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Part 0 TA-SAR RF Exposure REPORT

Applicant Name: **SAMSUNG Electronics Co., Ltd.** 129, Samsung-ro, Yeongtong-gu, Suwon-Si, Gyeonggi-do, 16677 Rep. of Korea	**Date of Issue:** Dec. 21, 2023 **Test Report No : HCT-SR-2401-FC001** **Test Site: HCT CO., LTD.**

FCC ID: **A3LSMM156B**

Standards	**FCC 47 CFR Part 2(2.1093)**
Equipment Type:	**Mobile Phone**
Model Name:	**SM-M156B/DSN**

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.

Tested By

Jin Wook, Ko
Test Engineer
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Reviewed By

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REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	Dec. 21, 2023	Initial Release

This test results were applied only to the test methods required by the standard.

Table of Contents

1. Test Location

1.1 Test Laboratory

Company Name	HCT Co., Ltd.
Address	74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383 KOREA
Telephone	031-645-6300
Fax.	031-645-6401

1.2 Test Facilities

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

Korea	National Radio Research Agency (Designation No. KR0032)
	KOLAS (Testing No. KT197)

2. DEVICE UNDER TEST

2.1 General Information of the EUT

Device Wireless specification overview		
Band & Mode	**Operating Mode**	**Tx Frequency**
GSM850	Voice / Data	824.2 ㎒ ~ 848.8 ㎒
GSM1900	Voice / Data	1 850.2 ㎒ ~ 1 909.8 ㎒
UMTS Band 2	Voice / Data	1 852.4 ㎒ ~ 1 907.6 ㎒
UMTS Band 4	Voice / Data	1 712.4 ㎒ ~ 1 752.6 ㎒
UMTS Band 5	Voice / Data	826.4 ㎒ ~ 846.6 ㎒
LTE Band 2 (PCS)	Voice / Data	1 850.7 ㎒ ~ 1 909.3 ㎒
LTE Band 4 (AWS)	Voice / Data	1 710.7 ㎒ ~ 1 754.3 ㎒
LTE Band 5 (Cell)	Voice / Data	824.7 ㎒ ~ 848.3 ㎒
LTE Band 12	Voice / Data	699.7 ㎒ ~ 715.3 ㎒
LTE Band 17	Voice / Data	706.5 ㎒ ~ 713.5 ㎒
LTE Band 26	Voice / Data	814.7 ㎒ ~ 848.3 ㎒
LTE Band 41	Voice / Data	2 498.5 ㎒ ~ 2 687.5 ㎒
LTE Band 66 (AWS)	Voice / Data	1 710.7 ㎒ ~ 1 779.3 ㎒
NR FDD Band n5	Voice / Data	826.5 ㎒ ~ 846.5 ㎒
NR FDD Band n66	Voice / Data	1 712.5 ㎒ ~ 1 777.5 ㎒
U-NII-1	Voice / Data	5 180 ㎒ ~ 5 240 ㎒
U-NII-2A	Voice / Data	5 260 ㎒ ~ 5 320 ㎒
U-NII-2C	Voice / Data	5 500 ㎒ ~ 5 720 ㎒
U-NII-3	Voice / Data	5 745 ㎒ ~ 5 825 ㎒
2.4 ㎓ WLAN	Voice / Data	2 412 ㎒ ~ 2 472 ㎒
Bluetooth / LE 5.3	Data	2 402 ㎒ ~ 2 480 ㎒
NFC	Data	13.56 ㎒

This device uses the MediaTek T 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/WLAN operations. Additionally, this device supports NFC technology, but the output power of this technology is not controlled by the Smart Transmit algorithm.

2.2 Time-Averaged Specific Absorption Rate[TA-SAR] algorithm

This device is enabled with MediaTek Time-Averaged Specific Absorption Rate [TA-SAR] algorithm to control and manage transmitting power in real time and to ensure that the time-averaged RF exposure from 2G/3G/4G/5G NR WWAN and WLAN is in compliance with FCC requirements.

This Part 0 report shows SAR_design_Limit of WWAN/WLAN radios for 2G/3G/4G and 5G Sub-6 NR, WLAN respectively. Characterization is achieved by determining $P_{\_limit}$ for 2G/3G/4G/5G Sub-6 NR, WLAN except BT correspond to the SAR_design_Limit after accounting for all device design related uncertainties, i.e. SAR_design (< FCC SAR limit) for sub-6 radio. The SAR_design_Limit is denoted as $P_{\_limit}$ in this report. Section 2.3 includes a nomenclature of the specific terms used in this report.

The compliance test under the static transmission scenario and simultaneous transmission analysis are reporte d in Part 1 report. The validation of the time-averaging algorithm and compliance under the dynamic (time- varying) transmission scenario for WWAN and WLAN technologies are reported in Part 2 report.

2.3 Nomenclature for part 0 TAS-SAR Report

Technology	Operating Parameter	the same meaning	Description
2G/3G/4G/5G Sub 6 NR /WLAN	$P_{\_limit}$	Plimit	The Time Averaged maximum power level limit for different bands for 2G/3G/4G/5G Sub 6 NR and WLAN
	P_{UE_max}	Pmax	Maximum Tx power at which a UE can possibly transmit.
	SAR_design_Limit	SAR_Desigh_Trget	Target SAR as measured by the Measured-Power_Limit after accounting for all device design related uncertainties 1 dB.

3. SAR MEASUREMENTS

3.1 SAR Definition

Specific Absorption Rate (SAR) is defined as the time derivative of the incremental electromagnetic energy (d*W*) absorbed by (dissipated in) an incremental mass (d*m*) contained in a volume element (d*V*) of a given density (*r*). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body

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

SAR Mathematical Equation

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

$$SAR = \sigma E^2 / \rho$$

Where:
σ = conductivity of the tissue-simulant material (S/m)
ρ = mass density of the tissue-simulant material (kg/㎥)
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 relations 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.

3.2 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 more than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the DUT's head and body area and the horizontal grid resolution was depending on the FCC KDB 865664 D01v01r04 (see table 3-1) & IEEE 1528-2013.

2. Based on step, the area of the maximum absorption was determined by sophisticated interpolations routines implemented in DASY software. When an Area Scan has measured all reachable point. DASY system computes the field maximal found in the scanned are, within a range of the maximum. SAR at this fixed point was measured and used as a reference value.

3. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB 865664 D01v01r04 table 4-1 and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (reference from the DASY manual.)

   a. The data at the surface were extrapolated, since the center of the dipoles is no more than 2.7 mm away from the tip of the probe (it is different from the probe type) and the distance between the surface and the lowest measuring point is 1.2 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.

   b. The maximum interpolated value was searched with a straight-forward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed using the 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 integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the average.

   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. If the value changed by more than 5 %, the SAR evaluation and drift measurements were repeated.

Table 3-1

Frequency	Maximum Area Scan Resolution(mm) (Δxarea, Δyarea)	Maximum Zoom Scan Resolution (mm) (Δxzoom, Δyzoom)	Maximum Zoom Scan Spatial Resolution (mm)			Minimum Zoom Scan Volume (mm) (x,y,z)
			Uniform Grid	Graded Grid		
			Δzzoom(n)	Δzzoom(1)*	Δzzoom(n>1)*	
≤2 GHz	≤15	≤8	≤5	≤4	≤1.5*Δzzoom(n-1)	≥30
2-3 GHz	≤12	≤5	≤5	≤4	≤1.5*Δzzoom(n-1)	≥30
3-4 GHz	≤12	≤5	≤4	≤3	≤1.5*Δzzoom(n-1)	≥28
4-5 GHz	≤10	≤4	≤3	≤2.5	≤1.5*Δzzoom(n-1)	≥25
5-6 GHz	≤10	≤4	≤2	≤2	≤1.5*Δzzoom(n-1)	≥22

Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v01r04*

4. SAR CHARACTERIZATION

4.1 ECI and SAR Determination

This device uses different Exposure Condition Index(ECI) 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 ECI. 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 Exposure Condition Index(ECI) conditions used in Table 4-1 and 4-2 represent different exposure scenarios.

Table 4-1 ECI and Corresponding Exposure Scenarios WWAN

Scenario	Description	SAR Test Cases
Head SAR (ECI = 1)	Device positioned next to head Receiver Active	Head SAR per KDB Publication 648474 D04
Body SAR /Hotspot Phablet (ECI =0,2,3)	Device being used with a body-worn accessory Device transmits in hotspot mode near body Hotspot Mode Active Device is held with hand	Body-worn SAR per KDB Publication 948474 D04 Hotspot SAR per KDB Publication 941225 D06 Phablet SAR per KDB Publication 648474 D04

Table 4-2 ECI and Corresponding Exposure Scenarios WLAN

Scenario	Description	SAR Test Cases
Head SAR (ECI = 1)	Device positioned next to head Receiver Active	Head SAR per KDB Publication 648474 D04
Body SAR /Hotspot Phablet (ECI =0,2,3)	Device being used with a body-worn accessory Device transmits in hotspot mode near body Hotspot Mode Active Device is held with hand	Body-worn SAR per KDB Publication 948474 D04 Hotspot SAR per KDB Publication 941225 D06 Phablet SAR per KDB Publication 648474 D04

SAR design Target

1g SAR		10g SAR	
Total uncertainty	1.0 dB	Total uncertainty	1.0 dB
SAR_regulatory_limit	1.6 W/kg	SAR_regulatory_limit	4.0 W/kg
WWAN SAR design target	1.0 W/kg	WWAN SAR design target	2.5 W/kg
WLAN SAR design target	0.8 W/kg	WLAN SAR design target	2.0 W/kg

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

SAR_design_target < SAR regulatory_limit X10^(-total uncertainty/10)

Table 4-3 SAR Characterization

Plim values in green indicate Plimit < Pmax			Plimit values in grey indicate Plimit > Pmax			
Plimit corresponding to 1 W/kg (1g) 2.5W/kg(10g) SAR_Design_target						Pmax
SAR Exposure Position			Head (RCV ON)	Body Phablet		Maximum Tune-up Output Power (Burst Average Power) [dBm]
Averaging volume			1g	1g	10g	
seperation Distance			0 mm	10 mm	0 mm	
Mode	Band	Antenna	ECI = 1	ECI =0,2,3		
GSM/GPRS/EDGE	850	MAIN 1	30.9	27.2		28.0
GSM/GPRS/EDGE	1900	MAIN 2	29.9	24.9		25.0
UMTS	2	MAIN 2	27.9	20.0		22.0
UMTS	4	MAIN 2	30.6	20.0		23.0
UMTS	5	MAIN 1	30.9	23.0		24.0
LTE FDD	2 Lower	MAIN 2	29.5	17.5		23.0
LTE FDD	2 Upper	MAIN 3	25.4	17.5		23.0
LTE FDD	66 Lower	MAIN 2	29.2	18.5		24.0
LTE FDD	4 Upper	MAIN 3	27.4	18.5		24.0
LTE FDD	12	MAIN 1	31.4	27.0		24.0
LTE FDD	26	MAIN 1	31.1	25.7		24.0
LTE TDD PC3	41	MAIN 2	27.5	20.0		23.0
NR FDD	5	MAIN 1	31.8	23.0		24.0
NR FDD	66	MAIN 2	22.0	17.5		24.0

Plim values in green indicate Plimit < Pmax			Plimit values in grey indicate Plimit > Pmax			
Plimit corresponding to 0.8 W/kg (1g) 2.0 W/kg(10g) SAR_Design_target						0
SAR Exposure Position			Head (RCV ON)	Body Phablet		Maximum Tune-up Output Power (Burst Average Power)
Averaging volume			1g	1g	10g	
seperation Distance			0 mm	10 mm	0 mm	
Mode	Band	Antenna	ECI = 1	ECI = 0,2,3		
WLAN 2.4 GHz	2.4 GHz	Sub 2	15.0	22.1		18.0
WLAN 5 GHz	5 GHz	Sub 2	14.0	14.0		17.0

Note:

1. Compared with the *P_limit* (Tune up Powers) declared in each ECI by the manufacturer and the P_*limit* (calculation) calculated by the SAR measurement of each ECI, the lower power were applied to the NV as the P_*limit* at each ECI configurations.
2. When *Pmax* < *P_limit* , the DUT will operate at a power level up to *Pmax*.
3. Maximum Tune up Power,P*max*. Is configured in NV settings in EUT to limit maximum transmitting power. This power is converted into peak power in NV setting for TDD schemes.(GPRS, LTE TDD,WLAN)
4. SAR_Design_Target is used in the same meaning as SAR_Design_Limit.
5. The above Pmax/Plimit value for GSM850/GSM1900 GPRS is Frame Averaged Power for 4Tx Slots
6. The above Plimit value for 2.4 GHz 802.11b/5 GHz 802.11n40 is Frame Averaged Power

5. Equipment List

* The E-field probe was calibrated by SPEAG, by the waveguide technique procedure. Dipole Verification measurement is performed by HCT Lab. before each test. The brain/body simulating material is calibrated by HCT using the DAKS 3.5 to determine the conductivity and permittivity (dielectric constant) of the brain/body-equivalent material.

Manufacturer	Type / Model	S/N	Calib. Date	Calib.Interval	Calib.Due
SPEAG	SAM Phantom	-	N/A	N/A	N/A
Staubli #3	CS8Cspeag-TX90	F12/ 5K9GA1/ C/ 01	N/A	N/A	N/A
Staubli #7	CS8Cspeag-TX90	F08/5AJ0A1/C/01	N/A	N/A	N/A
Staubli #11	CS8Cspeag-TX60L	F10/5FN3A1/C/01	N/A	N/A	N/A
Staubli #14	CS8Cspeag-TX90	F07/55B8A1/C/01	N/A	N/A	N/A
Staubli #3	TX90 XLspeag	F12/ 5K9GA1/ A/ 01	N/A	N/A	N/A
Staubli #7	CS8Cspeag-TX90	F08/5AJ0A1/C/01	N/A	N/A	N/A
Staubli #11	TX-60 L speag	F10/5FN3A1/A/01	N/A	N/A	N/A
Staubli #14	TX90 XL speag	F07/55B8A1/A/01	N/A	N/A	N/A
Staubli #3	Teach Pendant (Joystick)	S-1206 0513	N/A	N/A	N/A
Staubli #7	Teach Pendant (Joystick)	S-0008	N/A	N/A	N/A
Staubli #11	Teach Pendant (Joystick)	D21142602	N/A	N/A	N/A
Staubli #14	Teach Pendant (Joystick)	S-0306	N/A	N/A	N/A
TESTO	175-H1/Thermometer	40331939309	12/29/2022	Annual	12/29/2023
TESTO	175-H1/Thermometer	40331949309	12/29/2022	Annual	12/29/2023
TESTO	608-H1/Thermometer	2183499992	11/29/2022	Annual	11/29/2023
TESTO	608-H1/Thermometer	2183499992	11/29/2023	Annual	11/29/2024
TESTO	608-H1/Thermometer	83348021	03/27/2023	Annual	03/27/2024
SPEAG	DAE4	652	01/20/2023	Annual	01/20/2024
SPEAG	DAE4	1254	06/02/2023	Annual	06/02/2024
SPEAG	DAE4	869	03/23/2023	Annual	03/23/2024
SPEAG	DAE4	1686	05/23/2023	Annual	05/23/2024
SPEAG	E-Field Probe ES3DV3	3076	07/18/2023	Annual	07/18/2024
SPEAG	E-Field Probe EX3DV4	7654	05/24/2023	Annual	05/24/2024
SPEAG	E-Field Probe EX3DV4	7702	01/26/2023	Annual	01/26/2024
SPEAG	E-Field Probe EX3DV4	7680	05/24/2023	Annual	05/24/2024
SPEAG	Dipole CLA13	1016	09/21/2023	Annual	09/21/2024
SPEAG	Dipole D750V3	1014	05/23/2023	Annual	05/23/2024
SPEAG	Dipole D835V2	4d165	05/23/2023	Annual	05/23/2024
SPEAG	Dipole D1800V2	2d015	05/17/2023	Annual	05/17/2024
SPEAG	Dipole D1900V2	5d061	01/23/2023	Annual	01/23/2024
SPEAG	Dipole D2450V2	1049	04/25/2023	Annual	04/25/2024
SPEAG	Dipole D2600V2	1106	05/24/2023	Annual	05/24/2024
SPEAG	Dipole D5 GHz V2	1317	05/17/2023	Annual	05/17/2024
Agilent	Power Meter E4419B	MY41291386	09/21/2023	Annual	09/21/2024
Agilent	Power Meter N1911A	MY45101406	05/26/2023	Annual	05/26/2024
Agilent	Power Sensor 8481A	SG1091286	09/21/2023	Annual	09/21/2024
H.P	Power Sensor 8481A	MY41090675	09/21/2023	Annual	09/21/2024
Agilent	Wideband Power Sensor N1921A	MY55220026	07/28/2023	Annual	07/28/2024
Agilent	11636B/Power Divider	58698	01/26/2023	Annual	01/26/2024
SPEAG	DAKS 3.5	1038	01/25/2023	Annual	01/25/2024
SPEAG	Vector Reflectometer	00141013	02/13/2023	Annual	02/13/2024
SPEAG	MXA Signal Analyzer	MY49100108	01/13/2023	Annual	01/13/2024
H.P	Network Analyzer /8753ES	JP39240221	01/02/2023	Annual	01/02/2024
Agilent	WIRELESS COMMUNICATION E5515C	MY48361100	09/21/2023	Annual	09/21/2024
Agilent	WIRELESS COMMUNICATION E5515C	MY48360252	07/27/2023	Annual	07/27/2024
R&S	Wireless Communication Test Set CMW500	115733	03/23/2023	Annual	03/23/2024
Agilent	SIGNAL GENERATOR N5182A	MY47070230	03/23/2023	Annual	03/23/2024
EMPOWER	RF Power Amplifier	1084	05/26/2023	Annual	05/26/2024
EMPOWER	RF Power Amplifier	1011	09/21/2023	Annual	09/21/2024
MICRO LAB	LP Filter / LA-15N	10453	09/21/2023	Annual	09/21/2024
MICRO LAB	LP Filter / LA-30N	-	09/21/2023	Annual	09/21/2024
MICRO LAB	LP Filter / LA-60N	32011	09/21/2023	Annual	09/21/2024
Manufacturer	Type / Model	S/N	Calib. Date	Calib.Interval	Calib.Due

Agilent	Attenuator (3dB) 8693B	MY39260298	08/22/2023	Annual	08/22/2024
HP	Attenuator (3dB) 33340A	02427	08/22/2023	Annual	08/22/2024
HP	Attenuator (20dB) 8493C	09271	08/22/2023	Annual	08/22/2024
Agilent	Directional Bridge 86205A	3140A04581	04/25/2023	Annual	04/25/2024
OSI	Power Divider	#3	05/26/2023	Annual	05/26/2024
Agilent	MXA Signal Analyzer N9020A	MY50510407	06/07/2023	Annual	06/07/2024
HP	Dual Directional Coupler	16072	09/21/2023	Annual	09/21/2024
Anritsu	Radio Communication Test Station MT8000A	6262036812	12/07/2022	Annual	12/07/2023
Anritsu	Radio Communication Tester MT8820C	6201074225	01/25/2023	Annual	01/25/2024
Anritsu	Radio Communication Tester MT8820C	6200695605	03/23/2023	Annual	03/23/2024
Anritsu	Radio Communication Tester MT8821C	6201502997	05/26/2023	Annual	05/26/2024
Anritsu	Radio Communication Tester MT8821C	6201664725	01/25/2023	Annual	01/25/2024
Agilent	WIRELESS COMMUNICATION E5515C	MY50260992	05/26/2023	Annual	05/26/2024
Anritsu	Radio Communication Test Station MT8000A	6262036812	12/07/2022	Annual	12/07/2023
ROHDE&SCHWARZ	BLUETOOTH TESTER CBT	100272	01/25/2023	Annual	01/25/2024
MITUTOYO	Vernier Calipers	B17351637	08/23/2023	Annual	08/23/2024

6. Measurement Uncertainty

The measured SAR was <1.5 W/Kg for 1g SAR and <3.75 W/Kg For 10g SAR for all frequency bands. Therefore, per KDB Publication 865664 D01v01r04, the extended measurement uncertainty analysis per IEEE1528-2013 was not required.

Appendix A: SAR Test Results For P_{limit} CALCULATIONS

Table A-1 ECI = 1 $P_{\_limit}$ Calculations – 2G/3G Head SAR

MEASUREMENT RESULTS										
Frequency		Mode/ Band		Ant.	Frame Averaged Conducted Power	Test Position	Duty Cycle	Meas. SAR(1g)	$P_{\_limit}$	Minimum $P_{\_limit}$
MHz	Ch.				(dBm)			(W/kg)	(dBm)	(dBm)
836.6	190	GSM 850	GPRS 4Tx	Main 1	25.00	Left Cheek	1:2.07	0.210	31.8	30.9
836.6	190	GSM 850		Main 1	25.00	Left Tilt	1:2.07	0.133	33.8	
836.6	190	GSM 850		Main 1	25.00	Right Cheek	1:2.07	0.255	30.9	
836.6	190	GSM 850		Main 1	25.00	Right Tilt	1:2.07	0.144	33.4	
1 880	661	GSM 1900	GPRS 4Tx	Main 2	21.88	Left Cheek	1:2.07	0.156	29.9	29.9
1 880	661	GSM 1900		Main 2	21.88	Left Tilt	1:2.07	0.096	32.1	
1 880	661	GSM 1900		Main 2	21.88	Right Cheek	1:2.07	0.090	32.3	
1 880	661	GSM 1900		Main 2	21.88	Right Tilt	1:2.07	0.083	32.7	
836.4	4183	UMTS Band 5	RMC	Main 1	24.15	Left Cheek	1:1	0.181	31.6	30.9
836.4	4183	UMTS Band 5	RMC	Main 1	24.15	Left Tilt	1:1	0.096	34.3	
836.4	4183	UMTS Band 5	RMC	Main 1	24.15	Right Cheek	1:1	0.211	30.9	
836.4	4183	UMTS Band 5	RMC	Main 1	24.15	Right Tilt	1:1	0.094	34.4	
1 732.4	1412	UMTS Band 4	RMC	Main 2	23.10	Left Cheek	1:1	0.179	30.6	30.6
1 732.4	1412	UMTS Band 4	RMC	Main 2	23.10	Left Tilt	1:1	0.124	32.2	
1 732.4	1412	UMTS Band 4	RMC	Main 2	23.10	Right Cheek	1:1	0.138	31.7	
1 732.4	1412	UMTS Band 4	RMC	Main 2	23.10	Right Tilt	1:1	0.113	32.6	
1 880	9400	UMTS Band 2	RMC	Main 2	21.14	Left Cheek	1:1	0.211	27.9	27.9
1 880	9400	UMTS Band 2	RMC	Main 2	21.14	Left Tilt	1:1	0.174	28.7	
1 880	9400	UMTS Band 2	RMC	Main 2	21.14	Right Cheek	1:1	0.171	28.8	
1 880	9400	UMTS Band 2	RMC	Main 2	21.14	Right Tilt	1:1	0.121	30.3	

Table A-2 ECI = 1 P_{limit} Calculations – 4G Head SAR

MEASUREMENT RESULTS														
Frequency		Mode		Ant.	Band width	Frame Averaged Conducted Power	Test Position	MPR	RB Size	RB offset	Duty Cycle	Meas. SAR(1g)	P_{limit}	Minimum P_{limit}
MHz	Ch.				(dBm)	(dBm)		(dB)				(W/kg)	(dBm)	(dBm)
1 900	19100	LTE Band 2 Lower	High	Main 2	20	23.00	Left Cheek	0	1	49	1:1	0.222	29.5	29.5
1 900	19100	LTE Band 2 Lower	High	Main 2	20	23.00	Left Tilt	0	1	49	1:1	0.171	30.7	
1 900	19100	LTE Band 2 Lower	High	Main 2	20	23.00	Right Cheek	0	1	49	1:1	0.188	30.3	
1 900	19100	LTE Band 2 Lower	High	Main 2	20	23.00	Right Tilt	0	1	49	1:1	0.110	32.6	
1 860	18700	LTE Band 2 Upper	Low	Main 3	20	22.99	Left Cheek	0	1	0	1:1	0.313	28.0	25.4
1 860	18700	LTE Band 2 Upper	Low	Main 3	20	22.99	Left Tilt	0	1	0	1:1	0.177	30.5	
1 860	18700	LTE Band 2 Upper	Low	Main 3	20	22.99	Right Cheek	0	1	0	1:1	0.568	25.4	
1 860	18700	LTE Band 2 Upper	Low	Main 3	20	22.99	Right Tilt	0	1	0	1:1	0.209	29.8	
707.5	23095	LTE Band 12 (17)	Mid	Main 1	10	23.60	Left Cheek	0	1	0	1:1	0.147	31.9	31.4
707.5	23095	LTE Band 12 (17)	Mid	Main 1	10	23.60	Left Tilt	0	1	0	1:1	0.074	34.9	
707.5	23095	LTE Band 12 (17)	Mid	Main 1	10	23.60	Right Cheek	0	1	0	1:1	0.167	31.4	
707.5	23095	LTE Band 12 (17)	Mid	Main 1	10	23.60	Right Tilt	0	1	0	1:1	0.083	34.4	
831.5	26865	LTE Band 26	Mid	Main 1	15	24.08	Left Cheek	0	1	36	1:1	0.159	32.1	31.1
831.5	26865	LTE Band 26	Mid	Main 1	15	24.08	Left Tilt	0	1	36	1:1	0.089	34.6	
831.5	26865	LTE Band 26	Mid	Main 1	15	24.08	Right Cheek	0	1	36	1:1	0.200	31.1	
831.5	26865	LTE Band 26	Mid	Main 1	15	24.08	Right Tilt	0	1	36	1:1	0.100	34.1	
1 770	132572	LTE Band 66(4) Lower	High	Main 2	20	23.87	Left Cheek	0	1	99	1:1	0.295	29.2	29.2
1 770	132572	LTE Band 66(4) Lower	High	Main 2	20	23.87	Left Tilt	0	1	99	1:1	0.259	29.7	
1 770	132572	LTE Band 66(4) Lower	High	Main 2	20	23.87	Right Cheek	0	1	99	1:1	0.217	30.5	
1 770	132572	LTE Band 66(4) Lower	High	Main 2	20	23.87	Right Tilt	0	1	99	1:1	0.150	32.1	
1 732.5	20175	LTE Band 4(66) Upper	Mid	Main 3	20	23.69	Left Cheek	0	1	0	1:1	0.184	31.0	27.4
1 732.5	20175	LTE Band 4(66) Upper	Mid	Main 3	20	23.69	Left Tilt	0	1	0	1:1	0.095	33.9	
1 732.5	20175	LTE Band 4(66) Upper	Mid	Main 3	20	23.69	Right Cheek	0	1	0	1:1	0.426	27.4	
1 732.5	20175	LTE Band 4(66) Upper	Mid	Main 3	20	23.69	Right Tilt	0	1	0	1:1	0.155	31.8	
2 549.5	40185	LTE Band41(PC3)	Low	Main 2	20	21.09	Left Cheek	0	1	0	1:1.58	0.231	27.5	27.5
2 549.5	40185	LTE Band41(PC3)	Low	Main 2	20	21.09	Left Tilt	0	1	0	1:1.58	0.089	31.6	
2 549.5	40185	LTE Band41(PC3)	Low	Main 2	20	21.09	Right Cheek	0	1	0	1:1.58	0.149	29.4	
2 549.5	40185	LTE Band41(PC3)	Low	Main 2	20	21.09	Right Tilt	0	1	0	1:1.58	0.162	29.0	

Table A-3 ECI = 1 $P_{\_limit}$ Calculations – NR Head SAR

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

SAR measurements of all NR bands were measured in FTM Mode.

MEASUREMENT RESULTS																
Frequency		Mode		Ant.	Band width	Frame Averaged Conducted Power	Test Configurations		MPR	RB Size	RB offset	Duty Cycle	Meas. SAR (1g)	$P_{\_limit}$	Minimum $P_{\_limit}$
MHz	Ch.				(dBm)	(dBm)			(dB)				(W/kg)	(dBm)	(dBm)
836.5	167300	NR Band n5	Mid	Main 1	20	24.06	Left Cheek	DFT-s-OFDM QPSK	0	1	53	1:1	0.157	32.1	31.8
836.5	167300	NR Band n5	Mid	Main 1	20	24.06	Left Tilt	DFT-s-OFDM QPSK	0	1	53	1:1	0.082	34.9	
836.5	167300	NR Band n5	Mid	Main 1	20	24.06	Right Cheek	DFT-s-OFDM QPSK	0	1	53	1:1	0.168	31.8	
836.5	167300	NR Band n5	Mid	Main 1	20	24.06	Right Tilt	DFT-s-OFDM QPSK	0	1	53	1:1	0.082	34.9	
1 745	349000	NR Band n66 Lower	Mid	Main 2	40	22.26	Left Cheek	DFT-s-OFDM QPSK	0	1	108	1:1	0.133	31.0	30.8
1 745	349000	NR Band n66 Lower	Mid	Main 2	40	22.26	Left Tilt	DFT-s-OFDM QPSK	0	1	108	1:1	0.101	32.2	
1 745	349000	NR Band n66 Lower	Mid	Main 2	40	22.26	Right Cheek	DFT-s-OFDM QPSK	0	1	108	1:1	0.140	30.8	
1 745	349000	NR Band n66 Lower	Mid	Main 2	40	22.26	Right Tilt	DFT-s-OFDM QPSK	0	1	108	1:1	0.086	32.9	

Table A-4 ECI = 1 *PLimit* Calculations – WLAN Head SAR

MEASUREMENT RESULTS													
Frequency		Mode/ Band	Band width	Ant. No.	Data Rate	Frame Averaged Conducted Power	Test Position	Ant. Config.	Duty Cycle	Meas. SAR(1g)	Scaling Factor	Plimit	Minimum Plimit
MHz	Ch.		(MHz)		(Mbps)	(dBm)				(W/kg)	(Duty)	(dBm)	(dBm)
2 412	1	802.11b	20	Sub2	1	15.72	Left Cheek	WIFI1	99.5	0.101	1.005	24.7	23.5
2 412	1	802.11b	20	Sub2	1	15.72	Left Tilt	WIFI1	99.5	0.119	1.005	24.0	
2 412	1	802.11b	20	Sub2	1	15.72	Right Cheek	WIFI1	99.5	0.132	1.005	23.5	
2 412	1	802.11b	20	Sub2	1	15.72	Right Tilt	WIFI1	99.5	0.129	1.005	23.6	
5 270	54	802.11n	40	Sub2	MCS0	14.13	Left Cheek	WIFI1	93.5	0.266	1.069	18.9	18.1
5 270	54	802.11n	40	Sub2	MCS0	14.13	Left Tilt	WIFI1	93.5	0.320	1.069	18.1	
5 270	54	802.11n	40	Sub2	MCS0	14.13	Right Cheek	WIFI1	93.5	0.235	1.069	19.5	
5 270	54	802.11n	40	Sub2	MCS0	14.13	Right Tilt	WIFI1	93.5	0.317	1.069	18.2	
5 710	142	802.11n	40	Sub2	MCS0	14.66	Left Cheek	WIFI1	93.5	0.471	1.069	17.0	15.9
5 710	142	802.11n	40	Sub2	MCS0	14.66	Left Tilt	WIFI1	93.5	0.580	1.069	16.1	
5 710	142	802.11n	40	Sub2	MCS0	14.66	Right Cheek	WIFI1	93.5	0.422	1.069	17.4	
5 710	142	802.11n	40	Sub2	MCS0	14.66	Right Tilt	WIFI1	93.5	0.600	1.069	15.9	
5 755	151	802.11n	40	Sub2	MCS0	14.05	Left Cheek	WIFI1	93.5	0.489	1.069	16.2	15.5
5 755	151	802.11n	40	Sub2	MCS0	14.05	Left Tilt	WIFI1	93.5	0.499	1.069	16.1	
5 755	151	802.11n	40	Sub2	MCS0	14.05	Right Cheek	WIFI1	93.5	0.404	1.069	17.0	
5 755	151	802.11n	40	Sub2	MCS0	14.05	Right Tilt	WIFI1	93.5	0.576	1.069	15.5	

Table A-5 ECI = 0,2,3 $P_{\_limit}$ Calculations – 2G/3G Hotspot/Body SAR

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

MEASUREMENT RESULTS											
Frequency		Mode/ Band		Ant. No.	Frame Averaged Conducted Power	Test Position	Spacing (mm)	Duty Cycle	Meas. SAR(1g)	$P_{\_limit}$	Minimum $P_{\_limit}$
MHz	Ch.				(dBm)				(W/kg)	(dBm)	(dBm)
836.6	190	GSM 850	GPRS4Tx	Main 1	23.89	Rear	10	1:2.07	0.608	27.2	27.2
836.6	190	GSM 850	GPRS4Tx	Main 1	23.89	Front	10	1:2.07	0.216	31.7	
836.6	190	GSM 850	GPRS4Tx	Main 1	23.89	Left	10	1:2.07	0.181	32.4	
836.6	190	GSM 850	GPRS4Tx	Main 1	23.89	Right	10	1:2.07	0.235	31.3	
836.6	190	GSM 850	GPRS4Tx	Main 1	23.89	Bottom	10	1:2.07	0.282	30.5	
1 880.0	661	GSM 1900	GPRS4Tx	Main 2	20.01	Rear	10	1:2.07	0.365	26.3	25.7
1 880.0	661	GSM 1900	GPRS4Tx	Main 2	20.01	Front	10	1:2.07	0.282	27.4	
1 880.0	661	GSM 1900	GPRS4Tx	Main 2	20.01	Left	10	1:2.07	0.178	29.4	
1 880.0	661	GSM 1900	GPRS4Tx	Main 2	20.01	Bottom	10	1:2.07	0.414	25.7	
836.6	4183	UMTS 850	RMC	Main 1	23.16	Rear	10	1:1	0.555	25.7	25.7
836.6	4183	UMTS 850	RMC	Main 1	23.16	Front	10	1:1	0.127	32.1	
836.6	4183	UMTS 850	RMC	Main 1	23.16	Left	10	1:1	0.100	33.2	
836.6	4183	UMTS 850	RMC	Main 1	23.16	Right	10	1:1	0.170	30.9	
836.6	4183	UMTS 850	RMC	Main 1	23.16	Bottom	10	1:1	0.253	29.1	
1 732.4	1412	UMTS 1700	RMC	Main 2	19.99	Rear	10	1:1	0.178	27.5	25.7
1 732.4	1412	UMTS 1700	RMC	Main 2	19.99	Front	10	1:1	0.154	28.1	
1 732.4	1412	UMTS 1700	RMC	Main 2	19.99	Left	10	1:1	0.120	29.2	
1 732.4	1412	UMTS 1700	RMC	Main 2	19.99	Bottom	10	1:1	0.270	25.7	
1 880	9400	UMTS 1900	RMC	Main 2	19.10	Rear	10	1:1	0.332	23.9	22.8
1 880	9400	UMTS 1900	RMC	Main 2	19.10	Front	10	1:1	0.314	24.1	
1 880	9400	UMTS 1900	RMC	Main 2	19.10	Left	10	1:1	0.210	25.9	
1 880	9400	UMTS 1900	RMC	Main 2	19.10	Bottom	10	1:1	0.428	22.8	

Table A-6 ECI = 0,2,3 $P_{\_limit}$ Calculations – 4G Hotspot SAR

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

MEASUREMENT RESULTS															
Frequency		Mode		Ant. No.	Band width	Frame Averaged Conducted Power	Test Position	Spacing (mm)	MPR	RB Size	RB offset	Duty Cycle	Meas. SAR (1g)	$P_{\_limit}$	Minimum $P_{\_limit}$
MHz	Ch.				MHz	(dBm)			(dB)				(W/kg)	(dBm)	(dBm)
1 900	19100	LTE Band 2 Lower	High	Main 2	20	17.20	Rear	10	0	1	99	1:1	0.057	29.6	25.2
1 900	19100	LTE Band 2 Lower	High	Main 2	20	17.20	Front	10	0	1	99	1:1	0.098	27.3	
1 900	19100	LTE Band 2 Lower	High	Main 2	20	17.20	Left	10	0	1	99	1:1	0.078	28.3	
1 900	19100	LTE Band 2 Lower	High	Main 2	20	17.20	Bottom	10	0	1	99	1:1	0.159	25.2	
1 860	18700	LTE Band 2 Upper	Low	Main 3	20	17.02	Rear	10	0	1	0	1:1	0.183	24.4	24.4
1 860	18700	LTE Band 2 Upper	Low	Main 3	20	17.02	Front	10	0	1	0	1:1	0.068	28.7	
1 860	18700	LTE Band 2 Upper	Low	Main 3	20	17.02	Left	10	0	1	0	1:1	0.133	25.8	
1 860	18700	LTE Band 2 Upper	Low	Main 3	20	17.02	Top	10	0	1	0	1:1	0.017	34.7	
707.5	23095	LTE Band 12 (17)	Mid	Main 1	10	23.60	Back	10	0	1	0	1:1	0.456	27.0	27.0
707.5	23095	LTE Band 12 (17)	Mid	Main 1	10	23.60	Front	10	0	1	0	1:1	0.158	31.6	
707.5	23095	LTE Band 12 (17)	Mid	Main 1	10	23.60	Left	10	0	1	0	1:1	0.127	32.6	
707.5	23095	LTE Band 12 (17)	Mid	Main 1	10	23.60	Right	10	0	1	0	1:1	0.241	29.8	
707.5	23095	LTE Band 12 (17)	Mid	Main 1	10	23.60	Bottom	10	0	1	0	1:1	0.192	30.8	
831.5	26865	LTE Band 26	Mid	Main 1	15	24.08	Back	10	0	1	36	1:1	0.692	25.7	25.7
831.5	26865	LTE Band 26	Mid	Main 1	15	24.08	Front	10	0	1	36	1:1	0.168	31.8	
831.5	26865	LTE Band 26	Mid	Main 1	15	24.08	Left	10	0	1	36	1:1	0.131	32.9	
831.5	26865	LTE Band 26	Mid	Main 1	15	24.08	Right	10	0	1	36	1:1	0.272	29.7	
831.5	26865	LTE Band 26	Mid	Main 1	15	24.08	Bottom	10	0	1	36	1:1	0.436	27.7	
1 770	132572	LTE Band 66(4)Lower	High	Main 2	20	18.32	Back	10	0	1	99	1:1	0.116	27.7	24.6
1 770	132572	LTE Band 66(4)Lower	High	Main 2	20	18.32	Front	10	0	1	99	1:1	0.130	27.2	
1 770	132572	LTE Band 66(4)Lower	High	Main 2	20	18.32	Left	10	0	1	99	1:1	0.080	29.3	
1 770	132572	LTE Band 66(4)Lower	High	Main 2	20	18.32	Bottom	10	0	1	99	1:1	0.234	24.6	
1 732.5	20175	LTE Band 4(66) Upper	Mid	Main 3	20	17.73	Back	10	0	1	99	1:1	0.188	25.0	25.0
1 732.5	20175	LTE Band 4(66) Upper	Mid	Main 3	20	17.73	Front	10	0	1	99	1:1	0.037	32.0	
1 732.5	20175	LTE Band 4(66) Upper	Mid	Main 3	20	17.73	Left	10	0	1	99	1:1	0.093	28.0	
1 732.5	20175	LTE Band 4(66) Upper	Mid	Main 3	20	17.73	Top	10	0	1	99	1:1	0.011	37.3	
2 506	39750	LTE Band41(PC3)	Low	Main 2	20	19.86	Back	10	0	1	99	1:1.58	0.337	24.6	23.9
2 506	39750	LTE Band41(PC3)	Low	Main 2	20	19.86	Front	10	0	1	99	1:1.58	0.115	29.3	
2 506	39750	LTE Band41(PC3)	Low	Main 2	20	19.86	Left	10	0	1	99	1:1.58	0.149	28.1	
2 506	39750	LTE Band41(PC3)	Low	Main 2	20	19.86	Bottom	10	0	1	99	1:1.58	0.397	23.9	

Table A-7 ECI = 0,2,3 P_{limit} Calculations – NR Hotspot SAR

For some bands/modes, a lower P_{limit} was selected as a more conservative evaluation.
SAR measurements of all NR bands were measured in FTM Mode.

MEASUREMENT RESULTS																	
Frequency		Mode		Ant. No.	Band width	Frame Averaged Conducted Power	Test Position		MPR	Spacing (mm)	RB Size	RB offset	Duty Cycle	Meas. SAR(1g)	P_{limit}	Minimum P_{limit}
MHz	Ch.				MHz	(dBm)			(dB)					(W/kg)	(dBm)	(dBm)
836.5	167300	NR Band n5	Mid	Main 1	20	23.19	Rear	DFT-s-OFDM QPSK	0	10	1	53	1:1	0.511	26.1	26.1
836.5	167300	NR Band n5	Mid	Main 1	20	23.19	Front	DFT-s-OFDM QPSK	0	10	1	53	1:1	0.145	31.6	
836.5	167300	NR Band n5	Mid	Main 1	20	23.19	Left	DFT-s-OFDM QPSK	0	10	1	53	1:1	0.118	32.5	
836.5	167300	NR Band n5	Mid	Main 1	20	23.19	Right	DFT-s-OFDM QPSK	0	10	1	53	1:1	0.218	29.8	
836.5	167300	NR Band n5	Mid	Main 1	20	23.19	Bottom	DFT-s-OFDM QPSK	0	10	1	53	1:1	0.288	28.6	
1 745	349000	NR Band n66	Mid	Main 2	40	18.20	Rear	DFT-s-OFDM QPSK	0	10	1	108	1:1	0.133	27.0	26.3
1 745	349000	NR Band n66	Mid	Main 2	40	18.20	Front	DFT-s-OFDM QPSK	0	10	1	108	1:1	0.129	27.1	
1 745	349000	NR Band n66	Mid	Main 2	40	18.20	Left	DFT-s-OFDM QPSK	0	10	1	108	1:1	0.100	28.2	
1 745	349000	NR Band n66	Mid	Main 2	40	18.20	Bottom	DFT-s-OFDM QPSK	0	10	1	108	1:1	0.154	26.3	

Table A-8 ECI = 0,2,3 *PLimit* Calculations – WLAN Hotspot/Body SAR

MEASUREMENT RESULTS													
Frequency		Mode/ Band	Band width	Ant. No.	Data Rate	Frame Averaged Conducted Power	Test Position	Ant. Config.	Duty Cycle	Meas. SAR(1g)	Scaling Factor	Plimit	Minimum Plimit
MHz	Ch.		(MHz)		(Mbps)	(dBm)				(W/kg)	(Duty)	(dBm)	(dBm)
2 437	6	802.11b	20	Sub2	1	18.54	Rear	WIFI1	99.5	0.109	1.005	27.2	26.5
2 437	6	802.11b	20	Sub2	1	18.54	Front	WIFI1	99.5	0.045	1.005	31.0	
2 437	6	802.11b	20	Sub2	1	18.54	Left	WIFI1	99.5	0.013	1.005	36.4	
2 437	6	802.11b	20	Sub2	1	18.54	Top	WIFI1	99.5	0.128	1.005	26.5	
5 270	54	802.11n	40	Sub2	MCS0	14.13	Rear	WIFI1	93.5	0.119	1.069	22.4	22.4
5 270	54	802.11n	40	Sub2	MCS0	14.13	Front	WIFI1	93.5	0.029	1.069	28.5	
5 270	54	802.11n	40	Sub2	MCS0	14.13	Left	WIFI1	93.5	0.027	1.069	28.8	
5 270	54	802.11n	40	Sub2	MCS0	14.13	Top	WIFI1	93.5	0.084	1.069	23.9	
5 710	142	802.11n	40	Sub2	MCS0	14.66	Rear	WIFI1	93.5	0.309	1.069	18.8	18.8
5 710	142	802.11n	40	Sub2	MCS0	14.66	Front	WIFI1	93.5	0.134	1.069	22.4	
5 710	142	802.11n	40	Sub2	MCS0	14.66	Left	WIFI1	93.5	0.053	1.069	26.4	
5 710	142	802.11n	40	Sub2	MCS0	14.66	Top	WIFI1	93.5	0.230	1.069	20.1	
5 755	151	802.11n	40	Sub2	MCS0	14.05	Rear	WIFI1	93.5	0.396	1.069	17.1	15.7
5 755	151	802.11n	40	Sub2	MCS0	14.05	Front	WIFI1	93.5	0.098	1.069	23.2	
5 755	151	802.11n	40	Sub2	MCS0	14.05	Left	WIFI1	93.5	0.084	1.069	23.8	
5 755	151	802.11n	40	Sub2	MCS0	14.05	Top	WIFI1	93.5	0.548	1.069	15.7	

Table A-9 ECI = 0,2,3 $P_{\_limit}$ Calculations – 2G/3G Phablet SAR

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

MEASUREMENT RESULTS											
Frequency		Mode/ Band		Ant. No.	Frame Averaged Conducted Power	Test Position	Spacing (mm)	Duty Cycle	Meas. SAR(10g)	$P_{\_limit}$	Minimum $P_{\_limit}$
MHz	Ch.				(dBm)				(W/kg)	(dBm)	(dBm)
836.6	190	GSM 850	GPRS4Tx	Main 1	23.89	Rear	0	1:2.07	0.811	29.9	29.5
836.6	190	GSM 850	GPRS4Tx	Main 1	23.89	Front	0	1:2.07	0.394	33.0	
836.6	190	GSM 850	GPRS4Tx	Main 1	23.89	Left	0	1:2.07	0.102	38.9	
836.6	190	GSM 850	GPRS4Tx	Main 1	23.89	Right	0	1:2.07	0.474	32.2	
836.6	190	GSM 850	GPRS4Tx	Main 1	23.89	Bottom	0	1:2.07	0.882	29.5	
1 880.0	661	GSM 1900	GPRS4Tx	Main 2	20.01	Rear	0	1:2.07	1.250	24.9	24.9
1 880.0	661	GSM 1900	GPRS4Tx	Main 2	20.01	Front	0	1:2.07	0.820	26.7	
1 880.0	661	GSM 1900	GPRS4Tx	Main 2	20.01	Left	0	1:2.07	0.517	28.7	
1 880.0	661	GSM 1900	GPRS4Tx	Main 2	20.01	Bottom	0	1:2.07	0.856	26.5	
836.6	4183	UMTS 850	RMC	Main 1	23.16	Back	0	1:1	0.700	28.7	28.3
836.6	4183	UMTS 850	RMC	Main 1	23.16	Front	0	1:1	0.328	32.0	
836.6	4183	UMTS 850	RMC	Main 1	23.16	Left	0	1:1	0.074	38.4	
836.6	4183	UMTS 850	RMC	Main 1	23.16	Right	0	1:1	0.427	30.8	
836.6	4183	UMTS 850	RMC	Main 1	23.16	Bottom	0	1:1	0.770	28.3	
1 732.4	1412	UMTS 1700	RMC	Main 2	19.99	Rear	0	1:1	1.030	23.8	23.8
1 732.4	1412	UMTS 1700	RMC	Main 2	19.99	Front	0	1:1	0.906	24.4	
1 732.4	1412	UMTS 1700	RMC	Main 2	19.99	Left	0	1:1	0.491	27.1	
1 732.4	1412	UMTS 1700	RMC	Main 2	19.99	Bottom	0	1:1	0.761	25.2	
1 880	9400	UMTS 1900	RMC	Main 2	19.10	Rear	0	1:1	1.850	20.4	20.4
1 880	9400	UMTS 1900	RMC	Main 2	19.10	Front	0	1:1	1.120	22.6	
1 880	9400	UMTS 1900	RMC	Main 2	19.10	Left	0	1:1	0.805	24.0	
1 880	9400	UMTS 1900	RMC	Main 2	19.10	Bottom	0	1:1	1.070	22.8	

Table A-10 ECI = 0,2,3 $P_{\_limit}$ Calculations – 4G Phablet SAR

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

MEASUREMENT RESULTS															
Frequency		Mode		Ant. No.	Band width	Frame Averaged Conducted Power	Test Position	Spacing (mm)	MPR	RB Size	RB offset	Duty Cycle	Meas. SAR (10g)	$P_{\_limit}$	Minimum $P_{\_limit}$
MHz	Ch.				MHz	(dBm)			(dB)				(W/kg)	(dBm)	(dBm)
1 900	19100	LTE Band 2 Lower	High	Main 2	20	17.20	Rear	0	0	1	99	1:1	0.726	22.6	22.6
1 900	19100	LTE Band 2 Lower	High	Main 2	20	17.20	Front	0	0	1	99	1:1	0.439	24.8	
1 900	19100	LTE Band 2 Lower	High	Main 2	20	17.20	Left	0	0	1	99	1:1	0.251	27.2	
1 900	19100	LTE Band 2 Lower	High	Main 2	20	17.20	Bottom	0	0	1	99	1:1	0.416	25.0	
1 860	18700	LTE Band 2 Upper	Low	Main 3	20	17.02	Rear	0	0	1	0	1:1	0.989	21.0	21.0
1 860	18700	LTE Band 2 Upper	Low	Main 3	20	17.02	Front	0	0	1	0	1:1	0.115	30.4	
1 860	18700	LTE Band 2 Upper	Low	Main 3	20	17.02	Left	0	0	1	0	1:1	0.506	24.0	
1 860	18700	LTE Band 2 Upper	Low	Main 3	20	17.02	Top	0	0	1	0	1:1	0.038	35.2	
707.5	23095	LTE Band 12 (17)	Mid	Main 1	10	23.60	Back	0	0	1	0	1:1	0.731	28.9	28.9
707.5	23095	LTE Band 12 (17)	Mid	Main 1	10	23.60	Front	0	0	1	0	1:1	0.239	33.8	
707.5	23095	LTE Band 12 (17)	Mid	Main 1	10	23.60	Left	0	0	1	0	1:1	0.077	38.7	
707.5	23095	LTE Band 12 (17)	Mid	Main 1	10	23.60	Right	0	0	1	0	1:1	0.310	32.7	
707.5	23095	LTE Band 12 (17)	Mid	Main 1	10	23.60	Bottom	0	0	1	0	1:1	0.577	30.0	
831.5	26865	LTE Band 26	Mid	Main 1	15	24.08	Back	0	0	1	36	1:1	1.010	28.0	28.0
831.5	26865	LTE Band 26	Mid	Main 1	15	24.08	Front	0	0	1	36	1:1	0.417	31.9	
831.5	26865	LTE Band 26	Mid	Main 1	15	24.08	Left	0	0	1	36	1:1	0.094	38.3	
831.5	26865	LTE Band 26	Mid	Main 1	15	24.08	Right	0	0	1	36	1:1	0.589	30.4	
831.5	26865	LTE Band 26	Mid	Main 1	15	24.08	Bottom	0	0	1	36	1:1	1.010	28.0	
1 770	132572	LTE Band66(4)Lower	High	Main 2	20	18.32	Back	0	0	1	99	1:1	0.754	23.5	23.5
1 770	132572	LTE Band66(4)Lower	High	Main 2	20	18.32	Front	0	0	1	99	1:1	0.550	24.9	
1 770	132572	LTE Band66(4)Lower	High	Main 2	20	18.32	Left	0	0	1	99	1:1	0.313	27.3	
1 770	132572	LTE Band66(4)Lower	High	Main 2	20	18.32	Bottom	0	0	1	99	1:1	0.519	25.1	
1 732.5	20175	LTE Band4(66)Upper	Mid	Main 3	20	17.73	Back	0	0	1	0	1:1	0.959	21.9	21.9
1 732.5	20175	LTE Band4(66)Upper	Mid	Main 3	20	17.73	Front	0	0	1	0	1:1	0.120	30.9	
1 732.5	20175	LTE Band4(66)Upper	Mid	Main 3	20	17.73	Left	0	0	1	0	1:1	0.470	25.0	
1 732.5	20175	LTE Band4(66)Upper	Mid	Main 3	20	17.73	Top	0	0	1	0	1:1	0.059	34.0	
2 506	39750	LTE Band41(PC3)	Low	Main 2	20	19.86	Back	0	0	1	49	1:1.58	0.995	23.9	23.9
2 506	39750	LTE Band41(PC3)	Low	Main 2	20	19.86	Front	0	0	1	49	1:1.58	0.792	24.9	
2 506	39750	LTE Band41(PC3)	Low	Main 2	20	19.86	Left	0	0	1	49	1:1.58	0.645	25.7	
2 506	39750	LTE Band41(PC3)	Low	Main 2	20	19.86	Bottom	0	0	1	49	1:1.58	0.746	25.1	

Table A-11 ECI = 0,2,3 P_{limit} Calculations – NR Phablet SAR

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

SAR measurements of all NR bands were measured in FTM Mode.

MEASUREMENT RESULTS																	
Frequency		Mode		Ant. No.	Band width	Frame Averaged Conducted Power	Test Position		MPR	Spacing (mm)	RB Size	RB offset	Duty Cycle	Meas. SAR (10g)	P_{limit}	Minimum P_{limit}
MHz	Ch.				MHz	(dBm)			(dB)					(W/kg)	(dBm)	(dBm)
836.5	167300	NR Band n5	Mid	Main 1	20	23.19	Rear	DFT-s-OFDM QPSK	0	0	1	53	1:1	0.719	28.6	28.2
836.5	167300	NR Band n5	Mid	Main 1	20	23.19	Front	DFT-s-OFDM QPSK	0	0	1	53	1:1	0.339	31.9	
836.5	167300	NR Band n5	Mid	Main 1	20	23.19	Left	DFT-s-OFDM QPSK	0	0	1	53	1:1	0.075	38.4	
836.5	167300	NR Band n5	Mid	Main 1	20	23.19	Right	DFT-s-OFDM QPSK	0	0	1	53	1:1	0.436	30.8	
836.5	167300	NR Band n5	Mid	Main 1	20	23.19	Bottom	DFT-s-OFDM QPSK	0	0	1	53	1:1	0.787	28.2	
1 745	349000	NR Band n66	Mid	Main 2	40	18.20	Rear	DFT-s-OFDM QPSK	0	0	1	108	1:1	0.696	23.8	23.8
1 745	349000	NR Band n66	Mid	Main 2	40	18.20	Front	DFT-s-OFDM QPSK	0	0	1	108	1:1	0.574	24.6	
1 745	349000	NR Band n66	Mid	Main 2	40	18.20	Left	DFT-s-OFDM QPSK	0	0	1	108	1:1	0.338	26.9	
1 745	349000	NR Band n66	Mid	Main 2	40	18.20	Bottom	DFT-s-OFDM QPSK	0	0	1	108	1:1	0.523	25.0	

Table A-12 ECI = 0,2,3 *PLimit* Calculations – WLAN Phablet SAR

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

MEASUREMENT RESULTS														
Frequency		Mode/ Band	Band width	Ant. No.	Data Rate	Frame Averaged Conducted Power	Test Position	Ant. Config.	Spacing (mm)	Duty Cycle	Meas. SAR(10g)	Scaling Factor	Plimit	Minimum Plimit
Mhz	Ch.		(Mhz)		(Mbps)	(dBm)					(W/kg)	(Duty)	(dBm)	(dBm)
2 437	6	802.11b	20	Sub2	1	18.54	Rear	WIFI1	0	99.5	0.886	1.005	22.1	22.1
2 437	6	802.11b	20	Sub2	1	18.54	Front	WIFI1	0	99.5	0.232	1.005	27.9	
2 437	6	802.11b	20	Sub2	1	18.54	Left	WIFI1	0	99.5	0.063	1.005	33.6	
2 437	6	802.11b	20	Sub2	1	18.54	Top	WIFI1	0	99.5	0.679	1.005	23.2	
5 270	54	802.11n	40	Sub2	MCS0	14.13	Rear	WIFI1	0	93.5	0.280	1.069	22.7	21.5
5 270	54	802.11n	40	Sub2	MCS0	14.13	Front	WIFI1	0	93.5	0.104	1.069	27.0	
5 270	54	802.11n	40	Sub2	MCS0	14.13	Left	WIFI1	0	93.5	0.077	1.069	28.3	
5 270	54	802.11n	40	Sub2	MCS0	14.13	Top	WIFI1	0	93.5	0.369	1.069	21.5	
5 710	142	802.11n	40	Sub2	MCS0	14.66	Rear	WIFI1	0	93.5	0.548	1.069	20.3	19.2
5 710	142	802.11n	40	Sub2	MCS0	14.66	Front	WIFI1	0	93.5	0.197	1.069	24.7	
5 710	142	802.11n	40	Sub2	MCS0	14.66	Left	WIFI1	0	93.5	0.189	1.069	24.9	
5 710	142	802.11n	40	Sub2	MCS0	14.66	Top	WIFI1	0	93.5	0.698	1.069	19.2	
5 755	151	802.11n	40	Sub2	MCS0	14.05	Rear	WIFI1	0	93.5	0.553	1.069	19.6	19.2
5 755	151	802.11n	40	Sub2	MCS0	14.05	Front	WIFI1	0	93.5	0.242	1.069	23.2	
5 755	151	802.11n	40	Sub2	MCS0	14.05	Left	WIFI1	0	93.5	0.188	1.069	24.3	
5 755	151	802.11n	40	Sub2	MCS0	14.05	Top	WIFI1	0	93.5	0.614	1.069	19.2	