Test Report

Applicant	:	iWaylink Inc.
Product Type	:	Portable data terminal
Trade Name	:	IMOTION GROUP or
Model Number	:	TC603
Applicable Standard	:	47 CFR Part §2.1093
Received Date	:	Oct. 21, 2021
Test Period	:	Nov. 06 ~ Nov. 17, 2021
Issued Date	:	Jan. 18, 2022

Issued by

Approved By : Kris Pan

(Kris Pan)

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Taiwan Accreditation Foundation accreditation number: 1330
Test Firm MRA designation number: TW0010

Note:

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Revision History

Rev.	Issue Date	Revisions	Revised By
00	Jan. 18, 2022	Initial Issue	Nicole Chu

Contents

1. General Information

1.1 Reference Testing Standards

Standard	Description	Version
IEC/IEEE 62209-1528	Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Part 1528: Human models, instrumentation, and procedures (Frequency range of 4 MHz to 10 GHz)	2020
IEEE 1528	Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques	2013
IEEE C95.1	IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz	1992
47 CFR Part §2.1093	Radiofrequency radiation exposure evaluation: portable devices	-
KDB 248227 D01	SAR guidance for IEEE 802.11 (Wi-Fi) transmitters	v02r02
KDB 447498 D04	RF exposure procedures and equipment authorization policies for mobile and portable devices	v01
KDB 616217 D04	SAR evaluation considerations for laptop, notebook and tablet computers	v01r02
KDB 648474 D04	SAR evaluation considerations for wireless handsets	v01r03
KDB 865664 D01	SAR measurement requirement for 100 MHz to 6 GHz	v01r04
KDB 865664 D02	RF exposure compliance reporting and documentation considerations	v01r02
KDB 941225 D01	3G SAR measurement procedures	v03r01
KDB 941225 D05	SAR evaluation considerations for LTE devices	v02r05
KDB 941225 D05A	REL. 10 LTE SAR test guidance and KDB inquiries	v01r02
KDB 941225 D06	SAR evaluation procedures for portable devices with wireless router capabilities	v02r01

2. Description of Device Under Test (DUT)

Applicant	iWaylink Inc. 6F., No. 288, Sec. 6, Civic Blvd., Xinyi Dist., Taipei City 110, Taiwan
Manufacture	iWaylink Inc. 6F., No. 288, Sec. 6, Civic Blvd., Xinyi Dist., Taipei City 110, Taiwan
Product Type	Portable data terminal
Trade Name	IMOTION GROUP or
Model Number	TC603
SN No.	355749110447441
FCC ID	SPYTC603
Frequency Range	GSM850: 824.2 - 848.8 MHz GSM1900: 1850.2 - 1909.8 MHz WCDMA Band II: 1852.4 - 1907.6 MHz WCDMA Band IV: 1712.4 - 1752.6 MHz WCDMA Band V: 826.4 - 846.6 MHz LTE Band 2: 1850.7 - 1909.3 MHz LTE Band 4: 1710.7 - 1754.3 MHz LTE Band 5: 824.7 - 848.3 MHz LTE Band 7: 2502.5 - 2567.5 MHz LTE Band 12: 699.7 - 715.3 MHz LTE Band 17: 706.5 - 713.5 MHz LTE Band 38: 2572.5 - 2617.5 MHz LTE Band 41: 2542.5 - 2647.5 MHz WLAN 2.4 GHz Band：2412 - 2472 MHz WLAN 5.2 GHz Band：5180 - 5240 MHz WLAN 5.3 GHz Band：5260 - 5320 MHz WLAN 5.6 GHz Band：5500 - 5720 MHz WLAN 5.8 GHz Band：5745 - 5825 MHz Bluetooth：2402 - 2480 MHz NFC：13.56 MHz
Supported Modulations	GSM / GPRS / EGPRS
	WCDMA: RMC 12.2Kbps / HSDPA / HSUPA
	LTE: QPSK / 16QAM
	NFC：ASK
	WLAN 2.4 GHz : 802.11 b / g / n HT20 / HT40
	WLAN 5 GHz : 802.11 a / n / ac HT20 / HT40 / VHT20 / VHT40 / VHT80
	Bluetooth : BR/EDR/LE
Battery Information	Standard
	Trade Name: Zhuhai COSMX. Battery Co., Ltd. Model: 3H32-432A0010 Spec: DC 3.85 V / 3900 mAh
Device Category	Portable Device

Note:The above information of DUT was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

3. Summary of Maximum Value

Equipment Class	Mode	Highest Reported 1g SAR (W/kg)				
		Head standalone SAR 1 g (W/kg)	Hotspot standalone SAR 1 g (W/kg)	Body standalone SAR 1 g (W/kg)	Extremity standalone SAR10 g (W/kg)	Highest Simultaneous Transmission SAR
Licensed	GSM850	0.14	0.46	0.46	N/A	1.45
	GSM1900	0.40	0.41	0.41	N/A	
	WCDMA Band II	0.72	1.02	1.02	N/A	
	WCDMA Band V	0.21	0.22	0.22	N/A	
	LTE Band 2	0.79	0.71	0.71	N/A	
	LTE Band 4	0.60	0.55	0.55	N/A	
	LTE Band 5	0.09	0.14	0.13	N/A	
	LTE Band 7	0.14	1.11	1.11	N/A	
	LTE Band 12	0.12	0.23	0.23	N/A	
	LTE Band 17	0.13	0.21	0.21	N/A	
	LTE Band 41/38	0.19	1.11	1.11	N/A	
DTS	WLAN2.4GHz	0.13	0.13	0.13	N/A	1.24
NII	WLAN5GHz	0.25	0.33	0.34	0.33	1.45
DTS/DSS	Bluetooth	0.05	0.14	0.14	N/A	1.25

Note:

1. The test procedures, as described in American National Standards, Institute ANSI/IEEE C95.1 was employed and they specify the maximum exposure limit of tissue for portable devices being used within 20 cm between user and DUT in the uncontrolled environment. A description of the product and operating configuration, detailed summary of the test results, methodology and procedures used in the equipment used are included within this test report.

4. Introduction

4.1 SAR Definition

Specific Absorption Rate (SAR) is defined as the time derivative (rate) of the incremental energy (dw) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

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

SAR measurement can be related to the electrical field in the tissue by

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

Where：

σ = conductivity of the tissue (S/m)

ρ = mass density of the tissue (kg/m^3)

E = RMS electric field strength (V/m)

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

4.2 RF Exposure Limits

Table 1 Safety Limits for Controlled / Uncontrolled Environment Exposure

SAR Exposure Limit		
	General Population / Uncontrolled Exposure [1] (W/kg)	**Occupational / Controlled Exposure [2] (W/kg)**
Spatial Peak SAR [3] (head or Body)	1.60	8.00
Spatial Peak SAR [4] (Whole Body)	0.08	0.40
Spatial Peak SAR [5] (Hands / Feet / Ankle / Wrist)	4.00	20.00

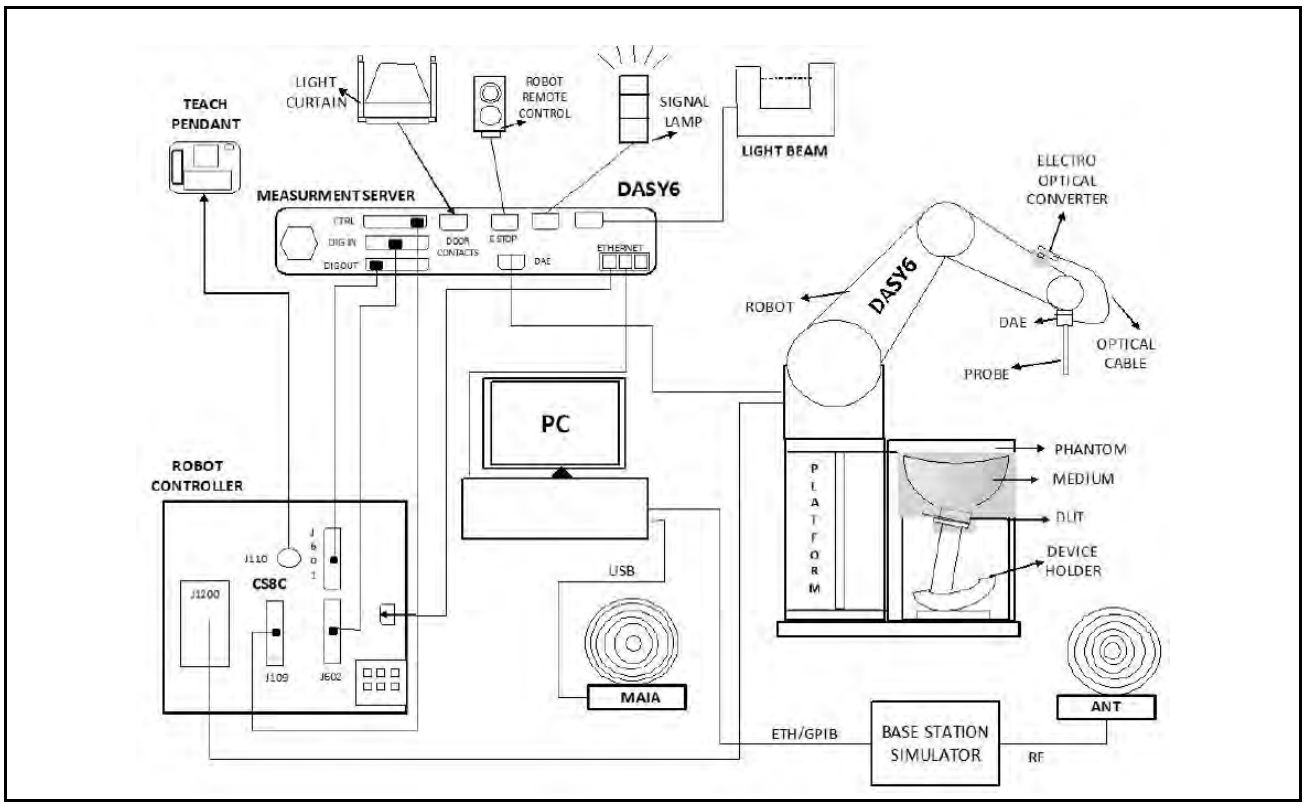
Notes：

1. **General Population / Uncontrolled Environments** are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.
2. **Occupational / Controlled Environments** are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation).
3. The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
4. The Spatial Average value of the SAR averaged over the whole body.
5. The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

5. System Describtion

5.1 SAR Measurement System

The DASY6 system in cDASY6/DASY5 V5.2 SAR Configuration is shown below:



The system for performing compliance tests consists of the following items:

1. A standard high precision 6-axis robot (Stäubli TX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
2. An isotropic field probe optimized and calibrated for the targeted measurements.
3. A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
4. The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
5. The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
6. The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
7. A computer running Win7/Win8/Win10 professional operating system and the cDASY6 and DASY5 V5.2 software.
8. Remote controls with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
9. The phantom, the device holder and other accessories according to the targeted measurement.
10. Tissue simulating liquid mixed according to the given recipes.
11. The validation dipole has been calibrated within and the system performance check has been successful.

<DASY E-Field Probe System>

The SAR measurements were conducted with the dosimetric probe (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation. The probes is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multi-fiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY software reads the reflection during a software approach and looks for the maximum using a 2nd order fitting. The approach is stopped when reaching the maximum.

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	4 MHz to 10 GHz Linearity: ± 0.2 dB (30 MHz to 10 GHz)
Directivity	±0.1 dB in TSL (rotation around probe axis) ±0.3 dB in TSL (rotation normal to probe axis)
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Calibration	ISO/IEC 17025 calibration service available

EX3DV4 E-Field Probe

Probe setup on robot

<Data Acquisition Electronic (DAE) System>

Model	DAE4	
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop.	
Measurement Range	-100 to +300 mV (16 bit resolution and two range settings: 4 mV, 400 mV)	
Input Offset Voltage	< 5 µV (with auto zero)	
Input Bias Current	< 50 fA	
Dimensions	60 x 60 x 68 mm	

<Robot>

Positioner	Stäubli Unimation Corp.	
Robot Model	TX90XL	
Number of Axes	6	
Nominal Load	5 kg	
Reach	1450 mm	
Repeatability	± 0.035 mm	

<Device Holder>

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity ε=3 and loss tangent δ=0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

	
Device Holder 1	Device Holder 2

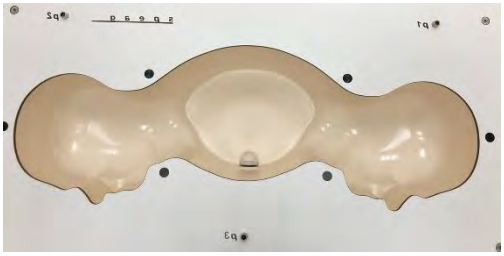
<Oval Flat Phantom – ELI>

The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (Oval Flat) phantom defined in IEEE 1528, IEC 62209-2 and IEC/IEEE 62209-1528. It enables the dosimetric evaluation of wireless portable device usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points with the robot.

Shell Thickness	2 ±0.2 mm	
Filling Volume	Approx. 30 liters	
Dimensions	190×600×400 mm (H × L × W)	

<SAM Phantom>

The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528, IEC 62209-1 and IEC/IEEE 62209-1528. It enables the dosimetric evaluation of left and right hand phone usage as well as body-mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.

Shell Thickness	2 ±0.2 mm	
Filling Volume	Approx. 25 liters	
Dimensions	Length: 1000 mm Width: 500 mm Height: adjustable feet	

5.2 Test Site Environment

Temperature (°C)	21-23

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5.3 Tissue Simulating Liquids (TSL)

<Tissue Dielectric Parameters in IEEE 1528-2013 and IEC/IEEE 62209-1528>

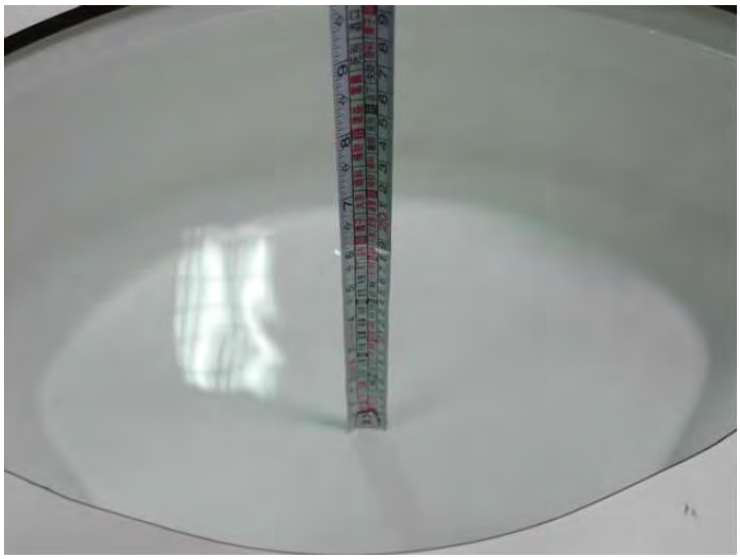
The following table incorporates the tissue dielectric parameters of head recommended by IEEE 1528-2013 and IEC/IEEE 62209-1528. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in human head. Other head and body tissue parameters that have not been specified are derived from the tissue dielectric parameters which computed by the 4-Cole-Cole equation according to the above-mentioned standards.

Table 2 Dielectric properties of the tissue-equivalent liquid material

Frequency (MHz)	Relative Permittivity (ε_r)	Conductivity (σ)
30	55.0	0.75
150	52.3	0.76
300	45.3	0.87
450	43.5	0.87
750	41.9	0.89
835	41.5	0.90
900	41.5	0.97
1450	40.5	1.20
1800	40.0	1.40
1900	40.0	1.40
1950	40.0	1.40
2000	40.0	1.40
2100	39.8	1.49
2450	39.2	1.80
2600	39.0	1.98
3000	38.5	2.40
3500	37.9	2.91
4000	37.4	3.43
4500	36.8	3.94
5000	36.2	4.45
5200	36.0	4.66
5400	35.8	4.86
5600	35.5	5.07
5800	35.3	5.27
6000	35.1	5.48
6500	34.5	6.07
7000	33.9	6.65
7500	33.3	7.24
8000	32.7	7.84
8500	32.1	8.46
9000	31.6	9.08
9500	31.0	9.71
10000	30.4	10.4

<Liquid Depth>

The depth of tissue-equivalent liquid in a phantom must be ≧ 15.0 cm to ensure that the probe is immersed sufficiently in the tissue medium.



Tissue-equivalent Liquid Heigh

<Liquid Check>

1. The dielectric parameters of the liquids were verified prior to the SAR evaluation using a DAKS 3.5 Probe Kit.
2. The SAR testing with IEC tissue parameters as an alternative option to Head and body parameters. The head TSL were applied to body SAR tests with restrictions below:

   The mixing and matching of head TSL and body TSL for body SAR testing in a single application are not permitted. For example, testing body SAR with head TSL and then switch to Body TSL for body SAR test is not allowed. The consistency of TSL is required.

Tissue Temp	Head / Body	Frequency	Cond.	Perm.	target Cond.	target Perm.	σ (Delta)(%)	εr (Delta)(%)	Limit (%)	Date
(°C)			σ	εr	σ	εr				
22.1	Head	2510 MHz	1.90	38.43	1.86	39.12	2.17	-1.78	±5	Nov. 06, 2021
22.1	Head	2535 MHz	1.93	38.38	1.89	39.09	1.93	-1.83	±5	Nov. 06, 2021
22.1	Head	2560 MHz	1.95	38.28	1.92	39.05	1.66	-1.96	±5	Nov. 06, 2021
22.1	Head	2550 MHz	1.94	38.32	1.91	39.07	1.74	-1.91	±5	Nov. 06, 2021
22.1	Head	2580 MHz	1.97	38.19	1.94	39.03	1.63	-2.15	±5	Nov. 06, 2021
22.1	Head	2610 MHz	2.01	38.08	1.97	38.99	1.75	-2.33	±5	Nov. 06, 2021
22.1	Head	2640 MHz	2.04	37.99	2.00	38.95	1.61	-2.48	±5	Nov. 06, 2021
22.2	Head	1720 MHz	1.38	40.26	1.35	40.11	1.59	0.36	±5	Nov. 07, 2021
22.2	Head	1732.5 MHz	1.39	40.21	1.36	40.10	1.98	0.27	±5	Nov. 07, 2021
22.2	Head	1745 MHz	1.40	40.15	1.37	40.08	2.08	0.17	±5	Nov. 07, 2021
22.2	Head	1850.2 MHz	1.40	41.31	1.40	40.00	0.05	3.26	±5	Nov. 08, 2021
22.2	Head	1880 MHz	1.43	41.21	1.40	40.00	2.17	3.02	±5	Nov. 08, 2021
22.2	Head	1909.8 MHz	1.46	41.14	1.40	40.00	4.12	2.84	±5	Nov. 08, 2021
22.2	Head	1852.4 MHz	1.40	41.30	1.40	40.00	0.06	3.26	±5	Nov. 08, 2021
22.2	Head	1880 MHz	1.43	41.21	1.40	40.00	2.17	3.02	±5	Nov. 08, 2021
22.2	Head	1907.6 MHz	1.46	41.14	1.40	40.00	3.97	2.85	±5	Nov. 08, 2021
22.2	Head	1860 MHz	1.41	41.27	1.40	40.00	0.77	3.17	±5	Nov. 08, 2021
22.2	Head	1880 MHz	1.43	41.21	1.40	40.00	2.17	3.02	±5	Nov. 08, 2021
22.2	Head	1900 MHz	1.45	41.16	1.40	40.00	3.46	2.89	±5	Nov. 08, 2021
22.1	Head	704 MHz	0.86	43.22	0.89	42.15	-2.81	2.54	±5	Nov. 09, 2021
22.1	Head	707.5 MHz	0.87	43.17	0.89	42.12	-2.55	2.49	±5	Nov. 09, 2021
22.1	Head	711 MHz	0.87	43.12	0.89	42.11	-2.02	2.40	±5	Nov. 09, 2021
22.1	Head	709 MHz	0.87	43.15	0.89	42.12	-2.26	2.44	±5	Nov. 09, 2021
22.1	Head	710 MHz	0.87	43.13	0.89	42.11	-2.14	2.43	±5	Nov. 09, 2021
22.1	Head	711 MHz	0.87	43.12	0.89	42.11	-2.02	2.40	±5	Nov. 09, 2021
22.1	Head	824.2 MHz	0.90	41.70	0.90	41.56	-1.13	-1.47	±5	Nov. 09, 2021
22.1	Head	836.6 MHz	0.91	41.55	0.90	41.50	-0.05	-1.75	±5	Nov. 09, 2021
22.1	Head	848.8 MHz	0.93	41.38	0.92	41.50	-0.18	-2.18	±5	Nov. 09, 2021
22.1	Head	826.4 MHz	0.89	40.92	0.90	41.54	-0.86	-1.49	±5	Nov. 09, 2021
22.1	Head	836.4 MHz	0.90	40.78	0.90	41.50	-0.07	-1.74	±5	Nov. 09, 2021
22.1	Head	846.6 MHz	0.91	40.63	0.91	41.50	-0.18	-2.10	±5	Nov. 09, 2021
22.1	Head	829 MHz	0.89	40.89	0.90	41.53	-0.54	-1.55	±5	Nov. 09, 2021
22.1	Head	836.5 MHz	0.90	40.77	0.90	41.50	-0.05	-1.75	±5	Nov. 09, 2021
22.1	Head	844 MHz	0.91	40.67	0.91	41.50	-0.12	-2.01	±5	Nov. 09, 2021
21.9	Head	824.2 MHz	0.87	42.09	0.90	41.56	-0.54	2.12	±5	Nov. 10, 2021
21.9	Head	836.6 MHz	0.88	41.97	0.90	41.50	0.50	1.84	±5	Nov. 10, 2021
21.9	Head	848.8 MHz	0.90	41.86	0.92	41.50	0.44	1.44	±5	Nov. 10, 2021

Tissue Temp	Head / Body	Frequency	Cond.	Perm.	target Cond.	target Perm.	σ (Delta)(%)	εr (Delta)(%)	Limit (%)	Date
(°C)			σ	εr	σ	εr				
21.9	Head	826.4 MHz	0.90	42.41	0.90	41.54	-0.29	2.09	±5	Nov. 10, 2021
21.9	Head	836.4 MHz	0.91	42.27	0.90	41.50	0.48	1.85	±5	Nov. 10, 2021
21.9	Head	846.6 MHz	0.92	42.12	0.91	41.50	0.42	1.50	±5	Nov. 10, 2021
21.9	Head	829 MHz	0.90	42.37	0.90	41.53	0.01	2.02	±5	Nov. 10, 2021
21.9	Head	836.5 MHz	0.91	42.27	0.90	41.50	0.50	1.84	±5	Nov. 10, 2021
21.9	Head	844 MHz	0.91	42.15	0.91	41.50	0.47	1.58	±5	Nov. 10, 2021
21.9	Head	704 MHz	0.86	43.25	0.89	42.15	-2.68	2.61	±5	Nov. 11, 2021
21.9	Head	707.5 MHz	0.87	43.20	0.89	42.12	-2.38	2.56	±5	Nov. 11, 2021
21.9	Head	711 MHz	0.87	43.15	0.89	42.11	-1.87	2.46	±5	Nov. 11, 2021
21.9	Head	709 MHz	0.87	43.18	0.89	42.12	-2.09	2.51	±5	Nov. 11, 2021
21.9	Head	710 MHz	0.87	43.16	0.89	42.11	-1.98	2.50	±5	Nov. 11, 2021
21.9	Head	711 MHz	0.87	43.15	0.89	42.11	-1.87	2.46	±5	Nov. 11, 2021
22.7	Head	1720 MHz	1.37	40.36	1.35	40.11	0.87	0.61	±5	Nov. 12, 2021
22.7	Head	1732.5 MHz	1.38	40.31	1.36	40.10	1.25	0.52	±5	Nov. 12, 2021
22.7	Head	1745 MHz	1.39	40.25	1.37	40.08	1.35	0.43	±5	Nov. 12, 2021
22.5	Head	1850.2 MHz	1.40	41.20	1.40	40.00	-0.32	2.99	±5	Nov. 13, 2021
22.5	Head	1880 MHz	1.43	41.10	1.40	40.00	1.78	2.75	±5	Nov. 13, 2021
22.5	Head	1909.8 MHz	1.45	41.03	1.40	40.00	3.73	2.57	±5	Nov. 13, 2021
22.5	Head	1852.4 MHz	1.40	41.20	1.40	40.00	-0.31	2.99	±5	Nov. 13, 2021
22.5	Head	1880 MHz	1.43	41.10	1.40	40.00	1.78	2.75	±5	Nov. 13, 2021
22.5	Head	1907.6 MHz	1.45	41.03	1.40	40.00	3.59	2.58	±5	Nov. 13, 2021
22.5	Head	1860 MHz	1.41	41.16	1.40	40.00	0.39	2.90	±5	Nov. 13, 2021
22.5	Head	1880 MHz	1.43	41.10	1.40	40.00	1.78	2.75	±5	Nov. 13, 2021
22.5	Head	1900 MHz	1.44	41.05	1.40	40.00	3.07	2.62	±5	Nov. 13, 2021
22.8	Head	2510 MHz	1.91	38.53	1.86	39.12	2.52	-1.52	±5	Nov. 14, 2021
22.8	Head	2535 MHz	1.93	38.48	1.89	39.09	2.27	-1.57	±5	Nov. 14, 2021
22.8	Head	2560 MHz	1.96	38.39	1.92	39.05	2.03	-1.70	±5	Nov. 14, 2021
22.8	Head	2550 MHz	1.95	38.43	1.91	39.07	2.10	-1.65	±5	Nov. 14, 2021
22.8	Head	2580 MHz	1.98	38.29	1.94	39.03	1.99	-1.89	±5	Nov. 14, 2021
22.8	Head	2610 MHz	2.01	38.19	1.97	38.99	2.10	-2.06	±5	Nov. 14, 2021
22.8	Head	2640 MHz	2.04	38.09	2.00	38.95	1.97	-2.22	±5	Nov. 14, 2021
22.2	Head	1850.2 MHz	1.38	41.34	1.40	40.00	-1.14	3.36	±5	Nov. 08, 2021
22.2	Head	1880 MHz	1.41	41.23	1.40	40.00	0.93	3.08	±5	Nov. 08, 2021
22.2	Head	1909.8 MHz	1.44	41.15	1.40	40.00	2.86	2.88	±5	Nov. 08, 2021
22.3	Head	1850.2 MHz	1.35	40.73	1.40	40.00	-3.57	1.82	±5	Nov. 13, 2021
22.3	Head	1880 MHz	1.38	40.61	1.40	40.00	-1.79	1.52	±5	Nov. 13, 2021
22.3	Head	1909.8 MHz	1.41	40.46	1.40	40.00	0.37	1.14	±5	Nov. 13, 2021

Tissue Temp	Head / Body	Frequency	Cond.	Perm.	target Cond.	target Perm.	σ (Delta)(%)	εr (Delta)(%)	Limit (%)	Date
(°C)			σ	εr	σ	εr				
22.3	Head	824.2 MHz	0.90	41.70	0.90	41.56	0.31	0.35	±5	Nov. 09, 2021
22.3	Head	836.6 MHz	0.91	41.55	0.90	41.50	1.29	0.12	±5	Nov. 09, 2021
22.3	Head	848.8 MHz	0.93	41.38	0.92	41.50	1.06	-0.30	±5	Nov. 09, 2021
22.1	Head	824.2 MHz	0.87	42.09	0.90	41.56	-2.95	1.26	±5	Nov. 10, 2021
22.1	Head	836.6 MHz	0.88	41.97	0.90	41.50	-1.99	1.14	±5	Nov. 10, 2021
22.1	Head	848.8 MHz	0.90	41.86	0.92	41.50	-2.04	0.86	±5	Nov. 10, 2021
22.5	Head	2308 MHz	1.67	39.59	1.67	39.44	-0.24	0.37	±5	Nov. 16, 2021
22.5	Head	2390 MHz	1.76	39.27	1.75	39.30	0.59	-0.07	±5	Nov. 16, 2021
22.5	Head	2472 MHz	1.84	38.95	1.82	39.17	1.03	-0.57	±5	Nov. 16, 2021
21.9	Head	5180 MHz	4.63	36.58	4.64	36.02	-0.12	1.54	±5	Nov. 16, 2021
21.9	Head	5190 MHz	4.64	36.56	4.65	36.01	-0.17	1.53	±5	Nov. 16, 2021
21.9	Head	5200 MHz	4.65	36.54	4.66	36.00	-0.20	1.51	±5	Nov. 16, 2021
21.9	Head	5220 MHz	4.67	36.50	4.68	35.98	-0.26	1.44	±5	Nov. 16, 2021
21.9	Head	5230 MHz	4.68	36.48	4.69	35.97	-0.26	1.40	±5	Nov. 16, 2021
21.9	Head	5240 MHz	4.69	36.45	4.70	35.96	-0.20	1.36	±5	Nov. 16, 2021
21.9	Head	5250 MHz	4.70	36.43	4.71	35.95	-0.16	1.33	±5	Nov. 16, 2021
21.9	Head	5260 MHz	4.72	36.41	4.72	35.94	-0.10	1.30	±5	Nov. 16, 2021
21.9	Head	5270 MHz	4.73	36.39	4.73	35.93	-0.07	1.29	±5	Nov. 16, 2021
21.9	Head	5280 MHz	4.74	36.38	4.74	35.92	-0.06	1.28	±5	Nov. 16, 2021
21.9	Head	5290 MHz	4.75	36.37	4.75	35.91	-0.09	1.27	±5	Nov. 16, 2021
21.9	Head	5300 MHz	4.75	36.35	4.76	35.90	-0.14	1.25	±5	Nov. 16, 2021
21.9	Head	5310 MHz	4.76	36.33	4.77	35.89	-0.20	1.22	±5	Nov. 16, 2021
21.9	Head	5320 MHz	4.77	36.30	4.78	35.88	-0.23	1.17	±5	Nov. 16, 2021
21.9	Head	5500 MHz	4.96	35.96	4.97	35.65	-0.08	0.88	±5	Nov. 16, 2021
21.9	Head	5510 MHz	4.97	35.95	4.98	35.64	-0.15	0.87	±5	Nov. 16, 2021
21.9	Head	5530 MHz	4.98	35.90	5.00	35.61	-0.29	0.82	±5	Nov. 16, 2021
21.9	Head	5550 MHz	5.00	35.84	5.02	35.58	-0.30	0.74	±5	Nov. 16, 2021
21.9	Head	5570 MHz	5.03	35.80	5.04	35.55	-0.19	0.69	±5	Nov. 16, 2021
21.9	Head	5580 MHz	5.04	35.79	5.05	35.53	-0.14	0.72	±5	Nov. 16, 2021
21.9	Head	5610 MHz	5.07	35.75	5.08	35.49	-0.16	0.74	±5	Nov. 16, 2021
21.9	Head	5620 MHz	5.08	35.74	5.09	35.48	-0.21	0.73	±5	Nov. 16, 2021
21.9	Head	5630 MHz	5.09	35.72	5.10	35.47	-0.26	0.69	±5	Nov. 16, 2021
21.9	Head	5660 MHz	5.12	35.64	5.13	35.44	-0.25	0.56	±5	Nov. 16, 2021
21.9	Head	5670 MHz	5.13	35.62	5.14	35.43	-0.21	0.52	±5	Nov. 16, 2021
21.9	Head	5690 MHz	5.15	35.58	5.16	35.41	-0.16	0.48	±5	Nov. 16, 2021
21.9	Head	5700 MHz	5.16	35.56	5.17	35.40	-0.17	0.46	±5	Nov. 16, 2021
21.9	Head	5710 MHz	5.17	35.55	5.18	35.39	-0.19	0.44	±5	Nov. 16, 2021
21.9	Head	5720 MHz	5.18	35.53	5.19	35.38	-0.22	0.42	±5	Nov. 16, 2021
21.9	Head	5745 MHz	5.20	35.48	5.22	35.36	-0.30	0.33	±5	Nov. 16, 2021

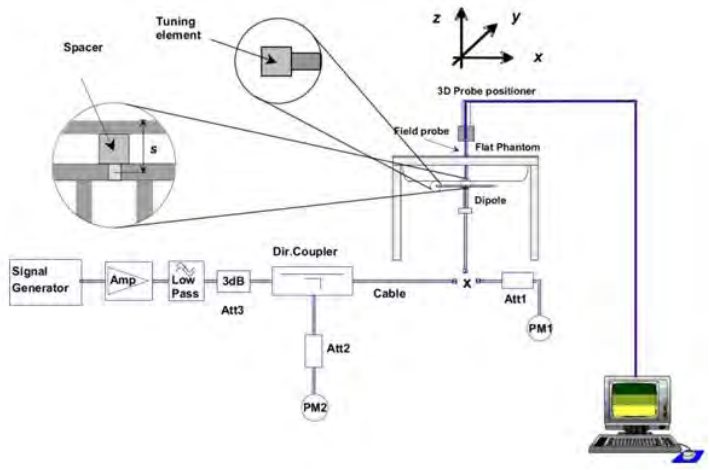
Tissue Temp	Head / Body	Frequency	Cond.	Perm.	target Cond.	target Perm.	σ (Delta)(%)	εr (Delta)(%)	Limit (%)	Date
(°C)			σ	εr	σ	εr				
21.9	Head	5755 MHz	5.21	35.45	5.23	35.35	-0.32	0.29	±5	Nov. 16, 2021
21.9	Head	5775 MHz	5.23	35.41	5.25	35.33	-0.29	0.23	±5	Nov. 16, 2021
21.9	Head	5785 MHz	5.24	35.40	5.26	35.32	-0.26	0.22	±5	Nov. 16, 2021
21.9	Head	5795 MHz	5.25	35.38	5.27	35.31	-0.24	0.21	±5	Nov. 16, 2021
21.9	Head	5825 MHz	5.28	35.35	5.30	35.28	-0.32	0.19	±5	Nov. 16, 2021
22.7	Head	5180 MHz	4.60	36.43	4.64	36.02	-0.83	1.14	±5	Nov. 17, 2021
22.7	Head	5190 MHz	4.61	36.42	4.65	36.01	-0.87	1.13	±5	Nov. 17, 2021
22.7	Head	5200 MHz	4.62	36.40	4.66	36.00	-0.91	1.11	±5	Nov. 17, 2021
22.7	Head	5220 MHz	4.64	36.36	4.68	35.98	-0.96	1.04	±5	Nov. 17, 2021
22.7	Head	5230 MHz	4.65	36.33	4.69	35.97	-0.96	1.00	±5	Nov. 17, 2021
22.7	Head	5240 MHz	4.66	36.31	4.70	35.96	-0.90	0.96	±5	Nov. 17, 2021
22.7	Head	5250 MHz	4.67	36.28	4.71	35.95	-0.86	0.93	±5	Nov. 17, 2021
22.7	Head	5260 MHz	4.68	36.26	4.72	35.94	-0.80	0.90	±5	Nov. 17, 2021
22.7	Head	5270 MHz	4.69	36.25	4.73	35.93	-0.77	0.89	±5	Nov. 17, 2021
22.7	Head	5280 MHz	4.70	36.24	4.74	35.92	-0.76	0.88	±5	Nov. 17, 2021
22.7	Head	5290 MHz	4.71	36.22	4.75	35.91	-0.79	0.87	±5	Nov. 17, 2021
22.7	Head	5300 MHz	4.72	36.20	4.76	35.90	-0.84	0.84	±5	Nov. 17, 2021
22.7	Head	5310 MHz	4.73	36.18	4.77	35.89	-0.90	0.81	±5	Nov. 17, 2021
22.7	Head	5320 MHz	4.74	36.16	4.78	35.88	-0.93	0.77	±5	Nov. 17, 2021
22.7	Head	5500 MHz	4.93	35.82	4.97	35.65	-0.78	0.47	±5	Nov. 17, 2021
22.7	Head	5510 MHz	4.93	35.81	4.98	35.64	-0.85	0.46	±5	Nov. 17, 2021
22.7	Head	5530 MHz	4.95	35.76	5.00	35.61	-0.99	0.42	±5	Nov. 17, 2021
22.7	Head	5550 MHz	4.97	35.70	5.02	35.58	-0.99	0.33	±5	Nov. 17, 2021
22.7	Head	5570 MHz	4.99	35.65	5.04	35.55	-0.88	0.28	±5	Nov. 17, 2021
22.7	Head	5580 MHz	5.01	35.64	5.05	35.53	-0.83	0.31	±5	Nov. 17, 2021
22.7	Head	5610 MHz	5.04	35.61	5.08	35.49	-0.86	0.33	±5	Nov. 17, 2021
22.7	Head	5620 MHz	5.04	35.59	5.09	35.48	-0.91	0.32	±5	Nov. 17, 2021
22.7	Head	5630 MHz	5.05	35.57	5.10	35.47	-0.95	0.29	±5	Nov. 17, 2021
22.7	Head	5660 MHz	5.08	35.49	5.13	35.44	-0.94	0.15	±5	Nov. 17, 2021
22.7	Head	5670 MHz	5.09	35.47	5.14	35.43	-0.90	0.12	±5	Nov. 17, 2021
22.7	Head	5690 MHz	5.12	35.44	5.16	35.41	-0.85	0.07	±5	Nov. 17, 2021
22.7	Head	5700 MHz	5.13	35.42	5.17	35.40	-0.87	0.05	±5	Nov. 17, 2021
22.7	Head	5710 MHz	5.13	35.40	5.18	35.39	-0.89	0.03	±5	Nov. 17, 2021
22.7	Head	5720 MHz	5.14	35.38	5.19	35.38	-0.91	0.01	±5	Nov. 17, 2021
22.7	Head	5745 MHz	5.16	35.33	5.22	35.36	-0.99	-0.08	±5	Nov. 17, 2021
22.7	Head	5755 MHz	5.17	35.31	5.23	35.35	-1.01	-0.12	±5	Nov. 17, 2021
22.7	Head	5775 MHz	5.19	35.27	5.25	35.33	-0.99	-0.18	±5	Nov. 17, 2021
22.7	Head	5785 MHz	5.21	35.25	5.26	35.32	-0.96	-0.19	±5	Nov. 17, 2021
22.7	Head	5795 MHz	5.22	35.24	5.27	35.31	-0.93	-0.20	±5	Nov. 17, 2021
22.7	Head	5825 MHz	5.24	35.20	5.30	35.28	-1.01	-0.22	±5	Nov. 17, 2021

6. System Verification

6.1 SAR System Verification

<Symmetric Dipoles for SAR System Verification>

Construction	Symmetrical dipole with λ/4 balun enables measurement of feed point impedance with NWA matched for use near flat phantoms filled with head simulating solutions Includes distance holder and tripod adaptor Calibration Calibrated SAR value for specified position and input power at the flat phantom in head simulating solutions.
Return Loss	> 20 dB at specified verification position.
Options	Dipoles for other frequencies or solutions and other calibration conditions are available upon request.



System Verification Setup Diagram

Validation Kit

6.1.1 SAR Verification Summary

Prior to the assessment, the validation data compared to the original value provided by SPEAG should be within its specifications of ±10%. The measured SAR will be normalized to 1 W input power. The result indicates the system check can meet the variation criterion and plots can be referred to Appendix B of this report.

Mixture Type	Frequency (MHz)	Power	Probe	Dipole	$SAR_{1\,g}$ (W/Kg)	Normalize to 1 Watt 1 g (W/Kg)	1 W Target $SAR_{1\,g}$ (W/Kg)	$SAR_{10\,g}$ (W/Kg)	Normalize to 1 Watt 10 g (W/Kg)	1 W Target $SAR_{10\,g}$ (W/Kg)	Difference percentage 1 g	Difference percentage 10 g	Date
			Model / Serial No.	Model / Serial No.									
Head	750	250 mW	EX3DV4-SN 3977	D750V3 – SN1004	2.19	8.76	8.43	1.44	5.76	5.55	3.9%	3.8%	Nov. 09, 2021
Head	750	250 mW	EX3DV4-SN 3977	D750V3 – SN1004	2.2	8.8	8.43	1.48	5.92	5.55	4.4%	6.7%	Nov. 11, 2021
Head	835	250 mW	EX3DV4-SN 3977	D835V2 – SN4d082	2.59	10.36	9.60	1.68	6.72	6.25	7.9%	7.5%	Nov. 09, 2021
Head	835	250 mW	EX3DV4-SN 3977	D835V2 – SN4d082	2.51	10.04	9.60	1.63	6.52	6.25	4.6%	4.3%	Nov. 10, 2021
Head	835	250 mW	EX3DV4-SN 7647	D835V2 – SN4d082	2.53	10.12	9.60	1.68	6.72	6.25	5.4%	7.5%	Nov. 09, 2021
Head	835	250 mW	EX3DV4-SN 7647	D835V2 – SN4d082	2.45	9.8	9.60	1.63	6.52	6.25	2.1%	4.3%	Nov. 10, 2021
Head	1750	250 mW	EX3DV4-SN 3977	D1750V2 – SN1111	9.8	39.2	36.40	5	20	19.00	7.7%	5.3%	Nov. 07, 2021
Head	1750	250 mW	EX3DV4-SN 3977	D1750V2 – SN1111	9.62	38.48	36.40	4.91	19.64	19.00	5.7%	3.4%	Nov. 12, 2021
Head	1900	250 mW	EX3DV4-SN 3977	D1900V2 – SN5d111	9.2	36.8	40.00	4.76	19.04	20.40	-8.0%	-6.7%	Nov. 08, 2021
Head	1900	250 mW	EX3DV4-SN 3977	D1900V2 – SN5d111	10.6	42.4	40.00	5.37	21.48	20.40	6.0%	5.3%	Nov. 13, 2021
Head	1900	250 mW	EX3DV4-SN 7647	D1900V2 – SN5d111	10.4	41.6	40.00	5.4	21.6	20.40	4.0%	5.9%	Nov. 08, 2021
Head	1900	250 mW	EX3DV4-SN 7647	D1900V2 – SN5d111	10.2	40.8	40.00	5.26	21.04	20.40	2.0%	3.1%	Nov. 13, 2021
Head	2450	250 mW	EX3DV4-SN 7647	D2450V2 – SN712	12.8	51.2	51.00	5.85	23.4	23.20	0.4%	0.9%	Nov. 16, 2021
Head	2600	250 mW	EX3DV4-SN 3977	D2600V2 – SN1007	14.6	58.4	55.40	6.68	26.72	24.40	5.4%	9.5%	Nov. 06, 2021
Head	2600	250 mW	EX3DV4-SN 3977	D2600V2 – SN1007	14.7	58.8	55.40	6.69	26.76	24.40	6.1%	9.7%	Nov. 14, 2021
Head	5250	100 mW	EX3DV4-SN 7647	D5250V2 – SN1021	7.35	73.5	78.40	2.07	20.7	22.20	-6.3%	-6.8%	Nov. 16, 2021
Head	5250	100 mW	EX3DV4-SN 7647	D5250V2 – SN1021	7.89	78.9	78.40	2.23	22.3	22.20	0.6%	0.5%	Nov. 17, 2021
Head	5600	100 mW	EX3DV4-SN 7647	D5600V2 – SN1021	7.9	79	82.20	2.21	22.1	23.50	-3.9%	-6.0%	Nov. 16, 2021
Head	5600	100 mW	EX3DV4-SN 7647	D5600V2 – SN1021	8.17	81.7	82.20	2.28	22.8	23.50	-0.6%	-3.0%	Nov. 17, 2021
Head	5750	100 mW	EX3DV4-SN 7647	D5750V2 – SN1021	7.83	78.3	77.30	2.2	22	21.70	1.3%	1.4%	Nov. 16, 2021
Head	5750	100 mW	EX3DV4-SN 7647	D5750V2 – SN1021	7.78	77.8	77.30	2.19	21.9	21.70	0.6%	0.9%	Nov. 17, 2021

7. Test Equipment List

7.1 SAR Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Cal. Date	Cal.Period
SPEAG	750MHz System Validation Kit	D750V3	1004	2021/10/14	1 year
SPEAG	835MHz System Validation Kit	D835V2	4d082	2021/10/18	1 year
SPEAG	1750MHz System Validation Kit	D1750V2	1111	2021/04/14	1 year
SPEAG	1900MHz System Validation Kit	D1900V2	5d111	2021/10/18	1 year
SPEAG	1950MHz System Validation Kit	D1950V3	1117	2021/04/13	1 year
SPEAG	2450MHz System Validation Kit	D2450V2	712	2021/04/14	1 year
SPEAG	2600MHz System Validation Kit	D2600V2	1007	2021/10/19	1 year
SPEAG	5GHz System Validation Kit	D5GHzV2	1021	2021/04/16	1 year
SPEAG	Dosimetric E-Field Probe	EX3DV4	3977	2021/07/26	1 year
SPEAG	Dosimetric E-Field Probe	EX3DV4	7647	2021/04/15	1 year
SPEAG	Data Acquisition Electronics	DAE4	779	2021/07/30	1 year
SPEAG	Data Acquisition Electronics	DAE4	1253	2020/12/16	1 year
SPEAG	Measurement Server	SE UPS 031 AA	1025	NCR	
SPEAG	Measurement Server	SE UMS 011 BB	1241	NCR	
SPEAG	Phantom	SAM V4.0	TP-1458	NCR	
SPEAG	Phantom	SAM V4.0	TP-1623	NCR	
SPEAG	Robot	Staubli TX90XL	F07/564ZA1/A/01	NCR	
SPEAG	Robot	Staubli TX90XL	F11/5G9EA1/A/01	NCR	
SPEAG	Software	DASY52	N/A	NCR	
		V52.10.4.1535			
SPEAG	Software	SEMCAD X	N/A	NCR	
		V14.6.14(7501)			
R&S	Wireless Communication Test Set	CMU200	112387	2021/03/17	1 year
Anritsu	Radio Communication Analyzer	MT8820C	6201342039	2020/12/03	1 year
SPEAG	Network Analyzer	DAKS_VNA R140	0010318	2021/05/26	1 year
SPEAG	Dielectric Probe Kit	DAKS-3.5	1101	2021/05/26	1 year
HILA	Digital Thermometer	TM-906A	1500033	2021/10/29	1 year
Agilent	Power Sensor	8481H	3318A20779	2021/05/26	1 year
Agilent	Power Meter	EDM Series E4418B	GB40206143	2021/05/26	1 year
Agilent	Power Sensor	N1921A	MY45241957	2020/12/09	1 year
Agilent	Power Meter	N1911A	MY45101619	2020/12/09	1 year
Agilent	Signal Generator	E8257D	MY44320425	2021/02/18	1 year
Agilent	Spectrum Analyzer	N9030A	MT-112	2021/01/08	1 year
Mini-Circuits	Dual Directional Coupler	ZCDC20-5R263-S+	E69806	NCR	
Mini-Circuits	Power Amplifier	EMC014225P	980292	NCR	
Mini-Circuits	Power Amplifier	EMC2830P	980293	NCR	
EMCI	Power Amplifier	EMC0618-P	980833	NCR	
Aisi	Attenuator	IEAT 3dB	N/A	NCR	

Testing Engineer: Jason Tsao / Ted Hsieh / Rocky Wang

8. Measurement Procedure

8.1 SAR Measurement Procedure

The measurement procedures are as follows:

1. The DUT is installed engineering testing software that provides continuous transmitting signal.
2. Measure output power through RF cable and power meter
3. Set scan area, grid size and other setting on the DASY software
4. Find out the largest SAR result on these testing positions of each band
5. Measure SAR results for other channels in worst SAR testing position if the SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

1. Power reference measurement
2. Area scan
3. Zoom scan
4. Power drift measurement

8.1.1 Area & Zoom Scan Procedures

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan measures points and step size follow as below. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution.

The measure settings are referred to KDB 865664 D01v01r04 :

<table>
<tr><td colspan="3"></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5 mm ± 1 mm</td><td>½·δ·ln(2) mm ± 0.5 mm</td></tr>
<tr><td colspan="3">Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30° ± 1°</td><td>20° ± 1°</td></tr>
<tr><td colspan="3" rowspan="2">Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}</td><td>≤ 2 GHz: ≤ 15 mm
2 - 3 GHz: ≤ 12 mm</td><td>3 - 4 GHz: ≤ 12 mm
4 - 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Area}, Δy_{Area}</td><td>≤ 2 GHz: ≤ 8 mm
2 - 3 GHz: ≤ 5 mm*</td><td>3 - 4 GHz: ≤ 5 mm*
4 - 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>≤ 5 mm</td><td>3 - 4 GHz: ≤ 4 mm
4 - 5 GHz: ≤ 3 mm
5 - 6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="2">Graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤ 4 mm</td><td>3 - 4 GHz: ≤ 3 mm
4 - 5 GHz: ≤ 2.5 mm
5 - 6 GHz: ≤ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">≤ 1.5·$\Delta z_{Zoom}(n-1)$ mm</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3 - 4 GHz: ≥ 28 mm
4 - 5 GHz: ≥ 25 mm
5 - 6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.
* When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB Publication 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

8.1.2 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1 g aggregate SAR, the DUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

8.1.3 Power Drift Monitoring

All SAR testing is under the DUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of DUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5 %, the SAR will be retested.

8.1.4 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1 g and 10 g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.
The base for the evaluation is a "cube" measurement. The measured volume must include the 1 g and 10 g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.
The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1 g and 10 g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

1. Extraction of the measured data (grid and values) from the Zoom Scan
2. Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
3. Generation of a high-resolution mesh within the measured volume
4. Interpolation of all measured values form the measurement grid to the high-resolution grid
5. Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
6. Calculation of the averaged SAR within masses of 1 g and 10 g

9. Measurement Uncertainty

9.1 SAR Measurement Uncertainty

Measurement Uncertainty (0.3-6 GHz)								
Uncertainty Component	**Tol.**	**Prob. Dist.**	**Div.**	**Ci - 1g**	**Ci - 10g**	**ui - 1g (%)**	**ui - 10g (%)**	**vi**
Measurement System								
Probe calibration	12.0	N	2	1	1	6.0	6.0	∞
Probe Calibration Drift	1.7	R	1.732	1	1	1.0	1.0	∞
Data acquisition	0.3	N	1	1	1	0.3	0.3	∞
Probe Linearity	4.7	R	1.732	1	1	2.7	2.7	∞
Broadband Signal	3.0	R	1.732	1	1	1.7	1.7	∞
Probe Isotropy	7.6	R	1.732	1	1	4.4	4.4	∞
RF Ambient	1.8	N	1	1	1	1.8	1.8	∞
Probe Positioning	0.2	N	1	0.14	0.14	0.0	0.0	∞
Data Processing	1.2	N	1	1	1	1.2	1.2	∞
Phantom and Device Errors								
Conductivity (meas.)DAK	2.5	N	1	0.78	0.71	2.0	1.8	∞
Conductivity (temp.)	3.3	R	1.732	0.78	0.71	1.5	1.4	∞
Phantom Shell Permittivity	14	R	1.732	0	0	0.0	0.0	∞
Distance DUT - TSL	2	N	1	2	2	4.0	4.0	∞
Device Positioning	1	N	1	1	1	1.0	1.0	∞
Device Holder	3.6	N	1	1	1	3.6	3.6	∞
DUT Modulation	2.4	R	1.732	1	1	1.4	1.4	∞
Time-average SAR	1.7	R	1.732	1	1	1.0	1.0	∞
DUT Drift	2.5	N	1	1	1	2.5	2.5	∞
Correction to the SAR Results								
Deviation to Target	1.9	N	1	1	0.84	1.9	1.6	∞
SAR scaling	0.0	R	1.732	1	1	0.0	0.0	∞
Combined Standard Uncertainty					RSS	11.0	10.9	
Expanded Uncertainty (95% confidence interval)					k =2	21.9	21.7	

Measurement Uncertainty (3-6 GHz)								
Uncertainty Component	**Tol.**	**Prob. Dist.**	**Div.**	**Ci - 1g**	**Ci - 10g**	**ui - 1g (%)**	**ui - 10g (%)**	**vi**
Measurement System								
Probe Calibration	13.1	N	2	1	1	6.55	6.55	∞
Probe Calibration Drift	1.7	R	1.732	1	1	1.0	1.0	∞
Data Acquisition	0.3	N	1	1	1	0.3	0.3	∞
Probe Linearity	4.7	R	1.732	1	1	2.7	2.7	∞
Broadband Signal	2.6	R	1.732	1	1	1.5	1.5	∞
Probe Isotropy	7.6	R	1.732	1	1	4.4	4.4	∞
RF Ambient	1.8	N	1	1	1	1.8	1.8	∞
Probe Positioning	0.2	N	1	0.33	0.33	0.1	0.1	∞
Data Processing	2.3	N	1	1	1	2.3	2.3	∞
Phantom and Device Errors								
Conductivity (meas.)DAK	2.5	N	1	0.78	0.71	2.0	1.8	∞
Conductivity (temp.)	3.4	R	1.732	0.78	0.71	1.5	1.4	∞
Phantom Shell Permittivity	14	R	1.732	0.25	0.25	2.0	2.0	∞
Distance DUT - TSL	2	N	1	2	2	4.0	4.0	∞
Device Positioning	1	N	1	1	1	1.0	1.0	∞
Device Holder	3.6	N	1	1	1	3.6	3.6	∞
DUT Modulation	2.4	R	1.732	1	1	1.4	1.4	∞
Time-average SAR	1.7	R	1.732	1	1	1.0	1.0	∞
DUT Drift	2.5	N	1	1	1	2.5	2.5	∞
Correction to the SAR Results								
Deviation to Target	1.9	N	1	1	0.84	1.9	1.6	∞
SAR scaling	0.0	R	1.732	1	1	0.0	0.0	∞
Combined Standard Uncertainty					RSS	11.6	11.5	
Expanded Uncertainty (95% confidence interval)					k =2	23.2	23.0	

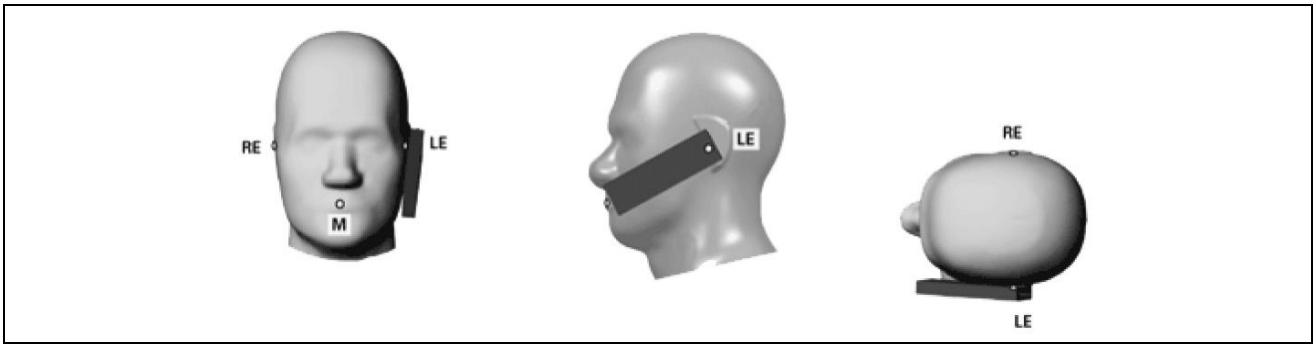
Measurement Uncertainty (6-10 GHz)								
Uncertainty Component	**Tol.**	**Prob. Dist.**	**Div.**	**Ci - 1g**	**Ci - 10g**	**ui - 1g (%)**	**ui - 10g (%)**	**vi**
Measurement System								
Probe calibration	18.6	N	2	1	1	9.3	9.3	∞
Probe Calibration Drift	1.7	R	1.732	1	1	1.0	1.0	∞
Data Acquisition	0.3	N	1	1	1	0.3	0.3	∞
Probe Linearity	4.7	R	1.732	1	1	2.7	2.7	∞
Broadband Signal	2.8	R	1.732	1	1	1.6	1.6	∞
Probe Isotropy	7.6	R	1.732	1	1	4.4	4.4	∞
RF Ambient Condition	1.8	N	1	1	1	1.8	1.8	∞
Probe Positioning	0.2	N	1	0.67	0.67	0.1	0.1	∞
Data Processing	3.5	N	1	1	1	3.5	3.5	∞
Phantom and Device Errors								
Conductivity (meas.)DAK	2.5	N	1	0.78	0.71	2.0	1.8	∞
Conductivity (temp.)	2.4	R	1.732	0.78	0.71	1.1	1.0	∞
Phantom Shell Permittivity	14.0	R	1.732	0.5	0.5	4.0	4.0	∞
Distance DUT - TSL	2	N	1	2	2	4.0	4.0	∞
Device Positioning	1	N	1	1	1	1.0	1.0	∞
Device Holder	3.6	N	1	1	1	3.6	3.6	∞
DUT Modulation	2.4	R	1.732	1	1	1.4	1.4	∞
Time-average SAR	1.7	R	1.732	1	1	1.0	1.0	∞
DUT Drift	2.5	N	1	1	1	2.5	2.5	∞
Correction to the SAR Results								
Deviation to Target	1.9	N	1	1	0.84	1.9	1.6	∞
SAR scaling	0.0	R	1.732	1	1	0.0	0.0	∞
Combined Standard Uncertainty					RSS	14.0	13.9	
Expanded Uncertainty (95% confidence interval)					k =2	28.0	27.9	

10. Measurement Evaluation

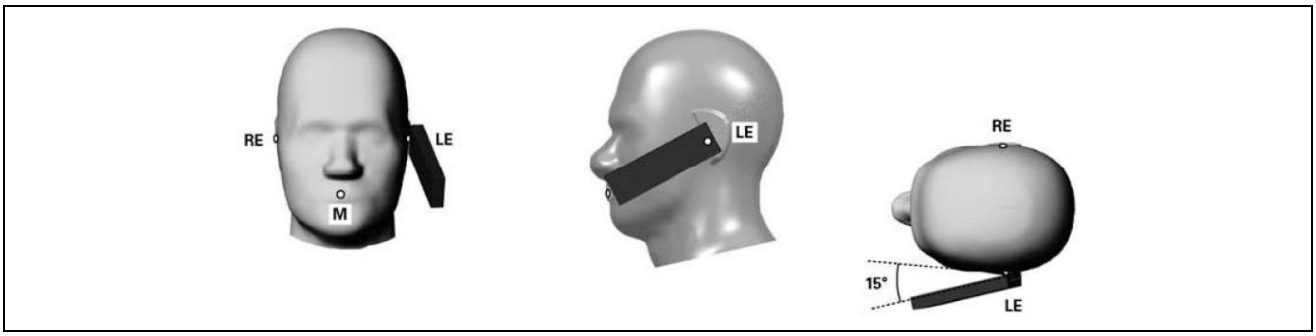
10.1 Positioning of the DUT in Relation to the Phantom

10.1.1 Head exposure condistion

According to KDB 447498 D1 and KDB 648447 D06,for devices that are designed to transmit next to the ear and operate according to the handset procedures in IEEE Std 1528-2013 & IEC/IEEE 62209-1528, or conditions described in the published RF exposure KDB procedures, must be tested using the SAM phantom defined in IEEE Std 1528-2013 & IEC/IEEE 62209-1528.



Cheek position of the DUT of SAM phantom



Tilt position of the DUT of SAM phantom

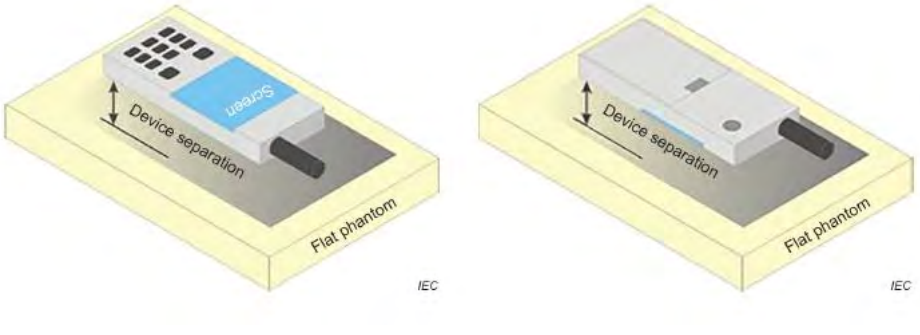
10.1.2 Hotspot mode exposure conditions

According to KDB 648447 D06, for cellphones that support wireless routing capabilities, the relevant hand and near-body exposure conditions are tested according to the hotspot mode SAR procedures in KDB Publication 941225 D06. A test separation distance of 10 mm is required between the phantom and all surfaces and edges with a transmitting antenna located within 25 mm from that surface or edge. When the form factor of a handset is smaller than 9 cm × 5 cm, a test separation distance of 5 mm (instead of 10 mm) is required for testing hotspot mode. When the separation distance required for body-worn accessory testing is greater than or equal to that tested for hotspot mode, using the same wireless mode test configuration for voice and data, such as WCDMA, LTE and Wi-Fi, and for the same surface of the phone, the hotspot mode SAR data may be used to support body-worn accessory SAR compliance for that particular configuration (surface).

Hotspot mode SAR is measured for all edges and surfaces of the device with a transmitting antenna located within 25 mm from that surface or edge; for the data modes, wireless technologies and frequency bands supporting hotspot mode.

10.1.3 Body-worn exposure conditions

According to KDB 648447 D06, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in KDB Publication 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it.



Test positions for body-worn device

10.1.4 Phablet SAR test considerations

According to KDB 648474 D04, the UMPC mini-tablet SAR procedures in KDB Publication 941225 D07 are primarily intended for devices with an overall diagonal dimensions ≤ 20 cm that operate like a tablet and mainly support hand-held interactive use next to or near the body of users, with no provision for next to the ear voice mode operations.

For smart phones, with a display diagonal dimension > 15.0 cm or an overall diagonal dimension >16.0 cm, devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance.

The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.

The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB Publication 865664 D01 to address interactive hand use exposure conditions. The 1-g SAR at 5 mm for UMPC mini-tablets is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg. The normal tablet procedures in KDB Publication 616217 are required when the overall diagonal dimension of the device is > 20.0 cm. Hotspot mode and extremity 10-g SAR is not required when normal tablet procedures are applied.

10.2 SAR Testing Consideration

10.2.1 SAR Testing with GSM & UMTS

<KDB 941225 D01 General Requirement>

According to 3G SAR test reduction procedure in KDB 941225 D01, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ 0.25 dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

GSM SAR Measurement

The 3G SAR test reduction procedure is applied to EDGE (8-PSK) with GPRS/EDGE (GMSK) as the primary mode in conjuction with the test reduction procedure in KDB Publication 447498 D01.

WCDMA SAR Measurement

Head SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”. The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the primary mode.

Body-Worn Accessory SAR for body-worn accessory configurations is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”. The 3G SAR test reduction procedure is applied to other spreading codes and multiple $DPDCH_n$ configurations supported by the handset with 12.2 kbps RMC as the primary mode.

Rel. 5 HSDPA SAR Measurement

When voice transmission in next to the ear head exposure conditions is according to the “Haed SAR” part in “WCDMA SAR Measurement” of this document. SAR for body exposure configurations is according to the “Body-Worn Accessory SAR” part in “WCDMA SAR Measurement” of this document. The 3G SAR test reduction procedure is applied to HSDPA body SAR with 12.2 kbps RMC as the primary mode. Body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, for the highest reported SAR configuration in 12.2 kbps RMC without HSDPA.

Rel. 6 HSPA (HSDPA/HSUPA) SAR Measurement

When voice transmission in next to the ear head exposure conditions is according to the “Haed SAR” part in “WCDMA SAR Measurement” of this document. SAR for body exposure configurations is according to the the “Body-Worn Accessory SAR” part in “WCDMA SAR Measurement” of this document. The 3G SAR test reduction procedure is applied to HSPA body SAR with 12.2 kbps RMC as the primary mode. Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA.

When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing.

10.2.2 SAR Testing with LTE

<KDB 941225 D05 General requirements>

1. Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel.
3. When the highest reported SAR for 1 RB and 50% RB allocation are > 0.8 W/kg, SAR is measured for the highest output power channel in 100%RB.
4. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.
5. The procedures required for 1 RB allocation are applied to measure the SAR for QPSK with 50% RB allocation.
6. For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
7. SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.
8. According to 5.3 of KDB 941225 D05, that about the test reduction for other channel bandwidth, if the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > 0.5 dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg, then SAR need to test.
9. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing; therefore, the requirement for H, M, and L channels may not fully apply.
10. This device supports LTE band 41 and band 38, and band 38 is covered by band 41. According to Apr. 2015 TCB workshop, for device supports overlapping bands, and both bands share the same transmission path and signal characteristics. SAR was only assessed for the band with the larger transmission frequency range.

10.2.3 SAR Testing with WLAN

A Wi-Fi device must be configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools for SAR measurement. The test frequencies established using test mode must correspond to the actualchannel frequencies.
For WLAN SAR testing, the DUT has installed WLAN engineering testing software which can provide continuous transmitting RF signal. And the RF signal utilized in SAR measurement has almost 100 % duty cycle and crest factor is 1.

- The cards was operated utilizing proprietary software (QRCT) and each channel was measured using a broadband power meter to determine the maximum average power.

<KDB 248227 D01 General requirements>

SAR test reduction for 802.11 Wi-Fi transmission mode configurations are considered separately for DSSS and OFDM. An initial test position is determined to reduce the number of tests required for certain exposure configurations with multiple test positions. An initial test configuration is determined for each frequency band and aggregated band according to maximum output power, channel bandwidth, wireless mode configurations and other operating parameters to streamline the measurement requirements. For 2.4 GHz DSSS, either the initial test position or DSSS procedure is applied to reduce the number of SAR tests; these are mutually exclusive. For OFDM, an initial test position is only applicable to next to the ear, UMPC mini-tablet and hotspot mode configurations, which is tested using the initial test configuration to facilitate test reduction. For other exposure conditions with a fixed test position, SAR test reduction is determined using only the initial test configuration.

The multiple test positions require SAR measurements in head, hotspot mode or UMPC mini-tablet configurations may be reduced according to the highest reported SAR determined using the initial test position(s) by applying the DSSS or OFDM SAR measurement procedures in the required wireless mode test configuration(s). The initial test position(s) is measured using the highest measured maximum output power channel in the required wireless mode test configuration(s). When the reported SAR for the initial test position is:

- ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and wireless mode combination within the frequency band or aggregated band. DSSS and OFDM configurations are considered separately according to the required SAR procedures.
- > 0.4 W/kg, SAR is repeated using the same wireless mode test configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg or all required test positions are tested.
  ※ For subsequent test positions with equivalent test separation distance or when exposure is dominated by coupling conditions, the position for maximum coupling condition should be tested.
  ※ When it is unclear, all equivalent conditions must be tested.

- For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, measure the SAR for these positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required test channels are considered.
  ※ The additional power measurements required for this step should be limited to those necessary for identifying subsequent highest output power channels to apply the test reduction.

- When the specified maximum output power is the same for both UNII 1 and UNII 2A, begin SAR measurements in UNII 2A with the channel with the highest measured output power. If the reported SAR for UNII 2A is ≤ 1.2 W/kg, SAR is not required for UNII 1; otherwise treat the remaining bands separately and test them independently for SAR.

- When the specified maximum output power is different between UNII 1 and UNII 2A, begin SAR with the band that has the higher specified maximum output. If the highest reported SAR for the band with the highest specified power is ≤ 1.2 W/kg, testing for the band with the lower specified output power is not required; otherwise test the remaining bands independently for SAR.

To determine the initial test position, Area Scans were performed to determine the position with the Maximum Value of SAR (measured). The position that produced the highest Maximum Value of SAR is considered as the worst case position; thus used as the initial test position.

- After an initial test configuration is determined, if multiple test channels have the same measured maximum output power, the channel chosen for SAR measurement is determined according to the following:
  (1) The channel closest to mid-band frequency is selected for SAR measurement.
  (2) For channels with equal separation from mid-band frequency; for example, high and low channels or two mid-band channels, the higher frequency (number) channel is selected for SAR measurement.

These channel selection procedures apply to both the initial test configuration and subsequent test configuration(s) selection.

<DUT Considaration>

The WLAN 2.4 GHz / 5.2 GHz / 5.8 GHz of this device supports hotspot operation.

10.3 Conducted Power Measurements

Refer to Appendix A - Conducted Power Measurements.

10.4 Antenna location

Refer to Appendix E.

10.5 Test Results

10.5.1 SAR Test Result

Head SAR													
Index.	Band	Modulation	Frequency		Bandwidth	RB Size	RB Offset	Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max Tune-up (dBm)	Duty Cycle (%)	Reported SAR 1 g
			Ch.	MHz					(mm)	(W/Kg)				
	GSM850	GPRS 2Tx slots	189	836.4	—	—	—	Right-Cheek	0	0.064	30.68	31	100	0.07
	GSM850	GPRS 2Tx slots	189	836.4	—	—	—	Right-Tilted	0	0.031	30.68	31	100	0.03
	GSM850	GPRS 2Tx slots	189	836.4	—	—	—	Left-Cheek	0	0.071	30.68	31	100	0.08
	GSM850	GPRS 2Tx slots	128	824.2	—	—	—	Left-Cheek	0	0.053	30.52	31	100	0.06
6	GSM850	GPRS 2Tx slots	251	848.8	—	—	—	Left-Cheek	0	0.124	30.55	31	100	0.14
	GSM850	GPRS 2Tx slots	189	836.4	—	—	—	Left-Tilted	0	0.03	30.68	31	100	0.03
	GSM1900	GPRS 2Tx slots	810	1909.8	—	—	—	Right-Cheek	0	0.304	27.13	28	100	0.37
12	GSM1900	GPRS 2Tx slots	512	1850.2	—	—	—	Right-Cheek	0	0.322	27.08	28	100	0.40
	GSM1900	GPRS 2Tx slots	661	1880	—	—	—	Right-Cheek	0	0.305	27.11	28	100	0.37
	GSM1900	GPRS 2Tx slots	810	1909.8	—	—	—	Right-Tilted	0	0.173	27.13	28	100	0.21
	GSM1900	GPRS 2Tx slots	810	1909.8	—	—	—	Left-Cheek	0	0.185	27.13	28	100	0.23
	GSM1900	GPRS 2Tx slots	810	1909.8	—	—	—	Left-Tilted	0	0.164	27.13	28	100	0.20
15	WCDMA Band II	RMC12.2Kbps	9262	1852.4	—	—	—	Right-Cheek	0	0.51	23.53	25	100	0.72
	WCDMA Band II	RMC12.2Kbps	9400	1880	—	—	—	Right-Cheek	0	0.507	23.52	25	100	0.71
	WCDMA Band II	RMC12.2Kbps	9538	1907.6	—	—	—	Right-Cheek	0	0.485	23.35	25	100	0.71
	WCDMA Band II	RMC12.2Kbps	9262	1852.4	—	—	—	Right-Tilted	0	0.342	23.53	25	100	0.48
	WCDMA Band II	RMC12.2Kbps	9262	1852.4	—	—	—	Left-Cheek	0	0.276	23.53	25	100	0.39
	WCDMA Band II	RMC12.2Kbps	9262	1852.4	—	—	—	Left-Tilted	0	0.311	23.53	25	100	0.44
	WCDMA Band V	RMC12.2Kbps	4182	836.4	—	—	—	Right-Cheek	0	0.063	24.06	25	100	0.08
	WCDMA Band V	RMC12.2Kbps	4182	836.4	—	—	—	Right-Tilted	0	0.05	24.06	25	100	0.06
	WCDMA Band V	RMC12.2Kbps	4182	836.4	—	—	—	Left-Cheek	0	0.132	24.06	25	100	0.16
	WCDMA Band V	RMC12.2Kbps	4132	826.4	—	—	—	Left-Cheek	0	0.113	24.04	25	100	0.14
27	WCDMA Band V	RMC12.2Kbps	4233	846.6	—	—	—	Left-Cheek	0	0.156	23.73	25	100	0.21
	WCDMA Band V	RMC12.2Kbps	4182	836.4	—	—	—	Left-Tilted	0	0.07	24.06	25	100	0.09
29	LTE Band 2	QPSK	18900	1880	20M	1	0	Right-Cheek	0	0.625	22.96	24	100	0.79
	LTE Band 2	QPSK	18700	1860	20M	1	0	Right-Cheek	0	0.605	22.89	24	100	0.78
	LTE Band 2	QPSK	19100	1900	20M	1	0	Right-Cheek	0	0.604	22.94	24	100	0.77
	LTE Band 2	QPSK	18900	1880	20M	50	50	Right-Cheek	0	0.503	21.81	23	100	0.66
	LTE Band 2	QPSK	18900	1880	20M	1	0	Right-Tilted	0	0.399	22.96	24	100	0.51
	LTE Band 2	QPSK	18900	1880	20M	50	50	Right-Tilted	0	0.341	21.81	23	100	0.45
	LTE Band 2	QPSK	18900	1880	20M	1	0	Left-Cheek	0	0.312	22.96	24	100	0.40
	LTE Band 2	QPSK	18900	1880	20M	50	50	Left-Cheek	0	0.252	21.81	23	100	0.33
	LTE Band 2	QPSK	18900	1880	20M	1	0	Left-Tilted	0	0.328	22.96	24	100	0.42
	LTE Band 2	QPSK	18900	1880	20M	50	50	Left-Tilted	0	0.264	21.81	23	100	0.35

Head SAR														
Index.	Band	Modulation	Frequency		Bandwidth	RB Size	RB Offset	Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max Tune-up (dBm)	Duty Cycle (%)	Reported SAR 1 g
			Ch.	MHz					(mm)	(W/Kg)				
40	LTE Band 4	QPSK	20175	1732.5	20M	1	0	Right-Cheek	0	0.421	22.43	24	100	0.60
	LTE Band 4	QPSK	20175	1732.5	20M	50	0	Right-Cheek	0	0.34	21.43	23	100	0.49
	LTE Band 4	QPSK	20175	1732.5	20M	1	0	Right-Tilted	0	0.291	22.43	24	100	0.42
	LTE Band 4	QPSK	20175	1732.5	20M	50	0	Right-Tilted	0	0.228	21.43	23	100	0.33
	LTE Band 4	QPSK	20175	1732.5	20M	1	0	Left-Cheek	0	0.222	22.43	24	100	0.32
	LTE Band 4	QPSK	20175	1732.5	20M	50	0	Left-Cheek	0	0.178	21.43	23	100	0.26
	LTE Band 4	QPSK	20175	1732.5	20M	1	0	Left-Tilted	0	0.189	22.43	24	100	0.27
	LTE Band 4	QPSK	20175	1732.5	20M	50	0	Left-Tilted	0	0.151	21.43	23	100	0.22
	LTE Band 5	QPSK	20525	836.5	10M	1	0	Right-Cheek	0	0.057	22.97	23	100	0.06
	LTE Band 5	QPSK	20525	836.5	10M	25	12	Right-Cheek	0	0.045	21.97	22	100	0.05
	LTE Band 5	QPSK	20525	836.5	10M	1	0	Right-Tilted	0	0.03	22.97	23	100	0.03
	LTE Band 5	QPSK	20525	836.5	10M	25	12	Right-Tilted	0	0.024	21.97	22	100	0.02
55	LTE Band 5	QPSK	20525	836.5	10M	1	0	Left-Cheek	0	0.088	22.97	23	100	0.09
	LTE Band 5	QPSK	20525	836.5	10M	25	12	Left-Cheek	0	0.07	21.97	22	100	0.07
	LTE Band 5	QPSK	20525	836.5	10M	1	0	Left-Tilted	0	0.028	22.97	23	100	0.03
	LTE Band 5	QPSK	20525	836.5	10M	25	12	Left-Tilted	0	0.019	21.97	22	100	0.02
62	LTE Band 7	QPSK	21100	2535	20M	1	0	Right-Cheek	0	0.137	21.81	22	100	0.14
	LTE Band 7	QPSK	20850	2510	20M	1	0	Right-Cheek	0	0.132	21.79	22	100	0.14
	LTE Band 7	QPSK	21350	2560	20M	1	0	Right-Cheek	0	0.131	21.68	22	100	0.14
	LTE Band 7	QPSK	21100	2535	20M	50	0	Right-Cheek	0	0.113	20.52	21	100	0.13
	LTE Band 7	QPSK	21100	2535	20M	1	0	Right-Tilted	0	0.058	21.81	22	100	0.06
	LTE Band 7	QPSK	21100	2535	20M	50	0	Right-Tilted	0	0.037	20.52	21	100	0.04
	LTE Band 7	QPSK	21100	2535	20M	1	0	Left-Cheek	0	0.074	21.81	22	100	0.08
	LTE Band 7	QPSK	21100	2535	20M	50	0	Left-Cheek	0	0.07	20.52	21	100	0.08
	LTE Band 7	QPSK	21100	2535	20M	1	0	Left-Tilted	0	0.069	21.81	22	100	0.07
	LTE Band 7	QPSK	21100	2535	20M	50	0	Left-Tilted	0	0.053	20.52	21	100	0.06
	LTE Band 12	QPSK	23095	707.5	10M	1	0	Right-Cheek	0	0.094	23.19	23.5	100	0.10
	LTE Band 12	QPSK	23095	707.5	10M	25	0	Right-Cheek	0	0.075	22.27	22.5	100	0.08
	LTE Band 12	QPSK	23095	707.5	10M	1	0	Right-Tilted	0	0.084	23.19	23.5	100	0.09
	LTE Band 12	QPSK	23095	707.5	10M	25	0	Right-Tilted	0	0.067	22.27	22.5	100	0.07
77	LTE Band 12	QPSK	23095	707.5	10M	1	0	Left-Cheek	0	0.111	23.19	23.5	100	0.12
	LTE Band 12	QPSK	23095	707.5	10M	25	0	Left-Cheek	0	0.088	22.27	22.5	100	0.09
	LTE Band 12	QPSK	23095	707.5	10M	1	0	Left-Tilted	0	0.086	23.19	23.5	100	0.09
	LTE Band 12	QPSK	23095	707.5	10M	25	0	Left-Tilted	0	0.066	22.27	22.5	100	0.07

Head SAR														
Index.	Band	Modulation	Frequency		Bandwidth	RB Size	RB Offset	Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max Tune-up (dBm)	Duty Cycle (%)	Reported SAR 1 g
			Ch.	MHz					(mm)	(W/Kg)				
	LTE Band 17	QPSK	23790	710	10M	1	0	Right-Cheek	0	0.091	22.89	23	100	0.09
	LTE Band 17	QPSK	23790	710	10M	25	25	Right-Cheek	0	0.072	21.93	22	100	0.07
	LTE Band 17	QPSK	23790	710	10M	1	0	Right-Tilted	0	0.082	22.89	23	100	0.08
	LTE Band 17	QPSK	23790	710	10M	25	25	Right-Tilted	0	0.065	21.93	22	100	0.07
88	LTE Band 17	QPSK	23790	710	10M	1	0	Left-Cheek	0	0.124	22.89	23	100	0.13
	LTE Band 17	QPSK	23790	710	10M	25	25	Left-Cheek	0	0.089	21.93	22	100	0.09
	LTE Band 17	QPSK	23790	710	10M	1	0	Left-Tilted	0	0.083	22.89	23	100	0.09
	LTE Band 17	QPSK	23790	710	10M	25	25	Left-Tilted	0	0.063	21.93	22	100	0.06
124	LTE Band 41	QPSK	40190	2550	20M	1	0	Right-Cheek	0	0.171	23.99	24.5	62.9	0.19
	LTE Band 41	QPSK	40490	2580	20M	1	0	Right-Cheek	0	0.144	23.64	24.5	62.9	0.18
	LTE Band 41	QPSK	40790	2610	20M	1	0	Right-Cheek	0	0.101	23.32	24.5	62.9	0.13
	LTE Band 41	QPSK	41090	2640	20M	1	0	Right-Cheek	0	0.11	23.33	24.5	62.9	0.14
	LTE Band 41	QPSK	40190	2550	20M	50	0	Right-Cheek	0	0.069	22.7	23.5	62.9	0.08
	LTE Band 41	QPSK	40190	2550	20M	1	0	Right-Tilted	0	0.058	23.99	24.5	62.9	0.07
	LTE Band 41	QPSK	40190	2550	20M	50	0	Right-Tilted	0	0.051	22.7	23.5	62.9	0.06
	LTE Band 41	QPSK	40190	2550	20M	1	0	Left-Cheek	0	0.08	23.99	24.5	62.9	0.09
	LTE Band 41	QPSK	40190	2550	20M	50	0	Left-Cheek	0	0.063	22.7	23.5	62.9	0.08
	LTE Band 41	QPSK	40190	2550	20M	1	0	Left-Tilted	0	0.075	23.99	24.5	62.9	0.08
	LTE Band 41	QPSK	40190	2550	20M	50	0	Left-Tilted	0	0.06	22.7	23.5	62.9	0.07

Head SAR											
Index.	Band	Modulation	Frequency		Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max Tune-up (dBm)	Duty Cycle (%)	Reported SAR 1 g
			Ch.	MHz		(mm)	(W/Kg)				
	WLAN2.4GHz	802.11b	6	2437	Right-Cheek	0	0.106	16.25	16.5	99.83	0.11
500	WLAN2.4GHz	802.11b	1	2412	Right-Cheek	0	0.117	16.19	16.5	99.83	0.13
	WLAN2.4GHz	802.11b	11	2462	Right-Cheek	0	0.108	16.15	16.5	99.83	0.12
	WLAN2.4GHz	802.11b	12	2467	Right-Cheek	0	0.101	16.06	16.5	99.83	0.11
	WLAN2.4GHz	802.11b	13	2472	Right-Cheek	0	0.082	15.57	16.5	99.83	0.10
	WLAN2.4GHz	802.11b	6	2437	Right-Tilted	0	0.103	16.25	16.5	99.83	0.11
	WLAN2.4GHz	802.11b	6	2437	Left-Cheek	0	0.071	16.25	16.5	99.83	0.08
	WLAN2.4GHz	802.11b	6	2437	Left-Tilted	0	0.079	16.25	16.5	99.83	0.08
	Bluetooth	—	0	2402	Right-Cheek	0	0.031	11.21	12	78.46	0.05
501	Bluetooth	—	39	2441	Right-Cheek	0	0.028	10.54	12	78.46	0.05
	Bluetooth	—	78	2480	Right-Cheek	0	0.03	11.04	12	78.46	0.05
	Bluetooth	—	0	2402	Right-Tilted	0	0.03	11.21	12	78.46	0.05
	Bluetooth	—	0	2402	Left-Cheek	0	0.021	11.21	12	78.46	0.03
	Bluetooth	—	0	2402	Left-Tilted	0	0.023	11.21	12	78.46	0.04
510	WLAN5GHz	802.11n HT40	54	5270	Right-Cheek	0	0.073	14.05	14.5	94.28	0.09
	WLAN5GHz	802.11n HT40	62	5310	Right-Cheek	0	0.071	13.77	14.5	94.28	0.09
	WLAN5GHz	802.11n HT40	54	5270	Right-Tilted	0	0.042	14.05	14.5	94.28	0.05
	WLAN5GHz	802.11n HT40	54	5270	Left-Cheek	0	0.057	14.05	14.5	94.28	0.07
	WLAN5GHz	802.11n HT40	54	5270	Left-Tilted	0	0.042	14.05	14.5	94.28	0.05
	WLAN5GHz	802.11n HT40	102	5510	Right-Cheek	0	0.149	13.97	14.5	94.28	0.18
	WLAN5GHz	802.11n HT40	110	5550	Right-Cheek	0	0.178	13.96	14.5	94.28	0.21
511	WLAN5GHz	802.11n HT40	126	5630	Right-Cheek	0	0.204	13.88	14.5	94.28	0.25
	WLAN5GHz	802.11n HT40	134	5670	Right-Cheek	0	0.18	13.87	14.5	94.28	0.22
	WLAN5GHz	802.11n HT40	142	5710	Right-Cheek	0	0.157	12.8	14.5	94.28	0.25
	WLAN5GHz	802.11n HT40	102	5510	Right-Tilted	0	0.078	13.97	14.5	94.28	0.09
	WLAN5GHz	802.11n HT40	102	5510	Left-Cheek	0	0.094	13.97	14.5	94.28	0.11
	WLAN5GHz	802.11n HT40	102	5510	Left-Tilted	0	0.077	13.97	14.5	94.28	0.09
	WLAN5GHz	802.11n HT40	159	5795	Right-Cheek	0	0.128	13.98	14.5	94.28	0.15
512	WLAN5GHz	802.11n HT40	151	5755	Right-Cheek	0	0.136	13.96	14.5	94.28	0.16
	WLAN5GHz	802.11n HT40	159	5795	Right-Tilted	0	0.085	13.98	14.5	94.28	0.10
	WLAN5GHz	802.11n HT40	159	5795	Left-Cheek	0	0.111	13.98	14.5	94.28	0.13
	WLAN5GHz	802.11n HT40	159	5795	Left-Tilted	0	0.1	13.98	14.5	94.28	0.12

Hotspot SAR														
Index.	Band	Modulation	Frequency		Bandwidth	RB Size	RB Offset	Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max Tune-up (dBm)	Duty Cycle (%)	Reported SAR 1 g
			Ch.	MHz					(mm)	(W/Kg)				
	GSM850	GPRS 2Tx slots	189	836.4	—	—	—	Front	10	0.14	30.68	31	100	0.15
	GSM850	GPRS 2Tx slots	189	836.4	—	—	—	Back	10	0.329	30.68	31	100	0.35
	GSM850	GPRS 2Tx slots	128	824.2	—	—	—	Back	10	0.279	30.52	31	100	0.31
304	GSM850	GPRS 2Tx slots	251	848.8	—	—	—	Back	10	0.415	30.55	31	100	0.46
	GSM850	GPRS 2Tx slots	189	836.4	—	—	—	Side 1	10	0.018	30.68	31	100	0.02
	GSM850	GPRS 2Tx slots	189	836.4	—	—	—	Side 2	10	0.088	30.68	31	100	0.09
	GSM850	GPRS 2Tx slots	189	836.4	—	—	—	Side 3	10	0.103	30.68	31	100	0.11
	GSM850	GPRS 2Tx slots	189	836.4	—	—	—	Side 4	10	0.122	30.68	31	100	0.13
310	GSM1900	GPRS 2Tx slots	810	1909.8	—	—	—	Front	10	0.333	27.13	28	100	0.41
	GSM1900	GPRS 2Tx slots	512	1850.2	—	—	—	Front	10	0.307	27.08	28	100	0.38
	GSM1900	GPRS 2Tx slots	661	1880	—	—	—	Front	10	0.304	27.11	28	100	0.37
	GSM1900	GPRS 2Tx slots	810	1909.8	—	—	—	Back	10	0.238	27.13	28	100	0.29
	GSM1900	GPRS 2Tx slots	810	1909.8	—	—	—	Side 1	10	0.051	27.13	28	100	0.06
	GSM1900	GPRS 2Tx slots	810	1909.8	—	—	—	Side 2	10	0.212	27.13	28	100	0.26
	GSM1900	GPRS 2Tx slots	810	1909.8	—	—	—	Side 3	10	0.156	27.13	28	100	0.19
	GSM1900	GPRS 2Tx slots	810	1909.8	—	—	—	Side 4	10	0.041	27.13	28	100	0.05
	WCDMA Band II	RMC12.2Kbps	9262	1852.4	—	—	—	Front	10	0.627	23.53	25	100	0.88
	WCDMA Band II	RMC12.2Kbps	9400	1880	—	—	—	Front	10	0.673	23.52	25	100	0.95
321	WCDMA Band II	RMC12.2Kbps	9538	1907.6	—	—	—	Front	10	0.698	23.35	25	100	1.02
	WCDMA Band II	RMC12.2Kbps	9262	1852.4	—	—	—	Back	10	0.429	23.53	25	100	0.60
	WCDMA Band II	RMC12.2Kbps	9262	1852.4	—	—	—	Side 1	10	0.088	23.53	25	100	0.12
	WCDMA Band II	RMC12.2Kbps	9262	1852.4	—	—	—	Side 2	10	0.398	23.53	25	100	0.56
	WCDMA Band II	RMC12.2Kbps	9262	1852.4	—	—	—	Side 3	10	0.341	23.53	25	100	0.48
	WCDMA Band II	RMC12.2Kbps	9262	1852.4	—	—	—	Side 4	10	0.105	23.53	25	100	0.15
	WCDMA Band V	RMC12.2Kbps	4182	836.4	—	—	—	Front	10	0.056	24.06	24.5	100	0.06
	WCDMA Band V	RMC12.2Kbps	4182	836.4	—	—	—	Back	10	0.168	24.06	24.5	100	0.19
	WCDMA Band V	RMC12.2Kbps	4132	826.4	—	—	—	Back	10	0.14	24.04	24.5	100	0.16
331	WCDMA Band V	RMC12.2Kbps	4233	846.6	—	—	—	Back	10	0.188	23.73	24.5	100	0.22
	WCDMA Band V	RMC12.2Kbps	4182	836.4	—	—	—	Side 1	10	0.01	24.06	24.5	100	0.01
	WCDMA Band V	RMC12.2Kbps	4182	836.4	—	—	—	Side 2	10	0.053	24.06	24.5	100	0.06
	WCDMA Band V	RMC12.2Kbps	4182	836.4	—	—	—	Side 3	10	0.047	24.06	24.5	100	0.05
	WCDMA Band V	RMC12.2Kbps	4182	836.4	—	—	—	Side 4	10	0.055	24.06	24.5	100	0.06

Hotspot SAR														
Index.	Band	Modulation	Frequency		Bandwidth	RB Size	RB Offset	Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max Tune-up (dBm)	Duty Cycle (%)	Reported SAR 1 g
			Ch.	MHz					(mm)	(W/Kg)				
337	LTE Band 2	QPSK	18900	1880	20M	1	0	Front	10	0.562	22.96	24	100	0.71
	LTE Band 2	QPSK	18700	1860	20M	1	0	Front	10	0.536	22.89	24	100	0.69
	LTE Band 2	QPSK	19100	1900	20M	1	0	Front	10	0.552	22.94	24	100	0.70
	LTE Band 2	QPSK	18900	1880	20M	50	50	Front	10	0.458	21.81	23	100	0.60
	LTE Band 2	QPSK	18900	1880	20M	1	0	Back	10	0.367	22.96	24	100	0.47
	LTE Band 2	QPSK	18900	1880	20M	50	50	Back	10	0.329	21.81	23	100	0.43
	LTE Band 2	QPSK	18900	1880	20M	1	0	Side 1	10	0.062	22.96	24	100	0.08
	LTE Band 2	QPSK	18900	1880	20M	50	50	Side 1	10	0.059	21.81	23	100	0.08
	LTE Band 2	QPSK	18900	1880	20M	1	0	Side 2	10	0.359	22.96	24	100	0.46
	LTE Band 2	QPSK	18900	1880	20M	50	50	Side 2	10	0.32	21.81	23	100	0.42
	LTE Band 2	QPSK	18900	1880	20M	1	0	Side 3	10	0.35	22.96	24	100	0.44
	LTE Band 2	QPSK	18900	1880	20M	50	50	Side 3	10	0.256	21.81	23	100	0.34
	LTE Band 2	QPSK	18900	1880	20M	1	0	Side 4	10	0.065	22.96	24	100	0.08
	LTE Band 2	QPSK	18900	1880	20M	50	50	Side 4	10	0.059	21.81	23	100	0.08
	LTE Band 4	QPSK	20175	1732.5	20M	1	0	Front	10	0.335	22.43	24	100	0.48
	LTE Band 4	QPSK	20175	1732.5	20M	50	0	Front	10	0.288	21.43	23	100	0.41
354	LTE Band 4	QPSK	20175	1732.5	20M	1	0	Back	10	0.381	22.43	24	100	0.55
	LTE Band 4	QPSK	20175	1732.5	20M	50	0	Back	10	0.317	21.43	23	100	0.46
	LTE Band 4	QPSK	20175	1732.5	20M	1	0	Side 1	10	0.069	22.43	24	100	0.10
	LTE Band 4	QPSK	20175	1732.5	20M	50	0	Side 1	10	0.039	21.43	23	100	0.06
	LTE Band 4	QPSK	20175	1732.5	20M	1	0	Side 2	10	0.272	22.43	24	100	0.39
	LTE Band 4	QPSK	20175	1732.5	20M	50	0	Side 2	10	0.229	21.43	23	100	0.33
	LTE Band 4	QPSK	20175	1732.5	20M	1	0	Side 3	10	0.275	22.43	24	100	0.39
	LTE Band 4	QPSK	20175	1732.5	20M	50	0	Side 3	10	0.245	21.43	23	100	0.35
	LTE Band 4	QPSK	20175	1732.5	20M	1	0	Side 4	10	0.059	22.43	24	100	0.08
	LTE Band 4	QPSK	20175	1732.5	20M	50	0	Side 4	10	0.047	21.43	23	100	0.07
	LTE Band 5	QPSK	20525	836.5	10M	1	0	Front	10	0.05	22.97	23	100	0.05
	LTE Band 5	QPSK	20525	836.5	10M	25	12	Front	10	0.044	21.97	22	100	0.04
369	LTE Band 5	QPSK	20525	836.5	10M	1	0	Back	10	0.144	22.97	23	100	0.14
	LTE Band 5	QPSK	20525	836.5	10M	25	12	Back	10	0.113	21.97	22	100	0.11
	LTE Band 5	QPSK	20525	836.5	10M	1	0	Side 1	10	0.01	22.97	23	100	0.01
	LTE Band 5	QPSK	20525	836.5	10M	25	12	Side 1	10	0.01	21.97	22	100	0.01
	LTE Band 5	QPSK	20525	836.5	10M	1	0	Side 2	10	0.01	22.97	23	100	0.01
	LTE Band 5	QPSK	20525	836.5	10M	25	12	Side 2	10	0.01	21.97	22	100	0.01
	LTE Band 5	QPSK	20525	836.5	10M	1	0	Side 3	10	0.041	22.97	23	100	0.04
	LTE Band 5	QPSK	20525	836.5	10M	25	12	Side 3	10	0.032	21.97	22	100	0.03
	LTE Band 5	QPSK	20525	836.5	10M	1	0	Side 4	10	0.01	22.97	23	100	0.01
	LTE Band 5	QPSK	20525	836.5	10M	25	12	Side 4	10	0.01	21.97	22	100	0.01

Hotspot SAR														
Index.	Band	Modulation	Frequency		Bandwidth	RB Size	RB Offset	Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max Tune-up (dBm)	Duty Cycle (%)	Reported SAR 1 g
			Ch.	MHz					(mm)	(W/Kg)				
	LTE Band 7	QPSK	21100	2535	20M	1	0	Front	10	0.266	21.81	22	100	0.28
	LTE Band 7	QPSK	21100	2535	20M	50	0	Front	10	0.222	20.52	21	100	0.25
	LTE Band 7	QPSK	21100	2535	20M	1	0	Back	10	0.985	21.81	22	100	1.03
385	LTE Band 7	QPSK	20850	2510	20M	1	0	Back	10	1.06	21.79	22	100	1.11
	LTE Band 7	QPSK	21350	2560	20M	1	0	Back	10	0.948	21.68	22	100	1.02
	LTE Band 7	QPSK	21100	2535	20M	50	0	Back	10	0.82	20.52	21	100	0.92
	LTE Band 7	QPSK	20850	2510	20M	50	0	Back	10	0.861	20.5	21	100	0.97
	LTE Band 7	QPSK	21350	2560	20M	50	0	Back	10	0.781	20.44	21	100	0.89
	LTE Band 7	QPSK	21100	2535	20M	100	0	Back	10	0.85	20.4	21	100	0.98
	LTE Band 7	QPSK	21100	2535	20M	1	0	Side 1	10	0.01	21.81	22	100	0.01
	LTE Band 7	QPSK	21100	2535	20M	50	0	Side 1	10	0.01	20.52	21	100	0.01
	LTE Band 7	QPSK	21100	2535	20M	1	0	Side 2	10	0.123	21.81	22	100	0.13
	LTE Band 7	QPSK	21100	2535	20M	50	0	Side 2	10	0.107	20.52	21	100	0.12
	LTE Band 7	QPSK	21100	2535	20M	1	0	Side 3	10	0.866	21.81	22	100	0.90
	LTE Band 7	QPSK	20850	2510	20M	1	0	Side 3	10	1.03	21.79	22	100	1.08
	LTE Band 7	QPSK	21350	2560	20M	1	0	Side 3	10	0.994	21.68	22	100	1.07
	LTE Band 7	QPSK	21100	2535	20M	50	0	Side 3	10	0.712	20.52	21	100	0.80
	LTE Band 7	QPSK	20850	2510	20M	50	0	Side 3	10	0.851	20.5	21	100	0.95
	LTE Band 7	QPSK	21350	2560	20M	50	0	Side 3	10	0.843	20.44	21	100	0.96
	LTE Band 7	QPSK	21100	2535	20M	100	0	Side 3	10	0.831	20.4	21	100	0.95
	LTE Band 7	QPSK	21100	2535	20M	1	0	Side 4	10	0.01	21.81	22	100	0.01
	LTE Band 7	QPSK	21100	2535	20M	50	0	Side 4	10	0.01	20.52	21	100	0.01
	LTE Band 12	QPSK	23095	707.5	10M	1	0	Front	10	0.09	23.19	23.5	100	0.10
	LTE Band 12	QPSK	23095	707.5	10M	25	0	Front	10	0.078	22.27	22.5	100	0.08
399	LTE Band 12	QPSK	23095	707.5	10M	1	0	Back	10	0.218	23.19	23.5	100	0.23
	LTE Band 12	QPSK	23095	707.5	10M	25	0	Back	10	0.172	22.27	22.5	100	0.18
	LTE Band 12	QPSK	23095	707.5	10M	1	0	Side 1	10	0.01	23.19	23.5	100	0.01
	LTE Band 12	QPSK	23095	707.5	10M	25	0	Side 1	10	0.01	22.27	22.5	100	0.01
	LTE Band 12	QPSK	23095	707.5	10M	1	0	Side 2	10	0.066	23.19	23.5	100	0.07
	LTE Band 12	QPSK	23095	707.5	10M	25	0	Side 2	10	0.054	22.27	22.5	100	0.06
	LTE Band 12	QPSK	23095	707.5	10M	1	0	Side 3	10	0.01	23.19	23.5	100	0.01
	LTE Band 12	QPSK	23095	707.5	10M	25	0	Side 3	10	0.01	22.27	22.5	100	0.01
	LTE Band 12	QPSK	23095	707.5	10M	1	0	Side 4	10	0.055	23.19	23.5	100	0.06
	LTE Band 12	QPSK	23095	707.5	10M	25	0	Side 4	10	0.053	22.27	22.5	100	0.06

Hotspot SAR														
Index.	Band	Modulation	Frequency		Bandwidth	RB Size	RB Offset	Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max Tune-up (dBm)	Duty Cycle (%)	Reported SAR 1 g
			Ch.	MHz					(mm)	(W/Kg)				
	LTE Band 17	QPSK	23790	710	10M	1	0	Front	10	0.083	22.89	23	100	0.09
	LTE Band 17	QPSK	23790	710	10M	25	25	Front	10	0.071	21.93	22	100	0.07
412	LTE Band 17	QPSK	23790	710	10M	1	0	Back	10	0.209	22.89	23	100	0.21
	LTE Band 17	QPSK	23790	710	10M	25	25	Back	10	0.159	21.93	22	100	0.16
	LTE Band 17	QPSK	23790	710	10M	1	0	Side 1	10	0.01	22.89	23	100	0.01
	LTE Band 17	QPSK	23790	710	10M	25	25	Side 1	10	0.01	21.93	22	100	0.01
	LTE Band 17	QPSK	23790	710	10M	1	0	Side 2	10	0.06	22.89	23	100	0.06
	LTE Band 17	QPSK	23790	710	10M	25	25	Side 2	10	0.049	21.93	22	100	0.05
	LTE Band 17	QPSK	23790	710	10M	1	0	Side 3	10	0.01	22.89	23	100	0.01
	LTE Band 17	QPSK	23790	710	10M	25	25	Side 3	10	0.01	21.93	22	100	0.01
	LTE Band 17	QPSK	23790	710	10M	1	0	Side 4	10	0.05	22.89	23	100	0.05
	LTE Band 17	QPSK	23790	710	10M	25	25	Side 4	10	0.048	21.93	22	100	0.05
	LTE Band 41	QPSK	40190	2550	20M	1	0	Front	10	0.252	23.99	24.5	62.9	0.29
	LTE Band 41	QPSK	40190	2550	20M	50	0	Front	10	0.215	22.7	23.5	62.9	0.26
466	LTE Band 41	QPSK	40190	2550	20M	1	0	Back	10	0.981	23.99	24.5	62.9	1.11
	LTE Band 41	QPSK	40490	2580	20M	1	0	Back	10	0.848	23.64	24.5	62.9	1.04
	LTE Band 41	QPSK	40790	2610	20M	1	0	Back	10	0.688	23.32	24.5	62.9	0.91
	LTE Band 41	QPSK	41090	2640	20M	1	0	Back	10	0.568	23.33	24.5	62.9	0.75
	LTE Band 41	QPSK	40190	2550	20M	50	0	Back	10	0.782	22.7	23.5	62.9	0.95
	LTE Band 41	QPSK	40490	2580	20M	50	25	Back	10	0.64	22.27	23.5	62.9	0.85
	LTE Band 41	QPSK	40790	2610	20M	50	25	Back	10	0.649	22.28	23.5	62.9	0.86
	LTE Band 41	QPSK	41090	2640	20M	50	25	Back	10	0.529	22.3	23.5	62.9	0.70
	LTE Band 41	QPSK	40190	2550	20M	100	0	Back	10	0.752	22.54	23.5	62.9	0.94
	LTE Band 41	QPSK	40190	2550	20M	1	0	Side 1	10	0.01	23.99	24.5	62.9	0.01
	LTE Band 41	QPSK	40190	2550	20M	50	0	Side 1	10	0.01	22.7	23.5	62.9	0.01
	LTE Band 41	QPSK	40190	2550	20M	1	0	Side 2	10	0.103	23.99	24.5	62.9	0.12
	LTE Band 41	QPSK	40190	2550	20M	50	0	Side 2	10	0.091	22.7	23.5	62.9	0.11
	LTE Band 41	QPSK	40190	2550	20M	1	0	Side 3	10	0.702	23.99	24.5	62.9	0.79
	LTE Band 41	QPSK	40490	2580	20M	1	0	Side 3	10	0.895	23.64	24.5	62.9	1.10
	LTE Band 41	QPSK	40790	2610	20M	1	0	Side 3	10	0.692	23.32	24.5	62.9	0.91
	LTE Band 41	QPSK	41090	2640	20M	1	0	Side 3	10	0.551	23.33	24.5	62.9	0.73
	LTE Band 41	QPSK	40190	2550	20M	50	0	Side 3	10	0.571	22.7	23.5	62.9	0.69
	LTE Band 41	QPSK	40490	2580	20M	50	25	Side 3	10	0.667	22.27	23.5	62.9	0.89
	LTE Band 41	QPSK	40790	2610	20M	50	25	Side 3	10	0.541	22.28	23.5	62.9	0.72
	LTE Band 41	QPSK	41090	2640	20M	50	25	Side 3	10	0.421	22.3	23.5	62.9	0.56
	LTE Band 41	QPSK	40190	2550	20M	100	0	Side 3	10	0.805	22.54	23.5	62.9	1.01
	LTE Band 41	QPSK	40190	2550	20M	1	0	Side 4	10	0.01	23.99	24.5	62.9	0.01
	LTE Band 41	QPSK	40190	2550	20M	50	0	Side 4	10	0.01	22.7	23.5	62.9	0.01

Hotspot SAR											
Index.	Band	Modulation	Frequency		Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max Tune-up (dBm)	Duty Cycle (%)	Reported SAR 1 g
			Ch.	MHz		(mm)	(W/Kg)				
	WLAN2.4GHz	802.11b	6	2437	Front	10	0.04	16.25	16.5	99.83	0.04
	WLAN2.4GHz	802.11b	6	2437	Back	10	0.115	16.25	16.5	99.83	0.12
502	WLAN2.4GHz	802.11b	1	2412	Back	10	0.124	16.19	16.5	99.83	0.13
	WLAN2.4GHz	802.11b	11	2462	Back	10	0.096	16.15	16.5	99.83	0.10
	WLAN2.4GHz	802.11b	12	2467	Back	10	0.091	16.06	16.5	99.83	0.10
	WLAN2.4GHz	802.11b	13	2472	Back	10	0.087	15.57	16.5	99.83	0.11
	WLAN2.4GHz	802.11b	6	2437	Side 1	10	0.095	16.25	16.5	99.83	0.10
	WLAN2.4GHz	802.11b	6	2437	Side 2	10	0.03	16.25	16.5	99.83	0.03
	WLAN2.4GHz	802.11b	6	2437	Side 3	10	0.01	16.25	16.5	99.83	0.01
	WLAN2.4GHz	802.11b	6	2437	Side 4	10	0.073	16.25	16.5	99.83	0.08
	Bluetooth	—	0	2402	Front	10	0.034	11.21	12	78.46	0.05
503	Bluetooth	—	0	2402	Back	10	0.09	11.21	12	78.46	0.14
	Bluetooth	—	39	2441	Back	10	0.071	10.54	12	78.46	0.13
	Bluetooth	—	78	2480	Back	10	0.083	11.04	12	78.46	0.13
	Bluetooth	—	0	2402	Side 1	10	0.021	11.21	12	78.46	0.03
	Bluetooth	—	0	2402	Side 2	10	0.01	11.21	12	78.46	0.02
	Bluetooth	—	0	2402	Side 3	10	0.01	11.21	12	78.46	0.02
	Bluetooth	—	0	2402	Side 4	10	0.018	11.21	12	78.46	0.03
	WLAN5GHz	802.11n HT40	38	5190	Front	10	0.047	14.26	14.5	94.28	0.05
504	WLAN5GHz	802.11n HT40	38	5190	Back	10	0.296	14.26	14.5	94.28	0.33
	WLAN5GHz	802.11n HT40	46	5230	Back	10	0.251	13.73	14.5	94.28	0.32
	WLAN5GHz	802.11n HT40	38	5190	Side 1	10	0.184	14.26	14.5	94.28	0.21
	WLAN5GHz	802.11n HT40	38	5190	Side 2	10	0.059	14.26	14.5	94.28	0.07
	WLAN5GHz	802.11n HT40	38	5190	Side 3	10	0.01	14.26	14.5	94.28	0.01
	WLAN5GHz	802.11n HT40	38	5190	Side 4	10	0.124	14.26	14.5	94.28	0.14
	WLAN5GHz	802.11n HT40	159	5795	Front	10	0.049	13.98	14.5	94.28	0.06
505	WLAN5GHz	802.11n HT40	159	5795	Back	10	0.09	13.98	14.5	94.28	0.11
	WLAN5GHz	802.11n HT40	151	5755	Back	10	0.086	13.96	14.5	94.28	0.10
	WLAN5GHz	802.11n HT40	159	5795	Side 1	10	0.08	13.98	14.5	94.28	0.10
	WLAN5GHz	802.11n HT40	159	5795	Side 2	10	0.01	13.98	14.5	94.28	0.01
	WLAN5GHz	802.11n HT40	159	5795	Side 3	10	0.01	13.98	14.5	94.28	0.01
	WLAN5GHz	802.11n HT40	159	5795	Side 4	10	0.063	13.98	14.5	94.28	0.08

Body-worn SAR														
Index.	Band	Modulation	Frequency		Bandwidth	RB Size	RB Offset	Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max Tune-up (dBm)	Duty Cycle (%)	Reported SAR 1 g
			Ch.	MHz					(mm)	(W/Kg)				
	GSM850	GPRS 2Tx slots	189	836.4	—	—	—	Front	10	0.14	30.68	31	100	0.15
	GSM850	GPRS 2Tx slots	189	836.4	—	—	—	Back	10	0.329	30.68	31	100	0.35
	GSM850	GPRS 2Tx slots	128	824.2	—	—	—	Back	10	0.279	30.52	31	100	0.31
304	GSM850	GPRS 2Tx slots	251	848.8	—	—	—	Back	10	0.415	30.55	31	100	0.46
310	GSM1900	GPRS 2Tx slots	810	1909.8	—	—	—	Front	10	0.333	27.13	28	100	0.41
	GSM1900	GPRS 2Tx slots	512	1850.2	—	—	—	Front	10	0.307	27.08	28	100	0.38
	GSM1900	GPRS 2Tx slots	661	1880	—	—	—	Front	10	0.304	27.11	28	100	0.37
	GSM1900	GPRS 2Tx slots	810	1909.8	—	—	—	Back	10	0.238	27.13	28	100	0.29
	WCDMA Band II	RMC12.2Kbps	9262	1852.4	—	—	—	Front	10	0.627	23.53	25	100	0.88
	WCDMA Band II	RMC12.2Kbps	9400	1880	—	—	—	Front	10	0.673	23.52	25	100	0.95
321	WCDMA Band II	RMC12.2Kbps	9538	1907.6	—	—	—	Front	10	0.698	23.35	25	100	1.02
	WCDMA Band II	RMC12.2Kbps	9262	1852.4	—	—	—	Back	10	0.429	23.53	25	100	0.60
	WCDMA Band V	RMC12.2Kbps	4182	836.4	—	—	—	Front	10	0.056	24.06	24.5	100	0.06
	WCDMA Band V	RMC12.2Kbps	4182	836.4	—	—	—	Back	10	0.168	24.06	24.5	100	0.19
	WCDMA Band V	RMC12.2Kbps	4132	826.4	—	—	—	Back	10	0.14	24.04	24.5	100	0.16
331	WCDMA Band V	RMC12.2Kbps	4233	846.6	—	—	—	Back	10	0.188	23.73	24.5	100	0.22
337	LTE Band 2	QPSK	18900	1880	20M	1	0	Front	10	0.562	22.96	24	100	0.71
	LTE Band 2	QPSK	18700	1860	20M	1	0	Front	10	0.536	22.89	24	100	0.69
	LTE Band 2	QPSK	19100	1900	20M	1	0	Front	10	0.552	22.94	24	100	0.70
	LTE Band 2	QPSK	18900	1880	20M	50	50	Front	10	0.458	21.81	23	100	0.60
	LTE Band 2	QPSK	18900	1880	20M	1	0	Back	10	0.367	22.96	24	100	0.47
	LTE Band 2	QPSK	18900	1880	20M	50	50	Back	10	0.329	21.81	23	100	0.43
	LTE Band 4	QPSK	20175	1732.5	20M	1	0	Front	10	0.335	22.43	24	100	0.48
	LTE Band 4	QPSK	20175	1732.5	20M	50	0	Front	10	0.288	21.43	23	100	0.41
354	LTE Band 4	QPSK	20175	1732.5	20M	1	0	Back	10	0.381	22.43	24	100	0.55
	LTE Band 4	QPSK	20175	1732.5	20M	50	0	Back	10	0.317	21.43	23	100	0.46
	LTE Band 5	QPSK	20525	836.5	10M	1	0	Front	10	0.05	22.97	23	100	0.05
	LTE Band 5	QPSK	20525	836.5	10M	25	12	Front	10	0.044	21.97	22	100	0.04
369	LTE Band 5	QPSK	20525	836.5	10M	1	0	Back	10	0.144	22.97	23	100	0.14
	LTE Band 5	QPSK	20525	836.5	10M	25	12	Back	10	0.113	21.97	22	100	0.11

Body-worn SAR														
Index.	Band	Modulation	Frequency		Bandwidth	RB Size	RB Offset	Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max Tune-up (dBm)	Duty Cycle (%)	Reported SAR 1 g
			Ch.	MHz					(mm)	(W/Kg)				
	LTE Band 7	QPSK	21100	2535	20M	1	0	Front	10	0.266	21.81	22	100	0.28
	LTE Band 7	QPSK	21100	2535	20M	50	0	Front	10	0.222	20.52	21	100	0.25
	LTE Band 7	QPSK	21100	2535	20M	1	0	Back	10	0.985	21.81	22	100	1.03
385	LTE Band 7	QPSK	20850	2510	20M	1	0	Back	10	1.06	21.79	22	100	1.11
	LTE Band 7	QPSK	21350	2560	20M	1	0	Back	10	0.948	21.68	22	100	1.02
	LTE Band 7	QPSK	21100	2535	20M	50	0	Back	10	0.82	20.52	21	100	0.92
	LTE Band 7	QPSK	20850	2510	20M	50	0	Back	10	0.861	20.5	21	100	0.97
	LTE Band 7	QPSK	21350	2560	20M	50	50	Back	10	0.781	20.44	21	100	0.89
	LTE Band 7	QPSK	21100	2535	20M	100	0	Back	10	0.85	20.4	21	100	0.98
	LTE Band 12	QPSK	23095	707.5	10M	1	0	Front	10	0.09	23.19	23.5	100	0.10
	LTE Band 12	QPSK	23095	707.5	10M	25	0	Front	10	0.078	22.27	22.5	100	0.08
399	LTE Band 12	QPSK	23095	707.5	10M	1	0	Back	10	0.218	23.19	23.5	100	0.23
	LTE Band 12	QPSK	23095	707.5	10M	25	0	Back	10	0.172	22.27	22.5	100	0.18
	LTE Band 17	QPSK	23790	710	10M	1	0	Front	10	0.083	22.89	23	100	0.09
	LTE Band 17	QPSK	23790	710	10M	25	25	Front	10	0.071	21.93	22	100	0.07
412	LTE Band 17	QPSK	23790	710	10M	1	0	Back	10	0.209	22.89	23	100	0.21
	LTE Band 17	QPSK	23790	710	10M	25	25	Back	10	0.159	21.93	22	100	0.16
	LTE Band 41	QPSK	40190	2550	20M	1	0	Front	10	0.252	23.99	24.5	62.9	0.29
	LTE Band 41	QPSK	40190	2550	20M	50	0	Front	10	0.215	22.7	23.5	62.9	0.26
466	LTE Band 41	QPSK	40190	2550	20M	1	0	Back	10	0.981	23.99	24.5	62.9	1.11
	LTE Band 41	QPSK	40490	2580	20M	1	0	Back	10	0.848	23.64	24.5	62.9	1.04
	LTE Band 41	QPSK	40790	2610	20M	1	0	Back	10	0.688	23.32	24.5	62.9	0.91
	LTE Band 41	QPSK	41090	2640	20M	1	0	Back	10	0.568	23.33	24.5	62.9	0.75
	LTE Band 41	QPSK	40190	2550	20M	50	0	Back	10	0.782	22.7	23.5	62.9	0.95
	LTE Band 41	QPSK	40490	2580	20M	50	25	Back	10	0.64	22.27	23.5	62.9	0.85
	LTE Band 41	QPSK	40790	2610	20M	50	25	Back	10	0.649	22.28	23.5	62.9	0.86
	LTE Band 41	QPSK	41090	2640	20M	50	25	Back	10	0.529	22.3	23.5	62.9	0.70
	LTE Band 41	QPSK	40190	2550	20M	100	0	Back	10	0.752	22.58	23.5	62.9	0.94

Body-worn SAR											
Index.	Band	Modulation	Frequency		Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max Tune-up (dBm)	Duty Cycle (%)	Reported SAR 1 g
			Ch.	MHz		(mm)	(W/Kg)				
	WLAN2.4GHz	802.11b	6	2437	Front	10	0.04	16.25	16.5	99.83	0.04
	WLAN2.4GHz	802.11b	6	2437	Back	10	0.115	16.25	16.5	99.83	0.12
502	WLAN2.4GHz	802.11b	1	2412	Back	10	0.124	16.19	16.5	99.83	0.13
	WLAN2.4GHz	802.11b	11	2462	Back	10	0.096	16.15	16.5	99.83	0.10
	WLAN2.4GHz	802.11b	12	2467	Back	10	0.091	16.06	16.5	99.83	0.10
	WLAN2.4GHz	802.11b	13	2472	Back	10	0.087	15.57	16.5	99.83	0.11
	Bluetooth	—	0	2402	Front	10	0.034	11.21	12	78.46	0.05
503	Bluetooth	—	0	2402	Back	10	0.09	11.21	12	78.46	0.14
	Bluetooth	—	39	2441	Back	10	0.071	10.54	12	78.46	0.13
	Bluetooth	—	78	2480	Back	10	0.083	11.04	12	78.46	0.13
	WLAN5GHz	802.11n HT40	54	5270	Front	10	0.059	14.05	14.5	94.28	0.07
506	WLAN5GHz	802.11n HT40	54	5270	Back	10	0.293	14.05	14.5	94.28	0.34
	WLAN5GHz	802.11n HT40	62	5310	Back	10	0.177	13.77	14.5	94.28	0.22
	WLAN5GHz	802.11n HT40	102	5510	Front	10	0.056	13.97	14.5	94.28	0.07
507	WLAN5GHz	802.11n HT40	102	5510	Back	10	0.208	13.97	14.5	94.28	0.25
	WLAN5GHz	802.11n HT40	110	5550	Back	10	0.193	13.96	14.5	94.28	0.23
	WLAN5GHz	802.11n HT40	126	5630	Back	10	0.169	13.88	14.5	94.28	0.21
	WLAN5GHz	802.11n HT40	134	5670	Back	10	0.142	13.87	14.5	94.28	0.17
	WLAN5GHz	802.11n HT40	142	5710	Back	10	0.112	12.8	14.5	94.28	0.18
	WLAN5GHz	802.11n HT40	159	5795	Front	10	0.049	13.98	14.5	94.28	0.06
505	WLAN5GHz	802.11n HT40	159	5795	Back	10	0.09	13.98	14.5	94.28	0.11
	WLAN5GHz	802.11n HT40	151	5755	Back	10	0.086	13.96	14.5	94.28	0.10

Extremity SAR											
Index.	Band	Modulation	Frequency		Test Position	Spacing	SAR 10 g	Burst Avg Power (dBm)	Max Tune-up (dBm)	Duty Cycle (%)	Reported SAR 10 g
			Ch.	MHz		(mm)	(W/Kg)				
	WLAN5GHz	802.11n HT40	54	5270	Front	0	0.046	14.05	14.5	94.28	0.054
508	WLAN5GHz	802.11n HT40	54	5270	Back	0	0.277	14.05	14.5	94.28	0.326
	WLAN5GHz	802.11n HT40	62	5310	Back	0	0.258	13.77	14.5	94.28	0.324
	WLAN5GHz	802.11n HT40	54	5270	Side 1	0	0.143	14.05	14.5	94.28	0.168
	WLAN5GHz	802.11n HT40	54	5270	Side 2	0	0.018	14.05	14.5	94.28	0.021
	WLAN5GHz	802.11n HT40	54	5270	Side 3	0	0.01	14.05	14.5	94.28	0.012
	WLAN5GHz	802.11n HT40	54	5270	Side 4	0	0.106	14.05	14.5	94.28	0.125
	WLAN5GHz	802.11n HT40	102	5510	Front	0	0.076	13.97	14.5	94.28	0.091
509	WLAN5GHz	802.11n HT40	102	5510	Back	0	0.267	13.97	14.5	94.28	0.320
	WLAN5GHz	802.11n HT40	110	5550	Back	0	0.236	13.96	14.5	94.28	0.284
	WLAN5GHz	802.11n HT40	126	5630	Back	0	0.192	13.88	14.5	94.28	0.235
	WLAN5GHz	802.11n HT40	134	5670	Back	0	0.165	13.87	14.5	94.28	0.202
	WLAN5GHz	802.11n HT40	142	5710	Back	0	0.133	12.8	14.5	94.28	0.209
	WLAN5GHz	802.11n HT40	102	5510	Side 1	0	0.165	13.97	14.5	94.28	0.198
	WLAN5GHz	802.11n HT40	102	5510	Side 2	0	0.017	13.97	14.5	94.28	0.020
	WLAN5GHz	802.11n HT40	102	5510	Side 3	0	0.01	13.97	14.5	94.28	0.012
	WLAN5GHz	802.11n HT40	102	5510	Side 4	0	0.138	13.97	14.5	94.28	0.165

10.6 Measurement Variability

Index.	Band	Modulation	Channel	Frequency (MHz)	Bandwidth	RB Size	RB Offset	Test Position	Spacing (mm)	Note	Original SAR 1 g (W/kg)	First SAR 1 g (W/kg)	First Ratio SAR 1 g
884	LTE Band 7	QPSK	20850	2510	20M	1	0	Back	10	original 385_once	1.06	1.04	1.89%
966	LTE Band 41	QPSK	40190	2550	20M	1	0	Back	10	original 466_once	0.981	0.954	2.75%

According to KDB 865664 D01v01r04, SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium.

The following procedures are applied to determine if repeated measurements are required:

1. The original highest measured Reported SAR 1-g is ≧ 0.80 W/kg, repeated that measurement once.
2. Perform a second repeated measurement the ratio of the largest to the smallest SAR for the original and first repeated measurements is <1.2 W/kg, or when the original or repeated measurement is ≧ 1.45 W/kg (~10% from the 1-g SAR limit).

10.7 Simultaneous Transmission Evaluation

10.7.1 Simultaneous Transmission Configurations

Condition(s)	Band			
	WWAN	WLAN 2.4GHz Ant Main	WLAN 5GHz Ant Main	Bluetooth
1	v	v	-	-
2	v	-	v	-
3	v	-	-	v
4	v	v	-	v
5	v	-	v	v

10.7.2 Simultaneous Transmission Result

When the sum of 1-g SAR of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit, SAR test exclusion applies to that simultaneous transmission configuration.

Sum of 1-g SAR of summary is shown as below:

Head Mode										
WWAN Band	Exposure Position	1	2	3	4	1+2 ∑ 1g SAR (W/kg)	1+3 ∑ 1g SAR (W/kg)	1+4 ∑ 1g SAR (W/kg)	1+2+4 ∑ 1g SAR (W/kg)	1+3+4 ∑ 1g SAR (W/kg)
		WWAN	WLAN2.4GHz	WLAN5GHz	Bluetooth					
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)					
GSM850	Right-Cheek at 0mm -	0.07	0.13	0.25	0.05	0.20	0.32	0.12	0.25	0.37
	Right-Tilted at 0mm -	0.03	0.11	0.10	0.05	0.14	0.13	0.08	0.19	0.18
	Left-Cheek at 0mm -	0.14	0.08	0.13	0.03	0.22	0.27	0.17	0.25	0.30
	Left-Tilted at 0mm -	0.03	0.08	0.12	0.04	0.11	0.15	0.07	0.15	0.19
GSM1900	Right-Cheek at 0mm -	0.40	0.13	0.25	0.05	0.53	0.65	0.45	0.58	0.70
	Right-Tilted at 0mm -	0.21	0.11	0.10	0.05	0.32	0.31	0.26	0.37	0.36
	Left-Cheek at 0mm -	0.23	0.08	0.13	0.03	0.31	0.36	0.26	0.34	0.39
	Left-Tilted at 0mm -	0.20	0.08	0.12	0.04	0.28	0.32	0.24	0.32	0.36
WCDMA Band II	Right-Cheek at 0mm -	0.72	0.13	0.25	0.05	0.85	0.97	0.77	0.90	1.02
	Right-Tilted at 0mm -	0.48	0.11	0.10	0.05	0.59	0.58	0.53	0.64	0.63
	Left-Cheek at 0mm -	0.39	0.08	0.13	0.03	0.47	0.52	0.42	0.50	0.55
	Left-Tilted at 0mm -	0.44	0.08	0.12	0.04	0.52	0.56	0.48	0.56	0.60
WCDMA Band V	Right-Cheek at 0mm -	0.08	0.13	0.25	0.05	0.21	0.33	0.13	0.26	0.38
	Right-Tilted at 0mm -	0.06	0.11	0.10	0.05	0.17	0.16	0.11	0.22	0.21
	Left-Cheek at 0mm -	0.21	0.08	0.13	0.03	0.29	0.34	0.24	0.32	0.37
	Left-Tilted at 0mm -	0.09	0.08	0.12	0.04	0.17	0.21	0.13	0.21	0.25
LTE Band 2	Right-Cheek at 0mm -	0.79	0.13	0.25	0.05	0.92	1.04	0.84	0.97	1.09
	Right-Tilted at 0mm -	0.51	0.11	0.10	0.05	0.62	0.61	0.56	0.67	0.66
	Left-Cheek at 0mm -	0.40	0.08	0.13	0.03	0.48	0.53	0.43	0.51	0.56
	Left-Tilted at 0mm -	0.42	0.08	0.12	0.04	0.50	0.54	0.46	0.54	0.58
LTE Band 4	Right-Cheek at 0mm -	0.60	0.13	0.25	0.05	0.73	0.85	0.65	0.78	0.90
	Right-Tilted at 0mm -	0.42	0.11	0.10	0.05	0.53	0.52	0.47	0.58	0.57
	Left-Cheek at 0mm -	0.32	0.08	0.13	0.03	0.40	0.45	0.35	0.43	0.48
	Left-Tilted at 0mm -	0.27	0.08	0.12	0.04	0.35	0.39	0.31	0.39	0.43
LTE Band 5	Right-Cheek at 0mm -	0.06	0.13	0.25	0.05	0.19	0.31	0.11	0.24	0.36
	Right-Tilted at 0mm -	0.03	0.11	0.10	0.05	0.14	0.13	0.08	0.19	0.18
	Left-Cheek at 0mm -	0.09	0.08	0.13	0.03	0.17	0.22	0.12	0.20	0.25
	Left-Tilted at 0mm -	0.03	0.08	0.12	0.04	0.11	0.15	0.07	0.15	0.19
LTE Band 7	Right-Cheek at 0mm -	0.14	0.13	0.25	0.05	0.27	0.39	0.19	0.32	0.44
	Right-Tilted at 0mm -	0.06	0.11	0.10	0.05	0.17	0.16	0.11	0.22	0.21
	Left-Cheek at 0mm -	0.08	0.08	0.13	0.03	0.16	0.21	0.11	0.19	0.24
	Left-Tilted at 0mm -	0.07	0.08	0.12	0.04	0.15	0.19	0.11	0.19	0.23
LTE Band 12	Right-Cheek at 0mm -	0.10	0.13	0.25	0.05	0.23	0.35	0.15	0.28	0.40
	Right-Tilted at 0mm -	0.09	0.11	0.10	0.05	0.20	0.19	0.14	0.25	0.24
	Left-Cheek at 0mm -	0.12	0.08	0.13	0.03	0.20	0.25	0.15	0.23	0.28
	Left-Tilted at 0mm -	0.09	0.08	0.12	0.04	0.17	0.21	0.13	0.21	0.25

Head Mode										
WWAN Band	Exposure Position	1	2	3	4	1+2 ∑ 1g SAR (W/kg)	1+3 ∑ 1g SAR (W/kg)	1+4 ∑ 1g SAR (W/kg)	1+2+4 ∑ 1g SAR (W/kg)	1+3+4 ∑ 1g SAR (W/kg)
		WWAN	WLAN2.4GHz	WLAN5GHz	Bluetooth					
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)					
LTE Band 17	Right-Cheek at 0mm -	0.09	0.13	0.25	0.05	0.22	0.34	0.14	0.27	0.39
	Right-Tilted at 0mm -	0.08	0.11	0.10	0.05	0.19	0.18	0.13	0.24	0.23
	Left-Cheek at 0mm -	0.13	0.08	0.13	0.03	0.21	0.26	0.16	0.24	0.29
	Left-Tilted at 0mm -	0.09	0.08	0.12	0.04	0.17	0.21	0.13	0.21	0.25
LTE Band 41/38	Right-Cheek at 0mm -	0.19	0.13	0.25	0.05	0.32	0.44	0.24	0.37	0.49
	Right-Tilted at 0mm -	0.07	0.11	0.10	0.05	0.18	0.17	0.12	0.23	0.22
	Left-Cheek at 0mm -	0.09	0.08	0.13	0.03	0.17	0.22	0.12	0.20	0.25
	Left-Tilted at 0mm -	0.08	0.08	0.12	0.04	0.16	0.20	0.12	0.20	0.24

Hotspot Mode										
WWAN Band	Exposure Position	1	2	3	4	1+2 ∑ 1g SAR (W/kg)	1+3 ∑ 1g SAR (W/kg)	1+4 ∑ 1g SAR (W/kg)	1+2+4 ∑ 1g SAR (W/kg)	1+3+4 ∑ 1g SAR (W/kg)
		WWAN	WLAN2.4GHz	WLAN5GHz	Bluetooth					
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)					
GSM850	Front at 10mm -	0.15	0.04	0.06	0.05	0.19	0.21	0.20	0.24	0.26
	Back at 10mm -	0.46	0.13	0.33	0.14	0.59	0.79	0.60	0.73	0.93
	side 1 at 10mm -	0.02	0.10	0.21	0.03	0.12	0.23	0.05	0.15	0.26
	side 2 at 10mm -	0.09	0.03	0.07	0.02	0.12	0.16	0.11	0.14	0.18
	side 3 at 10mm -	0.11	0.01	0.01	0.02	0.12	0.12	0.13	0.14	0.14
	side 4 at 10mm -	0.13	0.08	0.14	0.03	0.21	0.27	0.16	0.24	0.30
GSM1900	Front at 10mm -	0.41	0.04	0.06	0.05	0.45	0.47	0.46	0.50	0.52
	Back at 10mm -	0.29	0.13	0.33	0.14	0.42	0.62	0.43	0.56	0.76
	side 1 at 10mm -	0.06	0.10	0.21	0.03	0.16	0.27	0.09	0.19	0.30
	side 2 at 10mm -	0.26	0.03	0.07	0.02	0.29	0.33	0.28	0.31	0.35
	side 3 at 10mm -	0.19	0.01	0.01	0.02	0.20	0.20	0.21	0.22	0.22
	side 4 at 10mm -	0.05	0.08	0.14	0.03	0.13	0.19	0.08	0.16	0.22
WCDMA Band II	Front at 10mm -	1.02	0.04	0.06	0.05	1.06	1.08	1.07	1.11	1.13
	Back at 10mm -	0.60	0.13	0.33	0.14	0.73	0.93	0.74	0.87	1.07
	side 1 at 10mm -	0.12	0.10	0.21	0.03	0.22	0.33	0.15	0.25	0.36
	side 2 at 10mm -	0.56	0.03	0.07	0.02	0.59	0.63	0.58	0.61	0.65
	side 3 at 10mm -	0.48	0.01	0.01	0.02	0.49	0.49	0.50	0.51	0.51
	side 4 at 10mm -	0.15	0.08	0.14	0.03	0.23	0.29	0.18	0.26	0.32

Hotspot Mode										
WWAN Band	Exposure Position	1	2	3	4	1+2 ∑ 1g SAR (W/kg)	1+3 ∑ 1g SAR (W/kg)	1+4 ∑ 1g SAR (W/kg)	1+2+4 ∑ 1g SAR (W/kg)	1+3+4 ∑ 1g SAR (W/kg)
		WWAN	WLAN2.4GHz	WLAN5GHz	Bluetooth					
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)					
WCDMA Band V	Front at 10mm -	0.06	0.04	0.06	0.05	0.10	0.12	0.11	0.15	0.17
	Back at 10mm -	0.22	0.13	0.33	0.14	0.35	0.55	0.36	0.49	0.69
	side 1 at 10mm -	0.01	0.10	0.21	0.03	0.11	0.22	0.04	0.14	0.25
	side 2 at 10mm -	0.06	0.03	0.07	0.02	0.09	0.13	0.08	0.11	0.15
	side 3 at 10mm -	0.05	0.01	0.01	0.02	0.06	0.06	0.07	0.08	0.08
	side 4 at 10mm -	0.06	0.08	0.14	0.03	0.14	0.20	0.09	0.17	0.23
LTE Band 2	Front at 10mm -	0.71	0.04	0.06	0.05	0.75	0.77	0.76	0.80	0.82
	Back at 10mm -	0.47	0.13	0.33	0.14	0.60	0.80	0.61	0.74	0.94
	side 1 at 10mm -	0.08	0.10	0.21	0.03	0.18	0.29	0.11	0.21	0.32
	side 2 at 10mm -	0.46	0.03	0.07	0.02	0.49	0.53	0.48	0.51	0.55
	side 3 at 10mm -	0.44	0.01	0.01	0.02	0.45	0.45	0.46	0.47	0.47
	side 4 at 10mm -	0.08	0.08	0.14	0.03	0.16	0.22	0.11	0.19	0.25
LTE Band 4	Front at 10mm -	0.48	0.04	0.06	0.05	0.52	0.54	0.53	0.57	0.59
	Back at 10mm -	0.55	0.13	0.33	0.14	0.68	0.88	0.69	0.82	1.02
	side 1 at 10mm -	0.10	0.10	0.21	0.03	0.20	0.31	0.13	0.23	0.34
	side 2 at 10mm -	0.39	0.03	0.07	0.02	0.42	0.46	0.41	0.44	0.48
	side 3 at 10mm -	0.39	0.01	0.01	0.02	0.40	0.40	0.41	0.42	0.42
	side 4 at 10mm -	0.08	0.08	0.14	0.03	0.16	0.22	0.11	0.19	0.25
LTE Band 5	Front at 10mm -	0.05	0.04	0.06	0.05	0.09	0.11	0.10	0.14	0.16
	Back at 10mm -	0.14	0.13	0.33	0.14	0.27	0.47	0.28	0.41	0.61
	side 1 at 10mm -	0.01	0.10	0.21	0.03	0.11	0.22	0.04	0.14	0.25
	side 2 at 10mm -	0.01	0.03	0.07	0.02	0.04	0.08	0.03	0.06	0.10
	side 3 at 10mm -	0.04	0.01	0.01	0.02	0.05	0.05	0.06	0.07	0.07
	side 4 at 10mm -	0.01	0.08	0.14	0.03	0.09	0.15	0.04	0.12	0.18
LTE Band 7	Front at 10mm -	0.28	0.04	0.06	0.05	0.32	0.34	0.33	0.37	0.39
	Back at 10mm -	1.11	0.13	0.33	0.14	1.24	1.44	1.25	1.38	1.58
	side 1 at 10mm -	0.01	0.10	0.21	0.03	0.11	0.22	0.04	0.14	0.25
	side 2 at 10mm -	0.13	0.03	0.07	0.02	0.16	0.20	0.15	0.18	0.22
	side 3 at 10mm -	1.08	0.01	0.01	0.02	1.09	1.09	1.10	1.11	1.11
	side 4 at 10mm -	0.01	0.08	0.14	0.03	0.09	0.15	0.04	0.12	0.18
LTE Band 12	Front at 10mm -	0.10	0.04	0.06	0.05	0.14	0.16	0.15	0.19	0.21
	Back at 10mm -	0.23	0.13	0.33	0.14	0.36	0.56	0.37	0.50	0.70
	side 1 at 10mm -	0.01	0.10	0.21	0.03	0.11	0.22	0.04	0.14	0.25
	side 2 at 10mm -	0.07	0.03	0.07	0.02	0.10	0.14	0.09	0.12	0.16
	side 3 at 10mm -	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.04	0.04
	side 4 at 10mm -	0.06	0.08	0.14	0.03	0.14	0.20	0.09	0.17	0.23

Hotspot Mode										
WWAN Band	Exposure Position	1	2	3	4	1+2 ∑ 1g SAR (W/kg)	1+3 ∑ 1g SAR (W/kg)	1+4 ∑ 1g SAR (W/kg)	1+2+4 ∑ 1g SAR (W/kg)	1+3+4 ∑ 1g SAR (W/kg)
		WWAN	WLAN2.4GHz	WLAN5GHz	Bluetooth					
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)					
LTE Band 17	Front at 10mm -	0.09	0.04	0.06	0.05	0.13	0.15	0.14	0.18	0.20
	Back at 10mm -	0.21	0.13	0.33	0.14	0.34	0.54	0.35	0.48	0.68
	side 1 at 10mm -	0.01	0.10	0.21	0.03	0.11	0.22	0.04	0.14	0.25
	side 2 at 10mm -	0.06	0.03	0.07	0.02	0.09	0.13	0.08	0.11	0.15
	side 3 at 10mm -	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.04	0.04
	side 4 at 10mm -	0.05	0.08	0.14	0.03	0.13	0.19	0.08	0.16	0.22
LTE Band 41/38	Front at 10mm -	0.29	0.04	0.06	0.05	0.33	0.35	0.34	0.38	0.40
	Back at 10mm -	1.11	0.13	0.33	0.14	1.24	1.44	1.25	1.38	1.58
	side 1 at 10mm -	0.01	0.10	0.21	0.03	0.11	0.22	0.04	0.14	0.25
	side 2 at 10mm -	0.12	0.03	0.07	0.02	0.15	0.19	0.14	0.17	0.21
	side 3 at 10mm -	1.10	0.01	0.01	0.02	1.11	1.11	1.12	1.13	1.13
	side 4 at 10mm -	0.01	0.08	0.14	0.03	0.09	0.15	0.04	0.12	0.18

Body-worn Mode										
WWAN Band	Exposure Position	1	2	3	4	1+2 ∑ 1g SAR (W/kg)	1+3 ∑ 1g SAR (W/kg)	1+4 ∑ 1g SAR (W/kg)	1+2+4 ∑ 1g SAR (W/kg)	1+3+4 ∑ 1g SAR (W/kg)
		WWAN	WLAN2.4GHz	WLAN5GHz	Bluetooth					
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)					
GSM850	Front at 10mm -	0.15	0.04	0.07	0.05	0.19	0.22	0.20	0.24	0.27
	Back at 10mm -	0.46	0.13	0.34	0.14	0.59	0.80	0.60	0.73	0.94
GSM1900	Front at 10mm -	0.41	0.04	0.07	0.05	0.45	0.48	0.46	0.50	0.53
	Back at 10mm -	0.29	0.13	0.34	0.14	0.42	0.63	0.43	0.56	0.77
WCDMA Band II	Front at 10mm -	1.02	0.04	0.07	0.05	1.06	1.09	1.07	1.11	1.14
	Back at 10mm -	0.60	0.13	0.34	0.14	0.73	0.94	0.74	0.87	1.08
WCDMA Band V	Front at 10mm -	0.06	0.04	0.07	0.05	0.10	0.13	0.11	0.15	0.18
	Back at 10mm -	0.22	0.13	0.34	0.14	0.35	0.56	0.36	0.49	0.70
LTE Band 2	Front at 10mm -	0.71	0.04	0.07	0.05	0.75	0.78	0.76	0.80	0.83
	Back at 10mm -	0.47	0.13	0.34	0.14	0.60	0.81	0.61	0.74	0.95
LTE Band 4	Front at 10mm -	0.48	0.04	0.07	0.05	0.52	0.55	0.53	0.57	0.60
	Back at 10mm -	0.55	0.13	0.34	0.14	0.68	0.89	0.69	0.82	1.03
LTE Band 5	Front at 10mm -	0.05	0.04	0.07	0.05	0.09	0.12	0.10	0.14	0.17
	Back at 10mm -	0.13	0.13	0.34	0.14	0.26	0.47	0.27	0.40	0.61
LTE Band 7	Front at 10mm -	0.28	0.04	0.07	0.05	0.32	0.35	0.33	0.37	0.40
	Back at 10mm -	1.11	0.13	0.34	0.14	1.24	1.45	1.25	1.38	1.59
LTE Band 12	Front at 10mm -	0.10	0.04	0.07	0.05	0.14	0.17	0.15	0.19	0.22
	Back at 10mm -	0.23	0.13	0.34	0.14	0.36	0.57	0.37	0.50	0.71
LTE Band 17	Front at 10mm -	0.09	0.04	0.07	0.05	0.13	0.16	0.14	0.18	0.21
	Back at 10mm -	0.21	0.13	0.34	0.14	0.34	0.55	0.35	0.48	0.69
LTE Band 41/38	Front at 10mm -	0.29	0.04	0.07	0.05	0.33	0.36	0.34	0.38	0.41
	Back at 10mm -	1.11	0.13	0.34	0.14	1.24	1.45	1.25	1.38	1.59

10.7.3 SAR to peak location separation (SPLSR)

According to KDB 447498, when the sum of SAR is greater than the limit, SAR test exclusion is determined by the SAR to peak location separation ratio (SPLSR), and the simultaneously transmitting antennas must be considered one pair at a time. The ratio is determined by **$(SAR1+SAR2)^{1.5}$ / (separation distance between the peak SAR locations for the antenna pair, mm)**, round to two decimal digits, and must be $\leqq$ 0.04 for all antenna pairs in the configuration to qualify for 1-g SAR test exclusion.

Since the sum of SAR is under the SAR limit, SPLSR analysis is not required.

10.8 Requirements on the Uncertainty Evaluation

Decision Rule

■ Uncertainty is not included.

☐ Uncertainty is included.

The highest measured 1-g SAR is less than 1.5 W/kg and the highest measured 10-g SAR is less than 3.75 W/kg. Therefore, per KDB Publication 865664 D01v01r04, the extended measurement uncertainty analysis described in IEEE 1528-2013 and IEC/IEEE 62209-1528 is not required.

11. Conclusion

The SAR test values found for the device are below the maximum limit of 1.6 W/kg.

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