FCC SAR Test Report

APPLICANT	:	Motorola Mobility, LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola
MODEL NAME	:	5137
FCC ID	:	IHDT56UC2
STANDARD	:	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2003

We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Eric Huang / Deputy Manager

Approved by: Jones Tsai / Manager

Testing Laboratory
1190

SPORTON INTERNATIONAL INC.
No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.)

Table of Contents

1. Statement of Compliance **4**
2. Administration Data **5**
3. Guidance Standard **5**
4. Equipment Under Test (EUT) **6**
4.1 General Information 6
4.2 General LTE SAR Test and Reporting Considerations 7
5. RF Exposure Limits **10**
5.1 Uncontrolled Environment 10
5.2 Controlled Environment 10
6. Specific Absorption Rate (SAR) **11**
6.1 Introduction 11
6.2 SAR Definition 11
7. System Description and Setup **12**
8. Measurement Procedures **13**
8.1 Spatial Peak SAR Evaluation 13
8.2 Power Reference Measurement 14
8.3 Area Scan 14
8.4 Zoom Scan 15
8.5 Volume Scan Procedures 15
8.6 Power Drift Monitoring 15
9. Test Equipment List **16**
10. System Verification **17**
10.1 Tissue Verification 17
10.2 System Performance Check Results 19
11. RF Exposure Positions **21**
11.1 Ear and handset reference point 21
11.2 Definition of the cheek position 22
11.3 Definition of the tilt position 23
11.4 Body Worn Accessory 23
11.5 Wireless Router 24
11.6 Extremity Exposure Configurations 24
12. Conducted RF Output Power (Unit: dBm) **25**
13. Antenna Location **60**
14. SAR Test Results **61**
14.1 Head SAR 63
14.2 Hotspot SAR 66
14.3 Extremity SAR 70
14.4 Body Worn Accessory SAR 71
14.5 Repeated SAR Measurement 73
15. Simultaneous Transmission Analysis **74**
15.1 Head Exposure Conditions 75
15.2 Hotspot Exposure Conditions 76
15.3 Body-Worn Accessory Exposure Conditions 78
16. Uncertainty Assessment **79**
17. References **82**
Appendix A. Plots of System Performance Check
Appendix B. Plots of High SAR Measurement
Appendix C. DASY Calibration Certificate

Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA541573A	Rev. 01	Initial issue of report	May 28, 2015

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility, LLC, Mobile Cellular Phone, 5137**, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary				Highest Simultaneous Transmission 1g SAR (W/kg)
		Head (Separation 0mm)	Body-worn (Separation 15mm)	Wireless Router (Separation 10mm)	Extremity (Separation 0mm)	
		1g SAR (W/kg)			10g SAR (W/kg)	
PCE	GSM850	0.37	0.94	0.47	1.06	1.59
	GSM1900	0.25	0.34	0.96		
	WCDMA Band V	0.35	1.07	1.00	2.80	
	WCDMA Band IV	0.21	0.38	1.09		
	WCDMA Band II	0.35	0.51	1.31	**3.50**	
	LTE Band 12	0.29	0.80	**1.36**	2.07	
	LTE Band 17	0.37	0.88	0.83	2.44	
	LTE Band 5	0.37	**1.11**	1.29	2.01	
	LTE Band 4	0.34	0.51	1.17		
	LTE Band 2	0.38	0.48	1.28	3.11	
	LTE Band 25	0.30	0.39	1.09		
	LTE Band 7	0.62	0.47	1.19		
	LTE Band 41	0.29	0.17	0.48		
DTS	2.4GHz WLAN	0.79	0.09	0.30		1.59
NII	5.2GHz WLAN			0.14		1.48
	5.3GHz WLAN	**0.99**	0.08			
	5.5GHz WLAN	0.56	0.09			
	5.8GHz WLAN	0.59	0.10	0.07		
DSS	Bluetooth	0.06	< 0.01	0.02		1.36
Date of Testing:		2015/04/22 ~ 2015/5/19				

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for partial-body, 4.0 W/kg for Extremity) 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 1528-2003.

2. Administration Data

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978

Applicant	
Company Name	Motorola Mobility, LLC
Address	222 W Merchandise Mart Plaza, Suite 1800, Chicago, IL 60654, United States

Manufacturer	
Company Name	Motorola Mobility, LLC
Address	222 W Merchandise Mart Plaza, Suite 1800, Chicago, IL 60654, United States

3. Guidance Standard

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 1528-2003
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r03
- FCC KDB 865664 D02 SAR Reporting v01r01
- FCC KDB 447498 D01 General RF Exposure Guidance v05r02
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r02
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02
- FCC KDB 941225 D01 3G SAR Procedures v03
- FCC KDB 941225 D05 SAR for LTE Devices v02r03
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r01
- FCC KDB 941225 D06 Hotspot Mode SAR v02

4. Equipment Under Test (EUT)

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	5137
FCC ID	IHDT56UC2
IMEI Code	355486060017417
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	· GSM/GPRS/EGPRS · RMC/AMR 12.2Kbps · HSDPA · HSUPA · DC-HSDPA · LTE: QPSK, 16QAM · 802.11a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 · Bluetooth v3.0 with EDR，Bluetooth v4.0 with LE · NFC:ASK
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. 802.11 40MHz bandwidth is not supported in 2.4GHz WLAN.
2. While operating in body-adjacent exposure configurations during a mobile hotspot session, reduced power limits are enforced on the GSM850, WCDMA B5 and LTE B17 / B5 transmitter. More detailed information which can be referred to “operational description”.
3. This device implements antenna tuning techniques for several WWAN (cellular) operating modes and frequencies for the purpose of improving antenna efficiency over a broad range of frequencies. Specifically, these techniques are employed in the GSM/GPRS/EDGE, WCDMA, and LTE modes. Please refer to Exhibit 12 for additional information.
4. This device 2.4GHz / 5.2GHz / 5.8GHz WLAN supports Hotspot operation and WiFi Direct (Group Client / Group Owner), and 5.3GHz / 5.5GHz WLAN supports WiFi Direct (Group Client).

4.2 General LTE SAR Test and Reporting Considerations

<table>
<tr><th colspan="2">Summarized necessary items addressed in KDB 941225 D05 v02r03</th></tr>
<tr><td>FCC ID</td><td>IHDT56UC2</td></tr>
<tr><td>Equipment Name</td><td>Mobile Cellular Phone</td></tr>
<tr><td>Operating Frequency Range of each LTE transmission band</td><td>LTE Band 12: 699.7 MHz ~ 715.3 MHz
LTE Band 17: 706.5 MHz ~ 713.5 MHz
LTE Band 05: 824.7 MHz ~ 848.3 MHz
LTE Band 04: 1710.7 MHz ~ 1754.3 MHz
LTE Band 02: 1850.7 MHz ~ 1909.3 MHz
LTE Band 25: 1850.7 MHz ~ 1914.3 MHz
LTE Band 07: 2502.5 MHz ~ 2567.5 MHz
LTE Band 41: 2498.5 MHz ~ 2687.5 MHz</td></tr>
<tr><td>Channel Bandwidth</td><td>LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 17: 5MHz, 10MHz
LTE Band 05:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 04:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 02:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 25:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 07: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz</td></tr>
<tr><td>uplink modulations used</td><td>QPSK, and 16QAM</td></tr>
<tr><td>LTE Voice / Data requirements</td><td>Voice and Data</td></tr>
<tr><td>LTE MPR permanently built-in by design</td><td>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (RB)</th><th rowspan="2">MPR (dB)</th></tr>
<tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr>
<tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr>
</table></td></tr>
<tr><td>LTE A-MPR</td><td>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)</td></tr>
<tr><td>Spectrum plots for RB configuration</td><td>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.</td></tr>
<tr><td>Power reduction applied to satisfy SAR compliance</td><td>Yes, When operating in hotspot mode that LTE B17 / B5 power reduction applied to satisfy SAR compliance.</td></tr>
<tr><td>LTE Carrier Aggregation Combinations</td><td>Inter-Band and Intra-Band possible combinations as below page and the detail power verification please referred to page48.</td></tr>
<tr><td>LTE Carrier Aggregation Additional Information</td><td>This device does not support full CA features on 3GPP Release 10. Is supports a maximum of 2 carriers in the downlink only. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. Due to carrier capability, only the combinations listed above are supported. The following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.</td></tr>
</table>

LTE Carrier Aggregation Combinations																	
Inter-Band Combinations												Intra-Band Combinations					
(PCC) B2	(SCC) B4	(PCC) B4	(SCC) B2	(PCC) B2	(SCC) B12	(PCC) B12	(SCC) B2	(PCC) B4	(SCC) B12	(PCC) B12	(SCC) B4	Non contiguous		Non contiguous		contiguous	
												(PCC) B4	(SCC) B4	(PCC) B7	(SCC) B7	(PCC) B7	(SCC) B7
20M + 20M		20M + 20M		20M + 10M		10M + 20M		20M + 10M		10M + 20M		20M + 20M		20M + 20M		20M + 20M	
20M + 15M		20M + 15M		20M + 5M		10M + 15M		20M + 5M		5M + 20M		20M + 15M		15M + 20M		20M + 15M	
20M + 10M		20M + 10M		20M + 3M		10M + 10M		15M + 10M		10M + 15M		20M + 10M		15M + 15M		20M + 10M	
20M + 5M		20M + 5M		15M + 10M		10M + 5M		15M + 5M		5M + 15M		20M + 5M		10M + 15M		15M + 20M	
15M + 20M		15M + 20M		15M + 5M		5M + 20M		10M + 10M		10M + 10M		15M + 20M		10M + 10M		15M + 15M	
15M + 15M		15M + 15M		15M + 3M		5M + 15M		10M + 5M		5M + 10M		15M + 15M		5M + 15M		10M + 20M	
15M + 10M		15M + 10M		10M + 10M		5M + 10M		5M + 10M		10M + 5M		15M + 10M		20M + 15M			
15M + 5M		15M + 5M		10M + 5M		5M + 5M		5M + 5M		5M + 5M		15M + 5M		15M + 10M			
10M + 20M		10M + 20M		10M + 3M		3M + 20M		3M + 10M		10M + 3M		10M + 20M		15M + 5M			
10M + 15M		10M + 15M		5M + 10M		3M + 15M		3M + 5M		5M + 3M		10M + 15M					
10M + 10M		10M + 10M		5M + 5M		3M + 10M		1.4M + 10M		10M + 1.4M		10M + 10M					
10M + 5M		10M + 5M		5M + 3M		3M + 5M		1.4M + 5M		5M + 1.4M		10M + 5M					
5M + 20M		5M + 20M										5M + 20M					
5M + 15M		5M + 15M										5M + 15M					
5M + 10M		5M + 10M										5M + 10M					
5M + 5M		5M + 5M										5M + 5M					
3M + 20M		3M + 20M															
3M + 15M		3M + 15M															
3M + 10M		3M + 10M															
3M + 5M		3M + 5M															
1.4M + 20M		1.4M + 20M															
1.4M + 15M		1.4M + 15M															
1.4M + 10M		1.4M + 10M															
1.4M + 5M		1.4M + 5M															

Transmission (H, M, L) channel numbers and frequencies in each LTE band								
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 17								
	Bandwidth 5 MHz				Bandwidth 10 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq. (MHz)	
L	23755		706.5		23780		709	
M	23790		710		23790		710	
H	23825		713.5		23800		711	
LTE Band 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 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 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 25												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905
LTE Band 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 41								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506
L M	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5
M	40620	2593	40620	2590	40620	2593	40620	2593
H M	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680

5. RF Exposure Limits

5.1 Uncontrolled Environment

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

5.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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

6. Specific Absorption Rate (SAR)

6.1 Introduction

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

6.2 SAR Definition

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

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

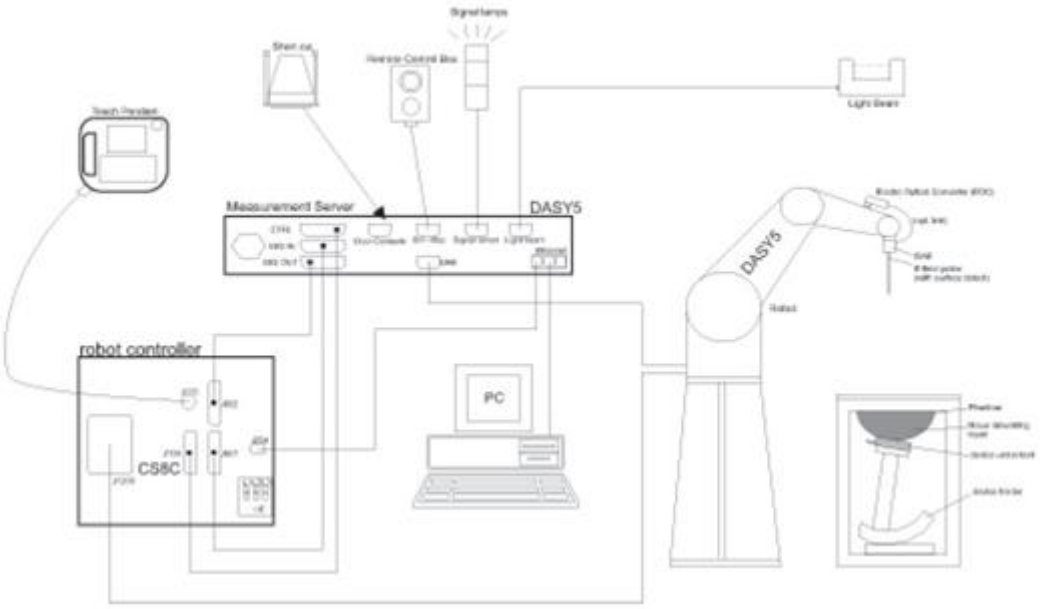
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

7. System Description and Setup

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



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

8. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

<SAR measurement>

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

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

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

8.1 Spatial Peak SAR Evaluation

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

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

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

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

8.2 Power Reference Measurement

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

8.3 Area Scan

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

Area scan parameters extracted from FCC KDB 865664 D01v01r03 SAR measurement 100 MHz to 6 GHz.

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

8.4 Zoom Scan

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

Zoom scan parameters extracted from FCC KDB 865664 D01v01r03 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.

8.5 Volume Scan Procedures

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

8.6 Power Drift Monitoring

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

9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1099	Nov. 19, 2014	Nov. 18, 2015
SPEAG	835MHz System Validation Kit	D835V2	499	Mar. 20, 2015	Mar. 19, 2016
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Nov. 14, 2014	Nov. 13, 2015
SPEAG	1900MHz System Validation Kit	D1900V2	5d041	Mar. 24, 2015	Mar. 23, 2016
SPEAG	2450MHz System Validation Kit	D2450V2	924	Nov. 19, 2014	Nov. 18, 2015
SPEAG	2600MHz System Validation Kit	D2600V2	1070	Nov. 19, 2014	Nov. 18, 2015
SPEAG	5GHz System Validation Kit	D5GHzV2	1006	Sep. 25, 2014	Sep. 24, 2015
SPEAG	Data Acquisition Electronics	DAE4	1388	Sep. 24, 2014	Sep. 23, 2015
SPEAG	Data Acquisition Electronics	DAE3	577	Oct. 06, 2014	Oct. 05, 2015
SPEAG	Data Acquisition Electronics	DAE4	1279	Jul. 23, 2014	Jul. 22, 2015
SPEAG	Data Acquisition Electronics	DAE4	1399	Nov. 13, 2014	Nov. 12, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3578	Mar. 31, 2015	Mar. 30, 2016
SPEAG	Dosimetric E-Field Probe	EX3DV4	3931	Sep. 25, 2014	Sep. 24, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3954	Nov. 21, 2014	Nov. 20, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3955	Nov. 21, 2014	Nov. 20, 2015
Wisewind	Thermometer	ETP-101	TM560	Oct. 21, 2014	Oct. 20, 2015
WonDer	Thermometer	WD-5015	TM685	Oct. 21, 2014	Oct. 20, 2015
Wisewind	Thermometer	HTC-1	TM642	Oct. 21, 2014	Oct. 20, 2015
Wisewind	Thermometer	HTC-1	TM281	Oct. 21, 2014	Oct. 20, 2015
Anritsu	Radio Communication Analyzer	MT8820C	6201074414	Feb. 06, 2015	Feb. 05, 2016
Agilent	Wireless Communication Test Set	E5515C	MY50266977	May. 27, 2014	May. 26, 2015
Anritsu	BT Base Station	MT8852B	1350002	Dec. 12, 2014	Dec. 11, 2015
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Agilent	Signal Generator	N5181A	MY50145381	Dec. 11, 2014	Dec. 10, 2015
Agilent	ENA Network Analyzer	E5071C	MY46316648	Feb. 11, 2015	Feb. 10, 2016
SPEAG	Dielectric Probe Kit	DAK-3.5	1138	Nov. 18, 2014	Nov. 17, 2015
Anritsu	Power Meter	ML2495A	1349001	Dec. 03, 2014	Dec. 02, 2015
Anritsu	Power Sensor	MA2411B	1306099	Dec. 03, 2014	Dec. 02, 2015
R&S	Spectrum Analyzer	FSP 7	101131	Jul. 10, 2014	Jul. 09, 2015
Agilent	Dual Directional Coupler	778D	50422	Note 1	
Woken	Attenuator 1	WK0602-XX	N/A	Note 1	
PE	Attenuator 2	PE7005-10	N/A	Note 1	
PE	Attenuator 3	PE7005- 3	N/A	Note 1	
AR	Power Amplifier	5S1G4M2	0328767	Note 1	
Mini-Circuits	Power Amplifier	ZVE-3W	162601250	Note 1	

General 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.

10. System Verification

10.1 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
900	50.8	48.2	0	0.9	0.1	0	1.05	55.0
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-1>

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	HSL	22.2	0.899	43.451	0.89	41.90	1.01	3.70	±5	2015/4/23
750	MSL	22.2	0.968	57.538	0.96	55.50	0.83	3.67	±5	2015/4/25
750	MSL	22.5	0.963	57.226	0.96	55.50	0.31	3.11	±5	2015/5/2
835	HSL	22.2	0.880	42.919	0.90	41.50	-2.22	3.42	±5	2015/4/22
835	HSL	22.2	0.885	43.277	0.90	41.50	-1.67	4.28	±5	2015/4/28
835	MSL	22.2	0.978	55.186	0.97	55.20	0.82	-0.03	±5	2015/4/25
835	MSL	22.2	0.976	55.961	0.97	55.20	0.62	1.38	±5	2015/4/28
835	MSL	22.2	0.964	54.823	0.97	55.20	-0.62	-0.68	±5	2015/4/29
835	MSL	22.5	0.992	57.189	0.97	55.20	2.27	3.60	±5	2015/5/1
1750	HSL	22.5	1.363	40.572	1.37	40.10	-0.51	1.18	±5	2015/4/25
1750	MSL	22.1	1.48	53.724	1.49	53.40	-0.67	0.61	±5	2015/4/26
1750	MSL	22.2	1.480	53.186	1.49	53.40	-0.67	-0.40	±5	2015/4/30
1900	HSL	22.5	1.428	40.987	1.40	40.00	2.00	2.47	±5	2015/4/24
1900	HSL	22.5	1.452	40.063	1.40	40.00	3.71	0.16	±5	2015/4/28
1900	MSL	22.2	1.56	54.78	1.52	53.30	2.63	2.78	±5	2015/4/25
1900	MSL	22.5	1.580	52.903	1.52	53.30	3.95	-0.74	±5	2015/4/27
1900	MSL	22.2	1.558	54.172	1.52	53.30	2.50	1.64	±5	2015/4/29

<Tissue Dielectric Parameter Check Results-2>

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
2450	HSL	22.5	1.859	38.685	1.80	39.20	3.28	-1.31	±5	2015/5/7
2450	HSL	22.2	1.865	38.157	1.80	39.20	3.61	-2.66	±5	2015/5/19
2450	MSL	22.1	2.032	52.296	1.95	52.70	4.21	-0.77	±5	2015/5/12
2450	MSL	22.3	2.001	53.484	1.95	52.70	2.62	1.49	±5	2015/5/13
2450	MSL	22.2	2.011	54.165	1.95	52.70	3.13	2.78	±5	2015/5/19
2600	HSL	22.2	2.049	37.175	1.96	39.00	4.54	-4.68	±5	2015/4/22
2600	HSL	22.4	2.002	38.410	1.96	39.00	2.14	-1.51	±5	2015/4/23
2600	MSL	22.5	2.193	52.388	2.16	52.50	1.53	-0.21	±5	2015/4/24
2600	MSL	22.4	2.209	51.123	2.16	52.50	2.27	-2.62	±5	2015/4/26
2600	MSL	22.4	2.209	51.123	2.16	52.50	2.27	-2.62	±5	2015/4/26
2600	MSL	22.4	2.209	51.123	2.16	52.50	2.27	-2.62	±5	2015/4/26
5200	MSL	22.2	5.451	47.722	5.30	49.00	2.85	-2.61	±5	2015/5/17
5300	HSL	22.3	4.632	36.761	4.76	35.90	-2.69	2.40	±5	2015/5/18
5300	MSL	22.2	5.580	47.530	5.42	48.90	2.95	-2.80	±5	2015/5/17
5600	HSL	22.3	4.929	36.341	5.07	35.50	-2.78	2.37	±5	2015/5/18
5600	HSL	22.3	4.929	36.341	5.07	35.50	-2.78	2.37	±5	2015/5/18
5600	MSL	22.2	5.991	47.104	5.77	48.50	3.83	-2.88	±5	2015/5/17
5800	HSL	22.3	5.129	36.102	5.27	35.30	-2.68	2.27	±5	2015/5/18
5800	MSL	22.2	6.272	46.665	6.00	48.20	4.53	-3.18	±5	2015/5/17

10.2 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.

<System Verification for 1g SAR Results>

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)	Deviation (%)
2015/4/23	750	HSL	250	D750V3-1099	EX3DV4 - SN3578	DAE4 Sn1388	2.12	8.06	5.21
2015/4/25	750	MSL	250	D750V3-1099	EX3DV4 - SN3955	DAE4 Sn1399	2.23	8.56	4.21
2015/5/2	750	MSL	250	D750V3-1099	EX3DV4 - SN3578	DAE4 Sn1388	2.04	8.56	-4.67
2015/4/22	835	HSL	250	D835V2_499	EX3DV4 - SN3931	DAE3 Sn577	2.30	9.20	0.00
2015/4/28	835	HSL	250	D835V2_499	EX3DV4 - SN3578	DAE4 Sn1388	2.14	9.20	-6.96
2015/4/25	835	MSL	250	D835V2_499	EX3DV4 - SN3955	DAE4 Sn1399	2.44	9.30	4.95
2015/4/28	835	MSL	250	D835V2_499	EX3DV4 - SN3578	DAE4 Sn1388	2.49	9.30	7.10
2015/4/29	835	MSL	250	D835V2_499	EX3DV4 - SN3578	DAE4 Sn1388	2.46	9.30	5.81
2015/5/1	835	MSL	250	D835V2_499	EX3DV4 - SN3578	DAE4 Sn1388	2.16	9.30	-7.10
2015/4/25	1750	HSL	250	D1750V2-1068	EX3DV4 - SN3955	DAE4 Sn1399	8.81	36.80	-4.24
2015/4/26	1750	MSL	250	D1750V2-1068	EX3DV4 - SN3955	DAE4 Sn1399	9.33	38.00	-1.79
2015/4/30	1750	MSL	250	D1750V2-1068	EX3DV4 - SN3578	DAE4 Sn1388	9.64	38.00	1.47
2015/4/24	1900	HSL	250	D1900V2_5d041	EX3DV4 - SN3578	DAE4 Sn1388	9.31	40.00	-6.90
2015/4/28	1900	HSL	250	D1900V2_5d041	EX3DV4 - SN3578	DAE4 Sn1388	9.53	40.00	-4.70
2015/4/25	1900	MSL	250	D1900V2_5d041	EX3DV4 - SN3955	DAE4 Sn1399	10.40	39.80	4.52
2015/4/27	1900	MSL	250	D1900V2_5d041	EX3DV4 - SN3578	DAE4 Sn1388	9.58	39.80	-3.72
2015/4/29	1900	MSL	250	D1900V2_5d041	EX3DV4 - SN3578	DAE4 Sn1388	9.95	39.80	0.00
2015/5/7	2450	HSL	250	D2450V2-924	EX3DV4 - SN3931	DAE3 Sn577	13.10	51.90	0.96
2015/5/19	2450	HSL	250	D2450V2-924	EX3DV4 - SN3954	DAE3 Sn577	13.30	51.90	2.50
2015/5/12	2450	MSL	250	D2450V2-924	EX3DV4 - SN3955	DAE4 Sn1399	12.20	51.40	-5.06
2015/5/13	2450	MSL	250	D2450V2-924	EX3DV4 - SN3955	DAE4 Sn1399	12.00	51.40	-6.61
2015/5/19	2450	MSL	250	D2450V2-924	EX3DV4 - SN3954	DAE3 Sn577	12.40	51.40	-3.50
2015/4/22	2600	HSL	250	D2600V2-1070	EX3DV4 - SN3931	DAE3 Sn577	13.80	56.90	-2.99
2015/4/23	2600	HSL	250	D2600V2-1070	EX3DV4 - SN3931	DAE3 Sn577	13.40	56.90	-5.80
2015/4/24	2600	MSL	250	D2600V2-1070	EX3DV4 - SN3578	DAE4 Sn1388	13.70	55.30	-0.90
2015/4/26	2600	MSL	250	D2600V2-1070	EX3DV4 - SN3955	DAE4 Sn1399	13.60	55.30	-1.63
2015/4/26	2600	MSL	250	D2600V2-1070	EX3DV4 - SN3954	DAE4 Sn1279	13.90	55.30	0.54
2015/4/26	2600	MSL	250	D2600V2-1070	EX3DV4 - SN3578	DAE4 Sn1388	13.80	55.30	-0.18
2015/5/17	5200	MSL	100	D5GHzV2-1006	EX3DV4 - SN3954	DAE4 Sn1279	7.30	77.50	-5.81
2015/5/18	5300	HSL	100	D5GHzV2-1006	EX3DV4 - SN3954	DAE4 Sn1279	8.34	86.60	-3.70
2015/5/17	5300	MSL	100	D5GHzV2-1006	EX3DV4 - SN3954	DAE4 Sn1279	8.63	80.00	7.88
2015/5/18	5600	HSL	100	D5GHzV2-1006	EX3DV4 - SN3954	DAE4 Sn1279	8.55	85.80	-0.35
2015/5/18	5600	HSL	100	D5GHzV2-1006	EX3DV4 - SN3954	DAE3 Sn577	8.52	85.80	-0.70
2015/5/17	5600	MSL	100	D5GHzV2-1006	EX3DV4 - SN3954	DAE4 Sn1279	8.18	85.20	-3.99
2015/5/18	5800	HSL	100	D5GHzV2-1006	EX3DV4 - SN3954	DAE3 Sn577	7.65	82.90	-7.72
2015/5/17	5800	MSL	100	D5GHzV2-1006	EX3DV4 - SN3954	DAE4 Sn1279	7.27	78.40	-7.27

<System Verification for 10g SAR Results>

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 (%)
2015/4/29	835	MSL	250	D835V2_499	EX3DV4 - SN3578	DAE4 Sn1388	1.64	6.12	6.56	7.19
2015/5/1	835	MSL	250	D835V2_499	EX3DV4 - SN3578	DAE4 Sn1388	1.43	6.12	5.72	-6.54
2015/4/29	1900	MSL	250	D1900V2_5d041	EX3DV4 - SN3578	DAE4 Sn1388	5.20	21.20	20.80	-1.89
2015/5/2	750	MSL	250	D750V3-1099	EX3DV4 - SN3578	DAE4 Sn1388	1.38	5.68	5.52	-2.82

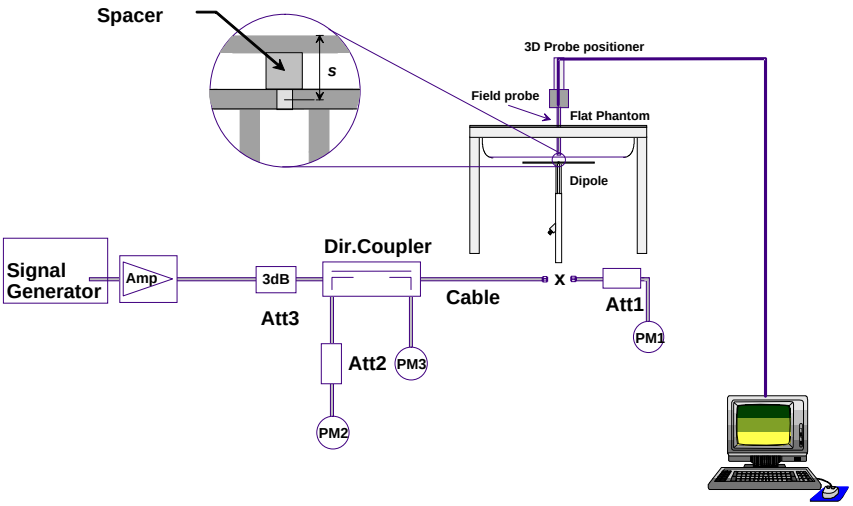


Fig 8.3.1 System Performance Check Setup

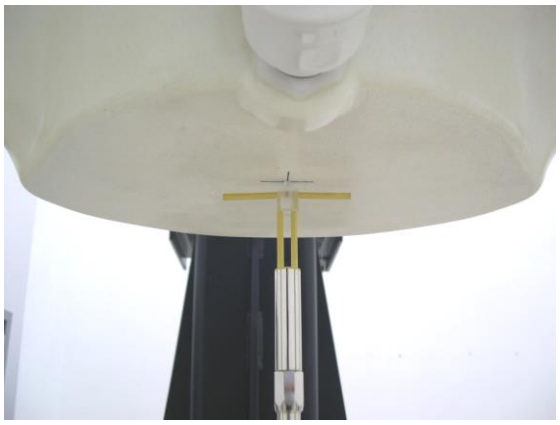


Fig 8.3.2 Setup Photo

11. RF Exposure Positions

11.1 Ear and handset reference point

Figure 9.1.1 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 9.1.2 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 9.1.3). 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 9.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

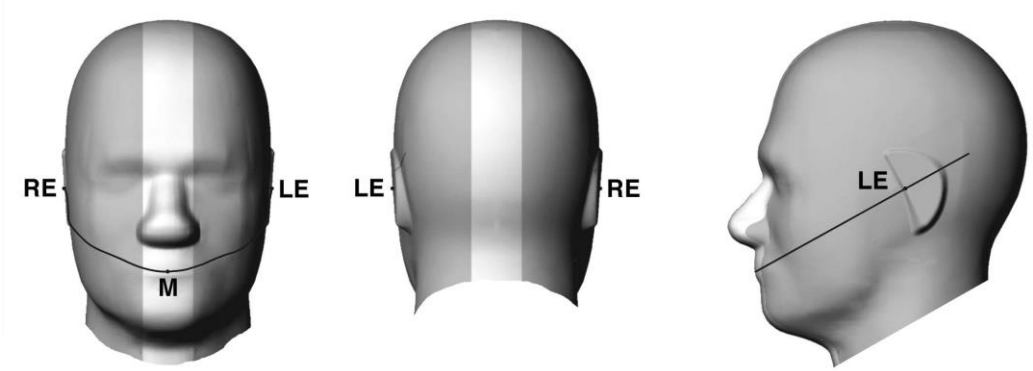


Fig 9.1.1 Front, back, and side views of SAM twin phantom

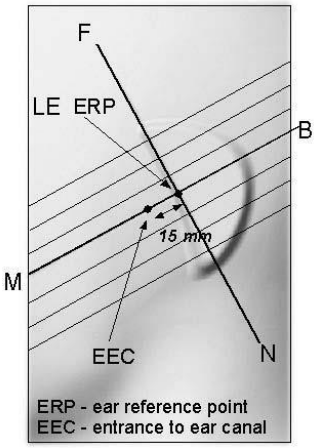


Fig 9.1.2 Close-up side view of phantom showing the ear region.

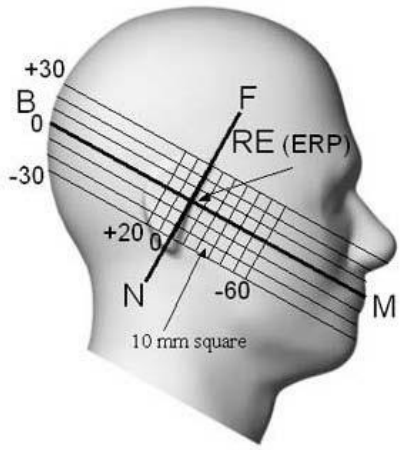


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

11.2 Definition of the cheek position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width wt of the handset at the level of the acoustic output (point A in Figure 9.2.1 and Figure 9.2.2), 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 9.2.1). 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 9.2.2), 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 9.2.3), 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 9.2.3. The actual rotation angles should be documented in the test report.

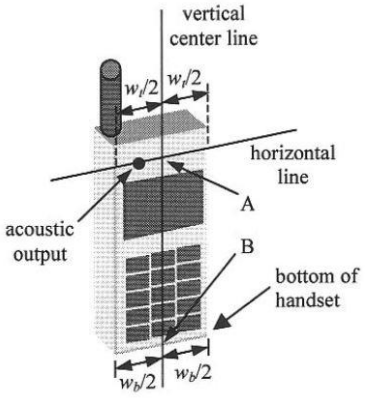


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case

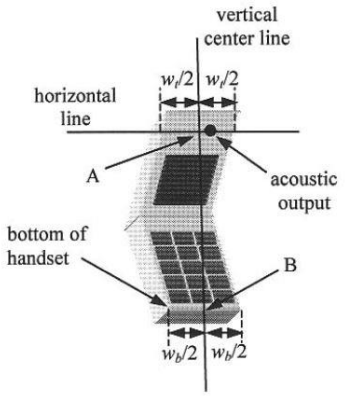


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

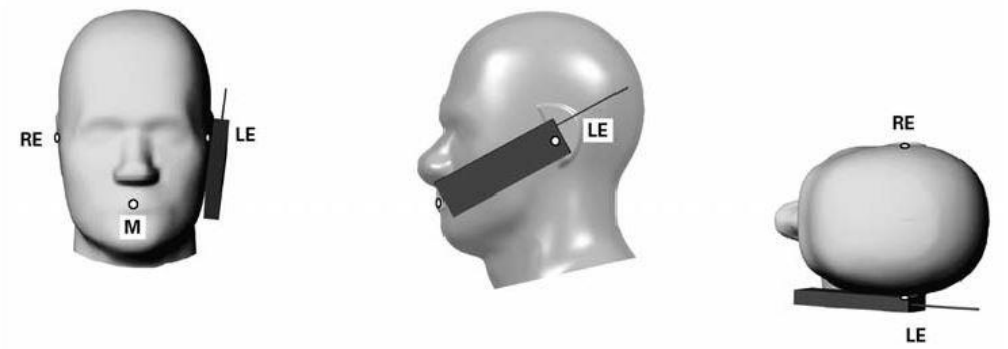


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

11.3 Definition of the tilt position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. While maintaining the orientation of the handset, move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15°.
3. Rotate the handset around the horizontal line by 15°.
4. While maintaining the orientation of the handset, move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact point is on the pinna. See Figure 9.3.1. 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

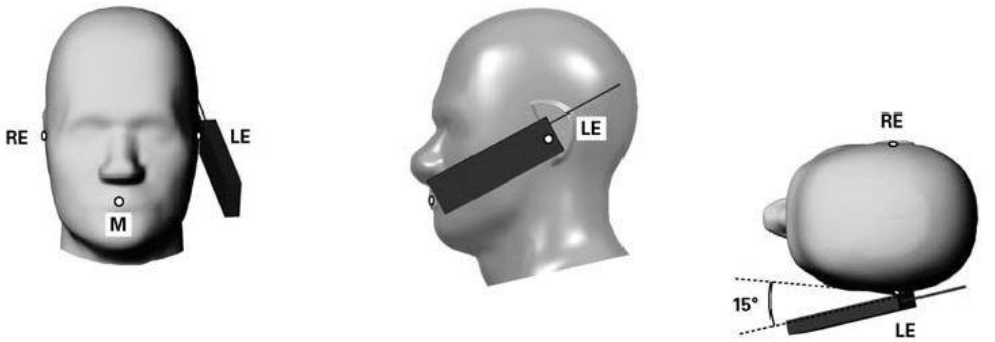


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

11.4 Body Worn Accessory

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 9.4). Per KDB 648474 D04v01r02, 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 D01v05r02 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is < 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset attached to the handset.

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

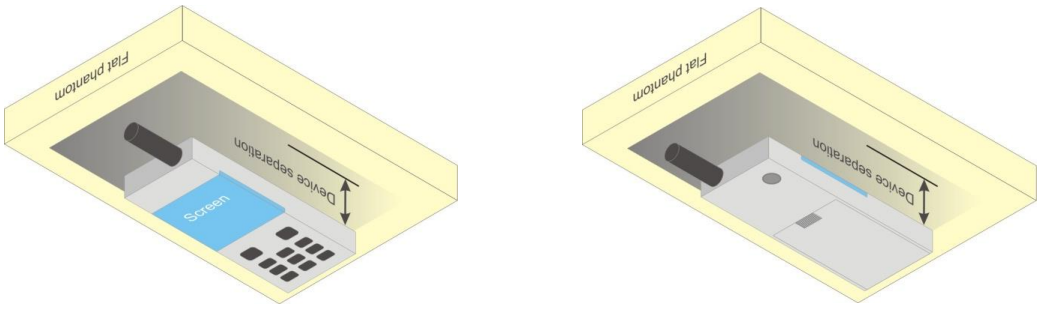


Fig 9.4 Body Worn Position

11.5 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 HDB Publication 941225 D06 v02 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 D01v05r02 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.

11.6 Extremity Exposure Configurations

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions; i.e., hands, wrists, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user’s body, SAR compliance for the body is also required. The 1-g body and 10-g extremity SAR exclusion thresholds found in KDB Publication 447498 D01v05 should be applied to determine SAR test requirements.

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, unless it is confirmed otherwise through KDB inquiries, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless mode and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied. 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; however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold. The normal tablet procedures in KDB 616217 are required when the over diagonal dimension of the device is > 20.0 cm. Hotspot mode SAR is not required when normal tablet procedures are applied. Extremity 10-g SAR is also not required for the front (top) surface of large form factor full size tablets. The more conservative tablet SAR results can be used to support the 10-g extremity SAR for phablet mode. The simultaneous transmission operating configurations applicable to voice and data transmissions for both phone and mini-tablet modes must be taken into consideration separately for 1-g and 10-g SAR to determine the simultaneous transmission SAR test exclusion and measurement requirements for the relevant wireless mode and exposure conditions

12. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

General Note:

1. Per KDB 447498 D01v05r02, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03, considering the possibility of e.g. 3rd party VoIP operation for Head and body-worn SAR test reduction for GSM and GPRS and 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 EUT was set in GPRS (4Tx slots) for GSM850/GSM1900.
3. Per KDB 941225 D01v03, for Hotspot SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance, for modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested, therefore, the EUT was set in GPRS (4Tx slots) for GSM850/GSM1900.

Band GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM (GMSK, 1 Tx slot)	31.99	32.27	32.44	33.50	22.99	23.27	23.44	24.50
GPRS (GMSK, 1 Tx slot)	31.99	32.27	32.43	33.50	22.99	23.27	23.43	24.50
GPRS (GMSK, 2 Tx slots)	28.97	29.13	28.62	30.50	22.97	23.13	22.62	24.50
GPRS (GMSK, 3 Tx slots)	26.75	26.90	27.07	28.75	22.49	22.64	22.81	24.49
GPRS (GMSK, 4 Tx slots)	25.50	25.52	25.70	27.50	22.50	22.52	22.70	24.50
EDGE (8PSK, 1 Tx slot)	26.01	26.09	26.14	28.00	17.01	17.09	17.14	19.00
EDGE (8PSK, 2 Tx slots)	23.38	23.47	23.56	25.00	17.38	17.47	17.56	19.00
EDGE (8PSK, 3 Tx slots)	23.00	23.21	23.24	23.25	18.74	18.95	18.98	18.99
EDGE (8PSK, 4 Tx slots)	21.67	21.84	21.95	22.00	18.67	18.84	18.95	19.00

Band GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM (GMSK, 1 Tx slot)	29.16	28.76	28.85	30.50	20.16	19.76	19.85	21.50
GPRS (GMSK, 1 Tx slot)	29.17	28.77	28.87	30.50	20.17	19.77	19.87	21.50
GPRS (GMSK, 2 Tx slots)	26.08	26.12	26.18	27.50	20.08	20.12	20.18	21.50
GPRS (GMSK, 3 Tx slots)	24.12	24.14	24.28	25.75	19.86	19.88	20.02	21.49
GPRS (GMSK, 4 Tx slots)	22.85	22.83	22.94	24.50	19.85	19.83	19.94	21.50
EDGE (8PSK, 1 Tx slot)	25.05	25.14	25.21	27.00	16.05	16.14	16.21	18.00
EDGE (8PSK, 2 Tx slots)	22.50	22.57	22.65	24.00	16.50	16.57	16.65	18.00
EDGE (8PSK, 3 Tx slots)	21.11	21.20	21.37	22.25	16.85	16.94	17.11	17.99
EDGE (8PSK, 4 Tx slots)	19.84	19.90	20.02	21.00	16.84	16.90	17.02	18.00

<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 D01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.
3. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

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

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

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

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

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

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

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

Setup Configuration

HSUPA Setup Configuration:

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

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

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 5) (Note 6)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	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 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * 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: For subtest 5 the β_c/β_d ratio of 15/15 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 = 14/15 and β_d = 15/15.
Note 5: 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 6: β_{ed} can not be set directly, it is set by Absolute Grant Value.

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.		

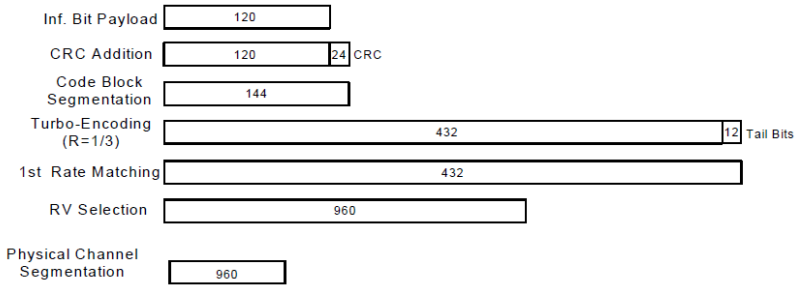


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

<WCDMA Conducted Power>

General Note:

1. Per KDB 941225 D01v03, SAR for Head / Hotspot / Body-worn exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

Band		WCDMA V			Tune-up Limit (dBm)	WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)
TX Channel		4132	4182	4233		9262	9400	9538		1312	1413	1513	
Rx Channel		4357	4407	4458		9662	9800	9938		1537	1638	1738	
Frequency (MHz)		826.4	836.4	846.6		1852.4	1880	1907.6		1712.4	1732.6	1752.6	
3GPP Rel 99	AMR 12.2Kbps	23.08	22.81	23.18	24.00	22.62	22.66	21.80	24.00	22.98	22.85	22.48	24.00
3GPP Rel 99	RMC 12.2Kbps	23.08	22.85	23.19	24.00	22.64	22.68	22.83	24.00	23.00	22.87	22.48	24.00
3GPP Rel 6	HSDPA Subtest-1	21.97	21.51	21.70	23.00	20.95	20.93	21.17	23.00	21.22	21.13	20.79	23.00
3GPP Rel 6	HSDPA Subtest-2	21.89	21.61	21.74	23.00	20.90	20.94	21.22	23.00	21.20	21.00	20.77	23.00
3GPP Rel 6	HSDPA Subtest-3	21.93	21.62	21.80	22.50	20.93	20.95	21.16	22.50	21.15	21.03	20.75	22.50
3GPP Rel 6	HSDPA Subtest-4	21.13	21.38	21.51	22.50	20.89	20.94	21.21	22.50	21.24	21.01	20.78	22.50
3GPP Rel 8	DC-HSDPA Subtest-1	21.96	21.50	21.70	23.00	20.94	20.92	21.15	23.00	21.20	21.12	20.78	23.00
3GPP Rel 8	DC-HSDPA Subtest-2	21.88	21.60	21.72	23.00	20.88	20.90	21.20	23.00	21.18	21.00	20.75	23.00
3GPP Rel 8	DC-HSDPA Subtest-3	21.92	21.59	21.78	22.50	20.92	20.93	21.14	22.50	21.12	20.98	20.73	22.50
3GPP Rel 8	DC-HSDPA Subtest-4	21.10	21.35	21.50	22.50	20.86	20.92	21.19	22.50	21.13	21.10	20.74	22.50
3GPP Rel 6	HSUPA Subtest-1	21.58	21.30	21.73	23.00	21.12	21.14	21.32	23.00	21.42	21.33	21.09	23.00
3GPP Rel 6	HSUPA Subtest-2	20.55	20.50	20.65	21.00	20.35	20.45	20.49	21.00	20.40	20.37	20.29	21.00
3GPP Rel 6	HSUPA Subtest-3	20.45	20.41	20.51	22.00	20.29	20.39	20.58	22.00	20.64	20.55	20.30	22.00
3GPP Rel 6	HSUPA Subtest-4	20.90	20.99	21.00	22.00	20.60	20.95	21.00	22.00	20.65	20.63	20.41	22.00
3GPP Rel 6	HSUPA Subtest-5	21.86	21.80	22.04	23.00	21.47	21.48	21.73	23.00	21.77	21.74	21.76	23.00

<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 D05v02r03, 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 D05v02r03, 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 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r03, 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 D05v02r03, 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 D05v02r03, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r03, 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 D05v02r03, smaller bandwidth SAR testing is not required.

<LTE Band 12>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23060	23095	23130		
Frequency (MHz)				704	707.5	711		
10	QPSK	1	0	22.66	22.78	22.89	24	0
10	QPSK	1	24	22.51	22.71	22.74		
10	QPSK	1	49	22.56	22.63	22.72		
10	QPSK	25	0	21.49	21.60	21.61	23	1
10	QPSK	25	12	21.43	21.50	21.57		
10	QPSK	25	24	21.48	21.51	21.58		
10	QPSK	50	0	21.44	21.54	21.55		
10	16QAM	1	0	21.86	22.02	22.06	23	1
10	16QAM	1	24	21.88	22.07	22.09		
10	16QAM	1	49	21.94	22.05	22.17		
10	16QAM	25	0	20.51	20.66	20.70	22	2
10	16QAM	25	12	20.53	20.75	20.64		
10	16QAM	25	24	20.62	20.66	20.71		
10	16QAM	50	0	20.52	20.70	20.61		
Channel				23035	23095	23155	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	22.49	22.75	22.85	24	0
5	QPSK	1	12	22.39	22.54	22.78		
5	QPSK	1	24	22.48	22.73	22.84		
5	QPSK	12	0	21.24	21.61	21.64	23	1
5	QPSK	12	6	21.34	21.55	21.71		
5	QPSK	12	11	21.36	21.61	21.72		
5	QPSK	25	0	21.40	21.61	21.82		
5	16QAM	1	0	21.68	21.95	22.04	23	1
5	16QAM	1	12	21.76	22.04	22.25		
5	16QAM	1	24	21.78	22.06	22.27		
5	16QAM	12	0	20.43	20.63	20.89	22	2
5	16QAM	12	6	20.47	20.59	20.96		
5	16QAM	12	11	20.50	20.67	20.92		
5	16QAM	25	0	20.54	20.86	20.89		
Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	22.50	22.54	22.53	24	0
3	QPSK	1	7	22.46	22.49	22.52		
3	QPSK	1	14	22.49	22.53	22.52		
3	QPSK	8	0	21.40	21.39	21.39	23	1
3	QPSK	8	4	21.37	21.33	21.33		
3	QPSK	8	7	21.48	21.50	21.53		
3	QPSK	15	0	21.35	21.34	21.37		
3	16QAM	1	0	21.77	21.80	21.83	23	1
3	16QAM	1	7	21.86	21.84	21.83		
3	16QAM	1	14	21.94	21.89	21.84		
3	16QAM	8	0	20.51	20.47	20.47	22	2
3	16QAM	8	4	20.48	20.45	20.47		
3	16QAM	8	7	20.52	20.57	20.52		
3	16QAM	15	0	20.44	20.47	20.47		

Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	22.45	22.45	22.45	24	0
1.4	QPSK	1	2	22.33	22.37	22.33		
1.4	QPSK	1	5	22.38	22.43	22.40		
1.4	QPSK	3	0	22.07	22.02	22.02		
1.4	QPSK	3	1	22.03	22.01	22.02		
1.4	QPSK	3	2	22.01	22.01	22.01		
1.4	QPSK	6	0	21.49	21.39	21.34	23	1
1.4	16QAM	1	0	21.67	21.72	21.77	23	1
1.4	16QAM	1	2	21.71	21.72	21.68		
1.4	16QAM	1	5	21.64	21.61	21.58		
1.4	16QAM	3	0	21.10	21.04	21.07		
1.4	16QAM	3	1	21.07	21.03	21.08		
1.4	16QAM	3	2	21.03	21.03	21.06		
1.4	16QAM	6	0	20.54	20.42	20.41	22	2

<LTE Band 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	22.78	22.90	22.86	24	0
10	QPSK	1	24	22.73	22.71	22.81		
10	QPSK	1	49	22.66	22.69	22.76		
10	QPSK	25	0	21.61	21.80	21.79	23	1
10	QPSK	25	12	21.66	21.71	21.78		
10	QPSK	25	24	21.64	21.75	21.71		
10	QPSK	50	0	21.59	21.79	21.74		
10	16QAM	1	0	21.83	21.93	21.98	23	1
10	16QAM	1	24	22.01	21.93	21.99		
10	16QAM	1	49	21.94	22.03	22.06		
10	16QAM	25	0	20.62	20.53	20.71	22	2
10	16QAM	25	12	20.65	20.60	20.74		
10	16QAM	25	24	20.63	20.57	20.71		
10	16QAM	50	0	20.56	20.54	20.71		
Channel				23755	23790	23825	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	22.49	22.64	22.70	24	0
5	QPSK	1	12	22.41	22.61	22.71		
5	QPSK	1	24	22.53	22.68	22.76		
5	QPSK	12	0	21.45	21.57	21.64	23	1
5	QPSK	12	6	21.45	21.56	21.69		
5	QPSK	12	11	21.51	21.60	21.76		
5	QPSK	25	0	21.45	21.59	21.72		
5	16QAM	1	0	21.68	21.87	21.93	23	1
5	16QAM	1	12	21.82	21.98	22.02		
5	16QAM	1	24	21.78	21.92	22.02		
5	16QAM	12	0	20.40	20.53	20.68	22	2
5	16QAM	12	6	20.39	20.56	20.73		
5	16QAM	12	11	20.41	20.60	20.69		
5	16QAM	25	0	20.48	20.56	20.67		

<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	23.00	23.06	22.89	24	0
10	QPSK	1	24	22.96	22.97	22.88		
10	QPSK	1	49	22.99	22.75	22.76		
10	QPSK	25	0	21.99	22.10	21.74	23	1
10	QPSK	25	12	21.98	21.87	21.73		
10	QPSK	25	24	21.90	21.81	21.72		
10	QPSK	50	0	21.96	22.05	21.78		
10	16QAM	1	0	22.30	22.46	22.13	23	1
10	16QAM	1	24	22.22	22.28	22.09		
10	16QAM	1	49	22.30	22.05	22.09		
10	16QAM	25	0	20.99	20.94	20.77	22	2
10	16QAM	25	12	20.97	20.83	20.72		
10	16QAM	25	24	20.93	20.80	20.73		
10	16QAM	50	0	20.85	20.93	20.81		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.82	22.98	22.83	24	0
5	QPSK	1	12	22.77	22.82	22.77		
5	QPSK	1	24	22.81	22.84	22.78		
5	QPSK	12	0	21.72	21.90	21.77	23	1
5	QPSK	12	6	21.79	21.95	21.76		
5	QPSK	12	11	21.82	21.97	21.77		
5	QPSK	25	0	21.81	21.83	21.90		
5	16QAM	1	0	22.09	22.22	22.16	23	1
5	16QAM	1	12	22.13	22.29	22.21		
5	16QAM	1	24	22.11	22.17	22.06		
5	16QAM	12	0	20.74	20.90	20.86	22	2
5	16QAM	12	6	20.77	20.90	20.92		
5	16QAM	12	11	20.78	20.89	20.88		
5	16QAM	25	0	20.84	20.81	20.87		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	23.00	22.99	22.96	24	0
3	QPSK	1	7	22.95	22.96	22.93		
3	QPSK	1	14	22.64	22.65	22.61		
3	QPSK	8	0	21.92	21.95	21.93	23	1
3	QPSK	8	4	21.87	21.83	21.84		
3	QPSK	8	7	21.73	21.75	21.76		
3	QPSK	15	0	21.92	21.91	21.92		
3	16QAM	1	0	22.42	22.37	22.41	23	1
3	16QAM	1	7	22.22	22.19	22.19		
3	16QAM	1	14	22.03	22.04	22.07		
3	16QAM	8	0	20.96	20.93	20.91	22	2
3	16QAM	8	4	20.73	20.76	20.81		
3	16QAM	8	7	20.71	20.74	20.75		
3	16QAM	15	0	20.83	20.88	20.83		

Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.92	22.91	22.91	24	0
1.4	QPSK	1	2	22.79	22.78	22.81		
1.4	QPSK	1	5	22.78	22.76	22.78		
1.4	QPSK	3	0	22.33	22.29	22.29		
1.4	QPSK	3	1	22.23	22.26	22.30		
1.4	QPSK	3	2	22.24	22.21	22.31		
1.4	QPSK	6	0	21.84	21.80	21.76	23	1
1.4	16QAM	1	0	22.21	22.22	22.26	23	1
1.4	16QAM	1	2	22.26	22.28	22.32		
1.4	16QAM	1	5	22.04	22.07	22.09		
1.4	16QAM	3	0	21.26	21.30	21.25		
1.4	16QAM	3	1	21.31	21.28	21.31		
1.4	16QAM	3	2	21.25	21.26	21.22		
1.4	16QAM	6	0	20.80	20.79	20.78	22	2

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	23.72	23.71	23.40	24	0
20	QPSK	1	49	23.04	23.07	22.80		
20	QPSK	1	99	23.15	23.07	22.71		
20	QPSK	50	0	22.37	22.19	21.89	23	1
20	QPSK	50	24	22.03	22.06	21.80		
20	QPSK	50	49	22.02	22.04	21.82		
20	QPSK	100	0	22.20	22.01	21.73		
20	16QAM	1	0	22.98	22.91	22.68	23	1
20	16QAM	1	49	22.18	22.04	21.77		
20	16QAM	1	99	22.47	22.33	22.03		
20	16QAM	50	0	21.38	21.17	20.91	22	2
20	16QAM	50	24	21.03	21.06	20.72		
20	16QAM	50	49	21.11	21.04	20.72		
20	16QAM	100	0	21.18	21.01	20.74		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	23.49	23.40	23.08	24	0
15	QPSK	1	37	22.81	22.80	22.44		
15	QPSK	1	74	23.11	22.95	22.64		
15	QPSK	36	0	22.21	22.05	21.80	23	1
15	QPSK	36	18	22.06	21.80	21.62		
15	QPSK	36	37	21.87	21.76	21.46		
15	QPSK	75	0	22.05	21.86	21.62		
15	16QAM	1	0	22.66	22.58	22.31	23	1
15	16QAM	1	37	22.13	21.83	21.67		
15	16QAM	1	74	22.31	22.14	21.85		
15	16QAM	36	0	21.18	21.01	20.74	22	2
15	16QAM	36	18	21.05	20.76	20.55		
15	16QAM	36	37	20.86	20.74	20.40		
15	16QAM	75	0	21.07	20.88	20.61		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	23.39	23.04	22.89	24	0
10	QPSK	1	24	22.98	22.86	22.51		
10	QPSK	1	49	22.97	22.69	22.60		
10	QPSK	25	0	22.05	21.78	21.63	23	1
10	QPSK	25	12	21.94	21.80	21.50		
10	QPSK	25	24	21.82	21.63	21.51		
10	QPSK	50	0	22.00	21.76	21.56		
10	16QAM	1	0	22.64	22.30	22.19	23	1
10	16QAM	1	24	22.24	22.27	21.85		
10	16QAM	1	49	22.29	21.99	21.84		
10	16QAM	25	0	21.01	20.79	20.61	22	2
10	16QAM	25	12	20.93	20.81	20.48		
10	16QAM	25	24	20.80	20.64	20.49		
10	16QAM	50	0	20.93	20.74	20.53		

Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	23.13	22.96	22.68	24	0
5	QPSK	1	12	22.96	22.72	22.47		
5	QPSK	1	24	22.88	22.68	22.49		
5	QPSK	12	0	21.97	21.73	21.53	23	1
5	QPSK	12	6	21.97	21.71	21.59		
5	QPSK	12	11	21.94	21.69	21.55		
5	QPSK	25	0	21.94	21.67	21.54		
5	16QAM	1	0	22.38	22.19	21.91	23	1
5	16QAM	1	12	22.33	22.27	21.92		
5	16QAM	1	24	22.15	21.93	21.77		
5	16QAM	12	0	20.94	20.76	20.51	22	2
5	16QAM	12	6	20.90	20.66	20.54		
5	16QAM	12	11	20.88	20.62	20.53		
5	16QAM	25	0	20.88	20.69	20.49		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	23.64	23.60	23.64	24	0
3	QPSK	1	7	23.04	23.05	23.04		
3	QPSK	1	14	23.08	23.13	23.12		
3	QPSK	8	0	22.39	22.35	22.39	23	1
3	QPSK	8	4	21.99	21.95	21.98		
3	QPSK	8	7	21.98	21.93	22.10		
3	QPSK	15	0	22.17	22.22	22.23		
3	16QAM	1	0	22.93	22.98	22.98	23	1
3	16QAM	1	7	22.16	22.13	22.15		
3	16QAM	1	14	22.52	22.51	22.55		
3	16QAM	8	0	21.43	21.38	21.38	22	2
3	16QAM	8	4	21.13	21.15	21.16		
3	16QAM	8	7	21.07	21.10	21.07		
3	16QAM	15	0	21.08	21.12	21.15		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	23.59	23.64	23.64	24	0
1.4	QPSK	1	2	23.08	23.13	23.15		
1.4	QPSK	1	5	23.07	23.11	23.10		
1.4	QPSK	3	0	22.93	22.98	22.98		
1.4	QPSK	3	1	22.90	23.01	22.98		
1.4	QPSK	3	2	22.90	22.96	23.01		
1.4	QPSK	6	0	22.22	22.17	22.21	23	1
1.4	16QAM	1	0	22.94	22.97	22.99	23	1
1.4	16QAM	1	2	22.14	22.14	22.14		
1.4	16QAM	1	5	22.55	22.59	22.61		
1.4	16QAM	3	0	22.01	22.03	22.03		
1.4	16QAM	3	1	21.96	21.99	22.01		
1.4	16QAM	3	2	21.94	21.96	21.96		
1.4	16QAM	6	0	21.06	21.07	21.10	22	2

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	23.60	23.86	23.90	24	0
20	QPSK	1	49	22.93	23.33	23.25		
20	QPSK	1	99	23.13	23.37	23.41		
20	QPSK	50	0	22.27	22.31	22.53	23	1
20	QPSK	50	24	21.94	22.22	22.26		
20	QPSK	50	49	21.90	22.16	22.21		
20	QPSK	100	0	22.16	22.19	22.40		
20	16QAM	1	0	22.96	22.99	22.98	23	1
20	16QAM	1	49	22.07	22.25	22.50		
20	16QAM	1	99	22.44	22.68	22.68		
20	16QAM	50	0	21.24	21.25	21.54	22	2
20	16QAM	50	24	21.06	21.18	21.51		
20	16QAM	50	49	21.04	21.22	21.45		
20	16QAM	100	0	21.16	21.25	21.54		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	23.46	23.61	23.66	24	0
15	QPSK	1	37	22.81	22.93	23.01		
15	QPSK	1	74	22.86	23.20	23.24		
15	QPSK	36	0	22.13	22.24	22.34	23	1
15	QPSK	36	18	21.96	22.01	22.09		
15	QPSK	36	37	21.88	22.01	22.09		
15	QPSK	75	0	21.96	22.15	22.29		
15	16QAM	1	0	22.77	22.91	23.00	23	1
15	16QAM	1	37	22.12	22.17	22.30		
15	16QAM	1	74	22.17	22.51	22.57		
15	16QAM	36	0	21.15	21.22	21.33	22	2
15	16QAM	36	18	20.97	21.05	21.09		
15	16QAM	36	37	20.83	21.06	21.08		
15	16QAM	75	0	21.04	21.19	21.27		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	23.04	23.30	23.43	24	0
10	QPSK	1	24	22.67	23.00	22.98		
10	QPSK	1	49	22.67	23.05	23.10		
10	QPSK	25	0	21.72	22.07	22.13	23	1
10	QPSK	25	12	21.64	21.94	22.05		
10	QPSK	25	24	21.65	21.90	21.95		
10	QPSK	50	0	21.81	21.99	22.01		
10	16QAM	1	0	22.36	22.62	22.71	23	1
10	16QAM	1	24	22.10	22.33	22.27		
10	16QAM	1	49	21.91	22.27	22.30		
10	16QAM	25	0	20.87	21.05	21.11	22	2
10	16QAM	25	12	20.75	20.94	21.02		
10	16QAM	25	24	20.64	20.88	20.99		
10	16QAM	50	0	20.78	20.94	20.95		

Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.90	23.14	23.13	24	0
5	QPSK	1	12	22.82	23.06	23.04		
5	QPSK	1	24	22.84	23.00	22.99		
5	QPSK	12	0	21.79	21.98	21.94	23	1
5	QPSK	12	6	21.77	22.00	21.99		
5	QPSK	12	11	21.77	21.94	21.95		
5	QPSK	25	0	21.74	21.92	21.94		
5	16QAM	1	0	22.18	22.42	22.43	23	1
5	16QAM	1	12	22.12	22.42	22.44		
5	16QAM	1	24	22.10	22.22	22.27		
5	16QAM	12	0	20.82	20.96	20.93	22	2
5	16QAM	12	6	20.79	20.96	20.96		
5	16QAM	12	11	20.78	20.89	20.93		
5	16QAM	25	0	20.79	20.97	20.94		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	23.50	23.53	23.48	24	0
3	QPSK	1	7	22.83	22.85	22.86		
3	QPSK	1	14	23.08	23.06	23.03		
3	QPSK	8	0	22.17	22.15	22.15	23	1
3	QPSK	8	4	21.92	21.95	21.90		
3	QPSK	8	7	21.87	21.91	21.94		
3	QPSK	15	0	22.10	22.05	22.02		
3	16QAM	1	0	22.99	22.94	22.97	23	1
3	16QAM	1	7	22.00	21.99	21.94		
3	16QAM	1	14	22.30	22.34	22.32		
3	16QAM	8	0	21.24	21.28	21.30	22	2
3	16QAM	8	4	20.94	20.92	20.96		
3	16QAM	8	7	20.87	20.87	20.84		
3	16QAM	15	0	21.10	21.06	21.08		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	23.28	23.26	23.24	24	0
1.4	QPSK	1	2	22.78	22.79	22.83		
1.4	QPSK	1	5	22.80	22.84	22.79		
1.4	QPSK	3	0	22.62	22.61	22.65		
1.4	QPSK	3	1	22.61	22.57	22.57		
1.4	QPSK	3	2	22.60	22.57	22.55		
1.4	QPSK	6	0	21.90	21.89	21.94	23	1
1.4	16QAM	1	0	22.71	22.75	22.72	23	1
1.4	16QAM	1	2	22.00	21.97	21.95		
1.4	16QAM	1	5	22.14	22.19	22.19		
1.4	16QAM	3	0	21.71	21.74	21.72		
1.4	16QAM	3	1	21.66	21.64	21.61		
1.4	16QAM	3	2	21.62	21.61	21.66		
1.4	16QAM	6	0	20.89	20.93	20.97	22	2

<LTE Band 25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	23.95	23.88	23.99	24	0
20	QPSK	1	49	23.41	23.21	23.40		
20	QPSK	1	99	23.37	23.35	23.37		
20	QPSK	50	0	22.50	22.43	22.51	23	1
20	QPSK	50	24	22.30	22.25	22.39		
20	QPSK	50	49	22.26	22.26	22.36		
20	QPSK	100	0	22.26	22.26	22.44		
20	16QAM	1	0	22.98	22.99	22.97	23	1
20	16QAM	1	49	22.27	22.33	22.39		
20	16QAM	1	99	22.39	22.63	22.56		
20	16QAM	50	0	21.39	21.36	21.51	22	2
20	16QAM	50	24	21.36	21.18	21.47		
20	16QAM	50	49	21.34	21.29	21.41		
20	16QAM	100	0	21.30	21.31	21.43		
Channel				26115	26340	26615	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	23.57	23.57	23.70	24	0
15	QPSK	1	37	23.01	22.96	23.22		
15	QPSK	1	74	22.93	23.23	23.09		
15	QPSK	36	0	22.28	22.23	22.31	23	1
15	QPSK	36	18	22.03	22.05	22.21		
15	QPSK	36	37	21.98	22.10	22.04		
15	QPSK	75	0	22.01	22.17	22.27		
15	16QAM	1	0	22.89	22.80	22.98	23	1
15	16QAM	1	37	22.18	22.31	22.36		
15	16QAM	1	74	22.13	22.48	22.53		
15	16QAM	36	0	21.31	21.27	21.31	22	2
15	16QAM	36	18	21.03	21.12	21.23		
15	16QAM	36	37	20.96	21.13	21.08		
15	16QAM	75	0	21.10	21.25	21.37		
Channel				26090	26340	26640	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	23.22	23.40	23.49	24	0
10	QPSK	1	24	22.88	23.08	23.07		
10	QPSK	1	49	22.90	23.05	23.32		
10	QPSK	25	0	21.98	22.13	22.24	23	1
10	QPSK	25	12	21.97	22.07	22.04		
10	QPSK	25	24	21.72	21.88	21.93		
10	QPSK	50	0	21.90	22.03	22.14		
10	16QAM	1	0	22.55	22.65	22.83	23	1
10	16QAM	1	24	22.24	22.47	22.50		
10	16QAM	1	49	22.33	22.35	22.80		
10	16QAM	25	0	20.99	21.17	21.21	22	2
10	16QAM	25	12	20.98	21.08	21.07		
10	16QAM	25	24	20.74	20.86	20.96		
10	16QAM	50	0	20.84	21.00	21.10		

Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	22.99	23.21	23.12	24	0
5	QPSK	1	12	22.89	22.98	23.08		
5	QPSK	1	24	22.87	22.94	23.06		
5	QPSK	12	0	21.82	21.99	21.96	23	1
5	QPSK	12	6	21.92	21.98	22.08		
5	QPSK	12	11	21.80	21.93	21.94		
5	QPSK	25	0	21.78	21.95	22.10		
5	16QAM	1	0	22.26	22.46	22.40	23	1
5	16QAM	1	12	22.29	22.34	22.47		
5	16QAM	1	24	22.16	22.18	22.30		
5	16QAM	12	0	20.82	21.01	21.14	22	2
5	16QAM	12	6	20.85	20.96	21.25		
5	16QAM	12	11	20.77	20.93	21.20		
5	16QAM	25	0	20.80	20.99	21.11		
Channel				26055	26340	26675	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	23.93	23.95	23.96	24	0
3	QPSK	1	7	23.35	23.38	23.43		
3	QPSK	1	14	23.35	23.37	23.33		
3	QPSK	8	0	22.47	22.51	22.49	23	1
3	QPSK	8	4	22.30	22.26	22.30		
3	QPSK	8	7	22.23	22.34	22.31		
3	QPSK	15	0	22.23	22.33	22.37		
3	16QAM	1	0	22.99	22.91	22.93	23	1
3	16QAM	1	7	22.26	22.28	22.30		
3	16QAM	1	14	22.30	22.28	22.32		
3	16QAM	8	0	21.31	21.26	21.29	22	2
3	16QAM	8	4	21.28	21.29	21.30		
3	16QAM	8	7	21.33	21.32	21.31		
3	16QAM	15	0	21.25	21.30	21.35		
Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	23.57	23.60	23.64	24	0
1.4	QPSK	1	2	23.01	23.05	23.05		
1.4	QPSK	1	5	22.90	22.93	23.00		
1.4	QPSK	3	0	23.01	22.99	22.98		
1.4	QPSK	3	1	22.96	22.93	22.99		
1.4	QPSK	3	2	22.92	22.93	22.95		
1.4	QPSK	6	0	21.99	21.95	22.00	23	1
1.4	16QAM	1	0	22.84	22.83	22.81	23	1
1.4	16QAM	1	2	22.11	22.06	22.04		
1.4	16QAM	1	5	22.12	22.15	22.16		
1.4	16QAM	3	0	22.00	21.95	21.96		
1.4	16QAM	3	1	21.93	21.93	21.95		
1.4	16QAM	3	2	21.91	21.95	21.96		
1.4	16QAM	6	0	21.01	20.99	20.94	22	2

<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	23.10	23.15	22.90	24	0
20	QPSK	1	49	22.62	22.80	22.74		
20	QPSK	1	99	22.41	22.47	22.54		
20	QPSK	50	0	21.66	21.89	21.80	23	1
20	QPSK	50	24	21.60	21.81	21.78		
20	QPSK	50	49	21.59	21.65	21.60		
20	QPSK	100	0	21.59	21.80	21.77		
20	16QAM	1	0	21.85	21.93	21.83	23	1
20	16QAM	1	49	21.86	22.03	22.03		
20	16QAM	1	99	21.55	21.55	21.66		
20	16QAM	50	0	20.65	20.70	20.71	22	2
20	16QAM	50	24	20.67	20.78	20.72		
20	16QAM	50	49	20.57	20.58	20.58		
20	16QAM	100	0	20.67	20.66	20.72		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	22.75	22.80	22.79	24	0
15	QPSK	1	37	22.63	22.87	22.69		
15	QPSK	1	74	22.48	22.52	22.49		
15	QPSK	36	0	21.75	21.89	21.76	23	1
15	QPSK	36	18	21.78	21.70	21.73		
15	QPSK	36	37	21.58	21.68	21.73		
15	QPSK	75	0	21.66	21.80	21.76		
15	16QAM	1	0	21.99	22.06	22.01	23	1
15	16QAM	1	37	21.98	22.10	22.03		
15	16QAM	1	74	21.71	21.77	21.74		
15	16QAM	36	0	20.74	20.83	20.74	22	2
15	16QAM	36	18	20.76	20.84	20.76		
15	16QAM	36	37	20.57	20.61	20.66		
15	16QAM	75	0	20.65	20.78	20.73		
Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	22.65	22.66	22.58	24	0
10	QPSK	1	24	22.72	22.76	22.68		
10	QPSK	1	49	22.62	22.49	22.49		
10	QPSK	25	0	21.72	21.67	21.52	23	1
10	QPSK	25	12	21.70	21.73	21.57		
10	QPSK	25	24	21.65	21.55	21.52		
10	QPSK	50	0	21.68	21.66	21.50		
10	16QAM	1	0	22.00	21.97	21.89	23	1
10	16QAM	1	24	22.06	22.06	21.93		
10	16QAM	1	49	21.92	21.80	21.73		
10	16QAM	25	0	20.72	20.60	20.57	22	2
10	16QAM	25	12	20.70	20.69	20.58		
10	16QAM	25	24	20.64	20.56	20.55		
10	16QAM	50	0	20.65	20.64	20.55		

Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	22.72	22.68	22.54	24	0
5	QPSK	1	12	22.77	22.67	22.52		
5	QPSK	1	24	22.63	22.60	22.57		
5	QPSK	12	0	21.64	21.66	21.47	23	1
5	QPSK	12	6	21.79	21.78	21.54		
5	QPSK	12	11	21.73	21.67	21.49		
5	QPSK	25	0	21.73	21.73	21.50		
5	16QAM	1	0	21.96	21.97	21.78	23	1
5	16QAM	1	12	22.17	22.14	21.88		
5	16QAM	1	24	21.97	21.85	21.81		
5	16QAM	12	0	20.63	20.67	20.53	22	2
5	16QAM	12	6	20.73	20.71	20.55		
5	16QAM	12	11	20.67	20.58	20.50		
5	16QAM	25	0	20.73	20.70	20.52		

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

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

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

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

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

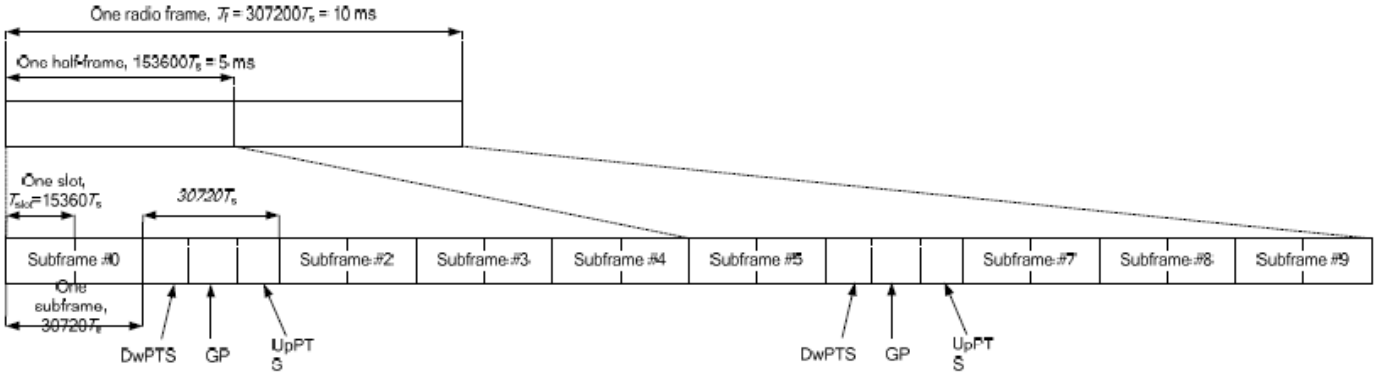


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

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

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

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

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

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

The highest duty factor is resulted from:

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

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

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

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

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

<LTE Band 41>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				39750	40185	40620	41055	41490		
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	21.74	21.55	21.46	21.29	21.79	23	0
20	QPSK	1	49	21.72	21.52	21.54	21.37	21.50		
20	QPSK	1	99	21.17	21.08	21.11	21.10	21.18		
20	QPSK	50	0	20.68	20.55	20.47	20.44	20.75	22	1
20	QPSK	50	24	20.74	20.56	20.57	20.46	20.64		
20	QPSK	50	49	20.46	20.36	20.37	20.34	20.47		
20	QPSK	100	0	20.60	20.44	20.33	20.46	20.61		
20	16QAM	1	0	20.81	20.75	20.60	20.51	20.87	22	1
20	16QAM	1	49	20.90	20.68	20.70	20.59	20.78		
20	16QAM	1	99	20.36	20.25	20.31	20.29	20.48		
20	16QAM	50	0	19.66	19.58	19.49	19.46	19.72	21	2
20	16QAM	50	24	19.76	19.57	19.59	19.44	19.65		
20	16QAM	50	49	19.46	19.35	19.37	19.36	19.45		
20	16QAM	100	0	19.65	19.47	19.39	19.47	19.59		
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5		
15	QPSK	1	0	21.69	21.59	21.57	21.73	21.73	23	0
15	QPSK	1	37	21.69	21.60	21.62	21.37	21.40		
15	QPSK	1	74	21.49	21.46	21.21	21.39	21.41		
15	QPSK	36	0	20.69	20.68	20.50	20.52	20.58	22	1
15	QPSK	36	18	20.67	20.62	20.54	20.59	20.66		
15	QPSK	36	37	20.54	20.44	20.38	20.47	20.52		
15	QPSK	75	0	20.62	20.53	20.38	20.45	20.52		
15	16QAM	1	0	20.80	20.72	20.65	20.86	20.91	22	1
15	16QAM	1	37	20.79	20.72	20.67	20.79	20.81		
15	16QAM	1	74	20.57	20.57	20.32	20.51	20.60		
15	16QAM	36	0	19.66	19.65	19.48	19.57	19.58	21	2
15	16QAM	36	18	19.60	19.53	19.51	19.57	19.63		
15	16QAM	36	37	19.51	19.48	19.35	19.42	19.50		
15	16QAM	75	0	19.63	19.54	19.42	19.54	19.56		
Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2501	2547	2593	2639	2685		
10	QPSK	1	0	21.56	21.50	21.47	21.55	21.55	23	0
10	QPSK	1	24	21.67	21.63	21.62	21.70	21.70		
10	QPSK	1	49	21.50	21.41	21.38	21.37	21.47		
10	QPSK	25	0	20.54	20.53	20.48	20.66	20.70	22	1
10	QPSK	25	12	20.56	20.52	20.54	20.54	20.62		
10	QPSK	25	24	20.62	20.52	20.35	20.48	20.56		
10	QPSK	50	0	20.60	20.55	20.48	20.53	20.61		
10	16QAM	1	0	20.90	20.81	20.83	20.89	20.95	22	1
10	16QAM	1	24	20.82	20.76	20.80	20.92	20.99		
10	16QAM	1	49	20.82	20.73	20.65	20.77	20.81		
10	16QAM	25	0	19.59	19.58	19.52	19.63	19.70	21	2
10	16QAM	25	12	19.59	19.59	19.57	19.68	19.69		
10	16QAM	25	24	19.65	19.62	19.42	19.62	19.65		
10	16QAM	50	0	19.58	19.48	19.48	19.58	19.63		

Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2545.8	2593	2640.3	2687.5		
5	QPSK	1	0	21.30	21.24	21.54	21.56	21.60	23	0
5	QPSK	1	12	21.20	21.22	21.46	21.43	21.51		
5	QPSK	1	24	21.15	21.16	21.33	21.40	21.47		
5	QPSK	12	0	20.50	20.45	20.51	20.58	20.67	22	1
5	QPSK	12	6	20.48	20.59	20.54	20.58	20.68		
5	QPSK	12	11	20.44	20.41	20.40	20.64	20.67		
5	QPSK	25	0	20.52	20.46	20.49	20.69	20.69		
5	16QAM	1	0	20.79	20.78	20.68	20.88	20.96	22	1
5	16QAM	1	12	20.90	20.81	20.94	21.00	21.01		
5	16QAM	1	24	20.77	20.72	20.63	20.88	20.89		
5	16QAM	12	0	19.52	19.43	19.51	19.65	19.70	21	2
5	16QAM	12	6	19.58	19.53	19.58	19.64	19.73		
5	16QAM	12	11	19.51	19.51	19.40	19.65	19.67		
5	16QAM	25	0	19.56	19.48	19.55	19.64	19.68		

LTE Carrier Aggregation Conducted Power

General Note:

1. According to KDB941225 D05A v01, 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.
2. 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.
3. The device only supports downlink carrier aggregation. Uplink carrier aggregation is not supported. Power measurements were performed with two DL carriers for the Release 8 configuration that had the highest output power across all bandwidths, channels and RB configuration for each band.
4. During the carrier aggregation conducted power measurements we have attention to throughput traffic to make sure all the power measurement is corrected.

Configure	PCC						SCC				Measured Power	
	LTE Band	BW (MHz)	Freq. (MHz)	Channel	UL# RB	UL RB Offset	LTE Band	BW (MHz)	Freq. (MHz)	Channel	LTE Rel 10 Tx. Power (dBm)	LTE Rel 8 Tx. Power (dBm)
Inter-Band	Band 2	20M	1860	18700	1	0	Band 4	20M	1732.5	20175	23.40	23.60
	Band 2	20M	1880	18900	1	0	Band 4	20M	1732.5	20175	23.79	23.86
	Band 2	20M	1900	19100	1	0	Band 4	20M	1732.5	20175	23.72	23.90
	Band 4	20M	1720	20050	1	0	Band 2	20M	1880	18900	23.59	23.72
	Band 4	20M	1732.5	20175	1	0	Band 2	20M	1880	18900	23.65	23.71
	Band 4	20M	1745	20300	1	0	Band 2	20M	1880	18900	23.36	23.40
	Band 2	20M	1860	18700	1	0	Band 12	10M	707.5	23095	23.53	23.60
	Band 2	20M	1880	18900	1	0	Band 12	10M	707.5	23095	23.70	23.86
	Band 2	20M	1900	19100	1	0	Band 12	10M	707.5	23095	23.80	23.90
	Band 12	10M	704	23060	1	0	Band 2	20M	1880	18900	22.43	22.60
	Band 12	10M	707.5	23095	1	0	Band 2	20M	1880	18900	22.58	22.78
	Band 12	10M	711	23130	1	0	Band 2	20M	1880	18900	22.82	22.89
	Band 4	20M	1720	20050	1	0	Band 12	10M	707.5	23095	23.65	23.72
	Band 4	20M	1732.5	20175	1	0	Band 12	10M	707.5	23095	23.62	23.71
	Band 4	20M	1745	20300	1	0	Band 12	10M	707.5	23095	23.25	23.40
	Band 12	10M	704	23060	1	0	Band 4	20M	1732.5	20175	22.52	22.60
	Band 12	10M	707.5	23095	1	0	Band 4	20M	1732.5	20175	22.65	22.78
	Band 12	10M	711	23130	1	0	Band 4	20M	1732.5	20175	22.74	22.89
Intra-Band	Band 4	20M	1720	20050	1	0	Band 4	20M	1732.5	20175	23.70	23.72
	Band 4	20M	1720	20050	1	0	Band 4	20M	1745	20300	23.57	23.72
	Band 4	20M	1732.5	20175	1	0	Band 4	20M	1720	20050	23.57	23.71
	Band 4	20M	1732.5	20175	1	0	Band 4	20M	1745	20300	23.68	23.71
	Band 4	20M	1745	20300	1	0	Band 4	20M	1720	20050	23.30	23.71
	Band 4	20M	1745	20300	1	0	Band 4	20M	1732.5	20175	23.25	23.40
	Band 7	20M	2510	20850	1	0	Band 7	20M	2535	21100	23.01	23.10
	Band 7	20M	2510	20850	1	0	Band 7	20M	2560	21350	23.07	23.10
	Band 7	20M	2535	21100	1	0	Band 7	20M	2510	20850	22.98	23.15
	Band 7	20M	2535	21100	1	0	Band 7	20M	2560	21350	22.95	23.15
	Band 7	20M	2560	21350	1	0	Band 7	20M	2510	20850	22.87	22.90
	Band 7	20M	2560	21350	1	0	Band 7	20M	2535	21100	22.86	22.90
	Band 7	20M	2510	20850	1	0	Band 7	20M	2530	21050	22.93	23.10
	Band 7	20M	2535	21100	1	0	Band 7	20M	2515	20900	23.00	23.15
	Band 7	20M	2535	21100	1	0	Band 7	20M	2555	21300	23.09	23.15
	Band 7	20M	2560	21350	1	0	Band 7	20M	2540	21150	22.82	22.90

<WLAN Conducted Power>

General Note:

1. For WLAN SAR testing was performed on single antenna RF power in SISO mode is larger or equal to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode.
2. Per KDB 248227 D01v02, the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is < 1.6W/kg and SAR peak to location ratio < 0.04, no additional SAR measurements for MIMO.
3. Per KDB 248227 D01v02, 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.
4. 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).
5. 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.
6. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
    a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
    b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
    c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

<2.4GHz WLAN Antenna 0>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b	CH 1	2412	1Mbps	18.70	19.50	99.04
		CH 6	2437		18.42	19.50	
		CH 11	2462		17.86	19.50	
	802.11g	CH 1	2412	6Mbps	14.72	15.50	95.41
		CH 6	2437		17.07	18.00	
		CH 11	2462		13.58	14.50	
	802.11n-HT20	CH 1	2412	MCS0	13.60	14.50	95.10
		CH 6	2437		16.94	18.00	
		CH 11	2462		11.96	13.00	
	802.11ac-VHT20	CH 1	2412	MCS0	17.05	18.00	95.10
		CH 6	2437		16.92	18.00	
		CH 11	2462		13.55	14.50	

<2.4GHz WLAN Antenna 1>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b	CH 1	2412	1Mbps	19.25	19.50	99.04
		CH 6	2437		19.14	19.50	
		CH 11	2462		18.30	19.50	
	802.11g	CH 1	2412	6Mbps	15.35	15.50	94.50
		CH 6	2437		17.80	18.00	
		CH 11	2462		14.23	14.50	
	802.11n-HT20	CH 1	2412	MCS0	14.23	14.50	94.12
		CH 6	2437		17.58	18.00	
		CH 11	2462		12.59	13.00	
	802.11ac-VHT20	CH 1	2412	MCS0	17.76	18.00	94.17
		CH 6	2437		17.67	18.00	
		CH 11	2462		14.15	14.50	

<2.4GHz WLAN Antenna 0+1>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b	CH 1	2412	1Mbps	22.12	22.50	99.04
		CH 6	2437		21.85	22.50	
		CH 11	2462		21.22	22.50	
	802.11g	CH 1	2412	6Mbps	18.04	18.50	95.41
		CH 6	2437		20.46	21.00	
		CH 11	2462		16.99	17.50	
	802.11n-HT20	CH 1	2412	MCS0	16.92	17.50	95.10
		CH 6	2437		20.44	21.00	
		CH 11	2462		15.35	16.00	
	802.11ac-VHT20	CH 1	2412	MCS0	20.50	21.00	95.10
		CH 6	2437		20.34	21.00	
		CH 11	2462		16.89	17.50	

<5GHz WLAN Antenna 0>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a	CH 36	5180	6Mbps	14.16	15.00	95.39
		CH 40	5200		16.23	16.50	
		CH 44	5220		14.11	15.00	
		CH 48	5240		13.98	15.00	
	802.11n-HT20	CH 36	5180	MCS0	13.96	15.00	95.54
		CH 40	5200		14.20	15.00	
		CH 44	5220		14.24	15.00	
		CH 48	5240		14.19	15.00	
	802.11n-HT40	CH 38	5190	MCS0	10.86	11.50	90.48
		CH 46	5230		14.09	15.00	
	802.11ac-VHT20	CH 36	5180	MCS0	13.51	15.00	94.61
		CH 40	5200		14.33	15.00	
		CH 44	5220		14.22	15.00	
		CH 48	5240		14.14	15.00	
	802.11ac-VHT40	CH 38	5190	MCS0	10.88	11.50	90.57
		CH 46	5230		14.18	15.00	
	802.11ac-VHT80	CH 42	5210	MCS0	10.57	11.50	82.27

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a	CH 52	5260	6Mbps	16.22	17.00	95.39
		CH 56	5280		16.07	17.00	
		CH 60	5300		16.20	17.00	
		CH 64	5320		13.43	15.00	
	802.11n-HT20	CH 52	5260	MCS0	14.26	16.00	95.54
		CH 56	5280		14.07	16.00	
		CH 60	5300		14.10	16.00	
		CH 64	5320		14.13	16.00	
	802.11n-HT40	CH 54	5270	MCS0	14.15	16.00	90.48
		CH 62	5310		13.12	15.00	
	802.11ac-VHT20	CH 52	5260	MCS0	14.18	16.00	94.61
		CH 56	5280		14.16	16.00	
		CH 60	5300		14.10	16.00	
		CH 64	5320		14.08	16.00	
	802.11ac-VHT40	CH 54	5270	MCS0	14.11	16.00	90.57
		CH 62	5310		12.63	13.50	
	802.11ac-VHT80	CH 58	5290	MCS0	12.01	13.00	82.27

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a	CH 100	5500	6Mbps	15.31	16.00	95.39
		CH 104	5520		16.45	17.00	
		CH 108	5540		16.42	17.00	
		CH 112	5560		16.40	17.00	
		CH 116	5580		16.53	17.00	
		CH 120	5600		16.24	17.00	
		CH 124	5620		16.29	17.00	
		CH 128	5640		16.25	17.00	
		CH 132	5660		16.27	17.00	
		CH 136	5680		16.17	17.00	
		CH 140	5700		14.51	15.50	
		CH 144	5720		16.47	17.00	
	802.11n-HT20	CH 100	5500	MCS0	14.79	15.50	95.54
		CH 104	5520		14.43	15.50	
		CH 108	5540		14.40	15.50	
		CH 112	5560		14.52	15.50	
		CH 116	5580		14.41	15.50	
		CH 120	5600		14.38	15.50	
		CH 124	5620		14.39	15.50	
		CH 128	5640		14.39	15.50	
		CH 132	5660		14.36	15.50	
		CH 136	5680		14.23	15.50	
		CH 140	5700		14.35	15.50	
		CH 144	5720		14.77	15.50	
	802.11n-HT40	CH 102	5510	MCS0	12.16	12.50	90.48
		CH 110	5550		14.48	15.00	
		CH 126	5630		14.20	15.00	
		CH 134	5670		14.29	15.50	
		CH 142	5710		14.16	15.50	
	802.11ac-VHT20	CH 100	5500	MCS0	14.65	15.50	94.61
		CH 104	5520		14.55	15.00	
		CH 108	5540		14.42	15.00	
		CH 112	5560		14.56	15.50	
		CH 116	5580		14.35	15.50	
		CH 120	5600		14.47	15.50	
		CH 124	5620		14.46	15.00	
		CH 128	5640		14.42	15.50	
		CH 132	5660		14.40	15.50	
		CH 136	5680		14.30	15.50	
		CH 140	5700		14.27	15.50	
		CH 144	5720		14.64	15.50	
	802.11ac-VHT40	CH 102	5510	MCS0	12.13	12.50	90.57
		CH 110	5550		14.56	15.00	
		CH 126	5630		14.20	15.00	
		CH 134	5670		14.35	15.00	
		CH 142	5710		14.14	15.00	
	802.11ac-VHT80	CH 106	5530	MCS0	10.66	11.00	82.27
		CH 122	5610		13.25	14.00	
		CH 138	5690		13.08	15.00	

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a	CH 149	5745	MCS0	14.92	16.00	95.39
		CH 153	5765		15.98	17.00	
		CH 157	5785		16.26	17.00	
		CH 161	5805		16.13	17.00	
		CH 165	5825		15.76	17.00	
	802.11n-HT20	CH 149	5745	MCS0	14.74	15.50	95.54
		CH 153	5765		14.20	15.50	
		CH 157	5785		14.43	15.50	
		CH 161	5805		14.32	15.50	
		CH 165	5825		14.59	15.50	
	802.11n-HT40	CH 151	5755	MCS0	12.26	13.00	90.48
		CH 159	5795		14.25	15.50	
	802.11ac-VHT20	CH 149	5745	MCS0	14.69	15.50	94.61
		CH 153	5765		14.20	15.50	
		CH 157	5785		14.48	15.50	
		CH 161	5805		14.26	15.50	
		CH 165	5825		14.60	15.50	
	802.11ac-VHT40	CH 151	5755	MCS0	12.66	13.00	90.57
		CH 159	5795		14.23	15.00	
	802.11ac-VHT80	CH 155	5775	MCS0	11.56	13.00	82.27

<5GHz WLAN Antenna 1>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a	CH 36	5180	6Mbps	14.45	15.00	95.37
		CH 40	5200		16.37	16.50	
		CH 44	5220		14.44	15.00	
		CH 48	5240		14.41	15.00	
	802.11n-HT20	CH 36	5180	MCS0	14.14	15.00	94.61
		CH 40	5200		14.47	15.00	
		CH 44	5220		14.64	15.00	
		CH 48	5240		14.65	15.00	
	802.11n-HT40	CH 38	5190	MCS0	10.94	11.50	90.48
		CH 46	5230		14.44	15.00	
	802.11ac-VHT20	CH 36	5180	MCS0	13.73	15.00	95.07
		CH 40	5200		14.50	15.00	
		CH 44	5220		14.42	15.00	
		CH 48	5240		14.46	15.00	
	802.11ac-VHT40	CH 38	5190	MCS0	10.96	11.50	90.48
		CH 46	5230		14.53	15.00	
	802.11ac-VHT80	CH 42	5210	MCS0	10.86	11.50	82.98

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a	CH 52	5260	6Mbps	16.78	17.00	95.37
		CH 56	5280		16.54	17.00	
		CH 60	5300		16.71	17.00	
		CH 64	5320		15.09	17.00	
	802.11n-HT20	CH 52	5260	MCS0	15.03	16.00	94.61
		CH 56	5280		14.85	16.00	
		CH 60	5300		14.94	16.00	
		CH 64	5320		14.91	16.00	
	802.11n-HT40	CH 54	5270	MCS0	15.01	16.00	90.48
		CH 62	5310		13.69	15.00	
	802.11ac-VHT20	CH 52	5260	MCS0	14.93	16.00	95.07
		CH 56	5280		14.90	16.00	
		CH 60	5300		14.79	16.00	
		CH 64	5320		14.72	16.00	
	802.11ac-VHT40	CH 54	5270	MCS0	14.98	16.00	90.48
		CH 62	5310		13.19	13.50	
	802.11ac-VHT80	CH 58	5290	MCS0	12.62	13.00	82.98

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a	CH 100	5500	6Mbps	15.71	16.00	95.37
		CH 104	5520		16.80	17.00	
		CH 108	5540		16.70	17.00	
		CH 112	5560		16.72	17.00	
		CH 116	5580		16.88	17.00	
		CH 120	5600		16.77	17.00	
		CH 124	5620		16.75	17.00	
		CH 128	5640		16.74	17.00	
		CH 132	5660		16.78	17.00	
		CH 136	5680		16.73	17.00	
		CH 140	5700		14.75	15.50	
		CH 144	5720		16.96	17.00	
	802.11n-HT20	CH 100	5500	MCS0	15.31	15.50	94.61
		CH 104	5520		14.80	15.50	
		CH 108	5540		14.70	15.50	
		CH 112	5560		15.00	15.50	
		CH 116	5580		15.28	15.50	
		CH 120	5600		14.99	15.50	
		CH 124	5620		14.92	15.50	
		CH 128	5640		15.01	15.50	
		CH 132	5660		14.96	15.50	
		CH 136	5680		14.73	15.50	
		CH 140	5700		14.73	15.50	
		CH 144	5720		14.95	15.50	
	802.11n-HT40	CH 102	5510	MCS0	12.34	12.50	90.48
		CH 110	5550		14.98	15.00	
		CH 126	5630		14.58	15.00	
		CH 134	5670		14.67	15.50	
		CH 142	5710		14.58	15.50	
	802.11ac-VHT20	CH 100	5500	MCS0	15.09	15.50	95.07
		CH 104	5520		14.84	15.00	
		CH 108	5540		14.76	15.00	
		CH 112	5560		15.01	15.50	
		CH 116	5580		14.91	15.50	
		CH 120	5600		15.03	15.50	
		CH 124	5620		14.98	15.00	
		CH 128	5640		15.02	15.50	
		CH 132	5660		14.94	15.50	
		CH 136	5680		14.68	15.50	
		CH 140	5700		14.47	15.50	
		CH 144	5720		15.00	15.50	
	802.11ac-VHT40	CH 102	5510	MCS0	12.31	12.50	90.48
		CH 110	5550		14.95	15.00	
		CH 126	5630		14.61	15.00	
		CH 134	5670		14.59	15.00	
		CH 142	5710		14.55	15.00	
	802.11ac-VHT80	CH 106	5530	MCS0	10.92	11.00	82.98
		CH 122	5610		13.71	14.00	
		CH 138	5690		13.69	15.00	

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a	CH 149	5745	MCS0	15.69	16.00	95.37
		CH 153	5765		16.65	17.00	
		CH 157	5785		16.64	17.00	
		CH 161	5805		16.39	17.00	
		CH 165	5825		16.04	17.00	
	802.11n-HT20	CH 149	5745	MCS0	14.97	15.50	94.61
		CH 153	5765		14.78	15.50	
		CH 157	5785		14.82	15.50	
		CH 161	5805		14.75	15.50	
		CH 165	5825		14.89	15.50	
	802.11n-HT40	CH 151	5755	MCS0	12.54	13.00	90.48
		CH 159	5795		14.41	15.50	
	802.11ac-VHT20	CH 149	5745	MCS0	14.92	15.50	95.07
		CH 153	5765		14.60	15.50	
		CH 157	5785		14.77	15.50	
		CH 161	5805		14.63	15.50	
		CH 165	5825		14.87	15.50	
	802.11ac-VHT40	CH 151	5755	MCS0	12.99	13.00	90.48
		CH 159	5795		14.50	15.00	
	802.11ac-VHT80	CH 155	5775	MCS0	11.95	13.00	82.98

<5GHz WLAN Antenna 0+1>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a	CH 36	5180	6Mbps	17.11	18.00	95.39
		CH 40	5200		19.39	19.50	
		CH 44	5220		17.31	18.00	
		CH 48	5240		17.15	18.00	
	802.11n-HT20	CH 36	5180	MCS0	17.14	18.00	95.54
		CH 40	5200		17.54	18.00	
		CH 44	5220		17.71	18.00	
		CH 48	5240		17.64	18.00	
	802.11n-HT40	CH 38	5190	MCS0	14.18	14.50	90.48
		CH 46	5230		17.49	18.00	
	802.11ac-VHT20	CH 36	5180	MCS0	16.64	18.00	94.61
		CH 40	5200		17.51	18.00	
		CH 44	5220		17.60	18.00	
		CH 48	5240		17.54	18.00	
	802.11ac-VHT40	CH 38	5190	MCS0	13.88	14.50	90.57
		CH 46	5230		17.46	18.00	
	802.11ac-VHT80	CH 42	5210	MCS0	13.67	14.50	82.27

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a	CH 52	5260	6Mbps	19.29	20.00	95.39
		CH 56	5280		19.28	20.00	
		CH 60	5300		19.25	20.00	
		CH 64	5320		17.86	18.00	
	802.11n-HT20	CH 52	5260	MCS0	17.75	19.00	95.54
		CH 56	5280		17.46	19.00	
		CH 60	5300		17.71	19.00	
		CH 64	5320		17.68	19.00	
	802.11n-HT40	CH 54	5270	MCS0	17.64	19.00	90.48
		CH 62	5310		16.54	18.00	
	802.11ac-VHT20	CH 52	5260	MCS0	17.58	19.00	94.61
		CH 56	5280		17.49	19.00	
		CH 60	5300		17.54	19.00	
		CH 64	5320		17.55	19.00	
	802.11ac-VHT40	CH 54	5270	MCS0	17.51	19.00	90.57
		CH 62	5310		15.96	16.50	
	802.11ac-VHT80	CH 58	5290	MCS0	15.31	16.00	82.27

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a	CH 100	5500	6Mbps	18.43	19.00	95.39
		CH 104	5520		19.57	20.00	
		CH 108	5540		19.54	20.00	
		CH 112	5560		19.58	20.00	
		CH 116	5580		19.44	20.00	
		CH 120	5600		19.52	20.00	
		CH 124	5620		19.50	20.00	
		CH 128	5640		19.48	20.00	
		CH 132	5660		19.53	20.00	
		CH 136	5680		19.40	20.00	
		CH 140	5700		17.89	18.50	
		CH 144	5720		19.71	20.00	
	802.11n-HT20	CH 100	5500	MCS0	18.31	18.50	95.54
		CH 104	5520		17.97	18.50	
		CH 108	5540		17.90	18.50	
		CH 112	5560		17.91	18.50	
		CH 116	5580		17.93	18.50	
		CH 120	5600		17.92	18.50	
		CH 124	5620		17.93	18.50	
		CH 128	5640		17.89	18.50	
		CH 132	5660		17.88	18.50	
		CH 136	5680		17.86	18.50	
		CH 140	5700		17.89	18.50	
		CH 144	5720		18.26	18.50	
	802.11n-HT40	CH 102	5510	MCS0	15.37	15.50	90.48
		CH 110	5550		17.87	18.00	
		CH 126	5630		17.76	18.00	
		CH 134	5670		17.78	18.50	
		CH 142	5710		17.74	18.50	
	802.11ac-VHT20	CH 100	5500	MCS0	18.06	18.50	94.61
		CH 104	5520		17.78	18.00	
		CH 108	5540		17.80	18.00	
		CH 112	5560		17.81	18.50	
		CH 116	5580		18.01	18.50	
		CH 120	5600		17.82	18.50	
		CH 124	5620		17.77	18.00	
		CH 128	5640		17.78	18.50	
		CH 132	5660		17.79	18.50	
		CH 136	5680		17.76	18.50	
		CH 140	5700		17.80	18.50	
		CH 144	5720		18.01	18.50	
	802.11ac-VHT40	CH 102	5510	MCS0	15.24	15.50	90.57
		CH 110	5550		17.78	18.00	
		CH 126	5630		17.76	18.00	
		CH 134	5670		17.71	18.00	
		CH 142	5710		17.59	18.00	
	802.11ac-VHT80	CH 106	5530	MCS0	13.90	14.00	82.27
		CH 122	5610		16.49	17.00	
		CH 138	5690		16.69	18.00	

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a	CH 149	5745	MCS0	18.18	19.00	95.39
		CH 153	5765		19.53	20.00	
		CH 157	5785		19.45	20.00	
		CH 161	5805		19.51	20.00	
		CH 165	5825		18.38	20.00	
	802.11n-HT20	CH 149	5745	MCS0	17.92	18.50	95.54
		CH 153	5765		17.78	18.50	
		CH 157	5785		17.76	18.50	
		CH 161	5805		17.77	18.50	
		CH 165	5825		17.84	18.50	
	802.11n-HT40	CH 151	5755	MCS0	15.51	16.00	90.48
		CH 159	5795		17.52	18.50	
	802.11ac-VHT20	CH 149	5745	MCS0	18.02	18.50	94.61
		CH 153	5765		17.67	18.50	
		CH 157	5785		17.69	18.50	
		CH 161	5805		17.68	18.50	
		CH 165	5825		17.81	18.50	
	802.11ac-VHT40	CH 151	5755	MCS0	15.84	16.00	90.57
		CH 159	5795		17.87	18.00	
	802.11ac-VHT80	CH 155	5775	MCS0	14.74	16.00	82.27

<2.4GHz Bluetooth>

General Note:

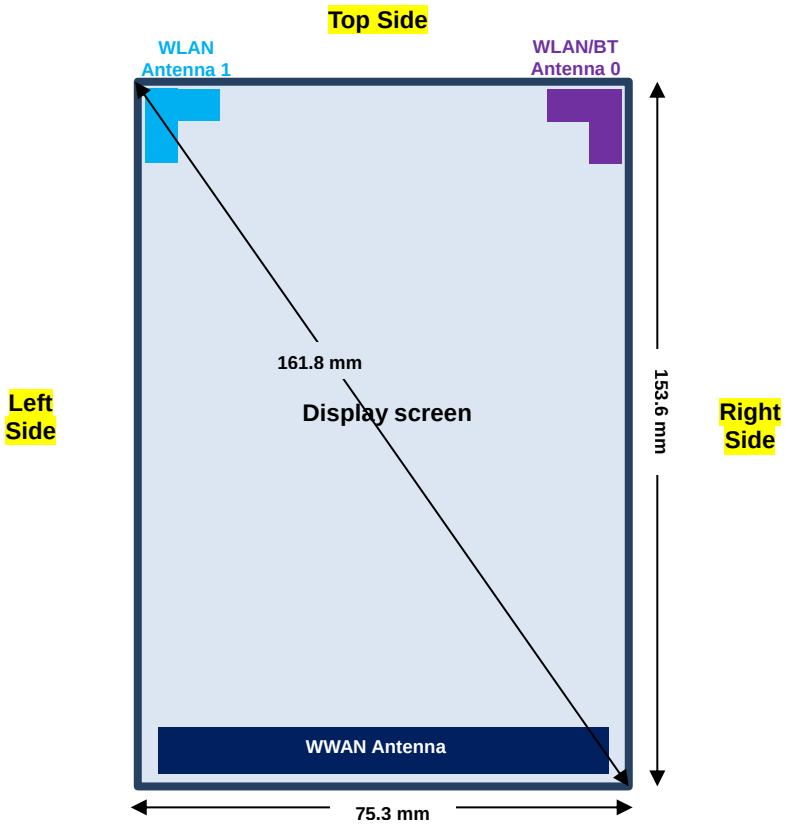
1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The duty factor is selected theoretical 83.3% perform Bluetooth SAR testing.

Mode	Channel	Frequency (MHz)	Average power (dBm)			Tune-up Limit
			1Mbps	2Mbps	3Mbps	
v3.0 with EDR	CH 00	2402	8.36	5.25	5.26	9.00
	CH 39	2441	10.11	7.00	7.02	10.50
	CH 78	2480	7.72	4.54	4.54	8.00

Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-up Limit
			GFSK	
v4.0 with LE	CH 00	2402	0.17	1.00
	CH 19	2440	2.20	3.00
	CH 39	2480	0.43	1.00

13. Antenna Location

<Mobile Phone>



Front View

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

Positions for SAR tests; Hotspot mode						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Main	Yes	Yes	No	Yes	Yes	Yes
BT&WLAN	Yes	Yes	Yes	No	Yes	Yes

General Note:

1. Referring to KDB 941225 D06 v02, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge

14. SAR Test Results

General Note:

1. Per KDB 447498 D01v05r02, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   d. 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.
   e. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   f. For WWAN: Reported SAR (W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   g. For WLAN: Reported SAR (W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor.
   h. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v05r02, 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 KDB648474 D04v01r02, 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, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.
4. Per KDB 648474 D04v01r02, 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. While operating in body-adjacent exposure configurations during a mobile hotspot session, reduced power limits are enforced on the GSM850, WCDMA B5 and LTE B17 / B5 transmitter. More detailed information which can be referred to “operational description”.

GSM Note:

1. Per KDB 941225 D01v03, considering the possibility of e.g. 3rd party VoIP operation for Head and body-worn SAR test reduction for GSM and GPRS and 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 EUT was set in GPRS (4Tx slots) for GSM850/GSM1900.
2. Per KDB 941225 D01v03, for Hotspot SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance, for modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested, therefore, the EUT was set in GPRS (4Tx slots) for GSM850/GSM1900.

UMTS Note:

1. Per KDB 941225 D01v03, SAR for Head / Hotspot / Body-worn exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.
2. Per KDB 941225 D01v03, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

LTE Note:

1. Per KDB 941225 D05v02r03, 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 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r03, 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 D05v02r03, 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 D05v02r03, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r03, 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 D05v02r03, smaller bandwidth SAR testing is not required.

WLAN Note:

1. Per KDB 248227 D01v02, 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 D01v02, for U-NII-1 Head and Body-worn 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. For WLAN SAR testing was performed on single antenna RF power in SISO mode is larger or equal to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode.
6. Per KDB 248227 D01v02, the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is < 1.6W/kg and SAR peak to location ratio < 0.04, no additional SAR measurements for MIMO.
7. This device 2.4GHz / 5.2GHz / 5.8GHz WLAN supports Hotspot operation and WiFi Direct (Group Client / Group Owner), and 5.3GHz / 5.5GHz WLAN supports WiFi Direct (Group Client).
8. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

14.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (4 Tx slots)	Right Cheek	0mm	251	848.8	25.70	27.50	1.514	0.19	0.223	0.338
	GSM850	GPRS (4 Tx slots)	Right Tilted	0mm	251	848.8	25.70	27.50	1.514	-0.04	0.105	0.159
01	GSM850	GPRS (4 Tx slots)	Left Cheek	0mm	251	848.8	25.70	27.50	1.514	0.1	0.241	0.365
	GSM850	GPRS (4 Tx slots)	Left Tilted	0mm	251	848.8	25.70	27.50	1.514	0.01	0.118	0.179
	GSM1900	GPRS (4 Tx slots)	Right Cheek	0mm	810	1909.8	22.94	24.50	1.432	0	0.174	0.249
	GSM1900	GPRS (4 Tx slots)	Right Tilted	0mm	810	1909.8	22.94	24.50	1.432	0.07	0.089	0.127
02	GSM1900	GPRS (4 Tx slots)	Left Cheek	0mm	810	1909.8	22.94	24.50	1.432	-0.09	0.174	0.249
	GSM1900	GPRS (4 Tx slots)	Left Tilted	0mm	810	1909.8	22.94	24.50	1.432	0.05	0.102	0.146

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA V	RMC 12.2Kbps	Right Cheek	0mm	4233	846.6	23.19	24.00	1.205	0.08	0.261	0.315
	WCDMA V	RMC 12.2Kbps	Right Tilted	0mm	4233	846.6	23.19	24.00	1.205	0.02	0.098	0.118
03	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	4233	846.6	23.19	24.00	1.205	0.06	0.290	0.349
	WCDMA V	RMC 12.2Kbps	Left Tilted	0mm	4233	846.6	23.19	24.00	1.205	0.07	0.108	0.130
	WCDMA IV	RMC 12.2Kbps	Right Cheek	0mm	1312	1712.4	23.00	24.00	1.259	-0.1	0.106	0.133
	WCDMA IV	RMC 12.2Kbps	Right Tilted	0mm	1312	1712.4	23.00	24.00	1.259	0.1	0.060	0.076
04	WCDMA IV	RMC 12.2Kbps	Left Cheek	0mm	1312	1712.4	23.00	24.00	1.259	-0.03	0.170	0.214
	WCDMA IV	RMC 12.2Kbps	Left Tilted	0mm	1312	1712.4	23.00	24.00	1.259	0.07	0.057	0.072
	WCDMA II	RMC 12.2Kbps	Right Cheek	0mm	9538	1907.6	22.83	24.00	1.309	-0.14	0.257	0.336
	WCDMA II	RMC 12.2Kbps	Right Tilted	0mm	9538	1907.6	22.83	24.00	1.309	-0.09	0.138	0.181
05	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	9538	1907.6	22.83	24.00	1.309	-0.11	0.265	0.347
	WCDMA II	RMC 12.2Kbps	Left Tilted	0mm	9538	1907.6	22.83	24.00	1.309	0.01	0.130	0.170

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	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)
06	LTE Band 12	10M	QPSK	1RB	0offset	Right Cheek	0mm	23130	711	22.89	24.00	1.291	-0.1	0.222	0.287
	LTE Band 12	10M	QPSK	25RB	0offset	Right Cheek	0mm	23130	711	21.61	23.00	1.377	-0.05	0.131	0.180
	LTE Band 12	10M	QPSK	1RB	0offset	Right Tilted	0mm	23130	711	22.89	24.00	1.291	0.19	0.051	0.066
	LTE Band 12	10M	QPSK	25RB	0offset	Right Tilted	0mm	23130	711	21.61	23.00	1.377	0.1	0.028	0.039
	LTE Band 12	10M	QPSK	1RB	0offset	Left Cheek	0mm	23130	711	22.89	24.00	1.291	-0.07	0.185	0.239
	LTE Band 12	10M	QPSK	25RB	0offset	Left Cheek	0mm	23130	711	21.61	23.00	1.377	0.02	0.108	0.149
	LTE Band 12	10M	QPSK	1RB	0offset	Left Tilted	0mm	23130	711	22.89	24.00	1.291	0.14	0.071	0.092
	LTE Band 12	10M	QPSK	25RB	0offset	Left Tilted	0mm	23130	711	21.61	23.00	1.377	0.12	0.042	0.058
07	LTE Band 17	10M	QPSK	1RB	0offset	Right Cheek	0mm	23790	710	22.90	24.00	1.288	0.04	0.290	0.374
	LTE Band 17	10M	QPSK	25RB	0offset	Right Cheek	0mm	23790	710	21.80	23.00	1.318	0.07	0.173	0.228
	LTE Band 17	10M	QPSK	1RB	0offset	Right Tilted	0mm	23790	710	22.90	24.00	1.288	0.02	0.064	0.082
	LTE Band 17	10M	QPSK	25RB	0offset	Right Tilted	0mm	23790	710	21.80	23.00	1.318	0.14	0.035	0.046
	LTE Band 17	10M	QPSK	1RB	0offset	Left Cheek	0mm	23790	710	22.90	24.00	1.288	0.03	0.203	0.262
	LTE Band 17	10M	QPSK	25RB	0offset	Left Cheek	0mm	23790	710	21.80	23.00	1.318	0	0.118	0.156
	LTE Band 17	10M	QPSK	1RB	0offset	Left Tilted	0mm	23790	710	22.90	24.00	1.288	-0.13	0.074	0.095
	LTE Band 17	10M	QPSK	25RB	0offset	Left Tilted	0mm	23790	710	21.80	23.00	1.318	-0.03	0.043	0.057

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 5	10M	QPSK	1RB	0offset	Right Cheek	0mm	20525	836.5	23.06	24.00	1.242	0.13	0.240	0.298
	LTE Band 5	10M	QPSK	25RB	0offset	Right Cheek	0mm	20525	836.5	22.10	23.00	1.230	0.12	0.146	0.180
	LTE Band 5	10M	QPSK	1RB	0offset	Right Tilted	0mm	20525	836.5	23.06	24.00	1.242	-0.18	0.116	0.144
	LTE Band 5	10M	QPSK	25RB	0offset	Right Tilted	0mm	20525	836.5	22.10	23.00	1.230	-0.11	0.067	0.082
08	LTE Band 5	10M	QPSK	1RB	0offset	Left Cheek	0mm	20525	836.5	23.06	24.00	1.242	0.06	0.296	0.368
	LTE Band 5	10M	QPSK	25RB	0offset	Left Cheek	0mm	20525	836.5	22.10	23.00	1.230	0.04	0.203	0.250
	LTE Band 5	10M	QPSK	1RB	0offset	Left Tilted	0mm	20525	836.5	23.06	24.00	1.242	0.13	0.123	0.153
	LTE Band 5	10M	QPSK	25RB	0offset	Left Tilted	0mm	20525	836.5	22.10	23.00	1.230	0.08	0.072	0.089
	LTE Band 4	20M	QPSK	1RB	0offset	Right Cheek	0mm	20050	1720	23.72	24.00	1.067	-0.07	0.222	0.237
	LTE Band 4	20M	QPSK	50RB	0offset	Right Cheek	0mm	20050	1720	22.37	23.00	1.156	-0.12	0.121	0.140
	LTE Band 4	20M	QPSK	1RB	0offset	Right Tilted	0mm	20050	1720	23.72	24.00	1.067	0.01	0.124	0.132
	LTE Band 4	20M	QPSK	50RB	0offset	Right Tilted	0mm	20050	1720	22.37	23.00	1.156	0.13	0.070	0.081
09	LTE Band 4	20M	QPSK	1RB	0offset	Left Cheek	0mm	20050	1720	23.72	24.00	1.067	-0.02	0.318	0.339
	LTE Band 4	20M	QPSK	50RB	0offset	Left Cheek	0mm	20050	1720	22.37	23.00	1.156	-0.1	0.173	0.200
	LTE Band 4	20M	QPSK	1RB	0offset	Left Tilted	0mm	20050	1720	23.72	24.00	1.067	-0.02	0.121	0.129
	LTE Band 4	20M	QPSK	50RB	0offset	Left Tilted	0mm	20050	1720	22.37	23.00	1.156	0.01	0.067	0.077
10	LTE Band 2	20M	QPSK	1RB	0offset	Right Cheek	0mm	19100	1900	23.90	24.00	1.023	-0.04	0.370	0.379
	LTE Band 2	20M	QPSK	50RB	0offset	Right Cheek	0mm	19100	1900	22.53	23.00	1.114	-0.07	0.216	0.241
	LTE Band 2	20M	QPSK	1RB	0offset	Right Tilted	0mm	19100	1900	23.90	24.00	1.023	-0.09	0.164	0.168
	LTE Band 2	20M	QPSK	50RB	0offset	Right Tilted	0mm	19100	1900	22.53	23.00	1.114	0.01	0.099	0.110
	LTE Band 2	20M	QPSK	1RB	0offset	Left Cheek	0mm	19100	1900	23.90	24.00	1.023	0.03	0.349	0.357
	LTE Band 2	20M	QPSK	50RB	0offset	Left Cheek	0mm	19100	1900	22.53	23.00	1.114	0.07	0.198	0.221
	LTE Band 2	20M	QPSK	1RB	0offset	Left Tilted	0mm	19100	1900	23.90	24.00	1.023	0.04	0.180	0.184
	LTE Band 2	20M	QPSK	50RB	0offset	Left Tilted	0mm	19100	1900	22.53	23.00	1.114	0.01	0.103	0.115
	LTE Band 25	20M	QPSK	1RB	0offset	Right Cheek	0mm	26590	1905	23.99	24.00	1.002	-0.11	0.254	0.255
	LTE Band 25	20M	QPSK	50RB	0offset	Right Cheek	0mm	26590	1905	22.51	23.00	1.119	-0.12	0.176	0.197
	LTE Band 25	20M	QPSK	1RB	0offset	Right Tilted	0mm	26590	1905	23.99	24.00	1.002	0.02	0.151	0.151
	LTE Band 25	20M	QPSK	50RB	0offset	Right Tilted	0mm	26590	1905	22.51	23.00	1.119	-0.03	0.101	0.113
11	LTE Band 25	20M	QPSK	1RB	0offset	Left Cheek	0mm	26590	1905	23.99	24.00	1.002	0.06	0.303	0.304
	LTE Band 25	20M	QPSK	50RB	0offset	Left Cheek	0mm	26590	1905	22.51	23.00	1.119	0.08	0.206	0.231
	LTE Band 25	20M	QPSK	1RB	0offset	Left Tilted	0mm	26590	1905	23.99	24.00	1.002	-0.07	0.144	0.144
	LTE Band 25	20M	QPSK	50RB	0offset	Left Tilted	0mm	26590	1905	22.51	23.00	1.119	-0.04	0.101	0.113
	LTE Band 7	20M	QPSK	1RB	0offset	Right Cheek	0mm	21100	2535	23.15	24.00	1.216	-0.08	0.256	0.311
	LTE Band 7	20M	QPSK	50RB	0offset	Right Cheek	0mm	21100	2535	21.89	23.00	1.291	0.03	0.181	0.234
	LTE Band 7	20M	QPSK	1RB	0offset	Right Tilted	0mm	21100	2535	23.15	24.00	1.216	0.12	0.169	0.206
	LTE Band 7	20M	QPSK	50RB	0offset	Right Tilted	0mm	21100	2535	21.89	23.00	1.291	0.08	0.113	0.146
12	LTE Band 7	20M	QPSK	1RB	0offset	Left Cheek	0mm	21100	2535	23.15	24.00	1.216	0.14	0.508	0.618
	LTE Band 7	20M	QPSK	50RB	0offset	Left Cheek	0mm	21100	2535	21.89	23.00	1.291	0.12	0.316	0.408
	LTE Band 7	20M	QPSK	1RB	0offset	Left Tilted	0mm	21100	2535	23.15	24.00	1.216	-0.11	0.182	0.221
	LTE Band 7	20M	QPSK	50RB	0offset	Left Tilted	0mm	21100	2535	21.89	23.00	1.291	0.13	0.106	0.137

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20M	QPSK	1RB	0offset	Right Cheek	0mm	41490	2680	21.79	23.00	1.321	62.9	1.006	0.03	0.081	0.108
	LTE Band 41	20M	QPSK	50RB	0offset	Right Cheek	0mm	41490	2680	20.75	22.00	1.334	62.9	1.006	0.11	0.043	0.058
	LTE Band 41	20M	QPSK	1RB	0offset	Right Tilted	0mm	41490	2680	21.79	23.00	1.321	62.9	1.006	0.05	0.090	0.120
	LTE Band 41	20M	QPSK	50RB	0offset	Right Tilted	0mm	41490	2680	20.75	22.00	1.334	62.9	1.006	0.02	0.077	0.103
13	LTE Band 41	20M	QPSK	1RB	0offset	Left Cheek	0mm	41490	2680	21.79	23.00	1.321	62.9	1.006	0.12	0.221	0.294
	LTE Band 41	20M	QPSK	50RB	0offset	Left Cheek	0mm	41490	2680	20.75	22.00	1.334	62.9	1.006	0.16	0.166	0.223
	LTE Band 41	20M	QPSK	1RB	0offset	Left Tilted	0mm	41490	2680	21.79	23.00	1.321	62.9	1.006	-0.17	0.068	0.090
	LTE Band 41	20M	QPSK	50RB	0offset	Left Tilted	0mm	41490	2680	20.75	22.00	1.334	62.9	1.006	0.15	0.057	0.076

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 0	1	2412	18.70	19.50	1.202	99.04	1.010	-0.09	0.332	0.403
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 0	1	2412	18.70	19.50	1.202	99.04	1.010	-0.04	0.373	0.453
14	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 0	1	2412	18.70	19.50	1.202	99.04	1.010	0.12	0.651	0.790
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 0	1	2412	18.70	19.50	1.202	99.04	1.010	-0.13	0.538	0.653
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 1	1	2412	19.25	19.50	1.059	99.04	1.010	0.04	0.465	0.497
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 1	1	2412	19.25	19.50	1.059	99.04	1.010	0.16	0.359	0.384
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 1	1	2412	19.25	19.50	1.059	99.04	1.010	0.14	0.174	0.186
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 1	1	2412	19.25	19.50	1.059	99.04	1.010	0.1	0.140	0.150
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 0	52	5260	16.22	17.00	1.195	95.39	1.048	-0.1	0.136	0.170
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 0	52	5260	16.22	17.00	1.195	95.39	1.048	-0.06	0.161	0.202
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 0	52	5260	16.22	17.00	1.195	95.39	1.048	-0.16	0.286	0.358
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 0	52	5260	16.22	17.00	1.195	95.39	1.048	-0.12	0.217	0.272
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	52	5260	16.78	17.00	1.052	95.37	1.049	-0.08	0.715	0.789
15	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1	52	5260	16.78	17.00	1.052	95.37	1.049	0.03	0.900	0.993
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1	60	5300	16.71	17.00	1.069	95.37	1.049	0.06	0.850	0.953
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 1	52	5260	16.78	17.00	1.052	95.37	1.049	-0.12	0.418	0.461
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 1	52	5260	16.78	17.00	1.052	95.37	1.049	-0.18	0.478	0.527
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 0	116	5580	16.53	17.00	1.113	95.39	1.048	-0.17	0.086	0.100
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 0	116	5580	16.53	17.00	1.113	95.39	1.048	-0.16	0.087	0.101
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 0	116	5580	16.53	17.00	1.113	95.39	1.048	-0.08	0.308	0.359
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 0	116	5580	16.53	17.00	1.113	95.39	1.048	-0.08	0.172	0.201
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	144	5720	16.96	17.00	1.009	95.37	1.049	-0.15	0.503	0.533
16	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1	144	5720	16.96	17.00	1.009	95.37	1.049	-0.1	0.530	0.561
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 1	144	5720	16.96	17.00	1.009	95.37	1.049	-0.16	0.355	0.376
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 1	144	5720	16.96	17.00	1.009	95.37	1.049	-0.16	0.348	0.368
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 0	157	5785	16.26	17.00	1.186	95.39	1.048	0.17	0.034	0.042
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 0	157	5785	16.26	17.00	1.186	95.39	1.048	-0.17	0.024	0.030
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 0	157	5785	16.26	17.00	1.186	95.39	1.048	-0.09	0.219	0.272
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 0	157	5785	16.26	17.00	1.186	95.39	1.048	-0.08	0.089	0.111
17	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	153	5765	16.65	17.00	1.084	95.37	1.049	0.01	0.521	0.592
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1	153	5765	16.65	17.00	1.084	95.37	1.049	0.06	0.423	0.481
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 1	153	5765	16.65	17.00	1.084	95.37	1.049	-0.06	0.276	0.314
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 1	153	5765	16.65	17.00	1.084	95.37	1.049	-0.1	0.266	0.302

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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)
	Bluetooth	1Mbps	Right Cheek	0mm	39	2441	10.11	10.50	1.093	0.02	0.025	0.027
	Bluetooth	1Mbps	Right Tilted	0mm	39	2441	10.11	10.50	1.093	-0.01	0.034	0.037
18	Bluetooth	1Mbps	Left Cheek	0mm	39	2441	10.11	10.50	1.093	-0.16	0.051	0.056
	Bluetooth	1Mbps	Left Tilted	0mm	39	2441	10.11	10.50	1.093	-0.11	0.038	0.042

14.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
19	GSM850	GPRS (4 Tx slots)	Front	10mm	ON	251	848.8		22.00	1.000	0.02	0.474	0.474
	GSM850	GPRS (4 Tx slots)	Back	10mm	ON	251	848.8		22.00	1.000	-0.12	0.322	0.322
	GSM850	GPRS (4 Tx slots)	Left Side	10mm	ON	251	848.8		22.00	1.000	0.03	0.213	0.213
	GSM850	GPRS (4 Tx slots)	Right Side	10mm	ON	251	848.8		22.00	1.000	0	0.118	0.118
	GSM850	GPRS (4 Tx slots)	Bottom Side	10mm	ON	251	848.8		22.00	1.000	0.12	0.175	0.175
	GSM1900	GPRS (4 Tx slots)	Front	10mm	OFF	810	1909.8	22.94	24.50	1.432	-0.1	0.546	0.782
	GSM1900	GPRS (4 Tx slots)	Back	10mm	OFF	810	1909.8	22.94	24.50	1.432	0.05	0.273	0.391
	GSM1900	GPRS (4 Tx slots)	Left Side	10mm	OFF	810	1909.8	22.94	24.50	1.432	-0.03	0.194	0.278
	GSM1900	GPRS (4 Tx slots)	Right Side	10mm	OFF	810	1909.8	22.94	24.50	1.432	-0.03	0.210	0.301
20	GSM1900	GPRS (4 Tx slots)	Bottom Side	10mm	OFF	810	1909.8	22.94	24.50	1.432	-0.18	0.668	0.957
	GSM1900	GPRS (4 Tx slots)	Bottom Side	10mm	OFF	512	1850.2	22.85	24.50	1.462	-0.07	0.650	0.950
	GSM1900	GPRS (4 Tx slots)	Bottom Side	10mm	OFF	661	1880	22.83	24.50	1.469	-0.15	0.650	0.955

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
21	WCDMA V	RMC12.2Kbps	Front	10mm	ON	4233	846.6		21.50	1.000	0.02	1.000	1.000
	WCDMA V	RMC12.2Kbps	Front	10mm	ON	4132	826.4		21.50	1.000	0	0.813	0.813
	WCDMA V	RMC12.2Kbps	Front	10mm	ON	4182	836.4		21.50	1.000	0	0.842	0.842
	WCDMA V	RMC12.2Kbps	Back	10mm	ON	4233	846.6		21.50	1.000	-0.05	0.636	0.636
	WCDMA V	RMC12.2Kbps	Left Side	10mm	ON	4233	846.6		21.50	1.000	-0.01	0.418	0.418
	WCDMA V	RMC12.2Kbps	Right Side	10mm	ON	4233	846.6		21.50	1.000	-0.05	0.215	0.215
	WCDMA V	RMC12.2Kbps	Bottom Side	10mm	ON	4233	846.6		21.50	1.000	0.16	0.413	0.413
	WCDMA IV	RMC12.2Kbps	Front	10mm	OFF	1312	1712.4	23.00	24.00	1.259	-0.13	0.482	0.607
	WCDMA IV	RMC12.2Kbps	Back	10mm	OFF	1312	1712.4	23.00	24.00	1.259	-0.06	0.389	0.490
	WCDMA IV	RMC12.2Kbps	Left Side	10mm	OFF	1312	1712.4	23.00	24.00	1.259	-0.18	0.130	0.164
	WCDMA IV	RMC12.2Kbps	Right Side	10mm	OFF	1312	1712.4	23.00	24.00	1.259	-0.08	0.190	0.239
	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	OFF	1312	1712.4	23.00	24.00	1.259	-0.02	0.787	0.991
	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	OFF	1413	1732.6	22.87	24.00	1.297	0	0.783	1.016
22	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	OFF	1513	1752.6	22.48	24.00	1.419	0.03	0.768	1.090
	WCDMA II	RMC12.2Kbps	Front	10mm	OFF	9538	1907.6	22.83	24.00	1.309	0.17	0.785	1.028
	WCDMA II	RMC12.2Kbps	Front	10mm	OFF	9262	1852.4	22.64	24.00	1.368	0.12	0.631	0.863
	WCDMA II	RMC12.2Kbps	Front	10mm	OFF	9400	1880	22.68	24.00	1.355	0.13	0.617	0.836
	WCDMA II	RMC12.2Kbps	Back	10mm	OFF	9538	1907.6	22.83	24.00	1.309	-0.1	0.467	0.611
	WCDMA II	RMC12.2Kbps	Left Side	10mm	OFF	9538	1907.6	22.83	24.00	1.309	-0.18	0.276	0.361
	WCDMA II	RMC12.2Kbps	Right Side	10mm	OFF	9538	1907.6	22.83	24.00	1.309	-0.16	0.328	0.429
23	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	OFF	9538	1907.6	22.83	24.00	1.309	-0.1	1.000	1.309
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	OFF	9262	1852.4	22.64	24.00	1.368	-0.06	0.934	1.277
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	OFF	9400	1880	22.68	24.00	1.355	-0.03	0.856	1.160

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
24	LTE Band 12	10M	QPSK	1RB	0offset	Front	10mm	OFF	23130	711	22.89	24.00	1.291	-0.03	1.050	1.356
	LTE Band 12	10M	QPSK	25RB	0offset	Front	10mm	OFF	23130	711	21.61	23.00	1.377	-0.12	0.692	0.953
	LTE Band 12	10M	QPSK	50RB	0offset	Front	10mm	OFF	23130	711	21.55	23.00	1.396	-0.05	0.709	0.990
	LTE Band 12	10M	QPSK	1RB	0offset	Back	10mm	OFF	23130	711	22.89	24.00	1.291	-0.04	0.834	1.077
	LTE Band 12	10M	QPSK	25RB	0offset	Back	10mm	OFF	23130	711	21.61	23.00	1.377	-0.05	0.520	0.716
	LTE Band 12	10M	QPSK	50RB	0offset	Back	10mm	OFF	23130	711	21.55	23.00	1.396	-0.04	0.533	0.744
	LTE Band 12	10M	QPSK	1RB	0offset	Left Side	10mm	OFF	23130	711	22.89	24.00	1.291	-0.02	0.155	0.200
	LTE Band 12	10M	QPSK	25RB	0offset	Left Side	10mm	OFF	23130	711	21.61	23.00	1.377	-0.04	0.097	0.134
	LTE Band 12	10M	QPSK	1RB	0offset	Right Side	10mm	OFF	23130	711	22.89	24.00	1.291	-0.04	0.583	0.753
	LTE Band 12	10M	QPSK	25RB	0offset	Right Side	10mm	OFF	23130	711	21.61	23.00	1.377	-0.1	0.345	0.475
	LTE Band 12	10M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	23130	711	22.89	24.00	1.291	-0.07	0.662	0.855
	LTE Band 12	10M	QPSK	25RB	0offset	Bottom Side	10mm	OFF	23130	711	21.61	23.00	1.377	-0.05	0.386	0.532
	LTE Band 12	10M	QPSK	50RB	0offset	Bottom Side	10mm	OFF	23130	711	21.55	23.00	1.396	-0.09	0.389	0.543
25	LTE Band 17	10M	QPSK	1RB	0offset	Front	10mm	ON	23790	710		21.00	1.000	-0.14	0.829	0.829
	LTE Band 17	10M	QPSK	25RB	0offset	Front	10mm	ON	23790	710		21.00	1.000	-0.13	0.723	0.723
	LTE Band 17	10M	QPSK	50RB	0offset	Front	10mm	ON	23790	710		21.00	1.000	0.02	0.748	0.748
	LTE Band 17	10M	QPSK	1RB	0offset	Back	10mm	ON	23790	710		21.00	1.000	0.04	0.563	0.563
	LTE Band 17	10M	QPSK	25RB	0offset	Back	10mm	ON	23790	710		21.00	1.000	-0.06	0.487	0.487
	LTE Band 17	10M	QPSK	1RB	0offset	Left Side	10mm	ON	23790	710		21.00	1.000	-0.05	0.111	0.111
	LTE Band 17	10M	QPSK	25RB	0offset	Left Side	10mm	ON	23790	710		21.00	1.000	0	0.092	0.092
	LTE Band 17	10M	QPSK	1RB	0offset	Right Side	10mm	ON	23790	710		21.00	1.000	-0.11	0.519	0.519
	LTE Band 17	10M	QPSK	25RB	0offset	Right Side	10mm	ON	23790	710		21.00	1.000	-0.01	0.312	0.312
	LTE Band 17	10M	QPSK	1RB	0offset	Bottom Side	10mm	ON	23790	710		21.00	1.000	0.01	0.600	0.600
	LTE Band 17	10M	QPSK	25RB	0offset	Bottom Side	10mm	ON	23790	710		21.00	1.000	-0.01	0.377	0.377
	LTE Band 5	10M	QPSK	1RB	0offset	Front	10mm	ON	20525	836.5		23.00	1.000	0.07	1.080	1.080
26	LTE Band 5	10M	QPSK	1RB	0offset	Front	10mm	ON	20450	829		23.00	1.000	0.03	1.290	1.290
	LTE Band 5	10M	QPSK	1RB	0offset	Front	10mm	ON	20600	844		23.00	1.000	0.13	1.220	1.220
	LTE Band 5	10M	QPSK	25RB	0offset	Front	10mm	ON	20525	836.5		23.00	1.000	0.01	0.971	0.971
	LTE Band 5	10M	QPSK	25RB	0offset	Front	10mm	ON	20450	829		23.00	1.000	0	0.924	0.924
	LTE Band 5	10M	QPSK	25RB	0offset	Front	10mm	ON	20600	844		23.00	1.000	0.01	1.050	1.050
	LTE Band 5	10M	QPSK	100RB	0offset	Front	10mm	ON	20525	836.5		23.00	1.000	-0.02	0.987	0.987
	LTE Band 5	10M	QPSK	1RB	0offset	Back	10mm	ON	20525	836.5		23.00	1.000	-0.09	0.715	0.715
	LTE Band 5	10M	QPSK	25RB	0offset	Back	10mm	ON	20525	836.5		23.00	1.000	-0.05	0.582	0.582
	LTE Band 5	10M	QPSK	1RB	0offset	Left Side	10mm	ON	20525	836.5		23.00	1.000	0.14	0.575	0.575
	LTE Band 5	10M	QPSK	25RB	0offset	Left Side	10mm	ON	20525	836.5		23.00	1.000	0.18	0.461	0.461
	LTE Band 5	10M	QPSK	1RB	0offset	Right Side	10mm	ON	20525	836.5		23.00	1.000	0	0.267	0.267
	LTE Band 5	10M	QPSK	25RB	0offset	Right Side	10mm	ON	20525	836.5		23.00	1.000	0.12	0.213	0.213
	LTE Band 5	10M	QPSK	1RB	0offset	Bottom Side	10mm	ON	20525	836.5		23.00	1.000	0.09	0.691	0.691
	LTE Band 5	10M	QPSK	25RB	0offset	Bottom Side	10mm	ON	20525	836.5		23.00	1.000	0.14	0.542	0.542
	LTE Band 4	20M	QPSK	1RB	0offset	Front	10mm	OFF	20050	1720	23.72	24.00	1.067	-0.13	0.673	0.718
	LTE Band 4	20M	QPSK	50RB	0offset	Front	10mm	OFF	20050	1720	22.37	23.00	1.156	-0.14	0.483	0.558
	LTE Band 4	20M	QPSK	1RB	0offset	Back	10mm	OFF	20050	1720	23.72	24.00	1.067	0.01	0.589	0.628
	LTE Band 4	20M	QPSK	50RB	0offset	Back	10mm	OFF	20050	1720	22.37	23.00	1.156	-0.04	0.414	0.479
	LTE Band 4	20M	QPSK	1RB	0offset	Left Side	10mm	OFF	20050	1720	23.72	24.00	1.067	-0.14	0.230	0.245
	LTE Band 4	20M	QPSK	50RB	0offset	Left Side	10mm	OFF	20050	1720	22.37	23.00	1.156	-0.14	0.167	0.193
	LTE Band 4	20M	QPSK	1RB	0offset	Right Side	10mm	OFF	20050	1720	23.72	24.00	1.067	-0.13	0.290	0.309
	LTE Band 4	20M	QPSK	50RB	0offset	Right Side	10mm	OFF	20050	1720	22.37	23.00	1.156	-0.17	0.204	0.236
	LTE Band 4	20M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	20050	1720	23.72	24.00	1.067	0.13	1.050	1.120
	LTE Band 4	20M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	20175	1732.5	23.71	24.00	1.069	-0.03	1.030	1.101
27	LTE Band 4	20M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	20300	1745	23.40	24.00	1.148	-0.05	1.020	1.171
	LTE Band 4	20M	QPSK	50RB	0offset	Bottom Side	10mm	OFF	20050	1720	22.37	23.00	1.156	0.13	0.630	0.728
	LTE Band 4	20M	QPSK	100RB	0offset	Bottom Side	10mm	OFF	20050	1720	22.20	23.00	1.202	0.09	0.619	0.744

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2	20M	QPSK	1RB	0offset	Front	10mm	OFF	19100	1900	23.90	24.00	1.023	-0.11	0.853	0.873
	LTE Band 2	20M	QPSK	1RB	0offset	Front	10mm	OFF	18700	1860	23.60	24.00	1.096	-0.06	0.827	0.907
	LTE Band 2	20M	QPSK	1RB	0offset	Front	10mm	OFF	18900	1880	23.86	24.00	1.033	-0.11	0.835	0.862
	LTE Band 2	20M	QPSK	50RB	0offset	Front	10mm	OFF	19100	1900	22.53	23.00	1.114	-0.11	0.499	0.556
	LTE Band 2	20M	QPSK	100RB	0offset	Front	10mm	OFF	19100	1900	22.40	23.00	1.148	-0.09	0.491	0.564
	LTE Band 2	20M	QPSK	1RB	0offset	Back	10mm	OFF	19100	1900	23.90	24.00	1.023	-0.12	0.477	0.488
	LTE Band 2	20M	QPSK	50RB	0offset	Back	10mm	OFF	19100	1900	22.53	23.00	1.114	-0.09	0.341	0.380
	LTE Band 2	20M	QPSK	1RB	0offset	Left Side	10mm	OFF	19100	1900	23.90	24.00	1.023	0.08	0.389	0.398
	LTE Band 2	20M	QPSK	50RB	0offset	Left Side	10mm	OFF	19100	1900	22.53	23.00	1.114	0.11	0.227	0.253
	LTE Band 2	20M	QPSK	1RB	0offset	Right Side	10mm	OFF	19100	1900	23.90	24.00	1.023	-0.09	0.441	0.451
	LTE Band 2	20M	QPSK	50RB	0offset	Right Side	10mm	OFF	19100	1900	22.53	23.00	1.114	-0.01	0.255	0.284
	LTE Band 2	20M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	19100	1900	23.90	24.00	1.023	0.06	1.210	1.238
28	LTE Band 2	20M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	18700	1860	23.60	24.00	1.096	-0.07	1.170	1.283
	LTE Band 2	20M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	18900	1880	23.86	24.00	1.033	-0.18	1.240	1.281
	LTE Band 2	20M	QPSK	50RB	0offset	Bottom Side	10mm	OFF	19100	1900	22.53	23.00	1.114	0.13	0.690	0.769
	LTE Band 2	20M	QPSK	100RB	0offset	Bottom Side	10mm	OFF	19100	1900	22.40	23.00	1.148	0.01	0.685	0.786
	LTE Band 25	20M	QPSK	1RB	0offset	Front	10mm	OFF	26590	1905	23.99	24.00	1.002	-0.03	0.788	0.790
	LTE Band 25	20M	QPSK	50RB	0offset	Front	10mm	OFF	26590	1905	22.51	23.00	1.119	0.01	0.578	0.647
	LTE Band 25	20M	QPSK	1RB	0offset	Back	10mm	OFF	26590	1905	23.99	24.00	1.002	0.06	0.452	0.453
	LTE Band 25	20M	QPSK	50RB	0offset	Back	10mm	OFF	26590	1905	22.51	23.00	1.119	0.09	0.322	0.360
	LTE Band 25	20M	QPSK	1RB	0offset	Left Side	10mm	OFF	26590	1905	23.99	24.00	1.002	0	0.321	0.322
	LTE Band 25	20M	QPSK	50RB	0offset	Left Side	10mm	OFF	26590	1905	22.51	23.00	1.119	-0.07	0.229	0.256
	LTE Band 25	20M	QPSK	1RB	0offset	Right Side	10mm	OFF	26590	1905	23.99	24.00	1.002	-0.05	0.369	0.370
	LTE Band 25	20M	QPSK	50RB	0offset	Right Side	10mm	OFF	26590	1905	22.51	23.00	1.119	-0.02	0.263	0.294
	LTE Band 25	20M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	26590	1905	23.99	24.00	1.002	-0.08	1.020	1.022
29	LTE Band 25	20M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	26140	1860	23.95	24.00	1.012	-0.03	1.080	1.093
	LTE Band 25	20M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	26340	1880	23.88	24.00	1.028	0	1.010	1.038
	LTE Band 25	20M	QPSK	50RB	0offset	Bottom Side	10mm	OFF	26590	1905	22.51	23.00	1.119	-0.12	0.706	0.790
	LTE Band 25	20M	QPSK	100RB	0offset	Bottom Side	10mm	OFF	26590	1905	22.44	23.00	1.138	-0.05	0.699	0.795
	LTE Band 7	20M	QPSK	1RB	0offset	Front	10mm	OFF	21100	2535	23.15	24.00	1.216	0.1	0.746	0.907
	LTE Band 7	20M	QPSK	1RB	0offset	Front	10mm	OFF	20850	2510	23.10	24.00	1.230	-0.05	0.778	0.957
	LTE Band 7	20M	QPSK	1RB	0offset	Front	10mm	OFF	21350	2560	22.90	24.00	1.288	0.03	0.677	0.872
	LTE Band 7	20M	QPSK	50RB	0offset	Front	10mm	OFF	21100	2535	21.89	23.00	1.291	0.09	0.538	0.695
	LTE Band 7	20M	QPSK	100RB	0offset	Front	10mm	OFF	21100	2535	21.80	23.00	1.318	0.05	0.518	0.683
	LTE Band 7	20M	QPSK	1RB	0offset	Back	10mm	OFF	21100	2535	23.15	24.00	1.216	-0.01	0.489	0.595
	LTE Band 7	20M	QPSK	50RB	0offset	Back	10mm	OFF	21100	2535	21.89	23.00	1.291	0.08	0.327	0.422
	LTE Band 7	20M	QPSK	1RB	0offset	Left Side	10mm	OFF	21100	2535	23.15	24.00	1.216	-0.1	0.461	0.561
	LTE Band 7	20M	QPSK	50RB	0offset	Left Side	10mm	OFF	21100	2535	21.89	23.00	1.291	-0.06	0.282	0.364
	LTE Band 7	20M	QPSK	1RB	0offset	Right Side	10mm	OFF	21100	2535	23.15	24.00	1.216	-0.13	0.194	0.236
	LTE Band 7	20M	QPSK	50RB	0offset	Right Side	10mm	OFF	21100	2535	21.89	23.00	1.291	-0.01	0.120	0.155
30	LTE Band 7	20M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	21100	2535	23.15	24.00	1.216	0.14	0.980	1.192
	LTE Band 7	20M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	20850	2510	23.10	24.00	1.230	0.14	0.964	1.186
	LTE Band 7	20M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	21350	2560	22.90	24.00	1.288	-0.01	0.887	1.143
	LTE Band 7	20M	QPSK	50RB	0offset	Bottom Side	10mm	OFF	21100	2535	21.89	23.00	1.291	0.15	0.594	0.767
	LTE Band 7	20M	QPSK	100RB	0offset	Bottom Side	10mm	OFF	21100	2535	21.80	23.00	1.318	0.18	0.600	0.791

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20M	QPSK	1RB	0offset	Front	10mm	OFF	41490	2680	21.79	23.00	1.321	62.9	1.006	-0.03	0.267	0.355
	LTE Band 41	20M	QPSK	50RB	0offset	Front	10mm	OFF	41490	2680	20.75	22.00	1.334	62.9	1.006	0.05	0.215	0.288
	LTE Band 41	20M	QPSK	1RB	0offset	Back	10mm	OFF	41490	2680	21.79	23.00	1.321	62.9	1.006	-0.03	0.197	0.262
	LTE Band 41	20M	QPSK	50RB	0offset	Back	10mm	OFF	41490	2680	20.75	22.00	1.334	62.9	1.006	-0.01	0.197	0.264
	LTE Band 41	20M	QPSK	1RB	0offset	Left Side	10mm	OFF	41490	2680	21.79	23.00	1.321	62.9	1.006	-0.04	0.158	0.210
	LTE Band 41	20M	QPSK	50RB	0offset	Left Side	10mm	OFF	41490	2680	20.75	22.00	1.334	62.9	1.006	-0.12	0.127	0.170
	LTE Band 41	20M	QPSK	1RB	0offset	Right Side	10mm	OFF	41490	2680	21.79	23.00	1.321	62.9	1.006	-0.15	0.053	0.070
	LTE Band 41	20M	QPSK	50RB	0offset	Right Side	10mm	OFF	41490	2680	20.75	22.00	1.334	62.9	1.006	-0.12	0.042	0.056
31	LTE Band 41	20M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	41490	2680	21.79	23.00	1.321	62.9	1.006	-0.01	0.358	0.476
	LTE Band 41	20M	QPSK	50RB	0offset	Bottom Side	10mm	OFF	41490	2680	20.75	22.00	1.334	62.9	1.006	-0.05	0.294	0.394

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 0	OFF	1	2412	18.70	19.50	1.202	99.04	1.010	0.06	0.121	0.147
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 0	OFF	1	2412	18.70	19.50	1.202	99.04	1.010	-0.04	0.116	0.141
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 0	OFF	1	2412	18.70	19.50	1.202	99.04	1.010	-0.09	0.010	0.012
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 0	OFF	1	2412	18.70	19.50	1.202	99.04	1.010	0.11	0.089	0.108
32	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 0	OFF	1	2412	18.70	19.50	1.202	99.04	1.010	0.01	0.250	0.303
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 1	OFF	1	2412	19.25	19.50	1.059	99.04	1.010	0.15	0.077	0.082
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 1	OFF	1	2412	19.25	19.50	1.059	99.04	1.010	0.1	0.035	0.037
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 1	OFF	1	2412	19.25	19.50	1.059	99.04	1.010	-0.06	0.038	0.041
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 1	OFF	1	2412	19.25	19.50	1.059	99.04	1.010	0.18	0.002	0.002
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 1	OFF	1	2412	19.25	19.50	1.059	99.04	1.010	0.05	0.056	0.060
	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 0	OFF	40	5200	16.23	16.50	1.064	95.39	1.048	-0.13	0.046	0.051
33	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 0	OFF	40	5200	16.23	16.50	1.064	95.39	1.048	-0.13	0.123	0.137
	WLAN5GHz	802.11a 6Mbps	Left Side	10mm	Ant 0	OFF	40	5200	16.23	16.50	1.064	95.39	1.048	-0.19	0.029	0.032
	WLAN5GHz	802.11a 6Mbps	Right Side	10mm	Ant 0	OFF	40	5200	16.23	16.50	1.064	95.39	1.048	-0.15	0.108	0.120
	WLAN5GHz	802.11a 6Mbps	Top Side	10mm	Ant 0	OFF	40	5200	16.23	16.50	1.064	95.39	1.048	-0.14	0.069	0.077
	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 1	OFF	40	5200	16.37	16.50	1.030	95.37	1.049	-0.19	0.064	0.069
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 1	OFF	40	5200	16.37	16.50	1.030	95.37	1.049	0.08	0.053	0.057
	WLAN5GHz	802.11a 6Mbps	Left Side	10mm	Ant 1	OFF	40	5200	16.37	16.50	1.030	95.37	1.049	-0.13	0.070	0.076
	WLAN5GHz	802.11a 6Mbps	Right Side	10mm	Ant 1	OFF	40	5200	16.37	16.50	1.030	95.37	1.049	-0.11	0.007	0.007
	WLAN5GHz	802.11a 6Mbps	Top Side	10mm	Ant 1	OFF	40	5200	16.37	16.50	1.030	95.37	1.049	-0.12	0.111	0.120
	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 0	OFF	157	5785	16.26	17.00	1.186	95.39	1.048	-0.14	0.020	0.025
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 0	OFF	157	5785	16.26	17.00	1.186	95.39	1.048	-0.15	0.045	0.056
	WLAN5GHz	802.11a 6Mbps	Left Side	10mm	Ant 0	OFF	157	5785	16.26	17.00	1.186	95.39	1.048	-0.1	0.001	0.002
	WLAN5GHz	802.11a 6Mbps	Right Side	10mm	Ant 0	OFF	157	5785	16.26	17.00	1.186	95.39	1.048	-0.1	0.027	0.034
	WLAN5GHz	802.11a 6Mbps	Topo Side	10mm	Ant 0	OFF	157	5785	16.26	17.00	1.186	95.39	1.048	-0.08	0.005	0.007
	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 1	OFF	153	5765	16.65	17.00	1.084	95.37	1.049	-0.1	0.040	0.045
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 1	OFF	153	5765	16.65	17.00	1.084	95.37	1.049	-0.11	0.052	0.059
	WLAN5GHz	802.11a 6Mbps	Left Side	10mm	Ant 1	OFF	153	5765	16.65	17.00	1.084	95.37	1.049	-0.15	0.060	0.068
	WLAN5GHz	802.11a 6Mbps	Right Side	10mm	Ant 1	OFF	153	5765	16.65	17.00	1.084	95.37	1.049	-0.14	0.004	0.004
34	WLAN5GHz	802.11a 6Mbps	Top Side	10mm	Ant 1	OFF	153	5765	16.65	17.00	1.084	95.37	1.049	-0.1	0.063	0.072

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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)
	Bluetooth	1Mbps	Front	10mm	39	2441	10.11	10.50	1.093	0.03	0.007	0.007
	Bluetooth	1Mbps	Back	10mm	39	2441	10.11	10.50	1.093	-0.03	0.004	0.005
	Bluetooth	1Mbps	Left Side	10mm	39	2441	10.11	10.50	1.093	-0.04	0.001	0.001
	Bluetooth	1Mbps	Right Side	10mm	39	2441	10.11	10.50	1.093	0.09	0.004	0.004
35	Bluetooth	1Mbps	Top Side	10mm	39	2441	10.11	10.50	1.093	-0.05	0.019	0.021

14.3 Extremity SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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)
36	GSM850	GPRS (4 Tx slots)	Front	0mm	251	848.8	25.70	27.50	1.514	0.11	0.699	**1.058**

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	WCDMA V	RMC12.2Kbps	Front	0mm	4233	846.6	23.19	24.00	1.205	-0.11	1.660	2.000
	WCDMA V	RMC12.2Kbps	Front	0mm	4132	826.4	23.08	24.00	1.236	-0.18	1.700	2.101
37	WCDMA V	RMC12.2Kbps	Front	0mm	4182	836.4	22.85	24.00	1.303	-0.12	2.150	**2.802**
	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	9538	1907.6	22.83	24.00	1.309	0.12	2.220	2.906
38	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	9262	1852.4	22.64	24.00	1.368	0.03	2.560	**3.501**
	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	9400	1880	22.68	24.00	1.355	0.14	1.880	2.548

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	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)
39	LTE Band 12	10M	QPSK	1RB	0offset	Front	0mm	23130	711	22.89	24.00	1.291	-0.01	1.600	**2.066**
40	LTE Band 17	10M	QPSK	1RB	0offset	Front	0mm	23790	710	22.90	24.00	1.288	0.03	1.890	**2.435**
	LTE Band 17	10M	QPSK	25RB	0offset	Front	0mm	23790	710	21.80	23.00	1.318	0.11	1.060	1.397
	LTE Band 17	10M	QPSK	50RB	0offset	Front	0mm	23790	710	21.79	23.00	1.321	0.1	1.060	1.401
	LTE Band 5	10M	QPSK	1RB	0offset	Front	0mm	20525	836.5	23.06	24.00	1.242	0	1.620	2.011
	LTE Band 5	10M	QPSK	1RB	0offset	Front	0mm	20450	829	23.00	24.00	1.259	-0.03	1.530	1.926
41	LTE Band 5	10M	QPSK	1RB	0offset	Front	0mm	20600	844	22.89	24.00	1.291	0.09	1.560	**2.014**
	LTE Band 5	10M	QPSK	25RB	0offset	Front	0mm	20525	836.5	22.10	23.00	1.230	-0.07	1.010	1.243
	LTE Band 5	10M	QPSK	25RB	0offset	Front	0mm	20600	844	21.74	23.00	1.337	-0.06	0.976	1.305
	LTE Band 5	10M	QPSK	100RB	0offset	Front	0mm	20525	836.5	22.05	23.00	1.245	-0.05	0.984	1.225
	LTE Band 2	20M	QPSK	1RB	0offset	Bottom Side	0mm	19100	1900	23.90	24.00	1.023	0.13	2.390	2.446
42	LTE Band 2	20M	QPSK	1RB	0offset	Bottom Side	0mm	18700	1860	23.60	24.00	1.096	0.18	2.840	**3.114**
	LTE Band 2	20M	QPSK	1RB	0offset	Bottom Side	0mm	18900	1880	23.86	24.00	1.033	0.05	2.580	2.665

14.4 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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)
43	GSM850	GPRS (4 Tx slots)	Front	15mm	251	848.8	25.70	27.50	1.514	0.02	0.623	0.943
	GSM850	GPRS (4 Tx slots)	Front	15mm	128	824.2	25.50	27.50	1.585	-0.04	0.504	0.799
	GSM850	GPRS (4 Tx slots)	Front	15mm	189	836.4	25.52	27.50	1.578	0	0.568	0.896
	GSM850	GPRS (4 Tx slots)	Back	15mm	251	848.8	25.70	27.50	1.514	0.01	0.462	0.699
44	GSM1900	GPRS (4 Tx slots)	Front	15mm	810	1909.8	22.94	24.50	1.432	-0.18	0.236	0.338
	GSM1900	GPRS (4 Tx slots)	Back	15mm	810	1909.8	22.94	24.50	1.432	0.03	0.154	0.221

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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)
45	WCDMA V	RMC 12.2Kbps	Front	15mm	4233	846.6	23.19	24.00	1.205	0.05	0.886	1.068
	WCDMA V	RMC 12.2Kbps	Front	15mm	4132	826.4	23.08	24.00	1.236	-0.01	0.610	0.754
	WCDMA V	RMC 12.2Kbps	Front	15mm	4182	836.4	22.85	24.00	1.303	0.03	0.631	0.822
	WCDMA V	RMC 12.2Kbps	Back	15mm	4233	846.6	23.19	24.00	1.205	-0.03	0.558	0.672
46	WCDMA IV	RMC 12.2Kbps	Front	15mm	1312	1712.4	23.00	24.00	1.259	0.02	0.299	0.376
	WCDMA IV	RMC 12.2Kbps	Back	15mm	1312	1712.4	23.00	24.00	1.259	0.04	0.252	0.317
47	WCDMA II	RMC 12.2Kbps	Front	15mm	9538	1907.6	22.83	24.00	1.309	-0.14	0.392	0.513
	WCDMA II	RMC 12.2Kbps	Back	15mm	9538	1907.6	22.83	24.00	1.309	0.04	0.219	0.287

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	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)
48	LTE Band 12	10M	QPSK	1RB	0offset	Front	15mm	23130	711	22.89	24.00	1.291	-0.09	0.616	0.795
	LTE Band 12	10M	QPSK	25RB	0offset	Front	15mm	23130	711	21.61	23.00	1.377	0	0.378	0.521
	LTE Band 12	10M	QPSK	1RB	0offset	Back	15mm	23130	711	22.89	24.00	1.291	-0.01	0.524	0.677
	LTE Band 12	10M	QPSK	25RB	0offset	Back	15mm	23130	711	21.61	23.00	1.377	-0.06	0.315	0.434
49	LTE Band 17	10M	QPSK	1RB	0offset	Front	15mm	23790	710	22.90	24.00	1.288	0.08	0.686	0.884
	LTE Band 17	10M	QPSK	25RB	0offset	Front	15mm	23790	710	21.80	23.00	1.318	-0.05	0.408	0.538
	LTE Band 17	10M	QPSK	50RB	0offset	Front	15mm	23790	710	21.79	23.00	1.321	0.1	0.414	0.547
	LTE Band 17	10M	QPSK	1RB	0offset	Back	15mm	23790	710	22.90	24.00	1.288	-0.04	0.577	0.743
	LTE Band 17	10M	QPSK	25RB	0offset	Back	15mm	23790	710	21.80	23.00	1.318	-0.08	0.340	0.448
	LTE Band 5	10M	QPSK	1RB	0offset	Front	15mm	20525	836.5	23.06	24.00	1.242	-0.01	0.823	1.022
	LTE Band 5	10M	QPSK	1RB	0offset	Front	15mm	20450	829	23.00	24.00	1.259	0.06	0.713	0.898
50	LTE Band 5	10M	QPSK	1RB	0offset	Front	15mm	20600	844	22.89	24.00	1.291	-0.09	0.856	1.105
	LTE Band 5	10M	QPSK	25RB	0offset	Front	15mm	20525	836.5	22.10	23.00	1.230	0.06	0.499	0.614
	LTE Band 5	10M	QPSK	50RB	0offset	Front	15mm	20525	836.5	22.05	23.00	1.245	0.03	0.515	0.641
	LTE Band 5	10M	QPSK	1RB	0offset	Back	15mm	20525	836.5	23.06	24.00	1.242	0.1	0.607	0.754
	LTE Band 5	10M	QPSK	25RB	0offset	Back	15mm	20525	836.5	22.10	23.00	1.230	-0.01	0.377	0.464
51	LTE Band 4	20M	QPSK	1RB	0offset	Front	15mm	20050	1720	23.72	24.00	1.067	0.03	0.482	0.514
	LTE Band 4	20M	QPSK	50RB	0offset	Front	15mm	20050	1720	22.37	23.00	1.156	0.05	0.271	0.313
	LTE Band 4	20M	QPSK	1RB	0offset	Back	15mm	20050	1720	23.72	24.00	1.067	0.03	0.310	0.331
	LTE Band 4	20M	QPSK	50RB	0offset	Back	15mm	20050	1720	22.37	23.00	1.156	0	0.195	0.225
52	LTE Band 2	20M	QPSK	1RB	0offset	Front	15mm	19100	1900	23.90	24.00	1.023	-0.01	0.469	0.480
	LTE Band 2	20M	QPSK	50RB	0offset	Front	15mm	19100	1900	22.53	23.00	1.114	-0.09	0.273	0.304
	LTE Band 2	20M	QPSK	1RB	0offset	Back	15mm	19100	1900	23.90	24.00	1.023	0.1	0.322	0.330
	LTE Band 2	20M	QPSK	50RB	0offset	Back	15mm	19100	1900	22.53	23.00	1.114	0.04	0.187	0.208

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	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)
53	LTE Band 25	20M	QPSK	1RB	0offset	Front	15mm	26590	1905	23.99	24.00	1.002	-0.12	0.389	0.390
	LTE Band 25	20M	QPSK	50RB	0offset	Front	15mm	26590	1905	22.51	23.00	1.119	-0.11	0.274	0.307
	LTE Band 25	20M	QPSK	1RB	0offset	Back	15mm	26590	1905	23.99	24.00	1.002	0.03	0.264	0.265
	LTE Band 25	20M	QPSK	50RB	0offset	Back	15mm	26590	1905	22.51	23.00	1.119	0.09	0.185	0.207
54	LTE Band 7	20M	QPSK	1RB	0offset	Front	15mm	21100	2535	23.15	24.00	1.216	0.03	0.387	0.471
	LTE Band 7	20M	QPSK	50RB	0offset	Front	15mm	21100	2535	21.89	23.00	1.291	-0.05	0.238	0.307
	LTE Band 7	20M	QPSK	1RB	0offset	Back	15mm	21100	2535	23.15	24.00	1.216	0	0.300	0.365
	LTE Band 7	20M	QPSK	50RB	0offset	Back	15mm	21100	2535	21.89	23.00	1.291	0.03	0.183	0.236

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	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)
55	LTE Band 41	20M	QPSK	1RB	0offset	Front	15mm	41490	2680	21.79	23.00	1.321	62.9	1.006	0	0.125	0.166
	LTE Band 41	20M	QPSK	50RB	0offset	Front	15mm	41490	2680	20.75	22.00	1.334	62.9	1.006	-0.05	0.105	0.141
	LTE Band 41	20M	QPSK	1RB	0offset	Back	15mm	41490	2680	21.79	23.00	1.321	62.9	1.006	0.04	0.086	0.114
	LTE Band 41	20M	QPSK	50RB	0offset	Back	15mm	41490	2680	20.75	22.00	1.334	62.9	1.006	-0.01	0.074	0.099

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
56	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	Ant 0	1	2412	18.70	19.50	1.202	99.04	1.010	0.11	0.071	0.086
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 0	1	2412	18.70	19.50	1.202	99.04	1.010	0.11	0.066	0.080
	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	Ant 1	1	2412	19.25	19.50	1.059	99.04	1.010	0.08	0.036	0.038
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 1	1	2412	19.25	19.50	1.059	99.04	1.010	0.09	0.011	0.012
	WLAN5GHz	802.11a 6Mbps	Front	15mm	Ant 0	52	5260	16.22	17.00	1.195	95.39	1.048	-0.16	0.046	0.058
	WLAN5GHz	802.11a 6Mbps	Back	15mm	Ant 0	52	5260	16.22	17.00	1.195	95.39	1.048	-0.12	0.063	0.079
	WLAN5GHz	802.11a 6Mbps	Front	15mm	Ant 1	52	5260	16.78	17.00	1.052	95.37	1.049	-0.14	0.067	0.074
57	WLAN5GHz	802.11a 6Mbps	Back	15mm	Ant 1	52	5260	16.78	17.00	1.052	95.37	1.049	-0.11	0.076	0.084
	WLAN5GHz	802.11a 6Mbps	Front	15mm	Ant 0	116	5580	16.53	17.00	1.113	95.39	1.048	-0.15	0.057	0.066
58	WLAN5GHz	802.11a 6Mbps	Back	15mm	Ant 0	116	5580	16.53	17.00	1.113	95.39	1.048	-0.05	0.080	0.093
	WLAN5GHz	802.11a 6Mbps	Front	15mm	Ant 1	144	5720	16.96	17.00	1.009	95.37	1.049	-0.1	0.060	0.064
	WLAN5GHz	802.11a 6Mbps	Back	15mm	Ant 1	144	5720	16.96	17.00	1.009	95.37	1.049	-0.15	0.070	0.074
	WLAN5GHz	802.11a 6Mbps	Front	15mm	Ant 0	157	5785	16.26	17.00	1.186	95.39	1.048	-0.15	0.054	0.067
59	WLAN5GHz	802.11a 6Mbps	Back	15mm	Ant 0	157	5785	16.26	17.00	1.186	95.39	1.048	-0.14	0.081	0.101
	WLAN5GHz	802.11a 6Mbps	Front	15mm	Ant 1	153	5765	16.65	17.00	1.084	95.37	1.049	-0.16	0.051	0.058
	WLAN5GHz	802.11a 6Mbps	Back	15mm	Ant 1	153	5765	16.65	17.00	1.084	95.37	1.049	-0.12	0.075	0.085

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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)
	Bluetooth	1Mbps	Front	15mm	39	2441	10.11	10.50	1.093	0.14	0.003	0.003
60	Bluetooth	1Mbps	Back	15mm	39	2441	10.11	10.50	1.093	-0.17	0.004	0.004

14.5 Repeated SAR Measurement

General Note:

1. Per KDB 865664 D01v01r03, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
2. Per KDB 865664 D01v01r03, 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 D01v01r03, 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.

<1g Repeated SAR>

No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1	52	5260	16.78	17.00	1.052	95.37	1.049	0.03	0.900	-	0.993
2nd	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1	52	5260	16.78	17.00	1.052	95.37	1.049	-0.11	0.859	1.05	0.948

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	LTE Band 12	10M	QPSK	1RB	0offset	Front	10mm	OFF	23130	711	22.89	24.00	1.291	-0.03	1.050	-	1.356
2nd	LTE Band 12	10M	QPSK	1RB	0offset	Front	10mm	OFF	23130	711	22.89	24.00	1.291	0.03	1.030	1.02	1.330
1st	LTE Band 5	10M	QPSK	1RB	0offset	Front	10mm	ON	20450	829		23.00	1.000	0.03	1.290	-	1.290
2nd	LTE Band 5	10M	QPSK	1RB	0offset	Front	10mm	ON	20450	829		23.00	1.000	-0.02	1.220	1.06	1.220
1st	LTE Band 4	20M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	20050	1720	23.72	24.00	1.067	0.13	1.050	-	1.120
2nd	LTE Band 4	20M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	20050	1720	23.72	24.00	1.067	-0.05	1.030	1.02	1.099
1st	LTE Band 2	20M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	18900	1880	23.86	24.00	1.033	-0.18	1.240	-	1.281
2nd	LTE Band 2	20M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	18900	1880	23.86	24.00	1.033	-0.04	1.200	1.03	1.239
1st	LTE Band 7	20M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	21100	2535	23.15	24.00	1.216	0.14	0.980	-	1.192
2nd	LTE Band 7	20M	QPSK	1RB	0offset	Bottom Side	10mm	OFF	21100	2535	23.15	24.00	1.216	0.12	0.968	1.01	1.177

<10g Repeated SAR>

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Ratio	Reported 10g SAR (W/kg)
1st	WCDMA V	-	-	-	-	RMC12.2Kbps	Front	0mm	OFF	4182	836.4	22.85	24.00	1.303	-0.12	2.150	-	2.802
2nd	WCDMA V	-	-	-	-	RMC12.2Kbps	Front	0mm	OFF	4182	836.4	22.85	24.00	1.303	0.16	2.090	1.03	2.724
1st	LTE Band 2	20M	QPSK	1RB	0offset	-	Bottom Side	0mm	OFF	18700	1860	23.60	24.00	1.096	0.18	2.840	-	3.114
2nd	LTE Band 2	20M	QPSK	1RB	0offset	-	Bottom Side	0mm	OFF	18700	1860	23.60	24.00	1.096	0.07	2.749	1.03	3.014

15. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Portable Handset				Note
		Head	Body-worn	Wireless Router	Extremity	
1.	GSM(Voice) + WLAN2.4GHz(data)	Yes	Yes		Yes	
2.	WCDMA(Voice) + WLAN2.4GHz(data)	Yes	Yes		Yes	
3.	LTE(Voice) + WLAN2.4GHz(data)	Yes	Yes		Yes	
4.	GSM(Voice) + Bluetooth(data)	Yes	Yes		Yes	
5.	WCDMA((Voice) + Bluetooth(data)	Yes	Yes		Yes	
6.	LTE((Voice) + Bluetooth(data)	Yes	Yes		Yes	
7.	GSM(Voice) + WLAN5GHz(data)	Yes	Yes		Yes	
8.	WCDMA((Voice) + WLAN5GHz(data)	Yes	Yes		Yes	
9.	LTE((Voice) + WLAN5GHz(data)	Yes	Yes		Yes	
10.	GPRS/EDGE(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	Yes	2.4GHz Hotspot
11.	WCDMA(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	Yes	2.4GHz Hotspot
12.	LTE(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	Yes	2.4GHz Hotspot
13.	GPRS/EDGE(Data) + Bluetooth(data)	Yes	Yes	Yes	Yes	Bluetooth Tethering
14.	WCDMA(Data) + Bluetooth(data)	Yes	Yes	Yes	Yes	Bluetooth Tethering
15.	LTE(Data) + Bluetooth(data)	Yes	Yes	Yes	Yes	Bluetooth Tethering
16.	GPRS/EDGE(data) + WLAN5GHz(data)	Yes	Yes	Yes	Yes	WiFi Direct
17.	WCDMA(data) + WLAN5GHz(data)	Yes	Yes	Yes	Yes	WiFi Direct
18.	LTE(data) + WLAN5GHz(data)	Yes	Yes	Yes	Yes	WiFi Direct

General Note:

1. This device supported VoIP in EGPRS, WCDMA, LTE (e.g. 3rd party VoIP).
2. This device 2.4GHz / 5.2GHz / 5.8GHz WLAN supports Hotspot operation and WiFi Direct (Group Client / Group Owner), and 5.3GHz / 5.5GHz WLAN supports WiFi Direct (Group Client).
3. The worst case 5 GHz WLAN reported SAR for each configuration was used for SAR summation, regardless of whether the WLAN channel has WiFi Direct and Hotspot capability. Therefore, the following summations represent the absolute worst cases for simultaneous transmission with 5 GHz WLAN.
4. EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment.
5. The Scaled SAR summation is calculated based on the same configuration and test position.
6. Per KDB 447498 D01v05r02, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/kg.
   ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
   iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.

15.1 Head Exposure Conditions

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN ANT 0 1g SAR (W/kg)	3 2.4GHz WLAN ANT 1 1g SAR (W/kg)	4 2.4GHz Bluetooth 1g SAR (W/kg)	5 5GHz WLAN ANT 0 1g SAR (W/kg)	6 5GHz WLAN ANT 0 1g SAR (W/kg)	1+2+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	1+5+6 Summed 1g SAR (W/kg)
GSM	GSM850	Right Cheek	0.338	0.403	0.497	0.027	0.170	0.789	**1.24**	**0.37**	**1.30**
		Right Tilted	0.159	0.453	0.384	0.037	0.202	0.993	**1.00**	**0.20**	**1.35**
		Left Cheek	0.365	0.790	0.186	0.056	0.359	0.461	**1.34**	**0.42**	**1.19**
		Left Tilted	0.179	0.653	0.150	0.042	0.272	0.527	**0.98**	**0.22**	**0.98**
	GSM1900	Right Cheek	0.249	0.403	0.497	0.027	0.170	0.789	**1.15**	**0.28**	**1.21**
		Right Tilted	0.127	0.453	0.384	0.037	0.202	0.993	**0.96**	**0.16**	**1.32**
		Left Cheek	0.249	0.790	0.186	0.056	0.359	0.461	**1.23**	**0.31**	**1.07**
		Left Tilted	0.146	0.653	0.150	0.042	0.272	0.527	**0.95**	**0.19**	**0.95**
WCDMA	WCDMA V	Right Cheek	0.315	0.403	0.497	0.027	0.170	0.789	**1.22**	**0.34**	**1.27**
		Right Tilted	0.118	0.453	0.384	0.037	0.202	0.993	**0.96**	**0.16**	**1.31**
		Left Cheek	0.349	0.790	0.186	0.056	0.359	0.461	**1.33**	**0.41**	**1.17**
		Left Tilted	0.130	0.653	0.150	0.042	0.272	0.527	**0.93**	**0.17**	**0.93**
	WCDMA IV	Right Cheek	0.133	0.403	0.497	0.027	0.170	0.789	**1.03**	**0.16**	**1.09**
		Right Tilted	0.076	0.453	0.384	0.037	0.202	0.993	**0.91**	**0.11**	**1.27**
		Left Cheek	0.214	0.790	0.186	0.056	0.359	0.461	**1.19**	**0.27**	**1.03**
		Left Tilted	0.072	0.653	0.150	0.042	0.272	0.527	**0.88**	**0.11**	**0.87**
	WCDMA II	Right Cheek	0.336	0.403	0.497	0.027	0.170	0.789	**1.24**	**0.36**	**1.30**
		Right Tilted	0.181	0.453	0.384	0.037	0.202	0.993	**1.02**	**0.22**	**1.38**
		Left Cheek	0.347	0.790	0.186	0.056	0.359	0.461	**1.32**	**0.40**	**1.17**
		Left Tilted	0.170	0.653	0.150	0.042	0.272	0.527	**0.97**	**0.21**	**0.97**
LTE	LTE Band 12	Right Cheek	0.287	0.403	0.497	0.027	0.170	0.789	**1.19**	**0.31**	**1.25**
		Right Tilted	0.066	0.453	0.384	0.037	0.202	0.993	**0.90**	**0.10**	**1.26**
		Left Cheek	0.239	0.790	0.186	0.056	0.359	0.461	**1.22**	**0.30**	**1.06**
		Left Tilted	0.092	0.653	0.150	0.042	0.272	0.527	**0.90**	**0.13**	**0.89**
	LTE Band 17	Right Cheek	0.374	0.403	0.497	0.027	0.170	0.789	**1.27**	**0.40**	**1.33**
		Right Tilted	0.082	0.453	0.384	0.037	0.202	0.993	**0.92**	**0.12**	**1.28**
		Left Cheek	0.262	0.790	0.186	0.056	0.359	0.461	**1.24**	**0.32**	**1.08**
		Left Tilted	0.095	0.653	0.150	0.042	0.272	0.527	**0.90**	**0.14**	**0.89**
	LTE Band 5	Right Cheek	0.298	0.403	0.497	0.027	0.170	0.789	**1.20**	**0.33**	**1.26**
		Right Tilted	0.144	0.453	0.384	0.037	0.202	0.993	**0.98**	**0.18**	**1.34**
		Left Cheek	0.368	0.790	0.186	0.056	0.359	0.461	**1.34**	**0.42**	**1.19**
		Left Tilted	0.153	0.653	0.150	0.042	0.272	0.527	**0.96**	**0.20**	**0.95**
	LTE Band 4	Right Cheek	0.237	0.403	0.497	0.027	0.170	0.789	**1.14**	**0.26**	**1.20**
		Right Tilted	0.132	0.453	0.384	0.037	0.202	0.993	**0.97**	**0.17**	**1.33**
		Left Cheek	0.339	0.790	0.186	0.056	0.359	0.461	**1.32**	**0.40**	**1.16**
		Left Tilted	0.129	0.653	0.150	0.042	0.272	0.527	**0.93**	**0.17**	**0.93**
	LTE Band 2	Right Cheek	0.379	0.403	0.497	0.027	0.170	0.789	**1.28**	**0.41**	**1.34**
		Right Tilted	0.168	0.453	0.384	0.037	0.202	0.993	**1.01**	**0.21**	**1.36**
		Left Cheek	0.357	0.790	0.186	0.056	0.359	0.461	**1.33**	**0.41**	**1.18**
		Left Tilted	0.184	0.653	0.150	0.042	0.272	0.527	**0.99**	**0.23**	**0.98**
	LTE Band 25	Right Cheek	0.255	0.403	0.497	0.027	0.170	0.789	**1.16**	**0.28**	**1.21**
		Right Tilted	0.151	0.453	0.384	0.037	0.202	0.993	**0.99**	**0.19**	**1.35**
		Left Cheek	0.304	0.790	0.186	0.056	0.359	0.461	**1.28**	**0.36**	**1.12**
		Left Tilted	0.144	0.653	0.150	0.042	0.272	0.527	**0.95**	**0.19**	**0.94**
	LTE Band 7	Right Cheek	0.311	0.403	0.497	0.027	0.170	0.789	**1.21**	**0.34**	**1.27**
		Right Tilted	0.206	0.453	0.384	0.037	0.202	0.993	**1.04**	**0.24**	**1.40**
		Left Cheek	0.618	0.790	0.186	0.056	0.359	0.461	**1.59**	**0.67**	**1.44**
		Left Tilted	0.221	0.653	0.150	0.042	0.272	0.527	**1.02**	**0.26**	**1.02**
	LTE Band 41	Right Cheek	0.108	0.403	0.497	0.027	0.170	0.789	**1.01**	**0.14**	**1.07**
		Right Tilted	0.120	0.453	0.384	0.037	0.202	0.993	**0.96**	**0.16**	**1.32**
		Left Cheek	0.294	0.790	0.186	0.056	0.359	0.461	**1.27**	**0.35**	**1.11**
		Left Tilted	0.090	0.653	0.150	0.042	0.272	0.527	**0.89**	**0.13**	**0.89**

15.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	1+5+6 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN ANT 0	2.4GHz WLAN ANT 1	2.4GHz Bluetooth	5GHz WLAN ANT 0	5GHz WLAN ANT 0			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
GSM	GSM850	Front	0.474	0.147	0.082	0.007	0.051	0.069	**0.70**	**0.48**	**0.59**
		Back	0.322	0.141	0.037	0.005	0.137	0.059	**0.50**	**0.33**	**0.52**
		Left side	0.213	0.012	0.041	0.001	0.032	0.076	**0.27**	**0.21**	**0.32**
		Right side	0.118	0.108	0.002	0.004	0.120	0.007	**0.23**	**0.12**	**0.25**
		Top side		0.303	0.060	0.021	0.077	0.120	**0.36**	**0.02**	**0.20**
		Bottom side	0.175						**0.18**	**0.18**	**0.18**
	GSM1900	Front	0.782	0.147	0.082	0.007	0.051	0.069	**1.01**	**0.79**	**0.90**
		Back	0.391	0.141	0.037	0.005	0.137	0.059	**0.57**	**0.40**	**0.59**
		Left side	0.278	0.012	0.041	0.001	0.032	0.076	**0.33**	**0.28**	**0.39**
		Right side	0.301	0.108	0.002	0.004	0.120	0.007	**0.41**	**0.31**	**0.43**
		Top side		0.303	0.060	0.021	0.077	0.120	**0.36**	**0.02**	**0.20**
		Bottom side	0.957						**0.96**	**0.96**	**0.96**
WCDMA	WCDMA V	Front	1.000	0.147	0.082	0.007	0.051	0.069	**1.23**	**1.01**	**1.12**
		Back	0.636	0.141	0.037	0.005	0.137	0.059	**0.81**	**0.64**	**0.83**
		Left side	0.418	0.012	0.041	0.001	0.032	0.076	**0.47**	**0.42**	**0.53**
		Right side	0.215	0.108	0.002	0.004	0.120	0.007	**0.33**	**0.22**	**0.34**
		Top side		0.303	0.060	0.021	0.077	0.120	**0.36**	**0.02**	**0.20**
		Bottom side	0.413						**0.41**	**0.41**	**0.41**
	WCDMA IV	Front	0.607	0.147	0.082	0.007	0.051	0.069	**0.84**	**0.61**	**0.73**
		Back	0.490	0.141	0.037	0.005	0.137	0.059	**0.67**	**0.50**	**0.69**
		Left side	0.164	0.012	0.041	0.001	0.032	0.076	**0.22**	**0.17**	**0.27**
		Right side	0.239	0.108	0.002	0.004	0.120	0.007	**0.35**	**0.24**	**0.37**
		Top side		0.303	0.060	0.021	0.077	0.120	**0.36**	**0.02**	**0.20**
		Bottom side	1.090						**1.09**	**1.09**	**1.09**
	WCDMA II	Front	1.028	0.147	0.082	0.007	0.051	0.069	**1.26**	**1.04**	**1.15**
		Back	0.611	0.141	0.037	0.005	0.137	0.059	**0.79**	**0.62**	**0.81**
		Left side	0.361	0.012	0.041	0.001	0.032	0.076	**0.41**	**0.36**	**0.47**
		Right side	0.429	0.108	0.002	0.004	0.120	0.007	**0.54**	**0.43**	**0.56**
		Top side		0.303	0.060	0.021	0.077	0.120	**0.36**	**0.02**	**0.20**
		Bottom side	1.309						**1.31**	**1.31**	**1.31**

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	1+5+6 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN ANT 0	2.4GHz WLAN ANT 1	2.4GHz Bluetooth	5GHz WLAN ANT 0	5GHz WLAN ANT 0			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
LTE	LTE Band 12	Front	1.356	0.147	0.082	0.007	0.051	0.069	**1.59**	**1.36**	**1.48**
		Back	1.077	0.141	0.037	0.005	0.137	0.059	**1.26**	**1.08**	**1.27**
		Left side	0.200	0.012	0.041	0.001	0.032	0.076	**0.25**	**0.20**	**0.31**
		Right side	0.753	0.108	0.002	0.004	0.120	0.007	**0.86**	**0.76**	**0.88**
		Top side		0.303	0.060	0.021	0.077	0.120	**0.36**	**0.02**	**0.20**
		Bottom side	0.855						**0.86**	**0.86**	**0.86**
	LTE Band 17	Front	0.829	0.147	0.082	0.007	0.051	0.069	**1.06**	**0.84**	**0.95**
		Back	0.563	0.141	0.037	0.005	0.137	0.059	**0.74**	**0.57**	**0.76**
		Left side	0.111	0.012	0.041	0.001	0.032	0.076	**0.16**	**0.11**	**0.22**
		Right side	0.519	0.108	0.002	0.004	0.120	0.007	**0.63**	**0.52**	**0.65**
		Top side		0.303	0.060	0.021	0.077	0.120	**0.36**	**0.02**	**0.20**
		Bottom side	0.600						**0.60**	**0.60**	**0.60**
	LTE Band 5	Front	1.290	0.147	0.082	0.007	0.051	0.069	**1.52**	**1.30**	**1.41**
		Back	0.715	0.141	0.037	0.005	0.137	0.059	**0.89**	**0.72**	**0.91**
		Left side	0.575	0.012	0.041	0.001	0.032	0.076	**0.63**	**0.58**	**0.68**
		Right side	0.267	0.108	0.002	0.004	0.120	0.007	**0.38**	**0.27**	**0.39**
		Top side		0.303	0.060	0.021	0.077	0.120	**0.36**	**0.02**	**0.20**
		Bottom side	0.691						**0.69**	**0.69**	**0.69**
	LTE Band 4	Front	0.718	0.147	0.082	0.007	0.051	0.069	**0.95**	**0.73**	**0.84**
		Back	0.628	0.141	0.037	0.005	0.137	0.059	**0.81**	**0.63**	**0.82**
		Left side	0.245	0.012	0.041	0.001	0.032	0.076	**0.30**	**0.25**	**0.35**
		Right side	0.309	0.108	0.002	0.004	0.120	0.007	**0.42**	**0.31**	**0.44**
		Top side		0.303	0.060	0.021	0.077	0.120	**0.36**	**0.02**	**0.20**
		Bottom side	1.171						**1.17**	**1.17**	**1.17**
	LTE Band 2	Front	0.907	0.147	0.082	0.007	0.051	0.069	**1.14**	**0.91**	**1.03**
		Back	0.488	0.141	0.037	0.005	0.137	0.059	**0.67**	**0.49**	**0.68**
		Left side	0.398	0.012	0.041	0.001	0.032	0.076	**0.45**	**0.40**	**0.51**
		Right side	0.451	0.108	0.002	0.004	0.120	0.007	**0.56**	**0.46**	**0.58**
		Top side		0.303	0.060	0.021	0.077	0.120	**0.36**	**0.02**	**0.20**
		Bottom side	1.283						**1.28**	**1.28**	**1.28**
	LTE Band 25	Front	0.790	0.147	0.082	0.007	0.051	0.069	**1.02**	**0.80**	**0.91**
		Back	0.453	0.141	0.037	0.005	0.137	0.059	**0.63**	**0.46**	**0.65**
		Left side	0.322	0.012	0.041	0.001	0.032	0.076	**0.38**	**0.32**	**0.43**
		Right side	0.370	0.108	0.002	0.004	0.120	0.007	**0.48**	**0.37**	**0.50**
		Top side		0.303	0.060	0.021	0.077	0.120	**0.36**	**0.02**	**0.20**
		Bottom side	1.093						**1.09**	**1.09**	**1.09**
	LTE Band 7	Front	0.957	0.147	0.082	0.007	0.051	0.069	**1.19**	**0.96**	**1.08**
		Back	0.595	0.141	0.037	0.005	0.137	0.059	**0.77**	**0.60**	**0.79**
		Left side	0.561	0.012	0.041	0.001	0.032	0.076	**0.61**	**0.56**	**0.67**
		Right side	0.236	0.108	0.002	0.004	0.120	0.007	**0.35**	**0.24**	**0.36**
		Top side		0.303	0.060	0.021	0.077	0.120	**0.36**	**0.02**	**0.20**
		Bottom side	1.192						**1.19**	**1.19**	**1.19**
	LTE Band 41	Front	0.355	0.147	0.082	0.007	0.051	0.069	**0.58**	**0.36**	**0.48**
		Back	0.264	0.141	0.037	0.005	0.137	0.059	**0.44**	**0.27**	**0.46**
		Left side	0.210	0.012	0.041	0.001	0.032	0.076	**0.26**	**0.21**	**0.32**
		Right side	0.070	0.108	0.002	0.004	0.120	0.007	**0.18**	**0.07**	**0.20**
		Top side		0.303	0.060	0.021	0.077	0.120	**0.36**	**0.02**	**0.20**
		Bottom side	0.476						**0.48**	**0.48**	**0.48**

15.3 Body-Worn Accessory Exposure Conditions

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN ANT 0 1g SAR (W/kg)	3 2.4GHz WLAN ANT 1 1g SAR (W/kg)	4 2.4GHz Bluetooth 1g SAR (W/kg)	5 5GHz WLAN ANT 0 1g SAR (W/kg)	6 5GHz WLAN ANT 0 1g SAR (W/kg)	1+2+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	1+5+6 Summed 1g SAR (W/kg)
GSM	GSM850	Front	0.943	0.086	0.038	0.003	0.067	0.074	**1.07**	**0.95**	**1.08**
		Back	0.699	0.080	0.012	0.004	0.101	0.085	**0.79**	**0.70**	**0.89**
	GSM1900	Front	0.338	0.086	0.038	0.003	0.067	0.074	**0.46**	**0.34**	**0.48**
		Back	0.221	0.080	0.012	0.004	0.101	0.085	**0.31**	**0.23**	**0.41**
WCDMA	WCDMA V	Front	1.068	0.086	0.038	0.003	0.067	0.074	**1.19**	**1.07**	**1.21**
		Back	0.672	0.080	0.012	0.004	0.101	0.085	**0.76**	**0.68**	**0.86**
	WCDMA IV	Front	0.376	0.086	0.038	0.003	0.067	0.074	**0.50**	**0.38**	**0.52**
		Back	0.317	0.080	0.012	0.004	0.101	0.085	**0.41**	**0.32**	**0.50**
	WCDMA II	Front	0.513	0.086	0.038	0.003	0.067	0.074	**0.64**	**0.52**	**0.65**
		Back	0.287	0.080	0.012	0.004	0.101	0.085	**0.38**	**0.29**	**0.47**
LTE	LTE Band 12	Front	0.795	0.086	0.038	0.003	0.067	0.074	**0.92**	**0.80**	**0.94**
		Back	0.677	0.080	0.012	0.004	0.101	0.085	**0.77**	**0.68**	**0.86**
	LTE Band 17	Front	0.884	0.086	0.038	0.003	0.067	0.074	**1.01**	**0.89**	**1.03**
		Back	0.743	0.080	0.012	0.004	0.101	0.085	**0.84**	**0.75**	**0.93**
	LTE Band 5	Front	1.105	0.086	0.038	0.003	0.067	0.074	**1.23**	**1.11**	**1.25**
		Back	0.754	0.080	0.012	0.004	0.101	0.085	**0.85**	**0.76**	**0.94**
	LTE Band 4	Front	0.514	0.086	0.038	0.003	0.067	0.074	**0.64**	**0.52**	**0.66**
		Back	0.331	0.080	0.012	0.004	0.101	0.085	**0.42**	**0.34**	**0.52**
	LTE Band 2	Front	0.480	0.086	0.038	0.003	0.067	0.074	**0.60**	**0.48**	**0.62**
		Back	0.330	0.080	0.012	0.004	0.101	0.085	**0.42**	**0.33**	**0.52**
	LTE Band 25	Front	0.390	0.086	0.038	0.003	0.067	0.074	**0.51**	**0.39**	**0.53**
		Back	0.265	0.080	0.012	0.004	0.101	0.085	**0.36**	**0.27**	**0.45**
	LTE Band 7	Front	0.471	0.086	0.038	0.003	0.067	0.074	**0.60**	**0.47**	**0.61**
		Back	0.365	0.080	0.012	0.004	0.101	0.085	**0.46**	**0.37**	**0.55**
	LTE Band 41	Front	0.166	0.086	0.038	0.003	0.067	0.074	**0.29**	**0.17**	**0.31**
		Back	0.114	0.080	0.012	0.004	0.101	0.085	**0.21**	**0.12**	**0.30**

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16. Uncertainty Assessment

The component of uncertainly may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainly by the statistical analysis of a series of observations is termed a Type An evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor[a]	1/k[b]	$1/\sqrt{3}$	$1/\sqrt{6}$	$1/\sqrt{2}$

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b) κ is the coverage factor

Table 16.1. Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)
Measurement System							
Probe Calibration	6.0	Normal	1	1	1	± 6.0 %	± 6.0 %
Axial Isotropy	4.7	Rectangular	√3	0.7	0.7	± 1.9 %	± 1.9 %
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	0.7	± 3.9 %	± 3.9 %
Boundary Effects	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Linearity	4.7	Rectangular	√3	1	1	± 2.7 %	± 2.7 %
System Detection Limits	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Readout Electronics	0.3	Normal	1	1	1	± 0.3 %	± 0.3 %
Response Time	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	1	± 1.5 %	± 1.5 %
RF Ambient Noise	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
RF Ambient Reflections	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Probe Positioner	0.4	Rectangular	√3	1	1	± 0.2 %	± 0.2 %
Probe Positioning	2.9	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Max. SAR Eval.	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Test Sample Related							
Device Positioning	2.9	Normal	1	1	1	± 2.9 %	± 2.9 %
Device Holder	3.6	Normal	1	1	1	± 3.6 %	± 3.6 %
Power Drift	5.0	Rectangular	√3	1	1	± 2.9 %	± 2.9 %
Phantom and Setup							
Phantom Uncertainty	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	± 1.8 %	± 1.2 %
Liquid Conductivity (Meas.)	2.5	Normal	1	0.64	0.43	± 1.6 %	± 1.1 %
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	0.49	± 1.7 %	± 1.4 %
Liquid Permittivity (Meas.)	2.5	Normal	1	0.6	0.49	± 1.5 %	± 1.2 %
Combined Standard Uncertainty						± 11.0 %	± 10.8 %
Coverage Factor for 95 %						K=2	
Expanded Uncertainty						**± 22.0 %**	**± 21.5 %**

Table 16.2. Uncertainty Budget for frequency range 300 MHz to 3 GHz

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)
Measurement System							
Probe Calibration	6.55	Normal	1	1	1	± 6.55 %	± 6.55 %
Axial Isotropy	4.7	Rectangular	√3	0.7	0.7	± 1.9 %	± 1.9 %
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	0.7	± 3.9 %	± 3.9 %
Boundary Effects	2.0	Rectangular	√3	1	1	± 1.2 %	± 1.2 %
Linearity	4.7	Rectangular	√3	1	1	± 2.7 %	± 2.7 %
System Detection Limits	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Readout Electronics	0.3	Normal	1	1	1	± 0.3 %	± 0.3 %
Response Time	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	1	± 1.5 %	± 1.5 %
RF Ambient Noise	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
RF Ambient Reflections	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Probe Positioner	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Probe Positioning	9.9	Rectangular	√3	1	1	± 5.7 %	± 5.7 %
Max. SAR Eval.	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Test Sample Related							
Device Positioning	2.9	Normal	1	1	1	± 2.9 %	± 2.9 %
Device Holder	3.6	Normal	1	1	1	± 3.6 %	± 3.6 %
Power Drift	5.0	Rectangular	√3	1	1	± 2.9 %	± 2.9 %
Phantom and Setup							
Phantom Uncertainty	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	± 1.8 %	± 1.2 %
Liquid Conductivity (Meas.)	2.5	Normal	1	0.64	0.43	± 1.6 %	± 1.1 %
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	0.49	± 1.7 %	± 1.4 %
Liquid Permittivity (Meas.)	2.5	Normal	1	0.6	0.49	± 1.5 %	± 1.2 %
Combined Standard Uncertainty						± 12.8 %	± 12.6 %
Coverage Factor for 95 %						K=2	
Expanded Uncertainty						**± 25.6 %**	**± 25.2 %**

Table 16.3. Uncertainty Budget for frequency range 3 GHz to 6 GHz

17. References

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

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

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[5] FCC KDB 248227 D01 v02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Mar 2015.

[6] FCC KDB 447498 D01 v05r02, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Feb 2014

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[11] FCC KDB 941225 D06 v02, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2014.

[12] FCC KDB 865664 D01 v01r03, "SAR Measurement Requirements for 100 MHz to 6 GHz", Feb 2014.

[13] FCC KDB 865664 D02 v01r01, “RF Exposure Compliance Reporting and Documentation Considerations” May 2013.