FCC SAR Test Report

APPLICANT	:	Motorola Mobility LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola
MODEL NAME	:	XT2413-1,XT2413-3
FCC ID	:	IHDT56AN3
STANDARD	:	FCC 47 CFR Part 2 (2.1093)

We, Sporton International Inc. (Shenzhen), would like to declare that the tested sample has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has 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 Inc. (Shenzhen), the test report shall not be reproduced except in full.

Approved by: Si Zhang

Sporton International Inc. (Shenzhen)
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People's Republic of China

Table of Contents

Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA391515-01	Rev. 01	Initial issue of report	Nov. 07, 2023

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Cellular Phone, XT2413-1,XT2413-3**, are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 5mm)	Body-worn (Separation 5mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.36	0.95	0.95	1.59
		GSM1900	0.23	**1.44**	1.33	
	WCDMA	WCDMA V	0.46	1.27	1.27	
		WCDMA IV	0.21	1.35	1.30	
		WCDMA II	0.49	1.29	1.41	
	LTE	LTE Band 14	0.48	1.04	1.04	
		LTE Band 12	0.83	0.80	1.05	
		LTE Band 13	0.56	0.84	0.84	
		LTE Band 5	1.02	1.17	1.17	
		LTE Band 66/4	0.96	1.29	1.40	
		LTE Band 2	1.00	1.33	1.42	
		LTE Band 30	0.59	1.41	1.41	
		LTE Band 7	0.14	1.38	**1.43**	
DTS	WLAN	WLAN2.4GHz	**1.37**	0.70	1.33	1.57
NII		WLAN5GHz	0.90	0.49	1.17	1.59
DSS	Bluetooth	Bluetooth	0.16	0.19	0.19	1.59

Highest 10g SAR Summary				
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)	Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	GSM	GSM1900	2.34	3.93
	WCDMA	WCDMA V	2.59	
		WCDMA IV	3.30	
		WCDMA II	3.46	
	LTE	LTE Band 12	2.55	
		LTE Band 5	2.76	
		LTE Band 66/4	3.17	
		LTE Band 2	3.26	
		LTE Band 30	**3.51**	
		LTE Band 7	2.38	
DTS	WLAN	WLAN2.4GHz	1.23	3.93
NII		WLAN5GHz	1.53	3.93
Date of Testing:			2023/10/12~2023/10/24	

Remark: This device supports LTE B4 and B66. Since the supported frequency span for LTE B4 falls completely within the supports frequency span for LTE B66, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B66.

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 Inc. (Shenzhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Testing Laboratory			
Test Firm	Sporton International Inc. (Shenzhen)		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	SAR04-SZ	CN1256	421272

Applicant	
Company Name	Motorola Mobility LLC
Address	222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

Manufacturer	
Company Name	Motorola Mobility LLC
Address	222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

3. Data Reuse Approach

3.1 Introduction Section

This application re-uses data collected on a similar device, FCC ID: IHDT56AN4 (reference model) and FCC ID: IHDT56AN3 (variant model). Due to the same design are identical between parent model and variant model, SAR data reuse is requested and spot check data in this report is used to justify the SAR data reuse.

For variant model 1g SAR and 10g spot check SAR result does not exceed 30% and 1g SAR < 1.2W/kg, 10g SAR < 3.0W/kg of the reference model, the WWAN max SAR summary was always choose the higher SAR between parent model and variant model.

The applicant should take full responsibility that the test data as referenced in this report represent compliance for this FCC ID: IHDT56AN3

3.2 Model Difference Information

The **main** difference between FCC ID: IHDT56AN4 and FCC ID: IHDT56AN3 is as below:

- Remove LTE Band 17/25/26/71/38/41
- Add LTE Band 14/30;

Other differences and all the details of similarity and difference can be found in the confidential documents (XT2413-1,XT2413-3_Operational Description of Product Equality Declaration).

3.3 Reference detail Section

Rule Part	Equipment Class	Wireless Technology	Frequency Band (MHz)	FCC ID (Reference)	Type Grant/ Permissive Change	Reference Title	FCC ID Filling (Variant)	Test on the variant
Part 2.1093	PCE	GSM	GSM850/1900	IHDT56AN4	Original Grant	FA391515	IHDT56AN3	Spot check
		WCDMA	B2/5/4	IHDT56AN4	Original Grant	FA391515	IHDT56AN3	Spot check
		LTE	B2/4/5/7/12/13/66	IHDT56AN4	Original Grant	FA391515	IHDT56AN3	Spot check
		LTE	B14/30				IHDT56AN3	Full Test
	DTS	BLE/ Wi-Fi	2400~2483.5				IHDT56AN3	Full Test
	NII	Wi-Fi	5150 ~ 5250 5250 ~ 5350 5470 ~ 5725 5725 ~ 5850				IHDT56AN3	Full Test
	DSS	Bluetooth	2400~2483.5				IHDT56AN3	Full Test

4. 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
- FCC KDB 616217 D04 SAR for laptop and tablets v01r02

5. Equipment Under Test (EUT) Information

5.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2413-1,XT2413-3
FCC ID	IHDT56AN3
IMEI Code	Sample 1: 350803920011684 Sample 2: 350803920016220
Frequency Band	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850 MHz ~ 1910 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 66: 1710 MHz ~ 1780 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 ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	GSM/GPRS/EGPRS AMR / RMC 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+ (16QAM uplink is supported) LTE: QPSK, 16QAM, 64QAM WLAN 2.4GHz : 802.11b/g/n HT20/ HT40 WLAN 5GHz : 802.11a/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE
HW Version	DVT2
SW Version	T3TF33.55
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 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 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 GPRS/EGPRS mode up to multi-slot class 12.
5. The device implements the power management and proximity sensor /receiver detection/hotspot mode for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity). Details about the power management decision and sensor detection are provided in the operational description. And the device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to power table at appendix E.
6. For WLAN transmitter, while the device WLAN is transmitting simultaneously with the WWAN/BT antenna, the device power will be reduced power at head exposure conditions. For WLAN transmitter, while the device WLAN is transmitting simultaneously with the WWAN/BT antenna and Proximity sensors trigger, the device power will be

reduced power at body-worn and extremity exposure conditions.

7. There are two samples, the different between them refer to the XT2413-1,XT2413-3_Operational Description of Product Equality Declaration which is exhibit separately. According to the differences, sample 1 was chosen to perform full SAR testing and sample 2 verified the worst case of sample 1.
8. The device has two batteries. For battery 1/2 only suppliers are different, so only battery 1 was chosen to perform full SAR testing.

5.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05	
FCC ID	IHDT56AN3
Equipment Name	Mobile Cellular Phone
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 66: 1710 MHz ~ 1780 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 14: 5MHz, 10MHz LTE Band 30: 5MHz, 10MHz LTE Band 66: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
Uplink Modulations used	QPSK / 16QAM / 64QAM
LTE Voice / Data requirements	Voice and Data
LTE Release Version	R10, Cat 13
CA Support	Supported, Uplink and Downlink
LTE MPR permanently built-in by design	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

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 operating in Proximity sensors/receiver/hotspot detect mechanism, head/body -worn /hotspot/extremity will trigger reduced power for some bands applied to satisfy SAR compliance, the detail please referred to section 14.
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power verification please referred to section 14.
LTE Carrier Aggregation Additional Information	1. This device supports LTE Carrier Aggregation (CA) in the uplink for intra-band and inter-band with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance. 2. This device supports maximum of 2 carriers in the downlink.

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 14

	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Channel #	Channel #	Freq.(MHz)
L	23305	790.5	23330	793
M	23330	793		
H	23355	795.5		

LTE Band 30

	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq.(MHz)
L	27685	2307.5	27710	2310
M	27710	2310		
H	27735	2312.5		

LTE Band 66

	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	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770

<For LTE Overlap Bands Description>

1) LTE Bands BW

Band	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
LTE Band 4	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 66	Yes	Yes	Yes	Yes	Yes	Yes

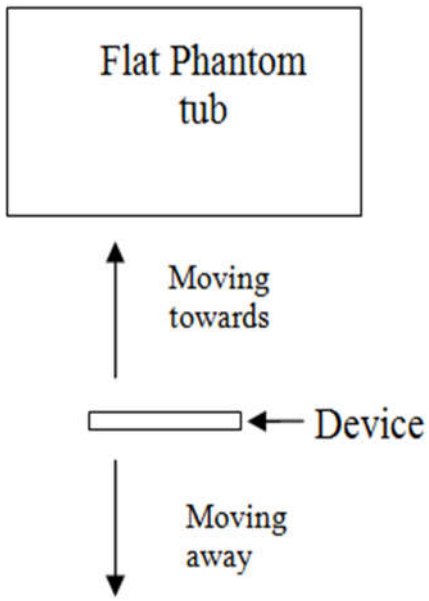
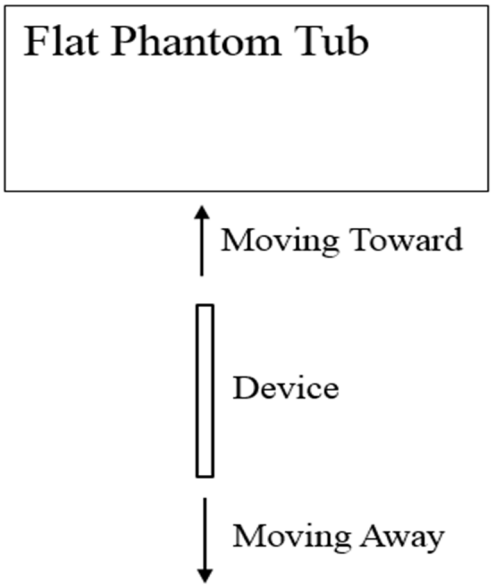
2) LTE Bands tune up:

Band	Antenna	Rec on	Hotspot	Sensor on	Handheld	Default Tune-up Limit
LTE Band 4	0	24	13.5	14.5	19.5	24
LTE Band 66	0	24	13.5	14.5	19.5	24
LTE Band 4	1	16.5	12	14	19	24
LTE Band 66	1	16.5	12	14	19	24

6. Proximity Sensor Triggering Test

<Proximity Sensor Triggering Distance>:

1. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed and the tissue-equivalent medium for highest frequency (5850MHz) and lowest (750MHz) frequency was used for proximity sensor triggering testing.
2. Capacitive proximity sensors placed coincident with antenna elements at the top and bottom ends of the phone are utilized to determine when the device comes in proximity of the user's body at the front or back of the device.
3. The output power will reduce to body worn power level when top and bottom sensor pad be detected.
4. The sensors used to detect the proximity of the user's body at the front or back surface of the device use a detection threshold distance. The data shown in the sections below shows the distance(s). When front or back body worn condition is detected reduced power will be active.
5. The device employs proximity sensors also can detect the presence of the user's a finger or hand when handheld state at the front/back/top/bottom/left/right sides of the device. When front/back/top/bottom/left/right sides of handheld condition is detected reduced power will be active.
6. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance -1mm was performed.

	
Sensor/Handheld detection test set-up, Front and Back sides	Handheld detection test set-up, Left Side, Right Side, Bottom Side and Top Side

<P-Sensor>

Proximity Sensor Triggering Distance (mm)				
Position	Front		Back	
	Moving towards	Moving away	Moving towards	Moving away
Minimum	19	22	27	29

<Handheld for ANT 0>

Proximity Sensor Triggering Distance (mm)										
Position	Front		Back		Left Side		Right Side		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	19	22	26	28	9	11	9	10	24	26

<Handheld for ANT1>

Proximity Sensor Triggering Distance (mm)								
Position	Front		Back		Left Side		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	9	14	20	24	9	10	15	17

<Handheld for ANT2&3>

Proximity Sensor Triggering Distance (mm)								
Position	Front		Back		Right Side		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	5	9	15	18	5	9	12	15

7. RF Exposure Limits

7.1 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.

7.2 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.

8. Specific Absorption Rate (SAR)

8.1 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.

8.2 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:

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

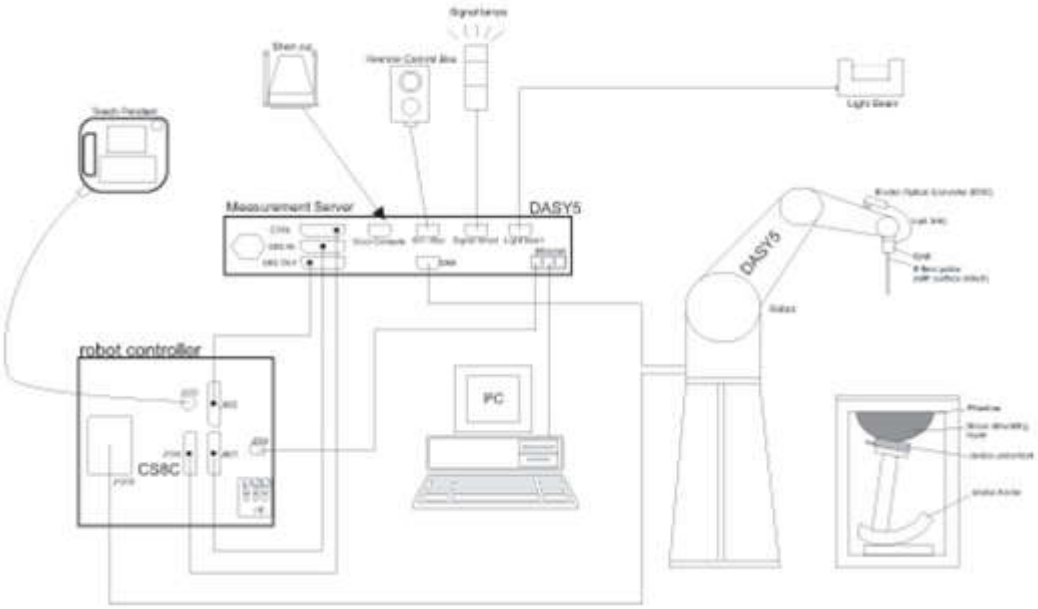
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

9. 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 DASY 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.

9.1 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.

<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

9.2 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

9.3 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

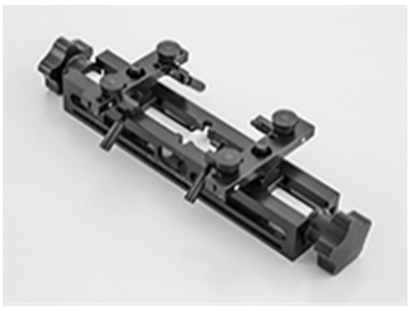
The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices or for evaluating transmitters operating at low frequencies. ELI is fully compatible with standard and all known tissue simulating liquids.

9.4 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

10. 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

10.1 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

10.2 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.

10.3 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.	

10.4 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	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
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.

10.5 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.

10.6 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.

11. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1099	Dec. 15, 2021	Dec. 14, 2024
SPEAG	835MHz System Validation Kit	D835V2	4d162	Dec. 17, 2021	Dec. 16, 2024
SPEAG	1750MHz System Validation Kit	D1750V2	1137	Oct. 19, 2021	Oct. 18, 2024
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	Dec. 20, 2021	Dec. 19, 2024
SPEAG	2300MHz System Validation Kit	D2300V2	1056	Oct. 20, 2021	Oct. 19, 2024
SPEAG	2450MHz System Validation Kit	D2450V2	1040	Apr. 25, 2023	Apr. 24, 2026
SPEAG	2600MHz System Validation Kit	D2600V2	1070	Dec. 20, 2021	Dec. 19, 2024
SPEAG	5000MHz System Validation Kit	D5GHzV2	1341	Dec. 13, 2021	Dec. 12, 2024
SPEAG	Data Acquisition Electronics	DAE4	1437	Nov. 23, 2022	Nov. 22, 2023
SPEAG	Dosimetric E-Field Probe	EX3DV4	3819	Jun. 06, 2023	Jun. 05, 2024
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1500	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201300653	Jul. 05, 2023	Jul. 04, 2024
Anritsu	Radio communication analyzer	MT8821C	6272416863	Apr. 03, 2023	Apr. 02, 2024
Agilent	Wireless Communication Test Set	E5515C	MY50267224	Jul. 05, 2023	Jul. 04, 2024
Keysight	Network Analyzer	E5071C	MY46523671	Oct. 17, 2022	Oct. 16, 2023
Keysight	Network Analyzer	E5071C	MY46523671	Oct. 16, 2023	Oct. 15, 2024
Speag	Dielectric Assessment KIT	DAK-3.5	1071	Feb. 20, 2023	Feb. 19, 2024
Agilent	Signal Generator	N5181A	MY50145381	Dec. 27, 2022	Dec. 26, 2023
Anritsu	Power Sensor	MA2411B	1542004	Dec. 27, 2022	Dec. 26, 2023
Anritsu	Power Meter	ML2495A	1339473	Dec. 27, 2022	Dec. 26, 2023
R&S	CBT BLUETOOTH TESTER	CBT	100963	Dec. 27, 2022	Dec. 26, 2023
R&S	Spectrum Analyzer	FSP7	100818	Jul. 05, 2023	Jul. 04, 2024
TES	Hygrometer	1310	200505600	Jul. 08, 2023	Jul. 07, 2024
Anymetre	Thermo-Hygrometer	JR593	2015030904	Jul. 08, 2023	Jul. 07, 2024
SPEAG	Device Holder	N/A	N/A	N/A	N/A
AR	Amplifier	5S1G4	0333096	Note 1	
Mini-Circuits	Amplifier	ZVE-3W-83+	599201528	Note 1	
ARRA	Power Divider	A3200-2	N/A	Note 1	
ET Industries	Dual Directional Coupler	C-058-10	N/A	Note 1	
Weinschel	Attenuator 1	3M-10	N/A	Note 1	
Weinschel	Attenuator 2	3M-20	N/A	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 source.
2. The dipole calibration interval can be extended to 3 years with justification according to KDB 865664 D01. The dipoles are also not physically damaged, or repaired during the interval. The justification data in appendix C can be found which the return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration for each dipole.

12. System Verification

12.1 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. 10.1. 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. 10.2.

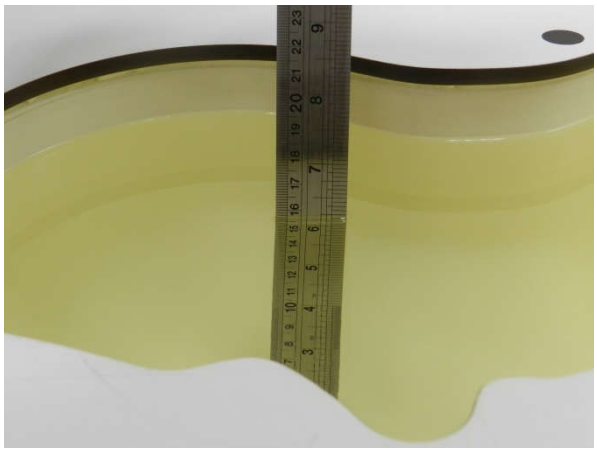


Fig 10.1Photo of Liquid Height for Head SAR

Fig 10.2 Photo of Liquid Height for Body SAR

12.2 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
900	40.3	57.9	0.2	1.4	0.2	0	0.97	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
For Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7
2600	68.1	0	0	0.1	0	31.8	2.16	52.5

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	22.2	0.916	43.557	0.89	41.90	2.92	3.95	±5	2023/10/12
835	Head	22.4	0.935	43.240	0.90	41.50	3.89	4.19	±5	2023/10/13
1750	Head	22.4	1.343	38.772	1.37	40.10	-1.97	-3.31	±5	2023/10/15
1900	Head	22.3	1.456	40.970	1.40	40.00	4.00	2.43	±5	2023/10/17
2300	Head	22.5	1.704	39.703	1.67	39.50	2.04	0.51	±5	2023/10/19
2450	Head	22.3	1.810	38.572	1.80	39.20	0.56	-1.60	±5	2023/10/20
2600	Head	22.3	1.922	40.023	1.96	39.00	-1.94	2.62	±5	2023/10/21
5250	Head	22.2	4.529	35.806	4.71	35.95	-3.84	-0.40	±5	2023/10/22
5600	Head	22.3	4.914	35.202	5.07	35.50	-3.08	-0.84	±5	2023/10/23
5750	Head	22.4	5.081	34.921	5.22	35.35	-2.66	-1.21	±5	2023/10/24

12.3 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 (%)
2023/10/12	750	Head	250	1099	3819	1437	2.220	8.540	8.88	3.98
2023/10/13	835	Head	250	4d162	3819	1437	2.580	9.640	10.32	7.05
2023/10/15	1750	Head	250	1137	3819	1437	8.880	36.500	35.52	-2.68
2023/10/17	1900	Head	250	5d182	3819	1437	10.200	39.600	40.8	3.03
2023/10/19	2300	Head	250	1056	3819	1437	12.200	48.800	48.8	0.00
2023/10/20	2450	Head	250	1040	3819	1437	13.100	52.700	52.4	-0.57
2023/10/21	2600	Head	250	1070	3819	1437	14.300	56.200	57.2	1.78
2023/10/22	5250	Head	100	1341	3819	1437	8.500	80.700	85	5.33
2023/10/23	5600	Head	100	1341	3819	1437	8.750	84.500	87.5	3.55
2023/10/24	5750	Head	100	1341	3819	1437	8.650	80.600	86.5	7.32

<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 (%)
2023/10/12	750	Head	250	1099	3819	1437	1.450	5.650	5.8	2.65
2023/10/13	835	Head	250	4d162	3819	1437	1.620	6.260	6.48	3.51
2023/10/15	1750	Head	250	1137	3819	1437	4.730	19.200	18.92	-1.46
2023/10/17	1900	Head	250	5d182	3819	1437	5.220	20.200	20.88	3.37
2023/10/19	2300	Head	250	1056	3819	1437	5.640	22.800	22.56	-1.05
2023/10/20	2450	Head	250	1040	3819	1437	5.870	24.600	23.48	-4.55
2023/10/21	2600	Head	250	1070	3819	1437	6.120	24.600	24.48	-0.49
2023/10/22	5250	Head	100	1341	3819	1437	2.420	23.100	24.2	4.76
2023/10/23	5600	Head	100	1341	3819	1437	2.480	24.000	24.8	3.33
2023/10/24	5750	Head	100	1341	3819	1437	2.420	22.700	24.2	6.61

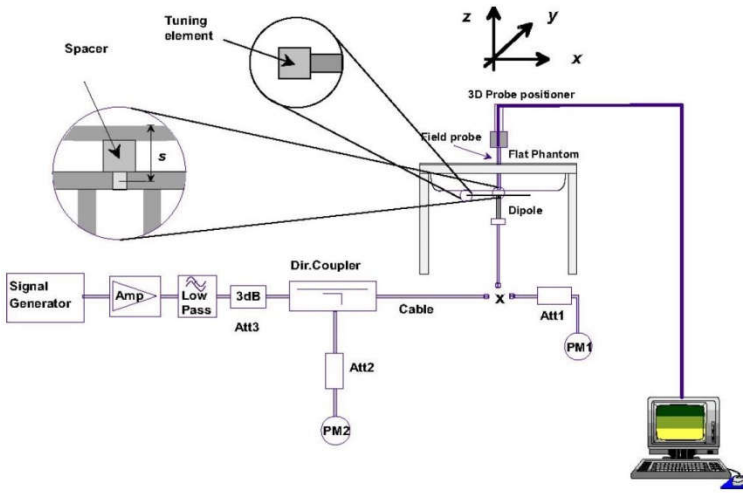


Fig 10.3.1 System Performance Check Setup

Fig 10.3.2 Setup Photo

13. RF Exposure Positions

13.1 Ear and handset reference point

Figure 11.1.1 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 11.1.2 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 11.1.3). 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 11.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

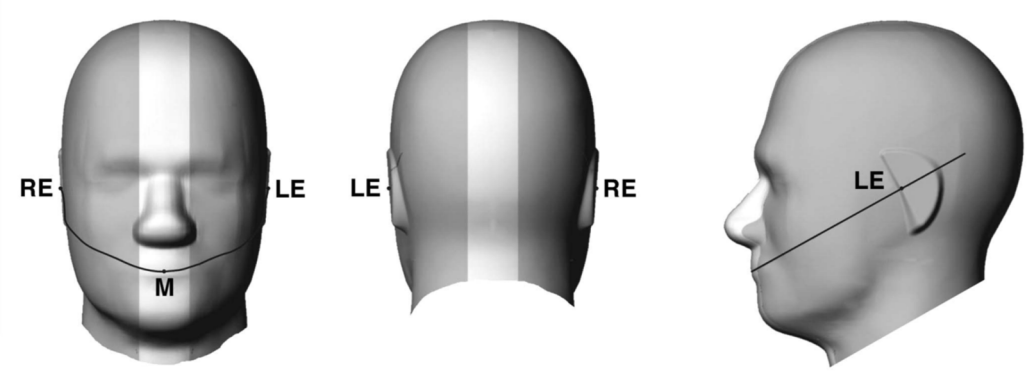


Fig 11.1.1 Front, back, and side views of SAM twin phantom

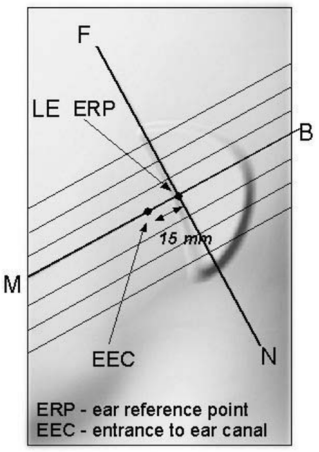


Fig 11.1.2 Close-up side view of phantom showing the ear region.

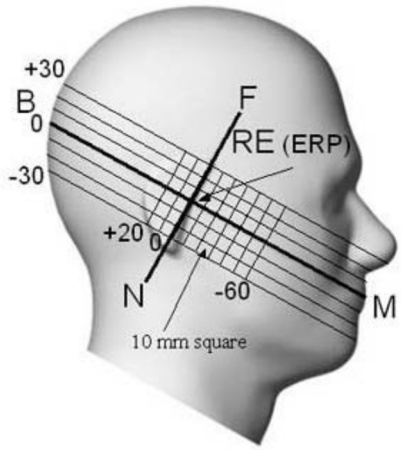


Fig 11.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

13.2 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 11.2.1 and Figure 11.2.2), 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 11.2.1). 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 11.2.2), 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 11.2.3), 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 11.2.3. The actual rotation angles should be documented in the test report.

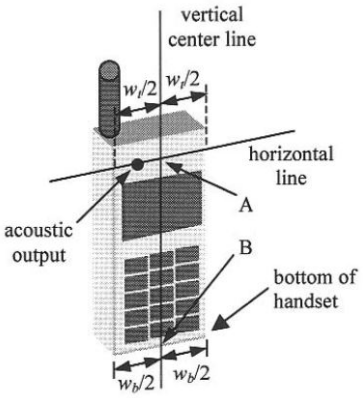


Fig 11.2.1 Handset vertical and horizontal reference lines—"fixed case

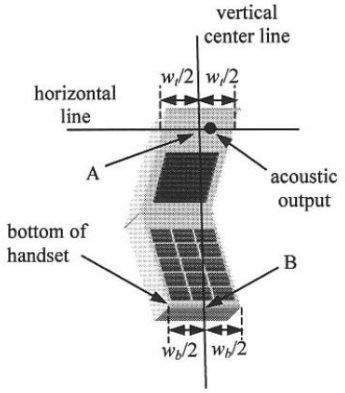


Fig 11.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

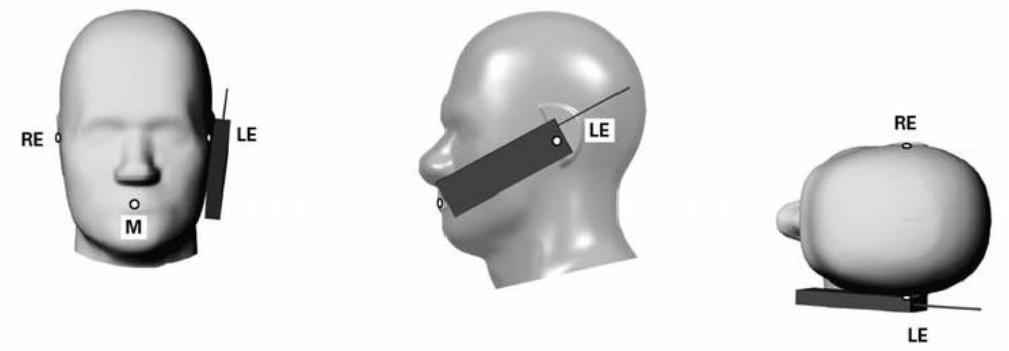


Fig 11.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

13.3 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 11.3.1. 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

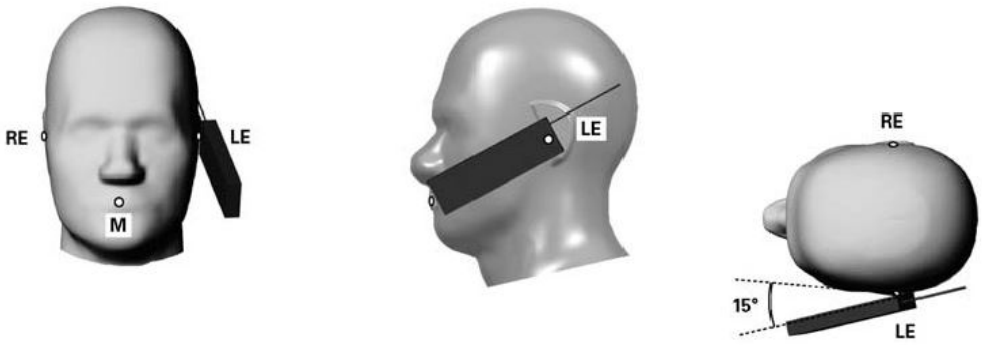


Fig 11.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

13.4 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 11.4). 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. 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.

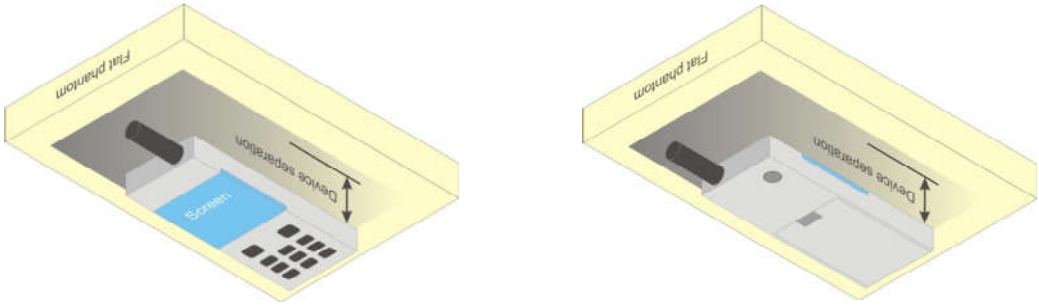


Fig 11.4 Body Worn Position

13.5 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 can provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets and 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.

13.6 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.

14. Conducted RF Output Power (Unit: dBm)

The detailed conducted power table can refer to Appendix E.

<GSM Conducted Power>

General Note:

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 GSM (1Tx slots) for GSM850/GSM1900 is 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 HSPA+ devices supporting 16 QAM in the uplink, power measurements procedure is according to the configurations in Table C.11.1.4 of 3GPP TS 34.121-1.
4. 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 Agilent E5515C 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.		

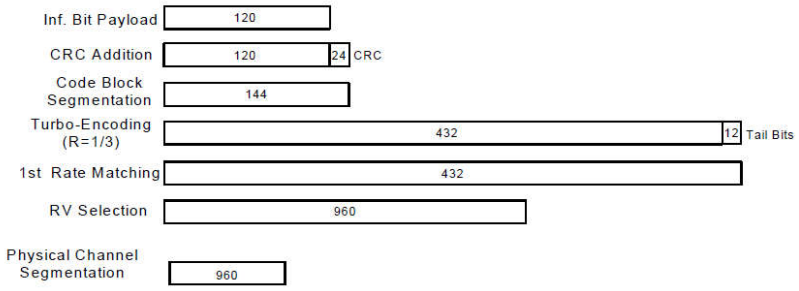


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

HSPA+ 3GPP release 7 (uplink category 7) 16QAM, 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 = 5.2E:HSPA+:UL with 16QAM
   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, C11.1.4, quoted from the TS 34.121-1 s5.2E
   iii. Set Channel Parms
   iv. Set Cell Power = -86 dBm
   v. Set Channel Type = HSPA
   vi. Set UE Target Power =21 dBm
   vii. Power Ctrl Mode= All Up Bits
   viii. Set Manual Uplink DPCH Bc/Bd = Manual
   ix. Set Manual Uplink DPCH Bc and Bd=15,15(for 34.121-1 v8.10.0 table C11.1.4 sub-test 1)
   x. Set HSPA Conn DL Channel Levels
   xi. Set HS-SCCH Configs
   xii. Set RB Test Mode Setup
   xiii. Set Common HSUPA Parameters
   xiv. Set Serving Grant
   xv. Confirm that E-TFCI is equal to the target E-TFCI of 105 for sub-test 1, and other subtest's E-TFCI
d. The transmitted maximum output power was recorded.

Table C.11.1.4: β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed}1: 30/15 β_{ed}2: 30/15	β_{ed}3: 24/15 β_{ed}4: 24/15	3.5	2.5	14	105	105

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with $\beta_{hs} = 30/15 * \beta_c$.
Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).
Note 3: DPDCH is not configured, therefore the β_c is set to 1 and β_d = 0 by default.
Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.
Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signaled to use the extrapolation algorithm.

Setup Configuration

<WCDMA Conducted Power>

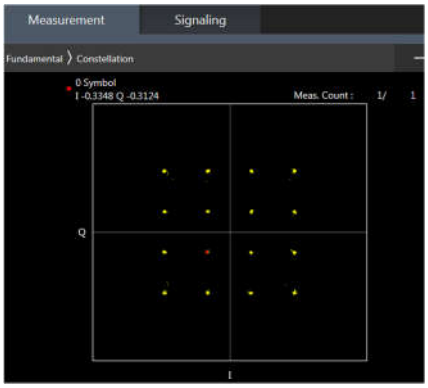
General Note:

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 / HSPA+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 / HSPA+ to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA / HSPA+) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+.

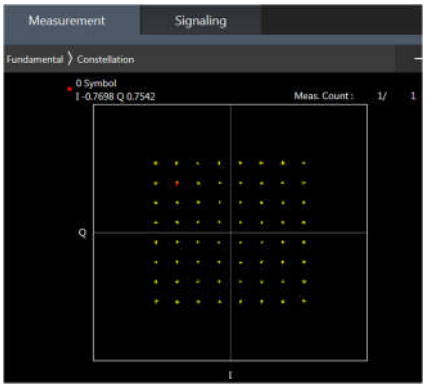
<LTE Conducted Power>

General Note:

1. Anritsu MT8820C 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 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 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 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 B4 SAR test was covered by B66; 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 May 2017 TCB workshop, for 16QAM and 64QAM 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.



16QAM



64QAM

<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.

2CC Downlink Carrier Aggregation	
Number	Combination
1	CA_2A-5A
2	CA_2A-12A
3	CA_2A-13A
4	CA_2A-14A
5	CA_2A-29A
6	CA_4A-29A
7	CA_4A-5A
8	CA_4A-12A
9	CA_5A-30A
10	CA_5A-66A
11	CA_12A-30A
12	CA_12A-66A
13	CA_14A-66A
14	CA_14A-30A
15	CA_4A-4A
16	CA_5B
17	CA_2C
18	CA_2A-2A
19	CA_66B
20	CA_66C
21	CA_66A-66A

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:

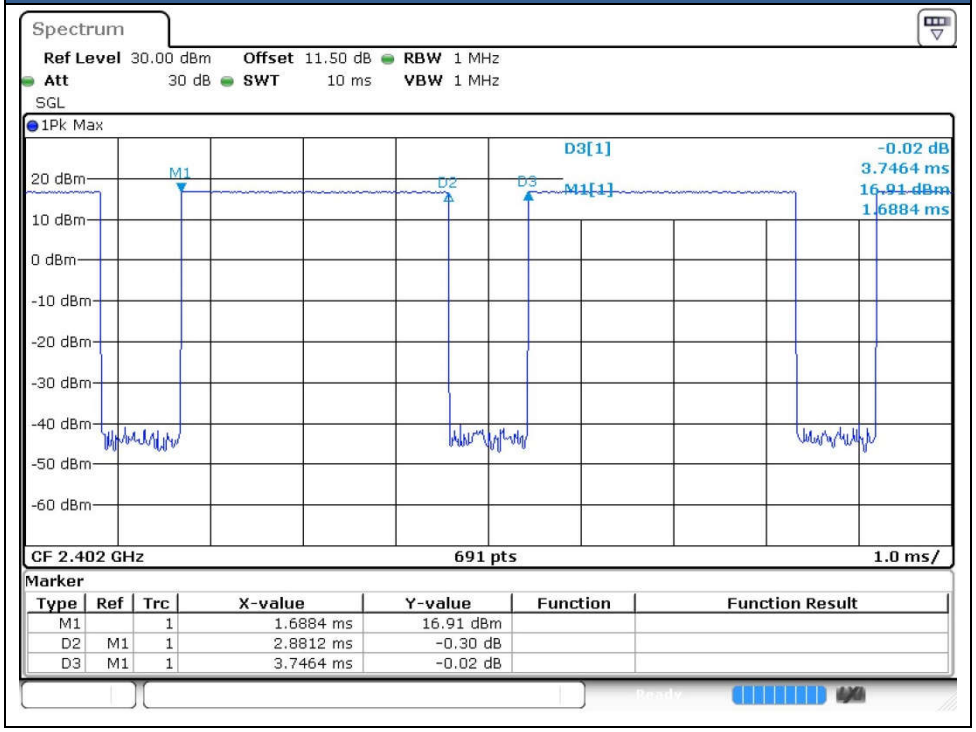
1. The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures. For “Not required”, SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) 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 in the initial test configuration. Additional output power measurements were not necessary.
2. 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.
3. 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).
4. 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.
5. 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.
6. The 2.4GHz/5GHz/BT WLAN can transmit in SISO antenna mode.

<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 76.91 % as following figure, according to Oct. 2016 TCB workshop for Bluetooth SAR scaling need further consideration and the maximum duty cycle is 100%, therefore the actual duty cycle will be scaled up to100% for Bluetooth reported SAR calculation.

Bluetooth time-domain plot



14. Antenna Location

The detailed antenna location information can refer to SAR Test Setup Photos.

15. SAR Test Results

General Note:

1. SAR spot check verification on the worst cases from the original model was performed to demonstrate the test data from original model remains representative for the variant model.
2. If the 1-g SAR spot check result “does not exceed 30%, but larger than 1.2 W/kg”, more spot check on the next-higher exposure position until the spot check result does not exceed 1.2 W/kg. Similarly, if the 10-g SAR spot check result “does not exceed 30%, but larger than 3.0 W/kg”, more spot check on the next-higher exposure position until the spot check result does not exceed 3.0 W/kg.
3. The Spot check results showed that Deviation of the SAR results did not exceed 30%, therefore referring to the guidance in the KDB inquiry, SAR data reuse is justified.
4. 1st as parent model, 2nd as variant model.

Full test 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/Bluetooth 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 WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
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 D01vg01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
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. The device implements the power management and proximity sensor /receiver detection/hotspot mode for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity). Details about the power management decision and sensor detection are provided in the operational description. And the device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to power table at appendix E.
6. For WLAN transmitter, while the device WLAN is transmitting simultaneously with the WWAN/BT antenna, the device power will be reduced power at head exposure conditions. For WLAN transmitter, while the device WLAN is transmitting simultaneously with the WWAN/BT antenna and Proximity sensors trigger, the device power will be reduced power at body-worn and extremity exposure conditions.
7. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15cm or an overall diagonal dimension > 16cm, when hotspot mode applies, 10-g product specific SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, in this report all the hotspot mode results are < 1.2W/kg.
8. 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 GSM1900, WCDMA Band II/IV/V, LTE Band 2/4/5/7/12 and WLAN 2.4GHz /WLAN 5.2/5.3/5.5/5.8GHz 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.
9. Although the headset SAR is greater than 0.8 W/kg, the headset SAR verified the worst of the non-headset SAR and less than non-headset SAR, so there is no need to be tested other channels.
10. The “Sim Tx” means Simultaneous Transmission in this report.
11. The following table “n/a” in the result means the SAR cube is too small to be detected.

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 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.
7. LTE B4 SAR test was covered by B66; 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

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. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

15.1 Head SAR

Plot No.	Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Average Power (dBm)	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)	Deviation
750MHz																					
	2nd	LTE Band 14	10M	QPSK	1	0		Right Cheek	0mm	Ant 0	1	Full Power	23330	793	22.84	24.00	1.306	-0.16	0.248	0.324	
	2nd	LTE Band 14	10M	QPSK	1	0		Right Tilted	0mm	Ant 0	1	Full Power	23330	793	22.84	24.00	1.306	-0.06	0.149	0.195	
	2nd	LTE Band 14	10M	QPSK	1	0		Left Cheek	0mm	Ant 0	1	Full Power	23330	793	22.84	24.00	1.306	0.13	0.224	0.293	
	2nd	LTE Band 14	10M	QPSK	1	0		Left Tilted	0mm	Ant 0	1	Full Power	23330	793	22.84	24.00	1.306	-0.03	0.220	0.287	
	2nd	LTE Band 14	10M	QPSK	25	0		Right Cheek	0mm	Ant 0	1	Full Power	23330	793	21.78	23.00	1.324	-0.03	0.138	0.183	
	2nd	LTE Band 14	10M	QPSK	25	0		Right Tilted	0mm	Ant 0	1	Full Power	23330	793	21.78	23.00	1.324	0.15	0.081	0.107	
	2nd	LTE Band 14	10M	QPSK	25	0		Left Cheek	0mm	Ant 0	1	Full Power	23330	793	21.78	23.00	1.324	-0.19	0.120	0.159	
	2nd	LTE Band 14	10M	QPSK	25	0		Left Tilted	0mm	Ant 0	1	Full Power	23330	793	21.78	23.00	1.324	-0.17	0.133	0.176	
01	2nd	LTE Band 14	10M	QPSK	1	0		Right Cheek	0mm	Ant 1	1	Full Power	23330	793	22.76	24.00	1.330	0.15	0.358	**0.476**	
	2nd	LTE Band 14	10M	QPSK	1	0		Right Tilted	0mm	Ant 1	1	Full Power	23330	793	22.76	24.00	1.330	0.1	0.315	0.419	
	2nd	LTE Band 14	10M	QPSK	1	0		Left Cheek	0mm	Ant 1	1	Full Power	23330	793	22.76	24.00	1.330	0.14	0.284	0.378	
	2nd	LTE Band 14	10M	QPSK	1	0		Left Tilted	0mm	Ant 1	1	Full Power	23330	793	22.76	24.00	1.330	-0.08	0.280	0.373	
	2nd	LTE Band 14	10M	QPSK	25	0		Right Cheek	0mm	Ant 1	1	Full Power	23330	793	21.70	23.00	1.349	0.04	0.189	0.255	
	2nd	LTE Band 14	10M	QPSK	25	0		Right Tilted	0mm	Ant 1	1	Full Power	23330	793	21.70	23.00	1.349	0.16	0.164	0.221	
	2nd	LTE Band 14	10M	QPSK	25	0		Left Cheek	0mm	Ant 1	1	Full Power	23330	793	21.70	23.00	1.349	-0.02	0.152	0.205	
	2nd	LTE Band 14	10M	QPSK	25	0		Left Tilted	0mm	Ant 1	1	Full Power	23330	793	21.70	23.00	1.349	0.19	0.142	0.192	
	1st	LTE Band 12	10M	QPSK	1	25		Right Cheek	0mm	Ant 0	1	Full Power	23095	707.5	23.00	24.00	1.259	0.03	0.169	0.213	4.23%
	2nd	LTE Band 12	10M	QPSK	1	25		Right Cheek	0mm	Ant 0	1	Full Power	23095	707.5	23.00	24.00	1.259	0.09	0.162	0.204	
	1st	LTE Band 12	10M	QPSK	1	25		Right Cheek	0mm	Ant 1	1	Full Power	23095	707.5	22.78	24.00	1.324	0.06	0.623	0.825	4.36%
02	2nd	LTE Band 12	10M	QPSK	1	25		Right Cheek	0mm	Ant 1	1	Full Power	23095	707.5	22.78	24.00	1.324	-0.02	0.596	**0.789**	
	1st	LTE Band 13	10M	QPSK	1	25		Right Cheek	0mm	Ant 0	1	Full Power	23230	782	22.87	24.00	1.297	-0.01	0.261	0.339	2.36%
	2nd	LTE Band 13	10M	QPSK	1	25		Right Cheek	0mm	Ant 0	1	Full Power	23230	782	22.87	24.00	1.297	0.14	0.255	0.331	
	1st	LTE Band 13	10M	QPSK	1	25		Right Cheek	0mm	Ant 1	1	Full Power	23230	782	22.86	24.00	1.300	-0.01	0.428	0.556	3.42%
03	2nd	LTE Band 13	10M	QPSK	1	25		Right Cheek	0mm	Ant 1	1	Full Power	23230	782	22.86	24.00	1.300	0.1	0.413	**0.537**	
835MHz																					
	1st	GSM850	-	-	-	-	GPRS (2 Tx slots)	Right Cheek	0mm	Ant 0	1	Full Power	251	848.8	29.79	31.00	1.321	0.11	0.274	0.362	0.28%
04	2nd	GSM850	-	-	-	-	GPRS (2 Tx slots)	Right Cheek	0mm	Ant 0	1	Full Power	251	848.8	29.79	31.00	1.321	-0.01	0.273	**0.361**	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	1	Full Power	4233	846.6	23.16	24.00	1.213	0.01	0.379	0.460	5.65%
05	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	1	Full Power	4233	846.6	23.16	24.00	1.213	0.01	0.358	**0.434**	
	1st	LTE Band 26	15M	QPSK	1	37		Right Cheek	0mm	Ant 0	1	Full Power	26965	841.5	23.24	24.00	1.191	0.1	0.371	0.442	4.07%
	2nd	LTE Band 5	10M	QPSK	1	25		Right Cheek	0mm	Ant 0	1	Full Power	20525	836.5	23.24	24.00	1.191	-0.02	0.356	0.424	
	1st	LTE Band 26	15M	QPSK	1	37		Right Cheek	0mm	Ant 1	1	Rec on	26965	841.5	21.98	23.00	1.265	-0.17	0.804	1.017	
06	2nd	LTE Band 5	10M	QPSK	1	25		Right Cheek	0mm	Ant 1	1	Rec on	20525	836.5	21.98	23.00	1.265	0.03	0.718	**0.908**	10.72%
	2nd	LTE Band 5	10M	QPSK	1	25		Right Cheek	0mm	Ant 1	2	Rec on	20525	836.5	21.98	23.00	1.265	-0.12	0.566	0.716	
1750MHz																					
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	1	Full Power	1312	1712.4	23.38	24.00	1.153	0.11	0.178	0.205	1.46%
07	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	1	Full Power	1312	1712.4	23.38	24.00	1.153	0.06	0.175	**0.202**	
	1st	LTE Band 66	20M	QPSK	1	49		Right Cheek	0mm	Ant 0	1	Full Power	132572	1770	22.87	24.00	1.297	-0.02	0.267	0.346	1.73%
	2nd	LTE Band 66	20M	QPSK	1	49		Right Cheek	0mm	Ant 0	1	Full Power	132572	1770	22.87	24.00	1.297	0.08	0.262	0.340	
	1st	LTE Band 66	20M	QPSK	1	49		Right Tilted	0mm	Ant 1	1	Rec on	132572	1770	15.28	16.50	1.324	0.12	0.722	0.956	8.05%
08	2nd	LTE Band 66	20M	QPSK	1	49		Right Tilted	0mm	Ant 1	1	Rec on	132572	1770	15.28	16.50	1.324	-0.08	0.664	**0.879**	
1900MHz																					
	1st	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Left Cheek	0mm	Ant 0	1	Full Power	810	1909.8	27.00	28.00	1.259	0.02	0.179	0.225	2.67%
09	2nd	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Left Cheek	0mm	Ant 0	1	Full Power	810	1909.8	27.00	28.00	1.259	0.01	0.174	**0.219**	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 0	1	Full Power	9538	1907.6	23.20	24.00	1.202	0.15	0.405	0.487	1.64%
10	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 0	1	Full Power	9538	1907.6	23.20	24.00	1.202	-0.14	0.398	**0.479**	
	1st	LTE Band 25	20M	QPSK	1	49		Left Cheek	0mm	Ant 0	1	Full Power	26590	1905	22.43	24.00	1.435	0.06	0.403	0.579	0.86%
	2nd	LTE Band 2	20M	QPSK	1	49		Left Cheek	0mm	Ant 0	1	Full Power	18900	1880	22.43	24.00	1.435	-0.1	0.400	0.574	
	1st	LTE Band 25	20M	QPSK	1	49		Right Tilted	0mm	Ant 1	1	Rec on	26140	1860	16.65	18.00	1.365	0.18	0.732	0.999	4.90%
11	2nd	LTE Band 2	20M	QPSK	1	49		Right Tilted	0mm	Ant 1	1	Rec on	18900	1880	16.65	18.00	1.365	0.01	0.696	**0.950**	

	2nd	LTE Band 2	20M	QPSK	1	49		Right Tilted	0mm	Ant 1	2	Rec on	18900	1880	16.65	18.00	1.365	-0.08	0.651	0.888	
2300MHz																					
	2nd	LTE Band 30	10M	QPSK	1	0		Right Cheek	0mm	Ant 0	1	Full Power	27710	2310	22.78	24.00	1.324	-0.17	0.293	0.388	
	2nd	LTE Band 30	10M	QPSK	1	0		Right Tilted	0mm	Ant 0	1	Full Power	27710	2310	22.78	24.00	1.324	0.08	0.205	0.271	
12	2nd	LTE Band 30	10M	QPSK	1	0		Left Cheek	0mm	Ant 0	1	Full Power	27710	2310	22.78	24.00	1.324	-0.19	0.448	**0.593**	
	2nd	LTE Band 30	10M	QPSK	1	0		Left Tilted	0mm	Ant 0	1	Full Power	27710	2310	22.78	24.00	1.324	0.19	0.264	0.350	
	2nd	LTE Band 30	10M	QPSK	25	0		Right Cheek	0mm	Ant 0	1	Full Power	27710	2310	21.52	23.00	1.406	-0.07	0.186	0.262	
	2nd	LTE Band 30	10M	QPSK	25	0		Right Tilted	0mm	Ant 0	1	Full Power	27710	2310	21.52	23.00	1.406	0.09	0.134	0.188	
	2nd	LTE Band 30	10M	QPSK	25	0		Left Cheek	0mm	Ant 0	1	Full Power	27710	2310	21.52	23.00	1.406	-0.07	0.360	0.506	
	2nd	LTE Band 30	10M	QPSK	25	0		Left Tilted	0mm	Ant 0	1	Full Power	27710	2310	21.52	23.00	1.406	-0.08	0.169	0.238	
2600MHz																					
	1st	LTE Band 7	20M	QPSK	1	49		Right Cheek	0mm	Ant 0	1	Rec on	20850	2510	22.18	23.50	1.355	-0.15	0.101	0.137	0.73%
13	2nd	LTE Band 7	20M	QPSK	1	49		Right Cheek	0mm	Ant 0	1	Rec on	20850	2510	22.18	23.50	1.355	0.03	0.100	**0.136**	

Plot No.	Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Sample	Average Power (dBm)	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)
WLAN &Bluetooth																		
	2nd	Bluetooth	DH5 1Mbps	Right Cheek	0mm	Ant 3	1	Full Power	0	2402	17.30	18.00	1.175	76.91	1.300	0.05	0.054	0.082
	2nd	Bluetooth	DH5 1Mbps	Right Tilted	0mm	Ant 3	1	Full Power	0	2402	17.30	18.00	1.175	76.91	1.300	0.09	0.054	0.082
14	2nd	Bluetooth	DH5 1Mbps	Left Cheek	0mm	Ant 3	1	Full Power	0	2402	17.30	18.00	1.175	76.91	1.300	-0.07	0.103	**0.157**
	2nd	Bluetooth	DH5 1Mbps	Left Tilted	0mm	Ant 3	1	Full Power	0	2402	17.30	18.00	1.175	76.91	1.300	0.12	0.085	0.130
	2nd	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 3	1	Full Power	6	2437	19.60	21.00	1.380	98.27	1.018	0.11	0.394	0.554
	2nd	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 3	1	Full Power	6	2437	19.60	21.00	1.380	98.27	1.018	0.02	0.334	0.469
15	2nd	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 3	1	Full Power	6	2437	19.60	21.00	1.380	98.27	1.018	-0.03	0.975	**1.370**
	2nd	WLAN2.4GHz	802.11g 6Mbps	Left Cheek	0mm	Ant 3	1	Full Power	6	2437	19.10	21.00	1.549	98.26	1.018	0.03	0.715	1.127
	2nd	WLAN2.4GHz	802.11n-HT20 MCS0	Left Cheek	0mm	Ant 3	1	Full Power	6	2437	19.20	21.00	1.514	98.13	1.019	-0.05	0.661	1.019
	2nd	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 3	2	Full Power	6	2437	19.60	21.00	1.380	98.27	1.018	-0.19	0.851	1.196
	2nd	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 3	1	Full Power	6	2437	19.60	21.00	1.380	98.27	1.018	0.02	0.562	0.790
	2nd	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 3	1	Full Power	1	2412	19.50	21.00	1.413	98.27	1.018	0.15	0.696	1.001
	2nd	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 3	1	Full Power	11	2462	19.60	21.00	1.380	98.27	1.018	0.07	0.611	0.859
	2nd	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 3	1	Sim TX	6	2437	13.60	15.00	1.380	98.27	1.018	-0.01	0.141	0.198
	2nd	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 3	1	Sim TX	6	2437	13.60	15.00	1.380	98.27	1.018	0.09	0.120	0.169
	2nd	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 3	1	Sim TX	6	2437	13.60	15.00	1.380	98.27	1.018	-0.05	0.260	0.365
	2nd	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 3	1	Sim TX	6	2437	13.60	15.00	1.380	98.27	1.018	-0.14	0.202	0.284
	2nd	WLAN5.3GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 2	1	Full Power	52	5260	17.60	19.00	1.382	98.26	1.018	-0.13	0.182	0.256
	2nd	WLAN5.3GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 2	1	Full Power	52	5260	17.60	19.00	1.382	98.26	1.018	-0.1	0.190	0.267
16	2nd	WLAN5.3GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 2	1	Full Power	52	5260	17.60	19.00	1.382	98.26	1.018	0.13	0.637	**0.896**
	2nd	WLAN5.3GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 2	2	Full Power	52	5260	17.60	19.00	1.382	98.26	1.018	0.03	0.518	0.729
	2nd	WLAN5.3GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 2	1	Full Power	52	5260	17.60	19.00	1.382	98.26	1.018	0.19	0.343	0.482
	2nd	WLAN5.3GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 2	1	Full Power	60	5300	17.45	19.00	1.430	98.26	1.018	0.08	0.530	0.772
	2nd	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 2	1	Sim TX	58	5290	14.22	16.00	1.507	92.42	1.082	0.15	0.089	0.145
	2nd	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 2	1	Sim TX	58	5290	14.22	16.00	1.507	92.42	1.082	0.09	0.093	0.152
	2nd	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 2	1	Sim TX	58	5290	14.22	16.00	1.507	92.42	1.082	0.16	0.250	0.408
	2nd	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 2	1	Sim TX	58	5290	14.22	16.00	1.507	92.42	1.082	0.13	0.169	0.275
	2nd	WLAN5.5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 2	1	Full Power	100	5500	17.71	19.00	1.347	98.26	1.018	-0.06	0.068	0.093
	2nd	WLAN5.5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 2	1	Full Power	100	5500	17.71	19.00	1.347	98.26	1.018	0.06	0.071	0.097
17	2nd	WLAN5.5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 2	1	Full Power	100	5500	17.71	19.00	1.347	98.26	1.018	-0.04	0.145	**0.199**
	2nd	WLAN5.5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 2	1	Full Power	100	5500	17.71	19.00	1.347	98.26	1.018	0.03	0.129	0.177
	2nd	WLAN5.8GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 2	1	Full Power	157	5785	17.87	19.00	1.298	98.26	1.018	0.18	0.107	0.141
	2nd	WLAN5.8GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 2	1	Full Power	157	5785	17.87	19.00	1.298	98.26	1.018	-0.05	0.133	0.176
18	2nd	WLAN5.8GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 2	1	Full Power	157	5785	17.87	19.00	1.298	98.26	1.018	-0.04	0.311	**0.411**
	2nd	WLAN5.8GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 2	1	Full Power	157	5785	17.87	19.00	1.298	98.26	1.018	0.18	0.171	0.226

15.2 Hotspot SAR

Plot No.	Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power State	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)	Deviation
750MHz																					
	2nd	LTE Band 14	10M	QPSK	1	0	-	Front	5mm	Ant 0	1	Full Power	23330	793	22.84	24.00	1.306	-0.16	0.303	0.396	
19	2nd	LTE Band 14	10M	QPSK	1	0	-	Back	5mm	Ant 0	1	Full Power	23330	793	22.84	24.00	1.306	-0.03	0.794	**1.037**	
	2nd	LTE Band 14	10M	QPSK	1	0	-	Left Side	5mm	Ant 0	1	Full Power	23330	793	22.84	24.00	1.306	0.01	0.347	0.453	
	2nd	LTE Band 14	10M	QPSK	1	0	-	Right Side	5mm	Ant 0	1	Full Power	23330	793	22.84	24.00	1.306	-0.02	0.522	0.682	
	2nd	LTE Band 14	10M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	1	Full Power	23330	793	22.84	24.00	1.306	0.01	0.217	0.283	
	2nd	LTE Band 14	10M	QPSK	25	0	-	Front	5mm	Ant 0	1	Full Power	23330	793	21.78	23.00	1.324	-0.12	0.167	0.221	
	2nd	LTE Band 14	10M	QPSK	25	0	-	Back	5mm	Ant 0	1	Full Power	23330	793	21.78	23.00	1.324	-0.02	0.365	0.483	
	2nd	LTE Band 14	10M	QPSK	25	0	-	Left Side	5mm	Ant 0	1	Full Power	23330	793	21.78	23.00	1.324	0.03	0.189	0.250	
	2nd	LTE Band 14	10M	QPSK	25	0	-	Right Side	5mm	Ant 0	1	Full Power	23330	793	21.78	23.00	1.324	-0.08	0.278	0.368	
	2nd	LTE Band 14	10M	QPSK	25	0	-	Bottom Side	5mm	Ant 0	1	Full Power	23330	793	21.78	23.00	1.324	0.18	0.126	0.167	
	2nd	LTE Band 14	10M	QPSK	50	0	-	Back	5mm	Ant 0	1	Full Power	23330	793	21.62	23.00	1.374	0.15	0.387	0.532	
	2nd	LTE Band 14	10M	QPSK	1	0	-	Front	5mm	Ant 1	1	Hotspot	23330	793	22.22	23.50	1.343	0.06	0.170	0.228	
	2nd	LTE Band 14	10M	QPSK	1	0	-	Back	5mm	Ant 1	1	Hotspot	23330	793	22.22	23.50	1.343	0.11	0.480	0.645	
	2nd	LTE Band 14	10M	QPSK	1	0	-	Left Side	5mm	Ant 1	1	Hotspot	23330	793	22.22	23.50	1.343	0.04	0.102	0.137	
	2nd	LTE Band 14	10M	QPSK	1	0	-	Right Side	5mm	Ant 1	1	Hotspot	23330	793	22.22	23.50	1.343	-0.03	0.072	0.097	
	2nd	LTE Band 14	10M	QPSK	1	0	-	Top Side	5mm	Ant 1	1	Hotspot	23330	793	22.22	23.50	1.343	-0.11	0.338	0.454	
	2nd	LTE Band 14	10M	QPSK	25	0	-	Front	5mm	Ant 1	1	Full Power	23330	793	21.70	23.00	1.349	-0.06	0.101	0.136	
	2nd	LTE Band 14	10M	QPSK	25	0	-	Back	5mm	Ant 1	1	Full Power	23330	793	21.70	23.00	1.349	-0.16	0.292	0.394	
	2nd	LTE Band 14	10M	QPSK	25	0	-	Left Side	5mm	Ant 1	1	Full Power	23330	793	21.70	23.00	1.349	-0.07	0.064	0.086	
	2nd	LTE Band 14	10M	QPSK	25	0	-	Right Side	5mm	Ant 1	1	Full Power	23330	793	21.70	23.00	1.349	0.11	0.046	0.062	
	2nd	LTE Band 14	10M	QPSK	25	0	-	Top Side	5mm	Ant 1	1	Full Power	23330	793	21.70	23.00	1.349	-0.17	0.254	0.343	
	1st	LTE Band 12	10M	QPSK	1	25	-	Back	5mm	Ant 0	1	Full Power	23095	707.5	23.00	24.00	1.259	-0.13	0.638	0.803	0.25%
20	2nd	LTE Band 12	10M	QPSK	1	25	-	Back	5mm	Ant 0	1	Full Power	23095	707.5	23.00	24.00	1.259	0.06	0.636	**0.801**	
	1st	LTE Band 12	10M	QPSK	1	25	-	Back	5mm	Ant 1	1	Hotspot	23095	707.5	19.18	20.50	1.355	0.11	0.474	0.642	9.19%
	2nd	LTE Band 12	10M	QPSK	1	25	-	Back	5mm	Ant 1	1	Hotspot	23095	707.5	19.18	20.50	1.355	0.01	0.430	0.583	
	1st	LTE Band 13	10M	QPSK	1	25	-	Back	5mm	Ant 0	1	Full Power	23230	782	22.87	24.00	1.297	0.06	0.644	0.835	1.20%
21	2nd	LTE Band 13	10M	QPSK	1	25	-	Back	5mm	Ant 0	1	Full Power	23230	782	22.87	24.00	1.297	0.09	0.636	**0.825**	
	1st	LTE Band 13	10M	QPSK	1	25	-	Back	5mm	Ant 1	1	Hotspot	23230	782	20.50	22.00	1.413	-0.06	0.466	0.658	12.16%
	2nd	LTE Band 13	10M	QPSK	1	25	-	Back	5mm	Ant 1	1	Hotspot	23230	782	20.50	22.00	1.413	-0.14	0.409	0.578	
835MHz																					
	1st	GSM850	-	-	-	-	GPRS (2 Tx slots)	Back	5mm	Ant 0	1	Full Power	251	848.8	29.79	31.00	1.321	-0.05	0.720	0.951	0.21%
22	2nd	GSM850	-	-	-	-	GPRS (2 Tx slots)	Back	5mm	Ant 0	1	Full Power	251	848.8	29.79	31.00	1.321	-0.06	0.718	**0.949**	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	1	Full Power	4233	846.6	23.16	24.00	1.213	0.15	1.050	1.274	
23	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	1	Full Power	4233	846.6	23.16	24.00	1.213	-0.14	1.040	**1.262**	0.94%
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	2	Full Power	4233	846.6	23.16	24.00	1.213	0.09	1.020	1.238	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Side	5mm	Ant 0	1	Full Power	4182	836.4	23.18	24.00	1.208	0.04	0.499	0.603	5.47%
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Side	5mm	Ant 0	1	Full Power	4182	836.4	23.18	24.00	1.208	-0.13	0.472	0.570	
	1st	LTE Band 26	15M	QPSK	1	37	-	Back	5mm	Ant 0	1	Full Power	26865	831.5	23.28	24.00	1.180	0.14	0.995	1.174	5.45%
24	2nd	LTE Band 5	10M	QPSK	1	25	-	Back	5mm	Ant 0	1	Full Power	20525	836.5	23.28	24.00	1.180	-0.12	0.940	**1.110**	
	1st	LTE Band 26	15M	QPSK	1	37	-	Back	5mm	Ant 1	1	Hotspot	26965	841.5	18.59	19.50	1.233	-0.11	0.564	0.695	11.65%
	2nd	LTE Band 5	10M	QPSK	1	25	-	Back	5mm	Ant 1	1	Hotspot	20525	836.5	18.59	19.50	1.233	0.03	0.498	0.614	
1750MHz																					
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	1	Hotspot	1312	1712.4	13.78	14.50	1.180	0.13	1.140	1.346	11.44%
25	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	1	Hotspot	1312	1712.4	13.78	14.50	1.180	0.01	1.010	**1.192**	
	1st	LTE Band 66	20M	QPSK	1	49	-	Bottom Side	5mm	Ant 0	1	Hotspot	132072	1720	12.28	13.50	1.324	-0.05	0.973	1.289	8.07%
26	2nd	LTE Band 66	20M	QPSK	1	49	-	Bottom Side	5mm	Ant 0	1	Hotspot	132072	1720	12.28	13.50	1.324	0	0.895	**1.185**	
	1st	LTE Band 66	20M	QPSK	1	49	-	Back	5mm	Ant 1	1	Hotspot	132072	1720	10.80	12.00	1.318	0.11	0.519	0.684	4.97%
	2nd	LTE Band 66	20M	QPSK	1	49	-	Back	5mm	Ant 1	1	Hotspot	132072	1720	10.80	12.00	1.318	0.06	0.493	0.650	
1900MHz																					
	1st	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Bottom Side	5mm	Ant 0	1	Hotspot	810	1909.8	25.07	26.00	1.239	0.15	1.160	1.437	2.57%
27	2nd	GSM1900	-	-	-	-	GPRS (2 Tx	Bottom Side	5mm	Ant 0	1	Hotspot	810	1909.8	25.07	26.00	1.239	-0.02	1.130	**1.400**	

							slots)														
	2nd	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Bottom Side	5mm	Ant 0	2	Hotspot	810	1909.8	25.07	26.00	1.239	0.03	1.110	1.375	
	1st	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Back	5mm	Ant 0	1	Hotspot	810	1909.8	25.07	26.00	1.239	0.08	0.784	0.971	3.40%
	2nd	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Back	5mm	Ant 0	1	Hotspot	810	1909.8	25.07	26.00	1.239	0.09	0.757	0.938	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	1	Hotspot	9262	1852.4	15.73	16.50	1.194	0.05	1.080	1.290	23.49%
28	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	1	Hotspot	9262	1852.4	15.73	16.50	1.194	-0.09	0.827	**0.987**	
	1st	LTE Band 25	20M	QPSK	1	49	-	Bottom Side	5mm	Ant 0	1	Hotspot	26140	1860	14.07	15.50	1.390	-0.09	0.957	1.330	12.56%
29	2nd	LTE Band 2	20M	QPSK	1	49	-	Bottom Side	5mm	Ant 0	1	Hotspot	18900	1880	14.07	15.50	1.390	-0.14	0.837	**1.163**	
	1st	LTE Band 25	20M	QPSK	1	49	-	Top Side	5mm	Ant 1	1	Hotspot	26140	1860	12.89	14.00	1.291	0.11	0.541	0.699	11.30%
	2nd	LTE Band 2	20M	QPSK	1	49	-	Top Side	5mm	Ant 1	1	Hotspot	18900	1880	12.89	14.00	1.291	-0.08	0.480	0.620	
2300MHz																					
	2nd	LTE Band 30	10M	QPSK	1	0	-	Front	5mm	Ant 0	1	Hotspot	27710	2310	18.33	19.50	1.309	-0.16	0.497	0.651	
30	2nd	LTE Band 30	10M	QPSK	1	0	-	Back	5mm	Ant 0	1	Hotspot	27710	2310	18.33	19.50	1.309	-0.12	1.080	**1.414**	
	2nd	LTE Band 30	10M	QPSK	1	0	-	Back	5mm	Ant 0	2	Hotspot	27710	2310	18.33	19.50	1.309	-0.18	0.888	1.163	
	2nd	LTE Band 30	10M	QPSK	1	0	-	Left Side	5mm	Ant 0	1	Hotspot	27710	2310	18.33	19.50	1.309	-0.17	0.615	0.805	
	2nd	LTE Band 30	10M	QPSK	1	0	-	Right Side	5mm	Ant 0	1	Hotspot	27710	2310	18.33	19.50	1.309	-0.01	0.068	0.089	
	2nd	LTE Band 30	10M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	1	Hotspot	27710	2310	18.33	19.50	1.309	-0.04	0.749	0.981	
	2nd	LTE Band 30	10M	QPSK	25	0	-	Front	5mm	Ant 0	1	Hotspot	27710	2310	18.26	19.50	1.330	-0.1	0.497	0.661	
	2nd	LTE Band 30	10M	QPSK	25	0	-	Back	5mm	Ant 0	1	Hotspot	27710	2310	18.26	19.50	1.330	-0.17	1.000	1.330	
	2nd	LTE Band 30	10M	QPSK	25	0	-	Left Side	5mm	Ant 0	1	Hotspot	27710	2310	18.26	19.50	1.330	0.02	0.605	0.805	
	2nd	LTE Band 30	10M	QPSK	25	0	-	Right Side	5mm	Ant 0	1	Hotspot	27710	2310	18.26	19.50	1.330	0.08	0.070	0.093	
	2nd	LTE Band 30	10M	QPSK	25	0	-	Bottom Side	5mm	Ant 0	1	Hotspot	27710	2310	18.26	19.50	1.330	0.09	0.753	1.002	
	2nd	LTE Band 30	10M	QPSK	50	0	-	Back	5mm	Ant 0	1	Hotspot	27710	2310	18.29	19.50	1.321	-0.09	0.966	1.276	
	2nd	LTE Band 30	10M	QPSK	50	0	-	Left Side	5mm	Ant 0	1	Hotspot	27710	2310	18.29	19.50	1.321	0.08	0.605	0.799	
	2nd	LTE Band 30	10M	QPSK	50	0	-	Bottom Side	5mm	Ant 0	1	Hotspot	27710	2310	18.29	19.50	1.321	-0.19	0.709	0.937	
2600MHz																					
	1st	LTE Band 7	20M	QPSK	1	49	-	Bottom Side	5mm	Ant 0	1	Hotspot	21350	2560	10.09	11.50	1.384	-0.04	1.000	1.384	20.23%
31	2nd	LTE Band 7	20M	QPSK	1	49	-	Bottom Side	5mm	Ant 0	1	Hotspot	21350	2560	10.09	11.50	1.384	0.03	0.798	**1.104**	

Plot No.	Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Sample	Power State	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)
WLAN &Bluetooth																		
	2nd	Bluetooth	DH5 1Mbps	Front	5mm	Ant 3	1	Full Power	0	2402	17.30	18.00	1.175	76.91	1.300	0.03	0.055	0.084
32	2nd	Bluetooth	DH5 1Mbps	Back	5mm	Ant 3	1	Full Power	0	2402	17.30	18.00	1.175	76.91	1.300	0.03	0.125	**0.191**
	2nd	Bluetooth	DH5 1Mbps	Left Side	5mm	Ant 3	1	Full Power	0	2402	17.30	18.00	1.175	76.91	1.300	-	n/a	n/a
	2nd	Bluetooth	DH5 1Mbps	Right Side	5mm	Ant 3	1	Full Power	0	2402	17.30	18.00	1.175	76.91	1.300	0.03	0.058	0.089
	2nd	Bluetooth	DH5 1Mbps	Top Side	5mm	Ant 3	1	Full Power	0	2402	17.30	18.00	1.175	76.91	1.300	0.03	0.022	0.034
	2nd	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 3	1	Hotspot	6	2437	16.10	17.50	1.380	98.27	1.018	0.19	0.404	0.568
33	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3	1	Hotspot	6	2437	16.10	17.50	1.380	98.27	1.018	0.17	0.500	**0.703**
	2nd	WLAN2.4GHz	802.11b 1Mbps	Left Side	5mm	Ant 3	1	Hotspot	6	2437	16.10	17.50	1.380	98.27	1.018	0.01	0.051	0.072
	2nd	WLAN2.4GHz	802.11b 1Mbps	Right Side	5mm	Ant 3	1	Hotspot	6	2437	16.10	17.50	1.380	98.27	1.018	-0.04	0.385	0.541
	2nd	WLAN2.4GHz	802.11b 1Mbps	Top Side	5mm	Ant 3	1	Hotspot	6	2437	16.10	17.50	1.380	98.27	1.018	-0.09	0.264	0.371
	2nd	WLAN5.2GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 2	1	Hotspot	42	5210	12.63	14.00	1.371	92.42	1.082	0.08	0.102	0.151
34	2nd	WLAN5.2GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 2	1	Hotspot	42	5210	12.63	14.00	1.371	92.42	1.082	0.18	0.317	**0.470**
	2nd	WLAN5.2GHz	802.11ac-VHT80 MCS0	Left Side	5mm	Ant 2	1	Hotspot	42	5210	12.63	14.00	1.371	92.42	1.082	-	n/a	n/a
	2nd	WLAN5.2GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 2	1	Hotspot	42	5210	12.63	14.00	1.371	92.42	1.082	-0.16	0.254	0.377
	2nd	WLAN5.2GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 2	1	Hotspot	42	5210	12.63	14.00	1.371	92.42	1.082	0.17	0.123	0.182
	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 2	1	Hotspot	155	5775	10.50	12.00	1.413	92.42	1.082	-0.14	0.057	0.087
35	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 2	1	Hotspot	155	5775	10.50	12.00	1.413	92.42	1.082	-0.18	0.322	**0.492**
	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 2	2	Hotspot	155	5775	10.50	12.00	1.413	92.42	1.082	0.03	0.280	0.428
	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Side	5mm	Ant 2	1	Hotspot	155	5775	10.50	12.00	1.413	92.42	1.082	-	n/a	n/a
	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 2	1	Hotspot	155	5775	10.50	12.00	1.413	92.42	1.082	0.09	0.229	0.350
	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 2	1	Hotspot	155	5775	10.50	12.00	1.413	92.42	1.082	0.14	0.137	0.209

15.3 Body Worn Accessory SAR

Plot No.	Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Headset	Power State	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)	Deviation
750MHz																						
	2nd	LTE Band 14	10M	QPSK	1	0	-	Front	5mm	Ant 0	1	-	Full Power	23330	793	22.84	24.00	1.306	-0.16	0.303	0.396	
36	2nd	LTE Band 14	10M	QPSK	1	0	-	Back	5mm	Ant 0	1	-	Full Power	23330	793	22.84	24.00	1.306	-0.03	0.794	**1.037**	
	2nd	LTE Band 14	10M	QPSK	25	0	-	Front	5mm	Ant 0	1	-	Full Power	23330	793	21.78	23.00	1.324	-0.12	0.167	0.221	
	2nd	LTE Band 14	10M	QPSK	25	0	-	Back	5mm	Ant 0	1	-	Full Power	23330	793	21.78	23.00	1.324	-0.02	0.365	0.483	
	2nd	LTE Band 14	10M	QPSK	50	0	-	Back	5mm	Ant 0	1	-	Full Power	23330	793	21.62	23.00	1.374	0.15	0.387	0.532	
	2nd	LTE Band 14	10M	QPSK	1	0	-	Front	5mm	Ant 1	1	-	Full Power	23330	793	22.76	24.00	1.330	0.15	0.213	0.283	
	2nd	LTE Band 14	10M	QPSK	1	0	-	Back	5mm	Ant 1	1	-	Full Power	23330	793	22.76	24.00	1.330	0.02	0.583	0.776	
	2nd	LTE Band 14	10M	QPSK	25	0	-	Front	5mm	Ant 1	1	-	Full Power	23330	793	21.70	23.00	1.349	0.16	0.101	0.136	
	2nd	LTE Band 14	10M	QPSK	25	0	-	Back	5mm	Ant 1	1	-	Full Power	23330	793	21.70	23.00	1.349	0.13	0.292	0.394	
	1st	LTE Band 12	10M	QPSK	1	25	-	Back	5mm	Ant 0	1	-	Full Power	23095	707.5	23.00	24.00	1.259	-0.13	0.638	0.803	0.25%
	2nd	LTE Band 12	10M	QPSK	1	25	-	Back	5mm	Ant 0	1	-	Full Power	23095	707.5	23.00	24.00	1.259	0.06	0.636	0.801	
	1st	LTE Band 12	10M	QPSK	1	25	-	Back	5mm	Ant 1	1	-	Sensor on	23095	707.5	21.24	22.50	1.337	0.11	0.784	1.048	9.06%
37	2nd	LTE Band 12	10M	QPSK	1	25	-	Back	5mm	Ant 1	1	-	Sensor on	23095	707.5	21.24	22.50	1.337	0.14	0.713	**0.953**	
	1st	LTE Band 13	10M	QPSK	1	25	-	Back	5mm	Ant 0	1	-	Full Power	23230	782	22.87	24.00	1.297	0.06	0.644	0.835	1.20%
38	2nd	LTE Band 13	10M	QPSK	1	25	-	Back	5mm	Ant 0	1	-	Full Power	23230	782	22.87	24.00	1.297	0.09	0.636	**0.825**	
	1st	LTE Band 13	10M	QPSK	1	25	-	Back	5mm	Ant 1	1	-	Full Power	23230	782	22.86	24.00	1.300	-0.06	0.625	0.813	0.25%
	2nd	LTE Band 13	10M	QPSK	1	25	-	Back	5mm	Ant 1	1	-	Full Power	23230	782	22.86	24.00	1.300	0.1	0.624	0.811	
835MHz																						
	1st	GSM850	-	-	-	-	GPRS (2 Tx slots)	Back	5mm	Ant 0	1	-	Full Power	251	848.8	29.79	31.00	1.321	-0.05	0.720	0.951	0.21%
39	2nd	GSM850	-	-	-	-	GPRS (2 Tx slots)	Back	5mm	Ant 0	1	-	Full Power	251	848.8	29.79	31.00	1.321	-0.06	0.718	**0.949**	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	1	-	Full Power	4233	846.6	23.16	24.00	1.213	0.15	1.050	1.274	
40	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	1	-	Full Power	4233	846.6	23.16	24.00	1.213	-0.14	1.040	**1.262**	0.94%
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	2	-	Full Power	4233	846.6	23.16	24.00	1.213	0.09	1.020	1.238	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Side	5mm	Ant 0	1	-	Full Power	4182	836.4	23.18	24.00	1.208	0.04	0.499	0.603	5.47%
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Side	5mm	Ant 0	1	-	Full Power	4182	836.4	23.18	24.00	1.208	-0.13	0.472	0.570	
	1st	LTE Band 26	15M	QPSK	1	37	-	Back	5mm	Ant 0	1	-	Full Power	26865	831.5	23.28	24.00	1.180	0.14	0.995	1.174	5.45%
41	2nd	LTE Band 5	10M	QPSK	1	25	-	Back	5mm	Ant 0	1	-	Full Power	20525	836.5	23.28	24.00	1.180	-0.12	0.940	**1.110**	
	1st	LTE Band 26	15M	QPSK	1	37	-	Back	5mm	Ant 1	1	-	Sensor on	26965	841.5	20.69	21.50	1.205	-0.11	0.830	1.000	1.80%
	2nd	LTE Band 5	10M	QPSK	1	25	-	Back	5mm	Ant 1	1	-	Sensor on	20525	836.5	20.69	21.50	1.205	0.09	0.815	0.982	
1750MHz																						
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	1	-	Sensor on	1312	1712.4	14.81	15.50	1.172	0.02	1.110	1.301	0.92%
42	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	1	-	Sensor on	1312	1712.4	14.81	15.50	1.172	0.07	1.100	**1.289**	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 0	1	-	Sensor on	1413	1732.6	14.91	15.50	1.146	-0.17	0.396	0.454	3.52%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 0	1	-	Sensor on	1413	1732.6	14.91	15.50	1.146	0.03	0.382	0.438	
	1st	LTE Band 66	20M	QPSK	1	49	-	Back	5mm	Ant 0	1	-	Sensor on	132072	1720	13.26	14.50	1.330	0.11	1.050	1.397	
43	2nd	LTE Band 66	20M	QPSK	1	49	-	Back	5mm	Ant 0	1	-	Sensor on	132072	1720	13.26	14.50	1.330	0.09	1.000	**1.330**	4.80%
	2nd	LTE Band 66	20M	QPSK	1	49	-	Back	5mm	Ant 0	2	-	Sensor on	132072	1720	13.26	14.50	1.330	-0.04	0.616	0.820	
	1st	LTE Band 66	20M	QPSK	1	49	-	Front	5mm	Ant 0	1	-	Sensor on	132322	1745	13.47	14.50	1.268	0.11	0.366	0.464	5.17%
	2nd	LTE Band 66	20M	QPSK	1	49	-	Front	5mm	Ant 0	1	-	Sensor on	132322	1745	13.47	14.50	1.268	-0.17	0.347	0.440	
	1st	LTE Band 66	20M	QPSK	1	49	-	Back	5mm	Ant 1	1	-	Sensor on	132072	1720	12.85	14.00	1.303	0.11	0.801	1.044	7.47%
	2nd	LTE Band 66	20M	QPSK	1	49	-	Back	5mm	Ant 1	1	-	Sensor on	132072	1720	12.85	14.00	1.303	-0.04	0.741	0.966	
1900MHz																						
	1st	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Back	5mm	Ant 0	1	-	Sensor on	810	1909.8	25.46	26.50	1.271	-0.04	1.050	1.334	14.69%
44	2nd	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Back	5mm	Ant 0	1	-	Sensor on	810	1909.8	25.46	26.50	1.271	0.04	0.896	**1.138**	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	1	-	Sensor on	9262	1852.4	18.26	19.00	1.186	0.04	1.190	1.411	13.47%
45	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	1	-	Sensor on	9262	1852.4	18.26	19.00	1.186	0.02	1.030	**1.221**	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 0	1	-	Sensor on	9262	1852.4	18.26	19.00	1.186	-0.08	0.795	0.943	9.23%
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 0	1	-	Sensor on	9262	1852.4	18.26	19.00	1.186	0.08	0.722	0.856	

	1st	LTE Band 25	20M	QPSK	1	49	-	Back	5mm	Ant 0	1	-	Sensor on	26140	1860	16.52	18.00	1.406	-0.13	1.010	1.420	17.61%
46	2nd	LTE Band 2	20M	QPSK	1	49	-	Back	5mm	Ant 0	1	-	Sensor on	18900	1880	16.52	18.00	1.406	-0.08	0.832	**1.170**	
	1st	LTE Band 25	20M	QPSK	1	49	-	Back	5mm	Ant 1	1	-	Sensor on	26140	1860	15.35	16.50	1.303	0.05	0.735	0.958	24.01%
	2nd	LTE Band 2	20M	QPSK	1	49	-	Back	5mm	Ant 1	1	-	Sensor on	18900	1880	15.35	16.50	1.303	0.13	0.559	0.728	
2300MHz																						
	2nd	LTE Band 30	10M	QPSK	1	0	-	Front	5mm	Ant 0	1	-	Sensor on	27710	2310	18.33	19.50	1.309	-0.16	0.497	0.651	
47	2nd	LTE Band 30	10M	QPSK	1	0	-	Back	5mm	Ant 0	1	-	Sensor on	27710	2310	18.33	19.50	1.309	-0.12	1.080	**1.414**	
	2nd	LTE Band 30	10M	QPSK	1	0	-	Back	5mm	Ant 0	2	-	Sensor on	27710	2310	18.33	19.50	1.309	-0.18	0.888	1.163	
	2nd	LTE Band 30	10M	QPSK	1	0	-	Back	5mm	Ant 0	1	Headset	Sensor on	27710	2310	18.33	19.50	1.309	0.06	1.000	1.309	
	2nd	LTE Band 30	10M	QPSK	1	0	-	Front	18mm	Ant 0	1	-	Full Power	27710	2310	22.78	24.00	1.324	0.03	0.198	0.262	
	2nd	LTE Band 30	10M	QPSK	1	0	-	Back	26mm	Ant 0	1	-	Full Power	27710	2310	22.78	24.00	1.324	0.02	0.169	0.224	
	2nd	LTE Band 30	10M	QPSK	25	0	-	Front	5mm	Ant 0	1	-	Sensor on	27710	2310	18.26	19.50	1.330	-0.1	0.497	0.661	
	2nd	LTE Band 30	10M	QPSK	25	0	-	Back	5mm	Ant 0	1	-	Sensor on	27710	2310	18.26	19.50	1.330	-0.17	1.000	1.330	
	2nd	LTE Band 30	10M	QPSK	50	0	-	Back	5mm	Ant 0	1	-	Sensor on	27710	2310	18.29	19.50	1.321	-0.09	0.966	1.276	
2600MHz																						
	1st	LTE Band 7	20M	QPSK	1	49	-	Back	5mm	Ant 0	1	-	Sensor on	21350	2560	11.20	12.50	1.349	-0.1	1.060	1.430	7.34%
48	2nd	LTE Band 7	20M	QPSK	1	49	-	Back	5mm	Ant 0	1	-	Sensor on	21350	2560	11.20	12.50	1.349	0.03	0.982	**1.325**	
	1st	LTE Band 7	20M	QPSK	1	49	-	Front	5mm	Ant 0	1	-	Sensor on	21100	2535	11.35	12.50	1.303	0.02	0.440	0.573	8.55%
	2nd	LTE Band 7	20M	QPSK	1	49	-	Front	5mm	Ant 0	1	-	Sensor on	21100	2535	11.35	12.50	1.303	0.03	0.402	0.524	

Plot No.	Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Sample	Headset	Power State	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 &WLAN																			
	2nd	Bluetooth	DH5 1Mbps	Front	5mm	Ant 3	1	-	Full Power	0	2402	17.30	18.00	1.175	76.91	1.300	0.03	0.055	0.084
49	2nd	Bluetooth	DH5 1Mbps	Back	5mm	Ant 3	1	-	Full Power	0	2402	17.30	18.00	1.175	76.91	1.300	0.03	0.125	**0.191**
	2nd	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 3	1	-	Full Power	6	2437	19.60	21.00	1.380	98.27	1.018	0.06	0.380	0.534
50	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3	1	-	Full Power	6	2437	19.60	21.00	1.380	98.27	1.018	0.08	0.944	**1.327**
	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3	1	-	Full Power	6	2437	19.60	21.00	1.380	98.27	1.018	-0.1	0.782	1.099
	2nd	WLAN2.4GHz	802.11g 6Mbps	Back	5mm	Ant 3	1	-	Full Power	6	2437	19.10	21.00	1.549	98.26	1.018	0.13	0.740	1.167
	2nd	WLAN2.4GHz	802.11n-HT20 MCS0	Back	5mm	Ant 3	1	-	Full Power	6	2437	19.20	21.00	1.514	98.13	1.019	-0.1	0.716	1.104
	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3	1	-	Full Power	1	2412	19.50	21.00	1.413	98.27	1.018	0.13	0.684	0.984
	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3	1	-	Full Power	11	2462	19.60	21.00	1.380	98.27	1.018	0.08	0.708	0.995
	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3	1	Headset	Full Power	6	2437	19.60	21.00	1.380	98.27	1.018	-0.13	0.932	1.310
	2nd	WLAN2.4GHz	802.11b 1Mbps	Front	18mm	Ant 3	1	-	Full Power	6	2437	19.60	21.00	1.380	98.27	1.018	0.03	0.082	0.115
	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	26mm	Ant 3	1	-	Full Power	6	2437	19.60	21.00	1.380	98.27	1.018	-0.03	0.052	0.073
	2nd	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 3	1	-	Sim TX	6	2437	14.10	15.50	1.380	98.27	1.018	0.05	0.113	0.159
	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3	1	-	Sim TX	6	2437	14.10	15.50	1.380	98.27	1.018	0.02	0.281	0.395
	2nd	WLAN5.3GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 2	1	-	Sensor on	58	5290	14.73	16.50	1.502	92.42	1.082	0.16	0.219	0.356
51	2nd	WLAN5.3GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 2	1	-	Sensor on	58	5290	14.73	16.50	1.502	92.42	1.082	0.05	0.689	**1.120**
	2nd	WLAN5.3GHz	802.11a 6Mbps	Front	18mm	Ant 2	1	-	Full Power	52	5260	17.60	19.00	1.382	98.26	1.018	0.03	0.083	0.117
	2nd	WLAN5.3GHz	802.11a 6Mbps	Back	26mm	Ant 2	1	-	Full Power	52	5260	17.60	19.00	1.382	98.26	1.018	-0.12	0.231	0.325
	2nd	WLAN5.3GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 2	1	-	Sim TX	58	5290	10.23	12.00	1.503	92.42	1.082	0.14	0.068	0.111
	2nd	WLAN5.3GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 2	1	-	Sim TX	58	5290	10.23	12.00	1.503	92.42	1.082	0.07	0.214	0.348
	2nd	WLAN5.5GHz	802.11a 6Mbps	Front	5mm	Ant 2	1	-	Sensor on	100	5500	15.69	17.00	1.353	98.26	1.018	-0.07	0.122	0.168
	2nd	WLAN5.5GHz	802.11a 6Mbps	Back	5mm	Ant 2	1	-	Sensor on	100	5500	15.69	17.00	1.353	98.26	1.018	0.05	0.665	0.916
	2nd	WLAN5.5GHz	802.11a 6Mbps	Back	5mm	Ant 2	1	-	Sensor on	116	5580	15.15	17.00	1.532	98.26	1.018	-0.18	0.578	0.902
	2nd	WLAN5.5GHz	802.11a 6Mbps	Back	5mm	Ant 2	1	-	Sensor on	124	5620	15.09	17.00	1.552	98.26	1.018	0.03	0.620	0.980
	2nd	WLAN5.5GHz	802.11a 6Mbps	Back	5mm	Ant 2	1	-	Sensor on	132	5660	15.07	17.00	1.560	98.26	1.018	0.06	0.710	1.127
	2nd	WLAN5.5GHz	802.11a 6Mbps	Back	5mm	Ant 2	1	-	Sensor on	140	5700	15.20	17.00	1.515	98.26	1.018	0.14	0.693	1.069
52	2nd	WLAN5.5GHz	802.11a 6Mbps	Back	5mm	Ant 2	1	-	Sensor on	144	5720	15.20	17.00	1.515	98.26	1.018	0.14	0.750	**1.157**
	2nd	WLAN5.5GHz	802.11a 6Mbps	Front	18mm	Ant 2	1	-	Full Power	100	5500	17.71	19.00	1.347	98.26	1.018	0.09	0.077	0.106
	2nd	WLAN5.5GHz	802.11a 6Mbps	Back	26mm	Ant 2	1	-	Full Power	144	5720	17.20	19.00	1.515	98.26	1.018	0.06	0.210	0.324
	2nd	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 2	1	-	Sim TX	106	5530	10.62	11.50	1.225	92.42	1.082	-0.03	0.041	0.055
	2nd	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 2	1	-	Sim TX	106	5530	10.62	11.50	1.225	92.42	1.082	0.14	0.254	0.337
	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 2	1	-	Sensor on	155	5775	14.03	15.50	1.403	92.42	1.082	-0.14	0.093	0.141

53	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 2	1	-	Sensor on	155	5775	14.03	15.50	1.403	92.42	1.082	0.03	0.772	**1.172**
	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 2	2	-	Sensor on	155	5775	14.03	15.50	1.403	92.42	1.082	0.06	0.767	1.164
	2nd	WLAN5.8GHz	802.11a 6Mbps	Front	18mm	Ant 2	1	-	Full Power	157	5785	17.87	19.00	1.298	98.26	1.018	0.06	0.082	0.108
	2nd	WLAN5.8GHz	802.11a 6Mbps	Back	26mm	Ant 2	1	-	Full Power	157	5785	17.87	19.00	1.298	98.26	1.018	-0.12	0.212	0.280
	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 2	1	-	Sim TX	155	5775	9.01	10.50	1.409	92.42	1.082	0.09	0.032	0.048
	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 2	1	-	Sim TX	155	5775	9.01	10.50	1.409	92.42	1.082	-0.09	0.227	0.346

15.4 Product specific 10g SAR

Plot No.	Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power State	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)	Deviation
750MHz																					
	1st	LTE Band 12	10M	QPSK	1	25		Back	0mm	Ant 1	1		23095	707.5	22.16	23.50	1.361	0.03	1.870	2.546	0.55%
54	2nd	LTE Band 12	10M	QPSK	1	25		Back	0mm	Ant 1	1		23095	707.5	22.16	23.50	1.361	-0.1	1.860	**2.532**	
835MHz																					
	1st	xWCDMA V	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 0	1	Full Power	4132	826.4	23.17	24.00	1.211	-0.05	2.140	2.591	0.96%
55	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 0	1	Full Power	4132	826.4	23.17	24.00	1.211	0.01	2.120	**2.566**	
	1st	LTE Band 26	15M	QPSK	1	37		Back	0mm	Ant 1	1	Handheld	26965	841.5	22.22	23.00	1.197	0.04	2.310	2.764	1.27%
56	2nd	LTE Band 5	10M	QPSK	1	25		Back	0mm	Ant 1	1	Handheld	20525	836.5	22.22	23.00	1.197	-0.07	2.280	**2.729**	
	2nd	LTE Band 5	10M	QPSK	1	25		Back	0mm	Ant 1	2	Handheld	20525	836.5	22.22	23.00	1.197	0.03	1.310	1.568	
1750MHz																					
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	Ant 0	1	Handheld	1312	1712.4	19.85	20.50	1.161	0.13	2.840	3.299	14.10%
57	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	Ant 0	1	Handheld	1312	1712.4	19.85	20.50	1.161	-0.17	2.440	**2.834**	
	1st	LTE Band 66	20M	QPSK	1	49		Bottom Side	0mm	Ant 0	1	Handheld	132072	1720	18.20	19.50	1.349	0.18	2.350	3.170	8.08%
58	2nd	LTE Band 66	20M	QPSK	1	49		Bottom Side	0mm	Ant 0	1	Handheld	132072	1720	18.20	19.50	1.349	-0.05	2.160	**2.914**	
	1st	LTE Band 66	20M	QPSK	1	49		Back	0mm	Ant 1	1	Handheld	132072	1720	17.86	19.00	1.300	0.01	2.130	2.769	5.63%
	2nd	LTE Band 66	20M	QPSK	1	49		Back	0mm	Ant 1	1	Handheld	132072	1720	17.86	19.00	1.300	0.08	2.010	2.613	
1900MHz																					
	1st	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Back	0mm	Ant 0	1	Full Power	810	1909.8	27.00	28.00	1.259	0.18	1.860	2.342	9.69%
59	2nd	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Back	0mm	Ant 0	1	Full Power	810	1909.8	27.00	28.00	1.259	0.03	1.680	**2.115**	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	Ant 0	1	Handheld	9262	1852.4	20.72	21.50	1.197	0.13	2.890	3.459	
60	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	Ant 0	1	Handheld	9262	1852.4	20.72	21.50	1.197	-0.03	2.880	**3.447**	0.35%
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	Ant 0	2	Handheld	9262	1852.4	20.72	21.50	1.197	-0.04	2.770	3.315	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 0		Handheld	9538	1907.6	20.61	21.50	1.227	-0.04	2.410	2.958	1.66%
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 0		Handheld	9538	1907.6	20.61	21.50	1.227	-0.12	2.370	2.909	
	1st	LTE Band 25	20M	QPSK	1	49		Bottom Side	0mm	Ant 0	1	Handheld	26140	1860	18.45	20.00	1.429		2.280	3.258	8.78%
61	2nd	LTE Band 2	20M	QPSK	1	49		Bottom Side	0mm	Ant 0	1	Handheld	18900	1880	18.45	20.00	1.429	0.03	2.080	**2.972**	
	1st	LTE Band 25	20M	QPSK	1	49		Back	0mm	Ant 1	1	Handheld	26590	1905	17.22	18.50	1.343	0.11	1.840	2.471	26.63%
	2nd	LTE Band 2	20M	QPSK	1	49		Back	0mm	Ant 1	1	Handheld	18900	1880	17.22	18.50	1.343	0.06	1.350	1.813	
2300MHz																					
	2nd	LTE Band 30	10M	QPSK	1	0		Front	0mm	Ant 0	1	Handheld	27710	2310	19.31	20.50	1.315	-0.03	1.320	1.736	
62	2nd	LTE Band 30	10M	QPSK	1	0		Back	0mm	Ant 0	1	Handheld	27710	2310	19.31	20.50	1.315	0.03	2.670	**3.512**	
	2nd	LTE Band 30	10M	QPSK	1	0		Back	0mm	Ant 0	2	Handheld	27710	2310	19.31	20.50	1.315	0.09	2.010	2.644	
	2nd	LTE Band 30	10M	QPSK	1	0		Left Side	0mm	Ant 0	1	Handheld	27710	2310	19.31	20.50	1.315	0.02	1.390	1.828	
	2nd	LTE Band 30	10M	QPSK	1	0		Bottom Side	0mm	Ant 0	1	Handheld	27710	2310	19.31	20.50	1.315	-0.05	2.000	2.630	
	2nd	LTE Band 30	10M	QPSK	1	0		Front	18mm	Ant 0	1	Full Power	27710	2310	22.78	24.00	1.324	0.06	0.169	0.224	
	2nd	LTE Band 30	10M	QPSK	1	0		Back	25mm	Ant 0	1	Full Power	27710	2310	22.78	24.00	1.324	0.08	0.085	0.113	
	2nd	LTE Band 30	10M	QPSK	1	0		Left Side	8mm	Ant 0	1	Full Power	27710	2310	22.78	24.00	1.324	-0.01	0.545	0.722	
	2nd	LTE Band 30	10M	QPSK	1	0		Bottom Side	23mm	Ant 0	1	Full Power	27710	2310	22.78	24.00	1.324	0.09	0.118	0.156	
	2nd	LTE Band 30	10M	QPSK	25	0		Front	0mm	Ant 0	1	Handheld	27710	2310	19.28	20.50	1.324	-0.03	1.220	1.616	
	2nd	LTE Band 30	10M	QPSK	25	0		Back	0mm	Ant 0	1	Handheld	27710	2310	19.28	20.50	1.324	-0.09	2.500	3.311	
	2nd	LTE Band 30	10M	QPSK	25	0		Left Side	0mm	Ant 0	1	Handheld	27710	2310	19.28	20.50	1.324	-0.02	1.300	1.722	
	2nd	LTE Band 30	10M	QPSK	25	0		Bottom Side	0mm	Ant 0	1	Handheld	27710	2310	19.28	20.50	1.324	0.06	1.910	2.529	
	2nd	LTE Band 30	10M	QPSK	50	0		Back	0mm	Ant 0	1	Handheld	27710	2310	19.21	20.50	1.346	-0.18	2.440	3.284	
	2nd	LTE Band 30	10M	QPSK	50	0		Bottom Side	0mm	Ant 0	1	Handheld	27710	2310	19.21	20.50	1.346	-0.03	1.800	2.423	
2600MHz																					
	1st	LTE Band 7	20M	QPSK	1	49		Back	0mm	Ant 0	1	Handheld	20850	2510	15.79	17.00	1.321	-0.16	1.800	2.378	15.56%
63	2nd	LTE Band 7	20M	QPSK	1	49		Back	0mm	Ant 0	1	Handheld	20850	2510	15.79	17.00	1.321	0.04	1.520	**2.008**	

Plot No.	Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Sample	Power State	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)
WLAN &Bluetooth																		
64	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	0mm	Ant 3	1	Full Power	6	2437	19.60	21.00	1.380	98.27	1.018	0.13	0.877	**1.232**
	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	14mm	Ant 3	1	Full Power	6	2437	19.60	21.00	1.380	98.27	1.018	-0.12	0.082	0.115
	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	0mm	Ant 3	1	Sim TX	6	2437	18.60	20.00	1.380	98.27	1.018	0.13	0.691	0.971
65	2nd	WLAN5.2GHz	802.11a 6Mbps	Back	0mm	Ant 2	1	Full Power	44	5220	17.99	19.00	1.263	98.26	1.018	-0.02	1.190	**1.530**
	2nd	WLAN5.2GHz	802.11a 6Mbps	Back	0mm	Ant 2	2	Full Power	44	5220	17.99	19.00	1.263	98.26	1.018	0.03	1.050	1.350
	2nd	WLAN5.2GHz	802.11a 6Mbps	Back	14mm	Ant 2	1	Full Power	44	5220	17.99	19.00	1.263	98.26	1.018	-0.06	0.131	0.168
	2nd	WLAN5.2GHz	802.11a 6Mbps	Back	0mm	Ant 2	1	Sim TX	44	5220	15.98	17.00	1.265	98.26	1.018	-0.08	0.757	0.975
	2nd	WLAN5.3GHz	802.11a 6Mbps	Front	0mm	Ant 2	1	Full Power	52	5260	17.60	19.00	1.382	98.26	1.018	0.01	0.323	0.454
66	2nd	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Ant 2	1	Full Power	52	5260	17.60	19.00	1.382	98.26	1.018	-0.08	1.010	**1.421**
	2nd	WLAN5.3GHz	802.11a 6Mbps	Left Side	0mm	Ant 2	1	Full Power	52	5260	17.60	19.00	1.382	98.26	1.018	0.17	0.042	0.059
	2nd	WLAN5.3GHz	802.11a 6Mbps	Right Side	0mm	Ant 2	1	Full Power	52	5260	17.60	19.00	1.382	98.26	1.018	-0.01	0.836	1.176
	2nd	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 2	1	Full Power	52	5260	17.60	19.00	1.382	98.26	1.018	-0.16	0.292	0.411
	2nd	WLAN5.3GHz	802.11a 6Mbps	Front	4mm	Ant 2	1	Full Power	52	5260	17.60	19.00	1.382	98.26	1.018	-0.03	0.100	0.141
	2nd	WLAN5.3GHz	802.11a 6Mbps	Back	14mm	Ant 2	1	Full Power	52	5260	17.60	19.00	1.382	98.26	1.018	0.02	0.116	0.163
	2nd	WLAN5.3GHz	802.11a 6Mbps	Right Side	4mm	Ant 2	1	Full Power	52	5260	17.60	19.00	1.382	98.26	1.018	0.09	0.312	0.439
	2nd	WLAN5.3GHz	802.11a 6Mbps	Top Side	11mm	Ant 2	1	Full Power	52	5260	17.60	19.00	1.382	98.26	1.018	-0.15	0.098	0.138
	2nd	WLAN5.3GHz	802.11a 6Mbps	Front	0mm	Ant 2	1	Sim TX	52	5260	15.59	17.00	1.384	98.26	1.018	0.17	0.201	0.283
	2nd	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Ant 2	1	Sim TX	52	5260	15.59	17.00	1.384	98.26	1.018	0.04	0.666	0.938
	2nd	WLAN5.3GHz	802.11a 6Mbps	Left Side	0mm	Ant 2	1	Sim TX	52	5260	15.59	17.00	1.384	98.26	1.018	-0.12	0.026	0.037
	2nd	WLAN5.3GHz	802.11a 6Mbps	Right Side	0mm	Ant 2	1	Sim TX	52	5260	15.59	17.00	1.384	98.26	1.018	-0.06	0.520	0.732
	2nd	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 2	1	Sim TX	52	5260	15.59	17.00	1.384	98.26	1.018	-0.14	0.181	0.255
	2nd	WLAN5.5GHz	802.11a 6Mbps	Front	0mm	Ant 2	1	Full Power	100	5500	17.71	19.00	1.347	98.26	1.018	0.01	0.132	0.181
67	2nd	WLAN5.5GHz	802.11a 6Mbps	Back	0mm	Ant 2	1	Full Power	100	5500	17.71	19.00	1.347	98.26	1.018	0.07	0.583	**0.799**
	2nd	WLAN5.5GHz	802.11a 6Mbps	Left Side	0mm	Ant 2	1	Full Power	100	5500	17.71	19.00	1.347	98.26	1.018	-	n/a	n/a
	2nd	WLAN5.5GHz	802.11a 6Mbps	Right Side	0mm	Ant 2	1	Full Power	100	5500	17.71	19.00	1.347	98.26	1.018	-0.04	0.465	0.638
	2nd	WLAN5.5GHz	802.11a 6Mbps	Top Side	0mm	Ant 2	1	Full Power	100	5500	17.71	19.00	1.347	98.26	1.018	0.09	0.165	0.226
68	2nd	WLAN5.8GHz	802.11a 6Mbps	Back	0mm	Ant 2	1	Full Power	157	5785	17.87	19.00	1.298	98.26	1.018	0.05	1.010	**1.335**
	2nd	WLAN5.8GHz	802.11a 6Mbps	Back	0mm	Ant 2	1	Full Power	157	5785	16.87	18.00	1.297	98.26	1.018	0.05	0.736	0.972

15.5 Repeated SAR Measurement

<1g>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	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	-	-	-	-	802.11b 1Mbps	Left Cheek	0mm	Ant 3	Full Power	6	2437	19.60	21.00	1.380	98.27	1.018	-0.03	0.975	1	1.370
2nd	WLAN2.4GHz	-	-	-	-	802.11b 1Mbps	Left Cheek	0mm	Ant 3	Full Power	6	2437	19.60	21.00	1.380	98.27	1.018	-0.03	0.965	1.010	1.356
1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	Full Power	4233	846.6	23.16	24.00	1.213	-	-	-0.14	1.040	1	1.262
2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	Full Power	4233	846.6	23.16	24.00	1.213	-	-	-0.02	1.000	1.040	1.213
1st	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Bottom Side	5mm	Ant 0	Hotspot	810	1909.8	25.07	26.00	1.239	-	-	-0.02	1.130	1	1.400
2nd	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Bottom Side	5mm	Ant 0	Hotspot	810	1909.8	25.07	26.00	1.239	-	-	0.09	1.100	1.027	1.363
1st	LTE Band 30	10M	QPSK	1	0	-	Back	5mm	Ant 0	Hotspot	27710	2310	18.33	19.50	1.309	-	-	-0.12	1.080	1	1.414
2nd	LTE Band 30	10M	QPSK	1	0	-	Back	5mm	Ant 0	Hotspot	27710	2310	18.33	19.50	1.309	-	-	0.03	1.000	1.080	1.309
1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	Sensor on	1312	1712.4	14.81	15.50	1.172	-	-	0.07	1.100	1	1.289
2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	Sensor on	1312	1712.4	14.81	15.50	1.172	-	-	-0.15	1.000	1.100	1.172
1st	LTE Band 7	20M	QPSK	1	49	-	Back	5mm	Ant 0	Sensor on	21350	2560	11.20	12.50	1.349	-	-	0.03	0.982	1	1.325
2nd	LTE Band 7	20M	QPSK	1	49	-	Back	5mm	Ant 0	Sensor on	21350	2560	11.20	12.50	1.349	-	-	0.07	0.953	1.030	1.286

<10g>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	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	LTE Band 5	10M	QPSK	1	25	-	Back	0mm	Ant 1	Handheld	20525	836.5	22.22	23.00	1.197	-0.07	2.280	1	2.729
2nd	LTE Band 5	10M	QPSK	1	25	-	Back	0mm	Ant 1	Handheld	20525	836.5	22.22	23.00	1.197	-0.12	2.200	1.036	2.633
1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	Ant 0	Handheld	1312	1712.4	19.85	20.50	1.161	-0.17	2.440	1	2.834
2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	Ant 0	Handheld	1312	1712.4	19.85	20.50	1.161	0.01	2.370	1.030	2.753
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	Ant 0	Handheld	9262	1852.4	20.72	21.50	1.197	-0.03	2.880	1	3.447
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	Ant 0	Handheld	9262	1852.4	20.72	21.50	1.197	0.08	2.850	1.011	3.411
1st	LTE Band 30	10M	QPSK	1	0	-	Back	0mm	Ant 0	Handheld	27710	2310	19.31	20.50	1.315	0.03	2.670	1	3.512
2nd	LTE Band 30	10M	QPSK	1	0	-	Back	0mm	Ant 0	Handheld	27710	2310	19.31	20.50	1.315	0.07	2.600	1.027	3.420

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.

16. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Mobile Cellular Phone			
		Head	Body	Hotspot	Product specific 10g SAR
1.	WWAN + WLAN2.4GHz	Yes	Yes	Yes	Yes
2.	WWAN + WLAN5GHz	Yes	Yes	Yes	Yes
3.	WWAN + Bluetooth	Yes	Yes	Yes	
4.	WLAN 5GHz + Bluetooth	Yes	Yes	Yes	
5.	WWAN + WLAN 5GHz + Bluetooth	Yes	Yes	Yes	

General Note:

1. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), and LTE supports VoLTE function.
2. EUT will choose each GSM, WCDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
3. This device WLAN 2.4GHz supports hotspot operation and Bluetooth support tethering applications.
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. According to the EUT characteristic, WLAN 5GHz and Bluetooth can transmit simultaneously.
6. According to the EUT characteristic, WLAN 5GHz and WLAN 2.4GHz cannot transmit simultaneously.
7. WLAN 2.4GHz and Bluetooth share the same antenna and they cannot transmit simultaneously.
8. The worst case 5 GHz WLAN SAR for each configuration was used for SAR summation.
9. When stand-alone SAR is not required for a transmitter or antenna, its SAR is considered zero in the SAR summing process to assess Multi-band transmission SAR compliance.
10. The maximum SAR summation is calculated based on the same configuration and test position.
11. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
    i) 1g 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 for 1g SAR and SPLSR≤ 0.10 for 10g SAR, simultaneously transmission SAR measurement is not necessary.
    iv) Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg and 10g SAR < 4.0W/kg.
    v) The SPLSR calculated results please refer to section 16.5.

Conclusion:

1. For the Spot check results from chapter 15.1 to 15.4, the Spot check results showed that deviation of the SAR results did not exceed 30%, and all below 1.2W/kg for 1-g SAR, below 3W/kg for 10-g SAR. Referring to the guidance in the KDB inquiry, SAR data reuse is justified.
2. For simultaneously transmission SAR analysis, WLAN/BT SAR values considered which did perform SAR testing on this report, Simultaneous transmission analysis for all WWAN bands and all position are based on max SAR results chosen between the original SAR results (Sporton SAR report no.: FA391515) and Spot check results.

16.1 Head Exposure Conditions

WWAN Band	Exposure Position	1	3	4	5	1+3	1+4+5
		WWAN	WLAN2.4GHz	WLAN5GHz	Bluetooth	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM850 Ant 0	Right Cheek	0.362	0.198	0.145	0.082	0.56	0.59
	Right Tilted	0.176	0.169	0.176	0.082	0.35	0.43
	Left Cheek	0.289	0.365	0.411	0.157	0.65	0.86
	Left Tilted	0.151	0.284	0.275	0.130	0.44	0.56
GSM1900 Ant 0	Right Cheek	0.164	0.198	0.164	0.082	0.36	0.41
	Right Tilted	0.138	0.169	0.138	0.082	0.31	0.36
	Left Cheek	0.225	0.365	0.225	0.157	0.59	0.61
	Left Tilted	0.166	0.284	0.166	0.130	0.45	0.46
WCDMA II Ant 0	Right Cheek	0.389	0.198	0.145	0.082	0.59	0.62
	Right Tilted	0.365	0.169	0.176	0.082	0.53	0.62
	Left Cheek	0.487	0.365	0.411	0.157	0.85	1.06
	Left Tilted	0.400	0.284	0.275	0.130	0.68	0.81
WCDMA IV Ant 0	Right Cheek	0.205	0.198	0.145	0.082	0.40	0.43
	Right Tilted	0.144	0.169	0.176	0.082	0.31	0.40
	Left Cheek	0.174	0.365	0.411	0.157	0.54	0.74
	Left Tilted	0.139	0.284	0.275	0.130	0.42	0.54
WCDMA V Ant 0	Right Cheek	0.460	0.198	0.145	0.082	0.66	0.69
	Right Tilted	0.215	0.169	0.176	0.082	0.38	0.47
	Left Cheek	0.310	0.365	0.411	0.157	0.68	0.88
	Left Tilted	0.181	0.284	0.275	0.130	0.47	0.59
LTE Band 12 Ant 0	Right Cheek	0.213	0.198	0.145	0.082	0.41	0.44
	Right Tilted	0.102	0.169	0.176	0.082	0.27	0.36
	Left Cheek	0.205	0.365	0.411	0.157	0.57	0.77
	Left Tilted	0.103	0.284	0.275	0.130	0.39	0.51
LTE Band 12 Ant 1	Right Cheek	0.825	0.198	0.145	0.082	1.02	1.05
	Right Tilted	0.702	0.169	0.176	0.082	0.87	0.96
	Left Cheek	0.650	0.365	0.411	0.157	1.02	1.22
	Left Tilted	0.591	0.284	0.275	0.130	0.88	1.00
LTE Band 13 Ant 0	Right Cheek	0.339	0.198	0.145	0.082	0.54	0.57
	Right Tilted	0.210	0.169	0.176	0.082	0.38	0.47
	Left Cheek	0.297	0.365	0.411	0.157	0.66	0.87
	Left Tilted	0.169	0.284	0.275	0.130	0.45	0.57
LTE Band 13 Ant 1	Right Cheek	0.556	0.198	0.145	0.082	0.75	0.78
	Right Tilted	0.517	0.169	0.176	0.082	0.69	0.78
	Left Cheek	0.502	0.365	0.411	0.157	0.87	1.07
	Left Tilted	0.471	0.284	0.275	0.130	0.76	0.88
LTE Band 5 Ant 0	Right Cheek	0.442	0.198	0.145	0.082	0.64	0.67
	Right Tilted	0.236	0.169	0.176	0.082	0.41	0.49
	Left Cheek	0.354	0.365	0.411	0.157	0.72	0.92
	Left Tilted	0.195	0.284	0.275	0.130	0.48	0.60
LTE Band 5 Ant 1	Right Cheek	1.017	0.198	0.145	0.082	1.22	1.24
	Right Tilted	0.585	0.169	0.176	0.082	0.75	0.84

	Left Cheek	0.554	0.365	0.411	0.157	0.92	1.12
	Left Tilted	0.448	0.284	0.275	0.130	0.73	0.85
LTE Band 66 Ant 0	Right Cheek	0.346	0.198	0.145	0.082	0.54	0.57
	Right Tilted	0.223	0.169	0.176	0.082	0.39	0.48
	Left Cheek	0.225	0.365	0.411	0.157	0.59	0.79
	Left Tilted	0.196	0.284	0.275	0.130	0.48	0.60
LTE Band 66 Ant 1	Right Cheek	0.704	0.198	0.145	0.082	0.90	0.93
	Right Tilted	0.956	0.169	0.176	0.082	1.13	1.21
	Left Cheek	0.414	0.365	0.411	0.157	0.78	0.98
	Left Tilted	0.520	0.284	0.275	0.130	0.80	0.93
LTE Band 2 Ant 0	Right Cheek	0.312	0.198	0.145	0.082	0.51	0.54
	Right Tilted	0.298	0.169	0.176	0.082	0.47	0.56
	Left Cheek	0.377	0.365	0.411	0.157	0.74	0.95
	Left Tilted	0.320	0.284	0.275	0.130	0.60	0.73
LTE Band 2 Ant 1	Right Cheek	0.944	0.198	0.145	0.082	1.14	1.17
	Right Tilted	0.999	0.169	0.176	0.082	1.17	1.26
	Left Cheek	0.620	0.365	0.411	0.157	0.99	1.19
	Left Tilted	0.778	0.284	0.275	0.130	1.06	1.18
LTE Band 7 Ant 0	Right Cheek	0.137	0.198	0.145	0.082	0.34	0.36
	Right Tilted	0.134	0.169	0.176	0.082	0.30	0.39
	Left Cheek	0.133	0.365	0.411	0.157	0.50	0.70
	Left Tilted	0.107	0.284	0.275	0.130	0.39	0.51
LTE Band 14 Ant 0	Right Cheek	0.324	0.198	0.145	0.082	0.52	0.55
	Right Tilted	0.195	0.169	0.176	0.082	0.36	0.45
	Left Cheek	0.293	0.365	0.411	0.157	0.66	0.86
	Left Tilted	0.287	0.284	0.275	0.130	0.57	0.69
LTE Band 14 Ant 1	Right Cheek	0.476	0.198	0.145	0.082	0.67	0.70
	Right Tilted	0.419	0.169	0.176	0.082	0.59	0.68
	Left Cheek	0.378	0.365	0.411	0.157	0.74	0.95
	Left Tilted	0.373	0.284	0.275	0.130	0.66	0.78
LTE Band 30 Ant 0	Right Cheek	0.388	0.198	0.145	0.082	0.59	0.62
	Right Tilted	0.271	0.169	0.176	0.082	0.44	0.53
	Left Cheek	0.593	0.365	0.411	0.157	0.96	1.16
	Left Tilted	0.350	0.284	0.275	0.130	0.63	0.76

16.2 Hotspot Exposure Conditions

WWAN Band	Exposure Position	1	3	4	5	1+3	1+4+5	SPLSR
		WWAN	WLAN2.4GHz	WLAN5GHz	Bluetooth	Summed	Summed	
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	
GSM850 Ant 0	Front	0.497	0.568	0.151	0.084	1.07	0.73	
	Back	0.951	0.703	0.492	0.191	**1.65**	**1.63**	**Case 1/2**
	Left side	0.262	0.072			0.33	0.26	
	Right side	0.486	0.541	0.377	0.089	1.03	0.95	
	Top side		0.371	0.209	0.034	0.37	0.24	
	Bottom side	0.466				0.47	0.47	
GSM1900 Ant 0	Front	0.649	0.568	0.151	0.084	1.22	0.88	
	Back	0.971	0.703	0.492	0.191	**1.67**	**1.65**	**Case 3/4**
	Left side	0.368	0.072			0.44	0.37	
	Right side	0.119	0.541	0.377	0.089	0.66	0.59	
	Top side		0.371	0.209	0.034	0.37	0.24	
	Bottom side	1.437				1.44	1.44	
WCDMA II Ant 0	Front	0.493	0.568	0.151	0.084	1.06	0.73	
	Back	0.674	0.703	0.492	0.191	1.38	1.36	
	Left side	0.291	0.072			0.36	0.29	
	Right side	0.079	0.541	0.377	0.089	0.62	0.55	
	Top side		0.371	0.209	0.034	0.37	0.24	
	Bottom side	1.290				1.29	1.29	
WCDMA IV Ant 0	Front	0.407	0.568	0.151	0.084	0.98	0.64	
	Back	1.088	0.703	0.492	0.191	**1.79**	**1.77**	**Case 5/6**
	Left side	0.048	0.072			0.12	0.05	
	Right side	0.070	0.541	0.377	0.089	0.61	0.54	
	Top side		0.371	0.209	0.034	0.37	0.24	
	Bottom side	1.346				1.35	1.35	
WCDMA V Ant 0	Front	0.583	0.568	0.151	0.084	1.15	0.82	
	Back	1.274	0.703	0.492	0.191	**1.98**	**1.96**	**Case 7/8**
	Left side	0.327	0.072			0.40	0.33	
	Right side	0.603	0.541	0.377	0.089	1.14	1.07	
	Top side		0.371	0.209	0.034	0.37	0.24	
	Bottom side	0.560				0.56	0.56	
LTE Band 12 Ant 0	Front	0.360	0.568	0.151	0.084	0.93	0.60	
	Back	0.803	0.703	0.492	0.191	1.51	1.49	
	Left side	0.326	0.072			0.40	0.33	
	Right side	0.640	0.541	0.377	0.089	1.18	1.11	
	Top side		0.371	0.209	0.034	0.37	0.24	
	Bottom side	0.313				0.31	0.31	
LTE Band 12 Ant 1	Front	0.264	0.568	0.151	0.084	0.83	0.50	
	Back	0.642	0.703	0.492	0.191	1.35	1.33	
	Left side	0.256	0.072			0.33	0.26	
	Right side	0.148	0.541	0.377	0.089	0.69	0.61	
	Top side	0.504	0.371	0.209	0.034	0.88	0.75	
	Bottom side					0.00	0.00	
LTE Band 13 Ant 0	Front	0.357	0.568	0.151	0.084	0.93	0.59	
	Back	0.835	0.703	0.492	0.191	1.54	1.52	
	Left side	0.419	0.072			0.49	0.42	
	Right side	0.649	0.541	0.377	0.089	1.19	1.12	
	Top side		0.371	0.209	0.034	0.37	0.24	
	Bottom side	0.208				0.21	0.21	
LTE Band 13 Ant 1	Front	0.186	0.568	0.151	0.084	0.75	0.42	
	Back	0.658	0.703	0.492	0.191	1.36	1.34	
	Left side	0.140	0.072			0.21	0.14	

	Right side	0.081	0.541	0.377	0.089	0.62	0.55	
	Top side	0.460	0.371	0.209	0.034	0.83	0.70	
	Bottom side					0.00	0.00	
LTE Band 5 Ant 0	Front	0.532	0.568	0.151	0.084	1.10	0.77	
	Back	1.127	0.703	0.492	0.191	**1.83**	**1.81**	**Case 9/10**
	Left side	0.497	0.072			0.57	0.50	
	Right side	0.690	0.541	0.377	0.089	1.23	1.16	
	Top side		0.371	0.209	0.034	0.37	0.24	
	Bottom side	0.336				0.34	0.34	
LTE Band 5 Ant 1	Front	0.124	0.568	0.151	0.084	0.69	0.36	
	Back	0.695	0.703	0.492	0.191	1.40	1.38	
	Left side	0.102	0.072			0.17	0.10	
	Right side	0.091	0.541	0.377	0.089	0.63	0.56	
	Top side	0.348	0.371	0.209	0.034	0.72	0.59	
	Bottom side					0.00	0.00	
LTE Band 66 Ant 0	Front	0.366	0.568	0.151	0.084	0.93	0.60	
	Back	0.996	0.703	0.492	0.191	**1.70**	**1.68**	**Case 11/12**
	Left side	0.053	0.072			0.13	0.05	
	Right side	0.060	0.541	0.377	0.089	0.60	0.53	
	Top side		0.371	0.209	0.034	0.37	0.24	
	Bottom side	1.289				1.29	1.29	
LTE Band 66 Ant 1	Front	0.263	0.568	0.151	0.084	0.83	0.50	
	Back	0.684	0.703	0.492	0.191	1.39	1.37	
	Left side	0.072	0.072			0.14	0.07	
	Right side	0.038	0.541	0.377	0.089	0.58	0.50	
	Top side	0.645	0.371	0.209	0.034	1.02	0.89	
	Bottom side					0.00	0.00	
LTE Band 2 Ant 0	Front	0.498	0.568	0.151	0.084	1.07	0.73	
	Back	0.667	0.703	0.492	0.191	1.37	1.35	
	Left side	0.298	0.072			0.37	0.30	
	Right side	0.079	0.541	0.377	0.089	0.62	0.55	
	Top side		0.371	0.209	0.034	0.37	0.24	
	Bottom side	1.330				1.33	1.33	
LTE Band 2 Ant 1	Front	0.248	0.568	0.151	0.084	0.82	0.48	
	Back	0.540	0.703	0.492	0.191	1.24	1.22	
	Left side	0.161	0.072			0.23	0.16	
	Right side		0.541	0.377	0.089	0.54	0.47	
	Top side	0.699	0.371	0.209	0.034	1.07	0.94	
	Bottom side					0.00	0.00	
LTE Band 7 Ant 0	Front	0.492	0.568	0.151	0.084	1.06	0.73	
	Back	1.240	0.703	0.492	0.191	**1.94**	**1.92**	**Case 13/14**
	Left side	0.064	0.072			0.14	0.06	
	Right side		0.541	0.377	0.089	0.54	0.47	
	Top side		0.371	0.209	0.034	0.37	0.24	
	Bottom side	1.384				1.38	1.38	
LTE Band 14 Ant 0	Front	0.396	0.568	0.151	0.084	0.96	0.63	
	Back	1.037	0.703	0.492	0.191	**1.74**	**1.72**	**Case 15/16**
	Left side	0.453	0.072			0.53	0.45	
	Right side	0.682	0.541	0.377	0.089	1.22	1.15	
	Top side		0.371	0.209	0.034	0.37	0.24	
	Bottom side	0.283				0.28	0.28	
LTE Band 14 Ant 1	Front	0.228	0.568	0.151	0.084	0.80	0.46	
	Back	0.645	0.703	0.492	0.191	1.35	1.33	
	Left side	0.137	0.072			0.21	0.14	
	Right side	0.097	0.541	0.377	0.089	0.64	0.56	
	Top side	0.454	0.371	0.209	0.034	0.83	0.70	

	Bottom side					0.00	0.00	
LTE Band 30 Ant 0	Front	0.661	0.568	0.151	0.084	1.23	0.90	
	Back	1.414	0.703	0.492	0.191	**2.12**	**2.10**	**Case 17/18**
	Left side	0.805	0.072			0.88	0.81	
	Right side	0.093	0.541	0.377	0.089	0.63	0.56	
	Top side		0.371	0.209	0.034	0.37	0.24	
	Bottom side	1.002				1.00	1.00	

16.3 Body-Worn Accessory Exposure Conditions

WWAN Band	Exposure Position	1	3	4	5	1+3	1+4+5	SPLSR
		WWAN	WLAN2.4GHz	WLAN5GHz	Bluetooth	Summed	Summed	
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	
GSM850 Ant 0	Front	0.497	0.159	0.111	0.084	0.66	0.69	
	Back	0.951	0.395	0.348	0.191	1.35	1.49	
	Front with Headset					0.00	0.00	
	Back with Headset					0.00	0.00	
GSM1900 Ant 0	Front	0.968	0.159	0.111	0.084	1.13	1.16	
	Back	1.334	0.395	0.348	0.191	**1.73**	**1.87**	**Case 19/20**
	Front with Headset					0.00	0.00	
	Back with Headset	1.175				1.18	1.18	
WCDMA II Ant 0	Front	0.943	0.159	0.111	0.084	1.10	1.14	
	Back	1.411	0.395	0.348	0.191	**1.81**	**1.95**	**Case 21/22**
	Front with Headset					0.00	0.00	
	Back with Headset	1.292				1.29	1.29	
WCDMA IV Ant 0	Front	0.454	0.159	0.111	0.084	0.61	0.65	
	Back	1.301	0.395	0.348	0.191	**1.70**	**1.84**	**Case 23/24**
	Front with Headset					0.00	0.00	
	Back with Headset	1.219				1.22	1.22	
WCDMA V Ant 0	Front	0.583	0.159	0.111	0.084	0.74	0.78	
	Back	1.274	0.395	0.348	0.191	**1.67**	**1.81**	**Case 25/26**
	Front with Headset					0.00	0.00	
	Back with Headset	1.250				1.25	1.25	
LTE Band 12 Ant 0	Front	0.360	0.159	0.111	0.084	0.52	0.56	
	Back	0.803	0.395	0.348	0.191	1.20	1.34	
	Front with Headset					0.00	0.00	
	Back with Headset					0.00	0.00	
LTE Band 12 Ant 1	Front	0.264	0.159	0.111	0.084	0.42	0.46	
	Back	1.048	0.395	0.348	0.191	1.44	**1.59**	
	Front with Headset					0.00	0.00	
	Back with Headset					0.00	0.00	
LTE Band 13 Ant 0	Front	0.357	0.159	0.111	0.084	0.52	0.55	
	Back	0.835	0.395	0.348	0.191	1.23	1.37	
	Front with Headset					0.00	0.00	
	Back with Headset					0.00	0.00	
LTE Band 13 Ant 1	Front	0.371	0.159	0.111	0.084	0.53	0.57	
	Back	0.813	0.395	0.348	0.191	1.21	1.35	
	Front with Headset					0.00	0.00	
	Back with Headset					0.00	0.00	
LTE Band 5 Ant 0	Front	0.532	0.159	0.111	0.084	0.69	0.73	
	Back	1.174	0.395	0.348	0.191	**1.57**	**1.71**	**Case 27**
	Front with Headset					0.00	0.00	
	Back with Headset					0.00	0.00	
LTE Band 5 Ant 1	Front	0.156	0.159	0.111	0.084	0.32	0.35	
	Back	1.000	0.395	0.348	0.191	1.40	1.54	

	Front with Headset					0.00	0.00	
	Back with Headset					0.00	0.00	
LTE Band 66 Ant 0	Front	0.464	0.159	0.111	0.084	0.62	0.66	
	Back	1.397	0.395	0.348	0.191	**1.79**	**1.94**	**Case 28/29**
	Front with Headset					0.00	0.00	
	Back with Headset	1.303				1.30	1.30	
LTE Band 66 Ant 1	Front	0.359	0.159	0.111	0.084	0.52	0.55	
	Back	1.044	0.395	0.348	0.191	1.44	1.58	
	Front with Headset					0.00	0.00	
	Back with Headset					0.00	0.00	
LTE Band 2 Ant 0	Front	0.910	0.159	0.111	0.084	1.07	1.11	
	Back	1.420	0.395	0.348	0.191	**1.82**	**1.96**	**Case 30/31**
	Front with Headset					0.00	0.00	
	Back with Headset	1.298				1.30	1.30	
LTE Band 2 Ant 1	Front	0.652	0.159	0.111	0.084	0.81	0.85	
	Back	0.958	0.395	0.348	0.191	1.35	1.50	
	Front with Headset					0.00	0.00	
	Back with Headset					0.00	0.00	
LTE Band 7 Ant 0	Front	0.573	0.159	0.111	0.084	0.73	0.77	
	Back	1.430	0.395	0.348	0.191	**1.83**	**1.97**	**Case 32/33**
	Front with Headset					0.00	0.00	
	Back with Headset	1.349				1.35	1.35	
LTE Band 14 Ant 0	Front	0.396	0.159	0.111	0.084	0.56	0.59	
	Back	1.037	0.395	0.348	0.191	1.43	1.58	
	Front with Headset					0.00	0.00	
	Back with Headset					0.00	0.00	
LTE Band 14 Ant 1	Front	0.283	0.159	0.111	0.084	0.44	0.48	
	Back	0.776	0.395	0.348	0.191	1.17	1.32	
	Front with Headset					0.00	0.00	
	Back with Headset					0.00	0.00	
LTE Band 30 Ant 0	Front	0.661	0.159	0.111	0.084	0.82	0.86	
	Back	1.414	0.395	0.348	0.191	**1.81**	**1.95**	**Case 34/35**
	Front with Headset					0.00	0.00	
	Back with Headset	1.309				1.31	1.31	

Sensor-off

WWAN Band	1	3	4	1+3	1+4
	WWAN	WLAN2.4GHz	WLAN5GHz	Summed	Summed
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM1900 Ant 0	0.310	0.115	0.117	0.43	0.43
	0.120	0.073	0.325	0.19	0.45
WCDMA II Ant 0	0.491	0.115	0.117	0.61	0.61
	0.342	0.073	0.325	0.42	0.67
WCDMA IV Ant 0	0.841	0.115	0.117	0.96	0.96
	0.642	0.073	0.325	0.72	0.97
LTE Band 12 Ant 1	0.303	0.115	0.117	0.42	0.42
	0.121	0.073	0.325	0.19	0.45
LTE Band 5 Ant 1	0.340	0.115	0.117	0.46	0.46
	0.104	0.073	0.325	0.18	0.43
LTE Band 66 Ant 0	0.858	0.115	0.117	0.97	0.98
	0.807	0.073	0.325	0.88	1.13
LTE Band 66 Ant 1	0.563	0.115	0.117	0.68	0.68
		0.073	0.325	0.07	0.33
LTE Band 2 Ant 0	0.951	0.115	0.117	1.07	1.07
	0.413	0.073	0.325	0.49	0.74
LTE Band 2 Ant 1	0.451	0.115	0.117	0.57	0.57
		0.073	0.325	0.07	0.33
LTE Band 7 Ant 0	1.165	0.115	0.117	1.28	1.28
	1.263	0.073	0.325	1.34	1.59
LTE Band 30 Ant 0	0.262	0.115	0.117	0.38	0.38
	0.224	0.073	0.325	0.30	0.55

16.4 Product specific 10g SAR Exposure Conditions

WWAN Band	Exposure Position	1	3	4	1+3	1+4	SPLSR
		WWAN	WLAN2.4GHz	WLAN5GHz	Summed	Summed	
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	
GSM1900 Ant 0	Front			0.283	0.00	0.28	
	Back	2.342	0.971	0.975	3.31	3.32	
	Left side			0.037	0.00	0.04	
	Right side			0.732	0.00	0.73	
	Top side			0.255	0.00	0.26	
	Bottom side	1.932			1.93	1.93	
WCDMA II Ant 0	Front	1.739		0.283	1.74	2.02	
	Back	2.958	0.971	0.975	3.93	3.93	
	Left side	1.984		0.037	1.98	2.02	
	Right side			0.732	0.00	0.73	
	Top side			0.255	0.00	0.26	
	Bottom side	3.494			3.49	3.49	
WCDMA IV Ant 0	Front	1.669		0.283	1.67	1.95	
	Back	1.910	0.971	0.975	2.88	2.89	
	Left side			0.037	0.00	0.04	
	Right side			0.732	0.00	0.73	
	Top side			0.255	0.00	0.26	
	Bottom side	3.299			3.30	3.30	
WCDMA V Ant 0	Front			0.283	0.00	0.28	
	Back	2.591	0.971	0.975	3.56	3.57	
	Left side			0.037	0.00	0.04	
	Right side			0.732	0.00	0.73	
	Top side			0.255	0.00	0.26	
	Bottom side				0.00	0.00	
LTE Band 12 Ant 1	Front			0.283	0.00	0.28	
	Back	2.546	0.971	0.975	3.52	3.52	
	Left side			0.037	0.00	0.04	
	Right side			0.732	0.00	0.73	
	Top side			0.255	0.00	0.26	
	Bottom side				0.00	0.00	
LTE Band 5 Ant 1	Front			0.283	0.00	0.28	
	Back	2.764	0.971	0.975	3.74	3.74	
	Left side			0.037	0.00	0.04	
	Right side			0.732	0.00	0.73	
	Top side			0.255	0.00	0.26	
	Bottom side				0.00	0.00	
LTE Band 66 Ant 0	Front	1.653		0.283	1.65	1.94	
	Back	2.226	0.971	0.975	3.20	3.20	
	Left side			0.037	0.00	0.04	
	Right side			0.732	0.00	0.73	
	Top side			0.255	0.00	0.26	
	Bottom side	3.170			3.17	3.17	
LTE Band 66 Ant 1	Front	1.356		0.283	1.36	1.64	
	Back	2.769	0.971	0.975	3.74	3.74	
	Left side			0.037	0.00	0.04	
	Right side			0.732	0.00	0.73	
	Top side	1.707		0.255	1.71	1.96	
	Bottom side				0.00	0.00	
LTE Band 2 Ant 0	Front	1.808		0.283	1.81	2.09	
	Back	2.786	0.971	0.975	3.76	3.76	
	Left side	1.978		0.037	1.98	2.02	

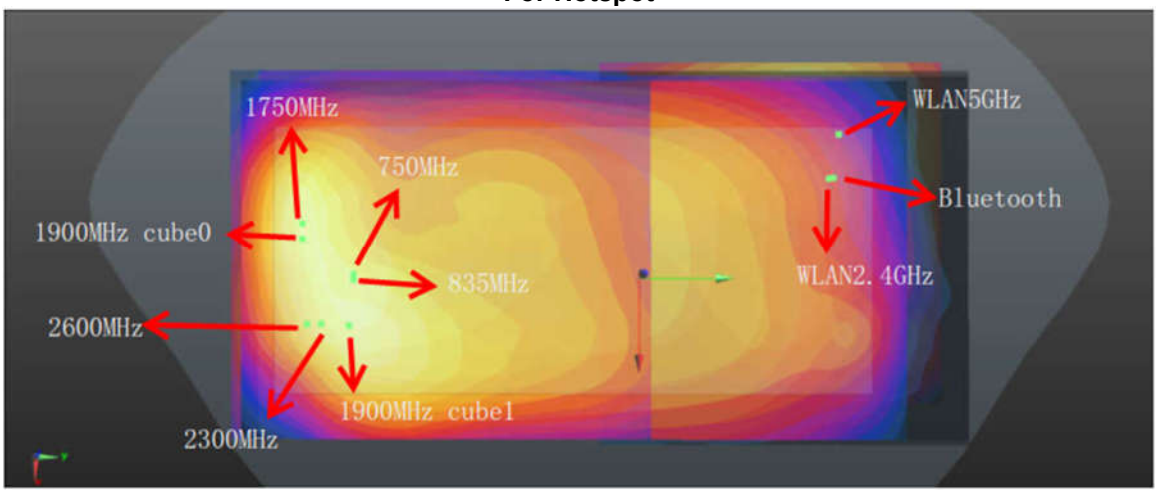
	Right side			0.732	0.00	0.73	
	Top side			0.255	0.00	0.26	
	Bottom side	3.258			3.26	3.26	
LTE Band 2 Ant 1	Front	0.540		0.283	0.54	0.82	
	Back	2.471	0.971	0.975	3.44	3.45	
	Left side	0.775		0.037	0.78	0.81	
	Right side			0.732	0.00	0.73	
	Top side	1.800		0.255	1.80	2.06	
	Bottom side				0.00	0.00	
LTE Band 7 Ant 0	Front	1.747		0.283	1.75	2.03	
	Back	2.378	0.971	0.975	3.35	3.35	
	Left side			0.037	0.00	0.04	
	Right side			0.732	0.00	0.73	
	Top side			0.255	0.00	0.26	
	Bottom side	1.941			1.94	1.94	
LTE Band 30 Ant 0	Front	1.736		0.283	1.74	2.02	
	Back	3.512	0.971	0.975	**4.48**	**4.49**	**Case 36/37**
	Left side	1.828		0.037	1.83	1.87	
	Right side			0.732	0.00	0.73	
	Top side			0.255	0.00	0.26	
	Bottom side	2.630			2.63	2.63	

16.5 SPLSR Evaluation and Analysis

General Note:

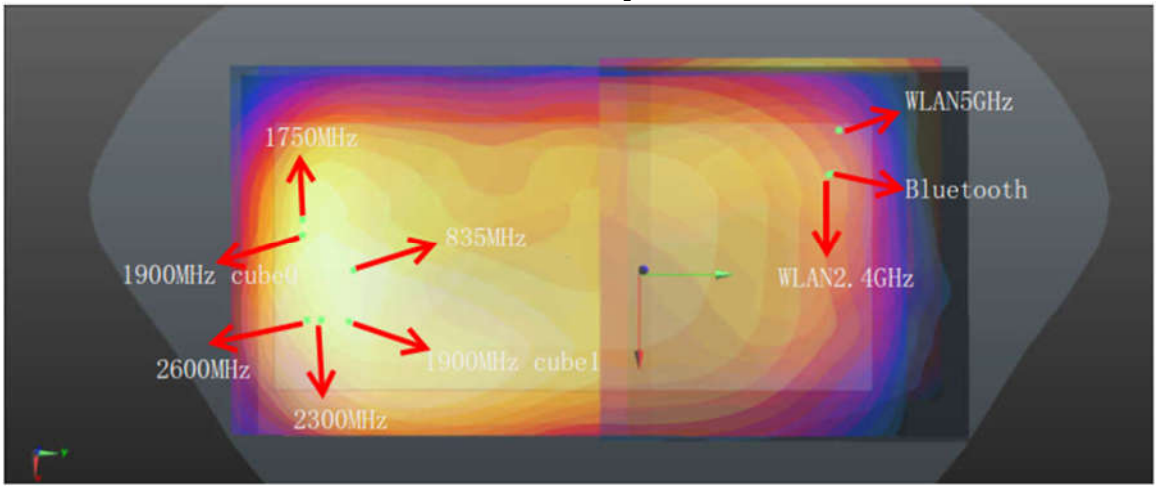
1. When standalone SAR is measured for both antennas in the pair, the peak location separation distance is computed by the square root of [(x1−x2)2 + (y1−y2)2 + (z1−z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates in the area scans or extrapolated peak SAR locations in the zoom scans, as 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.

For Hotspot



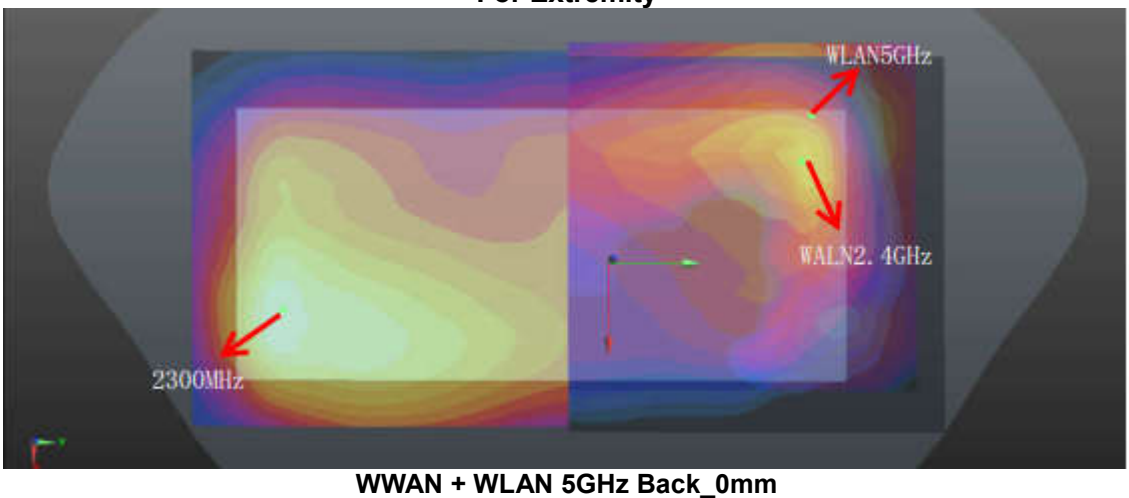
WWAN + WLAN 5GHz/2.4GHz + Bluetooth Back_5mm

For Body



WWAN + WLAN 5GHz/2.4GHz + Bluetooth Back_5mm

For Extremity



WWAN + WLAN 5GHz Back_0mm

For Hotspot

	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 1	GSM850	Back	0.951	5	-0.019	-0.08	-0.208	147.4	1.65	0.01	Not required
	WLAN2.4G		0.703	5	-0.0263	0.0672	-0.207				
Case 2	GSM850	Back	0.951	5	-0.019	-0.08	-0.208	148.5	1.44	0.01	Not required
	WLAN5G		0.492	5	-0.051	0.065	-0.207				
	GSM850		0.951	5	-0.019	-0.08	-0.208	138.2	1.14	0.01	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	WLAN5G		0.492	5	-0.051	0.065	-0.207	13.0	0.68	0.04	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
Case 3	GSM1900	Back	0.971	5	-0.002	-0.079	-0.207	148.2	1.67	0.01	Not required
	WLAN2.4G		0.703	5	-0.0263	0.0672	-0.207				
Case 4	GSM1900	Back	0.971	5	-0.002	-0.079	-0.207	152.1	1.46	0.01	Not required
	WLAN5G		0.492	5	-0.051	0.065	-0.207				
	GSM1900		0.971	5	-0.002	-0.079	-0.207	141.0	1.16	0.01	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	WLAN5G		0.492	5	-0.051	0.065	-0.207	13.0	0.68	0.04	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
Case 5	WCDMA IV	Back	1.088	5	-0.026	-0.088	-0.207	155.2	1.79	0.02	Not required
	WLAN2.4G		0.703	5	-0.0263	0.0672	-0.207				
Case 6	WCDMA IV	Back	1.088	5	-0.026	-0.088	-0.207	155.0	1.58	0.01	Not required
	WLAN5G		0.492	5	-0.051	0.065	-0.207				
	WCDMA IV		1.088	5	-0.026	-0.088	-0.207	145.2	1.28	0.01	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	WLAN5G		0.492	5	-0.051	0.065	-0.207	13.0	0.68	0.04	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
Case 7	WCDMA V	Back	1.274	5	-0.019	-0.08	-0.208	147.4	1.98	0.02	Not required
	WLAN2.4G		0.703	5	-0.0263	0.0672	-0.207				
Case 8	WCDMA V	Back	1.274	5	-0.019	-0.08	-0.208	148.5	1.77	0.02	Not required
	WLAN5G		0.492	5	-0.051	0.065	-0.207				
	WCDMA V		1.274	5	-0.019	-0.08	-0.208	138.2	1.47	0.01	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	WLAN5G		0.492	5	-0.051	0.065	-0.207	13.0	0.68	0.04	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
Case 9	LTE Band 5	Back	1.127	5	-0.0205	-0.08	-0.208	147.3	1.83	0.02	Not required
	WLAN2.4G		0.703	5	-0.0263	0.0672	-0.207				
Case 10	LTE Band 5	Back	1.127	5	-0.0205	-0.08	-0.208	148.2	1.62	0.01	Not required

	WLAN5G		0.492	5	-0.051	0.065	-0.207				
	LTE Band 5		1.127	5	-0.0205	-0.08	-0.208	138.0	1.32	0.01	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	WLAN5G		0.492	5	-0.051	0.065	-0.207	13.0	0.68	0.04	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
Case 11	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 66	Back	0.996	5	-0.0275	-0.087	-0.207	154.2	1.70	0.01	Not required
	WLAN2.4G		0.703	5	-0.0263	0.0672	-0.207				
Case 12	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 66	Back	0.996	5	-0.0275	-0.087	-0.207	153.8	1.49	0.01	Not required
	WLAN5G		0.492	5	-0.051	0.065	-0.207				
	LTE Band 66		0.996	5	-0.0275	-0.087	-0.207	144.1	1.19	0.01	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	WLAN5G		0.492	5	-0.051	0.065	-0.207	13.0	0.68	0.04	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
Case 13	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 7	Back	1.24	5	-0.0275	-0.087	-0.207	154.2	1.94	0.02	Not required
	WLAN2.4G		0.703	5	-0.0263	0.0672	-0.207				
Case 14	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 7	Back	1.24	5	-0.0275	-0.087	-0.207	153.8	1.73	0.01	Not required
	WLAN5G		0.492	5	-0.051	0.065	-0.207				
	LTE Band 7		1.24	5	-0.0275	-0.087	-0.207	144.1	1.43	0.01	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	WLAN5G		0.492	5	-0.051	0.065	-0.207	13.0	0.68	0.04	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
Case 15	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 14	Back	1.037	5	-0.011	-0.0815	-0.208	149.5	1.74	0.02	Not required
	WLAN2.4G		0.703	5	-0.0263	0.0672	-0.207				
Case 16	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 14	Back	1.037	5	-0.011	-0.0815	-0.208	151.9	1.53	0.01	Not required
	WLAN5G		0.492	5	-0.051	0.065	-0.207				
	LTE Band 14		1.037	5	-0.011	-0.0815	-0.208	141.2	1.23	0.01	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	WLAN5G		0.492	5	-0.051	0.065	-0.207	13.0	0.68	0.04	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
Case 17	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 30	Back	1.414	5	0.0057	-0.0816	-0.207	152.2	2.12	0.02	Not required
	WLAN2.4G		0.703	5	-0.0263	0.0672	-0.207				
Case 18	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 30	Back	1.414	5	0.0057	-0.0816	-0.207	157.2	1.91	0.02	Not required
	WLAN5G		0.492	5	-0.051	0.065	-0.207				
	LTE Band 30		1.414	5	0.0057	-0.0816	-0.207	145.8	1.61	0.01	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	WLAN5G		0.492	5	-0.051	0.065	-0.207	13.0	0.68	0.04	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				

For Body

	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 19	GSM1900	Back	1.334	5	-0.002	-0.079	-0.207	142.4	1.73	0.02	Not required
	WLAN2.4G		0.395	5	-0.0461	0.0564	-0.208				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 20	GSM1900	Back	1.334	5	-0.002	-0.079	-0.207	149.1	1.68	0.01	Not required
	WLAN5G		0.348	5	-0.056	0.06	-0.207				
	GSM1900		1.334	5	-0.002	-0.079	-0.207	141.0	1.53	0.01	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	WLAN5G		0.348	5	-0.056	0.06	-0.207	15.2	0.54	0.03	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 21	WCDMA II cube0	Back	1.411	5	-0.023	-0.087	-0.207	145.3	1.81	0.02	Not required
	WLAN2.4G		0.395	5	-0.0461	0.0564	-0.208				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 22	WCDMA II	Back	1.411	5	-0.023	-0.087	-0.207	150.7	1.76	0.02	Not required
	WLAN5G		0.348	5	-0.056	0.06	-0.207				
	WCDMA II		1.411	5	-0.023	-0.087	-0.207	144.6	1.60	0.01	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	WLAN5G		0.348	5	-0.056	0.06	-0.207	15.2	0.54	0.03	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 21	WCDMA II cube1	Back	1.411	5	-0.0055	-0.08	-0.207	142.3	1.81	0.02	Not required
	WLAN2.4G		0.395	5	-0.0461	0.0564	-0.208				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 22	WCDMA II	Back	1.411	5	-0.0055	-0.08	-0.207	148.8	1.76	0.02	Not required
	WLAN5G		0.348	5	-0.056	0.06	-0.207				
	WCDMA II		1.411	5	-0.0055	-0.08	-0.207	141.0	1.60	0.01	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	WLAN5G		0.348	5	-0.056	0.06	-0.207	15.2	0.54	0.03	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 23	WCDMA IV	Back	1.301	5	-0.026	-0.088	-0.207	145.8	1.70	0.02	Not required
	WLAN2.4G		0.395	5	-0.0461	0.0564	-0.208				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 24	WCDMA IV	Back	1.301	5	-0.026	-0.088	-0.207	151.0	1.65	0.01	Not required
	WLAN5G		0.348	5	-0.056	0.06	-0.207				
	WCDMA IV		1.301	5	-0.026	-0.088	-0.207	145.2	1.49	0.01	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	WLAN5G		0.348	5	-0.056	0.06	-0.207	15.2	0.54	0.03	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 25	WCDMA V	Back	1.274	5	-0.019	-0.08	-0.208	139.1	1.67	0.02	Not required
	WLAN2.4G		0.395	5	-0.0461	0.0564	-0.208				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 26	WCDMA V	Back	1.274	5	-0.019	-0.08	-0.208	144.8	1.62	0.01	Not required

	WLAN5G		0.348	5	-0.056	0.06	-0.207				
	WCDMA V		1.274	5	-0.019	-0.08	-0.208	138.2	1.47	0.01	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	WLAN5G		0.348	5	-0.056	0.06	-0.207	15.2	0.54	0.03	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
Case 27	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 5	Back	1.174	5	-0.0205	-0.08	-0.208	144.4	1.52	0.01	Not required
	WLAN5G		0.348	5	-0.056	0.06	-0.207				
	LTE Band 5		1.174	5	-0.0205	-0.08	-0.208	138.0	1.37	0.01	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	WLAN5G		0.348	5	-0.056	0.06	-0.207	15.2	0.54	0.03	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
Case 28	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 66	Back	1.397	5	-0.0275	-0.087	-0.207	144.6	1.79	0.02	Not required
	WLAN2.4G		0.395	5	-0.0461	0.0564	-0.208				
Case 29	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 66	Back	1.397	5	-0.0275	-0.087	-0.207	149.7	1.75	0.02	Not required
	WLAN5G		0.348	5	-0.056	0.06	-0.207				
	LTE Band 66		1.397	5	-0.0275	-0.087	-0.207	144.1	1.59	0.01	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	WLAN5G		0.348	5	-0.056	0.06	-0.207	15.2	0.54	0.03	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
Case 30	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 2 cube 0	Back	1.42	5	-0.023	-0.087	-0.207	145.3	1.82	0.02	Not required
	WLAN2.4G		0.395	5	-0.0461	0.0564	-0.208				
Case 31	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 2 cube 0	Back	1.42	5	-0.023	-0.087	-0.207	150.7	1.77	0.02	Not required
	WLAN5G		0.348	5	-0.056	0.06	-0.207				
	LTE Band 2 cube 0		1.42	5	-0.023	-0.087	-0.207	144.6	1.61	0.01	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	WLAN5G		0.348	5	-0.056	0.06	-0.207	15.2	0.54	0.03	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
Case 30	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 2 cube 1	Back	1.42	5	-0.0055	-0.0815	-0.207	143.8	1.82	0.02	Not required
	WLAN2.4G		0.395	5	-0.0461	0.0564	-0.208				
Case 31	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 2 cube 1	Back	1.42	5	-0.0055	-0.0815	-0.207	150.2	1.77	0.02	Not required
	WLAN5G		0.348	5	-0.056	0.06	-0.207				
	LTE Band 2 cube 1		1.42	5	-0.0055	-0.0815	-0.207	142.5	1.61	0.01	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	WLAN5G		0.348	5	-0.056	0.06	-0.207	15.2	0.54	0.03	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
Case 32	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 7	Back	1.43	5	0.0019	-0.0868	-0.207	151.0	1.83	0.02	Not required
	WLAN2.4G		0.395	5	-0.0461	0.0564	-0.208				
Case 33	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 7	Back	1.43	5	0.0019	-0.0868	-0.207	157.8	1.78	0.02	Not required

	WLAN5G		0.348	5	-0.056	0.06	-0.207				
	LTE Band 7		1.43	5	0.0019	-0.0868	-0.207	149.6	1.62	0.01	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	WLAN5G		0.348	5	-0.056	0.06	-0.207	15.2	0.54	0.03	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
Case 34	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 30	Back	1.414	5	0.0057	-0.0816	-0.207	147.4	1.81	0.02	Not required
	WLAN2.4G		0.395	5	-0.0461	0.0564	-0.208				
Case 35	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 30	Back	1.414	5	0.0057	-0.0816	-0.207	154.5	1.76	0.02	Not required
	WLAN5G		0.348	5	-0.056	0.06	-0.207				
	LTE Band 30		1.414	5	0.0057	-0.0816	-0.207	145.8	1.61	0.01	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				
	WLAN5G		0.348	5	-0.056	0.06	-0.207	15.2	0.54	0.03	Not required
	Bluetooth		0.191	5	-0.0413	0.0564	-0.208				

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Case 36	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 30	Back	3.512	0	-0.0031	-0.0816	-0.207	155.1	4.48	0.06	Not required
	WLAN2.4GHz		0.971	0	-0.0427	0.0684	-0.207				
Case 37	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 30	Back	3.512	0	-0.0031	-0.0816	-0.207	148.2	4.49	0.06	Not required
	WLAN5G		0.975	0	-0.047	0.06	-0.207				

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17. 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.

18. 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 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

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

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

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

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

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

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

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

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

[14] FCC KDB 616217 D04 v01r02, “SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers”, Oct 2015

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