FCC SAR Test Report

Product	:	4G LTE Mobile Wi-Fi Router
Trade mark	:	Syeconmax
Model/Type reference	:	SKM0138,SKM0338,SKM0538, SKM0738,SKM0938,SKM1138, SKM1338,SKM1538,SKM1738, SKM1938,SKM2138,SKM2338, SKM2538,SKM2738,SKM2938, SKM3138,SKM3338,SKM3538, SKM3738,SKM3938
Serial Number	:	N/A
Report Number	:	EED32P81377603
FCC ID	:	2BC2FSKM0138
Date of Issue:	:	Nov. 21, 2023
Test Standards	:	Refer to Section 1.5
Test result	:	PASS

Prepared for:

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Check No.: 6612300823

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Modified History

REV.	Modification Description	Issued Date	Remark
REV.1.0	Initial Test Report Release	Nov. 21, 2023	

1 General information

1.1 Notes

The test results of this test report relate exclusively to the test item specified in this test report.

Centre Testing International Group Co., Ltd. does not assume responsibility for any conclusions and generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report is not to be reproduced or published in full without the prior written permission.

1.2 Application details

Date of receipt of test item:	2023-09-16
Start of test:	2023-09-16
End of test:	2023-11-17

1.3 Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Ultra.
Model Name: SKM0138 are as below:

Frequency Band	MAX Reported SAR (W/kg)	SAR Test Limit (W/kg)
	1-g SAR Hotspot (10mm)	
GSM850	0.017	1.60
GSM1900	1.184	
UMTS Band II	1.263	
UMTS Band IV	**1.366**	
UMTS Band V	0.186	
LTE Band 2	1.110	
LTE Band 4	1.310	
LTE Band 5	0.214	
LTE Band 7	0.841	
LTE Band 12	0.032	
LTE Band 13	0.116	
LTE Band 17	0.045	
LTE Band 25	1.075	
LTE Band 26	0.177	
LTE Band 41	0.243	
LTE Band 66	1.326	
WiFi 2.4G	**0.105**	
Highest Simultaneous Transmission	**1.471**	

Note:

The device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits(1.6W/kg) according to the FCC rule §2.1093, the ANSI/IEEE C95.1:1992, the NCRP Report Number 86 for uncontrolled environment, according to the Industry Canada Radio Standards Specification RSS-102 for General Population/Uncontrolled exposure, and had been tested in accordance with the measurement methods and Procedures specified in IEEE Std 1528-2013.

1.4 EUT Information

Device Information:	
Product Name:	4G LTE Mobile Wi-Fi Router
Model:	SKM0138,SKM0338,SKM0538,SKM0738,SKM0938, SKM1138,SKM1338,SKM1538,SKM1738,SKM1938, SKM2138,SKM2338,SKM2538,SKM2738,SKM2938, SKM3138,SKM3338,SKM3538,SKM3738,SKM3938
Test Mode No.:	SKM0138
Trade mark:	Syeconmax
SN:	N/A
Device Type:	Portable device
Exposure Category:	uncontrolled environment / general population
Antenna Type :	Internal Antenna
Antenna Gain:	2.4G Wi-Fi: 3.67dBi; GSM 850: 1.17dBi; GSM 1900: 1.85dBi; WCDMA Band II: 1.85dBi; WCDMA Band IV: 1.35dBi; WCDMA Band V: 1.17dBi; LTE Band 2: 1.85dBi; LTE Band 4: 1.35dBi; LTE Band 5: 1.17dBi; LTE Band 7: 3.19dBi LTE Band 12: -1.15dBi LTE Band 13: -0.68dBi LTE Band 17: -1.15dBi LTE Band 25: 1.85dBi LTE Band 26: 1.25dBi LTE Band 41: 3.67dBi LTE Band 66: 1.35dBi
Device Operating Configurations:	
Supporting Modes :	GSM850/1900 WCDMA Band II/IV/V LTE Band 2/4/5/7/12/13/17/25/26/41/66 WiFi 2.4G

Duty Cycle used for SAR testing	Max duty cycle: 2.4G WiFi:99.76%		
Modulation:	GMSK,8PSK,QPSK,16QAM		
Operating Frequency Range(s)	Band	TX(MHz)	RX(MHz)
	GSM850	824~849	869~894
	GSM1900	1850~1910	1930~1990
	UMTS Band V	824~849	869~894
	UMTS Band IV	1710~1755	2110~2155
	UMTS Band II	1850~1910	1930~1990
	LTE Band 2	1850~1910	1930~1990
	LTE Band 4	1710~1755	2110~2155
	LTE Band 5	824~849	869~894
	LTE Band 7	:2500-2570	2620-2690
	LTE Band 12	699-716	729-746
	LTE Band 13	777-787	746-756
	LTE Band 17	704-716	734-746
	LTE Band 25	1850-1915	1930-1995
	LTE Band 26	824-849	869-894
	LTE Band 41	2496-2690	2496-2690
	LTE Band 66	1710-1780	2110-2200
	WiFi 2.4G	2412~2462	
Test Channels (low-mid-high):	128-190-251 (GSM850)		
	512-661-810 (GSM1900)		
	9262-9400-9538 (UMTS Band II)		
	1312-1413-1513 (UMTS Band IV)		
	4132-4182-4233 (UMTS Band V)		
	18700-18900-19100(LTE Band 2)		
	20050-20175-20300(LTE Band 4)		
	20450-20525-20600(LTE Band 5)		
	20850-21100-21350(LTE Band 7)		
	23060-23095-23130(LTE Band 12)		
	23230-23230-23230(LTE Band 13)		
	23780-23790-23800(LTE Band 17)		
	26140-26365-26590(LTE Band 25)		
	26853-26909-26965(LTE Band 26)		
	39750-40340-40620-40880-41490(LTE Band 41)		

	132072-132322-132572(LTE Band 66)	
	1/3-6-11/9 (WiFi 2.4G)	
Power Source:	USB port:	DC 5.0V
	Battery:	DC 3.8V,3000mAh,11.4Wh

Remark:

1) Model:SKM0138,SKM0338,SKM0538,SKM0738,SKM0938,SKM1138,SKM1338,SKM1538, SKM1738,SKM1938,SKM2138,SKM2338,SKM2538,SKM2738,SKM2938,SKM3138,SKM3338, SKM3538,SKM3738,SKM3938.

Only the model SKM0138 was tested. They are identical in functions. SKM0138 and its derivative models are only different in name and colors. Their safety and electromagnetic compatibility performance are the same.

2) Company Name and Address shown on Report, the sample(s) and sample Information were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.

1.5 Test standard/s

ANSI Std C95.1-1992	Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
IEEE Std 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
KDB 248227 D01	SAR guidance for IEEE 802.11(Wi-Fi) transmitters v02r02
KDB 447498 D01	General RF Exposure Guidance v06
KDB 648474 D04	Handsets SAR v01r03
KDB 690783 D01	SAR Listings on Grants v01r03
KDB 865664 D01	SAR Measurement 100 MHz to 6 GHz v01r04
KDB 865664 D02	RF Exposure Reporting v01r02
KDB 941225 D01	3G SAR Procedures v03r01
KDB 941225 D05	SAR for LTE Devices v02r05
KDB 941225 D06	Hotspot SAR v02r01

1.6 RF exposure limits

Human Exposure	Uncontrolled Environment General Population	Controlled Environment Occupational
Spatial Peak SAR* (Brain/Body/Arms/Legs)	**1.60 mW/g**	8.00 mW/g
Spatial Average SAR** (Whole Body)	0.08 mW/g	0.40 mW/g
Spatial Peak SAR*** (Hands/Feet/Ankle/Wrist)	4.00 mW/g	20.00 mW/g

The limit applied in this test report is shown in bold letters

Notes:

* 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.

** The Spatial Average value of the SAR averaged over the whole body.

*** 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.

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

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.

1.7 SAR Definition

Specific Absorption Rate 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).

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

SAR is expressed in units of watts per kilogram (W/kg). SAR can be related to the electric field at a point by

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

where:

σ = conductivity of the tissue (S/m)
ρ = mass density of the tissue (kg/m^3)
E = rms electric field strength (V/m)

1.8 Testing laboratory

Test Site	Centre Testing International Group Co., Ltd.
Test Location	Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China
Telephone	+86 (0) 755 3368 3668
Fax	+86 (0) 755 3368 3385

1.9 Test Environment

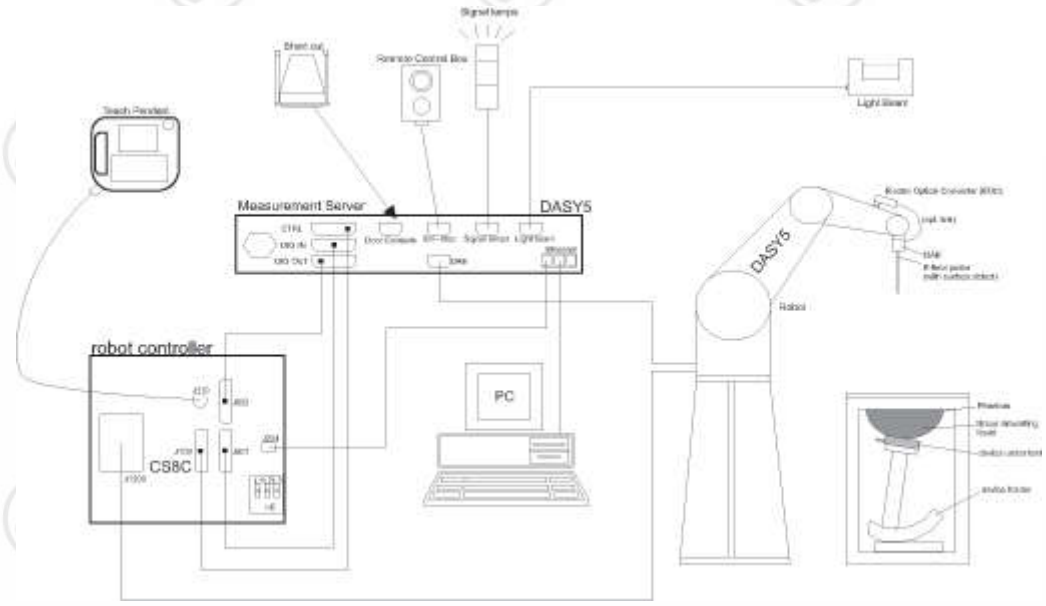
	Required	Actual
Ambient temperature:	18 – 25 °C	21.5 ± 2.0 °C
Tissue Simulating liquid:	18 – 25 °C	21.5 ± 2.0 °C
Relative humidity content:	30 – 70 %	30 – 70 %

1.10 Applicant and Manufacturer

Applicant/Client :	Shenzhen Syeconmax Technology Co., Ltd.
Applicant Address:	Floor 2, Building 8, Lijincheng Industrial Park, Industrial East Road, Longhua District, Shenzhen, China
Manufacturer Name:	Shenzhen Syeconmax Technology Co., Ltd.
Manufacturer Address:	Floor 2, Building 8, Lijincheng Industrial Park, Industrial East Road, Longhua District, Shenzhen, China
Factory:	Huizhou Skyline Intelligent Technology Co., Ltd.
Address of Factory:	3rd and 4th floors of E2-2-2 factory building and 4th floor of E2-2-1 factory building on the south side of Sanhe Avenue, Tonghu Town, Huizhou Zhongkai High-tech Zone.

2 SAR Measurement System Description and Setup

2.1 The Measurement System Description



The DASY5 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (Stäubli TX/RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic field probe optimized and calibrated for the targeted measurement.
- 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.
- 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.
- 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.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Win7 profesional operating system and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

2.2 Probe description

Dosimetric Probes: These probes are specially designed and calibrated for use in liquids with high permittivities. They should not be used in air, since the spherical isotropy in air is poor(±2 dB). The dosimetric probes have special calibrations in various liquids at different frequencies.

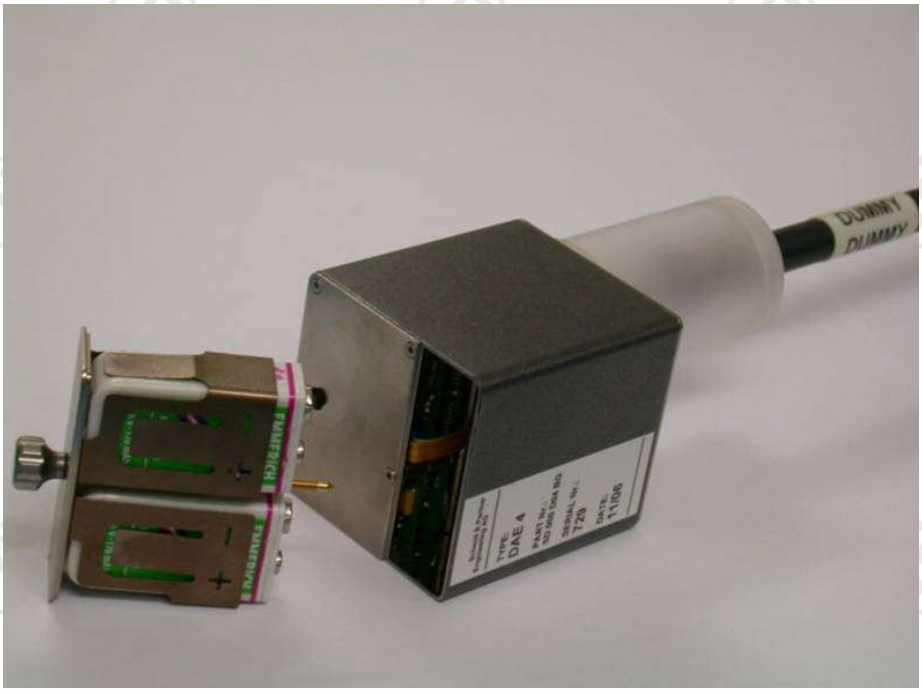
Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available.
Frequency	10 MHz to 6 GHz; Linearity: ± 0.2 dB
Probe Overall Length	337mm
Probe Body Diameter	10mm
Tip Length	9mm
Tip Diameter	2.5mm
Dynamic range	5 μW/g to 100 mW/g; Linearity: ± 0.2 dB

2.3 Data Acquisition Electronics description

The data acquisition electronics (DAE4) consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.

The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection. The input impedance of the DAE4 box is 200MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Batteries: The DAE works with either two standard 9V batteries or two 9V (actually 8.4V or 9.6 V) rechargeable batteries. Because the electronics automatically power-down unused components during braking or between measurements, the battery lifetime depends on system usage. Typical lifetimes are >20 hours for batteries and >10 hours for accus. Remove the batteries if you do not plan to use the DAE for a long period of time.



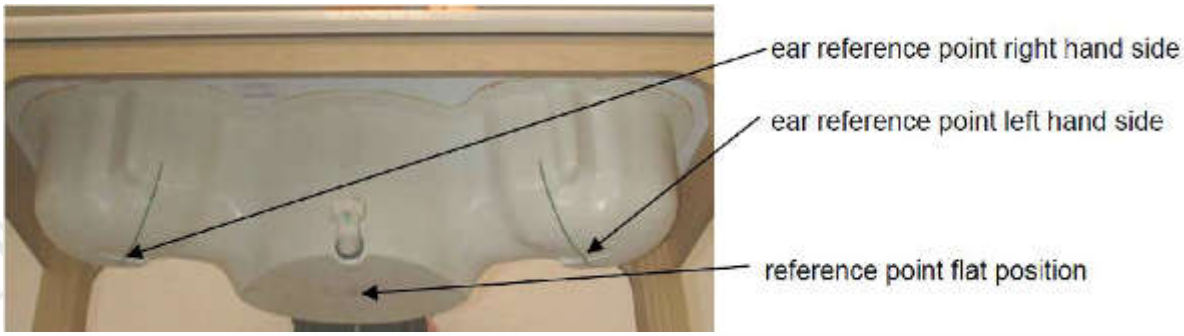
2.4 SAM Twin Phantom description

The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region, where shell thickness increases to 6 mm). The phantom has three measurement areas:

♦ Left hand

♦ Right hand

♦ Flat phantom



The phantom table for the DASY systems have the size of 100 x 50 x 85 cm (L xWx H). these tables are reinforced for mounting of the robot onto the table. For easy dislocation these tables have fork lift cut outs at the bottom.

The bottom plate contains three pairs of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections.

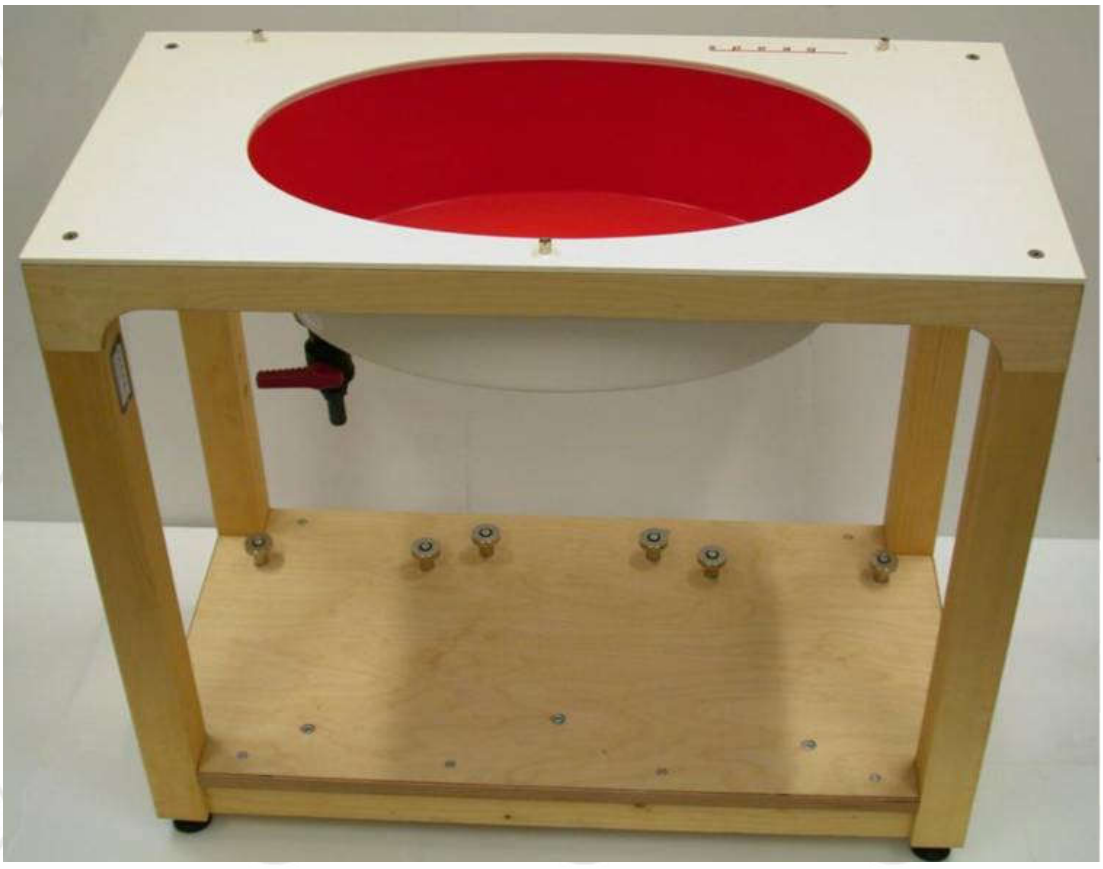
A white cover is provided to cover the phantom during off-periods to prevent water evaporation and changes in the liquid parameters.

Three reference marks are provided on the phantom counter. These reference marks are used to teach the absolute phantom position relative to the robot.

2.5 ELI4 Phantom description

The ELI4 phantom is intended for compliance testing of handheld and body mounted wireless devices in the frequency range of 30MHz to 6 GHz. ELI4 is fully compatible with the latest draft of the standard IEC 62209-2 and all known tissue simulating liquids.

ELI4 has been optimized regarding its performance and can be integrated into a SPEAG standard phantom table. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points



2.6 Device Holder description

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5mm distance, a positioning uncertainty of ±0.5mm would produce a SAR uncertainty of ±20%. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

The DASY device holder is designed to cope with the different positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales is the ear reference point (ERP).Thus the device needs no repositioning when changing the angles.

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.

3 SAR Test Equipment List

To simplify the identification of the test equipment and/or ancillaries which were used, the reporting of the relevant test cases only refer to the test item number as specified in the table below.

	Manufacturer	Device Type	Type(Model)	Serial number	Date of last calibration	Valid period
☒	SPEAG	E-Field Probe	EX3DV4	7328	2023-03-23	One year
☒	SPEAG	E-Field Probe	EX3DV4	7769	2022-09-20	One year
☒	SPEAG	750 MHz Dipole	D750V3	1088	2023-04-11	Three years
☒	SPEAG	835 MHz Dipole	D835V2	4d193	2021-01-12	Three years
☒	SPEAG	1750 MHz Dipole	D1750V2	1134	2021-01-12	Three years
☒	SPEAG	1900 MHz Dipole	D1900V2	5d198	2021-01-12	Three years
☐	SPEAG	2000 MHz Dipole	D2000V2	1078	2021-01-12	Three years
☐	SPEAG	2300 MHz Dipole	D2300V2	1082	2023-01-11	Three years
☒	SPEAG	2450 MHz Dipole	D2450V2	959	2021-01-12	Three years
☒	SPEAG	2600 MHz Dipole	D2600V2	1101	2021-01-12	Three years
☒	SPEAG	5 GHz Dipole	D5GHzV2	1208	2021-01-12	Three years
☒	SPEAG	DAKS probe	DAKS-3.5	1052	2021-01-27	Three years
☒	SPEAG	Planar R140 Vector Reflectometer	DAKS-VNA R140	0200514	2021-01-27	Three years
☒	SPEAG	Data acquisition electronics	DAE4	1458	2023-01-11	One year
☒	SPEAG	Software	DASY 5	NA	NCR	NCR
☒	SPEAG	Twin Phantom	SAM V5.0	1875	NCR	NCR
☐	SPEAG	Flat Phantom	ELI V6.0	2024	NCR	NCR
☒	R & S	Universal Radio Communication Tester	CMU200	101553	2022-12-23	One year
☒	R & S	Universal Radio Communication Tester	CMW500	102898	2022-12-23	One year
☒	Agilent	Signal Generator	N5181A	MY50142334	2022-12-19	One year
☒	BONN	Power Amplifier and directional coupler	SU319W	BL-SZ1550140	2022-12-23	One year
☒	KEITHLEY	RF Power Meter	3500	1128079	2023-06-07	One year
☒	KEITHLEY	RF Power Meter	3500	1128081	2023-06-07	One year
☒	JINGCHUAN G	Temperature/ Humidity Indicator	GSP-8	EMK197F0009 5	2023-06-07	One year

Note:

a) There is no physical damage on the dipole;

b) System check with specific dipole is within 10% of calibrated value;

c) The most recent return-loss result, measured at least annually, deviates by no more than 20% from the previous measurement.

d) The most recent measurement of the real or imaginary parts of the impedance, measured at least annually is within 5Ω from the previous measurement.

4 SAR Measurement Procedures

4.1 Spatial Peak SAR Evaluation

The DASY5 software includes all numerical procedures necessary to evaluate the spatial peak SAR values.The base for the evaluation is a "cube" measurement in a volume of 30mm^3 (7x7x7 points). 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. If the 10g cube or both cubes are not entirely inside the measured volumes,the system issues a warning regarding the evaluated spatial peak values within the Postprocessing engine (SEMCAD X). This means that if the measured volume is shifted, higher values might be possible. To get the correct values you can use a finer measurement grid for the area scan. In complicated field distributions, a large grid spacing for the area scan might miss some details and give an incorrectly interpolated peak location. The entire evaluation of the spatial peak values is performed within the Postprocessing engine (SEMCAD X). 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 from 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

4.2 Data Storage and Evaluation

Data Storage

The DASY5 software stores the measured voltage acquired by the Data Acquisition Electronics (DAE) as raw data together with all the necessary software parameters for the data evaluation (probe calibration data, liquid parameters and communication system parameters) in measurement files with the extension .da5x. The postprocessing software evaluates the data every time the data is visualized or exported. This allows the verification and modification of the setup after completion of the measurement. For example, if a measurement has been performed with an incorrect crest factor, the parameter can be corrected afterwards and the data can be reevaluated.

To avoid unintentional parameter changes or data manipulations, the parameters in measured files are locked. In the administrator access mode of the software, the parameters can be unlocked. After changing the parameters, the measured scans can be reevaluated in the postprocessing engine.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type (e.g., E-field, H-field, SAR). Some of these units are not available in certain situations or give meaningless results, e.g., a SAR-output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

Data Evaluation

The fields and SAR are calculated from the measured voltage (probe voltage acquired by the DAE) and the following parameters:

Probe parameters:	- Sensitivity	$norm_i$, a_{i0}, a_{i1}, a_{i2}
	- Conversion Factor	$convF_i$
	- Diode Compression Point	dcp_i
	- Probe Modulation Response Factors	a_i, b_i, c_i, d
Device parameters:	- Frequency	f
	- Crest factor	cf
Media parameters:	- Conductivity	σ

- Relative Permittivity ρ

This parameters are stored in the DASY5 V52 measurement file.

These parameters must be correctly set in the DASY5 V52 software setup. They are available as configuration file and can be imported into the measurement file. The values displayed in the multimeter window are assessed using the parameters of the actual system setup. In the scan visualization and export modes, the parameters stored in the measurement file are used.

The measured voltage is not proportional to the exciting. It must be first linearized.

Approximated Probe Response Linearization using Crest Factor.

This linearization method is enabled when a custom defined communication system is measured. The compensation applied is a function of the measured voltage, the detector diode compression point and the crest factor of the measured signal.

$$V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}$$

with V_i = linearized voltage of channel i (uV) (i = x,y,z)

U_i = measured voltage of channel i (uV) (i = x,y,z)

cf = crest factor of exciting field (DASY parameter)

dcp_i = diode compression point of channel i (uV) (Probe parameter, i = x,y,z)

Field and SAR Calculation

The primary field data for each channel are calculated using the linearized voltage:

E - fieldprobes : $$E_i = \sqrt{\frac{V_i}{Norm_i \cdot ConvF}}$$

H - fieldprobes : $$H_i = \sqrt{V_i} \cdot \frac{a_{i0} + a_{i1} f + a_{i2} f^2}{f}$$

with V_i = linearized voltage of channel i (i = x,y,z)

$Norm_i$ = sensor sensitivity of channel i (i = x,y,z)

uV/(V/m)^2 for E-field Probes

ConvF = sensitivity enhancement in solution

a_{ij} = sensor sensitivity factors for H-field probes

f = carrier frequency [GHz]

E_i = electric field strength of channel i in V/m

H_i = magnetic field strength of channel i in A/m

The RMS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}$$

The primary field data are used to calculate the derived field units.

$$SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1'000}$$

with SAR = local specific absorption rate in mW/g

E_{tot} = total field strength in V/m

σ = conductivity in [mho/m] or [Siemens/m]

ρ = equivalent tissue density in g/cm^3

Note that the density is set to 1, to account for actual head tissue density rather than the density of the tissue simulating liquid.

Spatial Peak SAR for 1 g and 10 g

The DASY5 software includes all numerical procedures necessary to evaluate the spatial peak SAR values.The base for the evaluation is a "cube" measurement at the points of the fine cube grid consisting of 5 x 5 x 7 points(with 8mm horizontal resolution) or 7 x 7 x 7 points(with 5mm horizontal resolution) or 8 x 8 x 7 points(with 4mm horizontal resolution)..The entire evaluation of the spatial peak values is performed within the Postprocessing engine (SEMCAD X).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 from 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.

4.3 Data Storage and Evaluation

The DASY5 installation includes predefined files with recommended procedures for measurements and validation. All test positions (head or body-worn) are tested with the same configuration of test steps differing only in the grid definition for the different test positions.

Step 1: Power reference measurement

The Power Reference Measurement and Power Drift Measurement are for monitoring the power drift of the device under test in the batch process. The Minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. By default, the Minimum distance of probe sensors to surface is 4 mm. This distance can be modified by the user, but cannot be smaller than the Distance of sensor calibration points to probe tip as defined in the probe properties. The SAR measurement was taken at a selected spatial reference point to monitor power variations during testing. This fixed location point was measured and used as a reference value.

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a finer measurement around the hotspot. The sophisticated interpolation routines implemented in DASY5 software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maxima found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE 1528-2003 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

Step 3: Zoom Scan

The Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The default Zoom Scan is defined in the following table. DASY5 is also able to perform repeated zoom scans if more than 1 peak is found during area scan. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Area scan and Zoom scan resolutions per FCC KDB Publication 865664 D01:

Frequency	Maximun Area Scan resolution (Δx_{Area},Δy_{Area})	Maximun Zoom Scan spatial resolution (Δx_{Zoom},Δy_{Zoom})	Maximun Zoom Scan spatial resolution			Minimum zoom scan volume (x,y,z)
			Uniform Grid	Graded Grad		
			$\Delta z_{Zoom}(n)$	$\Delta z_{Zoom}(1)$*	$\Delta z_{Zoom}(n>1)$*	
≤ 2GHz	≤ 15mm	≤ 8mm	≤ 5mm	≤ 4mm	≤1.5*$\Delta z_{Zoom}(n-1)$	≥ 30mm
2-3GHz	≤ 12mm	≤ 5mm	≤ 5mm	≤ 4mm	≤1.5*$\Delta z_{Zoom}(n-1)$	≥ 30mm
3-4GHz	≤ 12mm	≤ 5mm	≤ 4mm	≤ 3mm	≤1.5*$\Delta z_{Zoom}(n-1)$	≥ 28mm
4-5GHz	≤ 10mm	≤ 4mm	≤ 3mm	≤ 2.5mm	≤1.5*$\Delta z_{Zoom}(n-1)$	≥ 25mm
5-6GHz	≤ 10mm	≤ 4mm	≤ 2mm	≤ 2mm	≤1.5*$\Delta z_{Zoom}(n-1)$	≥ 22mm

Step 4: Power Drift Monitoring

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement job within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. If the value changed by more than 5%, the evaluation should be retested.

5 SAR Verification Procedure

5.1 Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 5.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown as followed:

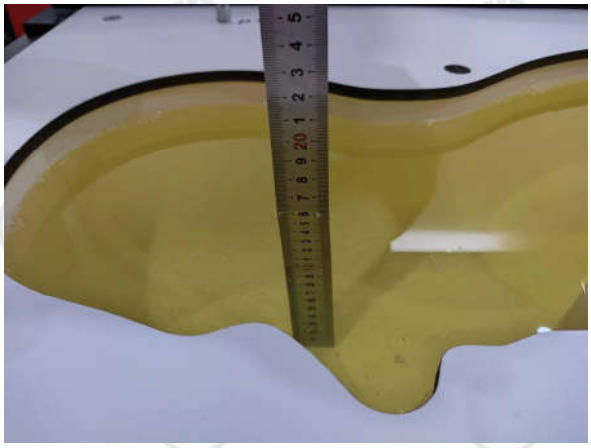


Photo of Liquid Height for Head SAR

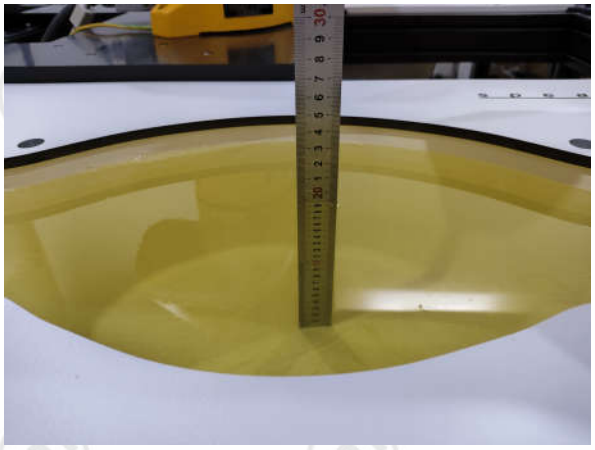


Photo of Liquid Height for Body SAR

5.2 Tissue Verification

The following materials are used for producing the tissue-equivalent materials.
(Liquids used for tests are marked with☒):

Ingredients (% of weight)	**Frequency (MHz)**							
Tissue Type	**Head Tissue**							
frequency band	☒750	☒835	☒ 1750	☒ 1900	☐ 2300	☒ 2450	☒ 2600	☒ 5200-5800
Water	41.45	41.45	52.64	55.242	62.82	62.7	55.242	65.52
Salt (NaCl)	1.45	1.45	0.36	0.306	0.51	0.5	0.306	0.0
Sugar	56.0	56.0	0.0	0.0	0.0	0.0	0.0	0.0
HEC	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Bactericide	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	36.8	0.0	17.24
DGBE	0.0	0.0	47.0	44.542	36.67	0.0	44.452	0.0
Diethylenglycol monohexylether	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.24

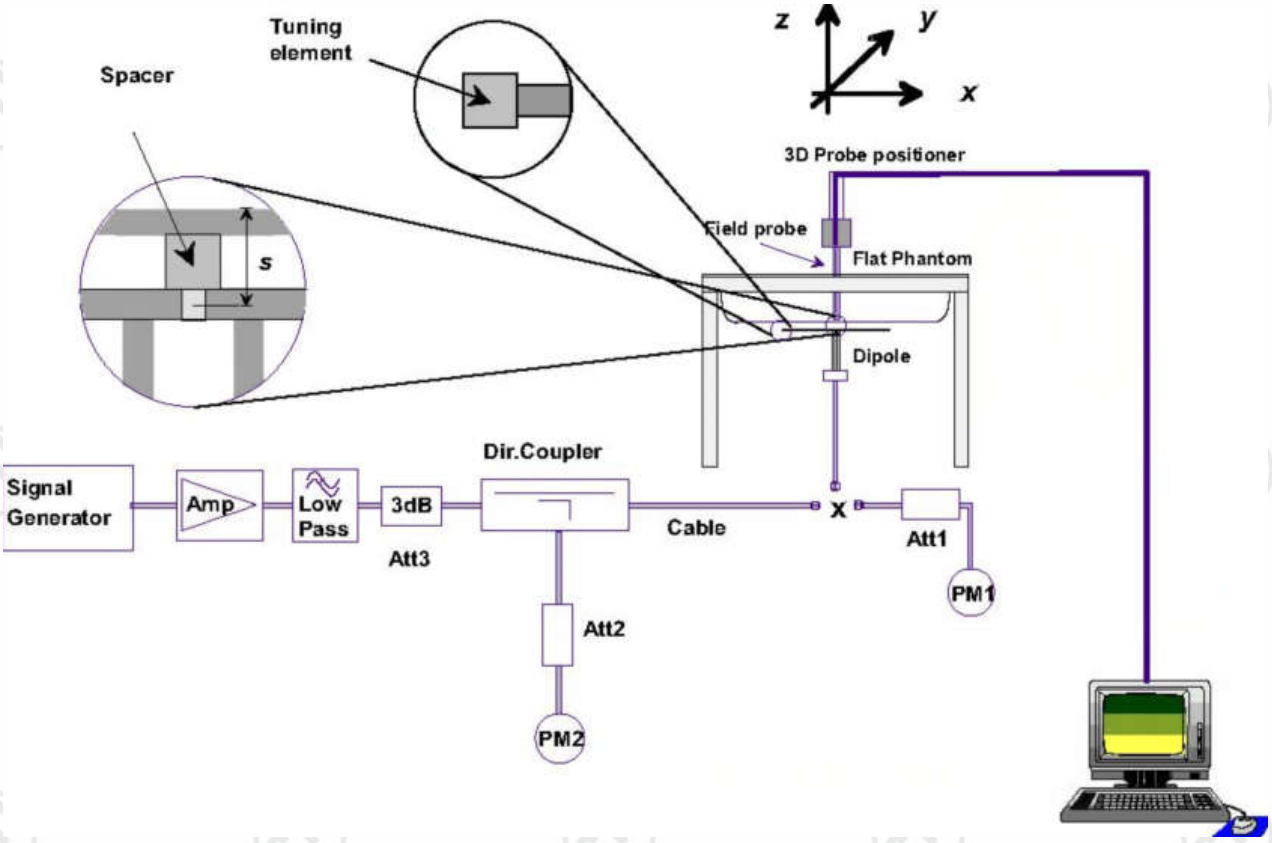
Salt: 99+% Pure Sodium Chloride Sugar: 98+% Pure Sucrose
Water: De-ionized, 16MΩ+ resistivity HEC: Hydroxyethyl Cellulose
DGBE: 99+% Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol]
Triton X-100(ultra pure): Polyethylene glycol mono [4-(1,1,3,3-tetramethylbutyl)phenyl]ether

Tissue simulating liquids: parameters:

Tissue Type	Measured Frequency (MHz)	Target Tissue		Measured Tissue		Liquid Temp.	Test Date
		ε_r (+/-5%)	σ (S/m) (+/-5%)	ε_r	σ (S/m)		
750 Head	**750**	41.90 (39.81~44.00)	0.89 (0.85~0.93)	43.03	0.855	20.45°C	9/17/2023
	750	41.90 (39.81~44.00)	0.89 (0.85~0.93)	39.90	0.921	20.53°C	9/18/2023
	750	41.90 (39.81~44.00)	0.89 (0.85~0.93)	43.27	0.874	20.63°C	9/19/2023
835 Head	**835**	41.50 (39.43~43.58)	0.90 (0.86~0.95)	40.38	0.882	20.48°C	9/21/2023
	835	41.50 (39.43~43.58)	0.90 (0.86~0.95)	39.72	0.893	20.45°C	9/22/2023
	835	41.50 (39.43~43.58)	0.90 (0.86~0.95)	39.70	0.891	20.81°C	9/24/2023
	835	41.50 (39.43~43.58)	0.90 (0.86~0.95)	40.47	0.884	20.51°C	11/13/2023
1800 Head	**1750**	40.10 (38.10~42.10)	1.37 (1.31~1.43)	40.46	1.324	20.96°C	11/2/2023
	1750	40.10 (38.10~42.10)	1.37 (1.31~1.43)	40.07	1.409	20.28°C	11/5/2023
	1750	40.10 (38.10~42.10)	1.37 (1.31~1.43)	40.75	1.343	20.52°C	11/6/2023
1900 Head	**1900**	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.32	1.429	20.25°C	10/30/2023
	1900	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.29	1.427	20.51°C	10/31/2023
	1900	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.93	1.437	20.59°C	11/1/2023
	1900	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.32	1.429	20.25°C	11/12/2023
2450 Head	**2450**	39.20 (37.24~41.16)	1.80 (1.71~1.89)	40.75	1.831	20.63°C	11/9/2023
	2450	39.20 (37.24~41.16)	1.80 (1.71~1.89)	38.76	1.866	20.16°C	11/10/2023
2600 Head	**2600**	39.00 (37.05~40.95)	1.96 (1.86~2.06)	39.49	2.000	20.66°C	11/16/2023
ε_r= Relative permittivity, σ= Conductivity							

5.3 System check procedure

The System check is performed by using a System check dipole which is positioned parallel to the planar part of the SAM phantom at the reference point. The distance of the dipole to the SAM phantom is determined by a spacer. The dipole is connected to the signal source consisting of signal generator and amplifier via a directional coupler, N-connector cable and adaption to SMA. It is fed with a power of 250mW. To adjust this power a power meter is used. The power sensor is connected to the cable before the System check to measure the power at this point and do adjustments at the signal generator. At the outputs of the directional coupler both return loss as well as forward power are controlled during the validation to make sure that emitted power at the dipole is kept constant. This can also be checked by the power drift measurement after the test (result on plot).
System check results have to be equal or near the values determined during dipole calibration (target SAR in table above) with the relevant liquids and test system.



5.4 System check results

The system Check is performed for verifying the accuracy of the complete measurement system and performance of the software. The following table shows System check results for all frequency bands and tissue liquids used during the tests (plot(s) see annex A).

System Check (MHz)	Target SAR (1W) (+/-10%)		Measured SAR (Normalized to 1W)		Liquid Temp.	Test Date
	1-g (mW/g)	10-g (mW/g)	1-g (mW/g)	10-g (mW/g)		
D750V2 Head	8.58 (7.722~9.438)	5.71 (5.139~6.281)	7.88	5.24	20.45°C	9/17/2023
D750V2 Head	8.58 (7.722~9.438)	5.71 (5.139~6.281)	8.16	5.40	20.53°C	9/18/2023
D750V2 Head	8.58 (7.722~9.438)	5.71 (5.139~6.281)	8.44	5.60	20.63°C	9/19/2023
D835V2 Head	9.53 (8.577~10.483)	6.31 (5.679~6.941)	9.92	6.48	20.48°C	9/21/2023
D835V2 Head	9.53 (8.577~10.483)	6.31 (5.679~6.941)	9.68	6.36	20.45°C	9/22/2023
D835V2 Head	9.53 (8.577~10.483)	6.31 (5.679~6.941)	9.36	6.16	20.81°C	9/24/2023
D835V2 Head	9.53 (8.577~10.483)	6.31 (5.679~6.941)	9.92	6.52	20.51°C	11/13/2023
D1750V2 Head	37.00 (33.30~40.70)	19.40 (17.46~21.34)	38.96	20.92	20.96°C	11/2/2023
D1750V2 Head	37.00 (33.30~40.70)	19.40 (17.46~21.34)	37.12	19.96	20.28°C	11/5/2023
D1750V2 Head	37.00 (33.30~40.70)	19.40 (17.46~21.34)	36.52	19.68	20.52°C	11/6/2023
D1900V2 Head	39.60 (35.64~43.56)	20.40 (18.36~22.44)	40.40	21.08	20.25°C	10/30/2023
D1900V2 Head	39.60 (35.64~43.56)	20.40 (18.36~22.44)	39.12	20.32	20.51°C	10/31/2023
D1900V2 Head	39.60 (35.64~43.56)	20.40 (18.36~22.44)	40.80	21.20	20.59°C	11/1/2023
D1900V2 Head	39.60 (35.64~43.56)	20.40 (18.36~22.44)	40.80	22.08	20.25°C	11/12/2023
D2450V2 Head	51.70 (46.53~56.87)	23.70 (21.33~26.07)	49.60	23.52	20.63°C	11/9/2023
D2450V2 Head	51.70 (46.53~56.87)	23.70 (21.33~26.07)	51.60	24.60	20.16°C	11/10/2023

D2600V2 Head	57.30 (51.57~63.03)	25.10 (22.59~27.61)	57.20	25.76	20.66°C	11/16/2023
Note: All SAR values are normalized to 1W forward power.						

6 SAR Measurement variability and uncertainty

6.1 SAR measurement variability

In accordance with published RF Exposure KDB procedure 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.The same procedures should be adapted for measurements according to extremity exposure limits by applying a factor of 2.5 for extremity exposure.

1) Repeated measurement is not required when the original highest measured SAR is < 2.0 W/kg; steps 2) through 4) do not apply.
2) When the original highest measured SAR is ≥ 2.0 W/kg, repeat that measurement once.
3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 3.0 or when the original or repeated measurement is ≥ 3.6 W/kg (~ 10% from the 10-g SAR limit).
4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥3.75 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

6.2 SAR measurement uncertainty

Per KDB865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04,when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. The equivalent ratio (1.5/1.6) is applied to extremity and occupational exposure conditions.

7 SAR Test Configuration

7.1 GSM Test Configurations

SAR tests for GSM850 and GSM1900, a communication link is set up with a base station by air link. Using CMU200 the power lever is set to “5”and “0” in SAR of GSM850 and GSM1900. The tests in the band of GSM850 and GSM1900 are performed in the mode of GPRS/EGPRS function. Since the GPRS/EGPRS class is 12 for this EUT, it has at most 4 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslot is 5.

When SAR tests for EGPRS mode is necessary, GMSK modulation should be used to minimize SAR measurement error due to higher peak-to-average power (PAR) ratios inherent in 8-PSK.

7.2 UMTS Test Configurations

1) RMC

As the SAR body tests for WCDMA Band II/V, we established the radio link through call processing. The maximum output power were verified on high, middle and low channels for each test band according to 3GPP TS 34.121 with the following configuration:

1) 12.2kbps RMC, 64,144,384 kbps RMC with TPC set to ‘all 1’.
2) Test loop Mode 1.

For the output power, the configurations for the DPCCH and $DPDCH_1$ are as followed (EUT do not support the $DPDCH_{2-n}$)

	Channel Bit Rate (kbps)	Channel Symbol Rate (ksps)	Spreading Factor	Spreading Code Number	Bits/Slot
DPCCH	15	15	256	0	10
$DPDCH_1$	15	15	256	64	10
	30	30	128	32	20
	60	60	64	16	40
	120	120	32	8	80
	240	240	16	4	160
	480	480	8	2	320
	960	960	4	1	640
$DPDCH_n$	960	960	4	1, 2, 3	640

SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits configured to all “1s”. SAR for other spreading codes and multiple DPDCHn, when supported by the EUT, are not required when the maximum average outputs of each RF channel, for each spreading code and DPDCHn configuration, are less than ¼ dB higher than those measured in 12.2 kbps RMC.

2) HSDPA

SAR for body exposure configurations is measured according to the ''Body SAR Measurements'' procedures of 3G device. In addition, body SAR is also measured for HSDPA when the maximum average outputs of each RF channel with HSDPA active is at ¼ dB higher than that measured without HSDPA using 12.2kbps RMC or the maximum SAR 12.2kbps RMC is above 75% of the SAR limit. Body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2kbps RMC configured in Test Loop Mode 1, using the highest body SAR configuration in 12.2 kbps RMC without HSDPA.

HSDPA should be configured according to UE category of a test device. The number of HS-DSCH/ HS-PDSCHs, HAPRQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission condition, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4ms with a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. The β_c and β_d gain factors for DPCCH and DPDCH were set according to the values in the below table, β_{hs} for HS-DPCCH is set automatically to the correct value when ΔACK, ΔNACK, ΔCQI = 8. The variation of the β_c /β_d ratio causes a power reduction at sub-tests 2 - 4.

Sub-test	$b\beta_c$	$b\beta_d$	$b\beta_d$ (SF)	$b\beta_c$ /β_d	$b\beta_{hs}$ (1)	CM(dB)(2)	MPR (dB)
1	2/15	15/15	64	2/15	4/15	0.0	0
2	12/15(3)	15/15(3)	64	12/15(3)	24/15	1.0	0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: ∆ACK, ∆NACK and ∆CQI = 8Þ $A_{hs} = \beta_{hs}/\beta_c = 30/15$Þ $\beta_{hs} = 30/15 * \beta_c$

Note 2 : CM=1 for β_c/β_d= 12/15, β_{hs}/β_c = 24/15. For all other combinations of DPDCH,DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 3 : For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1,TF1) to β_c = 11/15 and β_d = 15/15

The measurements were performed with a Fixed Reference Channel (FRC) and H-Set 1 QPSK.

Parameter	Value
Nominal average inf. bit rate	534 kbit/s
Inter-TTI Distance	3 TTI's
Number of HARQ Processes	2 Processes
Information Bit Payload	3202 Bits
MAC-d PDU size	336 Bits
Number Code Blocks	1 Block
Binary Channel Bits Per TTI	4800 Bits
Total Available SMLs in UE	19200 SMLs
Number of SMLs per HARQ Process	9600 SMLs
Coding Rate	0.67
Number of Physical Channel Codes	5

Note: settings of required H-Set 1 QPSK acc. to 3GPP 34.121

HS-DSCH Category	Maximum HS-DSCH Codes Received	Minimum Inter-TTI Interval	Maximum HS-DSCH Transport Block Bits/HS-DSCH TTI	Total Soft Channel Bits
1	5	3	7298	19200
2	5	3	7298	28800
3	5	2	7298	28800
4	5	2	7298	38400
5	5	1	7298	57600
6	5	1	7298	67200
7	10	1	14411	115200
8	10	1	14411	134400
9	15	1	25251	172800
10	15	1	27952	172800
11	5	2	3630	14400
12	5	1	3630	28800
13	15	1	34800	259200
14	15	1	42196	259200
15	15	1	23370	345600
16	15	1	27952	345600

3) HSUPA

Body SAR is also measured for HSDPA when the maximum average outputs of each RF channel with HSDPA active is at ¼ dB higher than that measured without HSDPA using 12.2kbps RMC or the maximum SAR 12.2kbps RMC is above 75% of the SAR limit. Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-set 1 and QPSK for FRC and 12.2kbps RMC configured in Test Loop Mode 1 with power control algorithm 2, according to the highest body SAR configuration in 12.2 kbps RMC without HSPA.

Due to inner loop power control requirements in HSDPA, a commercial communication test set should be used for the output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSDPA should be configured according to the b values indicated below as well as other applicable procedures described in the 'UMTS Handset' and 'Release 5 HSDPA Data Device' sections of 3G device.

Sub-test	$b\beta_c$	$b\beta_d$	β_d (SF)	$b\beta_c/\beta_d$	$b\beta_{hs}$(1)	$b\beta_{ec}$	$b\beta_{ed}$	β_{ec} (SF)	β_{ed} (code)	CM(2) (dB)	MPR (dB)	AG(4) Index	E-TFCI
1	11/15(3)	15/15(3)	64	11/15(3)	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1}:47/15 β_{ed2}:47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15(4)	15/15(4)	64	15/15(4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: ∆ACK, ∆NACK and ∆CQI = 8Þ $A_{hs} = \beta_{hs}/\beta_c = 30/15$Þ $\beta_{hs} = 30/15 * \beta_c$

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference

Note 3 : For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1,TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$

Note 4 : For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1,TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$

Note 5 : Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to

TS 25.306 Table 5.1g

Note 6: β_{ed} can not be set directly; it is set by Absolute Grant Value.

UE E-DCH Category	Maximum E-DCH Codes Transmitted	Number of HARQ Processes	E-DCH TTI(ms)	Minimum Speading Factor	Maximum E-DCH Transport Block Bits	Max Rate (Mbps)
1	1	4	10	4	7110	0.7296
2	2	8	2	4	2798	1.4592
	2	4	10	4	14484	
3	2	4	10	4	14484	1.4592
4	2	8	2	2	5772	2.9185
	2	4	10	2	20000	2.00
5	2	4	10	2	20000	2.00
6 (No DPDCH)	4	8	10	2SF2&2SF4	11484	5.76
	4	4	2		20000	2.00
7 (No DPDCH)	4	8	2	2SF2&2SF4	22996	?
	4	4	10		20000	?

NOTE: When 4 codes are transmitted in parallel, two codes shall be transmitted with SF2 and two with SF4. UE categories 1 to 6 support QPSK only. UE category 7 supports QPSK and 16QAM. (TS25.306-7.3.0)

7.3 LTE Test Configuration

SAR for LTE band exposure configurations is measured according to the procedures of KDB 941225 D05 SAR for LTE Devices. The CMW500 WideBand Radio Communication Tester was used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing.SAR test were performed with the same number of RB and RB offsets transmitting on all TTI frames(Maximum TTI)

1) Spectrum Plots for RB configurations

A properly configured base station simulator was used for LTE output power measurements and SAR testing.Therefore, spectrum plots for RB configurations were not required to be included in this report.

2) MPR

When MPR is implemented permanently within the UE, regardless of network requirements, only those RB configurations allowed by 3GPP for the channel bandwidth and modulation combinations may be tested with MPR active. Configurations with RB allocations less than the RB thresholds required by 3GPP must be tested without MPR.

The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3

Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

3) A-MPR

A-MPR(Additional MPR) has been disabled for all SAR tests by using Network Signaling Value of “NS_01”on the base station simulator.

4) LTE procedures for SAR testing

4.1) Largest channel bandwidth standalone SAR test requirements

4.1.1)QPSK with 1 RB allocation

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. 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. 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.

4.1.2)QPSK with 50% RB allocation

The procedures required for 1 RB allocation in 4.1.1) are applied to measure the SAR for QPSK with 50% RB allocation.

4.1.3)QPSK with 100% RB allocation

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 in 4.1.1) and 4.1.2) 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.

4.1.4)Higher order modulations

For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in above sections to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, 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.

4.2) Other channel bandwidth standalone SAR test requirements

For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in section 4.1) to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ½ 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.

7.4 WIFI 5G Test Configurations

1) U-NII-1 and U-NII-2A Bands

For devices that operate in only one of the U-NII-1 and U-NII-2A bands, the normally required SAR procedures for OFDM configurations are applied. For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following：

1.1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, both bands are tested independently for SAR.

1.2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, both bands are tested independently for SAR.

1.3) The two U-NII bands may be aggregated to support a 160 MHz channel on channel number 50. Without additional testing, the maximum output power for this is limited to the lower of the maximum output power certified for the two bands. When SAR measurement is required for at least one of the bands and the highest reported SAR adjusted by the ratio of specified maximum output power of aggregated to standalone band is > 1.2 W/kg, SAR is required for the 160 MHz channel. This procedure does not apply to an aggregated band with maximum output higher than the standalone band(s); the aggregated band must be tested independently for SAR. SAR is not required when the 160 MHz channel is operating at a reduced maximum power and also qualifies for SAR test exclusion.

2) U-NII-2C and U-NII-3 Bands

The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. when Terminal Doppler Weather Radar (TDWR) restriction applies, all channels that operate at 5.60 – 5.65 GHz must be included to apply the SAR test reduction and measurement procedures.

When the same transmitter and antenna(s) are used for U-NII-2C band and U-NII-3 band or 5.8 GHz band of §15.247, the bands may be aggregated to enable additional channels with 20, 40 or 80 MHz bandwidth to span across the band gap, as illustrated in Appendix B. The maximum output power for the additional band gap channels is limited to the lower of those certified for the bands. Unless band gap channels are permanently disabled, they must be considered for SAR testing. The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. To maintain SAR measurement accuracy and to facilitate test reduction, the channels in U-NII-2C band above 5.65 GHz may be grouped with the 5.8 GHz channels in U-NII-3 or §15.247 band to enable two SAR probe calibration frequency points to cover the bands, including the band gap channels. When band gap channels are supported and the bands are not aggregated for SAR testing, band gap channels must be considered independently in each band according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

3) OFDM Transmission Mode SAR Test Configuration and Channel Selection Requirements

The initial test configuration for 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple configurations in a frequency band have the same specified maximum output power, the initial test configuration is determined according to the following steps applied sequentially.

3.1) The largest channel bandwidth configuration is selected among the multiple configurations with the same specified maximum output power.

3.2) If multiple configurations have the same specified maximum output power and largest channel bandwidth, the lowest order modulation among the largest channel bandwidth configurations is selected.

3.3) If multiple configurations have the same specified maximum output power, largest channel bandwidth and lowest order modulation, the lowest data rate configuration among these configurations is selected.

3.4) When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n.

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. These channel selection procedures apply to both the initial test configuration and subsequent test configuration(s), with respect to the default power measurement procedures or additional power measurements required for further SAR test reduction. The same procedures also apply to subsequent highest output power channel(s) selection.

3.4.1) The channel closest to mid-band frequency is selected for SAR measurement.

3.4.2) 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.

4) SAR Test Requirements for OFDM configurations

When SAR measurement is required for 802.11 a/n/ac OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. When the same transmitter and antenna(s) are used for U-NII-1 and U-NII-2A bands, additional SAR test reduction applies. When band gap channels between U-NII-2C band and 5.8 GHz U-NII-3 or §15.247 band are supported, the highest maximum output power transmission mode configuration and maximum output power channel across the bands must be used to determine SAR test reduction, according to the initial test configuration and subsequent test configuration requirements. In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.

7.5 WIFI 2.4G Test Configurations

For WiFi SAR testing, a communication link is set up with the testing software for WiFi mode test. During the test,at the each test frequency channel, the EUT is operated at the RF continuous emission mode. The RF signal utilized in SAR measurement has 100% duty cycle and its crest factor is 1. The test procedures in KDB 248227D01 v02r02 are applied.

Per KDB 248227 D01 802.11 Wi-Fi SAR v02r02,SAR Test Reduction criteria are as follows:

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 relative SAR levels of multiple exposure test positions can be established by area scan measurements on the highest measured output power channel to determine the initial test position. The area scans must be measured using the same SAR measurement configurations, including test channel, maximum output power, probe tip to phantom distance, scan resolution etc.

When the *reported* SAR for the *initial test position* is:

1) ≤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.

2) > 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.

3) 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.

SAR is not required for the following 2.4 GHz OFDM conditions.

1) When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.

2) When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

8 SAR Test Results

8.1 Conducted Power Measurements

1.For the measurements a Rohde & Schwarz Radio Communication Tester CMU200/CMW500 was used.
2.Establish communication link between emulator and EUT and set EUT to operate at maximum output power all the time.
3.Source-based Time Averaged Burst Power Calculation:
For TDMA,the following duty cycle factor was used to calculate the Source-based Time Averaged power.

Number of Time slot	1	2	3	4
Duty cycle	1:8.3	1:4.1	1:2.77	1:2.08
Duty cycle factor	-9.19	-6.13	-4.42	-3.18

8.1.1 Conducted Power of GSM850

GSM850		Burst-Averaged output Power (dBm)			Division Factors	Source Based time Average Power(dBm)		
		128CH	190CH	251CH		128CH	190CH	251CH
GSM(CS)		34.07	34.32	34.60	-9.19	24.88	25.13	25.41
GPRS/ EDGE (GMSK)	1 Tx Slot	/	/	/	/	/	/	/
	2 Tx Slots	/	/	/	/	/	/	/
	3 Tx Slots	/	/	/	/	/	/	/
	4 Tx Slots	/	/	/	/	/	/	/
EDGE (8PSK)	1 Tx Slot	/	/	/	/	/	/	/
	2 Tx Slots	/	/	/	/	/	/	/
	3 Tx Slots	/	/	/	/	/	/	/
	4 Tx Slots	/	/	/	/	/	/	/

Note: 1) The conducted power of GSM850 is measured with RMS detector.
2) Source Based time Average Power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timeslots.
3) channel/Frequency: 128/824.2,190/836.6,251/848.8.

8.1.2 Conducted Power of GSM1900

GSM1900		Burst-Averaged output Power (dBm)			Division Factors	Source Based time Average Power(dBm)		
		512CH	661CH	810CH		512CH	661CH	810CH
GSM(CS)		31.53	30.82	30.84	-9.19	22.34	21.63	21.65
GPRS/ EDGE (GMSK)	1 Tx Slot	/	/	/	/	/	/	/
	2 Tx Slots	/	/	/	/	/	/	/
	3 Tx Slots	/	/	/	/	/	/	/
	4 Tx Slots	/	/	/	/	/	/	/
EDGE (8PSK)	1 Tx Slot	/	/	/	/	/	/	/
	2 Tx Slots	/	/	/	/	/	/	/
	3 Tx Slots	/	/	/	/	/	/	/
	4 Tx Slots	/	/	/	/	/	/	/

Note: 1) The conducted power of GSM1900 is measured with RMS detector.

2) Source Based time Average Power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timeslots.

3) channel/Frequency: 512/1850.2,661/1880,810/1909.8.

8.1.3 Conducted Power of UMTS Band II

UMTS Band II		Conducted Power (dBm)		
		9262CH	9400CH	9538CH
WCDMA	12.2kbps RMC	22.64	22.32	22.41
HSDPA	Subtest 1	22.98	21.74	22.46
	Subtest 2	21.29	20.05	20.40
	Subtest 3	21.29	19.74	20.77
	Subtest 4	19.15	17.85	18.06
HSUPA	Subtest 1	22.12	20.94	21.55
	Subtest 2	22.07	20.90	21.48
	Subtest 3	22.03	20.81	21.43
	Subtest 4	21.98	20.75	21.45
	Subtest 5	22.64	21.41	22.03

Note: channel /Frequency: 9262/1852.4,9400/1880,9538/1907.6

8.1.4 Conducted Power of UMTS Band IV

UMTS Band II		Conducted Power (dBm)		
		1312CH	1413CH	1513CH
WCDMA	12.2kbps RMC	22.90	22.95	22.75
HSDPA	Subtest 1	20.19	19.19	19.76
	Subtest 2	20.22	19.24	19.80
	Subtest 3	17.59	16.71	17.24
	Subtest 4	17.98	16.48	17.58
HSUPA	Subtest 1	20.67	20.04	20.28
	Subtest 2	21.16	20.44	20.79
	Subtest 3	21.06	20.36	20.72
	Subtest 4	21.08	20.45	20.77
	Subtest 5	21.25	20.43	20.82

Note: channel /Frequency: 1312/1712.4,1413/11732.6,1513/1752.6

8.1.5 Conducted Power of UMTS Band V

UMTS Band V		Conducted Power (dBm)		
		4132CH	4182CH	4233CH
WCDMA	12.2kbps RMC	24.63	24.39	24.27
HSDPA	Subtest 1	23.22	23.26	23.20
	Subtest 2	22.79	22.79	22.67
	Subtest 3	22.66	22.72	22.65
	Subtest 4	22.64	22.67	22.62
HSUPA	Subtest 1	21.29	21.32	21.27
	Subtest 2	21.80	21.80	21.78
	Subtest 3	21.77	21.80	21.83
	Subtest 4	21.29	21.37	21.34
	Subtest 5	23.28	23.35	23.31

Note: channel /Frequency: 4132/826.4,4182/836.4,4233/846.6

8.1.6 Conducted Power of LTE Band 2

Bandwidth	Modulation	RB size	RB offset	Channel 18607	Channel 18900	Channel 19193
1.4MHz	QPSK	1	0	23.34	22.71	22.96
		1	3	23.45	22.71	22.96
		1	5	23.35	22.72	23.71
		3	0	23.47	22.87	22.91
		3	2	23.41	22.92	22.88
		3	3	23.35	22.93	22.89
		6	0	22.52	22.00	21.96
	16QAM	1	0	22.19	19.98	21.34
		1	3	22.38	21.80	21.47
		1	5	22.37	21.78	21.30
		3	0	22.10	21.97	21.64
		3	2	22.09	22.07	21.65
		3	3	22.42	22.02	21.65
		6	0	21.70	21.06	21.18
Bandwidth	Modulation	RB size	RB offset	Channel 18615	Channel 18900	Channel 19185
3MHz	QPSK	1	0	23.43	22.75	23.00
		1	7	23.49	22.86	23.03
		1	14	23.39	22.87	23.00
		8	0	22.38	21.91	22.09
		8	4	22.40	21.79	22.13
		8	7	22.36	21.82	22.08
		15	0	22.46	21.86	22.12
	16QAM	1	0	21.85	22.00	22.21
		1	7	21.82	22.02	22.20
		1	14	21.81	22.04	22.10
		8	0	21.76	21.10	21.50
		8	4	21.76	21.04	21.46
		8	7	21.71	21.10	21.42
		15	0	21.41	21.08	21.22

Bandwidth	Modulation	RB size	RB offset	Channel 18625	Channel 18900	Channel 19175
5MHz	QPSK	1	0	23.40	22.93	23.16
		1	13	23.42	22.88	23.06
		1	24	23.38	22.80	23.07
		12	0	22.40	21.80	22.16
		12	6	22.44	21.80	22.19
		12	13	22.48	21.83	22.10
		25	0	22.49	21.78	22.03
	16QAM	1	0	22.52	21.65	21.65
		1	13	22.42	21.70	21.49
		1	24	22.26	21.61	21.57
		12	0	21.62	21.04	21.30
		12	6	21.76	21.03	21.32
		12	13	21.67	21.04	21.16
		25	0	21.39	21.13	21.43
Bandwidth	Modulation	RB size	RB offset	Channel 18650	Channel 18900	Channel 19150
10MHz	QPSK	1	0	23.38	22.85	23.16
		1	24	23.36	22.78	23.02
		1	49	23.27	22.75	22.98
		25	0	22.46	21.81	22.15
		25	12	22.49	21.83	22.11
		25	25	22.45	21.80	22.02
		50	0	22.49	21.89	22.17
	16QAM	1	0	22.41	21.68	21.90
		1	24	22.41	22.53	21.90
		1	49	22.27	22.50	21.77
		25	0	21.68	21.01	21.21
		25	12	21.68	21.03	21.20
		25	25	21.68	20.99	21.17
		50	0	21.81	21.07	21.30

Bandwidth	Modulation	RB size	RB offset	Channel 18675	Channel 18900	Channel 19125
15MHz	QPSK	1	0	22.36	22.78	23.06
		1	37	23.42	22.71	23.11
		1	74	23.33	22.71	23.12
		36	0	22.72	22.18	21.84
		36	18	22.65	22.11	21.88
		36	38	22.49	22.17	21.81
		75	0	22.49	21.87	22.19
	16QAM	1	0	22.76	22.16	21.89
		1	37	22.66	22.07	21.90
		1	74	22.49	22.13	21.81
		37	0	22.73	22.16	21.94
		37	18	22.64	22.08	21.93
		37	38	22.50	22.15	21.79
		75	0	21.69	21.27	21.35
Bandwidth	Modulation	RB size	RB offset	Channel 18700	Channel 18900	Channel 19100
20MHz	QPSK	1	0	23.31	22.91	23.01
		1	50	23.42	22.83	23.10
		1	99	23.24	22.86	23.08
		50	0	22.48	21.90	22.13
		50	25	22.54	21.92	22.13
		50	50	22.29	21.92	22.13
		100	0	22.43	21.89	22.20
	16QAM	1	0	23.07	21.98	21.66
		1	50	22.96	21.86	21.80
		1	99	22.65	21.83	21.68
		50	0	21.82	21.15	21.43
		50	25	21.82	21.17	21.44
		50	50	21.45	21.00	21.34
		100	0	21.59	21.02	21.47

8.1.7 Conducted Power of LTE Band 4

Bandwidth	Modulation	RB size	RB offset	Channel 19957	Channel 20175	Channel 20393
1.4MHz	QPSK	1	0	23.67	23.69	23.74
		1	3	23.63	23.72	23.77
		1	5	23.67	23.85	23.68
		3	0	23.82	23.85	23.65
		3	2	23.74	23.74	23.56
		3	3	23.85	23.80	23.62
		6	0	22.85	23.02	22.75
	16QAM	1	0	22.66	23.37	23.58
		1	3	22.64	22.58	23.69
		1	5	22.63	22.69	23.59
		3	0	22.79	22.91	22.70
		3	2	22.79	22.91	22.68
		3	3	22.78	22.93	22.75
		6	0	22.09	22.14	21.95
Bandwidth	Modulation	RB size	RB offset	Channel 19965	Channel 20175	Channel 20385
3MHz	QPSK	1	0	22.74	23.60	23.61
		1	7	23.71	23.64	23.60
		1	14	23.74	23.63	23.61
		8	0	22.94	22.66	22.78
		8	4	22.87	22.75	22.80
		8	7	22.88	22.73	22.73
		15	0	22.89	22.69	22.75
	16QAM	1	0	22.79	23.25	22.59
		1	7	22.79	23.36	22.52
		1	14	22.78	23.34	22.59
		8	0	22.25	22.00	22.25
		8	4	22.24	22.02	22.09
		8	7	22.57	22.06	22.00
		15	0	21.91	21.97	21.85

Bandwidth	Modulation	RB size	RB offset	Channel 19975	Channel 20175	Channel 20375
5MHz	QPSK	1	0	23.95	23.69	24.16
		1	13	23.79	23.90	23.98
		1	24	23.79	23.93	24.01
		12	0	22.97	22.64	22.92
		12	6	22.97	22.68	22.93
		12	13	22.85	22.81	22.80
		25	0	22.89	22.73	22.87
	16QAM	1	0	22.66	22.54	22.29
		1	13	22.66	22.68	22.30
		1	24	22.54	22.61	22.09
		12	0	21.99	21.86	21.97
		12	6	22.06	21.82	21.98
		12	13	22.24	21.94	21.88
		25	0	22.21	21.94	22.03
Bandwidth	Modulation	RB size	RB offset	Channel 20000	Channel 20175	Channel 20350
10MHz	QPSK	1	0	23.78	23.67	23.80
		1	25	23.74	23.76	23.78
		1	49	23.62	23.84	23.74
		25	0	22.78	22.63	22.86
		25	13	22.89	22.64	22.88
		25	25	22.80	22.82	22.75
		50	0	22.77	22.80	22.80
	16QAM	1	0	22.29	22.49	22.63
		1	25	22.19	22.58	22.63
		1	49	21.99	22.64	22.51
		25	0	22.42	21.95	21.97
		25	13	22.39	21.98	21.93
		25	25	21.90	22.07	21.95
		50	0	22.32	21.99	22.10

Bandwidth	Modulation	RB size	RB offset	Channel 20025	Channel 20175	Channel 20325
15MHz	QPSK	1	0	23.02	23.69	23.92
		1	37	23.65	23.71	23.90
		1	74	23.60	23.95	23.86
		36	0	23.05	22.47	22.68
		36	18	22.84	22.62	22.78
		36	38	22.77	22.81	22.62
		75	0	22.66	22.75	22.99
	16QAM	1	0	23.10	22.51	22.65
		1	37	22.88	22.63	22.86
		1	74	22.85	22.81	22.67
		37	0	23.09	22.46	22.65
		37	18	22.86	22.64	22.74
		37	38	22.81	22.78	22.66
		75	0	21.84	21.95	22.23
Bandwidth	Modulation	RB size	RB offset	Channel 20050	Channel 20175	Channel 20300
20MHz	QPSK	1	0	23.75	23.47	23.85
		1	50	23.53	23.58	24.02
		1	99	23.55	23.89	23.90
		50	0	22.77	22.71	22.84
		50	25	22.81	22.72	22.89
		50	50	22.58	22.89	22.96
		100	0	22.65	22.81	22.89
	16QAM	1	0	23.17	22.66	21.87
		1	50	23.01	22.81	22.15
		1	99	23.01	23.00	22.03
		50	0	22.23	22.30	22.11
		50	25	22.22	22.31	22.10
		50	50	22.16	22.50	22.15
		100	0	21.93	21.95	22.11

8.1.8 Conducted Power of LTE Band 5

Bandwidth	Modulation	RB size	RB offset	Channel 20407	Channel 20525	Channel 20643
1.4MHz	QPSK	1	0	22.90	22.01	22.33
		1	3	22.97	22.97	22.38
		1	5	23.05	22.08	22.40
		3	0	23.03	22.05	22.36
		3	2	23.06	22.06	22.36
		3	3	23.10	22.04	22.31
		6	0	22.99	22.06	22.11
	16QAM	1	0	22.43	22.48	22.10
		1	3	22.51	22.52	22.06
		1	5	22.55	22.54	22.12
		3	0	22.76	22.78	22.22
		3	2	22.74	22.83	22.18
		3	3	22.81	22.89	22.23
		6	0	22.98	22.33	23.35
Bandwidth	Modulation	RB size	RB offset	Channel 20415	Channel 20525	Channel 20635
3MHz	QPSK	1	0	23.12	22.87	22.55
		1	7	23.28	22.21	22.36
		1	14	23.51	22.23	22.34
		8	0	22.12	22.06	22.48
		8	4	22.10	22.06	22.42
		8	7	22.22	22.13	22.19
		15	0	22.25	22.14	22.26
	16QAM	1	0	22.84	22.41	22.45
		1	7	22.01	22.66	22.15
		1	14	22.13	22.70	22.17
		7	0	22.17	22.17	23.58
		7	4	22.21	22.07	23.60
		7	7	22.39	22.34	23.27
		15	0	22.94	22.24	23.26

Bandwidth	Modulation	RB size	RB offset	Channel 20425	Channel 20525	Channel 20625
5MHz	QPSK	1	0	23.22	22.91	22.09
		1	13	23.60	22.40	22.66
		1	24	22.13	22.59	22.45
		12	0	22.30	22.08	22.82
		12	6	22.31	22.99	22.73
		12	13	22.80	22.46	22.33
		25	0	22.44	22.24	22.56
	16QAM	1	0	22.88	22.66	22.44
		1	13	22.17	22.03	22.03
		1	24	22.83	22.22	23.71
		12	0	22.29	22.04	23.28
		12	6	22.27	23.96	23.17
		12	13	22.72	22.41	23.19
		25	0	22.43	22.29	23.16
Bandwidth	Modulation	RB size	RB offset	Channel 20450	Channel 20525	Channel 20600
10MHz	QPSK	1	0	23.12	22.23	22.39
		1	25	22.24	22.25	22.85
		1	49	22.54	22.42	22.43
		25	0	22.62	22.73	22.15
		25	12	22.61	22.63	22.14
		25	25	23.96	22.37	22.55
		50	0	23.28	22.15	22.94
	16QAM	1	0	22.46	23.15	22.07
		1	25	22.51	22.06	22.57
		1	49	23.89	22.21	23.18
		25	0	22.69	23.16	22.18
		25	12	22.71	23.17	22.19
		25	25	23.08	22.46	23.11
		50	0	22.28	22.12	23.08

8.1.9 Conducted Power of LTE Band 7

Bandwidth	Modulation	RB size	RB offset	Channel 20775	Channel 21100	Channel 21425
5MHz	QPSK	1	0	21.88	22.15	21.35
		1	13	21.91	22.70	21.87
		1	24	21.85	21.31	22.40
		12	0	22.82	22.34	21.46
		12	6	22.83	22.34	21.46
		12	13	22.82	22.09	21.98
		25	0	22.81	22.65	21.64
	16QAM	1	0	22.15	21.82	20.98
		1	13	22.21	22.50	21.50
		1	24	22.10	22.02	21.01
		12	0	22.08	21.42	20.47
		12	6	22.05	21.42	20.50
		12	13	22.40	22.04	21.10
		25	0	22.06	21.63	20.88
Bandwidth	Modulation	RB size	RB offset	Channel 20800	Channel 21100	Channel 21400
10MHz	QPSK	1	0	21.94	22.49	21.93
		1	25	21.82	22.67	21.15
		1	49	21.12	21.70	22.10
		25	0	22.97	22.21	21.01
		25	13	22.84	22.08	21.00
		25	25	22.46	22.31	21.81
		50	0	22.69	22.77	21.41
	16QAM	1	0	22.32	21.69	20.80
		1	25	22.19	22.87	20.91
		1	49	22.50	22.97	21.94
		25	0	22.99	21.26	20.13
		25	13	22.06	21.27	20.12
		25	25	22.63	22.51	20.84
		50	0	22.72	21.97	20.62

Bandwidth	Modulation	RB size	RB offset	Channel 20825	Channel 21100	Channel 21375
15MHz	QPSK	1	0	21.09	22.06	21.91
		1	37	21.52	22.69	21.93
		1	74	22.88	21.06	22.18
		36	0	21.21	21.28	21.79
		36	18	22.66	22.09	20.86
		36	38	22.06	21.35	21.02
		75	0	22.24	22.78	21.43
	16QAM	1	0	21.24	21.38	21.76
		1	37	22.67	22.08	20.85
		1	74	22.11	21.34	21.98
		37	0	21.16	21.27	21.77
		37	18	22.67	22.09	20.89
		37	38	22.09	21.35	21.00
		75	0	22.36	21.97	20.59
Bandwidth	Modulation	RB size	RB offset	Channel 20850	Channel 21100	Channel 21350
20MHz	QPSK	1	0	21.10	21.60	22.06
		1	50	21.07	22.75	21.18
		1	99	22.04	21.08	22.30
		50	0	22.70	21.65	21.16
		50	25	22.50	21.67	21.20
		50	50	21.69	22.75	21.38
		100	0	22.71	22.17	21.87
	16QAM	1	0	21.37	21.56	22.16
		1	50	22.38	22.27	20.81
		1	99	21.37	21.26	21.73
		50	0	22.55	21.43	21.52
		50	25	22.57	21.53	21.48
		50	50	21.54	22.46	20.58
		100	0	21.82	21.83	20.87

8.1.10 Conducted Power of LTE Band 12

Bandwidth	Modulation	RB size	RB offset	Channel 23025	Channel 23095	Channel 23165
3MHz	QPSK	1	0	22.23	22.65	22.11
		1	7	22.90	22.05	22.65
		1	14	22.70	22.35	22.89
		8	0	21.89	21.68	22.16
		8	4	21.88	21.74	22.28
		8	7	21.59	21.95	22.65
		15	0	21.69	21.84	22.41
	16QAM	1	0	21.74	22.07	22.55
		1	7	21.35	22.37	22.55
		1	14	21.11	22.65	22.34
		8	0	21.97	21.77	22.47
		8	4	21.90	21.75	22.46
		8	7	21.32	21.16	22.38
		15	0	21.44	21.04	22.36
Bandwidth	Modulation	RB size	RB offset	Channel 23035	Channel 23095	Channel 23155
5MHz	QPSK	1	0	22.23	22.67	22.56
		1	13	22.14	22.03	22.50
		1	24	22.15	22.17	22.09
		12	0	21.95	21.63	22.43
		12	6	21.94	21.71	22.42
		12	13	21.47	22.17	22.64
		25	0	21.59	22.00	22.25
	16QAM	1	0	21.78	21.12	22.44
		1	13	21.22	21.51	22.27
		1	24	21.23	22.30	22.41
		12	0	21.84	21.58	22.27
		12	6	21.83	21.49	22.25
		12	13	21.97	21.39	22.05
		25	0	22.00	21.05	22.17

Bandwidth	Modulation	RB size	RB offset	Channel 23060	Channel 23095	Channel 23130
10MHz	QPSK	1	0	22.14	22.30	22.67
		1	25	22.55	22.16	22.04
		1	49	22.31	22.35	22.72
		25	0	21.44	21.59	22.43
		25	13	21.50	21.63	22.42
		25	25	21.70	22.17	22.07
		50	0	21.53	22.13	22.44
	16QAM	1	0	21.38	21.36	21.26
		1	25	21.84	21.93	22.71
		1	49	21.56	22.55	22.40
		25	0	21.20	21.60	21.24
		25	13	21.20	21.43	21.32
		25	25	21.58	21.72	22.60
		50	0	21.61	21.17	22.36

8.1.11 Conducted Power of LTE Band 13

Bandwidth	Modulation	RB size	RB offset	Channel 23205	Channel 23230	Channel 23255
5MHz	QPSK	1	0	22.01	22.09	22.57
		1	13	22.19	22.48	22.18
		1	24	22.63	22.11	22.28
		12	0	22.63	22.78	22.15
		12	6	22.52	22.69	22.13
		12	13	22.73	22.15	22.05
		25	0	22.26	22.46	21.96
	16QAM	1	0	22.33	22.79	22.03
		1	13	22.53	22.04	21.80
		1	24	21.95	21.70	21.78
		12	0	22.52	21.61	21.16
		12	6	22.46	21.61	21.18
		12	13	21.72	21.22	21.23
		25	0	22.27	21.33	21.09
Bandwidth	Modulation	RB size	RB offset	Channel /	Channel 23230	Channel /
10MHz	QPSK	1	0	/	22.89	/
		1	25	/	22.46	/
		1	49	/	22.23	/
		25	0	/	22.12	/
		25	13	/	22.14	/
		25	25	/	22.04	/
		50	0	/	22.67	/
	16QAM	1	0	/	22.22	/
		1	25	/	21.81	/
		1	49	/	21.43	/
		25	0	/	22.17	/
		25	13	/	22.18	/
		25	25	/	21.16	/
		50	0	/	21.70	/

8.1.12 Conducted Power of LTE Band 17

Bandwidth	Modulation	RB size	RB offset	Channel 23755	Channel 23790	Channel 23825
5MHz	QPSK	1	0	22.77	22.44	22.61
		1	13	22.10	22.14	22.55
		1	24	22.57	22.86	22.10
		12	0	22.62	22.34	22.97
		12	6	22.62	22.38	22.86
		12	13	22.98	22.37	22.80
		25	0	22.85	22.87	22.31
	16QAM	1	0	22.69	22.40	22.09
		1	13	22.02	22.28	22.01
		1	24	22.53	22.17	22.15
		12	0	22.35	22.33	22.20
		12	6	22.45	22.38	22.52
		12	13	22.12	22.14	22.11
		25	0	22.70	22.15	22.54
Bandwidth	Modulation	RB size	RB offset	Channel 23780	Channel 23790	Channel 23800
10MHz	QPSK	1	0	22.65	22.59	22.01
		1	25	22.58	22.74	22.31
		1	49	22.32	22.46	22.97
		25	0	22.48	22.19	22.45
		25	13	22.57	22.18	22.40
		25	25	22.49	22.83	22.23
		50	0	22.63	22.18	22.55
	16QAM	1	0	22.97	22.16	22.25
		1	25	22.77	22.37	22.73
		1	49	22.61	22.11	22.41
		25	0	22.78	22.09	22.49
		25	13	22.78	22.08	22.48
		25	25	22.30	22.62	22.74
		50	0	22.68	22.15	22.47

8.1.13 Conducted Power of LTE Band 25

Bandwidth	Modulation	RB size	RB offset	Channel 26047	Channel 26365	Channel 26683
1.4MHz	QPSK	1	0	23.31	22.76	22.91
		1	3	23.29	22.65	22.91
		1	5	23.28	22.67	22.86
		3	0	23.33	22.79	22.84
		3	2	23.32	22.83	22.81
		3	3	23.23	22.83	22.86
		6	0	22.38	21.84	21.99
	16QAM	1	0	22.92	21.74	21.32
		1	3	22.94	21.77	21.36
		1	5	22.89	21.84	21.31
		3	0	22.18	21.94	21.70
		3	2	22.13	21.99	22.18
		3	3	22.11	21.98	21.62
		6	0	21.71	21.10	21.03
Bandwidth	Modulation	RB size	RB offset	Channel 26055	Channel 26365	Channel 26675
3MHz	QPSK	1	0	23.29	22.67	22.83
		1	7	23.22	22.67	22.84
		1	14	23.30	22.65	22.73
		8	0	22.37	21.62	21.98
		8	4	22.40	21.65	22.00
		8	7	22.30	21.73	21.89
		15	0	22.26	21.70	21.96
	16QAM	1	0	21.62	22.26	21.99
		1	7	21.67	22.24	21.57
		1	14	21.60	22.19	21.56
		8	0	21.56	21.18	21.37
		8	4	21.60	21.14	21.37
		8	7	21.82	20.94	21.27
		15	0	21.28	20.89	21.25

Bandwidth	Modulation	RB size	RB offset	Channel 26065	Channel 26365	Channel 26665
5MHz	QPSK	1	0	22.31	22.84	22.97
		1	13	23.33	22.88	22.98
		1	24	23.33	22.80	22.84
		12	0	22.36	21.76	22.02
		12	6	22.40	21.67	21.94
		12	13	22.28	21.65	21.83
		25	0	22.37	21.76	21.83
	16QAM	1	0	22.10	21.59	21.36
		1	13	22.12	21.60	21.42
		1	24	22.08	21.59	21.35
		12	0	21.44	21.16	21.27
		12	6	21.46	21.20	21.33
		12	13	21.55	20.91	21.19
		25	0	21.47	21.07	21.35
Bandwidth	Modulation	RB size	RB offset	Channel 26090	Channel 26365	Channel 26640
10MHz	QPSK	1	0	22.30	22.58	23.00
		1	25	23.32	22.57	22.87
		1	49	23.22	22.59	22.74
		25	0	22.30	21.74	21.91
		25	13	22.22	21.78	22.00
		25	25	22.34	21.75	21.96
		50	0	22.29	21.82	21.89
	16QAM	1	0	21.66	21.93	21.73
		1	25	21.66	21.99	21.66
		1	49	21.64	21.99	21.51
		25	0	21.66	21.31	21.16
		25	13	21.69	21.17	21.14
		25	25	21.64	20.96	21.15
		50	0	21.43	21.01	21.09

Bandwidth	Modulation	RB size	RB offset	Channel 26115	Channel 26365	Channel 26615
15MHz	QPSK	1	0	22.94	22.72	23.01
		1	37	22.89	22.54	22.94
		1	74	22.72	22.68	22.79
		36	0	22.17	21.99	21.82
		36	18	22.12	21.95	21.69
		36	38	21.98	22.04	21.57
		75	0	22.35	21.74	22.08
	16QAM	1	0	22.13	22.01	21.85
		1	37	22.15	21.95	21.74
		1	74	22.44	21.68	21.58
		37	0	22.13	22.03	21.91
		37	18	22.15	21.98	21.75
		37	38	21.93	22.07	21.60
		75	0	21.61	20.91	21.16
Bandwidth	Modulation	RB size	RB offset	Channel 26140	Channel 26365	Channel 26590
20MHz	QPSK	1	0	23.18	22.80	22.86
		1	50	23.14	22.74	22.98
		1	99	22.82	22.83	22.84
		50	0	22.34	21.75	22.15
		50	25	22.38	21.86	22.14
		50	50	22.07	21.85	22.08
		100	0	22.13	21.84	22.13
	16QAM	1	0	22.62	21.78	21.62
		1	50	22.66	21.70	21.66
		1	99	22.34	21.83	21.54
		50	0	21.48	21.21	21.29
		50	25	21.49	21.23	21.26
		50	50	21.30	21.11	21.18
		100	0	21.45	20.96	21.44

8.1.14 Conducted Power of LTE Band 26

Bandwidth	Modulation	RB size	RB offset	Channel 26785	Channel 26909	Channel 27033
1.4MHz	QPSK	1	0	22.18	22.40	22.42
		1	3	22.30	22.50	22.28
		1	5	22.26	22.57	22.32
		3	0	22.22	22.38	22.45
		3	2	22.26	22.40	22.49
		3	3	22.27	22.52	22.44
		6	0	22.22	22.36	21.37
	16QAM	1	0	22.34	22.09	21.84
		1	3	22.34	22.15	21.79
		1	5	22.34	22.22	21.73
		3	0	21.74	22.22	21.05
		3	2	21.80	22.33	21.04
		3	3	21.82	22.43	22.97
		6	0	21.74	22.03	22.81
Bandwidth	Modulation	RB size	RB offset	Channel 26793	Channel 26909	Channel 27025
3MHz	QPSK	1	0	22.34	22.04	22.68
		1	7	22.45	22.34	22.52
		1	14	22.59	22.55	22.35
		8	0	22.22	22.24	21.51
		8	4	22.23	22.23	21.45
		8	7	22.41	22.45	21.44
		15	0	22.28	22.41	21.44
	16QAM	1	0	21.98	22.59	21.47
		1	7	22.04	22.87	21.33
		1	14	22.18	22.11	21.20
		8	0	21.86	21.90	21.24
		8	4	21.86	21.91	21.25
		8	7	21.96	22.13	21.19
		15	0	21.58	21.95	22.90

Bandwidth	Modulation	RB size	RB offset	Channel 26803	Channel 26909	Channel 27015
5MHz	QPSK	1	0	22.46	22.04	22.17
		1	13	22.66	22.59	22.79
		1	24	21.08	22.82	22.51
		12	0	22.40	22.24	21.86
		12	6	22.34	22.10	21.91
		12	13	22.65	22.64	21.60
		25	0	22.48	22.40	21.69
	16QAM	1	0	22.00	21.78	21.47
		1	13	22.24	22.27	21.07
		1	24	22.67	22.51	22.77
		12	0	21.75	21.60	21.33
		12	6	21.76	21.57	21.26
		12	13	22.06	22.14	22.91
		25	0	21.76	21.90	21.25
Bandwidth	Modulation	RB size	RB offset	Channel 26828	Channel 26909	Channel 26990
10MHz	QPSK	1	0	21.69	22.37	22.69
		1	25	21.04	22.57	22.07
		1	49	22.40	22.80	22.39
		25	0	22.46	21.84	22.45
		25	13	22.45	21.75	22.32
		25	25	22.74	22.60	21.68
		50	0	22.18	22.34	22.11
	16QAM	1	0	22.09	22.98	22.10
		1	25	22.92	22.27	22.54
		1	49	21.28	22.45	21.87
		25	0	22.10	21.38	21.82
		25	13	22.10	21.38	21.87
		25	25	22.30	22.25	21.18
		50	0	22.62	21.68	21.56

Bandwidth	Modulation	RB size	RB offset	Channel 26853	Channel 26909	Channel 26965
15MHz	QPSK	1	0	22.41	21.61	22.29
		1	37	22.01	22.53	22.64
		1	74	22.66	22.48	22.58
		36	0	22.35	22.59	21.97
		36	18	22.99	22.49	22.35
		36	38	22.73	22.45	21.25
		75	0	22.90	21.97	22.22
	16QAM	1	0	22.37	22.26	21.98
		1	37	22.97	22.57	22.37
		1	74	22.65	22.47	21.23
		37	0	22.37	22.59	21.95
		37	18	22.99	22.51	22.31
		37	38	22.71	22.43	21.18
		75	0	22.42	21.49	21.73

8.1.15 Conducted Power of LTE Band 41

Bandwidth	Modulation	RB size	RB offset	Channel 39675	Channel 40620	Channel 41565
5MHz	QPSK	1	0	22.25	21.62	21.95
		1	13	22.02	21.39	21.13
		1	24	22.00	21.37	21.59
		12	0	21.64	21.46	21.11
		12	6	21.67	21.48	21.03
		12	13	21.97	21.47	21.05
		25	0	21.73	21.27	22.08
	16QAM	1	0	21.14	21.40	21.27
		1	13	22.03	21.55	21.23
		1	24	22.36	21.92	21.59
		12	0	21.73	22.57	22.21
		12	6	21.73	22.58	22.22
		12	13	21.06	22.41	22.18
		25	0	21.69	22.48	21.97
Bandwidth	Modulation	RB size	RB offset	Channel 39700	Channel 40620	Channel 41540
10MHz	QPSK	1	0	22.20	22.48	21.59
		1	25	22.51	21.12	21.71
		1	49	22.25	22.07	22.92
		25	0	22.14	21.88	21.86
		25	13	22.19	21.84	21.86
		25	25	22.37	22.53	21.48
		50	0	22.26	21.28	21.17
	16QAM	1	0	22.25	21.99	21.77
		1	25	22.17	21.33	21.88
		1	49	22.78	22.32	21.92
		25	0	21.33	21.00	21.92
		25	13	21.25	21.11	21.91
		25	25	21.55	21.77	21.53
		50	0	21.35	22.41	21.26

Bandwidth	Modulation	RB size	RB offset	Channel 39725	Channel 40620	Channel 41515
15MHz	QPSK	1	0	22.64	22.03	21.02
		1	37	22.31	21.17	21.50
		1	74	22.05	22.72	22.56
		36	0	21.97	22.17	21.96
		36	18	22.43	21.51	21.68
		36	38	21.46	22.04	21.78
		75	0	21.96	21.34	21.20
	16QAM	1	0	21.55	22.15	22.09
		1	37	22.50	21.28	21.68
		1	74	21.43	21.78	21.77
		37	0	21.99	22.44	22.06
		37	18	22.52	21.60	21.67
		37	38	21.02	21.96	21.78
		75	0	21.02	22.51	21.29
Bandwidth	Modulation	RB size	RB offset	Channel 39750	Channel 40620	Channel 41490
20MHz	QPSK	1	0	22.87	22.32	21.73
		1	50	22.16	21.06	21.79
		1	99	21.37	22.47	22.71
		50	0	22.27	21.36	22.29
		50	25	22.23	21.53	22.43
		50	50	21.29	22.14	21.18
		100	0	21.82	21.54	21.74
	16QAM	1	0	22.71	22.42	21.43
		1	50	22.16	21.05	21.53
		1	99	21.25	21.48	22.33
		50	0	21.46	21.76	21.58
		50	25	21.48	21.77	21.66
		50	50	21.40	21.42	21.34
		100	0	21.90	22.55	21.92

8.1.16 Conducted Power of LTE Band 66

Bandwidth	Modulation	RB size	RB offset	Channel 131979	Channel 132322	Channel 132665
1.4MHz	QPSK	1	0	23.56	23.70	23.52
		1	3	23.49	23.60	23.48
		1	5	23.57	23.67	23.48
		3	0	23.62	23.73	23.48
		3	2	23.69	23.71	23.47
		3	3	23.66	23.70	23.40
		6	0	22.70	22.81	22.56
	16QAM	1	0	22.99	22.40	21.93
		1	3	22.95	22.34	21.95
		1	5	22.80	22.32	21.92
		3	0	22.29	22.44	22.21
		3	2	22.25	22.44	22.19
		3	3	22.22	22.45	22.23
		6	0	21.99	22.13	21.62
Bandwidth	Modulation	RB size	RB offset	Channel 131987	Channel 132322	Channel 132657
3MHz	QPSK	1	0	23.60	23.67	23.40
		1	7	23.65	23.69	23.48
		1	14	23.67	23.65	23.40
		8	0	22.71	22.75	22.50
		8	4	22.62	22.78	22.52
		8	7	22.69	22.76	22.59
		15	0	22.62	22.73	22.55
	16QAM	1	0	22.58	23.05	22.67
		1	7	22.58	23.10	22.63
		1	14	22.57	23.02	22.62
		8	0	22.21	22.28	22.09
		8	4	22.20	22.29	22.13
		8	7	22.19	22.26	22.06
		15	0	21.83	22.28	21.83

Bandwidth	Modulation	RB size	RB offset	Channel 131997	Channel 132322	Channel 132647
5MHz	QPSK	1	0	23.71	23.90	23.56
		1	13	23.72	23.81	23.63
		1	24	23.63	23.81	23.57
		12	0	22.77	22.74	22.56
		12	6	22.65	22.78	22.47
		12	13	22.60	22.76	22.54
		25	0	22.73	22.78	22.45
	16QAM	1	0	22.42	22.57	21.99
		1	13	22.46	22.66	21.98
		1	24	22.45	22.63	22.03
		12	0	22.01	22.20	21.81
		12	6	21.91	22.07	21.83
		12	13	21.92	22.10	21.86
		25	0	21.90	22.20	21.94
Bandwidth	Modulation	RB size	RB offset	Channel 132022	Channel 132322	Channel 132622
10MHz	QPSK	1	0	23.64	23.70	23.42
		1	25	23.60	23.63	23.52
		1	49	23.64	23.71	23.53
		25	0	22.64	22.73	22.53
		25	13	22.74	22.78	22.41
		25	25	22.65	22.75	22.46
		50	0	22.70	22.69	22.59
	16QAM	1	0	22.09	23.05	21.83
		1	25	22.06	23.07	21.92
		1	49	22.01	23.04	21.85
		25	0	22.04	22.15	21.83
		25	13	22.03	22.17	21.88
		25	25	22.04	22.11	21.95
		50	0	21.98	22.17	21.92

Bandwidth	Modulation	RB size	RB offset	Channel 132047	Channel 132322	Channel 132597
15MHz	QPSK	1	0	23.72	23.62	23.40
		1	37	23.69	23.64	23.35
		1	74	23.59	23.67	23.45
		36	0	22.87	23.10	22.20
		36	18	22.86	23.08	22.20
		36	38	22.84	22.99	22.25
		75	0	22.68	22.78	22.28
	16QAM	1	0	22.92	23.05	22.16
		1	37	22.90	23.05	22.15
		1	74	22.90	23.05	22.27
		37	0	22.90	23.02	22.15
		37	18	22.87	23.08	22.13
		37	38	22.87	23.06	22.21
		75	0	22.05	22.10	21.90
Bandwidth	Modulation	RB size	RB offset	Channel 132072	Channel 132322	Channel 132572
20MHz	QPSK	1	0	23.04	23.66	23.39
		1	50	23.46	23.76	23.38
		1	99	23.48	23.67	23.30
		50	0	22.67	22.84	22.49
		50	25	22.69	22.84	22.43
		50	50	22.66	22.78	22.43
		100	0	22.69	22.77	22.47
	16QAM	1	0	23.06	22.80	22.10
		1	50	22.96	22.96	22.04
		1	99	23.05	22.88	22.09
		50	0	21.97	22.20	21.80
		50	25	21.96	22.20	21.91
		50	50	22.02	22.21	21.85
		100	0	22.01	21.98	21.75

8.1.17 Conducted Power of WiFi 2.4G

The output power of WiFi 2.4G is as following:

Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power(dBm)	SAR Test (Yes/No)
802.11b	1	2412	1	10.50	**9.73**	Yes
	6	2437		10.50	9.68	Yes
	11	2462		10.50	9.32	Yes
802.11g	1	2412	6	10.00	9.17	No
	6	2437		10.00	9.51	No
	11	2462		10.00	9.19	No
802.11n (HT20)	1	2412	6.5	9.50	9.47	No
	6	2437		9.50	9.47	No
	11	2462		9.50	9.49	No
802.11n (HT40)	3	2422	13.5	10.00	9.63	No
	6	2437		10.00	9.60	No
	9	2452		10.00	9.40	No

Note: 1) channel /Frequency: 1/2412, 3/2422, 6/2437, 9/2452, 11/2462.

8.2 SAR test results

Notes:

1) Per KDB447498 D01v06, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is: ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz. When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel must be used.

2) Per KDB447498 D01v06, All measurement SAR result is scaled-up to account for tune-up tolerance is compliant.

3) Per KDB865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/Kg; if the deviation among the repeated measurement is ≤ 20%, and the measured SAR <1.45W/Kg, only one repeated measurement is required.

4) Per KDB865664 D02v01r02, SAR plot is only required for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination; Plots are also required when the measured SAR is > 1.5 W/kg, or > 7.0 W/kg for occupational exposure. The same procedures should be adapted for measurements according to extremity exposure limits by applying a factor of 2.5 for extremity exposure.The published RF exposure KDB procedures may require additional plots; for example, to support SAR to peak location separation ratio test exclusion and/or volume scan post-processing (Refer to appendix B for details).

5) Per KDB941225 D06, the DUT Dimension is bigger than 9 cm x 5 cm, so 10mm is chosen as the test separation distance for Hotspot mode. When the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.

6) Per KDB648474 D04, SAR is evaluated without a headset connected to the device. When the standalone reported body-worn SAR is ≤1.2 W/kg, no additional SAR evaluations using a headset are required.

8.2.1 Results overview of GSM850

Test position of Hotspot with 10mm	Test channel /Frequency	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
Front Side	190/836.6	GSM	0.009	0.007	0.070	34.32	35.500	0.012	20.51°C
Back Side	190/836.6	GSM	**0.013**	0.008	0.560	34.32	35.500	**0.017**	20.51°C
Left Side	190/836.6	GSM	0.003	0.002	-0.040	34.32	35.500	0.003	20.51°C
Right Side	190/836.6	GSM	0.005	0.002	0.000	34.32	35.500	0.006	20.51°C
Top Side	190/836.6	GSM	0.011	0.008	-0.890	34.32	35.500	0.014	20.51°C
Back Side	128/824.2	GSM	0.004	0.003	0.000	34.07	35.500	0.006	20.51°C
Back Side	251/848.8	GSM	0.006	0.005	-0.150	34.60	35.500	0.007	20.51°C

Note: Per KDB 648474 D04, product specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2W/kg.

8.2.2 Results overview of GSM1900

Test position of Hotspot with 10mm	Test channel /Frequency	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
Front Side	661/1880	GSM	0.542	0.335	1.940	30.820	32.000	0.711	20.25°C
Back Side	661/1880	GSM	0.902	0.538	-1.420	30.820	32.000	**1.184**	20.25°C
Left Side	661/1880	GSM	0.357	0.206	0.540	30.820	32.000	0.468	20.25°C
Right Side	661/1880	GSM	0.099	0.063	-0.650	30.820	32.000	0.130	20.25°C
Top Side	661/1880	GSM	0.201	0.118	-0.070	30.820	32.000	0.264	20.25°C
Back Side	512/1850.2	GSM	0.847	0.517	0.610	31.530	32.000	0.944	20.25°C
Back Side	810/1909.8	GSM	0.698	0.416	0.040	30.820	32.000	0.916	20.25°C

Test position of Hotspot with 10mm	Test channel /Frequency	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
SAR1-g >0.8 (W/kg) Repeated									
Back Side	661/1880	GSM	0.896	0.531	-0.360	30.820	32.000	**1.176**	20.25°C
Back Side	512/1850.2	GSM	1.050	0.624	0.050	31.530	32.000	1.170	20.25°C

Note: Per KDB 648474 D04, product specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2W/kg.

8.2.3 Results overview of UMTS Band II

Test position of Hotspot with 10mm	Test channel /Frequency	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
Front Side	9400/1880	RMC	0.675	0.403	0.600	22.32	23.000	0.789	20.59°C
Back Side	9400/1880	RMC	1.080	0.626	0.240	22.32	23.000	**1.263**	20.59°C
Left Side	9400/1880	RMC	0.398	0.220	0.380	22.32	23.000	0.465	20.59°C
Right Side	9400/1880	RMC	0.118	0.072	0.290	22.32	23.000	0.138	20.59°C
Top Side	9400/1880	RMC	0.188	0.111	-0.080	22.32	23.000	0.220	20.59°C
Back Side	9262/1852.4	RMC	1.090	0.630	1.420	22.64	23.000	1.184	20.59°C
Back Side	9538/1907.6	RMC	0.765	0.440	0.000	22.41	23.000	0.876	20.59°C

Test position of Hotspot with 10mm	Test channel /Frequency	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
SAR1-g >0.8 (W/kg) Repeated									
Back Side	9400/1880	RMC	1.050	0.606	0.380	22.32	23.000	1.228	20.59°C
Back Side	9262/1852.4	RMC	1.130	0.651	0.180	22.64	23.000	**1.228**	20.59°C

Note: Per KDB 648474 D04, product specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2W/kg.

8.2.4 Results overview of UMTS Band IV

Test position of Hotspot with 10mm	Test channel /Frequency	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
Front Side	1413/1732.6	RMC	0.840	0.509	-0.520	22.95	23.000	0.850	20.96°C
Back Side	1413/1732.6	RMC	1.130	0.663	0.200	22.95	23.000	1.143	20.96°C
Left Side	1413/1732.6	RMC	0.447	0.251	0.100	22.95	23.000	0.452	20.96°C
Right Side	1413/1732.6	RMC	0.140	0.082	0.240	22.95	23.000	0.142	20.96°C
Top Side	1413/1732.6	RMC	0.206	0.114	-0.010	22.95	23.000	0.208	20.96°C
Back Side	1312/1712.4	RMC	1.140	0.656	0.030	22.90	23.000	1.167	20.96°C
Back Side	1513/1752.6	RMC	1.290	0.753	-0.050	22.75	23.000	**1.366**	20.96°C

Test position of Hotspot with 10mm	Test channel /Frequency	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
SAR1-g >0.8 (W/kg) Repeated									
Front Side	1413/1732.6	RMC	0.842	0.510	0.190	22.95	23.000	0.852	20.96°C
Back Side	1413/1732.6	RMC	1.140	0.666	-0.090	22.95	23.000	1.153	20.96°C
Back Side	1312/1712.4	RMC	1.140	0.656	0.090	22.90	23.000	1.167	20.96°C
Back Side	1513/1752.6	RMC	1.290	0.754	0.090	22.75	23.000	**1.366**	20.96°C

Note: Per KDB 648474 D04, product specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2W/kg.

8.2.5 Results overview of UMTS Band V

Test position of Hotspot with 10mm	Test channel /Frequency	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
Front Side	4182/836.4	RMC	0.130	0.079	-0.170	24.390	25.000	0.150	20.81°C
Back Side	4182/836.4	RMC	0.140	0.079	-0.050	24.390	25.000	0.161	20.81°C
Left Side	4182/836.4	RMC	0.018	0.012	-0.180	24.390	25.000	0.021	20.81°C
Right Side	4182/836.4	RMC	0.019	0.013	0.080	24.390	25.000	0.022	20.81°C
Top Side	4182/836.4	RMC	0.085	0.047	-0.170	24.390	25.000	0.098	20.81°C
Back Side	4132/826.4	RMC	0.111	0.062	0.500	24.630	25.000	0.121	20.81°C
Back Side	4233/846.6	RMC	0.157	0.088	0.010	24.270	25.000	**0.186**	20.81°C

Note: Per KDB 648474 D04, product specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2W/kg.

8.2.6 Results overview of LTE Band 2

Test position of Hotspot with 10mm	Test channel /Freq. (MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
Front Side	18900/1880	20M QPSK 1RB#50	0.513	0.309	0.630	22.830	23.500	0.599	20.25°C
Back Side	18900/1880	20M QPSK 1RB#50	0.885	0.514	0.020	22.830	23.500	1.033	20.25°C
Left Side	18900/1880	20M QPSK 1RB#50	0.488	0.271	0.340	22.830	23.500	0.569	20.25°C
Right Side	18900/1880	20M QPSK 1RB#50	0.138	0.084	1.300	22.830	23.500	0.161	20.25°C
Top Side	18900/1880	20M QPSK 1RB#50	0.263	0.149	0.040	22.830	23.500	0.307	20.25°C
Front Side	18900/1880	20M QPSK 50%RB#50	0.645	0.387	0.210	21.920	23.500	0.928	20.25°C
Back Side	18900/1880	20M QPSK 50%RB#50	0.717	0.415	0.060	21.920	23.500	1.032	20.25°C
Left Side	18900/1880	20M QPSK 50%RB#50	0.393	0.217	0.260	21.920	23.500	0.565	20.25°C
Right Side	18900/1880	20M QPSK 50%RB#50	0.109	0.066	-0.110	21.920	23.500	0.157	20.25°C
Top Side	18900/1880	20M QPSK 50%RB#50	0.214	0.119	-0.060	21.920	23.500	0.308	20.25°C
Back Side	18700/1860	20M QPSK 1RB#50	**1.070**	0.621	0.210	23.420	23.500	**1.090**	20.25°C
Back Side	19100/1900	20M QPSK 1RB#50	0.760	0.441	0.330	23.100	23.500	0.833	20.25°C

Test position of Hotspot with 10mm	Test channel /Frequency	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
SAR1-g >0.8 (W/kg) Repeated									
Back Side	18900/1880	20M QPSK 1RB#50	0.896	0.518	0.130	22.830	23.500	1.045	20.96°C
Back Side	18700/1860	20M QPSK 1RB#50	1.090	0.635	0.170	23.420	23.500	**1.110**	20.96°C

Note: Per KDB 648474 D04, product specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2W/kg.

8.2.7 Results overview of LTE Band 4

Test position of Hotspot with 10mm	Test channel /Freq. (MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
Front Side	20175/1732.5	20M QPSK 1RB#50	0.913	0.572	0.630	23.580	24.500	1.128	20.96°C
Back Side	20175/1732.5	20M QPSK 1RB#50	1.040	0.621	0.660	23.580	24.500	1.285	20.96°C
Left Side	20175/1732.5	20M QPSK 1RB#50	0.444	0.251	-1.360	23.580	24.500	0.549	20.96°C
Right Side	20175/1732.5	20M QPSK 1RB#50	0.083	0.057	0.890	23.580	24.500	0.103	20.28°C
Top Side	20175/1732.5	20M QPSK 1RB#50	0.265	0.163	-0.060	23.580	24.500	0.328	20.28°C
Front Side	20175/1732.5	20M QPSK 50%RB#25	0.773	0.476	-1.070	22.720	24.500	1.165	20.28°C
Back Side	20175/1732.5	20M QPSK 50%RB#25	0.861	0.511	-0.070	22.720	24.500	**1.297**	20.28°C
Left Side	20175/1732.5	20M QPSK 50%RB#25	0.484	0.274	0.260	22.720	24.500	0.729	20.28°C
Right Side	20175/1732.5	20M QPSK 50%RB#25	0.064	0.042	0.240	22.720	24.500	0.097	20.28°C
Top Side	20175/1732.5	20M QPSK 50%RB#25	0.219	0.135	-0.170	22.720	24.500	0.330	20.28°C
Back Side	20050/1720	20M QPSK 1RB#50	1.010	0.613	-0.260	23.530	24.500	1.263	20.28°C
Back Side	20300/1745	20M QPSK 1RB#50	1.010	0.609	0.350	24.020	24.500	1.128	20.28°C

Test position of Hotspot with10mm	Test channel /Frequency	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
SAR1-g >0.8 (W/kg) Repeated									
Front Side	20175/1732.5	20M QPSK 1RB#50	0.929	0.576	0.080	23.580	24.500	1.148	20.96°C
Back Side	20175/1732.5	20M QPSK 1RB#50	1.060	0.634	-0.030	23.580	24.500	**1.310**	20.96°C
Back Side	20175/1732.5	20M QPSK 50%RB#25	0.786	0.473	0.210	22.720	24.500	1.184	20.28°C

Back Side	20050/1720	20M QPSK 1RB#50	1.040	0.618	-0.010	23.530	24.500	1.300	20.28°C
Back Side	20300/1745	20M QPSK 1RB#50	0.998	0.603	0.020	24.020	24.500	1.115	20.28°C

Note: Per KDB 648474 D04, product specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2W/kg.

8.2.8 Results overview of LTE Band 5

Test position of Hotspot with 10mm	Test channel /Freq. (MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
Front Side	20525/836.5	10M QPSK 1RB#25	0.087	0.053	-0.090	22.250	24.000	0.130	20.48°C
Back Side	20525/836.5	10M QPSK 1RB#25	0.133	0.073	-0.110	22.250	24.000	0.199	20.48°C
Left Side	20525/836.5	10M QPSK 1RB#25	0.033	0.010	-0.120	22.250	24.000	0.049	20.48°C
Right Side	20525/836.5	10M QPSK 1RB#25	0.040	0.020	0.510	22.250	24.000	0.060	20.48°C
Top Side	20525/836.5	10M QPSK 1RB#25	0.095	0.050	-0.160	22.250	24.000	0.142	20.48°C
Front Side	20525/836.5	10M QPSK 25%RB#25	0.091	0.056	0.050	22.370	24.000	0.133	20.48°C
Back Side	20525/836.5	10M QPSK 25%RB#25	0.139	0.076	-0.210	22.370	24.000	0.202	20.48°C
Left Side	20525/836.5	10M QPSK 25%RB#25	0.033	0.010	0.410	22.370	24.000	0.047	20.48°C
Right Side	20525/836.5	10M QPSK 25%RB#25	0.025	0.017	-0.370	22.370	24.000	0.036	20.48°C
Top Side	20525/836.5	10M QPSK 25%RB#25	0.098	0.052	-0.180	22.370	24.000	0.142	20.48°C
Back Side	20450/829	10M QPSK 25%RB#25	0.174	0.086	0.000	23.960	24.000	0.176	20.48°C
Back Side	20600/844	10M QPSK 25%RB#25	0.153	0.085	0.220	22.550	24.000	**0.214**	20.48°C

Note: Per KDB 648474 D04, product specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2W/kg.

8.2.9 Results overview of LTE Band 7

Test position of Hotspot with 10mm	Test channel /Freq. (MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
Front Side	21100/2535	20M QPSK 1RB#50	0.306	0.110	1.540	22.750	23.000	0.324	20.66°C
Back Side	21100/2535	20M QPSK 1RB#50	0.490	0.237	0.010	22.750	23.000	0.519	20.66°C
Left Side	21100/2535	20M QPSK 1RB#50	0.191	0.106	0.810	22.750	23.000	0.202	20.66°C
Right Side	21100/2535	20M QPSK 1RB#50	0.031	0.019	0.000	22.750	23.000	0.033	20.66°C
Top Side	21100/2535	20M QPSK 1RB#50	0.417	0.201	0.140	22.750	23.000	0.442	20.66°C
Front Side	21100/2535	20M QPSK 50%RB#25	0.444	0.219	-0.560	21.670	23.000	0.603	20.66°C
Back Side	21100/2535	20M QPSK 50%RB#25	0.619	0.297	0.700	21.670	23.000	**0.841**	20.66°C
Left Side	21100/2535	20M QPSK 50%RB#25	0.150	0.084	0.090	21.670	23.000	0.204	20.66°C
Right Side	21100/2535	20M QPSK 50%RB#25	0.025	0.016	0.000	21.670	23.000	0.034	20.66°C
Top Side	21100/2535	20M QPSK 50%RB#25	0.555	0.264	-0.160	21.670	23.000	0.754	20.66°C
Back Side	20850/2510	20M QPSK 50%RB#25	0.385	0.192	1.170	22.500	23.000	0.432	20.66°C
Back Side	21350/2560	20M QPSK 50%RB#25	0.418	0.200	-1.770	21.200	23.000	0.633	20.66°C

Note: Per KDB 648474 D04, product specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2W/kg.

8.2.10 Results overview of LTE Band 12

Test position of Hotspot with 10mm	Test channel /Freq. (MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
Front Side	23095/707.5	10M QPSK 1RB#25	**0.002**	0.001	-1.470	22.160	23.000	0.003	20.53°C
Back Side	23095/707.5	10M QPSK 1RB#25	0.002	0.001	1.330	22.160	23.000	0.002	20.53°C
Left Side	23095/707.5	10M QPSK 1RB#25	0.004	0.003	0.050	22.160	23.000	0.004	20.53°C
Right Side	23095/707.5	10M QPSK 1RB#25	0.002	0.002	-0.180	22.160	23.000	0.003	20.53°C
Top Side	23095/707.5	10M QPSK 1RB#25	0.002	0.001	1.060	22.160	23.000	0.003	20.53°C
Front Side	23095/707.5	10M QPSK 25%RB#25	0.026	0.018	0.100	22.170	23.000	**0.032**	20.53°C
Back Side	23095/707.5	10M QPSK 25%RB#25	0.026	0.012	0.240	22.170	23.000	0.032	20.53°C
Left Side	23095/707.5	10M QPSK 25%RB#25	0.022	0.016	0.090	22.170	23.000	0.027	20.53°C
Right Side	23095/707.5	10M QPSK 25%RB#25	0.013	0.009	0.040	22.170	23.000	0.015	20.53°C
Top Side	23095/707.5	10M QPSK 25%RB#25	0.016	0.007	-0.450	22.170	23.000	0.019	20.53°C
Front Side	23060/704	10M QPSK 25%RB#25	0.016	0.006	0.840	21.700	23.000	0.021	20.53°C
Front Side	23130/711	10M QPSK 25%RB#25	0.022	0.010	0.430	22.070	23.000	0.027	20.53°C

Note: Per KDB 648474 D04, product specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2W/kg.

8.2.11 Results overview of LTE Band 13

Test position of Hotspot with 10mm	Test channel /Freq. (MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
Front Side	23230/782	10M QPSK 1RB#25	0.063	0.035	0.520	22.460	22.500	0.063	20.88°C
Back Side	23230/782	10M QPSK 1RB#25	0.115	0.059	0.000	22.460	22.500	**0.116**	20.88°C
Left Side	23230/782	10M QPSK 1RB#25	0.028	0.019	0.340	22.460	22.500	0.028	20.45°C
Right Side	23230/782	10M QPSK 1RB#25	0.025	0.018	-0.010	22.460	22.500	0.026	20.45°C
Top Side	23230/782	10M QPSK 1RB#25	0.052	0.027	-0.050	22.460	22.500	0.053	20.45°C
Front Side	23230/782	10M QPSK 25%RB#25	0.027	0.012	0.000	22.040	22.500	0.030	20.45°C
Back Side	23230/782	10M QPSK 25%RB#25	0.080	0.041	0.620	22.040	22.500	0.088	20.45°C
Left Side	23230/782	10M QPSK 25%RB#25	0.023	0.016	0.050	22.040	22.500	0.025	20.45°C
Right Side	23230/782	10M QPSK 25%RB#25	0.020	0.014	-0.360	22.040	22.500	0.022	20.45°C
Top Side	23230/782	10M QPSK 25%RB#25	0.039	0.020	-0.370	22.040	22.500	0.044	20.45°C

Note: Per KDB 648474 D04, product specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2W/kg.

8.2.12 Results overview of LTE Band 17

Test position of Hotspot with 10mm	Test channel /Freq. (MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
Front Side	23790/710	10M QPSK 1RB#25	0.040	0.028	0.240	22.740	23.000	0.042	20.53°C
Back Side	23790/710	10M QPSK 1RB#25	0.036	0.016	1.100	22.740	23.000	0.038	20.53°C
Left Side	23790/710	10M QPSK 1RB#25	0.027	0.019	-0.220	22.740	23.000	0.029	20.53°C
Right Side	23790/710	10M QPSK 1RB#25	0.019	0.013	0.220	22.740	23.000	0.020	20.63°C
Top Side	23790/710	10M QPSK 1RB#25	0.022	0.010	0.010	22.740	23.000	0.023	20.63°C
Front Side	23790/710	10M QPSK 25%RB#25	0.037	0.026	0.020	22.180	23.000	**0.045**	20.63°C
Back Side	23790/710	10M QPSK 25%RB#25	0.025	0.011	-0.030	22.180	23.000	0.030	20.63°C
Left Side	23790/710	10M QPSK 25%RB#25	0.036	0.025	0.010	22.180	23.000	0.043	20.63°C
Right Side	23790/710	10M QPSK 25%RB#25	0.018	0.013	-0.170	22.180	23.000	0.022	20.63°C
Top Side	23790/710	10M QPSK 25%RB#25	0.019	0.008	-0.740	22.180	23.000	0.023	20.63°C
Front Side	23780/709	10M QPSK 1RB#25	0.034	0.024	0.550	22.580	23.000	0.038	20.63°C
Front Side	23800/711	10M QPSK 1RB#25	0.033	0.023	-0.140	22.310	23.000	0.039	20.63°C

Note: Per KDB 648474 D04, product specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2W/kg.

8.2.13 Results overview of LTE Band 25

Test position of Hotspot with 10mm	Test channel /Freq. (MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
Front Side	26365/1882.5	20M QPSK 1RB#50	0.648	0.395	0.870	22.740	23.000	0.688	20.51°C
Back Side	26365/1882.5	20M QPSK 1RB#50	0.924	0.535	0.280	22.740	23.000	0.981	20.51°C
Left Side	26365/1882.5	20M QPSK 1RB#50	0.339	0.187	0.110	22.740	23.000	0.360	20.51°C
Right Side	26365/1882.5	20M QPSK 1RB#50	0.142	0.085	-0.100	22.740	23.000	0.151	20.51°C
Top Side	26365/1882.5	20M QPSK 1RB#50	0.307	0.166	-0.070	22.740	23.000	0.326	20.51°C
Front Side	26365/1882.5	20M QPSK 50%RB#25	0.529	0.318	0.490	21.860	23.000	0.688	20.51°C
Back Side	26365/1882.5	20M QPSK 50%RB#25	0.708	0.409	-0.110	21.860	23.000	0.921	20.51°C
Left Side	26365/1882.5	20M QPSK 50%RB#25	0.346	0.190	-0.120	21.860	23.000	0.450	20.51°C
Right Side	26365/1882.5	20M QPSK 50%RB#25	0.113	0.067	1.180	21.860	23.000	0.147	20.51°C
Top Side	26365/1882.5	20M QPSK 50%RB#25	0.393	0.213	-0.080	21.860	23.000	0.511	20.51°C
Back Side	26140/1860	20M QPSK 1RB#50	1.110	0.640	0.620	23.140	23.000	**1.075**	20.51°C
Back Side	26590/1905	20M QPSK 1RB#50	0.752	0.425	0.740	22.980	23.000	0.755	20.51°C

Test position of Hotspot with 10mm	Test channel /Freq. (MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
SAR1-g >0.8 (W/kg) Repeated									
Back Side	26365/1882.5	20M QPSK 1RB#50	0.898	0.522	0.200	22.74	23.000	0.953	20.51°C
Back Side	26140/1860	20M QPSK 1RB#50	1.100	0.637	0.180	23.14	23.000	**1.065**	20.51°C

Note: Per KDB 648474 D04, product specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2W/kg.

8.2.14 Results overview of LTE Band 26

Test position of Hotspot with 10mm	Test channel /Freq. (MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
Front Side	26909/835.9	15M QPSK 1RB#38	0.111	0.067	-0.090	22.530	23.000	0.124	20.45°C
Back Side	26909/835.9	15M QPSK 1RB#38	0.159	0.086	0.210	22.530	23.000	**0.177**	20.45°C
Left Side	26909/835.9	15M QPSK 1RB#38	0.032	0.010	-0.010	22.530	23.000	0.035	20.45°C
Right Side	26909/835.9	15M QPSK 1RB#38	0.024	0.017	-0.050	22.530	23.000	0.027	20.45°C
Top Side	26909/835.9	15M QPSK 1RB#38	0.073	0.041	0.050	22.530	23.000	0.081	20.45°C
Front Side	26909/835.9	15M QPSK 36%RB#39	0.093	0.056	-0.380	22.450	23.000	0.105	20.45°C
Back Side	26909/835.9	15M QPSK 36%RB#39	0.131	0.071	-0.160	22.450	23.000	0.149	20.45°C
Left Side	26909/835.9	15M QPSK 36%RB#39	0.016	0.004	0.360	22.450	23.000	0.018	20.45°C
Right Side	26909/835.9	15M QPSK 36%RB#39	0.009	0.007	-0.010	22.450	23.000	0.011	20.45°C
Top Side	26909/835.9	15M QPSK 36%RB#39	0.034	0.020	-0.030	22.450	23.000	0.039	20.45°C
Back Side	26853/830.3	15M QPSK 1RB#38	0.125	0.070	0.390	22.010	23.000	0.157	20.45°C
Back Side	26965/841.5	15M QPSK 1RB#38	0.150	0.084	-0.050	22.640	23.000	0.163	20.45°C

Note: Per KDB 648474 D04, product specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2W/kg.

8.2.15 Results overview of LTE Band 41

Test position of Hotspot with 10mm	Test channel /Freq. (MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
Front Side	40620/2593	20M QPSK 1RB#50	0.087	0.046	0.140	21.06	22.500	0.122	20.66°C
Back Side	40620/2593	20M QPSK 1RB#50	0.123	0.060	-0.780	21.06	22.500	0.171	20.66°C
Left Side	40620/2593	20M QPSK 1RB#50	0.028	0.017	0.910	21.06	22.500	0.039	20.66°C
Right Side	40620/2593	20M QPSK 1RB#50	0.014	0.010	0.000	21.06	22.500	0.019	20.66°C
Top Side	40620/2593	20M QPSK 1RB#50	0.167	0.083	0.470	21.06	22.500	0.233	20.66°C
Front Side	40620/2593	20M QPSK 50%RB#25	0.091	0.047	0.300	21.53	22.500	0.114	20.66°C
Back Side	40620/2593	20M QPSK 50%RB#25	0.102	0.051	-0.240	21.53	22.500	0.128	20.66°C
Left Side	40620/2593	20M QPSK 50%RB#25	0.022	0.015	0.450	21.53	22.500	0.027	20.66°C
Right Side	40620/2593	20M QPSK 50%RB#25	0.014	0.010	1.490	21.53	22.500	0.017	20.66°C
Top Side	40620/2593	20M QPSK 50%RB#25	0.152	0.077	0.000	21.53	22.500	0.190	20.66°C
Top Side	39750/2506	20M QPSK 50%RB#25	**0.225**	0.113	0.660	22.16	22.500	**0.243**	20.66°C
Top Side	40340/2565	20M QPSK 50%RB#25	0.216	0.108	0.360	22.16	22.500	0.234	20.66°C
Top Side	40880/2619	20M QPSK 50%RB#25	0.094	0.049	0.070	21.79	22.500	0.111	20.66°C
Top Side	41490/2680	20M QPSK 50%RB#25	0.065	0.035	0.000	21.79	22.500	0.077	20.66°C

Note: Per KDB 648474 D04, product specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2W/kg.

8.2.16 Results overview of LTE Band 66

Test position of Hotspot with 10mm	Test channel /Freq. (MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
Front Side	132322/1745	20M QPSK 1RB#50	0.844	0.503	0.870	23.76	24.000	0.892	20.52°C
Back Side	132322/1745	20M QPSK 1RB#50	1.040	0.605	-0.590	23.76	24.000	1.099	20.52°C
Left Side	132322/1745	20M QPSK 1RB#50	0.348	0.198	0.240	23.76	24.000	0.368	20.52°C
Right Side	132322/1745	20M QPSK 1RB#50	0.078	0.046	0.300	23.76	24.000	0.082	20.52°C
Top Side	132322/1745	20M QPSK 1RB#50	0.381	0.209	-0.350	23.76	24.000	0.403	20.52°C
Front Side	132322/1745	20M QPSK 50%RB#25	0.726	0.432	-0.010	22.84	24.000	0.948	20.52°C
Back Side	132322/1745	20M QPSK 50%RB#25	0.797	0.463	-0.030	22.84	24.000	1.041	20.52°C
Left Side	132322/1745	20M QPSK 50%RB#25	0.273	0.155	-0.280	22.84	24.000	0.357	20.52°C
Right Side	132322/1745	20M QPSK 50%RB#25	0.060	0.036	0.860	22.84	24.000	0.079	20.52°C
Top Side	132322/1745	20M QPSK 50%RB#25	0.294	0.161	0.030	22.84	24.000	0.384	20.52°C
Back Side	132072/1720	20M QPSK 1RB#50	0.986	0.570	0.170	23.46	24.000	1.117	20.52°C
Back Side	132572/1770	20M QPSK 1RB#50	1.150	0.673	0.400	23.38	24.000	**1.326**	20.52°C

Test position of Hotspot with 10mm	Test channel /Freq. (MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR1-g(W/kg)	Liquid Temp.
			1-g	10-g					
SAR1-g >0.8 (W/kg) Repeated									
Front Side	132322/1745	20M QPSK 1RB#50	0.765	0.467	-0.060	23.76	24.000	0.808	20.52°C
Back Side	132322/1745	20M QPSK 1RB#50	1.030	0.602	-0.090	23.76	24.000	1.089	20.52°C
Back Side	132072/1720	20M QPSK 1RB#50	1.080	0.629	0.520	23.46	24.000	1.223	20.52°C
Back Side	132572/1770	20M QPSK 1RB#50	1.070	0.628	0.270	23.38	24.000	**1.234**	20.52°C

Note: Per KDB 648474 D04, product specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2W/kg.

8.2.17 Results overview of WiFi 2.4G

Test position of Hotspot with 10mm	Test channel /Freq. (MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up power (dBm)	Scaled SAR_{1-g} (W/kg)	Actual Duty Cycle	Reported SAR 1-g (W/kg)
			1-g	10-g						
Front Side	1/2412	802.11b	0.070	0.035	-1.720	9.73	10.50	0.083	99.88%	0.083
Back Side	1/2412	802.11b	**0.088**	0.043	0.890	9.73	10.50	0.105	99.88%	**0.105**
Left Side	1/2412	802.11b	0.021	0.012	-0.770	9.73	10.50	0.025	99.88%	0.025
Right Side	1/2412	802.11b	0.084	0.042	0.260	9.73	10.50	0.100	99.88%	0.100
Top Side	1/2412	802.11b	0.029	0.014	0.270	9.73	10.50	0.035	99.88%	0.035
Back Side	6/2437	802.11b	0.057	0.029	0.980	9.68	10.50	0.069	99.76%	0.069
Back Side	11/2462	802.11b	0.072	0.034	1.300	9.32	10.50	0.094	99.88%	0.094

Note: Per KDB248227D01:

1) SAR is measured for 2.4 GHz 802.11b DSSS using initial test position procedure.

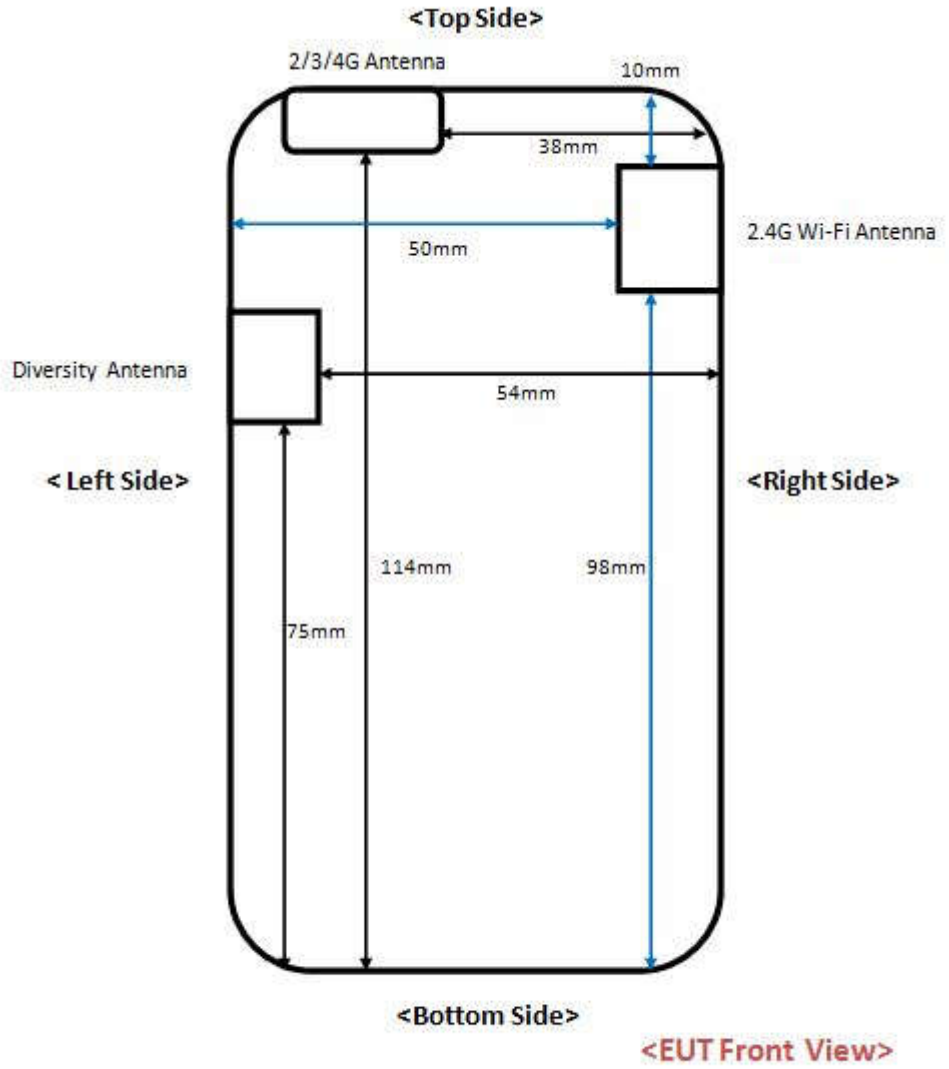
2) When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤1.2 W/kg, 802.11g/n OFDM SAR Test is not required.

3) Per KDB 648474 D04, product specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2W/kg.

4) Scaled SAR = SAR Value * $10^{(0.1*(\text{Tune up Power-Conducted Power}))}$
Reported SAR = SAR Value * $10^{(0.1*(\text{Tune up Power-Conducted Power}))}$/ Duty factor * 100

8.3 Multiple Transmitter Information

The location of the antennas inside SKM0138 is shown as below picture:



Note:

1) Per KDB 941225 D06, particular DUT edges were not required to be evaluated for Hotspot SAR if the antenna-to-edge distance is greater than 2.5cm.

8.4 Simultaneous Transmission Possibilities

The Simultaneous Transmission Possibilities of this device are as below:

Simultaneous Tx Combination	Configuration	Head	Body-worn	Hotspot	product specific 10-g SAR
1	UMTS + WiFi 2.4G	N/A	N/A	Yes	Yes
2	UMTS + WiFi 2.4G	N/A	N/A	Yes	Yes
3	LTE + WiFi 2.4G	N/A	N/A	Yes	Yes

8.5 SAR Summation Scenario

Test Position		2G/3G/4G Antenna SARmax																WiFi Antenna SARmax	∑1-g SAR1-g	SPLSP
		GSM 850	GSM 1900	UMTS Band II	UMTS Band IV	UMTS Band V	LTE Band 2	LTE Band 4	LTE Band 5	LTE Band 7	LTE Band 12	LTE Band 13	LTE Band 17	LTE Band 25	LTE Band 26	LTE Band 41	LTE Band 66	WiFi 2.4G		
Hotspot 10mm	Front Side	0.012	0.711	0.789	0.850	0.150	0.928	**1.165**	0.133	0.603	0.032	0.063	0.045	0.688	0.124	0.122	0.948	0.083	1.248	NO
	Back Side	0.017	1.184	1.263	**1.366**	0.186	1.110	1.310	0.214	0.841	0.032	0.116	0.038	1.075	0.177	0.171	1.326	0.105	**1.471**	NO
	Left Side	0.003	0.468	0.465	0.452	0.021	0.569	**0.729**	0.049	0.204	0.027	0.028	0.043	0.450	0.035	0.039	0.368	0.025	0.754	NO
	Right Side	0.006	0.130	0.138	0.142	0.022	**0.161**	0.103	0.060	0.034	0.015	0.026	0.022	0.147	0.027	0.019	0.082	0.100	0.261	NO
	Top Side	0.014	0.264	0.220	0.208	0.098	0.308	0.330	0.142	**0.754**	0.019	0.053	0.023	0.511	0.081	0.243	0.403	0.035	0.789	NO

Note: Simultaneous Tx Combination of 2G/3G/4G antenna and WiFi 2.4G.

8.6 Simultaneous Transmission Conlcusion

The above numeral summed SAR results is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore simultaneous transmission SAR with Volume Scans is not required per KDB 447498 D01v06.

Annex A: Appendix A: SAR System performance Check Plots

(Please See Appendix A)

Annex B: Appendix B: SAR Measurement results Plots

(Please See Appendix B)

Annex C: Appendix C: Calibration reports

(Please See Appendix C)

Annex D: Appendix D: Photo documentation

(Please See Appendix D)

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*** End of Report ***