



**FCC 47 CFR Parts 1 & 2
Published RF Exposure KDB Procedures
IEEE Std 1528-2013**

(Class II Permissive Change)

SAR EVALUATION REPORT

For
CDMA/LTE Phone + Bluetooth & DTS/UNII a/b/g/n + NFC

**Model: LG-VS880, VS880, LGVS880
FCC ID: ZNFVS880**

**Report Number: 14U17461-S7
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Prepared for
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1. Attestation of Test Results


| | | | | |
|---------------------------------|--|------------|------------|------------|
| Applicant | LG ELECTRONICS MOBILECOMM U.S.A., INC. | | | |
| DUT description | CDMA/LTE Phone + Bluetooth & DTS/UNII a/b/g/n + NFC | | | |
| Model | LG-VS880, VS880, LGVS880 | | | |
| Test device is | An identical prototype | | | |
| Device category | Portable | | | |
| Exposure category | General Population/Uncontrolled Exposure | | | |
| Date tested | 5/19/2014 – 5/29/2014 | | | |
| The highest reported SAR values | RF exposure condition | Licensed | DTS | UNII |
| | Head | 0.480 W/kg | 0.115 W/kg | 0.103 W/kg |
| | Body-worn Accessory | 0.945 W/kg | 0.159 W/kg | 0.158 W/kg |
| | Wireless Router (Hotspot) | 0.945 W/kg | 0.159 W/kg | N/A |
| | Wi-Fi Direct | N/A | 0.159 W/kg | N/A |
| | Simultaneous Transmission | 1.267 W/kg | 1.267 W/kg | 1.266 W/kg |
| Applicable Standards | FCC 47 CFR Parts 1 & 2 Published RF Exposure KDB Procedures, and TCB workshop updates IEEE Std 1528-2013 | | | |
| Test Results | Pass | | | |

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

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

Approved & Released By:

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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 1528-2013, the following FCC Published RF exposure KDB procedures, and TCB workshop updates:

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

3. Facilities and Accreditation

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

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

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

4. Calibration and Uncertainty

4.1. Measuring Instrument Calibration

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

Tissue Dielectric Properties

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

System Performance Check

| Name of Equipment | Manufacturer | Type/Model | Serial No. | Cal. Due Date |
|------------------------------|--------------|------------------------|------------|---------------|
| Power Meter | HP | 437B | 3125U11364 | 8/26/2014 |
| Power Sensor | HP | 8481A | 1926A27048 | 7/29/2014 |
| Synthesized Signal Generator | HP | 8665B | 3744A01155 | 3/12/2015 |
| Power Meter | HP | 437B | 3125U12345 | 7/29/2014 |
| Power Sensor | HP | 8481A | 2702A76223 | 9/17/2014 |
| Directional coupler | Werlatone | C8060-102 | 2141 | N/A |
| Amplifier | MITEQ | AMF-4D-00400600-50-30P | 1795092 | N/A |
| DC Power Supply | BK Precision | 1611 | 215-02292 | N/A |
| E-Field Probe | SPEAG | EX3DV4 | 3885 | 9/18/2014 |
| E-Field Probe | SPEAG | EX3DV4 | 3901 | 2/25/2015 |
| E-Field Probe | SPEAG | EX3DV4 | 3686 | 3/18/2015 |
| E-Field Probe | SPEAG | EX3DV4 | 3989 | 4/15/2015 |
| E-Field Probe | SPEAG | EX3DV4 | 3990 | 4/15/2015 |
| Data Acquisition Electronics | SPEAG | DAE4 | 1343 | 7/24/2014 |
| Data Acquisition Electronics | SPEAG | DAE4 | 1357 | 2/17/2015 |
| Data Acquisition Electronics | SPEAG | DAE4 | 1433 | 4/14/2015 |
| Data Acquisition Electronics | SPEAG | DAE4 | 1434 | 4/14/2015 |
| Data Acquisition Electronics | SPEAG | DAE4 | 1239 | 4/15/2015 |
| System Validation Dipole | SPEAG | D750V3 | 1019 | 3/17/2015 |
| System Validation Dipole | SPEAG | D835V2 | 4d002 | 11/15/2014 |
| System Validation Dipole | SPEAG | D1750V2 | 1050 | 4/22/2015 |
| System Validation Dipole | SPEAG | D1900V2 | 5d043 | 11/12/2014 |
| System Validation Dipole | SPEAG | D2450V2 | 748 | 2/18/2015 |
| System Validation Dipole | SPEAG | D5GHzV2 | 1003 | 2/26/2015 |

Others

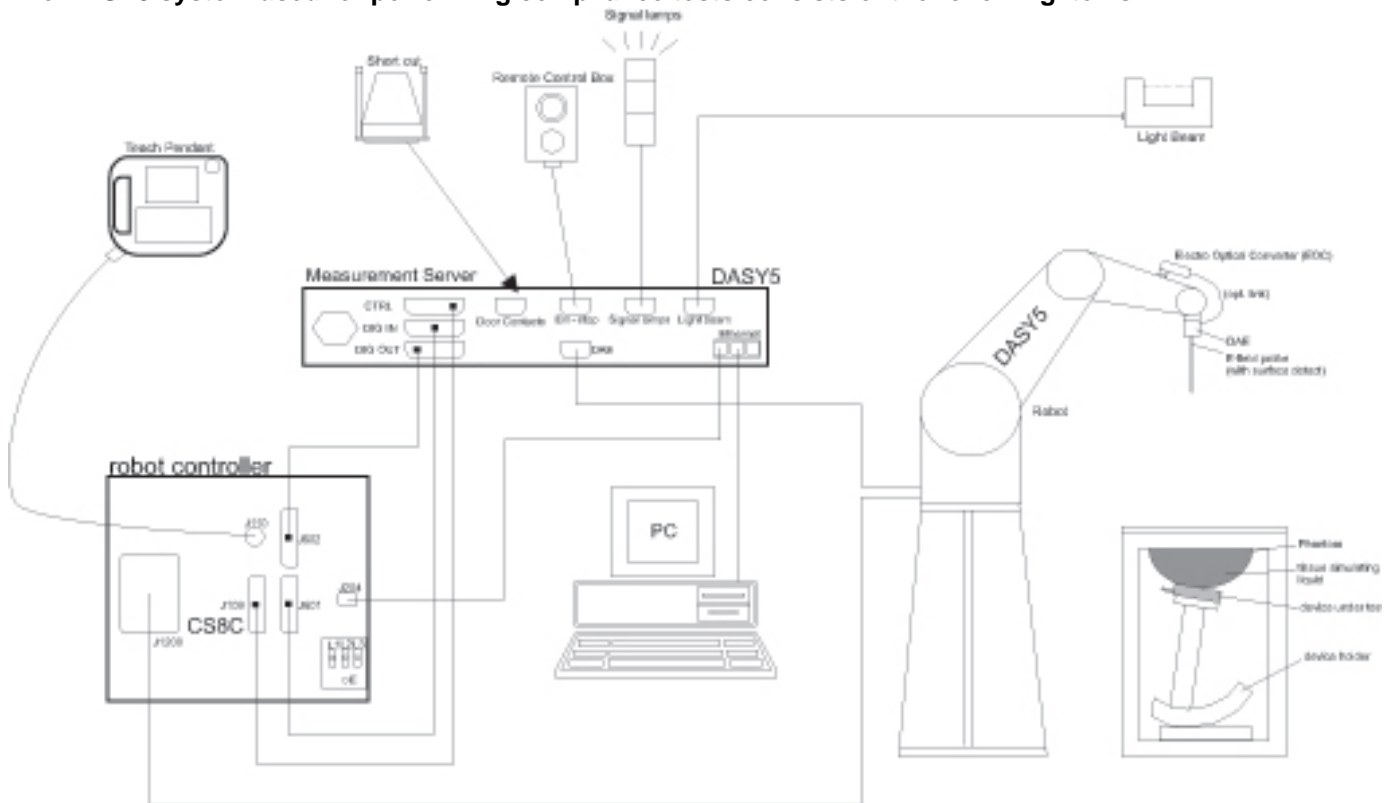
| Name of Equipment | Manufacturer | Type/Model | Serial No. | Cal. Due Date |
|------------------------|--------------|----------------|------------|---------------|
| Power Sensor | Agilent | N1921A | MY52260009 | 12/12/2014 |
| Power Meter | Agilent | N1912A | MY50001018 | 8/23/2014 |
| Base Station Simulator | Agilent | 8960 Series 10 | MY53211024 | 9/11/2014 |
| Base Station Simulator | R & S | CMU200 | 106301 | 7/3/2014 |
| Base Station Simulator | R & S | CMW500 | 132910-cp | 4/25/2015 |
| Base Station Simulator | R & S | CMW500 | 132909-bp | 2/20/2015 |

4.2. Measurement Uncertainty

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

5. Measurement System Description and Setup

The DASY5 system used for performing compliance tests consists of the following items:



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

6. SAR Measurement Procedure

6.1. Normal SAR Measurement Procedure

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 2.1 mm. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE Standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

Area Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

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

Step 3: Zoom Scan

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

Zoom Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

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

Step 4: Power drift measurement

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

Step 5: Z-Scan (FCC only)

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

6.2. Volume Scan Procedures

Step 1: Repeat Step 1-4 in Section 6.1

Step 2: Volume Scan

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

Step 3: Power drift measurement

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

7. Device Under Test

7.1. General Information

| | |
|----------------------------|--|
| Operating Configuration(s) | Held to head, Body-worn (Voice call) |
| Mobile Hotspot | Wi-Fi Hotspot mode permits the device to share its cellular data connection with other Wi-Fi -enabled devices. <input checked="" type="checkbox"/> Mobile Hotspot (Wi-Fi 2.4 GHz) <input checked="" type="checkbox"/> Mobile Hotspot (Wi-Fi 5.8 GHz) |
| Wi-Fi Direct | Wi-Fi Direct enabled devices transfer data directly between each other <input checked="" type="checkbox"/> Wi-Fi Direct (Wi-Fi 2.4 GHz) <input checked="" type="checkbox"/> Wi-Fi Direct (Wi-Fi 5.8 GHz) |
| Device dimension | Overall (Length x Width): 152.1 mm x 79.2 mm Overall Diagonal: 166.2 mm Display Diagonal: 145.4 mm |
| Back Cover | <input type="checkbox"/> Normal Battery Cover <input type="checkbox"/> Wireless Charger Battery Cover <input checked="" type="checkbox"/> Normal Battery Cover with NFC |
| Accessory | <input checked="" type="checkbox"/> Headset |
| Battery Options | <input checked="" type="checkbox"/> Standard – Lithium-ion battery, Rating 3.8Vdc, 3200mAh <input type="checkbox"/> Extended (large capacity) |

7.2. Wireless Technologies

| | |
|---|--|
| Wireless Technology and Frequency Bands | CDMA BC 0 / 1 LTE Band 4 / 13 Wi-Fi : 2.4 / 5 GHz Bluetooth: 2.4 GHz. |
| Mode | CDMA2000 <ul style="list-style-type: none"> - <input checked="" type="checkbox"/> 1xRTT (Voice & Data) - <input checked="" type="checkbox"/> 1xEVDO Rel. 0 - <input checked="" type="checkbox"/> 1xEVDO Rev. A LTE <ul style="list-style-type: none"> - <input checked="" type="checkbox"/> QPSK - <input checked="" type="checkbox"/> 16QAM Wi-Fi 2.4GHz (802.11b/g/n) <ul style="list-style-type: none"> - <input checked="" type="checkbox"/> 802.11b - <input checked="" type="checkbox"/> 802.11g - <input checked="" type="checkbox"/> 802.11n (HT20) Wi-Fi 5GHz <ul style="list-style-type: none"> - <input checked="" type="checkbox"/> 802.11a - <input checked="" type="checkbox"/> 802.11n (HT20) - <input checked="" type="checkbox"/> 802.11n (HT40) Bluetooth Ver. 4.0 (LE) |
| Duty Cycle (Used for SAR testing) | CDMA: 100% LTE (FDD): 100% Wi-Fi 802.11a/b/g/n: 100% |
| VoIP | <input checked="" type="checkbox"/> Supported |
| SV-LTE | <input checked="" type="checkbox"/> Supported |

7.3. RF Output Power Tolerance

| Upper limit (dB): 0.5 ~ -1.5 | | RF Output Power (dBm) | |
|------------------------------|---------------|-----------------------|------------------------------|
| RF Air interface | Mode | Target | Max. tune-up tolerance limit |
| CDMA BC0 | 1xRTT | 24.9 | 25.4 |
| | 1xEVDO Rel. 0 | 24.9 | 25.4 |
| | 1xEVDO Rev. A | 24.9 | 25.4 |
| CDMA BC1 | 1xRTT | 24.2 | 24.7 |
| | 1xEVDO Rel. 0 | 24.2 | 24.7 |
| | 1xEVDO Rev. A | 24.2 | 24.7 |
| LTE Band 4 | QPSK | 24.2 | 24.7 |
| LTE Band 13 | QPSK | 24.2 | 24.7 |

| Upper limit (dB): 0.7 ~ -1.5 | | RF Output Power (dBm) | |
|------------------------------|--------------|-----------------------|------------------------------|
| RF Air interface | Mode | Target | Max. tune-up tolerance limit |
| WiFi 2.4 GHz | 802.11b | 16.0 | 16.7 |
| | 802.11g | 14.0 | 14.7 |
| | 802.11n HT20 | 12.0 | 12.7 |
| WiFi 5 GHz | 802.11a | 10.5 | 11.2 |
| | 802.11n HT20 | 10.1 | 10.8 |
| | 802.11n HT40 | 10.1 | 10.8 |
| Bluetooth | | 10.5 | 11.2 |
| Bluetooth LE | | 7.5 | 8.2 |

7.4. Simultaneous Transmission Condition

| RF Exposure Condition | Capable Transmit Configurations |
|---|---|
| Head | <ol style="list-style-type: none"> 1. CDMA 1xRTT BC0 / BC1 + Wi-Fi 2.4 / 5 GHz 2. CDMA 1xEVDO BC0 / BC1 + Wi-Fi 2.4 / 5 GHz (VoIP) 3. LTE Band 4 / 13 + Wi-Fi 2.4 / 5 GHz 4. CDMA 1x BC0 / BC1 + LTE B4 / B13 + Wi-Fi 2.4 / 5 GHz (SV-LTE + Wi-Fi) |
| Body-worn Accessory | <ol style="list-style-type: none"> 1. CDMA 1xRTT BC0 / BC1 + Wi-Fi 2.4 / 5 GHz 2. CDMA 1xRTT BC0 / BC1 + BT 3. CDMA 1xEVDO BC0 / BC1 + Wi-Fi 2.4 / 5 GHz (VoIP) 4. CDMA 1xEVDO BC0 / BC1 + BT (VoIP) 5. LTE Band 4 / 13 + Wi-Fi 2.4 / 5 GHz 6. LTE Band 4 / 13 + BT 7. CDMA 1x BC0 / BC1 + LTE B4 / B13 + Wi-Fi 2.4 / 5 GHz (SV-LTE + Wi-Fi) 8. CDMA 1x BC0 / BC1 + LTE B4 / B13 + BT (SV-LTE + BT) |
| Wireless Router (Hotspot) | <ol style="list-style-type: none"> 1. CDMA 1xEVDO BC0 / BC1 + Wi-Fi 2.4 / 5.8 GHz 2. LTE Band 4 / 13 + Wi-Fi 2.4 / 5.8 GHz 3. CDMA 1x BC0 / BC1 + LTE B4 / B13 + Wi-Fi 2.4 / 5.8 GHz (SV-LTE + Wi-Fi) |
| Wi-Fi Direct | <ol style="list-style-type: none"> 1. CDMA 1xEVDO BC0 / BC1 + Wi-Fi 2.4 / 5.8 GHz (GO / GC) 2. LTE Band 4 / 13 + Wi-Fi 2.4 / 5.8 GHz (GO / GC) 3. CDMA 1x BC0 / BC1 + LTE B4 / B13 + Wi-Fi 2.4 / 5.8 GHz (SV-LTE + Wi-Fi) (GO / GC) |
| <p>Notes:</p> <ol style="list-style-type: none"> 1. CDMA 1xEVDO and LTE support Hotspot. 2. VoIP is supported in CDMA, LTE(e.g. 3rd part VoIP and VoLTE) 3. Wi-Fi 2.4 GHz supports Hotspot and Wi-Fi Direct (GO/GC). 4. Wi-Fi 5 GHz supports Hotspot and Wi-Fi Direct: UNII I (5.2 GHz): Wi-Fi Direct GC is only supported (SAR Exclusion), Hotspot is not supported UNII II (5.3 GHz): Wi-Fi Direct/Hotspot is not supported UNII III (5.5 GHz): Wi-Fi Direct/Hotspot is not supported UNII IV (5.8 GHz): Wi-Fi Direct GO/GC and Hotspot are supported (except channel 165: Wi-Fi direct/Hotspot not supported) 5. Wi-Fi and Bluetooth cannot transmit simultaneously because they share the same chip. | |

7.5. General LTE SAR Test and Reporting Considerations

| Item | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|------------------------|--------|--------------|---|--------------|---|---------|---------|-------|--------|--------|--------|------|-----|-----|-----|------|------|------|-----|--------|-----|-----|-----|------|------|------|-----|--------|-----|-----|-----|------|------|------|-----|
| Frequency range, Channel Bandwidth, Numbers and Frequencies | Band 4 | Frequency range: 1710 - 1755 MHz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Channel Bandwidth | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 20 MHz | 15 MHz | 10 MHz | 5 MHz | 3 MHz | 1.4 MHz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Low | 20050 | 20025 | 20000 | 19975 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Mid | 20175 | 20175 | 20175 | 20175 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | High | 20300 | 20325 | 20350 | 20375 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Band 13 | Frequency range: 777 - 787 MHz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Channel Bandwidth | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 20 MHz | 15 MHz | 10 MHz | 5 MHz | 3 MHz | 1.4 MHz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Low | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid | | | 23230 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LTE transmitter and antenna implementation | LTE has one TX/RX antenna and one RX only antenna. Refer to Appendix "Antenna Locations and Separation Distances" for antenna locations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum power reduction (MPR) | <p>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3</p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (RB)</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 2</td> </tr> </tbody> </table> <p>MPR Built-in by design A-MPR (additional MPR) was disabled during SAR testing</p> | Modulation | Channel bandwidth / Transmission bandwidth (RB) | | | | | | MPR (dB) | 1.4 MHz | 3.0 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz | QPSK | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 1 | 16 QAM | ≤ 5 | ≤ 4 | ≤ 8 | ≤ 12 | ≤ 16 | ≤ 18 | ≤ 1 | 16 QAM | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 2 |
| Modulation | Channel bandwidth / Transmission bandwidth (RB) | | | | | | MPR (dB) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1.4 MHz | 3.0 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| QPSK | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 QAM | ≤ 5 | ≤ 4 | ≤ 8 | ≤ 12 | ≤ 16 | ≤ 18 | ≤ 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 QAM | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Power reduction | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <table border="1"> <thead> <tr> <th>Mode</th> <th>CDMA Current Voice Power for BC0 & BC1</th> <th>LTE B4 & B13 Max Power</th> </tr> </thead> <tbody> <tr> <td rowspan="2">SV-LTE</td> <td>P ≤ 18.2 dBm</td> <td>B4: 24.7 dBm (Limited) B13: 24.7 (Limited)</td> </tr> <tr> <td>P > 18.2 dBm</td> <td>B4: 20.7 dBm (Limited) B13: 20.7 dBm (Limited)</td> </tr> </tbody> </table> | Mode | CDMA Current Voice Power for BC0 & BC1 | LTE B4 & B13 Max Power | SV-LTE | P ≤ 18.2 dBm | B4: 24.7 dBm (Limited) B13: 24.7 (Limited) | P > 18.2 dBm | B4: 20.7 dBm (Limited) B13: 20.7 dBm (Limited) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mode | CDMA Current Voice Power for BC0 & BC1 | LTE B4 & B13 Max Power | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SV-LTE | P ≤ 18.2 dBm | B4: 24.7 dBm (Limited) B13: 24.7 (Limited) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | P > 18.2 dBm | B4: 20.7 dBm (Limited) B13: 20.7 dBm (Limited) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Spectrum plots for RB configurations | A properly configured base station simulator was used for the SAR and power measurements; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

8. RF Exposure Conditions

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

8.1. Head Exposure Conditions

For CDMA, LTE, Wi-Fi, and Bluetooth

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

8.2. Body-worn Accessory Exposure Conditions

For CDMA (①)

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

For LTE (②)

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

For Wi-Fi/Bluetooth (⑤)

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

8.3. Hotspot Exposure Conditions

For CDMA (①)

| Test Configurations | Antenna-to-edge/surface | SAR Required | Note |
|---------------------|-------------------------|--------------|---|
| Rear | <25 mm | Yes | |
| Front | <25 mm | Yes | |
| Edge 1 (Top) | 129.9 mm | No | SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR |
| Edge 2 (Right) | 53.4 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 |
| Edge 3 (Bottom) | 2 mm | Yes | |
| Edge 4 (Left) | 2 mm | Yes | |

For LTE (②)

| Test Configurations | Antenna-to-edge/surface | SAR Required | Note |
|---------------------|-------------------------|--------------|---|
| Rear | <25 mm | Yes | |
| Front | <25 mm | Yes | |
| Edge 1 (Top) | 130.9 mm | No | SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR |
| Edge 2 (Right) | 2 mm | Yes | |
| Edge 3 (Bottom) | 2 mm | Yes | |
| Edge 4 (Left) | 43.7 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 |

For Wi-Fi/Bluetooth (⑤)

| Test Configurations | Antenna-to-edge/surface | SAR Required | Note |
|---------------------|-------------------------|--------------|---|
| Rear | <25 mm | Yes | |
| Front | <25 mm | Yes | |
| Edge 1 (Top) | 2 mm | Yes | |
| Edge 2 (Right) | 14.3 mm | Yes | |
| Edge 3 (Bottom) | 140.8 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 |
| Edge 4 (Left) | 44.9 mm | No | SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR |

8.4. Wi-Fi Direct Exposure Conditions

For Wi-Fi (⑤)

| Test Configurations | Antenna-to-edge/surface | SAR Required | Note |
|---------------------|-------------------------|--------------|--|
| Rear | <25 mm | Yes | |
| Front | <25 mm | Yes | |
| Edge 1 (Top) | 2 mm | Yes | |
| Edge 2 (Right) | 14.3 mm | Yes | |
| Edge 3 (Bottom) | 140.8 mm | No | SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 648474 D04 Handset SAR |
| Edge 4 (Left) | 44.9 mm | No | SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 648474 D04 Handset SAR |

9. RF Output Power Measurement

9.1. CDMA

1xRTT Measured Results

| Band | Mode | Ch | Freq. (MHz) | Avg Pwr (dBm) | Power Reduction (dBm) |
|------|---------------------|------|-------------|---------------|-----------------------|
| BC 0 | RC1 SO55 (Loopback) | 1013 | 824.70 | 25.1 | 18.0 |
| | | 384 | 836.52 | 25.2 | 18.2 |
| | | 777 | 848.31 | 25.1 | 18.0 |
| | RC3 SO55 (Loopback) | 1013 | 824.70 | 25.1 | 18.0 |
| | | 384 | 836.52 | 25.2 | 18.2 |
| | | 777 | 848.31 | 25.0 | 17.9 |
| | RC3 SO32 (+F-SCH) | 1013 | 824.70 | 25.1 | 18.0 |
| | | 384 | 836.52 | 25.2 | 18.1 |
| | | 777 | 848.31 | 25.1 | 17.9 |
| BC 1 | RC1 SO55 (Loopback) | 25 | 1851.25 | 24.5 | 17.9 |
| | | 600 | 1880.00 | 24.5 | 18.2 |
| | | 1175 | 1908.75 | 24.5 | 17.9 |
| | RC3 SO55 (Loopback) | 25 | 1851.25 | 24.5 | 17.8 |
| | | 600 | 1880.00 | 24.5 | 18.2 |
| | | 1175 | 1908.75 | 24.5 | 17.9 |
| | RC3 SO32 (+F-SCH) | 25 | 1851.25 | 24.5 | 17.8 |
| | | 600 | 1880.00 | 24.5 | 18.0 |
| | | 1175 | 1908.75 | 24.5 | 17.9 |

1xEv-Do Rel. 0 Measured Results

| Band | FTAP Rate | RTAP Rate | Channel | Freq. (MHz) | Avg Pwr (dBm) |
|------|---------------------------|------------|---------|-------------|---------------|
| BC 0 | 307.2 kbps (2 slot, QPSK) | 153.6 kbps | 1013 | 824.70 | 25.2 |
| | | | 384 | 836.52 | 25.3 |
| | | | 777 | 848.31 | 25.2 |
| BC1 | 307.2 kbps (2 slot, QPSK) | 153.6 kbps | 25 | 1851.25 | 24.5 |
| | | | 600 | 1880.00 | 24.5 |
| | | | 1175 | 1908.75 | 24.5 |

1xEv-Do Rev. A Measured Results

| Band | FETAP Traffic Format | RETAP Data Payload Size | Channel | Freq. (MHz) | Avg Pwr (dBm) |
|------|---|-------------------------|---------|-------------|---------------|
| BC 0 | 307.2k, QPSK/ ACK channel is transmitted at all the slots | 4096 | 1013 | 824.70 | 25.2 |
| | | | 384 | 836.52 | 25.3 |
| | | | 777 | 848.31 | 25.2 |
| BC1 | 307.2k, QPSK/ ACK channel is transmitted at all the slots | 4096 | 25 | 1851.25 | 24.4 |
| | | | 600 | 1880.00 | 24.4 |
| | | | 1175 | 1908.75 | 24.5 |

9.2. LTE Band

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

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

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

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

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

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

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

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

LTE Band 4 Measured Results

| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) | | |
|------------|----------|-------|---------------|-----------|------------|-----------|---------------|------------|------------|
| | | | | | | | 1720 MHz | 1732.5 MHz | 1745 MHz |
| LTE Band 4 | 20 | QPSK | 1 | 0 | 0 | 0 | 24.7 | 24.7 | 24.7 |
| | | | 1 | 50 | 0 | 0 | 24.6 | 24.7 | 24.6 |
| | | | 1 | 99 | 0 | 0 | 24.6 | 24.6 | 24.7 |
| | | | 50 | 0 | 1 | 1 | 23.6 | 23.4 | 23.5 |
| | | | 50 | 25 | 1 | 1 | 23.6 | 23.6 | 23.5 |
| | | | 50 | 50 | 1 | 1 | 23.5 | 23.6 | 23.5 |
| | | | 100 | 0 | 1 | 1 | 23.5 | 23.5 | 23.6 |
| | | 16QAM | 1 | 0 | 1 | 1 | 23.6 | 23.5 | 23.7 |
| | | | 1 | 50 | 1 | 1 | 23.6 | 23.6 | 23.4 |
| | | | 1 | 99 | 1 | 1 | 23.5 | 23.3 | 23.7 |
| | | | 50 | 0 | 2 | 2 | 22.3 | 22.3 | 22.2 |
| | | | 50 | 25 | 2 | 2 | 22.3 | 22.5 | 21.9 |
| | | | 50 | 50 | 2 | 2 | 22.4 | 22.5 | 22.2 |
| | | | 100 | 0 | 2 | 2 | 22.4 | 22.4 | 22.3 |
| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) | | |
| | | | | | | | 1717.5 MHz | 1732.5 MHz | 1747.5 MHz |
| LTE Band 4 | 15 | QPSK | 1 | 0 | 0 | 0 | 24.5 | 24.6 | 24.7 |
| | | | 1 | 36 | 0 | 0 | 24.7 | 24.7 | 24.6 |
| | | | 1 | 74 | 0 | 0 | 24.5 | 24.7 | 24.7 |
| | | | 36 | 0 | 1 | 1 | 23.5 | 23.5 | 23.4 |
| | | | 36 | 18 | 1 | 1 | 23.6 | 23.6 | 23.5 |
| | | | 36 | 37 | 1 | 1 | 23.5 | 23.5 | 23.5 |
| | | | 75 | 0 | 1 | 1 | 23.6 | 23.6 | 23.5 |
| | | 16QAM | 1 | 0 | 1 | 1 | 23.3 | 23.6 | 23.6 |
| | | | 1 | 36 | 1 | 1 | 23.5 | 23.7 | 23.7 |
| | | | 1 | 74 | 1 | 1 | 23.2 | 23.7 | 23.7 |
| | | | 36 | 0 | 2 | 2 | 22.1 | 22.4 | 21.9 |
| | | | 36 | 18 | 2 | 2 | 22.3 | 22.5 | 22.1 |
| | | | 36 | 37 | 2 | 2 | 22.3 | 22.5 | 22.2 |
| | | | 75 | 0 | 2 | 2 | 22.3 | 22.5 | 22.2 |
| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) | | |
| | | | | | | | 1715 MHz | 1732.5 MHz | 1750 MHz |
| LTE Band 4 | 10 | QPSK | 1 | 0 | 0 | 0 | 24.5 | 24.6 | 24.5 |
| | | | 1 | 25 | 0 | 0 | 24.7 | 24.7 | 24.7 |
| | | | 1 | 49 | 0 | 0 | 24.6 | 24.7 | 24.7 |
| | | | 25 | 0 | 1 | 1 | 23.3 | 23.4 | 23.5 |
| | | | 25 | 12 | 1 | 1 | 23.4 | 23.5 | 23.6 |
| | | | 25 | 25 | 1 | 1 | 23.6 | 23.5 | 23.6 |
| | | | 50 | 0 | 1 | 1 | 23.5 | 23.6 | 23.6 |
| | | 16QAM | 1 | 0 | 1 | 1 | 23.2 | 23.7 | 23.2 |
| | | | 1 | 25 | 1 | 1 | 23.4 | 23.7 | 23.3 |
| | | | 1 | 49 | 1 | 1 | 23.3 | 23.7 | 23.6 |
| | | | 25 | 0 | 2 | 2 | 22.0 | 22.3 | 22.3 |
| | | | 25 | 12 | 2 | 2 | 22.2 | 22.4 | 22.3 |
| | | | 25 | 25 | 2 | 2 | 22.3 | 22.4 | 22.3 |
| | | | 50 | 0 | 2 | 2 | 22.3 | 22.5 | 22.3 |

LTE Band 4 Measured Results (continued)

| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) | | |
|------------|----------|-------|---------------|-----------|------------|-----------|---------------|------------|------------|
| | | | | | | | 1712.5 MHz | 1732.5 MHz | 1752.5 MHz |
| LTE Band 4 | 5 | QPSK | 1 | 0 | 0 | 0 | 24.6 | 24.7 | 24.7 |
| | | | 1 | 12 | 0 | 0 | 24.5 | 24.7 | 24.7 |
| | | | 1 | 24 | 0 | 0 | 24.6 | 24.7 | 24.7 |
| | | | 12 | 0 | 1 | 1 | 23.5 | 23.4 | 23.6 |
| | | | 12 | 6 | 1 | 1 | 23.4 | 23.5 | 23.7 |
| | | | 12 | 11 | 1 | 1 | 23.4 | 23.6 | 23.7 |
| | | | 25 | 0 | 1 | 1 | 23.3 | 23.6 | 23.6 |
| | | 16QAM | 1 | 0 | 1 | 1 | 23.3 | 23.4 | 23.4 |
| | | | 1 | 12 | 1 | 1 | 23.2 | 23.5 | 23.5 |
| | | | 1 | 24 | 1 | 1 | 23.3 | 23.5 | 23.6 |
| | | | 12 | 0 | 2 | 2 | 22.2 | 22.3 | 22.4 |
| | | | 12 | 6 | 2 | 2 | 22.2 | 22.4 | 22.5 |
| | | | 12 | 11 | 2 | 2 | 22.1 | 22.4 | 22.7 |
| | | | 25 | 0 | 2 | 2 | 22.1 | 22.4 | 22.5 |

LTE Band 4 Power Reduction Measured Results

| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) | | |
|------------|----------|-------|---------------|-----------|---|-----------|---------------|------------|----------|
| | | | | | | | 1720 MHz | 1732.5 MHz | 1745 MHz |
| LTE Band 4 | 20 | QPSK | 1 | 0 | MPR is disabled when Power Reduction is enabled | | 20.7 | 20.7 | 20.6 |
| | | | 1 | 50 | | | 20.6 | 20.5 | 20.7 |
| | | | 1 | 99 | | | 20.5 | 20.5 | 20.6 |
| | | | 50 | 0 | | | 19.6 | 19.7 | 19.8 |
| | | | 50 | 25 | | | 19.7 | 19.8 | 19.6 |
| | | | 50 | 50 | | | 19.7 | 19.7 | 19.7 |
| | | | 100 | 0 | | | 19.6 | 19.8 | 19.8 |
| | | 16QAM | 1 | 0 | | | 19.8 | 19.7 | 20.0 |
| | | | 1 | 50 | | | 19.8 | 19.8 | 19.8 |
| | | | 1 | 99 | | | 19.8 | 19.8 | 19.9 |
| | | | 50 | 0 | | | 18.7 | 18.6 | 18.7 |
| | | | 50 | 25 | | | 18.7 | 18.8 | 18.6 |
| | | | 50 | 50 | | | 18.7 | 18.7 | 18.6 |
| | | | 100 | 0 | | | 18.7 | 18.8 | 18.7 |
| LTE Band 4 | 15 | QPSK | 1 | 0 | MPR is disabled when Power Reduction is enabled | | 20.5 | 20.7 | 20.5 |
| | | | 1 | 36 | | | 20.5 | 20.7 | 20.6 |
| | | | 1 | 74 | | | 20.4 | 20.5 | 20.7 |
| | | | 36 | 0 | | | 19.6 | 19.7 | 19.7 |
| | | | 36 | 18 | | | 19.7 | 19.8 | 19.7 |
| | | | 36 | 37 | | | 19.8 | 19.7 | 19.8 |
| | | | 75 | 0 | | | 19.7 | 19.8 | 19.7 |
| | | 16QAM | 1 | 0 | | | 19.5 | 19.9 | 20.2 |
| | | | 1 | 36 | | | 19.6 | 19.9 | 20.0 |
| | | | 1 | 74 | | | 19.4 | 19.9 | 20.2 |
| | | | 36 | 0 | | | 18.5 | 18.6 | 18.6 |
| | | | 36 | 18 | | | 18.7 | 18.9 | 18.6 |
| | | | 36 | 37 | | | 18.7 | 18.7 | 18.6 |
| | | | 75 | 0 | | | 18.6 | 18.8 | 18.7 |

| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) | | |
|------------|----------|-------|---------------|-----------|---|-----------|---------------|------------|------------|
| | | | | | | | 1715 MHz | 1732.5 MHz | 1750 MHz |
| LTE Band 4 | 10 | QPSK | 1 | 0 | MPR is disabled when Power Reduction is enabled | | 20.4 | 20.6 | 20.6 |
| | | | 1 | 25 | | | 20.5 | 20.6 | 20.6 |
| | | | 1 | 49 | | | 20.6 | 20.7 | 20.7 |
| | | | 25 | 0 | | | 19.6 | 19.7 | 19.7 |
| | | | 25 | 12 | | | 19.6 | 19.8 | 19.7 |
| | | | 25 | 25 | | | 19.7 | 19.7 | 19.8 |
| | | 16QAM | 50 | 0 | | | 19.6 | 19.8 | 19.8 |
| | | | 1 | 0 | | | 19.3 | 19.5 | 19.5 |
| | | | 1 | 25 | | | 19.4 | 19.5 | 19.5 |
| | | | 1 | 49 | | | 19.5 | 19.6 | 19.6 |
| | | | 25 | 0 | | | 18.6 | 18.7 | 18.6 |
| | | | 25 | 12 | | | 18.7 | 18.8 | 18.7 |
| | | | 25 | 25 | | | 19.0 | 18.7 | 18.7 |
| | | | 50 | 0 | | | 18.6 | 18.8 | 18.7 |
| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) | | |
| | | | | | | | 1712.5 MHz | 1732.5 MHz | 1752.5 MHz |
| LTE Band 4 | 5 | QPSK | 1 | 0 | MPR is disabled when Power Reduction is enabled | | 20.4 | 20.7 | 20.5 |
| | | | 1 | 12 | | | 20.3 | 20.7 | 20.5 |
| | | | 1 | 24 | | | 20.4 | 20.6 | 20.5 |
| | | | 12 | 0 | | | 19.4 | 19.7 | 19.7 |
| | | | 12 | 6 | | | 19.4 | 19.7 | 19.8 |
| | | | 12 | 11 | | | 19.4 | 19.7 | 19.7 |
| | | 16QAM | 25 | 0 | | | 19.4 | 19.7 | 19.8 |
| | | | 1 | 0 | | | 19.2 | 19.7 | 20.1 |
| | | | 1 | 12 | | | 19.1 | 19.8 | 20.1 |
| | | | 1 | 24 | | | 19.3 | 19.7 | 20.2 |
| | | | 12 | 0 | | | 18.5 | 18.7 | 18.7 |
| | | | 12 | 6 | | | 18.4 | 18.8 | 18.7 |
| | | | 12 | 11 | | | 18.4 | 18.7 | 18.8 |
| | | | 25 | 0 | | | 18.5 | 18.7 | 18.7 |

LTE Band 13 Measured Results

| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) |
|-------------|----------|-------|---------------|-----------|---|-----------|---------------|
| | | | | | | | 782 MHz |
| LTE Band 13 | 10 | QPSK | 1 | 0 | 0 | 0 | 24.7 |
| | | | 1 | 25 | 0 | 0 | 24.7 |
| | | | 1 | 49 | 0 | 0 | 24.7 |
| | | | 25 | 0 | 1 | 1 | 23.7 |
| | | | 25 | 12 | 1 | 1 | 23.7 |
| | | | 25 | 25 | 1 | 1 | 23.6 |
| | | | 50 | 0 | 1 | 1 | 23.7 |
| | | 16QAM | 1 | 0 | 1 | 1 | 23.7 |
| | | | 1 | 25 | 1 | 1 | 23.6 |
| | | | 1 | 49 | 1 | 1 | 23.6 |
| | | | 25 | 0 | 2 | 2 | 22.7 |
| | | | 25 | 12 | 2 | 2 | 22.7 |
| | | | 25 | 25 | 2 | 2 | 22.6 |
| | | | 50 | 0 | 2 | 2 | 22.6 |
| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) |
| | | | | | | | 782 MHz |
| LTE Band 13 | 10 | QPSK | 1 | 0 | MPR is disabled when Power Reduction is enabled | | 20.7 |
| | | | 1 | 25 | | | 20.7 |
| | | | 1 | 49 | | | 20.7 |
| | | | 25 | 0 | | | 19.6 |
| | | | 25 | 12 | | | 19.4 |
| | | | 25 | 25 | | | 19.3 |
| | | | 50 | 0 | | | 19.5 |
| | | 16QAM | 1 | 0 | | | 19.8 |
| | | | 1 | 25 | | | 19.6 |
| | | | 1 | 49 | | | 19.5 |
| | | | 25 | 0 | | | 18.8 |
| | | | 25 | 12 | | | 18.8 |
| | | | 25 | 25 | | | 18.6 |
| | | | 50 | 0 | | | 18.7 |

Note(s):

10 MHz Bandwidth does not support at least three non-overlapping channels in certain channel bandwidths. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing per KDB 941225 D05 SAR for LTE Devices

9.3. SV-LTE

9.3.1. CDMA BC0 + LTE Band 4

| Agilent 8960 | | R&S CMW 500 | | | | | Agilent 8960 | | R&S CMW 500 | | | | |
|------------------|---------------|--------------------|-------|---------------|---------------|-------|------------------|-------|--------------------|---------------|---------------|------|------|
| CDMA BC0 (1xRTT) | | LTE Band 4 (20MHz) | | | | | CDMA BC0 (1xRTT) | | LTE Band 4 (20MHz) | | | | |
| P > 18.2 dBm | | Limit = 20.7 dBm | | | | | P ≤ 18.2 dBm | | Limit = 24.7 dBm | | | | |
| Ch. # | Avg Pwr (dBm) | Ch. # | Mod | UL RB Setting | Avg Pwr (dBm) | Ch. # | Avg Pwr (dBm) | Ch. # | Mod | UL RB Setting | Avg Pwr (dBm) | | |
| 1013 | | 20175 | QPSK | 1 | 0 | 20.4 | 1013 | | 20175 | QPSK | 1 | 0 | 24.7 |
| | | | | 1 | 49 | 20.3 | | | | | 1 | 49 | 24.7 |
| | | | | 1 | 99 | 20.6 | | | | | 1 | 99 | 24.6 |
| | | | | 50 | 0 | 20.6 | | | | | 50 | 0 | 23.4 |
| | | | | 50 | 25 | 20.6 | | | | | 50 | 25 | 23.6 |
| | | | | 50 | 50 | 20.6 | | | | | 50 | 50 | 23.6 |
| | | | | 100 | 0 | 20.6 | | | | | 100 | 0 | 23.5 |
| | | | 16QAM | 1 | 0 | 20.7 | | | | 1 | 0 | 23.5 | |
| | | | | 1 | 49 | 20.7 | | | | 1 | 49 | 23.6 | |
| | | | | 1 | 99 | 20.7 | | | | 1 | 99 | 23.3 | |
| | | | | 50 | 0 | 20.6 | | | | 50 | 0 | 22.3 | |
| | | | | 50 | 25 | 20.6 | | | | 50 | 25 | 22.5 | |
| | | | | 50 | 50 | 20.6 | | | | 50 | 50 | 22.5 | |
| | | | | 100 | 0 | 20.6 | | | | 100 | 0 | 22.4 | |
| | | | | 100 | 0 | 20.6 | | | | 100 | 0 | 22.4 | |
| 384 | | 20175 | QPSK | 1 | 0 | 20.4 | 384 | | 20175 | QPSK | 1 | 0 | 24.7 |
| | | | | 1 | 49 | 20.3 | | | | | 1 | 49 | 24.7 |
| | | | | 1 | 99 | 20.5 | | | | | 1 | 99 | 24.6 |
| | | | | 50 | 0 | 20.6 | | | | | 50 | 0 | 23.4 |
| | | | | 50 | 25 | 20.6 | | | | | 50 | 25 | 23.6 |
| | | | | 50 | 50 | 20.6 | | | | | 50 | 50 | 23.6 |
| | | | | 100 | 0 | 20.5 | | | | | 100 | 0 | 23.5 |
| | | | 16QAM | 1 | 0 | 20.7 | | | | 1 | 0 | 23.5 | |
| | | | | 1 | 49 | 20.7 | | | | 1 | 49 | 23.6 | |
| | | | | 1 | 99 | 20.7 | | | | 1 | 99 | 23.3 | |
| | | | | 50 | 0 | 20.6 | | | | 50 | 0 | 22.3 | |
| | | | | 50 | 25 | 20.7 | | | | 50 | 25 | 22.5 | |
| | | | | 50 | 50 | 20.6 | | | | 50 | 50 | 22.5 | |
| | | | | 100 | 0 | 20.6 | | | | 100 | 0 | 22.4 | |
| | | | | 100 | 0 | 20.6 | | | | 100 | 0 | 22.4 | |
| 777 | | 20175 | QPSK | 1 | 0 | 20.4 | 777 | | 20175 | QPSK | 1 | 0 | 24.7 |
| | | | | 1 | 49 | 20.3 | | | | | 1 | 49 | 24.7 |
| | | | | 1 | 99 | 20.6 | | | | | 1 | 99 | 24.6 |
| | | | | 50 | 0 | 20.6 | | | | | 50 | 0 | 23.4 |
| | | | | 50 | 25 | 20.6 | | | | | 50 | 25 | 23.6 |
| | | | | 50 | 50 | 20.6 | | | | | 50 | 50 | 23.6 |
| | | | | 100 | 0 | 20.5 | | | | | 100 | 0 | 23.5 |
| | | | 16QAM | 1 | 0 | 20.7 | | | | 1 | 0 | 23.5 | |
| | | | | 1 | 49 | 20.6 | | | | 1 | 49 | 23.6 | |
| | | | | 1 | 99 | 20.7 | | | | 1 | 99 | 23.3 | |
| | | | | 50 | 0 | 20.6 | | | | 50 | 0 | 22.3 | |
| | | | | 50 | 25 | 20.6 | | | | 50 | 25 | 22.5 | |
| | | | | 50 | 50 | 20.6 | | | | 50 | 50 | 22.5 | |
| | | | | 100 | 0 | 20.6 | | | | 100 | 0 | 22.4 | |
| | | | | 100 | 0 | 20.6 | | | | 100 | 0 | 22.4 | |

9.3.2. CDMA BC1 + LTE Band 4

| Agilent 8960 | | R&S CMW 500 | | | | | Agilent 8960 | | R&S CMW 500 | | | | |
|------------------|---------------|--------------------|-------|---------------|---------------|-------|------------------|-------|--------------------|---------------|---------------|------|-------|
| CDMA BC1 (1xRTT) | | LTE Band 4 (20MHz) | | | | | CDMA BC1 (1xRTT) | | LTE Band 4 (20MHz) | | | | |
| P > 18.2 dBm | | Limit = 20.7 dBm | | | | | P ≤ 18.2 dBm | | Limit = 24.7 dBm | | | | |
| Ch. # | Avg Pwr (dBm) | Ch. # | Mod | UL RB Setting | Avg Pwr (dBm) | Ch. # | Avg Pwr (dBm) | Ch. # | Mod | UL RB Setting | Avg Pwr (dBm) | | |
| 25 | | 20175 | QPSK | 1 | 0 | 20.4 | 25 | 20175 | QPSK | 1 | 0 | 24.7 | |
| | | | | 1 | 49 | 20.4 | | | | 1 | 49 | 24.7 | |
| | | | | 1 | 99 | 20.6 | | | | 1 | 99 | 24.6 | |
| | | | | 50 | 0 | 20.6 | | | | 50 | 0 | 23.4 | |
| | | | | 50 | 25 | 20.6 | | | | 50 | 25 | 23.6 | |
| | | | | 50 | 50 | 20.6 | | | | 50 | 50 | 23.6 | |
| | | | | 100 | 0 | 20.6 | | | | 100 | 0 | 23.5 | |
| | | | 16QAM | 1 | 0 | 20.7 | | | 16QAM | 1 | 0 | 23.5 | |
| | | | | 1 | 49 | 20.7 | | | | 1 | 49 | 23.6 | |
| | | | | 1 | 99 | 20.7 | | | | 1 | 99 | 23.3 | |
| | | | | 50 | 0 | 20.7 | | | | 50 | 0 | 22.3 | |
| | | | | 50 | 25 | 20.6 | | | | 50 | 25 | 22.5 | |
| | | | | 50 | 50 | 20.6 | | | | 50 | 50 | 22.5 | |
| | | | | 100 | 0 | 20.6 | | | | 100 | 0 | 22.4 | |
| | | | 600 | | 20175 | QPSK | | | 1 | 0 | 20.4 | 600 | 20175 |
| 1 | 49 | 20.4 | | | | | 1 | 49 | 24.7 | | | | |
| 1 | 99 | 20.6 | | | | | 1 | 99 | 24.6 | | | | |
| 50 | 0 | 20.6 | | | | | 50 | 0 | 23.4 | | | | |
| 50 | 25 | 20.6 | | | | | 50 | 25 | 23.6 | | | | |
| 50 | 50 | 20.6 | | | | | 50 | 50 | 23.6 | | | | |
| 100 | 0 | 20.5 | | | | | 100 | 0 | 23.5 | | | | |
| 16QAM | 1 | 0 | | | | 20.6 | 16QAM | 1 | 0 | 23.5 | | | |
| | 1 | 49 | | | | 20.7 | | 1 | 49 | 23.6 | | | |
| | 1 | 99 | | | | 20.7 | | 1 | 99 | 23.3 | | | |
| | 50 | 0 | | | | 20.7 | | 50 | 0 | 22.3 | | | |
| | 50 | 25 | | | | 20.6 | | 50 | 25 | 22.5 | | | |
| | 50 | 50 | | | | 20.6 | | 50 | 50 | 22.5 | | | |
| | 100 | 0 | | | | 20.6 | | 100 | 0 | 22.4 | | | |
| 1175 | | 20175 | | | | QPSK | 1 | 0 | 20.5 | 1175 | 20175 | | |
| | | | 1 | 49 | 20.4 | | 1 | 49 | 24.7 | | | | |
| | | | 1 | 99 | 20.6 | | 1 | 99 | 24.6 | | | | |
| | | | 50 | 0 | 20.6 | | 50 | 0 | 23.4 | | | | |
| | | | 50 | 25 | 20.6 | | 50 | 25 | 23.6 | | | | |
| | | | 50 | 50 | 20.6 | | 50 | 50 | 23.6 | | | | |
| | | | 100 | 0 | 20.6 | | 100 | 0 | 23.5 | | | | |
| | | | 16QAM | 1 | 0 | 20.7 | 16QAM | 1 | 0 | | | 23.5 | |
| | | | | 1 | 49 | 20.7 | | 1 | 49 | | | 23.6 | |
| | | | | 1 | 99 | 20.7 | | 1 | 99 | | | 23.3 | |
| | | | | 50 | 0 | 20.7 | | 50 | 0 | | | 22.3 | |
| | | | | 50 | 25 | 20.7 | | 50 | 25 | | | 22.5 | |
| | | | | 50 | 50 | 20.6 | | 50 | 50 | | | 22.5 | |
| | | | | 100 | 0 | 20.6 | | 100 | 0 | | | 22.4 | |

9.3.3. CDMA BC0 + LTE Band 13

| Agilent 8960 | | R&S CMW 500 | | | | | Agilent 8960 | | R&S CMW 500 | | | | |
|------------------|---------------|----------------------|-------|---------------|---------------|-------|------------------|-------|---------------------|---------------|---------------|------|--|
| CDMA BC0 (1xRTT) | | LTE Band 13 (10 MHz) | | | | | CDMA BC0 (1xRTT) | | LTE Band 13 (10MHz) | | | | |
| P > 18.2 dBm | | Limit = 20.7 dBm | | | | | P ≤ 18.2 dBm | | Limit = 24.7 dBm | | | | |
| Ch. # | Avg Pwr (dBm) | Ch. # | Mod | UL RB Setting | Avg Pwr (dBm) | Ch. # | Avg Pwr (dBm) | Ch. # | Mod | UL RB Setting | Avg Pwr (dBm) | | |
| 1013 | | 23230 | QPSK | 1 | 0 | 20.7 | 1013 | 23230 | QPSK | 1 | 0 | 24.7 | |
| | | | | 1 | 25 | 20.7 | | | | 1 | 25 | 24.7 | |
| | | | | 1 | 49 | 20.7 | | | | 1 | 49 | 24.7 | |
| | | | | 25 | 0 | 20.6 | | | | 25 | 0 | 23.7 | |
| | | | | 25 | 12 | 20.7 | | | | 25 | 12 | 23.7 | |
| | | | | 25 | 25 | 20.6 | | | | 25 | 25 | 23.6 | |
| | | | | 50 | 0 | 20.6 | | | | 50 | 0 | 23.7 | |
| | | | 16QAM | 1 | 0 | 20.5 | | | 16QAM | 1 | 0 | 23.7 | |
| | | | | 1 | 25 | 20.5 | | | | 1 | 25 | 23.6 | |
| | | | | 1 | 49 | 20.6 | | | | 1 | 49 | 23.6 | |
| | | | | 25 | 0 | 20.6 | | | | 25 | 0 | 22.7 | |
| | | | | 25 | 12 | 20.7 | | | | 25 | 12 | 22.7 | |
| | | | | 25 | 25 | 20.7 | | | | 25 | 25 | 22.6 | |
| | | | | 50 | 0 | 20.7 | | | | 50 | 0 | 22.6 | |
| | | | | 50 | 0 | 20.7 | | | | 50 | 0 | 22.6 | |
| 384 | | 23230 | QPSK | 1 | 0 | 20.7 | 384 | 23230 | QPSK | 1 | 0 | 24.7 | |
| | | | | 1 | 25 | 20.7 | | | | 1 | 25 | 24.7 | |
| | | | | 1 | 49 | 20.7 | | | | 1 | 49 | 24.7 | |
| | | | | 25 | 0 | 20.6 | | | | 25 | 0 | 23.7 | |
| | | | | 25 | 12 | 20.7 | | | | 25 | 12 | 23.7 | |
| | | | | 25 | 25 | 20.6 | | | | 25 | 25 | 23.6 | |
| | | | | 50 | 0 | 20.6 | | | | 50 | 0 | 23.7 | |
| | | | 16QAM | 1 | 0 | 20.6 | | | 16QAM | 1 | 0 | 23.7 | |
| | | | | 1 | 25 | 20.5 | | | | 1 | 25 | 23.6 | |
| | | | | 1 | 49 | 20.6 | | | | 1 | 49 | 23.6 | |
| | | | | 25 | 0 | 20.7 | | | | 25 | 0 | 22.7 | |
| | | | | 25 | 12 | 20.7 | | | | 25 | 12 | 22.7 | |
| | | | | 25 | 25 | 20.6 | | | | 25 | 25 | 22.6 | |
| | | | | 50 | 0 | 20.6 | | | | 50 | 0 | 22.6 | |
| | | | | 50 | 0 | 20.6 | | | | 50 | 0 | 22.6 | |
| 777 | | 23230 | QPSK | 1 | 0 | 20.6 | 777 | 23230 | QPSK | 1 | 0 | 24.7 | |
| | | | | 1 | 25 | 20.7 | | | | 1 | 25 | 24.7 | |
| | | | | 1 | 49 | 20.7 | | | | 1 | 49 | 24.7 | |
| | | | | 25 | 0 | 20.6 | | | | 25 | 0 | 23.7 | |
| | | | | 25 | 12 | 20.6 | | | | 25 | 12 | 23.7 | |
| | | | | 25 | 25 | 20.6 | | | | 25 | 25 | 23.6 | |
| | | | | 50 | 0 | 20.7 | | | | 50 | 0 | 23.7 | |
| | | | 16QAM | 1 | 0 | 20.5 | | | 16QAM | 1 | 0 | 23.7 | |
| | | | | 1 | 25 | 20.5 | | | | 1 | 25 | 23.6 | |
| | | | | 1 | 49 | 20.6 | | | | 1 | 49 | 23.6 | |
| | | | | 25 | 0 | 20.7 | | | | 25 | 0 | 22.7 | |
| | | | | 25 | 12 | 20.7 | | | | 25 | 12 | 22.7 | |
| | | | | 25 | 25 | 20.6 | | | | 25 | 25 | 22.6 | |
| | | | | 50 | 0 | 20.7 | | | | 50 | 0 | 22.6 | |
| | | | | 50 | 0 | 20.7 | | | | 50 | 0 | 22.6 | |

9.3.4. CDMA BC1 + LTE Band 13

| Agilent 8960 | | R&S CMW 500 | | | | | Agilent 8960 | | R&S CMW 500 | | | | |
|------------------|---------------|----------------------|-------|---------------|---------------|-------|------------------|-------|----------------------|---------------|---------------|------|--|
| CDMA BC1 (1xRTT) | | LTE Band 13 (10 MHz) | | | | | CDMA BC1 (1xRTT) | | LTE Band 13 (10 MHz) | | | | |
| P > 18.2 dBm | | Limit = 20.7 dBm | | | | | P ≤ 18.2 dBm | | Limit = 24.7 dBm | | | | |
| Ch. # | Avg Pwr (dBm) | Ch. # | Mod | UL RB Setting | Avg Pwr (dBm) | Ch. # | Avg Pwr (dBm) | Ch. # | Mod | UL RB Setting | Avg Pwr (dBm) | | |
| 25 | | 23230 | QPSK | 1 | 0 | 20.7 | 25 | 23230 | QPSK | 1 | 0 | 24.7 | |
| | | | | 1 | 25 | 20.7 | | | | 1 | 25 | 24.7 | |
| | | | | 1 | 49 | 20.7 | | | | 1 | 49 | 24.7 | |
| | | | | 25 | 0 | 20.6 | | | | 25 | 0 | 23.7 | |
| | | | | 25 | 12 | 20.7 | | | | 25 | 12 | 23.7 | |
| | | | | 25 | 25 | 20.6 | | | | 25 | 25 | 23.6 | |
| | | | | 50 | 0 | 20.7 | | | | 50 | 0 | 23.7 | |
| | | | 16QAM | 1 | 0 | 20.6 | | | 16QAM | 1 | 0 | 23.7 | |
| | | | | 1 | 25 | 20.5 | | | | 1 | 25 | 23.6 | |
| | | | | 1 | 49 | 20.6 | | | | 1 | 49 | 23.6 | |
| | | | | 25 | 0 | 20.7 | | | | 25 | 0 | 22.7 | |
| | | | | 25 | 12 | 20.7 | | | | 25 | 12 | 22.7 | |
| | | | | 25 | 25 | 20.7 | | | | 25 | 25 | 22.6 | |
| | | | | 50 | 0 | 20.7 | | | | 50 | 0 | 22.6 | |
| 600 | | 23230 | QPSK | 1 | 0 | 20.7 | 600 | 23230 | QPSK | 1 | 0 | 24.7 | |
| | | | | 1 | 25 | 20.7 | | | | 1 | 25 | 24.7 | |
| | | | | 1 | 49 | 20.7 | | | | 1 | 49 | 24.7 | |
| | | | | 25 | 0 | 20.6 | | | | 25 | 0 | 23.7 | |
| | | | | 25 | 12 | 20.7 | | | | 25 | 12 | 23.7 | |
| | | | | 25 | 25 | 20.6 | | | | 25 | 25 | 23.6 | |
| | | | | 50 | 0 | 20.7 | | | | 50 | 0 | 23.7 | |
| | | | 16QAM | 1 | 0 | 20.5 | | | 16QAM | 1 | 0 | 23.7 | |
| | | | | 1 | 25 | 20.5 | | | | 1 | 25 | 23.6 | |
| | | | | 1 | 49 | 20.6 | | | | 1 | 49 | 23.6 | |
| | | | | 25 | 0 | 20.7 | | | | 25 | 0 | 22.7 | |
| | | | | 25 | 12 | 20.7 | | | | 25 | 12 | 22.7 | |
| | | | | 25 | 25 | 20.6 | | | | 25 | 25 | 22.6 | |
| | | | | 50 | 0 | 20.6 | | | | 50 | 0 | 22.6 | |
| 1175 | | 23230 | QPSK | 1 | 0 | 20.7 | 1175 | 23230 | QPSK | 1 | 0 | 24.7 | |
| | | | | 1 | 25 | 20.7 | | | | 1 | 25 | 24.7 | |
| | | | | 1 | 49 | 20.7 | | | | 1 | 49 | 24.7 | |
| | | | | 25 | 0 | 20.6 | | | | 25 | 0 | 23.7 | |
| | | | | 25 | 12 | 20.7 | | | | 25 | 12 | 23.7 | |
| | | | | 25 | 25 | 20.6 | | | | 25 | 25 | 23.6 | |
| | | | | 50 | 0 | 20.6 | | | | 50 | 0 | 23.7 | |
| | | | 16QAM | 1 | 0 | 20.6 | | | 16QAM | 1 | 0 | 23.7 | |
| | | | | 1 | 25 | 20.5 | | | | 1 | 25 | 23.6 | |
| | | | | 1 | 49 | 20.6 | | | | 1 | 49 | 23.6 | |
| | | | | 25 | 0 | 20.7 | | | | 25 | 0 | 22.7 | |
| | | | | 25 | 12 | 20.7 | | | | 25 | 12 | 22.7 | |
| | | | | 25 | 25 | 20.6 | | | | 25 | 25 | 22.6 | |
| | | | | 50 | 0 | 20.7 | | | | 50 | 0 | 22.6 | |

9.4. Wi-Fi (2.4 GHz Band)

Required Test Channels per KDB 248227 D01

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

Notes:

√ = "default test channels"

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

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

Measured Results

| Band (GHz) | Mode | Data Rate | Ch # | Freq. (MHz) | Avg Pwr (dBm) | SAR Test (Yes/No) |
|------------|----------------|-----------|------|-------------|---------------|-------------------|
| 2.4 (DTS) | 802.11b | 1 Mbps | 1 | 2412 | 16.2 | Yes |
| | | | 6 | 2437 | 16.4 | |
| | | | 11 | 2462 | 16.2 | |
| | 802.11g | 6 Mbps | 1 | 2412 | 14.5 | No |
| | | | 6 | 2437 | 14.5 | |
| | | | 11 | 2462 | 14.3 | |
| | 802.11n (HT20) | MCS0 | 1 | 2412 | 12.2 | No |
| | | | 6 | 2437 | 12.3 | |
| | | | 11 | 2462 | 12.1 | |

Note(s):

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

Power measurements to determine worst-case data rates

| Mode | Ch # | Freq. (MHz) | Data Rate | Avg Pwr (dBm) | SAR test (Yes/No) |
|---------|------|-------------|-----------|---------------|-------------------|
| 802.11b | 6 | 2437 | 1 Mbps | 16.4 | Yes |
| | | | 2 Mbps | 16.3 | No |
| | | | 5.5 Mbps | 16.3 | No |
| | | | 11 Mbps | 16.3 | No |

9.5. Wi-Fi (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 | | * | |
| | 5.8 GHz | 5.660 | 132 | | * | |
| | | 5.680 | 136 | √ | | |
| | | 5.700 | 140 | | * | |
| | | 5.745 | 149 | √ | | |
| DTS (15.247) | 5.8 GHz | 5.765 | 153 | | * | |
| | | 5.785 | 157 | √ | | |
| | | 5.805 | 161 | | * | |
| | | 5.825 | 165 | √ | | |

√ = "default test channels"

* = possible 802.11a channels with maximum average output > the "default test channels"

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

Measured Results

| Band (GHz) | Mode | Data Rate | Ch # | Freq. (MHz) | Avg Pwr (dBm) | SAR Test (Yes/No) |
|----------------|----------------|-----------|------|-------------|---------------|-------------------|
| 5.2 (UNII) | 802.11a | 6 Mbps | 36 | 5180 | 10.4 | Yes |
| | | | 40 | 5200 | 10.4 | |
| | | | 44 | 5220 | 10.5 | |
| | | | 48 | 5240 | 10.5 | |
| | 802.11n (HT20) | MCS0 | 36 | 5180 | 10.1 | No |
| | | | 40 | 5200 | 10.3 | |
| | | | 44 | 5220 | 10.2 | |
| | | | 48 | 5240 | 10.3 | |
| 802.11n (HT40) | MCS0 | 38 | 5190 | 9.5 | No | |
| | | 46 | 5230 | 9.4 | | |
| 5.3 (UNII) | 802.11a | 6 Mbps | 52 | 5260 | 10.8 | Yes |
| | | | 56 | 5280 | 10.7 | |
| | | | 60 | 5300 | 10.7 | |
| | | | 64 | 5320 | 10.7 | |
| | 802.11n (HT20) | MCS0 | 52 | 5260 | 10.4 | No |
| | | | 56 | 5280 | 10.3 | |
| | | | 60 | 5300 | 10.4 | |
| | | | 64 | 5320 | 10.6 | |
| 802.11n (HT40) | MCS0 | 54 | 5270 | 9.6 | No | |
| | | 62 | 5310 | 9.6 | | |
| 5.5 (UNII) | 802.11a | 6 Mbps | 100 | 5500 | 10.8 | Yes |
| | | | 104 | 5520 | 10.7 | |
| | | | 108 | 5540 | 10.7 | |
| | | | 112 | 5560 | 10.6 | |
| | | | 116 | 5580 | 10.5 | |
| | | | 120 | 5600 | Not Supported | |
| | | | 124 | 5620 | Not Supported | |
| | | | 128 | 5640 | Not Supported | |
| | | | 132 | 5660 | 10.2 | |
| | | | 136 | 5680 | 10.1 | |
| | 140 | 5700 | 10.0 | | | |
| | 802.11n (HT20) | MCS0 | 100 | 5500 | 10.6 | No |
| | | | 104 | 5520 | 10.3 | |
| | | | 108 | 5540 | 10.3 | |
| | | | 112 | 5560 | 10.3 | |
| | | | 116 | 5580 | 10.4 | |
| | | | 120 | 5600 | Not Supported | |
| | | | 124 | 5620 | Not Supported | |
| | | | 128 | 5640 | Not Supported | |
| | | | 132 | 5660 | 9.7 | |
| 136 | | | 5680 | 9.7 | | |
| 802.11n (HT40) | MCS0 | 102 | 5510 | 9.6 | No | |
| | | 110 | 5550 | 9.9 | | |
| | | 134 | 5670 | 9.4 | | |

Note(s):

Per KDB 248227, 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 channels.

Measured Results (Continued)

| Band (GHz) | Mode | Data Rate | Ch # | Freq. (MHz) | Avg Pwr (dBm) | SAR Test (Yes/No) |
|------------|----------------|-----------|------|-------------|---------------|-------------------|
| 5.8 (DTS) | 802.11a | 6 Mbps | 149 | 5745 | 11.0 | Yes |
| | | | 153 | 5765 | 10.9 | |
| | | | 157 | 5785 | 10.8 | |
| | | | 161 | 5805 | 10.7 | |
| | | | 165 | 5825 | 10.6 | |
| | 802.11n (HT20) | MCS0 | 149 | 5745 | 10.7 | No |
| | | | 153 | 5765 | 10.5 | |
| | | | 157 | 5785 | 10.6 | |
| | | | 161 | 5805 | 10.6 | |
| | 802.11n (HT40) | MCS0 | 151 | 5755 | 10.6 | No |
| | | | 159 | 5795 | 10.3 | |

Note(s):

Per KDB 248227, 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 channels.

Power measurements to determine worst-case data rates

| Band | Mode | Ch # | Freq. (MHz) | Data Rate | Avg Pwr (dBm) | SAR test (Yes/No) |
|----------------|---------|------|-------------|-----------|---------------|-------------------|
| 5.2 GHz (UNII) | 802.11a | 36 | 5180 | 6 Mbps | 10.4 | Yes |
| | | | | 9 Mbps | 10.3 | No |
| | | | | 12 Mbps | 10.3 | No |
| | | | | 18 Mbps | 10.3 | No |
| | | | | 24 Mbps | 10.2 | No |
| | | | | 36 Mbps | 10.2 | No |
| | | | | 48 Mbps | 10.2 | No |
| | | | | 54 Mbps | 10.2 | No |
| 5.3 GHz (UNII) | 802.11a | 56 | 5280 | 6 Mbps | 10.8 | Yes |
| | | | | 9 Mbps | 10.6 | No |
| | | | | 12 Mbps | 10.6 | No |
| | | | | 18 Mbps | 10.6 | No |
| | | | | 24 Mbps | 10.5 | No |
| | | | | 36 Mbps | 10.5 | No |
| | | | | 48 Mbps | 10.4 | No |
| | | | | 54 Mbps | 10.4 | No |
| 5.5 GHz (UNII) | 802.11a | 116 | 5580 | 6 Mbps | 10.5 | Yes |
| | | | | 9 Mbps | 10.3 | No |
| | | | | 12 Mbps | 10.3 | No |
| | | | | 18 Mbps | 10.3 | No |
| | | | | 24 Mbps | 10.3 | No |
| | | | | 36 Mbps | 10.3 | No |
| | | | | 48 Mbps | 10.3 | No |
| | | | | 54 Mbps | 10.3 | No |
| 5.8 GHz (DTS) | 802.11a | 149 | 5745 | 6 Mbps | 11.0 | Yes |
| | | | | 9 Mbps | 10.9 | No |
| | | | | 12 Mbps | 10.9 | No |
| | | | | 18 Mbps | 10.9 | No |
| | | | | 24 Mbps | 10.9 | No |
| | | | | 36 Mbps | 10.9 | No |
| | | | | 48 Mbps | 10.9 | No |
| | | | | 54 Mbps | 10.8 | No |

9.6. Bluetooth

Maximum tune-up tolerance limit is 11.2 dBm from the rated nominal maximum output power. This power level qualifies for exclusion of SAR testing.

10. Tissue Dielectric Properties

IEEE Std 1528-2013

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

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

FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

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

10.2. Tissue Dielectric Parameter Check Results

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

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

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

SAR Lab D

| Date | Freq. (MHz) | Liquid Parameters | | Measured | Target | Delta (%) | Limit ±(%) | |
|-----------|-------------|-------------------|---|---|--------|-----------|------------|---|
| 5/21/2014 | Body 835 | e' | 54.5900 | Relative Permittivity (ϵ_r): | 54.59 | 55.20 | -1.11 | 5 |
| | | e" | 21.6800 | Conductivity (σ): | 1.01 | 0.97 | 3.77 | 5 |
| | Body 820 | e' | 54.6900 | Relative Permittivity (ϵ_r): | 54.69 | 55.28 | -1.06 | 5 |
| | | e" | 21.7600 | Conductivity (σ): | 0.99 | 0.97 | 2.44 | 5 |
| | Body 850 | e' | 54.4200 | Relative Permittivity (ϵ_r): | 54.42 | 55.16 | -1.34 | 5 |
| | | e" | 21.6300 | Conductivity (σ): | 1.02 | 0.99 | 3.56 | 5 |
| 5/21/2014 | Head 835 | e' | 40.3500 | Relative Permittivity (ϵ_r): | 40.35 | 41.50 | -2.77 | 5 |
| | | e" | 19.4700 | Conductivity (σ): | 0.90 | 0.90 | 0.44 | 5 |
| | Head 820 | e' | 40.5300 | Relative Permittivity (ϵ_r): | 40.53 | 41.60 | -2.58 | 5 |
| | | e" | 19.4600 | Conductivity (σ): | 0.89 | 0.90 | -1.25 | 5 |
| | Head 850 | e' | 40.1200 | Relative Permittivity (ϵ_r): | 40.12 | 41.50 | -3.33 | 5 |
| | | e" | 19.4300 | Conductivity (σ): | 0.92 | 0.92 | 0.36 | 5 |
| 5/23/2014 | Body 5180 | e' | 48.9500 | Relative Permittivity (ϵ_r): | 48.95 | 49.05 | -0.20 | 5 |
| | | e" | 18.6400 | Conductivity (σ): | 5.37 | 5.27 | 1.85 | 5 |
| | Body 5200 | e' | 48.8800 | Relative Permittivity (ϵ_r): | 48.88 | 49.02 | -0.28 | 5 |
| | | e" | 18.6600 | Conductivity (σ): | 5.40 | 5.29 | 1.90 | 5 |
| | Body 5600 | e' | 48.1500 | Relative Permittivity (ϵ_r): | 48.15 | 48.48 | -0.68 | 5 |
| | | e" | 19.0500 | Conductivity (σ): | 5.93 | 5.76 | 2.96 | 5 |
| Body 5800 | e' | 47.8600 | Relative Permittivity (ϵ_r): | 47.86 | 48.20 | -0.71 | 5 | |
| | e" | 19.2700 | Conductivity (σ): | 6.21 | 6.00 | 3.58 | 5 | |
| Body 5825 | e' | 47.7600 | Relative Permittivity (ϵ_r): | 47.76 | 48.20 | -0.91 | 5 | |
| | e" | 19.2700 | Conductivity (σ): | 6.24 | 6.00 | 4.02 | 5 | |
| 5/28/2014 | Body 835 | e' | 53.3000 | Relative Permittivity (ϵ_r): | 53.30 | 55.20 | -3.44 | 5 |
| | | e" | 21.6100 | Conductivity (σ): | 1.00 | 0.97 | 3.44 | 5 |
| | Body 820 | e' | 53.4100 | Relative Permittivity (ϵ_r): | 53.41 | 55.28 | -3.38 | 5 |
| | | e" | 21.6100 | Conductivity (σ): | 0.99 | 0.97 | 1.74 | 5 |
| | Body 850 | e' | 53.1600 | Relative Permittivity (ϵ_r): | 53.16 | 55.16 | -3.62 | 5 |
| | | e" | 21.6000 | Conductivity (σ): | 1.02 | 0.99 | 3.42 | 5 |

SAR Lab E

| Date | Freq. (MHz) | Liquid Parameters | | Measured | Target | Delta (%) | Limit ±(%) | |
|-----------|-------------|-------------------|---------|---|--------|-----------|------------|---|
| 5/27/2014 | Body 1750 | e' | 51.8900 | Relative Permittivity (ϵ_r): | 51.89 | 53.44 | -2.90 | 5 |
| | | e" | 15.4400 | Conductivity (σ): | 1.50 | 1.49 | 1.09 | 5 |
| | Body 1710 | e' | 52.0500 | Relative Permittivity (ϵ_r): | 52.05 | 53.54 | -2.79 | 5 |
| | | e" | 15.1600 | Conductivity (σ): | 1.44 | 1.46 | -1.38 | 5 |
| | Body 1755 | e' | 51.8800 | Relative Permittivity (ϵ_r): | 51.88 | 53.43 | -2.90 | 5 |
| | | e" | 15.4500 | Conductivity (σ): | 1.51 | 1.49 | 1.24 | 5 |
| 5/28/2014 | Head 1750 | e' | 40.5500 | Relative Permittivity (ϵ_r): | 40.55 | 40.08 | 1.16 | 5 |
| | | e" | 13.8200 | Conductivity (σ): | 1.34 | 1.37 | -1.77 | 5 |
| | Head 1710 | e' | 40.7300 | Relative Permittivity (ϵ_r): | 40.73 | 40.15 | 1.45 | 5 |
| | | e" | 13.5400 | Conductivity (σ): | 1.29 | 1.35 | -4.38 | 5 |
| | Head 1755 | e' | 40.5300 | Relative Permittivity (ϵ_r): | 40.53 | 40.08 | 1.13 | 5 |
| | | e" | 13.8300 | Conductivity (σ): | 1.35 | 1.37 | -1.62 | 5 |
| 5/28/2014 | Body 750 | e' | 53.5000 | Relative Permittivity (ϵ_r): | 53.50 | 55.55 | -3.68 | 5 |
| | | e" | 23.1100 | Conductivity (σ): | 0.96 | 0.96 | 0.07 | 5 |
| | Body 700 | e' | 54.1000 | Relative Permittivity (ϵ_r): | 54.10 | 55.74 | -2.94 | 5 |
| | | e" | 23.5200 | Conductivity (σ): | 0.92 | 0.96 | -4.56 | 5 |
| | Body 790 | e' | 53.0300 | Relative Permittivity (ϵ_r): | 53.03 | 55.39 | -4.26 | 5 |
| | | e" | 22.8000 | Conductivity (σ): | 1.00 | 0.97 | 3.66 | 5 |

SAR Lab F

| Date | Freq. (MHz) | Liquid Parameters | | Measured | Target | Delta (%) | Limit ±(%) | |
|-----------|-------------|-------------------|---------|---|--------|-----------|------------|---|
| 5/20/2014 | Body 1900 | e' | 51.4300 | Relative Permittivity (ϵ_r): | 51.43 | 53.30 | -3.51 | 5 |
| | | e" | 14.8300 | Conductivity (σ): | 1.57 | 1.52 | 3.07 | 5 |
| | Body 1850 | e' | 51.6100 | Relative Permittivity (ϵ_r): | 51.61 | 53.30 | -3.17 | 5 |
| | | e" | 14.6900 | Conductivity (σ): | 1.51 | 1.52 | -0.59 | 5 |
| | Body 1910 | e' | 51.3600 | Relative Permittivity (ϵ_r): | 51.36 | 53.30 | -3.64 | 5 |
| | | e" | 14.8700 | Conductivity (σ): | 1.58 | 1.52 | 3.90 | 5 |
| 5/21/2014 | Head 1900 | e' | 38.4900 | Relative Permittivity (ϵ_r): | 38.49 | 40.00 | -3.78 | 5 |
| | | e" | 13.6700 | Conductivity (σ): | 1.44 | 1.40 | 3.16 | 5 |
| | Head 1850 | e' | 38.6600 | Relative Permittivity (ϵ_r): | 38.66 | 40.00 | -3.35 | 5 |
| | | e" | 13.6200 | Conductivity (σ): | 1.40 | 1.40 | 0.07 | 5 |
| | Head 1910 | e' | 38.4600 | Relative Permittivity (ϵ_r): | 38.46 | 40.00 | -3.85 | 5 |
| | | e" | 13.6800 | Conductivity (σ): | 1.45 | 1.40 | 3.77 | 5 |

SAR Lab G

| Date | Freq. (MHz) | Liquid Parameters | | Measured | Target | Delta (%) | Limit ±(%) | |
|-----------|-------------|-------------------|---------|---|--------|-----------|------------|---|
| 5/22/2014 | Body 2450 | e' | 51.4700 | Relative Permittivity (ϵ_r): | 51.47 | 52.70 | -2.33 | 5 |
| | | e" | 14.7900 | Conductivity (σ): | 2.01 | 1.95 | 3.32 | 5 |
| | Body 2410 | e' | 51.5500 | Relative Permittivity (ϵ_r): | 51.55 | 52.76 | -2.29 | 5 |
| | | e" | 14.7100 | Conductivity (σ): | 1.97 | 1.91 | 3.34 | 5 |
| | Body 2475 | e' | 51.4100 | Relative Permittivity (ϵ_r): | 51.41 | 52.67 | -2.39 | 5 |
| | | e" | 14.8700 | Conductivity (σ): | 2.05 | 1.99 | 3.08 | 5 |
| 5/22/2014 | Head 2450 | e' | 38.7700 | Relative Permittivity (ϵ_r): | 38.77 | 39.20 | -1.10 | 5 |
| | | e" | 13.6400 | Conductivity (σ): | 1.86 | 1.80 | 3.23 | 5 |
| | Head 2410 | e' | 38.8800 | Relative Permittivity (ϵ_r): | 38.88 | 39.28 | -1.02 | 5 |
| | | e" | 13.5400 | Conductivity (σ): | 1.81 | 1.76 | 3.07 | 5 |
| | Head 2475 | e' | 38.6900 | Relative Permittivity (ϵ_r): | 38.69 | 39.17 | -1.22 | 5 |
| | | e" | 13.7000 | Conductivity (σ): | 1.89 | 1.83 | 3.19 | 5 |
| 5/28/2014 | Head 750 | e' | 40.2300 | Relative Permittivity (ϵ_r): | 40.23 | 41.96 | -4.13 | 5 |
| | | e" | 21.6600 | Conductivity (σ): | 0.90 | 0.89 | 1.14 | 5 |
| | Head 700 | e' | 40.8700 | Relative Permittivity (ϵ_r): | 40.87 | 42.22 | -3.19 | 5 |
| | | e" | 22.0200 | Conductivity (σ): | 0.86 | 0.89 | -3.62 | 5 |
| | Head 790 | e' | 39.6900 | Relative Permittivity (ϵ_r): | 39.69 | 41.76 | -4.95 | 5 |
| | | e" | 21.4200 | Conductivity (σ): | 0.94 | 0.90 | 4.99 | 5 |

SAR Lab H

| Date | Freq. (MHz) | Liquid Parameters | | Measured | Target | Delta (%) | Limit ±(%) | |
|-----------|-------------|-------------------|---------|---|--------|-----------|------------|---|
| 5/27/2014 | Head 5180 | e' | 36.7500 | Relative Permittivity (ϵ_r): | 36.75 | 36.01 | 2.05 | 5 |
| | | e" | 16.4000 | Conductivity (σ): | 4.72 | 4.63 | 2.01 | 5 |
| | Head 5200 | e' | 36.8000 | Relative Permittivity (ϵ_r): | 36.80 | 35.99 | 2.25 | 5 |
| | | e" | 16.6100 | Conductivity (σ): | 4.80 | 4.65 | 3.26 | 5 |
| | Head 5600 | e' | 36.3600 | Relative Permittivity (ϵ_r): | 36.36 | 35.53 | 2.32 | 5 |
| | | e" | 16.6500 | Conductivity (σ): | 5.18 | 5.06 | 2.45 | 5 |
| | Head 5800 | e' | 35.9500 | Relative Permittivity (ϵ_r): | 35.95 | 35.30 | 1.84 | 5 |
| | | e" | 16.7800 | Conductivity (σ): | 5.41 | 5.27 | 2.69 | 5 |
| | Head 5825 | e' | 36.0700 | Relative Permittivity (ϵ_r): | 36.07 | 35.30 | 2.18 | 5 |
| | | e" | 16.9100 | Conductivity (σ): | 5.48 | 5.27 | 3.93 | 5 |

11. System Performance Check

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

11.1. System Performance Check Measurement Conditions

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

11.2. Reference SAR Values for System Performance Check

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

| System Dipole | Serial No. | Cal. Date | Freq. (MHz) | Target SAR Values (mW/g) | | |
|---------------|------------|------------|-------------|--------------------------|------|------|
| | | | | 1g/10g | Head | Body |
| D750V3 | 1019 | 3/17/2014 | 750 | 1g | 8.21 | 8.64 |
| | | | | 10g | 5.38 | 5.69 |
| D835V2 | 4d002 | 11/15/2013 | 835 | 1g | 9.49 | 9.43 |
| | | | | 10g | 6.18 | 6.21 |
| D1750V2 | 1050 | 4/22/2014 | 1750 | 1g | 36.6 | 37.2 |
| | | | | 10g | 19.4 | 20.0 |
| D1900V2 | 5d043 | 11/12/2013 | 1900 | 1g | 40.1 | 39.0 |
| | | | | 10g | 21.1 | 20.8 |
| D2450V2 | 748 | 2/18/2014 | 2450 | 1g | 51.6 | 50.7 |
| | | | | 10g | 24.0 | 23.7 |
| D5GHzV2 | 1003 | 2/26/2014 | 5200 | 1g | 77.7 | 73.5 |
| | | | | 10g | 22.2 | 20.5 |
| | | | 5600 | 1g | 81.8 | 79.6 |
| | | | | 10g | 23.2 | 22.1 |
| | | | 5800 | 1g | 78.3 | 73.8 |
| | | | | 10g | 22.1 | 20.4 |

11.3. System Performance Check Results

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

SAR Lab D

| Date Tested | System Dipole | | T.S. Liquid | Measured Results | | | Target (Ref. Value) | Delta ±10 % | Est./Zoom Ratio | Plot No. | |
|-------------|---------------|----------|-------------|------------------|-----------|------------------|---------------------|-------------|-----------------|----------|-----|
| | Type | Serial # | | Area Scan | Zoom Scan | Normalize to 1 W | | | | | |
| 5/21/2014 | D835V2 | 4d002 | Body | 1g | 0.993 | 0.967 | 9.67 | 9.43 | 2.55 | 2.62 | |
| | | | | 10g | 0.665 | 0.635 | 6.35 | 6.21 | 2.25 | | |
| 5/21/2014 | D835V2 | 4d002 | Head | 1g | 0.974 | 0.948 | 9.48 | 9.49 | -0.11 | 2.67 | |
| | | | | 10g | 0.654 | 0.621 | 6.21 | 6.18 | 0.49 | | |
| 5/23/2014 | D5200V2 | 1003 | Body | 1g | 7.09 | 7.53 | 75.3 | 73.5 | 2.45 | -6.21 | |
| | | | | 10g | 1.91 | 2.09 | 20.9 | 20.5 | 1.95 | | |
| | Body | | 1g | 7.63 | 7.83 | 78.3 | 79.6 | -1.63 | -2.62 | | |
| | | | 10g | 2.04 | 2.15 | 21.5 | 22.1 | -2.71 | | | |
| | Body | | 1g | 6.64 | 7.17 | 71.7 | 73.8 | -2.85 | -7.98 | 1,2 | |
| | | | 10g | 1.80 | 1.98 | 19.8 | 20.4 | -2.94 | | | |
| 5/28/2014 | D835V2 | 4d002 | Body | 1g | 1.02 | 1.00 | 10.0 | 9.43 | 6.04 | 1.96 | 3,4 |
| | | | | 10g | 0.684 | 0.659 | 6.59 | 6.21 | 6.12 | | |

SAR Lab E

| Date Tested | System Dipole | | T.S. Liquid | Measured Results | | | Target (Ref. Value) | Delta ±10 % | Est./Zoom Ratio | Plot No. | |
|-------------|---------------|----------|-------------|------------------|-----------|------------------|---------------------|-------------|-----------------|----------|-----|
| | Type | Serial # | | Area Scan | Zoom Scan | Normalize to 1 W | | | | | |
| 5/27/2014 | D1750V2 | 1050 | Body | 1g | 3.96 | 4.05 | 40.5 | 37.2 | 8.87 | -2.27 | 5,6 |
| | | | | 10g | 2.07 | 2.16 | 21.6 | 20.0 | 8.00 | | |
| 5/28/2014 | D1750V2 | 1050 | Head | 1g | 3.71 | 3.58 | 35.8 | 36.6 | -2.19 | 3.50 | |
| | | | | 10g | 1.98 | 1.91 | 19.1 | 19.4 | -1.55 | | |
| 5/28/2014 | D750V3 | 1019 | Body | 1g | 0.911 | 0.891 | 8.91 | 8.64 | 3.12 | 2.20 | 7,8 |
| | | | | 10g | 0.617 | 0.593 | 5.93 | 5.69 | 4.22 | | |

SAR Lab F

| Date Tested | System Dipole | | T.S. Liquid | Measured Results | | | Target (Ref. Value) | Delta ±10 % | Est./Zoom Ratio | Plot No. | |
|-------------|---------------|----------|-------------|------------------|-----------|------------------|---------------------|-------------|-----------------|----------|------|
| | Type | Serial # | | Area Scan | Zoom Scan | Normalize to 1 W | | | | | |
| 5/20/2014 | D1900V2 | 5d043 | Body | 1g | 4.18 | 4.20 | 42.0 | 39.0 | 7.69 | -0.48 | 9,10 |
| | | | | 10g | 2.14 | 2.19 | 21.9 | 20.8 | 5.29 | | |
| 5/21/2014 | D1900V2 | 5d043 | Head | 1g | 4.21 | 4.14 | 41.4 | 40.1 | 3.24 | 1.66 | |
| | | | | 10g | 2.16 | 2.13 | 21.3 | 21.1 | 0.95 | | |

SAR Lab G

| Date Tested | System Dipole | | T.S. Liquid | Measured Results | | | Target (Ref. Value) | Delta ±10 % | Est./Zoom Ratio | Plot No. | |
|-------------|---------------|----------|-------------|------------------|-----------|------------------|---------------------|-------------|-----------------|----------|-------|
| | Type | Serial # | | Area Scan | Zoom Scan | Normalize to 1 W | | | | | |
| 5/22/2014 | D2450V2 | 748 | Body | 1g | 5.46 | 5.49 | 54.9 | 50.7 | 8.28 | -0.55 | |
| | | | | 10g | 2.39 | 2.55 | 25.5 | 23.7 | 7.59 | | |
| 5/22/2014 | D2450V2 | 748 | Head | 1g | 5.69 | 5.60 | 56.0 | 51.6 | 8.53 | 1.58 | 11,12 |
| | | | | 10g | 2.50 | 2.57 | 25.7 | 24.0 | 7.08 | | |
| 5/28/2014 | D750V3 | 1019 | Head | 1g | 0.801 | 0.774 | 7.74 | 8.21 | -5.72 | 3.37 | 13,14 |
| | | | | 10g | 0.544 | 0.506 | 5.06 | 5.38 | -5.95 | | |

SAR Lab H

| Date Tested | System Dipole | | T.S. Liquid | Measured Results | | | Target (Ref. Value) | Delta ±10 % | Est./Zoom Ratio | Plot No. | |
|-------------|---------------|----------|----------------|------------------|-----------|---------------------|---------------------------|----------------|--------------------|----------|-------|
| | Type | Serial # | | Area Scan | Zoom Scan | Normalize to 1 W | | | | | |
| 5/27/2014 | D5200V2 | 1003 | Head | 1g | 7.78 | 8.14 | 81.4 | 77.7 | 4.76 | -4.63 | |
| | | | | 10g | 2.15 | 2.32 | 23.2 | 22.2 | 4.50 | | |
| | D5600V2 | | Head | 1g | 7.39 | 7.75 | 77.5 | 81.8 | -5.26 | -4.87 | 15,16 |
| | | | | 10g | 2.03 | 2.19 | 21.9 | 23.2 | -5.60 | | |
| | D5800V2 | | Head | 1g | 7.57 | 8.12 | 81.2 | 78.3 | 3.70 | -7.27 | |
| | | | | 10g | 2.08 | 2.29 | 22.9 | 22.1 | 3.62 | | |

12. SAR Test Results

SAR Test Reduction criteria are as follows:

KDB 447498 D01 General RF Exposure Guidance:

Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:

- ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
- ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
- ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz

KDB 941225 D05 SAR for LTE Devices:

SAR test reduction is applied using the following criteria:

- Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB, and 50% RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel.
- When the reported SAR is > 0.8 W/kg, testing for other Channels is performed at the highest output power level for 1RB, and 50% RB configuration for that channel.
- Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are > 0.8 W/kg. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg.
- Testing for 16-QAM modulation is not required because the reported SAR for QPSK is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of QPSK.
- Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.

KDB 648474 D04 Handset SAR:

Additional 1-g SAR testing at 5 mm is not required. For hotspot mode, 10-g extremity SAR is not required for the surfaces and edges since all 1-g reported SAR < 1.2 W/kg.

12.1. CDMA BC0

12.1.1. Maximum Power

| RF Exposure Conditions | Mode | Dist. (mm) | Test Position | Ch #. | Freq. (MHz) | Power (dBm) | | 1-g SAR (W/kg) | | Plot No. |
|------------------------|------------------|------------|---------------|-------|-------------|---------------|-------|----------------|--------|----------|
| | | | | | | Tune-up limit | Meas. | Meas. | Scaled | |
| Head | 1xRTT (RC3 SO55) | 0 | Left Touch | 384 | 836.5 | 25.4 | 25.2 | 0.378 | 0.396 | 1 |
| | | | Left Tilt | 384 | 836.5 | 25.4 | 25.2 | 0.224 | 0.235 | |
| | | | Right Touch | 384 | 836.5 | 25.4 | 25.2 | 0.320 | 0.335 | |
| | | | Right Tilt | 384 | 836.5 | 25.4 | 25.2 | 0.167 | 0.175 | |
| | 1xEVDO (Rel. 0) | | Left Touch | 384 | 836.5 | 25.4 | 25.3 | 0.331 | 0.339 | |
| | | | Left Tilt | 384 | 836.5 | 25.4 | 25.3 | 0.223 | 0.228 | |
| | | | Right Touch | 384 | 836.5 | 25.4 | 25.3 | 0.293 | 0.300 | |
| | | | Right Tilt | 384 | 836.5 | 25.4 | 25.3 | 0.186 | 0.190 | |
| Body-worn & Hotspot | 1xRTT (RC3 SO32) | 10 | Rear | 384 | 836.5 | 25.4 | 25.2 | 0.726 | 0.760 | |
| | | | Front | 384 | 836.5 | 25.4 | 25.2 | 0.414 | 0.434 | |
| | 1xEVDO (Rel. 0) | | Rear | 384 | 836.5 | 25.4 | 25.3 | 0.758 | 0.776 | 2 |
| | | | Front | 384 | 836.5 | 25.4 | 25.3 | 0.416 | 0.426 | |
| Hotspot | 1xRTT (RC3 SO32) | 10 | Edge 3 | 384 | 836.5 | 25.4 | 25.2 | 0.278 | 0.291 | |
| | | | Edge 4 | 384 | 836.5 | 25.4 | 25.2 | 0.470 | 0.492 | |
| | 1xEVDO (Rel. 0) | | Edge 3 | 384 | 836.5 | 25.4 | 25.3 | 0.282 | 0.289 | |
| | | | Edge 4 | 384 | 836.5 | 25.4 | 25.3 | 0.438 | 0.448 | |

12.1.2. Power Reduction

| RF Exposure Conditions | Mode | Dist. (mm) | Test Position | Ch #. | Freq. (MHz) | Power (dBm) | | 1-g SAR (W/kg) | | Plot No. |
|------------------------|------------------|------------|---------------|-------|-------------|---------------|-------|----------------|--------|----------|
| | | | | | | Tune-up limit | Meas. | Meas. | Scaled | |
| Head | 1xRTT (RC3 SO55) | 0 | Left Touch | 384 | 836.5 | 18.2 | 18.2 | 0.077 | 0.077 | |
| | | 0 | Left Tilt | 384 | 836.5 | 18.2 | 18.2 | 0.050 | 0.050 | |
| | | 0 | Right Touch | 384 | 836.5 | 18.2 | 18.2 | 0.066 | 0.066 | |
| | | 0 | Right Tilt | 384 | 836.5 | 18.2 | 18.2 | 0.043 | 0.043 | |
| Body-worn & Hotspot | 1xRTT (RC3 SO32) | 10 | Rear | 384 | 836.5 | 18.2 | 18.1 | 0.154 | 0.158 | |
| | | 10 | Front | 384 | 836.5 | 18.2 | 18.1 | 0.090 | 0.092 | |
| Hotspot | 1xRTT (RC3 SO32) | 10 | Edge 3 | 384 | 836.5 | 18.2 | 18.1 | 0.005 | 0.005 | |
| | | 10 | Edge 4 | 384 | 836.5 | 18.2 | 18.1 | 0.048 | 0.049 | |

12.2. CDMA BC1

12.2.1. Maximum Power

| RF Exposure Conditions | Mode | Dist. (mm) | Test Position | Ch #. | Freq. (MHz) | Power (dBm) | | 1-g SAR (W/kg) | | Plot No. |
|------------------------|------------------|------------|---------------|-------|-------------|---------------|-------|----------------|--------|----------|
| | | | | | | Tune-up limit | Meas. | Meas. | Scaled | |
| Head | 1xRTT (RC3 SO55) | 0 | Left Touch | 600 | 1880.0 | 24.7 | 24.5 | 0.458 | 0.480 | 3 |
| | | | Left Tilt | 600 | 1880.0 | 24.7 | 24.5 | 0.221 | 0.231 | |
| | | | Right Touch | 600 | 1880.0 | 24.7 | 24.5 | 0.193 | 0.202 | |
| | | | Right Tilt | 600 | 1880.0 | 24.7 | 24.5 | 0.176 | 0.184 | |
| | 1xEVDO (Rel. 0) | | Left Touch | 600 | 1880.0 | 24.7 | 24.5 | 0.398 | 0.417 | |
| | | | Left Tilt | 600 | 1880.0 | 24.7 | 24.5 | 0.208 | 0.218 | |
| | | | Right Touch | 600 | 1880.0 | 24.7 | 24.5 | 0.224 | 0.235 | |
| | | | Right Tilt | 600 | 1880.0 | 24.7 | 24.5 | 0.186 | 0.195 | |
| Body-worn & Hotspot | 1xRTT (RC3 SO32) | 10 | Rear | 600 | 1880.0 | 24.7 | 24.5 | 0.652 | 0.683 | |
| | | | Front | 600 | 1880.0 | 24.7 | 24.5 | 0.492 | 0.515 | |
| | 1xEVDO (Rel. 0) | | Rear | 600 | 1880.0 | 24.7 | 24.5 | 0.756 | 0.792 | 4 |
| | | | Front | 600 | 1880.0 | 24.7 | 24.5 | 0.678 | 0.710 | |
| Hotspot | 1xRTT (RC3 SO32) | 10 | Edge 3 | 600 | 1880.0 | 24.7 | 24.5 | 0.287 | 0.301 | |
| | | | Edge 4 | 600 | 1880.0 | 24.7 | 24.5 | 0.354 | 0.371 | |
| | 1xEVDO (Rel. 0) | | Edge 3 | 600 | 1880.0 | 24.7 | 24.5 | 0.339 | 0.355 | |
| | | | Edge 4 | 600 | 1880.0 | 24.7 | 24.5 | 0.427 | 0.447 | |

12.2.2. Power Reduction

| RF Exposure Conditions | Mode | Dist. (mm) | Test Position | Ch #. | Freq. (MHz) | Power (dBm) | | 1-g SAR (W/kg) | | Plot No. |
|------------------------|------------------|------------|---------------|-------|-------------|---------------|-------|----------------|--------|----------|
| | | | | | | Tune-up limit | Meas. | Meas. | Scaled | |
| Head | 1xRTT (RC3 SO55) | 0 | Left Touch | 600 | 1880.0 | 18.2 | 18.2 | 0.078 | 0.078 | |
| | | | Left Tilt | 600 | 1880.0 | 18.2 | 18.2 | 0.035 | 0.035 | |
| | | | Right Touch | 600 | 1880.0 | 18.2 | 18.2 | 0.048 | 0.048 | |
| | | | Right Tilt | 600 | 1880.0 | 18.2 | 18.2 | 0.037 | 0.037 | |
| Body-worn & Hotspot | 1xRTT (RC3 SO32) | 10 | Rear | 600 | 1880.0 | 18.2 | 18.0 | 0.156 | 0.163 | |
| | | | Front | 600 | 1880.0 | 18.2 | 18.0 | 0.139 | 0.146 | |
| Hotspot | 1xRTT (RC3 SO32) | 10 | Edge 3 | 600 | 1880.0 | 18.2 | 18.0 | 0.069 | 0.072 | |
| | | | Edge 4 | 600 | 1880.0 | 18.2 | 18.0 | 0.081 | 0.085 | |

12.3. LTE Band 4 (20MHz Bandwidth)

12.3.1. Maximum Power

| RF Exposure Conditions | Mode | Dist. (mm) | Test Position | Ch #. | Freq. (MHz) | RB Allocation | RB offset | Power (dBm) | | 1-g SAR (W/kg) | | Plot No. |
|------------------------|------|------------|---------------|--------|-------------|---------------|-----------|---------------|-------|----------------|--------|----------|
| | | | | | | | | Tune-up limit | Meas. | Meas. | Scaled | |
| Head | QPSK | 0 | Left Touch | 20175 | 1732.5 | 1 | 0 | 24.7 | 24.7 | 0.178 | 0.178 | |
| | | | | | | 50 | 25 | 23.7 | 23.6 | 0.180 | 0.184 | |
| | | | Left Tilt | 20175 | 1732.5 | 1 | 0 | 24.7 | 24.7 | 0.152 | 0.152 | |
| | | | | | | 50 | 25 | 23.7 | 23.6 | 0.151 | 0.155 | |
| | | | Right Touch | 20175 | 1732.5 | 1 | 0 | 24.7 | 24.7 | 0.461 | 0.461 | |
| | | | | | | 50 | 25 | 23.7 | 23.6 | 0.452 | 0.463 | 5 |
| | | | Right Tilt | 20175 | 1732.5 | 1 | 0 | 24.7 | 24.7 | 0.159 | 0.159 | |
| | | | | | | 50 | 25 | 23.7 | 23.6 | 0.156 | 0.160 | |
| Body-worn & Hotspot | QPSK | 10 | Rear | 20050 | 1720.0 | 1 | 0 | 24.7 | 24.7 | 0.743 | 0.743 | |
| | | | | | | 50 | 25 | 23.7 | 23.6 | 0.626 | 0.641 | |
| | | | | 20175 | 1732.5 | 1 | 0 | 24.7 | 24.7 | 0.878 | 0.878 | |
| | | | | | | 50 | 25 | 23.7 | 23.6 | 0.830 | 0.849 | |
| | | | 20300 | 1745.0 | 100 | 0 | 23.7 | 23.5 | 0.690 | 0.723 | | |
| | | | | | 1 | 0 | 24.7 | 24.7 | 0.945 | 0.945 | 6 | |
| | | | Front | 20175 | 1732.5 | 50 | 25 | 23.7 | 23.5 | 0.648 | 0.679 | |
| | | | | | | 1 | 0 | 24.7 | 24.7 | 0.439 | 0.439 | |
| Hotspot | QPSK | 10 | Edge 2 | 20175 | 1732.5 | 1 | 0 | 24.7 | 24.7 | 0.326 | 0.326 | |
| | | | | | | 50 | 25 | 23.7 | 23.6 | 0.318 | 0.325 | |
| | | | Edge 3 | 20175 | 1732.5 | 1 | 0 | 24.7 | 24.7 | 0.348 | 0.348 | |
| | | | | | | 50 | 25 | 23.7 | 23.6 | 0.361 | 0.369 | |

12.3.2. Power Reduction

| RF Exposure Conditions | Mode | Dist. (mm) | Test Position | Ch #. | Freq. (MHz) | RB Allocation | RB offset | Power (dBm) | | 1-g SAR (W/kg) | | Plot No. |
|------------------------|------|------------|---------------|-------|-------------|---------------|-----------|---------------|-------|----------------|--------|----------|
| | | | | | | | | Tune-up limit | Meas. | Meas. | Scaled | |
| Head | QPSK | 0 | Left Touch | 20175 | 1732.5 | 1 | 0 | 20.7 | 20.7 | 0.061 | 0.061 | |
| | | | | | | 50 | 25 | 20.7 | 19.8 | 0.043 | 0.053 | |
| | | | Left Tilt | 20175 | 1732.5 | 1 | 0 | 20.7 | 20.7 | 0.047 | 0.047 | |
| | | | | | | 50 | 25 | 20.7 | 19.8 | 0.049 | 0.060 | |
| | | | Right Touch | 20175 | 1732.5 | 1 | 0 | 20.7 | 20.7 | 0.154 | 0.154 | |
| | | | | | | 50 | 25 | 20.7 | 19.8 | 0.177 | 0.218 | |
| | | | Right Tilt | 20175 | 1732.5 | 1 | 0 | 20.7 | 20.7 | 0.054 | 0.054 | |
| | | | | | | 50 | 25 | 20.7 | 19.8 | 0.060 | 0.074 | |
| Body-worn & Hotspot | QPSK | 10 | Rear | 20175 | 1732.5 | 1 | 0 | 20.7 | 20.7 | 0.219 | 0.219 | |
| | | | | | | 50 | 25 | 20.7 | 19.8 | 0.236 | 0.290 | |
| | | | Front | 20175 | 1732.5 | 1 | 0 | 20.7 | 20.7 | 0.152 | 0.152 | |
| | | | | | | 50 | 25 | 20.7 | 19.8 | 0.173 | 0.213 | |
| Hotspot | QPSK | 10 | Edge 2 | 20175 | 1732.5 | 1 | 0 | 20.7 | 20.7 | 0.108 | 0.108 | |
| | | | | | | 50 | 25 | 20.7 | 19.8 | 0.119 | 0.146 | |
| | | | Edge 3 | 20175 | 1732.5 | 1 | 0 | 20.7 | 20.7 | 0.117 | 0.117 | |
| | | | | | | 50 | 25 | 20.7 | 19.8 | 0.130 | 0.160 | |

12.4. LTE Band 13 (10MHz Bandwidth)

12.4.1. Maximum Power

| RF Exposure Conditions | Mode | Dist. (mm) | Test Position | Ch #. | Freq. (MHz) | RB Allocation | RB offset | Power (dBm) | | 1-g SAR (W/kg) | | Plot No. |
|------------------------|-------|------------|---------------|-------|-------------|---------------|-----------|---------------|-------|----------------|--------|----------|
| | | | | | | | | Tune-up limit | Meas. | Meas. | Scaled | |
| Head | QPSK | 0 | Left Touch | 23230 | 782.0 | 1 | 0 | 24.7 | 24.7 | 0.327 | 0.327 | 7 |
| | | | | | | 25 | 0 | 23.7 | 23.7 | 0.259 | 0.259 | |
| | | | Left Tilt | 23230 | 782.0 | 1 | 0 | 24.7 | 24.7 | 0.198 | 0.198 | |
| | | | | | | 25 | 0 | 23.7 | 23.7 | 0.152 | 0.152 | |
| | | | Right Touch | 23230 | 782.0 | 1 | 0 | 24.7 | 24.7 | 0.317 | 0.317 | |
| | | | | | | 25 | 0 | 23.7 | 23.7 | 0.245 | 0.245 | |
| Right Tilt | 23230 | 782.0 | 1 | 0 | 24.7 | 24.7 | 0.208 | 0.208 | | | | |
| | | | 25 | 0 | 23.7 | 23.7 | 0.144 | 0.144 | | | | |
| Body-worn & Hotspot | QPSK | 10 | Rear | 23230 | 782.0 | 1 | 0 | 24.7 | 24.7 | 0.536 | 0.536 | 8 |
| | | | | | | 25 | 0 | 23.7 | 23.7 | 0.439 | 0.439 | |
| | | | Front | 23230 | 782.0 | 1 | 0 | 24.7 | 24.7 | 0.376 | 0.376 | |
| | | | | | | 25 | 0 | 23.7 | 23.7 | 0.301 | 0.301 | |
| Hotspot | QPSK | 10 | Edge 2 | 23230 | 782.0 | 1 | 0 | 24.7 | 24.7 | 0.425 | 0.425 | |
| | | | | | | 25 | 0 | 23.7 | 23.7 | 0.324 | 0.324 | |
| | | | Edge 3 | 23230 | 782.0 | 1 | 0 | 24.7 | 24.7 | 0.367 | 0.367 | |
| | | | | | | 25 | 0 | 23.7 | 23.7 | 0.298 | 0.298 | |

12.4.2. Power Reduction

| RF Exposure Conditions | Mode | Dist. (mm) | Test Position | Ch #. | Freq. (MHz) | RB Allocation | RB offset | Power (dBm) | | 1-g SAR (W/kg) | | Plot No. |
|------------------------|-------|------------|---------------|-------|-------------|---------------|-----------|---------------|-------|----------------|--------|----------|
| | | | | | | | | Tune-up limit | Meas. | Meas. | Scaled | |
| Head | QPSK | 0 | Left Touch | 23230 | 782.0 | 1 | 0 | 20.7 | 20.7 | 0.129 | 0.129 | |
| | | | | | | 25 | 0 | 20.7 | 19.6 | 0.101 | 0.130 | |
| | | | Left Tilt | 23230 | 782.0 | 1 | 0 | 20.7 | 20.7 | 0.064 | 0.064 | |
| | | | | | | 25 | 0 | 20.7 | 19.6 | 0.052 | 0.067 | |
| | | | Right Touch | 23230 | 782.0 | 1 | 0 | 20.7 | 20.7 | 0.119 | 0.119 | |
| | | | | | | 25 | 0 | 20.7 | 19.6 | 0.096 | 0.124 | |
| Right Tilt | 23230 | 782.0 | 1 | 0 | 20.7 | 20.7 | 0.079 | 0.079 | | | | |
| | | | 25 | 0 | 20.7 | 19.6 | 0.062 | 0.080 | | | | |
| Body-worn & Hotspot | QPSK | 10 | Rear | 23230 | 782.0 | 1 | 0 | 20.7 | 20.7 | 0.210 | 0.210 | |
| | | | | | | 25 | 0 | 20.7 | 19.6 | 0.162 | 0.209 | |
| | | | Front | 23230 | 782.0 | 1 | 0 | 20.7 | 20.7 | 0.151 | 0.151 | |
| | | | | | | 25 | 0 | 20.7 | 19.6 | 0.117 | 0.151 | |
| Hotspot | QPSK | 10 | Edge 2 | 23230 | 782.0 | 1 | 0 | 20.7 | 20.7 | 0.109 | 0.109 | |
| | | | | | | 25 | 0 | 20.7 | 19.6 | 0.084 | 0.108 | |
| | | | Edge 3 | 23230 | 782.0 | 1 | 0 | 20.7 | 20.7 | 0.124 | 0.124 | |
| | | | | | | 25 | 0 | 20.7 | 19.6 | 0.096 | 0.124 | |

12.5. Wi-Fi (DTS Band)

12.5.1. 2.4 GHz Band

| RF Exposure Conditions | Mode | Dist. (mm) | Test Position | Ch #. | Freq. (MHz) | Power (dBm) | | 1-g SAR (W/kg) | | Plot No. |
|------------------------------------|-------------------|------------|---------------|-------|-------------|---------------|-------|----------------|--------|----------|
| | | | | | | Tune-up limit | Meas. | Meas. | Scaled | |
| Head | 802.11b 1 Mbps | 0 | Left Touch | 6 | 2437.0 | 16.7 | 16.4 | 0.064 | 0.069 | |
| | | | Left Tilt | 6 | 2437.0 | 16.7 | 16.4 | 0.107 | 0.115 | 9 |
| | | | Right Touch | 6 | 2437.0 | 16.7 | 16.4 | 0.066 | 0.071 | |
| | | | Right Tilt | 6 | 2437.0 | 16.7 | 16.4 | 0.080 | 0.086 | |
| Body-worn, Hotspot, & Wi-Fi Direct | 802.11b 1 Mbps | 10 | Rear | 6 | 2437.0 | 16.7 | 16.4 | 0.148 | 0.159 | 10 |
| | | | Front | 6 | 2437.0 | 16.7 | 16.4 | 0.025 | 0.027 | |
| Hotspot & Wi-Fi Direct | 802.11b 1 Mbps | 10 | Edge 1 | 6 | 2437.0 | 16.7 | 16.4 | 0.078 | 0.084 | |
| | | | Edge 2 | 6 | 2437.0 | 16.7 | 16.4 | 0.021 | 0.023 | |

12.5.2. 5.8 GHz Band

| RF Exposure Conditions | Mode | Dist. (mm) | Test Position | Ch #. | Freq. (MHz) | Power (dBm) | | 1-g SAR (W/kg) | | Plot No. |
|------------------------------------|-------------------|------------|---------------|-------|-------------|---------------|-------|----------------|--------|----------|
| | | | | | | Tune-up limit | Meas. | Meas. | Scaled | |
| Head | 802.11a 6 Mbps | 0 | Left Touch | 149 | 5745.0 | 11.2 | 11.0 | 0.078 | 0.082 | |
| | | | Left Tilt | 149 | 5745.0 | 11.2 | 11.0 | 0.093 | 0.097 | 11 |
| | | | Right Touch | 149 | 5745.0 | 11.2 | 11.0 | 0.052 | 0.054 | |
| | | | Right Tilt | 149 | 5745.0 | 11.2 | 11.0 | 0.011 | 0.012 | |
| Body-worn, Hotspot, & Wi-Fi Direct | 802.11a 6 Mbps | 10 | Rear | 149 | 5745.0 | 11.2 | 11.0 | 0.075 | 0.079 | 12 |
| | | | Front | 149 | 5745.0 | 11.2 | 11.0 | 0.000 | 0.000 | |
| Hotspot & Wi-Fi Direct | 802.11a 6 Mbps | 10 | Edge 1 | 149 | 5745.0 | 11.2 | 11.0 | 0.062 | 0.065 | |
| | | | Edge 2 | 149 | 5745.0 | 11.2 | 11.0 | 0.000 | 0.000 | |

12.6. Wi-Fi (UNII Bands)

| RF Exposure Conditions | Mode | Dist. (mm) | Test Position | Ch #. | Freq. (MHz) | Power (dBm) | | 1-g SAR (W/kg) | | Plot No. |
|------------------------|-------------------|------------|---------------|-------|-------------|---------------|-------|----------------|--------|----------|
| | | | | | | Tune-up limit | Meas. | Meas. | Scaled | |
| Head | 802.11a 6 Mbps | 0 | Left Touch | 48 | 5240.0 | 11.2 | 10.5 | 0.037 | 0.043 | |
| | | | | 52 | 5260.0 | 11.2 | 10.8 | 0.037 | 0.041 | |
| | | | | 100 | 5500.0 | 11.2 | 10.8 | 0.089 | 0.098 | |
| | | | Left Tilt | 48 | 5240.0 | 11.2 | 10.5 | 0.049 | 0.058 | |
| | | | | 52 | 5260.0 | 11.2 | 10.8 | 0.049 | 0.054 | |
| | | | | 100 | 5500.0 | 11.2 | 10.8 | 0.094 | 0.103 | 13 |
| | | | Right Touch | 48 | 5240.0 | 11.2 | 10.5 | 0.025 | 0.029 | |
| | | | | 52 | 5260.0 | 11.2 | 10.8 | 0.027 | 0.030 | |
| | | | | 100 | 5500.0 | 11.2 | 10.8 | 0.065 | 0.071 | |
| | | | Right Tilt | 48 | 5240.0 | 11.2 | 10.5 | 0.039 | 0.046 | |
| | | | | 52 | 5260.0 | 11.2 | 10.8 | 0.042 | 0.046 | |
| | | | | 100 | 5500.0 | 11.2 | 10.8 | 0.025 | 0.027 | |
| Body-worn | 802.11a 6 Mbps | 10 | Rear | 48 | 5240.0 | 11.2 | 10.5 | 0.068 | 0.080 | |
| | | | | 52 | 5260.0 | 11.2 | 10.8 | 0.080 | 0.088 | |
| | | | | 100 | 5500.0 | 11.2 | 10.8 | 0.144 | 0.158 | 14 |
| | | | Front | 48 | 5240.0 | 11.2 | 10.5 | 0.010 | 0.011 | |
| | | | | 52 | 5260.0 | 11.2 | 10.8 | 0.000 | 0.000 | |
| | | | | 100 | 5500.0 | 11.2 | 10.8 | 0.010 | 0.011 | |

12.7. Bluetooth

12.7.1. Standalone SAR Test Exclusion Considerations

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

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

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

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

Body-worn Accessory Exposure Conditions

| Max. tune-up tolerance limit | | Min. test separation distance (mm) | Frequency (GHz) | Result |
|------------------------------|------|------------------------------------|-----------------|--------|
| (dBm) | (mW) | | | |
| 11.2 | 13 | 10 | 2.480 | 2.1 |

Conclusion:

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

12.7.2. Estimated SAR

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

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

Estimated SAR Result for Body-worn Accessory Conditions:

| Test Configuration | Max. tune-up tolerance limit (mW) | Min. test separation distance (mm) | Frequency (GHz) | Estimated 1-g SAR (W/kg) |
|--------------------|-----------------------------------|------------------------------------|-----------------|--------------------------|
| Rear/Front | 13 | 10 | 2.480 | 0.273 |

13. SAR Measurement Variability

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

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

13.1. The Highest Measured SAR Configuration in Each Frequency Band

| Frequency Band (MHz) | Air Interface | Head (W/kg) | Body-worn & Hotspot (W/kg) | Hotspot/Wi-Fi Direct (W/kg) |
|----------------------|-------------------|-------------|----------------------------|-----------------------------|
| 750 | LTE Band 13 | N/A | N/A | N/A |
| 850 | CDMA BC0 | N/A | N/A | N/A |
| 1750 | LTE Band 4 | N/A | 0.945 W/kg | N/A |
| 1900 | CDMA BC1 | N/A | N/A | N/A |
| 2400 | Wi-Fi 802.11b/g/n | N/A | N/A | N/A |
| 5200 | 802.11a/n | N/A | N/A | N/A |
| 5300 | | N/A | N/A | N/A |
| 5500 | | N/A | N/A | N/A |
| 5800 | | N/A | N/A | N/A |

13.2. Repeated Measurement Results

Head Exposure Condition

Not Applicable.

Body-worn Accessory and Hotspot Mode Exposure Conditions

| Frequency band | Test Position | Mode | Ch #. | Freq. (MHz) | Meas. SAR (W/kg) | | Largest to Smallest SAR Ratio | Note |
|----------------|---------------|------|-------|-------------|------------------|----------|-------------------------------|------|
| | | | | | Original | Repeated | | |
| LTE Band 4 | Rear | QPSK | 20300 | 1745.00 | 0.945 | 0.938 | 1.01 | 1 |

Hotspot Mode/Wi-Fi Direct Exposure Condition

Not Applicable.

Note(s):

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

14. Simultaneous Transmission SAR Analysis

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

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

Where:

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

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

Ri is the separation distance between the pair of simultaneous transmitting antennas. When the SAR is measured for both antennas in the pair, it is determined by the actual x, y, and z coordinates in the 1-g SAR for each SAR Peak Location; based on the extrapolated and interpolated result in the zoom scan measurement using the formula:

$$[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$$

A new threshold of 0.04 is also introduced in the KDB 447498. Thus, in order for a pair of simultaneously transmitting antennas, with the sum of 1-g SAR > 1.6 W/kg, to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:

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

14.1. Sum of the SAR for CDMA BC0 & Wi-Fi 2.4GHz Band & BT

| RF Exposure conditions | Test Position | | Simultaneous Transmission Scenario | | | Σ 1-g SAR (mW/g) | SPLSR (Yes/ No) |
|-------------------------------|---------------|-------------------|------------------------------------|-------------|-----------|------------------|-----------------|
| | | | CDMA BC0 | Wi-Fi (DTS) | Bluetooth | | |
| Head | Left Touch | WWAN + Wi-Fi(DTS) | 0.396 | 0.069 | | 0.465 | No |
| | Left Tilt | WWAN + Wi-Fi(DTS) | 0.235 | 0.115 | | 0.350 | No |
| | Right Touch | WWAN + Wi-Fi(DTS) | 0.335 | 0.071 | | 0.406 | No |
| | Right Tilt | WWAN + Wi-Fi(DTS) | 0.190 | 0.086 | | 0.276 | No |
| Body-worn Accessory & Hotspot | Rear | WWAN + Wi-Fi(DTS) | 0.776 | 0.159 | | 0.935 | No |
| | | WWAN + BT | 0.776 | | 0.273 | 1.049 | No |
| | Front | WWAN + Wi-Fi(DTS) | 0.434 | 0.027 | | 0.461 | No |
| | | WWAN + BT | 0.434 | | 0.273 | 0.707 | No |
| Hotspot | Edge 1 | WWAN + Wi-Fi(DTS) | | 0.084 | | 0.084 | No |
| | Edge 2 | WWAN + Wi-Fi(DTS) | | 0.023 | | 0.023 | No |
| | Edge 3 | WWAN + Wi-Fi(DTS) | 0.291 | | | 0.291 | No |
| | Edge 4 | WWAN + Wi-Fi(DTS) | 0.492 | | | 0.492 | No |

14.2. Sum of the SAR for CDMA BC0 & Wi-Fi 5 GHz Bands & BT

| RF Exposure conditions | Test Position | | Simultaneous Transmission Scenario | | | | Σ 1-g SAR (mW/g) | SPLSR (Yes/ No) |
|-------------------------------|--------------------|--------------------|------------------------------------|-------------|--------------|-----------|------------------|-----------------|
| | | | CDMA BC0 | Wi-Fi (DTS) | Wi-Fi (UNII) | Bluetooth | | |
| Head | Left Touch | WWAN + Wi-Fi(DTS) | 0.396 | 0.082 | | | 0.478 | No |
| | | WWAN + Wi-Fi(UNII) | 0.396 | | 0.098 | | 0.494 | No |
| | Left Tilt | WWAN + Wi-Fi(DTS) | 0.235 | 0.097 | | | 0.332 | No |
| | | WWAN + Wi-Fi(UNII) | 0.235 | | 0.103 | | 0.338 | No |
| | Right Touch | WWAN + Wi-Fi(DTS) | 0.335 | 0.054 | | | 0.389 | No |
| | | WWAN + Wi-Fi(UNII) | 0.335 | | 0.071 | | 0.406 | No |
| Right Tilt | WWAN + Wi-Fi(DTS) | 0.190 | 0.012 | | | 0.202 | No | |
| | WWAN + Wi-Fi(UNII) | 0.190 | | 0.046 | | 0.236 | No | |
| Body-worn Accessory & Hotspot | Rear | WWAN + Wi-Fi(DTS) | 0.776 | 0.079 | | | 0.855 | No |
| | | WWAN + Wi-Fi(UNII) | 0.776 | | 0.158 | | 0.934 | No |
| | | WWAN + BT | 0.776 | | | 0.273 | 1.049 | No |
| | Front | WWAN + Wi-Fi(DTS) | 0.434 | 0.000 | | | 0.434 | No |
| | | WWAN + Wi-Fi(UNII) | 0.434 | | 0.011 | | 0.445 | No |
| | | WWAN + BT | 0.434 | | | 0.273 | 0.707 | No |
| Hotspot | Edge 1 | WWAN + Wi-Fi(DTS) | | 0.065 | | | 0.065 | No |
| | Edge 2 | WWAN + Wi-Fi(DTS) | | 0.000 | | | 0.000 | No |
| | Edge 3 | WWAN + Wi-Fi(DTS) | 0.291 | | | | 0.291 | No |
| | Edge 4 | WWAN + Wi-Fi(DTS) | 0.492 | | | | 0.492 | No |

SAR to Peak Location Separation Ratio (SPLSR)

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

14.3. Sum of the SAR for CDMA BC1 & Wi-Fi 2.4 GHz Band & BT

| RF Exposure conditions | Test Position | | Simultaneous Transmission Scenario | | | Σ 1-g SAR (mW/g) | SPLSR (Yes/ No) |
|-------------------------------|---------------|-------------------|------------------------------------|-------------|-----------|------------------|-----------------|
| | | | CDMA BC1 | Wi-Fi (DTS) | Bluetooth | | |
| Head | Left Touch | WWAN + Wi-Fi(DTS) | 0.480 | 0.069 | | 0.549 | No |
| | Left Tilt | WWAN + Wi-Fi(DTS) | 0.231 | 0.115 | | 0.346 | No |
| | Right Touch | WWAN + Wi-Fi(DTS) | 0.235 | 0.071 | | 0.306 | No |
| | Right Tilt | WWAN + Wi-Fi(DTS) | 0.195 | 0.086 | | 0.281 | No |
| Body-worn Accessory & Hotspot | Rear | WWAN + Wi-Fi(DTS) | 0.792 | 0.159 | | 0.951 | No |
| | | WWAN + BT | 0.792 | | 0.273 | 1.065 | No |
| | Front | WWAN + Wi-Fi(DTS) | 0.710 | 0.027 | | 0.737 | No |
| | | WWAN + BT | 0.710 | | 0.273 | 0.983 | No |
| Hotspot | Edge 1 | WWAN + Wi-Fi(DTS) | | 0.084 | | 0.084 | No |
| | Edge 2 | WWAN + Wi-Fi(DTS) | | 0.023 | | 0.023 | No |
| | Edge 3 | WWAN + Wi-Fi(DTS) | 0.355 | | | 0.355 | No |
| | Edge 4 | WWAN + Wi-Fi(DTS) | 0.447 | | | 0.447 | No |

14.4. Sum of the SAR for CDMA BC1 & Wi-Fi 5 GHz Bands & BT

| RF Exposure conditions | Test Position | | Simultaneous Transmission Scenario | | | | Σ 1-g SAR (mW/g) | SPLSR (Yes/ No) |
|-------------------------------|---------------|--------------------|------------------------------------|-------------|--------------|-----------|------------------|-----------------|
| | | | CDMA BC1 | Wi-Fi (DTS) | Wi-Fi (UNII) | Bluetooth | | |
| Head | Left Touch | WWAN + Wi-Fi(DTS) | 0.480 | 0.082 | | | 0.562 | No |
| | | WWAN + Wi-Fi(UNII) | 0.480 | | 0.098 | | 0.578 | No |
| | Left Tilt | WWAN + Wi-Fi(DTS) | 0.231 | 0.097 | | | 0.328 | No |
| | | WWAN + Wi-Fi(UNII) | 0.231 | | 0.103 | | 0.334 | No |
| | Right Touch | WWAN + Wi-Fi(DTS) | 0.235 | 0.054 | | | 0.289 | No |
| | | WWAN + Wi-Fi(UNII) | 0.235 | | 0.071 | | 0.306 | No |
| | Right Tilt | WWAN + Wi-Fi(DTS) | 0.195 | 0.012 | | | 0.207 | No |
| | | WWAN + Wi-Fi(UNII) | 0.195 | | 0.046 | | 0.241 | No |
| Body-worn Accessory & Hotspot | Rear | WWAN + Wi-Fi(DTS) | 0.792 | 0.079 | | | 0.871 | No |
| | | WWAN + Wi-Fi(UNII) | 0.792 | | 0.158 | | 0.950 | No |
| | | WWAN + BT | 0.792 | | | 0.273 | 1.065 | No |
| | Front | WWAN + Wi-Fi(DTS) | 0.710 | 0.000 | | | 0.710 | No |
| | | WWAN + Wi-Fi(UNII) | 0.710 | | 0.011 | | 0.721 | No |
| | | WWAN + BT | 0.710 | | | 0.273 | 0.983 | No |
| Hotspot | Edge 1 | WWAN + Wi-Fi(DTS) | | 0.065 | | | 0.065 | No |
| | Edge 2 | WWAN + Wi-Fi(DTS) | | 0.000 | | | 0.000 | No |
| | Edge 3 | WWAN + Wi-Fi(DTS) | 0.355 | | | | 0.355 | No |
| | Edge 4 | WWAN + Wi-Fi(DTS) | 0.447 | | | | 0.447 | No |

SAR to Peak Location Separation Ratio (SPLSR)

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

14.5. Sum of the SAR for LTE Band 4 & Wi-Fi 2.4 GHz Band & BT

| RF Exposure conditions | Test Position | | Simultaneous Transmission Scenario | | | Σ 1-g SAR (mW/g) | SPLSR (Yes/ No) |
|-------------------------------|---------------|-------------------|------------------------------------|-------------|-----------|------------------|-----------------|
| | | | LTE Band 4 | Wi-Fi (DTS) | Bluetooth | | |
| Head | Left Touch | WWAN + Wi-Fi(DTS) | 0.184 | 0.069 | | 0.253 | No |
| | Left Tilt | WWAN + Wi-Fi(DTS) | 0.155 | 0.115 | | 0.270 | No |
| | Right Touch | WWAN + Wi-Fi(DTS) | 0.463 | 0.071 | | 0.534 | No |
| | Right Tilt | WWAN + Wi-Fi(DTS) | 0.160 | 0.086 | | 0.246 | No |
| Body-worn Accessory & Hotspot | Rear | WWAN + Wi-Fi(DTS) | 0.945 | 0.159 | | 1.104 | No |
| | | WWAN + BT | 0.945 | | 0.273 | 1.218 | No |
| | Front | WWAN + Wi-Fi(DTS) | 0.464 | 0.027 | | 0.491 | No |
| | | WWAN + BT | 0.464 | | 0.273 | 0.737 | No |
| Hotspot | Edge 1 | WWAN + Wi-Fi(DTS) | | 0.084 | | 0.084 | No |
| | Edge 2 | WWAN + Wi-Fi(DTS) | 0.326 | 0.023 | | 0.349 | No |
| | Edge 3 | WWAN + Wi-Fi(DTS) | 0.369 | | | 0.369 | No |
| | Edge 4 | WWAN + Wi-Fi(DTS) | | | | 0.000 | No |

14.6. Sum of the SAR for LTE Band 4 & Wi-Fi 5 GHz Bands & BT

| RF Exposure conditions | Test Position | | Simultaneous Transmission Scenario | | | | Σ 1-g SAR (mW/g) | SPLSR (Yes/ No) |
|-------------------------------|--------------------|--------------------|------------------------------------|-------------|--------------|-----------|------------------|-----------------|
| | | | LTE Band 4 | Wi-Fi (DTS) | Wi-Fi (UNII) | Bluetooth | | |
| Head | Left Touch | WWAN + Wi-Fi(DTS) | 0.184 | 0.082 | | | 0.266 | No |
| | | WWAN + Wi-Fi(UNII) | 0.184 | | 0.098 | | 0.282 | No |
| | Left Tilt | WWAN + Wi-Fi(DTS) | 0.155 | 0.097 | | | 0.252 | No |
| | | WWAN + Wi-Fi(UNII) | 0.155 | | 0.103 | | 0.258 | No |
| | Right Touch | WWAN + Wi-Fi(DTS) | 0.463 | 0.054 | | | 0.517 | No |
| | | WWAN + Wi-Fi(UNII) | 0.463 | | 0.071 | | 0.534 | No |
| Right Tilt | WWAN + Wi-Fi(DTS) | 0.160 | 0.012 | | | 0.172 | No | |
| | WWAN + Wi-Fi(UNII) | 0.160 | | 0.046 | | 0.206 | No | |
| Body-worn Accessory & Hotspot | Rear | WWAN + Wi-Fi(DTS) | 0.945 | 0.079 | | | 1.024 | No |
| | | WWAN + Wi-Fi(UNII) | 0.945 | | 0.158 | | 1.103 | No |
| | | WWAN + BT | 0.945 | | | 0.273 | 1.218 | No |
| | Front | WWAN + Wi-Fi(DTS) | 0.464 | 0.000 | | | 0.464 | No |
| | | WWAN + Wi-Fi(UNII) | 0.464 | | 0.011 | | 0.475 | No |
| | | WWAN + BT | 0.464 | | | 0.273 | 0.737 | No |
| Hotspot | Edge 1 | WWAN + Wi-Fi(DTS) | | 0.065 | | | 0.065 | No |
| | Edge 2 | WWAN + Wi-Fi(DTS) | 0.326 | 0.000 | | | 0.326 | No |
| | Edge 3 | WWAN + Wi-Fi(DTS) | 0.369 | | | | 0.369 | No |
| | Edge 4 | WWAN + Wi-Fi(DTS) | | | | | 0.000 | 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.

14.7. Sum of the SAR for LTE Band 13 & Wi-Fi 2.4 GHz & BT

| RF Exposure conditions | Test Position | | Simultaneous Transmission Scenario | | | Σ 1-g SAR (mW/g) | SPLSR (Yes/ No) |
|-------------------------------|---------------|-------------------|------------------------------------|-------------|-----------|------------------|-----------------|
| | | | LTE Band 13 | Wi-Fi (DTS) | Bluetooth | | |
| Head | Left Touch | WWAN + Wi-Fi(DTS) | 0.327 | 0.069 | | 0.396 | No |
| | Left Tilt | WWAN + Wi-Fi(DTS) | 0.198 | 0.115 | | 0.313 | No |
| | Right Touch | WWAN + Wi-Fi(DTS) | 0.317 | 0.071 | | 0.388 | No |
| | Right Tilt | WWAN + Wi-Fi(DTS) | 0.208 | 0.086 | | 0.294 | No |
| Body-worn Accessory & Hotspot | Rear | WWAN + Wi-Fi(DTS) | 0.536 | 0.159 | | 0.695 | No |
| | | WWAN + BT | 0.536 | | 0.273 | 0.809 | No |
| | Front | WWAN + Wi-Fi(DTS) | 0.376 | 0.027 | | 0.403 | No |
| | | WWAN + BT | 0.376 | | 0.273 | 0.649 | No |
| Hotspot | Edge 1 | WWAN + Wi-Fi(DTS) | | 0.084 | | 0.084 | No |
| | Edge 2 | WWAN + Wi-Fi(DTS) | 0.425 | 0.023 | | 0.448 | No |
| | Edge 3 | WWAN + Wi-Fi(DTS) | 0.367 | | | 0.367 | No |
| | Edge 4 | WWAN + Wi-Fi(DTS) | | | | 0.000 | No |

14.8. Sum of the SAR for LTE Band 13 & Wi-Fi 5 GHz Bands & BT

| RF Exposure conditions | Test Position | | Simultaneous Transmission Scenario | | | | Σ 1-g SAR (mW/g) | SPLSR (Yes/ No) |
|-------------------------------|---------------|--------------------|------------------------------------|-------------|--------------|-----------|------------------|-----------------|
| | | | LTE Band 13 | Wi-Fi (DTS) | Wi-Fi (UNII) | Bluetooth | | |
| Head | Left Touch | WWAN + Wi-Fi(DTS) | 0.327 | 0.082 | | | 0.409 | No |
| | | WWAN + Wi-Fi(UNII) | 0.327 | | 0.098 | | 0.425 | No |
| | Left Tilt | WWAN + Wi-Fi(DTS) | 0.198 | 0.097 | | | 0.295 | No |
| | | WWAN + Wi-Fi(UNII) | 0.198 | | 0.103 | | 0.301 | No |
| | Right Touch | WWAN + Wi-Fi(DTS) | 0.317 | 0.054 | | | 0.371 | No |
| | | WWAN + Wi-Fi(UNII) | 0.317 | | 0.071 | | 0.388 | No |
| | Right Tilt | WWAN + Wi-Fi(DTS) | 0.208 | 0.012 | | | 0.220 | No |
| | | WWAN + Wi-Fi(UNII) | 0.208 | | 0.046 | | 0.254 | No |
| Body-worn Accessory & Hotspot | Rear | WWAN + Wi-Fi(DTS) | 0.536 | 0.079 | | | 0.615 | No |
| | | WWAN + Wi-Fi(UNII) | 0.536 | | 0.158 | | 0.694 | No |
| | | WWAN + BT | 0.536 | | | 0.273 | 0.809 | No |
| | Front | WWAN + Wi-Fi(DTS) | 0.376 | 0.000 | | | 0.376 | No |
| | | WWAN + Wi-Fi(UNII) | 0.376 | | 0.011 | | 0.387 | No |
| | | WWAN + BT | 0.376 | | | 0.273 | 0.649 | No |
| Hotspot | Edge 1 | WWAN + Wi-Fi(DTS) | | 0.065 | | | 0.065 | No |
| | Edge 2 | WWAN + Wi-Fi(DTS) | 0.425 | 0.000 | | | 0.425 | No |
| | Edge 3 | WWAN + Wi-Fi(DTS) | 0.367 | | | | 0.367 | No |
| | Edge 4 | WWAN + Wi-Fi(DTS) | | | | | 0.000 | 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.

14.9. Sum of the SAR for SV-LTE

14.9.1. CDMA (Maximum Power), LTE (Power Reduction), Wi-Fi 2.4 GHz Band, & BT

| RF Exposure Conditions | Test Position | Voice (Maximum Power) | | Data (Reduced Power) | | Data | | Σ 1-g SAR (W/kg) |
|--------------------------------------|---------------|-----------------------|----------|----------------------|-------------|---------------|-----------|------------------|
| | | CDMA BC0 | CDMA BC1 | LTE Band 4 | LTE Band 13 | WiFi DTS Band | Bluetooth | |
| Head | Left Touch | 0.396 | | 0.061 | | 0.069 | | 0.526 |
| | | 0.396 | | | 0.130 | 0.069 | | 0.595 |
| | | | 0.480 | 0.061 | | 0.069 | | 0.610 |
| | | | 0.480 | | 0.130 | 0.069 | | 0.679 |
| | Left Tilt | 0.235 | | 0.060 | | 0.115 | | 0.410 |
| | | 0.235 | | | 0.067 | 0.115 | | 0.417 |
| | | | 0.231 | 0.060 | | 0.115 | | 0.406 |
| | | | 0.231 | | 0.067 | 0.115 | | 0.413 |
| | Right Touch | 0.335 | | 0.218 | | 0.071 | | 0.624 |
| | | 0.335 | | | 0.124 | 0.071 | | 0.530 |
| | | | 0.202 | 0.218 | | 0.071 | | 0.491 |
| | | | 0.202 | | 0.124 | 0.071 | | 0.397 |
| | Right Tilt | 0.175 | | 0.074 | | 0.086 | | 0.335 |
| | | 0.175 | | | 0.080 | 0.086 | | 0.341 |
| | | | 0.184 | 0.074 | | 0.086 | | 0.344 |
| | | | 0.184 | | 0.080 | 0.086 | | 0.350 |
| Body-worn, Hotspot, and Wi-Fi Direct | Rear | 0.760 | | 0.290 | | 0.159 | | 1.209 |
| | | 0.760 | | 0.290 | | | 0.273 | 1.323 |
| | | 0.760 | | | 0.210 | 0.159 | | 1.129 |
| | | 0.760 | | | 0.210 | | 0.273 | 1.243 |
| | | | 0.683 | 0.290 | | 0.159 | | 1.132 |
| | | | 0.683 | 0.290 | | | 0.273 | 1.246 |
| | | | 0.683 | | 0.210 | 0.159 | | 1.052 |
| | | | 0.683 | | 0.210 | | 0.273 | 1.166 |
| | Front | 0.434 | | 0.213 | | 0.027 | | 0.674 |
| | | 0.434 | | 0.213 | | | 0.273 | 0.920 |
| | | 0.434 | | | 0.151 | 0.027 | | 0.612 |
| | | 0.434 | | | 0.151 | | 0.273 | 0.858 |
| | | | 0.515 | 0.213 | | 0.027 | | 0.755 |
| | | | 0.515 | 0.213 | | | 0.273 | 1.001 |
| | | | 0.515 | | 0.151 | 0.027 | | 0.693 |
| | | | 0.515 | | 0.151 | | 0.273 | 0.939 |
| Hotspot and Wi-Fi Direct | Edge 1 | | | | | 0.084 | | 0.084 |
| | Edge 2 | | | 0.146 | | 0.023 | | 0.169 |
| | | | | | 0.109 | 0.023 | | 0.132 |
| | Edge 3 | 0.291 | | 0.160 | | | | 0.451 |
| | | 0.291 | | | 0.124 | | | 0.415 |
| | | | 0.301 | 0.160 | | | | 0.461 |
| | | | 0.301 | | 0.124 | | | 0.425 |
| | Edge 4 | 0.492 | | | | | | 0.492 |
| | | 0.371 | | | | | 0.371 | |

14.9.2. CDMA (Maximum Power), LTE (Power Reduction), Wi-Fi 5 GHz Bands, & BT

| RF Exposure Conditions | Test Position | Voice (Maximum Power) | | Data (Reduced Power) | | Data | | | Σ 1-g SAR (W/kg) | |
|--------------------------|--------------------------------------|-----------------------|----------|----------------------|-------------|-----------------------|----------------|-----------|------------------|-------|
| | | CDMA BC0 | CDMA BC1 | LTE Band 4 | LTE Band 13 | WiFi 5.8 GHz DTS Band | WiFi UNII Band | Bluetooth | | |
| Head | Left Touch | 0.396 | | 0.061 | | 0.082 | | | 0.539 | |
| | | 0.396 | | 0.061 | | | 0.098 | | 0.555 | |
| | | 0.396 | | | 0.130 | 0.082 | | | 0.608 | |
| | | 0.396 | | | 0.130 | | 0.098 | | 0.624 | |
| | | | 0.480 | 0.061 | | 0.082 | | | 0.623 | |
| | | | 0.480 | 0.061 | | | 0.098 | | 0.639 | |
| | | | 0.480 | | 0.130 | 0.082 | | | 0.692 | |
| | | | 0.480 | | 0.130 | | 0.098 | | 0.708 | |
| | Left Tilt | 0.235 | | 0.060 | | 0.097 | | | 0.392 | |
| | | 0.235 | | 0.060 | | | 0.103 | | 0.398 | |
| | | 0.235 | | | 0.067 | 0.097 | | | 0.399 | |
| | | 0.235 | | | 0.067 | | 0.103 | | 0.405 | |
| | | | 0.231 | 0.060 | | 0.097 | | | 0.388 | |
| | | | 0.231 | 0.060 | | | 0.103 | | 0.394 | |
| | | | 0.231 | | 0.067 | 0.097 | | | 0.395 | |
| | | | 0.231 | | 0.067 | | 0.103 | | 0.401 | |
| | Right Touch | 0.335 | | 0.218 | | 0.054 | | | 0.607 | |
| | | 0.335 | | 0.218 | | | 0.071 | | 0.624 | |
| | | 0.335 | | | 0.124 | 0.054 | | | 0.513 | |
| | | 0.335 | | | 0.124 | | 0.071 | | 0.530 | |
| | | | 0.202 | 0.218 | | 0.054 | | | 0.474 | |
| | | | 0.202 | 0.218 | | | 0.071 | | 0.491 | |
| | | | 0.202 | | 0.124 | 0.054 | | | 0.380 | |
| | | | 0.202 | | 0.124 | | 0.071 | | 0.397 | |
| | Right Tilt | 0.175 | | 0.074 | | 0.012 | | | 0.261 | |
| | | 0.175 | | 0.074 | | | 0.046 | | 0.295 | |
| | | 0.175 | | | 0.080 | 0.012 | | | 0.267 | |
| | | 0.175 | | | 0.080 | | 0.046 | | 0.301 | |
| | | | 0.184 | 0.074 | | 0.012 | | | 0.270 | |
| | | | 0.184 | 0.074 | | | 0.046 | | 0.304 | |
| | | | 0.184 | | 0.080 | 0.012 | | | 0.276 | |
| | | | 0.184 | | 0.080 | | 0.046 | | 0.310 | |
| | Body-worn, Hotspot, and Wi-Fi Direct | Rear | 0.760 | | 0.290 | | 0.079 | | | 1.129 |
| | | | 0.760 | | 0.290 | | | 0.158 | | 1.208 |
| | | | 0.760 | | 0.290 | | | | 0.273 | 1.323 |
| | | | 0.760 | | | 0.210 | 0.079 | | | 1.049 |
| 0.760 | | | | | 0.210 | | 0.158 | | 1.128 | |
| 0.760 | | | | | 0.210 | | | 0.273 | 1.243 | |
| | | | 0.683 | 0.290 | | 0.079 | | | 1.052 | |
| | | | 0.683 | 0.290 | | | 0.158 | | 1.131 | |
| | | | 0.683 | 0.290 | | | | 0.273 | 1.246 | |
| | | | 0.683 | | 0.210 | 0.079 | | | 0.972 | |
| | | | 0.683 | | 0.210 | | 0.158 | | 1.051 | |
| | | | 0.683 | | 0.210 | | | 0.273 | 1.166 | |
| Front | | 0.434 | | 0.213 | | 0.000 | | | 0.647 | |
| | | 0.434 | | 0.213 | | | 0.011 | | 0.658 | |
| | | 0.434 | | 0.213 | | | | 0.273 | 0.920 | |
| | | 0.434 | | | 0.151 | 0.000 | | | 0.585 | |
| | | 0.434 | | | 0.151 | | 0.011 | | 0.596 | |
| | | 0.434 | | | 0.151 | | | 0.273 | 0.858 | |
| | | | 0.515 | 0.213 | | 0.000 | | | 0.728 | |
| | | | 0.515 | 0.213 | | | 0.011 | | 0.739 | |
| | | | 0.515 | 0.213 | | | | 0.273 | 1.001 | |
| | | | 0.515 | | 0.151 | 0.000 | | | 0.666 | |
| | | | 0.515 | | 0.151 | | 0.011 | | 0.677 | |
| | | | 0.515 | | 0.151 | | | 0.273 | 0.939 | |
| Hotspot and Wi-Fi Direct | Edge 1 | | | | | 0.065 | | | 0.065 | |
| | Edge 2 | | | 0.146 | | 0.000 | | | 0.146 | |
| | Edge 3 | 0.291 | | 0.160 | | 0.109 | 0.000 | | 0.109 | |
| | | 0.291 | | | 0.124 | | | | 0.451 | |
| | | | 0.301 | 0.160 | | | | | 0.415 | |
| | | | 0.301 | | 0.124 | | | | 0.461 | |
| | Edge 4 | 0.492 | | | | | | | 0.425 | |
| | | | 0.371 | | | | | | 0.492 | |

14.9.3. CDMA (Power Reduction), LTE (Maximum Power), Wi-Fi 2.4 GHz Band, & BT

| RF Exposure Conditions | Test Position | Voice (Reduced Power) | | Data (Maximum Power) | | Data | | Σ 1-g SAR (W/kg) |
|--------------------------------------|---------------|-----------------------|----------|----------------------|-------------|---------------|-----------|------------------|
| | | CDMA BC0 | CDMA BC1 | LTE Band 4 | LTE Band 13 | WiFi DTS Band | Bluetooth | |
| Head | Left Touch | 0.077 | | 0.184 | | 0.069 | | 0.330 |
| | | 0.077 | | | 0.327 | 0.069 | | 0.473 |
| | | | 0.078 | 0.184 | | 0.069 | | 0.331 |
| | | | 0.078 | | 0.327 | 0.069 | | 0.474 |
| | Left Tilt | 0.050 | | 0.155 | | 0.115 | | 0.320 |
| | | 0.050 | | | 0.198 | 0.115 | | 0.363 |
| | | | 0.035 | 0.155 | | 0.115 | | 0.305 |
| | | | 0.035 | | 0.198 | 0.115 | | 0.348 |
| | Right Touch | 0.066 | | 0.463 | | 0.071 | | 0.600 |
| | | 0.066 | | | 0.317 | 0.071 | | 0.454 |
| | | | 0.048 | 0.463 | | 0.071 | | 0.582 |
| | | | 0.048 | | 0.317 | 0.071 | | 0.436 |
| | Right Tilt | 0.043 | | 0.160 | | 0.086 | | 0.289 |
| | | 0.043 | | | 0.208 | 0.086 | | 0.337 |
| | | | 0.037 | 0.160 | | 0.086 | | 0.283 |
| | | | 0.037 | | 0.208 | 0.086 | | 0.331 |
| Body-worn, Hotspot, and Wi-Fi Direct | Rear | 0.158 | | 0.945 | | 0.159 | | 1.262 |
| | | 0.158 | | 0.945 | | | 0.273 | 1.376 |
| | | 0.158 | | | 0.536 | 0.159 | | 0.853 |
| | | 0.158 | | | 0.536 | | 0.273 | 0.967 |
| | | | 0.163 | 0.945 | | 0.159 | | 1.267 |
| | | | 0.163 | 0.945 | | | 0.273 | 1.381 |
| | | | 0.163 | | 0.536 | 0.159 | | 0.858 |
| | | | 0.163 | | 0.536 | | 0.273 | 0.972 |
| | Front | 0.092 | | 0.464 | | 0.027 | | 0.583 |
| | | 0.092 | | 0.464 | | | 0.273 | 0.829 |
| | | 0.092 | | | 0.376 | 0.027 | | 0.495 |
| | | 0.092 | | | 0.376 | | 0.273 | 0.741 |
| | | | 0.146 | 0.464 | | 0.027 | | 0.637 |
| | | | 0.146 | 0.464 | | | 0.273 | 0.883 |
| | | | 0.146 | | 0.376 | 0.027 | | 0.549 |
| | | | 0.146 | | 0.376 | | 0.273 | 0.795 |
| Hotspot and Wi-Fi Direct | Edge 1 | | | | | 0.084 | | 0.084 |
| | Edge 2 | | | 0.326 | | 0.023 | | 0.349 |
| | Edge 3 | | | | 0.425 | 0.023 | | 0.448 |
| | | 0.005 | | 0.369 | | | | 0.374 |
| | | 0.005 | | | 0.367 | | | 0.372 |
| | Edge 4 | | 0.072 | 0.369 | | | | 0.441 |
| | | | 0.072 | | 0.367 | | | 0.439 |
| | | 0.049 | | | | | | 0.049 |
| | | 0.085 | | | | | 0.085 | |

14.9.4. CDMA (Power Reduction), LTE (Maximum Power), Wi-Fi 5 GHz Bands, & BT

| RF Exposure Conditions | Test Position | Voice (Power Reduction) | | Data (Maximum Power) | | Data | | | Σ 1-g SAR (W/kg) |
|--------------------------------------|---------------|-------------------------|----------|----------------------|-------------|-----------------------|----------------|-----------|------------------|
| | | CDMA BC0 | CDMA BC1 | LTE Band 4 | LTE Band 13 | WiFi 5.8 GHz DTS Band | WiFi UNII Band | Bluetooth | |
| Head | Left Touch | 0.077 | | 0.184 | | 0.082 | | | 0.343 |
| | | 0.077 | | 0.184 | | | 0.098 | | 0.359 |
| | | 0.077 | | | 0.327 | 0.082 | | | 0.486 |
| | | 0.077 | | | 0.327 | | 0.098 | | 0.502 |
| | | | 0.078 | 0.184 | | 0.082 | | | 0.344 |
| | | | 0.078 | 0.184 | | | 0.098 | | 0.360 |
| | | | 0.078 | | 0.327 | 0.082 | | | 0.487 |
| | | | 0.078 | | 0.327 | | 0.098 | | 0.503 |
| | Left Tilt | 0.050 | | 0.155 | | 0.097 | | | 0.302 |
| | | 0.050 | | 0.155 | | | 0.103 | | 0.308 |
| | | 0.050 | | | 0.198 | 0.097 | | | 0.345 |
| | | 0.050 | | | 0.198 | | 0.103 | | 0.351 |
| | | | 0.035 | 0.155 | | 0.097 | | | 0.287 |
| | | | 0.035 | 0.155 | | | 0.103 | | 0.293 |
| | | | 0.035 | | 0.198 | 0.097 | | | 0.330 |
| | | | 0.035 | | 0.198 | | 0.103 | | 0.336 |
| | Right Touch | 0.066 | | 0.463 | | 0.054 | | | 0.583 |
| | | 0.066 | | 0.463 | | | 0.071 | | 0.600 |
| | | 0.066 | | | 0.317 | 0.054 | | | 0.437 |
| | | 0.066 | | | 0.317 | | 0.071 | | 0.454 |
| | | | 0.048 | 0.463 | | 0.054 | | | 0.565 |
| | | | 0.048 | 0.463 | | | 0.071 | | 0.582 |
| | | | 0.048 | | 0.317 | 0.054 | | | 0.419 |
| | | | 0.048 | | 0.317 | | 0.071 | | 0.436 |
| | Right Tilt | 0.043 | | 0.160 | | 0.012 | | | 0.215 |
| | | 0.043 | | 0.160 | | | 0.046 | | 0.249 |
| | | 0.043 | | | 0.208 | 0.012 | | | 0.263 |
| | | 0.043 | | | 0.208 | | 0.046 | | 0.297 |
| | | | 0.037 | 0.160 | | 0.012 | | | 0.209 |
| | | | 0.037 | 0.160 | | | 0.046 | | 0.243 |
| | | 0.037 | | 0.208 | 0.012 | | | 0.257 | |
| | | 0.037 | | 0.208 | | 0.046 | | 0.291 | |
| Body-worn, Hotspot, and Wi-Fi Direct | Rear | 0.158 | | 0.945 | | 0.079 | | | 1.182 |
| | | 0.158 | | 0.945 | | | 0.158 | | 1.261 |
| | | 0.158 | | 0.945 | | | | 0.273 | 1.376 |
| | | 0.158 | | | 0.536 | 0.079 | | | 0.773 |
| | | 0.158 | | | 0.536 | | 0.158 | | 0.852 |
| | | 0.158 | | | 0.536 | | | 0.273 | 0.967 |
| | | | 0.163 | 0.945 | | 0.079 | | | 1.187 |
| | | | 0.163 | 0.945 | | | 0.158 | | 1.266 |
| | | | 0.163 | 0.945 | | | | 0.273 | 1.381 |
| | | | 0.163 | | 0.536 | 0.079 | | | 0.778 |
| | Front | 0.092 | | 0.464 | | 0.000 | | | 0.556 |
| | | 0.092 | | 0.464 | | | 0.011 | | 0.567 |
| | | 0.092 | | 0.464 | | | | 0.273 | 0.829 |
| | | 0.092 | | | 0.376 | 0.000 | | | 0.468 |
| | | 0.092 | | | 0.376 | | 0.011 | | 0.479 |
| | | 0.092 | | | 0.376 | | | 0.273 | 0.741 |
| | | | 0.146 | 0.464 | | 0.000 | | | 0.610 |
| | | | 0.146 | 0.464 | | | 0.011 | | 0.621 |
| | | | 0.146 | 0.464 | | | | 0.273 | 0.883 |
| | | | 0.146 | | 0.376 | 0.000 | | | 0.522 |
| Hotspot and Wi-Fi Direct | Edge 1 | | | | | 0.065 | | | 0.065 |
| | Edge 2 | | | 0.326 | | 0.000 | | | 0.326 |
| | Edge 3 | 0.005 | | 0.369 | | | | | 0.374 |
| | | 0.005 | | | 0.367 | | | | 0.372 |
| | | | 0.072 | 0.369 | | | | | 0.441 |
| | Edge 4 | | | | 0.367 | | | | 0.439 |
| | | 0.049 | | | | | | | 0.049 |
| | | | 0.085 | | | | | | 0.085 |

15. Appendixes

Refer to separated files for the following appendixes.

- 15.1. Photos and Antenna Locations**
- 15.2. System Performance Check Plots**
- 15.3. Highest SAR Test Plots**
- 15.4. Calibration Certificate for E-Field Probe EX3DV4 - SN 3885**
- 15.5. Calibration Certificate for E-Field Probe EX3DV4 - SN 3901**
- 15.6. Calibration Certificate for E-Field Probe EX3DV3 - SN 3686**
- 15.7. Calibration Certificate for E-Field Probe EX3DV4 - SN 3989**
- 15.8. Calibration Certificate for E-Field Probe EX3DV4 - SN 3990**
- 15.9. Calibration Certificate for D750V3 - SN 1019**
- 15.10. Calibration Certificate for D835V2 - SN 4d002**
- 15.11. Calibration Certificate for D1750V2 - SN 1050**
- 15.12. Calibration Certificate for D1900V2- SN 5d043**
- 15.13. Calibration Certificate for D2450V2 - SN 748**
- 15.14. Calibration Certificate for D5GHzV2 - SN 1003**

END OF REPORT