FCC SAR Test Report

APPLICANT	:	Motorola Mobility, LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola
MODEL NAME	:	4242
FCC ID	:	IHDT56QC7
STANDARD	:	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2003

We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Eric Huang / Deputy Manager

Approved by: Jones Tsai / Manager

Testing Laboratory
1190

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA4N1482-04	Rev. 01	Initial issue of report	Jan. 05, 2015

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility, LLC, Mobile Cellular Phone, 4242**, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary			
		Head (Separation 0mm) 1g SAR (W/kg)	Body-worn (Separation 10mm) 1g SAR (W/kg)	Wireless Router (Separation 10mm) 1g SAR (W/kg)	Highest Simultaneous Transmission 1g SAR (W/kg)
PCE	GSM850	0.40	0.62	0.62	1.55
	GSM1900	0.23	0.41	0.51	
	WCDMA Band V	0.44	0.77	0.77	
	WCDMA Band IV	0.75	**1.40**	1.40	
	WCDMA Band II	0.75	1.19	1.36	
	CDMA 2000 BC10	0.49	1.04	1.03	
	CDMA 2000 BC0	0.56	1.38	0.79	
	CDMA 2000 BC1	0.78	1.06	1.29	
	LTE Band 12	0.50	0.52	0.52	
	LTE Band 17	0.71	0.60	0.60	
	LTE Band 5	0.59	0.86	0.86	
	LTE Band 26	0.42	0.57	0.57	
	LTE Band 4	0.65	1.20	1.20	
	LTE Band 2	0.77	1.20	1.31	
	LTE Band 25	0.71	1.19	**1.43**	
	LTE Band 41	0.59	0.91	0.91	
DTS	WLAN 2.4GHz Band	**0.89**	0.15	0.15	1.55
DSS	Bluetooth	0.15	0.02	0.02	1.43
Date of Testing:		2014/12/6~2014/12/16			

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/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 1528-2003.

2. Administration Data

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978

Applicant	
Company Name	Motorola Mobility, LLC
Address	222 W. Merchandise Mart Plaza, Chicago IL 60654 USA

Manufacturer	
Company Name	Motorola Mobility, LLC
Address	222 W. Merchandise Mart Plaza, Chicago IL 60654 USA

3. Guidance Standard

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2003
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r03
- FCC KDB 865664 D02 SAR Reporting v01r01
- FCC KDB 447498 D01 General RF Exposure Guidance v05r02
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r02
- FCC KDB 248227 D01 SAR meas for 802 11abg v01r02
- FCC KDB 941225 D01 3G SAR Procedures v03
- FCC KDB 941225 D05 SAR for LTE Devices v02r03
- FCC KDB 941225 D06 Hotspot Mode SAR v02

4. Equipment Under Test (EUT)

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	4242
FCC ID	IHDT56QC7
IMEI Code	990005460004840
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz CDMA2000 BC0: 824.7 MHz ~ 848.31 MHz CDMA 2000 BC10: 817.9 MHz ~ 823.1 MHz CDMA 2000 BC1: 1851.25 MHz ~ 1908.75 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz LTE Band 41: 2687.5 MHz ~ 2498.5 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	・GSM/GPRS/EGPRS ・RMC/AMR 12.2Kbps ・HSDPA ・HSUPA ・DC-HSDPA ・CDMA2000 : 1xRTT/1xEv-Do(Rev.0)/1xEv-Do(Rev.A) ・LTE: QPSK, 16QAM ・802.11b/g/n HT20 ・Bluetooth v3.0+EDR，Bluetooth v4.0-LE
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype

Remark:

1. This device supported VoIP in EGPRS, CDMA, WCDMA, LTE (e.g. 3rd party VoIP).
2. The 2.4GHz WLAN and Bluetooth conducted power and SAR testing results were referred to Sporton FCC SAR Test Report, Brand Name: Motorola, Model Name: 4060, FCC ID: IHDT56QC4, Report No: FA4N1482-01 or Appendix D and also used perform transmission simultaneous analysis.

4.2 Maximum Tune-up Limit

Mode	Burst average power(dBm)	
	GSM 850	GSM 1900
GSM (GMSK, 1 Tx slot)	33.50	30.50
GPRS (GMSK, 1 Tx slot)	33.50	30.50
GPRS (GMSK, 2 Tx slots)	30.50	27.50
GPRS (GMSK, 3 Tx slots)	28.75	25.75
GPRS (GMSK, 4 Tx slots)	27.50	24.50
EDGE (8PSK, 1 Tx slot)	28.00	27.00
EDGE (8PSK, 2 Tx slots)	25.50	24.50
EDGE (8PSK, 3 Tx slots)	23.25	22.25
EDGE (8PSK, 4 Tx slots)	22.00	21.00

Band / Mode			Average power(dBm)
WCDMA	Band V / IV / II	AMR / RMC 12.2Kbps	24.00
		HSDPA Subtest-1	23.00
		DC-HSDPA Subtest-1	23.00
		HSUPA Subtest-5	23.00
CDMA		BC10	25.00
		BC0	25.00
		BC1	25.00
LTE		Band 12	24.00
		Band 17	24.00
		Band 5	24.00
		Band 26	24.00
		Band 4	24.00
		Band 2	24.00
		Band 25	24.00
		Band 41	24.00

Mode				Average Power (dBm)
2.4GHz WLAN	802.11b			18.00
	802.11g		CH 1	16.00
			CH 6	16.00
			CH 11	14.00
	802.11n-HT20		CH 1	16.00
			CH 6	16.00
			CH 11	14.00
Bluetooth	v3.0+EDR	1Mbps	Low	13.00
			Middle	12.00
			High	10.00
		2Mbps	Low	10.00
			Middle	10.00
			High	8.00
		3Mbps	Low	10.00
			Middle	10.00
			High	8.00
	v4.0+LE		Low	10.50
			Middle	12.00
			High	9.00

4.3 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r03	
FCC ID	IHDT56QC7
Equipment Name	Mobile Cellular Phone
Operating Frequency Range of each LTE transmission band	LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 05: 824.7 MHz ~ 848.3 MHz LTE Band 04: 1710.7 MHz ~ 1754.3 MHz LTE Band 02: 1850.7 MHz ~ 1909.3 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz
Channel Bandwidth	LTE Band 12: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 26: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 05: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 04: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 02: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 25: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz
uplink modulations used	QPSK, and 16QAM
LTE Voice / Data requirements	Data only
LTE MPR permanently built-in by design	Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.

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

Transmission (H, M, L) channel numbers and frequencies in each LTE band

LTE Band 12

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711

LTE Band 17

	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq. (MHz)
L	23755	706.5	23780	709
M	23790	710	23790	710
H	23825	713.5	23800	711

LTE Band 5

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844

LTE Band 26										
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5

LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745

LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900

LTE Band 25												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905

LTE Band 41								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506
L M	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5
M	40620	2593	40620	2590	40620	2593	40620	2593
H M	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680

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

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

6. Specific Absorption Rate (SAR)

6.1 Introduction

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.

6.2 SAR Definition

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:

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

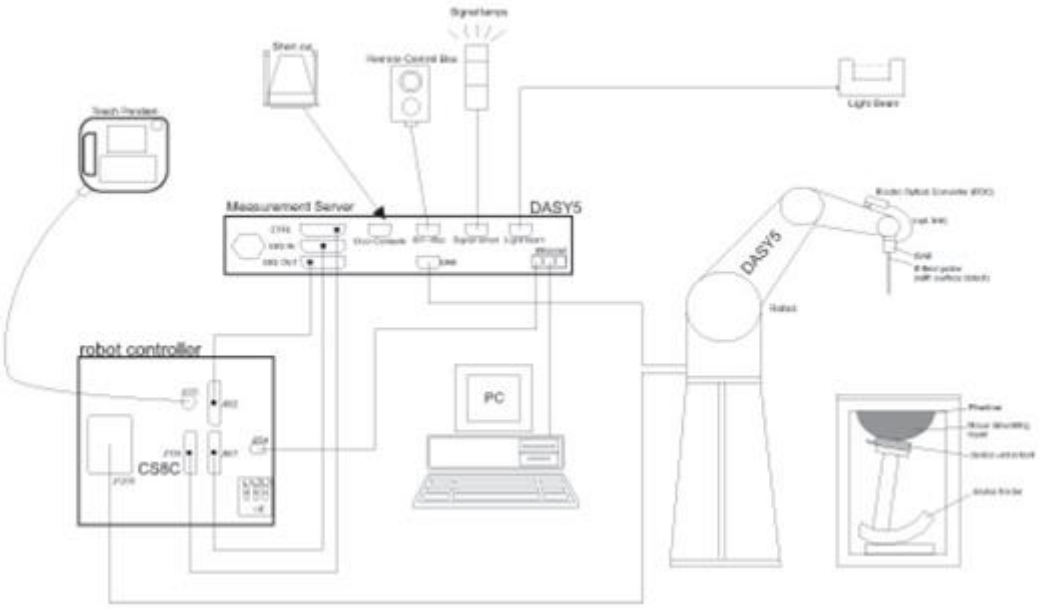
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

7. System Description and Setup

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



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

8. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

(a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
(b) Read the WWAN RF power level from the base station simulator.
(c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
(d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

(a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
(b) Place the EUT in the positions as Appendix D demonstrates.
(c) Set scan area, grid size and other setting on the DASY software.
(d) Measure SAR results for the highest power channel on each testing position.
(e) Find out the largest SAR result on these testing positions of each band
(f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

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

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

8.1 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

8.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

8.3 Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB0 is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01v01r03 SAR measurement 100 MHz to 6 GHz.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

8.4 Zoom Scan

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r03 SAR measurement 100 MHz to 6 GHz.

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

8.5 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 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.

8.6 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 drifts more than 5%, the SAR will be retested.

9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1099	Nov. 19, 2014	Nov. 18, 2015
SPEAG	835MHz System Validation Kit	D835V2	4d162	Nov. 19, 2014	Nov. 18, 2015
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Nov. 14, 2014	Nov. 13, 2015
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	Nov. 14, 2014	Nov. 13, 2015
SPEAG	2600MHz System Validation Kit	D2600V2	1070	Nov. 19, 2014	Nov. 18, 2015
SPEAG	Data Acquisition Electronics	DAE3	577	Oct. 06, 2014	Oct. 05, 2015
SPEAG	Data Acquisition Electronics	DAE4	1279	Jul. 23, 2014	Jul. 22, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3931	Sep. 25, 2014	Sep. 24, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3954	Nov. 21, 2014	Nov. 20, 2015
Wisewind	Thermometer	ETP-101	TM560	Oct. 21, 2014	Oct. 20, 2015
Wisewind	Thermometer	ETP-101	TM685	Oct. 21, 2014	Oct. 20, 2015
Anritsu	Radio Communication Analyzer	MT8820C	6201074414	Feb. 11, 2014	Feb. 10, 2015
Agilent	Wireless Communication Test Set	E5515C	MY50266977	May. 27, 2014	May. 26, 2015
SPEAG	Device Holder	N/A	N/A	NCR	NCR
R&S	Signal Generator	SMU200A	102502	Jul. 07, 2014	Jul. 06, 2015
SPEAG	Dielectric Probe Kit	DAKS-3.5	0004	Mar. 04, 2014	Mar. 03, 2015
Agilent	ENA Network Analyzer	E5071C	MY46101588	May. 31, 2014	May. 30, 2015
Anritsu	Power Meter	ML2495A	1036004	Aug. 09, 2014	Aug. 08, 2015
Anritsu	Power Sensor	MA2411B	1027253	Aug. 11, 2014	Aug. 10, 2015
R&S	Spectrum Analyzer	FSP 7	101131	Jul. 10, 2014	Jul. 09, 2015
Agilent	Dual Directional Coupler	778D	50422	Note1	
Woken	Attenuator 1	WK0602-XX	N/A	Note1	
PE	Attenuator 2	PE7005-10	N/A	Note1	
PE	Attenuator 3	PE7005- 3	N/A	Note1	
AR	Power Amplifier	5S1G4M2	0328767	Note1	
Mini-Circuits	Power Amplifier	ZVE-3W	162601250	Note1	
Mini-Circuits	Power Amplifier	ZHL-42W+	13440021344	Note1	

General Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.

10. System Verification

10.1 Tissue Verification

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0
For Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
900	50.8	48.2	0	0.9	0.1	0	1.05	55.0
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7
2600	68.1	0	0	0.1	0	31.8	2.16	52.5

Simulating Liquid for 5GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	64~78%
Mineral oil	11~18%
Emulsifiers	9~15%
Additives and Salt	2~3%

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (εr)	Conductivity Target (σ)	Permittivity Target (εr)	Delta (σ) (%)	Delta (εr) (%)	Limit (%)	Date
750	HSL	22.4	0.886	41.532	0.89	41.90	-0.45	-0.88	±5	2014/12/7
750	MSL	22.3	0.961	53.931	0.96	55.50	0.10	-2.83	±5	2014/12/13
835	HSL	22.7	0.894	41.667	0.90	41.50	-0.67	0.40	±5	2014/12/6
835	HSL	22.5	0.905	40.297	0.90	41.50	0.56	-2.90	±5	2014/12/7
835	HSL	22.3	0.900	40.246	0.90	41.50	0.00	-3.02	±5	2014/12/13
835	MSL	22.3	0.963	54.539	0.97	55.20	-0.72	-1.20	±5	2014/12/11
835	MSL	22.5	0.996	55.380	0.97	55.20	2.68	0.33	±5	2014/12/12
835	MSL	22.3	0.981	55.337	0.97	55.20	1.13	0.25	±5	2014/12/13
1750	HSL	22.4	1.423	38.399	1.37	40.10	3.87	-4.24	±5	2014/12/7
1750	MSL	22.3	1.546	51.742	1.49	53.40	3.76	-3.10	±5	2014/12/12
1750	MSL	22.4	1.517	52.252	1.49	53.40	1.81	-2.15	±5	2014/12/15
1900	HSL	22.7	1.438	39.210	1.40	40.00	2.71	-1.98	±5	2014/12/6
1900	HSL	22.3	1.432	39.131	1.40	40.00	2.29	-2.17	±5	2014/12/14
1900	MSL	22.4	1.530	52.859	1.52	53.30	0.66	-0.83	±5	2014/12/9
1900	MSL	22.3	1.517	53.129	1.52	53.30	-0.20	-0.32	±5	2014/12/10
2600	HSL	22.2	1.974	38.204	1.96	39.00	0.71	-2.04	±5	2014/12/8
2600	MSL	22.5	2.209	51.123	2.16	52.50	2.27	-2.62	±5	2014/12/16

10.2 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2014/12/7	750	HSL	250	D750V3-1099	EX3DV4 - SN3954	DAE4 Sn1279	2.07	8.06	8.28	2.73
2014/12/13	750	MSL	250	D750V3-1099	EX3DV4 - SN3931	DAE3 Sn577	2.08	8.56	8.32	-2.80
2014/12/6	835	HSL	250	D835V2-4d162	EX3DV4 - SN3954	DAE4 Sn1279	2.16	9.15	8.64	-5.57
2014/12/7	835	HSL	250	D835V2-4d162	EX3DV4 - SN3954	DAE4 Sn1279	2.13	9.15	8.52	-6.89
2014/12/13	835	HSL	250	D835V2-4d162	EX3DV4 - SN3931	DAE3 Sn577	2.14	9.15	8.56	-6.45
2014/12/11	835	MSL	250	D835V2-4d162	EX3DV4 - SN3931	DAE3 Sn577	2.27	9.56	9.08	-5.02
2014/12/12	835	MSL	250	D835V2-4d162	EX3DV4 - SN3931	DAE3 Sn577	2.35	9.56	9.40	-1.67
2014/12/13	835	MSL	250	D835V2-4d162	EX3DV4 - SN3931	DAE3 Sn577	2.21	9.56	8.84	-7.53
2014/12/7	1750	HSL	250	D1750V2-1068	EX3DV4 - SN3954	DAE4 Sn1279	8.97	36.80	35.88	-2.50
2014/12/12	1750	MSL	250	D1750V2-1068	EX3DV4 - SN3931	DAE3 Sn577	9.88	38.00	39.52	4.00
2014/12/15	1750	MSL	250	D1750V2-1068	EX3DV4 - SN3931	DAE3 Sn577	9.21	38.00	36.84	-3.05
2014/12/6	1900	HSL	250	D1900V2-5d182	EX3DV4 - SN3954	DAE4 Sn1279	9.55	39.80	38.20	-4.02
2014/12/14	1900	HSL	250	D1900V2-5d182	EX3DV4 - SN3931	DAE3 Sn577	10.70	39.80	42.80	7.54
2014/12/9	1900	MSL	250	D1900V2-5d182	EX3DV4 - SN3931	DAE3 Sn577	9.33	40.00	37.32	-6.70
2014/12/10	1900	MSL	250	D1900V2-5d182	EX3DV4 - SN3931	DAE3 Sn577	9.21	40.00	36.84	-7.90
2014/12/8	2600	HSL	250	D2600V2-1070	EX3DV4 - SN3954	DAE4 Sn1279	13.60	56.90	54.40	-4.39
2014/12/16	2600	MSL	250	D2600V2-1070	EX3DV4 - SN3931	DAE3 Sn577	13.00	55.30	52.00	-5.97

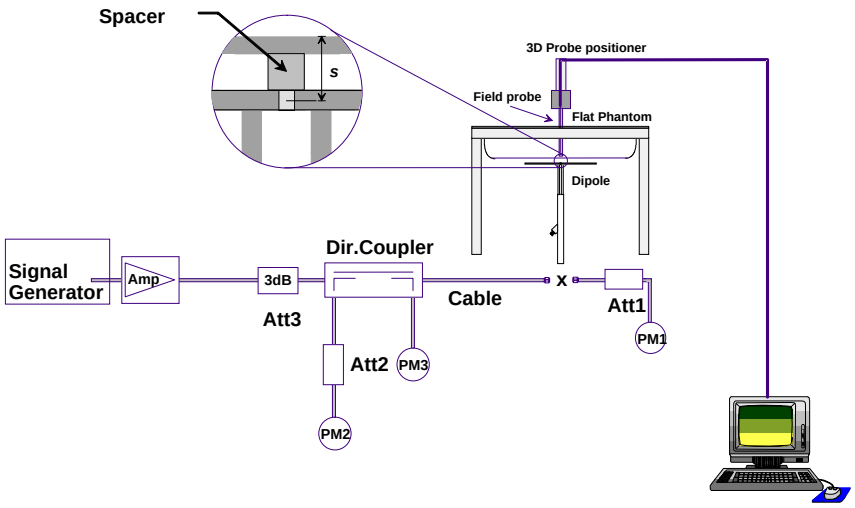


Fig 8.3.1 System Performance Check Setup

Fig 8.3.2 Setup Photo

11. RF Exposure Positions

11.1 Ear and handset reference point

Figure 9.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled "M," the left ear reference point (ERP) is marked "LE," and the right ERP is marked "RE." Each ERP is 15 mm along the B-M (back-mouth) line behind the entrance-to-ear-canal (EEC) point, as shown in Figure 9.1.2 The Reference Plane is defined as passing through the two ear reference points and point M. The line N-F (neck-front), also called the reference pivoting line, is normal to the Reference Plane and perpendicular to both a line passing through RE and LE and the B-M line (see Figure 9.1.3). Both N-F and B-M lines should be marked on the exterior of the phantom shell to facilitate handset positioning. Posterior to the N-F line the ear shape is a flat surface with 6 mm thickness at each ERP, and forward of the N-F line the ear is truncated, as illustrated in Figure 9.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

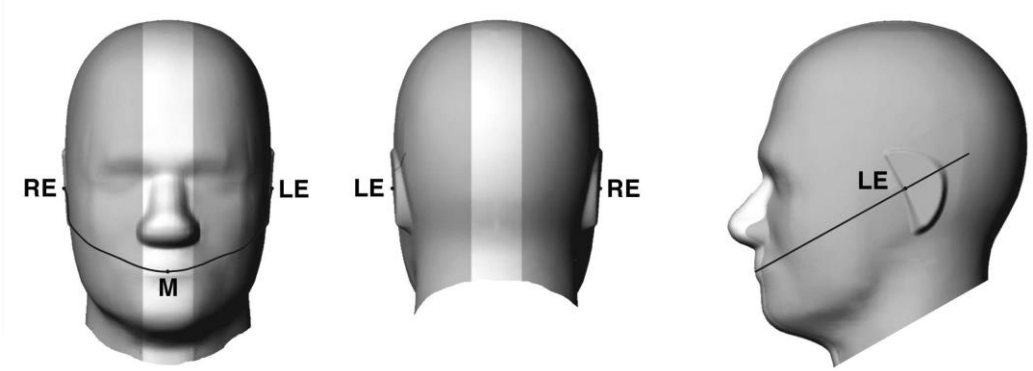


Fig 9.1.1 Front, back, and side views of SAM twin phantom

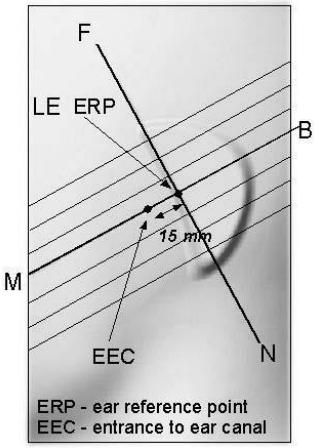


Fig 9.1.2 Close-up side view of phantom showing the ear region.

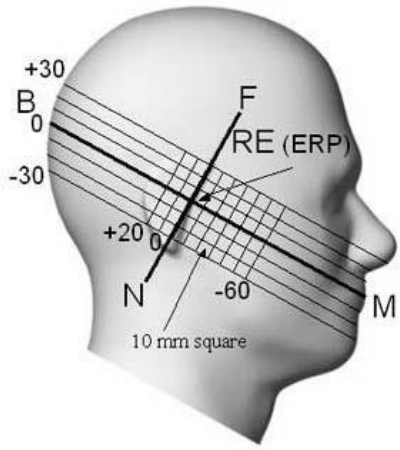


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

11.2 Definition of the cheek position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width wt of the handset at the level of the acoustic output (point A in Figure 9.2.1 and Figure 9.2.2), and the midpoint of the width wb of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 9.2.1). 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 (see Figure 9.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 9.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 9.2.3. The actual rotation angles should be documented in the test report.

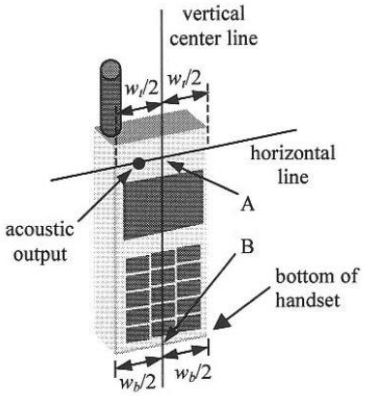


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case

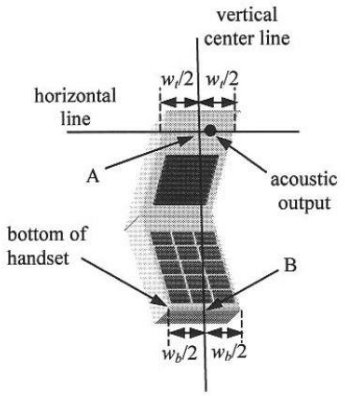


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

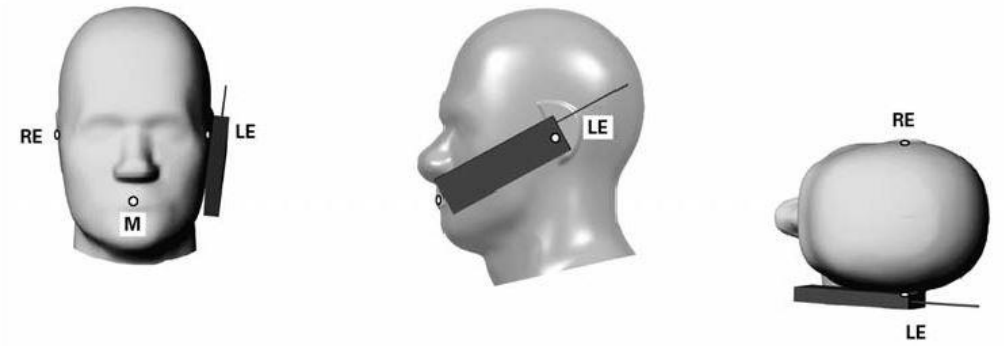


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

11.3 Definition of the tilt position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. While maintaining the orientation of the handset, move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15°.
3. Rotate the handset around the horizontal line by 15°.
4. While maintaining the orientation of the handset, move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact point is on the pinna. See Figure 9.3.1. If contact occurs at any location other than the pinna, e.g., the antenna at the back of the phantom head, the angle of the handset should be reduced. In this case, the tilt position is obtained if any point on the handset is in contact with the pinna and a second point

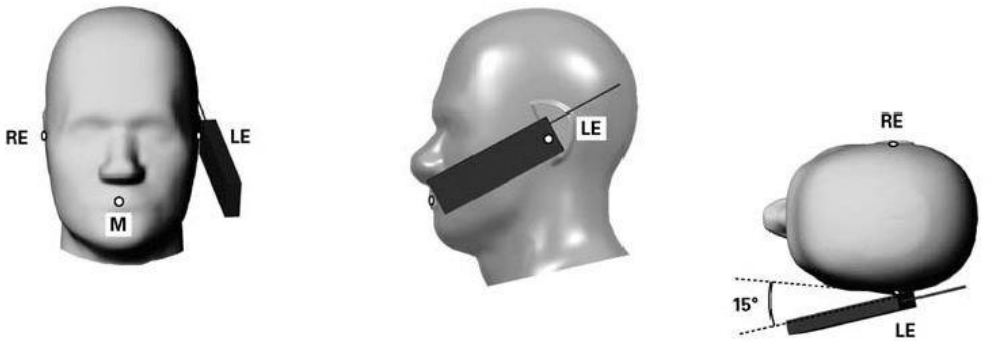


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

11.4 Body Worn Accessory

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 9.4). Per KDB 648474 D04v01r02, 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 FCC KDB 447498 D01v05r02 should be 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 applicable. When the reported SAR for 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 handset attached to the handset.

Accessories for body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are test with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-chip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

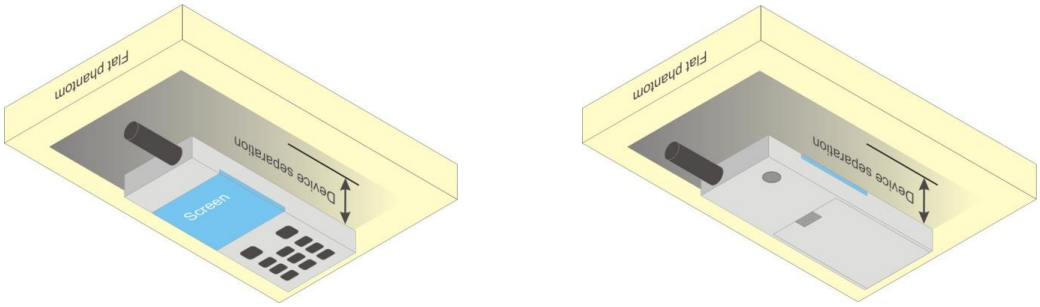


Fig 9.4 Body Worn Position

11.5 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC HDB Publication 941225 D06 v02 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined form general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v05r02 publication procedures. The “Portable Hotspot” feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

12. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

General Note:

1. Per KDB 447498 D01v05r02, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03, considering the possibility of e.g. 3rd party VoIP operation for Head and body-worn SAR test reduction for GSM and GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The 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. Therefore, the EUT was set in GPRS (4Tx slots) for GSM850/GSM1900.
3. Per KDB 941225 D01v03, for Hotspot SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance, for modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested, therefore, the EUT was set in GPRS (4Tx slots) for GSM850/GSM1900.

Band GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM (GMSK, 1 Tx slot)	32.34	32.47	32.55	33.50	23.34	23.47	23.55	24.50
GPRS (GMSK, 1 Tx slot)	32.38	32.50	32.59	33.50	23.38	23.50	23.59	24.50
GPRS (GMSK, 2 Tx slots)	29.37	29.68	29.86	30.50	23.37	23.68	23.86	24.50
GPRS (GMSK, 3 Tx slots)	27.77	27.86	27.91	28.75	23.51	23.60	23.65	24.49
GPRS (GMSK, 4 Tx slots)	26.31	26.47	26.55	27.50	23.31	23.47	23.55	24.50
EDGE (8PSK, 1 Tx slot)	26.60	26.77	26.81	28.00	17.60	17.77	17.81	19.00
EDGE (8PSK, 2 Tx slots)	24.01	24.19	24.25	25.50	18.01	18.19	18.25	19.50
EDGE (8PSK, 3 Tx slots)	22.63	22.88	23.03	23.25	18.37	18.62	18.77	18.99
EDGE (8PSK, 4 Tx slots)	21.48	21.60	21.76	22.00	18.48	18.60	18.76	19.00

Band GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM (GMSK, 1 Tx slot)	28.95	29.23	29.22	30.50	19.95	20.23	20.22	21.50
GPRS (GMSK, 1 Tx slot)	28.96	29.24	29.23	30.50	19.96	20.24	20.23	21.50
GPRS (GMSK, 2 Tx slots)	26.20	26.37	26.27	27.50	20.20	20.37	20.27	21.50
GPRS (GMSK, 3 Tx slots)	24.42	24.60	24.47	25.75	20.16	20.34	20.21	21.49
GPRS (GMSK, 4 Tx slots)	23.11	23.35	23.06	24.50	20.11	20.35	20.06	21.50
EDGE (8PSK, 1 Tx slot)	25.29	25.60	25.41	27.00	16.29	16.60	16.41	18.00
EDGE (8PSK, 2 Tx slots)	22.85	23.11	22.90	24.50	16.85	17.11	16.90	18.50
EDGE (8PSK, 3 Tx slots)	21.05	21.32	21.10	22.25	16.79	17.06	16.84	17.99
EDGE (8PSK, 4 Tx slots)	19.78	20.00	19.77	21.00	16.78	17.00	16.77	18.00

<WCDMA Conducted Power>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.
3. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set Gain Factors (β_c and β_d) and parameters were set according to each
   ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
   iii. Set RMC 12.2Kbps + HSDPA mode.
   iv. Set Cell Power = -86 dBm
   v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
   vi. Select HSDPA Uplink Parameters
   vii. Set Delta ACK, Delta NACK and Delta CQI = 8
   viii. Set Ack-Nack Repetition Factor to 3
   ix. Set CQI Feedback Cycle (k) to 4 ms
   x. Set CQI Repetition Factor to 2
   xi. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d *(SF)*	β_c/β_d	β_{HS} *(Note1, Note 2)*	**CM** (dB) *(Note 3)*	**MPR** (dB) *(Note 3)*
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 *(Note 4)*	15/15 *(Note 4)*	64	12/15 *(Note 4)*	24/15	1.0	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} = 30/15 with β_{hs} = 30/15 * β_c.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and Δ_{NACK} = 30/15 with β_{hs} = 30/15 * β_c, and Δ_{CQI} = 24/15 with β_{hs} = 24/15 * β_c.

Note 3: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

Setup Configuration

HSUPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting * :
   i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
   ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
   iii. Set Cell Power = -86 dBm
   iv. Set Channel Type = 12.2k + HSPA
   v. Set UE Target Power
   vi. Power Ctrl Mode= Alternating bits
   vii. Set and observe the E-TFCI
   viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
d. The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 5) (Note 6)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	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	$\beta_{ed}1$: 47/15 $\beta_{ed}2$: 47/15	4 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 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.
Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.
Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 14/15 and β_d = 15/15.
Note 5: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.
Note 6: β_{ed} can not be set directly, it is set by Absolute Grant Value.

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration below
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set RMC 12.2Kbps + HSDPA mode.
   ii. Set Cell Power = -25 dBm
   iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
   iv. Select HSDPA Uplink Parameters
   v. Set Gain Factors (β_c and β_d) and parameters were set according to each Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
      a). Subtest 1: β_c/β_d=2/15
      b). Subtest 2: β_c/β_d=12/15
      c). Subtest 3: β_c/β_d=15/8
      d). Subtest 4: β_c/β_d=15/4
   vi. Set Delta ACK, Delta NACK and Delta CQI = 8
   vii. Set Ack-Nack Repetition Factor to 3
   viii. Set CQI Feedback Cycle (k) to 4 ms
   ix. Set CQI Repetition Factor to 2
   x. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
A summary of these settings are illustrated below:

C.8.1.12 Fixed Reference Channel Definition H-Set 12

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Proces ses	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.		
Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

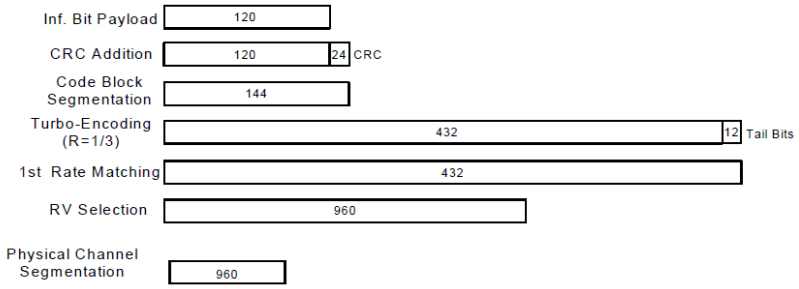


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

<WCDMA Conducted Power>

General Note:

1. Per KDB 941225 D01v03, SAR for Head / Hotspot / Body-worn exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

Band			WCDMA V			WCDMA II			WCDMA IV		
TX Channel			4132	4182	4233	9262	9400	9538	1312	1413	1513
Frequency (MHz)			826.4	836.4	846.6	1852.4	1880	1907.6	1712.4	1732.6	1752.6
MPR (dB)	3GPP Rel 99	AMR 12.2Kbps	23.47	23.30	23.21	23.00	23.07	23.05	23.18	23.05	23.01
	3GPP Rel 99	RMC 12.2Kbps	23.50	23.32	23.25	23.22	23.30	23.28	23.20	23.07	23.03
0	3GPP Rel 6	HSDPA Subtest-1	22.51	22.36	22.28	22.02	22.12	22.05	22.21	22.15	22.10
0	3GPP Rel 6	HSDPA Subtest-2	22.50	22.34	22.26	22.00	22.10	22.03	22.20	22.14	22.08
0.5	3GPP Rel 6	HSDPA Subtest-3	21.92	21.87	21.80	21.48	21.54	21.50	21.61	21.57	21.49
0.5	3GPP Rel 6	HSDPA Subtest-4	21.90	21.85	21.78	21.45	21.52	21.48	21.60	21.56	21.47
0	3GPP Rel 8	DC-HSDPA Subtest-1	22.44	22.30	22.22	21.92	22.02	21.95	22.11	22.08	22.05
0	3GPP Rel 8	DC-HSDPA Subtest-2	22.43	22.29	22.18	21.90	22.00	21.92	22.10	22.06	22.02
0.5	3GPP Rel 8	DC-HSDPA Subtest-3	21.80	21.77	21.70	21.33	21.42	21.39	21.50	21.48	21.39
0.5	3GPP Rel 8	DC-HSDPA Subtest-4	21.78	21.75	21.68	21.30	21.42	21.36	21.49	21.47	21.38
0	3GPP Rel 6	HSUPA Subtest-1	21.80	21.45	21.37	21.50	21.66	21.59	22.20	22.08	21.97
2	3GPP Rel 6	HSUPA Subtest-2	20.59	20.48	20.47	20.35	20.48	20.44	20.89	20.79	20.76
1	3GPP Rel 6	HSUPA Subtest-3	20.50	20.52	20.45	20.48	20.76	20.66	20.70	20.66	20.54
2	3GPP Rel 6	HSUPA Subtest-4	21.00	20.85	20.85	20.62	20.95	20.78	20.96	20.88	20.77
0	3GPP Rel 6	HSUPA Subtest-5	21.80	21.72	21.62	21.68	21.90	21.78	22.11	22.01	21.89

<CDMA2000 Conducted Power>

General Note:

1. Per KDB 941225 D01v03, SAR for head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55.
2. Per KDB 941225 D01v03, in Hotspot mode EUT is treated as data device and SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps) as the primary mode.
3. Per KDB 941225 D01v03, for Body-worn accessory SAR is measured in RC3 with the handset configured in TDSO/SO32 to transmit at full rate on FCH only with all other code channels disabled. The body-worn accessory procedures in KDB Publication 447498 are applied. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCH), with FCH only as the primary mode.

Band	CDMA2000 BC10			CDMA2000 BC0			CDMA2000 BC1		
TX Channel	476	580	684	1013	384	777	25	600	1175
Frequency (MHz)	817.9	820.5	823.1	824.7	836.52	848.31	1851.25	1880	1908.75
1xRTT RC1 SO55	24.25	24.34	24.32	24.23	24.25	24.13	24.18	24.13	24.15
1xRTT RC3 SO55	24.35	24.40	24.46	24.39	24.37	24.30	24.33	24.30	24.33
1xRTT RC3 SO32(+ F-SCH)	24.28	24.19	24.37	24.28	24.22	24.24	24.28	24.16	24.31
1xRTT RC3 SO32(+SCH)	24.18	24.18	24.21	24.24	24.20	24.30	24.31	24.14	24.25
1xEVDO RTAP 153.6Kbps	24.32	24.28	24.35	24.31	24.31	24.21	24.24	24.25	24.31
1xEVDO RETAP 4096Bits	24.28	24.32	24.30	24.27	24.37	24.36	24.31	24.32	24.28

<LTE Conducted Power>

General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r03, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r03, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r03, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r03, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r03, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, smaller bandwidth SAR testing is not required.

<LTE Band 12>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				23060	23095	23130		
Frequency (MHz)				704	707.5	711		
10	QPSK	1	0	23.63	23.53	23.25	24.0	0
10	QPSK	1	24	23.55	23.48	23.15		
10	QPSK	1	49	23.29	23.25	22.99		
10	QPSK	25	0	22.44	22.19	22.05	23.0	1
10	QPSK	25	12	22.36	22.12	21.91		
10	QPSK	25	24	22.35	21.95	21.96		
10	QPSK	50	0	22.32	22.13	22.06		
10	16QAM	1	0	22.15	22.18	21.74	23.0	1
10	16QAM	1	24	22.25	22.23	21.89		
10	16QAM	1	49	22.11	22.25	21.97		
10	16QAM	25	0	21.32	21.16	21.03	22.0	2
10	16QAM	25	12	21.13	21.09	20.98		
10	16QAM	25	24	20.99	21.21	21.07		
10	16QAM	50	0	21.20	21.02	20.83		
Channel				23035	23095	23155	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	23.46	23.38	23.48	24.0	0
5	QPSK	1	12	23.34	23.39	23.44		
5	QPSK	1	24	23.08	23.09	23.22		
5	QPSK	12	0	22.19	22.03	22.06	23.0	1
5	QPSK	12	6	22.04	21.96	21.97		
5	QPSK	12	11	21.84	21.80	21.86		
5	QPSK	25	0	21.96	21.95	21.96		
5	16QAM	1	0	22.00	22.09	22.14	23.0	1
5	16QAM	1	12	22.19	22.03	22.18		
5	16QAM	1	24	22.07	22.24	22.19		
5	16QAM	12	0	21.06	21.12	21.02	22.0	2
5	16QAM	12	6	20.93	21.07	21.09		
5	16QAM	12	11	21.13	21.04	21.08		
5	16QAM	25	0	21.00	20.97	20.89		
Channel				23025	23095	23165	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	23.33	23.33	23.47	24.0	0
3	QPSK	1	7	23.35	23.32	23.47		
3	QPSK	1	14	23.11	23.16	23.05		
3	QPSK	8	0	22.12	22.07	22.13	23.0	1
3	QPSK	8	4	22.11	21.97	22.03		
3	QPSK	8	7	21.83	21.86	21.80		
3	QPSK	15	0	21.97	21.97	21.99		
3	16QAM	1	0	22.15	22.14	22.14	23.0	1
3	16QAM	1	7	22.14	22.09	22.14		
3	16QAM	1	14	22.18	22.17	22.12		
3	16QAM	8	0	21.15	20.99	21.05	22.0	2
3	16QAM	8	4	20.91	21.09	20.96		
3	16QAM	8	7	21.19	21.14	21.18		
3	16QAM	15	0	20.87	20.86	20.93		

Channel				23017	23095	23173	Tune up Limit (dBm)	Target MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	23.47	23.46	23.49	24.0	0
1.4	QPSK	1	2	23.45	23.39	23.45		
1.4	QPSK	1	5	23.17	23.08	23.25		
1.4	QPSK	3	0	23.06	23.12	23.06		
1.4	QPSK	3	1	23.06	23.20	22.93		
1.4	QPSK	3	2	22.99	23.10	22.90		
1.4	QPSK	6	0	22.10	22.01	22.00	23.0	1
1.4	16QAM	1	0	22.00	22.08	22.09	23.0	1
1.4	16QAM	1	2	22.12	22.18	22.17		
1.4	16QAM	1	5	22.21	22.14	22.13		
1.4	16QAM	3	0	22.05	22.10	22.11		
1.4	16QAM	3	1	22.11	22.10	21.98		
1.4	16QAM	3	2	22.10	22.10	21.99		
1.4	16QAM	6	0	20.99	20.88	20.92	22.0	2

<LTE Band 17 >

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	23.40	23.00	23.10	24.0	0
10	QPSK	1	24	23.17	22.68	22.99		
10	QPSK	1	49	23.07	22.72	22.80		
10	QPSK	25	0	22.16	22.03	21.99	23.0	1
10	QPSK	25	12	22.01	22.00	21.96		
10	QPSK	25	24	21.93	22.02	21.99		
10	QPSK	50	0	22.10	21.97	22.02		
10	16QAM	1	0	22.12	22.15	22.25	23.0	1
10	16QAM	1	24	22.15	22.14	21.95		
10	16QAM	1	49	22.05	22.05	22.21		
10	16QAM	25	0	21.05	20.80	20.74	22.0	2
10	16QAM	25	12	21.16	20.78	20.71		
10	16QAM	25	24	20.99	20.75	20.82		
10	16QAM	50	0	20.80	20.50	20.95		
Channel				23755	23790	23825	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	23.12	22.99	22.80	24.0	0
5	QPSK	1	12	22.88	22.48	22.68		
5	QPSK	1	24	22.87	22.69	22.66		
5	QPSK	12	0	22.00	21.87	21.86	23.0	1
5	QPSK	12	6	21.98	21.86	21.97		
5	QPSK	12	11	21.83	22.01	21.99		
5	QPSK	25	0	22.10	21.93	21.77		
5	16QAM	1	0	22.10	22.08	21.96	23.0	1
5	16QAM	1	12	22.10	22.03	22.03		
5	16QAM	1	24	22.01	21.95	21.98		
5	16QAM	12	0	21.02	20.62	20.77	22.0	2
5	16QAM	12	6	21.05	20.70	20.72		
5	16QAM	12	11	20.95	20.74	20.69		
5	16QAM	25	0	20.67	20.34	20.39		

<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	23.40	23.44	23.68	24.0	0
10	QPSK	1	24	23.09	23.28	23.48		
10	QPSK	1	49	23.16	23.29	23.44		
10	QPSK	25	0	22.32	22.33	22.40	23.0	1
10	QPSK	25	12	22.22	22.25	22.37		
10	QPSK	25	24	22.21	22.30	22.36		
10	QPSK	50	0	22.34	22.38	22.39		
10	16QAM	1	0	22.25	22.54	22.30	23.0	1
10	16QAM	1	24	22.10	22.50	22.25		
10	16QAM	1	49	22.12	22.48	22.26		
10	16QAM	25	0	21.53	21.22	21.49	22.0	2
10	16QAM	25	12	21.63	21.32	21.48		
10	16QAM	25	24	21.61	21.20	21.49		
10	16QAM	50	0	21.55	21.38	21.42		
Channel				20425	20525	20625	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	23.32	23.34	23.28	24.0	0
5	QPSK	1	12	22.90	22.95	22.99		
5	QPSK	1	24	23.13	23.16	22.97		
5	QPSK	12	0	22.30	22.18	22.15	23.0	1
5	QPSK	12	6	22.27	22.36	22.26		
5	QPSK	12	11	22.20	22.21	22.31		
5	QPSK	25	0	22.23	22.23	22.31		
5	16QAM	1	0	22.17	22.20	22.08	23.0	1
5	16QAM	1	12	22.04	21.96	21.91		
5	16QAM	1	24	21.96	21.97	21.93		
5	16QAM	12	0	21.50	21.43	21.35	22.0	2
5	16QAM	12	6	21.49	21.62	21.45		
5	16QAM	12	11	21.54	21.41	21.50		
5	16QAM	25	0	21.36	21.35	21.37		
Channel				20415	20525	20635	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	23.37	23.25	23.29	24.0	0
3	QPSK	1	7	23.02	23.00	22.97		
3	QPSK	1	14	23.00	23.15	23.08		
3	QPSK	8	0	22.16	22.22	22.22	23.0	1
3	QPSK	8	4	22.35	22.24	22.26		
3	QPSK	8	7	22.37	22.22	22.27		
3	QPSK	15	0	22.14	22.31	22.21		
3	16QAM	1	0	22.12	22.21	22.16	23.0	1
3	16QAM	1	7	21.92	22.10	22.08		
3	16QAM	1	14	21.96	22.01	22.09		
3	16QAM	8	0	21.51	21.33	21.44	22.0	2
3	16QAM	8	4	21.61	21.50	21.52		
3	16QAM	8	7	21.59	21.60	21.49		
3	16QAM	15	0	21.40	21.37	21.35		

Channel				20407	20525	20643	Tune up Limit (dBm)	Target MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	23.36	23.28	23.20	24.0	0
1.4	QPSK	1	2	22.99	22.97	23.06		
1.4	QPSK	1	5	23.05	23.13	23.13		
1.4	QPSK	3	0	23.22	23.21	23.15		
1.4	QPSK	3	1	23.28	23.22	23.11		
1.4	QPSK	3	2	23.29	23.22	23.11		
1.4	QPSK	6	0	22.14	22.21	22.18	23.0	1
1.4	16QAM	1	0	22.11	22.22	22.06	23.0	1
1.4	16QAM	1	2	22.04	21.96	21.99		
1.4	16QAM	1	5	22.01	22.07	21.97		
1.4	16QAM	3	0	22.34	22.25	21.88		
1.4	16QAM	3	1	22.35	22.15	21.89		
1.4	16QAM	3	2	22.22	22.11	21.99		
1.4	16QAM	6	0	21.45	21.53	21.54	22.0	2

<LTE Band 26>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				26765	26865	26965		
Frequency (MHz)				821.5	831.5	841.5		
15	QPSK	1	0	23.60	23.57	23.43	24.0	0
15	QPSK	1	37	23.54	23.52	23.28		
15	QPSK	1	74	23.42	23.51	23.30		
15	QPSK	36	0	22.43	22.40	22.40	23.0	1
15	QPSK	36	18	22.33	22.36	22.33		
15	QPSK	36	37	22.34	22.32	22.31		
15	QPSK	75	0	22.35	22.30	22.22		
15	16QAM	1	0	22.55	22.70	22.38	23.0	1
15	16QAM	1	37	22.35	22.67	22.39		
15	16QAM	1	74	22.25	22.55	22.40		
15	16QAM	36	0	21.38	21.36	21.25	22.0	2
15	16QAM	36	18	21.47	21.27	21.30		
15	16QAM	36	37	21.40	21.54	21.38		
15	16QAM	75	0	21.30	21.25	21.40		
Channel				26740	26865	26990	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	23.49	23.54	23.58	24.0	0
10	QPSK	1	24	23.42	23.48	23.35		
10	QPSK	1	49	23.32	23.33	23.38		
10	QPSK	25	0	22.42	22.43	22.32	23.0	1
10	QPSK	25	12	22.22	22.13	22.22		
10	QPSK	25	24	22.21	22.14	22.15		
10	QPSK	50	0	22.31	22.17	22.23		
10	16QAM	1	0	22.38	22.39	22.38	23.0	1
10	16QAM	1	24	22.35	22.22	22.15		
10	16QAM	1	49	22.08	22.19	22.21		
10	16QAM	25	0	21.23	21.24	21.31	22.0	2
10	16QAM	25	12	21.38	21.27	21.40		
10	16QAM	25	24	21.23	21.40	21.27		
10	16QAM	50	0	21.29	21.13	21.13		
Channel				26715	26865	27015	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	23.43	23.52	23.25	24.0	0
5	QPSK	1	12	23.39	23.45	23.44		
5	QPSK	1	24	23.27	23.40	23.26		
5	QPSK	12	0	22.26	22.27	22.36	23.0	1
5	QPSK	12	6	22.25	22.23	22.26		
5	QPSK	12	11	22.28	22.22	22.28		
5	QPSK	25	0	22.21	22.24	22.23		
5	16QAM	1	0	22.41	22.54	22.35	23.0	1
5	16QAM	1	12	22.24	22.25	22.34		
5	16QAM	1	24	22.19	22.05	22.17		
5	16QAM	12	0	21.29	21.27	21.35	22.0	2
5	16QAM	12	6	21.27	21.43	21.39		
5	16QAM	12	11	21.34	21.24	21.20		
5	16QAM	25	0	21.23	21.12	21.25		

Channel				26705	26865	27025	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	23.54	23.40	23.55	24.0	0
3	QPSK	1	7	23.52	23.54	23.41		
3	QPSK	1	14	23.42	23.23	23.40		
3	QPSK	8	0	22.38	22.41	22.30	23.0	1
3	QPSK	8	4	22.17	22.17	22.14		
3	QPSK	8	7	22.20	22.28	22.24		
3	QPSK	15	0	22.20	22.35	22.18		
3	16QAM	1	0	22.36	22.53	22.48	23.0	1
3	16QAM	1	7	22.32	22.26	22.27		
3	16QAM	1	14	22.10	22.22	22.12		
3	16QAM	8	0	21.18	21.22	21.21	22.0	2
3	16QAM	8	4	21.32	21.38	21.40		
3	16QAM	8	7	21.38	21.20	21.32		
3	16QAM	15	0	21.22	21.17	21.13		
Channel				26697	26865	27033	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	23.51	23.49	23.46	24.0	0
1.4	QPSK	1	2	23.44	23.51	23.45		
1.4	QPSK	1	5	23.35	23.27	23.34		
1.4	QPSK	3	0	23.11	23.00	23.20		
1.4	QPSK	3	1	23.05	23.22	23.22		
1.4	QPSK	3	2	23.25	23.11	23.12		
1.4	QPSK	6	0	22.31	22.26	22.35	23.0	1
1.4	16QAM	1	0	22.37	22.39	22.51	23.0	1
1.4	16QAM	1	2	22.22	22.20	22.17		
1.4	16QAM	1	5	22.19	22.08	22.23		
1.4	16QAM	3	0	22.31	22.25	22.22		
1.4	16QAM	3	1	22.25	22.15	22.15		
1.4	16QAM	3	2	22.26	22.30	22.15		
1.4	16QAM	6	0	21.18	21.27	21.19	22.0	2

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	23.69	23.55	23.59	24.0	0
20	QPSK	1	49	23.48	23.54	23.48		
20	QPSK	1	99	23.21	22.91	23.04		
20	QPSK	50	0	22.31	22.11	22.22	23.0	1
20	QPSK	50	24	22.17	21.96	22.11		
20	QPSK	50	49	22.04	22.01	22.10		
20	QPSK	100	0	22.10	22.03	22.06		
20	16QAM	1	0	22.77	22.29	22.78	23.0	1
20	16QAM	1	49	22.75	22.31	22.66		
20	16QAM	1	99	22.74	22.45	22.49		
20	16QAM	50	0	21.38	20.98	21.44	22.0	2
20	16QAM	50	24	21.14	20.90	21.15		
20	16QAM	50	49	21.02	21.02	21.05		
20	16QAM	100	0	21.13	20.85	21.12		
Channel				20025	20175	20325	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	23.56	23.31	23.18	24.0	0
15	QPSK	1	37	23.32	23.16	23.29		
15	QPSK	1	74	23.14	22.91	23.19		
15	QPSK	36	0	22.29	21.93	22.08	23.0	1
15	QPSK	36	18	22.10	22.11	22.06		
15	QPSK	36	37	21.97	21.95	21.98		
15	QPSK	75	0	21.97	22.10	21.99		
15	16QAM	1	0	22.75	22.30	22.36	23.0	1
15	16QAM	1	37	22.70	22.24	22.43		
15	16QAM	1	74	22.58	22.22	22.23		
15	16QAM	36	0	21.29	21.19	21.05	22.0	2
15	16QAM	36	18	20.95	21.10	21.17		
15	16QAM	36	37	20.93	21.04	21.23		
15	16QAM	75	0	21.03	21.08	21.11		
Channel				20000	20175	20350	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	23.24	23.34	23.11	24.0	0
10	QPSK	1	24	23.00	23.25	23.15		
10	QPSK	1	49	22.97	23.17	23.05		
10	QPSK	25	0	22.27	22.29	21.95	23.0	1
10	QPSK	25	12	22.29	22.34	22.00		
10	QPSK	25	24	22.19	22.26	21.91		
10	QPSK	50	0	22.23	22.34	21.89		
10	16QAM	1	0	22.55	22.50	22.28	23.0	1
10	16QAM	1	24	22.38	22.45	22.34		
10	16QAM	1	49	22.37	22.22	22.10		
10	16QAM	25	0	21.34	21.45	21.35	22.0	2
10	16QAM	25	12	21.36	21.37	21.25		
10	16QAM	25	24	21.21	21.38	21.21		
10	16QAM	50	0	21.20	21.33	20.99		

Channel				19975	20175	20375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	23.29	23.14	23.00	24.0	0
5	QPSK	1	12	23.19	23.23	23.05		
5	QPSK	1	24	22.85	22.81	22.86		
5	QPSK	12	0	22.11	21.90	21.76	23.0	1
5	QPSK	12	6	21.90	22.06	21.84		
5	QPSK	12	11	21.77	21.86	21.80		
5	QPSK	25	0	21.85	22.02	21.71		
5	16QAM	1	0	22.43	22.24	22.09	23.0	1
5	16QAM	1	12	22.40	22.05	22.34		
5	16QAM	1	24	22.34	21.86	22.00		
5	16QAM	12	0	21.06	21.32	21.15	22.0	2
5	16QAM	12	6	20.80	21.17	21.25		
5	16QAM	12	11	20.74	21.22	21.17		
5	16QAM	25	0	20.74	21.04	20.89		
Channel				19965	20175	20385	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	23.54	23.33	23.10	24.0	0
3	QPSK	1	7	23.29	23.05	23.09		
3	QPSK	1	14	23.05	22.92	22.92		
3	QPSK	8	0	22.24	22.07	21.79	23.0	1
3	QPSK	8	4	22.06	22.08	21.88		
3	QPSK	8	7	21.97	21.98	21.80		
3	QPSK	15	0	21.95	21.95	21.76		
3	16QAM	1	0	22.27	22.20	22.08	23.0	1
3	16QAM	1	7	22.30	22.05	22.21		
3	16QAM	1	14	22.33	21.93	21.98		
3	16QAM	8	0	20.93	21.05	20.77	22.0	2
3	16QAM	8	4	21.00	21.14	20.99		
3	16QAM	8	7	20.88	21.10	21.08		
3	16QAM	15	0	20.93	21.12	20.81		
Channel				19957	20175	20393	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	23.59	23.39	23.40	24.0	0
1.4	QPSK	1	2	23.40	23.20	23.39		
1.4	QPSK	1	5	23.18	23.05	23.01		
1.4	QPSK	3	0	23.10	22.91	23.10		
1.4	QPSK	3	1	23.15	23.01	23.05		
1.4	QPSK	3	2	23.12	22.96	23.08		
1.4	QPSK	6	0	22.01	21.94	21.89	23.0	1
1.4	16QAM	1	0	22.58	22.53	22.39	23.0	1
1.4	16QAM	1	2	22.72	22.62	22.69		
1.4	16QAM	1	5	22.60	22.51	22.57		
1.4	16QAM	3	0	22.15	21.98	22.08		
1.4	16QAM	3	1	22.22	22.10	22.18		
1.4	16QAM	3	2	22.25	22.17	22.18		
1.4	16QAM	6	0	21.10	20.99	20.93	22.0	2

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	22.85	23.12	23.05	24.0	0
20	QPSK	1	49	22.77	23.11	22.98		
20	QPSK	1	99	22.69	22.84	22.81		
20	QPSK	50	0	21.89	22.06	22.04	23.0	1
20	QPSK	50	24	21.83	21.76	21.88		
20	QPSK	50	49	21.68	21.85	21.81		
20	QPSK	100	0	21.85	21.95	21.88		
20	16QAM	1	0	21.71	22.05	22.11	23.0	1
20	16QAM	1	49	21.54	21.98	21.80		
20	16QAM	1	99	21.85	22.10	21.89		
20	16QAM	50	0	20.75	20.75	21.09	22.0	2
20	16QAM	50	24	20.55	20.66	20.96		
20	16QAM	50	49	20.48	20.78	20.87		
20	16QAM	100	0	20.75	20.67	20.86		
Channel				18675	18900	19125	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.88	22.86	23.08	24.0	0
15	QPSK	1	37	22.91	22.90	22.77		
15	QPSK	1	74	22.68	23.02	22.90		
15	QPSK	36	0	21.94	21.77	22.02	23.0	1
15	QPSK	36	18	21.89	21.74	21.85		
15	QPSK	36	37	21.81	21.78	21.86		
15	QPSK	75	0	21.83	21.85	21.94		
15	16QAM	1	0	21.86	22.12	22.11	23.0	1
15	16QAM	1	37	21.79	22.12	21.72		
15	16QAM	1	74	21.79	22.24	21.83		
15	16QAM	36	0	20.85	20.81	20.95	22.0	2
15	16QAM	36	18	20.84	20.76	20.81		
15	16QAM	36	37	20.72	20.82	20.79		
15	16QAM	75	0	20.78	20.74	20.95		
Channel				18650	18900	19150	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	22.81	22.73	22.97	24.0	0
10	QPSK	1	24	23.07	22.58	22.87		
10	QPSK	1	49	22.91	22.77	23.04		
10	QPSK	25	0	21.87	21.79	21.78	23.0	1
10	QPSK	25	12	21.91	21.77	21.87		
10	QPSK	25	24	21.88	21.80	21.85		
10	QPSK	50	0	21.92	21.75	21.94		
10	16QAM	1	0	22.33	22.33	22.17	23.0	1
10	16QAM	1	24	22.32	22.42	22.42		
10	16QAM	1	49	22.31	22.22	22.65		
10	16QAM	25	0	20.73	20.79	20.75	22.0	2
10	16QAM	25	12	21.00	20.97	21.05		
10	16QAM	25	24	21.08	21.00	20.82		
10	16QAM	50	0	20.73	20.65	20.76		

Channel				18625	18900	19175	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.77	22.84	22.77	24.0	0
5	QPSK	1	12	22.82	22.95	23.02		
5	QPSK	1	24	22.71	22.91	22.72		
5	QPSK	12	0	21.90	21.74	21.84	23.0	1
5	QPSK	12	6	21.87	21.66	22.00		
5	QPSK	12	11	21.87	21.76	22.03		
5	QPSK	25	0	21.89	21.84	22.03		
5	16QAM	1	0	21.91	21.96	21.86	23.0	1
5	16QAM	1	12	21.80	21.70	22.15		
5	16QAM	1	24	21.64	21.83	21.50		
5	16QAM	12	0	20.91	20.65	21.13	22.0	2
5	16QAM	12	6	20.89	20.68	20.94		
5	16QAM	12	11	20.78	20.73	20.83		
5	16QAM	25	0	20.81	20.91	20.85		
Channel				18615	18900	19185	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	22.80	22.84	22.75	24.0	0
3	QPSK	1	7	22.71	22.92	22.95		
3	QPSK	1	14	22.60	22.72	22.58		
3	QPSK	8	0	21.81	21.63	21.81	23.0	1
3	QPSK	8	4	21.70	21.62	21.83		
3	QPSK	8	7	21.48	21.61	21.87		
3	QPSK	15	0	21.65	21.81	21.86		
3	16QAM	1	0	21.59	21.94	21.79	23.0	1
3	16QAM	1	7	21.50	21.70	21.95		
3	16QAM	1	14	21.76	21.65	21.45		
3	16QAM	8	0	20.72	20.63	21.09	22.0	2
3	16QAM	8	4	20.56	20.60	20.91		
3	16QAM	8	7	20.48	20.62	20.74		
3	16QAM	15	0	20.58	20.77	20.66		
Channel				18607	18900	19193	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.61	22.59	22.46	24.0	0
1.4	QPSK	1	2	22.60	22.51	22.48		
1.4	QPSK	1	5	22.60	22.40	22.52		
1.4	QPSK	3	0	22.52	22.46	22.41		
1.4	QPSK	3	1	22.42	22.29	22.40		
1.4	QPSK	3	2	22.52	22.49	22.51		
1.4	QPSK	6	0	21.65	21.58	21.60	23.0	1
1.4	16QAM	1	0	21.63	21.51	21.62	23.0	1
1.4	16QAM	1	2	21.40	21.37	21.22		
1.4	16QAM	1	5	21.83	21.63	21.81		
1.4	16QAM	3	0	21.56	21.38	21.55		
1.4	16QAM	3	1	21.56	21.42	21.37		
1.4	16QAM	3	2	21.25	21.10	21.17		
1.4	16QAM	6	0	20.62	20.56	20.53	22.0	2

<LTE Band 25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	23.30	23.18	23.23	24.0	0
20	QPSK	1	49	23.27	22.93	23.07		
20	QPSK	1	99	22.88	22.60	22.69		
20	QPSK	50	0	22.12	22.05	22.03	23.0	1
20	QPSK	50	24	21.87	21.92	22.11		
20	QPSK	50	49	21.76	21.87	22.01		
20	QPSK	100	0	22.05	22.00	21.98		
20	16QAM	1	0	22.77	22.57	22.66	23.0	1
20	16QAM	1	49	22.51	22.61	22.50		
20	16QAM	1	99	22.33	22.52	22.51		
20	16QAM	50	0	21.15	21.02	21.09	22.0	2
20	16QAM	50	24	20.95	21.03	21.06		
20	16QAM	50	49	20.83	20.87	21.06		
20	16QAM	100	0	20.88	20.82	21.06		
Channel				26115	26340	26615	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	23.14	22.96	23.01	24.0	0
15	QPSK	1	37	23.13	22.88	23.02		
15	QPSK	1	74	22.71	22.58	22.63		
15	QPSK	36	0	21.97	21.86	21.93	23.0	1
15	QPSK	36	18	21.85	21.82	22.08		
15	QPSK	36	37	21.60	21.77	21.84		
15	QPSK	75	0	21.96	21.89	21.94		
15	16QAM	1	0	22.64	22.49	22.48	23.0	1
15	16QAM	1	37	22.31	22.52	22.36		
15	16QAM	1	74	22.26	22.37	22.41		
15	16QAM	36	0	21.04	20.95	21.06	22.0	2
15	16QAM	36	18	20.81	20.84	20.86		
15	16QAM	36	37	20.74	20.69	21.05		
15	16QAM	75	0	20.68	20.76	20.99		
Channel				26090	26340	26640	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	23.27	23.03	23.06	24.0	0
10	QPSK	1	24	23.07	22.86	23.06		
10	QPSK	1	49	22.81	22.50	22.53		
10	QPSK	25	0	21.94	21.86	21.86	23.0	1
10	QPSK	25	12	21.73	21.91	22.09		
10	QPSK	25	24	21.60	21.69	21.99		
10	QPSK	50	0	21.94	21.88	21.92		
10	16QAM	1	0	22.59	22.49	22.48	23.0	1
10	16QAM	1	24	22.35	22.57	22.35		
10	16QAM	1	49	22.17	22.34	22.50		
10	16QAM	25	0	20.96	20.96	21.03	22.0	2
10	16QAM	25	12	20.93	20.86	20.95		
10	16QAM	25	24	20.74	20.69	20.98		
10	16QAM	50	0	20.81	20.62	20.95		

Channel				26065	26340	26665	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	23.24	23.13	23.02	24.0	0
5	QPSK	1	12	23.20	22.91	23.07		
5	QPSK	1	24	22.87	22.48	22.59		
5	QPSK	12	0	22.05	21.87	21.93	23.0	1
5	QPSK	12	6	21.69	21.75	22.03		
5	QPSK	12	11	21.73	21.80	21.87		
5	QPSK	25	0	22.04	21.91	21.81		
5	16QAM	1	0	22.58	22.55	22.61	23.0	1
5	16QAM	1	12	22.49	22.52	22.40		
5	16QAM	1	24	22.27	22.35	22.43		
5	16QAM	12	0	21.03	20.91	21.02	22.0	2
5	16QAM	12	6	20.79	20.92	21.06		
5	16QAM	12	11	20.79	20.82	20.91		
5	16QAM	25	0	20.71	20.70	20.97		
Channel				26055	26340	26675	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	23.19	23.06	22.97	24.0	0
3	QPSK	1	7	23.16	22.85	23.01		
3	QPSK	1	14	22.85	22.41	22.52		
3	QPSK	8	0	22.04	21.96	21.87	23.0	1
3	QPSK	8	4	21.84	21.85	22.01		
3	QPSK	8	7	21.59	21.74	21.87		
3	QPSK	15	0	21.96	22.00	21.88		
3	16QAM	1	0	22.70	22.48	22.66	23.0	1
3	16QAM	1	7	22.32	22.43	22.48		
3	16QAM	1	14	22.24	22.52	22.35		
3	16QAM	8	0	21.12	20.85	20.99	22.0	2
3	16QAM	8	4	20.89	20.95	20.91		
3	16QAM	8	7	20.73	20.84	21.03		
3	16QAM	15	0	20.71	20.75	20.94		
Channel				26047	26340	26683	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	23.10	22.92	23.10	24.0	0
1.4	QPSK	1	2	23.25	23.05	23.11		
1.4	QPSK	1	5	23.10	22.94	22.99		
1.4	QPSK	3	0	23.05	22.98	22.99		
1.4	QPSK	3	1	22.95	22.77	22.84		
1.4	QPSK	3	2	22.88	22.69	22.77		
1.4	QPSK	6	0	22.03	22.03	21.98	23.0	1
1.4	16QAM	1	0	22.59	22.47	22.51	23.0	1
1.4	16QAM	1	2	22.33	22.29	22.26		
1.4	16QAM	1	5	22.31	22.14	22.21		
1.4	16QAM	3	0	22.51	22.48	22.36		
1.4	16QAM	3	1	22.42	22.42	22.26		
1.4	16QAM	3	2	22.39	22.24	22.22		
1.4	16QAM	6	0	20.70	20.50	20.58	22.0	2

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

SAR was tested with a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by 3GPP.

a. 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations

b. "special subframe S" contains both uplink and downlink transmissions, it has been taken into consideration to determine the transmission duty factor according to the worst case uplink and downlink cyclic prefix requirements for UpPTS

c. Establishing connections with base station simulators ensure a consistent means for testing SAR and recommended for evaluating SAR. The Anritsu MT8820C (firmware: #22.52#004) was used for LTE output power measurements and SAR testing.

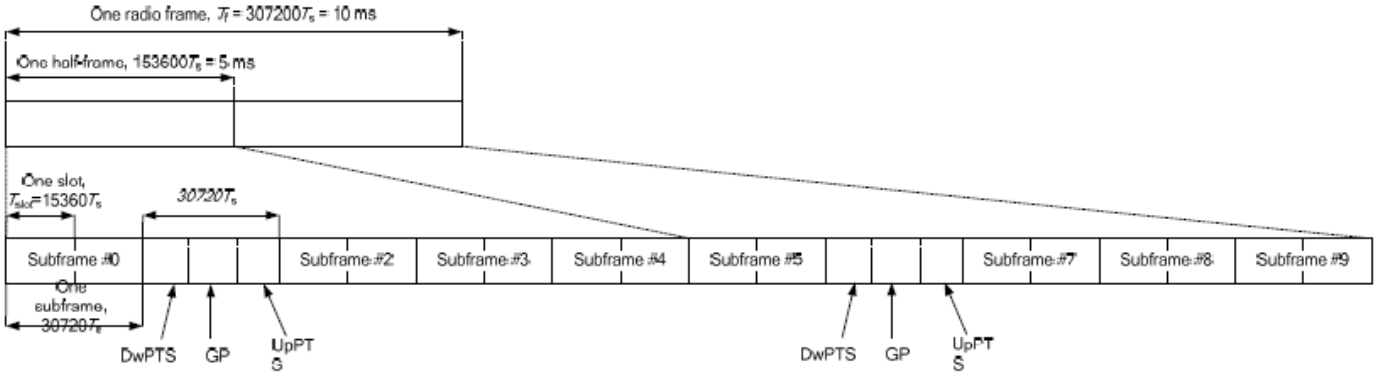


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

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

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

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	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Special subframe (30720·T_s): Normal cyclic prefix in downlink (UpPTS)			
	Special subframe configuration	**Normal cyclic prefix in uplink**	**Extended cyclic prefix in uplink**
Uplink duty factor in one special subframe	**0~4**	7.13%	8.33%
	5~9	14.3%	16.7%

Special subframe(30720·T_s): Extended cyclic prefix in downlink (UpPTS)			
	Special subframe configuration	**Normal cyclic prefix in uplink**	**Extended cyclic prefix in uplink**
Uplink duty factor in one special subframe	**0~3**	7.13%	8.33%
	4~7	14.3%	16.7%

The highest duty factor is resulted from:

i. Uplink-downlink configuration: 0. In a half-frame consisted of 5 subfames, uplink operation is in 3 uplink subframes and 1 special subframe.

ii. special subframe configuration: 5-9 for normal cyclic prefix in downlink, 4-7 for extended cyclic prefix in downlink

iii. for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.167)/5 = 63.3%

iv. for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.143)/5 = 62.9%

v. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.

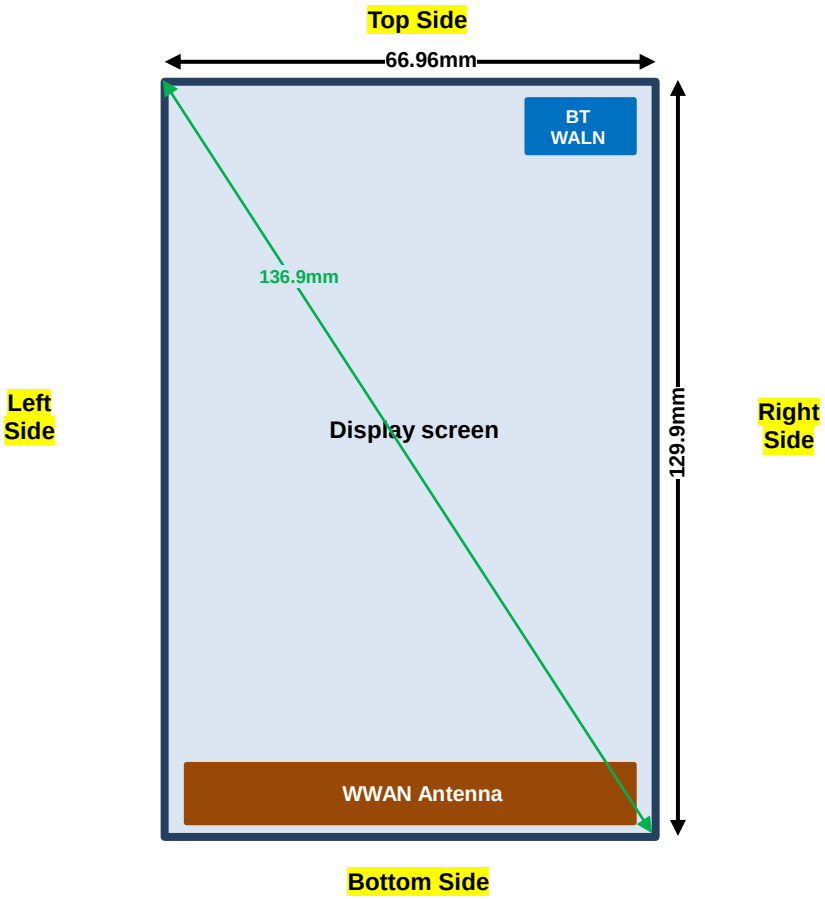
<LTE Band 41>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power Middle High Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				39750	40185	40620	41055	41490		
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	23.92	23.98	22.95	23.35	23.63	24.0	0
20	QPSK	1	49	23.71	23.97	22.77	23.06	23.50		
20	QPSK	1	99	23.71	23.50	22.76	23.08	23.00		
20	QPSK	50	0	22.85	22.86	21.94	22.15	22.53	23.0	1
20	QPSK	50	24	22.70	22.84	21.75	22.13	22.45		
20	QPSK	50	49	22.60	22.73	21.68	22.04	22.51		
20	QPSK	100	0	22.62	22.91	21.72	22.13	22.69		
20	16QAM	1	0	22.58	22.61	22.50	22.38	22.48	23.0	1
20	16QAM	1	49	22.56	22.54	22.28	22.31	22.54		
20	16QAM	1	99	22.60	22.46	22.29	22.34	22.42		
20	16QAM	50	0	21.76	21.91	20.90	21.11	21.64	22.0	2
20	16QAM	50	24	21.56	21.95	20.68	21.07	21.60		
20	16QAM	50	49	21.41	21.79	20.60	20.98	21.53		
20	16QAM	100	0	21.58	21.97	20.65	21.04	21.59		
Channel				39725	40173	40620	41068	41515	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5		
15	QPSK	1	0	22.95	23.86	22.65	23.07	23.40	24.0	0
15	QPSK	1	37	23.28	23.94	22.46	22.98	23.38		
15	QPSK	1	74	23.42	23.55	22.46	22.92	22.94		
15	QPSK	36	0	22.69	22.94	21.83	22.27	22.56	23.0	1
15	QPSK	36	18	22.52	22.91	21.68	22.27	22.63		
15	QPSK	36	37	22.39	22.89	21.64	22.11	22.56		
15	QPSK	75	0	22.49	22.96	21.68	22.27	22.58		
15	16QAM	1	0	22.68	22.96	21.88	22.32	22.64	23.0	1
15	16QAM	1	37	22.62	22.95	21.68	22.28	22.49		
15	16QAM	1	74	22.43	22.78	21.69	22.23	22.48		
15	16QAM	36	0	21.29	21.80	20.87	21.33	21.55	22.0	2
15	16QAM	36	18	21.25	21.69	20.71	21.24	21.61		
15	16QAM	36	37	21.21	21.70	20.65	21.19	21.55		
15	16QAM	75	0	21.48	21.96	20.66	21.28	21.55		
Channel				39700	40160	40620	41080	41540	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2501	2547	2593	2639	2685		
10	QPSK	1	0	23.43	23.85	22.53	23.15	23.47	24.0	0
10	QPSK	1	24	23.27	23.95	22.36	22.86	23.27		
10	QPSK	1	49	23.45	23.90	22.79	23.00	22.99		
10	QPSK	25	0	22.36	22.81	21.71	22.27	22.33	23.0	1
10	QPSK	25	12	22.54	22.86	21.68	22.26	22.32		
10	QPSK	25	24	22.70	22.91	21.73	22.19	22.25		
10	QPSK	50	0	22.50	22.93	21.74	22.30	22.34		
10	16QAM	1	0	22.50	22.86	22.00	22.94	22.57	23.0	1
10	16QAM	1	24	22.21	22.88	21.42	22.80	22.35		
10	16QAM	1	49	22.30	22.91	21.32	22.37	22.28		
10	16QAM	25	0	21.43	21.95	20.82	21.40	21.58	22.0	2
10	16QAM	25	12	21.65	21.93	20.67	21.26	21.56		
10	16QAM	25	24	21.69	21.88	20.74	21.31	21.42		
10	16QAM	50	0	21.16	21.98	20.45	20.92	21.41		

Channel				39675	40148	40620	41093	41565	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2545.8	2593	2640.3	2687.5		
5	QPSK	1	0	23.37	23.88	22.59	23.25	23.25	24.0	0
5	QPSK	1	12	23.24	23.92	22.32	23.34	22.88		
5	QPSK	1	24	23.15	23.85	22.30	23.12	22.84		
5	QPSK	12	0	22.19	22.97	21.45	22.29	22.40	23.0	1
5	QPSK	12	6	22.24	22.96	21.47	22.09	22.43		
5	QPSK	12	11	22.26	22.94	21.43	22.09	22.35		
5	QPSK	25	0	22.20	22.97	21.45	22.03	22.32		
5	16QAM	1	0	22.31	22.83	21.45	21.95	22.32	23.0	1
5	16QAM	1	12	22.10	22.92	21.39	21.84	22.28		
5	16QAM	1	24	22.15	22.94	21.52	21.75	22.30		
5	16QAM	12	0	21.46	21.96	20.58	21.16	21.50	22.0	2
5	16QAM	12	6	21.64	21.81	20.72	21.15	21.52		
5	16QAM	12	11	21.51	21.72	20.71	21.15	21.51		
5	16QAM	25	0	21.62	21.85	20.65	21.27	21.62		

13. Antenna Location

<Mobile Phone>



Front View

Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN	≤ 25mm	≤ 25mm	> 25mm	≤ 25mm	≤ 25mm	≤ 25mm
Positions for SAR tests; Hotspot mode						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN	Yes	Yes	No	Yes	Yes	Yes

General Note:

1. Referring to KDB 941225 D06 v02, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.

14. SAR Test Results

General Note:

1. Per KDB 447498 D01v05r02, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   c. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v05r02, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 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
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Pre KDB648474 D04v01r02, 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, if reported SAR < 1.2 W/kg connected to the headset is not required.

GSM Note:

1. Per KDB 941225 D01v03, considering the possibility of e.g. 3rd party VoIP operation for Head and body-worn SAR test reduction for GSM and GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The 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. Therefore, the EUT was set in GPRS (4Tx slots) for GSM850/GSM1900.
2. Per KDB 941225 D01v03, for Hotspot SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance, for modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested, therefore, the EUT was set in GPRS (4Tx slots) for GSM850/GSM1900.

WCDMA Note:

1. Per KDB 941225 D01v03, SAR for head / Hotspot / Body-worn exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.
2. Per KDB 941225 D01v03, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

CDMA Note:

1. Per KDB 941225 D01v03, SAR for head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55.
2. Per KDB 941225 D01v03, in Hotspot mode EUT is treated as data device and SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps) as the primary mode.
3. Per KDB 941225 D01v03, for Body-worn accessory SAR is measured in RC3 with the handset configured in TDSO/SO32 to transmit at full rate on FCH only with all other code channels disabled. The body-worn accessory procedures in KDB Publication 447498 are applied. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCH), with FCH only as the primary mode.

LTE Note:

1. Per KDB 941225 D05v02r03, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r03, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r03, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r03, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, smaller bandwidth SAR testing is not required.
6. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.

14.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (4 Tx slots)	Right Cheek	251	848.8	26.55	27.50	1.245	-0.11	0.273	0.340
	GSM850	GPRS (4 Tx slots)	Right Tilted	251	848.8	26.55	27.50	1.245	-0.03	0.194	0.241
1	GSM850	GPRS (4 Tx slots)	Left Cheek	251	848.8	26.55	27.50	1.245	0	0.317	**0.395**
	GSM850	GPRS (4 Tx slots)	Left Tilted	251	848.8	26.55	27.50	1.245	-0.01	0.198	0.246
	GSM1900	GPRS (4 Tx slots)	Right Cheek	661	1880	23.35	24.50	1.303	-0.11	0.128	0.167
	GSM1900	GPRS (4 Tx slots)	Right Tilted	661	1880	23.35	24.50	1.303	-0.17	0.069	0.090
2	GSM1900	GPRS (4 Tx slots)	Left Cheek	661	1880	23.35	24.50	1.303	0	0.176	**0.229**
	GSM1900	GPRS (4 Tx slots)	Left Tilted	661	1880	23.35	24.50	1.303	-0.01	0.052	0.068

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA V	RMC12.2Kbps	Right Cheek	4132	826.4	23.50	24.00	1.122	0.1	0.320	0.359
	WCDMA V	RMC12.2Kbps	Right Tilted	4132	826.4	23.50	24.00	1.122	-0.02	0.248	0.278
3	WCDMA V	RMC12.2Kbps	Left Cheek	4132	826.4	23.50	24.00	1.122	0.01	0.394	**0.442**
	WCDMA V	RMC12.2Kbps	Left Tilted	4132	826.4	23.50	24.00	1.122	-0.05	0.258	0.289
	WCDMA IV	RMC12.2Kbps	Right Cheek	1312	1712.4	23.20	24.00	1.202	-0.03	0.401	0.482
	WCDMA IV	RMC12.2Kbps	Right Tilted	1312	1712.4	23.20	24.00	1.202	0.02	0.254	0.305
4	WCDMA IV	RMC12.2Kbps	Left Cheek	1312	1712.4	23.20	24.00	1.202	-0.03	0.626	**0.753**
	WCDMA IV	RMC12.2Kbps	Left Tilted	1312	1712.4	23.20	24.00	1.202	0.06	0.258	0.310
	WCDMA II	RMC12.2Kbps	Right Cheek	9400	1880	23.30	24.00	1.175	0.09	0.396	0.465
	WCDMA II	RMC12.2Kbps	Right Tilted	9400	1880	23.30	24.00	1.175	0.02	0.214	0.251
5	WCDMA II	RMC12.2Kbps	Left Cheek	9400	1880	23.30	24.00	1.175	0.01	0.637	**0.748**
	WCDMA II	RMC12.2Kbps	Left Tilted	9400	1880	23.30	24.00	1.175	0.11	0.185	0.217

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	CDMA BC10	1xRTT RC3 SO55	Right Cheek	684	823.1	24.46	25.00	1.132	-0.05	0.352	0.399
	CDMA BC10	1xRTT RC3 SO55	Right Tilted	684	823.1	24.46	25.00	1.132	0.08	0.276	0.313
6	CDMA BC10	1xRTT RC3 SO55	Left Cheek	684	823.1	24.46	25.00	1.132	0	0.434	**0.491**
	CDMA BC10	1xRTT RC3 SO55	Left Tilted	684	823.1	24.46	25.00	1.132	0.03	0.277	0.314
	CDMA BC0	1xRTT RC3 SO55	Right Cheek	1013	824.7	24.39	25.00	1.151	0.02	0.407	0.468
	CDMA BC0	1xRTT RC3 SO55	Right Tilted	1013	824.7	24.39	25.00	1.151	0.08	0.304	0.350
7	CDMA BC0	1xRTT RC3 SO55	Left Cheek	1013	824.7	24.39	25.00	1.151	0.04	0.483	**0.556**
	CDMA BC0	1xRTT RC3 SO55	Left Tilted	1013	824.7	24.39	25.00	1.151	0.09	0.309	0.356
	CDMA BC1	1xRTT RC3 SO55	Right Cheek	1175	1908.75	24.33	25.00	1.167	-0.01	0.374	0.436
	CDMA BC1	1xRTT RC3 SO55	Right Tilted	1175	1908.75	24.33	25.00	1.167	-0.01	0.237	0.277
8	CDMA BC1	1xRTT RC3 SO55	Left Cheek	1175	1908.75	24.33	25.00	1.167	0.01	0.666	**0.777**
	CDMA BC1	1xRTT RC3 SO55	Left Tilted	1175	1908.75	24.33	25.00	1.167	0	0.216	0.252

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
9	LTE Band 12	10M	QPSK	1RB	0offest	Right Cheek	23060	704	23.63	24.00	1.089	-0.06	0.458	**0.499**
	LTE Band 12	10M	QPSK	25RB	0offest	Right Cheek	23060	704	22.44	23.00	1.138	0.04	0.304	0.346
	LTE Band 12	10M	QPSK	1RB	0offest	Right Tilted	23060	704	23.63	24.00	1.089	0.01	0.180	0.196
	LTE Band 12	10M	QPSK	25RB	0offest	Right Tilted	23060	704	22.44	23.00	1.138	0.09	0.111	0.126
	LTE Band 12	10M	QPSK	1RB	0offest	Left Cheek	23060	704	23.63	24.00	1.089	-0.07	0.341	0.371
	LTE Band 12	10M	QPSK	25RB	0offest	Left Cheek	23060	704	22.44	23.00	1.138	-0.03	0.221	0.251
	LTE Band 12	10M	QPSK	1RB	0offest	Left Tilted	23060	704	23.63	24.00	1.089	0.07	0.184	0.200
	LTE Band 12	10M	QPSK	25RB	0offest	Left Tilted	23060	704	22.44	23.00	1.138	0.01	0.124	0.141
10	LTE Band 17	10M	QPSK	1RB	0offest	Right Cheek	23780	709	23.40	24.00	1.148	-0.04	0.617	**0.708**
	LTE Band 17	10M	QPSK	25RB	0offest	Right Cheek	23780	709	22.16	23.00	1.213	-0.01	0.386	0.468
	LTE Band 17	10M	QPSK	1RB	0offest	Right Tilted	23780	709	23.40	24.00	1.148	0.1	0.217	0.249
	LTE Band 17	10M	QPSK	25RB	0offest	Right Tilted	23780	709	22.16	23.00	1.213	0.06	0.137	0.166
	LTE Band 17	10M	QPSK	1RB	0offest	Left Cheek	23780	709	23.40	24.00	1.148	0.01	0.400	0.459
	LTE Band 17	10M	QPSK	25RB	0offest	Left Cheek	23780	709	22.16	23.00	1.213	0.01	0.252	0.306
	LTE Band 17	10M	QPSK	1RB	0offest	Left Tilted	23780	709	23.40	24.00	1.148	-0.08	0.203	0.233
	LTE Band 17	10M	QPSK	25RB	0offest	Left Tilted	23780	709	22.16	23.00	1.213	0.05	0.129	0.157
11	LTE Band 5	10M	QPSK	1RB	0offest	Right Cheek	20600	844	23.68	24.00	1.076	-0.16	0.550	**0.592**
	LTE Band 5	10M	QPSK	25RB	0offest	Right Cheek	20600	844	22.40	23.00	1.148	0.16	0.334	0.383
	LTE Band 5	10M	QPSK	1RB	0offest	Right Tilted	20600	844	23.68	24.00	1.076	0.12	0.374	0.403
	LTE Band 5	10M	QPSK	25RB	0offest	Right Tilted	20600	844	22.40	23.00	1.148	0.04	0.237	0.272
	LTE Band 5	10M	QPSK	1RB	0offest	Left Cheek	20600	844	23.68	24.00	1.076	0.07	0.462	0.497
	LTE Band 5	10M	QPSK	25RB	0offest	Left Cheek	20600	844	22.40	23.00	1.148	0.07	0.304	0.349
	LTE Band 5	10M	QPSK	1RB	0offest	Left Tilted	20600	844	23.68	24.00	1.076	0.08	0.295	0.318
	LTE Band 5	10M	QPSK	25RB	0offest	Left Tilted	20600	844	22.40	23.00	1.148	0.1	0.192	0.220
	LTE Band 26	15M	QPSK	1RB	0offest	Right Cheek	26765	821.5	23.60	24.00	1.096	-0.07	0.277	0.304
	LTE Band 26	15M	QPSK	36RB	0offest	Right Cheek	26765	821.5	22.43	23.00	1.140	0.05	0.192	0.219
	LTE Band 26	15M	QPSK	1RB	0offest	Right Tilted	26765	821.5	23.60	24.00	1.096	0.02	0.194	0.213
	LTE Band 26	15M	QPSK	36RB	0offest	Right Tilted	26765	821.5	22.43	23.00	1.140	0.14	0.152	0.173
12	LTE Band 26	15M	QPSK	1RB	0offest	Left Cheek	26765	821.5	23.60	24.00	1.096	-0.01	0.383	**0.420**
	LTE Band 26	15M	QPSK	36RB	0offest	Left Cheek	26765	821.5	22.43	23.00	1.140	-0.1	0.258	0.294
	LTE Band 26	15M	QPSK	1RB	0offest	Left Tilted	26765	821.5	23.60	24.00	1.096	0.02	0.224	0.246
	LTE Band 26	15M	QPSK	36RB	0offest	Left Tilted	26765	821.5	22.43	23.00	1.140	-0.03	0.163	0.186

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 4	20M	QPSK	1RB	0offest	Right Cheek	20050	1720	23.69	24.00	1.074	0	0.402	0.432
	LTE Band 4	20M	QPSK	50RB	0offest	Right Cheek	20050	1720	22.31	23.00	1.172	0.03	0.273	0.320
	LTE Band 4	20M	QPSK	1RB	0offest	Right Tilted	20050	1720	23.69	24.00	1.074	-0.06	0.255	0.274
	LTE Band 4	20M	QPSK	50RB	0offest	Right Tilted	20050	1720	22.31	23.00	1.172	-0.07	0.202	0.237
13	LTE Band 4	20M	QPSK	1RB	0offest	Left Cheek	20050	1720	23.69	24.00	1.074	0.03	0.608	**0.653**
	LTE Band 4	20M	QPSK	50RB	0offest	Left Cheek	20050	1720	22.31	23.00	1.172	0.03	0.413	0.484
	LTE Band 4	20M	QPSK	1RB	0offest	Left Tilted	20050	1720	23.69	24.00	1.074	-0.02	0.237	0.255
	LTE Band 4	20M	QPSK	50RB	0offest	Left Tilted	20050	1720	22.31	23.00	1.172	0	0.151	0.177
	LTE Band 2	20M	QPSK	1RB	0offest	Right Cheek	18900	1880	23.12	24.00	1.225	-0.04	0.414	0.507
	LTE Band 2	20M	QPSK	50RB	0offest	Right Cheek	18900	1880	22.06	23.00	1.242	-0.02	0.251	0.312
	LTE Band 2	20M	QPSK	1RB	0offest	Right Tilted	18900	1880	23.12	24.00	1.225	-0.1	0.211	0.258
	LTE Band 2	20M	QPSK	50RB	0offest	Right Tilted	18900	1880	22.06	23.00	1.242	0.03	0.138	0.171
14	LTE Band 2	20M	QPSK	1RB	0offest	Left Cheek	18900	1880	23.12	24.00	1.225	-0.02	0.629	**0.770**
	LTE Band 2	20M	QPSK	50RB	0offest	Left Cheek	18900	1880	22.06	23.00	1.242	-0.08	0.383	0.476
	LTE Band 2	20M	QPSK	1RB	0offest	Left Tilted	18900	1880	23.12	24.00	1.225	0.1	0.211	0.258
	LTE Band 2	20M	QPSK	50RB	0offest	Left Tilted	18900	1880	22.06	23.00	1.242	-0.05	0.137	0.170
	LTE Band 25	20M	QPSK	1RB	0offest	Right Cheek	26140	1860	23.30	24.00	1.175	0.07	0.412	0.484
	LTE Band 25	20M	QPSK	50RB	0offest	Right Cheek	26140	1860	22.12	23.00	1.225	0.02	0.245	0.300
	LTE Band 25	20M	QPSK	1RB	0offest	Right Tilted	26140	1860	23.30	24.00	1.175	-0.03	0.231	0.271
	LTE Band 25	20M	QPSK	50RB	0offest	Right Tilted	26140	1860	22.12	23.00	1.225	0.12	0.157	0.192
15	LTE Band 25	20M	QPSK	1RB	0offest	Left Cheek	26140	1860	23.30	24.00	1.175	-0.17	0.602	**0.707**
	LTE Band 25	20M	QPSK	50RB	0offest	Left Cheek	26140	1860	22.12	23.00	1.225	0.04	0.375	0.459
	LTE Band 25	20M	QPSK	1RB	0offest	Left Tilted	26140	1860	23.30	24.00	1.175	0.06	0.221	0.260
	LTE Band 25	20M	QPSK	50RB	0offest	Left Tilted	26140	1860	22.12	23.00	1.225	-0.02	0.137	0.168

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
16	LTE Band 41	20M	QPSK	1RB	0offest	Right Cheek	40185	2549.5	23.98	24.00	1.005	62.9	1.006	-0.1	0.582	**0.588**
	LTE Band 41	20M	QPSK	50RB	0offest	Right Cheek	40185	2549.5	22.86	23.00	1.033	62.9	1.006	-0.09	0.550	0.571
	LTE Band 41	20M	QPSK	1RB	0offest	Right Tilted	40185	2549.5	23.98	24.00	1.005	62.9	1.006	-0.1	0.276	0.279
	LTE Band 41	20M	QPSK	50RB	0offest	Right Tilted	40185	2549.5	22.86	23.00	1.033	62.9	1.006	0.05	0.222	0.231
	LTE Band 41	20M	QPSK	1RB	0offest	Left Cheek	40185	2549.5	23.98	24.00	1.005	62.9	1.006	-0.03	0.431	0.436
	LTE Band 41	20M	QPSK	50RB	0offest	Left Cheek	40185	2549.5	22.86	23.00	1.033	62.9	1.006	-0.01	0.375	0.390
	LTE Band 41	20M	QPSK	1RB	0offest	Left Tilted	40185	2549.5	23.98	24.00	1.005	62.9	1.006	-0.02	0.123	0.124
	LTE Band 41	20M	QPSK	50RB	0offest	Left Tilted	40185	2549.5	22.86	23.00	1.033	62.9	1.006	-0.14	0.108	0.112

14.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
17	GSM850	GPRS (4 Tx slots)	Front	1cm	251	848.8	26.55	27.50	1.245	-0.01	0.497	**0.619**
	GSM850	GPRS (4 Tx slots)	Back	1cm	251	848.8	26.55	27.50	1.245	-0.07	0.495	0.616
	GSM850	GPRS (4 Tx slots)	Left Side	1cm	251	848.8	26.55	27.50	1.245	-0.08	0.302	0.376
	GSM850	GPRS (4 Tx slots)	Right Side	1cm	251	848.8	26.55	27.50	1.245	-0.04	0.327	0.407
	GSM850	GPRS (4 Tx slots)	Bottom Side	1cm	251	848.8	26.55	27.50	1.245	0.01	0.077	0.096
	GSM1900	GPRS (4 Tx slots)	Front	1cm	661	1880	23.35	24.50	1.303	-0.1	0.317	0.413
	GSM1900	GPRS (4 Tx slots)	Back	1cm	661	1880	23.35	24.50	1.303	-0.08	0.249	0.324
	GSM1900	GPRS (4 Tx slots)	Left Side	1cm	661	1880	23.35	24.50	1.303	-0.04	0.084	0.109
	GSM1900	GPRS (4 Tx slots)	Right Side	1cm	661	1880	23.35	24.50	1.303	-0.01	0.029	0.038
18	GSM1900	GPRS (4 Tx slots)	Bottom Side	1cm	661	1880	23.35	24.50	1.303	-0.04	0.393	**0.512**

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA V	RMC12.2Kbps	Front	1cm	4132	826.4	23.50	24.00	1.122	-0.01	0.663	0.744
19	WCDMA V	RMC12.2Kbps	Back	1cm	4132	826.4	23.50	24.00	1.122	-0.01	0.682	**0.765**
	WCDMA V	RMC12.2Kbps	Left Side	1cm	4132	826.4	23.50	24.00	1.122	0.02	0.568	0.637
	WCDMA V	RMC12.2Kbps	Right Side	1cm	4132	826.4	23.50	24.00	1.122	0.01	0.648	0.727
	WCDMA V	RMC12.2Kbps	Bottom Side	1cm	4132	826.4	23.50	24.00	1.122	-0.09	0.091	0.102
	WCDMA IV	RMC12.2Kbps	Front	1cm	1312	1712.4	23.20	24.00	1.202	0.08	0.973	1.170
	WCDMA IV	RMC12.2Kbps	Front	1cm	1413	1732.6	23.07	24.00	1.239	-0.03	1.060	1.313
	WCDMA IV	RMC12.2Kbps	Front	1cm	1513	1752.6	23.03	24.00	1.250	-0.04	1.090	1.363
	WCDMA IV	RMC12.2Kbps	Back	1cm	1312	1712.4	23.20	24.00	1.202	-0.04	0.814	0.979
	WCDMA IV	RMC12.2Kbps	Back	1cm	1413	1732.6	23.07	24.00	1.239	0.02	1.110	1.375
20	WCDMA IV	RMC12.2Kbps	Back	1cm	1513	1752.6	23.03	24.00	1.250	-0.04	1.120	**1.400**
	WCDMA IV	RMC12.2Kbps	Left Side	1cm	1312	1712.4	23.20	24.00	1.202	-0.04	0.342	0.411
	WCDMA IV	RMC12.2Kbps	Right Side	1cm	1312	1712.4	23.20	24.00	1.202	-0.07	0.092	0.111
	WCDMA IV	RMC12.2Kbps	Bottom Side	1cm	1312	1712.4	23.20	24.00	1.202	-0.04	0.600	0.721
	WCDMA II	RMC12.2Kbps	Front	1cm	9400	1880	23.30	24.00	1.175	-0.03	0.979	1.150
	WCDMA II	RMC12.2Kbps	Front	1cm	9262	1852.4	23.22	24.00	1.197	-0.13	0.982	1.175
	WCDMA II	RMC12.2Kbps	Front	1cm	9538	1907.6	23.28	24.00	1.180	-0.1	1.010	1.192
	WCDMA II	RMC12.2Kbps	Back	1cm	9400	1880	23.30	24.00	1.175	-0.04	0.895	1.052
	WCDMA II	RMC12.2Kbps	Back	1cm	9262	1852.4	23.22	24.00	1.197	-0.06	0.870	1.041
	WCDMA II	RMC12.2Kbps	Back	1cm	9538	1907.6	23.28	24.00	1.180	-0.06	0.919	1.085
	WCDMA II	RMC12.2Kbps	Left Side	1cm	9400	1880	23.30	24.00	1.175	0.04	0.339	0.398
	WCDMA II	RMC12.2Kbps	Right Side	1cm	9400	1880	23.30	24.00	1.175	-0.08	0.117	0.137
	WCDMA II	RMC12.2Kbps	Bottom Side	1cm	9400	1880	23.30	24.00	1.175	-0.18	1.110	1.304
	WCDMA II	RMC12.2Kbps	Bottom Side	1cm	9262	1852.4	23.22	24.00	1.197	-0.1	1.060	1.269
21	WCDMA II	RMC12.2Kbps	Bottom Side	1cm	9538	1907.6	23.28	24.00	1.180	-0.11	1.150	**1.357**

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	CDMA BC10	RTAP 153.6 Kbps	Front	1cm	684	823.1	24.35	25.00	1.161	0.03	0.773	0.898
	CDMA BC10	RTAP 153.6 Kbps	Front	1cm	476	817.9	24.32	25.00	1.169	0	0.730	0.854
	CDMA BC10	RTAP 153.6 Kbps	Front	1cm	580	820.5	24.28	25.00	1.180	-0.06	0.786	0.928
	CDMA BC10	RTAP 153.6 Kbps	Back	1cm	684	823.1	24.35	25.00	1.161	0.06	0.872	1.013
	CDMA BC10	RTAP 153.6 Kbps	Back	1cm	476	817.9	24.32	25.00	1.169	-0.02	0.811	0.948
22	CDMA BC10	RTAP 153.6 Kbps	Back	1cm	580	820.5	24.28	25.00	1.180	-0.03	0.876	**1.034**
	CDMA BC10	RTAP 153.6 Kbps	Left Side	1cm	684	823.1	24.35	25.00	1.161	0.02	0.459	0.533
	CDMA BC10	RTAP 153.6 Kbps	Right Side	1cm	684	823.1	24.35	25.00	1.161	-0.01	0.453	0.526
	CDMA BC10	RTAP 153.6 Kbps	Bottom Side	1cm	684	823.1	24.35	25.00	1.161	-0.06	0.120	0.139
	CDMA BC0	RTAP 153.6 Kbps	Front	1cm	1013	824.7	24.31	25.00	1.172	0.04	0.617	0.723
23	CDMA BC0	RTAP 153.6 Kbps	Back	1cm	1013	824.7	24.31	25.00	1.172	-0.01	0.677	**0.794**
	CDMA BC0	RTAP 153.6 Kbps	Left Side	1cm	1013	824.7	24.31	25.00	1.172	0.03	0.602	0.706
	CDMA BC0	RTAP 153.6 Kbps	Right Side	1cm	1013	824.7	24.31	25.00	1.172	-0.08	0.433	0.508
	CDMA BC0	RTAP 153.6 Kbps	Bottom Side	1cm	1013	824.7	24.31	25.00	1.172	-0.08	0.093	0.109
	CDMA BC1	RTAP 153.6 Kbps	Front	1cm	1175	1908.75	24.31	25.00	1.172	-0.06	0.970	1.137
	CDMA BC1	RTAP 153.6 Kbps	Front	1cm	25	1851.25	24.24	25.00	1.191	-0.11	0.766	0.912
	CDMA BC1	RTAP 153.6 Kbps	Front	1cm	600	1880	24.25	25.00	1.189	-0.13	0.835	0.992
	CDMA BC1	RTAP 153.6 Kbps	Back	1cm	1175	1908.75	24.31	25.00	1.172	-0.07	0.876	1.027
	CDMA BC1	RTAP 153.6 Kbps	Back	1cm	25	1851.25	24.24	25.00	1.191	-0.13	0.612	0.729
	CDMA BC1	RTAP 153.6 Kbps	Back	1cm	600	1880	24.25	25.00	1.189	0.13	0.658	0.782
	CDMA BC1	RTAP 153.6 Kbps	Left Side	1cm	1175	1908.75	24.31	25.00	1.172	-0.03	0.339	0.397
	CDMA BC1	RTAP 153.6 Kbps	Right Side	1cm	1175	1908.75	24.31	25.00	1.172	-0.1	0.104	0.122
24	CDMA BC1	RTAP 153.6 Kbps	Bottom Side	1cm	1175	1908.75	24.31	25.00	1.172	-0.1	1.100	**1.289**
	CDMA BC1	RTAP 153.6 Kbps	Bottom Side	1cm	25	1851.25	24.24	25.00	1.191	0.04	0.882	1.051
	CDMA BC1	RTAP 153.6 Kbps	Bottom Side	1cm	600	1880	24.25	25.00	1.189	0.04	0.934	1.110

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 12	10M	QPSK	1RB	0offest	Front	1cm	23060	704	23.63	24.00	1.089	0.1	0.423	0.461
	LTE Band 12	10M	QPSK	25RB	0offest	Front	1cm	23060	704	22.44	23.00	1.138	0.05	0.193	0.220
25	LTE Band 12	10M	QPSK	1RB	0offest	Back	1cm	23060	704	23.63	24.00	1.089	-0.01	0.474	**0.516**
	LTE Band 12	10M	QPSK	25RB	0offest	Back	1cm	23060	704	22.44	23.00	1.138	0.07	0.269	0.306
	LTE Band 12	10M	QPSK	1RB	0offest	Left Side	1cm	23060	704	23.63	24.00	1.089	-0.12	0.112	0.122
	LTE Band 12	10M	QPSK	25RB	0offest	Left Side	1cm	23060	704	22.44	23.00	1.138	0	0.066	0.075
	LTE Band 12	10M	QPSK	1RB	0offest	Right Side	1cm	23060	704	23.63	24.00	1.089	-0.09	0.440	0.479
	LTE Band 12	10M	QPSK	25RB	0offest	Right Side	1cm	23060	704	22.44	23.00	1.138	0.01	0.303	0.345
	LTE Band 12	10M	QPSK	1RB	0offest	Bottom Side	1cm	23060	704	23.63	24.00	1.089	-0.02	0.181	0.197
	LTE Band 12	10M	QPSK	25RB	0offest	Bottom Side	1cm	23060	704	22.44	23.00	1.138	-0.04	0.094	0.107
	LTE Band 17	10M	QPSK	1RB	0offest	Front	1cm	23780	709	23.40	24.00	1.148	-0.19	0.473	0.543
	LTE Band 17	10M	QPSK	25RB	0offest	Front	1cm	23780	709	22.16	23.00	1.213	0.1	0.251	0.305
26	LTE Band 17	10M	QPSK	1RB	0offest	Back	1cm	23780	709	23.40	24.00	1.148	-0.09	0.520	**0.597**
	LTE Band 17	10M	QPSK	25RB	0offest	Back	1cm	23780	709	22.16	23.00	1.213	-0.12	0.318	0.386
	LTE Band 17	10M	QPSK	1RB	0offest	Left Side	1cm	23780	709	23.40	24.00	1.148	-0.01	0.109	0.125
	LTE Band 17	10M	QPSK	25RB	0offest	Left Side	1cm	23780	709	22.16	23.00	1.213	-0.08	0.065	0.079
	LTE Band 17	10M	QPSK	1RB	0offest	Right Side	1cm	23780	709	23.40	24.00	1.148	0.07	0.519	0.596
	LTE Band 17	10M	QPSK	25RB	0offest	Right Side	1cm	23780	709	22.16	23.00	1.213	-0.07	0.322	0.391
	LTE Band 17	10M	QPSK	1RB	0offest	Bottom Side	1cm	23780	709	23.40	24.00	1.148	-0.14	0.214	0.246
	LTE Band 17	10M	QPSK	25RB	0offest	Bottom Side	1cm	23780	709	22.16	23.00	1.213	-0.01	0.106	0.129

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 26	15M	QPSK	1RB	0offest	Front	1cm	26765	821.5	23.60	24.00	1.096	-0.04	0.480	0.526
	LTE Band 26	15M	QPSK	36RB	0offest	Front	1cm	26765	821.5	22.43	23.00	1.140	-0.12	0.344	0.392
27	LTE Band 26	15M	QPSK	1RB	0offest	Back	1cm	26765	821.5	23.60	24.00	1.096	-0.05	0.521	**0.571**
	LTE Band 26	15M	QPSK	36RB	0offest	Back	1cm	26765	821.5	22.43	23.00	1.140	-0.08	0.394	0.449
	LTE Band 26	15M	QPSK	1RB	0offest	Left Side	1cm	26765	821.5	23.60	24.00	1.096	-0.06	0.432	0.474
	LTE Band 26	15M	QPSK	36RB	0offest	Left Side	1cm	26765	821.5	22.43	23.00	1.140	0.06	0.268	0.306
	LTE Band 26	15M	QPSK	1RB	0offest	Right Side	1cm	26765	821.5	23.60	24.00	1.096	-0.14	0.279	0.306
	LTE Band 26	15M	QPSK	36RB	0offest	Right Side	1cm	26765	821.5	22.43	23.00	1.140	0.18	0.216	0.246
	LTE Band 26	15M	QPSK	1RB	0offest	Bottom Side	1cm	26765	821.5	23.60	24.00	1.096	0.07	0.068	0.075
	LTE Band 26	15M	QPSK	36RB	0offest	Bottom Side	1cm	26765	821.5	22.43	23.00	1.140	-0.05	0.054	0.062
28	LTE Band 5	10M	QPSK	1RB	0offest	Front	1cm	20600	844	23.68	24.00	1.076	0.01	0.802	**0.863**
	LTE Band 5	10M	QPSK	1RB	0offest	Front	1cm	20450	829	23.40	24.00	1.148	-0.02	0.640	0.735
	LTE Band 5	10M	QPSK	1RB	0offest	Front	1cm	20525	836.5	23.44	24.00	1.138	-0.09	0.730	0.830
	LTE Band 5	10M	QPSK	25RB	0offest	Front	1cm	20600	844	22.40	23.00	1.148	-0.03	0.497	0.571
	LTE Band 5	10M	QPSK	50RB	0offest	Front	1cm	20600	844	22.39	23.00	1.151	-0.03	0.502	0.578
	LTE Band 5	10M	QPSK	1RB	0offest	Back	1cm	20600	844	23.68	24.00	1.076	-0.13	0.781	0.841
	LTE Band 5	10M	QPSK	1RB	0offest	Back	1cm	20450	829	23.40	24.00	1.148	-0.12	0.609	0.699
	LTE Band 5	10M	QPSK	1RB	0offest	Back	1cm	20525	836.5	23.44	24.00	1.138	-0.02	0.725	0.825
	LTE Band 5	10M	QPSK	25RB	0offest	Back	1cm	20600	844	22.40	23.00	1.148	-0.04	0.499	0.573
	LTE Band 5	10M	QPSK	50RB	0offest	Back	1cm	20600	844	22.39	23.00	1.151	0.04	0.507	0.583
	LTE Band 5	10M	QPSK	1RB	0offest	Left Side	1cm	20600	844	23.68	24.00	1.076	0.06	0.752	0.810
	LTE Band 5	10M	QPSK	1RB	0offest	Left Side	1cm	20450	829	23.40	24.00	1.148	0.08	0.632	0.726
	LTE Band 5	10M	QPSK	1RB	0offest	Left Side	1cm	20525	836.5	23.44	24.00	1.138	0.03	0.741	0.843
	LTE Band 5	10M	QPSK	25RB	0offest	Left Side	1cm	20600	844	22.40	23.00	1.148	0	0.496	0.569
	LTE Band 5	10M	QPSK	50RB	0offest	Left Side	1cm	20600	844	22.39	23.00	1.151	0.07	0.496	0.571
	LTE Band 5	10M	QPSK	1RB	0offest	Right Side	1cm	20600	844	23.68	24.00	1.076	0.07	0.551	0.593
	LTE Band 5	10M	QPSK	25RB	0offest	Right Side	1cm	20600	844	22.40	23.00	1.148	-0.01	0.365	0.419
	LTE Band 5	10M	QPSK	1RB	0offest	Bottom Side	1cm	20600	844	23.68	24.00	1.076	-0.04	0.116	0.125
	LTE Band 5	10M	QPSK	25RB	0offest	Bottom Side	1cm	20600	844	22.40	23.00	1.148	0.01	0.075	0.086
	LTE Band 4	20M	QPSK	1RB	0offest	Front	1cm	20050	1720	23.69	24.00	1.074	0	1.110	1.192
	LTE Band 4	20M	QPSK	1RB	0offest	Front	1cm	20175	1732.5	23.55	24.00	1.109	0.01	1.040	1.154
29	LTE Band 4	20M	QPSK	1RB	0offest	Front	1cm	20300	1745	23.59	24.00	1.099	0.01	1.090	**1.198**
	LTE Band 4	20M	QPSK	50RB	0offest	Front	1cm	20050	1720	22.31	23.00	1.172	0.11	0.618	0.724
	LTE Band 4	20M	QPSK	100RB	0offest	Front	1cm	20050	1720	22.10	23.00	1.230	-0.01	0.639	0.786
	LTE Band 4	20M	QPSK	1RB	0offest	Back	1cm	20050	1720	23.69	24.00	1.074	0.02	0.768	0.825
	LTE Band 4	20M	QPSK	1RB	0offest	Back	1cm	20175	1732.5	23.55	24.00	1.109	0.02	0.840	0.932
	LTE Band 4	20M	QPSK	1RB	0offest	Back	1cm	20300	1745	23.59	24.00	1.099	-0.17	0.870	0.956
	LTE Band 4	20M	QPSK	50RB	0offest	Back	1cm	20050	1720	22.31	23.00	1.172	-0.01	0.538	0.631
	LTE Band 4	20M	QPSK	100RB	0offest	Back	1cm	20050	1720	22.10	23.00	1.230	-0.02	0.538	0.662
	LTE Band 4	20M	QPSK	1RB	0offest	Left Side	1cm	20050	1720	23.69	24.00	1.074	0.06	0.378	0.406
	LTE Band 4	20M	QPSK	50RB	0offest	Left Side	1cm	20050	1720	22.31	23.00	1.172	-0.05	0.262	0.307
	LTE Band 4	20M	QPSK	1RB	0offest	Right Side	1cm	20050	1720	23.69	24.00	1.074	0.13	0.078	0.084
	LTE Band 4	20M	QPSK	50RB	0offest	Right Side	1cm	20050	1720	22.31	23.00	1.172	-0.04	0.051	0.060
	LTE Band 4	20M	QPSK	1RB	0offest	Bottom Side	1cm	20050	1720	23.69	24.00	1.074	0.04	0.586	0.629
	LTE Band 4	20M	QPSK	50RB	0offest	Bottom Side	1cm	20050	1720	22.31	23.00	1.172	0.04	0.421	0.493

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 25	20M	QPSK	1RB	0offest	Front	1cm	26140	1860	23.30	24.00	1.175	0.04	1.010	1.187
	LTE Band 25	20M	QPSK	1RB	0offest	Front	1cm	26340	1880	23.18	24.00	1.208	-0.12	0.987	1.192
	LTE Band 25	20M	QPSK	1RB	0offest	Front	1cm	26590	1905	23.23	24.00	1.194	-0.03	1.000	1.194
	LTE Band 25	20M	QPSK	50RB	0offest	Front	1cm	26140	1860	22.12	23.00	1.225	-0.02	0.631	0.773
	LTE Band 25	20M	QPSK	100RB	0offest	Front	1cm	26140	1860	22.05	23.00	1.245	-0.02	0.608	0.757
	LTE Band 25	20M	QPSK	1RB	0offest	Back	1cm	26140	1860	23.30	24.00	1.175	-0.02	0.988	1.161
	LTE Band 25	20M	QPSK	1RB	0offest	Back	1cm	26340	1880	23.18	24.00	1.208	-0.04	0.938	1.133
	LTE Band 25	20M	QPSK	1RB	0offest	Back	1cm	26590	1905	23.23	24.00	1.194	0.04	0.982	1.172
	LTE Band 25	20M	QPSK	50RB	0offest	Back	1cm	26140	1860	22.12	23.00	1.225	-0.04	0.595	0.729
	LTE Band 25	20M	QPSK	100RB	0offest	Back	1cm	26140	1860	22.05	23.00	1.245	-0.03	0.574	0.714
	LTE Band 25	20M	QPSK	1RB	0offest	Left Side	1cm	26140	1860	23.30	24.00	1.175	0.02	0.439	0.516
	LTE Band 25	20M	QPSK	50RB	0offest	Left Side	1cm	26140	1860	22.12	23.00	1.225	-0.01	0.267	0.327
	LTE Band 25	20M	QPSK	1RB	0offest	Right Side	1cm	26140	1860	23.30	24.00	1.175	-0.06	0.115	0.135
	LTE Band 25	20M	QPSK	50RB	0offest	Right Side	1cm	26140	1860	22.12	23.00	1.225	-0.05	0.070	0.086
	LTE Band 25	20M	QPSK	1RB	0offest	Bottom Side	1cm	26140	1860	23.30	24.00	1.175	0.07	1.170	1.375
30	LTE Band 25	20M	QPSK	1RB	0offest	Bottom Side	1cm	26340	1880	23.18	24.00	1.208	-0.05	1.180	**1.425**
	LTE Band 25	20M	QPSK	1RB	0offest	Bottom Side	1cm	26590	1905	23.23	24.00	1.194	0.02	1.130	1.349
	LTE Band 25	20M	QPSK	50RB	0offest	Bottom Side	1cm	26140	1860	22.12	23.00	1.225	0.01	0.715	0.876
	LTE Band 25	20M	QPSK	50RB	0offest	Bottom Side	1cm	26340	1880	22.05	23.00	1.245	0.03	0.701	0.872
	LTE Band 25	20M	QPSK	50RB	0offest	Bottom Side	1cm	26590	1905	22.03	23.00	1.250	0.12	0.696	0.870
	LTE Band 25	20M	QPSK	100RB	0offest	Bottom Side	1cm	26140	1860	22.05	23.00	1.245	0.1	0.712	0.886
	LTE Band 2	20M	QPSK	1RB	0offest	Front	1cm	18900	1880	23.12	24.00	1.225	0.08	0.962	1.178
	LTE Band 2	20M	QPSK	1RB	0offest	Front	1cm	18700	1860	22.85	24.00	1.303	0.06	0.914	1.191
	LTE Band 2	20M	QPSK	1RB	0offest	Front	1cm	19100	1900	23.05	24.00	1.245	-0.08	0.960	1.195
	LTE Band 2	20M	QPSK	50RB	0offest	Front	1cm	18900	1880	22.06	23.00	1.242	-0.11	0.553	0.687
	LTE Band 2	20M	QPSK	100RB	0offest	Front	1cm	18900	1880	21.95	23.00	1.274	-0.09	0.542	0.690
	LTE Band 2	20M	QPSK	1RB	0offest	Back	1cm	18900	1880	23.12	24.00	1.225	-0.1	0.719	0.880
	LTE Band 2	20M	QPSK	1RB	0offest	Back	1cm	18700	1860	22.85	24.00	1.303	-0.01	0.715	0.932
	LTE Band 2	20M	QPSK	1RB	0offest	Back	1cm	19100	1900	23.05	24.00	1.245	0.08	0.782	0.973
	LTE Band 2	20M	QPSK	50RB	0offest	Back	1cm	18900	1880	22.06	23.00	1.242	-0.15	0.451	0.560
	LTE Band 2	20M	QPSK	100RB	0offest	Back	1cm	18900	1880	21.95	23.00	1.274	-0.02	0.446	0.568
	LTE Band 2	20M	QPSK	1RB	0offest	Left Side	1cm	18900	1880	23.12	24.00	1.225	-0.12	0.359	0.440
	LTE Band 2	20M	QPSK	50RB	0offest	Left Side	1cm	18900	1880	22.06	23.00	1.242	-0.04	0.226	0.281
	LTE Band 2	20M	QPSK	1RB	0offest	Right Side	1cm	18900	1880	23.12	24.00	1.225	-0.13	0.123	0.151
	LTE Band 2	20M	QPSK	50RB	0offest	Right Side	1cm	18900	1880	22.06	23.00	1.242	-0.04	0.076	0.094
	LTE Band 2	20M	QPSK	1RB	0offest	Bottom Side	1cm	18900	1880	23.12	24.00	1.225	-0.17	0.990	1.212
	LTE Band 2	20M	QPSK	1RB	0offest	Bottom Side	1cm	18700	1860	22.85	24.00	1.303	-0.15	0.991	1.291
31	LTE Band 2	20M	QPSK	1RB	0offest	Bottom Side	1cm	19100	1900	23.05	24.00	1.245	-0.16	1.050	**1.307**
	LTE Band 2	20M	QPSK	50RB	0offest	Bottom Side	1cm	18900	1880	22.06	23.00	1.242	-0.06	0.622	0.772
	LTE Band 2	20M	QPSK	100RB	0offest	Bottom Side	1cm	18900	1880	21.95	23.00	1.274	-0.01	0.599	0.763

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20M	QPSK	1RB	0offest	Front	1cm	40185	2549.5	23.98	24.00	1.005	62.9	1.006	-0.15	0.851	0.860
	LTE Band 41	20M	QPSK	1RB	0offest	Front	1cm	39750	2506	23.92	24.00	1.019	62.9	1.006	-0.03	0.796	0.816
	LTE Band 41	20M	QPSK	1RB	0offest	Front	1cm	40620	2593	22.95	24.00	1.274	62.9	1.006	-0.09	0.633	0.811
	LTE Band 41	20M	QPSK	1RB	0offest	Front	1cm	41490	2680	23.63	24.00	1.089	62.9	1.006	0.08	0.662	0.725
	LTE Band 41	20M	QPSK	1RB	0offest	Front	1cm	41055	2636.5	23.35	24.00	1.161	62.9	1.006	-0.07	0.623	0.728
	LTE Band 41	20M	QPSK	50RB	0offest	Front	1cm	40185	2549.5	22.86	23.00	1.033	62.9	1.006	-0.18	0.744	0.773
	LTE Band 41	20M	QPSK	50RB	0offest	Front	1cm	39750	2506	22.85	23.00	1.035	62.9	1.006	-0.02	0.709	0.738
	LTE Band 41	20M	QPSK	50RB	0offest	Front	1cm	40620	2593	21.94	23.00	1.276	62.9	1.006	0.08	0.547	0.702
	LTE Band 41	20M	QPSK	50RB	0offest	Front	1cm	41490	2680	22.53	23.00	1.114	62.9	1.006	0.04	0.659	0.739
	LTE Band 41	20M	QPSK	50RB	0offest	Front	1cm	41055	2636.5	22.15	23.00	1.216	62.9	1.006	-0.08	0.574	0.702
	LTE Band 41	20M	QPSK	100RB	0offest	Front	1cm	40185	2549.5	22.91	23.00	1.021	62.9	1.006	-0.04	0.745	0.765
	LTE Band 41	20M	QPSK	1RB	0offest	Back	1cm	40185	2549.5	23.98	24.00	1.005	62.9	1.006	-0.06	0.876	0.885
	LTE Band 41	20M	QPSK	1RB	0offest	Back	1cm	39750	2506	23.92	24.00	1.019	62.9	1.006	0.09	0.768	0.787
32	LTE Band 41	20M	QPSK	1RB	0offest	Back	1cm	40620	2593	22.95	24.00	1.274	62.9	1.006	-0.04	0.713	**0.913**
	LTE Band 41	20M	QPSK	1RB	0offest	Back	1cm	41490	2680	23.63	24.00	1.089	62.9	1.006	0.03	0.746	0.817
	LTE Band 41	20M	QPSK	1RB	0offest	Back	1cm	41055	2636.5	23.35	24.00	1.161	62.9	1.006	0.08	0.723	0.845
	LTE Band 41	20M	QPSK	50RB	0offest	Back	1cm	40185	2549.5	22.86	23.00	1.033	62.9	1.006	-0.09	0.737	0.766
	LTE Band 41	20M	QPSK	50RB	0offest	Back	1cm	39750	2506	22.85	23.00	1.035	62.9	1.006	-0.03	0.681	0.709
	LTE Band 41	20M	QPSK	50RB	0offest	Back	1cm	40620	2593	21.94	23.00	1.276	62.9	1.006	0	0.624	0.801
	LTE Band 41	20M	QPSK	50RB	0offest	Back	1cm	41490	2680	22.53	23.00	1.114	62.9	1.006	-0.01	0.638	0.715
	LTE Band 41	20M	QPSK	50RB	0offest	Back	1cm	41055	2636.5	22.15	23.00	1.216	62.9	1.006	-0.03	0.622	0.761
	LTE Band 41	20M	QPSK	100RB	0offest	Back	1cm	40185	2549.5	22.91	23.00	1.021	62.9	1.006	-0.11	0.701	0.720
	LTE Band 41	20M	QPSK	1RB	0offest	Left Side	1cm	40185	2549.5	23.98	24.00	1.005	62.9	1.006	-0.07	0.131	0.132
	LTE Band 41	20M	QPSK	50RB	0offest	Left Side	1cm	40185	2549.5	22.86	23.00	1.033	62.9	1.006	-0.08	0.141	0.146
	LTE Band 41	20M	QPSK	1RB	0offest	Right Side	1cm	40185	2549.5	23.98	24.00	1.005	62.9	1.006	-0.07	0.883	0.892
	LTE Band 41	20M	QPSK	1RB	0offest	Right Side	1cm	39750	2506	23.92	24.00	1.019	62.9	1.006	0.16	0.679	0.696
	LTE Band 41	20M	QPSK	1RB	0offest	Right Side	1cm	40620	2593	22.95	24.00	1.274	62.9	1.006	-0.07	0.709	0.908
	LTE Band 41	20M	QPSK	1RB	0offest	Right Side	1cm	41490	2680	23.63	24.00	1.089	62.9	1.006	-0.18	0.668	0.732
	LTE Band 41	20M	QPSK	1RB	0offest	Right Side	1cm	41055	2636.5	23.35	24.00	1.161	62.9	1.006	0.08	0.629	0.735
	LTE Band 41	20M	QPSK	50RB	0offest	Right Side	1cm	40185	2549.5	22.86	23.00	1.033	62.9	1.006	-0.05	0.735	0.764
	LTE Band 41	20M	QPSK	50RB	0offest	Right Side	1cm	39750	2506	22.85	23.00	1.035	62.9	1.006	-0.02	0.681	0.709
	LTE Band 41	20M	QPSK	50RB	0offest	Right Side	1cm	40620	2593	21.94	23.00	1.276	62.9	1.006	-0.01	0.629	0.808
	LTE Band 41	20M	QPSK	50RB	0offest	Right Side	1cm	41490	2680	22.53	23.00	1.114	62.9	1.006	-0.07	0.636	0.713
	LTE Band 41	20M	QPSK	50RB	0offest	Right Side	1cm	41055	2636.5	22.15	23.00	1.216	62.9	1.006	-0.06	0.623	0.762
	LTE Band 41	20M	QPSK	100RB	0offest	Right Side	1cm	40185	2549.5	22.91	23.00	1.021	62.9	1.006	0.06	0.762	0.783
	LTE Band 41	20M	QPSK	1RB	0offest	Bottom Side	1cm	40185	2549.5	23.98	24.00	1.005	62.9	1.006	-0.09	0.802	0.811
	LTE Band 41	20M	QPSK	1RB	0offest	Bottom Side	1cm	39750	2506	23.92	24.00	1.019	62.9	1.006	-0.02	0.623	0.638
	LTE Band 41	20M	QPSK	1RB	0offest	Bottom Side	1cm	40620	2593	22.95	24.00	1.274	62.9	1.006	-0.02	0.618	0.792
	LTE Band 41	20M	QPSK	1RB	0offest	Bottom Side	1cm	41490	2680	23.63	24.00	1.089	62.9	1.006	-0.05	0.589	0.645
	LTE Band 41	20M	QPSK	1RB	0offest	Bottom Side	1cm	41055	2636.5	23.35	24.00	1.161	62.9	1.006	-0.04	0.574	0.671
	LTE Band 41	20M	QPSK	50RB	0offest	Bottom Side	1cm	40185	2549.5	22.86	23.00	1.033	62.9	1.006	-0.03	0.756	0.785
	LTE Band 41	20M	QPSK	50RB	0offest	Bottom Side	1cm	39750	2506	22.85	23.00	1.035	62.9	1.006	-0.02	0.603	0.628
	LTE Band 41	20M	QPSK	50RB	0offest	Bottom Side	1cm	40620	2593	21.94	23.00	1.276	62.9	1.006	-0.02	0.458	0.588
	LTE Band 41	20M	QPSK	50RB	0offest	Bottom Side	1cm	41490	2680	22.53	23.00	1.114	62.9	1.006	-0.06	0.502	0.563
	LTE Band 41	20M	QPSK	50RB	0offest	Bottom Side	1cm	41055	2636.5	22.15	23.00	1.216	62.9	1.006	-0.03	0.172	0.210
	LTE Band 41	20M	QPSK	100RB	0offest	Bottom Side	1cm	40185	2549.5	22.91	23.00	1.021	62.9	1.006	0.1	0.731	0.751

14.3 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
33	GSM850	GPRS (4 Tx slots)	Front	1cm	251	848.8	26.55	27.50	1.245	-0.01	0.497	**0.619**
	GSM850	GPRS (4 Tx slots)	Back	1cm	251	848.8	26.55	27.50	1.245	-0.07	0.495	0.616
34	GSM1900	GPRS (4 Tx slots)	Front	1cm	661	1880	23.35	24.50	1.303	-0.1	0.317	**0.413**
	GSM1900	GPRS (4 Tx slots)	Back	1cm	661	1880	23.35	24.50	1.303	-0.08	0.249	0.324

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Headset.	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA V	RMC12.2Kbps	Front	1cm		4132	826.4	23.50	24.00	1.122	-0.01	0.663	0.744
35	WCDMA V	RMC12.2Kbps	Back	1cm		4132	826.4	23.50	24.00	1.122	-0.01	0.682	**0.765**
	WCDMA IV	RMC12.2Kbps	Front	1cm		1312	1712.4	23.20	24.00	1.202	0.08	0.973	1.170
	WCDMA IV	RMC12.2Kbps	Front	1cm		1413	1732.6	23.07	24.00	1.239	-0.03	1.060	1.313
	WCDMA IV	RMC12.2Kbps	Front	1cm		1513	1752.6	23.03	24.00	1.250	-0.04	1.090	1.363
	WCDMA IV	RMC12.2Kbps	Front	1cm	Headset	1312	1712.4	23.20	24.00	1.202	0.14	1.010	1.214
	WCDMA IV	RMC12.2Kbps	Front	1cm	Headset	1413	1732.6	23.07	24.00	1.239	0.1	1.100	1.363
36	WCDMA IV	RMC12.2Kbps	Front	1cm	Headset	1513	1752.6	23.03	24.00	1.250	0.07	1.120	**1.400**
	WCDMA IV	RMC12.2Kbps	Back	1cm		1312	1712.4	23.20	24.00	1.202	-0.04	0.814	0.979
	WCDMA IV	RMC12.2Kbps	Back	1cm		1413	1732.6	23.07	24.00	1.239	0.02	1.110	1.375
	WCDMA IV	RMC12.2Kbps	Back	1cm		1513	1752.6	23.03	24.00	1.250	-0.04	1.120	1.400
	WCDMA IV	RMC12.2Kbps	Back	1cm	Headset	1312	1712.4	23.20	24.00	1.202	0.07	0.905	1.088
	WCDMA IV	RMC12.2Kbps	Back	1cm	Headset	1413	1732.6	23.07	24.00	1.239	-0.01	0.860	1.065
	WCDMA IV	RMC12.2Kbps	Back	1cm	Headset	1513	1752.6	23.03	24.00	1.250	-0.04	0.907	1.134
	WCDMA II	RMC12.2Kbps	Front	1cm		9400	1880	23.30	24.00	1.175	-0.03	0.979	1.150
	WCDMA II	RMC12.2Kbps	Front	1cm		9262	1852.4	23.22	24.00	1.197	-0.13	0.982	1.175
37	WCDMA II	RMC12.2Kbps	Front	1cm		9538	1907.6	23.28	24.00	1.180	-0.1	1.010	**1.192**
	WCDMA II	RMC12.2Kbps	Back	1cm		9400	1880	23.30	24.00	1.175	-0.04	0.895	1.052
	WCDMA II	RMC12.2Kbps	Back	1cm		9262	1852.4	23.22	24.00	1.197	-0.06	0.870	1.041
	WCDMA II	RMC12.2Kbps	Back	1cm		9538	1907.6	23.28	24.00	1.180	-0.06	0.919	1.085

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Headset	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	CDMA BC10	1xRTT RC3 SO32	Front	1cm		684	823.1	24.37	25.00	1.156	0.02	0.858	0.992
	CDMA BC10	1xRTT RC3 SO32	Front	1cm		476	817.9	24.28	25.00	1.180	-0.03	0.831	0.981
	CDMA BC10	1xRTT RC3 SO32	Front	1cm		580	820.5	24.19	25.00	1.205	-0.06	0.811	0.977
38	CDMA BC10	1xRTT RC3 SO32	Back	1cm		684	823.1	24.37	25.00	1.156	-0.06	0.901	**1.042**
	CDMA BC10	1xRTT RC3 SO32	Back	1cm		476	817.9	24.28	25.00	1.180	-0.07	0.833	0.983
	CDMA BC10	1xRTT RC3 SO32	Back	1cm		580	820.5	24.19	25.00	1.205	-0.03	0.846	1.019
	CDMA BC0	1xRTT RC3 SO32	Front	1cm		1013	824.7	24.28	25.00	1.180	-0.08	0.889	1.049
	CDMA BC0	1xRTT RC3 SO32	Front	1cm		384	836.52	24.22	25.00	1.197	0.04	1.060	1.269
	CDMA BC0	1xRTT RC3 SO32	Front	1cm		777	848.31	24.24	25.00	1.191	-0.06	1.090	1.298
	CDMA BC0	1xRTT RC3 SO32	Front	1cm	Headset	1013	824.7	24.28	25.00	1.180	0.09	0.797	0.941
	CDMA BC0	1xRTT RC3 SO32	Front	1cm	Headset	384	836.52	24.22	25.00	1.197	-0.1	0.873	1.045
	CDMA BC0	1xRTT RC3 SO32	Front	1cm	Headset	777	848.31	24.24	25.00	1.191	-0.15	0.750	0.893
	CDMA BC0	1xRTT RC3 SO32	Back	1cm		1013	824.7	24.28	25.00	1.180	0.08	0.983	1.160
39	CDMA BC0	1xRTT RC3 SO32	Back	1cm		384	836.52	24.22	25.00	1.197	-0.03	1.150	**1.376**
	CDMA BC0	1xRTT RC3 SO32	Back	1cm		777	848.31	24.24	25.00	1.191	-0.06	1.130	1.346
	CDMA BC0	1xRTT RC3 SO32	Back	1cm	Headset	1013	824.7	24.28	25.00	1.180	-0.02	0.572	0.675
	CDMA BC0	1xRTT RC3 SO32	Back	1cm	Headset	384	836.52	24.22	25.00	1.197	0	0.697	0.834
	CDMA BC0	1xRTT RC3 SO32	Back	1cm	Headset	777	848.31	24.24	25.00	1.191	-0.04	0.816	0.972
	CDMA BC1	1xRTT RC3 SO32	Front	1cm		1175	1908.75	24.31	25.00	1.172	-0.05	0.830	0.973
	CDMA BC1	1xRTT RC3 SO32	Front	1cm		25	1851.25	24.28	25.00	1.180	-0.13	0.721	0.851
	CDMA BC1	1xRTT RC3 SO32	Front	1cm		600	1880	24.16	25.00	1.213	0.02	0.715	0.868
40	CDMA BC1	1xRTT RC3 SO32	Back	1cm		1175	1908.75	24.31	25.00	1.172	-0.05	0.900	**1.055**
	CDMA BC1	1xRTT RC3 SO32	Back	1cm		25	1851.25	24.28	25.00	1.180	-0.07	0.785	0.927
	CDMA BC1	1xRTT RC3 SO32	Back	1cm		600	1880	24.16	25.00	1.213	-0.02	0.777	0.943

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 12	10M	QPSK	1RB	0offest	Front	1cm	23060	704	23.63	24.00	1.089	0.1	0.423	0.461
	LTE Band 12	10M	QPSK	25RB	0offest	Front	1cm	23060	704	22.44	23.00	1.138	0.05	0.193	0.220
41	LTE Band 12	10M	QPSK	1RB	0offest	Back	1cm	23060	704	23.63	24.00	1.089	-0.01	0.474	**0.516**
	LTE Band 12	10M	QPSK	25RB	0offest	Back	1cm	23060	704	22.44	23.00	1.138	0.07	0.269	0.306
	LTE Band 17	10M	QPSK	1RB	0offest	Front	1cm	23780	709	23.40	24.00	1.148	-0.19	0.473	0.543
	LTE Band 17	10M	QPSK	25RB	0offest	Front	1cm	23780	709	22.16	23.00	1.213	0.1	0.251	0.305
42	LTE Band 17	10M	QPSK	1RB	0offest	Back	1cm	23780	709	23.40	24.00	1.148	-0.09	0.520	**0.597**
	LTE Band 17	10M	QPSK	25RB	0offest	Back	1cm	23780	709	22.16	23.00	1.213	-0.12	0.318	0.386
	LTE Band 26	15M	QPSK	1RB	0offest	Front	1cm	26765	821.5	23.60	24.00	1.096	-0.04	0.480	0.526
	LTE Band 26	15M	QPSK	36RB	0offest	Front	1cm	26765	821.5	22.43	23.00	1.140	-0.12	0.344	0.392
43	LTE Band 26	15M	QPSK	1RB	0offest	Back	1cm	26765	821.5	23.60	24.00	1.096	-0.05	0.521	**0.571**
	LTE Band 26	15M	QPSK	36RB	0offest	Back	1cm	26765	821.5	22.43	23.00	1.140	-0.08	0.394	0.449
44	LTE Band 5	10M	QPSK	1RB	0offest	Front	1cm	20600	844	23.68	24.00	1.076	0.01	0.802	**0.863**
	LTE Band 5	10M	QPSK	1RB	0offest	Front	1cm	20450	829	23.40	24.00	1.148	-0.02	0.640	0.735
	LTE Band 5	10M	QPSK	1RB	0offest	Front	1cm	20525	836.5	23.44	24.00	1.138	-0.09	0.730	0.830
	LTE Band 5	10M	QPSK	25RB	0offest	Front	1cm	20600	844	22.40	23.00	1.148	-0.03	0.497	0.571
	LTE Band 5	10M	QPSK	50RB	0offest	Front	1cm	20600	844	22.39	23.00	1.151	-0.03	0.502	0.578
	LTE Band 5	10M	QPSK	1RB	0offest	Back	1cm	20600	844	23.68	24.00	1.076	-0.13	0.781	0.841
	LTE Band 5	10M	QPSK	1RB	0offest	Back	1cm	20450	829	23.40	24.00	1.148	-0.12	0.609	0.699
	LTE Band 5	10M	QPSK	1RB	0offest	Back	1cm	20525	836.5	23.44	24.00	1.138	-0.02	0.725	0.825
	LTE Band 5	10M	QPSK	25RB	0offest	Back	1cm	20600	844	22.40	23.00	1.148	-0.04	0.499	0.573
	LTE Band 5	10M	QPSK	50RB	0offest	Back	1cm	20600	844	22.39	23.00	1.151	0.04	0.507	0.583

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 4	20M	QPSK	1RB	0offest	Front	1cm	20050	1720	23.69	24.00	1.074	0	1.110	1.192
	LTE Band 4	20M	QPSK	1RB	0offest	Front	1cm	20175	1732.5	23.55	24.00	1.109	0.01	1.040	1.154
45	LTE Band 4	20M	QPSK	1RB	0offest	Front	1cm	20300	1745	23.59	24.00	1.099	0.01	1.090	**1.198**
	LTE Band 4	20M	QPSK	50RB	0offest	Front	1cm	20050	1720	22.31	23.00	1.172	0.11	0.618	0.724
	LTE Band 4	20M	QPSK	100RB	0offest	Front	1cm	20050	1720	22.10	23.00	1.230	-0.01	0.639	0.786
	LTE Band 4	20M	QPSK	1RB	0offest	Back	1cm	20050	1720	23.69	24.00	1.074	0.02	0.768	0.825
	LTE Band 4	20M	QPSK	1RB	0offest	Back	1cm	20175	1732.5	23.55	24.00	1.109	0.02	0.840	0.932
	LTE Band 4	20M	QPSK	1RB	0offest	Back	1cm	20300	1745	23.59	24.00	1.099	-0.17	0.870	0.956
	LTE Band 4	20M	QPSK	50RB	0offest	Back	1cm	20050	1720	22.31	23.00	1.172	-0.01	0.538	0.631
	LTE Band 4	20M	QPSK	100RB	0offest	Back	1cm	20050	1720	22.10	23.00	1.230	-0.02	0.538	0.662
	LTE Band 25	20M	QPSK	1RB	0offest	Front	1cm	26140	1860	23.30	24.00	1.175	0.04	1.010	1.187
	LTE Band 25	20M	QPSK	1RB	0offest	Front	1cm	26340	1880	23.18	24.00	1.208	-0.12	0.987	1.192
46	LTE Band 25	20M	QPSK	1RB	0offest	Front	1cm	26590	1905	23.23	24.00	1.194	-0.03	1.000	**1.194**
	LTE Band 25	20M	QPSK	50RB	0offest	Front	1cm	26140	1860	22.12	23.00	1.225	-0.02	0.631	0.773
	LTE Band 25	20M	QPSK	100RB	0offest	Front	1cm	26140	1860	22.05	23.00	1.245	-0.02	0.608	0.757
	LTE Band 25	20M	QPSK	1RB	0offest	Back	1cm	26140	1860	23.30	24.00	1.175	-0.02	0.988	1.161
	LTE Band 25	20M	QPSK	1RB	0offest	Back	1cm	26340	1880	23.18	24.00	1.208	-0.04	0.938	1.133
	LTE Band 25	20M	QPSK	1RB	0offest	Back	1cm	26590	1905	23.23	24.00	1.194	0.04	0.982	1.172
	LTE Band 25	20M	QPSK	50RB	0offest	Back	1cm	26140	1860	22.12	23.00	1.225	-0.04	0.595	0.729
	LTE Band 25	20M	QPSK	100RB	0offest	Back	1cm	26140	1860	22.05	23.00	1.245	-0.03	0.574	0.714
	LTE Band 2	20M	QPSK	1RB	0offest	Front	1cm	18900	1880	23.12	24.00	1.225	0.08	0.962	1.178
	LTE Band 2	20M	QPSK	1RB	0offest	Front	1cm	18700	1860	22.85	24.00	1.303	0.06	0.914	1.191
47	LTE Band 2	20M	QPSK	1RB	0offest	Front	1cm	19100	1900	23.05	24.00	1.245	-0.08	0.960	**1.195**
	LTE Band 2	20M	QPSK	50RB	0offest	Front	1cm	18900	1880	22.06	23.00	1.242	-0.11	0.553	0.687
	LTE Band 2	20M	QPSK	100RB	0offest	Front	1cm	18900	1880	21.95	23.00	1.274	-0.09	0.542	0.690
	LTE Band 2	20M	QPSK	1RB	0offest	Back	1cm	18900	1880	23.12	24.00	1.225	-0.1	0.719	0.880
	LTE Band 2	20M	QPSK	1RB	0offest	Back	1cm	18700	1860	22.85	24.00	1.303	-0.01	0.715	0.932
	LTE Band 2	20M	QPSK	1RB	0offest	Back	1cm	19100	1900	23.05	24.00	1.245	0.08	0.782	0.973
	LTE Band 2	20M	QPSK	50RB	0offest	Back	1cm	18900	1880	22.06	23.00	1.242	-0.15	0.451	0.560
	LTE Band 2	20M	QPSK	100RB	0offest	Back	1cm	18900	1880	21.95	23.00	1.274	-0.02	0.446	0.568

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20M	QPSK	1RB	0offest	Front	1cm	40185	2549.5	23.98	24.00	1.005	62.9	1.006	-0.15	0.851	0.860
	LTE Band 41	20M	QPSK	1RB	0offest	Front	1cm	39750	2506	23.92	24.00	1.019	62.9	1.006	-0.03	0.796	0.816
	LTE Band 41	20M	QPSK	1RB	0offest	Front	1cm	40620	2593	22.95	24.00	1.274	62.9	1.006	-0.09	0.633	0.811
	LTE Band 41	20M	QPSK	1RB	0offest	Front	1cm	41490	2680	23.63	24.00	1.089	62.9	1.006	0.08	0.662	0.725
	LTE Band 41	20M	QPSK	1RB	0offest	Front	1cm	41055	2636.5	23.35	24.00	1.161	62.9	1.006	-0.07	0.623	0.728
	LTE Band 41	20M	QPSK	50RB	0offest	Front	1cm	40185	2549.5	22.86	23.00	1.033	62.9	1.006	-0.18	0.744	0.773
	LTE Band 41	20M	QPSK	50RB	0offest	Front	1cm	39750	2506	22.85	23.00	1.035	62.9	1.006	-0.02	0.709	0.738
	LTE Band 41	20M	QPSK	50RB	0offest	Front	1cm	40620	2593	21.94	23.00	1.276	62.9	1.006	0.08	0.547	0.702
	LTE Band 41	20M	QPSK	50RB	0offest	Front	1cm	41490	2680	22.53	23.00	1.114	62.9	1.006	0.04	0.659	0.739
	LTE Band 41	20M	QPSK	50RB	0offest	Front	1cm	41055	2636.5	22.15	23.00	1.216	62.9	1.006	-0.08	0.574	0.702
	LTE Band 41	20M	QPSK	100RB	0offest	Front	1cm	40185	2549.5	22.91	23.00	1.021	62.9	1.006	-0.04	0.745	0.765
	LTE Band 41	20M	QPSK	1RB	0offest	Back	1cm	40185	2549.5	23.98	24.00	1.005	62.9	1.006	-0.06	0.876	0.885
	LTE Band 41	20M	QPSK	1RB	0offest	Back	1cm	39750	2506	23.92	24.00	1.019	62.9	1.006	0.09	0.768	0.787
48	LTE Band 41	20M	QPSK	1RB	0offest	Back	1cm	40620	2593	22.95	24.00	1.274	62.9	1.006	-0.04	0.713	**0.913**
	LTE Band 41	20M	QPSK	1RB	0offest	Back	1cm	41490	2680	23.63	24.00	1.089	62.9	1.006	0.03	0.746	0.817
	LTE Band 41	20M	QPSK	1RB	0offest	Back	1cm	41055	2636.5	23.35	24.00	1.161	62.9	1.006	0.08	0.723	0.845
	LTE Band 41	20M	QPSK	50RB	0offest	Back	1cm	40185	2549.5	22.86	23.00	1.033	62.9	1.006	-0.09	0.737	0.766
	LTE Band 41	20M	QPSK	50RB	0offest	Back	1cm	39750	2506	22.85	23.00	1.035	62.9	1.006	-0.03	0.681	0.709
	LTE Band 41	20M	QPSK	50RB	0offest	Back	1cm	40620	2593	21.94	23.00	1.276	62.9	1.006	0	0.624	0.801
	LTE Band 41	20M	QPSK	50RB	0offest	Back	1cm	41490	2680	22.53	23.00	1.114	62.9	1.006	-0.01	0.638	0.715
	LTE Band 41	20M	QPSK	50RB	0offest	Back	1cm	41055	2636.5	22.15	23.00	1.216	62.9	1.006	-0.03	0.622	0.761
	LTE Band 41	20M	QPSK	100RB	0offest	Back	1cm	40185	2549.5	22.91	23.00	1.021	62.9	1.006	-0.11	0.701	0.720

14.4 Repeated SAR Measurement

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	CDMA BC0	-	-	-	-	1xRTT RC3 SO32	Back	1cm	384	836.52	24.22	25.00	1.197	-	1.000	-0.03	1.150	-	1.376
2nd	CDMA BC0	-	-	-	-	1xRTT RC3 SO32	Back	1cm	384	836.52	24.22	25.00	1.197	-	1.000	0	1.100	1.05	1.316
1st	WCDMA IV	-	-	-	-	RMC12.2Kbps	Back	1cm	1513	1752.6	23.03	24.00	1.250	-	1.000	-0.04	1.120	-	1.400
2nd	WCDMA IV	-	-	-	-	RMC12.2Kbps	Back	1cm	1513	1752.6	23.03	24.00	1.250	-	1.000	-0.06	1.090	1.03	1.363
1st	LTE Band 25	20M	QPSK	1RB	0offest	-	Bottom Side	1cm	26340	1880	23.18	24.00	1.208	-	1.000	-0.05	1.180	-	1.425
2nd	LTE Band 25	20M	QPSK	1RB	0offest	-	Bottom Side	1cm	26340	1880	23.18	24.00	1.208	-	1.000	0.17	1.090	1.08	1.317
1st	LTE Band 41	20M	QPSK	1RB	0offest	-	Right Side	1cm	40185	2549.5	23.98	24.00	1.005	62.9	1.006	-0.07	0.883	-	0.892
2nd	LTE Band 41	20M	QPSK	1RB	0offest	-	Right Side	1cm	40185	2549.5	23.98	24.00	1.005	62.9	1.006	-0.05	0.878	1.01	0.887

General Note:

1. Per KDB 865664 D01v01r03, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg
2. Per KDB 865664 D01v01r03, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.
3. The ratio is the difference in percentage between original and repeated *measured SAR*.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

15. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Portable Handset			Note
		Head	Body-worn	Hotspot	
1.	GSM(Voice) + WLAN2.4GHz(data)	Yes	Yes		
2.	WCDMA(Voice) + WLAN2.4GHz(data)	Yes	Yes		
3.	CDMA(Voice) + WLAN2.4GHz(data)	Yes	Yes		
4.	GSM(Voice) + Bluetooth(data)	Yes	Yes		
5.	WCDMA((Voice) + Bluetooth(data)	Yes	Yes		
6.	CDMA((Voice) + Bluetooth(data)	Yes	Yes		
7.	GPRS/EDGE(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	2.4GHz Hotspot
8.	WCDMA(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	2.4GHz Hotspot
9.	CDMA(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	2.4GHz Hotspot
10.	LTE(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	2.4GHz Hotspot
11.	GPRS/EDGE(Data) + Bluetooth(data)	Yes	Yes	Yes	Bluetooth Tethering
12.	WCDMA(Data) + Bluetooth(data)	Yes	Yes	Yes	Bluetooth Tethering
13.	CDMA(Data) + Bluetooth(data)	Yes	Yes	Yes	Bluetooth Tethering
14.	LTE(Data) + Bluetooth(data)	Yes	Yes	Yes	Bluetooth Tethering

General Note:

1. The 2.4GHz WLAN and Bluetooth conducted power and SAR testing results were referred to Sporton FCC SAR Test Report, Brand Name: Motorola, Model Name: 4060, FCC ID: IHDT56QC4, Report No: FA4N1482-01 or Appendix D and also used perform transmission simultaneous analysis.
2. This device supported VoIP in EGPRS, CDMA, WCDMA, LTE (e.g. 3rd party VoIP).
3. In body-worn exposure condition, the WWAN connection a headset SAR simultaneously transmission was select WLAN without connect a headset SAR for conservatively summation.
4. WLAN and Bluetooth share the same antenna, and cannot transmit simultaneously.
5. The Scaled SAR summation is calculated based on the same configuration and test position.
6. Per KDB 447498 D01v05r02, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/kg.
   ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
   iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
   v) The SPLSR calculated results please refer to section 15.4.

15.1 Head Exposure Conditions

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN 1g SAR (W/kg)	3 2.4GHz Bluetooth 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Right Cheek	0.340	0.535	0.086	**0.88**	**0.43**		
		Right Tilted	0.241	0.504	0.081	**0.75**	**0.32**		
		Left Cheek	0.395	0.891	0.153	**1.29**	**0.55**		
		Left Tilted	0.246	0.589	0.101	**0.84**	**0.35**		
	GSM1900	Right Cheek	0.167	0.535	0.086	**0.70**	**0.25**		
		Right Tilted	0.090	0.504	0.081	**0.59**	**0.17**		
		Left Cheek	0.229	0.891	0.153	**1.12**	**0.38**		
		Left Tilted	0.068	0.589	0.101	**0.66**	**0.17**		
WCDMA	Band V	Right Cheek	0.359	0.535	0.086	**0.89**	**0.45**		
		Right Tilted	0.278	0.504	0.081	**0.78**	**0.36**		
		Left Cheek	0.442	0.891	0.153	**1.33**	**0.60**		
		Left Tilted	0.289	0.589	0.101	**0.88**	**0.39**		
	Band IV	Right Cheek	0.482	0.535	0.086	**1.02**	**0.57**		
		Right Tilted	0.305	0.504	0.081	**0.81**	**0.39**		
		Left Cheek	0.753	0.891	0.153	**1.64**	**0.91**	0.03	Case 1
		Left Tilted	0.310	0.589	0.101	**0.90**	**0.41**		
	Band II	Right Cheek	0.465	0.535	0.086	**1.00**	**0.55**		
		Right Tilted	0.251	0.504	0.081	**0.76**	**0.33**		
		Left Cheek	0.748	0.891	0.153	**1.64**	**0.90**	0.03	Case 2
		Left Tilted	0.217	0.589	0.101	**0.81**	**0.32**		
CDMA	BC10	Right Cheek	0.399	0.535	0.086	**0.93**	**0.49**		
		Right Tilted	0.313	0.504	0.081	**0.82**	**0.39**		
		Left Cheek	0.491	0.891	0.153	**1.38**	**0.64**		
		Left Tilted	0.314	0.589	0.101	**0.90**	**0.42**		
	BC0	Right Cheek	0.468	0.535	0.086	**1.00**	**0.55**		
		Right Tilted	0.350	0.504	0.081	**0.85**	**0.43**		
		Left Cheek	0.556	0.891	0.153	**1.45**	**0.71**		
		Left Tilted	0.356	0.589	0.101	**0.95**	**0.46**		
	BC1	Right Cheek	0.436	0.535	0.086	**0.97**	**0.52**		
		Right Tilted	0.277	0.504	0.081	**0.78**	**0.36**		
		Left Cheek	0.777	0.891	0.153	**1.67**	**0.93**	0.03	Case 3
		Left Tilted	0.252	0.589	0.101	**0.84**	**0.35**		

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN 1g SAR (W/kg)	3 2.4GHz Bluetooth 1g SAR (W/kg)	**1+2 Summed 1g SAR (W/kg)**	**1+3 Summed 1g SAR (W/kg)**	SPLSR	Case No
LTE	Band 12	Right Cheek	0.499	0.535	0.086	**1.03**	**0.59**		
		Right Tilted	0.196	0.504	0.081	**0.70**	**0.28**		
		Left Cheek	0.371	0.891	0.153	**1.26**	**0.52**		
		Left Tilted	0.200	0.589	0.101	**0.79**	**0.30**		
	Band 17	Right Cheek	0.708	0.535	0.086	**1.24**	**0.79**		
		Right Tilted	0.249	0.504	0.081	**0.75**	**0.33**		
		Left Cheek	0.459	0.891	0.153	**1.35**	**0.61**		
		Left Tilted	0.233	0.589	0.101	**0.82**	**0.33**		
	Band 5	Right Cheek	0.592	0.535	0.086	**1.13**	**0.68**		
		Right Tilted	0.403	0.504	0.081	**0.91**	**0.48**		
		Left Cheek	0.497	0.891	0.153	**1.39**	**0.65**		
		Left Tilted	0.318	0.589	0.101	**0.91**	**0.42**		
	Band 26	Right Cheek	0.304	0.535	0.086	**0.84**	**0.39**		
		Right Tilted	0.213	0.504	0.081	**0.72**	**0.29**		
		Left Cheek	0.420	0.891	0.153	**1.31**	**0.57**		
		Left Tilted	0.246	0.589	0.101	**0.84**	**0.35**		
	Band 4	Right Cheek	0.432	0.535	0.086	**0.97**	**0.52**		
		Right Tilted	0.274	0.504	0.081	**0.78**	**0.36**		
		Left Cheek	0.653	0.891	0.153	**1.54**	**0.81**		
		Left Tilted	0.255	0.589	0.101	**0.84**	**0.36**		
	Band 2	Right Cheek	0.507	0.535	0.086	**1.04**	**0.59**		
		Right Tilted	0.258	0.504	0.081	**0.76**	**0.34**		
		Left Cheek	0.770	0.891	0.153	**1.66**	**0.92**	0.03	Case 4
		Left Tilted	0.258	0.589	0.101	**0.85**	**0.36**		
	Band 25	Right Cheek	0.484	0.535	0.086	**1.02**	**0.57**		
		Right Tilted	0.271	0.504	0.081	**0.78**	**0.35**		
		Left Cheek	0.707	0.891	0.153	**1.60**	**0.86**	0.03	Case5
		Left Tilted	0.260	0.589	0.101	**0.85**	**0.36**		
	Band 41	Right Cheek	0.588	0.535	0.086	**1.12**	**0.67**		
		Right Tilted	0.279	0.504	0.081	**0.78**	**0.36**		
		Left Cheek	0.436	0.891	0.153	**1.33**	**0.59**		
		Left Tilted	0.124	0.589	0.101	**0.71**	**0.23**		

15.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN 1g SAR (W/kg)	3 2.4GHz Bluetooth 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Front	0.619	0.150	0.022	**0.77**	**0.64**		
		Back	0.616	0.110	0.017	**0.73**	**0.63**		
		Left side	0.376			**0.38**	**0.38**		
		Right side	0.407	0.064	0.010	**0.47**	**0.42**		
		Top side		0.113	0.014	**0.11**	**0.01**		
		Bottom side	0.096			**0.10**	**0.10**		
	GSM1900	Front	0.413	0.150	0.022	**0.56**	**0.44**		
		Back	0.324	0.110	0.017	**0.43**	**0.34**		
		Left side	0.109			**0.11**	**0.11**		
		Right side	0.038	0.064	0.010	**0.10**	**0.05**		
		Top side		0.113	0.014	**0.11**	**0.01**		
		Bottom side	0.512			**0.51**	**0.51**		
WCDMA	Band V	Front	0.744	0.150	0.022	**0.89**	**0.77**		
		Back	0.765	0.110	0.017	**0.88**	**0.78**		
		Left side	0.637			**0.64**	**0.64**		
		Right side	0.727	0.064	0.010	**0.79**	**0.74**		
		Top side		0.113	0.014	**0.11**	**0.01**		
		Bottom side	0.102			**0.10**	**0.10**		
	Band IV	Front	1.363	0.150	0.022	**1.51**	**1.39**		
		Back	1.400	0.110	0.017	**1.51**	**1.42**		
		Left side	0.411			**0.41**	**0.41**		
		Right side	0.111	0.064	0.010	**0.18**	**0.12**		
		Top side		0.113	0.014	**0.11**	**0.01**		
		Bottom side	0.721			**0.72**	**0.72**		
	Band II	Front	1.192	0.150	0.022	**1.34**	**1.21**		
		Back	1.085	0.110	0.017	**1.20**	**1.10**		
		Left side	0.398			**0.40**	**0.40**		
		Right side	0.137	0.064	0.010	**0.20**	**0.15**		
		Top side		0.113	0.014	**0.11**	**0.01**		
		Bottom side	1.357			**1.36**	**1.36**		
CDMA	BC10	Front	0.928	0.150	0.022	**1.08**	**0.95**		
		Back	1.034	0.110	0.017	**1.14**	**1.05**		
		Left side	0.533			**0.53**	**0.53**		
		Right side	0.526	0.064	0.010	**0.59**	**0.54**		
		Top side		0.113	0.014	**0.11**	**0.01**		
		Bottom side	0.139			**0.14**	**0.14**		
	BC0	Front	0.723	0.150	0.022	**0.87**	**0.75**		
		Back	0.794	0.110	0.017	**0.90**	**0.81**		
		Left side	0.706			**0.71**	**0.71**		
		Right side	0.508	0.064	0.010	**0.57**	**0.52**		
		Top side		0.113	0.014	**0.11**	**0.01**		
		Bottom side	0.109			**0.11**	**0.11**		
	BC1	Front	1.137	0.150	0.022	**1.29**	**1.16**		
		Back	1.027	0.110	0.017	**1.14**	**1.04**		
		Left side	0.397			**0.40**	**0.40**		
		Right side	0.122	0.064	0.010	**0.19**	**0.13**		
		Top side		0.113	0.014	**0.11**	**0.01**		
		Bottom side	1.289			**1.29**	**1.29**		

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN 1g SAR (W/kg)	3 2.4GHz Bluetooth 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	SPLSR	Case No
LTE	Band 12	Front	0.461	0.150	0.022	**0.61**	**0.48**		
		Back	0.516	0.110	0.017	**0.63**	**0.53**		
		Left side	0.122			**0.12**	**0.12**		
		Right side	0.479	0.064	0.010	**0.54**	**0.49**		
		Top side		0.113	0.014	**0.11**	**0.01**		
		Bottom side	0.197			**0.20**	**0.20**		
	Band 17	Front	0.543	0.150	0.022	**0.69**	**0.57**		
		Back	0.597	0.110	0.017	**0.71**	**0.61**		
		Left side	0.125			**0.13**	**0.13**		
		Right side	0.596	0.064	0.010	**0.66**	**0.61**		
		Top side		0.113	0.014	**0.11**	**0.01**		
		Bottom side	0.246			**0.25**	**0.25**		
	Band 5	Front	0.863	0.150	0.022	**1.01**	**0.89**		
		Back	0.841	0.110	0.017	**0.95**	**0.86**		
		Left side	0.843			**0.84**	**0.84**		
		Right side	0.593	0.064	0.010	**0.66**	**0.60**		
		Top side		0.113	0.014	**0.11**	**0.01**		
		Bottom side	0.125			**0.13**	**0.13**		
	Band 26	Front	0.526	0.150	0.022	**0.68**	**0.55**		
		Back	0.571	0.110	0.017	**0.68**	**0.59**		
		Left side	0.474			**0.47**	**0.47**		
		Right side	0.306	0.064	0.010	**0.37**	**0.32**		
		Top side		0.113	0.014	**0.11**	**0.01**		
		Bottom side	0.075			**0.08**	**0.08**		
	Band 4	Front	1.198	0.150	0.022	**1.35**	**1.22**		
		Back	0.956	0.110	0.017	**1.07**	**0.97**		
		Left side	0.406			**0.41**	**0.41**		
		Right side	0.084	0.064	0.010	**0.15**	**0.09**		
		Top side		0.113	0.014	**0.11**	**0.01**		
		Bottom side	0.629			**0.63**	**0.63**		
	Band 2	Front	1.195	0.150	0.022	**1.35**	**1.22**		
		Back	0.973	0.110	0.017	**1.08**	**0.99**		
		Left side	0.440			**0.44**	**0.44**		
		Right side	0.151	0.064	0.010	**0.22**	**0.16**		
		Top side		0.113	0.014	**0.11**	**0.01**		
		Bottom side	1.307			**1.31**	**1.31**		
	Band 25	Front	1.194	0.150	0.022	**1.34**	**1.22**		
		Back	1.172	0.110	0.017	**1.28**	**1.19**		
		Left side	0.516			**0.52**	**0.52**		
		Right side	0.135	0.064	0.010	**0.20**	**0.15**		
		Top side		0.113	0.014	**0.11**	**0.01**		
		Bottom side	1.425			**1.43**	**1.43**		
	Band 41	Front	0.860	0.150	0.022	**1.01**	**0.88**		
		Back	0.913	0.110	0.017	**1.02**	**0.93**		
		Left side	0.146			**0.15**	**0.15**		
		Right side	0.908	0.064	0.010	**0.97**	**0.92**		
		Top side		0.113	0.014	**0.11**	**0.01**		
		Bottom side	0.811			**0.81**	**0.81**		

15.3 Body-Worn Accessory Exposure Conditions

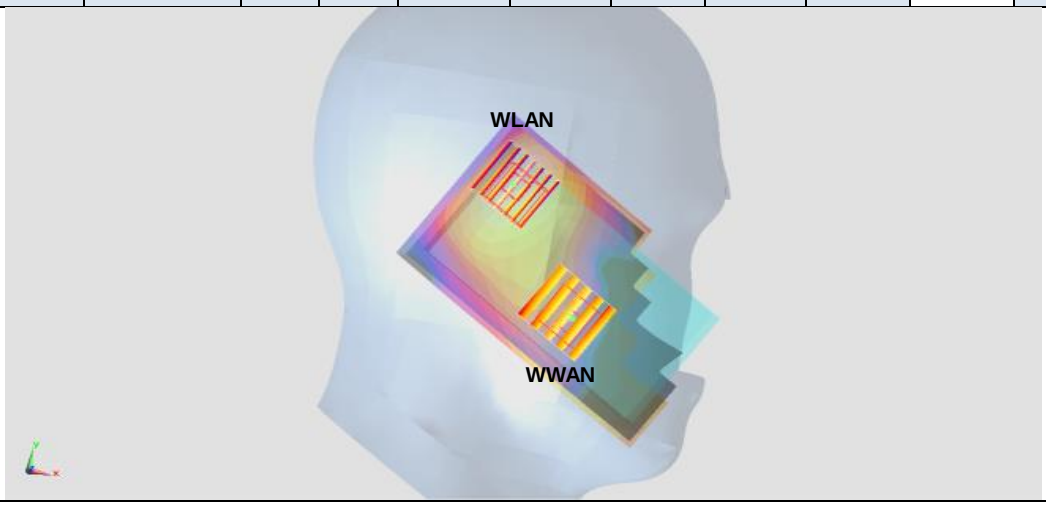
WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN 1g SAR (W/kg)	3 2.4GHz Bluetooth 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Front	0.619	0.150	0.022	**0.77**	**0.64**		
		Back	0.616	0.110	0.017	**0.73**	**0.63**		
	GSM1900	Front	0.413	0.150	0.022	**0.56**	**0.44**		
		Back	0.324	0.110	0.017	**0.43**	**0.34**		
WCDMA	Band V	Front	0.744	0.150	0.022	**0.89**	**0.77**		
		Back	0.765	0.110	0.017	**0.88**	**0.78**		
	Band IV	Front	1.363	0.150	0.022	**1.51**	**1.39**		
		Back	1.400	0.110	0.017	**1.51**	**1.42**		
		Front with Headset	1.400	0.150	0.022	**1.55**	**1.42**		
		Back with Headset	1.134	0.110	0.017	**1.24**	**1.15**		
	Band II	Front	1.192	0.150	0.022	**1.34**	**1.21**		
		Back	1.085	0.110	0.017	**1.20**	**1.10**		
CDMA	BC10	Front	0.992	0.150	0.022	**1.14**	**1.01**		
		Back	1.042	0.110	0.017	**1.15**	**1.06**		
	BC0	Front	1.298	0.150	0.022	**1.45**	**1.32**		
		Back	1.376	0.110	0.017	**1.49**	**1.39**		
		Front with Headset	1.045	0.150	0.022	**1.20**	**1.07**		
		Back with Headset	0.972	0.110	0.017	**1.08**	**0.99**		
	BC1	Front	0.973	0.150	0.022	**1.12**	**1.00**		
		Back	1.055	0.110	0.017	**1.17**	**1.07**		
LTE	Band 12	Front	0.461	0.150	0.022	**0.61**	**0.48**		
		Back	0.516	0.110	0.017	**0.63**	**0.53**		
	Band 17	Front	0.543	0.150	0.022	**0.69**	**0.57**		
		Back	0.597	0.110	0.017	**0.71**	**0.61**		
	Band 5	Front	0.863	0.150	0.022	**1.01**	**0.89**		
		Back	0.841	0.110	0.017	**0.95**	**0.86**		
	Band 26	Front	0.526	0.150	0.022	**0.68**	**0.55**		
		Back	0.571	0.110	0.017	**0.68**	**0.59**		
	Band 4	Front	1.198	0.150	0.022	**1.35**	**1.22**		
		Back	0.956	0.110	0.017	**1.07**	**0.97**		
	Band 2	Front	1.195	0.150	0.022	**1.35**	**1.22**		
		Back	0.973	0.110	0.017	**1.08**	**0.99**		
	Band 25	Front	1.194	0.150	0.022	**1.34**	**1.22**		
		Back	1.172	0.110	0.017	**1.28**	**1.19**		
	Band 41	Front	0.860	0.150	0.022	**1.01**	**0.88**		
		Back	0.913	0.110	0.017	**1.02**	**0.93**		

15.4 SPLSR Evaluation and Analysis

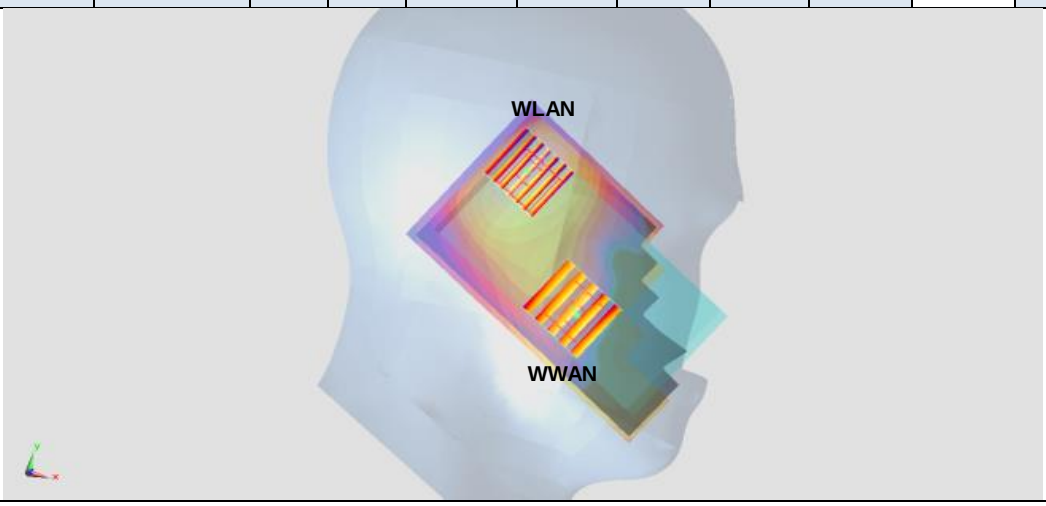
General Note:

1. SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*). If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary

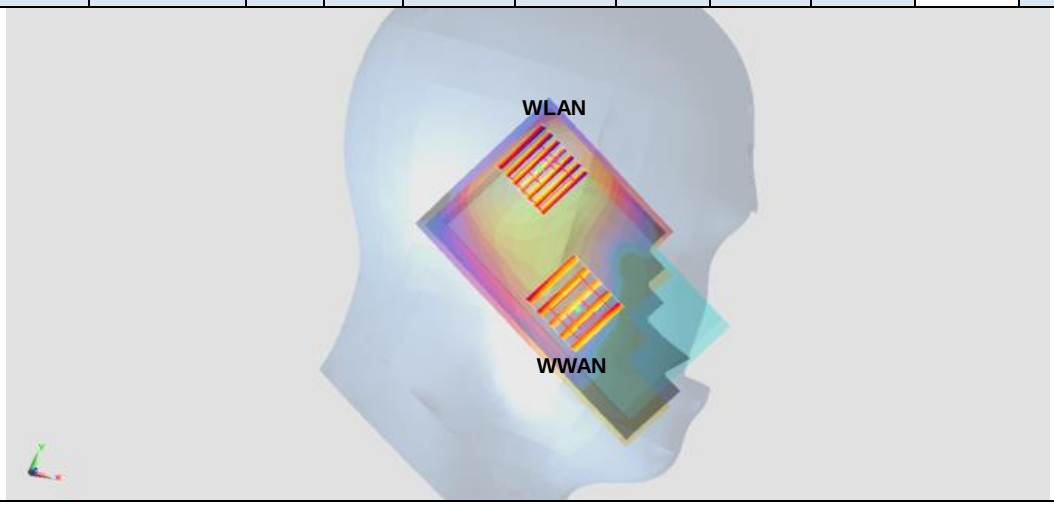
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 1	WCDMA IV	Left Cheek	0.753	-	0.0664	0.265	-0.172	70.3	1.64	0.03	Not required
	WLAN2.4GHz		0.891	-	0.0267	0.323	-0.172				



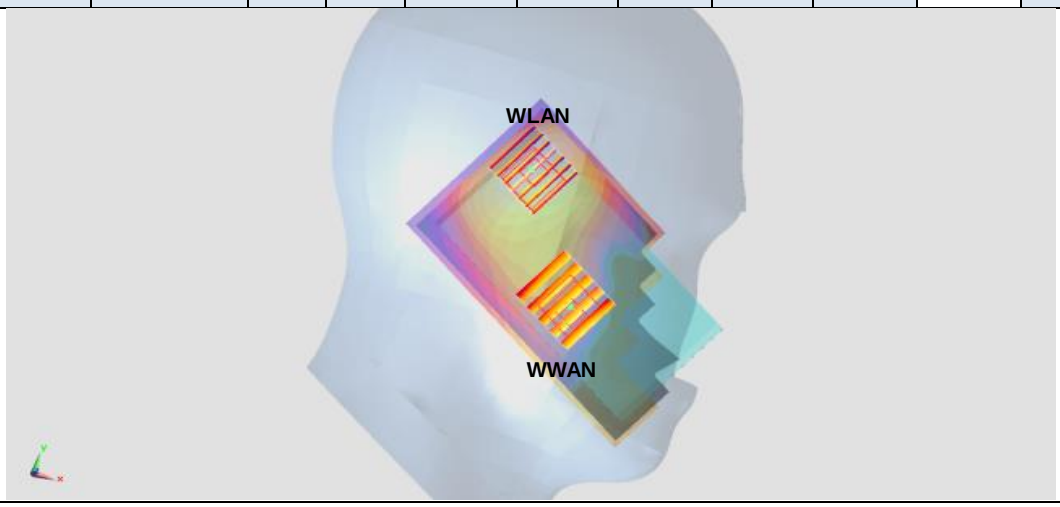
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 2	WCDMA II	Left Cheek	0.748	-	0.0662	0.261	-0.172	73.5	1.64	0.03	Not required
	WLAN2.4GHz		0.891	-	0.0267	0.323	-0.172				



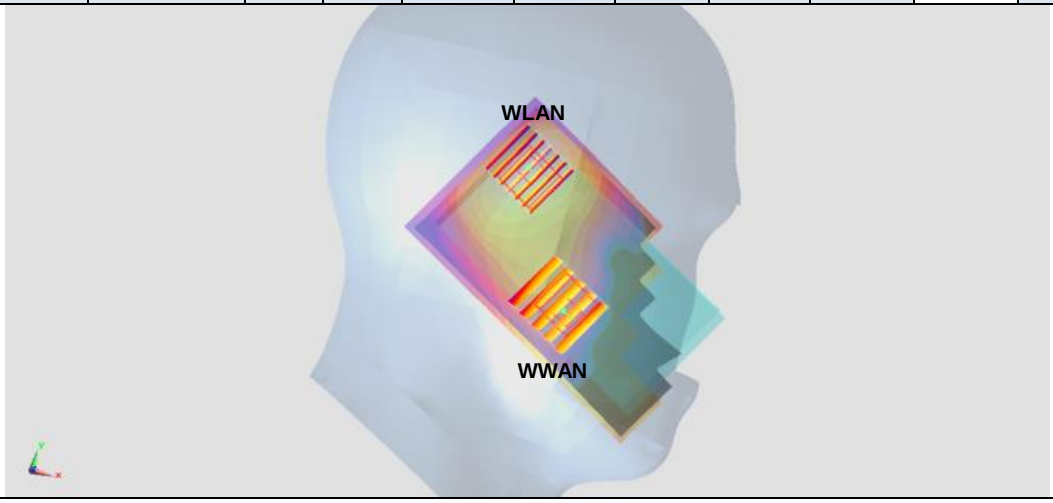
Case 3	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	CDMA BC1	Left Cheek	0.777	-	0.0643	0.264	-0.173	70.0	1.67	0.03	Not required
	WLAN2.4GHz		0.891	-	0.0267	0.323	-0.172				



Case 4	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 2	Left Cheek	0.77	-	0.0666	0.255	-0.171	78.8	1.66	0.03	Not required
	WLAN2.4GHz		0.891	-	0.0267	0.323	-0.172				



Case 5	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 25	Left Cheek	0.707	-	0.0676	0.257	-0.171	77.7	1.60	0.03	Not required
	WLAN2.4GHz		0.891	-	0.0267	0.323	-0.172				



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16. Uncertainty Assessment

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

Table 16.1. 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.

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)
Measurement System							
Probe Calibration	6.0	Normal	1	1	1	± 6.0 %	± 6.0 %
Axial Isotropy	4.7	Rectangular	√3	0.7	0.7	± 1.9 %	± 1.9 %
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	0.7	± 3.9 %	± 3.9 %
Boundary Effects	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Linearity	4.7	Rectangular	√3	1	1	± 2.7 %	± 2.7 %
System Detection Limits	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Readout Electronics	0.3	Normal	1	1	1	± 0.3 %	± 0.3 %
Response Time	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	1	± 1.5 %	± 1.5 %
RF Ambient Noise	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
RF Ambient Reflections	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Probe Positioner	0.4	Rectangular	√3	1	1	± 0.2 %	± 0.2 %
Probe Positioning	2.9	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Max. SAR Eval.	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Test Sample Related							
Device Positioning	2.9	Normal	1	1	1	± 2.9 %	± 2.9 %
Device Holder	3.6	Normal	1	1	1	± 3.6 %	± 3.6 %
Power Drift	5.0	Rectangular	√3	1	1	± 2.9 %	± 2.9 %
Phantom and Setup							
Phantom Uncertainty	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	± 1.8 %	± 1.2 %
Liquid Conductivity (Meas.)	2.5	Normal	1	0.64	0.43	± 1.6 %	± 1.1 %
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	0.49	± 1.7 %	± 1.4 %
Liquid Permittivity (Meas.)	2.5	Normal	1	0.6	0.49	± 1.5 %	± 1.2 %
Combined Standard Uncertainty						± 11.0 %	± 10.8 %
Coverage Factor for 95 %						K=2	
Expanded Uncertainty						**± 22.0 %**	**± 21.5 %**

Table 16.2. Uncertainty Budget for frequency range 300 MHz to 3 GHz

17. References

[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

[3] IEEE Std. 1528-2003, “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, December 2003

[4] SPEAG DASY System Handbook

[5] FCC KDB 248227 D01 v01r02, “SAR Measurement Procedures for 802.11 a/b/g Transmitters”, May 2007

[6] FCC KDB 447498 D01 v05r02, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Feb 2014

[7] FCC KDB 648474 D03 v01r02, “Evaluation and Approval Considerations for Handsets with Specific Wireless Charging Battery Covers” May 2013.

[8] FCC KDB 648474 D04 v01r02, “SAR Evaluation Considerations for Wireless Handsets”, Dec 2013.

[9] FCC KDB 941225 D01 v03, “3G SAR MEAUREMENT PROCEDURES”, Oct 2014

[10] FCC KDB 941225 D05 v02r03, “SAR Evaluation Considerations for LTE Devices”, Dec 2013

[11] FCC KDB 941225 D06 v02, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2014.

[12] FCC KDB 865664 D01 v01r03, "SAR Measurement Requirements for 100 MHz to 6 GHz", Feb 2014.

[13] FCC KDB 865664 D02 v01r01, “RF Exposure Compliance Reporting and Documentation Considerations” May 2013.