	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.89	1	Left	Tilt	QPSK	36	37	1:1	0.072	35.32	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.90	0	Right	Cheek	QPSK	1	0	1:1	0.203	31.83	31.83
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.87	1	Right	Cheek	QPSK	25	25	1:1	0.160	31.83	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.90	0	Right	Tilt	QPSK	1	0	1:1	0.102	34.81	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.87	1	Right	Tilt	QPSK	25	25	1:1	0.081	34.79	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.90	0	Left	Cheek	QPSK	1	0	1:1	0.163	32.78	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.87	1	Left	Cheek	QPSK	25	25	1:1	0.128	32.80	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.90	0	Left	Tilt	QPSK	1	0	1:1	0.111	34.45	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.87	1	Left	Tilt	QPSK	25	25	1:1	0.080	34.84	

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MEASUREMENT RESULTS															
FREQUENCY		Mode	Bandwidth [MHz]	Conducted Power [dBm]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Duty Cycle	SAR (1g)	PLimit	Minimum PLimit	
MHz	Ch.											(W/kg)	[dBm]	[dBm]	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.20	0	Right	Cheek	QPSK	1	50	1.1	0.106	33.95	32.62
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.20	1	Right	Cheek	QPSK	50	0	1.1	0.082	34.06	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.20	0	Right	Tilt	QPSK	1	50	1.1	0.054	36.88	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.20	1	Right	Tilt	QPSK	50	0	1.1	0.038	37.40	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.20	0	Left	Cheek	QPSK	1	50	1.1	0.144	32.62	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.20	1	Left	Cheek	QPSK	50	0	1.1	0.109	32.83	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.20	0	Left	Tilt	QPSK	1	50	1.1	0.036	38.64	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.20	1	Left	Tilt	QPSK	50	0	1.1	0.028	38.73	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.01	0	Right	Cheek	QPSK	1	99	1.1	0.072	35.44	33.56
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.04	1	Right	Cheek	QPSK	50	50	1.1	0.058	35.41	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.01	0	Right	Tilt	QPSK	1	99	1.1	0.072	35.44	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.04	1	Right	Tilt	QPSK	50	50	1.1	0.049	36.14	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.01	0	Left	Cheek	QPSK	1	99	1.1	0.111	33.56	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.04	1	Left	Cheek	QPSK	50	50	1.1	0.081	33.96	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.01	0	Left	Tilt	QPSK	1	99	1.1	0.083	34.82	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.04	1	Left	Tilt	QPSK	50	50	1.1	0.063	35.05	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.89	0	Right	Cheek	QPSK	1	99	1.1	0.073	35.26	33.03
1880.00	18900	Mid	LTE Band 2 (PCS)	20	22.98	1	Right	Cheek	QPSK	50	25	1.1	0.061	35.13	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.89	0	Right	Tilt	QPSK	1	99	1.1	0.081	34.81	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	22.98	1	Right	Tilt	QPSK	50	25	1.1	0.049	36.08	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.89	0	Left	Cheek	QPSK	1	99	1.1	0.122	33.03	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	22.98	1	Left	Cheek	QPSK	50	25	1.1	0.091	33.39	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.89	0	Left	Tilt	QPSK	1	99	1.1	0.044	37.46	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	22.98	1	Left	Tilt	QPSK	50	25	1.1	0.070	34.53	
2310.00	27710	Mid	LTE Band 30	10	22.44	0	Right	Cheek	QPSK	1	0	1.1	0.042	36.21	32.85
2310.00	27710	Mid	LTE Band 30	10	21.58	1	Right	Cheek	QPSK	25	12	1.1	0.034	36.27	
2310.00	27710	Mid	LTE Band 30	10	22.44	0	Right	Tilt	QPSK	1	0	1.1	0.037	36.76	
2310.00	27710	Mid	LTE Band 30	10	21.58	1	Right	Tilt	QPSK	25	12	1.1	0.031	36.67	
2310.00	27710	Mid	LTE Band 30	10	22.44	0	Left	Cheek	QPSK	1	0	1.1	0.091	32.85	
2310.00	27710	Mid	LTE Band 30	10	21.58	1	Left	Cheek	QPSK	25	12	1.1	0.071	33.07	
2310.00	27710	Mid	LTE Band 30	10	22.44	0	Left	Tilt	QPSK	1	0	1.1	0.033	37.25	
2310.00	27710	Mid	LTE Band 30	10	21.58	1	Left	Tilt	QPSK	25	12	1.1	0.024	37.78	
2510.00	20850	Low	LTE Band 7	20	23.50	0	Right	Cheek	QPSK	1	99	1.1	0.098	33.59	32.60
2510.00	20850	Low	LTE Band 7	20	22.60	1	Right	Cheek	QPSK	50	50	1.1	0.077	33.74	
2510.00	20850	Low	LTE Band 7	20	23.50	0	Right	Tilt	QPSK	1	99	1.1	0.110	33.09	
2510.00	20850	Low	LTE Band 7	20	22.60	1	Right	Tilt	QPSK	50	50	1.1	0.083	33.41	
2510.00	20850	Low	LTE Band 7	20	23.50	0	Left	Cheek	QPSK	1	99	1.1	0.123	32.60	
2510.00	20850	Low	LTE Band 7	20	22.60	1	Left	Cheek	QPSK	50	50	1.1	0.098	32.69	
2510.00	20850	Low	LTE Band 7	20	23.50	0	Left	Tilt	QPSK	1	99	1.1	0.070	35.05	
2510.00	20850	Low	LTE Band 7	20	22.60	1	Left	Tilt	QPSK	50	50	1.1	0.056	35.12	
3690.00	56640	High	LTE Band 48	20	23.75	0	Right	Cheek	QPSK	1	50	1:1.58	1.360	20.43	19.41
3690.00	56640	High	LTE Band 48	20	23.75	0	Right	Tilt	QPSK	1	50	1:1.58	1.720	19.41	
3690.00	56640	High	LTE Band 48	20	23.75	0	Left	Cheek	QPSK	1	50	1:1.58	0.590	24.05	
3690.00	56640	High	LTE Band 48	20	23.75	0	Left	Tilt	QPSK	1	50	1:1.58	0.711	23.25	
2593.00	40620	Mid	LTE Band 41	20	24.81	0	Right	Cheek	QPSK	1	0	1:1.58	0.060	35.04	34.56
2593.00	40620	Mid	LTE Band 41	20	24.00	1	Right	Cheek	QPSK	50	0	1:1.58	0.046	35.39	
2593.00	40620	Mid	LTE Band 41	20	24.81	0	Right	Tilt	QPSK	1	0	1:1.58	0.067	34.56	
2593.00	40620	Mid	LTE Band 41	20	24.00	1	Right	Tilt	QPSK	50	0	1:1.58	0.051	34.94	
2593.00	40620	Mid	LTE Band 41	20	24.81	0	Left	Cheek	QPSK	1	0	1:1.58	0.042	36.59	
2593.00	40620	Mid	LTE Band 41	20	24.00	1	Left	Cheek	QPSK	50	0	1:1.58	0.036	36.45	
2593.00	40620	Mid	LTE Band 41	20	24.81	0	Left	Tilt	QPSK	1	0	1:1.58	0.029	38.20	
2593.00	40620	Mid	LTE Band 41	20	24.00	1	Left	Tilt	QPSK	50	0	1:1.58	0.026	37.86	

For some bands/modes, a lower P_{Limit} was selected as a more conservative evaluation.

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Table A-3
DSI = 2 P_{Limit} Calculations – NR Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode	Bandwidth [MHz]	Conducted Power [dBm]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Duty Cycle	SAR (1g)	PLimit	Minimum PLimit
MHz	Ch.											(W/kg)	[dBm]	[dBm]
680.50	136100	Mid	NR Band n71	20	24.96	0	Right	Cheek	DFT-s-OFDM QPSK	1	53	1.1	0.115	34.35
680.50	136100	Mid	NR Band n71	20	24.90	0	Right	Cheek	DFT-s-OFDM QPSK	50	28	1.1	0.116	34.26
680.50	136100	Mid	NR Band n71	20	23.45	1.5	Right	Cheek	CP-OFDM QPSK	1	1	1.1	0.069	35.06
680.50	136100	Mid	NR Band n71	20	24.96	0	Right	Tilt	DFT-s-OFDM QPSK	1	53	1.1	0.050	37.97
680.50	136100	Mid	NR Band n71	20	24.90	0	Right	Tilt	DFT-s-OFDM QPSK	50	28	1.1	0.052	37.74
680.50	136100	Mid	NR Band n71	20	24.96	0	Left	Cheek	DFT-s-OFDM QPSK	1	53	1.1	0.096	35.14
680.50	136100	Mid	NR Band n71	20	24.90	0	Left	Cheek	DFT-s-OFDM QPSK	50	28	1.1	0.106	34.65
680.50	136100	Mid	NR Band n71	20	24.96	0	Left	Tilt	DFT-s-OFDM QPSK	1	53	1.1	0.046	38.33
680.50	136100	Mid	NR Band n71	20	24.90	0	Left	Tilt	DFT-s-OFDM QPSK	50	28	1.1	0.048	38.09
836.50	167300	Mid	NR Band n5	20	24.82	0	Right	Cheek	DFT-s-OFDM QPSK	1	1	1.1	0.181	32.24
836.50	167300	Mid	NR Band n5	20	24.42	0	Right	Cheek	DFT-s-OFDM QPSK	50	28	1.1	0.188	31.68
836.50	167300	Mid	NR Band n5	20	23.10	1.5	Right	Cheek	CP-OFDM QPSK	1	1	1.1	0.116	32.46
836.50	167300	Mid	NR Band n5	20	24.82	0	Right	Tilt	DFT-s-OFDM QPSK	1	1	1.1	0.091	35.23
836.50	167300	Mid	NR Band n5	20	24.42	0	Right	Tilt	DFT-s-OFDM QPSK	50	28	1.1	0.086	35.08
836.50	167300	Mid	NR Band n5	20	24.82	0	Left	Cheek	DFT-s-OFDM QPSK	1	1	1.1	0.129	33.71
836.50	167300	Mid	NR Band n5	20	24.42	0	Left	Cheek	DFT-s-OFDM QPSK	50	28	1.1	0.139	32.99
836.50	167300	Mid	NR Band n5	20	24.82	0	Left	Tilt	DFT-s-OFDM QPSK	1	1	1.1	0.084	35.58
836.50	167300	Mid	NR Band n5	20	24.42	0	Left	Tilt	DFT-s-OFDM QPSK	50	28	1.1	0.087	35.02
1745.00	349000	Mid	NR Band n66	20	24.28	0	Right	Cheek	DFT-s-OFDM QPSK	1	53	1.1	0.075	35.53
1745.00	349000	Mid	NR Band n66	20	24.23	0	Right	Cheek	DFT-s-OFDM QPSK	50	28	1.1	0.070	35.78
1745.00	349000	Mid	NR Band n66	20	24.28	0	Right	Tilt	DFT-s-OFDM QPSK	1	53	1.1	0.053	37.04
1745.00	349000	Mid	NR Band n66	20	24.23	0	Right	Tilt	DFT-s-OFDM QPSK	50	28	1.1	0.046	37.60
1745.00	349000	Mid	NR Band n66	20	24.28	0	Left	Cheek	DFT-s-OFDM QPSK	1	53	1.1	0.133	33.04
1745.00	349000	Mid	NR Band n66	20	24.23	0	Left	Cheek	DFT-s-OFDM QPSK	50	28	1.1	0.120	33.44
1745.00	349000	Mid	NR Band n66	20	21.79	1.5	Left	Cheek	CP-OFDM QPSK	1	1	1.1	0.080	32.76
1745.00	349000	Mid	NR Band n66	20	24.28	0	Left	Tilt	DFT-s-OFDM QPSK	1	53	1.1	0.053	37.04
1745.00	349000	Mid	NR Band n66	20	24.23	0	Left	Tilt	DFT-s-OFDM QPSK	50	28	1.1	0.043	37.90
1900.00	380000	High	NR Band n2	20	23.90	0	Right	Cheek	DFT-s-OFDM QPSK	1	1	1.1	0.077	35.04
1900.00	380000	High	NR Band n2	20	23.90	0	Right	Cheek	DFT-s-OFDM QPSK	50	28	1.1	0.066	35.70
1900.00	380000	High	NR Band n2	20	23.90	0	Right	Tilt	DFT-s-OFDM QPSK	1	1	1.1	0.047	37.18
1900.00	380000	High	NR Band n2	20	23.90	0	Right	Tilt	DFT-s-OFDM QPSK	50	28	1.1	0.049	37.00
1900.00	380000	High	NR Band n2	20	23.90	0	Left	Cheek	DFT-s-OFDM QPSK	1	1	1.1	0.138	32.50
1900.00	380000	High	NR Band n2	20	23.90	0	Left	Cheek	DFT-s-OFDM QPSK	50	28	1.1	0.124	32.97
1900.00	380000	High	NR Band n2	20	23.90	1.5	Left	Cheek	CP-OFDM QPSK	1	1	1.1	0.089	35.04
1900.00	380000	High	NR Band n2	20	23.90	0	Left	Tilt	DFT-s-OFDM QPSK	1	1	1.1	0.055	36.50
1900.00	380000	High	NR Band n2	20	23.90	0	Left	Tilt	DFT-s-OFDM QPSK	50	28	1.1	0.052	36.74
2592.99	518598	Mid	NR Band n41	100	23.41	0	Right	Cheek	DFT-s-OFDM QPSK	1	137	1.4	0.621	19.46
2592.99	518598	Mid	NR Band n41	100	23.28	0	Right	Cheek	DFT-s-OFDM QPSK	135	69	1.4	0.583	19.60
2592.99	518598	Mid	NR Band n41	100	23.41	0	Right	Tilt	DFT-s-OFDM QPSK	1	137	1.4	0.838	18.16
2592.99	518598	Mid	NR Band n41	100	23.28	0	Right	Tilt	DFT-s-OFDM QPSK	135	69	1.4	0.815	18.15
2592.99	518598	Mid	NR Band n41	100	21.17	1.5	Right	Tilt	CP-OFDM QPSK	1	1	1.4	0.388	19.26
2592.99	518598	Mid	NR Band n41	100	23.41	0	Left	Cheek	DFT-s-OFDM QPSK	1	137	1.4	0.315	22.41
2592.99	518598	Mid	NR Band n41	100	23.28	0	Left	Cheek	DFT-s-OFDM QPSK	135	69	1.4	0.301	22.47
2592.99	518598	Mid	NR Band n41	100	23.41	0	Left	Tilt	DFT-s-OFDM QPSK	1	137	1.4	0.429	21.06
2592.99	518598	Mid	NR Band n41	100	23.28	0	Left	Tilt	DFT-s-OFDM QPSK	135	69	1.4	0.412	21.11

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Table A-4
DSI = 0 P_{Limit} Calculations – 2G/3G Body-Worn SAR

MEASUREMENT RESULTS										
FREQUENCY		Mode/Band	Service	Conducted Power [dBm]	Spacing	Side	Duty Cycle	SAR (1g)	PLimit	Minimum PLimit
MHz	Ch.							(W/kg)	[dBm]	[dBm]
836.60	190	GSM 850	GSM	31.54	15 mm	Back	1:8.3	0.139	30.91	30.91
1880.00	661	GSM 1900	GSM	29.02	15 mm	Back	1:8.3	0.271	25.49	25.49
836.60	4183	UMTS 850	RMC	23.80	15 mm	Back	1:1	0.211	30.56	30.56
1752.60	1513	UMTS 1750	RMC	23.20	15 mm	Back	1:1	0.759	24.40	24.40
1907.60	9538	UMTS 1900	RMC	23.19	15 mm	Back	1:1	0.681	24.86	24.86
820.10	564	CDMA BC10 (§90S)	TDSO / SO32	24.54	15 mm	Back	1:1	0.195	31.64	31.64
836.52	384	CDMA BC0 (§22H)	TDSO / SO32	24.46	15 mm	Back	1:1	0.231	30.82	30.82
1880.00	600	PCS CDMA	TDSO / SO32	23.06	15 mm	Back	1:1	0.667	24.82	24.82

For some bands/modes, a lower P_{Limit} was selected as a more conservative evaluation.

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Table A-5
DSI = 0 P_{Limit} Calculations – 4G Body-Worn SAR

MEASUREMENT RESULTS															
FREQUENCY			Mode	Bandwidth [MHz]	Conducted Power [dBm]	MPR [dB]	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	PLimit	Minimum PLimit
													[W/kg]	[dBm]	[dBm]
MHz	Ch.														
680.50	133297	Mid	LTE Band 71	20	24.86	0	QPSK	1	0	15 mm	Back	1:1	0.148	33.16	32.61
680.50	133297	Mid	LTE Band 71	20	23.88	1	QPSK	50	0	15 mm	Back	1:1	0.134	32.61	
707.50	23095	Mid	LTE Band 12	10	24.92	0	QPSK	1	0	15 mm	Back	1:1	0.166	32.72	32.24
707.50	23095	Mid	LTE Band 12	10	23.82	1	QPSK	25	12	15 mm	Back	1:1	0.144	32.24	
782.00	23230	Mid	LTE Band 13	10	24.99	0	QPSK	1	0	15 mm	Back	1:1	0.235	31.28	30.94
782.00	23230	Mid	LTE Band 13	10	23.97	1	QPSK	25	0	15 mm	Back	1:1	0.201	30.94	
793.00	23330	Mid	LTE Band 14	10	24.78	0	QPSK	1	0	15 mm	Back	1:1	0.269	30.48	30.32
793.00	23330	Mid	LTE Band 14	10	23.64	1	QPSK	25	0	15 mm	Back	1:1	0.215	30.32	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.72	0	QPSK	1	36	15 mm	Back	1:1	0.259	30.59	30.53
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.89	1	QPSK	36	37	15 mm	Back	1:1	0.217	30.53	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.90	0	QPSK	1	0	15 mm	Back	1:1	0.227	31.34	30.88
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.87	1	QPSK	25	25	15 mm	Back	1:1	0.199	30.88	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.88	0	QPSK	1	99	15 mm	Back	1:1	0.740	25.19	24.80
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.19	1	QPSK	50	0	15 mm	Back	1:1	0.691	24.80	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.74	0	QPSK	1	0	15 mm	Back	1:1	0.717	25.18	25.18
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.04	1	QPSK	50	50	15 mm	Back	1:1	0.578	25.42	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	23.72	0	QPSK	1	50	15 mm	Back	1:1	0.627	25.75	25.75
1880.00	18900	Mid	LTE Band 2 (PCS)	20	22.98	1	QPSK	50	25	15 mm	Back	1:1	0.516	25.85	
2310.00	27710	Mid	LTE Band 30	10	22.44	0	QPSK	1	0	15 mm	Back	1:1	0.588	24.75	24.75
2310.00	27710	Mid	LTE Band 30	10	21.58	1	QPSK	25	12	15 mm	Back	1:1	0.472	24.84	
2510.00	20850	Low	LTE Band 7	20	23.45	0	QPSK	1	99	15 mm	Back	1:1	0.389	27.55	27.53
2510.00	20850	Low	LTE Band 7	20	22.60	1	QPSK	50	50	15 mm	Back	1:1	0.321	27.53	
3690.00	56640	High	LTE Band 48	20	23.15	0	QPSK	1	0	15 mm	Back	1:1.58	0.198	28.20	28.20
3690.00	56640	High	LTE Band 48	20	23.00	1	QPSK	50	25	15 mm	Back	1:1.58	0.155	29.11	
2593.00	40620	Mid	LTE Band 41	20	24.81	0	QPSK	1	0	15 mm	Back	1:1.58	0.184	30.18	29.51
2593.00	40620	Mid	LTE Band 41	20	24.00	0	QPSK	50	0	15 mm	Back	1:1.58	0.178	29.51	

For some bands/modes, a lower P_{Limit} was selected as a more conservative evaluation.

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Table A-6
DSI = 0 P_{Limit} Calculations – NR Body-Worn SAR

MEASUREMENT RESULTS															
FREQUENCY			Mode	Bandwidth [MHz]	Conducted Power [dBm]	MPR [dB]	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	PLimit	Minimum PLimit
MHz	Ch.												(W/kg)	[dBm]	[dBm]
680.50	136100	Mid	NR Band n71	20	24.96	0	DFT-s-OFDM QPSK	1	53	15 mm	Back	1:1	0.197	32.02	31.93
680.50	136100	Mid	NR Band n71	20	24.90	0	DFT-s-OFDM QPSK	50	28	15 mm	Back	1:1	0.198	31.93	
680.50	136100	Mid	NR Band n71	20	23.45	1.5	CP-OFDM QPSK	1	1	15 mm	Back	1:1	0.118	32.73	
836.50	167300	Mid	NR Band n5	20	24.82	0	DFT-s-OFDM QPSK	1	1	15 mm	Back	1:1	0.196	31.90	31.04
836.50	167300	Mid	NR Band n5	20	24.42	0	DFT-s-OFDM QPSK	50	28	15 mm	Back	1:1	0.218	31.04	
836.50	167300	Mid	NR Band n5	20	23.10	1.5	CP-OFDM QPSK	1	1	15 mm	Back	1:1	0.137	31.73	
1745.00	349000	Mid	NR Band n66	20	24.28	0	DFT-s-OFDM QPSK	1	1	15 mm	Back	1:1	0.677	25.97	25.42
1745.00	349000	Mid	NR Band n66	20	24.23	0	DFT-s-OFDM QPSK	50	28	15 mm	Back	1:1	0.634	26.21	
1745.00	349000	Mid	NR Band n66	20	21.79	1.5	CP-OFDM QPSK	1	1	15 mm	Back	1:1	0.434	25.42	
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-s-OFDM QPSK	1	1	15 mm	Back	1:1	0.609	26.05	26.05
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-s-OFDM QPSK	50	28	15 mm	Back	1:1	0.561	26.41	
1900.00	380000	High	NR Band n2	20	22.56	1.5	CP-OFDM QPSK	1	1	15 mm	Back	1:1	0.412	26.41	
2592.99	518598	Mid	NR Band n41	100	23.41	0	DFT-s-OFDM QPSK	1	137	15 mm	Back	1:4	0.054	30.07	29.27
2592.99	518598	Mid	NR Band n41	100	23.28	0	DFT-s-OFDM QPSK	135	69	15 mm	Back	1:4	0.063	29.27	
2592.99	518598	Mid	NR Band n41	100	21.17	1.5	CP-OFDM QPSK	1	1	15 mm	Back	1:4	0.031	30.24	

For some bands/modes, a lower P_{Limit} was selected as a more conservative evaluation.

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Table A-7
DSI = 3 P_{Limit} Calculations – 2G/3G Hotspot SAR

MEASUREMENT RESULTS											
FREQUENCY		Mode/Band	Service	Conducted Power [dBm]	Spacing	Side	# of GPRS Slots	Duty Cycle	SAR (1g)	PLimit	Minimum PLimit
MHz	Ch.								(W/kg)	[dBm]	[dBm]
836.60	190	GSM 850	GPRS	28.63	10 mm	Back	3	1:2.76	0.409	28.08	28.08
836.60	190	GSM 850	GPRS	28.63	10 mm	Front	3	1:2.76	0.272	29.85	
836.60	190	GSM 850	GPRS	28.63	10 mm	Bottom	3	1:2.76	0.246	30.29	
836.60	190	GSM 850	GPRS	28.63	10 mm	Right	3	1:2.76	0.218	30.82	
836.60	190	GSM 850	GPRS	28.63	10 mm	Left	3	1:2.76	0.079	35.22	
1880.00	661	GSM 1900	GPRS	25.24	10 mm	Back	3	1:2.76	0.442	24.36	21.70
1880.00	661	GSM 1900	GPRS	25.24	10 mm	Front	3	1:2.76	0.384	24.97	
1880.00	661	GSM 1900	GPRS	25.24	10 mm	Bottom	3	1:2.76	0.814	21.70	
1880.00	661	GSM 1900	GPRS	25.24	10 mm	Right	3	1:2.76	0.062	32.89	
1880.00	661	GSM 1900	GPRS	25.24	10 mm	Left	3	1:2.76	0.060	33.03	
846.60	4233	UMTS 850	RMC	23.69	10 mm	Back	N/A	1:1	0.501	26.69	26.69
836.60	4183	UMTS 850	RMC	23.80	10 mm	Front	N/A	1:1	0.325	28.68	
836.60	4183	UMTS 850	RMC	23.80	10 mm	Bottom	N/A	1:1	0.277	29.38	
836.60	4183	UMTS 850	RMC	23.80	10 mm	Right	N/A	1:1	0.236	30.07	
836.60	4183	UMTS 850	RMC	23.80	10 mm	Left	N/A	1:1	0.088	34.36	
1732.40	1412	UMTS 1750	RMC	23.39	10 mm	Back	N/A	1:1	1.510	21.60	19.52
1732.40	1412	UMTS 1750	RMC	23.39	10 mm	Front	N/A	1:1	1.180	22.67	
1732.40	1412	UMTS 1750	RMC	23.39	10 mm	Bottom	N/A	1:1	2.440	19.52	
1732.40	1412	UMTS 1750	RMC	23.39	10 mm	Right	N/A	1:1	0.192	30.56	
1732.40	1412	UMTS 1750	RMC	23.39	10 mm	Left	N/A	1:1	0.180	30.84	
1880.00	9400	UMTS 1900	RMC	23.24	10 mm	Back	N/A	1:1	1.410	21.75	19.24
1880.00	9400	UMTS 1900	RMC	23.24	10 mm	Front	N/A	1:1	1.120	22.75	
1880.00	9400	UMTS 1900	RMC	23.24	10 mm	Bottom	N/A	1:1	2.510	19.24	
1880.00	9400	UMTS 1900	RMC	23.24	10 mm	Right	N/A	1:1	0.170	30.94	
1880.00	9400	UMTS 1900	RMC	23.24	10 mm	Left	N/A	1:1	0.157	31.28	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	24.61	10 mm	Back	N/A	1:1	0.429	28.29	28.29
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	24.61	10 mm	Front	N/A	1:1	0.288	30.02	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	24.61	10 mm	Bottom	N/A	1:1	0.235	30.90	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	24.61	10 mm	Right	N/A	1:1	0.257	30.51	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	24.61	10 mm	Left	N/A	1:1	0.109	34.24	
848.31	777	CDMA BC0 (S22H)	EVDO Rev. 0	24.40	10 mm	Back	N/A	1:1	0.560	26.92	26.92
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	24.52	10 mm	Front	N/A	1:1	0.374	28.79	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	24.52	10 mm	Bottom	N/A	1:1	0.313	29.56	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	24.52	10 mm	Right	N/A	1:1	0.283	30.00	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	24.52	10 mm	Left	N/A	1:1	0.107	34.23	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.11	10 mm	Back	N/A	1:1	1.360	21.77	19.85
1880.00	600	PCS CDMA	EVDO Rev. 0	23.11	10 mm	Front	N/A	1:1	1.200	22.32	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.11	10 mm	Bottom	N/A	1:1	2.120	19.85	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.11	10 mm	Right	N/A	1:1	0.161	31.04	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.11	10 mm	Left	N/A	1:1	0.140	31.65	

For some bands/modes, a lower P_{Limit} was selected as a more conservative evaluation.

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Table A-8
DSI = 3 P_{Limit} Calculations – 4G Hotspot SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Bandwidth [MHz]	Conducted Power [dBm]	MPR [dB]	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	PLimit	Minimum PLimit	
MHz	Ch.											[W/kg]	[dBm]	[dBm]	
680.50	133297	Mid	LTE Band 71	20	24.86	0	QPSK	1	0	10 mm	Back	1.1	0.182	32.26	31.76
680.50	133297	Mid	LTE Band 71	20	23.88	1	QPSK	50	0	10 mm	Back	1.1	0.163	31.76	
680.50	133297	Mid	LTE Band 71	20	24.86	0	QPSK	1	0	10 mm	Front	1.1	0.164	32.71	
680.50	133297	Mid	LTE Band 71	20	23.88	1	QPSK	50	0	10 mm	Front	1.1	0.132	32.67	
680.50	133297	Mid	LTE Band 71	20	24.86	0	QPSK	1	0	10 mm	Bottom	1.1	0.073	36.23	
680.50	133297	Mid	LTE Band 71	20	23.88	1	QPSK	50	0	10 mm	Bottom	1.1	0.062	35.96	
680.50	133297	Mid	LTE Band 71	20	24.86	0	QPSK	1	0	10 mm	Right	1.1	0.142	33.34	
680.50	133297	Mid	LTE Band 71	20	23.88	1	QPSK	50	0	10 mm	Right	1.1	0.128	32.81	
680.50	133297	Mid	LTE Band 71	20	24.86	0	QPSK	1	0	10 mm	Left	1.1	0.116	34.22	
680.50	133297	Mid	LTE Band 71	20	23.88	1	QPSK	50	0	10 mm	Left	1.1	0.095	34.10	
707.50	23095	Mid	LTE Band 12	10	24.92	0	QPSK	1	0	10 mm	Back	1.1	0.242	31.08	30.66
707.50	23095	Mid	LTE Band 12	10	23.82	1	QPSK	25	12	10 mm	Back	1.1	0.207	30.66	
707.50	23095	Mid	LTE Band 12	10	24.92	0	QPSK	1	0	10 mm	Front	1.1	0.170	32.62	
707.50	23095	Mid	LTE Band 12	10	23.82	1	QPSK	25	12	10 mm	Front	1.1	0.128	32.75	
707.50	23095	Mid	LTE Band 12	10	24.92	0	QPSK	1	0	10 mm	Bottom	1.1	0.095	35.14	
707.50	23095	Mid	LTE Band 12	10	23.82	1	QPSK	25	12	10 mm	Bottom	1.1	0.084	34.58	
707.50	23095	Mid	LTE Band 12	10	24.92	0	QPSK	1	0	10 mm	Right	1.1	0.169	32.64	
707.50	23095	Mid	LTE Band 12	10	23.82	1	QPSK	25	12	10 mm	Right	1.1	0.160	31.78	
707.50	23095	Mid	LTE Band 12	10	24.92	0	QPSK	1	0	10 mm	Left	1.1	0.122	34.06	
707.50	23095	Mid	LTE Band 12	10	23.82	1	QPSK	25	12	10 mm	Left	1.1	0.107	33.53	
782.00	23230	Mid	LTE Band 13	10	24.99	0	QPSK	1	0	10 mm	Back	1.1	0.392	29.06	28.60
782.00	23230	Mid	LTE Band 13	10	23.97	1	QPSK	25	0	10 mm	Back	1.1	0.344	28.60	
782.00	23230	Mid	LTE Band 13	10	24.99	0	QPSK	1	0	10 mm	Front	1.1	0.296	30.28	
782.00	23230	Mid	LTE Band 13	10	23.97	1	QPSK	25	0	10 mm	Front	1.1	0.251	29.97	
782.00	23230	Mid	LTE Band 13	10	24.99	0	QPSK	1	0	10 mm	Bottom	1.1	0.220	31.57	
782.00	23230	Mid	LTE Band 13	10	23.97	1	QPSK	25	0	10 mm	Bottom	1.1	0.188	31.23	
782.00	23230	Mid	LTE Band 13	10	24.99	0	QPSK	1	0	10 mm	Right	1.1	0.330	29.80	
782.00	23230	Mid	LTE Band 13	10	23.97	1	QPSK	25	0	10 mm	Right	1.1	0.253	29.94	
782.00	23230	Mid	LTE Band 13	10	24.99	0	QPSK	1	0	10 mm	Left	1.1	0.167	32.76	
782.00	23230	Mid	LTE Band 13	10	23.97	1	QPSK	25	0	10 mm	Left	1.1	0.132	32.76	
793.00	23330	Mid	LTE Band 14	10	24.78	0	QPSK	1	0	10 mm	Back	1.1	0.487	27.90	27.64
793.00	23330	Mid	LTE Band 14	10	23.64	1	QPSK	25	0	10 mm	Back	1.1	0.398	27.64	
793.00	23330	Mid	LTE Band 14	10	24.78	0	QPSK	1	0	10 mm	Front	1.1	0.332	29.57	
793.00	23330	Mid	LTE Band 14	10	23.64	1	QPSK	25	0	10 mm	Front	1.1	0.286	29.08	
793.00	23330	Mid	LTE Band 14	10	24.78	0	QPSK	1	0	10 mm	Bottom	1.1	0.282	30.28	
793.00	23330	Mid	LTE Band 14	10	23.64	1	QPSK	25	0	10 mm	Bottom	1.1	0.222	30.18	
793.00	23330	Mid	LTE Band 14	10	24.78	0	QPSK	1	0	10 mm	Right	1.1	0.365	29.16	
793.00	23330	Mid	LTE Band 14	10	23.64	1	QPSK	25	0	10 mm	Right	1.1	0.284	29.11	
793.00	23330	Mid	LTE Band 14	10	24.78	0	QPSK	1	0	10 mm	Left	1.1	0.161	32.71	
793.00	23330	Mid	LTE Band 14	10	23.64	1	QPSK	25	0	10 mm	Left	1.1	0.124	32.71	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.72	0	QPSK	1	36	10 mm	Back	1.1	0.596	26.97	26.97
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.89	1	QPSK	36	37	10 mm	Back	1.1	0.485	27.03	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.72	0	QPSK	1	36	10 mm	Front	1.1	0.419	28.50	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.89	1	QPSK	36	37	10 mm	Front	1.1	0.343	28.54	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.72	0	QPSK	1	36	10 mm	Bottom	1.1	0.325	29.60	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.89	1	QPSK	36	37	10 mm	Bottom	1.1	0.266	29.64	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.72	0	QPSK	1	36	10 mm	Right	1.1	0.271	30.39	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.89	1	QPSK	36	37	10 mm	Right	1.1	0.216	30.55	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.72	0	QPSK	1	36	10 mm	Left	1.1	0.096	34.90	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.89	1	QPSK	36	37	10 mm	Left	1.1	0.080	34.86	

FCC ID: A3LSMG986U	 PART 0 SAR AND POWER DENSITY CHAR REPORT 	Approved by: Quality Manager
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MEASUREMENT RESULTS															
FREQUENCY			Mode	Bandwidth [MHz]	Conducted Power [dBm]	MPR [dB]	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	PLimit	Minimum PLimit
MHz	Ch.												(W/kg)	[dBm]	[dBm]
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.90	0	QPSK	1	0	10 mm	Back	1.1	0.534	27.62	27.20
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.87	1	QPSK	25	25	10 mm	Back	1.1	0.464	27.20	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.90	0	QPSK	1	0	10 mm	Front	1.1	0.396	28.92	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.87	1	QPSK	25	25	10 mm	Front	1.1	0.333	28.65	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.90	0	QPSK	1	0	10 mm	Bottom	1.1	0.324	29.79	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.87	1	QPSK	25	25	10 mm	Bottom	1.1	0.274	29.49	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.90	0	QPSK	1	0	10 mm	Right	1.1	0.267	30.63	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.87	1	QPSK	25	25	10 mm	Right	1.1	0.211	30.63	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.90	0	QPSK	1	0	10 mm	Left	1.1	0.093	35.22	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.87	1	QPSK	25	25	10 mm	Left	1.1	0.075	35.12	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.16	0	QPSK	1	50	10 mm	Back	1.1	1.510	22.37	20.06
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.16	0	QPSK	1	50	10 mm	Front	1.1	1.380	22.76	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.16	0	QPSK	1	50	10 mm	Bottom	1.1	2.570	20.06	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.16	0	QPSK	1	50	10 mm	Right	1.1	0.229	30.56	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.16	0	QPSK	1	50	10 mm	Left	1.1	0.185	31.49	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.01	0	QPSK	1	99	10 mm	Back	1.1	1.350	22.71	19.98
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.01	0	QPSK	1	99	10 mm	Front	1.1	1.170	23.33	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.01	0	QPSK	1	99	10 mm	Bottom	1.1	2.530	19.98	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.01	0	QPSK	1	99	10 mm	Right	1.1	0.153	32.16	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.01	0	QPSK	1	99	10 mm	Left	1.1	0.166	31.81	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.89	0	QPSK	1	99	10 mm	Back	1.1	1.430	22.34	19.53
1900.00	19100	High	LTE Band 2 (PCS)	20	23.89	0	QPSK	1	99	10 mm	Front	1.1	1.250	22.92	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.89	0	QPSK	1	99	10 mm	Bottom	1.1	2.730	19.53	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.89	0	QPSK	1	99	10 mm	Right	1.1	0.169	31.61	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.89	0	QPSK	1	99	10 mm	Left	1.1	0.140	32.43	
2310.00	27710	Mid	LTE Band 30	10	22.44	0	QPSK	1	0	10 mm	Back	1.1	1.140	21.87	18.32
2310.00	27710	Mid	LTE Band 30	10	22.44	0	QPSK	1	0	10 mm	Front	1.1	1.090	22.07	
2310.00	27710	Mid	LTE Band 30	10	22.44	0	QPSK	1	0	10 mm	Bottom	1.1	2.580	18.32	
2310.00	27710	Mid	LTE Band 30	10	22.44	0	QPSK	1	0	10 mm	Right	1.1	0.087	33.04	
2310.00	27710	Mid	LTE Band 30	10	22.44	0	QPSK	1	0	10 mm	Left	1.1	0.072	33.87	
2510.00	20850	Low	LTE Band 7	20	23.45	0	QPSK	1	99	10 mm	Back	1.1	0.754	24.68	21.02
2510.00	20850	Low	LTE Band 7	20	23.45	0	QPSK	1	99	10 mm	Front	1.1	0.628	25.47	
2510.00	20850	Low	LTE Band 7	20	23.45	0	QPSK	1	99	10 mm	Bottom	1.1	1.750	21.02	
2510.00	20850	Low	LTE Band 7	20	23.45	0	QPSK	1	99	10 mm	Left	1.1	0.171	31.12	
3690.00	56640	High	LTE Band 48	20	23.75	0	QPSK	1	50	10 mm	Back	1:1.58	0.370	26.08	22.92
3690.00	56640	High	LTE Band 48	20	23.00	1	QPSK	50	25	10 mm	Back	1:1.58	0.295	26.32	
3690.00	56640	High	LTE Band 48	20	23.75	0	QPSK	1	50	10 mm	Front	1:1.58	0.197	28.82	
3690.00	56640	High	LTE Band 48	20	23.00	1	QPSK	50	25	10 mm	Front	1:1.58	0.157	29.06	
3560.00	55340	Low	LTE Band 48	20	23.37	0	QPSK	1	99	10 mm	Top	1:1.58	0.702	22.92	
3690.00	56640	High	LTE Band 48	20	23.00	1	QPSK	50	25	10 mm	Top	1:1.58	0.525	23.81	
3690.00	56640	High	LTE Band 48	20	23.75	0	QPSK	1	50	10 mm	Left	1:1.58	0.340	26.45	
3690.00	56640	High	LTE Band 48	20	23.00	1	QPSK	50	25	10 mm	Left	1:1.58	0.274	26.64	
2593.00	40620	Mid	LTE Band 41	20	24.81	0	QPSK	1	0	10 mm	Back	1:1.58	0.365	27.20	22.82
2593.00	40620	Mid	LTE Band 41	20	24.81	0	QPSK	1	0	10 mm	Front	1:1.58	0.329	27.65	
2593.00	40620	Mid	LTE Band 41	20	24.81	0	QPSK	1	0	10 mm	Bottom	1:1.58	1.000	22.82	
2593.00	40620	Mid	LTE Band 41	20	24.81	0	QPSK	1	0	10 mm	Left	1:1.58	0.136	31.49	

For some bands/modes, a lower P_{Limit} was selected as a more conservative evaluation.

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Table A-9
DSI = 3 P_{Limit} Calculations – NR Hotspot SAR

MEASUREMENT RESULTS															
FREQUENCY			Mode	Bandwidth [MHz]	Conducted Power [dBm]	MPR [dB]	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	PLimit	Minimum PLimit
MHz	Ch.												(W/kg)	[dBm]	
680.50	136100	Mid	NR Band n71	20	24.96	0	DFT-s-OFDM QPSK	1	53	10 mm	Back	1:1	0.247	31.03	30.97
680.50	136100	Mid	NR Band n71	20	24.90	0	DFT-s-OFDM QPSK	50	28	10 mm	Back	1:1	0.247	30.97	
680.50	136100	Mid	NR Band n71	20	23.45	1.5	CP-OFDM QPSK	1	1	10 mm	Back	1:1	0.153	31.60	
680.50	136100	Mid	NR Band n71	20	24.96	0	DFT-s-OFDM QPSK	1	53	10 mm	Front	1:1	0.191	32.15	
680.50	136100	Mid	NR Band n71	20	24.90	0	DFT-s-OFDM QPSK	50	28	10 mm	Front	1:1	0.189	32.14	
680.50	136100	Mid	NR Band n71	20	24.96	0	DFT-s-OFDM QPSK	1	53	10 mm	Bottom	1:1	0.111	34.51	
680.50	136100	Mid	NR Band n71	20	24.90	0	DFT-s-OFDM QPSK	50	28	10 mm	Bottom	1:1	0.114	34.33	
680.50	136100	Mid	NR Band n71	20	24.96	0	DFT-s-OFDM QPSK	1	53	10 mm	Right	1:1	0.218	31.58	
680.50	136100	Mid	NR Band n71	20	24.90	0	DFT-s-OFDM QPSK	50	28	10 mm	Right	1:1	0.207	31.74	
680.50	136100	Mid	NR Band n71	20	24.96	0	DFT-s-OFDM QPSK	1	53	10 mm	Left	1:1	0.150	33.20	
680.50	136100	Mid	NR Band n71	20	24.90	0	DFT-s-OFDM QPSK	50	28	10 mm	Left	1:1	0.145	33.29	
836.50	167300	Mid	NR Band n5	20	24.82	0	DFT-s-OFDM QPSK	1	1	10 mm	Back	1:1	0.470	28.10	27.45
836.50	167300	Mid	NR Band n5	20	24.42	0	DFT-s-OFDM QPSK	50	28	10 mm	Back	1:1	0.498	27.45	
836.50	167300	Mid	NR Band n5	20	23.10	1.5	CP-OFDM QPSK	1	1	10 mm	Back	1:1	0.311	28.17	
836.50	167300	Mid	NR Band n5	20	24.82	0	DFT-s-OFDM QPSK	1	1	10 mm	Front	1:1	0.299	30.06	
836.50	167300	Mid	NR Band n5	20	24.42	0	DFT-s-OFDM QPSK	50	28	10 mm	Front	1:1	0.336	29.16	
836.50	167300	Mid	NR Band n5	20	24.82	0	DFT-s-OFDM QPSK	1	1	10 mm	Bottom	1:1	0.269	30.52	
836.50	167300	Mid	NR Band n5	20	24.42	0	DFT-s-OFDM QPSK	50	28	10 mm	Bottom	1:1	0.314	29.45	
836.50	167300	Mid	NR Band n5	20	24.82	0	DFT-s-OFDM QPSK	1	1	10 mm	Right	1:1	0.240	31.02	
836.50	167300	Mid	NR Band n5	20	24.42	0	DFT-s-OFDM QPSK	50	28	10 mm	Right	1:1	0.242	30.58	
836.50	167300	Mid	NR Band n5	20	24.82	0	DFT-s-OFDM QPSK	1	1	10 mm	Left	1:1	0.089	35.33	
836.50	167300	Mid	NR Band n5	20	24.42	0	DFT-s-OFDM QPSK	50	28	10 mm	Left	1:1	0.090	34.88	
1770.00	354000	High	NR Band n66	20	23.94	0	DFT-s-OFDM QPSK	1	53	10 mm	Back	1:1	1.070	23.65	21.49
1745.00	349000	Mid	NR Band n66	20	24.23	0	DFT-s-OFDM QPSK	50	28	10 mm	Front	1:1	0.987	24.29	
1745.00	349000	Mid	NR Band n66	20	24.23	0	DFT-s-OFDM QPSK	50	28	10 mm	Bottom	1:1	1.880	21.49	
1745.00	349000	Mid	NR Band n66	20	24.28	0	DFT-s-OFDM QPSK	1	53	10 mm	Right	1:1	0.112	33.79	
1745.00	349000	Mid	NR Band n66	20	24.28	0	DFT-s-OFDM QPSK	1	53	10 mm	Left	1:1	0.132	33.07	
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-s-OFDM QPSK	1	1	10 mm	Back	1:1	1.170	23.22	20.23
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-s-OFDM QPSK	1	1	10 mm	Front	1:1	1.080	23.57	
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-s-OFDM QPSK	1	1	10 mm	Bottom	1:1	2.330	20.23	
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-s-OFDM QPSK	1	1	10 mm	Right	1:1	0.159	31.89	
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-s-OFDM QPSK	1	1	10 mm	Left	1:1	0.136	32.56	
2592.99	518598	Mid	NR Band n41	100	23.41	0	DFT-s-OFDM QPSK	1	137	10 mm	Back	1:4	0.099	27.43	25.68
2592.99	518598	Mid	NR Band n41	100	23.28	0	DFT-s-OFDM QPSK	135	69	10 mm	Back	1:4	0.104	27.09	
2592.99	518598	Mid	NR Band n41	100	23.41	0	DFT-s-OFDM QPSK	1	137	10 mm	Front	1:4	0.051	30.31	
2592.99	518598	Mid	NR Band n41	100	23.28	0	DFT-s-OFDM QPSK	135	69	10 mm	Front	1:4	0.063	29.27	
2592.99	518598	Mid	NR Band n41	100	23.41	0	DFT-s-OFDM QPSK	1	137	10 mm	Top	1:4	0.139	25.96	
2592.99	518598	Mid	NR Band n41	100	23.28	0	DFT-s-OFDM QPSK	135	69	10 mm	Top	1:4	0.144	25.68	
2592.99	518598	Mid	NR Band n41	100	23.41	0	DFT-s-OFDM QPSK	1	137	10 mm	Left	1:4	0.028	32.92	
2592.99	518598	Mid	NR Band n41	100	23.28	0	DFT-s-OFDM QPSK	135	69	10 mm	Left	1:4	0.028	32.79	

For some bands/modes, a lower P_{Limit} was selected as a more conservative evaluation.

FCC ID: A3LSMG986U	 PART 0 SAR AND POWER DENSITY CHAR REPORT 	Approved by: Quality Manager
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Table A-10
DSI = 0 P_{Limit} Calculations – 2G/3G Phablet SAR

MEASUREMENT RESULTS											
FREQUENCY		Mode/Band	Service	Conducted Power [dBm]	Spacing	Side	# of GPRS Slots	Duty Cycle	SAR (10g)	PLimit	Minimum PLimit
MHz	Ch.								[W/kg]	[dBm]	[dBm]
836.60	190	GSM 850	GPRS	28.63	8 mm	Back	3	1:2.76	0.317	33.17	32.95
836.60	190	GSM 850	GPRS	28.63	6 mm	Front	3	1:2.76	0.333	32.95	
836.60	190	GSM 850	GPRS	28.63	11 mm	Bottom	3	1:2.76	0.107	37.89	
836.60	190	GSM 850	GPRS	28.63	0 mm	Right	3	1:2.76	0.208	35.00	
836.60	190	GSM 850	GPRS	28.63	0 mm	Left	3	1:2.76	0.138	36.78	
1880.00	661	GSM 1900	GPRS	25.24	8 mm	Back	3	1:2.76	0.318	29.77	28.74
1880.00	661	GSM 1900	GPRS	25.24	6 mm	Front	3	1:2.76	0.403	28.74	
1880.00	661	GSM 1900	GPRS	25.24	11 mm	Bottom	3	1:2.76	0.397	28.80	
1880.00	661	GSM 1900	GPRS	25.24	0 mm	Right	3	1:2.76	0.124	33.86	
1880.00	661	GSM 1900	GPRS	25.24	0 mm	Left	3	1:2.76	0.119	34.03	
836.60	4183	UMTS 850	RMC	23.80	8 mm	Back	N/A	1:1	0.351	32.33	32.26
836.60	4183	UMTS 850	RMC	23.80	6 mm	Front	N/A	1:1	0.356	32.26	
836.60	4183	UMTS 850	RMC	23.80	11 mm	Bottom	N/A	1:1	0.107	37.49	
836.60	4183	UMTS 850	RMC	23.80	0 mm	Right	N/A	1:1	0.203	34.70	
836.60	4183	UMTS 850	RMC	23.80	0 mm	Left	N/A	1:1	0.157	35.82	
1732.40	1412	UMTS 1750	RMC	23.39	8 mm	Back	N/A	1:1	1.060	27.12	26.13
1732.40	1412	UMTS 1750	RMC	23.39	6 mm	Front	N/A	1:1	1.330	26.13	
1732.40	1412	UMTS 1750	RMC	23.39	11 mm	Bottom	N/A	1:1	1.140	26.80	
1732.40	1412	UMTS 1750	RMC	23.39	0 mm	Right	N/A	1:1	0.382	31.55	
1732.40	1412	UMTS 1750	RMC	23.39	0 mm	Left	N/A	1:1	0.353	31.89	
1880.00	9400	UMTS 1900	RMC	23.24	8 mm	Back	N/A	1:1	0.844	27.96	26.61
1880.00	9400	UMTS 1900	RMC	23.24	6 mm	Front	N/A	1:1	1.150	26.61	
1880.00	9400	UMTS 1900	RMC	23.24	11 mm	Bottom	N/A	1:1	0.995	27.24	
1880.00	9400	UMTS 1900	RMC	23.24	0 mm	Right	N/A	1:1	0.355	31.72	
1880.00	9400	UMTS 1900	RMC	23.24	0 mm	Left	N/A	1:1	0.340	31.90	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	24.61	8 mm	Back	N/A	1:1	0.356	33.07	33.05
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	24.61	6 mm	Front	N/A	1:1	0.358	33.05	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	24.61	11 mm	Bottom	N/A	1:1	0.108	38.26	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	24.61	0 mm	Right	N/A	1:1	0.228	35.01	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	24.61	0 mm	Left	N/A	1:1	0.137	37.22	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	24.52	8 mm	Back	N/A	1:1	0.403	32.45	32.12
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	24.52	6 mm	Front	N/A	1:1	0.434	32.12	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	24.52	11 mm	Bottom	N/A	1:1	0.122	37.64	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	24.52	0 mm	Right	N/A	1:1	0.259	34.37	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	24.52	0 mm	Left	N/A	1:1	0.154	36.62	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.11	8 mm	Back	N/A	1:1	0.834	27.88	27.00
1880.00	600	PCS CDMA	EVDO Rev. 0	23.11	6 mm	Front	N/A	1:1	0.987	27.15	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.11	11 mm	Bottom	N/A	1:1	1.020	27.00	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.11	0 mm	Right	N/A	1:1	0.322	32.01	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.11	0 mm	Left	N/A	1:1	0.304	32.26	

For some bands/modes, a lower P_{Limit} was selected as a more conservative evaluation.

FCC ID: A3LSMG986U	 PART 0 SAR AND POWER DENSITY CHAR REPORT 	Approved by: Quality Manager
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Table A-11
DSI = 1 P_{Limit} Calculations – 2G/3G Phablet SAR

MEASUREMENT RESULTS											
FREQUENCY		Mode/Band	Service	Conducted Power [dBm]	Spacing	Side	# of GPRS Slots	Duty Cycle	SAR (10g)	PLimit	Minimum PLimit
MHz	Ch.								(W/kg)	[dBm]	[dBm]
836.60	190	GSM 850	GPRS	28.63	0 mm	Back	3	1:2.76	1.620	26.08	26.08
836.60	190	GSM 850	GPRS	28.63	0 mm	Front	3	1:2.76	1.490	26.45	
836.60	190	GSM 850	GPRS	28.63	0 mm	Bottom	3	1:2.76	0.689	29.80	
836.60	190	GSM 850	GPRS	28.63	0 mm	Right	3	1:2.76	0.208	35.00	
836.60	190	GSM 850	GPRS	28.63	0 mm	Left	3	1:2.76	0.138	36.78	
1880.00	661	GSM 1900	GPRS	25.24	0 mm	Back	3	1:2.76	1.620	22.69	19.77
1880.00	661	GSM 1900	GPRS	25.24	0 mm	Front	3	1:2.76	1.510	23.00	
1880.00	661	GSM 1900	GPRS	25.24	0 mm	Bottom	3	1:2.76	3.180	19.77	
1880.00	661	GSM 1900	GPRS	25.24	0 mm	Right	3	1:2.76	0.124	33.86	
1880.00	661	GSM 1900	GPRS	25.24	0 mm	Left	3	1:2.76	0.119	34.03	
836.60	4183	UMTS 850	RMC	23.80	0 mm	Back	N/A	1:1	1.490	26.05	26.05
836.60	4183	UMTS 850	RMC	23.80	0 mm	Front	N/A	1:1	1.470	26.11	
836.60	4183	UMTS 850	RMC	23.80	0 mm	Bottom	N/A	1:1	0.801	28.74	
836.60	4183	UMTS 850	RMC	23.80	0 mm	Right	N/A	1:1	0.203	34.70	
836.60	4183	UMTS 850	RMC	23.80	0 mm	Left	N/A	1:1	0.157	35.82	
1732.40	1412	UMTS 1750	RMC	23.39	0 mm	Back	N/A	1:1	4.030	21.32	19.75
1732.40	1412	UMTS 1750	RMC	23.39	0 mm	Front	N/A	1:1	4.050	21.29	
1732.40	1412	UMTS 1750	RMC	23.39	0 mm	Bottom	N/A	1:1	5.780	19.75	
1732.40	1412	UMTS 1750	RMC	23.39	0 mm	Right	N/A	1:1	0.382	31.55	
1732.40	1412	UMTS 1750	RMC	23.39	0 mm	Left	N/A	1:1	0.353	31.89	
1880.00	9400	UMTS 1900	RMC	23.24	0 mm	Back	N/A	1:1	4.310	20.87	19.18
1880.00	9400	UMTS 1900	RMC	23.24	0 mm	Front	N/A	1:1	4.180	21.01	
1880.00	9400	UMTS 1900	RMC	23.24	0 mm	Bottom	N/A	1:1	6.360	19.18	
1880.00	9400	UMTS 1900	RMC	23.24	0 mm	Right	N/A	1:1	0.355	31.72	
1880.00	9400	UMTS 1900	RMC	23.24	0 mm	Left	N/A	1:1	0.340	31.90	
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. 0	24.61	0 mm	Back	N/A	1:1	1.720	26.23	26.23
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. 0	24.61	0 mm	Front	N/A	1:1	1.580	26.60	
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. 0	24.61	0 mm	Bottom	N/A	1:1	0.815	29.48	
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. 0	24.61	0 mm	Right	N/A	1:1	0.228	35.01	
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. 0	24.61	0 mm	Left	N/A	1:1	0.137	37.22	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. 0	24.52	0 mm	Back	N/A	1:1	1.700	26.19	26.19
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. 0	24.52	0 mm	Front	N/A	1:1	1.630	26.38	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. 0	24.52	0 mm	Bottom	N/A	1:1	0.661	30.30	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. 0	24.52	0 mm	Right	N/A	1:1	0.259	34.37	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. 0	24.52	0 mm	Left	N/A	1:1	0.154	36.62	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.11	0 mm	Back	N/A	1:1	3.990	21.08	19.92
1880.00	600	PCS CDMA	EVDO Rev. 0	23.11	0 mm	Front	N/A	1:1	3.380	21.80	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.11	0 mm	Bottom	N/A	1:1	5.210	19.92	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.11	0 mm	Right	N/A	1:1	0.322	32.01	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.11	0 mm	Left	N/A	1:1	0.304	32.26	

For some bands/modes, a lower P_{Limit} was selected as a more conservative evaluation.

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Table A-12
DSI = 0 P_{Limit} Calculations – 4G Phablet SAR

MEASUREMENT RESULTS															
FREQUENCY			Mode	Bandwidth [MHz]	Conducted Power [dBm]	MPR [dB]	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	PLimit	Minimum PLimit
MHz	Ch.												[W/kg]	[dBm]	[dBm]
680.50	133297	Mid	LTE Band 71	20	24.86	0	QPSK	1	0	8 mm	Back	1:1	0.163	36.72	36.72
680.50	133297	Mid	LTE Band 71	20	24.86	0	QPSK	1	0	6 mm	Front	1:1	0.134	37.57	
680.50	133297	Mid	LTE Band 71	20	24.86	0	QPSK	1	0	11 mm	Bottom	1:1	0.038	43.04	
680.50	133297	Mid	LTE Band 71	20	24.86	0	QPSK	1	0	0 mm	Right	1:1	0.094	39.11	
680.50	133297	Mid	LTE Band 71	20	24.86	0	QPSK	1	0	0 mm	Left	1:1	0.053	41.60	
707.50	23095	Mid	LTE Band 12	10	24.92	0	QPSK	1	0	8 mm	Back	1:1	0.189	36.13	36.13
707.50	23095	Mid	LTE Band 12	10	24.92	0	QPSK	1	0	6 mm	Front	1:1	0.171	36.57	
707.50	23095	Mid	LTE Band 12	10	24.92	0	QPSK	1	0	11 mm	Bottom	1:1	0.042	42.67	
707.50	23095	Mid	LTE Band 12	10	24.92	0	QPSK	1	0	0 mm	Right	1:1	0.115	38.29	
707.50	23095	Mid	LTE Band 12	10	24.92	0	QPSK	1	0	0 mm	Left	1:1	0.062	40.98	
782.00	23230	Mid	LTE Band 13	10	24.99	0	QPSK	1	0	8 mm	Back	1:1	0.339	33.67	33.64
782.00	23230	Mid	LTE Band 13	10	24.99	0	QPSK	1	0	6 mm	Front	1:1	0.341	33.64	
782.00	23230	Mid	LTE Band 13	10	24.99	0	QPSK	1	0	11 mm	Bottom	1:1	0.100	38.97	
782.00	23230	Mid	LTE Band 13	10	24.99	0	QPSK	1	0	0 mm	Right	1:1	0.221	35.53	
782.00	23230	Mid	LTE Band 13	10	24.99	0	QPSK	1	0	0 mm	Left	1:1	0.143	37.42	
793.00	23330	Mid	LTE Band 14	10	24.78	0	QPSK	1	0	8 mm	Back	1:1	0.421	32.52	32.41
793.00	23330	Mid	LTE Band 14	10	24.78	0	QPSK	1	0	6 mm	Front	1:1	0.431	32.41	
793.00	23330	Mid	LTE Band 14	10	24.78	0	QPSK	1	0	11 mm	Bottom	1:1	0.129	37.65	
793.00	23330	Mid	LTE Band 14	10	24.78	0	QPSK	1	0	0 mm	Right	1:1	0.256	34.68	
793.00	23330	Mid	LTE Band 14	10	24.78	0	QPSK	1	0	0 mm	Left	1:1	0.161	36.69	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.72	0	QPSK	1	36	8 mm	Back	1:1	0.476	31.92	31.92
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.72	0	QPSK	1	36	6 mm	Front	1:1	0.434	32.32	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.72	0	QPSK	1	36	11 mm	Bottom	1:1	0.144	37.12	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.72	0	QPSK	1	36	0 mm	Right	1:1	0.259	34.57	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.72	0	QPSK	1	36	0 mm	Left	1:1	0.165	36.52	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.90	0	QPSK	1	0	8 mm	Back	1:1	0.474	32.12	32.12
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.90	0	QPSK	1	0	6 mm	Front	1:1	0.431	32.53	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.90	0	QPSK	1	0	11 mm	Bottom	1:1	0.143	37.33	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.90	0	QPSK	1	0	0 mm	Right	1:1	0.269	34.58	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.90	0	QPSK	1	0	0 mm	Left	1:1	0.175	36.45	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.16	0	QPSK	1	50	8 mm	back	1:1	1.110	27.69	26.80
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.19	1	QPSK	50	0	8 mm	back	1:1	0.946	27.41	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.16	0	QPSK	1	50	6 mm	front	1:1	1.270	27.10	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.19	1	QPSK	50	0	6 mm	front	1:1	1.060	26.92	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.16	0	QPSK	1	50	11 mm	bottom	1:1	1.350	26.84	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.19	1	QPSK	50	0	11 mm	bottom	1:1	1.090	26.80	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.16	0	QPSK	1	50	0 mm	right	1:1	0.368	32.48	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.19	1	QPSK	50	0	0 mm	right	1:1	0.303	32.35	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.16	0	QPSK	1	50	0 mm	left	1:1	0.410	32.01	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.19	1	QPSK	50	0	0 mm	left	1:1	0.337	31.89	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.01	0	QPSK	1	99	8 mm	back	1:1	0.924	28.33	27.11
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.04	1	QPSK	50	50	8 mm	back	1:1	0.766	28.18	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.01	0	QPSK	1	99	6 mm	front	1:1	1.180	27.27	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.04	1	QPSK	50	50	6 mm	front	1:1	0.979	27.11	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.01	0	QPSK	1	99	11 mm	bottom	1:1	1.150	27.38	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.04	1	QPSK	50	50	11 mm	bottom	1:1	0.929	27.34	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.01	0	QPSK	1	99	0 mm	right	1:1	0.337	32.71	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.04	1	QPSK	50	50	0 mm	right	1:1	0.285	32.47	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.01	0	QPSK	1	99	0 mm	left	1:1	0.338	32.70	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.04	1	QPSK	50	50	0 mm	left	1:1	0.272	32.67	

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MEASUREMENT RESULTS															
FREQUENCY			Mode	Bandwidth [MHz]	Conducted Power [dBm]	MPR [dB]	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	PLimit	Minimum PLimit
MHz	Ch.												(W/kg)	[dBm]	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.89	0	QPSK	1	99	8 mm	back	1:1	0.989	27.92	26.73
1880.00	18900	Mid	LTE Band 2 (PCS)	20	22.98	1	QPSK	50	25	8 mm	back	1:1	0.797	27.94	
1860.00	18700	High	LTE Band 2 (PCS)	20	23.89	0	QPSK	1	99	6 mm	front	1:1	1.300	26.73	
1840.00	18500	Mid	LTE Band 2 (PCS)	20	22.98	1	QPSK	50	25	6 mm	front	1:1	1.010	26.92	
1820.00	18300	High	LTE Band 2 (PCS)	20	23.89	0	QPSK	1	99	11 mm	bottom	1:1	1.230	26.97	
1800.00	18100	Mid	LTE Band 2 (PCS)	20	22.98	1	QPSK	50	25	11 mm	bottom	1:1	0.966	27.11	
1780.00	17900	High	LTE Band 2 (PCS)	20	23.89	0	QPSK	1	99	0 mm	right	1:1	0.351	32.42	
1760.00	17700	Mid	LTE Band 2 (PCS)	20	22.98	1	QPSK	50	25	0 mm	right	1:1	0.284	32.43	
1740.00	17500	High	LTE Band 2 (PCS)	20	23.89	0	QPSK	1	99	0 mm	left	1:1	0.330	32.68	
1720.00	17300	Mid	LTE Band 2 (PCS)	20	22.98	1	QPSK	50	25	0 mm	left	1:1	0.273	32.60	
2310.00	27710	Mid	LTE Band 30	10	22.44	0	QPSK	1	0	8 mm	back	1:1	0.741	27.72	26.23
2310.00	27710	Mid	LTE Band 30	10	21.58	1	QPSK	25	12	8 mm	back	1:1	0.599	27.79	
2310.00	27710	Mid	LTE Band 30	10	22.44	0	QPSK	1	0	6 mm	front	1:1	0.993	26.45	
2310.00	27710	Mid	LTE Band 30	10	21.58	1	QPSK	25	12	6 mm	front	1:1	0.814	26.45	
2310.00	27710	Mid	LTE Band 30	10	22.44	0	QPSK	1	0	11 mm	bottom	1:1	1.040	26.25	
2310.00	27710	Mid	LTE Band 30	10	21.58	1	QPSK	25	12	11 mm	bottom	1:1	0.857	26.23	
2310.00	27710	Mid	LTE Band 30	10	22.44	0	QPSK	1	0	0 mm	Right	1:1	0.225	32.90	
2310.00	27710	Mid	LTE Band 30	10	21.58	1	QPSK	25	12	0 mm	Right	1:1	0.185	32.89	
2310.00	27710	Mid	LTE Band 30	10	22.44	0	QPSK	1	0	0 mm	left	1:1	0.298	31.68	
2310.00	27710	Mid	LTE Band 30	10	21.58	1	QPSK	25	12	0 mm	left	1:1	0.247	31.63	
2510.00	20850	Low	LTE Band 7	20	23.45	0	QPSK	1	99	8 mm	back	1:1	0.511	30.35	29.18
2510.00	20850	Low	LTE Band 7	20	22.60	1	QPSK	50	50	8 mm	back	1:1	0.426	30.29	
2510.00	20850	Low	LTE Band 7	20	23.45	0	QPSK	1	99	6 mm	front	1:1	0.617	29.53	
2510.00	20850	Low	LTE Band 7	20	22.60	1	QPSK	50	50	6 mm	front	1:1	0.507	29.53	
2510.00	20850	Low	LTE Band 7	20	23.45	0	QPSK	1	99	11 mm	bottom	1:1	0.669	29.18	
2510.00	20850	Low	LTE Band 7	20	22.60	1	QPSK	50	50	11 mm	bottom	1:1	0.520	29.42	
2510.00	20850	Low	LTE Band 7	20	23.45	0	QPSK	1	99	0 mm	left	1:1	0.423	31.17	
2510.00	20850	Low	LTE Band 7	20	22.60	1	QPSK	50	50	0 mm	left	1:1	0.420	30.35	
3690.00	56640	High	LTE Band 48	20	23.75	0	QPSK	1	50	0 mm	Back	1:1.58	1.750	31.38	22.48
3690.00	56640	High	LTE Band 48	20	23.75	0	QPSK	1	50	0 mm	Front	1:1.58	1.430	31.45	
3690.00	56640	High	LTE Band 48	20	23.75	0	QPSK	1	50	0 mm	Top	1:1.58	2.110	22.50	
3690.00	56640	High	LTE Band 48	20	23.75	0	QPSK	1	50	0 mm	Left	1:1.58	2.120	22.48	
2593.00	40620	Mid	LTE Band 41	20	24.81	0	QPSK	1	0	8 mm	back	1:1.58	0.232	33.15	31.74
2593.00	40620	Mid	LTE Band 41	20	24.00	1	QPSK	50	0	8 mm	back	1:1.58	0.188	33.25	
2593.00	40620	Mid	LTE Band 41	20	24.81	0	QPSK	1	0	6 mm	front	1:1.58	0.243	32.95	
2593.00	40620	Mid	LTE Band 41	20	24.00	1	QPSK	50	0	6 mm	front	1:1.58	0.199	33.00	
2593.00	40620	Mid	LTE Band 41	20	24.81	0	QPSK	1	0	11 mm	bottom	1:1.58	0.290	32.18	
2593.00	40620	Mid	LTE Band 41	20	24.00	1	QPSK	50	0	11 mm	bottom	1:1.58	0.240	32.19	
2593.00	40620	Mid	LTE Band 41	20	24.81	0	QPSK	1	0	0 mm	left	1:1.58	0.321	31.74	
2593.00	40620	Mid	LTE Band 41	20	24.00	1	QPSK	50	0	0 mm	left	1:1.58	0.264	31.78	

For some bands/modes, a lower P_{Limit} was selected as a more conservative evaluation.

FCC ID: A3LSMG986U	 PART 0 SAR AND POWER DENSITY CHAR REPORT 	Approved by: Quality Manager
Test Dates: 10/21/19 – 01/01/20	DUT Type: Portable Handset	APPENDIX A: Page 15 of 19

Table A-13
DSI = 1 P_{Limit} Calculations – 4G Phablet SAR

MEASUREMENT RESULTS															
FREQUENCY			Mode	Bandwidth [MHz]	Conducted Power [dBm]	MPR [dB]	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	PLimit	Minimum PLimit
MHz	Ch.												(W/kg)	[dBm]	[dBm]
680.50	133297	Mid	LTE Band 71	20	24.86	0	QPSK	1	0	0 mm	Back	1:1	0.775	29.95	29.82
680.50	133297	Mid	LTE Band 71	20	24.86	0	QPSK	1	0	0 mm	Front	1:1	0.797	29.82	
680.50	133297	Mid	LTE Band 71	20	24.86	0	QPSK	1	0	0 mm	Bottom	1:1	0.540	31.52	
680.50	133297	Mid	LTE Band 71	20	24.86	0	QPSK	1	0	0 mm	Right	1:1	0.094	39.11	
680.50	133297	Mid	LTE Band 71	20	24.86	0	QPSK	1	0	0 mm	Left	1:1	0.053	41.60	
707.50	23095	Mid	LTE Band 12	10	24.92	0	QPSK	1	0	0 mm	Back	1:1	0.844	29.64	29.64
707.50	23095	Mid	LTE Band 12	10	24.92	0	QPSK	1	0	0 mm	Front	1:1	0.740	30.21	
707.50	23095	Mid	LTE Band 12	10	24.92	0	QPSK	1	0	0 mm	Bottom	1:1	0.643	30.82	
707.50	23095	Mid	LTE Band 12	10	24.92	0	QPSK	1	0	0 mm	Right	1:1	0.115	38.29	
707.50	23095	Mid	LTE Band 12	10	24.92	0	QPSK	1	0	0 mm	Left	1:1	0.062	40.98	
782.00	23230	Mid	LTE Band 13	10	24.99	0	QPSK	1	0	0 mm	Back	1:1	1.510	27.18	27.18
782.00	23230	Mid	LTE Band 13	10	24.99	0	QPSK	1	0	0 mm	Front	1:1	1.480	27.27	
782.00	23230	Mid	LTE Band 13	10	24.99	0	QPSK	1	0	0 mm	Bottom	1:1	0.653	30.82	
782.00	23230	Mid	LTE Band 13	10	24.99	0	QPSK	1	0	0 mm	Right	1:1	0.221	35.53	
782.00	23230	Mid	LTE Band 13	10	24.99	0	QPSK	1	0	0 mm	Left	1:1	0.143	37.42	
793.00	23330	Mid	LTE Band 14	10	24.78	0	QPSK	1	0	0 mm	Back	1:1	1.590	26.75	26.75
793.00	23330	Mid	LTE Band 14	10	24.78	0	QPSK	1	0	0 mm	Front	1:1	1.540	26.88	
793.00	23330	Mid	LTE Band 14	10	24.78	0	QPSK	1	0	0 mm	Bottom	1:1	0.751	30.00	
793.00	23330	Mid	LTE Band 14	10	24.78	0	QPSK	1	0	0 mm	Right	1:1	0.256	34.68	
793.00	23330	Mid	LTE Band 14	10	24.78	0	QPSK	1	0	0 mm	Left	1:1	0.161	36.69	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.72	0	QPSK	1	36	0 mm	Back	1:1	1.950	25.80	25.80
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.72	0	QPSK	1	36	0 mm	Front	1:1	1.410	27.21	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.72	0	QPSK	1	36	0 mm	Bottom	1:1	1.020	28.61	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.72	0	QPSK	1	36	0 mm	Right	1:1	0.259	34.57	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.72	0	QPSK	1	36	0 mm	Left	1:1	0.165	36.52	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.90	0	QPSK	1	0	0 mm	Back	1:1	1.910	26.07	26.07
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.90	0	QPSK	1	0	0 mm	Front	1:1	1.380	27.48	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.90	0	QPSK	1	0	0 mm	Bottom	1:1	1.010	28.84	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.90	0	QPSK	1	0	0 mm	Right	1:1	0.269	34.58	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.90	0	QPSK	1	0	0 mm	Left	1:1	0.175	36.45	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.16	0	QPSK	1	50	0 mm	Back	1:1	4.480	21.63	19.84
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.16	0	QPSK	1	50	0 mm	Front	1:1	4.330	21.77	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.16	0	QPSK	1	50	0 mm	Bottom	1:1	6.760	19.84	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.16	0	QPSK	1	50	0 mm	Right	1:1	0.368	32.48	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.16	0	QPSK	1	50	0 mm	Left	1:1	0.410	32.01	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.01	0	QPSK	1	99	0 mm	Back	1:1	4.400	21.55	20.31
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.01	0	QPSK	1	99	0 mm	Front	1:1	4.150	21.81	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.01	0	QPSK	1	99	0 mm	Bottom	1:1	5.860	20.31	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.01	0	QPSK	1	99	0 mm	Right	1:1	0.337	32.71	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.01	0	QPSK	1	99	0 mm	Left	1:1	0.338	32.70	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.89	0	QPSK	1	99	0 mm	Back	1:1	4.300	21.53	19.87
1900.00	19100	High	LTE Band 2 (PCS)	20	23.89	0	QPSK	1	99	0 mm	Front	1:1	4.030	21.82	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.89	0	QPSK	1	99	0 mm	Bottom	1:1	6.310	19.87	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.89	0	QPSK	1	99	0 mm	Right	1:1	0.351	32.42	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.89	0	QPSK	1	99	0 mm	Left	1:1	0.330	32.68	

FCC ID: A3LSMG986U	 PART 0 SAR AND POWER DENSITY CHAR REPORT 	Approved by: Quality Manager
Test Dates: 10/21/19 – 01/01/20	DUT Type: Portable Handset	APPENDIX A: Page 16 of 19

MEASUREMENT RESULTS															
FREQUENCY			Mode	Bandwidth [MHz]	Conducted Power [dBm]	MPR [dB]	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	PLimit	Minimum PLimit
MHz	Ch.												(W/kg)	[dBm]	[dBm]
2310.00	27710	Mid	LTE Band 30	10	22.44	0	QPSK	1	0	0 mm	Back	1:1	2.990	21.66	21.16
2310.00	27710	Mid	LTE Band 30	10	22.44	0	QPSK	1	0	0 mm	Front	1:1	3.210	21.35	
2310.00	27710	Mid	LTE Band 30	10	22.44	0	QPSK	1	0	0 mm	Bottom	1:1	3.360	21.16	
2310.00	27710	Mid	LTE Band 30	10	22.44	0	QPSK	1	0	0 mm	Right	1:1	0.225	32.90	
2310.00	27710	Mid	LTE Band 30	10	22.44	0	QPSK	1	0	0 mm	Left	1:1	0.298	31.68	
2510.00	20850	Low	LTE Band 7	20	23.45	0	QPSK	1	99	0 mm	Back	1:1	2.230	23.95	23.95
2510.00	20850	Low	LTE Band 7	20	23.45	0	QPSK	1	99	0 mm	Front	1:1	1.630	25.31	
2510.00	20850	Low	LTE Band 7	20	23.45	0	QPSK	1	99	0 mm	Bottom	1:1	1.780	24.93	
2510.00	20850	Low	LTE Band 7	20	23.45	0	QPSK	1	99	0 mm	Left	1:1	0.423	31.17	
3690.00	56640	High	LTE Band 48	20	23.75	0	QPSK	1	0	0 mm	Back	1:1.58	1.750	23.31	22.48
3690.00	56640	High	LTE Band 48	20	23.75	0	QPSK	1	0	0 mm	Front	1:1.58	1.430	24.19	
3690.00	56640	High	LTE Band 48	20	23.75	0	QPSK	1	0	0 mm	Top	1:1.58	2.110	22.50	
3690.00	56640	High	LTE Band 48	20	23.75	0	QPSK	1	0	0 mm	Left	1:1.58	2.120	22.48	
2593.00	40620	Mid	LTE Band 41	20	24.81	0	QPSK	1	0	0 mm	Back	1:1.58	2.270	23.24	23.24
2593.00	40620	Mid	LTE Band 41	20	24.81	0	QPSK	1	0	0 mm	Front	1:1.58	1.170	26.12	
2593.00	40620	Mid	LTE Band 41	20	24.81	0	QPSK	1	0	0 mm	Bottom	1:1.58	1.120	26.31	
2593.00	40620	Mid	LTE Band 41	20	24.81	0	QPSK	1	0	0 mm	Left	1:1.58	0.321	31.74	

For some bands/modes, a lower P_{Limit} was selected as a more conservative evaluation.

FCC ID: A3LSMG986U	 PART 0 SAR AND POWER DENSITY CHAR REPORT 	Approved by: Quality Manager
Test Dates: 10/21/19 – 01/01/20	DUT Type: Portable Handset	APPENDIX A: Page 17 of 19

Table A-14
DSI = 0 P_{Limit} Calculations – NR Phablet SAR

MEASUREMENT RESULTS															
FREQUENCY			Mode	Bandwidth [MHz]	Conducted Power [dBm]	MPR [dB]	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	PLimit	Minimum PLimit
MHz	Ch.												(W/kg)	[dBm]	[dBm]
680.50	136100	Mid	NR Band n71	20	24.96	0	DFT-s-OFDM QPSK	1	53	8 mm	Back	1:1	0.185	36.27	36.27
680.50	136100	Mid	NR Band n71	20	24.96	0	DFT-s-OFDM QPSK	1	53	6 mm	Front	1:1	0.160	36.90	
680.50	136100	Mid	NR Band n71	20	24.96	0	DFT-s-OFDM QPSK	1	53	11 mm	Bottom	1:1	0.045	42.41	
680.50	136100	Mid	NR Band n71	20	24.96	0	DFT-s-OFDM QPSK	1	53	0 mm	Right	1:1	0.116	38.29	
680.50	136100	Mid	NR Band n71	20	24.96	0	DFT-s-OFDM QPSK	1	53	0 mm	Left	1:1	0.062	41.02	
836.50	167300	Mid	NR Band n5	20	24.42	0	DFT-s-OFDM QPSK	50	28	8 mm	Back	1:1	0.404	32.34	32.11
836.50	167300	Mid	NR Band n5	20	24.42	0	DFT-s-OFDM QPSK	50	28	6 mm	Front	1:1	0.426	32.11	
836.50	167300	Mid	NR Band n5	20	24.42	0	DFT-s-OFDM QPSK	50	28	11 mm	Bottom	1:1	0.124	37.47	
836.50	167300	Mid	NR Band n5	20	24.42	0	DFT-s-OFDM QPSK	50	28	0 mm	Right	1:1	0.258	34.28	
836.50	167300	Mid	NR Band n5	20	24.42	0	DFT-s-OFDM QPSK	50	28	0 mm	Left	1:1	0.158	36.41	
1745.00	349000	Mid	NR Band n66 (AWS)	20	24.28	0	DFT-S-OFDM QPSK	1	53	8 mm	Back	1:1	1.090	27.89	27.60
1745.00	349000	Mid	NR Band n66 (AWS)	20	24.23	0	DFT-S-OFDM QPSK	50	28	8 mm	Back	1:1	1.020	28.12	
1745.00	349000	Mid	NR Band n66 (AWS)	20	24.28	0	DFT-S-OFDM QPSK	1	53	6 mm	Front	1:1	1.120	27.77	
1745.00	349000	Mid	NR Band n66 (AWS)	20	24.23	0	DFT-S-OFDM QPSK	50	28	6 mm	Front	1:1	1.150	27.60	
1745.00	349000	Mid	NR Band n66 (AWS)	20	24.28	0	DFT-S-OFDM QPSK	1	53	11 mm	Bottom	1:1	1.050	28.05	
1745.00	349000	Mid	NR Band n66 (AWS)	20	24.23	0	DFT-S-OFDM QPSK	50	28	11 mm	Bottom	1:1	1.020	28.12	
1745.00	349000	Mid	NR Band n66 (AWS)	20	24.28	0	DFT-S-OFDM QPSK	1	53	0 mm	Right	1:1	0.363	32.66	
1745.00	349000	Mid	NR Band n66 (AWS)	20	24.23	0	DFT-S-OFDM QPSK	50	28	0 mm	Right	1:1	0.355	32.71	
1745.00	349000	Mid	NR Band n66 (AWS)	20	24.28	0	DFT-S-OFDM QPSK	1	53	0 mm	Left	1:1	0.449	31.74	
1745.00	349000	Mid	NR Band n66 (AWS)	20	24.23	0	DFT-S-OFDM QPSK	50	28	0 mm	Left	1:1	0.429	31.88	
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-S-OFDM QPSK	1	1	8 mm	Back	1:1	0.903	28.32	26.88
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-S-OFDM QPSK	50	28	8 mm	Back	1:1	0.832	28.68	
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-S-OFDM QPSK	1	1	6 mm	Front	1:1	1.260	26.88	
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-S-OFDM QPSK	50	28	6 mm	Front	1:1	1.180	27.16	
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-S-OFDM QPSK	1	1	11 mm	Bottom	1:1	1.110	27.43	
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-S-OFDM QPSK	50	28	11 mm	Bottom	1:1	1.060	27.63	
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-S-OFDM QPSK	1	1	0 mm	Right	1:1	0.314	32.91	
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-S-OFDM QPSK	50	28	0 mm	Right	1:1	0.319	32.84	
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-S-OFDM QPSK	1	1	0 mm	Left	1:1	0.313	32.92	
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-S-OFDM QPSK	50	28	0 mm	Left	1:1	0.325	32.76	
2592.99	518598	Mid	NR Band n41	100	23.41	0	DFT-s-OFDM QPSK	1	137	0 mm	Back	1:4	0.404	25.30	22.86
2592.99	518598	Mid	NR Band n41	100	23.41	0	DFT-s-OFDM QPSK	1	137	0 mm	Front	1:4	0.303	26.55	
2592.99	518598	Mid	NR Band n41	100	23.41	0	DFT-s-OFDM QPSK	1	137	0 mm	Top	1:4	0.710	22.86	
2592.99	518598	Mid	NR Band n41	100	23.41	0	DFT-s-OFDM QPSK	1	137	0 mm	Left	1:4	0.158	29.38	

For some bands/modes, a lower P_{Limit} was selected as a more conservative evaluation.

FCC ID: A3LSMG986U	 PART 0 SAR AND POWER DENSITY CHAR REPORT 	Approved by: Quality Manager
Test Dates: 10/21/19 – 01/01/20	DUT Type: Portable Handset	APPENDIX A: Page 18 of 19

Table A-15
DSI = 1 P_{Limit} Calculations – NR Phablet SAR

MEASUREMENT RESULTS															
FREQUENCY			Mode	Bandwidth [MHz]	Conducted Power [dBm]	MPR [dB]	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	PLimit	Minimum PLimit
MHz	Ch.												(W/kg)	[dBm]	[dBm]
680.50	136100	Mid	NR Band n71	20	24.96	0	DFT-s-OFDM QPSK	1	53	0 mm	Back	1:1	0.902	29.39	29.39
680.50	136100	Mid	NR Band n71	20	24.96	0	DFT-s-OFDM QPSK	1	53	0 mm	Front	1:1	0.788	29.97	
680.50	136100	Mid	NR Band n71	20	24.96	0	DFT-s-OFDM QPSK	1	53	0 mm	Bottom	1:1	0.465	32.26	
680.50	136100	Mid	NR Band n71	20	24.96	0	DFT-s-OFDM QPSK	1	53	0 mm	Right	1:1	0.116	38.29	
680.50	136100	Mid	NR Band n71	20	24.96	0	DFT-s-OFDM QPSK	1	53	0 mm	Left	1:1	0.062	41.02	
836.50	167300	Mid	NR Band n5	20	24.42	0	DFT-s-OFDM QPSK	50	28	0 mm	Back	1:1	1.820	25.80	25.80
836.50	167300	Mid	NR Band n5	20	24.42	0	DFT-s-OFDM QPSK	50	28	0 mm	Front	1:1	1.610	26.33	
836.50	167300	Mid	NR Band n5	20	24.42	0	DFT-s-OFDM QPSK	50	28	0 mm	Bottom	1:1	0.764	29.57	
836.50	167300	Mid	NR Band n5	20	24.42	0	DFT-s-OFDM QPSK	50	28	0 mm	Right	1:1	0.258	34.28	
836.50	167300	Mid	NR Band n5	20	24.42	0	DFT-s-OFDM QPSK	50	28	0 mm	Left	1:1	0.158	36.41	
1745.00	349000	Mid	NR Band n66	20	24.28	0	DFT-s-OFDM QPSK	1	53	0 mm	Back	1:1	2.450	24.37	20.70
1745.00	349000	Mid	NR Band n66	20	24.28	0	DFT-s-OFDM QPSK	1	53	0 mm	Front	1:1	4.410	21.82	
1745.00	349000	Mid	NR Band n66	20	24.28	0	DFT-s-OFDM QPSK	1	53	0 mm	Bottom	1:1	5.700	20.70	
1745.00	349000	Mid	NR Band n66	20	24.28	0	DFT-s-OFDM QPSK	1	53	0 mm	Right	1:1	0.363	32.66	
1745.00	349000	Mid	NR Band n66	20	24.28	0	DFT-s-OFDM QPSK	1	53	0 mm	Left	1:1	0.449	31.74	
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-s-OFDM QPSK	1	1	0 mm	Back	1:1	3.980	21.88	19.73
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-s-OFDM QPSK	1	1	0 mm	Front	1:1	3.880	21.99	
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-s-OFDM QPSK	1	1	0 mm	Bottom	1:1	6.530	19.73	
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-s-OFDM QPSK	1	1	0 mm	Right	1:1	0.314	32.91	
1900.00	380000	High	NR Band n2	20	23.90	0	DFT-s-OFDM QPSK	1	1	0 mm	Left	1:1	0.313	32.92	
2592.99	518598	Mid	NR Band n41	100	23.41	0	DFT-s-OFDM QPSK	1	137	0 mm	Back	1:4	0.404	25.30	22.86
2592.99	518598	Mid	NR Band n41	100	23.41	0	DFT-s-OFDM QPSK	1	137	0 mm	Front	1:4	0.303	26.55	
2592.99	518598	Mid	NR Band n41	100	23.41	0	DFT-s-OFDM QPSK	1	137	0 mm	Top	1:4	0.710	22.86	
2592.99	518598	Mid	NR Band n41	100	23.41	0	DFT-s-OFDM QPSK	1	137	0 mm	Left	1:4	0.158	29.38	

For some bands/modes, a lower P_{Limit} was selected as a more conservative evaluation.

FCC ID: A3LSMG986U	 PART 0 SAR AND POWER DENSITY CHAR REPORT 	Approved by: Quality Manager
Test Dates: 10/21/19 – 01/01/20	DUT Type: Portable Handset	APPENDIX A: Page 19 of 19