



PART 0 SAR CHAR REPORT

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APPLICANT: SAMSUNG ELECTRONICS CO., LTD

Report Type: Part 0 SAR Characterization
DUT Type: Portable Handset
Model(s): SM-G986DS, SC-52A, SCG02

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
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
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 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2472 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

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 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 WWAN is in compliance with FCC requirements. This Part 0 report shows SAR characterization of WWAN radios for 2G/3G/4G. Characterization is achieved by determining P_{Limit} for 2G/3G/4G that corresponds 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).

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1.3 Nomenclature for Part 0 Report

Technology	Term	Description
2G/3G/4G	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

1.4 Bibliography

Report Type	Report Serial Number
FCC SAR Evaluation Report (Part 1)	1M2001240012-01.A3L
RF Exposure Part 2 Test Report	1M2001240012-20.A3L

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2 SAR AND POWER DENSITY MEASUREMENTS

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.

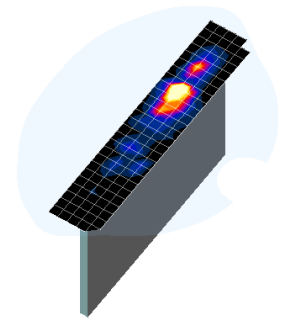


Figure 2-1
Sample SAR Area Scan

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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		
				$\Delta z_{\text{zoom}}(n)$	$\Delta z_{\text{zoom}}(1)^*$	
≤2 GHz	≤15	≤8	≤5	≤4	$\leq 1.5^* \Delta z_{\text{zoom}}(n-1)$	≥30
2-3 GHz	≤12	≤5	≤5	≤4	$\leq 1.5^* \Delta z_{\text{zoom}}(n-1)$	≥30
3-4 GHz	≤12	≤5	≤4	≤3	$\leq 1.5^* \Delta z_{\text{zoom}}(n-1)$	≥28
4-5 GHz	≤10	≤4	≤3	≤2.5	$\leq 1.5^* \Delta z_{\text{zoom}}(n-1)$	≥25
5-6 GHz	≤10	≤4	≤2	≤2	$\leq 1.5^* \Delta z_{\text{zoom}}(n-1)$	≥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)	- 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:

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

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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	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	31.2	29.6	32.3	29.6	29.6
GSM/GPRS/EDGE 1900 MHz	26.1	18.8	34.0	18.8	18.8
UMTS B5	30.5	26.8	31.4	26.8	26.8
LTE FDD B12	31.3	29.2	33.6	29.2	29.2
LTE FDD B13	30.4	27.4	31.7	27.4	27.4
LTE FDD B5	31.0	27.0	31.6	27.0	27.0
LTE FDD B4	25.0	19.5	31.6	19.5	19.5
LTE TDD B41	27.3	21.5	33.1	19.0	21.5

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=3 is set to be less or equal to P_{limit} for DSI=1.
- 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 EQUIPMENT LIST

For SAR measurements

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	8594A	(9kHz-2.5GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A000187
Agilent	E4432B	ESG-D Series Signal Generator	7/14/2019	Annual	7/14/2020	US40053896
Agilent	N9020A	MVA Signal Analyzer	4/20/2019	Annual	4/20/2020	US46470561
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Agilent	E5513C	Wireless Communications Test Set	6/25/2019	Annual	6/25/2020	MY50287125
Agilent	E5151C	Wireless Communications Test Set	5/22/2018	Biennial	5/22/2020	GB43193663
Agilent	N5182A	MVG Vector Signal Generator	6/27/2019	Annual	6/27/2020	US46248056
Agilent	8753ES	S-Parameter Network Analyzer	12/31/2019	Annual	12/31/2020	US39170122
Agilent	N5182A	MVG Vector Signal Generator	7/10/2019	Annual	7/10/2020	MY47420800
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	MY40900700
Agilent	8753ES	S-Parameter Network Analyzer	1/26/2020	Annual	1/16/2021	US39170118
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
Amplifier Research	1551GG	Amplifier	N/A	N/A	N/A	433972
Amplifier Research	1551GG	Amplifier	N/A	N/A	N/A	433974
Anritsu	MA2409A	Power Meter	12/17/2019	Annual	12/17/2020	940801
Anritsu	MA2410A	USB Power Sensor	5/6/2019	Annual	5/6/2020	1231538
Anritsu	MA2410A	USB Power Sensor	5/22/2019	Annual	5/22/2020	1231535
Anritsu	MA2410A	USB Power Sensor	6/21/2019	Annual	6/21/2020	1244515
Anritsu	ML2496A	Power Meter	12/17/2019	Annual	12/17/2020	1138001
Anritsu	MA2411B	Pulse Power Sensor	6/11/2019	Annual	6/11/2020	1207364
Anritsu	MA2411B	Pulse Power Sensor	12/4/2019	Annual	12/4/2020	1136966
Anritsu	MT8820C	Radio Communication Analyzer	7/25/2019	Annual	7/25/2020	6201240328
Anritsu	MT8820C	Radio Communication Analyzer	3/29/2019	Annual	3/29/2020	6201300731
Anritsu	MT8821C	Radio Communication Analyzer	8/16/2019	Annual	8/16/2020	6201144418
Anritsu	MT8821C	Radio Communication Analyzer	3/18/2019	Annual	3/18/2020	6201144419
Anritsu	MT8862A	Wireless Connectivity Test Set	8/8/2019	Annual	8/8/2020	6201782395
COMTECH	AR85729-S7598	Solid State Amplifier	N/A	N/A	N/A	MY40406-1002
COMTECH	AR85729-S	Solid State Amplifier	N/A	N/A	N/A	MY55408-009
Control Company	4352	Ultra Long Stem Thermometer	8/2/2018	Biennial	8/2/2020	181292054
Control Company	4352	Ultra Long Stem Thermometer	8/2/2018	Biennial	8/2/2020	181292061
Control Company	4040	Therm / Clock / Humidity Monitor	10/9/2018	Biennial	10/9/2020	181647811
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	181647812
Control Company	4352	Long Stem Thermometer	6/26/2019	Biennial	6/26/2021	192282745
Control Company	4352	Long Stem Thermometer	6/26/2019	Biennial	6/26/2021	192282753
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY51180215
Keysight Technologies	N6705B	DC Power Analyzer	4/27/2019	Biennial	4/27/2021	MY53004059
MLL	BW-N20W5+	6dB Attenuator	CBT	N/A	CBT	1319
Mini-Circuits	NLP-1600+	Low Pass Filter	CBT	N/A	CBT	8897690929
Mini-Circuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	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	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	2226
Mitsutoyo	CO-FC32	Digital Caliper	4/18/2018	Biennial	4/18/2020	13264055
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	130
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
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
Pasternack	NC-100	Torque Wrench	11/7/2017	Biennial	11/7/2019	N/A
Rohde & Schwarz	CMW500	Radio Communication Tester	8/26/2019	Annual	8/26/2020	100976
Rohde & Schwarz	CMW500	Radio Communication Tester	6/26/2019	Annual	6/26/2020	112347
Rohde & Schwarz	CML200	Base Station Simulator	6/3/2019	Annual	6/3/2020	109892
SPEAG	EX3D4	SAR Probe	7/16/2019	Annual	7/16/2020	7448
SPEAG	EX3D4	SAR Probe	12/11/2019	Annual	12/11/2020	7570
SPEAG	EX3D4	SAR Probe	1/21/2020	Annual	1/21/2021	3589
SPEAG	EX3D4	SAR Probe	5/16/2019	Annual	5/16/2020	7406
SPEAG	EX3D4	SAR Probe	9/19/2019	Annual	9/19/2020	7551
SPEAG	EX3D4	SAR Probe	7/15/2019	Annual	7/15/2020	7547
SPEAG	EX3D4	SAR Probe	6/19/2019	Annual	6/19/2020	7469
SPEAG	EX3D4	SAR Probe	4/24/2019	Annual	4/24/2020	7507
SPEAG	EX3D4	SAR Probe	12/11/2019	Annual	12/11/2020	7571
SPEAG	DAE4	Das Data Acquisition Electronics	7/11/2019	Annual	7/11/2020	1322
SPEAG	DAE4	Das Data Acquisition Electronics	12/18/2019	Annual	12/18/2020	859
SPEAG	DAE4	Das Data Acquisition Electronics	1/13/2020	Annual	1/13/2021	1358
SPEAG	DAE4	Das Data Acquisition Electronics	5/8/2019	Annual	5/8/2020	729
SPEAG	DAE4	Das Data Acquisition Electronics	9/17/2019	Annual	9/17/2020	1333
SPEAG	DAE4	Das Data Acquisition Electronics	7/11/2019	Annual	7/11/2020	1323
SPEAG	DAE4	Das Data Acquisition Electronics	6/20/2019	Annual	6/20/2020	1334
SPEAG	DAE4	Das Data Acquisition Electronics	4/18/2019	Annual	4/18/2020	1407
SPEAG	DAE4	Das Data Acquisition Electronics	12/5/2019	Annual	12/5/2020	1333
SPEAG	D750V3	750 MHz SAR Dipole	1/25/2018	Triennial	1/25/2021	1020
SPEAG	D750V3	750 MHz SAR Dipole	3/18/2019	Annual	3/18/2020	1054
SPEAG	D835V2	835 MHz SAR Dipole	10/19/2018	Biennial	10/19/2020	46133
SPEAG	D1760V2	1760 MHz SAR Dipole	5/23/2018	Biennial	5/23/2020	1008
SPEAG	D1900V2	1900 MHz SAR Dipole	10/23/2018	Biennial	10/23/2020	50080
SPEAG	D2450V2	2450 MHz SAR Dipole	9/11/2017	Triennial	9/11/2020	797
SPEAG	D360V2	360 MHz SAR Dipole	6/14/2019	Annual	6/14/2020	1054
SPEAG	D59HV2	5 GHz SAR Dipole	1/16/2018	Triennial	1/16/2021	1057
SPEAG	D750V3	750 MHz SAR Dipole	10/19/2018	Biennial	10/19/2020	1161
SPEAG	D835V2	835 MHz SAR Dipole	1/13/2020	Annual	1/13/2021	46132
SPEAG	D835V2	835 MHz SAR Dipole	3/13/2019	Annual	3/13/2020	40547
SPEAG	D1760V2	1760 MHz SAR Dipole	5/19/2019	Annual	5/19/2020	1148
SPEAG	D1760V2	1760 MHz SAR Dipole	10/22/2018	Biennial	10/22/2020	1150
SPEAG	D1900V2	1900 MHz SAR Dipole	2/21/2019	Biennial	2/21/2021	56148
SPEAG	D2450V2	2450 MHz SAR Dipole	8/14/2019	Annual	8/14/2020	719
SPEAG	D2600V2	2600 MHz SAR Dipole	4/11/2018	Biennial	4/11/2020	1004
SPEAG	D59HV2	5 GHz SAR Dipole	8/10/2018	Biennial	8/10/2020	1227
SPEAG	D190V2	1900 MHz SAR Dipole	10/23/2018	Biennial	10/23/2020	56149
SPEAG	DAX-12	Dielectric Assessment Kit (10MHz - 3GHz)	11/23/2019	Annual	11/23/2020	1121

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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5 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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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	32.56	Right	Cheek	1:8.3	0.129	32.25	32.25
836.60	190	GSM 850	GSM	32.56	Right	Tilt	1:8.3	0.063	35.37	
836.60	190	GSM 850	GSM	32.56	Left	Cheek	1:8.3	0.096	33.54	
836.60	190	GSM 850	GSM	32.56	Left	Tilt	1:8.3	0.056	35.88	
1880.00	661	GSM 1900	GSM	29.40	Right	Cheek	1:8.3	0.036	34.64	33.97
1880.00	661	GSM 1900	GSM	29.40	Right	Tilt	1:8.3	0.036	34.64	
1880.00	661	GSM 1900	GSM	29.40	Left	Cheek	1:8.3	0.042	33.97	
1880.00	661	GSM 1900	GSM	29.40	Left	Tilt	1:8.3	0.034	34.88	
836.60	4183	UMTS 850	RMC	23.31	Right	Cheek	1:1	0.156	31.38	31.38
836.60	4183	UMTS 850	RMC	23.31	Right	Tilt	1:1	0.070	34.86	
836.60	4183	UMTS 850	RMC	23.31	Left	Cheek	1:1	0.111	32.86	
836.60	4183	UMTS 850	RMC	23.31	Left	Tilt	1:1	0.065	35.18	

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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
MHz	Ch.												(W/kg)	[dBm]	[dBm]
707.50	23095	Mid	LTE Band 12	10	23.41	0	Right	Cheek	QPSK	1	0	1:1	0.087	34.01	33.59
707.50	23095	Mid	LTE Band 12	10	22.49	1	Right	Cheek	QPSK	25	12	1:1	0.068	34.16	
707.50	23095	Mid	LTE Band 12	10	23.41	0	Right	Tilt	QPSK	1	0	1:1	0.037	37.73	
707.50	23095	Mid	LTE Band 12	10	22.49	1	Right	Tilt	QPSK	25	12	1:1	0.030	37.72	
707.50	23095	Mid	LTE Band 12	10	23.41	0	Left	Cheek	QPSK	1	0	1:1	0.096	33.59	
707.50	23095	Mid	LTE Band 12	10	22.49	1	Left	Cheek	QPSK	25	12	1:1	0.072	33.92	
707.50	23095	Mid	LTE Band 12	10	23.41	0	Left	Tilt	QPSK	1	0	1:1	0.044	36.98	
707.50	23095	Mid	LTE Band 12	10	22.49	1	Left	Tilt	QPSK	25	12	1:1	0.041	36.36	
782.00	23230	Mid	LTE Band 13	10	23.23	0	Right	Cheek	QPSK	1	0	1:1	0.144	31.65	31.65
782.00	23230	Mid	LTE Band 13	10	22.32	1	Right	Cheek	QPSK	25	12	1:1	0.102	32.23	
782.00	23230	Mid	LTE Band 13	10	23.23	0	Right	Tilt	QPSK	1	0	1:1	0.063	35.24	
782.00	23230	Mid	LTE Band 13	10	22.32	1	Right	Tilt	QPSK	25	12	1:1	0.044	35.89	
782.00	23230	Mid	LTE Band 13	10	23.23	0	Left	Cheek	QPSK	1	0	1:1	0.090	33.69	
782.00	23230	Mid	LTE Band 13	10	22.32	1	Left	Cheek	QPSK	25	12	1:1	0.080	33.29	
782.00	23230	Mid	LTE Band 13	10	23.23	0	Left	Tilt	QPSK	1	0	1:1	0.054	35.91	
782.00	23230	Mid	LTE Band 13	10	22.32	1	Left	Tilt	QPSK	25	12	1:1	0.044	35.89	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.43	0	Right	Cheek	QPSK	1	0	1:1	0.154	31.55	31.55
836.50	20525	Mid	LTE Band 5 (Cell)	10	22.38	1	Right	Cheek	QPSK	25	12	1:1	0.118	31.66	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.43	0	Right	Tilt	QPSK	1	0	1:1	0.074	34.74	
836.50	20525	Mid	LTE Band 5 (Cell)	10	22.38	1	Right	Tilt	QPSK	25	12	1:1	0.056	34.90	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.43	0	Left	Cheek	QPSK	1	0	1:1	0.097	33.56	
836.50	20525	Mid	LTE Band 5 (Cell)	10	22.38	1	Left	Cheek	QPSK	25	12	1:1	0.081	33.30	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.43	0	Left	Tilt	QPSK	1	0	1:1	0.064	35.37	
836.50	20525	Mid	LTE Band 5 (Cell)	10	22.38	1	Left	Tilt	QPSK	25	12	1:1	0.051	35.30	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.90	0	Right	Cheek	QPSK	1	50	1:1	0.073	34.27	31.60
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.02	1	Right	Cheek	QPSK	50	25	1:1	0.055	34.62	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.90	0	Right	Tilt	QPSK	1	50	1:1	0.065	34.77	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.02	1	Right	Tilt	QPSK	50	25	1:1	0.053	34.78	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.90	0	Left	Cheek	QPSK	1	50	1:1	0.135	31.60	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.02	1	Left	Cheek	QPSK	50	25	1:1	0.108	31.69	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.90	0	Left	Tilt	QPSK	1	50	1:1	0.063	34.91	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.02	1	Left	Tilt	QPSK	50	25	1:1	0.049	35.12	
2593.00	40620	Mid	LTE Band 41	20	23.86	0	Right	Cheek	QPSK	1	50	1:1.58	0.042	35.64	33.12
2593.00	40620	Mid	LTE Band 41	20	22.97	1	Right	Cheek	QPSK	50	25	1:1.58	0.033	35.80	
2593.00	40620	Mid	LTE Band 41	20	23.86	0	Right	Tilt	QPSK	1	50	1:1.58	0.046	35.25	
2593.00	40620	Mid	LTE Band 41	20	22.97	1	Right	Tilt	QPSK	50	25	1:1.58	0.038	35.19	
2593.00	40620	Mid	LTE Band 41	20	23.86	0	Left	Cheek	QPSK	1	50	1:1.58	0.075	33.12	
2593.00	40620	Mid	LTE Band 41	20	22.97	1	Left	Cheek	QPSK	50	25	1:1.58	0.060	33.20	
2593.00	40620	Mid	LTE Band 41	20	23.86	0	Left	Tilt	QPSK	1	50	1:1.58	0.026	37.72	
2593.00	40620	Mid	LTE Band 41	20	22.97	1	Left	Tilt	QPSK	50	25	1:1.58	0.019	38.20	

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

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Table A-3
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	32.56	15 mm	Back	1:8.3	0.164	31.21	31.21
1880.00	661	GSM 1900	GSM	29.40	15 mm	Back	1:8.3	0.258	26.08	26.08
836.60	4183	UMTS 850	RMC	23.31	15 mm	Back	1:1	0.193	30.45	30.45

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

Table A-4
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]
707.50	23095	Mid	LTE Band 12	10	23.41	0	QPSK	1	0	15 mm	Back	1:1	0.160	31.37	31.32
707.50	23095	Mid	LTE Band 12	10	22.49	1	QPSK	25	12	15 mm	Back	1:1	0.131	31.32	
782.00	23230	Mid	LTE Band 13	10	23.23	0	QPSK	1	0	15 mm	Back	1:1	0.191	30.42	30.39
782.00	23230	Mid	LTE Band 13	10	22.32	1	QPSK	25	12	15 mm	Back	1:1	0.156	30.39	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.43	0	QPSK	1	0	15 mm	Back	1:1	0.167	31.20	30.98
836.50	20525	Mid	LTE Band 5 (Cell)	10	22.38	1	QPSK	25	12	15 mm	Back	1:1	0.138	30.98	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.90	0	QPSK	1	50	15 mm	Back	1:1	0.616	25.00	24.97
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.02	1	QPSK	50	25	15 mm	Back	1:1	0.507	24.97	
2593.00	40620	Mid	LTE Band 41	20	23.86	0	QPSK	1	50	15 mm	Back	1:1.58	0.285	27.33	27.33
2593.00	40620	Mid	LTE Band 41	20	22.97	1	QPSK	50	25	15 mm	Back	1:1.58	0.232	27.33	

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

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Table A-5
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	29.30	10 mm	Back	3	1:2.76	0.301	30.08	30.08
836.60	190	GSM 850	GPRS	29.30	10 mm	Front	3	1:2.76	0.207	31.71	
836.60	190	GSM 850	GPRS	29.30	10 mm	Bottom	3	1:2.76	0.171	32.54	
836.60	190	GSM 850	GPRS	29.30	10 mm	Right	3	1:2.76	0.183	32.25	
836.60	190	GSM 850	GPRS	29.30	10 mm	Left	3	1:2.76	0.070	36.42	
1880.00	661	GSM 1900	GPRS	25.05	10 mm	Back	3	1:2.76	0.723	22.03	20.37
1880.00	661	GSM 1900	GPRS	25.05	10 mm	Front	3	1:2.76	0.666	22.39	
1880.00	661	GSM 1900	GPRS	25.05	10 mm	Bottom	3	1:2.76	1.060	20.37	
1880.00	661	GSM 1900	GPRS	25.05	10 mm	Right	3	1:2.76	0.086	31.28	
1880.00	661	GSM 1900	GPRS	25.05	10 mm	Left	3	1:2.76	0.090	31.08	
836.60	4183	UMTS 850	RMC	23.31	10 mm	Back	N/A	1:1	0.395	27.34	27.34
836.60	4183	UMTS 850	RMC	23.31	10 mm	Front	N/A	1:1	0.293	28.64	
836.60	4183	UMTS 850	RMC	23.31	10 mm	Bottom	N/A	1:1	0.220	29.89	
836.60	4183	UMTS 850	RMC	23.31	10 mm	Right	N/A	1:1	0.208	30.13	
836.60	4183	UMTS 850	RMC	23.31	10 mm	Left	N/A	1:1	0.076	34.50	

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

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Table A-6
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
MHz	Ch.												(W/kg)	[dBm]
707.50	23095	Mid	LTE Band 12	10	23.41	0	QPSK	1	0	10 mm	Back	1:1	0.200	30.40
707.50	23095	Mid	LTE Band 12	10	22.49	1	QPSK	25	12	10 mm	Back	1:1	0.180	29.94
707.50	23095	Mid	LTE Band 12	10	23.41	0	QPSK	1	0	10 mm	Front	1:1	0.185	30.74
707.50	23095	Mid	LTE Band 12	10	22.49	1	QPSK	25	12	10 mm	Front	1:1	0.150	30.73
707.50	23095	Mid	LTE Band 12	10	23.41	0	QPSK	1	0	10 mm	Bottom	1:1	0.115	32.80
707.50	23095	Mid	LTE Band 12	10	22.49	1	QPSK	25	12	10 mm	Bottom	1:1	0.097	32.62
707.50	23095	Mid	LTE Band 12	10	23.41	0	QPSK	1	0	10 mm	Right	1:1	0.199	30.42
707.50	23095	Mid	LTE Band 12	10	22.49	1	QPSK	25	12	10 mm	Right	1:1	0.162	30.39
707.50	23095	Mid	LTE Band 12	10	23.41	0	QPSK	1	0	10 mm	Left	1:1	0.120	32.62
707.50	23095	Mid	LTE Band 12	10	22.49	1	QPSK	25	12	10 mm	Left	1:1	0.096	32.67
782.00	23230	Mid	LTE Band 13	10	23.23	0	QPSK	1	0	10 mm	Back	1:1	0.298	28.49
782.00	23230	Mid	LTE Band 13	10	22.32	1	QPSK	25	12	10 mm	Back	1:1	0.245	28.43
782.00	23230	Mid	LTE Band 13	10	23.23	0	QPSK	1	0	10 mm	Front	1:1	0.225	29.71
782.00	23230	Mid	LTE Band 13	10	22.32	1	QPSK	25	12	10 mm	Front	1:1	0.184	29.67
782.00	23230	Mid	LTE Band 13	10	23.23	0	QPSK	1	0	10 mm	Bottom	1:1	0.177	30.75
782.00	23230	Mid	LTE Band 13	10	22.32	1	QPSK	25	12	10 mm	Bottom	1:1	0.146	30.68
782.00	23230	Mid	LTE Band 13	10	23.23	0	QPSK	1	0	10 mm	Right	1:1	0.217	29.87
782.00	23230	Mid	LTE Band 13	10	22.32	1	QPSK	25	12	10 mm	Right	1:1	0.163	30.20
782.00	23230	Mid	LTE Band 13	10	23.23	0	QPSK	1	0	10 mm	Left	1:1	0.103	33.10
782.00	23230	Mid	LTE Band 13	10	22.32	1	QPSK	25	12	10 mm	Left	1:1	0.083	33.13
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.43	0	QPSK	1	0	10 mm	Back	1:1	0.364	27.82
836.50	20525	Mid	LTE Band 5 (Cell)	10	22.38	1	QPSK	25	12	10 mm	Back	1:1	0.304	27.55
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.43	0	QPSK	1	0	10 mm	Front	1:1	0.250	29.45
836.50	20525	Mid	LTE Band 5 (Cell)	10	22.38	1	QPSK	25	12	10 mm	Front	1:1	0.210	29.16
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.43	0	QPSK	1	0	10 mm	Bottom	1:1	0.214	30.13
836.50	20525	Mid	LTE Band 5 (Cell)	10	22.38	1	QPSK	25	12	10 mm	Bottom	1:1	0.179	29.85
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.43	0	QPSK	1	0	10 mm	Right	1:1	0.192	30.60
836.50	20525	Mid	LTE Band 5 (Cell)	10	22.38	1	QPSK	25	12	10 mm	Right	1:1	0.145	30.77
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.43	0	QPSK	1	0	10 mm	Left	1:1	0.087	34.03
836.50	20525	Mid	LTE Band 5 (Cell)	10	22.38	1	QPSK	25	12	10 mm	Left	1:1	0.058	34.75
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.90	0	QPSK	1	50	10 mm	Back	1:1	1.210	22.07
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.90	0	QPSK	1	50	10 mm	Front	1:1	1.030	22.77
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.90	0	QPSK	1	50	10 mm	Bottom	1:1	1.940	20.02
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.90	0	QPSK	1	50	10 mm	Right	1:1	0.149	31.17
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.90	0	QPSK	1	50	10 mm	Left	1:1	0.149	31.17
2593.00	40620	Mid	LTE Band 41	20	23.86	0	QPSK	1	50	10 mm	Back	1:1.58	0.376	26.12
2593.00	40620	Mid	LTE Band 41	20	23.86	0	QPSK	1	50	10 mm	Front	1:1.58	0.430	25.54
2593.00	40620	Mid	LTE Band 41	20	23.86	0	QPSK	1	50	10 mm	Bottom	1:1.58	1.300	20.73
2593.00	40620	Mid	LTE Band 41	20	23.86	0	QPSK	1	50	10 mm	Left	1:1.58	0.152	30.06

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 – 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	29.30	8 mm	Back	3	1:2.76	0.241	35.03	34.50
836.60	190	GSM 850	GPRS	29.30	6 mm	Front	3	1:2.76	0.272	34.50	
836.60	190	GSM 850	GPRS	29.30	11 mm	Bottom	3	1:2.76	0.078	39.93	
836.60	190	GSM 850	GPRS	29.30	0 mm	Right	3	1:2.76	0.148	37.15	
836.60	190	GSM 850	GPRS	29.30	0 mm	Left	3	1:2.76	0.100	38.85	
1880.00	661	GSM 1900	GPRS	25.05	8 mm	Back	3	1:2.76	0.456	28.01	26.97
1880.00	661	GSM 1900	GPRS	25.05	6 mm	Front	3	1:2.76	0.580	26.97	
1880.00	661	GSM 1900	GPRS	25.05	11 mm	Bottom	3	1:2.76	0.489	27.71	
1880.00	661	GSM 1900	GPRS	25.05	0 mm	Right	3	1:2.76	0.153	32.75	
1880.00	661	GSM 1900	GPRS	25.05	0 mm	Left	3	1:2.76	0.156	32.67	
836.60	4183	UMTS 850	RMC	23.31	8 mm	Back	N/A	1:1	0.298	32.55	32.06
836.60	4183	UMTS 850	RMC	23.31	6 mm	Front	N/A	1:1	0.333	32.06	
836.60	4183	UMTS 850	RMC	23.31	11 mm	Bottom	N/A	1:1	0.094	37.56	
836.60	4183	UMTS 850	RMC	23.31	0 mm	Right	N/A	1:1	0.173	34.91	
836.60	4183	UMTS 850	RMC	23.31	0 mm	Left	N/A	1:1	0.123	36.39	

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

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Table A-8
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	29.30	0 mm	Back	3	1:2.76	0.827	29.67	29.56
836.60	190	GSM 850	GPRS	29.30	0 mm	Front	3	1:2.76	0.850	29.56	
836.60	190	GSM 850	GPRS	29.30	0 mm	Bottom	3	1:2.76	0.289	34.24	
836.60	190	GSM 850	GPRS	29.30	0 mm	Right	3	1:2.76	0.148	37.15	
836.60	190	GSM 850	GPRS	29.30	0 mm	Left	3	1:2.76	0.100	38.85	
1880.00	661	GSM 1900	GPRS	25.05	0 mm	Back	3	1:2.76	2.020	21.55	20.01
1880.00	661	GSM 1900	GPRS	25.05	0 mm	Front	3	1:2.76	2.140	21.30	
1880.00	661	GSM 1900	GPRS	25.05	0 mm	Bottom	3	1:2.76	2.880	20.01	
1880.00	661	GSM 1900	GPRS	25.05	0 mm	Right	3	1:2.76	0.153	32.75	
1880.00	661	GSM 1900	GPRS	25.05	0 mm	Left	3	1:2.76	0.156	32.67	
836.60	4183	UMTS 850	RMC	23.31	0 mm	Back	N/A	1:1	1.050	27.08	26.84
836.60	4183	UMTS 850	RMC	23.31	0 mm	Front	N/A	1:1	1.110	26.84	
836.60	4183	UMTS 850	RMC	23.31	0 mm	Bottom	N/A	1:1	0.567	29.75	
836.60	4183	UMTS 850	RMC	23.31	0 mm	Right	N/A	1:1	0.173	34.91	
836.60	4183	UMTS 850	RMC	23.31	0 mm	Left	N/A	1:1	0.123	36.39	

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

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Table A-9
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]
707.50	23095	Mid	LTE Band 12	10	23.41	0	QPSK	1	0	8 mm	Back	1:1	0.168	35.14	35.14
707.50	23095	Mid	LTE Band 12	10	23.41	0	QPSK	1	0	6 mm	Front	1:1	0.166	35.19	
707.50	23095	Mid	LTE Band 12	10	23.41	0	QPSK	1	0	11 mm	Bottom	1:1	0.049	40.49	
707.50	23095	Mid	LTE Band 12	10	23.41	0	QPSK	1	0	0 mm	Right	1:1	0.122	36.53	
707.50	23095	Mid	LTE Band 12	10	23.41	0	QPSK	1	0	0 mm	Left	1:1	0.075	38.64	
782.00	23230	Mid	LTE Band 13	10	23.23	0	QPSK	1	0	8 mm	Back	1:1	0.166	35.01	34.98
782.00	23230	Mid	LTE Band 13	10	23.23	0	QPSK	1	0	6 mm	Front	1:1	0.167	34.98	
782.00	23230	Mid	LTE Band 13	10	23.23	0	QPSK	1	0	11 mm	Bottom	1:1	0.074	38.52	
782.00	23230	Mid	LTE Band 13	10	23.23	0	QPSK	1	0	0 mm	Right	1:1	0.131	36.04	
782.00	23230	Mid	LTE Band 13	10	23.23	0	QPSK	1	0	0 mm	Left	1:1	0.091	37.62	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.43	0	QPSK	1	0	8 mm	Back	1:1	0.182	34.81	32.77
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.43	0	QPSK	1	0	6 mm	Front	1:1	0.291	32.77	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.43	0	QPSK	1	0	11 mm	Bottom	1:1	0.086	38.06	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.43	0	QPSK	1	0	0 mm	Right	1:1	0.142	35.89	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.43	0	QPSK	1	0	0 mm	Left	1:1	0.108	37.08	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.90	0	QPSK	1	50	8 mm	Back	1:1	0.886	27.41	26.99
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.02	1	QPSK	50	25	8 mm	Back	1:1	0.724	27.40	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.90	0	QPSK	1	50	6 mm	Front	1:1	0.947	27.12	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.02	1	QPSK	50	25	6 mm	Front	1:1	0.773	27.12	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.90	0	QPSK	1	50	11 mm	Bottom	1:1	0.975	26.99	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.02	1	QPSK	50	25	11 mm	Bottom	1:1	0.792	27.01	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.90	0	QPSK	1	50	0 mm	Right	1:1	0.355	31.38	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.02	1	QPSK	50	25	0 mm	Right	1:1	0.292	31.35	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.90	0	QPSK	1	50	0 mm	left	1:1	0.399	30.87	
1732.50	20175	Mid	LTE Band 4(AWS)	20	22.02	1	QPSK	50	25	0 mm	left	1:1	0.322	30.92	
2593.00	40620	Mid	LTE Band 41	20	23.86	0	QPSK	1	50	8 mm	Back	1:1.58	0.305	31.01	28.66
2593.00	40620	Mid	LTE Band 41	20	22.97	1	QPSK	50	25	8 mm	Back	1:1.58	0.250	30.98	
2593.00	40620	Mid	LTE Band 41	20	23.86	0	QPSK	1	50	6 mm	Front	1:1.58	0.437	29.45	
2593.00	40620	Mid	LTE Band 41	20	22.97	1	QPSK	50	25	6 mm	Front	1:1.58	0.349	29.54	
2593.00	40620	Mid	LTE Band 41	20	23.86	0	QPSK	1	50	11 mm	Bottom	1:1.58	0.524	28.66	
2593.00	40620	Mid	LTE Band 41	20	22.97	1	QPSK	50	25	11 mm	Bottom	1:1.58	0.414	28.79	
2593.00	40620	Mid	LTE Band 41	20	23.86	0	QPSK	1	50	0 mm	Left	1:1.58	0.395	29.89	
2593.00	40620	Mid	LTE Band 41	20	22.97	1	QPSK	50	25	0 mm	Left	1:1.58	0.325	29.84	

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

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Table A-10
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]
707.50	23095	Mid	LTE Band 12	10	23.41	0	QPSK	1	0	0 mm	Back	1:1	0.659	29.20	29.20
707.50	23095	Mid	LTE Band 12	10	23.41	0	QPSK	1	0	0 mm	Front	1:1	0.537	30.09	
707.50	23095	Mid	LTE Band 12	10	23.41	0	QPSK	1	0	0 mm	Bottom	1:1	0.593	29.66	
707.50	23095	Mid	LTE Band 12	10	23.41	0	QPSK	1	0	0 mm	Right	1:1	0.122	36.53	
707.50	23095	Mid	LTE Band 12	10	23.41	0	QPSK	1	0	0 mm	Left	1:1	0.075	38.64	
782.00	23230	Mid	LTE Band 13	10	23.23	0	QPSK	1	0	0 mm	Back	1:1	0.754	28.44	27.37
782.00	23230	Mid	LTE Band 13	10	23.23	0	QPSK	1	0	0 mm	Front	1:1	0.964	27.37	
782.00	23230	Mid	LTE Band 13	10	23.23	0	QPSK	1	0	0 mm	Bottom	1:1	0.467	30.52	
782.00	23230	Mid	LTE Band 13	10	23.23	0	QPSK	1	0	0 mm	Right	1:1	0.131	36.04	
782.00	23230	Mid	LTE Band 13	10	23.23	0	QPSK	1	0	0 mm	Left	1:1	0.091	37.62	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.43	0	QPSK	1	0	0 mm	Back	1:1	1.090	27.04	27.04
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.43	0	QPSK	1	0	0 mm	Front	1:1	0.874	27.99	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.43	0	QPSK	1	0	0 mm	Bottom	1:1	0.612	29.54	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.43	0	QPSK	1	0	0 mm	Right	1:1	0.142	35.89	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.43	0	QPSK	1	0	0 mm	Left	1:1	0.108	37.08	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.90	0	QPSK	1	50	0 mm	Back	1:1	3.740	21.15	19.70
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.90	0	QPSK	1	50	0 mm	Front	1:1	3.640	21.27	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.90	0	QPSK	1	50	0 mm	Bottom	1:1	5.220	19.70	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.90	0	QPSK	1	50	0 mm	Right	1:1	0.355	31.38	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.90	0	QPSK	1	50	0 mm	Left	1:1	0.399	30.87	
2593.00	40620	Mid	LTE Band 41	20	23.86	0	QPSK	1	50	0 mm	Back	1:1.58	2.090	22.65	21.93
2593.00	40620	Mid	LTE Band 41	20	23.86	0	QPSK	1	50	0 mm	Front	1:1.58	1.050	25.64	
2593.00	40620	Mid	LTE Band 41	20	23.86	0	QPSK	1	50	0 mm	Bottom	1:1.58	2.470	21.93	
2593.00	40620	Mid	LTE Band 41	20	23.86	0	QPSK	1	50	0 mm	Left	1:1.58	0.395	29.89	

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

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