FCC SAR Test Report

APPLICANT	:	Essential Products Inc.
EQUIPMENT	:	Smartphone
BRAND NAME	:	Essential Products Inc
MODEL NAME	:	A11
FCC ID	:	2ALBB-A11
STANDARD	:	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2013

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 / 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.)

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA740822	Rev. 02	Initial issue of report	Jun. 15, 2017
FA740822	Rev. 01	Revised typo on page 99	Jun. 26, 2017

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Essential Products Inc., Smartphone, A11, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary			Highest Simultaneous Transmission 1g SAR (W/kg)
		Head (Separation 0mm)	Body-worn (Separation 10mm)	Hotspot (Separation 10mm)	
		1g SAR (W/kg)			
Licensed	GSM850	0.27	0.35	0.35	0.92
	GSM1900	0.14	0.38	0.40	
	WCDMA II	0.25	0.61	0.63	
	WCDMA IV	0.16	0.55	0.56	
	WCDMA V	0.22	0.40	0.47	
	CDMA BC0	0.14	0.24	0.38	
	CDMA BC1	0.28	0.61	0.56	
	CDMA BC10	0.15	0.27	0.42	
	LTE Band 7	0.14	0.76	0.63	
	LTE Band 12 / 17	0.17	0.27	0.27	
	LTE Band 13	0.19	0.34	0.41	
	LTE Band 2 / 25	0.20	0.59	0.64	
	LTE Band 5 / 26	0.22	0.31	0.39	
	LTE Band 30	0.10	0.27	0.32	
	LTE Band 38 / 41	0.21	0.70	0.70	
	LTE Band 4 / 66	0.22	0.53	0.53	
DTS	2.4GHz WLAN	0.14	0.07	0.08	0.92
NII	5GHz WLAN	0.11	0.05	0.05	0.89
DSS	Bluetooth	0.05			0.92
Date of Testing:		2017/5/13 ~ 2017/6/12			

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

2. Administration Data

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	Essential Products Inc.
Address	380 Portage Ave., Palo Alto, CA 94306

Manufacturer	
Company Name	FIH Mobile Limited
Address	No.4, Mingsheng St.,Tu-Cheng Dist., New Taipei City 23679, Taiwan

3. Guidance Applied

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

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

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Smartphone
Brand Name	Essential Products Inc
Model Name	A11
FCC ID	2ALBB-A11
IMEI Code	001064000162524
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz CDMA2000 BC0: 824.7 MHz ~ 848.31 MHz CDMA 2000 BC1: 1851.25 MHz ~ 1908.75 MHz CDMA 2000 BC10: 817.9 MHz ~ 823.1 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 30: 2307.5 MHz ~ 2312.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 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/DTM RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+ (16QAM uplink) CDMA2000 : 1xRTT/1xEv-Do(Rev.0)/1xEv-Do(Rev.A) LTE: QPSK, 16QAM, 64QAM WLAN 2.4GHz : 802.11b/g/n HT20/HT40 WLAN 5GHz : 802.11a/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC:ASK
HW Version	DVT
SW Version	NMF26X 99
GSM / (E)GPRS Dual Transfer mode	Class A – EUT can support Packet Switched and Circuit Switched Network simultaneously.
EUT Stage	Identical Prototype
Remark : 1. WLAN operation in 5600 MHz ~ 5650 MHz is notched.	

4.2 General LTE SAR Test and Reporting Considerations

<table>
<tr><th colspan="2">Summarized necessary items addressed in KDB 941225 D05 v02r05</th></tr>
<tr><td>FCC ID</td><td>2ALBB-A11</td></tr>
<tr><td>Equipment Name</td><td>Smartphone</td></tr>
<tr><td>Operating Frequency Range of each LTE transmission band</td><td>LTE Band 2: 1850.7 MHz ~ 1909.3 MHz
LTE Band 4: 1710.7 MHz ~ 1754.3 MHz
LTE Band 5: 824.7 MHz ~ 848.3 MHz
LTE Band 7: 2502.5 MHz ~ 2567.5 MHz
LTE Band 12: 699.7 MHz ~ 715.3 MHz
LTE Band 13: 779.5 MHz ~ 784.5 MHz
LTE Band 17: 706.5 MHz ~ 713.5 MHz
LTE Band 25: 1850.7 MHz ~ 1914.3 MHz
LTE Band 26: 814.7 MHz ~ 848.3 MHz
LTE Band 30: 2307.5 MHz ~ 2312.5 MHz
LTE Band 41: 2498.5 MHz ~ 2687.5 MHz
LTE Band 66: 1710.7 MHz ~ 1779.3 MHz</td></tr>
<tr><td>Channel Bandwidth</td><td>LTE Band 02:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 04:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 05:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 07: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 13: 5MHz, 10MHz
LTE Band 17: 5MHz, 10MHz
LTE Band 25:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 26:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz
LTE Band 30: 5MHz, 10MHz
LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 66:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz</td></tr>
<tr><td>uplink modulations used</td><td>QPSK / 16QAM / 64QAM</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>
Table 6.2.3_3.3-1: Maximum Power Reduction (MPR) for Power Class 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth configuration [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>64 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</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>LTE Carrier Aggregation Combinations</td><td>Inter-Band and Intra-Band possible combinations and the detail power verification please referred to section 12, page65.</td></tr>
<tr><td>LTE Carrier Aggregation Additional Information</td><td>This device does not support full CA features on 3GPP Release 10. It supports a maximum of 3 carriers in the downlink only. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. 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>

Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900
LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 5								
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844
LTE Band 7								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510
M	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560
LTE Band 12								
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711
LTE Band 13				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq.(MHz)
L	23205	779.5	23230	782
M	23230	782		
H	23255	784.5		
LTE Band 17				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq. (MHz)
L	23755	706.5	23780	709
M	23790	710	23790	710
H	23825	713.5	23800	711
LTE Band 25												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905

LTE Band 26										
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5

LTE Band 30				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq.(MHz)
L	27685	2307.5	27710	2310
M	27710	2310		
H	27735	2312.5		

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

5. RF Exposure Limits

5.1 Uncontrolled Environment

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

5.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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:

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

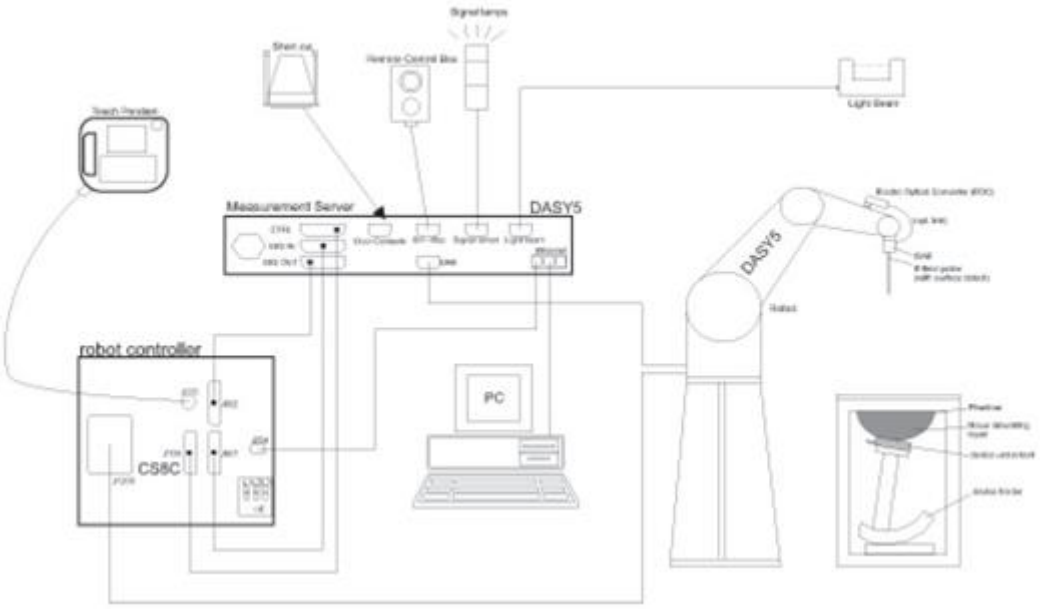
SAR is expressed in units of Watts per kilogram (W/kg)

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

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.

7.1 E-Field Probe

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

<ES3DV3 Probe>

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

<EX3DV4 Probe>

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

7.2 Data Acquisition Electronics (DAE)

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

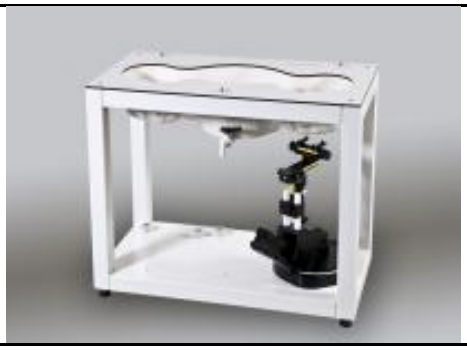
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Fig 5.1 Photo of DAE

7.3 Phantom

<SAM Twin Phantom>

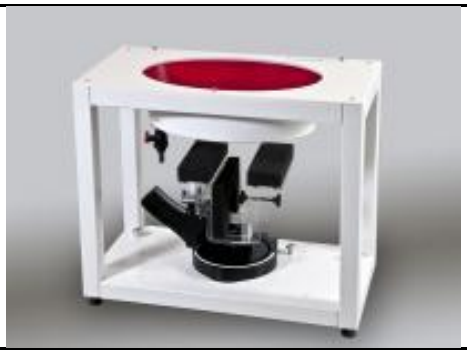
Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom



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

<ELI Phantom>

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



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

7.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

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

Mounting Device for Hand-Held Transmitters

Mounting Device Adaptor for Wide-Phones

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

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

Mounting Device for Laptops

8. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

<SAR measurement>

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

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

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

8.1 Spatial Peak SAR Evaluation

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

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

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

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

8.2 Power Reference Measurement

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

8.3 Area Scan

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

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

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

8.4 Zoom Scan

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

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

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 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	1078	Jun. 22, 2016	Jun. 21, 2017
SPEAG	835MHz System Validation Kit	D835V2	499	Mar. 21, 2017	Mar. 20, 2018
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Nov. 16, 2016	Nov. 15, 2017
SPEAG	1900MHz System Validation Kit	D1900V2	5d210	Aug. 25, 2016	Aug. 24, 2017
SPEAG	2300MHz System Validation Kit	D2300V2	1006	Jan. 25, 2017	Jan. 24, 2018
SPEAG	2450MHz System Validation Kit	D2450V2	926	Jul. 25, 2016	Jul. 24, 2017
SPEAG	2600MHz System Validation Kit	D2600V2	1008	Aug. 30, 2016	Aug. 29, 2017
SPEAG	5GHz System Validation Kit	D5GHzV2	1006	Sep. 27, 2016	Sep. 26, 2017
SPEAG	Data Acquisition Electronics	DAE4	916	Dec. 15, 2016	Dec. 14, 2017
SPEAG	Data Acquisition Electronics	DAE3	577	Sep. 28, 2016	Sep. 27, 2017
SPEAG	Data Acquisition Electronics	DAE4	853	Jul. 11, 2017	Jul. 10, 2018
SPEAG	Dosimetric E-Field Probe	ES3DV3	3270	Aug. 26, 2016	Aug. 25, 2017
SPEAG	Dosimetric E-Field Probe	EX3DV4	3931	Oct. 03, 2016	Oct. 02, 2017
SPEAG	Dosimetric E-Field Probe	ES3DV3	3169	May. 11, 2017	May. 10, 2018
WonDer	Thermometer	WD-5015	TM685	Oct. 12, 2016	Oct. 11, 2017
WonDer	Thermometer	WD-5015	TM642	Oct. 12, 2016	Oct. 11, 2017
WonDer	Thermometer	WD-5015	TM281	Oct. 12, 2016	Oct. 11, 2017
Anritsu	Radio Communication Analyzer	MT8820C	6201341950	Dec. 14, 2016	Dec. 13, 2017
Agilent	Wireless Communication Test Set	E5515C	GB46311322	Mar. 13, 2017	Mar. 12, 2018
R&S	BT Base Station	CBT32	100522	Mar. 14, 2017	Mar. 13, 2018
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Dec. 09, 2016	Dec. 08, 2017
Agilent	ENA Network Analyzer	E5071C	MY46316648	Jan. 04, 2017	Jan. 03, 2018
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Jul. 19, 2016	Jul. 18, 2017
LINE SEIKI	Digital Thermometer	LKMelectronic	DTM3000SPEZIAL	Sep. 05, 2016	Sep. 04, 2017
Anritsu	Power Meter	ML2495A	1438002	Dec. 06, 2016	Dec. 05, 2017
Anritsu	Power Sensor	MA2411B	1339195	Dec. 06, 2016	Dec. 05, 2017
Agilent	Spectrum Analyzer	E4408B	MY44211028	Aug. 22, 2016	Aug. 21, 2017
Mini-Circuits	Power Amplifier	ZVE-8G+	D120604	Mar. 09, 2017	Mar. 08, 2018
Mini-Circuits	Power Amplifier	ZHL-42W+	QA1344002	Mar. 09, 2017	Mar. 08, 2018
ATM	Dual Directional Coupler	C122H-10	P610410z-02	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	

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 Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 10.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 10.2.

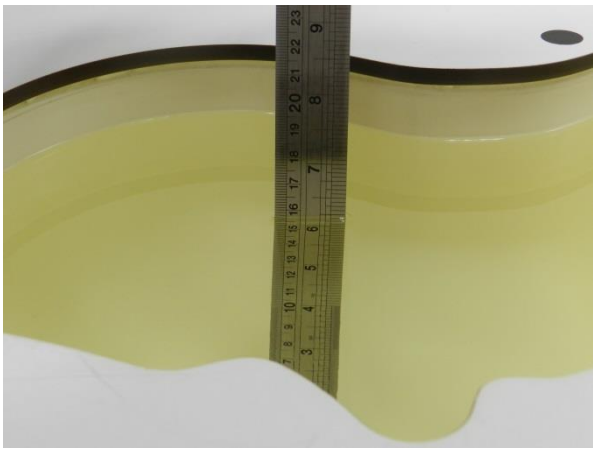


Fig 10.1Photo of Liquid Height for Head SAR

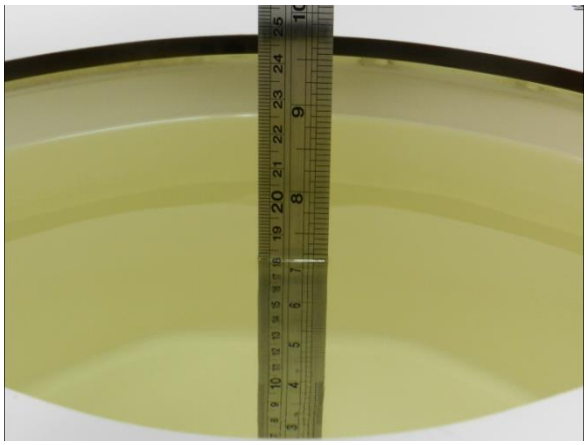


Fig 10.2 Photo of Liquid Height for Body SAR

10.2 Tissue Verification

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

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
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>

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	0.891	42.518	0.89	41.90	0.11	1.47	±5	2017/5/25
750	MSL	22.3	0.976	55.496	0.96	55.50	1.67	-0.01	±5	2017/5/24
835	HSL	22.5	0.894	41.646	0.90	41.50	-0.67	0.35	±5	2017/5/26
835	MSL	22.6	0.967	56.912	0.97	55.20	-0.31	3.10	±5	2017/5/22
1750	HSL	22.6	1.383	41.193	1.37	40.10	0.95	2.73	±5	2017/5/25
1750	HSL	22.6	1.383	41.193	1.37	40.10	0.95	2.73	±5	2017/5/25
1750	MSL	22.5	1.460	54.922	1.49	53.40	-2.01	2.85	±5	2017/5/16
1900	HSL	22.8	1.404	41.766	1.40	40.00	0.29	4.42	±5	2017/5/24
1900	MSL	22.7	1.565	54.297	1.52	53.30	2.96	1.87	±5	2017/5/15
2300	HSL	22.9	1.609	40.796	1.67	39.50	-3.65	3.28	±5	2017/5/14
2300	MSL	22.6	1.765	53.692	1.81	52.90	-2.49	1.50	±5	2017/5/14
2450	HSL	22.2	1.807	39.489	1.80	39.20	0.39	0.74	±5	2017/6/12
2450	MSL	22.2	2.002	54.626	1.95	52.70	2.67	3.65	±5	2017/6/12
2600	HSL	22.9	1.953	39.680	1.96	39.00	-0.36	1.74	±5	2017/5/14
2600	MSL	22.6	2.127	53.404	2.16	52.50	-1.53	1.72	±5	2017/5/13
2600	MSL	22.7	2.157	53.481	2.16	52.50	-0.14	1.87	±5	2017/6/1
5250	HSL	22.3	4.605	35.204	4.71	35.95	-2.23	-2.08	±5	2017/6/11
5250	MSL	22.2	5.448	46.827	5.36	48.95	1.64	-4.34	±5	2017/6/12
5600	HSL	22.3	4.945	34.709	5.07	35.50	-2.47	-2.23	±5	2017/6/11
5600	MSL	22.2	5.906	46.222	5.77	48.50	2.36	-4.70	±5	2017/6/12
5750	HSL	22.3	5.095	34.511	5.22	35.35	-2.39	-2.37	±5	2017/6/11
5750	MSL	22.2	6.109	45.992	5.94	48.28	2.85	-4.74	±5	2017/6/12

10.3 System Performance Check Results

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

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2017/5/25	750	HSL	250	D750V3-1078	ES3DV3 - SN3169	DAE4 Sn853	2.15	8.18	8.60	5.13
2017/5/24	750	MSL	250	D750V3-1078	EX3DV4 - SN3931	DAE3 Sn577	2.30	8.63	9.20	6.60
2017/5/26	835	HSL	250	D835V2-499	ES3DV3 - SN3169	DAE4 Sn853	2.36	9.45	9.44	-0.11
2017/5/22	835	MSL	250	D835V2-499	EX3DV4 - SN3931	DAE3 Sn577	2.49	9.67	9.96	3.00
2017/5/25	1750	HSL	250	D1750V2-1068	EX3DV4 - SN3931	DAE3 Sn577	9.47	36.60	37.88	3.50
2017/5/25	1750	HSL	250	D1750V2-1068	ES3DV3 - SN3169	DAE4 Sn853	9.11	36.60	36.44	-0.44
2017/5/16	1750	MSL	250	D1750V2-1068	EX3DV4 - SN3931	DAE3 Sn577	8.39	36.20	33.56	-7.29
2017/5/24	1900	HSL	250	D1900V2-5d210	EX3DV4 - SN3931	DAE3 Sn577	10.70	39.90	42.80	7.27
2017/5/15	1900	MSL	250	D1900V2-5d210	EX3DV4 - SN3931	DAE3 Sn577	10.70	40.30	42.80	6.20
2017/5/14	2300	HSL	250	D2300V2-1006	EX3DV4 - SN3931	DAE3 Sn577	12.00	49.00	48.00	-2.04
2017/5/14	2300	MSL	250	D2300V2-1006	EX3DV4 - SN3931	DAE3 Sn577	12.10	47.90	48.40	1.04
2017/6/12	2450	HSL	250	D2450V2-926	EX3DV4 - SN3931	DAE3 Sn577	12.60	52.80	50.40	-4.55
2017/6/12	2450	MSL	250	D2450V2-926	EX3DV4 - SN3931	DAE3 Sn577	12.50	51.20	50.00	-2.34
2017/5/14	2600	HSL	250	D2600V2-1008	EX3DV4 - SN3931	DAE3 Sn577	13.70	56.80	54.80	-3.52
2017/5/13	2600	MSL	250	D2600V2-1008	EX3DV4 - SN3931	DAE3 Sn577	14.20	55.20	56.80	2.90
2017/6/1	2600	MSL	250	D2600V2-1008	ES3DV3 - SN3270	DAE4 Sn916	14.30	55.20	57.20	3.62
2017/6/11	5250	HSL	100	D5GHzV2-1006-5250	EX3DV4 - SN3931	DAE3 Sn577	7.91	80.60	79.10	-1.86
2017/6/12	5250	MSL	100	D5GHzV2-1006-5250	EX3DV4 - SN3931	DAE3 Sn577	7.50	75.50	75.00	-0.66
2017/6/11	5600	HSL	100	D5GHzV2-1006-5600	EX3DV4 - SN3931	DAE3 Sn577	8.83	83.80	88.30	5.37
2017/6/12	5600	MSL	100	D5GHzV2-1006-5600	EX3DV4 - SN3931	DAE3 Sn577	8.34	78.60	83.40	6.11
2017/6/11	5750	HSL	100	D5GHzV2-1006-5750	EX3DV4 - SN3931	DAE3 Sn577	8.07	80.50	80.70	0.25
2017/6/12	5750	MSL	100	D5GHzV2-1006-5750	EX3DV4 - SN3931	DAE3 Sn577	7.67	74.60	76.70	2.82

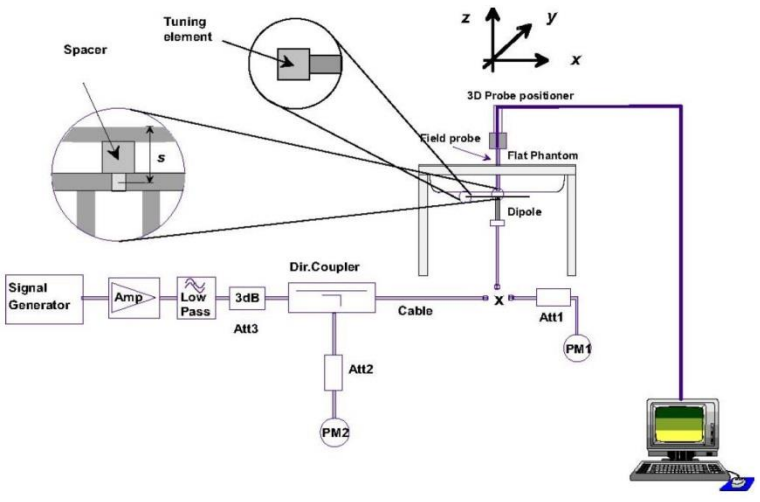


Fig 8.3.1 System Performance Check Setup

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.

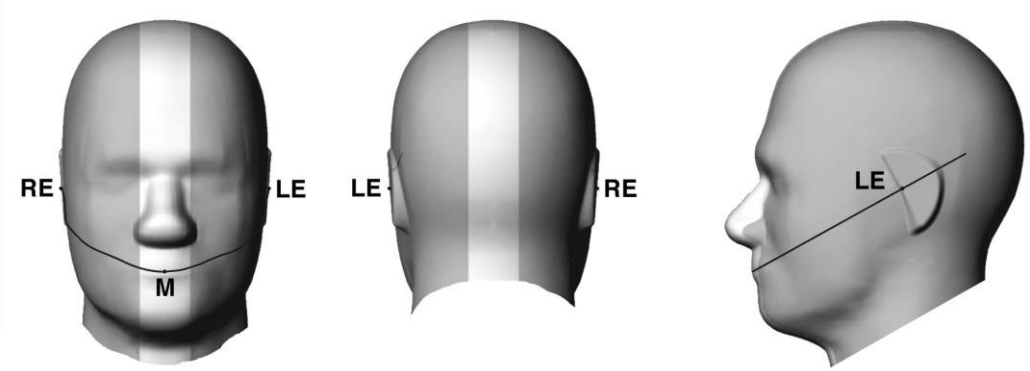


Fig 9.1.1 Front, back, and side views of SAM twin phantom

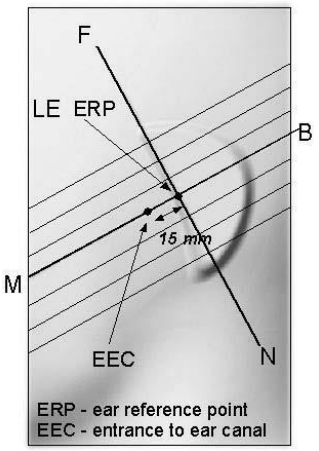


Fig 9.1.2 Close-up side view of phantom showing the ear region.

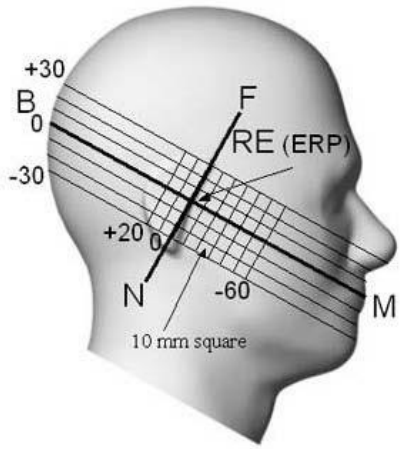


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

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.

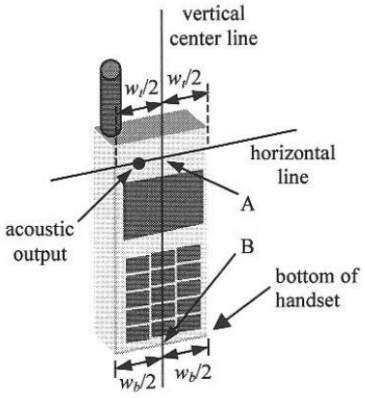


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case

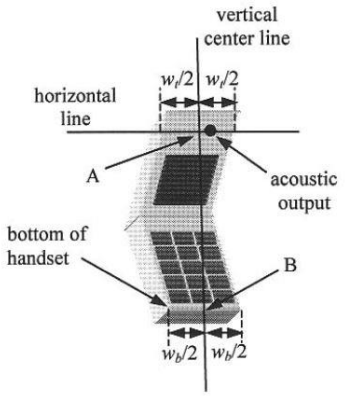


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

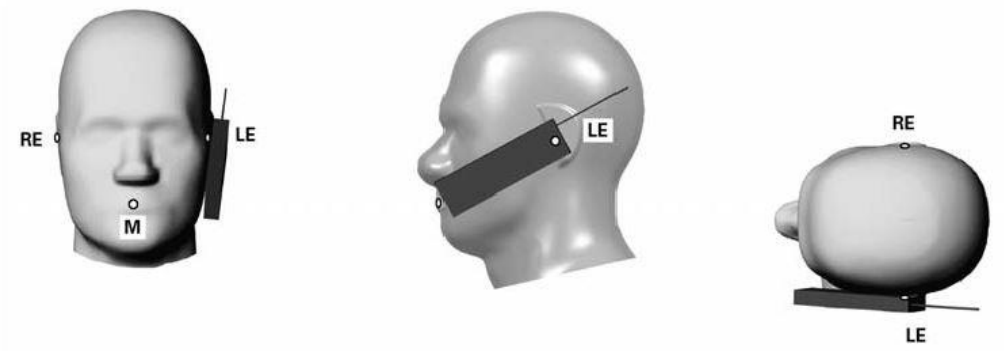


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

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

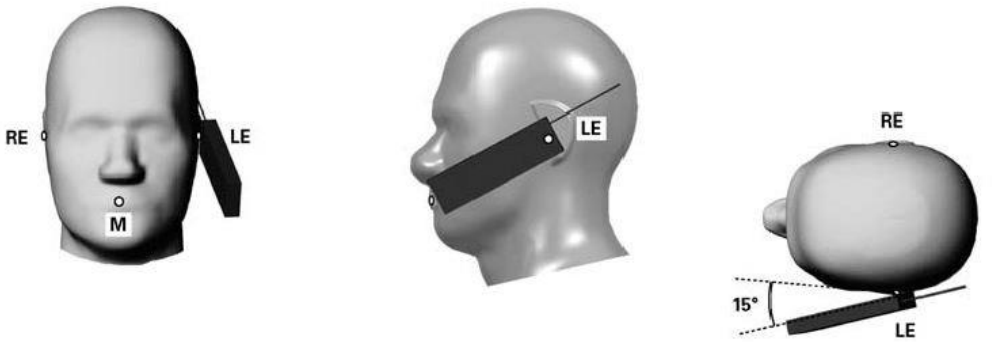


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

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 KDB648474 D04v01r03, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset attached to the handset.

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

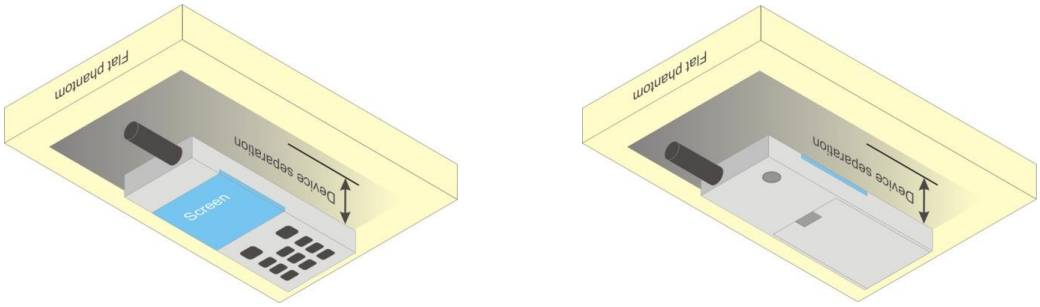


Fig 9.4 Body Worn Position

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 KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined form general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

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

12. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

1. For DTM multi-slot class mode, the device was linked with base station simulator (Agilent E5515C) and transmit maximum power on maximum number of TX slots, i.e. one CS timeslot, and additional PS timeslots (1 for DTM class 5 and 9, 2 for DTM class 11) in one TDMA frame.
2. Agilent E5515C was used to setup the device operated under DTM mode for power measurement and SAR testing. For conducted power, the power of the burst for voice and the power of the bursts for data was reported separately in the table above, and the frame-average power is derived below to determine SAR testing.

   *DTM frame average power (dBm) = 10*log [∑(power of each slot, in mW)/8]*
3. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
4. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE / DTM modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (3Tx slots) for GSM850/GSM1900 is considered as the primary mode.
5. Other configurations of GSM / GPRS / EDGE / DTM are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode

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 1 Tx slot		33.22	33.45	33.45	33.50	24.22	24.45	24.45	24.50
GPRS 1 Tx slot		33.21	33.49	33.48	33.50	24.21	24.49	24.48	24.50
GPRS 2 Tx slots		31.69	31.61	31.92	32.00	25.69	25.61	25.92	26.00
GPRS 3 Tx slots		30.26	30.16	30.03	30.50	26.00	25.90	25.77	26.24
GPRS 4 Tx slots		28.32	28.64	28.50	29.00	25.32	25.64	25.50	26.00
EDGE 1 Tx slot		26.70	26.66	26.61	27.00	17.70	17.66	17.61	18.00
EDGE 2 Tx slots		24.90	24.84	24.77	25.00	18.90	18.84	18.77	19.00
EDGE 3 Tx slots		23.60	23.57	23.55	24.00	19.34	19.31	19.29	19.74
EDGE 4 Tx slots		22.45	22.40	22.33	23.00	19.45	19.40	19.33	20.00
DTM Multi-slot class 5	GSM 1 Tx slot	31.55	31.55	31.86	32.00	25.49	25.48	25.79	25.98
	GPRS 1 Tx slot	31.48	31.46	31.77	32.00				
DTM Multi-slot class 9	GSM 1 Tx slot	31.87	31.81	31.88	32.00	25.80	25.75	25.81	25.98
	GPRS 1 Tx slot	31.78	31.74	31.79	32.00				
DTM Multi-slot class 11	GSM 1 Tx slot	30.04	29.94	30.27	30.50	25.73	25.61	25.92	26.24
	GPRS 2 Tx slots	29.96	29.84	30.14	30.50				
DTM Multi-slot class 5	GSM 1 Tx slot	31.58	31.56	31.81	32.00	23.39	23.35	23.55	23.76
	EDGE 1 Tx slot	24.88	24.73	24.70	25.00				
DTM Multi-slot class 9	GSM 1 Tx slot	31.52	31.48	31.79	32.00	23.33	23.27	23.53	23.76
	EDGE 1 Tx slot	24.80	24.68	24.69	25.00				
DTM Multi-slot class 11	GSM 1 Tx slot	30.19	30.06	29.94	30.50	22.72	22.63	22.53	23.08
	EDGE 2 Tx slots	23.54	23.55	23.47	24.00				

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 1 Tx slot		29.84	29.71	29.56	30.00	20.84	20.71	20.56	21.00
GPRS 1 Tx slot		29.87	29.76	29.56	30.00	20.87	20.76	20.56	21.00
GPRS 2 Tx slots		28.27	28.18	28.49	28.50	22.27	22.18	22.49	22.50
GPRS 3 Tx slots		26.98	26.85	26.83	27.00	22.72	22.59	22.57	22.74
GPRS 4 Tx slots		25.39	25.26	25.40	25.50	22.39	22.26	22.40	22.50
EDGE 1 Tx slot		25.73	25.71	25.79	26.00	16.73	16.71	16.79	17.00
EDGE 2 Tx slots		23.96	23.96	24.11	24.50	17.96	17.96	18.11	18.50
EDGE 3 Tx slots		22.85	22.82	22.93	23.00	18.59	18.56	18.67	18.74
EDGE 4 Tx slots		21.68	21.69	21.80	22.00	18.68	18.69	18.80	19.00
DTM Multi-slot class 5	GSM 1 Tx slot	28.09	28.35	28.30	28.50	22.00	22.26	22.21	22.48
	GPRS 1 Tx slot	27.95	28.21	28.17	28.50				
DTM Multi-slot class 9	GSM 1 Tx slot	28.07	28.30	28.23	28.50	21.98	22.21	22.15	22.48
	GPRS 1 Tx slot	27.93	28.17	28.11	28.50				
DTM Multi-slot class 11	GSM 1 Tx slot	26.73	26.63	26.91	27.00	22.37	22.27	22.56	22.74
	GPRS 2 Tx slots	26.58	26.48	26.77	27.00				
DTM Multi-slot class 5	GSM 1 Tx slot	28.10	28.45	28.33	28.50	20.46	20.71	20.69	20.92
	EDGE 1 Tx slot	23.86	23.85	24.09	24.50				
DTM Multi-slot class 9	GSM 1 Tx slot	28.22	28.50	28.35	28.50	20.53	20.74	20.65	20.92
	EDGE 1 Tx slot	23.82	23.80	23.88	24.50				
DTM Multi-slot class 11	GSM 1 Tx slot	26.82	26.79	27.00	27.00	20.28	20.26	20.43	20.51
	EDGE 2 Tx slots	22.71	22.70	22.81	23.00				

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

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

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

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

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

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

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

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

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

Setup Configuration

HSUPA Setup Configuration:

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

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

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

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

Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

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

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

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

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

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration below
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set RMC 12.2Kbps + HSDPA mode.
   ii. Set Cell Power = -25 dBm
   iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
   iv. Select HSDPA Uplink Parameters
   v. Set Gain Factors (β_c and β_d) and parameters were set according to each Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
      a). Subtest 1: β_c/β_d=2/15
      b). Subtest 2: β_c/β_d=12/15
      c). Subtest 3: β_c/β_d=15/8
      d). Subtest 4: β_c/β_d=15/4
   vi. Set Delta ACK, Delta NACK and Delta CQI = 8
   vii. Set Ack-Nack Repetition Factor to 3
   viii. Set CQI Feedback Cycle (k) to 4 ms
   ix. Set CQI Repetition Factor to 2
   x. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

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

C.8.1.12 Fixed Reference Channel Definition H-Set 12

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

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

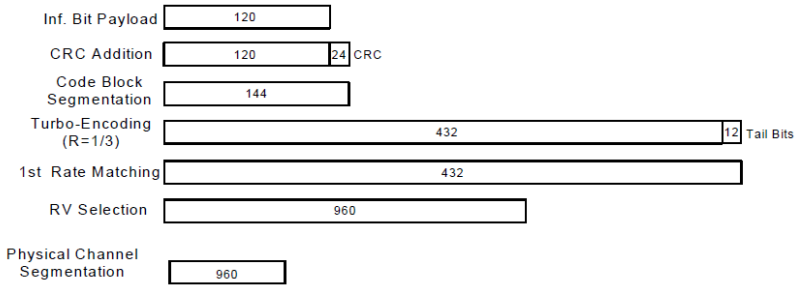


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

<WCDMA Conducted Power>

General Note:

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

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	24.72	24.86	24.88	25.00	24.62	24.54	24.60	25.00	24.29	24.37	24.40	25.00
3GPP Rel 99	RMC 12.2Kbps	24.74	24.90	24.91	25.00	24.66	24.59	24.62	25.00	24.31	24.41	24.42	25.00
3GPP Rel 6	HSDPA Subtest-1	23.87	23.96	23.94	24.00	23.84	23.74	23.55	24.00	23.40	23.48	23.53	24.00
3GPP Rel 6	HSDPA Subtest-2	23.90	23.97	23.95	24.00	23.88	23.72	23.54	24.00	23.46	23.57	23.54	24.00
3GPP Rel 6	HSDPA Subtest-3	23.38	23.48	23.43	23.50	23.35	23.26	23.07	23.50	22.83	23.05	23.09	23.50
3GPP Rel 6	HSDPA Subtest-4	23.40	23.48	23.43	23.50	23.40	23.24	23.05	23.50	22.82	23.03	23.05	23.50
3GPP Rel 8	DC-HSDPA Subtest-1	23.81	23.93	23.89	24.00	23.82	23.64	23.47	24.00	23.37	23.40	23.49	24.00
3GPP Rel 8	DC-HSDPA Subtest-2	23.86	23.91	23.92	24.00	23.87	23.69	23.50	24.00	23.38	23.56	23.49	24.00
3GPP Rel 8	DC-HSDPA Subtest-3	23.32	23.37	23.40	23.50	23.30	23.19	23.06	23.50	22.73	22.95	23.05	23.50
3GPP Rel 8	DC-HSDPA Subtest-4	23.39	23.39	23.32	23.50	23.31	23.14	22.94	23.50	22.72	23.00	22.98	23.50
3GPP Rel 6	HSUPA Subtest-1	23.72	24.00	23.91	24.00	23.80	23.68	23.72	24.00	23.30	23.51	23.45	24.00
3GPP Rel 6	HSUPA Subtest-2	21.71	21.97	22.00	22.00	21.67	21.59	21.60	22.00	21.32	21.36	21.54	22.00
3GPP Rel 6	HSUPA Subtest-3	22.76	22.96	22.89	23.00	22.65	22.60	22.55	23.00	22.29	22.26	22.45	23.00
3GPP Rel 6	HSUPA Subtest-4	21.77	21.98	21.87	22.00	21.69	21.42	21.52	22.00	21.31	21.46	21.33	22.00
3GPP Rel 6	HSUPA Subtest-5	23.70	24.00	23.90	24.00	23.60	23.67	23.58	24.00	23.30	23.40	23.40	24.00

<CDMA2000 Conducted Power>

General Note:

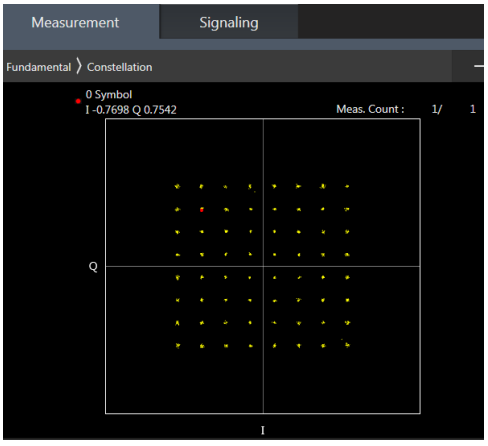
1. Per KDB 941225 D01v03r01, SAR for head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55.
2. Per KDB 941225 D01v03r01, in Hotspot mode EUT is treated as data device and SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps) as the primary mode.
3. Per KDB 941225 D01v03r01,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

Band	CDMA BC0			Tune-up Limit (dBm)	CDMA BC1			Tune-up Limit (dBm)	CDMA BC10			Tune-up Limit (dBm)
TX Channel	1013	384	777		25	600	1175		476	580	684	
Frequency (MHz)	824.7	836.52	848.31		1851.25	1880	1908.75		817.9	820.5	823.1	
RC1 SO55	24.84	24.83	24.54	25.00	24.64	24.55	24.47	25.00	24.19	24.48	24.54	25.00
RC3 SO55	24.72	24.87	24.53	25.00	24.65	24.66	24.52	25.00	24.27	24.57	24.63	25.00
RC3 SO32 (F+SCH)	24.75	24.85	24.54	25.00	24.64	24.65	24.52	25.00	24.28	24.57	24.62	25.00
RC3 SO32 (+SCH)	24.73	24.84	24.52	25.00	24.63	24.63	24.50	25.00	24.27	24.56	24.62	25.00
RTAP 153.6Kbps	24.76	24.86	24.54	25.00	24.65	24.65	24.50	25.00	24.37	24.56	24.62	25.00
RETAP 4096Bits	24.59	24.68	24.37	25.00	24.49	24.51	24.33	25.00	24.21	24.38	24.45	25.00

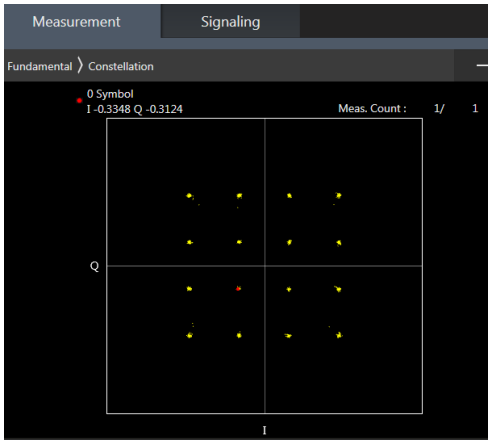
<LTE Conducted Power>

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 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM / 64QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM / 64QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B26 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE band 2 / 4 / 5 / 17 / 38 SAR test was covered by Band 25 / 66 / 26 / 12 / 41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
   b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band
10. According to 2017 TCB workshop, for 64 QAM and 16 QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



64QAM



16QAM

<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	24.31	24.32	24.23	24.5	0
20	QPSK	1	49	23.96	23.90	24.08		
20	QPSK	1	99	24.04	23.96	24.08		
20	QPSK	50	0	23.12	23.08	23.25	23.5	1
20	QPSK	50	24	23.04	22.98	23.16		
20	QPSK	50	50	22.99	22.91	23.13		
20	QPSK	100	0	23.05	23.00	23.19		
20	16QAM	1	0	23.50	23.46	23.47	23.5	1
20	16QAM	1	49	23.23	23.17	23.34		
20	16QAM	1	99	23.33	23.27	23.38		
20	16QAM	50	0	22.15	22.10	22.26	22.5	2
20	16QAM	50	24	22.06	22.04	22.20		
20	16QAM	50	50	22.02	21.94	22.17		
20	16QAM	100	0	22.06	22.01	22.19		
20	64QAM	1	0	22.33	22.38	22.28	22.5	2
20	64QAM	1	49	22.01	21.97	22.13		
20	64QAM	1	99	22.06	22.04	22.13		
20	64QAM	50	0	20.99	20.98	21.12	21.5	3
20	64QAM	50	24	20.92	20.88	21.04		
20	64QAM	50	50	20.83	20.81	21.00		
20	64QAM	100	0	20.89	20.88	21.05		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	24.09	24.10	24.26	24.5	0
15	QPSK	1	37	23.92	23.88	24.06		
15	QPSK	1	74	23.90	23.87	24.11		
15	QPSK	36	0	23.06	23.04	23.22	23.5	1
15	QPSK	36	20	23.02	22.99	23.16		
15	QPSK	36	39	22.95	22.91	23.12		
15	QPSK	75	0	23.01	22.98	23.16		
15	16QAM	1	0	23.37	23.39	23.50	23.5	1
15	16QAM	1	37	23.19	23.18	23.35		
15	16QAM	1	74	23.19	23.15	23.41		
15	16QAM	36	0	22.06	22.07	22.23	22.5	2
15	16QAM	36	20	22.02	21.99	22.19		
15	16QAM	36	39	21.96	21.92	22.15		
15	16QAM	75	0	22.02	22.00	22.18		
15	64QAM	1	0	22.17	22.19	22.30	22.5	2
15	64QAM	1	37	22.00	21.97	22.11		
15	64QAM	1	74	21.96	21.93	22.15		
15	64QAM	36	0	20.97	20.97	21.09	21.5	3
15	64QAM	36	20	20.92	20.90	21.05		
15	64QAM	36	39	20.86	20.83	21.00		
15	64QAM	75	0	20.88	20.86	21.02		

Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	24.22	24.22	24.17	24.5	0
10	QPSK	1	25	23.93	23.90	24.09		
10	QPSK	1	49	24.10	24.05	24.09		
10	QPSK	25	0	23.02	23.00	23.16	23.5	1
10	QPSK	25	12	22.98	22.96	23.12		
10	QPSK	25	25	22.95	22.91	23.11		
10	QPSK	50	0	22.99	22.96	23.14		
10	16QAM	1	0	23.49	23.48	23.41	23.5	1
10	16QAM	1	25	23.21	23.18	23.38		
10	16QAM	1	49	23.36	23.33	23.35		
10	16QAM	25	0	22.02	22.02	22.16	22.5	2
10	16QAM	25	12	22.02	21.99	22.16		
10	16QAM	25	25	21.95	21.90	22.13		
10	16QAM	50	0	22.01	21.96	22.14		
10	64QAM	1	0	22.28	22.27	22.18	22.5	2
10	64QAM	1	25	21.99	21.94	22.10		
10	64QAM	1	49	22.11	22.11	22.08		
10	64QAM	25	0	20.89	20.89	21.01	21.5	3
10	64QAM	25	12	20.85	20.85	21.00		
10	64QAM	25	25	20.83	20.81	20.95		
10	64QAM	50	0	20.86	20.85	21.01		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	23.91	23.93	24.09	24.5	0
5	QPSK	1	12	23.86	23.85	24.05		
5	QPSK	1	24	23.86	23.85	24.06		
5	QPSK	12	0	22.91	22.93	23.11	23.5	1
5	QPSK	12	7	22.91	22.93	23.10		
5	QPSK	12	13	22.88	22.89	23.05		
5	QPSK	25	0	22.87	22.88	23.08		
5	16QAM	1	0	23.18	23.19	23.35	23.5	1
5	16QAM	1	12	23.13	23.15	23.34		
5	16QAM	1	24	23.14	23.13	23.33		
5	16QAM	12	0	21.94	21.93	22.12	22.5	2
5	16QAM	12	7	21.93	21.92	22.13		
5	16QAM	12	13	21.89	21.88	22.09		
5	16QAM	25	0	21.90	21.90	22.08		
5	64QAM	1	0	22.06	22.04	22.18	22.5	2
5	64QAM	1	12	21.97	21.93	22.12		
5	64QAM	1	24	21.97	21.95	22.14		
5	64QAM	12	0	20.90	20.90	21.03	21.5	3
5	64QAM	12	7	20.91	20.88	21.05		
5	64QAM	12	13	20.87	20.83	21.01		
5	64QAM	25	0	20.82	20.83	20.97		

Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	23.86	23.86	24.04	24.5	0
3	QPSK	1	8	23.83	23.83	24.03		
3	QPSK	1	14	23.83	23.82	24.01		
3	QPSK	8	0	22.86	22.86	23.04	23.5	1
3	QPSK	8	4	22.88	22.88	23.10		
3	QPSK	8	7	22.85	22.86	23.05		
3	QPSK	15	0	22.84	22.88	23.05		
3	16QAM	1	0	23.09	23.11	23.30	23.5	1
3	16QAM	1	8	23.10	23.13	23.33		
3	16QAM	1	14	23.07	23.09	23.29		
3	16QAM	8	0	21.94	21.94	22.12	22.5	2
3	16QAM	8	4	21.95	21.94	22.16		
3	16QAM	8	7	21.92	21.92	22.11		
3	16QAM	15	0	21.88	21.92	22.09		
3	64QAM	1	0	21.98	21.99	22.11	22.5	2
3	64QAM	1	8	21.96	21.96	22.13		
3	64QAM	1	14	21.95	21.93	22.09		
3	64QAM	8	0	20.87	20.86	21.00	21.5	3
3	64QAM	8	4	20.88	20.89	21.02		
3	64QAM	8	7	20.84	20.83	21.00		
3	64QAM	15	0	20.83	20.83	20.97		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	23.79	23.79	23.98	24.5	0
1.4	QPSK	1	3	23.86	23.86	24.05		
1.4	QPSK	1	5	23.78	23.77	23.99		
1.4	QPSK	3	0	23.84	23.83	24.04		
1.4	QPSK	3	1	23.88	23.87	24.08		
1.4	QPSK	3	3	23.84	23.84	24.02		
1.4	QPSK	6	0	22.80	22.82	22.97	23.5	1
1.4	16QAM	1	0	23.05	23.06	23.28	23.5	1
1.4	16QAM	1	3	23.14	23.15	23.32		
1.4	16QAM	1	5	23.03	23.04	23.25		
1.4	16QAM	3	0	22.86	22.86	23.03		
1.4	16QAM	3	1	22.90	22.89	23.07		
1.4	16QAM	3	3	22.84	22.83	22.99		
1.4	16QAM	6	0	21.88	21.90	22.05	22.5	2
1.4	64QAM	1	0	21.91	21.93	22.07	22.5	2
1.4	64QAM	1	3	22.01	21.95	22.13		
1.4	64QAM	1	5	21.89	21.89	22.05		
1.4	64QAM	3	0	21.88	21.90	22.05		
1.4	64QAM	3	1	21.93	21.94	22.08		
1.4	64QAM	3	3	21.89	21.88	22.03		
1.4	64QAM	6	0	20.76	20.75	20.91	21.5	3

<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	23.85	23.90	23.84	24.5	0
20	QPSK	1	49	23.61	23.59	23.66		
20	QPSK	1	99	23.56	23.59	23.66		
20	QPSK	50	0	22.79	22.76	22.85	23.5	1
20	QPSK	50	24	22.71	22.70	22.75		
20	QPSK	50	50	22.66	22.70	22.75		
20	QPSK	100	0	22.73	22.68	22.78		
20	16QAM	1	0	23.09	23.09	23.11	23.5	1
20	16QAM	1	49	22.87	22.84	22.88		
20	16QAM	1	99	22.78	22.87	22.92		
20	16QAM	50	0	21.82	21.80	21.90	22.5	2
20	16QAM	50	24	21.74	21.69	21.77		
20	16QAM	50	50	21.69	21.70	21.78		
20	16QAM	100	0	21.71	21.67	21.74		
20	64QAM	1	0	21.93	21.97	21.94	22.5	2
20	64QAM	1	49	21.69	21.68	21.74		
20	64QAM	1	99	21.60	21.67	21.73		
20	64QAM	50	0	20.68	20.69	20.75	21.5	3
20	64QAM	50	24	20.60	20.60	20.66		
20	64QAM	50	50	20.54	20.60	20.66		
20	64QAM	100	0	20.58	20.58	20.65		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	23.79	23.82	23.85	24.5	0
15	QPSK	1	37	23.61	23.57	23.62		
15	QPSK	1	74	23.61	23.66	23.69		
15	QPSK	36	0	22.74	22.72	22.83	23.5	1
15	QPSK	36	20	22.69	22.69	22.75		
15	QPSK	36	39	22.64	22.63	22.75		
15	QPSK	75	0	22.69	22.68	22.72		
15	16QAM	1	0	23.06	23.08	23.17	23.5	1
15	16QAM	1	37	22.86	22.84	22.88		
15	16QAM	1	74	22.88	22.92	22.95		
15	16QAM	36	0	21.77	21.76	21.82	22.5	2
15	16QAM	36	20	21.73	21.70	21.75		
15	16QAM	36	39	21.65	21.62	21.75		
15	16QAM	75	0	21.69	21.68	21.73		
15	64QAM	1	0	21.88	21.90	21.97	22.5	2
15	64QAM	1	37	21.68	21.66	21.70		
15	64QAM	1	74	21.65	21.71	21.75		
15	64QAM	36	0	20.65	20.68	20.74	21.5	3
15	64QAM	36	20	20.62	20.61	20.66		
15	64QAM	36	39	20.54	20.52	20.67		
15	64QAM	75	0	20.60	20.58	20.61		

Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	23.72	23.72	23.79	24.5	0
10	QPSK	1	25	23.62	23.60	23.75		
10	QPSK	1	49	23.59	23.64	23.66		
10	QPSK	25	0	22.70	22.70	22.76	23.5	1
10	QPSK	25	12	22.65	22.64	22.80		
10	QPSK	25	25	22.62	22.62	22.73		
10	QPSK	50	0	22.65	22.67	22.79		
10	16QAM	1	0	22.97	22.99	23.05	23.5	1
10	16QAM	1	25	22.90	22.87	23.02		
10	16QAM	1	49	22.85	22.90	22.95		
10	16QAM	25	0	21.70	21.70	21.73	22.5	2
10	16QAM	25	12	21.68	21.68	21.81		
10	16QAM	25	25	21.65	21.62	21.73		
10	16QAM	50	0	21.70	21.66	21.80		
10	64QAM	1	0	21.80	21.81	21.84	22.5	2
10	64QAM	1	25	21.71	21.68	21.78		
10	64QAM	1	49	21.66	21.72	21.73		
10	64QAM	25	0	20.65	20.62	20.63	21.5	3
10	64QAM	25	12	20.63	20.60	20.70		
10	64QAM	25	25	20.57	20.54	20.61		
10	64QAM	50	0	20.61	20.59	20.69		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	23.69	23.65	23.73	24.5	0
5	QPSK	1	12	23.61	23.58	23.67		
5	QPSK	1	24	23.60	23.55	23.65		
5	QPSK	12	0	22.68	22.62	22.74	23.5	1
5	QPSK	12	7	22.68	22.64	22.71		
5	QPSK	12	13	22.62	22.59	22.66		
5	QPSK	25	0	22.66	22.62	22.70		
5	16QAM	1	0	22.92	22.89	23.00	23.5	1
5	16QAM	1	12	22.87	22.86	22.94		
5	16QAM	1	24	22.87	22.83	22.94		
5	16QAM	12	0	21.71	21.66	21.77	22.5	2
5	16QAM	12	7	21.70	21.67	21.75		
5	16QAM	12	13	21.65	21.60	21.70		
5	16QAM	25	0	21.67	21.65	21.72		
5	64QAM	1	0	21.78	21.76	21.87	22.5	2
5	64QAM	1	12	21.71	21.70	21.80		
5	64QAM	1	24	21.71	21.68	21.74		
5	64QAM	12	0	20.64	20.64	20.72	21.5	3
5	64QAM	12	7	20.68	20.62	20.70		
5	64QAM	12	13	20.62	20.59	20.66		
5	64QAM	25	0	20.57	20.57	20.64		

Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	23.57	23.57	23.69	24.5	0
3	QPSK	1	8	23.55	23.52	23.67		
3	QPSK	1	14	23.53	23.51	23.62		
3	QPSK	8	0	22.59	22.61	22.72	23.5	1
3	QPSK	8	4	22.60	22.61	22.69		
3	QPSK	8	7	22.58	22.56	22.69		
3	QPSK	15	0	22.57	22.59	22.69		
3	16QAM	1	0	22.81	22.76	22.93	23.5	1
3	16QAM	1	8	22.82	22.83	22.93		
3	16QAM	1	14	22.80	22.75	22.88		
3	16QAM	8	0	21.64	21.65	21.79	22.5	2
3	16QAM	8	4	21.69	21.66	21.78		
3	16QAM	8	7	21.64	21.61	21.73		
3	16QAM	15	0	21.61	21.60	21.72		
3	64QAM	1	0	21.70	21.69	21.79	22.5	2
3	64QAM	1	8	21.67	21.66	21.77		
3	64QAM	1	14	21.65	21.64	21.75		
3	64QAM	8	0	20.59	20.58	20.68	21.5	3
3	64QAM	8	4	20.61	20.59	20.70		
3	64QAM	8	7	20.57	20.56	20.68		
3	64QAM	15	0	20.55	20.54	20.64		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	23.47	23.48	23.61	24.5	0
1.4	QPSK	1	3	23.55	23.56	23.68		
1.4	QPSK	1	5	23.47	23.48	23.61		
1.4	QPSK	3	0	23.52	23.51	23.66		
1.4	QPSK	3	1	23.57	23.55	23.69		
1.4	QPSK	3	3	23.52	23.50	23.64		
1.4	QPSK	6	0	22.52	22.52	22.64	23.5	1
1.4	16QAM	1	0	22.76	22.75	22.89	23.5	1
1.4	16QAM	1	3	22.83	22.84	22.97		
1.4	16QAM	1	5	22.74	22.74	22.87		
1.4	16QAM	3	0	22.55	22.56	22.67		
1.4	16QAM	3	1	22.59	22.58	22.71		
1.4	16QAM	3	3	22.52	22.52	22.65		
1.4	16QAM	6	0	21.61	21.59	21.71	22.5	2
1.4	64QAM	1	0	21.62	21.60	21.70	22.5	2
1.4	64QAM	1	3	21.67	21.69	21.79		
1.4	64QAM	1	5	21.61	21.58	21.69		
1.4	64QAM	3	0	21.60	21.58	21.68		
1.4	64QAM	3	1	21.63	21.61	21.74		
1.4	64QAM	3	3	21.59	21.58	21.68		
1.4	64QAM	6	0	20.47	20.46	20.56	21.5	3

<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	24.28	24.31	24.21	24.5	0
10	QPSK	1	25	24.29	24.30	24.20		
10	QPSK	1	49	24.21	24.22	24.04		
10	QPSK	25	0	23.26	23.37	23.21	23.5	1
10	QPSK	25	12	23.33	23.34	23.28		
10	QPSK	25	25	23.28	23.27	23.17		
10	QPSK	50	0	23.24	23.33	23.16		
10	16QAM	1	0	23.46	23.50	23.50	23.5	1
10	16QAM	1	25	23.48	23.46	23.47		
10	16QAM	1	49	23.45	23.47	23.32		
10	16QAM	25	0	22.25	22.37	22.21	22.5	2
10	16QAM	25	12	22.36	22.35	22.29		
10	16QAM	25	25	22.29	22.27	22.21		
10	16QAM	50	0	22.22	22.33	22.25		
10	64QAM	1	0	22.37	22.41	22.32	22.5	2
10	64QAM	1	25	22.37	22.43	22.34		
10	64QAM	1	49	22.28	22.33	22.24		
10	64QAM	25	0	21.18	21.31	21.13	21.5	3
10	64QAM	25	12	21.28	21.28	21.23		
10	64QAM	25	25	21.22	21.19	21.13		
10	64QAM	50	0	21.13	21.26	21.19		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	24.23	24.30	24.20	24.5	0
5	QPSK	1	12	24.17	24.25	24.15		
5	QPSK	1	24	24.25	24.24	24.01		
5	QPSK	12	0	23.24	23.32	23.22	23.5	1
5	QPSK	12	7	23.22	23.30	23.21		
5	QPSK	12	13	23.29	23.27	23.16		
5	QPSK	25	0	23.23	23.29	23.12		
5	16QAM	1	0	23.48	23.50	23.45	23.5	1
5	16QAM	1	12	23.43	23.49	23.39		
5	16QAM	1	24	23.48	23.50	23.30		
5	16QAM	12	0	22.25	22.32	22.22	22.5	2
5	16QAM	12	7	22.23	22.32	22.23		
5	16QAM	12	13	22.32	22.26	22.18		
5	16QAM	25	0	22.22	22.32	22.21		
5	64QAM	1	0	22.39	22.46	22.36	22.5	2
5	64QAM	1	12	22.34	22.40	22.31		
5	64QAM	1	24	22.38	22.36	22.25		
5	64QAM	12	0	21.21	21.34	21.19	21.5	3
5	64QAM	12	7	21.24	21.30	21.23		
5	64QAM	12	13	21.29	21.25	21.17		
5	64QAM	25	0	21.17	21.23	21.16		

Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	24.22	24.27	24.17	24.5	0
3	QPSK	1	8	24.19	24.25	24.11		
3	QPSK	1	14	24.08	24.26	24.06		
3	QPSK	8	0	23.23	23.30	23.19	23.5	1
3	QPSK	8	4	23.23	23.28	23.21		
3	QPSK	8	7	23.19	23.26	23.12		
3	QPSK	15	0	23.21	23.26	23.16		
3	16QAM	1	0	23.48	23.49	23.41	23.5	1
3	16QAM	1	8	23.45	23.48	23.41		
3	16QAM	1	14	23.39	23.49	23.31		
3	16QAM	8	0	22.28	22.35	22.24	22.5	2
3	16QAM	8	4	22.30	22.37	22.27		
3	16QAM	8	7	22.25	22.33	22.23		
3	16QAM	15	0	22.25	22.32	22.21		
3	64QAM	1	0	22.36	22.39	22.30	22.5	2
3	64QAM	1	8	22.33	22.40	22.29		
3	64QAM	1	14	22.29	22.39	22.26		
3	64QAM	8	0	21.19	21.28	21.16	21.5	3
3	64QAM	8	4	21.20	21.28	21.17		
3	64QAM	8	7	21.17	21.26	21.16		
3	64QAM	15	0	21.15	21.24	21.14		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	24.13	24.20	24.06	24.5	0
1.4	QPSK	1	3	24.21	24.27	24.11		
1.4	QPSK	1	5	24.12	24.18	23.87		
1.4	QPSK	3	0	24.20	24.26	24.10		
1.4	QPSK	3	1	24.24	24.30	24.16		
1.4	QPSK	3	3	24.19	24.25	23.97		
1.4	QPSK	6	0	23.15	23.23	23.09	23.5	1
1.4	16QAM	1	0	23.42	23.47	23.33	23.5	1
1.4	16QAM	1	3	23.48	23.50	23.32		
1.4	16QAM	1	5	23.38	23.45	23.25		
1.4	16QAM	3	0	23.21	23.25	23.05		
1.4	16QAM	3	1	23.24	23.29	23.08		
1.4	16QAM	3	3	23.19	23.24	22.99		
1.4	16QAM	6	0	22.24	22.29	22.17	22.5	2
1.4	64QAM	1	0	22.29	22.33	22.24	22.5	2
1.4	64QAM	1	3	22.29	22.40	22.25		
1.4	64QAM	1	5	22.24	22.35	22.20		
1.4	64QAM	3	0	22.25	22.30	22.18		
1.4	64QAM	3	1	22.30	22.34	22.22		
1.4	64QAM	3	3	22.24	22.30	22.14		
1.4	64QAM	6	0	21.09	21.14	21.02	21.5	3

<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	24.23	24.33	24.18	25	0
20	QPSK	1	49	24.11	24.21	24.08		
20	QPSK	1	99	24.17	24.16	23.86		
20	QPSK	50	0	23.23	23.31	23.15	24	1
20	QPSK	50	24	23.18	23.28	23.14		
20	QPSK	50	50	23.22	23.22	23.12		
20	QPSK	100	0	23.19	23.28	23.15		
20	16QAM	1	0	23.48	23.56	23.37	24	1
20	16QAM	1	49	23.35	23.47	23.34		
20	16QAM	1	99	23.46	23.43	23.10		
20	16QAM	50	0	22.25	22.35	22.18	23	2
20	16QAM	50	24	22.22	22.32	22.19		
20	16QAM	50	50	22.25	22.24	22.13		
20	16QAM	100	0	22.18	22.26	22.14		
20	64QAM	1	0	22.53	22.58	22.46	23	2
20	64QAM	1	49	22.38	22.49	22.35		
20	64QAM	1	99	22.48	22.43	22.36		
20	64QAM	50	0	21.33	21.43	21.25	22	3
20	64QAM	50	24	21.32	21.39	21.24		
20	64QAM	50	50	21.35	21.33	21.22		
20	64QAM	100	0	21.29	21.38	21.22		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	24.20	24.31	24.15	25	0
15	QPSK	1	37	24.08	24.19	24.07		
15	QPSK	1	74	24.20	24.16	23.88		
15	QPSK	36	0	23.21	23.33	23.15	24	1
15	QPSK	36	20	23.22	23.26	23.18		
15	QPSK	36	39	23.17	23.22	23.14		
15	QPSK	75	0	23.20	23.26	23.15		
15	16QAM	1	0	23.46	23.62	23.43	24	1
15	16QAM	1	37	23.34	23.48	23.31		
15	16QAM	1	74	23.46	23.44	23.28		
15	16QAM	36	0	22.24	22.31	22.17	23	2
15	16QAM	36	20	22.22	22.29	22.17		
15	16QAM	36	39	22.28	22.24	22.14		
15	16QAM	75	0	22.20	22.26	22.15		
15	64QAM	1	0	22.50	22.64	22.45	23	2
15	64QAM	1	37	22.39	22.45	22.34		
15	64QAM	1	74	22.48	22.43	22.37		
15	64QAM	36	0	21.31	21.42	21.25	22	3
15	64QAM	36	20	21.31	21.39	21.25		
15	64QAM	36	39	21.35	21.32	21.23		
15	64QAM	75	0	21.25	21.34	21.22		

Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	24.17	24.32	24.26	25	0
10	QPSK	1	25	23.99	24.31	24.16		
10	QPSK	1	49	23.95	24.21	23.88		
10	QPSK	25	0	23.19	23.31	23.13	24	1
10	QPSK	25	12	23.19	23.37	23.16		
10	QPSK	25	25	23.16	23.33	23.14		
10	QPSK	50	0	23.15	23.38	23.14		
10	16QAM	1	0	23.43	23.64	23.40	24	1
10	16QAM	1	25	23.37	23.59	23.37		
10	16QAM	1	49	23.32	23.52	23.28		
10	16QAM	25	0	22.17	22.36	22.14	23	2
10	16QAM	25	12	22.20	22.41	22.17		
10	16QAM	25	25	22.14	22.32	22.14		
10	16QAM	50	0	22.17	22.38	22.24		
10	64QAM	1	0	22.41	22.54	22.39	23	2
10	64QAM	1	25	22.40	22.48	22.37		
10	64QAM	1	49	22.36	22.43	22.34		
10	64QAM	25	0	21.24	21.34	21.21	22	3
10	64QAM	25	12	21.25	21.35	21.23		
10	64QAM	25	25	21.22	21.28	21.21		
10	64QAM	50	0	21.23	21.32	21.20		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	24.21	24.30	24.16	25	0
5	QPSK	1	12	24.22	24.27	24.10		
5	QPSK	1	24	24.17	24.24	23.84		
5	QPSK	12	0	23.24	23.32	23.21	24	1
5	QPSK	12	7	23.27	23.33	23.24		
5	QPSK	12	13	23.23	23.30	23.19		
5	QPSK	25	0	23.23	23.31	23.22		
5	16QAM	1	0	23.45	23.57	23.40	24	1
5	16QAM	1	12	23.44	23.56	23.38		
5	16QAM	1	24	23.39	23.51	23.31		
5	16QAM	12	0	22.28	22.32	22.21	23	2
5	16QAM	12	7	22.29	22.36	22.24		
5	16QAM	12	13	22.24	22.30	22.20		
5	16QAM	25	0	22.25	22.35	22.21		
5	64QAM	1	0	22.39	22.49	22.38	23	2
5	64QAM	1	12	22.37	22.47	22.37		
5	64QAM	1	24	22.36	22.41	22.33		
5	64QAM	12	0	21.28	21.38	21.25	22	3
5	64QAM	12	7	21.31	21.39	21.29		
5	64QAM	12	13	21.25	21.35	21.26		
5	64QAM	25	0	21.21	21.30	21.22		

<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	23.95	24.09	24.15	25	0
10	QPSK	1	25	24.04	24.21	24.13		
10	QPSK	1	49	24.08	24.23	24.15		
10	QPSK	25	0	22.97	23.25	23.19	24	1
10	QPSK	25	12	23.11	23.26	23.18		
10	QPSK	25	25	23.15	23.22	23.29		
10	QPSK	50	0	23.09	23.23	23.19		
10	16QAM	1	0	23.22	23.38	23.42	24	1
10	16QAM	1	25	23.31	23.45	23.42		
10	16QAM	1	49	23.36	23.50	23.39		
10	16QAM	25	0	22.00	22.24	22.19	23	2
10	16QAM	25	12	22.12	22.25	22.22		
10	16QAM	25	25	22.17	22.21	22.28		
10	16QAM	50	0	22.08	22.24	22.21		
10	64QAM	1	0	22.08	22.23	22.27	23	2
10	64QAM	1	25	22.16	22.31	22.29		
10	64QAM	1	49	22.19	22.36	22.31		
10	64QAM	25	0	20.94	21.21	21.16	22	3
10	64QAM	25	12	21.08	21.21	21.18		
10	64QAM	25	25	21.10	21.17	21.24		
10	64QAM	50	0	21.04	21.20	21.16		
Channel				23035	23095	23155	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	23.93	24.05	24.13	25	0
5	QPSK	1	12	23.92	24.16	24.18		
5	QPSK	1	24	24.04	24.15	24.03		
5	QPSK	12	0	22.99	23.23	23.23	24	1
5	QPSK	12	7	23.02	23.23	23.26		
5	QPSK	12	13	23.08	23.21	23.21		
5	QPSK	25	0	22.96	23.20	23.26		
5	16QAM	1	0	23.21	23.32	23.38	24	1
5	16QAM	1	12	23.21	23.40	23.45		
5	16QAM	1	24	23.27	23.40	23.30		
5	16QAM	12	0	22.01	22.23	22.26	23	2
5	16QAM	12	7	22.05	22.24	22.28		
5	16QAM	12	13	22.10	22.19	22.23		
5	16QAM	25	0	22.01	22.23	22.26		
5	64QAM	1	0	22.10	22.23	22.27	23	2
5	64QAM	1	12	22.05	22.29	22.33		
5	64QAM	1	24	22.16	22.29	22.31		
5	64QAM	12	0	21.00	21.26	21.29	22	3
5	64QAM	12	7	21.01	21.24	21.30		
5	64QAM	12	13	21.07	21.20	21.27		
5	64QAM	25	0	20.93	21.16	21.23		

Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	23.90	24.14	24.13	25	0
3	QPSK	1	8	23.88	24.11	24.12		
3	QPSK	1	14	24.00	24.11	24.03		
3	QPSK	8	0	22.92	23.16	23.20	24	1
3	QPSK	8	4	22.97	23.19	23.23		
3	QPSK	8	7	22.93	23.17	23.20		
3	QPSK	15	0	22.96	23.15	23.19		
3	16QAM	1	0	23.14	23.37	23.38	24	1
3	16QAM	1	8	23.16	23.38	23.38		
3	16QAM	1	14	23.23	23.36	23.29		
3	16QAM	8	0	22.00	22.22	22.24	23	2
3	16QAM	8	4	22.03	22.25	22.28		
3	16QAM	8	7	22.01	22.24	22.26		
3	16QAM	15	0	22.00	22.21	22.20		
3	64QAM	1	0	22.06	22.30	22.31	23	2
3	64QAM	1	8	22.06	22.29	22.30		
3	64QAM	1	14	22.16	22.27	22.30		
3	64QAM	8	0	20.97	21.21	21.24	22	3
3	64QAM	8	4	21.02	21.23	21.28		
3	64QAM	8	7	20.97	21.23	21.24		
3	64QAM	15	0	20.95	21.18	21.23		
Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	23.85	24.03	24.02	25	0
1.4	QPSK	1	3	23.90	24.10	24.09		
1.4	QPSK	1	5	23.82	24.03	23.93		
1.4	QPSK	3	0	23.85	24.09	24.09		
1.4	QPSK	3	1	23.92	24.13	24.14		
1.4	QPSK	3	3	23.86	24.08	24.03		
1.4	QPSK	6	0	22.90	23.08	23.10	24	1
1.4	16QAM	1	0	23.10	23.28	23.27	24	1
1.4	16QAM	1	3	23.17	23.35	23.32		
1.4	16QAM	1	5	23.10	23.28	23.18		
1.4	16QAM	3	0	22.88	23.10	23.10		
1.4	16QAM	3	1	22.94	23.14	23.13		
1.4	16QAM	3	3	22.88	23.09	23.07		
1.4	16QAM	6	0	21.97	22.17	22.20	23	2
1.4	64QAM	1	0	22.03	22.23	22.23	23	2
1.4	64QAM	1	3	22.06	22.28	22.28		
1.4	64QAM	1	5	22.00	22.21	22.20		
1.4	64QAM	3	0	21.97	22.18	22.20		
1.4	64QAM	3	1	22.02	22.24	22.24		
1.4	64QAM	3	3	21.96	22.19	22.20		
1.4	64QAM	6	0	20.88	21.10	21.10	22	3

<LTE Band 13>

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				23230				
Frequency (MHz)				782				
10	QPSK	1	0	23.00			25	0
10	QPSK	1	25	24.26				
10	QPSK	1	49	24.15				
10	QPSK	25	0	23.24			24	1
10	QPSK	25	12	23.33				
10	QPSK	25	25	23.26				
10	QPSK	50	0	23.31				
10	16QAM	1	0	22.25			24	1
10	16QAM	1	25	23.51				
10	16QAM	1	49	23.41				
10	16QAM	25	0	22.26			23	2
10	16QAM	25	12	22.35				
10	16QAM	25	25	22.27				
10	16QAM	50	0	22.33				
10	64QAM	1	0	21.27			23	2
10	64QAM	1	25	22.38				
10	64QAM	1	49	22.25				
10	64QAM	25	0	21.18			22	3
10	64QAM	25	12	21.27				
10	64QAM	25	25	21.19				
10	64QAM	50	0	21.25				
Channel				23205	23230	23255	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	23.00	24.09	24.25	25	0
5	QPSK	1	12	24.13	24.23	24.19		
5	QPSK	1	24	24.21	24.21	24.14		
5	QPSK	12	0	22.00	23.32	23.26	24	1
5	QPSK	12	7	23.06	23.32	23.26		
5	QPSK	12	13	23.28	23.26	23.21		
5	QPSK	25	0	23.16	23.28	23.24		
5	16QAM	1	0	22.00	23.35	23.51	24	1
5	16QAM	1	12	23.35	23.50	23.46		
5	16QAM	1	24	23.47	23.45	23.39		
5	16QAM	12	0	21.98	22.33	22.31	23	2
5	16QAM	12	7	22.21	22.34	22.28		
5	16QAM	12	13	22.28	22.27	22.23		
5	16QAM	25	0	22.22	22.29	22.24		
5	64QAM	1	0	21.00	22.27	22.36	23	2
5	64QAM	1	12	22.28	22.35	22.32		
5	64QAM	1	24	22.36	22.30	22.25		
5	64QAM	12	0	21.18	21.30	21.26	22	3
5	64QAM	12	7	21.22	21.31	21.26		
5	64QAM	12	13	21.27	21.25	21.22		
5	64QAM	25	0	21.18	21.24	21.19		

<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	24.29	24.13	24.11	25	0
10	QPSK	1	25	24.33	24.22	24.20		
10	QPSK	1	49	24.39	24.26	23.96		
10	QPSK	25	0	23.30	23.17	23.24	24	1
10	QPSK	25	12	23.40	23.28	23.27		
10	QPSK	25	25	23.39	23.37	23.35		
10	QPSK	50	0	23.40	23.27	23.26		
10	16QAM	1	0	23.49	23.36	23.34	24	1
10	16QAM	1	25	23.57	23.45	23.44		
10	16QAM	1	49	23.64	23.49	23.30		
10	16QAM	25	0	22.31	22.16	22.27	23	2
10	16QAM	25	12	22.41	22.30	22.28		
10	16QAM	25	25	22.38	22.36	22.34		
10	16QAM	50	0	22.40	22.27	22.27		
10	64QAM	1	0	22.39	22.26	22.25	23	2
10	64QAM	1	25	22.46	22.35	22.34		
10	64QAM	1	49	22.52	22.37	22.36		
10	64QAM	25	0	21.26	21.14	21.23	22	3
10	64QAM	25	12	21.38	21.27	21.26		
10	64QAM	25	25	21.30	21.31	21.30		
10	64QAM	50	0	21.34	21.23	21.24		
Channel				23755	23790	23825	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	24.25	24.08	24.16	25	0
5	QPSK	1	12	24.23	24.18	24.24		
5	QPSK	1	24	24.32	24.27	23.84		
5	QPSK	12	0	23.27	23.26	23.30	24	1
5	QPSK	12	7	23.30	23.29	23.33		
5	QPSK	12	13	23.29	23.22	23.29		
5	QPSK	25	0	23.28	23.25	23.32		
5	16QAM	1	0	23.48	23.35	23.41	24	1
5	16QAM	1	12	23.46	23.45	23.50		
5	16QAM	1	24	23.54	23.52	23.15		
5	16QAM	12	0	22.32	22.29	22.33	23	2
5	16QAM	12	7	22.31	22.29	22.34		
5	16QAM	12	13	22.29	22.27	22.29		
5	16QAM	25	0	22.29	22.25	22.31		
5	64QAM	1	0	22.39	22.23	22.33	23	2
5	64QAM	1	12	22.35	22.31	22.38		
5	64QAM	1	24	22.45	22.41	22.20		
5	64QAM	12	0	21.33	21.26	21.32	22	3
5	64QAM	12	7	21.35	21.30	21.36		
5	64QAM	12	13	21.31	21.27	21.33		
5	64QAM	25	0	21.26	21.24	21.29		

<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	24.26	24.34	24.48	24.5	0
20	QPSK	1	49	23.95	24.02	24.25		
20	QPSK	1	99	24.15	24.12	24.26		
20	QPSK	50	0	24.07	24.19	24.33	24.5	0
20	QPSK	50	24	24.06	24.11	24.18		
20	QPSK	50	50	23.97	24.07	24.32		
20	QPSK	100	0	24.03	24.12	24.35		
20	16QAM	1	0	24.32	24.40	24.47	24.5	0
20	16QAM	1	49	24.23	24.28	24.41		
20	16QAM	1	99	24.43	24.38	24.24		
20	16QAM	50	0	23.71	23.90	23.48	24.5	0
20	16QAM	50	24	23.65	23.93	23.32		
20	16QAM	50	50	23.55	24.02	23.86		
20	16QAM	100	0	23.48	23.54	23.85		
20	64QAM	1	0	23.55	23.40	23.83	24.5	0
20	64QAM	1	49	23.95	23.65	23.29		
20	64QAM	1	99	23.44	24.08	22.91		
20	64QAM	50	0	22.67	22.43	22.32	23.5	1
20	64QAM	50	24	22.80	22.63	22.37		
20	64QAM	50	50	22.61	22.96	22.55		
20	64QAM	100	0	22.43	22.54	22.82		
Channel				26115	26340	26615	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	23.95	24.08	24.19	24.5	0
15	QPSK	1	37	23.77	23.85	24.01		
15	QPSK	1	74	23.72	23.79	23.94		
15	QPSK	36	0	23.92	24.02	24.07	24.5	0
15	QPSK	36	20	23.87	23.96	24.12		
15	QPSK	36	39	23.84	23.86	24.02		
15	QPSK	75	0	23.86	23.96	24.12		
15	16QAM	1	0	24.20	24.27	24.25	24.5	0
15	16QAM	1	37	24.08	24.11	24.29		
15	16QAM	1	74	24.02	24.05	23.63		
15	16QAM	36	0	23.60	23.41	23.23	24.5	0
15	16QAM	36	20	23.82	23.68	23.68		
15	16QAM	36	39	23.74	23.86	23.45		
15	16QAM	75	0	23.59	23.59	23.67		
15	64QAM	1	0	23.60	23.45	23.40	24.5	0
15	64QAM	1	37	23.91	23.66	23.59		
15	64QAM	1	74	23.84	24.00	22.79		
15	64QAM	36	0	22.63	22.47	22.28	23.5	1
15	64QAM	36	20	22.89	22.71	22.59		
15	64QAM	36	39	22.83	22.95	22.53		
15	64QAM	75	0	22.58	22.54	22.35		

Channel				26090	26340	26640	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	24.09	24.21	24.13	24.5	0
10	QPSK	1	25	23.78	23.87	24.05		
10	QPSK	1	49	23.96	24.02	23.96		
10	QPSK	25	0	23.88	23.98	24.14	24.5	0
10	QPSK	25	12	23.87	23.94	24.12		
10	QPSK	25	25	23.83	23.87	23.98		
10	QPSK	50	0	23.85	23.94	24.11		
10	16QAM	1	0	24.33	24.33	24.34	24.5	0
10	16QAM	1	25	24.07	24.14	24.30		
10	16QAM	1	49	24.23	24.29	23.59		
10	16QAM	25	0	23.50	23.41	23.73	24.5	0
10	16QAM	25	12	23.71	23.63	23.79		
10	16QAM	25	25	23.80	23.86	23.25		
10	16QAM	50	0	23.68	23.76	23.53		
10	64QAM	1	0	23.50	23.45	23.42	24.5	0
10	64QAM	1	25	23.78	23.69	23.97		
10	64QAM	1	49	23.98	24.13	22.67		
10	64QAM	25	0	22.52	22.43	22.66	23.5	1
10	64QAM	25	12	22.70	22.59	22.81		
10	64QAM	25	25	22.78	22.85	22.40		
10	64QAM	50	0	22.70	22.66	22.51		
Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	23.85	23.93	24.11	24.5	0
5	QPSK	1	12	23.78	23.88	24.04		
5	QPSK	1	24	23.77	23.86	23.97		
5	QPSK	12	0	23.87	23.98	24.11	24.5	0
5	QPSK	12	7	23.86	23.96	23.99		
5	QPSK	12	13	23.82	23.90	23.60		
5	QPSK	25	0	23.84	23.93	23.88		
5	16QAM	1	0	24.08	24.18	24.33	24.5	0
5	16QAM	1	12	24.03	24.12	24.11		
5	16QAM	1	24	24.05	24.12	23.65		
5	16QAM	12	0	23.37	23.47	23.58	24.5	0
5	16QAM	12	7	23.50	23.65	23.18		
5	16QAM	12	13	23.59	23.75	22.80		
5	16QAM	25	0	23.43	23.61	23.15		
5	64QAM	1	0	23.49	23.55	23.95	24.5	0
5	64QAM	1	12	23.54	23.68	23.40		
5	64QAM	1	24	23.78	23.96	22.64		
5	64QAM	12	0	22.45	22.56	22.73	23.5	1
5	64QAM	12	7	22.54	22.71	22.41		
5	64QAM	12	13	22.64	22.81	22.00		
5	64QAM	25	0	22.46	22.61	22.33		

Channel				26055	26340	26675	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	23.81	23.90	24.05	24.5	0
3	QPSK	1	8	23.76	23.88	24.00		
3	QPSK	1	14	23.76	23.86	23.98		
3	QPSK	8	0	23.85	23.92	23.89	24.5	0
3	QPSK	8	4	23.84	23.95	23.64		
3	QPSK	8	7	23.79	23.88	23.47		
3	QPSK	15	0	23.84	23.92	23.60		
3	16QAM	1	0	24.05	24.10	24.17	24.5	0
3	16QAM	1	8	24.01	24.13	23.73		
3	16QAM	1	14	24.00	24.09	23.64		
3	16QAM	8	0	23.42	23.56	23.05	24.5	0
3	16QAM	8	4	23.46	23.69	22.89		
3	16QAM	8	7	23.44	23.71	22.68		
3	16QAM	15	0	23.38	23.61	22.88		
3	64QAM	1	0	23.50	23.62	23.49	24.5	0
3	64QAM	1	8	23.51	23.76	22.89		
3	64QAM	1	14	23.66	23.92	22.68		
3	64QAM	8	0	22.42	22.59	22.27	23.5	1
3	64QAM	8	4	22.47	22.70	22.03		
3	64QAM	8	7	22.46	22.74	21.84		
3	64QAM	15	0	22.41	22.64	22.09		
Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	23.71	23.82	23.90	24.5	0
1.4	QPSK	1	3	23.79	23.87	23.97		
1.4	QPSK	1	5	23.71	23.77	23.87		
1.4	QPSK	3	0	23.74	23.86	23.97		
1.4	QPSK	3	1	23.79	23.91	24.02		
1.4	QPSK	3	3	23.74	23.85	23.97		
1.4	QPSK	6	0	23.75	23.85	23.37	24.5	0
1.4	16QAM	1	0	23.95	24.06	23.53	24.5	0
1.4	16QAM	1	3	24.04	24.12	23.47		
1.4	16QAM	1	5	23.97	24.04	23.51		
1.4	16QAM	3	0	23.77	23.85	23.30		
1.4	16QAM	3	1	23.83	23.90	23.28		
1.4	16QAM	3	3	23.76	23.84	23.25		
1.4	16QAM	6	0	23.30	23.57	22.53	24.5	0
1.4	64QAM	1	0	23.39	23.57	22.75	24.5	0
1.4	64QAM	1	3	23.42	23.70	22.50		
1.4	64QAM	1	5	23.39	23.72	22.55		
1.4	64QAM	3	0	23.40	23.62	22.66		
1.4	64QAM	3	1	23.43	23.66	22.69		
1.4	64QAM	3	3	23.37	23.68	22.55		
1.4	64QAM	6	0	22.26	22.51	21.64	21.5	3

<LTE Band 26>

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				26765	26865	26965		
Frequency (MHz)				821.5	831.5	841.5		
15	QPSK	1	0	23.64	23.76	23.80	25	0
15	QPSK	1	37	23.73	23.87	23.87		
15	QPSK	1	74	23.73	23.88	23.90		
15	QPSK	36	0	23.78	23.80	23.96	25	0
15	QPSK	36	20	23.82	23.94	23.97		
15	QPSK	36	39	23.82	23.89	24.01		
15	QPSK	75	0	23.74	23.89	23.94		
15	16QAM	1	0	23.88	24.04	24.08	25	0
15	16QAM	1	37	24.02	24.12	24.18		
15	16QAM	1	74	24.01	24.22	24.17		
15	16QAM	36	0	23.76	23.82	23.97	25	0
15	16QAM	36	20	23.81	23.90	24.00		
15	16QAM	36	39	23.83	23.86	24.03		
15	16QAM	75	0	23.76	23.87	23.97		
15	64QAM	1	0	23.54	24.01	24.02	25	0
15	64QAM	1	37	23.92	24.02	24.01		
15	64QAM	1	74	23.85	23.93	23.92		
15	64QAM	36	0	22.69	23.23	23.62	24	1
15	64QAM	36	20	23.13	23.22	23.41		
15	64QAM	36	39	23.19	23.43	23.16		
15	64QAM	75	0	23.01	23.25	23.22		
Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	23.82	23.77	23.83	25	0
10	QPSK	1	25	23.83	23.78	23.77		
10	QPSK	1	49	23.84	23.79	23.76		
10	QPSK	25	0	23.83	23.87	23.86	25	0
10	QPSK	25	12	23.89	23.84	23.85		
10	QPSK	25	25	23.81	23.81	23.87		
10	QPSK	50	0	23.87	23.81	23.91		
10	16QAM	1	0	24.03	24.04	24.11	25	0
10	16QAM	1	25	24.09	24.06	24.01		
10	16QAM	1	49	24.12	24.04	24.05		
10	16QAM	25	0	23.31	23.81	23.84	25	0
10	16QAM	25	12	23.41	23.86	23.80		
10	16QAM	25	25	23.82	23.78	23.82		
10	16QAM	50	0	23.42	23.75	23.89		
10	64QAM	1	0	23.45	23.77	24.01	25	0
10	64QAM	1	25	23.76	23.94	23.93		
10	64QAM	1	49	24.01	23.93	23.82		
10	64QAM	25	0	22.50	23.14	23.36	24	1
10	64QAM	25	12	22.66	23.17	23.17		
10	64QAM	25	25	22.99	23.23	22.99		
10	64QAM	50	0	22.69	22.98	22.99		

Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	23.80	23.82	23.87	25	0
5	QPSK	1	12	23.75	23.77	23.82		
5	QPSK	1	24	23.83	23.74	23.79		
5	QPSK	12	0	23.85	23.85	23.90	25	0
5	QPSK	12	7	23.83	23.85	23.91		
5	QPSK	12	13	23.87	23.79	23.86		
5	QPSK	25	0	23.82	23.82	23.91		
5	16QAM	1	0	24.01	24.08	24.18	25	0
5	16QAM	1	12	23.98	24.07	24.14		
5	16QAM	1	24	24.05	24.05	24.09		
5	16QAM	12	0	23.22	23.86	23.90	25	0
5	16QAM	12	7	23.22	23.85	23.87		
5	16QAM	12	13	23.22	23.81	23.76		
5	16QAM	25	0	23.23	23.83	23.81		
5	64QAM	1	0	23.45	24.02	24.06	25	0
5	64QAM	1	12	23.45	23.97	23.96		
5	64QAM	1	24	23.57	23.92	23.80		
5	64QAM	12	0	22.36	23.24	23.07	24	1
5	64QAM	12	7	22.42	23.13	23.03		
5	64QAM	12	13	22.47	23.14	22.92		
5	64QAM	25	0	22.45	23.17	22.99		
Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	23.78	23.78	23.85	25	0
3	QPSK	1	8	23.76	23.78	23.81		
3	QPSK	1	14	23.74	23.76	23.77		
3	QPSK	8	0	23.84	23.84	23.88	25	0
3	QPSK	8	4	23.84	23.85	23.90		
3	QPSK	8	7	23.80	23.82	23.86		
3	QPSK	15	0	23.81	23.81	23.86		
3	16QAM	1	0	23.96	24.05	24.12	25	0
3	16QAM	1	8	23.97	24.04	24.11		
3	16QAM	1	14	23.93	24.00	24.05		
3	16QAM	8	0	23.25	23.84	23.84	25	0
3	16QAM	8	4	23.25	23.90	23.88		
3	16QAM	8	7	23.15	23.86	23.77		
3	16QAM	15	0	23.20	23.83	23.79		
3	64QAM	1	0	23.43	23.99	24.02	25	0
3	64QAM	1	8	23.47	23.96	23.95		
3	64QAM	1	14	23.49	23.93	23.74		
3	64QAM	8	0	22.39	23.16	23.09	24	1
3	64QAM	8	4	22.43	23.18	23.00		
3	64QAM	8	7	22.42	23.16	22.90		
3	64QAM	15	0	22.33	23.07	22.88		

Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	23.71	23.71	23.74	25	0
1.4	QPSK	1	3	23.76	23.75	23.79		
1.4	QPSK	1	5	23.67	23.69	23.70		
1.4	QPSK	3	0	23.73	23.75	23.75		
1.4	QPSK	3	1	23.78	23.77	23.80		
1.4	QPSK	3	3	23.73	23.74	23.75		
1.4	QPSK	6	0	23.73	23.74	23.78	25	0
1.4	16QAM	1	0	23.89	23.95	24.00	25	0
1.4	16QAM	1	3	23.94	24.02	24.07		
1.4	16QAM	1	5	23.86	23.95	23.99		
1.4	16QAM	3	0	23.73	23.76	23.82		
1.4	16QAM	3	1	23.77	23.80	23.86		
1.4	16QAM	3	3	23.70	23.73	23.79		
1.4	16QAM	6	0	23.11	23.80	23.65	25	0
1.4	64QAM	1	0	23.39	23.89	23.88	25	0
1.4	64QAM	1	3	23.30	23.96	23.75		
1.4	64QAM	1	5	23.42	23.89	23.74		
1.4	64QAM	3	0	23.28	23.86	23.84		
1.4	64QAM	3	1	23.24	23.86	23.82		
1.4	64QAM	3	3	23.11	23.83	23.75		
1.4	64QAM	6	0	22.20	22.97	22.81	24	1

<LTE Band 30>

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					27710			
Frequency (MHz)					2310			
10	QPSK	1	0		24.20		25	0
10	QPSK	1	25		24.29			
10	QPSK	1	49		24.19			
10	QPSK	25	0		23.38		24	1
10	QPSK	25	12		23.34			
10	QPSK	25	25		23.27			
10	QPSK	50	0		23.33			
10	16QAM	1	0		23.44		24	1
10	16QAM	1	25		23.52			
10	16QAM	1	49		23.44			
10	16QAM	25	0		22.38		23	2
10	16QAM	25	12		22.35			
10	16QAM	25	25		22.29			
10	16QAM	50	0		22.36			
10	64QAM	1	0		22.60		23	2
10	64QAM	1	25		22.60			
10	64QAM	1	49		22.53			
10	64QAM	25	0		21.56		22	3
10	64QAM	25	12		21.52			
10	64QAM	25	25		21.44			
10	64QAM	50	0		21.52			
Channel				27685	27710	27735	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2307.5	2310	2312.5		
5	QPSK	1	0	24.14	24.20	24.22	25	0
5	QPSK	1	12	24.28	24.28	24.27		
5	QPSK	1	24	24.28	24.26	24.23		
5	QPSK	12	0	23.34	23.35	23.34	24	1
5	QPSK	12	7	23.36	23.34	23.31		
5	QPSK	12	13	23.29	23.27	23.28		
5	QPSK	25	0	23.32	23.31	23.31		
5	16QAM	1	0	23.39	23.58	23.60	24	1
5	16QAM	1	12	23.53	23.53	23.52		
5	16QAM	1	24	23.51	23.49	23.48		
5	16QAM	12	0	22.39	22.36	22.35	23	2
5	16QAM	12	7	22.37	22.34	22.34		
5	16QAM	12	13	22.32	22.31	22.29		
5	16QAM	25	0	22.34	22.33	22.32		
5	64QAM	1	0	22.57	22.69	22.68	23	2
5	64QAM	1	12	22.62	22.60	22.58		
5	64QAM	1	24	22.60	22.58	22.56		
5	64QAM	12	0	21.56	21.56	21.54	22	3
5	64QAM	12	7	21.56	21.56	21.53		
5	64QAM	12	13	21.51	21.50	21.49		
5	64QAM	25	0	21.51	21.49	21.47		

<LTE Band 66>

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				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	23.87	23.88	23.75	24.5	0
20	QPSK	1	49	23.66	23.60	23.63		
20	QPSK	1	99	23.68	23.56	23.51		
20	QPSK	50	0	22.84	22.78	22.68	23.5	1
20	QPSK	50	24	22.76	22.70	22.65		
20	QPSK	50	50	22.67	22.59	22.59		
20	QPSK	100	0	22.76	22.66	22.67		
20	16QAM	1	0	23.13	23.04	22.98	23.5	1
20	16QAM	1	49	22.87	22.71	22.81		
20	16QAM	1	99	22.93	22.70	22.73		
20	16QAM	50	0	21.84	21.73	21.70	22.5	2
20	16QAM	50	24	21.77	21.63	21.72		
20	16QAM	50	50	21.69	21.52	21.60		
20	16QAM	100	0	21.74	21.61	21.67		
20	64QAM	1	0	22.07	22.04	21.95	22.5	2
20	64QAM	1	49	21.84	21.67	21.78		
20	64QAM	1	99	21.89	21.66	21.67		
20	64QAM	50	0	20.83	20.72	20.70	21.5	3
20	64QAM	50	24	20.77	20.63	20.71		
20	64QAM	50	50	20.72	20.52	20.61		
20	64QAM	100	0	20.78	20.59	20.69		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	23.87	23.73	23.75	24.5	0
15	QPSK	1	37	23.68	23.46	23.63		
15	QPSK	1	74	23.57	23.39	23.61		
15	QPSK	36	0	22.72	22.64	22.72	23.5	1
15	QPSK	36	20	22.68	22.59	22.76		
15	QPSK	36	39	22.61	22.47	22.64		
15	QPSK	75	0	22.68	22.60	22.64		
15	16QAM	1	0	23.03	23.01	22.93	23.5	1
15	16QAM	1	37	22.77	22.69	22.78		
15	16QAM	1	74	22.81	22.67	22.80		
15	16QAM	36	0	21.75	21.71	21.64	22.5	2
15	16QAM	36	20	21.67	21.59	21.65		
15	16QAM	36	39	21.59	21.48	21.58		
15	16QAM	75	0	21.67	21.61	21.65		
15	64QAM	1	0	21.94	21.93	21.90	22.5	2
15	64QAM	1	37	21.77	21.68	21.73		
15	64QAM	1	74	21.73	21.58	21.71		
15	64QAM	36	0	20.75	20.70	20.67	21.5	3
15	64QAM	36	20	20.68	20.60	20.68		
15	64QAM	36	39	20.63	20.52	20.60		
15	64QAM	75	0	20.65	20.60	20.63		

Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	23.71	23.71	23.60	24.5	0
10	QPSK	1	25	23.60	23.56	23.46		
10	QPSK	1	49	23.58	23.49	23.41		
10	QPSK	25	0	22.72	22.66	22.56	23.5	1
10	QPSK	25	12	22.66	22.66	22.53		
10	QPSK	25	25	22.65	22.56	22.49		
10	QPSK	50	0	22.66	22.49	22.53		
10	16QAM	1	0	23.00	22.86	22.86	23.5	1
10	16QAM	1	25	22.88	22.73	22.71		
10	16QAM	1	49	22.79	22.63	22.70		
10	16QAM	25	0	21.73	21.57	21.57	22.5	2
10	16QAM	25	12	21.68	21.56	21.52		
10	16QAM	25	25	21.64	21.47	21.48		
10	16QAM	50	0	21.67	21.54	21.51		
10	64QAM	1	0	21.88	21.75	21.77	22.5	2
10	64QAM	1	25	21.78	21.63	21.64		
10	64QAM	1	49	21.74	21.54	21.59		
10	64QAM	25	0	20.73	20.58	20.54	21.5	3
10	64QAM	25	12	20.71	20.57	20.56		
10	64QAM	25	25	20.66	20.49	20.48		
10	64QAM	50	0	20.72	20.56	20.56		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	23.59	23.55	23.71	24.5	0
5	QPSK	1	12	23.51	23.44	23.64		
5	QPSK	1	24	23.53	23.43	23.62		
5	QPSK	12	0	22.63	22.51	22.70	23.5	1
5	QPSK	12	7	22.59	22.52	22.68		
5	QPSK	12	13	22.54	22.48	22.66		
5	QPSK	25	0	22.59	22.48	22.68		
5	16QAM	1	0	22.86	22.79	22.95	23.5	1
5	16QAM	1	12	22.79	22.71	22.90		
5	16QAM	1	24	22.78	22.67	22.81		
5	16QAM	12	0	21.64	21.56	21.63	22.5	2
5	16QAM	12	7	21.61	21.56	21.62		
5	16QAM	12	13	21.56	21.51	21.58		
5	16QAM	25	0	21.61	21.50	21.60		
5	64QAM	1	0	21.81	21.71	21.81	22.5	2
5	64QAM	1	12	21.72	21.66	21.73		
5	64QAM	1	24	21.72	21.59	21.71		
5	64QAM	12	0	20.68	20.60	20.64	21.5	3
5	64QAM	12	7	20.66	20.59	20.66		
5	64QAM	12	13	20.63	20.54	20.63		
5	64QAM	25	0	20.60	20.50	20.59		

Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	23.54	23.45	23.55	24.5	0
3	QPSK	1	8	23.52	23.44	23.52		
3	QPSK	1	14	23.48	23.39	23.49		
3	QPSK	8	0	22.58	22.47	22.56	23.5	1
3	QPSK	8	4	22.58	22.48	22.59		
3	QPSK	8	7	22.55	22.46	22.54		
3	QPSK	15	0	22.56	22.47	22.54		
3	16QAM	1	0	22.78	22.73	22.79	23.5	1
3	16QAM	1	8	22.82	22.72	22.79		
3	16QAM	1	14	22.74	22.66	22.75		
3	16QAM	8	0	21.63	21.54	21.63	22.5	2
3	16QAM	8	4	21.63	21.56	21.66		
3	16QAM	8	7	21.59	21.52	21.61		
3	16QAM	15	0	21.60	21.50	21.60		
3	64QAM	1	0	21.70	21.63	21.72	22.5	2
3	64QAM	1	8	21.70	21.62	21.72		
3	64QAM	1	14	21.67	21.58	21.67		
3	64QAM	8	0	20.64	20.55	20.64	21.5	3
3	64QAM	8	4	20.63	20.56	20.64		
3	64QAM	8	7	20.59	20.50	20.59		
3	64QAM	15	0	20.58	20.50	20.58		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	23.45	23.34	23.47	24.5	0
1.4	QPSK	1	3	23.51	23.42	23.54		
1.4	QPSK	1	5	23.43	23.35	23.47		
1.4	QPSK	3	0	23.47	23.40	23.50		
1.4	QPSK	3	1	23.50	23.44	23.55		
1.4	QPSK	3	3	23.47	23.40	23.49		
1.4	QPSK	6	0	22.48	22.42	22.51	23.5	1
1.4	16QAM	1	0	22.69	22.64	22.70	23.5	1
1.4	16QAM	1	3	22.78	22.69	22.80		
1.4	16QAM	1	5	22.66	22.59	22.69		
1.4	16QAM	3	0	22.50	22.43	22.51		
1.4	16QAM	3	1	22.55	22.48	22.58		
1.4	16QAM	3	3	22.47	22.41	22.50		
1.4	16QAM	6	0	21.59	21.51	21.57	22.5	2
1.4	64QAM	1	0	21.77	21.73	21.71	22.5	2
1.4	64QAM	1	3	21.81	21.74	21.69		
1.4	64QAM	1	5	21.73	21.68	21.62		
1.4	64QAM	3	0	21.71	21.66	21.59		
1.4	64QAM	3	1	21.75	21.71	21.61		
1.4	64QAM	3	3	21.72	21.65	21.60		
1.4	64QAM	6	0	20.62	20.53	20.55	21.5	3

<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.

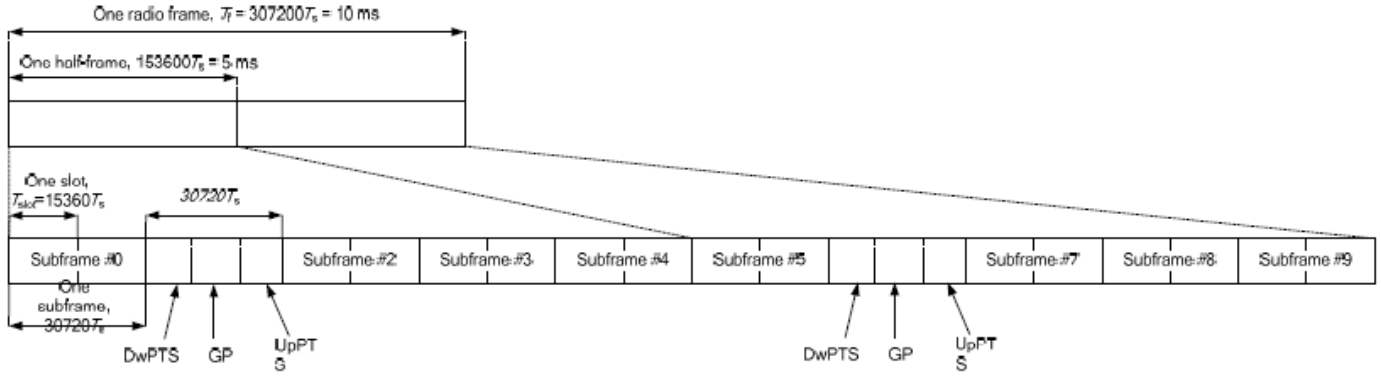


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

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 38>

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				37850	38000	38150		
Frequency (MHz)				2580	2595	2610		
20	QPSK	1	0	24.65	24.62	24.54	25	0
20	QPSK	1	49	24.54	24.47	24.27		
20	QPSK	1	99	24.53	24.43	23.72		
20	QPSK	50	0	23.66	23.63	23.38	24	1
20	QPSK	50	24	23.62	23.57	23.22		
20	QPSK	50	50	23.60	23.52	22.93		
20	QPSK	100	0	23.63	23.58	22.97		
20	16QAM	1	0	23.73	23.70	23.61	24	1
20	16QAM	1	49	23.59	23.54	23.49		
20	16QAM	1	99	23.56	23.48	22.85		
20	16QAM	50	0	22.68	22.64	22.56	23	2
20	16QAM	50	24	22.67	22.61	22.37		
20	16QAM	50	50	22.61	22.56	22.11		
20	16QAM	100	0	22.63	22.59	22.04		
20	64QAM	1	0	22.58	22.71	22.64	23	2
20	64QAM	1	49	22.56	22.51	22.58		
20	64QAM	1	99	22.50	22.50	22.17		
20	64QAM	50	0	21.61	22.00	21.56	22	3
20	64QAM	50	24	21.58	21.53	21.58		
20	64QAM	50	50	21.55	21.50	21.37		
20	64QAM	100	0	21.62	21.55	21.36		
Channel				37825	38000	38175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2577.5	2595	2612.5		
15	QPSK	1	0	24.62	24.57	24.43	25	0
15	QPSK	1	37	24.52	24.46	24.00		
15	QPSK	1	74	24.54	24.44	23.71		
15	QPSK	36	0	23.63	23.58	23.22	24	1
15	QPSK	36	20	23.61	23.56	23.09		
15	QPSK	36	39	23.58	23.53	22.85		
15	QPSK	75	0	23.63	23.55	22.95		
15	16QAM	1	0	23.69	23.65	23.56	24	1
15	16QAM	1	37	23.62	23.57	23.48		
15	16QAM	1	74	23.59	23.53	22.82		
15	16QAM	36	0	22.62	22.56	22.32	23	2
15	16QAM	36	20	22.58	22.54	22.14		
15	16QAM	36	39	22.56	22.50	21.83		
15	16QAM	75	0	22.63	22.58	22.13		
15	64QAM	1	0	22.78	22.66	22.63	23	2
15	64QAM	1	37	22.70	22.53	22.58		
15	64QAM	1	74	22.64	22.53	22.10		
15	64QAM	36	0	21.61	21.56	21.53	22	3
15	64QAM	36	20	21.60	21.55	21.41		
15	64QAM	36	39	21.54	21.47	21.19		
15	64QAM	75	0	21.58	21.51	21.24		

Channel				37800	38000	38200	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2575	2595	2615		
10	QPSK	1	0	24.59	24.52	24.04	25	0
10	QPSK	1	25	24.59	24.51	24.06		
10	QPSK	1	49	24.56	24.47	23.69		
10	QPSK	25	0	23.62	23.56	23.00	24	1
10	QPSK	25	12	23.62	23.57	22.92		
10	QPSK	25	25	23.58	23.52	22.77		
10	QPSK	50	0	23.59	23.55	22.64		
10	16QAM	1	0	23.65	23.62	23.21	24	1
10	16QAM	1	25	23.64	23.59	23.11		
10	16QAM	1	49	23.57	23.52	22.79		
10	16QAM	25	0	22.62	22.58	22.16	23	2
10	16QAM	25	12	22.65	22.59	22.09		
10	16QAM	25	25	22.60	22.51	21.92		
10	16QAM	50	0	22.64	22.59	21.87		
10	64QAM	1	0	22.62	22.57	22.51	23	2
10	64QAM	1	25	22.57	22.55	22.41		
10	64QAM	1	49	22.50	22.49	22.04		
10	64QAM	25	0	21.62	21.59	21.46	22	3
10	64QAM	25	12	21.62	21.61	21.33		
10	64QAM	25	25	21.59	21.54	21.20		
10	64QAM	50	0	21.58	21.54	21.13		
Channel				37775	38000	38225	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2572.5	2595	2617.5		
5	QPSK	1	0	24.56	24.53	23.80	25	0
5	QPSK	1	12	24.54	24.49	23.92		
5	QPSK	1	24	24.49	24.42	23.61		
5	QPSK	12	0	23.61	23.54	22.88	24	1
5	QPSK	12	7	23.62	23.57	22.83		
5	QPSK	12	13	23.58	23.54	22.74		
5	QPSK	25	0	23.62	23.53	22.74		
5	16QAM	1	0	23.60	23.54	22.97	24	1
5	16QAM	1	12	23.53	23.58	22.97		
5	16QAM	1	24	23.59	23.53	22.77		
5	16QAM	12	0	22.58	22.54	21.94	23	2
5	16QAM	12	7	22.61	22.54	21.95		
5	16QAM	12	13	22.57	22.51	21.82		
5	16QAM	25	0	22.61	22.56	21.86		
5	64QAM	1	0	22.58	22.55	22.28	23	2
5	64QAM	1	12	22.58	22.52	22.22		
5	64QAM	1	24	22.55	22.52	22.04		
5	64QAM	12	0	21.58	21.59	21.23	22	3
5	64QAM	12	7	21.61	21.58	21.15		
5	64QAM	12	13	21.56	21.53	21.08		
5	64QAM	25	0	21.60	21.55	21.11		

<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	25.48	25.64	25.69	24.99	24.26	26	0
20	QPSK	1	49	25.34	25.52	25.52	24.87	24.25		
20	QPSK	1	99	25.43	25.58	25.60	24.97	24.03		
20	QPSK	50	0	24.48	24.61	24.63	23.63	23.85	25	1
20	QPSK	50	24	24.43	24.49	24.60	23.60	23.91		
20	QPSK	50	50	24.45	24.53	24.53	23.51	23.90		
20	QPSK	100	0	24.42	24.58	24.54	23.64	23.86		
20	16QAM	1	0	24.54	24.71	24.76	24.06	23.30	25	1
20	16QAM	1	49	24.39	24.60	24.58	24.19	24.34		
20	16QAM	1	99	24.44	24.63	24.66	24.00	23.39		
20	16QAM	50	0	23.46	23.62	23.64	22.57	23.09	24	2
20	16QAM	50	24	23.46	23.61	23.62	22.64	23.17		
20	16QAM	50	50	23.48	23.55	23.53	22.60	22.98		
20	16QAM	100	0	23.45	23.59	23.61	22.30	22.65		
20	64QAM	1	0	23.49	23.65	23.67	23.63	23.28	24	2
20	64QAM	1	49	23.35	23.49	23.54	23.61	23.13		
20	64QAM	1	99	23.42	23.49	23.61	23.46	23.63		
20	64QAM	50	0	22.38	22.57	22.59	22.51	22.34	23	3
20	64QAM	50	24	22.31	22.54	22.53	22.38	22.18		
20	64QAM	50	50	22.41	22.48	22.52	22.20	22.34		
20	64QAM	100	0	22.28	22.45	22.53	22.16	22.34		
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	25.43	25.59	25.61	24.92	25.37	26	0
15	QPSK	1	37	25.29	25.46	25.47	25.30	25.33		
15	QPSK	1	74	25.27	25.46	25.48	25.06	25.19		
15	QPSK	36	0	24.43	24.55	24.59	23.41	24.06	25	1
15	QPSK	36	20	24.40	24.55	24.56	23.52	23.87		
15	QPSK	36	39	24.38	24.51	24.53	23.46	23.91		
15	QPSK	75	0	24.40	24.54	24.57	23.59	24.09		
15	16QAM	1	0	24.49	24.66	24.72	23.88	24.45	25	1
15	16QAM	1	37	24.43	24.59	24.63	23.81	24.43		
15	16QAM	1	74	24.38	24.54	24.50	24.03	24.26		
15	16QAM	36	0	23.40	23.53	23.56	22.67	23.23	24	2
15	16QAM	36	20	23.40	23.53	23.55	22.63	23.30		
15	16QAM	36	39	23.32	23.48	23.48	22.51	23.07		
15	16QAM	75	0	23.42	23.56	23.59	22.55	22.97		
15	64QAM	1	0	23.48	23.62	23.69	23.55	23.32	24	2
15	64QAM	1	37	23.38	23.52	23.54	23.28	23.24		
15	64QAM	1	74	23.36	23.49	23.54	23.55	23.10		
15	64QAM	36	0	22.33	22.51	22.55	22.43	22.18	23	3
15	64QAM	36	20	22.31	22.50	22.56	22.37	22.25		
15	64QAM	36	39	22.26	22.45	22.48	22.38	22.12		
15	64QAM	75	0	22.31	22.51	22.52	22.23	22.23		

Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2501	2547	2593	2639	2685		
10	QPSK	1	0	25.40	25.58	25.51	24.58	25.14	26	0
10	QPSK	1	25	25.36	25.56	25.56	24.56	25.25		
10	QPSK	1	49	25.34	25.53	25.55	24.70	24.98		
10	QPSK	25	0	24.41	24.55	24.60	23.49	24.28	25	1
10	QPSK	25	12	24.41	24.59	24.62	23.50	24.34		
10	QPSK	25	25	24.38	24.54	24.57	23.49	24.21		
10	QPSK	50	0	24.43	24.56	24.58	23.14	24.22		
10	16QAM	1	0	24.49	24.63	24.68	23.82	24.22	25	1
10	16QAM	1	25	24.47	24.61	24.64	23.87	24.34		
10	16QAM	1	49	24.36	24.55	24.58	23.90	24.04		
10	16QAM	25	0	23.41	23.58	23.60	22.69	23.30	24	2
10	16QAM	25	12	23.45	23.60	23.61	22.65	23.36		
10	16QAM	25	25	23.39	23.44	23.56	22.57	23.22		
10	16QAM	50	0	23.44	23.57	23.62	22.38	23.24		
10	64QAM	1	0	23.41	23.56	23.63	23.41	23.65	24	2
10	64QAM	1	25	23.37	23.52	23.56	23.29	23.27		
10	64QAM	1	49	23.30	23.45	23.51	23.47	23.51		
10	64QAM	25	0	22.37	22.57	22.58	22.52	22.43	23	3
10	64QAM	25	12	22.38	22.59	22.59	22.52	22.29		
10	64QAM	25	25	22.33	22.53	22.55	22.53	22.36		
10	64QAM	50	0	22.32	22.51	22.54	22.37	22.33		
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5		
5	QPSK	1	0	25.39	25.55	25.58	24.70	25.13	26	0
5	QPSK	1	12	25.37	25.53	25.46	25.18	25.67		
5	QPSK	1	24	25.28	25.47	25.47	24.81	25.33		
5	QPSK	12	0	24.42	24.55	24.58	23.53	24.05	25	1
5	QPSK	12	7	24.44	24.56	24.61	23.65	24.10		
5	QPSK	12	13	24.37	24.54	24.56	23.52	23.95		
5	QPSK	25	0	24.41	24.54	24.59	23.40	23.83		
5	16QAM	1	0	24.42	24.58	24.62	23.78	24.33	25	1
5	16QAM	1	12	24.47	24.61	24.64	23.99	24.51		
5	16QAM	1	24	24.40	24.57	24.58	24.00	24.28		
5	16QAM	12	0	23.41	23.54	23.57	22.60	23.09	24	2
5	16QAM	12	7	23.40	23.56	23.59	22.69	23.23		
5	16QAM	12	13	23.38	23.52	23.54	22.66	23.07		
5	16QAM	25	0	23.44	23.56	23.58	22.65	23.09		
5	64QAM	1	0	23.37	23.54	23.60	23.40	23.79	24	2
5	64QAM	1	12	23.34	23.49	23.61	23.77	23.71		
5	64QAM	1	24	23.32	23.48	23.57	23.74	23.66		
5	64QAM	12	0	22.31	22.53	22.55	22.54	22.72	23	3
5	64QAM	12	7	22.36	22.57	22.59	22.49	22.71		
5	64QAM	12	13	22.31	22.51	22.54	22.25	22.66		
5	64QAM	25	0	22.36	22.53	22.57	22.27	22.71		

<LTE Carrier Aggregation Combination>

General Note:

1. This device supports Carrier Aggregation on downlink only for inter and intra band, Uplink CA is not supported. For the device supports bands and bandwidths and configurations are provided as follow table was according to 3GPP.
2. All permutations exist. No restrictions on Pcell & Scell combinations. Only LTE Band 29A is limited to Scell.
3. This device supported inter-band up to 3 DL carrier aggregation for intra-band supported non-contiguous and contiguous configuration.

<Inter-Band Combination>

E-UTRA CA configuration / Bandwidth combination set									
E-UTRA CA Configuration	E- UTRA Bands	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	Maximum aggregated bandwidth [MHz]	Bandwidth combination set
CA_2A-4A	2	Yes	Yes	Yes	Yes	Yes	Yes	40	0
	4			Yes	Yes	Yes	Yes		
	2			Yes	Yes			20	1
	4			Yes	Yes				
	2			Yes	Yes	Yes	Yes	40	2
	4			Yes	Yes	Yes	Yes		
CA_2A-5A	2			Yes	Yes	Yes	Yes	30	0
	5			Yes	Yes				
CA_2A-12A	2			Yes	Yes	Yes	Yes	30	0
	12			Yes	Yes				
	2			Yes	Yes	Yes	Yes	30	1
	12		Yes	Yes	Yes				
CA_2A-13A	2			Yes	Yes	Yes	Yes	30	0
	13				Yes				
	2			Yes	Yes			20	1
	13				Yes				
CA_2A-17A	2			Yes	Yes			20	0
	17			Yes	Yes				
CA_2A-29A	2			Yes	Yes			20	0
	29		Yes	Yes	Yes				
	2			Yes	Yes			20	1
	29			Yes	Yes				
	2			Yes	Yes	Yes	Yes	30	2
	29			Yes	Yes				
CA_2A-30A	2			Yes	Yes	Yes	Yes	30	0
	30			Yes	Yes				
CA_4A-5A	4			Yes	Yes			20	0
	5			Yes	Yes				
	4			Yes	Yes	Yes	Yes	30	1
	5			Yes	Yes				
CA_4A-7A	4			Yes	Yes			30	0
	7			Yes	Yes	Yes	Yes		

E-UTRA CA configuration / Bandwidth combination set									
E-UTRA CA Configuration	E- UTRA Bands	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	Maximum aggregated bandwidth [MHz]	Bandwidth combination set
CA_4A-12A	4	Yes	Yes	Yes	Yes			20	0
	12			Yes	Yes				
	4	Yes	Yes	Yes	Yes	Yes	Yes	30	1
	12			Yes	Yes				
	4			Yes	Yes	Yes	Yes	30	2
	12		Yes	Yes	Yes				
	4			Yes	Yes			20	3
	12			Yes	Yes				
	4			Yes	Yes	Yes	Yes	30	4
	12			Yes	Yes				
	4			Yes	Yes	Yes		20	5
	12			Yes					
CA_4A-13A	4			Yes	Yes	Yes	Yes	30	0
	13				Yes				
	4			Yes	Yes			20	1
	13				Yes				
CA_4A-17A	4			Yes	Yes			20	0
	17			Yes	Yes				
CA_4A-29A	4			Yes	Yes			20	0
	29		Yes	Yes	Yes				
	4			Yes	Yes			20	1
	29			Yes	Yes				
	4			Yes	Yes	Yes	Yes	30	2
	29			Yes	Yes				
CA_5A-7A	5	Yes	Yes	Yes	Yes			30	0
	7				Yes	Yes	Yes		
	5			Yes	Yes			30	1
	7				Yes	Yes	Yes		
CA_5A-30A	5			Yes	Yes			20	0
	30			Yes	Yes				
CA_12A-30A	12			Yes	Yes			20	0
	30			Yes	Yes				
CA_25A-26A	25		Yes	Yes	Yes	Yes	Yes	35	0
	26	Yes	Yes	Yes	Yes	Yes			
	25		Yes	Yes	Yes			20	1
	26		Yes	Yes	Yes				
	25			Yes	Yes			20	2
	26			Yes	Yes				
CA_25A-41A	25			Yes	Yes	Yes	Yes	40	0
	41			Yes	Yes	Yes	Yes		
CA_26A-41A	26			Yes	Yes	Yes		35	0
	41			Yes	Yes	Yes	Yes		
CA_29A-30A	29			Yes	Yes			20	0
	30			Yes	Yes				

E-UTRA CA configuration / Bandwidth combination set									
E-UTRA CA Configuration	E- UTRA Bands	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	Maximum aggregated bandwidth [MHz]	Bandwidth combination set
CA_2A-2A-13A	2	See CA_2A-2A Bandwidth Combination Set 0 in Table 5.4.2A.1-3						50	0
	13				Yes				
CA_2A-4A-4A	2			Yes	Yes	Yes	Yes	60	0
	4	See CA_4A-4A Bandwidth Combination Set 0 in Table 5.4.2A.1-3							
CA_2A-4A-5A	2			Yes	Yes	Yes	Yes	50	0
	4			Yes	Yes	Yes	Yes		
	5			Yes	Yes				
CA_2A-4A-12A	2			Yes	Yes	Yes	Yes	50	0
	4			Yes	Yes	Yes	Yes		
	12			Yes	Yes				
CA_2A-4A-29A	2			Yes	Yes	Yes	Yes	50	0
	4			Yes	Yes	Yes	Yes		
	29			Yes	Yes				
CA_2A-5A-29A	2			Yes	Yes	Yes	Yes	40	0
	5			Yes	Yes				
	29			Yes	Yes				
CA_2A-5A-30A	2			Yes	Yes	Yes	Yes	40	0
	5			Yes	Yes				
	30			Yes	Yes				
CA_2A-12A-30A	2			Yes	Yes	Yes	Yes	40	0
	12			Yes	Yes				
	30			Yes	Yes				
CA_2A-29A-30A	2			Yes	Yes	Yes	Yes	40	0
	29			Yes	Yes				
	30			Yes	Yes				
CA_4A-4A-5A	4	See CA_4A-4A Bandwidth Combination Set 0 in table 5.4.2A.1-3						50	0
	5			Yes	Yes				
CA_4A-4A-7A	4			Yes	Yes			40	0
	4			Yes	Yes				
	7			Yes	Yes	Yes	Yes		
	4			Yes	Yes	Yes	Yes	60	1
	4			Yes	Yes	Yes	Yes		
	7			Yes	Yes	Yes	Yes		
CA_4A-4A-13A	4	See CA_4A-4A Bandwidth Combination Set 0 in Table 5.4.2A.1-3						50	0
	13				Yes				
CA_4A-7A-12A	4			Yes	Yes			40	0
	7			Yes	Yes	Yes	Yes		
	12			Yes	Yes				
	4			Yes	Yes	Yes	Yes	50	1
	7			Yes	Yes	Yes	Yes		
	12			Yes	Yes				
CA_4A-4A-12A	4	See CA_4A-4A Bandwidth Combination Set 0 in Table 5.4.2A.1-3						50	0
	12			Yes	Yes				

E-UTRA CA configuration / Bandwidth combination set									
E-UTRA CA Configuration	E- UTRA Bands	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	Maximum aggregated bandwidth [MHz]	Bandwidth combination set
CA_4A-5A-30A	4			Yes	Yes	Yes	Yes	40	0
	5			Yes	Yes				
	30			Yes	Yes				
CA_4A-12A-30A	4			Yes	Yes	Yes	Yes	40	0
	12			Yes	Yes				
	30			Yes	Yes				
CA_4A-29A-30A	4			Yes	Yes	Yes	Yes	40	0
	29			Yes	Yes				
	30			Yes	Yes				
CA_25A-41C	25			Yes	Yes	Yes	Yes	60	0
	41	See CA_41C Bandwidth Combination Set 1 in Table 5.4.2A.1-1							
CA_26A-41C	26			Yes	Yes	Yes		55	0
	41	See CA_41C Bandwidth Combination Set 1 in Table 5.4.2A.1-1							

<Intra-Band Combination>

E-UTRA CA configuration / Bandwidth combination set					
E-UTRA CA configuration	Component carriers in order of increasing carrier frequency			Maximum aggregated bandwidth [MHz]	Bandwidth combination set
	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]		
CA_2C	5	20		40	0
	10	15, 20			
	15	10, 15, 20			
	20	5, 10, 15, 20			
CA_2A-2A	5, 10, 15, 20	5, 10, 15, 20		40	0
CA_7A-7A	5	15		40	0
	10	10, 15			
	15	15, 20			
	20	20			
CA_25A-25A	5, 10	5, 10		20	0
	5, 10, 15, 20	5, 10, 15, 20		40	1
CA_41C	10	20		40	0
	15	15, 20			
	20	10, 15, 20			
	5, 10	20		40	1
	15	15, 20			
	20	5, 10, 15, 20			
	10	15, 20		40	2
	15	10, 15, 20			
	20	10, 15, 20			
	10	20		40	3
	20	20			

E-UTRA CA configuration / Bandwidth combination set					
E-UTRA CA configuration	Component carriers in order of increasing carrier frequency			Maximum aggregated bandwidth [MHz]	Bandwidth combination set
	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]		
CA_41D	10	20	15	60	0
	10	15, 20	20		
	15	20	10, 15		
	15	10, 15, 20	20		
	20	15, 20	10		
	20	10, 15, 20	15, 20		
CA_41A-41A	10, 15, 20	10, 15, 20		40	0
	5, 10, 15, 20	5, 10, 15, 20		40	1
CA_41A-41C	5, 10, 15, 20	See CA_41C Bandwidth Combination Set 1 in Table 5.4.2A.1-1		60	0
	See CA_41C Bandwidth Combination Set 1 in Table 5.4.2A.1-1		5, 10, 15, 20		

<LTE Carrier Aggregation Conducted Power>

General Note:

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

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

iii. The device supports downlink carrier aggregation only. Uplink carrier aggregation is not supported. For power measurement were control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.

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

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

vi. For inter-band CA, the SCC selected highest bandwidth and near the middle of its transmission band.

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

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

<Maximum output power for Two Carrier power verification>

Configure	PCC							SCC				Power	
	LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	Band 2	20	1880	18900	QPSK	1	0	Band 4	20	2132.5	2175	24.30	24.32
	Band 4	20	1732.5	20175	QPSK	1	0	Band 2	20	1960	900	23.88	23.90
	Band 2	20	1880	18900	QPSK	1	0	Band 5	10	881.5	2525	23.29	24.32
	Band 5	10	836.5	20525	QPSK	1	0	Band 2	20	1960	900	24.31	24.31
	Band 2	20	1880	18900	QPSK	1	0	Band 12	10	737.5	5095	24.28	24.32
	Band 12	10	707.5	23095	QPSK	1	49	Band 2	20	1960	900	24.22	24.23
	Band 2	20	1880	18900	QPSK	1	0	Band 13	10	751	5230	24.29	24.32
	Ban 13	10	782	23230	QPSK	1	25	Band 2	20	1960	900	24.25	24.26
	Band 2	10	1880	18900	QPSK	1	0	Band 17	10	740	5790	24.20	24.22
	Ban 17	10	709	23780	QPSK	1	49	Band 2	10	1960	900	24.38	24.39
	Band 2	20	1880	18900	QPSK	1	0	Band 29	10	722.5	9715	24.31	24.32
	Band 2	20	1880	18900	QPSK	1	0	Band 30	10	2355	9820	24.31	24.32
	Band 30	10	2310	27710	QPSK	1	25	Band 2	20	1960	900	24.28	24.29
	Band 4	20	1732.5	20175	QPSK	1	0	Band 5	10	881.5	2525	23.88	23.90
	Band 5	10	836.5	20525	QPSK	1	0	Band 4	20	2132.5	2175	24.30	24.31
	Band 4	10	1750	20350	QPSK	1	0	Band 7	20	2655	3100	23.79	23.79
	Band 7	20	2535	21100	QPSK	1	0	Band 4	10	2132.5	2175	24.32	24.33

Configure		PCC							SCC				Power	
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band		Band 4	20	1732.5	20175	QPSK	1	0	Band 12	10	737.5	5095	23.88	23.90
		Band 12	10	707.5	23095	QPSK	1	49	Band 4	20	2132.5	2175	24.21	24.23
		Band 4	20	1732.5	20175	QPSK	1	0	Band 13	10	751	5230	23.89	23.90
		Band 13	10	782	23230	QPSK	1	25	Band 4	20	2132.5	2175	24.25	24.26
		Band 4	10	1750	20350	QPSK	1	0	Band 17	10	740	5790	23.77	23.79
		Band 17	10	709	23780	QPSK	1	49	Band 4	10	2132.5	2175	24.37	24.39
		Band 4	20	1732.5	20175	QPSK	1	0	Band 29	10	722.5	9715	23.89	23.90
		Band 4	20	1732.5	20175	QPSK	1	0	Band 30	10	2355	9820	23.88	23.90
		Band 30	10	2310	27710	QPSK	1	0	Band 4	20	2132.5	2175	24.26	24.29
		Band 5	10	836.5	20525	QPSK	1	0	Band 7	20	2655	3100	24.29	24.31
		Band 7	20	2535	21100	QPSK	1	0	Band 5	10	881.5	2525	24.30	24.33
		Band 5	10	836.5	20525	QPSK	1	0	Band 30	10	2355	9820	24.28	24.31
		Band 30	10	2310	27710	QPSK	1	0	Band 5	10	881.5	2525	24.26	24.29
		Band 12	10	707.5	23095	QPSK	1	49	Band 30	10	2355	9820	24.22	24.23
		Band 30	10	2310	27710	QPSK	1	0	Band 12	10	737.5	5095	24.28	24.29
		Band 25	20	1905	26590	QPSK	1	0	Band 26	15	876.5	8865	24.47	24.48
		Band 26	15	831.5	26865	16QAM	1	74	Band 25	20	1960	8340	24.20	24.22
		Band 25	20	1905	26590	QPSK	1	0	Band 41	20	2593	40620	24.45	24.48
		Band 41	20	2593	40620	QPSK	1	0	Band 25	20	1960	8340	25.67	25.69
		Band 26	15	831.5	26865	16QAM	1	74	Band 41	20	2593	40620	24.21	24.22
		Band 41	20	2593	40620	QPSK	1	0	Band 26	15	876.5	8865	25.68	25.69
		Band 30	10	2310	27710	QPSK	1	0	Band 29	10	722.5	9715	24.28	24.29
Intra-Band	Non-Contiguous	Band 2	20	1880	18900	QPSK	1	0	Band 2	5	1987.5	1175	24.31	24.32
		Band 7	20	2535	21100	QPSK	1	0	Band 7	15	2682.5	3375	24.33	24.33
		Band 25	20	1905	26590	QPSK	1	0	Band 25	5	1992.5	8665	24.47	24.48
		Band 41	20	2593	40620	QPSK	1	0	Band 41	5	2687.5	41565	25.65	25.69
	Contiguous	Band 2	20	1880	18900	QPSK	1	0	Band 2	20	1979.8	1098	24.31	24.32
		Band 41	20	2593	40620	QPSK	1	0	Band 41	20	2612.8	40818	25.68	25.69

<Maximum output power for Three Carrier power verification>

Configure		PCC							SCC1				SCC2				Power	
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Ch.	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Ch.	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band		Band 2	20	1880	18900	QPSK	1	0	Band 4	20	2132.5	2175	Band 5	10	881.5	2525	24.30	24.32
		Band 4	20	1732.5	20175	QPSK	1	0	Band 2	20	1960	900	Band 5	10	881.5	2525	23.87	23.90
		Band 5	10	836.5	20525	QPSK	1	0	Band 2	20	1960	900	Band 4	20	2132.5	2175	24.31	24.31
		Band 2	20	1880	18900	QPSK	1	0	Band 4	20	2132.5	2175	Band 12	10	737.5	5095	24.32	24.32
		Band 4	20	1732.5	20175	QPSK	1	0	Band 2	20	1960	900	Band 12	10	737.5	5095	23.89	23.90
		Band 12	10	707.5	23095	QPSK	1	49	Band 2	20	1960	900	Band 4	20	2132.5	2175	24.22	24.23
		Band 2	20	1880	18900	QPSK	1	0	Band 4	20	2132.5	2175	Band 29	10	722.5	9715	24.29	24.32
		Band 4	20	1732.5	20175	QPSK	1	0	Band 2	20	1960	900	Band 29	10	722.5	9715	23.88	23.90
		Band 2	20	1880	18900	QPSK	1	0	Band 5	10	881.5	2525	Band 30	10	2355	9820	24.30	24.32
		Band 5	10	836.5	20525	QPSK	1	0	Band 2	20	1960	900	Band 30	10	2355	9820	24.29	24.31
		Band 30	10	2310	27710	QPSK	1	0	Band 2	20	1960	900	Band 5	10	881.5	2525	24.25	24.29
		Band 2	20	1880	18900	QPSK	1	0	Band 12	10	737.5	5095	Band 30	10	2355	9820	24.31	24.32
		Band 12	10	707.5	23095	QPSK	1	49	Band 2	20	1960	900	Band 30	10	2355	9820	24.22	24.23
		Band 30	10	2310	27710	QPSK	1	0	Band 2	20	1960	900	Band 12	10	737.5	5095	24.28	24.29
		Band 2	20	1880	18900	QPSK	1	0	Band 29	10	722.5	9715	Band 30	10	2355	9820	24.32	24.32
		Band 30	10	2310	27710	QPSK	1	0	Band 2	20	1960	900	Band 29	10	722.5	9715	24.29	24.29
		Band 4	20	1732.5	20175	QPSK	1	0	Band 5	10	881.5	2525	Band 30	10	2355	9820	23.88	23.90
		Band 5	10	836.5	20525	QPSK	1	0	Band 4	20	2132.5	2175	Band 30	10	2355	9820	24.30	24.31
		Band 30	10	2310	27710	QPSK	1	0	Band 4	20	2132.5	2175	Band 5	10	881.5	2525	24.28	24.29
		Band 4	20	1732.5	20175	QPSK	1	0	Band 7	20	2655	3100	Band 12	10	737.5	5095	23.88	23.90
		Band 7	20	2535	21100	QPSK	1	0	Band 4	20	2132.5	2175	Band 12	10	737.5	5095	24.32	24.33
		Band 12	10	707.5	23095	QPSK	1	49	Band 4	20	2132.5	2175	Band 7	20	2655	3100	24.22	24.23
		Band 4	20	1732.5	20175	QPSK	1	0	Band 12	10	737.5	5095	Band 30	10	2355	9820	23.89	23.90
		Band 12	10	707.5	23095	QPSK	1	49	Band 4	20	2132.5	2175	Band 30	10	2355	9820	24.21	24.23
		Band 30	10	2310	27710	QPSK	1	0	Band 4	20	2132.5	2175	Band 12	10	737.5	5095	24.28	24.29
		Band 4	20	1732.5	20175	QPSK	1	0	Band 29	10	722.5	9715	Band 30	10	2355	9820	23.87	23.90
		Band 30	10	2310	27710	QPSK	1	0	Band 4	20	2132.5	2175	Band 29	10	722.5	9715	24.28	24.29
		Band 2	20	1880	18900	QPSK	1	0	Band 2	5	1987.5	1175	Band 13	10	751	5230	23.29	24.32
		Band 13	10	782	23230	QPSK	1	25	Band 2	20	1960	900	Band 2	5	1987.5	1175	24.26	24.26
		Band 2	20	1880	18900	QPSK	1	0	Band 2	5	1987.5	1175	Band 4	20	2132.5	2175	23.30	24.32
		Band 4	20	1732.5	20175	QPSK	1	0	Band 2	20	1960	900	Band 2	5	1987.5	1175	23.88	23.90
		Band 4	20	1732.5	20175	QPSK	1	0	Band 4	5	2152.5	2375	Band 7	20	2655	3100	23.85	23.90
		Band 7	20	2535	21100	QPSK	1	0	Band 4	20	2132.5	2175	Band 4	5	2152.5	2375	24.32	24.33
		Band 4	20	1732.5	20175	QPSK	1	0	Band 4	5	2152.5	2375	Band 5	10	881.5	2525	23.86	23.90
		Band 5	10	836.5	20525	QPSK	1	0	Band 4	20	2132.5	2175	Band 4	5	2152.5	2375	24.30	24.31
		Band 4	20	1732.5	20175	QPSK	1	0	Band 4	5	2152.5	2375	Band 12	10	737.5	5095	23.85	23.90
		Band 12	10	707.5	23095	QPSK	1	49	Band 4	20	2132.5	2175	Band 4	5	2152.5	2375	24.20	24.23
		Band 4	20	1732.5	20175	QPSK	1	0	Band 4	5	2152.5	2375	Band 13	10	751	5230	23.90	23.90
		Band 13	10	782	23230	QPSK	1	25	Band 4	20	2132.5	2175	Band 4	5	2152.5	2375	24.25	24.26
		Band 25	20	1905	26590	QPSK	1	0	Band 41	20	2593	40620	Band 41	20	2612.8	40818	24.47	24.48
		Band 41	20	2593	40620	QPSK	1	0	Band 41	20	2612.8	40818	Band 25	20	1960	8340	26.68	25.69
		Band 26	15	831.5	26865	16QAM	1	74	Band 41	20	2593	40620	Band 41	20	2612.8	40818	24.20	24.22
		Band 41	20	2593	40620	QPSK	1	0	Band 41	20	2612.8	40818	Band 26	15	876.5	8865	25.68	25.69
Intra-Band	Non-Contiguous	Band 41	20	2593	40620	QPSK	1	0	Band 41	5	2687.5	41565	Band 41	20	2675.8	41448	25.68	25.69
		Band 41	20	2593	40620	QPSK	1	0	Band 41	20	2612.8	40818	Band 41	5	2687.5	41565	25.66	25.69
	Contiguous	Band 41	20	2593	40620	QPSK	1	0	Band 41	20	2612.8	40818	Band 41	20	2632.6	41016	25.67	25.69

<WLAN Conducted Power>

General Note:

4. For each antenna, transmit power in SISO operation is larger than (or equal to) the power in MIMO operation, RF exposure compliance of MIMO mode can be deduced from the compliance simultaneous transmission of antennas operating in SISO mode.
5. Per KDB 248227 D01v02r02, 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.
6. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
7. 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).
8. 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.
9. 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 ANT 1>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	14.45	14.50	100.00
		6	2437	14.44	14.50	
		11	2462	12.98	13.00	
	802.11g 6Mbps	1	2412	8.45	8.50	95.39
		6	2437	8.43	8.50	
		11	2462	7.26	7.50	
	802.11n-HT20 MCS0	1	2412	8.46	8.50	95.88
		6	2437	8.44	8.50	
		11	2462	7.29	7.50	
	802.11n-HT40 MCS0	3	2422	8.48	8.50	91.95
		6	2437	8.46	8.50	
		9	2452	7.31	7.50	

<2.4GHz WLAN ANT 2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	15.49	15.50	100.00
		6	2437	15.25	15.50	
		11	2462	15.23	15.50	
	802.11g 6Mbps	1	2412	11.35	11.50	95.42
		6	2437	11.26	11.50	
		11	2462	11.11	11.50	
	802.11n-HT20 MCS0	1	2412	11.36	11.50	95.21
		6	2437	11.28	11.50	
		11	2462	11.16	11.50	
	802.11n-HT40 MCS0	3	2422	11.48	11.50	90.91
		6	2437	11.33	11.50	
		9	2452	11.31	11.50	

<2.4GHz WLAN ANT 1+2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	18.37	18.50	100.00
		6	2437	17.73	18.50	
		11	2462	18.09	18.50	
	802.11g 6Mbps	1	2412	14.45	14.50	96.15
		6	2437	14.21	14.50	
		11	2462	14.16	14.50	
	802.11n-HT20 MCS0	1	2412	14.49	14.50	96.21
		6	2437	14.28	14.50	
		11	2462	14.18	14.50	
	802.11n-HT40 MCS0	3	2422	14.30	14.50	91.95
		6	2437	14.26	14.50	
		9	2452	14.24	14.50	

<5GHz WLAN ANT1>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	11.45	11.50	94.52
		40	5200	11.45	11.50	
		44	5220	11.43	11.50	
		48	5240	11.44	11.50	
	802.11n-HT20 MCS0	36	5180	11.49	11.50	94.15
		40	5200	11.48	11.50	
		44	5220	11.48	11.50	
		48	5240	11.46	11.50	
	802.11n-HT40 MCS0	38	5190	11.49	11.50	89.77
		46	5230	11.38	11.50	
	802.11ac-VHT20 MCS0	36	5180	9.48	9..5	94.18
		40	5200	9.41	9..5	
		44	5220	9.37	9..5	
		48	5240	9.41	9..5	
	802.11ac-VHT40 MCS0	38	5190	9.48	9..5	89.77
		46	5230	9.37	9..5	
	802.11ac-VHT80 MCS0	42	5210	9.30	9..5	87.20

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	11.42	11.50	94.52
		56	5280	11.42	11.50	
		60	5300	11.44	11.50	
		64	5320	11.45	11.50	
	802.11n-HT20 MCS0	52	5260	11.44	11.50	94.15
		56	5280	11.45	11.50	
		60	5300	11.45	11.50	
		64	5320	11.46	11.50	
	802.11n-HT40 MCS0	54	5270	11.42	11.50	89.77
		62	5310	11.44	11.50	
	802.11ac-VHT20 MCS0	52	5260	9.38	9..5	94.18
		56	5280	9.42	9..5	
		60	5300	9.47	9..5	
		64	5320	9.49	9..5	
	802.11ac-VHT40 MCS0	54	5270	9.37	9..5	89.77
		62	5310	9.41	9..5	
	802.11ac-VHT80 MCS0	58	5290	9.26	9..5	87.20

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	11.39	11.50	94.52
		116	5580	11.38	11.50	
		132	5660	11.38	11.50	
		140	5700	11.38	11.50	
	802.11n-HT20 MCS0	100	5500	11.48	11.50	94.15
		116	5580	11.46	11.50	
		132	5660	11.45	11.50	
		140	5700	11.45	11.50	
	802.11n-HT40 MCS0	102	5510	11.48	11.50	89.77
		110	5550	11.47	11.50	
		134	5670	11.47	11.50	
	802.11ac-VHT20 MCS0	100	5500	9.49	9..5	94.18
		116	5580	9.46	9..5	
		132	5660	9.47	9..5	
		140	5700	9.47	9..5	
	802.11ac-VHT40 MCS0	102	5510	9.49	9..5	89.77
		110	5550	9.46	9..5	
		134	5670	9.47	9..5	
	802.11ac-VHT80 MCS0	106	5530	9.27	9..5	87.20

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a MCS0	149	5745	11.32	11.50	94.52
		157	5785	11.28	11.50	
		165	5825	11.27	11.50	
	802.11n-HT20 MCS0	149	5745	11.49	11.50	94.15
		157	5785	11.48	11.50	
		165	5825	11.28	11.50	
	802.11n-HT40 MCS0	151	5755	11.48	11.50	89.77
		159	5795	11.16	11.50	
	802.11ac-VHT20 MCS0	149	5745	9.47	9..5	94.18
		157	5785	9.46	9..5	
		165	5825	9.24	9..5	
	802.11ac-VHT40 MCS0	151	5755	9.49	9..5	89.77
		159	5795	9.47	9..5	
	802.11ac-VHT80 MCS0	155	5775	9.23	9..5	87.20

<5GHz WLAN ANT2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	9.33	10.50	94.52
		40	5200	9.31	10.50	
		44	5220	9.24	10.50	
		48	5240	9.31	10.50	
	802.11n-HT20 MCS0	36	5180	9.49	10.50	94.15
		40	5200	9.47	10.50	
		44	5220	9.47	10.50	
		48	5240	9.48	10.50	
	802.11n-HT40 MCS0	38	5190	9.49	10.50	90.29
		46	5230	9.45	10.50	
	802.11ac-VHT20 MCS0	36	5180	7.48	8.50	94.18
		40	5200	7.42	8.50	
		44	5220	7.37	8.50	
		48	5240	7.34	8.50	
	802.11ac-VHT40 MCS0	38	5190	7.49	8.50	89.27
		46	5230	7.40	8.50	
	802.11ac-VHT80 MCS0	42	5210	7.40	8.50	86.59

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	9.29	10.50	94.52
		56	5280	9.30	10.50	
		60	5300	9.30	10.50	
		64	5320	9.32	10.50	
	802.11n-HT20 MCS0	52	5260	9.35	10.50	94.15
		56	5280	9.35	10.50	
		60	5300	9.36	10.50	
		64	5320	9.47	10.50	
	802.11n-HT40 MCS0	54	5270	9.38	10.50	90.29
		62	5310	9.43	10.50	
	802.11ac-VHT20 MCS0	52	5260	7.40	8.50	94.18
		56	5280	7.41	8.50	
		60	5300	7.45	8.50	
		64	5320	7.47	8.50	
	802.11ac-VHT40 MCS0	54	5270	7.38	8.50	89.27
		62	5310	7.45	8.50	
	802.11ac-VHT80 MCS0	58	5290	7.34	8.50	86.59

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	9.43	10.50	94.52
		116	5580	9.36	10.50	
		132	5660	9.36	10.50	
		140	5700	9.35	10.50	
	802.11n-HT20 MCS0	100	5500	9.44	10.50	94.15
		116	5580	9.38	10.50	
		132	5660	9.36	10.50	
		140	5700	9.36	10.50	
	802.11n-HT40 MCS0	102	5510	9.41	10.50	90.29
		110	5550	9.40	10.50	
		134	5670	9.37	10.50	
	802.11ac-VHT20 MCS0	100	5500	7.49	8.50	94.18
		116	5580	7.33	8.50	
		132	5660	7.30	8.50	
		140	5700	7.29	8.50	
	802.11ac-VHT40 MCS0	102	5510	7.46	8.50	89.27
		110	5550	7.34	8.50	
		134	5670	7.38	8.50	
	802.11ac-VHT80 MCS0	106	5530	7.32	8.50	86.59

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a MCS0	149	5745	9.41	10.50	94.52
		157	5785	9.30	10.50	
		165	5825	9.29	10.50	
	802.11n-HT20 MCS0	149	5745	9.49	10.50	94.15
		157	5785	9.37	10.50	
		165	5825	9.47	10.50	
	802.11n-HT40 MCS0	151	5755	9.46	10.50	90.29
		159	5795	9.43	10.50	
	802.11ac-VHT20 MCS0	149	5745	7.49	8.50	94.18
		157	5785	7.42	8.50	
		165	5825	7.16	8.50	
	802.11ac-VHT40 MCS0	151	5755	7.49	8.50	89.27
		159	5795	7.42	8.50	
	802.11ac-VHT80 MCS0	155	5775	7.20	8.50	86.59

<5GHz WLAN ANT1+2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	14.39	14.50	94.52
		40	5200	14.38	14.50	
		44	5220	14.25	14.50	
		48	5240	14.28	14.50	
	802.11n-HT20 MCS0	36	5180	14.42	14.50	94.15
		40	5200	14.35	14.50	
		44	5220	14.26	14.50	
		48	5240	14.37	14.50	
	802.11n-HT40 MCS0	38	5190	14.13	14.50	88.76
		46	5230	14.05	14.50	
	802.11ac-VHT20 MCS0	36	5180	12.49	12.50	94.18
		40	5200	12.48	12.50	
		44	5220	12.46	12.50	
		48	5240	12.44	12.50	
	802.11ac-VHT40 MCS0	38	5190	12.49	12.50	89.27
		46	5230	12.47	12.50	
	802.11ac-VHT80 MCS0	42	5210	12.42	12.50	87.20

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	14.31	14.50	94.52
		56	5280	14.33	14.50	
		60	5300	14.36	14.50	
		64	5320	14.38	14.50	
	802.11n-HT20 MCS0	52	5260	14.32	14.50	94.15
		56	5280	14.34	14.50	
		60	5300	14.37	14.50	
		64	5320	14.42	14.50	
	802.11n-HT40 MCS0	54	5270	14.09	14.50	88.76
		62	5310	14.12	14.50	
	802.11ac-VHT20 MCS0	52	5260	12.42	12.50	94.18
		56	5280	12.36	12.50	
		60	5300	12.35	12.50	
		64	5320	12.48	12.50	
	802.11ac-VHT40 MCS0	54	5270	12.19	12.50	89.27
		62	5310	12.35	12.50	
	802.11ac-VHT80 MCS0	58	5290	12.19	12.50	87.20

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	14.39	14.50	94.52
		116	5580	14.37	14.50	
		132	5660	14.37	14.50	
		140	5700	14.37	14.50	
	802.11n-HT20 MCS0	100	5500	14.40	14.50	94.15
		116	5580	14.39	14.50	
		132	5660	14.38	14.50	
		140	5700	14.38	14.50	
	802.11n-HT40 MCS0	102	5510	14.11	14.50	88.76
		110	5550	14.05	14.50	
		134	5670	14.04	14.50	
	802.11ac-VHT20 MCS0	100	5500	12.49	12.50	94.18
		116	5580	12.48	12.50	
		132	5660	12.46	12.50	
		140	5700	12.46	12.50	
	802.11ac-VHT40 MCS0	102	5510	12.42	12.50	89.27
		110	5550	12.21	12.50	
		134	5670	12.38	12.50	
	802.11ac-VHT80 MCS0	106	5530	12.17	12.50	87.20

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a MCS0	149	5745	14.38	14.50	94.52
		157	5785	14.27	14.50	
		165	5825	14.09	14.50	
	802.11n-HT20 MCS0	149	5745	14.41	14.50	94.15
		157	5785	14.28	14.50	
		165	5825	14.30	14.50	
	802.11n-HT40 MCS0	151	5755	14.46	14.50	88.76
		159	5795	14.36	14.50	
	802.11ac-VHT20 MCS0	149	5745	12.30	12.50	94.18
		157	5785	12.14	12.50	
		165	5825	12.28	12.50	
	802.11ac-VHT40 MCS0	151	5755	12.47	12.50	89.27
		159	5795	12.46	12.50	
	802.11ac-VHT80 MCS0	155	5775	12.46	12.50	87.20

<2.4GHz Bluetooth>

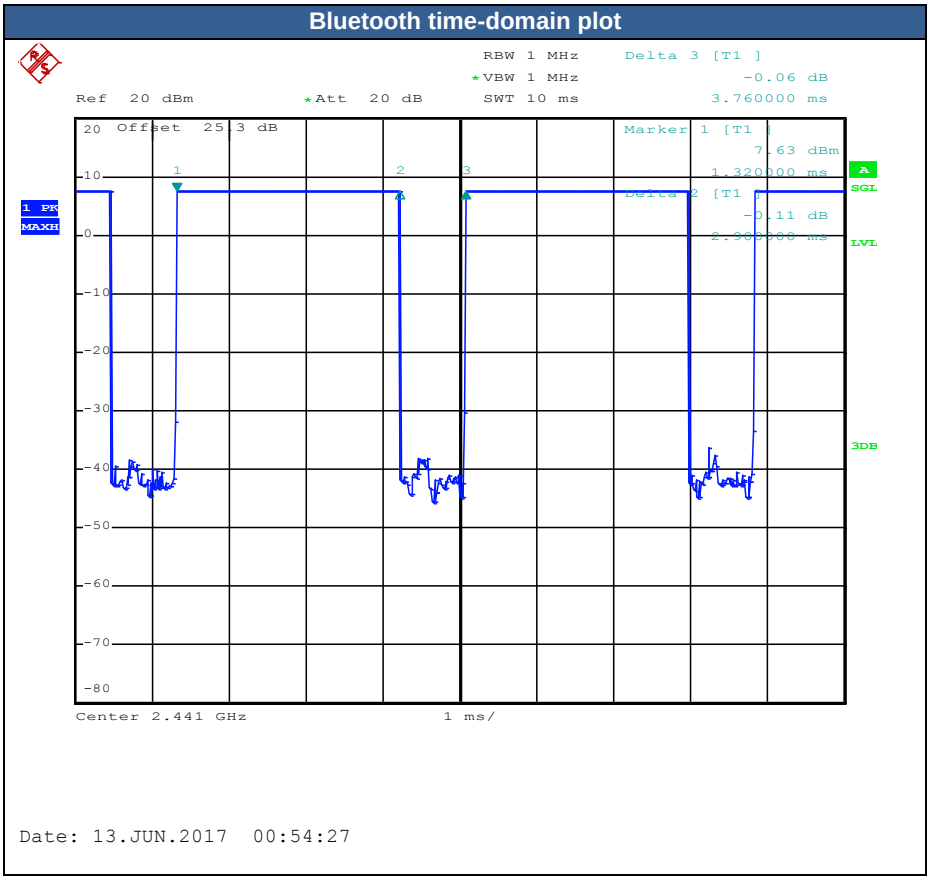
Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
BR / EDR	CH 00	2402	7.57	5.21	5.17
	CH 39	2441	7.51	4.50	4.42
	CH 78	2480	6.26	4.07	4.07
Tune-up Limit			8	5.5	5.5

Mode	Channel	Frequency (MHz)	Average power (dBm)
			GFSK
LE	CH 00	2402	-3.20
	CH 19	2440	-3.72
	CH 39	2480	-4.33
Tune-up Limit			-3

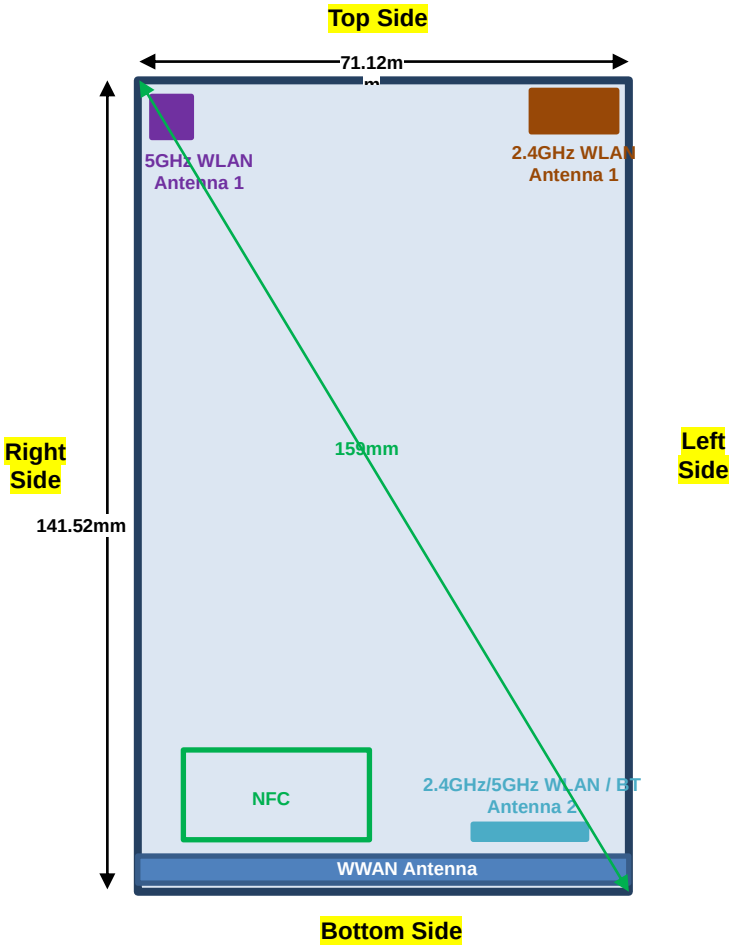
General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The Bluetooth duty cycle is 77.13 % as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the theoretical duty cycle is 83.3%, therefore the actual duty cycle will be scaled up to the theoretical value of Bluetooth reported SAR calculation

Bluetooth time-domain plot



13. Antenna Location



Back View

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

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

General Note:

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

14. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN/BT: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. 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.
3. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
4. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
5. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.

GSM Note:

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

UMTS Note:

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

CDMA Note:

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

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM / 64QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM / 64QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B12 / B26 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE band 2 / 4 / 5 / 17 / 38 SAR test was covered by Band 25 / 66 / 26 / 12 / 41; according to TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. The maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion.
   b. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.

WLAN Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. Per KDB 248227 D01v02r02, U-NII-1 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 D01v02r02, 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 WLAN 2.4GHz / 5.2GHz / 5.8GHz supports Hotspot operation and Bluetooth support tethering applications.
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 (3 Tx slots)	Right Cheek	0mm	128	824.2	30.26	30.50	1.057	-0.06	0.173	0.183
	GSM850	GPRS (3 Tx slots)	Right Tilted	0mm	128	824.2	30.26	30.50	1.057	0.14	0.123	0.130
	GSM850	GPRS (3 Tx slots)	Left Cheek	0mm	128	824.2	30.26	30.50	1.057	-0.05	0.177	0.187
	GSM850	GPRS (3 Tx slots)	Left Cheek	0mm	189	836.4	30.16	30.50	1.081	0.01	0.210	0.227
01	GSM850	GPRS (3 Tx slots)	Left Cheek	0mm	251	848.8	30.03	30.50	1.114	0.1	0.245	0.273
	GSM850	GPRS (3 Tx slots)	Left Tilted	0mm	128	824.2	30.26	30.50	1.057	-0.04	0.122	0.129
	GSM1900	GPRS (3 Tx slots)	Right Cheek	0mm	512	1850.2	26.98	27.00	1.005	-0.01	0.129	0.130
	GSM1900	GPRS (3 Tx slots)	Right Cheek	0mm	661	1880	26.85	27.00	1.035	0.03	0.131	0.136
02	GSM1900	GPRS (3 Tx slots)	Right Cheek	0mm	810	1909.8	26.83	27.00	1.040	-0.13	0.135	0.140
	GSM1900	GPRS (3 Tx slots)	Right Tilted	0mm	512	1850.2	26.98	27.00	1.005	0.18	0.071	0.071
	GSM1900	GPRS (3 Tx slots)	Left Cheek	0mm	512	1850.2	26.98	27.00	1.005	0.18	0.078	0.078
	GSM1900	GPRS (3 Tx slots)	Left Tilted	0mm	512	1850.2	26.98	27.00	1.005	-0.04	0.052	0.052

<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 II	RMC 12.2Kbps	Right Cheek	0mm	9538	1907.6	24.91	25.00	1.021	-0.06	0.214	0.218
03	WCDMA II	RMC 12.2Kbps	Right Cheek	0mm	9262	1852.4	24.74	25.00	1.062	-0.07	0.234	0.248
	WCDMA II	RMC 12.2Kbps	Right Cheek	0mm	9400	1880	24.90	25.00	1.023	-0.04	0.236	0.241
	WCDMA II	RMC 12.2Kbps	Right Tilted	0mm	9538	1907.6	24.91	25.00	1.021	0.19	0.130	0.133
	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	9538	1907.6	24.91	25.00	1.021	0.19	0.149	0.152
	WCDMA II	RMC 12.2Kbps	Left Tilted	0mm	9538	1907.6	24.91	25.00	1.021	-0.18	0.104	0.106
	WCDMA IV	RMC 12.2Kbps	Right Cheek	0mm	1312	1712.4	24.66	25.00	1.081	-0.1	0.073	0.079
	WCDMA IV	RMC 12.2Kbps	Right Tilted	0mm	1312	1712.4	24.66	25.00	1.081	0.16	0.049	0.053
	WCDMA IV	RMC 12.2Kbps	Left Cheek	0mm	1312	1712.4	24.66	25.00	1.081	-0.11	0.131	0.142
04	WCDMA IV	RMC 12.2Kbps	Left Cheek	0mm	1413	1732.6	24.59	25.00	1.099	0.04	0.147	0.162
	WCDMA IV	RMC 12.2Kbps	Left Cheek	0mm	1513	1752.6	24.62	25.00	1.091	0.12	0.082	0.089
	WCDMA IV	RMC 12.2Kbps	Left Tilted	0mm	1312	1712.4	24.66	25.00	1.081	-0.16	0.048	0.052
	WCDMA V	RMC 12.2Kbps	Right Cheek	0mm	4233	846.6	24.42	25.00	1.143	0	0.152	0.174
	WCDMA V	RMC 12.2Kbps	Right Tilted	0mm	4233	846.6	24.42	25.00	1.143	-0.03	0.104	0.119
05	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	4233	846.6	24.42	25.00	1.143	0	0.191	0.218
	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	4132	826.4	24.31	25.00	1.172	0.04	0.176	0.206
	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	4182	836.4	24.41	25.00	1.146	0.01	0.176	0.202
	WCDMA V	RMC 12.2Kbps	Left Tilted	0mm	4233	846.6	24.42	25.00	1.143	0.04	0.129	0.147

<CDMA 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)
	CDMA BC0	1xRTT RC3 SO55	Right Cheek	0mm	384	836.52	24.87	25.00	1.030	-0.07	0.103	0.106
	CDMA BC0	1xRTT RC3 SO55	Right Tilted	0mm	384	836.52	24.87	25.00	1.030	0.07	0.072	0.074
	CDMA BC0	1xRTT RC3 SO55	Left Cheek	0mm	384	836.52	24.87	25.00	1.030	0.04	0.124	0.128
06	CDMA BC0	1xRTT RC3 SO55	Left Cheek	0mm	1013	824.7	24.72	25.00	1.067	0.19	0.128	0.137
	CDMA BC0	1xRTT RC3 SO55	Left Cheek	0mm	777	848.31	24.53	25.00	1.114	0.03	0.112	0.125
	CDMA BC0	1xRTT RC3 SO55	Left Tilted	0mm	384	836.52	24.87	25.00	1.030	-0.01	0.090	0.093
	CDMA BC1	1xRTT RC3 SO55	Right Cheek	0mm	600	1880	24.66	25.00	1.081	0.05	0.226	0.244
	CDMA BC1	1xRTT RC3 SO55	Right Cheek	0mm	25	1851.25	24.65	25.00	1.084	-0.01	0.179	0.194
07	CDMA BC1	1xRTT RC3 SO55	Right Cheek	0mm	1175	1908.75	24.52	25.00	1.117	-0.15	0.251	0.280
	CDMA BC1	1xRTT RC3 SO55	Right Tilted	0mm	600	1880	24.66	25.00	1.081	0.14	0.104	0.112
	CDMA BC1	1xRTT RC3 SO55	Left Cheek	0mm	600	1880	24.66	25.00	1.081	0.15	0.105	0.114
	CDMA BC1	1xRTT RC3 SO55	Left Tilted	0mm	600	1880	24.66	25.00	1.081	-0.11	0.076	0.082
	CDMA BC10	1xRTT RC3 SO55	Right Cheek	0mm	580	820.5	24.57	25.00	1.104	0.02	0.117	0.129
	CDMA BC10	1xRTT RC3 SO55	Right Tilted	0mm	580	820.5	24.57	25.00	1.104	0.01	0.087	0.096
08	CDMA BC10	1xRTT RC3 SO55	Left Cheek	0mm	580	820.5	24.57	25.00	1.104	0	0.135	0.149
	CDMA BC10	1xRTT RC3 SO55	Left Tilted	0mm	580	820.5	24.57	25.00	1.104	0.05	0.099	0.109

<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)
	LTE Band 7	20M	QPSK	1	0	Right Cheek	0mm	21100	2535	24.33	25.00	1.167	-0.03	0.081	0.095
	LTE Band 7	20M	QPSK	1	0	Right Cheek	0mm	20850	2510	24.23	25.00	1.194	-0.05	0.060	0.072
09	LTE Band 7	20M	QPSK	1	0	Right Cheek	0mm	21350	2560	24.18	25.00	1.208	-0.19	0.117	0.141
	LTE Band 7	20M	QPSK	50	0	Right Cheek	0mm	21100	2535	23.31	24.00	1.172	-0.13	0.067	0.079
	LTE Band 7	20M	QPSK	1	0	Right Tilted	0mm	21100	2535	24.33	25.00	1.167	-0.17	0.028	0.033
	LTE Band 7	20M	QPSK	50	0	Right Tilted	0mm	21100	2535	23.31	24.00	1.172	-0.12	0.023	0.027
	LTE Band 7	20M	QPSK	1	0	Left Cheek	0mm	21100	2535	24.33	25.00	1.167	0.11	0.076	0.089
	LTE Band 7	20M	QPSK	50	0	Left Cheek	0mm	21100	2535	23.31	24.00	1.172	0.17	0.056	0.066
	LTE Band 7	20M	QPSK	1	0	Left Tilted	0mm	21100	2535	24.33	25.00	1.167	-0.14	0.048	0.056
	LTE Band 7	20M	QPSK	50	0	Left Tilted	0mm	21100	2535	23.31	24.00	1.172	0.17	0.045	0.053
	LTE Band 12	10M	QPSK	1	49	Right Cheek	0mm	23095	707.5	24.23	25.00	1.194	0	0.130	0.155
	LTE Band 12	10M	QPSK	25	25	Right Cheek	0mm	23095	707.5	23.22	24.00	1.197	-0.03	0.103	0.123
	LTE Band 12	10M	QPSK	1	49	Right Tilted	0mm	23095	707.5	24.23	25.00	1.194	0.07	0.089	0.106
	LTE Band 12	10M	QPSK	25	25	Right Tilted	0mm	23095	707.5	23.22	24.00	1.197	0.02	0.069	0.083
10	LTE Band 12	10M	QPSK	1	49	Left Cheek	0mm	23095	707.5	24.23	25.00	1.194	0.02	0.143	0.171
	LTE Band 12	10M	QPSK	25	25	Left Cheek	0mm	23095	707.5	23.22	24.00	1.197	-0.01	0.113	0.135
	LTE Band 12	10M	QPSK	1	49	Left Tilted	0mm	23095	707.5	24.23	25.00	1.194	0	0.069	0.082
	LTE Band 12	10M	QPSK	25	25	Left Tilted	0mm	23095	707.5	23.22	24.00	1.197	0.01	0.054	0.065
	LTE Band 13	10M	QPSK	1	25	Right Cheek	0mm	23230	782	24.26	25.00	1.186	-0.01	0.138	0.164
	LTE Band 13	10M	QPSK	25	12	Right Cheek	0mm	23230	782	23.33	24.00	1.167	0	0.111	0.130
	LTE Band 13	10M	QPSK	1	25	Right Tilted	0mm	23230	782	24.26	25.00	1.186	0.05	0.112	0.133
	LTE Band 13	10M	QPSK	25	12	Right Tilted	0mm	23230	782	23.33	24.00	1.167	-0.12	0.089	0.104
11	LTE Band 13	10M	QPSK	1	25	Left Cheek	0mm	23230	782	24.26	25.00	1.186	0	0.157	0.186
	LTE Band 13	10M	QPSK	25	12	Left Cheek	0mm	23230	782	23.33	24.00	1.167	-0.19	0.125	0.146
	LTE Band 13	10M	QPSK	1	25	Left Tilted	0mm	23230	782	24.26	25.00	1.186	0.02	0.095	0.113
	LTE Band 13	10M	QPSK	25	12	Left Tilted	0mm	23230	782	23.33	24.00	1.167	0.02	0.076	0.089

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 25	20M	QPSK	1	0	Right Cheek	0mm	26590	1905	24.48	24.50	1.005	-0.07	0.193	0.194
12	LTE Band 25	20M	QPSK	1	0	Right Cheek	0mm	26140	1860	24.26	24.50	1.057	-0.04	0.190	0.201
	LTE Band 25	20M	QPSK	1	0	Right Cheek	0mm	26340	1880	24.34	24.50	1.038	-0.14	0.187	0.194
	LTE Band 25	20M	QPSK	50	0	Right Cheek	0mm	26590	1905	24.33	24.50	1.040	-0.13	0.138	0.144
	LTE Band 25	20M	QPSK	1	0	Right Tilted	0mm	26590	1905	24.48	24.50	1.005	0.07	0.103	0.103
	LTE Band 25	20M	QPSK	50	0	Right Tilted	0mm	26590	1905	24.26	24.50	1.057	0.08	0.086	0.091
	LTE Band 25	20M	QPSK	1	0	Left Cheek	0mm	26590	1905	24.48	24.50	1.005	0.09	0.138	0.139
	LTE Band 25	20M	QPSK	50	0	Left Cheek	0mm	26590	1905	24.26	24.50	1.057	0.12	0.108	0.114
	LTE Band 25	20M	QPSK	1	0	Left Tilted	0mm	26590	1905	24.48	24.50	1.005	-0.02	0.112	0.113
	LTE Band 25	20M	QPSK	50	0	Left Tilted	0mm	26590	1905	24.26	24.50	1.057	-0.08	0.077	0.081
	LTE Band 26	15M	QPSK	1	74	Right Cheek	0mm	26865	831.5	23.88	25.00	1.294	0.05	0.148	0.192
	LTE Band 26	15M	QPSK	36	39	Right Cheek	0mm	26865	831.5	23.89	25.00	1.291	-0.02	0.112	0.145
	LTE Band 26	15M	QPSK	1	74	Right Tilted	0mm	26865	831.5	23.88	25.00	1.294	0.06	0.089	0.115
	LTE Band 26	15M	QPSK	36	39	Right Tilted	0mm	26865	831.5	23.89	25.00	1.291	0.07	0.068	0.088
13	LTE Band 26	15M	QPSK	1	74	Left Cheek	0mm	26865	831.5	23.88	25.00	1.294	0.01	0.171	0.221
	LTE Band 26	15M	QPSK	36	39	Left Cheek	0mm	26865	831.5	23.89	25.00	1.291	0.02	0.131	0.169
	LTE Band 26	15M	QPSK	1	74	Left Tilted	0mm	26865	831.5	23.88	25.00	1.294	-0.09	0.106	0.137
	LTE Band 26	15M	QPSK	36	39	Left Tilted	0mm	26865	831.5	23.89	25.00	1.291	0.03	0.104	0.134
	LTE Band 30	10M	QPSK	1	25	Right Cheek	0mm	27710	2310	24.29	25.00	1.178	-0.11	0.066	0.078
	LTE Band 30	10M	QPSK	25	0	Right Cheek	0mm	27710	2310	23.38	24.00	1.153	0.1	0.040	0.046
	LTE Band 30	10M	QPSK	1	25	Right Tilted	0mm	27710	2310	24.29	25.00	1.178	0.18	0.068	0.080
	LTE Band 30	10M	QPSK	25	0	Right Tilted	0mm	27710	2310	23.38	24.00	1.153	0.05	0.055	0.063
14	LTE Band 30	10M	QPSK	1	25	Left Cheek	0mm	27710	2310	24.29	25.00	1.178	-0.17	0.083	0.098
	LTE Band 30	10M	QPSK	25	0	Left Cheek	0mm	27710	2310	23.38	24.00	1.153	-0.18	0.066	0.076
	LTE Band 30	10M	QPSK	1	25	Left Tilted	0mm	27710	2310	24.29	25.00	1.178	-0.1	0.051	0.060
	LTE Band 30	10M	QPSK	25	0	Left Tilted	0mm	27710	2310	23.38	24.00	1.153	-0.06	0.041	0.047
15	LTE Band 66	20M	QPSK	1	0	Right Cheek	0mm	132322	1745	23.88	24.50	1.153	0.02	0.188	0.217
	LTE Band 66	20M	QPSK	1	0	Right Cheek	0mm	132072	1720	23.87	24.50	1.156	-0.14	0.172	0.199
	LTE Band 66	20M	QPSK	1	0	Right Cheek	0mm	132572	1770	23.75	24.50	1.189	-0.12	0.168	0.200
	LTE Band 66	20M	QPSK	50	0	Right Cheek	0mm	132072	1720	22.84	23.50	1.164	-0.1	0.133	0.155
	LTE Band 66	20M	QPSK	1	0	Right Tilted	0mm	132322	1745	23.88	24.50	1.153	-0.11	0.117	0.135
	LTE Band 66	20M	QPSK	50	0	Right Tilted	0mm	132072	1720	22.84	23.50	1.164	-0.15	0.092	0.107
	LTE Band 66	20M	QPSK	1	0	Left Cheek	0mm	132322	1745	23.88	24.50	1.153	0.11	0.137	0.158
	LTE Band 66	20M	QPSK	50	0	Left Cheek	0mm	132072	1720	22.84	23.50	1.164	0.16	0.107	0.125
	LTE Band 66	20M	QPSK	1	0	Left Tilted	0mm	132322	1745	23.88	24.50	1.153	-0.02	0.121	0.140
	LTE Band 66	20M	QPSK	50	0	Left Tilted	0mm	132072	1720	22.84	23.50	1.164	0.14	0.089	0.104

<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	1	0	Right Cheek	0mm	40620	2593	25.69	26.00	1.074	62.9	1.006	0.07	0.112	0.121
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	39750	2506	25.48	26.00	1.127	62.9	1.006	0.16	0.031	0.035
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	40185	2549.5	25.64	26.00	1.086	62.9	1.006	-0.16	0.076	0.083
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	41055	2636.5	24.99	26.00	1.262	62.9	1.006	-0.17	0.140	0.178
16	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	41490	2680	24.26	26.00	1.493	62.9	1.006	-0.15	0.137	0.206
	LTE Band 41	20M	QPSK	50	0	Right Cheek	0mm	40620	2593	24.63	25.00	1.089	62.9	1.006	-0.18	0.080	0.088
	LTE Band 41	20M	QPSK	1	0	Right Tilted	0mm	40620	2593	25.69	26.00	1.074	62.9	1.006	0.07	0.035	0.038
	LTE Band 41	20M	QPSK	50	0	Right Tilted	0mm	40620	2593	24.63	25.00	1.089	62.9	1.006	0.17	0.028	0.031
	LTE Band 41	20M	QPSK	1	0	Left Cheek	0mm	40620	2593	25.69	26.00	1.074	62.9	1.006	0.18	0.075	0.081
	LTE Band 41	20M	QPSK	50	0	Left Cheek	0mm	40620	2593	24.63	25.00	1.089	62.9	1.006	-0.19	0.046	0.050
	LTE Band 41	20M	QPSK	1	0	Left Tilted	0mm	40620	2593	25.69	26.00	1.074	62.9	1.006	0.16	0.061	0.066
	LTE Band 41	20M	QPSK	50	0	Left Tilted	0mm	40620	2593	24.63	25.00	1.089	62.9	1.006	0.17	0.047	0.051

<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 1	1	2412	14.45	14.50	1.012	100	1.000	0.14	0.133	0.135
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 1	1	2412	14.45	14.50	1.012	100	1.000	0.14	0.117	0.118
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 1	1	2412	14.45	14.50	1.012	100	1.000	0.12	0.113	0.114
17	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 1	1	2412	14.45	14.50	1.012	100	1.000	0.17	0.138	0.140
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 1	6	2412	14.44	14.50	1.014	100	1.000	0.01	0.134	0.136
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 1	11	2462	12.98	13.00	1.005	100	1.000	0.04	0.083	0.083
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 2	1	2412	15.49	15.50	1.002	100	1.000	0.13	0.001	0.001
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 2	1	2412	15.49	15.50	1.002	100	1.000	0	0.001	0.001
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 2	1	2412	15.49	15.50	1.002	100	1.000	0.18	0.003	0.003
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 2	1	2412	15.49	15.50	1.002	100	1.000	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 1	62	5310	11.44	11.50	1.014	89.77	1.114	0.11	0.015	0.017
	WLAN5GHz	802.11n-HT40 MCS0	Right Tilted	0mm	Ant 1	62	5310	11.44	11.50	1.014	89.77	1.114	0.17	0.012	0.014
18	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 1	62	5310	11.44	11.50	1.014	89.77	1.114	0.19	0.068	0.077
	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 1	54	5270	11.42	11.50	1.019	89.77	1.114	0.1	0.055	0.062
	WLAN5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 1	62	5310	11.44	11.50	1.014	89.77	1.114	0.1	0.030	0.034
	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 2	62	5310	9.43	10.50	1.278	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Right Tilted	0mm	Ant 2	62	5310	9.43	10.50	1.278	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 2	62	5310	9.43	10.50	1.278	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 2	62	5310	9.43	10.50	1.278	90.29	1.108	0	0.001	0.001

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)
	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 1	102	5510	11.48	11.50	1.005	89.7	1.115	0.19	0.016	0.018
	WLAN5GHz	802.11n-HT40 MCS0	Right Tilted	0mm	Ant 1	102	5510	11.48	11.50	1.005	89.7	1.115	-0.15	0.017	0.019
	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 1	102	5510	11.48	11.50	1.005	89.7	1.115	0.19	0.057	0.064
19	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 1	110	5550	11.47	11.50	1.007	89.7	1.115	0.07	0.064	0.072
	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 1	134	5670	11.47	11.50	1.007	89.7	1.115	0.14	0.039	0.044
	WLAN5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 1	102	5510	11.48	11.50	1.005	89.7	1.115	0.13	0.034	0.038
	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 2	102	5510	9.41	10.50	1.284	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Right Tilted	0mm	Ant 2	102	5510	9.41	10.50	1.284	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 2	102	5510	9.41	10.50	1.284	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 2	102	5510	9.41	10.50	1.284	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 1	151	5755	11.48	11.50	1.005	89.7	1.115	0.14	0.026	0.029
	WLAN5GHz	802.11n-HT40 MCS0	Right Tilted	0mm	Ant 1	151	5755	11.48	11.50	1.005	89.7	1.115	-0.13	0.037	0.041
	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 1	151	5755	11.48	11.50	1.005	89.7	1.115	0.11	0.060	0.067
20	WLAN5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 1	151	5755	11.48	11.50	1.005	89.7	1.115	0.11	0.095	0.106
	WLAN5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 1	159	5795	11.16	11.50	1.082	89.7	1.115	0.1	0.060	0.072
	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 2	151	5755	9.46	10.50	1.270	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Right Tilted	0mm	Ant 2	151	5755	9.46	10.50	1.270	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 2	151	5755	9.46	10.50	1.270	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 2	151	5755	9.46	10.50	1.270	90.29	1.108	0	0.001	0.001

<Bluetooth SAR>

Plot No.	Band	Mode	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)
	Bluetooth	1Mbps	Right Cheek	0mm	00	2402	7.57	8.00	1.104	77.13	1.080	0.07	0.035	0.042
	Bluetooth	1Mbps	Right Tilted	0mm	00	2402	7.57	8.00	1.104	77.13	1.080	-0.13	0.042	0.050
	Bluetooth	1Mbps	Left Cheek	0mm	00	2402	7.57	8.00	1.104	77.13	1.080	0.19	0.033	0.039
21	Bluetooth	1Mbps	Left Tilted	0mm	00	2402	7.57	8.00	1.104	77.13	1.080	0.18	0.043	0.051
	Bluetooth	1Mbps	Left Tilted	0mm	39	2441	7.51	8.00	1.119	77.13	1.080	0.18	0.032	0.039
	Bluetooth	1Mbps	Left Tilted	0mm	78	2480	6.26	8.00	1.493	77.13	1.080	0.01	0.012	0.019

14.2 Hotspot 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 (3 Tx slots)	Front	10mm	128	824.2	30.26	30.50	1.057	0.14	0.274	0.290
	GSM850	GPRS (3 Tx slots)	Back	10mm	128	824.2	30.26	30.50	1.057	-0.01	0.318	0.336
	GSM850	GPRS (3 Tx slots)	Back	10mm	189	836.4	30.16	30.50	1.081	0.03	0.321	0.347
22	GSM850	GPRS (3 Tx slots)	Back	10mm	251	848.8	30.03	30.50	1.114	0.02	0.316	0.352
	GSM850	GPRS (3 Tx slots)	Left Side	10mm	128	824.2	30.26	30.50	1.057	0.04	0.307	0.324
	GSM850	GPRS (3 Tx slots)	Right Side	10mm	128	824.2	30.26	30.50	1.057	-0.04	0.202	0.213
	GSM850	GPRS (3 Tx slots)	Bottom Side	10mm	128	824.2	30.26	30.50	1.057	-0.11	0.036	0.038
	GSM1900	GPRS (3 Tx slots)	Front	10mm	512	1850.2	26.98	27.00	1.005	-0.11	0.137	0.138
	GSM1900	GPRS (3 Tx slots)	Back	10mm	512	1850.2	26.98	27.00	1.005	-0.07	0.288	0.289
	GSM1900	GPRS (3 Tx slots)	Left Side	10mm	512	1850.2	26.98	27.00	1.005	0.03	0.054	0.054
	GSM1900	GPRS (3 Tx slots)	Right Side	10mm	512	1850.2	26.98	27.00	1.005	0.01	0.163	0.164
	GSM1900	GPRS (3 Tx slots)	Bottom Side	10mm	512	1850.2	26.98	27.00	1.005	-0.14	0.333	0.335
	GSM1900	GPRS (3 Tx slots)	Bottom Side	10mm	661	1880	26.85	27.00	1.035	-0.13	0.373	0.386
23	GSM1900	GPRS (3 Tx slots)	Bottom Side	10mm	810	1909.8	26.83	27.00	1.040	-0.14	0.388	0.403

<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 II	RMC 12.2Kbps	Front	10mm	9538	1907.6	24.91	25.00	1.021	-0.05	0.317	0.324
	WCDMA II	RMC 12.2Kbps	Back	10mm	9538	1907.6	24.91	25.00	1.021	-0.16	0.579	0.591
	WCDMA II	RMC 12.2Kbps	Left Side	10mm	9538	1907.6	24.91	25.00	1.021	0.07	0.225	0.230
	WCDMA II	RMC 12.2Kbps	Right Side	10mm	9538	1907.6	24.91	25.00	1.021	0.01	0.381	0.389
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	9538	1907.6	24.91	25.00	1.021	-0.12	0.593	0.605
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	9262	1852.4	24.74	25.00	1.062	-0.19	0.563	0.598
24	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	9400	1880	24.90	25.00	1.023	-0.11	0.612	0.626
	WCDMA IV	RMC 12.2Kbps	Front	10mm	1312	1712.4	24.66	25.00	1.081	-0.15	0.119	0.129
	WCDMA IV	RMC 12.2Kbps	Back	10mm	1312	1712.4	24.66	25.00	1.081	-0.13	0.203	0.220
	WCDMA IV	RMC 12.2Kbps	Left Side	10mm	1312	1712.4	24.66	25.00	1.081	-0.01	0.088	0.095
	WCDMA IV	RMC 12.2Kbps	Right Side	10mm	1312	1712.4	24.66	25.00	1.081	0	0.111	0.120
	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	1312	1712.4	24.66	25.00	1.081	-0.17	0.441	0.477
25	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	1413	1732.6	24.59	25.00	1.099	-0.1	0.508	0.558
	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	1513	1752.6	24.62	25.00	1.091	-0.11	0.250	0.273
	WCDMA V	RMC 12.2Kbps	Front	10mm	4233	846.6	24.42	25.00	1.143	-0.02	0.238	0.272
	WCDMA V	RMC 12.2Kbps	Back	10mm	4233	846.6	24.42	25.00	1.143	-0.03	0.302	0.345
	WCDMA V	RMC 12.2Kbps	Left Side	10mm	4233	846.6	24.42	25.00	1.143	-0.02	0.366	0.418
26	WCDMA V	RMC 12.2Kbps	Left Side	10mm	4132	826.4	24.31	25.00	1.172	0.03	0.398	0.467
	WCDMA V	RMC 12.2Kbps	Left Side	10mm	4182	836.4	24.41	25.00	1.146	0	0.338	0.387
	WCDMA V	RMC 12.2Kbps	Right Side	10mm	4233	846.6	24.42	25.00	1.143	-0.01	0.243	0.278
	WCDMA V	RMC 12.2Kbps	Bottom Side	10mm	4233	846.6	24.42	25.00	1.143	-0.13	0.037	0.042

<CDMA 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)
	CDMA BC0	RTAP 153.6Kbps	Front	10mm	384	836.52	24.86	25.00	1.033	-0.07	0.155	0.160
	CDMA BC0	RTAP 153.6Kbps	Back	10mm	384	836.52	24.86	25.00	1.033	-0.15	0.204	0.211
	CDMA BC0	RTAP 153.6Kbps	Left Side	10mm	384	836.52	24.86	25.00	1.033	-0.03	0.319	0.329
27	CDMA BC0	RTAP 153.6Kbps	Left Side	10mm	1013	824.7	24.76	25.00	1.057	0	0.357	0.377
	CDMA BC0	RTAP 153.6Kbps	Left Side	10mm	777	848.31	24.54	25.00	1.112	-0.05	0.284	0.316
	CDMA BC0	RTAP 153.6Kbps	Right Side	10mm	384	836.52	24.86	25.00	1.033	-0.07	0.171	0.177
	CDMA BC0	RTAP 153.6Kbps	Bottom Side	10mm	384	836.52	24.86	25.00	1.033	-0.04	0.073	0.075
	CDMA BC1	RTAP 153.6Kbps	Front	10mm	600	1880	24.65	25.00	1.084	-0.04	0.183	0.198
	CDMA BC1	RTAP 153.6Kbps	Back	10mm	600	1880	24.65	25.00	1.084	-0.12	0.358	0.388
	CDMA BC1	RTAP 153.6Kbps	Left Side	10mm	600	1880	24.65	25.00	1.084	0.09	0.072	0.078
	CDMA BC1	RTAP 153.6Kbps	Right Side	10mm	600	1880	24.65	25.00	1.084	-0.05	0.254	0.275
	CDMA BC1	RTAP 153.6Kbps	Bottom Side	10mm	600	1880	24.65	25.00	1.084	-0.12	0.394	0.427
	CDMA BC1	RTAP 153.6Kbps	Bottom Side	10mm	25	1851.25	24.65	25.00	1.084	-0.13	0.340	0.369
28	CDMA BC1	RTAP 153.6Kbps	Bottom Side	10mm	1175	1908.75	24.50	25.00	1.122	-0.13	0.501	0.562
	CDMA BC10	RTAP 153.6Kbps	Front	10mm	580	820.5	24.56	25.00	1.107	0.02	0.186	0.206
	CDMA BC10	RTAP 153.6Kbps	Back	10mm	580	820.5	24.56	25.00	1.107	-0.02	0.249	0.276
29	CDMA BC10	RTAP 153.6Kbps	Left Side	10mm	580	820.5	24.56	25.00	1.107	0.13	0.383	0.424
	CDMA BC10	RTAP 153.6Kbps	Right Side	10mm	580	820.5	24.56	25.00	1.107	-0.01	0.217	0.240
	CDMA BC10	RTAP 153.6Kbps	Bottom Side	10mm	580	820.5	24.56	25.00	1.107	0	0.075	0.083

<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)
	LTE Band 7	20M	QPSK	1	0	Front	10mm	21100	2535	24.33	25.00	1.167	0.01	0.263	0.307
	LTE Band 7	20M	QPSK	50	0	Front	10mm	21100	2535	23.31	24.00	1.172	0.16	0.200	0.234
	LTE Band 7	20M	QPSK	1	0	Back	10mm	21100	2535	24.33	25.00	1.167	0.11	0.502	0.586
	LTE Band 7	20M	QPSK	50	0	Back	10mm	21100	2535	23.31	24.00	1.172	0.02	0.390	0.457
	LTE Band 7	20M	QPSK	1	0	Left Side	10mm	21100	2535	24.33	25.00	1.167	-0.01	0.244	0.285
	LTE Band 7	20M	QPSK	50	0	Left Side	10mm	21100	2535	23.31	24.00	1.172	-0.05	0.189	0.222
	LTE Band 7	20M	QPSK	1	0	Right Side	10mm	21100	2535	24.33	25.00	1.167	-0.06	0.036	0.042
	LTE Band 7	20M	QPSK	50	0	Right Side	10mm	21100	2535	23.31	24.00	1.172	-0.02	0.030	0.035
	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	21100	2535	24.33	25.00	1.167	-0.16	0.521	0.608
30	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	20850	2510	24.23	25.00	1.194	0.05	0.531	0.634
	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	21350	2560	24.18	25.00	1.208	-0.04	0.429	0.518
	LTE Band 7	20M	QPSK	50	0	Bottom Side	10mm	21100	2535	23.31	24.00	1.172	-0.17	0.398	0.467
	LTE Band 12	10M	QPSK	1	49	Front	10mm	23095	707.5	24.23	25.00	1.194	-0.05	0.157	0.187
	LTE Band 12	10M	QPSK	25	25	Front	10mm	23095	707.5	23.22	24.00	1.197	-0.02	0.135	0.162
31	LTE Band 12	10M	QPSK	1	49	Back	10mm	23095	707.5	24.23	25.00	1.194	0.02	0.228	0.272
	LTE Band 12	10M	QPSK	25	25	Back	10mm	23095	707.5	23.22	24.00	1.197	-0.02	0.176	0.211
	LTE Band 12	10M	QPSK	1	49	Left Side	10mm	23095	707.5	24.23	25.00	1.194	-0.11	0.192	0.229
	LTE Band 12	10M	QPSK	25	25	Left Side	10mm	23095	707.5	23.22	24.00	1.197	-0.12	0.151	0.181
	LTE Band 12	10M	QPSK	1	49	Right Side	10mm	23095	707.5	24.23	25.00	1.194	0.09	0.136	0.162
	LTE Band 12	10M	QPSK	25	25	Right Side	10mm	23095	707.5	23.22	24.00	1.197	0.07	0.106	0.127
	LTE Band 12	10M	QPSK	1	49	Bottom Side	10mm	23095	707.5	24.23	25.00	1.194	-0.14	0.040	0.048
	LTE Band 12	10M	QPSK	25	25	Bottom Side	10mm	23095	707.5	23.22	24.00	1.197	-0.19	0.031	0.037

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 13	10M	QPSK	1	25	Front	10mm	23230	782	24.26	25.00	1.186	0	0.226	0.268
	LTE Band 13	10M	QPSK	25	12	Front	10mm	23230	782	23.33	24.00	1.167	0.01	0.180	0.210
	LTE Band 13	10M	QPSK	1	25	Back	10mm	23230	782	24.26	25.00	1.186	-0.09	0.290	0.344
	LTE Band 13	10M	QPSK	25	12	Back	10mm	23230	782	23.33	24.00	1.167	-0.03	0.231	0.270
32	LTE Band 13	10M	QPSK	1	25	Left Side	10mm	23230	782	24.26	25.00	1.186	-0.11	0.342	0.406
	LTE Band 13	10M	QPSK	25	12	Left Side	10mm	23230	782	23.33	24.00	1.167	-0.1	0.273	0.319
	LTE Band 13	10M	QPSK	1	25	Right Side	10mm	23230	782	24.26	25.00	1.186	0.02	0.205	0.243
	LTE Band 13	10M	QPSK	25	12	Right Side	10mm	23230	782	23.33	24.00	1.167	0.01	0.164	0.191
	LTE Band 13	10M	QPSK	1	25	Bottom Side	10mm	23230	782	24.26	25.00	1.186	-0.18	0.050	0.059
	LTE Band 13	10M	QPSK	25	12	Bottom Side	10mm	23230	782	23.33	24.00	1.167	-0.16	0.039	0.046
	LTE Band 25	20M	QPSK	1	0	Front	10mm	26590	1905	24.48	24.50	1.005	-0.04	0.319	0.320
	LTE Band 25	20M	QPSK	50	0	Front	10mm	26590	1905	24.33	24.50	1.040	0	0.242	0.252
	LTE Band 25	20M	QPSK	1	0	Back	10mm	26590	1905	24.48	24.50	1.005	-0.13	0.584	0.587
	LTE Band 25	20M	QPSK	50	0	Back	10mm	26590	1905	24.33	24.50	1.040	-0.13	0.449	0.467
	LTE Band 25	20M	QPSK	1	0	Left Side	10mm	26590	1905	24.48	24.50	1.005	-0.13	0.138	0.139
	LTE Band 25	20M	QPSK	50	0	Left Side	10mm	26590	1905	24.33	24.50	1.040	-0.07	0.132	0.137
	LTE Band 25	20M	QPSK	1	0	Right Side	10mm	26590	1905	24.48	24.50	1.005	0.02	0.329	0.331
	LTE Band 25	20M	QPSK	50	0	Right Side	10mm	26590	1905	24.33	24.50	1.040	-0.07	0.313	0.325
	LTE Band 25	20M	QPSK	1	0	Bottom Side	10mm	26590	1905	24.48	24.50	1.005	-0.11	0.623	0.626
33	LTE Band 25	20M	QPSK	1	0	Bottom Side	10mm	26140	1860	24.26	24.50	1.057	-0.12	0.604	0.638
	LTE Band 25	20M	QPSK	1	0	Bottom Side	10mm	26340	1880	24.34	24.50	1.038	-0.11	0.614	0.637
	LTE Band 25	20M	QPSK	50	0	Bottom Side	10mm	26590	1905	24.33	24.50	1.040	-0.19	0.475	0.494
	LTE Band 26	15M	QPSK	1	74	Front	10mm	26865	831.5	23.88	25.00	1.294	-0.14	0.199	0.258
	LTE Band 26	15M	QPSK	36	39	Front	10mm	26865	831.5	23.89	25.00	1.291	0.15	0.171	0.221
	LTE Band 26	15M	QPSK	1	74	Back	10mm	26865	831.5	23.88	25.00	1.294	-0.07	0.239	0.309
	LTE Band 26	15M	QPSK	36	39	Back	10mm	26865	831.5	23.89	25.00	1.291	-0.15	0.213	0.275
34	LTE Band 26	15M	QPSK	1	74	Left Side	10mm	26865	831.5	23.88	25.00	1.294	-0.12	0.299	0.387
	LTE Band 26	15M	QPSK	36	39	Left Side	10mm	26865	831.5	23.89	25.00	1.291	0	0.223	0.288
	LTE Band 26	15M	QPSK	1	74	Right Side	10mm	26865	831.5	23.88	25.00	1.294	-0.11	0.191	0.247
	LTE Band 26	15M	QPSK	36	39	Right Side	10mm	26865	831.5	23.89	25.00	1.291	-0.06	0.163	0.210
	LTE Band 26	10M	QPSK	1	74	Bottom Side	10mm	26865	831.5	23.88	25.00	1.294	-0.14	0.031	0.040
	LTE Band 26	10M	QPSK	36	39	Bottom Side	10mm	26865	831.5	23.89	25.00	1.291	-0.1	0.026	0.034

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 30	10M	QPSK	1	25	Front	10mm	27710	2310	24.29	25.00	1.178	0.01	0.145	0.171
	LTE Band 30	10M	QPSK	25	0	Front	10mm	27710	2310	23.38	24.00	1.153	-0.09	0.115	0.133
	LTE Band 30	10M	QPSK	1	25	Back	10mm	27710	2310	24.29	25.00	1.178	-0.03	0.226	0.266
	LTE Band 30	10M	QPSK	25	0	Back	10mm	27710	2310	23.38	24.00	1.153	0.14	0.209	0.241
	LTE Band 30	10M	QPSK	1	25	Left Side	10mm	27710	2310	24.29	25.00	1.178	-0.14	0.128	0.151
	LTE Band 30	10M	QPSK	25	0	Left Side	10mm	27710	2310	23.38	24.00	1.153	0.08	0.108	0.125
	LTE Band 30	10M	QPSK	1	25	Right Side	10mm	27710	2310	24.29	25.00	1.178	-0.02	0.092	0.108
	LTE Band 30	10M	QPSK	25	0	Right Side	10mm	27710	2310	23.38	24.00	1.153	0.02	0.074	0.085
35	LTE Band 30	10M	QPSK	1	25	Bottom Side	10mm	27710	2310	24.29	25.00	1.178	-0.13	0.275	0.324
	LTE Band 30	10M	QPSK	25	0	Bottom Side	10mm	27710	2310	23.38	24.00	1.153	0.14	0.229	0.264
	LTE Band 66	20M	QPSK	1	0	Front	10mm	132322	1745	23.88	24.50	1.153	-0.08	0.226	0.261
	LTE Band 66	20M	QPSK	50	0	Front	10mm	132072	1720	22.84	23.50	1.164	-0.07	0.164	0.191
	LTE Band 66	20M	QPSK	1	0	Back	10mm	132322	1745	23.88	24.50	1.153	-0.13	0.416	0.480
	LTE Band 66	20M	QPSK	1	0	Back	10mm	132072	1720	23.87	24.50	1.156	-0.12	0.388	0.449
36	LTE Band 66	20M	QPSK	1	0	Back	10mm	132572	1770	23.75	24.50	1.189	-0.14	0.449	0.534
	LTE Band 66	20M	QPSK	50	0	Back	10mm	132072	1720	22.84	23.50	1.164	-0.06	0.316	0.368
	LTE Band 66	20M	QPSK	1	0	Left Side	10mm	132322	1745	23.88	24.50	1.153	0.01	0.191	0.220
	LTE Band 66	20M	QPSK	50	0	Left Side	10mm	132072	1720	22.84	23.50	1.164	-0.16	0.110	0.128
	LTE Band 66	20M	QPSK	1	0	Right Side	10mm	132322	1745	23.88	24.50	1.153	-0.07	0.220	0.254
	LTE Band 66	20M	QPSK	50	0	Right Side	10mm	132072	1720	22.84	23.50	1.164	-0.04	0.153	0.178
	LTE Band 66	20M	QPSK	1	0	Bottom Side	10mm	132322	1720	23.88	24.50	1.153	0.11	0.415	0.479
	LTE Band 66	20M	QPSK	50	0	Bottom Side	10mm	132072	1720	22.84	23.50	1.164	0.09	0.319	0.371

<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	1	0	Front	10mm	40620	2593	25.69	26.00	1.074	62.9	1.006	0.11	0.247	0.267
	LTE Band 41	20M	QPSK	50	0	Front	10mm	40620	2593	24.63	25.00	1.089	62.9	1.006	0.04	0.200	0.219
	LTE Band 41	20M	QPSK	1	0	Back	10mm	40620	2593	25.69	26.00	1.074	62.9	1.006	0.03	0.459	0.496
	LTE Band 41	20M	QPSK	1	0	Back	10mm	39750	2506	25.48	26.00	1.127	62.9	1.006	0.01	0.401	0.455
	LTE Band 41	20M	QPSK	1	0	Back	10mm	40185	2549.5	25.64	26.00	1.086	62.9	1.006	-0.03	0.406	0.444
37	LTE Band 41	20M	QPSK	1	0	Back	10mm	41055	2636.5	24.99	26.00	1.262	62.9	1.006	-0.01	0.548	0.696
	LTE Band 41	20M	QPSK	1	0	Back	10mm	41490	2680	24.26	26.00	1.493	62.9	1.006	0.04	0.449	0.674
	LTE Band 41	20M	QPSK	50	0	Back	10mm	40620	2593	24.63	25.00	1.089	62.9	1.006	0.01	0.371	0.406
	LTE Band 41	20M	QPSK	100	0	Back	10mm	40185	2549.5	24.58	25.00	1.102	62.9	1.006	0.02	0.316	0.350
	LTE Band 41	20M	QPSK	1	0	Left Side	10mm	40620	2593	25.69	26.00	1.074	62.9	1.006	0.15	0.185	0.200
	LTE Band 41	20M	QPSK	50	0	Left Side	10mm	40620	2593	24.63	25.00	1.089	62.9	1.006	0.15	0.145	0.159
	LTE Band 41	20M	QPSK	1	0	Right Side	10mm	40620	2593	25.69	26.00	1.074	62.9	1.006	0.05	0.075	0.081
	LTE Band 41	20M	QPSK	50	0	Right Side	10mm	40620	2593	24.63	25.00	1.089	62.9	1.006	0.03	0.061	0.067
	LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	40620	2593	25.69	26.00	1.074	62.9	1.006	-0.02	0.378	0.408
	LTE Band 41	20M	QPSK	50	0	Bottom Side	10mm	40620	2593	24.63	25.00	1.089	62.9	1.006	-0.06	0.294	0.322

<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	Front	10mm	Ant 1	1	2412	14.45	14.50	1.012	100	1.000	-0.15	0.034	0.034
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 1	1	2412	14.45	14.50	1.012	100	1.000	0.11	0.071	0.072
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 1	1	2412	14.45	14.50	1.012	100	1.000	0.11	0.016	0.016
38	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 1	1	2412	14.45	14.50	1.012	100	1.000	0.04	0.078	0.079
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 1	6	2437	14.44	14.50	1.014	100	1.000	0.19	0.070	0.071
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 1	11	2462	12.98	13.00	1.005	100	1.000	0.15	0.048	0.048
	WLAN2.4GHz	802.11b 1Mbps	Bottom Side	10mm	Ant 1	1	2412	14.45	14.50	1.012	100	1.000	0.06	0.001	0.001
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 2	1	2412	15.49	15.50	1.002	100	1.000	-0.19	0.013	0.013
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 2	1	2412	15.49	15.50	1.002	100	1.000	-0.16	0.026	0.026
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 2	1	2412	15.49	15.50	1.002	100	1.000	0.1	0.011	0.011
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 2	1	2412	15.49	15.50	1.002	100	1.000	0.14	0.001	0.001
	WLAN2.4GHz	802.11b 1Mbps	Bottom Side	10mm	Ant 2	1	2412	15.49	15.50	1.002	100	1.000	0.18	0.010	0.010
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 1	38	5190	11.49	11.50	1.003	89.77	1.114	-0.19	0.005	0.006
39	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 1	38	5190	11.49	11.50	1.003	89.77	1.114	-0.14	0.016	0.018
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 1	46	5230	11.38	11.50	1.028	89.77	1.114	0.16	0.014	0.016
	WLAN5GHz	802.11n-HT40 MCS0	Left Side	10mm	Ant 1	38	5190	11.49	11.50	1.003	89.77	1.114	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Right Side	10mm	Ant 1	38	5190	11.49	11.50	1.003	89.77	1.114	0.16	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Top Side	10mm	Ant 1	38	5190	11.49	11.50	1.003	89.77	1.114	0.05	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Bottom Side	10mm	Ant 1	38	5190	11.49	11.50	1.003	89.77	1.114	-0.19	0.008	0.009
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 2	38	5200	9.49	10.50	1.261	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 2	38	5190	9.49	10.50	1.261	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Left Side	10mm	Ant 2	38	5190	9.49	10.50	1.261	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Right Side	10mm	Ant 2	38	5190	9.49	10.50	1.261	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Top Side	10mm	Ant 2	38	5190	9.49	10.50	1.261	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Bottom Side	10mm	Ant 2	38	5190	9.49	10.50	1.261	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 1	151	5755	11.48	11.50	1.005	89.77	1.114	-0.1	0.002	0.002
40	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 1	151	5755	11.48	11.50	1.005	89.77	1.114	-0.16	0.042	0.047
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 1	159	5795	11.16	11.50	1.082	89.77	1.114	-0.11	0.035	0.042
	WLAN5GHz	802.11n-HT40 MCS0	Left Side	10mm	Ant 1	151	5755	11.48	11.50	1.005	89.77	1.114	-0.11	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Right Side	10mm	Ant 1	151	5755	11.48	11.50	1.005	89.77	1.114	0.19	0.042	0.047
	WLAN5GHz	802.11n-HT40 MCS0	Top Side	10mm	Ant 1	151	5755	11.48	11.50	1.005	89.77	1.114	-0.14	0.014	0.016
	WLAN5GHz	802.11n-HT40 MCS0	Bottom Side	10mm	Ant 1	151	5755	11.48	11.50	1.005	89.77	1.114	0.06	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 2	151	5755	9.46	10.50	1.270	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 2	151	5755	9.46	10.50	1.270	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Left Side	10mm	Ant 2	151	5755	9.46	10.50	1.270	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Right Side	10mm	Ant 2	151	5755	9.46	10.50	1.270	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Top Side	10mm	Ant 2	151	5755	9.46	10.50	1.270	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Bottom Side	10mm	Ant 2	151	5755	9.46	10.50	1.270	90.29	1.108	0	0.001	0.001

14.3 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)
	GSM850	GPRS (3 Tx slots)	Front	10mm	128	824.2	30.26	30.50	1.057	0.14	0.274	0.290
	GSM850	GPRS (3 Tx slots)	Back	10mm	128	824.2	30.26	30.50	1.057	-0.01	0.318	0.336
	GSM850	GPRS (3 Tx slots)	Back	10mm	189	836.4	30.16	30.50	1.081	0.03	0.321	0.347
41	GSM850	GPRS (3 Tx slots)	Back	10mm	251	848.8	30.03	30.50	1.114	0.02	0.316	0.352
	GSM1900	GPRS (3 Tx slots)	Front	10mm	512	1850.2	26.98	27.00	1.005	-0.11	0.137	0.138
	GSM1900	GPRS (3 Tx slots)	Back	10mm	512	1850.2	26.98	27.00	1.005	-0.07	0.288	0.289
	GSM1900	GPRS (3 Tx slots)	Back	10mm	661	1880	26.85	27.00	1.035	-0.09	0.344	0.356
42	GSM1900	GPRS (3 Tx slots)	Back	10mm	810	1909.8	26.83	27.00	1.040	-0.15	0.369	0.384

<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 II	RMC 12.2Kbps	Front	10mm	9538	1907.6	24.91	25.00	1.021	-0.05	0.317	0.324
	WCDMA II	RMC 12.2Kbps	Back	10mm	9538	1907.6	24.91	25.00	1.021	-0.16	0.579	0.591
	WCDMA II	RMC 12.2Kbps	Back	10mm	9262	1852.4	24.74	25.00	1.062	0.07	0.522	0.554
43	WCDMA II	RMC 12.2Kbps	Back	10mm	9400	1880	24.90	25.00	1.023	-0.07	0.597	0.611
	WCDMA IV	RMC 12.2Kbps	Front	10mm	1312	1712.4	24.66	25.00	1.081	-0.15	0.119	0.129
	WCDMA IV	RMC 12.2Kbps	Back	10mm	1312	1712.4	24.66	25.00	1.081	-0.13	0.203	0.220
44	WCDMA IV	RMC 12.2Kbps	Back	10mm	1413	1732.6	24.59	25.00	1.099	-0.18	0.500	0.550
	WCDMA IV	RMC 12.2Kbps	Back	10mm	1513	1752.6	24.62	25.00	1.091	0.1	0.225	0.246
	WCDMA V	RMC 12.2Kbps	Front	10mm	4233	846.6	24.42	25.00	1.143	-0.02	0.238	0.272
	WCDMA V	RMC 12.2Kbps	Back	10mm	4233	846.6	24.42	25.00	1.143	-0.03	0.302	0.345
45	WCDMA V	RMC 12.2Kbps	Back	10mm	4132	826.4	24.31	25.00	1.172	-0.04	0.342	0.401
	WCDMA V	RMC 12.2Kbps	Back	10mm	4182	836.4	24.41	25.00	1.146	-0.04	0.297	0.340

<CDMA 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)
	CDMA BC0	1xRTT RC3 SO32	Front	10mm	384	836.52	24.85	25.00	1.035	-0.09	0.160	0.166
	CDMA BC0	1xRTT RC3 SO32	Back	10mm	384	836.52	24.85	25.00	1.035	0.01	0.209	0.216
46	CDMA BC0	1xRTT RC3 SO32	Back	10mm	1013	824.7	24.75	25.00	1.059	-0.11	0.229	0.243
	CDMA BC0	1xRTT RC3 SO32	Back	10mm	777	848.31	24.54	25.00	1.112	-0.12	0.182	0.202
	CDMA BC1	1xRTT RC3 SO32	Front	10mm	600	1880	24.65	25.00	1.084	0.08	0.250	0.271
	CDMA BC1	1xRTT RC3 SO32	Back	10mm	600	1880	24.65	25.00	1.084	0.17	0.433	0.469
	CDMA BC1	1xRTT RC3 SO32	Back	10mm	25	1851.25	24.65	25.00	1.084	-0.11	0.316	0.343
47	CDMA BC1	1xRTT RC3 SO32	Back	10mm	1175	1908.75	24.52	25.00	1.117	-0.09	0.544	0.608
	CDMA BC10	1xRTT RC3 SO32	Front	10mm	580	820.5	24.57	25.00	1.104	-0.06	0.184	0.203
48	CDMA BC10	1xRTT RC3 SO32	Back	10mm	580	820.5	24.57	25.00	1.104	-0.04	0.246	0.272

<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)
	LTE Band 7	20M	QPSK	1	0	Front	10mm	21100	2535	24.33	25.00	1.167	0.01	0.263	0.307
	LTE Band 7	20M	QPSK	50	0	Front	10mm	21100	2535	23.31	24.00	1.172	0.16	0.200	0.234
	LTE Band 7	20M	QPSK	1	0	Back	10mm	21100	2535	24.33	25.00	1.167	0.11	0.502	0.586
49	LTE Band 7	20M	QPSK	1	0	Back	10mm	20850	2510	24.23	25.00	1.194	-0.04	0.640	0.764
	LTE Band 7	20M	QPSK	1	0	Back	10mm	21350	2560	24.18	25.00	1.208	0.07	0.561	0.678
	LTE Band 7	20M	QPSK	50	0	Back	10mm	21100	2535	23.31	24.00	1.172	0.02	0.390	0.457
	LTE Band 12	10M	QPSK	1	49	Front	10mm	23095	707.5	24.23	25.00	1.194	-0.05	0.157	0.187
	LTE Band 12	10M	QPSK	25	25	Front	10mm	23095	707.5	23.22	24.00	1.197	-0.02	0.135	0.162
50	LTE Band 12	10M	QPSK	1	49	Back	10mm	23095	707.5	24.23	25.00	1.194	0.02	0.228	0.272
	LTE Band 12	10M	QPSK	25	25	Back	10mm	23095	707.5	23.22	24.00	1.197	-0.02	0.176	0.211
	LTE Band 13	10M	QPSK	1	25	Front	10mm	23230	782	24.26	25.00	1.186	0	0.226	0.268
	LTE Band 13	10M	QPSK	25	12	Front	10mm	23230	782	23.33	24.00	1.167	0.01	0.180	0.210
51	LTE Band 13	10M	QPSK	1	25	Back	10mm	23230	782	24.26	25.00	1.186	-0.09	0.290	0.344
	LTE Band 13	10M	QPSK	25	12	Back	10mm	23230	782	23.33	24.00	1.167	-0.03	0.231	0.270
	LTE Band 25	20M	QPSK	1	0	Front	10mm	26590	1905	24.48	24.50	1.005	-0.04	0.319	0.320
	LTE Band 25	20M	QPSK	50	0	Front	10mm	26590	1905	24.33	24.50	1.040	0	0.242	0.252
52	LTE Band 25	20M	QPSK	1	0	Back	10mm	26590	1905	24.48	24.50	1.005	-0.13	0.584	0.587
	LTE Band 25	20M	QPSK	1	0	Back	10mm	26140	1860	24.26	24.50	1.057	-0.14	0.522	0.552
	LTE Band 25	20M	QPSK	1	0	Back	10mm	26340	1880	24.34	24.50	1.038	-0.1	0.563	0.584
	LTE Band 25	20M	QPSK	50	0	Back	10mm	26590	1905	24.33	24.50	1.040	-0.13	0.449	0.467
	LTE Band 26	15M	QPSK	1	74	Front	10mm	26865	831.5	23.88	25.00	1.294	-0.14	0.199	0.258
	LTE Band 26	15M	QPSK	36	39	Front	10mm	26865	831.5	23.89	25.00	1.291	0.15	0.171	0.221
53	LTE Band 26	15M	QPSK	1	74	Back	10mm	26865	831.5	23.88	25.00	1.294	-0.07	0.239	0.309
	LTE Band 26	15M	QPSK	36	39	Back	10mm	26865	831.5	23.89	25.00	1.291	-0.15	0.213	0.275
	LTE Band 30	10M	QPSK	1	25	Front	10mm	27710	2310	24.29	25.00	1.178	0.01	0.145	0.171
	LTE Band 30	10M	QPSK	25	0	Front	10mm	27710	2310	23.38	24.00	1.153	-0.09	0.115	0.133
54	LTE Band 30	10M	QPSK	1	25	Back	10mm	27710	2310	24.29	25.00	1.178	-0.03	0.226	0.266
	LTE Band 30	10M	QPSK	25	0	Back	10mm	27710	2310	23.38	24.00	1.153	0.14	0.209	0.241
	LTE Band 66	20M	QPSK	1	0	Front	10mm	132322	1745	23.88	24.50	1.153	-0.08	0.226	0.261
	LTE Band 66	20M	QPSK	50	0	Front	10mm	132072	1720	22.84	23.50	1.164	-0.07	0.164	0.191
	LTE Band 66	20M	QPSK	1	0	Back	10mm	132322	1745	23.88	24.50	1.153	-0.13	0.416	0.480
	LTE Band 66	20M	QPSK	1	0	Back	10mm	132072	1720	23.87	24.50	1.156	-0.12	0.388	0.449
55	LTE Band 66	20M	QPSK	1	0	Back	10mm	132572	1770	23.75	24.50	1.189	-0.14	0.449	0.534
	LTE Band 66	20M	QPSK	50	0	Back	10mm	132072	1720	22.84	23.50	1.164	-0.06	0.316	0.368

<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	1	0	Front	10mm	40620	2593	25.69	26.00	1.074	62.9	1.006	0.11	0.247	0.267
	LTE Band 41	20M	QPSK	50	0	Front	10mm	40620	2593	24.63	25.00	1.089	62.9	1.006	0.04	0.200	0.219
	LTE Band 41	20M	QPSK	1	0	Back	10mm	40620	2593	25.69	26.00	1.074	62.9	1.006	0.03	0.459	0.496
	LTE Band 41	20M	QPSK	1	0	Back	10mm	39750	2506	25.48	26.00	1.127	62.9	1.006	0.01	0.401	0.455
	LTE Band 41	20M	QPSK	1	0	Back	10mm	40185	2549.5	25.64	26.00	1.086	62.9	1.006	-0.03	0.406	0.444
56	LTE Band 41	20M	QPSK	1	0	Back	10mm	41055	2636.5	24.99	26.00	1.262	62.9	1.006	-0.01	0.548	0.696
	LTE Band 41	20M	QPSK	1	0	Back	10mm	41490	2680	24.26	26.00	1.493	62.9	1.006	0.04	0.449	0.674
	LTE Band 41	20M	QPSK	50	0	Back	10mm	40620	2593	24.63	25.00	1.089	62.9	1.006	0.01	0.371	0.406
	LTE Band 41	20M	QPSK	100	0	Back	10mm	40185	2549.5	24.58	25.00	1.102	62.9	1.006	0.02	0.316	0.350

<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	Front	10mm	Ant 1	1	2412	14.45	14.50	1.012	100	1.000	-0.15	0.034	0.034
57	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 1	1	2412	14.45	14.50	1.012	100	1.000	0.11	0.071	0.072
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 1	6	2437	14.44	14.50	1.014	100	1.000	-0.18	0.062	0.063
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 1	11	2462	12.98	13.00	1.005	100	1.000	-0.11	0.035	0.035
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 2	1	2412	15.49	15.50	1.002	100	1.000	-0.19	0.013	0.013
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 2	1	2412	15.49	15.50	1.002	100	1.000	-0.16	0.026	0.026
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 1	62	5310	11.44	11.50	1.014	89.77	1.114	-0.13	0.006	0.007
58	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 1	62	5310	11.44	11.50	1.014	89.77	1.114	-0.06	0.017	0.019
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 1	54	5270	11.42	11.50	1.019	89.77	1.114	0.16	0.015	0.017
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 2	62	5310	9.43	10.50	1.278	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 2	62	5310	9.43	10.50	1.278	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 1	102	5510	11.48	11.50	1.005	89.77	1.114	0.17	0.005	0.006
59	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 1	102	5510	11.48	11.50	1.005	89.77	1.114	0.15	0.046	0.051
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 1	110	5550	11.47	11.50	1.007	89.77	1.114	-0.09	0.037	0.042
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 1	134	5670	11.47	11.50	1.007	89.77	1.114	0.1	0.037	0.042
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 2	102	5510	9.41	10.50	1.284	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 2	102	5510	9.41	10.50	1.284	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 1	151	5755	11.48	11.50	1.005	89.77	1.114	-0.1	0.002	0.002
60	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 1	151	5755	11.48	11.50	1.005	89.77	1.114	-0.16	0.042	0.047
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 1	159	5795	11.16	11.50	1.082	89.77	1.114	-0.11	0.035	0.042
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 2	151	5755	9.46	10.50	1.270	90.29	1.108	0	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 2	151	5755	9.46	10.50	1.270	90.29	1.108	0	0.001	0.001

15. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Portable Handset		
		Head	Body-worn	Hotspot
1.	GSM Voice + WLAN2.4GHz	Yes	Yes	
2.	GPRS/EDGE + WLAN2.4GHz	Yes	Yes	Yes
3.	WCDMA + WLAN2.4GHz	Yes	Yes	Yes
4.	LTE + WLAN2.4GHz	Yes	Yes	Yes
5.	GSM Voice + Bluetooth	Yes	Yes	
6.	GPRS/EDGE + Bluetooth	Yes	Yes	Yes
7.	WCDMA+ Bluetooth	Yes	Yes	Yes
8.	LTE + Bluetooth	Yes	Yes	Yes
9.	GSM Voice + WLAN5GHz	Yes	Yes	
10.	GPRS/EDGE + WLAN5GHz	Yes	Yes	Yes
11.	WCDMA + WLAN5GHz	Yes	Yes	Yes
12.	LTE + WLAN5GHz	Yes	Yes	Yes
13.	GSM Voice + WLAN2.4GHz Ant 2 + Bluetooth Ant 1	Yes	Yes	
14.	GPRS/EDGE + + WLAN2.4GHz Ant 2 + Bluetooth Ant 1	Yes	Yes	Yes
15.	WCDMA + WLAN2.4GHz Ant 2 + Bluetooth Ant 1	Yes	Yes	Yes
16.	LTE + WLAN2.4GHz Ant 2 + Bluetooth Ant 1	Yes	Yes	Yes
17.	GSM Voice + WLAN5GHz Ant 2 + Bluetooth Ant 1	Yes	Yes	
18.	GPRS/EDGE + + WLAN5GHz Ant 2 + Bluetooth Ant 1	Yes	Yes	Yes
19.	WCDMA + WLAN5GHz Ant 2 + Bluetooth Ant 1	Yes	Yes	Yes
20.	LTE + WLAN5GHz Ant 2 + Bluetooth Ant 1	Yes	Yes	Yes

General Note:

1. This device supported VoIP in EGPRS, WCDMA, LTE (e.g. 3rd party VoIP).
2. This device WLAN 2.4GHz / 5.2GHz / 5.8GHz supports Hotspot operation and Bluetooth support tethering applications.
3. The worst case WLAN reported SAR for each configuration was used for SAR summation. Therefore, the following summations represent the absolute worst cases for simultaneous transmission with 5 GHz WLAN.
4. WLAN and Bluetooth share the same antenna 1, and cannot transmit simultaneously.
5. 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.
6. The Scaled SAR summation is calculated based on the same configuration and test position.
7. Per KDB 447498 D01v06, 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.
8. For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v06 based on the formula below.
   i) (*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)]·[√f(GHz)/*x*] W/kg for *test separation distances* ≤ 50 mm; where *x* = 7.5 for 1-g SAR, and *x* = 18.75 for 10-g SAR.
   ii) When the minimum separation distance is < 5mm, the distance is used 5mm to determine SAR test exclusion.
   iii) 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the *test separation distances* is > 50 mm.

Bluetooth Max Power	Exposure Position	Hotspot	Body worn
	Test separation	10 mm	10 mm
8.0 dBm	Estimated SAR (W/kg)	0.126 W/kg	0.126 W/kg

15.1 Head Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+3+6 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+5+6 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1				
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)				
GSM	GSM850	Right Cheek	0.183	0.135	0.001	0.029	0.001	0.042	**0.319**	**0.226**	**0.213**	**0.226**
		Right Tilted	0.130	0.118	0.001	0.041	0.001	0.050	**0.249**	**0.181**	**0.172**	**0.181**
		Left Cheek	0.273	0.114	0.003	0.077	0.001	0.039	**0.390**	**0.315**	**0.351**	**0.313**
		Left Tilted	0.129	0.140	0.001	0.106	0.001	0.051	**0.270**	**0.181**	**0.236**	**0.181**
	GSM1900	Right Cheek	0.140	0.135	0.001	0.029	0.001	0.042	**0.276**	**0.183**	**0.170**	**0.183**
		Right Tilted	0.071	0.118	0.001	0.041	0.001	0.050	**0.190**	**0.122**	**0.113**	**0.122**
		Left Cheek	0.078	0.114	0.003	0.077	0.001	0.039	**0.195**	**0.120**	**0.156**	**0.118**
		Left Tilted	0.052	0.140	0.001	0.106	0.001	0.051	**0.193**	**0.104**	**0.159**	**0.104**
WCDMA	WCDMA II	Right Cheek	0.248	0.135	0.001	0.029	0.001	0.042	**0.384**	**0.291**	**0.278**	**0.291**
		Right Tilted	0.133	0.118	0.001	0.041	0.001	0.050	**0.252**	**0.184**	**0.175**	**0.184**
		Left Cheek	0.152	0.114	0.003	0.077	0.001	0.039	**0.269**	**0.194**	**0.230**	**0.192**
		Left Tilted	0.106	0.140	0.001	0.106	0.001	0.051	**0.247**	**0.158**	**0.213**	**0.158**
	WCDMA IV	Right Cheek	0.079	0.135	0.001	0.029	0.001	0.042	**0.215**	**0.122**	**0.109**	**0.122**
		Right Tilted	0.053	0.118	0.001	0.041	0.001	0.050	**0.172**	**0.104**	**0.095**	**0.104**
		Left Cheek	0.162	0.114	0.003	0.077	0.001	0.039	**0.279**	**0.204**	**0.240**	**0.202**
		Left Tilted	0.052	0.140	0.001	0.106	0.001	0.051	**0.193**	**0.104**	**0.159**	**0.104**
	WCDMA V	Right Cheek	0.174	0.135	0.001	0.029	0.001	0.042	**0.310**	**0.217**	**0.204**	**0.217**
		Right Tilted	0.119	0.118	0.001	0.041	0.001	0.050	**0.238**	**0.170**	**0.161**	**0.170**
		Left Cheek	0.218	0.114	0.003	0.077	0.001	0.039	**0.335**	**0.260**	**0.296**	**0.258**
		Left Tilted	0.147	0.140	0.001	0.106	0.001	0.051	**0.288**	**0.199**	**0.254**	**0.199**
CDMA	CDMA BC0	Right Cheek	0.106	0.135	0.001	0.029	0.001	0.042	**0.242**	**0.149**	**0.136**	**0.149**
		Right Tilted	0.074	0.118	0.001	0.041	0.001	0.050	**0.193**	**0.125**	**0.116**	**0.125**
		Left Cheek	0.137	0.114	0.003	0.077	0.001	0.039	**0.254**	**0.179**	**0.215**	**0.177**
		Left Tilted	0.093	0.140	0.001	0.106	0.001	0.051	**0.234**	**0.145**	**0.200**	**0.145**
	CDMA BC1	Right Cheek	0.280	0.135	0.001	0.029	0.001	0.042	**0.416**	**0.323**	**0.310**	**0.323**
		Right Tilted	0.112	0.118	0.001	0.041	0.001	0.050	**0.231**	**0.163**	**0.154**	**0.163**
		Left Cheek	0.114	0.114	0.003	0.077	0.001	0.039	**0.231**	**0.156**	**0.192**	**0.154**
		Left Tilted	0.082	0.140	0.001	0.106	0.001	0.051	**0.223**	**0.134**	**0.189**	**0.134**
	CDMA BC10	Right Cheek	0.129	0.135	0.001	0.029	0.001	0.042	**0.265**	**0.172**	**0.159**	**0.172**
		Right Tilted	0.096	0.118	0.001	0.041	0.001	0.050	**0.215**	**0.147**	**0.138**	**0.147**
		Left Cheek	0.149	0.114	0.003	0.077	0.001	0.039	**0.266**	**0.191**	**0.227**	**0.189**
		Left Tilted	0.109	0.140	0.001	0.106	0.001	0.051	**0.250**	**0.161**	**0.216**	**0.161**

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+3+6 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+5+6 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1				
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)				
LTE	LTE Band 7	Right Cheek	0.141	0.135	0.001	0.029	0.001	0.042	**0.277**	**0.184**	**0.171**	**0.184**
		Right Tilted	0.033	0.118	0.001	0.041	0.001	0.050	**0.152**	**0.084**	**0.075**	**0.084**
		Left Cheek	0.089	0.114	0.003	0.077	0.001	0.039	**0.206**	**0.131**	**0.167**	**0.129**
		Left Tilted	0.056	0.140	0.001	0.106	0.001	0.051	**0.197**	**0.108**	**0.163**	**0.108**
	LTE Band 12	Right Cheek	0.155	0.135	0.001	0.029	0.001	0.042	**0.291**	**0.198**	**0.185**	**0.198**
		Right Tilted	0.106	0.118	0.001	0.041	0.001	0.050	**0.225**	**0.157**	**0.148**	**0.157**
		Left Cheek	0.171	0.114	0.003	0.077	0.001	0.039	**0.288**	**0.213**	**0.249**	**0.211**
		Left Tilted	0.082	0.140	0.001	0.106	0.001	0.051	**0.223**	**0.134**	**0.189**	**0.134**
	LTE Band 13	Right Cheek	0.164	0.135	0.001	0.029	0.001	0.042	**0.300**	**0.207**	**0.194**	**0.207**
		Right Tilted	0.133	0.118	0.001	0.041	0.001	0.050	**0.252**	**0.184**	**0.175**	**0.184**
		Left Cheek	0.186	0.114	0.003	0.077	0.001	0.039	**0.303**	**0.228**	**0.264**	**0.226**
		Left Tilted	0.113	0.140	0.001	0.106	0.001	0.051	**0.254**	**0.165**	**0.220**	**0.165**
	LTE Band 25	Right Cheek	0.201	0.135	0.001	0.029	0.001	0.042	**0.337**	**0.244**	**0.231**	**0.244**
		Right Tilted	0.103	0.118	0.001	0.041	0.001	0.050	**0.222**	**0.154**	**0.145**	**0.154**
		Left Cheek	0.139	0.114	0.003	0.077	0.001	0.039	**0.256**	**0.181**	**0.217**	**0.179**
		Left Tilted	0.113	0.140	0.001	0.106	0.001	0.051	**0.254**	**0.165**	**0.220**	**0.165**
	LTE Band 26	Right Cheek	0.192	0.135	0.001	0.029	0.001	0.042	**0.328**	**0.235**	**0.222**	**0.235**
		Right Tilted	0.115	0.118	0.001	0.041	0.001	0.050	**0.234**	**0.166**	**0.157**	**0.166**
		Left Cheek	0.221	0.114	0.003	0.077	0.001	0.039	**0.338**	**0.263**	**0.299**	**0.261**
		Left Tilted	0.137	0.140	0.001	0.106	0.001	0.051	**0.278**	**0.189**	**0.244**	**0.189**
	LTE Band 30	Right Cheek	0.078	0.135	0.001	0.029	0.001	0.042	**0.214**	**0.121**	**0.108**	**0.121**
		Right Tilted	0.080	0.118	0.001	0.041	0.001	0.050	**0.199**	**0.131**	**0.122**	**0.131**
		Left Cheek	0.098	0.114	0.003	0.077	0.001	0.039	**0.215**	**0.140**	**0.176**	**0.138**
		Left Tilted	0.060	0.140	0.001	0.106	0.001	0.051	**0.201**	**0.112**	**0.167**	**0.112**
	LTE Band 41	Right Cheek	0.206	0.135	0.001	0.029	0.001	0.042	**0.342**	**0.249**	**0.236**	**0.249**
		Right Tilted	0.038	0.118	0.001	0.041	0.001	0.050	**0.157**	**0.089**	**0.080**	**0.089**
		Left Cheek	0.081	0.114	0.003	0.077	0.001	0.039	**0.198**	**0.123**	**0.159**	**0.121**
		Left Tilted	0.066	0.140	0.001	0.106	0.001	0.051	**0.207**	**0.118**	**0.173**	**0.118**
	LTE Band 66	Right Cheek	0.217	0.135	0.001	0.029	0.001	0.042	**0.353**	**0.260**	**0.247**	**0.260**
		Right Tilted	0.135	0.118	0.001	0.041	0.001	0.050	**0.254**	**0.186**	**0.177**	**0.186**
		Left Cheek	0.158	0.114	0.003	0.077	0.001	0.039	**0.275**	**0.200**	**0.236**	**0.198**
		Left Tilted	0.140	0.140	0.001	0.106	0.001	0.051	**0.281**	**0.192**	**0.247**	**0.192**

15.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+3+6 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1				
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)				
GSM	GSM850	Front	0.290	0.034	0.013	0.006	0.001	0.126	**0.337**	**0.429**	**0.297**	**0.417**
		Back	0.352	0.072	0.026	0.047	0.001	0.126	**0.450**	**0.504**	**0.400**	**0.479**
		Left side	0.324	0.016	0.011	0.001	0.001	0.126	**0.351**	**0.461**	**0.326**	**0.451**
		Right side	0.213			0.047	0.001	0.126	**0.213**	**0.339**	**0.261**	**0.340**
		Top side		0.079	0.001	0.016	0.001	0.126	**0.080**	**0.127**	**0.017**	**0.127**
		Bottom side	0.038	0.001	0.010	0.009	0.001	0.126	**0.049**	**0.174**	**0.048**	**0.165**
	GSM1900	Front	0.138	0.034	0.013	0.006	0.001	0.126	**0.185**	**0.277**	**0.145**	**0.265**
		Back	0.289	0.072	0.026	0.047	0.001	0.126	**0.387**	**0.441**	**0.337**	**0.416**
		Left side	0.054	0.016	0.011	0.001	0.001	0.126	**0.081**	**0.191**	**0.056**	**0.181**
		Right side	0.164			0.047	0.001	0.126	**0.164**	**0.290**	**0.212**	**0.291**
		Top side		0.079	0.001	0.016	0.001	0.126	**0.080**	**0.127**	**0.017**	**0.127**
		Bottom side	0.403	0.001	0.010	0.009	0.001	0.126	**0.414**	**0.539**	**0.413**	**0.530**
WCDMA	WCDMA II	Front	0.324	0.034	0.013	0.006	0.001	0.126	**0.371**	**0.463**	**0.331**	**0.451**
		Back	0.591	0.072	0.026	0.047	0.001	0.126	**0.689**	**0.743**	**0.639**	**0.718**
		Left side	0.230	0.016	0.011	0.001	0.001	0.126	**0.257**	**0.367**	**0.232**	**0.357**
		Right side	0.389			0.047	0.001	0.126	**0.389**	**0.515**	**0.437**	**0.516**
		Top side		0.079	0.001	0.016	0.001	0.126	**0.080**	**0.127**	**0.017**	**0.127**
		Bottom side	0.626	0.001	0.010	0.009	0.001	0.126	**0.637**	**0.762**	**0.636**	**0.753**
	WCDMA IV	Front	0.129	0.034	0.013	0.006	0.001	0.126	**0.176**	**0.268**	**0.136**	**0.256**
		Back	0.220	0.072	0.026	0.047	0.001	0.126	**0.318**	**0.372**	**0.268**	**0.347**
		Left side	0.095	0.016	0.011	0.001	0.001	0.126	**0.122**	**0.232**	**0.097**	**0.222**
		Right side	0.120			0.047	0.001	0.126	**0.120**	**0.246**	**0.168**	**0.247**
		Top side		0.079	0.001	0.016	0.001	0.126	**0.080**	**0.127**	**0.017**	**0.127**
		Bottom side	0.558	0.001	0.010	0.009	0.001	0.126	**0.569**	**0.694**	**0.568**	**0.685**
	WCDMA V	Front	0.272	0.034	0.013	0.006	0.001	0.126	**0.319**	**0.411**	**0.279**	**0.399**
		Back	0.345	0.072	0.026	0.047	0.001	0.126	**0.443**	**0.497**	**0.393**	**0.472**
		Left side	0.467	0.016	0.011	0.001	0.001	0.126	**0.494**	**0.604**	**0.469**	**0.594**
		Right side	0.278			0.047	0.001	0.126	**0.278**	**0.404**	**0.326**	**0.405**
		Top side		0.079	0.001	0.016	0.001	0.126	**0.080**	**0.127**	**0.017**	**0.127**
		Bottom side	0.042	0.001	0.010	0.009	0.001	0.126	**0.053**	**0.178**	**0.052**	**0.169**

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+3+6 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1				
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)				
CDMA	CDMA BC0	Front	0.160	0.034	0.013	0.006	0.001	0.126	**0.207**	**0.299**	**0.167**	**0.287**
		Back	0.211	0.072	0.026	0.047	0.001	0.126	**0.309**	**0.363**	**0.259**	**0.338**
		Left side	0.377	0.016	0.011	0.001	0.001	0.126	**0.404**	**0.514**	**0.379**	**0.504**
		Right side	0.177			0.047	0.001	0.126	**0.177**	**0.303**	**0.225**	**0.304**
		Top side		0.079	0.001	0.016	0.001	0.126	**0.080**	**0.127**	**0.017**	**0.127**
		Bottom side	0.075	0.001	0.010	0.009	0.001	0.126	**0.086**	**0.211**	**0.085**	**0.202**
	CDMA BC1	Front	0.198	0.034	0.013	0.006	0.001	0.126	**0.245**	**0.337**	**0.205**	**0.325**
		Back	0.388	0.072	0.026	0.047	0.001	0.126	**0.486**	**0.540**	**0.436**	**0.515**
		Left side	0.078	0.016	0.011	0.001	0.001	0.126	**0.105**	**0.215**	**0.080**	**0.205**
		Right side	0.275			0.047	0.001	0.126	**0.275**	**0.401**	**0.323**	**0.402**
		Top side		0.079	0.001	0.016	0.001	0.126	**0.080**	**0.127**	**0.017**	**0.127**
		Bottom side	0.562	0.001	0.010	0.009	0.001	0.126	**0.573**	**0.698**	**0.572**	**0.689**
	CDMA BC10	Front	0.206	0.034	0.013	0.006	0.001	0.126	**0.253**	**0.345**	**0.213**	**0.333**
		Back	0.276	0.072	0.026	0.047	0.001	0.126	**0.374**	**0.428**	**0.324**	**0.403**
		Left side	0.424	0.016	0.011	0.001	0.001	0.126	**0.451**	**0.561**	**0.426**	**0.551**
		Right side	0.240			0.047	0.001	0.126	**0.240**	**0.366**	**0.288**	**0.367**
		Top side		0.079	0.001	0.016	0.001	0.126	**0.080**	**0.127**	**0.017**	**0.127**
		Bottom side	0.083	0.001	0.010	0.009	0.001	0.126	**0.094**	**0.219**	**0.093**	**0.210**
LTE	LTE Band 7	Front	0.307	0.034	0.013	0.006	0.001	0.126	**0.354**	**0.446**	**0.314**	**0.434**
		Back	0.586	0.072	0.026	0.047	0.001	0.126	**0.684**	**0.738**	**0.634**	**0.713**
		Left side	0.285	0.016	0.011	0.001	0.001	0.126	**0.312**	**0.422**	**0.287**	**0.412**
		Right side	0.042			0.047	0.001	0.126	**0.042**	**0.168**	**0.090**	**0.169**
		Top side		0.079	0.001	0.016	0.001	0.126	**0.080**	**0.127**	**0.017**	**0.127**
		Bottom side	0.634	0.001	0.010	0.009	0.001	0.126	**0.645**	**0.770**	**0.644**	**0.761**
	LTE Band 12	Front	0.187	0.034	0.013	0.006	0.001	0.126	**0.234**	**0.326**	**0.194**	**0.314**
		Back	0.272	0.072	0.026	0.047	0.001	0.126	**0.370**	**0.424**	**0.320**	**0.399**
		Left side	0.229	0.016	0.011	0.001	0.001	0.126	**0.256**	**0.366**	**0.231**	**0.356**
		Right side	0.162			0.047	0.001	0.126	**0.162**	**0.288**	**0.210**	**0.289**
		Top side		0.079	0.001	0.016	0.001	0.126	**0.080**	**0.127**	**0.017**	**0.127**
		Bottom side	0.048	0.001	0.010	0.009	0.001	0.126	**0.059**	**0.184**	**0.058**	**0.175**
	LTE Band 13	Front	0.268	0.034	0.013	0.006	0.001	0.126	**0.315**	**0.407**	**0.275**	**0.395**
		Back	0.344	0.072	0.026	0.047	0.001	0.126	**0.442**	**0.496**	**0.392**	**0.471**
		Left side	0.406	0.016	0.011	0.001	0.001	0.126	**0.433**	**0.543**	**0.408**	**0.533**
		Right side	0.243			0.047	0.001	0.126	**0.243**	**0.369**	**0.291**	**0.370**
		Top side		0.079	0.001	0.016	0.001	0.126	**0.080**	**0.127**	**0.017**	**0.127**
		Bottom side	0.059	0.001	0.010	0.009	0.001	0.126	**0.070**	**0.195**	**0.069**	**0.186**
	LTE Band 25	Front	0.320	0.034	0.013	0.006	0.001	0.126	**0.367**	**0.459**	**0.327**	**0.447**
		Back	0.587	0.072	0.026	0.047	0.001	0.126	**0.685**	**0.739**	**0.635**	**0.714**
		Left side	0.139	0.016	0.011	0.001	0.001	0.126	**0.166**	**0.276**	**0.141**	**0.266**
		Right side	0.331			0.047	0.001	0.126	**0.331**	**0.457**	**0.379**	**0.458**
		Top side		0.079	0.001	0.016	0.001	0.126	**0.080**	**0.127**	**0.017**	**0.127**
		Bottom side	0.638	0.001	0.010	0.009	0.001	0.126	**0.649**	**0.774**	**0.648**	**0.765**

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+3+6 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1				
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)				
	LTE Band 26	Front	0.258	0.034	0.013	0.006	0.001	0.126	**0.305**	**0.397**	**0.265**	**0.385**
		Back	0.309	0.072	0.026	0.047	0.001	0.126	**0.407**	**0.461**	**0.357**	**0.436**
		Left side	0.387	0.016	0.011	0.001	0.001	0.126	**0.414**	**0.524**	**0.389**	**0.514**
		Right side	0.247			0.047	0.001	0.126	**0.247**	**0.373**	**0.295**	**0.374**
		Top side		0.079	0.001	0.016	0.001	0.126	**0.080**	**0.127**	**0.017**	**0.127**
		Bottom side	0.040	0.001	0.010	0.009	0.001	0.126	**0.051**	**0.176**	**0.050**	**0.167**
	LTE Band 30	Front	0.171	0.034	0.013	0.006	0.001	0.126	**0.218**	**0.310**	**0.178**	**0.298**
		Back	0.266	0.072	0.026	0.047	0.001	0.126	**0.364**	**0.418**	**0.314**	**0.393**
		Left side	0.151	0.016	0.011	0.001	0.001	0.126	**0.178**	**0.288**	**0.153**	**0.278**
		Right side	0.108			0.047	0.001	0.126	**0.108**	**0.234**	**0.156**	**0.235**
		Top side		0.079	0.001	0.016	0.001	0.126	**0.080**	**0.127**	**0.017**	**0.127**
		Bottom side	0.324	0.001	0.010	0.009	0.001	0.126	**0.335**	**0.460**	**0.334**	**0.451**
	LTE Band 41	Front	0.267	0.034	0.013	0.006	0.001	0.126	**0.314**	**0.406**	**0.274**	**0.394**
		Back	0.696	0.072	0.026	0.047	0.001	0.126	**0.794**	**0.848**	**0.744**	**0.823**
		Left side	0.200	0.016	0.011	0.001	0.001	0.126	**0.227**	**0.337**	**0.202**	**0.327**
		Right side	0.081			0.047	0.001	0.126	**0.081**	**0.207**	**0.129**	**0.208**
		Top side		0.079	0.001	0.016	0.001	0.126	**0.080**	**0.127**	**0.017**	**0.127**
		Bottom side	0.408	0.001	0.010	0.009	0.001	0.126	**0.419**	**0.544**	**0.418**	**0.535**
	LTE Band 66	Front	0.261	0.034	0.013	0.006	0.001	0.126	**0.308**	**0.400**	**0.268**	**0.388**
		Back	0.534	0.072	0.026	0.047	0.001	0.126	**0.632**	**0.686**	**0.582**	**0.661**
		Left side	0.220	0.016	0.011	0.001	0.001	0.126	**0.247**	**0.357**	**0.222**	**0.347**
		Right side	0.254			0.047	0.001	0.126	**0.254**	**0.380**	**0.302**	**0.381**
		Top side		0.079	0.001	0.016	0.001	0.126	**0.080**	**0.127**	**0.017**	**0.127**
		Bottom side	0.479	0.001	0.010	0.009	0.001	0.126	**0.490**	**0.615**	**0.489**	**0.606**

15.3 Body-Worn Accessory Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1				
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)				
GSM	GSM850	Front	0.290	0.034	0.013	0.007	0.001	0.126	**0.337**	**0.429**	**0.298**	**0.417**
		Back	0.352	0.072	0.026	0.051	0.001	0.126	**0.450**	**0.504**	**0.404**	**0.479**
	GSM1900	Front	0.138	0.034	0.013	0.007	0.001	0.126	**0.185**	**0.277**	**0.146**	**0.265**
		Back	0.384	0.072	0.026	0.051	0.001	0.126	**0.482**	**0.536**	**0.436**	**0.511**
WCDMA	WCDMA II	Front	0.324	0.034	0.013	0.007	0.001	0.126	**0.371**	**0.463**	**0.332**	**0.451**
		Back	0.611	0.072	0.026	0.051	0.001	0.126	**0.709**	**0.763**	**0.663**	**0.738**
	WCDMA IV	Front	0.129	0.034	0.013	0.007	0.001	0.126	**0.176**	**0.268**	**0.137**	**0.256**
		Back	0.550	0.072	0.026	0.051	0.001	0.126	**0.648**	**0.702**	**0.602**	**0.677**
	WCDMA V	Front	0.272	0.034	0.013	0.007	0.001	0.126	**0.319**	**0.411**	**0.280**	**0.399**
		Back	0.401	0.072	0.026	0.051	0.001	0.126	**0.499**	**0.553**	**0.453**	**0.528**
CDMA	CDMA BC0	Front	0.166	0.034	0.013	0.007	0.001	0.126	**0.213**	**0.305**	**0.174**	**0.293**
		Back	0.243	0.072	0.026	0.051	0.001	0.126	**0.341**	**0.395**	**0.295**	**0.370**
	CDMA BC1	Front	0.271	0.034	0.013	0.007	0.001	0.126	**0.318**	**0.410**	**0.279**	**0.398**
		Back	0.608	0.072	0.026	0.051	0.001	0.126	**0.706**	**0.760**	**0.660**	**0.735**
	CDMA BC10	Front	0.203	0.034	0.013	0.007	0.001	0.126	**0.250**	**0.342**	**0.211**	**0.330**
		Back	0.272	0.072	0.026	0.051	0.001	0.126	**0.370**	**0.424**	**0.324**	**0.399**
LTE	LTE Band 7	Front	0.307	0.034	0.013	0.007	0.001	0.126	**0.354**	**0.446**	**0.315**	**0.434**
		Back	0.764	0.072	0.026	0.051	0.001	0.126	**0.862**	**0.916**	**0.816**	**0.891**
	LTE Band 12	Front	0.187	0.034	0.013	0.007	0.001	0.126	**0.234**	**0.326**	**0.195**	**0.314**
		Back	0.272	0.072	0.026	0.051	0.001	0.126	**0.370**	**0.424**	**0.324**	**0.399**
	LTE Band 13	Front	0.268	0.034	0.013	0.007	0.001	0.126	**0.315**	**0.407**	**0.276**	**0.395**
		Back	0.344	0.072	0.026	0.051	0.001	0.126	**0.442**	**0.496**	**0.396**	**0.471**
	LTE Band 25	Front	0.320	0.034	0.013	0.007	0.001	0.126	**0.367**	**0.459**	**0.328**	**0.447**
		Back	0.587	0.072	0.026	0.051	0.001	0.126	**0.685**	**0.739**	**0.639**	**0.714**
	LTE Band 26	Front	0.258	0.034	0.013	0.007	0.001	0.126	**0.305**	**0.397**	**0.266**	**0.385**
		Back	0.309	0.072	0.026	0.051	0.001	0.126	**0.407**	**0.461**	**0.361**	**0.436**
	LTE Band 30	Front	0.171	0.034	0.013	0.007	0.001	0.126	**0.218**	**0.310**	**0.179**	**0.298**
		Back	0.266	0.072	0.026	0.051	0.001	0.126	**0.364**	**0.418**	**0.318**	**0.393**
	LTE Band 41	Front	0.267	0.034	0.013	0.007	0.001	0.126	**0.314**	**0.406**	**0.275**	**0.394**
		Back	0.696	0.072	0.026	0.051	0.001	0.126	**0.794**	**0.848**	**0.748**	**0.823**
	LTE Band 66	Front	0.261	0.034	0.013	0.007	0.001	0.126	**0.308**	**0.400**	**0.269**	**0.388**
		Back	0.534	0.072	0.026	0.051	0.001	0.126	**0.632**	**0.686**	**0.586**	**0.661**

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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	Divisor	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System							
Probe Calibration	6.00	N	1	1	1	6.0	6.0
Axial Isotropy	4.70	R	1.732	0.7	0.7	1.9	1.9
Hemispherical Isotropy	9.60	R	1.732	0.7	0.7	3.9	3.9
Boundary Effects	1.00	R	1.732	1	1	0.6	0.6
Linearity	4.70	R	1.732	1	1	2.7	2.7
System Detection Limits	1.00	R	1.732	1	1	0.6	0.6
Modulation Response	4.68	R	1.732	1	1	2.7	2.7
Readout Electronics	0.30	N	1	1	1	0.3	0.3
Response Time	0.00	R	1.732	1	1	0.0	0.0
Integration Time	2.60	R	1.732	1	1	1.5	1.5
RF Ambient Noise	3.00	R	1.732	1	1	1.7	1.7
RF Ambient Reflections	3.00	R	1.732	1	1	1.7	1.7
Probe Positioner	0.40	R	1.732	1	1	0.2	0.2
Probe Positioning	2.90	R	1.732	1	1	1.7	1.7
Max. SAR Eval.	2.00	R	1.732	1	1	1.2	1.2
Test Sample Related							
Device Positioning	3.03	N	1	1	1	3.0	3.0
Device Holder	3.60	N	1	1	1	3.6	3.6
Power Drift	5.00	R	1.732	1	1	2.9	2.9
Power Scaling	0.00	R	1.732	1	1	0.0	0.0
Phantom and Setup							
Phantom Uncertainty	6.10	R	1.732	1	1	3.5	3.5
SAR correction	0.00	R	1.732	1	0.84	0.0	0.0
Liquid Conductivity Repeatability	0.03	N	1	0.78	0.71	0.0	0.0
Liquid Conductivity (target)	5.00	R	1.732	0.78	0.71	2.3	2.0
Liquid Conductivity (mea.)	2.50	R	1.732	0.78	0.71	1.1	1.0
Temp. unc. - Conductivity	3.68	R	1.732	0.78	0.71	1.7	1.5
Liquid Permittivity Repeatability	0.02	N	1	0.23	0.26	0.0	0.0
Liquid Permittivity (target)	5.00	R	1.732	0.23	0.26	0.7	0.8
Liquid Permittivity (mea.)	2.50	R	1.732	0.23	0.26	0.3	0.4
Temp. unc. - Permittivity	0.84	R	1.732	0.23	0.26	0.1	0.1
Combined Std. Uncertainty						11.6%	11.6%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						23.2%	23.1%

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

Error Description	Uncertainty Value (±%)	Probability	Divisor	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System							
Probe Calibration	6.55	N	1	1	1	6.6	6.6
Axial Isotropy	4.70	R	1.732	0.7	0.7	1.9	1.9
Hemispherical Isotropy	9.60	R	1.732	0.7	0.7	3.9	3.9
Boundary Effects	2.00	R	1.732	1	1	1.2	1.2
Linearity	4.70	R	1.732	1	1	2.7	2.7
System Detection Limits	1.00	R	1.732	1	1	0.6	0.6
Modulation Response	4.68	R	1.732	1	1	2.7	2.7
Readout Electronics	0.30	N	1	1	1	0.3	0.3
Response Time	0.00	R	1.732	1	1	0.0	0.0
Integration Time	2.60	R	1.732	1	1	1.5	1.5
RF Ambient Noise	3.00	R	1.732	1	1	1.7	1.7
RF Ambient Reflections	3.00	R	1.732	1	1	1.7	1.7
Probe Positioner	0.40	R	1.732	1	1	0.2	0.2
Probe Positioning	6.70	R	1.732	1	1	3.9	3.9
Max. SAR Eval.	4.00	R	1.732	1	1	2.3	2.3
Test Sample Related							
Device Positioning	3.03	N	1	1	1	3.0	3.0
Device Holder	3.60	N	1	1	1	3.6	3.6
Power Drift	5.00	R	1.732	1	1	2.9	2.9
Power Scaling	0.00	R	1.732	1	1	0.0	0.0
Phantom and Setup							
Phantom Uncertainty	6.60	R	1.732	1	1	3.8	3.8
SAR correction	0.00	R	1.732	1	0.84	0.0	0.0
Liquid Conductivity Repeatability	0.03	N	1	0.78	0.71	0.0	0.0
Liquid Conductivity (target)	5.00	R	1.732	0.78	0.71	2.3	2.0
Liquid Conductivity (mea.)	2.50	R	1.732	0.78	0.71	1.1	1.0
Temp. unc. - Conductivity	3.68	R	1.732	0.78	0.71	1.7	1.5
Liquid Permittivity Repeatability	0.02	N	1	0.23	0.26	0.0	0.0
Liquid Permittivity (target)	5.00	R	1.732	0.23	0.26	0.7	0.8
Liquid Permittivity (mea.)	2.50	R	1.732	0.23	0.26	0.3	0.4
Temp. unc. - Permittivity	0.84	R	1.732	0.23	0.26	0.1	0.1
Combined Std. Uncertainty						12.7%	12.6%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						25.4%	25.3%

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

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

[4] SPEAG DASY System Handbook

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

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

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

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

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

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

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

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

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