



SAR EVALUATION REPORT
CLASS II PERMISSIVE CHANGE

FCC 47 CFR § 2.1093
IEEE Std 1528-2013

For
CDMA/LTE PHONE + BLUETOOTH and WLAN 2.4GHz b/g/n

FCC ID: ZNFLS751
Model Name: LGLS751, LG-LS751, LS751

Report Number: 15I20527-S1A
Issue Date: 5/11/2015

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Date	Revisions	Revised By
--	5/1/2015	Initial Issue	--
A	5/11/2015	Report revised based on Reviewer's comments: 1. Sec. 10.3.: Updated table 2. Appendix C: Corrected BC10 plot	Kenneth Mak

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1. Attestation of Test Results

Applicant Name	LG ELECTRONICS MOBILECOMM U.S.A., INC.			
FCC ID	ZNFLS751			
Model Name	LGLS751, LG-LS751, LS751			
Applicable Standards	FCC 47 CFR § 2.1093 Published RF exposure KDB procedures IEEE Std 1528-2013			
SAR Limits (W/Kg)				
Exposure Category	Peak spatial-average(1g of tissue)			
General population / Uncontrolled exposure	1.6			
The Highest Reported SAR (W/kg)				
RF Exposure Conditions	Equipment Class			
	Licensed	DTS	U-NII	DSS (BT)
Head	1.007	0.397	N/A	N/A
Body-worn	0.966	0.134		
Hotspot/Wi-Fi Direct				
Simultaneous Tx	1.404			
Date Tested	4/20/2015 to 4/27/2015			
Test Results	Pass			
<p>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.</p> <p>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.</p>				
Approved & Released By:			Prepared By:	
				
Bobby Bayani Senior Engineer UL Verification Services Inc.			James Kim Laboratory Technician UL Verification Services Inc.	

2. Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR § 2.1093, IEEE STD 1528-2013, the following FCC Published RF exposure [KDB](#) procedures:

- 248227 D01 SAR meas for 802.11 v02
- 447498 D01 General RF Exposure Guidance v05r02
- 447498 D03 Supplement C Cross-Reference
- 648474 D04 Handset SAR v01r02
- 690783 D01 SAR Listings on Grants v01r03
- 865664 D01 SAR measurement 100 MHz to 6 GHz v01r03
- 865664 D02 RF Exposure Reporting v01r01
- 941225 D01 3G SAR Procedures v03
- 941225 D05 SAR for LTE Devices v02r03
- 941225 D06 Hotspot Mode v02

3. Facilities and Accreditation

The test sites and measurement facilities used to collect data are located at

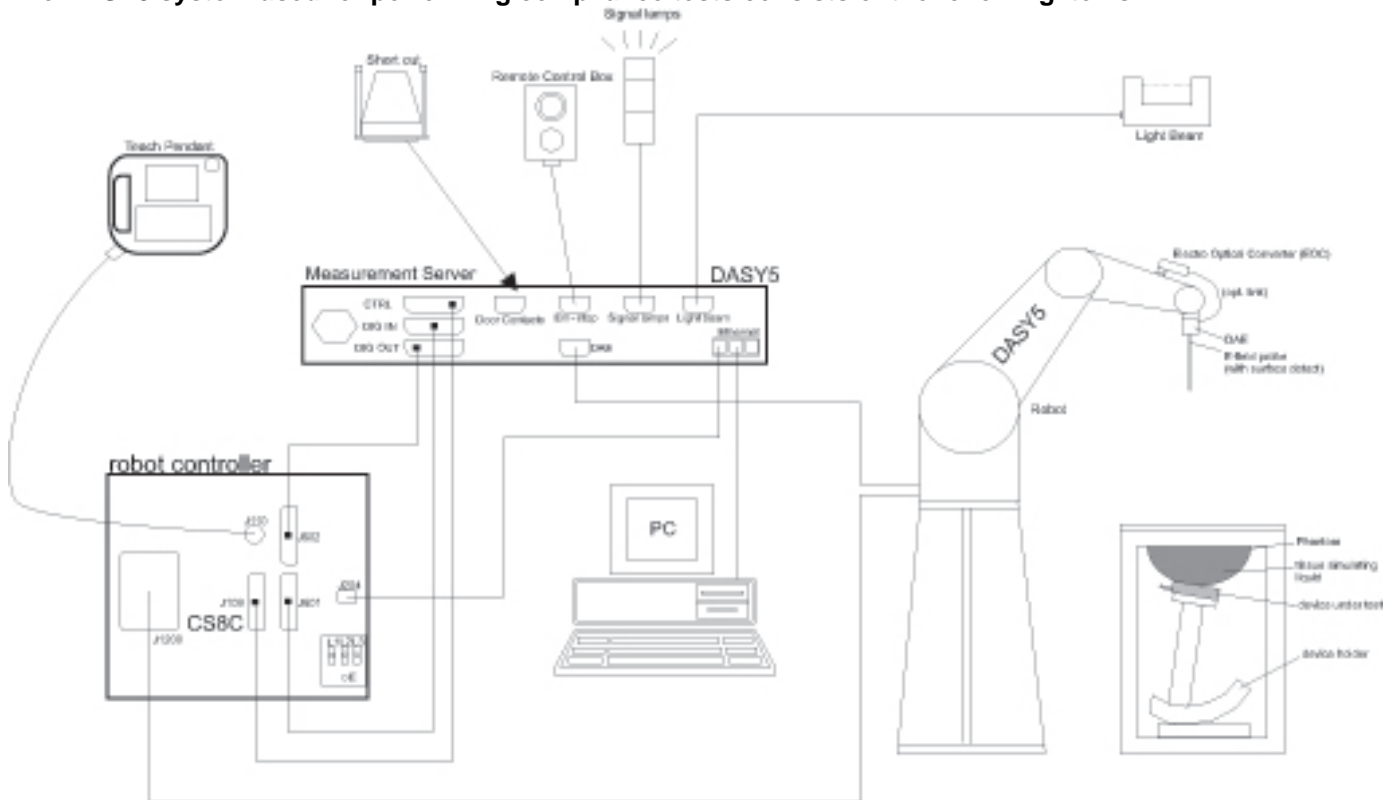
47173 Benicia Street	47266 Benicia Street
SAR Lab A	SAR Lab 1
SAR Lab B	SAR Lab 2
SAR Lab C	SAR Lab 3
SAR Lab D	SAR Lab 4
SAR Lab E	SAR Lab 5
SAR Lab F	
SAR Lab G	
SAR Lab H	

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://ts.nist.gov/standards/scopes/2000650.htm>

4. SAR Measurement System & Test Equipment

4.1. SAR Measurement System

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.

4.2. SAR Scan Procedures

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

	≤ 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	$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
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 \leq 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

		≤ 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	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 <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.

4.3. Test Equipment

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.

Dielectric Property Measurements

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Network Analyzer	Agilent	8753ES	MY40001647	7/17/2015
Dielectronic Probe kit	SPEAG	DAK-3.5	1087	11/11/2015
Dielectronic Probe kit	SPEAG	DAK-3.5 Short	SM DAK 200 BA	N/A
Thermometer	Traceable Calibration Control Co.	4242	122529162	10/8/2015

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Synthesized Signal Generator	HP	8665B	3744A01084	5/20/2015
Power Meter	Agilent	N1912A	MY53040016	5/5/2015
Power Sensor	Agilent	E9323A	MY53070005	5/1/2015
Power Sensor	Agilent	E9323A	MY53070009	5/28/2015
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1795093	N/A
Directional coupler	Werlatone	C8060-102	2149	N/A
DC Power Supply	AMETEK	XT 15-4	1319A02778	N/A
Synthesized Signal Generator	HP	8665B	3744A01155	3/18/2016
Power Meter	HP	437B	3125U11364	8/27/2015
Power Meter	HP	437B	3125U12345	8/15/2015
Power Sensor	HP	8481A	1926A27048	8/15/2015
Power Sensor	HP	8481A	2702A76223	9/17/2015
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1795092	N/A
Directional coupler	Werlatone	C8060-102	2141	N/A
DC Power Supply	BK PRECISION	1611	215-02292	N/A
E-Field Probe (SAR Lab A)	SPEAG	EX3DV4	3901	1/27/2016
E-Field Probe (SAR Lab E)	SPEAG	EX3DV4	3772	2/23/2016
E-Field Probe (SAR Lab F)	SPEAG	EX3DV4	3936	7/24/2015
E-Field Probe (SAR Lab G)	SPEAG	EX3DV4	3686	2/23/2016
Data Acquisition Electronics (SAR Lab A)	SPEAG	DAE4	1357	2/20/2016
Data Acquisition Electronics (SAR Lab E)	SPEAG	DAE4	1257	9/29/2015
Data Acquisition Electronics (SAR Lab F)	SPEAG	DAE4	1359	2/18/2016
Data Acquisition Electronics (SAR Lab G)	SPEAG	DAE4	1433	3/12/2016
System Validation Dipole	SPEAG	D750V3	1071	11/13/2015
System Validation Dipole	SPEAG	D835V2	4d002	11/13/2015
System Validation Dipole	SPEAG	D1750V2	1053	8/18/2015
System Validation Dipole	SPEAG	D1900V2	5d043	11/7/2015
System Validation Dipole	SPEAG	D2450V2	706	5/20/2015
System Validation Dipole	SPEAG	D2600V2	1036	3/13/2016

Other

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Power Meter	Agilent	N1911A	MY53060016	8/7/2015
Power Sensor	Agilent	N1921A	MY52020022	12/12/2015
Base Station Simulator	R & S	CMW500	135387	7/8/2015

5. Measurement Uncertainty

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

6. Device Under Test (DUT) Information

6.1. DUT Description

Device Dimension	Overall (Length x Width): 139.7 mm x 69.8 mm Overall Diagonal: 151.2 mm Display Diagonal: 127 mm
Back Cover	<input checked="" type="checkbox"/> Normal Battery Cover
Battery Options	<input checked="" type="checkbox"/> Standard – Lithium-ion battery, Rating 3.8Vdc, 9.7Wh
Accessory	Headset
Wireless Router (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)
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)

6.2. Wireless Technologies

Wireless technologies	Frequency bands	Operating mode	Duty Cycle used for SAR testing
CDMA (CDMA2000)	BC0 BC1 BC10	1xRTT (Voice & Data) 1xEV-DO Rel. 0 1xEV-DO Rev. A 1xAdvanced	100%
	Does this device support SV-DO (1xRTT-1xEVDO)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
LTE (FDD)	Band 2 Band 4 Band 5 Band 12 Band 25 Band 26	QPSK 16QAM	100%
	Does this device support SV-LTE (1xRTT-LTE)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
LTE (TDD)	Band 41	QPSK 16QAM	63.3%
	Does this device support SV-LTE (1xRTT-LTE)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Wi-Fi	2.4 GHz	802.11b 802.11g 802.11n (HT20)	100%
Bluetooth	2.4 GHz	Version 4.0 LE	N/A

6.3. Nominal and Maximum Output Power

KDB 447498 sec.4.1.(3) at the maximum rated output power and within the tune-up tolerance range specified for the product, but not more than 2 dB lower than the maximum tune-up tolerance limit

Upper limit (dB): -1.5 ~ 0.5		Max. RF Output Power (dBm)	
RF Air interface	Mode	Target	Max. tune-up tolerance limit
CDMA BC0	1xRTT	24.2	24.7
	1xAdvanced	24.2	24.7
	1xEVDO Rel. 0	24.2	24.7
	1xEVDO Rev. A	24.2	24.7
CDMA BC1	1xRTT	24.2	24.7
	1xAdvanced	24.2	24.7
	1xEVDO Rel. 0	24.2	24.7
	1xEVDO Rev. A	24.2	24.7
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
LTE Band 2	QPSK	23.2	23.7
LTE Band 4	QPSK	23.2	23.7
LTE Band 5	QPSK	23.2	23.7
LTE Band 12	QPSK	23.7	24.2
LTE Band 25	QPSK	23.2	23.7
LTE Band 26	QPSK	23.2	23.7
LTE Band 41	QPSK	23.5	24.0
Upper limit (dB): 1.0		Max. RF Output Power (dBm)	
RF Air interface	Mode	Target	Max. tune-up tolerance limit
WiFi 2.4 GHz	802.11b	16.0	17.0
	802.11g	13.0	14.0
	802.11n HT20	12.0	13.0
Upper limit (dB): 2.0		Max. RF Output Power (dBm)	
RF Air interface	Mode	Target	Max. tune-up tolerance limit
	Bluetooth	8.0	10.0
	Bluetooth LE	0.0	2.0

6.4. General LTE SAR Test and Reporting Considerations

Item	Description						
Frequency range, Channel Bandwidth, Numbers and Frequencies	Band 2	Frequency range: 1850 - 1910 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	18700/1860	18675/1857.5	18650/1855	18625/1852.5	18615/1851.5	18607/1850.7
	Mid	18900/1880	18900/1880	18900/1880	18900/1880	18900/1880	18900/1880
	High	19100/1900	19125/1902.5	19150/1905	19175/1907.5	19185/1908.5	19193/1909.3
	Band 4	Frequency range: 1710 - 1755 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	20050/1720	20025/1717.5	20000/1715	19975/1712.5	19965/1711.5	19957/1710.7
	Mid	20175/1732.5	20175/1732.5	20175/1732.5	20175/1732.5	20175/1732.5	20175/1732.5
	High	20300/1745	20325/1747.5	20350/1750	20375/1752.5	20385/1753.5	20393/1754.3
	Band 5	Frequency range: 824 - 849 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low			20450/829	20425/826.5	20415/825.5	20407/824.7
	Mid			20525/836.5	20525/836.5	20525/836.5	20525/836.5
	High			20600/844	20625/846.5	20635/847.5	20643/848.3
	Band 12	Frequency range: 699 – 716 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low			23060/704	23035/701.5	23025/700.5	23017/699.7
	Mid			23095/707.5	23095/707.5	23095/707.5	23095/707.5
	High			23130/711	23155/713.5	23165/714.5	23173/715.3
	Band 25	Frequency range: 1850 - 1915 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	26140/1860	26115/1857.5	26090/1855	26065/1852.5	26055/1851.5	26047/1850.7
Mid	26365/1882.5	26365/1882.5	26365/1882.5	26365/1882.5	26365/1882.5	26365/1882.5	
High	26590/1905	26615/1907.5	26640/1910	26665/1912.5	26675/1913.5	26683/1914.3	
Band 26	Frequency range: 814 - 849 MHz						
	Channel Bandwidth						
	20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz	
Low		26765/821.5	26740/819	26715/816.5	26705/815.5	26697/814.7	
Mid		26865/831.5	26865/831.5	26865/831.5	26865/831.5	26865/831.5	
High		26965/841.5	26990/844	27015/846.5	27025/847.5	27033/848.3	

General LTE SAR Test and Reporting Considerations (Continued)

Frequency range, Channel Bandwidth, Numbers and Frequencies	Band 41	Frequency range: 2496 - 2690 MHz																																										
		Channel Bandwidth																																										
	20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz																																						
Low	39750/ 2506.0	39725/ 2503.5	39700/ 2501	39675/ 2498.5																																								
Low-Mid	40185/ 2549.5	40173/ 2548.3	40160/ 2547.0	40148/ 2545.8																																								
Mid	40620/ 2593.0	40620/ 2593.0	40620/ 2593.0	40620/ 2593.0																																								
Mid-High	41055/ 2636.5	41068/ 2547.8	41080/ 2639.0	41093/ 2640.3																																								
High	41490/ 2680.0	41515/ 2682.5	41540/ 2685.0	41565/ 2687.5																																								
LTE transmitter and antenna implementation	LTE Bands 5/12/26 has one (1) Tx/Rx antenna, LTE Bands 2/4/25/41 has and one (1) Tx/Rx antenna, LTE Bands 2/4/5/25/26/41 has one(1) Rx antenna and LTE Band 12 has one (1) Rx antenna. Refer to Appendix A.																																											
Maximum power reduction (MPR)	<p align="center">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	No																																											
Spectrum plots for RB configurations	A properly configured base station 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.																																											

6.5. LTE (TDD) Considerations

According to KDB 941225 D05 SAR for LTE Devices, 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	$26336 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$			$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-		
9	$13168 \cdot T_s$	-	-	-	-	-

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 $\times (T_s) \times \#$ 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

7. RF Exposure Conditions (Test Configurations)

Refer to “SAR Photos and Ant locations” Appendix for the specific details of the antenna-to-antenna and antenna-to-edge(s) distances.

Wireless technologies	RF Exposure Conditions	DUT-to-User Separation	Test Position	Antenna-to-edge/surface	SAR Required	Note
WWAN (Antenna 1)	Head	0 mm	Left Touch	N/A	Yes	
			Left Tilt (15°)	N/A	Yes	
			Right Touch	N/A	Yes	
			Right Tilt (15°)	N/A	Yes	
	Body	10 mm	Rear	N/A	Yes	
			Front	N/A	Yes	
	Hotspot	10 mm	Rear	< 25 mm	Yes	
			Front	< 25 mm	Yes	
			Edge 1 (Top)	> 25 mm	No	1
			Edge 2 (Right)	< 25 mm	Yes	
			Edge 3 (Bottom)	< 25 mm	Yes	
			Edge 4 (Left)	< 25 mm	Yes	
WWAN (Antenna 2)	Head	0 mm	Left Touch	N/A	Yes	
			Left Tilt (15°)	N/A	Yes	
			Right Touch	N/A	Yes	
			Right Tilt (15°)	N/A	Yes	
	Body	10 mm	Rear	N/A	Yes	
			Front	N/A	Yes	
	Hotspot	10 mm	Rear	< 25 mm	Yes	
			Front	< 25 mm	Yes	
			Edge 1 (Top)	> 25 mm	No	1
			Edge 2 (Right)	> 25 mm	No	1
			Edge 3 (Bottom)	< 25 mm	Yes	
			Edge 4 (Left)	< 25 mm	Yes	
WLAN (Antenna 4)	Head	0 mm	Left Touch	N/A	Yes	
			Left Tilt (15°)	N/A	Yes	
			Right Touch	N/A	Yes	
			Right Tilt (15°)	N/A	Yes	
	Body	10 mm	Rear	N/A	Yes	
			Front	N/A	Yes	
	Hotspot / Wi-Fi Direct	10 mm	Rear	< 25 mm	Yes	
			Front	< 25 mm	Yes	
			Edge 1 (Top)	< 25 mm	Yes	
			Edge 2 (Right)	< 25 mm	Yes	
			Edge 3 (Bottom)	> 25 mm	No	1
			Edge 4 (Left)	> 25 mm	No	1

Notes:

- SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR.

8. Dielectric Property Measurements & System Check

8.1. Dielectric Property Measurements

The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within $\pm 2^\circ\text{C}$ 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.

Tissue Dielectric Parameters

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

IEEE Std 1528-2013

Refer to Table 3 within the IEEE Std 1528-2013

Dielectric Property Measurements Results:

SAR Lab A

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)	
4/23/2015	Head 2600	e'	37.9500	Relative Permittivity (ϵ_r):	37.95	39.01	-2.72	5
		e"	14.0800	Conductivity (σ):	2.04	1.96	3.74	5
	Head 2500	e'	38.3500	Relative Permittivity (ϵ_r):	38.35	39.14	-2.01	5
		e"	13.8700	Conductivity (σ):	1.93	1.85	3.99	5
	Head 2700	e'	37.5700	Relative Permittivity (ϵ_r):	37.57	38.88	-3.38	5
		e"	14.3100	Conductivity (σ):	2.15	2.07	3.77	5
4/23/2015	Body 2600	e'	52.1000	Relative Permittivity (ϵ_r):	52.10	52.51	-0.78	5
		e"	14.9000	Conductivity (σ):	2.15	2.16	-0.31	5
	Body 2500	e'	52.4300	Relative Permittivity (ϵ_r):	52.43	52.64	-0.39	5
		e"	14.6300	Conductivity (σ):	2.03	2.02	0.66	5
	Body 2700	e'	51.8100	Relative Permittivity (ϵ_r):	51.81	52.38	-1.10	5
		e"	15.2100	Conductivity (σ):	2.28	2.30	-0.78	5
4/27/2015	Body 835	e'	54.0400	Relative Permittivity (ϵ_r):	54.04	55.20	-2.10	5
		e"	21.7100	Conductivity (σ):	1.01	0.97	3.91	5
	Body 820	e'	54.2100	Relative Permittivity (ϵ_r):	54.21	55.28	-1.93	5
		e"	21.8000	Conductivity (σ):	0.99	0.97	2.63	5
	Body 850	e'	53.9100	Relative Permittivity (ϵ_r):	53.91	55.16	-2.26	5
		e"	21.6700	Conductivity (σ):	1.02	0.99	3.75	5
4/27/2015	Body 1900	e'	52.9000	Relative Permittivity (ϵ_r):	52.90	53.30	-0.75	5
		e"	14.7500	Conductivity (σ):	1.56	1.52	2.52	5
	Body 1850	e'	53.1500	Relative Permittivity (ϵ_r):	53.15	53.30	-0.28	5
		e"	14.6300	Conductivity (σ):	1.50	1.52	-0.99	5
	Body 1910	e'	52.8500	Relative Permittivity (ϵ_r):	52.85	53.30	-0.84	5
		e"	14.7800	Conductivity (σ):	1.57	1.52	3.27	5

SAR Lab E

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)	
4/20/2015	Head 835	e'	42.0300	Relative Permittivity (ϵ_r):	42.03	41.50	1.28	5
		e"	19.5900	Conductivity (σ):	0.91	0.90	1.06	5
	Head 820	e'	42.1200	Relative Permittivity (ϵ_r):	42.12	41.60	1.24	5
		e"	19.6400	Conductivity (σ):	0.90	0.90	-0.33	5
	Head 850	e'	41.8600	Relative Permittivity (ϵ_r):	41.86	41.50	0.87	5
		e"	19.6300	Conductivity (σ):	0.93	0.92	1.40	5
4/20/2015	Body 835	e'	54.6300	Relative Permittivity (ϵ_r):	54.63	55.20	-1.03	5
		e"	21.4000	Conductivity (σ):	0.99	0.97	2.43	5
	Body 820	e'	54.6600	Relative Permittivity (ϵ_r):	54.66	55.28	-1.12	5
		e"	21.4200	Conductivity (σ):	0.98	0.97	0.84	5
	Body 850	e'	54.5300	Relative Permittivity (ϵ_r):	54.53	55.16	-1.14	5
		e"	21.4000	Conductivity (σ):	1.01	0.99	2.46	5
4/23/2015	Head 835	e'	42.2000	Relative Permittivity (ϵ_r):	42.20	41.50	1.69	5
		e"	19.7100	Conductivity (σ):	0.92	0.90	1.68	5
	Head 820	e'	42.4100	Relative Permittivity (ϵ_r):	42.41	41.60	1.94	5
		e"	19.7900	Conductivity (σ):	0.90	0.90	0.43	5
	Head 850	e'	42.0000	Relative Permittivity (ϵ_r):	42.00	41.50	1.20	5
		e"	19.6000	Conductivity (σ):	0.93	0.92	1.24	5
4/23/2015	Body 835	e'	53.9700	Relative Permittivity (ϵ_r):	53.97	55.20	-2.23	5
		e"	21.1100	Conductivity (σ):	0.98	0.97	1.04	5
	Body 820	e'	54.1300	Relative Permittivity (ϵ_r):	54.13	55.28	-2.07	5
		e"	21.2700	Conductivity (σ):	0.97	0.97	0.14	5
	Body 850	e'	53.8000	Relative Permittivity (ϵ_r):	53.80	55.16	-2.46	5
		e"	21.0110	Conductivity (σ):	0.99	0.99	0.60	5

SAR Lab F

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)	
4/20/2015	Head 1900	e'	40.1400	Relative Permittivity (ϵ_r):	40.14	40.00	0.35	5
		e"	13.6700	Conductivity (σ):	1.44	1.40	3.16	5
	Head 1850	e'	40.3900	Relative Permittivity (ϵ_r):	40.39	40.00	0.98	5
		e"	13.5600	Conductivity (σ):	1.39	1.40	-0.37	5
	Head 1910	e'	40.1200	Relative Permittivity (ϵ_r):	40.12	40.00	0.30	5
		e"	13.6800	Conductivity (σ):	1.45	1.40	3.77	5
4/20/2015	Body 1900	e'	53.3100	Relative Permittivity (ϵ_r):	53.31	53.30	0.02	5
		e"	14.9100	Conductivity (σ):	1.58	1.52	3.63	5
	Body 1850	e'	53.5200	Relative Permittivity (ϵ_r):	53.52	53.30	0.41	5
		e"	14.8100	Conductivity (σ):	1.52	1.52	0.23	5
	Body 1910	e'	53.3000	Relative Permittivity (ϵ_r):	53.30	53.30	0.00	5
		e"	14.8900	Conductivity (σ):	1.58	1.52	4.04	5
4/22/2015	Head 750	e'	40.2700	Relative Permittivity (ϵ_r):	40.27	41.96	-4.03	5
		e"	21.5100	Conductivity (σ):	0.90	0.89	0.44	5
	Head 700	e'	40.9700	Relative Permittivity (ϵ_r):	40.97	42.22	-2.96	5
		e"	21.7700	Conductivity (σ):	0.85	0.89	-4.71	5
	Head 790	e'	39.7100	Relative Permittivity (ϵ_r):	39.71	41.76	-4.90	5
		e"	21.4000	Conductivity (σ):	0.94	0.90	4.90	5
4/22/2015	Body 750	e'	54.0800	Relative Permittivity (ϵ_r):	54.08	55.55	-2.64	5
		e"	23.3900	Conductivity (σ):	0.98	0.96	1.28	5
	Body 700	e'	54.3900	Relative Permittivity (ϵ_r):	54.39	55.74	-2.42	5
		e"	23.9300	Conductivity (σ):	0.93	0.96	-2.90	5
	Body 790	e'	53.2800	Relative Permittivity (ϵ_r):	53.28	55.39	-3.81	5
		e"	22.9500	Conductivity (σ):	1.01	0.97	4.34	5

SAR Lab G

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)	
4/20/2015	Head 2450	e'	37.9900	Relative Permittivity (ϵ_r):	37.99	39.20	-3.09	5
		e"	13.3100	Conductivity (σ):	1.81	1.80	0.73	5
	Head 2410	e'	38.2900	Relative Permittivity (ϵ_r):	38.29	39.28	-2.52	5
		e"	13.3200	Conductivity (σ):	1.78	1.76	1.39	5
	Head 2475	e'	37.8400	Relative Permittivity (ϵ_r):	37.84	39.17	-3.39	5
		e"	13.4500	Conductivity (σ):	1.85	1.83	1.31	5
4/20/2015	Body 2450	e'	51.6200	Relative Permittivity (ϵ_r):	51.62	52.70	-2.05	5
		e"	14.4400	Conductivity (σ):	1.97	1.95	0.88	5
	Body 2410	e'	51.9600	Relative Permittivity (ϵ_r):	51.96	52.76	-1.52	5
		e"	14.3700	Conductivity (σ):	1.93	1.91	0.95	5
	Body 2475	e'	51.5400	Relative Permittivity (ϵ_r):	51.54	52.67	-2.14	5
		e"	14.6300	Conductivity (σ):	2.01	1.99	1.42	5
4/21/2015	Head 1750	e'	40.8200	Relative Permittivity (ϵ_r):	40.82	40.08	1.83	5
		e"	13.9200	Conductivity (σ):	1.35	1.37	-1.06	5
	Head 1710	e'	41.4700	Relative Permittivity (ϵ_r):	41.47	40.15	3.30	5
		e"	13.8300	Conductivity (σ):	1.31	1.35	-2.33	5
	Head 1755	e'	40.8200	Relative Permittivity (ϵ_r):	40.82	40.08	1.85	5
		e"	13.9600	Conductivity (σ):	1.36	1.37	-0.69	5
4/21/2015	Body 1750	e'	51.4100	Relative Permittivity (ϵ_r):	51.41	53.44	-3.80	5
		e"	15.1700	Conductivity (σ):	1.48	1.49	-0.67	5
	Body 1710	e'	52.0300	Relative Permittivity (ϵ_r):	52.03	53.54	-2.83	5
		e"	15.1300	Conductivity (σ):	1.44	1.46	-1.57	5
	Body 1755	e'	51.4300	Relative Permittivity (ϵ_r):	51.43	53.43	-3.74	5
		e"	15.2100	Conductivity (σ):	1.48	1.49	-0.33	5

8.2. System 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 re-measured or sooner when marginal liquid parameters are used at the beginning of a series of measurements.

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 for SAR measurements ≤ 3 GHz and ≥ 10.0 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.

Reference Target SAR Values

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 (W/kg)		
				1g/10g	Head	Body
D750V3	1071	11/13/2014	750	1g	8.22	8.52
				10g	5.39	5.64
D835V2	4d002	11/13/2014	835	1g	9.23	9.33
				10g	5.99	6.12
D1750V2	1053	8/18/2014	1750	1g	36.9	38.0
				10g	19.6	20.4
D1900V2	5d043	11/7/2014	1900	1g	40.6	40.0
				10g	21.1	21.3
D2450V2	706	5/20/2014	2450	1g	53.0	50.2
				10g	24.5	23.4
D2600V2	1036	3/13/2015	2600	1g	56.1	56.2
				10g	25.0	25.0

System 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 A

Date Tested	System Dipole		T.S. Liquid	Measured Results		Target (Ref. Value)	Delta $\pm 10\%$	Plot No.	
	Type	Serial #		Zoom Scan to 100 mW	Normalize to 1 W				
4/23/2015	D2600V2	1036	Head	1g	6.05	60.5	56.1	7.84	1,2
				10g	2.66	26.6	25.0	6.40	
4/23/2015	D2600V2	1036	Body	1g	6.05	60.5	56.2	7.65	
				10g	2.64	26.4	25.0	5.60	
4/27/2015	D835V2	4d002	Body	1g	1.01	10.1	9.33	8.25	3,4
				10g	0.664	6.64	6.12	8.50	
4/27/2015	D1900V2	5d043	Body	1g	4.28	42.8	40.0	7.00	5,6
				10g	2.23	22.3	21.3	4.69	

SAR Lab E

Date Tested	System Dipole		T.S. Liquid	Measured Results		Target (Ref. Value)	Delta $\pm 10\%$	Plot No.	
	Type	Serial #		Zoom Scan to 100 mW	Normalize to 1 W				
4/20/2015	D835V2	4d002	Head	1g	0.926	9.26	9.23	0.33	
				10g	0.611	6.11	5.99	2.00	
4/20/2015	D835V2	4d002	Body	1g	0.983	9.83	9.33	5.36	
				10g	0.650	6.50	6.12	6.21	
4/23/2015	D835V2	4d002	Head	1g	0.953	9.53	9.23	3.25	
				10g	0.629	6.29	5.99	5.01	
4/23/2015	D835V2	4d002	Body	1g	0.990	9.90	9.33	6.11	7,8
				10g	0.656	6.56	6.12	7.19	

SAR Lab F

Date Tested	System Dipole		T.S. Liquid	Measured Results		Target (Ref. Value)	Delta $\pm 10\%$	Plot No.	
	Type	Serial #		Zoom Scan to 100 mW	Normalize to 1 W				
4/20/2015	D1900V2	5d043	Head	1g	4.33	43.3	40.6	6.65	9,10
				10g	2.21	22.1	21.1	4.74	
4/20/2015	D1900V2	5d043	Body	1g	4.22	42.2	40.0	5.50	
				10g	2.16	21.6	21.3	1.41	
4/22/2015	750V2	1071	Head	1g	0.841	8.41	8.22	2.31	
				10g	0.551	5.51	5.39	2.23	
4/22/2015	750V2	1071	Body	1g	0.892	8.92	8.52	4.69	11,12
				10g	0.595	5.95	5.64	5.50	

SAR Lab G

Date Tested	System Dipole		T.S. Liquid	Measured Results		Target (Ref. Value)	Delta $\pm 10\%$	Plot No.	
	Type	Serial #		Zoom Scan to 100 mW	Normalize to 1 W				
4/20/2015	2450	706	Head	1g	5.39	53.9	53.0	1.70	
				10g	2.46	24.6	24.5	0.41	
4/20/2015	2450	706	Body	1g	5.27	52.7	50.2	4.98	13,14
				10g	2.46	24.6	23.4	5.13	
4/21/2015	1750	1053	Head	1g	3.70	37.0	36.9	0.27	
				10g	2.05	20.5	19.6	4.59	
4/21/2015	1750	1053	Body	1g	3.77	37.7	38.0	-0.79	15,16
				10g	2.01	20.1	20.4	-1.47	

9. Conducted Output Power Measurements

9.1. CDMA

1x Advanced Setup Procedures used to establish the test signals

Call box setup procedure

- Protocol Rev > 6 (IS-2000-0)
- System ID: 331; NID: 65535, Reg. Ch. #.:
- Radio Config (RC) > Fwd11,Rvs8
- Service Option (SO) Setup > SO75 (Loopback)
- Traffic Data Rate > Full
- Rvs Power Ctrl > All Up bits (Maximum TxPout)
- Reverse Power Control Mode: 00-200 to 400 bps
- Smart blanking was disabled.

Measured Results

Band	Mode	Ch No.	Freq. (MHz)	Avg Pwr (dBm)	
BC 0	1xRTT	RC1 SO55 (Loopback)	1013	824.70	24.6
			384	836.52	24.4
			777	848.31	24.4
		RC3 SO55 (Loopback)	1013	824.70	24.6
			384	836.52	24.4
			777	848.31	24.4
		RC3 SO32 (+F-SCH)	1013	824.70	24.6
			384	836.52	24.4
			777	848.31	24.4
	1xAdvanced	Fwd11/Rvs8 SO75 (Loopback)	1013	824.70	24.4
			384	836.52	24.4
			777	848.31	24.3
	1xEVDO Rel. 0	FTAP Rate: 307.2 kbps(2 slot, QPSK) RTAP Rate: 153.6 kbps	1013	824.70	24.6
			384	836.52	24.5
			777	848.31	24.5
	1xEVDO Rev. A	FETAP: 307.2k, QPSK/ ACK RETAP: 4096	1013	824.70	24.6
			384	836.52	24.5
			777	848.31	24.5
Band	Mode	Ch No.	Freq. (MHz)	Avg Pwr (dBm)	
BC 1	1xRTT	RC1 SO55 (Loopback)	25	1851.25	24.6
			600	1880.00	24.6
			1175	1908.75	24.5
		RC3 SO55 (Loopback)	25	1851.25	24.7
			600	1880.00	24.7
			1175	1908.75	24.5
		RC3 SO32 (+F-SCH)	25	1851.25	24.6
			600	1880.00	24.7
			1175	1908.75	24.5
	1xAdvanced	Fwd11/Rvs8 SO75 (Loopback)	25	1851.25	24.6
			600	1880.00	24.7
			1175	1908.75	24.7
	1xEVDO Rel. 0	FTAP Rate: 307.2 kbps(2 slot, QPSK) RTAP Rate: 153.6 kbps	25	1851.25	24.6
			600	1880.00	24.7
			1175	1908.75	24.6
	1xEVDO Rev. A	FETAP: 307.2k, QPSK/ ACK RETAP: 4096	25	1851.25	24.6
			600	1880.00	24.6
			1175	1908.75	24.5

Band	Mode		Ch No.	Freq. (MHz)	Avg Pwr (dBm)
BC 10	1xRTT	RC1 SO55 (Loopback)	476	817.9	25.0
			580	820.5	25.0
			684	823.1	24.6
		RC3 SO55 (Loopback)	476	817.9	25.0
			580	820.5	25.0
			684	823.1	24.6
		RC3 SO32 (+F-SCH)	476	817.9	25.0
			580	820.5	25.0
			684	823.1	24.7
	1xAdvanced	Fwd11/Rvs8 SO75 (Loopback)	476	817.9	24.8
			580	820.5	24.8
			684	823.1	24.5
	1xEVDO Rel. 0	FTAP Rate: 307.2 kbps(2 slot, QPSK) RTAP Rate: 153.6 kbps	476	817.9	24.8
			580	820.5	24.8
			684	823.1	24.4
	1xEVDO Rev. A	FETAP: 307.2k, QPSK/ ACK RETAP: 4096	476	817.9	24.8
			580	820.5	24.8
			684	823.1	24.4

9.2. LTE

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 2 Measured Results

SAR for LTE Band 2 is covered by LTE Band 25 due to similar frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 4 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							1720 MHz	1732.5 MHz	1745 MHz
LTE Band 4	20	QPSK	1	0	0	0	23.2	23.4	23.2
			1	49	0	0	23.4	23.3	23.4
			1	99	0	0	22.9	23.1	23.0
			50	0	1	1	22.2	22.3	22.3
			50	24	1	1	22.2	22.2	22.2
			50	50	1	1	22.1	22.2	22.1
		16QAM	100	0	1	1	22.2	22.3	22.3
			1	0	1	1	22.3	22.4	22.6
			1	49	1	1	22.7	22.0	22.6
			1	99	1	1	22.0	21.7	22.4
			50	0	2	2	21.2	21.2	21.2
			50	24	2	2	21.1	21.1	21.0
			50	50	2	2	21.1	21.0	21.0
			100	0	2	2	21.2	21.3	21.3

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							1717.5 MHz	1732.5 MHz	1747.5 MHz
LTE Band 4	15	QPSK	1	0	0	0	23.2	23.2	23.3
			1	37	0	0	23.1	23.3	23.0
			1	74	0	0	23.2	23.2	22.8
			36	0	1	1	22.2	22.3	22.2
			36	20	1	1	22.1	22.2	22.2
			36	39	1	1	22.2	22.2	22.2
		16QAM	75	0	1	1	22.1	22.3	22.2
			1	0	1	1	22.7	22.7	22.7
			1	37	1	1	22.7	22.7	22.7
			1	74	1	1	22.6	22.7	22.7
			36	0	2	2	21.0	21.2	21.2
			36	20	2	2	21.1	21.1	21.3
			36	39	2	2	21.2	21.1	21.0
			75	0	2	2	21.1	21.2	21.2

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							1715 MHz	1732.5 MHz	1750 MHz
LTE Band 4	10	QPSK	1	0	0	0	23.3	22.9	23.1
			1	25	0	0	23.1	23.2	23.1
			1	49	0	0	23.0	23.2	22.9
			25	0	1	1	22.3	22.3	22.3
			25	12	1	1	22.3	22.1	22.2
			25	25	1	1	22.1	22.2	22.1
		16QAM	50	0	1	1	22.3	22.2	22.2
			1	0	1	1	22.7	22.7	22.4
			1	25	1	1	22.7	22.5	21.8
			1	49	1	1	22.7	22.6	22.0
			25	0	2	2	21.0	21.3	21.2
			25	12	2	2	21.2	21.1	21.2
			25	25	2	2	21.0	21.2	21.1
			50	0	2	2	21.1	21.1	21.1

LTE Band 4 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							1712.5 MHz	1732.5 MHz	1752.5 MHz
LTE Band 4	5	QPSK	1	0	0	0	22.9	23.3	23.2
			1	12	0	0	23.1	23.6	23.3
			1	24	0	0	23.0	23.3	23.3
			12	0	1	1	22.2	22.1	22.2
			12	7	1	1	22.1	22.1	22.2
			12	13	1	1	22.2	22.1	22.2
			25	0	1	1	22.1	22.2	22.2
		16QAM	1	0	1	1	22.2	22.2	22.5
			1	12	1	1	22.5	22.1	22.7
			1	24	1	1	22.2	22.5	22.4
			12	0	2	2	21.0	21.1	21.1
			12	7	2	2	21.1	21.1	21.3
			12	13	2	2	21.1	21.3	21.3
			25	0	2	2	21.4	21.1	21.3
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							1711.5 MHz	1732.5 MHz	1753.5 MHz
LTE Band 4	3	QPSK	1	0	0	0	23.1	23.1	23.0
			1	8	0	0	23.0	23.3	23.1
			1	14	0	0	23.1	23.3	22.9
			8	0	1	1	22.1	22.3	22.0
			8	4	1	1	22.2	22.2	22.1
			8	7	1	1	22.2	22.2	22.1
			15	0	1	1	22.2	22.2	22.2
		16QAM	1	0	1	1	22.7	22.6	22.4
			1	8	1	1	22.7	22.7	22.5
			1	14	1	1	22.7	22.7	22.2
			8	0	2	2	21.3	21.1	21.2
			8	4	2	2	21.0	20.9	21.2
			8	7	2	2	21.0	20.7	21.2
			15	0	2	2	21.2	21.2	21.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							1710.7 MHz	1732.5 MHz	1754.3 MHz
LTE Band 4	1.4	QPSK	1	0	0	0	23.1	23.1	22.8
			1	3	0	0	22.9	23.2	22.9
			1	5	0	0	23.0	23.2	22.9
			3	0	0	0	23.1	23.1	23.0
			3	1	0	0	23.2	23.1	23.0
			3	3	0	0	23.2	23.1	23.1
			6	0	1	1	22.2	22.2	22.2
		16QAM	1	0	1	1	22.7	22.7	22.3
			1	3	1	1	22.7	22.7	22.3
			1	5	1	1	22.7	22.6	22.2
			3	0	1	1	22.3	22.0	22.5
			3	1	1	1	22.2	22.1	22.5
			3	3	1	1	22.2	21.7	22.6
			6	0	2	2	20.9	21.0	21.2

LTE Band 5 Measured Results

SAR for LTE Band 5 is covered by LTE Band 26 due to similar frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 12 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							704 MHz	707.5 MHz	711 MHz
LTE Band 12	10	QPSK	1	0	0	0	23.6	23.7	23.8
			1	25	0	0	23.6	23.7	23.5
			1	49	0	0	23.6	23.5	23.6
			25	0	1	1	22.8	22.8	22.8
			25	12	1	1	22.7	22.7	22.7
			25	25	1	1	22.8	22.7	22.9
		16QAM	50	0	1	1	22.8	22.7	22.8
			1	0	1	1	22.8	23.2	23.1
			1	25	1	1	23.0	23.2	22.6
			1	49	1	1	23.2	23.0	22.9
			25	0	2	2	21.7	21.9	21.9
			25	12	2	2	21.7	21.8	21.8
			25	25	2	2	21.9	21.7	22.1
			50	0	2	2	21.8	21.9	21.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							701.5 MHz	707.5 MHz	713.5 MHz
LTE Band 12	5	QPSK	1	0	0	0	23.5	23.7	23.7
			1	12	0	0	23.5	24.1	23.8
			1	24	0	0	23.5	23.7	23.8
			12	0	1	1	22.9	22.7	22.7
			12	7	1	1	22.7	22.8	22.9
			12	13	1	1	22.7	22.7	22.8
		16QAM	25	0	1	1	22.9	22.7	22.8
			1	0	1	1	22.9	23.0	23.0
			1	12	1	1	22.6	23.1	23.0
			1	24	1	1	23.0	23.1	23.0
			12	0	2	2	21.9	22.1	21.8
			12	7	2	2	21.6	22.0	21.9
			12	13	2	2	21.8	22.0	21.9
			25	0	2	2	22.0	21.6	21.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							700.5 MHz	707.5 MHz	714.5 MHz
LTE Band 12	3	QPSK	1	0	0	0	23.5	23.6	23.6
			1	8	0	0	23.6	23.7	23.7
			1	14	0	0	23.7	23.6	23.6
			8	0	1	1	22.9	22.8	22.8
			8	4	1	1	22.9	22.8	22.9
			8	7	1	1	22.9	22.8	22.8
		16QAM	15	0	1	1	22.8	22.8	22.9
			1	0	1	1	22.7	23.0	22.9
			1	8	1	1	23.0	23.0	23.0
			1	14	1	1	22.8	23.0	22.8
			8	0	2	2	22.2	21.5	22.1
			8	4	2	2	22.1	21.5	21.9
			8	7	2	2	21.8	21.8	22.0
			15	0	2	2	21.9	22.0	21.9

LTE Band 12 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							699.7 MHz	707.5 MHz	715.3 MHz
LTE Band 12	1.4	QPSK	1	0	0	0	23.6	23.6	23.5
			1	3	0	0	23.7	23.8	23.5
			1	5	0	0	23.8	23.5	23.6
			3	0	0	0	23.7	23.7	23.7
			3	1	0	0	23.7	23.6	23.6
			3	3	0	0	23.5	23.6	23.6
			6	0	1	1	22.9	22.9	22.8
		16QAM	1	0	1	1	23.0	23.0	22.7
			1	3	1	1	23.1	23.0	22.8
			1	5	1	1	23.0	23.0	23.0
			3	0	1	1	23.0	22.8	23.0
			3	1	1	1	22.9	22.9	23.2
			3	3	1	1	22.8	23.0	22.7
			6	0	2	2	21.6	21.6	21.9

LTE Band 25 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							1860 MHz	1882.5 MHz	1905 MHz
LTE Band 25	20	QPSK	1	0	0	0	23.3	23.3	23.2
			1	49	0	0	23.6	23.7	23.2
			1	99	0	0	23.3	23.1	23.2
			50	0	1	1	22.3	22.4	22.2
			50	24	1	1	22.2	22.3	22.0
			50	50	1	1	22.3	22.2	22.0
		16QAM	100	0	1	1	22.4	22.2	22.2
			1	0	1	1	22.3	22.3	22.7
			1	49	1	1	22.1	22.7	22.4
			1	99	1	1	22.3	22.0	22.4
			50	0	2	2	21.2	21.3	21.1
			50	24	2	2	21.1	21.3	20.9
			50	50	2	3	21.1	21.1	21.0
			100	0	2	2	21.3	21.2	21.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							1857.5 MHz	1882.5 MHz	1907.5 MHz
LTE Band 25	15	QPSK	1	0	0	0	23.6	23.4	23.1
			1	37	0	0	23.5	23.4	23.3
			1	74	0	0	23.1	23.0	22.9
			36	0	1	1	22.1	22.3	22.1
			36	20	1	1	22.1	22.3	21.9
			36	39	1	1	22.1	22.1	21.9
			75	0	1	1	22.1	22.2	22.0
		16QAM	1	0	1	1	22.7	22.2	22.7
			1	37	1	1	22.7	22.5	22.7
			1	74	1	1	22.7	21.9	22.7
			36	0	2	2	21.3	21.3	21.2
			36	20	2	2	21.2	21.2	20.8
			36	39	2	2	21.1	21.0	20.8
			75	0	2	2	21.0	21.1	21.1
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	23.3	23.2	22.9
			1	25	0	0	23.2	23.3	23.0
			1	49	0	0	23.0	23.1	22.9
			25	0	1	1	22.3	22.3	22.1
			25	12	1	1	22.2	22.2	22.1
			25	25	1	1	22.1	22.2	22.0
			50	0	1	1	22.1	22.3	22.0
		16QAM	1	0	1	1	22.6	22.5	22.3
			1	25	1	1	22.7	22.7	21.8
			1	49	1	1	22.7	22.7	22.2
			25	0	2	2	21.2	21.3	21.0
			25	12	2	2	21.1	21.2	21.2
			25	25	2	2	21.2	21.1	21.0
			50	0	2	2	21.0	21.1	21.0

LTE Band 25 Measured Results (continued)

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	23.0	22.9	23.1
			1	12	0	0	23.1	23.0	23.2
			1	24	0	0	22.9	23.0	23.1
			12	0	1	1	22.2	22.2	22.2
			12	7	1	1	22.2	22.2	22.0
			12	13	1	1	22.3	22.2	22.0
			25	0	1	1	22.3	22.2	22.0
		16QAM	1	0	1	1	22.5	22.3	22.5
			1	12	1	1	22.7	22.5	22.6
			1	24	1	1	22.2	21.9	22.7
			12	0	2	2	21.1	21.0	21.2
			12	7	2	2	21.1	21.2	21.1
			12	13	2	2	21.3	21.3	21.2
			25	0	2	2	21.1	21.3	21.1
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	23.1	23.1	23.0
			1	8	0	0	23.2	23.1	23.4
			1	14	0	0	23.1	23.1	23.0
			8	0	1	1	22.2	22.1	21.9
			8	4	1	1	22.2	22.3	21.9
			8	7	1	1	22.2	22.2	22.1
			15	0	1	1	22.2	22.2	22.0
		16QAM	1	0	1	1	22.2	22.7	22.2
			1	8	1	1	22.7	22.7	22.3
			1	14	1	1	22.7	22.7	22.2
			8	0	2	2	21.1	21.4	21.1
			8	4	2	2	21.0	21.3	21.2
			8	7	2	2	21.0	21.4	21.2
			15	0	2	2	21.0	21.2	21.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							1850.7 MHz	1882.5 MHz	1914.3 MHz
LTE Band 25	1.4	QPSK	1	0	0	0	23.2	23.1	22.8
			1	3	0	0	23.3	23.2	22.9
			1	5	0	0	23.1	23.0	22.8
			3	0	0	0	23.2	23.1	22.8
			3	1	0	0	23.3	23.2	23.0
			3	3	0	0	23.3	23.1	23.0
			6	0	1	1	22.2	22.0	21.9
		16QAM	1	0	1	1	22.6	22.6	22.1
			1	3	1	1	22.6	22.7	22.2
			1	5	1	1	22.6	22.7	22.0
			3	0	1	1	21.9	22.3	21.8
			3	1	1	1	22.0	22.3	22.0
			3	3	1	1	21.9	22.3	22.2
			6	0	2	2	20.9	21.2	21.2

LTE Band 26 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							821.5 MHz	831.5 MHz	841.5 MHz
LTE Band 26	15	QPSK	1	0	0	0	23.3	23.3	23.0
			1	37	0	0	23.3	23.5	23.0
			1	74	0	0	23.1	23.1	22.8
			36	0	1	1	22.4	22.3	22.3
			36	20	1	1	22.4	22.2	22.1
			36	39	1	1	22.2	22.2	22.2
			75	0	1	1	22.3	22.2	22.2
		16QAM	1	0	1	0	22.2	22.5	23.1
			1	37	1	0	22.6	22.5	23.2
			1	74	1	1	22.2	22.2	22.7
			36	0	2	2	21.4	21.4	21.3
			36	20	2	2	21.2	21.3	21.2
			36	39	2	2	21.1	21.2	21.1
			75	0	2	2	21.2	21.2	21.2
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							819 MHz	831.5 MHz	844 MHz
LTE Band 26	10	QPSK	1	0	0	0	23.3	23.3	23.1
			1	25	0	0	23.3	23.1	23.0
			1	49	0	0	23.2	23.2	23.1
			25	0	1	1	22.3	22.4	22.2
			25	12	1	1	22.4	22.2	22.2
			25	25	1	1	22.3	22.2	22.2
			50	0	1	1	22.3	22.3	22.2
		16QAM	1	0	1	0	23.1	22.8	22.2
			1	25	1	0	23.1	22.4	22.4
			1	49	1	1	22.4	22.7	22.5
			25	0	2	2	21.3	21.4	21.2
			25	12	2	2	21.3	21.2	21.2
			25	25	2	2	21.3	21.2	21.2
			50	0	2	2	21.3	21.4	21.2
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							816.5 MHz	831.5 MHz	846.5 MHz
LTE Band 26	5	QPSK	1	0	0	0	22.9	23.2	23.1
			1	12	0	0	23.0	23.6	23.2
			1	24	0	0	23.0	23.2	23.0
			12	0	1	1	22.2	22.1	22.3
			12	7	1	1	22.2	22.2	22.2
			12	13	1	1	22.4	22.2	22.2
			25	0	1	1	22.3	22.1	22.2
		16QAM	1	0	1	1	22.2	22.3	22.6
			1	12	1	1	22.5	22.2	22.6
			1	24	1	1	22.4	22.0	22.5
			12	0	2	2	21.1	21.2	21.3
			12	7	2	2	21.2	21.1	21.3
			12	13	2	2	21.3	21.0	21.2
			25	0	2	2	21.4	21.1	21.3

LTE Band 26 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							815.5 MHz	831.5 MHz	847.5 MHz
LTE Band 26	3	QPSK	1	0	0	0	23.0	22.9	23.0
			1	8	0	0	23.0	23.0	23.0
			1	14	0	0	23.0	23.0	23.0
			8	0	1	1	22.2	22.2	22.2
			8	4	1	1	22.3	22.1	22.1
			8	7	1	1	22.2	22.2	22.1
			15	0	1	1	22.2	22.2	22.2
		16QAM	1	0	1	0	22.9	22.6	22.4
			1	8	1	0	22.9	22.2	22.4
			1	14	1	0	23.0	22.2	22.2
			8	0	2	2	21.4	21.2	21.3
			8	4	2	2	21.5	21.2	21.2
			8	7	2	2	21.1	20.7	21.1
			15	0	2	2	21.2	21.3	21.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)		
							814.7 MHz	831.5 MHz	848.3 MHz
LTE Band 26	1.4	QPSK	1	0	0	0	23.1	22.9	23.0
			1	3	0	0	23.2	22.9	23.1
			1	5	0	0	23.1	23.0	23.0
			3	0	1	0	23.2	23.0	23.2
			3	1	1	0	23.1	23.2	23.2
			3	3	1	0	23.1	23.2	23.2
			6	0	1	1	22.2	22.2	22.4
		16QAM	1	0	1	0	22.9	22.6	22.2
			1	3	1	0	23.0	22.7	22.4
			1	5	1	0	22.9	22.6	22.3
			3	0	2	1	22.3	22.1	22.5
			3	1	2	1	22.2	22.1	22.5
			3	3	2	1	22.2	22.2	22.4
			6	0	2	2	21.1	21.2	21.4

LTE Band 41 Measured Results

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	23.6	23.5	23.7	23.3	23.8
			1	49	0	0	23.6	23.4	23.7	23.0	23.1
			1	99	0	1	23.2	23.1	23.2	23.0	23.1
			50	0	1	1	22.5	22.5	22.6	22.4	22.3
			50	25	1	1	22.5	22.4	22.6	22.3	22.3
			50	49	1	1	22.5	22.3	22.5	22.1	22.2
			100	0	1	1	22.4	22.3	22.6	22.3	22.3
		16QAM	1	0	1	1	22.2	22.3	22.2	22.2	22.9
			1	49	1	1	22.2	22.2	22.2	22.0	22.8
			1	99	1	1	22.2	22.0	22.2	22.2	22.7
			50	0	2	2	21.5	21.6	21.7	21.4	21.3
			50	25	2	2	21.6	21.3	21.5	21.4	21.4
			50	49	2	2	21.5	21.3	21.4	21.2	21.2
			100	0	2	2	21.4	21.3	21.4	21.2	21.3
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)				
							2503.5 MHz	2548.3 MHz	2593 MHz	2637.8 MHz	2682.5 MHz
LTE Band 41	15	QPSK	1	0	0	0	23.5	23.7	23.6	23.2	23.3
			1	37	0	0	23.5	23.4	23.5	23.1	23.5
			1	74	0	0	23.5	23.4	23.4	23.0	23.0
			36	0	1	1	22.4	22.5	22.5	22.3	22.4
			36	18	1	1	22.5	22.5	22.5	22.2	22.3
			36	35	1	1	22.5	22.5	22.4	22.2	22.3
			75	0	1	1	22.4	22.5	22.4	22.2	22.3
		16QAM	1	0	1	1	22.7	22.9	22.5	22.2	22.9
			1	37	1	1	22.7	22.7	22.3	22.0	22.9
			1	74	1	1	22.7	22.7	22.2	22.2	22.8
			36	0	2	2	21.2	21.5	21.5	21.4	21.4
			36	18	2	2	21.3	21.4	21.6	21.4	21.3
			36	35	2	2	21.3	21.3	21.5	21.3	21.2
			75	0	2	2	21.4	21.5	21.6	21.3	21.3
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)				
							2501 MHz	2547 MHz	2593 MHz	2639 MHz	2685 MHz
LTE Band 41	10	QPSK	1	0	0	0	23.2	23.5	23.4	23.2	23.3
			1	24	0	0	23.2	23.2	23.3	23.0	23.2
			1	49	0	0	23.3	23.3	23.3	23.2	23.2
			25	0	1	1	22.3	22.4	22.4	22.3	22.3
			25	12	1	1	22.2	22.5	22.5	22.2	22.2
			25	24	1	1	22.3	22.4	22.4	22.1	22.1
			50	0	1	1	22.2	22.5	22.5	22.2	22.2
		16QAM	1	0	1	1	22.8	22.2	22.2	22.2	22.2
			1	24	1	1	22.9	22.2	22.1	22.2	22.9
			1	49	1	1	22.2	22.2	22.1	22.2	22.8
			25	0	2	2	21.4	21.5	21.3	21.2	21.4
			25	12	2	2	21.4	21.4	21.3	21.2	21.3
			25	24	2	2	21.3	21.5	21.4	21.2	21.0
			50	0	2	2	21.2	21.4	21.6	21.2	21.3

LTE Band 41 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Meas. MPR	Avg Pwr (dBm)				
							2498.5 MHz	2545.8 MHz	2593 MHz	2640.3 MHz	2687.5 MHz
LTE Band 41	5	QPSK	1	0	0	0	23.2	23.4	23.3	23.0	23.2
			1	12	0	0	23.4	23.5	23.8	23.4	23.4
			1	24	0	0	23.2	23.3	23.3	23.2	23.1
			12	0	1	1	22.3	22.5	22.4	22.2	22.2
			12	6	1	1	22.3	22.5	22.4	22.2	22.2
			12	11	1	1	22.3	22.5	22.4	22.2	22.1
			25	0	1	1	22.2	22.5	22.5	22.3	22.2
		16QAM	1	0	1	1	22.8	22.0	22.3	22.2	22.0
			1	12	1	1	22.0	22.0	22.6	22.2	22.0
			1	24	1	1	22.8	23.0	22.3	22.1	22.0
			12	0	2	2	21.4	21.7	21.4	21.4	21.5
			12	6	2	2	21.4	21.6	21.6	21.3	21.5
			12	11	2	2	21.5	21.4	21.5	21.4	21.4
			25	0	2	2	21.2	21.3	21.5	21.4	21.5

9.3. Wi-Fi 2.4GHz (DTS Band)

Measured Results

Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)	Note(s)
2.4	802.11b	1 Mbps	1	2412	16.7	17.0	Yes	
			6	2437	16.5			
			11	2462	16.3			
	802.11g	6 Mbps	1	2412	Not Required	14.0	No	1
			6	2437				
			11	2462				
	802.11n (HT20)	MCS0	1	2412	Not Required	13.0	No	1
			6	2437				
			11	2462				

Note(s):

- Output Power and SAR is not required for 802.11g/n HT20 channels when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

9.4. Bluetooth

Maximum tune-up tolerance limit is 10.0 dBm. This power level qualifies for exclusion of SAR testing.

10. Measured and Reported (Scaled) SAR Results

SAR Test Reduction criteria are as follows:

KDB 447498 D01 General RF Exposure Guidance:

Testing of other required channels within the operating mode of a frequency band is not required when the reported 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

KDB 648474 D04 Handset SAR:

With headset attached, 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.

KDB 941225 D01 SAR test for 3G devices:

When the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq \frac{1}{4}$ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode

KDB 941225 D05 SAR for LTE Devices:

SAR test reduction is applied using the following criteria:

- Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB, and 50% RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel.
- When the reported SAR is > 0.8 W/kg, testing for other Channels 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.

KDB 248227 D01 SAR meas for 802.11 v02:

SAR test reduction for 802.11 Wi-Fi transmission mode configurations are considered separately for DSSS and OFDM. An initial test position is determined to reduce the number of tests required for certain exposure configurations with multiple test positions. An initial test configuration is determined for each frequency band and aggregated band according to maximum output power, channel bandwidth, wireless mode configurations and other operating parameters to streamline the measurement requirements. For 2.4 GHz DSSS, either the initial test position or DSSS procedure is applied to reduce the number of SAR tests; these are mutually exclusive. For OFDM, an initial test position is only applicable to next to the ear, UMPC mini-tablet and hotspot mode configurations, which is tested using the initial test configuration to facilitate test reduction. For other exposure conditions with a fixed test position, SAR test reduction is determined using only the initial test configuration.

The multiple test positions require SAR measurements in head, hotspot mode or UMPC mini-tablet configurations may be reduced according to the highest reported SAR determined using the initial test position(s) by applying the DSSS or OFDM SAR measurement procedures in the required wireless mode test configuration(s). The initial test position(s) is measured using the highest measured maximum output power channel in the required wireless mode test configuration(s). When the reported SAR for the initial test position is:

- ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and wireless mode combination within the frequency band or aggregated band. DSSS and OFDM configurations are considered separately according to the required SAR procedures.
- > 0.4 W/kg, SAR is repeated using the same wireless mode test configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg or all required test positions are tested.
 - For subsequent test positions with equivalent test separation distance or when exposure is dominated by coupling conditions, the position for maximum coupling condition should be tested.
 - When it is unclear, all equivalent conditions must be tested.
- For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, measure the SAR for these positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required test channels are considered.
 - The additional power measurements required for this step should be limited to those necessary for identifying subsequent highest output power channels to apply the test reduction.
- When the specified maximum output power is the same for both UNII 1 and UNII 2A, begin SAR measurements in UNII 2A with the channel with the highest measured output power. If the reported SAR for UNII 2A is ≤ 1.2 W/kg, SAR is not required for UNII 1; otherwise treat the remaining bands separately and test them independently for SAR.
- When the specified maximum output power is different between UNII 1 and UNII 2A, begin SAR with the band that has the higher specified maximum output. If the highest reported SAR for the band with the highest specified power is ≤ 1.2 W/kg, testing for the band with the lower specified output power is not required; otherwise test the remaining bands independently for SAR.

To determine the initial test position, Area Scans were performed to determine the position with the *Maximum Value of SAR (measured)*. The position that produced the highest *Maximum Value of SAR* is considered the worst case position; thus used as the initial test position.

10.1. 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	836.5	24.7	24.4	0.529	0.567	
			Left Tilt	384	836.5	24.7	24.4	0.347	0.372	
			Right Touch	384	836.5	24.7	24.4	0.643	0.689	
			Right Tilt	384	836.5	24.7	24.4	0.380	0.407	
	1xEVDO (Rel. 0)	0	Left Touch	384	836.5	24.7	24.4	0.593	0.635	
			Left Tilt	384	836.5	24.7	24.4	0.358	0.384	
			Right Touch	384	836.5	24.7	24.4	0.644	0.690	1
			Right Tilt	384	836.5	24.7	24.4	0.416	0.446	
Body-worn & Hotspot	1xRTT (RC3 SO32)	10	Rear	384	836.5	24.7	24.4	0.733	0.785	
			Front	1013	824.7	24.7	24.6	0.660	0.675	
				384	836.5	24.7	24.4	0.783	0.839	2
				777	848.3	24.7	24.4	0.652	0.699	
Hotspot	1xRTT (RC3 SO32)	10	Edge 2	384	836.5	24.7	24.4	0.637	0.683	
			Edge 3	384	836.5	24.7	24.4	0.450	0.482	
			Edge 4	384	836.5	24.7	24.4	0.345	0.370	

10.2. 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	1880.0	24.7	24.7	0.782	0.782	
			Left Tilt	600	1880.0	24.7	24.7	0.533	0.533	
			Right Touch	600	1880.0	24.7	24.7	0.541	0.541	
			Right Tilt	600	1880.0	24.7	24.7	0.395	0.395	
	1xEVDO (Rel. 0)	0	Left Touch	25	1851.3	24.7	24.6	0.614	0.628	
				600	1880.0	24.7	24.7	0.800	0.800	3
			Left Tilt	1175	1908.8	24.7	24.6	0.779	0.797	
				600	1880.0	24.7	24.7	0.512	0.512	
			Right Touch	600	1880.0	24.7	24.7	0.758	0.758	
			Right Tilt	600	1880.0	24.7	24.7	0.392	0.392	
Body-worn & Hotspot	1xRTT (RC3 SO32)	10	Rear	600	1880.0	24.7	24.7	0.765	0.765	4
			Front	600	1880.0	24.7	24.7	0.721	0.721	
Hotspot	1xRTT (RC3 SO32)	10	Edge 3	600	1880.0	24.7	24.7	0.553	0.553	
			Edge 4	600	1880.0	24.7	24.7	0.717	0.717	

10.3. 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	25.0	0.536	0.561	
			Left Tilt	580	820.5	25.2	25.0	0.334	0.350	
			Right Touch	580	820.5	25.2	25.0	0.651	0.682	
			Right Tilt	580	820.5	25.2	25.0	0.333	0.349	
	1xEVDO (Rel. 0)	0	Left Touch	580	820.5	25.2	24.8	0.526	0.577	
			Left Tilt	580	820.5	25.2	24.8	0.322	0.353	
			Right Touch	580	820.5	25.2	24.8	0.649	0.712	5
			Right Tilt	580	820.5	25.2	24.8	0.346	0.379	
Body-worn & Hotspot	1xRTT (RC3 SO32)	10	Rear	476	817.9	25.2	25.0	0.802	0.840	
				580	820.5	25.2	25.0	0.822	0.861	
				684	823.1	25.2	24.6	0.812	0.932	6
			Front	580	820.5	25.2	25.0	0.662	0.693	
Hotspot	1xRTT (RC3 SO32)	10	Edge 2	580	820.5	25.2	25.0	0.601	0.629	
			Edge 3	580	820.5	25.2	25.0	0.364	0.381	
			Edge 4	580	820.5	25.2	25.0	0.359	0.376	

10.4. LTE Band 2

SAR for LTE Band 2 is covered by LTE Band 25 due to similar frequency range, same maximum tune-up limit and same channel bandwidth.

10.5. LTE Band 4 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	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	20175	1732.5	1	0.0	23.7	23.4	0.355	0.380	7			
						50	0.0	22.7	22.3	0.274	0.300				
			Left Tilt	20175	1732.5	1	0.0	23.7	23.4	0.291	0.312				
						50	0.0	22.7	22.3	0.151	0.166				
			Right Touch	20175	1732.5	1	0.0	23.7	23.4	0.267	0.286				
						50	0.0	22.7	22.3	0.106	0.116				
			Right Tilt	20175	1732.5	1	0.0	23.7	23.4	0.191	0.205				
						50	0.0	22.7	22.3	0.158	0.173				
			Body-worn & Hotspot	QPSK	10	Rear	20175	1732.5	1	0.0	23.7	23.4	0.637	0.683	8
									50	0.0	22.7	22.3	0.521	0.571	
Front	20175	1732.5				1	0.0	23.7	23.4	0.581	0.623				
						50	0.0	22.7	22.3	0.460	0.504				
Hotspot	QPSK	10	Edge 2	20175	1732.5	1	0.0	23.7	23.4	0.100	0.107				
						50	0.0	22.7	22.3	0.072	0.079				
			Edge 3	20175	1732.5	1	0.0	23.7	23.4	0.294	0.315				
						50	0.0	22.7	22.3	0.216	0.237				

10.6. LTE Band 5

SAR for LTE Band 5 is covered by LTE Band 26 due to similar frequency range, same maximum tune-up limit and same channel bandwidth.

10.7. LTE Band 12 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	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	23095	707.5	1	0	24.2	23.7	0.243	0.273	9
						25	0	23.2	22.8	0.202	0.221	
			Left Tilt	23095	707.5	1	0	24.2	23.7	0.171	0.192	
						25	0	23.2	22.8	0.143	0.157	
			Right Touch	23095	707.5	1	0	24.2	23.7	0.298	0.334	
						25	0	23.2	22.8	0.249	0.273	
			Right Tilt	23095	707.5	1	0	24.2	23.7	0.191	0.214	
						25	0	23.2	22.8	0.158	0.173	
Body-worn & Hotspot	QPSK	10	Rear	23095	707.5	1	0	24.2	23.7	0.649	0.728	10
						25	0	23.2	22.8	0.536	0.588	
			Front	23095	707.5	1	0	24.2	23.7	0.398	0.447	
						25	0	23.2	22.8	0.323	0.354	
Hotspot	QPSK	10	Edge 2	23095	707.5	1	0	24.2	23.7	0.442	0.496	
						25	0	23.2	22.8	0.357	0.391	
			Edge 3	23095	707.5	1	0	24.2	23.7	0.130	0.146	
						25	0	23.2	22.8	0.103	0.113	
			Edge 4	23095	707.5	1	0	24.2	23.7	0.305	0.342	
						25	0	23.2	22.8	0.105	0.115	

10.8. LTE Band 25 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	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	49	23.7	23.6	0.608	0.622	11
						50	0	22.7	22.4	0.559	0.599	
			Left Tilt	26365	1882.5	1	49	23.7	23.6	0.401	0.410	
						50	0	22.7	22.4	0.312	0.334	
			Right Touch	26365	1882.5	1	49	23.7	23.6	0.463	0.474	
						50	0	22.7	22.4	0.417	0.447	
			Right Tilt	26365	1882.5	1	49	23.7	23.6	0.378	0.387	
						50	0	22.7	22.4	0.285	0.305	
Body-worn & Hotspot	QPSK	10	Rear	26365	1882.5	1	49	23.7	23.6	0.728	0.745	
						50	0	22.7	22.4	0.565	0.605	
			Front	26140	1860.0	1	49	23.7	23.6	0.715	0.732	
				26365	1882.5	1	49	23.7	23.6	0.819	0.838	
				26590	1905.0	1	49	23.7	23.6	0.944	0.966	
Hotspot	QPSK	10	Edge 3	26365	1882.5	1	49	23.7	23.6	0.446	0.456	
						50	0	22.7	22.4	0.345	0.370	
			Edge 4	26365	1882.5	1	49	23.7	23.6	0.682	0.698	
						50	0	22.7	22.4	0.507	0.543	

10.9. LTE Band 26 (15MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	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	37	23.7	23.5	0.381	0.399				
						36	0	22.7	22.3	0.243	0.266				
			Left Tilt	26865	831.5	1	37	23.7	23.5	0.258	0.270				
						36	0	22.7	22.3	0.162	0.178				
			Right Touch	26865	831.5	1	37	23.7	23.5	0.446	0.467		13		
						36	0	22.7	22.3	0.290	0.318				
		Right Tilt	26865	831.5	1	37	23.7	23.5	0.278	0.291					
					36	0	22.7	22.3	0.182	0.200					
		Body-worn & Hotspot	QPSK	10	Rear	26865	831.5	1	37	23.7	23.5	0.630	0.660	14	
								36	0	22.7	22.3	0.386	0.423		
					Front	26865	831.5	1	37	23.7	23.5	0.490	0.513		
								36	0	22.7	22.3	0.314	0.344		
Hotspot	QPSK				10	Edge 2	26865	831.5	1	37	23.7	23.5	0.430		0.450
									36	0	22.7	22.3	0.280		0.307
		Edge 3	26865	831.5		1	37	23.7	23.5	0.292	0.306				
						36	0	22.7	22.3	0.184	0.202				
		Edge 4	26865	831.5		1	37	23.7	23.5	0.269	0.282				
						36	0	22.7	22.3	0.173	0.190				

10.10. LTE Band 41 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	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	39750	2506.0	1	0	24.0	23.6	0.575	0.630		
						40185	2549.5	1	0	24.0	23.5	0.785	0.881		
						41055	2636.5	1	0	24.0	23.3	0.857	1.007	15	
						41490	2680.0	1	0	24.0	23.8	0.585	0.613		
						Left Tilt	40620	2593.0	1	0	24.0	23.7	0.276	0.296	
									50	0	23.0	22.6	0.228	0.250	
			Right Touch	40620	2593.0	1	0	24.0	23.7	0.370	0.396				
						50	0	23.0	22.6	0.299	0.328				
			Right Tilt	40620	2593.0	1	0	24.0	23.7	0.212	0.227				
						50	0	23.0	22.6	0.176	0.193				
			Body-worn & Hotspot	QPSK	10	Rear	40620	2593.0	1	0	24.0	23.7	0.556	0.596	
									50	0	23.0	22.6	0.427	0.468	
						Front	40620	2593.0	1	0	24.0	23.7	0.580	0.621	16
									50	0	23.0	22.6	0.549	0.602	
Hotspot	QPSK	10	Edge 3	40620	2593.0	1	0	24.0	23.7	0.537	0.575				
						50	0	23.0	22.6	0.407	0.446				
			Edge 4	40620	2593.0	1	0	24.0	23.7	0.456	0.489				
						50	0	23.0	22.6	0.366	0.401				

10.11. Wi-Fi (DTS Band)

Frequency Band	Mode	RF Exposure Conditions	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Power (dBm)		1-g SAR (W/kg)		Notes	Plot No.
								Tune-up limit	Meas.	Meas.	Scaled		
2.4GHz	802.11b 1 Mbps	Head	0	Left Touch	6	2437.0	0.717	17.0	16.5	0.354	0.397	1	17
				Left Tilt	6	2437.0	0.675	17.0	16.5				
				Right Touch	6	2437.0	0.439	17.0	16.5				
				Right Tilt	6	2437.0	0.467	17.0	16.5				
		Body-worn & Hotspot & Wi-Fi Direct	10	Rear	6	2437.0	0.241	17.0	16.5	0.119	0.134	1	18
				Front	6	2437.0	0.170	17.0	16.5				
				Edge 1	6	2437.0	0.189	17.0	16.5				
				Edge 2	6	2437.0	0.109	17.0	16.5				

Note(s):

1. Highest reported SAR is ≤ 0.4 W/kg. Therefore, further SAR measurements within this exposure condition are not required.
2. Highest reported SAR is > 0.4 W/kg. Due to the highest reported SAR for this test position, other test positions in Head exposure condition were evaluated until a SAR ≤ 0.8 W/kg was reported.
3. Testing for a second channel was required because the reported SAR for this test position was >0.8 W/kg.
4. Additional testing required in order satisfying FCC simultaneous transmission limit criteria.

10.12. Bluetooth

Standalone SAR Test Exclusion Considerations & Estimated SAR

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.

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.

Body-worn Accessory Exposure Conditions

Max. tune-up tolerance limit		Min. test separation distance (mm)	Frequency (GHz)	SAR test exclusion Result*	Test Configuration	Estimated 1-g SAR (W/kg)
(dBm)	(mW)					
10.0	10	10	2.480	1.6	Rear/Front	0.210

Conclusion:

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

11. SAR Measurement Variability

In accordance with published RF Exposure KDB 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.

Frequency Band (MHz)	Air Interface	RF Exposure Conditions	Test Position	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)	Repeated Measured SAR (W/kg)	Largest to Smallest SAR Ratio
700	LTE Band 12	Body-worn & Hotspot	Rear	No	0.649	N/A	N/A
850	CDMA BC0	Body-worn & Hotspot	Front	No	0.783	N/A	N/A
	CDMA BC10	Body-worn & Hotspot	Rear	Yes	0.822	0.779	1.06
	LTE Band 26	Body-worn & Hotspot	Rear	No	0.630	N/A	N/A
1900	CDMA BC1	Head	Left Touch	No	0.800	N/A	N/A
	LTE Band 25	Body-worn & Hotspot	Front	Yes	0.944	0.905	1.04
1700	LTE Band 4	Body-worn & Hotspot	Rear	No	0.637	N/A	N/A
2400	Wi-Fi 802.11b/g/n	Head	Left Touch	No	0.354	N/A	N/A
2600	LTE Band 41	Head	Left Touch	Yes	0.926	0.914	1.01

Note(s):

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.

12. Simultaneous Transmission SAR Analysis

Simultaneous Transmission Condition

RF Exposure Condition	Item	Capable Transmit Configurations		
Head	1	CDMA	+	DTS
	2	LTE	+	DTS
Body-worn	1	CDMA	+	DTS
	2	CDMA	+	BT
	3	LTE	+	DTS
	4	LTE	+	BT
Hotspot & Wi-Fi Direct	1	CDMA	+	DTS
	2	LTE	+	DTS

Notes:

1. DTS supports Hotspot and Wi-Fi Direct
2. CDMA and LTE support Hotspot.
3. VoIP is supported in CDMA and LTE.
4. DTS Radio cannot transmit simultaneously with Bluetooth Radio.

12.1. Sum of the SAR for WWAN & Wi-Fi & BT

RF Exposure conditions	① WWAN	② DTS	③ BT	①+② WWAN +DTS		①+③ WWAN +BT	
				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
Head	1.007	0.397		1.404	No		
Body-worn & Hotspot	0.966	0.134	0.210	1.100	No	1.176	No

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

Appendixes

Refer to separated files for the following appendixes.

A_15I20527v0 SAR Photos & Ant. Locations

B_15I20527v0 SAR System Check Plots

C_15I20527v1 SAR Highest Test Plots

D_15I20527v0 SAR Tissue Ingredients

E_15I20527v0 SAR Probe Cal. Certificates

F_15I20527v0 SAR Dipole Cal. Certificates

END OF REPORT