



# MOTOROLA

## Portable Cellular Phone SAR Test Report

**Tests Requested By:** Motorola Mobility, LLC  
600 N. US Highway 45  
Libertyville, IL 60048

**Test Report #:** 25430-1F  
**Date of Report:** Jun-28-2013  
**Date of Test:** May-08-2013 to Jun-20, 2013  
**FCC ID #:** IHDT56PE1  
**IC ID #:** N/A  
**Generic Name:** M0D95

**Test Laboratory:** Motorola Mobility, LLC - ADR Test Services Laboratory  
600 N. US Highway 45  
Libertyville, IL 60048

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This laboratory is accredited to ISO/IEC 17025-2005 to perform the following tests:

### Accreditation:



<p><u>Tests:</u> Electromagnetic Specific Absorption Rate</p>	<p><u>Procedures:</u> IEC 62209-1 RSS-102 IEEE 1528 - 2003 FCC OET Bulletin 65 (<i>including Supplement C</i>) Australian Communications Authority Radio Communications (Electromagnetic Radiation – Human Exposure) Standard 2003 CENELEC EN 50360 ARIB Std. T-56 (2002)</p>
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### On the following products or types of products:

Wireless Communications Devices (Examples): Two Way Radios; Portable Phones (including Cellular, Licensed Non-Broadcast and PCS); Low Frequency Readers; and Pagers

### Statement of Compliance:

Motorola declares under its sole responsibility that the portable cellular telephone model to which this declaration relates, is in conformity with the appropriate General Population/Uncontrolled RF exposure standards, recommendations and guidelines (FCC 47 CFR §2.1093) as well as with CENELEC en50360:2001 and ANSI / IEEE C95.1. It also declares that the product was tested in accordance with IEEE 1528 / CENELEC EN62209-1 (2006), along with other published guidance indicated in the references at the end of this report, as well as other appropriate measurement standards, guidelines and recommended practices. Any deviations from these standards, guidelines and recommended practices are noted below:

(none)

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This test report shall not be reproduced except in full, without written approval of the laboratory. The results and statements contained herein relate only to the items tested. The names of individuals involved may be mentioned only in connection with the statements or results from this report. Motorola encourages all feedback, both positive and negative, on this test report.

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### Revision History

Revision Version	Date	Notes
Rev. 0	Jun-28-2013	Initial report release

## 1 Introduction

The Motorola Mobility ADR Test Services Laboratory has performed measurements of the maximum potential exposure to the user of the portable cellular phone covered by this test report. The Specific Absorption Rate (SAR) of this product was measured. The portable cellular phone was tested in accordance with [1], [4], [5], [9], and per FCC KDB 941225 D06 for mobile hotspot operation. The SAR values measured for the portable cellular phone are below the maximum recommended levels of 1.6 W/kg in a 1 g average set in [3] and 2.0 W/kg in a 10 g average set in [2].

Transmit Band	Head SAR (1 g <sup>w</sup> /kg)	Body-Worn Accessory SAR (1 g <sup>w</sup> /kg)	Mobile Hotspot SAR (1 g <sup>w</sup> /kg)
LTE Band 13	0.69	0.27	0.7
LTE Band 4	1.01	0.3	1.15
CDMA 800	0.90	0.53	1.02
CDMA 1900	1.02	0.16	1.13
GSM 850	0.31	0.21	0.57
GSM 1900	0.45	0.07	0.53
WCDMA 850	0.36	0.28	0.5
WCDMA 1900	0.76	0.11	1.15
Wi-Fi 2.45 GHz	0.26	0.02	0.19
Wi-Fi 5.2 GHz	0.08	0.03	N/A
Wi-Fi 5.8 GHz	0.12	0.04	0.14
Bluetooth	N/A		
Simultaneous SAR	1.60		

## 2 Details of the Device Under Test

### 2.1 Sample Information

<b>Serial Number(s) (Functional Use)</b>	LUME290020 (CDMA conducted power measurements, CDMA/Wi-Fi SAR testing) LUME290014 (GSM conducted power measurements, GSM/CDMA SAR testing) LUME290017 (WCDMA conducted power measurements, WCDMA/LTE Band 4/13 SAR testing) LUME290016 (LTE Band 4 conducted power measurements, LTE Band 4 SAR testing) LUME290023 (LTE Band 13 conducted power measurements, LTE Band 4/13 SAR testing) LUME290022 (Wi-Fi 2.4 GHz conducted power measurements)
<b>Production Unit or Identical Prototype (47 CFR §2.908)</b>	Identical Prototype
<b>Device Category</b>	Portable (Mobile Station Class B)
<b>RF Exposure Limits</b>	General Population / Uncontrolled

### 2.2 Antenna Description

#### Main (835/1880 MHz) Antenna

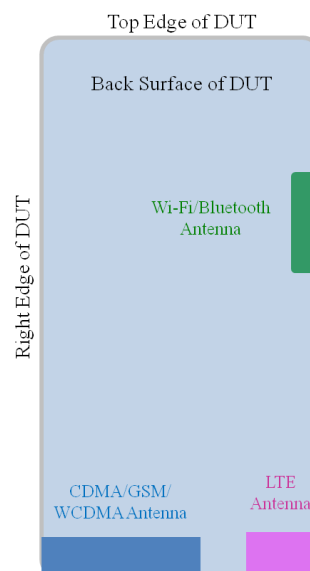
<b>Type</b>	Internal	
<b>Location</b>	Bottom of Transceiver	
<b>Dimensions</b>	Width	5.2 mm
	Length	27.23 mm

#### LTE (780/1730 MHz) Antenna

<b>Type</b>	Internal	
<b>Location</b>	Right-Side Rear of Transceiver	
<b>Dimensions</b>	Width	6.9 mm
	Length	17.66 mm

#### Wi-Fi/Bluetooth Antenna

<b>Type</b>	Internal	
<b>Location</b>	Left Edge of Transceiver	
<b>Dimensions</b>	Width	2.8 mm
	Length	12.2 mm



## 2.3 Transmission Band Summary

Mode(s) of Operation	Modulation Mode(s)	Target Output Power Setting	Maximum Output Power Setting	Duty Cycle	Transmitting Frequency Range(s)
LTE Band 4	QPSK, 16QAM	23.0 dBm	24.0 dBm	1:1	1710.0 - 1755.0 MHz
LTE Band 13	QPSK, 16QAM	23.0 dBm	24.0 dBm	1:1	777.0 - 787.0 MHz
CDMA 800	QPSK	24.0 dBm	25.0 dBm	1:1	824.70 - 848.31 MHz
CDMA 1900	QPSK	24.0 dBm	25.0 dBm	1:1	1851.20 - 1908.75 MHz
GSM 850	GMSK	32.5 dBm	33.5 dBm	1:8.3	824.2 - 848.8 MHz
GPRS/EDGE 850	GMSK	32.5 dBm	33.5 dBm	1:8.3, 2:8.3, 3:8.3, 4:8.3	824.2 - 848.8 MHz
EDGE 850	8PSK	27.0 dBm	28.0 dBm	1:8.3, 2:8.3, 3:8.3, 4:8.3	824.2 - 848.8 MHz
GSM 900	GMSK	32.5 dBm	33.5 dBm	1:8.3	880.2 - 914.8 MHz
GPRS/EDGE 900	GMSK	32.5 dBm	33.5 dBm	1:8.3, 2:8.3, 3:8.3, 4:8.3	880.2 - 914.8 MHz
EDGE 900	8PSK	27.0 dBm	28.0 dBm	1:8.3, 2:8.3, 3:8.3, 4:8.3	880.2 - 914.8 MHz
GSM 1800	GMSK	29.5 dBm	30.5 dBm	1:8.3	1710.2 - 1784.8 MHz
GPRS/EDGE 1800	GMSK	29.5 dBm	30.5 dBm	1:8.3, 2:8.3, 3:8.3, 4:8.3	1710.2 - 1784.8 MHz
EDGE 1800	8PSK	26.0 dBm	27.0 dBm	1:8.3, 2:8.3, 3:8.3, 4:8.3	1710.2 - 1784.8 MHz
GSM 1900	GMSK	29.5 dBm	30.5 dBm	1:8.3	1850.2 - 1909.8 MHz
GPRS/EDGE 1900	GMSK	29.5 dBm	30.5 dBm	1:8.3, 2:8.3, 3:8.3, 4:8.3	1850.2 - 1909.8 MHz
EDGE 1900	8PSK	26.0 dBm	27.0 dBm	1:8.3, 2:8.3, 3:8.3, 4:8.3	1850.2 - 1909.8 MHz
WCDMA 850	QPSK	23.0 dBm	24.0 dBm	1:1	826.4 - 846.6 MHz
WCDMA 900	QPSK	23.0 dBm	24.0 dBm	1:1	882.4 - 912.6 MHz
WCDMA 1900	QPSK	23.0 dBm	24.0 dBm	1:1	1852.4 - 1907.6 MHz
WCDMA 2100	QPSK	23.0 dBm	24.0 dBm	1:1	1922.4 - 1977.6 MHz
Wi-Fi 802.11b/g/n	BPSK	19.06 dBm		1:1	2412.0 - 2462.0 MHz
Wi-Fi 802.11a/n/ac	BPSK	13.62 dBm		1:1	5180.0 - 5240.0 MHz
Wi-Fi 802.11a/n/ac	BPSK	13.27 dBm		1:1	5745.0 - 5825.0 MHz
Bluetooth	GFSK	10.57 dBm		1:1	2402.0 - 2480.0 MHz

## 2.4 Device Test Setup, Operating Configurations, and Conducted Power Measurements

### 2.4.1 LTE

#### Technical Description

##### LTE Summary Information

<b>FCC ID</b>			IHDT56PE1
<b>Form Factor</b>			Portable Handset
<b>Frequency Range(s)</b>			See Section 2.3
<b>Channel Bandwidth(s)</b>			Band 4: 20, 15, 10, 5, 3, 1.4 MHz Band 13: 10, 5 MHz
<b>Low, Middle, High Channel Numbers and Frequencies</b>			
<b>Low</b>	<b>Mid</b>	<b>High</b>	<b>Band: Channel Bandwidth</b>
--	20175 (1732.5 MHz)	--	Band 4: 20 MHz
20025 (1717.5 MHz)	20175 (1732.5 MHz)	20325 (1747.5 MHz)	Band 4: 15 MHz
20000 (1715.0 MHz)	20175 (1732.5 MHz)	20350 (1750.0 MHz)	Band 4: 10 MHz
19975 (1712.5 MHz)	20175 (1732.5 MHz)	20375 (1752.5 MHz)	Band 4: 5 MHz
19965 (1711.5 MHz)	20175 (1732.5 MHz)	20385 (1753.5 MHz)	Band 4: 3 MHz
19956 (1710.6 MHz)	20175 (1732.5 MHz)	20394 (1754.4 MHz)	Band 4: 1.4 MHz
--	23230 (782.0 MHz)	--	Band 13: 10 MHz
--	23230 (782.0 MHz)	--	Band 13: 5 MHz
<b>UE Category</b>			3
<b>Modulations Supported</b>			QPSK, 16QAM
<b>Description of LTE Tx and Antenna Implementation</b>			Band 4: 1 TX Antenna, 1 RX Antenna Band 17: 1 TX/RX Antenna,
<b>LTE Voice Available?</b>			Yes (VOIP clients Only)
<b>Hotspot with LTE + Wi-Fi?</b>			Yes
<b>Hotspot with LTE + Wi-Fi active with Voice sessions?</b>			Yes (SVLTE with CDMA only)
<b>LTE MPR Permanently Implemented per 3GPP TS 36.101?</b>			Yes
<b>A-MPR disabled for SAR Testing?</b>			Yes
<b>Conducted power table providing measurements across 1 RB, 50% RB and 100% RB allocations?</b>			Yes
<b>Table provided specifying other US wireless operating modes?</b>			Yes
<b>Table provided specifying maximum average conducted power for these other wireless modes?</b>			Yes
<b>Table provided identifying simultaneous transmission conditions?</b>			Yes
<b>Power Reduction used for SAR compliance?</b>			Yes
<b>Power Reduction used for GSM/WCDMA?</b>			No
<b>Power Reduction used for LTE?</b>			Yes
<b>Power Reduction used for SVLTE?</b>			Yes
<b>Test Equipment used</b>			CMW500 SW version 2.1.28.9

LTE Maximum Power Reduction (MPR) conditions are defined in 3GPP 36-521, section 6.2.3.3:

**6.2.3.3 Minimum conformance requirements**

For UE Power Class 3, the allowed Maximum Power Reduction (MPR) for the maximum output power in Table 6.2.2.3-1 due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3.3-1.

**Table 6.2.3.3-1: Maximum Power Reduction (MPR) for Power Class 3**

Modulation	Channel bandwidth / Transmission bandwidth configuration [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

For the UE maximum output power modified by MPR, the power limits specified in subclause 6.2.5.3 apply. The normative reference for this requirement is TS 36.101 clause 6.2.3.

For the device’s architecture, MPR is permanently implemented. Per the chart above, the following MPR is used:

Modulation	1.4 MHz		3 MHz		5 MHz		10 MHz		15 MHz		20 MHz	
	# of RBs	MPR (dB)	# of RBs	MPR (dB)	# of RBs	MPR (dB)	# of RBs	MPR (dB)	# of RBs	MPR (dB)	# of RBs	MPR (dB)
QPSK	> 5	1	> 4	1	> 8	1	> 12	1	> 16	1	> 18	1
16 QAM	≤ 5	1	≤ 4	1	≤ 8	1	≤ 12	1	≤ 16	1	≤ 18	1
16 QAM	> 5	2	> 4	2	> 8	2	> 12	2	> 16	2	> 18	2

The table applies for any RB start value. RBs are assigned contiguously. Thus, given the maximum power limits stated in 2.2 and the MPR described above, the maximum power for the SAR test cases in channel bandwidths greater than 1.4 MHz is as follows:

Test Case	Band 4	Band 13
	Max Power (dBm)	Max Power (dBm)
QPSK, 1 RB Allocation	24.0	24.0
QPSK, 50% RB Allocation	23.0	23.0
QPSK, 100% RB Allocation	23.0	23.0
16QAM, 1 RB Allocation	23.0	23.0
16QAM, 50% RB Allocation	22.0	22.0
16QAM, 100% RB Allocation	22.0	22.0

The maximum power for the SAR test cases in a 1.4 MHz channel bandwidth is as follows:

Test Case	Band 4
	Max Power (dBm)
QPSK, 1 RB Allocation	24.0
QPSK, 50% RB Allocation	24.0
QPSK, 100% RB Allocation	23.0
16QAM, 1 RB Allocation	23.0
16QAM, 50% RB Allocation	23.0
16QAM, 100% RB Allocation	22.0

## **Exposure Conditions and Test Exclusions**

<b>Mode</b>	<b>Type</b>	<b>Head-Adjacent</b>	<b>Body-Worn Accessory</b>	<b>Mobile Hotspot</b>
All Modes, QPSK modulation	Data	Tested (1)	Tested (1)	Tested
All Modes, 16QAM modulation	Data	Excluded (2)	Excluded (2)	Excluded (2)

### Notes:

- (1) QPSK modulation, as a data-only mode, was tested against the Head and in Body-Worn Accessory exposure conditions to support evaluation for SVLTE and VOIP applications potentially installed and used by the end-user.
- (2) 16QAM modulation was excluded from testing per FCC KDB 941225 D05, as the maximum output power in this mode is not more than ½ dB higher than each comparable mode in QPSK and the *reported* SAR results for QPSK mode testing were less than 1.45 <sup>W</sup>/kg.

## **Device Test Setup**

For LTE modes, the test sample was operated using transmission to a base station simulator. The base station simulator was configured per the guidance provided in FCC KDB 941225 D05, with closed-loop power control enforced to ensure the phone transmits at maximum output power.

### Conducted Power Measurements

#### LTE Band 4

LTE Band 4 (20 MHz Channel Bandwidth) - Measured Conducted Power (dBm)																
Modulation	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	16QAM	16QAM	16QAM	16QAM	16QAM	16QAM		
Start RB	0	50	99	0	25	50	0	0	50	99	0	25	50	0		
RB Allocation	1	1	1	50	50	50	100	1	1	1	50	50	50	100		
Max Limit (dBm)	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00		
MPR Target (dB)	0	0	0	-1	-1	-1	-1	-1	-1	-1	-2	-2	-2	-2		
Max Limit with MPR (dBm)	24.00	24.00	24.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	22.00	22.00	22.00	22.00		
Channel BW	Frequency (MHz)	Channel														
20 MHz	1732.5	20175	23.83	23.75	23.79	23.11	23.00	22.95	22.98	22.75	22.63	22.59	22.12	22.11	22.01	22.07

LTE Band 4 (15 MHz Channel Bandwidth) - Measured Conducted Power (dBm)																
Modulation	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	16QAM	16QAM	16QAM	16QAM	16QAM	16QAM		
Start RB	0	37	74	0	19	39	0	0	37	74	0	19	39	0		
RB Allocation	1	1	1	36	36	36	75	1	1	1	36	36	36	75		
Max Limit (dBm)	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00		
MPR Target (dB)	0	0	0	-1	-1	-1	-1	-1	-1	-1	-2	-2	-2	-2		
Max Limit with MPR (dBm)	24.00	24.00	24.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	22.00	22.00	22.00	22.00		
Channel BW	Frequency (MHz)	Channel														
15 MHz	1717.5	20025	23.93	23.90	23.94	23.23	23.16	23.15	23.04	23.22	23.18	23.19	22.06	22.10	22.08	22.07
15 MHz	1732.5	20175	23.89	23.77	23.67	23.17	23.03	22.95	22.82	22.80	22.59	22.57	22.16	22.10	22.05	21.97
15 MHz	1747.5	20325	23.77	23.74	23.70	22.87	22.77	22.82	22.72	23.15	23.05	23.02	21.99	21.90	21.89	21.83

LTE Band 4 (10 MHz Channel Bandwidth) - Measured Conducted Power (dBm)																
Modulation	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	16QAM	16QAM	16QAM	16QAM	16QAM	16QAM		
Start RB	0	25	49	0	12	25	0	0	25	49	0	12	25	0		
RB Allocation	1	1	1	25	25	25	50	1	1	1	25	25	25	50		
Max Limit (dBm)	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00		
MPR Target (dB)	0	0	0	-1	-1	-1	-1	-1	-1	-1	-2	-2	-2	-2		
Max Limit with MPR (dBm)	24.00	24.00	24.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	22.00	22.00	22.00		
Channel BW	Frequency (MHz)	Channel														
10 MHz	1715.0	20000	23.88	23.87	23.95	23.13	23.15	23.20	23.08	22.74	22.69	22.78	22.12	22.20	22.24	22.08
10 MHz	1732.5	20175	23.85	23.70	23.71	23.08	23.08	23.04	23.01	22.73	22.58	22.66	22.09	22.10	22.04	21.99
10 MHz	1750.0	20350	23.66	23.60	23.68	22.86	22.81	22.79	22.79	23.00	22.95	23.07	21.83	21.86	21.92	21.79

LTE Band 4 (5 MHz Channel Bandwidth) - Measured Conducted Power (dBm)																
Modulation	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	16QAM	16QAM	16QAM	16QAM	16QAM	16QAM		
Start RB	0	12	24	0	6	13	0	0	12	24	0	6	13	0		
RB Allocation	1	1	1	12	12	12	25	1	1	1	12	12	12	25		
Max Limit (dBm)	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00		
MPR Target (dB)	0	0	0	-1	-1	-1	-1	-1	-1	-1	-2	-2	-2	-2		
Max Limit with MPR (dBm)	24.00	24.00	24.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	22.00	22.00	22.00		
Channel BW	Frequency (MHz)	Channel														
5 MHz	1712.5	19975	23.90	23.83	23.81	23.16	23.09	23.22	23.06	22.65	22.68	22.68	22.06	22.04	22.14	22.09
5 MHz	1732.5	20175	23.84	23.78	23.74	23.12	23.14	23.06	23.11	23.18	23.13	23.11	22.18	22.18	22.10	22.08
5 MHz	1752.5	20375	23.54	23.64	23.64	22.81	22.85	22.89	22.81	23.10	23.21	23.30	21.87	21.91	21.87	21.77

<b>LTE Band 4 (3 MHz Channel Bandwidth) - Measured Conducted Power (dBm)</b>																
Modulation	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	16QAM	16QAM	16QAM	16QAM	16QAM	16QAM		
Start RB	0	7	14	0	3	7	0	0	7	14	0	3	7	0		
RB Allocation	1	1	1	8	8	8	15	1	1	1	8	8	8	15		
Max Limit (dBm)	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00		
MPR Target (dB)	0	0	0	-1	-1	-1	-1	-1	-1	-1	-2	-2	-2	-2		
Max Limit with MPR (dBm)	24.00	24.00	24.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	22.00	22.00	22.00	22.00		
Channel BW	Frequency (MHz)	Channel														
3 MHz	1711.5	19965	23.83	23.80	23.82	23.15	23.06	23.12	23.08	22.69	22.65	22.67	22.16	22.08	22.11	22.05
3 MHz	1732.5	20175	23.81	23.66	23.67	23.10	23.08	22.98	23.01	21.06	22.54	22.56	22.12	22.14	21.99	22.04
3 MHz	1753.5	20385	23.72	23.68	23.71	22.87	22.81	22.86	22.85	23.01	22.45	22.38	21.96	21.91	21.94	21.87

<b>LTE Band 4 (1.4 MHz Channel Bandwidth) - Measured Conducted Power (dBm)</b>																
Modulation	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	16QAM	16QAM	16QAM	16QAM	16QAM	16QAM		
Start RB	0	3	5	0	1	3	0	0	3	5	0	1	3	0		
RB Allocation	1	1	1	3	3	3	6	1	1	1	3	3	3	6		
Max Limit (dBm)	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00		
MPR Target (dB)	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-2		
Max Limit with MPR (dBm)	24.00	24.00	24.00	24.00	24.00	24.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	22.00		
Channel BW	Frequency (MHz)	Channel														
1.4 MHz	1710.6	19956	23.84	23.87	23.87	23.77	23.77	23.76	23.17	23.30	23.29	23.32	23.10	23.04	23.04	21.97
1.4 MHz	1732.5	20175	23.72	23.66	23.65	23.74	23.86	23.68	23.08	22.57	22.59	22.55	23.26	23.27	23.14	22.28
1.4 MHz	1754.4	20394	23.66	23.60	23.64	23.56	23.57	23.58	22.89	22.71	22.66	22.70	22.91	22.81	22.89	21.98

LTE Band 13

<b>LTE Band 13 (10 MHz Channel Bandwidth) - Measured Conducted Power (dBm)</b>																
Modulation	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	16QAM	16QAM	16QAM	16QAM	16QAM	16QAM		
Start RB	0	25	49	0	12	25	0	0	25	49	0	12	25	0		
RB Allocation	1	1	1	25	25	25	50	1	1	1	25	25	25	50		
Max Limit (dBm)	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00		
MPR Target (dB)	0	0	0	-1	-1	-1	-1	-1	-1	-1	-2	-2	-2	-2		
Max Limit with MPR (dBm)	24.00	24.00	24.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	22.00	22.00	22.00		
Channel BW	Frequency (MHz)	Channel														
10 MHz	782.0	23230	23.99	23.80	23.84	22.67	22.56	22.64	22.45	23.05	22.84	22.98	21.76	21.69	21.68	21.38

<b>LTE Band 13 (5 MHz Channel Bandwidth) - Measured Conducted Power (dBm)</b>																
Modulation	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	16QAM	16QAM	16QAM	16QAM	16QAM	16QAM		
Start RB	0	12	24	0	6	13	0	0	12	24	0	6	13	0		
RB Allocation	1	1	1	12	12	12	25	1	1	1	12	12	12	25		
Max Limit (dBm)	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00		
MPR Target (dB)	0	0	0	-1	-1	-1	-1	-1	-1	-1	-2	-2	-2	-2		
Max Limit with MPR (dBm)	24.00	24.00	24.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	22.00	22.00	22.00		
Channel BW	Frequency (MHz)	Channel														
5 MHz	782.0	23230	23.79	23.78	23.76	22.71	22.72	22.68	22.55	22.21	22.26	22.31	21.80	21.72	21.77	21.73

## 2.4.2 CDMA

### Technical Description

The phone under test contains CDMA2000 1x and CDMA2000 1xEV-DO (Rel. A) transmitters that support both voice (circuit-switched) and data (packet-switched) capabilities.

### Exposure Conditions and Test Exclusions

Mode	Type	Head-Adjacent	Body-Worn Accessory	Mobile Hotspot
RC3 SO55 Loopback	Voice	Tested (1)	Excluded (2)	N/A
RC1 SO55 Loopback	Voice	Excluded (2)	Excluded (2)	N/A
TDSO SO32 FCH	Data	Tested (3)	Tested (1)	Excluded (2)
TDSO SO32 FCH+SCH	Data	Excluded (2)	Excluded (2)	Excluded (2)
EVDO Rel. 0 (RTAP)	Data	Excluded (2)	Excluded (2)	Tested (1)
EVDO Rel. A (RETAP)	Data	Excluded (2)	Excluded (2)	Excluded (2)

#### Notes:

- (1) Per FCC KDB 941225 D01, RC3 SO55 is tested as the default mode for Head SAR measurements, TDSO SO32 on FCH with other code channels disabled is tested as the default mode for Body SAR measurements, and EVDO Rel. 0 (RTAP) is tested as the default mode in the Mobile Hotspot SAR exposure condition as a EVDO Data Device.
- (2) Per FCC KDB 941225 D01, the noted modes were excluded from testing as each exhibited measured output power not higher than that found in the default modes for each exposure condition.
- (3) TDSO SO32 FCH, as a data-only mode, was tested against the Head to support evaluation for 3<sup>rd</sup> Party VOIP applications potentially installed and used by the end-user.

### Device Test Setup

For CDMA modes, the test sample was operated using transmission to a base station simulator. The base station simulator was set up for the proper channel and transmit mode of operation on the phone's uplink. The transmitter power level and power control were set to "All Up Bits" for RC3 operation, and "Alternating Bits" for TDSO SO32 operation.

### Conducted Power Measurements

Power measurements were executed per FCC KDB 941225 D01:

Measured Conducted Power (dBm) for CDMA modes							
Band	Channel	Loopback		Data		EVDO Rel. 0	EVDO Rel. A
		RC3 SO55	RC1 SO55	TDSO SO32 FCH	TDSO SO32 FCH+SCH	RTAP 153.6k	Subtype 2 RETAP
CDMA 800	1013	24.9	24.73	24.74	24.69	24.77	24.77
	384	24.56	24.35	24.34	24.3	24.39	24.38
	777	24.4	24.18	24.17	24.13	24.23	24.22
CDMA 1900	25	24.94	24.85	24.83	24.83	24.89	24.89
	600	24.99	24.91	24.89	24.89	24.93	24.92
	1175	24.7	24.61	24.6	24.59	24.64	24.63

Note that the device's system architecture does not support simultaneous voice and data during a single CDMA session to the cellular network. Operation in TDSO and EVDO modes is for data transmission only.

## 2.4.3 GSM

### Technical Description

The phone under test contains a GSM transmitter that supports voice (circuit-switched) capability, and data (packet-switched) capabilities over GPRS/EDGE (GMSK) or EDGE (8PSK).

### Exposure Conditions and Test Exclusions

Mode	Type	Head-Adjacent	Body-Worn Accessory	Mobile Hotspot
GSM (GMSK 1-Slot)	Voice	Tested	Tested	N/A
GPRS/EDGE (GMSK Multi-Slot)	Data	Tested (1) (3)	Tested (1) (3)	Tested (3)
EDGE (8PSK Multi-Slot)	Data	Excluded (2) (3)	Excluded (2) (3)	Excluded (2) (3)

#### Notes:

- (1) GPRS/EDGE (GMSK Multi-Slot), as a data-only mode, was tested against the Head and in Body-Worn Accessory exposure conditions to support evaluation for 3<sup>rd</sup> Party VOIP applications potentially installed and used by the end-user.
- (2) EDGE (8PSK Multi-Slot) was excluded from testing per FCC KDB 941225 D03, as the source-based time-averaged output power in this mode is lower than that measured in normal GSM voice mode and GPRS/EDGE (GMSK Multi-Slot) data modes.
- (3) GPRS/EDGE (GMSK Multi-Slot) and EDGE (8PSK Multi-Slot) utilize reduced output power as additional time slots are transmitted in the uplink frame, as demonstrated in the following table. The values noted are maximum limits, and conform to the same power tune-up tolerances noted in section 2.3 above. The multi-slot configuration that results in the highest source-based time-averaged output power from the device was chosen for testing when testing of these modes is required.

GSM Data Functionality	GPRS/EDGE Class 12 (4 uplink timeslots; 4 downlink timeslots; 5 total timeslots per frame)							
	Class B (DTM not supported)							
Mode(s) of Operation	GPRS/EDGE 850				GPRS/EDGE 1900			
Modulation	GMSK				GMSK			
Maximum TX Burst Output Power Setting (dBm)	33.5	31.0	28.75	<b>28.0</b>	30.5	28.0	25.75	<b>25.0</b>
Maximum Time Average Output Power Setting (dBm)	24.3	24.8	24.3	<b>24.8</b>	21.3	21.8	21.3	<b>21.8</b>
Duty Cycle	1:8.3	2:8.3	3:8.3	<b>4:8.3</b>	1:8.3	2:8.3	3:8.3	<b>4:8.3</b>
Transmitting Frequency Range(s)	824.2 - 848.8 MHz				1850.2 - 1909.8 MHz			
Mode(s) of Operation	EDGE 850				EDGE 1900			
Modulation	8PSK				8PSK			
Maximum TX Burst Output Power Setting (dBm)	28.0	25.5	24.0	22.5	27.0	24.5	22.75	21.5
Maximum Time Average Output Power Setting (dBm)	18.8	19.3	19.6	19.3	17.8	18.3	18.3	18.3
Duty Cycle	1:8.3	2:8.3	3:8.3	4:8.3	1:8.3	2:8.3	3:8.3	4:8.3
Transmitting Frequency Range(s)	824.2 - 848.8 MHz				1850.2 - 1909.8 MHz			

### Device Test Setup

For GSM modes, the test sample was operated using transmission to a base station simulator. The base station simulator was set up for the proper channel and transmit mode of operation on the phone's uplink. The transmitter power level and power control were set to maximum at power step 5 for GSM 850 band, and power step 0 for GSM 1900 band.

**Conducted Power Measurements**

Band	Channel	Conducted power (dBm) for GSM modes (Burst Average Power)								
		GSM CS Voice (1 Slot)	GPRS PS Data (1 Slot)	GPRS PS Data (2 Slots)	GPRS PS Data (3 Slots)	GPRS PS Data (4 Slots)	EDGE PS Data (1 Slot)	EDGE PS Data (2 Slots)	EDGE PS Data (3 Slots)	EDGE PS Data (4 Slots)
GSM 850	128	33.24	33.39	29.93	27.87	27.03	26.02	23.31	21.36	19.89
	190	33.21	33.33	29.96	27.82	27.43	26.01	23.31	21.30	20.53
	251	32.97	33.10	29.72	27.88	26.59	25.92	23.24	21.25	19.80
GSM 1900	512	30.37	30.37	27.17	25.35	24.10	25.21	22.62	21.10	19.99
	661	30.24	30.19	27.13	25.50	24.13	25.32	22.73	21.26	20.02
	810	30.30	30.40	27.15	25.20	23.94	25.25	22.68	20.92	20.03

Band	Channel	Conducted power (dBm) for GSM modes (Source-Based Time-Averaged Power)								
		GSM CS Voice (1 Slot)	GPRS PS Data (1 Slot)	GPRS PS Data (2 Slots)	GPRS PS Data (3 Slots)	GPRS PS Data (4 Slots)	EDGE PS Data (1 Slot)	EDGE PS Data (2 Slots)	EDGE PS Data (3 Slots)	EDGE PS Data (4 Slots)
GSM 850	128	24.05	24.20	23.75	23.45	23.86	16.83	17.13	16.94	16.72
	190	24.02	24.14	23.78	23.40	24.26	16.82	17.13	16.88	17.36
	251	23.78	23.91	23.54	23.46	23.42	16.73	17.06	16.83	16.63
GSM 1900	512	21.18	21.18	20.99	20.93	20.93	16.02	16.44	16.68	16.82
	661	21.05	21.00	20.95	21.08	20.96	16.13	16.55	16.84	16.85
	810	21.11	21.21	20.97	20.78	20.77	16.06	16.50	16.50	16.86

Burst Average Power was measured using a power meter set to the appropriate profile to capture average power in the transmitting timeslot(s). Source-Based Time-Averaged Power, being related to the Burst Average Power by a fixed factor dependent on the number of time slots active in the frame, was calculated as follows (in dB), where x is the number of time slots active:

$$P_{Source} = P_{Burst} - 10 * \log \left( \frac{x}{8.3} \right)$$

CS Voice denotes circuit-switched transmission for voice call operation, and PS Data denotes packet-switched transmission for data sessions.

## 2.4.4 WCDMA

### Technical Description

The phone under test contains a WCDMA transmitter designed per 3GPP TS 25.101, that supports both voice and data capabilities.

### Exposure Conditions and Test Exclusions

Mode	Type	Head-Adjacent	Body-Worn Accessory	Mobile Hotspot
RMC	Voice/ Data	Tested	Tested	Tested
AMR	Voice/ Data	Excluded (1)	Excluded (1)	Excluded (1)
HSDPA (Rel 5) Modes	Data	Excluded (1)	Excluded (1)	Excluded (1)
HSPA (Rel 6) Modes	Data	Excluded (1)	Excluded (1)	Excluded (1)

Notes:

(1) AMR, HSDPA (Rel. 5), and HSPA (Rel. 6) were excluded from testing per FCC KDB 941225 D01, as the measured output power in these modes is not more than ¼ dB higher than that measured in RMC.

### Device Test Setup

For WCDMA modes, the test sample was operated using transmission to a base station simulator. The base station simulator was set up for the proper channel and transmit mode of operation on the phone’s uplink. The transmitter power level and transmit power control were set to “All 1’s” for RMC and AMR modes in WCDMA or HSDPA, or inner loop power control procedures were applied to maintain maximum output power while HSUPA was active.

### Conducted Power Measurements

Power measurements were executed per FCC KDB 941225 D01:

Band	Channel	Conducted power (dBm) for WCDMA modes		Conducted Power (dBm) for WCDMA – HSDPA (Rel 5) Modes				Conducted Power (dBm) for WCDMA – HSPA (HSUPA/HSDPA-Rel 6) Modes				
		RMC	AMR	Subtest 1	Subtest 2	Subtest 3	Subtest 4	Subtest 1	Subtest 2	Subtest 3	Subtest 4	Subtest 5
WCDMA 850	4132	23.86	24	23.11	22.5	22.52	22.45	22.5	22.47	22.94	22.86	22.95
	4180	23.9	23.96	23.05	22.49	22.48	22.47	22.55	22.51	22.95	22.9	22.95
	4233	23.88	23.89	23.04	22.46	22.41	22.4	22.48	22.42	22.88	22.81	22.86
WCDMA 1900	9262	23.99	24.04	22.91	22.28	22.27	22.24	22.65	22.42	22.72	22.75	22.82
	9400	23.89	23.96	22.77	22.16	22.2	22.14	22.5	22.43	22.8	22.76	22.75
	9538	23.86	23.89	22.75	22.16	22.2	22.17	22.51	22.38	22.76	22.71	22.73

Maximum Power Reduction (MPR)

According to 3GPP 25.101 sub-clause 6.2.2, the maximum output power is allowed to be reduced by following the table.

**Table 6.1A: UE maximum output power with HS-DPCCH and E-DCH**

UE transmit channel configuration	CM (dB)	MPR (dB)
For all combinations of; DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH	$0 \leq CM \leq 3.5$	MAX (CM-1, 0)
Note 1: CM = 1 for $\beta_c/\beta_d=12/15$ , $\beta_{hs}/\beta_c=24/15$ . For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.		

The device supports MPR to solve linearity issues (ACLR or SEM) due to the higher peak-to-average ratios (PAR) of the HSUPA signal. This prevents saturating the full range of the TX DAC inside of device and provides a reduced power output to the RF transceiver chip according to the Cubic Metric (a function of the combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH).

When E-DPDCH channels are present, the beta gains on those channels are reduced first to try to get the power under the allowed limit. If the beta gains are lowered as far as possible, then a hard limiting is applied at the maximum allowed level.

The SW currently recalculates the cubic metric every time the beta gains on the E-DPDCH are reduced. The cubic metric will likely get lower each time this is done. However, there is no reported reduction of maximum output power in the HSUPA mode since the device also provides a mechanism to compensate for the power back-off by increasing the gain of TX\_AGC in the transceiver (PA) device.

The end effect is that the device's output power is identical to the case where there is no MPR in the device.

## 2.4.5 Wi-Fi 802.11

### Technical Description

The phone under test contains a Wi-Fi 802.11b/g/n transmitter capable of data transmission in the 2.45 GHz ISM band, and contains a Wi-Fi 802.11a/n transmitter capable of data transmission in the 5 GHz U-NII bands.

### Exposure Conditions and Test Exclusions

Mode	Type	Head-Adjacent	Body-Worn Accessory	Mobile Hotspot
802.11b / 802.11a	Data	Tested (1)	Tested (1)	Tested (1)
802.11g / 802.11n	Data	Excluded (1)	Excluded (1)	Excluded (1)

Notes:

(1) Per FCC KDB 248227 D01 and the April 2010 FCC/TCB Meeting Notes, the highest average output power channel for the lowest data rate for 802.11b or 802.11a was selected for SAR evaluation. Other 802.11 modes (including 802.11g and 802.11n) were not investigated when the average output powers over all channels and data rates were not more than ¼ dB higher than the tested channel in the lowest data rate of the 802.11b or 802.11a mode. The **bolded** data rates and channels in the following conducted power tables were used for SAR testing. For cases where alternate channels, higher data rates, or 802.11 modes resulted in output power more than ¼ dB higher than the tested configuration, additional SAR tests were conducted. Alternate configurations selected for additional testing are marked in **highlighted bold**, and were tested in all applicable exposure conditions.

### Device Test Setup

For Wi-Fi 802.11 modes, the test sample was operated using manufacturer test mode software per guidance provided in FCC KDB 248227. The test software was set up for the proper channel, transmitter power level and transmit modes of operation on the phone’s uplink.

### Conducted Power Measurements

Band	Channel	Average Conducted Power (dBm) for 802.11b Mode Data Rates			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
2450 MHz	1	<b>18.9</b>	19.01	19.03	19.06
	6	18.88	19.02	19.03	19.02
	11	18.08	18.01	18.04	18.03

Band	Channel	Average Conducted Power (dBm) for 802.11g Mode Data Rates							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
2450 MHz	1	13.79	13.74	13.7	13.71	13.68	13.66	13.66	13.632
	6	17.88	17.87	18.01	17.88	17.9	18.01	16.92	15.99
	11	11.52	11.55	11.52	11.58	11.47	11.52	11.51	11.49

Band	Channel	Average Conducted Power (dBm) for 802.11n Mode Data Rates (20 MHz Channel, 800 ns Guard Interval)							
		6.5 Mbps	13 Mbps	19.5 Mbps	26 Mbps	39 Mbps	52 Mbps	58.5 Mbps	65 Mbps
2450 MHz	1	13.7	13.69	13.69	13.78	13.65	13.62	13.64	12.54
	6	16.78	16.01	15.93	15.86	14.76	14.77	13.55	12.42
	11	11.48	11.53	11.57	11.63	11.55	11.46	11.47	11.46

Band	Channel	Average Conducted Power (dBm) for 802.11n Mode Data Rates (20 MHz Channel, 400 ns Guard Interval)							
		7.2 Mbps	14.4 Mbps	21.6 Mbps	28.8 Mbps	43.3 Mbps	57.7 Mbps	65 Mbps	72.2 Mbps
2450 MHz	1	13.69	13.76	13.73	13.71	13.85	13.69	13.68	12.57
	6	16.82	15.84	15.86	15.9	14.85	14.82	13.6	12.42
	11	11.58	11.55	11.5	11.52	11.39	11.58	11.49	11.39

Band	Channel	Conducted Power (dBm) for 802.11a Mode Data Rates							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
Wi-Fi 5210 MHz	36	<b>13.61</b>	13.62	13.62	13.6	13.55	13.58	12.5	11.589
	40	13.58	13.61	13.57	13.5	13.52	13.59	12.69	11.59
	44	13.56	13.58	13.6	13.59	13.58	13.57	12.7	11.59
	48	13.5	13.6	13.48	13.62	13.55	13.54	12.44	11.62
Wi-Fi 5775 MHz	149	<b>13.19</b>	13.19	13.19	13.17	13.27	13.18	12.12	11.13
	153	13.01	13.07	13.08	13.07	13.08	13.11	12.13	11.18
	157	13.14	13.08	13.2	13.17	13.17	13.03	12.1	11.17
	161	13.17	13.2	13.2	13.19	13.16	13.17	12.13	11.17
	165	13.05	13	12.99	13.03	13.01	12.99	12.06	11.14

Band	Channel	Conducted Power (dBm) for 802.11n Mode Data Rates (20 MHz Channel, 800 ns Guard Interval)							
		6.5 Mbps	13 Mbps	19.5 Mbps	26 Mbps	39 Mbps	52 Mbps	58.5 Mbps	65 Mbps
Wi-Fi 5210 MHz	36	12.74	12.78	11.87	11.65	10.7	9.77	8.83	7.84
	40	12.45	12.45	11.35	11.33	10.48	9.45	8.56	7.42
	44	12.56	12.54	11.69	11.52	10.54	9.71	8.69	7.68
	48	12.52	12.5	11.67	11.63	10.57	9.62	8.73	7.67
Wi-Fi 5775 MHz	149	12.27	12.29	11.3	11.17	10.23	9.45	8.3	7.4
	153	12.18	12.17	11.21	11.21	10.29	9.3	8.37	7.13
	157	12.23	12.2	11.24	11.23	10.17	9.33	8.24	7.02
	161	12.21	12.27	11.21	11.24	10.35	9.34	8.26	7.01
	165	12.16	12.08	11.25	11.13	10.2	9.33	8.19	7.17

Band	Channel	Conducted Power (dBm) for 802.11n Mode Data Rates (20 MHz Channel, 400 ns Guard Interval)							
		7.2 Mbps	14.4 Mbps	21.6 Mbps	28.8 Mbps	43.3 Mbps	57.7 Mbps	65 Mbps	72.2 Mbps
Wi-Fi 5210 MHz	36	12.72	12.75	11.91	11.84	10.66	9.77	8.79	7.84
	40	12.49	12.4	11.43	11.48	10.57	9.64	8.63	7.4
	44	12.58	12.58	11.69	11.65	10.76	9.73	8.78	7.65
	48	12.48	12.61	11.64	11.53	10.72	9.79	8.86	7.76
Wi-Fi 5775 MHz	149	12.2	12.26	11.4	11.33	10.37	9.53	8.45	7.25
	153	12.18	12.18	11.2	11.19	10.28	9.29	8.32	7.33
	157	12.17	12.22	11.27	11.18	10.26	9.37	8.42	7.26
	161	12.17	12.09	11.28	11.21	10.28	9.32	8.37	7.12
	165	12.06	12.18	11.25	11.16	10.29	9.35	8.17	7.2

## 2.4.6 Bluetooth

### Technical Description

The phone under test contains a Bluetooth transmitter capable of data transmission in the 2.45 GHz ISM band.

### Exposure Conditions and Test Exclusions

Mode	Type	Head-Adjacent	Dispatch/Push-to-Talk	Body-Worn Accessory	Mobile Hotspot
All Modes	Data	Excluded (1)	Excluded (1)	Excluded (1)	Excluded (1)

Notes:

(1) Per FCC KDB 447498 D01, standalone SAR measurements of the Bluetooth transmitter in this phone were not required based on the maximum conducted power and the Bluetooth antenna-to-user separation distance. As detailed by the KDB publication, the SAR exclusion threshold for distances < 50 mm is defined by the following equation:

$$\frac{[maximum\ power\ of\ channel,\ including\ tune\ -\ up\ tolerance]_{(mW)}}{[minimum\ test\ separation\ distance]_{(mm)}} \times \sqrt{f_{(GHz)}} \leq 3.0$$

Based on the maximum conducted power of Bluetooth and the most conservative antenna-to-user separation distance used in testing, standalone SAR measurements for Bluetooth were not required.

$$\frac{[11.41]_{(mW)}}{[25]_{(mm)}} \times \sqrt{2.48_{(GHz)}} = 0.72 \leq 3.0$$

Note that simultaneous SAR evaluations include estimations for Bluetooth SAR, as detailed in section 4.6 below.

### Conducted Power Measurements

Frequency [MHz]	Data Rate [Mbps]	Channel Number	Average Conducted Power [mW]
2402	1.0	0	7.293
2441	1.0	39	8.572
2480	1.0	78	7.078
2402	2.0	0	9.217
2441	2.0	39	10.814
2480	2.0	78	8.863
2402	3.0	0	9.745
2441	3.0	39	11.410
2480	3.0	78	9.391

Frequency [MHz]	Mode	Channel Number	Average Conducted Power [mW]
2402	LE	0	8.069
2441	LE	39	9.467
2480	LE	78	7.612

## 2.4.7 Near-Field Communications

### Technical Description

This device contains an integrated Near Field Communications (NFC) module.

### Test Exclusion Evaluation

Evaluation of SAR test requirements for the NFC transmitter was performed per the guidance in FCC KDB 447498, FCC KDB 865664 and FCC KDB 648474. FCC KDB 865664 specifies that the FCC SAR test requirements are applicable to 100 MHz - 6 GHz only, but states that numerical SAR simulation may be appropriate for transmit frequencies below 100 MHz. Additionally, KDB 447498 provides guidance on test exclusion based on maximum transmit power capabilities, which this NFC transmitter falls into. Finally, KDB 648474 states that "phones with built-in NFC, wireless charging or similar functions that do not require separate SAR testing for these specific capabilities can generally be tested according to the normally required SAR measurement procedures. The SAR influence of the additional accessory hardware and functionality to the transmitters and antennas that require SAR Testing are considered during the required SAR testing; therefore, it is transparent to the testing process." Therefore, no SAR measurements of the NFC transmitter are required.

## 2.5 Transmitter power reduction conditions and modes

The phone utilizes reduced limits for the maximum transmit power for its transmitters when operating under the following noted conditions to ensure SAR exposure compliance is maintained. Tables of the reduced limits used for testing are given below. A complete description of this functionality is provided in the “Operational Description” contained within Exhibit 12. The implementation to trigger the reduction in power requires the device to be radiating, which prevents conducted power measurements of this functionality without modification to the unit.

While operating in head-adjacent exposure configurations, reduced power limits are enforced on the LTE Band 4 transmitter. Tables of the reduced limits used for testing are given below.

Mode(s) of Operation	LTE Band 4					
Test Channel	Applicable to all channels/channel bandwidths					
Modulation	QPSK			16QAM		
RB Allocation	1 RB	50%	100%	1 RB	50%	100%
Maximum Output Power Setting (dBm)	24.0	24.0	24.0	24.0	24.0	24.0
Output Power with MPR (dBm)	24.0	23.0	23.0	23.0	22.0	22.0
Reduced Maximum Output Power Setting (dBm)	23.0	23.0	23.0	23.0	22.0	22.0

The DUT supports Simultaneous Voice and LTE (SVLTE), allowing a 1x CDMA voice call while simultaneously providing an LTE link for data transport on the cellular network. While operating in SVLTE, *if the power on the 1x CDMA transmitter for voice is operating above 18 dBm*, a reduced maximum LTE transmit power limit is enforced to ensure SAR exposure compliance is maintained. When the power of the 1x CDMA transmitter is operating at or below 18 dBm or this combination of transmitters is not in use, the LTE transmitter operates up to its maximum power limit. Note that both conditions (1x CDMA above 18 dBm and LTE at reduced power, or 1x CDMA at or below 18 dBm with LTE at full power) are demonstrated for SAR compliance in section 6. A table of the reduced limits used for testing is given below.

Mode(s) of Operation	LTE Band 4					
Test Channel	Applicable to all channels/channel bandwidths					
Modulation	QPSK			16QAM		
RB Allocation	1 RB	50%	100%	1 RB	50%	100%
Maximum Output Power Setting (dBm)	24.0	24.0	24.0	24.0	24.0	24.0
Output Power with MPR (dBm)	24.0	23.0	23.0	23.0	22.0	22.0
Reduced Maximum Output Power Setting (dBm)	20.0	20.0	20.0	20.0	20.0	20.0

Mode(s) of Operation	LTE Band 13					
Test Channel	Applicable to all channels/channel bandwidths					
Modulation	QPSK			16QAM		
RB Allocation	1 RB	50%	100%	1 RB	50%	100%
Maximum Output Power (dBm)	24.0	24.0	24.0	24.0	24.0	24.0
Output Power with MPR (dBm)	24.0	23.0	23.0	23.0	22.0	22.0
Reduced Maximum Output Power (dBm)	21.5	21.5	21.5	21.5	21.5	21.5

The LTE transmitter may also operate as the data transport to the network during a mobile hotspot session. For operation in this state, the noted reduced power limit is strictly enforced regardless of other transmit conditions.

While operating in a mobile hotspot session, either as data transport to the network or voice transport for SVLTE during a mobile hotspot session, a reduced maximum power limit is enforced on the CDMA transmitter to ensure SAR exposure compliance is maintained. A table of the reduced limits used for testing is given below.

Mode(s) of Operation	CDMA 1900
Channel Ranges	25-1175
Maximum Output Power Setting (dBm)	25.0
Reduced Maximum Output Power Setting (dBm)	24.0

See section 6.4 for tables detailing the complete interoperation of this power limit reduction schema.

## **2.6 Accessories for the Device Under Test**

### **2.6.1 Batteries**

The phone tested in this report has the following battery options:

Model SNN5916B - 2000 mAH battery

The model SNN5916B battery is an internally-sealed battery contained within the DUT, and may not be removed by the end-user. This battery was used to do all of the SAR testing. The phone was placed in the SAR measurement system with a fully charged battery.

### **2.6.2 Body-Worn Carry Accessories**

There are no body-worn accessories available for this phone at the time of testing thus the device was tested per the Supplement C testing guidelines for devices that do not have body-worn accessories. A separation distance of 25 mm between the device and the flat phantom was used for testing body-worn accessory SAR. The chosen separation distance of 25 mm is utilized in order to support any case or holder accessories offered or to be offered by Motorola for this product. The device was tested with the front and back of the device facing the phantom. Both sides of the device were tested for Body SAR for the purpose of including the SAR evaluation for body-worn accessories that support the device with either side facing the user.

### **2.6.3 Optional Inductive Charging Accessories**

This device has an inductive charging accessory integrated within battery. The inductive charging door serves as the Wireless Power Receiver in an Inductive Charging System. The receiver is a Wireless Power Consortium (WPC) compliant receiver and requires a WPC compliant transmitter to create the appropriate magnetic field in order to function. The receiver is designed to apply power to the phone when placed in the appropriate magnetic field. Please see a more detailed description in Exhibit 12: Operational Description. Please see Exhibit 3 for external photos of the inductive charging door.

The inductive charging battery was used to do all of the SAR testing.

### 3 Test Equipment Used

#### 3.1 Dosimetric Measurement System

The Motorola Mobility ADR Test Services Laboratory utilizes a DASY52™ Dosimetric Assessment System manufactured by Schmid & Partner Engineering AG (SPEAG™), of Zurich Switzerland. All SAR measurements are taken within a shielded enclosure. The overall 10 g RSS uncertainty of the measurement system is  $\pm 11\%$  ( $K=1$ ) with an expanded uncertainty of  $\pm 22\%$  ( $K=2$ ). The overall 1 g RSS uncertainty of the measurement system is  $\pm 11\%$  ( $K=1$ ) with an expanded uncertainty of  $\pm 22\%$  ( $K=2$ ). The measurement uncertainty budget is given in Appendix 5. Per IEEE 1528, this uncertainty budget is applicable to the SAR range of 0.4 W/kg to 10 W/kg.

The list of calibrated equipment used for the measurements is shown in the following table. All equipment was brought into service and used only during its noted calibration period, except where indicated. Equipment without a calibration period was in service for the entirety of the test period.

Description	Serial Number	Cal Date	Cal Due Date	Service Notes
DASY™ DAE V1	656	07-Feb-2013	07-Feb-2014	Measurement System 1 Removed from service 13-May-2013
DASY™ DAE V1	715	28-Jan-2013	28-Jan-2014	Measurement System 1 Placed into service 13-May-2013
E-Field Probe ES3DV3	3180	11-Feb-2013	11-Feb-2014	Measurement System 1
Twin SAM Phantom V4.0	TP-1156			Measurement System 1
Twin SAM Phantom V4.0	TP-1319			Measurement System 1
MFP V5.1 C Triple Modular Flat Phantom	1101			Measurement System 1
DASY™ DAE V1	376	3-Sep-2012	3-Sep-2013	Measurement System 2
E-Field Probe ES3DV3	3124	20-Aug-2012	20-Aug-2013	Measurement System 2
Twin SAM Phantom V4.0	TP-1235			Measurement System 2
Twin SAM Phantom V4.0	TP-1136			Measurement System 2
MFP V5.1 C Triple Modular Flat Phantom	1102			Measurement System 2
DASY™ DAE V1	784	6-Mar-2013	6-Mar-2014	Measurement System 3
E-Field Probe EX3DV4	3730	24-Aug-2012	24-Aug-2013	Measurement System 3
Twin SAM Phantom V4.0	TP-1106			Measurement System 3
Twin SAM Phantom V4.0	TP-1153			Measurement System 3
MFP V5.1 C Triple Modular Flat Phantom	1103			Measurement System 3
DASY™ DAE V1	703	11-Sep-2012	11-Sep-2013	Measurement System 4
E-Field Probe ES3DV3	3037	13-Sep-2012	13-Sep-2013	Measurement System 4
Twin SAM Phantom V4.0	TP-1132			Measurement System 4
Twin SAM Phantom V4.0	TP-1162			Measurement System 4
MFP V5.1 C Triple Modular Flat Phantom	1104			Measurement System 4
Dipole Validation Kit, D835V2	422tr	18-Mar-2011	18-Mar-2012	Calibration extension, see note.
Dipole Validation Kit, D835V2	423tr	12-Sep-2012	12-Sep-2013	
Dipole Validation Kit, D835V2	436tr	18-Mar-2011	18-Mar-2012	Calibration extension, see note.
Dipole Validation Kit, D1800V2	2d190	5-Jan-2012	5-Jan-2013	Calibration extension, see note.
Dipole Validation Kit, D1800V2	2d191	5-Jan-2012	5-Jan-2013	Calibration extension, see note.
Dipole Validation Kit, D1800V2	259tr	20-Oct-2011	20-Oct-2012	Calibration extension, see note.
Dipole Validation Kit, DV2450V2	877	10-Jan-2012	10-Jan-2013	Calibration extension, see note.
Dipole Validation Kit, D5GHzV2	1098	17-Jan-2012	17-Jan-2013	Calibration extension, see note.

Note: Per FCC KDB 865664 D01, evaluation for the extension of the dipole calibration was carried out. Results are provided in Appendix 7 in addition to the original calibration certificate.

### 3.2 Additional Equipment

Description	Serial Number	Cal Date	Cal Due Date	Service Notes
Signal Generator HP8648C	3847A04810	26-Sep-2011	26-Sep-2013	
Power Meter E4419B	GB39511090	12-Aug-2011	12-Aug-2013	
Power Sensor #1 - E9301A	US39211009	28-Aug-2012	28-Aug-2013	
Power Sensor #2 - E9301A	US39211013	2-Nov-2012	2-Nov-2013	
Signal Generator HP8648C	3847M01245	23-Aug-2011	23-Aug-2013	
Power Meter E4419B	GB39511087	28-Aug-2012	28-Aug-2014	
Power Sensor #1 - E9301A	US39210915	14-Jan-2013	14-Jan-2014	
Power Sensor #2 - E9301A	US39210916	14-Jan-2013	14-Jan-2014	
Signal Generator HP8648C	3847A04632	13-Aug-2011	13-Aug-2013	
Power Meter E4419B	GB39511086	4-Nov-2011	4-Nov-2013	
Power Sensor #1 - E9301A	US39211007	28-Aug-2012	28-Aug-2013	
Power Sensor #2 - E9301A	US39211008	28-Aug-2012	28-Aug-2013	
Signal Generator N5181A	MY50143026	27-Oct-2011	27-Oct-2014	
Power Meter E4419B	GB39511088	11-Aug-2011	11-Aug-2013	
Power Sensor #1 - E9301A	US39210929	27-Jul-2012	27-Jul-2013	
Power Sensor #2 - E9301A	US39210930	27-Jun-2012	27-Jun-2013	
Network Analyzer E5071C	MY46212851	10-May-2012	10-May-2013	
Dielectric Probe Kit DAK-3.5	1072			

### 3.3 Test System Validations

Per [5] and FCC KDB 865664 D01, each SAR system (including probes, system components, and software) used for device testing was validated against its performance specifications prior to deployment. These validation measurements are taken to ensure the accuracy of device test results. Validation measurements utilize reference dipoles and the required tissue-equivalent media, and include assessments of system sensitivity, probe linearity, and probe isotropy. Per FCC KDB 865664 D02, a tabulated summary of the validation results for each SAR system used in testing is given below.

<b>DASY52™ Measurement System 1</b>											
<b>System Validation Measurements</b>											
Probe	Tissue Type	f (MHz)	CW Validations				Modulated Validations				
			Date	Dielectric Parameters			Date	Mod. Type	Dielectric Parameters		Result
				Measured $\sigma$ (S/m)	Measured $\epsilon_r$	Result			Measured $\sigma$ (S/m)	Measured $\epsilon_r$	
3180	Head	750	21-Feb-13	0.8599	41.52	pass					
3180	Head	835	21-Feb-13	0.941	41.98	pass	3/7/2013	GMSK	0.912	39.6	PASS
3180	Head	1800	21-Feb-13	1.37	39.23	pass	3/7/2013	GMSK	1.384	38.24	PASS
3180	Head	1900	21-Feb-13	1.476	38.79	pass					
3180	Head	2450	25-Feb-13	1.75	36.59	pass	3/14/2013	OFDM	1.807	37.8	PASS
3180	Head	2600	25-Feb-13	1.897	36.17	pass					
3180	Body	750	21-Feb-13	0.9525	54.36	pass					
3180	Body	835	21-Feb-13	1	55.04	pass	3/7/2013	GMSK	0.996	54.068	PASS
3180	Body	1800	21-Feb-13	1.445	49.43	pass	3/7/2013	GMSK	1.582	49.18	PASS
3180	Body	1900	21-Feb-13	1.561	49.05	pass					
3180	Body	2450	25-Feb-13	1.926	49.22	pass	3/12/2013	OFDM	1.999	50.5	PASS
3180	Body	2600	25-Feb-13	2.097	48.83	pass					

<b>DASY52™ Measurement System 2</b>											
<b>System Validation Measurements</b>											
Probe	Tissue Type	f (MHz)	CW Validations				Modulated Validations				
			Date	Dielectric Parameters			Date	Mod. Type	Dielectric Parameters		Result
				Measured $\sigma$ (S/m)	Measured $\epsilon_r$	Result			Measured $\sigma$ (S/m)	Measured $\epsilon_r$	
3124	Head	750	1/16/2013	0.876	42.29	PASS					
3124	Head	835	1/16/2013	0.895	39.11	PASS	1/14/2013	GMSK	0.914	40.63	PASS
3124	Head	1800	1/15/2013	1.365	38.34	PASS	1/14/2013	GMSK	1.373	39.61	PASS
3124	Head	1900	1/15/2013	1.457	38.20	PASS					
3124	Head	2450	1/16/2013	1.812	39.28	PASS	3/12/2013	OFDM	1.795	37.65	PASS
3124	Head	2600	1/16/2013	1.971	38.77	PASS					
3124	Body	750	1/16/2013	0.967	54.55	PASS					
3124	Body	835	1/15/2013	0.989	53.55	PASS	1/15/2013	GMSK	0.99	53.547	PASS
3124	Body	1800	1/15/2013	1.448	51.40	PASS	1/14/2013	GMSK	1.45	52.38	PASS
3124	Body	1900	1/15/2013	1.568	51.03	PASS					
3124	Body	2450	1/16/2013	1.992	50.89	PASS	3/12/2013	OFDM	1.999	50.5	PASS
3124	Body	2600	1/16/2013	2.179	50.40	PASS					

<b>DASY52™ Measurement System 3</b>											
<b>System Validation Measurements</b>											
Probe	Tissue Type	f (MHz)	CW Validations				Modulated Validations				
			Date	Dielectric Parameters			Date	Mod. Type	Dielectric Parameters		Result
				Measured $\sigma$ (S/m)	Measured $\epsilon_r$	Result			Measured $\sigma$ (S/m)	Measured $\epsilon_r$	
3730	Head	2450	1/16/2013	1.812	39.28	PASS	3/12/2013	OFDM	1.795	37.65	PASS
3730	Head	2600	1/16/2013	1.972	38.77	PASS					
3730	Head	5200	1/15/2013	4.547	35.00	PASS	3/18/2013	OFDM	4.562	35.362	PASS
3730	Head	5300	1/15/2013	4.663	34.79	PASS	3/18/2013	OFDM	4.679	35.123	PASS
3730	Head	5600	1/15/2013	4.981	34.10	PASS	3/18/2013	OFDM	5.014	34.448	PASS
3730	Head	5800	1/14/2013	5.204	33.67	PASS	3/19/2013	OFDM	5.243	34.016	PASS
3730	Body	2450	1/16/2013	1.992	50.89	PASS	3/12/2013	OFDM	1.999	50.5	PASS
3730	Body	2600	1/16/2013	2.179	50.40	PASS					
3730	Body	5200	1/14/2013	5.204	46.23	PASS	3/18/2013	OFDM	5.233	47.237	PASS
3730	Body	5300	1/14/2013	5.353	46.00	PASS	3/18/2013	OFDM	5.386	46.995	PASS
3730	Body	5600	1/14/2013	5.766	45.24	PASS	3/18/2013	OFDM	5.815	46.248	PASS
3730	Body	5800	1/14/2013	6.061	44.77	PASS	3/19/2013	OFDM	6.114	45.753	PASS

<b>DASY52™ Measurement System 4</b>											
<b>System Validation Measurements</b>											
Probe	Tissue Type	f (MHz)	CW Validations				Modulated Validations				
			Date	Dielectric Parameters			Date	Mod. Type	Dielectric Parameters		Result
				Measured $\sigma$ (S/m)	Measured $\epsilon_r$	Result			Measured $\sigma$ (S/m)	Measured $\epsilon_r$	
3037	Head	750	1/8/2013	0.861	43.20	PASS					
3037	Head	835	1/7/2013	0.936	42.10	PASS	1/10/2013	GMSK	0.936	41.632	PASS
3037	Head	1800	1/7/2013	1.352	38.58	PASS	1/8/2013	GMSK	1.345	38.568	PASS
3037	Head	1900	1/7/2013	1.459	38.05	PASS					
3037	Head	2450	1/8/2013	1.822	37.87	PASS	3/12/2013	OFDM	1.795	37.65	PASS
3037	Head	2600	1/8/2013	1.974	37.32	PASS					
3037	Body	750	1/8/2013	0.911	54.83	PASS					
3037	Body	835	1/7/2013	0.997	53.94	PASS	1/8/2013	GMSK	1.00	54.83	PASS
3037	Body	1800	1/7/2013	1.443	52.70	PASS	1/8/2013	GMSK	1.43	52.459	PASS
3037	Body	1900	1/7/2013	1.567	52.25	PASS					
3037	Body	2450	1/8/2013	1.999	51.31	PASS	3/12/2013	OFDM	1.999	50.5	PASS
3037	Body	2600	1/8/2013	2.177	50.77	PASS					

### 3.4 Test System Verifications (System Performance Checks)

System accuracy verifications of the DASY52™ were performed using the measurement equipment listed in Section 3.1. The daily system performance check occurs within the flat section of the SAM phantom.

A SAR measurement was performed to verify the measured SAR was within ±10% from the target SAR indicated in Appendix 7. These frequencies are within ±10% of the compliance test mid-band frequency as required in [1] and [5]. The test was conducted within 24 hours prior to the measurement of the phone. Recommended limits for permittivity and conductivity, specified in [5], are shown in the table below. The obtained results from the system accuracy verification are also displayed in the table below. SAR values are normalized to 1 W forward power delivered to the dipole. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values. The distributions of SAR compare well with those of the reference measurements (see Appendix 1). For frequencies below 3 GHz, the simulated tissue depth was verified to be 15.0 cm ± 0.5 cm. For frequencies above 3 GHz, the simulated tissue depth was verified to be 10 cm ± 0.5 cm. Z-axis scans showing the SAR penetration are also included in Appendix 1.

<b>DASY52™ Measurement System 1</b>											
<b>System Verification Measurements for Head SAR Measurements</b>											
<i>f</i> (MHz)	Description	Probe	Dipole	Measured SAR (W/kg), 1 gram	Normalized SAR (W/kg), 1 gram	Dielectric Parameters				Ambient Temp (°C)	Tissue Temp (°C)
						Measured $\sigma$ (S/m)	Deviation $\sigma$ (S/m)	Measured $\epsilon_r$	Deviation $\epsilon_r$		
835	Measured, May-09-2013	3180	422tr	1.86	9.3	0.95	5.6%	42.3	1.9%	22.2	20.9
	Measured, May-15-2013	3180	422tr	1.86	9.3	0.94	4.5%	41.8	0.8%	22.1	21.1
	Recommended Limits	3180	422tr		9.33	0.90	±10%	41.5	±10%	18-25	18-25
1800	Measured, May-09-2013	3180	259tr	7.65	38.25	1.35	-3.6%	38.2	-4.7%	22.2	20.3
	Recommended Limits	3180	259tr		38.1	1.40	±10%	40.0	±10%	18-25	18-25

<b>DASY52™ Measurement System 2</b>											
<b>System Verification Measurements for Head SAR Measurements</b>											
<i>f</i> (MHz)	Description	Probe	Dipole	Measured SAR (W/kg), 1 gram	Normalized SAR (W/kg), 1 gram	Dielectric Parameters				Ambient Temp (°C)	Tissue Temp (°C)
						Measured $\sigma$ (S/m)	Deviation $\sigma$ (S/m)	Measured $\epsilon_r$	Deviation $\epsilon_r$		
835	Measured, Jun-10-2013	3124	436tr	1.99	9.95	0.93	3.4%	41.0	-1.2%	22.3	21.1
	Recommended Limits	3124	436tr		9.73	0.90	±10%	41.5	±10%	18-25	18-25
1800	Measured, May-14-2013	3124	2d190	7.49	37.45	1.34	-4.3%	37.7	-5.9%	22.2	20.5
	Measured, May-22-2013	3124	2d190	7.58	37.9	1.33	-5.0%	36.9	-7.9%	22.2	20.3
	Measured, Jun-17-2013	3124	2d190	7.69	38.45	1.35	-3.6%	38.2	-4.5%	22.3	20.7
	Recommended Limits	3124	2d190		39.3	1.40	±10%	40.0	±10%	18-25	18-25

<b>DASY52™ Measurement System 3</b>											
<b>System Verification Measurements for Head SAR Measurements</b>											
<i>f</i> (MHz)	Description	Probe	Dipole	Measured SAR (W/kg), 1 gram	Normalized SAR (W/kg), 1 gram	Dielectric Parameters				Ambient Temp (°C)	Tissue Temp (°C)
						Measured $\sigma$ (S/m)	Deviation $\sigma$ (%)	Measured $\epsilon_r$	Deviation $\epsilon_r$ (%)		
2450	Measured, Jun-04-2013	3730	877	5.45	54.5	1.81	0.6%	36.0	-8.1%	21.8	20.7
	Recommended Limits	3730	877		52.1	1.80	±10%	39.2	±10%	18-25	18-25
5200	Measured, Jun-04-2013	3730	1098	7.80	78	4.54	-2.4%	34.1	-5.3%	22.2	19.1
	Recommended Limits	3730	1098		79.2	4.65	-5%/+10%	36.0	-10%/+5%	18-25	18-25
5800	Measured, Jun-05-2013	3730	1098	7.89	78.9	5.2	-1.4%	32.8	-7.4%	22.4	19.1
	Recommended Limits	3730	1098		78.2	5.27	-5%/+10%	35.4	-10%/+5%	18-25	18-25

<b>DASY52™ Measurement System 4</b>											
<b>System Verification Measurements for Head SAR Measurements</b>											
<i>f</i> (MHz)	Description	Probe	Dipole	Measured SAR (W/kg), 1 gram	Normalized SAR (W/kg), 1 gram	Dielectric Parameters				Ambient Temp (°C)	Tissue Temp (°C)
						Measured $\sigma$ (S/m)	Deviation $\sigma$ (S/m)	Measured $\epsilon_r$	Deviation $\epsilon_r$		
835	Measured, May-14-2013	3037	423tr	1.90	9.5	0.92	2.3%	40.4	-2.7%	22.4	21.6
	Recommended Limits	3037	423tr		9.22	0.90	±10%	41.5	±10%	18-25	18-25
1800	Measured, May-08-2013	3037	2d191	7.60	38	1.33	-5.0%	38.3	-4.3%	22.1	19.8
	Recommended Limits	3037	2d191		39.2	1.40	±10%	40.0	±10%	18-25	18-25

<b>DASY52™ Measurement System 1</b>											
<b>System Verification Measurements for Body SAR Measurements</b>											
<i>f</i> (MHz)	Description	Probe	Dipole	Measured SAR (W/kg), 1 gram	Normalized SAR (W/kg), 1 gram	Dielectric Parameters				Ambient Temp (°C)	Tissue Temp (°C)
						Measured $\sigma$ (S/m)	Deviation $\sigma$ (S/m)	Measured $\epsilon_r$	Deviation $\epsilon_r$		
<b>835</b>	Measured, May-09-2013	3180	422tr	1.93	9.65	1.00	3.1%	52.9	-4.2%	21.8	19.0
	Measured, May-15-2013	3180	422tr	1.93	9.65	0.99	2.1%	52.6	-4.7%	22.0	21.0
	Recommended Limits	3180	422tr		9.77	0.97	±10%	55.2	±10%	18-25	18-25
<b>1800</b>	Measured, May-09-2013	3180	259tr	7.73	38.65	1.45	-4.7%	50.6	-5.0%	21.9	19.3
	Measured, May-14-2013	3180	259tr	7.82	39.1	1.43	-6.0%	50.3	-5.8%	22.2	20.7
	Recommended Limits	3180	259tr		39.1	1.52	±10%	53.3	±10%	18-25	18-25

<b>DASY52™ Measurement System 2</b>											
<b>System Verification Measurements for Body SAR Measurements</b>											
<i>f</i> (MHz)	Description	Probe	Dipole	Measured SAR (W/kg), 1 gram	Normalized SAR (W/kg), 1 gram	Dielectric Parameters				Ambient Temp (°C)	Tissue Temp (°C)
						Measured $\sigma$ (S/m)	Deviation $\sigma$ (S/m)	Measured $\epsilon_r$	Deviation $\epsilon_r$		
<b>1800</b>	Measured, Jun-18-2013	3124	2d190	7.84	39.2	1.43	-6.0%	48.7	-7.4%	22.1	20.8
	Measured, Jun-20-2013	3124	2d190	7.80	39	1.44	-5.3%	48.9	-8.3%	22.1	20.5
	Recommended Limits	3124	2d190		37.8	1.52	±10%	53.3	±10%	18-25	18-25

<b>DASY52™ Measurement System 3</b>											
<b>System Verification Measurements for Body SAR Measurements</b>											
<i>f</i> (MHz)	Description	Probe	Dipole	Measured SAR (W/kg), 1 gram	Normalized SAR (W/kg), 1 gram	Dielectric Parameters				Ambient Temp (°C)	Tissue Temp (°C)
						Measured $\sigma$ (S/m)	Deviation $\sigma$ (%)	Measured $\epsilon_r$	Deviation $\epsilon_r$ (%)		
<b>2450</b>	Measured, Jun-04-2013	3730	877	5.20	52	1.99	2.1%	48.8	-7.4%	21.7	20.5
	Recommended Limits	3730	877		52.3	1.95	±10%	52.7	±10%	18-25	18-25
<b>5200</b>	Measured, Jun-03-2013	3730	1098	7.98	79.8	5.30	0.0%	47.2	-3.7%	21.7	20.7
	Recommended Limits	3730	1098		73.7	5.30	-5%/+10%	49.0	-10%/+5%	18-25	18-25
<b>5800</b>	Measured, Jun-03-2013	3730	1098	7.18	71.8	6.21	3.5%	45.7	-5.2%	21.7	20.7
	Recommended Limits	3730	1098		71.1	6.00	-5%/+10%	48.2	-10%/+5%	18-25	18-25

<b>DASY52™ Measurement System 4</b>											
<b>System Verification Measurements for Body SAR Measurements</b>											
<i>f</i> (MHz)	Description	Probe	Dipole	Measured SAR (W/kg), 1 gram	Normalized SAR (W/kg), 1 gram	Dielectric Parameters				Ambient Temp (°C)	Tissue Temp (°C)
						Measured $\sigma$ (S/m)	Deviation $\sigma$ (S/m)	Measured $\epsilon_r$	Deviation $\epsilon_r$		
<b>835</b>	Measured, May-09-2013	3037	423tr	1.94	9.7	1.00	3.1%	52.8	-4.5%	22.3	21.0
	Measured, May-10-2013	3037	423tr	1.96	9.8	1.00	3.1%	53.6	-3.0%	21.6	20.5
	Recommended Limits	3037	423tr		9.31	0.97	±10%	55.2	±10%	18-25	18-25
<b>1800</b>	Measured, May-09-2013	3037	2d191	7.91	39.55	1.45	-4.7%	50.6	-5.0%	22.3	20.5
	Measured, May-12-2013	3037	2d191	7.87	39.35	1.42	-6.6%	50.8	-4.8%	22.5	20.5
	Recommended Limits	3037	2d191		37.8	1.52	±10%	53.3	±10%	18-25	18-25

### 3.5 Simulated Tissue Dielectric Properties

Validation, System Performance Check, and device SAR measurements are performed using the DASY52™ system along with liquids specified to simulate head and body tissues subjected to electromagnetic exposure. The list of ingredients and the percent composition of the tissue-simulating liquids used for testing are indicated in the following table.

Ingredient	782 / 835 / 900 MHz Head	782 / 835 / 900 MHz Body	1800 MHz / 1900 MHz Head	1800 MHz / 1900 MHz Body	2450 MHz Head	2450 MHz Body	5 GHz Head	5 GHz Body
Sugar	57.0	44.9	--	--	--	--	--	--
DGBE	--	--	47.0	30.8	6.89	8.0	--	--
Water	40.45	53.06	52.62	68.8	57.95	71.8	65.52	78.66
Salt	1.45	0.94	0.38	0.4	0.15	0.2	--	--
HEC	1.0	1.0	--	--	--	--	--	--
Bact.	0.1	0.1	--	--	--	--	--	--
Triton X-100	--	--	--	--	35.02	20.0	17.24	10.67
Di(ethylene glycol) Hexyl Ether	--	--	--	--	--	--	17.24	10.67

Prior to conducting SAR measurements, the relative permittivity,  $\epsilon_r$ , and conductivity,  $\sigma$ , of the tissue-simulating liquids were measured with a SPEAG™ DAK-3.5 Dielectric Assessment Kit across the frequency ranges of interest. These values, along with recommended targets, percent deviation from the targets, and the temperature of the simulated tissue are shown in the tables below.

For SAR measurements, the dielectric measurements from the DAK-3.5 are imported into the DASY software which performs interpolation to determine the dielectric parameters at the specific frequencies used for device testing. The DASY software also implements SAR error compensation algorithms to automatically correct the measured SAR results for deviations between the measured and target dielectric parameters. This error compensation has been verified by the lab to meet the requirements in FCC KDB 865664 D01. Therefore, where frequencies of test fall within  $\pm 50$  MHz of a calibration point of the probe used for test, the acceptable range of tissue variation is  $\pm 10\%$  per FCC KDB 865664 D01 section 2.4. For test frequencies outside of  $\pm 50$  MHz of a probe calibration point, the range of tissue variation is reduced per section 2.6 part 2 of the same KDB, to ensure that tissues used in testing are within the required specification regardless of device performance. A mass density of  $\rho = 1 \text{ g/cm}^3$  was entered into the system for all cases. It can be seen that the measured parameters are within tolerance of the recommended targets specified in [1] and [5].

Head Simulated-Tissue Dielectric Parameters									
Index	Date Measured	f (MHz)	Target $\sigma$ (S/m)	Target $\epsilon_r$	Measured $\sigma$ (S/m)	Deviation $\sigma$ (%)	Measured $\epsilon_r$	Deviation $\epsilon_r$ (%)	Temp (°C)
782	May-15-2013	777.0	0.90 ±10%	41.80 ±10%	0.88	-1.8%	42.6	1.8%	21.1
		782.0	0.90 ±10%	41.78 ±10%	0.89	-0.7%	42.5	1.7%	
		787.0	0.90 ±10%	41.75 ±10%	0.89	-0.7%	42.4	1.6%	
835	May-09-2013	820.0	0.90 ±10%	41.58 ±10%	0.92	2.4%	42.3	1.8%	21.0
		835.0	0.90 ±10%	41.50 ±10%	0.95	5.6%	42.3	1.9%	
		849.0	0.92 ±10%	41.50 ±10%	0.96	5.0%	42.2	1.7%	
835	May-14-2013	820.0	0.90 ±10%	41.58 ±10%	0.91	1.3%	40.6	-2.4%	21.6
		835.0	0.90 ±10%	41.50 ±10%	0.92	2.3%	40.4	-2.7%	
		849.0	0.92 ±10%	41.50 ±10%	0.94	2.8%	40.2	-3.2%	
835	Jun-10-2013	820.0	0.90 ±10%	41.58 ±10%	0.91	1.3%	41.2	-1.0%	21.1
		835.0	0.90 ±10%	41.50 ±10%	0.93	3.4%	41.0	-1.2%	
		849.0	0.92 ±10%	41.50 ±10%	0.94	2.8%	40.9	-1.5%	
1730	May-14-2013	1709.0	1.35 -5%/+10%	40.13 -10%/+5%	0.85	-4.5%	42.5	0.8%	20.0
		1730.0	1.36 -5%/+10%	40.10 -10%/+5%	0.86	-3.4%	42.4	0.7%	
		1755.0	1.37 -5%/+10%	40.06 -10%/+5%	0.87	-2.4%	42.4	0.7%	
1730	Jun-17-2013	1709.0	1.35 -5%/+10%	40.13 -10%/+5%	1.31	-2.9%	37.4	-7.0%	20.8
		1730.0	1.36 -5%/+10%	40.10 -10%/+5%	1.33	-2.3%	37.3	-7.1%	
		1755.0	1.37 -5%/+10%	40.06 -10%/+5%	1.35	-1.8%	37.1	-7.3%	
1880	May-08-2013	1850.0	1.40 ±10%	40.00 ±10%	1.39	-0.8%	38.0	-4.9%	19.6
		1880.0	1.40 -5%/+10%	40.00 -10%/+5%	1.42	1.5%	37.9	-5.4%	
		1915.0	1.40 -5%/+10%	40.00 -10%/+5%	1.46	4.3%	37.8	-5.6%	
1880	May-09-2013	1850.0	1.40 ±10%	40.00 ±10%	1.38	-1.5%	38.9	-2.8%	20.3
		1880.0	1.40 -5%/+10%	40.00 -10%/+5%	1.40	0.0%	38.3	-4.4%	
		1915.0	1.40 -5%/+10%	40.00 -10%/+5%	1.48	5.8%	37.6	-5.9%	
1880	May-22-2013	1850.0	1.40 ±10%	40.00 ±10%	1.37	-2.2%	36.4	-9.0%	20.3
		1880.0	1.40 -5%/+10%	40.00 -10%/+5%	1.40	0.0%	36.3	-9.4%	
		1915.0	1.40 -5%/+10%	40.00 -10%/+5%	1.45	3.6%	36.3	-9.3%	
2450	Jun-04-2013	2412.0	1.77 ±10%	39.27 ±10%	1.74	-1.5%	35.8	-8.9%	20.7
		2450.0	1.80 ±10%	39.20 ±10%	1.81	0.6%	36.0	-8.1%	
		2462.0	1.81 ±10%	39.18 ±10%	1.81	-0.2%	36.0	-8.1%	
5500	Jun-04-2013	5180.0	4.63 -5%/+10%	36.02 -10%/+5%	4.52	-2.4%	34.1	-5.3%	19.0
		5500.0	4.96 -5%/+10%	35.65 -10%/+5%	4.86	-2.1%	33.4	-6.2%	
		5825.0	5.30 -5%/+10%	35.36 -10%/+5%	5.23	-1.3%	32.8	-7.4%	

Body Simulated-Tissue Dielectric Parameters									
Index	Date Measured	f (MHz)	Target $\sigma$ (S/m)	Target $\epsilon_r$	Measured $\sigma$ (S/m)	Deviation $\sigma$ (%)	Measured $\epsilon_r$	Deviation $\epsilon_r$ (%)	Temp (°C)
782	May-15-2013	777.0	0.97 ±10%	55.43 ±10%	0.94	-2.7%	53.3	-3.9%	20.9
		782.0	0.97 ±10%	55.41 ±10%	0.94	-2.7%	53.2	-4.0%	
		787.0	0.97 ±10%	55.39 ±10%	0.95	-1.7%	53.2	-4.1%	
835	May-09-2013	820.0	0.97 ±10%	55.26 ±10%	0.97	0.2%	53.0	-4.2%	20.3
		835.0	0.97 ±10%	55.20 ±10%	1.00	3.1%	52.9	-4.2%	
		849.0	0.99 ±10%	55.16 ±10%	1.00	1.3%	52.9	-4.2%	
835	May-09-2013	820.0	0.97 ±10%	55.26 ±10%	0.97	0.2%	52.8	-4.5%	21.1
		835.0	0.97 ±10%	55.20 ±10%	1.00	3.1%	52.8	-4.5%	
		849.0	0.99 ±10%	55.16 ±10%	1.00	1.3%	52.7	-4.5%	
835	May-10-2013	820.0	0.97 ±10%	55.26 ±10%	0.98	1.2%	53.6	-3.1%	20.5
		835.0	0.97 ±10%	55.20 ±10%	1.00	3.1%	53.6	-3.0%	
		849.0	0.99 ±10%	55.16 ±10%	1.00	1.3%	53.6	-3.0%	
1730	May-14-2013	1709.0	1.47 -5%/+10%	53.55 -10%/+5%	1.45	-1.1%	50.0	-6.7%	20.8
		1730.0	1.48 -5%/+10%	53.50 -10%/+5%	1.47	-0.7%	49.9	-6.7%	
		1755.0	1.49 -5%/+10%	53.39 -10%/+5%	1.50	0.5%	49.8	-6.8%	
1730	Jun-18-2013	1709.0	1.47 -5%/+10%	53.55 -10%/+5%	1.45	-1.1%	49.9	-6.9%	20.7
		1730.0	1.48 -5%/+10%	53.50 -10%/+5%	1.46	-1.4%	49.9	-6.8%	
		1755.0	1.49 -5%/+10%	53.39 -10%/+5%	1.49	-0.3%	49.7	-7.0%	
1880	May-09-2013	1850.0	1.52 ±10%	53.30 ±10%	1.46	-4.0%	51.6	-3.3%	20.5
		1880.0	1.52 -5%/+10%	53.30 -10%/+5%	1.50	-1.4%	50.8	-4.8%	
		1915.0	1.52 -5%/+10%	53.30 -10%/+5%	1.59	4.7%	50.2	-5.9%	
1880	May-12-2013	1850.0	1.52 ±10%	53.30 ±10%	1.49	-2.0%	51.0	-4.4%	20.5
		1880.0	1.52 -5%/+10%	53.30 -10%/+5%	1.51	-0.7%	50.8	-4.8%	
		1915.0	1.52 -5%/+10%	53.30 -10%/+5%	1.55	2.0%	50.5	-5.4%	
1880	Jun-20-2013	1850.0	1.52 ±10%	53.30 ±10%	1.50	-1.4%	48.8	-8.5%	20.5
		1880.0	1.52 -5%/+10%	53.30 -10%/+5%	1.53	0.7%	48.7	-8.7%	
		1915.0	1.52 -5%/+10%	53.30 -10%/+5%	1.58	4.0%	48.5	-9.1%	
2450	Jun-04-2013	2412.0	1.91 ±10%	52.75 ±10%	1.92	0.3%	48.5	-8.1%	20.5
		2450.0	1.95 ±10%	52.70 ±10%	1.99	2.1%	48.8	-7.4%	
		2462.0	1.97 ±10%	52.68 ±10%	1.99	1.2%	48.8	-7.5%	
5500	Jun-03-2013	5180.0	5.28 -5%/+10%	49.05 -10%/+5%	5.27	-0.2%	47.2	-3.8%	20.7
		5500.0	5.65 -5%/+10%	48.61 -10%/+5%	5.74	1.6%	46.4	-4.5%	
		5825.0	6.03 -5%/+10%	48.17 -10%/+5%	6.25	3.7%	45.7	-5.3%	

## 4 Test Setup Information, SAR Measurement Results, and Analysis

### 4.1 Overview of Test Setup and Results

The phone was tested in the exposure configurations stipulated in [1], [4], [5], [9], and per FCC KDB 941225 D06 for mobile hotspot operation. The phone was positioned into these configurations using the device holder supplied with the DASY52™ SAR measurement system. The default settings for the SAR scans are set in accordance with FCC KDB 865664 D01 for all area scan resolutions, zoom scan resolutions and volumes, and probe positioning. Please refer to the DASY52™ manual for additional information on SAR scanning procedures and algorithms used.

The SAR measurements were performed using the SAM and Flat phantoms listed in section 3.1. The same phantoms and simulated tissues were used for the system performance checks and the device SAR measurements. Consequently the Z-axis scans included in Appendix 1 are applicable for verification of the required simulated tissue depths of 15.0 cm ± 0.5 cm for frequencies less than 3 GHz, or 10.0 cm ± 0.5 cm for frequencies greater than 3 GHz.

The SAR results shown in following tables are maximum SAR values averaged over 1 gram of phantom tissue, to demonstrate compliance to [3] and also over 10 grams of phantom tissue, to demonstrate compliance to [6]. Also shown are the maximum device power, measured device power, temperature of the simulated tissue after the test, the measured drift and the scaled SAR. The exact method of scaling is:

$$\text{Scaled SAR} = (\text{Measured SAR}) * 10^{\left(\frac{(\text{Maximum Power}) - (\text{Measured Power})}{10}\right)} * 10^{\left(\frac{-\text{Drift}}{10}\right)}$$

The SAR reported at the end of the measurement process by the DASY52™ measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process. This is the most conservative SAR because it corresponds to the average output power at the beginning of the SAR test. This extrapolation has been done because when the DUT is operating properly it may exhibit a slump in radiated power and SAR over time. This is verified by measuring the SAR drift after the test. Note that measured SAR is scaled only in the manner which results in a more conservative scaled value, i.e. to a higher SAR value as a consequence of measured power being below the maximum allowed power, or for negative drift values.

Per FCC KDB 447498 D01, area-scan based 1 g SAR estimation was used for initial testing in all combinations of device modes and exposure conditions. The highest SAR measurements for each combination of device mode and exposure condition, and all conditions where the area scan estimation reported values greater than 1.2 W/kg, were further evaluated with a zoom scan. When operating conditions for the SAR system verifications did not demonstrate that the verification area scan 1 g SAR estimation resulted in values within 3% of zoom scan 1 g SAR, zoom scans were executed for all SAR tests.

The test conditions that produced the highest SAR values for each combination of DUT mode and exposure condition are indicated as **bold** numbers in the following tables. Plots of these tests are included in Appendices 2 through 4.

### 4.2 Head-Adjacent Exposure Results

Left Cheek-Touch Position												
Mode	Battery/ Accessory	Channel	f (MHz)	DUT Power		Temp (°C)	Drift (dB)	10 g SAR value		1 g SAR value		Plot Page
				Maximum (dBm)	Measured (dBm)			Measured (W/kg)	Corrected (W/kg)	Measured (W/kg)	Corrected (W/kg)	
LTE B13, 10 MHz BW QPSK (1 RB @ Low)	SNN5916B	23230	782	24.0	23.99	20.6	0.020	0.506	0.51	0.690	0.69	A30
LTE B13, 10 MHz BW QPSK (50% RB @ Low)	SNN5916B	23230	782	23.0	22.67	20.6	0.100	0.282	0.30	0.382	0.41	
LTE B13, 10 MHz BW QPSK (1 RB @ Low)	SNN5916B	23230	782	21.5		20.7	0.110	0.167	0.17	0.229	0.23	
LTE B13, 10 MHz BW QPSK (50% RB @ Low)	SNN5916B	23230	782	21.5		20.7	0.030	0.160	0.17	0.218	0.23	
LTE B4, 20 MHz BW QPSK (1 RB @ Low)	SNN5916B	20175	1732.5	23.0		20.5	0.070	0.580	0.60	0.915	0.95	
LTE B4, 20 MHz BW QPSK (50% RB @ Low)	SNN5916B	20175	1732.5	23.0		20.5	0.070	0.611	0.61	0.968	0.97	
LTE B4, 20 MHz BW QPSK (100% RB)	SNN5916B	20175	1732.5	23.0		20.5	0.060	0.630	0.63	1.000	1.01	A31
LTE B4, 20 MHz BW QPSK (1 RB @ Low)	SNN5916B	20175	1732.5	20.0		20.2	-0.110	0.319	0.36	0.515	0.59	
LTE B4, 20 MHz BW QPSK (50% RB @ Low)	SNN5916B	20175	1732.5	20.0		20.2	-0.020	0.328	0.36	0.531	0.59	
CDMA 800, RC3 SO55	SNN5916B	1013	824.7	25.0	24.90	21.2	-0.23	0.418	0.45	0.556	0.60	
CDMA 800, RC3 SO55	SNN5916B	1013	824.7	18.0		20.5	-0.02	0.065	0.07	0.0865	0.09	
EV-DO 800 Rev. 0	SNN5916B	1013	824.7	25.0	24.77	20.5	0.02	0.538	0.57	0.712	0.75	
CDMA 1900, RC3 SO55	SNN5916B	600	1880	25.0	24.99	20.4	-0.17	0.245	0.26	0.397	0.41	
CDMA 1900, RC3 SO55	SNN5916B	600	1880	18.0		20	0.21	0.0603	0.06	0.0974	0.10	
EV-DO 1900 Rev. 0	SNN5916B	600	1880	25.0	24.93	20.2	-0.24	0.278	0.30	0.449	0.48	
GSM 850, CS Voice	SNN5916B	128	824.2	33.5	33.24	19.6	0.03	0.181	0.19	0.24	0.25	
GSM 1900, CS Voice	SNN5916B	512	1850.2	30.5	30.37	19.3	0.02	0.137	0.14	0.217	0.22	
WCDMA 850, RMC	SNN5916B	4180	836	24.0	23.90	20.6	-0.07	0.248	0.26	0.33	0.34	
WCDMA 1900, RMC	SNN5916B	9262	1852.4	24.0	23.99	20.1	-0.18	0.145	0.15	0.243	0.25	
802.11b, 1 Mbps	SNN5916B	1	2412		18.9	19	0.17	0.0493	0.05	0.0933	0.09	
802.11a, 6 Mbps	SNN5916B	36	5180		13.61	19.1	0.20	0.0189	0.02	0.035	0.04	
802.11a, 6 Mbps	SNN5916B	149	5745		13.19	19.2	-0.53	0.0203	0.02	0.0457	0.05	

Table 4-1: SAR measurement results in a head-adjacent position against the ICNIRP and ANSI SAR Limit.

Right Cheek-Touch Position												
Mode	Battery/ Accessory	Channel	f (MHz)	DUT Power		Temp (°C)	Drift (dB)	10 g SAR value		1 g SAR value		Plot Page
				Maximum (dBm)	Measured (dBm)			Measured (W/kg)	Corrected (W/kg)	Measured (W/kg)	Corrected (W/kg)	
LTE B13, 10 MHz BW QPSK (1 RB @ Low)	SNN5916B	23230	782	24.0	24.0	20.5	-0.060	0.382	0.39	0.496	0.50	
LTE B13, 10 MHz BW QPSK (50% RB @ Low)	SNN5916B	23230	782	23.0	22.7	20.5	0.110	0.216	0.23	0.281	0.30	
LTE B13, 10 MHz BW QPSK (1 RB @ Low)	SNN5916B	23230	782	21.5		20.7	-0.060	0.126	0.13	0.163	0.17	
LTE B13, 10 MHz BW QPSK (50% RB @ Low)	SNN5916B	23230	782	21.5		20.7	0.010	0.126	0.13	0.165	0.17	
LTE B4, 20 MHz BW QPSK (1 RB @ Low)	SNN5916B	20175	1732.5	23.0		20.6	0.000	0.348	0.36	0.518	0.54	
LTE B4, 20 MHz BW QPSK (50% RB @ Low)	SNN5916B	20175	1732.5	23.0		20.6	0.090	0.378	0.38	0.565	0.57	
LTE B4, 20 MHz BW QPSK (1 RB @ Low)	SNN5916B	20175	1732.5	20.0		20.2	0.050	0.189	0.21	0.283	0.31	
LTE B4, 20 MHz BW QPSK (50% RB @ Low)	SNN5916B	20175	1732.5	20.0		20.2	0.020	0.192	0.21	0.289	0.32	
CDMA 800, RC3 SO55	SNN5916B	1013	824.7	25.0	24.90	21.2	-0.04	0.457	0.47	0.623	0.64	
CDMA 800, RC3 SO55	SNN5916B	1013	824.7	18.0		20.4	-0.04	0.0792	0.08	0.107	0.11	
EV-DO 800 Rev. 0	SNN5916B	1013	824.7	<b>25.0</b>	<b>24.77</b>	<b>20.4</b>	<b>0.30</b>	<b>0.607</b>	<b>0.64</b>	<b>0.852</b>	<b>0.90</b>	A32
EV-DO 800 Rev. 0	SNN5916B	384	836.5	25.0	24.39	20.4	0.06	0.376	0.43	0.51	0.59	
EV-DO 800 Rev. 0	SNN5916B	777	848.3	25.0	24.23	20.4	0.02	0.428	0.51	0.584	0.70	
CDMA 1900, RC3 SO55	SNN5916B	25	1851.3	25.0	24.94	20.4	0.03	0.46	0.47	0.802	0.81	
CDMA 1900, RC3 SO55	SNN5916B	600	1880	<b>25.0</b>	<b>24.99</b>	<b>20.5</b>	<b>-0.25</b>	<b>0.557</b>	<b>0.59</b>	<b>0.962</b>	<b>1.02</b>	A33
CDMA 1900, RC3 SO55	SNN5916B	1175	1908.8	25.0	24.70	20.4	0.07	0.515	0.55	0.891	0.95	
CDMA 1900, RC3 SO55	SNN5916B	600	1880	18.0		20	-0.07	0.121	0.12	0.209	0.21	
EV-DO 1900 Rev. 0	SNN5916B	25	1851.3	25.0	24.89	20.2	0.04	0.501	0.51	0.875	0.90	
EV-DO 1900 Rev. 0	SNN5916B	600	1880	25.0	24.93	20.2	-0.04	0.565	0.58	0.98	1.01	
EV-DO 1900 Rev. 0	SNN5916B	1175	1908.8	25.0	24.64	20.2	0.03	0.471	0.51	0.82	0.89	
GSM 850, CS Voice	SNN5916B	128	824.2	33.5	33.24	19.5	0.03	0.206	0.22	0.284	0.30	
GSM 850, GPRS Class 12 (4 Uplink Timeslots)	SNN5916B	128	824.2	<b>28.0</b>	<b>27.03</b>	<b>19.6</b>	<b>-0.01</b>	<b>0.184</b>	<b>0.23</b>	<b>0.248</b>	<b>0.31</b>	A34
GSM 1900, CS Voice	SNN5916B	512	1850.2	<b>30.5</b>	<b>30.37</b>	<b>19.2</b>	<b>0.17</b>	<b>0.255</b>	<b>0.26</b>	<b>0.439</b>	<b>0.45</b>	A35
GSM 1900, GPRS Class 12 (4 Uplink Timeslots)	SNN5916B	512	1850.2	25.0	24.10	19.2	0.19	0.203	0.25	0.349	0.43	
WCDMA 850, RMC	SNN5916B	4180	836	<b>24.0</b>	<b>23.90</b>	<b>21.6</b>	<b>0.01</b>	<b>0.256</b>	<b>0.26</b>	<b>0.35</b>	<b>0.36</b>	A36
WCDMA 1900, RMC	SNN5916B	9262	1852.4	<b>24.0</b>	<b>23.99</b>	<b>19.8</b>	<b>-0.03</b>	<b>0.438</b>	<b>0.44</b>	<b>0.754</b>	<b>0.76</b>	A37
802.11b, 1 Mbps	SNN5916B	1	2412		<b>18.9</b>	<b>19</b>	<b>0.26</b>	<b>0.114</b>	<b>0.11</b>	<b>0.263</b>	<b>0.26</b>	A38
802.11a, 6 Mbps	SNN5916B	36	5180		<b>13.61</b>	<b>19.1</b>	<b>0.06</b>	<b>0.0239</b>	<b>0.02</b>	<b>0.0786</b>	<b>0.08</b>	A39
802.11a, 6 Mbps	SNN5916B	149	5745		<b>13.19</b>	<b>19.2</b>	<b>0.22</b>	<b>0.0364</b>	<b>0.04</b>	<b>0.122</b>	<b>0.12</b>	A40

Table 4-2: SAR measurement results in a head-adjacent position against the ICNIRP and ANSI SAR Limit.

Left 15° Tilt Position												
Mode	Battery/ Accessory	Channel	f (MHz)	DUT Power		Temp (°C)	Drift (dB)	10 g SAR value		1 g SAR value		Plot Page
				Maximum (dBm)	Measured (dBm)			Measured (W/kg)	Corrected (W/kg)	Measured (W/kg)	Corrected (W/kg)	
LTE B13, 10 MHz BW QPSK (1 RB @ Low)	SNN5916B	23230	782	24.0	24.0	20.5	-0.020	0.275	0.28	0.355	0.36	
LTE B13, 10 MHz BW QPSK (50% RB @ Low)	SNN5916B	23230	782	23.0	22.7	20.5	0.070	0.157	0.17	0.203	0.22	
LTE B13, 10 MHz BW QPSK (1 RB @ Low)	SNN5916B	23230	782	21.5		20.7	0.090	0.110	0.11	0.141	0.14	
LTE B13, 10 MHz BW QPSK (50% RB @ Low)	SNN5916B	23230	782	21.5		20.7	0.040	0.113	0.12	0.145	0.15	
LTE B4, 20 MHz BW QPSK (1 RB @ Low)	SNN5916B	20175	1732.5	23.0		20.6	-0.190	0.351	0.38	0.542	0.59	
LTE B4, 20 MHz BW QPSK (50% RB @ Low)	SNN5916B	20175	1732.5	23.0		20.6	-0.080	0.370	0.38	0.572	0.58	
LTE B4, 20 MHz BW QPSK (1 RB @ Low)	SNN5916B	20175	1732.5	20.0		20.2	0.060	0.154	0.17	0.235	0.26	
LTE B4, 20 MHz BW QPSK (50% RB @ Low)	SNN5916B	20175	1732.5	20.0		20.2	0.000	0.158	0.18	0.242	0.27	
CDMA 800, RC3 SO55	SNN5916B	1013	824.7	25.0	24.90	21.2	0.05	0.294	0.30	0.386	0.39	
CDMA 800, RC3 SO55	SNN5916B	1013	824.7	18.0		20.5	0.02	0.0594	0.06	0.0776	0.08	
EV-DO 800 Rev. 0	SNN5916B	1013	824.7	25.0	24.77	20.5	-0.14	0.37	0.40	0.484	0.53	
CDMA 1900, RC3 SO55	SNN5916B	600	1880	25.0	24.99	20.5	-0.07	0.16	0.16	0.265	0.27	
CDMA 1900, RC3 SO55	SNN5916B	600	1880	18.0		20	0.05	0.037	0.04	0.062	0.06	
EV-DO 1900 Rev. 0	SNN5916B	600	1880	25.0	24.93	20.2	0.07	0.206	0.21	0.346	0.35	
GSM 850, CS Voice	SNN5916B	128	824.2	33.5	33.24	19.3	0.00	0.123	0.13	0.161	0.17	
GSM 1900, CS Voice	SNN5916B	512	1850.2	30.5	30.37	19.3	-0.06	0.0895	0.09	0.157	0.16	
WCDMA 850, RMC	SNN5916B	4180	836	24.0	23.90	20.6	-0.03	0.167	0.17	0.221	0.23	
WCDMA 1900, RMC	SNN5916B	9262	1852.4	24.0	23.99	20.1	0.11	0.1	0.10	0.168	0.17	
802.11b, 1 Mbps	SNN5916B	1	2412		18.9	19	0.01	0.0436	0.04	0.0893	0.09	
802.11a, 6 Mbps	SNN5916B	36	5180		13.61	20.5	-0.06	0.0173	0.02	0.0341	0.03	
802.11a, 6 Mbps	SNN5916B	149	5745		13.19	19.2	0.02	0.0242	0.02	0.0449	0.04	

Table 4-3: SAR measurement results in a head-adjacent position against the ICNIRP and ANSI SAR Limit.

Right 15° Tilt Position												
Mode	Battery/ Accessory	Channel	f (MHz)	DUT Power		Temp (°C)	Drift (dB)	10 g SAR value		1 g SAR value		Plot Page
				Maximum (dBm)	Measured (dBm)			Measured (W/kg)	Corrected (W/kg)	Measured (W/kg)	Corrected (W/kg)	
LTE B13, 10 MHz BW QPSK (1 RB @ Low)	SNN5916B	23230	782	24.0	24.0	20.5	0.100	0.227	0.23	0.294	0.30	
LTE B13, 10 MHz BW QPSK (50% RB @ Low)	SNN5916B	23230	782	23.0	22.7	20.5	0.070	0.123	0.13	0.160	0.17	
LTE B13, 10 MHz BW QPSK (1 RB @ Low)	SNN5916B	23230	782	21.5		20.7	0.070	0.094	0.09	0.119	0.12	
LTE B13, 10 MHz BW QPSK (50% RB @ Low)	SNN5916B	23230	782	21.5		20.7	-0.210	0.088	0.10	0.117	0.13	
LTE B4, 20 MHz BW QPSK (1 RB @ Low)	SNN5916B	20175	1732.5	23.0		20.6	-0.050	0.259	0.27	0.398	0.42	
LTE B4, 20 MHz BW QPSK (50% RB @ Low)	SNN5916B	20175	1732.5	23.0		20.6	-0.020	0.280	0.28	0.431	0.43	
LTE B4, 20 MHz BW QPSK (1 RB @ Low)	SNN5916B	20175	1732.5	20.0		20.2	-0.020	0.127	0.14	0.192	0.21	
LTE B4, 20 MHz BW QPSK (50% RB @ Low)	SNN5916B	20175	1732.5	20.0		20.2	0.030	0.130	0.14	0.197	0.22	
CDMA 800, RC3 SO55	SNN5916B	1013	824.7	25.0	24.90	21.3	0.11	0.314	0.32	0.411	0.42	
CDMA 800, RC3 SO55	SNN5916B	1013	824.7	18.0		20.4	0.08	0.0618	0.06	0.0815	0.08	
EV-DO 800 Rev. 0	SNN5916B	1013	824.7	25.0	24.77	20.5	-0.06	0.314	0.34	0.411	0.44	
CDMA 1900, RC3 SO55	SNN5916B	600	1880	25.0	24.99	20.4	0.02	0.189	0.19	0.338	0.34	
CDMA 1900, RC3 SO55	SNN5916B	600	1880	18.0		20	0.14	0.035	0.04	0.0617	0.06	
EV-DO 1900 Rev. 0	SNN5916B	600	1880	25.0	24.93	20.2	0.25	0.206	0.21	0.372	0.38	
GSM 850, CS Voice	SNN5916B	128	824.2	33.5	33.24	19.5	0.09	0.134	0.14	0.177	0.19	
GSM 1900, CS Voice	SNN5916B	512	1850.2	30.5	30.37	19.2	-0.04	0.0924	0.10	0.164	0.17	
WCDMA 850, RMC	SNN5916B	4180	836	24.0	23.90	21.6	0.08	0.168	0.17	0.224	0.23	
WCDMA 1900, RMC	SNN5916B	9262	1852.4	24.0	23.99	20.1	-0.04	0.136	0.14	0.238	0.24	
802.11b, 1 Mbps	SNN5916B	1	2412		18.9	19	0.52	0.0368	0.04	0.0873	0.09	
802.11a, 6 Mbps	SNN5916B	36	5180		13.61	19.1	-0.31	0.0135	0.01	0.045	0.05	
802.11a, 6 Mbps	SNN5916B	149	5745		13.19	19.2	-0.16	0.0159	0.02	0.0547	0.06	

Table 4-4: SAR measurement results in a head-adjacent position against the ICNIRP and ANSI SAR Limit.

### 4.3 Body-Worn Accessory Exposure Results

Body-Worn Accessory Position, Front of Phone 25 mm from Phantom												
Mode	Battery/Accessory	Channel	f (MHz)	DUT Power		Temp (°C)	Drift (dB)	10 g SAR value		1 g SAR value		Plot Page
				Maximum (dBm)	Measured (dBm)			Measured (W/kg)	Corrected (W/kg)	Measured (W/kg)	Corrected (W/kg)	
LTE B13, 10 MHz BW QPSK (1 RB @ Low)	SNN5916B	23230	782	24.0	23.99	20.5	-0.080	0.197	0.20	0.262	0.27	A42
LTE B13, 10 MHz BW QPSK (50% RB @ Low)	SNN5916B	23230	782	23.0	22.67	20.4	0.050	0.106	0.11	0.140	0.15	
LTE B4, 20 MHz BW QPSK (1 RB @ Low)	SNN5916B	20175	1732.5	24.0	23.88	20.2	-0.040	0.185	0.19	0.287	0.30	A43
LTE B4, 20 MHz BW QPSK (50% RB @ Low)	SNN5916B	20175	1732.5	24.0	22.97	20.2	0.040	0.140	0.14	0.217	0.22	
CDMA 800, TDSO SO32	SNN5916B	1013	824.7	25.0	24.74	21.3	0.00	0.377	0.40	0.502	0.53	A44
CDMA 1900, TDSO SO32	SNN5916B	600	1880	25.0	24.89	20.5	0.01	0.0894	0.09	0.14	0.14	
GSM 850, CS Voice	SNN5916B	128	824.2	33.5	33.24	19.1	-0.17	0.14	0.15	0.187	0.21	
GSM 1900, CS Voice	SNN5916B	512	1850.2	30.5	30.37	19.2	-0.04	0.04	0.04	0.0636	0.07	A47
WCDMA 850, RMC	SNN5916B	4180	836	24.0	23.90	20.6	-0.10	0.203	0.21	0.27	0.28	A48
WCDMA 1900, RMC	SNN5916B	9262	1852.4	24.0	23.99	20	-0.24	0.0669	0.07	0.106	0.11	A49
802.11b, 1 Mbps	SNN5916B	1	2412	19.0	18.9	20.5	-0.63	0.00593	0.01	0.012	0.01	
802.11a, 6 Mbps	SNN5916B	36	5180	13.0	13.61	20.7	-0.27	0.00128	0.00	0.00644	0.01	
802.11a, 6 Mbps	SNN5916B	149	5745	13.0	13.19	20.5	-0.25	0.00567	0.01	0.0148	0.02	

Table 4-5: SAR measurement results in a body-adjacent position against the ICNIRP and ANSI SAR Limit.

Body-Worn Accessory Position, Back of Phone 25 mm from Phantom												
Mode	Battery/Accessory	Channel	f (MHz)	DUT Power		Temp (°C)	Drift (dB)	10 g SAR value		1 g SAR value		Plot Page
				Maximum (dBm)	Measured (dBm)			Measured (W/kg)	Corrected (W/kg)	Measured (W/kg)	Corrected (W/kg)	
LTE B13, 10 MHz BW QPSK (1 RB @ Low)	SNN5916B	23230	782	24.0	23.99	20.1	-0.290	0.174	0.19	0.231	0.25	
LTE B13, 10 MHz BW QPSK (50% RB @ Low)	SNN5916B	23230	782	23.0	22.67	20	0.050	0.092	0.10	0.123	0.13	
LTE B4, 20 MHz BW QPSK (1 RB @ Low)	SNN5916B	20175	1732.5	24.0	23.88	20.1	0.000	0.175	0.18	0.272	0.28	
LTE B4, 20 MHz BW QPSK (50% RB @ Low)	SNN5916B	20175	1732.5	23.0	22.97	20.1	0.010	0.134	0.13	0.209	0.21	
CDMA 800, TDSO SO32	SNN5916B	1013	824.7	25.0	24.74	21.3	-0.04	0.36	0.39	0.478	0.51	
CDMA 1900, TDSO SO32	SNN5916B	600	1880	25.0	24.89	20.5	-0.04	0.101	0.10	0.156	0.16	A45
GSM 850, CS Voice	SNN5916B	128	824.2	33.5	33.24	19.1	0.01	0.147	0.16	0.195	0.21	A46
GSM 1900, CS Voice	SNN5916B	512	1850.2	30.5	30.37	19.2	0.04	0.0399	0.04	0.0616	0.06	
WCDMA 850, RMC	SNN5916B	4180	836	24.0	23.90	20.6	0.07	0.194	0.20	0.258	0.26	
WCDMA 1900, RMC	SNN5916B	9262	1852.4	24.0	23.99	20	-0.17	0.0664	0.07	0.101	0.11	
802.11b, 1 Mbps	SNN5916B	1	2412		18.9	20.5	0.19	0.0129	0.01	0.0226	0.02	A50
802.11a, 6 Mbps	SNN5916B	36	5180		13.61	20.7	-0.21	0.0118	0.01	0.0289	0.03	A51
802.11a, 6 Mbps	SNN5916B	149	5745		13.19	20.7	-0.53	0.0128	0.01	0.0314	0.04	A52

Table 4-6: SAR measurement results in a body-adjacent position against the ICNIRP and ANSI SAR Limit.

### 4.4 Mobile Hotspot Exposure Results



Mobile Hotspot Surfaces/Edges for SAR testing						
Mode	Front	Back	Left	Right	Top	Bottom
LTE	Yes	Yes	Yes	No	No	Yes
CDMA	Yes	Yes	No	Yes	No	Yes
GSM	Yes	Yes	No	Yes	No	Yes
WCDMA	Yes	Yes	No	Yes	No	Yes
Wi-Fi	Yes	Yes	Yes	No	No	No

Mobile Hotspot Position, Front of Phone 10 mm from Phantom												
Mode	Battery/ Accessory	Channel	f (MHz)	DUT Power		Temp (°C)	Drift (dB)	10 g SAR value		1 g SAR value		Plot Page
				Maximum (dBm)	Measured (dBm)			Measured (W/kg)	Corrected (W/kg)	Measured (W/kg)	Corrected (W/kg)	
LTE B13, 10 MHz BW QPSK (1 RB @ Low)	SNN5916B	23230	782	24.0	24.0	20	-0.050	0.500	0.51	0.693	0.70	A54
LTE B13, 10 MHz BW QPSK (50% RB @ Low)	SNN5916B	23230	782	23.0	22.7	20	0.060	0.257	0.28	0.350	0.38	
LTE B13, 10 MHz BW QPSK (1 RB @ Low)	SNN5916B	23230	782	21.5		20.2	-0.180	0.164	0.17	0.225	0.23	
LTE B13, 10 MHz BW QPSK (50% RB @ Low)	SNN5916B	23230	782	21.5		20.1	0.040	0.152	0.16	0.206	0.21	
LTE B4, 20 MHz BW QPSK (1 RB @ Low)	SNN5916B	20175	1732.5	24.0	23.88	20.6	0.040	0.702	0.72	1.120	1.15	A55
LTE B4, 20 MHz BW QPSK (1 RB @ Low)	SNN5916B	20175	1732.5	24.0	23.88	20.8	-0.030	0.674	0.70	1.080	1.12	
LTE B4, 20 MHz BW QPSK (50% RB @ Low)	SNN5916B	20175	1732.5	23.0	22.97	20.8	-0.050	0.511	0.52	0.818	0.83	
LTE B4, 20 MHz BW QPSK (100% RB)	SNN5916B	20175	1732.5	23.0	22.94	20	-0.040	0.612	0.63	0.988	1.01	
LTE B4, 20 MHz BW QPSK (1 RB @ Low)	SNN5916B	20175	1732.5	20.0		19.1	-0.040	0.280	0.31	0.450	0.51	
LTE B4, 20 MHz BW QPSK (50% RB @ Low)	SNN5916B	20175	1732.5	20.0		19	-0.080	0.290	0.33	0.469	0.53	
CDMA 800, EVDO Rel. 0 (RTAP)	SNN5916B	1013	824.7	25.0	24.77	20.5	0.27	0.719	0.76	0.966	1.02	A56
CDMA 800, EVDO Rel. 0 (RTAP)	SNN5916B	1013	824.7	25.0	24.77	20.2	-0.05	0.59	0.63	0.793	0.85	
CDMA 800, EVDO Rel. 0 (RTAP)	SNN5916B	1013	824.7	25.0	24.77	20.2	0.18	0.612	0.65	0.824	0.87	
CDMA 800, EVDO Rel. 0 (RTAP)	SNN5916B	384	836.5	25.0	24.39	20.5	0.02	0.522	0.60	0.696	0.80	
CDMA 800, EVDO Rel. 0 (RTAP)	SNN5916B	777	848.3	25.0	24.23	20.5	-0.06	0.582	0.70	0.778	0.94	
CDMA 800, EVDO Rel. 0 (RTAP)	SNN5916B	1013	824.7	19.0		20.5	-0.01	0.106	0.11	0.142	0.14	
CDMA 1900, EVDO REL. 0 (RTAP)	SNN5916B	600	848.3	24.0		20.5	-0.08	0.349	0.36	0.625	0.65	
CDMA 1900, EVDO REL. 0 (RTAP)	SNN5916B	600	848.3	19.0		20.2	-0.02	0.131	0.13	0.25	0.25	
GSM 850, GPRS Class 12 (4 Uplink Timeslots)GSM 850, CS Voice	SNN5916B	190	836.6	28.0	27.43	18.9	0.06	0.351	0.40	0.469	0.53	
GSM 1900, GPRS Class 12 (4 Uplink Timeslots)GSM 1900, CS Voice	SNN5916B	661	1880.0	25.0	24.13	19	-0.04	0.199	0.25	0.373	0.46	
WCDMA 850, RMC	SNN5916B	4180	836	24.0	23.90	20.7	0.05	0.368	0.38	0.489	0.50	A60
WCDMA 1900, RMC	SNN5916B	9262	1852.4	24.0	23.99	19.9	-0.03	0.381	0.38	0.714	0.72	
802.11b, 1 Mbps	SNN5916B	1	2412		18.9	20.5	0.20	0.0214	0.02	0.0425	0.04	
802.11a, 6 Mbps	SNN5916B	149	5745		13.61	20.7	0.28	0.0114	0.01	0.0296	0.03	

Table 4-7: SAR measurement results in a body-adjacent position against the ICNIRP and ANSI SAR Limit.

Body-Worn Accessory Position, Back of Phone 10 mm from Phantom												
Mode	Battery/Accessory	Channel	f (MHz)	DUT Power		Temp (°C)	Drift (dB)	10 g SAR value		1 g SAR value		Plot Page
				Maximum (dBm)	Measured (dBm)			Measured (W/kg)	Corrected (W/kg)	Measured (W/kg)	Corrected (W/kg)	
LTE B13, 10 MHz BW QPSK (1 RB @ Low)	SNN5916B	23230	782	24.0	24.0	20	-0.040	0.463	0.47	0.665	0.67	
LTE B13, 10 MHz BW QPSK (50% RB @ Low)	SNN5916B	23230	782	23.0	22.7	20	0.070	0.237	0.26	0.336	0.36	
LTE B13, 10 MHz BW QPSK (1 RB @ Low)	SNN5916B	23230	782	21.5		20.2	0.030	0.150	0.15	0.213	0.21	
LTE B13, 10 MHz BW QPSK (50% RB @ Low)	SNN5916B	23230	782	21.5		20.1	0.000	0.142	0.15	0.199	0.21	
LTE B4, 20 MHz BW QPSK (1 RB @ Low)	SNN5916B	20175	1732.5	24.0	23.88	20.8	-0.030	0.648	0.67	1.050	1.09	
LTE B4, 20 MHz BW QPSK (50% RB @ Low)	SNN5916B	20175	1732.5	23.0	22.97	20.8	-0.060	0.492	0.50	0.798	0.81	
LTE B4, 20 MHz BW QPSK (100% RB)	SNN5916B	20175	1732.5	23.0	22.94	20.8	-0.010	0.504	0.51	0.819	0.83	
LTE B4, 20 MHz BW QPSK (1 RB @ Low)	SNN5916B	20175	1732.5	20.0		20.2	0.070	0.232	0.26	0.379	0.42	
LTE B4, 20 MHz BW QPSK (50% RB @ Low)	SNN5916B	20175	1732.5	20.0		20.2	0.000	0.237	0.26	0.388	0.43	
CDMA 800, EVDO Rel. 0 (RTAP)	SNN5916B	1013	824.7	25.0	24.77	20.4	0.11	0.645	0.68	0.844	0.89	
CDMA 800, EVDO Rel. 0 (RTAP)	SNN5916B	384	836.5	25.0	24.39	20.5	0.22	0.518	0.60	0.676	0.78	
CDMA 800, EVDO Rel. 0 (RTAP)	SNN5916B	777	848.3	25.0	24.23	20.5	-0.05	0.513	0.62	0.683	0.82	
CDMA 800, EVDO Rel. 0 (RTAP)	SNN5916B	1013	824.7	19.0		20.5	0.03	0.1	0.10	0.132	0.13	
CDMA 1900, EVDO REL. 0 (RTAP)	SNN5916B	600	848.3	24.0		20.5	-0.2	0.394	0.42	0.719	0.77	
CDMA 1900, EVDO REL. 0 (RTAP)	SNN5916B	600	848.3	19.0		20.2	-0.03	0.143	0.14	0.263	0.26	
GSM 850, GPRS Class 12 (4 Uplink Timeslots)GSM 850, CS Voice	SNN5916B	190	836.6	28.0	27.43	19	-0.01	0.343	0.39	0.469	0.54	
GSM 1900, GPRS Class 12 (4 Uplink Timeslots)GSM 1900, CS Voice	SNN5916B	661	1880	25.0	24.13	19	-0.07	0.157	0.19	0.285	0.35	
WCDMA 850, RMC	SNN5916B	4180	836	24.0	23.90	20.6	-0.07	0.326	0.34	0.426	0.44	
WCDMA 1900, RMC	SNN5916B	9400	1800.0	24.0	23.99	19.9	0.03	0.352	0.35	0.635	0.64	
802.11b, 1 Mbps	SNN5916B	1	2412		18.9	20.5	-0.01	0.073	0.07	0.148	0.15	
802.11a, 6 Mbps	SNN5916B	149	5745		13.61	20.7	0.06	0.0357	0.04	0.101	0.10	

Table 4-8: SAR measurement results in a body-adjacent position against the ICNIRP and ANSI SAR Limit.

Mobile Hotspot Position, Left Edge of Phone 10 mm from Phantom												
Mode	Battery/Accessory	Channel	f (MHz)	DUT Power		Temp (°C)	Drift (dB)	10 g SAR value		1 g SAR value		Plot Page
				Maximum (dBm)	Measured (dBm)			Measured (W/kg)	Corrected (W/kg)	Measured (W/kg)	Corrected (W/kg)	
LTE B13, 10 MHz BW QPSK (1 RB @ Low)	SNN5916B	23230	782	24.0	24.0	20.1	-0.070	0.350	0.36	0.500	0.51	
LTE B13, 10 MHz BW QPSK (50% RB @ Low)	SNN5916B	23230	782	23.0	22.7	20.1	0.020	0.182	0.20	0.262	0.28	
LTE B13, 10 MHz BW QPSK (1 RB @ Low)	SNN5916B	23230	782	21.5		20.1	0.060	0.126	0.13	0.180	0.18	
LTE B13, 10 MHz BW QPSK (50% RB @ Low)	SNN5916B	23230	782	21.5		20.1	0.010	0.122	0.13	0.174	0.18	
LTE B4, 20 MHz BW QPSK (1 RB @ Low)	SNN5916B	20175	1732.5	24.0	23.88	20.8	-0.020	0.372	0.38	0.624	0.64	
LTE B4, 20 MHz BW QPSK (50% RB @ Low)	SNN5916B	20175	1732.5	23.0	22.97	20.8	-0.020	0.282	0.29	0.475	0.48	
LTE B4, 20 MHz BW QPSK (1 RB @ Low)	SNN5916B	20175	1732.5	20.0		20.2	0.000	0.117	0.13	0.196	0.22	
LTE B4, 20 MHz BW QPSK (50% RB @ Low)	SNN5916B	20175	1732.5	20.0		20.2	0.000	0.119	0.13	0.200	0.22	
802.11b, 1 Mbps	SNN5916B	1	2412		18.9	20.5	-0.09	0.087	0.09	0.189	0.19	A62
802.11a, 6 Mbps	SNN5916B	149	5745		13.61	20.7	0.10	0.0479	0.05	0.144	0.14	A63

Table 4-9: SAR measurement results in a body-adjacent position against the ICNIRP and ANSI SAR Limit.

Body-Worn Accessory Position, Right Edge of Phone 10 mm from Phantom												
Mode	Battery/Accessory	Channel	f (MHz)	DUT Power		Temp (°C)	Drift (dB)	10 g SAR value		1 g SAR value		Plot Page
				Maximum (dBm)	Measured (dBm)			Measured (W/kg)	Corrected (W/kg)	Measured (W/kg)	Corrected (W/kg)	
CDMA 800, EVDO Rel. 0 (RTAP)	SNN5916B	1013	824.7	25.0	24.77	20.5	-0.08	0.591	0.63	0.859	0.92	
CDMA 800, EVDO Rel. 0 (RTAP)	SNN5916B	384	836.5	25.0	24.39	20.2	-0.13	0.462	0.55	0.677	0.80	
CDMA 800, EVDO Rel. 0 (RTAP)	SNN5916B	777	848.3	25.0	24.23	20.2	-0.04	0.48	0.58	0.701	0.84	
CDMA 800, EVDO Rel. 0 (RTAP)	SNN5916B	1013	824.7	19.0		20.4	-0.03	0.0907	0.09	0.131	0.13	
CDMA 1900, EVDO REL. 0 (RTAP)	SNN5916B	600	848.3	24.0		20.5	0.03	0.203	0.21	0.346	0.35	
CDMA 1900, EVDO REL. 0 (RTAP)	SNN5916B	600	848.3	19.0		20.4	0.00	0.0605	0.06	0.104	0.10	
GSM 850, GPRS Class 12 (4 Uplink Timeslots)GSM 850, CS Voice	SNN5916B	190	836.6	<b>28.0</b>	<b>27.43</b>	<b>18.8</b>	<b>-0.04</b>	<b>0.344</b>	<b>0.40</b>	<b>0.497</b>	<b>0.57</b>	<b>A58</b>
GSM 1900, GPRS Class 12 (4 Uplink Timeslots)GSM 1900, CS Voice	SNN5916B	661	1880	25.0	24.13	19	-0.02	0.11	0.14	0.189	0.23	
WCDMA 850, RMC	SNN5916B	4180	836	24.0	23.90	20.7	0.01	0.331	0.34	0.482	0.49	
WCDMA 1900, RMC	SNN5916B	9262	1852.4	24.0	23.99	19.6	-0.14	0.175	0.18	0.302	0.31	

Table 4-10: SAR measurement results in a body-adjacent position against the ICNIRP and ANSI SAR Limit.

Body-Worn Accessory Position, Bottom Edge of Phone 10 mm from Phantom												
Mode	Battery/Accessory	Channel	f (MHz)	DUT Power		Temp (°C)	Drift (dB)	10 g SAR value		1 g SAR value		Plot Page
				Maximum (dBm)	Measured (dBm)			Measured (W/kg)	Corrected (W/kg)	Measured (W/kg)	Corrected (W/kg)	
LTE B13, 10 MHz BW QPSK (1 RB @ Low)	SNN5916B	23230	782	24.0	24.0	20.1	0.020	0.209	0.21	0.366	0.37	
LTE B13, 10 MHz BW QPSK (50% RB @ Low)	SNN5916B	23230	782	23.0	22.7	20.1	-0.300	0.078	0.09	0.138	0.16	
LTE B13, 10 MHz BW QPSK (1 RB @ Low)	SNN5916B	23230	782	21.5		20.2	-0.030	0.056	0.06	0.095	0.10	
LTE B13, 10 MHz BW QPSK (50% RB @ Low)	SNN5916B	23230	782	21.5		20.1	0.060	0.044	0.05	0.075	0.08	
LTE B4, 20 MHz BW QPSK (1 RB @ Low)	SNN5916B	20175	1732.5	24.0	23.88	20.8	-0.040	0.286	0.30	0.511	0.53	
LTE B4, 20 MHz BW QPSK (50% RB @ Low)	SNN5916B	20175	1732.5	23.0	22.97	20.8	0.000	0.215	0.22	0.385	0.39	
LTE B4, 20 MHz BW QPSK (1 RB @ Low)	SNN5916B	20175	1732.5	20.0		20.2	-0.010	0.103	0.11	0.184	0.21	
LTE B4, 20 MHz BW QPSK (50% RB @ Low)	SNN5916B	20175	1732.5	20.0		20.2	-0.120	0.102	0.12	0.184	0.21	
CDMA 800, EVDO Rel. 0 (RTAP)	SNN5916B	1013	824.7	25.0	24.77	20.3	0.23	0.0913	0.10	0.153	0.16	
CDMA 800, EVDO Rel. 0 (RTAP)	SNN5916B	1013	824.7	19.0		20.4	0.04	0.0131	0.01	0.0239	0.02	
CDMA 1900, EVDO REL. 0 (RTAP)	SNN5916B	25	836.5	24.0		20.5	0.03	0.54	0.55	1.05	1.08	
CDMA 1900, EVDO REL. 0 (RTAP)	SNN5916B	600	848.3	24.0		20.5	0.02	0.548	0.56	1.09	1.11	
CDMA 1900, EVDO REL. 0 (RTAP)	SNN5916B	1175	1851.3	<b>24.0</b>		<b>20.5</b>	<b>-0.2</b>	<b>0.489</b>	<b>0.56</b>	<b>0.995</b>	<b>1.13</b>	<b>A57</b>
CDMA 1900, EVDO REL. 0 (RTAP)	SNN5916B	1175	1851.3	24.0		20.5	-0.03	0.489	0.53	0.993	1.09	
CDMA 1900, EVDO REL. 0 (RTAP)	SNN5916B	600	848.3	19.0		20.4	0.04	0.133	0.13	0.265	0.27	
GSM 850, GPRS Class 12 (4 Uplink Timeslots)GSM 850, CS Voice	SNN5916B	190	836.6	28.0	27.43	18.7	0.02	0.0507	0.06	0.0924	0.11	
GSM 1900, GPRS Class 12 (4 Uplink Timeslots)GSM 1900, CS Voice	SNN5916B	661	1880.0	<b>25.0</b>	<b>24.13</b>	<b>19</b>	<b>0.02</b>	<b>0.216</b>	<b>0.26</b>	<b>0.433</b>	<b>0.53</b>	<b>A59</b>
WCDMA 850, RMC	SNN5916B	4180	836	24.0	23.90	20.6	0.05	0.0555	0.06	0.0906	0.09	
WCDMA 1900, RMC	SNN5916B	9262	1852.4	24.0	23.99	19.6	-0.03	0.47	0.47	0.941	0.95	
WCDMA 1900, RMC	SNN5916B	9400	1880	24.0	23.89	19.5	0.04	0.533	0.55	1.09	1.12	
WCDMA 1900, RMC	SNN5916B	9538	1907.6	<b>24.0</b>	<b>23.86</b>	<b>19.5</b>	<b>-0.05</b>	<b>0.528</b>	<b>0.55</b>	<b>1.1</b>	<b>1.15</b>	<b>A61</b>
WCDMA 1900, RMC	SNN5916B	9538	1907.6	24.0	23.86	20.8	-0.16	0.456	0.49	0.947	1.01	

Table 4-11: SAR measurement results in a body-adjacent position against the ICNIRP and ANSI SAR Limit.

### 4.5 Measurement Variability Analysis

Per FCC KDB 865664 D01, SAR measurement variability was assessed for each frequency band as determined by the SAR probe calibration points and tissue-equivalent mediums used for the device measurements. These additional measurements are executed after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The phone was returned to ambient conditions (normal room temperature) with the battery fully charged before it was re-mounted on the device holder for these measurements, to minimize any unexpected variations in the repeated results.

SAR measurement variability was assessed using the following procedures for each frequency band:

1. If the original highest measured SAR is  $< 0.8 \text{ W/kg}$ , the following steps do not apply and no repeat measurements were executed.
2. If the original highest measured SAR is  $\geq 0.8 \text{ W/kg}$ , that measurement was repeated once.
3. If the ratio of the largest to smallest SAR for the original and first repeated measurement was  $> 1.2$ , or if the original or first repeated measurement was  $\geq 1.45 \text{ W/kg}$ , the measurement was repeated a second time.
4. If the ratio of the largest to smallest SAR for the original, first repeated, or second repeated measurement was  $> 1.2$ , and one of those measurements was  $\geq 1.5 \text{ W/kg}$ , the measurement was repeated a third time.

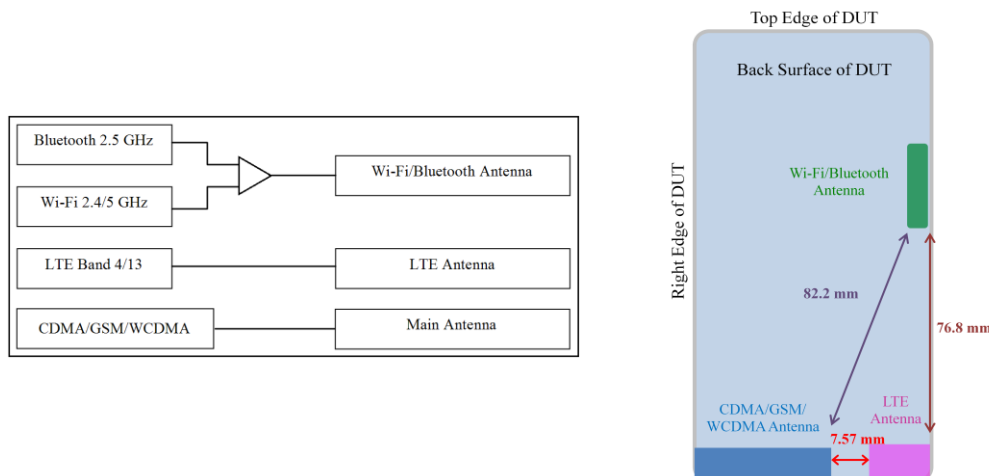
SAR Measurement Variability Results										
Mode	Exposure Condition	Channel	f (MHz)	Original Measured SAR (W/kg)	1st Repeated SAR (W/kg)	Ratio	2nd Repeated SAR (W/kg)	Ratio	3rd Repeated SAR (W/kg)	Ratio
LTE B4, 20 MHz BW QPSK (1 RB @ Low)	Mobile Hotspot Position, Front of Phone 10 mm from Phantom	20175	1732.5	1.12	1.08	1.04				
CDMA 800, EVDO Rel. 0 (RTAP)	Mobile Hotspot Position, Front of Phone 10 mm from Phantom	1013	824.7	0.966	0.793	1.22	0.824	1.22		
CDMA 1900, EVDO REL. 0 (RTAP)	Mobile Hotspot Position, Bottom Edge of Phone 10 mm from Phantom	1175	1851.3	0.995	0.993	1.00				
WCDMA 1900, RMC	Mobile Hotspot Position, Bottom Edge of Phone 10 mm from Phantom	9538	1907.6	1.1	0.947	1.16				

Table 4-12: SAR measurement results for Variability Analysis

### 4.6 Description and Evaluation of Simultaneous Transmitters

Per FCC KDB 447498 D01, the necessity of simultaneous SAR testing was evaluated for the licensed and unlicensed transmitters of the phone under test.

By design some or all of the transmitters built into the phone may operate simultaneously, as described in the tables on the following pages. A simplified model of the transmit paths and a diagram of the separation distances between the transmitting antennas are provided below.



When standalone SAR test exclusion applies to a mode and antenna that transmits simultaneously with other modes and antennas, the KDB directs that the standalone SAR of that mode must be estimated for evaluation in the SAR summations.

For simultaneous SAR evaluation, Bluetooth SAR was estimated and included in all applicable SAR summations. For Body-Worn Accessory simultaneous SAR evaluation, the value used for inclusion in these summations was found to be:

$$\frac{[11.41]_{(mW)}}{[25]_{(mm)}} \times \sqrt{\frac{2.48_{(GHz)}}{7.5}} = 0.1 W/kg_{(estimated)}$$

Note that Head-Adjacent exposure configurations are not applicable to Bluetooth operation, and therefore were not considered for simultaneous evaluation. Further, Bluetooth and Wi-Fi share the same transmit path, and cannot transmit simultaneously.

A description of the power conditions or reduced limits for simultaneous transmit modes is provided in section 2.5 and in expanded detail in Exhibit 12. The notation used in the “Exposure Condition” tables is as follows for the PWR column:

- MAX or N/A indicates the transmitter in this case has no reduced power limit enforced and may operate up to its maximum power, and no conditions are contingent on this transmitter’s operation.
- >18 and ≤18 indicate the transmitter’s power (in dBm) is monitored as a condition for enforcing the other power limit reductions in this case.
- 13, 19, 20, 21.5, 23 and 24 indicate an enforced power limit, at the value stated in dBm, on the noted transmitter for this simultaneous transmit case.

Per FCC KDB 447498 D01 section 4.3.2, when the sum of the 1 g SAR values of all simultaneously transmitting antennas and device modes in an exposure condition is within the SAR limit, that simultaneous transmission configuration may be excluded from SAR measurements. Simultaneous SAR summations for the head-adjacent, body-worn accessory and mobile hotspot exposure conditions with the worst-case SAR transmitter configurations are presented in the following tables.

Head Exposure Conditions; Simultaneous Transmit Configurations, including Power Conditions or Reduced Limits							
Case	Transmitter #1		Transmitter #2		Transmitter #3		Notes
	Transmitter Configuration	PWR	Transmitter Configuration	PWR	Transmitter Configuration	PWR	
H1	GSM 850	MAX	Wi-Fi 2.4 GHz	19			Voice + Background Data
H2	GSM 1900	MAX	Wi-Fi 2.4 GHz	19			Voice + Background Data
H3	GSM 850	MAX	Wi-Fi 5 GHz	13			Voice + Background Data
H4	GSM 1900	MAX	Wi-Fi 5 GHz	13			Voice + Background Data
H5	WCDMA 850	MAX	Wi-Fi 2.4 GHz	19			Voice + Background Data
H6	WCDMA 1900	MAX	Wi-Fi 2.4 GHz	19			Voice + Background Data
H7	WCDMA 850	MAX	Wi-Fi 5 GHz	13			Voice + Background Data
H8	WCDMA 1900	MAX	Wi-Fi 5 GHz	13			Voice + Background Data
H9	CDMA 800	MAX	Wi-Fi 2.4 GHz	19			Voice + Background Data
H10	CDMA 1900	MAX	Wi-Fi 2.4 GHz	19			Voice + Background Data
H11	CDMA 800	MAX	Wi-Fi 5 GHz	13			Voice + Background Data
H12	CDMA 1900	MAX	Wi-Fi 5 GHz	13			Voice + Background Data
H13	LTE B13	MAX	Wi-Fi 2.4 GHz	19			VoIP while in mobile hotspot
H14	LTE B4	23	Wi-Fi 2.4 GHz	19			VoIP while in mobile hotspot
H15	LTE B13	MAX	Wi-Fi 5 GHz	13			VoIP while in mobile hotspot
H16	LTE B4	23	Wi-Fi 5 GHz	13			VoIP while in mobile hotspot
H17	1x/EVDO 800	MAX	Wi-Fi 2.4 GHz	19			VoIP while in mobile hotspot
H18	1x/EVDO 800	MAX	Wi-Fi 2.4 GHz	19			VoIP while in mobile hotspot
H19	1x/EVDO 1900	MAX	Wi-Fi 5 GHz	13			VoIP while in mobile hotspot
H20	1x/EVDO 1900	MAX	Wi-Fi 5 GHz	13			VoIP while in mobile hotspot
H21	CDMA 800	≤18	LTE B4	23			SVLTE
H22	CDMA 1900	≤18	LTE B4	23			SVLTE
H23	CDMA 800	≤18	LTE B13	MAX			SVLTE
H24	CDMA 1900	≤18	LTE B13	MAX			SVLTE
H25	CDMA 800	>18	LTE B4	20			SVLTE
H26	CDMA 1900	>18	LTE B4	20			SVLTE
H27	CDMA 800	>18	LTE B13	21.5			SVLTE
H28	CDMA 1900	>18	LTE B13	21.5			SVLTE
H29	CDMA 800	≤18	LTE B4	23	Wi-Fi 2.4 GHz	19	SVLTE during Mobile Hotspot
H30	CDMA 800	≤18	LTE B4	23	Wi-Fi 5.785 GHz	13	SVLTE during Mobile Hotspot
H31	CDMA 800	≤18	LTE B13	MAX	Wi-Fi 2.4 GHz	19	SVLTE during Mobile Hotspot
H32	CDMA 800	≤18	LTE B13	MAX	Wi-Fi 5.785 GHz	13	SVLTE during Mobile Hotspot
H33	CDMA 800	>18	LTE B4	20	Wi-Fi 2.4 GHz	19	SVLTE during Mobile Hotspot
H34	CDMA 800	>18	LTE B4	20	Wi-Fi 5.785 GHz	13	SVLTE during Mobile Hotspot
H35	CDMA 800	>18	LTE B13	21.5	Wi-Fi 2.4 GHz	19	SVLTE during Mobile Hotspot
H36	CDMA 800	>18	LTE B13	21.5	Wi-Fi 5.785 GHz	13	SVLTE during Mobile Hotspot
H37	CDMA 1900	≤18	LTE B4	23	Wi-Fi 2.4 GHz	19	SVLTE during Mobile Hotspot
H38	CDMA 1900	≤18	LTE B4	23	Wi-Fi 5.785 GHz	13	SVLTE during Mobile Hotspot
H39	CDMA 1900	≤18	LTE B13	MAX	Wi-Fi 2.4 GHz	19	SVLTE during Mobile Hotspot
H40	CDMA 1900	≤18	LTE B13	MAX	Wi-Fi 5.785 GHz	13	SVLTE during Mobile Hotspot
H41	CDMA 1900	>18	LTE B4	20	Wi-Fi 2.4 GHz	19	SVLTE during Mobile Hotspot
H42	CDMA 1900	>18	LTE B4	20	Wi-Fi 5.785 GHz	13	SVLTE during Mobile Hotspot
H43	CDMA 1900	>18	LTE B13	21.5	Wi-Fi 2.4 GHz	19	SVLTE during Mobile Hotspot
H44	CDMA 1900	>18	LTE B13	21.5	Wi-Fi 5.785 GHz	13	SVLTE during Mobile Hotspot

		Transmitter Stand-Alone 1 g SAR Values (W/kg)				1 g SAR Summations (W/kg)			
						H1	H2	H3	H4
Band		GSM 850	GSM 1900	Wi-Fi 2.4 GHz	Wi-Fi 5 GHz	GSM 850 + Wi-Fi 2.4 GHz	GSM 1900 + Wi-Fi 2.4 GHz	GSM 850 + Wi-Fi 5 GHz	GSM 1900 + Wi-Fi 5 GHz
Power Condition or Reduced Limit		N/A	N/A	19	13				
Position	Left Head Cheek	0.25	0.22	0.09	0.05	0.34	0.31	0.3	0.27
	Left Head 15° Tilt	0.17	0.16	0.09	0.04	0.26	0.25	0.21	0.2
	Right Head Cheek	0.31	0.45	0.26	0.12	0.57	0.71	0.43	0.57
	Right Head 15° Tilt	0.19	0.17	0.09	0.06	0.28	0.26	0.25	0.23

Table 4-13: SAR summations for simultaneous evaluation – GSM in Head Positions

		Transmitter Stand-Alone 1 g SAR Values (W/kg)				1 g SAR Summations (W/kg)			
						H5	H6	H7	H8
Band		WCDMA 850	WCDMA 1900	Wi-Fi 2.4 GHz	Wi-Fi 5 GHz	WCDMA 850 + Wi-Fi 2.4 GHz	WCDMA 1900 + Wi-Fi 2.4 GHz	WCDMA 850 + Wi-Fi 5 GHz	WCDMA 1900 + Wi-Fi 5 GHz
Power Condition or Reduced Limit		N/A	N/A	19	13				
Position	Left Head Cheek	0.34	0.25	0.09	0.05	0.43	0.34	0.39	0.3
	Left Head 15° Tilt	0.23	0.17	0.09	0.04	0.32	0.26	0.27	0.21
	Right Head Cheek	0.36	0.76	0.26	0.12	0.62	1.02	0.48	0.88
	Right Head 15° Tilt	0.23	0.24	0.09	0.06	0.32	0.33	0.29	0.3

Table 4-14: SAR summations for simultaneous evaluation – WCDMA in Head Positions

		Transmitter Stand-Alone 1 g SAR Values (W/kg)				1 g SAR Summations (W/kg)			
						H9	H10	H11	H12
Band		CDMA 800	CDMA 1900	Wi-Fi 2.4 GHz	Wi-Fi 5 GHz	CDMA 800 + Wi-Fi 2.4 GHz	CDMA 1900 + Wi-Fi 2.4 GHz	CDMA 800 + Wi-Fi 5 GHz	CDMA 1900 + Wi-Fi 5 GHz
Power Condition or Reduced Limit		N/A	N/A	19	13				
Position	Left Head Cheek	0.6	0.41	0.09	0.05	0.69	0.5	0.65	0.46
	Left Head 15° Tilt	0.39	0.27	0.09	0.04	0.48	0.36	0.43	0.31
	Right Head Cheek	0.64	1.02	0.26	0.12	0.9	1.28	0.76	1.14
	Right Head 15° Tilt	0.42	0.34	0.09	0.06	0.51	0.43	0.48	0.4

Table 4-15: SAR summations for simultaneous evaluation – CDMA in Head Positions

		Transmitter Stand-Alone 1 g SAR Values (W/kg)				1 g SAR Summations (W/kg)			
						H13	H14	H15	H16
Band		LTE Band 13	LTE Band 4	Wi-Fi 2.4 GHz	Wi-Fi 5.785 GHz	LTE Band 13 + Wi-Fi 2.4 GHz	LTE Band 4 + Wi-Fi 2.4 GHz	LTE Band 13 + Wi-Fi 5 GHz	LTE Band 4 + Wi-Fi 5 GHz
Power Condition or Reduced Limit		N/A	23	19	13				
Position	Left Head Cheek	0.69	1.01	0.09	0.05	0.78	1.1	0.74	1.06
	Left Head 15° Tilt	0.36	0.59	0.09	0.04	0.45	0.68	0.4	0.63
	Right Head Cheek	0.5	0.57	0.26	0.12	0.76	0.83	0.62	0.69
	Right Head 15° Tilt	0.3	0.43	0.09	0.06	0.39	0.52	0.36	0.49

Table 4-16: SAR summations for simultaneous evaluation – LTE in Head Positions during VoIP and a Mobile Hotspot session

		Transmitter Stand-Alone 1 g SAR Values (W/kg)				1 g SAR Summations (W/kg)			
						H17	H18	H19	H20
Band		EVDO 800	EVDO 1900	Wi-Fi 2.4 GHz	Wi-Fi 5 GHz	EVDO 800 + Wi-Fi 2.4 GHz	EVDO 1900 + Wi-Fi 2.4 GHz	EVDO 800 + Wi-Fi 5 GHz	EVDO 1900 + Wi-Fi 5 GHz
Power Condition or Reduced Limit		N/A	N/A	19	13				
Position	Left Head Cheek	0.75	0.48	0.09	0.05	0.84	0.57	0.8	0.53
	Left Head 15° Tilt	0.53	0.35	0.09	0.04	0.62	0.44	0.57	0.39
	Right Head Cheek	0.9	1.01	0.26	0.12	1.16	1.27	1.02	1.13
	Right Head 15° Tilt	0.44	0.38	0.09	0.06	0.53	0.47	0.5	0.44

Table 4-17: SAR summations for simultaneous evaluation – 1x RTT Data in Head Positions during VoIP and a Mobile Hotspot session

		Transmitter Stand-Alone 1 g SAR Values (W/kg)				1 g SAR Summations (W/kg)			
						H21	H22	H23	H24
Band		CDMA 800	CDMA 1900	LTE Band 4	LTE Band 13	CDMA 800 + LTE Band 4	CDMA 1900 + LTE Band 4	CDMA 800 + LTE Band 13	CDMA 1900 + LTE Band 13
Power Condition or Reduced Limit		≤18	≤18	23	N/A				
Position	Left Head Cheek	0.09	0.1	1.01	0.69	1.1	1.11	0.78	0.79
	Left Head 15° Tilt	0.08	0.06	0.59	0.36	0.67	0.65	0.44	0.42
	Right Head Cheek	0.11	0.21	0.57	0.5	0.68	0.78	0.61	0.71
	Right Head 15° Tilt	0.08	0.06	0.43	0.3	0.51	0.49	0.38	0.36

Table 4-18: SAR summations for simultaneous evaluation – CDMA in Head Positions during SVLTE

		Transmitter Stand-Alone 1 g SAR Values (W/kg)				1 g SAR Summations (W/kg)			
						H25	H26	H27	H28
Band		CDMA 800	CDMA 1900	LTE Band 4	LTE Band 13	CDMA 800 + LTE Band 4	CDMA 1900 + LTE Band 4	CDMA 800 + LTE Band 13	CDMA 1900 + LTE Band 13
Power Condition or Reduced Limit		>18 or MAX	>18 or MAX	20	21.5				
Position	Left Head Cheek	0.6	0.41	0.59	0.23	1.19	1	0.83	0.64
	Left Head 15° Tilt	0.39	0.27	0.27	0.15	0.66	0.54	0.54	0.42
	Right Head Cheek	0.64	1.02	0.32	0.17	0.96	1.34	0.81	1.19
	Right Head 15° Tilt	0.42	0.34	0.22	0.13	0.64	0.56	0.55	0.47

Table 4-19: SAR summations for simultaneous evaluation – CDMA in Head Positions during SVLTE

		Transmitter Stand-Alone 1 g SAR Values (W/kg)					1 g SAR Summations (W/kg)			
							H29	H30	H31	H32
Band		CDMA 800	LTE Band 4	LTE Band 13	Wi-Fi 2.4 GHz	Wi-Fi 5.785 GHz	CDMA 800 + LTE Band 4 + Wi-Fi 2.4 GHz	CDMA 800 + LTE Band 4 + Wi-Fi 5.785 GHz	CDMA 800 + LTE Band 13 + Wi-Fi 2.4 GHz	CDMA 800 + LTE Band 13 + Wi-Fi 5.785 GHz
Power Condition or Reduced Limit		≤18	23	N/A	19	13				
Position	Left Head Cheek	0.09	1.01	0.69	0.09	0.05	1.19	1.15	0.87	0.83
	Left Head 15° Tilt	0.08	0.59	0.36	0.09	0.04	0.76	0.71	0.53	0.48
	Right Head Cheek	0.11	0.57	0.5	0.26	0.12	0.94	0.8	0.87	0.73
	Right Head 15° Tilt	0.08	0.43	0.3	0.09	0.06	0.6	0.57	0.47	0.44

Table 4-20: SAR summations for simultaneous evaluation – CDMA 800 in Head Positions during a Mobile Hotspot session

		Transmitter Stand-Alone 1 g SAR Values (W/kg)					1 g SAR Summations (W/kg)			
							H33	H34	H35	H36
Band		CDMA 800	LTE Band 4	LTE Band 13	Wi-Fi 2.4 GHz	Wi-Fi 5.785 GHz	CDMA 800 + LTE Band 4 + Wi-Fi 2.4 GHz	CDMA 800 + LTE Band 4 + Wi-Fi 5.785 GHz	CDMA 800 + LTE Band 13 + Wi-Fi 2.4 GHz	CDMA 800 + LTE Band 13 + Wi-Fi 5.785 GHz
Power Condition or Reduced Limit		>18 or MAX	20	21.5	19	13				
Position	Left Head Check	0.6	0.59	0.23	0.09	0.05	1.28	1.24	0.92	0.88
	Left Head 15° Tilt	0.39	0.27	0.15	0.09	0.04	0.75	0.7	0.63	0.58
	Right Head Check	0.64	0.32	0.17	0.26	0.12	1.22	1.08	1.07	0.93
	Right Head 15° Tilt	0.42	0.22	0.13	0.09	0.06	0.73	0.7	0.64	0.61

Table 4-21: SAR summations for simultaneous evaluation – CDMA 800 in Head Positions during a Mobile Hotspot session

		Transmitter Stand-Alone 1 g SAR Values (W/kg)					1 g SAR Summations (W/kg)			
							H37	H38	H39	H40
Band		CDMA 1900	LTE Band 4	LTE Band 13	Wi-Fi 2.4 GHz	Wi-Fi 5.785 GHz	CDMA 1900 + LTE Band 4 + Wi-Fi 2.4 GHz	CDMA 1900 + LTE Band 4 + Wi-Fi 5.785 GHz	CDMA 1900 + LTE Band 13 + Wi-Fi 2.4 GHz	CDMA 1900 + LTE Band 13 + Wi-Fi 5.785 GHz
Power Condition or Reduced Limit		≤18	23	N/A	19	13				
Position	Left Head Check	0.1	1.01	0.69	0.09	0.05	1.2	1.16	0.88	0.84
	Left Head 15° Tilt	0.06	0.59	0.36	0.09	0.04	0.74	0.69	0.51	0.46
	Right Head Check	0.21	0.57	0.5	0.26	0.12	1.04	0.9	0.97	0.83
	Right Head 15° Tilt	0.06	0.43	0.3	0.09	0.06	0.58	0.55	0.45	0.42

Table 4-22: SAR summations for simultaneous evaluation – CDMA 1900 in Head Positions during a Mobile Hotspot session

		Transmitter Stand-Alone 1 g SAR Values (W/kg)					1 g SAR Summations (W/kg)			
							H41	H42	H43	H44
Band		CDMA 1900	LTE Band 4	LTE Band 13	Wi-Fi 2.4 GHz	Wi-Fi 5.785 GHz	CDMA 1900 + LTE Band 4 + Wi-Fi 2.4 GHz	CDMA 1900 + LTE Band 4 + Wi-Fi 5.785 GHz	CDMA 1900 + LTE Band 13 + Wi-Fi 2.4 GHz	CDMA 1900 + LTE Band 13 + Wi-Fi 5.785 GHz
Power Condition or Reduced Limit		>18 or MAX	20	21.5	19	13				
Position	Left Head Check	0.41	0.59	0.23	0.09	0.05	1.09	1.05	0.73	0.69
	Left Head 15° Tilt	0.27	0.27	0.15	0.09	0.04	0.63	0.58	0.51	0.46
	Right Head Check	1.02	0.32	0.17	0.26	0.12	1.6	1.46	1.45	1.31
	Right Head 15° Tilt	0.34	0.22	0.13	0.09	0.06	0.65	0.62	0.56	0.53

Table 4-23: SAR summations for simultaneous evaluation – CDMA 1900 in Head Positions during a Mobile Hotspot session

Body-Worn Accessory Exposure Conditions; Simultaneous Transmit Configurations, including Power Conditions or Reduced Limits							
Case	Transmitter #1		Transmitter #2		Transmitter #3		Notes
	Transmitter Configuration	PWR	Transmitter Configuration	PWR	Transmitter Configuration	PWR	
B1	GSM 850	MAX	Wi-Fi 2.4 GHz	19			Voice + Background Data
B2	GSM 1900	MAX	Wi-Fi 2.4 GHz	19			Voice + Background Data
B3	GSM 850	MAX	Wi-Fi 5 GHz	13			Voice + Background Data
B4	GSM 1900	MAX	Wi-Fi 5 GHz	13			Voice + Background Data
B5	WCDMA 850	MAX	Wi-Fi 2.4 GHz	19			Voice + Background Data
B6	WCDMA 1900	MAX	Wi-Fi 2.4 GHz	19			Voice + Background Data
B7	WCDMA 850	MAX	Wi-Fi 5 GHz	13			Voice + Background Data
B8	WCDMA 1900	MAX	Wi-Fi 5 GHz	13			Voice + Background Data
B9	CDMA 800	MAX	Wi-Fi 2.4 GHz	19			Voice + Background Data
B10	CDMA 1900	MAX	Wi-Fi 2.4 GHz	19			Voice + Background Data
B11	CDMA 800	MAX	Wi-Fi 5 GHz	13			Voice + Background Data
B12	CDMA 1900	MAX	Wi-Fi 5 GHz	13			Voice + Background Data
B13	CDMA 800	≤18	LTE B4	23			SVLTE
B14	CDMA 1900	≤18	LTE B4	23			SVLTE
B15	CDMA 800	≤18	LTE B13	MAX			SVLTE
B16	CDMA 1900	≤18	LTE B13	MAX			SVLTE
B17	CDMA 800	>18	LTE B4	20			SVLTE
B18	CDMA 1900	>18	LTE B4	20			SVLTE
B19	CDMA 800	>18	LTE B13	21.5			SVLTE
B20	CDMA 1900	>18	LTE B13	21.5			SVLTE
B21	CDMA 800	MAX	Bluetooth	MAX			Voice + BT (Estimated)
B22	CDMA 1900	MAX	Bluetooth	MAX			Voice + BT (Estimated)
B23	GSM 850	MAX	Bluetooth	MAX			Voice + BT (Estimated)
B24	GSM 1900	MAX	Bluetooth	MAX			Voice + BT (Estimated)
B25	WCDMA 850	MAX	Bluetooth	MAX			Voice + BT (Estimated)
B26	WCDMA 1900	MAX	Bluetooth	MAX			Voice + BT (Estimated)
B27	LTE B4	MAX	Bluetooth	MAX			VoIP + BT (Estimated)
B28	LTE B13	MAX	Bluetooth	MAX			VoIP + BT (Estimated)

		Transmitter Stand-Alone 1 g SAR Values (W/kg)				1 g SAR Summations (W/kg)			
						B1	B2	B3	B4
Band		GSM 850	GSM 1900	Wi-Fi 2.4 GHz	Wi-Fi 5 GHz	GSM 850 + Wi-Fi 2.4 GHz	GSM 1900 + Wi-Fi 2.4 GHz	GSM 850 + Wi-Fi 5 GHz	GSM 1900 + Wi-Fi 5 GHz
Position	Front of Phone 25 mm from Phantom	0.21	0.07	0.01	0.02	0.22	0.08	0.23	0.09
	Back of Phone 25 mm from Phantom	0.21	0.06	0.02	0.04	0.23	0.08	0.25	0.1

Table 4-24: SAR summations for simultaneous evaluation – GSM in Body-Worn Accessory Positions

		Transmitter Stand-Alone 1 g SAR Values (W/kg)				1 g SAR Summations (W/kg)			
						B5	B6	B7	B8
Band		WCDMA 850	WCDMA 1900	Wi-Fi 2.4 GHz	Wi-Fi 5 GHz	WCDMA 850 + Wi-Fi 2.4 GHz	WCDMA 1900 + Wi-Fi 2.4 GHz	WCDMA 850 + Wi-Fi 5 GHz	WCDMA 1900 + Wi-Fi 5 GHz
Position	Front of Phone 25 mm from Phantom	0.28	0.11	0.01	0.02	0.29	0.12	0.3	0.13
	Back of Phone 25 mm from Phantom	0.26	0.11	0.02	0.04	0.28	0.13	0.3	0.15

Table 4-25: SAR summations for simultaneous evaluation – WCDMA in Body-Worn Accessory Positions

		Transmitter Stand-Alone 1 g SAR Values (W/kg)				1 g SAR Summations (W/kg)			
						B9	B10	B11	B12
Band		CDMA 800	CDMA 1900	Wi-Fi 2.4 GHz	Wi-Fi 5 GHz	CDMA 800 + Wi-Fi 2.4 GHz	CDMA 1900 + Wi-Fi 2.4 GHz	CDMA 850 + Wi-Fi 5 GHz	CDMA 1900 + Wi-Fi 5 GHz
Position	Front of Phone 25 mm from Phantom	0.53	0.14	0.01	0.02	0.54	0.15	0.55	0.16
	Back of Phone 25 mm from Phantom	0.51	0.16	0.02	0.04	0.53	0.18	0.55	0.2

Table 4-26: SAR summations for simultaneous evaluation – CDMA in Body-Worn Accessory Positions

		Transmitter Stand-Alone 1 g SAR Values (W/kg)				1 g SAR Summations (W/kg)			
						B13, B17	B14, B18	B15, B19	B16, B20
Band		CDMA 800	CDMA 1900	LTE B4	LTE B13	CDMA 800 + LTE B4	CDMA 1900 + LTE B4	CDMA 800 + LTE B13	CDMA 1900 + LTE B13
Position	Front of Phone 25 mm from Phantom	0.53	0.14	0.3	0.27	0.83	0.44	0.8	0.41
	Back of Phone 25 mm from Phantom	0.51	0.16	0.28	0.25	0.79	0.44	0.76	0.41

Table 4-27: SAR summations for simultaneous evaluation – CDMA in Body-Worn Accessory Positions

		Transmitter Stand-Alone 1 g SAR Values (W/kg)						1 g SAR Summations (W/kg)						
								B21	B22	B23	B24	B25	B26	
Band		CDMA 800	CDMA 1900	GSM 850	GSM 1900	WCDMA 850	WCDMA 1900	Bluetooth (Estimated)	CDMA 800 + BT	CDMA 1900 + BT	GSM 850 + BT	GSM 1900 + BT	WCDMA 850 + BT	WCDMA 1900 + BT
Position	Front of Phone 25 mm from Phantom	0.25	0.18	0.16	0.14	0.21	0.24	0.1	0.35	0.28	0.26	0.24	0.31	0.34
	Back of Phone 25 mm from Phantom	0.22	0.17	0.17	0.13	0.2	0.18	0.1	0.32	0.27	0.27	0.23	0.3	0.28

Table 4-28: SAR summations for simultaneous evaluation – Bluetooth (Estimated) in Body-Worn Accessory Positions

		Transmitter Stand-Alone 1 g SAR Values (W/kg)			1 g SAR Summations (W/kg)	
					B27	B28
Band		LTE B4	LTE B13	Bluetooth (Estimated)	LTE B4 + BT	LTE B13 + BT
Position	Front of Phone 25 mm from Phantom	0.3	0.27	0.1	0.4	0.37
	Back of Phone 25 mm from Phantom	0.28	0.25	0.1	0.38	0.35

Table 4-29: SAR summations for simultaneous evaluation – LTE in VoIP and a background data session when in a Body-Worn Accessory Position

Mobile Hotspot Exposure Conditions; Simultaneous Transmit Configurations, including Power Conditions or Reduced Limits							
Case	Transmitter #1		Transmitter #2		Transmitter #3		Notes
	Transmitter Configuration	PWR	Transmitter Configuration	PWR	Transmitter Configuration	PWR	
M1	GSM 850	MAX	Wi-Fi 2.4 GHz	19			Mobile Hotspot
M2	GSM 1900	MAX	Wi-Fi 2.4 GHz	19			Mobile Hotspot
M3	GSM 850	MAX	Wi-Fi 5 GHz	13			Mobile Hotspot
M4	GSM 1900	MAX	Wi-Fi 5 GHz	13			Mobile Hotspot
M5	WCDMA 850	MAX	Wi-Fi 2.4 GHz	19			Mobile Hotspot
M6	WCDMA 1900	MAX	Wi-Fi 2.4 GHz	19			Mobile Hotspot
M7	WCDMA 850	MAX	Wi-Fi 5 GHz	13			Mobile Hotspot
M8	WCDMA 1900	MAX	Wi-Fi 5 GHz	13			Mobile Hotspot
M9	CDMA 800	MAX	Wi-Fi 2.4 GHz	19			Mobile Hotspot
M10	CDMA 1900	24	Wi-Fi 2.4 GHz	19			Mobile Hotspot
M11	CDMA 800	MAX	Wi-Fi 5 GHz	13			Mobile Hotspot
M12	CDMA 1900	24	Wi-Fi 5 GHz	13			Mobile Hotspot
M13	LTE B13	MAX	Wi-Fi 2.4 GHz	19			Mobile Hotspot
M14	LTE B4	MAX	Wi-Fi 2.4 GHz	19			Mobile Hotspot
M15	LTE B13	MAX	Wi-Fi 5 GHz	13			Mobile Hotspot
M16	LTE B4	MAX	Wi-Fi 5 GHz	13			Mobile Hotspot
M17	CDMA 800	≤18	LTE B4	23	Wi-Fi 2.4 GHz	19	SVLTE during Mobile Hotspot
M18	CDMA 800	≤18	LTE B4	23	Wi-Fi 5.785 GHz	13	SVLTE during Mobile Hotspot
M19	CDMA 800	≤18	LTE B13	MAX	Wi-Fi 2.4 GHz	19	SVLTE during Mobile Hotspot
M20	CDMA 800	≤18	LTE B13	MAX	Wi-Fi 5.785 GHz	13	SVLTE during Mobile Hotspot
M21	CDMA 800	>18	LTE B4	20	Wi-Fi 2.4 GHz	19	SVLTE during Mobile Hotspot
M22	CDMA 800	>18	LTE B4	20	Wi-Fi 5.785 GHz	13	SVLTE during Mobile Hotspot
M23	CDMA 800	>18	LTE B13	21.5	Wi-Fi 2.4 GHz	19	SVLTE during Mobile Hotspot
M24	CDMA 800	>18	LTE B13	21.5	Wi-Fi 5.785 GHz	13	SVLTE during Mobile Hotspot
M25	CDMA 1900	≤18	LTE B4	23	Wi-Fi 2.4 GHz	19	SVLTE during Mobile Hotspot
M26	CDMA 1900	≤18	LTE B4	23	Wi-Fi 5.785 GHz	13	SVLTE during Mobile Hotspot
M27	CDMA 1900	≤18	LTE B13	MAX	Wi-Fi 2.4 GHz	19	SVLTE during Mobile Hotspot
M28	CDMA 1900	≤18	LTE B13	MAX	Wi-Fi 5.785 GHz	13	SVLTE during Mobile Hotspot
M29	CDMA 1900	>18	LTE B4	20	Wi-Fi 2.4 GHz	19	SVLTE during Mobile Hotspot
M30	CDMA 1900	>18	LTE B4	20	Wi-Fi 5.785 GHz	13	SVLTE during Mobile Hotspot
M31	CDMA 1900	>18	LTE B13	21.5	Wi-Fi 2.4 GHz	19	SVLTE during Mobile Hotspot
M32	CDMA 1900	>18	LTE B13	21.5	Wi-Fi 5.785 GHz	13	SVLTE during Mobile Hotspot

		Transmitter Stand-Alone 1 g SAR Values (W/kg)				1 g SAR Summations (W/kg)			
		GPRS 850	GPRS 1900	Wi-Fi 2.4 GHz	Wi-Fi 5.785 GHz	M1	M2	M3	M4
Band		GPRS 850	GPRS 1900	Wi-Fi 2.4 GHz	Wi-Fi 5.785 GHz	GPRS 850 + Wi-Fi 2.4 GHz	GPRS 1900 + Wi-Fi 2.4 GHz	GPRS 850 + Wi-Fi 5.785 GHz	GPRS 1900 + Wi-Fi 5.785 GHz
Power Condition or Reduced Limit		N/A	N/A	19	13				
Position	Front of Phone 10 mm from Phantom	0.53	0.46	0.04	0.03	0.57	0.5	0.56	0.49
	Back of Phone 10 mm from Phantom	0.54	0.35	0.15	0.1	0.69	0.5	0.64	0.45
	Left Edge of Phone 10 mm from Phantom	0	0	0.19	0.14	0.19	0.19	0.14	0.14
	Right Edge of Phone 10 mm from Phantom	0.57	0.23	0	0	0.57	0.23	0.57	0.23
	Top Edge of Phone 10 mm from Phantom	0	0	0	0	0	0	0	0
	Bottom Edge of Phone 10 mm from Phantom	0.11	0.53	0	0	0.11	0.53	0.11	0.53

Table 4-30: SAR summations for simultaneous evaluation – Positions during a Mobile Hotspot session

		Transmitter Stand-Alone 1 g SAR Values (W/kg)				1 g SAR Summations (W/kg)			
		WCDMA 850	WCDMA 1900	Wi-Fi 2.4 GHz	Wi-Fi 5 GHz	M5	M6	M7	M8
Band		WCDMA 850	WCDMA 1900	Wi-Fi 2.4 GHz	Wi-Fi 5 GHz	WCDMA 850 + Wi-Fi 2.4 GHz	WCDMA 1900 + Wi-Fi 2.4 GHz	WCDMA 850 + Wi-Fi 5 GHz	WCDMA 1900 + Wi-Fi 5 GHz
Power Condition or Reduced Limit		N/A	N/A	19	13				
Position	Front of Phone 10 mm from Phantom	0.5	0.72	0.04	0.03	0.54	0.76	0.53	0.75
	Back of Phone 10 mm from Phantom	0.44	0.64	0.15	0.1	0.59	0.79	0.54	0.74
	Left Edge of Phone 10 mm from Phantom	0	0	0.19	0.14	0.19	0.19	0.14	0.14
	Right Edge of Phone 10 mm from Phantom	0.49	0.31	0	0	0.49	0.31	0.49	0.31
	Top Edge of Phone 10 mm from Phantom	0	0	0	0	0	0	0	0
	Bottom Edge of Phone 10 mm from Phantom	0.09	1.15	0	0	0.09	1.15	0.09	1.15

Table 4-31: SAR summations for simultaneous evaluation – Positions during a Mobile Hotspot session

		Transmitter Stand-Alone 1 g SAR Values (W/kg)				1 g SAR Summations (W/kg)			
						M9	M10	M11	M12
Band		CDMA 800	CDMA 1900	Wi-Fi 2.4 GHz	Wi-Fi 5 GHz	CDMA 800 + Wi-Fi 2.4 GHz	CDMA 1900 + Wi-Fi 2.4 GHz	CDMA 050 + Wi-Fi 5 GHz	CDMA 1900 + Wi-Fi 5 GHz
Power Condition or Reduced Limit		N/A	24	19	13				
Position	Front of Phone 10 mm from Phantom	1.02	0.65	0.04	0.03	1.06	0.69	1.05	0.68
	Back of Phone 10 mm from Phantom	0.89	0.77	0.15	0.1	1.04	0.92	0.99	0.87
	Left Edge of Phone 10 mm from Phantom	0	0	0.19	0.14	0.19	0.19	0.14	0.14
	Right Edge of Phone 10 mm from Phantom	0.92	0.35	0	0	0.92	0.35	0.92	0.35
	Top Edge of Phone 10 mm from Phantom	0	0	0	0	0	0	0	0
	Bottom Edge of Phone 10 mm from Phantom	0.16	1.13	0	0	0.16	1.13	0.16	1.13

Table 4-32: SAR summations for simultaneous evaluation – Positions during a Mobile Hotspot session

		Transmitter Stand-Alone 1 g SAR Values (W/kg)				1 g SAR Summations (W/kg)			
						M13	M14	M15	M16
Band		LTE Band 13	LTE Band 4	Wi-Fi 2.4 GHz	Wi-Fi 5.785 GHz	LTE Band 13 + Wi-Fi 2.4 GHz	LTE Band 4 + Wi-Fi 2.4 GHz	LTE Band 13 + Wi-Fi 5 GHz	LTE Band 4 + Wi-Fi 5 GHz
Power Condition or Reduced Limit		N/A	N/A	19	13				
Position	Front of Phone 10 mm from Phantom	0.7	1.15	0.04	0.03	0.74	1.19	0.73	1.18
	Back of Phone 10 mm from Phantom	0.67	1.09	0.15	0.1	0.82	1.24	0.77	1.19
	Left Edge of Phone 10 mm from Phantom	0.51	0.64	0.19	0.14	0.7	0.83	0.65	0.78
	Right Edge of Phone 10 mm from Phantom	0	0	0	0	0	0	0	0
	Top Edge of Phone 10 mm from Phantom	0	0	0	0	0	0	0	0
	Bottom Edge of Phone 10 mm from Phantom	0.37	0.53	0	0	0.37	0.53	0.37	0.53

Table 4-33: SAR summations for simultaneous evaluation – Positions during a Mobile Hotspot session

		Transmitter Stand-Alone 1 g SAR Values (W/kg)					1 g SAR Summations (W/kg)			
							M17	M18	M19	M20
Band		CDMA 800	LTE Band 4	LTE Band 13	Wi-Fi 2.4 GHz	Wi-Fi 5.785 GHz	CDMA 800 + LTE Band 4 + Wi-Fi 2.4 GHz	CDMA 800 + LTE Band 4 + Wi-Fi 5.785 GHz	CDMA 800 + LTE Band 13 + Wi-Fi 2.4 GHz	CDMA 800 + LTE Band 13 + Wi-Fi 5.785 GHz
Power Condition or Reduced Limit		≤18	N/A	N/A	19	13				
Position	Front of Phone 10 mm from Phantom	0.14	1.15	0.7	0.04	0.03	1.33	1.32	0.88	0.87
	Back of Phone 10 mm from Phantom	0.13	1.09	0.67	0.15	0.1	1.37	1.32	0.95	0.9
	Left Edge of Phone 10 mm from Phantom	0	0.64	0.51	0.19	0.14	0.83	0.78	0.7	0.65
	Right Edge of Phone 10 mm from Phantom	0.13	0	0	0	0	0.13	0.13	0.13	0.13
	Top Edge of Phone 10 mm from Phantom	0	0	0	0	0	0	0	0	0
	Bottom Edge of Phone 10 mm from Phantom	0.02	0.53	0.37	0	0	0.55	0.55	0.39	0.39

Table 4-34: SAR summations for simultaneous evaluation – Positions during a Mobile Hotspot session with a concurrent Voice session

		Transmitter Stand-Alone 1 g SAR Values (W/kg)					1 g SAR Summations (W/kg)			
							M21	M22	M23	M24
Band		CDMA 800	LTE Band 4	LTE Band 13	Wi-Fi 2.4 GHz	Wi-Fi 5.785 GHz	CDMA 800 + LTE Band 4 + Wi-Fi 2.4 GHz	CDMA 800 + LTE Band 4 + Wi-Fi 5.785 GHz	CDMA 800 + LTE Band 13 + Wi-Fi 2.4 GHz	CDMA 800 + LTE Band 13 + Wi-Fi 5.785 GHz
Power Condition or Reduced Limit		>18 or MAX	20	21.5	19	13				
Position	Front of Phone 10 mm from Phantom	1.02	0.53	0.23	0.04	0.03	1.59	1.58	1.29	1.28
	Back of Phone 10 mm from Phantom	0.89	0.43	0.21	0.15	0.1	1.47	1.42	1.25	1.2
	Left Edge of Phone 10 mm from Phantom	0	0.22	0.18	0.19	0.14	0.41	0.36	0.37	0.32
	Right Edge of Phone 10 mm from Phantom	0.92	0	0	0	0	0.92	0.92	0.92	0.92
	Top Edge of Phone 10 mm from Phantom	0	0	0	0	0	0	0	0	0
	Bottom Edge of Phone 10 mm from Phantom	0.16	0.21	0.1	0	0	0.37	0.37	0.26	0.26

Table 4-39: SAR summations for simultaneous evaluation – Positions during a Mobile Hotspot session with a concurrent Voice session

		Transmitter Stand-Alone 1 g SAR Values (W/kg)					1 g SAR Summations (W/kg)			
							M25	M26	M27	M28
Band		CDMA 1900	LTE Band 4	LTE Band 13	Wi-Fi 2.4 GHz	Wi-Fi 5.785 GHz	CDMA 1900 + LTE Band 4 + Wi-Fi 2.4 GHz	CDMA 1900 + LTE Band 4 + Wi-Fi 5.785 GHz	CDMA 1900 + LTE Band 13 + Wi-Fi 2.4 GHz	CDMA 1900 + LTE Band 13 + Wi-Fi 5.785 GHz
Power Condition or Reduced Limit		≤18	N/A	N/A	19	13				
Position	Front of Phone 10 mm from Phantom	0.25	1.15	0.7	0.04	0.03	1.44	1.43	0.99	0.98
	Back of Phone 10 mm from Phantom	0.26	1.09	0.67	0.15	0.1	1.5	1.45	1.08	1.03
	Left Edge of Phone 10 mm from Phantom	0	0.64	0.51	0.19	0.14	0.83	0.78	0.7	0.65
	Right Edge of Phone 10 mm from Phantom	0.1	0	0	0	0	0.1	0.1	0.1	0.1
	Top Edge of Phone 10 mm from Phantom	0	0	0	0	0	0	0	0	0
	Bottom Edge of Phone 10 mm from Phantom	0.27	0.53	0.37	0	0	0.8	0.8	0.64	0.64

Table 4-39: SAR summations for simultaneous evaluation – Positions during a Mobile Hotspot session with a concurrent Voice session

		Transmitter Stand-Alone 1 g SAR Values (W/kg)					1 g SAR Summations (W/kg)			
							M29	M30	M31	M32
Band		CDMA 1900	LTE Band 4	LTE Band 13	Wi-Fi 2.4 GHz	Wi-Fi 5.785 GHz	CDMA 1900 + LTE Band 4 + Wi-Fi 2.4 GHz	CDMA 1900 + LTE Band 4 + Wi-Fi 5.785 GHz	CDMA 1900 + LTE Band 13 + Wi-Fi 2.4 GHz	CDMA 1900 + LTE Band 13 + Wi-Fi 5.785 GHz
Power Condition or Reduced Limit		24	20	21.5	19	13				
Position	Front of Phone 10 mm from Phantom	0.65	0.53	0.23	0.04	0.03	1.22	1.21	0.92	0.91
	Back of Phone 10 mm from Phantom	0.77	0.43	0.21	0.15	0.1	1.35	1.3	1.13	1.08
	Left Edge of Phone 10 mm from Phantom	0	0.22	0.18	0.19	0.14	0.41	0.36	0.37	0.32
	Right Edge of Phone 10 mm from Phantom	0.35	0	0	0	0	0.35	0.35	0.35	0.35
	Top Edge of Phone 10 mm from Phantom	0	0	0	0	0	0	0	0	0
	Bottom Edge of Phone 10 mm from Phantom	1.13	0.21	0.1	0	0	1.34	1.34	1.23	1.23

Table 4-39: SAR summations for simultaneous evaluation – Positions during a Mobile Hotspot session with a concurrent Voice session

**Simultaneous Evaluation Conclusion**

As no summation of transmitter SAR values results in a value greater than the compliance limit, no measurements for simultaneous SAR are required.

## 5 References to Test Standards and Guidance

- [1] CENELEC, EN 62209-1:2006 “Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures - Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)”
- [2] CENELEC, EN 50360:2001 “Product standard to demonstrate the compliance of mobile phones with the basic restrictions related to human exposure to electromagnetic fields (300 MHz – 3 GHz)”.
- [3] ANSI / IEEE, C95.1 1992 Edition “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”
- [4] FCC OET Bulletin 65 Supplement C 01-01
- [5] IEEE 1528 2003 Edition “IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”
- [6] ICNIRP Guidelines “Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz)”
- [7] IC RSS-102 “Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)
- [8] IC Notice 2012-DRS1203 “RE: Applicability of Latest FCC RF Exposure KDB Procedures (Publication Date: October 24, 2012) and Other Procedures”
- [9] CENELEC, EN 62209-2:2010 “Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)”
- [10] FCC KDB Publication 248227 D01 v01r02 “SAR Measurement Procedures for 802.11 a/b/g Transmitters”
- [11] FCC KDB Publication 447498 D01 v05r01 “Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies”
- [12] FCC KDB Publication 648474 D04r01 v01 “SAR Evaluation Considerations for Wireless Handsets”
- [13] FCC KDB Publication 865664 D01 v01r01 “SAR Measurement Requirements for 100 MHz to 6 GHz”
- [14] FCC KDB Publication 865664 D02 v01r01 “RF Exposure Compliance Reporting and Documentation Considerations”
- [15] FCC KDB Publication 941225 D01 v02r02 “SAR Measurement Procedures for 3G Devices”
- [16] FCC KDB Publication 941225 D03 v01 “Recommended SAR Test Reduction Procedures for GSM/GPRS/EDGE”
- [17] FCC KDB Publication 941225 D05 v02r02 “SAR Evaluation Considerations for LTE Devices”
- [18] FCC KDB Publication 941225 D06 v01r01 “SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities”