

TEST REPORT

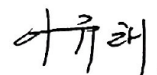
FCC SAR Part 0 Test for SM-A566E/DS
Certification

APPLICANT
SAMSUNG Electronics Co., Ltd.

REPORT NO.
HCT-SR-2412-FC007

DATE OF ISSUE
December 23, 2024

Tested by
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TEST REPORT

PART 0 RF Exposure
Test for
certification

REPORT NO.

HCT-SR-2412-FC007

DATE OF ISSUE

Dec. 23, 2024

FCC ID

A3LSMA566E

Applicant

SAMSUNG Electronics Co., Ltd

129, Samsung-ro, Yeongtong-gu, Suwon-Si, Gyeonggi-do, 16677, Korea

Product Name

Mobile Phone

Model Name

SM-A566E/DS

Additional Model Name

SM-A566E

Date of Test

Nov. 13, 2024 ~ Dec. 16, 2024

Location of Test

☒ Permanent Testing Lab ☐ On Site Testing Lab

**(Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si,
Gyeonggi-do, 17383 KOREA)**

FCC Rule Part(s)

CFR §2.1093

Test Results

Pass (SAR limit : 1.6 W/kg)

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.

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

REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	Dec. 23, 2024	Initial Release

Notice

Content

The results shown in this test report only apply to the sample(s), as received, provided by the applicant, unless otherwise stated.

The test results have only been applied with the test methods required by the standard(s).

The laboratory is not accredited for the test results marked *.

Information provided by the applicant is marked **.

Test results provided by external providers are marked ***.

When confirmation of authenticity of this test report is required, please contact www.hct.co.kr

The test results in this test report are not associated with the ((KS Q) ISO/IEC 17025) accreditation by KOLAS (Korea Laboratory Accreditation Scheme) / A2LA (American Association for Laboratory Accreditation) that are under the ILAC (International Laboratory Accreditation Cooperation) Mutual Recognition Agreement (MRA).

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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)

1.3 General Information of the EUT

Model Name	SM-A566E/DS
Additional Model Name	SM-A566E
Equipment Type	Mobile Phone
FCC ID	A3LSMA566E
Application Type	Certification
Applicant	SAMSUNG Electronics Co., Ltd.

2. DEVICE UNDER TEST DESCRIPTION

2.1 General Information of the EUT

Device Wireless specification overview		
Band & Mode	Operating Mode	Tx Frequency
GSM850	Voice / Data	824.2 MHz ~ 848.8 MHz
GSM1900	Voice / Data	1 850.2 MHz ~ 1 909.8 MHz
UMTS Band 2	Voice / Data	1 852.4 MHz ~ 1 907.6 MHz
UMTS Band 4	Voice / Data	1 712.4 MHz ~ 1 752.6 MHz
UMTS Band 5	Voice / Data	826.4 MHz ~ 846.6 MHz
LTE FDD Band 2 (PCS)	Voice / Data	1 850.7 MHz ~ 1 909.3 MHz
LTE FDD Band 4 (AWS)	Voice / Data	1 710.7 MHz ~ 1 754.3 MHz
LTE FDD Band 5 (Cell)	Voice / Data	824.7 MHz ~ 848.3 MHz
LTE FDD Band 12	Voice / Data	699.7 MHz ~ 715.3 MHz
LTE FDD Band 13	Voice / Data	779.5 MHz ~ 784.5 MHz
LTE FDD Band 17	Voice / Data	706.5 MHz ~ 713.5 MHz
LTE FDD Band 25	Voice / Data	1 850.7 MHz ~ 1 914.3 MHz
LTE FDD Band 26	Voice / Data	814.7 MHz ~ 848.3 MHz
LTE TDD Band 41	Voice / Data	2 498.5 MHz ~ 2 687.5 MHz
LTE FDD Band 66 (AWS)	Voice / Data	1 710.7 MHz ~ 1 779.3 MHz
NR FDD Band n5	Voice / Data	826.5 MHz ~ 846.5 MHz
NR TDD Band n41	Voice / Data	2 501.01 MHz ~ 2 685 MHz
NR FDD Band n66	Voice / Data	1 712.5 MHz ~ 1 777.5 MHz
NR TDD Band n77	Voice / Data	3 705 MHz ~ 3 975 MHz
NR TDD Band n77 DoD	Voice / Data	3 445.01 MHz ~ 3 544.98 MHz
U-NII-1	Voice / Data	5 180 MHz ~ 5 240 MHz
U-NII-2A	Voice / Data	5 260 MHz ~ 5 320 MHz
U-NII-2C	Voice / Data	5 500 MHz ~ 5 720 MHz
U-NII-3	Voice / Data	5 745 MHz ~ 5 825 MHz
U-NII-4	Voice / Data	5 845 MHz ~ 5 885 MHz
2.4 GHz WLAN	Voice / Data	2 412 MHz ~ 2 462 MHz
Bluetooth / LE 5.3	Data	2 402 MHz ~ 2 480 MHz
NFC	Data	13.56 MHz

2.2 Time-Averaging for SAR

This WWAN/WLAN/BT Mode of DUT is equipped with an S.LSI chipset to which the Samsung S.LSI proprietary TAS (Time Average SAR) algorithm is applied.

This DUT is enabled with the Samsung S.LSI proprietary TAS (Time Average SAR) algorithm for WWAN/WLAN/BT Mode and manage transmitting power in real time and to ensure at all times the time-averaged RF exposure is in compliance with the FCC requirement

FCC RF exposure limit is based on time averaged RF exposure. The SAR regulatory specification is defined over certain measurement duration allowing for time-averaging. The Samsung S.LSI proprietary TAS (Time Average SAR) algorithm has been designed to meet the compliance limits over the required duration, while still allowing dynamic control of transmit power to satisfy the performance of the system.

This feature performs time averaging SAR algorithm in real time to control and manage transmitting power and ensure the time-averaged RF exposure is in compliance with FCC requirements all the time.

The WLAN mode are not controlled by The Samsung S.LSI proprietary TAS (Time Average SAR) algorithm. This feature performs time averaging algorithm in real time to control and manage transmitting power and ensure the time-averaged RF exposure is in compliance with FCC requirements all the time. DUT contains BDF File configured for the WLAN TAS algorithm. Only the NFC mode of the device did not apply the time averaged SAR algorithm.

The Samsung S.LSI TAS algorithm allow the device to transmit at higher power instantaneously, as high as Pmax, when needed, but enforces power limiting to maintain time-averaged transmit power to Plimit. Below table shows Plimit NV settings and maximum tune up output power Pmax configured for this DUT for various transmit conditions(Radio SAR indicator RSI for Head/Non-Head SAR of WWAN/WLAN/BT Mode).

The purpose of this report is to demonstrate that the DUT meets FCC SAR limits when transmitting in static transmission configurations at Plimit specified by manufacturer.

SAR Characterization confirms that Plimit in the 4G/5G/WLAN/WLAN/BT communication mode declared by the manufacturer satisfies SAR_Design_target.

The compliance test under the static transmission scenario and simultaneous transmission analysis are reported in SAR report for WWAN/WLAN/BT. The validation of The Samsung S.LSI proprietary TAS (Time Average SAR) algorithm and compliance under the time- varying transmission scenario for WWAN technologies are reported in A3LSMA566E_SAR Part 2 Report_Main report.

2.3 Nomenclature for Part 0 Report

Technology	Term	Description
2G/3G/4G/5G Sub 6 NR/WLAN	Plimit	Power level that corresponds to the exposure design target (SAR_design_target) after accounting for all device design related uncertainties
	Pmax	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 Plimit for all technologies and bands

3. SAR MEASUREMENTS

3.1 SAR Definition

Specific Absorption Rate (SAR) is defined as the time derivative of the incremental electromagnetic energy (dW) 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

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

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/m³)

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		
				Δazzoom(n)	Δazzoom(1)*	
≤2 GHz	≤15	≤8	≤5	≤4	≤1.5*Δazzoom(n-1)	≥30
2-3 GHz	≤12	≤5	≤5	≤4	≤1.5*Δazzoom(n-1)	≥30
3-4 GHz	≤12	≤5	≤4	≤3	≤1.5*Δazzoom(n-1)	≥28
4-5 GHz	≤10	≤4	≤3	≤2.5	≤1.5*Δazzoom(n-1)	≥25
5-6 GHz	≤10	≤4	≤2	≤2	≤1.5*Δazzoom(n-1)	≥22

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

4. SAR CHARACTERIZATION

4.1 Exposure Index and SAR Determination

This device uses different Radio SAR index (RSI) 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 RSI. 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 Radio SAR index (RSI) conditions used in Table 4-1 represent different exposure scenarios.

Table 4-1 RSI and Corresponding Exposure Scenarios

Scenario		Description	SAR Test Cases
Head	RSI = 1	Device positioned next to head When RCV is activated for voice call	Head SAR per KDB Publication 648474 D04
Non –Head	RSI = 0 (Body)	Device is held with hand Device transmits in hotspot mode near body Device being used with a body-worn accessory Device being used with a Earjack	Phablet SAR per KDB Publication 648474 D04 Hotspot SAR per KDB Publication 941225 D06 Body-worn SAR per KDB Publication 648474 D04

The output power for SAR test in WWAN mode of this device is characterized as Head [RSI=1] and Non-Head [RSI=0] is body SAR configuration.

4.2 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 4-2).

<i>SAR_design_target</i>			
$SAR_design_target < SAR_regulatory_limit \times 10^{Total\ Uncertainty/10}$			
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

Table 4-2 *SAR_design_target* Calculations for WWAN Bands

4.3 SAR Characterization

SAR test results corresponding to Pmax for each antenna/technology/band/RSI can be found in Appendix A. Plimit is calculated by linearly scaling with the measured SAR at the Pmax to correspond to the SAR_design_target. Plimit determination for each exposure scenario corresponding to SAR_design_target are shown in Table 4-3.

Radio State Index (RSI)	Plimit Determination Scenarios
0	The worst-case SAR exposure is determined as maximum SAR normalized to the limit among: 1. Extremity SAR measured at 0 mm 2. Body-Worn SAR at 5mm 3. Plimit is calculated based on 1g Hotspot SAR at 5mm 4. Earjack SAR at 0,5mm
1	Plimit is calculated based on 1g Head SAR

Table 4-3 *PLimit* Determination for WLAN/BT

<i>SAR_design_target</i>			
$SAR_design_target < SAR_regulatory_limit \times 10^{Total\ Uncertainty/10}$			
WLAN 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>	0.7 W/kg	<i>SAR_design_target</i>	2.5 W/kg

Table 4-3-1 *WLAN SAR_design_target* Calculations WLAN/BT

Table 4-4 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)	Non Head (Bodyworn / Hotspot)	Maximum Tune-up Output Power (Frame Averaged Power) [dBm]	UL:DL Ratio
Averaging volume			1g	1g		
seperation Distance			0 mm	5 mm		
Mode	Band	Antenna	RSI = 1	RSI =0		
GSM/GPRS/EDGE	850	MAIN 1	36.0	22.5	25.4	48.2%
GSM/GPRS/EDGE	850	Sub 1	26.2	22.3	25.4	48.2%
GSM/GPRS/EDGE	1900	MAIN 2	36.7	19.2	22.0	48.2%
UMTS	2	MAIN 2	32.3	19.0	23.8	100%
UMTS	4	MAIN 2	33.4	18.3	23.8	100%
UMTS	5	MAIN 1	32.4	23.3	24.5	100%
UMTS	5 Upper	Sub 1	22.5	22.5	24.5	100%
LTE FDD	25(2) Lower	MAIN 2	32.7	18.7	23.5	100%
LTE FDD	25(2) Upper	Sub 2	21.5	20.7	23.5	100%
LTE FDD	66(4) Lower	MAIN 2	35.1	21.8	24.0	100%
LTE FDD	66(4) Upper	Sub 2	20.4	19.8	23.5	100%
LTE FDD	12(17)	MAIN 1	31.8	22.0	24.5	100%
LTE FDD	12(17) Upper	Sub 1	21.1	22.5	23.0	100%
LTE FDD	13	MAIN 1	40.4	22.0	24.5	100%
LTE FDD	13 Upper	Sub 1	21.3	22.6	23.0	100%
LTE FDD	26(5)	MAIN 1	33.9	23.9	24.5	100%
LTE FDD	26(5) Upper	Sub 1	20.6	22.8	23.0	100%
LTE TDD PC3	41	MAIN 2	35.4	18.5	21.5	63.3%
LTE TDD PC3	41 Upper	Sub 2	20.5	21.7	22.0	63.3%
NR FDD	5 Lower	MAIN 1	35.7	22.0	24.0	100%
NR FDD	5 Upper	Sub 1	21.3	21.9	23.0	100%
NR FDD	66 Lower	MAIN 2	33.2	19.3	24.5	100%
NR FDD	66 Upper	Sub 2	21.3	20.2	24.5	100%
NR TDD	41	MAIN 2	44.6	16.7	23.5	100%
NR TDD	41 SRS2	Sub 2	15.5	11.5	20.0	100%
NR TDD	41 SRS3	Sub 4	21.5	12.5	21.5	100%
NR TDD	41 SRS4	Sub 3	37.3	9.0	18.0	100%
NR TDD	77	Sub 2	16.7	16.9	24.0	100%
WLAN	2.4	Sub 4	12.5	16.0	18.0	100%
WLAN	2.4	Sub 6	11.5	18.4	18.0	100%
WLAN	2.4	Sub4+6	15.0	15.8	19.0	100%
WLAN	5	Sub 3	10.0	17.6	14.0	100%
WLAN	5	Sub 1	7.0	18.8	14.0	100%
BT LE	2.4	Sub 4	20.5	20.1	17.0	100%
BT BDR	2.4	Sub 4	21.7	24.2	17.5	100%

Note:

1. Compared with the Plimit(Tune up Powers) declared in each RSI/DSI by manufacturer and the plimit(calculation) calculated by the SAR measurement of each RSI/DSI, the lower power were applied to the plimit at each RSI/DSI configurations.
2. When $P_{max} < Plimit$, the DUT will operate at a power level up to P_{max} .
3. Maximum Tune up Power, Pmax 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 and WLAN/BT

5. Equipment List

Manufacturer	Type / Model	S/N	Calib. Date	Calib.Interval	Calib.Due
SPEAG	SAM Phantom	-	N/A	N/A	N/A
SPEAG	ELI Phantom	-	N/A	N/A	N/A
SPEAG	cDASY6 5G Module Phantom	-	N/A	N/A	N/A
HP	SAR System Control PC	-	N/A	N/A	N/A
Staubli	CS8Cspeag-TX90	F13/ 5R4XF1/ C/ 01	N/A	N/A	N/A
Staubli	TX90 XLspeag	F13/ 5R4XF1/ A/ 01	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick)	S-1338 1332	N/A	N/A	N/A
TESTO	175-H1/Thermometer	40331953309	01/18/2024	Annual	01/18/2025
Staubli	CS8Cspeag-TX90	F08/5AJ0A1/C/01	N/A	N/A	N/A
Staubli	TX90 XLspeag	F08/5AJ0A1/A/01	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick)	S-0008	N/A	N/A	N/A
TESTO	175-H1/Thermometer	40331949309	12/26/2023	Annual	12/26/2024
Staubli	CS8Cspeag-TX90	F13/ 5SD0A1/ C/ 01	N/A	N/A	N/A
Staubli	TX90 XLspeag	F13/ 5SD0A1/ A/ 01	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick)	001729	N/A	N/A	N/A
TESTO	608-H1/Thermometer	83348029	03/20/2024	Annual	03/20/2025
Staubli	CS9spe-TX2-60	F/21/0029002/C/001	N/A	N/A	N/A
Staubli	TX2-60 Lspeag	F/21/0029002/A/001	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick)	D21144507C	N/A	N/A	N/A
TESTO	608-H1/Thermometer	83239085	10/24/2023	Annual	10/24/2024
Staubli	CS8Cspeag-TX90	F07/56W9A1/C/01	N/A	N/A	N/A
Staubli	TX90 XLspeag	F07/56W9A1/A/01	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick)	S-0602	N/A	N/A	N/A
TESTO	608-H1/Thermometer	83406789	06/26/2024	Annual	06/26/2025
SPEAG	DAE4	1417	02/16/2024	Annual	02/16/2025
SPEAG	DAE4	1254	05/16/2024	Annual	05/16/2025
SPEAG	DAE4	504	01/30/2024	Annual	01/30/2025
SPEAG	DAE4	869	03/15/2024	Annual	03/15/2025
SPEAG	E-Field Probe EX3DV4	7654	05/22/2024	Annual	05/22/2025
SPEAG	E-Field Probe EX3DV4	7732	06/19/2024	Annual	06/19/2025
SPEAG	E-Field Probe EX3DV4	7309	06/19/2024	Annual	06/19/2025
SPEAG	E-Field Probe EX3DV4	7679	08/22/2024	Annual	08/22/2025
SPEAG	E-Field Probe ES3DV3	3076	07/17/2024	Annual	07/17/2024
SPEAG	CLA13	1016	11/19/2024	Annual	11/19/2025
SPEAG	Dipole D750V3	1014	05/20/2024	Annual	05/20/2025
SPEAG	Dipole D835V2	441	04/18/2024	Annual	04/18/2025
SPEAG	Dipole D1800V2	2d007	04/15/2024	Annual	04/15/2025
SPEAG	Dipole D1900V2	5d032	01/18/2024	Annual	01/23/2025
SPEAG	Dipole D2450V2	743	03/14/2024	Annual	03/14/2025
SPEAG	Dipole D2600V2	1015	04/22/2024	Annual	04/22/2025
SPEAG	Dipole D3500V2	1132	01/23/2024	Annual	01/23/2025
SPEAG	Dipole D3700V2	1105	09/18/2024	Annual	09/18/2025
SPEAG	Dipole D3900V2	1086	05/21/2024	Annual	05/21/2025
SPEAG	Dipole D5GHzV2	1107	04/19/2024	Annual	05/17/2025

Manufacturer	Type / Model	S/N	Calib. Date	Calib.Interval	Calib.Due
Agilent	Power Meter E4419B	MY41291386	09/11/2024	Annual	09/11/2025
Agilent	Power Meter N1911A	MY45101406	05/21/2024	Annual	05/21/2025
Agilent	Power Sensor 8481A	SG1091286	09/12/2024	Annual	09/12/2025
H.P	Power Sensor 8481A	MY41090675	09/12/2024	Annual	09/12/2025
Agilent	Wideband Power Sensor N1921A	MY55220026	07/30/2024	Annual	07/30/2025
Agilent	11636B/Power Divider	58698	01/15/2024	Annual	01/15/2025
SPEAG	DAKS 3.5	1038	01/22/2024	Annual	01/22/2025
SPEAG	Vector Reflectometer	0141013	01/11/2024	Annual	01/11/2025
SPEAG	DAKS 12	1048	03/20/2024	Annual	03/20/2025
SPEAG	Vector Reflectometer	21393001	03/21/2024	Annual	03/21/2025
SPEAG	MXA Signal Analyzer	MY49100108	01/09/2024	Annual	01/09/2025
H.P	Network Analyzer /8753ES	JP39240221	12/26/2023	Annual	12/26/2024
Protek	NETWORK ANALYZER	X11-15305	02/15/2024	Annual	02/15/2025
Agilent	WIRELESS COMMUNICATION E5515C	MY48361100	09/11/2024	Annual	09/11/2025
Agilent	WIRELESS COMMUNICATION E5515C	MY48360252	07/29/2024	Annual	07/29/2025
R&S	Wireless Communication Test Set CMW500	115733	03/19/2024	Annual	03/19/2025
R&S	Wireless Communication Test Set CMW500	139333	12/09/2024	Annual	12/09/2025
Agilent	SIGNAL GENERATOR N5182A	MY47070230	03/19/2024	Annual	03/19/2025
Keysight	PSG Vector Signal Generator	MY50350097	03/05/2024	Annual	03/05/2025
EMPOWER	RF Power Amplifier	1084	05/21/2024	Annual	05/21/2025
EMPOWER	RF Power Amplifier	1041D/C0508	05/21/2024	Annual	05/21/2025
EMPOWER	RF Power Amplifier	1011	09/11/2024	Annual	09/11/2025
MICRO LAB	LP Filter / LA-15N	10453	09/11/2024	Annual	09/11/2025
MICRO LAB	LP Filter / LA-30N	-	09/11/2024	Annual	09/11/2025
MICRO LAB	LP Filter / LA-60N	32011	09/11/2024	Annual	09/11/2025
Agilent	Attenuator (3dB) 8693B	MY39260298	08/20/2024	Annual	08/20/2025
HP	Attenuator (20dB) 8493C	09271	08/21/2024	Annual	08/21/2025
Agilent	Directional Bridge 86205A	3140A04581	04/22/2024	Annual	04/22/2026
Agilent	MXA Signal Analyzer N9020A	MY50510407	06/04/2024	Annual	06/04/2025
KEYSIGHT	EXG Vector Signal Generator	MY50350097	03/05/2024	Annual	03/05/2025
HP	Dual Directional Coupler	16072	09/11/2024	Annual	09/11/2025
Narda	DIRECTIONAL COUPLER	07066	01/08/2024	Annual	01/08/2025
Anritsu	Radio Communication Test Station MT8000A	6261987928	01/18/2024	Annual	01/18/2025
Anritsu	Radio Communication Test Station MT8000A	6262036812	11/27/2024	Annual	11/27/2025
Anritsu	Radio Communication Tester MT8820C	6201074225	01/17/2024	Annual	01/17/2025
Anritsu	Radio Communication Tester MT8820C	6200695605	03/19/2024	Annual	03/19/2025
Anritsu	Radio Communication Tester MT8821C	6262044720	11/27/2024	Annual	11/27/2025
Anritsu	Radio Communication Tester MT8821C	6201664725	01/17/2024	Annual	01/17/2025
Agilent	WIRELESS COMMUNICATION E5515C	MY50260992	05/22/2024	Annual	05/22/2025
ROHDE&SCHWARZ	BLUETOOTH TESTER CBT	100272	01/16/2024	Annual	01/16/2025
YAMADA	STRAIGHT RULE	-	06/25/2024	Annual	06/25/2025

Manufacturer	Type / Model	S/N	Calib. Date	Calib.Interval	Calib.Due
Anritsu	Radio Communication Test Station MT8000A	6261987928	01/18/2024	Annual	01/18/2025
Anritsu	Radio Communication Test Station MT8000A	6262036812	11/28/2023	Annual	11/28/2024
Anritsu	Radio Communication Test Station MT8000A	6262148305	12/21/2023	Annual	12/21/2024
Anritsu	Radio Communication Tester MT8820C	6201074225	01/17/2024	Annual	01/17/2025
Anritsu	Radio Communication Tester MT8820C	6200695605	03/19/2024	Annual	03/19/2025
Anritsu	Radio Communication Tester MT8821C	6262044720	11/28/2023	Annual	11/28/2024
Anritsu	Radio Communication Tester MT8821C	6201664725	01/17/2024	Annual	01/17/2025
Agilent	WIRELESS COMMUNICATION E5515C	MY50260992	05/22/2024	Annual	05/22/2025

* 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.

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 Plimit CALCULATIONS

Table A-1 RSI = 1 *PLimit* Calculations – 2G/3G Head SAR

MEASUREMENT RESULTS										
Frequency		Mode/ Band		Ant.	Frame Averaged	Test Position	Duty Cycle	Meas.	Plimit	Minimum
Mhz	Ch.				Conducted Power			SAR(1g)	(dBm)	(dBm)
824.2	128	GSM 850	GPRS 4Tx	A	25.44	Left Cheek	1:2.07	0.066	37.2	36.0
824.2	128	GSM 850		A	25.44	Left Tilt	1:2.07	0.034	40.1	
824.2	128	GSM 850		A	25.44	Right Cheek	1:2.07	0.088	36.0	
824.2	128	GSM 850		A	25.44	Right Tilt	1:2.07	0.039	39.5	
836.6	190	GSM 850		E	21.87	Left Cheek	1:8.3	0.478	25.1	
836.6	190	GSM 850	GSM Voice	E	21.87	Left Tilt	1:8.3	0.411	25.7	25.1
836.6	190	GSM 850		E	21.87	Right Cheek	1:8.3	0.377	26.1	
836.6	190	GSM 850		E	21.87	Right Tilt	1:8.3	0.296	27.2	
1880	661	GSM 1900		B	22.13	Left Cheek	1:2.07	0.032	37.1	
1880	661	GSM 1900	B	22.13	Left Tilt	1:2.07	0.014	40.7		
1880	661	GSM 1900	B	22.13	Right Cheek	1:2.07	0.027	37.8		
1880	661	GSM 1900	B	22.13	Right Tilt	1:2.07	0.00838	43.1		
836.6	4183	UMTS Band 5	RMC	A	23.84	Left Cheek	1:1	0.095	34.1	32.4
836.6	4183	UMTS Band 5		A	23.84	Left Tilt	1:1	0.064	35.8	
836.6	4183	UMTS Band 5		A	23.84	Right Cheek	1:1	0.138	32.4	
836.6	4183	UMTS Band 5		A	23.84	Right Tilt	1:1	0.061	36.0	
836.6	4183	UMTS Band 5	RMC	E	22.94	Left Cheek	1:1	0.650	24.8	24.8
836.6	4183	UMTS Band 5		E	22.94	Left Tilt	1:1	0.656	24.8	
836.6	4183	UMTS Band 5		E	22.94	Right Cheek	1:1	0.479	26.1	
836.6	4183	UMTS Band 5		E	22.94	Right Tilt	1:1	0.443	26.5	
1732.4	1412	UMTS Band 4	RMC	B	24.18	Left Cheek	1:1	0.119	33.4	33.4
1732.4	1412	UMTS Band 4		B	24.18	Left Tilt	1:1	0.083	35.0	
1732.4	1412	UMTS Band 4		B	24.18	Right Cheek	1:1	0.112	33.7	
1732.4	1412	UMTS Band 4		B	24.18	Right Tilt	1:1	0.075	35.4	
1880	9400	UMTS Band 2	RMC	B	23.61	Left Cheek	1:1	0.135	32.3	32.3
1880	9400	UMTS Band 2		B	23.61	Left Tilt	1:1	0.094	33.9	
1880	9400	UMTS Band 2		B	23.61	Right Cheek	1:1	0.104	33.4	
1880	9400	UMTS Band 2		B	23.61	Right Tilt	1:1	0.087	34.2	

Table A-2 RSI = 1 *PLimit* 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)	Plimit	Minimum Plimit
MHz	Ch.				(dBm)	(dBm)		(dB)				(W/kg)	(dBm)	(dBm)
707.5	23095	LTE Band 12	Mid	A	10	24.42	Left Cheek	0	1	24	1:1	0.139	33.0	31.8
707.5	23095	LTE Band 12	Mid	A	10	24.42	Left Tilt	0	1	24	1:1	0.048	37.6	
707.5	23095	LTE Band 12	Mid	A	10	24.42	Right Cheek	0	1	24	1:1	0.184	31.8	
707.5	23095	LTE Band 12	Mid	A	10	24.42	Right Tilt	0	1	24	1:1	0.091	34.8	
707.5	23095	LTE Band 12	Mid	E	10	19.89	Left Cheek	0	1	24	1:1	0.753	21.1	21.1
707.5	23095	LTE Band 12	Mid	E	10	19.89	Left Tilt	0	1	24	1:1	0.599	22.1	
707.5	23095	LTE Band 12	Mid	E	10	19.89	Right Cheek	0	1	24	1:1	0.538	22.6	
707.5	23095	LTE Band 12	Mid	E	10	19.89	Right Tilt	0	1	24	1:1	0.476	23.1	
782	23230	LTE Band 13	Mid	A	10	24.90	Left Cheek	0	1	24	1:1	0.014	43.4	40.4
782	23230	LTE Band 13	Mid	A	10	24.90	Left Tilt	0	1	24	1:1	0.00701	46.4	
782	23230	LTE Band 13	Mid	A	10	24.90	Right Cheek	0	1	24	1:1	0.028	40.4	
782	23230	LTE Band 13	Mid	A	10	24.90	Right Tilt	0	1	24	1:1	0.011	44.5	
782	23230	LTE Band 13	Mid	E	10	19.51	Left Cheek	0	1	24	1:1	0.669	21.3	21.3
782	23230	LTE Band 13	Mid	E	10	19.51	Left Tilt	0	1	24	1:1	0.535	22.2	
782	23230	LTE Band 13	Mid	E	10	19.51	Right Cheek	0	1	24	1:1	0.457	22.9	
782	23230	LTE Band 13	Mid	E	10	19.51	Right Tilt	0	1	24	1:1	0.414	23.3	
1905	26590	LTE Band 25(2)	High	B	20	23.87	Left Cheek	0	1	49	1:1	0.130	32.7	32.7
1905	26590	LTE Band 25(2)	High	B	20	23.87	Left Tilt	0	1	49	1:1	0.019	41.1	
1905	26590	LTE Band 25(2)	High	B	20	23.87	Right Cheek	0	1	49	1:1	0.104	33.7	
1905	26590	LTE Band 25(2)	High	B	20	23.87	Right Tilt	0	1	49	1:1	0.051	36.8	
1905	26590	LTE Band 25(2)	High	F	20	17.74	Left Cheek	0	1	49	1:1	0.210	24.5	21.5
1905	26590	LTE Band 25(2)	High	F	20	17.74	Left Tilt	0	1	49	1:1	0.258	23.6	
1905	26590	LTE Band 25(2)	High	F	20	17.65	Right Cheek	0	1	49	1:1	0.416	21.5	
1905	26590	LTE Band 25(2)	High	F	20	17.74	Right Tilt	0	1	49	1:1	0.425	21.5	
831.5	26865	LTE Band 26(5)	Mid	A	15	24.75	Left Cheek	0	1	0	1:1	0.083	35.6	33.9
831.5	26865	LTE Band 26(5)	Mid	A	15	24.75	Left Tilt	0	1	0	1:1	0.046	38.1	
831.5	26865	LTE Band 26(5)	Mid	A	15	24.75	Right Cheek	0	1	0	1:1	0.121	33.9	
831.5	26865	LTE Band 26(5)	Mid	A	15	24.75	Right Tilt	0	1	0	1:1	0.060	37.0	
831.5	26865	LTE Band 26(5)	Mid	E	15	19.56	Left Cheek	0	1	0	1:1	0.771	20.7	20.7
831.5	26865	LTE Band 26(5)	Mid	E	15	19.56	Left Tilt	0	1	0	1:1	0.606	21.7	
831.5	26865	LTE Band 26(5)	Mid	E	15	19.56	Right Cheek	0	1	0	1:1	0.505	22.5	
831.5	26865	LTE Band 26(5)	Mid	E	15	19.56	Right Tilt	0	1	0	1:1	0.424	23.3	

MEASUREMENT RESULTS

Frequency		Mode		Ant.	Band width	Frame Averaged Conducted Power	Test Position	MPR	RB Size	RB offset	Duty Cycle	Meas. SAR(1g)	Plimit	Minimum Plimit
MHz	Ch.				(dBm)	(dBm)		(dB)				(W/kg)	(dBm)	(dBm)
2 680	41490	LTE Band41(PC3)	High	B	20	22.35	Left Cheek	0	1	49	1:1.58	0.034	37.0	36.2
2 680	41490	LTE Band41(PC3)	High	B	20	22.35	Left Tilt	0	1	49	1:1.58	0.016	40.3	
2 680	41490	LTE Band41(PC3)	High	B	20	22.35	Right Cheek	0	1	49	1:1.58	0.041	36.2	
2 680	41490	LTE Band41(PC3)	High	B	20	22.35	Right Tilt	0	1	49	1:1.58	0.015	40.6	
2 680	41490	LTE Band41(PC3)	High	F	20	16.99	Left Cheek	0	1	49	1:1.58	0.198	24.0	20.5
2 680	41490	LTE Band41(PC3)	High	F	20	16.99	Left Tilt	0	1	49	1:1.58	0.231	23.4	
2 680	41490	LTE Band41(PC3)	High	F	20	16.99	Right Cheek	0	1	49	1:1.58	0.325	21.9	
2 680	41490	LTE Band41(PC3)	High	F	20	16.99	Right Tilt	0	1	49	1:1.58	0.446	20.5	
1 720	132072	LTE Band 66	Low	B	20	24.98	Left Cheek	0	1	49	1:1	0.098	35.1	35.1
1 720	132072	LTE Band 66	Low	B	20	24.98	Left Tilt	0	1	49	1:1	0.098	35.1	
1 720	132072	LTE Band 66	Low	B	20	24.98	Right Cheek	0	1	49	1:1	0.089	35.5	
1 720	132072	LTE Band 66	Low	B	20	24.98	Right Tilt	0	1	49	1:1	0.072	36.4	
1 720	132072	LTE Band 66	Low	F	20	18.30	Left Cheek	0	50	49	1:1	0.508	21.2	20.4
1 720	132072	LTE Band 66	Low	F	20	18.30	Left Tilt	0	50	49	1:1	0.619	20.4	
1 720	132072	LTE Band 66	Low	F	20	18.30	Right Cheek	0	50	49	1:1	0.605	20.5	
1 720	132072	LTE Band 66	Low	F	20	18.30	Right Tilt	0	50	49	1:1	0.527	21.1	

Table A-3 RSI = 1 *PLimit* Calculations – NR Head SAR

For some bands/modes, a lower *PLimit* was selected as a more conservative evaluation.

NR TDD Bands : In the case of the NR TDD bands, the *PLimit* were calculated as the Frame average power to which the duty factor was applied to the burst power.

SAR measurements of TDD 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)	Plimit	Minimum Plimit
MHz	Ch.				(dBm)	(dBm)			(dB)	(W/kg)	(dBm)	(dBm)			
836.5	167300	NR Band n5	Mid	A	20	24.07	Left Cheek	DFT-s OFDM QPSK	0	1	1	1:1	0.039	38.2	35.7
836.5	167300	NR Band n5	Mid	A	20	24.07	Left Tilt	DFT-s OFDM QPSK	0	1	1	1:1	0.027	39.8	
836.5	167300	NR Band n5	Mid	A	20	24.07	Right Cheek	DFT-s OFDM QPSK	0	1	1	1:1	0.068	35.7	
836.5	167300	NR Band n5	Mid	A	20	24.07	Right Tilt	DFT-s OFDM QPSK	0	1	1	1:1	0.032	39.0	
836.5	167300	NR Band n5	Mid	E	20	18.32	Left Cheek	DFT-s OFDM QPSK	0	1	1	1:1	0.503	21.3	21.3
836.5	167300	NR Band n5	Mid	E	20	18.32	Left Tilt	DFT-s OFDM QPSK	0	1	1	1:1	0.464	21.7	
836.5	167300	NR Band n5	Mid	E	20	18.32	Right Cheek	DFT-s OFDM QPSK	0	1	1	1:1	0.282	23.8	
836.5	167300	NR Band n5	Mid	E	20	18.32	Right Tilt	DFT-s OFDM QPSK	0	1	1	1:1	0.349	22.9	
2 592.99	518598	NR Band n41	Mid	B	100	16.56	Left Cheek	DFT-s OFDM QPSK	0	1	137	1:1	0	N/A	N/A
2 592.99	518598	NR Band n41	Mid	B	100	16.56	Left Tilt	DFT-s OFDM QPSK	0	1	137	1:1	0	N/A	
2 592.99	518598	NR Band n41	Mid	B	100	16.56	Right Cheek	DFT-s OFDM QPSK	0	1	137	1:1	0	N/A	
2 592.99	518598	NR Band n41	Mid	B	100	16.56	Right Tilt	DFT-s OFDM QPSK	0	1	137	1:1	0	N/A	
2 592.99	518598	NR Band n41 SRS1	Mid	F	100	12.20	Left Cheek	CW	0	-	-	1:1	0.107	21.9	17.5
2 592.99	518598	NR Band n41 SRS1	Mid	F	100	12.20	Left Tilt	CW	0	-	-	1:1	0.118	21.5	
2 592.99	518598	NR Band n41 SRS1	Mid	F	100	12.20	Right Cheek	CW	0	-	-	1:1	0.264	18.0	
2 592.99	518598	NR Band n41 SRS1	Mid	F	100	12.20	Right Tilt	CW	0	-	-	1:1	0.295	17.5	
2 592.99	518598	NR Band n41 SRS2	Mid	H	100	13.37	Left Cheek	CW	0	-	-	1:1	0.014	31.9	23.5
2 592.99	518598	NR Band n41 SRS2	Mid	H	100	13.37	Left Tilt	CW	0	-	-	1:1	0.012	32.6	
2 592.99	518598	NR Band n41 SRS2	Mid	H	100	13.37	Right Cheek	CW	0	-	-	1:1	0.097	23.5	
2 592.99	518598	NR Band n41 SRS2	Mid	H	100	13.37	Right Tilt	CW	0	-	-	1:1	0.095	23.6	
2 592.99	518598	NR Band n41 SRS3	Mid	D	100	9.28	Left Cheek	CW	0	-	-	1:1	0	N/A	N/A
2 592.99	518598	NR Band n41 SRS3	Mid	D	100	9.28	Left Tilt	CW	0	-	-	1:1	0	N/A	
2 592.99	518598	NR Band n41 SRS3	Mid	D	100	9.28	Right Cheek	CW	0	-	-	1:1	0	N/A	
2 592.99	518598	NR Band n41 SRS3	Mid	D	100	9.28	Right Tilt	CW	0	-	-	1:1	0	N/A	
1 745	349000	NR Band 66	Mid	B	40	24.47	Left Cheek	DFT-s OFDM QPSK	0	1	108	1:1	0.134	33.2	33.2
1 745	349000	NR Band 66	Mid	B	40	24.47	Left Tilt	DFT-s OFDM QPSK	0	1	108	1:1	0.016	42.4	
1 745	349000	NR Band 66	Mid	B	40	24.47	Right Cheek	DFT-s OFDM QPSK	0	1	108	1:1	0.022	41.0	
1 745	349000	NR Band 66	Mid	B	40	24.47	Right Tilt	DFT-s OFDM QPSK	0	1	108	1:1	0.014	43.0	
1 745	349000	NR Band 66	Mid	F	40	18.62	Left Cheek	DFT-s OFDM QPSK	0	108	0	1:1	0.380	22.8	21.3
1 745	349000	NR Band 66	Mid	F	40	18.62	Left Tilt	DFT-s OFDM QPSK	0	108	0	1:1	0.460	22.0	
1 745	349000	NR Band 66	Mid	F	40	18.62	Right Cheek	DFT-s OFDM QPSK	0	108	0	1:1	0.468	21.9	
1 745	349000	NR Band 66	Mid	F	40	18.56	Right Tilt	CP OFDM QPSK	0	1	1	1:1	0.531	21.3	
3 930	662000	NR Band 77	High	F	100	14.15	Left Cheek	DFT-s OFDM QPSK	0	1	271	1:1	0.204	21.1	16.7
3 930	662000	NR Band 77	High	F	100	14.15	Left Tilt	DFT-s OFDM QPSK	0	1	271	1:1	0.213	20.9	
3 930	662000	NR Band 77	High	F	100	14.15	Right Cheek	DFT-s OFDM QPSK	0	1	271	1:1	0.409	18.0	
3 930	662000	NR Band 77	High	F	100	13.87	Right Tilt	DFT-s OFDM QPSK	0	270	0	1:1	0.516	16.7	
3 500.01	633334	NR Band 77 DoD	Mid	F	100	13.95	Right Tilt	DFT-s OFDM QPSK	0	135	138	1:1	0.468	17.2	17.2

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

MEASUREMENT RESULTS													
Frequency		Mode/ Band	Band width (MHz)	Ant.	Data Rate	Frame Averaged Conducted Power (dBm)	Test Position	Ant. Config.	Duty Cycle	Meas. SAR(1g)	Scaling Factor	Plimit	Minimum Plimit
MHz	Ch.				(Mbps)					(W/kg)	(Duty)	(dBm)	(dBm)
2 437	6	802.11b	20	H	1	13.38	Left Cheek	WIFI1	98.6	0.078	1.014	22.9	17.6
2 437	6	802.11b	20	H	1	13.38	Left Tilt	WIFI1	98.6	0.097	1.014	22.0	
2 437	6	802.11b	20	H	1	13.38	Right Cheek	WIFI1	98.6	0.264	1.014	17.6	
2 437	6	802.11b	20	H	1	13.38	Right Tilt	WIFI1	98.6	0.254	1.014	17.8	
2 437	6	802.11b	20	J	1	11.79	Left Cheek	WIFI2	98.6	0.088	1.014	20.8	17.6
2 437	6	802.11b	20	J	1	11.79	Left Tilt	WIFI2	98.6	0.097	1.014	20.4	
2 437	6	802.11b	20	J	1	11.79	Right Cheek	WIFI2	98.6	0.184	1.014	17.6	
2 437	6	802.11b	20	J	1	11.79	Right Tilt	WIFI2	98.6	0.010	1.014	30.2	
5 775	155	802.11ac	80	G	MCS0	10.44	Left Cheek	WIFI1	88.6	0.057	1.129	21.3	12.9
5 775	155	802.11ac	80	G	MCS0	10.44	Left Tilt	WIFI1	88.6	0.048	1.129	22.1	
5 775	155	802.11ac	80	G	MCS0	10.44	Right Cheek	WIFI1	88.6	0.395	1.129	12.9	
5 775	155	802.11ac	80	G	MCS0	10.44	Right Tilt	WIFI1	88.6	0.138	1.129	17.5	
5 290	58	802.11ac	80	E	MCS0	7.63	Left Cheek	WIFI2	88.6	0.136	1.129	14.7	14.7
5 290	58	802.11ac	80	E	MCS0	7.63	Left Tilt	WIFI2	88.6	0.112	1.129	15.6	
5 290	58	802.11ac	80	E	MCS0	7.63	Right Cheek	WIFI2	88.6	0.120	1.129	15.3	
5 290	58	802.11ac	80	E	MCS0	7.63	Right Tilt	WIFI2	88.6	0.099	1.129	16.1	

Table A-5 DSI = 1 *PLimit* Calculations – BT Head SAR

MEASUREMENT RESULTS										
Frequency		Mode/ Band	Ant.	Frame Averaged	Test Position	Ant. Config.	Meas. SAR(1g)	Scaling Factor	Plimit	Minimum Plimit
MHz	Ch.			Conducted Power (dBm)			(W/kg)	(Duty)	(dBm)	(dBm)
2 440	17	Bluetooth LE	H	18.45	Left Cheek	Ant1	0.138	1.149	25.5	20.5
2 440	17	Bluetooth LE	H	18.45	Left Tilt	Ant1	0.163	1.149	24.8	
2 440	17	Bluetooth LE	H	18.45	Right Cheek	Ant1	0.438	1.149	20.5	
2 440	17	Bluetooth LE	H	18.45	Right Tilt	Ant1	0.412	1.149	20.8	

Table A-6 RSI = 0 P_{Limit} Calculations – 2G/3G 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 (dBm)	Test Position	Spacing (mm)	Duty Cycle	Meas. SAR(1g) (W/kg)	Plimit (dBm)	Minimum Plimit (dBm)
Mhz	Ch.										
824.2	128	GSM 850	GPRS 2Tx	A	22.22	Rear	5	1:8.3	0.654	24.1	24.1
824.2	128	GSM 850	GPRS 2Tx	A	22.22	Front	5	1:8.3	0.605	24.4	
824.2	128	GSM 850	GPRS 2Tx	A	22.59	Left	5	1:4.15	0.094	32.9	
824.2	128	GSM 850	GPRS 2Tx	A	22.59	Right	5	1:4.15	0.346	27.2	
824.2	128	GSM 850	GPRS 2Tx	A	22.59	Bottom	5	1:4.15	0.430	26.3	
836.6	190	GSM 850	GPRS 2Tx	E	21.87	Rear	5	1:8.3	0.354	26.4	26.4
836.6	190	GSM 850	GPRS 2Tx	E	21.87	Front	5	1:8.3	0.286	27.3	
836.6	190	GSM 850	GPRS 2Tx	E	22.12	Right	5	1:4.15	0.240	28.3	
836.6	190	GSM 850	GPRS 2Tx	E	22.12	Top	5	1:4.15	0.357	26.6	
1880.0	661	GSM 1900	GPRS 4Tx	B	18.30	Rear	5	1:2.07	0.392	22.4	19.0
1880.0	661	GSM 1900	GPRS 4Tx	B	18.30	Front	5	1:2.07	0.307	23.4	
1880.0	661	GSM 1900	GPRS 4Tx	B	18.30	Left	5	1:2.07	0.130	27.2	
1880.0	661	GSM 1900	GPRS 4Tx	B	18.30	Bottom	5	1:2.07	0.850	19.0	
836.6	4183	UMTS 850	RMC	A	21.25	Rear	5	1:1	0.551	23.8	23.8
836.6	4183	UMTS 850	RMC	A	21.25	Front	5	1:1	0.431	24.9	
836.6	4183	UMTS 850	RMC	A	21.25	Right	5	1:1	0.267	27.0	
836.6	4183	UMTS 850	RMC	A	21.25	Bottom	5	1:1	0.385	25.4	
836.6	4183	UMTS 850	RMC	E	22.94	Rear	5	1:1	0.501	25.9	25.9
836.6	4183	UMTS 850	RMC	E	22.94	Front	5	1:1	0.402	26.9	
836.6	4183	UMTS 850	RMC	E	22.94	Left	5	1:1	0.045	36.4	
836.6	4183	UMTS 850	RMC	E	22.94	Right	5	1:1	0.212	29.7	
836.6	4183	UMTS 850	RMC	E	22.94	Top	5	1:1	0.492	26.0	
1732.4	1412	UMTS 1700	RMC	B	17.90	Rear	5	1:1	0.383	22.1	18.3
1732.4	1412	UMTS 1700	RMC	B	17.90	Front	5	1:1	0.472	21.2	
1732.4	1412	UMTS 1700	RMC	B	17.90	Left	5	1:1	0.208	24.7	
1732.4	1412	UMTS 1700	RMC	B	17.90	Bottom	5	1:1	0.918	18.3	
1880	9400	UMTS 1900	RMC	B	0.297	Rear	5	1:1	0.297	22.8	19.1
1880	9400	UMTS 1900	RMC	B	0.232	Front	5	1:1	0.232	23.8	
1880	9400	UMTS 1900	RMC	B	0.154	Left	5	1:1	0.154	25.6	
1880	9400	UMTS 1900	RMC	B	0.718	Bottom	5	1:1	0.697	19.1	

Table A-7 RSI = 0 P_{Limit} Calculations – 4G Body 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)	Plimit	Minimum Plimit
					Mhz	(dBm)			(dB)				(W/kg)		
707.5	23095	LTE Band 12	Mid	A	10	24.42	Rear	5	0	1	24	1:1	0.567	26.9	26.9
707.5	23095	LTE Band 12	Mid	A	10	24.42	Front	5	0	1	24	1:1	0.403	28.4	
707.5	23095	LTE Band 12	Mid	A	10	24.42	Left	5	0	1	24	1:1	0.059	36.7	
707.5	23095	LTE Band 12	Mid	A	10	24.42	Right	5	0	1	24	1:1	0.350	29.0	
707.5	23095	LTE Band 12	Mid	A	10	24.42	Bottom	5	0	1	24	1:1	0.430	28.1	
707.5	23095	LTE Band 12	Mid	E	10	19.89	Rear	5	0	1	24	1:1	0.545	22.5	22.5
707.5	23095	LTE Band 12	Mid	E	10	19.89	Front	5	0	1	24	1:1	0.399	23.9	
707.5	23095	LTE Band 12	Mid	E	10	19.89	Right	5	0	1	24	1:1	0.192	27.1	
707.5	23095	LTE Band 12	Mid	E	10	19.89	Top	5	0	1	24	1:1	0.459	23.3	
782	23230	LTE Band 13	Mid	A	10	23.87	Rear	5	0	1	24	1:1	0.279	29.4	29.1
782	23230	LTE Band 13	Mid	A	10	23.87	Front	5	0	1	24	1:1	0.32	28.8	
782	23230	LTE Band 13	Mid	A	10	23.87	Left	5	0	1	24	1:1	0.031	39.0	
782	23230	LTE Band 13	Mid	A	10	23.87	Right	5	0	1	24	1:1	0.129	32.8	
782	23230	LTE Band 13	Mid	A	10	23.87	Bottom	5	0	1	24	1:1	0.301	29.1	
782	23230	LTE Band 13	Mid	E	10	19.51	Rear	5	0	1	24	1:1	0.487	22.6	22.6
782	23230	LTE Band 13	Mid	E	10	19.51	Front	5	0	1	24	1:1	0.335	24.3	
782	23230	LTE Band 13	Mid	E	10	19.51	Right	5	0	1	24	1:1	0.228	25.9	
782	23230	LTE Band 13	Mid	E	10	19.51	Top	5	0	1	24	1:1	0.407	23.4	
1905	26590	LTE Band 25	High	B	20	18.83	Rear	5	0	1	49	1:1	0.466	22.1	18.7
1905	26590	LTE Band 25	High	B	20	18.83	Front	5	0	1	0	1:1	0.334	23.6	
1905	26590	LTE Band 25	High	B	20	18.83	Left	5	0	1	0	1:1	0.126	27.8	
1905	26590	LTE Band 25	High	B	20	18.83	Bottom	5	0	1	0	1:1	1.02	18.7	
1905	26590	LTE Band 25	High	F	20	17.65	Rear	5	0	1	0	1:1	0.201	24.6	20.7
1905	26590	LTE Band 25	High	F	20	17.74	Front	5	0	1	0	1:1	0.205	24.6	
1905	26590	LTE Band 25	High	F	20	17.65	Left	5	0	1	0	1:1	0.060	29.9	
1905	26590	LTE Band 25	High	F	20	17.65	Top	5	0	1	0	1:1	0.499	20.7	
831.5	26865	LTE Band 26	Mid	A	15	21.10	Rear	5	0	1	0	1:1	0.529	23.9	23.9
831.5	26865	LTE Band 26	Mid	A	15	21.10	Front	5	0	1	0	1:1	0.360	25.5	
831.5	26865	LTE Band 26	Mid	A	15	21.10	Left	5	0	1	0	1:1	0.020	38.1	
831.5	26865	LTE Band 26	Mid	A	15	21.10	Right	5	0	1	0	1:1	0.169	28.8	
831.5	26865	LTE Band 26	Mid	A	15	21.10	Bottom	5	0	1	0	1:1	0.316	26.1	
831.5	26865	LTE Band 26	Mid	E	15	19.50	Rear	5	0	36	0	1:1	0.467	22.8	22.8
831.5	26865	LTE Band 26	Mid	E	15	19.50	Front	5	0	36	0	1:1	0.405	23.4	
831.5	26865	LTE Band 26	Mid	E	15	19.50	Right	5	0	36	0	1:1	0.201	26.5	
831.5	26865	LTE Band 26	Mid	E	15	19.50	Top	5	0	36	0	1:1	0.452	22.9	

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)	Plimit	Minimum Plimit
MHz	Ch.				MHz	(dBm)			(dB)				(W/kg)	(dBm)	(dBm)
2 680	41490	LTE Band 41(PC3)	High	B	20	17.23	Rear	5	0	50	25	1:1.58	0.360	21.7	18.5
2 680	41490	LTE Band 41(PC3)	High	B	20	17.23	Front	5	0	50	25	1:1.58	0.261	23.1	
2 680	41490	LTE Band 41(PC3)	High	B	20	17.22	Left	5	0	1	49	1:1.58	0.056	29.7	
2 680	41490	LTE Band 41(PC3)	High	B	20	17.24	Bottom	5	0	100	0	1:1.58	0.745	18.5	
2 680	41490	LTE Band 41(PC3)	High	F	20	16.99	Rear	5	0	1	49	1:1.58	0.185	24.3	21.7
2 680	41490	LTE Band 41(PC3)	High	F	20	16.99	Front	5	0	1	49	1:1.58	0.199	24.0	
2 680	41490	LTE Band 41(PC3)	High	F	20	16.99	Left	5	0	50	0	1:1.58	0.021	33.8	
2 680	41490	LTE Band 41(PC3)	High	F	20	16.99	Top	5	0	1	49	1:1.58	0.338	21.7	
1 720	132072	LTE Band 66	Low	B	20	19.59	Rear	5	0	1	49	1:1	0.482	22.8	21.8
1 720	132072	LTE Band 66	Low	B	20	19.59	Front	5	0	1	49	1:1	0.303	24.8	
1 720	132072	LTE Band 66	Low	B	20	19.59	Left	5	0	1	49	1:1	0.163	27.5	
1 720	132072	LTE Band 66	Low	B	20	19.59	Bottom	5	0	1	49	1:1	0.602	21.8	
1 720	132072	LTE Band 66	Low	F	20	18.30	Rear	5	0	50	49	1:1	0.388	22.4	19.8
1 720	132072	LTE Band 66	Low	F	20	18.46	Front	5	0	1	49	1:1	0.334	23.2	
1 720	132072	LTE Band 66	Low	F	20	18.46	Left	5	0	1	49	1:1	0.121	27.6	
1 720	132072	LTE Band 66	Low	F	20	18.30	Top	5	0	50	49	1:1	0.716	19.8	

Table A-8 RSI = 2 *PLimit* Calculations – NR Hotspot SAR

For some bands/modes, a lower *PLimit* was selected as a more conservative evaluation.

NR TDD Bands : In the case of the NR TDD bands, the *PLimit* were calculated as the Frame average power to which the duty factor was applied to the burst power.0

SAR measurements of TDD 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)	Plimit	Minimum Plimit
														MHz	Ch.	MHz
836.5	167300	NR Band n5	Mid	A	20	21.95	Rear	DFT-s OFDM QPSK	0	5	1	1	1:1	0.402	25.9	25.7
836.5	167300	NR Band n5	Mid	A	20	21.95	Front	DFT-s OFDM QPSK	0	5	1	1	1:1	0.323	26.9	
836.5	167300	NR Band n5	Mid	A	20	21.79	Left	DFT-s OFDM QPSK	0	5	50	0	1:1	0.04	35.8	
836.5	167300	NR Band n5	Mid	A	20	21.95	Right	DFT-s OFDM QPSK	0	5	1	1	1:1	0.215	28.6	
836.5	167300	NR Band n5	Mid	A	20	21.79	Bottom	DFT-s OFDM QPSK	0	5	50	0	1:1	0.406	25.7	
836.5	167300	NR Band n5	Mid	E	20	20.31	Rear	DFT-s OFDM QPSK	0	5	50	0	1:1	0.690	21.9	21.9
836.5	167300	NR Band n5	Mid	E	20	20.31	Front	DFT-s OFDM QPSK	0	5	50	0	1:1	0.618	22.4	
836.5	167300	NR Band n5	Mid	E	20	20.31	Right	DFT-s OFDM QPSK	0	5	50	0	1:1	0.233	26.6	
836.5	167300	NR Band n5	Mid	E	20	20.31	Top	DFT-s OFDM QPSK	0	5	50	0	1:1	0.561	22.8	
2 592.99	518598	NR Band n41	Mid	B	100	16.56	Rear	DFT-s-OFDM QPSK	0	5	1	137	1:1	0.609	18.7	18.7
2 592.99	518598	NR Band n41	Mid	B	100	16.56	Front	DFT-s-OFDM QPSK	0	5	1	137	1:1	0.455	20.0	
2 592.99	518598	NR Band n41	Mid	B	100	16.56	Left	DFT-s-OFDM QPSK	0	5	1	137	1:1	0.052	29.4	
2 592.99	518598	NR Band n41	Mid	B	100	16.56	Bottom	DFT-s-OFDM QPSK	0	5	1	137	1:1	0.551	19.1	
2 592.99	518598	NR n41 SRS#2	Mid	F	100	12.20	Rear	CW	0	5	-	-	1:1	0.094	22.5	18.9
2 592.99	518598	NR n41 SRS#2	Mid	F	100	12.20	Front	CW	0	5	-	-	1:1	0.078	23.3	
2 592.99	518598	NR n41 SRS#2	Mid	F	100	12.20	Left	CW	0	5	-	-	1:1	0.016	30.2	
2 592.99	518598	NR n41 SRS#2	Mid	F	100	12.20	Top	CW	0	5	-	-	1:1	0.215	18.9	
2 592.99	518598	NR n41 SRS#3	Mid	H	100	13.37	Rear	CW	0	5	-	-	1:1	0.044	26.9	24.9
2 592.99	518598	NR n41 SRS#3	Mid	H	100	13.37	Front	CW	0	5	-	-	1:1	0.032	28.3	
2 592.99	518598	NR n41 SRS#3	Mid	H	100	13.37	Left	CW	0	5	-	-	1:1	0.048	26.6	
2 592.99	518598	NR n41 SRS#3	Mid	H	100	13.37	Top	CW	0	5	-	-	1:1	0.070	24.9	
2 592.99	518598	NR n41 SRS#4	Mid	D	100	9.28	Rear	CW	0	5	-	-	1:1	0.041	23.2	23.2
2 592.99	518598	NR n41 SRS#4	Mid	D	100	9.28	Front	CW	0	5	-	-	1:1	0.031	24.4	
2 592.99	518598	NR n41 SRS#4	Mid	D	100	9.28	Right	CW	0	5	-	-	1:1	0.000	N/A	
2 592.99	518598	NR n41 SRS#4	Mid	D	100	9.28	Bottom	CW	0	5	-	-	1:1	0.014	27.8	

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)	Plimit	Minimum Plimit
MHz	Ch.															
1 745	349000	NR Band n66	Mid	B	40	17.98	Rear	DFT-s OFDM QPSK	0	5	1	108	1:1	0.237	24.2	19.3
1 745	349000	NR Band n66	Mid	B	40	17.97	Front	DFT-s OFDM QPSK	0	5	108	0	1:1	0.353	22.5	
1 745	349000	NR Band n66	Mid	B	40	17.97	Left	DFT-s OFDM QPSK	0	5	108	0	1:1	0.152	26.2	
1 745	349000	NR Band n66	Mid	B	40	17.91	Bottom	CP OFDM QPSK	0	5	1	1	1:1	0.720	19.3	
1 745	349000	NR Band n66	Mid	F	40	18.62	Rear	DFT-s OFDM QPSK	0	5	108	0	1:1	0.392	22.7	20.2
1 745	349000	NR Band n66	Mid	F	40	18.62	Front	DFT-s OFDM QPSK	0	5	108	0	1:1	0.207	25.5	
1 745	349000	NR Band n66	Mid	F	40	18.62	Left	DFT-s OFDM QPSK	0	5	108	0	1:1	0.105	28.4	
1 745	349000	NR Band n66	Mid	F	40	18.56	Top	CP OFDM QPSK	0	5	1	1	1:1	0.687	20.2	
3 930	662000	NR Band n77	Low	F	100	14.31	Rear	DFT-s OFDM QPSK	0	5	1	271	1:1	0.504	17.3	16.9
3 930	662000	NR Band n77	Low	F	100	14.15	Front	DFT-s OFDM QPSK	0	5	135	138	1:1	0.181	21.6	
3 930	662000	NR Band n77	Low	F	100	14.31	Left	DFT-s OFDM QPSK	0	5	1	271	1:1	0.010	34.3	
3 750	650000	NR Band n77	Low	F	100	14.29	Top	DFT-s OFDM QPSK	0	5	1	271	1:1	0.548	16.9	
3 500.01	633334	NR Band n77	Mid	F	100	13.26	Top	DFT-s OFDM QPSK	0	5	270	0	1:1	0.460	16.6	16.6

Table A-9 DSI = 0 *PLimit* Calculations – WLAN Body SAR

MEASUREMENT RESULTS														
Frequency		Mode/ Band	Band width	Ant. No.	Data Rate	Frame Averaged Conducted Power	Test Position	Spacing (mm)	Ant. Config.	Duty Cycle	Meas. SAR(1g)	Scaling Factor	Plimit	Minimum Plimit
MHz	Ch.										(W/kg)	(Duty)	(dBm)	(dBm)
2 437	6	802.11b	20	H	1	16.66	Rear	5	WIFI1	98.6	0.555	1.014	17.7	17.7
2 437	6	802.11b	20	H	1	16.66	Front	5	WIFI1	98.6	0.312	1.014	20.2	
2 437	6	802.11b	20	H	1	16.66	Left	5	WIFI1	98.6	0.568	1.014	17.6	
2 437	6	802.11b	20	H	1	16.66	Top	5	WIFI1	98.6	0.340	1.014	19.8	
2 437	6	802.11b	20	J	1	16.54	Rear	5	WIFI2	98.6	0.455	1.014	18.4	18.4
2 437	6	802.11b	20	J	1	16.54	Front	5	WIFI2	98.6	0.302	1.014	20.2	
2 437	6	802.11b	20	J	1	16.54	Right	5	WIFI2	98.6	0.108	1.014	24.7	
2 437	6	802.11b	20	J	1	16.54	Top	5	WIFI2	98.6	0.001	1.014	45.0	
2 437	6	802.11b	20	H+J	1	16.61	Rear	5	MIMO	98.6	0.827	1.014	15.9	15.9
2 437	6	802.11b	20	H+J	1	16.61	Front	5	MIMO	98.6	0.387	1.014	19.2	
2 437	6	802.11b	20	H+J	1	16.61	Left	5	MIMO	98.6	0.838	1.014	15.8	
2 437	6	802.11b	20	H+J	1	16.61	Right	5	MIMO	98.6	0.235	1.014	21.4	
2 437	6	802.11b	20	H+J	1	16.61	Top	5	MIMO	98.6	0.616	1.014	17.2	
5 630	126	802.11n	40	G	MCS0	14.62	Rear	5	WIFI1	90.4	0.484	1.106	16.2	15.7
5 630	126	802.11n	40	G	MCS0	14.62	Front	5	WIFI1	90.4	0.328	1.106	17.9	
5 630	126	802.11n	40	G	MCS0	14.62	Left	5	WIFI1	90.4	0.546	1.106	15.7	
5 630	126	802.11n	40	G	MCS0	14.62	Top	5	WIFI1	90.4	0.172	1.106	20.7	
5 310	62	802.11n	40	E	MCS0	11.15	Rear	5	WIFI2	90.4	0.465	1.106	12.9	12.6
5 310	62	802.11n	40	E	MCS0	11.15	Front	5	WIFI2	90.4	0.282	1.106	15.1	
5 310	62	802.11n	40	E	MCS0	11.15	Right	5	WIFI2	90.4	0.505	1.106	12.6	
5 310	62	802.11n	40	E	MCS0	11.15	Top	5	WIFI2	90.4	0.232	1.106	15.9	

Table A-10 DSI = 0 *PLimit* Calculations – BT Body SAR

MEASUREMENT RESULTS											
Frequency		Mode/ Band	Ant.	Frame Averaged Conducted Power	Test Position	Spacing (mm)	Ant. Config.	Meas. SAR(1g)	Scaling Factor	Plimit	Minimum Plimit
MHz	Ch.							(W/kg)	(Duty)	(dBm)	(dBm)
2 440	17	Bluetooth LE	H	18.45	Rear	5	WIFI1	0.355	1.149	21.4	20.1
2 440	17	Bluetooth LE	H	18.45	Front	5	WIFI1	0.480	1.149	20.1	
2 440	17	Bluetooth LE	H	18.45	Left	5	WIFI1	0.403	1.149	20.8	
2 440	17	Bluetooth LE	H	18.45	Top	5	WIFI1	0.228	1.149	23.3	