Prüfbericht-Nr.: *Test report no.:*	CN249FTY 001	**Auftrags-Nr.:** *Order no.*:	48225046	Seite 1 von 69 *Page 1 of 69*
Kunden-Referenz-Nr.: *Client reference no.:*	N/A	**Auftragsdatum:** *Order date:*	2023-11-22	
Auftraggeber: *Client:*	AMobile Solutions Corp. 8F.-1, No.700, Zhongzheng Rd., Zhonghe Dist., New Taipei City 235, Taiwan			
Prüfgegenstand: *Test item:*	6" Rugged Mobile Computing Device			
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	PD602			
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:*	2023-10-26
Prüfmuster-Nr.: *Test sample no:*	A003589973-003
Prüfzeitraum: *Testing period:*	2023-11-25 - 2024-01-02
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	**genehmigt von:** authorized by:	Brenda Chen
Datum: *Date:* 2024-01-12		**Ausstellungsdatum:** *Issue date:* 2024-01-12	
Stellung / *Position:*	Morrision Huang Project Engineer	**Stellung** / *Position:*	Senior Project Manager

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*

Anmerkungen
Remarks

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. *The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system.* *Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.*
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CONTENTS

HISTORY OF THIS TEST REPORT

Revision	Description	Date Issued
R01	Original Release	2024-01-12

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} (W/kg)	Highest Reported Body-worn SAR_{1g} (1.0 cm Gap) (W/kg)	Highest Reported Hotspot SAR_{1g} (1.0 cm Gap) (W/kg)	Highest Reported Extremity SAR_{10g} (0 cm Gap) (W/kg)
PCE	GSM850	0.271	0.587	0.587	-
	GSM1900	0.112	0.392	0.451	-
	UMTS II	0.166	0.564	0.789	-
	UMTS V	0.088	0.076	0.076	-
	LTE 2	0.166	0.410	0.524	-
	LTE 4	0.058	0.284	0.345	-
	LTE 5	0.014	0.038	0.038	-
	LTE 7	0.002	0.052	0.052	-
	LTE 12	0.122	0.156	0.185	-
	LTE 41	0.005	0.022	0.022	-
DTS	2.4G WLAN	0.140	0.039	0.039	-
NII	5G WLAN	0.892	1.155	-	1.748
DSS	Bluetooth	0.007	<0.001	<0.001	-
Highest Simultaneous Transmission SAR		Head (W/Kg)	Body-Worn (W/Kg)	Hotspot (W/Kg)	Extremity (W/Kg)
PCE + DTS		0.411	0.626	0.801	-
PCE + NII		1.146	1.558	-	-
PCE + DSS		0.278	0.587	0.789	-

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. This device supports both LTE band 12 and band 17. The frequency span of LTE band 12 can completely cover LTE band 17, and they have the same tune-up power. SAR was tested for LTE band 12 only.

1.2 Equipment Under Test (EUT) Information

1.2.1 General Information

EUT Type	6" Rugged Mobile Computing Device
Model Name	PD602
FCC ID	2AQ5W-PD602
Antenna Type	LDS Antenna
Antenna Gain (dB)	GSM850: -2.61 GSM1900: -0.19 UMTS Band II: -0.19 UMTS Band V: -2.61 LTE Band 2: -0.19 LTE Band 4: -6.86 LTE Band 5: -2.61 LTE Band 7: -0.79 LTE Band 12: -9.36 LTE Band 17: -9.36 LTE Band 41: -0.79 WLAN 2.4GHz Band: 3.83 WLAN U-NII 1: 3.29 WLAN U-NII 2: 3.49 WLAN U-NII 3: 3.8 WLAN U-NII 4: 2.38 Bluetooth: 3.83

1.2.2 Wireless Technologies

Tx Frequency Bands (Unit: MHz)	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz UMTS Band II: 1852.4 MHz ~ 1907.6 MHz UMTS Band V: 826.4 MHz ~ 846.6 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 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN U-NII 1: 5150 MHz ~ 5250 MHz WLAN U-NII 2: 5250 MHz ~ 5320 MHz WLAN U-NII 3: 5470 MHz ~ 5725 MHz WLAN U-NII 4: 5725 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Uplink Modulations	GSM & GPRS: GMSK EDGE: 8PSK UMTS: QPSK LTE: QPSK, 16QAM, 64QAM 802.11b: DSSS 802.11a/g/n/ac: OFDM Bluetooth: GFSK, π/4-DQPSK, 8-DPSK Bluetooth LE: GFSK NFC: ASK

1.3 Maximum Conducted Power

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

Mode	GSM850	GSM1900
GSM (GMSK, 1Tx-slot)	34.00	28.50
GPRS (GMSK, 1Tx-slot)	34.00	28.50
GPRS (GMSK, 2Tx-slot)	33.00	28.00
GPRS (GMSK, 3Tx-slot)	31.00	26.50
GPRS (GMSK, 4Tx-slot)	29.50	26.00
EDGE (8PSK, 1Tx-slot)	26.50	26.00
EDGE (8PSK, 2Tx-slot)	26.00	26.00
EDGE (8PSK, 3Tx-slot)	26.00	26.00
EDGE (8PSK, 4Tx-slot)	25.00	25.50

Mode	UMTS Band II	UMTS Band V
RMC 12.2K	24.00	22.50
HSDPA	23.00	21.50
HSUPA	23.00	21.50

Mode	LTE 2	LTE 4	LTE 5	LTE 7
QPSK / 16QAM	21.50	21.50	20.50	21.50

Mode	LTE 12	LTE 17	LTE 41
QPSK / 16QAM	21.50	21.50	20.00

Mode	2.4G WLAN	5.2G WLAN	5.3G WLAN	5.6G WLAN	5.8G WLAN
802.11a	N/A	15.50	15.50	16.00	17.50
802.11b	11.00	N/A	N/A	N/A	N/A
802.11g	18.00	N/A	N/A	N/A	N/A
802.11n HT20	17.50	15.50	15.50	16.00	17.50
802.11n HT40	16.50	15.00	15.00	16.00	17.50
802.11ac VHT20	17.50	15.50	15.50	16.00	17.50
802.11ac VHT40	16.50	15.00	15.00	16.00	17.50
802.11ac VHT80	N/A	10.50	12.50	14.00	14.00

Mode	2.4G Bluetooth
GFSK	15.50
π/4-DQPSK	13.00
8DPSK	13.00
LE	14.00

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
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
System Validation Dipole	SPEAG	D2600V2	1171	2023/3/21	1 Year
System Validation Dipole	SPEAG	D5GHzV2	1235	2023/3/20	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	2023/6/14	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	2023/11/24	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
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 248227 D01 802.11 Wi-Fi SAR v02r02
- KDB 447498 D01 General RF Exposure Guidance v06
- KDB 648474 D04 Handset SAR v01r03
- KDB 941225 D01 3G SAR Procedures v03r01
- KDB 941225 D05 SAR for LTE Devices v02r05
- KDB 941225 D06 Hotspot Mode v02r01

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

- TCB workshop October, 2014; Page 36, RF Exposure Procedures Update (Overlapping LTE Bands)
- TCB workshop October, 2014; Page 37, LTE Considerations (LTE Band 41 Test Channels)

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:

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

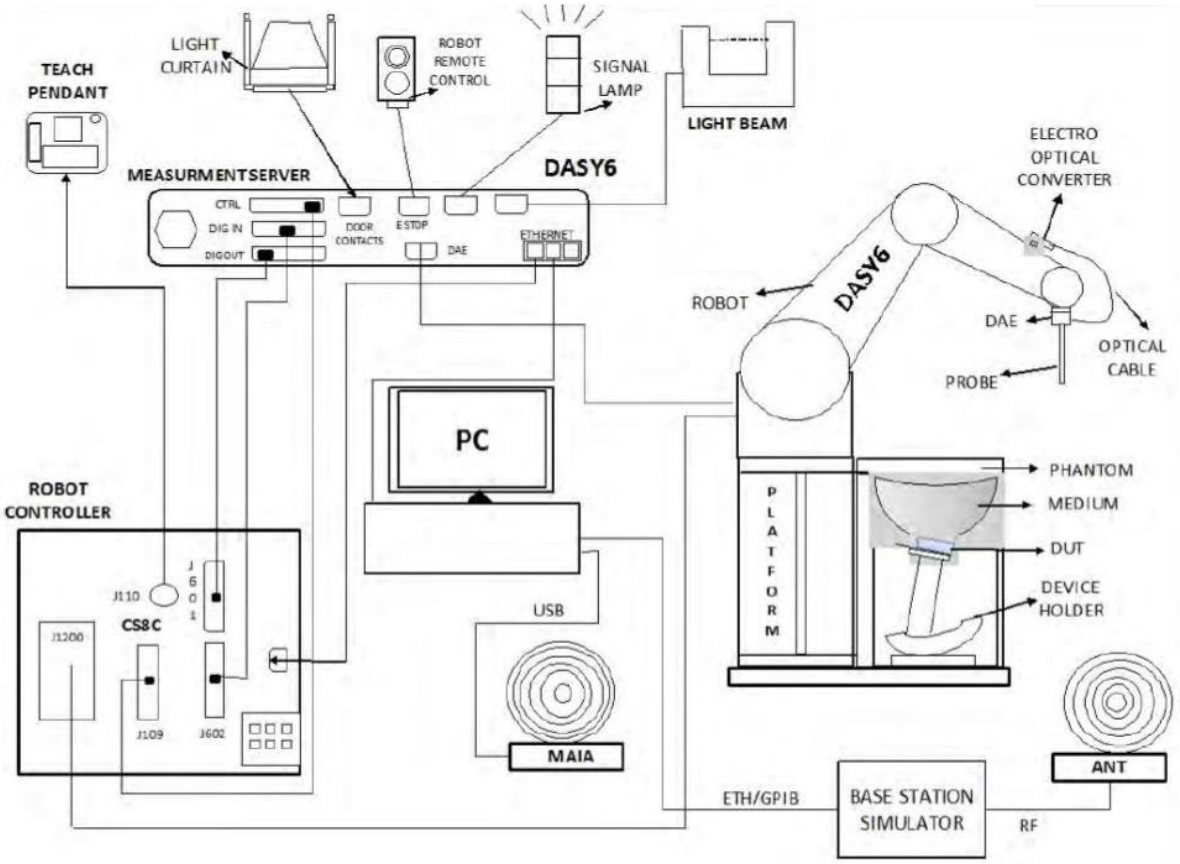
SAR is expressed in units of Watts per kilogram (W/kg)
SAR measurement can be related to the electrical field in the tissue by

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

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

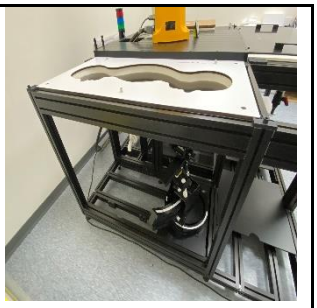
The SAR measurement is conducted with the dosimetric probe. The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency.

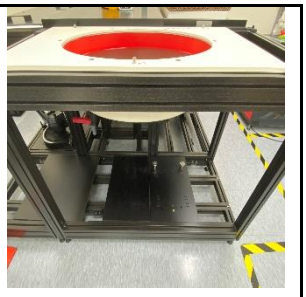
Model	EX3DV4
Construction	Symmetrical design with triangular core. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).
Frequency	4 MHz to 10 GHz Linearity: ± 0.2 dB
Directivity	± 0.1 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation 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

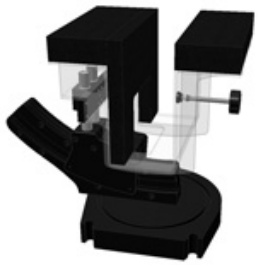
6.2.4 Phantoms

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.

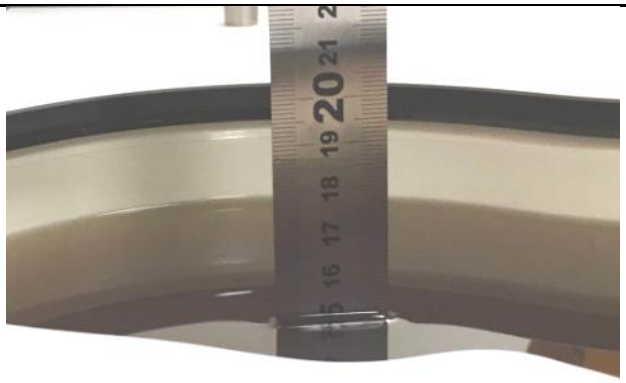


Photo of Liquid Height for Head Position

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 GSM / GPRS / EDGE for Setup and Testing>
The maximum multi-slot capability supported by this device is as below.
1. This EUT is class B device
2. This EUT supports GPRS multi-slot class 12 (max. uplink: 4, max. downlink: 4, total timeslots: 5)
3. This EUT supports EDGE multi-slot class 12 (max. uplink: 4, max. downlink: 4, total timeslots: 5)

For GSM850 frequency band, the power control level is set to 5 for GSM mode and GPRS (GMSK: CS1), and set to 8 for EDGE (GMSK: MCS1, 8PSK: MCS9). For GSM1900 frequency band, the power control level is set to 0 for GSM mode and GPRS (GMSK: CS1), and set to 2 for EDGE (GMSK: MCS1, 8PSK: MCS9).

SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.

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

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

Handsets with Release 5 HSDPA
The 3G SAR test reduction procedure is applied to HSDPA body-worn configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for HSDPA using the HSDPA body SAR procedures in the “Release 5 HSDPA Data Devices”, for the highest reported SAR body-worn exposure configuration in 12.2 kbps RMC. Handsets with both HSDPA and HSUPA are tested according to Release 6 HSPA test procedures.

Handsets with Release 6 HSUPA

The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body-worn configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for HSPA using the HSPA body SAR procedures in the “Release 6 HSPA Data Devices”, for the highest reported body-worn exposure SAR configuration in 12.2 kbps RMC. When VOIP is applicable for next to the ear head exposure in HSPA, the 3G SAR test reduction procedure is applied to HSPA with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body-worn measurements is tested for next to the ear head exposure.

Release 5 HSDPA Data Devices

The 3G SAR test reduction procedure is applied to body SAR with 12.2 kbps RMC as the primary mode. Otherwise, body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, for the highest reported SAR configuration in 12.2 kbps RMC without HSDPA. HSDPA is configured according to the applicable UE category of a test device. The number of HS-DSCH / HS-PDSCHs, HARQ 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 conditions, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4 ms and a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. DPCCH and DPDCH gain factors (β_c, β_d), and HS-DPCCH power offset parameters (Δ_{ACK}, Δ_{NACK}, Δ_{CQI}) are set according to values indicated in below. The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the H-set.

Sub-test	β_c	β_d	β_d (SF)	β_c / β_d	β_{hs} (1)	CM (dB)(2)	MPR
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: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 8 $\Leftrightarrow$ $A_{hs} = \beta_{hs} / \beta_c$ = 30 / 15 $\Leftrightarrow$ β_{hs} = 30 / 15 * β_c.
Note 2: CM = 1 for β_c / β_d = 12 / 15, β_{hs} / β_c = 24 / 15.
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 signaled gain factors for the reference TFC (TF1, TF1) to β_c = 11 / 15 and β_d = 15 / 15.

Release 6 HSUPA Data Devices

The 3G SAR test reduction procedure is applied to body SAR with 12.2 kbps RMC as the primary mode. Otherwise, body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA. When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode. Otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing. Due to inner loop power control requirements in HSPA, a communication test set is required for output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSPA are configured according to the β values indicated in below.

Sub-test	β_c	β_d	β_d (SF)	β_c / β_d	β_{hs} (1)	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	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: Δ_{ACK}, Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs} / \beta_c = 30 / 15 \Leftrightarrow \beta_{hs} = 30 / 15 * \beta_c$.
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 signaled 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 signaled 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} cannot be set directly; it is set by Absolute Grant Value.

<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		
7			V	V	V	V
12	V	V	V	V		
17			V	V		
41			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

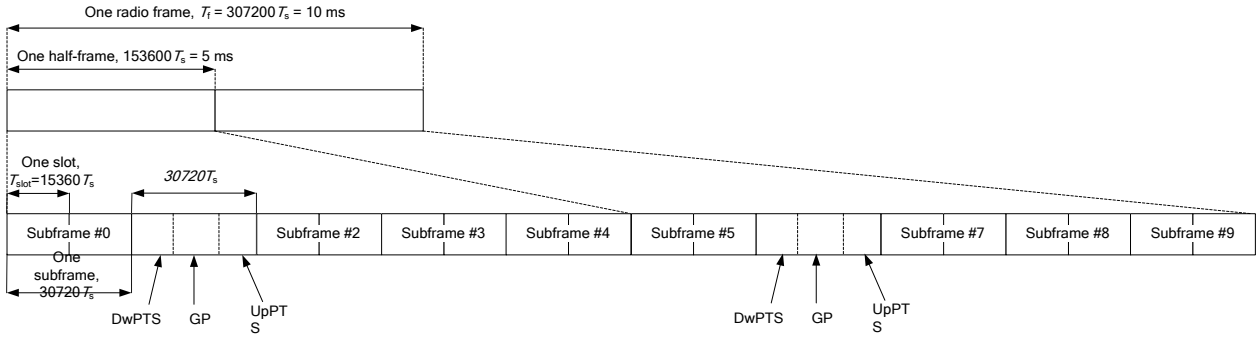
Note: MPR is according to the standard and implemented in the circuit (mandatory).

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.

TDD-LTE Setup Configurations

According to KDB 941225 D05, SAR testing for TDD-LTE device must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP TDD-LTE configurations. The TDD-LTE of this device supports frame structure type 2 defined in 3GPP TS 36.211 section 4.2, and the frame structure configuration can be referred to below.



3GPP TS 36.211 Frame Structure Type 2

Special Subframe Configuration	Normal Cyclic Prefix in Downlink			Extended Cyclic Prefix in Downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal Cyclic Prefix in Uplink	Extended Cyclic Prefix in Uplink		Normal Cyclic Prefix in Uplink	Extended Cyclic Prefix in Uplink
0	6592 - Ts	2192·Ts	2560·Ts	7680 - Ts	2192·Ts	2560·Ts
1	19760 - Ts			20480 - Ts		
2	21952 - Ts			23040 - Ts		
3	24144 - Ts			25600 - Ts		
4	26336 - Ts			7680 - Ts	4384·Ts	5120·Ts
5	6592 - Ts	4384·Ts	5120·Ts	20480 - Ts		
6	19760 - Ts			23040 - Ts		
7	21952 - Ts			12800 - Ts		
8	24144 - Ts			-	-	-
9	13168 - Ts			-	-	-

3GPP TS 36.211 Configuration of Special Subframe

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-Point Periodicity	Subframe Number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

3GPP TS 36.211 Uplink-Downlink Configurations

The variety of different TD-LTE uplink-downlink configurations allows a network operator to allocate the network's capacity between uplink and downlink traffic to meet the needs of the network. The uplink duty cycle of these seven configurations can readily be computed and shown in below.

UL-DL Configuration	0	1	2	3	4	5	6
Highest Duty-Cycle	63.33%	43.33%	23.33%	31.67%	21.67%	11.67%	53.33%

Considering the highest transmission duty cycle, TDD-LTE was tested using Uplink-Downlink Configuration 0 with 6 uplink subframe and 2 special subframe. The special subframe was set to special subframe configuration 7 using extended cyclic prefix uplink. Therefore, SAR testing for TDD-LTE was performed at the maximum output power with highest transmission duty cycle of 63.33%.

<Considerations Related to WLAN for Setup and Testing>
In general, various vendor specific external test software and chipset based internal test modes are typically used for SAR measurement. These chipset based test mode utilities are generally hardware and manufacturer dependent, and often include substantial flexibility to reconfigure or reprogram a device. A Wi-Fi device must be configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools for SAR measurement. The test frequencies established using test mode must correspond to the actual channel frequencies. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92 - 96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. In addition, a periodic transmission duty factor is required for current generation SAR systems to measure SAR correctly. The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

According to KDB 248227 D01, this device has installed WLAN engineering testing software which can provide continuous transmitting RF signal. During WLAN 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.

Initial Test Configuration
An initial test configuration is determined for OFDM transmission modes in 2.4 GHz and 5 GHz bands according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band. When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band.

Subsequent Test Configuration
SAR measurement requirements for the remaining 802.11 transmission mode configurations that have not been tested in the initial test configuration are determined separately for each standalone and aggregated frequency band, in each exposure condition, according to the maximum output power specified for production units. Additional power measurements may be required to determine if SAR measurements are required for subsequent highest output power channels in a subsequent test configuration. When the highest reported SAR for the initial test configuration according to the initial test position or fixed exposure position requirements, is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for that subsequent test configuration.

SAR Test Configuration and Channel Selection

When multiple channel bandwidth configurations in a frequency band have the same specified maximum output power, the initial test configuration is using largest channel bandwidth, lowest order modulation, lowest data rate, and lowest order 802.11 mode (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.

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

2) For channels with equal separation from mid-band frequency; for example, high and low channels or two mid-band channels, the higher frequency (number) channel is selected for SAR measurement.

Test Reduction for U-NII-1 (5.2 GHz) and U-NII-2A (5.3 GHz) Bands

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) 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).

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.

<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 KDB 648474 D04, handsets are tested for SAR compliance in head, body-worn accessory and other use configurations described in the following subsections.

8.2.1 Head Exposure Conditions

Head exposure is limited to next to the ear voice mode operations. Head SAR compliance is tested according to the test positions defined in IEEE Std 1528-2003 using the SAM phantom illustrated as below.

1. Define two imaginary lines on the handset

(a) The vertical centerline passes through two points on the front side of the handset - the midpoint of the width w_t of the handset at the level of the acoustic output, and the midpoint of the width w_b of the bottom of the handset.

(b) The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output. The horizontal line is also tangential to the face of the handset at point A.

(c) The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.

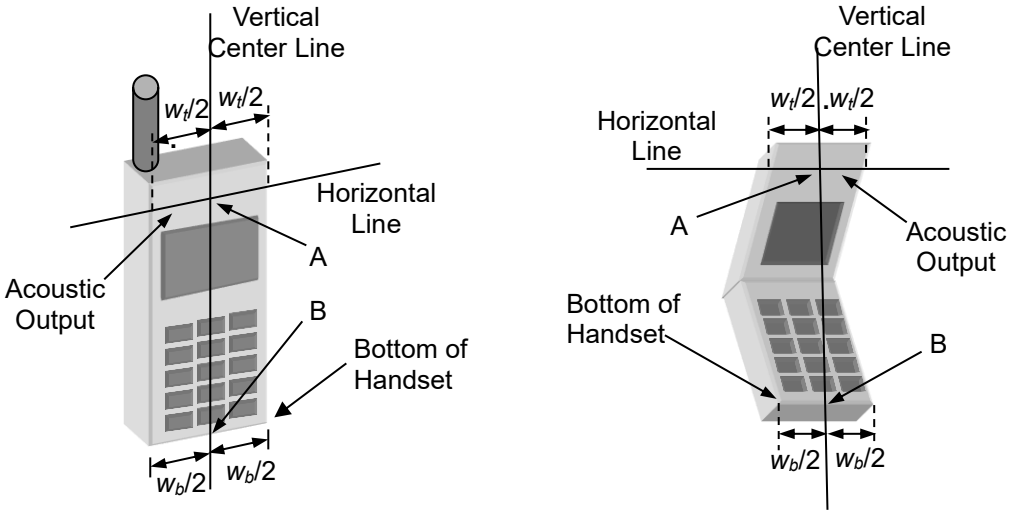


Illustration for Handset Vertical and Horizontal Reference Lines

2. Cheek Position

(a) To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the three ear and mouth reference point (M: Mouth, RE: Right Ear, and LE: Left Ear) and align the center of the ear piece with the line RE-LE.

(b) To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost.

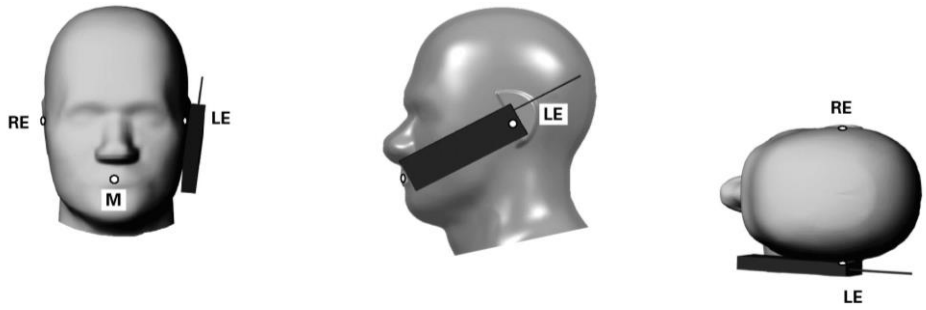


Illustration for Cheek Position

3. Tilted Position

(a) To position the device in the “cheek” position described above.

(b) While maintaining the device the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost.

Illustration for Tilted Position

8.2.2 Body-worn Accessory Exposure Conditions

Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in KDB 447498 D01 are used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

Body-worn accessories that do not contain metallic or conductive components may be tested according to worst-case exposure configurations, typically according to the smallest test separation distance required for the group of body-worn accessories with similar operating and exposure characteristics. All body-worn accessories containing metallic components are tested in conjunction with the host device.

Body-worn accessory SAR compliance is based on a single minimum test separation distance for all wireless and operating modes applicable to each body-worn accessory used by the host, and according to the relevant voice and/or data mode transmissions and operations. If a body-worn accessory supports voice only operations in its normal and expected use conditions, testing of data mode for body-worn compliance is not required.

A conservative minimum test separation distance for supporting off-the-shelf body-worn accessories that may be acquired by users of consumer handsets is used to test for body-worn accessory SAR compliance. This distance is determined by the handset manufacturer, according to the requirements of Supplement C 01-01. Devices that are designed to operate on the body of users using lanyards and straps, or without requiring additional body-worn accessories, will be tested using a conservative minimum test separation distance <= 5 mm to support compliance.

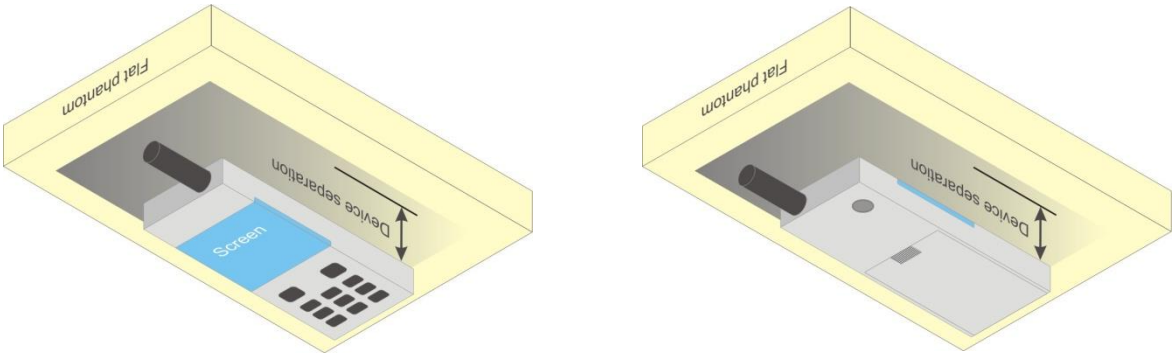
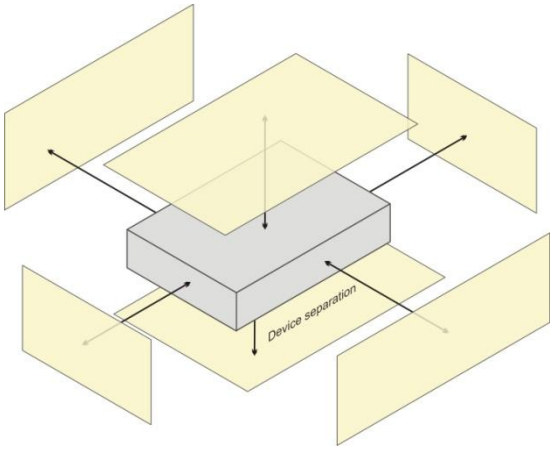


Illustration for Body Worn Position

8.2.3 Hotspot Mode Exposure Conditions

For handsets that support hotspot mode operations, with wireless router capabilities and various web browsing functions, the relevant hand and body exposure conditions are tested according to the hotspot SAR procedures in KDB 941225 D06. A test separation distance of 10 mm is required between the phantom and all surfaces and edges with a transmitting antenna located within 25 mm from that surface or edge. When the form factor of a handset is smaller than 9 cm x 5 cm, a test separation distance of 5 mm (instead of 10 mm) is required for testing hotspot mode. When the separation distance required for body-worn accessory testing is larger than or equal to that tested for hotspot mode, in the same wireless mode and for the same surface of the phone, the hotspot mode SAR data may be used to support body-worn accessory SAR compliance for that particular configuration (surface).



Based on the antenna location shown on appendix D of this report, the SAR testing required for hotspot mode is listed as below.

Antenna	Front Face	Back Face	Left Side	Right Side	Top Side	Bottom Side
WWAN	V	V	V	V	V	V
WLAN 2.4G	V	V	V	V	V	V
WLAN / BT	V	V	V	V	V	V

8.2.4 Extremity Exposure Conditions

Transmitters that are built-in within a wrist watch or similar wrist-worn devices typically operate in speaker mode for voice communication, with the device worn on the wrist and positioned next to the mouth. Next to the mouth exposure requires 1-g SAR, and the wrist-worn condition requires 10-g extremity SAR. The 10-g extremity and 1-g SAR test exclusions may be applied to the wrist and face exposure conditions. When SAR evaluation is required, next to the mouth use is evaluated with the front of the device positioned at 10 mm from a flat phantom filled with head tissue-equivalent medium. The wrist bands should be strapped together to represent normal use conditions. SAR for wrist exposure is evaluated with the back of the devices positioned in direct contact against a flat phantom fill with body tissue-equivalent medium. The wrist bands should be unstrapped and touching the phantom. The space introduced by the watch or wrist bands and the phantom must be representative of actual use conditions.

8.2.5 SAR Test Exclusion Evaluations

According to KDB 447498 D01, the SAR test exclusion condition is based on source-based time-averaged maximum conducted output power, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions. The SAR exclusion threshold is determined by the following formula.

$$\frac{\textbf{Max. Tune up Power}_{(mW)}}{\textbf{Min. Test Separation Distance}_{(mm)}} \times \sqrt{f_{(GHz)}} \leq 3.0 \text{ for SAR-1g, } \leq 7.5 \text{ for SAR-10g}$$

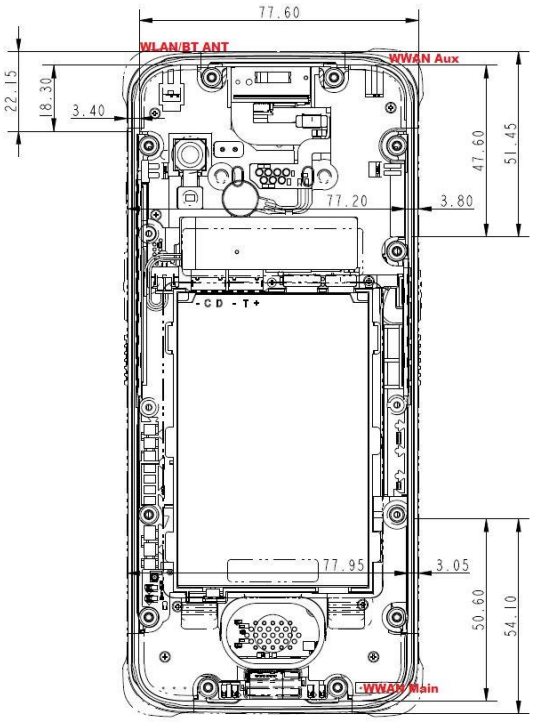
When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

NFC Field Strength Calculation				
Specified Field Strength Limit (dBuV/m)		Distance from Transmitter (meters)		Calculation EIRP (mW)
56.50		3		0.0001362
Power (dBm)	Power (mW)	Min. Distance (mm)	Frequency (GHz)	Calculated Threshold
-4.9	0.32	5	0.01356	0.001

Note:

1. When separation distance <= 50 mm and the calculated result shown in above table is <= 3.0 for SAR-1g exposure condition, or <= 7.5 for SAR-10g exposure condition, the SAR testing exclusion is applied.

8.2.6 Antenna Location



<Rear View>

8.3 Simultaneous Transmission Possibilities

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

Simultaneous TX Combination	Capable Transmit Configurations	Head (Voice / VoIP)	Body-worn (Voice / VoIP)	Hotspot (Data)
1	WWAN + WLAN 2.4GHz	Yes	Yes	Yes
2	WWAN + WLAN 5GHz	Yes	Yes	No
3	WWAN + Bluetooth	Yes	Yes	Yes

Note :

1. The WLAN and Bluetooth cannot transmit simultaneously, so there is no co-location test requirement for WLAN and Bluetooth.
2. Only 2.4G WLAN (802.11b/g/n) supports wireless hotspot capability. 5G WLAN (802.11a/n/ac) does not support wireless hotspot mode.

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 (%)
2023/11/30	Head	750	0.89	42.637	0.89	41.9	0.00	1.76
2023/11/25	Head	835	0.908	42.65	0.9	41.5	0.89	2.77
2023/11/30	Head	835	0.918	42.374	0.9	41.5	2.00	2.11
2023/12/2	Head	835	0.913	42.374	0.9	41.5	1.44	2.11
2023/11/25	Head	1800	1.378	40.29	1.4	40	-1.57	0.72
2023/11/30	Head	1800	1.333	40.106	1.4	40	-4.79	0.27
2023/11/24	Head	1900	1.46	39.715	1.4	40	4.29	-0.71
2023/11/30	Head	1900	1.392	39.942	1.4	40	-0.57	-0.15
2023/12/2	Head	1900	1.397	39.715	1.4	40	-0.21	-0.71
2023/12/29	Head	1900	1.416	40.142	1.4	40	1.14	0.36
2023/12/3	Head	2450	1.855	40.418	1.8	39.2	3.06	3.11
2023/11/27	Head	2600	1.973	39.801	1.96	39	0.66	2.05
2023/12/10	Head	5250	4.61	35.777	4.71	35.9	-2.12	-0.34
2024/1/2	Head	5250	4.645	35.897	4.71	35.9	-1.38	-0.01
2023/12/10	Head	5600	4.975	35.127	5.07	35.5	-1.87	-1.05
2024/1/2	Head	5600	5.012	35.246	5.07	35.5	-1.14	-0.72
2023/12/10	Head	5750	5.132	34.873	5.22	35.4	-1.69	-1.49
2024/1/2	Head	5750	5.17	34.993	5.22	35.4	-0.96	-1.15

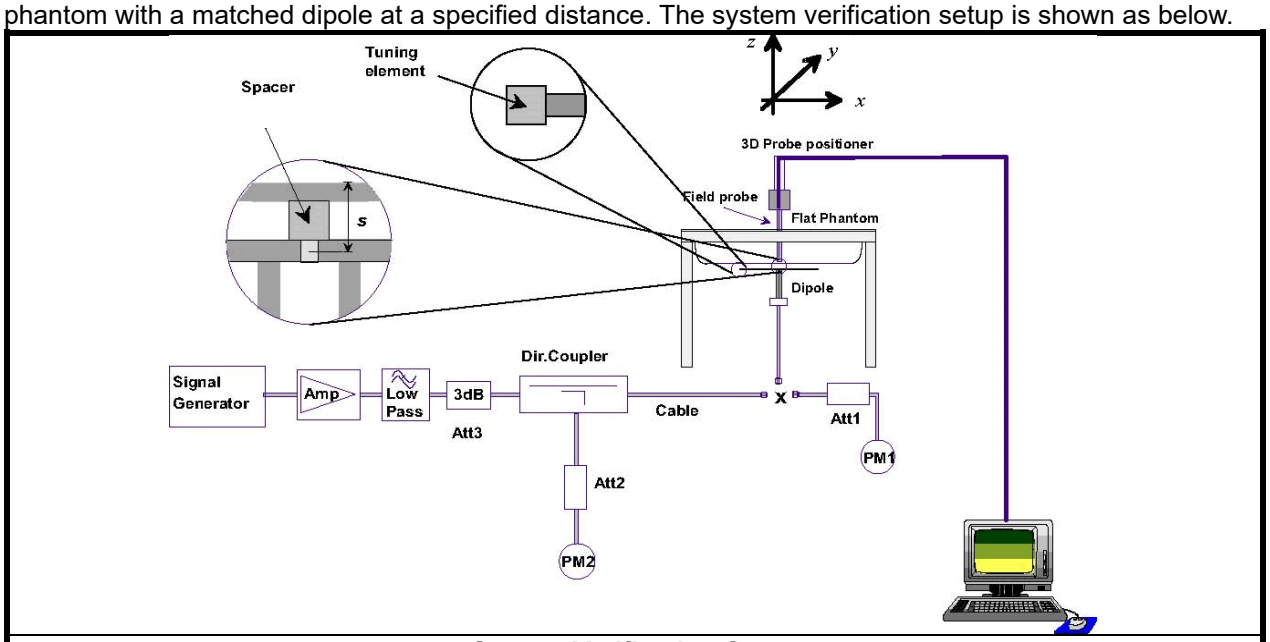
Note:

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.

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
2023/11/30	Head	2.09	8.36	8.45	-1.07	1199	7400	855
2023/11/25	Head	2.47	9.88	9.83	0.51	4d058	7400	855
2023/11/30	Head	2.44	9.76	9.83	-0.71	4d058	7400	855
2023/12/2	Head	2.48	9.92	9.83	0.92	4d058	7400	855
2023/11/25	Head	9.21	36.84	38.8	-5.05	2d156	7400	855
2023/11/30	Head	9.19	36.76	38.8	-5.26	2d156	7400	855
2023/11/24	Head	10.20	40.8	39.4	3.55	5d090	7400	855
2023/11/30	Head	9.55	38.2	39.4	-3.05	5d090	7400	855
2023/12/2	Head	10.20	40.8	39.4	3.55	5d090	7400	855
2023/12/29	Head	9.68	38.72	39.4	-1.73	5d090	7400	855
2023/12/3	Head	13.30	53.2	52.3	1.72	804	7400	855
2023/11/27	Head	13.70	54.8	54.7	0.18	1171	7400	855
2023/12/10	Head	8.19	81.9	79.8	2.63	1235	7400	855
2024/1/2	Head	8.25	82.5	79.8	3.38	1235	7400	855
2023/12/10	Head	8.38	83.8	82.7	1.33	1235	7400	855
2024/1/2	Head	8.45	84.5	82.7	2.18	1235	7400	855
2023/12/10	Head	7.99	79.9	81.4	-1.84	1235	7400	855
2024/1/2	Head	8.05	80.5	81.4	-1.11	1235	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.

GSM850		Max Burst Average Power (dBm)				Max Frame Average Power (dBm)			
		Max. Tune-up	Channel/Frequency(MHz)			Max. Tune-up	Channel/Frequency(MHz)		
			128/824.2	190/836.6	251/848.8		128/824.2	190/836.6	251/848.8
GSM (CS)		34.00	33.98	33.98	33.95	25.00	24.98	24.98	24.95
GPRS (GMSK)	1 Tx Slot	34.00	33.99	33.99	33.96	25.00	24.99	24.99	24.96
	2 Tx Slot	33.00	32.90	32.70	32.40	27.00	26.90	26.70	26.40
	3 Tx Slot	31.00	30.60	30.40	30.10	26.74	26.34	26.14	25.84
	4 Tx Slot	29.50	29.20	29.00	28.70	26.50	26.20	26.00	25.70
EDGE (8PSK)	1 Tx Slot	26.50	26.20	26.10	25.70	17.50	17.20	17.10	16.70
	2 Tx Slot	26.00	25.70	25.70	25.40	20.00	19.70	19.70	19.40
	3 Tx Slot	26.00	25.50	25.60	24.90	21.74	21.24	21.34	20.64
	4 Tx Slot	25.00	25.00	24.90	24.50	22.00	22.00	21.90	21.50
GSM1900		Max Burst Average Power (dBm)				Max Frame Average Power (dBm)			
		Max. Tune-up	Channel/Frequency(MHz)			Max. Tune-up	Channel/Frequency(MHz)		
			512/1850.2	661/1880	810/1909.8		512/1850.2	661/1880	810/1909.8
GSM (CS)		28.50	28.38	28.09	27.80	19.50	19.38	19.09	28.50
GPRS (GMSK)	1 Tx Slot	28.50	28.39	28.11	27.81	19.50	19.39	19.11	18.81
	2 Tx Slot	28.00	27.65	27.39	27.11	22.00	21.65	21.39	21.11
	3 Tx Slot	26.50	26.36	26.10	25.83	22.24	22.10	21.84	21.57
	4 Tx Slot	26.00	25.85	25.52	25.27	23.00	22.85	22.52	22.27
EDGE (8PSK)	1 Tx Slot	26.00	25.87	25.66	25.30	17.00	16.87	16.66	16.30
	2 Tx Slot	26.00	25.73	25.64	25.26	20.00	19.73	19.64	19.26
	3 Tx Slot	26.00	25.69	25.59	25.23	21.74	21.43	21.33	20.97
	4 Tx Slot	25.50	25.42	25.50	25.21	22.50	22.42	22.50	22.21

Note:

1. SAR testing was performed on the maximum frame-averaged power mode.
2. The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum burst-averaged power based on time slots. The calculated method is shown as below: Frame-averaged power = 10 x log (Burst-averaged power mW x Slot used / 8)

Band	UMTS B2 Average Conducted Power (dBm)				UMTS B5 Average Conducted Power (dBm)			
Tx Channel	Max. Tune-up	9262	9400	9538	Max. Tune-up	4132	4182	4233
Rx Channel		9662	9800	9938		4357	4407	4458
Frequency (MHz)		1852.4	1880	1907.6		826.4	836.4	846.6
RMC 12.2K	24.00	23.74	23.42	23.04	22.50	22.38	22.35	22.20
HSDPA Subtest-1	23.00	22.73	22.47	22.20	21.50	21.35	21.25	21.15
HSDPA Subtest-2	23.00	22.72	22.46	22.16	21.50	21.30	21.35	21.17
HSDPA Subtest-3	22.50	22.23	21.98	21.67	21.00	20.77	20.68	20.55
HSDPA Subtest-4	22.50	22.23	21.99	21.68	21.00	20.82	20.74	20.63
HSUPA Subtest-1	22.00	20.51	20.41	20.14	21.50	21.27	21.22	21.05
HSUPA Subtest-2	21.00	20.74	20.53	20.74	19.50	19.27	19.18	19.06
HSUPA Subtest-3	22.00	21.47	21.32	21.11	20.50	20.34	20.17	20.11
HSUPA Subtest-4	21.00	20.26	20.01	20.21	19.50	19.32	19.15	19.09
HSUPA Subtest-5	23.00	21.69	21.46	21.19	21.50	21.31	21.15	21.13

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	21.50	20.75	20.47	20.21	QPSK	1/0	21.50	20.66	20.40	20.11
	1/2	21.50	20.79	20.51	20.23		1/7	21.50	20.76	20.49	20.26
	1/5	21.50	20.72	20.47	20.20		1/14	21.50	20.61	20.41	20.11
	3/0	21.50	20.82	20.54	20.29		8/0	20.50	19.86	19.63	19.38
	3/1	21.50	20.84	20.58	20.31		8/3	20.50	19.96	19.71	19.45
	3/3	21.50	20.84	20.56	20.28		8/7	20.50	19.93	19.65	19.38
	6/0	20.50	19.97	19.73	19.45		15/0	20.50	19.91	19.65	19.38
16QAM	1/0	20.50	20.00	19.70	19.50	16QAM	1/0	20.50	19.87	19.58	19.34
	1/2	20.50	20.17	19.84	19.46		1/7	20.50	20.02	19.71	19.61
	1/5	20.50	20.11	19.75	19.48		1/14	20.50	20.02	19.62	19.31
	3/0	20.50	19.82	19.60	19.35		8/0	19.50	18.94	18.73	18.47
	3/1	20.50	19.90	19.62	19.35		8/3	19.50	19.03	18.79	18.54
	3/3	20.50	19.93	19.65	19.33		8/7	19.50	19.02	18.73	18.44
	6/0	19.50	19.07	18.85	18.54		15/0	19.50	18.91	18.69	18.38
64QAM	1/0	19.50	19.19	18.79	18.48	64QAM	1/0	19.50	19.00	18.76	18.46
	1/2	19.50	19.14	18.82	18.62		1/7	19.50	19.13	18.82	18.55
	1/5	19.50	19.06	18.86	18.49		1/14	19.50	19.00	18.77	18.45
	3/0	19.50	19.16	18.83	18.57		8/0	18.50	18.00	17.72	17.46
	3/1	19.50	19.13	18.87	18.60		8/3	18.50	18.06	17.79	17.56
	3/3	19.50	19.14	18.88	18.54		8/7	18.50	18.02	17.76	17.48
	6/0	18.50	18.02	17.76	17.49		15/0	18.50	17.94	17.66	17.40
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	21.50	20.87	20.63	20.39	QPSK	1/0	21.50	20.94	20.71	20.47
	1/12	21.50	20.98	20.73	20.50		1/24	21.50	20.96	20.73	20.54
	1/24	21.50	20.85	20.59	20.32		1/49	21.50	20.91	20.70	20.44
	12/0	20.50	19.89	19.73	19.48		25/0	20.50	19.85	19.73	19.52
	12/6	20.50	20.03	19.78	19.52		25/12	20.50	19.99	19.79	19.56
	12/13	20.50	19.96	19.70	19.42		25/25	20.50	19.98	19.73	19.43
	25/0	20.50	19.97	19.74	19.47		50/0	20.50	19.94	19.77	19.52
16QAM	1/0	20.50	20.14	19.84	19.74	16QAM	1/0	20.50	20.27	20.03	19.89
	1/12	20.50	20.39	20.06	19.86		1/24	20.50	20.23	20.03	19.85
	1/24	20.50	20.10	19.96	19.56		1/49	20.50	20.16	19.97	19.73
	12/0	19.50	18.93	18.75	18.50		25/0	19.50	18.89	18.75	18.57
	12/6	19.50	19.06	18.80	18.56		25/12	19.50	19.04	18.84	18.62
	12/13	19.50	19.00	18.72	18.43		25/25	19.50	19.04	18.77	18.48
	25/0	19.50	19.03	18.78	18.49		50/0	19.50	18.95	18.79	18.54
64QAM	1/0	19.50	19.08	18.97	18.62	64QAM	1/0	19.50	19.22	18.96	18.78
	1/12	19.50	19.34	19.02	18.81		1/24	19.50	19.24	19.03	18.74
	1/24	19.50	19.12	18.82	18.57		1/49	19.50	19.19	19.00	18.68
	12/0	18.50	17.98	17.82	17.56		25/0	18.50	17.92	17.78	17.58
	12/6	18.50	18.12	17.88	17.61		25/12	18.50	18.07	17.86	17.64
	12/13	18.50	18.05	17.80	17.49		25/25	18.50	18.05	17.81	17.51
	25/0	18.50	18.04	17.82	17.53		50/0	18.50	17.96	17.79	17.57

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	21.50	20.89	20.74	20.48	QPSK	1/0	21.50	20.94	20.76	20.56
	1/37	21.50	20.96	20.75	20.59		1/49	21.50	21.05	20.90	20.70
	1/74	21.50	20.81	20.65	20.41		1/99	21.50	20.82	20.64	20.45
	36/0	20.50	19.91	19.77	19.53		50/0	20.50	19.93	19.94	19.67
	36/19	20.50	19.96	19.79	19.55		50/24	20.50	20.08	19.95	19.73
	36/39	20.50	19.86	19.79	19.48		50/50	20.50	19.94	19.92	19.61
	75/0	20.50	19.91	19.79	19.54		100/0	20.50	19.93	19.91	19.64
16QAM	1/0	20.50	20.17	19.99	19.78	16QAM	1/0	20.50	20.27	19.99	19.93
	1/37	20.50	20.35	20.03	19.77		1/49	20.50	20.39	20.08	20.00
	1/74	20.50	20.09	19.84	19.61		1/99	20.50	20.12	19.99	19.65
	36/0	19.50	18.90	18.78	18.56		50/0	19.50	18.94	18.94	18.69
	36/19	19.50	19.01	18.82	18.58		50/24	19.50	19.12	18.96	18.74
	36/39	19.50	18.90	18.80	18.52		50/50	19.50	18.96	18.91	18.64
	75/0	19.50	18.93	18.81	18.56		100/0	19.50	18.95	18.91	18.64
64QAM	1/0	19.50	19.17	18.96	18.68	64QAM	1/0	19.50	19.20	19.03	18.84
	1/37	19.50	19.21	18.99	18.86		1/49	19.50	19.33	19.05	18.90
	1/74	19.50	19.08	18.90	18.62		1/99	19.50	19.11	18.81	18.69
	36/0	18.50	17.99	17.86	17.61		50/0	18.50	17.97	17.97	17.73
	36/19	18.50	18.06	17.88	17.61		50/24	18.50	18.14	17.96	17.76
	36/39	18.50	17.96	17.84	17.56		50/50	18.50	17.98	17.94	17.64
	75/0	18.50	17.95	17.82	17.58		100/0	18.50	17.97	17.93	17.68

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)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			19957 / 1710.7	20175 / 1732.5	20393 / 1754.3				19965 / 1711.5	20175 / 1732.5	20385 / 1753.5
QPSK	1/0	21.50	20.47	20.69	20.82	QPSK	1/0	21.50	20.36	20.51	20.58
	1/2	21.50	20.53	20.80	20.88		1/7	21.50	20.46	20.66	20.79
	1/5	21.50	20.49	20.71	20.84		1/14	21.50	20.37	20.57	20.70
	3/0	21.50	20.58	20.77	20.91		8/0	20.50	19.59	19.79	19.91
	3/1	21.50	20.60	20.79	20.92		8/3	20.50	19.65	19.85	19.99
	3/3	21.50	20.58	20.81	20.94		8/7	20.50	19.59	19.84	19.94
	6/0	20.50	19.74	19.94	20.04		15/0	20.50	19.59	19.78	19.90
16QAM	1/0	20.50	19.73	19.96	20.09	16QAM	1/0	20.50	19.75	19.89	19.97
	1/2	20.50	19.81	20.14	20.30		1/7	20.50	19.78	19.99	20.03
	1/5	20.50	19.88	20.14	20.11		1/14	20.50	19.78	19.92	20.11
	3/0	20.50	19.60	19.82	20.04		8/0	19.50	18.69	18.86	19.00
	3/1	20.50	19.70	19.91	20.06		8/3	19.50	18.75	18.95	19.10
	3/3	20.50	19.56	19.87	19.96		8/7	19.50	18.71	18.93	19.05
	6/0	19.50	18.89	19.08	19.20		15/0	19.50	18.62	18.81	18.93
64QAM	1/0	19.50	18.93	19.07	19.13	64QAM	1/0	19.50	18.62	18.93	19.02
	1/2	19.50	18.95	19.20	19.31		1/7	19.50	18.86	19.09	19.21
	1/5	19.50	18.93	19.12	19.23		1/14	19.50	18.68	18.97	19.08
	3/0	19.50	18.92	19.11	19.23		8/0	18.50	17.67	17.86	17.99
	3/1	19.50	18.88	19.10	19.26		8/3	18.50	17.77	17.94	18.08
	3/3	19.50	18.87	19.09	19.24		8/7	18.50	17.72	17.93	18.03
	6/0	18.50	17.80	17.96	18.11		15/0	18.50	17.64	17.81	17.95
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)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			19975 / 1712.5	20175 / 1732.5	20375 / 1752.5				20000 / 1715	20175 / 1732.5	20350 / 1750
QPSK	1/0	21.50	20.54	20.73	20.81	QPSK	1/0	21.50	20.64	20.77	20.93
	1/12	21.50	20.73	20.95	21.04		1/24	21.50	20.77	20.93	21.00
	1/24	21.50	20.61	20.79	20.93		1/49	21.50	20.75	20.90	21.04
	12/0	20.50	19.65	19.85	19.95		25/0	20.50	19.63	19.79	19.90
	12/6	20.50	19.73	19.94	20.04		25/12	20.50	19.75	19.93	20.01
	12/13	20.50	19.70	19.93	20.03		25/25	20.50	19.73	19.91	19.97
	25/0	20.50	19.68	19.87	19.99		50/0	20.50	19.70	19.88	19.96
16QAM	1/0	20.50	19.81	20.03	20.30	16QAM	1/0	20.50	19.97	20.08	20.33
	1/12	20.50	19.96	20.29	20.44		1/24	20.50	20.05	20.23	20.30
	1/24	20.50	19.93	20.17	20.24		1/49	20.50	20.06	20.18	20.38
	12/0	19.50	18.69	18.91	18.95		25/0	19.50	18.68	18.87	18.95
	12/6	19.50	18.77	18.96	19.07		25/12	19.50	18.81	18.98	19.06
	12/13	19.50	18.72	18.96	19.05		25/25	19.50	18.78	18.98	19.05
	25/0	19.50	18.72	18.95	19.06		50/0	19.50	18.73	18.89	18.98
64QAM	1/0	19.50	18.86	18.96	19.09	16QAM	1/0	19.50	18.96	19.11	19.22
	1/12	19.50	19.03	19.23	19.32		1/24	19.50	19.05	19.20	19.29
	1/24	19.50	18.89	19.08	19.22		1/49	19.50	18.97	19.14	19.39
	12/0	18.50	17.73	17.94	18.02		25/0	18.50	17.70	17.84	17.98
	12/6	18.50	17.78	18.01	18.13		25/12	18.50	17.82	17.99	18.09
	12/13	18.50	17.77	18.02	18.10		25/25	18.50	17.80	17.98	18.06
	25/0	18.50	17.73	17.95	18.07		50/0	18.50	17.73	17.92	18.00

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)			Modula -tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			20025 / 1717.5	20175 / 1732.5	20325 / 1747.5				20050 / 1720	20175 / 1732.5	20300 / 1745
QPSK	1/0	21.50	20.58	20.70	20.81	QPSK	1/0	21.50	20.46	20.58	20.70
	1/37	21.50	20.75	20.96	21.00		1/49	21.50	20.79	20.93	21.05
	1/74	21.50	20.77	20.90	20.98		1/99	21.50	20.73	20.83	20.89
	36/0	20.50	19.66	19.77	19.87		50/0	20.50	19.68	19.74	19.87
	36/19	20.50	19.74	19.89	19.99		50/24	20.50	19.82	19.94	19.99
	36/39	20.50	19.79	19.93	19.99		50/50	20.50	19.84	19.93	19.98
	75/0	20.50	19.74	19.86	19.94		100/0	20.50	19.76	19.86	19.90
16QAM	1/0	20.50	19.91	20.07	20.23	16QAM	1/0	20.50	19.83	19.90	20.09
	1/37	20.50	20.00	20.29	20.34		1/49	20.50	20.17	20.37	20.30
	1/74	20.50	20.07	20.20	20.40		1/99	20.50	20.16	20.20	20.18
	36/0	19.50	18.71	18.80	18.91		50/0	19.50	18.69	18.78	18.91
	36/19	19.50	18.77	18.92	19.01		50/24	19.50	18.85	18.95	19.01
	36/39	19.50	18.82	18.95	19.03		50/50	19.50	18.86	18.97	19.02
	75/0	19.50	18.77	18.90	18.97		100/0	19.50	18.76	18.86	18.93
64QAM	1/0	19.50	18.83	18.97	19.10	64QAM	1/0	19.50	18.74	18.81	18.96
	1/37	19.50	19.05	19.23	19.30		1/49	19.50	19.11	19.18	19.34
	1/74	19.50	19.00	19.11	19.29		1/99	19.50	19.04	19.06	19.18
	36/0	18.50	17.74	17.85	17.95		50/0	18.50	17.72	17.77	17.90
	36/19	18.50	17.84	18.00	18.06		50/24	18.50	17.86	17.98	18.03
	36/39	18.50	17.87	18.02	18.05		50/50	18.50	17.88	17.98	18.05
	75/0	18.50	17.77	17.92	17.98		100/0	18.50	17.78	17.89	17.95

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)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			20407 / 824.7	20525 / 836.5	20643 / 848.3				20415 / 825.5	20525 / 836.5	20635 / 847.5
QPSK	1/0	20.50	19.52	19.62	19.69	QPSK	1/0	20.50	19.46	19.52	19.55
	1/2	20.50	19.61	19.63	19.76		1/7	20.50	19.60	19.63	19.71
	1/5	20.50	19.56	19.59	19.71		1/14	20.50	19.49	19.47	19.58
	3/0	20.50	19.63	19.70	19.79		8/0	19.50	18.67	18.70	18.77
	3/1	20.50	19.64	19.70	19.82		8/3	19.50	18.70	18.77	18.88
	3/3	20.50	19.63	19.70	19.82		8/7	19.50	18.66	18.73	18.83
	6/0	19.50	18.74	18.80	18.90		15/0	19.50	18.63	18.70	18.78
16QAM	1/0	19.50	18.83	18.86	18.91	16QAM	1/0	19.50	18.69	18.74	18.89
	1/2	19.50	18.95	18.99	18.98		1/7	19.50	18.96	18.95	19.03
	1/5	19.50	18.88	18.91	18.99		1/14	19.50	18.76	18.76	18.87
	3/0	19.50	18.61	18.75	18.79		8/0	18.50	17.75	17.81	17.88
	3/1	19.50	18.62	18.79	18.87		8/3	18.50	17.80	17.89	17.96
	3/3	19.50	18.62	18.78	18.78		8/7	18.50	17.76	17.80	17.92
	6/0	18.50	17.85	17.96	18.03		15/0	18.50	17.67	17.74	17.79
64QAM	1/0	18.50	17.90	17.95	17.98	64QAM	1/0	18.50	17.78	17.85	17.91
	1/2	18.50	17.95	18.03	18.13		1/7	18.50	17.94	17.99	18.06
	1/5	18.50	17.86	17.96	18.05		1/14	18.50	17.78	17.86	17.97
	3/0	18.50	17.93	18.01	18.03		8/0	17.50	16.75	16.82	16.90
	3/1	18.50	17.90	18.03	18.04		8/3	17.50	16.80	16.86	16.96
	3/3	18.50	17.89	17.94	18.07		8/7	17.50	16.76	16.80	16.91
	6/0	17.50	16.75	16.80	16.96		15/0	17.50	16.70	16.76	16.82
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)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			20425 / 826.5	20525 / 836.5	20625 / 846.5				20450 / 829	20525 / 836.5	20600 / 844
QPSK	1/0	20.50	19.67	19.74	19.78	QPSK	1/0	20.50	19.80	19.81	19.84
	1/12	20.50	19.80	19.91	19.94		1/24	20.50	19.83	19.89	19.92
	1/24	20.50	19.71	19.81	19.87		1/49	20.50	19.83	19.84	20.04
	12/0	19.50	18.74	18.69	18.81		25/0	19.50	18.84	18.67	18.88
	12/6	19.50	18.81	18.84	18.89		25/12	19.50	18.85	18.85	18.90
	12/13	19.50	18.69	18.86	18.82		25/25	19.50	18.81	18.82	18.88
	25/0	19.50	18.73	18.78	18.84		50/0	19.50	18.87	18.77	18.90
16QAM	1/0	19.50	18.93	19.00	19.17	16QAM	1/0	19.50	19.11	19.05	19.22
	1/12	19.50	19.18	19.26	19.21		1/24	19.50	19.13	19.13	19.17
	1/24	19.50	19.05	19.20	19.20		1/49	19.50	19.20	19.16	19.34
	12/0	18.50	17.77	17.71	17.83		25/0	18.50	17.87	17.72	17.96
	12/6	18.50	17.83	17.89	17.96		25/12	18.50	17.86	17.91	17.95
	12/13	18.50	17.71	17.89	17.87		25/25	18.50	17.82	17.89	17.94
	25/0	18.50	17.78	17.87	17.91		50/0	18.50	17.87	17.80	17.95
64QAM	1/0	18.50	17.92	18.00	18.00	64QAM	1/0	18.50	18.03	18.04	18.05
	1/12	18.50	18.03	18.08	18.20		1/24	18.50	18.06	18.07	18.17
	1/24	18.50	17.92	17.97	18.13		1/49	18.50	17.97	18.02	18.12
	12/0	17.50	16.80	16.76	16.89		25/0	17.50	16.90	16.74	16.98
	12/6	17.50	16.88	16.93	16.99		25/12	17.50	16.94	16.92	16.99
	12/13	17.50	16.76	16.97	16.92		25/25	17.50	16.84	16.92	16.97
	25/0	17.50	16.80	16.88	16.93		50/0	17.50	16.88	16.85	16.97

LTE B7/BW=5M		Average Conducted Power (dBm)				LTE B7/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)		
			20775 / 2502.5	21100 / 2535	21425 / 2567.5				20800 / 2505	21100 / 2535	21400 / 2565
QPSK	1/0	21.50	20.48	20.60	20.85	QPSK	1/0	21.50	20.59	20.67	20.87
	1/12	21.50	20.64	20.75	20.98		1/24	21.50	20.66	20.78	20.99
	1/24	21.50	20.50	20.63	20.87		1/49	21.50	20.59	20.74	20.98
	12/0	20.50	19.50	19.68	19.94		25/0	20.50	19.56	19.70	19.90
	12/6	20.50	19.58	19.70	19.94		25/12	20.50	19.61	19.72	19.96
	12/13	20.50	19.54	19.66	19.85		25/25	20.50	19.63	19.68	19.85
	25/0	20.50	19.54	19.65	19.89		50/0	20.50	19.57	19.72	19.89
16QAM	1/0	20.50	19.86	19.84	20.18	16QAM	1/0	20.50	19.95	19.97	20.18
	1/12	20.50	20.00	20.11	20.22		1/24	20.50	19.98	20.09	20.27
	1/24	20.50	19.87	19.95	20.16		1/49	20.50	19.83	20.11	20.18
	12/0	19.50	18.51	18.69	18.94		25/0	19.50	18.59	18.74	18.93
	12/6	19.50	18.58	18.73	18.95		25/12	19.50	18.63	18.76	18.99
	12/13	19.50	18.54	18.68	18.91		25/25	19.50	18.67	18.71	18.88
	25/0	19.50	18.58	18.70	18.93		50/0	19.50	18.62	18.71	18.87
64QAM	1/0	19.50	18.72	18.83	19.07	64QAM	1/0	19.50	18.73	18.83	19.09
	1/12	19.50	18.91	18.99	19.23		1/24	19.50	18.87	18.96	19.13
	1/24	19.50	18.74	18.78	19.03		1/49	19.50	18.84	18.89	19.11
	12/0	18.50	17.60	17.75	18.01		25/0	18.50	17.65	17.78	17.95
	12/6	18.50	17.66	17.80	18.04		25/12	18.50	17.68	17.80	18.06
	12/13	18.50	17.64	17.74	17.96		25/25	18.50	17.70	17.77	17.94
	25/0	18.50	17.62	17.74	17.97		50/0	18.50	17.64	17.76	17.95

LTE B7/BW=15M		Average Conducted Power (dBm)				LTE B7/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)		
			20825 / 2507.5	21100 / 2535	21375 / 2562.5				20850 / 2510	21100 / 2535	21350 / 2560
QPSK	1/0	21.50	20.51	20.56	20.81	QPSK	1/0	21.50	20.52	20.59	20.83
	1/37	21.50	20.69	20.76	20.99		1/49	21.50	20.76	20.89	21.07
	1/74	21.50	20.58	20.74	20.89		1/99	21.50	20.58	20.79	20.93
	36/0	20.50	19.53	19.61	19.81		50/0	20.50	19.60	19.74	19.83
	36/19	20.50	19.58	19.71	19.92		50/24	20.50	19.75	19.84	20.07
	36/39	20.50	19.58	19.70	19.85		50/50	20.50	19.79	19.79	19.92
	75/0	20.50	19.58	19.67	19.85		100/0	20.50	19.68	19.77	19.90
16QAM	1/0	20.50	19.81	19.82	20.08	16QAM	1/0	20.50	19.88	19.84	20.17
	1/37	20.50	20.03	20.07	20.31		1/49	20.50	20.15	20.10	20.32
	1/74	20.50	19.85	19.95	20.18		1/99	20.50	19.94	20.13	20.18
	36/0	19.50	18.53	18.63	18.82		50/0	19.50	18.61	18.78	18.84
	36/19	19.50	18.60	18.74	18.92		50/24	19.50	18.72	18.87	19.05
	36/39	19.50	18.59	18.71	18.85		50/50	19.50	18.81	18.79	18.94
	75/0	19.50	18.59	18.69	18.83		100/0	19.50	18.67	18.76	18.88
64QAM	1/0	19.50	18.69	18.78	19.04	64QAM	1/0	19.50	18.71	18.82	19.04
	1/37	19.50	18.87	19.05	19.18		1/49	19.50	18.93	19.11	19.28
	1/74	19.50	18.77	18.97	19.03		1/99	19.50	18.71	18.99	19.12
	36/0	18.50	17.61	17.70	17.90		50/0	18.50	17.65	17.81	17.92
	36/19	18.50	17.65	17.76	18.02		50/24	18.50	17.79	17.90	18.11
	36/39	18.50	17.70	17.80	17.94		50/50	18.50	17.84	17.85	17.99
	75/0	18.50	17.62	17.71	17.88		100/0	18.50	17.76	17.80	17.94

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	21.50	20.61	20.64	20.59	QPSK	1/0	21.50	20.50	20.50	20.45
	1/2	21.50	20.71	20.67	20.61		1/7	21.50	20.66	20.60	20.59
	1/5	21.50	20.62	20.61	20.61		1/14	21.50	20.55	20.46	20.49
	3/0	21.50	20.70	20.70	20.68		8/0	20.50	19.76	19.68	19.73
	3/1	21.50	20.70	20.71	20.69		8/3	20.50	19.78	19.76	19.76
	3/3	21.50	20.74	20.71	20.70		8/7	20.50	19.72	19.72	19.67
	6/0	20.50	19.79	19.77	19.78		15/0	20.50	19.72	19.68	19.68
16QAM	1/0	20.50	19.94	19.96	19.96	16QAM	1/0	20.50	19.71	19.84	19.83
	1/2	20.50	19.89	20.03	19.92		1/7	20.50	19.90	19.92	20.02
	1/5	20.50	19.80	19.92	19.90		1/14	20.50	19.81	19.78	19.79
	3/0	20.50	19.74	19.66	19.76		8/0	19.50	18.85	18.77	18.85
	3/1	20.50	19.79	19.70	19.76		8/3	19.50	18.85	18.84	18.83
	3/3	20.50	19.78	19.72	19.71		8/7	19.50	18.81	18.83	18.75
	6/0	19.50	18.93	18.92	18.91		15/0	19.50	18.76	18.73	18.74
64QAM	1/0	19.50	18.93	18.93	18.86	64QAM	1/0	19.50	18.83	18.82	18.82
	1/2	19.50	19.05	19.00	18.96		1/7	19.50	19.04	18.94	18.91
	1/5	19.50	18.95	18.92	18.95		1/14	19.50	18.88	18.73	18.82
	3/0	19.50	18.98	18.97	18.92		8/0	18.50	17.85	17.76	17.81
	3/1	19.50	18.94	18.94	18.99		8/3	18.50	17.86	17.84	17.86
	3/3	19.50	18.95	18.92	18.95		8/7	18.50	17.77	17.81	17.76
	6/0	18.50	17.79	17.84	17.82		15/0	18.50	17.76	17.75	17.76
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	21.50	20.76	20.74	20.68	QPSK	1/0	21.50	20.99	20.94	20.96
	1/12	21.50	20.92	20.88	20.85		1/24	21.50	21.02	20.96	20.97
	1/24	21.50	20.73	20.76	20.72		1/49	21.50	20.94	20.94	20.91
	12/0	20.50	19.96	19.71	19.75		25/0	20.50	20.12	19.79	19.56
	12/6	20.50	19.90	19.82	19.84		25/12	20.50	19.98	19.95	19.88
	12/13	20.50	19.76	19.92	19.61		25/25	20.50	20.05	20.14	19.69
	25/0	20.50	19.89	19.85	19.71		50/0	20.50	20.11	20.03	19.65
16QAM	1/0	20.50	20.02	20.06	20.02	16QAM	1/0	20.50	20.16	20.11	20.24
	1/12	20.50	20.19	20.23	20.17		1/24	20.50	20.32	20.26	20.28
	1/24	20.50	20.08	20.08	20.00		1/49	20.50	20.23	20.24	20.16
	12/0	19.50	18.96	18.75	18.77		25/0	19.50	19.14	18.84	18.62
	12/6	19.50	18.92	18.83	18.84		25/12	19.50	19.03	18.99	18.96
	12/13	19.50	18.80	18.95	18.64		25/25	19.50	19.09	19.22	18.74
	25/0	19.50	18.95	18.90	18.79		50/0	19.50	19.13	19.06	18.67
64QAM	1/0	19.50	18.97	18.98	19.03	64QAM	1/0	19.50	19.15	19.18	19.09
	1/12	19.50	19.07	19.04	19.04		1/24	19.50	19.20	19.14	19.22
	1/24	19.50	18.89	18.88	18.97		1/49	19.50	19.12	19.12	19.11
	12/0	18.50	18.04	17.77	17.83		25/0	18.50	18.16	17.86	17.62
	12/6	18.50	17.96	17.90	17.93		25/12	18.50	18.06	18.01	17.98
	12/13	18.50	17.85	18.00	17.68		25/25	18.50	18.10	18.22	17.79
	25/0	18.50	17.95	17.90	17.80		50/0	18.50	18.14	18.08	17.69

LTE B17/BW=5M		Average Conducted Power (dBm)				LTE B17/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)		
			23755 / 706.5	23790 / 710	23825 / 713.5				23780 / 709	23790 / 710	23800 / 711
QPSK	1/0	21.50	20.81	20.77	20.77	QPSK	1/0	21.50	20.99	21.01	20.99
	1/12	21.50	20.89	20.89	20.87		1/24	21.50	21.01	21.05	21.02
	1/24	21.50	20.79	20.77	20.75		1/49	21.50	20.92	20.95	20.95
	12/0	20.50	19.77	19.62	19.79		25/0	20.50	19.72	19.65	19.58
	12/6	20.50	19.86	19.84	19.84		25/12	20.50	19.98	19.96	19.93
	12/13	20.50	19.94	19.87	19.59		25/25	20.50	20.03	19.85	19.68
	25/0	20.50	19.87	19.79	19.69		50/0	20.50	19.93	19.79	19.66
16QAM	1/0	20.50	20.06	20.13	20.07	16QAM	1/0	20.50	20.32	20.26	20.30
	1/12	20.50	20.18	20.14	20.12		1/24	20.50	20.35	20.25	20.32
	1/24	20.50	20.10	20.16	20.10		1/49	20.50	20.28	20.29	20.15
	12/0	19.50	18.78	18.69	18.79		25/0	19.50	18.77	18.69	18.64
	12/6	19.50	18.87	18.89	18.86		25/12	19.50	19.00	19.01	18.99
	12/13	19.50	18.98	18.92	18.64		25/25	19.50	19.07	18.92	18.74
	25/0	19.50	18.93	18.84	18.77		50/0	19.50	18.94	18.80	18.71
64QAM	1/0	19.50	18.94	18.97	18.98	64QAM	1/0	19.50	19.22	19.12	19.19
	1/12	19.50	19.04	19.08	19.11		1/24	19.50	19.18	19.26	19.23
	1/24	19.50	18.98	19.02	18.95		1/49	19.50	19.09	19.13	19.05
	12/0	18.50	17.83	17.71	17.88		25/0	18.50	17.78	17.72	17.66
	12/6	18.50	17.94	17.90	17.93		25/12	18.50	18.02	18.03	18.02
	12/13	18.50	18.01	17.98	17.69		25/25	18.50	18.10	17.93	17.77
	25/0	18.50	17.93	17.86	17.78		50/0	18.50	17.98	17.84	17.72

LTE B41/BW=5M		Average Conducted Power (dBm)					LTE B41/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)			
			40065 / 2537.5	40325 / 2563.5	40595 / 2590.5	41215 / 2652.5				40090 / 2540	40370 / 2568	40660 / 2597	41190 / 2650
QPSK	1/0	20.00	19.41	19.39	19.04	18.84	QPSK	1/0	20.00	19.44	19.47	19.13	18.88
	1/12	20.00	19.60	19.51	19.15	18.96		1/24	20.00	19.52	19.48	19.17	19.02
	1/24	20.00	19.42	19.33	18.99	18.82		1/49	20.00	19.47	19.39	19.06	18.90
	12/0	19.00	18.49	18.40	18.08	17.93		25/0	19.00	18.43	18.35	18.00	18.03
	12/6	19.00	18.53	18.48	18.20	17.98		25/12	19.00	18.46	18.40	18.16	17.91
	12/13	19.00	18.37	18.42	18.13	17.86		25/25	19.00	18.27	18.37	18.16	17.80
	25/0	19.00	18.41	18.36	18.07	17.91		50/0	19.00	18.36	18.32	18.06	17.92
16QAM	1/0	19.00	18.44	18.42	18.15	17.95	16QAM	1/0	19.00	18.48	18.47	18.21	18.01
	1/12	19.00	18.59	18.53	18.23	18.06		1/24	19.00	18.61	18.54	18.28	18.12
	1/24	19.00	18.49	18.40	18.11	17.97		1/49	19.00	18.55	18.43	18.13	18.03
	12/0	18.00	17.41	17.32	17.02	16.91		25/0	18.00	17.46	17.37	17.00	17.04
	12/6	18.00	17.47	17.34	17.11	16.89		25/12	18.00	17.51	17.38	17.16	16.94
	12/13	18.00	17.38	17.31	17.07	16.81		25/25	18.00	17.34	17.41	17.18	16.82
	25/0	18.00	17.47	17.36	17.02	16.88		50/0	18.00	17.38	17.36	17.05	16.95
64QAM	1/0	18.00	17.11	17.08	16.76	16.58	64QAM	1/0	18.00	17.14	17.15	16.86	16.61
	1/12	18.00	17.25	17.20	16.87	16.69		1/24	18.00	17.23	17.18	16.85	16.72
	1/24	18.00	17.16	17.06	16.72	16.60		1/49	18.00	17.12	17.10	16.77	16.62
	12/0	17.00	16.51	16.37	16.09	15.98		25/0	17.00	16.53	16.48	16.08	16.09
	12/6	17.00	16.57	16.45	16.18	16.02		25/12	17.00	16.52	16.48	16.16	16.00
	12/13	17.00	16.48	16.39	16.11	15.90		25/25	17.00	16.40	16.42	16.21	15.87
	25/0	17.00	16.52	16.49	16.09	15.92		50/0	17.00	16.38	16.37	16.04	15.93

LTE B41/BW=15M		Average Conducted Power (dBm)					LTE B41/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)			
			40115 / 2542.5	40415 / 2572.5	40715 / 2602.5	41165 / 2647.5				40140 / 2545	40460 / 2577	40780 / 2609	41140 / 2645
QPSK	1/0	20.00	19.34	19.38	19.09	18.84	QPSK	1/0	20.00	19.48	19.53	19.28	18.98
	1/37	20.00	19.45	19.45	19.11	18.94		1/49	20.00	19.69	19.64	19.38	19.16
	1/74	20.00	19.41	19.32	19.00	18.86		1/99	20.00	19.53	19.37	19.08	18.95
	36/0	19.00	18.44	18.41	18.01	17.97		50/0	19.00	18.63	18.52	18.07	18.26
	36/19	19.00	18.45	18.39	18.12	17.94		50/24	19.00	18.58	18.54	18.30	18.11
	36/39	19.00	18.33	18.35	18.08	17.76		50/50	19.00	18.40	18.47	18.32	17.88
	75/0	19.00	18.32	18.29	18.00	17.85		100/0	19.00	18.55	18.57	18.32	18.08
16QAM	1/0	19.00	18.37	18.43	18.18	17.97	16QAM	1/0	19.00	18.55	18.56	18.34	18.11
	1/37	19.00	18.54	18.49	18.16	18.07		1/49	19.00	18.77	18.70	18.46	18.30
	1/74	19.00	18.43	18.36	18.12	17.95		1/99	19.00	18.57	18.43	18.20	18.09
	36/0	18.00	17.42	17.36	16.95	17.03		50/0	18.00	17.65	17.51	17.06	17.33
	36/19	18.00	17.44	17.38	17.07	16.91		50/24	18.00	17.58	17.57	17.26	17.18
	36/39	18.00	17.34	17.32	17.10	16.78		50/50	18.00	17.40	17.47	17.32	16.84
	75/0	18.00	17.36	17.32	17.02	16.86		100/0	18.00	17.61	17.60	17.29	17.14
64QAM	1/0	18.00	17.05	17.11	16.81	16.55	64QAM	1/0	18.00	17.18	17.22	17.00	16.69
	1/37	18.00	17.18	17.19	16.84	16.71		1/49	18.00	17.40	17.35	17.09	16.89
	1/74	18.00	17.13	17.02	16.71	16.59		1/99	18.00	17.22	17.08	16.80	16.66
	36/0	17.00	16.45	16.34	15.99	15.99		50/0	17.00	16.67	16.53	16.07	16.33
	36/19	17.00	16.44	16.39	16.07	15.93		50/24	17.00	16.61	16.58	16.27	16.17
	36/39	17.00	16.38	16.35	16.12	15.79		50/50	17.00	16.39	16.51	16.37	15.84
	75/0	17.00	16.37	16.30	16.05	15.91		100/0	17.00	16.61	16.61	16.28	16.15

<Bluetooth>

BT	Average Conducted Power (dBm)					
	Max. Tune up	CH0 2402MHz	Max. Tune up	CH39 2441MHz	Max. Tune up	CH78 2480MHz
DH5	13.0	12.64	15.5	15.24	14.5	14.22
2DH5	11.0	10.81	13.0	12.85	12.5	12.44
3DH5	11.0	10.68	13.0	12.81	12.5	12.36

BT	Average Conducted Power (dBm)					
	Max. Tune up	CH0 2402MHz	Max. Tune up	CH19 2440MHz	Max. Tune up	CH39 2480MHz
BLE(1M)	11.5	11.15	11.5	11.33	14.0	13.58
BLE(2M)	13.0	12.62	11.0	10.91	12.5	12.39

<WLAN 2.4G>

2.4G WIFI					
Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Average Power (dBm)	Max. Tune up
802.11b	1	2412	1	7.06	7.50
	7	2442		10.89	11.00
	13	2472		6.95	7.00
802.11g	1	2412	6	16.23	16.50
	7	2442		17.65	18.00
	13	2472		12.46	12.50
802.11n HT20	1	2412	MCS0	16.11	16.50
	7	2442		17.35	17.50
	13	2472		11.81	12.00
802.11n HT40	3	2422	MCS0	15.02	15.50
	7	2442		16.02	16.50
	11	2462		15.55	16.00
802.11ac VHT20	1	2412	MCS0	16.13	16.50
	7	2442		17.39	17.50
	13	2472		11.85	12.00
802.11ac VHT40	3	2422	MCS0	15.21	15.50
	7	2442		16.13	16.50
	11	2462		15.62	16.00

<WLAN 5G>

5.2G WIFI						
Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Average Power (dBm)	Max. Tune up
5.2G	802.11a	36	5180	6	14.14	14.50
		40	5200		15.46	15.50
		44	5220		15.19	15.50
		48	5240		15.13	15.50
	802.11n HT20	36	5180	MCS0	13.25	13.50
		40	5200		15.42	15.50
		44	5220		15.43	15.50
		48	5240		15.11	15.50
	802.11n HT40	38	5190	MCS0	11.82	12.00
		46	5230		14.65	15.00
	802.11ac VHT20	36	5180	MCS0	13.27	13.50
		40	5200		15.45	15.50
		44	5220		15.47	15.50
		48	5240		15.15	15.50
	802.11ac VHT40	38	5190	MCS0	11.86	12.00
		46	5230		14.68	15.00
	802.11ac VHT80	42	5210	MCS0	10.31	10.50

5.3G WIFI						
Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Average Power (dBm)	Max. Tune up
5.3G	802.11a	52	5260	6	15.15	15.50
		56	5280		14.84	15.00
		60	5300		15.33	15.50
		64	5320		14.24	14.50
	802.11n HT20	52	5260	MCS0	15.11	15.50
		56	5280		15.21	15.50
		60	5300		15.23	15.50
		64	5320		13.62	14.00
	802.11n HT40	54	5270	MCS0	14.92	15.00
		62	5310		12.33	12.50
	802.11ac VHT20	52	5260	MCS0	15.13	15.50
		56	5280		15.24	15.50
		60	5300		15.27	15.50
		64	5320		13.68	14.00
	802.11ac VHT40	54	5270	MCS0	14.99	15.00
		62	5310		12.39	12.50
	802.11ac VHT80	58	5290	MCS0	12.33	12.50

5.6G WIFI						
Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Average Power (dBm)	Max. Tune up
5.6G	802.11a	100	5500	6	12.09	12.50
		116	5580		15.95	16.00
		124	5620		15.97	16.00
		132	5660		11.79	12.00
		140	5700		12.11	12.50
	802.11n HT20	100	5500	MCS0	12.41	12.50
		116	5580		15.80	16.00
		124	5620		15.89	16.00
		132	5660		11.78	12.00
		140	5700		11.55	12.00
	802.11n HT40	102	5510	MCS0	10.44	10.50
		110	5550		15.64	16.00
		126	5630		15.68	16.00
		134	5670		14.22	14.50
	802.11ac VHT20	100	5500	MCS0	12.46	12.50
		116	5580		15.84	16.00
		124	5620		15.92	16.00
		132	5660		11.81	12.00
		140	5700		11.58	12.00
	802.11ac VHT40	102	5510	MCS0	10.49	10.50
		110	5550		15.67	16.00
		126	5630		15.70	16.00
		134	5670		14.28	14.50
	802.11ac VHT80	106	5530	MCS0	11.42	11.50
		122	5610		13.86	14.00

5.8G WIFI						
Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Average Power (dBm)	Max. Tune up
5.8G	802.11a	149	5745	6	17.21	17.50
		157	5785		17.18	17.50
		165	5825		17.12	17.50
	802.11n HT20	149	5745	MCS0	17.09	17.50
		157	5785		17.15	17.50
		165	5825		17.09	17.50
	802.11n HT40	151	5755	MCS0	15.62	16.00
		159	5795		17.19	17.50
	802.11ac VHT20	149	5745	MCS0	17.13	17.50
		157	5785		17.17	17.50
		165	5825		17.12	17.50
	802.11ac VHT40	151	5755	MCS0	15.66	16.00
		159	5795		17.23	17.50
	802.11ac VHT80	155	5775	MCS0	13.83	14.00

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 D01, 3G SAR Measurement Procedures>

The mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ 1/4 dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

<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.

<KDB 248227 D01, SAR Guidance for Wi-Fi Transmitters>

(1) For handsets operating next to ear, hotspot mode or mini-tablet configurations, the initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When the reported SAR of initial test position is <= 0.4 W/kg, SAR testing for remaining test positions is not required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is <= 0.8 W/kg or all test positions are measured.

(2) For WLAN 2.4 GHz, the highest measured maximum output power channel for DSSS was selected for SAR measurement. When the reported SAR is <= 0.8 W/kg, no further SAR testing is required. Otherwise, SAR is evaluated at the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel. For OFDM modes (802.11g/n), SAR is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and it is <= 1.2 W/kg.

(3) For WLAN 5 GHz, the initial test configuration was selected according to the transmission mode with the highest maximum output power. When the reported SAR of initial test configuration is > 0.8 W/kg, SAR is required for the subsequent highest measured output power channel until the reported SAR result is <= 1.2 W/kg or all required channels are measured. For other transmission modes, SAR is not required when the highest reported SAR for initial test configuration is adjusted by the ratio of subsequent test configuration to initial test configuration specified maximum output power and it is <= 1.2 W/kg.

8.8.2 SAR Results for Head Exposure Condition

Plot No.	Band	Mode	Test Position	Ch.	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
234	GSM850	GPRS 10	Right Cheek	128	824.2	32.90	33.00	1.023	1.000	-0.15	0.219	0.224
235	GSM850	GPRS 10	Right Tilted	128	824.2	32.90	33.00	1.023	1.000	-0.11	0.103	0.105
236	GSM850	GPRS 10	Left Cheek	128	824.2	32.90	33.00	1.023	1.000	-0.14	0.265	**0.271**
237	GSM850	GPRS 10	Left Tilted	128	824.2	32.90	33.00	1.023	1.000	-0.03	0.140	0.143
352	GSM1900	GPRS 12	Right Cheek	512	1850.2	25.85	26.00	1.035	1.000	-0.12	0.055	0.057
353	GSM1900	GPRS 12	Right Tilted	512	1850.2	25.85	26.00	1.035	1.000	0.12	0.019	0.020
354	GSM1900	GPRS 12	Left Cheek	512	1850.2	25.85	26.00	1.035	1.000	0.15	0.108	**0.112**
355	GSM1900	GPRS 12	Left Tilted	512	1850.2	25.85	26.00	1.035	1.000	-0.1	0.027	0.028
226	UMTS B2	RMC 12.2Kbps	Right Cheek	9262	1852.4	23.74	24.00	1.062	1.000	0.09	0.104	0.110
227	UMTS B2	RMC 12.2Kbps	Right Tilted	9262	1852.4	23.74	24.00	1.062	1.000	0.17	0.022	0.023
228	UMTS B2	RMC 12.2Kbps	Left Cheek	9262	1852.4	23.74	24.00	1.062	1.000	-0.18	0.156	**0.166**
229	UMTS B2	RMC 12.2Kbps	Left Tilted	9262	1852.4	23.74	24.00	1.062	1.000	-0.16	0.044	0.047
230	UMTS B5	RMC 12.2Kbps	Right Cheek	4132	826.4	22.38	22.50	1.028	1.000	-0.03	0.086	**0.088**
231	UMTS B5	RMC 12.2Kbps	Right Tilted	4132	826.4	22.38	22.50	1.028	1.000	0.11	0.003	0.003
232	UMTS B5	RMC 12.2Kbps	Left Cheek	4132	826.4	22.38	22.50	1.028	1.000	0.09	0.032	0.032
233	UMTS B5	RMC 12.2Kbps	Left Tilted	4132	826.4	22.38	22.50	1.028	1.000	0.14	0.012	0.013

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Ch.	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
1	LTE B2	20M	QPSK	1	49	Right Cheek	18700	1860	21.05	21.50	1.109	1.000	-0.02	0.066	0.073
2	LTE B2	20M	QPSK	50	24	Right Cheek	18700	1860	20.08	20.50	1.102	1.000	0.11	0.053	0.058
3	LTE B2	20M	QPSK	1	49	Right Tilted	18700	1860	21.05	21.50	1.109	1.000	-0.03	0.035	0.039
4	LTE B2	20M	QPSK	50	24	Right Tilted	18700	1860	20.08	20.50	1.102	1.000	0.05	0.026	0.029
5	LTE B2	20M	QPSK	1	49	Left Cheek	18700	1860	21.05	21.50	1.109	1.000	-0.03	0.150	**0.166**
6	LTE B2	20M	QPSK	50	24	Left Cheek	18700	1860	20.08	20.50	1.102	1.000	0.04	0.116	0.128
7	LTE B2	20M	QPSK	1	49	Left Tilted	18700	1860	21.05	21.50	1.109	1.000	-0.14	0.039	0.043
8	LTE B2	20M	QPSK	50	24	Left Tilted	18700	1860	20.08	20.50	1.102	1.000	0.06	0.032	0.035
9	LTE B4	20M	QPSK	1	49	Right Cheek	20175	1732.5	20.93	21.50	1.140	1.000	-0.05	0.027	0.031
10	LTE B4	20M	QPSK	50	24	Right Cheek	20175	1732.5	19.94	20.50	1.138	1.000	0.05	0.030	0.034
11	LTE B4	20M	QPSK	1	49	Right Tilted	20175	1732.5	20.93	21.50	1.140	1.000	0.09	0.012	0.014
12	LTE B4	20M	QPSK	50	24	Right Tilted	20175	1732.5	19.94	20.50	1.138	1.000	-0.14	0.008	0.009
13	LTE B4	20M	QPSK	1	49	Left Cheek	20175	1732.5	20.93	21.50	1.140	1.000	0.16	0.051	**0.058**
14	LTE B4	20M	QPSK	50	24	Left Cheek	20175	1732.5	19.94	20.50	1.138	1.000	0.08	0.040	0.046
15	LTE B4	20M	QPSK	1	49	Left Tilted	20175	1732.5	20.93	21.50	1.140	1.000	0.01	0.016	0.018
16	LTE B4	20M	QPSK	50	24	Left Tilted	20175	1732.5	19.94	20.50	1.138	1.000	-0.04	0.012	0.014
17	LTE B5	10M	QPSK	1	49	Right Cheek	20525	836.5	19.84	20.50	1.164	1.000	-0.05	0.011	0.013
18	LTE B5	10M	QPSK	25	12	Right Cheek	20525	836.5	18.85	19.50	1.161	1.000	0	<0.001	<0.001
19	LTE B5	10M	QPSK	1	49	Right Tilted	20525	836.5	19.84	20.50	1.164	1.000	-0.11	0.004	0.005
20	LTE B5	10M	QPSK	25	12	Right Tilted	20525	836.5	18.85	19.50	1.161	1.000	0.02	0.002	0.003
21	LTE B5	10M	QPSK	1	49	Left Cheek	20525	836.5	19.84	20.50	1.164	1.000	-0.02	0.012	**0.014**
22	LTE B5	10M	QPSK	25	12	Left Cheek	20525	836.5	18.85	19.50	1.161	1.000	-0.08	0.010	0.012
23	LTE B5	10M	QPSK	1	49	Left Tilted	20525	836.5	19.84	20.50	1.164	1.000	-0.09	0.005	0.005
24	LTE B5	10M	QPSK	25	12	Left Tilted	20525	836.5	18.85	19.50	1.161	1.000	-0.14	0.006	0.007
25	LTE B7	20M	QPSK	1	49	Right Cheek	21350	2560	21.07	21.50	1.104	1.000	0.04	0.001	**0.002**
26	LTE B7	20M	QPSK	50	24	Right Cheek	21350	2560	20.07	20.50	1.104	1.000	-0.11	0.001	0.001
27	LTE B7	20M	QPSK	1	49	Right Tilted	21350	2560	21.07	21.50	1.104	1.000	0	<0.001	<0.001
28	LTE B7	20M	QPSK	50	24	Right Tilted	21350	2560	20.07	20.50	1.104	1.000	0	<0.001	<0.001
29	LTE B7	20M	QPSK	1	49	Left Cheek	21350	2560	21.07	21.50	1.104	1.000	0	<0.001	<0.001
30	LTE B7	20M	QPSK	50	24	Left Cheek	21350	2560	20.07	20.50	1.104	1.000	0	<0.001	<0.001
31	LTE B7	20M	QPSK	1	49	Left Tilted	21350	2560	21.07	21.50	1.104	1.000	0	<0.001	<0.001
32	LTE B7	20M	QPSK	50	24	Left Tilted	21350	2560	20.07	20.50	1.104	1.000	0	<0.001	<0.001

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Ch.	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
124	LTE B12	10M	QPSK	1	24	Right Cheek	23095	707.5	20.96	21.50	1.132	1.000	-0.11	0.088	0.099
125	LTE B12	10M	QPSK	25	25	Right Cheek	23095	707.5	20.14	20.50	1.086	1.000	-0.15	0.061	0.067
126	LTE B12	10M	QPSK	1	24	Right Tilted	23095	707.5	20.96	21.50	1.132	1.000	-0.11	0.040	0.045
127	LTE B12	10M	QPSK	25	25	Right Tilted	23095	707.5	20.14	20.50	1.086	1.000	-0.15	0.029	0.031
128	LTE B12	10M	QPSK	1	24	Left Cheek	23095	707.5	20.96	21.50	1.132	1.000	-0.11	0.108	**0.122**
129	LTE B12	10M	QPSK	25	25	Left Cheek	23095	707.5	20.14	20.50	1.086	1.000	-0.17	0.080	0.087
130	LTE B12	10M	QPSK	1	24	Left Tilted	23095	707.5	20.96	21.50	1.132	1.000	-0.18	0.049	0.055
131	LTE B12	10M	QPSK	25	25	Left Tilted	23095	707.5	20.14	20.50	1.086	1.000	-0.15	0.036	0.039
132	LTE B17	10M	QPSK	1	24	Left Cheek	23790	710	21.05	21.50	1.109	1.000	0.12	0.111	0.123
33	LTE B41	20M	QPSK	1	49	Right Cheek	40140	2545	19.69	20.00	1.074	1.006	0.17	0.005	**0.005**
34	LTE B41	20M	QPSK	50	0	Right Cheek	40140	2545	18.63	19.00	1.089	1.006	0	<0.001	<0.001
35	LTE B41	20M	QPSK	1	49	Right Tilted	40140	2545	19.69	20.00	1.074	1.006	0	<0.001	<0.001
36	LTE B41	20M	QPSK	50	0	Right Tilted	40140	2545	18.63	19.00	1.089	1.006	0	<0.001	<0.001
37	LTE B41	20M	QPSK	1	49	Left Cheek	40140	2545	19.69	20.00	1.074	1.006	0	<0.001	<0.001
38	LTE B41	20M	QPSK	50	0	Left Cheek	40140	2545	18.63	19.00	1.089	1.006	0	<0.001	<0.001
39	LTE B41	20M	QPSK	1	49	Left Tilted	40140	2545	19.69	20.00	1.074	1.006	0	<0.001	<0.001
40	LTE B41	20M	QPSK	50	0	Left Tilted	40140	2545	18.63	19.00	1.089	1.006	0	<0.001	<0.001

Plot No.	Band	Mode	Test Position	Ch.	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
296	WLAN2.4GHz	802.11b	Right Cheek	6	2437	10.89	11.00	1.026	1.003	0	<0.001	<0.001
297	WLAN2.4GHz	802.11b	Right Tilted	6	2437	10.89	11.00	1.026	1.003	0	<0.001	<0.001
283	WLAN2.4GHz	802.11b	Left Cheek	6	2437	10.89	11.00	1.026	1.003	0.1	0.021	0.022
294	WLAN2.4GHz	802.11b	Left Tilted	6	2437	10.89	11.00	1.026	1.003	-0.16	0.016	0.016
298	WLAN2.4GHz	802.11g	Right Cheek	6	2437	17.65	18.00	1.084	1.027	0.17	0.014	0.016
299	WLAN2.4GHz	802.11g	Right Tilted	6	2437	17.65	18.00	1.084	1.027	0.11	0.030	0.033
282	WLAN2.4GHz	802.11g	Left Cheek	6	2437	17.65	18.00	1.084	1.027	-0.12	0.126	**0.140**
295	WLAN2.4GHz	802.11g	Left Tilted	6	2437	17.65	18.00	1.084	1.027	-0.16	0.103	0.115
332	WLAN5GHz	802.11a	Right Cheek	60	5300	15.33	15.50	1.040	1.025	0.16	0.495	0.528
334	WLAN5GHz	802.11a	Right Tilted	60	5300	15.33	15.50	1.040	1.025	0.03	0.532	0.567
336	WLAN5GHz	802.11a	Left Cheek	60	5300	15.33	15.50	1.040	1.025	-0.19	0.701	**0.747**
338	WLAN5GHz	802.11a	Left Tilted	60	5300	15.33	15.50	1.040	1.025	-0.14	0.569	0.607
374	WLAN5GHz	802.11n HT40	Right Cheek	126	5630	15.68	16.00	1.076	1.055	-0.03	0.432	0.491
375	WLAN5GHz	802.11n HT40	Right Tilted	126	5630	15.68	16.00	1.076	1.055	-0.12	0.455	**0.517**
372	WLAN5GHz	802.11n HT40	Left Cheek	126	5630	15.68	16.00	1.076	1.055	0.04	0.422	0.479
373	WLAN5GHz	802.11n HT40	Left Tilted	126	5630	15.68	16.00	1.076	1.055	-0.15	0.434	0.493
376	WLAN5GHz	802.11n HT40	Right Cheek	159	5795	17.19	17.50	1.074	1.055	-0.04	0.751	0.851
377	WLAN5GHz	802.11n HT40	Right Tilted	159	5795	17.19	17.50	1.074	1.055	-0.15	0.775	0.878
378	WLAN5GHz	802.11n HT40	Left Cheek	159	5795	17.19	17.50	1.074	1.055	-0.13	0.772	0.875
379	WLAN5GHz	802.11n HT40	Left Tilted	159	5795	17.19	17.50	1.074	1.055	-0.05	0.787	**0.892**
380	WLAN5GHz	802.11n HT40	Left Tilted	151	5755	15.62	16.00	1.091	1.055	-0.11	0.488	0.562
238	Bluetooth	DH5	Right Cheek	39	2441	15.24	15.50	1.062	1.085	-0.06	0.002	0.003
239	Bluetooth	DH5	Right Tilted	39	2441	15.24	15.50	1.062	1.085	-0.09	0.003	0.003
240	Bluetooth	DH5	Left Cheek	39	2441	15.24	15.50	1.062	1.085	0.06	0.006	**0.007**
241	Bluetooth	DH5	Left Tilted	39	2441	15.24	15.50	1.062	1.085	0	<0.001	<0.001

Note: “<0.01” means the SAR value is too low to be measured.

8.8.3 SAR Results for Body-worn Exposure Condition (Separation Distance is 1.0cm Gap)

Plot No.	Band	Mode	Test Position	Headset	Ch.	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
260	GSM850	GPRS	Front	-	128	824.2	32.90	33.00	1.023	1.000	-0.11	0.329	0.337
261	GSM850	GPRS	Back	-	128	824.2	32.90	33.00	1.023	1.000	0.08	0.574	**0.587**
272	GSM850	GPRS	Back	Headset	128	824.2	32.90	33.00	1.023	1.000	0.14	0.505	0.517
349	GSM1900	GPRS	Front	-	512	1850.2	25.85	26.00	1.035	1.000	-0.05	0.379	**0.392**
350	GSM1900	GPRS	Back	-	512	1850.2	25.85	26.00	1.035	1.000	0	0.270	0.279
351	GSM1900	GPRS	Front	Headset	512	1850.2	25.85	26.00	1.035	1.000	-0.05	0.370	0.383
248	UMTS B2	RMC 12.2Kbps	Front	-	9262	1852.4	23.74	24.00	1.062	1.000	-0.08	0.531	**0.564**
249	UMTS B2	RMC 12.2Kbps	Back	-	9262	1852.4	23.74	24.00	1.062	1.000	-0.14	0.500	0.531
258	UMTS B2	RMC 12.2Kbps	Front	Headset	9262	1852.4	23.74	24.00	1.000	1.000	-0.11	0.487	0.487
253	UMTS B5	RMC 12.2Kbps	Front	-	4132	826.4	22.38	22.50	1.028	1.000	0.15	0.045	0.046
254	UMTS B5	RMC 12.2Kbps	Back	-	4132	826.4	22.38	22.50	1.028	1.000	0.11	0.074	**0.076**
259	UMTS B5	RMC 12.2Kbps	Back	Headset	4132	826.4	22.38	22.50	1.000	1.000	0.08	0.067	0.067

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Headset	Ch.	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
76	LTE B2	20M	QPSK	1	49	Front	-	18700	1860	21.05	21.50	1.109	1.000	-0.03	0.370	**0.410**
77	LTE B2	20M	QPSK	50	24	Front	-	18700	1860	20.08	20.50	1.102	1.000	-0.1	0.302	0.333
68	LTE B2	20M	QPSK	1	49	Back	-	18700	1860	21.05	21.50	1.109	1.000	-0.15	0.363	0.403
69	LTE B2	20M	QPSK	50	24	Back	-	18700	1860	20.08	20.50	1.102	1.000	-0.08	0.292	0.322
122	LTE B2	20M	QPSK	1	49	Front	Headset	18700	1860	21.05	21.50	1.109	1.000	0.07	0.346	0.384
78	LTE B4	20M	QPSK	1	49	Front	-	20175	1732.5	20.93	21.50	1.140	1.000	-0.16	0.200	0.228
79	LTE B4	20M	QPSK	50	24	Front	-	20175	1732.5	19.94	20.50	1.138	1.000	-0.1	0.158	0.180
70	LTE B4	20M	QPSK	1	49	Back	-	20175	1732.5	20.93	21.50	1.140	1.000	-0.15	0.249	**0.284**
71	LTE B4	20M	QPSK	50	24	Back	-	20175	1732.5	19.94	20.50	1.138	1.000	-0.16	0.168	0.191
121	LTE B4	20M	QPSK	1	49	Back	Headset	20175	1732.5	20.93	21.50	1.140	1.000	-0.1	0.220	0.251
80	LTE B5	10M	QPSK	1	49	Front	-	20525	836.5	19.84	20.50	1.164	1.000	0.11	0.019	0.022
81	LTE B5	10M	QPSK	25	12	Front	-	20525	836.5	18.85	19.50	1.161	1.000	-0.13	0.016	0.019
72	LTE B5	10M	QPSK	1	49	Back	-	20525	836.5	19.84	20.50	1.164	1.000	-0.14	0.033	**0.038**
73	LTE B5	10M	QPSK	25	12	Back	-	20525	836.5	18.85	19.50	1.161	1.000	0.17	0.028	0.033
120	LTE B5	10M	QPSK	1	49	Back	Headset	20525	836.5	19.84	20.50	1.164	1.000	0.08	0.020	0.023
45	LTE B7	20M	QPSK	1	49	Front	-	21350	2560	21.07	21.50	1.104	1.000	0	<0.001	<0.001
46	LTE B7	20M	QPSK	50	24	Front	-	21350	2560	20.07	20.50	1.104	1.000	0	<0.001	<0.001
49	LTE B7	20M	QPSK	1	49	Back	-	21350	2560	21.07	21.50	1.104	1.000	-0.17	0.047	**0.052**
50	LTE B7	20M	QPSK	50	24	Back	-	21350	2560	20.07	20.50	1.104	1.000	0.1	0.037	0.041
66	LTE B7	20M	QPSK	1	49	Back	Headset	21350	2560	21.07	21.50	1.104	1.000	-0.07	0.039	0.043
82	LTE B12	10M	QPSK	1	24	Front	-	23095	707.5	20.96	21.50	1.132	1.000	-0.06	0.093	0.105
83	LTE B12	10M	QPSK	25	25	Front	-	23095	707.5	20.14	20.50	1.086	1.000	-0.07	0.068	0.074
74	LTE B12	10M	QPSK	1	24	Back	-	23095	707.5	20.96	21.50	1.132	1.000	-0.04	0.138	**0.156**
75	LTE B12	10M	QPSK	25	25	Back	-	23095	707.5	20.14	20.50	1.086	1.000	-0.07	0.103	0.112
109	LTE B12	10M	QPSK	1	24	Back	Headset	23095	707.5	20.96	21.50	1.132	1.000	0.07	0.100	0.113
123	LTE B17	10M	QPSK	1	24	Back	-	23790	710	21.05	21.50	1.109	1.000	-0.1	0.138	0.153
47	LTE B41	20M	QPSK	1	49	Front	-	40140	2545	19.69	20.00	1.074	1.006	0	<0.001	<0.001
48	LTE B41	20M	QPSK	50	0	Front	-	40140	2545	18.63	19.00	1.089	1.006	0	<0.001	<0.001
51	LTE B41	20M	QPSK	1	49	Back	-	40140	2545	19.69	20.00	1.074	1.006	-0.1	0.020	**0.022**
52	LTE B41	20M	QPSK	50	0	Back	-	40140	2545	18.63	19.00	1.089	1.006	-0.12	0.008	0.008
67	LTE B41	20M	QPSK	1	49	Back	Headset	40140	2545	19.69	20.00	1.074	1.006	-0.09	0.008	0.009

Plot No.	Band	Mode	Test Position	Headset	Ch.	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
288	WLAN2.4GHz	802.11b	Front	-	6	2437	10.89	11.00	1.026	1.003	0	0.004	0.004
280	WLAN2.4GHz	802.11b	Back	-	6	2437	10.89	11.00	1.026	1.003	0.17	0.006	0.006
294	WLAN2.4GHz	802.11b	Back	Headset	6	2437	10.89	11.00	1.026	1.003	0.1	0.004	0.004
289	WLAN2.4GHz	802.11g	Front	-	6	2437	17.65	18.00	1.084	1.027	0.06	0.033	0.036
281	WLAN2.4GHz	802.11g	Back	-	6	2437	17.65	18.00	1.084	1.027	0.14	0.035	**0.039**
295	WLAN2.4GHz	802.11g	Back	Headset	6	2437	17.65	18.00	1.084	1.027	-0.18	0.030	0.033
356	WLAN5GHz	802.11a	Front	-	60	5300	15.33	15.50	1.040	1.025	-0.13	0.178	0.190
359	WLAN5GHz	802.11a	Back	-	60	5300	15.33	15.50	1.040	1.025	-0.13	0.985	1.050
360	WLAN5GHz	802.11a	Back	-	52	5260	15.15	15.50	1.084	1.025	-0.12	1.040	**1.155**
2st	WLAN5GHz	802.11a	Back	-	52	5260	15.15	15.50	1.084	1.025	-0.12	1.030	1.144
361	WLAN5GHz	802.11a	Back	-	56	5280	14.84	15.00	1.038	1.025	-0.05	1.010	1.074
362	WLAN5GHz	802.11a	Back	-	64	5320	14.24	14.50	1.062	1.025	0.1	0.884	0.962
363	WLAN5GHz	802.11a	Back	Headset	52	5260	15.15	15.50	1.084	1.025	-0.12	1.010	1.122
357	WLAN5GHz	802.11n HT40	Front	-	126	5630	15.68	16.00	1.076	1.055	-0.13	0.126	0.143
364	WLAN5GHz	802.11n HT40	Back	-	126	5630	15.68	16.00	1.076	1.055	0.1	0.906	1.029
365	WLAN5GHz	802.11n HT40	Back	-	102	5510	10.44	10.50	1.014	1.055	-0.15	0.270	0.289
366	WLAN5GHz	802.11n HT40	Back	-	110	5550	15.64	16.00	1.086	1.055	-0.04	0.911	**1.044**
2st	WLAN5GHz	802.11n HT40	Back	-	110	5550	15.64	16.00	1.086	1.055	-0.01	0.896	1.027
367	WLAN5GHz	802.11n HT40	Back	-	134	5670	14.22	14.50	1.067	1.055	0	0.633	0.712
368	WLAN5GHz	802.11n HT40	Back	Headset	110	5550	15.64	16.00	1.086	1.055	0.04	0.889	1.019
358	WLAN5GHz	802.11n HT40	Front	-	159	5795	17.19	17.50	1.074	1.055	0.02	0.163	0.185
369	WLAN5GHz	802.11n HT40	Back	-	159	5795	17.19	17.50	1.074	1.055	-0.1	0.940	**1.065**
2st	WLAN5GHz	802.11n HT40	Back	-	159	5795	17.19	17.50	1.074	1.055	-0.12	0.931	1.055
370	WLAN5GHz	802.11n HT40	Back	-	151	5755	15.62	16.00	1.091	1.055	-0.02	0.829	0.955
371	WLAN5GHz	802.11n HT40	Back	Headset	159	5795	17.19	17.50	1.074	1.055	-0.11	0.921	1.044
242	Bluetooth	DH5	Front	-	39	2441	15.24	15.50	1.062	1.085	0	<0.001	<0.001
243	Bluetooth	DH5	Back	-	39	2441	15.24	15.50	1.062	1.085	0	<0.001	<0.001

Note: "<0.01" means the SAR value is too low to be measured.

8.8.4 SAR Results for Hotspot Exposure Condition (Separation Distance is 1.0cm Gap)

Plot No.	Band	Mode	Test Position	Ch.	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
260	GSM850	GPRS 10	Front	128	824.2	32.90	33.00	1.023	1.000	-0.11	0.329	0.337
261	GSM850	GPRS 10	Back	128	824.2	32.90	33.00	1.023	1.000	0.08	0.574	**0.587**
262	GSM850	GPRS 10	Left Side	128	824.2	32.90	33.00	1.023	1.000	0.01	0.471	0.482
263	GSM850	GPRS 10	Right Side	128	824.2	32.90	33.00	1.023	1.000	-0.16	0.078	0.079
	GSM850	GPRS 10	Top Side	128	824.2	32.90	33.00	1.023	1.000	0	<0.001	<0.001
264	GSM850	GPRS 10	Bottom Side	128	824.2	32.90	33.00	1.023	1.000	-0.09	0.220	0.225
349	GSM1900	GPRS 12	Front	512	1850.2	25.85	26.00	1.035	1.000	0.03	0.312	0.323
350	GSM1900	GPRS 12	Back	512	1850.2	25.85	26.00	1.035	1.000	0	0.270	0.279
344	GSM1900	GPRS 12	Left Side	512	1850.2	25.85	26.00	1.035	1.000	-0.01	0.436	**0.451**
346	GSM1900	GPRS 12	Right Side	512	1850.2	25.85	26.00	1.035	1.000	-0.05	0.016	0.016
347	GSM1900	GPRS 12	Top Side	512	1850.2	25.85	26.00	1.035	1.000	0.1	0.013	0.013
348	GSM1900	GPRS 12	Bottom Side	512	1850.2	25.85	26.00	1.035	1.000	-0.05	0.097	0.100
248	UMTS B2	RMC 12.2Kbps	Front	9262	1852.4	23.74	24.00	1.062	1.000	-0.08	0.531	0.564
249	UMTS B2	RMC 12.2Kbps	Back	9262	1852.4	23.74	24.00	1.062	1.000	-0.14	0.500	0.531
250	UMTS B2	RMC 12.2Kbps	Left Side	9262	1852.4	23.74	24.00	1.062	1.000	-0.13	0.743	**0.789**
251	UMTS B2	RMC 12.2Kbps	Right Side	9262	1852.4	23.74	24.00	1.062	1.000	-0.19	0.056	0.059
	UMTS B2	RMC 12.2Kbps	Top Side	9262	1852.4	23.74	24.00	1.062	1.000	0	<0.001	<0.001
252	UMTS B2	RMC 12.2Kbps	Bottom Side	9262	1852.4	23.74	24.00	1.062	1.000	-0.12	0.203	0.216
253	UMTS B5	RMC 12.2Kbps	Front	4132	826.4	22.38	22.50	1.028	1.000	0.15	0.045	0.046
254	UMTS B5	RMC 12.2Kbps	Back	4132	826.4	22.38	22.50	1.028	1.000	0.11	0.074	**0.076**
255	UMTS B5	RMC 12.2Kbps	Left Side	4132	826.4	22.38	22.50	1.028	1.000	0.15	0.064	0.066
256	UMTS B5	RMC 12.2Kbps	Right Side	4132	826.4	22.38	22.50	1.028	1.000	-0.14	0.009	0.009
	UMTS B5	RMC 12.2Kbps	Top Side	4132	826.4	22.38	22.50	1.028	1.000	0	<0.001	<0.001
257	UMTS B5	RMC 12.2Kbps	Bottom Side	4132	826.4	22.38	22.50	1.028	1.000	-0.05	0.028	0.029

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Ch.	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
76	LTE B2	20M	QPSK	1	49	Front	18700	1860	21.05	21.50	1.109	1.000	-0.03	0.370	0.410
77	LTE B2	20M	QPSK	50	24	Front	18700	1860	20.08	20.50	1.102	1.000	-0.1	0.302	0.333
68	LTE B2	20M	QPSK	1	49	Back	18700	1860	21.05	21.50	1.109	1.000	-0.15	0.363	0.403
69	LTE B2	20M	QPSK	50	24	Back	18700	1860	20.08	20.50	1.102	1.000	-0.08	0.292	0.322
84	LTE B2	20M	QPSK	1	49	Left Side	18700	1860	21.05	21.50	1.109	1.000	0.02	0.472	**0.524**
85	LTE B2	20M	QPSK	50	24	Left Side	18700	1860	20.08	20.50	1.102	1.000	0	0.385	0.424
92	LTE B2	20M	QPSK	1	49	Right Side	18700	1860	21.05	21.50	1.109	1.000	0.14	0.048	0.053
93	LTE B2	20M	QPSK	50	24	Right Side	18700	1860	20.08	20.50	1.102	1.000	0.13	0.038	0.041
	LTE B2	20M	QPSK	1	49	Top Side	18700	1860	21.05	21.50	1.109	1.000	0	<0.001	<0.001
	LTE B2	20M	QPSK	50	24	Top Side	18700	1860	20.08	20.50	1.102	1.000	0	<0.001	<0.001
100	LTE B2	20M	QPSK	1	49	Bottom Side	18700	1860	21.05	21.50	1.109	1.000	0.03	0.146	0.162
101	LTE B2	20M	QPSK	50	24	Bottom Side	18700	1860	20.08	20.50	1.102	1.000	-0.07	0.118	0.130
78	LTE B4	20M	QPSK	1	49	Front	20175	1732.5	20.93	21.50	1.140	1.000	-0.16	0.200	0.228
79	LTE B4	20M	QPSK	50	24	Front	20175	1732.5	19.94	20.50	1.138	1.000	-0.1	0.158	0.180
70	LTE B4	20M	QPSK	1	49	Back	20175	1732.5	20.93	21.50	1.140	1.000	-0.15	0.249	0.284
71	LTE B4	20M	QPSK	50	24	Back	20175	1732.5	19.94	20.50	1.138	1.000	-0.16	0.168	0.191
86	LTE B4	20M	QPSK	1	49	Left Side	20175	1732.5	20.93	21.50	1.140	1.000	-0.03	0.303	**0.345**
87	LTE B4	20M	QPSK	50	24	Left Side	20175	1732.5	19.94	20.50	1.138	1.000	-0.04	0.240	0.273
94	LTE B4	20M	QPSK	1	49	Right Side	20175	1732.5	20.93	21.50	1.140	1.000	0.17	0.016	0.018
95	LTE B4	20M	QPSK	50	24	Right Side	20175	1732.5	19.94	20.50	1.138	1.000	0.02	0.012	0.013
	LTE B4	20M	QPSK	1	49	Top Side	20175	1732.5	20.93	21.50	1.140	1.000	0	<0.001	<0.001
	LTE B4	20M	QPSK	50	24	Top Side	20175	1732.5	19.94	20.50	1.138	1.000	0	<0.001	<0.001
102	LTE B4	20M	QPSK	1	49	Bottom Side	20175	1732.5	20.93	21.50	1.140	1.000	0.14	0.075	0.085
103	LTE B4	20M	QPSK	50	24	Bottom Side	20175	1732.5	19.94	20.50	1.138	1.000	-0.03	0.059	0.067
80	LTE B5	10M	QPSK	1	49	Front	20525	836.5	19.84	20.50	1.164	1.000	0.11	0.019	0.022
81	LTE B5	10M	QPSK	25	12	Front	20525	836.5	18.85	19.50	1.161	1.000	-0.13	0.016	0.019
72	LTE B5	10M	QPSK	1	49	Back	20525	836.5	19.84	20.50	1.164	1.000	-0.14	0.033	**0.038**
73	LTE B5	10M	QPSK	25	12	Back	20525	836.5	18.85	19.50	1.161	1.000	0.17	0.028	0.033
88	LTE B5	10M	QPSK	1	49	Left Side	20525	836.5	19.84	20.50	1.164	1.000	0.17	0.029	0.034
89	LTE B5	10M	QPSK	25	12	Left Side	20525	836.5	18.85	19.50	1.161	1.000	0.02	0.026	0.030
96	LTE B5	10M	QPSK	1	49	Right Side	20525	836.5	19.84	20.50	1.164	1.000	0.18	0.004	0.004
97	LTE B5	10M	QPSK	25	12	Right Side	20525	836.5	18.85	19.50	1.161	1.000	-0.12	0.003	0.003
	LTE B5	10M	QPSK	1	49	Top Side	20525	836.5	19.84	20.50	1.164	1.000	0	<0.001	<0.001
	LTE B5	10M	QPSK	25	12	Top Side	20525	836.5	18.85	19.50	1.161	1.000	0	<0.001	<0.001
104	LTE B5	10M	QPSK	1	49	Bottom Side	20525	836.5	19.84	20.50	1.164	1.000	0.12	0.011	0.013
105	LTE B5	10M	QPSK	25	12	Bottom Side	20525	836.5	18.85	19.50	1.161	1.000	0.11	0.009	0.011
45	LTE B7	20M	QPSK	1	49	Front	21350	2560	21.07	21.50	1.104	1.000	0	<0.001	<0.001
46	LTE B7	20M	QPSK	50	24	Front	21350	2560	20.07	20.50	1.104	1.000	0	<0.001	<0.001
49	LTE B7	20M	QPSK	1	49	Back	21350	2560	21.07	21.50	1.104	1.000	-0.17	0.047	**0.052**
50	LTE B7	20M	QPSK	50	24	Back	21350	2560	20.07	20.50	1.104	1.000	0.1	0.037	0.041
53	LTE B7	20M	QPSK	1	49	Left Side	21350	2560	21.07	21.50	1.104	1.000	0.12	0.026	0.028
54	LTE B7	20M	QPSK	50	24	Left Side	21350	2560	20.07	20.50	1.104	1.000	0.18	0.021	0.024
57	LTE B7	20M	QPSK	1	49	Right Side	21350	2560	21.07	21.50	1.104	1.000	0	<0.001	<0.001
58	LTE B7	20M	QPSK	50	24	Right Side	21350	2560	20.07	20.50	1.104	1.000	0	<0.001	<0.001
	LTE B7	20M	QPSK	1	49	Top Side	21350	2560	21.07	21.50	1.104	1.000	0	<0.001	<0.001
	LTE B7	20M	QPSK	50	24	Top Side	21350	2560	20.07	20.50	1.104	1.000	0	<0.001	<0.001
61	LTE B7	20M	QPSK	1	49	Bottom Side	21350	2560	21.07	21.50	1.104	1.000	-0.16	0.021	0.023
62	LTE B7	20M	QPSK	50	24	Bottom Side	21350	2560	20.07	20.50	1.104	1.000	-0.15	0.018	0.020

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Ch.	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
82	LTE B12	10M	QPSK	1	24	Front	23095	707.5	20.96	21.50	1.132	1.000	-0.06	0.093	0.105
83	LTE B12	10M	QPSK	25	25	Front	23095	707.5	20.14	20.50	1.086	1.000	-0.07	0.068	0.074
74	LTE B12	10M	QPSK	1	24	Back	23095	707.5	20.96	21.50	1.132	1.000	-0.04	0.138	0.156
75	LTE B12	10M	QPSK	25	25	Back	23095	707.5	20.14	20.50	1.086	1.000	-0.07	0.103	0.112
90	LTE B12	10M	QPSK	1	24	Left Side	23095	707.5	20.96	21.50	1.132	1.000	-0.07	0.163	**0.185**
91	LTE B12	10M	QPSK	25	25	Left Side	23095	707.5	20.14	20.50	1.086	1.000	-0.08	0.120	0.130
98	LTE B12	10M	QPSK	1	24	Right Side	23095	707.5	20.96	21.50	1.132	1.000	0.06	0.046	0.052
99	LTE B12	10M	QPSK	25	25	Right Side	23095	707.5	20.14	20.50	1.086	1.000	-0.15	0.033	0.036
	LTE B12	10M	QPSK	1	24	Top Side	23095	707.5	20.96	21.50	1.132	1.000	0	<0.001	<0.001
	LTE B12	10M	QPSK	25	25	Top Side	23095	707.5	20.14	20.50	1.086	1.000	0	<0.001	<0.001
106	LTE B12	10M	QPSK	1	24	Bottom Side	23095	707.5	20.96	21.50	1.132	1.000	0.03	0.067	0.076
107	LTE B12	10M	QPSK	25	25	Bottom Side	23095	707.5	20.14	20.50	1.086	1.000	0.17	0.049	0.054
108	LTE B17	10M	QPSK	1	24	Left Side	23790	710	21.05	21.50	1.109	1.000	-0.19	0.125	0.139
47	LTE B41	20M	QPSK	1	49	Front	40140	2545	19.69	20.00	1.074	1.006	0	<0.001	<0.001
48	LTE B41	20M	QPSK	50	0	Front	40140	2545	18.63	19.00	1.089	1.006	0	<0.001	<0.001
51	LTE B41	20M	QPSK	1	49	Back	40140	2545	19.69	20.00	1.074	1.006	-0.1	0.020	**0.022**
52	LTE B41	20M	QPSK	50	0	Back	40140	2545	18.63	19.00	1.089	1.006	-0.12	0.008	0.008
55	LTE B41	20M	QPSK	1	49	Left Side	40140	2545	19.69	20.00	1.074	1.006	-0.14	0.003	0.004
56	LTE B41	20M	QPSK	50	0	Left Side	40140	2545	18.63	19.00	1.089	1.006	-0.19	0.003	0.003
59	LTE B41	20M	QPSK	1	49	Right Side	40140	2545	19.69	20.00	1.074	1.006	-0.18	0.003	0.003
60	LTE B41	20M	QPSK	50	0	Right Side	40140	2545	18.63	19.00	1.089	1.006	0.19	0.001	0.002
	LTE B41	20M	QPSK	1	49	Top Side	40140	2545	19.69	20.00	1.074	1.006	-0.15	<0.001	<0.001
	LTE B41	20M	QPSK	50	0	Top Side	40140	2545	18.63	19.00	1.089	1.006	-0.06	<0.001	<0.001
63	LTE B41	20M	QPSK	1	49	Bottom Side	40140	2545	19.69	20.00	1.074	1.006	-0.18	0.004	0.004
64	LTE B41	20M	QPSK	50	0	Bottom Side	40140	2545	18.63	19.00	1.089	1.006	0	<0.001	<0.001

Plot No.	Band	Mode	Test Position	Ch.	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
288	WLAN2.4GHz	802.11b	Front	6	2437	10.89	11.00	1.026	1.003	0	0.004	0.004
280	WLAN2.4GHz	802.11b	Back	6	2437	10.89	11.00	1.026	1.003	0.17	0.006	0.006
273	WLAN2.4GHz	802.11b	Left Side	6	2437	10.89	11.00	1.026	1.003	0.08	0.012	0.012
290	WLAN2.4GHz	802.11b	Right Side	6	2437	10.89	11.00	1.026	1.003	0	<0.001	<0.001
292	WLAN2.4GHz	802.11b	Top Side	6	2437	10.89	11.00	1.026	1.003	0	<0.001	<0.001
	WLAN2.4GHz	802.11b	Bottom Side	6	2437	10.89	11.00	1.026	1.003	0	<0.001	<0.001
289	WLAN2.4GHz	802.11g	Front	6	2437	17.65	18.00	1.084	1.027	0.06	0.033	0.036
281	WLAN2.4GHz	802.11g	Back	6	2437	17.65	18.00	1.084	1.027	0.14	0.035	**0.039**
274	WLAN2.4GHz	802.11g	Left Side	6	2437	17.65	18.00	1.084	1.027	0.13	0.010	0.011
291	WLAN2.4GHz	802.11g	Right Side	6	2437	17.65	18.00	1.084	1.027	0.12	0.026	0.029
293	WLAN2.4GHz	802.11g	Top Side	6	2437	17.65	18.00	1.084	1.027	0.03	0.029	0.033
	WLAN2.4GHz	802.11g	Bottom Side	6	2437	17.65	18.00	1.084	1.027	0	<0.001	<0.001
242	Bluetooth	DH5 1Mbps	Front	39	2441	15.24	15.50	1.062	1.085	0	<0.001	<0.001
243	Bluetooth	DH5 1Mbps	Back	39	2441	15.24	15.50	1.062	1.085	0	<0.001	<0.001
244	Bluetooth	DH5 1Mbps	Left Side	39	2441	15.24	15.50	1.062	1.085	0	<0.001	<0.001
245	Bluetooth	DH5 1Mbps	Right Side	39	2441	15.24	15.50	1.062	1.085	0	<0.001	<0.001
246	Bluetooth	DH5 1Mbps	Top Side	39	2441	15.24	15.50	1.062	1.085	0	<0.001	<0.001
247	Bluetooth	DH5 1Mbps	Bottom Side	39	2441	15.24	15.50	1.062	1.085	0	<0.001	<0.001

Note: “<0.01” means the SAR value is too low to be measured.

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

Plot No.	Band	Mode	Test Position	Ch.	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Power Drift (dB)	Measured SAR-10g (W/kg)	Reported SAR-10g (W/kg)
320	WLAN5GHz	802.11a	Front	60	5300	15.33	15.50	1.040	1.025	-0.05	0.398	0.424
322	WLAN5GHz	802.11a	Back	60	5300	15.33	15.50	1.040	1.025	-0.06	1.640	**1.748**
324	WLAN5GHz	802.11a	Left Side	60	5300	15.33	15.50	1.040	1.025	0.13	0.024	0.026
326	WLAN5GHz	802.11a	Right Side	60	5300	15.33	15.50	1.040	1.025	0.17	0.695	0.741
328	WLAN5GHz	802.11a	Top Side	60	5300	15.33	15.50	1.040	1.025	0.12	0.823	0.877
330	WLAN5GHz	802.11a	Bottom Side	60	5300	15.33	15.50	1.040	1.025	0.19	0.033	0.035
321	WLAN5GHz	802.11n HT40	Front	126	5630	15.68	16.00	1.076	1.055	-0.01	0.426	0.484
323	WLAN5GHz	802.11n HT40	Back	126	5630	15.68	16.00	1.076	1.055	-0.17	1.510	**1.715**
325	WLAN5GHz	802.11n HT40	Left Side	126	5630	15.68	16.00	1.076	1.055	0.05	0.034	0.039
327	WLAN5GHz	802.11n HT40	Right Side	126	5630	15.68	16.00	1.076	1.055	0.12	0.615	0.698
329	WLAN5GHz	802.11n HT40	Top Side	126	5630	15.68	16.00	1.076	1.055	0.18	0.824	0.936
331	WLAN5GHz	802.11n HT40	Bottom Side	126	5630	15.68	16.00	1.076	1.055	0.13	0.040	0.045
285	WLAN5GHz	802.11n HT40	Front	159	5795	17.19	17.50	1.074	1.055	-0.14	0.539	0.611
286	WLAN5GHz	802.11n HT40	Back	159	5795	17.19	17.50	1.074	1.055	-0.18	1.220	**1.382**
310	WLAN5GHz	802.11n HT40	Left Side	159	5795	17.19	17.50	1.074	1.055	-0.15	0.060	0.068
311	WLAN5GHz	802.11n HT40	Right Side	159	5795	17.19	17.50	1.074	1.055	0.18	0.505	0.572
312	WLAN5GHz	802.11n HT40	Top Side	159	5795	17.19	17.50	1.074	1.055	0.06	0.919	1.041
313	WLAN5GHz	802.11n HT40	Bottom Side	159	5795	17.19	17.50	1.074	1.055	0.15	0.026	0.029

8.8.6 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.

Since all the measured SAR are less than 0.8 W/kg, the repeated measurement is not required.

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.

Band	Mode	Test Position	Ch.	Original Measured SAR-1g (W/kg)	1st Repeated SAR-1g (W/kg)	L/S Ratio	2nd Repeated SAR-1g (W/kg)	L/S Ratio	3rd Repeated SAR-1g (W/kg)	L/S Ratio
WLAN5GHz	802.11a	Back	52	1.040	1.030	1.01	N/A	N/A	N/A	N/A
WLAN5GHz	802.11n HT40	Back	110	0.911	0.896	1.02	N/A	N/A	N/A	N/A
WLAN5GHz	802.11n HT40	Back	159	0.940	0.931	1.01	N/A	N/A	N/A	N/A

8.8.7 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.

8.8.8 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)					Summed 1g SAR (W/kg)		
		1	2	3	4	5			
WWAN Band	Exposure Position	WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth	NFC	1+2+5	1+3+5	1+4+5
GSM850	Right Cheek	0.224	0.016	0.851	0.003	0.001	0.241	1.076	0.228
	Right Tilted	0.105	0.033	0.878	0.003	0.001	0.139	0.984	0.109
	Left Cheek	0.271	0.140	0.875	0.007	0.001	0.412	1.147	0.279
	Left Tilted	0.143	0.115	0.892	0.000	0.001	0.259	1.036	0.144
GSM1900	Right Cheek	0.057	0.016	0.851	0.003	0.001	0.074	0.909	0.061
	Right Tilted	0.020	0.033	0.878	0.003	0.001	0.054	0.899	0.024
	Left Cheek	0.112	0.140	0.875	0.007	0.001	0.253	0.988	0.120
	Left Tilted	0.028	0.115	0.892	0.000	0.001	0.144	0.921	0.029
UMTS B2	Right Cheek	0.110	0.016	0.851	0.003	0.001	0.127	0.962	0.114
	Right Tilted	0.023	0.033	0.878	0.003	0.001	0.057	0.902	0.027
	Left Cheek	0.166	0.140	0.875	0.007	0.001	0.307	1.042	0.174
	Left Tilted	0.047	0.115	0.892	0.000	0.001	0.163	0.940	0.048
UMTS B5	Right Cheek	0.088	0.016	0.851	0.003	0.001	0.105	0.940	0.092
	Right Tilted	0.003	0.033	0.878	0.003	0.001	0.037	0.882	0.007
	Left Cheek	0.032	0.140	0.875	0.007	0.001	0.173	0.908	0.040
	Left Tilted	0.013	0.115	0.892	0.000	0.001	0.129	0.906	0.014
LTE B2	Right Cheek	0.073	0.016	0.851	0.003	0.001	0.090	0.925	0.077
	Right Tilted	0.039	0.033	0.878	0.003	0.001	0.073	0.918	0.043
	Left Cheek	0.166	0.140	0.875	0.007	0.001	0.307	1.042	0.174
	Left Tilted	0.043	0.115	0.892	0.000	0.001	0.159	0.936	0.044
LTE B4	Right Cheek	0.034	0.016	0.851	0.003	0.001	0.051	0.886	0.038
	Right Tilted	0.014	0.033	0.878	0.003	0.001	0.048	0.893	0.018
	Left Cheek	0.058	0.140	0.875	0.007	0.001	0.199	0.934	0.066
	Left Tilted	0.018	0.115	0.892	0.000	0.001	0.134	0.911	0.019
LTE B5	Right Cheek	0.013	0.016	0.851	0.003	0.001	0.030	0.865	0.017
	Right Tilted	0.005	0.033	0.878	0.003	0.001	0.039	0.884	0.009
	Left Cheek	0.014	0.140	0.875	0.007	0.001	0.155	0.890	0.022
	Left Tilted	0.007	0.115	0.892	0.000	0.001	0.123	0.900	0.008
LTE B7	Right Cheek	0.002	0.016	0.851	0.003	0.001	0.019	0.854	0.006
	Right Tilted	0.000	0.033	0.878	0.003	0.001	0.034	0.879	0.004
	Left Cheek	0.000	0.140	0.875	0.007	0.001	0.141	0.876	0.008
	Left Tilted	0.000	0.115	0.892	0.000	0.001	0.116	0.893	0.001
LTE B12	Right Cheek	0.099	0.016	0.851	0.003	0.001	0.116	0.951	0.103
	Right Tilted	0.045	0.033	0.878	0.003	0.001	0.079	0.924	0.049
	Left Cheek	0.122	0.140	0.875	0.007	0.001	0.263	0.998	0.130
	Left Tilted	0.055	0.115	0.892	0.000	0.001	0.171	0.948	0.056
LTE B41	Right Cheek	0.005	0.016	0.851	0.003	0.001	0.022	0.857	0.009
	Right Tilted	0.000	0.033	0.878	0.003	0.001	0.034	0.879	0.004
	Left Cheek	0.000	0.140	0.875	0.007	0.001	0.141	0.876	0.008
	Left Tilted	0.000	0.115	0.892	0.000	0.001	0.116	0.893	0.001

Body-Worn		Reported SAR (W/kg)					Summed 1g SAR (W/kg)		
		1	2	3	4	5			
WWAN Band	Exposure Position	WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth	NFC	1+2+5	1+3+5	1+4+5
GSM850	Front	0.337	0.036	0.190	0.000	0.001	0.374	0.528	0.338
	Back	0.587	0.039	1.155	0.000	0.001	0.627	1.743*	0.588
	Front with Headset	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001
	Back with Headset	0.517	0.033	1.122	0.000	0.001	0.551	1.640**	0.518
GSM1900	Front	0.392	0.036	0.190	0.000	0.001	0.429	0.583	0.393
	Back	0.279	0.039	1.155	0.000	0.001	0.319	1.435	0.280
	Front with Headset	0.383	0.000	0.000	0.000	0.001	0.384	0.384	0.384
	Back with Headset	0.000	0.033	1.122	0.000	0.001	0.034	1.123	0.001
UMTS B2	Front	0.564	0.036	0.190	0.000	0.001	0.601	0.755	0.565
	Back	0.531	0.039	1.155	0.000	0.001	0.571	1.687***	0.532
	Front with Headset	0.487	0.000	0.000	0.000	0.001	0.488	0.488	0.488
	Back with Headset	0.000	0.033	1.122	0.000	0.001	0.034	1.123	0.001
UMTS B5	Front	0.046	0.036	0.190	0.000	0.001	0.083	0.237	0.047
	Back	0.076	0.039	1.155	0.000	0.001	0.116	1.232	0.077
	Front with Headset	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001
	Back with Headset	0.067	0.033	1.122	0.000	0.001	0.101	1.190	0.068
LTE B2	Front	0.410	0.036	0.190	0.000	0.001	0.447	0.601	0.411
	Back	0.403	0.039	1.155	0.000	0.001	0.443	1.559	0.404
	Front with Headset	0.384	0.000	0.000	0.000	0.001	0.385	0.385	0.385
	Back with Headset	0.000	0.033	1.122	0.000	0.001	0.034	1.123	0.001
LTE B4	Front	0.228	0.036	0.190	0.000	0.001	0.265	0.419	0.229
	Back	0.284	0.039	1.155	0.000	0.001	0.324	1.440	0.285
	Front with Headset	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001
	Back with Headset	0.251	0.033	1.122	0.000	0.001	0.285	1.374	0.252
LTE B5	Front	0.022	0.036	0.190	0.000	0.001	0.059	0.213	0.023
	Back	0.038	0.039	1.155	0.000	0.001	0.078	1.194	0.039
	Front with Headset	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001
	Back with Headset	0.023	0.033	1.122	0.000	0.001	0.057	1.146	0.024
LTE B7	Front	0.000	0.036	0.190	0.000	0.001	0.037	0.191	0.001
	Back	0.052	0.039	1.155	0.000	0.001	0.092	1.208	0.053
	Front with Headset	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001
	Back with Headset	0.043	0.033	1.122	0.000	0.001	0.077	1.166	0.044
LTE B12	Front	0.105	0.036	0.190	0.000	0.001	0.142	0.296	0.106
	Back	0.156	0.039	1.155	0.000	0.001	0.196	1.312	0.157
	Front with Headset	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001
	Back with Headset	0.113	0.033	1.122	0.000	0.001	0.147	1.236	0.114
LTE B41	Front	0.000	0.036	0.190	0.000	0.001	0.037	0.191	0.001
	Back	0.022	0.039	1.155	0.000	0.001	0.062	1.178	0.023
	Front with Headset	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001
	Back with Headset	0.009	0.033	1.122	0.000	0.001	0.043	1.132	0.010

Note:

1. * Refer to SPLSR case 1 for the details.
2. ** Refer to SPLSR case 2 for the details.
3. *** Refer to SPLSR case 3 for the details.

Hotspot		Reported SAR (W/kg)				Summed 1g SAR (W/kg)	
		1	2	3	5		
WWAN Band	Exposure Position	WWAN	2.4GHz WLAN	Bluetooth	NFC	1+2+4	1+3+4
GSM850	Front	0.337	0.036	0.000	0.001	0.374	0.338
	Back	0.587	0.039	0.000	0.001	0.627	0.588
	Left side	0.482	0.012	0.000	0.001	0.495	0.483
	Right side	0.079	0.029	0.000	0.001	0.109	0.080
	Top side	0.000	0.033	0.000	0.001	0.034	0.001
	Bottom side	0.225	0.000	0.000	0.001	0.226	0.226
GSM1900	Front	0.392	0.036	0.000	0.001	0.429	0.393
	Back	0.279	0.039	0.000	0.001	0.319	0.280
	Left side	0.451	0.012	0.000	0.001	0.464	0.452
	Right side	0.016	0.029	0.000	0.001	0.046	0.017
	Top side	0.013	0.033	0.000	0.001	0.047	0.014
	Bottom side	0.100	0.000	0.000	0.001	0.101	0.101
UMTS B2	Front	0.564	0.036	0.000	0.001	0.601	0.565
	Back	0.531	0.039	0.000	0.001	0.571	0.532
	Left side	0.789	0.012	0.000	0.001	0.802	0.790
	Right side	0.059	0.029	0.000	0.001	0.089	0.060
	Top side	0.000	0.033	0.000	0.001	0.034	0.001
	Bottom side	0.216	0.000	0.000	0.001	0.217	0.217
UMTS B5	Front	0.046	0.036	0.000	0.001	0.083	0.047
	Back	0.076	0.039	0.000	0.001	0.116	0.077
	Left side	0.066	0.012	0.000	0.001	0.079	0.067
	Right side	0.009	0.029	0.000	0.001	0.039	0.010
	Top side	0.000	0.033	0.000	0.001	0.034	0.001
	Bottom side	0.029	0.000	0.000	0.001	0.030	0.030
LTE B2	Front	0.410	0.036	0.000	0.001	0.447	0.411
	Back	0.403	0.039	0.000	0.001	0.443	0.404
	Left side	0.524	0.012	0.000	0.001	0.537	0.524
	Right side	0.053	0.029	0.000	0.001	0.083	0.053
	Top side	0.000	0.033	0.000	0.001	0.034	0.000
	Bottom side	0.162	0.000	0.000	0.001	0.163	0.162
LTE B4	Front	0.228	0.036	0.000	0.001	0.265	0.228
	Back	0.284	0.039	0.000	0.001	0.324	0.284
	Left side	0.345	0.012	0.000	0.001	0.358	0.345
	Right side	0.018	0.029	0.000	0.001	0.048	0.018
	Top side	0.000	0.033	0.000	0.001	0.034	0.000
	Bottom side	0.085	0.000	0.000	0.001	0.086	0.085
LTE B5	Front	0.022	0.036	0.000	0.001	0.059	0.022
	Back	0.038	0.039	0.000	0.001	0.078	0.038
	Left side	0.034	0.012	0.000	0.001	0.047	0.034
	Right side	0.004	0.029	0.000	0.001	0.034	0.004
	Top side	0.000	0.033	0.000	0.001	0.034	0.000
	Bottom side	0.013	0.000	0.000	0.001	0.014	0.013
LTE B7	Front	0.000	0.036	0.000	0.001	0.037	0.000
	Back	0.052	0.039	0.000	0.001	0.092	0.052
	Left side	0.028	0.012	0.000	0.001	0.041	0.028
	Right side	0.000	0.029	0.000	0.001	0.030	0.000
	Top side	0.000	0.033	0.000	0.001	0.034	0.000
	Bottom side	0.023	0.000	0.000	0.001	0.024	0.023
LTE B12	Front	0.105	0.036	0.000	0.001	0.142	0.105
	Back	0.156	0.039	0.000	0.001	0.196	0.156
	Left side	0.185	0.012	0.000	0.001	0.198	0.185
	Right side	0.052	0.029	0.000	0.001	0.082	0.052
	Top side	0.000	0.033	0.000	0.001	0.034	0.000
	Bottom side	0.076	0.000	0.000	0.001	0.077	0.076
LTE B41	Front	0.000	0.036	0.000	0.001	0.037	0.000
	Back	0.022	0.039	0.000	0.001	0.062	0.022
	Left side	0.004	0.012	0.000	0.001	0.017	0.004
	Right side	0.003	0.029	0.000	0.001	0.033	0.003
	Top side	0.000	0.033	0.000	0.001	0.034	0.000
	Bottom side	0.004	0.000	0.000	0.001	0.005	0.004

<SAR to Peak Location Separation Ratio Analysis>

The simultaneous transmitting antennas in each operating mode and exposure condition combination are considered one pair at a time to determine the SPLSR. When SAR is measured for both antennas in the pair, the peak location separation distance is computed by the following formula.

$$\text{Peak Location Separation Distance} = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2}$$

Where (x_1, y_1, z_1) and (x_2, y_2, z_2) are the coordinates of the extrapolated peak SAR locations in the area or zoom scans.

When standalone test exclusion applies, SAR is estimated; the peak location is assumed to be at the feed-point or geometric center of the antenna. Due to curvatures on the SAM phantom, when SAR is estimated for one of the antennas in an antenna pair, the measured peak SAR location will be translated onto the test device to determine the peak location separation for the antenna pair.

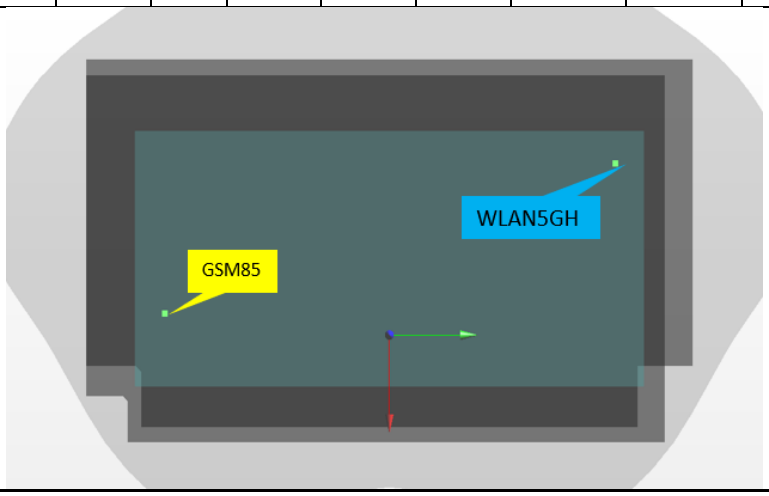
The SPLSR is determined by the following formula.

$$\text{SPLSR} = \frac{(\text{SAR}_1 + \text{SAR}_2)^{1.5}}{R_i}$$

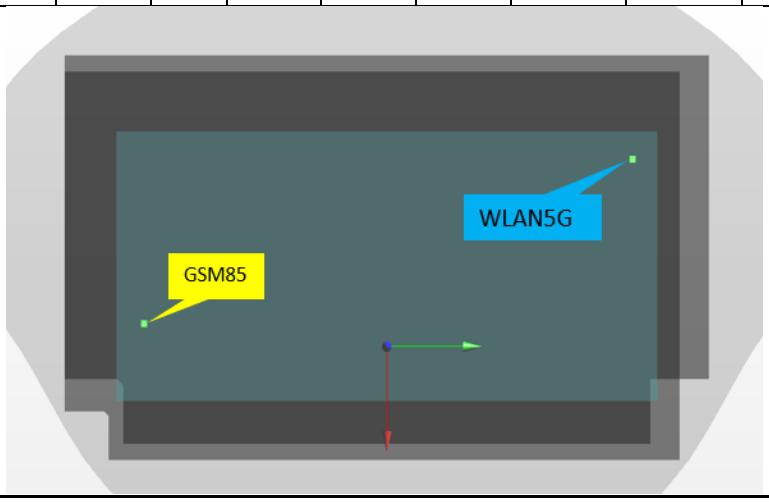
Where SAR_1 and SAR_2 are the highest reported or estimated SAR for each antenna in the pair, and R_i is the separation distance between the peak SAR locations for the antenna pair in mm.

When the SPLSR is <= 0.04, the simultaneous transmission SAR is not required. Otherwise, the enlarged zoom scan and volume scan post-processing procedures will be performed.

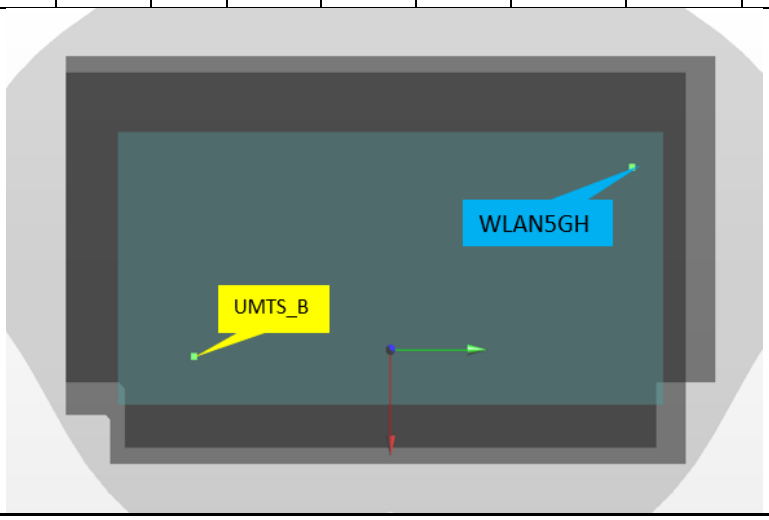
Case 1 Plot No.	Band	Exposure Condition	Test Position	SAR Value (W/kg)	Coordinates x	Coordinates y	Coordinates Z	3D Distance (mm)	Summed SAR (W/kg)	SPLSR	Simultaneous Transmission SAR Test
261	GSM850	Body	Back	0.587	19.6	-81.5	-1.79	174.7	1.74	0.01	SPLSR < 0.04, Not required
360	WLAN 5GHz			1.155	-32.6	85.2	-2				



Case 2 / Plot No.	Band	Exposure Condition	Test Position	SAR Value (W/kg)	Coordinates x	Coordinates y	Coordinates Z	3D Distance (mm)	Summed SAR (W/kg)	SPLSR	Simultaneous Transmission SAR Test
272	GSM850	Body	Back_ Headset	0.517	19.6	-83	-1.87	178.4	1.64	0.01	SPLSR < 0.04, Not required
363	WLAN 5GHz			1.122	-33.8	-87.2	-1.95				



Case 3 / Plot No.	Band	Exposure Condition	Test Position	SAR Value (W/kg)	Coordinates x	Coordinates y	Coordinates Z	3D Distance (mm)	Summed SAR (W/kg)	SPLSR	Simultaneous Transmission SAR Test
249	UMTS B2	Body	Back	0.531	30.2	-69.7	-1.84	167.2	1.69	0.01	SPLSR < 0.04, Not required
360	WLAN5 GHz			1.155	-32.6	85.2	-2				



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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