FCC 47 CFR Parts 1 & 2
Published RF Exposure KDB Procedures
IEEE Std 1528-2003 and IEEE Std 1528a-2005

SAR EVALUATION REPORT

For
iPhone

Model: A1457

FCC ID: BCG-E2643B

Report Number: 13U15037-24A
Issue Date: 9/5/2013

Prepared for
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Revision History

Rev.	Issue Date	Revisions	Revised By
--	7/24/2013	Initial Issue	--
A	9/5/13	Made the following changes based on reviewer's comments: 1. Removed OET 65 supplement C from cover page, Sec. 1, 2 and 10 2. Sec. 7.1: Added description of detect mode 3. Sec. 7.3 & 7.4: Corrected some typo 4. Sec. 8.2: Added explanation on selected test separation distance for Body-worn accessory test configurations. 5. Sec. 8.3: Added justification for testing at 5 mm to cover hotspot operation. 6. Sec. 9.4: Added WLAN channels 12 and 13 and added justification (note 2) why channels 12 and 13 were not tested. 7. Sec. 12.3.2. and 12.4.2.: Added justification for SAR test exclusion for HSPA 8. Updated project no. from 13U15037-10A to 13U15037-24A 9. Sec. 7.1: Added flowchart and descriptions. 10. Sec. 9: Added note	Sunny Shih

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1. Attestation of Test Results

Applicant	Apple Inc.			
DUT description	iPhone			
Model	A1457			
Test device is	An identical prototype			
Device category	Portable			
Exposure category	General Population/Uncontrolled Exposure			
Date tested	6/3/2013 – 7/23/2013			
The highest reported SAR values	RF exposure conditions	Licensed	DTS	UNII
	Head	1.170 W/kg	0.588 W/kg	0.595 W/kg
	Body-worn Accessory	1.110 W/kg	0.577 W/kg	0.521 W/kg
	Wireless Router (Hotspot)	1.090 W/kg	0.462 W/kg	N/A
	Simultaneous Transmission	1.592 W/kg	1.585 W/kg	1.592 W/kg
Applicable Standards	FCC 47 CFR Parts 1 & 2 Published RF Exposure KDB Procedures, and TCB workshop updates IEEE Std 1528-2003 and IEEE Std 1528a-2005			
Test Results	Pass			

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

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

Approved & Released By:	Prepared By:
Sunny Shih WiSE Operations Manager UL Verification Services Inc.	Devin Chang WiSE Engineer UL Verification Services Inc.

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2. Test Methodology

The tests documented in this report were performed in accordance with FCC 47 CFR Parts 1 & 2, 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 SAR Handsets Multi Xmiter and Ant v01r01
- 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

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.

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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	E5071B	MY42100131	2/21/2014
Dielectronic Probe kit	SPEAG	DAK-3.5	1087	10/16/2013
Dielectronic Probe kit	SPEAG	DAK-3.5 Short	SM DAK 200 BA	N/A
Thermometer	Control Company	4242	122529163	9/19/2013

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	AMETEK	XHR60-18	1308A01935	N/A
Synthesized Signal Generator	HP	8665B	3744A01155	3/6/2014
Power Meter	HP	438A	2822A05684	10/7/2013
Power Sensor	HP	8481A	2702A66876	9/24/2013
Power Sensor	HP	8482A	2349A08568	9/26/2013
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1622052	N/A
Directional coupler	Werlatone	C8060-102	2149	N/A
DC Power Supply	EKNWOOD	PA36-3A	7060074	N/A
Thermometer	TRACEABLE	4242	122529162	9/19/2013
E-Field Probe	SPEAG	EX3DV4	3749	1/15/2014
E-Field Probe	SPEAG	EX3DV4	3751	12/15/2013
E-Field Probe	SPEAG	EX3DV4	3772	2/20/2014
E-Field Probe	SPEAG	EX3DV4	3686	3/12/2014
E-Field Probe	SPEAG	EX3DV4	3901	2/13/2014
E-Field Probe	SPEAG	EX3DV4	3885	10/9/2013
Data Acquisition Electronics	SPEAG	DAE4	1343	8/20/2013
Data Acquisition Electronics	SPEAG	DAE3	427	1/9/2014
Data Acquisition Electronics	SPEAG	DAE4	1258	3/6/2014
Data Acquisition Electronics	SPEAG	DAE4	1257	8/28/2013
Data Acquisition Electronics	SPEAG	DAE4	1357	2/5/2014
Data Acquisition Electronics	SPEAG	DAE4	1352	10/8/2013
Data Acquisition Electronics	SPEAG	DAE4	1360	2/7/2014
System Validation Dipole	SPEAG	D835V2	4d002	10/24/2013
System Validation Dipole	SPEAG	D835V2	4d142	10/4/2013
System Validation Dipole	SPEAG	D1900V2	5d043	11/6/2013
System Validation Dipole	SPEAG	D1900V2	5d163	10/4/2013
System Validation Dipole	SPEAG	D2450V2	899	10/5/2013
System Validation Dipole	SPEAG	D5GHzV2	1138	10/9/2013
System Validation Dipole	SPEAG	D5GHzV2	1003	9/18/2013

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Others

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Base Station Simulator	Agilent	8960	MY48360200	3/20/2014
Base Station Simulator	R & S	CMU200	106291	8/8/2013
Base Station Simulator	R & S	CMU200	117455	5/20/2014
Base Station Simulator	R & S	CMU200	118715	5/20/2014
Base Station Simulator	R & S	CMW500	132910-cp	2/19/2014
Base Station Simulator	R & S	CMW500	132909-bp	2/19/2014
Base Station Simulator	R & S	CMW500	103764-dn	8/16/2014
Base Station Simulator	R & S	CMW500	103766-ly	8/19/2014
Base Station Simulator	R & S	CMW500	107513-be	7/26/2014
Power Meter	Agilent	N1912A	MY50001018	8/10/2013
Power Sensor	Agilent	N1921A	MY52020011	5/13/2014
Power Sensor	Agilent	N1921A	MY52200012	7/24/2013

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.

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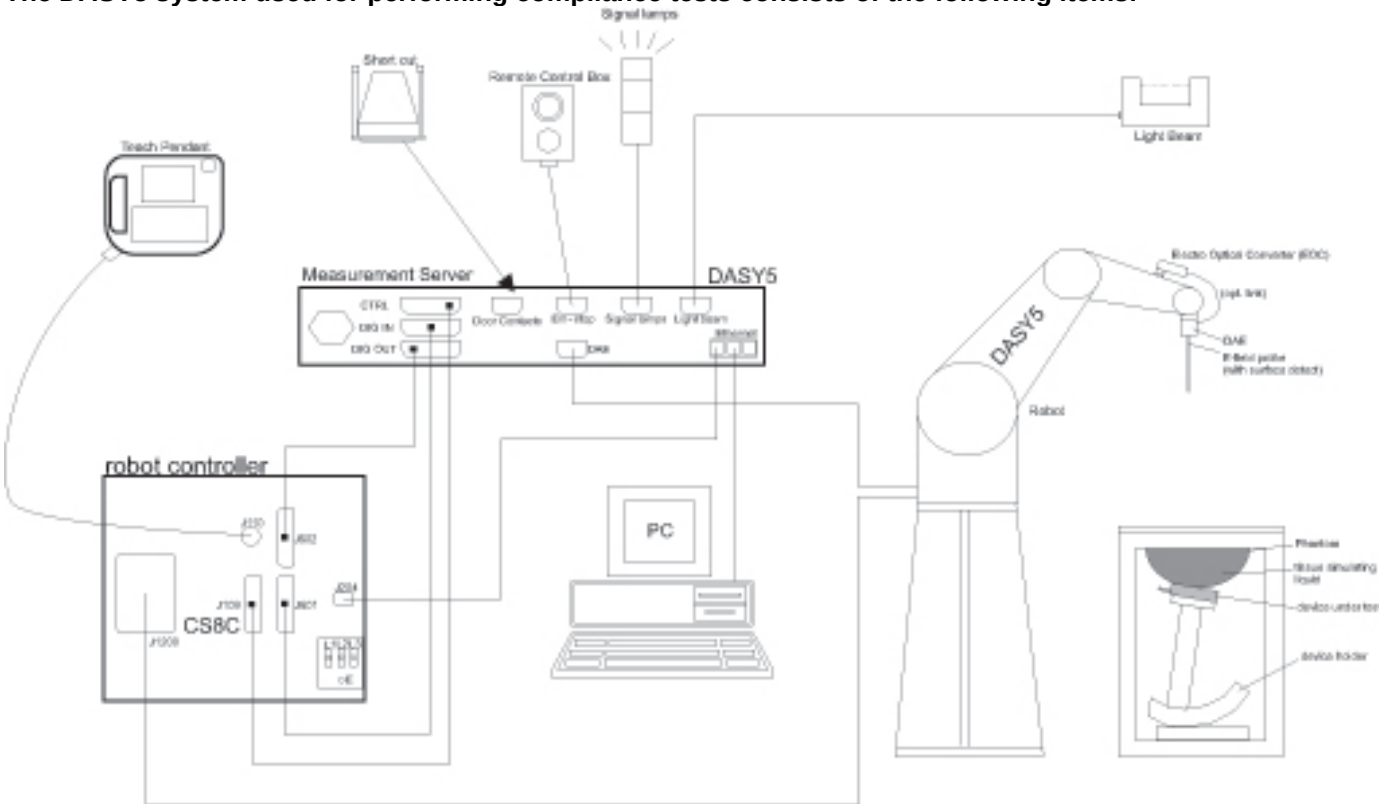
5. Measurement System Description and Setup

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.

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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 v01r01

	≤ 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.	

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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 v01r01

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

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

* When zoom scan is required and the *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.

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.

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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.

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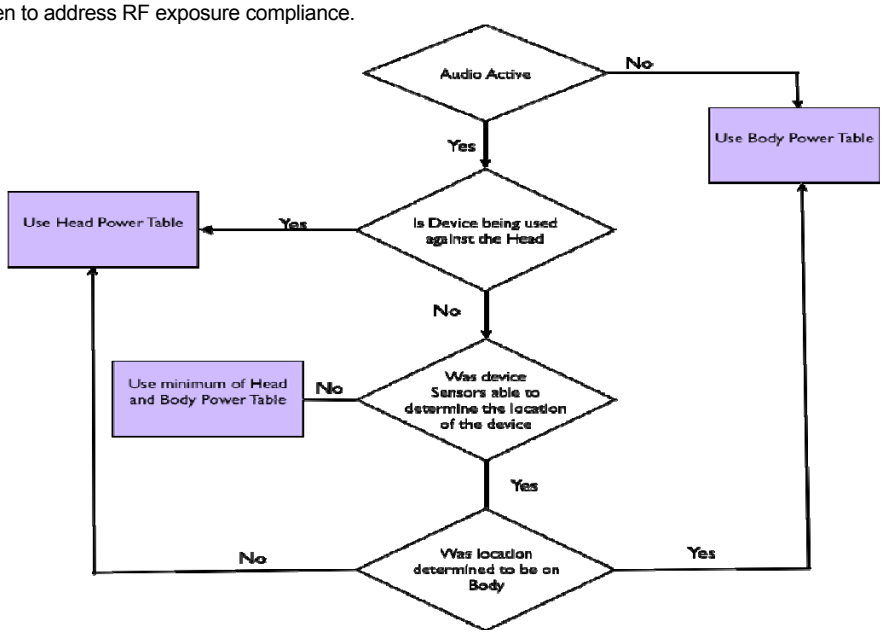
7. Device Under Test

7.1. General Information

iPhone

Model: A1457 The FCC ID: BCG-E2643B device uses sensors present in it to determine if the device is against the user's body so that the correct power table can be chosen to address RF exposure compliance.



Device uses 2 different power tables to meet RF exposure compliance:
- Head Power Table: Head Power Table is used when device is used against the head.
- Body Power Table: Body Power Table is used when device is used against the body. Device uses sensors to determine if the device is against the user's body or not.

The sensors used for this detection are a part of the device. The measurements from the sensors are processed to produce a metric. The device is declared to be on the body if the computed metric exceeds a priori specified threshold. When the device is identified to be on the body, the "body power table" is used. When the device is identified as not on the body, the "head power table" is used.

Operating Configuration(s)	Held to head and 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)
SV-LTE & SV-DO	Not Supported
AirPlay	AirPlay mode enabled devices transfer data directly between each other ☒ AirPlay (WiFi 2.4 GHz) ☒ AirPlay (WiFi 5 GHz)
RF Exposure Condition(s)	Head, Body-worn Accessory, Hotspot (wireless router)
Device dimension	Overall (Length x Width): 124.0 mm x 58.5 mm Overall Diagonal: 130.4 mm Display Diagonal: 103.0 mm
Accessory	Headset
Battery Options	☒ Standard – Lithium-ion battery, Rating 3.8 Vdc, 5.96 Wh ☐ Extended (large capacity)

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7.2. Wireless Technologies

Wireless Technology and Frequency Bands	GSM: 850 /1900 W-CDMA Band: 2 / 5 LTE Band 2 / 5 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) - ☒ DC-HSDPA (Rel. 8, CAT 24) - ☒ HSPA+ (Rel. 6, CAT 6) LTE - ☒ QPSK - ☒ 16QAM WiFi 2.4GHz (802.11b/g/n) - ☒ 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)
Duty Cycle	GSM Voice: 12.5%; GPRS 1 Slot: 12.5%; 2 Slots: 25% W-CDMA: 100% LTE: 100% WiFi 802.11a/b/g/n: 100% Bluetooth: 32.25% (DH1), 66.68% (DH3), 77.52% (DH5)
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 GPRS and GSM services simultaneously. ☒ Class B - Mobile phones can be attached to both GPRS and GSM services, using one service at a time. ☐ Class C - Mobile phones are attached to either GPRS or GSM voice service. You need to switch manually between services
DTM (Dual Transfer Mode)	Not Supported
VoIP (GPRS)	Supported

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7.3. Simultaneous Transmission Condition

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 3. WCDMA Band 2/5 + WiFi 2.4/5GHz 4. LTE B2/B5 + WiFi 2.4/5GHz
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 4. GSM 850/1900 (GPRS/EDGE) + BT 5. WCDMA Band 2/5 + WiFi 2.4/5GHz 6. WCDMA Band 2/5 + BT 7. LTE B2/B5 + WiFi 2.4/5GHz 8. LTE B2/B5 + BT
Wireless Router (Hotspot)	1. GSM 850/1900 (GPRS/EDGE) + WiFi 2.4GHz 2. WCDMA Band 2/5 + WiFi 2.4GHz 3. LTE B2/B5 + WiFi 2.4GHz
Notes: 1. WiFi only 2.4GHz supports Hotspot. 2. GPRS/EDGE, CDMA, WCDMA and LTE support Hotspot. 3. VoIP is supported in CDMA, LTE, WCDMA and GPRS. 4. WiFi 2.4 GHz Radio cannot transmit simultaneously with Bluetooth Radio.	

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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 rowspan="3">Band 2</td><td colspan="6">Frequency range: 1850 - 1910 MHz</td></tr>
<tr><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>18700 /1860</td><td>18675/ 1857.5</td><td>18650/ 1855</td><td>18625/ 1852.5</td><td>18615/ 1851.5</td><td>18607/ 1850.7</td></tr>
<tr><td>Mid</td><td>18900/ 1880</td><td>18900/ 1880</td><td>18900/ 1880</td><td>18900/ 1880</td><td>18900/ 1880</td><td>18900/ 1880</td></tr>
<tr><td>High</td><td>19100/ 1900</td><td>19125/ 1902.5</td><td>19150/ 1905</td><td>19175/ 1907.5</td><td>19185/ 1908.5</td><td>19193/ 1909.3</td></tr>
<tr><td rowspan="3">Band 5</td><td colspan="6">Frequency range: 824 - 849 MHz</td></tr>
<tr><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>20450/ 829</td><td>20425/ 826.5</td><td>20415/ 825.5</td><td>20407/ 824.7</td></tr>
<tr><td>Mid</td><td></td><td></td><td>20525/ 836.5</td><td>20525/ 836.5</td><td>20525/ 836.5</td><td>20525/ 836.5</td></tr>
<tr><td>High</td><td></td><td></td><td>20600/ 844</td><td>20625/ 846.5</td><td>20635/ 847.5</td><td>20643/ 848.3</td></tr>
</table>
</td></tr>
<tr><td>LTE transmitter and antenna implementation</td><td>LTE can transmit from either UAT (Secondary Antenna) or LAT (Primary Antenna). The antenna switching is implemented with a physical, “break-before-make” switch such that only one antenna can be used for LTE transmission at a time.</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>No</td></tr>
<tr><td>Spectrum plots for RB configurations</td><td>When a properly configured basestation simulator is not used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration should be included in the SAR report to demonstrate that the tested RB allocations have been correctly established at the maximum output power conditions.</td></tr>
</table>

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8. RF Exposure Conditions

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

8.1. Head Exposure Conditions

For GSM, W-CDMA, CDMA, LTE and WiFi

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

The Body-worn accessory test configurations were tested using a conservative minimum test separation distance of 5 mm.

For WWAN and LTE (LAT/Primary Antenna)

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

For WWAN and LTE (UAT/Secondary Antenna)

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

For WiFi

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

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8.3. Hotspot Exposure Conditions

Per Section 4 of test plan submitted in the manufacturer KDB titled Detect Mode Feature, hotspot operation SAR test cases are covered by worse-cases in Body-worn SAR at 5 mm separation distance.

For WWAN and LTE (LAT/Primary Antenna)

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	<25 mm	Yes	
Front	<25 mm	Yes	
Edge 1 (Top)	0 mm	Yes	
Edge 2 (Right)	0 mm	Yes	
Edge 3 (Bottom)	>25 mm	No	SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR v01r01
Edge 4 (Left)	0 mm	Yes	

For WWAN and LTE (UAT/Secondary Antenna)

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	<25 mm	Yes	
Front	<25 mm	Yes	
Edge 1 (Top)	>25 mm	No	SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR v01r01
Edge 2 (Right)	0 mm	Yes	
Edge 3 (Bottom)	0 mm	Yes	
Edge 4 (Left)	0 mm	Yes	

For WiFi

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	<25 mm	Yes	
Front	<25 mm	Yes	
Edge 1 (Top)	4.7 mm	Yes	
Edge 2 (Right)	35.2 mm	Yes	
Edge 3 (Bottom)	115.4 mm	No	SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR v01r01
Edge 4 (Left)	10.5 mm	Yes	

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9. RF Output Power Measurement

The proprietary logic is used to determine when head/body power table is used.

9.1. GSM

GSM (GMSK) - Voice Mode

Band	Ch No.	Freq. (MHz)	Avg Power (dBm)			
			HEAD		BODY	
			UAT	LAT	UAT	LAT
850	128	824.2	33.2	33.4	33.2	33.0
	190	836.6	33.2	33.4	33.2	33.0
	251	848.8	33.2	33.5	33.2	33.0

GPRS (GMSK) - Coding Scheme: CS1

Band	Ch No.	Freq. (MHz)	HEAD				BODY			
			UAT		LAT		UAT		LAT	
			1 slot	2 slots	1 slot	2 slots	1 slot	2 slots	1 slot	2 slots
Burst Power (dBm)										
850	128	824.2	33.2	**31.0**	33.4	**32.5**	33.2	**32.2**	33.5	**31.0**
	190	836.6	33.2	**31.0**	33.4	**32.5**	33.2	**32.2**	33.5	**31.0**
	251	848.8	33.2	**31.0**	33.5	**32.5**	33.2	**32.2**	33.5	**31.0**
Frame Power (dBm)										
850	128	824.2	24.2	**25.0**	24.4	**26.5**	24.2	**26.2**	24.5	**25.0**
	190	836.6	24.2	**25.0**	24.4	**26.5**	24.2	**26.2**	24.5	**25.0**
	251	848.8	24.2	**25.0**	24.5	**26.5**	24.2	**26.2**	24.5	**25.0**

EGPRS (8PSK) - Coding Scheme: MCS5

Band	Ch No.	Freq. (MHz)	HEAD				BODY			
			UAT		LAT		UAT		LAT	
			1 slot	2 slots	1 slot	2 slots	1 slot	2 slots	1 slot	2 slots
Burst Power (dBm)										
850	128	824.2	28.6	28.5	28.8	29.0	28.5	28.6	28.8	28.9
	190	836.6	28.7	28.7	28.9	28.8	28.7	28.7	28.8	28.9
	251	848.8	28.7	28.6	29.0	28.8	28.5	28.7	29.0	29.0
Frame Power (dBm)										
850	128	824.2	19.6	22.5	19.8	23.0	19.5	22.6	19.8	22.9
	190	836.6	19.7	22.7	19.9	22.8	19.7	22.7	19.8	22.9
	251	848.8	19.7	22.6	20.0	22.8	19.5	22.7	20.0	23.0

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

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GSM (GMSK) - Voice Mode

Band	Ch No.	Freq. (MHz)	Avg Power (dBm)			
			HEAD		BODY	
			UAT	LAT	UAT	LAT
1900	512	1850.2	30.4	30.5	28.75	28.9
	661	1880.0	30.5	30.5	28.75	29.0
	810	1909.8	30.5	30.5	28.75	28.9

GPRS (GMSK) - Coding Scheme: CS1

Band	Ch No.	Freq. (MHz)	HEAD				BODY			
			UAT		LAT		UAT		LAT	
			1 slot	2 slots	1 slot	2 slots	1 slot	2 slots	1 slot	2 slots
			Burst Power (dBm)				Burst Power (dBm)			
1900	512	1850.2	30.4	**27.3**	30.5	**28.0**	28.75	**28.75**	28.9	**26.0**
	661	1880.0	30.5	**27.5**	30.5	**28.0**	28.75	**28.75**	29.0	**26.0**
	810	1909.8	30.5	**27.5**	30.5	**28.0**	28.75	**28.75**	28.9	**26.0**
			Frame Power (dBm)				Frame Power (dBm)			
1900	512	1850.2	21.4	21.3	21.5	22.0	19.7	22.73	19.9	20.0
	661	1880.0	21.5	21.5	21.5	22.0	19.7	22.73	20.0	20.0
	810	1909.8	21.5	21.5	21.5	22.0	19.7	22.73	19.9	20.0

EGPRS (8PSK) - Coding Scheme: MCS5

Band	Ch No.	Freq. (MHz)	HEAD				BODY			
			UAT		LAT		UAT		LAT	
			1 slot	2 slots	1 slot	2 slots	1 slot	2 slots	1 slot	2 slots
			Burst Power (dBm)				Burst Power (dBm)			
1900	512	1850.2	27.3	27.3	27.9	27.9	27.3	27.4	27.9	**27.0**
	661	1880.0	27.2	27.3	28.0	27.8	27.4	27.3	27.9	**27.0**
	810	1909.8	27.4	27.4	27.8	27.8	27.2	27.3	28.0	**27.0**
			Frame Power (dBm)				Frame Power (dBm)			
1900	512	1850.2	18.3	21.3	18.9	21.9	18.3	21.4	18.9	21.0
	661	1880.0	18.2	21.3	19.0	21.8	18.4	21.3	18.9	21.0
	810	1909.8	18.4	21.4	18.8	21.8	18.2	21.3	19.0	21.0

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, and EGPRS 2 time slots (LAT) based on the output power measurements above

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9.2. W-CDMA

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)			
				HEAD		BODY	
				UAT	LAT	UAT	LAT
W-CDMA Band 2	Rel 99 (RMC, 12.2 kbps)	9262	1852.4	22.4	22.8	22.4	20.0
		9400	1880.0	22.5	23.0	22.4	20.0
		9538	1907.6	22.5	23.0	22.3	20.0
W-CDMA Band 5	Rel 99 (RMC, 12.2 kbps)	4132	826.4	23.9	24.5	24.1	24.2
		4183	836.6	23.9	24.5	24.2	24.2
		4233	846.6	23.8	24.4	24.1	24.1

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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	1	1.5	1.5
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			

Measured Results

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)			
				HEAD		BODY	
				UAT	LAT	UAT	LAT
W-CDMA Band 2	Subtest 1	9262	1852.4	22.3	22.7	22.30	19.9
		9400	1880.0	22.3	22.8	22.20	19.8
		9538	1907.6	22.4	22.8	22.20	19.8
	Subtest 2	9262	1852.4	21.2	21.6	21.50	18.7
		9400	1880.0	21.3	21.5	21.50	18.9
		9538	1907.6	21.2	21.7	21.30	18.8
	Subtest 3	9262	1852.4	19.8	21.7	21.30	18.3
		9400	1880.0	19.7	21.6	21.30	18.3
		9538	1907.6	19.9	21.6	21.50	18.4
	Subtest 4	9262	1852.4	19.7	21.5	21.20	18.5
		9400	1880.0	19.8	21.6	21.30	18.4
		9538	1907.6	19.8	21.6	21.30	18.3
W-CDMA Band 5	Subtest 1	4132	826.4	23.8	24.4	24.0	24.0
		4183	836.6	23.8	24.2	24.1	24.1
		4233	846.6	23.7	24.3	24.1	24.0
	Subtest 2	4132	826.4	22.6	23.6	23.2	23.1
		4183	836.6	22.7	23.5	23.1	23.2
		4233	846.6	22.7	23.4	23.1	23.2
	Subtest 3	4132	826.4	23.4	23.1	22.7	22.7
		4183	836.6	23.5	22.9	22.6	22.7
		4233	846.6	23.4	22.9	22.6	22.6
	Subtest 4	4132	826.4	23.5	23.0	22.5	22.5
		4183	836.6	23.3	22.8	22.7	22.6
		4233	846.6	23.3	22.9	22.6	22.6

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

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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	

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Measured Results

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)			
				HEAD		BODY	
				UAT	LAT	UAT	LAT
W-CDMA Band 2	Subtest 1	9262	1852.4	22.4	22.9	22.30	19.8
		9400	1880.0	22.3	22.8	22.20	19.9
		9538	1907.6	22.5	22.7	22.30	19.9
	Subtest 2	9262	1852.4	20.6	20.9	20.40	17.9
		9400	1880.0	20.4	21.0	20.40	18.0
		9538	1907.6	20.4	21.0	20.30	17.9
	Subtest 3	9262	1852.4	21.5	21.8	21.40	18.9
		9400	1880.0	21.4	21.8	21.30	19.1
		9538	1907.6	21.4	21.7	21.30	19.0
	Subtest 4	9262	1852.4	20.5	21.0	20.50	18.0
		9400	1880.0	20.5	20.8	20.30	18.1
		9538	1907.6	20.3	20.8	20.30	18.0
	Subtest 5	9262	1852.4	22.3	22.9	22.30	20.0
		9400	1880.0	22.4	22.9	22.40	19.8
		9538	1907.6	22.4	22.8	22.30	19.8
W-CDMA Band 5	Subtest 1	4132	826.4	23.7	24.3	24.0	24.1
		4183	836.6	23.8	24.3	24.0	24.0
		4233	846.6	23.8	24.2	23.9	24.0
	Subtest 2	4132	826.4	21.9	22.4	22.0	22.2
		4183	836.6	21.8	22.3	22.1	22.1
		4233	846.6	21.8	22.3	21.9	22.0
	Subtest 3	4132	826.4	22.7	23.4	23.1	23.2
		4183	836.6	22.8	23.4	23.0	23.1
		4233	846.6	22.9	23.3	23.0	23.1
	Subtest 4	4132	826.4	21.7	22.3	21.8	22.1
		4183	836.6	21.8	22.4	22.0	22.0
		4233	846.6	21.7	22.2	22.0	22.0
	Subtest 5	4132	826.4	23.8	24.4	24.2	24.2
		4183	836.6	23.6	24.3	24.3	24.2
		4233	846.6	23.7	24.2	24.3	24.0

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DC-HSDPA

The following tests were completed according to procedures in section 7.3.13 of 3GPP TS34.108 v9.5.0. A summary of these settings are illustrated below:

Downlink Physical Channels are set as per 3GPP TS34.121-1 v9.0.0 E.5.0

Table E.5.0: Levels for HSDPA connection setup

Parameter During Connection setup	Unit	Value
P-CPICH_Ec/Ior	dB	-10
P-CCPCH and SCH_Ec/Ior	dB	-12
PICH _Ec/Ior	dB	-15
HS-PDSCH	dB	off
HS-SCCH_1	dB	off
DPCH_Ec/Ior	dB	-5
OCNS_Ec/Ior	dB	-3.1

Call is set up as per 3GPP TS34.108 v9.5.0 sub clause 7.3.13

The configurations of the fixed reference channels for HSDPA RF tests are described in 3GPP TS 34.121, annex C for FDD and 3GPP TS 34.122.

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

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

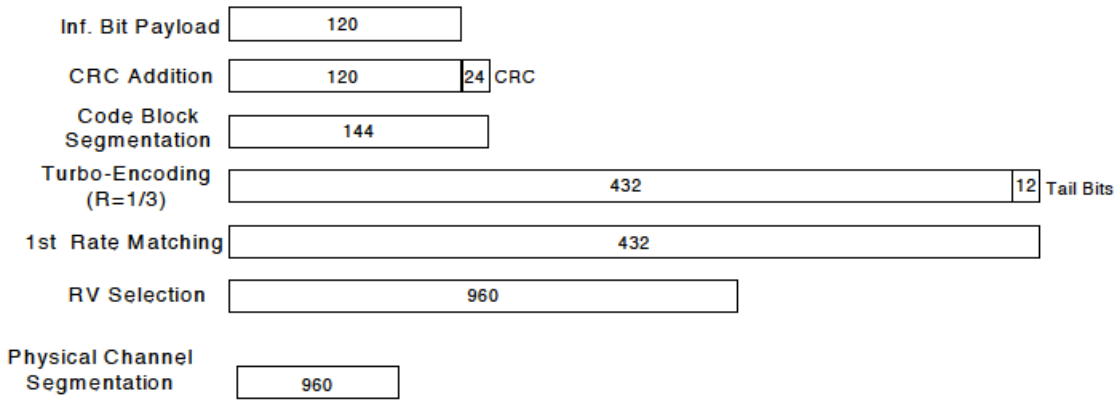

Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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The following 4 Sub-tests for HSDPA were completed according to Release 8 procedures in section 5.2 of 3GPP TS34.121. A summary of subtest settings are illustrated below:

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm2			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	βd (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	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack Repetition factor	3			
	CQI Feedback	4ms			
	CQI Repetition Factor	2			
	Ahs = βhs/ βc	30/15			

Up commands are set continuously to set the UE to Max power.

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Measured Results

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)			
				HEAD		BODY	
				UAT	LAT	UAT	LAT
W-CDMA Band 2	Subtest 1	9262	1852.4	22.3	22.9	22.30	19.9
		9400	1880.0	22.4	22.8	22.40	19.8
		9538	1907.6	22.2	22.8	22.30	19.8
	Subtest 2	9262	1852.4	22.3	22.8	22.20	19.9
		9400	1880.0	22.4	22.7	22.30	20.0
		9538	1907.6	22.3	22.8	22.30	19.8
	Subtest 3	9262	1852.4	21.9	22.3	21.60	19.3
		9400	1880.0	22.0	22.3	21.80	19.3
		9538	1907.6	21.8	22.4	21.70	19.4
	Subtest 4	9262	1852.4	21.8	22.3	21.70	19.5
		9400	1880.0	21.8	22.3	21.70	19.3
		9538	1907.6	21.9	22.3	21.60	19.2
W-CDMA Band 5	Subtest 1	4132	826.4	23.8	24.3	24.0	24.2
		4183	836.6	23.7	24.4	24.0	24.1
		4233	846.6	23.7	24.4	24.2	24.1
	Subtest 2	4132	826.4	23.7	24.4	24.0	24.1
		4183	836.6	23.8	24.2	24.1	24.0
		4233	846.6	23.8	24.2	24.1	24.1
	Subtest 3	4132	826.4	23.2	24.0	23.4	23.6
		4183	836.6	23.3	23.9	23.5	23.5
		4233	846.6	23.3	23.9	23.4	23.5
	Subtest 4	4132	826.4	23.4	23.8	23.5	23.7
		4183	836.6	23.3	23.8	23.4	23.4
		4233	846.6	23.3	24.0	23.3	23.5

HSPA+

Since 16QAM is not used for uplink, the uplink Category and release is same as HSUPA, i.e., CAT 6 Rel 6. Therefore, the RF conducted power is not measured.

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9.3. LTE

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

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

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

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

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

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.					

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9.3.1. LTE Band 2

Measured Results

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Avg Pwr (dBm)			
							HEAD		BODY	
							UAT	LAT	UAT	LAT
20	18700	1860.0	QPSK	1	0	0	22.4	22.8	22.20	19.3
				1	49	0	22.4	22.9	22.20	19.3
				1	99	0	22.3	22.8	22.20	19.3
				50	0	1	21.2	21.8	21.10	18.2
				50	24	1	21.2	21.8	21.10	18.1
				50	49	1	21.2	21.8	21.00	18.3
				100	0	1	21.2	21.7	21.00	18.2
			16QAM	1	0	1	21.2	21.8	21.00	18.1
				1	49	1	21.1	21.7	21.00	18.1
				1	99	1	21.2	21.6	20.90	18.2
				50	0	2	20.3	20.7	20.00	17.2
				50	24	2	20.2	20.6	20.10	17.1
				50	49	2	20.2	20.8	20.00	17.1
				100	0	2	20.2	20.9	20.00	17.2
	18900	1880.0	QPSK	1	0	0	22.5	23.0	22.20	19.3
				1	49	0	22.5	23.0	22.25	19.3
				1	99	0	22.5	23.0	22.25	19.3
				50	0	1	21.3	22.0	21.10	18.2
				50	24	1	21.5	22.0	21.10	18.3
				50	49	1	21.4	22.0	21.10	18.2
				100	0	1	21.5	22.0	21.20	18.3
			16QAM	1	0	1	21.3	21.9	21.10	18.1
				1	49	1	21.5	21.8	21.20	18.2
				1	99	1	21.5	22.0	21.20	18.2
				50	0	2	20.5	21.0	20.30	17.3
				50	24	2	20.5	21.1	20.30	17.2
				50	49	2	20.4	20.9	20.20	17.3
				100	0	2	20.4	21.0	20.30	17.2
	19100	1900.0	QPSK	1	0	0	22.4	22.9	22.20	19.3
				1	49	0	22.5	22.9	22.20	19.3
				1	99	0	22.4	22.9	22.10	19.3
				50	0	1	21.4	21.8	21.10	18.3
				50	24	1	21.4	21.8	21.10	18.3
				50	49	1	21.4	21.8	21.10	18.3
				100	0	1	21.4	21.7	21.10	18.3
			16QAM	1	0	1	21.3	21.6	21.20	18.3
				1	49	1	21.4	21.7	21.20	18.2
				1	99	1	21.3	21.5	21.00	18.3
				50	0	2	20.5	20.7	20.10	17.4
				50	24	2	20.4	20.6	20.20	17.3
				50	49	2	20.3	20.6	20.00	17.2
				100	0	2	20.4	20.5	20.00	17.3

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LTE Band 2 Measured Results (continued)

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Avg Pwr (dBm)			
							HEAD		BODY	
							UAT	LAT	UAT	LAT
15	18675	1857.5	QPSK	1	0	0	22.4	22.8	22.10	19.2
				1	37	0	22.4	22.8	22.20	19.2
				1	74	0	22.3	22.8	22.20	19.1
				36	0	1	21.1	21.7	21.10	18.1
				36	16	1	21.2	21.5	21.20	18.1
				36	35	1	21.2	21.6	21.00	18.1
				75	0	1	21.1	21.5	21.10	18.2
			16QAM	1	0	1	21.2	21.7	21.00	18.1
				1	37	1	21.0	21.5	21.00	18.1
				1	74	1	21.1	21.7	20.80	18.1
				36	0	2	20.3	20.7	20.00	17.3
				36	16	2	20.3	20.8	20.10	17.1
				36	35	2	20.2	20.7	20.10	17.1
				75	0	2	20.2	20.8	20.00	17.3
	18900	1880.0	QPSK	1	0	0	22.5	22.8	22.20	19.1
				1	37	0	22.4	22.9	22.20	19.2
				1	74	0	22.5	22.8	22.20	19.2
				36	0	1	21.3	22.0	21.10	18.2
				36	16	1	21.3	21.9	21.10	18.2
				36	35	1	21.3	22.0	21.10	18.2
				75	0	1	21.4	21.8	21.20	18.2
			16QAM	1	0	1	21.3	21.9	21.10	18.1
				1	37	1	21.5	21.8	21.20	18.2
				1	74	1	21.5	22.0	21.30	18.1
				36	0	2	20.6	21.0	20.40	17.3
				36	16	2	20.5	21.2	20.30	17.3
				36	35	2	20.6	20.9	20.20	17.3
				75	0	2	20.4	21.2	20.40	17.1
	19125	1902.5	QPSK	1	0	0	22.4	22.8	22.20	19.1
				1	37	0	22.3	22.8	22.20	19.2
				1	74	0	22.4	22.9	22.00	19.0
				36	0	1	21.4	21.8	21.10	18.2
				36	16	1	21.3	21.7	21.00	18.3
				36	35	1	21.4	21.7	21.00	18.1
				75	0	1	21.4	21.7	21.00	18.3
			16QAM	1	0	1	21.2	21.6	21.20	18.1
				1	37	1	21.4	21.7	21.10	18.2
				1	74	1	21.2	21.5	21.10	18.2
				36	0	2	20.3	20.7	20.10	17.4
				36	16	2	20.2	20.5	20.20	17.4
				36	35	2	20.3	20.6	20.20	17.2
				75	0	2	20.4	20.6	20.00	17.2

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LTE Band 2 Measured Results (continued)

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Avg Pwr (dBm)			
							HEAD		BODY	
							UAT	LAT	UAT	LAT
10	18650	1855.0	QPSK	1	0	0	22.3	22.7	22.10	19.1
				1	24	0	22.3	22.8	22.10	19.1
				1	49	0	22.3	22.8	22.10	19.1
				25	0	1	21.1	21.7	21.10	18.1
				25	12	1	21.2	21.7	21.20	18.1
				25	24	1	21.2	21.6	21.00	18.1
				50	0	1	21.1	21.8	21.10	18.2
			16QAM	1	0	1	21.1	21.7	21.00	18.1
				1	24	1	21.1	21.8	20.90	18.2
				1	49	1	21.0	21.6	20.80	18.1
				25	0	2	20.3	20.8	20.00	17.4
				25	12	2	20.2	20.8	20.10	17.2
				25	24	2	20.3	20.7	20.20	17.2
				50	0	2	20.2	20.8	20.10	17.3
	18900	1880.0	QPSK	1	0	0	22.5	22.8	22.10	19.2
				1	24	0	22.4	22.9	22.20	19.2
				1	49	0	22.3	22.8	22.20	19.2
				25	0	1	21.3	22.0	21.20	18.2
				25	12	1	21.3	21.9	21.20	18.1
				25	24	1	21.3	22.0	21.10	18.2
				50	0	1	21.3	21.8	21.20	18.1
			16QAM	1	0	1	21.3	21.9	21.10	18.1
				1	24	1	21.5	21.8	21.20	18.2
				1	49	1	21.5	22.0	21.30	18.1
				25	0	2	20.7	21.0	20.30	17.4
				25	12	2	20.5	21.2	20.30	17.3
				25	24	2	20.6	20.9	20.20	17.3
				50	0	2	20.5	21.1	20.40	17.3
	19150	1905.0	QPSK	1	0	0	22.3	22.8	22.20	19.1
				1	24	0	22.2	22.8	22.10	19.1
				1	49	0	22.2	22.9	21.90	19.1
				25	0	1	21.4	21.8	21.10	18.2
				25	12	1	21.2	21.7	21.00	18.2
				25	24	1	21.2	21.7	20.90	18.1
				50	0	1	21.3	21.7	21.00	18.3
			16QAM	1	0	1	21.2	21.6	20.80	18.1
				1	24	1	21.3	21.7	20.90	18.1
				1	49	1	21.2	21.6	21.00	18.2
				25	0	2	20.3	20.7	20.10	17.3
				25	12	2	20.4	20.5	20.00	17.4
				25	24	2	20.3	20.5	20.10	17.2
				50	0	2	20.4	20.6	20.00	17.2

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LTE Band 2 Measured Results (continued)

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Avg Pwr (dBm)			
							HEAD		BODY	
							UAT	LAT	UAT	LAT
5	18625	1855.0	QPSK	1	0	0	22.3	22.6	22.00	19.2
				1	12	0	22.3	22.8	22.10	19.1
				1	24	0	22.2	22.8	22.10	19.2
				12	0	1	21.1	21.6	21.00	18.1
				12	6	1	21.1	21.6	21.10	18.3
				12	11	1	21.2	21.6	21.00	18.1
				25	0	1	21.0	21.7	21.10	18.2
			16QAM	1	0	1	21.1	21.7	21.10	18.1
				1	12	1	21.1	21.6	20.90	18.2
				1	24	1	21.1	21.6	20.90	18.2
				12	0	2	20.2	20.7	20.00	17.3
				12	6	2	20.1	20.8	20.10	17.2
				12	11	2	20.3	20.7	20.20	17.2
				25	0	2	20.1	20.7	20.20	17.4
	18900	1880.0	QPSK	1	0	0	22.4	22.8	22.10	19.1
				1	12	0	22.4	22.7	22.10	19.2
				1	24	0	22.3	22.7	22.20	19.2
				12	0	1	21.4	22.0	21.20	18.2
				12	6	1	21.2	21.9	21.10	18.2
				12	11	1	21.3	21.8	21.10	18.2
				25	0	1	21.3	21.8	21.10	18.1
			16QAM	1	0	1	21.2	21.9	21.30	18.3
				1	12	1	21.3	21.8	21.20	18.2
				1	24	1	21.4	22.0	21.30	18.2
				12	0	2	20.3	21.0	20.20	17.4
				12	6	2	20.5	21.2	20.30	17.4
				12	11	2	20.5	20.9	20.20	17.3
				25	0	2	20.5	21.0	20.30	17.4
	19175	1907.5	QPSK	1	0	0	22.1	22.8	22.20	19.1
				1	12	0	22.2	22.7	22.00	19.1
				1	24	0	22.2	22.8	21.80	19.2
				12	0	1	21.3	21.8	21.10	18.2
				12	6	1	21.2	21.7	21.00	18.2
				12	11	1	21.2	21.6	21.00	18.1
				25	0	1	21.3	21.7	21.00	18.1
			16QAM	1	0	1	21.2	21.6	20.80	18.1
				1	12	1	21.4	21.7	20.90	18.2
				1	24	1	21.2	21.6	21.00	18.2
				12	0	2	20.3	20.7	20.20	17.3
				12	6	2	20.5	20.7	20.10	17.4
				12	11	2	20.3	20.5	20.10	17.2
				25	0	2	20.4	20.7	20.20	17.2

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LTE Band 2 Measured Results (continued)

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Avg Pwr (dBm)			
							HEAD		BODY	
							UAT	LAT	UAT	LAT
3	18615	1851.5	QPSK	1	0	0	22.3	22.6	22.10	19.2
				1	7	0	22.3	22.7	22.10	19.1
				1	14	0	22.2	22.8	22.10	19.2
				8	0	1	21.1	21.6	21.10	18.1
				8	4	1	21.2	21.7	21.10	18.2
				8	7	1	21.2	21.6	21.00	18.1
				15	0	1	21.2	21.6	21.10	18.2
			16QAM	1	0	1	21.1	21.5	21.10	18.1
				1	7	1	21.1	21.6	20.80	18.2
				1	14	1	21.2	21.6	20.90	18.1
				8	0	2	20.2	20.7	20.00	17.3
				8	4	2	20.1	20.6	20.10	17.2
				8	7	2	20.2	20.7	20.10	17.2
				15	0	2	20.1	20.6	20.20	17.4
	18900	1880.0	QPSK	1	0	0	22.3	22.8	22.10	19.1
				1	7	0	22.4	22.7	22.10	19.2
				1	14	0	22.3	22.6	22.10	19.2
				8	0	1	21.3	22.0	21.20	18.1
				8	4	1	21.2	21.9	21.10	18.2
				8	7	1	21.3	21.9	21.10	18.2
				15	0	1	21.3	21.8	21.20	18.1
			16QAM	1	0	1	21.2	21.9	21.30	18.4
				1	7	1	21.3	21.8	21.20	18.2
				1	14	1	21.3	21.9	21.30	18.3
				8	0	2	20.3	21.0	20.20	17.4
				8	4	2	20.4	21.1	20.30	17.3
				8	7	2	20.5	20.9	20.30	17.3
				15	0	2	20.6	21.0	20.30	17.4
	19185	1908.5	QPSK	1	0	0	22.1	22.7	22.10	19.1
				1	7	0	22.2	22.7	22.00	19.1
				1	14	0	22.3	22.8	21.90	19.2
				8	0	1	21.3	21.8	21.10	18.2
				8	4	1	21.2	21.7	21.00	18.2
				8	7	1	21.2	21.6	21.00	18.2
				15	0	1	21.2	21.7	21.00	18.2
			16QAM	1	0	1	21.2	21.8	20.80	18.1
				1	7	1	21.3	21.7	20.90	18.2
				1	14	1	21.2	21.6	21.00	18.1
				8	0	2	20.3	20.7	20.10	17.3
				8	4	2	20.3	20.7	20.20	17.3
				8	7	2	20.3	20.5	20.10	17.2
				15	0	2	20.4	20.8	20.20	17.1

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LTE Band 2 Measured Results (continued)

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Avg Pwr (dBm)			
							HEAD		BODY	
							UAT	LAT	UAT	LAT
1.4	18607	1850.7	QPSK	1	0	0	22.3	22.6	22.10	19.2
				1	2	0	22.3	22.7	22.10	19.1
				1	5	0	22.2	22.8	22.10	19.2
				3	0	0	22.1	22.7	22.00	19.1
				3	1	0	22.2	22.7	22.10	19.2
				3	2	0	22.2	22.8	22.10	19.2
				6	0	1	21.3	21.6	21.10	18.2
			16QAM	1	0	1	21.2	21.7	21.20	18.3
				1	2	1	21.3	21.7	21.20	18.1
				1	5	1	21.2	21.8	21.20	18.3
				3	0	1	21.2	21.6	21.10	18.2
				3	1	1	21.2	21.7	21.20	18.2
				3	2	1	21.1	21.7	21.10	18.1
				6	0	2	20.2	20.7	20.20	17.3
	18900	1880.0	QPSK	1	0	0	22.3	22.7	22.20	19.1
				1	2	0	22.2	22.7	22.10	19.0
				1	5	0	22.2	22.8	22.20	19.0
				3	0	0	22.2	22.7	22.10	19.0
				3	1	0	22.3	22.6	22.10	19.1
				3	2	0	22.2	22.6	22.00	19.1
				6	0	1	21.3	21.7	21.00	18.3
			16QAM	1	0	1	21.4	21.8	21.20	18.2
				1	2	1	21.3	21.6	21.20	18.2
				1	5	1	21.3	21.6	21.10	18.1
				3	0	1	21.2	21.5	21.00	18.0
				3	1	1	21.3	21.6	21.10	18.0
				3	2	1	21.3	21.7	21.10	18.1
				6	0	2	20.4	20.8	20.30	17.1
	19193	1909.3	QPSK	1	0	0	22.3	22.8	22.20	19.0
				1	2	0	22.3	22.7	22.20	19.0
				1	5	0	22.3	22.7	22.10	19.2
				3	0	0	22.2	22.6	22.10	19.0
				3	1	0	22.2	22.6	22.00	19.1
				3	2	0	22.3	22.5	22.00	19.0
				6	0	1	21.3	21.6	21.00	18.2
			16QAM	1	0	1	21.3	21.5	21.10	18.1
				1	2	1	21.3	21.6	21.20	18.0
				1	5	1	21.5	21.6	21.10	18.1
				3	0	1	21.4	21.6	21.10	18.2
				3	1	1	21.3	21.5	21.10	18.1
				3	2	1	21.2	21.5	21.10	18.0
				6	0	2	20.2	20.5	20.30	17.2

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9.3.2. LTE Band 5

Measured Results

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Avg Pwr (dBm)			
							HEAD		BODY	
							UAT	LAT	UAT	LAT
10	20450	829.0	QPSK	1	0	0	23.6	23.8	23.5	23.9
				1	24	0	23.7	24.0	23.7	23.9
				1	49	0	23.6	23.9	23.6	23.9
				25	0	1	22.6	23.0	22.5	22.9
				25	12	1	22.7	23.0	22.5	23.0
				25	24	1	22.7	23.0	22.5	23.0
				50	0	1	22.6	23.1	22.5	22.8
			16QAM	1	0	1	22.6	23.1	22.5	22.7
				1	24	1	22.7	23.0	22.4	22.8
				1	49	1	22.5	23.0	22.3	22.6
				25	0	2	21.7	22.1	21.2	21.7
				25	12	2	21.6	22.0	21.1	21.6
				25	24	2	21.6	22.1	21.2	21.7
				50	0	2	21.7	22.1	21.2	21.6
	20525	836.5	QPSK	1	0	0	23.7	24.0	23.7	23.9
				1	24	0	23.7	24.0	23.7	24.0
				1	49	0	23.7	24.0	23.6	24.0
				25	0	1	22.7	23.2	22.7	23.0
				25	12	1	22.8	23.4	22.7	23.2
				25	24	1	22.8	23.3	22.7	23.1
				50	0	1	22.8	23.2	22.7	23.0
			16QAM	1	0	1	22.7	23.1	22.7	22.9
				1	24	1	22.6	23.2	22.6	22.8
				1	49	1	22.7	23.1	22.6	22.9
				25	0	2	21.7	22.2	21.7	21.8
				25	12	2	21.6	22.3	21.8	21.7
				25	24	2	21.8	22.1	21.6	21.7
				50	0	2	21.7	22.3	21.7	21.7
	20600	844.0	QPSK	1	0	0	23.7	24.0	23.5	24.0
				1	24	0	23.7	24.0	23.5	24.0
				1	49	0	23.6	24.0	23.5	23.9
				25	0	1	22.7	23.3	22.6	23.2
				25	12	1	22.7	23.3	22.6	23.1
				25	24	1	22.7	23.3	22.6	23.0
				50	0	1	22.7	23.3	22.5	22.9
			16QAM	1	0	1	22.6	23.2	22.4	22.8
				1	24	1	22.7	23.2	22.5	22.7
				1	49	1	22.7	23.2	22.5	22.7
				25	0	2	22.6	22.1	21.5	21.8
				25	12	2	21.5	22.3	21.6	21.7
				25	24	2	21.6	22.2	21.5	21.6
				50	0	2	21.7	22.1	21.4	21.7

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LTE Band 5 Measured Results (continued)

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Avg Pwr (dBm)			
							HEAD		BODY	
							UAT	LAT	UAT	LAT
5	20425	826.5	QPSK	1	0	0	23.6	23.7	23.5	23.8
				1	12	0	23.7	23.8	23.5	23.8
				1	24	0	23.6	23.8	23.6	23.7
				12	0	1	22.5	22.9	22.5	22.7
				12	6	1	22.6	22.9	22.6	23.0
				12	11	1	22.5	22.8	22.5	22.8
				25	0	1	22.6	22.9	22.6	22.8
			16QAM	1	0	1	22.6	23.0	22.5	22.8
				1	12	1	22.7	23.0	22.4	22.8
				1	24	1	22.5	22.9	22.4	22.6
				12	0	2	21.6	22.2	21.2	21.7
				12	6	2	21.6	22.0	21.1	21.8
				12	11	2	21.7	22.2	21.3	21.7
				25	0	2	21.7	22.1	21.2	21.6
	20525	836.5	QPSK	1	0	0	23.5	23.8	23.7	23.8
				1	12	0	23.6	23.8	23.6	24.0
				1	24	0	23.6	23.9	23.6	23.9
				12	0	1	22.7	23.2	22.7	23.1
				12	6	1	22.8	23.3	22.6	23.2
				12	11	1	22.7	23.2	22.7	23.1
				25	0	1	22.6	23.1	22.7	23.0
			16QAM	1	0	1	22.7	23.2	22.7	22.9
				1	12	1	22.7	23.2	22.7	22.7
				1	24	1	22.7	23.2	22.6	22.9
				12	0	2	21.6	22.2	21.7	21.8
				12	6	2	21.6	22.2	21.8	21.7
				12	11	2	21.7	22.1	21.7	21.8
				25	0	2	21.5	22.3	21.7	21.7
	20625	846.5	QPSK	1	0	0	23.7	23.8	23.5	24.0
				1	12	0	23.6	24.0	23.3	24.0
				1	24	0	23.5	23.9	23.5	23.9
				12	0	1	22.7	23.2	22.6	23.2
				12	6	1	22.8	23.3	22.6	23.1
				12	11	1	22.7	23.3	22.5	23.0
				25	0	1	22.6	23.3	22.5	22.9
			16QAM	1	0	1	22.6	23.3	22.3	22.8
				1	12	1	22.7	23.2	22.5	22.7
				1	24	1	22.7	23.2	22.4	22.8
				12	0	2	22.5	22.2	21.5	21.8
				12	6	2	21.4	22.3	21.6	21.7
				12	11	2	21.6	22.2	21.5	21.6
				25	0	2	21.7	22.2	21.4	21.7

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LTE Band 5 Measured Results (continued)

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Avg Pwr (dBm)			
							HEAD		BODY	
							UAT	LAT	UAT	LAT
3	20415	825.5	QPSK	1	0	0	23.6	23.5	23.4	23.7
				1	7	0	23.7	23.6	23.5	23.6
				1	14	0	23.6	23.6	23.6	23.7
				8	0	1	22.5	22.9	22.5	22.7
				8	4	1	22.6	22.8	22.7	23.1
				8	7	1	22.6	22.8	22.5	22.9
				15	0	1	22.6	22.7	22.6	22.8
			16QAM	1	0	1	22.6	23.0	22.4	22.8
				1	7	1	22.7	23.0	22.4	22.9
				1	14	1	22.5	22.8	22.4	22.6
				8	0	2	21.7	22.2	21.3	21.7
				8	4	2	21.6	22.1	21.2	21.7
				8	7	2	21.7	22.2	21.3	21.7
				15	0	2	21.7	22.1	21.2	21.7
	20525	836.5	QPSK	1	0	0	23.6	23.8	23.5	23.8
				1	7	0	23.6	23.7	23.6	23.8
				1	14	0	23.6	23.9	23.6	23.9
				8	0	1	22.6	23.2	22.7	23.1
				8	4	1	22.8	23.1	22.5	23.3
				8	7	1	22.7	23.2	22.7	23.2
				15	0	1	22.6	23.1	22.6	23.1
			16QAM	1	0	1	22.6	23.2	22.7	23.0
				1	7	1	22.7	23.2	22.7	22.8
				1	14	1	22.7	23.1	22.8	22.9
				8	0	2	21.6	22.2	21.7	21.8
				8	4	2	21.7	22.2	21.8	21.7
				8	7	2	21.7	22.2	21.7	21.9
				15	0	2	21.5	22.3	21.8	21.8
	20635	847.5	QPSK	1	0	0	23.7	23.8	23.5	23.9
				1	7	0	23.5	23.9	23.3	23.8
				1	14	0	23.5	23.7	23.4	23.9
				8	0	1	22.7	23.2	22.6	23.1
				8	4	1	22.8	23.2	22.4	23.1
				8	7	1	22.6	23.3	22.6	23.2
				15	0	1	22.6	23.3	22.5	22.9
			16QAM	1	0	1	22.6	23.3	22.3	22.8
				1	7	1	22.8	23.2	22.6	22.8
				1	14	1	22.7	23.2	22.4	22.8
				8	0	2	22.5	22.2	21.5	21.9
				8	4	2	21.4	22.3	21.7	21.7
				8	7	2	21.6	22.2	21.5	21.6
				15	0	2	21.6	22.2	21.5	21.8

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LTE Band 5 Measured Results (continued)

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Avg Pwr (dBm)			
							HEAD		BODY	
							UAT	LAT	UAT	LAT
1.4	20407	824.7	QPSK	1	0	0	23.6	23.5	23.4	23.7
				1	2	0	23.8	23.6	23.5	23.6
				1	5	0	23.6	23.6	23.6	23.7
				3	0	0	23.7	23.5	23.7	23.7
				3	1	0	23.8	23.6	23.5	23.7
				3	2	0	23.7	23.7	23.6	23.6
				6	0	1	22.9	22.5	22.5	22.8
			16QAM	1	0	1	22.8	22.6	22.6	22.7
				1	2	1	22.7	22.5	22.7	22.7
				1	5	1	22.7	22.6	22.8	22.6
				3	0	1	22.6	22.4	22.7	22.8
				3	1	1	22.8	22.5	22.7	22.5
				3	2	1	22.7	22.6	22.5	22.7
				6	0	2	21.6	21.6	21.8	21.8
	20525	836.5	QPSK	1	0	0	23.7	23.5	23.5	23.7
				1	2	0	23.7	23.7	23.7	23.6
				1	5	0	23.7	23.7	23.7	23.6
				3	0	0	23.6	23.7	23.7	23.6
				3	1	0	23.7	23.6	23.6	23.5
				3	2	0	23.6	23.5	23.6	23.5
				6	0	1	22.7	22.6	22.7	22.7
			16QAM	1	0	1	22.8	22.6	22.8	22.8
				1	2	1	22.8	22.5	22.7	22.7
				1	5	1	22.8	22.5	22.7	22.7
				3	0	1	22.7	22.7	22.5	22.8
				3	1	1	22.8	22.6	22.7	22.6
				3	2	1	22.7	22.7	22.6	22.6
				6	0	2	21.8	21.7	21.7	21.6
	20643	848.3	QPSK	1	0	0	23.8	23.4	23.6	23.7
				1	2	0	23.7	23.6	23.7	23.6
				1	5	0	23.7	23.6	23.7	23.5
				3	0	0	23.7	23.5	23.5	23.5
				3	1	0	23.6	23.5	23.5	23.5
				3	2	0	23.7	23.5	23.5	23.4
				6	0	1	22.8	22.7	22.6	22.6
			16QAM	1	0	1	22.7	22.6	22.6	22.5
				1	2	1	22.7	22.6	22.7	22.6
				1	5	1	22.6	22.7	22.6	22.7
				3	0	1	22.8	22.8	22.5	22.7
				3	1	1	22.8	22.6	22.5	22.5
				3	2	1	22.6	22.6	22.4	22.4
				6	0	2	21.7	21.7	21.5`	21.6

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9.4. WiFi (2.4 GHz Band)

Required Test Channels per KDB 248227 D01

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

Notes:
√ = "default test channels"
∇ = possible 802.11g channels with maximum average output ¼ dB ≥ the "default test channels"
= when output power is reduced for channel 1 and /or 11 to meet restricted band requirements the highest output channels closest to each of these channels should be tested.

Measured Results

Band (GHz)	Mode	Ch #	Freq. (MHz)	Avg Pwr (dBm)		
				Vendor A	Vendor B	Vendor C
2.4 (DTS)	802.11b	1	2412	14.5	14.4	14.5
		6	2437	14.5	14.5	14.5
		11	2462	14.5	14.5	14.5
		12	2467	14.5	14.5	14.5
		13	2472	14.5	14.5	14.5
	802.11g	1	2412	14.4	14.5	14.4
		6	2437	14.5	14.5	14.5
		11	2462	14.4	14.3	14.5
		12	2467	12.0	12.0	12.0
		13	2472	5.0	5.0	5.0
	802.11n (HT20)	1	2412	14.5	14.5	14.4
		6	2437	14.5	14.4	14.5
		11	2462	14.4	14.5	14.3
		12	2467	12.0	12.0	12.0
		13	2472	5.0	5.0	5.0

Note(s):

1. 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.
2. Additionally, SAR is not required for Channels 12 and 13 because the tune-up limit and the measured output power for these two channels are no greater than those for the default test channels.

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9.5. WiFi (5 GHz Bands)

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.

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Measured Results

Band (GHz)	Mode	Ch #	Freq. (MHz)	Avg Pwr (dBm)		
				Vendor A	Vendor B	Vendor C
5.2 (UNII)	802.11a	36	5180	14.0	14.0	14.0
		40	5200	13.9	14.0	13.9
		44	5220	13.9	13.9	14.0
		48	5240	14.0	14.0	14.0
	802.11n (HT20)	36	5180	14.0	13.9	14.0
		40	5200	14.0	14.0	13.9
		48	5240	13.5	13.7	13.8
	802.11n (HT40)	38	5190	14.0	14.0	14.0
		46	5230	13.9	14.0	13.8
5.3 (UNII)	802.11a	52	5260	15.0	15.0	15.0
		56	5280	15.0	15.0	14.9
		60	5300	15.0	14.9	14.9
		64	5320	14.9	14.9	14.9
	802.11n (HT20)	52	5260	15.0	15.0	15.0
		60	5300	15.0	14.9	15.0
		64	5320	14.9	14.9	14.9
	802.11n (HT40)	54	5270	15.0	15.0	15.0
		62	5310	15.0	15.0	15.0
5.5 (UNII)	802.11a	100	5500	15.5	15.4	15.5
		104	5520	15.5	15.5	15.5
		108	5540	15.5	15.5	15.4
		112	5560	15.5	15.4	15.5
		116	5580	15.5	15.5	15.5
		120	5600	15.4	15.4	15.4
		124	5620	15.5	15.5	15.5
		128	5640	15.4	15.4	15.5
		132	5660	15.4	15.4	15.4
		136	5680	15.5	15.5	15.5
		140	5700	15.5	15.5	15.5
	802.11n (HT20)	100	5500	15.5	15.5	15.3
		116	5580	15.5	15.3	15.5
		140	5700	15.5	15.5	15.4
	802.11n (HT40)	102	5510	15.4	15.4	15.5
		118	5590	15.5	15.3	15.3
		134	5670	15.5	15.5	15.5
5.8 (DTS)	802.11a	149	5745	16.0	16.0	15.9
		153	5765	16.0	15.9	16.0
		157	5785	16.0	16.0	16.0
		161	5805	15.9	15.9	15.9
		165	5825	15.9	15.9	16.0
	802.11n (HT20)	149	5745	16.0	16.0	15.9
		157	5785	15.8	15.8	16.0
		165	5825	15.6	15.8	15.6
	802.11n (HT40)	151	5755	16.0	16.0	15.8
		159	5795	15.9	15.9	16.0

Note(s):

1. SAR is not required for 802.11n HT20/HT40 channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding 802.11a/b channels. As per KDB 248227

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9.6. Bluetooth

Band (GHz)	Mode	Ch #	Freq. (MHz)	Avg Pwr (dBm)		
				Vendor A	Vendor B	Vendor C
2.4	V3.0 + EDR, GFSK	0	2402	11.3	11.5	11.7
		39	2441	12.8	12.9	13.0
		78	2480	11.8	11.7	11.5
	V3.0 + EDR, 8-DPSK	0	2402	10.3	10.3	10.5
		39	2441	12.2	12.0	12.1
		78	2480	10.3	10.3	10.4
	V4.0 LE, GFSK	0	2402	7.5	7.6	7.8
		19	2440	7.9	7.8	7.8
		39	2480	7.5	7.6	7.6

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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 KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r01

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

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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

MSL/HSL750 (Body and Head liquids for 700 – 800 MHz)

Item	Head Tissue Simulation Liquids HSL750 Muscle (body) Tissue Simulation Liquids MSL750
Type No	SL AAH 075
Manufacturer	SPEAG
The item is composed of the following ingredients:	
H^2O	Water, 35 – 58%
Sucrese	Sugar, white, refined, 40-60%
NaCl	Sodium Chloride, 0-6%
Hydroxyethel-cellulsoe	Medium Viscosity (CAS# 9004-62-0), <0.3%
Preventol-D7	Preservative: aqueous preparation, (CAS# 55965-84-9), containing 5-chloro-2-methyl-3(2H)-isothiazolone and 2-methyyl-3(2H)-isothiazolone, 0.1-0.7%

MSL/HSL1750 (Body and Head liquids for 1700 – 1800 MHz)

Item	Head Tissue Simulation Liquids HSL1750 Muscle (body) Tissue Simulation Liquids MSL1750
Type No	SL AAM 175
Manufacturer	SPEAG
-The item is composed of the following ingredients:	
H^2O	Water, 52 – 75%
C8H18O3	Diethylene glycol monobutyl ether (DGBE), 25-48%
NaCl	Sodium Chloride, <1.0%

Simulating Liquids for 5 GHz, Manufactured by SPEAG

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

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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

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
6/17/2013	Head 2450	e'	38.6900	Relative Permittivity (ε_r):	38.69	39.20	-1.30	5
		e"	13.0300	Conductivity (σ):	1.78	1.80	-1.39	5
	Head 2410	e'	38.8300	Relative Permittivity (ε_r):	38.83	39.28	-1.14	5
		e"	12.9000	Conductivity (σ):	1.73	1.76	-1.81	5
	Head 2475	e'	38.5800	Relative Permittivity (ε_r):	38.58	39.17	-1.50	5
		e"	13.0900	Conductivity (σ):	1.80	1.83	-1.40	5
6/17/2013	Body 2450	e'	51.2300	Relative Permittivity (ε_r):	51.23	52.70	-2.79	5
		e"	14.8200	Conductivity (σ):	2.02	1.95	3.53	5
	Body 2410	e'	51.3100	Relative Permittivity (ε_r):	51.31	52.76	-2.75	5
		e"	14.7100	Conductivity (σ):	1.97	1.91	3.34	5
	Body 2475	e'	51.1500	Relative Permittivity (ε_r):	51.15	52.67	-2.88	5
		e"	14.8800	Conductivity (σ):	2.05	1.99	3.15	5
6/20/2013	Head 2450	e'	38.2200	Relative Permittivity (ε_r):	38.22	39.20	-2.50	5
		e"	13.4000	Conductivity (σ):	1.83	1.80	1.41	5
	Head 2410	e'	38.3800	Relative Permittivity (ε_r):	38.38	39.28	-2.29	5
		e"	13.3500	Conductivity (σ):	1.79	1.76	1.62	5
	Head 2475	e'	38.1200	Relative Permittivity (ε_r):	38.12	39.17	-2.68	5
		e"	13.4800	Conductivity (σ):	1.86	1.83	1.54	5
6/20/2013	Body 2450	e'	51.3600	Relative Permittivity (ε_r):	51.36	52.70	-2.54	5
		e"	13.7200	Conductivity (σ):	1.87	1.95	-4.15	5
	Body 2410	e'	51.5100	Relative Permittivity (ε_r):	51.51	52.76	-2.37	5
		e"	13.6500	Conductivity (σ):	1.83	1.91	-4.11	5
	Body 2475	e'	51.2700	Relative Permittivity (ε_r):	51.27	52.67	-2.66	5
		e"	13.8400	Conductivity (σ):	1.90	1.99	-4.06	5

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SAR Room B

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
7/12/2013	Head 1900	e'	41.1800	Relative Permittivity (ε_r):	41.18	40.00	2.95	5
		e"	13.3100	Conductivity (σ):	1.41	1.40	0.44	5
	Head 1850	e'	41.3800	Relative Permittivity (ε_r):	41.38	40.00	3.45	5
		e"	13.2100	Conductivity (σ):	1.36	1.40	-2.94	5
	Head 1910	e'	41.1400	Relative Permittivity (ε_r):	41.14	40.00	2.85	5
		e"	13.3300	Conductivity (σ):	1.42	1.40	1.12	5
7/15/2013	Head 1900	e'	41.4800	Relative Permittivity (ε_r):	41.48	40.00	3.70	5
		e"	13.6400	Conductivity (σ):	1.44	1.40	2.93	5
	Head 1850	e'	41.6800	Relative Permittivity (ε_r):	41.68	40.00	4.20	5
		e"	13.5200	Conductivity (σ):	1.39	1.40	-0.66	5
	Head 1910	e'	41.4400	Relative Permittivity (ε_r):	41.44	40.00	3.60	5
		e"	13.6700	Conductivity (σ):	1.45	1.40	3.70	5
7/17/2013	Body 835	e'	55.3600	Relative Permittivity (ε_r):	55.36	55.20	0.29	5
		e"	21.1900	Conductivity (σ):	0.98	0.97	1.42	5
	Body 820	e'	55.5000	Relative Permittivity (ε_r):	55.50	55.28	0.40	5
		e"	21.2600	Conductivity (σ):	0.97	0.97	0.09	5
	Body 850	e'	55.2300	Relative Permittivity (ε_r):	55.23	55.16	0.13	5
		e"	21.1200	Conductivity (σ):	1.00	0.99	1.12	5
7/18/2013	Head 835	e'	40.7700	Relative Permittivity (ε_r):	40.77	41.50	-1.76	5
		e"	19.5100	Conductivity (σ):	0.91	0.90	0.65	5
	Head 820	e'	40.9600	Relative Permittivity (ε_r):	40.96	41.60	-1.54	5
		e"	19.4700	Conductivity (σ):	0.89	0.90	-1.19	5
	Head 850	e'	40.5700	Relative Permittivity (ε_r):	40.57	41.50	-2.24	5
		e"	19.4200	Conductivity (σ):	0.92	0.92	0.31	5
7/22/2013	Head 1900	e'	38.6200	Relative Permittivity (ε_r):	38.62	40.00	-3.45	5
		e"	13.3800	Conductivity (σ):	1.41	1.40	0.97	5
	Head 1850	e'	38.7900	Relative Permittivity (ε_r):	38.79	40.00	-3.03	5
		e"	13.2200	Conductivity (σ):	1.36	1.40	-2.87	5
	Head 1910	e'	38.5800	Relative Permittivity (ε_r):	38.58	40.00	-3.55	5
		e"	13.4000	Conductivity (σ):	1.42	1.40	1.65	5

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SAR Room C

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
6/6/2013	Head 5180	e'	35.6200	Relative Permittivity (ε_r):	35.62	36.01	-1.09	5
		e"	15.5400	Conductivity (σ):	4.48	4.63	-3.34	5
	Head 5200	e'	35.5900	Relative Permittivity (ε_r):	35.59	35.99	-1.11	5
		e"	15.5500	Conductivity (σ):	4.50	4.65	-3.33	5
	Head 5600	e'	35.0600	Relative Permittivity (ε_r):	35.06	35.53	-1.33	5
		e"	15.7600	Conductivity (σ):	4.91	5.06	-3.02	5
	Head 5800	e'	34.8100	Relative Permittivity (ε_r):	34.81	35.30	-1.39	5
		e"	15.8400	Conductivity (σ):	5.11	5.27	-3.07	5
	Head 5825	e'	34.7400	Relative Permittivity (ε_r):	34.74	35.30	-1.59	5
		e"	15.9100	Conductivity (σ):	5.15	5.27	-2.22	5
6/6/2013	Body 5180	e'	49.2700	Relative Permittivity (ε_r):	49.27	49.05	0.46	5
		e"	18.5900	Conductivity (σ):	5.35	5.27	1.57	5
	Body 5200	e'	49.2800	Relative Permittivity (ε_r):	49.28	49.02	0.53	5
		e"	18.6500	Conductivity (σ):	5.39	5.29	1.84	5
	Body 5600	e'	48.6400	Relative Permittivity (ε_r):	48.64	48.48	0.33	5
		e"	18.9900	Conductivity (σ):	5.91	5.76	2.64	5
	Body 5800	e'	48.3900	Relative Permittivity (ε_r):	48.39	48.20	0.39	5
		e"	19.1800	Conductivity (σ):	6.19	6.00	3.09	5
	Body 5825	e'	48.3000	Relative Permittivity (ε_r):	48.30	48.20	0.21	5
		e"	19.2800	Conductivity (σ):	6.24	6.00	4.08	5
6/10/2013	Head 5180	e'	36.6100	Relative Permittivity (ε_r):	36.61	36.01	1.66	5
		e"	15.7800	Conductivity (σ):	4.55	4.63	-1.85	5
	Head 5200	e'	36.6100	Relative Permittivity (ε_r):	36.61	35.99	1.72	5
		e"	15.6400	Conductivity (σ):	4.52	4.65	-2.77	5
	Head 5600	e'	35.7800	Relative Permittivity (ε_r):	35.78	35.53	0.69	5
		e"	15.6100	Conductivity (σ):	4.86	5.06	-3.95	5
	Head 5800	e'	35.8500	Relative Permittivity (ε_r):	35.85	35.30	1.56	5
		e"	16.0500	Conductivity (σ):	5.18	5.27	-1.78	5
	Head 5825	e'	35.6800	Relative Permittivity (ε_r):	35.68	35.30	1.08	5
		e"	15.7800	Conductivity (σ):	5.11	5.27	-3.02	5
6/10/2013	Body 5180	e'	47.2000	Relative Permittivity (ε_r):	47.20	49.05	-3.77	5
		e"	18.6700	Conductivity (σ):	5.38	5.27	2.01	5
	Body 5200	e'	47.1400	Relative Permittivity (ε_r):	47.14	49.02	-3.83	5
		e"	18.4400	Conductivity (σ):	5.33	5.29	0.70	5
	Body 5600	e'	46.1100	Relative Permittivity (ε_r):	46.11	48.48	-4.88	5
		e"	18.5300	Conductivity (σ):	5.77	5.76	0.15	5
	Body 5800	e'	46.2900	Relative Permittivity (ε_r):	46.29	48.20	-3.96	5
		e"	19.1600	Conductivity (σ):	6.18	6.00	2.98	5
	Body 5825	e'	45.9800	Relative Permittivity (ε_r):	45.98	48.20	-4.61	5
		e"	18.7700	Conductivity (σ):	6.08	6.00	1.32	5

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Tissue Dielectric Parameter Check Results (SAR Room C continued)

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
6/13/2013	Head 5180	e'	37.2400	Relative Permittivity (ε_r):	37.24	36.01	3.41	5
		e"	16.1300	Conductivity (σ):	4.65	4.63	0.33	5
	Head 5200	e'	37.2100	Relative Permittivity (ε_r):	37.21	35.99	3.39	5
		e"	16.1400	Conductivity (σ):	4.67	4.65	0.34	5
	Head 5600	e'	36.6300	Relative Permittivity (ε_r):	36.63	35.53	3.08	5
		e"	16.3400	Conductivity (σ):	5.09	5.06	0.55	5
	Head 5800	e'	36.3300	Relative Permittivity (ε_r):	36.33	35.30	2.92	5
		e"	16.4900	Conductivity (σ):	5.32	5.27	0.91	5
	Head 5825	e'	36.3300	Relative Permittivity (ε_r):	36.33	35.30	2.92	5
		e"	16.4700	Conductivity (σ):	5.33	5.27	1.22	5
6/13/2013	Body 5180	e'	48.4500	Relative Permittivity (ε_r):	48.45	49.05	-1.22	5
		e"	18.4200	Conductivity (σ):	5.31	5.27	0.65	5
	Body 5200	e'	48.4100	Relative Permittivity (ε_r):	48.41	49.02	-1.24	5
		e"	18.4100	Conductivity (σ):	5.32	5.29	0.53	5
	Body 5600	e'	47.7700	Relative Permittivity (ε_r):	47.77	48.48	-1.46	5
		e"	18.8100	Conductivity (σ):	5.86	5.76	1.67	5
	Body 5800	e'	47.4400	Relative Permittivity (ε_r):	47.44	48.20	-1.58	5
		e"	19.0700	Conductivity (σ):	6.15	6.00	2.50	5
	Body 5825	e'	47.4000	Relative Permittivity (ε_r):	47.40	48.20	-1.66	5
		e"	19.0500	Conductivity (σ):	6.17	6.00	2.83	5
6/17/2013	Head 5180	e'	36.7800	Relative Permittivity (ε_r):	36.78	36.01	2.13	5
		e"	15.3400	Conductivity (σ):	4.42	4.63	-4.58	5
	Head 5200	e'	36.7200	Relative Permittivity (ε_r):	36.72	35.99	2.03	5
		e"	15.3400	Conductivity (σ):	4.44	4.65	-4.64	5
	Head 5600	e'	36.2000	Relative Permittivity (ε_r):	36.20	35.53	1.87	5
		e"	15.5500	Conductivity (σ):	4.84	5.06	-4.31	5
	Head 5800	e'	35.9300	Relative Permittivity (ε_r):	35.93	35.30	1.78	5
		e"	15.6600	Conductivity (σ):	5.05	5.27	-4.17	5
	Head 5825	e'	35.9100	Relative Permittivity (ε_r):	35.91	35.30	1.73	5
		e"	15.6700	Conductivity (σ):	5.08	5.27	-3.69	5
6/17/2013	Body 5180	e'	48.3900	Relative Permittivity (ε_r):	48.39	49.05	-1.34	5
		e"	18.3500	Conductivity (σ):	5.29	5.27	0.26	5
	Body 5200	e'	48.3500	Relative Permittivity (ε_r):	48.35	49.02	-1.37	5
		e"	18.3500	Conductivity (σ):	5.31	5.29	0.21	5
	Body 5600	e'	47.7300	Relative Permittivity (ε_r):	47.73	48.48	-1.54	5
		e"	18.7600	Conductivity (σ):	5.84	5.76	1.40	5
	Body 5800	e'	47.3800	Relative Permittivity (ε_r):	47.38	48.20	-1.70	5
		e"	18.9800	Conductivity (σ):	6.12	6.00	2.02	5
	Body 5825	e'	47.3200	Relative Permittivity (ε_r):	47.32	48.20	-1.83	5
		e"	18.9700	Conductivity (σ):	6.14	6.00	2.40	5
6/20/2013	Head 5180	e'	34.8200	Relative Permittivity (ε_r):	34.82	36.01	-3.31	5
		e"	15.5200	Conductivity (σ):	4.47	4.63	-3.46	5
	Head 5200	e'	34.7600	Relative Permittivity (ε_r):	34.76	35.99	-3.42	5
		e"	15.4700	Conductivity (σ):	4.47	4.65	-3.83	5
	Head 5600	e'	34.2200	Relative Permittivity (ε_r):	34.22	35.53	-3.70	5
		e"	15.6000	Conductivity (σ):	4.86	5.06	-4.01	5
	Head 5800	e'	33.8500	Relative Permittivity (ε_r):	33.85	35.30	-4.11	5
		e"	15.7700	Conductivity (σ):	5.09	5.27	-3.50	5
	Head 5825	e'	33.8100	Relative Permittivity (ε_r):	33.81	35.30	-4.22	5
		e"	15.7200	Conductivity (σ):	5.09	5.27	-3.39	5

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Tissue Dielectric Parameter Check Results (SAR Room C continued)

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
6/20/2013	Body 5180	e'	48.2200	Relative Permittivity (ε_r):	48.22	49.05	-1.69	5
		e"	18.0000	Conductivity (σ):	5.18	5.27	-1.65	5
	Body 5200	e'	48.1700	Relative Permittivity (ε_r):	48.17	49.02	-1.73	5
		e"	17.9700	Conductivity (σ):	5.20	5.29	-1.87	5
	Body 5600	e'	47.5300	Relative Permittivity (ε_r):	47.53	48.48	-1.95	5
		e"	18.1800	Conductivity (σ):	5.66	5.76	-1.74	5
	Body 5800	e'	47.1300	Relative Permittivity (ε_r):	47.13	48.20	-2.22	5
		e"	18.5200	Conductivity (σ):	5.97	6.00	-0.46	5
	Body 5825	e'	47.0800	Relative Permittivity (ε_r):	47.08	48.20	-2.32	5
		e"	18.4600	Conductivity (σ):	5.98	6.00	-0.35	5
6/24/2013	Head 5180	e'	36.7400	Relative Permittivity (ε_r):	36.74	36.01	2.02	5
		e"	15.5300	Conductivity (σ):	4.47	4.63	-3.40	5
	Head 5200	e'	36.7100	Relative Permittivity (ε_r):	36.71	35.99	2.00	5
		e"	15.5200	Conductivity (σ):	4.49	4.65	-3.52	5
	Head 5600	e'	36.1400	Relative Permittivity (ε_r):	36.14	35.53	1.71	5
		e"	15.7400	Conductivity (σ):	4.90	5.06	-3.15	5
	Head 5800	e'	35.8800	Relative Permittivity (ε_r):	35.88	35.30	1.64	5
		e"	15.8500	Conductivity (σ):	5.11	5.27	-3.01	5
	Head 5825	e'	35.8700	Relative Permittivity (ε_r):	35.87	35.30	1.61	5
		e"	15.8600	Conductivity (σ):	5.14	5.27	-2.53	5
6/24/2013	Body 5180	e'	49.0500	Relative Permittivity (ε_r):	49.05	49.05	0.01	5
		e"	18.8100	Conductivity (σ):	5.42	5.27	2.78	5
	Body 5200	e'	49.0400	Relative Permittivity (ε_r):	49.04	49.02	0.04	5
		e"	18.8400	Conductivity (σ):	5.45	5.29	2.88	5
	Body 5600	e'	48.3300	Relative Permittivity (ε_r):	48.33	48.48	-0.30	5
		e"	19.2000	Conductivity (σ):	5.98	5.76	3.77	5
	Body 5800	e'	48.0200	Relative Permittivity (ε_r):	48.02	48.20	-0.37	5
		e"	19.4400	Conductivity (σ):	6.27	6.00	4.49	5
	Body 5825	e'	47.9700	Relative Permittivity (ε_r):	47.97	48.20	-0.48	5
		e"	19.4200	Conductivity (σ):	6.29	6.00	4.83	5
6/27/2013	Body 5180	e'	47.7700	Relative Permittivity (ε_r):	47.77	49.05	-2.60	5
		e"	18.3800	Conductivity (σ):	5.29	5.27	0.43	5
	Body 5200	e'	47.7200	Relative Permittivity (ε_r):	47.72	49.02	-2.65	5
		e"	18.4300	Conductivity (σ):	5.33	5.29	0.64	5
	Body 5600	e'	47.1000	Relative Permittivity (ε_r):	47.10	48.48	-2.84	5
		e"	18.7700	Conductivity (σ):	5.84	5.76	1.45	5
	Body 5800	e'	46.8100	Relative Permittivity (ε_r):	46.81	48.20	-2.88	5
		e"	19.0100	Conductivity (σ):	6.13	6.00	2.18	5
	Body 5825	e'	46.7400	Relative Permittivity (ε_r):	46.74	48.20	-3.03	5
		e"	18.9800	Conductivity (σ):	6.15	6.00	2.46	5
6/28/2013	Head 5180	e'	35.5000	Relative Permittivity (ε_r):	35.50	36.01	-1.42	5
		e"	16.3900	Conductivity (σ):	4.72	4.63	1.95	5
	Head 5200	e'	35.4600	Relative Permittivity (ε_r):	35.46	35.99	-1.47	5
		e"	16.4000	Conductivity (σ):	4.74	4.65	1.95	5
	Head 5600	e'	34.7700	Relative Permittivity (ε_r):	34.77	35.53	-2.15	5
		e"	16.5800	Conductivity (σ):	5.16	5.06	2.02	5
	Head 5800	e'	34.4600	Relative Permittivity (ε_r):	34.46	35.30	-2.38	5
		e"	16.6800	Conductivity (σ):	5.38	5.27	2.07	5
	Head 5825	e'	34.4200	Relative Permittivity (ε_r):	34.42	35.30	-2.49	5
		e"	16.6900	Conductivity (σ):	5.41	5.27	2.57	5

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Tissue Dielectric Parameter Check Results (SAR Room C continued)

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
7/1/2013	Head 5180	e'	37.0000	Relative Permittivity (ε_r):	37.00	36.01	2.74	5
		e"	15.9900	Conductivity (σ):	4.61	4.63	-0.54	5
	Head 5200	e'	36.9300	Relative Permittivity (ε_r):	36.93	35.99	2.61	5
		e"	16.0000	Conductivity (σ):	4.63	4.65	-0.53	5
	Head 5600	e'	36.3100	Relative Permittivity (ε_r):	36.31	35.53	2.18	5
		e"	16.2800	Conductivity (σ):	5.07	5.06	0.18	5
	Head 5800	e'	36.0200	Relative Permittivity (ε_r):	36.02	35.30	2.04	5
		e"	16.3700	Conductivity (σ):	5.28	5.27	0.18	5
	Head 5825	e'	35.9600	Relative Permittivity (ε_r):	35.96	35.30	1.87	5
		e"	16.3900	Conductivity (σ):	5.31	5.27	0.73	5
7/1/2013	Body 5180	e'	47.3100	Relative Permittivity (ε_r):	47.31	49.05	-3.54	5
		e"	18.2300	Conductivity (σ):	5.25	5.27	-0.39	5
	Body 5200	e'	47.2700	Relative Permittivity (ε_r):	47.27	49.02	-3.57	5
		e"	18.2600	Conductivity (σ):	5.28	5.29	-0.28	5
	Body 5600	e'	46.6300	Relative Permittivity (ε_r):	46.63	48.48	-3.81	5
		e"	18.5800	Conductivity (σ):	5.79	5.76	0.42	5
	Body 5800	e'	46.3000	Relative Permittivity (ε_r):	46.30	48.20	-3.94	5
		e"	18.7400	Conductivity (σ):	6.04	6.00	0.73	5
	Body 5825	e'	46.2700	Relative Permittivity (ε_r):	46.27	48.20	-4.00	5
		e"	18.7900	Conductivity (σ):	6.09	6.00	1.43	5

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SAR Room D

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
7/12/2013	Head 835	e'	40.7400	Relative Permittivity (ε_r):	40.74	41.50	-1.83	5
		e"	19.9200	Conductivity (σ):	0.92	0.90	2.76	5
	Head 820	e'	40.9500	Relative Permittivity (ε_r):	40.95	41.60	-1.57	5
		e"	19.9800	Conductivity (σ):	0.91	0.90	1.39	5
	Head 850	e'	40.5400	Relative Permittivity (ε_r):	40.54	41.50	-2.31	5
		e"	19.8700	Conductivity (σ):	0.94	0.92	2.63	5
7/18/2013	Body 835	e'	56.1100	Relative Permittivity (ε_r):	56.11	55.20	1.65	5
		e"	21.8700	Conductivity (σ):	1.02	0.97	4.68	5
	Body 820	e'	55.9500	Relative Permittivity (ε_r):	55.95	55.28	1.22	5
		e"	21.8100	Conductivity (σ):	0.99	0.97	2.68	5
	Body 850	e'	55.8000	Relative Permittivity (ε_r):	55.80	55.16	1.17	5
		e"	21.7400	Conductivity (σ):	1.03	0.99	4.09	5

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SAR Room E

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
6/3/2013	Head 5180	e'	35.5700	Relative Permittivity (ε_r):	35.57	36.01	-1.23	5
		e"	15.3300	Conductivity (σ):	4.42	4.63	-4.65	5
	Head 5200	e'	35.5300	Relative Permittivity (ε_r):	35.53	35.99	-1.28	5
		e"	15.3200	Conductivity (σ):	4.43	4.65	-4.76	5
	Head 5600	e'	35.0400	Relative Permittivity (ε_r):	35.04	35.53	-1.39	5
		e"	15.5700	Conductivity (σ):	4.85	5.06	-4.19	5
	Head 5800	e'	34.7400	Relative Permittivity (ε_r):	34.74	35.30	-1.59	5
		e"	15.6400	Conductivity (σ):	5.04	5.27	-4.29	5
	Head 5825	e'	34.6800	Relative Permittivity (ε_r):	34.68	35.30	-1.76	5
		e"	15.6600	Conductivity (σ):	5.07	5.27	-3.76	5
6/3/2013	Body 5180	e'	47.9600	Relative Permittivity (ε_r):	47.96	49.05	-2.22	5
		e"	18.3500	Conductivity (σ):	5.29	5.27	0.26	5
	Body 5200	e'	47.9200	Relative Permittivity (ε_r):	47.92	49.02	-2.24	5
		e"	18.3700	Conductivity (σ):	5.31	5.29	0.32	5
	Body 5600	e'	47.2900	Relative Permittivity (ε_r):	47.29	48.48	-2.45	5
		e"	18.8100	Conductivity (σ):	5.86	5.76	1.67	5
	Body 5800	e'	46.9000	Relative Permittivity (ε_r):	46.90	48.20	-2.70	5
		e"	18.9800	Conductivity (σ):	6.12	6.00	2.02	5
	Body 5825	e'	46.8900	Relative Permittivity (ε_r):	46.89	48.20	-2.72	5
		e"	19.0000	Conductivity (σ):	6.15	6.00	2.56	5
6/6/2013	Head 5180	e'	34.9000	Relative Permittivity (ε_r):	34.90	36.01	-3.09	5
		e"	16.0100	Conductivity (σ):	4.61	4.63	-0.42	5
	Head 5200	e'	34.8700	Relative Permittivity (ε_r):	34.87	35.99	-3.11	5
		e"	16.0200	Conductivity (σ):	4.63	4.65	-0.41	5
	Head 5600	e'	34.2900	Relative Permittivity (ε_r):	34.29	35.53	-3.50	5
		e"	16.2300	Conductivity (σ):	5.05	5.06	-0.13	5
	Head 5800	e'	33.9700	Relative Permittivity (ε_r):	33.97	35.30	-3.77	5
		e"	16.3300	Conductivity (σ):	5.27	5.27	-0.07	5
	Head 5825	e'	33.9400	Relative Permittivity (ε_r):	33.94	35.30	-3.85	5
		e"	16.3600	Conductivity (σ):	5.30	5.27	0.55	5
6/6/2013	Body 5180	e'	47.6100	Relative Permittivity (ε_r):	47.61	49.05	-2.93	5
		e"	18.1900	Conductivity (σ):	5.24	5.27	-0.61	5
	Body 5200	e'	47.5500	Relative Permittivity (ε_r):	47.55	49.02	-3.00	5
		e"	18.2300	Conductivity (σ):	5.27	5.29	-0.45	5
	Body 5600	e'	46.9800	Relative Permittivity (ε_r):	46.98	48.48	-3.09	5
		e"	18.5900	Conductivity (σ):	5.79	5.76	0.48	5
	Body 5800	e'	46.6900	Relative Permittivity (ε_r):	46.69	48.20	-3.13	5
		e"	18.7900	Conductivity (σ):	6.06	6.00	1.00	5
	Body 5825	e'	46.6500	Relative Permittivity (ε_r):	46.65	48.20	-3.22	5
		e"	18.8100	Conductivity (σ):	6.09	6.00	1.54	5

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Tissue Dielectric Parameter Check Results (SAR Room E continued)

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6/10/2013	Head 5180	e'	37.2600	Relative Permittivity (ε_r):	37.26	36.01	3.46	5
		e"	15.9500	Conductivity (σ):	4.59	4.63	-0.79	5
	Head 5200	e'	37.2500	Relative Permittivity (ε_r):	37.25	35.99	3.50	5
		e"	15.7900	Conductivity (σ):	4.57	4.65	-1.84	5
	Head 5600	e'	36.4200	Relative Permittivity (ε_r):	36.42	35.53	2.49	5
		e"	15.7300	Conductivity (σ):	4.90	5.06	-3.21	5
	Head 5800	e'	36.4900	Relative Permittivity (ε_r):	36.49	35.30	3.37	5
		e"	16.2100	Conductivity (σ):	5.23	5.27	-0.80	5
	Head 5825	e'	36.3100	Relative Permittivity (ε_r):	36.31	35.30	2.86	5
		e"	15.9200	Conductivity (σ):	5.16	5.27	-2.16	5
6/10/2013	Body 5180	e'	48.5400	Relative Permittivity (ε_r):	48.54	49.05	-1.03	5
		e"	18.6900	Conductivity (σ):	5.38	5.27	2.12	5
	Body 5200	e'	48.5000	Relative Permittivity (ε_r):	48.50	49.02	-1.06	5
		e"	18.4500	Conductivity (σ):	5.33	5.29	0.75	5
	Body 5600	e'	47.4500	Relative Permittivity (ε_r):	47.45	48.48	-2.12	5
		e"	18.5300	Conductivity (σ):	5.77	5.76	0.15	5
	Body 5800	e'	47.6400	Relative Permittivity (ε_r):	47.64	48.20	-1.16	5
		e"	19.1800	Conductivity (σ):	6.19	6.00	3.09	5
	Body 5825	e'	47.3200	Relative Permittivity (ε_r):	47.32	48.20	-1.83	5
		e"	18.7900	Conductivity (σ):	6.09	6.00	1.43	5
6/13/2013	Head 5180	e'	37.6400	Relative Permittivity (ε_r):	37.64	36.01	4.52	5
		e"	16.2400	Conductivity (σ):	4.68	4.63	1.01	5
	Head 5200	e'	37.6000	Relative Permittivity (ε_r):	37.60	35.99	4.47	5
		e"	16.2400	Conductivity (σ):	4.70	4.65	0.96	5
	Head 5600	e'	37.1000	Relative Permittivity (ε_r):	37.10	35.53	4.41	5
		e"	16.4100	Conductivity (σ):	5.11	5.06	0.98	5
	Head 5800	e'	36.8100	Relative Permittivity (ε_r):	36.81	35.30	4.28	5
		e"	16.5500	Conductivity (σ):	5.34	5.27	1.28	5
	Head 5825	e'	36.7900	Relative Permittivity (ε_r):	36.79	35.30	4.22	5
		e"	16.5000	Conductivity (σ):	5.34	5.27	1.41	5
6/13/2013	Body 5180	e'	49.5900	Relative Permittivity (ε_r):	49.59	49.05	1.11	5
		e"	18.6600	Conductivity (σ):	5.37	5.27	1.96	5
	Body 5200	e'	49.5300	Relative Permittivity (ε_r):	49.53	49.02	1.04	5
		e"	18.6900	Conductivity (σ):	5.40	5.29	2.06	5
	Body 5600	e'	48.8900	Relative Permittivity (ε_r):	48.89	48.48	0.85	5
		e"	19.0800	Conductivity (σ):	5.94	5.76	3.13	5
	Body 5800	e'	48.5500	Relative Permittivity (ε_r):	48.55	48.20	0.73	5
		e"	19.3700	Conductivity (σ):	6.25	6.00	4.11	5
	Body 5825	e'	48.5100	Relative Permittivity (ε_r):	48.51	48.20	0.64	5
		e"	19.3100	Conductivity (σ):	6.25	6.00	4.24	5
6/17/2013	Head 5180	e'	36.2200	Relative Permittivity (ε_r):	36.22	36.01	0.57	5
		e"	16.5100	Conductivity (σ):	4.76	4.63	2.69	5
	Head 5200	e'	36.1600	Relative Permittivity (ε_r):	36.16	35.99	0.47	5
		e"	16.5200	Conductivity (σ):	4.78	4.65	2.70	5
	Head 5600	e'	35.5600	Relative Permittivity (ε_r):	35.56	35.53	0.07	5
		e"	16.7100	Conductivity (σ):	5.20	5.06	2.82	5
	Head 5800	e'	35.2500	Relative Permittivity (ε_r):	35.25	35.30	-0.14	5
		e"	16.7900	Conductivity (σ):	5.41	5.27	2.75	5
	Head 5825	e'	35.2300	Relative Permittivity (ε_r):	35.23	35.30	-0.20	5
		e"	16.8000	Conductivity (σ):	5.44	5.27	3.25	5

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Tissue Dielectric Parameter Check Results (SAR Room E continued)

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
6/17/2013	Body 5180	e'	47.2800	Relative Permittivity (ε_r):	47.28	49.05	-3.60	5
		e"	18.2600	Conductivity (σ):	5.26	5.27	-0.23	5
	Body 5200	e'	47.2500	Relative Permittivity (ε_r):	47.25	49.02	-3.61	5
		e"	18.2900	Conductivity (σ):	5.29	5.29	-0.12	5
	Body 5600	e'	46.6300	Relative Permittivity (ε_r):	46.63	48.48	-3.81	5
		e"	18.6100	Conductivity (σ):	5.79	5.76	0.59	5
	Body 5800	e'	46.3400	Relative Permittivity (ε_r):	46.34	48.20	-3.86	5
		e"	18.7700	Conductivity (σ):	6.05	6.00	0.89	5
	Body 5825	e'	46.2900	Relative Permittivity (ε_r):	46.29	48.20	-3.96	5
		e"	18.7800	Conductivity (σ):	6.08	6.00	1.38	5
6/20/2013	Head 5180	e'	35.9400	Relative Permittivity (ε_r):	35.94	36.01	-0.20	5
		e"	16.3000	Conductivity (σ):	4.69	4.63	1.39	5
	Head 5200	e'	35.8900	Relative Permittivity (ε_r):	35.89	35.99	-0.28	5
		e"	16.3000	Conductivity (σ):	4.71	4.65	1.33	5
	Head 5600	e'	35.2700	Relative Permittivity (ε_r):	35.27	35.53	-0.74	5
		e"	16.5400	Conductivity (σ):	5.15	5.06	1.78	5
	Head 5800	e'	34.9900	Relative Permittivity (ε_r):	34.99	35.30	-0.88	5
		e"	16.6400	Conductivity (σ):	5.37	5.27	1.83	5
	Head 5825	e'	34.9100	Relative Permittivity (ε_r):	34.91	35.30	-1.10	5
		e"	16.6400	Conductivity (σ):	5.39	5.27	2.27	5
6/20/2013	Body 5180	e'	48.1000	Relative Permittivity (ε_r):	48.10	49.05	-1.93	5
		e"	18.4800	Conductivity (σ):	5.32	5.27	0.97	5
	Body 5200	e'	48.0200	Relative Permittivity (ε_r):	48.02	49.02	-2.04	5
		e"	18.4900	Conductivity (σ):	5.35	5.29	0.97	5
	Body 5600	e'	47.4200	Relative Permittivity (ε_r):	47.42	48.48	-2.18	5
		e"	18.9200	Conductivity (σ):	5.89	5.76	2.26	5
	Body 5800	e'	47.1000	Relative Permittivity (ε_r):	47.10	48.20	-2.28	5
		e"	19.1000	Conductivity (σ):	6.16	6.00	2.66	5
	Body 5825	e'	47.0100	Relative Permittivity (ε_r):	47.01	48.20	-2.47	5
		e"	19.1100	Conductivity (σ):	6.19	6.00	3.16	5
6/24/2013	Head 5180	e'	36.9900	Relative Permittivity (ε_r):	36.99	36.01	2.71	5
		e"	15.8500	Conductivity (σ):	4.57	4.63	-1.41	5
	Head 5200	e'	36.9700	Relative Permittivity (ε_r):	36.97	35.99	2.72	5
		e"	15.8600	Conductivity (σ):	4.59	4.65	-1.40	5
	Head 5600	e'	36.4100	Relative Permittivity (ε_r):	36.41	35.53	2.47	5
		e"	16.0400	Conductivity (σ):	4.99	5.06	-1.30	5
	Head 5800	e'	36.1300	Relative Permittivity (ε_r):	36.13	35.30	2.35	5
		e"	16.1500	Conductivity (σ):	5.21	5.27	-1.17	5
	Head 5825	e'	36.1100	Relative Permittivity (ε_r):	36.11	35.30	2.29	5
		e"	16.1500	Conductivity (σ):	5.23	5.27	-0.74	5
6/24/2013	Body 5180	e'	47.6900	Relative Permittivity (ε_r):	47.69	49.05	-2.77	5
		e"	18.6000	Conductivity (σ):	5.36	5.27	1.63	5
	Body 5200	e'	47.6900	Relative Permittivity (ε_r):	47.69	49.02	-2.71	5
		e"	18.6100	Conductivity (σ):	5.38	5.29	1.63	5
	Body 5600	e'	47.0000	Relative Permittivity (ε_r):	47.00	48.48	-3.05	5
		e"	18.9500	Conductivity (σ):	5.90	5.76	2.42	5
	Body 5800	e'	46.6800	Relative Permittivity (ε_r):	46.68	48.20	-3.15	5
		e"	19.1200	Conductivity (σ):	6.17	6.00	2.77	5
	Body 5825	e'	46.6800	Relative Permittivity (ε_r):	46.68	48.20	-3.15	5
		e"	19.1400	Conductivity (σ):	6.20	6.00	3.32	5

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Tissue Dielectric Parameter Check Results (SAR Room E continued)

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
7/12/2013	Body 1900	e'	51.7100	Relative Permittivity (ε_r):	51.71	53.30	-2.98	5
		e"	14.7300	Conductivity (σ):	1.56	1.52	2.38	5
	Body 1850	e'	51.8700	Relative Permittivity (ε_r):	51.87	53.30	-2.68	5
		e"	14.6700	Conductivity (σ):	1.51	1.52	-0.72	5
	Body 1910	e'	51.6800	Relative Permittivity (ε_r):	51.68	53.30	-3.04	5
		e"	14.7600	Conductivity (σ):	1.57	1.52	3.13	5
7/15/2013	Body 1900	e'	52.4200	Relative Permittivity (ε_r):	52.42	53.30	-1.65	5
		e"	14.6500	Conductivity (σ):	1.55	1.52	1.82	5
	Body 1850	e'	52.5800	Relative Permittivity (ε_r):	52.58	53.30	-1.35	5
		e"	14.5400	Conductivity (σ):	1.50	1.52	-1.60	5
	Body 1910	e'	52.3900	Relative Permittivity (ε_r):	52.39	53.30	-1.71	5
		e"	14.6700	Conductivity (σ):	1.56	1.52	2.50	5
7/22/2013	Body 1900	e'	51.2000	Relative Permittivity (ε_r):	51.20	53.30	-3.94	5
		e"	14.5300	Conductivity (σ):	1.54	1.52	0.99	5
	Body 1850	e'	51.3500	Relative Permittivity (ε_r):	51.35	53.30	-3.66	5
		e"	14.4600	Conductivity (σ):	1.49	1.52	-2.14	5
	Body 1910	e'	51.1400	Relative Permittivity (ε_r):	51.14	53.30	-4.05	5
		e"	14.5300	Conductivity (σ):	1.54	1.52	1.52	5

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SAR Room F

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
6/6/2013	Head 5180	e'	35.3200	Relative Permittivity (ε_r):	35.32	36.01	-1.92	5
		e"	16.2200	Conductivity (σ):	4.67	4.63	0.89	5
	Head 5200	e'	35.2800	Relative Permittivity (ε_r):	35.28	35.99	-1.97	5
		e"	16.2100	Conductivity (σ):	4.69	4.65	0.77	5
	Head 5600	e'	34.6200	Relative Permittivity (ε_r):	34.62	35.53	-2.57	5
		e"	16.4500	Conductivity (σ):	5.12	5.06	1.22	5
	Head 5800	e'	34.2700	Relative Permittivity (ε_r):	34.27	35.30	-2.92	5
		e"	16.5400	Conductivity (σ):	5.33	5.27	1.22	5
	Head 5825	e'	34.2000	Relative Permittivity (ε_r):	34.20	35.30	-3.12	5
		e"	16.5800	Conductivity (σ):	5.37	5.27	1.90	5
6/6/2013	Body 5180	e'	46.8000	Relative Permittivity (ε_r):	46.80	49.05	-4.58	5
		e"	18.1100	Conductivity (σ):	5.22	5.27	-1.05	5
	Body 5200	e'	46.7200	Relative Permittivity (ε_r):	46.72	49.02	-4.69	5
		e"	18.2900	Conductivity (σ):	5.29	5.29	-0.12	5
	Body 5600	e'	46.4000	Relative Permittivity (ε_r):	46.40	48.48	-4.29	5
		e"	19.0600	Conductivity (σ):	5.93	5.76	3.02	5
	Body 5800	e'	45.8800	Relative Permittivity (ε_r):	45.88	48.20	-4.81	5
		e"	18.9200	Conductivity (σ):	6.10	6.00	1.69	5
	Body 5825	e'	46.1000	Relative Permittivity (ε_r):	46.10	48.20	-4.36	5
		e"	19.2000	Conductivity (σ):	6.22	6.00	3.64	5
6/10/2013	Head 5180	e'	37.0700	Relative Permittivity (ε_r):	37.07	36.01	2.94	5
		e"	15.7000	Conductivity (σ):	4.52	4.63	-2.34	5
	Head 5200	e'	37.0600	Relative Permittivity (ε_r):	37.06	35.99	2.97	5
		e"	15.5700	Conductivity (σ):	4.50	4.65	-3.21	5
	Head 5600	e'	36.2300	Relative Permittivity (ε_r):	36.23	35.53	1.96	5
		e"	15.5700	Conductivity (σ):	4.85	5.06	-4.19	5
	Head 5800	e'	36.3400	Relative Permittivity (ε_r):	36.34	35.30	2.95	5
		e"	16.0000	Conductivity (σ):	5.16	5.27	-2.09	5
	Head 5825	e'	36.1400	Relative Permittivity (ε_r):	36.14	35.30	2.38	5
		e"	15.7500	Conductivity (σ):	5.10	5.27	-3.20	5
6/10/2013	Body 5180	e'	47.7900	Relative Permittivity (ε_r):	47.79	49.05	-2.56	5
		e"	19.0100	Conductivity (σ):	5.48	5.27	3.87	5
	Body 5200	e'	47.6900	Relative Permittivity (ε_r):	47.69	49.02	-2.71	5
		e"	18.7900	Conductivity (σ):	5.43	5.29	2.61	5
	Body 5600	e'	46.6000	Relative Permittivity (ε_r):	46.60	48.48	-3.87	5
		e"	18.9900	Conductivity (σ):	5.91	5.76	2.64	5
	Body 5800	e'	46.8200	Relative Permittivity (ε_r):	46.82	48.20	-2.86	5
		e"	19.4800	Conductivity (σ):	6.28	6.00	4.70	5
	Body 5825	e'	46.4400	Relative Permittivity (ε_r):	46.44	48.20	-3.65	5
		e"	19.2000	Conductivity (σ):	6.22	6.00	3.64	5
6/13/2013	Head 5180	e'	35.4000	Relative Permittivity (ε_r):	35.40	36.01	-1.70	5
		e"	15.8600	Conductivity (σ):	4.57	4.63	-1.35	5
	Head 5200	e'	35.3500	Relative Permittivity (ε_r):	35.35	35.99	-1.78	5
		e"	15.8600	Conductivity (σ):	4.59	4.65	-1.40	5
	Head 5600	e'	34.7500	Relative Permittivity (ε_r):	34.75	35.53	-2.21	5
		e"	16.0500	Conductivity (σ):	5.00	5.06	-1.24	5
	Head 5800	e'	34.4300	Relative Permittivity (ε_r):	34.43	35.30	-2.46	5
		e"	16.1900	Conductivity (σ):	5.22	5.27	-0.93	5
	Head 5825	e'	34.4000	Relative Permittivity (ε_r):	34.40	35.30	-2.55	5
		e"	16.1600	Conductivity (σ):	5.23	5.27	-0.68	5

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Tissue Dielectric Parameter Check Results (SAR Room F continued)

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6/13/2013	Body 5180	e'	47.5400	Relative Permittivity (ε_r):	47.54	49.05	-3.07	5
		e"	18.4300	Conductivity (σ):	5.31	5.27	0.70	5
	Body 5200	e'	47.4900	Relative Permittivity (ε_r):	47.49	49.02	-3.12	5
		e"	18.4200	Conductivity (σ):	5.33	5.29	0.59	5
	Body 5600	e'	46.9000	Relative Permittivity (ε_r):	46.90	48.48	-3.25	5
		e"	18.7600	Conductivity (σ):	5.84	5.76	1.40	5
	Body 5800	e'	46.5500	Relative Permittivity (ε_r):	46.55	48.20	-3.42	5
		e"	18.9800	Conductivity (σ):	6.12	6.00	2.02	5
	Body 5825	e'	46.5200	Relative Permittivity (ε_r):	46.52	48.20	-3.49	5
		e"	18.9500	Conductivity (σ):	6.14	6.00	2.29	5
6/17/2013	Head 5180	e'	36.7700	Relative Permittivity (ε_r):	36.77	36.01	2.10	5
		e"	15.4000	Conductivity (σ):	4.44	4.63	-4.21	5
	Head 5200	e'	36.7300	Relative Permittivity (ε_r):	36.73	35.99	2.06	5
		e"	15.3700	Conductivity (σ):	4.44	4.65	-4.45	5
	Head 5600	e'	36.1900	Relative Permittivity (ε_r):	36.19	35.53	1.85	5
		e"	15.5900	Conductivity (σ):	4.85	5.06	-4.07	5
	Head 5800	e'	35.9200	Relative Permittivity (ε_r):	35.92	35.30	1.76	5
		e"	15.6900	Conductivity (σ):	5.06	5.27	-3.98	5
	Head 5825	e'	35.8900	Relative Permittivity (ε_r):	35.89	35.30	1.67	5
		e"	15.6700	Conductivity (σ):	5.08	5.27	-3.69	5
6/17/2013	Body 5180	e'	48.5000	Relative Permittivity (ε_r):	48.50	49.05	-1.11	5
		e"	18.4100	Conductivity (σ):	5.30	5.27	0.59	5
	Body 5200	e'	48.4600	Relative Permittivity (ε_r):	48.46	49.02	-1.14	5
		e"	18.3900	Conductivity (σ):	5.32	5.29	0.43	5
	Body 5600	e'	47.8300	Relative Permittivity (ε_r):	47.83	48.48	-1.34	5
		e"	18.8000	Conductivity (σ):	5.85	5.76	1.61	5
	Body 5800	e'	47.4900	Relative Permittivity (ε_r):	47.49	48.20	-1.47	5
		e"	19.0100	Conductivity (σ):	6.13	6.00	2.18	5
	Body 5825	e'	47.4400	Relative Permittivity (ε_r):	47.44	48.20	-1.58	5
		e"	19.0100	Conductivity (σ):	6.16	6.00	2.62	5
6/20/2013	Head 5180	e'	36.2700	Relative Permittivity (ε_r):	36.27	36.01	0.71	5
		e"	16.0400	Conductivity (σ):	4.62	4.63	-0.23	5
	Head 5200	e'	36.2400	Relative Permittivity (ε_r):	36.24	35.99	0.69	5
		e"	16.0000	Conductivity (σ):	4.63	4.65	-0.53	5
	Head 5600	e'	35.6400	Relative Permittivity (ε_r):	35.64	35.53	0.30	5
		e"	16.1400	Conductivity (σ):	5.03	5.06	-0.68	5
	Head 5800	e'	35.2600	Relative Permittivity (ε_r):	35.26	35.30	-0.11	5
		e"	16.3300	Conductivity (σ):	5.27	5.27	-0.07	5
	Head 5825	e'	35.2200	Relative Permittivity (ε_r):	35.22	35.30	-0.23	5
		e"	16.2800	Conductivity (σ):	5.27	5.27	0.06	5
6/20/2013	Body 5180	e'	48.0000	Relative Permittivity (ε_r):	48.00	49.05	-2.13	5
		e"	18.2100	Conductivity (σ):	5.24	5.27	-0.50	5
	Body 5200	e'	47.9500	Relative Permittivity (ε_r):	47.95	49.02	-2.18	5
		e"	18.1400	Conductivity (σ):	5.24	5.29	-0.94	5
	Body 5600	e'	47.2800	Relative Permittivity (ε_r):	47.28	48.48	-2.47	5
		e"	18.3500	Conductivity (σ):	5.71	5.76	-0.82	5
	Body 5800	e'	46.8700	Relative Permittivity (ε_r):	46.87	48.20	-2.76	5
		e"	18.6900	Conductivity (σ):	6.03	6.00	0.46	5
	Body 5825	e'	46.8200	Relative Permittivity (ε_r):	46.82	48.20	-2.86	5
		e"	18.6000	Conductivity (σ):	6.02	6.00	0.41	5

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Tissue Dielectric Parameter Check Results (SAR Room F continued)

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7/5/2013	Head 5180	e'	36.8100	Relative Permittivity (ε_r):	36.81	36.01	2.21	5
		e"	15.6400	Conductivity (σ):	4.50	4.63	-2.72	5
	Head 5200	e'	36.7700	Relative Permittivity (ε_r):	36.77	35.99	2.17	5
		e"	15.6500	Conductivity (σ):	4.52	4.65	-2.71	5
	Head 5600	e'	36.1600	Relative Permittivity (ε_r):	36.16	35.53	1.76	5
		e"	15.8500	Conductivity (σ):	4.94	5.06	-2.47	5
	Head 5800	e'	35.8800	Relative Permittivity (ε_r):	35.88	35.30	1.64	5
		e"	15.9400	Conductivity (σ):	5.14	5.27	-2.46	5
	Head 5825	e'	35.8500	Relative Permittivity (ε_r):	35.85	35.30	1.56	5
		e"	15.9500	Conductivity (σ):	5.17	5.27	-1.97	5
7/5/2013	Body 5180	e'	49.4100	Relative Permittivity (ε_r):	49.41	49.05	0.74	5
		e"	18.2500	Conductivity (σ):	5.26	5.27	-0.28	5
	Body 5200	e'	49.3700	Relative Permittivity (ε_r):	49.37	49.02	0.71	5
		e"	18.2600	Conductivity (σ):	5.28	5.29	-0.28	5
	Body 5600	e'	48.7200	Relative Permittivity (ε_r):	48.72	48.48	0.50	5
		e"	18.6500	Conductivity (σ):	5.81	5.76	0.80	5
	Body 5800	e'	48.4100	Relative Permittivity (ε_r):	48.41	48.20	0.44	5
		e"	18.8700	Conductivity (σ):	6.09	6.00	1.43	5
	Body 5825	e'	48.3800	Relative Permittivity (ε_r):	48.38	48.20	0.37	5
		e"	18.9000	Conductivity (σ):	6.12	6.00	2.02	5
7/18/2013	Body 835	e'	54.9800	Relative Permittivity (ε_r):	54.98	55.20	-0.40	5
		e"	21.9300	Conductivity (σ):	1.02	0.97	4.97	5
	Body 820	e'	55.0200	Relative Permittivity (ε_r):	55.02	55.28	-0.46	5
		e"	22.0400	Conductivity (σ):	1.00	0.97	3.76	5
	Body 850	e'	54.8200	Relative Permittivity (ε_r):	54.82	55.16	-0.61	5
		e"	21.8900	Conductivity (σ):	1.03	0.99	4.81	5

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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.

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11.2. Reference SAR Values for System Performance Check

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

System Dipole	Serial No.	Cal. Date	Freq. (MHz)	Target SAR Values (mW/g)		
				1g/10g	Head	Body
D835V2	4d142	10/04/2012	835	1g	9.45	9.5
				10g	6.23	6.29
D835V2	4d002	10/24/2012	835	1g	9.58	9.48
				10g	6.28	6.26
D1900V2	5d043	11/06/2012	1900	1g	39.9	40.9
				10g	20.9	21.6
D1900V2	5d163	10/04/2012	1900	1g	39.4	39.6
				10g	20.7	21.1
D1900V2	5d140	04/18/2013	1900	1g	41.2	41.5
				10g	21.5	22.0
D2450V2	899	10/5/2012	2450	1g	53.6	51.7
				10g	25.0	24.3
D5GHV2	1138	10/9/2012	5200	1g	79.5	73.2
				10g	22.8	20.4
			5500	1g	83.6	77.9
				10g	23.8	21.7
			5800	1g	78.7	72.8
				10g	22.4	20.1
D5GHV2	1003	9/18/2012	5200	1g	76.5	74.8
				10g	21.9	20.9
			5600	1g	82.8	79.0
				10g	23.6	22.0
			5800	1g	76.9	77.0
				10g	22.0	21.4

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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				
6/17/2013	D2450V2	899	Head	1g	5.52	5.43	54.30	53.60	1.31	1.63	
				10g	2.38	2.47	24.70	25.00	-1.20		
6/17/2013	D2450V2	899	Body	1g	5.26	5.36	53.60	51.70	**3.68**	-1.90	1,2
				10g	2.27	2.47	24.70	24.30	1.65		
6/20/2013	D2450V2	899	Head	1g	5.41	5.41	54.10	53.60	0.93	0.00	
				10g	2.35	2.44	24.40	25.00	-2.40		
6/20/2013	D2450V2	899	Body	1g	5.28	5.20	52.00	51.70	0.58	1.52	
				10g	2.31	2.36	23.60	24.30	-2.88		

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				
7/12/2013	D1900V2	5d163	Head	1g	4.35	4.13	41.30	39.40	**4.82**	5.06	3,4
				10g	2.29	2.14	21.40	20.70	3.38		
7/15/2013	D1900V2	5d163	Head	1g	4.18	4.09	40.90	39.40	3.81	2.15	
				10g	2.17	2.11	21.10	20.70	1.93		
7/17/2013	D835V2	4d142	Body	1g	0.99	0.96	9.57	9.50	**0.74**	3.04	5,6
				10g	0.66	0.63	6.30	6.29	0.16		
7/18/2013	D835V2	4d142	Head	1g	0.98	0.94	9.41	9.45	-0.42	3.78	
				10g	0.66	0.62	6.17	6.23	-0.96		
7/22/2013	D1900V2	5d163	Head	1g	3.91	3.82	38.20	39.40	-3.05	2.30	
				10g	2.02	1.99	19.90	20.70	-3.86		

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SAR Room C

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				
6/6/2013	D5GHzV2 (5.8GHz)	1138	Head	1g	7.19	7.50	75.00	78.70	-4.70	-4.31	
				10g	2.03	2.14	21.40	22.40	-4.46		
6/6/2013	D5GHzV2 (5.8GHz)	1138	Body	1g	6.49	6.95	69.50	72.80	-4.53	-7.09	
				10g	1.77	1.94	19.40	20.10	-3.48		
6/10/2013	D5GHzV2 (5.8GHz)	1138	Head	1g	6.83	7.84	78.40	78.70	-0.38	-14.79	
				10g	1.95	2.24	22.40	22.40	0.00		
6/10/2013	D5GHzV2 (5.8GHz)	1138	Body	1g	6.36	7.07	70.70	72.80	-2.88	-11.16	
				10g	1.72	1.96	19.60	20.10	-2.49		
6/13/2013	D5GHzV2 (5.8GHz)	1138	Head	1g	7.52	8.13	81.30	78.70	3.30	-8.11	
				10g	2.08	2.32	23.20	22.40	3.57		
6/13/2013	D5GHzV2 (5.8GHz)	1138	Body	1g	6.24	6.83	68.30	72.80	-6.18	-9.46	7,8
				10g	1.71	1.90	19.00	20.10	-5.47		
6/17/2013	D5GHzV2 (5.8GHz)	1003	Head	1g	7.09	7.68	76.80	76.90	-0.13	-8.32	
				10g	1.97	2.21	22.10	22.00	0.45		
6/17/2013	D5GHzV2 (5.8GHz)	1003	Body	1g	7.03	7.62	76.20	77.00	-1.04	-8.39	
				10g	1.90	2.13	21.30	21.40	-0.47		
6/20/2013	D5GHzV2 (5.8GHz)	1003	Head	1g	6.35	7.66	76.60	76.90	-0.39	-20.63	
				10g	1.81	2.20	22.00	22.00	0.00		
6/20/2013	D5GHzV2 (5.8GHz)	1003	Body	1g	6.77	7.30	73.00	77.00	-5.19	-7.83	
				10g	1.82	2.03	20.30	21.40	-5.14		
6/24/2013	D5GHzV2 (5.8GHz)	1003	Head	1g	6.63	7.17	71.70	76.90	-6.76	-8.14	9,10
				10g	1.88	2.06	20.60	22.00	-6.36		
6/24/2013	D5GHzV2 (5.8GHz)	1003	Body	1g	7.27	7.82	78.20	77.00	1.56	-7.57	
				10g	1.95	2.18	21.80	21.40	1.87		
6/27/2013	D5GHzV2 (5.8GHz)	1138	Body	1g	6.75	7.36	73.60	72.80	1.10	-9.04	
				10g	1.84	2.06	20.60	20.10	2.49		
6/28/2013	D5GHzV2 (5.8GHz)	1138	Head	1g	7.00	7.62	76.20	78.70	-3.18	-8.86	
				10g	2.00	2.18	21.80	22.40	-2.68		
7/1/2013	D5GHzV2 (5.8GHz)	1003	Head	1g	7.16	7.95	79.50	76.90	3.38	-11.03	
				10g	2.04	2.28	22.80	22.00	3.64		
7/1/2013	D5GHzV2 (5.8GHz)	1003	Body	1g	6.67	7.48	74.80	77.00	-2.86	-12.14	
				10g	1.86	2.10	21.00	21.40	-1.87		

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SAR Room D

Date Tested	System Dipole		T.S. Liquid		Measured Results			Target (Ref. Value)	Delta ±10 %	Est./Zoom Ratio ±3 %	Plots No.
	Type	Serial #			Area Scan	Zoom Scan	Normalize to 1 W				
7/12/2013	D835V2	4d002	Head	1g	0.93	0.91	9.14	9.48	-3.59	1.93	11,12
				10g	0.63	0.60	5.99	6.26	-4.31		
7/18/2013	D835V2	4d142	Body	1g	0.98	0.92	9.23	9.50	-2.84	6.10	13,14
				10g	0.66	0.61	6.09	6.29	-3.18		

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				
6/3/2013	D5GHV2 (5.2GHz)	1138	Head	1g	7.32	7.38	73.80	79.5	-7.17	-0.82	
				10g	2.00	2.09	20.90	22.8	-8.33		
6/3/2013	D5GHV2 (5.2GHz)	1138	Body	1g	7.14	7.46	74.60	73.2	1.91	-4.48	
				10g	1.97	2.13	21.30	20.4	4.41		
6/6/2013	D5GHV2 (5.2GHz)	1138	Head	1g	7.87	8.15	81.50	79.5	2.52	-3.56	
				10g	2.17	2.31	23.10	22.8	1.32		
6/6/2013	D5GHV2 (5.2GHz)	1138	Body	1g	7.54	7.69	76.90	73.2	5.05	-1.99	
				10g	2.08	2.18	21.80	20.4	6.86		
6/10/2013	D5GHV2 (5.2GHz)	1138	Head	1g	6.97	7.34	73.40	79.5	-7.67	-5.31	
				10g	1.91	2.08	20.80	22.8	-8.77		
6/10/2013	D5GHV2 (5.2GHz)	1138	Body	1g	7.22	7.65	76.50	73.2	4.51	-5.96	
				10g	2.00	2.18	21.80	20.4	6.86		
6/13/2013	D5GHV2 (5.2GHz)	1138	Head	1g	7.80	7.48	74.80	79.5	-5.91	4.10	
				10g	2.15	2.12	21.20	22.8	-7.02		
6/13/2013	D5GHV2 (5.2GHz)	1138	Body	1g	7.41	7.70	77.00	73.2	5.19	-3.91	
				10g	2.03	2.19	21.90	20.4	7.35		
6/17/2013	D5GHV2 (5.2GHz)	1138	Head	1g	7.33	7.81	78.10	79.5	-1.76	-6.55	
				10g	2.00	2.22	22.20	22.8	-2.63		
6/17/2013	D5GHV2 (5.2GHz)	1138	Body	1g	7.59	7.62	76.20	73.2	4.10	-0.40	
				10g	2.12	2.18	21.80	20.4	6.86		
6/20/2013	D5GHV2 (5.2GHz)	1138	Head	1g	8.24	8.02	80.20	79.5	0.88	2.67	
				10g	2.25	2.28	22.80	22.8	0.00		
6/20/2013	D5GHV2 (5.2GHz)	1138	Body	1g	6.85	7.34	73.40	73.2	0.27	-7.15	
				10g	1.89	2.09	20.90	20.4	2.45		
6/24/2013	D5GHV2 (5.2GHz)	1138	Head	1g	7.06	7.31	73.10	79.5	-8.05	-3.54	15,16
				10g	1.94	2.07	20.70	22.8	-9.21		
6/24/2013	D5GHV2 (5.2GHz)	1138	Body	1g	7.34	7.68	76.80	73.2	4.92	-4.63	
				10g	2.04	2.19	21.90	20.4	7.35		
7/12/2013	D1900V2	5d043	Body	1g	4.01	3.98	39.80	40.90	-2.69	0.75	17,18
				10g	2.00	2.09	20.90	21.60	-3.24		
7/15/2013	D1900V2	5d163	Body	1g	4.09	4.05	40.50	39.60	2.27	0.98	19,20
				10g	2.04	2.12	21.20	21.10	0.47		
7/22/2013	D1900V2	5d140	Body	1g	4.24	4.18	41.80	41.5	0.72	1.42	21,22
				10g	2.14	2.18	21.80	22.0	-0.91		

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SAR Room F

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				
6/6/2013	D5GHV2 (5.5GHz)	1138	Head	1g	9.20	8.70	87.00	83.6	4.07	5.43	
				10g	2.57	2.52	25.20	23.8	5.88		
6/6/2013	D5GHV2 (5.6GHz)	1138	Head	1g	7.68	8.13	81.30	83.6	-2.75	-5.86	
				10g	2.13	2.34	23.40	23.8	-1.68		
6/6/2013	D5GHV2 (5.5GHz)	1138	Body	1g	7.63	7.74	77.40	77.9	-0.64	-1.44	
				10g	2.09	2.21	22.10	21.7	1.84		
6/6/2013	D5GHV2 (5.6GHz)	1138	Body	1g	7.96	8.03	80.30	77.9	3.08	-0.88	
				10g	2.16	2.27	22.70	21.7	4.61		
6/10/2013	D5GHV2 (5.5GHz)	1138	Head	1g	7.67	8.25	82.50	83.6	-1.32	-7.56	
				10g	2.13	2.36	23.60	23.8	-0.84		
6/10/2013	D5GHV2 (5.6GHz)	1138	Head	1g	7.55	8.01	80.10	83.6	-4.19	-6.09	
				10g	2.09	2.27	22.70	23.8	-4.62		
6/10/2013	D5GHV2 (5.5GHz)	1138	Body	1g	8.00	8.07	80.70	77.9	3.59	-0.88	
				10g	2.19	2.29	22.90	21.7	5.53		
6/10/2013	D5GHV2 (5.6GHz)	1138	Body	1g	8.05	7.96	79.60	77.9	2.18	1.12	
				10g	2.19	2.24	22.40	21.7	3.23		
6/10/2013	D5GHV2 (5.5GHz)	1138	Head	1g	8.37	8.55	85.50	83.6	2.27	-2.15	
				10g	2.35	2.45	24.50	23.8	2.94		
6/10/2013	D5GHV2 (5.6GHz)	1138	Head	1g	8.44	8.71	87.10	83.6	4.19	-3.20	
				10g	2.29	2.48	24.80	23.8	4.20		
6/10/2013	D5GHV2 (5.5GHz)	1138	Body	1g	7.77	7.90	79.00	77.9	1.41	-1.67	
				10g	2.12	2.23	22.30	21.7	2.76		
6/10/2013	D5GHV2 (5.6GHz)	1138	Body	1g	7.96	8.03	80.30	77.9	3.08	-0.88	
				10g	2.15	2.26	22.60	21.7	4.15		
6/17/2013	D5GHV2 (5.6GHz)	1003	Head	1g	7.87	8.53	85.30	82.8	3.02	-8.39	
				10g	2.16	2.44	24.40	23.6	3.39		
6/17/2013	D5GHV2 (5.6GHz)	1003	Body	1g	7.69	7.78	77.80	79.0	-1.52	-1.17	
				10g	2.09	2.18	21.80	22.0	-0.91		
6/20/2013	D5GHV2 (5.6GHz)	1003	Head	1g	8.17	8.73	87.30	82.8	5.43	-6.85	23,24
				10g	2.24	2.51	25.10	23.6	6.36		
6/20/2013	D5GHV2 (5.6GHz)	1003	Body	1g	7.65	7.65	76.50	79.0	-3.16	0.00	
				10g	2.08	2.15	21.50	22.0	-2.27		
7/5/2013	D5GHV2 (5.8GHz)	1003	Head	1g	7.46	7.83	78.30	76.9	1.82	-4.96	
				10g	2.05	2.27	22.70	22.0	3.18		
7/5/2013	D5GHV2 (5.8GHz)	1003	Body	1g	8.28	7.96	79.60	77.0	3.38	3.86	
				10g	2.29	2.25	22.50	21.4	5.14		
7/18/2013	D835V2	4d142	Body	1g	1.03	0.99	9.85	9.50	3.68	4.37	
				10g	0.69	0.65	6.49	6.29	3.18		

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12. SAR Test Results

12.1. GSM850

12.1.1. Head Exposure Conditions

Test Position	Antenna	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
					Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Left Touch	UAT	Voice	190	836.6	33.2	33.2	0.384	0.384	0.275	0.275	
Left Tilt	UAT	Voice	190	836.6	33.2	33.2	0.311	0.311	0.169	0.169	
Right Touch	UAT	Voice	190	836.6	33.2	33.2	0.325	0.325	0.243	0.243	
Right Tilt	UAT	Voice	190	836.6	33.2	33.2	0.200	0.200	0.151	0.151	
Left Touch	UAT	GPRS 2 slots	190	836.6	31.0	31.0	**0.582**	0.582	**0.416**	0.416	1
Left Tilt	UAT	GPRS 2 slots	190	836.6	31.0	31.0	0.336	0.336	0.229	0.229	
Right Touch	UAT	GPRS 2 slots	190	836.6	31.0	31.0	0.435	0.435	0.323	0.323	
Right Tilt	UAT	GPRS 2 slots	190	836.6	31.0	31.0	0.296	0.296	0.213	0.213	
Left Touch	LAT	Voice	190	836.6	33.5	33.4	0.314	0.321	0.240	0.246	
Left Tilt	LAT	Voice	190	836.6	33.5	33.4	0.232	0.237	0.176	0.180	
Right Touch	LAT	Voice	190	836.6	33.5	33.4	0.323	0.331	0.239	0.245	
Right Tilt	LAT	Voice	190	836.6	33.5	33.4	0.196	0.201	0.148	0.151	
Left Touch	LAT	GPRS 2 slots	190	836.6	32.5	32.5	0.585	0.585	0.441	0.441	
Left Tilt	LAT	GPRS 2 slots	190	836.6	32.5	32.5	0.226	0.226	0.172	0.172	
Right Touch	LAT	GPRS 2 slots	190	836.6	32.5	32.5	0.544	0.544	0.404	0.404	
Right Tilt	LAT	GPRS 2 slots	190	836.6	32.5	32.5	0.342	0.342	0.259	0.259	

12.1.2. Body-worn Accessory Exposure Conditions

Test Position	Antenna	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Rear	UAT	Voice	5	190	836.6	33.2	33.2	0.233	0.233	0.141	0.141	
Front	UAT	Voice	5	190	836.6	33.2	33.2	0.204	0.204	0.118	0.118	
Rear	LAT	Voice	5	190	836.6	33.5	33.5	**0.632**	0.632	**0.445**	0.445	2
Front	LAT	Voice	5	190	836.6	33.5	33.5	0.541	0.541	0.414	0.414	

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12.1.3. Hotspot Exposure Conditions

Test Position	Antenna	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Rear	UAT	GPRS 2 slots	5	190	836.6	32.2	32.2	0.411	0.411	0.249	0.249	
Front	UAT	GPRS 2 slots	5	190	836.6	32.2	32.2	0.359	0.359	0.207	0.207	
Edge 1	UAT	GPRS 2 slots	5	190	836.6	32.2	32.2	0.275	0.275	0.134	0.134	
Edge 2	UAT	GPRS 2 slots	5	190	836.6	32.2	32.2	0.473	0.473	0.310	0.310	
Edge 4	UAT	GPRS 2 slots	5	190	836.6	32.2	32.2	0.185	0.185	0.119	0.119	
Rear	LAT	GPRS 2 slots	5	128	824.2	31.0	31.0	0.906	0.906	0.638	0.638	
Rear	LAT	GPRS 2 slots	5	190	836.6	31.0	31.0	**1.090**	1.090	**0.765**	0.765	3
Rear	LAT	GPRS 2 slots	5	251	848.8	31.0	31.0	1.050	1.050	0.749	0.749	
Front	LAT	GPRS 2 slots	5	128	824.2	31.0	31.0	0.746	0.746	0.564	0.564	
Front	LAT	GPRS 2 slots	5	190	836.6	31.0	31.0	0.847	0.847	0.646	0.646	
Front	LAT	GPRS 2 slots	5	251	848.8	31.0	31.0	0.946	0.946	0.732	0.732	
Edge 2	LAT	GPRS 2 slots	5	190	836.6	31.0	31.0	0.628	0.628	0.407	0.407	
Edge 3	LAT	GPRS 2 slots	5	190	836.6	31.0	31.0	0.205	0.205	0.107	0.107	
Edge 4	LAT	GPRS 2 slots	5	128	824.2	31.0	31.0	0.979	0.979	0.648	0.648	
Edge 4	LAT	GPRS 2 slots	5	190	836.6	31.0	31.0	0.994	0.994	0.656	0.656	
Edge 4	LAT	GPRS 2 slots	5	251	848.8	31.0	31.0	0.964	0.964	0.642	0.642	

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
2. With headset attached. According to KDB 648474 Section 2.3, when the reported SAR for body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

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12.2. GSM1900

12.2.1. Head Exposure Conditions

Test Position	Antenna	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
					Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Left Touch	UAT	Voice	661	1880.0	30.5	30.5	0.536	0.536	0.271	0.271	
Left Tilt	UAT	Voice	661	1880.0	30.5	30.5	0.573	0.573	0.287	0.287	
Right Touch	UAT	Voice	512	1850.2	30.5	30.4	0.920	0.941	0.491	0.502	
Right Touch	UAT	Voice	661	1880.0	30.5	30.5	**0.948**	0.948	**0.508**	0.508	4
Right Touch	UAT	Voice	810	1909.8	30.5	30.5	0.932	0.932	0.499	0.499	
Right Tilt	UAT	Voice	661	1880.0	30.5	30.5	0.777	0.777	0.410	0.410	
Left Touch	UAT	GPRS 2 slots	661	1880.0	27.5	27.5	0.496	0.496	0.250	0.250	
Left Tilt	UAT	GPRS 2 slots	661	1880.0	27.5	27.5	0.523	0.523	0.267	0.267	
Right Touch	UAT	GPRS 2 slots	512	1850.2	27.5	27.3	0.868	0.909	0.464	0.486	
Right Touch	UAT	GPRS 2 slots	661	1880.0	27.5	27.5	0.838	0.838	0.453	0.453	
Right Touch	UAT	GPRS 2 slots	810	1909.8	27.5	27.5	0.858	0.858	0.460	0.460	
Right Tilt	UAT	GPRS 2 slots	661	1880.0	27.5	27.5	0.731	0.731	0.387	0.387	
Left Touch	LAT	Voice	661	1880.0	30.5	30.5	0.472	0.472	0.303	0.303	
Left Tilt	LAT	Voice	661	1880.0	30.5	30.5	0.232	0.232	0.139	0.139	
Right Touch	LAT	Voice	661	1880.0	30.5	30.5	0.704	0.704	0.429	0.429	
Right Tilt	LAT	Voice	661	1880.0	30.5	30.5	0.163	0.163	0.099	0.099	
Left Touch	LAT	GPRS 2 slots	661	1880.0	28.0	28.0	0.599	0.599	0.386	0.386	
Left Tilt	LAT	GPRS 2 slots	661	1880.0	28.0	28.0	0.301	0.301	0.180	0.180	
Right Touch	LAT	GPRS 2 slots	512	1850.2	28.0	28.0	0.805	0.805	0.495	0.495	
Right Touch	LAT	GPRS 2 slots	661	1880.0	28.0	28.0	0.844	0.844	0.513	0.513	
Right Touch	LAT	GPRS 2 slots	810	1909.8	28.0	28.0	0.903	0.903	0.541	0.541	
Right Tilt	LAT	GPRS 2 slots	661	1880.0	28.0	28.0	0.194	0.194	0.120	0.120	0

12.2.2. Body-worn Accessory Exposure Conditions

Test Position	Antenna	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Rear	UAT	Voice	5	661	1880.0	28.75	28.75	0.330	0.330	0.166	0.166	
Front	UAT	Voice	5	661	1880.0	28.75	28.75	0.239	0.239	0.125	0.125	
Rear	LAT	Voice	5	512	1850.2	29.0	28.9	0.861	0.881	0.441	0.451	
Rear	LAT	Voice	5	661	1880.0	29.0	29.0	**0.862**	0.862	**0.434**	0.434	5
Rear	LAT	Voice	5	810	1909.8	29.0	28.9	0.806	0.825	0.403	0.412	
Front	LAT	Voice	5	661	1880.0	29.0	29.0	0.642	0.642	0.359	0.359	

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12.2.3. Hotspot Exposure Conditions

Test Position	Antenna	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Rear	UAT	GPRS 2 slots	5	661	1880.0	28.75	28.75	0.317	0.317	0.158	0.158	
Front	UAT	GPRS 2 slots	5	661	1880.0	28.75	28.75	0.228	0.228	0.119	0.119	
Edge 1	UAT	GPRS 2 slots	5	661	1880.0	28.75	28.75	0.174	0.174	0.070	0.070	
Edge 2	UAT	GPRS 2 slots	5	661	1880.0	28.75	28.75	0.050	0.050	0.026	0.026	
Edge 4	UAT	GPRS 2 slots	5	661	1880.0	28.75	28.75	0.133	0.133	0.071	0.071	
Rear	LAT	GPRS 2 slots	5	512	1850.2	26.0	26.0	0.960	0.960	0.489	0.489	
Rear	LAT	GPRS 2 slots	5	661	1880.0	26.0	26.0	0.957	0.957	0.484	0.484	
Rear	LAT	GPRS 2 slots	5	810	1909.8	26.0	26.0	0.952	0.952	0.474	0.474	
Front	LAT	GPRS 2 slots	5	661	1880.0	26.0	26.0	0.691	0.691	0.387	0.387	
Edge 2	LAT	GPRS 2 slots	5	661	1880.0	26.0	26.0	0.601	0.601	0.320	0.320	
Edge 3	LAT	GPRS 2 slots	5	661	1880.0	26.0	26.0	0.780	0.780	0.377	0.377	
Edge 4	LAT	GPRS 2 slots	5	661	1880.0	26.0	26.0	0.102	0.102	0.053	0.053	
Rear	LAT	EGPRS 2 slots	5	512	1850.2	27.0	27.0	**1.110**	1.110	**0.547**	0.547	6
Rear	LAT	EGPRS 2 slots	5	661	1880.0	27.0	27.0	1.100	1.100	0.533	0.533	
Rear	LAT	EGPRS 2 slots	5	810	1909.8	27.0	27.0	1.090	1.090	0.522	0.522	
Front	LAT	EGPRS 2 slots	5	512	1850.2	27.0	27.0	0.876	0.876	0.483	0.483	
Front	LAT	EGPRS 2 slots	5	661	1880.0	27.0	27.0	0.823	0.823	0.445	0.445	
Front	LAT	EGPRS 2 slots	5	810	1909.8	27.0	27.0	0.792	0.792	0.412	0.412	
Edge 2	LAT	EGPRS 2 slots	5	661	1880.0	27.0	27.0	0.628	0.628	0.331	0.331	
Edge 3	LAT	EGPRS 2 slots	5	512	1850.2	27.0	27.0	0.984	0.984	0.469	0.469	
Edge 3	LAT	EGPRS 2 slots	5	661	1880.0	27.0	27.0	0.919	0.919	0.424	0.424	
Edge 3	LAT	EGPRS 2 slots	5	810	1909.8	27.0	27.0	0.934	0.934	0.420	0.420	
Edge 4	LAT	EGPRS 2 slots	5	661	1880.0	27.0	27.0	0.085	0.085	0.043	0.043	

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
2. With headset attached. According to KDB 648474 Section 2.3, when the reported SAR for body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

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12.3. W-CDMA Band 2

12.3.1. Head Exposure Conditions

Test Position	Antenna	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
					Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Left Touch	UAT	Rel. 99 RMC	9400	1880.0	22.5	22.5	0.648	0.648	0.320	0.320	
Left Tilt	UAT	Rel. 99 RMC	9400	1880.0	22.5	22.5	0.707	0.707	0.347	0.347	
Right Touch	UAT	Rel. 99 RMC	9262	1852.4	22.5	22.4	0.906	0.927	0.479	0.490	
Right Touch	UAT	Rel. 99 RMC	9400	1880.0	22.5	22.5	0.940	0.940	0.493	0.493	
Right Touch	UAT	Rel. 99 RMC	9538	1907.6	22.5	22.5	0.956	0.956	0.498	0.498	
Right Tilt	UAT	Rel. 99 RMC	9262	1852.4	22.5	22.4	0.903	0.924	0.465	0.476	
Right Tilt	UAT	Rel. 99 RMC	9400	1880.0	22.5	22.5	0.915	0.915	0.464	0.464	
Right Tilt	UAT	Rel. 99 RMC	9538	1907.6	22.5	22.5	0.912	0.912	0.449	0.449	
Left Touch	LAT	Rel. 99 RMC	9262	1852.4	23.0	22.8	0.897	0.939	0.566	0.593	
Left Touch	LAT	Rel. 99 RMC	9400	1880.0	23.0	23.0	1.070	1.070	0.665	0.665	
Left Touch	LAT	Rel. 99 RMC	9538	1907.6	23.0	23.0	1.060	1.060	0.653	0.653	
Left Tilt	LAT	Rel. 99 RMC	9400	1880.0	23.0	23.0	0.429	0.429	0.258	0.258	
Right Touch	LAT	Rel. 99 RMC	9262	1852.4	23.0	22.8	1.090	1.141	0.668	0.699	
Right Touch	LAT	Rel. 99 RMC	9400	1880.0	23.0	23.0	**1.170**	1.170	**0.708**	0.708	7
Right Touch	LAT	Rel. 99 RMC	9538	1907.6	23.0	23.0	1.150	1.150	0.691	0.691	
Right Tilt	LAT	Rel. 99 RMC	9400	1880.0	23.0	23.0	0.410	0.410	0.262	0.262	

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
2. With headset attached. According to KDB 648474 Section 2.3, when the reported SAR for body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

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12.3.2. Body-worn Accessory & Hotspot Exposure Conditions

KDB 941225 D01 – Body SAR is not required for handsets with HSPA capabilities when the maximum average output of each RF channel with HSUPA/HSDPA active is less than ¼ dB higher than that measured without HSUPA/HSDPA using 12.2 kbps RMC and the maximum SAR for 12.2kbps RMC is ≤ 75% of the SAR limit. (pg.12)

Body-worn Accessory & Hotspot Exposure Conditions

Test Position	Antenna	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Rear	UAT	Rel. 99 RMC	5	9400	1880.0	22.5	22.4	0.678	0.694	0.356	0.364	
Front	UAT	Rel. 99 RMC	5	9400	1880.0	22.5	22.4	0.542	0.555	0.295	0.302	
Rear	LAT	Rel. 99 RMC	5	9262	1852.4	22.5	20.0	0.982	1.746	0.498	0.886	
Rear	LAT	Rel. 99 RMC	5	9400	1880.0	22.5	20.0	**1.070**	1.903	**0.536**	0.953	8
Rear	LAT	Rel. 99 RMC	5	9538	1907.6	22.5	20.0	1.070	1.903	0.530	0.942	
Front	LAT	Rel. 99 RMC	5	9262	1852.4	22.5	20.0	0.747	1.328	0.427	0.759	
Front	LAT	Rel. 99 RMC	5	9400	1880.0	22.5	20.0	0.790	1.405	0.441	0.784	
Front	LAT	Rel. 99 RMC	5	9538	1907.6	22.5	20.0	0.768	1.366	0.422	0.750	

Hotspot Exposure Conditions

Test Position	Antenna	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Edge 1	UAT	Rel. 99 RMC	5	9400	1880.0	22.5	22.4	0.393	0.402	0.168	0.172	
Edge 2	UAT	Rel. 99 RMC	5	9400	1880.0	22.5	22.4	0.159	0.163	0.085	0.087	
Edge 4	UAT	Rel. 99 RMC	5	9400	1880.0	22.5	22.4	0.383	0.392	0.209	0.214	
Edge 2	LAT	Rel. 99 RMC	5	9400	1880.0	20.0	20.0	0.614	0.614	0.328	0.328	
Edge 3	LAT	Rel. 99 RMC	5	9262	1852.4	20.0	20.0	0.764	0.764	0.379	0.379	
Edge 3	LAT	Rel. 99 RMC	5	9400	1880.0	20.0	20.0	**0.815**	0.815	**0.398**	0.398	9
Edge 3	LAT	Rel. 99 RMC	5	9538	1907.6	20.0	20.0	0.807	0.807	0.388	0.388	
Edge 4	LAT	Rel. 99 RMC	5	9400	1880.0	20.0	20.0	0.085	0.085	0.045	0.045	

Note(s):

3. 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
4. With headset attached. According to KDB 648474 Section 2.3, when the reported SAR for body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

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12.4. W-CDMA Band 5

12.4.1. Head Exposure Conditions

Test Position	Antenna	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
					Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Left Touch	UAT	Rel. 99 RMC	4183	836.6	23.9	23.9	0.465	0.465	0.330	0.330	
Left Tilt	UAT	Rel. 99 RMC	4183	836.6	23.9	23.9	0.392	0.392	0.215	0.215	
Right Touch	UAT	Rel. 99 RMC	4183	836.6	23.9	23.9	0.327	0.327	0.212	0.212	
Right Tilt	UAT	Rel. 99 RMC	4183	836.6	23.9	23.9	0.273	0.273	0.158	0.158	
Left Touch	LAT	Rel. 99 RMC	4183	836.6	24.5	24.5	0.549	0.549	0.422	0.422	
Left Tilt	LAT	Rel. 99 RMC	4183	836.6	24.5	24.5	0.288	0.288	0.219	0.219	
Right Touch	LAT	Rel. 99 RMC	4183	836.6	24.5	24.5	**0.587**	0.587	**0.433**	0.433	10
Right Tilt	LAT	Rel. 99 RMC	4183	836.6	24.5	24.5	0.332	0.332	0.254	0.254	

12.4.2. Body-worn Accessory & Hotspot Exposure Conditions

KDB 941225 D01 – Body SAR is not required for handsets with HSPA capabilities when the maximum average output of each RF channel with HSUPA/HSDPA active is less than ¼ dB higher than that measured without HSUPA/HSDPA using 12.2 kbps RMC and the maximum SAR for 12.2kbps RMC is ≤ 75% of the SAR limit. (pg.12)

Body-worn Accessory & Hotspot Exposure Conditions

Test Position	Antenna	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Rear	UAT	Rel. 99 RMC	5	4183	836.6	24.2	24.2	0.265	0.265	0.162	0.162	
Front	UAT	Rel. 99 RMC	5	4183	836.6	24.2	24.2	0.214	0.214	0.126	0.126	
Rear	LAT	Rel. 99 RMC	5	4183	836.6	24.25	24.2	**0.723**	0.731	**0.494**	0.500	11
Front	LAT	Rel. 99 RMC	5	4183	836.6	24.25	24.2	0.678	0.686	0.514	0.520	

Hotspot Exposure Conditions

Test Position	Antenna	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Edge 1	UAT	Rel. 99 RMC	5	4183	836.6	24.2	24.2	0.195	0.195	0.095	0.095	
Edge 2	UAT	Rel. 99 RMC	5	4183	836.6	24.2	24.2	0.598	0.598	0.394	0.394	
Edge 4	UAT	Rel. 99 RMC	5	4183	836.6	24.2	24.2	0.224	0.224	0.147	0.147	
Edge 2	LAT	Rel. 99 RMC	5	4183	836.6	24.25	24.2	0.484	0.490	0.313	0.317	
Edge 3	LAT	Rel. 99 RMC	5	4183	836.6	24.25	24.2	0.178	0.180	0.090	0.091	
Edge 4	LAT	Rel. 99 RMC	5	4183	836.6	24.25	24.2	**0.620**	0.627	**0.408**	0.413	12

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
2. With headset attached. According to KDB 648474 Section 2.3, when the reported SAR for body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

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12.5. LTE Band 2 (20MHz Bandwidth)

12.5.1. Head Exposure Conditions

Test Position	Antenna	Mode	UL Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Meas. Pwr (dBm)	1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Meas.	Scaled	Meas.	Scaled	
Left Touch	UAT	QPSK	18900	1880.0	1	49	22.5	0.682	0.682	0.340	0.340	
					50	24	21.5	0.520	0.545	0.260	0.272	
Left Tilt	UAT	QPSK	18700	1860.0	1	49	22.4	0.843	0.863	0.422	0.432	
			18900	1880.0	1	49	22.5	0.809	0.809	0.397	0.397	
					50	24	21.5	0.621	0.650	0.305	0.319	
					100	0	21.5	0.646	0.646	0.326	0.326	
			19100	1900.0	1	49	22.4	0.774	0.792	0.382	0.391	
Right Touch	UAT	QPSK	18700	1860.0	1	49	22.4	0.908	0.929	0.472	0.483	
			18900	1880.0	1	49	22.5	0.943	0.943	0.485	0.485	
					50	24	21.5	0.730	0.764	0.377	0.395	
					100	0	21.5	0.728	0.728	0.376	0.376	
			19100	1900.0	1	49	22.5	0.997	0.997	0.510	0.510	
Right Tilt	UAT	QPSK	18700	1860.0	1	49	22.4	0.831	0.850	0.435	0.445	
			18900	1880.0	1	49	22.5	0.851	0.851	0.439	0.439	
					50	24	21.5	0.675	0.707	0.347	0.363	
					100	0	21.5	0.667	0.667	0.342	0.342	
			19100	1900.0	1	49	22.5	0.982	0.982	0.502	0.502	
Left Touch	LAT	QPSK	18700	1860.0	1	49	22.9	0.923	0.944	0.591	0.605	
			18900	1880.0	1	49	23.0	0.954	0.954	0.617	0.617	
					50	24	22.0	0.731	0.765	0.473	0.495	
					100	0	22.0	0.717	0.717	0.463	0.463	
			19100	1900.0	1	49	22.9	1.010	1.034	0.641	0.656	
Left Tilt	LAT	QPSK	18900	1880.0	1	49	23.0	0.554	0.554	0.326	0.326	
					50	24	22.0	0.437	0.458	0.257	0.269	
Right Touch	LAT	QPSK	18700	1860.0	1	49	22.9	0.869	0.889	0.523	0.535	
					50	24	21.8	0.706	0.792	0.425	0.477	
			18900	1880.0	1	49	23.0	**1.070**	**1.070**	**0.641**	0.641	13
					50	24	22.0	0.855	0.895	0.513	0.537	
					100	0	22.0	0.844	0.864	0.503	0.515	
			19100	1900.0	1	49	22.9	1.040	1.064	0.613	0.627	
					50	24	21.8	0.827	1.065	0.489	0.630	
Right Tilt	LAT	QPSK	18900	1880.0	1	49	23.0	0.171	0.171	0.101	0.101	
					50	24	22.0	0.132	0.138	0.078	0.082	

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12.5.2. Body-worn Accessory & Hotspot Exposure Conditions

Body-worn Accessory & Hotspot Exposure Conditions

Test Position	Antenna	Mode	Dist. (mm)	UL Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Meas. Pwr (dBm)	1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
									Meas.	Scaled	Meas.	Scaled	
Rear	UAT	QPSK	5	18900	1880.0	1	49	22.3	0.794	0.794	0.414	0.414	
						50	24	21.1	0.601	0.615	0.314	0.321	
Front	UAT	QPSK	5	18900	1880.0	1	49	22.3	0.567	0.567	0.310	0.310	
						50	24	21.1	0.430	0.440	0.235	0.240	
Rear	LAT	QPSK	5	18700	1860.0	1	49	19.3	0.943	0.932	0.465	0.460	
				18900	1880.0	1	49	19.3	0.997	0.986	0.505	0.499	
						50	24	18.3	0.750	0.733	0.379	0.370	
						100	0	18.3	0.744	0.727	0.377	0.368	
				19100	1900.0	1	49	19.3	**1.030**	1.018	**0.499**	0.493	14
Front	LAT	QPSK	5	18900	1880.0	1	49	19.3	0.718	0.710	0.396	0.391	
						50	24	18.3	0.546	0.534	0.305	0.298	

Hotspot Exposure Conditions

Test Position	Antenna	Mode	Dist. (mm)	UL Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Meas. Pwr (dBm)	1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
									Meas.	Scaled	Meas.	Scaled	
Edge 1	UAT	QPSK	5	18900	1880.0	1	49	22.3	0.465	0.465	0.196	0.196	
						50	24	21.1	0.352	0.360	0.147	0.150	
Edge 2	UAT	QPSK	5	18900	1880.0	1	49	22.3	0.112	0.112	0.059	0.059	
						50	24	21.1	0.087	0.089	0.047	0.048	
Edge 4	UAT	QPSK	5	18900	1880.0	1	49	22.3	0.325	0.325	0.175	0.175	
						50	24	21.1	0.252	0.258	0.135	0.138	
Edge 2	LAT	QPSK	5	18900	1880.0	1	49	19.3	0.574	0.567	0.308	0.304	
						50	24	18.3	0.440	0.430	0.235	0.230	
Edge 3	LAT	QPSK	5	18900	1880.0	1	49	19.3	**0.727**	0.719	**0.351**	0.347	15
						50	24	18.3	0.558	0.545	0.269	0.263	
Edge 4	LAT	QPSK	5	18900	1880.0	1	49	19.3	0.078	0.077	0.041	0.040	
						50	24	18.3	0.059	0.058	0.030	0.030	

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
2. Per KDB 941225 D05 SAR for LTE Devices, SAR test reduction is applied using the following criteria:
   - Testing for Low and High Channel is performed at the highest output power level for 1RB, and 50% RB configuration for that channel.
   - Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are ≥ 0.8 W/kg. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg.
   - Testing for 16-QAM modulation is not required because the reported SAR for QPSK is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of QPSK.
   - Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.
3. With headset attached. According to KDB 648474 Section 2.3, when the reported SAR for body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

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12.6. LTE Band 5 (10MHz Bandwidth)

12.6.1. Head Exposure Conditions

Test Position	Antenna	Mode	UL Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Meas. Pwr (dBm)	1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Meas.	Scaled	Meas.	Scaled	
Left Touch	UAT	QPSK	20525	836.6	1	24	23.7	0.384	0.384	0.251	0.251	
					25	12	22.8	0.298	0.305	0.196	0.201	
Left Tilt	UAT	QPSK	20525	836.6	1	24	23.7	0.346	0.346	0.193	0.193	
					25	12	22.8	0.263	0.269	0.145	0.148	
Right Touch	UAT	QPSK	20525	836.6	1	24	23.7	0.336	0.336	0.208	0.208	
					25	12	22.8	0.253	0.259	0.156	0.160	
Right Tilt	UAT	QPSK	20525	836.6	1	24	23.7	0.276	0.276	0.160	0.160	
					25	12	22.8	0.198	0.203	0.114	0.117	
Left Touch	LAT	QPSK	20525	836.6	1	24	24.0	**0.505**	0.505	**0.382**	0.382	16
					25	12	23.4	0.410	0.365	0.311	0.277	
Left Tilt	LAT	QPSK	20525	836.6	1	24	24.0	0.269	0.269	0.205	0.205	
					25	12	23.4	0.219	0.195	0.166	0.148	
Right Touch	LAT	QPSK	20525	836.6	1	24	24.0	0.466	0.466	0.346	0.346	
					25	12	23.4	0.383	0.341	0.283	0.252	
Right Tilt	LAT	QPSK	20525	836.6	1	24	24.0	0.264	0.264	0.201	0.201	
					25	12	23.4	0.213	0.190	0.162	0.144	

12.6.2. Body-worn Accessory & Hotspot Exposure Conditions

Body-worn Accessory & Hotspot Exposure Conditions

Test Position	Antenna	Mode	Dist. (mm)	UL Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Meas. Pwr (dBm)	1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
									Meas.	Scaled	Meas.	Scaled	
Rear	UAT	QPSK	5	20525	836.6	1	24	23.7	0.267	0.267	0.152	0.152	
						25	12	22.7	0.207	0.198	0.118	0.113	
Front	UAT	QPSK	5	20525	836.6	1	24	23.7	0.221	0.221	0.126	0.126	
						25	12	22.7	0.176	0.168	0.098	0.093	
Rear	LAT	QPSK	5	20525	836.6	1	24	24.0	**0.598**	0.598	**0.429**	0.429	17
						25	12	23.2	0.455	0.435	0.327	0.312	
Front	LAT	QPSK	5	20525	836.6	1	24	24.0	0.562	0.562	0.425	0.425	
						25	12	23.2	0.430	0.411	0.328	0.313	

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Hotspot Exposure Conditions

Test Position	Antenna	Mode	Dist. (mm)	UL Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Meas. Pwr (dBm)	1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
									Meas.	Scaled	Meas.	Scaled	
Edge 1	UAT	QPSK	5	20525	836.6	1	24	23.7	0.162	0.162	0.081	0.081	
						25	12	22.7	0.158	0.151	0.079	0.075	
Edge 2	UAT	QPSK	5	20525	836.6	1	24	23.7	0.313	0.313	0.206	0.206	
						25	12	22.7	0.242	0.231	0.158	0.151	
Edge 4	UAT	QPSK	5	20525	836.6	1	24	23.7	0.072	0.072	0.031	0.031	
						25	12	22.7	0.059	0.056	0.037	0.036	
Edge 2	LAT	QPSK	5	20525	836.6	1	24	24.0	0.433	0.433	0.279	0.279	
						25	12	23.2	0.328	0.313	0.211	0.202	
Edge 3	LAT	QPSK	5	20525	836.6	1	24	24.0	0.124	0.124	0.064	0.064	
						25	12	23.2	0.097	0.092	0.050	0.048	
Edge 4	LAT	QPSK	5	20525	836.6	1	24	24.0	**0.583**	0.583	**0.383**	0.383	18
						25	12	23.2	0.455	0.435	0.299	0.286	

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
2. Per KDB 941225 D05 SAR for LTE Devices, SAR test reduction is applied using the following criteria:
   - Testing for Low and High Channel is performed at the highest output power level for 1RB, and 50% RB configuration for that channel.
   - Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are ≥ 0.8 W/kg. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg.
   - Testing for 16-QAM modulation is not required because the reported SAR for QPSK is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of QPSK.
   - Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.
3. With headset attached. According to KDB 648474 Section 2.3, when the reported SAR for body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

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12.7. Wi-Fi (DTS Band)

12.7.1. Head Exposure Conditions

WiFi Vendor	Band	Test Position	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Vendor A	2.4GHz	Left Touch	802.11b	6	2437	14.5	14.5	0.229	0.229	0.119	0.119	
		Left Tilt	802.11b	6	2437	14.5	14.5	0.156	0.156	0.074	0.074	
		Right Touch	802.11b	6	2437	14.5	14.5	0.588	**0.588**	0.273	0.273	19
		Right Tilt	802.11b	6	2437	14.5	14.5	0.413	0.413	0.183	0.183	
Vendor B	2.4GHz	Left Touch	802.11b	6	2437	14.5	14.5	0.154	0.154	0.080	0.080	
		Left Tilt	802.11b	6	2437	14.5	14.5	0.111	0.111	0.053	0.053	
		Right Touch	802.11b	6	2437	14.5	14.5	0.375	0.375	0.173	0.173	
		Right Tilt	802.11b	6	2437	14.5	14.5	0.280	0.280	0.125	0.125	
Vendor C	2.4GHz	Left Touch	802.11b	6	2437	14.5	14.5	0.135	0.135	0.069	0.069	
		Left Tilt	802.11b	6	2437	14.5	14.5	0.096	0.096	0.044	0.044	
		Right Touch	802.11b	6	2437	14.5	14.5	0.349	0.349	0.164	0.164	
		Right Tilt	802.11b	6	2437	14.5	14.5	0.228	0.228	0.099	0.099	
Vendor A	5.8GHz	Left Touch	802.11a	157	5785	16.0	16.0	0.376	0.376	0.098	0.098	
		Left Tilt	802.11a	157	5785	16.0	16.0	0.488	0.488	0.145	0.145	
		Right Touch	802.11a	157	5785	16.0	16.0	0.375	0.375	0.102	0.102	
		Right Tilt	802.11a	157	5785	16.0	16.0	0.327	0.327	0.088	0.088	
Vendor B	5.8GHz	Left Touch	802.11a	157	5785	16.0	16.0	0.297	0.297	0.074	0.074	
		Left Tilt	802.11a	157	5785	16.0	16.0	0.306	0.306	0.073	0.073	
		Right Touch	802.11a	157	5785	16.0	16.0	0.320	0.320	0.083	0.083	
		Right Tilt	802.11a	157	5785	16.0	16.0	0.196	0.196	0.046	0.046	
Vendor C	5.8GHz	Left Touch	802.11a	157	5785	16.0	16.0	0.352	0.352	0.096	0.096	
		Left Tilt	802.11a	157	5785	16.0	16.0	0.316	0.316	0.085	0.085	
		Right Touch	802.11a	157	5785	16.0	16.0	0.569	0.569	0.120	0.120	20
		Right Tilt	802.11a	157	5785	16.0	16.0	0.543	0.543	0.112	0.112	

12.7.2. Body-worn Accessory & Hotspot Mode Exposure Conditions

Body-worn Accessory & Hotspot Mode Exposure Conditions

WiFi Vendor	Band	Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
							Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Vendor A	2.4GHz	Rear	802.11b	5	6	2437	14.5	14.5	0.462	**0.462**	0.205	0.205	21
		Front	802.11b	5	6	2437	14.5	14.5	0.217	0.217	0.111	0.111	
Vendor B	2.4GHz	Rear	802.11b	5	6	2437	14.5	14.5	0.316	0.316	0.132	0.132	
		Front	802.11b	5	6	2437	14.5	14.5	0.124	0.124	0.060	0.060	
Vendor C	2.4GHz	Rear	802.11b	5	6	2437	14.5	14.5	0.284	0.284	0.120	0.120	
		Front	802.11b	5	6	2437	14.5	14.5	0.137	0.137	0.067	0.067	

Body-worn Accessory Exposure Conditions

WiFi Vendor	Band	Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
							Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Vendor A	5.8GHz	Rear	802.11a	5	157	5785	16.0	16.0	0.577	**0.577**	0.149	0.149	22
		Front	802.11a	5	157	5785	16.0	16.0	0.163	0.163	0.046	0.046	
Vendor B	5.8GHz	Rear	802.11a	5	157	5785	16.0	16.0	0.415	0.415	0.104	0.104	
		Front	802.11a	5	157	5785	16.0	16.0	0.141	0.141	0.033	0.033	
Vendor C	5.8GHz	Rear	802.11a	5	157	5785	16.0	16.0	0.560	0.560	0.144	0.144	
		Front	802.11a	5	157	5785	16.0	16.0	0.139	0.139	0.034	0.034	

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Hotspot Mode Exposure Conditions

WiFi Vendor	Band	Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
							Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Vendor A	2.4GHz	Edge 1	802.11b	5	6	2437	14.5	14.5	0.103	0.103	0.047	0.047	
		Edge 2	802.11b	5	6	2437	14.5	14.5	0.015	0.015	0.004	0.004	
		Edge 4	802.11b	5	6	2437	14.5	14.5	0.255	0.255	0.123	0.123	
Vendor B	2.4GHz	Edge 1	802.11b	5	6	2437	14.5	14.5	0.078	0.078	0.034	0.034	
		Edge 2	802.11b	5	6	2437	14.5	14.5	0.011	0.011	0.003	0.003	
		Edge 4	802.11b	5	6	2437	14.5	14.5	0.217	0.217	0.102	0.102	
Vendor C	2.4GHz	Edge 1	802.11b	5	6	2437	14.5	14.5	0.091	0.091	0.038	0.038	
		Edge 2	802.11b	5	6	2437	14.5	14.5	0.015	0.015	0.004	0.004	
		Edge 4	802.11b	5	6	2437	14.5	14.5	0.226	0.226	0.105	0.105	

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

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12.8. Wi-Fi (UNII Bands)

12.8.1. Head Exposure Conditions

WiFi Vendor	Band	Test Position	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Vendor A	5.2GHz	Left Touch	802.11a	48	5240	14.0	14.0	0.133	0.133	0.036	0.036	
		Left Tilt	802.11a	48	5240	14.0	14.0	0.090	0.090	0.024	0.024	
		Right Touch	802.11a	48	5240	14.0	14.0	0.403	0.403	0.094	0.094	23
		Right Tilt	802.11a	48	5240	14.0	14.0	0.279	0.279	0.061	0.061	
	5.3GHz	Left Touch	802.11a	52	5260	15.0	15.0	0.162	0.162	0.046	0.046	
		Left Tilt	802.11a	52	5260	15.0	15.0	0.087	0.087	0.023	0.023	
		Right Touch	802.11a	52	5260	15.0	15.0	0.435	0.435	0.107	0.107	24
		Right Tilt	802.11a	52	5260	15.0	15.0	0.265	0.265	0.063	0.063	
	5.5GHz	Left Touch	802.11a	104	5520	15.5	15.5	0.296	0.296	0.096	0.096	
				116	5580	15.5	15.5	0.276	0.276	0.085	0.085	
				124	5620	15.5	15.5	0.373	0.373	0.110	0.110	
				136	5680	15.5	15.5	0.367	0.367	0.107	0.107	
		Left Tilt	802.11a	104	5520	15.5	15.5	0.361	0.361	0.110	0.110	
				116	5580	15.5	15.5	0.272	0.272	0.077	0.077	
				124	5620	15.5	15.5	0.352	0.352	0.109	0.109	
				136	5680	15.5	15.5	0.347	0.347	0.102	0.102	
		Right Touch	802.11a	104	5520	15.5	15.5	0.504	0.504	0.124	0.124	
				116	5580	15.5	15.5	0.446	0.446	0.120	0.120	
				124	5620	15.5	15.5	0.595	**0.595**	0.156	0.156	25
				136	5680	15.5	15.5	0.503	0.503	0.135	0.135	
		Right Tilt	802.11a	104	5520	15.5	15.5	0.406	0.406	0.110	0.110	
				116	5580	15.5	15.5	0.407	0.407	0.108	0.108	
				124	5620	15.5	15.5	0.511	0.511	0.127	0.127	
				136	5680	15.5	15.5	0.422	0.422	0.113	0.113	

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WiFi Vendor	Band	Test Position	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Vendor B	5.2GHz	Left Touch	802.11a	48	5240	14.0	14.0	0.217	0.217	0.055	0.055	
		Left Tilt	802.11a	48	5240	14.0	14.0	0.163	0.163	0.040	0.040	
		Right Touch	802.11a	48	5240	14.0	14.0	0.266	0.266	0.074	0.074	
		Right Tilt	802.11a	48	5240	14.0	14.0	0.137	0.137	0.037	0.037	
	5.3GHz	Left Touch	802.11a	52	5260	15.0	15.0	0.222	0.222	0.059	0.059	
		Left Tilt	802.11a	52	5260	15.0	15.0	0.161	0.161	0.042	0.042	
		Right Touch	802.11a	52	5260	15.0	15.0	0.331	0.331	0.094	0.094	
		Right Tilt	802.11a	52	5260	15.0	15.0	0.257	0.257	0.071	0.071	
	5.5GHz	Left Touch	802.11a	104	5520	15.5	15.5	0.272	0.272	0.079	0.079	
				116	5580	15.5	15.5	0.351	0.351	0.094	0.094	
				124	5620	15.5	15.5	0.243	0.243	0.072	0.072	
				136	5680	15.5	15.5	0.333	0.333	0.081	0.081	
		Left Tilt	802.11a	104	5520	15.5	15.5	0.229	0.229	0.064	0.064	
				116	5580	15.5	15.5	0.328	0.328	0.088	0.088	
				124	5620	15.5	15.5	0.260	0.260	0.062	0.062	
				136	5680	15.5	15.5	0.241	0.241	0.072	0.072	
		Right Touch	802.11a	104	5520	15.5	15.5	0.563	0.563	0.123	0.123	
				116	5580	15.5	15.5	0.536	0.536	0.120	0.120	
				124	5620	15.5	15.5	0.443	0.443	0.117	0.117	
				136	5680	15.5	15.5	0.497	0.497	0.130	0.130	
		Right Tilt	802.11a	104	5520	15.5	15.5	0.536	0.536	0.115	0.115	
				116	5580	15.5	15.5	0.493	0.493	0.112	0.112	
				124	5620	15.5	15.5	0.324	0.324	0.088	0.088	
				136	5680	15.5	15.5	0.293	0.293	0.078	0.078	

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WiFi Vendor	Band	Test Position	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Vendor C	5.2GHz	Left Touch	802.11a	48	5240	14.0	14.0	0.129	0.129	0.029	0.029	
		Left Tilt	802.11a	48	5240	14.0	14.0	0.093	0.093	0.020	0.020	
		Right Touch	802.11a	48	5240	14.0	14.0	0.147	0.147	0.035	0.035	
		Right Tilt	802.11a	48	5240	14.0	14.0	0.110	0.110	0.026	0.026	
	5.3GHz	Left Touch	802.11a	52	5260	15.0	15.0	0.252	0.252	0.061	0.061	
		Left Tilt	802.11a	52	5260	15.0	15.0	0.147	0.147	0.034	0.034	
		Right Touch	802.11a	52	5260	15.0	15.0	0.231	0.231	0.063	0.063	
		Right Tilt	802.11a	52	5260	15.0	15.0	0.213	0.213	0.052	0.052	
	5.5GHz	Left Touch	802.11a	104	5520	15.5	15.5	0.294	0.294	0.078	0.078	
				116	5580	15.5	15.5	0.262	0.262	0.067	0.067	
				124	5620	15.5	15.5	0.322	0.322	0.083	0.083	
				136	5680	15.5	15.5	0.375	0.375	0.098	0.098	
		Left Tilt	802.11a	104	5520	15.5	15.5	0.277	0.277	0.081	0.081	
				116	5580	15.5	15.5	0.324	0.324	0.085	0.085	
				124	5620	15.5	15.5	0.291	0.291	0.069	0.069	
				136	5680	15.5	15.5	0.330	0.330	0.092	0.092	
		Right Touch	802.11a	104	5520	15.5	15.5	0.455	0.455	0.099	0.099	
				116	5580	15.5	15.5	0.361	0.361	0.089	0.089	
				124	5620	15.5	15.5	0.478	0.478	0.111	0.111	
				136	5680	15.5	15.5	0.431	0.431	0.102	0.102	
		Right Tilt	802.11a	104	5520	15.5	15.5	0.476	0.476	0.107	0.107	
				116	5580	15.5	15.5	0.298	0.298	0.080	0.080	
				124	5620	15.5	15.5	0.334	0.334	0.088	0.088	
				136	5680	15.5	15.5	0.395	0.395	0.105	0.105	

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12.8.2. Body-worn Accessory Exposure Conditions

WiFi Vendor	Band	Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
							Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Vendor A	5.2GHz	Rear	802.11a	5	48	5240	14.0	14.0	0.370	0.370	0.097	0.097	26
		Front	802.11a	5	48	5240	14.0	14.0	0.095	0.095	0.021	0.021	
	5.3GHz	Rear	802.11a	5	52	5260	15.0	15.0	0.443	0.443	0.122	0.122	
		Front	802.11a	5	52	5260	15.0	15.0	0.119	0.119	0.029	0.029	
	5.5GHz	Rear	802.11a	5	104	5520	15.5	15.5	0.512	0.512	0.154	0.154	
					116	5580	15.5	15.5	0.386	0.386	0.124	0.124	
					124	5620	15.5	15.5	0.426	0.426	0.138	0.138	
					136	5680	15.5	15.5	0.521	**0.521**	0.153	0.153	27
		Front	802.11a	5	124	5620	15.5	15.5	0.320	0.320	0.107	0.107	
Vendor B	5.2GHz	Rear	802.11a	5	48	5240	14.0	14.0	0.261	0.261	0.068	0.068	
		Front	802.11a	5	48	5240	14.0	14.0	0.066	0.066	0.021	0.021	
	5.3GHz	Rear	802.11a	5	52	5260	15.0	15.0	0.338	0.338	0.087	0.087	
		Front	802.11a	5	52	5260	15.0	15.0	0.153	0.153	0.042	0.042	
	5.5GHz	Rear	802.11a	5	104	5520	15.5	15.5	0.477	0.477	0.148	0.148	
					116	5580	15.5	15.5	0.450	0.450	0.135	0.135	
					124	5620	15.5	15.5	0.399	0.399	0.126	0.126	
					136	5680	15.5	15.5	0.405	0.405	0.123	0.123	
		Front	802.11a	5	124	5620	15.5	15.5	0.190	0.190	0.070	0.070	
Vendor C	5.2GHz	Rear	802.11a	5	48	5240	14.0	14.0	0.344	0.344	0.083	0.083	
		Front	802.11a	5	48	5240	14.0	14.0	0.059	0.059	0.013	0.013	
	5.3GHz	Rear	802.11a	5	52	5260	15.0	15.0	0.479	0.479	0.116	0.116	28
		Front	802.11a	5	52	5260	15.0	15.0	0.105	0.105	0.026	0.026	
	5.5GHz	Rear	802.11a	5	104	5520	15.5	15.5	0.257	0.257	0.090	0.090	
					116	5580	15.5	15.5	0.385	0.385	0.121	0.121	
					124	5620	15.5	15.5	0.367	0.367	0.122	0.122	
					136	5680	15.5	15.5	0.357	0.357	0.117	0.117	
		Front	802.11a	5	124	5620	15.5	15.5	0.192	0.192	0.072	0.072	

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12.9. Bluetooth

12.9.1. Body-worn Accessory Exposure Considerations

WiFi Vendor	Test Position	Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Vendor A	Rear	GFSK	5	39	2441	13.0	12.8	0.015	0.016	0.004	0.004	
	Front	GFSK	5	39	2441	13.0	12.8	0.012	0.013	0.004	0.004	
Vendor B	Rear	GFSK	5	39	2441	13.0	12.9	0.015	0.015	0.005	0.005	
	Front	GFSK	5	39	2441	13.0	12.9	0.012	0.012	0.004	0.004	
Vendor C	Rear	GFSK	5	39	2441	13.0	13.0	0.016	0.016	0.004	0.004	29
	Front	GFSK	5	39	2441	13.0	13.0	0.013	0.013	0.004	0.004	

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

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13. SAR Measurement Variability

In accordance with published RF Exposure KDB procedure 865664 D01 SAR measurement 100 MHz to 6 GHz v01. 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

Freq. Band (MHz)	Air Interface	Head	Body-worn Accessory	Hotspot
850	GSM 850			1.090 W/kg
	W-CDMA Band 5			
	LTE Band 5			
1900	GSM 1900			
	W-CDMA Band 2	1.170 W/kg		
	LTE Band 2			
2400	WiFi 802.11b/g/n	< 0.80 W/kg	< 0.80 W/kg	< 0.80 W/kg
	Bluetooth	< 0.80 W/kg	< 0.80 W/kg	< 0.80 W/kg
5000	WiFi 802.11a/n	< 0.80 W/kg	< 0.80 W/kg	< 0.80 W/kg

13.2. Repeated Measurement Results

Head Exposure Condition

Frequency band	Test Position	Antenna	Mode	Ch #.	Freq. (MHz)	Meas. SAR (W/kg)		Largest to Smallest SAR Ratio	Note
						Original	Repeated		
WCDMA Band 2	Right Touch	LAT	Rel. 99 RMC	9400	1880.0	1.170	1.110	1.05	1

Body-worn Accessory Exposure Condition

N/A

Hotspot Mode Exposure Conditions

Frequency band	Test Position	Antenna	Mode	Ch #.	Freq. (MHz)	Meas. SAR (W/kg)		Largest to Smallest SAR Ratio	Note
						Original	Repeated		
GSM850	Rear	LAT	GPRS 2slots	190	836.6	1.090	1.040	1.05	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.

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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:

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

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14.1. Sum of the SAR for GSM850 (UAT) + WiFi DTS & UNII Band & BT

RF Exposure conditions	Test Position	Simultaneous Transmission Scenario				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
		GSM 850	WiFi DTS Band	WiFi UNII Band	Bluetooth		
Head	Left Touch	0.582	0.376			0.958	No
		0.582		0.375		0.957	No
	Left Tilt	0.336	0.488			0.824	No
		0.336		0.361		0.697	No
	Right Touch	0.435	0.588			1.023	No
		0.435		0.595		1.030	No
	Right Tilt	0.296	0.543			0.839	No
		0.296		0.536		0.832	No
Body-worn Accessory & Hotspot	Rear	0.411	0.577			0.988	No
		0.411		0.521		0.932	No
		0.411			0.016	0.427	No
	Front	0.359	0.217			0.576	No
		0.359		0.320		0.679	No
		0.359			0.013	0.372	No
Hotspot	Edge 1	0.275	0.103			0.378	No
	Edge 2	0.473	0.015			0.488	No
	Edge 3	0.000	0			0	No
	Edge 4	0.185	0.255			0.440	No

SAR to Peak Location Separation Ratio (SPLSR)

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

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14.2. Sum of the SAR for GSM850 (LAT) + WiFi DTS & UNII Band & BT

RF Exposure conditions	Test Position	Simultaneous Transmission Scenario				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
		GSM 850	WiFi DTS Band	WiFi UNII Band	Bluetooth		
Head	Left Touch	0.585	0.376			0.961	No
		0.585		0.375		0.960	No
	Left Tilt	0.226	0.488			0.714	No
		0.226		0.361		0.587	No
	Right Touch	0.544	0.588			1.132	No
		0.544		0.595		1.139	No
	Right Tilt	0.342	0.543			0.885	No
		0.342		0.536		0.878	No
Body-worn Accessory & Hotspot	Rear	1.090	0.577			1.667	**Yes**
		1.090		0.521		1.611	**Yes**
		1.090			0.016	1.106	No
	Front	0.946	0.217			1.163	No
		0.946		0.320		1.266	No
		0.946			0.013	0.959	No
Hotspot	Edge 1	0	0.103			0.103	No
	Edge 2	0.628	0.015			0.643	No
	Edge 3	0.205	0			0.205	No
	Edge 4	0.994	0.255			1.249	No

SAR to Peak Location Separation Ratio (SPLSR)

Case #	RF Exposure conditions	Test Position	Worst-case combination			∑ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
			GSM 850	WiFi DTS Band	WiFi UNII Band					
1	Body-worn Accessory & Hotspot	Rear	1.090	0.577		1.667	97.5	0.022	No	1
			1.090		0.521	1.611	98.4	0.021	No	2

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.

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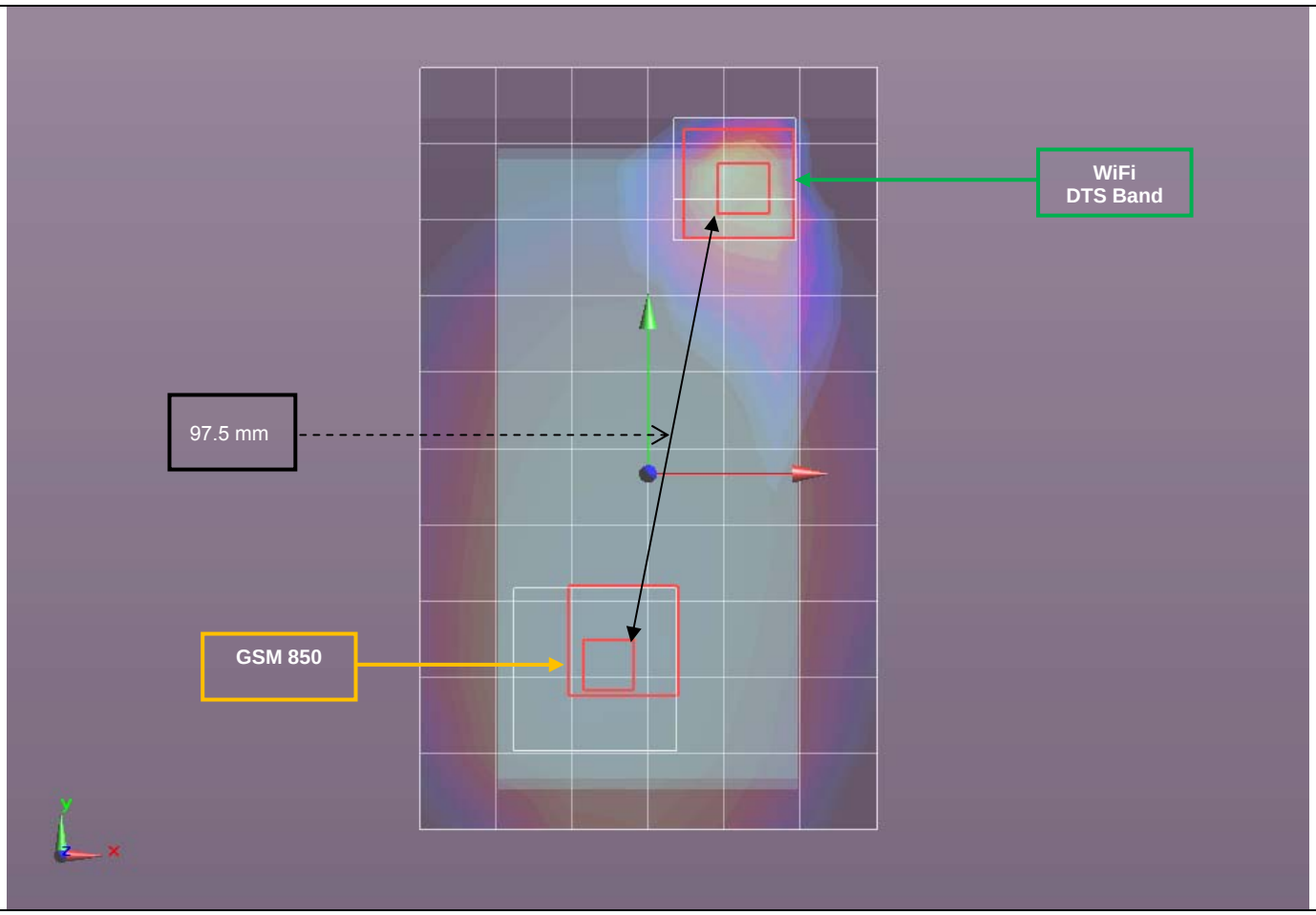
Figure (1)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
GSM850	1.3	-0.0105	-0.0385	-0.183
WiFi DTS Band	3.01	0.0202	0.054	-0.184

d: Calculated distance (mm)
97.5

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

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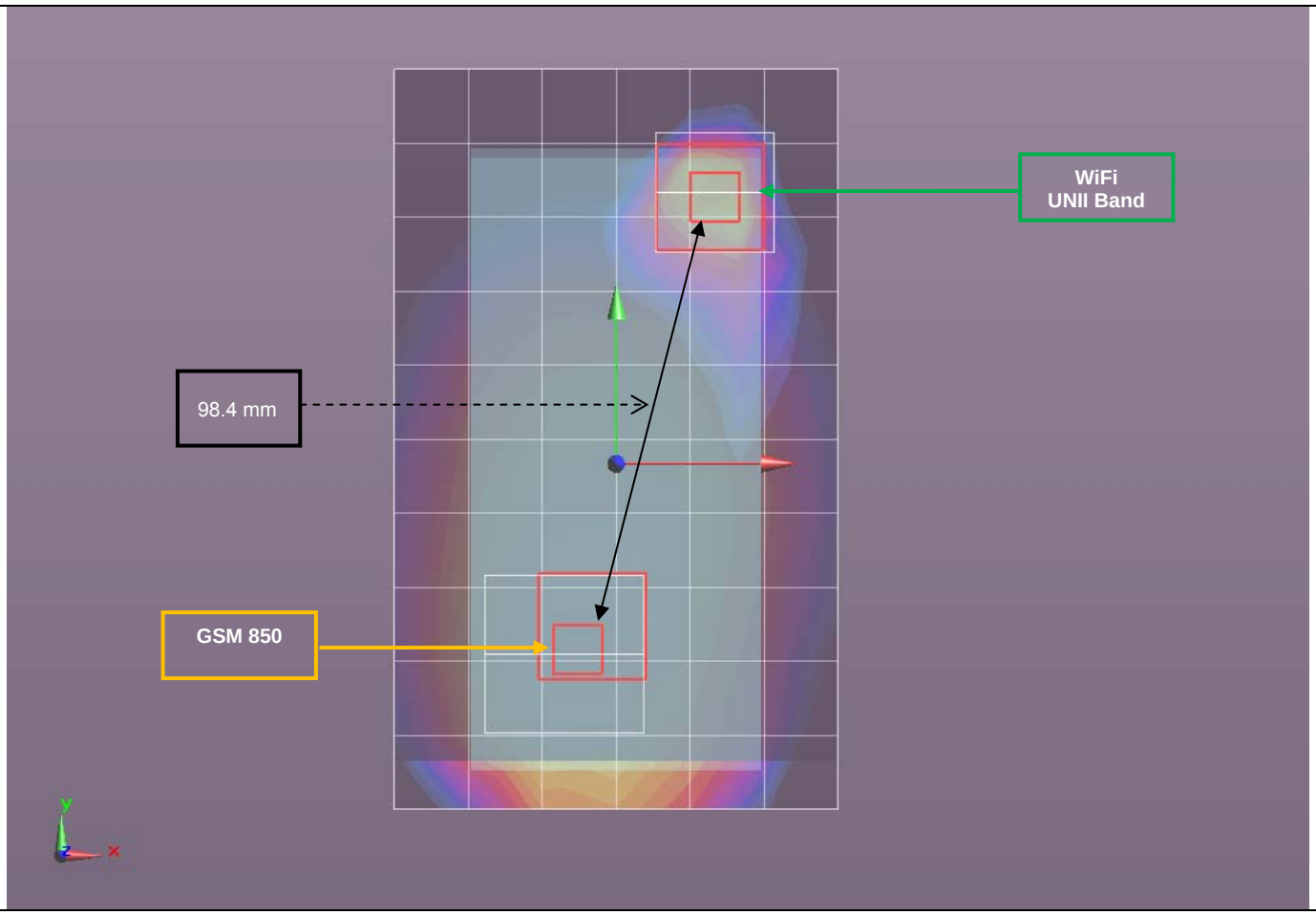
Figure (2)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
GSM850	1.3	-0.0105	-0.0385	-0.183
WiFi UNII Band	3.24	0.02	0.055	-0.184

d: Calculated distance (mm)
98.4

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

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14.3. Sum of the SAR for GSM1900 (UAT) + WiFi DTS & UNII Band & BT

RF Exposure conditions	Test Position	Simultaneous Transmission Scenario				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
		GSM 1900	WiFi DTS Band	WiFi UNII Band	Bluetooth		
Head	Left Touch	0.536	0.376			0.912	No
		0.536		0.375		0.911	No
	Left Tilt	0.573	0.488			1.061	No
		0.573		0.361		0.934	No
	Right Touch	0.948	0.588			1.536	No
		0.948		0.595		1.543	No
	Right Tilt	0.777	0.543			1.320	No
		0.777		0.536		1.313	No
Body-worn Accessory & Hotspot	Rear	0.330	0.577			0.907	No
		0.330		0.521		0.851	No
		0.330			0.016	0.346	No
	Front	0.239	0.217			0.456	No
		0.239		0.320		0.559	No
		0.239			0.013	0.252	No
Hotspot	Edge 1	0.174	0.103			0.277	No
	Edge 2	0.050	0.015			0.065	No
	Edge 3	0	0			0	No
	Edge 4	0.133	0.255			0.388	No

SAR to Peak Location Separation Ratio (SPLSR)

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

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14.4. Sum of the SAR for GSM1900 (LAT) + WiFi DTS & UNII Band & BT

RF Exposure conditions	Test Position	Simultaneous Transmission Scenario				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
		GSM 1900	WiFi DTS Band	WiFi UNII Band	Bluetooth		
Head	Left Touch	0.599	0.376			0.975	No
		0.599		0.375		0.974	No
	Left Tilt	0.301	0.488			0.789	No
		0.301		0.361		0.662	No
	Right Touch	0.903	0.588			1.491	No
		0.903		0.595		1.498	No
	Right Tilt	0.194	0.543			0.737	No
		0.194		0.536		0.730	No
Body-worn Accessory & Hotspot	Rear	1.110	0.577			1.687	**Yes**
		1.110		0.521		1.631	**Yes**
		1.110			0.016	1.126	No
	Front	0.876	0.217			1.093	No
		0.876		0.320		1.196	No
		0.876			0.013	0.889	No
Hotspot	Edge 1	0	0.103			0.103	No
	Edge 2	0.628	0.015			0.643	No
	Edge 3	0.984	0			0.984	No
	Edge 4	0.085	0.255			0.340	No

SAR to Peak Location Separation Ratio (SPLSR)

Case #	RF Exposure conditions	Test Position	Worst-case combination			∑ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
			GSM 1900	WiFi DTS Band	WiFi UNII Band					
2	Body-worn Accessory & Hotspot	Rear	1.110	0.577		1.687	120.8	0.018	No	1
			1.110		0.521	1.631	121.7	0.017	No	2

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.

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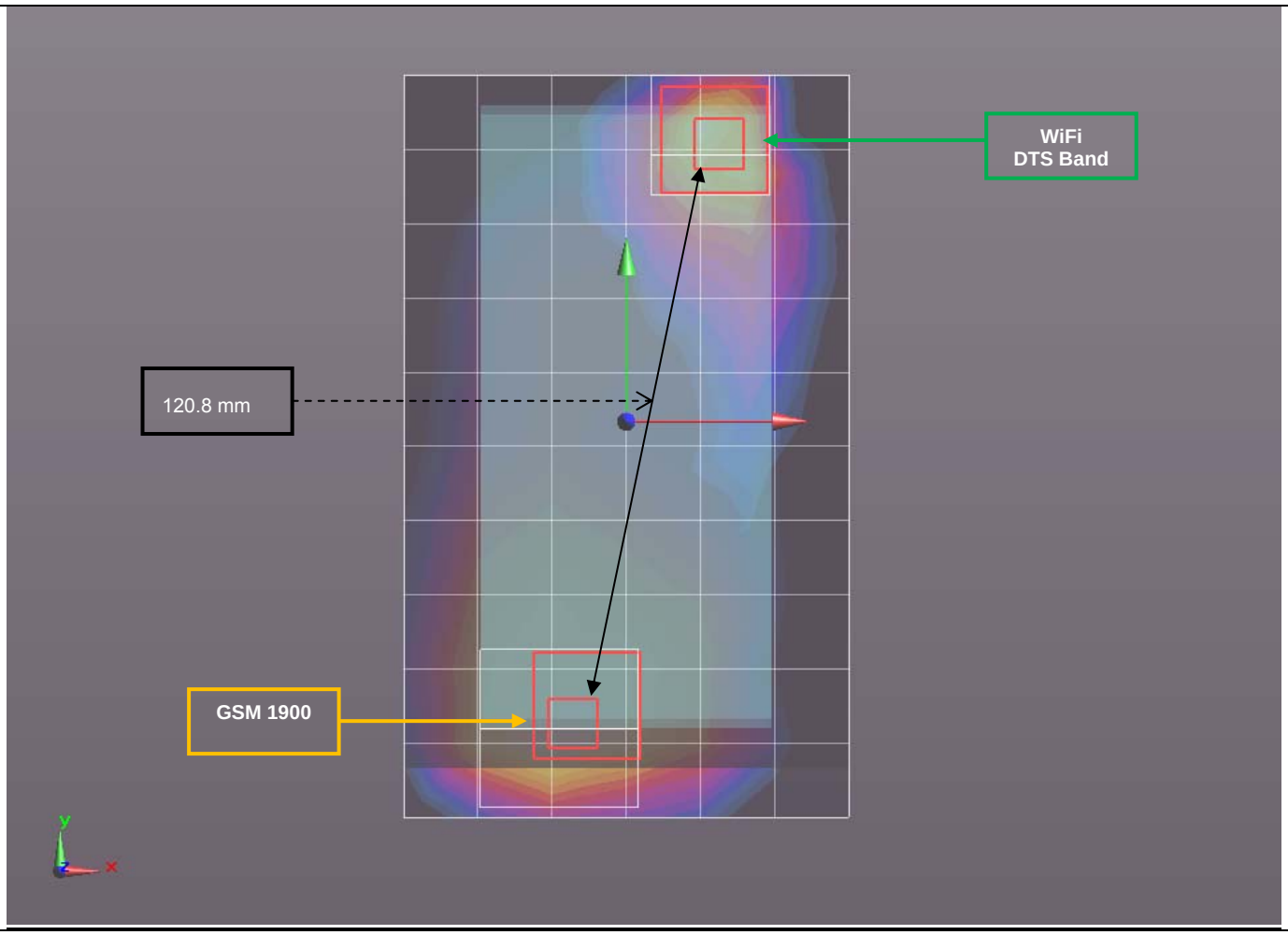
Figure (1)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
GSM1900	1.65	-0.0135	-0.062	-0.184
WiFi DTS Band	3.01	0.0202	0.054	-0.184

d: Calculated distance (mm)
120.8

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

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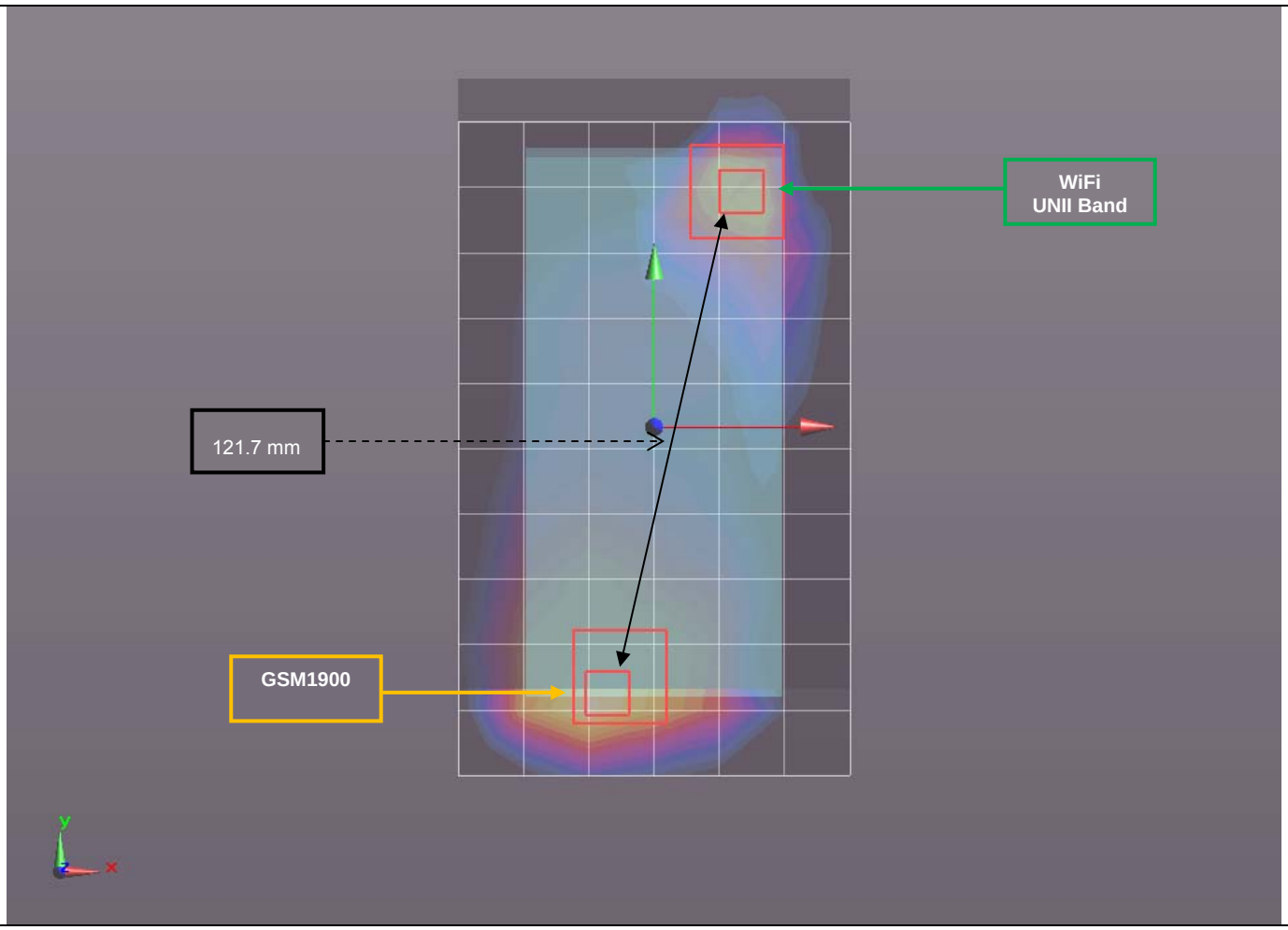
Figure (2)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
GSM1900	1.65	-0.0135	-0.062	-0.184
WiFi UNII Band	3.24	0.02	0.055	-0.184

d: Calculated distance (mm)
121.7

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

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14.5. Sum of the SAR for W-CDMA Band 2 (UAT) + WiFi DTS & UNII Band & BT

RF Exposure conditions	Test Position	Simultaneous Transmission Scenario				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
		W-CDMA Band 2	WiFi DTS Band	WiFi UNII Band	Bluetooth		
Head	Left Touch	0.648	0.376			1.024	No
		0.648		0.375		1.023	No
	Left Tilt	0.707	0.488			1.195	No
		0.707		0.361		1.068	No
	Right Touch	0.956	0.588			1.544	No
		0.956		0.595		1.551	No
	Right Tilt	0.915	0.543			1.458	No
		0.915		0.536		1.451	No
Body-worn Accessory & Hotspot	Rear	0.694	0.577			1.271	No
		0.694		0.521		1.215	No
		0.694			0.016	0.710	No
	Front	0.555	0.217			0.772	No
		0.555		0.320		0.875	No
		0.555			0.013	0.568	No
Hotspot	Edge 1	0.402	0.103			0.505	No
	Edge 2	0.163	0.015			0.178	No
	Edge 3	0	0			0.000	No
	Edge 4	0.392	0.255			0.647	No

SAR to Peak Location Separation Ratio (SPLSR)

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

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14.6. Sum of the SAR for W-CDMA Band 2 (LAT) + WiFi DTS & UNII Band & BT

RF Exposure conditions	Test Position	Simultaneous Transmission Scenario				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
		W-CDMA Band 2	WiFi DTS Band	WiFi UNII Band	Bluetooth		
Head	Left Touch	1.070	0.376			1.446	No
		1.070		0.375		1.445	No
	Left Tilt	0.429	0.488			0.917	No
		0.429		0.361		0.790	No
	Right Touch	1.170	0.588			1.758	**Yes**
		1.170		0.595		1.765	**Yes**
	Right Tilt	0.410	0.543			0.953	No
		0.410		0.536		0.946	No
Body-worn Accessory & Hotspot	Rear	1.070	0.577			1.647	**Yes**
		1.070		0.521		1.591	No
		1.070			0.016	1.086	No
	Front	0.790	0.217			1.007	No
		0.790		0.320		1.110	No
		0.790			0.013	0.803	No
Hotspot	Edge 1	0	0.103			0.103	No
	Edge 2	0.614	0.015			0.629	No
	Edge 3	0.815	0			0.815	No
	Edge 4	0.085	0.255			0.340	No

SAR to Peak Location Separation Ratio (SPLSR)

Case #	RF Exposure conditions	Test Position	Worst-case combination			∑ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
			W-CDMA Band 2	WiFi DTS Band	WiFi UNII Band					
4	Head	Right Touch	1.170	0.588		1.758	90.4	0.026	No	1
			1.170		0.595	1.765	84.5	0.028	No	2
5	Body-worn Accessory & Hotspot	Rear	1.070	0.577		1.647	120.4	0.018	No	3

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.

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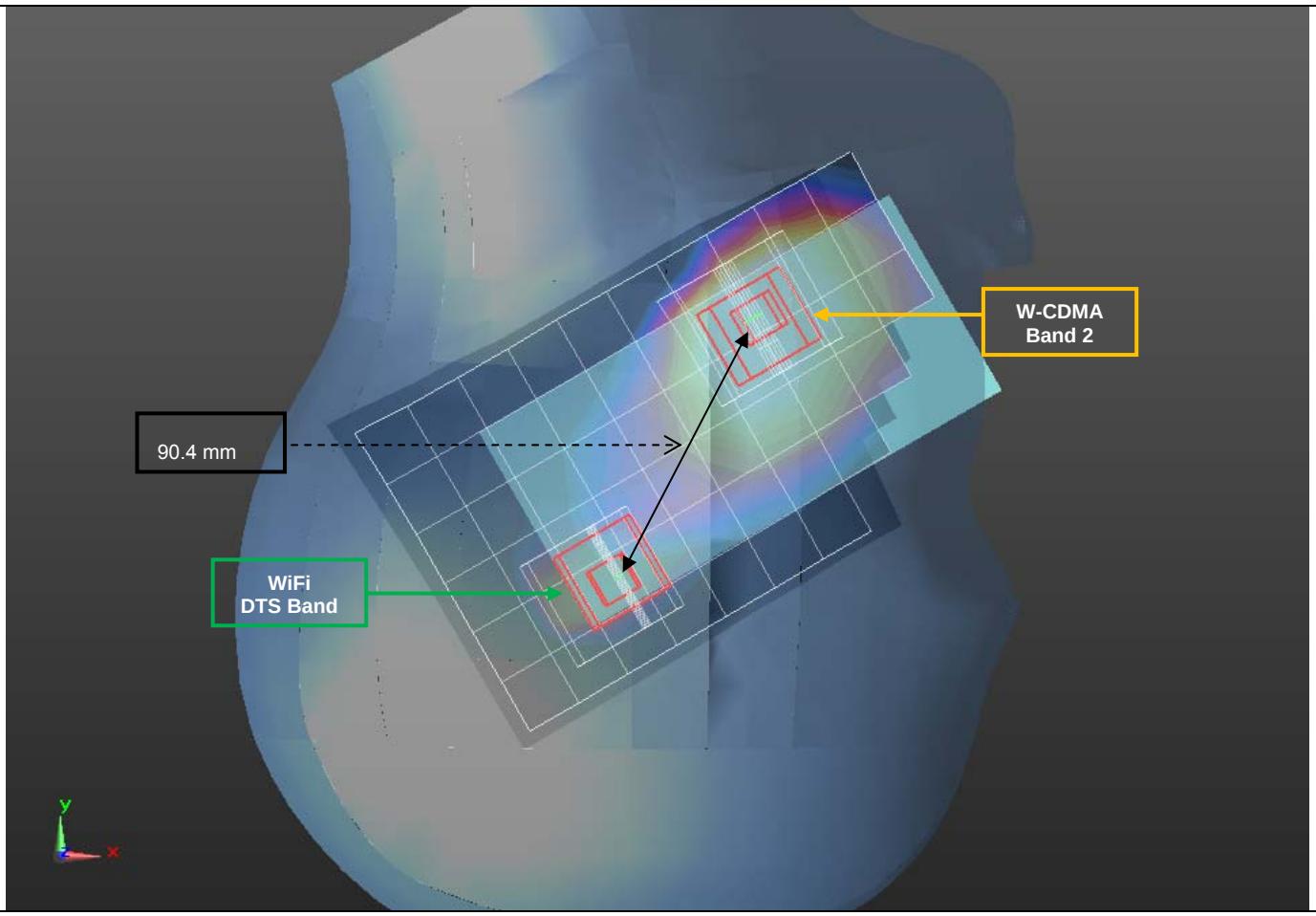
Figure (1)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
W-CDMA Band 2	1.44	0.0637	-0.258	-0.172
WiFi DTS Band	1.31	0.018	-0.336	-0.174

d: Calculated distance (mm)
90.4

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

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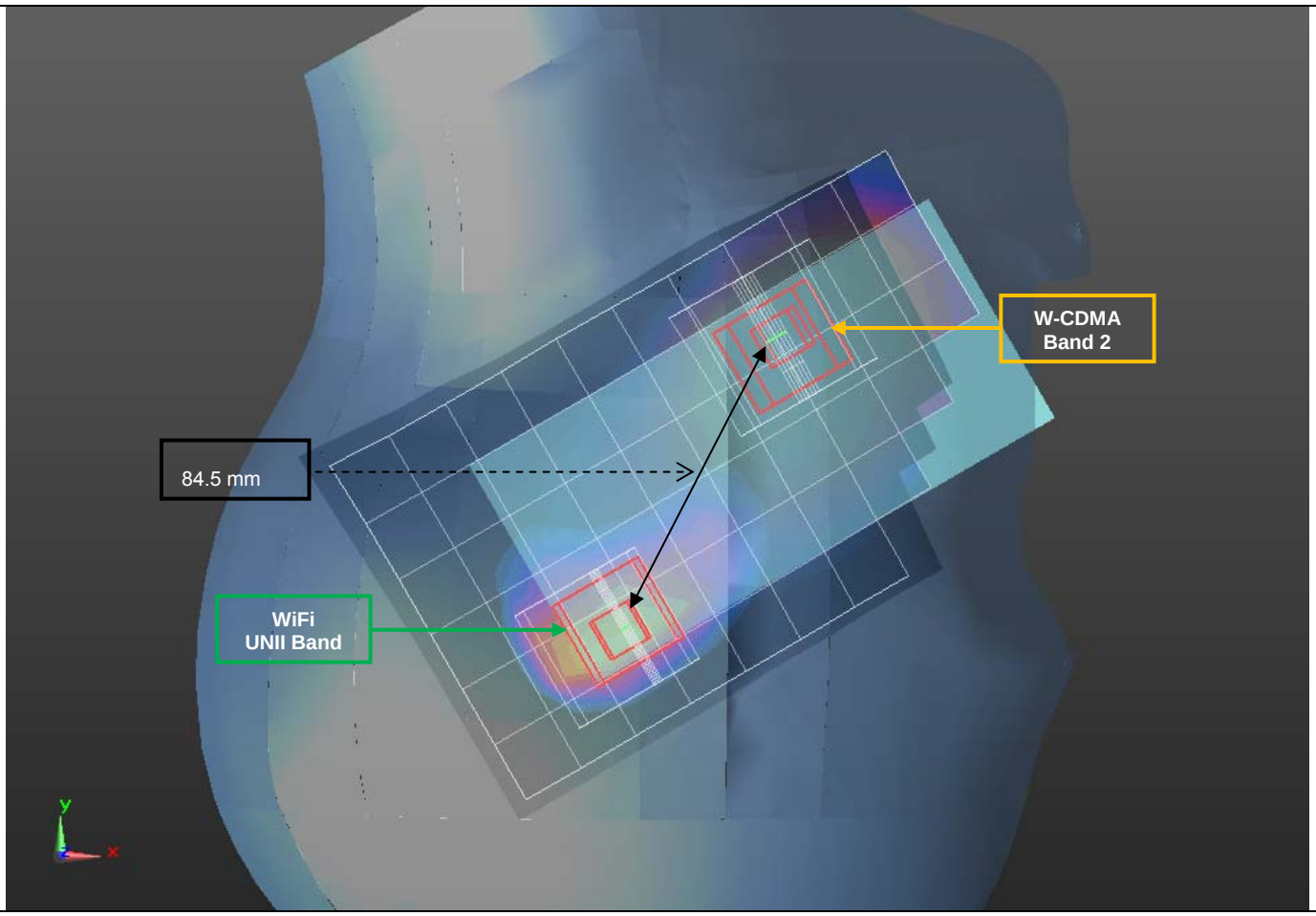
Figure (2)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
W-CDMA Band 2	1.44	0.0637	-0.258	-0.172
WiFi UNII Band	3.39	0.0179	-0.329	-0.174

d: Calculated distance (mm)
84.5

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

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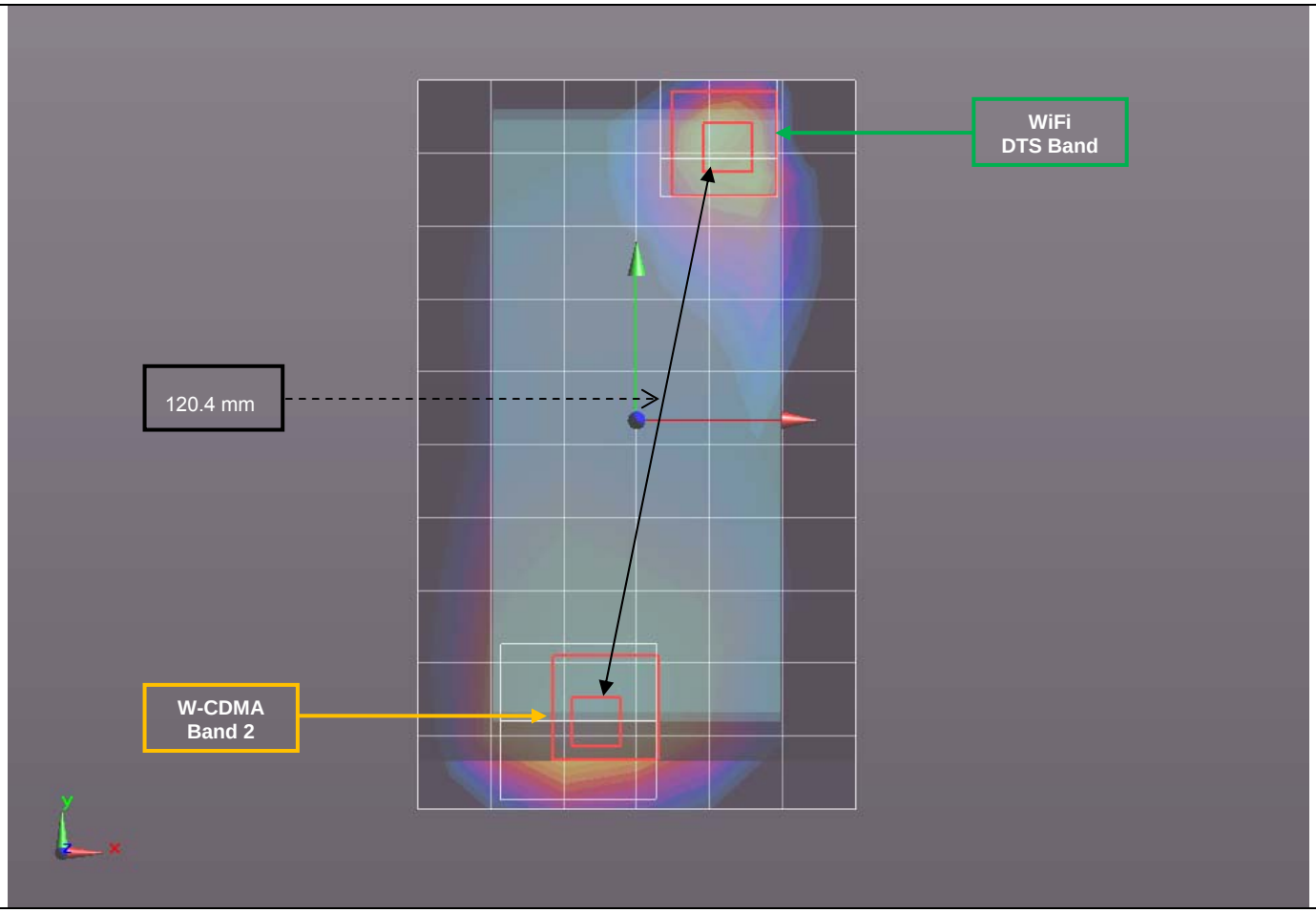
Figure (3)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
W-CDMA Band 2	1.49	-0.012	-0.062	-0.183
WiFi DTS Band	3.01	0.0202	0.054	-0.184

d: Calculated distance (mm)
120.4

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

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14.7. Sum of the SAR for W-CDMA Band 5 (UAT) + WiFi DTS & UNII Band & BT

RF Exposure conditions	Test Position	Simultaneous Transmission Scenario				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
		W-CDMA Band 5	WiFi DTS Band	WiFi UNII Band	Bluetooth		
Head	Left Touch	0.465	0.376			0.841	No
		0.465		0.375		0.840	No
	Left Tilt	0.392	0.488			0.880	No
		0.392		0.361		0.753	No
	Right Touch	0.327	0.588			0.915	No
		0.327		0.595		0.922	No
	Right Tilt	0.273	0.543			0.816	No
		0.273		0.536		0.809	No
Body-worn Accessory & Hotspot	Rear	0.265	0.577			0.842	No
		0.265		0.521		0.786	No
		0.265			0.016	0.281	No
	Front	0.214	0.217			0.431	No
		0.214		0.320		0.534	No
		0.214			0.013	0.227	No
Hotspot	Edge 1	0.195	0.103			0.298	No
	Edge 2	0.598	0.015			0.613	No
	Edge 3	0	0			0.000	No
	Edge 4	0.224	0.255			0.479	No

SAR to Peak Location Separation Ratio (SPLSR)
As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required.

14.8. Sum of the SAR for W-CDMA Band 5 (LAT) + WiFi DTS & UNII Band & BT

RF Exposure conditions	Test Position	Simultaneous Transmission Scenario				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
		W-CDMA Band 5	WiFi DTS Band	WiFi UNII Band	Bluetooth		
Head	Left Touch	0.549	0.376			0.925	No
		0.549		0.375		0.924	No
	Left Tilt	0.288	0.488			0.776	No
		0.288		0.361		0.649	No
	Right Touch	0.587	0.588			1.175	No
		0.587		0.595		1.182	No
	Right Tilt	0.332	0.543			0.875	No
		0.332		0.536		0.868	No
Body-worn Accessory & Hotspot	Rear	0.731	0.577			1.308	No
		0.731		0.521		1.252	No
		0.731			0.016	0.747	No
	Front	0.686	0.217			0.903	No
		0.686		0.320		1.006	No
		0.686			0.013	0.699	No
Hotspot	Edge 1	0	0.103			0.103	No
	Edge 2	0.490	0.015			0.505	No
	Edge 3	0.180	0			0.180	No
	Edge 4	0.627	0.255			0.882	No

SAR to Peak Location Separation Ratio (SPLSR)
As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required.

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14.9. Sum of the SAR for LTE Band 2 (UAT) + WiFi DTS & UNII Band & BT

RF Exposure conditions	Test Position	Simultaneous Transmission Scenario				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
		LTE Band 2	WiFi DTS Band	WiFi UNII Band	Bluetooth		
Head	Left Touch	0.682	0.376			1.058	No
		0.682		0.375		1.057	No
	Left Tilt	0.863	0.488			1.351	No
		0.863		0.361		1.224	No
	Right Touch	0.997	0.588			**1.585**	No
		0.997		0.595		**1.592**	No
	Right Tilt	0.982	0.543			1.525	No
		0.982		0.536		1.518	No
Body-worn Accessory & Hotspot	Rear	0.794	0.577			1.371	No
		0.794		0.521		1.315	No
		0.794			0.016	0.810	No
	Front	0.567	0.217			0.784	No
		0.567		0.320		0.887	No
		0.567			0.013	0.580	No
Hotspot	Edge 1	0.465	0.103			0.568	No
	Edge 2	0.112	0.015			0.127	No
	Edge 3	0	0			0	No
	Edge 4	0.325	0.255			0.580	No

SAR to Peak Location Separation Ratio (SPLSR)

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

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14.10. Sum of the SAR for LTE Band 2 (LAT) + WiFi DTS & UNII Band & BT

RF Exposure conditions	Test Position	Simultaneous Transmission Scenario				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
		LTE Band 2	WiFi DTS Band	WiFi UNII Band	Bluetooth		
Head	Left Touch	1.034	0.376			1.410	No
		1.034		0.375		1.409	No
	Left Tilt	0.554	0.488			1.042	No
		0.554		0.361		0.915	No
	Right Touch	1.070	0.588			1.658	**Yes**
		1.070		0.595		1.665	**Yes**
	Right Tilt	0.171	0.543			0.714	No
		0.171		0.536		0.707	No
Body-worn Accessory & Hotspot	Rear	1.030	0.577			1.607	**Yes**
		1.030		0.521		1.551	No
		1.030			0.016	1.046	No
	Front	0.718	0.217			0.935	No
		0.718		0.320		1.038	No
		0.718			0.013	0.731	No
Hotspot	Edge 1	0	0.103			0.103	No
	Edge 2	0.574	0.015			0.589	No
	Edge 3	0.727	0			0.727	No
	Edge 4	0.078	0.255			0.333	No

SAR to Peak Location Separation Ratio (SPLSR)

Case #	RF Exposure conditions	Test Position	Worst-case combination			∑ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
			LTE Band 2	WiFi DTS Band	WiFi UNII Band					
7	Head	Right Touch	1.070	0.588		1.658	92.5	0.023	No	1
			1.070		0.595	1.665	86.5	0.025	No	2
	Body-worn Accessory & Hotspot	Rear	1.030	0.577		1.607	119.8	0.017	No	3

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.

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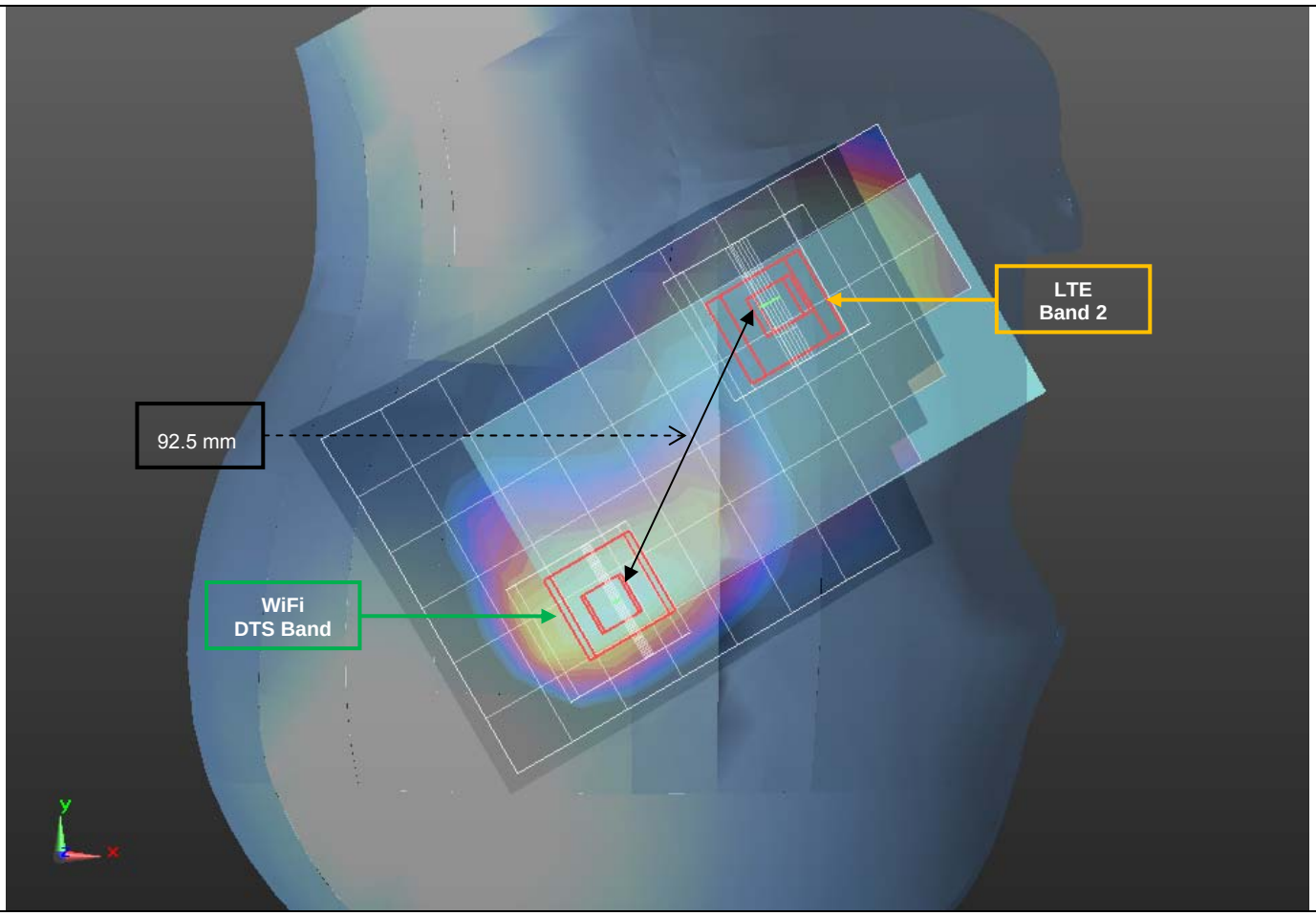
Figure (1)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 2	1.33	0.0643	-0.256	-0.172
WiFi DTS Band	1.31	0.018	-0.336	-0.174

d: Calculated distance (mm)
92.5

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

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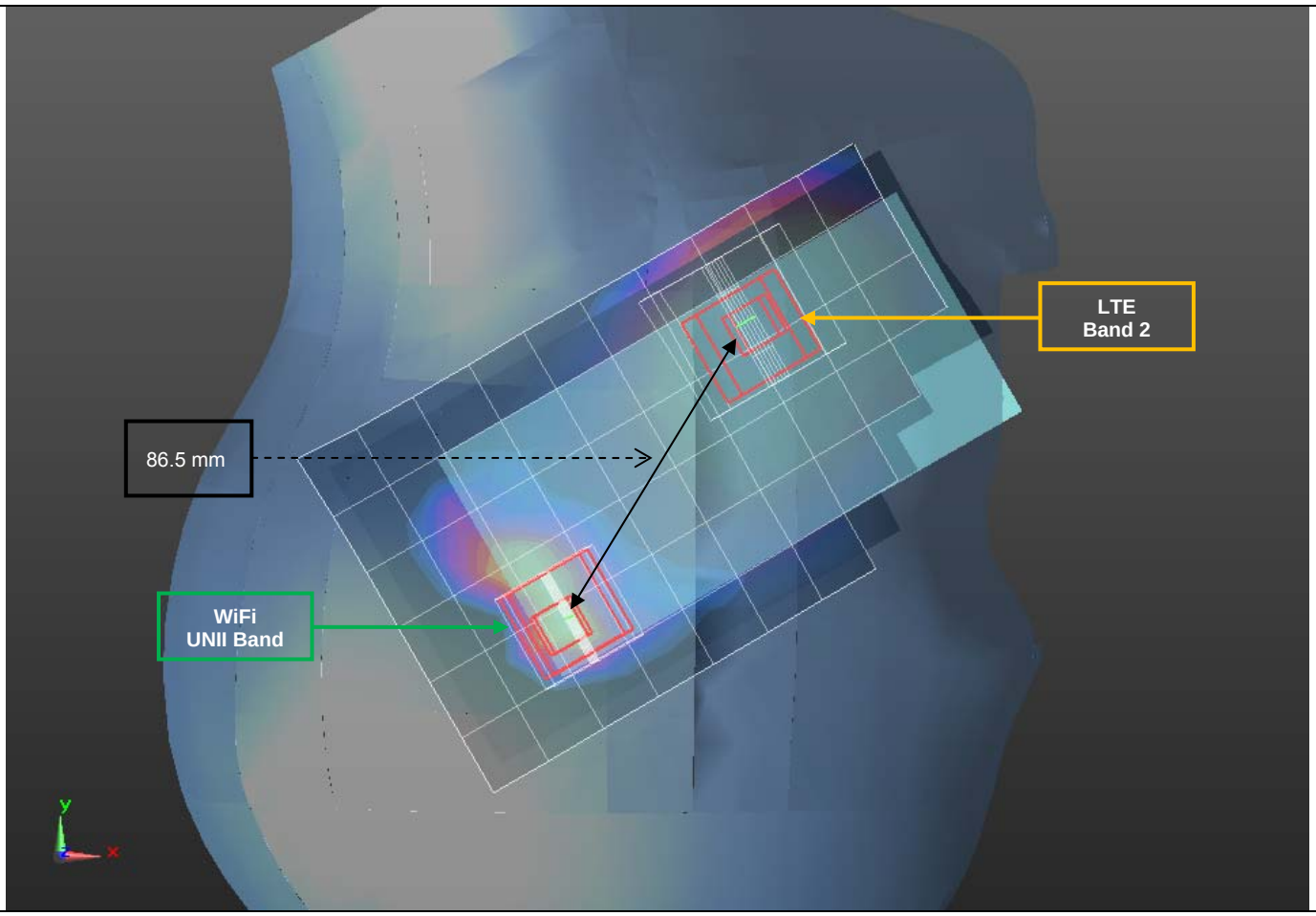
Figure (2)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 2	1.33	0.0643	-0.256	-0.172
WiFi UNII Band	3.39	0.0179	-0.329	-0.174

d: Calculated distance (mm)
86.5

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

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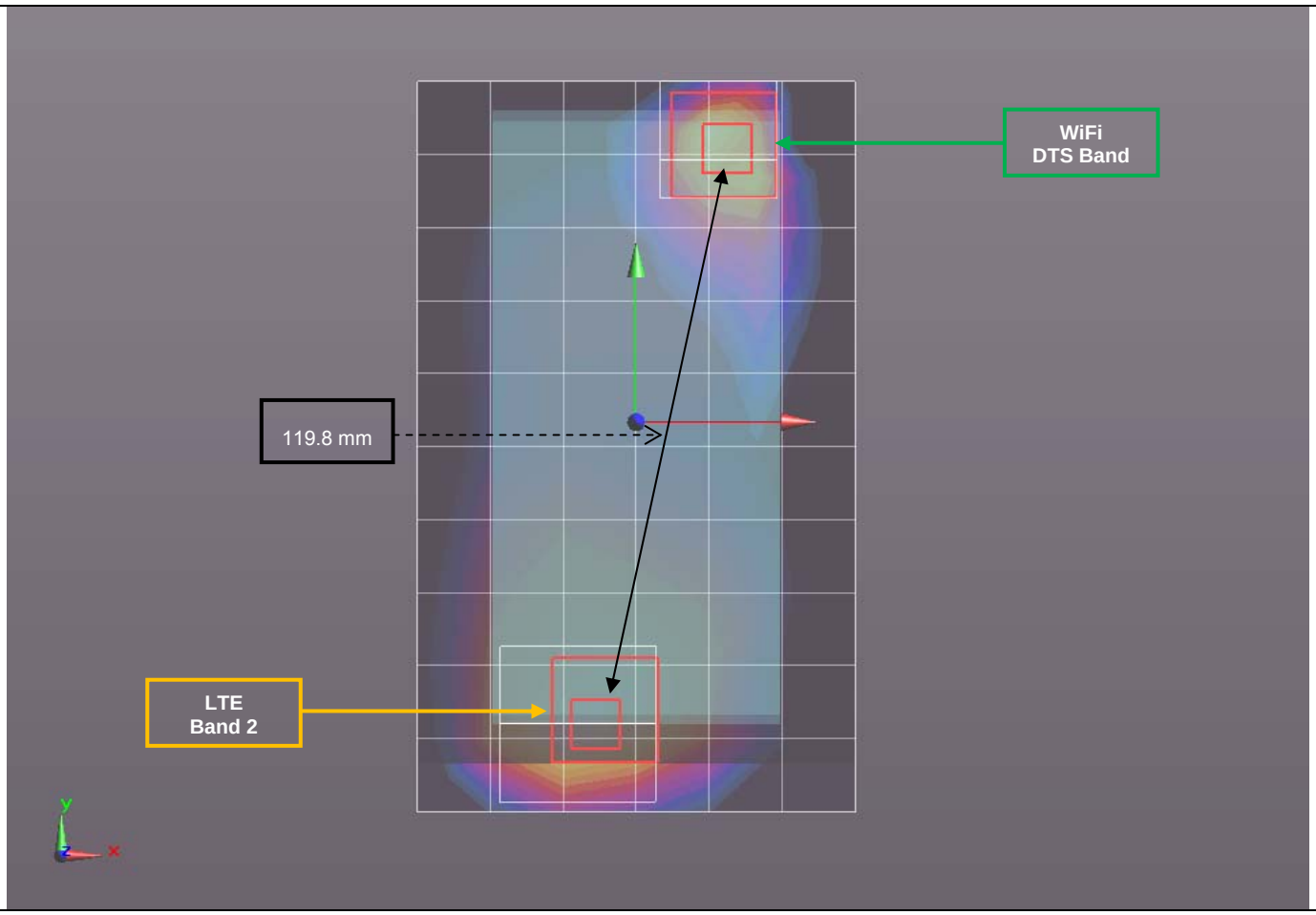
Figure (3)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 2	1.52	-0.015	-0.0605	-0.183
WiFi DTS Band	3.01	0.0202	0.054	-0.184

d: Calculated distance (mm)
119.8

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

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14.11. Sum of the SAR for LTE Band 5 (UAT) + WiFi DTS & UNII Band & BT

RF Exposure conditions	Test Position	Simultaneous Transmission Scenario				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
		LTE Band 5	WiFi DTS Band	WiFi UNII Band	Bluetooth		
Head	Left Touch	0.384	0.376			0.760	No
		0.384		0.375		0.759	No
	Left Tilt	0.346	0.488			0.834	No
		0.346		0.361		0.707	No
	Right Touch	0.336	0.588			0.924	No
		0.336		0.595		0.931	No
	Right Tilt	0.276	0.543			0.819	No
		0.276		0.536		0.812	No
Body-worn Accessory & Hotspot	Rear	0.267	0.577			0.844	No
		0.267		0.521		0.788	No
		0.267			0.016	0.283	No
	Front	0.221	0.217			0.438	No
		0.221		0.320		0.541	No
		0.221			0.013	0.234	No
Hotspot	Edge 1	0.162	0.103			0.265	No
	Edge 2	0.313	0.015			0.328	No
	Edge 3	0	0			0.000	No
	Edge 4	0.072	0.255			0.327	No

SAR to Peak Location Separation Ratio (SPLSR)
As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required.

14.12. Sum of the SAR for LTE Band 5 (LAT) + WiFi DTS & UNII Band & BT

RF Exposure conditions	Test Position	Simultaneous Transmission Scenario				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
		LTE Band 5	WiFi DTS Band	WiFi UNII Band	Bluetooth		
Head	Left Touch	0.505	0.376			0.881	No
		0.505		0.375		0.880	No
	Left Tilt	0.269	0.488			0.757	No
		0.269		0.361		0.630	No
	Right Touch	0.466	0.588			1.054	No
		0.466		0.595		1.061	No
	Right Tilt	0.264	0.543			0.807	No
		0.264		0.536		0.800	No
Body-worn Accessory & Hotspot	Rear	0.598	0.577			1.175	No
		0.598		0.521		1.119	No
		0.598			0.016	0.614	No
	Front	0.562	0.217			0.779	No
		0.562		0.320		0.882	No
		0.562			0.013	0.575	No
Hotspot	Edge 1	0	0.103			0.103	No
	Edge 2	0.433	0.015			0.448	No
	Edge 3	0.124	0			0.124	No
	Edge 4	0.583	0.255			0.838	No

SAR to Peak Location Separation Ratio (SPLSR)
As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required.

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15. Appendixes

Refer to separated files for the following appendixes.

15.1. System Performance Check Plots

15.2. Highest SAR Test Plots

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

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

15.5. Calibration Certificate for E-Field Probe EX3DV4 - SN 3772

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

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

15.8. Calibration Certificate for E-Field Probe EX3DV4 - SN 3885

15.9. Calibration Certificate for D835V2 - SN 4d002

15.10. Calibration Certificate for D835V2 - SN 4d142

15.11. Calibration Certificate for D1900V2- SN 5d043

15.12. Calibration Certificate for D1900V2- SN 5d163

15.13. Calibration Certificate for D1900V2 - SN 5d140

15.14. Calibration Certificate for D2450V2 - SN 899

15.15. Calibration Certificate for D5GHzV2 - SN 1003

15.16. Calibration Certificate for D5GHzV2 - SN 1138

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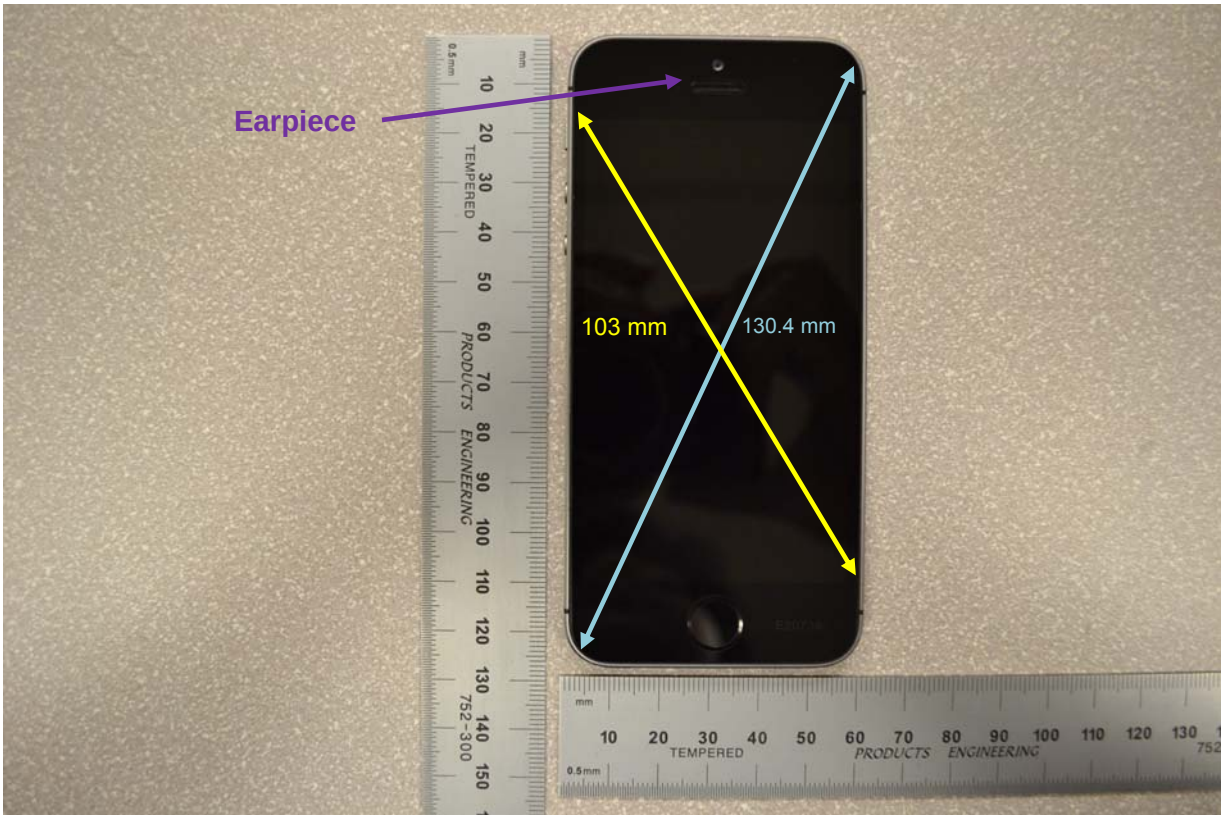
16. External Photos

Overall Dimensions



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Front View of the DUT

Rear View of the DUT

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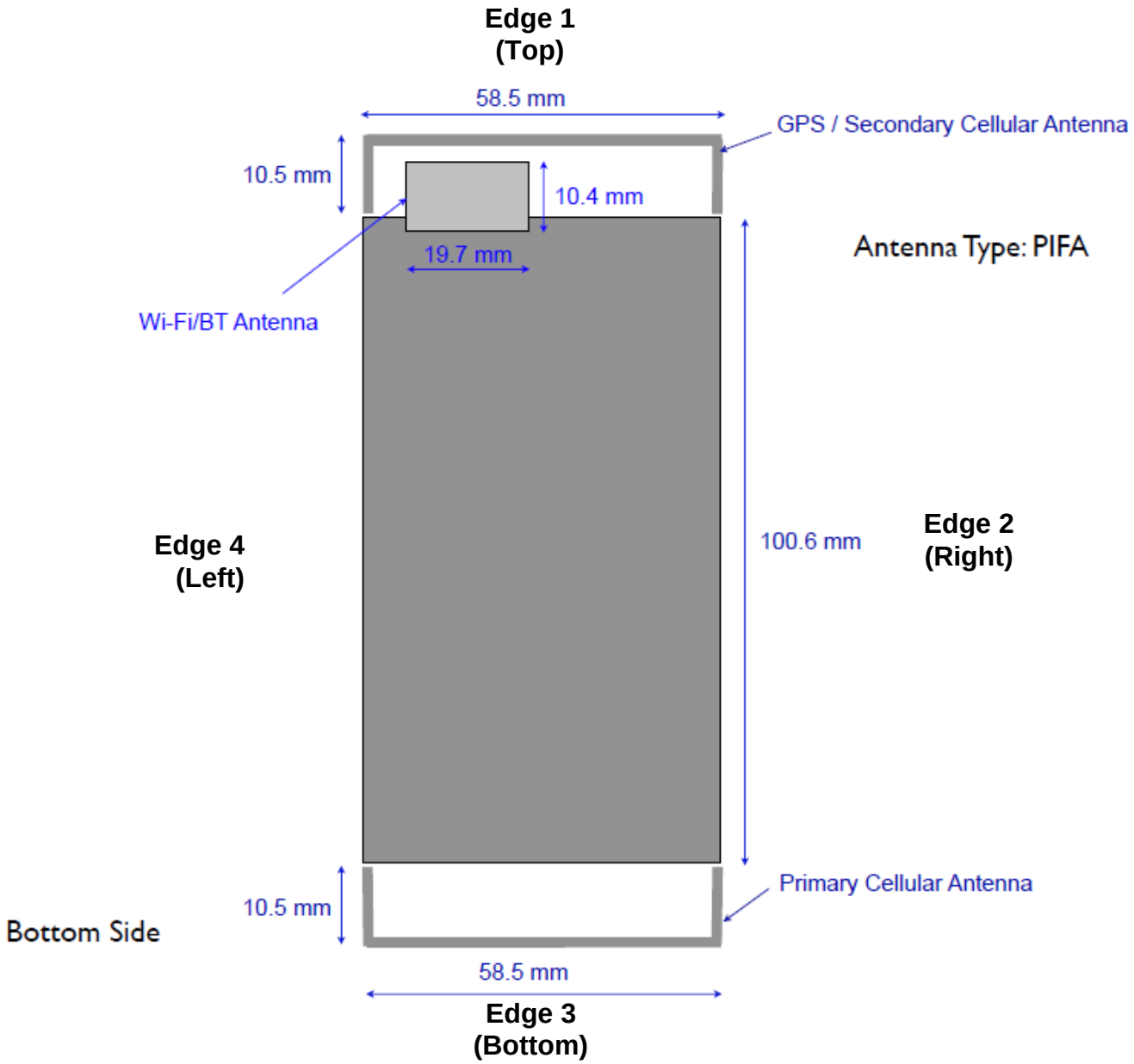
17. Antenna Locations & Separation Distances



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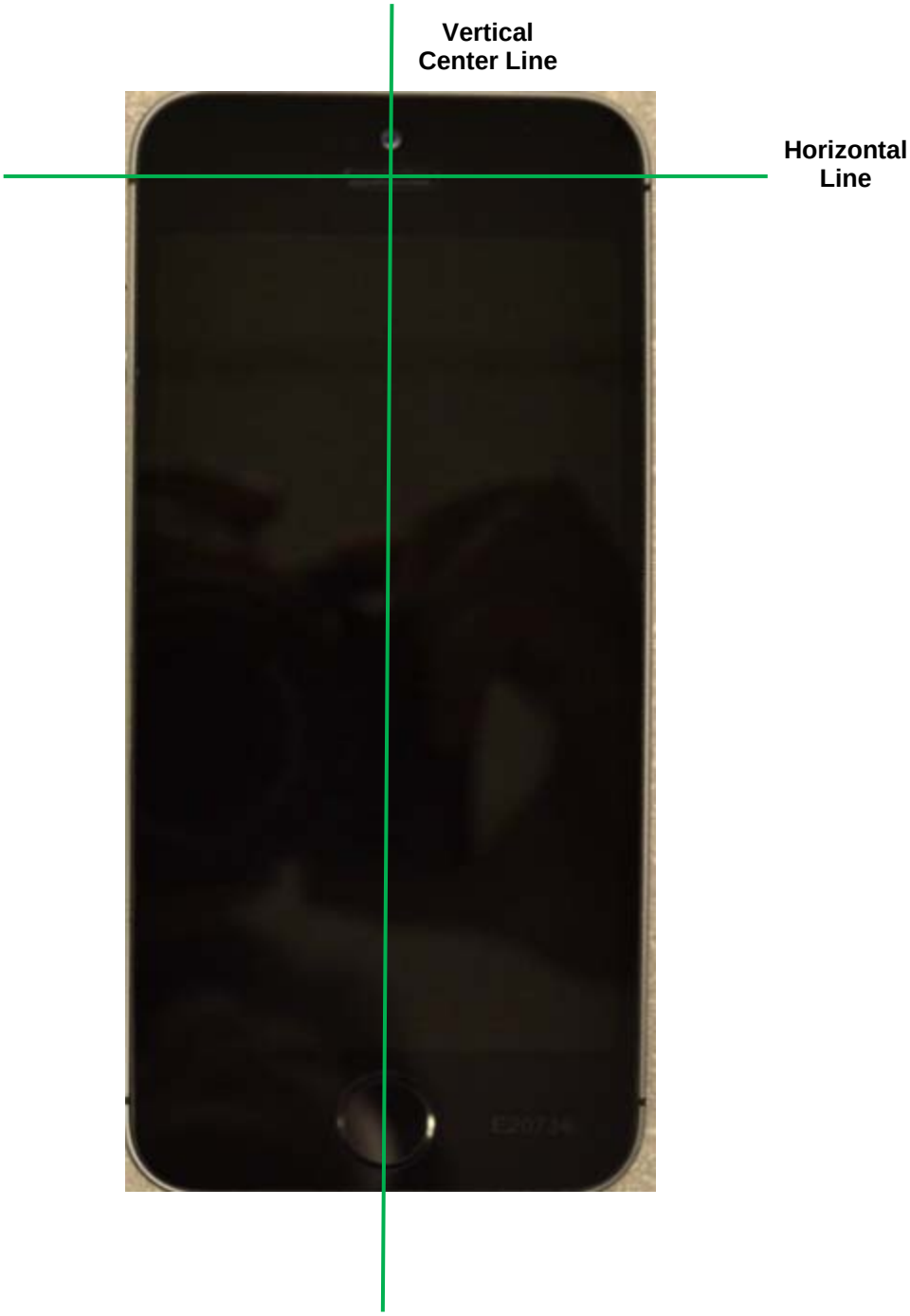
18. Setup Photos

Handset Vertical and Horizontal Reference Lines



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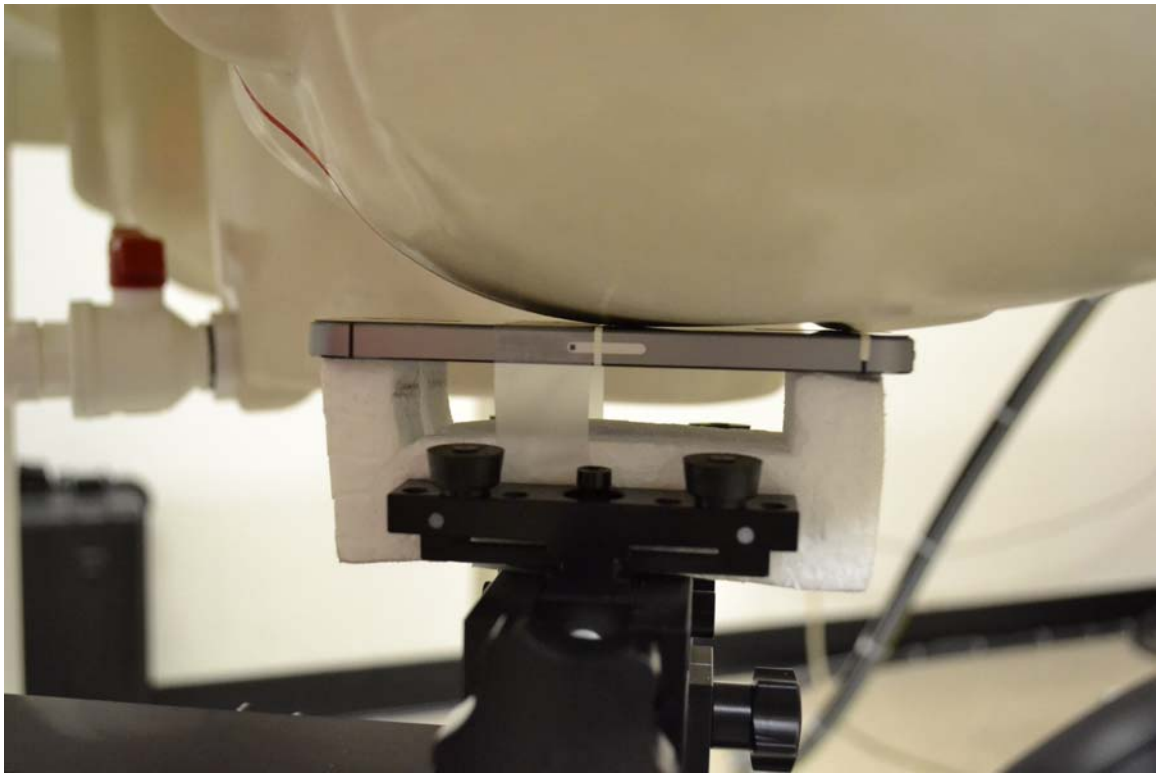
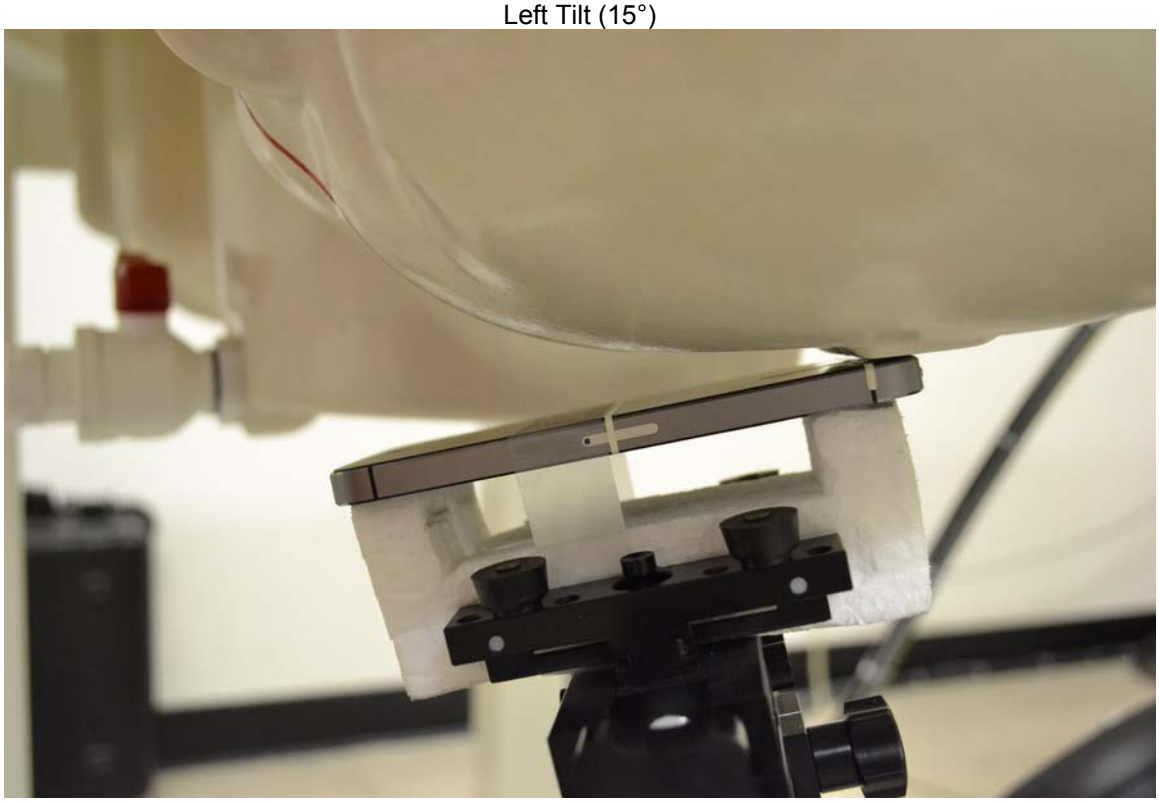
18.1. Head Exposure Conditions

Left Touch



Left Tilt (15°)



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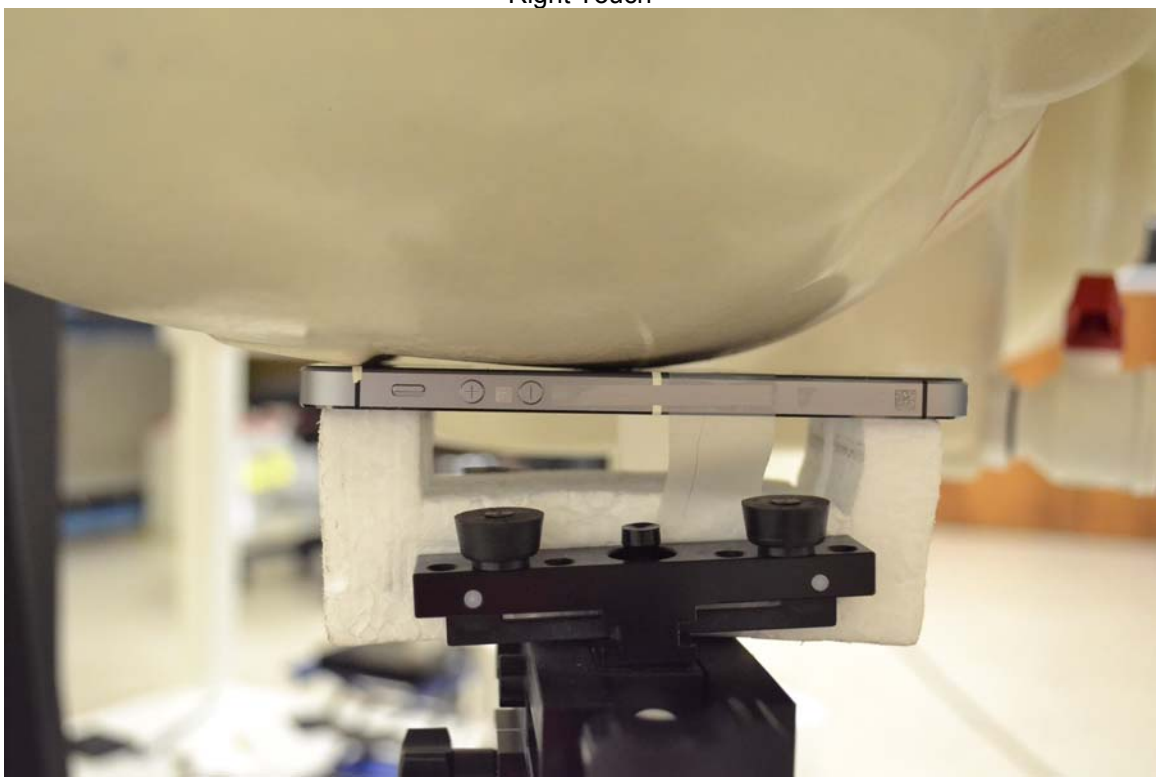
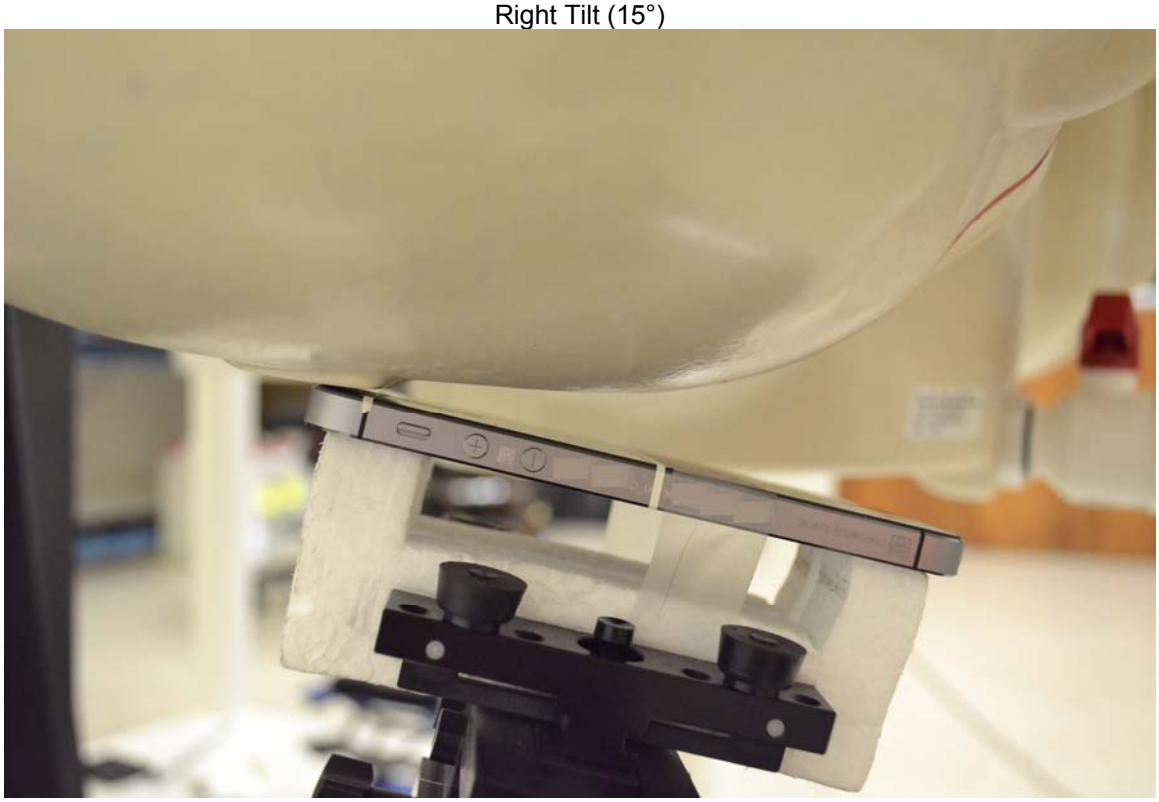
Right Touch



Right Tilt (15°)



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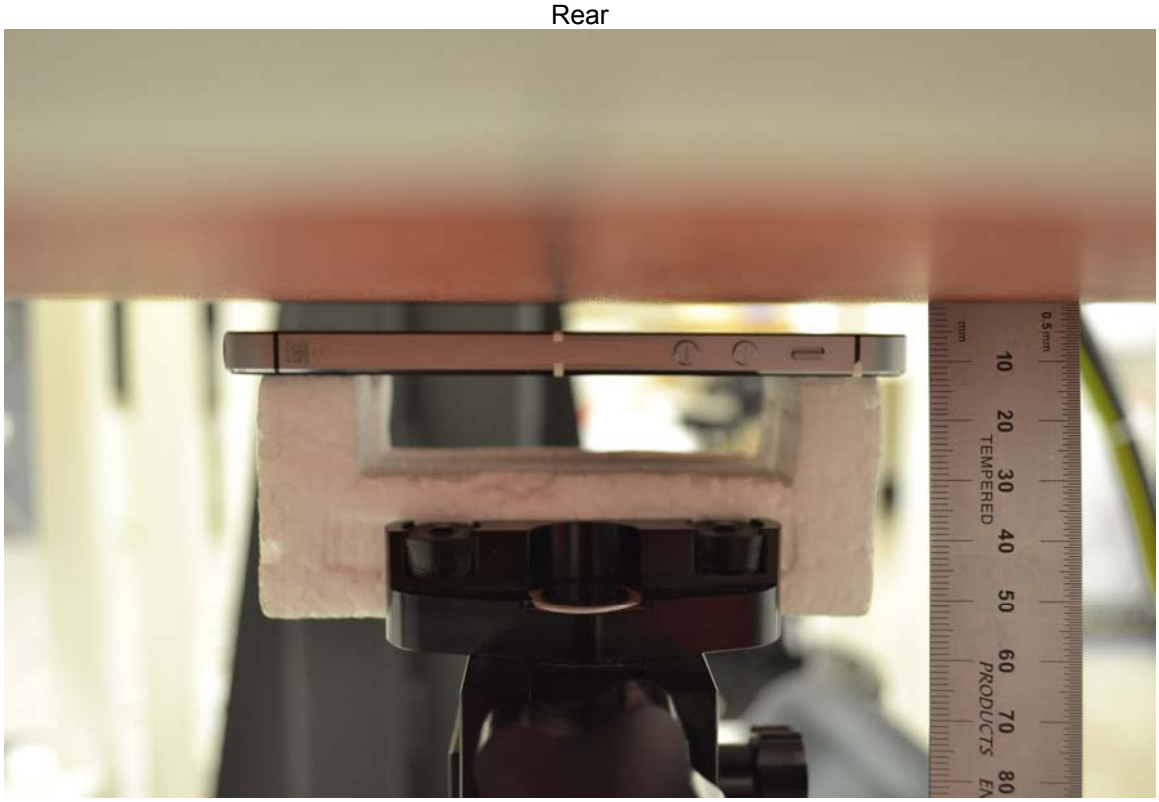
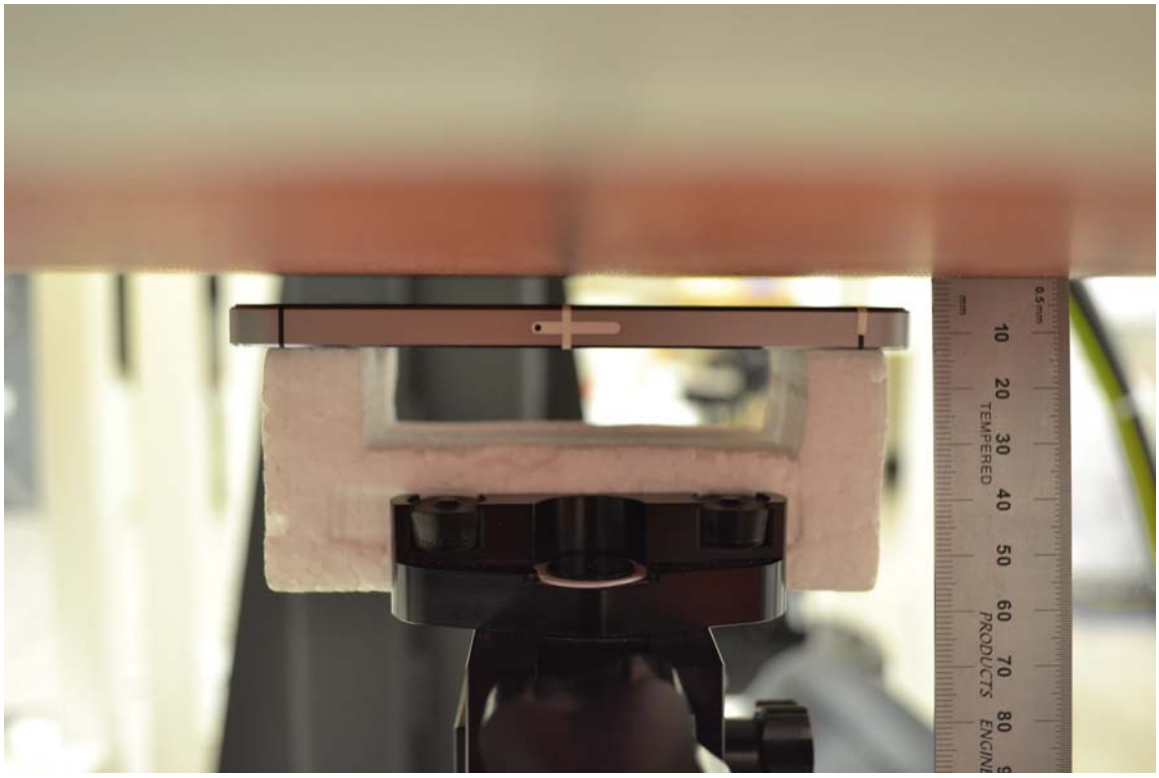
18.2. Body-worn Accessory & Hotspot mode Exposure Conditions

Rear



Front



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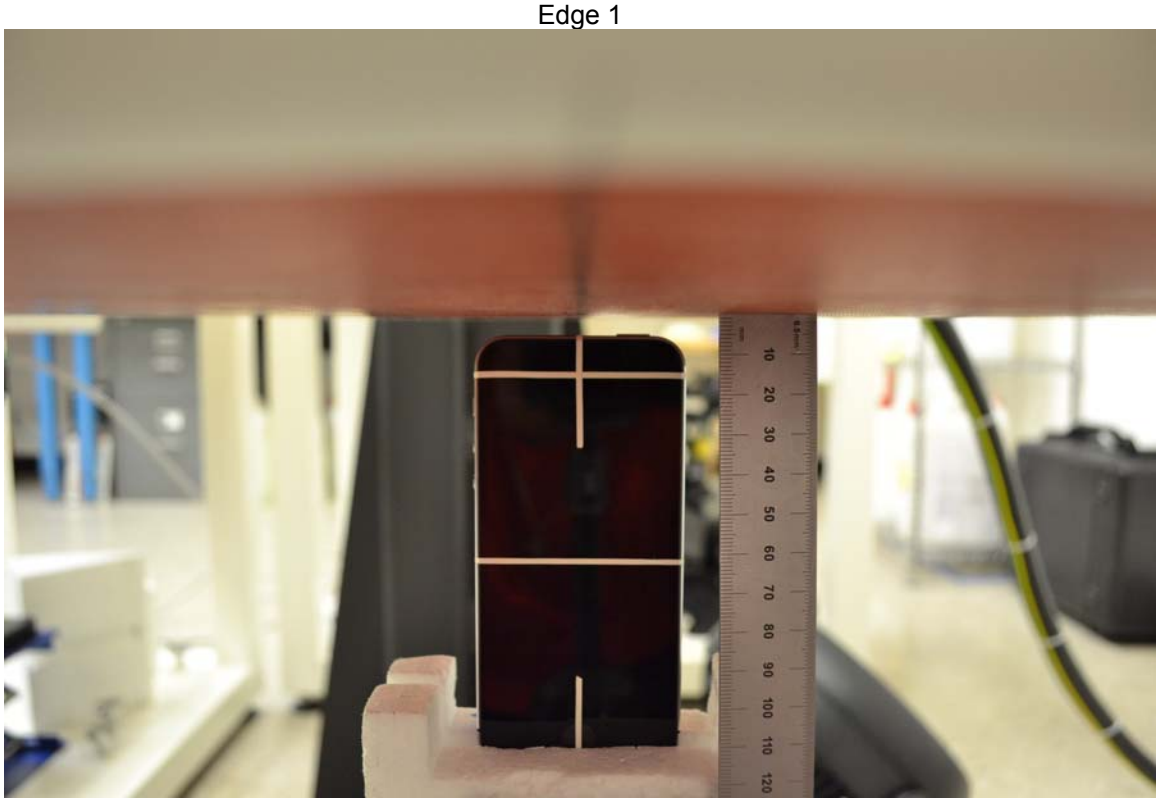
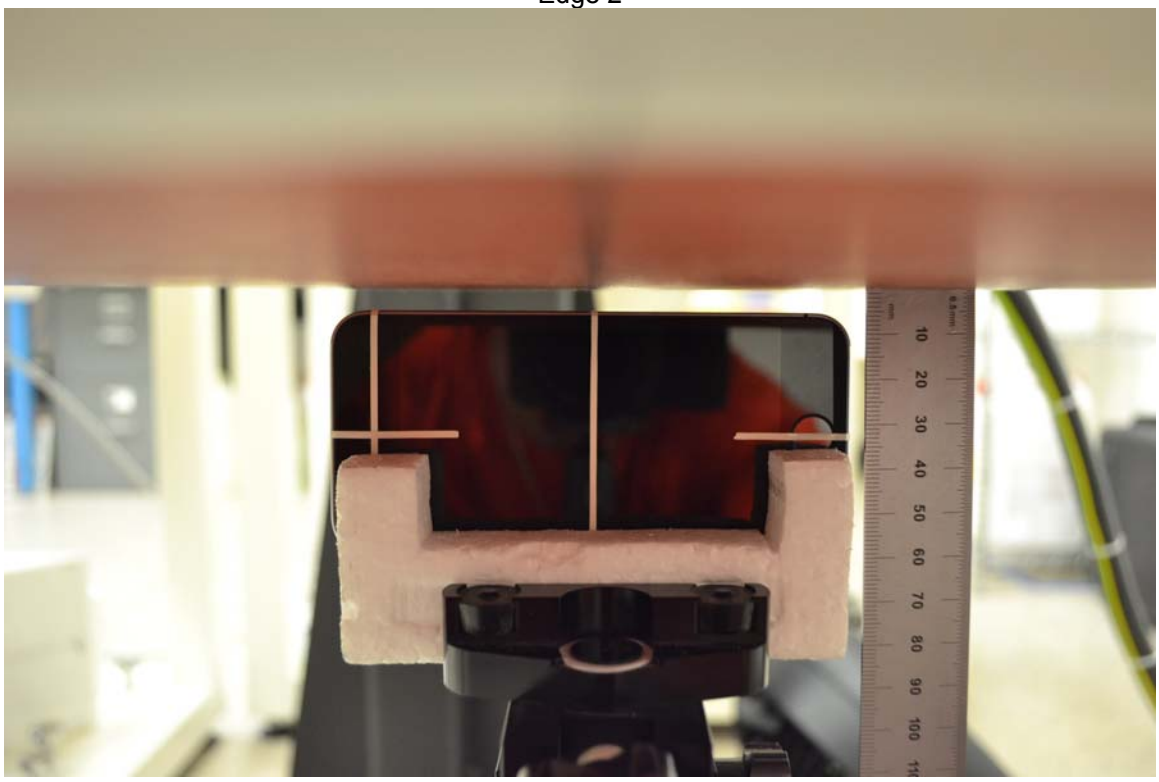
18.3. Hotspot Exposure Conditions

Edge 1



Edge 2



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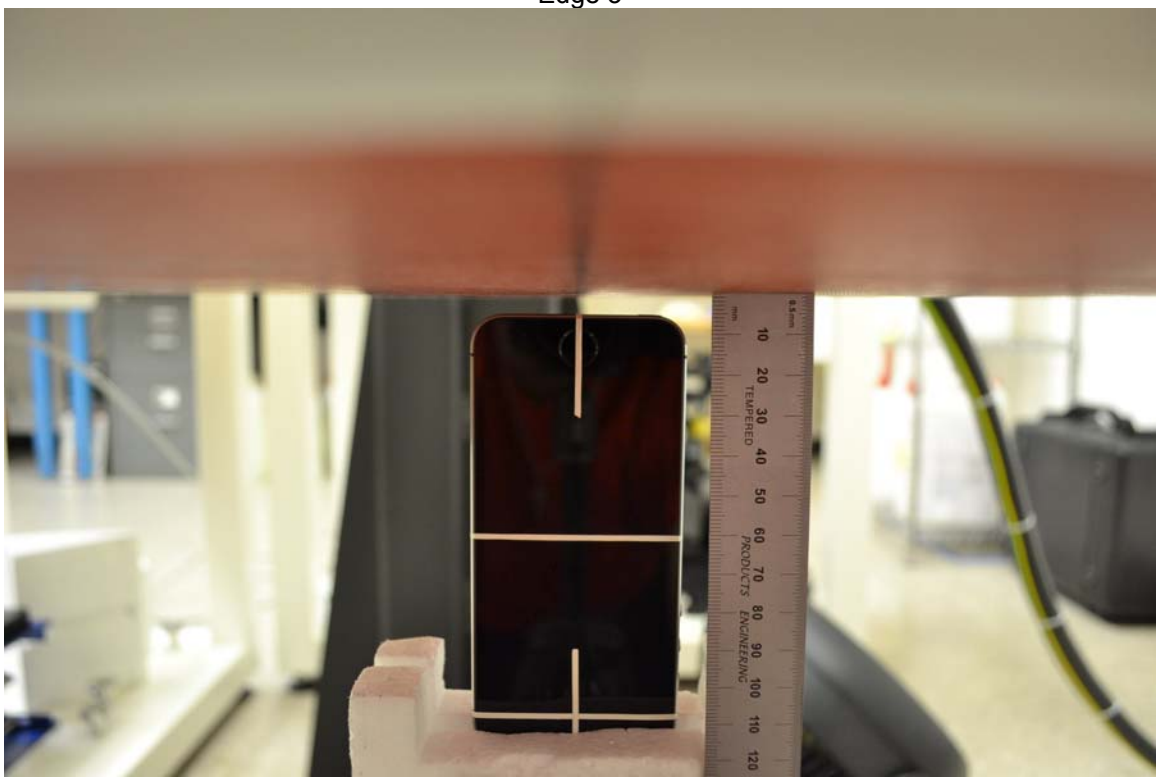
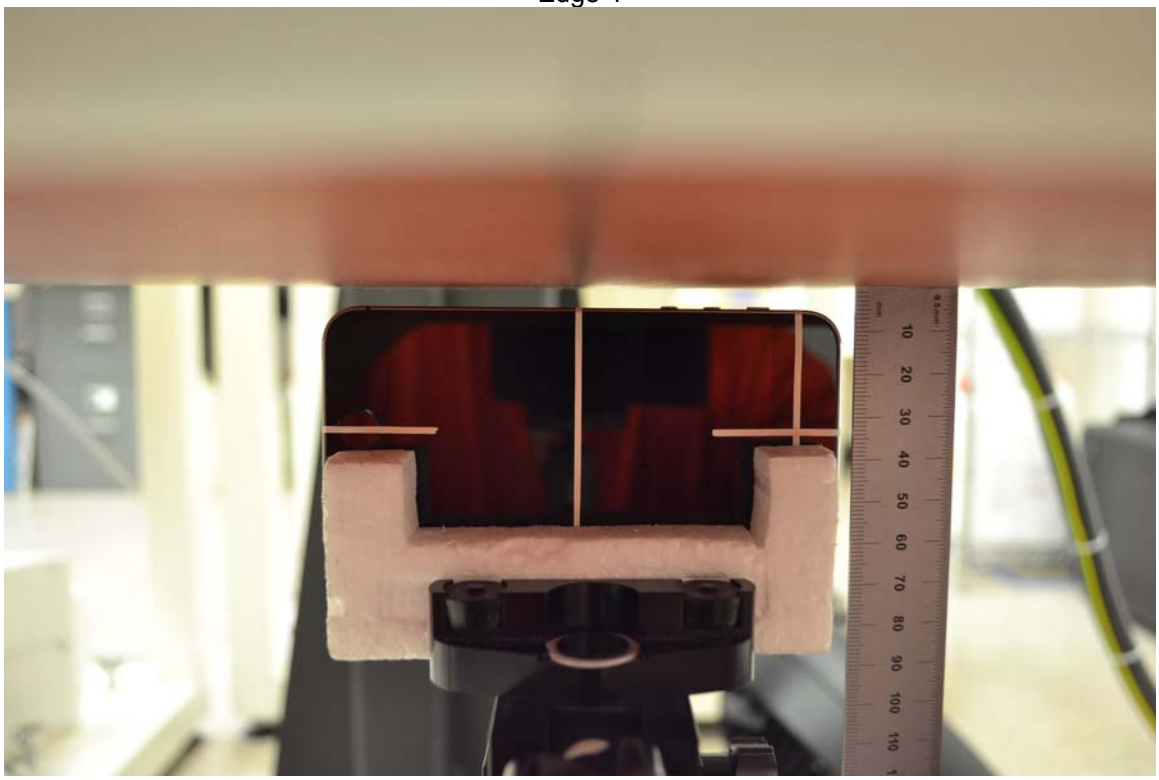
Edge 3



Edge 4



END OF REPORT

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