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PART 0 SAR CHARACTERIZATION REPORT

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Date of Testing:
 11/11/19 – 01/27/20
Test Site/Location:
 PCTEST Lab, Columbia, MD, USA
 Lab Code 2451B
Document Serial No.:
 1M1911010179-17-R2.A3L

FCC ID: **A3LSMG986W**
IC ID: **649E-SMG986W**
APPLICANT: **SAMSUNG ELECTRONICS CO., LTD**

Report Type: Part 0 SAR Characterization
DUT Type/Apparatus/Device: Portable Handset
Application Type: Certification
IC Specification(s): RSS-102 Issue 5 (March 2015), Health Canada Safety Code 6
Additional Standard(s): IEC 62209-1, IEC 62209-2
Radio Equipment Type: Cellular Communications Apparatus
Model: SM-G986W
HVIN: SM-G986W

Note: This revised Test Report (S/N: 1M1911010179-17-R2.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

Band & Mode	Operating Modes	Tx Frequency
Cell. CDMA/EVDO	Voice/Data	824.70 - 848.31 MHz
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
UMTS 1750	Voice/Data	1712.4 - 1752.6 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
LTE Band 71	Voice/Data	665.5 - 695.5 MHz
LTE Band 12	Voice/Data	699.7 - 715.3 MHz
LTE Band 13	Voice/Data	779.5 - 784.5 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 848.3 MHz
LTE Band 66 (AWS)	Voice/Data	1710.7 - 1779.3 MHz
LTE Band 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 25 (PCS)	Voice/Data	1850.7 - 1914.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
LTE Band 30	Voice/Data	2307.5 - 2312.5 MHz
LTE Band 7	Voice/Data	2502.5 - 2567.5 MHz
LTE Band 41	Voice/Data	2502.5 - 2687.5 MHz
LTE Band 38	Voice/Data	2572.5 - 2617.5 MHz
NR Band n71	Data	665.5 - 695.5 MHz
NR Band n66 (AWS)	Data	1712.5 - 1777.5 MHz
NR Band n41	Data	2510 - 2679.99 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2462 MHz
U-NII-1	Voice/Data	5180 - 5240 MHz
U-NII-2A	Voice/Data	5260 - 5320 MHz
U-NII-2C	Voice/Data	5500 - 5720 MHz
U-NII-3	Voice/Data	5745 - 5825 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz
ANT+	Data	2402 - 2480 MHz
MST	Data	555 Hz - 8.33 kHz
WPT	N/A	110 kHz - 148 kHz

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 Sub-6 NR 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.

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1.2 Time-Averaging for SAR

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 Sub-6 NR WWAN is in compliance with FCC requirements. This Part 0 report shows SAR characterization of WWAN radios for 2G/3G/4G and 5G Sub-6 NR. Characterization is achieved by determining *PLimit* for 2G/3G/4G and 5G Sub-6 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. The SAR characterization is denoted as SAR 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	<i>PLimit</i>	Power level that corresponds to the exposure design target (<i>SAR_design_target</i>) after accounting for all device design related uncertainties
	<i>Pmax</i>	Maximum tune up output power
	<i>SAR_design_target</i>	Target SAR level < FCC SAR limit after accounting for all device design related uncertainties
	<i>SAR Char</i>	Table containing <i>PLimit</i> for all technologies and bands

1.4 Bibliography

Report Type	Report Serial Number
FCC SAR Evaluation Report (Part 1)	1M1911010179-01-R1.A3L
ISED SAR Evaluation Report (Part 1)	1M1911010179-16-R1.A3L
RF Exposure Part 2 Test Report	80-W5681-8 Rev. C

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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. 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.

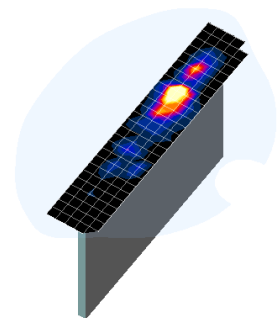




Figure 2-1
Sample SAR Area Scan



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3. 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 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 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).
 - b. 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.
 - c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. 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) ($\Delta x_{area}, \Delta y_{area}$)	Maximum Zoom Scan Resolution (mm) ($\Delta x_{zoom}, \Delta y_{zoom}$)	Maximum Zoom Scan Spatial Resolution (mm)			Minimum Zoom Scan Volume (mm) (x,y,z)
			Uniform Grid	Graded Grid		
				$\Delta z_{zoom}(n)$	$\Delta z_{zoom}(1)^*$	
≤ 2 GHz	≤ 15	≤ 8	≤ 5	≤ 4	≤ 1.5* $\Delta z_{zoom}(n-1)$	≥ 30
2-3 GHz	≤ 12	≤ 5	≤ 5	≤ 4	≤ 1.5* $\Delta z_{zoom}(n-1)$	≥ 30
3-4 GHz	≤ 12	≤ 5	≤ 4	≤ 3	≤ 1.5* $\Delta z_{zoom}(n-1)$	≥ 28
4-5 GHz	≤ 10	≤ 4	≤ 3	≤ 2.5	≤ 1.5* $\Delta z_{zoom}(n-1)$	≥ 25
5-6 GHz	≤ 10	≤ 4	≤ 2	≤ 2	≤ 1.5* $\Delta z_{zoom}(n-1)$	≥ 22

*Also compliant to IEEE 1528-2013 Table 6

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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)	<ul style="list-style-type: none"> Device positioned next to head Receiver Active 	Head SAR per KDB Publication 648474 D04
Hotspot mode (DSI = 3)	<ul style="list-style-type: none"> Device transmits in hotspot mode near body Hotspot Mode Active 	Hotspot SAR per KDB Publication 941225 D06
Phablet Grip (DSI=1 or 4)	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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**

SAR_{design_target}			
$SAR_{design_target} < SAR_{regulatory_limit} \times 10^{\frac{-Total\ Uncertainty}{10}}$			
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 Characterization

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 top, 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:

$$P_{limit} = \min\{ P_{limit} \text{ corresponding to 1g Body Worn SAR evaluation at 15 mm spacing, } \\ P_{limit} \text{ corresponding to 10g Extremity SAR evaluation at 6~11 mm spacing, } \\ P_{limit} \text{ corresponding to 10g Extremity SAR evaluation at 0 mm for top, left, and right surfaces} \}$$



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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	Phablet 10g SAR at Red Power	Head 1g SAR	Hotspot 1g SAR	Phablet 10g SAR at Red Power
Mode/Band	PLimit (dBm)	PLimit (dBm)	PLimit (dBm)	PLimit (dBm)	PLimit (dBm)
GSM/GPRS/EDGE 850 MHz	31.3	26.1	31.3	26.1	26.1
GSM/GPRS/EDGE 1900 MHz	26.0	18.8	33.9	18.8	18.8
UMTS B5	31.5	26.0	31.9	26.0	26.0
UMTS B4	25.6	19.0	33.2	19.0	19.0
UMTS B2	25.8	18.5	34.2	18.5	18.5
CDMA/EVDO BCO	31.1	26.2	32.1	26.2	26.2
LTE FDD B71	32.7	29.8	32.9	29.8	29.8
LTE FDD B12	31.4	29.6	32.6	29.6	29.6
LTE FDD B13	30.9	27.2	32.9	27.2	27.2
LTE FDD B5	31.8	26.1	32.6	26.1	26.1
LTE FDD B4	24.3	19.3	33.7	19.3	19.3
LTE FDD B66	24.3	19.3	33.7	19.3	19.3
LTE FDD B25/2	26.7	18.5	33.9	18.5	18.5
LTE FDD B30	25.5	20.5	34.3	18.2	20.5
LTE FDD B7	27.6	20.5	32.0	19.5	20.5
LTE TDD B38	27.5	19.0	28.0	19.0	19.0
LTE TDD B41	27.5	21.5	32.6	19.0	21.5
NR FDD n71	32.1	29.4	34.2	29.4	29.4
NR FDD n66	24.7	19.8	33.1	19.8	19.8
NR TDD n41	22.9	22.9	18.1	20.9	22.9

Notes:



1. When Hotspot Mode (DSI=3) and Extremity sensor (DSI=1) are triggered at the same time, DSI=1 takes priority, thus the P_{limit} for DSI=3 is set to be less or equal to P_{limit} for DSI=1.
2. When $P_{max} < P_{limit}$, the DUT will operate at a power level up to P_{max} .
3. P_{limit} for DSI=1 and DSI =4 are the same.

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Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	85544A	9(Hz)-2.9GHz Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	E4438C	ESG Vector Signal Generator	3/8/2019	Biennial	3/8/2021	MY42082385
Agilent	E4438C	ESG Vector Signal Generator	3/11/2019	Biennial	3/11/2021	MY45090700
Agilent	N9020A	MXA Signal Analyzer	4/20/2019	Annual	4/20/2020	US46470561
Agilent	N5182A	MXG Vector Signal Generator	7/10/2019	Annual	7/10/2020	MY47420800
Agilent	N9030A	PXA Signal Analyzer (44GHz)	6/12/2019	Annual	6/12/2020	MY52350166
Agilent	8753ES	S-Parameter Network Analyzer	8/26/2019	Annual	8/26/2020	MY40000670
Agilent	8753ES	S-Parameter Vector Network Analyzer	9/19/2019	Annual	9/19/2020	MY40003841
Agilent	E5515C	Wireless Communications Test Set	9/25/2019	Annual	9/25/2020	G843304278
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	G844450273
Amplifier Research	1551G6	Amplifier	CBT	N/A	CBT	353317
Amplifier Research	1551G6	Amplifier	CBT	N/A	CBT	353468
Amplifier Research	1551G6	Amplifier	CBT	N/A	CBT	353469
Anritsu	MA2411B	Pulse Power Sensor	6/11/2019	Annual	6/11/2020	1207364
Anritsu	MA2411B	Pulse Power Sensor	8/8/2019	Annual	8/8/2020	1339008
Anritsu	MA2411B	Pulse Power Sensor	3/6/2019	Annual	3/6/2020	1339018
Anritsu	MT8820C	Radio Communication Analyzer	3/29/2019	Annual	3/29/2020	6201300731
Anritsu	MT8821C	Radio Communication Analyzer	3/6/2019	Annual	3/6/2020	6201381794
Anritsu	MT8862A	Wireless Connectivity Test Set	8/8/2019	Annual	8/8/2020	6261782395
Anritsu	MA24106A	USB Power Sensor	5/22/2019	Annual	5/22/2020	1231535
Anritsu	MA24106A	USB Power Sensor	5/6/2019	Annual	5/6/2020	1231538
Anritsu	ML2496A	Power Meter	10/29/2019	Annual	10/29/2020	1840005
Control Company	4352	Long Stem Thermometer	6/26/2019	Biennial	6/26/2021	192282739
Control Company	4352	Long Stem Thermometer	6/26/2019	Biennial	6/26/2021	192282744
Control Company	4040	Therm./ Clock/ Humidity Monitor	10/9/2018	Biennial	10/9/2020	181647802
Control Company	4040	Therm./ Clock/ Humidity Monitor	10/9/2018	Biennial	10/9/2020	181647811
Control Company	4352	Ultra Long Stem Thermometer	11/29/2018	Biennial	11/29/2020	181766777
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
Keysight Technologies	N6705B	DC Power Analyzer	4/27/2019	Biennial	4/27/2021	MY53004059
Keysight Technologies	85033E	Standard Mechanical Calibration Kit (DC to 9GHz, 3.5mm)	7/2/2019	Annual	7/2/2020	MY53401181
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
Mini Circuits	PWR-SEN-4GH5	USB Power Sensor	4/19/2019	Annual	4/19/2020	11401010036
MiniCircuits	VL-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
MiniCircuits	VL-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Mitutoyo	CD-5CSX	Digital Caliper	4/18/2018	Biennial	4/18/2020	13264165
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	NC-100	Torque Wrench	5/23/2018	Biennial	5/23/2020	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	6/3/2019	Annual	6/3/2020	109892
Rohde & Schwarz	CMW500	Radio Communication Tester	8/26/2019	Annual	8/26/2020	100976
Rohde & Schwarz	CMW500	Radio Communication Tester	10/15/2019	Annual	10/15/2020	109366
Rohde & Schwarz	CMW500	Radio Communication Tester	6/26/2019	Annual	6/26/2020	112347
Rohde & Schwarz	CMW500	Radio Communication Tester	8/27/2019	Annual	8/27/2020	116743
Rohde & Schwarz	CMW500	Radio Communication Tester	4/19/2019	Annual	4/19/2020	128633
Rohde & Schwarz	ZNL6	Vector Network Analyzer	10/11/2019	Annual	10/11/2020	101307
Seakonk	NC-100	Torque Wrench	4/18/2018	Biennial	4/18/2020	N/A
SPEAG	D1750V2	1750 MHz SAR Dipole	5/15/2019	Annual	5/15/2020	1148
SPEAG	D1750V2	1750 MHz SAR Dipole	10/22/2018	Biennial	10/22/2020	1150
SPEAG	D1765V2	1765 MHz SAR Dipole	5/23/2018	Biennial	5/23/2020	1008
SPEAG	D1900V2	1900 MHz SAR Dipole	10/23/2018	Biennial	10/23/2020	5d080
SPEAG	D1900V2	1900 MHz SAR Dipole	2/21/2019	Annual	2/21/2020	5d148
SPEAG	D1900V2	1900 MHz SAR Dipole	10/23/2018	Biennial	10/23/2020	5d149
SPEAG	D2300V2	2300 MHz SAR Dipole	8/13/2018	Biennial	8/13/2020	1073
SPEAG	D2300V2	2300 MHz SAR Dipole	11/12/2019	Annual	11/12/2020	1064
SPEAG	D2450V2	2450 MHz SAR Dipole	8/14/2019	Annual	8/14/2020	719
SPEAG	D2450V2	2450 MHz SAR Dipole	9/11/2017	Triennial	9/11/2020	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	D2600V2	2600 MHz SAR Dipole	6/14/2019	Annual	6/14/2020	1064
SPEAG	D5GHV2	5 GHz SAR Dipole	9/17/2019	Annual	9/17/2020	1191
SPEAG	D750V3	750 MHz Dipole	3/18/2019	Annual	3/18/2020	1054
SPEAG	D750V3	750 MHz SAR Dipole	1/15/2018	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	3/13/2019	Annual	3/13/2020	46047
SPEAG	D835V2	835 MHz SAR Dipole	1/22/2019	Annual	1/22/2020	46132
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/13/2019	Annual	2/13/2020	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/8/2019	Annual	5/8/2020	728
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/14/2019	Annual	2/14/2020	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/11/2019	Annual	7/11/2020	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/11/2019	Annual	7/11/2020	1323
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/17/2019	Annual	9/17/2020	1333
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/20/2019	Annual	6/20/2020	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/18/2019	Annual	4/18/2020	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/14/2019	Annual	8/14/2020	1450
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/15/2019	Annual	1/15/2020	1530
SPEAG	DAE4	Data Acquisition Electronics	12/5/2019	Annual	12/5/2020	1533
SPEAG	DAK-3.5	Dielectric Assessment Kit	10/22/2019	Annual	10/22/2020	1091
SPEAG	EX3DV4	SAR Probe	2/19/2019	Annual	2/19/2020	3914
SPEAG	EX3DV4	SAR Probe	8/16/2019	Annual	8/16/2020	7308
SPEAG	EX3DV4	SAR Probe	4/24/2019	Annual	4/24/2020	7357
SPEAG	EX3DV4	SAR Probe	5/16/2019	Annual	5/16/2020	7406
SPEAG	EX3DV4	SAR Probe	6/19/2019	Annual	6/19/2020	7409
SPEAG	EX3DV4	SAR Probe	7/16/2019	Annual	7/16/2020	7410
SPEAG	EX3DV4	SAR Probe	2/19/2019	Annual	2/19/2020	7417
SPEAG	EX3DV4	SAR Probe	1/24/2019	Annual	1/24/2020	7488
SPEAG	EX3DV4	SAR Probe	7/15/2019	Annual	7/15/2020	7547
SPEAG	EX3DV4	SAR Probe	9/19/2019	Annual	9/19/2020	7551
SPEAG	EX3DV4	SAR Probe	12/11/2019	Annual	12/11/2020	7571

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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MEASUREMENT UNCERTAINTIES

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 ₁ 1gm	c ₁ 10 gms	1gm u ₁ (± %)	10gms u ₁ (± %)	v ₁
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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APPENDIX A: SAR TEST RESULTS FOR *PLIMIT* CALCULATIONS



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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	32.10	Right	Cheek	1:8.3	0.145	31.29	31.29
836.60	190	GSM 850	GSM	32.10	Right	Tilt	1:8.3	0.067	34.64	
836.60	190	GSM 850	GSM	32.10	Left	Cheek	1:8.3	0.117	32.22	
836.60	190	GSM 850	GSM	32.10	Left	Tilt	1:8.3	0.064	34.84	
1880.00	661	GSM 1900	GSM	28.90	Right	Cheek	1:8.3	0.036	34.14	33.90
1880.00	661	GSM 1900	GSM	28.90	Right	Tilt	1:8.3	0.019	36.91	
1880.00	661	GSM 1900	GSM	28.90	Left	Cheek	1:8.3	0.038	33.90	
1880.00	661	GSM 1900	GSM	28.90	Left	Tilt	1:8.3	0.017	37.39	
836.60	4183	UMTS 850	RMC	24.21	Right	Cheek	1:1	0.168	31.96	31.96
836.60	4183	UMTS 850	RMC	24.21	Right	Tilt	1:1	0.077	35.35	
836.60	4183	UMTS 850	RMC	24.21	Left	Cheek	1:1	0.131	33.04	
836.60	4183	UMTS 850	RMC	24.21	Left	Tilt	1:1	0.074	35.52	
1732.40	1412	UMTS 1750	RMC	24.16	Right	Cheek	1:1	0.094	34.43	33.19
1732.40	1412	UMTS 1750	RMC	24.16	Right	Tilt	1:1	0.089	34.67	
1732.40	1412	UMTS 1750	RMC	24.16	Left	Cheek	1:1	0.125	33.19	
1732.40	1412	UMTS 1750	RMC	24.16	Left	Tilt	1:1	0.088	34.72	
1880.00	9400	UMTS 1900	RMC	24.02	Right	Cheek	1:1	0.091	34.43	34.20
1880.00	9400	UMTS 1900	RMC	24.02	Right	Tilt	1:1	0.052	36.86	
1880.00	9400	UMTS 1900	RMC	24.02	Left	Cheek	1:1	0.096	34.20	
1880.00	9400	UMTS 1900	RMC	24.02	Left	Tilt	1:1	0.052	36.86	
836.52	384	CDMA BC0 (\$22H)	RC3 / SO55	25.07	Right	Cheek	1:1	0.196	32.15	32.09
836.52	384	CDMA BC0 (\$22H)	RC3 / SO55	25.07	Right	Tilt	1:1	0.085	35.78	
836.52	384	CDMA BC0 (\$22H)	RC3 / SO55	25.07	Left	Cheek	1:1	0.157	33.11	
836.52	384	CDMA BC0 (\$22H)	RC3 / SO55	25.07	Left	Tilt	1:1	0.090	35.53	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. A	25.06	Right	Cheek	1:1	0.198	32.09	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. A	25.06	Right	Tilt	1:1	0.095	35.28	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. A	25.06	Left	Cheek	1:1	0.174	32.65	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. A	25.06	Left	Tilt	1:1	0.095	35.28	



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Table A-2
DSI = 2 P_{Limit} Calculations – LTE B71/12/13/5 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	133297	Md	LTE Band 71	20	24.79	0	Right	Cheek	QPSK	1	50	1:1	0.156	32.86	32.77
680.50	133297	Md	LTE Band 71	20	23.77	1	Right	Cheek	QPSK	50	25	1:1	0.126	32.77	
680.50	133297	Md	LTE Band 71	20	24.79	0	Right	Tilt	QPSK	1	50	1:1	0.083	35.60	
680.50	133297	Md	LTE Band 71	20	23.77	1	Right	Tilt	QPSK	50	25	1:1	0.066	35.57	
680.50	133297	Md	LTE Band 71	20	24.79	0	Left	Cheek	QPSK	1	50	1:1	0.128	33.72	
680.50	133297	Md	LTE Band 71	20	23.77	1	Left	Cheek	QPSK	50	25	1:1	0.107	33.48	
680.50	133297	Md	LTE Band 71	20	24.79	0	Left	Tilt	QPSK	1	50	1:1	0.069	36.40	
680.50	133297	Md	LTE Band 71	20	23.77	1	Left	Tilt	QPSK	50	25	1:1	0.058	36.14	
707.50	23095	Md	LTE Band 12	10	24.77	0	Right	Cheek	QPSK	1	49	1:1	0.164	32.62	32.38
707.50	23095	Md	LTE Band 12	10	23.81	1	Right	Cheek	QPSK	25	12	1:1	0.139	32.38	
707.50	23095	Md	LTE Band 12	10	24.77	0	Right	Tilt	QPSK	1	49	1:1	0.079	35.79	
707.50	23095	Md	LTE Band 12	10	23.81	1	Right	Tilt	QPSK	25	12	1:1	0.071	35.30	
707.50	23095	Md	LTE Band 12	10	24.77	0	Left	Cheek	QPSK	1	49	1:1	0.140	33.31	
707.50	23095	Md	LTE Band 12	10	23.81	1	Left	Cheek	QPSK	25	12	1:1	0.128	32.74	
707.50	23095	Md	LTE Band 12	10	24.77	0	Left	Tilt	QPSK	1	49	1:1	0.087	35.37	
707.50	23095	Md	LTE Band 12	10	23.81	1	Left	Tilt	QPSK	25	12	1:1	0.074	35.12	
782.00	23230	Md	LTE Band 13	10	25.04	0	Right	Cheek	QPSK	1	0	1:1	0.162	32.94	32.89
782.00	23230	Md	LTE Band 13	10	24.06	1	Right	Cheek	QPSK	25	0	1:1	0.131	32.89	
782.00	23230	Md	LTE Band 13	10	25.04	0	Right	Tilt	QPSK	1	0	1:1	0.056	37.56	
782.00	23230	Md	LTE Band 13	10	24.06	1	Right	Tilt	QPSK	25	0	1:1	0.046	37.43	
782.00	23230	Md	LTE Band 13	10	25.04	0	Left	Cheek	QPSK	1	0	1:1	0.143	33.49	
782.00	23230	Md	LTE Band 13	10	24.06	1	Left	Cheek	QPSK	25	0	1:1	0.122	33.20	
782.00	23230	Md	LTE Band 13	10	25.04	0	Left	Tilt	QPSK	1	0	1:1	0.109	34.67	
782.00	23230	Md	LTE Band 13	10	24.06	1	Left	Tilt	QPSK	25	0	1:1	0.085	34.77	
836.50	20525	Md	LTE Band 5 (Cell)	10	25.06	0	Right	Cheek	QPSK	1	0	1:1	0.175	32.63	32.41
836.50	20525	Md	LTE Band 5 (Cell)	10	23.81	1	Right	Cheek	QPSK	25	0	1:1	0.138	32.41	
836.50	20525	Md	LTE Band 5 (Cell)	10	25.06	0	Right	Tilt	QPSK	1	0	1:1	0.081	35.98	
836.50	20525	Md	LTE Band 5 (Cell)	10	23.81	1	Right	Tilt	QPSK	25	0	1:1	0.063	35.82	
836.50	20525	Md	LTE Band 5 (Cell)	10	25.06	0	Left	Cheek	QPSK	1	0	1:1	0.123	34.16	
836.50	20525	Md	LTE Band 5 (Cell)	10	23.81	1	Left	Cheek	QPSK	25	0	1:1	0.115	33.20	
836.50	20525	Md	LTE Band 5 (Cell)	10	25.06	0	Left	Tilt	QPSK	1	0	1:1	0.071	36.55	
836.50	20525	Md	LTE Band 5 (Cell)	10	23.81	1	Left	Tilt	QPSK	25	0	1:1	0.063	35.82	



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Table A-3
DSI = 2 P_{Limit} Calculations – LTE B66/25/30/7/41 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]	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.28	0	Right	Cheek	QPSK	1	50	1:1	0.084	35.04	33.67
1770.00	132572	High	LTE Band 66 (AWS)	20	23.52	1	Right	Cheek	QPSK	50	25	1:1	0.070	35.07	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.28	0	Right	Tilt	QPSK	1	50	1:1	0.068	35.95	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.52	1	Right	Tilt	QPSK	50	25	1:1	0.050	36.53	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.28	0	Left	Cheek	QPSK	1	50	1:1	0.115	33.67	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.52	1	Left	Cheek	QPSK	50	25	1:1	0.091	33.93	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.28	0	Left	Tilt	QPSK	1	50	1:1	0.050	37.29	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.52	1	Left	Tilt	QPSK	50	25	1:1	0.041	37.39	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.36	0	Right	Cheek	QPSK	1	99	1:1	0.077	35.50	33.89
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.48	1	Right	Cheek	QPSK	50	50	1:1	0.057	35.92	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.36	0	Right	Tilt	QPSK	1	99	1:1	0.060	36.58	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.48	1	Right	Tilt	QPSK	50	50	1:1	0.046	36.85	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.36	0	Left	Cheek	QPSK	1	99	1:1	0.110	33.95	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.48	1	Left	Cheek	QPSK	50	50	1:1	0.091	33.89	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.36	0	Left	Tilt	QPSK	1	99	1:1	0.070	35.91	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.48	1	Left	Tilt	QPSK	50	50	1:1	0.055	36.08	
2310.00	27710	Mid	LTE Band 30	10	22.18	0	Right	Cheek	QPSK	1	0	1:1	0.049	35.28	34.26
2310.00	27710	Mid	LTE Band 30	10	21.26	1	Right	Cheek	QPSK	25	0	1:1	0.032	36.21	
2310.00	27710	Mid	LTE Band 30	10	22.18	0	Right	Tilt	QPSK	1	0	1:1	0.032	37.13	
2310.00	27710	Mid	LTE Band 30	10	21.26	1	Right	Tilt	QPSK	25	0	1:1	0.025	37.28	
2310.00	27710	Mid	LTE Band 30	10	22.18	0	Left	Cheek	QPSK	1	0	1:1	0.062	34.26	
2310.00	27710	Mid	LTE Band 30	10	21.26	1	Left	Cheek	QPSK	25	0	1:1	0.043	34.93	
2310.00	27710	Mid	LTE Band 30	10	22.18	0	Left	Tilt	QPSK	1	0	1:1	0.028	37.71	
2310.00	27710	Mid	LTE Band 30	10	21.26	1	Left	Tilt	QPSK	25	0	1:1	0.019	38.47	
2560.00	21350	High	LTE Band 7	20	23.35	0	Right	Cheek	QPSK	1	0	1:1	0.089	33.86	31.99
2560.00	21350	High	LTE Band 7	20	22.52	1	Right	Cheek	QPSK	50	0	1:1	0.069	34.13	
2560.00	21350	High	LTE Band 7	20	23.35	0	Right	Tilt	QPSK	1	0	1:1	0.135	32.05	
2560.00	21350	High	LTE Band 7	20	22.52	1	Right	Tilt	QPSK	50	0	1:1	0.113	31.99	
2560.00	21350	High	LTE Band 7	20	23.35	0	Left	Cheek	QPSK	1	0	1:1	0.135	32.05	
2560.00	21350	High	LTE Band 7	20	22.52	1	Left	Cheek	QPSK	50	0	1:1	0.096	32.70	
2560.00	21350	High	LTE Band 7	20	23.35	0	Left	Tilt	QPSK	1	0	1:1	0.055	35.95	
2560.00	21350	High	LTE Band 7	20	22.52	1	Left	Tilt	QPSK	50	0	1:1	0.038	36.72	
2506.00	39750	Low	LTE Band 41	20	24.51	0	Right	Cheek	QPSK	1	0	1:1.58	0.069	34.14	32.61
2506.00	39750	Low	LTE Band 41	20	23.50	1	Right	Cheek	QPSK	50	0	1:1.58	0.055	34.11	
2506.00	39750	Low	LTE Band 41	20	24.51	0	Right	Tilt	QPSK	1	0	1:1.58	0.087	33.13	
2506.00	39750	Low	LTE Band 41	20	23.50	1	Right	Tilt	QPSK	50	0	1:1.58	0.068	33.19	
2506.00	39750	Low	LTE Band 41	20	24.51	0	Left	Cheek	QPSK	1	0	1:1.58	0.098	32.61	
2506.00	39750	Low	LTE Band 41	20	23.50	1	Left	Cheek	QPSK	50	0	1:1.58	0.073	32.88	
2506.00	39750	Low	LTE Band 41	20	24.51	0	Left	Tilt	QPSK	1	0	1:1.58	0.076	33.72	
2506.00	39750	Low	LTE Band 41	20	23.50	1	Left	Tilt	QPSK	50	0	1:1.58	0.064	33.45	



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Table A-4
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	25.12	0	Right	Cheek	DFT-s-OFDM QPSK	1	53	1:1	0.096	35.30	35.09
680.50	136100	Mid	NR Band n71	20	24.87	0	Right	Cheek	DFT-s-OFDM QPSK	50	28	1:1	0.095	35.09	
680.50	136100	Mid	NR Band n71	20	23.05	1.5	Right	Cheek	CP-OFDM QPSK	1	1	1:1	0.051	35.97	
680.50	136100	Mid	NR Band n71	20	25.12	0	Right	Tilt	DFT-s-OFDM QPSK	1	53	1:1	0.047	38.40	
680.50	136100	Mid	NR Band n71	20	24.87	0	Right	Tilt	DFT-s-OFDM QPSK	50	28	1:1	0.044	38.44	
680.50	136100	Mid	NR Band n71	20	25.12	0	Left	Cheek	DFT-s-OFDM QPSK	1	53	1:1	0.092	35.48	
680.50	136100	Mid	NR Band n71	20	24.87	0	Left	Cheek	DFT-s-OFDM QPSK	50	28	1:1	0.089	35.38	
680.50	136100	Mid	NR Band n71	20	25.12	0	Left	Tilt	DFT-s-OFDM QPSK	1	53	1:1	0.048	38.31	
680.50	136100	Mid	NR Band n71	20	24.87	0	Left	Tilt	DFT-s-OFDM QPSK	50	28	1:1	0.044	38.44	
1745.00	349000	Mid	NR Band n66 (AWS)	20	24.12	0	Right	Cheek	DFT-s-OFDM QPSK	1	53	1:1	0.093	34.44	
1745.00	349000	Mid	NR Band n66 (AWS)	20	23.97	0	Right	Cheek	DFT-s-OFDM QPSK	50	28	1:1	0.095	34.19	
1745.00	349000	Mid	NR Band n66 (AWS)	20	24.12	0	Right	Tilt	DFT-s-OFDM QPSK	1	53	1:1	0.065	35.99	
1745.00	349000	Mid	NR Band n66 (AWS)	20	23.97	0	Right	Tilt	DFT-s-OFDM QPSK	50	28	1:1	0.065	35.84	
1745.00	349000	Mid	NR Band n66 (AWS)	20	24.12	0	Left	Cheek	DFT-s-OFDM QPSK	1	53	1:1	0.116	33.48	
1745.00	349000	Mid	NR Band n66 (AWS)	20	23.97	0	Left	Cheek	DFT-s-OFDM QPSK	50	28	1:1	0.121	33.14	
1745.00	349000	Mid	NR Band n66 (AWS)	20	22.01	1.5	Left	Cheek	CP-OFDM QPSK	1	1	1:1	0.077	33.15	
1745.00	349000	Mid	NR Band n66 (AWS)	20	24.12	0	Left	Tilt	DFT-s-OFDM QPSK	1	53	1:1	0.041	37.99	
1745.00	349000	Mid	NR Band n66 (AWS)	20	23.97	0	Left	Tilt	DFT-s-OFDM QPSK	50	28	1:1	0.041	37.84	
2592.99	518598	Mid	NR Band n41	100	23.66	0	Right	Cheek	DFT-s-OFDM QPSK	1	1	1:4	0.609	19.79	18.05
2592.99	518598	Mid	NR Band n41	100	23.39	0	Right	Cheek	DFT-s-OFDM QPSK	135	69	1:4	0.600	19.59	
2592.99	518598	Mid	NR Band n41	100	22.52	1	Right	Cheek	DFT-s-OFDM QPSK	270	0	1:4	0.433	20.13	
2592.99	518598	Mid	NR Band n41	100	23.66	0	Right	Tilt	DFT-s-OFDM QPSK	1	1	1:4	0.876	18.21	
2592.99	518598	Mid	NR Band n41	100	23.39	0	Right	Tilt	DFT-s-OFDM QPSK	135	69	1:4	0.854	18.05	
2592.99	518598	Mid	NR Band n41	100	22.52	1	Right	Tilt	DFT-s-OFDM QPSK	270	0	1:4	0.670	18.24	
2592.99	518598	Mid	NR Band n41	100	22.08	1.5	Right	Tilt	CP-OFDM QPSK	1	1	1:4	0.379	20.27	
2592.99	518598	Mid	NR Band n41	100	23.66	0	Left	Cheek	DFT-s-OFDM QPSK	1	1	1:4	0.441	21.19	
2592.99	518598	Mid	NR Band n41	100	23.39	0	Left	Cheek	DFT-s-OFDM QPSK	135	69	1:4	0.453	20.81	
2592.99	518598	Mid	NR Band n41	100	22.52	1	Left	Cheek	DFT-s-OFDM QPSK	270	0	1:4	0.362	20.91	
2592.99	518598	Mid	NR Band n41	100	23.66	0	Left	Tilt	DFT-s-OFDM QPSK	1	1	1:4	0.647	19.53	
2592.99	518598	Mid	NR Band n41	100	23.39	0	Left	Tilt	DFT-s-OFDM QPSK	135	69	1:4	0.686	19.01	
2592.99	518598	Mid	NR Band n41	100	22.52	1	Left	Tilt	DFT-s-OFDM QPSK	270	0	1:4	0.552	19.08	



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Table A-5
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	32.10	15 mm	Back	1:8.3	0.131	31.73	31.73
836.60	190	GSM 850	GSM	32.10	15 mm	Front	1:8.3	0.127	31.86	
1880.00	661	GSM 1900	GSM	28.90	15 mm	Back	1:8.3	0.232	26.04	26.04
1880.00	661	GSM 1900	GSM	28.90	15 mm	Front	1:8.3	0.191	26.89	
836.60	4183	UMTS 850	RMC	24.21	15 mm	Back	1:1	0.185	31.54	31.54
836.60	4183	UMTS 850	RMC	24.21	15 mm	Front	1:1	0.172	31.85	
1752.60	1513	UMTS 1750	RMC	24.12	15 mm	Back	1:1	0.736	25.45	25.45
1732.40	1412	UMTS 1750	RMC	24.16	15 mm	Front	1:1	0.592	26.44	
1910.00	9538	UMTS 1900	RMC	23.89	15 mm	Back	1:1	0.678	25.58	25.58
1880.00	9400	UMTS 1900	RMC	24.02	15 mm	Front	1:1	0.558	26.55	
836.52	384	CDMA BC0 (\$22H)	TDSO / SO32	24.96	15 mm	Back	1:1	0.241	31.14	31.14
836.52	384	CDMA BC0 (\$22H)	TDSO / SO32	24.96	15 mm	Front	1:1	0.202	31.91	



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Table A-6
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
MHz	Ch.	(W/kg)											[dBm]	[dBm]	
680.50	133297	Mid	LTE Band 71	20	24.79	0	QPSK	1	50	15 mm	Back	1:1	0.163	32.67	32.43
680.50	133297	Mid	LTE Band 71	20	23.77	1	QPSK	50	25	15 mm	Back	1:1	0.136	32.43	
680.50	133297	Mid	LTE Band 71	20	24.79	0	QPSK	1	50	15 mm	Front	1:1	0.139	33.36	
680.50	133297	Mid	LTE Band 71	20	23.77	1	QPSK	50	25	15 mm	Front	1:1	0.112	33.28	
707.50	23095	Mid	LTE Band 12	10	24.77	0	QPSK	1	49	15 mm	Back	1:1	0.216	31.43	31.43
707.50	23095	Mid	LTE Band 12	10	23.81	1	QPSK	25	12	15 mm	Back	1:1	0.165	31.64	
707.50	23095	Mid	LTE Band 12	10	24.77	0	QPSK	1	49	15 mm	Front	1:1	0.192	31.94	
707.50	23095	Mid	LTE Band 12	10	23.81	1	QPSK	25	12	15 mm	Front	1:1	0.141	32.32	
782.00	23230	Mid	LTE Band 13	10	25.04	0	QPSK	1	0	15 mm	Back	1:1	0.261	30.87	30.76
782.00	23230	Mid	LTE Band 13	10	24.06	1	QPSK	25	0	15 mm	Back	1:1	0.214	30.76	
782.00	23230	Mid	LTE Band 13	10	25.04	0	QPSK	1	0	15 mm	Front	1:1	0.257	30.94	
782.00	23230	Mid	LTE Band 13	10	24.06	1	QPSK	25	0	15 mm	Front	1:1	0.212	30.80	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.06	0	QPSK	1	0	15 mm	Back	1:1	0.210	31.84	31.48
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.81	1	QPSK	25	0	15 mm	Back	1:1	0.171	31.48	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.06	0	QPSK	1	0	15 mm	Front	1:1	0.196	32.14	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.81	1	QPSK	25	0	15 mm	Front	1:1	0.155	31.91	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.23	0	QPSK	1	50	15 mm	Back	1:1	0.989	24.28	24.28
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.40	1	QPSK	50	0	15 mm	Back	1:1	0.805	24.34	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.23	0	QPSK	1	50	15 mm	Front	1:1	0.774	25.34	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.52	1	QPSK	50	25	15 mm	Front	1:1	0.573	25.94	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.05	0	QPSK	1	0	15 mm	Back	1:1	0.631	26.05	26.05
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.48	1	QPSK	50	50	15 mm	Back	1:1	0.518	26.34	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.36	0	QPSK	1	99	15 mm	Front	1:1	0.508	27.30	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.48	1	QPSK	50	50	15 mm	Front	1:1	0.420	27.25	
2310.00	27710	Mid	LTE Band 30	10	22.18	0	QPSK	1	0	15 mm	Back	1:1	0.468	25.48	25.15
2310.00	27710	Mid	LTE Band 30	10	21.26	1	QPSK	25	0	15 mm	Back	1:1	0.408	25.15	
2310.00	27710	Mid	LTE Band 30	10	22.18	0	QPSK	1	0	15 mm	Front	1:1	0.464	25.51	
2310.00	27710	Mid	LTE Band 30	10	21.26	1	QPSK	25	0	15 mm	Front	1:1	0.360	25.70	
2560.00	21350	High	LTE Band 7	20	23.35	0	QPSK	1	0	15 mm	Back	1:1	0.381	27.54	27.54
2560.00	21350	High	LTE Band 7	20	22.52	1	QPSK	50	0	15 mm	Back	1:1	0.294	27.84	
2560.00	21350	High	LTE Band 7	20	23.35	0	QPSK	1	0	15 mm	Front	1:1	0.325	28.23	
2560.00	21350	High	LTE Band 7	20	22.52	1	QPSK	50	0	15 mm	Front	1:1	0.257	28.42	
2506.00	39750	Low	LTE Band 41	20	24.51	0	QPSK	1	0	15 mm	Back	1:1.58	0.317	27.51	27.33
2506.00	39750	Low	LTE Band 41	20	23.50	1	QPSK	50	0	15 mm	Back	1:1.58	0.262	27.33	
2506.00	39750	Low	LTE Band 41	20	24.51	0	QPSK	1	0	15 mm	Front	1:1.58	0.284	27.99	
2506.00	39750	Low	LTE Band 41	20	23.50	1	QPSK	50	0	15 mm	Front	1:1.58	0.228	27.93	

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



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Table A-7
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	25.12	0	DFT-s-OFDM QPSK	1	53	15 mm	Back	1:1	0.146	33.48	33.14
680.50	136100	Mid	NR Band n71	20	24.87	0	DFT-s-OFDM QPSK	50	28	15 mm	Back	1:1	0.148	33.17	
680.50	136100	Mid	NR Band n71	20	23.05	1.5	CP-OFDM QPSK	1	1	15 mm	Back	1:1	0.098	33.14	
680.50	136100	Mid	NR Band n71	20	25.12	0	DFT-s-OFDM QPSK	1	53	15 mm	Front	1:1	0.125	34.15	
680.50	136100	Mid	NR Band n71	20	24.87	0	DFT-s-OFDM QPSK	50	28	15 mm	Front	1:1	0.131	33.70	
1745.00	349000	Mid	NR Band n66	20	24.12	0	DFT-s-OFDM QPSK	1	53	15 mm	Back	1:1	0.867	24.74	24.70
1745.00	349000	Mid	NR Band n66	20	23.97	0	DFT-s-OFDM QPSK	50	28	15 mm	Back	1:1	0.805	24.91	
1745.00	349000	Mid	NR Band n66	20	22.76	1	DFT-s-OFDM QPSK	100	0	15 mm	Back	1:1	0.640	24.70	
1745.00	349000	Mid	NR Band n66	20	22.01	1.5	CP-OFDM QPSK	1	1	15 mm	Back	1:1	0.504	24.99	
1745.00	349000	Mid	NR Band n66	20	24.12	0	DFT-s-OFDM QPSK	1	53	15 mm	Front	1:1	0.738	25.44	
1745.00	349000	Mid	NR Band n66	20	23.97	0	DFT-s-OFDM QPSK	50	28	15 mm	Front	1:1	0.657	25.79	
1745.00	349000	Mid	NR Band n66	20	22.76	1	DFT-s-OFDM QPSK	100	0	15 mm	Front	1:1	0.524	25.57	
2592.99	518598	Mid	NR Band n41	100	23.66	0	DFT-s-OFDM QPSK	1	1	15 mm	Back	1:4	0.103	27.51	26.16
2592.99	518598	Mid	NR Band n41	100	23.39	0	DFT-s-OFDM QPSK	135	69	15 mm	Back	1:4	0.132	26.16	
2592.99	518598	Mid	NR Band n41	100	22.08	1.5	CP-OFDM QPSK	1	1	15 mm	Back	1:4	0.053	28.82	
2592.99	518598	Mid	NR Band n41	100	23.66	0	DFT-s-OFDM QPSK	1	1	15 mm	Front	1:4	0.063	29.65	
2592.99	518598	Mid	NR Band n41	100	23.39	0	DFT-s-OFDM QPSK	135	69	15 mm	Front	1:4	0.068	29.04	

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 – 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	28.88	10 mm	Back	3	1:2.76	0.377	28.69	28.69
836.60	190	GSM 850	GPRS	28.88	10 mm	Front	3	1:2.76	0.262	30.27	
836.60	190	GSM 850	GPRS	28.88	10 mm	Bottom	3	1:2.76	0.233	30.78	
836.60	190	GSM 850	GPRS	28.88	10 mm	Right	3	1:2.76	0.208	31.27	
836.60	190	GSM 850	GPRS	28.88	10 mm	Left	3	1:2.76	0.076	35.64	
1880.00	661	GSM 1900	GPRS	25.61	10 mm	Back	3	1:2.76	0.448	24.67	20.14
1880.00	661	GSM 1900	GPRS	25.61	10 mm	Front	3	1:2.76	0.414	25.01	
1909.80	810	GSM 1900	GPRS	25.36	10 mm	Bottom	3	1:2.76	1.200	20.14	
1880.00	661	GSM 1900	GPRS	25.61	10 mm	Right	3	1:2.76	0.052	34.02	
1880.00	661	GSM 1900	GPRS	25.61	10 mm	Left	3	1:2.76	0.058	33.55	
836.60	4183	UMTS 850	RMC	24.21	10 mm	Back	N/A	1:1	0.467	27.52	27.52
836.60	4183	UMTS 850	RMC	24.21	10 mm	Front	N/A	1:1	0.296	29.50	
836.60	4183	UMTS 850	RMC	24.21	10 mm	Bottom	N/A	1:1	0.273	29.85	
836.60	4183	UMTS 850	RMC	24.21	10 mm	Right	N/A	1:1	0.228	30.63	
836.60	4183	UMTS 850	RMC	24.21	10 mm	Left	N/A	1:1	0.082	35.07	
1732.40	1412	UMTS 1750	RMC	24.16	10 mm	Back	N/A	1:1	1.450	22.55	20.39
1732.40	1412	UMTS 1750	RMC	24.16	10 mm	Front	N/A	1:1	1.350	22.86	
1732.40	1412	UMTS 1750	RMC	24.16	10 mm	Bottom	N/A	1:1	2.380	20.39	
1732.40	1412	UMTS 1750	RMC	24.16	10 mm	Right	N/A	1:1	0.170	31.86	
1732.40	1412	UMTS 1750	RMC	24.16	10 mm	Left	N/A	1:1	0.188	31.42	
1880.00	9400	UMTS 1900	RMC	24.02	10 mm	Back	N/A	1:1	1.330	22.78	20.20
1880.00	9400	UMTS 1900	RMC	24.02	10 mm	Front	N/A	1:1	1.150	23.41	
1880.00	9400	UMTS 1900	RMC	24.02	10 mm	Bottom	N/A	1:1	2.410	20.20	
1880.00	9400	UMTS 1900	RMC	24.02	10 mm	Right	N/A	1:1	0.155	32.12	
1880.00	9400	UMTS 1900	RMC	24.02	10 mm	Left	N/A	1:1	0.141	32.53	
848.31	777	CDMA BC0 (§22H)	EVDO Rev. 0	24.97	10 mm	Back	N/A	1:1	0.639	26.91	26.91
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.09	10 mm	Front	N/A	1:1	0.362	29.50	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.09	10 mm	Bottom	N/A	1:1	0.312	30.15	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.09	10 mm	Right	N/A	1:1	0.227	31.53	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.09	10 mm	Left	N/A	1:1	0.088	35.65	

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 – LTE B71/12/13/5 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	24.79	0	QPSK	1	50	10 mm	Back	1:1	0.216	31.45	31.36	
680.50	133297	Mid	LTE Band 71	20	23.77	1	QPSK	50	25	10 mm	Back	1:1	0.174	31.36		
680.50	133297	Mid	LTE Band 71	20	24.79	0	QPSK	1	50	10 mm	Front	1:1	0.161	32.72		
680.50	133297	Mid	LTE Band 71	20	23.77	1	QPSK	50	25	10 mm	Front	1:1	0.131	32.60		
680.50	133297	Mid	LTE Band 71	20	24.79	0	QPSK	1	50	10 mm	Bottom	1:1	0.100	34.79		
680.50	133297	Mid	LTE Band 71	20	23.77	1	QPSK	50	25	10 mm	Bottom	1:1	0.081	34.69		
680.50	133297	Mid	LTE Band 71	20	24.79	0	QPSK	1	50	10 mm	Right	1:1	0.170	32.49		
680.50	133297	Mid	LTE Band 71	20	23.77	1	QPSK	50	25	10 mm	Right	1:1	0.143	32.22		
680.50	133297	Mid	LTE Band 71	20	24.79	0	QPSK	1	50	10 mm	Left	1:1	0.106	34.54		
680.50	133297	Mid	LTE Band 71	20	23.77	1	QPSK	50	25	10 mm	Left	1:1	0.095	33.99		
707.50	23095	Mid	LTE Band 12	10	24.77	0	QPSK	1	49	10 mm	Back	1:1	0.279	30.31		30.31
707.50	23095	Mid	LTE Band 12	10	23.81	1	QPSK	25	12	10 mm	Back	1:1	0.211	30.57		
707.50	23095	Mid	LTE Band 12	10	24.77	0	QPSK	1	49	10 mm	Front	1:1	0.197	31.83		
707.50	23095	Mid	LTE Band 12	10	23.81	1	QPSK	25	12	10 mm	Front	1:1	0.154	31.93		
707.50	23095	Mid	LTE Band 12	10	24.77	0	QPSK	1	49	10 mm	Bottom	1:1	0.112	34.28		
707.50	23095	Mid	LTE Band 12	10	23.81	1	QPSK	25	12	10 mm	Bottom	1:1	0.096	33.99		
707.50	23095	Mid	LTE Band 12	10	24.77	0	QPSK	1	49	10 mm	Right	1:1	0.225	31.25		
707.50	23095	Mid	LTE Band 12	10	23.81	1	QPSK	25	12	10 mm	Right	1:1	0.172	31.45		
707.50	23095	Mid	LTE Band 12	10	24.77	0	QPSK	1	49	10 mm	Left	1:1	0.175	32.34		
707.50	23095	Mid	LTE Band 12	10	23.81	1	QPSK	25	12	10 mm	Left	1:1	0.121	32.98		
782.00	23230	Mid	LTE Band 13	10	25.04	0	QPSK	1	0	10 mm	Back	1:1	0.324	29.93	29.30	
782.00	23230	Mid	LTE Band 13	10	24.06	1	QPSK	25	0	10 mm	Back	1:1	0.299	29.30		
782.00	23230	Mid	LTE Band 13	10	25.04	0	QPSK	1	0	10 mm	Front	1:1	0.275	30.65		
782.00	23230	Mid	LTE Band 13	10	24.06	1	QPSK	25	0	10 mm	Front	1:1	0.222	30.60		
782.00	23230	Mid	LTE Band 13	10	25.04	0	QPSK	1	0	10 mm	Bottom	1:1	0.224	31.54		
782.00	23230	Mid	LTE Band 13	10	24.06	1	QPSK	25	0	10 mm	Bottom	1:1	0.187	31.34		
782.00	23230	Mid	LTE Band 13	10	25.04	0	QPSK	1	0	10 mm	Right	1:1	0.267	30.77		
782.00	23230	Mid	LTE Band 13	10	24.06	1	QPSK	25	0	10 mm	Right	1:1	0.229	30.46		
782.00	23230	Mid	LTE Band 13	10	25.04	0	QPSK	1	0	10 mm	Left	1:1	0.140	33.58		
782.00	23230	Mid	LTE Band 13	10	24.06	1	QPSK	25	0	10 mm	Left	1:1	0.113	33.53		
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.06	0	QPSK	1	0	10 mm	Back	1:1	0.491	28.15		27.79
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.81	1	QPSK	25	0	10 mm	Back	1:1	0.400	27.79		
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.06	0	QPSK	1	0	10 mm	Front	1:1	0.331	29.86		
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.81	1	QPSK	25	0	10 mm	Front	1:1	0.261	29.64		
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.06	0	QPSK	1	0	10 mm	Bottom	1:1	0.275	30.67		
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.81	1	QPSK	25	0	10 mm	Bottom	1:1	0.230	30.19		
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.06	0	QPSK	1	0	10 mm	Right	1:1	0.248	31.12		
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.81	1	QPSK	25	0	10 mm	Right	1:1	0.192	30.98		
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.06	0	QPSK	1	0	10 mm	Left	1:1	0.094	35.33		
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.81	1	QPSK	25	0	10 mm	Left	1:1	0.073	35.18		



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Table A-10
DSI = 3 P_{Limit} Calculations – LTE B66/25/30/7/41 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]
1770.00	132572	High	LTE Band 66 (AWS)	20	24.28	0	QPSK	1	50	10 mm	Back	1:1	1.680	22.03	19.02
1770.00	132572	High	LTE Band 66 (AWS)	20	24.28	0	QPSK	1	50	10 mm	Front	1:1	1.410	22.79	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.28	0	QPSK	1	50	10 mm	Bottom	1:1	3.360	19.02	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.28	0	QPSK	1	50	10 mm	Right	1:1	0.327	29.13	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.28	0	QPSK	1	50	10 mm	Left	1:1	0.254	30.23	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.36	0	QPSK	1	99	10 mm	Back	1:1	1.350	23.06	20.54
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.36	0	QPSK	1	99	10 mm	Front	1:1	1.220	23.50	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.36	0	QPSK	1	99	10 mm	Bottom	1:1	2.410	20.54	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.36	0	QPSK	1	99	10 mm	Right	1:1	0.159	32.35	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.36	0	QPSK	1	99	10 mm	Left	1:1	0.145	32.75	
2310.00	27710	Mid	LTE Band 30	10	22.18	0	QPSK	1	0	10 mm	Back	1:1	1.100	21.77	18.29
2310.00	27710	Mid	LTE Band 30	10	22.18	0	QPSK	1	0	10 mm	Front	1:1	1.010	22.14	
2310.00	27710	Mid	LTE Band 30	10	22.18	0	QPSK	1	0	10 mm	Bottom	1:1	2.450	18.29	
2310.00	27710	Mid	LTE Band 30	10	22.18	0	QPSK	1	0	10 mm	Right	1:1	0.088	32.74	
2310.00	27710	Mid	LTE Band 30	10	22.18	0	QPSK	1	0	10 mm	Left	1:1	0.054	34.86	
2560.00	21350	High	LTE Band 7	20	23.35	0	QPSK	1	0	10 mm	Back	1:1	0.773	24.47	20.80
2560.00	21350	High	LTE Band 7	20	23.35	0	QPSK	1	0	10 mm	Front	1:1	0.729	24.72	
2560.00	21350	High	LTE Band 7	20	23.35	0	QPSK	1	0	10 mm	Bottom	1:1	1.800	20.80	
2560.00	21350	High	LTE Band 7	20	23.35	0	QPSK	1	0	10 mm	Left	1:1	0.099	33.39	
2506.00	39750	Low	LTE Band 41	20	24.51	0	QPSK	1	0	10 mm	Back	1:1.58	0.527	25.31	20.76
2506.00	39750	Low	LTE Band 41	20	24.51	0	QPSK	1	0	10 mm	Front	1:1.58	0.483	25.68	
2506.00	39750	Low	LTE Band 41	20	24.51	0	QPSK	1	0	10 mm	Bottom	1:1.58	1.500	20.76	
2506.00	39750	Low	LTE Band 41	20	24.51	0	QPSK	1	0	10 mm	Left	1:1.58	0.102	32.44	



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Table A-11
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]	[dBm]											
680.50	136100	Mid	NR Band n71	20	25.12	0	DFT-s-OFDM QPSK	1	53	10 mm	Back	1:1	0.178	32.62	32.19										
680.50	136100	Mid	NR Band n71	20	24.87	0	DFT-s-OFDM QPSK	50	28	10 mm	Back	1:1	0.182	32.27		32.19									
680.50	136100	Mid	NR Band n71	20	23.05	1.5	CP-OFDM QPSK	1	1	10 mm	Back	1:1	0.122	32.19			32.19								
680.50	136100	Mid	NR Band n71	20	25.12	0	DFT-s-OFDM QPSK	1	53	10 mm	Front	1:1	0.144	33.54				32.19							
680.50	136100	Mid	NR Band n71	20	24.87	0	DFT-s-OFDM QPSK	50	28	10 mm	Front	1:1	0.147	33.20					32.19						
680.50	136100	Mid	NR Band n71	20	25.12	0	DFT-s-OFDM QPSK	1	53	10 mm	Bottom	1:1	0.082	35.98						32.19					
680.50	136100	Mid	NR Band n71	20	24.87	0	DFT-s-OFDM QPSK	50	28	10 mm	Bottom	1:1	0.087	35.47							32.19				
680.50	136100	Mid	NR Band n71	20	25.12	0	DFT-s-OFDM QPSK	1	53	10 mm	Right	1:1	0.168	32.87								32.19			
680.50	136100	Mid	NR Band n71	20	24.87	0	DFT-s-OFDM QPSK	50	28	10 mm	Right	1:1	0.163	32.75									32.19		
680.50	136100	Mid	NR Band n71	20	25.12	0	DFT-s-OFDM QPSK	1	53	10 mm	Left	1:1	0.114	34.55										32.19	
680.50	136100	Mid	NR Band n71	20	24.87	0	DFT-s-OFDM QPSK	50	28	10 mm	Left	1:1	0.113	34.34											32.19
1745.00	349000	Mid	NR Band n66	20	24.12	0	DFT-s-OFDM QPSK	1	53	10 mm	Back	1:1	1.540	22.24											
1745.00	349000	Mid	NR Band n66	20	24.12	0	DFT-s-OFDM QPSK	1	53	10 mm	Front	1:1	1.320	22.91	20.23										
1745.00	349000	Mid	NR Band n66	20	24.12	0	DFT-s-OFDM QPSK	1	53	10 mm	Bottom	1:1	2.450	20.23		20.23									
1745.00	349000	Mid	NR Band n66	20	24.12	0	DFT-s-OFDM QPSK	1	53	10 mm	Right	1:1	0.101	34.08			20.23								
1745.00	349000	Mid	NR Band n66	20	24.12	0	DFT-s-OFDM QPSK	1	53	10 mm	Left	1:1	0.111	33.67				20.23							
2592.99	518598	Mid	NR Band n41	100	23.66	0	DFT-s-OFDM QPSK	1	1	10 mm	Back	1:4	0.290	23.02					20.87						
2592.99	518598	Mid	NR Band n41	100	23.39	0	DFT-s-OFDM QPSK	135	69	10 mm	Back	1:4	0.327	22.22	20.87										
2592.99	518598	Mid	NR Band n41	100	23.66	0	DFT-s-OFDM QPSK	1	1	10 mm	Front	1:4	0.152	25.82		20.87									
2592.99	518598	Mid	NR Band n41	100	23.39	0	DFT-s-OFDM QPSK	135	69	10 mm	Front	1:4	0.173	24.99			20.87								
2592.99	518598	Mid	NR Band n41	100	23.66	0	DFT-s-OFDM QPSK	1	1	10 mm	Top	1:4	0.402	21.60				20.87							
2592.99	518598	Mid	NR Band n41	100	23.39	0	DFT-s-OFDM QPSK	135	69	10 mm	Top	1:4	0.447	20.87						20.87					
2592.99	518598	Mid	NR Band n41	100	22.08	1.5	CP-OFDM QPSK	1	1	10 mm	Top	1:4	0.164	23.91							20.87				
2592.99	518598	Mid	NR Band n41	100	23.66	0	DFT-s-OFDM QPSK	1	1	10 mm	Left	1:4	0.084	28.40								20.87			
2592.99	518598	Mid	NR Band n41	100	23.39	0	DFT-s-OFDM QPSK	135	69	10 mm	Left	1:4	0.109	27.00									20.87		

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 – 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	28.88	8 mm	Back	3	1:2.76	0.421	32.19	31.60
836.60	190	GSM 850	GPRS	28.88	6 mm	Front	3	1:2.76	0.482	31.60	
836.60	190	GSM 850	GPRS	28.88	11 mm	Bottom	3	1:2.76	0.201	35.40	
836.60	190	GSM 850	GPRS	28.88	0 mm	Right	3	1:2.76	0.321	33.36	
836.60	190	GSM 850	GPRS	28.88	0 mm	Left	3	1:2.76	0.221	34.99	
1880.00	661	GSM 1900	GPRS	25.61	8 mm	Back	3	1:2.76	0.430	28.82	27.15
1880.00	661	GSM 1900	GPRS	25.61	6 mm	Front	3	1:2.76	0.633	27.15	
1880.00	661	GSM 1900	GPRS	25.61	11 mm	Bottom	3	1:2.76	0.535	27.88	
1880.00	661	GSM 1900	GPRS	25.61	0 mm	Right	3	1:2.76	0.157	33.20	
1880.00	661	GSM 1900	GPRS	25.61	0 mm	Left	3	1:2.76	0.234	31.47	
836.60	4183	UMTS 850	RMC	24.21	8 mm	Back	N/A	1:1	0.300	33.42	33.25
836.60	4183	UMTS 850	RMC	24.21	6 mm	Front	N/A	1:1	0.312	33.25	
836.60	4183	UMTS 850	RMC	24.21	11 mm	Bottom	N/A	1:1	0.201	35.16	
836.60	4183	UMTS 850	RMC	24.21	0 mm	Right	N/A	1:1	0.203	35.11	
836.60	4183	UMTS 850	RMC	24.21	0 mm	Left	N/A	1:1	0.157	36.23	
1732.40	1412	UMTS 1750	RMC	24.16	8 mm	Back	N/A	1:1	1.110	27.69	27.14
1732.40	1412	UMTS 1750	RMC	24.16	6 mm	Front	N/A	1:1	1.260	27.14	
1732.40	1412	UMTS 1750	RMC	24.16	11 mm	Bottom	N/A	1:1	1.150	27.53	
1732.40	1412	UMTS 1750	RMC	24.16	0 mm	Right	N/A	1:1	0.375	32.40	
1732.40	1412	UMTS 1750	RMC	24.16	0 mm	Left	N/A	1:1	0.394	32.18	
1880.00	9400	UMTS 1900	RMC	24.02	8 mm	Back	N/A	1:1	0.845	28.73	27.47
1880.00	9400	UMTS 1900	RMC	24.02	6 mm	Front	N/A	1:1	0.948	28.23	
1880.00	9400	UMTS 1900	RMC	24.02	11 mm	Bottom	N/A	1:1	1.130	27.47	
1880.00	9400	UMTS 1900	RMC	24.02	0 mm	Right	N/A	1:1	0.321	32.93	
1880.00	9400	UMTS 1900	RMC	24.02	0 mm	Left	N/A	1:1	0.443	31.54	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. 0	25.09	8 mm	Back	N/A	1:1	0.399	33.06	33.04
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. 0	25.09	6 mm	Front	N/A	1:1	0.401	33.04	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. 0	25.09	11 mm	Bottom	N/A	1:1	0.133	37.83	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. 0	25.09	0 mm	Right	N/A	1:1	0.244	35.20	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. 0	25.09	0 mm	Left	N/A	1:1	0.101	39.03	



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Table A-13
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	28.88	0 mm	Back	3	1:2.76	1.450	26.82	26.82
836.60	190	GSM 850	GPRS	28.88	0 mm	Front	3	1:2.76	1.409	26.94	
836.60	190	GSM 850	GPRS	28.88	0 mm	Bottom	3	1:2.76	1.000	28.43	
836.60	190	GSM 850	GPRS	28.88	0 mm	Right	3	1:2.76	0.301	33.64	
836.60	190	GSM 850	GPRS	28.88	0 mm	Left	3	1:2.76	0.112	37.94	
1880.00	661	GSM 1900	GPRS	25.61	0 mm	Back	3	1:2.76	1.721	22.80	20.03
1880.00	661	GSM 1900	GPRS	25.61	0 mm	Front	3	1:2.76	1.200	24.37	
1880.00	661	GSM 1900	GPRS	25.61	0 mm	Bottom	3	1:2.76	3.260	20.03	
1880.00	661	GSM 1900	GPRS	25.61	0 mm	Right	3	1:2.76	0.157	33.20	
1880.00	661	GSM 1900	GPRS	25.61	0 mm	Left	3	1:2.76	0.234	31.47	
836.60	4183	UMTS 850	RMC	24.21	0 mm	Back	N/A	1:1	1.389	26.76	26.73
836.60	4183	UMTS 850	RMC	24.21	0 mm	Front	N/A	1:1	1.400	26.73	
836.60	4183	UMTS 850	RMC	24.21	0 mm	Bottom	N/A	1:1	0.910	28.60	
836.60	4183	UMTS 850	RMC	24.21	0 mm	Right	N/A	1:1	0.203	35.11	
836.60	4183	UMTS 850	RMC	24.21	0 mm	Left	N/A	1:1	0.157	36.23	
1732.40	1412	UMTS 1750	RMC	24.16	0 mm	Back	N/A	1:1	4.550	21.56	20.43
1732.40	1412	UMTS 1750	RMC	24.16	0 mm	Front	N/A	1:1	4.480	21.63	
1732.40	1412	UMTS 1750	RMC	24.16	0 mm	Bottom	N/A	1:1	5.900	20.43	
1732.40	1412	UMTS 1750	RMC	24.16	0 mm	Right	N/A	1:1	0.375	32.40	
1732.40	1412	UMTS 1750	RMC	24.16	0 mm	Left	N/A	1:1	0.394	32.18	
1880.00	9400	UMTS 1900	RMC	24.02	0 mm	Back	N/A	1:1	4.450	21.52	20.20
1880.00	9400	UMTS 1900	RMC	24.02	0 mm	Front	N/A	1:1	4.150	21.82	
1880.00	9400	UMTS 1900	RMC	24.02	0 mm	Bottom	N/A	1:1	6.020	20.20	
1880.00	9400	UMTS 1900	RMC	24.02	0 mm	Right	N/A	1:1	0.321	32.93	
1880.00	9400	UMTS 1900	RMC	24.02	0 mm	Left	N/A	1:1	0.443	31.54	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.09	0 mm	Back	N/A	1:1	1.622	26.97	26.97
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.09	0 mm	Front	N/A	1:1	1.598	27.03	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.09	0 mm	Bottom	N/A	1:1	0.620	31.15	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.09	0 mm	Right	N/A	1:1	0.244	35.20	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.09	0 mm	Left	N/A	1:1	0.101	39.03	



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Table A-14
DSI = 0 P_{Limit} Calculations – LTE B71/12/13/5 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	24.79	0	QPSK	1	0	8 mm	Back	1:1	0.150	37.01	37.01
680.50	133297	Mid	LTE Band 71	20	24.79	0	QPSK	1	0	6 mm	Front	1:1	0.121	37.94	
680.50	133297	Mid	LTE Band 71	20	24.79	0	QPSK	1	0	11 mm	Bottom	1:1	0.098	38.86	
680.50	133297	Mid	LTE Band 71	20	24.79	0	QPSK	1	0	0 mm	Right	1:1	0.102	38.68	
680.50	133297	Mid	LTE Band 71	20	24.79	0	QPSK	1	0	0 mm	Left	1:1	0.099	38.81	
707.50	23095	Mid	LTE Band 12	10	24.77	0	QPSK	1	49	8 mm	Back	1:1	0.178	36.25	36.25
707.50	23095	Mid	LTE Band 12	10	24.77	0	QPSK	1	49	6 mm	Front	1:1	0.168	36.50	
707.50	23095	Mid	LTE Band 12	10	24.77	0	QPSK	1	49	11 mm	Bottom	1:1	0.070	40.30	
707.50	23095	Mid	LTE Band 12	10	24.77	0	QPSK	1	49	0 mm	Right	1:1	0.112	38.26	
707.50	23095	Mid	LTE Band 12	10	24.77	0	QPSK	1	49	0 mm	Left	1:1	0.085	39.46	
782.00	23230	Mid	LTE Band 13	10	25.04	0	QPSK	1	0	8 mm	Back	1:1	0.312	34.08	33.95
782.00	23230	Mid	LTE Band 13	10	25.04	0	QPSK	1	0	6 mm	Front	1:1	0.321	33.95	
782.00	23230	Mid	LTE Band 13	10	25.04	0	QPSK	1	0	11 mm	Bottom	1:1	0.153	37.17	
782.00	23230	Mid	LTE Band 13	10	25.04	0	QPSK	1	0	0 mm	Right	1:1	0.321	33.95	
782.00	23230	Mid	LTE Band 13	10	25.04	0	QPSK	1	0	0 mm	Left	1:1	0.211	35.78	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.06	0	QPSK	1	0	8 mm	Back	1:1	0.387	33.16	33.16
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.06	0	QPSK	1	0	6 mm	Front	1:1	0.381	33.23	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.06	0	QPSK	1	0	11 mm	Bottom	1:1	0.154	37.16	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.06	0	QPSK	1	0	0 mm	Right	1:1	0.255	34.97	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.06	0	QPSK	1	0	0 mm	Left	1:1	0.189	36.27	



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Table A-15
DSI = 0 P_{Limit} Calculations – LTE B66/25/30/7/41 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]		
1770.00	132572	High	LTE Band 66 (AWS)	20	24.28	0	QPSK	1	50	8 mm	Back	1:1	1.260	27.26	26.30	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.52	1	QPSK	50	25	8 mm	Back	1:1	1.030	27.37		
1770.00	132572	High	LTE Band 66 (AWS)	20	24.28	0	QPSK	1	50	6 mm	Front	1:1	1.530	26.41		
1770.00	132572	High	LTE Band 66 (AWS)	20	23.52	1	QPSK	50	25	6 mm	Front	1:1	1.260	26.50		
1770.00	132572	High	LTE Band 66 (AWS)	20	24.28	0	QPSK	1	50	11 mm	Bottom	1:1	1.570	26.30		
1770.00	132572	High	LTE Band 66 (AWS)	20	23.52	1	QPSK	50	25	11 mm	Bottom	1:1	1.300	26.36		
1770.00	132572	High	LTE Band 66 (AWS)	20	24.28	0	QPSK	1	50	0 mm	Right	1:1	0.411	32.12		
1770.00	132572	High	LTE Band 66 (AWS)	20	23.52	1	QPSK	50	25	0 mm	Right	1:1	0.341	32.17		
1770.00	132572	High	LTE Band 66 (AWS)	20	24.28	0	QPSK	1	50	0 mm	Left	1:1	0.556	30.81		
1770.00	132572	High	LTE Band 66 (AWS)	20	23.52	1	QPSK	50	25	0 mm	Left	1:1	0.477	30.71		
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.36	0	QPSK	1	99	8 mm	Back	1:1	0.873	28.93	27.63	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.48	1	QPSK	50	50	8 mm	Back	1:1	0.694	29.05		
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.36	0	QPSK	1	99	6 mm	Front	1:1	1.170	27.66		
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.48	1	QPSK	50	50	6 mm	Front	1:1	0.962	27.63		
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.36	0	QPSK	1	99	11 mm	Bottom	1:1	1.060	28.09		
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.48	1	QPSK	50	50	11 mm	Bottom	1:1	0.886	27.99		
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.36	0	QPSK	1	99	0 mm	Right	1:1	0.300	33.57		
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.48	1	QPSK	50	50	0 mm	Right	1:1	0.248	33.51		
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.36	0	QPSK	1	99	0 mm	Left	1:1	0.409	32.22		
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.48	1	QPSK	50	50	0 mm	Left	1:1	0.343	32.11		
2310.00	27710	Mid	LTE Band 30	10	22.18	0	QPSK	1	0	8 mm	Back	1:1	0.807	27.09	25.54	
2310.00	27710	Mid	LTE Band 30	10	21.26	1	QPSK	25	0	8 mm	Back	1:1	0.630	27.25		
2310.00	27710	Mid	LTE Band 30	10	22.18	0	QPSK	1	0	6 mm	Front	1:1	1.090	25.79		
2310.00	27710	Mid	LTE Band 30	10	21.26	1	QPSK	25	0	6 mm	Front	1:1	0.862	25.88		
2310.00	27710	Mid	LTE Band 30	10	22.18	0	QPSK	1	0	11 mm	Bottom	1:1	1.140	25.59		
2310.00	27710	Mid	LTE Band 30	10	21.26	1	QPSK	25	0	11 mm	Bottom	1:1	0.933	25.54		
2310.00	27710	Mid	LTE Band 30	10	22.18	0	QPSK	1	0	0 mm	Right	1:1	0.260	32.01		
2310.00	27710	Mid	LTE Band 30	10	21.26	1	QPSK	25	0	0 mm	Right	1:1	0.201	32.21		
2310.00	27710	Mid	LTE Band 30	10	22.18	0	QPSK	1	0	0 mm	Left	1:1	0.271	31.83		
2310.00	27710	Mid	LTE Band 30	10	21.26	1	QPSK	25	0	0 mm	Left	1:1	0.220	31.82		
2560.00	21350	High	LTE Band 7	20	23.35	0	QPSK	1	0	8 mm	Back	1:1	0.453	30.77	29.07	
2560.00	21350	High	LTE Band 7	20	22.52	1	QPSK	50	0	8 mm	Back	1:1	0.357	30.97		
2560.00	21350	High	LTE Band 7	20	23.35	0	QPSK	1	0	6 mm	Front	1:1	0.617	29.43		
2560.00	21350	High	LTE Band 7	20	22.52	1	QPSK	50	0	6 mm	Front	1:1	0.487	29.62		
2560.00	21350	High	LTE Band 7	20	23.35	0	QPSK	1	0	11 mm	Bottom	1:1	0.670	29.07		
2560.00	21350	High	LTE Band 7	20	22.52	1	QPSK	50	0	11 mm	Bottom	1:1	0.525	29.30		
2560.00	21350	High	LTE Band 7	20	23.35	0	QPSK	1	0	0 mm	Left	1:1	0.317	32.32		
2560.00	21350	High	LTE Band 7	20	22.52	1	QPSK	50	0	0 mm	Left	1:1	0.254	32.45		
2506.00	39750	Low	LTE Band 41	20	24.51	0	QPSK	1	0	8 mm	Back	1:1.58	0.372	30.80		28.91
2506.00	39750	Low	LTE Band 41	20	23.50	1	QPSK	50	0	8 mm	Back	1:1.58	0.300	30.72		
2506.00	39750	Low	LTE Band 41	20	24.51	0	QPSK	1	0	6 mm	Front	1:1.58	0.477	29.72		
2506.00	39750	Low	LTE Band 41	20	23.50	1	QPSK	50	0	6 mm	Front	1:1.58	0.383	29.66		
2506.00	39750	Low	LTE Band 41	20	24.51	0	QPSK	1	0	11 mm	Bottom	1:1.58	0.570	28.94		
2506.00	39750	Low	LTE Band 41	20	23.50	1	QPSK	50	0	11 mm	Bottom	1:1.58	0.455	28.91		
2506.00	39750	Low	LTE Band 41	20	24.51	0	QPSK	1	0	0 mm	Left	1:1.58	0.220	33.08		
2506.00	39750	Low	LTE Band 41	20	23.50	1	QPSK	50	0	0 mm	Left	1:1.58	0.177	33.01		

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



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Table A-16
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.	Mid											[W/kg]	[dBm]	[dBm]
680.50	133297	Mid	LTE Band 71	20	24.79	0	QPSK	1	50	0 mm	Back	1:1	0.743	30.06	30.06
680.50	133297	Mid	LTE Band 71	20	24.79	0	QPSK	1	50	0 mm	Front	1:1	0.741	30.07	
680.50	133297	Mid	LTE Band 71	20	24.79	0	QPSK	1	50	0 mm	Bottom	1:1	0.520	31.61	
680.50	133297	Mid	LTE Band 71	20	24.79	0	QPSK	1	50	0 mm	Right	1:1	0.102	38.68	
680.50	133297	Mid	LTE Band 71	20	24.79	0	QPSK	1	50	0 mm	Left	1:1	0.099	38.81	
707.50	23095	Mid	LTE Band 12	10	24.77	0	QPSK	1	49	0 mm	Back	1:1	0.758	29.95	29.95
707.50	23095	Mid	LTE Band 12	10	24.77	0	QPSK	1	49	0 mm	Front	1:1	0.699	30.30	
707.50	23095	Mid	LTE Band 12	10	24.77	0	QPSK	1	49	0 mm	Bottom	1:1	0.530	31.51	
707.50	23095	Mid	LTE Band 12	10	24.77	0	QPSK	1	49	0 mm	Right	1:1	0.112	38.26	
707.50	23095	Mid	LTE Band 12	10	24.77	0	QPSK	1	49	0 mm	Left	1:1	0.085	39.46	
782.00	23230	Mid	LTE Band 13	10	25.04	0	QPSK	1	0	0 mm	Back	1:1	1.258	28.02	28.02
782.00	23230	Mid	LTE Band 13	10	25.04	0	QPSK	1	0	0 mm	Front	1:1	1.154	28.40	
782.00	23230	Mid	LTE Band 13	10	25.04	0	QPSK	1	0	0 mm	Bottom	1:1	0.810	29.93	
782.00	23230	Mid	LTE Band 13	10	25.04	0	QPSK	1	0	0 mm	Right	1:1	0.321	33.95	
782.00	23230	Mid	LTE Band 13	10	25.04	0	QPSK	1	0	0 mm	Left	1:1	0.211	35.78	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.06	0	QPSK	1	0	0 mm	Back	1:1	1.809	26.47	26.47
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.06	0	QPSK	1	0	0 mm	Front	1:1	1.789	26.51	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.06	0	QPSK	1	0	0 mm	Bottom	1:1	0.980	29.13	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.06	0	QPSK	1	0	0 mm	Right	1:1	0.255	34.97	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.06	0	QPSK	1	0	0 mm	Left	1:1	0.189	36.27	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.28	0	QPSK	1	50	0 mm	Back	1:1	4.850	21.40	19.60
1770.00	132572	High	LTE Band 66 (AWS)	20	24.28	0	QPSK	1	50	0 mm	Front	1:1	4.760	21.48	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.28	0	QPSK	1	50	0 mm	Bottom	1:1	7.350	19.60	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.28	0	QPSK	1	50	0 mm	Right	1:1	0.411	32.12	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.28	0	QPSK	1	50	0 mm	Left	1:1	0.556	30.81	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.36	0	QPSK	1	99	0 mm	Back	1:1	4.010	22.31	21.04
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.36	0	QPSK	1	99	0 mm	Front	1:1	3.681	22.68	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.36	0	QPSK	1	99	0 mm	Bottom	1:1	5.366	21.04	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.36	0	QPSK	1	99	0 mm	Right	1:1	0.300	33.57	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.36	0	QPSK	1	99	0 mm	Left	1:1	0.409	32.22	
2310.00	27710	Mid	LTE Band 30	10	22.18	0	QPSK	1	0	0 mm	Back	1:1	2.670	21.89	21.66
2310.00	27710	Mid	LTE Band 30	10	22.18	0	QPSK	1	0	0 mm	Front	1:1	2.820	21.66	
2310.00	27710	Mid	LTE Band 30	10	22.18	0	QPSK	1	0	0 mm	Bottom	1:1	2.750	21.77	
2310.00	27710	Mid	LTE Band 30	10	22.18	0	QPSK	1	0	0 mm	Right	1:1	0.260	32.01	
2310.00	27710	Mid	LTE Band 30	10	22.18	0	QPSK	1	0	0 mm	Left	1:1	0.271	31.83	
2560.00	21350	High	LTE Band 7	20	23.35	0	QPSK	1	0	0 mm	Back	1:1	1.560	25.40	25.02
2560.00	21350	High	LTE Band 7	20	23.35	0	QPSK	1	0	0 mm	Front	1:1	1.700	25.02	
2560.00	21350	High	LTE Band 7	20	23.35	0	QPSK	1	0	0 mm	Bottom	1:1	1.630	25.21	
2560.00	21350	High	LTE Band 7	20	23.35	0	QPSK	1	0	0 mm	Left	1:1	0.317	32.32	
2506.00	39750	Low	LTE Band 41	20	24.51	0	QPSK	1	0	0 mm	Back	1:1.58	1.350	25.20	25.20
2506.00	39750	Low	LTE Band 41	20	24.51	0	QPSK	1	0	0 mm	Front	1:1.58	1.260	25.50	
2506.00	39750	Low	LTE Band 41	20	24.51	0	QPSK	1	0	0 mm	Bottom	1:1.58	1.340	25.23	
2506.00	39750	Low	LTE Band 41	20	24.51	0	QPSK	1	0	0 mm	Right	1:1.58	0.278	32.06	
2506.00	39750	Low	LTE Band 41	20	24.51	0	QPSK	1	0	0 mm	Left	1:1.58	0.220	33.08	

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



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Table A-17
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	25.12	0	DFT-s-OFDM QPSK	1	53	8 mm	Back	1:1	0.158	37.11	37.11
680.50	136100	Mid	NR Band n71	20	25.12	0	DFT-s-OFDM QPSK	1	53	6 mm	Front	1:1	0.145	37.49	
680.50	136100	Mid	NR Band n71	20	25.12	0	DFT-s-OFDM QPSK	1	53	11 mm	Bottom	1:1	0.111	38.65	
680.50	136100	Mid	NR Band n71	20	25.12	0	DFT-s-OFDM QPSK	1	53	0 mm	Right	1:1	0.087	39.70	
680.50	136100	Mid	NR Band n71	20	25.12	0	DFT-s-OFDM QPSK	1	53	0 mm	Left	1:1	0.081	40.01	
1745.00	349000	Mid	NR Band n66	20	24.12	0	DFT-s-OFDM QPSK	1	53	8 mm	Back	1:1	1.180	27.38	26.64
1745.00	349000	Mid	NR Band n66	20	23.97	0	DFT-s-OFDM QPSK	50	28	8 mm	Back	1:1	1.180	27.23	
1745.00	349000	Mid	NR Band n66	20	24.12	0	DFT-s-OFDM QPSK	1	53	6 mm	Front	1:1	1.400	26.64	
1745.00	349000	Mid	NR Band n66	20	23.97	0	DFT-s-OFDM QPSK	50	28	6 mm	Front	1:1	1.350	26.65	
1745.00	349000	Mid	NR Band n66	20	24.12	0	DFT-s-OFDM QPSK	1	53	11 mm	Bottom	1:1	1.260	27.10	
1745.00	349000	Mid	NR Band n66	20	23.97	0	DFT-s-OFDM QPSK	50	28	11 mm	Bottom	1:1	1.220	27.09	
1745.00	349000	Mid	NR Band n66	20	24.12	0	DFT-s-OFDM QPSK	1	53	0 mm	Right	1:1	0.376	32.35	
1745.00	349000	Mid	NR Band n66	20	23.97	0	DFT-s-OFDM QPSK	50	28	0 mm	Right	1:1	0.387	32.07	
1745.00	349000	Mid	NR Band n66	20	24.12	0	DFT-s-OFDM QPSK	1	53	0 mm	Left	1:1	0.468	31.40	
1745.00	349000	Mid	NR Band n66	20	23.97	0	DFT-s-OFDM QPSK	50	28	0 mm	Left	1:1	0.485	31.09	
2592.99	518598	Mid	NR Band n41	100	23.66	0	DFT-s-OFDM QPSK	1	1	0 mm	Back	1:4	0.396	25.64	23.26
2592.99	518598	Mid	NR Band n41	100	23.66	0	DFT-s-OFDM QPSK	1	1	0 mm	Front	1:4	0.279	27.16	
2592.99	518598	Mid	NR Band n41	100	23.66	0	DFT-s-OFDM QPSK	1	1	0 mm	Top	1:4	0.686	23.26	
2592.99	518598	Mid	NR Band n41	100	23.66	0	DFT-s-OFDM QPSK	1	1	0 mm	Left	1:4	0.133	27.23	





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Table A-18
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	25.12	0	DFT-s-OFDM QPSK	1	53	0 mm	Back	1:1	0.764	30.27	30.27
680.50	136100	Mid	NR Band n71	20	25.12	0	DFT-s-OFDM QPSK	1	53	0 mm	Front	1:1	0.645	31.00	
680.50	136100	Mid	NR Band n71	20	25.12	0	DFT-s-OFDM QPSK	1	53	0 mm	Bottom	1:1	0.420	32.87	
680.50	136100	Mid	NR Band n71	20	25.12	0	DFT-s-OFDM QPSK	1	53	0 mm	Right	1:1	0.099	39.14	
680.50	136100	Mid	NR Band n71	20	25.12	0	DFT-s-OFDM QPSK	1	53	0 mm	Left	1:1	0.085	39.81	
1745.00	349000	Mid	NR Band n66	20	24.12	0	DFT-s-OFDM QPSK	1	53	0 mm	Back	1:1	2.320	24.44	20.66
1745.00	349000	Mid	NR Band n66	20	24.12	0	DFT-s-OFDM QPSK	1	53	0 mm	Front	1:1	2.051	24.98	
1745.00	349000	Mid	NR Band n66	20	24.12	0	DFT-s-OFDM QPSK	1	53	0 mm	Bottom	1:1	5.540	20.66	
1745.00	349000	Mid	NR Band n66	20	24.12	0	DFT-s-OFDM QPSK	1	53	0 mm	Right	1:1	0.376	32.35	
1745.00	349000	Mid	NR Band n66	20	24.12	0	DFT-s-OFDM QPSK	1	53	0 mm	Left	1:1	0.468	31.40	
2592.99	518598	Mid	NR Band n41	100	23.66	0	DFT-s-OFDM QPSK	1	1	0 mm	Back	1:4	0.396	25.64	23.26
2592.99	518598	Mid	NR Band n41	100	23.66	0	DFT-s-OFDM QPSK	1	1	0 mm	Front	1:4	0.279	27.16	
2592.99	518598	Mid	NR Band n41	100	23.66	0	DFT-s-OFDM QPSK	1	1	0 mm	Top	1:4	0.686	23.26	
2592.99	518598	Mid	NR Band n41	100	23.66	0	DFT-s-OFDM QPSK	1	1	0 mm	Left	1:4	0.133	30.38	

FCC ID: A3LSMG986W IC ID: 649E-SMG986W	 PART 0 SAR CHARACTERIZATION REPORT 	Approved by: Quality Manager
Test Dates: 11/11/19 – 01/27/20	DUT Type/Apparatus/Device: Portable Handset	APPENDIX A: Page 19 of 19