FCC SAR Test Report

APPLICANT	:	**Honeywell International Inc.** **Honeywell Safety and Productivity Solutions**
EQUIPMENT	:	**Mobile Computer**
BRAND NAME	:	**Honeywell**
MODEL NAME	:	**CT40P-L1N**
FCC ID	:	**HD5-CT40PL1N**
STANDARD	:	**FCC 47 CFR Part 2 (2.1093)** **ANSI/IEEE C95.1-1992** **IEEE 1528-2013**

The product was received on Jul. 24, 2020 and testing was started from Aug. 08, 2020 and completed on Aug. 24, 2020. We, Sporton International (Kunshan) Inc, would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.

Rose Wang

Reviewed by: Rose Wang / Supervisor

Kat Yin

Approved by: Kat Yin / Manager

Sporton International (Kunshan) Inc.
No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China

Table of Contents

Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA072404	Rev. 01	Initial issue of report	Sep. 02, 2020

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Honeywell International Inc., Mobile Computer, CT40P-L1N,** are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 10mm)	Body-worn (Separation 15mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.55	0.75	0.54	1.59
		GSM1900	0.12	0.92	0.55	
	WCDMA	Band II	0.15	**1.25**	0.54	
		Band IV	0.14	1.23	0.65	
		Band V	0.62	0.85	0.62	
	CDMA	BC0	0.48	0.65	0.51	
		BC1	0.14	1.00	0.58	
		BC10	0.47	0.69	0.43	
	LTE	Band 4	0.26	1.13	**1.10**	
		Band 7	0.26	0.94	0.48	
		Band 12/ Band 17	0.48	0.83	0.63	
		Band 13	0.35	0.63	0.37	
		Band 25/Band 2	0.13	1.10	0.54	
		Band 26/Band5	0.40	0.39	0.39	
		Band 41/ Band 38	0.22	1.17	0.57	
DTS	WLAN	2.4GHz WLAN	1.25	0.38	0.21	1.59
NII		5GHz WLAN	**1.33**	0.57	0.18	1.59
DSS	Bluetooth	2.4GHz Bluetooth	<0.10	<0.10	<0.10	1.32

Highest 10g SAR Summary				
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)	Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	WCDMA	Band II	3.64	3.99
		Band IV	2.58	
	CDMA	BC1	3.68	
	LTE	Band 4	**3.74**	
		Band 7	3.05	
		Band 25/Band 2	3.53	
NII	WLAN	5GHz WLAN	0.62	3.99
Date of Testing:			2020/8/08~2020/8/24	

Remark:
This device supports LTE B2 / B5 / B17 / B38 and B25 / B26 / B12 / B41. Since the supported frequency span for LTE B2 / B5 / B17 / B38 falls completely within the supports frequency span for LTE B25 / B26 / B12 / B41, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B25 / B26 / B12 / B41.

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR, 4.0 W/kg for Product Specific 10g SAR) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.

2. Administration Data

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Testing Laboratory		
Test Firm	Sporton International (Kunshan) Inc.	
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958	
Test Site No.	FCC Designation No.	FCC Test Firm Registration No.
	CN1257	314309

Applicant	
Company Name	Honeywell International Inc. Honeywell Safety and Productivity Solutions
Address	9680 Old Bailes Road, Fort Mill, SC 29707 USA

Manufacturer	
Company Name	Honeywell International Inc. Honeywell Safety and Productivity Solutions
Address	9680 Old Bailes Rd. Fort Mill, SC 29707 United States

3. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Computer
Brand Name	Honeywell
Model Name	CT40P-L1N
FCC ID	HD5-CT40PL1N
IMEI Code	SIM1: 990016300002167 SIM2: 990016300002142
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz CDMA2000 BC0: 824.7 MHz ~ 848.31 MHz CDMA 2000 BC1: 1851.25 MHz ~ 1908.75 MHz CDMA 2000 BC10: 817.9 MHz ~ 823.1 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+(16QAM uplink is not supported) CDMA2000 : 1xRTT/1xEv-Do(Rev.0)/1xEv-Do(Rev.A) LTE: QPSK, 16QAM, 64QAM WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC:ASK
HW Version	V2.0
SW Version	OS.03.003-HON.02.001
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype
Remark: 1. This device supports VoIP in GPRS, EGPRS, WCDMA, CDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation. 2. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications. 3. This device 2.4GHz WLAN/5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz	

WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only).
4. This device does not support DTM operation and supports GRPS/EGRPS mode up to multi-slot class 33.
5. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of WCDMA Band II, CDMA 2000 BC1 and LTE Band 2/4/7/25.
6. There are two samples, the differences between two samples are sample 1 has Type C charging port and sample 2 has none. According to the difference, there has no effect on SAR distribution, so chose sample 1 to perform full SAR testing.

4.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05	
FCC ID	HD5-CT40PL1N
Equipment Name	Mobile Computer
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz
Channel Bandwidth	LTE Band 2:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 5:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 13: 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 25:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 26:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz
uplink modulations used	QPSK / 16QAM / 64QAM
LTE Voice / Data requirements	Voice and Data
LTE Release Version	R11, Cat6
CA Support	Supported, Downlink only
LTE MPR permanently built-in by design	Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.
Power reduction applied to satisfy SAR compliance	Yes, When hotspot mode is enabled, power reduction will be activated to limit the maximum power of LTE Band 2/4/7/25.
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power verification please referred to section 13.
LTE Carrier Aggregation Additional Information	This device supports maximum of 2 carriers in the downlink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3

Modulation	Channel bandwidth / Transmission bandwidth (N_{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
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5

Transmission (H, M, L) channel numbers and frequencies in each LTE band

LTE Band 2

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900

LTE Band 4

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745

LTE Band 5

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844

LTE Band 7

	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510
M	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560

LTE Band 12

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711

LTE Band 13

	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq.(MHz)
L	23205	779.5	23230	782
M	23230	782		
H	23255	784.5		

LTE Band 17

	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq. (MHz)
L	23755	706.5	23780	709
M	23790	710	23790	710
H	23825	713.5	23800	711

LTE Band 25

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905

LTE Band 26

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)

L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5

LTE Band 38								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580
M	38000	2595	38000	2595	38000	2595	38000	2595
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610

LTE Band 41								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5
M	40620	2593	40620	2593	40620	2593	40620	2593
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680

5. RF Exposure Limits

5.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

5.2 Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

6. Specific Absorption Rate (SAR)

6.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

6.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$\mathbf{SAR} = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\mathbf{dm}}\right) = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\boldsymbol{\rho}\mathbf{dv}}\right)$$

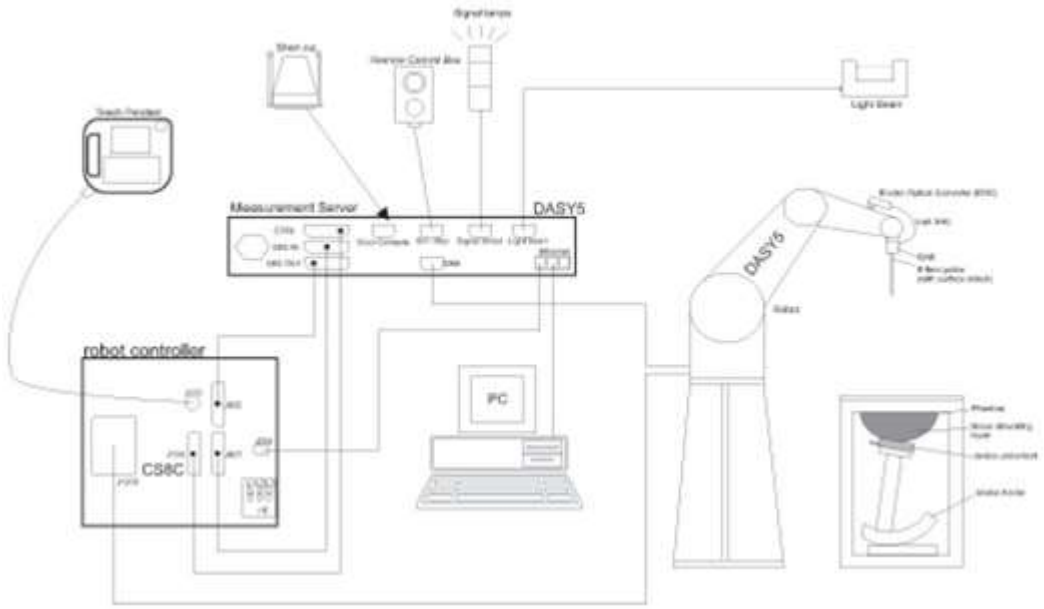
SAR is expressed in units of Watts per kilogram (W/kg)

$$\mathbf{SAR} = \frac{\boldsymbol{\sigma}|\mathbf{E}|^{\mathbf{2}}}{\boldsymbol{\rho}}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

7. System Description and Setup

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



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

7.1 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG).The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

<ES3DV3 Probe>

Construction	Symmetric design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	10 MHz – 4 GHz; Linearity: ±0.2 dB (30 MHz – 4 GHz)
Directivity	±0.2 dB in TSL (rotation around probe axis) ±0.3 dB in TSL (rotation normal to probe axis)
Dynamic Range	5 µW/g – >100 mW/g; Linearity: ±0.2 dB
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 3.9 mm (body: 12 mm) Distance from probe tip to dipole centers: 3.0 mm

<EX3DV4 Probe>

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	10 MHz – >6 GHz Linearity: ±0.2 dB (30 MHz – 6 GHz)
Directivity	±0.3 dB in TSL (rotation around probe axis) ±0.5 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 µW/g – >100 mW/g Linearity: ±0.2 dB (noise: typically <1 µW/g)
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm

7.2 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Photo of DAE

7.3 Phantom

<SAM Twin Phantom>

Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

<ELI Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%)
Filling Volume	Approx. 30 liters
Dimensions	Major ellipse axis: 600 mm Minor axis: 400 mm

The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

7.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

In combination with the Twin SAM V5.0/V5.0c or ELI phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat). And upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140 mm.

Mounting Device for Hand-Held Transmitters

Mounting Device Adaptor for Wide-Phones

<Mounting Device for Laptops and other Body-Worn Transmitters>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.

Mounting Device for Laptops

8. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

(a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
(b) Read the WWAN RF power level from the base station simulator.
(c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
(d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

(a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
(b) Place the EUT in the positions as Appendix D demonstrates.
(c) Set scan area, grid size and other setting on the DASY software.
(d) Measure SAR results for the highest power channel on each testing position.
(e) Find out the largest SAR result on these testing positions of each band
(f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

8.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

8.2 Power Reference Measurement

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

8.3 Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB0 is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

8.4 Zoom Scan

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

Zoom scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

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

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

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

8.5 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

8.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.

9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1087	2019/3/27	2022/3/26
SPEAG	835MHz System Validation Kit	D835V2	4d151	2019/3/27	2022/3/26
SPEAG	1750MHz System Validation Kit	D1750V2	1090	2019/3/27	2022/3/26
SPEAG	1900MHz System Validation Kit	D1900V2	5d170	2019/3/26	2022/3/25
SPEAG	2450MHz System Validation Kit	D2450V2	908	2019/3/25	2022/3/24
SPEAG	2600MHz System Validation Kit	D2600V2	1061	2018/12/7	2021/12/6
SPEAG	5000MHz System Validation Kit	D5GHzV2	1113	2019/9/24	2020/9/23
SPEAG	Data Acquisition Electronics	DAE4	656	2019/12/17	2020/12/16
SPEAG	Data Acquisition Electronics	DAE4	1303	2020/7/7	2021/7/6
SPEAG	Dosimetric E-Field Probe	ES3DV3	3279	2020/6/2	2021/6/1
SPEAG	Dosimetric E-Field Probe	EX3DV4	7592	2020/5/22	2021/5/21
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1753	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio Communication Analyzer	MT8821C	6201432831	2020/4/16	2021/4/15
Agilent	Wireless Communication Test Set	E5515C	MY52102706	2020/4/16	2021/4/15
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	2020/4/16	2021/4/15
SPEAG	Dielectric Probe Kit	DAK-3.5	1071	2019/10/28	2020/10/27
Anritsu	Vector Signal Generator	MG3710A	6201682672	2020/1/8	2021/1/7
Rohde & Schwarz	Power Meter	NRVD	102081	2019/8/15	2020/8/14
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2019/8/14	2020/8/13
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2019/8/14	2020/8/13
Rohde & Schwarz	Power Meter	NRVD	102081	2020/8/14	2021/8/13
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2020/8/13	2021/8/12
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2020/8/13	2021/8/12
R&S	CBT BLUETOOTH TESTER	CBT	101641	2020/1/8	2021/1/7
EXA	Spectrum Analyzer	FSV7	101631	2020/1/8	2021/1/7
Testo	Hygrometer	608-H1	1241332088	2020/1/8	2021/1/7
FLUKE	DIGITAC THERMOMETER	51II	97240029	2019/8/15	2020/8/14
FLUKE	DIGITAC THERMOMETER	51II	97240029	2020/8/14	2021/8/13
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A	Note 1	
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B	Note 1	
ARRA	Power Divider	A3200-2	N/A	Note 1	
MCL	Attenuation1	BW-S10W5+	N/A	Note 1	
MCL	Attenuation2	BW-S10W5+	N/A	Note 1	
MCL	Attenuation3	BW-S10W5+	N/A	Note 1	
Agilent	Dual Directional Coupler	778D	20500	Note 1	
Agilent	Dual Directional Coupler	11691D	MY48151020	Note 1	

Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check
2. Referring to KDB 865664 D01v01r04, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The justification data of dipole can be found in appendix C. The return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.

10. System Verification

10.1 Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 11.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 11.2.

Fig 11.1 Photo of Liquid Height for Head SAR

Fig 11.2 Photo of Liquid Height for Body SAR

10.2 Tissue Verification

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

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0

Simulating Liquid for 5GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	64~78%
Mineral oil	11~18%
Emulsifiers	9~15%
Additives and Salt	2~3%

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	Head	22.8	0.914	43.152	0.89	41.90	2.70	2.99	±5	2020.8.8
835	Head	22.6	0.915	41.269	0.90	41.50	1.67	-0.56	±5	2020.8.11
1750	Head	22.9	1.351	39.346	1.37	40.10	-1.39	-1.88	±5	2020.8.14
1900	Head	22.9	1.433	39.091	1.40	40.00	2.36	-2.27	±5	2020.8.17
2450	Head	22.6	1.824	39.188	1.80	39.20	1.33	-0.03	±5	2020.8.11
2600	Head	22.7	1.929	39.002	1.96	39.00	-1.58	0.01	±5	2020.8.24
5250	Head	22.6	4.554	34.764	4.71	35.90	-3.31	-3.16	±5	2020.8.12
5600	Head	22.8	4.896	34.292	5.07	35.50	-3.43	-3.40	±5	2020.8.16
5750	Head	22.7	5.048	34.059	5.22	35.40	-3.30	-3.79	±5	2020.8.13

10.3 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

<1g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2020.8.8	750	Head	250	1087	3279	1303	2.08	8.36	8.32	-0.48
2020.8.11	835	Head	250	4d151	3279	1303	2.44	9.30	9.76	4.95
2020.8.14	1750	Head	250	1090	3279	1303	8.87	36.40	35.48	-2.53
2020.8.17	1900	Head	250	5d170	3279	1303	10.10	39.00	40.4	3.59
2020.8.11	2450	Head	250	908	7592	656	13.60	52.80	54.4	3.03
2020.8.24	2600	Head	250	1061	3279	1303	13.70	57.70	54.8	-5.03
2020.8.12	5250	Head	100	1113	7592	656	7.88	80.50	78.8	-2.11
2020.8.16	5600	Head	100	1113	7592	656	8.65	83.40	86.5	3.72
2020.8.13	5750	Head	100	1113	7592	656	7.62	80.00	76.2	-4.75

<10g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2020.8.14	1750	Head	250	1090	3279	1303	4.81	19.20	19.24	0.21
2020.8.17	1900	Head	250	5d170	3279	1303	5.38	20.30	21.52	6.01
2020.8.24	2600	Head	250	1061	3279	1303	5.94	25.90	23.76	-8.26
2020.8.12	5250	Head	100	1113	7592	656	2.31	23.10	23.1	0.00
2020.8.16	5600	Head	100	1113	7592	656	2.49	23.80	24.9	4.62

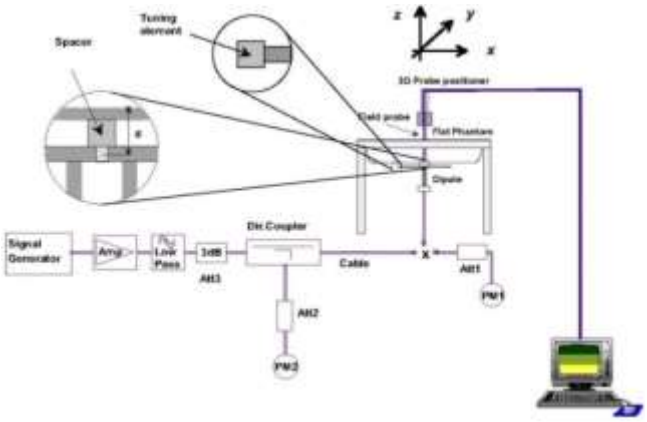


Fig 11.3.1 System Performance Check Setup

Fig 11.3.2 Setup Photo

11. RF Exposure Positions

11.1 Ear and handset reference point

Figure 12.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled “M,” the left ear reference point (ERP) is marked “LE,” and the right ERP is marked “RE.” Each ERP is 15 mm along the B-M (back-mouth) line behind the entrance-to-ear-canal (EEC) point, as shown in Figure 12.1.2 The Reference Plane is defined as passing through the two ear reference points and point M. The line N-F (neck-front), also called the reference pivoting line, is normal to the Reference Plane and perpendicular to both a line passing through RE and LE and the B-M line (see Figure 12.1.3). Both N-F and B-M lines should be marked on the exterior of the phantom shell to facilitate handset positioning. Posterior to the N-F line the ear shape is a flat surface with 6 mm thickness at each ERP, and forward of the N-F line the ear is truncated, as illustrated in Figure 12.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

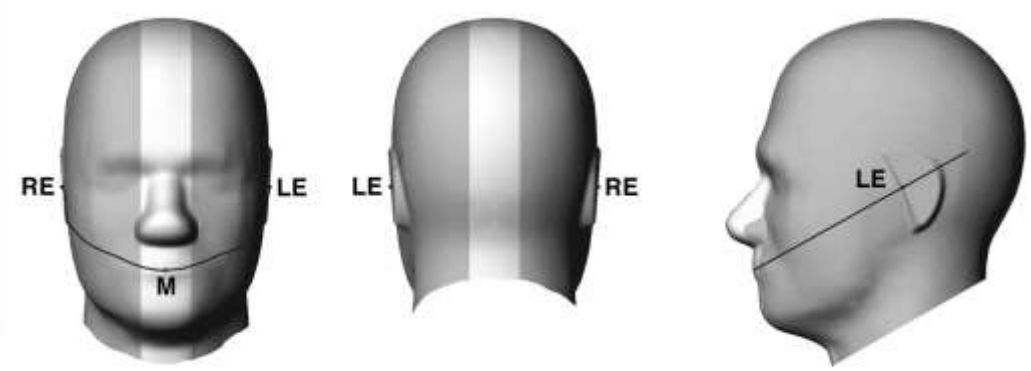


Fig 12.1.1 Front, back, and side views of SAM twin phantom

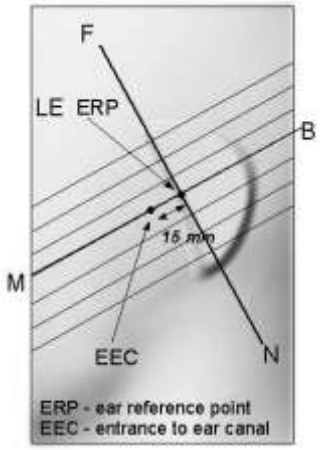


Fig 12.1.2 Close-up side view of phantom showing the ear region.

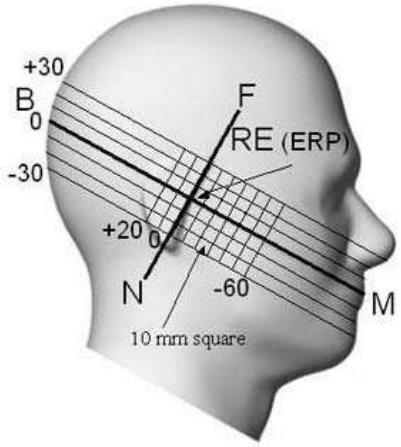


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

11.2 Definition of the cheek position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width wt of the handset at the level of the acoustic output (point A in Figure 12.2.1 and Figure 12.2.2), and the midpoint of the width wb of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 12.2.1). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 12.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 12.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 12.2.3. The actual rotation angles should be documented in the test report.

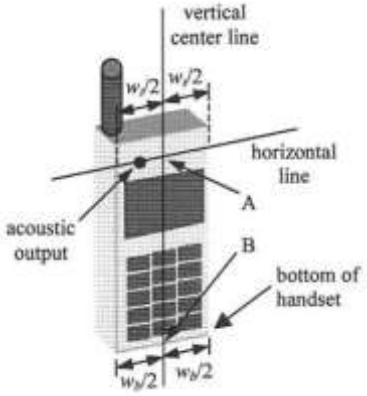


Fig 12.2.1 Handset vertical and horizontal reference lines—"fixed case

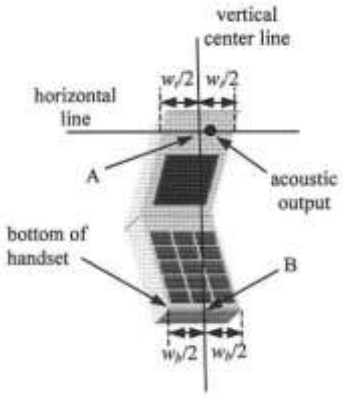


Fig 12.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

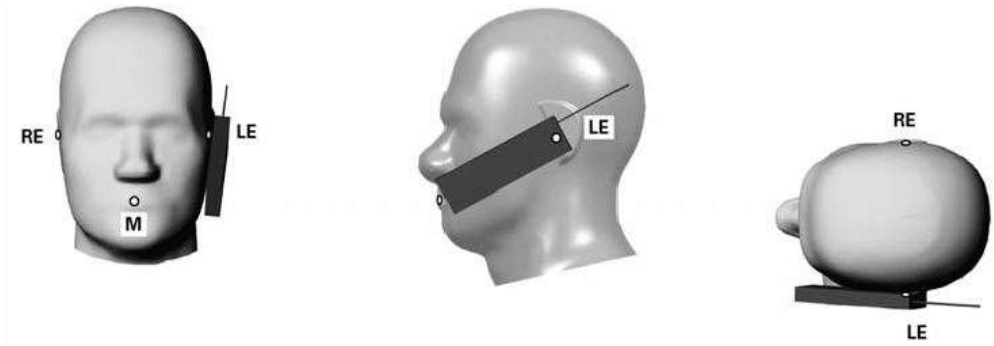


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

11.3 Definition of the tilt position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. While maintaining the orientation of the handset, move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15°.
3. Rotate the handset around the horizontal line by 15°.
4. While maintaining the orientation of the handset, move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact point is on the pinna. See Figure 12.3.1. If contact occurs at any location other than the pinna, e.g., the antenna at the back of the phantom head, the angle of the handset should be reduced. In this case, the tilt position is obtained if any point on the handset is in contact with the pinna and a second point

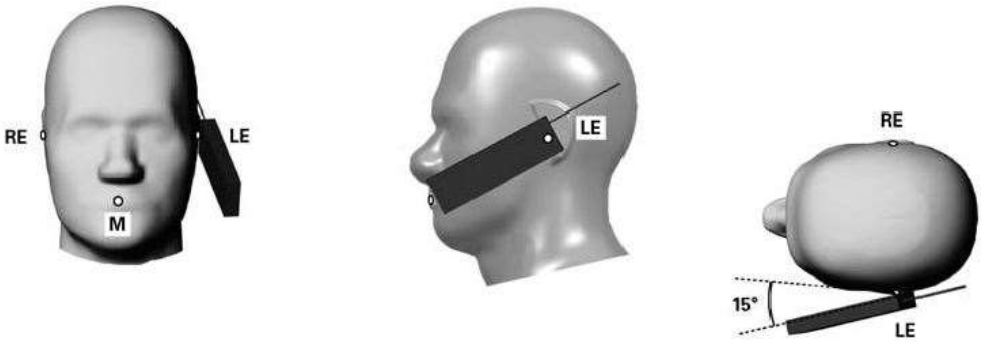


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

11.4 Body Worn Accessory

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 12.4). Per KDB648474 D04v01r03, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset attached to the handset.

Accessories for body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are test with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-chip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

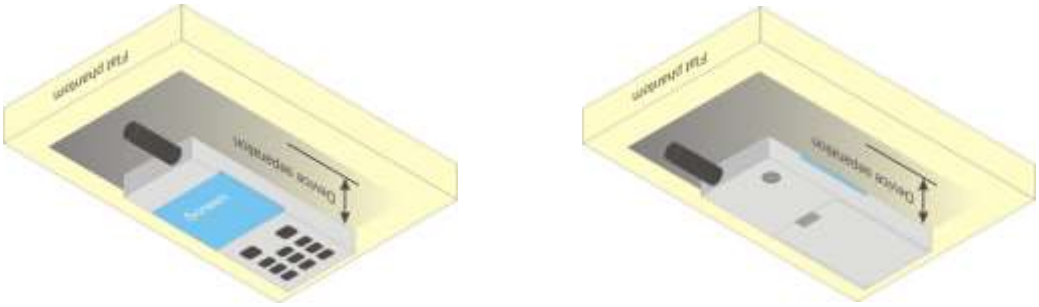


Fig 12.4 Body Worn Position

11.5 Product Specific 10g SAR Exposure

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, According to KDB648474 D04v01r03, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.

2. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions.6 The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

11.6 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined form general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v06 publication procedures. The “Portable Hotspot” feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

12. Conducted RF Output Power (Unit: dBm)

The detailed conducted power table can refer to Appendix E.

<GSM Conducted Power>

1. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS 2Tx slots for GSM850/GSM1900 are considered as the primary mode.
3. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

<WCDMA Conducted Power>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01v03r01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.
3. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set Gain Factors (β_c and β_d) and parameters were set according to each
   ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
   iii. Set RMC 12.2Kbps + HSDPA mode.
   iv. Set Cell Power = -86 dBm
   v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
   vi. Select HSDPA Uplink Parameters
   vii. Set Delta ACK, Delta NACK and Delta CQI = 8
   viii. Set Ack-Nack Repetition Factor to 3
   ix. Set CQI Feedback Cycle (k) to 4 ms
   x. Set CQI Repetition Factor to 2
   xi. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d *(SF)*	β_c/β_d	β_{HS} *(Note1, Note 2)*	**CM** (dB) *(Note 3)*	**MPR** (dB) *(Note 3)*
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 *(Note 4)*	15/15 *(Note 4)*	64	12/15 *(Note 4)*	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and Δ_{NACK} = 30/15 with β_{hs} = 30/15 * β_c, and Δ_{CQI} = 24/15 with β_{hs} = 24/15 * β_c.

Note 3: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

Setup Configuration

HSUPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting * :
   i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
   ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
   iii. Set Cell Power = -86 dBm
   iv. Set Channel Type = 12.2k + HSPA
   v. Set UE Target Power
   vi. Power Ctrl Mode= Alternating bits
   vii. Set and observe the E-TFCI
   viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
d. The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed}1$: 47/15 $\beta_{ed}2$: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c. For sub-test 5, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 5/15 with β_{hs} = 5/15 * β_c.

Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_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.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.

Note 4: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

a. The EUT was connected to Base Station referred to the Setup Configuration below
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set RMC 12.2Kbps + HSDPA mode.
   ii. Set Cell Power = -25 dBm
   iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
   iv. Select HSDPA Uplink Parameters
   v. Set Gain Factors (β_c and β_d) and parameters were set according to each Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
      a). Subtest 1: β_c/β_d=2/15
      b). Subtest 2: β_c/β_d=12/15
      c). Subtest 3: β_c/β_d=15/8
      d). Subtest 4: β_c/β_d=15/4
   vi. Set Delta ACK, Delta NACK and Delta CQI = 8
   vii. Set Ack-Nack Repetition Factor to 3
   viii. Set CQI Feedback Cycle (k) to 4 ms
   ix. Set CQI Repetition Factor to 2
   x. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
A summary of these settings are illustrated below:

C.8.1.12 Fixed Reference Channel Definition H-Set 12

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

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

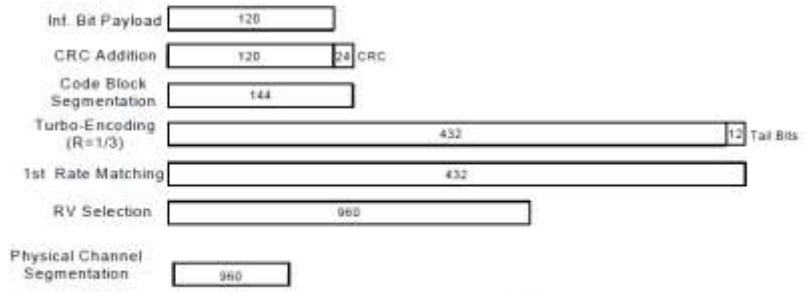


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

<WCDMA Conducted Power>

General Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA

<CDMA2000 Conducted Power>

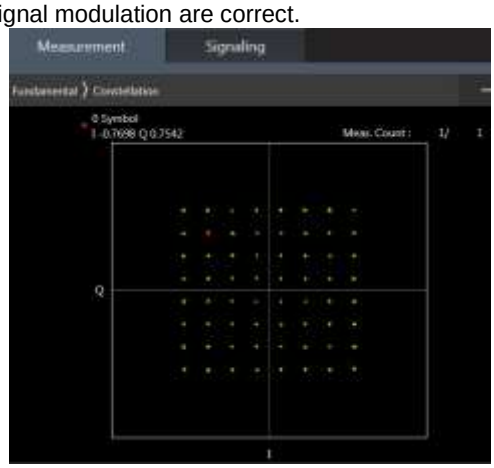
General Note:

1. Per KDB 941225 D01v03r01, SAR for head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55.
2. Per KDB 941225 D01v03r01, in Hotspot mode EUT is treated as data device and SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps) as the primary mode.
3. Per KDB 941225 D01v03r01, for Body-worn accessory SAR is measured in RC3 with the handset configured in TDSO/SO32 to transmit at full rate on FCH only with all other code channels disabled. The body-worn accessory procedures in KDB Publication 447498 are applied. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCH), with FCH only as the primary mode.

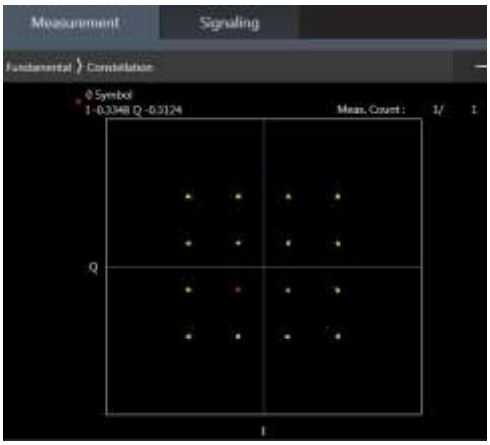
<LTE Conducted Power>

General Note:

1. Anritsu MT8821C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM/64QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B5 / B12 / B17 / B26 / B38 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE B2 / B5 / B17 / B38 SAR test was covered by LTE B25 / B26 / B12 / B41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
   b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band
10. According to 2017 TCB workshop, for 64 QAM and 16 QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



64QAM



16QAM

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

SAR was tested with a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by 3GPP.

a. 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations

b. "special subframe S" contains both uplink and downlink transmissions, it has been taken into consideration to determine the transmission duty factor according to the worst case uplink and downlink cyclic prefix requirements for UpPTS

c. Establishing connections with base station simulators ensure a consistent means for testing SAR and recommended for evaluating SAR. The Anritsu MT8820C (firmware: #22.52#004) was used for LTE output power measurements and SAR testing.

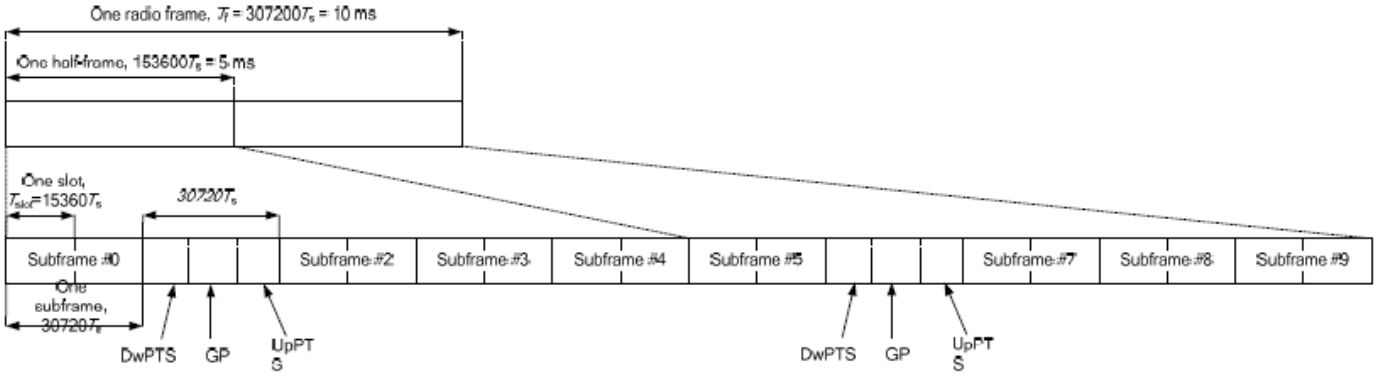


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Special subframe (30720·T_s): Normal cyclic prefix in downlink (UpPTS)			
	Special subframe configuration	**Normal cyclic prefix in uplink**	**Extended cyclic prefix in uplink**
Uplink duty factor in one special subframe	**0~4**	7.13%	8.33%
	5~9	14.3%	16.7%

Special subframe(30720·T_s): Extended cyclic prefix in downlink (UpPTS)			
	Special subframe configuration	**Normal cyclic prefix in uplink**	**Extended cyclic prefix in uplink**
Uplink duty factor in one special subframe	**0~3**	7.13%	8.33%
	4~7	14.3%	16.7%

The highest duty factor is resulted from:

i. Uplink-downlink configuration: 0. In a half-frame consisted of 5 subfames, uplink operation is in 3 uplink subframes and 1 special subframe.

ii. special subframe configuration: 5-9 for normal cyclic prefix in downlink, 4-7 for extended cyclic prefix in downlink

iii. for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.167)/5 = 63.3%

iv. for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.143)/5 = 62.9%

v. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.

<LTE Carrier Aggregation>

General Note:

1. This device supports Carrier Aggregation on downlink for inter and intra band. For the device supports bands and bandwidths and configurations are provided as follow table was according to 3GPP.
2. In applying the existing power measurement procedures of KDB 941225 D05A for DL CA SAR test exclusion, only the subset with the largest number of combinations of frequency bands and CCs in each row need combination, and for this device that all the configurations were choose to power measurement.
3. The gray color table is covered by other combinations and no need to verify power.
4. All permutations exist. No restrictions on Pcell & Scell combinations. Only LTE Band 29A is limited to Scell.

2CC Downlink Carrier Aggregation	
Number	Combination
2CC #1	CA_2A-4A
2CC #2	CA_2A-5A
2CC #3	CA_2A-12A
2CC #4	CA_2A-13A
2CC #5	CA_2A-29A
2CC #6	CA_4A-5A
2CC #7	CA_4A-12A
2CC #8	CA_4A-13A
2CC #9	CA_4A-29A
2CC #10	CA_5A-7A
2CC #11	CA_2A-2A
2CC #12	CA_4A-4A
2CC #13	CA_7A-7A
2CC #14	CA_41A-41A
2CC #15	CA_2C
2CC #16	CA_7B
2CC #17	CA_7C
2CC #18	CA_41C

LTE Carrier Aggregation Conducted Power (Downlink)

i. According to KDB941225 D05A v01r02, Uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.

ii. Uplink maximum output power with downlink carrier aggregation active does not show more than ¼ dB higher than the maximum output power without downlink carrier aggregation active, therefore SAR evaluation with downlink carrier aggregation active can be excluded.

iii. The device supports downlink two carrier aggregation. For power measurement were control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.

iv. Selected highest measured power when downlink carrier aggregation is inactive for conducted power comparison with downlink carrier aggregation is active, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.

v. For inter-band CA, the SCC selected highest bandwidth and near the middle of its transmission band. For SCC DL RB size and offset will base on the PCC corresponding RB allocation.

vi. For non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band.

vii. For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

$$\text{Nominal channel spacing} = \left\lfloor \frac{BW_{Channel(1)} + BW_{Channel(2)} - 0.1\left|BW_{Channel(1)} - BW_{Channel(2)}\right|}{0.6} \right\rfloor 0.3 \ \text{[MHz]}$$

<WLAN Conducted Power>

General Note:

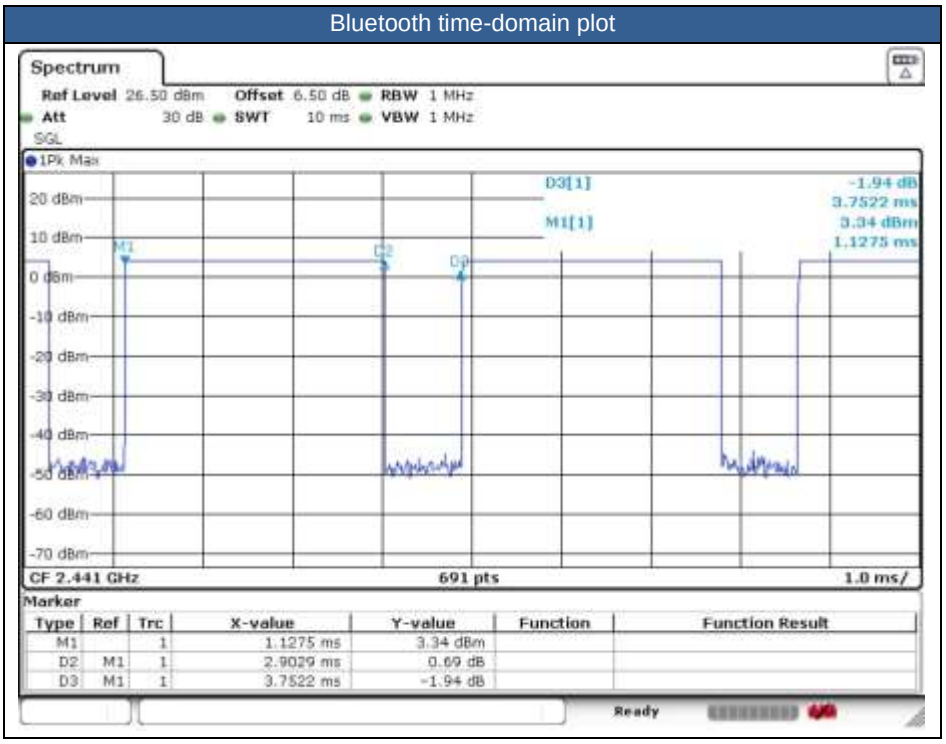
1. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
2. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
3. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
4. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
    a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
    b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
    c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

<2.4GHz Bluetooth>

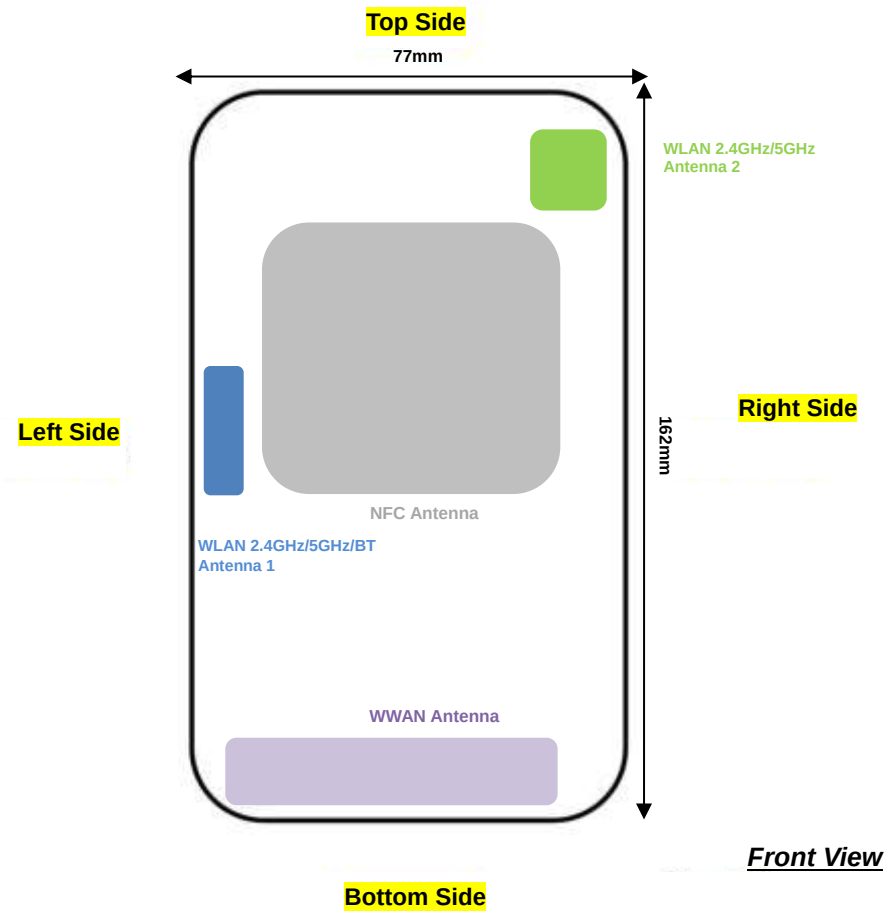
General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The Bluetooth duty cycle is 77.36% as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the theoretical duty cycle is 83.3%, therefore the actual duty cycle will be scaled up to the theoretical value of Bluetooth reported SAR calculation

Bluetooth time-domain plot



13. Antenna Location



Front View

Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Main	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	≤ 25mm
WLAN 2.4GHz/5GHz/BT Antenna 1	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	>25mm	≤ 25mm
WLAN 2.4GHz/5GHz Antenna 2	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm

Positions for SAR tests; Hotspot mode						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Main	Yes	Yes	No	Yes	Yes	Yes
WLAN 2.4GHz/5GHz/BT Antenna 1	Yes	Yes	Yes	No	No	Yes
WLAN 2.4GHz/5GHz Antenna 2	Yes	Yes	Yes	No	Yes	No

General Note:
Referring to KDB 941225 D06 v02r01, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.

14. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For BT/WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
   e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥ 0.8W/kg. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.
5. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power (for handheld on state, the maximum full power means reduced power), including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.
   a. For this device SAR for WWAN/WLAN transmitter scaled to maximum output power mode for product specific 10g SAR is higher than 1.2W/kg of WCDMA BII/BIV, CDMA2000 BC1 and LTE Band 2/4/7/25 therefore product specific 10g SAR is necessary.
   b. WLAN 5.3/5.5GHz tested the product specific 10g SAR since it has no hotspot mode.
   c. When 10-g product specific 10g SAR is considered, SAR thresholds is specified in the procedures for SAR test reduction and exclusion should be multiplied by 2.5.
6. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of WCDMA Band II, CDMA 2000 BC1 and LTE Band 2/4/7/25.

GSM Note:

1. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS 2Tx slots for GSM850/GSM1900 are considered as the primary mode.
2. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

WCDMA Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM/64QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / B5 / B12 / B17 / B26 / B38 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

WLAN/Bluetooth Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. Per KDB 248227 D01v02r02, U-NII-1 SAR testing is not required when the U-NII-2A band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band.
3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
5. Based on WLAN2.4GHz and Bluetooth share the same antenna, so Bluetooth RF exposure evaluation chose the worst positon of WLAN 2.4GHz Ant to perform Bluetooth SAR test, and used this Bluetooth SAR value conservatively represent other position do co-located analysis with WWAN.
6. The WLAN Antenna 1 can transmit in SISO antenna mode. WLAN Antenna 2 only supports MIMO mode.
7. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

14.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
01	GSM850	GPRS 2Tx slots	Right Cheek	Full	251	848.8	30.20	31.40	1.318	-0.07	0.418	**0.551**
	GSM850	GPRS 2Tx slots	Right Tilted	Full	251	848.8	30.20	31.40	1.318	-0.04	0.306	0.403
	GSM850	GPRS 2Tx slots	Left Cheek	Full	251	848.8	30.20	31.40	1.318	0.03	0.374	0.493
	GSM850	GPRS 2Tx slots	Left Tilted	Full	251	848.8	30.20	31.40	1.318	0.07	0.276	0.364
	GSM850	GPRS 2Tx slots	Right Cheek	Full	128	824.2	29.87	31.40	1.422	0.01	0.356	0.506
	GSM850	GPRS 2Tx slots	Right Cheek	Full	189	836.4	30.00	31.40	1.380	0.05	0.384	0.530
02	GSM1900	GPRS 2Tx slots	Right Cheek	Full	512	1850.2	26.72	28.20	1.406	0.05	0.085	**0.120**
	GSM1900	GPRS 2Tx slots	Right Tilted	Full	512	1850.2	26.72	28.20	1.406	-0.04	0.048	0.067
	GSM1900	GPRS 2Tx slots	Left Cheek	Full	512	1850.2	26.72	28.20	1.406	0.03	0.053	0.075
	GSM1900	GPRS 2Tx slots	Left Tilted	Full	512	1850.2	26.72	28.20	1.406	0.07	0.051	0.072
	GSM1900	GPRS 2Tx slots	Right Cheek	Full	661	1880	26.40	28.20	1.514	0.11	0.065	0.098
	GSM1900	GPRS 2Tx slots	Right Cheek	Full	810	1909.8	26.33	28.20	1.538	0.09	0.064	0.098

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Right Cheek	Full	9400	1880	22.25	22.50	1.059	0.06	0.135	0.143
	WCDMA II	RMC 12.2Kbps	Right Tilted	Full	9400	1880	22.25	22.50	1.059	-0.04	0.102	0.108
	WCDMA II	RMC 12.2Kbps	Left Cheek	Full	9400	1880	22.25	22.50	1.059	0.06	0.110	0.117
	WCDMA II	RMC 12.2Kbps	Left Tilted	Full	9400	1880	22.25	22.50	1.059	0.08	0.106	0.112
03	WCDMA II	RMC 12.2Kbps	Right Cheek	Full	9262	1852.4	22.12	22.50	1.091	0.01	0.139	**0.152**
	WCDMA II	RMC 12.2Kbps	Right Cheek	Full	9538	1907.6	22.24	22.50	1.062	0.03	0.126	0.134
	WCDMA IV	RMC 12.2Kbps	Right Cheek	Full	1413	1732.6	20.69	21.50	1.205	0.01	0.106	0.128
	WCDMA IV	RMC 12.2Kbps	Right Tilted	Full	1413	1732.6	20.69	21.50	1.205	0.1	0.071	0.086
	WCDMA IV	RMC 12.2Kbps	Left Cheek	Full	1413	1732.6	20.69	21.50	1.205	0.11	0.086	0.104
	WCDMA IV	RMC 12.2Kbps	Left Tilted	Full	1413	1732.6	20.69	21.50	1.205	0.09	0.068	0.082
04	WCDMA IV	RMC 12.2Kbps	Right Cheek	Full	1312	1712.4	20.59	21.50	1.233	0.06	0.111	**0.137**
	WCDMA IV	RMC 12.2Kbps	Right Cheek	Full	1513	1752.6	20.67	21.50	1.211	0.06	0.107	0.130
	WCDMA V	RMC 12.2Kbps	Right Cheek	Full	4182	836.4	23.46	24.90	1.393	0.01	0.406	0.566
	WCDMA V	RMC 12.2Kbps	Right Tilted	Full	4182	836.4	23.46	24.90	1.393	0.06	0.257	0.358
	WCDMA V	RMC 12.2Kbps	Left Cheek	Full	4182	836.4	23.46	24.90	1.393	-0.07	0.428	0.596
	WCDMA V	RMC 12.2Kbps	Left Tilted	Full	4182	836.4	23.46	24.90	1.393	0.06	0.254	0.354
	WCDMA V	RMC 12.2Kbps	Left Cheek	Full	4132	826.4	23.43	24.90	1.403	0.06	0.388	0.544
05	WCDMA V	RMC 12.2Kbps	Left Cheek	Full	4233	846.6	23.44	24.90	1.400	0.04	0.444	**0.621**

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	CDMA2000 BC0	RC3 SO55	Right Cheek	Full	777	848.31	22.69	23.80	1.291	0.08	0.369	0.476
	CDMA2000 BC0	RC3 SO55	Right Tilted	Full	777	848.31	22.69	23.80	1.291	0.02	0.260	0.336
06	CDMA2000 BC0	RC3 SO55	Left Cheek	Full	777	848.31	22.69	23.80	1.291	0.17	0.370	**0.478**
	CDMA2000 BC0	RC3 SO55	Left Tilted	Full	777	848.31	22.69	23.80	1.291	0.02	0.251	0.324
	CDMA2000 BC0	RC3 SO55	Left Cheek	Full	1013	824.7	22.36	23.80	1.393	0.08	0.319	0.444
	CDMA2000 BC0	RC3 SO55	Left Cheek	Full	384	836.52	22.56	23.80	1.330	-0.1	0.356	0.474
	CDMA2000 BC1	RC3 SO55	Right Cheek	Full	1175	1908.75	21.78	22.20	1.102	-0.08	0.113	0.124
	CDMA2000 BC1	RC3 SO55	Right Tilted	Full	1175	1908.75	21.78	22.20	1.102	0.11	0.083	0.091
	CDMA2000 BC1	RC3 SO55	Left Cheek	Full	1175	1908.75	21.78	22.20	1.102	0.16	0.098	0.108
	CDMA2000 BC1	RC3 SO55	Left Tilted	Full	1175	1908.75	21.78	22.20	1.102	-0.12	0.094	0.104
07	CDMA2000 BC1	RC3 SO55	Right Cheek	Full	25	1851.25	21.77	22.20	1.104	0.06	0.122	**0.135**
	CDMA2000 BC1	RC3 SO55	Right Cheek	Full	600	1880	21.70	22.20	1.122	0.09	0.117	0.131
	CDMA2000 BC10	RC3 SO55	Right Cheek	Full	476	817.9	24.65	24.80	1.035	-0.07	0.421	0.436
	CDMA2000 BC10	RC3 SO55	Right Tilted	Full	476	817.9	24.65	24.80	1.035	-0.08	0.258	0.267
	CDMA2000 BC10	RC3 SO55	Left Cheek	Full	476	817.9	24.65	24.80	1.035	0.11	0.419	0.434
	CDMA2000 BC10	RC3 SO55	Left Tilted	Full	476	817.9	24.65	24.80	1.035	0.16	0.267	0.276
	CDMA2000 BC10	RC3 SO55	Right Cheek	Full	580	820.5	24.55	24.80	1.059	-0.12	0.426	0.451
08	CDMA2000 BC10	RC3 SO55	Right Cheek	Full	684	823.1	24.62	24.80	1.042	-0.06	0.447	**0.466**

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
09	LTE Band 4	20M	QPSK	1	0	Right Cheek	Full	20175	1732.5	23.45	23.60	1.035	-0.03	0.250	**0.259**
	LTE Band 4	20M	QPSK	50	0	Right Cheek	Full	20175	1732.5	22.43	22.60	1.040	0.06	0.192	0.200
	LTE Band 4	20M	QPSK	1	0	Right Tilted	Full	20175	1732.5	23.45	23.60	1.035	-0.01	0.135	0.140
	LTE Band 4	20M	QPSK	50	0	Right Tilted	Full	20175	1732.5	22.43	22.60	1.040	0.06	0.107	0.111
	LTE Band 4	20M	QPSK	1	0	Left Cheek	Full	20175	1732.5	23.45	23.60	1.035	0.04	0.176	0.182
	LTE Band 4	20M	QPSK	50	0	Left Cheek	Full	20175	1732.5	22.43	22.60	1.040	0.02	0.126	0.131
	LTE Band 4	20M	QPSK	1	0	Left Tilted	Full	20175	1732.5	23.45	23.60	1.035	0.08	0.154	0.159
	LTE Band 4	20M	QPSK	50	0	Left Tilted	Full	20175	1732.5	22.43	22.60	1.040	0.02	0.100	0.104
	LTE Band 7	20M	QPSK	1	0	Right Cheek	Full	21100	2535	21.98	22.40	1.102	0.15	0.114	0.126
	LTE Band 7	20M	QPSK	50	0	Right Cheek	Full	21100	2535	21.12	21.40	1.067	0.04	0.093	0.099
	LTE Band 7	20M	QPSK	1	0	Right Tilted	Full	21100	2535	21.98	22.40	1.102	0.01	0.084	0.093
	LTE Band 7	20M	QPSK	50	0	Right Tilted	Full	21100	2535	21.12	21.40	1.067	0.09	0.067	0.071
10	LTE Band 7	20M	QPSK	1	0	Left Cheek	Full	21100	2535	21.98	22.40	1.102	0.01	0.234	**0.258**
	LTE Band 7	20M	QPSK	50	0	Left Cheek	Full	21100	2535	21.12	21.40	1.067	0.03	0.163	0.174
	LTE Band 7	20M	QPSK	1	0	Left Tilted	Full	21100	2535	21.98	22.40	1.102	0.04	0.118	0.130
	LTE Band 7	20M	QPSK	50	0	Left Tilted	Full	21100	2535	21.12	21.40	1.067	0.03	0.099	0.106
	LTE Band 7	20M	QPSK	1	0	Left Cheek	Full	20850	2510	21.94	22.40	1.112	0.04	0.189	0.210
	LTE Band 7	20M	QPSK	1	0	Left Cheek	Full	21350	2560	21.90	22.40	1.122	0.02	0.181	0.203
	LTE Band 12	10M	QPSK	1	0	Right Cheek	Full	23095	707.5	23.17	25.00	1.524	-0.02	0.287	0.437
	LTE Band 12	10M	QPSK	25	0	Right Cheek	Full	23095	707.5	22.15	24.00	1.531	0.04	0.222	0.340
	LTE Band 12	10M	QPSK	1	0	Right Tilted	Full	23095	707.5	23.17	25.00	1.524	0.07	0.184	0.280
	LTE Band 12	10M	QPSK	25	0	Right Tilted	Full	23095	707.5	22.15	24.00	1.531	0.02	0.147	0.225
11	LTE Band 12	10M	QPSK	1	0	Left Cheek	Full	23095	707.5	23.17	25.00	1.524	-0.08	0.313	**0.477**
	LTE Band 12	10M	QPSK	25	0	Left Cheek	Full	23095	707.5	22.15	24.00	1.531	-0.01	0.211	0.323
	LTE Band 12	10M	QPSK	1	0	Left Tilted	Full	23095	707.5	23.17	25.00	1.524	0.05	0.158	0.241
	LTE Band 12	10M	QPSK	25	0	Left Tilted	Full	23095	707.5	22.15	24.00	1.531	0.19	0.131	0.201
	LTE Band 13	10M	QPSK	1	0	Right Cheek	Full	23230	782	21.78	23.10	1.355	-0.04	0.258	0.350
	LTE Band 13	10M	QPSK	25	0	Right Cheek	Full	23230	782	20.80	22.10	1.349	0.06	0.206	0.278
	LTE Band 13	10M	QPSK	1	0	Right Tilted	Full	23230	782	21.78	23.10	1.355	0.11	0.201	0.272
	LTE Band 13	10M	QPSK	25	0	Right Tilted	Full	23230	782	20.80	22.10	1.349	0.02	0.159	0.214
12	LTE Band 13	10M	QPSK	1	0	Left Cheek	Full	23230	782	21.78	23.10	1.355	-0.02	0.259	**0.351**
	LTE Band 13	10M	QPSK	25	0	Left Cheek	Full	23230	782	20.80	22.10	1.349	0.06	0.208	0.281
	LTE Band 13	10M	QPSK	1	0	Left Tilted	Full	23230	782	21.78	23.10	1.355	0.04	0.195	0.264
	LTE Band 13	10M	QPSK	25	0	Left Tilted	Full	23230	782	20.80	22.10	1.349	0.04	0.146	0.197
	LTE Band 25	20M	QPSK	1	0	Right Cheek	Full	26340	1880	22.64	23.00	1.086	-0.04	0.118	0.128
	LTE Band 25	20M	QPSK	50	0	Right Cheek	Full	26340	1880	21.43	22.00	1.140	0.06	0.096	0.109
	LTE Band 25	20M	QPSK	1	0	Right Tilted	Full	26340	1880	22.64	23.00	1.086	0.11	0.094	0.102
	LTE Band 25	20M	QPSK	50	0	Right Tilted	Full	26340	1880	21.43	22.00	1.140	0.02	0.071	0.081
13	LTE Band 25	20M	QPSK	1	0	Left Cheek	Full	26340	1880	22.64	23.00	1.086	0.09	0.121	**0.131**
	LTE Band 25	20M	QPSK	50	0	Left Cheek	Full	26340	1880	21.43	22.00	1.140	0.02	0.098	0.112
	LTE Band 25	20M	QPSK	1	0	Left Tilted	Full	26340	1880	22.64	23.00	1.086	0.03	0.096	0.104
	LTE Band 25	20M	QPSK	50	0	Left Tilted	Full	26340	1880	21.43	22.00	1.140	0.04	0.069	0.079
	LTE Band 25	20M	QPSK	1	0	Left Cheek	Full	26140	1860	22.54	23.00	1.112	0.08	0.106	0.118
	LTE Band 25	20M	QPSK	1	0	Left Cheek	Full	26590	1905	22.50	23.00	1.122	-0.04	0.113	0.127

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
14	LTE Band 26	15M	QPSK	1	0	Right Cheek	Full	26865	831.5	22.42	23.70	1.343	0.02	0.300	**0.403**
	LTE Band 26	15M	QPSK	36	0	Right Cheek	Full	26865	831.5	21.49	22.70	1.321	0.03	0.211	0.279
	LTE Band 26	15M	QPSK	1	0	Right Tilted	Full	26865	831.5	22.42	23.70	1.343	0.04	0.151	0.203
	LTE Band 26	15M	QPSK	36	0	Right Tilted	Full	26865	831.5	21.49	22.70	1.321	0.08	0.127	0.168
	LTE Band 26	15M	QPSK	1	0	Left Cheek	Full	26865	831.5	22.42	23.70	1.343	0.05	0.248	0.333
	LTE Band 26	15M	QPSK	36	0	Left Cheek	Full	26865	831.5	21.49	22.70	1.321	0.01	0.212	0.280
	LTE Band 26	15M	QPSK	1	0	Left Tilted	Full	26865	831.5	22.42	23.70	1.343	0.09	0.152	0.204
	LTE Band 26	15M	QPSK	36	0	Left Tilted	Full	26865	831.5	21.49	22.70	1.321	0.09	0.124	0.164

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20M	QPSK	1	0	Right Cheek	Full	40620	2593	23.29	24.00	1.178	62.9	1.006	0.02	0.084	0.100
	LTE Band 41	20M	QPSK	50	0	Right Cheek	Full	40620	2593	22.40	23.00	1.148	62.9	1.006	0.07	0.066	0.076
	LTE Band 41	20M	QPSK	1	0	Right Tilted	Full	40620	2593	23.29	24.00	1.178	62.9	1.006	0.1	0.050	0.059
	LTE Band 41	20M	QPSK	50	0	Right Tilted	Full	40620	2593	22.40	23.00	1.148	62.9	1.006	-0.01	0.038	0.044
	LTE Band 41	20M	QPSK	1	0	Left Cheek	Full	40620	2593	23.29	24.00	1.178	62.9	1.006	0.03	0.141	0.167
	LTE Band 41	20M	QPSK	50	0	Left Cheek	Full	40620	2593	22.40	23.00	1.148	62.9	1.006	0.02	0.116	0.134
	LTE Band 41	20M	QPSK	1	0	Left Tilted	Full	40620	2593	23.29	24.00	1.178	62.9	1.006	-0.02	0.075	0.089
	LTE Band 41	20M	QPSK	50	0	Left Tilted	Full	40620	2593	22.40	23.00	1.148	62.9	1.006	-0.09	0.050	0.058
15	LTE Band 41	20M	QPSK	1	0	Left Cheek	Full	39750	2506	23.20	24.00	1.202	62.9	1.006	0.02	0.178	**0.215**
	LTE Band 41	20M	QPSK	1	0	Left Cheek	Full	40185	2549.5	23.16	24.00	1.213	62.9	1.006	0.01	0.127	0.155
	LTE Band 41	20M	QPSK	1	0	Left Cheek	Full	41055	2636.5	23.14	24.00	1.219	62.9	1.006	0.03	0.125	0.153
	LTE Band 41	20M	QPSK	1	0	Left Cheek	Full	41490	2680	23.12	24.00	1.225	62.9	1.006	-0.01	0.127	0.156

<WLAN2.4G SAR>

Plot No.	Band	Mode	Test Position	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	Ant 1	6	2437	18.22	18.50	1.067	100	1.000	0.06	0.136	0.145
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	Ant 1	6	2437	18.22	18.50	1.067	100	1.000	-0.04	0.056	0.060
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	Ant 1	6	2437	18.22	18.50	1.067	100	1.000	0.09	0.310	0.331
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	Ant 1	6	2437	18.22	18.50	1.067	100	1.000	0.08	0.287	0.306
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	Ant 1	1	2412	17.93	18.50	1.140	100	1.000	0.03	0.320	0.365
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	Ant 1	11	2462	18.15	18.50	1.084	100	1.000	0.06	0.300	0.325
	WLAN2.4GHz	802.11n-HT20 MCS0	Right Cheek	Ant 1+2	6	2437	20.65	21.00	1.084	94.31	1.060	0.08	0.453	0.521
	WLAN2.4GHz	802.11n-HT20 MCS0	Right Tilted	Ant 1+2	6	2437	20.65	21.00	1.084	94.31	1.060	-0.08	0.400	0.460
16	WLAN2.4GHz	802.11n-HT20 MCS0	Left Cheek	Ant 1+2	6	2437	20.65	21.00	1.084	94.31	1.060	0.02	1.090	**1.253**
	WLAN2.4GHz	802.11n-HT20 MCS0	Left Tilted	Ant 1+2	6	2437	20.65	21.00	1.084	94.31	1.060	-0.05	0.703	0.808
	WLAN2.4GHz	802.11n-HT20 MCS0	Left Cheek	Ant 1+2	10	2457	18.49	19.00	1.126	94.31	1.060	-0.04	0.879	1.049
	WLAN2.4GHz	802.11n-HT20 MCS0	Left Cheek	Ant 1+2	1	2412	15.91	16.00	1.022	94.31	1.060	0.09	0.785	0.850
	WLAN2.4GHz	802.11n-HT20 MCS0	Left Cheek	Ant 1+2	11	2462	15.63	16.00	1.090	94.31	1.060	0.01	0.815	0.942

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Left Cheek	Ant 1	0	2402	5.00	6.00	1.259	77.37	1.077	0.06	0.042	0.057
17	Bluetooth	1Mbps	Left Cheek	Ant 1	39	2441	4.92	6.00	1.282	77.37	1.077	-0.11	0.051	**0.070**
	Bluetooth	1Mbps	Left Cheek	Ant 1	78	2480	5.98	6.00	1.005	77.37	1.077	0.01	0.048	0.052

<WLAN5G SAR>

Plot No.	Band	Mode	Test Position	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN5.3GHz	802.11a 6Mbps	Right Cheek	Ant 1	52	5260	12.99	13.50	1.125	95.3	1.049	0.08	0.107	0.126
	WLAN5.3GHz	802.11a 6Mbps	Right Tilted	Ant 1	52	5260	12.99	13.50	1.125	95.3	1.049	0.06	0.039	0.046
	WLAN5.3GHz	802.11a 6Mbps	Left Cheek	Ant 1	52	5260	12.99	13.50	1.125	95.3	1.049	0.02	0.191	0.225
	WLAN5.3GHz	802.11a 6Mbps	Left Tilted	Ant 1	52	5260	12.99	13.50	1.125	95.3	1.049	0.05	0.051	0.060
	WLAN5.3GHz	802.11a 6Mbps	Left Cheek	Ant 1	56	5280	12.87	13.50	1.156	95.3	1.049	-0.02	0.197	0.239
	WLAN5.3GHz	802.11a 6Mbps	Left Cheek	Ant 1	64	5320	12.94	13.50	1.138	95.3	1.049	0.03	0.189	0.226
	WLAN5.3GHz	802.11n-HT20 MCS0	Right Cheek	Ant 1+2	64	5320	16.12	16.50	1.091	94.72	1.056	0.02	0.394	0.454
	WLAN5.3GHz	802.11n-HT20 MCS0	Right Tilted	Ant 1+2	64	5320	16.12	16.50	1.091	94.72	1.056	0.01	0.310	0.357
	WLAN5.3GHz	802.11n-HT20 MCS0	Left Cheek	Ant 1+2	64	5320	16.12	16.50	1.091	94.72	1.056	0.03	1.000	1.153
	WLAN5.3GHz	802.11n-HT20 MCS0	Left Tilted	Ant 1+2	64	5320	16.12	16.50	1.091	94.72	1.056	-0.08	0.500	0.576
18	WLAN5.3GHz	802.11n-HT20 MCS0	Left Cheek	Ant 1+2	52	5260	15.99	16.50	1.125	94.72	1.056	-0.14	1.050	**1.247**
	WLAN5.3GHz	802.11n-HT20 MCS0	Left Cheek	Ant 1+2	60	5300	16.07	16.50	1.103	94.72	1.056	0.04	1.010	1.176
	WLAN5.5GHz	802.11a 6Mbps	Right Cheek	Ant 1	140	5700	12.89	13.50	1.151	95.3	1.049	0.01	0.078	0.094
	WLAN5.5GHz	802.11a 6Mbps	Right Tilted	Ant 1	140	5700	12.89	13.50	1.151	95.3	1.049	0.06	0.056	0.068
	WLAN5.5GHz	802.11a 6Mbps	Left Cheek	Ant 1	140	5700	12.89	13.50	1.151	95.3	1.049	0.09	0.163	0.197
	WLAN5.5GHz	802.11a 6Mbps	Left Tilted	Ant 1	140	5700	12.89	13.50	1.151	95.3	1.049	0.09	0.065	0.078
	WLAN5.5GHz	802.11a 6Mbps	Left Cheek	Ant 1	100	5500	12.83	13.50	1.167	95.3	1.049	-0.04	0.165	0.202
	WLAN5.5GHz	802.11a 6Mbps	Left Cheek	Ant 1	116	5580	12.39	13.50	1.291	95.3	1.049	-0.05	0.175	0.237
	WLAN5.5GHz	802.11n-HT20 MCS0	Right Cheek	Ant 1+2	100	5500	15.71	16.50	1.199	94.72	1.056	-0.09	0.271	0.343
	WLAN5.5GHz	802.11n-HT20 MCS0	Right Tilted	Ant 1+2	100	5500	15.71	16.50	1.199	94.72	1.056	0.05	0.207	0.262
	WLAN5.5GHz	802.11n-HT20 MCS0	Left Tilted	Ant 1+2	100	5500	15.71	16.50	1.199	94.72	1.056	-0.01	0.411	0.520
19	WLAN5.5GHz	802.11n-HT20 MCS0	Left Cheek	Ant 1+2	100	5500	15.71	16.50	1.199	94.72	1.056	-0.03	1.050	**1.329**
	WLAN5.5GHz	802.11n-HT20 MCS0	Left Cheek	Ant 1+2	116	5580	15.58	16.50	1.236	94.72	1.056	-0.11	0.967	1.262
	WLAN5.5GHz	802.11n-HT20 MCS0	Left Cheek	Ant 1+2	140	5700	14.08	14.50	1.101	94.72	1.056	0.01	0.748	0.870
	WLAN5.8GHz	802.11a 6Mbps	Right Cheek	Ant 1	157	5785	14.02	14.50	1.117	95.3	1.049	-0.01	0.102	0.120
	WLAN5.8GHz	802.11a 6Mbps	Right Tilted	Ant 1	157	5785	14.02	14.50	1.117	95.3	1.049	0.08	0.060	0.070
	WLAN5.8GHz	802.11a 6Mbps	Left Cheek	Ant 1	157	5785	14.02	14.50	1.117	95.3	1.049	0.1	0.306	0.359
	WLAN5.8GHz	802.11a 6Mbps	Left Tilted	Ant 1	157	5785	14.02	14.50	1.117	95.3	1.049	0.02	0.091	0.107
	WLAN5.8GHz	802.11a 6Mbps	Left Cheek	Ant 1	149	5745	13.68	14.50	1.208	95.3	1.049	-0.02	0.312	0.395
	WLAN5.8GHz	802.11a 6Mbps	Left Cheek	Ant 1	165	5825	13.94	14.50	1.138	95.3	1.049	-0.01	0.310	0.370
	WLAN5.8GHz	802.11n-HT20 MCS0	Right Cheek	Ant 1+2	157	5785	16.89	17.50	1.151	94.72	1.056	0.05	0.243	0.295
	WLAN5.8GHz	802.11n-HT20 MCS0	Right Tilted	Ant 1+2	157	5785	16.89	17.50	1.151	94.72	1.056	-0.02	0.209	0.254
	WLAN5.8GHz	802.11n-HT20 MCS0	Left Cheek	Ant 1+2	157	5785	16.89	17.50	1.151	94.72	1.056	0.01	0.900	1.094
	WLAN5.8GHz	802.11n-HT20 MCS0	Left Tilted	Ant 1+2	157	5785	16.89	17.50	1.151	94.72	1.056	0.05	0.509	0.619
20	WLAN5.8GHz	802.11n-HT20 MCS0	Left Cheek	Ant 1+2	149	5745	16.88	17.50	1.153	94.72	1.056	-0.19	0.989	**1.205**
	WLAN5.8GHz	802.11n-HT20 MCS0	Left Cheek	Ant 1+2	165	5825	16.82	17.50	1.168	94.72	1.056	0.07	0.773	0.954

14.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS 2Tx slots	Front	10mm	Full	251	848.8	30.20	31.40	1.318	0.03	0.374	0.493
	GSM850	GPRS 2Tx slots	Back	10mm	Full	251	848.8	30.20	31.40	1.318	0.02	0.431	0.568
	GSM850	GPRS 2Tx slots	Left Side	10mm	Full	251	848.8	30.20	31.40	1.318	-0.01	0.258	0.340
	GSM850	GPRS 2Tx slots	Right Side	10mm	Full	251	848.8	30.20	31.40	1.318	0.03	0.297	0.392
	GSM850	GPRS 2Tx slots	Bottom Side	10mm	Full	251	848.8	30.20	31.40	1.318	0.02	0.239	0.315
	GSM850	GPRS 2Tx slots	Back	10mm	Full	128	824.2	29.87	31.40	1.422	0.04	0.469	0.667
21	GSM850	GPRS 2Tx slots	Back	10mm	Full	189	836.4	30.00	31.40	1.380	0.01	0.540	**0.745**
	GSM1900	GPRS 2Tx slots	Front	10mm	Full	512	1850.2	26.72	28.20	1.406	0.05	0.301	0.423
	GSM1900	GPRS 2Tx slots	Back	10mm	Full	512	1850.2	26.72	28.20	1.406	0.08	0.609	0.856
	GSM1900	GPRS 2Tx slots	Left Side	10mm	Full	512	1850.2	26.72	28.20	1.406	-0.04	0.056	0.079
	GSM1900	GPRS 2Tx slots	Right Side	10mm	Full	512	1850.2	26.72	28.20	1.406	0.08	0.067	0.094
	GSM1900	GPRS 2Tx slots	Bottom Side	10mm	Full	512	1850.2	26.72	28.20	1.406	0.09	0.481	0.676
	GSM1900	GPRS 2Tx slots	Back	10mm	Full	661	1880	26.40	28.20	1.514	0.01	0.566	0.857
22	GSM1900	GPRS 2Tx slots	Back	10mm	Full	810	1909.8	26.33	28.20	1.538	0.08	0.598	**0.920**

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Front	10mm	Reduced	9400	1880	20.95	21.50	1.135	0.02	0.500	0.568
	WCDMA II	RMC 12.2Kbps	Back	10mm	Reduced	9400	1880	20.95	21.50	1.135	0.01	1.060	1.203
	WCDMA II	RMC 12.2Kbps	Left Side	10mm	Reduced	9400	1880	20.95	21.50	1.135	-0.09	0.096	0.108
	WCDMA II	RMC 12.2Kbps	Right Side	10mm	Reduced	9400	1880	20.95	21.50	1.135	0.05	0.073	0.083
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	Reduced	9400	1880	20.95	21.50	1.135	0.01	0.743	0.843
	WCDMA II	RMC 12.2Kbps	Back	10mm	Reduced	9262	1852.4	20.76	21.50	1.186	0.08	1.020	1.209
23	WCDMA II	RMC 12.2Kbps	Back	10mm	Reduced	9538	1907.6	20.93	21.50	1.140	0.08	1.100	**1.254**
	WCDMA IV	RMC 12.2Kbps	Front	10mm	Full	1413	1732.6	20.69	21.50	1.205	-0.02	0.454	0.547
	WCDMA IV	RMC 12.2Kbps	Back	10mm	Full	1413	1732.6	20.69	21.50	1.205	0.02	0.962	1.159
	WCDMA IV	RMC 12.2Kbps	Left Side	10mm	Full	1413	1732.6	20.69	21.50	1.205	0.01	0.052	0.063
	WCDMA IV	RMC 12.2Kbps	Right Side	10mm	Full	1413	1732.6	20.69	21.50	1.205	0.08	0.127	0.153
	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	Full	1413	1732.6	20.69	21.50	1.205	0.01	0.620	0.747
24	WCDMA IV	RMC 12.2Kbps	Back	10mm	Full	1312	1712.4	20.59	21.50	1.233	0.01	0.998	**1.231**
	WCDMA IV	RMC 12.2Kbps	Back	10mm	Full	1513	1752.6	20.67	21.50	1.211	0.11	0.934	1.131
	WCDMA V	RMC 12.2Kbps	Front	10mm	Full	4182	836.4	23.46	24.90	1.393	0.06	0.384	0.535
	WCDMA V	RMC 12.2Kbps	Back	10mm	Full	4182	836.4	23.46	24.90	1.393	0.03	0.560	0.780
	WCDMA V	RMC 12.2Kbps	Left Side	10mm	Full	4182	836.4	23.46	24.90	1.393	-0.02	0.275	0.383
	WCDMA V	RMC 12.2Kbps	Right Side	10mm	Full	4182	836.4	23.46	24.90	1.393	0.09	0.327	0.456
	WCDMA V	RMC 12.2Kbps	Bottom Side	10mm	Full	4182	836.4	23.46	24.90	1.393	-0.02	0.254	0.354
	WCDMA V	RMC 12.2Kbps	Back	10mm	Full	4132	826.4	23.43	24.90	1.403	0.01	0.528	0.741
25	WCDMA V	RMC 12.2Kbps	Back	10mm	Full	4233	846.6	23.44	24.90	1.400	0.03	0.606	**0.848**

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	CDMA2000 BC0	RTAP 153.6Kbps	Front	10mm	Full	384	836.52	22.79	23.80	1.262	-0.01	0.363	0.458
	CDMA2000 BC0	RTAP 153.6Kbps	Back	10mm	Full	384	836.52	22.79	23.80	1.262	0.01	0.466	0.588
	CDMA2000 BC0	RTAP 153.6Kbps	Left Side	10mm	Full	384	836.52	22.79	23.80	1.262	0.04	0.272	0.343
	CDMA2000 BC0	RTAP 153.6Kbps	Right Side	10mm	Full	384	836.52	22.79	23.80	1.262	0.01	0.307	0.387
	CDMA2000 BC0	RTAP 153.6Kbps	Bottom Side	10mm	Full	384	836.52	22.79	23.80	1.262	0.06	0.250	0.315
	CDMA2000 BC0	RTAP 153.6Kbps	Back	10mm	Full	1013	824.7	22.78	23.80	1.265	0.01	0.443	0.560
26	CDMA2000 BC0	RTAP 153.6Kbps	Back	10mm	Full	777	848.31	22.77	23.80	1.268	-0.09	0.515	**0.653**
	CDMA2000 BC1	RTAP 153.6Kbps	Front	10mm	Reduced	1175	1908.75	20.95	21.00	1.012	0.05	0.515	0.521
27	CDMA2000 BC1	RTAP 153.6Kbps	Back	10mm	Reduced	1175	1908.75	20.95	21.00	1.012	-0.05	0.985	**0.996**
	CDMA2000 BC1	RTAP 153.6Kbps	Back	10mm	Reduced	25	1851.25	20.91	21.00	1.021	-0.03	0.919	0.938
	CDMA2000 BC1	RTAP 153.6Kbps	Back	10mm	Reduced	600	1880	20.88	21.00	1.028	0.02	0.933	0.959
	CDMA2000 BC1	RTAP 153.6Kbps	Left Side	10mm	Reduced	1175	1908.75	20.95	21.00	1.012	0.05	0.115	0.116
	CDMA2000 BC1	RTAP 153.6Kbps	Right Side	10mm	Reduced	1175	1908.75	20.95	21.00	1.012	0.19	0.077	0.078
	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Side	10mm	Reduced	1175	1908.75	20.95	21.00	1.012	0.04	0.860	0.870
	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Side	10mm	Reduced	25	1851.25	20.91	21.00	1.021	-0.02	0.887	0.906
	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Side	10mm	Reduced	600	1880	20.88	21.00	1.028	0.01	0.815	0.838
	CDMA2000 BC10	RTAP 153.6Kbps	Front	10mm	Full	580	820.5	24.76	24.80	1.009	0.01	0.443	0.447
	CDMA2000 BC10	RTAP 153.6Kbps	Back	10mm	Full	580	820.5	24.76	24.80	1.009	-0.02	0.635	0.641
	CDMA2000 BC10	RTAP 153.6Kbps	Left Side	10mm	Full	580	820.5	24.76	24.80	1.009	0.02	0.331	0.334
	CDMA2000 BC10	RTAP 153.6Kbps	Right Side	10mm	Full	580	820.5	24.76	24.80	1.009	0.04	0.460	0.464
	CDMA2000 BC10	RTAP 153.6Kbps	Bottom Side	10mm	Full	580	820.5	24.76	24.80	1.009	0.02	0.269	0.271
	CDMA2000 BC10	RTAP 153.6Kbps	Back	10mm	Full	476	817.9	24.75	24.80	1.012	0.02	0.471	0.476
28	CDMA2000 BC10	RTAP 153.6Kbps	Back	10mm	Full	684	823.1	24.59	24.80	1.050	0.04	0.660	**0.693**

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 4	20M	QPSK	1	0	Front	10mm	Reduced	20175	1732.5	20.77	21.00	1.054	0.09	0.508	0.536
	LTE Band 4	20M	QPSK	50	0	Front	10mm	Reduced	20175	1732.5	20.57	21.00	1.104	-0.01	0.396	0.437
29	LTE Band 4	20M	QPSK	1	0	Back	10mm	Reduced	20175	1732.5	20.77	21.00	1.054	-0.03	1.070	**1.128**
	LTE Band 4	20M	QPSK	50	0	Back	10mm	Reduced	20175	1732.5	20.57	21.00	1.104	0.01	1.004	1.108
	LTE Band 4	20M	QPSK	100	0	Back	10mm	Reduced	20175	1732.5	20.55	21.00	1.109	0.01	0.766	0.850
	LTE Band 4	20M	QPSK	1	0	Left Side	10mm	Reduced	20175	1732.5	20.77	21.00	1.054	0.09	0.055	0.058
	LTE Band 4	20M	QPSK	50	0	Left Side	10mm	Reduced	20175	1732.5	20.57	21.00	1.104	0.09	0.043	0.047
	LTE Band 4	20M	QPSK	1	0	Right Side	10mm	Reduced	20175	1732.5	20.77	21.00	1.054	-0.01	0.127	0.134
	LTE Band 4	20M	QPSK	50	0	Right Side	10mm	Reduced	20175	1732.5	20.57	21.00	1.104	0.02	0.098	0.108
	LTE Band 4	20M	QPSK	1	0	Bottom Side	10mm	Reduced	20175	1732.5	20.77	21.00	1.054	0.06	0.641	0.676
	LTE Band 4	20M	QPSK	50	0	Bottom Side	10mm	Reduced	20175	1732.5	20.57	21.00	1.104	0.01	0.499	0.551
	LTE Band 4	20M	QPSK	100	0	Bottom Side	10mm	Reduced	20175	1732.5	20.55	21.00	1.109	-0.08	0.483	0.536
	LTE Band 7	20M	QPSK	1	0	Front	10mm	Reduced	21100	2535	20.97	21.00	1.007	-0.02	0.416	0.419
	LTE Band 7	20M	QPSK	50	0	Front	10mm	Reduced	21100	2535	20.93	21.00	1.016	0.01	0.345	0.351
30	LTE Band 7	20M	QPSK	1	0	Back	10mm	Reduced	21100	2535	20.97	21.00	1.007	0.06	0.931	**0.937**
	LTE Band 7	20M	QPSK	1	0	Back	10mm	Reduced	20850	2510	20.88	21.00	1.028	0.06	0.846	0.870
	LTE Band 7	20M	QPSK	1	0	Back	10mm	Reduced	21350	2560	20.83	21.00	1.040	-0.05	0.764	0.794
	LTE Band 7	20M	QPSK	50	0	Back	10mm	Reduced	21100	2535	20.93	21.00	1.016	0.01	0.735	0.747
	LTE Band 7	20M	QPSK	100	0	Back	10mm	Reduced	21100	2535	20.94	21.00	1.014	0.06	0.737	0.747
	LTE Band 7	20M	QPSK	1	0	Left Side	10mm	Reduced	21100	2535	20.97	21.00	1.007	0.08	0.165	0.166
	LTE Band 7	20M	QPSK	50	0	Left Side	10mm	Reduced	21100	2535	20.93	21.00	1.016	0.02	0.148	0.150
	LTE Band 7	20M	QPSK	1	0	Right Side	10mm	Reduced	21100	2535	20.97	21.00	1.007	-0.05	0.138	0.139
	LTE Band 7	20M	QPSK	50	0	Right Side	10mm	Reduced	21100	2535	20.93	21.00	1.016	0.01	0.113	0.115
	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	Reduced	21100	2535	20.97	21.00	1.007	0.09	0.846	0.852
	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	Reduced	20850	2510	20.88	21.00	1.028	0.01	0.763	0.784
	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	Reduced	21350	2560	20.83	21.00	1.040	0.01	0.818	0.851
	LTE Band 7	20M	QPSK	50	0	Bottom Side	10mm	Reduced	21100	2535	20.93	21.00	1.016	0.06	0.694	0.705
	LTE Band 7	20M	QPSK	100	0	Bottom Side	10mm	Reduced	21100	2535	20.94	21.00	1.014	0.04	0.742	0.752
	LTE Band 12	10M	QPSK	1	0	Front	10mm	Full	23095	707.5	23.17	25.00	1.524	0.01	0.327	0.498
	LTE Band 12	10M	QPSK	25	0	Front	10mm	Full	23095	707.5	22.15	24.00	1.531	0.06	0.274	0.420
31	LTE Band 12	10M	QPSK	1	0	Back	10mm	Full	23095	707.5	23.17	25.00	1.524	0.02	0.543	**0.828**
	LTE Band 12	10M	QPSK	25	0	Back	10mm	Full	23095	707.5	22.15	24.00	1.531	0.01	0.438	0.671
	LTE Band 12	10M	QPSK	50	0	Back	10mm	Full	23095	707.5	22.05	24.00	1.567	0.08	0.361	0.566
	LTE Band 12	10M	QPSK	1	0	Left Side	10mm	Full	23095	707.5	23.17	25.00	1.524	0.02	0.313	0.477
	LTE Band 12	10M	QPSK	25	0	Left Side	10mm	Full	23095	707.5	22.15	24.00	1.531	0.03	0.267	0.409
	LTE Band 12	10M	QPSK	1	0	Right Side	10mm	Full	23095	707.5	23.17	25.00	1.524	-0.08	0.366	0.558
	LTE Band 12	10M	QPSK	25	0	Right Side	10mm	Full	23095	707.5	22.15	24.00	1.531	0.08	0.436	0.668
	LTE Band 12	10M	QPSK	1	0	Bottom Side	10mm	Full	23095	707.5	23.17	25.00	1.524	0.06	0.122	0.186
	LTE Band 12	10M	QPSK	25	0	Bottom Side	10mm	Full	23095	707.5	22.15	24.00	1.531	0.01	0.101	0.155

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 13	10M	QPSK	1	0	Front	10mm	Full	23230	782	21.78	23.10	1.355	0.06	0.244	0.331
	LTE Band 13	10M	QPSK	25	0	Front	10mm	Full	23230	782	20.80	22.10	1.349	-0.05	0.195	0.263
32	LTE Band 13	10M	QPSK	1	0	Back	10mm	Full	23230	782	21.78	23.10	1.355	-0.01	0.462	**0.626**
	LTE Band 13	10M	QPSK	25	0	Back	10mm	Full	23230	782	20.80	22.10	1.349	0.09	0.342	0.461
	LTE Band 13	10M	QPSK	1	0	Left Side	10mm	Full	23230	782	21.78	23.10	1.355	0.09	0.227	0.308
	LTE Band 13	10M	QPSK	25	0	Left Side	10mm	Full	23230	782	20.80	22.10	1.349	0.01	0.182	0.246
	LTE Band 13	10M	QPSK	1	0	Right Side	10mm	Full	23230	782	21.78	23.10	1.355	-0.04	0.287	0.389
	LTE Band 13	10M	QPSK	25	0	Right Side	10mm	Full	23230	782	20.80	22.10	1.349	0.06	0.223	0.301
	LTE Band 13	10M	QPSK	1	0	Bottom Side	10mm	Full	23230	782	21.78	23.10	1.355	-0.03	0.143	0.194
	LTE Band 13	10M	QPSK	25	0	Bottom Side	10mm	Full	23230	782	20.80	22.10	1.349	-0.04	0.111	0.150
	LTE Band 25	20M	QPSK	1	0	Front	10mm	Reduced	26340	1880	21.42	21.50	1.019	0.01	0.587	0.598
	LTE Band 25	20M	QPSK	50	0	Front	10mm	Reduced	26340	1880	21.26	21.50	1.057	0.05	0.456	0.482
33	LTE Band 25	20M	QPSK	1	0	Back	10mm	Reduced	26340	1880	21.42	21.50	1.019	-0.11	1.080	**1.100**
	LTE Band 25	20M	QPSK	50	0	Back	10mm	Reduced	26340	1880	21.26	21.50	1.057	0.05	0.913	0.965
	LTE Band 25	20M	QPSK	1	0	Left Side	10mm	Reduced	26340	1880	21.42	21.50	1.019	0.01	0.108	0.110
	LTE Band 25	20M	QPSK	50	0	Left Side	10mm	Reduced	26340	1880	21.26	21.50	1.057	0.09	0.082	0.087
	LTE Band 25	20M	QPSK	1	0	Right Side	10mm	Reduced	26340	1880	21.42	21.50	1.019	-0.01	0.102	0.104
	LTE Band 25	20M	QPSK	50	0	Right Side	10mm	Reduced	26340	1880	21.26	21.50	1.057	0.04	0.081	0.086
	LTE Band 25	20M	QPSK	1	0	Bottom Side	10mm	Reduced	26340	1880	21.42	21.50	1.019	0.17	0.746	0.760
	LTE Band 25	20M	QPSK	50	0	Bottom Side	10mm	Reduced	26340	1880	21.26	21.50	1.057	-0.02	0.540	0.571
	LTE Band 25	20M	QPSK	1	0	Back	10mm	Reduced	26140	1860	21.41	21.50	1.021	0.1	1.015	1.036
	LTE Band 25	20M	QPSK	1	0	Back	10mm	Reduced	26590	1905	21.31	21.50	1.045	0.02	1.022	1.068
	LTE Band 25	20M	QPSK	50	0	Back	10mm	Reduced	26140	1860	21.19	21.50	1.074	0.01	0.877	0.942
	LTE Band 25	20M	QPSK	50	0	Back	10mm	Reduced	26590	1905	21.25	21.50	1.059	0.09	0.855	0.906
	LTE Band 25	20M	QPSK	100	0	Back	10mm	Reduced	26340	1880	21.24	21.50	1.062	-0.01	0.797	0.846
	LTE Band 26	15M	QPSK	1	0	Front	10mm	Full	26865	831.5	22.42	23.70	1.343	0.05	0.246	0.330
	LTE Band 26	15M	QPSK	36	0	Front	10mm	Full	26865	831.5	21.49	22.70	1.321	0.08	0.205	0.271
34	LTE Band 26	15M	QPSK	1	0	Back	10mm	Full	26865	831.5	22.42	23.70	1.343	0.02	0.292	**0.392**
	LTE Band 26	15M	QPSK	36	0	Back	10mm	Full	26865	831.5	21.49	22.70	1.321	0.17	0.241	0.318
	LTE Band 26	15M	QPSK	1	0	Left Side	10mm	Full	26865	831.5	22.42	23.70	1.343	0.01	0.134	0.180
	LTE Band 26	15M	QPSK	36	0	Left Side	10mm	Full	26865	831.5	21.49	22.70	1.321	0.02	0.122	0.161
	LTE Band 26	15M	QPSK	1	0	Right Side	10mm	Full	26865	831.5	22.42	23.70	1.343	0.01	0.201	0.270
	LTE Band 26	15M	QPSK	36	0	Right Side	10mm	Full	26865	831.5	21.49	22.70	1.321	0.07	0.165	0.218
	LTE Band 26	15M	QPSK	1	0	Bottom Side	10mm	Full	26865	831.5	22.42	23.70	1.343	0.08	0.154	0.207
	LTE Band 26	15M	QPSK	36	0	Bottom Side	10mm	Full	26865	831.5	21.49	22.70	1.321	0.08	0.126	0.166

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20M	QPSK	1	0	Front	10mm	Full	40620	2593	23.29	24.00	1.178	62.9	1.006	-0.05	0.409	0.485
	LTE Band 41	20M	QPSK	50	0	Front	10mm	Full	40620	2593	22.40	23.00	1.148	62.9	1.006	0.01	0.325	0.375
	LTE Band 41	20M	QPSK	1	0	Back	10mm	Full	40620	2593	23.29	24.00	1.178	62.9	1.006	-0.01	0.952	1.128
35	LTE Band 41	20M	QPSK	1	0	Back	10mm	Full	39750	2506	23.20	24.00	1.202	62.9	1.006	-0.03	0.970	**1.173**
	LTE Band 41	20M	QPSK	1	0	Back	10mm	Full	40185	2549.5	23.16	24.00	1.213	62.9	1.006	-0.18	0.879	1.073
	LTE Band 41	20M	QPSK	1	0	Back	10mm	Full	41055	2636.5	23.14	24.00	1.219	62.9	1.006	-0.01	0.797	0.977
	LTE Band 41	20M	QPSK	1	0	Back	10mm	Full	41490	2680	23.12	24.00	1.225	62.9	1.006	0.01	0.705	0.869
	LTE Band 41	20M	QPSK	50	0	Back	10mm	Full	40620	2593	22.40	23.00	1.148	62.9	1.006	0.02	0.784	0.906
	LTE Band 41	20M	QPSK	50	0	Back	10mm	Full	39750	2506	22.35	23.00	1.161	62.9	1.006	-0.01	0.940	1.098
	LTE Band 41	20M	QPSK	50	0	Back	10mm	Full	40185	2549.5	22.36	23.00	1.159	62.9	1.006	-0.02	0.738	0.860
	LTE Band 41	20M	QPSK	50	0	Back	10mm	Full	41055	2636.5	22.14	23.00	1.219	62.9	1.006	0.13	0.645	0.791
	LTE Band 41	20M	QPSK	50	0	Back	10mm	Full	41490	2680	22.17	23.00	1.211	62.9	1.006	0.09	0.705	0.859
	LTE Band 41	20M	QPSK	100	0	Back	10mm	Full	40620	2593	22.34	23.00	1.164	62.9	1.006	0.04	0.692	0.810
	LTE Band 41	20M	QPSK	1	0	Left Side	10mm	Full	40620	2593	23.29	24.00	1.178	62.9	1.006	0.04	0.192	0.227
	LTE Band 41	20M	QPSK	50	0	Left Side	10mm	Full	40620	2593	22.40	23.00	1.148	62.9	1.006	-0.04	0.155	0.179
	LTE Band 41	20M	QPSK	1	0	Right Side	10mm	Full	40620	2593	23.29	24.00	1.178	62.9	1.006	-0.02	0.125	0.148
	LTE Band 41	20M	QPSK	50	0	Right Side	10mm	Full	40620	2593	22.40	23.00	1.148	62.9	1.006	0.11	0.099	0.114
	LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	Full	40620	2593	23.29	24.00	1.178	62.9	1.006	0.06	0.871	1.032
	LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	Full	39750	2506	23.20	24.00	1.202	62.9	1.006	0.08	0.910	1.101
	LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	Full	40185	2549.5	23.16	24.00	1.213	62.9	1.006	0.08	0.841	1.027
	LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	Full	41055	2636.5	23.14	24.00	1.219	62.9	1.006	0.01	0.700	0.858
	LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	Full	41490	2680	23.12	24.00	1.225	62.9	1.006	0.02	0.760	0.936
	LTE Band 41	20M	QPSK	50	0	Bottom Side	10mm	Full	40620	2593	22.40	23.00	1.148	62.9	1.006	0.01	0.699	0.807
	LTE Band 41	20M	QPSK	50	0	Bottom Side	10mm	Full	39750	2506	22.35	23.00	1.161	62.9	1.006	0.03	0.609	0.712
	LTE Band 41	20M	QPSK	50	0	Bottom Side	10mm	Full	40185	2549.5	22.36	23.00	1.159	62.9	1.006	-0.05	0.710	0.828
	LTE Band 41	20M	QPSK	50	0	Bottom Side	10mm	Full	41055	2636.5	22.14	23.00	1.219	62.9	1.006	-0.05	0.564	0.692
	LTE Band 41	20M	QPSK	50	0	Bottom Side	10mm	Full	41490	2680	22.17	23.00	1.211	62.9	1.006	0.04	0.705	0.859
	LTE Band 41	20M	QPSK	100	0	Bottom Side	10mm	Full	40620	2593	22.34	23.00	1.164	62.9	1.006	-0.01	0.692	0.810

<WLAN2.4G SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 1	6	2437	18.22	18.50	1.067	100	1.000	-0.02	0.075	0.080
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 1	6	2437	18.22	18.50	1.067	100	1.000	0.02	0.276	0.294
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 1	6	2437	18.22	18.50	1.067	100	1.000	-0.01	0.122	0.130
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 1	6	2437	18.22	18.50	1.067	100	1.000	-0.06	0.079	0.084
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 1	6	2437	18.22	18.50	1.067	100	1.000	0.01	0.050	0.053
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 1	1	2412	17.93	18.50	1.140	100	1.000	0.06	0.240	0.274
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 1	11	2462	18.15	18.50	1.084	100	1.000	0.02	0.201	0.218
	WLAN2.4GHz	802.11n-HT20 MCS0	Front	10mm	Ant 1+2	6	2437	20.65	21.00	1.084	94.31	1.060	0.01	0.181	0.208
36	WLAN2.4GHz	802.11n-HT20 MCS0	Back	10mm	Ant 1+2	6	2437	20.65	21.00	1.084	94.31	1.060	0.18	0.326	**0.375**
	WLAN2.4GHz	802.11n-HT20 MCS0	Left Side	10mm	Ant 1+2	6	2437	20.65	21.00	1.084	94.31	1.060	0.02	0.124	0.142
	WLAN2.4GHz	802.11n-HT20 MCS0	Right Side	10mm	Ant 1+2	6	2437	20.65	21.00	1.084	94.31	1.060	0.02	0.159	0.183
	WLAN2.4GHz	802.11n-HT20 MCS0	Top Side	10mm	Ant 1+2	6	2437	20.65	21.00	1.084	94.31	1.060	0.01	0.120	0.138
	WLAN2.4GHz	802.11n-HT20 MCS0	Back	10mm	Ant 1+2	1	2412	15.91	16.00	1.022	94.31	1.060	0.01	0.268	0.290
	WLAN2.4GHz	802.11n-HT20 MCS0	Back	10mm	Ant 1+2	11	2462	15.63	16.00	1.090	94.31	1.060	0.1	0.230	0.266

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Back	10mm	Ant 1	0	2402	5.00	6.00	1.259	77.37	1.077	-0.02	0.038	0.052
37	Bluetooth	1Mbps	Back	10mm	Ant 1	39	2441	4.92	6.00	1.282	77.37	1.077	0.08	0.049	**0.067**
	Bluetooth	1Mbps	Back	10mm	Ant 1	78	2480	5.98	6.00	1.005	77.37	1.077	0.08	0.045	0.049

<WLAN5G SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN5.2GHz	802.11a 6Mbps	Front	10mm	Ant 1	48	5240	13.04	13.50	1.112	95.3	1.049	0.08	0.104	0.121
	WLAN5.2GHz	802.11a 6Mbps	Back	10mm	Ant 1	48	5240	13.04	13.50	1.112	95.3	1.049	0.01	0.095	0.111
	WLAN5.2GHz	802.11a 6Mbps	Left Side	10mm	Ant 1	48	5240	13.04	13.50	1.112	95.3	1.049	-0.05	0.294	0.343
	WLAN5.2GHz	802.11a 6Mbps	Right Side	10mm	Ant 1	48	5240	13.04	13.50	1.112	95.3	1.049	0.04	0.045	0.052
	WLAN5.2GHz	802.11a 6Mbps	Top Side	10mm	Ant 1	48	5240	13.04	13.50	1.112	95.3	1.049	0.03	0.079	0.092
	WLAN5.2GHz	802.11a 6Mbps	Left Side	10mm	Ant 1	36	5180	12.97	13.50	1.130	95.3	1.049	0.06	0.252	0.299
	WLAN5.2GHz	802.11a 6Mbps	Left Side	10mm	Ant 1	44	5220	12.96	13.50	1.133	95.3	1.049	0.06	0.267	0.317
	WLAN5.2GHz	802.11n-HT20 MCS0	Front	10mm	Ant 1+2	44	5220	16.10	16.50	1.096	94.72	1.056	0.01	0.245	0.284
	WLAN5.2GHz	802.11n-HT20 MCS0	Back	10mm	Ant 1+2	44	5220	16.10	16.50	1.096	94.72	1.056	0.02	0.162	0.188
	WLAN5.2GHz	802.11n-HT20 MCS0	Left Side	10mm	Ant 1+2	44	5220	16.10	16.50	1.096	94.72	1.056	0.06	0.296	0.343
	WLAN5.2GHz	802.11n-HT20 MCS0	Right Side	10mm	Ant 1+2	44	5220	16.10	16.50	1.096	94.72	1.056	0.01	0.345	0.399
	WLAN5.2GHz	802.11n-HT20 MCS0	Top Side	10mm	Ant 1+2	44	5220	16.10	16.50	1.096	94.72	1.056	0.04	0.149	0.173
	WLAN5.2GHz	802.11n-HT20 MCS0	Right Side	10mm	Ant 1+2	36	5180	15.96	16.50	1.131	94.72	1.056	-0.04	0.322	0.385
	WLAN5.2GHz	802.11n-HT20 MCS0	Right Side	10mm	Ant 1+2	48	5240	16.09	16.50	1.100	94.72	1.056	0.01	0.351	0.408
38	WLAN5.2GHz	802.11n-HT20 MCS0	Right Side	10mm	Ant 1+2	40	5200	16.00	16.50	1.123	94.72	1.056	-0.03	0.365	**0.433**
	WLAN5.8GHz	802.11a 6Mbps	Front	10mm	Ant 1	157	5785	14.02	14.50	1.117	95.3	1.049	0.02	0.133	0.156
	WLAN5.8GHz	802.11a 6Mbps	Back	10mm	Ant 1	157	5785	14.02	14.50	1.117	95.3	1.049	0.01	0.125	0.146
	WLAN5.8GHz	802.11a 6Mbps	Left Side	10mm	Ant 1	157	5785	14.02	14.50	1.117	95.3	1.049	0.01	0.388	0.455
	WLAN5.8GHz	802.11a 6Mbps	Right Side	10mm	Ant 1	157	5785	14.02	14.50	1.117	95.3	1.049	0.02	0.074	0.087
	WLAN5.8GHz	802.11a 6Mbps	Top Side	10mm	Ant 1	157	5785	14.02	14.50	1.117	95.3	1.049	-0.06	0.105	0.123
	WLAN5.8GHz	802.11a 6Mbps	Left Side	10mm	Ant 1	149	5745	13.68	14.50	1.208	95.3	1.049	-0.05	0.338	0.428
	WLAN5.8GHz	802.11a 6Mbps	Left Side	10mm	Ant 1	165	5825	13.94	14.50	1.138	95.3	1.049	0.01	0.398	0.475
	WLAN5.8GHz	802.11n-HT20 MCS0	Front	10mm	Ant 1+2	157	5785	16.89	17.50	1.151	94.72	1.056	-0.08	0.284	0.345
	WLAN5.8GHz	802.11n-HT20 MCS0	Back	10mm	Ant 1+2	157	5785	16.89	17.50	1.151	94.72	1.056	-0.02	0.169	0.205
	WLAN5.8GHz	802.11n-HT20 MCS0	Left Side	10mm	Ant 1+2	157	5785	16.89	17.50	1.151	94.72	1.056	-0.11	0.407	0.495
	WLAN5.8GHz	802.11n-HT20 MCS0	Right Side	10mm	Ant 1+2	157	5785	16.89	17.50	1.151	94.72	1.056	-0.16	0.432	0.525
	WLAN5.8GHz	802.11n-HT20 MCS0	Top Side	10mm	Ant 1+2	157	5785	16.89	17.50	1.151	94.72	1.056	-0.01	0.170	0.207
39	WLAN5.8GHz	802.11n-HT20 MCS0	Right Side	10mm	Ant 1+2	149	5745	16.88	17.50	1.153	94.72	1.056	-0.05	0.467	**0.569**
	WLAN5.8GHz	802.11n-HT20 MCS0	Right Side	10mm	Ant 1+2	165	5825	16.82	17.50	1.168	94.72	1.056	0.19	0.388	0.479

14.3 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS 2Tx slots	Front	15mm	Full	251	848.8	30.20	31.40	1.318	0.04	0.297	0.392
40	GSM850	GPRS 2Tx slots	Back	15mm	Full	251	848.8	30.20	31.40	1.318	-0.06	0.407	**0.537**
	GSM850	GPRS 2Tx slots	Back	15mm	Full	128	824.2	29.87	31.40	1.422	0.02	0.283	0.403
	GSM850	GPRS 2Tx slots	Back	15mm	Full	189	836.4	30.00	31.40	1.380	0.07	0.354	0.489
	GSM1900	GPRS 2Tx slots	Front	15mm	Full	512	1850.2	26.72	28.20	1.406	-0.08	0.174	0.245
	GSM1900	GPRS 2Tx slots	Back	15mm	Full	512	1850.2	26.72	28.20	1.406	-0.06	0.346	0.486
	GSM1900	GPRS 2Tx slots	Back	15mm	Full	661	1880	26.40	28.20	1.514	0.01	0.298	0.451
41	GSM1900	GPRS 2Tx slots	Back	15mm	Full	810	1909.8	26.33	28.20	1.538	-0.06	0.354	**0.545**

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Front	15mm	Full	9400	1880	22.25	22.50	1.059	0.07	0.259	0.274
	WCDMA II	RMC 12.2Kbps	Back	15mm	Full	9400	1880	22.25	22.50	1.059	0.09	0.475	0.503
	WCDMA II	RMC 12.2Kbps	Back	15mm	Full	9262	1852.4	22.12	22.50	1.091	0.04	0.477	0.521
42	WCDMA II	RMC 12.2Kbps	Back	15mm	Full	9538	1907.6	22.24	22.50	1.062	0.02	0.509	**0.540**
	WCDMA IV	RMC 12.2Kbps	Front	15mm	Full	1413	1732.6	20.69	21.50	1.205	0.04	0.21	0.253
	WCDMA IV	RMC 12.2Kbps	Back	15mm	Full	1413	1732.6	20.69	21.50	1.205	0.03	0.51	0.615
43	WCDMA IV	RMC 12.2Kbps	Back	15mm	Full	1312	1712.4	20.59	21.50	1.233	0.01	0.523	**0.645**
	WCDMA IV	RMC 12.2Kbps	Back	15mm	Full	1513	1752.6	20.67	21.50	1.211	0.09	0.489	0.592
	WCDMA V	RMC 12.2Kbps	Front	15mm	Full	4182	836.4	23.46	24.90	1.393	0.01	0.304	0.424
	WCDMA V	RMC 12.2Kbps	Back	15mm	Full	4182	836.4	23.46	24.90	1.393	0.09	0.411	0.573
	WCDMA V	RMC 12.2Kbps	Back	15mm	Full	4132	826.4	23.43	24.90	1.403	0.09	0.396	0.556
44	WCDMA V	RMC 12.2Kbps	Back	15mm	Full	4233	846.6	23.44	24.90	1.400	-0.08	0.444	**0.621**

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	CDMA2000 BC0	RC3 SO32 (F+SCH)	Front	15mm	Full	1013	824.7	22.71	23.80	1.285	0.03	0.296	0.380
	CDMA2000 BC0	RC3 SO32 (F+SCH)	Back	15mm	Full	1013	824.7	22.71	23.80	1.285	-0.06	0.347	0.446
	CDMA2000 BC0	RC3 SO32 (F+SCH)	Back	15mm	Full	777	848.31	22.68	23.80	1.294	0.04	0.382	0.494
45	CDMA2000 BC0	RC3 SO32 (F+SCH)	Back	15mm	Full	384	836.52	22.70	23.80	1.288	0.05	0.395	**0.509**
	CDMA2000 BC1	RC3 SO32 (F+SCH)	Front	15mm	Full	1175	1908.75	21.90	22.20	1.072	-0.06	0.321	0.344
46	CDMA2000 BC1	RC3 SO32 (F+SCH)	Back	15mm	Full	1175	1908.75	21.90	22.20	1.072	0.03	0.540	**0.579**
	CDMA2000 BC1	RC3 SO32 (F+SCH)	Back	15mm	Full	25	1851.25	21.89	22.20	1.074	-0.03	0.483	0.519
	CDMA2000 BC1	RC3 SO32 (F+SCH)	Back	15mm	Full	600	1880	21.73	22.20	1.114	0.06	0.499	0.556
	CDMA2000 BC10	RC3 SO32 (F+SCH)	Front	15mm	Full	476	817.9	24.74	24.80	1.014	0.06	0.303	0.307
	CDMA2000 BC10	RC3 SO32 (F+SCH)	Back	15mm	Full	476	817.9	24.74	24.80	1.014	0.01	0.387	0.392
	CDMA2000 BC10	RC3 SO32 (F+SCH)	Back	15mm	Full	580	820.5	24.45	24.80	1.084	-0.08	0.394	0.427
47	CDMA2000 BC10	RC3 SO32 (F+SCH)	Back	15mm	Full	684	823.1	24.55	24.80	1.059	-0.02	0.410	**0.434**

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 4	20M	QPSK	1	0	Front	15mm	Full	20175	1732.5	23.45	23.60	1.035	0.09	0.421	0.436
	LTE Band 4	20M	QPSK	50	0	Front	15mm	Full	20175	1732.5	22.43	22.60	1.040	0.12	0.337	0.350
48	LTE Band 4	20M	QPSK	1	0	Back	15mm	Full	20175	1732.5	23.45	23.60	1.035	-0.02	1.060	**1.097**
	LTE Band 4	20M	QPSK	50	0	Back	15mm	Full	20175	1732.5	22.43	22.60	1.040	0.05	0.779	0.810
	LTE Band 4	20M	QPSK	100	0	Back	15mm	Full	20175	1732.5	22.37	22.60	1.054	0.05	0.822	0.867
	LTE Band 7	20M	QPSK	1	0	Front	15mm	Full	21100	2535	21.98	22.40	1.102	0.02	0.142	0.156
	LTE Band 7	20M	QPSK	50	0	Front	15mm	Full	21100	2535	21.12	21.40	1.067	0.01	0.109	0.116
49	LTE Band 7	20M	QPSK	1	0	Back	15mm	Full	21100	2535	21.98	22.40	1.102	0.01	0.434	**0.478**
	LTE Band 7	20M	QPSK	1	0	Back	15mm	Full	20850	2510	21.94	22.40	1.112	0.03	0.263	0.292
	LTE Band 7	20M	QPSK	1	0	Back	15mm	Full	21350	2560	21.90	22.40	1.122	0.03	0.270	0.303
	LTE Band 7	20M	QPSK	50	0	Back	15mm	Full	21100	2535	21.12	21.40	1.067	0.03	0.244	0.260
	LTE Band 12	10M	QPSK	1	0	Front	15mm	Full	23095	707.5	23.17	25.00	1.524	-0.06	0.293	0.447
	LTE Band 12	10M	QPSK	25	0	Front	15mm	Full	23095	707.5	22.15	24.00	1.531	-0.01	0.232	0.355
50	LTE Band 12	10M	QPSK	1	0	Back	15mm	Full	23095	707.5	23.17	25.00	1.524	0.09	0.414	**0.631**
	LTE Band 12	10M	QPSK	25	0	Back	15mm	Full	23095	707.5	22.15	24.00	1.531	0.02	0.320	0.490
	LTE Band 13	10M	QPSK	1	0	Front	15mm	Full	23230	782	21.78	23.10	1.355	0.01	0.199	0.270
	LTE Band 13	10M	QPSK	25	0	Front	15mm	Full	23230	782	20.80	22.10	1.349	0.06	0.158	0.213
51	LTE Band 13	10M	QPSK	1	0	Back	15mm	Full	23230	782	21.78	23.10	1.355	0.04	0.273	**0.370**
	LTE Band 13	10M	QPSK	25	0	Back	15mm	Full	23230	782	20.80	22.10	1.349	0.05	0.255	0.344
	LTE Band 25	20M	QPSK	1	0	Front	15mm	Full	26340	1880	22.64	23.00	1.086	0.02	0.216	0.235
	LTE Band 25	20M	QPSK	50	0	Front	15mm	Full	26340	1880	21.43	22.00	1.140	-0.02	0.217	0.247
	LTE Band 25	20M	QPSK	1	0	Back	15mm	Full	26340	1880	22.64	23.00	1.086	0.07	0.484	0.526
	LTE Band 25	20M	QPSK	1	0	Back	15mm	Full	26140	1860	22.54	23.00	1.112	-0.02	0.472	0.525
52	LTE Band 25	20M	QPSK	1	0	Back	15mm	Full	26590	1905	22.50	23.00	1.122	-0.02	0.478	**0.536**
	LTE Band 25	20M	QPSK	50	0	Back	15mm	Full	26340	1880	21.43	22.00	1.140	0.01	0.388	0.442
	LTE Band 25	20M	QPSK	100	0	Back	15mm	Full	26340	1880	21.42	22.00	1.143	0.01	0.417	0.477
	LTE Band 26	15M	QPSK	1	0	Front	15mm	Full	26865	831.5	22.42	23.70	1.343	-0.05	0.182	0.244
	LTE Band 26	15M	QPSK	36	0	Front	15mm	Full	26865	831.5	21.49	22.70	1.321	-0.01	0.121	0.160
53	LTE Band 26	15M	QPSK	1	0	Back	15mm	Full	26865	831.5	22.42	23.70	1.343	0.02	0.288	**0.387**
	LTE Band 26	15M	QPSK	36	0	Back	15mm	Full	26865	831.5	21.49	22.70	1.321	-0.04	0.187	0.247

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20M	QPSK	1	0	Front	15mm	Full	40620	2593	23.29	24.00	1.178	62.9	1.006	-0.01	0.165	0.195
	LTE Band 41	20M	QPSK	50	0	Front	15mm	Full	40620	2593	22.40	23.00	1.148	62.9	1.006	0.05	0.162	0.187
	LTE Band 41	20M	QPSK	1	0	Back	15mm	Full	40620	2593	23.29	24.00	1.178	62.9	1.006	0.08	0.411	0.487
	LTE Band 41	20M	QPSK	1	0	Back	15mm	Full	39750	2506	23.20	24.00	1.202	62.9	1.006	-0.01	0.389	0.470
	LTE Band 41	20M	QPSK	1	0	Back	15mm	Full	40185	2549.5	23.16	24.00	1.213	62.9	1.006	-0.02	0.396	0.483
	LTE Band 41	20M	QPSK	1	0	Back	15mm	Full	41055	2636.5	23.14	24.00	1.219	62.9	1.006	0.06	0.390	0.478
54	LTE Band 41	20M	QPSK	1	0	Back	15mm	Full	41490	2680	23.12	24.00	1.225	62.9	1.006	-0.09	0.463	**0.570**
	LTE Band 41	20M	QPSK	50	0	Back	15mm	Full	40620	2593	22.40	23.00	1.148	62.9	1.006	-0.01	0.343	0.396
	LTE Band 41	20M	QPSK	100	0	Back	15mm	Full	40620	2593	22.34	23.00	1.164	62.9	1.006	-0.03	0.349	0.409

<WLAN2.4G SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	Ant 1	6	2437	18.22	18.50	1.067	100	1.000	-0.02	0.050	0.053
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 1	6	2437	18.22	18.50	1.067	100	1.000	0.01	0.142	0.151
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 1	1	2412	17.93	18.50	1.140	100	1.000	0.06	0.171	0.195
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 1	11	2462	18.15	18.50	1.084	100	1.000	-0.03	0.139	0.151
	WLAN2.4GHz	802.11n-HT20 MCS0	Front	15mm	Ant 1+2	6	2437	20.65	21.00	1.084	94.31	1.060	0.09	0.095	0.109
55	WLAN2.4GHz	802.11n-HT20 MCS0	Back	15mm	Ant 1+2	6	2437	20.65	21.00	1.084	94.31	1.060	0.08	0.181	**0.208**
	WLAN2.4GHz	802.11n-HT20 MCS0	Back	15mm	Ant 1+2	1	2412	15.91	16.00	1.022	94.31	1.060	0.01	0.062	0.067
	WLAN2.4GHz	802.11n-HT20 MCS0	Back	15mm	Ant 1+2	11	2462	15.63	16.00	1.090	94.31	1.060	0.05	0.078	0.090

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Back	15mm	Ant 1	0	2402	5.00	6.00	1.259	77.37	1.077	0.01	0.031	0.042
56	Bluetooth	1Mbps	Back	15mm	Ant 1	39	2441	4.92	6.00	1.282	77.37	1.077	0.08	0.036	**0.050**
	Bluetooth	1Mbps	Back	15mm	Ant 1	78	2480	5.98	6.00	1.005	77.37	1.077	0.05	0.033	0.035

<WLAN5G SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN5.3GHz	802.11a 6Mbps	Front	15mm	Ant 1	52	5260	12.99	13.50	1.125	95.3	1.049	0.05	0.075	0.088
	WLAN5.3GHz	802.11a 6Mbps	Back	15mm	Ant 1	52	5260	12.99	13.50	1.125	95.3	1.049	-0.02	0.083	0.098
	WLAN5.3GHz	802.11a 6Mbps	Back	15mm	Ant 1	56	5280	12.87	13.50	1.156	95.3	1.049	0.06	0.087	0.106
	WLAN5.3GHz	802.11a 6Mbps	Back	15mm	Ant 1	64	5320	12.94	13.50	1.138	95.3	1.049	-0.01	0.074	0.088
57	WLAN5.3GHz	802.11n-HT20 MCS0	Front	15mm	Ant 1+2	64	5320	16.12	16.50	1.091	94.72	1.056	-0.06	0.153	**0.176**
	WLAN5.3GHz	802.11n-HT20 MCS0	Back	15mm	Ant 1+2	64	5320	16.12	16.50	1.091	94.72	1.056	-0.04	0.107	0.123
	WLAN5.3GHz	802.11n-HT20 MCS0	Front	15mm	Ant 1+2	52	5260	15.99	16.50	1.125	94.72	1.056	0.17	0.141	0.167
	WLAN5.3GHz	802.11n-HT20 MCS0	Front	15mm	Ant 1+2	60	5300	16.07	16.50	1.103	94.72	1.056	-0.06	0.145	0.169
	WLAN5.5GHz	802.11a 6Mbps	Front	15mm	Ant 1	140	5700	12.89	13.50	1.151	95.3	1.049	-0.04	0.043	0.052
	WLAN5.5GHz	802.11a 6Mbps	Back	15mm	Ant 1	140	5700	12.89	13.50	1.151	95.3	1.049	0.08	0.051	0.062
	WLAN5.5GHz	802.11a 6Mbps	Back	15mm	Ant 1	100	5500	12.83	13.50	1.167	95.3	1.049	0.09	0.048	0.059
	WLAN5.5GHz	802.11a 6Mbps	Back	15mm	Ant 1	116	5580	12.39	13.50	1.291	95.3	1.049	-0.01	0.054	0.073
58	WLAN5.5GHz	802.11n-HT20 MCS0	Front	15mm	Ant 1+2	100	5500	15.71	16.50	1.199	94.72	1.056	0.06	0.125	0.158
	WLAN5.5GHz	802.11n-HT20 MCS0	Back	15mm	Ant 1+2	100	5500	15.71	16.50	1.199	94.72	1.056	0.09	0.101	0.128
	WLAN5.5GHz	802.11n-HT20 MCS0	Front	15mm	Ant 1+2	116	5580	15.58	16.50	1.236	94.72	1.056	-0.03	0.115	0.150
	WLAN5.5GHz	802.11n-HT20 MCS0	Front	15mm	Ant 1+2	140	5500	14.08	14.50	1.101	94.72	1.056	-0.05	0.037	0.043
	WLAN5.8GHz	802.11a 6Mbps	Front	15mm	Ant 1	157	5785	14.02	14.50	1.117	95.3	1.049	0.06	0.078	0.091
	WLAN5.8GHz	802.11a 6Mbps	Back	15mm	Ant 1	157	5785	14.02	14.50	1.117	95.3	1.049	-0.04	0.066	0.077
	WLAN5.8GHz	802.11a 6Mbps	Front	15mm	Ant 1	149	5745	13.68	14.50	1.208	95.3	1.049	0.09	0.065	0.082
	WLAN5.8GHz	802.11a 6Mbps	Front	15mm	Ant 1	165	5825	13.94	14.50	1.138	95.3	1.049	0.02	0.079	0.094
59	WLAN5.8GHz	802.11n-HT20 MCS0	Front	15mm	Ant 1+2	157	5785	16.89	17.50	1.151	94.72	1.056	-0.09	0.119	**0.145**
	WLAN5.8GHz	802.11n-HT20 MCS0	Back	15mm	Ant 1+2	157	5785	16.89	17.50	1.151	94.72	1.056	-0.01	0.107	0.130
	WLAN5.8GHz	802.11n-HT20 MCS0	Front	15mm	Ant 1+2	149	5745	16.88	17.50	1.153	94.72	1.056	0.05	0.105	0.128
	WLAN5.8GHz	802.11n-HT20 MCS0	Front	15mm	Ant 1+2	165	5825	16.82	17.50	1.168	94.72	1.056	0.08	0.112	0.138

14.4 Product Specific SAR

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Back	0mm	Full	9400	1880	22.25	22.50	1.059	0.06	2.860	3.029
	WCDMA II	RMC 12.2Kbps	Back	0mm	Full	9262	1852.4	22.12	22.50	1.091	0.03	2.670	2.914
60	WCDMA II	RMC 12.2Kbps	Back	0mm	Full	9538	1907.6	22.24	22.50	1.062	0.08	3.430	**3.642**
	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	Full	9400	1880	22.25	22.50	1.059	0.05	1.850	1.960
	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	Full	9262	1852.4	22.12	22.50	1.091	0.01	1.890	2.063
	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	Full	9538	1907.6	22.24	22.50	1.062	0.08	2.100	2.230
	WCDMA IV	RMC 12.2Kbps	Back	0mm	Full	1413	1732.6	20.69	21.50	1.205	0.06	2.030	2.446
	WCDMA IV	RMC 12.2Kbps	Back	0mm	Full	1312	1712.4	20.59	21.50	1.233	-0.03	2.020	2.491
61	WCDMA IV	RMC 12.2Kbps	Back	0mm	Full	1513	1752.6	20.67	21.50	1.211	0.01	2.130	**2.579**

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
62	CDMA2000 BC1	RTAP 153.6Kbps	Back	0mm	Full	1175	1908.75	21.66	22.20	1.132	0.07	3.250	**3.680**
	CDMA2000 BC1	RTAP 153.6Kbps	Back	0mm	Full	25	1851.25	21.76	22.20	1.107	0.06	2.714	3.003
	CDMA2000 BC1	RTAP 153.6Kbps	Back	0mm	Full	600	1880	21.91	22.20	1.069	0.01	2.782	2.974

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
63	LTE Band 4	20M	QPSK	1	0	Back	0mm	Full	20175	1732.5	23.45	23.60	1.035	0.08	3.610	**3.737**
	LTE Band 4	20M	QPSK	50	0	Back	0mm	Full	20175	1732.5	22.43	22.60	1.040	-0.01	3.050	3.172
	LTE Band 4	20M	QPSK	100	0	Back	0mm	Full	20175	1732.5	22.37	22.60	1.054	0.09	3.110	3.279
	LTE Band 4	20M	QPSK	1	0	Bottom Side	0mm	Full	20175	1732.5	23.45	23.60	1.035	-0.04	2.110	2.184
	LTE Band 4	20M	QPSK	50	0	Bottom Side	0mm	Full	20175	1732.5	22.43	22.60	1.040	0.03	1.940	2.017
	LTE Band 4	20M	QPSK	100	0	Bottom Side	0mm	Full	20175	1732.5	22.37	22.60	1.054	0.11	2.030	2.140
64	LTE Band 7	20M	QPSK	1	0	Back	0mm	Full	21100	2535	21.98	22.40	1.102	-0.15	2.770	**3.051**
	LTE Band 7	20M	QPSK	1	0	Back	0mm	Full	20850	2510	21.94	22.40	1.112	0.01	2.680	2.979
	LTE Band 7	20M	QPSK	1	0	Back	0mm	Full	21350	2560	21.90	22.40	1.122	0.07	2.670	2.996
	LTE Band 7	20M	QPSK	50	0	Back	0mm	Full	21100	2535	21.12	21.40	1.067	0.07	2.250	2.400
	LTE Band 7	20M	QPSK	50	0	Back	0mm	Full	20850	2510	20.96	21.40	1.107	0.09	2.350	2.601
	LTE Band 7	20M	QPSK	50	0	Back	0mm	Full	21350	2560	20.97	21.40	1.104	-0.03	2.410	2.661
	LTE Band 7	20M	QPSK	100	0	Back	0mm	Full	21100	2535	21.09	21.40	1.074	0.01	2.250	2.416
	LTE Band 7	20M	QPSK	1	0	Bottom Side	0mm	Full	21100	2535	21.98	22.40	1.102	-0.05	2.490	2.743
	LTE Band 7	20M	QPSK	1	0	Bottom Side	0mm	Full	20850	2510	21.94	22.40	1.112	0.06	2.350	2.613
	LTE Band 7	20M	QPSK	1	0	Bottom Side	0mm	Full	21350	2560	21.90	22.40	1.122	-0.02	2.450	2.749
	LTE Band 7	20M	QPSK	50	0	Bottom Side	0mm	Full	21100	2535	21.12	21.40	1.067	-0.02	2.220	2.368
	LTE Band 7	20M	QPSK	50	0	Bottom Side	0mm	Full	20850	2510	20.96	21.40	1.107	-0.01	2.120	2.346
	LTE Band 7	20M	QPSK	50	0	Bottom Side	0mm	Full	21350	2560	20.97	21.40	1.104	0.01	2.150	2.374
	LTE Band 7	20M	QPSK	100	0	Bottom Side	0mm	Full	21100	2535	21.09	21.40	1.074	0.07	2.210	2.374
65	LTE Band 25	20M	QPSK	1	0	Back	0mm	Full	26340	1880	22.64	23.00	1.086	-0.17	3.250	**3.531**
	LTE Band 25	20M	QPSK	1	0	Back	0mm	Full	26140	1860	22.54	23.00	1.112	0.06	3.050	3.391
	LTE Band 25	20M	QPSK	1	0	Back	0mm	Full	26590	1905	22.50	23.00	1.122	0.03	3.140	3.523
	LTE Band 25	20M	QPSK	50	0	Back	0mm	Full	26340	1880	21.43	22.00	1.140	-0.02	2.520	2.873
	LTE Band 25	20M	QPSK	50	0	Back	0mm	Full	26140	1860	21.34	22.00	1.164	0.02	2.380	2.771
	LTE Band 25	20M	QPSK	50	0	Back	0mm	Full	26590	1905	21.42	22.00	1.143	0.05	2.420	2.766
	LTE Band 25	20M	QPSK	100	0	Back	0mm	Full	26340	1880	21.42	22.00	1.143	-0.02	2.350	2.686

<WLAN5G SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	WLAN5.3GHz	802.11a 6Mbps	Front	0mm	Ant 1	52	5260	12.99	13.50	1.125	95.3	1.049	-0.02	0.198	0.234
	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Ant 1	52	5260	12.99	13.50	1.125	95.3	1.049	0.05	0.097	0.114
	WLAN5.3GHz	802.11a 6Mbps	Left Side	0mm	Ant 1	52	5260	12.99	13.50	1.125	95.3	1.049	0.02	0.392	0.463
	WLAN5.3GHz	802.11a 6Mbps	Right Side	0mm	Ant 1	52	5260	12.99	13.50	1.125	95.3	1.049	0.16	0.021	0.025
	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 1	52	5260	12.99	13.50	1.125	95.3	1.049	0.05	0.022	0.026
	WLAN5.3GHz	802.11a 6Mbps	Left Side	0mm	Ant 1	56	5280	12.87	13.50	1.156	95.3	1.049	0.08	0.397	0.482
	WLAN5.3GHz	802.11a 6Mbps	Left Side	0mm	Ant 1	64	5320	12.94	13.50	1.138	95.3	1.049	0.01	0.331	0.395
	WLAN5.3GHz	802.11n-HT20 MCS0	Front	0mm	Ant 1+2	64	5320	16.12	16.50	1.091	94.72	1.056	-0.02	0.496	0.572
	WLAN5.3GHz	802.11n-HT20 MCS0	Back	0mm	Ant 1+2	64	5320	16.12	16.50	1.091	94.72	1.056	-0.02	0.274	0.316
	WLAN5.3GHz	802.11n-HT20 MCS0	Left Side	0mm	Ant 1+2	64	5320	16.12	16.50	1.091	94.72	1.056	0.05	0.388	0.447
	WLAN5.3GHz	802.11n-HT20 MCS0	Right Side	0mm	Ant 1+2	64	5320	16.12	16.50	1.091	94.72	1.056	0.06	0.412	0.475
	WLAN5.3GHz	802.11n-HT20 MCS0	Top Side	0mm	Ant 1+2	64	5320	16.12	16.50	1.091	94.72	1.056	0.05	0.224	0.258
	WLAN5.3GHz	802.11n-HT20 MCS0	Front	0mm	Ant 1+2	52	5260	15.99	16.50	1.125	94.72	1.056	0.01	0.483	0.574
66	WLAN5.3GHz	802.11n-HT20 MCS0	Front	0mm	Ant 1+2	60	5300	16.07	16.50	1.103	94.72	1.056	0.06	0.499	**0.581**
	WLAN5.5GHz	802.11a 6Mbps	Front	0mm	Ant 1	140	5700	12.89	13.50	1.151	95.3	1.049	0.01	0.125	0.151
	WLAN5.5GHz	802.11a 6Mbps	Back	0mm	Ant 1	140	5700	12.89	13.50	1.151	95.3	1.049	0.05	0.071	0.086
	WLAN5.5GHz	802.11a 6Mbps	Left Side	0mm	Ant 1	140	5700	12.89	13.50	1.151	95.3	1.049	0.02	0.251	0.303
	WLAN5.5GHz	802.11a 6Mbps	Right Side	0mm	Ant 1	140	5700	12.89	13.50	1.151	95.3	1.049	0.01	0.029	0.035
	WLAN5.5GHz	802.11a 6Mbps	Top Side	0mm	Ant 1	140	5700	12.89	13.50	1.151	95.3	1.049	0.01	0.026	0.031
	WLAN5.5GHz	802.11a 6Mbps	Left Side	0mm	Ant 1	100	5500	12.83	13.50	1.167	95.3	1.049	-0.18	0.248	0.304
	WLAN5.5GHz	802.11a 6Mbps	Left Side	0mm	Ant 1	116	5580	12.39	13.50	1.291	95.3	1.049	0.01	0.256	0.347
67	WLAN5.5GHz	802.11n-HT20 MCS0	Front	0mm	Ant 1+2	100	5500	15.71	16.50	1.199	94.72	1.056	0.02	0.489	**0.619**
	WLAN5.5GHz	802.11n-HT20 MCS0	Back	0mm	Ant 1+2	100	5500	15.71	16.50	1.199	94.72	1.056	-0.01	0.359	0.455
	WLAN5.5GHz	802.11n-HT20 MCS0	Left Side	0mm	Ant 1+2	100	5500	15.71	16.50	1.199	94.72	1.056	0.01	0.274	0.347
	WLAN5.5GHz	802.11n-HT20 MCS0	Right Side	0mm	Ant 1+2	100	5500	15.71	16.50	1.199	94.72	1.056	-0.09	0.402	0.509
	WLAN5.5GHz	802.11n-HT20 MCS0	Top Side	0mm	Ant 1+2	100	5500	15.56	16.50	1.242	94.72	1.056	0.05	0.147	0.193
	WLAN5.5GHz	802.11n-HT20 MCS0	Front	0mm	Ant 1+2	116	5580	15.58	16.50	1.236	94.72	1.056	0.03	0.349	0.456
	WLAN5.5GHz	802.11n-HT20 MCS0	Front	0mm	Ant 1+2	140	5500	14.08	14.50	1.101	94.72	1.056	-0.01	0.298	0.347

14.5 Repeated SAR Measurement

<1g>

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WLAN2.4GHz	-	-	-	-	802.11n-HT20 MCS0	Left Cheek	0mm	1+2	-	6	2437	20.65	21.00	1.084	94.31	1.060	0.02	1.090	1	1.253
2nd	WLAN2.4GHz	-	-	-	-	802.11n-HT20 MCS0	Left Cheek	0mm	1+2	-	6	2437	20.65	21.00	1.084	94.31	1.060	-0.02	1.070	1.019	1.230
1st	WLAN5.3GHz	-	-	-	-	802.11n-HT20 MCS0	Left Cheek	0mm	1+2	-	52	5260	15.99	16.50	1.125	94.72	1.056	-0.14	1.050	1	1.247
2nd	WLAN5.3GHz	-	-	-	-	802.11n-HT20 MCS0	Left Cheek	0mm	1+2	-	52	5260	15.99	16.50	1.125	94.72	1.056	0.03	1.020	1.029	1.211
1st	WLAN5.5GHz	-	-	-	-	802.11n-HT20 MCS0	Left Cheek	0mm	1+2	-	100	5500	15.71	16.50	1.199	94.72	1.056	-0.03	1.050	1	1.329
2nd	WLAN5.5GHz	-	-	-	-	802.11n-HT20 MCS0	Left Cheek	0mm	1+2	-	100	5500	15.71	16.50	1.199	94.72	1.056	0.09	1.040	1.01	1.317
1st	WLAN5.8GHz	-	-	-	-	802.11n-HT20 MCS0	Left Cheek	0mm	1+2	-	149	5745	16.88	17.50	1.153	94.72	1.056	-0.19	0.989	1	1.205
2nd	WLAN5.8GHz	-	-	-	-	802.11n-HT20 MCS0	Left Cheek	0mm	1+2	-	149	5745	16.88	17.50	1.153	94.72	1.056	0.01	0.973	1.016	1.185
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	10mm	-	Reduced	9538	1907.6	20.93	21.50	1.140	-	-	0.08	1.100	1	1.254
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	10mm	-	Reduced	9538	1907.6	20.93	21.50	1.140	-	-	0.09	1.080	1.019	1.231
1st	LTE Band 4	20M	QPSK	1	0	-	Back	10mm	-	Reduced	20175	1732.5	20.77	21.00	1.054	-	-	-0.03	1.070	1	1.128
2nd	LTE Band 4	20M	QPSK	1	0	-	Back	10mm	-	Reduced	20175	1732.5	20.77	21.00	1.054	-	-	0.02	1.050	1.019	1.107
1st	LTE Band 41	20M	QPSK	1	0	-	Back	10mm	-	Full	39750	2506	23.20	24.00	1.202	62.9	1.006	-0.03	0.970	1	1.173
2nd	LTE Band 41	20M	QPSK	1	0	-	Back	10mm	-	Full	39750	2506	23.20	24.00	1.202	62.9	1.006	0.07	0.966	1.004	1.168

<10g>

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Ratio	Reported 10g SAR (W/kg)
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	0mm	Full	9538	1907.6	22.24	22.50	1.062	0.08	3.430	1	3.642
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	0mm	Full	9538	1907.6	22.24	22.50	1.062	0.02	3.280	1.046	3.482
1st	LTE Band 4	20M	QPSK	1	0	-	Back	0mm	Full	20175	1732.5	23.45	23.60	1.035	0.08	3.610	1	3.737
2nd	LTE Band 4	20M	QPSK	1	0	-	Back	0mm	Full	20175	1732.5	23.45	23.60	1.035	0.02	3.590	1.006	3.716
1st	LTE Band 7	20M	QPSK	1	0	-	Back	0mm	Full	21100	2535	21.98	22.40	1.102	-0.15	2.770	1	3.051
2nd	LTE Band 7	20M	QPSK	1	0	-	Back	0mm	Full	21100	2535	21.98	22.40	1.102	0.03	2.720	1.018	2.996

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.
3. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. The ratio is the difference in percentage between original and repeated *measured SAR*.
5. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

15. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product Specific
1.	GSM Voice + WLAN2.4GHz	Yes	Yes		Yes
2.	GPRS/EDGE + WLAN2.4GHz	Yes	Yes	Yes	Yes
3.	WCDMA + WLAN2.4GHz	Yes	Yes	Yes	Yes
4.	CDMA + WLAN2.4GHz	Yes	Yes	Yes	Yes
5.	LTE + WLAN2.4GHz	Yes	Yes	Yes	Yes
6.	GSM Voice + WLAN5.3/5.5GHz	Yes	Yes		Yes
7.	GPRS/EDGE + WLAN5.3/5.5GHz	Yes	Yes		Yes
8.	WCDMA + WLAN5.3/5.5GHz	Yes	Yes		Yes
9.	CDMA + WLAN5.3/5.5GHz	Yes	Yes		Yes
10.	LTE + WLAN5.3/5.5GHz	Yes	Yes		Yes
11.	GSM Voice + WLAN5.2/5.8GHz	Yes	Yes		Yes
12.	GPRS/EDGE + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes
13.	WCDMA + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes
14.	CDMA + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes
15.	LTE + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes
16.	GSM Voice + Bluetooth	Yes	Yes		Yes
17.	GPRS/EDGE + Bluetooth	Yes	Yes	Yes	Yes
18.	WCDMA + Bluetooth	Yes	Yes	Yes	Yes
19.	CDMA + Bluetooth	Yes	Yes	Yes	Yes
20.	LTE + Bluetooth	Yes	Yes	Yes	Yes

General Note:

1. This device supports VoIP in GPRS, EGPRS, WCDMA, CDMA and LTE (e.g. for 3rd-party VoIP) and LTE supports VoLTE function.
2. EUT will choose each GSM, WCDMA, CDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
3. EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment.
4. This device 2.4GHz WLAN/ 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WLAN Direct (GC/GO), and 5.3GHz / 5.5GHz supports WLAN Direct (GC only).
5. 2.4GHz WLAN antenna 1 and Bluetooth share the same antenna, and cannot transmit simultaneously.
6. According to the EUT character, WLAN 5GHz and Bluetooth cannot transmit simultaneously.
7. According to the EUT character, WLAN 5GHz and 2.4GHz WLAN cannot transmit simultaneously.
8. The worst case 5 GHz WLAN SAR for each configuration was used for SAR summation.
9. All licensed modes share the same antenna part and cannot transmit simultaneously.
10. The Scaled SAR summation is calculated based on the same configuration and test position.
11. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
    i) Scalar SAR summation < 1.6W/kg and 10g Scalar SAR summation < 4.0W/kg.
    ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
    iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.
    iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
    v) The SPLSR calculated results please refer to section 15.4.

15.1 Head Exposure Conditions

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN Ant 1 1g SAR (W/kg)	3 2.4GHz WLAN Ant 1+2 1g SAR (W/kg)	4 5GHz WLAN Ant 1 1g SAR (W/kg)	5 5GHz WLAN Ant 1+2 1g SAR (W/kg)	6 Bluetooth Ant 1 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	SPLSR	Case No	1+4 Summed 1g SAR (W/kg)	1+5 Summed 1g SAR (W/kg)	SPLSR	Case No	1+6 Summed 1g SAR (W/kg)
GSM	GSM850	Right Cheek	0.551	0.145	0.521	0.126	0.454	0.070	0.70	1.07			0.68	1.01			0.62
		Right Tilted	0.403	0.060	0.460	0.070	0.357	0.070	0.46	0.86			0.47	0.76			0.47
		Left Cheek	0.493	0.365	1.253	0.395	1.329	0.070	0.86	**1.75**	**0.03**	**#20**	0.89	**1.82**	**0.03**	**#01**	0.56
		Left Tilted	0.364	0.306	0.808	0.107	0.619	0.070	0.67	1.17			0.47	0.98			0.43
	GSM1900	Right Cheek	0.120	0.145	0.521	0.126	0.454	0.070	0.27	0.64			0.25	0.57			0.19
		Right Tilted	0.067	0.060	0.460	0.070	0.357	0.070	0.13	0.53			0.14	0.42			0.14
		Left Cheek	0.075	0.365	1.253	0.395	1.329	0.070	0.44	1.33			0.47	1.40			0.15
		Left Tilted	0.072	0.306	0.808	0.107	0.619	0.070	0.38	0.88			0.18	0.69			0.14
WCDMA	WCDMA II	Right Cheek	0.152	0.145	0.521	0.126	0.454	0.070	0.30	0.67			0.28	0.61			0.22
		Right Tilted	0.108	0.060	0.460	0.070	0.357	0.070	0.17	0.57			0.18	0.47			0.18
		Left Cheek	0.117	0.365	1.253	0.395	1.329	0.070	0.48	1.37			0.51	1.45			0.19
		Left Tilted	0.112	0.306	0.808	0.107	0.619	0.070	0.42	0.92			0.22	0.73			0.18
	WCDMA IV	Right Cheek	0.137	0.145	0.521	0.126	0.454	0.070	0.28	0.66			0.26	0.59			0.21
		Right Tilted	0.086	0.060	0.460	0.070	0.357	0.070	0.15	0.55			0.16	0.44			0.16
		Left Cheek	0.104	0.365	1.253	0.395	1.329	0.070	0.47	1.36			0.50	1.43			0.17
		Left Tilted	0.082	0.306	0.808	0.107	0.619	0.070	0.39	0.89			0.19	0.70			0.15
	WCDMA V	Right Cheek	0.566	0.145	0.521	0.126	0.454	0.070	0.71	1.09			0.69	1.02			0.64
		Right Tilted	0.358	0.060	0.460	0.070	0.357	0.070	0.42	0.82			0.43	0.72			0.43
		Left Cheek	0.621	0.365	1.253	0.395	1.329	0.070	0.99	**1.87**	**0.03**	**#02**	1.02	**1.95**	**0.04**	**#03**	0.69
		Left Tilted	0.354	0.306	0.808	0.107	0.619	0.070	0.66	1.16			0.46	0.97			0.42
CDMA	CDMA2000 BC0	Right Cheek	0.476	0.145	0.521	0.126	0.454	0.070	0.62	1.00			0.60	0.93			0.55
		Right Tilted	0.336	0.060	0.460	0.070	0.357	0.070	0.40	0.80			0.41	0.69			0.41
		Left Cheek	0.478	0.365	1.253	0.395	1.329	0.070	0.84	**1.73**	**0.03**	**#04**	0.87	**1.81**	**0.03**	**#05**	0.55
		Left Tilted	0.324	0.306	0.808	0.107	0.619	0.070	0.63	1.13			0.43	0.94			0.39
	CDMA2000 BC1	Right Cheek	0.135	0.145	0.521	0.126	0.454	0.070	0.28	0.66			0.26	0.59			0.21
		Right Tilted	0.091	0.060	0.460	0.070	0.357	0.070	0.15	0.55			0.16	0.45			0.16
		Left Cheek	0.108	0.365	1.253	0.395	1.329	0.070	0.47	1.36			0.50	1.44			0.18
		Left Tilted	0.104	0.306	0.808	0.107	0.619	0.070	0.41	0.91			0.21	0.72			0.17
	CDMA2000 BC10	Right Cheek	0.466	0.145	0.521	0.126	0.454	0.070	0.61	0.99			0.59	0.92			0.54
		Right Tilted	0.267	0.060	0.460	0.070	0.357	0.070	0.33	0.73			0.34	0.62			0.34
		Left Cheek	0.434	0.365	1.253	0.395	1.329	0.070	0.80	**1.69**	**0.03**	**#06**	0.83	**1.76**	**0.03**	**#07**	0.50
		Left Tilted	0.276	0.306	0.808	0.107	0.619	0.070	0.58	1.08			0.38	0.90			0.35
LTE	LTE Band 4	Right Cheek	0.259	0.145	0.521	0.126	0.454	0.070	0.40	0.78			0.39	0.71			0.33
		Right Tilted	0.140	0.060	0.460	0.070	0.357	0.070	0.20	0.60			0.21	0.50			0.21
		Left Cheek	0.182	0.365	1.253	0.395	1.329	0.070	0.55	1.44			0.58	1.51			0.25
		Left Tilted	0.159	0.306	0.808	0.107	0.619	0.070	0.47	0.97			0.27	0.78			0.23
	LTE Band 7	Right Cheek	0.126	0.145	0.521	0.126	0.454	0.070	0.27	0.65			0.25	0.58			0.20
		Right Tilted	0.093	0.060	0.460	0.070	0.357	0.070	0.15	0.55			0.16	0.45			0.16
		Left Cheek	0.258	0.365	1.253	0.395	1.329	0.070	0.62	1.51			0.65	**1.59**			0.33
		Left Tilted	0.130	0.306	0.808	0.107	0.619	0.070	0.44	0.94			0.24	0.75			0.20
	LTE Band 12	Right Cheek	0.437	0.145	0.521	0.126	0.454	0.070	0.58	0.96			0.56	0.89			0.51
		Right Tilted	0.280	0.060	0.460	0.070	0.357	0.070	0.34	0.74			0.35	0.64			0.35
		Left Cheek	0.477	0.365	1.253	0.395	1.329	0.070	0.84	**1.73**	**0.03**	**#08**	0.87	**1.81**	**0.03**	**#09**	0.55
		Left Tilted	0.241	0.306	0.808	0.107	0.619	0.070	0.55	1.05			0.35	0.86			0.31

	LTE Band 13	Right Cheek	0.350	0.145	0.521	0.126	0.454	0.070	0.50	0.87			0.48	0.80			0.42
		Right Tilted	0.272	0.060	0.460	0.070	0.357	0.070	0.33	0.73			0.34	0.63			0.34
		Left Cheek	0.351	0.365	1.253	0.395	1.329	0.070	0.72	**1.60**	**0.03**	**#10**	0.75	**1.68**	**0.03**	**#11**	0.42
		Left Tilted	0.264	0.306	0.808	0.107	0.619	0.070	0.57	1.07			0.37	0.88			0.33
	LTE Band 25	Right Cheek	0.128	0.145	0.521	0.126	0.454	0.070	0.27	0.65			0.25	0.58			0.20
		Right Tilted	0.102	0.060	0.460	0.070	0.357	0.070	0.16	0.56			0.17	0.46			0.17
		Left Cheek	0.131	0.365	1.253	0.395	1.329	0.070	0.50	1.38			0.53	1.46			0.20
		Left Tilted	0.104	0.306	0.808	0.107	0.619	0.070	0.41	0.91			0.21	0.72			0.17
	LTE Band 26	Right Cheek	0.403	0.145	0.521	0.126	0.454	0.070	0.55	0.92			0.53	0.86			0.47
		Right Tilted	0.203	0.060	0.460	0.070	0.357	0.070	0.26	0.66			0.27	0.56			0.27
		Left Cheek	0.333	0.365	1.253	0.395	1.329	0.070	0.70	**1.59**			0.73	**1.66**	**0.03**	**#12**	0.40
		Left Tilted	0.204	0.306	0.808	0.107	0.619	0.070	0.51	1.01			0.31	0.82			0.27
	LTE Band 41	Right Cheek	0.100	0.145	0.521	0.126	0.454	0.070	0.25	0.62			0.23	0.55			0.17
		Right Tilted	0.059	0.060	0.460	0.070	0.357	0.070	0.12	0.52			0.13	0.42			0.13
		Left Cheek	0.215	0.365	1.253	0.395	1.329	0.070	0.58	1.47			0.61	1.54			0.29
		Left Tilted	0.089	0.306	0.808	0.107	0.619	0.070	0.40	0.90			0.20	0.71			0.16

15.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	SPLSR	Case No	1+4 Summed 1g SAR (W/kg)	1+5 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1	5GHz WLAN Ant 1+2	Bluetooth Ant 1							
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)							
GSM	GSM850	Front	0.493	0.080	0.208	0.156	0.345	0.067	0.57	0.70			0.65	0.84	0.56
		Back	0.745	0.294	0.375	0.146	0.205	0.067	1.04	1.12			0.89	0.95	0.81
		Left side	0.340	0.130	0.142	0.475	0.495	0.067	0.47	0.48			0.82	0.84	0.41
		Right side	0.392	0.084	0.183	0.087	0.569	0.067	0.48	0.58			0.48	0.96	0.46
		Top side		0.053	0.138	0.123	0.207	0.067	0.05	0.14			0.12	0.21	0.07
		Bottom side	0.315					0.067	0.32	0.32			0.32	0.32	0.38
	GSM1900	Front	0.423	0.080	0.208	0.156	0.345	0.067	0.50	0.63			0.58	0.77	0.49
		Back	0.920	0.294	0.375	0.146	0.205	0.067	1.21	1.30			1.07	1.13	0.99
		Left side	0.079	0.130	0.142	0.475	0.495	0.067	0.21	0.22			0.55	0.57	0.15
		Right side	0.094	0.084	0.183	0.087	0.569	0.067	0.18	0.28			0.18	0.66	0.16
		Top side		0.053	0.138	0.123	0.207	0.067	0.05	0.14			0.12	0.21	0.07
		Bottom side	0.676					0.067	0.68	0.68			0.68	0.68	0.74
WCDMA	WCDMA II	Front	0.568	0.080	0.208	0.156	0.345	0.067	0.65	0.78			0.72	0.91	0.64
		Back	1.254	0.294	0.375	0.146	0.205	0.067	1.55	**1.63**	**0.02**	**#13**	1.40	1.46	**1.32**
		Left side	0.108	0.130	0.142	0.475	0.495	0.067	0.24	0.25			0.58	0.60	0.18
		Right side	0.083	0.084	0.183	0.087	0.569	0.067	0.17	0.27			0.17	0.65	0.15
		Top side		0.053	0.138	0.123	0.207	0.067	0.05	0.14			0.12	0.21	0.07
		Bottom side	0.843					0.067	0.84	0.84			0.84	0.84	0.91
	WCDMA IV	Front	0.547	0.080	0.208	0.156	0.345	0.067	0.63	0.76			0.70	0.89	0.61
		Back	1.231	0.294	0.375	0.146	0.205	0.067	1.53	**1.61**	**0.02**	**#14**	1.38	1.44	1.30
		Left side	0.063	0.130	0.142	0.475	0.495	0.067	0.19	0.21			0.54	0.56	0.13
		Right side	0.153	0.084	0.183	0.087	0.569	0.067	0.24	0.34			0.24	0.72	0.22
		Top side		0.053	0.138	0.123	0.207	0.067	0.05	0.14			0.12	0.21	0.07
		Bottom side	0.747					0.067	0.75	0.75			0.75	0.75	0.81
	WCDMA V	Front	0.535	0.080	0.208	0.156	0.345	0.067	0.62	0.74			0.69	0.88	0.60
		Back	0.848	0.294	0.375	0.146	0.205	0.067	1.14	1.22			0.99	1.05	0.92
		Left side	0.383	0.130	0.142	0.475	0.495	0.067	0.51	0.53			0.86	0.88	0.45
		Right side	0.456	0.084	0.183	0.087	0.569	0.067	0.54	0.64			0.54	1.03	0.52
		Top side		0.053	0.138	0.123	0.207	0.067	0.05	0.14			0.12	0.21	0.07
		Bottom side	0.354					0.067	0.35	0.35			0.35	0.35	0.42
CDMA	CDMA2000 BC0	Front	0.458	0.080	0.208	0.156	0.345	0.067	0.54	0.67			0.61	0.80	0.53
		Back	0.653	0.294	0.375	0.146	0.205	0.067	0.95	1.03			0.80	0.86	0.72
		Left side	0.343	0.130	0.142	0.475	0.495	0.067	0.47	0.49			0.82	0.84	0.41
		Right side	0.387	0.084	0.183	0.087	0.569	0.067	0.47	0.57			0.47	0.96	0.45
		Top side		0.053	0.138	0.123	0.207	0.067	0.05	0.14			0.12	0.21	0.07
		Bottom side	0.315					0.067	0.32	0.32			0.32	0.32	0.38
	CDMA2000 BC1	Front	0.521	0.080	0.208	0.156	0.345	0.067	0.60	0.73			0.68	0.87	0.59
		Back	0.996	0.294	0.375	0.146	0.205	0.067	1.29	1.37			1.14	1.20	1.06
		Left side	0.116	0.130	0.142	0.475	0.495	0.067	0.25	0.26			0.59	0.61	0.18
		Right side	0.078	0.084	0.183	0.087	0.569	0.067	0.16	0.26			0.17	0.65	0.15
		Top side		0.053	0.138	0.123	0.207	0.067	0.05	0.14			0.12	0.21	0.07
		Bottom side	0.906					0.067	0.91	0.91			0.91	0.91	0.97
	CDMA2000	Front	0.447	0.080	0.208	0.156	0.345	0.067	0.53	0.66			0.60	0.79	0.51

	BC10	Back	0.693	0.294	0.375	0.146	0.205	0.067	0.99	1.07			0.84	0.90	0.76
		Left side	0.334	0.130	0.142	0.475	0.495	0.067	0.46	0.48			0.81	0.83	0.40
		Right side	0.464	0.084	0.183	0.087	0.569	0.067	0.55	0.65			0.55	1.03	0.53
		Top side		0.053	0.138	0.123	0.207	0.067	0.05	0.14			0.12	0.21	0.07
		Bottom side	0.271					0.067	0.27	0.27			0.27	0.27	0.34
LTE	LTE Band 4	Front	0.536	0.080	0.208	0.156	0.345	0.067	0.62	0.74			0.69	0.88	0.60
		Back	1.128	0.294	0.375	0.146	0.205	0.067	1.42	1.50			1.27	1.33	1.20
		Left side	0.058	0.130	0.142	0.475	0.495	0.067	0.19	0.20			0.53	0.55	0.13
		Right side	0.134	0.084	0.183	0.087	0.569	0.067	0.22	0.32			0.22	0.70	0.20
		Top side		0.053	0.138	0.123	0.207	0.067	0.05	0.14			0.12	0.21	0.07
		Bottom side	0.676					0.067	0.68	0.68			0.68	0.68	0.74
	LTE Band 7	Front	0.419	0.080	0.208	0.156	0.345	0.067	0.50	0.63			0.58	0.76	0.49
		Back	0.937	0.294	0.375	0.146	0.205	0.067	1.23	1.31			1.08	1.14	1.00
		Left side	0.166	0.130	0.142	0.475	0.495	0.067	0.30	0.31			0.64	0.66	0.23
		Right side	0.139	0.084	0.183	0.087	0.569	0.067	0.22	0.32			0.23	0.71	0.21
		Top side		0.053	0.138	0.123	0.207	0.067	0.05	0.14			0.12	0.21	0.07
		Bottom side	0.852					0.067	0.85	0.85			0.85	0.85	0.92
	LTE Band 12	Front	0.498	0.080	0.208	0.156	0.345	0.067	0.58	0.71			0.65	0.84	0.57
		Back	0.828	0.294	0.375	0.146	0.205	0.067	1.12	1.20			0.97	1.03	0.90
		Left side	0.477	0.130	0.142	0.475	0.495	0.067	0.61	0.62			0.95	0.97	0.54
		Right side	0.668	0.084	0.183	0.087	0.569	0.067	0.75	0.85			0.76	1.24	0.74
		Top side		0.053	0.138	0.123	0.207	0.067	0.05	0.14			0.12	0.21	0.07
		Bottom side	0.186					0.067	0.19	0.19			0.19	0.19	0.25
	LTE Band 13	Front	0.331	0.080	0.208	0.156	0.345	0.067	0.41	0.54			0.49	0.68	0.40
		Back	0.626	0.294	0.375	0.146	0.205	0.067	0.92	1.00			0.77	0.83	0.69
		Left side	0.308	0.130	0.142	0.475	0.495	0.067	0.44	0.45			0.78	0.80	0.38
		Right side	0.389	0.084	0.183	0.087	0.569	0.067	0.47	0.57			0.48	0.96	0.46
		Top side		0.053	0.138	0.123	0.207	0.067	0.05	0.14			0.12	0.21	0.07
		Bottom side	0.194					0.067	0.19	0.19			0.19	0.19	0.26
	LTE Band 25	Front	0.598	0.080	0.208	0.156	0.345	0.067	0.68	0.81			0.75	0.94	0.67
		Back	1.100	0.294	0.375	0.146	0.205	0.067	1.39	1.48			1.25	1.31	1.17
		Left side	0.110	0.130	0.142	0.475	0.495	0.067	0.24	0.25			0.59	0.61	0.18
		Right side	0.104	0.084	0.183	0.087	0.569	0.067	0.19	0.29			0.19	0.67	0.17
		Top side		0.053	0.138	0.123	0.207	0.067	0.05	0.14			0.12	0.21	0.07
		Bottom side	0.760					0.067	0.76	0.76			0.76	0.76	0.83
	LTE Band 26	Front	0.330	0.080	0.208	0.156	0.345	0.067	0.41	0.54			0.49	0.68	0.40
		Back	0.392	0.294	0.375	0.146	0.205	0.067	0.69	0.77			0.54	0.60	0.46
		Left side	0.180	0.130	0.142	0.475	0.495	0.067	0.31	0.32			0.66	0.68	0.25
		Right side	0.270	0.084	0.183	0.087	0.569	0.067	0.35	0.45			0.36	0.84	0.34
		Top side		0.053	0.138	0.123	0.207	0.067	0.05	0.14			0.12	0.21	0.07
		Bottom side	0.207					0.067	0.21	0.21			0.21	0.21	0.27
	LTE Band 41	Front	0.485	0.080	0.208	0.156	0.345	0.067	0.57	0.69			0.64	0.83	0.55
		Back	1.173	0.294	0.375	0.146	0.205	0.067	1.47	1.55			1.32	1.38	1.24
		Left side	0.227	0.130	0.142	0.475	0.495	0.067	0.36	0.37			0.70	0.72	0.29
		Right side	0.148	0.084	0.183	0.087	0.569	0.067	0.23	0.33			0.24	0.72	0.22
		Top side		0.053	0.138	0.123	0.207	0.067	0.05	0.14			0.12	0.21	0.07
		Bottom side	1.101					0.067	1.10	1.10			1.10	1.10	1.17

15.3 Body-Worn Accessory Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	1+5 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1	5GHz WLAN Ant 1+2	Bluetooth Ant 1					
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)					
GSM	GSM850	Front	0.392	0.053	0.109	0.094	0.176	0.050	0.45	0.50	0.49	0.57	0.44
		Back	0.537	0.195	0.208	0.106	0.130	0.050	0.73	0.75	0.64	0.67	0.59
	GSM1900	Front	0.245	0.053	0.109	0.094	0.176	0.050	0.30	0.35	0.34	0.42	0.30
		Back	0.545	0.195	0.208	0.106	0.130	0.050	0.74	0.75	0.65	0.68	0.60
WCDMA	WCDMA II	Front	0.274	0.053	0.109	0.094	0.176	0.050	0.33	0.38	0.37	0.45	0.32
		Back	0.540	0.195	0.208	0.106	0.130	0.050	0.74	0.75	0.65	0.67	0.59
	WCDMA IV	Front	0.253	0.053	0.109	0.094	0.176	0.050	0.31	0.36	0.35	0.43	0.30
		Back	0.645	0.195	0.208	0.106	0.130	0.050	0.84	0.85	0.75	0.78	0.70
	WCDMA V	Front	0.424	0.053	0.109	0.094	0.176	0.050	0.48	0.53	0.52	0.60	0.47
		Back	0.621	0.195	0.208	0.106	0.130	0.050	0.82	0.83	0.73	0.75	0.67
CDMA	CDMA2000 BC0	Front	0.380	0.053	0.109	0.094	0.176	0.050	0.43	0.49	0.47	0.56	0.43
		Back	0.509	0.195	0.208	0.106	0.130	0.050	0.70	0.72	0.62	0.64	0.56
	CDMA2000 BC1	Front	0.344	0.053	0.109	0.094	0.176	0.050	0.40	0.45	0.44	0.52	0.39
		Back	0.579	0.195	0.208	0.106	0.130	0.050	0.77	0.79	0.69	0.71	0.63
	CDMA2000 BC10	Front	0.307	0.053	0.109	0.094	0.176	0.050	0.36	0.42	0.40	0.48	0.36
		Back	0.434	0.195	0.208	0.106	0.130	0.050	0.63	0.64	0.54	0.56	0.48
LTE	LTE Band 4	Front	0.436	0.053	0.109	0.094	0.176	0.050	0.49	0.55	0.53	0.61	0.49
		Back	1.097	0.195	0.208	0.106	0.130	0.050	1.29	1.31	1.20	1.23	1.15
	LTE Band 7	Front	0.156	0.053	0.109	0.094	0.176	0.050	0.21	0.27	0.25	0.33	0.21
		Back	0.478	0.195	0.208	0.106	0.130	0.050	0.67	0.69	0.58	0.61	0.53
	LTE Band 12	Front	0.447	0.053	0.109	0.094	0.176	0.050	0.50	0.56	0.54	0.62	0.50
		Back	0.631	0.195	0.208	0.106	0.130	0.050	0.83	0.84	0.74	0.76	0.68
	LTE Band 13	Front	0.270	0.053	0.109	0.094	0.176	0.050	0.32	0.38	0.36	0.45	0.32
		Back	0.370	0.195	0.208	0.106	0.130	0.050	0.57	0.58	0.48	0.50	0.42
	LTE Band 25	Front	0.247	0.053	0.109	0.094	0.176	0.050	0.30	0.36	0.34	0.42	0.30
		Back	0.536	0.195	0.208	0.106	0.130	0.050	0.73	0.74	0.64	0.67	0.59
	LTE Band 26	Front	0.244	0.053	0.109	0.094	0.176	0.050	0.30	0.35	0.34	0.42	0.29
		Back	0.387	0.195	0.208	0.106	0.130	0.050	0.58	0.60	0.49	0.52	0.44
	LTE Band 41	Front	0.195	0.053	0.109	0.094	0.176	0.050	0.25	0.30	0.29	0.37	0.25
		Back	0.570	0.195	0.208	0.106	0.130	0.050	0.77	0.78	0.68	0.70	0.62

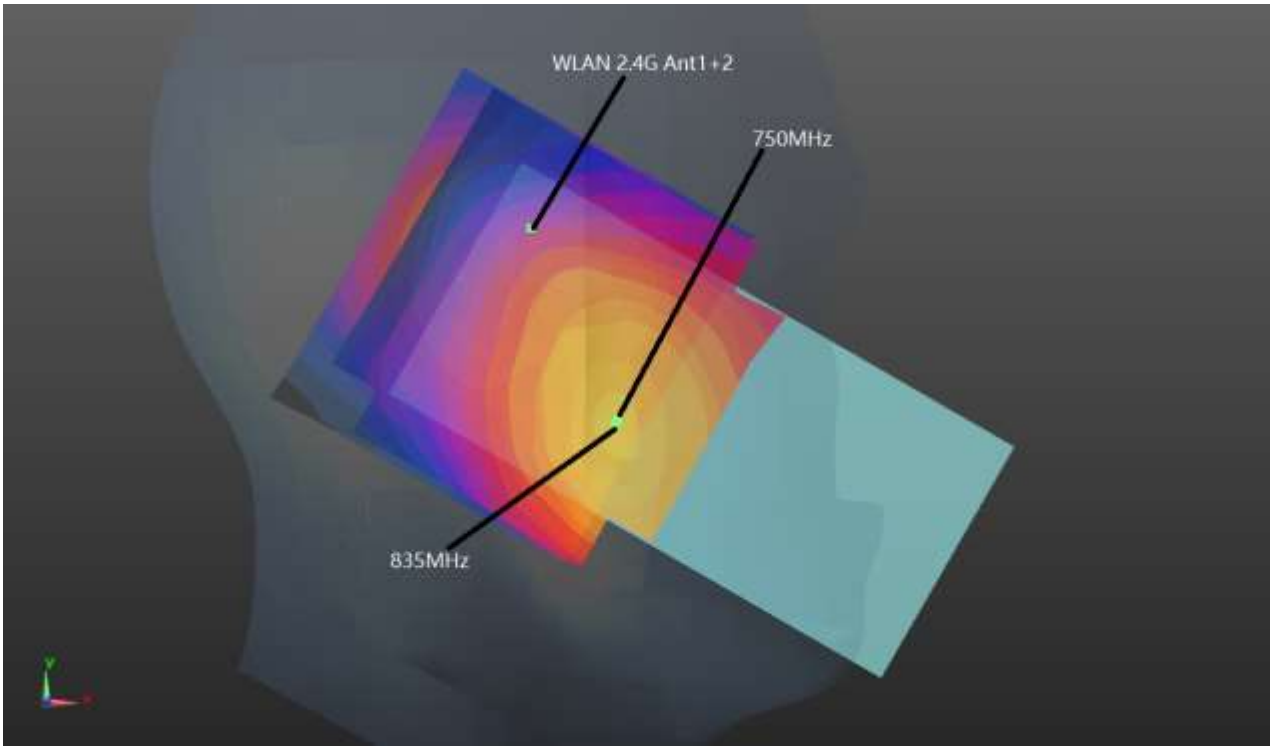
15.4 Product Specific Exposure Conditions

WWAN Band		Exposure Position	1	2	3	1+2 Summed 10g SAR (W/kg)	1+3 Summed 10g SAR (W/kg)	SPLSR	Case No
			WWAN	5GHz WLAN Ant 1	5GHz WLAN Ant 1+2				
			10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)				
WCDMA	WCDMA II	Front at 0mm		0.234	0.619	0.23	0.62		
		Back at 0mm	3.642	0.114	0.455	3.76	**4.10**	**0.06**	**#15**
		Left side at 0mm		0.482	0.447	0.48	0.45		
		Right side at 0mm		0.035	0.509	0.04	0.51		
		Top side at 0mm		0.031	0.258	0.03	0.26		
		Bottom side at 0mm	2.230			2.23	2.23		
	WCDMA IV	Front at 0mm		0.234	0.619	0.23	0.62		
		Back at 0mm	2.579	0.114	0.455	2.69	3.03		
		Left side at 0mm		0.482	0.447	0.48	0.45		
		Right side at 0mm		0.035	0.509	0.04	0.51		
		Top side at 0mm		0.031	0.258	0.03	0.26		
		Bottom side at 0mm				0.00	0.00		
CDMA	CDMA2000 BC1	Front at 0mm		0.234	0.619	0.23	0.62		
		Back at 0mm	3.680	0.114	0.455	3.79	**4.14**	**0.06**	**#16**
		Left side at 0mm		0.482	0.447	0.48	0.45		
		Right side at 0mm		0.035	0.509	0.04	0.51		
		Top side at 0mm		0.031	0.258	0.03	0.26		
		Bottom side at 0mm				0.00	0.00		
LTE	LTE Band 4	Front at 0mm		0.234	0.619	0.23	0.62		
		Back at 0mm	3.737	0.114	0.455	3.85	**4.19**	**0.06**	**#17**
		Left side at 0mm		0.482	0.447	0.48	0.45		
		Right side at 0mm		0.035	0.509	0.04	0.51		
		Top side at 0mm		0.031	0.258	0.03	0.26		
		Bottom side at 0mm	2.184			2.18	2.18		
	LTE Band 7	Front at 0mm		0.234	0.619	0.23	0.62		
		Back at 0mm	3.051	0.114	0.455	3.17	3.51		
		Left side at 0mm		0.482	0.447	0.48	0.45		
		Right side at 0mm		0.035	0.509	0.04	0.51		
		Top side at 0mm		0.031	0.258	0.03	0.26		
		Bottom side at 0mm	2.749			2.75	2.75		
	LTE Band 25	Front at 0mm		0.234	0.619	0.23	0.62		
		Back at 0mm	3.531	0.114	0.455	3.65	**3.99**		
		Left side at 0mm		0.482	0.447	0.48	0.45		
		Right side at 0mm		0.035	0.509	0.04	0.51		
		Top side at 0mm		0.031	0.258	0.03	0.26		
		Bottom side at 0mm				0.00	0.00		

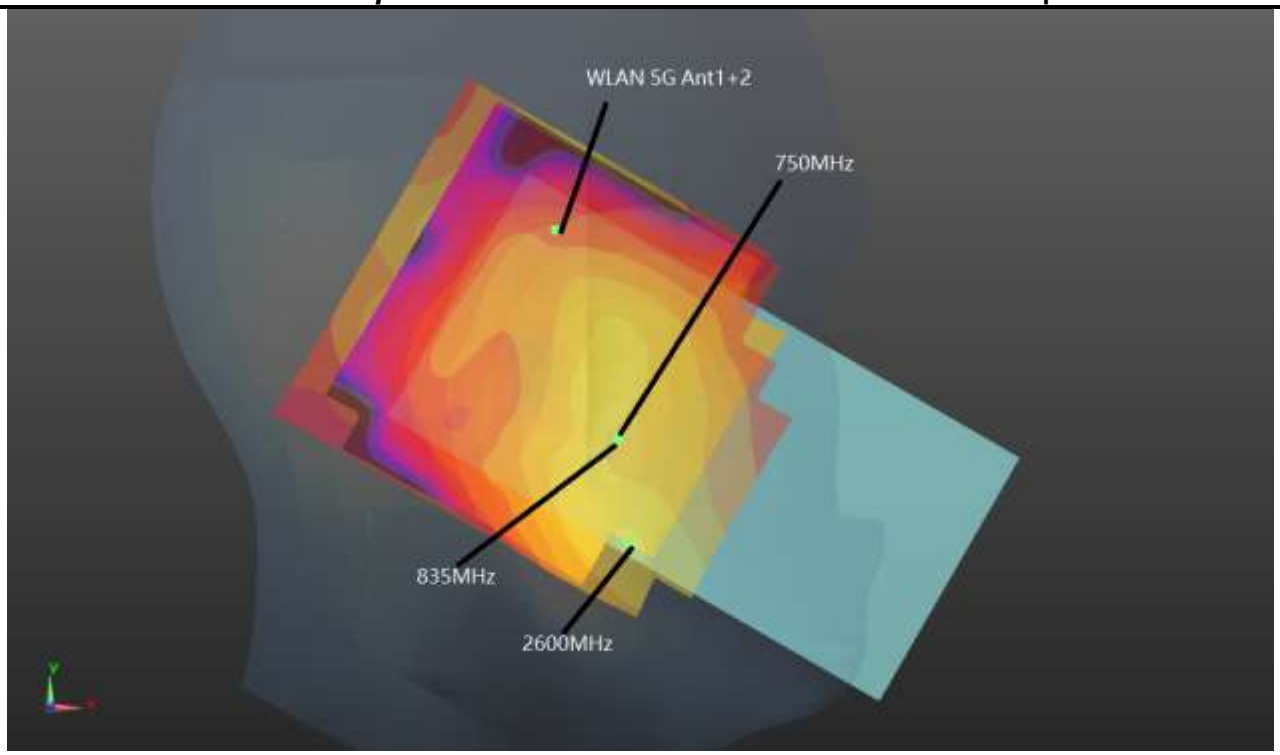
15.5 SPLSR Evaluation and Analysis

General Note:

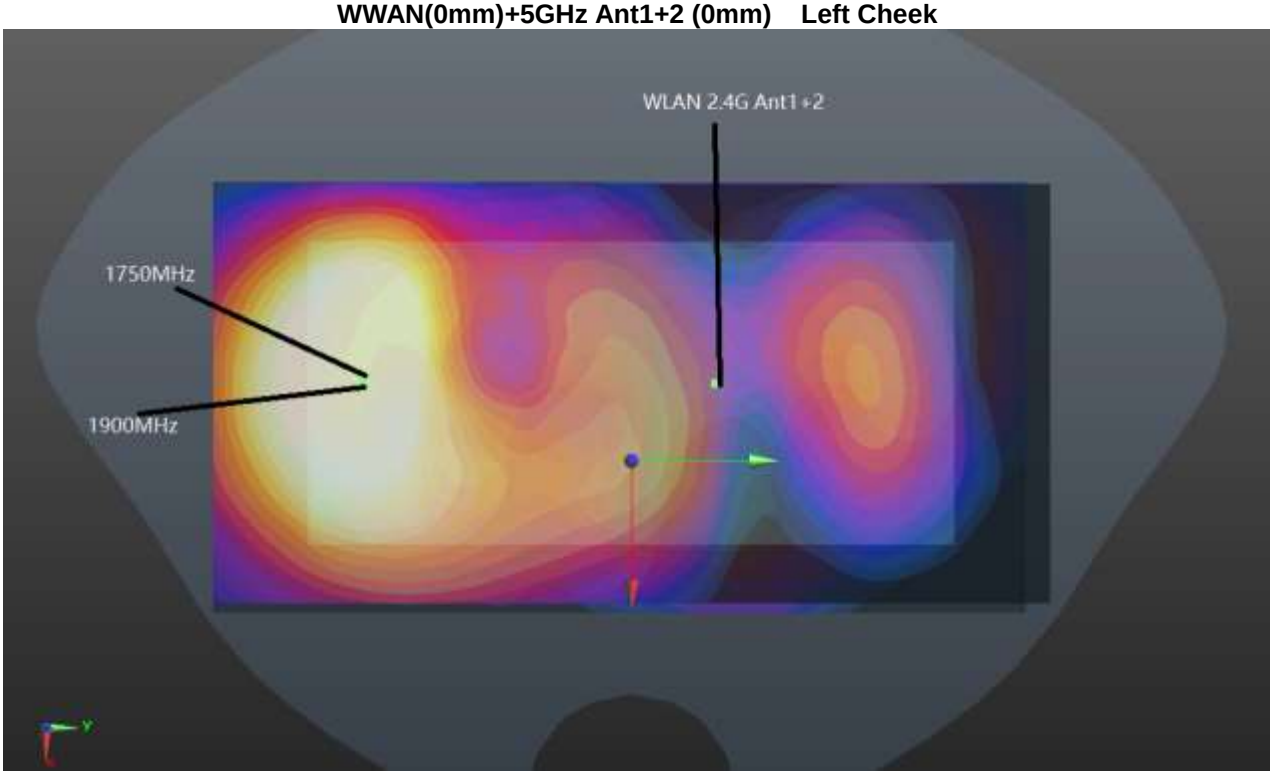
1. When standalone SAR is measured for both antennas in the pair, the peak location separation distance is computed by the square root of [(x1−x2)2 + (y1−y2)2 + (z1−z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates in the area scans or extrapolated peak SAR locations in the zoom scans, as appropriate.
2. SPLSR = (SAR1 + SAR2)1.5 / (min. separation distance, mm). If SPLSR ≤ 0.04 for 1g SAR and SPLSR ≤ 0.10 for 10g SAR, simultaneously transmission SAR measurement is not necessary.



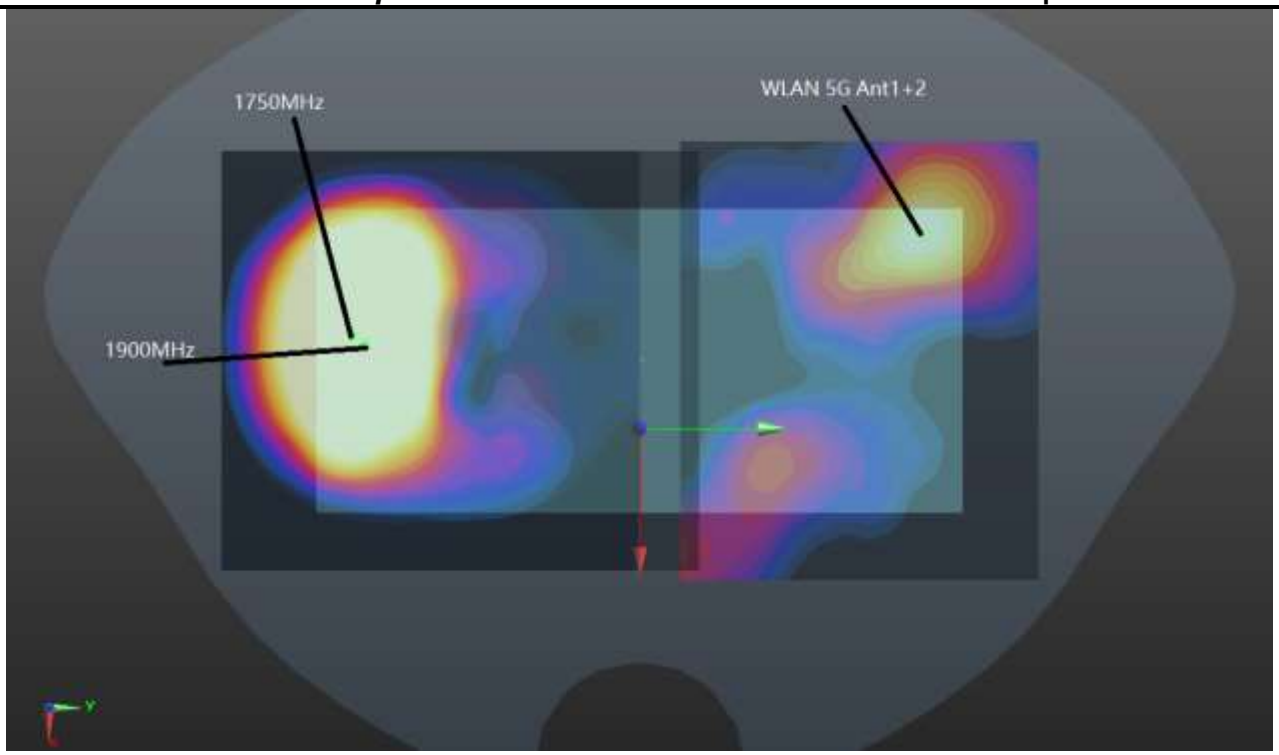
WWAN(0mm)+2.4GHz Ant1+2 (0mm) Left Cheek



WWAN(0mm)+5GHz Ant1+2 (0mm) Left Cheek



WWAN(10mm)+2.4GHz Ant1+2 (10mm) Back



WWAN (0mm) + 5GHz Ant1+2 (0mm) Back

Head

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 20	GSM850	Left Cheek	0.493	0mm	43.69	-50.23	-3.25	70.7	1.75	0.03	Not required
	2.4GHz WLAN		1.253	0mm	16.13	14.92	-2.38				
Case 01	GSM850	Left Cheek	0.493	0mm	43.69	-50.23	-3.25	73.1	1.82	0.03	Not required
	5GHz WLAN		1.329	0mm	24.83	20.35	-2.54				
Case 02	WCDMA V	Left Cheek	0.621	0mm	38.09	-56.12	-3.06	74.4	1.87	0.03	Not required
	2.4GHz WLAN		1.253	0mm	16.13	14.92	-2.38				
Case 03	WCDMA V	Left Cheek	0.621	0mm	38.09	-56.12	-3.06	77.6	1.95	0.04	Not required
	5GHz WLAN		1.329	0mm	24.83	20.35	-2.54				
Case 04	CDMA2000 BC0	Left Cheek	0.478	0mm	42.38	-49.34	-2.88	69.4	1.73	0.03	Not required
	2.4GHz WLAN		1.253	0mm	16.13	14.92	-2.38				
Case 05	CDMA2000 BC0	Left Cheek	0.478	0mm	42.38	-49.34	-2.88	71.9	1.81	0.03	Not required
	5GHz WLAN		1.329	0mm	24.83	20.35	-2.54				
Case 06	CDMA2000 BC10	Left Cheek	0.434	0mm	42.38	-49.35	-2.92	69.4	1.69	0.03	Not required
	2.4GHz WLAN		1.253	0mm	16.13	14.92	-2.38				
Case 07	CDMA2000 BC10	Left Cheek	0.434	0mm	42.38	-49.35	-2.92	71.9	1.76	0.03	Not required
	5GHz WLAN		1.329	0mm	24.83	20.35	-2.54				
Case 08	LTE Band 12	Left Cheek	0.477	0mm	45.18	-47.39	-3.18	68.8	1.73	0.03	Not required
	2.4GHz WLAN		1.253	0mm	16.13	14.92	-2.38				
Case 09	LTE Band 12	Left Cheek	0.477	0mm	45.18	-47.39	-3.18	70.7	1.81	0.03	Not required
	5GHz WLAN		1.329	0mm	24.83	20.35	-2.54				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 10	LTE Band 13	Left Cheek	0.351	0mm	42.72	-54.79	-2.85	74.6	1.60	0.03	Not required
	2.4GHz WLAN		1.253	0mm	16.13	14.92	-2.38				
Case 11	LTE Band 13	Left Cheek	0.351	0mm	42.72	-54.79	-2.85	77.2	1.68	0.03	Not required
	5GHz WLAN		1.329	0mm	24.83	20.35	-2.54				
Case 12	LTE Band 26	Left Cheek	0.333	0mm	44	-42.94	-3.64	66.1	1.66	0.03	Not required
	5GHz WLAN		1.329	0mm	24.83	20.35	-2.54				
Hotspot											
Case 13	WCDMA II	Back	1.254	10mm	-3.1	-67.5	-2.65	84.6	1.63	0.02	Not required
	2.4GHz WLAN		0.375	10mm	-7.4	17	-2.99				
Case 14	WCDMA Iv	Back	1.231	10mm	-4.6	-69.1	-2.63	86.1	1.61	0.02	Not required
	2.4GHz WLAN		0.375	10mm	-7.4	17	-2.99				
10g SAR											
Case 15	WCDMA II	Back	3.642	0mm	-8.9	-67.5	-2.57	139.6	4.10	0.06	Not required
	5GHz WLAN		0.455	0mm	-32	70.2	-2.49				
Case 16	CDMA BC1	Back	3.68	0mm	-7.7	-69	-2.49	141.3	4.14	0.06	Not required
	5GHz WLAN		0.455	0mm	-32	70.2	-2.49				
Case 17	LTE Band 4	Back	3.737	0mm	-7.6	-68.8	-2.68	141.1	4.19	0.06	Not required
	5GHz WLAN		0.455	0mm	-32	70.2	-2.49				

Test Engineer : Nick Hu, Tony Zhang, Hank Chang, Yuankai Kong

16. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured 1-g SAR is less 1.5W/kg and highest measured 10-g SAR is less 3.75W/kg. Therefore, the measurement uncertainty table is not required in this report.

17. References

[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

[3] IEEE Std. 1528-2013, “IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, Sep 2013

[4] SPEAG DASY System Handbook

[5] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.

[6] FCC KDB 865664 D02 v01r02, “RF Exposure Compliance Reporting and Documentation Considerations” Oct 2015.

[7] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015

[8] FCC KDB 648474 D04 v01r03, “SAR Evaluation Considerations for Wireless Handsets”, Oct 2015.

[9] FCC KDB 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

[10] FCC KDB 941225 D01 v03r01, “3G SAR MEAUREMENT PROCEDURES”, Oct 2015

[11] FCC KDB 941225 D05 v02r05, “SAR Evaluation Considerations for LTE Devices”, Dec 2015

[12] FCC KDB 941225 D05A v01r02, “Rel. 10 LTE SAR Test Guidance and KDB Inquiries”, Oct 2015

[13] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.

------THE END------

Appendix A. Plots of System Performance Check

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.8.8

System Check_Head_750MHz

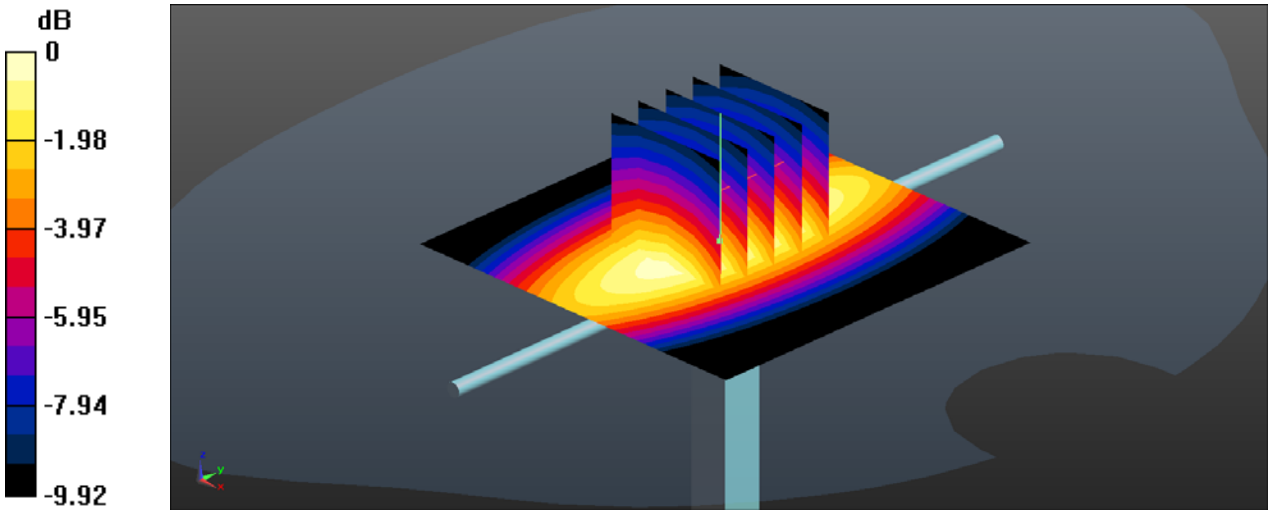
DUT: D750V3 - SN:1087

Communication System: UID 0, CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: HSL_750 Medium parameters used: f = 750 MHz; σ = 0.914 S/m; ε_r = 43.152; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3279; ConvF(6.44, 6.44, 6.44); Calibrated: 2020.6.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.63 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 50.04 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.02 W/kg
SAR(1 g) = 2.08 W/kg; SAR(10 g) = 1.39 W/kg
Maximum value of SAR (measured) = 2.60 W/kg



0 dB = 2.60 W/kg = 4.15 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.8.11

System Check_Head_835MHz

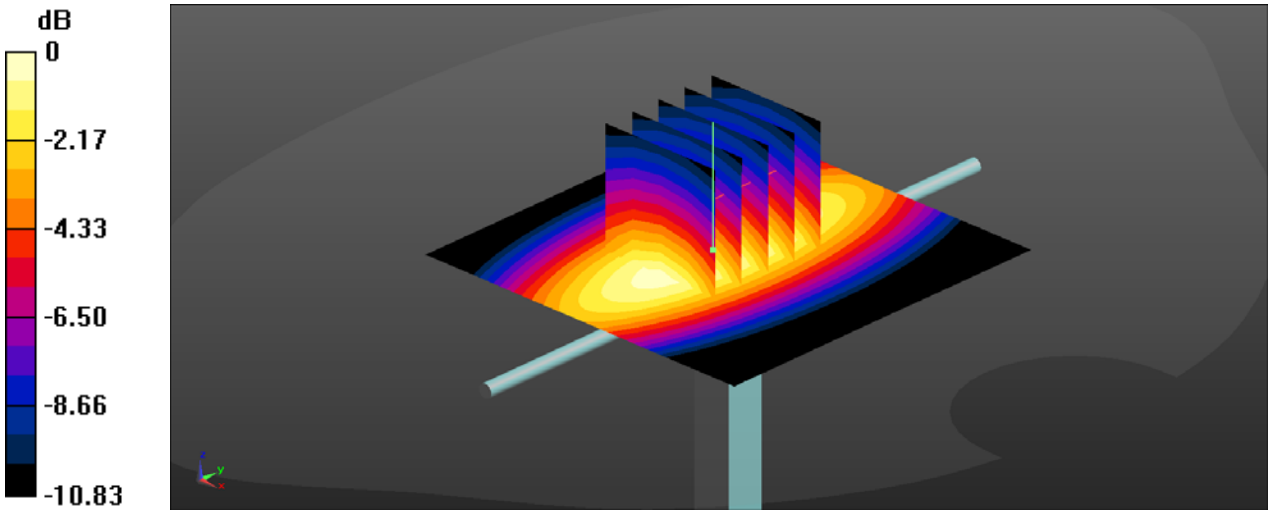
DUT: D835V2 - SN:4d151

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_835 Medium parameters used: f = 835 MHz; σ = 0.915 S/m; ε_r = 41.269; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3279; ConvF(6.25, 6.25, 6.25); Calibrated: 2020.6.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14(7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.12 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 52.32 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.69 W/kg
SAR(1 g) = 2.44 W/kg; SAR(10 g) = 1.59 W/kg
Maximum value of SAR (measured) = 3.11 W/kg



0 dB = 3.11 W/kg = 4.93 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.8.14

System Check_Head_1750MHz

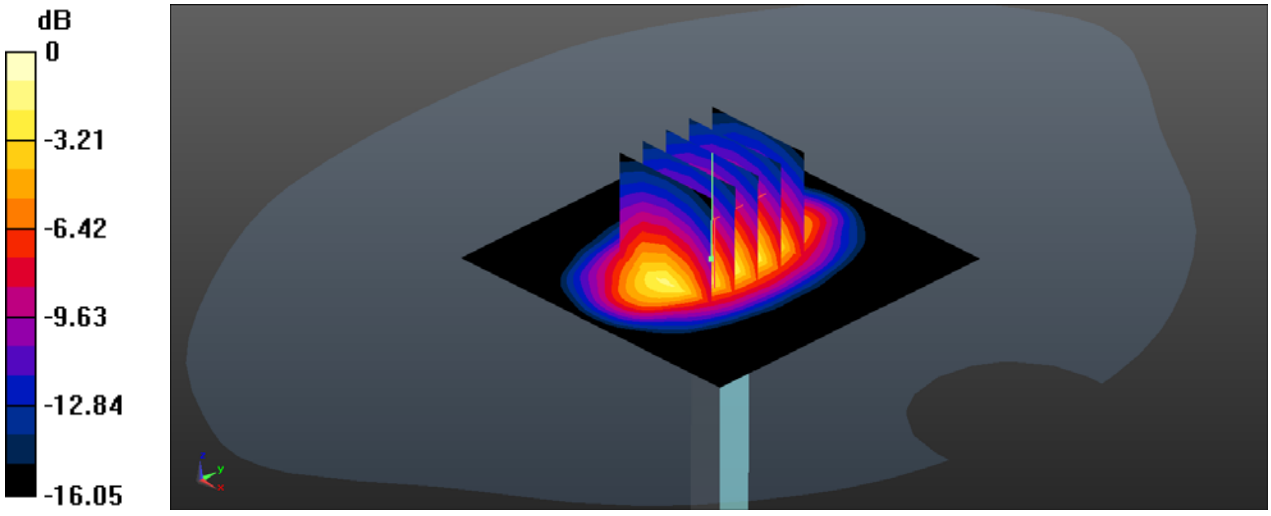
DUT: D1750V2 - SN:1090

Communication System: UID 0, CW (0); Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1750 Medium parameters used: f = 1750 MHz; σ = 1.351 S/m; ε_r = 39.346; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3279; ConvF(5.4, 5.4, 5.4); Calibrated: 2020.6.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 12.5 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 85.02 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 15.5 W/kg
SAR(1 g) = 8.87 W/kg; SAR(10 g) = 4.81 W/kg
Maximum value of SAR (measured) = 12.4 W/kg



0 dB = 12.4 W/kg = 10.93 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.8.17

System Check_Head_1900MHz

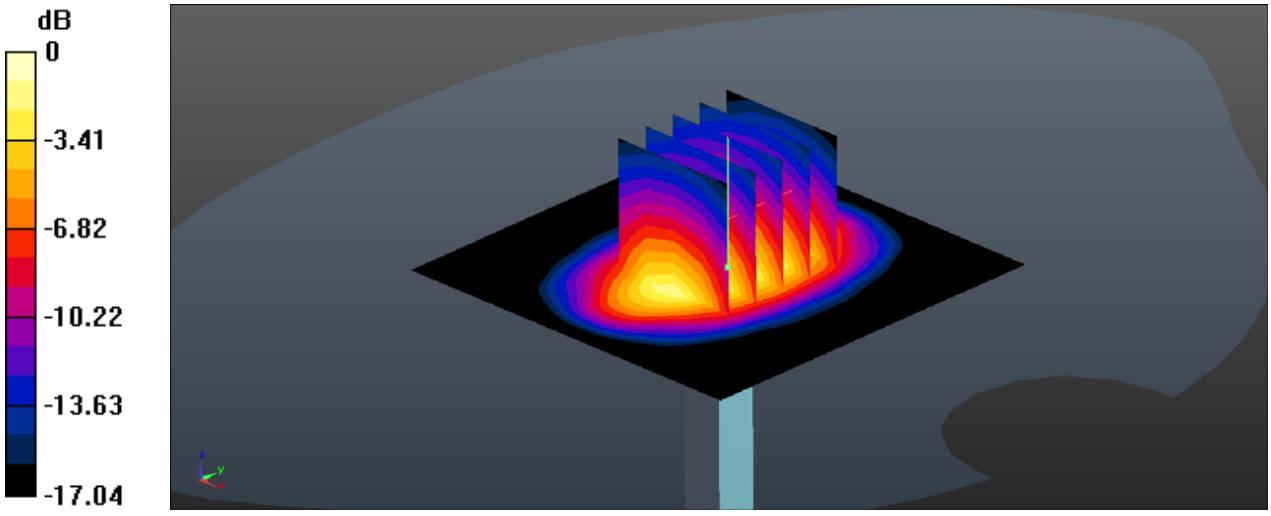
DUT: D1900V2 - SN:5d170

Communication System: UID 0, CW (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1900 MHz; σ = 1.433 S/m; ε_r = 39.091; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3279; ConvF(5.16, 5.16, 5.16); Calibrated: 2020.6.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14(7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 12.6 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 96.40 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 17.9 W/kg
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.38 W/kg
Maximum value of SAR (measured) = 12.8 W/kg



0 dB = 12.8 W/kg = 11.07 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.8.11

System Check_Head_2450MHz

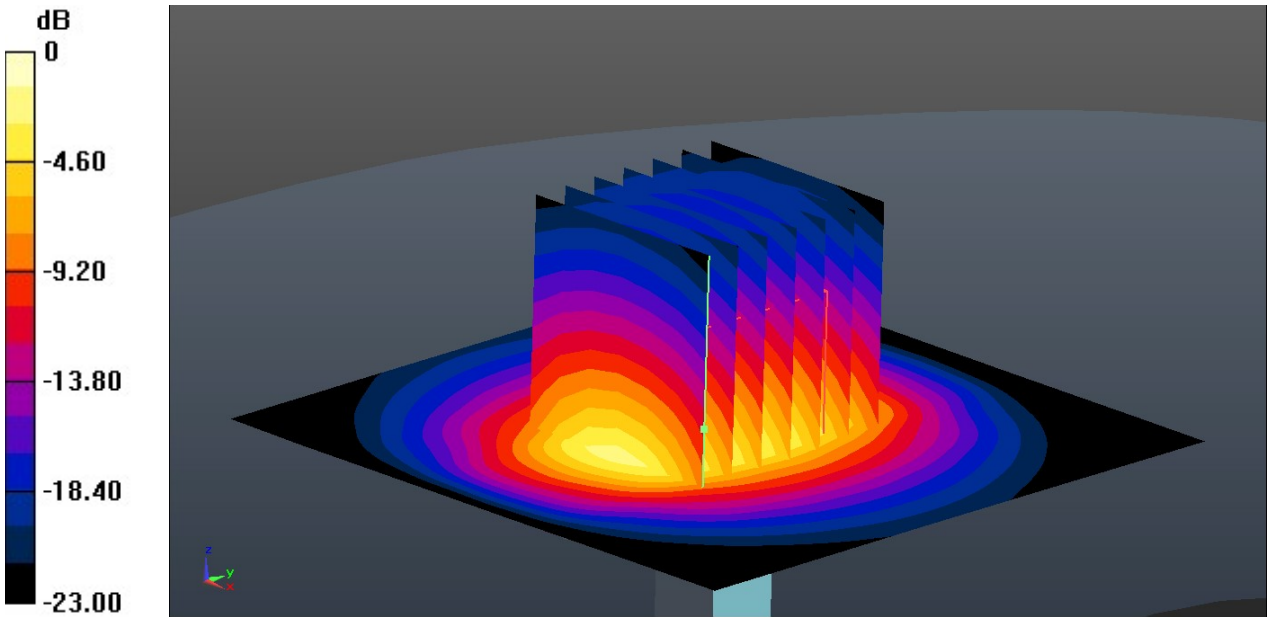
DUT: D2450V2 - SN:908

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450 Medium parameters used: f = 2450 MHz; σ = 1.824 S/m; ε_r = 39.188; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7592; ConvF(7.57, 7.57, 7.57); Calibrated: 2020.5.22
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 2019.12.17
- Phantom: SAM1; Type: SAM; Serial: TP-1753
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 18.7 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 101.8 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 29.8 W/kg
SAR(1 g) = 13.6 W/kg; SAR(10 g) = 6.17 W/kg
Maximum value of SAR (measured) = 18.1 W/kg



0 dB = 18.1 W/kg = 12.58 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.8.24

System Check_Head_2600MHz

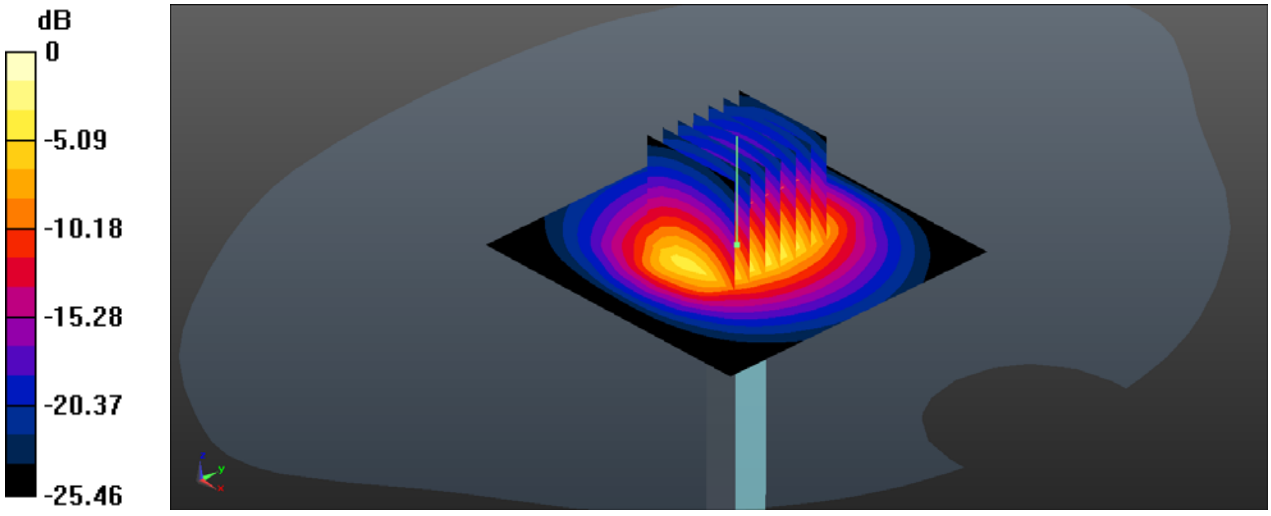
DUT: D2600V2 - SN:1061

Communication System: UID 0, CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: HSL_2600 Medium parameters used: f = 2600 MHz; σ = 1.929 S/m; ε_r = 39.002; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3279; ConvF(4.54, 4.54, 4.54); Calibrated: 2020.6.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 19.1 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 90.78 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 31.1 W/kg
SAR(1 g) = 13.7 W/kg; SAR(10 g) = 5.94 W/kg
Maximum value of SAR (measured) = 18.5 W/kg



0 dB = 18.5 W/kg = 12.67 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.8.12

System Check_Head_5250MHz

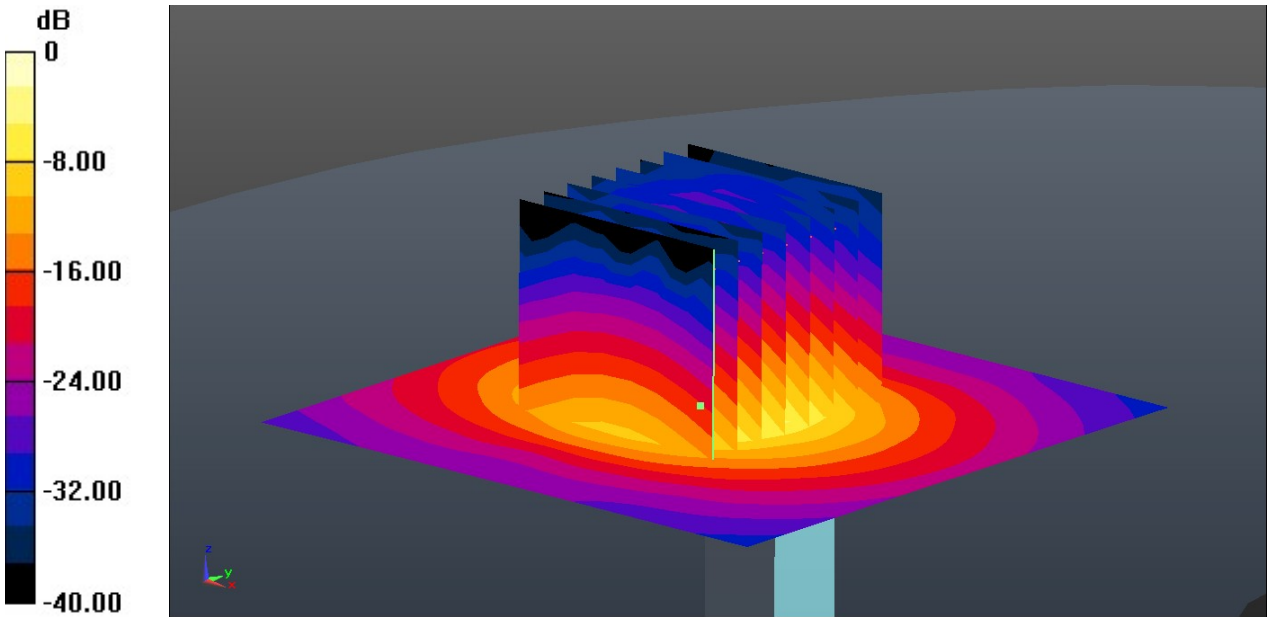
DUT: D5GHzV2 - SN:1113

Communication System: UID 0, CW (0); Frequency: 5250 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5250 MHz; σ = 4.554 S/m; ε_r = 34.764; ρ = 1000kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7592; ConvF(5.24, 5.24, 5.24); Calibrated: 2020.5.22
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 2019.12.17
- Phantom: SAM1; Type: SAM; Serial: TP-1753
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 18.6 W/kg

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 43.01 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 28.9 W/kg
SAR(1 g) = 7.88 W/kg; SAR(10 g) = 2.31 W/kg
Maximum value of SAR (measured) = 17.5 W/kg



0 dB = 17.5 W/kg = 12.43 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.8.16

System Check_Head_5600MHz

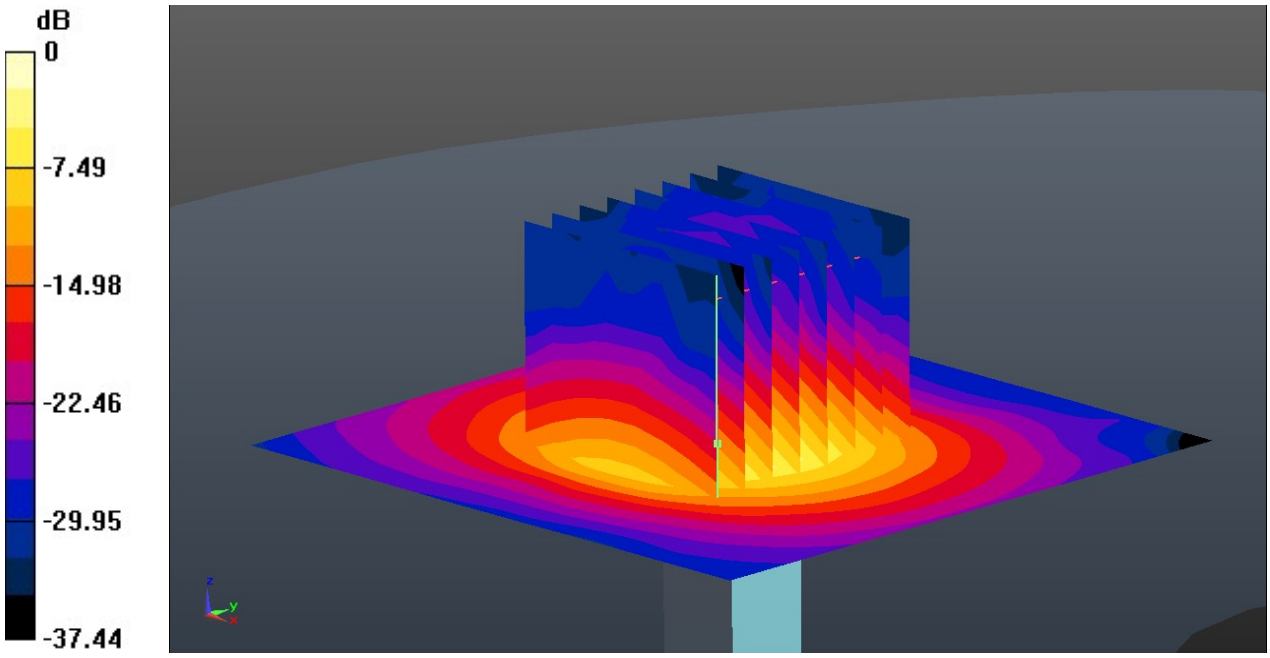
DUT: D5GHzV2 - SN:1113

Communication System: UID 0, CW (0); Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5600 MHz; σ = 4.896 S/m; ε_r = 34.292; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7592; ConvF(4.65, 4.65, 4.65); Calibrated: 2020.5.22
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 2019.12.17
- Phantom: SAM1; Type: SAM; Serial: TP-1753
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 20.2 W/kg

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 43.78 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 36.6 W/kg
SAR(1 g) = 8.65 W/kg; SAR(10 g) = 2.49 W/kg
Maximum value of SAR (measured) = 19.9 W/kg



0 dB = 19.9 W/kg = 12.99 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.8.13

System Check_Head_5750MHz

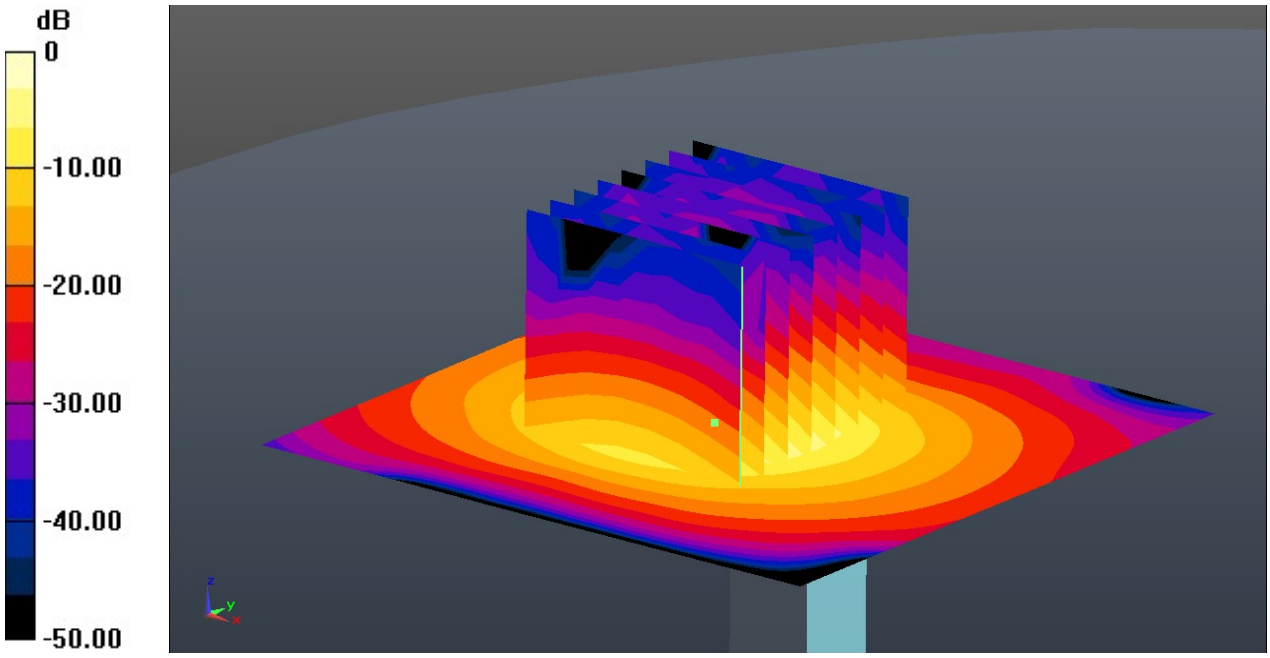
DUT: D5GHzV2 - SN:1113

Communication System: UID 0, CW (0); Frequency: 5750 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5750 MHz; σ = 5.048 S/m; ε_r = 34.059; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7592; ConvF(4.69, 4.69, 4.69); Calibrated: 2020.5.22
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 2019.12.17
- Phantom: SAM1; Type: SAM; Serial: TP-1753
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 18.5 W/kg

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 39.34 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 31.9 W/kg
SAR(1 g) = 7.62 W/kg; SAR(10 g) = 2.18 W/kg
Maximum value of SAR (measured) = 17.7 W/kg



0 dB = 17.7 W/kg = 12.48 dBW/kg

Appendix B. Plots of High SAR Measurement

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.8.11

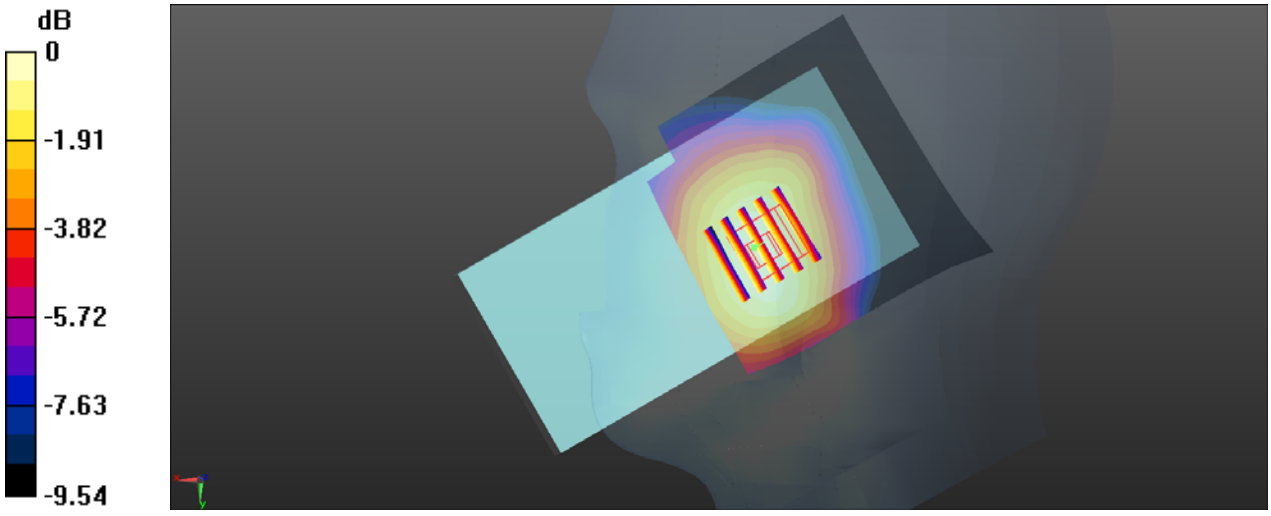
01_GSM850_GPRS 2Tx slots_Right Cheek_0mm_Ch251

Communication System: UID 0, GSM850 (0); Frequency: 848.8 MHz;Duty Cycle: 1:4.15
Medium: HSL_850 Medium parameters used: f = 849 MHz; σ = 0.916 S/m; ε_r = 42.063; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3279; ConvF(6.25, 6.25, 6.25); Calibrated: 2020.6.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.502 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.171 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.541 W/kg
SAR(1 g) = 0.418 W/kg; SAR(10 g) = 0.319 W/kg
Maximum value of SAR (measured) = 0.464 W/kg



0 dB = 0.464 W/kg = -3.33 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.8.17

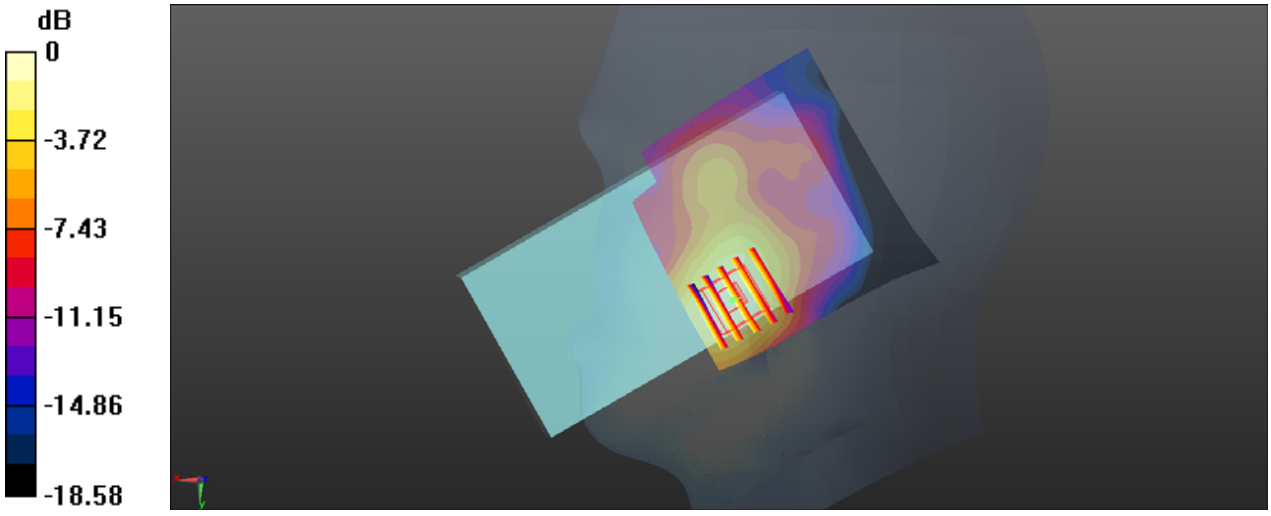
02_GSM1900_GPRS 2Tx slots_Right Cheek_0mm_Ch512

Communication System: UID 0, PCS (0); Frequency: 1850.2 MHz;Duty Cycle: 1:4.15
Medium: HSL_1900 Medium parameters used: f = 1850.2 MHz; σ = 1.406 S/m; ε_r = 39.148; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3279; ConvF(5.16, 5.16, 5.16); Calibrated: 2020.6.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.100 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.614 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.127 W/kg
SAR(1 g) = 0.085 W/kg; SAR(10 g) = 0.053 W/kg
Maximum value of SAR (measured) = 0.101 W/kg



0 dB = 0.101 W/kg = -9.96 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.8.17

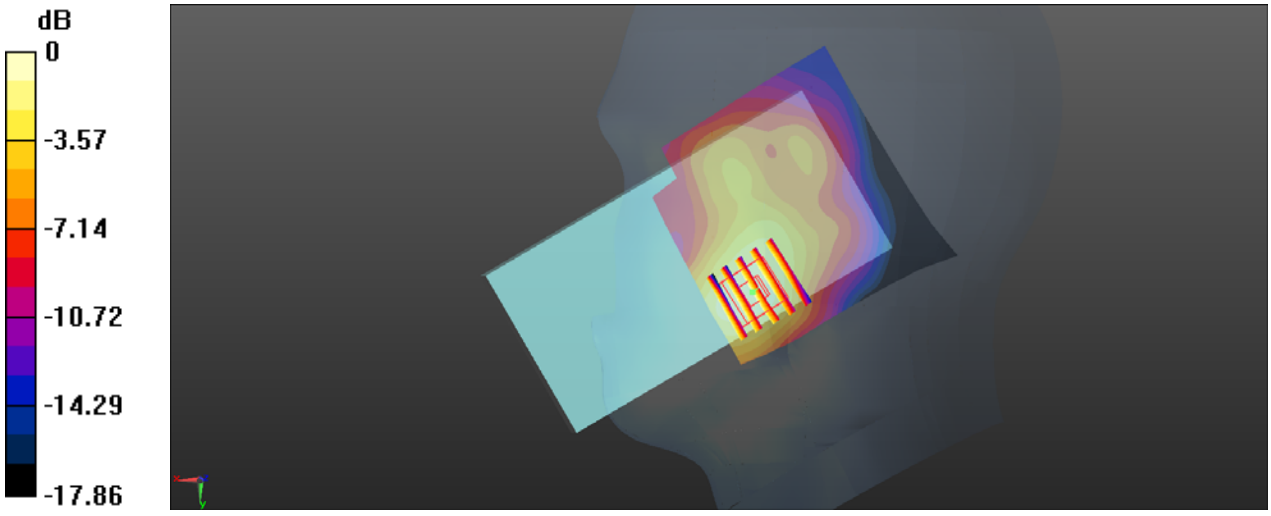
03_WCDMA II_RMC 12.2Kbps_Right Cheek_0mm_Ch9262

Communication System: UID 0, WCDMA (0); Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1852.4 MHz; σ = 1.408 S/m; ε_r = 39.15; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3279; ConvF(5.16, 5.16, 5.16); Calibrated: 2020.6.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.167 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.850 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.206 W/kg
SAR(1 g) = 0.139 W/kg; SAR(10 g) = 0.087 W/kg
Maximum value of SAR (measured) = 0.166 W/kg



0 dB = 0.166 W/kg = -7.80 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.8.14

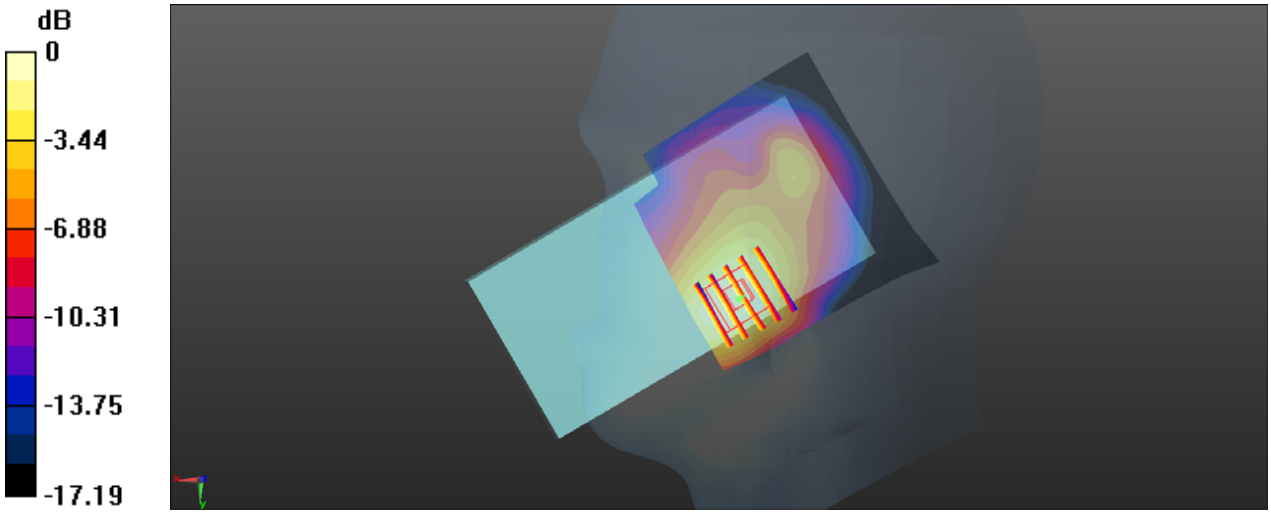
04_WCDMA IV_RMC 12.2Kbps_Right Cheek_0mm_Ch1312

Communication System: UID 0, WCDMA (0); Frequency: 1712.4 MHz;Duty Cycle: 1:1
Medium: HSL_1750 Medium parameters used: f = 1712.4 MHz; σ = 1.325 S/m; ε_r = 39.426; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3279; ConvF(5.4, 5.4, 5.4); Calibrated: 2020.6.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.126 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.066 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.153 W/kg
SAR(1 g) = 0.111 W/kg; SAR(10 g) = 0.068 W/kg
Maximum value of SAR (measured) = 0.123 W/kg



0 dB = 0.123 W/kg = -9.10 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.8.11

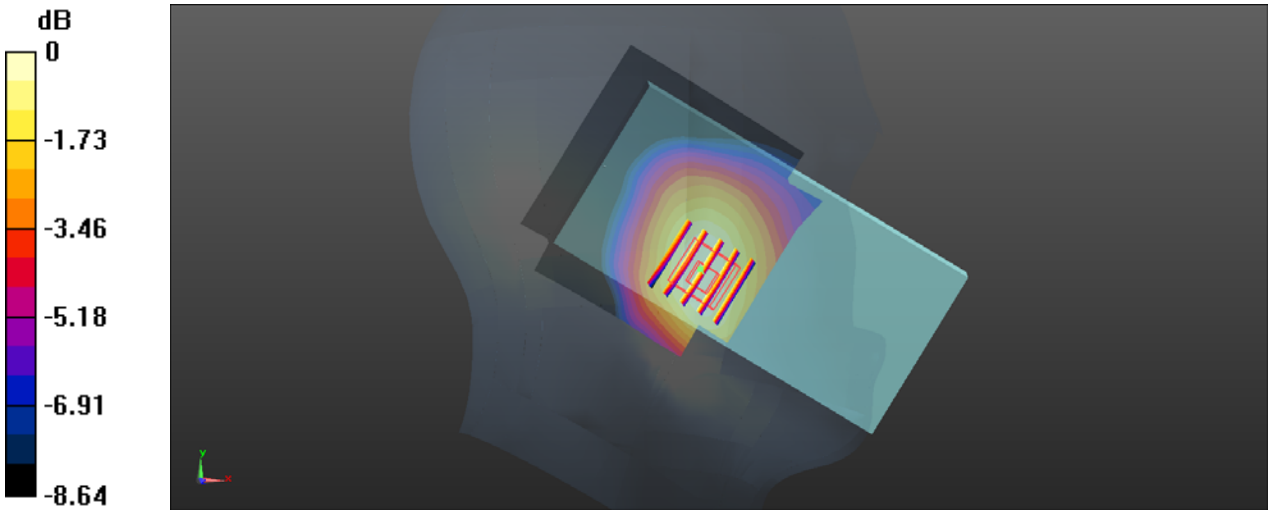
05_WCDMA V_RMC 12.2Kbps_Left Cheek_0mm_Ch4233

Communication System: UID 0, WCDMA (0); Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium: HSL_850 Medium parameters used: f = 847 MHz; σ = 0.926 S/m; ε_r = 41.111; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3279; ConvF(6.25, 6.25, 6.25); Calibrated: 2020.6.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.496 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.488 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.572 W/kg
SAR(1 g) = 0.444 W/kg; SAR(10 g) = 0.338 W/kg
Maximum value of SAR (measured) = 0.486 W/kg



0 dB = 0.486 W/kg = -3.13 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.8.11

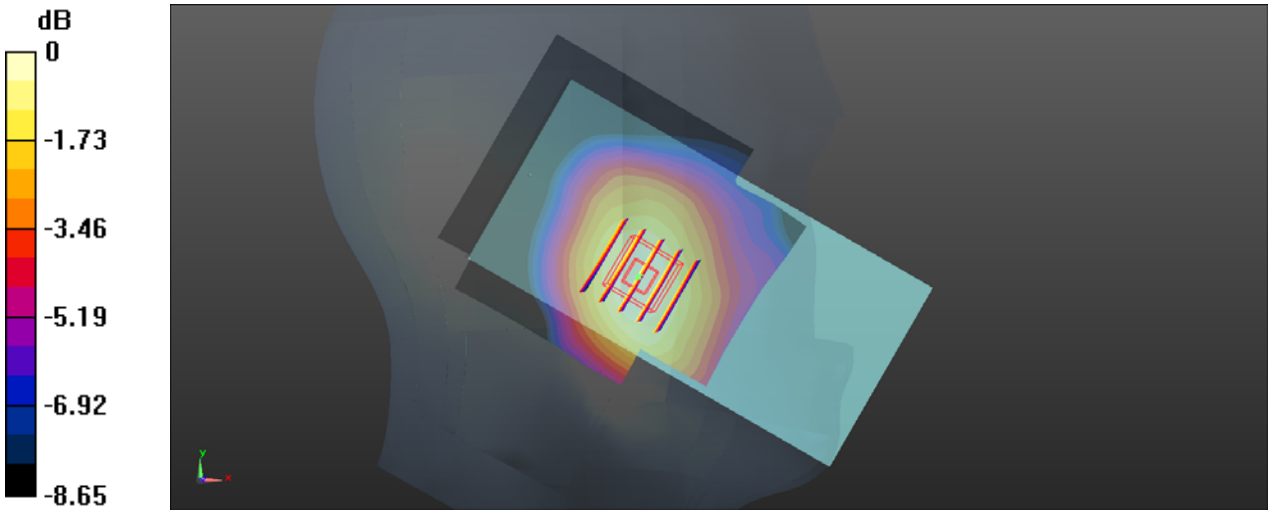
06_CDMA2000 BC0_RC3 SO55_Left Cheek_0mm_Ch777

Communication System: UID 0, CDMA (0); Frequency: 848.31 MHz;Duty Cycle: 1:1
Medium: HSL_850 Medium parameters used: f = 848.31 MHz; σ = 0.927 S/m; ε_r = 41.094; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3279; ConvF(6.25, 6.25, 6.25); Calibrated: 2020.6.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.417 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.922 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.476 W/kg
SAR(1 g) = 0.370 W/kg; SAR(10 g) = 0.284 W/kg
Maximum value of SAR (measured) = 0.404 W/kg



0 dB = 0.404 W/kg = -3.94 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.8.17

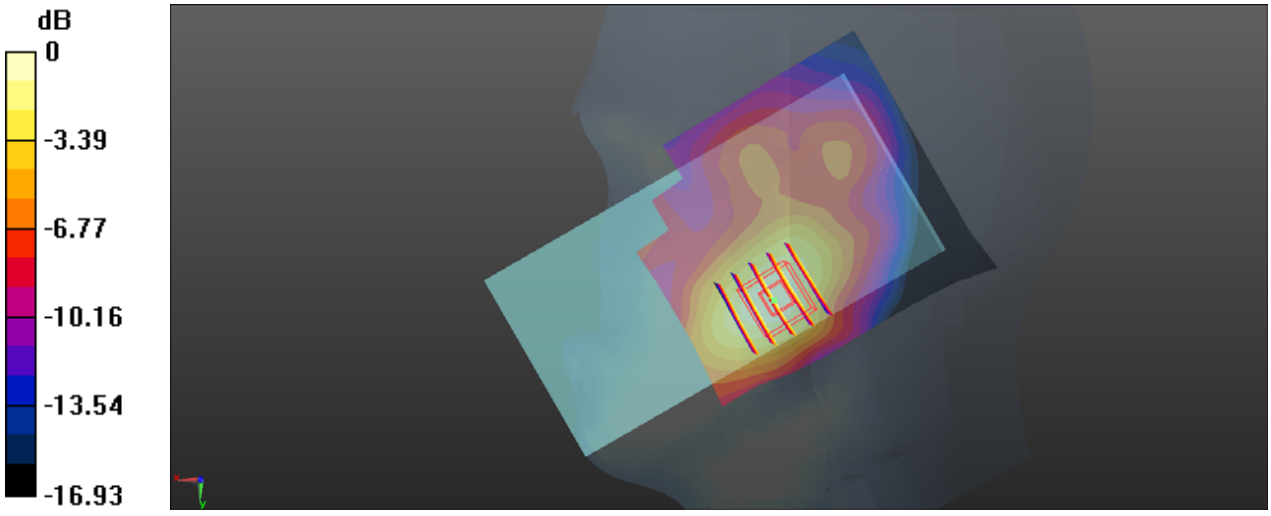
07_CDMA2000 BC1_RC3 SO55_Right Cheek_0mm_Ch25

Communication System: UID 0, CDMA (0); Frequency: 1851.25 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1851.25 MHz; σ = 1.407 S/m; ε_r = 39.15; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3279; ConvF(5.16, 5.16, 5.16); Calibrated: 2020.6.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.141 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.255 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.187 W/kg
SAR(1 g) = 0.122 W/kg; SAR(10 g) = 0.075 W/kg
Maximum value of SAR (measured) = 0.146 W/kg



0 dB = 0.146 W/kg = -8.36 dBW/kg