FCC OET BULLETIN 65 SUPPLEMENT C 01-01
IEEE Std 1528-2003 and IEEE Std 1528a-2005

SAR EVALUATION REPORT

For

GSM/CDMA/WCDMA + LTE Phone Bluetooth, WLAN (2.4GHz & 5GHz) and NFC

Model: VS980, LGVS980 and LG-VS980

FCC ID: ZNFVS980

Report Number: 13U15118-6A
Issue Date: 7/11/2013

Prepared for

LG ELECTRONICS MOBILECOMM U.S.A., INC.
1000 SYLVAN AVE.
ENGLEWOOD CLIFFS, NJ 07632

Prepared by

UL VERIFICATION SERVICES INC.
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 771-1000
FAX: (510) 661-0888

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	6/25/2013	Initial Issue	--
A	7/11/2013	Made the following modifications: 1. Sec. 4.2: Removed uncertainty tables 2. Sec. 7.3.: Updated WiFi Direct section 3. Sec. 7.4.: Updated spectrum plots exclusion justification 4. Sec. 9.7. & 9.8.: Included target MPR for tables 5. Sec. 9.11.: Updated output tolerance and measured result tables	Kenneth Mak

Table of Contents

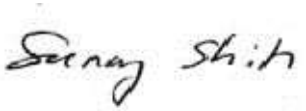
1. Attestation of Test Results

Applicant	LG ELECTRONICS MOBILECOMM U.S.A., INC.			
DUT description	GSM/CDMA/WCDMA + LTE Phone Bluetooth, WLAN (2.4GHz & 5GHz) and NFC			
Model	VS980, LGVS980 and LG-VS980			
Test device is	An identical prototype			
Device category	Portable			
Exposure category	General Population/Uncontrolled Exposure			
Date tested	5/20/2013 – 6/11/2013			
The highest reported SAR values	RF exposure conditions	Licensed	DTS	UNII
	Head	0.812 W/kg	0.334 W/kg	0.220 W/kg
	Body-worn Accessory	1.060 W/kg	0.153 W/kg	0.096 W/kg
	Wireless Router (Hotspot)	1.060 W/kg	0.153 W/kg	n/a W/kg
	WiFi Direct (5.8 GHz)	n/a W/kg	0.073 W/kg	n/a W/kg
	Simultaneous Transmission	1.441 W/kg	1.441 W/kg	1.348 W/kg
Applicable Standards	OET Bulletin 65 Supplement C IEEE Std 1528-2003 and IEEE Std 1528a-2005 FCC Published RF exposure KDB procedures, and TCB workshop updates			
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.

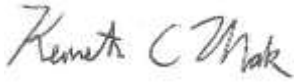
Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. 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:



Sunny Shih
WiSE Operations Manager
UL Verification Services Inc.

Prepared By:



Kenneth Mak
WiSE Laboratory Engineer
UL Verification Services Inc.

2. Test Methodology

The tests documented in this report were performed in accordance with FCC OET Bulletin 65 Supplement C Edition 01-01, IEEE STD 1528-2003, IEEE Std 1528a-2005, the following FCC Published RF exposure KDB procedures, and TCB workshop updates:

- 447498 D01 General RF Exposure Guidance v05r01
- 648474 D04 Handset SAR v01r01
- 648474 D03 Wireless Chargers Battery Cover v01r02
- 941225 D01 SAR test for 3G devices v02
- 941225 D02 HSPA and 1x Advanced v02r02
- 941225 D03 SAR Test Reduction GSM GPRS EDGE v01
- 941225 D04 SAR for GSM E GPRS Dual Xfer Mode v01
- 941225 D05 SAR for LTE Devices v02r02
- 941225 D06 Hot Spot SAR v01r01
- 248227 D01 SAR Meas for 802 11abg v01r02
- 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r01
- 865664 D02 SAR Reporting v01r01
- 690783 D01 SAR Listings on Grants v01r02
- April 2013 TCB Workshop Updates – include 802.11ac SAR for highest 802.11a configuration in each 5 GHz band and each exposure condition.

3. Facilities and Accreditation

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

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	MY40001647	6/27/2013
Dielectronic Probe kit	SPEAG	DAK-3.5	1087	10/16/2013
Thermometer	Control Company	4242	122529162	9/19/2014

System Performance Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due date
Synthesized Signal Generator	HP	8665B	3546A00784	3/26/2014
Power Meter	HP	438A	3513U04320	9/24/2013
Power Sensor	HP	8481A	2237A31744	9/24/2013
Power Sensor	HP	8481A	2702A76223	8/21/2013
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1795093	N/A
Directional coupler	Werlatone	C8060-102	2711	N/A
DC Power Supply	Sorensen	XT20-3	1318A00529	N/A
Synthesized Signal Generator	HP	8665B	3744A01084	5/7/2014
Power Meter	HP	437B	3125U15418	8/9/2013
Power Meter	HP	437B	3125U09248	9/24/2013
Power Sensor	HP	8481A	1926A16917	8/21/2013
Power Sensor	HP	8481A	3318A95392	9/24/2013
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1620606	N/A
Directional coupler	Werlatone	C8060-102	2141	N/A
DC Power Supply	HP	6296A	2410A-05117	N/A
E-Field Probe (SAR A)	SPEAG	EX3DV4	3749	1/15/2014
E-Field Probe (SAR B)	SPEAG	EX3DV4	3751	11/15/2013
E-Field Probe (SAR D)	SPEAG	EX3DV4	3686	3/11/2014
E-Field Probe (SAR E)	SPEAG	EX3DV4	3901	2/13/2014
E-Field Probe (SAR 1)	SPEAG	EX3DV3	3531	11/15/2013
Data Acquisition Electronics (SAR A)	SPEAG	DAE4	1343	8/20/2013
Data Acquisition Electronics (SAR B)	SPEAG	DAE3	427	1/9/2014
Data Acquisition Electronics (SAR D)	SPEAG	DAE4	1257	8/28/2013
Data Acquisition Electronics (SAR E)	SPEAG	DAE4	1357	2/5/2014
Data Acquisition Electronics (SAR 1)	SPEAG	DAE4	1259	2/7/2014
System Validation Dipole	SPEAG	D750V3	1071	10/5/2013
System Validation Dipole	SPEAG	D835V2	4d142	10/4/2013
System Validation Dipole	SPEAG	D835V2	4d002	10/24/2013
System Validation Dipole	SPEAG	D1750V2	1050	4/20/2014
System Validation Dipole	SPEAG	D1900V2	5d140	4/18/2014
System Validation Dipole	SPEAG	D2450V2	899	10/5/2013
System Validation Dipole	SPEAG	D5GHzV2	1138	10/9/2013

Others

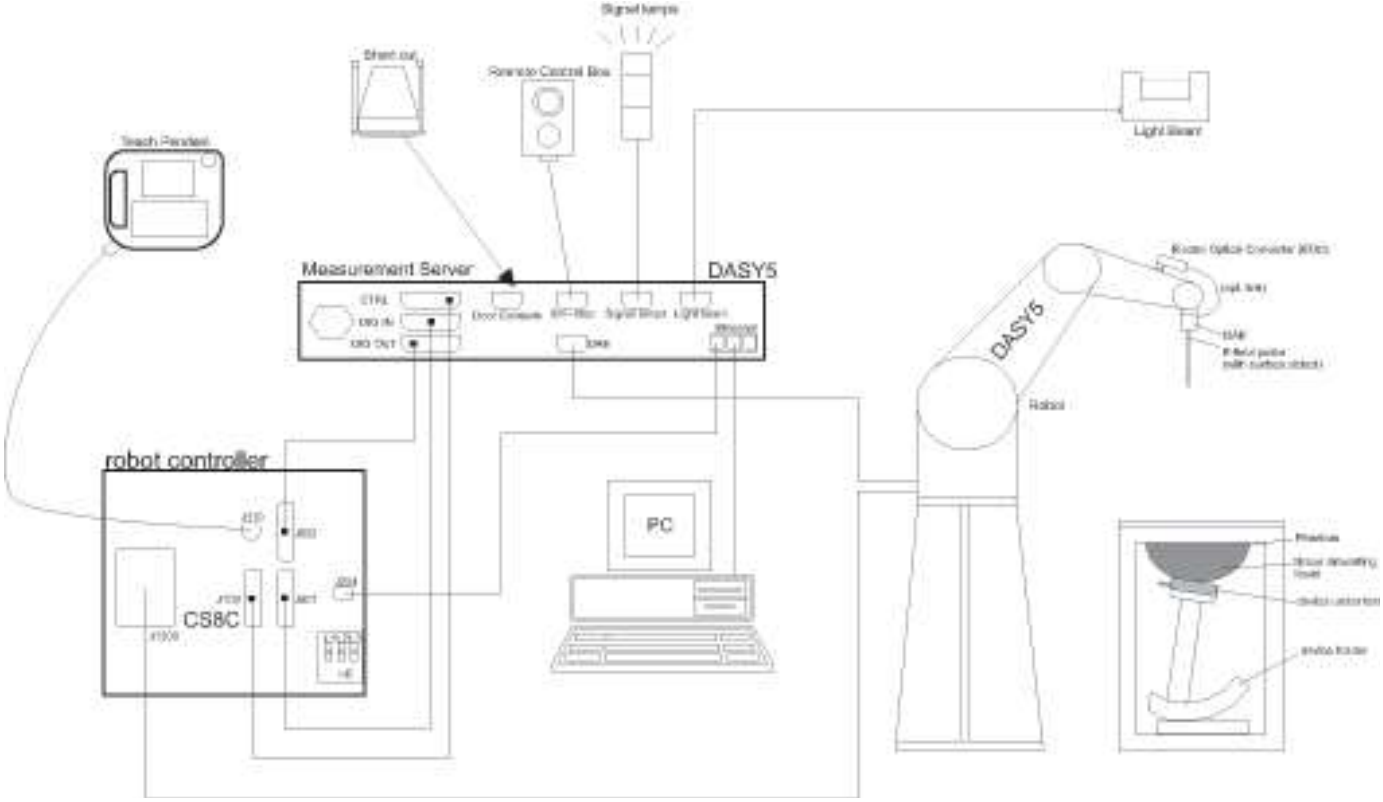
Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due date
Base Station Simulator	Agilent	8960	GB46160222	11/10/2013
Base Station Simulator	Agilent	8960	GB47050526	9/20/2013
Base Station Simulator	R & S	CMU200	106291	8/8/2013
Base Station Simulator	R & S	CMU200	838114/032	7/9/2013
Base Station Simulator	R & S	CMW500	124593-SS	7/11/2013

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 1528-2003 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	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

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)

<table>
<tr><td colspan="3"></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>≤ 2 GHz: ≤ 8 mm
2 – 3 GHz: ≤ 5 mm*</td><td>3 – 4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>≤ 5 mm</td><td>3 – 4 GHz: ≤ 4 mm
4 – 5 GHz: ≤ 3 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤ 4 mm</td><td>3 – 4 GHz: ≤ 3 mm
4 – 5 GHz: ≤ 2.5 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">≤ 1.5·$\Delta z_{Zoom}(n-1)$</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3 – 4 GHz: ≥ 28 mm
4 – 5 GHz: ≥ 25 mm
5 – 6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
* When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

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

GSM/CDMA/WCDMA + LTE Phone Bluetooth, WLAN (2.4GHz & 5GHz) and NFC Model: VS980, LGVS980 and LG-VS980	
Operating Configuration(s)	Held to head, Body-worn (Voice call)
Mobile Hotspot	WiFi Hotspot mode permits the device to share its cellular data connection with other WiFi-enabled devices. ☒ Mobile Hotspot (WiFi 2.4 GHz) ☐ Mobile Hotspot (WiFi 5 GHz)
WiFi Direct	Wi-Fi Direct enabled devices transfer data directly between each other ☒ WiFi Direct (WiFi 2.4 GHz) ☒ WiFi Direct (WiFi 5 GHz) – GO (Group Owner) only for UNII Band 4 5.8GHz band
VoIP	Supported
Device dimension	Overall (Length x Width): 138.5 mm x 70.9 mm Overall Diagonal: 147.8 mm Display Diagonal: 132.9mm
Accessory	N/A
Battery Options	☒ Standard –embedded to device ☐ Extended (large capacity)

7.2. Wireless Technologies

Wireless Technology and Frequency Bands	GSM: 850 / 1900 W-CDMA Band: II / V CDMA BC0 / 1 LTE Band 4 / 13 WiFi: 2.4 / 5 GHz Bluetooth: 2.4 GHz.
Mode	GSM - ☒ Voice (GMSK) - ☒ GPRS (GMSK) - ☒ EGPRS (8PSK) W-CDMA - ☒ UMTS Rel. 99 (Voice & Data) - ☒ HSDPA (Rel. 7, CAT 14) - ☒ HSUPA (Rel. 6, CAT 6) CDMA2000 - ☒ 1xRTT (Voice & Data) - ☒ 1xEVDO Rel. 0 - ☒ 1xEVDO Rev. A - ☐ 1xAdvanced - ☐ 1xEVDO Rev. B LTE - ☒ QPSK - ☒ 16QAM WiFi 2.4GHz (802.11b/g/n/ac) - ☒ 802.11b - ☒ 802.11g - ☒ 802.11n (20MHz) - ☐ 802.11n (40MHz) - ☒ 802.11ac (20MHz) WiFi 5GHz - ☒ 802.11a - ☒ 802.11n (20MHz) - ☒ 802.11n (40MHz) - ☒ 802.11ac (80MHz) Bluetooth Ver. 4.0 (LE)

Wireless Technologies (continued)

Duty Cycle	GSM Voice: 12.5%; GPRS 1 Slot: 12.5%; 2 Slots: 25%, 3 Slots: 37.5%,4 Slots: 50%, W-CDMA: 100% LTE: 100% WiFi 802.11a/b/g/n: 100% Bluetooth: 76%
GPRS Multi-Slot Class	☐ Class 8 - One Up ☒ Class 10 - Two Up ☐ Class 12 - Four Up
Mobile Phone Capability	☐ Class A - Mobile phones can be connected to both (E)GPRS and GSM services simultaneously. ☒ Class B - Mobile phones can be attached to both (E)GPRS and GSM services, using one service at a time. ☐ Class C - Mobile phones are attached to either (E)GPRS or GSM voice service. You need to switch manually between services
DTM (Dual Transfer Mode)	☐ Supported ☒ Not Supported
VoIP (GPRS)	☒ Supported
SV-LTE & SV-DO	☒ Supported (SV-LTE only) Note: • SAR testing for CDMA_1xRTT (SV) for both minimum power and maximum power • SAR testing for LTE for both minimum power and maximum power

7.3. Simultaneous Transmission Conditions

RF Exposure Condition	Capable Transmit Configurations
Head	1. GSM 850/1900 Voice + WiFi 2.4/5GHz 2. GSM 850/1900 (GPRS/EDGE) + WiFi 2.4/5GHz (VoIP) 3. CDMA DO BC0/BC1 + WiFi 2.4/5GHz (VoIP) 4. WCDMA Band V/II (850/1900) + WiFi 2.4/5GHz 5. LTE B4/B13 + WiFi 2.4/5GHz 6. CDMA 1x BC0/BC1 + LTE B4/B13 + WiFi 2.4/5GHz (SV-LTE + WiFi)
Body-worn Accessory	1. GSM 850/1900 Voice + WiFi 2.4/5GHz 2. GSM 850/1900 Voice + BT 3. GSM 850/1900 (GPRS/EDGE) + WiFi 2.4/5GHz (VoIP) 4. GSM 850/1900 (GPRS/EDGE) + BT 5. CDMA 1xRTT BC0/BC1 + WiFi 2.4/5GHz 6. CDMA 1xRTT BC0/BC1 + BT 7. CDMA 1xEVDO BC0/BC1 + WiFi 2.4/5GHz (VoIP) 8. CDMA 1xEVDO BC0/BC1 + BT 9. WCDMA Band V/II (850/1900) + WiFi 2.4/5GHz 10. WCDMA Band V/II (850/1900) + BT 11. LTE B4/B13 + WiFi 2.4/5GHz 12. LTE B4/B13 + BT 13. CDMA 1x BC0/BC1 + LTE B4/B13 + WiFi 2.4/5GHz (SV-LTE + WiFi) 14. CDMA 1x BC0/BC1 + LTE B4/B13 + BT (SV-LTE + BT)
Wireless Router (Hotspot)	1. GSM 850/1900 (GPRS/EDGE) + WiFi 2.4GHz 2. CDMA 1xEVDO BC0/BC1 + WiFi 2.4GHz 3. WCDMA Band V/II (850/1900) + WiFi 2.4GHz 4. LTE B4/B13 + WiFi 2.4GHz 5. CDMA 1x BC0/BC1 + LTE B4/B13 + WiFi 2.4GHz (SV-LTE + WiFi)
WiFi Direct	1. GSM 850/1900 (GPRS/EDGE) + WiFi 2.4GHz (GO/GC) 2. GSM 850/1900 (GPRS/EDGE) + WiFi 5.8GHz (GO only) 3. CDMA 1xEVDO BC0/BC1 + WiFi 2.4GHz (GO/GC) 4. CDMA 1xEVDO BC0/BC1 + WiFi 5.8GHz (GO only) 5. WCDMA Band V/II (850/1900) + WiFi 2.4GHz (GO/GC) 6. WCDMA Band V/II (850/1900) + WiFi 5.8GHz (GO only) 7. LTE B4/B13 + WiFi 2.4GHz (GO/GC) 8. LTE B4/B13 + WiFi 5.8GHz (GO only) 9. CDMA 1x BC0/BC1 + LTE B4/B13 + WiFi 2.4GHz (SV-LTE + WiFi) (GO/GC) 10. CDMA 1x BC0/BC1 + LTE B4/B13 + WiFi 5.8GHz (SV-LTE + WiFi) (GO only)

1. WiFi 2.4GHz supports Hotspot and WiFi-Direct (GO/GC).
2. WiFi 5GHz does not support Hotspot but supports WiFi-Direct.
   UNII 1 (5.2GHz) = WiFi direct supports GC only, UNII 2 (5.3GHz) = WiFi direct not supported,
   UNII 3 (5.5GHz) = WiFi direct not supported, UNII 4 (5.8GHz) = WiFi direct supports GO only
3. CDMA, LTE, WCDMA, GPRS/EDGE supports Hotspot.
4. VoIP is supported in CDMA, LTE, WCDMA, GSM (e.g. 3rd part VoIP and VoLTE)
5. Bluetooth and WiFi cannot transmit simultaneously since they share the same chip.

Notes: GO = Group Owner (requires SAR), GC = Group Client (SAR excluded)

7.4. General LTE SAR Test and Reporting Considerations

<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>Frequency range, Channel Bandwidth, Numbers and Frequencies</td><td>
<table>
<tr><td colspan="7">Band 4</td></tr>
<tr><td colspan="4">Tx: 1710 – 1755 MHz</td><td colspan="3">Rx: 2110 – 2155 MHz</td></tr>
<tr><td colspan="7">Band 13</td></tr>
<tr><td colspan="4">Tx: 777 – 787 MHz</td><td colspan="3">Rx: 746 – 756 MHz</td></tr>
<tr><td rowspan="2">Band 4</td><td colspan="6">Channel Bandwidth</td></tr>
<tr><td>20 MHz</td><td>15 MHz</td><td>10 MHz</td><td>5 MHz</td><td>3 MHz</td><td>1.4 MHz</td></tr>
<tr><td>Low</td><td>20050/ 1720</td><td>20025/ 1717.5</td><td>20000/ 1715</td><td>19975/ 1712.5</td><td></td><td></td></tr>
<tr><td>Mid</td><td>20175/ 1732.5</td><td>20175/ 1732.5</td><td>20175/ 1732.5</td><td>20175/ 1732.5</td><td></td><td></td></tr>
<tr><td>High</td><td>20300/ 1745</td><td>20325/ 1747.5</td><td>20350/ 1750</td><td>20375/ 1752.5</td><td></td><td></td></tr>
<tr><td rowspan="2">Band 13</td><td colspan="6">Channel Bandwidth</td></tr>
<tr><td>20 MHz</td><td>15 MHz</td><td>10 MHz</td><td>5 MHz</td><td>3 MHz</td><td>1.4 MHz</td></tr>
<tr><td>Low</td><td></td><td></td><td></td><td>23205/ 779.5</td><td></td><td></td></tr>
<tr><td>Mid</td><td></td><td></td><td>23230/ 782</td><td>23230/ 782.0</td><td></td><td></td></tr>
<tr><td>High</td><td></td><td></td><td></td><td>23255/ 784.5</td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>LTE transmitter and antenna implementation</td><td>LTE has two TX/RX antennas and two Rx only antennas.
Refer to Section 17 for antenna locations</td></tr>
<tr><td>Maximum power reduction (MPR)</td><td>
Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3
<table>
<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>
<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>
</table>
MPR Built-in by design
A-MPR (additional MPR) was disabled during SAR testing
</td></tr>
<tr><td>Power reduction</td><td>Power Reduction Operation Table for SV-LTE
<table>
<tr><th>Mode</th><th>CDMA Current Voice Power for BC0 & BC1</th><th>LTE B13 & B4 Max Power</th></tr>
<tr><td rowspan="2">SV-LTE</td><td>P ≤ 18.5 dBm</td><td>23.2 dBm (limted)</td></tr>
<tr><td>P > 18.5 dBm</td><td>19.2 dBm (limited)</td></tr>
</table>
</td></tr>
<tr><td>Spectrum plots for RB configurations</td><td>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.</td></tr>
</table>

8. RF Exposure Conditions

Refer to Section 17 “Antenna Dimensions and Separation Distances” for the specific details of the antenna-to-antenna and antenna-to-edge(s) distances.

8.1. Head Exposure Conditions

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 GSM, CDMA, W-CDMA & LTE Band 4 (❶,❷)

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	1 mm	Yes	
Front	8.23 mm	Yes	

For LTE Band 13, BT & WiFi (❸,❺)

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	1.15 mm	Yes	
Front	8.07 mm	Yes	

8.3. Hotspot Exposure Conditions

For CDMA, GSM, & WCDMA (❶)

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	1 mm	Yes	
Front	8.23 mm	Yes	
Edge 1 (Top)	118.9 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 v01
Edge 2 (Right)	1.5 mm	Yes	
Edge 3 (Bottom)	1.5 mm	Yes	
Edge 4 (Left)	25 mm	Yes	

For LTE Band B4 (❷)

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	1 mm	Yes	
Front	8.23 mm	Yes	
Edge 1 (Top)	112 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 v01
Edge 2 (Right)	49 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 v01
Edge 3 (Bottom)	1.5 mm	Yes	
Edge 4 (Left)	1.5 mm	Yes	

For LTE Band B13 (❸)

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	1.15 mm	Yes	
Front	8.07 mm	Yes	
Edge 1 (Top)	1.5 mm	Yes	
Edge 2 (Right)	1.5 mm	Yes	
Edge 3 (Bottom)	110 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 v01
Edge 4 (Left)	53.5 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 v01

For WiFi & BT (❺)

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	1.15 mm	Yes	
Front	8.07 mm	Yes	
Edge 1 (Top)	1.5 mm	Yes	
Edge 2 (Right)	20 mm	Yes	
Edge 3 (Bottom)	126.5 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 v01
Edge 4 (Left)	38 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 v01

8.4. WiFi Direct Exposure Conditions

For WiFi 5.8GHz Band(❺)

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	1.15 mm	Yes	
Front	8.07 mm	Yes	
Edge 1 (Top)	1.5 mm	Yes	
Edge 2 (Right)	20 mm	Yes	
Edge 3 (Bottom)	126.5 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 v01
Edge 4 (Left)	38 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 v01

9. RF Output Power Measurement

9.1. GSM850

Output Power Tolerance	Voice (dBm)	GPRS 1 slot	GPRS 2 slots
Max	33.2	33.2	31.2
Target	**32.7**	**32.7**	**30.7**

Output Power Tolerance	Voice (dBm)	EGPRS 1 slot	EGPRS 2 slots
Max		27.2	27.2
Target		**26.7**	**26.7**

MEASURED RESULTS

GSM (GMSK) - Voice Mode

Band	Ch No.	Freq. (MHz)	Avg burst Pwr (dBm)
850	128	824.2	33.1
	190	836.6	32.9
	251	848.8	33.0

GPRS (GMSK) - Coding Scheme: CS1

Band	Ch No.	Freq. (MHz)	Avg Power (dBm)			
			1 time slot		2 time slots	
			Burst	Frame	Burst	Frame
850	128	824.2	32.7	23.7	31.0	25.0
	190	836.6	32.9	23.9	31.1	25.1
	251	848.8	33.0	24.0	31.2	25.2

EGPRS (8PSK) - Coding Scheme: MCS5

Band	Ch No.	Freq. (MHz)	Power (dBm)			
			1 time slot		2 time slots	
			Burst	Frame	Burst	Frame
850	128	824.2	27.0	18.0	27.0	21.0
	190	836.6	27.0	18.0	27.0	21.0
	251	848.8	26.9	17.9	26.9	20.9

Notes:

The worst-case configuration and mode for SAR testing is determined to be as follows:

- Head & Body-worn Accessory: GMSK Voice Mode
- Hotspot mode: GMSK (GPRS) mode with 2 time slots, based on the output power measurements above
- SAR is not required for EGPRS (8PSK) mode because its output power is less than that of GPRS mode

9.2. GSM1900

Output Power Tolerance	Voice (dBm)	GPRS 1 slot	GPRS 2 slots
Max	30.7	30.7	28.7
Target	**30.2**	**30.2**	**28.2**

Output Power Tolerance	Voice (dBm)	EGPRS 1 slot	EGPRS 2 slots
Max		26.7	26.7
Target		**26.2**	**26.2**

MEASURED RESULTS

GSM (GMSK) - Voice Mode

Band	Ch No.	Freq. (MHz)	Avg burst Pwr (dBm)
1900	512	1850.2	30.5
	661	1880.0	30.6
	810	1909.8	30.6

GPRS (GMSK) - Coding Scheme: CS1

Band	Ch No.	Freq. (MHz)	Avg Power (dBm)			
			1 time slot		2 time slots	
			Burst	Frame	Burst	Frame
1900	512	1850.2	30.4	21.4	28.4	22.4
	661	1880.0	30.6	21.6	28.4	22.4
	810	1909.8	30.6	21.6	28.5	22.5

EGPRS (8PSK) - Coding Scheme: MCS5

Band	Ch No.	Freq. (MHz)	Power (dBm)			
			1 time slot		2 time slots	
			Burst	Frame	Burst	Frame
1900	512	1850.2	26.6	17.6	26.5	20.5
	661	1880.0	26.5	17.5	26.5	20.5
	810	1909.8	26.6	17.6	26.5	20.5

Notes:

The worst-case configuration and mode for SAR testing is determined to be as follows:

- Head & Body-worn Accessory: GMSK Voice Mode
- Hotspot mode: GMSK (GPRS) mode with 2 time slots, based on the output power measurements above
- SAR is not required for EGPRS (8PSK) mode because its output power is less than that of GPRS mode

9.3. CDMA BC0

Output Power Tolerance	1xRTT (dBm)	1xEVDO Rel. 0 (dBm)	1xEVDO Rev. A (dBm)
Max	25.2	25.2	25.2
Target	**24.7**	**24.7**	**24.7**

MEASURED RESULTS

1xRTT

Band	Mode	Ch	Freq. (MHz)	Max Power Avg Pwr (dBm)	Power Reduction
BC 0	RC1 SO55 (Loopback)	1013	824.7	25.2	18.3
		384	836.52	25.1	18.2
		777	848.31	25.1	18.5
	RC3 SO55 (Loopback)	1013	824.7	25.1	18.3
		384	836.52	25.2	18.2
		777	848.31	25.2	18.5
	RC3 SO32 (+F-SCH)	1013	824.7	25.1	18.3
		384	836.52	25.1	18.2
		777	848.31	25.0	18.5

1xEVDO Rel. 0

Band	FTAP Rate	RTAP Rate	Channel	f (MHz)	Avg Pwr (dBm)
BC0	307.2 kbps (2 slot, QPSK)	153.6 kbps	1013	824.7	25.1
			384	836.52	25.0
			777	848.31	25.1

1xEv-Do Rev. A

Band	FETAP Traffic Format	RETAP Data Payload	Channel	f (MHz)	Avg Pwr (dBm)
BC0	307.2k, QPSK/ ACK channel is transmitted at all the slots	4096	1013	824.7	25.0
			384	836.52	25.0
			777	848.31	25.1

9.4. CDMA BC1

Output Power Tolerance	1xRTT (dBm)	1xEVDO Rel. 0 (dBm)	1xEVDO Rev. A (dBm)
Max	24.7	24.7	24.7
Target	**24.2**	**24.2**	**24.2**

MEASURED RESULTS

1xRTT

Band	Mode	Ch	Freq. (MHz)	Max Power Avg Pwr (dBm)	Power Reduction
BC 1	RC1 SO55 (Loopback)	25	1851.25	24.6	18.5
		600	1880.00	24.6	18.3
		1175	1908.75	24.7	18.4
	RC3 SO55 (Loopback)	25	1851.25	24.6	18.5
		600	1880.00	24.6	18.3
		1175	1908.75	24.7	18.4
	RC3 SO32 (+F-SCH)	25	1851.25	24.7	18.5
		600	1880.00	24.7	18.3
		1175	1908.75	24.7	18.4

1xEVDO Rel. 0

Band	FTAP Rate	RTAP Rate	Channel	f (MHz)	Avg Pwr (dBm)
BC1	307.2 kbps (2 slot, QPSK)	153.6 kbps	25	1851.25	24.7
			600	1880.00	24.7
			1175	1908.75	24.7

1xEVDO Rev. A

Band	FETAP Traffic Format	RETAP Data Payload	Channel	f (MHz)	Avg Pwr (dBm)
BC1	307.2k, QPSK/ ACK channel is transmitted at all the slots	4096	25	1851.25	24.7
			600	1880.00	24.7
			1175	1908.75	24.7

9.5. W-CDMA Band II

Output Power Tolerance	Release 99 (dBm)
Max	23.7
Target	**23.2**

Release 99

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 specification. The DUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7).

Mode	Subtest	Rel99
WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	βc/βd	8/15

MEASURED RESULTS

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)
W-CDMA Band II	Rel 99 (RMC, 12.2 kbps)	9262	1852.4	23.5
		9400	1880.0	23.6
		9538	1907.6	23.5

HSDPA

The following 4 Sub-tests were completed according to Release 7 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subtest	1	2	3	4
W-CDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm 2			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	βc/βd	2/15	12/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
	MPR (dB)	0	0	0.5	0.5
HSDPA Specific Settings	D_{ACK}	8			
	D_{NAK}	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
	Ahs =βhs/βc	30/15			

Output Power Tolerance	HSDPA (dBm)			
	Subtest 1	Subtest 2	Subtest 3	Subtest 4
Max	23.7	23.7	23.2	23.2
Target	**23.2**	**23.2**	**22.7**	**22.7**

MEASURED RESULTS

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	23.5
		9400	1880.0	23.7
		9538	1907.6	23.7
	Subtest 2	9262	1852.4	23.5
		9400	1880.0	23.6
		9538	1907.6	23.5
	Subtest 3	9262	1852.4	23.0
		9400	1880.0	23.2
		9538	1907.6	23.0
	Subtest 4	9262	1852.4	23.1
		9400	1880.0	23.2
		9538	1907.6	23.0

Maximum output power levels that are possible for all subtests reported.

HSPA (HSDPA & HSUPA)

The following 5 Sub-tests were completed according to Release 6 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

	Mode	HSPA	HSPA	HSPA	HSPA	HSPA
	Subtest	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	βc	11/15	6/15	15/15	2/15	15/15
	βd	15/15	15/15	9/15	15/15	15/15
	βec	209/225	12/15	30/15	2/15	24/15
	βc/βd	11/15	6/15	15/9	2/15	15/15
	βhs	22/15	12/15	30/15	4/15	30/15
	βed	1309/225	94/75	47/15 47/15	56/75	134/15
	CM (dB)	1.0	3.0	2.0	3.0	1.0
	MPR (dB)	0	2	1	2	0
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				
	CQI Repetition Factor (Table 5.2B.4)	2				
	Ahs = βhs/βc	30/15				
HSUPA Specific Settings	D E-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_TFCIs	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27		E-TFCI 11 E-TFCI PO 4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27	

Output Power Tolerance	HSUPA (dBm)				
	Subtest 1	Subtest 2	Subtest 3	Subtest 4	Subtest 5
Max	23.7	21.7	22.7	21.7	23.7
Target	**23.2**	**21.2**	**22.2**	**21.2**	**23.2**

MEASURED RESULTS

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	22.8
		9400	1880.0	23.1
		9538	1907.6	23.0
	Subtest 2	9262	1852.4	21.4
		9400	1880.0	21.6
		9538	1907.6	21.6
	Subtest 3	9262	1852.4	22.9
		9400	1880.0	23.0
		9538	1907.6	22.6
	Subtest 4	9262	1852.4	22.2
		9400	1880.0	21.8
		9538	1907.6	22.2
	Subtest 5	9262	1852.4	23.6
		9400	1880.0	23.7
		9538	1907.6	23.6

9.6. W-CDMA Band V

Output Power Tolerance	Release 99 (dBm)
Max	23.7
Target	**23.2**

Release 99

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 specification. The DUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7).

Mode	Subtest	Rel99
WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	βc/βd	8/15

MEASURED RESULTS

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)
W-CDMA Band V	Rel 99 (RMC, 12.2 kbps)	4132	826.4	23.6
		4183	836.6	23.6
		4233	846.6	23.6

HSDPA

The following 4 Sub-tests were completed according to Release 7 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subtest	1	2	3	4
W-CDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm 2			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	βc/βd	2/15	12/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
	MPR (dB)	0	0	0.5	0.5
HSDPA Specific Settings	D_{ACK}	8			
	D_{NAK}	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
	Ahs =βhs/βc	30/15			

Output Power Tolerance	HSDPA (dBm)			
	Subtest 1	Subtest 2	Subtest 3	Subtest 4
Max	23.7	23.7	23.2	23.2
Target	**23.2**	**23.2**	**22.7**	**22.7**

MEASURED RESULTS

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)
W-CDMA Band V	Subtest 1	4132	826.4	23.5
		4183	836.6	23.5
		4233	846.6	23.5
	Subtest 2	4132	826.4	23.6
		4183	836.6	23.5
		4233	846.6	23.4
	Subtest 3	4132	826.4	23.0
		4183	836.6	23.0
		4233	846.6	23.0
	Subtest 4	4132	826.4	23.0
		4183	836.6	23.0
		4233	846.6	23.1

Maximum output power levels that are possible for all subtests reported.

HSPA (HSDPA & HSUPA)

The following 5 Sub-tests were completed according to Release 6 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

	Mode	HSPA	HSPA	HSPA	HSPA	HSPA
	Subtest	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	βc	11/15	6/15	15/15	2/15	15/15
	βd	15/15	15/15	9/15	15/15	15/15
	βec	209/225	12/15	30/15	2/15	24/15
	βc/βd	11/15	6/15	15/9	2/15	15/15
	βhs	22/15	12/15	30/15	4/15	30/15
	βed	1309/225	94/75	47/15 47/15	56/75	134/15
	CM (dB)	1.0	3.0	2.0	3.0	1.0
	MPR (dB)	0	2	1	2	0
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				
	CQI Repetition Factor (Table 5.2B.4)	2				
	Ahs = βhs/βc	30/15				
HSUPA Specific Settings	D E-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_TFCIs	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27		E-TFCI 11 E-TFCI PO 4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27	

Output Power Tolerance	HSUPA (dBm)				
	Subtest 1	Subtest 2	Subtest 3	Subtest 4	Subtest 5
Max	23.7	21.7	22.7	21.7	23.7
Target	**23.2**	**21.2**	**22.2**	**21.2**	**23.2**

MEASURED RESULTS

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)
W-CDMA Band V	Subtest 1	4132	826.4	22.7
		4183	836.6	22.9
		4233	846.6	23.0
	Subtest 2	4132	826.4	21.6
		4183	836.6	21.4
		4233	846.6	21.6
	Subtest 3	4132	826.4	22.4
		4183	836.6	22.7
		4233	846.6	22.2
	Subtest 4	4132	826.4	21.8
		4183	836.6	21.9
		4233	846.6	21.6
	Subtest 5	4132	826.4	23.6
		4183	836.6	23.6
		4233	846.6	23.6

9.7. LTE Band 4

Output Power Tolerance	QPSK (dBm)
Max	23.7
Target	**23.2**

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 6.6.3.3.2	13	10	Table 6.2.4-2	Table 6.2.4-2
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.

MEASURED RESULTS (MAX. POWER)

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)
20	20050	1720.0	QPSK	1	0	0	0	23.6
				1	49	0	0	23.6
				1	99	0	0	23.6
				50	0	1	1	22.3
				50	24	1	1	22.2
				50	49	1	1	22.2
				100	0	1	1	22.3
			16QAM	1	0	1	1	22.6
				1	49	1	1	22.6
				1	99	1	1	22.5
				50	0	2	2	21.3
				50	24	2	2	21.2
				50	49	2	2	21.2
				100	0	2	2	21.3
	20175	1732.5	QPSK	1	0	0	0	23.4
				1	49	0	0	23.3
				1	99	0	0	23.6
				50	0	1	1	22.3
				50	24	1	1	22.4
				50	49	1	1	22.3
				100	0	1	1	22.3
			16QAM	1	0	1	2	21.9
				1	49	1	2	21.8
				1	99	1	2	21.8
				50	0	2	2	21.3
				50	24	2	2	21.3
				50	49	2	2	21.4
				100	0	2	2	21.3
	20300	1745.0	QPSK	1	0	0	0	23.6
				1	49	0	0	23.6
				1	99	0	0	23.4
				50	0	1	1	22.4
				50	24	1	1	22.4
				50	49	1	1	22.3
				100	0	1	1	22.4
			16QAM	1	0	1	1	22.2
				1	49	1	1	22.2
				1	99	1	2	22.1
				50	0	2	2	21.5
				50	24	2	2	21.4
				50	49	2	2	21.3
				100	0	2	2	21.3

MEASURED RESULTS (POWER REDUCTION)

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)
20	20050	1720.0	QPSK	1	0	MPR is disabled when power reduction is enabled		19.6
				1	49			19.5
				1	99			19.5
				50	0			19.4
				50	24			19.4
				50	49			19.4
				100	0			19.4
			16QAM	1	0			19.2
				1	49			19.5
				1	99			19.4
				50	0			19.4
				50	24			19.4
				50	49			19.4
				100	0			19.4
	20175	1732.5	QPSK	1	0			19.6
				1	49			19.5
				1	99			19.5
				50	0			19.5
				50	24			19.4
				50	49			19.5
				100	0			19.5
			16QAM	1	0			19.3
				1	49			19.2
				1	99			19.4
				50	0			19.5
				50	24			19.4
				50	49			19.5
				100	0			19.5
	20300	1745.0	QPSK	1	0			19.6
				1	49			19.6
				1	99			19.5
				50	0			19.5
				50	24			19.5
				50	49			19.5
				100	0			19.5
			16QAM	1	0			19.7
				1	49			19.6
				1	99			19.6
				50	0			19.5
				50	24			19.4
				50	49			19.4
				100	0			19.4

MEASURED RESULTS (MAX. POWER)

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)
15	20025	1717.5	QPSK	1	0	0	0	23.7
				1	37	0	0	23.4
				1	74	0	0	23.5
				36	0	1	1	22.3
				36	16	1	1	22.3
				36	35	1	2	22.2
				75	0	1	2	22.2
			16QAM	1	0	1	1	22.6
				1	37	1	1	22.4
				1	74	1	1	22.5
				36	0	2	2	21.4
				36	16	2	2	21.3
				36	35	2	2	21.3
				75	0	2	2	21.3
	20175	1732.5	QPSK	1	0	0	0	23.6
				1	37	0	0	23.6
				1	74	0	0	23.5
				36	0	1	1	22.3
				36	16	1	1	22.3
				36	35	1	1	22.4
				75	0	1	1	22.3
			16QAM	1	0	1	1	22.5
				1	37	1	1	22.5
				1	74	1	1	22.5
				36	0	2	2	21.3
				36	16	2	2	21.3
				36	35	2	2	21.4
				75	0	2	2	21.3
	20325	1747.5	QPSK	1	0	0	0	23.5
				1	37	0	0	23.6
				1	74	0	0	23.4
				36	0	1	1	22.4
				36	16	1	1	22.4
				36	35	1	1	22.3
				75	0	1	1	22.3
			16QAM	1	0	1	1	22.3
				1	37	1	1	22.4
				1	74	1	1	22.3
				36	0	2	2	21.3
				36	16	2	2	21.3
				36	35	2	2	21.2
				75	0	2	2	21.2

MEASURED RESULTS (POWER REDUCTION)

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)
15	20025	1717.5	QPSK	1	0	MPR is disabled when power reduction is enabled		19.7
				1	37			19.6
				1	74			19.7
				36	0			19.6
				36	16			19.6
				36	35			19.6
				75	0			19.6
			16QAM	1	0			19.6
				1	37			19.4
				1	74			19.5
				36	0			19.5
				36	16			19.5
				36	35			19.5
				75	0			19.5
	20175	1732.5	QPSK	1	0			19.6
				1	37			19.6
				1	74			19.4
				36	0			19.5
				36	16			19.4
				36	35			19.5
				75	0			19.5
			16QAM	1	0			19.5
				1	37			19.4
				1	74			19.3
				36	0			19.5
				36	16			19.5
				36	35			19.5
				75	0			19.4
	20325	1747.5	QPSK	1	0			19.6
				1	37			19.6
				1	74			19.6
				36	0			19.6
				36	16			19.6
				36	35			19.6
				75	0			19.6
			16QAM	1	0			19.7
				1	37			19.7
				1	74			19.7
				36	0			19.6
				36	16			19.6
				36	35			19.6
				75	0			19.6

MEASURED RESULTS (MAX. POWER)

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)
10	20000	1715.0	QPSK	1	0	0	0	23.4
				1	24	0	0	23.4
				1	49	0	0	23.4
				25	0	1	1	22.3
				25	12	1	1	22.2
				25	24	1	1	22.2
				50	0	1	1	22.1
			16QAM	1	0	1	2	21.9
				1	24	1	2	21.8
				1	49	1	2	21.8
				25	0	2	2	21.3
				25	12	2	2	21.3
				25	24	2	2	21.3
				50	0	2	2	21.2
	20175	1732.5	QPSK	1	0	0	0	23.4
				1	24	0	0	23.4
				1	49	0	0	23.5
				25	0	1	1	22.3
				25	12	1	1	22.2
				25	24	1	1	22.2
				50	0	1	1	22.3
			16QAM	1	0	1	2	21.9
				1	24	1	2	21.8
				1	49	1	2	22.0
				25	0	2	2	21.3
				25	12	2	2	21.2
				25	24	2	2	21.2
				50	0	2	2	21.2
	20350	1750.0	QPSK	1	0	0	0	23.6
				1	24	0	0	23.5
				1	49	0	0	23.4
				25	0	1	1	22.3
				25	12	1	2	22.1
				25	24	1	1	22.2
				50	0	1	1	22.2
			16QAM	1	0	1	1	22.6
				1	24	1	1	22.4
				1	49	1	1	22.4
				25	0	2	2	21.3
				25	12	2	2	21.2
				25	24	2	2	21.2
				50	0	2	3	21.1

MEASURED RESULTS (POWER REDUCTION)

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)
10	20000	1715.0	QPSK	1	0	MPR is disabled when power reduction is enabled		19.6
				1	24			19.7
				1	49			19.7
				25	0			19.6
				25	12			19.6
				25	24			19.6
				50	0			19.5
			16QAM	1	0			19.7
				1	24			19.7
				1	49			19.4
				25	0			19.6
				25	12			19.6
				25	24			19.6
				50	0			19.4
	20175	1732.5	QPSK	1	0			19.5
				1	24			19.4
				1	49			19.4
				25	0			19.4
				25	12			19.4
				25	24			19.4
				50	0			19.5
			16QAM	1	0			19.3
				1	24			19.2
				1	49			19.2
				25	0			19.5
				25	12			19.5
				25	24			19.5
				50	0			19.5
	20350	1750.0	QPSK	1	0			19.6
				1	24			19.5
				1	49			19.5
				25	0			19.6
				25	12			19.5
				25	24			19.6
				50	0			19.6
			16QAM	1	0			19.7
				1	24			19.7
				1	49			19.7
				25	0			19.6
				25	12			19.5
				25	24			19.6
				50	0			19.5

MEASURED RESULTS (MAX. POWER)

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)
5	19975	1712.5	QPSK	1	0	0	0	23.5
				1	12	0	0	23.6
				1	24	0	0	23.5
				12	0	1	1	22.2
				12	6	1	1	22.3
				12	11	1	1	22.4
				25	0	1	1	22.2
			16QAM	1	0	1	1	22.5
				1	12	1	1	22.5
				1	24	1	1	22.5
				12	0	2	2	21.3
				12	6	2	2	21.3
				12	11	2	2	21.4
				25	0	2	2	21.3
	20175	1732.5	QPSK	1	0	0	0	23.5
				1	12	0	0	23.6
				1	24	0	0	23.5
				12	0	1	1	22.2
				12	6	1	1	22.3
				12	11	1	1	22.3
				25	0	1	1	22.3
			16QAM	1	0	1	1	22.5
				1	12	1	1	22.5
				1	24	1	1	22.5
				12	0	2	2	21.3
				12	6	2	2	21.4
				12	11	2	2	21.4
				25	0	2	2	21.3
	20375	1752.5	QPSK	1	0	0	0	23.4
				1	12	0	0	23.4
				1	24	0	0	23.4
				12	0	1	1	22.2
				12	6	1	1	22.3
				12	11	1	1	22.3
				25	0	1	1	22.2
			16QAM	1	0	1	1	22.7
				1	12	1	1	22.7
				1	24	1	1	22.6
				12	0	2	2	21.2
				12	6	2	2	21.2
				12	11	2	2	21.2
				25	0	2	2	21.1

MEASURED RESULTS (POWER REDUCTION)

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)
5	19975	1712.5	QPSK	1	0	MPR is disabled when power reduction is enabled		19.7
				1	12			19.7
				1	24			19.7
				12	0			19.5
				12	6			19.6
				12	11			19.6
				25	0			19.6
			16QAM	1	0			19.5
				1	12			19.6
				1	24			19.6
				12	0			19.5
				12	6			19.6
				12	11			19.6
				25	0			19.6
	20175	1732.5	QPSK	1	0			19.6
				1	12			19.6
				1	24			19.5
				12	0			19.5
				12	6			19.5
				12	11			19.4
				25	0			19.5
			16QAM	1	0			19.6
				1	12			19.5
				1	24			19.5
				12	0			19.5
				12	6			19.5
				12	11			19.5
				25	0			19.5
	20375	1752.5	QPSK	1	0			19.6
				1	12			19.7
				1	24			19.6
				12	0			19.6
				12	6			19.6
				12	11			19.6
				25	0			19.6
			16QAM	1	0			19.6
				1	12			19.6
				1	24			19.6
				12	0			19.5
				12	6			19.6
				12	11			19.5
				25	0			19.6

9.8. LTE Band 13

Output Power Tolerance	QPSK (dBm)
Max	23.7
Target	**23.2**

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 6.6.3.3.2	13	10	Table 6.2.4-2	Table 6.2.4-2
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.

MEASURED RESULTS (MAX. POWER)

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)
10	23230	782.0	QPSK	1	0	0	0	23.6
				1	24	0	0	23.6
				1	49	0	0	23.5
				25	0	1	1	22.3
				25	12	1	1	22.3
				25	24	1	1	22.3
				50	0	1	1	22.2
			16QAM	1	0	1	1	22.6
				1	24	1	1	22.6
				1	49	1	1	22.6
				25	0	2	2	21.4
				25	12	2	2	21.3
				25	24	2	2	21.3
				50	0	2	2	21.2

MEASURED RESULTS (POWER REDUCTION)

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Power Reduction
10	23230	782.0	QPSK	1	0	MPR is disabled when power reduction is enabled		19.6
				1	24			19.5
				1	49			19.5
				25	0			19.5
				25	12			19.5
				25	24			19.4
				50	0			19.4
			16QAM	1	0			19.7
				1	24			19.7
				1	49			19.7
				25	0			19.5
				25	12			19.5
				25	24			19.4
				50	0			19.3

9.9. SV-LTE

9.9.1. SV-LTE (CDMA BC0 + LTE B4)

Agilent 8960		R&S CMW 500				
CDMA BC0 (1xRTT) P = 18 dBm		LTE Band 4 (20MHz) Limited = 19.7 dBm				
Ch. #	Avg Pwr (dBm)	Ch. #	Mod	UL RB Setting		Avg Pwr (dBm)
1013		20175	QPSK	1	0	23.6
				1	24	23.5
				1	49	23.4
				25	0	22.4
				25	12	22.3
				25	24	22.3
				50	0	22.3
			16QAM	1	0	22.4
				1	24	22.4
				1	49	22.4
				25	0	21.4
				25	12	21.4
				25	24	21.4
				50	0	21.3
384		20175	QPSK	1	0	23.6
				1	24	23.5
				1	49	23.4
				25	0	22.4
				25	12	22.3
				25	24	22.3
				50	0	22.3
			16QAM	1	0	22.5
				1	24	22.4
				1	49	22.4
				25	0	21.4
				25	12	21.4
				25	24	21.4
				50	0	21.3
777		20175	QPSK	1	0	23.6
				1	24	23.5
				1	49	23.4
				25	0	22.4
				25	12	22.4
				25	24	22.3
				50	0	22.3
			16QAM	1	0	22.6
				1	24	22.5
				1	49	22.4
				25	0	21.5
				25	12	21.4
				25	24	21.4
				50	0	21.3

Agilent 8960		R&S CMW 500				
CDMA BC0 (1xRTT) P = 19 dBm		LTE Band 4 (20MHz) Limited = 19.7 dBm				
Ch. #	Avg Pwr (dBm)	Ch. #	Mod	UL RB Setting		Avg Pwr (dBm)
1013		20175	QPSK	1	0	19.7
				1	24	19.6
				1	49	19.6
				25	0	19.6
				25	12	19.5
				25	24	19.6
				50	0	19.5
			16QAM	1	0	19.7
				1	24	19.7
				1	49	19.7
				25	0	19.6
				25	12	19.6
				25	24	19.6
				50	0	19.5
384		20175	QPSK	1	0	19.7
				1	24	19.6
				1	49	19.6
				25	0	19.6
				25	12	19.6
				25	24	19.6
				50	0	19.5
			16QAM	1	0	19.7
				1	24	19.7
				1	49	19.7
				25	0	19.6
				25	12	19.6
				25	24	19.6
				50	0	19.5
777		20175	QPSK	1	0	19.6
				1	24	19.6
				1	49	19.6
				25	0	19.6
				25	12	19.5
				25	24	19.5
				50	0	19.5
			16QAM	1	0	19.7
				1	24	19.7
				1	49	19.7
				25	0	19.6
				25	12	19.5
				25	24	19.5
				50	0	19.5

9.9.2. SV-LTE (CDMA BC1 + LTE B4)

Agilent 8960		R&S CMW 500				
CDMA BC1 (1xRTT) P = 18 dBm		LTE Band 4 (20MHz) Limited = 19.7 dBm				
Ch. #	Avg Pwr (dBm)	Ch. #	Mod	UL RB Setting		Avg Pwr (dBm)
25		20175	QPSK	1	0	23.6
				1	24	23.5
				1	49	23.5
				25	0	22.5
				25	12	22.3
				25	24	22.4
				50	0	22.3
			16QAM	1	0	22.5
				1	24	22.5
				1	49	22.5
				25	0	21.5
				25	12	21.4
				25	24	21.4
				50	0	21.3
600		20175	QPSK	1	0	23.5
				1	24	23.5
				1	49	23.5
				25	0	22.5
				25	12	22.3
				25	24	22.4
				50	0	22.3
			16QAM	1	0	22.5
				1	24	22.6
				1	49	22.5
				25	0	21.5
				25	12	21.4
				25	24	21.4
				50	0	21.3
1175		20175	QPSK	1	0	23.6
				1	24	23.5
				1	49	23.5
				25	0	22.4
				25	12	22.3
				25	24	22.3
				50	0	22.3
			16QAM	1	0	22.5
				1	24	22.5
				1	49	22.5
				25	0	21.5
				25	12	21.4
				25	24	21.4
				50	0	21.3

Agilent 8960		R&S CMW 500				
CDMA BC1 (1xRTT) P = 19 dBm		LTE Band 4 (20MHz) Limited = 19.7 dBm				
Ch. #	Avg Pwr (dBm)	Ch. #	Mod	UL RB Setting		Avg Pwr (dBm)
25		20175	QPSK	1	0	19.7
				1	24	19.7
				1	49	19.6
				25	0	19.6
				25	12	19.6
				25	24	19.6
				50	0	19.5
			16QAM	1	0	19.7
				1	24	19.7
				1	49	19.7
				25	0	19.6
				25	12	19.5
				25	24	19.6
				50	0	19.5
600		20175	QPSK	1	0	19.7
				1	24	19.7
				1	49	19.6
				25	0	19.6
				25	12	19.7
				25	24	19.6
				50	0	19.5
			16QAM	1	0	19.7
				1	24	19.7
				1	49	19.7
				25	0	19.6
				25	12	19.6
				25	24	19.6
				50	0	19.5
1175		20175	QPSK	1	0	19.7
				1	24	19.7
				1	49	19.6
				25	0	19.6
				25	12	19.5
				25	24	19.5
				50	0	19.5
			16QAM	1	0	19.7
				1	24	19.7
				1	49	19.7
				25	0	19.6
				25	12	19.6
				25	24	19.5
				50	0	19.5

9.9.3. SV-LTE (CDMA BC0 + LTE B13)

Agilent 8960		R&S CMW 500				
CDMA BC0 (1xRTT)		LTE Band 13				
P = 18 dBm		Limited = 19.7 dBm				
Ch. #	Avg Pwr (dBm)	Ch. #	Mod	UL RB Setting		Avg Pwr (dBm)
1013		23230	QPSK	1	0	23.6
				1	24	23.5
				1	49	23.5
				25	0	22.4
				25	12	22.3
				25	24	22.3
				50	0	22.2
			16QAM	1	0	22.5
				1	24	22.5
				1	49	22.4
				25	0	21.3
				25	12	21.3
				25	24	21.2
				50	0	21.1
384		23230	QPSK	1	0	23.5
				1	24	23.5
				1	49	23.3
				25	0	22.3
				25	12	22.3
				25	24	22.2
				50	0	22.1
			16QAM	1	0	22.5
				1	24	22.5
				1	49	22.4
				25	0	21.3
				25	12	21.3
				25	24	21.3
				50	0	21.1
777		23230	QPSK	1	0	23.5
				1	24	23.6
				1	49	23.4
				25	0	22.3
				25	12	22.3
				25	24	22.2
				50	0	22.2
			16QAM	1	0	22.5
				1	24	22.5
				1	49	22.5
				25	0	21.4
				25	12	21.3
				25	24	21.3
				50	0	21.1

Agilent 8960		R&S CMW 500				
CDMA BC0 (1xRTT)		LTE Band 13				
P = 19 dBm		Limited = 19.7 dBm				
Ch. #	Avg Pwr (dBm)	Ch. #	Mod	UL RB Setting		Avg Pwr (dBm)
1013		23230	QPSK	1	0	19.6
				1	24	19.6
				1	49	19.6
				25	0	19.5
				25	12	19.5
				25	24	19.5
				50	0	19.4
			16QAM	1	0	19.7
				1	24	19.7
				1	49	19.6
				25	0	19.5
				25	12	19.4
				25	24	19.4
				50	0	19.3
384		23230	QPSK	1	0	19.6
				1	24	19.6
				1	49	19.6
				25	0	19.5
				25	12	19.5
				25	24	19.4
				50	0	19.4
			16QAM	1	0	19.6
				1	24	19.7
				1	49	19.6
				25	0	19.5
				25	12	19.5
				25	24	19.4
				50	0	19.3
777		23230	QPSK	1	0	19.6
				1	24	19.6
				1	49	19.5
				25	0	19.5
				25	12	19.5
				25	24	19.4
				50	0	19.4
			16QAM	1	0	19.6
				1	24	19.7
				1	49	19.6
				25	0	19.5
				25	12	19.5
				25	24	19.4
				50	0	19.2

9.9.4. SV-LTE (CDMA BC1 + LTE B13)

Agilent 8960		R&S CMW 500				
CDMA BC1 (1xRTT)		LTE Band 13				
P = 18 dBm		Limited = 19.7 dBm				
Ch. #	Avg Pwr (dBm)	Ch. #	Mod	UL RB Setting		Avg Pwr (dBm)
25		23230	QPSK	1	0	23.5
				1	24	23.5
				1	49	23.4
				25	0	22.3
				25	12	22.2
				25	24	22.2
				50	0	22.1
			16QAM	1	0	22.5
				1	24	22.5
				1	49	22.4
				25	0	21.3
				25	12	21.3
				25	24	21.3
				50	0	21.1
600		23230	QPSK	1	0	23.5
				1	24	23.5
				1	49	23.4
				25	0	22.4
				25	12	22.3
				25	24	22.3
				50	0	22.2
			16QAM	1	0	22.5
				1	24	22.5
				1	49	22.5
				25	0	21.3
				25	12	21.3
				25	24	21.3
				50	0	21.1
1175		23230	QPSK	1	0	23.5
				1	24	23.5
				1	49	23.5
				25	0	22.4
				25	12	22.3
				25	24	22.3
				50	0	22.2
			16QAM	1	0	22.5
				1	24	22.5
				1	49	22.5
				25	0	21.4
				25	12	21.3
				25	24	21.3
				50	0	21.1

Agilent 8960		R&S CMW 500				
CDMA BC1 (1xRTT)		LTE Band 13				
P = 19 dBm		Limited = 19.7 dBm				
Ch. #	Avg Pwr (dBm)	Ch. #	Mod	UL RB Setting		Avg Pwr (dBm)
25		23230	QPSK	1	0	19.6
				1	24	19.6
				1	49	19.6
				25	0	19.6
				25	12	19.5
				25	24	19.5
				50	0	19.4
			16QAM	1	0	19.7
				1	24	19.7
				1	49	19.7
				25	0	19.5
				25	12	19.5
				25	24	19.5
				50	0	19.4
600		23230	QPSK	1	0	19.6
				1	24	19.6
				1	49	19.6
				25	0	19.5
				25	12	19.5
				25	24	19.5
				50	0	19.5
			16QAM	1	0	19.7
				1	24	19.7
				1	49	19.7
				25	0	19.6
				25	12	19.5
				25	24	19.5
				50	0	19.3
1175		23230	QPSK	1	0	19.6
				1	24	19.6
				1	49	19.6
				25	0	19.6
				25	12	19.6
				25	24	19.5
				50	0	19.5
			16QAM	1	0	19.7
				1	24	19.7
				1	49	19.7
				25	0	19.5
				25	12	19.5
				25	24	19.5
				50	0	19.4

9.10. WiFi (2.4 GHz Band)

Output Power Tolerance	IEEE 802.11 (dBm)			
	b	g	n (HT20)	ac (HT20)
Max	16.0	13.0	12.0	12.0
Target	**15.0**	**12.0**	**11.0**	**11.0**

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 (MHz)	Mode	Ch #	Freq. (MHz)	Avg Pwr (dBm)
2.4	802.11b	1	2412	15.9
		6	2437	15.4
		11	2462	15.6
	802.11g	1	2412	11.8
		6	2437	11.4
		11	2462	11.7
	802.11n (HT20)	1	2412	11.7
		6	2437	11.5
		11	2462	11.7
	802.11ac (HT20)	1	2412	12.0
		6	2437	11.7
		11	2462	11.4

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.

9.11. WiFi (5 GHz Bands)

Output Power Tolerance	IEEE 802.11 (dBm)					
	a	n (HT20)	n (HT40)	ac (HT20)	ac (HT40)	ac (HT80)
Max	13.0	13.0	12.0	11.0	11.0	11.0
Target	**12.0**	**12.0**	**11.0**	**10.0**	**10.0**	**10.0**

Required Test Channels per KDB 248227 D01

Mode		Band	GHz	Channel	"Default Test Channels"	
					802.11a	
802.11a	UNII (15.407)	5.2 GHz	5.180	36	√	
			5.200	40		*
			2.220	44		*
			5.240	48	√	
		5.3 GHz	5.260	52	√	
			5.280	56		*
			5.300	60		*
			5.320	64	√	
		5.5 GHz	5.500	100		
			5.520	104	√	
			5.540	108		*
			5.560	112		*
			5.580	116	√	
			5.600	120		*
			5.620	124	√	
			5.640	128		*
			5.660	132		*
			5.680	136	√	
			5.700	140		*
	DTS (15.247)	5.8 GHz	5.745	149	√	
			5.765	153		*
			5.785	157	√	
			5.805	161		*
			5.825	165	√	

√ = "default test channels"

* = possible 802.11a channels with maximum average output > 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 (MHz)	Mode	Ch #	Freq. (MHz)	Avg Pwr (dBm)
5.2	802.11a	36	5180	12.4
		40	5200	12.3
		44	5220	12.1
		48	5240	12.3
	802.11n (HT20)	36	5180	11.7
		40	5200	11.4
		48	5240	11.8
	802.11n (HT40)	38	5190	11.6
		46	5230	11.5
	802.11ac (HT20)	36	5180	10.3
		40	5200	10.4
		48	5240	10.1
	802.11ac (HT40)	38	5190	10.7
		46	5230	10.0
	802.11ac (HT80)	42	5210	10.5
5.3	802.11a	52	5260	12.5
		56	5280	12.5
		60	5300	12.5
		64	5320	12.3
	802.11n (HT20)	52	5260	11.6
		60	5300	11.6
		64	5320	11.5
	802.11n (HT40)	54	5270	12.0
		62	5310	11.4
	802.11ac (HT20)	52	5260	10.7
		60	5300	10.5
		64	5320	10.4
	802.11ac (HT40)	54	5270	10.8
		62	5310	10.9
	802.11ac (HT80)	58	5290	10.6

MEASURED RESULTS (CONTINUED)

Band (MHz)	Mode	Ch #	Freq. (MHz)	Avg Pwr (dBm)
5.5	802.11a	100	5500	12.2
		104	5520	12.0
		108	5540	11.8
		112	5560	11.8
		116	5580	11.9
		120	5600	not supported
		124	5620	not supported
		128	5640	not supported
		132	5660	11.6
		136	5680	11.4
		140	5700	11.4
	802.11n (HT20)	100	5500	11.4
		116	5580	11.1
		140	5700	10.6
	802.11n (HT40)	102	5510	11.3
		110	5550	11.7
		134	5670	10.9
		142	5710	10.9
	802.11ac (HT20)	100	5500	10.6
		116	5580	10.2
		140	5700	9.5
	802.11ac (HT40)	102	5510	10.6
		110	5550	10.9
		134	5670	10.2
		142	5710	10.2
	802.11ac (HT80)	106	5530	10.8
		138	5690	10.2
5.8	802.11a	149	5745	11.5
		153	5765	11.4
		157	5785	11.3
		161	5805	11.4
		165	5825	11.1
	802.11n (HT20)	149	5745	10.5
		157	5785	10.4
		161	5805	11.4
	802.11n (HT40)	151	5755	10.4
		159	5795	10.1
	802.11ac (HT20)	149	5745	9.8
		157	5785	9.7
		165	5825	9.5
	802.11ac (HT40)	151	5755	9.7
		159	5795	9.3
	802.11ac (HT80)	155	5775	9.9

9.12. Bluetooth

Output Power Tolerance	IEEE 802.15 (dBm)
Max	10.0
Target	**8.5**

Band (MHz)	Mode	Ch #	Freq. (MHz)	Conducted Avg Power	
				(dBm)	(mW)
2.4	GFSK	0	2402	8.2	6.6
		39	2441	7.3	5.4
		78	2480	7.3	5.4
	8-DPSK	0	2402	5.6	3.6
		39	2441	4.8	3.0
		78	2480	5.5	3.5

10. Tissue Dielectric Properties

IEEE Std 1528-2003 Table 2

Target Frequency (MHz)	Head	
	ε_r	σ (S/m)
300	45.3	0.87
450	43.5	0.87
835	41.5	0.90
900	41.5	0.97
1450	40.5	1.20
1800 – 2000	40.0	1.40
2450	39.2	1.80
2600	39.0	1.96
3000	38.5	2.40

FCC OET Bulletin 65 Supplement C 01-01

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

10.1. Composition of Ingredients for the Tissue Material Used in the SAR Tests

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

Ingredients (% by weight)	Frequency (MHz)									
	450		835		915		1900		2450	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.56	51.16	41.45	52.4	41.05	56.0	54.9	40.4	62.7	73.2
Salt (NaCl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5
Conductivity (S/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78

Salt: 99+% Pure Sodium Chloride Sugar: 98+% Pure Sucrose
Water: De-ionized, 16 MΩ+ resistivity HEC: Hydroxyethyl Cellulose
DGBE: 99+% Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol]
Triton X-100 (ultra pure): Polyethylene glycol mono [4-(1,1, 3, 3-tetramethylbutyl)phenyl]ether

Simulating Liquids for 5 GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	78
Mineral oil	11
Emulsifiers	9
Additives and Salt	2

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 Room A

	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
5/23/2013	Head 1750	e'	38.4900	Relative Permittivity (ϵ_r):	38.49	40.08	-3.98	5
		e"	13.8300	Conductivity (σ):	1.35	1.37	-1.70	5
	Head 1710	e'	38.6500	Relative Permittivity (ϵ_r):	38.65	40.15	-3.73	5
		e"	13.7200	Conductivity (σ):	1.30	1.35	-3.11	5
	Head 1755	e'	38.4600	Relative Permittivity (ϵ_r):	38.46	40.08	-4.03	5
		e"	13.8100	Conductivity (σ):	1.35	1.37	-1.76	5
5/23/2013	Body 1750	e'	51.5500	Relative Permittivity (ϵ_r):	51.55	53.44	-3.54	5
		e"	15.1900	Conductivity (σ):	1.48	1.49	-0.54	5
	Body 1710	e'	51.6700	Relative Permittivity (ϵ_r):	51.67	53.54	-3.50	5
		e"	15.1100	Conductivity (σ):	1.44	1.46	-1.70	5
	Body 1755	e'	51.5300	Relative Permittivity (ϵ_r):	51.53	53.43	**-3.55**	5
		e"	15.2000	Conductivity (σ):	1.48	1.49	-0.40	5
5/28/2013	Body 1750	e'	51.6200	Relative Permittivity (ϵ_r):	51.62	53.44	-3.41	5
		e"	15.0000	Conductivity (σ):	1.46	1.49	-1.79	5
	Body 1710	e'	51.7200	Relative Permittivity (ϵ_r):	51.72	53.54	-3.41	5
		e"	14.9200	Conductivity (σ):	1.42	1.46	-2.94	5
	Body 1755	e'	51.5700	Relative Permittivity (ϵ_r):	51.57	53.43	-3.48	5
		e"	15.0300	Conductivity (σ):	1.47	1.49	-1.51	5
5/30/2013	Head 750	e'	40.4600	Relative Permittivity (ϵ_r):	40.46	41.96	-3.58	5
		e"	21.5100	Conductivity (σ):	0.90	0.89	0.44	5
	Head 700	e'	41.1500	Relative Permittivity (ϵ_r):	41.15	42.22	-2.53	5
		e"	21.9000	Conductivity (σ):	0.85	0.89	**-4.14**	5
	Head 790	e'	39.9400	Relative Permittivity (ϵ_r):	39.94	41.76	**-4.35**	5
		e"	21.2300	Conductivity (σ):	0.93	0.90	4.06	5
5/30/2013	Body 750	e'	54.4100	Relative Permittivity (ϵ_r):	54.41	55.55	-2.05	5
		e"	23.1200	Conductivity (σ):	0.96	0.96	0.11	5
	Body 700	e'	54.9400	Relative Permittivity (ϵ_r):	54.94	55.74	-1.43	5
		e"	23.5300	Conductivity (σ):	0.92	0.96	-4.52	5
	Body 790	e'	53.9600	Relative Permittivity (ϵ_r):	53.96	55.39	-2.59	5
		e"	22.8300	Conductivity (σ):	1.00	0.97	3.80	5

SAR Room B

	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
5/22/2013	Head 835	e'	41.2800	Relative Permittivity (ϵ_r):	41.28	41.50	-0.53	5
		e"	19.5400	Conductivity (σ):	0.91	0.90	0.80	5
	Head 820	e'	41.4700	Relative Permittivity (ϵ_r):	41.47	41.60	-0.32	5
		e"	19.5600	Conductivity (σ):	0.89	0.90	-0.74	5
	Head 850	e'	41.1000	Relative Permittivity (ϵ_r):	41.10	41.50	-0.96	5
		e"	19.5100	Conductivity (σ):	0.92	0.92	0.78	5
5/25/2013	Head 1900	e'	39.4700	Relative Permittivity (ϵ_r):	39.47	40.00	-1.33	5
		e"	13.6100	Conductivity (σ):	1.44	1.40	2.70	5
	Head 1850	e'	39.6900	Relative Permittivity (ϵ_r):	39.69	40.00	-0.78	5
		e"	13.4900	Conductivity (σ):	1.39	1.40	-0.88	5
	Head 1910	e'	39.4100	Relative Permittivity (ϵ_r):	39.41	40.00	-1.48	5
		e"	13.6300	Conductivity (σ):	1.45	1.40	3.40	5
5/25/2013	Body 1900	e'	51.5500	Relative Permittivity (ϵ_r):	51.55	53.30	-3.28	5
		e"	14.6000	Conductivity (σ):	1.54	1.52	1.48	5
	Body 1850	e'	51.7300	Relative Permittivity (ϵ_r):	51.73	53.30	-2.95	5
		e"	14.4500	Conductivity (σ):	1.49	1.52	-2.21	5
	Body 1910	e'	51.5000	Relative Permittivity (ϵ_r):	51.50	53.30	-3.38	5
		e"	14.6300	Conductivity (σ):	1.55	1.52	2.22	5

SAR Room D

	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
5/20/2013	Body 1900	e'	52.4300	Relative Permittivity (ϵ_r):	52.43	53.30	-1.63	5
		e"	14.9600	Conductivity (σ):	1.58	1.52	3.98	5
	Body 1850	e'	52.8400	Relative Permittivity (ϵ_r):	52.84	53.30	-0.86	5
		e"	14.6200	Conductivity (σ):	1.50	1.52	-1.06	5
	Body 1910	e'	52.5900	Relative Permittivity (ϵ_r):	52.59	53.30	-1.33	5
		e"	14.8700	Conductivity (σ):	1.58	1.52	3.90	5
5/22/2013	Head 1900	e'	39.1900	Relative Permittivity (ϵ_r):	39.19	40.00	-2.03	5
		e"	13.4300	Conductivity (σ):	1.42	1.40	1.34	5
	Head 1850	e'	39.4300	Relative Permittivity (ϵ_r):	39.43	40.00	-1.43	5
		e"	13.3200	Conductivity (σ):	1.37	1.40	-2.13	5
	Head 1910	e'	39.1400	Relative Permittivity (ϵ_r):	39.14	40.00	-2.15	5
		e"	13.4500	Conductivity (σ):	1.43	1.40	2.03	5
5/23/2013	Body 2450	e'	51.0300	Relative Permittivity (ϵ_r):	51.03	52.70	-3.17	5
		e"	14.3900	Conductivity (σ):	1.96	1.95	0.53	5
	Body 2410	e'	51.1700	Relative Permittivity (ϵ_r):	51.17	52.76	-3.01	5
		e"	14.2200	Conductivity (σ):	1.91	1.91	-0.10	5
	Body 2475	e'	50.9900	Relative Permittivity (ϵ_r):	50.99	52.67	-3.19	5
		e"	14.4700	Conductivity (σ):	1.99	1.99	0.31	5
5/24/2013	Head 835	e'	40.4700	Relative Permittivity (ϵ_r):	40.47	41.50	-2.48	5
		e"	19.1500	Conductivity (σ):	0.89	0.90	-1.21	5
	Head 820	e'	40.6600	Relative Permittivity (ϵ_r):	40.66	41.60	-2.27	5
		e"	19.2000	Conductivity (σ):	0.88	0.90	-2.57	5
	Head 850	e'	40.2500	Relative Permittivity (ϵ_r):	40.25	41.50	-3.01	5
		e"	19.0900	Conductivity (σ):	0.90	0.92	-1.39	5
6/6/2013	Body 835	e'	54.0600	Relative Permittivity (ϵ_r):	54.06	55.20	-2.07	5
		e"	21.8500	Conductivity (σ):	1.01	0.97	**4.58**	5
	Body 820	e'	54.1900	Relative Permittivity (ϵ_r):	54.19	55.28	-1.97	5
		e"	21.9100	Conductivity (σ):	1.00	0.97	3.15	5
	Body 850	e'	53.9000	Relative Permittivity (ϵ_r):	53.90	55.16	-2.28	5
		e"	21.7600	Conductivity (σ):	1.03	0.99	4.18	5

SAR Room E

	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
5/24/2013	Body 835	e'	53.9600	Relative Permittivity (ϵ_r):	53.96	55.20	-2.25	5
		e''	21.4500	Conductivity (σ):	1.00	0.97	2.67	5
	Body 820	e'	54.0800	Relative Permittivity (ϵ_r):	54.08	55.28	-2.17	5
		e''	21.5200	Conductivity (σ):	0.98	0.97	1.31	5
	Body 850	e'	53.7800	Relative Permittivity (ϵ_r):	53.78	55.16	-2.50	5
		e''	21.4100	Conductivity (σ):	1.01	0.99	2.51	5

SAR Room 1

	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
5/28/2013	Body 5180	e'	48.3000	Relative Permittivity (ϵ_r):	48.30	49.05	-1.52	10
		e''	18.1900	Conductivity (σ):	5.24	5.27	-0.61	5
	Body 5200	e'	48.2100	Relative Permittivity (ϵ_r):	48.21	49.02	-1.65	10
		e''	18.2700	Conductivity (σ):	5.28	5.29	-0.23	5
	Body 5600	e'	46.9400	Relative Permittivity (ϵ_r):	46.94	48.48	-3.17	10
		e''	18.5100	Conductivity (σ):	5.76	5.76	0.04	5
	Body 5800	e'	46.7500	Relative Permittivity (ϵ_r):	46.75	48.20	-3.01	10
		e''	18.6600	Conductivity (σ):	6.02	6.00	0.30	5
	Body 5825	e'	46.6000	Relative Permittivity (ϵ_r):	46.60	48.20	-3.32	10
		e''	18.5300	Conductivity (σ):	6.00	6.00	0.03	5
6/2/2013	Head 5180	e'	37.1800	Relative Permittivity (ϵ_r):	37.18	36.01	3.24	10
		e''	15.8200	Conductivity (σ):	4.56	4.63	-1.60	5
	Head 5200	e'	37.1600	Relative Permittivity (ϵ_r):	37.16	35.99	**3.25**	10
		e''	15.8400	Conductivity (σ):	4.58	4.65	-1.53	5
	Head 5600	e'	36.6000	Relative Permittivity (ϵ_r):	36.60	35.53	3.00	10
		e''	16.0400	Conductivity (σ):	4.99	5.06	-1.30	5
	Head 5800	e'	36.3290	Relative Permittivity (ϵ_r):	36.33	35.30	2.92	10
		e''	16.1500	Conductivity (σ):	5.21	5.27	-1.17	5
	Head 5825	e'	36.2700	Relative Permittivity (ϵ_r):	36.27	35.30	2.75	10
		e''	16.1700	Conductivity (σ):	5.24	5.27	-0.62	5
6/5/2013	Head 5180	e'	36.8700	Relative Permittivity (ϵ_r):	36.87	36.01	2.38	10
		e''	15.8200	Conductivity (σ):	4.56	4.63	-1.60	5
	Head 5200	e'	36.8500	Relative Permittivity (ϵ_r):	36.85	35.99	2.39	10
		e''	15.8400	Conductivity (σ):	4.58	4.65	-1.53	5
	Head 5600	e'	36.2700	Relative Permittivity (ϵ_r):	36.27	35.53	2.07	10
		e''	15.9900	Conductivity (σ):	4.98	5.06	**-1.61**	5
	Head 5800	e'	35.9700	Relative Permittivity (ϵ_r):	35.97	35.30	1.90	10
		e''	16.1200	Conductivity (σ):	5.20	5.27	-1.35	5
	Head 5825	e'	35.9700	Relative Permittivity (ϵ_r):	35.97	35.30	1.90	10
		e''	16.1000	Conductivity (σ):	5.21	5.27	-1.05	5
6/6/2013	Body 5180	e'	47.8700	Relative Permittivity (ϵ_r):	47.87	49.05	-2.40	10
		e''	18.4900	Conductivity (σ):	5.33	5.27	1.03	5
	Body 5200	e'	47.7900	Relative Permittivity (ϵ_r):	47.79	49.02	-2.51	10
		e''	18.6200	Conductivity (σ):	5.38	5.29	1.68	5
	Body 5600	e'	47.5500	Relative Permittivity (ϵ_r):	47.55	48.48	-1.91	10
		e''	18.9700	Conductivity (σ):	5.91	5.76	2.53	5
	Body 5800	e'	47.2700	Relative Permittivity (ϵ_r):	47.27	48.20	-1.93	10
		e''	19.3700	Conductivity (σ):	6.25	6.00	4.11	5
	Body 5825	e'	47.2700	Relative Permittivity (ϵ_r):	47.27	48.20	-1.93	10
		e''	19.1000	Conductivity (σ):	6.19	6.00	3.10	5
6/11/2013	Body 2450	e'	52.7000	Relative Permittivity (ϵ_r):	52.70	52.70	0.00	5
		e''	13.9900	Conductivity (σ):	1.91	1.95	-2.27	5
	Body 2410	e'	52.8300	Relative Permittivity (ϵ_r):	52.83	52.76	0.13	5
		e''	13.8100	Conductivity (σ):	1.85	1.91	-2.98	5
	Body 2475	e'	52.5900	Relative Permittivity (ϵ_r):	52.59	52.67	-0.15	5
		e''	14.0800	Conductivity (σ):	1.94	1.99	-2.39	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
D750V3	1071	10/05/12	750	1g	8.29	8.79
				10g	5.49	5.82
D835V2	4d142	10/04/12	835	1g	9.45	9.50
				10g	6.23	6.29
D835V2	4d002	10/24/12	835	1g	9.58	9.48
				10g	6.28	6.26
D1750V2	1050	4/20/13	1750	1g	36.5	37.1
				10g	19.4	20.1
D1900V2	5d140	04/18/13	1900	1g	41.2	41.5
				10g	21.5	22.0
D2450V2	899	10/05/12	2450	1g	53.6	51.7
				10g	25.0	24.3
D5GHzV2	1138	10/09/12	5.2GHz	1g	79.5	73.2
				10g	22.8	20.4
			5.5GHz	1g	83.6	77.9
				10g	23.8	21.7
			5.8GHz	1g	78.7	72.8
				10g	22.4	20.1

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 Room A

Date Tested	System Dipole		T.S. Liquid		Measured Results			Target (Ref. Value)	Delta ±10 %	Est./ Zoom Ratio ±3 %	Plot No.
	Type	Serial #			Area Scan	Zoom Scan	Normalize to 1 W				
5/23/2013	D1750V2	1050	Head	1g	3.69	3.54	35.40	36.5	-3.01	4.07	
				10g	1.98	1.88	18.80	19.4	-3.09		
5/23/2013	D1750V2	1050	Body	1g	3.93	3.84	38.40	37.1	**3.50**	2.29	1,2
				10g	2.04	2.04	20.40	20.1	1.49		
5/28/2013	D1750V2	1050	Body	1g	3.81	3.73	37.30	37.1	0.54	2.10	
				10g	1.98	1.99	19.90	20.1	-1.00		
5/30/2013	D750V3	1071	Head	1g	0.861	0.839	8.39	8.29	1.21	2.56	
				10g	0.586	0.550	5.50	5.49	0.18		
5/30/2013	D750V3	1071	Body	1g	0.936	0.917	9.17	8.79	4.32	2.03	3,4
				10g	0.633	0.610	6.10	5.82	**4.81**		

SAR Room B

Date Tested	System Dipole		T.S. Liquid		Measured Results			Target (Ref. Value)	Delta ±10 %	Est./ Zoom Ratio ±3 %	Plot No.
	Type	Serial #			Area Scan	Zoom Scan	Normalize to 1 W				
5/22/2013	D835V2	4d002	Head	1g	1.02	0.998	9.98	9.58	**4.18**	2.16	5,6
				10g	0.691	0.654	6.54	6.28	4.14		
5/25/2013	D1900V2	5d140	Body	1g	4.16	4.11	41.10	41.5	-0.96	1.20	
				10g	2.12	2.14	21.40	22.0	-2.73		
5/25/2013	D1900V2	5d140	Head	1g	4.10	4.01	40.10	41.2	-2.67	2.20	7,8
				10g	2.16	2.08	20.80	21.5	**-3.26**		

SAR Room D

Date Tested	System Dipole		T.S. Liquid		Measured Results			Target (Ref. Value)	Delta ±10 %	Est./ Zoom Ratio ±3 %	Plot No.
	Type	Serial #			Area Scan	Zoom Scan	Normalize to 1 W				
5/20/2013	D1900V2	5d140	Body	1g	3.98	3.99	39.90	41.5	-3.86	-0.25	9,10
				10g	2.04	2.10	21.00	22.0	**-4.55**		
5/22/2013	D1900V2	5d140	Head	1g	4.19	4.07	40.70	41.2	-1.21	2.86	
				10g	2.15	2.11	21.10	21.5	-1.86		
5/23/2013	D2450V2	899	Body	1g	5.14	5.21	52.10	51.7	**0.77**	-1.36	11,12
				10g	2.22	2.42	24.20	24.3	-0.41		
5/24/2013	D835V2	4d002	Head	1g	0.939	0.917	9.17	9.58	-4.28	2.34	
				10g	0.631	0.600	6.00	6.28	-4.46		
6/6/2013	D835V2	4d142	Body	1g	1.03	1.02	10.20	9.50	**7.37**	0.97	13,14
				10g	0.695	0.671	6.71	6.29	6.68		

SAR Room E

Date Tested	System Dipole		T.S. Liquid		Measured Results			Target (Ref. Value)	Delta ±10 %	Est./ Zoom Ratio ±3 %	Plot No.
	Type	Serial #			Area Scan	Zoom Scan	Normalize to 1 W				
5/24/2013	D835V2	4d002	Body	1g	1.01	0.99	9.89	9.48	**4.32**	2.08	15,16
				10g	0.68	0.65	6.53	6.26	4.31		

SAR Room 1

Date Tested	System Dipole		T.S. Liquid		Measured Results			Target (Ref. Value)	Delta ±10 %	Est./Zoom Ratio ±3 %	Plot No.
	Type	Serial #			Area Scan	Zoom Scan	Normalize to 1 W				
5/28/2013	D5GHz (5.2GHz)	1138	Body	1g	7.18	7.50	75.00	73.2	2.46	-4.46	
				10g	2.00	2.14	21.40	20.4	4.90		
5/28/2013	D5GHz (5.5GHz)	1138	Body	1g	7.98	8.24	82.40	77.9	5.78	-3.26	
				10g	2.22	2.36	23.60	21.7	8.76		
5/28/2013	D5GHz (5.8GHz)	1138	Body	1g	6.96	7.00	70.00	72.8	-3.85	-0.57	
				10g	1.62	1.90	19.00	20.1	-5.47		
6/2/2013	D5GHz (5.2GHz)	1138	Head	1g	6.63	7.25	72.50	79.5	**-8.81**	-9.35	17,18
				10g	1.89	2.12	21.20	22.8	-7.02		
6/2/2013	D5GHz (5.5GHz)	1138	Head	1g	7.43	8.10	81.00	83.6	-3.11	-9.02	
				10g	2.06	2.33	23.30	23.8	-2.10		
6/2/2013	D5GHz (5.8GHz)	1138	Head	1g	6.68	7.43	74.30	78.7	-5.59	-11.23	
				10g	1.87	2.14	21.40	22.4	-4.46		
6/5/2013	D5GHz (5.2GHz)	1138	Head	1g	6.87	7.42	74.20	79.5	-6.67	-8.01	
				10g	1.98	2.18	21.80	22.8	-4.39		
6/5/2013	D5GHz (5.5GHz)	1138	Head	1g	7.16	8.30	83.00	83.6	-0.72	-15.92	
				10g	2.14	2.39	23.90	23.8	0.42		
6/5/2013	D5GHz (5.8GHz)	1138	Head	1g	7.05	7.84	78.40	78.7	-0.38	-11.21	
				10g	1.98	2.26	22.60	22.4	0.89		
6/6/2013	D5GHz (5.2GHz)	1138	Body	1g	7.11	7.61	76.10	73.2	3.96	-7.03	
				10g	2.02	2.21	22.10	20.4	8.33		
6/6/2013	D5GHz (5.5GHz)	1138	Body	1g	7.43	7.93	79.30	77.9	1.80	-6.73	
				10g	2.08	2.30	23.00	21.7	5.99		
6/6/2013	D5GHz (5.8GHz)	1138	Body	1g	6.70	7.19	71.90	72.8	-1.24	-7.31	
				10g	1.89	2.07	20.70	20.1	2.99		
6/11/2013	D2450V2	899	Body	1g	5.01	5.07	50.70	51.7	**-1.93**	-1.20	19,20
				10g	2.19	2.40	24.00	24.3	-1.23		

12. SAR Test Results

12.1. GSM850

12.1.1. Head Exposure Conditions

Head Exposure Conditions (Voice mode)

Test Position	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
				Tune-up limit	Meas.	Meas.	Scaled		
Left Touch	Voice	128	824.2	33.2	33.1				1
		190	836.6	33.2	32.9	0.152	0.163		
		251	848.8	33.2	33.0				1
Left Tilt (15°)	Voice	128	824.2	33.2	33.1				1
		190	836.6	33.2	32.9	0.106	0.114		
		251	848.8	33.2	33.0				1
Right Touch	Voice	128	824.2	33.2	33.1				1
		190	836.6	33.2	32.9	0.199	**0.213**	1	
		251	848.8	33.2	33.0				1
Right Tilt (15°)	Voice	128	824.2	33.2	33.1				1
		190	836.6	33.2	32.9	0.106	0.114		
		251	848.8	33.2	33.0				1

Head Exposure Conditions (VoIP mode)

Test Position	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
				Tune-up limit	Meas.	Meas.	Scaled		
Left Touch	GPRS 2 slots	128	824.2	31.2	31.0				1
		190	836.6	31.2	31.1	0.166	0.170		
		251	848.8	31.2	31.2				1
Left Tilt (15°)	GPRS 2 slots	128	824.2	31.2	31.0				1
		190	836.6	31.2	31.1	0.117	0.120		
		251	848.8	31.2	31.2				1
Right Touch	GPRS 2 slots	128	824.2	31.2	31.0				1
		190	836.6	31.2	31.1	0.218	**0.223**	2	
		251	848.8	31.2	31.2				1
Right Tilt (15°)	GPRS 2 slots	128	824.2	31.2	31.0				1
		190	836.6	31.2	31.1	0.128	0.131		
		251	848.8	31.2	31.2				1

Note(s):

1. 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

12.1.2. Body-worn Accessory & Hotspot Exposure Conditions

Body-worn Accessory (Voice mode)

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Rear	Voice	10	128	824.2	33.2	33.1				1
			190	836.6	33.2	32.9	0.274	**0.294**	3	
			251	848.8	33.2	33.0				1
Front	Voice	10	128	824.2	33.2	33.1				1
			190	836.6	33.2	32.9	0.229	0.245		
			251	848.8	33.2	33.0				1

Body-worn Accessory (VoIP mode) & Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Rear	GPRS 2 slots	10	128	824.2	31.2	31.0				1
			190	836.6	31.2	31.1	0.262	**0.268**	4	
			251	848.8	31.2	31.2				1
Front	GPRS 2 slots	10	128	824.2	31.2	31.0				1
			190	836.6	31.2	31.1	0.242	0.248		
			251	848.8	31.2	31.2				1

Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Edge 2	GPRS 2 slots	10	128	824.2	31.2	31.0				1
			190	836.6	31.2	31.1	0.385	**0.394**	5	
			251	848.8	31.2	31.2				1
Edge 3	GPRS 2 slots	10	128	824.2	31.2	31.0				1
			190	836.6	31.2	31.1	0.229	0.234		
			251	848.8	31.2	31.2				1
Edge 4	GPRS 2 slots	10	128	824.2	31.2	31.0				1
			190	836.6	31.2	31.1	0.103	0.105		
			251	848.8	31.2	31.2				1

Note(s):

1. 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. GSM1900

12.2.1. Head Exposure Conditions

Head Exposure Conditions (Voice mode)

Test Position	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
				Tune-up limit	Meas.	Meas.	Scaled		
Left Touch	Voice	512	1850.2	30.7	30.2				1
		661	1880	30.7	30.2	0.066	0.074		
		810	1909.8	30.7	30.2				1
Left Tilt (15°)	Voice	512	1850.2	30.7	30.2				1
		661	1880	30.7	30.2	0.037	0.041		
		810	1909.8	30.7	30.2				1
Right Touch	Voice	512	1850.2	30.7	30.2				1
		661	1880	30.7	30.2	0.079	**0.089**	6	
		810	1909.8	30.7	30.2				1
Right Tilt (15°)	Voice	512	1850.2	30.7	30.2				1
		661	1880	30.7	30.2	0.029	0.032		
		810	1909.8	30.7	30.2				1

Head Exposure Conditions (VoIP mode)

Test Position	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
				Tune-up limit	Meas.	Meas.	Scaled		
Left Touch	GPRS 2 Slots	512	1850.2	28.7	28.4				1
		661	1880.0	28.7	28.4	0.078	0.084		
		810	1909.8	28.7	28.5				1
Left Tilt (15°)	GPRS 2 Slots	512	1850.2	28.7	28.4				1
		661	1880.0	28.7	28.4	0.047	0.050		
		810	1909.8	28.7	28.5				1
Right Touch	GPRS 2 Slots	512	1850.2	28.7	28.4				1
		661	1880.0	28.7	28.4	0.104	**0.111**	7	
		810	1909.8	28.7	28.5				1
Right Tilt (15°)	GPRS 2 Slots	512	1850.2	28.7	28.4				1
		661	1880.0	28.7	28.4	0.039	0.042		
		810	1909.8	28.7	28.5				1

Note(s):

1. 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

12.2.2. Body-worn Accessory & Hotspot Exposure Conditions

Body-worn Accessory (Voice mode)

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Rear	Voice	10	512	1850.2	30.7	30.2				1
			661	1880.0	30.7	30.2	0.346	**0.388**	8	
			810	1909.8	30.7	30.2				1
Front	Voice	10	512	1850.2	30.7	30.2				1
			661	1880.0	30.7	30.2	0.159	0.178		
			810	1909.8	30.7	30.2				1

Body-worn Accessory (VoIP mode) & Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Rear	GPRS 2 slots	10	512	1850.2	28.7	28.4				1
			661	1880.0	28.7	28.4	0.449	**0.481**	9	
			810	1909.8	28.7	28.5				1
Front	GPRS 2 slots	10	512	1850.2	28.7	28.4				1
			661	1880.0	28.7	28.4	0.206	0.221		
			810	1909.8	28.7	28.5				1

Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Edge 2	GPRS 2 slots	10	512	1850.2	28.7	28.4				1
			661	1880.0	28.7	28.4	0.136	0.146		
			810	1909.8	28.7	28.5				1
Edge 3	GPRS 2 slots	10	512	1850.2	28.7	28.4				1
			661	1880.0	28.7	28.4	0.371	0.398		
			810	1909.8	28.7	28.5				1
Edge 4	GPRS 2 slots	10	512	1850.2	28.7	28.4				1
			661	1880.0	28.7	28.4	0.060	0.064		
			810	1909.8	28.7	28.5				1

Note(s):

1. 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

12.3. CDMA BC0

12.3.1. Head Exposure Conditions

Head Exposure Conditions (Voice mode)

Test Position	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
				Tune-up limit	Meas.	Meas.	Scaled		
Left Touch	1xRTT (RC3 SO55)	1013	824.70	25.2	25.1				1
		384	836.52	25.2	25.1	0.223	0.228		
		777	848.31	25.2	25.2				1
Left Tilt (15°)	1xRTT (RC3 SO55)	1013	824.70	25.2	25.1				1
		384	836.52	25.2	25.1	0.133	0.136		
		777	848.31	25.2	25.2				1
Right Touch	1xRTT (RC3 SO55)	1013	824.70	25.2	25.1				1
		384	836.52	25.2	25.1	0.293	**0.300**	1	
		777	848.31	25.2	25.2				1
Right Tilt (15°)	1xRTT (RC3 SO55)	1013	824.70	25.2	25.1				1
		384	836.52	25.2	25.1	0.144	0.147		
		777	848.31	25.2	25.2				1

Head Exposure Conditions (VoIP mode)

Test Position	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
				Tune-up limit	Meas.	Meas.	Scaled		
Left Touch	1xEVDO (Rel. 0)	1013	824.70	25.2	25.1				1
		384	836.52	25.2	25.0	0.216	0.226		
		777	848.31	25.2	25.1				1
Left Tilt (15°)	1xEVDO (Rel. 0)	1013	824.70	25.2	25.1				1
		384	836.52	25.2	25.0	0.134	0.140		
		777	848.31	25.2	25.1				1
Right Touch	1xEVDO (Rel. 0)	1013	824.70	25.2	25.1				1
		384	836.52	25.2	25.0	0.262	**0.274**	2	
		777	848.31	25.2	25.1				1
Right Tilt (15°)	1xEVDO (Rel. 0)	1013	824.70	25.2	25.1				1
		384	836.52	25.2	25.0	0.142	0.149		
		777	848.31	25.2	25.1				1

Note(s):

1. 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

12.3.2. Body-worn Accessory & Hotspot Exposure Conditions

Body-worn Accessory (Voice mode) & Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Rear	1xRTT (RC3 SO32)	10	1013	824.70	25.2	25.1				1
			384	836.52	25.2	25.1	0.332	**0.340**	3	
			777	848.31	25.2	25.0				1
Front	1xRTT (RC3 SO32)	10	1013	824.70	25.2	25.1				1
			384	836.52	25.2	25.1	0.323	0.331		
			777	848.31	25.2	25.0				1

Body-worn Accessory (VoIP mode) & Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Rear	1xEVDO (Rel. 0)	10	1013	824.70	25.2	25.1				1
			384	836.52	25.2	25.0	0.355	0.372		
			777	848.31	25.2	25.1				1
Front	1xEVDO (Rel. 0)	10	1013	824.70	25.2	25.1				1
			384	836.52	25.2	25.0	0.403	**0.422**	4	
			777	848.31	25.2	25.1				1

Note(s):

1. 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

Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Edge 2	1xRTT (RC3 SO32)	10	1013	824.70	25.2	25.1				1
			384	836.52	25.2	25.1	0.433	**0.443**	5	
			777	848.31	25.2	25.0				1
Edge 3	1xRTT (RC3 SO32)	10	1013	824.70	25.2	25.1				1
			384	836.52	25.2	25.1	0.264	0.270		
			777	848.31	25.2	25.0				1
Edge 4	1xRTT (RC3 SO32)	10	1013	824.70	25.2	25.1				1
			384	836.52	25.2	25.1	0.085	0.087		
			777	848.31	25.2	25.0				1
Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Edge 2	1xEVDO (Rel. 0)	10	1013	824.70	25.2	25.1				1
			384	836.52	25.2	25.0	0.439	**0.460**	6	
			777	848.31	25.2	25.1				1
Edge 3	1xEVDO (Rel. 0)	10	1013	824.70	25.2	25.1				1
			384	836.52	25.2	25.0	0.310	0.325		
			777	848.31	25.2	25.1				1
Edge 4	1xEVDO (Rel. 0)	10	1013	824.70	25.2	25.1				1
			384	836.52	25.2	25.0	0.111	0.116		
			777	848.31	25.2	25.1				1

Note(s):

1. 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. CDMA BC0 Power Reduction

12.4.1. Head Exposure Conditions

Head Exposure Conditions (Voice mode)

Test Position	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
				Tune-up limit	Meas.	Meas.	Scaled		
Left Touch	1xRTT (RC3 SO55)	1013	824.70	18.5	18.3				1
		384	836.52	18.5	18.2	0.048	0.051		
		777	848.31	18.5	18.5				1
Left Tilt (15°)	1xRTT (RC3 SO55)	1013	824.70	18.5	18.3				1
		384	836.52	18.5	18.2	0.035	0.038		
		777	848.31	18.5	18.5				1
Right Touch	1xRTT (RC3 SO55)	1013	824.70	18.5	18.3				1
		384	836.52	18.5	18.2	0.054	0.058		
		777	848.31	18.5	18.5				1
Right Tilt (15°)	1xRTT (RC3 SO55)	1013	824.70	18.5	18.3				1
		384	836.52	18.5	18.2	0.043	0.046		
		777	848.31	18.5	18.5				1

12.4.2. Body-worn Accessory & Hotspot Exposure Conditions

Body-worn Accessory (Voice mode) & Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Rear	1xRTT (RC3 SO32)	10	1013	824.70	18.5	18.3				1
			384	836.52	18.5	18.2	0.075	0.080		
			777	848.31	18.5	18.5				1
Front	1xRTT (RC3 SO32)	10	1013	824.70	18.5	18.3				1
			384	836.52	18.5	18.2	0.071	0.076		
			777	848.31	18.5	18.5				1

Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Edge 2	1xRTT (RC3 SO32)	10	1013	824.70	18.5	18.3				1
			384	836.52	18.5	18.2	0.103	0.110		
			777	848.31	18.5	18.5				1
Edge 3	1xRTT (RC3 SO32)	10	1013	824.70	18.5	18.3				1
			384	836.52	18.5	18.2	0.059	0.063		
			777	848.31	18.5	18.5				1
Edge 4	1xRTT (RC3 SO32)	10	1013	824.70	18.5	18.3				1
			384	836.52	18.5	18.2	0.016	0.017		
			777	848.31	18.5	18.5				1

Note(s):

1. 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

12.5. CDMA BC1

12.5.1. Head Exposure Conditions

Head Exposure Conditions (Voice mode)

Test Position	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
				Tune-up limit	Meas.	Meas.	Scaled		
Left Touch	1xRTT (RC3 SO55)	25	1851.25	24.7	24.6				1
		600	1880.00	24.7	24.6	0.208	0.213		
		1175	1908.75	24.7	24.7				1
Left Tilt (15°)	1xRTT (RC3 SO55)	25	1851.25	24.7	24.6				1
		600	1880.00	24.7	24.6	0.099	0.102		
		1175	1908.75	24.7	24.7				1
Right Touch	1xRTT (RC3 SO55)	25	1851.25	24.7	24.6				1
		600	1880.00	24.7	24.6	0.362	**0.370**	7	
		1175	1908.75	24.7	24.7				1
Right Tilt (15°)	1xRTT (RC3 SO55)	25	1851.25	24.7	24.6				1
		600	1880.00	24.7	24.6	0.126	0.129		
		1175	1908.75	24.7	24.7				1

Head Exposure Conditions (VoIP mode)

Test Position	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
				Tune-up limit	Meas.	Meas.	Scaled		
Left Touch	1xEVDO (Rel. 0)	25	1851.25	24.7	24.7				1
		600	1880.00	24.7	24.7	0.223	0.223		
		1175	1908.75	24.7	24.7				1
Left Tilt (15°)	1xEVDO (Rel. 0)	25	1851.25	24.7	24.7				1
		600	1880.00	24.7	24.7	0.165	0.165		
		1175	1908.75	24.7	24.7				1
Right Touch	1xEVDO (Rel. 0)	25	1851.25	24.7	24.7				1
		600	1880.00	24.7	24.7	0.360	**0.360**	8	
		1175	1908.75	24.7	24.7				1
Right Tilt (15°)	1xEVDO (Rel. 0)	25	1851.25	24.7	24.7				1
		600	1880.00	24.7	24.7	0.121	0.121		
		1175	1908.75	24.7	24.7				1

Note(s):

1. 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

12.5.2. Body-worn Accessory & Hotspot Exposure Conditions

Body-worn Accessory (Voice mode) & Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Rear	1xRTT (RC3 SO32)	10	25	1851.25	24.7	24.7	0.861	0.861		
			600	1880.00	24.7	24.7	0.945	0.945		
			1175	1908.75	24.7	24.7	1.060	**1.060**	9	
Front	1xRTT (RC3 SO32)	10	25	1851.25	24.7	24.7				1
			600	1880.00	24.7	24.7	0.412	0.412		
			1175	1908.75	24.7	24.7				1

Body-worn Accessory (VoIP mode) & Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Rear	1xEVDO (Rel. 0)	10	25	1851.25	24.7	24.7	0.837	0.837		
			600	1880.00	24.7	24.7	0.884	0.884		
			1175	1908.75	24.7	24.7	0.952	**0.952**	10	
Front	1xEVDO (Rel. 0)	10	25	1851.25	24.7	24.7				1
			600	1880.00	24.7	24.7	0.408	0.408		
			1175	1908.75	24.7	24.7				1

Note(s):

1. 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

Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Edge 2	1xRTT (RC3 SO32)	10	25	1851.25	24.7	24.7				1
			600	1880.00	24.7	24.7	0.257	0.257		
			1175	1908.75	24.7	24.7				1
Edge 3	1xRTT (RC3 SO32)	10	25	1851.25	24.7	24.7				1
			600	1880.00	24.7	24.7	0.677	0.677		
			1175	1908.75	24.7	24.7				1
Edge 4	1xRTT (RC3 SO32)	10	25	1851.25	24.7	24.7				1
			600	1880.00	24.7	24.7	0.111	0.111		
			1175	1908.75	24.7	24.7				1
Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Edge 2	1xEVDO (Rel. 0)	10	25	1851.25	24.7	24.7				1
			600	1880.00	24.7	24.7	0.275	0.275		
			1175	1908.75	24.7	24.7				1
Edge 3	1xEVDO (Rel. 0)	10	25	1851.25	24.7	24.7				1
			600	1880.00	24.7	24.7	0.737	0.737		
			1175	1908.75	24.7	24.7				1
Edge 4	1xEVDO (Rel. 0)	10	25	1851.25	24.7	24.7				1
			600	1880.00	24.7	24.7	0.124	0.124		
			1175	1908.75	24.7	24.7				1

Note(s):

1. 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

12.6. CDMA BC1 Power Reduction

12.6.1. Head Exposure Conditions

Head Exposure Conditions (Voice mode)

Test Position	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
				Tune-up limit	Meas.	Meas.	Scaled		
Left Touch	1xRTT (RC3 SO55)	25	1851.25	18.5	18.3				1
		600	1880.00	18.5	18.2	0.062	0.066		
		1175	1908.75	18.5	18.5				1
Left Tilt (15°)	1xRTT (RC3 SO55)	25	1851.25	18.5	18.3				1
		600	1880.00	18.5	18.2	0.040	0.043		
		1175	1908.75	18.5	18.5				1
Right Touch	1xRTT (RC3 SO55)	25	1851.25	18.5	18.3				1
		600	1880.00	18.5	18.2	0.119	0.128		
		1175	1908.75	18.5	18.5				1
Right Tilt (15°)	1xRTT (RC3 SO55)	25	1851.25	18.5	18.3				1
		600	1880.00	18.5	18.2	0.034	0.037		
		1175	1908.75	18.5	18.5				1

12.6.2. Body-worn Accessory & Hotspot Exposure Conditions

Body-worn Accessory (Voice mode)

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Rear	1xRTT (RC3 SO32)	10	25	1851.25	18.5	18.3				1
			600	1880.00	18.5	18.2	0.189	0.203		
			1175	1908.75	18.5	18.5				1
Front	1xRTT (RC3 SO32)	10	25	1851.25	18.5	18.3				1
			600	1880.00	18.5	18.2	0.085	0.091		
			1175	1908.75	18.5	18.5				1

Body-worn Accessory (VoIP mode) & Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Edge 2	1xRTT (RC3 SO32)	10	25	1851.25	18.5	18.3				1
			600	1880.00	18.5	18.2	0.052	0.056		
			1175	1908.75	18.5	18.5				1
Edge 3	1xRTT (RC3 SO32)	10	25	1851.25	18.5	18.3				1
			600	1880.00	18.5	18.2	0.123	0.132		
			1175	1908.75	18.5	18.5				1
Edge 4	1xRTT (RC3 SO32)	10	25	1851.25	18.5	18.3				1
			600	1880.00	18.5	18.2	0.027	0.029		
			1175	1908.75	18.5	18.5				1

Note(s):

1. 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

12.7. W-CDMA Band II

12.7.1. Head Exposure Conditions

Test Position	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
				Tune-up limit	Meas.	Meas.	Scaled		
Left Touch	Rel 99 RMC 12.2kbps	9262	1852.4	23.7	23.5				1
		9400	1880.0	23.7	23.6	0.157	0.161		
		9538	1907.6	23.7	23.5				1
Left Tilt (15°)	Rel 99 RMC 12.2kbps	9262	1852.4	23.7	23.5				1
		9400	1880.0	23.7	23.6	0.082	0.084		
		9538	1907.6	23.7	23.5				1
Right Touch	Rel 99 RMC 12.2kbps	9262	1852.4	23.7	23.5				1
		9400	1880.0	23.7	23.6	0.175	**0.179**	1	
		9538	1907.6	23.7	23.5				1
Right Tilt (15°)	Rel 99 RMC 12.2kbps	9262	1852.4	23.7	23.5				1
		9400	1880.0	23.7	23.6	0.072	0.073		
		9538	1907.6	23.7	23.5				1

12.7.2. Body-worn Accessory & Hotspot Exposure Conditions

Body-worn Accessory & Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Rear	Rel 99 RMC 12.2kbps	10	9262	1852.4	23.7	23.5				1
			9400	1880.0	23.7	23.6	0.607	**0.621**	2	
			9538	1907.6	23.7	23.5				1
Front	Rel 99 RMC 12.2kbps	10	9262	1852.4	23.7	23.5				1
			9400	1880.0	23.7	23.6	0.323	0.331		
			9538	1907.6	23.7	23.5				1

Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Edge 2	Rel 99 RMC 12.2kbps	10	9262	1852.4	23.7	23.5				1
			9400	1880.0	23.7	23.6	0.162	0.166		
			9538	1907.6	23.7	23.5				1
Edge 3	Rel 99 RMC 12.2kbps	10	9262	1852.4	23.7	23.5				1
			9400	1880.0	23.7	23.6	0.563	0.576		
			9538	1907.6	23.7	23.5				1
Edge 4	Rel 99 RMC 12.2kbps	10	9262	1852.4	23.7	23.5				1
			9400	1880.0	23.7	23.6	0.069	0.070		
			9538	1907.6	23.7	23.5				1

Note(s):

1. 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. W-CDMA Band V

12.8.1. Head Exposure Conditions

Test Position	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
				Tune-up limit	Meas.	Meas.	Scaled		
Left Touch	Rel 99 RMC 12.2kbps	4132	826.4	23.7	23.5				1
		4183	836.6	23.7	23.6	0.168	0.172		
		4233	846.6	23.7	23.5				1
Left Tilt (15°)	Rel 99 RMC 12.2kbps	4132	826.4	23.7	23.5				1
		4183	836.6	23.7	23.6	0.118	0.121		
		4233	846.6	23.7	23.5				1
Right Touch	Rel 99 RMC 12.2kbps	4132	826.4	23.7	23.5				1
		4183	836.6	23.7	23.6	0.222	**0.227**	3	
		4233	846.6	23.7	23.5				1
Right Tilt (15°)	Rel 99 RMC 12.2kbps	4132	826.4	23.7	23.5				1
		4183	836.6	23.7	23.6	0.125	0.128		
		4233	846.6	23.7	23.5				1

12.8.2. Body-worn Accessory & Hotspot Exposure Conditions

Body-worn Accessory & Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Rear	Rel 99 RMC 12.2kbps	10	4132	826.4	23.7	23.5				1
			4183	836.6	23.7	23.6	0.260	**0.266**	4	
			4233	846.6	23.7	23.5				1
Front	Rel 99 RMC 12.2kbps	10	4132	826.4	23.7	23.5				1
			4183	836.6	23.7	23.6	0.252	0.258		
			4233	846.6	23.7	23.5				1

Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Edge 2	Rel 99 RMC 12.2kbps	10	4132	826.4	23.7	23.5				1
			4183	836.6	23.7	23.6	0.248	0.254		
			4233	846.6	23.7	23.5				1
Edge 3	Rel 99 RMC 12.2kbps	10	4132	826.4	23.7	23.5				1
			4183	836.6	23.7	23.6	0.208	0.213		
			4233	846.6	23.7	23.5				1
Edge 4	Rel 99 RMC 12.2kbps	10	4132	826.4	23.7	23.5				1
			4183	836.6	23.7	23.6	0.098	0.100		
			4233	846.6	23.7	23.5				1

Note(s):

1. 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

12.9. LTE Band 4 (20MHz Bandwidth)

12.9.1. Head Exposure Conditions

Test Position	Mode	UL Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
						Tune-up limit	Meas.	Meas.	Scaled		
Left Touch	QPSK	20175	1732.5	1	99	23.7	23.6	0.309	**0.316**	1	
				50	24	22.7	22.4	0.172	0.184		
Left Tilt (15°)	QPSK	20175	1732.5	1	99	23.7	23.6	0.077	0.079		
				50	24	22.7	22.4	0.044	0.047		
Right Touch	QPSK	20175	1732.5	1	99	23.7	23.6	0.277	0.283		
				50	24	22.7	22.4	0.153	0.164		
Right Tilt (15°)	QPSK	20175	1732.5	1	99	23.7	23.6	0.076	0.078		
				50	24	22.7	22.4	0.032	0.034		

12.9.2. Body-worn Accessory & Hotspot Exposure Conditions

Body-worn Accessory & Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	UL Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
							Tune-up limit	Meas.	Meas.	Scaled		
Rear	QPSK	10	20175	1732.5	1	99	23.7	23.6	0.635	**0.650**	2	
					50	24	22.7	22.4	0.355	0.380		
Front	QPSK	10	20175	1732.5	1	99	23.7	23.6	0.454	0.465		
					50	24	22.7	22.4	0.252	0.270		

Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	UL Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
							Tune-up limit	Meas.	Meas.	Scaled		
Edge 3	QPSK	10	20175	1732.5	1	99	23.7	23.6	0.376	0.385		
					50	24	22.7	22.4	0.203	0.218		
Edge 4	QPSK	10	20175	1732.5	1	99	23.7	23.6	0.410	0.420		
					50	24	22.7	22.4	0.217	0.233		

Note(s):

1. Per KDB 941225 D05 SAR for LTE Devices v02r02, 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.
2. 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

12.10. LTE Band 4 (20MHz Bandwidth) Power Reduction

12.10.1. Head Exposure Conditions

Test Position	Mode	UL Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
						Tune-up limit	Meas.	Meas.	Scaled		
Left Touch	QPSK	20175	1732.5	1	99	19.7	19.5	0.111	0.116		
				50	24	19.7	19.4	0.078	0.084		
Left Tilt (15°)	QPSK	20175	1732.5	1	99	19.7	19.5	0.028	0.029		
				50	24	19.7	19.4	0.020	0.021		
Right Touch	QPSK	20175	1732.5	1	99	19.7	19.5	0.106	0.111		
				50	24	19.7	19.4	0.078	0.084		
Right Tilt (15°)	QPSK	20175	1732.5	1	99	19.7	19.5	0.025	0.026		
				50	24	19.7	19.4	0.015	0.016		

12.10.2. Body-worn Accessory & Hotspot Exposure Conditions

Body-worn Accessory & Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	UL Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
							Tune-up limit	Meas.	Meas.	Scaled		
Rear	QPSK	10	20175	1732.5	1	99	19.7	19.5	0.218	0.228		
					50	24	19.7	19.4	0.165	0.177		
Front	QPSK	10	20175	1732.5	1	99	19.7	19.5	0.181	0.190		
					50	24	19.7	19.4	0.122	0.131		

Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	UL Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
							Tune-up limit	Meas.	Meas.	Scaled		
Edge 3	QPSK	10	20175	1732.5	1	99	19.7	19.5	0.096	0.101		
					50	24	19.7	19.4	0.067	0.072		
Edge 4	QPSK	10	20175	1732.5	1	99	19.7	19.5	0.149	0.156		
					50	24	19.7	19.4	0.100	0.107		

Note(s):

1. Per KDB 941225 D05 SAR for LTE Devices v02r02, 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 $\geq$ 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.
2. 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

12.11. LTE Band 13 (10MHz Bandwidth)

12.11.1. Head Exposure Conditions

Test Position	Mode	UL Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
						Tune-up limit	Meas.	Meas.	Scaled		
Left Touch	QPSK	23230	782.0	1	0	23.7	23.6	0.589	0.603		
				25	0	22.7	22.3	0.444	0.487		
Left Tilt (15°)	QPSK	23230	782.0	1	0	23.7	23.6	0.406	0.415		
				25	0	22.7	22.3	0.307	0.337		
Right Touch	QPSK	23230	782.0	1	0	23.7	23.6	0.794	**0.812**	3	
				25	0	22.7	22.3	0.593	0.650		
Right Tilt (15°)	QPSK	23230	782.0	1	0	23.7	23.6	0.621	0.635		
				25	0	22.7	22.3	0.457	0.501		

12.11.2. Body-worn Accessory & Hotspot Exposure Conditions

Body-worn Accessory & Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	UL Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
							Tune-up limit	Meas.	Meas.	Scaled		
Rear	QPSK	10	23230	782.0	1	0	23.7	23.6	0.489	**0.500**	4	
					25	0	22.7	22.3	0.392	0.430		
Front	QPSK	10	23230	782.0	1	0	23.7	23.6	0.322	0.330		
					25	0	22.7	22.3	0.249	0.273		

Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	UL Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
							Tune-up limit	Meas.	Meas.	Scaled		
Edge 1	QPSK	10	23230	782.0	1	0	23.7	23.6	0.201	0.206		
					25	0	22.7	22.3	0.148	0.162		
Edge 2	QPSK	10	23230	782.0	1	0	23.7	23.6	0.311	0.318		
					25	0	22.7	22.3	0.250	0.274		

Note(s):

1. Per KDB 941225 D05 SAR for LTE Devices v02r02, 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 $\geq$ 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.
2. 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

12.12. LTE Band 13 (10MHz Bandwidth) Power Reduction

12.12.1. Head Exposure Conditions

Test Position	Mode	UL Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
						Tune-up limit	Meas.	Meas.	Scaled		
Left Touch	QPSK	23230	782.0	1	0	19.7	19.6	0.228	0.233		
				25	0	19.7	19.5	0.220	0.230		
Left Tilt (15°)	QPSK	23230	782.0	1	0	19.7	19.6	0.166	0.170		
				25	0	19.7	19.5	0.159	0.166		
Right Touch	QPSK	23230	782.0	1	0	19.7	19.6	0.310	0.317		
				25	0	19.7	19.5	0.303	0.317		
Right Tilt (15°)	QPSK	23230	782.0	1	0	19.7	19.6	0.255	0.261		
				25	0	19.7	19.5	0.243	0.254		

12.12.2. Body-worn Accessory & Hotspot Exposure Conditions

Body-worn Accessory & Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	UL Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
							Tune-up limit	Meas.	Meas.	Scaled		
Rear	QPSK	10	23230	782.0	1	0	19.7	19.6	0.222	0.227		
					25	0	19.7	19.5	0.203	0.213		
Front	QPSK	10	23230	782.0	1	0	19.7	19.6	0.130	0.133		
					25	0	19.7	19.5	0.129	0.135		

Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	UL Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
							Tune-up limit	Meas.	Meas.	Scaled		
Edge 1	QPSK	10	23230	782.0	1	0	19.7	19.6	0.085	0.087		
					25	0	19.7	19.5	0.081	0.085		
Edge 2	QPSK	10	23230	782.0	1	0	19.7	19.6	0.120	0.123		
					25	0	19.7	19.5	0.119	0.125		

Note(s):

1. Per KDB 941225 D05 SAR for LTE Devices v02r02, 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 $\geq$ 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.
2. 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

12.13. Wi-Fi (2.4 GHz Band)

12.13.1. Head Exposure Conditions

Test Position	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
				Tune-up limit	Meas.	Meas.	Scaled		
Left Touch	802.11b	1	2412	16.0	15.9				1
		6	2437	16.0	15.4	0.257	0.298		
		11	2462	16.0	15.6				1
Left Tilt (15°)	802.11b	1	2412	16.0	15.9				1
		6	2437	16.0	15.4	0.288	**0.334**	1	
		11	2462	16.0	15.6				1
Right Touch	802.11b	1	2412	16.0	15.9				1
		6	2437	16.0	15.4	0.167	0.194		
		11	2462	16.0	15.6				1
Right Tilt (15°)	802.11b	1	2412	16.0	15.9				1
		6	2437	16.0	15.4	0.189	0.219		
		11	2462	16.0	15.6				1

12.13.2. Additional Testing in 802.11ac Mode for Head Exposure Conditions

Test exclusion considerations for 802.11ac mode:

Apply usual 802.11 test exclusion considerations, but include 802.11ac SAR for highest 802.11a configuration in each frequency band and each exposure condition according to April 2013 TCB Workshop Updates.

Additional testing in 802.11ac mode was performed in HT20 mode so that the same channels from the 802.11a mode could be tested.

Test Position	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
				Tune-up limit	Meas.	Meas.	Scaled		
Left Tilt (15°)	802.11ac (HT 20)	1	2412						1
		6	2437	12.0	11.7	0.157	**0.168**	2	
		11	2462						1

12.13.3. Body-worn Accessory & Hotspot Exposure Conditions

Body-worn Accessory & Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Rear	802.11b	10	1	2412	16.0	15.9				1
			6	2437	16.0	15.4	0.132	**0.153**	3	
			11	2462	16.0	15.6				1
Front	802.11b	10	1	2412	16.0	15.9				1
			6	2437	16.0	15.4	0.061	0.071		
			11	2462	16.0	15.6				1

Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Edge 1	802.11b	10	1	2412	16.0	15.9				1
			6	2437	16.0	15.4	0.065	0.075		
			11	2462	16.0	15.6				1
Edge 2	802.11b	10	1	2412	16.0	15.9				1
			6	2437	16.0	15.4	0.037	0.043		
			11	2462	16.0	15.6				1

12.13.4. Additional Testing in 802.11ac Mode for Body-worn Accessory & Hotspot Exposure Conditions

Test exclusion considerations for 802.11ac mode:

Apply usual 802.11 test exclusion considerations, but include 802.11ac SAR for highest 802.11a configuration in each frequency band and each exposure condition according to April 2013 TCB Workshop Updates.

Additional testing in 802.11ac mode was performed in HT20 mode so that the same channels from the 802.11a mode could be tested.

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Rear	802.11ac (HT 20)	10	1	2412						1
			6	2437	12.0	11.7	0.063	**0.068**	4	
			11	2462						1

Note(s):

1. 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

12.14. Wi-Fi (5 GHz Bands)

12.14.1. Head Exposure Conditions

Band (GHz)	Test Position	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
					Tune-up limit	Meas.	Meas.	Scaled	
5.2GHz	Left Touch	802.11a	36	5180	13.0	12.4	0.149	0.171	
			48	5240	13.0	12.3	0.149	0.175	
	Left Tilt (15°)	802.11a	36	5180	13.0	12.4	0.164	0.189	
			48	5240	13.0	12.3	0.187	**0.220**	5
	Right Touch	802.11a	36	5180	13.0	12.4	0.064	0.074	
			48	5240	13.0	12.3	0.116	0.136	
	Right Tilt (15°)	802.11a	36	5180	13.0	12.4	0.091	0.105	
			48	5240	13.0	12.3	0.155	0.182	
5.3GHz	Left Touch	802.11a	52	5260	13.0	12.5	0.102	0.114	
			60	5320	13.0	12.5	0.076	0.085	
	Left Tilt (15°)	802.11a	52	5260	13.0	12.5	0.126	0.141	
			60	5320	13.0	12.5	0.122	0.137	
	Right Touch	802.11a	52	5260	13.0	12.5	0.071	0.079	
			60	5320	13.0	12.5	0.121	0.136	
	Right Tilt (15°)	802.11a	52	5260	13.0	12.5	0.092	0.103	
			60	5320	13.0	12.5	0.153	**0.172**	6
5.5GHz	Left Touch	802.11a	100	5520	13.0	12.2	0.143	0.174	
			116	5580	13.0	11.9	0.080	0.103	
			124		not supported				
			132	5620	13.0	11.6	0.075	0.104	
	Left Tilt (15°)	802.11a	100	5520	13.0	12.2	0.165	0.200	
			116	5580	13.0	11.9	0.100	0.128	
			124		not supported				
			132	5620	13.0	11.6	0.086	0.119	
	Right Touch	802.11a	100	5520	13.0	12.2	0.081	0.098	
			116	5580	13.0	11.9	0.123	0.158	
			124		not supported				
			132	5620	13.0	11.6	0.110	0.153	
	Right Tilt (15°)	802.11a	100	5520	13.0	12.2	0.171	**0.207**	7
			116	5580	13.0	11.9	0.158	0.203	
			124		not supported				
			132	5620	13.0	11.6	0.083	0.115	
5.8GHz	Left Touch	802.11a	149	5745	13.0	11.5	0.109	0.155	
			157	5785	13.0	11.3	0.098	0.147	
			161	5805	13.0	11.4	0.062	0.091	
	Left Tilt (15°)	802.11a	149	5745	13.0	11.5	0.119	**0.170**	8
			157	5785	13.0	11.3	0.113	0.169	
			161	5805	13.0	11.4	0.078	0.114	
	Right Touch	802.11a	149	5745	13.0	11.5	0.068	0.097	
			157	5785	13.0	11.3	0.078	0.117	
			161	5805	13.0	11.4	0.076	0.111	
	Right Tilt (15°)	802.11a	149	5745	13.0	11.5	0.083	0.118	
			157	5785	13.0	11.3	0.090	0.135	
			161	5805	13.0	11.4	0.095	0.139	

12.14.2. Additional Testing in 802.11ac Mode for Head Exposure Conditions

Test exclusion considerations for 802.11ac mode:

Apply usual 802.11 test exclusion considerations, but include 802.11ac SAR for highest 802.11a configuration in each frequency band and each exposure condition according to April 2013 TCB Workshop Updates.

Additional testing in 802.11ac mode was performed in HT20 mode so that the same channels from the 802.11a mode could be tested.

Band (GHz)	Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
5.2	Left Tilt (15°)	802.11ac (HT 20)	0	48	5240	11.0	10.1	0.105	**0.128**	9
5.3	Right Tilt (15°)	802.11ac (HT 20)	0	60	5320	11.0	10.5	0.066	0.075	
5.5	Right Tilt (15°)	802.11ac (HT 20)	0	100	5520	11.0	10.6	0.072	0.080	
5.8	Left Tilt (15°)	802.11ac (HT 20)	0	149	5745	11.0	9.8	0.064	0.084	

12.14.3. Body-worn Accessory Exposure Conditions

Band (GHz)	Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
5.2	Rear	802.11a	10	36	5180	13.0	12.4	0.037	**0.043**	10
				48	5240	13.0	12.3	0.035	0.041	
	Front	802.11a	10	36	5180	13.0	12.4	0.029	0.033	
				48	5240	13.0	12.3	0.037	**0.043**	11
5.3	Rear	802.11a	10	52	5260	13.0	12.5	0.076	**0.085**	12
				60	5300	13.0	12.5	0.069	0.077	
	Front	802.11a	10	52	5260	13.0	12.5	0.036	0.040	
				60	5300	13.0	12.5	0.033	0.037	
5.5	Rear	802.11a	10	100	5500	13.0	12.2	0.038	0.047	
				116	5580	13.0	11.9	0.029	0.037	
				124	not supported					
				132	5660	13.0	11.6	0.069	**0.096**	13
	Front	802.11a	10	100	5500	13.0	12.2	0.035	0.043	
				116	5580	13.0	11.9	0.053	0.068	
				124	not supported					
				132	5660	13.0	11.6	0.051	0.070	
5.8	Rear	802.11a	10	149	5745	13.0	11.5	0.035	0.050	
				157	5785	13.0	11.3	0.040	**0.060**	14
				161	5805	13.0	11.4	0.041	**0.060**	15
	Front	802.11a	10	149	5745	13.0	11.5	0.027	0.038	
				157	5785	13.0	11.3	0.020	0.030	
				161	5805	13.0	11.4	0.021	0.031	

12.14.4. WiFi Direct (Group Owner) Exposure Conditions

Band (GHz)	Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
5.8	Rear	802.11a	10	149	5745	13.0	11.5	0.035	0.050	
				157	5785	13.0	11.3	0.040	0.060	
				161	5825	13.0	11.4	0.041	0.060	
	Front	802.11a	10	149	5745	13.0	11.5	0.027	0.038	
				157	5785	13.0	11.3	0.020	0.030	
				161	5805	13.0	11.4	0.021	0.031	
	Edge 1	802.11a	10	149	5745	13.0	11.5	0.051	**0.073**	16
				157	5785	13.0	11.3	0.038	0.057	
				161	5825	13.0	11.4	0.039	0.057	
	Edge 2	802.11a	10	149	5745	13.0	11.5	0.045	0.064	
				157	5785	13.0	11.3	0.028	0.042	
				161	5805	13.0	11.4	0.039	0.057	

Note(s):

1. 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

12.14.5. Additional Testing in 802.11ac Mode for Body-worn & WiFi Direct

Test exclusion considerations for 802.11ac mode:

Apply usual 802.11 test exclusion considerations, but include 802.11ac SAR for highest 802.11a configuration in each frequency band and each exposure condition according to April 2013 TCB Workshop Updates.

Additional testing in 802.11ac mode was performed in HT20 mode so that the same channels from the 802.11a mode could be tested.

Band (GHz)	Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
5.2	Rear	802.11ac (HT 20)	10	36	5180	11.0	10.3	0.029	0.034	
5.3	Rear	802.11ac (HT 20)	10	52	5260	11.0	10.7	0.030	0.033	
5.5	Rear	802.11ac (HT 20)	10	132	5660	11.0	10.6	0.032	**0.035**	17
5.8	Edge 1	802.11ac (HT 20)	10	149	5745	11.0	9.8	0.032	**0.042**	18

12.15. Bluetooth

12.15.1. Body-worn Accessory & Hotspot Exposure Conditions

Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
					Tune-up limit	Meas.	Meas.	Scaled		
Rear	GFSK	10	0	2402	10.0	4.7	0.005	0.016		
			39	2441	10.0					1
			78	2480	10.0					1
Front	GFSK	10	0	2402	10.0	4.7	0.002	0.006		
			39	2441	10.0					1
			78	2480	10.0					1

Note(s):

1. 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

13. SAR Measurement Variability

In accordance with published RF Exposure KDB procedure 865664 D01 SAR measurement 100 MHz to 6 GHz v01r01. 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	Body-worn Accessory	Hotspot/WiFi Direct
850	GSM 850	< 0.8W/kg	< 0.8W/kg	< 0.8W/kg
	CDMA BC0	< 0.8W/kg	< 0.8W/kg	< 0.8W/kg
	WCDMA Band V	< 0.8W/kg	< 0.8W/kg	< 0.8W/kg
1900	GSM 1900	< 0.8W/kg	< 0.8W/kg	< 0.8W/kg
	CDMA BC1	< 0.8W/kg	1.060 W/kg	< 0.8W/kg
	WCDMA Band II	< 0.8W/kg	< 0.8W/kg	< 0.8W/kg
1750	LTE Band 4	< 0.8W/kg	< 0.8W/kg	< 0.8W/kg
750	LTE Band 13	< 0.8W/kg	< 0.8W/kg	< 0.8W/kg
2400	WiFi 802.11b/g/n/ac	< 0.8W/kg	< 0.8W/kg	< 0.8W/kg
5000	WiFi 802.11a/n/ac	< 0.8W/kg	< 0.8W/kg	< 0.8W/kg

13.2. Repeated Measurement Results

13.2.1. Head Exposure Condition

Not Applicable.

13.2.2. Body-worn Accessory Exposure Condition

Frequency band	Test Position	Mode	Ch #.	Freq. (MHz)	Meas. SAR (W/kg)		Largest to Smallest SAR Ratio	Note
					Original	Repeated		
CDMA BC1	Rear	1xRTT (RC3 SO32)	1175	1908.75	1.060	0.991	1.07	1

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.

13.2.3. Hotspot Mode Exposure Conditions

Not Applicable.

14. Simultaneous Transmission SAR Analysis

KDB 447498 D01 General RF Exposure Guidance v05, 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:

SAR_1 is the highest measured or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition

SAR_2 is the highest measured 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. Head Exposure Conditions

14.1.1. Sum of the SAR for GSM (Voice) & WiFi

Test Position	GSM		WiFi					∑ 1-g SAR (mW/g)
	850	1900	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	
Left Touch	0.163		0.298					0.461
	0.163			0.175				0.338
	0.163				0.114			0.277
	0.163					0.174		0.337
	0.163						0.155	0.318
		0.074	0.298					0.372
		0.074		0.175				0.249
		0.074			0.114			0.188
		0.074				0.174		0.248
		0.074					0.155	0.229
Left Tilt (15°)	0.114		0.334					0.448
	0.114			0.220				0.334
	0.114				0.141			0.255
	0.114					0.200		0.314
	0.114						0.170	0.284
		0.041	0.334					0.375
		0.041		0.220				0.261
		0.041			0.141			0.182
		0.041				0.200		0.241
		0.041					0.170	0.211
Right Touch	0.213		0.194					0.407
	0.213			0.136				0.349
	0.213				0.136			0.349
	0.213					0.158		0.371
	0.213						0.117	0.330
		0.089	0.194					0.283
		0.089		0.136				0.225
		0.089			0.136			0.225
		0.089				0.158		0.247
		0.089					0.117	0.206
Right Tilt (15°)	0.114		0.219					0.333
	0.114			0.182				0.296
	0.114				0.172			0.286
	0.114					0.207		0.321
	0.114						0.139	0.253
		0.032	0.219					0.251
		0.032		0.182				0.214
		0.032			0.172			0.204
		0.032				0.207		0.239
		0.032					0.139	0.171

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.

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

14.1.2. Sum of the SAR for GSM (VoIP) & WiFi

Test Position	GSM (GPRS)		WiFi					∑ 1-g SAR (mW/g)
	850	1900	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	
Left Touch	0.170		0.298					0.468
	0.170			0.175				0.345
	0.170				0.114			0.284
	0.170					0.174		0.344
	0.170						0.155	0.325
		0.084	0.298					0.382
		0.084		0.175				0.259
		0.084			0.114			0.198
		0.084				0.174		0.258
		0.084					0.155	0.239
Left Tilt (15°)	0.120		0.334					0.454
	0.120			0.220				0.340
	0.120				0.141			0.261
	0.120					0.200		0.320
	0.120						0.170	0.290
		0.050	0.334					0.384
		0.050		0.220				0.270
		0.050			0.141			0.191
		0.050				0.200		0.250
		0.050					0.170	0.220
Right Touch	0.223		0.194					0.417
	0.223			0.136				0.359
	0.223				0.136			0.359
	0.223					0.158		0.381
	0.223						0.117	0.340
		0.111	0.194					0.305
		0.111		0.136				0.247
		0.111			0.136			0.247
		0.111				0.158		0.269
		0.111					0.117	0.228
Right Tilt (15°)	0.131		0.219					0.350
	0.131			0.182				0.313
	0.131				0.172			0.303
	0.131					0.207		0.338
	0.131						0.139	0.270
		0.042	0.219					0.261
		0.042		0.182				0.224
		0.042			0.172			0.214
		0.042				0.207		0.249
		0.042					0.139	0.181

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.

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

14.1.3. Sum of the SAR for CDMA (Voice) & WiFi

Test Position	CDMA (1xRTT)		WiFi					∑ 1-g SAR (mW/g)
	BC0	BC1	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	
Left Touch	0.228		0.298					0.526
	0.228			0.175				0.403
	0.228				0.114			0.342
	0.228					0.174		0.402
	0.228						0.155	0.383
		0.213	0.298					0.511
		0.213		0.175				0.388
		0.213			0.114			0.327
		0.213				0.174		0.387
		0.213					0.155	0.368
Left Tilt (15°)	0.136		0.334					0.470
	0.136			0.220				0.356
	0.136				0.141			0.277
	0.136					0.200		0.336
	0.136						0.170	0.306
		0.102	0.334					0.436
		0.102		0.220				0.322
		0.102			0.141			0.243
		0.102				0.200		0.302
		0.102					0.170	0.272
Right Touch	0.300		0.194					0.494
	0.300			0.136				0.436
	0.300				0.136			0.436
	0.300					0.158		0.458
	0.300						0.117	0.417
		0.370	0.194					0.564
		0.370		0.136				0.506
		0.370			0.136			0.506
		0.370				0.158		0.528
		0.370					0.117	0.487
Right Tilt (15°)	0.147		0.219					0.366
	0.147			0.182				0.329
	0.147				0.172			0.319
	0.147					0.207		0.354
	0.147						0.139	0.286
		0.129	0.219					0.348
		0.129		0.182				0.311
		0.129			0.172			0.301
		0.129				0.207		0.336
		0.129					0.139	0.268

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.

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

14.1.4. Sum of the SAR for CDMA (VoIP) & WiFi

Test Position	CDMA (EV-DO)		WiFi					∑ 1-g SAR (mW/g)
	BC0	BC1	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	
Left Touch	0.226		0.298					0.524
	0.226			0.175				0.401
	0.226				0.114			0.340
	0.226					0.174		0.400
	0.226						0.155	0.381
		0.223	0.298					0.521
		0.223		0.175				0.398
		0.223			0.114			0.337
		0.223				0.174		0.397
		0.223					0.155	0.378
Left Tilt (15°)	0.140		0.334					0.474
	0.140			0.220				0.360
	0.140				0.141			0.281
	0.140					0.200		0.340
	0.140						0.170	0.310
		0.165	0.334					0.499
		0.165		0.220				0.385
		0.165			0.141			0.306
		0.165				0.200		0.365
		0.165					0.170	0.335
Right Touch	0.274		0.194					0.468
	0.274			0.136				0.410
	0.274				0.136			0.410
	0.274					0.158		0.432
	0.274						0.117	0.391
		0.360	0.194					0.554
		0.360		0.136				0.496
		0.360			0.136			0.496
		0.360				0.158		0.518
		0.360					0.117	0.477
Right Tilt (15°)	0.149		0.219					0.368
	0.149			0.182				0.331
	0.149				0.172			0.321
	0.149					0.207		0.356
	0.149						0.139	0.288
		0.121	0.219					0.340
		0.121		0.182				0.303
		0.121			0.172			0.293
		0.121				0.207		0.328
		0.121					0.139	0.260

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.

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

14.1.5. Sum of the SAR for WCDMA & WiFi

Test Position	WCDMA		WiFi					∑ 1-g SAR (mW/g)
	Band V	Band II	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	
Left Touch	0.172		0.298					0.470
	0.172			0.175				0.347
	0.172				0.114			0.286
	0.172					0.174		0.346
	0.172						0.155	0.327
		0.161	0.298					0.459
		0.161		0.175				0.336
		0.161			0.114			0.275
		0.161				0.174		0.335
		0.161					0.155	0.316
Left Tilt (15°)	0.121		0.334					0.455
	0.121			0.220				0.341
	0.121				0.141			0.262
	0.121					0.200		0.321
	0.121						0.170	0.291
		0.084	0.334					0.418
		0.084		0.220				0.304
		0.084			0.141			0.225
		0.084				0.200		0.284
		0.084					0.170	0.254
Right Touch	0.227		0.194					0.421
	0.227			0.136				0.363
	0.227				0.136			0.363
	0.227					0.158		0.385
	0.227						0.117	0.344
		0.179	0.194					0.373
		0.179		0.136				0.315
		0.179			0.136			0.315
		0.179				0.158		0.337
		0.179					0.117	0.296
Right Tilt (15°)	0.128		0.219					0.347
	0.128			0.182				0.310
	0.128				0.172			0.300
	0.128					0.207		0.335
	0.128						0.139	0.267
		0.073	0.219					0.292
		0.073		0.182				0.255
		0.073			0.172			0.245
		0.073				0.207		0.280
		0.073					0.139	0.212

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.

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

14.1.6. Sum of the SAR for LTE & WiFi

Test Position	LTE		WiFi					∑ 1-g SAR (mW/g)
	Band 4	Band 13	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	
Left Touch	0.316		0.298					0.614
	0.316			0.175				0.491
	0.316				0.114			0.430
	0.316					0.174		0.490
	0.316						0.155	0.471
		0.603	0.298					0.901
		0.603		0.175				0.778
		0.603			0.114			0.717
		0.603				0.174		0.777
		0.603					0.155	0.758
Left Tilt (15°)	0.079		0.334					0.413
	0.079			0.220				0.299
	0.079				0.141			0.220
	0.079					0.200		0.279
	0.079						0.170	0.249
		0.415	0.334					0.749
		0.415		0.220				0.635
		0.415			0.141			0.556
		0.415				0.200		0.615
		0.415					0.170	0.585
Right Touch	0.283		0.194					0.477
	0.283			0.136				0.419
	0.283				0.136			0.419
	0.283					0.158		0.441
	0.283						0.117	0.400
		0.812	0.194					1.006
		0.812		0.136				0.948
		0.812			0.136			0.948
		0.812				0.158		0.970
		0.812					0.117	0.929
Right Tilt (15°)	0.078		0.219					0.297
	0.078			0.182				0.260
	0.078				0.172			0.250
	0.078					0.207		0.285
	0.078						0.139	0.217
		0.635	0.219					0.854
		0.635		0.182				0.817
		0.635			0.172			0.807
		0.635				0.207		0.842
		0.635					0.139	0.774

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.

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

14.1.7. Sum of the SAR for SV-LTE & WiFi

Test Position	CDMA BC0	LTE Band 4	WiFi					∑ 1-g SAR (mW/g)
	Voice (Max. Pwr)	(Pwr Reduction)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	
Left Touch	0.228	0.116	0.298					0.642
	0.228	0.116		0.175				0.519
	0.228	0.116			0.114			0.458
	0.228	0.116				0.174		0.518
	0.228	0.116					0.155	0.499
Left Tilt (15°)	0.136	0.029	0.334					0.499
	0.136	0.029		0.220				0.385
	0.136	0.029			0.141			0.306
	0.136	0.029				0.200		0.365
	0.136	0.029					0.170	0.335
Right Touch	0.300	0.111	0.194					0.605
	0.300	0.111		0.136				0.547
	0.300	0.111			0.136			0.547
	0.300	0.111				0.158		0.569
	0.300	0.111					0.117	0.528
Right Tilt (15°)	0.147	0.026	0.219					0.392
	0.147	0.026		0.182				0.355
	0.147	0.026			0.172			0.345
	0.147	0.026				0.207		0.380
	0.147	0.026					0.139	0.312

Test Position	CDMA BC0	LTE Band 4	WiFi					∑ 1-g SAR (mW/g)
	Voice (Pwr Reduction)	(Max. Pwr)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	
Left Touch	0.051	0.316	0.298					0.665
	0.051	0.316		0.175				0.542
	0.051	0.316			0.114			0.481
	0.051	0.316				0.174		0.541
	0.051	0.316					0.155	0.522
Left Tilt (15°)	0.038	0.079	0.334					0.451
	0.038	0.079		0.220				0.337
	0.038	0.079			0.141			0.258
	0.038	0.079				0.200		0.317
	0.038	0.079					0.170	0.287
Right Touch	0.058	0.283	0.194					0.535
	0.058	0.283		0.136				0.477
	0.058	0.283			0.136			0.477
	0.058	0.283				0.158		0.499
	0.058	0.283					0.117	0.458
Right Tilt (15°)	0.046	0.078	0.219					0.343
	0.046	0.078		0.182				0.306
	0.046	0.078			0.172			0.296
	0.046	0.078				0.207		0.331
	0.046	0.078					0.139	0.263

Sum of the SAR for SV-LTE & WiFi (Continued)

Test Position	CDMA BC1	LTE Band 4	WiFi					∑ 1-g SAR (mW/g)
	Voice (Max. Pwr)	(Pwr Reduction)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	
Left Touch	0.213	0.116	0.298					0.627
	0.213	0.116		0.175				0.504
	0.213	0.116			0.114			0.443
	0.213	0.116				0.174		0.503
	0.213	0.116					0.155	0.484
Left Tilt (15°)	0.102	0.029	0.334					0.465
	0.102	0.029		0.220				0.351
	0.102	0.029			0.141			0.272
	0.102	0.029				0.200		0.331
	0.102	0.029					0.170	0.301
Right Touch	0.370	0.111	0.194					0.675
	0.370	0.111		0.136				0.617
	0.370	0.111			0.136			0.617
	0.370	0.111				0.158		0.639
	0.370	0.111					0.117	0.598
Right Tilt (15°)	0.129	0.026	0.219					0.374
	0.129	0.026		0.182				0.337
	0.129	0.026			0.172			0.327
	0.129	0.026				0.207		0.362
	0.129	0.026					0.139	0.294

Test Position	CDMA BC1	LTE Band 4	WiFi					∑ 1-g SAR (mW/g)
	Voice (Pwr Reduction)	(Max. Pwr)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	
Left Touch	0.066	0.316	0.298					0.680
	0.066	0.316		0.175				0.557
	0.066	0.316			0.114			0.496
	0.066	0.316				0.174		0.556
	0.066	0.316					0.155	0.537
Left Tilt (15°)	0.043	0.079	0.334					0.456
	0.043	0.079		0.220				0.342
	0.043	0.079			0.141			0.263
	0.043	0.079				0.200		0.322
	0.043	0.079					0.170	0.292
Right Touch	0.128	0.283	0.194					0.605
	0.128	0.283		0.136				0.547
	0.128	0.283			0.136			0.547
	0.128	0.283				0.158		0.569
	0.128	0.283					0.117	0.528
Right Tilt (15°)	0.037	0.078	0.219					0.334
	0.037	0.078		0.182				0.297
	0.037	0.078			0.172			0.287
	0.037	0.078				0.207		0.322
	0.037	0.078					0.139	0.254

Sum of the SAR for SV-LTE & WiFi (Continued)

Test Position	CDMA BC0	LTE Band 13	WiFi					∑ 1-g SAR (mW/g)
	Voice (Max. Pwr)	(Pwr Reduction)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	
Left Touch	0.228	0.233	0.298					0.759
	0.228	0.233		0.175				0.636
	0.228	0.233			0.114			0.575
	0.228	0.233				0.174		0.635
	0.228	0.233					0.155	0.616
Left Tilt (15°)	0.136	0.170	0.334					0.640
	0.136	0.170		0.220				0.526
	0.136	0.170			0.141			0.447
	0.136	0.170				0.200		0.506
	0.136	0.170					0.170	0.476
Right Touch	0.300	0.317	0.194					0.811
	0.300	0.317		0.136				0.753
	0.300	0.317			0.136			0.753
	0.300	0.317				0.158		0.775
	0.300	0.317					0.117	0.734
Right Tilt (15°)	0.147	0.261	0.219					0.627
	0.147	0.261		0.182				0.590
	0.147	0.261			0.172			0.580
	0.147	0.261				0.207		0.615
	0.147	0.261					0.139	0.547

Test Position	CDMA BC0	LTE Band 13	WiFi					∑ 1-g SAR (mW/g)
	Voice (Pwr Reduction)	(Max. Pwr)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	
Left Touch	0.051	0.603	0.298					0.952
	0.051	0.603		0.175				0.829
	0.051	0.603			0.114			0.768
	0.051	0.603				0.174		0.828
	0.051	0.603					0.155	0.809
Left Tilt (15°)	0.038	0.415	0.334					0.787
	0.038	0.415		0.220				0.673
	0.038	0.415			0.141			0.594
	0.038	0.415				0.200		0.653
	0.038	0.415					0.170	0.623
Right Touch	0.058	0.812	0.194					1.064
	0.058	0.812		0.136				1.006
	0.058	0.812			0.136			1.006
	0.058	0.812				0.158		1.028
	0.058	0.812					0.117	0.987
Right Tilt (15°)	0.046	0.635	0.219					0.900
	0.046	0.635		0.182				0.863
	0.046	0.635			0.172			0.853
	0.046	0.635				0.207		0.888
	0.046	0.635					0.139	0.820

Sum of the SAR for SV-LTE & WiFi (Continued)

Test Position	CDMA BC1	LTE Band 13	WiFi					∑ 1-g SAR (mW/g)
	Voice (Max. Pwr)	(Pwr Reduction)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	
Left Touch	0.213	0.233	0.298					0.744
	0.213	0.233		0.175				0.621
	0.213	0.233			0.114			0.560
	0.213	0.233				0.174		0.620
	0.213	0.233					0.155	0.601
Left Tilt (15°)	0.102	0.170	0.334					0.606
	0.102	0.170		0.220				0.492
	0.102	0.170			0.141			0.413
	0.102	0.170				0.200		0.472
	0.102	0.170					0.170	0.442
Right Touch	0.370	0.317	0.194					0.881
	0.370	0.317		0.136				0.823
	0.370	0.317			0.136			0.823
	0.370	0.317				0.158		0.845
	0.370	0.317					0.117	0.804
Right Tilt (15°)	0.129	0.261	0.219					0.609
	0.129	0.261		0.182				0.572
	0.129	0.261			0.172			0.562
	0.129	0.261				0.207		0.597
	0.129	0.261					0.139	0.529

Test Position	CDMA BC1	LTE Band 13	WiFi					∑ 1-g SAR (mW/g)
	Voice (Pwr Reduction)	(Max. Pwr)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	
Left Touch	0.066	0.603	0.298					0.967
	0.066	0.603		0.175				0.844
	0.066	0.603			0.114			0.783
	0.066	0.603				0.174		0.843
	0.066	0.603					0.155	0.824
Left Tilt (15°)	0.043	0.415	0.334					0.792
	0.043	0.415		0.220				0.678
	0.043	0.415			0.141			0.599
	0.043	0.415				0.200		0.658
	0.043	0.415					0.170	0.628
Right Touch	0.128	0.812	0.194					1.134
	0.128	0.812		0.136				1.076
	0.128	0.812			0.136			1.076
	0.128	0.812				0.158		1.098
	0.128	0.812					0.117	1.057
Right Tilt (15°)	0.037	0.635	0.219					0.891
	0.037	0.635		0.182				0.854
	0.037	0.635			0.172			0.844
	0.037	0.635				0.207		0.879
	0.037	0.635					0.139	0.811

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.

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

14.2. Body-worn Accessory Exposure Conditions

14.2.1. Sum of the SAR for GSM (Voice), WiFi & BT

Test Position	GSM		WiFi						∑ 1-g SAR (mW/g)
	850	1900	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Rear	0.294		0.153						0.447
	0.294			0.043					0.337
	0.294				0.085				0.379
	0.294					0.096			0.390
	0.294						0.060		0.354
	0.294							0.006	0.300
		0.388	0.153						0.541
		0.388		0.043					0.431
		0.388			0.085				0.473
		0.388				0.096			0.484
		0.388					0.060		0.448
		0.388						0.006	0.394
Front	0.245		0.071						0.316
	0.245			0.043					0.288
	0.245				0.040				0.285
	0.245					0.070			0.315
	0.245						0.038		0.283
	0.245							0.002	0.247
		0.178	0.071						0.249
		0.178		0.043					0.221
		0.178			0.040				0.218
		0.178				0.070			0.248
		0.178					0.038		0.216
		0.178						0.002	0.180

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.

Conclusion:
Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

14.2.2. Sum of the SAR for GSM (VoIP), WiFi & BT

Test Position	GSM (GPRS)		WiFi						∑ 1-g SAR (mW/g)
	850	1900	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Rear	0.268		0.153						0.421
	0.268			0.043					0.311
	0.268				0.085				0.353
	0.268					0.096			0.364
	0.268						0.060		0.328
	0.268							0.006	0.274
		0.481	0.153						0.634
		0.481		0.043					0.524
		0.481			0.085				0.566
		0.481				0.096			0.577
		0.481					0.060		0.541
		0.481						0.006	0.487
Front	0.248		0.071						0.319
	0.248			0.043					0.291
	0.248				0.040				0.288
	0.248					0.070			0.318
	0.248						0.038		0.286
	0.248							0.002	0.250
		0.221	0.071						0.292
		0.221		0.043					0.264
		0.221			0.040				0.261
		0.221				0.070			0.291
		0.221					0.038		0.259
		0.221						0.002	0.223

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.

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

14.2.3. Sum of the SAR for CDMA (Voice), WiFi & BT

Test Position	CDMA (1xRTT)		WiFi						∑ 1-g SAR (mW/g)
	BC0	BC1	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Rear	0.340		0.153						0.493
	0.340			0.043					0.383
	0.340				0.085				0.425
	0.340					0.096			0.436
	0.340						0.060		0.400
	0.340							0.006	0.346
		1.060	0.153						1.213
		1.060		0.043					1.103
		1.060			0.085				1.145
		1.060				0.096			1.156
		1.060					0.060		1.120
		1.060						0.006	1.066
Front	0.331		0.071						0.402
	0.331			0.043					0.374
	0.331				0.040				0.371
	0.331					0.070			0.401
	0.331						0.038		0.369
	0.331							0.002	0.333
		0.412	0.071						0.483
		0.412		0.043					0.455
		0.412			0.040				0.452
		0.412				0.070			0.482
		0.412					0.038		0.450
		0.412						0.002	0.414

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.

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

14.2.4. Sum of the SAR for CDMA (VoIP), WiFi & BT

Test Position	CDMA (EV-DO)		WiFi						∑ 1-g SAR (mW/g)
	BC0	BC1	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Rear	0.372		0.153						0.525
	0.372			0.043					0.415
	0.372				0.085				0.457
	0.372					0.096			0.468
	0.372						0.060		0.432
	0.372							0.006	0.378
		0.952	0.153						1.105
		0.952		0.043					0.995
		0.952			0.085				1.037
		0.952				0.096			1.048
		0.952					0.060		1.012
		0.952						0.006	0.958
Front	0.422		0.071						0.493
	0.422			0.043					0.465
	0.422				0.040				0.462
	0.422					0.070			0.492
	0.422						0.038		0.460
	0.422							0.002	0.424
		0.408	0.071						0.479
		0.408		0.043					0.451
		0.408			0.040				0.448
		0.408				0.070			0.478
		0.408					0.038		0.446
		0.408						0.002	0.410

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.

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

14.2.5. Sum of the SAR for WCDMA, WiFi & BT

Test Position	WCDMA		WiFi						∑ 1-g SAR (mW/g)
	Band V	Band II	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Rear	0.266		0.153						0.419
	0.266			0.043					0.309
	0.266				0.085				0.351
	0.266					0.096			0.362
	0.266						0.060		0.326
	0.266							0.006	0.272
		0.621	0.153						0.774
		0.621		0.043					0.664
		0.621			0.085				0.706
		0.621				0.096			0.717
		0.621					0.060		0.681
		0.621						0.006	0.627
Front	0.258		0.071						0.329
	0.258			0.043					0.301
	0.258				0.040				0.298
	0.258					0.070			0.328
	0.258						0.038		0.296
	0.258							0.002	0.260
		0.331	0.071						0.402
		0.331		0.043					0.374
		0.331			0.040				0.371
		0.331				0.070			0.401
		0.331					0.038		0.369
		0.331						0.002	0.333

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.

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

14.2.6. Sum of the SAR for LTE, WiFi & BT

Test Position	LTE		WiFi						∑ 1-g SAR (mW/g)
	Band 4	Band 13	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Rear	0.650		0.153						0.803
	0.650			0.043					0.693
	0.650				0.085				0.735
	0.650					0.096			0.746
	0.650						0.060		0.710
	0.650							0.006	0.656
		0.500	0.153						0.653
		0.500		0.043					0.543
		0.500			0.085				0.585
		0.500				0.096			0.596
		0.500					0.060		0.560
		0.500						0.006	0.506
Front	0.465		0.071						0.536
	0.465			0.043					0.508
	0.465				0.040				0.505
	0.465					0.070			0.535
	0.465						0.038		0.503
	0.465							0.002	0.467
		0.444	0.071						0.515
		0.444		0.043					0.487
		0.444			0.040				0.484
		0.444				0.070			0.514
		0.444					0.038		0.482
		0.444						0.002	0.446

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.

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

14.2.7. Sum of the SAR for SV-LTE, WiFi & BT

Test Position	CDMA BC0	LTE Band 4	WiFi						∑ 1-g SAR (mW/g)
	Voice (Max. Pwr)	(Pwr Reduction)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Rear	0.340	0.228	0.153						0.721
	0.340	0.228		0.043					0.611
	0.340	0.228			0.085				0.653
	0.340	0.228				0.096			0.664
	0.340	0.228					0.060		0.628
	0.340	0.228						0.006	0.574

Test Position	CDMA BC0	LTE Band 4	WiFi						∑ 1-g SAR (mW/g)
	Voice (Pwr Reduction)	(Max. Pwr)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Rear	0.080	0.650	0.153						0.883
	0.080	0.650		0.043					0.773
	0.080	0.650			0.085				0.815
	0.080	0.650				0.096			0.826
	0.080	0.650					0.060		0.790
	0.080	0.650						0.006	0.736

Test Position	CDMA BC1	LTE Band 4	WiFi						∑ 1-g SAR (mW/g)
	Voice (Max. Pwr)	(Pwr Reduction)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Rear	1.060	0.228	0.153						**1.441**
	1.060	0.228		0.043					1.331
	1.060	0.228			0.085				1.373
	1.060	0.228				0.096			1.384
	1.060	0.228					0.060		1.348
	1.060	0.228						0.006	1.294

Test Position	CDMA BC1	LTE Band 4	WiFi						∑ 1-g SAR (mW/g)
	Voice (Pwr Reduction)	(Max. Pwr)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Rear	0.203	0.650	0.153						1.006
	0.203	0.650		0.043					0.896
	0.203	0.650			0.085				0.938
	0.203	0.650				0.096			0.949
	0.203	0.650					0.060		0.913
	0.203	0.650						0.006	0.859

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.

Conclusion:
Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

Sum of the SAR for SV-LTE, WiFi & BT (Continued)

Test Position	CDMA BC0	LTE Band 13	WiFi						∑ 1-g SAR (mW/g)
	Voice (Max. Pwr)	(Pwr Reduction)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Rear	0.340	0.227	0.153						0.720
	0.340	0.227		0.043					0.610
	0.340	0.227			0.085				0.652
	0.340	0.227				0.096			0.663
	0.340	0.227					0.060		0.627
	0.340	0.227						0.006	0.573
Test Position	CDMA BC0	LTE Band 13	WiFi						∑ 1-g SAR (mW/g)
	Voice (Pwr Reduction)	(Max. Pwr)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Rear	0.080	0.500	0.153						0.733
	0.080	0.500		0.043					0.623
	0.080	0.500			0.085				0.665
	0.080	0.500				0.096			0.676
	0.080	0.500					0.060		0.640
	0.080	0.500						0.006	0.586
Test Position	CDMA BC1	LTE Band 13	WiFi						∑ 1-g SAR (mW/g)
	Voice (Max. Pwr)	(Pwr Reduction)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Rear	1.060	0.227	0.153						1.440
	1.060	0.227		0.043					1.330
	1.060	0.227			0.085				1.372
	1.060	0.227				0.096			1.383
	1.060	0.227					0.060		1.347
	1.060	0.227						0.006	1.293
Test Position	CDMA BC1	LTE Band 13	WiFi						∑ 1-g SAR (mW/g)
	Voice (Pwr Reduction)	(Max. Pwr)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Rear	0.203	0.500	0.153						0.856
	0.203	0.500		0.043					0.746
	0.203	0.500			0.085				0.788
	0.203	0.500				0.096			0.799
	0.203	0.500					0.060		0.763
	0.203	0.500						0.006	0.709

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.

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

Sum of the SAR for SV-LTE, WiFi & BT (Continued)

Test Position	CDMA BC0	LTE Band 4	WiFi						∑ 1-g SAR (mW/g)
	Voice (Max. Pwr)	(Pwr Reduction)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Front	0.331	0.190	0.071						0.592
	0.331	0.190		0.043					0.564
	0.331	0.190			0.040				0.561
	0.331	0.190				0.070			0.591
	0.331	0.190					0.038		0.559
	0.331	0.190						0.002	0.523
Test Position	CDMA BC0	LTE Band 4	WiFi						∑ 1-g SAR (mW/g)
	Voice (Pwr Reduction)	(Max. Pwr)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Front	0.076	0.465	0.071						0.612
	0.076	0.465		0.043					0.584
	0.076	0.465			0.040				0.581
	0.076	0.465				0.070			0.611
	0.076	0.465					0.038		0.579
	0.076	0.465						0.002	0.543
Test Position	CDMA BC1	LTE Band 4	WiFi						∑ 1-g SAR (mW/g)
	Voice (Max. Pwr)	(Pwr Reduction)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Front	0.412	0.190	0.071						0.673
	0.412	0.190		0.043					0.645
	0.412	0.190			0.040				0.642
	0.412	0.190				0.070			0.672
	0.412	0.190					0.038		0.640
	0.412	0.190						0.002	0.604
Test Position	CDMA BC1	LTE Band 4	WiFi						∑ 1-g SAR (mW/g)
	Voice (Pwr Reduction)	(Max. Pwr)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Front	0.091	0.465	0.071						0.627
	0.091	0.465		0.043					0.599
	0.091	0.465			0.040				0.596
	0.091	0.465				0.070			0.626
	0.091	0.465					0.038		0.594
	0.091	0.465						0.002	0.558

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.

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

Sum of the SAR for SV-LTE, WiFi & BT (Continued)

Test Position	CDMA BC0	LTE Band 13	WiFi						∑ 1-g SAR (mW/g)
	Voice (Max. Pwr)	(Pwr Reduction)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Front	0.331	0.135	0.071						0.537
	0.331	0.135		0.043					0.509
	0.331	0.135			0.040				0.506
	0.331	0.135				0.070			0.536
	0.331	0.135					0.038		0.504
	0.331	0.135						0.002	0.468
Test Position	CDMA BC0	LTE Band 13	WiFi						∑ 1-g SAR (mW/g)
	Voice (Pwr Reduction)	(Max. Pwr)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Front	0.076	0.444	0.071						0.591
	0.076	0.444		0.043					0.563
	0.076	0.444			0.040				0.560
	0.076	0.444				0.070			0.590
	0.076	0.444					0.038		0.558
	0.076	0.444						0.002	0.522
Test Position	CDMA BC1	LTE Band 13	WiFi						∑ 1-g SAR (mW/g)
	Voice (Max. Pwr)	(Pwr Reduction)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Front	0.412	0.135	0.071						0.618
	0.412	0.135		0.043					0.590
	0.412	0.135			0.040				0.587
	0.412	0.135				0.070			0.617
	0.412	0.135					0.038		0.585
	0.412	0.135						0.002	0.549
Test Position	CDMA BC1	LTE Band 13	WiFi						∑ 1-g SAR (mW/g)
	Voice (Pwr Reduction)	(Max. Pwr)	2.4 GHz	5.2 GHz	5.3 GHz	5.5 GHz	5.8 GHz	Bluetooth	
Front	0.091	0.444	0.071						0.606
	0.091	0.444		0.043					0.578
	0.091	0.444			0.040				0.575
	0.091	0.444				0.070			0.605
	0.091	0.444					0.038		0.573
	0.091	0.444						0.002	0.537

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.

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

14.3. Hotspot Mode Exposure Conditions

14.3.1. Sum of the SAR for GSM (VoIP) & WiFi

Test Position	GSM (GPRS)		WiFi	∑ 1-g SAR
	850	1900	2.4 GHz	(mW/g)
Rear	0.268		0.153	0.421
		0.481	0.153	0.634
Front	0.248		0.071	0.319
		0.221	0.071	0.292
Edge 1	N/A		0.075	0.075
		N/A	0.075	0.075
Edge 2	0.394		0.043	0.437
		0.146	0.043	0.189
Edge 3	0.234		N/A	0.234
		0.398	N/A	0.398
Edge 4	0.105		N/A	0.105
		0.064	N/A	0.064

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.

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.

14.3.2. Sum of the SAR for CDMA (EV-DO) & WiFi

Test Position	CDMA (EV-DO)		WiFi	∑ 1-g SAR
	BC0	BC1	2.4 GHz	(mW/g)
Rear	0.372		0.153	0.525
		0.952	0.153	1.105
Front	0.422		0.071	0.493
		0.408	0.071	0.479
Edge 1	N/A		0.075	0.075
		N/A	0.075	0.075
Edge 2	0.460		0.043	0.503
		0.275	0.043	0.318
Edge 3	0.325		N/A	0.325
		0.737	N/A	0.737
Edge 4	0.116		N/A	0.116
		0.124	N/A	0.124

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.

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.

14.3.3. Sum of the SAR for WCDMA & WiFi

Test Position	WCDMA		WiFi	∑ 1-g SAR (mW/g)
	Band V	Band II	2.4 GHz	
Rear	0.266		0.153	0.419
		0.621	0.153	0.774
Front	0.258		0.071	0.329
		0.331	0.071	0.402
Edge 1	N/A		0.075	0.075
		N/A	0.075	0.075
Edge 2	0.254		0.043	0.297
		0.166	0.043	0.209
Edge 3	0.213		N/A	0.213
		0.576	N/A	0.576
Edge 4	0.100		N/A	0.100
		0.070	N/A	0.070

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.

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.

14.3.4. Sum of the SAR for LTE & WiFi

Test Position	LTE		WiFi	∑ 1-g SAR (mW/g)
	Band 4	Band 13	2.4 GHz	
Rear	0.650		0.153	0.803
		0.500	0.153	0.653
Front	0.465		0.071	0.536
		0.444	0.071	0.515
Edge 1	N/A		0.075	0.075
		0.206	0.075	0.281
Edge 2	N/A		0.043	0.043
		0.318	0.043	0.361
Edge 3	0.385		N/A	0.385
		N/A	N/A	N/A
Edge 4	0.420		N/A	0.420
		N/A	N/A	N/A

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.

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.

14.3.5. Sum of the SAR for SV-LTE & WiFi 2.4 GHz

Test Position	CDMA BC0 Voice (Max. Pwr)	LTE Band 4 (Pwr Reduction)	WiFi 2.4 GHz	∑ 1-g SAR (mW/g)
Rear	0.340	0.228	0.153	0.721
Front	0.331	0.190	0.071	0.592
Edge 1	N/A	N/A	0.075	0.075
Edge 2	0.443	N/A	0.043	0.486
Edge 3	0.270	0.101	N/A	0.371
Edge 4	0.087	0.156	N/A	0.243
Test Position	CDMA BC0 Voice (Pwr Reduction)	LTE Band 4 (Max. Pwr)	WiFi 2.4 GHz	∑ 1-g SAR (mW/g)
Rear	0.080	0.650	0.153	0.883
Front	0.076	0.465	0.071	0.612
Edge 1	N/A	N/A	0.075	0.075
Edge 2	0.110	N/A	0.043	0.153
Edge 3	0.063	0.385	N/A	0.448
Edge 4	0.017	0.420	N/A	0.437

Test Position	CDMA BC1 Voice (Max. Pwr)	LTE Band 4 (Pwr Reduction)	WiFi 2.4 GHz	∑ 1-g SAR (mW/g)
Rear	1.060	0.228	0.153	1.441
Front	0.412	0.190	0.071	0.673
Edge 1	N/A	N/A	0.075	0.075
Edge 2	0.257	N/A	0.043	0.300
Edge 3	0.677	0.101	N/A	0.778
Edge 4	0.111	0.156	N/A	0.267
Test Position	CDMA BC1 Voice (Pwr Reduction)	LTE Band 4 (Max. Pwr)	WiFi 2.4 GHz	∑ 1-g SAR (mW/g)
Rear	0.203	0.650	0.153	1.006
Front	0.091	0.465	0.071	0.627
Edge 1	N/A	N/A	0.075	0.075
Edge 2	0.056	N/A	0.043	0.099
Edge 3	0.132	0.385	N/A	0.517
Edge 4	0.029	0.420	N/A	0.449

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.

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.

Sum of the SAR for SV-LTE & WiFi 2.4 GHz (Continued)

Test Position	CDMA BC0	LTE Band 13	WiFi	∑ 1-g SAR (mW/g)
	Voice (Max. Pwr)	(Pwr Reduction)	2.4 GHz	
Rear	0.340	0.227	0.153	0.720
Front	0.331	0.135	0.071	0.537
Edge 1	N/A	0.087	0.075	0.162
Edge 2	0.443	0.125	0.043	0.611
Edge 3	0.270	N/A	N/A	0.270
Edge 4	0.087	N/A	N/A	0.087
Test Position	CDMA BC0	LTE Band 13	WiFi	∑ 1-g SAR (mW/g)
	Voice (Pwr Reduction)	(Max. Pwr)	2.4 GHz	
Rear	0.080	0.500	0.153	0.733
Front	0.076	0.444	0.071	0.591
Edge 1	N/A	0.206	0.075	0.281
Edge 2	0.110	0.318	0.043	0.471
Edge 3	0.063	N/A	N/A	0.063
Edge 4	0.017	N/A	N/A	0.017

Test Position	CDMA BC1	LTE Band 13	WiFi	∑ 1-g SAR (mW/g)
	Voice (Max. Pwr)	(Pwr Reduction)	2.4 GHz	
Rear	1.060	0.227	0.153	1.440
Front	0.412	0.135	0.071	0.618
Edge 1	N/A	0.087	0.075	0.162
Edge 2	0.257	0.125	0.043	0.425
Edge 3	0.677	N/A	N/A	0.677
Edge 4	0.111	N/A	N/A	0.111
Test Position	CDMA BC1	LTE Band 13	WiFi	∑ 1-g SAR (mW/g)
	Voice (Pwr Reduction)	(Max. Pwr)	2.4 GHz	
Rear	0.203	0.500	0.153	0.856
Front	0.091	0.444	0.071	0.606
Edge 1	N/A	0.206	0.075	0.281
Edge 2	0.056	0.318	0.043	0.417
Edge 3	0.132	N/A	N/A	0.132
Edge 4	0.029	N/A	N/A	0.029

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.

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.

14.4. WiFi Direct Exposure Conditions

The 2.4 GHz band is covered by body worn accessory and hotspot exposure conditions.

The 5.8 GHz band only operates in Group Owner (GO) mode.

14.4.1. Sum of the SAR for GSM (VoIP) & WiFi 5.8 GHz

Test Position	GSM (GPRS)		WiFi	∑ 1-g SAR
	850	1900	5.8 GHz	(mW/g)
Rear	0.268		0.060	0.328
		0.481	0.060	0.541
Front	0.248		0.038	0.286
		0.221	0.038	0.259
Edge 1	N/A		0.073	0.073
		N/A	0.073	0.073
Edge 2	0.394		0.064	0.458
		0.146	0.064	0.210
Edge 3	0.234		N/A	0.234
		0.398	N/A	0.398
Edge 4	0.105		N/A	0.105
		0.064	N/A	0.064

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.

Conclusion:
Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

14.4.2. Sum of the SAR for CDMA (EV-DO) & WiFi 5.8 GHz

Test Position	CDMA (EV-DO)		WiFi	∑ 1-g SAR
	BC0	BC1	5.8 GHz	(mW/g)
Rear	0.372		0.060	0.432
		0.952	0.060	1.012
Front	0.422		0.038	0.460
		0.408	0.038	0.446
Edge 1	N/A		0.073	0.073
		N/A	0.073	0.073
Edge 2	0.460		0.064	0.524
		0.275	0.064	0.339
Edge 3	0.325		N/A	0.325
		0.737	N/A	0.737
Edge 4	0.116		N/A	0.116
		0.124	N/A	0.124

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.

Conclusion:
Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

14.4.3. Sum of the SAR for WCDMA & WiFi 5.8 GHz

Test Position	WCDMA		WiFi	∑ 1-g SAR (mW/g)
	Band V	Band II	5.8 GHz	
Rear	0.266		0.060	0.326
		0.621	0.060	0.681
Front	0.258		0.038	0.296
		0.331	0.038	0.369
Edge 1	N/A		0.073	0.073
		N/A	0.073	0.073
Edge 2	0.254		0.064	0.318
		0.166	0.064	0.230
Edge 3	0.213		N/A	0.213
		0.576	N/A	0.576
Edge 4	0.100		N/A	0.100
		0.070	N/A	0.070

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.

Conclusion:
Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

14.4.4. Sum of the SAR for LTE & WiFi 5.8 GHz

Test Position	LTE		WiFi	∑ 1-g SAR (mW/g)
	Band 4	Band 13	5.8 GHz	
Rear	0.650		0.060	0.710
		0.500	0.060	0.560
Front	0.465		0.038	0.503
		0.444	0.038	0.482
Edge 1	N/A		0.073	0.073
		0.206	0.073	0.279
Edge 2	N/A		0.064	0.064
		0.318	0.064	0.382
Edge 3	0.385		N/A	0.385
		N/A	N/A	N/A
Edge 4	0.420		N/A	0.420
		N/A	N/A	N/A

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.

Conclusion:
Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

14.4.5. Sum of the SAR for SV-LTE & WiFi 5.8 GHz

Test Position	CDMA BC0 Voice (Max. Pwr)	LTE Band 4 (Pwr Reduction)	WiFi 5.8 GHz	∑ 1-g SAR (mW/g)
Rear	0.340	0.228	0.060	0.628
Front	0.331	0.190	0.038	0.559
Edge 1	N/A	N/A	0.073	0.073
Edge 2	0.443	N/A	0.064	0.507
Edge 3	0.270	0.101	N/A	0.371
Edge 4	0.087	0.156	N/A	0.243
Test Position	CDMA BC0 Voice (Pwr Reduction)	LTE Band 4 (Max. Pwr)	WiFi 5.8 GHz	∑ 1-g SAR (mW/g)
Rear	0.080	0.650	0.060	0.790
Front	0.076	0.465	0.038	0.579
Edge 1	N/A	N/A	0.073	0.073
Edge 2	0.110	N/A	0.064	0.174
Edge 3	0.063	0.385	N/A	0.448
Edge 4	0.017	0.420	N/A	0.437

Test Position	CDMA BC1 Voice (Max. Pwr)	LTE Band 4 (Pwr Reduction)	WiFi 5.8 GHz	∑ 1-g SAR (mW/g)
Rear	1.060	0.228	0.060	**1.348**
Front	0.412	0.190	0.038	0.640
Edge 1	N/A	N/A	0.073	0.073
Edge 2	0.257	N/A	0.064	0.321
Edge 3	0.677	0.101	N/A	0.778
Edge 4	0.111	0.156	N/A	0.267
Test Position	CDMA BC1 Voice (Pwr Reduction)	LTE Band 4 (Max. Pwr)	WiFi 5.8 GHz	∑ 1-g SAR (mW/g)
Rear	0.203	0.650	0.060	0.913
Front	0.091	0.465	0.038	0.594
Edge 1	N/A	N/A	0.073	0.073
Edge 2	0.056	N/A	0.064	0.120
Edge 3	0.132	0.385	N/A	0.517
Edge 4	0.029	0.420	N/A	0.449

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.

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

Sum of the SAR for SV-LTE & WiFi 5.8 GHz Band (Continued)

Test Position	CDMA BC0 Voice (Max. Pwr)	LTE Band 13 (Pwr Reduction)	WiFi 5.8 GHz	∑ 1-g SAR (mW/g)
Rear	0.340	0.227	0.060	0.627
Front	0.331	0.135	0.038	0.504
Edge 1	N/A	0.087	0.073	0.160
Edge 2	0.443	0.125	0.064	0.632
Edge 3	0.270	N/A	N/A	0.270
Edge 4	0.087	N/A	N/A	0.087
Test Position	CDMA BC0 Voice (Pwr Reduction)	LTE Band 13 (Max. Pwr)	WiFi 5.8 GHz	∑ 1-g SAR (mW/g)
Rear	0.080	0.500	0.060	0.640
Front	0.076	0.444	0.038	0.558
Edge 1	N/A	0.206	0.073	0.279
Edge 2	0.110	0.318	0.064	0.492
Edge 3	0.063	N/A	N/A	0.063
Edge 4	0.017	N/A	N/A	0.017

Test Position	CDMA BC1 Voice (Max. Pwr)	LTE Band 13 (Pwr Reduction)	WiFi 5.8 GHz	∑ 1-g SAR (mW/g)
Rear	1.060	0.227	0.060	1.347
Front	0.412	0.135	0.038	0.585
Edge 1	N/A	0.087	0.073	0.160
Edge 2	0.257	0.125	0.064	0.446
Edge 3	0.677	N/A	N/A	0.677
Edge 4	0.111	N/A	N/A	0.111
Test Position	CDMA BC1 Voice (Pwr Reduction)	LTE Band 13 (Max. Pwr)	WiFi 5.8 GHz	∑ 1-g SAR (mW/g)
Rear	0.203	0.500	0.060	0.763
Front	0.091	0.444	0.038	0.573
Edge 1	N/A	0.206	0.073	0.279
Edge 2	0.056	0.318	0.064	0.438
Edge 3	0.132	N/A	N/A	0.132
Edge 4	0.029	N/A	N/A	0.029

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.

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg.

15. Appendixes

Refer to separated files for the following appendixes.

15.1. System Performance Check Plots

15.2. Highest SAR Test Plots for GSM

15.3. Highest SAR Test Plots for CDMA

15.4. Highest SAR Test Plots for WCDMA

15.5. Highest SAR Test Plots for LTE

15.6. Highest SAR Test Plots for WiFi

15.7. Calibration Certificate for E-Field Probe EX3DV4 - SN 3749

15.8. Calibration Certificate for E-Field Probe EX3DV4 - SN 3751

15.9. Calibration Certificate for E-Field Probe EX3DV4 - SN 3686

15.10. Calibration Certificate for E-Field Probe EX3DV4 - SN 3901

15.11. Calibration Certificate for E-Field Probe EX3DV3 - SN 3531

15.12. Calibration Certificate for D750V3 - SN 1071

15.13. Calibration Certificate for D835V2 - SN 4d142

15.14. Calibration Certificate for D835V2 - SN 4d002

15.15. Calibration Certificate for D1750V2 - SN 1050

15.16. Calibration Certificate for D1900V2- SN 5d140

15.17. Calibration Certificate for D2450V2 - SN 899

15.18. Calibration Certificate for D5GHzV2 - SN 1138