



**FCC 47 CFR PARTS 1 & 2
PUBLISHED RF EXPOSURE KDB PROCEDURES
IEEE STANDARD 1528-2013**

(CLASS II PERMISSIVE CHANGE)

SAR EVALUATION REPORT

For
CDMA/LTE Phone + Bluetooth & WLAN (2.4GHz) and NFC

**Model: LG-LS740, LGLS740, LS740
FCC ID: ZNFLS740**

**Report Number: 14U16944-6
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Prepared for
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1. Attestation of Test Results

Applicant	LG ELECTRONICS MOBILECOMM U.S.A., INC.			
DUT description	CDMA/LTE Phone + Bluetooth & WLAN (2.4GHz) and NFC			
Model	LG-LS740, LGLS740, LS740			
Test device is	An identical prototype			
Device category	Portable			
Exposure category	General Population/Uncontrolled Exposure			
Date tested	01/21/2014 – 01/30/2014			
The highest reported SAR values	RF exposure conditions	Licensed	DTS	UNII
	Head	0.700 W/kg	0.223 W/kg	N/A
	Body-worn Accessory	1.095 W/kg	0.070 W/kg	N/A
	Wireless Router (Hotspot)	1.095 W/kg	0.070 W/kg	N/A
	Simultaneous Transmission	1.165 W/kg		N/A
Applicable Standards	FCC 47 CFR Parts 1 & 2 Published RF Exposure KDB Procedures, and TCB workshop updates IEEE Standard 1528-2013			
Test Results	Pass			

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government (NIST Handbook 150, Annex A). This report is written to support regulatory compliance of the applicable standards stated above.

Approved & Released By:

Prepared By:




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 WiSE Engineer
 UL Verification Services Inc.

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 WiSE Laboratory Technician
 UL Verification Services Inc.

2. Test Methodology

The tests documented in this report were performed in accordance with FCC 47 CFR Parts 1 & 2, IEEE STD 1528-2013, the following FCC Published RF exposure KDB procedures, and TCB workshop updates:

- 447498 D01 General RF Exposure Guidance v05r02
- 648474 D04 Handset SAR v01r01
- 941225 D01 SAR test for 3G devices v02
- 941225 D02 HSPA and 1x Advanced v02r02
- 941225 D05 SAR for LTE Devices v02r03
- 941225 D06 Hot Spot SAR v01r01
- 248227 D01 SAR Meas for 802 11abg v01r02
- 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r03
- 865664 D02 SAR Reporting v01r01
- 690783 D01 SAR Listings on Grants v01r03

3. Facilities and Accreditation

The test sites and measurement facilities used to collect data are located at 47173 & 47266 Benicia Street, Fremont, California, USA.

47173 Benicia Street	47266 Benicia Street
SAR Lab A	SAR Lab 1
SAR Lab B	SAR Lab 2
SAR Lab C	SAR Lab 3
SAR Lab D	SAR Lab 4
SAR Lab E	
SAR Lab F	

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

4. Calibration and Uncertainty

4.1. Measuring Instrument Calibration

The measuring equipment used to perform the tests documented in this report has been calibrated in accordance with the manufacturers' recommendations, and is traceable to recognized national standards.

Tissue Dielectric Properties

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Network Analyzer	Agilent	8753ES	MY40000980	2/20/2014
Dielectronic Probe kit	SPEAG	DAK-3.5	1082	9/10/2014
Dielectronic Probe kit	SPEAG	DAK-3.5 Short	SM DAK 200 BA	N/A
Thermometer	Control Company	4242	122529162	9/19/2014
Network Analyzer	Agilent	8753ES	MY40001647	7/11/2014
Dielectronic Probe kit	SPEAG	DAK-3.5	1087	11/13/2014
Dielectronic Probe kit	SPEAG	DAK-3.5 Short	SM DAK 040 CA	N/A
Thermometer	Control Company	4242	122529163	9/19/2014

System Performance Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Synthesized Signal Generator	Agilent	8665B	3438A00633	6/13/2014
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1808939	N/A
Directional coupler	Werlatone	C8060-102	2710	N/A
DC Power Supply	Sorensen Ametek	XT15-4	1319A02778	N/A
Power Meter	HP	438A	2822A05684	10/10/2014
Power Sensor	Agilent	8481A	2237A31744	10/2/2014
Power Sensor	Agilent	8481A	2349A36506	9/30/2014
Synthesized Signal Generator	HP	8665B	3546A00784	3/26/2014
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1795093	N/A
Bidirectional coupler	Werlatone	C8060-102	2711	N/A
DC Power Supply	Sorensen Ametek	XT20-3	1318A00529	N/A
Power Meter	Agilent	N1912A (P-Series)	MY50001018	8/23/2014
Power Sensor	Agilent	E9323A	MY53070009	4/3/2014
Power Sensor	Agilent	E9323A	US40411556	8/9/2014
E-Field Probe	SPEAG	EX3DV4	3686	3/11/2014
Data Acquisition Electronics	SPEAG	DAE4	1360	2/7/2014
E-Field Probe	SPEAG	EX3DV4	3936	7/15/2014
Data Acquisition Electronics	SPEAG	DAE4	1380	2/7/2014
E-Field Probe	SPEAG	EX3DV4	3902	7/12/2014
Data Acquisition Electronics	SPEAG	DAE4	1377	7/15/2014
System Validation Dipole	SPEAG	D835V2	4d142	9/17/2014
System Validation Dipole	SPEAG	D1900V2	5d043	11/12/2014
System Validation Dipole	SPEAG	D1900V2	5d163	9/17/2014
System Validation Dipole	SPEAG	D2450V2	899	9/10/2014
System Validation Dipole	SPEAG	D2600V2	1006	9/11/2014

Others

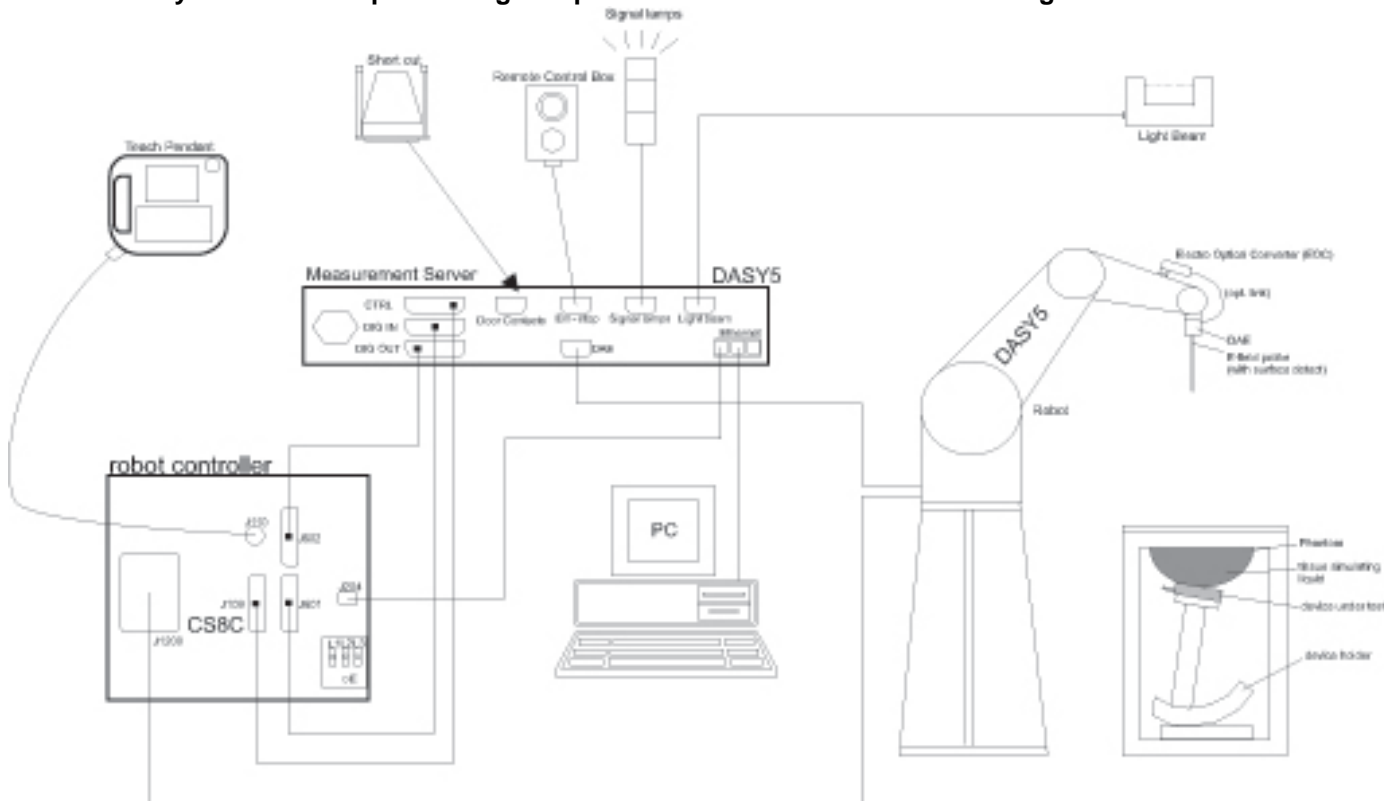
Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Power Meter	Agilent	N1912A	MY53040016	4/4/2014
Power Sensor	Agilent	N1921A	MY52020011	5/13/2014
Base Station Simulator	R & S	CMW500	132909	2/20/2014

4.2. Measurement Uncertainty

Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r01 Section 2.8.1., when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval.

5. Measurement System Description and Setup

The DASY5 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.

6. SAR Measurement Procedure

6.1. Normal SAR Measurement Procedure

Step 1: 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. The minimum distance of probe sensors to surface is 2.1 mm. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE 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 KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ 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.	

Step 3: Zoom Scan

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The Zoom Scan measures points (refer to table below) within a cube whose 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 g and 10 g and displays these values next to the job's label.

Zoom Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01 (Draft)

		≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: $\Delta x_{Zoom}, \Delta y_{Zoom}$		≤ 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 1 st two points closest to phantom surface	≤ 4 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$
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 <i>reported</i> SAR from the area scan based <i>1-g SAR estimation</i> 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.			

Step 4: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

Step 5: Z-Scan (FCC only)

The Z Scan measures points along a vertical straight line. The line runs along the Z-axis of a one-dimensional grid. In order to get a reasonable extrapolation the extrapolated distance should not be larger than the step size in Z-direction.

6.2. Volume Scan Procedures

Step 1: Repeat Step 1-4 in Section 6.1

Step 2: Volume Scan

Volume Scans are used to assess peak SAR and averaged SAR measurements in largely extended 3-dimensional volumes within any phantom. This measurement does not need any previous area scan. The grid can be anchored to a user specific point or to the current probe location.

Step 3: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

7. Device Under Test

7.1. General Information

Operating Configuration(s)	Held to head, Body-worn (Voice call)
Mobile Hotspot	Wi-Fi Hotspot mode permits the device to share its cellular data connection with other Wi-Fi-enabled devices. <input checked="" type="checkbox"/> Mobile Hotspot (Wi-Fi 2.4 GHz) <input type="checkbox"/> Mobile Hotspot (Wi-Fi 5 GHz)
Wi-Fi Direct	Wi-Fi Direct enabled devices transfer data directly between each other <input checked="" type="checkbox"/> Wi-Fi Direct (Wi-Fi 2.4 GHz) <input type="checkbox"/> Wi-Fi Direct (Wi-Fi 5 GHz)
Device dimensions	Overall (Length x Width): 131.6 mm x 66 mm Overall Diagonal: 139.6 mm Display Diagonal: 121.3 mm
Back Cover	<input type="checkbox"/> Normal Battery Cover <input type="checkbox"/> Wireless Charger Battery Cover <input checked="" type="checkbox"/> Normal Battery Cover with NFC
Accessory	<input checked="" type="checkbox"/> Headset
Battery Options	<input checked="" type="checkbox"/> Standard – Lithium-ion battery, Rating 3.8 Vdc, 3000 mAh <input type="checkbox"/> Extended (large capacity)

7.2. Wireless Technologies

Wireless Technology and Frequency Bands	CDMA BC 0 / 1 / 10 LTE Band 25 / 26 (FDD) LTE Band 41 (TDD) Wi-Fi: 2.4 GHz Bluetooth: 2.4 GHz
Mode	CDMA2000 <ul style="list-style-type: none"> - <input checked="" type="checkbox"/> 1xRTT (Voice & Data) - <input checked="" type="checkbox"/> 1xEVDO Rel. 0 - <input checked="" type="checkbox"/> 1xEVDO Rev. A - <input checked="" type="checkbox"/> 1xAdvanced LTE: QPSK, 16QAM Wi-Fi 2.4GHz (802.11b/g/n) <ul style="list-style-type: none"> - <input checked="" type="checkbox"/> 802.11b - <input checked="" type="checkbox"/> 802.11g - <input checked="" type="checkbox"/> 802.11n (20MHz) Bluetooth Ver. 4.0 (LE)
Duty Cycle (Used for SAR testing)	CDMA: 100% LTE (FDD): 100% LTE (TDD): 63% Wi-Fi 802.11b/g/n: 100%
SV-LTE & SV-DO	<input type="checkbox"/> Supported

7.3. RF Output Power Tune-up Tolerance

Upper limit (dB): 0.5		RF Output Power (dBm)	
RF Air interface	Mode	Target	Max. tune-up tolerance limit
CDMA BC0	1xRTT	24.7	25.2
	1xAdvanced	24.7	25.2
	1xEVDO Rel. 0	24.7	25.2
	1xEVDO Rev. A	24.7	25.2
CDMA BC1	1xRTT	24.7	25.2
	1xAdvanced	24.7	25.2
	1xEVDO Rel. 0	24.7	25.2
	1xEVDO Rev. A	24.7	25.2
CDMA BC10	1xRTT	24.7	25.2
	1xAdvanced	24.7	25.2
	1xEVDO Rel. 0	24.7	25.2
	1xEVDO Rev. A	24.7	25.2
Upper limit (dB): 0.5		RF Output Power (dBm)	
RF Air interface	Mode	Target	Max. tune-up tolerance limit
LTE Band 25	QPSK	23.4	23.9
LTE Band 26	QPSK	23.4	23.9
LTE Band 41	QPSK	22.2	22.7
Upper limit (dB): 0.7		RF Output Power (dBm)	
RF Air interface	Mode	Target	Max. tune-up tolerance limit
WiFi 2.4 GHz	802.11b	16.0	16.7
	802.11g	10.5	11.2
	802.11n HT20	10.0	10.7
Upper limit (dB): 0.7		RF Output Power (dBm)	
RF Air interface		Target	Max. tune-up tolerance limit
Bluetooth		8.0	8.7
Bluetooth (LE)		-0.5	0.2

7.4. Simultaneous Transmission Condition

RF Exposure Condition	Capable Transmit Configurations
Head	<ol style="list-style-type: none"> CDMA 1xRTT BC0/BC1/BC10 + Wi-Fi 2.4GHz CDMA 1xEVDO BC0/BC1/BC10 + Wi-Fi 2.4GHz (VoIP) LTE Band 25 / 26 / 41 + Wi-Fi 2.4GHz
Body-worn Accessory	<ol style="list-style-type: none"> CDMA 1xRTT BC0/BC1/BC10 + Wi-Fi 2.4GHz CDMA 1xRTT BC0/BC1/BC10 + BT CDMA 1xEVDO BC0/BC1/BC10 + Wi-Fi 2.4GHz (VoIP) CDMA 1xEVDO BC0/BC1/BC10 + BT (VoIP) LTE Band 25 / 26 / 41 + Wi-Fi 2.4GHz LTE Band 25 / 26 / 41 + BT
Wireless Router (Hotspot)	<ol style="list-style-type: none"> CDMA 1xEVDO BC0/BC1/BC10 + Wi-Fi 2.4GHz LTE Band 25 / 26 / 41 + Wi-Fi 2.4GHz
Wi-Fi Direct	<ol style="list-style-type: none"> CDMA 1xEVDO BC0/BC1/BC10 + Wi-Fi 2.4GHz (GO/GC) LTE Band 25 / 26 / 41 + Wi-Fi 2.4GHz (GO/GC)
Note:	
<ol style="list-style-type: none"> CDMA 1xEVDO, LTE support Hotspot and VoIP. Wi-Fi 2.4GHz supports Hotspot and Wi-Fi-Direct (GO/GC). GO = Group Owner (requires SAR), GC = Group Client (SAR excluded) Wi-Fi 2.4GHz and Bluetooth cannot transmit simultaneously. CDMA and LTE cannot transmit simultaneously. 	

7.5. General LTE SAR Test and Reporting Considerations

Item	Description																																						
Frequency range, Channel Bandwidth, Numbers and Frequencies	Band 25																																						
	Tx: 1850 to 1915 MHz Rx: 1930 to 1995 MHz																																						
	Band 26																																						
	Tx: 814 to 849 MHz Rx: 859 to 894 MHz																																						
	Band 41																																						
	Tx: 2496 to 2690 MHz Rx: 2496 to 2690 MHz																																						
	Band 25																																						
	Channel Bandwidth																																						
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz																																
	Low			26090	26065	26055																																	
	Mid			26365	26365	26365																																	
	High			26640	26665	26675																																	
	Band 26	Channel Bandwidth																																					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz																																
	Low			26740	26715	26705	26697																																
	Mid			26865	26865	26865	26865																																
	High			26990	27015	27025	27033																																
	Band 41	Channel Bandwidth																																					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz																																
Low	39750	39725	39700																																				
Low-Mid	40185	40173	40160																																				
Mid	40620	40620	40620																																				
Mid-High	41055	41068	41080																																				
High	41490	41515	41540																																				
LTE transmitter and antenna implementation	LTE has two TX/RX antennas and two Rx only antennas. Refer to Appendix "Antenna Locations and Separation Distances" for antenna locations																																						
Maximum power reduction (MPR)	<p>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3</p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (RB)</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 2</td> </tr> </tbody> </table> <p>MPR Built-in by design A-MPR (additional MPR) was disabled during SAR testing</p>	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
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																																
Power reduction	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																																						
Spectrum plots for RB configurations	A properly configured basestation simulator was used for the SAR and power measurements; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																						

7.5.1. TDD LTE Considerations

According to KDB 941225 D05 SAR for LTE Devices v02r02, for Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

SAR was tested with the highest transmission duty factor (63.33%) using Uplink-downlink configuration 0 and Special subframe configuration 7.

LTE TDD Band 41 supports 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special subframe configurations.

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	$26336 \cdot T_s$			$7680 \cdot T_s$		
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-		
9	$13168 \cdot T_s$			-		

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

Calculated Duty Cycle

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33

Calculated Duty Cycle = Extended cyclic prefix in uplink x (T_s) x # of S + # of U

Example for Calculated Duty Cycle for Uplink-Downlink Configuration 0:
 Calculated Duty Cycle = $5120 \times [1/(15000 \times 2048)] \times 2 + 6 \text{ ms} = 63.33\%$
 where
 $T_s = 1/(15000 \times 2048)$ seconds

8. RF Exposure Conditions

Refer to Appendix “Antenna Locations and Separation Distances” for the specific details of the antenna-to-antenna and antenna-to-edge(s) distances.

8.1. Head Exposure Conditions

For CDMA, LTE, Wi-Fi and Bluetooth

Test Configurations	SAR Required	Note
Left Touch	Yes	
Left Tilt (15°)	Yes	
Right Touch	Yes	
Right Tilt (15°)	Yes	

8.2. Body-worn Accessory Exposure Conditions

For CDMA and LTE B25/B26 (①)

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	<25 mm	Yes	
Front	<25 mm	Yes	

For LTE B41 (②)

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	<25 mm	Yes	
Front	<25 mm	Yes	

For Wi-Fi and Bluetooth (③)

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	<25 mm	Yes	
Front	<25 mm	Yes	

8.3. Hotspot Exposure Conditions

For CDMA and LTE B25/B26 (①)

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	<25 mm	Yes	
Front	<25 mm	Yes	
Edge 1 (Top)	106.6 mm	No	SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR v01r01
Edge 2 (Right)	38.5 mm	No	SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR v01r01
Edge 3 (Bottom)	1.5 mm	Yes	
Edge 4 (Left)	2 mm	Yes	

For LTE B41 (②)

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	<25 mm	Yes	
Front	<25 mm	Yes	
Edge 1 (Top)	126.6 mm	No	SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR v01r01
Edge 2 (Right)	1.5 mm	Yes	
Edge 3 (Bottom)	1.5 mm	Yes	
Edge 4 (Left)	49.5 mm	No	SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR v01r01

For Wi-Fi and Bluetooth (③)

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	<25 mm	Yes	
Front	<25 mm	Yes	
Edge 1 (Top)	1.5 mm	Yes	
Edge 2 (Right)	56 mm	No	SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR v01r01
Edge 3 (Bottom)	113 mm	No	SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR v01r01
Edge 4 (Left)	2 mm	Yes	

8.4. Wi-Fi Direct Exposure Conditions

For Wi-Fi (④)

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	<25 mm	Yes	
Front	<25 mm	Yes	
Edge 1 (Top)	1.5 mm	Yes	
Edge 2 (Right)	56 mm	No	SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 648474 D04 Handset SAR v01r01
Edge 3 (Bottom)	113 mm	No	SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 648474 D04 Handset SAR v01r01
Edge 4 (Left)	2 mm	Yes	

9. RF Output Power Measurement

9.1. CDMA

1xRTT Measured Results

Band	Mode	Ch	Freq. (MHz)	Avg Pwr (dBm)
BC 0	RC1 SO55 (Loopback)	1013	824.70	25.0
		384	836.52	25.1
		777	848.31	25.1
	RC3 SO55 (Loopback)	1013	824.70	25.0
		384	836.52	25.0
		777	848.31	25.0
	RC3 SO32 (+F-SCH)	1013	824.70	25.1
		384	836.52	25.1
		777	848.31	25.1
BC 1	RC1 SO55 (Loopback)	25	1851.25	25.1
		600	1880.00	25.1
		1175	1908.75	25.0
	RC3 SO55 (Loopback)	25	1851.25	25.1
		600	1880.00	25.1
		1175	1908.75	25.1
	RC3 SO32 (+F-SCH)	25	1851.25	25.1
		600	1880.00	25.1
		1175	1908.75	25.1
BC 10	RC1 SO55 (Loopback)	476	817.9	25.1
		580	820.5	25.1
		684	823.1	25.1
	RC3 SO55 (Loopback)	476	817.9	25.0
		580	820.5	25.1
		684	823.1	25.0
	RC3 SO32 (+F-SCH)	476	817.9	25.1
		580	820.5	25.1
		684	823.1	25.0

1x Advanced Measured Results

Band	Mode	Ch	Freq. (MHz)	Avg Pwr (dBm)
BC 0	Fwd11/Rvs8 SO75 (Loopback)	1013	824.70	25.0
		384	836.52	25.1
		777	848.31	25.1
BC 1	Fwd11/Rvs8 SO75 (Loopback)	25	1851.25	25.1
		600	1880.00	25.1
		1175	1908.75	25.1
BC 10	Fwd11/Rvs8 SO75 (Loopback)	476	817.9	25.1
		580	820.5	25.1
		684	823.1	25.1

1xEv-Do Rel. 0 Measured Results

Band	FTAP Rate	RTAP Rate	Channel	Freq. (MHz)	Avg Pwr (dBm)
BC 0	307.2 kbps (2 slot, QPSK)	153.6 kbps	1013	824.70	25.1
			384	836.52	25.2
			777	848.31	25.1
BC1	307.2 kbps (2 slot, QPSK)	153.6 kbps	25	1851.25	25.1
			600	1880.00	25.1
			1175	1908.75	25.1
BC10	307.2 kbps (2 slot, QPSK)	153.6 kbps	476	817.9	25.1
			580	820.5	25.2
			684	823.1	25.1

1xEv-Do Rev. A Measured Results

Band	FETAP Traffic Format	RETAP Data Payload Size	Channel	Freq. (MHz)	Avg Pwr (dBm)
BC 0	307.2k, QPSK/ ACK channel is transmitted at all the slots	4096	1013	824.70	25.1
			384	836.52	25.2
			777	848.31	25.1
BC1	307.2k, QPSK/ ACK channel is transmitted at all the slots	4096	25	1851.25	25.1
			600	1880.00	25.1
			1175	1908.75	25.1
BC10	307.2k, QPSK/ ACK channel is transmitted at all the slots	4096	476	817.9	25.1
			580	820.5	25.2
			684	823.1	25.1

9.2. LTE Bands

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

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

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

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signalling Value of "NS_01".

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	NA
NS_03	6.6.2.2.1	2, 4, 10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10, 15, 20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	n/a
NS_07	6.6.2.2.3	13	10	Table 6.2.4-2	Table 6.2.4-2
	6.6.3.3.2				
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23 ¹	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-

Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.

LTE Band 25 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							1855 MHz	1882.5 MHz	1910 MHz
LTE Band 25	10	QPSK	1	0	0	0	23.8	23.7	23.8
			1	25	0	0	23.7	23.7	23.7
			1	49	0	0	23.8	23.7	23.8
			25	0	1	1	22.8	22.8	22.9
			25	12	1	1	22.8	22.8	22.9
			25	25	1	1	22.8	22.8	22.9
			50	0	1	1	22.8	22.8	22.8
		16QAM	1	0	1	1	22.5	22.5	22.3
			1	25	1	1	22.4	22.5	22.2
			1	49	1	1	22.5	22.4	22.2
			25	0	2	2	21.8	21.7	21.9
			25	12	2	2	21.8	21.7	21.9
			25	25	2	2	21.8	21.7	21.8
			50	0	2	2	21.8	21.7	21.8
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							1852.5 MHz	1882.5 MHz	1912.5 MHz
LTE Band 25	5	QPSK	1	0	0	0	23.7	23.9	23.9
			1	12	0	0	23.7	23.8	23.7
			1	24	0	0	23.7	23.8	23.8
			12	0	1	1	22.8	22.8	22.9
			12	7	1	1	22.8	22.9	22.8
			12	13	1	1	22.8	22.8	22.7
			25	0	1	1	22.8	22.8	22.8
		16QAM	1	0	1	1	22.3	22.6	22.5
			1	12	1	1	22.3	22.6	22.5
			1	24	1	1	22.3	22.6	22.5
			12	0	2	2	21.8	21.7	21.8
			12	7	2	2	21.8	21.7	21.7
			12	13	2	2	21.7	21.7	21.7
			25	0	2	2	21.9	21.7	21.7
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							1851.5 MHz	1882.5 MHz	1913.5 MHz
LTE Band 25	3	QPSK	1	0	0	0	23.7	23.7	23.8
			1	8	0	0	23.7	23.7	23.7
			1	14	0	0	23.8	23.7	23.8
			8	0	1	1	22.7	22.7	22.7
			8	4	1	1	22.8	22.7	22.6
			8	7	1	1	22.8	22.7	22.7
			15	0	1	1	22.8	22.7	22.7
		16QAM	1	0	1	1	22.6	22.3	22.5
			1	8	1	1	22.5	22.3	22.3
			1	14	1	1	22.6	22.3	22.4
			8	0	2	2	21.6	21.7	21.6
			8	4	2	2	21.7	21.7	21.5
			8	7	2	2	21.7	21.7	21.5
			15	0	2	2	21.8	21.7	21.6

LTE Band 26 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							821 MHz	831.5 MHz	844 MHz
LTE Band 26	10	QPSK	1	0	0	0	23.7	23.7	23.8
			1	25	0	0	23.7	23.7	23.8
			1	49	0	0	23.7	23.6	23.7
			25	0	1	1	22.8	22.6	22.6
			25	12	1	1	22.7	22.7	22.6
			25	25	1	1	22.7	22.6	22.7
			50	0	1	1	22.8	22.7	22.8
		16QAM	1	0	1	1	22.5	22.5	22.4
			1	25	1	1	22.4	22.5	22.4
			1	49	1	1	22.5	22.4	22.4
			25	0	2	2	21.5	21.4	21.6
			25	12	2	2	21.4	21.5	21.6
			25	25	2	2	21.5	21.5	21.7
			50	0	2	2	21.5	21.4	21.7
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
LTE Band 26	5	QPSK	1	0	0	0	23.7	23.8	23.8
			1	12	0	0	23.7	23.9	23.8
			1	24	0	0	23.7	23.8	23.8
			12	0	1	1	22.8	22.7	22.7
			12	7	1	1	22.8	22.7	22.7
			12	13	1	1	22.7	22.6	22.6
			25	0	1	1	22.8	22.7	22.7
		16QAM	1	0	1	1	22.4	22.5	22.3
			1	12	1	1	22.4	22.5	22.3
			1	24	1	1	22.4	22.5	22.3
			12	0	2	2	21.6	21.5	21.5
			12	7	2	2	21.6	21.6	21.5
			12	13	2	2	21.6	21.5	21.4
			25	0	2	2	21.7	21.5	21.6
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
LTE Band 26	3	QPSK	1	0	0	0	23.7	23.7	23.7
			1	8	0	0	23.6	23.7	23.8
			1	14	0	0	23.7	23.7	23.7
			8	0	1	1	22.8	22.7	22.7
			8	4	1	1	22.7	22.7	22.7
			8	7	1	1	22.7	22.7	22.7
			15	0	1	1	22.7	22.7	22.7
		16QAM	1	0	1	1	22.5	22.3	22.4
			1	8	1	1	22.5	22.3	22.3
			1	14	1	1	22.5	22.3	22.4
			8	0	2	2	21.6	21.7	21.5
			8	4	2	2	21.6	21.5	21.4
			8	7	2	2	21.6	21.6	21.4
			15	0	2	2	21.6	21.6	21.5

LTE Band 26 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							816.7 MHz	831.5 MHz	841.5 MHz
LTE Band 26	1.4	QPSK	1	0	0	0	23.8	23.8	23.7
			1	2	0	0	23.7	23.7	23.7
			1	5	0	0	23.8	23.8	23.7
			3	0	0	0	23.8	23.8	23.7
			3	2	0	0	23.9	23.9	23.7
			3	3	0	0	23.8	23.8	23.7
			6	0	1	1	22.8	22.7	22.6
		16QAM	1	0	1	1	22.6	22.4	22.4
			1	2	1	1	22.6	22.3	22.4
			1	5	1	1	22.6	22.4	22.4
			3	0	1	2	22.4	22.3	22.3
			3	2	1	1	22.5	22.3	22.2
			3	3	1	2	22.4	22.3	22.3
			6	0	2	2	21.7	21.6	21.4

LTE Band 41 Measured Results

Procedure used to establish SAR test signal for LTE TDD Band 41

Set to CMW-500 with following parameters:

- Turn the LTE Signaling off using “ON | OFF” key
- Operating Band: Select Band 41 and TDD
- Go to “Config...”

LTE Signaling 1 - X3.2.10.6

Connection Status

Cell: OFF

Packet Switched: OFF

RRC State: Idle

Event Log

- 03:21:26 State 'Cell Off'
- 03:21:17 State 'Cell On'
- 03:21:16 Signaling Failure
- 03:21:13 Network Originated Detach
- 03:21:02 State 'Connection Established'
- 03:21:02 EPS Dedicated Bearer Established
- 03:20:57 State 'Attached'
- 03:20:57 EPS Default Bearer Established

UE Info

IMEI: ---

IMSI: ---

UE IPv4 Address [0]: ---

UE IPv6 Prefix [0]: ---

Connection Setup

Scheduling: RMC

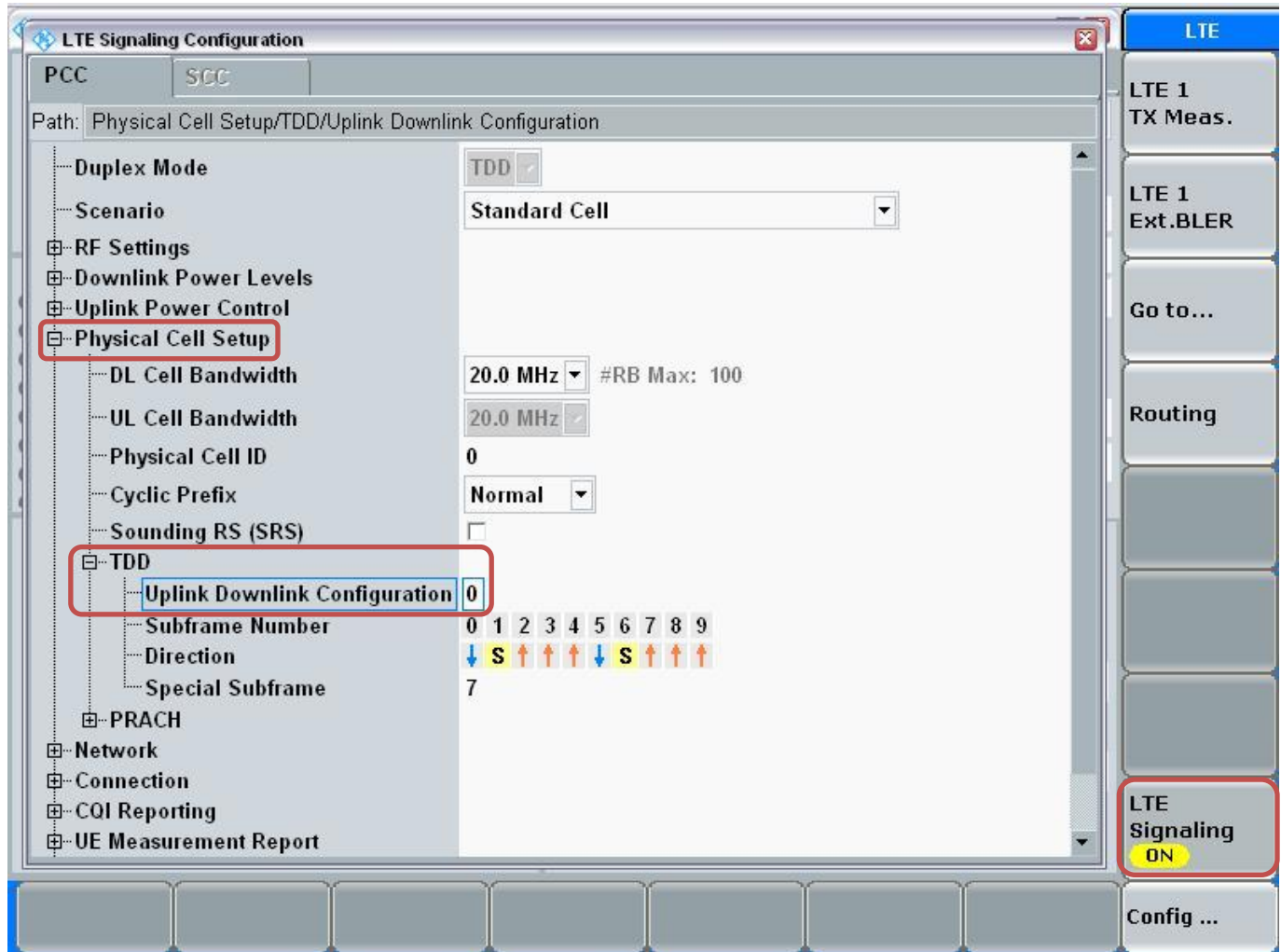
	Downlink	Uplink
Channel	40620 Ch	40620 Ch
Frequency	2593.0 MHz	2593.0 MHz
Cell Bandwidth	20.0 MHz	20.0 MHz
RS EPRE	-85.8 dBm/15kHz	
Full Cell BW Pow.	-55.0 dBm	
PUSCH Open Loop Nom. Power	23 dBm	
PUSCH Closed Loop Target Power	23.0 dBm	
# RB	100	100
RB Pos./Start RB	low 0	low 0
Modulation	QPSK	QPSK
TBS Idx / Value	5 8760	2 4584
Throughput	3.970 Mbit/s	1.834 Mbit/s

LTE Signaling OFF

Config ...

Go to "Physical Cell Setup"

- Select "TDD" and Set "Uplink Downlink Configuration" to "0"
- Turn the cell on using "ON | OFF" key



Connect to EUT

- Turn the cell on using “ON | OFF” key
- After EUT is Attached
- Select “Connect”

The screenshot displays the 'LTE Signaling 1 - X3.2.10.6' software interface. The main window is divided into several sections:

- Connection Status:** Shows 'Cell' with a signal icon, 'Packet Switched' with a laptop icon, and 'RRC State' as 'Connected'. A red box highlights the 'Attached' status.
- Event Log:** Lists system events such as 'State 'Attached'', 'EPS Default Bearer Established', and 'RRC Connection Established'.
- UE Info:** Displays identifiers including IMEI (001027009999998), IMSI (001010123456789), UE IPv4 Address (192.168.48.129), and UE IPv6 Prefix (fc01:abab:cdcd:efe0::).
- Connection Setup:** Configures parameters for PCC and SCC bearers. Key settings include:
 - Operating Band: Band 41, TDD
 - Channel: 40620 Ch (Downlink and Uplink)
 - Frequency: 2593.0 MHz (Downlink), 2593.0 MHz (Uplink)
 - Cell Bandwidth: 20.0 MHz (Downlink and Uplink)
 - RS EPRE: -85.8 dBm/15kHz
 - Full Cell BW Pow.: -55.0 dBm
 - PUSCH Open Loop Nom. Power: 23 dBm
 - PUSCH Closed Loop Target Power: 23.0 dBm
 - Scheduling: RMC
 - # RB: 100 (Downlink and Uplink)
 - RB Pos./Start RB: low (Downlink), 0 (Uplink)
 - Modulation: QPSK (Downlink and Uplink)
 - TBS Idx / Value: 5 / 8760 (Downlink), 2 / 4584 (Uplink)
 - Throughput: 3.970 Mbit/s (Downlink), 1.834 Mbit/s (Uplink)
- Bottom Bar:** Contains control buttons: 'Detach', 'Connect' (highlighted with a red box), 'Send SMS', 'Handover ...', and 'Config ...'.
- Right Panel:** Includes 'LTE' tab, 'LTE 1 TX Meas.', 'LTE 1 Ext.BLER', 'Go to...', 'Routing', and 'LTE Signaling ON' (highlighted with a red box).

Max Power Setting

- Select "LTE 1 TX Meas."
- Press "RESTART | STOP" Soft key

The screenshot displays the 'LTE Signaling 1 - X3.2.10.6' interface. It is divided into several sections:

- Connection Status:** Shows 'Cell' with a signal strength icon, 'Packet Switched' with a laptop icon, and 'RRC State' as 'Connected'. A 'Connection Established' message is visible.
- Event Log:** Lists system events such as 'State 'Connection Established'', 'EPS Dedicated Bearer Established', 'State 'Attached'', 'EPS Default Bearer Established', 'RRC Connection Established', 'State 'Cell On'', 'State 'Cell Off'', and 'State 'Cell On''.
- UE Info:** Displays identifiers: IMEI (001027009999998), IMSI (001010123456789), UE IPv4 Address [0] (192.168.48.129), and UE IPv6 Prefix [0] (fc01:abab:cdcd:efe0::).
- Connection Setup:** Shows parameters for PCC and SCC. Key settings include:
 - Operating Band: Band 41, TDD
 - Channel: 40620 Ch (Downlink and Uplink)
 - Frequency: 2593.0 MHz (Downlink and Uplink)
 - Cell Bandwidth: 20.0 MHz (Downlink and Uplink)
 - RS EPRE: -85.8 dBm/15kHz
 - Full Cell BW Pow.: -55.0 dBm
 - PUSCH Open Loop Nom. Power: 23 dBm
 - PUSCH Closed Loop Target Power: 23.0 dBm
 - Scheduling: RMC
 - # RB: 100 (Downlink and Uplink)
 - RB Pos./Start RB: low (Downlink and Uplink)
 - Modulation: QPSK (Downlink and Uplink)
 - TBS Idx / Value: 5 / 8760 (Downlink), 2 / 4584 (Uplink)
 - Throughput: 3.970 Mbit/s (Downlink), 1.834 Mbit/s (Uplink)
- Right Panel:** A vertical stack of buttons including 'LTE', 'LTE 1 TX Meas.' (highlighted with a red box), 'LTE 1 Ext.BLER', 'Go to...', 'Routing', and 'LTE Signaling ON' (highlighted with a red box).
- Bottom Panel:** A row of soft keys: 'Detach', 'Disconnect', 'Send SMS', 'Handover ...', and 'Config ...'.

Select "Signaling Parameter"

- Select "TX Power Control (TPC)" > Select "Active TPC Setup" to "Max Power" > Set "Closed Loop Target Power" to "23 dBm"

The screenshot displays the 'LTE Measurement - X3.2.10.6 - TX Measurement' software interface. The main window shows various measurement plots: EVM, Inband Emissions, Equalizer Spectrum Flatness, and Spectrum ACLR. A 'Signaling TPC' dialog box is open, showing the 'Active TPC Setup' dropdown set to 'Max Power' and the 'Closed Loop Target Power' set to '23.0 dBm'. The 'Signaling Parameter' button on the right sidebar is highlighted with a red box. The bottom of the interface features a navigation bar with buttons for 'Cell Setup ...', 'Connection Setup ...', 'DL Error Insertion ...', 'TPC ...', 'Power ...', 'Enable ...', and 'Config ...'. The right sidebar contains buttons for 'LTE', 'Multi Evaluation RUN', 'RF Settings', 'Trigger', 'Display', 'Signaling Parameter', and 'LTE Signaling ON'.

View TX Power

- Go to "Display"
- Select "Select View..."
- Select "Spectrum Emission Mask"

LTE Measurement - X3.2.10.6 - TX Measurement

Mode: TDD Freq.: 2593.0 MHz Ref. Level: 45.00 dBm Bandwidth: 20.0 MHz Cyclic Prefix: Normal Meas Subfr.: 0

Spectrum Emission Mask

dBm vs MHz graph showing Current power levels. The y-axis ranges from -60 to 30 dBm, and the x-axis ranges from -30 to 30 MHz. A blue trace shows the current power spectrum, and red lines indicate the mask limits.

Detected Allocation	NoRB:	100	OffsetRB:	0		
	Current		Average	Extreme	StdDev	
OBW	17.790 MHz		17.773 MHz	17.790 MHz	0.013 MHz	
	Current		Average	Min	Max	StdDev
TX Power	23.72 dBm		23.33 dBm	22.10 dBm	24.27 dBm	0.23 dBm

Statistic Count: 20/20 Out of Tolerance: 0.00% Detected Modulation: QPSK Detected Channel Type: PUSCH View Filter Throughput: 100.0%

Select View dropdown menu: SpectrumEmissionMask

Buttons: Select View ..., Margin On Off, Select Trace (SEM) ..., Y Scale (SEM) ..., X Scale (SEM) ..., Config ...

Right sidebar buttons: LTE, Multi Evaluation RUN, RF Settings, Trigger, Display (highlighted), Marker, Signaling Parameter, LTE Signaling ON, Config ...

LTE Band 41 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)				
							2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	20	QPSK	1	0	0	0	22.3	22.5	22.4	22.6	22.4
			1	49	0	0	22.4	22.5	22.4	22.6	22.3
			1	99	0	0	22.4	22.6	22.4	22.7	22.4
			50	0	1	1	21.4	21.4	21.3	21.4	21.3
			50	24	1	1	21.4	21.3	21.3	21.4	21.2
			50	50	1	1	21.4	21.5	21.3	21.4	21.4
			100	0	1	1	21.4	21.4	21.3	21.4	21.3
		16QAM	1	0	1	1	21.3	21.4	21.4	21.4	21.5
			1	49	1	1	21.5	21.4	21.4	21.4	21.3
			1	99	1	1	21.4	21.3	21.4	21.5	21.4
			50	0	2	2	20.4	20.4	20.3	20.4	20.2
			50	24	2	2	20.5	20.4	20.3	20.4	20.2
			50	50	2	2	20.5	20.5	20.4	20.4	20.5
			100	0	2	2	20.5	20.5	20.4	20.5	20.3
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)				
							2503.5 MHz	2548.3 MHz	2593 MHz	2637.75 MHz	2682.5 MHz
LTE Band 41	15	QPSK	1	0	0	0	22.4	22.3	22.7	22.4	22.4
			1	37	0	0	22.5	22.3	22.6	22.5	22.4
			1	74	0	0	22.6	22.3	22.6	22.5	22.2
			36	0	1	1	21.3	21.4	21.3	21.4	21.3
			36	20	1	1	21.3	21.4	21.3	21.4	21.4
			36	39	1	1	21.4	21.4	21.3	21.3	21.4
			75	0	1	1	21.4	21.4	21.3	21.4	21.3
		16QAM	1	0	1	1	21.1	21.4	21.0	21.2	21.5
			1	37	1	1	21.2	21.4	21.0	21.2	21.5
			1	74	1	1	21.2	21.3	21.0	21.2	21.4
			36	0	2	2	20.3	20.4	20.2	20.3	20.3
			36	20	2	2	20.3	20.4	20.3	20.3	20.4
			36	39	2	2	20.4	20.5	20.3	20.3	20.5
			75	0	2	2	20.5	20.4	20.4	20.4	20.3
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)				
							2498.5 MHz	2545.8 MHz	2593 MHz	2640.25 MHz	2687.5 MHz
LTE Band 41	10	QPSK	1	0	0	0	22.4	22.3	22.5	22.5	22.2
			1	25	0	0	22.4	22.3	22.6	22.5	22.4
			1	49	0	0	22.6	22.4	22.6	22.5	22.4
			25	0	1	1	21.5	21.3	21.3	21.3	21.4
			25	12	1	1	21.3	21.3	21.3	21.4	21.4
			25	25	1	1	21.4	21.4	21.3	21.4	21.4
			50	0	1	1	21.4	21.4	21.3	21.4	21.4
		16QAM	1	0	1	2	21.0	21.1	21.0	21.2	21.1
			1	25	1	2	21.1	21.1	21.0	21.2	21.2
			1	49	1	2	21.2	21.2	21.0	21.2	21.2
			25	0	2	2	20.4	20.4	20.3	20.4	20.4
			25	12	2	2	20.2	20.4	20.3	20.3	20.4
			25	25	2	2	20.3	20.3	20.3	20.3	20.5
			50	0	2	2	20.4	20.4	20.3	20.4	20.5

9.3. Wi-Fi (2.4 GHz Band)

Required Test Channels per KDB 248227 D01

Mode	Band	GHz	Channel	"Default Test Channels"	
				802.11b	802.11g
802.11b/g	2.4 GHz	2.412	1 [#]	√	∇
		2.437	6	√	∇
		2.462	11 [#]	√	∇

Notes:

√ = "default test channels"

∇ = possible 802.11g channels with maximum average output ¼ dB ≥ the "default test channels"

[#] = when output power is reduced for channel 1 and /or 11 to meet restricted band requirements the highest output channels closest to each of these channels should be tested.

Measured Results

Band (GHz)	Mode	Ch #	Freq. (MHz)	Avg Pwr (dBm)	SAR test (Yes/No)
2.4 (DTS)	802.11b	1	2412	16.0	Yes
		6	2437	16.3	
		11	2462	16.2	
	802.11g	1	2412	10.1	No
		6	2437	10.4	
		11	2462	10.6	
	802.11n (HT20)	1	2412	9.1	No
		6	2437	9.5	
		11	2462	10.6	

Power measurements to determine worst-case data rates

Mode	Ch #	Freq. (MHz)	Data Rate	Avg Pwr (dBm)	SAR test (Yes/No)
802.11b	6	2437	1 Mbps	16.3	Yes
			2 Mbps	16.2	No
			5.5 Mbps	16.2	No
			11 Mbps	16.2	No

Note(s):

Per KDB 248227 D01, SAR is not required for 802.11g/HT20 channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding 802.11b channels.

9.4. Bluetooth

Maximum tune-up tolerance limit is 8.7 dBm from the rated nominal maximum output power. This power level qualifies for exclusion of SAR testing.

Refer to Standalone SAR Test Exclusion Considerations Section.

10. Tissue Dielectric Properties

IEEE Standard 1528-2013

Target Frequency (MHz)	Head	
	ϵ_r	σ (S/m)
300	45.3	0.87
450	43.5	0.87
750	41.9	0.89
835	41.5	0.90
900	41.5	0.97
1450	40.5	1.20
1500	40.4	1.23
1640	40.2	1.31
1750	40.1	1.37
1800	40.0	1.40
1900	40.0	1.40
2000	40.0	1.40
2100	39.8	1.49
2300	39.5	1.67
2450	39.2	1.80
2600	39.0	1.96
3000	38.5	2.40
3500	37.9	2.91
4000	37.4	3.43
4500	36.8	3.94
5000	36.2	4.45
5200	36.0	4.66
5400	35.8	4.86
5600	35.5	5.07
5800	35.3	5.27
6000	35.1	5.48

NOTE—For convenience, permittivity and conductivity values at some frequencies that are not part of the original data from Drossos et al. [B60] or the extension to 5800 MHz are provided (i.e., the values shown in italics). These values were linearly interpolated between the values in this table that are immediately above and below these values, except the values at 6000 MHz that were linearly extrapolated from the values at 3000 MHz and 5800 MHz.

FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

Target Frequency (MHz)	Head		Body	
	ϵ_r	σ (S/m)	ϵ_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5000	36.2	4.45	49.3	5.07
5100	36.1	4.55	49.1	5.18
5200	36.0	4.66	49.0	5.30
5300	35.9	4.76	48.9	5.42
5400	35.8	4.86	48.7	5.53
5500	35.6	4.96	48.6	5.65
5600	35.5	5.07	48.5	5.77
5700	35.4	5.17	48.3	5.88
5800	35.3	5.27	48.2	6.00

10.2. Tissue Dielectric Parameter Check Results

The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within ± 2°C of the temperature when the tissue parameters are characterized.

The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements. The parameters should be re-measured after each 3 – 4 days of use; or earlier if the dielectric parameters can become out of tolerance; for example, when the parameters are marginal at the beginning of the measurement series.

Tissue dielectric parameters were measured at the low, middle and high frequency of each operating frequency range of the test device.

SAR Lab D

	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)	
1/22/2014	Body 1900	e'	52.4000	Relative Permittivity (ϵ_r):	52.40	53.30	-1.69	5
		e"	14.7900	Conductivity (σ):	1.56	1.52	2.80	5
	Body 1850	e'	52.6200	Relative Permittivity (ϵ_r):	52.62	53.30	-1.28	5
		e"	14.6700	Conductivity (σ):	1.51	1.52	-0.72	5
	Body 1910	e'	52.3700	Relative Permittivity (ϵ_r):	52.37	53.30	-1.74	5
		e"	14.8300	Conductivity (σ):	1.57	1.52	3.62	5
1/22/2014	Head 2450	e'	40.7900	Relative Permittivity (ϵ_r):	40.79	39.20	4.06	5
		e"	13.8500	Conductivity (σ):	1.89	1.80	4.82	5
	Head 2410	e'	40.9300	Relative Permittivity (ϵ_r):	40.93	39.28	4.20	5
		e"	13.6400	Conductivity (σ):	1.83	1.76	3.83	5
	Head 2475	e'	40.6500	Relative Permittivity (ϵ_r):	40.65	39.17	3.78	5
		e"	13.8800	Conductivity (σ):	1.91	1.83	4.55	5
1/22/2014	Body 2450	e'	50.7200	Relative Permittivity (ϵ_r):	50.72	52.70	-3.76	5
		e"	13.8800	Conductivity (σ):	1.89	1.95	-3.03	5
	Body 2410	e'	50.8000	Relative Permittivity (ϵ_r):	50.80	52.76	-3.71	5
		e"	13.5500	Conductivity (σ):	1.82	1.91	-4.81	5
	Body 2475	e'	50.5300	Relative Permittivity (ϵ_r):	50.53	52.67	-4.06	5
		e"	13.8000	Conductivity (σ):	1.90	1.99	-4.33	5

SAR Lab 3

	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)	
1/28/2014	Body 2600	e'	51.8000	Relative Permittivity (ϵ_r):	51.80	52.51	-1.35	5
		e"	15.3000	Conductivity (σ):	2.21	2.16	2.36	5
	Body 2500	e'	52.2100	Relative Permittivity (ϵ_r):	52.21	52.64	-0.81	5
		e"	14.8800	Conductivity (σ):	2.07	2.02	2.38	5
	Body 2700	e'	51.3900	Relative Permittivity (ϵ_r):	51.39	52.38	-1.90	5
		e"	15.6500	Conductivity (σ):	2.35	2.30	2.09	5
1/28/2014	Head 2600	e'	40.2800	Relative Permittivity (ϵ_r):	40.28	39.01	3.25	5
		e"	13.0900	Conductivity (σ):	1.89	1.96	-3.56	5
	Head 2500	e'	40.6600	Relative Permittivity (ϵ_r):	40.66	39.14	3.89	5
		e"	12.7700	Conductivity (σ):	1.78	1.85	-4.26	5
	Head 2700	e'	39.9100	Relative Permittivity (ϵ_r):	39.91	38.88	2.64	5
		e"	13.3500	Conductivity (σ):	2.00	2.07	-3.19	5

SAR Lab 4

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)	
		Parameter	Value					
1/23/2014	Body 835	e'	52.9400	Relative Permittivity (ϵ_r):	52.94	55.20	-4.09	5
		e"	21.7000	Conductivity (σ):	1.01	0.97	3.87	5
	Body 820	e'	53.0600	Relative Permittivity (ϵ_r):	53.06	55.28	-4.01	5
		e"	21.7600	Conductivity (σ):	0.99	0.97	2.44	5
	Body 850	e'	52.7800	Relative Permittivity (ϵ_r):	52.78	55.16	-4.31	5
		e"	21.6600	Conductivity (σ):	1.02	0.99	3.70	5
1/27/2014	Head 835	e'	42.0100	Relative Permittivity (ϵ_r):	42.01	41.50	1.23	5
		e"	19.8200	Conductivity (σ):	0.92	0.90	2.25	5
	Head 820	e'	42.2100	Relative Permittivity (ϵ_r):	42.21	41.60	1.46	5
		e"	19.8500	Conductivity (σ):	0.91	0.90	0.73	5
	Head 850	e'	41.8100	Relative Permittivity (ϵ_r):	41.81	41.50	0.75	5
		e"	19.7600	Conductivity (σ):	0.93	0.92	2.07	5
1/27/2014	Head 1900	e'	38.8400	Relative Permittivity (ϵ_r):	38.84	40.00	-2.90	5
		e"	13.3700	Conductivity (σ):	1.41	1.40	0.89	5
	Head 1850	e'	39.0400	Relative Permittivity (ϵ_r):	39.04	40.00	-2.40	5
		e"	13.3200	Conductivity (σ):	1.37	1.40	-2.13	5
	Head 1910	e'	38.7800	Relative Permittivity (ϵ_r):	38.78	40.00	-3.05	5
		e"	13.4000	Conductivity (σ):	1.42	1.40	1.65	5

11. System Performance Check

SAR system verification is required to confirm measurement accuracy, according to the tissue dielectric media, probe calibration points and other system operating parameters required for measuring the SAR of a test device. The system verification must be performed for each frequency band and within the valid range of each probe calibration point required for testing the device. The same SAR probe(s) and tissue-equivalent media combinations used with each specific SAR system for system verification must be used for device testing. When multiple probe calibration points are required to cover substantially large transmission bands, independent system verifications are required for each probe calibration point. A system verification must be performed before each series of SAR measurements using the same probe calibration point and tissue-equivalent medium. Additional system verification should be considered according to the conditions of the tissue-equivalent medium and measured tissue dielectric parameters, typically every three to four days when the liquid parameters are remeasured or sooner when marginal liquid parameters are used at the beginning of a series of measurements.

11.1. System Performance Check Measurement Conditions

- The measurements were performed in the flat section of the TWIN SAM or ELI phantom, shell thickness: 2.0 ±0.2 mm (bottom plate) filled with Body or Head simulating liquid of the following parameters.
- The depth of tissue-equivalent liquid in a phantom must be ≥ 15.0 cm ± 0.5 cm for SAR measurements ≤ 3 GHz and ≥ 10.0 cm ± 0.5 cm for measurements > 3 GHz.
- The DASY system with an E-Field Probe was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10 mm (above 1 GHz) and 15 mm (below 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 15 mm was aligned with the dipole.
 For 5 GHz band - The coarse grid with a grid spacing of 10 mm was aligned with the dipole.
- Special 7x7x7 (below 3 GHz) and/or 8x8x7 (above 3 GHz) fine cube was chosen for the cube.
- Distance between probe sensors and phantom surface was set to 3 mm.
 For 5 GHz band - Distance between probe sensors and phantom surface was set to 2.5 mm
- The dipole input power (forward power) was 100 mW.
- The results are normalized to 1 W input power.

11.2. Reference SAR Values for System Performance Check

The reference SAR values can be obtained from the calibration certificate of system validation dipoles

System Dipole	Serial No.	Cal. Date	Freq. (MHz)	Target SAR Values (mW/g)		
				1g/10g	Head	Body
D835V2	4d142	9/17/2013	835	1g	9.44	9.36
				10g	6.12	6.20
D1900V2	5d043	11/12/2013	1900	1g	40.1	39.0
				10g	21.1	20.8
D1900V2	5d163	9/17/2013	1900	1g	40.9	40.1
				10g	21.2	21.2
D2450V2	899	9/10/2013	2450	1g	51.3	49.7
				10g	23.9	23.3
D2600V2	1006	9/11/2013	2600	1g	56.5	55.7
				10g	25.2	24.8

11.3. System Performance Check Results

The 1-g and 10-g SAR measured with a reference dipole, using the required tissue-equivalent medium at the test frequency, must be within 10% of the manufacturer calibrated dipole SAR target.

SAR Lab D

Date Tested	System Dipole		T.S. Liquid	Measured Results			Target (Ref. Value)	Delta ±10 %	Est./Zoom Ratio	Plot No.	
	Type	Serial #		Area Scan	Zoom Scan	Normalize to 1 W					
1/22/2014	D1900V2	5d043	Body	1g	4.18	4.11	41.1	39.0	5.38	1.67	1, 2
				10g	2.11	2.09	20.9	20.8	0.48		
1/22/2014	D2450V2	899	Head	1g	5.78	5.51	55.1	51.3	7.41	4.67	3, 4
				10g	2.62	2.47	24.7	23.9	3.35		
1/22/2014	D2450V2	899	Body	1g	5.10	4.96	49.6	49.7	-0.20	2.75	
				10g	2.31	2.27	22.7	23.3	-2.58		

SAR Lab 3

Date Tested	System Dipole		T.S. Liquid	Measured Results			Target (Ref. Value)	Delta ±10 %	Est./Zoom Ratio	Plot No.	
	Type	Serial #		Area Scan	Zoom Scan	Normalize to 1 W					
1/28/2014	D2600	1006	Body	1g	5.58	5.56	55.6	55.7	-0.18	0.36	
				10g	2.41	2.43	24.3	24.8	-2.02		
1/28/2014	D2600	1006	Head	1g	5.47	5.29	52.9	56.5	-6.37	3.29	5, 6
				10g	2.46	2.32	23.2	25.2	-7.94		

SAR Lab 4

Date Tested	System Dipole		T.S. Liquid	Measured Results			Target (Ref. Value)	Delta ±10 %	Est./Zoom Ratio	Plot No.	
	Type	Serial #		Area Scan	Zoom Scan	Normalize to 1 W					
1/24/2014	D835V2	4d142	Body	1g	1.01	0.980	9.80	9.36	4.70	2.97	
				10g	0.672	0.645	6.45	6.20	4.03		
1/27/2014	D1900V2	5d163	Head	1g	4.03	3.90	39.0	40.9	-4.65	3.23	7, 8
				10g	2.07	2.02	20.2	21.2	-4.72		
1/27/2014	D835V2	4d142	Head	1g	1.02	0.992	9.92	9.44	5.08	2.75	9,10
				10g	0.687	0.648	6.48	6.12	5.88		

12. SAR Test Results

12.1. CDMA BC0

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	
						Tune-up limit	Meas.	Meas.	Scaled		
Head	1xRTT (RC3 SO55)	0	Left Touch	384	836.52	25.2	25.0	0.411	0.430	1	
			Left Tilt	384	836.52	25.2	25.0	0.270	0.283		
			Right Touch	384	836.52	25.2	25.0	0.325	0.340		
			Right Tilt	384	836.52	25.2	25.0	0.255	0.267		
	1xEVDO (Rel. 0)	0	Left Touch	384	836.52	25.2	25.2	0.377	0.377		
			Left Tilt	384	836.52	25.2	25.2	0.240	0.240		
			Right Touch	384	836.52	25.2	25.2	0.306	0.306		
Body-worn & Hotspot	1xRTT (RC3 SO32)	10	Rear	1013	824.70	25.2	25.1	0.981	1.004		
				384	836.52	25.2	25.1	0.929	0.951		
				777	848.31	25.2	25.1	0.992	1.015		
	1xEVDO (Rel. 0)	10	Front	Rear	1013	824.70	25.2	25.1	0.994	1.017	
					384	836.52	25.2	25.2	0.932	0.932	
					777	848.31	25.2	25.1	1.000	1.023	2
					384	836.52	25.2	25.2	0.479	0.479	
Hotspot	1xRTT (RC3 SO32)	10	Edge 3	384	836.52	25.2	25.1	0.338	0.346		
			Edge 4	384	836.52	25.2	25.1	0.773	0.791		
	1xEVDO (Rel. 0)	10	Edge 3	Edge 4	1013	824.70	25.2	25.1	0.832	0.851	
					384	836.52	25.2	25.2	0.858	0.858	
					777	848.31	25.2	25.1	0.792	0.810	

Note(s):

- 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

12.2. CDMA BC1

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
Head	1xRTT (RC3 SO55)	0	Left Touch	600	1880.00	25.2	25.1	0.684	0.700	3
			Left Tilt	600	1880.00	25.2	25.1	0.323	0.331	
			Right Touch	600	1880.00	25.2	25.1	0.351	0.359	
			Right Tilt	600	1880.00	25.2	25.1	0.312	0.319	
	1xEVDO (Rel. 0)	0	Left Touch	600	1880.00	25.2	25.1	0.671	0.687	
			Left Tilt	600	1880.00	25.2	25.1	0.331	0.339	
			Right Touch	600	1880.00	25.2	25.1	0.352	0.360	
			Right Tilt	600	1880.00	25.2	25.1	0.287	0.294	
Body-worn & Hotspot	1xRTT (RC3 SO32)	10	Rear	25	1851.25	25.2	25.1	0.930	0.952	
				600	1880.00	25.2	25.1	1.070	1.095	4
				1175	1908.75	25.2	25.1	0.909	0.930	
			Front	600	1880.00	25.2	25.1	0.613	0.627	
	1xEVDO (Rel. 0)	10	Rear	25	1851.25	25.2	25.1	0.866	0.886	
				600	1880.00	25.2	25.1	0.936	0.958	
				1175	1908.75	25.2	25.1	0.844	0.864	
			Front	600	1880.00	25.2	25.1	0.600	0.614	
Hotspot	1xRTT (RC3 SO32)	10	Edge 3	600	1880.00	25.2	25.1	0.745	0.762	
			Edge 4	600	1880.00	25.2	25.1	0.670	0.686	
	1xEVDO (Rel. 0)	10	Edge 3	600	1880.00	25.2	25.1	0.737	0.754	
			Edge 4	600	1880.00	25.2	25.1	0.625	0.640	

Note(s):

- 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
- With headset attached. According to KDB 648474 Section 2.3, 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 headset attached to the handset.

12.3. CDMA BC10

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
Head	1xRTT (RC3 SO55)	0	Left Touch	580	820.5	25.2	25.1	0.454	0.465	5
			Left Tilt	580	820.5	25.2	25.1	0.290	0.297	
			Right Touch	580	820.5	25.2	25.1	0.361	0.369	
			Right Tilt	580	820.5	25.2	25.1	0.301	0.308	
	1xEVDO (Rel. 0)	0	Left Touch	580	820.5	25.2	25.2	0.457	0.457	
			Left Tilt	580	820.5	25.2	25.2	0.321	0.321	
			Right Touch	580	820.5	25.2	25.2	0.374	0.374	
			Right Tilt	580	820.5	25.2	25.2	0.317	0.317	
Body-worn & Hotspot	1xRTT (RC3 SO32)	10	Rear	476	817.9	25.2	25.1	1.000	1.023	
				580	820.5	25.2	25.1	0.964	0.986	
				684	823.1	25.2	25.0	0.956	1.001	
			Front	580	820.5	25.2	25.1	0.483	0.494	
	1xEVDO (Rel. 0)	10	Rear	476	817.9	25.2	25.1	1.010	1.034	6
				580	820.5	25.2	25.2	1.000	1.000	
				684	823.1	25.2	25.1	0.985	1.008	
			Front	580	820.5	25.2	25.2	0.510	0.510	
Hotspot	1xRTT (RC3 SO32)	10	Edge 3	580	820.5	25.2	25.1	0.322	0.330	
			Edge 4	580	820.5	25.2	25.1	0.742	0.759	
	1xEVDO (Rel. 0)	10	Edge 3	580	820.5	25.2	25.2	0.357	0.357	
				476	817.9	25.2	25.1	0.902	0.923	
			Edge 4	580	820.5	25.2	25.2	0.896	0.896	
				684	823.1	25.2	25.1	0.863	0.883	

Note(s):

- 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

12.4. LTE Band 25 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	UL Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	0	Left Touch	26365	1882.5	1	0	23.9	23.7	0.528	0.553	7
						25	0	22.9	22.8	0.421	0.431	
			Left Tilt	26365	1882.5	1	0	23.9	23.7	0.262	0.274	
						25	0	22.9	22.8	0.199	0.204	
			Right Touch	26365	1882.5	1	0	23.9	23.7	0.309	0.324	
						25	0	22.9	22.8	0.220	0.225	
			Right Tilt	26365	1882.5	1	0	23.9	23.7	0.250	0.262	
						25	0	22.9	22.8	0.184	0.188	
Body-worn & Hotspot	QPSK	10	Rear	26090	1855.0	1	0	23.9	23.8	0.786	0.804	
				26365	1882.5	1	0	23.9	23.7	0.807	0.845	8
				26640	1910.0	1	0	23.9	23.8	0.614	0.628	
			Front	26365	1882.5	1	0	23.9	23.7	0.467	0.489	
						25	0	22.9	22.8	0.369	0.378	
						25	0	22.9	22.8	0.369	0.378	
Hotspot	QPSK	10	Edge 3	26365	1882.5	1	0	23.9	23.7	0.577	0.604	
						25	0	22.9	22.8	0.455	0.466	
			Edge 4	26365	1882.5	1	0	23.9	23.7	0.514	0.538	
						25	0	22.9	22.8	0.403	0.412	

Note(s):

- 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
- Per KDB 941225 D05 SAR for LTE Devices, SAR test reduction is applied using the following criteria:
 - Testing for Low and High Channel is performed at the highest output power level for 1RB, and 50% RB configuration for that channel.
 - Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are ≥ 0.8 W/kg. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg.
 - Testing for 16-QAM modulation is not required because the reported SAR for QPSK is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of QPSK.
 - Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.

12.5. LTE Band 26 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	UL Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	0	Left Touch	26865	831.5	1	0	23.9	23.7	0.324	0.339	9
						25	12	22.9	22.7	0.252	0.264	
			Left Tilt	26865	831.5	1	0	23.9	23.7	0.187	0.196	
						25	12	22.9	22.7	0.165	0.173	
			Right Touch	26865	831.5	1	0	23.9	23.7	0.241	0.252	
						25	12	22.9	22.7	0.202	0.212	
Right Tilt	26865	831.5	1	0	23.9	23.7	0.187	0.196				
			25	12	22.9	22.7	0.157	0.164				
Body-worn & Hotspot	QPSK	10	Rear	26865	831.5	1	0	23.9	23.7	0.675	0.707	10
						25	12	22.9	22.7	0.546	0.572	
			Front	26865	831.5	1	0	23.9	23.7	0.332	0.348	
						25	12	22.9	22.7	0.285	0.298	
Hotspot	QPSK	10	Edge 3	26865	831.5	1	0	23.9	23.7	0.207	0.217	
						25	12	22.9	22.7	0.202	0.212	
			Edge 4	26865	831.5	1	0	23.9	23.7	0.490	0.513	
						25	12	22.9	22.7	0.415	0.435	

Note(s):

- 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
- Per KDB 941225 D05 SAR for LTE Devices, SAR test reduction is applied using the following criteria:
 - Testing for Low and High Channel is performed at the highest output power level for 1RB, and 50% RB configuration for that channel.
 - Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are ≥ 0.8 W/kg. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg.
 - Testing for 16-QAM modulation is not required because the reported SAR for QPSK is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of QPSK.
 - Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.

12.6. LTE Band 41 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	UL Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	0	Left Touch	40620	2593.0	1	0	22.7	22.4	0.236	0.253	
						50	0	21.7	21.3	0.170	0.186	
			Left Tilt	40620	2593.0	1	0	22.7	22.4	0.145	0.155	
						50	0	21.7	21.3	0.105	0.115	
			Right Touch	40620	2593.0	1	0	22.7	22.4	0.495	0.530	11
						50	0	21.7	21.3	0.369	0.405	
Right Tilt	40620	2593.0	1	0	22.7	22.4	0.120	0.129				
			50	0	21.7	21.3	0.092	0.101				
Body-worn & Hotspot	QPSK	10	Rear	40620	2593.0	1	0	22.7	22.4	0.429	0.460	12
						50	0	21.7	21.3	0.323	0.354	
			Front	40620	2593.0	1	0	22.7	22.4	0.324	0.347	
						50	0	21.7	21.3	0.261	0.286	
Hotspot	QPSK	10	Edge 2	40620	2593.0	1	0	22.7	22.4	0.304	0.326	
						50	0	21.7	21.3	0.243	0.266	
			Edge 3	40620	2593.0	1	0	22.7	22.4	0.155	0.166	
						50	0	21.7	21.3	0.122	0.134	

Note(s):

- 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
- Per KDB 941225 D05 SAR for LTE Devices, SAR test reduction is applied using the following criteria:
 - Testing for Low and High Channel is performed at the highest output power level for 1RB, and 50% RB configuration for that channel.
 - Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are ≥ 0.8 W/kg. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg.
 - Testing for 16-QAM modulation is not required because the reported SAR for QPSK is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of QPSK.
 - Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.

12.7. Wi-Fi 2.4 GHz (DTS Band)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
Head	802.11b	0	Left Touch	6	2437	16.7	16.3	0.132	0.145	
			Left Tilt	6	2437	16.7	16.3	0.118	0.129	
			Right Touch	6	2437	16.7	16.3	0.203	0.223	13
			Right Tilt	6	2437	16.7	16.3	0.137	0.150	
Body-worn & Hotspot	802.11b	10	Rear	6	2437	16.7	16.3	0.064	0.070	14
			Front	6	2437	16.7	16.3	0.041	0.045	
Hotspot	802.11b	10	Edge 1	6	2437	16.7	16.3	0.036	0.039	
			Edge 4	6	2437	16.7	16.3	0.044	0.048	

Note(s):

- 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

12.8. Bluetooth

12.8.1. Standalone SAR Test Exclusion Considerations

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$, for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- $f_{(\text{GHz})}$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

Body-worn Accessory Exposure Conditions

Max. tune-up tolerance limit		Min. test separation distance (mm)	Frequency (GHz)	Result
(dBm)	(mW)			
8.7	7	10	2.480	1.2

Conclusion:

The computed value is < 3 ; therefore, Bluetooth qualifies for Standalone SAR test exclusion.

12.8.2. Estimated SAR

When the standalone SAR test exclusion is applied to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

- $(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{(\text{GHz})}/x}] \text{ W/kg}$ for test separation distances ≤ 50 mm; where $x = 7.5$ for 1-g SAR, and $x = 18.75$ for 10-g SAR.
- 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distances is > 50 mm.

Estimated SAR Result for Body-worn Accessory Conditions:

Test Configuration	Max. tune-up tolerance limit (mW)	Min. test separation distance (mm)	Frequency (GHz)	Estimated 1-g SAR (W/kg)
Rear/Front	7	10	2.480	0.147

13. SAR Measurement Variability

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

- 1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
- 2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
- 3) Perform a second repeated measurement only if the **ratio of largest to smallest SAR** for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
- 4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

13.1. The Highest Measured SAR Configuration in Each Frequency Band

Frequency Band (MHz)	Air Interface	Head (W/kg)	Body-worn & Hotspot (W/kg)	Hotspot/Wi-Fi Direct (W/kg)
850	CDMA BC10	N/A	1.010 W/kg	N/A
1900	CDMA BC1	N/A	1.070 W/kg	N/A
2400	Wi-Fi 802.11b/g/n	N/A	N/A	N/A
2600	LTE Band 41	N/A	N/A	N/A

13.2. Repeated Measurement Results

Head Exposure Condition

Not Applicable.

Body-worn & Hotspot Mode Exposure Condition

RF Exposure Conditions	Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Meas. SAR (W/kg)		Largest to Smallest SAR Ratio
						Original	Repeated	
Body-worn and Hotspot	Rear	1xEVDO (Rel. 0)	10	476	817.9	1.010	1.010	1.00
Body-worn and Hotspot	Rear	1xRTT (RC3 SO32)	10	600	1880	1.070	1.040	1.03

Hotspot Mode/Wi-Fi Direct Exposure Condition

Not Applicable.

Note(s):

1. Second Repeated Measurement is not required since the ratio of the largest to smallest SAR for the original and first repeated measurement is not > 1.20.

14. Simultaneous Transmission SAR Analysis

KDB 447498 D01 General RF Exposure Guidance introduces a new formula for calculating the SAR to Peak Location Ratio (SPLSR) between pairs of simultaneously transmitting antennas:

$$SPLSR = (SAR_1 + SAR_2)^{1.5} / Ri$$

Where:

SAR₁ is the highest reported or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition

SAR₂ is the highest reported or estimated SAR for the second of a pair of simultaneous transmitting antennas, in the same test operating mode and exposure condition as the first

Ri is the separation distance between the pair of simultaneous transmitting antennas. When the SAR is measured, for both antennas in the pair, it is determined by the actual x, y and z coordinates in the 1-g SAR for each SAR peak location, based on the extrapolated and interpolated result in the zoom scan measurement, using the formula of $[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$

A new threshold of 0.04 is also introduced in the draft KDB. Thus, in order for a pair of simultaneous transmitting antennas with the sum of 1-g SAR > 1.6 W/kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:

$$(SAR_1 + SAR_2)^{1.5} / Ri < 0.04$$

14.1. Sum of the SAR for CDMA BC0, Wi-Fi, & BT

RF Exposure conditions	Test Position	Simultaneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/ No)
		CDMA BC0	WiFi 2.4 GHz DTS Band	Bluetooth		
Head	Left Touch	0.430	0.145		0.575	No
	Left Tilt	0.283	0.129		0.412	No
	Right Touch	0.340	0.223		0.563	No
	Right Tilt	0.267	0.150		0.417	No
Body-worn & Hotspot	Rear	1.023	0.070		1.093	No
		1.023		0.147	1.170	No
	Front	0.479	0.045		0.524	No
		0.479		0.147	0.626	No
Hotspot	Edge 1		0.039		0.039	No
	Edge 2					
	Edge 3	0.354			0.354	No
	Edge 4	0.858	0.048		0.906	No

SAR to Peak Location Separation Ratio (SPLSR)

As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required.

14.2. Sum of the SAR for CDMA BC1, Wi-Fi, & BT

RF Exposure conditions	Test Position	Simultaneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/ No)
		CDMA BC1	WiFi 2.4 GHz DTS Band	Bluetooth		
Head	Left Touch	0.700	0.145		0.845	No
	Left Tilt	0.339	0.129		0.468	No
	Right Touch	0.360	0.223		0.583	No
	Right Tilt	0.319	0.150		0.469	No
Body-worn & Hotspot	Rear	1.095	0.070		1.165	No
		1.095		0.147	1.242	No
	Front	0.627	0.045		0.672	No
		0.627		0.147	0.774	No
Hotspot	Edge 1		0.039		0.039	No
	Edge 2					
	Edge 3	0.762			0.762	No
	Edge 4	0.686	0.048		0.734	No

SAR to Peak Location Separation Ratio (SPLSR)

As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required.

14.3. Sum of the SAR for CDMA BC10, Wi-Fi, & BT

RF Exposure conditions	Test Position	Simultaneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/ No)
		CDMA BC10	WiFi 2.4 GHz DTS Band	Bluetooth		
Head	Left Touch	0.465	0.145		0.610	No
	Left Tilt	0.321	0.129		0.450	No
	Right Touch	0.374	0.223		0.597	No
	Right Tilt	0.317	0.150		0.467	No
Body-worn & Hotspot	Rear	1.034	0.070		1.104	No
		1.034		0.147	1.181	No
	Front	0.510	0.045		0.555	No
		0.510		0.147	0.657	No
Hotspot	Edge 1		0.039		0.039	No
	Edge 2					
	Edge 3	0.357			0.357	No
	Edge 4	0.923	0.048		0.971	No

SAR to Peak Location Separation Ratio (SPLSR)

As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required.

14.4. Sum of the SAR for LTE Band 25, Wi-Fi, & BT

RF Exposure conditions	Test Position	Simultaneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/ No)
		LTE Band 25	WiFi 2.4 GHz DTS Band	Bluetooth		
Head	Left Touch	0.553	0.145		0.698	No
	Left Tilt	0.274	0.129		0.403	No
	Right Touch	0.324	0.223		0.547	No
	Right Tilt	0.262	0.150		0.412	No
Body-worn & Hotspot	Rear	0.845	0.070		0.915	No
		0.845		0.147	0.992	No
	Front	0.489	0.045		0.534	No
		0.489		0.147	0.636	No
Hotspot	Edge 1		0.039		0.039	No
	Edge 2					
	Edge 3	0.604			0.604	No
	Edge 4	0.538	0.048		0.586	No

SAR to Peak Location Separation Ratio (SPLSR)

As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required.

14.5. Sum of the SAR for LTE Band 26, Wi-Fi, & BT

RF Exposure conditions	Test Position	Simultaneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/ No)
		LTE Band 26	WiFi 2.4 GHz DTS Band	Bluetooth		
Head	Left Touch	0.339	0.145		0.484	No
	Left Tilt	0.196	0.129		0.325	No
	Right Touch	0.252	0.223		0.475	No
	Right Tilt	0.196	0.150		0.346	No
Body-worn & Hotspot	Rear	0.707	0.070		0.777	No
		0.707		0.147	0.854	No
	Front	0.348	0.045		0.393	No
		0.348		0.147	0.495	No
Hotspot	Edge 1		0.039		0.039	No
	Edge 2					
	Edge 3	0.217			0.217	No
	Edge 4	0.513	0.048		0.561	No

SAR to Peak Location Separation Ratio (SPLSR)

As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required.

14.6. Sum of the SAR for LTE Band 41, Wi-Fi, & BT

RF Exposure conditions	Test Position	Simultaneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/ No)
		LTE Band 41	WiFi 2.4 GHz DTS Band	Bluetooth		
Head	Left Touch	0.253	0.145		0.398	No
	Left Tilt	0.155	0.129		0.284	No
	Right Touch	0.530	0.223		0.753	No
	Right Tilt	0.129	0.150		0.279	No
Body-worn & Hotspot	Rear	0.460	0.070		0.530	No
		0.460		0.147	0.607	No
	Front	0.347	0.045		0.392	No
		0.347		0.147	0.494	No
Hotspot	Edge 1		0.039		0.039	No
	Edge 2	0.326			0.326	No
	Edge 3	0.166			0.166	No
	Edge 4		0.048		0.048	No

SAR to Peak Location Separation Ratio (SPLSR)

As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required.

15. Appendixes

Refer to separated files for the following appendixes.

- 15.1. Photos and Antenna Locations**
- 15.2. System Performance Check Plots**
- 15.3. Highest SAR Test Plots**
- 15.4. Calibration Certificate for E-Field Probe EX3DV4 - SN 3686**
- 15.5. Calibration Certificate for E-Field Probe EX3DV4 - SN 3936**
- 15.6. Calibration Certificate for E-Field Probe EX3DV4 - SN 3902**
- 15.7. Calibration Certificate for D835V2 - SN 4d142**
- 15.8. Calibration Certificate for D1900V2- SN 5d043**
- 15.9. Calibration Certificate for D1900V2- SN 5d163**
- 15.10. Calibration Certificate for D2450V2 - SN 899**
- 15.11. Calibration Certificate for D2600V2 – SN 1006**

END OF REPORT