Prüfbericht-Nr.: *Test report no.:*	CN23MVS1 (FCC-SAR) 001	**Auftrags-Nr.:** *Order no.*:	48218163	Seite 1 von 45 *Page 1 of 45*
Kunden-Referenz-Nr.: *Client reference no.:*	N/A	**Auftragsdatum:** *Order date:*	2023-07-12	
Auftraggeber: *Client:*	Wistron Corporation 21F., No. 88, Sec. 1, HsinTai 5th Rd., Hsichih Dist, New Taipei City 221, Taiwan			
Prüfgegenstand: *Test item:*	R5			
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	LVR5			
Auftrags-Inhalt: *Order content*:	Test Report for FCC SAR			
Prüfgrundlage: *Test specification:*	FCC 47 CFR §2.1093 IEEE Std 1528-2013 IEC/IEEE 62209-1528:2020 Published RF exposure KDB procedures			

Wareneingangsdatum: *Date of sample receipt:*	2023-05-05
Prüfmuster-Nr.: *Test sample no:*	A003468922-007 ~ 009 A003468922-012
Prüfzeitraum: *Testing period:*	2023-05-11 - 2023-06-05
Ort der Prüfung: *Place of testing:*	EMC/RF Taipei Testing Site
Prüflaboratorium: *Testing laboratory:*	Taipei Testing Laboratories
Prüfergebnis*: *Test result*:*	Pass

überprüft von: *compiled by:*	Morrison Huang Morrison Huang Project Engineer	**genehmigt von:** authorized by:	Brenda Chen Brenda Chen Senior Project Manager
Datum: *Date:* 2023-07-27		**Ausstellungsdatum:** *Issue date:* 2023-07-27	
Stellung / *Position:*		**Stellung** / *Position:*	

Sonstiges / *Other:*

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt
Condition of the test item at delivery: *Test item complete and undamaged*

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
** Legend:*	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

CONTENTS

HISTORY OF THIS TEST REPORT

Report No.	Description	Date Issued
CN23MVS1 (FCC-SAR) 001	Original Release	2023-07-27

1. General Information

1.1 Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for the EUT are as follows:

Equipment Class	Operating Mode	Highest Head SAR_{1g} (10 mm Gap) (W/kg)	Highest Reported Body SAR_{1g} (0 mm Gap) (W/kg)	Highest Reported Extremity SAR_{10g} (0 mm Gap) (W/kg)
PCB	LTE 2	1.357	0.287	2.062
	LTE 5	0.911	0.197	1.517
	LTE 12	0.551	0.145	1.056
	LTE 13	0.675	0.123	0.943
	LTE 66	1.376	0.407	2.990
DSS	Bluetooth	0.011	0.056	0.027
Highest Simultaneous Transmission SAR		Head (W/Kg)	Body (W/Kg)	Extremity (W/Kg)
PCB + DSS		1.387	0.452	3.015

Note:

1. The maximum results of Specific Absorption Rate (SAR) found during testing for the EUT are as follows: This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6W/kg as averaged over any 1 gram of tissue; 10-gram SAR for Product Specific 10g SAR, limit: 4.0W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.
2. According to TCB workshop October, 2014 RF Exposure Procedures Update (Overlapping LTE Bands): SAR for LTE Band 4 (Frequency range: 1710 – 1755 MHz) is covered by LTE Band 66 (Frequency range: 1710 – 1780 MHz) due to similar frequency range, the same maximum tune up limit and same channel bandwidth.

1.2 Equipment Under Test (EUT) Information

1.2.1 General Information

EUT Type	R5
Model Name	LVR5
FCC ID	PU5-LVR5
Antenna Type	Coupling Feed
Antenna Gain:	LTE Band 2: 2.24 dBi LTE Band 4: 0.46 dBi LTE Band 5: -3.30 dBi LTE Band 12: -4.11 dBi LTE Band 13: -3.20 dBi LTE Band 66: 0.70 dBi
EUT Stage	Identical Prototype

1.2.2 Wireless Technologies

Tx Frequency Bands (Unit: MHz)	LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 66: 1710.7 MHz ~1779.3 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Uplink Modulations	LTE: QPSK, 16QAM Bluetooth: GFSK

1.3 Maximum Conducted Power

The maximum conducted average power (Unit: dBm) including tune-up tolerance is shown as below.

Mode	LTE 2	LTE 4	LTE 5
QPSK / 16QAM	23.0	23.0	24.0

Mode	LTE 12	LTE 13	LTE 66
QPSK / 16QAM	24.0	24.0	23.0

Mode	2.4G Bluetooth
LE	4.0

2. Test Sites

2.1 Test Laboratory

Taipei Testing Laboratories

11F., No. 758, Sec. 4, Bade Rd., Songshan Dist., Taipei City 105 Taiwan (R.O.C.)

2.2 Test Facilities

Taipei Testing Laboratories

No. 458-18, Sec. 2, Fenliao Rd., Linkou Dist., New Taipei City 244 Taiwan (R.O.C.)

The tests at the test sites have been conducted under the supervision of a TÜV engineer.

2.3 List of Test and Measurement Instruments

Equipment	Manufacturer	Model	SN	Cal. Date	Cal. Interval
E-field probes	SPEAG	EX3DV4	7400	2023/4/28	1 Year
E-field probes	SPEAG	EX3DV4	3975	2022/7/21	1 Year
Data Acquisition Electronics	SPEAG	DAE4	855	2023/4/25	1 Year
System Validation Dipole	SPEAG	D750V3	1199	2023/3/21	1 Year
System Validation Dipole	SPEAG	D835V2	4d058	2023/3/21	1 Year
System Validation Dipole	SPEAG	D1800V2	2d156	2023/3/14	1 Year
System Validation Dipole	SPEAG	D1900V2	5d090	2023/3/23	1 Year
System Validation Dipole	SPEAG	D2450V2	804	2023/3/21	1 Year
ENA	Agilent	E5080A	MY55200677	2023/1/7	1 Year
Power Meter	Anritsu	ML2495A	1901008	2023/3/17	1 Year
Power Sensor	Anritsu	MA2411B	1725269	2023/3/17	1 Year
Power Sensor	R&S	NRP33S	101622	2023/3/21	1 Year
Signal Analyzer	R&S	FSV40	101512	2023/2/23	1 Year
Signal Generator	R&S	SMB100A03	181334	2023/2/22	1 Year
Wireless Tester	Anritsu	MT8821C	6262044753	2022/7/7	1 Year
Wireless Tester	Anritsu	MT8000A	6262036825	2023/4/21	1 Year
Wireless Tester	R&S	CMW500	166978	2023/4/20	1 Year
Digital Thermometer	Testo	608-H1	45197159	2022/11/25	1 Year
Directional coupler	Fairview Microwave	FMCP1025-20	A000553136-001	N/A	N/A
Dielectric Assessment Kit	SPEAG	DAK-3.5	1292	N/A	N/A
Twin Sam Phantom	SPEAG	QD000P40CC	TP-1467	N/A	N/A
ELI Phantom	SPEAG	QDOVA002AA	1153	N/A	N/A
mmWave Phantom	SPEAG	QD015025C	1001 and higher	N/A	N/A
Power Amplifier	EMCI	EMC2830P	980352	N/A	N/A
Power Amplifier	mini-circuits	ZHL-42W	SN002101809	N/A	N/A

3. Measurement Uncertainty

The component of uncertainly may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainly by the statistical analysis of a series of observations is termed a Type An evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor(a)	1/k(b)	1/ √ 3	1/ √ 6	1/ √ 2

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity
(b) κ is the coverage factor

Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

SAR Uncertainty Budget According to IEC/IEEE 62209-1528 (Frequency band: 4MHz - 10GHz range)								
Symbol	Input quantity *Xi* (source of uncertainty)	Unc. Value	Prob. Dist.	Div.	ci (1g)	ci (10g)	Std.Unc. (1g) (±%)	Std.Unc. (10g) (±%)
Measurement system errors								
CF	Probe calibration (±%)	18.6	N	2	1	1	9.3	9.3
***CF*drift**	Probe calibration drift (±%)	1.0	N	1	1	1	0.6	0.6
LIN	Probe linearity and detection limit (±%)	4.7	R	1.732	1	1	2.7	2.7
BBS	Broadband signal (±%)	3.0	N	1	1	1	1.7	1.7
ISO	Probe isotropy (±%)	7.6	R	2	1	1	4.4	4.4
DAE	Other probe and data acquisition errors (±%)	0.3	N	1.732	1	1	0.2	0.2
AMB	RF ambient and noise (±%)	1.8	N	1	1	1	1.8	1.8
∆xyz	Probe positioning errors (±mm)	0.20	N	1	0.33	0.33	0.07	0.07
DAT	Data processing errors (±%)	3.5	N	1	1	1	3.5	3.5
Phantom and device (DUT or validation antenna) errors								
***LIQ*(σ)**	Conductivity (meas.) DAK (±%)	2.5	N	1	0.78	0.71	2.0	1.8
***LIQ*(Tc)**	Conductivity (temp.) (±%)	5	R	1.732	0.78	0.71	2.3	2.0
EPS	Phantom Permittivity (±%)	14	R	1.732	0.5	0.5	4.0	4.0
DIS	Distance DUT – TSL (±%)	2	N	1	2	2	4.0	4.0
Dxyz	Device Positioning (±%)	2	N	1	1	1	2.0	2.0
H	Device Holder (±%)	3.4	N	1	1	1	3.4	3.4
MOD	DUT Modulationm (±%)	2.4	R	1.732	1	1	1.4	1.4
TAS	Time-average SAR (±%)	2.4	R	1.732	1	1	1.4	1.4
***RF*drift**	DUT drift (±%)	5	N	1	1	1	5.0	5.0
VAL	Val Antenna Unc. (±%)	0	N	1	1	1	0.0	0.0
***P*in**	Unc. Input Power (±%)	0	N	1	1	1	0.0	0.0
Corrections to the SAR result								
***C*(ε',σ)**	Deviation to Target (±%)	1.9	N	1	1	0.84	1.9	1.6
***C*(*R*)**	SAR scaling (±%)	0	R	√3	1	1	0.0	0.0
***u*(∆*SAR*)**	Combined uncertainty						14.9	14.8
	Coverage Factor for 95%						K=2	K=2
U	Expanded uncertainty					*U* =	±29.7	±29.6

Uncertainty budget for frequency range 4 MHz to 10 GHz

Per KDB865664 D01 SAR Measurement 100 MHz to 6 GHz, 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.

4. Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR §2.1093, IEEE STD 1528-2013, the following FCC Published RF exposure KDB procedures & manufacturer KDB inquiries:

- KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- KDB 865664 D02 RF Exposure Reporting v01r02
- KDB 447498 D01 General RF Exposure Guidance v07
- KDB 648474 D04 Handset SAR v01r03
- KDB 941225 D05 SAR for LTE Devices v02r05

In addition to the above, the following information was used:

- TCB workshop October, 2014; Page 36, RF Exposure Procedures Update (Overlapping LTE Bands)

5. RF Exposure Limits

5.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

5.2 Controlled Environment

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). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1 gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is average over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

6. SAR Measurement System

6.1 Definition of Specific Absorption Rate (SAR)

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

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

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

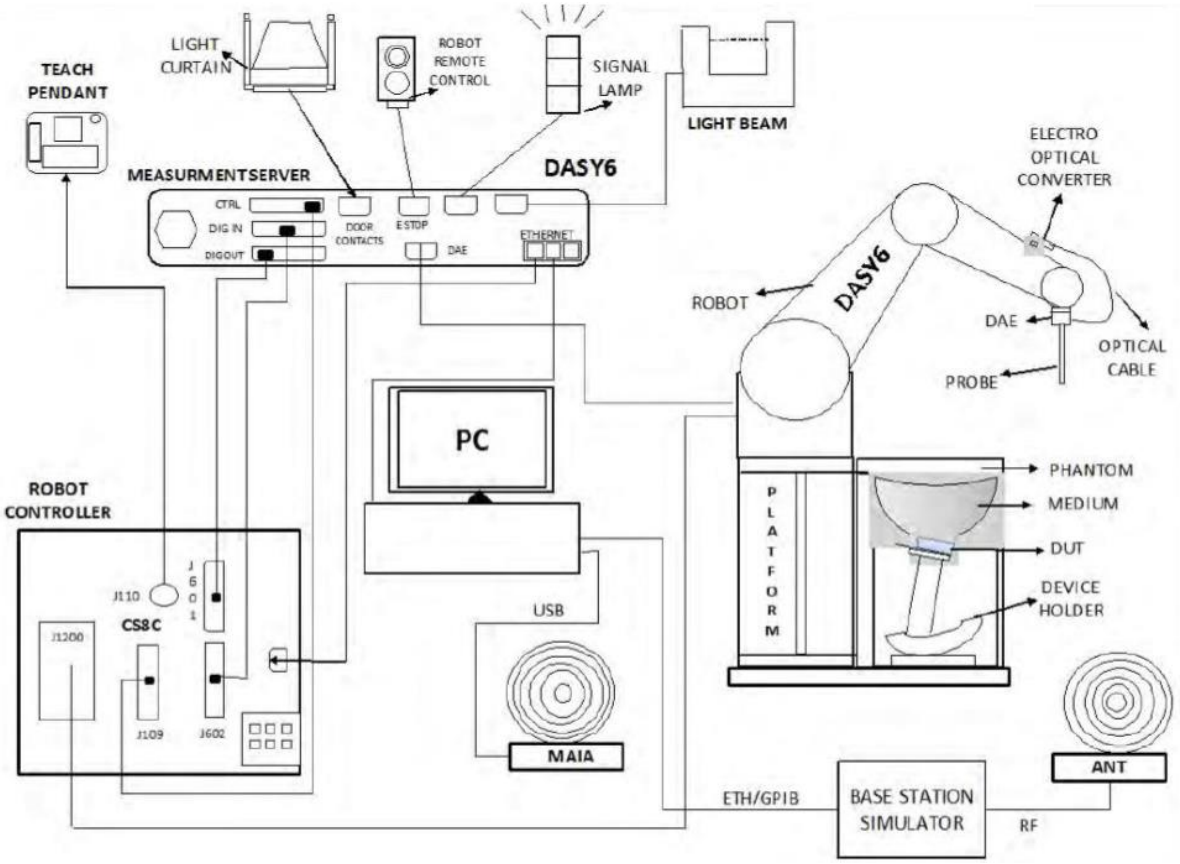
SAR is expressed in units of Watts per kilogram (W/kg)
SAR measurement can be related to the electrical field in the tissue by

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

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

6.2 SPEAG DASY System

DASY system consists of high precision robot, probe alignment sensor, phantom, robot controller, controlled measurement server and near-field probe. The robot includes six axes that can move to the precision position of the DASY6 software defined. The DASY software can define the area that is detected by the probe. The robot is connected to controlled box. Controlled measurement server is connected to the controlled robot box. The DAE includes amplifier, signal multiplexing, AD converter, offset measurement and surface detection. It is connected to the Electro-optical coupler (ECO). The ECO performs the conversion form the optical into digital electric signal of the DAE and transfers data to the PC.



DASY System Setup

6.2.1 Robot

The DASY system uses the high precision robots from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability ±0.035 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)

DASY6

6.2.2 Probes

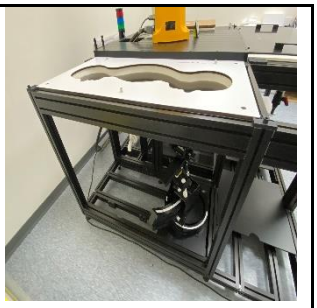
The SAR measurement is conducted with the dosimetric probe. The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency.

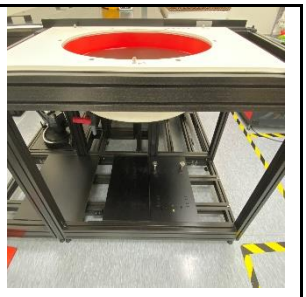
Model	EX3DV4
Construction	Symmetrical design with triangular core. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).
Frequency	4 MHz to 10 GHz Linearity: ± 0.2 dB
Directivity	± 0.1 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 µW/g to 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm

6.2.3 Data Acquisition Electronics (DAE)

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

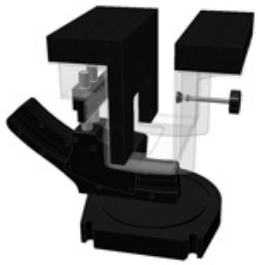
6.2.4 Phantoms

Model	Twin SAM	
Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEC/IEEE 62209-1528. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.	
Material	Vinylester, glass fiber reinforced (VE-GF)	
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)	
Dimensions	Length: 1000 mm Width: 500 mm Height: adjustable feet	
Filling Volume	approx. 25 liters	

Model	ELI	
Construction	Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 4 MHz to 10 GHz. ELI is fully compatible with the IEC/IEEE 62209-1528 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. 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. The phantom is compatible with all SPEAG dosimetric probes and dipoles.	
Material	Vinylester, glass fiber reinforced (VE-GF)	
Shell Thickness	2.0 ± 0.2 mm (bottom plate)	
Dimensions	Major axis: 600 mm Minor axis: 400 mm	
Filling Volume	approx. 30 liters	

6.2.5 Device Holder

Model	Mounting Device	
Construction	In combination with the Twin SAM Phantom or ELI4, the Mounting Device enables the rotation of the mounted transmitter device in spherical coordinates. Rotation point is the ear opening point. Transmitter devices can be easily and accurately positioned according to IEC, IEEE, FCC or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat).	
Material	POM	

Model	Laptop Extensions Kit	
Construction	Simple but effective and easy-to-use extension for Mounting Device that facilitates the testing of larger devices according to IEC/IEEE 62209-1528 (e.g., laptops, cameras, etc.). It is lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner.	
Material	POM, Acrylic glass, Foam	

6.2.6 System Validation Dipoles

Model	D-Serial	
Construction	Symmetrical dipole with l/4 balun. Enables measurement of feed point impedance with NWA. Matched for use near flat phantoms filled with tissue simulating solutions.	
Frequency	300 MHz to 10 GHz	
Return Loss	> 20 dB	
Power Capability	> 100 W (f < 1GHz), > 40 W (f > 1GHz)	

6.2.7 Tissue Simulating Liquids

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15 cm. 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. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5% are listed.

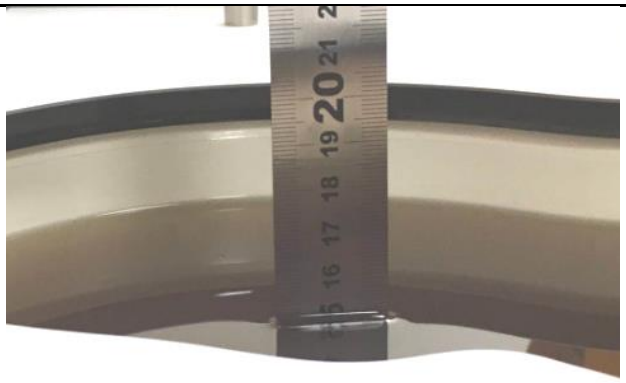


Photo of Liquid Height for Head Position

The dielectric properties of the head tissue simulating liquids are defined in IEEE 1528 Appendix A.
The workshop effective February 19, 2019, FCC has permitted the use of single head tissue simulating liquid specified in IEC 62209 1 for all SAR tests.
The dielectric properties of the tissue simulating liquids were verified prior to the SAR evaluation using a dielectric assessment kit and a network analyzer.

Targets of Tissue Simulating Liquid

Frequency (MHz)	Target Permittivity	Range of ±5%	Target Conductivity	Range of ±5%
For Head				
750	41.9	39.8 ~ 44.0	0.89	0.85 ~ 0.93
835	41.5	39.4 ~ 43.6	0.90	0.86 ~ 0.95
900	41.5	39.4 ~ 43.6	0.97	0.92 ~ 1.02
1450	40.5	38.5 ~ 42.5	1.20	1.14 ~ 1.26
1640	40.3	38.3 ~ 42.3	1.29	1.23 ~ 1.35
1750	40.1	38.1 ~ 42.1	1.37	1.30 ~ 1.44
1800	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
1900	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
2000	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
2300	39.5	37.5 ~ 41.5	1.67	1.59 ~ 1.75
2450	39.2	37.2 ~ 41.2	1.80	1.71 ~ 1.89
2600	39.0	37.1 ~ 41.0	1.96	1.86 ~ 2.06
3500	37.9	36.0 ~ 39.8	2.91	2.76 ~ 3.06
5200	36.0	34.2 ~ 37.8	4.66	4.43 ~ 4.89
5300	35.9	34.1 ~ 37.7	4.76	4.52 ~ 5.00
5500	35.6	33.8 ~ 37.4	4.96	4.71 ~ 5.21
5600	35.5	33.7 ~ 37.3	5.07	4.82 ~ 5.32
5800	35.3	33.5 ~ 37.1	5.27	5.01 ~ 5.53
6500	34.5	32.8 ~ 36.2	6.07	6.04 ~ 6.11

7. SAR Measurement Procedure

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

(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

The SAR measurement procedures for each of test conditions are as follows:

(a) Make EUT to transmit maximum output power
(b) Measure conducted output power through RF cable
(c) Place the EUT in the specific position of phantom
(d) Perform SAR testing steps on the DASY system
(e) Record the SAR value

7.1 Area & Zoom Scan Procedure

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g. According to KDB 865664 D01, the resolution for Area and Zoom scan is specified in the table below.

Items	≤ 2GHz	2-3 GHz	3-4 GHz	4-5 GHz	5-6 GHz
Area Scan (Δx, Δy)	≦15mm	≦12 mm	≦12 mm	≦10 mm	≦10 mm
Zoom Scan (Δx, Δy)	≦8 mm	≦5 mm	≦5 mm	≦4 mm	≦4 mm
Zoom Scan (Δz)	≦5 mm	≦5 mm	≦4 mm	≦3 mm	≦2 mm
Zoom Scan Volume	≧30 mm	≧30 mm	≧28 mm	≧25 mm	≧22 mm

Note:
When zoom scan is required and report SAR is ≦1.4 W/kg, the zoom scan resolution of Δx / Δy (2-3 GHz): ≦8 mm, 3-4 GHz: ≦7 mm, 4-6 GHz: ≦5 mm) may be applied.

7.2 Volume Scan Procedure

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

7.3 Power Drift Monitoring

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

7.4 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

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

7.5 SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Shepard’s method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5 mm.

8. SAR Measurement Evaluation

8.1 EUT Configuration and Setting

<Connections between EUT and System Simulator>
For WWAN SAR testing, the EUT was linked and controlled by base station emulator (R&S_CMW500). Communication between the EUT and the emulator was established by air link. The distance between the EUT and the communicating antenna of the emulator is larger than 50 cm and the output power radiated from the emulator antenna is at least 30 dB smaller than the output power of EUT. The EUT was set from the emulator to radiate maximum output power during SAR testing.

<Considerations Related to LTE for Setup and Testing>
This device contains LTE transmitter which follows 3GPP standards, is category 3, supports both QPSK and 16QAM modulations, and supported LTE band and channel bandwidth is listed in below. The output power was tested per 3GPP TS 36.521-1 maximum transmit procedures for both QPSK and 16QAM modulation. The results please refer to section 4.6 of this report.

EUT Supported LTE Band and Channel Bandwidth						
LTE Band	BW 1.4 MHz	BW 3 MHz	BW 5 MHz	BW 10 MHz	BW 15 MHz	BW 20 MHz
2	V	V	V	V	V	V
4	V	V	V	V	V	V
5	V	V	V	V		
12	V	V	V	V		
13			V	V		
66	V	V	V	V	V	V

The LTE maximum power reduction (MPR) in accordance with 3GPP TS 36.101 is active all times during LTE operation. The allowed MPR for the maximum output power is specified in below.

Modulation	Channel Bandwidth / RB Configurations						LTE MPR Setting (dB)
	BW 1.4 MHz	BW 3 MHz	BW 5 MHz	BW 10 MHz	BW 15 MHz	BW 20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	1
16QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	1
16QAM	> 5	> 4	> 8	> 12	> 16	> 18	2

Note: MPR is according to the standard and implemented in the circuit (mandatory).

In addition, the device is compliant with additional maximum power reduction (A-MPR) requirements defined in 3GPP TS 36.101 section 6.2.4 that was disabled for all FCC compliance testing.

During LTE SAR testing, the related parameters of operating band, channel bandwidth, uplink channel number, modulation type, and RB was set in base station simulator. When the EUT has registered and communicated to base station simulator, the simulator set to make EUT transmitting the maximum radiated power.

<Considerations Related to Bluetooth for Setup and Testing>
This device has installed Bluetooth engineering testing software which can provide continuous transmitting RF signal. During Bluetooth SAR testing, this device was operated to transmit continuously at the maximum transmission duty with specified transmission mode, operating frequency, lowest data rate, and maximum output power.

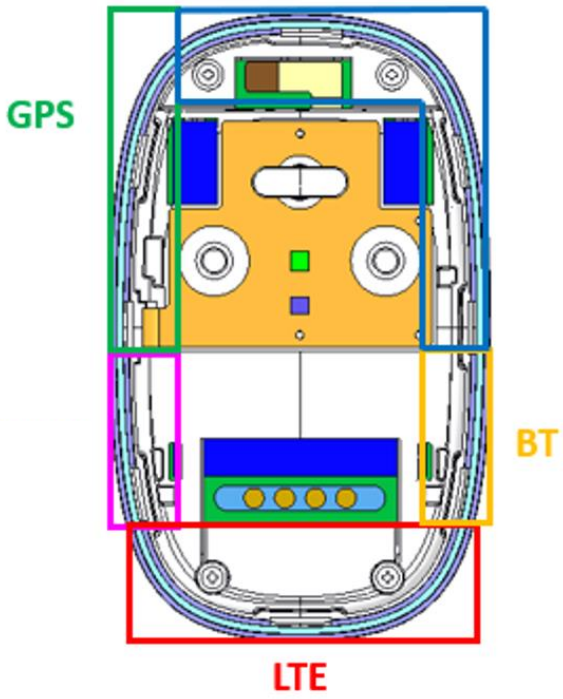
8.2 EUT Testing Position

According to technical standards, handsets are tested for SAR compliance in the configurations described in the following subsections.

8.2.1 Head/Body/Extremity Exposure Conditions

The EUT was tested for the surfaces of EUT as Front, Back, Left Side, Right Side, Top Side and Bottom Side. The separation distance between this EUT and phantom is 10mm for Head SAR and 0mm for Body/Extremity SAR.

8.2.2 Antenna Location



8.2.3 SAR Test Exclusion Evaluations

According to KDB 447498 D01, the SAR test exclusion condition is based on source-based SAR-based thresholds are derived based on frequency, power, and separation distance of the RF source. The formula defines the thresholds in general for either available maximum time-averaged power or maximum time-averaged ERP, whichever is greater.

$$P_{\text{th}}\,(\text{mW}) = ERP_{20\,\text{cm}}\,(\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

$$P_{\text{th}}\,(\text{mW}) = \begin{cases} ERP_{20\,\text{cm}}(d/20\ \text{cm})^{x} & d \le 20\ \text{cm} \\ ERP_{20\,\text{cm}} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases}$$

where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\,\text{cm}}\sqrt{f}}\right)$$

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

Band	Freq (MHz)	Power (dBm)	Power (mW)	ERP (mW)	Antenna to distance on each side (mm)					
					Front	Rear	Left	Right	Top	Bottom
					5	5	5	5	5	5
LTE 2	1880	23.5	223.87	136.46	Pth(mW)					
					3.39	3.39	3.39	3.39	3.39	3.39
					Exempt					
					X	X	X	X	X	X
LTE 4	1732.5	24.0	251.19	153.11	Pth(mW)					
					3.62	3.62	3.62	3.62	3.62	3.62
					Exempt					
					X	X	X	X	X	X
LTE 5	836.5	24.0	251.19	153.11	Pth(mW)					
					9.22	9.22	9.22	9.22	9.22	9.22
					Exempt					
					X	X	X	X	X	X
LTE 12	711	24.0	251.19	153.11	Pth(mW)					
					11.59	11.59	11.59	11.59	11.59	11.59
					Exempt					
					X	X	X	X	X	X
LTE 13	782	23.5	223.87	136.46	Pth(mW)					
					10.14	10.14	10.14	10.14	10.14	10.14
					Exempt					
					X	X	X	X	X	X
LTE 66	1745	23.5	223.87	136.46	Pth(mW)					
					3.60	3.60	3.60	3.60	3.60	3.60
					Exempt					
					X	X	X	X	X	X

8.3 Simultaneous Transmission Possibilities

The simultaneous transmission possibilities for this device are listed as below.

Simultaneous TX Combination	Capable Transmit Configurations	Head (Data)	Body (Data)	Extremity (Data)
1	LTE 2 (Data) + BT (Data)	Yes	Yes	Yes
2	LTE 4 (Data) + BT (Data)	Yes	Yes	Yes
3	LTE 5 (Data) + BT (Data)	Yes	Yes	Yes
4	LTE 12 (Data) + BT (Data)	Yes	Yes	Yes
5	LTE 13 (Data) + BT (Data)	Yes	Yes	Yes
6	LTE 66 (Data) + BT (Data)	Yes	Yes	Yes

8.4 Tissue Verification

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine of the dielectic parameter are within the tolerances of the specified target values. The measured conductivity and relative permittivity should be within ± 5% of the target values.

The following materials are used for producing the tissue-equivalent materials.

Recipes of Tissue Simulating Liquid

Tissue Type	Bactericide	DGBE	HEC	NaCl	Sucrose	Triton X-100	Water	Diethylene Glycol Mono-hexylether
H750	44	-	0.2	-	56.0	-	42.1	-
H835	44	48.4	0.2	1.3	57.0	-	41.1	-
H900	44	48.4	0.2	1.4	58.0	-	40.2	-
H1450	44	-	-	0.6	-	-	56.1	-
H1640	44	-	-	0.5	-	-	53.7	-
H1750	44	45.3	-	0.4	-	-	52.6	-
H1800	44	45.3	-	0.5	-	-	55.2	-
H1900	44	45.3	-	0.2	-	-	55.3	-
H2000	44	45.3	-	0.1	-	-	55.4	-
H2300	44	-	-	0.1	-	-	55.0	-
H2450	44	-	-	0.1	-	-	54.9	-
H2600	44	-	-	0.1	-	-	54.8	-
H3500	44	-	-	0.2	-	20.0	71.8	-
H4000	44	-	-	-	-	-	56.0	-
H5G	44	-	-	-	-	17.2	65.5	17.2
H6G	44	-	-	-	-	-	56.0	-

Salt: 99+% Pure Sodium Chloride; Sugar: 98+% Pure Sucrose; Water: De-ionized, 16M +resistivity
HEC: Hydroxyethyl Cellulose; Sorbitan monolaurate (Tween 20); 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.

The measuring results for tissue simulating liquid are shown as below.

Test Date	Tissue Type	Frequency (MHz)	Measured Conductivity (σ)	Measured Permittivity (ε_r)	Target Conductivity (σ)	Target Permittivity (ε_r)	Conductivity Deviation (%)	Permittivity Deviation (%)
May. 11, 2023	Head	750	0.904	43.009	0.89	41.9	1.57	2.65
May. 29, 2023	Head	750	0.902	42.969	0.89	41.9	1.35	2.55
Jun. 01, 2023	Head	750	0.904	42.859	0.89	41.9	1.57	2.29
May. 11, 2023	Head	835	0.908	42.650	0.90	41.5	0.89	2.77
May. 29, 2023	Head	835	0.912	42.730	0.90	41.5	1.33	2.96
Jun. 01, 2023	Head	835	0.911	42.260	0.90	41.5	1.22	1.83
May. 23, 2023	Head	1800	1.395	39.630	1.40	40.0	-0.36	-0.92
May. 23, 2023	Head	1800	1.395	39.630	1.40	40.0	-0.36	-0.92
May. 29, 2023	Head	1800	1.403	39.830	1.40	40.0	0.21	-0.43
Jun. 03, 2023	Head	1800	1.388	40.140	1.40	40.0	-0.86	0.35
May. 23, 2023	Head	1900	1.384	39.514	1.40	40.0	-1.14	-1.21
May. 29, 2023	Head	1900	1.402	39.714	1.40	40.0	0.14	-0.72
Jun. 03, 2023	Head	1900	1.391	39.923	1.40	40.0	-0.64	-0.19
Jun. 05, 2023	Head	2450	1.795	39.440	1.80	39.2	-0.28	0.61

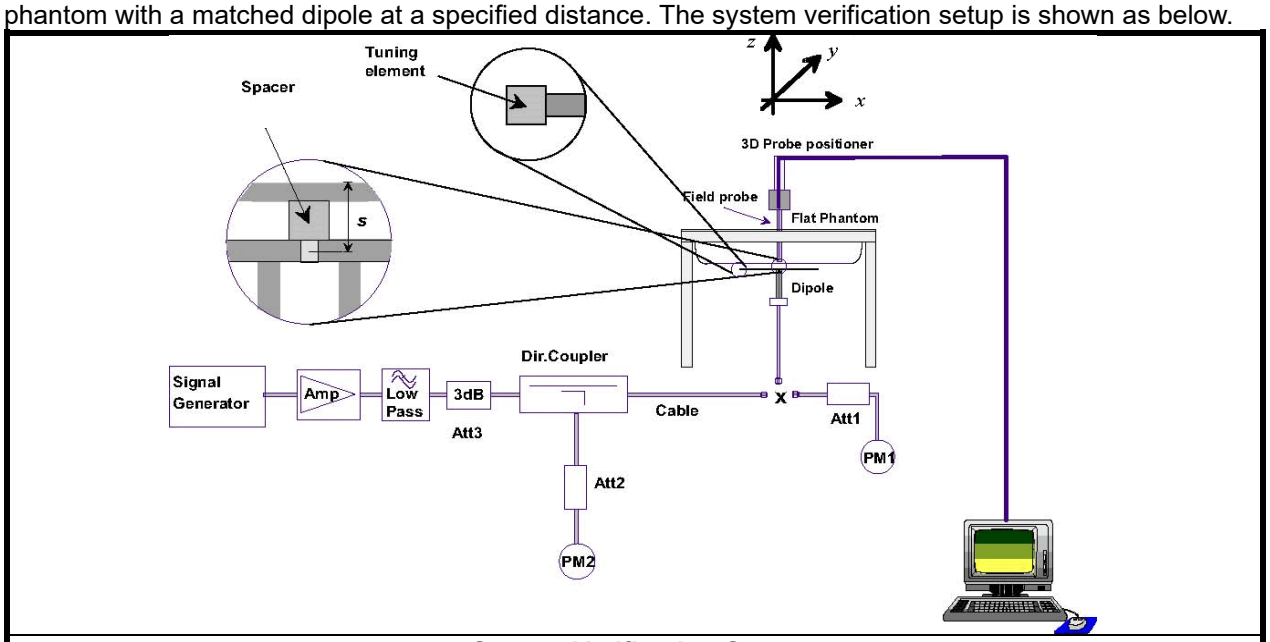
Note:

The dielectric properties of the tissue simulating liquid must be measured within 24 hours before the SAR testing and within ±5% of the target values. Liquid temperature during the SAR testing must be within ±2 ℃.

8.5 System Validation

System check Procedure

The system check verifies that the system operates within its specifications. It is performed daily or before every SAR measurement. The system check uses normal SAR measurements in the flat section of the phantom with a matched dipole at a specified distance. The system verification setup is shown as below.



System Verification Setup

The validation dipole is placed beneath the flat phantom with the specific spacer in place. The distance spacer is touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The spectrum analyzer measures the forward power at the location of the system check dipole connector. The signal generator is adjusted for the desired forward power (250 mW is used for 700 MHz to 3 GHz, 100 mW is used for 3.5 GHz to 6 GHz) at the dipole connector and the power meter is read at that level. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter.

After system check testing, the SAR result will be normalized to 1W forward input power and compared with the reference SAR value derived from validation dipole certificate report. The deviation of system check should be within 10 %.

8.6 System Verification

The measuring results for system check are shown as below.

<Head/Body>

Test Date	Frequency (MHz)	1W Target SAR-1g (W/kg)	Measured SAR-1g (W/kg)	Normalized to 1W SAR-1g (W/kg)	Deviation (%)	Dipole S/N	Probe S/N	DAE S/N
May. 11, 2023	750	8.45	2.11	8.44	-0.12	1199	7400	855
May. 29, 2023	750	8.45	2.09	8.36	-1.07	1199	7400	855
Jun. 01, 2023	750	8.45	1.99	7.96	-5.80	1199	7400	855
May. 11, 2023	835	9.83	2.47	9.88	0.51	4d058	7400	855
May. 29, 2023	835	9.83	2.45	9.80	-0.31	4d058	7400	855
Jun. 01, 2023	835	9.83	2.44	9.76	-0.71	4d058	7400	855
May. 23, 2023	1800	38.80	9.01	36.04	-7.11	2d156	7400	855
May. 23, 2023	1800	38.80	8.94	35.76	-7.84	2d156	3975	855
May. 29, 2023	1800	38.80	9.02	36.08	-7.01	2d156	7400	855
Jun. 03, 2023	1800	38.80	9.35	37.40	-3.61	2d156	7400	855
May. 23, 2023	1900	39.40	9.45	37.80	-4.06	5d090	7400	855
May. 29, 2023	1900	39.40	9.58	38.32	-2.74	5d090	7400	855
Jun. 03, 2023	1900	39.40	9.44	37.76	-4.16	5d090	7400	855
Jun. 05, 2023	2450	52.30	12.80	51.20	-2.10	804	7400	855

<Extremity>

Test Date	Frequency (MHz)	1W Target SAR-1g (W/kg)	Measured SAR-10g (W/kg)	Normalized to 1W SAR-10g (W/kg)	Deviation (%)	Dipole S/N	Probe S/N	DAE S/N
May. 11, 2023	750	5.54	1.44	5.76	3.97	1199	7400	855
May. 29, 2023	750	5.54	1.43	5.72	3.25	1199	7400	855
Jun. 01, 2023	750	5.54	1.31	5.24	-5.42	1199	7400	855
May. 11, 2023	835	6.42	1.63	6.52	1.56	4d058	7400	855
May. 29, 2023	835	6.42	1.62	6.48	0.93	4d058	7400	855
Jun. 01, 2023	835	6.42	1.60	6.40	-0.31	4d058	7400	855
May. 23, 2023	1800	20.20	4.95	19.80	-1.98	2d156	7400	855
May. 23, 2023	1800	20.20	4.72	18.88	-6.53	2d156	3975	855
May. 29, 2023	1800	20.20	4.95	19.80	-1.98	2d156	7400	855
Jun. 03, 2023	1800	20.20	4.94	19.76	-2.18	2d156	7400	855
May. 23, 2023	1900	20.50	5.05	20.20	-1.46	5d090	7400	855
May. 29, 2023	1900	20.50	5.11	20.44	-0.29	5d090	7400	855
Jun. 03, 2023	1900	20.50	4.91	19.64	-4.20	5d090	7400	855
Jun. 05, 2023	2450	24.30	6.14	24.56	1.07	804	7400	855

Note:

Comparing to the reference SAR value provided by SPEAG, the validation data should be within its specification of 10 %. The result indicates the system check can meet the variation criterion and the plots can be referred to Appendix A of this report.

8.7 Maximum Output Power

8.7.1 Measured Conducted Power Result

All Rate have been tested, the Worst average power (Unit: dBm) is shown as below.

LTE B2/BW=1.4M		Average Conducted Power(dBm)				LTE B2/BW=3M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			18607/ 1850.7	18900/ 1880	19193/ 1909.3				18615/ 1851.5	18900/ 1880	19185/ 1908.5
QPSK	1/0	23.00	22.46	22.56	22.41	QPSK	1/0	23.00	22.38	22.50	22.35
	1/2	23.00	22.50	22.66	22.51		1/7	23.00	22.70	22.67	22.57
	1/5	23.00	22.47	22.57	22.37		1/14	23.00	22.49	22.52	22.57
	3/0	23.00	22.32	22.37	22.25		8/0	22.00	21.27	21.51	21.27
	3/1	23.00	22.30	22.64	22.45		8/3	22.00	21.35	21.40	21.27
	3/3	23.00	22.31	22.40	22.27		8/7	22.00	21.37	21.45	21.29
	6/0	22.00	21.19	21.29	21.19		15/0	22.00	21.32	21.38	21.22
16QAM	1/0	22.00	21.19	21.15	20.96	16QAM	1/0	22.00	21.17	21.18	21.19
	1/2	22.00	21.14	21.27	21.11		1/7	22.00	21.38	21.30	21.21
	1/5	22.00	21.26	21.19	21.18		1/14	22.00	21.25	21.25	21.24
	3/0	22.00	21.42	21.41	21.10		8/0	21.00	20.49	20.64	20.32
	3/1	22.00	21.51	21.36	21.43		8/3	21.00	20.33	20.66	20.29
	3/3	22.00	21.49	21.36	21.46		8/7	21.00	20.49	20.58	20.54
	6/0	21.00	20.22	20.19	20.09		15/0	21.00	20.29	20.36	20.27
LTE B2/BW=5M		Average Conducted Power (dBm)				LTE B2/BW=10M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			18625/ 1852.5	18900/ 1880	19175/ 1907.5				18650/ 1855	18900/ 1880	19150/ 1905
QPSK	1/0	23.00	22.20	22.31	22.12	QPSK	1/0	23.00	22.33	22.38	22.22
	1/12	23.00	22.23	22.70	22.26		1/24	23.00	22.63	22.70	22.51
	1/24	23.00	22.21	22.19	22.57		1/49	23.00	22.50	22.45	22.31
	12/0	22.00	21.04	21.18	20.93		25/0	22.00	21.17	21.21	21.08
	12/6	22.00	21.06	21.24	21.09		25/12	22.00	21.30	21.26	21.18
	12/13	22.00	21.16	21.26	21.07		25/25	22.00	21.26	21.25	21.10
	25/0	22.00	21.13	21.22	21.05		50/0	22.00	21.25	21.26	21.08
16QAM	1/0	22.00	20.93	21.11	21.00	16QAM	1/0	22.00	21.00	21.22	21.04
	1/12	22.00	20.96	21.08	21.00		1/24	22.00	21.13	21.24	20.98
	1/24	22.00	20.94	21.05	21.05		1/49	22.00	21.14	21.11	21.04
	12/0	21.00	20.10	20.19	19.98		25/0	21.00	20.37	20.39	20.01
	12/6	21.00	20.23	20.34	20.20		25/12	21.00	20.40	20.34	20.18
	12/13	21.00	20.02	20.16	19.93		25/25	21.00	20.38	20.25	20.20
	25/0	21.00	20.32	20.31	20.18						
LTE B2/BW=15M		Average Conducted Power (dBm)				LTE B2/BW=20M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			18675/ 1857.5	18900/ 1880	19125/ 1902.5				18700/ 1860	18900/ 1880	19100/ 1900
QPSK	1/0	23.00	22.09	22.12	22.02	QPSK	1/0	23.00	22.60	22.78	22.77
	1/37	23.00	22.25	22.71	22.10		1/49	23.00	22.70	22.69	22.68
	1/74	23.00	22.60	22.24	22.02		1/99	23.00	22.35	22.51	22.11
	36/0	22.00	21.01	21.08	20.98		50/0	22.00	21.33	21.35	21.27
	36/19	22.00	21.00	21.11	20.83		50/24	22.00	21.29	21.41	21.16
	36/39	22.00	21.05	20.97	20.83		50/50	22.00	21.28	21.27	21.17
	75/0	22.00	21.02	21.07	20.90		100/0	22.00	21.34	21.40	21.27
16QAM	1/0	22.00	20.82	21.36	20.95	16QAM	1/0	22.00	20.97	21.25	21.21
	1/37	22.00	20.99	21.39	20.75		1/49	22.00	21.30	21.37	21.23
	1/74	22.00	20.90	20.93	20.84		1/99	22.00	21.65	21.23	21.05

LTE B4/BW=1.4M		Average Conducted Power(dBm)				LTE B4/BW=3M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz) 19957/ 1710.7	20175/ 1732.5	20393/ 1754.3	Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz) 19965/ 1711.5	20175/ 1732.5	20385/ 1753.5
QPSK	1/0	23.00	21.98	22.20	22.34	QPSK	1/0	23.00	22.08	22.37	22.38
	1/2	23.00	22.34	22.46	22.34		1/7	23.00	22.50	22.48	22.34
	1/5	23.00	22.13	22.21	22.11		1/14	23.00	22.15	22.44	22.35
	3/0	23.00	22.06	22.17	21.86		8/0	22.00	21.04	21.18	21.12
	3/1	23.00	21.86	22.49	21.91		8/3	22.00	21.08	21.22	21.05
	3/3	23.00	21.95	22.13	22.07		8/7	22.00	21.06	21.15	21.12
	6/0	22.00	20.80	21.04	20.89		15/0	22.00	20.95	21.15	21.10
16QAM	1/0	22.00	20.78	21.10	20.90	16QAM	1/0	22.00	20.95	21.07	21.08
	1/2	22.00	20.79	20.96	20.86		1/7	22.00	20.94	21.12	21.00
	1/5	22.00	20.85	21.05	20.93		1/14	22.00	20.96	21.12	21.06
	3/0	22.00	20.87	21.00	21.21		8/0	21.00	19.88	20.35	20.11
	3/1	22.00	21.15	21.14	21.22		8/3	21.00	20.11	20.40	20.22
	3/3	22.00	20.88	21.18	21.26		8/7	21.00	20.22	20.41	20.32
	6/0	21.00	19.64	20.09	19.95		15/0	21.00	19.84	20.27	20.03
LTE B4/BW=5M		Average Conducted Power (dBm)				LTE B4/BW=10M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz) 19975/ 1712.5	20175/ 1732.5	20375/ 1752.5	Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz) 20000/ 1715	20175/ 1732.5	20350/ 1750
QPSK	1/0	23.00	22.11	22.28	22.50	QPSK	1/0	23.00	21.97	22.18	22.46
	1/12	23.00	22.31	22.42	22.53		1/24	23.00	22.31	22.28	22.50
	1/24	23.00	22.26	22.45	22.40		1/49	23.00	22.23	22.28	22.31
	12/0	22.00	20.97	21.18	21.19		25/0	22.00	20.88	21.00	21.24
	12/6	22.00	21.01	21.20	21.21		25/12	22.00	21.02	21.15	21.07
	12/13	22.00	20.96	21.24	21.16		25/25	22.00	20.99	21.16	21.16
	25/0	22.00	20.97	21.21	21.16		50/0	22.00	20.89	21.17	21.13
16QAM	1/0	22.00	20.75	21.08	21.05	16QAM	1/0	22.00	20.91	20.85	21.06
	1/12	22.00	20.98	21.12	21.10		1/24	22.00	20.83	21.04	21.04
	1/24	22.00	20.86	21.11	20.99		1/49	22.00	20.93	21.01	21.10
	12/0	21.00	19.95	20.09	20.08		25/0	21.00	19.97	20.32	20.38
	12/6	21.00	19.98	20.29	20.21		25/12	21.00	20.04	20.24	20.16
	12/13	21.00	20.15	20.27	20.36		25/25	21.00	20.07	20.38	20.22
	25/0	21.00	20.17	20.25	20.26						
LTE B4/BW=15M		Average Conducted Power (dBm)				LTE B4/BW=20M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz) 20025/ 1717.5	20175/ 1732.5	20325/ 1747.5	Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz) 20050/ 1720	20175/ 1732.5	20300/ 1745
QPSK	1/0	23.00	21.96	22.14	22.47	QPSK	1/0	23.00	22.75	22.96	22.94
	1/37	23.00	21.95	22.51	22.47		1/49	23.00	22.53	22.44	22.49
	1/74	23.00	21.77	21.88	22.04		1/99	23.00	22.34	22.31	22.43
	36/0	22.00	20.60	20.78	20.86		50/0	22.00	21.12	21.07	21.27
	36/19	22.00	20.73	20.77	20.96		50/24	22.00	21.29	21.39	21.31
	36/39	22.00	20.75	20.76	20.77		50/50	22.00	21.12	21.10	21.23
	75/0	22.00	20.74	20.71	20.89		100/0	22.00	21.13	21.15	21.33
16QAM	1/0	22.00	20.57	20.71	20.78	16QAM	1/0	22.00	20.76	21.05	21.39
	1/37	22.00	20.61	21.00	20.77		1/49	22.00	21.08	21.11	21.15
	1/74	22.00	20.65	20.59	20.80		1/99	22.00	21.07	21.10	21.68

LTE B5/BW=1.4M		Average Conducted Power (dBm)				LTE B5/BW=3M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz) 20407/ 824.7	20525/ 836.5	20643/ 848.3	Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz) 20415/ 825.5	20525/ 836.5	20635/ 847.5
QPSK	1/0	24.00	23.68	23.66	23.55	QPSK	1/0	24.00	23.66	23.70	23.38
	1/2	24.00	23.83	23.83	23.58		1/7	24.00	23.69	23.93	23.64
	1/5	24.00	23.71	23.95	23.49		1/14	24.00	23.47	23.70	23.62
	3/0	24.00	23.76	23.66	23.55		8/0	23.00	22.47	22.71	22.29
	3/1	24.00	23.69	23.82	23.65		8/3	23.00	22.51	22.74	22.47
	3/3	24.00	23.77	23.77	23.49		8/7	23.00	22.39	22.72	22.49
	6/0	23.00	22.67	22.73	22.54		15/0	23.00	22.61	22.68	22.42
16QAM	1/0	23.00	22.90	22.92	22.50	16QAM	1/0	23.00	22.41	22.41	22.46
	1/2	23.00	23.00	22.65	22.45		1/7	23.00	22.45	22.79	22.58
	1/5	23.00	22.98	22.63	22.52		1/14	23.00	22.62	22.69	22.44
	3/0	23.00	22.76	22.64	22.44		8/0	22.00	21.30	21.34	21.21
	3/1	23.00	22.90	22.75	22.52		8/3	22.00	21.56	21.58	21.25
	3/3	23.00	23.00	22.76	22.52		8/7	22.00	21.42	21.36	21.52
	6/0	22.00	21.72	21.60	21.40		15/0	22.00	21.53	21.38	21.36
LTE B5/BW=5M		Average Conducted Power(dBm)				LTE B5/BW=10M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz) 20425/ 826.5	20525/ 836.5	20625/ 846.5	Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz) 20450/ 829	20525/ 836.5	20600/ 844
QPSK	1/0	24.00	23.57	23.66	23.73	QPSK	1/0	24.00	22.99	23.79	23.71
	1/12	24.00	23.74	23.97	23.56		1/24	24.00	23.78	23.98	23.87
	1/24	24.00	23.65	23.80	23.77		1/49	24.00	23.49	23.37	23.43
	12/0	23.00	22.61	22.70	22.58		25/0	23.00	22.35	22.56	22.50
	12/6	23.00	22.76	22.72	22.51		25/12	23.00	22.41	22.44	22.47
	12/13	23.00	22.58	22.74	22.57		25/25	23.00	22.49	22.48	22.25
	25/0	23.00	22.66	22.76	22.55		50/0	23.00	22.49	22.51	22.42
16QAM	1/0	23.00	22.57	22.50	22.42	16QAM	1/0	23.00	22.18	22.60	22.40
	1/12	23.00	22.74	22.86	22.39		1/24	23.00	22.43	22.54	22.45
	1/24	23.00	22.64	22.58	22.41		1/49	23.00	22.19	22.08	21.92
	12/0	22.00	21.68	21.48	21.39		25/0	22.00	21.30	21.53	21.35
	12/6	22.00	21.83	21.70	21.50		25/12	22.00	21.30	21.52	21.43
	12/13	22.00	21.66	21.47	21.27		25/25	22.00	21.30	21.47	21.23
	25/0	22.00	21.59	21.69	21.35						

LTE B12/BW=1.4M		Average Conducted Power (dBm)				LTE B12/BW=3M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			23017/ 699.7	23095/ 707.5	23173/ 715.3				23025/ 700.5	23095/ 707.5	23165/ 714.5
QPSK	1/0	24.00	23.50	23.64	23.81	QPSK	1/0	24.00	23.58	23.64	23.66
	1/2	24.00	23.92	23.69	23.75		1/7	24.00	23.29	23.89	23.90
	1/5	24.00	23.63	23.66	23.73		1/14	24.00	23.66	23.70	23.66
	3/0	24.00	23.45	23.69	23.40		8/0	23.00	22.35	22.48	22.76
	3/1	24.00	23.68	23.85	23.87		8/3	23.00	22.60	22.66	22.81
	3/3	24.00	23.43	23.56	23.64		8/7	23.00	22.28	22.65	22.82
	6/0	23.00	22.50	22.54	22.73		15/0	23.00	22.46	22.63	22.80
16QAM	1/0	23.00	22.34	22.43	22.96	16QAM	1/0	23.00	22.23	22.37	22.62
	1/2	23.00	22.09	22.50	22.48		1/7	23.00	22.15	22.57	22.74
	1/5	23.00	22.36	22.57	22.52		1/14	23.00	22.29	22.48	22.57
	3/0	23.00	22.84	22.79	22.64		8/0	22.00	21.63	21.58	21.79
	3/1	23.00	22.73	22.62	22.88		8/3	22.00	21.75	21.78	21.82
	3/3	23.00	22.38	22.71	22.58		8/7	22.00	21.43	21.97	21.90
	6/0	22.00	21.40	21.57	21.38		15/0	22.00	21.58	21.59	21.66
LTE B12/BW=5M		Average Conducted Power (dBm)				LTE B12/BW=10M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			23035/ 701.5	23095/ 707.5	23155/ 713.5				23060/ 704	23095/ 707.5	23130/ 711
QPSK	1/0	24.00	23.58	23.54	23.63	QPSK	1/0	24.00	23.45	23.52	23.53
	1/12	24.00	23.57	23.84	23.93		1/24	24.00	23.55	23.78	23.96
	1/24	24.00	23.47	23.72	23.61		1/49	24.00	23.59	23.57	23.56
	12/0	23.00	22.50	22.53	22.63		25/0	23.00	22.34	22.39	22.61
	12/6	23.00	22.43	22.60	22.51		25/12	23.00	22.39	22.56	22.61
	12/13	23.00	22.40	22.62	22.65		25/25	23.00	22.37	22.58	22.68
	25/0	23.00	22.58	22.61	22.63		50/0	23.00	22.33	22.56	22.61
16QAM	1/0	23.00	22.28	22.14	22.75	16QAM	1/0	23.00	22.19	22.15	22.38
	1/12	23.00	22.00	22.58	22.39		1/24	23.00	22.29	22.45	22.46
	1/24	23.00	22.11	22.35	22.34		1/49	23.00	22.47	22.29	22.22
	12/0	22.00	21.16	21.41	21.42		25/0	22.00	21.38	21.44	21.57
	12/6	22.00	21.40	21.65	21.66		25/12	22.00	21.37	21.62	21.59
	12/13	22.00	21.42	21.38	21.71		25/25	22.00	21.44	21.55	21.54
	25/0	22.00	21.37	21.78	21.60						

LTE B13/BW=5M		Average Conducted Power (dBm)				LTE B13/BW=10M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			23205/ 779.5	23230/ 782	23255/ 784.5					23230/ 782	
QPSK	1/0	24.00	23.39	23.48	23.56	QPSK	1/0	24.00		23.60	
	1/12	24.00	23.83	23.71	23.82		1/24	24.00		23.85	
	1/24	24.00	23.40	23.69	23.57		1/49	24.00		23.60	
	12/0	23.00	22.27	22.36	22.44		25/0	23.00		22.63	
	12/6	23.00	22.41	22.48	22.52		25/12	23.00		22.68	
	12/13	23.00	22.40	22.42	22.34		25/25	23.00		22.58	
	25/0	23.00	22.39	22.47	22.36		50/0	23.00		22.40	
16QAM	1/0	23.00	22.14	22.17	22.57	16QAM	1/0	23.00		22.17	
	1/12	23.00	22.61	22.12	22.39		1/24	23.00		22.38	
	1/24	23.00	22.31	22.35	22.25		1/49	23.00		22.20	
	12/0	22.00	21.44	21.21	21.56		25/0	22.00		21.40	
	12/6	22.00	21.58	21.46	21.49		25/12	22.00		21.30	
	12/13	22.00	21.23	21.51	21.46		25/25	22.00		21.28	
	25/0	22.00	21.39	21.56	21.48						

LTE B66/BW=1.4M		Average Conducted Power(dBm)				LTE B66/BW=3M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			131979/ 1710.7	132322/ 1745	132665/ 1779.3				131987/ 1711.5	132322/ 1745	132657/ 1778.5
QPSK	1/0	23.00	22.23	22.73	22.42	QPSK	1/0	23.00	22.05	22.57	22.28
	1/2	23.00	22.38	22.72	22.34		1/7	23.00	22.18	22.76	22.22
	1/5	23.00	22.44	22.66	22.47		1/14	23.00	22.12	22.65	22.30
	3/0	23.00	22.34	22.58	22.24		8/0	22.00	21.05	21.53	21.20
	3/1	23.00	22.42	22.51	22.39		8/3	22.00	21.13	21.43	21.16
	3/3	23.00	22.49	22.62	22.35		8/7	22.00	21.13	21.48	21.18
	6/0	22.00	21.24	21.46	21.21		15/0	22.00	21.06	21.46	21.20
16QAM	1/0	22.00	21.05	21.41	21.08	16QAM	1/0	22.00	20.93	21.19	20.96
	1/2	22.00	21.07	21.25	21.14		1/7	22.00	20.91	21.16	20.63
	1/5	22.00	21.01	21.41	21.13		1/14	22.00	21.02	21.31	21.09
	3/0	22.00	21.27	21.66	21.15		8/0	21.00	20.05	20.25	19.94
	3/1	22.00	21.23	21.59	21.31		8/3	21.00	20.10	20.24	20.38
	3/3	22.00	21.56	21.58	21.26		8/7	21.00	20.05	20.59	20.20
	6/0	21.00	20.10	20.58	20.28		15/0	21.00	20.00	20.24	20.10
LTE B66/BW=5M		Average Conducted Power (dBm)				LTE B66/BW=10M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			131997/ 1712.5	132322/ 1745	132647/ 1777.5				132022/ 1715	132322/ 1745	132622/ 1775
QPSK	1/0	23.00	22.28	22.59	22.39	QPSK	1/0	23.00	22.06	22.52	22.19
	1/12	23.00	22.42	22.76	22.40		1/24	23.00	22.50	22.69	22.25
	1/24	23.00	22.49	22.69	22.36		1/49	23.00	22.27	22.66	22.12
	12/0	22.00	21.26	21.49	21.20		25/0	22.00	20.95	21.31	21.01
	12/6	22.00	21.20	21.53	21.30		25/12	22.00	21.08	21.34	20.96
	12/13	22.00	21.17	21.50	21.28		25/25	22.00	21.06	21.26	21.02
	25/0	22.00	21.17	21.46	21.40		50/0	22.00	21.07	21.30	20.98
16QAM	1/0	22.00	21.32	21.33	20.96	16QAM	1/0	22.00	20.65	21.09	20.82
	1/12	22.00	21.01	20.98	20.86		1/24	22.00	20.89	21.05	20.96
	1/24	22.00	20.98	21.35	20.84		1/49	22.00	20.91	21.08	20.79
	12/0	21.00	20.30	20.48	20.20		25/0	21.00	20.00	20.37	20.06
	12/6	21.00	20.15	20.49	20.37		25/12	21.00	20.25	20.41	20.04
	12/13	21.00	20.27	20.42	20.26		25/25	21.00	20.08	20.42	20.10
	25/0	21.00	20.31	20.78	20.43						
LTE B66/BW=15M		Average Conducted Power (dBm)				LTE B66/BW=20M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			132047/ 1717.5	132322/ 1745	132597/ 1772.5				132072/ 1720	132322/ 1745	132572/ 1770
QPSK	1/0	23.00	21.77	22.30	21.94	QPSK	1/0	23.00	22.80	22.98	22.70
	1/37	23.00	22.73	22.60	22.33		1/49	23.00	22.28	22.73	22.40
	1/74	23.00	22.16	22.20	21.97		1/99	23.00	22.32	22.75	22.54
	36/0	22.00	20.76	21.08	20.82		50/0	22.00	21.37	21.58	21.42
	36/19	22.00	20.88	21.15	20.88		50/24	22.00	21.57	21.56	21.40
	36/39	22.00	20.94	21.14	20.81		50/50	22.00	21.55	21.59	21.38
	75/0	22.00	20.90	21.12	20.86		100/0	22.00	21.51	21.62	21.29
16QAM	1/0	22.00	20.58	20.80	20.63	16QAM	1/0	22.00	21.02	21.28	21.12
	1/37	22.00	20.68	20.50	20.73		1/49	22.00	21.31	21.14	21.22
	1/74	22.00	20.74	20.87	20.63		1/99	22.00	21.22	21.33	21.08

<Bluetooth>

BT	Average Conducted Power (dBm)			
	Max. Tune up	CH0	CH19	CH39
		2402MHz	2440MHz	2480MHz
BLE(1M)	4.0	3.74	3.59	3.42
BLE(2M)	4.0	3.70	3.58	3.42

8.8 SAR Testing Results

8.8.1 SAR Test Reduction Considerations

<KDB 447498 D01, General RF Exposure Guidance>

Testing of other required channels within the operating mode of a frequency band is not required when the reported SAR for the mid-band or highest output power channel is:

(1) ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz

(2) ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz

(3) ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz

<KDB 941225 D05, SAR Evaluation Considerations for LTE Devices>

(1) QPSK with 1 RB and 50% RB allocation

Start with the largest channel bandwidth and measure SAR, using the RB offset and required test channel combination with the highest maximum output power among 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; 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.

(2) QPSK with 100% RB allocation

SAR is not required when the highest maximum output power for 100% RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

(3) Higher order modulations

SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > 1/2 dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

(4) Other channel bandwidth

SAR is required when the highest maximum output power of the smaller channel bandwidth is > 1/2 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.

8.8.2 SAR Results for Head Exposure Condition (Separation Distance is 10mm Gap)

Plot No.	Band	BW (MHz)	Mode	RB#	RB Offset	Test Position	Ch.	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
38	LTE Band 2	20M	QPSK	1	0	Front	18900	22.78	23.00	1.052	-0.11	1.290	**1.357**
47	LTE Band 2	20M	QPSK	1	0	Front	18700	22.60	23.00	1.096	0.18	1.230	1.349
49	LTE Band 2	20M	QPSK	1	0	Front	19100	22.77	23.00	1.054	0.14	1.180	1.244
46	LTE Band 2	20M	QPSK	50	24	Front	18900	21.41	22.00	1.146	-0.07	0.894	1.024
48	LTE Band 2	20M	QPSK	50	24	Front	18900	21.29	22.00	1.178	0.01	0.911	1.073
50	LTE Band 2	20M	QPSK	50	24	Front	18900	21.16	22.00	1.213	0.15	0.849	1.030
51	LTE Band 2	20M	QPSK	100	0	Front	18900	21.40	22.00	1.148	0.02	0.881	1.012
52	LTE Band 2	20M	QPSK	1	0	Bottom Side	18900	22.78	23.00	1.052	0.09	0.148	0.156
53	LTE Band 2	20M	QPSK	50	24	Bottom Side	18900	21.41	22.00	1.146	-0.15	0.115	0.132
1	LTE Band 5	10M	QPSK	1	24	Front	20525	23.98	24.00	1.005	0.19	0.907	**0.911**
2	LTE Band 5	10M	QPSK	25	0	Front	20525	22.56	23.00	1.107	0.1	0.734	0.812
20	LTE Band 5	10M	QPSK	50	0	Front	20525	22.51	23.00	1.119	-0.01	0.609	0.682
7	LTE Band 5	10M	QPSK	1	24	Bottom Side	20525	23.98	24.00	1.005	0.12	0.145	0.146
8	LTE Band 5	10M	QPSK	25	0	Bottom Side	20525	22.56	23.00	1.107	0.04	0.117	0.129
3	LTE Band 12	10M	QPSK	1	24	Front	23095	23.78	24.00	1.052	-0.11	0.524	**0.551**
4	LTE Band 12	10M	QPSK	25	25	Front	23095	22.58	23.00	1.102	-0.1	0.447	0.492
9	LTE Band 12	10M	QPSK	1	24	Bottom Side	23095	23.78	24.00	1.052	-0.18	0.114	0.120
10	LTE Band 12	10M	QPSK	25	25	Bottom Side	23095	22.58	23.00	1.102	-0.1	0.139	0.153
5	LTE Band 13	10M	QPSK	1	24	Front	23230	23.85	24.00	1.035	-0.15	0.652	**0.675**
6	LTE Band 13	10M	QPSK	25	12	Front	23230	22.68	23.00	1.076	-0.18	0.625	0.673
11	LTE Band 13	10M	QPSK	1	24	Bottom Side	23230	23.85	24.00	1.035	-0.13	0.096	0.099
12	LTE Band 13	10M	QPSK	25	12	Bottom Side	23230	22.68	23.00	1.076	-0.05	0.109	0.117
31	LTE Band 66	20M	QPSK	1	0	Front	132322	22.98	23.00	1.005	0.09	1.370	**1.376**
36	LTE Band 66	20M	QPSK	1	0	Front	132072	22.80	23.00	1.047	0.09	1.310	1.372
37	LTE Band 66	20M	QPSK	1	0	Front	132572	22.70	23.00	1.072	-0.15	1.260	1.350
43	LTE Band 66	20M	QPSK	50	50	Front	132322	21.59	22.00	1.099	0.03	0.985	1.083
44	LTE Band 66	20M	QPSK	50	50	Front	132072	21.55	22.00	1.109	0.13	1.040	1.154
42	LTE Band 66	20M	QPSK	50	50	Front	132572	21.38	22.00	1.153	0.02	1.130	1.303
45	LTE Band 66	20M	QPSK	100	0	Front	132322	21.62	22.00	1.091	0.12	1.020	1.113
54	LTE Band 66	20M	QPSK	1	0	Bottom Side	132322	22.98	23.00	1.005	0.15	0.092	0.092
55	LTE Band 66	20M	QPSK	50	50	Bottom Side	132322	21.59	22.00	1.099	0.18	0.074	0.081

Plot No.	Band	Mode	Test Position	Ch.	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
195	Bluetooth	1Mbps	Front	0	3.74	4.00	1.062	0.17	0.011	**0.011**
196	Bluetooth	1Mbps	Bottom Side	0	3.74	4.00	1.062	0.14	0.00194	0.002

8.8.3 SAR Results for Body Exposure Condition (Separation Distance is 0mm Gap)

Plot No.	Band	BW (MHz)	Mode	RB#	RB Offset	Test Position	Headset	Ch.	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
56	LTE Band 2	20M	QPSK	1	0	Front	-	18900	22.78	23.00	1.052	-0.14	2.290	0.195
57	LTE Band 2	20M	QPSK	50	24	Front	-	18900	21.41	22.00	1.146	0.05	1.680	0.156
66	LTE Band 2	20M	QPSK	1	0	Back	-	18900	22.78	23.00	1.052	-0.09	3.370	**0.287**
184	LTE Band 2	20M	QPSK	1	0	Back	-	18700	22.60	23.00	1.096	-0.11	3.170	0.282
185	LTE Band 2	20M	QPSK	1	0	Back	-	19100	22.77	23.00	1.054	0.04	3.190	0.272
67	LTE Band 2	20M	QPSK	50	24	Back	-	18900	21.41	22.00	1.146	0.05	2.440	0.226
206	LTE Band 2	20M	QPSK	50	24	Back	-	18700	21.29	22.00	1.178	0.16	2.400	0.229
207	LTE Band 2	20M	QPSK	50	24	Back	-	19100	21.16	22.00	1.213	0.03	2.380	0.234
186	LTE Band 2	20M	QPSK	100	0	Back	-	18900	21.40	22.00	1.148	0.02	2.500	0.233
76	LTE Band 2	20M	QPSK	1	0	Left Side	-	18900	22.78	23.00	1.052	0	1.480	0.126
77	LTE Band 2	20M	QPSK	50	24	Left Side	-	18900	21.41	22.00	1.146	-0.02	1.060	0.098
82	LTE Band 2	20M	QPSK	1	0	Right Side	-	18900	22.78	23.00	1.052	-0.19	1.090	0.093
83	LTE Band 2	20M	QPSK	50	24	Right Side	-	18900	21.41	22.00	1.146	-0.01	0.742	0.069
92	LTE Band 2	20M	QPSK	1	0	Top Side	-	18900	22.78	23.00	1.052	0.08	0.301	0.026
93	LTE Band 2	20M	QPSK	50	24	Top Side	-	18900	21.41	22.00	1.146	0	0.229	0.021
100	LTE Band 2	20M	QPSK	1	0	Bottom Side	-	18900	22.78	23.00	1.052	0.05	0.580	0.049
101	LTE Band 2	20M	QPSK	50	24	Bottom Side	-	18900	21.41	22.00	1.146	-0.02	0.472	0.044
113	LTE Band 2	20M	QPSK	1	0	Back	Lanyard	18900	22.78	23.00	1.052	-0.08	3.250	0.277
119	LTE Band 2	20M	QPSK	1	0	Back	Blet Clip	18900	22.78	23.00	1.052	0.18	1.150	0.098
13	LTE Band 5	10M	QPSK	1	24	Front	-	20525	23.98	24.00	1.005	0.17	2.350	0.191
14	LTE Band 5	10M	QPSK	25	0	Front	-	20525	22.56	23.00	1.107	0.13	1.980	0.177
60	LTE Band 5	10M	QPSK	1	24	Back	-	20525	23.98	24.00	1.005	0.16	2.420	**0.197**
61	LTE Band 5	10M	QPSK	25	0	Back	-	20525	22.56	23.00	1.107	0.11	2.030	0.182
70	LTE Band 5	10M	QPSK	1	24	Left Side	-	20525	23.98	24.00	1.005	0.14	1.460	0.119
71	LTE Band 5	10M	QPSK	25	0	Left Side	-	20525	22.56	23.00	1.107	0.08	1.080	0.097
80	LTE Band 5	10M	QPSK	1	24	Right Side	-	20525	23.98	24.00	1.005	0.15	1.870	0.152
81	LTE Band 5	10M	QPSK	25	0	Right Side	-	20525	22.56	23.00	1.107	0.03	1.390	0.125
90	LTE Band 5	10M	QPSK	1	24	Top Side	-	20525	23.98	24.00	1.005	0.05	0.313	0.025
91	LTE Band 5	10M	QPSK	25	0	Top Side	-	20525	22.56	23.00	1.107	0.06	0.236	0.021
102	LTE Band 5	10M	QPSK	1	24	Bottom Side	-	20525	23.98	24.00	1.005	-0.11	0.897	0.073
103	LTE Band 5	10M	QPSK	25	0	Bottom Side	-	20525	22.56	23.00	1.107	0.03	0.697	0.062
114	LTE Band 5	10M	QPSK	1	24	Back	Lanyard	20525	23.98	24.00	1.005	-0.12	2.390	0.194
116	LTE Band 5	10M	QPSK	1	24	Back	Blet Clip	20525	23.98	24.00	1.005	-0.13	0.967	0.079
15	LTE Band 12	10M	QPSK	1	24	Front	-	23095	23.78	24.00	1.052	-0.18	1.170	0.100
16	LTE Band 12	10M	QPSK	25	25	Front	-	23095	22.58	23.00	1.102	0.07	1.560	0.139
62	LTE Band 12	10M	QPSK	1	24	Back	-	23095	23.78	24.00	1.052	-0.16	1.370	0.117
63	LTE Band 12	10M	QPSK	25	25	Back	-	23095	22.58	23.00	1.102	0.02	1.630	**0.145**
72	LTE Band 12	10M	QPSK	1	24	Left Side	-	23095	23.78	24.00	1.052	-0.18	0.762	0.065
73	LTE Band 12	10M	QPSK	25	25	Left Side	-	23095	22.58	23.00	1.102	0.07	0.713	0.064
84	LTE Band 12	10M	QPSK	1	24	Right Side	-	23095	23.78	24.00	1.052	-0.18	1.090	0.093
85	LTE Band 12	10M	QPSK	25	25	Right Side	-	23095	22.58	23.00	1.102	0.08	0.987	0.088
96	LTE Band 12	10M	QPSK	1	24	Top Side	-	23095	23.78	24.00	1.052	-0.11	0.386	0.033
97	LTE Band 12	10M	QPSK	25	25	Top Side	-	23095	22.58	23.00	1.102	0.05	0.370	0.033
104	LTE Band 12	10M	QPSK	1	24	Bottom Side	-	23095	23.78	24.00	1.052	-0.13	0.885	0.075
105	LTE Band 12	10M	QPSK	25	25	Bottom Side	-	23095	22.58	23.00	1.102	-0.04	1.040	0.093
111	LTE Band 12	10M	QPSK	25	25	Back	Lanyard	23095	22.58	23.00	1.102	0.04	1.610	0.144
117	LTE Band 12	10M	QPSK	25	25	Back	Blet Clip	23095	22.58	23.00	1.102	-0.12	0.373	0.033

Plot No.	Band	BW (MHz)	Mode	RB#	RB Offset	Test Position	Headset	Ch.	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
17	LTE Band 13	10M	QPSK	1	24	Front	-	23230	23.85	24.00	1.035	-0.16	1.160	0.097
18	LTE Band 13	10M	QPSK	25	12	Front	-	23230	22.68	23.00	1.076	-0.04	1.320	0.115
64	LTE Band 13	10M	QPSK	1	24	Back	-	23230	23.85	24.00	1.035	-0.15	1.470	**0.123**
65	LTE Band 13	10M	QPSK	25	12	Back	-	23230	22.68	23.00	1.076	0.04	1.170	0.102
74	LTE Band 13	10M	QPSK	1	24	Left Side	-	23230	23.85	24.00	1.035	-0.1	0.651	0.055
75	LTE Band 13	10M	QPSK	25	12	Left Side	-	23230	22.68	23.00	1.076	0	0.634	0.055
86	LTE Band 13	10M	QPSK	1	24	Right Side	-	23230	23.85	24.00	1.035	-0.09	0.991	0.083
87	LTE Band 13	10M	QPSK	25	12	Right Side	-	23230	22.68	23.00	1.076	0.17	0.882	0.077
98	LTE Band 13	10M	QPSK	1	24	Top Side	-	23230	23.85	24.00	1.035	0.11	0.282	0.024
99	LTE Band 13	10M	QPSK	25	12	Top Side	-	23230	22.68	23.00	1.076	0.07	0.208	0.018
106	LTE Band 13	10M	QPSK	1	24	Bottom Side	-	23230	23.85	24.00	1.035	0.14	0.861	0.072
107	LTE Band 13	10M	QPSK	25	12	Bottom Side	-	23230	22.68	23.00	1.076	0.04	0.696	0.061
112	LTE Band 13	10M	QPSK	1	24	Back	Lanyard	23230	23.85	24.00	1.035	-0.16	1.460	0.122
118	LTE Band 13	10M	QPSK	1	24	Back	Blet Clip	23230	23.85	24.00	1.035	-0.19	0.422	0.035
58	LTE Band 66	20M	QPSK	1	0	Front	-	132322	22.98	23.00	1.005	0.14	2.220	0.181
59	LTE Band 66	20M	QPSK	50	50	Front	-	132322	21.59	22.00	1.099	0.15	1.790	0.159
68	LTE Band 66	20M	QPSK	1	0	Back	-	132322	22.98	23.00	1.005	-0.06	4.090	0.333
187	LTE Band 66	20M	QPSK	1	0	Back	-	132072	22.80	23.00	1.047	0.19	4.080	0.346
189	LTE Band 66	20M	QPSK	1	0	Back	-	132572	22.70	23.00	1.072	0.12	4.690	**0.407**
69	LTE Band 66	20M	QPSK	50	50	Back	-	132322	21.59	22.00	1.099	0.17	3.690	0.328
188	LTE Band 66	20M	QPSK	50	50	Back	-	132072	21.55	22.00	1.109	-0.09	3.250	0.292
190	LTE Band 66	20M	QPSK	50	50	Back	-	132572	21.38	22.00	1.153	-0.03	3.380	0.316
191	LTE Band 66	20M	QPSK	100	0	Back	-	132322	21.62	22.00	1.091	0.01	3.130	0.277
78	LTE Band 66	20M	QPSK	1	0	Left Side	-	132322	22.98	23.00	1.005	-0.06	1.620	0.132
79	LTE Band 66	20M	QPSK	50	50	Left Side	-	132322	21.59	22.00	1.099	-0.02	1.330	0.118
88	LTE Band 66	20M	QPSK	1	0	Right Side	-	132322	22.98	23.00	1.005	-0.13	1.100	0.090
89	LTE Band 66	20M	QPSK	50	50	Right Side	-	132322	21.59	22.00	1.099	0.1	0.927	0.083
94	LTE Band 66	20M	QPSK	1	0	Top Side	-	132322	22.98	23.00	1.005	-0.06	0.120	0.010
95	LTE Band 66	20M	QPSK	50	50	Top Side	-	132322	21.59	22.00	1.099	0.15	0.105	0.009
108	LTE Band 66	20M	QPSK	1	0	Bottom Side	-	132322	22.98	23.00	1.005	0.18	0.425	0.035
109	LTE Band 66	20M	QPSK	50	50	Bottom Side	-	132322	21.59	22.00	1.099	0.13	0.343	0.031
115	LTE Band 66	20M	QPSK	1	0	Back	Lanyard	132322	22.98	23.00	1.005	-0.16	4.040	0.329
120	LTE Band 66	20M	QPSK	1	0	Back	Blet Clip	132322	22.98	23.00	1.005	0.06	1.180	0.096

Plot No.	Band	Mode	Test Position	Headset	Ch.	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
197	Bluetooth	1Mbps	Front	-	0	3.74	4.00	1.062	0.14	0.055	**0.056**
198	Bluetooth	1Mbps	Back	-	0	3.74	4.00	1.062	-0.19	0.044	0.045
199	Bluetooth	1Mbps	Left Side	-	0	3.74	4.00	1.062	0.07	0.032	0.033
200	Bluetooth	1Mbps	Right Side	-	0	3.74	4.00	1.062	0.17	0.00539	0.006
201	Bluetooth	1Mbps	Top Side	-	0	3.74	4.00	1.062	0.12	0.010	0.010
202	Bluetooth	1Mbps	Bottom Side	-	0	3.74	4.00	1.062	0.14	0.010	0.010
203	Bluetooth	1Mbps	Front	Lanyard	0	3.74	4.00	1.062	0.14	0.051	0.052
204	Bluetooth	1Mbps	Front	Blet Clip	0	3.74	4.00	1.062	-0.15	0.00915	0.009

8.8.4 SAR Results for Extremity Exposure Condition (Separation Distance is 0cm Gap)

Plot No.	Band	BW (MHz)	Mode	RB#	RB Offset	Test Position	Ch.	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-10g (W/kg)	Reported SAR-10g (W/kg)
160	LTE Band 2	20M	QPSK	1	0	Front	18900	22.78	23.00	1.052	-0.14	1.110	1.168
161	LTE Band 2	20M	QPSK	50	24	Front	18900	21.41	22.00	1.146	0.05	0.822	0.942
164	LTE Band 2	20M	QPSK	1	0	Back	18900	22.78	23.00	1.052	-0.09	1.960	**2.062**
184	LTE Band 2	20M	QPSK	1	0	Back	18700	22.60	23.00	1.096	-0.11	1.860	2.039
185	LTE Band 2	20M	QPSK	1	0	Back	19100	22.77	23.00	1.054	0.04	1.900	2.003
165	LTE Band 2	20M	QPSK	50	24	Back	18900	21.41	22.00	1.146	0.05	1.410	1.615
206	LTE Band 2	20M	QPSK	50	24	Back	18700	21.29	22.00	1.178	0.16	1.400	1.649
207	LTE Band 2	20M	QPSK	50	24	Back	19100	21.16	22.00	1.213	0.03	1.390	1.687
186	LTE Band 2	20M	QPSK	100	0	Back	18900	21.40	22.00	1.148	0.02	1.470	1.688
168	LTE Band 2	20M	QPSK	1	0	Left Side	18900	22.78	23.00	1.052	0	0.804	0.846
169	LTE Band 2	20M	QPSK	50	24	Left Side	18900	21.41	22.00	1.146	-0.02	0.574	0.658
172	LTE Band 2	20M	QPSK	1	0	Right Side	18900	22.78	23.00	1.052	-0.19	0.554	0.583
173	LTE Band 2	20M	QPSK	50	24	Right Side	18900	21.41	22.00	1.146	-0.01	0.380	0.435
176	LTE Band 2	20M	QPSK	1	0	Top Side	18900	22.78	23.00	1.052	0.08	0.169	0.178
177	LTE Band 2	20M	QPSK	50	24	Top Side	18900	21.41	22.00	1.146	0	0.128	0.147
180	LTE Band 2	20M	QPSK	1	0	Bottom Side	18900	22.78	23.00	1.052	0.05	0.242	0.255
181	LTE Band 2	20M	QPSK	50	24	Bottom Side	18900	21.41	22.00	1.146	-0.02	0.194	0.222
124	LTE Band 5	10M	QPSK	1	24	Front	20525	23.98	24.00	1.005	0.07	1.490	1.497
125	LTE Band 5	10M	QPSK	25	0	Front	20525	22.56	23.00	1.107	0.03	1.240	1.372
130	LTE Band 5	10M	QPSK	1	24	Back	20525	23.98	24.00	1.005	0.06	1.510	**1.517**
131	LTE Band 5	10M	QPSK	25	0	Back	20525	22.56	23.00	1.107	0.01	1.260	1.394
136	LTE Band 5	10M	QPSK	1	24	Left Side	20525	23.98	24.00	1.005	0.04	0.942	0.946
137	LTE Band 5	10M	QPSK	25	0	Left Side	20525	22.56	23.00	1.107	0.08	0.693	0.767
142	LTE Band 5	10M	QPSK	1	24	Right Side	20525	23.98	24.00	1.005	0.05	1.050	1.055
143	LTE Band 5	10M	QPSK	25	0	Right Side	20525	22.56	23.00	1.107	0.03	0.771	0.853
148	LTE Band 5	10M	QPSK	1	24	Top Side	20525	23.98	24.00	1.005	0.05	0.123	0.124
149	LTE Band 5	10M	QPSK	25	0	Top Side	20525	22.56	23.00	1.107	0.06	0.093	0.103
154	LTE Band 5	10M	QPSK	1	24	Bottom Side	20525	23.98	24.00	1.005	-0.01	0.355	0.357
155	LTE Band 5	10M	QPSK	25	0	Bottom Side	20525	22.56	23.00	1.107	0.03	0.277	0.307
126	LTE Band 12	10M	QPSK	1	24	Front	23095	23.78	24.00	1.052	-0.08	0.731	0.769
127	LTE Band 12	10M	QPSK	25	25	Front	23095	22.58	23.00	1.102	0.07	0.941	1.037
132	LTE Band 12	10M	QPSK	1	24	Back	23095	23.78	24.00	1.052	-0.06	0.802	0.844
133	LTE Band 12	10M	QPSK	25	25	Back	23095	22.58	23.00	1.102	0.02	0.959	**1.056**
138	LTE Band 12	10M	QPSK	1	24	Left Side	23095	23.78	24.00	1.052	-0.08	0.471	0.495
139	LTE Band 12	10M	QPSK	25	25	Left Side	23095	22.58	23.00	1.102	0.07	0.442	0.487
144	LTE Band 12	10M	QPSK	1	24	Right Side	23095	23.78	24.00	1.052	-0.08	0.544	0.572
145	LTE Band 12	10M	QPSK	25	25	Right Side	23095	22.58	23.00	1.102	0.08	0.489	0.539
150	LTE Band 12	10M	QPSK	1	24	Top Side	23095	23.78	24.00	1.052	-0.01	0.144	0.151
151	LTE Band 12	10M	QPSK	25	25	Top Side	23095	22.58	23.00	1.102	0.05	0.137	0.151
156	LTE Band 12	10M	QPSK	1	24	Bottom Side	23095	23.78	24.00	1.052	-0.03	0.330	0.347
157	LTE Band 12	10M	QPSK	25	25	Bottom Side	23095	22.58	23.00	1.102	-0.04	0.386	0.425
128	LTE Band 13	10M	QPSK	1	24	Front	23230	23.85	24.00	1.035	-0.06	0.733	0.759
129	LTE Band 13	10M	QPSK	25	12	Front	23230	22.68	23.00	1.076	-0.04	0.832	0.896
134	LTE Band 13	10M	QPSK	1	24	Back	23230	23.85	24.00	1.035	-0.05	0.911	**0.943**
135	LTE Band 13	10M	QPSK	25	12	Back	23230	22.68	23.00	1.076	0.07	0.738	0.794
140	LTE Band 13	10M	QPSK	1	24	Left Side	23230	23.85	24.00	1.035	-0.1	0.410	0.424
141	LTE Band 13	10M	QPSK	25	12	Left Side	23230	22.68	23.00	1.076	0	0.398	0.428
146	LTE Band 13	10M	QPSK	1	24	Right Side	23230	23.85	24.00	1.035	-0.09	0.537	0.556
147	LTE Band 13	10M	QPSK	25	12	Right Side	23230	22.68	23.00	1.076	0.07	0.476	0.512
152	LTE Band 13	10M	QPSK	1	24	Top Side	23230	23.85	24.00	1.035	0.01	0.110	0.114
153	LTE Band 13	10M	QPSK	25	12	Top Side	23230	22.68	23.00	1.076	0.07	0.083	0.089
158	LTE Band 13	10M	QPSK	1	24	Bottom Side	23230	23.85	24.00	1.035	0.04	0.339	0.351
159	LTE Band 13	10M	QPSK	25	12	Bottom Side	23230	22.68	23.00	1.076	0.04	0.273	0.294

Plot No.	Band	BW (MHz)	Mode	RB#	RB Offset	Test Position	Ch.	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-10g (W/kg)	Reported SAR-10g (W/kg)
162	LTE Band 66	20M	QPSK	1	0	Front	132322	22.98	23.00	1.005	0.19	1.300	1.306
163	LTE Band 66	20M	QPSK	50	50	Front	132322	21.59	22.00	1.099	0.18	1.060	1.165
166	LTE Band 66	20M	QPSK	1	0	Back	132322	22.98	23.00	1.005	0.02	2.650	2.662
187	LTE Band 66	20M	QPSK	1	0	Back	132072	22.80	23.00	1.047	0.19	2.340	2.450
189	LTE Band 66	20M	QPSK	1	0	Back	132572	22.70	23.00	1.072	0.12	2.790	**2.990**
167	LTE Band 66	20M	QPSK	50	50	Back	132322	21.59	22.00	1.099	0.17	2.080	2.286
188	LTE Band 66	20M	QPSK	50	50	Back	132072	21.55	22.00	1.109	-0.09	1.910	2.119
190	LTE Band 66	20M	QPSK	50	50	Back	132572	21.38	22.00	1.153	-0.03	1.980	2.284
191	LTE Band 66	20M	QPSK	100	0	Back	132322	21.62	22.00	1.091	0.01	1.830	1.997
170	LTE Band 66	20M	QPSK	1	0	Left Side	132322	22.98	23.00	1.005	-0.06	0.897	0.901
171	LTE Band 66	20M	QPSK	50	50	Left Side	132322	21.59	22.00	1.099	-0.02	0.732	0.804
174	LTE Band 66	20M	QPSK	1	0	Right Side	132322	22.98	23.00	1.005	-0.13	0.585	0.588
175	LTE Band 66	20M	QPSK	50	50	Right Side	132322	21.59	22.00	1.099	0.19	0.496	0.545
178	LTE Band 66	20M	QPSK	1	0	Top Side	132322	22.98	23.00	1.005	-0.06	0.073	0.073
179	LTE Band 66	20M	QPSK	50	50	Top Side	132322	21.59	22.00	1.099	0.19	0.064	0.070
182	LTE Band 66	20M	QPSK	1	0	Bottom Side	132322	22.98	23.00	1.005	0.18	0.204	0.205
183	LTE Band 66	20M	QPSK	50	50	Bottom Side	132322	21.59	22.00	1.099	0.19	0.165	0.181

Plot No.	Band	Mode	Test Position	Ch.	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-10g (W/kg)	Reported SAR-10g (W/kg)
205	Bluetooth	1Mbps	Front	0	3.74	4.00	1.062	0.16	0.026	**0.027**
198	Bluetooth	1Mbps	Back	0	3.74	4.00	1.062	-0.19	0.024	0.025
199	Bluetooth	1Mbps	Left Side	0	3.74	4.00	1.062	0.07	0.013	0.013
200	Bluetooth	1Mbps	Right Side	0	3.74	4.00	1.062	0.17	0.001	0.002
201	Bluetooth	1Mbps	Top Side	0	3.74	4.00	1.062	0.12	0.004	0.004
202	Bluetooth	1Mbps	Bottom Side	0	3.74	4.00	1.062	0.14	0.003	0.003

8.8.5 SAR Measurement Variability

According to KDB 865664 D01, SAR measurement variability was assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. Alternatively, if the highest measured SAR for both head and body tissue-equivalent media are ≤ 1.45 W/kg and the ratio of these highest SAR values, i.e., largest divided by smallest value, is ≤ 1.10, the highest SAR configuration for either head or body tissue-equivalent medium may be used to perform the repeated measurement. 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.

SAR repeated measurement procedure:

1. When the highest measured SAR is < 0.80 W/kg, repeated measurement is not required.
2. When the highest measured SAR is >= 0.80 W/kg, repeat that measurement once.
3. If the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20, or when the original or repeated measurement is >= 1.45 W/kg, perform a second repeated measurement.
4. If the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20, and the original, first or second repeated measurement is >= 1.5 W/kg, perform a third repeated measurement.

Plot No.	Band	BW (MHz)	Mode	RB#	RB Offset	Test Position	Ch.	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)	Ratio
38	LTE Band 2	20M	QPSK	1	0	Front	18900	22.78	23.00	1.052	-0.11	1.290	1.357	-
121	LTE Band 2	20M	QPSK	1	0	Front	18900	22.78	23.00	1.052	0.03	1.290	1.357	0.0%
1	LTE Band 5	10M	QPSK	1	24	Front	20525	23.98	24.00	1.005	0.19	0.907	0.911	-
122	LTE Band 5	10M	QPSK	1	24	Front	20525	23.98	24.00	1.005	0.12	0.862	0.866	-5.2%
31	LTE Band 66	20M	QPSK	1	0	Front	132322	22.98	23.00	1.005	0.09	1.370	1.376	-
123	LTE Band 66	20M	QPSK	1	0	Front	132322	22.98	23.00	1.005	0.11	1.230	1.236	-11.4%

Plot No.	Band	BW (MHz)	Mode	RB#	RB Offset	Test Position	Ch.	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-10g (W/kg)	Reported SAR-10g (W/kg)	Ratio
3	LTE Band 2	20M	QPSK	1	0	Back	18900	22.78	23.00	1.052	-0.09	1.960	2.062	-
193	LTE Band 2	20M	QPSK	1	0	Back	18900	22.78	23.00	1.052	-0.12	2.060	2.167	4.90%
189	LTE Band 66	20M	QPSK	1	0	Back	132572	22.70	23.00	1.072	0.12	2.790	2.990	-
194	LTE Band 66	20M	QPSK	1	0	Back	132572	22.70	23.00	1.072	-0.14	2.700	2.893	-3.4%

8.8.6 DUT Holder Perturbations

Depending on antenna locations, buttons locations on phones or device, form factor (e.g. dongles etc.), the measured SAR could be influenced by the relative positions of the test device and its holder.

When the highest reported SAR of an antenna is > 1.2 W/kg, holder perturbation verification is required, using the highest SAR configuration among all applicable frequency bands with and without the device holder.

All the measured SAR are less than 1.2 W/kg, so the holder perturbation verification is not required.

8.8.7 Simultaneous Multi-band Transmission Evaluation

<SAR Summation Analysis>

Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmitting antenna. When the sum of SAR_{1g} of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit (SAR_{1g} 1.6 W/kg), the simultaneous transmission SAR is not required. When the sum of SAR_{1g} is greater than the SAR limit (SAR_{1g} 1.6 W/kg), SAR test exclusion is determined by the SPLSR.

Head		Reported SAR (W/kg)		
		1	2	
WWAN Band	Exposure Position	WWAN 1g SAR (W/kg)	Bluetooth 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)
LTE Band 2	Front	1.357	0.011	1.368
	Bottom Side	0.156	0.002	0.158
LTE Band 5	Right Cheek	0.911	0.011	0.922
	Left Tilted	0.146	0.002	0.148
LTE Band 12	Right Cheek	0.551	0.011	0.562
	Left Tilted	0.153	0.002	0.155
LTE Band 13	Right Cheek	0.675	0.011	0.686
	Left Tilted	0.117	0.002	0.119
LTE Band 66	Right Cheek	1.376	0.011	1.387
	Left Tilted	0.092	0.002	0.094

Body		Reported SAR (W/kg)		
WWAN Band	Exposure Position	1 WWAN 1g SAR (W/kg)	2 Bluetooth 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)
LTE Band 2	Front	0.195	0.056	0.251
	Back	0.287	0.045	0.332
	Left side	0.126	0.033	0.159
	Right side	0.093	0.006	0.099
	Top side	0.026	0.010	0.036
	Bottom side	0.049	0.010	0.059
LTE Band 5	Front	0.191	0.056	0.247
	Back	0.197	0.045	0.242
	Left side	0.119	0.033	0.152
	Right side	0.152	0.006	0.158
	Top side	0.025	0.010	0.035
	Bottom side	0.073	0.010	0.083
LTE Band 12	Front	0.139	0.056	0.195
	Back	0.145	0.045	0.190
	Left side	0.065	0.033	0.098
	Right side	0.093	0.006	0.099
	Top side	0.033	0.010	0.043
	Bottom side	0.093	0.010	0.103
LTE Band 13	Front	0.115	0.056	0.171
	Back	0.123	0.045	0.168
	Left side	0.055	0.033	0.088
	Right side	0.083	0.006	0.089
	Top side	0.024	0.010	0.034
	Bottom side	0.072	0.010	0.082
LTE Band 66	Front	0.181	0.056	0.237
	Back	0.407	0.045	0.452
	Left side	0.132	0.033	0.165
	Right side	0.090	0.006	0.096
	Top side	0.010	0.010	0.020
	Bottom side	0.035	0.010	0.045

Body		Reported SAR (W/kg)		
WWAN Band	Exposure Position	1 WWAN 1g SAR (W/kg)	2 Bluetooth 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)
LTE Band 2	Front with lanyard	-	0.052	0.052
	Back with lanyard	0.277	-	0.277
	Front with Blet Clip	-	0.009	0.009
	Back with Blet Clip	0.098	-	0.098
LTE Band 5	Front with lanyard	-	0.052	0.052
	Back with lanyard	0.194	-	0.194
	Front with Blet Clip	-	0.009	0.009
	Back with Blet Clip	0.079	-	0.079
LTE Band 12	Front with lanyard	-	0.052	0.052
	Back with lanyard	0.144	-	0.144
	Front with Blet Clip	-	0.009	0.009
	Back with Blet Clip	0.033	-	0.033
LTE Band 13	Front with lanyard	-	0.052	0.052
	Back with lanyard	0.122	-	0.122
	Front with Blet Clip	-	0.009	0.009
	Back with Blet Clip	0.035	-	0.035
LTE Band 66	Front with lanyard	-	0.052	0.052
	Back with lanyard	0.329	-	0.329
	Front with Blet Clip	-	0.009	0.009
	Back with Blet Clip	0.096	-	0.096

Extremity		Reported SAR (W/kg)		
WWAN Band	Exposure Position	1 WWAN 10g SAR (W/kg)	2 Bluetooth 10g SAR (W/kg)	1+2 Summed 10g SAR (W/kg)
LTE Band 2	Front	1.168	0.027	1.195
	Back	2.062	0.025	2.087
	Left side	0.846	0.013	0.859
	Right side	0.583	0.002	0.585
	Top side	0.178	0.004	0.182
	Bottom side	0.255	0.003	0.258
LTE Band 5	Front	1.497	0.027	1.524
	Back	1.517	0.025	1.542
	Left side	0.946	0.013	0.959
	Right side	1.055	0.002	1.057
	Top side	0.124	0.004	0.128
	Bottom side	0.357	0.003	0.360
LTE Band 12	Front	1.037	0.027	1.064
	Back	1.056	0.025	1.081
	Left side	0.495	0.013	0.508
	Right side	0.572	0.002	0.574
	Top side	0.151	0.004	0.155
	Bottom side	0.425	0.003	0.428
LTE Band 13	Front	0.896	0.027	0.923
	Back	0.943	0.025	0.968
	Left side	0.428	0.013	0.441
	Right side	0.556	0.002	0.558
	Top side	0.114	0.004	0.118
	Bottom side	0.351	0.003	0.354
LTE Band 66	Front	1.306	0.027	1.333
	Back	2.990	0.025	3.015
	Left side	0.901	0.013	0.914
	Right side	0.588	0.002	0.590
	Top side	0.073	0.004	0.077
	Bottom side	0.205	0.003	0.208

9. Appendixes

Appendix A – SAR Plots of System Verification

Appendix B – SAR Plots of SAR Measurement

Appendix C – Calibration Certificate for Probe and Dipole

Appendix D – Photographs of the Test Set-Up

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