



FCC SAR TEST REPORT

FCC ID : UZ7TC57HO
Equipment : Touch Computer
Brand Name : Zebra
Model Name : TC57HO
Applicant : Zebra Technologies Corporation
1 Zebra Plaza Holtsville, NY 11742
Manufacturer : Zebra Technologies Corporation
1 Zebra Plaza Holtsville, NY 11742
Standard : FCC 47 CFR Part 2 (2.1093)
ANSI/IEEE C95.1-1992
IEEE 1528-2013

The product was received on Aug. 29, 2018 and testing was started from Sep. 08, 2018 and completed on Oct. 03, 2018. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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

Approved by: Cona Huang / Deputy Manager

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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History of this test report

Report No.	Version	Description	Issued Date
FA882724	01	Initial issue of report	Oct. 12, 2018



1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Zebra Technologies Corporation, Touch Computer, TC57HO, are as follows.

Table with columns: Equipment Class, Frequency Band, Highest SAR Summary (Head, Body-worn, Hotspot), Highest Simultaneous Transmission 1g SAR (W/kg). Rows include Licensed (GSM850, GSM1900, WCDMA II, etc.), DTS (2.4GHz WLAN), and NII (5GHz WLAN).

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test.. 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

Reviewed by: Jason Wang
Report Producer: Wan Liu

2. 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



3. Equipment Under Test (EUT) Information

3.1 General Information

Product Feature & Specification	
Equipment Name	Touch Computer
Brand Name	Zebra
Model Name	TC57HO
FCC ID	UZ7TC57HO
IMEI Code	357539090017902
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 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 14: 790.5 MHz ~ 795.5 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz 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 ~ 5720 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 LTE: QPSK, 16QAM, 64QAM WLAN 2.4GHz : 802.11b/g/n/ac HT20/HT40/VHT20/VHT40 WLAN 5GHz : 802.11a/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC:ASK
HW Version	DV
SW Version	91-10-03.00-OG-U00-STD
FW Version	FUSION_QA_2_1.0.0.030_O
MFD	30-Jul-18
GSM / (E)GPRS Dual Transfer mode	Class A – EUT can support Packet Switched and Circuit Switched Network simultaneously.
EUT Stage	Engineering sample
Remark:	<ol style="list-style-type: none"> 1. This device WLAN 2.4GHz / 5.2GHz / 5.8GHz supports Hotspot operation and Bluetooth support tethering applications. 2. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of GSM1900, WCDMA B2 / B4 and LTE B2 / B4 / B25 / B66. 3. There are two kinds battery options, the battery1 as the main testing, battery2 is selected worst case from battery1 perform. 4. Choose the worst case to be verification the earphone / Exoskeleton / trigger handle / soft holster for SAR compliance.



Specification of Accessories				
Adapter	Brand Name	Zebra	Part Number	PWR-WUA5V12W0US
Battery 1	Brand Name	Zebra	Part Number	BT-000314-50
Battery 2	Brand Name	Zebra	Part Number	BT-000314-01
USB cable	Brand Name	Zebra	Part Number	CBL-TC51-USB1-01
Headset Jumper 1	Brand Name	Zebra	Part Number	CBL-TC51-HDST25-01
Headset Jumper 2	Brand Name	Zebra	Part Number	CBL-TC51-HDST35-01
2.5mm Earphone	Brand Name	Zebra	Part Number	HDST-25MM-PTVP-01
3.5mm Earphone	Brand Name	Zebra	Part Number	HDST-35MM-PTVP-01
Exoskeleton	Brand Name	Zebra	Part Number	SG-TC51-EX01-01
Trigger Handle 1	Brand Name	Zebra	Part Number	TRG-TC51-SNP1-01
Soft Holster	Brand Name	Zebra	Part Number	SG-TC51-HLSTR1-01
Hand strap	Brand Name	Zebra	Part Number	SG-TC51-BHDSTP1-03
USB-C Adaptor	Brand Name	Zebra	Part Number	ADPTR-TC56-USBC-01
USB Type C cable	Brand Name	Zebra	Part Number	N/A



3.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																															
FCC ID	UZ7TC57HO																																																														
Equipment Name	Touch Computer																																																														
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 14: 790.5 MHz ~ 795.5 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 MHz																																																														
Channel Bandwidth	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 14: 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 25: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 26: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 66: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz																																																														
uplink modulations used	QPSK / 16QAM / 64QAM																																																														
LTE Voice / Data requirements	Voice and Data																																																														
LTE MPR permanently built-in by design	<p align="center">Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (N_{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> </thead> <tbody> <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> <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> <tr> <td>256 QAM</td> <td colspan="6">≥ 1</td> <td>≤ 5</td> </tr> </tbody> </table>	Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
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256 QAM	≥ 1						≤ 5																																																								
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)																																																														
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																																														
Power reduction applied to satisfy SAR compliance	Yes, when operating in hotspot mode that LTE B2 / B4 / B25 / B66 power reduction applied to satisfy SAR compliance.																																																														
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power measurement please referred to section 11.																																																														
LTE Carrier Aggregation Additional Information	Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.																																																														



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		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	20407	824.7	20415	825.5	20425	826.5	20450	829	20450	829	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844	20600	844	20600	844
LTE Band 7												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 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	20775	2502.5	20800	2505	20825	2507.5	20850	2510	20850	2510	20850	2510
M	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560	21350	2560	21350	2560
LTE Band 12												
	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	23017	699.7	23025	700.5	23035	701.5	23060	704	23060	704	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711	23130	711	23130	711
LTE Band 13												
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 10 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23205		779.5		23230		782		23230		782	
M	23230		782		23230		782		23230		782	
H	23255		784.5		23230		782		23230		782	
LTE Band 14												
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 10 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23305		790.5		23330		793		23330		793	
M	23330		793		23330		793		23330		793	
H	23355		795.5		23330		793		23330		793	
LTE Band 17												
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 10 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23755		706.5		23780		709		23780		709	
M	23790		710		23790		710		23790		710	
H	23825		713.5		23800		711		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)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26740	819	26765	821.5
M	26865	831.5	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	26990	844	26965	841.5
LTE Band 38												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580	37850	2580	37850	2580
M	38000	2595	38000	2595	38000	2595	38000	2595	38000	2595	38000	2595
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610	38150	2610	38150	2610
LTE Band 41												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506	39750	2506	39750	2506
L	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5	40185	2549.5	40185	2549.5
M	40620	2593	40620	2593	40620	2593	40620	2593	40620	2593	40620	2593
H	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5	41055	2636.5	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680	41490	2680	41490	2680
LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770



4. RF Exposure Limits

4.1 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.

4.2 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.



5. Specific Absorption Rate (SAR)

5.1 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.

5.2 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:

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

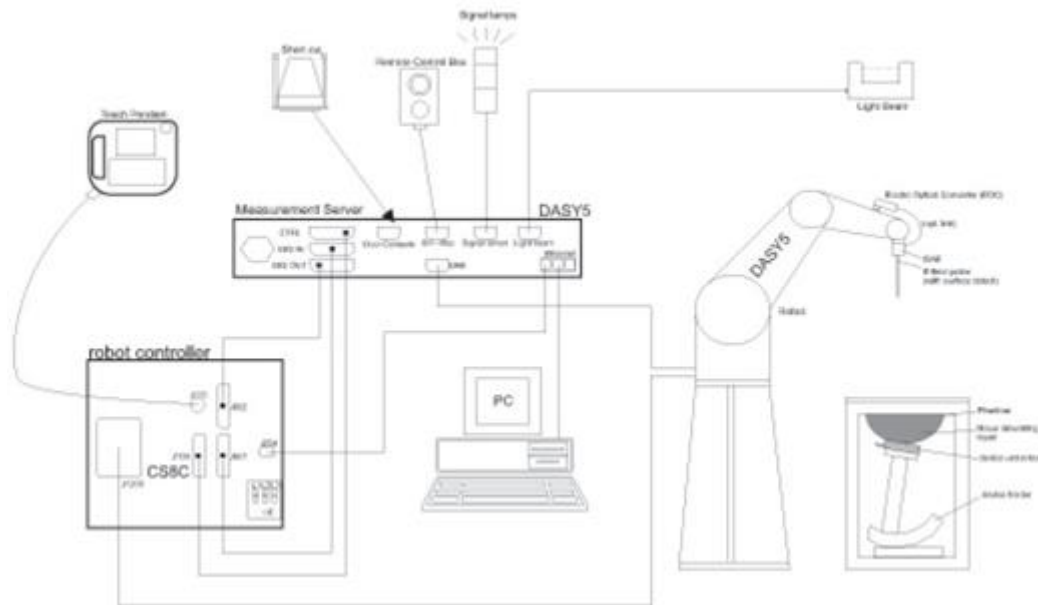
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

6. 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.


6.1 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 μ W/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 μ W/g – >100 mW/g Linearity: ± 0.2 dB (noise: typically <1 μ W/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	

6.2 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


6.3 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.

6.4 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



7. 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

7.1 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 from 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



7.2 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.

7.3 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	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ 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.	

7.4 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: $\Delta x_{Zoom}, \Delta y_{Zoom}$		≤ 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 1 st two points closest to phantom surface	≤ 4 mm	$3 - 4$ GHz: ≤ 3 mm $4 - 5$ GHz: ≤ 2.5 mm $5 - 6$ GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z	≥ 30 mm	$3 - 4$ GHz: ≥ 28 mm $4 - 5$ GHz: ≥ 25 mm $5 - 6$ GHz: ≥ 22 mm	
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details. * When zoom scan is required and the <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> 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.				

7.5 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.

7.6 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.



8. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1107	Feb. 27, 2018	Feb. 26, 2019
SPEAG	835MHz System Validation Kit	D835V2	4d167	Feb. 27, 2018	Feb. 26, 2019
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Nov. 15, 2017	Nov. 14, 2018
SPEAG	1900MHz System Validation Kit	D1900V2	5d018	Jun. 21, 2018	Jun. 20, 2019
SPEAG	2450MHz System Validation Kit	D2450V2	735	Dec. 15, 2017	Dec. 14, 2018
SPEAG	2600MHz System Validation Kit	D2600V2	1078	Mar. 01, 2018	Feb. 28, 2019
SPEAG	5GHz System Validation Kit	D5GHzV2	1203	Dec. 14, 2017	Dec. 13, 2018
SPEAG	Data Acquisition Electronics	DAE4	1424	Jan. 18, 2018	Jan. 17, 2019
SPEAG	Data Acquisition Electronics	DAE3	495	May. 24, 2018	May. 23, 2019
SPEAG	Data Acquisition Electronics	DAE4	1399	Nov. 16, 2017	Nov. 15, 2018
SPEAG	Data Acquisition Electronics	DAE3	577	Sep. 25, 2017	Sep. 24, 2018
SPEAG	Data Acquisition Electronics	DAE4	854	Jun. 14, 2018	Jun. 13, 2019
SPEAG	Data Acquisition Electronics	DAE4	853	Jul. 24, 2018	Jul. 23, 2019
SPEAG	Data Acquisition Electronics	DAE4	917	Dec. 14, 2017	Dec. 13, 2018
SPEAG	Dosimetric E-Field Probe	EX3DV4	3976	Jan. 23, 2018	Jan. 22, 2019
SPEAG	Dosimetric E-Field Probe	ES3DV3	3270	Sep. 25, 2017	Sep. 24, 2018
SPEAG	Dosimetric E-Field Probe	ES3DV3	3169	May. 28, 2018	May. 27, 2019
SPEAG	Dosimetric E-Field Probe	ES3DV3	3170	Oct. 26, 2017	Oct. 25, 2018
SPEAG	Dosimetric E-Field Probe	EX3DV4	7306	Jul. 26, 2018	Jul. 25, 2019
SPEAG	Dosimetric E-Field Probe	EX3DV4	7324	Jul. 16, 2018	Jul. 15, 2019
SPEAG	Dosimetric E-Field Probe	EX3DV4	7346	Feb. 28, 2018	Feb. 27, 2019
SPEAG	Dosimetric E-Field Probe	EX3DV4	3642	Apr. 27, 2018	Apr. 26, 2019
RCPTWN	Thermometer	HTC-1	TM685-1	Mar. 16, 2018	Mar. 15, 2019
RCPTWN	Thermometer	HTC-1	TM281-1	Mar. 16, 2018	Mar. 15, 2019
RCPTWN	Thermometer	HTC-1	TM560-1	Mar. 16, 2018	Mar. 15, 2019
Gencom	Thermometer	TE1	TM225-1	Mar. 16, 2018	Mar. 15, 2019
WonDer	Thermometer	WD-5016	TM642-1	Mar. 16, 2018	Mar. 15, 2019
Anritsu	Radio Communication Analyzer	MT8821C	6201341950	Apr. 17, 2018	Apr. 16, 2019
Agilent	Wireless Communication Test Set	E5515C	MY50266977	May. 21, 2018	May. 20, 2019
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Dec. 07, 2017	Dec. 06, 2018
Agilent	ENA Network Analyzer	E5071C	MY46316648	Jan. 17, 2018	Jan. 16, 2019
SPEAG	Dielectric Probe Kit	DAK-3.5	1146	Jul. 24, 2018	Jul. 23, 2019
LINE SEIKI	Digital Thermometer	DTM3000-spezial	2942	Dec. 08, 2017	Dec. 07, 2018
Anritsu	Power Meter	ML2495A	1419002	May. 18, 2018	May. 17, 2019
Anritsu	Power Sensor	MA2411B	1339124	May. 18, 2018	May. 17, 2019
Anritsu	Power Meter	ML2495A	1218006	Oct. 06, 2017	Oct. 05, 2018
Anritsu	Power Sensor	MA2411B	1207363	Oct. 06, 2017	Oct. 05, 2018
Agilent	Spectrum Analyzer	E4408B	MY44211028	Aug. 28, 2018	Aug. 27, 2019
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jun. 23, 2018	Jun. 22, 2019
Mini-Circuits	Power Amplifier	ZVE-8G+	6382	Aug. 09, 2018	Aug. 08, 2019
Mini-Circuits	Power Amplifier	ZHL-42W+	15542	Aug. 09, 2018	Aug. 08, 2019
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.

9. System Verification

9.1 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.

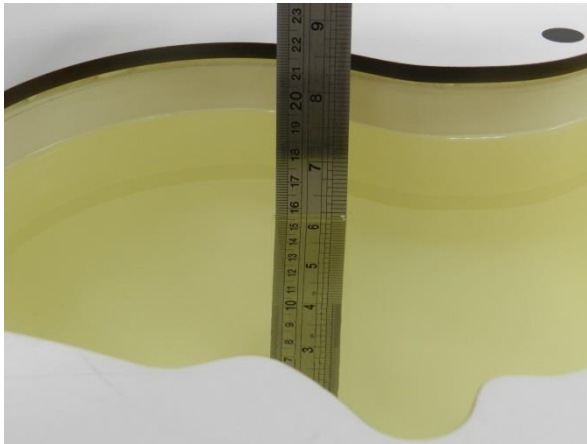


Fig 10.1 Photo of Liquid Height for Head SAR

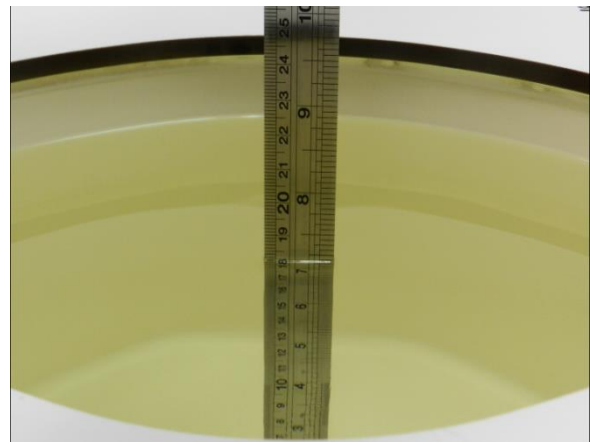


Fig 10.2 Photo of Liquid Height for Body SAR



9.2 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. (°C)	Conductivity (σ)	Permittivity (ε _r)	Conductivity Target (σ)	Permittivity Target (ε _r)	Delta (σ) (%)	Delta (ε _r) (%)	Limit (%)	Date
750	HSL	22.3	0.900	41.860	0.89	41.90	1.12	-0.10	±5	2018/9/11
750	HSL	22.6	0.890	42.757	0.89	41.90	0.00	2.05	±5	2018/9/13
750	HSL	22.6	0.889	43.106	0.89	41.90	-0.11	2.88	±5	2018/9/16
750	MSL	22.3	0.973	53.678	0.96	55.50	1.35	-3.28	±5	2018/9/10
835	HSL	22.5	0.907	41.548	0.90	41.50	0.78	0.12	±5	2018/9/15
835	HSL	22.5	0.907	41.548	0.90	41.50	0.78	0.12	±5	2018/9/15
835	MSL	22.3	0.953	54.989	0.97	55.20	-1.75	-0.38	±5	2018/9/12
835	MSL	22.7	0.953	55.239	0.97	55.20	-1.75	0.07	±5	2018/9/14
1750	HSL	22.4	1.363	40.691	1.37	40.10	-0.51	1.47	±5	2018/9/10
1750	HSL	22.3	1.410	40.018	1.37	40.10	2.92	-0.20	±5	2018/9/17
1750	MSL	22.4	1.517	54.136	1.49	53.40	1.81	1.38	±5	2018/9/18
1750	MSL	22.4	1.439	53.356	1.49	53.40	-3.42	-0.08	±5	2018/9/20
1900	HSL	22.2	1.449	39.742	1.40	40.00	3.50	-0.65	±5	2018/9/9
1900	MSL	22.4	1.564	54.342	1.52	53.30	2.89	1.95	±5	2018/9/18
1900	MSL	22.4	1.575	54.212	1.52	53.30	3.62	1.71	±5	2018/9/19
2450	HSL	22.5	1.809	37.954	1.80	39.20	0.50	-3.18	±5	2018/9/27
2450	MSL	22.5	1.970	51.100	1.95	52.70	1.03	-3.04	±5	2018/9/27
2450	MSL	22.7	1.969	51.200	1.95	52.70	0.97	-2.85	±5	2018/10/1
2600	HSL	22.4	2.025	39.601	1.96	39.00	3.32	1.54	±5	2018/9/9
2600	HSL	22.6	2.015	39.477	1.96	39.00	2.81	1.22	±5	2018/9/12
2600	HSL	22.8	1.971	39.357	1.96	39.00	0.56	0.92	±5	2018/9/16
2600	MSL	22.5	2.225	52.759	2.16	52.50	3.01	0.49	±5	2018/9/8
2600	MSL	22.6	2.198	52.467	2.16	52.50	1.76	-0.06	±5	2018/9/17
5250	HSL	22.8	4.576	36.961	4.71	35.95	-2.85	2.81	±5	2018/10/1
5250	MSL	22.2	5.159	50.006	5.36	48.95	-3.75	2.16	±5	2018/10/3
5600	HSL	22.8	4.910	36.490	5.07	35.50	-3.16	2.79	±5	2018/10/1
5600	HSL	22.6	4.829	36.410	5.07	35.50	-4.75	2.56	±5	2018/10/3
5600	MSL	22.2	5.631	49.424	5.77	48.50	-2.41	1.91	±5	2018/10/3
5750	HSL	22.8	5.061	36.240	5.22	35.35	-3.05	2.52	±5	2018/10/1
5750	HSL	22.6	4.973	36.234	5.22	35.35	-4.73	2.50	±5	2018/10/3
5750	MSL	22.2	5.844	49.179	5.94	48.28	-1.62	1.86	±5	2018/10/3



9.3 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 (%)
2018/9/11	750	MSL	250	D750V3-1107	ES3DV3 - SN3270	DAE4 Sn853	2.03	8.52	8.12	-4.69
2018/9/13	750	HSL	250	D750V3-1107	ES3DV3 - SN3170	DAE3 Sn577	1.90	8.18	7.6	-7.09
2018/9/16	750	HSL	250	D750V3-1107	EX3DV4 - SN7346	DAE4 Sn1399	2.10	8.18	8.4	2.69
2018/9/10	750	MSL	250	D750V3-1107	EX3DV4 - SN7306	DAE4 Sn917	2.31	8.52	9.24	8.45
2018/9/15	835	HSL	250	D835V2-4d167	EX3DV4 - SN7324	DAE4 Sn854	2.52	9.26	10.08	8.86
2018/9/15	835	HSL	250	D835V2-4d167	EX3DV4 - SN7346	DAE4 Sn1399	2.49	9.26	9.96	7.56
2018/9/12	835	MSL	250	D835V2-4d167	ES3DV3 - SN3270	DAE4 Sn853	2.44	9.62	9.76	1.46
2018/9/14	835	MSL	250	D835V2-4d167	EX3DV4 - SN7324	DAE4 Sn854	2.62	9.62	10.48	8.94
2018/9/10	1750	HSL	250	D1750V2-1068	EX3DV4 - SN3976	DAE4 Sn1424	8.47	36.70	33.88	-7.68
2018/9/17	1750	HSL	250	D1750V2-1068	EX3DV4 - SN3976	DAE4 Sn1424	9.03	36.70	36.12	-1.58
2018/9/18	1750	MSL	250	D1750V2-1068	ES3DV3 - SN3169	DAE3 Sn495	9.65	37.20	38.6	3.76
2018/9/20	1750	MSL	250	D1750V2-1068	ES3DV3 - SN3169	DAE3 Sn495	9.16	37.20	36.64	-1.51
2018/9/9	1900	HSL	250	D1900V2-5d018	EX3DV4 - SN3976	DAE4 Sn1424	9.46	40.10	37.84	-5.64
2018/9/18	1900	MSL	250	D1900V2-5d018	ES3DV3 - SN3169	DAE3 Sn495	10.20	40.20	40.8	1.49
2018/9/19	1900	MSL	250	D1900V2-5d018	ES3DV3 - SN3169	DAE3 Sn495	10.30	40.20	41.2	2.49
2018/9/27	2450	HSL	250	D2450V2-735	ES3DV3 - SN3170	DAE4 Sn853	12.60	51.40	50.4	-1.95
2018/9/27	2450	MSL	250	D2450V2-735	ES3DV3 - SN3169	DAE3 Sn495	13.20	50.60	52.8	4.35
2018/10/1	2450	MSL	250	D2450V2-735	ES3DV3 - SN3169	DAE3 Sn495	13.20	50.60	52.8	4.35
2018/9/9	2600	HSL	250	D2600V2-1078	ES3DV3 - SN3270	DAE4 Sn853	14.00	56.50	56	-0.88
2018/9/12	2600	HSL	250	D2600V2-1078	EX3DV4 - SN7306	DAE4 Sn917	14.30	56.50	57.2	1.24
2018/9/16	2600	HSL	250	D2600V2-1078	EX3DV4 - SN7306	DAE4 Sn917	14.00	56.50	56	-0.88
2018/9/8	2600	MSL	250	D2600V2-1078	ES3DV3 - SN3270	DAE4 Sn853	14.10	54.10	56.4	4.25
2018/9/17	2600	MSL	250	D2600V2-1078	EX3DV4 - SN7324	DAE4 Sn854	14.80	54.10	59.2	9.43
2018/10/1	5250	HSL	100	D5GHzV2-1203	EX3DV4 - SN3642	DAE4 Sn854	8.08	80.80	80.8	0.00
2018/10/3	5250	MSL	100	D5GHzV2-1203	EX3DV4 - SN3642	DAE4 Sn854	7.36	77.50	73.6	-5.03
2018/10/1	5600	HSL	100	D5GHzV2-1203	EX3DV4 - SN3642	DAE4 Sn854	8.25	84.10	82.5	-1.90
2018/10/3	5600	HSL	100	D5GHzV2-1203	EX3DV4 - SN3642	DAE4 Sn854	8.12	84.10	81.2	-3.45
2018/10/3	5600	MSL	100	D5GHzV2-1203	EX3DV4 - SN3642	DAE4 Sn854	7.89	79.30	78.9	-0.50
2018/10/1	5750	HSL	100	D5GHzV2-1203	EX3DV4 - SN3642	DAE4 Sn854	7.41	80.50	74.1	-7.95
2018/10/3	5750	HSL	100	D5GHzV2-1203	EX3DV4 - SN3642	DAE4 Sn854	7.77	80.50	77.7	-3.48
2018/10/3	5750	MSL	100	D5GHzV2-1203	EX3DV4 - SN3642	DAE4 Sn854	7.13	76.80	71.3	-7.16

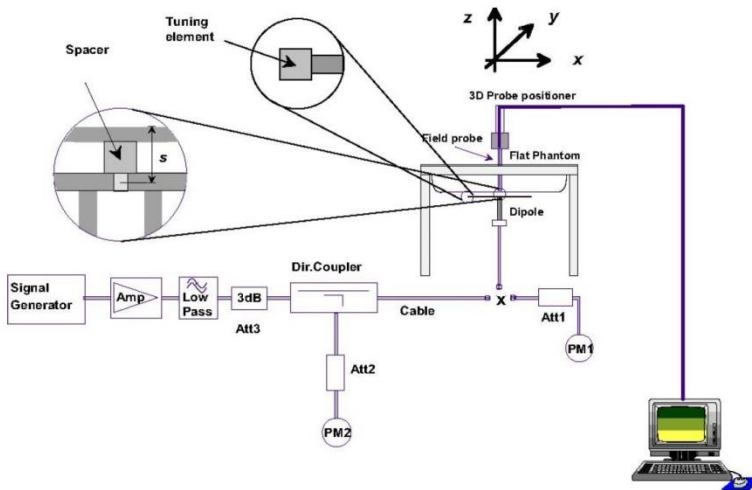


Fig 8.3.1 System Performance Check Setup



Fig 8.3.2 Setup Photo

10. RF Exposure Positions

10.1 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.

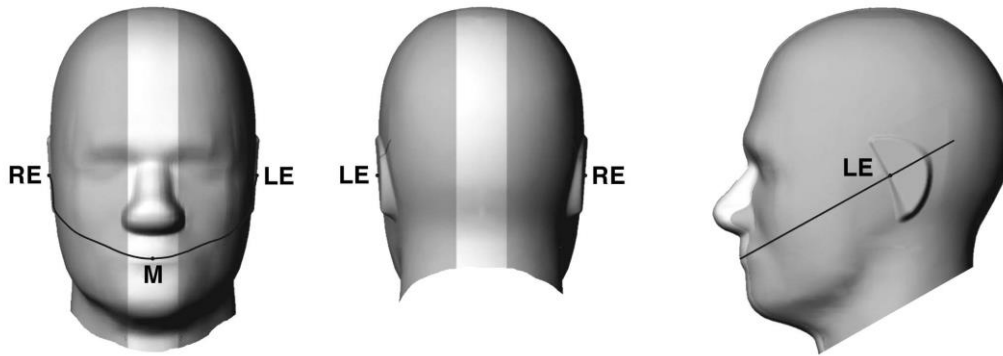


Fig 9.1.1 Front, back, and side views of SAM twin phantom

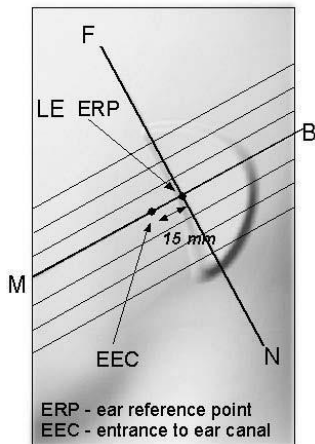


Fig 9.1.2 Close-up side view of phantom showing the ear region.

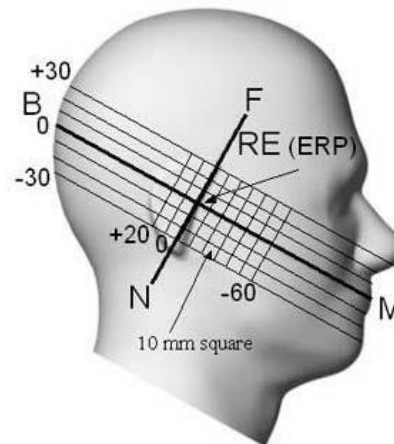


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

10.2 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 w_t 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 w_b 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.

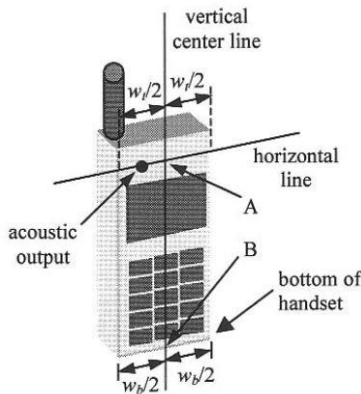


Fig 9.2.1 Handset vertical and horizontal reference lines—“fixed case”

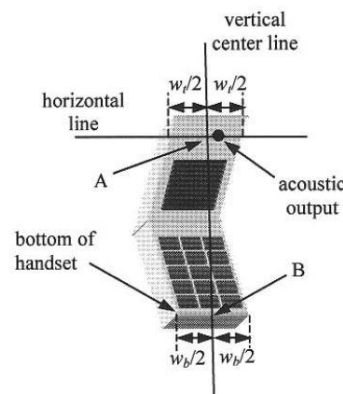


Fig 9.2.2 Handset vertical and horizontal reference lines—“clam-shell case”

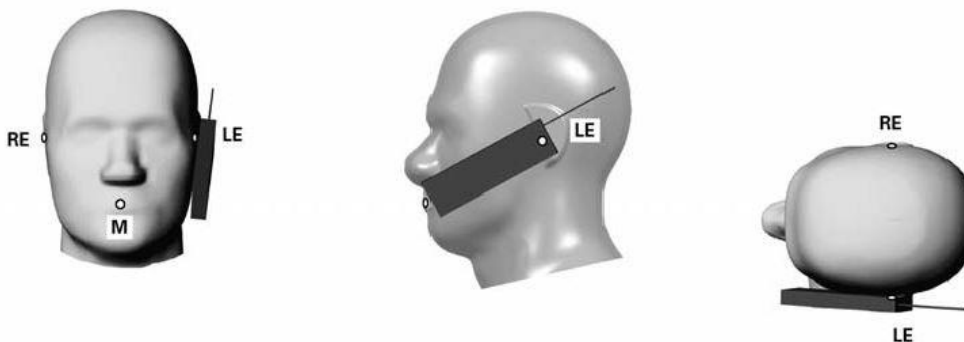


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

10.3 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

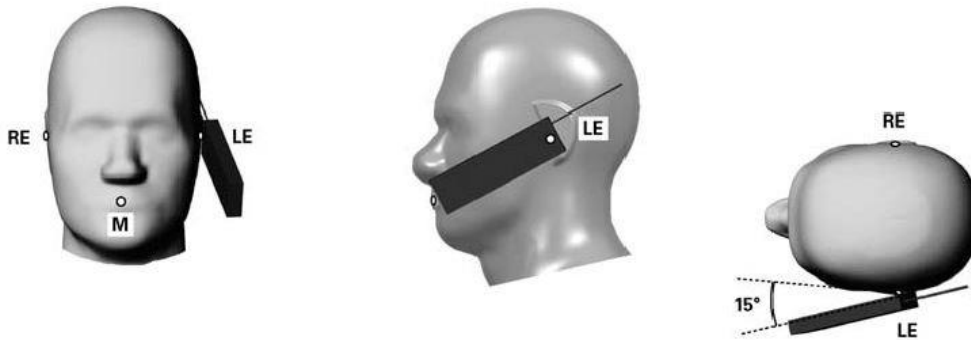


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

10.4 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 headset 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.

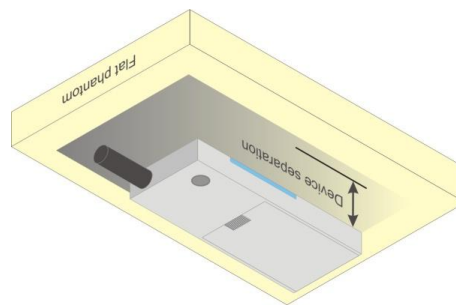


Fig 9.4 Body Worn Position

10.5 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 ($L \times W \geq 9$ 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 from 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.



11. 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.
$$DTM \text{ frame average power (dBm)} = 10 * \log [\sum(\text{power of each slot, in mW})/8]$$
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 (4Tx 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 $\leq \frac{1}{4}$ dB higher than the primary mode, SAR measurement is not required for the secondary mode
6. Power reduction which is triggered by hotspot mode is implemented in GSM1900 band, for hotspot mode SAR testing EUT was set in reduced power mode and GPRS 2Tx slot due to its highest frame-average power.



<Default Power 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		32.61	32.21	32.09	33.50	23.61	23.21	23.09	24.50
GPRS 1 Tx slot		32.64	32.26	32.15	33.50	23.64	23.26	23.15	24.50
GPRS 2 Tx slots		29.91	29.41	29.78	30.00	23.91	23.41	23.78	24.00
GPRS 3 Tx slots		29.60	29.28	29.51	30.00	25.34	25.02	25.25	25.74
GPRS 4 Tx slots		29.50	29.18	29.48	30.00	26.50	26.18	26.48	27.00
EDGE 1 Tx slot		26.04	26.12	26.02	28.00	17.04	17.12	17.02	19.00
EDGE 2 Tx slots		25.85	25.96	25.83	27.00	19.85	19.96	19.83	21.00
EDGE 3 Tx slots		25.39	25.40	25.37	26.00	21.13	21.14	21.11	21.74
EDGE 4 Tx slots		24.73	24.74	24.72	25.50	21.73	21.74	21.72	22.50
DTM Multi-slot class 5	GSM 1 Tx slot	29.45	29.22	29.47	30.00	23.34	23.13	23.37	23.98
	GPRS 1 Tx slot	29.26	29.07	29.31	30.00				
DTM Multi-slot class 9	GSM 1 Tx slot	29.43	29.16	29.46	30.00	23.32	23.07	23.36	23.98
	GPRS 1 Tx slot	29.25	29.01	29.30	30.00				
DTM Multi-slot class 11	GSM 1 Tx slot	29.02	28.76	29.05	30.00	24.66	24.41	24.70	25.74
	GPRS 2 Tx slots	28.87	28.62	28.91	30.00				
DTM Multi-slot class 5	GSM 1 Tx slot	29.30	29.19	29.55	30.00	21.83	21.70	22.02	22.73
	EDGE 1 Tx slot	25.65	25.49	25.70	27.00				
DTM Multi-slot class 9	GSM 1 Tx slot	29.27	29.18	29.52	30.00	21.79	21.70	21.98	22.73
	EDGE 1 Tx slot	25.61	25.51	25.66	27.00				
DTM Multi-slot class 11	GSM 1 Tx slot	28.95	29.01	29.43	30.00	22.57	22.61	22.83	23.51
	EDGE 2 Tx slots	25.18	25.20	25.16	26.00				

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		29.45	29.05	29.06	30.50	20.45	20.05	20.06	21.50
GPRS 1 Tx slot		29.48	29.08	29.08	30.50	20.48	20.08	20.08	21.50
GPRS 2 Tx slots		28.46	28.25	27.85	29.50	22.46	22.25	21.85	23.50
GPRS 3 Tx slots		27.43	27.03	26.74	28.50	23.17	22.77	22.48	24.24
GPRS 4 Tx slots		26.53	25.90	25.98	27.50	23.53	22.90	22.98	24.50
EDGE 1 Tx slot		25.61	25.17	25.00	27.00	16.61	16.17	16.00	18.00
EDGE 2 Tx slots		25.50	25.04	24.87	26.00	19.50	19.04	18.87	20.00
EDGE 3 Tx slots		24.40	24.03	23.98	25.00	20.14	19.77	19.72	20.74
EDGE 4 Tx slots		23.80	23.43	23.41	24.50	20.80	20.43	20.41	21.50
DTM Multi-slot class 5	GSM 1 Tx slot	28.16	27.93	27.55	29.50	22.10	21.85	21.52	23.48
	GPRS 1 Tx slot	28.08	27.82	27.53	29.50				
DTM Multi-slot class 9	GSM 1 Tx slot	28.16	27.92	27.53	29.50	22.09	21.84	21.50	23.48
	GPRS 1 Tx slot	28.07	27.81	27.51	29.50				
DTM Multi-slot class 11	GSM 1 Tx slot	26.69	26.58	26.57	28.50	22.37	22.31	22.30	24.24
	GPRS 2 Tx slots	26.60	26.56	26.55	28.50				
DTM Multi-slot class 5	GSM 1 Tx slot	27.61	27.50	27.52	29.50	20.58	20.27	20.28	22.07
	EDGE 1 Tx slot	25.28	24.60	24.60	26.00				
DTM Multi-slot class 9	GSM 1 Tx slot	28.19	27.95	27.88	29.50	20.93	20.54	20.44	22.07
	EDGE 1 Tx slot	25.22	24.51	24.34	26.00				
DTM Multi-slot class 11	GSM 1 Tx slot	26.51	26.54	26.56	28.50	20.78	20.44	20.58	22.24
	EDGE 2 Tx slots	24.06	23.37	23.64	25.00				



<Reduced Power Mode>

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		25.52	25.30	25.44	27.00	16.52	16.30	16.44	18.00
GPRS 1 Tx slot		25.59	25.38	25.51	27.00	16.59	16.38	16.51	18.00
GPRS 2 Tx slots		23.24	22.98	22.95	24.50	17.24	16.98	16.95	18.50
GPRS 3 Tx slots		20.84	20.65	20.57	22.00	16.58	16.39	16.31	17.74
GPRS 4 Tx slots		19.88	19.67	19.53	21.00	16.88	16.67	16.53	18.00
EDGE 1 Tx slot		25.55	25.05	24.83	26.00	16.55	16.05	15.83	17.00
EDGE 2 Tx slots		23.35	22.90	23.00	24.00	17.35	16.90	17.00	18.00
EDGE 3 Tx slots		20.42	20.72	20.32	21.00	16.16	16.46	16.06	16.74
EDGE 4 Tx slots		19.91	19.64	19.35	21.00	16.91	16.64	16.35	18.00
DTM Multi-slot class 5	GSM 1 Tx slot	23.37	22.98	22.95	24.50	17.32	16.93	16.89	18.48
	GPRS 1 Tx slot	23.31	22.92	22.87	24.50				
DTM Multi-slot class 9	GSM 1 Tx slot	23.36	22.96	22.93	24.50	17.31	16.91	16.87	18.48
	GPRS 1 Tx slot	23.30	22.90	22.86	24.50				
DTM Multi-slot class 11	GSM 1 Tx slot	20.72	20.53	20.50	22.00	16.45	16.26	16.24	17.74
	GPRS 2 Tx slots	20.71	20.52	20.50	22.00				
DTM Multi-slot class 5	GSM 1 Tx slot	23.50	23.06	22.97	24.50	17.50	17.15	17.06	18.24
	EDGE 1 Tx slot	23.55	23.28	23.18	24.00				
DTM Multi-slot class 9	GSM 1 Tx slot	23.42	23.03	23.07	24.50	17.39	16.97	17.01	18.24
	EDGE 1 Tx slot	23.40	22.96	23.00	24.00				
DTM Multi-slot class 11	GSM 1 Tx slot	20.69	20.63	20.51	22.00	16.63	16.38	16.12	17.10
	EDGE 2 Tx slots	20.99	20.64	20.31	21.00				



<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} (Note 1, 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 $\Delta_{CQI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$.

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 $\Delta_{NACK} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$, and $\Delta_{CQI} = 24/15$ with $\beta_{HS} = 24/15 * \beta_c$.

Note 3: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{HS}/\beta_c = 24/15$. For all other combinations of DPCCH, DPDCCH 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 $\beta_c = 11/15$ and $\beta_d = 15/15$.

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-TFCl
 - viii. Confirm that E-TFCl is equal to the target E-TFCl of 75 for sub-test 1, and other subtest's E-TFCl
- 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-TFCl
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/25	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed1}: 47/15$ $\beta_{ed2}: 47/15$	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 $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$. For sub-test 5, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 5/15$ with $\beta_{hs} = 5/15 * \beta_c$.

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

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 $\beta_c = 10/15$ and $\beta_d = 15/15$.

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: $\beta_c/\beta_d=2/15$
 - b). Subtest 2: $\beta_c/\beta_d=12/15$
 - c). Subtest 3: $\beta_c/\beta_d=15/8$
 - d). Subtest 4: $\beta_c/\beta_d=15/4$
 - 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	Processes	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.		

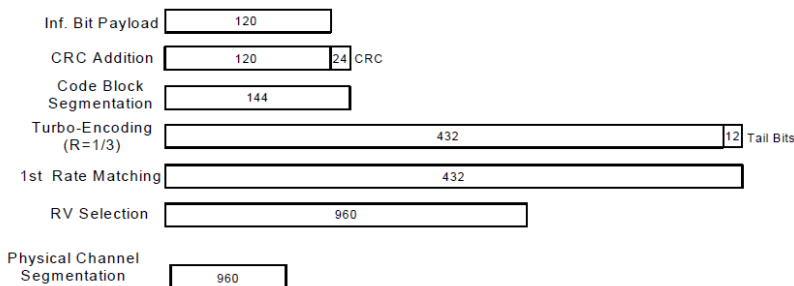


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration



<WCDMA Conducted Power>

General Note:

- Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
- 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.

<Default Power Mode>

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel	Rx Channel	9262	9400	9538		1312	1413	1513		4132	4182	4233	
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	23.76	23.75	24.18	25.00	23.64	23.82	23.80	25.00	23.74	23.65	23.68	25.00
3GPP Rel 99	RMC 12.2Kbps	23.78	23.76	24.20	25.00	23.66	23.85	23.84	25.00	23.75	23.68	23.69	25.00
3GPP Rel 6	HSDPA Subtest-1	22.83	22.79	23.06	24.00	22.63	22.81	22.80	24.00	23.06	22.78	22.68	24.00
3GPP Rel 6	HSDPA Subtest-2	22.81	22.80	23.04	24.00	22.60	22.79	22.89	24.00	23.08	22.82	22.72	24.00
3GPP Rel 6	HSDPA Subtest-3	22.35	22.30	22.55	23.50	22.15	22.33	22.40	23.50	22.59	22.30	22.19	23.50
3GPP Rel 6	HSDPA Subtest-4	22.30	22.29	22.53	23.50	22.06	22.27	22.33	23.50	22.59	22.33	22.22	23.50
3GPP Rel 8	DC-HSDPA Subtest-1	22.74	22.70	22.97	24.00	22.62	22.80	22.88	24.00	22.99	22.71	22.61	24.00
3GPP Rel 8	DC-HSDPA Subtest-2	22.72	22.71	22.95	24.00	22.63	22.75	22.84	24.00	23.01	22.75	22.65	24.00
3GPP Rel 8	DC-HSDPA Subtest-3	22.26	22.21	22.46	23.50	22.10	22.31	22.35	23.50	22.52	22.23	22.12	23.50
3GPP Rel 8	DC-HSDPA Subtest-4	22.21	22.20	22.44	23.50	22.13	22.27	22.36	23.50	22.52	22.26	22.15	23.50
3GPP Rel 6	HSUPA Subtest-1	22.81	22.75	23.09	24.00	22.64	22.73	22.69	24.00	23.07	22.78	22.68	24.00
3GPP Rel 6	HSUPA Subtest-2	20.79	20.71	21.00	22.00	20.58	20.59	20.68	22.00	21.03	20.74	20.65	22.00
3GPP Rel 6	HSUPA Subtest-3	21.80	21.70	22.08	23.00	21.55	21.62	21.69	23.00	22.08	21.77	21.64	23.00
3GPP Rel 6	HSUPA Subtest-4	20.79	20.68	21.07	22.00	20.60	20.56	20.67	22.00	21.01	20.60	20.67	22.00
3GPP Rel 6	HSUPA Subtest-5	22.80	22.74	23.06	24.00	22.63	22.72	22.64	24.00	23.07	22.72	22.66	24.00

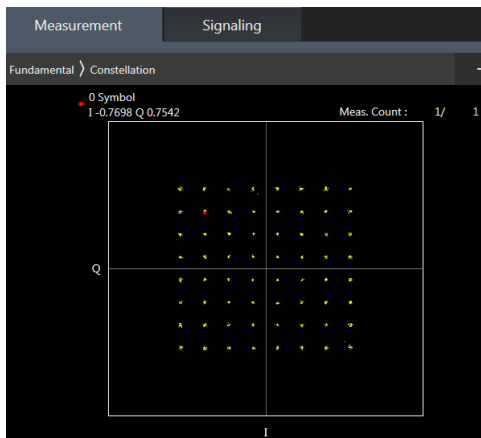
<Reduced Power Mode>

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)
TX Channel	Rx Channel	9262	9400	9538		1312	1413	1513	
Frequency (MHz)		1852.4	1880	1907.6	1712.4	1732.6	1752.6		
3GPP Rel 99	AMR 12.2Kbps	17.19	17.13	17.55	18.50	17.08	17.28	17.25	18.50
3GPP Rel 99	RMC 12.2Kbps	17.20	17.15	17.60	18.50	17.11	17.30	17.29	18.50
3GPP Rel 6	HSDPA Subtest-1	16.17	16.14	16.69	17.50	16.25	16.30	16.34	17.50
3GPP Rel 6	HSDPA Subtest-2	16.14	16.18	16.60	17.50	16.21	16.27	16.41	17.50
3GPP Rel 6	HSDPA Subtest-3	15.70	15.67	16.18	17.00	15.69	15.81	15.90	17.00
3GPP Rel 6	HSDPA Subtest-4	15.70	15.66	16.12	17.00	15.65	15.73	15.86	17.00
3GPP Rel 8	DC-HSDPA Subtest-1	16.14	16.12	16.59	17.50	16.15	16.30	16.36	17.50
3GPP Rel 8	DC-HSDPA Subtest-2	16.14	16.05	16.50	17.50	16.16	16.22	16.33	17.50
3GPP Rel 8	DC-HSDPA Subtest-3	15.60	15.57	16.04	17.00	15.72	15.76	15.92	17.00
3GPP Rel 8	DC-HSDPA Subtest-4	15.63	15.59	16.01	17.00	15.73	15.75	15.83	17.00
3GPP Rel 6	HSUPA Subtest-1	16.21	16.11	16.68	17.50	16.18	16.22	16.16	17.50
3GPP Rel 6	HSUPA Subtest-2	14.15	14.10	14.63	15.50	14.19	14.09	14.20	15.50
3GPP Rel 6	HSUPA Subtest-3	15.22	15.04	15.64	16.50	15.13	15.12	15.20	16.50
3GPP Rel 6	HSUPA Subtest-4	14.14	14.09	14.68	15.50	14.19	14.09	14.22	15.50
3GPP Rel 6	HSUPA Subtest-5	16.20	16.08	16.59	17.50	16.17	16.24	16.17	17.50

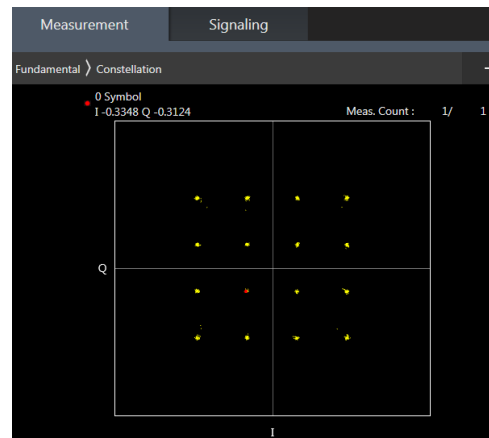
<LTE Conducted Power>

General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ 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 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.
9. LTE band 2 / 4 / 5 / 17 SAR test was covered by Band 25 / 66 / 26 / 12; 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 \leq 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



<Default Power Mode>

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	23.95	23.91	24.09	25	0
20	QPSK	1	49	23.85	23.78	24.02		
20	QPSK	1	99	23.82	23.88	23.89		
20	QPSK	50	0	22.87	22.80	22.97	24	1
20	QPSK	50	24	22.88	22.77	22.94		
20	QPSK	50	50	22.86	22.78	23.09		
20	QPSK	100	0	22.86	22.75	22.96		
20	16QAM	1	0	23.30	23.31	23.19	24	1
20	16QAM	1	49	23.21	23.20	23.40		
20	16QAM	1	99	23.27	23.21	23.41		
20	16QAM	50	0	22.00	21.92	22.06	23	2
20	16QAM	50	24	22.04	21.95	22.12		
20	16QAM	50	50	22.01	21.91	22.17		
20	16QAM	100	0	21.98	21.92	22.07		
20	64QAM	1	0	22.29	22.24	22.12	23	2
20	64QAM	1	49	22.15	22.12	22.32		
20	64QAM	1	99	22.16	22.12	22.37		
20	64QAM	50	0	21.04	20.94	21.07	22	3
20	64QAM	50	24	21.06	20.96	21.14		
20	64QAM	50	50	21.00	20.94	21.20		
20	64QAM	100	0	21.04	20.96	21.10		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	23.87	23.85	23.86	25	0
15	QPSK	1	37	23.89	23.82	23.97		
15	QPSK	1	74	23.77	23.91	24.08		
15	QPSK	36	0	22.89	22.84	22.90	24	1
15	QPSK	36	20	22.86	22.88	23.05		
15	QPSK	36	39	22.80	22.84	23.03		
15	QPSK	75	0	22.80	22.85	23.01	24	1
15	16QAM	1	0	23.28	23.20	23.24		
15	16QAM	1	37	23.28	23.22	23.31		
15	16QAM	1	74	23.12	23.24	23.36	23	2
15	16QAM	36	0	22.05	21.99	22.03		
15	16QAM	36	20	22.01	22.03	22.17		
15	16QAM	36	39	21.97	21.98	22.14		
15	16QAM	75	0	21.98	21.99	22.10	23	2
15	64QAM	1	0	22.18	22.14	22.16		
15	64QAM	1	37	22.19	22.19	22.31		
15	64QAM	1	74	22.10	22.22	22.32	22	3
15	64QAM	36	0	21.09	21.03	21.06		
15	64QAM	36	20	21.03	21.06	21.21		
15	64QAM	36	39	21.02	21.02	21.17		
15	64QAM	75	0	20.99	21.00	21.11		



Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	23.96	23.92	23.99	25	0
10	QPSK	1	25	23.90	23.84	24.08		
10	QPSK	1	49	23.88	23.98	24.06		
10	QPSK	25	0	22.92	22.85	23.03	24	1
10	QPSK	25	12	22.94	22.87	23.02		
10	QPSK	25	25	22.81	22.85	23.15		
10	QPSK	50	0	22.81	22.83	23.03	24	1
10	16QAM	1	0	23.32	23.31	23.31		
10	16QAM	1	25	23.25	23.21	23.37		
10	16QAM	1	49	23.20	23.31	23.35	23	2
10	16QAM	25	0	22.07	22.00	22.12		
10	16QAM	25	12	22.05	21.99	22.16		
10	16QAM	25	25	21.93	21.97	22.23	23	2
10	16QAM	50	0	21.94	21.98	22.16		
10	64QAM	1	0	22.31	22.22	22.26		
10	64QAM	1	25	22.23	22.19	22.35	23	2
10	64QAM	1	49	22.19	22.32	22.35		
10	64QAM	25	0	21.08	21.00	21.12		
10	64QAM	25	12	21.10	21.01	21.18	22	3
10	64QAM	25	25	20.94	20.99	21.24		
10	64QAM	50	0	20.96	20.97	21.16		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	23.85	23.80	24.02	25	0
5	QPSK	1	12	23.88	23.83	24.01		
5	QPSK	1	24	23.83	23.80	24.02		
5	QPSK	12	0	22.90	22.85	23.11	24	1
5	QPSK	12	7	22.92	22.87	23.17		
5	QPSK	12	13	22.90	22.84	23.12		
5	QPSK	25	0	22.87	22.81	23.12	24	1
5	16QAM	1	0	23.21	23.18	23.34		
5	16QAM	1	12	23.30	23.21	23.32		
5	16QAM	1	24	23.18	23.16	23.32	23	2
5	16QAM	12	0	22.05	22.00	22.21		
5	16QAM	12	7	22.08	22.00	22.24		
5	16QAM	12	13	22.06	22.00	22.22	23	2
5	16QAM	25	0	22.00	21.97	22.21		
5	64QAM	1	0	22.21	22.16	22.35		
5	64QAM	1	12	22.17	22.18	22.32	23	2
5	64QAM	1	24	22.15	22.12	22.31		
5	64QAM	12	0	21.13	21.06	21.27		
5	64QAM	12	7	21.14	21.11	21.29	22	3
5	64QAM	12	13	21.13	21.06	21.30		
5	64QAM	25	0	21.02	20.96	21.23		



Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	23.58	23.79	24.03	25	0
3	QPSK	1	8	23.84	23.83	24.05		
3	QPSK	1	14	23.82	23.77	24.03		
3	QPSK	8	0	22.86	22.82	23.09	24	1
3	QPSK	8	4	22.89	22.85	23.09		
3	QPSK	8	7	22.85	22.80	23.11		
3	QPSK	15	0	22.85	22.82	23.14	24	1
3	16QAM	1	0	23.20	23.19	23.31		
3	16QAM	1	8	23.25	23.22	23.35		
3	16QAM	1	14	23.18	23.17	23.32	23	2
3	16QAM	8	0	22.04	22.01	22.20		
3	16QAM	8	4	21.85	22.05	22.24		
3	16QAM	8	7	22.04	22.00	22.20	23	2
3	16QAM	15	0	21.95	21.71	22.21		
3	64QAM	1	0	22.16	22.10	22.28		
3	64QAM	1	8	22.20	22.14	22.32	23	2
3	64QAM	1	14	22.12	22.14	22.28		
3	64QAM	8	0	21.10	21.02	21.23		
3	64QAM	8	4	21.11	21.09	21.28	22	3
3	64QAM	8	7	20.85	21.02	21.25		
3	64QAM	15	0	20.99	20.72	21.18		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	23.76	23.75	23.99	25	0
1.4	QPSK	1	3	23.82	23.79	24.07		
1.4	QPSK	1	5	23.74	23.72	23.99		
1.4	QPSK	3	0	23.84	23.77	24.04		
1.4	QPSK	3	1	23.86	23.85	24.01		
1.4	QPSK	3	3	23.83	23.80	24.05		
1.4	QPSK	6	0	22.79	22.76	23.03	24	1
1.4	16QAM	1	0	23.13	23.13	23.23	24	1
1.4	16QAM	1	3	23.23	23.22	23.31		
1.4	16QAM	1	5	23.09	23.10	23.24		
1.4	16QAM	3	0	22.92	22.93	23.07		
1.4	16QAM	3	1	22.99	22.95	23.13		
1.4	16QAM	3	3	22.91	22.92	23.09		
1.4	16QAM	6	0	22.00	21.95	22.19	23	2
1.4	64QAM	1	0	22.10	22.08	22.23	23	2
1.4	64QAM	1	3	22.15	22.16	22.31		
1.4	64QAM	1	5	22.08	22.05	22.24		
1.4	64QAM	3	0	22.07	22.10	22.20		
1.4	64QAM	3	1	22.14	22.12	22.27		
1.4	64QAM	3	3	22.09	22.07	22.24		
1.4	64QAM	6	0	20.94	20.87	21.11	22	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	23.75	23.90	23.96	25	0
20	QPSK	1	49	23.72	23.89	23.89		
20	QPSK	1	99	23.65	23.88	23.87		
20	QPSK	50	0	22.82	22.95	23.03	24	1
20	QPSK	50	24	22.77	22.94	22.97		
20	QPSK	50	50	22.77	22.94	22.92		
20	QPSK	100	0	22.79	22.93	23.01		
20	16QAM	1	0	22.99	23.23	23.37	24	1
20	16QAM	1	49	23.12	23.21	23.27		
20	16QAM	1	99	23.08	23.23	23.23		
20	16QAM	50	0	21.91	22.03	22.13	23	2
20	16QAM	50	24	21.94	22.09	22.08		
20	16QAM	50	50	21.93	22.06	22.06		
20	16QAM	100	0	21.91	22.06	22.12		
20	64QAM	1	0	21.96	22.23	22.32	23	2
20	64QAM	1	49	22.06	22.19	22.24		
20	64QAM	1	99	22.07	22.19	22.23		
20	64QAM	50	0	20.94	21.08	21.17	22	3
20	64QAM	50	24	21.00	21.14	21.11		
20	64QAM	50	50	20.97	21.11	21.08		
20	64QAM	100	0	20.94	21.06	21.17		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	23.57	23.72	23.86	25	0
15	QPSK	1	37	23.69	23.85	23.80		
15	QPSK	1	74	23.82	23.85	23.80		
15	QPSK	36	0	22.71	22.87	22.91	24	1
15	QPSK	36	20	22.77	22.89	22.96		
15	QPSK	36	39	22.82	22.89	22.84		
15	QPSK	75	0	22.72	22.86	22.93	24	1
15	16QAM	1	0	22.97	23.10	23.26		
15	16QAM	1	37	23.11	23.26	23.24		
15	16QAM	1	74	23.19	23.24	23.21	23	2
15	16QAM	36	0	21.84	21.99	22.04		
15	16QAM	36	20	21.91	22.01	22.07		
15	16QAM	36	39	21.95	22.01	21.94		
15	16QAM	75	0	21.90	21.94	22.02	23	2
15	64QAM	1	0	21.89	22.00	22.15		
15	64QAM	1	37	22.04	22.13	22.09		
15	64QAM	1	74	22.06	22.14	22.12	22	3
15	64QAM	36	0	20.89	21.00	21.07		
15	64QAM	36	20	20.93	21.03	21.11		
15	64QAM	36	39	20.98	21.02	21.00		
15	64QAM	75	0	20.87	20.98	21.10		



Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	23.64	23.87	23.79	25	0
10	QPSK	1	25	23.64	23.88	23.80		
10	QPSK	1	49	23.70	23.87	23.78		
10	QPSK	25	0	22.66	22.91	22.81	24	1
10	QPSK	25	12	22.79	22.93	22.86		
10	QPSK	25	25	22.75	22.91	22.82		
10	QPSK	50	0	22.76	22.90	22.81	24	1
10	16QAM	1	0	22.98	23.27	23.18		
10	16QAM	1	25	23.02	23.21	23.20		
10	16QAM	1	49	23.08	23.26	23.20	23	2
10	16QAM	25	0	21.77	22.02	21.96		
10	16QAM	25	12	21.90	22.05	21.97		
10	16QAM	25	25	21.89	22.03	21.94	23	2
10	16QAM	50	0	21.88	22.04	21.94		
10	64QAM	1	0	21.92	22.21	22.11		
10	64QAM	1	25	21.94	22.18	22.10	23	2
10	64QAM	1	49	22.01	22.21	22.11		
10	64QAM	25	0	20.77	21.05	20.95		
10	64QAM	25	12	20.93	21.10	20.98	22	3
10	64QAM	25	25	20.89	21.05	20.97		
10	64QAM	50	0	20.93	21.04	20.97		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	23.61	23.83	23.77	25	0
5	QPSK	1	12	23.61	23.86	23.79		
5	QPSK	1	24	23.59	23.87	23.76		
5	QPSK	12	0	22.66	22.90	22.80	24	1
5	QPSK	12	7	22.70	22.96	22.84		
5	QPSK	12	13	22.63	22.92	22.84		
5	QPSK	25	0	22.66	22.91	22.82	24	1
5	16QAM	1	0	22.94	23.19	23.16		
5	16QAM	1	12	22.97	23.22	23.16		
5	16QAM	1	24	22.98	23.18	23.13	23	2
5	16QAM	12	0	21.78	22.04	21.94		
5	16QAM	12	7	21.86	22.09	22.02		
5	16QAM	12	13	21.79	22.05	21.97	23	2
5	16QAM	25	0	21.74	22.01	21.94		
5	64QAM	1	0	21.92	22.15	22.11		
5	64QAM	1	12	21.94	22.19	22.15	23	2
5	64QAM	1	24	21.90	22.16	22.08		
5	64QAM	12	0	20.84	21.09	21.02		
5	64QAM	12	7	20.89	21.16	21.08	22	3
5	64QAM	12	13	20.84	21.09	21.04		
5	64QAM	25	0	20.76	21.04	20.95		



Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	23.56	23.82	23.85	25	0
3	QPSK	1	8	23.59	23.85	23.87		
3	QPSK	1	14	23.56	23.81	23.86		
3	QPSK	8	0	22.60	22.88	22.93	24	1
3	QPSK	8	4	22.67	22.91	22.92		
3	QPSK	8	7	22.61	22.89	22.80		
3	QPSK	15	0	22.63	22.67	22.80		
3	16QAM	1	0	22.94	23.19	23.14	24	1
3	16QAM	1	8	23.01	23.21	23.18		
3	16QAM	1	14	22.93	23.20	23.14		
3	16QAM	8	0	21.77	21.81	22.00	23	2
3	16QAM	8	4	21.82	22.08	22.00		
3	16QAM	8	7	21.57	22.06	22.00		
3	16QAM	15	0	21.75	22.00	21.94		
3	64QAM	1	0	21.85	21.65	21.82	23	2
3	64QAM	1	8	21.86	22.13	22.06		
3	64QAM	1	14	21.85	22.14	22.06		
3	64QAM	8	0	20.80	21.10	21.03	22	3
3	64QAM	8	4	20.82	20.89	21.03		
3	64QAM	8	7	20.81	21.09	20.99		
3	64QAM	8	7	20.81	21.09	20.99		
3	64QAM	15	0	20.75	21.03	20.72		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	23.50	23.78	23.80	25	0
1.4	QPSK	1	3	23.56	23.87	23.88		
1.4	QPSK	1	5	23.50	23.77	23.68		
1.4	QPSK	3	0	23.54	23.84	23.77		
1.4	QPSK	3	1	23.59	23.88	23.79		
1.4	QPSK	3	3	23.54	23.81	23.75		
1.4	QPSK	6	0	22.55	22.83	22.75	24	1
1.4	16QAM	1	0	22.84	23.12	23.09	24	1
1.4	16QAM	1	3	22.93	23.21	23.17		
1.4	16QAM	1	5	22.85	23.10	23.06		
1.4	16QAM	3	0	22.68	22.95	22.92		
1.4	16QAM	3	1	22.70	22.98	22.93		
1.4	16QAM	3	3	22.68	22.94	22.90		
1.4	16QAM	6	0	21.77	22.01	21.95	23	2
1.4	64QAM	1	0	21.82	22.05	22.02	23	2
1.4	64QAM	1	3	21.87	22.18	22.09		
1.4	64QAM	1	5	21.85	22.10	22.02		
1.4	64QAM	3	0	21.83	22.08	22.01		
1.4	64QAM	3	1	21.83	22.11	22.07		
1.4	64QAM	3	3	21.79	22.09	21.98		
1.4	64QAM	6	0	20.68	20.94	20.88	22	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	23.48	23.49	23.38	24.5	0
10	QPSK	1	25	23.43	23.45	23.32		
10	QPSK	1	49	23.46	23.43	23.28		
10	QPSK	25	0	22.54	22.58	22.40	23.5	1
10	QPSK	25	12	22.47	22.48	22.29		
10	QPSK	25	25	22.51	22.43	22.36		
10	QPSK	50	0	22.51	22.54	22.25	23.5	1
10	16QAM	1	0	22.78	22.82	22.65		
10	16QAM	1	25	22.77	22.83	22.69		
10	16QAM	1	49	22.88	22.75	22.65	22.5	2
10	16QAM	25	0	21.62	21.63	21.44		
10	16QAM	25	12	21.70	21.63	21.50		
10	16QAM	25	25	21.64	21.57	21.45	22.5	2
10	16QAM	50	0	21.65	21.61	21.38		
10	64QAM	1	0	21.73	21.72	21.55		
10	64QAM	1	25	21.69	21.72	21.61	22.5	2
10	64QAM	1	49	21.77	21.66	21.57		
10	64QAM	25	0	20.62	20.63	20.44		
10	64QAM	25	12	20.70	20.63	20.57	21.5	3
10	64QAM	25	25	20.65	20.62	20.49		
10	64QAM	50	0	20.70	20.64	20.44		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	23.47	23.44	23.30	24.5	0
5	QPSK	1	12	23.45	23.46	23.29		
5	QPSK	1	24	23.43	23.39	23.27		
5	QPSK	12	0	22.50	22.47	22.33	23.5	1
5	QPSK	12	7	22.50	22.50	22.39		
5	QPSK	12	13	22.48	22.45	22.33		
5	QPSK	25	0	22.46	22.48	22.34	23.5	1
5	16QAM	1	0	22.79	22.77	22.63		
5	16QAM	1	12	22.77	22.78	22.68		
5	16QAM	1	24	22.73	22.70	22.59	22.5	2
5	16QAM	12	0	21.60	21.60	21.48		
5	16QAM	12	7	21.61	21.63	21.49		
5	16QAM	12	13	21.58	21.56	21.45	22.5	2
5	16QAM	25	0	21.57	21.58	21.44		
5	64QAM	1	0	21.76	21.74	21.61		
5	64QAM	1	12	21.73	21.75	21.60	22.5	2
5	64QAM	1	24	21.71	21.72	21.55		
5	64QAM	12	0	20.64	20.68	20.54		
5	64QAM	12	7	20.68	20.70	20.54	21.5	3
5	64QAM	12	13	20.63	20.63	20.51		
5	64QAM	25	0	20.60	20.59	20.46		



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Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	23.43	23.44	23.30	24.5	0
3	QPSK	1	8	23.45	23.40	23.29		
3	QPSK	1	14	23.44	23.40	23.26		
3	QPSK	8	0	22.47	22.47	22.07	23.5	1
3	QPSK	8	4	22.52	22.48	22.34		
3	QPSK	8	7	22.46	22.47	22.34		
3	QPSK	15	0	22.44	22.46	22.33		
3	16QAM	1	0	22.81	22.80	22.65	23.5	1
3	16QAM	1	8	22.81	22.80	22.69		
3	16QAM	1	14	22.77	22.77	22.63		
3	16QAM	8	0	21.65	21.61	21.46	22.5	2
3	16QAM	8	4	21.67	21.65	21.27		
3	16QAM	8	7	21.61	21.62	21.49		
3	16QAM	15	0	21.58	21.58	21.44		
3	64QAM	1	0	21.71	21.70	21.55	22.5	2
3	64QAM	1	8	21.69	21.71	21.56		
3	64QAM	1	14	21.70	21.68	21.55		
3	64QAM	8	0	20.67	20.60	20.47	21.5	3
3	64QAM	8	4	20.67	20.66	20.52		
3	64QAM	8	7	20.64	20.66	20.49		
3	64QAM	8	7	20.64	20.66	20.49		
3	64QAM	15	0	20.59	20.60	20.45		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	23.40	23.36	23.22	24.5	0
1.4	QPSK	1	3	23.48	23.45	23.29		
1.4	QPSK	1	5	23.39	23.35	23.21		
1.4	QPSK	3	0	23.42	23.38	23.25		
1.4	QPSK	3	1	23.47	23.45	23.30		
1.4	QPSK	3	3	23.47	23.43	23.25		
1.4	QPSK	6	0	22.43	22.40	22.26	23.5	1
1.4	16QAM	1	0	22.73	22.75	22.59	23.5	1
1.4	16QAM	1	3	22.83	22.81	22.65		
1.4	16QAM	1	5	22.72	22.70	22.56		
1.4	16QAM	3	0	22.54	22.50	22.36		
1.4	16QAM	3	1	22.59	22.56	22.37		
1.4	16QAM	3	3	22.50	22.51	22.31		
1.4	16QAM	6	0	21.62	21.58	21.44	22.5	2
1.4	64QAM	1	0	21.65	21.68	21.52	22.5	2
1.4	64QAM	1	3	21.76	21.70	21.56		
1.4	64QAM	1	5	21.66	21.65	21.46		
1.4	64QAM	3	0	21.67	21.64	21.51		
1.4	64QAM	3	1	21.72	21.70	21.52		
1.4	64QAM	3	3	21.65	21.65	21.45		
1.4	64QAM	3	3	21.65	21.65	21.45		
1.4	64QAM	6	0	20.55	20.55	20.37		



<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	23.39	23.32	23.36		
20	QPSK	1	49	23.37	23.17	23.28	23.5	0
20	QPSK	1	99	23.38	23.31	23.36		
20	QPSK	50	0	22.47	22.33	22.43		
20	QPSK	50	24	22.47	22.27	22.37	22.5	1
20	QPSK	50	50	22.38	22.32	22.42		
20	QPSK	100	0	22.41	22.28	22.37		
20	16QAM	1	0	22.39	22.46	22.25	22.5	1
20	16QAM	1	49	22.44	22.42	22.33		
20	16QAM	1	99	22.37	22.40	22.47		
20	16QAM	50	0	21.24	21.34	21.08	21.5	2
20	16QAM	50	24	21.28	21.35	21.20		
20	16QAM	50	50	21.19	21.41	21.23		
20	16QAM	100	0	21.17	21.33	21.17	21.5	2
20	64QAM	1	0	21.30	21.37	21.16		
20	64QAM	1	49	21.33	21.42	21.21		
20	64QAM	1	99	21.27	21.48	21.43	20.5	3
20	64QAM	50	0	20.27	20.36	20.12		
20	64QAM	50	24	20.29	20.37	20.18		
20	64QAM	50	50	20.23	20.45	20.24	20.5	3
20	64QAM	100	0	20.19	20.40	20.17		
Channel				20825	21100	21375		
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	23.21	23.10	23.12		
15	QPSK	1	37	23.35	22.97	23.22	23.5	0
15	QPSK	1	74	23.30	23.11	23.30		
15	QPSK	36	0	22.29	22.15	22.30		
15	QPSK	36	20	22.44	22.07	22.26	22.5	1
15	QPSK	36	39	22.40	22.17	22.22		
15	QPSK	75	0	22.43	22.09	22.26		
15	16QAM	1	0	22.47	22.50	22.47	22.5	1
15	16QAM	1	37	22.40	22.47	22.48		
15	16QAM	1	74	22.50	22.42	22.43		
15	16QAM	36	0	21.41	21.13	21.29	21.5	2
15	16QAM	36	20	21.39	21.20	21.33		
15	16QAM	36	39	21.44	21.26	21.48		
15	16QAM	75	0	21.42	21.24	21.44	21.5	2
15	64QAM	1	0	21.43	21.18	21.42		
15	64QAM	1	37	21.44	21.19	21.36		
15	64QAM	1	74	21.45	21.32	21.49	20.5	3
15	64QAM	36	0	20.46	20.15	20.21		
15	64QAM	36	20	20.41	20.24	20.49		
15	64QAM	36	39	20.43	20.18	20.31	20.5	3
15	64QAM	75	0	20.50	20.27	20.34		



Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	23.38	23.13	23.22	23.5	0
10	QPSK	1	25	23.32	23.15	23.28		
10	QPSK	1	49	23.30	23.23	23.34		
10	QPSK	25	0	22.42	22.23	22.33	22.5	1
10	QPSK	25	12	22.47	22.23	22.37		
10	QPSK	25	25	22.49	22.25	22.40		
10	QPSK	50	0	22.45	22.22	22.36	22.5	1
10	16QAM	1	0	22.43	22.20	22.28		
10	16QAM	1	25	22.48	22.20	22.34		
10	16QAM	1	49	22.43	22.31	22.41	21.5	2
10	16QAM	25	0	21.25	21.00	21.11		
10	16QAM	25	12	21.28	21.01	21.16		
10	16QAM	25	25	21.25	21.03	21.19	21.5	2
10	16QAM	50	0	21.23	21.01	21.17		
10	64QAM	1	0	21.30	21.06	21.17		
10	64QAM	1	25	21.34	21.07	21.25	21.5	2
10	64QAM	1	49	21.42	21.21	21.34		
10	64QAM	25	0	20.23	20.01	20.11		
10	64QAM	25	12	20.29	20.02	20.19	20.5	3
10	64QAM	25	25	20.31	20.05	20.21		
10	64QAM	50	0	20.29	20.01	20.16		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	23.36	23.12	23.26	23.5	0
5	QPSK	1	12	23.35	23.14	23.28		
5	QPSK	1	24	23.34	23.19	23.31		
5	QPSK	12	0	22.45	22.20	22.31	22.5	1
5	QPSK	12	7	22.48	22.24	22.40		
5	QPSK	12	13	22.41	22.23	22.40		
5	QPSK	25	0	22.48	22.23	22.33	22.5	1
5	16QAM	1	0	22.36	22.15	22.28		
5	16QAM	1	12	22.44	22.21	22.30		
5	16QAM	1	24	22.43	22.21	22.33	21.5	2
5	16QAM	12	0	21.21	20.96	21.13		
5	16QAM	12	7	21.30	21.04	21.20		
5	16QAM	12	13	21.27	21.01	21.21	21.5	2
5	16QAM	25	0	21.25	21.02	21.14		
5	64QAM	1	0	21.48	21.20	21.36		
5	64QAM	1	12	21.47	21.34	21.42	21.5	2
5	64QAM	1	24	21.35	21.45	21.46		
5	64QAM	12	0	20.33	20.18	20.26		
5	64QAM	12	7	20.47	20.12	20.29	20.5	3
5	64QAM	12	13	20.42	20.33	20.42		
5	64QAM	25	0	20.45	20.23	20.39		



<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	24.16	24.24	24.31	25	0
10	QPSK	1	25	24.02	24.08	24.12		
10	QPSK	1	49	23.82	23.87	24.03		
10	QPSK	25	0	23.14	23.12	23.15	24	1
10	QPSK	25	12	23.07	23.11	23.07		
10	QPSK	25	25	22.95	23.09	23.09		
10	QPSK	50	0	23.05	23.07	23.10		
10	16QAM	1	0	23.17	23.24	23.41	24	1
10	16QAM	1	25	23.38	23.42	23.50		
10	16QAM	1	49	23.46	23.55	23.53		
10	16QAM	25	0	22.09	22.26	22.19	23	2
10	16QAM	25	12	22.21	22.26	22.19		
10	16QAM	25	25	22.27	22.21	22.28		
10	16QAM	50	0	22.21	22.23	22.16		
10	64QAM	1	0	22.08	22.16	22.33	23	2
10	64QAM	1	25	22.33	22.35	22.43		
10	64QAM	1	49	22.38	22.49	22.47		
10	64QAM	25	0	21.08	21.24	21.20	22	3
10	64QAM	25	12	21.22	21.27	21.23		
10	64QAM	25	25	21.28	21.21	21.30		
10	64QAM	50	0	21.18	21.24	21.20		
Channel				23035	23095	23155	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	23.89	23.94	24.18	25	0
5	QPSK	1	12	24.01	24.06	24.16		
5	QPSK	1	24	24.11	24.03	24.14		
5	QPSK	12	0	23.08	23.10	23.23	24	1
5	QPSK	12	7	23.12	23.16	23.26		
5	QPSK	12	13	23.20	23.09	23.22		
5	QPSK	25	0	23.06	23.11	23.20		
5	16QAM	1	0	23.24	23.34	23.54	24	1
5	16QAM	1	12	23.42	23.41	23.55		
5	16QAM	1	24	23.49	23.38	23.56		
5	16QAM	12	0	22.21	22.24	22.35	23	2
5	16QAM	12	7	22.24	22.27	22.39		
5	16QAM	12	13	22.30	22.22	22.34		
5	16QAM	25	0	22.19	22.22	22.32		
5	64QAM	1	0	22.19	22.26	22.51	23	2
5	64QAM	1	12	22.35	22.36	22.50		
5	64QAM	1	24	22.43	22.32	22.52		
5	64QAM	12	0	21.27	21.29	21.42	22	3
5	64QAM	12	7	21.30	21.28	21.45		
5	64QAM	12	13	21.34	21.27	21.39		
5	64QAM	25	0	21.21	21.22	21.32		



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Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	23.91	24.04	24.15	25	0
3	QPSK	1	8	24.00	24.12	24.14		
3	QPSK	1	14	24.00	24.03	24.14		
3	QPSK	8	0	22.82	23.16	23.17	24	1
3	QPSK	8	4	22.87	23.22	23.31		
3	QPSK	8	7	23.09	23.18	23.29		
3	QPSK	15	0	23.06	23.12	23.17	24	1
3	16QAM	1	0	23.23	23.32	23.54		
3	16QAM	1	8	23.44	23.42	23.59		
3	16QAM	1	14	23.43	23.38	23.54	23	2
3	16QAM	8	0	22.22	22.26	22.38		
3	16QAM	8	4	22.28	22.27	22.48		
3	16QAM	8	7	22.26	22.26	22.47	23	2
3	16QAM	15	0	22.22	22.29	22.33		
3	64QAM	1	0	22.15	22.01	22.47		
3	64QAM	1	8	22.33	22.33	22.56	23	2
3	64QAM	1	14	22.35	22.40	22.51		
3	64QAM	8	0	21.24	21.28	21.36		
3	64QAM	8	4	21.29	21.27	21.52	22	3
3	64QAM	8	7	21.26	21.24	21.46		
3	64QAM	15	0	21.24	21.21	21.32		
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	24.05	24.16	25	0
1.4	QPSK	1	3	23.92	24.11	24.11		
1.4	QPSK	1	5	23.86	23.98	24.17		
1.4	QPSK	3	0	23.90	24.04	24.14		
1.4	QPSK	3	1	23.95	24.07	24.15		
1.4	QPSK	3	3	23.92	24.13	24.10		
1.4	QPSK	6	0	22.90	23.06	23.19	24	1
1.4	16QAM	1	0	23.19	23.32	23.56	24	1
1.4	16QAM	1	3	23.32	23.40	23.59		
1.4	16QAM	1	5	23.22	23.37	23.48		
1.4	16QAM	3	0	23.01	23.25	23.35		
1.4	16QAM	3	1	23.03	23.28	23.37		
1.4	16QAM	3	3	22.98	23.18	23.30		
1.4	16QAM	6	0	22.08	22.19	22.37	23	2
1.4	64QAM	1	0	22.16	22.28	22.50	23	2
1.4	64QAM	1	3	22.22	22.30	22.49		
1.4	64QAM	1	5	22.13	22.24	22.41		
1.4	64QAM	3	0	22.15	22.27	22.46		
1.4	64QAM	3	1	22.18	22.30	22.51		
1.4	64QAM	3	3	22.18	22.22	22.42		
1.4	64QAM	6	0	21.02	21.21	21.34	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	23.17			24.5	0
10	QPSK	1	25	23.12				
10	QPSK	1	49	23.08				
10	QPSK	25	0	22.22			23.5	1
10	QPSK	25	12	22.20				
10	QPSK	25	25	22.13				
10	QPSK	50	0	22.18				
10	16QAM	1	0	22.39			23.5	1
10	16QAM	1	25	22.45				
10	16QAM	1	49	22.53				
10	16QAM	25	0	21.30			22.5	2
10	16QAM	25	12	21.29				
10	16QAM	25	25	21.23				
10	16QAM	50	0	21.30				
10	64QAM	1	0	21.34			22.5	2
10	64QAM	1	25	21.37				
10	64QAM	1	49	21.47				
10	64QAM	25	0	20.31			21.5	3
10	64QAM	25	12	20.29				
10	64QAM	25	25	20.26				
10	64QAM	50	0	20.29				
Channel				23205	23230	23255	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	23.06	23.12	22.99	24.5	0
5	QPSK	1	12	23.04	23.11	23.10		
5	QPSK	1	24	23.10	23.07	23.05		
5	QPSK	12	0	22.13	22.17	22.05	23.5	1
5	QPSK	12	7	22.25	22.19	22.06		
5	QPSK	12	13	22.19	22.12	22.13		
5	QPSK	25	0	22.21	22.15	22.08		
5	16QAM	1	0	22.35	22.43	22.35	23.5	1
5	16QAM	1	12	22.35	22.44	22.42		
5	16QAM	1	24	22.41	22.41	22.40		
5	16QAM	12	0	21.24	21.27	21.15	22.5	2
5	16QAM	12	7	21.34	21.29	21.18		
5	16QAM	12	13	21.28	21.24	21.21		
5	16QAM	25	0	21.27	21.26	21.16		
5	64QAM	1	0	21.32	21.39	21.27	22.5	2
5	64QAM	1	12	21.31	21.39	21.38		
5	64QAM	1	24	21.37	21.36	21.35		
5	64QAM	12	0	20.30	20.33	20.21	21.5	3
5	64QAM	12	7	20.38	20.32	20.26		
5	64QAM	12	13	20.35	20.29	20.27		
5	64QAM	25	0	20.27	20.27	20.16		



<LTE Band 14>

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				23330				
Frequency (MHz)				793				
10	QPSK	1	0	23.29			24.5	0
10	QPSK	1	25	23.27				
10	QPSK	1	49	23.22				
10	QPSK	25	0	22.32			23.5	1
10	QPSK	25	12	22.31				
10	QPSK	25	25	22.25				
10	QPSK	50	0	22.29				
10	16QAM	1	0	22.63			23.5	1
10	16QAM	1	25	22.61				
10	16QAM	1	49	22.60				
10	16QAM	25	0	21.40			22.5	2
10	16QAM	25	12	21.43				
10	16QAM	25	25	21.37				
10	16QAM	50	0	21.41				
10	64QAM	1	0	21.51			22.5	2
10	64QAM	1	25	21.56				
10	64QAM	1	49	21.58				
10	64QAM	25	0	20.43			21.5	3
10	64QAM	25	12	20.44				
10	64QAM	25	25	20.37				
10	64QAM	50	0	20.41				
Channel				23305	23330	23355	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				790.5	793	795.5		
5	QPSK	1	0	23.23	23.28	23.27	24.5	0
5	QPSK	1	12	23.21	23.27	23.26		
5	QPSK	1	24	23.28	23.23	23.28		
5	QPSK	12	0	22.23	22.29	22.27	23.5	1
5	QPSK	12	7	22.33	22.30	22.31		
5	QPSK	12	13	22.30	22.28	22.34		
5	QPSK	25	0	22.33	22.31	22.25		
5	16QAM	1	0	22.53	22.61	22.62	23.5	1
5	16QAM	1	12	22.63	22.58	22.65		
5	16QAM	1	24	22.61	22.61	22.57		
5	16QAM	12	0	21.33	21.41	21.40	22.5	2
5	16QAM	12	7	21.43	21.42	21.41		
5	16QAM	12	13	21.42	21.38	21.44		
5	16QAM	25	0	21.39	21.37	21.35		
5	64QAM	1	0	21.49	21.58	21.52	22.5	2
5	64QAM	1	12	21.58	21.53	21.58		
5	64QAM	1	24	21.53	21.56	21.53		
5	64QAM	12	0	20.40	20.44	20.43	21.5	3
5	64QAM	12	7	20.50	20.47	20.45		
5	64QAM	12	13	20.47	20.43	20.50		
5	64QAM	25	0	20.41	20.37	20.37		



<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	24.30	24.25	24.27	25	0
10	QPSK	1	25	24.20	24.19	24.21		
10	QPSK	1	49	24.01	24.09	24.11		
10	QPSK	25	0	23.28	23.26	23.25	24	1
10	QPSK	25	12	23.27	23.23	23.23		
10	QPSK	25	25	23.24	23.23	23.21		
10	QPSK	50	0	23.27	23.23	23.24		
10	16QAM	1	0	23.42	23.48	23.47	24	1
10	16QAM	1	25	23.55	23.55	23.56		
10	16QAM	1	49	23.68	23.64	23.57		
10	16QAM	25	0	22.38	22.36	22.33	23	2
10	16QAM	25	12	22.38	22.35	22.35		
10	16QAM	25	25	22.34	22.33	22.33		
10	16QAM	50	0	22.38	22.37	22.36		
10	64QAM	1	0	22.38	22.46	22.44	23	2
10	64QAM	1	25	22.54	22.53	22.51		
10	64QAM	1	49	22.61	22.62	22.57		
10	64QAM	25	0	21.38	21.37	21.38	22	3
10	64QAM	25	12	21.39	21.38	21.37		
10	64QAM	25	25	21.35	21.34	21.34		
10	64QAM	50	0	21.39	21.36	21.36		
Channel				23755	23790	23825	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	24.04	24.19	24.15	25	0
5	QPSK	1	12	24.17	24.20	24.23		
5	QPSK	1	24	24.20	24.26	24.19		
5	QPSK	12	0	23.21	23.23	23.20	24	1
5	QPSK	12	7	23.26	23.26	23.33		
5	QPSK	12	13	23.29	23.23	23.29		
5	QPSK	25	0	23.28	23.20	23.18		
5	16QAM	1	0	23.42	23.54	23.54	24	1
5	16QAM	1	12	23.48	23.57	23.65		
5	16QAM	1	24	23.57	23.66	23.53		
5	16QAM	12	0	22.34	22.34	22.31	23	2
5	16QAM	12	7	22.38	22.35	22.46		
5	16QAM	12	13	22.39	22.33	22.43		
5	16QAM	25	0	22.39	22.30	22.28		
5	64QAM	1	0	22.33	22.47	22.45	23	2
5	64QAM	1	12	22.42	22.49	22.56		
5	64QAM	1	24	22.49	22.54	22.48		
5	64QAM	12	0	21.36	21.39	21.36	22	3
5	64QAM	12	7	21.40	21.41	21.52		
5	64QAM	12	13	21.44	21.38	21.48		
5	64QAM	25	0	21.39	21.35	21.30		



<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	24.10	24.02	24.00	25	0
20	QPSK	1	49	23.89	23.83	23.79		
20	QPSK	1	99	23.90	23.84	23.76		
20	QPSK	50	0	22.94	22.88	22.87	24	1
20	QPSK	50	24	22.94	22.83	22.83		
20	QPSK	50	50	22.93	22.83	22.81		
20	QPSK	100	0	22.90	22.86	22.81		
20	16QAM	1	0	23.34	23.24	23.12	24	1
20	16QAM	1	49	23.26	23.23	23.15		
20	16QAM	1	99	23.31	23.29	23.21		
20	16QAM	50	0	22.07	22.00	21.94	23	2
20	16QAM	50	24	22.10	22.02	21.95		
20	16QAM	50	50	22.10	21.97	21.95		
20	16QAM	100	0	22.07	21.96	21.94		
20	64QAM	1	0	22.29	22.15	22.00	23	2
20	64QAM	1	49	22.23	22.18	22.06		
20	64QAM	1	99	22.31	22.20	22.13		
20	64QAM	50	0	21.07	21.01	20.94	22	3
20	64QAM	50	24	21.11	21.07	20.99		
20	64QAM	50	50	21.11	21.00	20.99		
20	64QAM	100	0	21.09	21.01	20.97		
Channel				26115	26340	26615	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	23.98	23.86	23.82	25	0
15	QPSK	1	37	23.92	23.87	23.90		
15	QPSK	1	74	23.93	23.93	23.91		
15	QPSK	36	0	22.99	22.92	22.90	24	1
15	QPSK	36	20	23.04	22.94	22.88		
15	QPSK	36	39	23.01	22.93	23.00		
15	QPSK	75	0	22.96	22.89	22.88		
15	16QAM	1	0	23.38	23.23	23.19	24	1
15	16QAM	1	37	23.28	23.26	23.18		
15	16QAM	1	74	23.24	23.23	23.20		
15	16QAM	36	0	22.13	22.06	22.00	23	2
15	16QAM	36	20	22.17	22.09	22.04		
15	16QAM	36	39	22.14	22.05	22.10		
15	16QAM	75	0	22.14	22.00	21.98		
15	64QAM	1	0	22.33	22.23	22.13	23	2
15	64QAM	1	37	22.27	22.18	22.15		
15	64QAM	1	74	22.24	22.24	22.15		
15	64QAM	36	0	21.17	21.11	21.04	22	3
15	64QAM	36	20	21.20	21.12	21.05		
15	64QAM	36	39	21.15	21.08	21.13		
15	64QAM	75	0	21.14	21.05	20.98		



Channel				26090	26340	26640	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	23.98	23.92	23.90	25	0
10	QPSK	1	25	23.90	23.85	23.90		
10	QPSK	1	49	23.87	23.87	23.89		
10	QPSK	25	0	22.94	22.89	22.96	24	1
10	QPSK	25	12	22.87	22.89	23.02		
10	QPSK	25	25	22.84	22.87	23.00		
10	QPSK	50	0	22.84	22.88	22.98		
10	16QAM	1	0	23.37	23.33	23.22	24	1
10	16QAM	1	25	23.29	23.25	23.23		
10	16QAM	1	49	23.25	23.26	23.18		
10	16QAM	25	0	22.11	22.04	22.06	23	2
10	16QAM	25	12	22.00	22.05	22.10		
10	16QAM	25	25	21.98	22.01	22.06		
10	16QAM	50	0	21.97	22.03	22.06		
10	64QAM	1	0	22.30	22.26	22.18	23	2
10	64QAM	1	25	22.24	22.19	22.18		
10	64QAM	1	49	22.18	22.21	22.14		
10	64QAM	25	0	21.11	21.06	21.07	22	3
10	64QAM	25	12	21.03	21.06	21.08		
10	64QAM	25	25	20.97	21.01	21.10		
10	64QAM	50	0	21.01	21.04	21.08		
Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	23.88	23.81	23.87	25	0
5	QPSK	1	12	23.88	23.83	23.89		
5	QPSK	1	24	23.84	23.81	23.87		
5	QPSK	12	0	22.95	22.88	22.95	24	1
5	QPSK	12	7	22.98	22.90	22.98		
5	QPSK	12	13	22.93	22.88	22.97		
5	QPSK	25	0	22.92	22.86	22.98		
5	16QAM	1	0	23.25	23.23	23.15	24	1
5	16QAM	1	12	23.28	23.24	23.21		
5	16QAM	1	24	23.18	23.16	23.12		
5	16QAM	12	0	22.08	22.01	22.04	23	2
5	16QAM	12	7	22.11	22.05	22.07		
5	16QAM	12	13	22.07	22.03	22.07		
5	16QAM	25	0	22.06	21.98	22.06		
5	64QAM	1	0	22.19	22.13	22.14	23	2
5	64QAM	1	12	22.22	22.15	22.18		
5	64QAM	1	24	22.19	22.13	22.13		
5	64QAM	12	0	21.17	21.12	21.11	22	3
5	64QAM	12	7	21.18	21.13	21.14		
5	64QAM	12	13	21.14	21.09	21.13		
5	64QAM	25	0	21.08	21.00	21.07		



Channel				26055	26340	26675	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	23.82	23.82	23.88	25	0
3	QPSK	1	8	23.87	23.86	23.88		
3	QPSK	1	14	23.84	23.57	23.87		
3	QPSK	8	0	22.95	22.89	22.96	24	1
3	QPSK	8	4	22.98	22.90	22.98		
3	QPSK	8	7	22.93	22.86	22.96		
3	QPSK	15	0	22.89	22.87	22.97		
3	16QAM	1	0	23.19	23.21	23.21	24	1
3	16QAM	1	8	23.26	23.21	22.97		
3	16QAM	1	14	23.18	23.19	23.13		
3	16QAM	8	0	22.10	22.07	22.08	23	2
3	16QAM	8	4	22.17	22.10	22.10		
3	16QAM	8	7	22.11	22.08	22.07		
3	16QAM	15	0	22.04	22.00	22.10		
3	64QAM	1	0	21.95	22.18	22.17	23	2
3	64QAM	1	8	22.22	22.16	22.17		
3	64QAM	1	14	22.16	22.15	22.10		
3	64QAM	8	0	21.13	20.86	21.12	22	3
3	64QAM	8	4	21.18	21.14	21.12		
3	64QAM	8	7	21.13	21.09	21.11		
3	64QAM	8	7	21.13	21.09	21.11		
3	64QAM	15	0	21.07	21.06	21.07		
Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	23.80	23.78	23.81	25	0
1.4	QPSK	1	3	23.87	23.84	23.92		
1.4	QPSK	1	5	23.80	23.77	23.82		
1.4	QPSK	3	0	23.85	23.81	23.87		
1.4	QPSK	3	1	23.89	23.87	23.92		
1.4	QPSK	3	3	23.88	23.80	23.86		
1.4	QPSK	6	0	22.88	22.82	22.88	24	1
1.4	16QAM	1	0	23.18	23.16	23.10	24	1
1.4	16QAM	1	3	23.24	23.24	23.18		
1.4	16QAM	1	5	23.16	23.12	23.05		
1.4	16QAM	3	0	22.97	22.94	22.94		
1.4	16QAM	3	1	23.06	22.99	22.96		
1.4	16QAM	3	3	22.95	22.91	22.91		
1.4	16QAM	6	0	22.06	22.02	22.03	23	2
1.4	64QAM	1	0	22.13	22.11	22.05	23	2
1.4	64QAM	1	3	22.19	22.18	22.09		
1.4	64QAM	1	5	22.11	22.09	22.01		
1.4	64QAM	3	0	22.09	22.12	22.09		
1.4	64QAM	3	1	22.19	22.15	22.12		
1.4	64QAM	3	3	22.11	22.06	22.07		
1.4	64QAM	6	0	21.00	20.98	21.01	22	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	23.57	23.55	23.43	24.5	0
15	QPSK	1	37	23.49	23.44	23.33		
15	QPSK	1	74	23.52	23.44	23.31		
15	QPSK	36	0	22.61	22.53	22.42	23.5	1
15	QPSK	36	20	22.55	22.51	22.42		
15	QPSK	36	39	22.59	22.46	22.34		
15	QPSK	75	0	22.62	22.50	22.39	23.5	1
15	16QAM	1	0	22.85	22.87	22.79		
15	16QAM	1	37	22.83	22.79	22.65		
15	16QAM	1	74	22.89	22.78	22.65	22.5	2
15	16QAM	36	0	21.63	21.60	21.51		
15	16QAM	36	20	21.76	21.65	21.53		
15	16QAM	36	39	21.69	21.62	21.47	22.5	2
15	16QAM	75	0	21.72	21.61	21.51		
15	64QAM	1	0	21.81	21.82	21.75		
15	64QAM	1	37	21.75	21.74	21.61	22.5	2
15	64QAM	1	74	21.83	21.74	21.61		
15	64QAM	36	0	20.68	20.69	20.58		
15	64QAM	36	20	20.81	20.67	20.55	21.5	3
15	64QAM	36	39	20.74	20.66	20.54		
15	64QAM	75	0	20.74	20.65	20.51		
Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	23.51	23.48	23.33	24.5	0
10	QPSK	1	25	23.50	23.44	23.29		
10	QPSK	1	49	23.46	23.42	23.26		
10	QPSK	25	0	22.51	22.52	22.36	23.5	1
10	QPSK	25	12	22.55	22.50	22.39		
10	QPSK	25	25	22.52	22.44	22.33		
10	QPSK	50	0	22.52	22.50	22.34	23.5	1
10	16QAM	1	0	22.84	22.83	22.72		
10	16QAM	1	25	22.88	22.83	22.68		
10	16QAM	1	49	22.84	22.81	22.62	22.5	2
10	16QAM	25	0	21.65	21.60	21.49		
10	16QAM	25	12	21.65	21.60	21.47		
10	16QAM	25	25	21.62	21.55	21.43	22.5	2
10	16QAM	50	0	21.64	21.59	21.44		
10	64QAM	1	0	21.78	21.76	21.64		
10	64QAM	1	25	21.79	21.73	21.59	22.5	2
10	64QAM	1	49	21.75	21.72	21.52		
10	64QAM	25	0	20.68	20.63	20.50		
10	64QAM	25	12	20.69	20.65	20.49	21.5	3
10	64QAM	25	25	20.65	20.59	20.43		
10	64QAM	50	0	20.66	20.61	20.46		



Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	23.50	23.45	23.28	24.5	0
5	QPSK	1	12	23.51	23.44	23.25		
5	QPSK	1	24	23.49	23.42	23.23		
5	QPSK	12	0	22.54	22.50	22.29	23.5	1
5	QPSK	12	7	22.56	22.52	22.34		
5	QPSK	12	13	22.53	22.46	22.27		
5	QPSK	25	0	22.56	22.48	22.31	23.5	1
5	16QAM	1	0	22.84	22.78	22.61		
5	16QAM	1	12	22.86	22.80	22.60		
5	16QAM	1	24	22.86	22.75	22.53	22.5	2
5	16QAM	12	0	21.64	21.58	21.44		
5	16QAM	12	7	21.66	21.61	21.45		
5	16QAM	12	13	21.63	21.58	21.40	22.5	2
5	16QAM	25	0	21.64	21.56	21.40		
5	64QAM	1	0	21.79	21.75	21.58		
5	64QAM	1	12	21.83	21.75	21.58	22.5	2
5	64QAM	1	24	21.79	21.73	21.53		
5	64QAM	12	0	20.72	20.68	20.50		
5	64QAM	12	7	20.72	20.69	20.49	21.5	3
5	64QAM	12	13	20.68	20.66	20.47		
5	64QAM	25	0	20.66	20.59	20.41		
Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	23.51	23.44	23.28	24.5	0
3	QPSK	1	8	23.52	23.44	23.26		
3	QPSK	1	14	23.51	23.42	23.03		
3	QPSK	8	0	22.55	22.28	22.27	23.5	1
3	QPSK	8	4	22.57	22.50	22.33		
3	QPSK	8	7	22.30	22.47	22.29		
3	QPSK	15	0	22.54	22.47	22.28	23.5	1
3	16QAM	1	0	22.85	22.81	22.61		
3	16QAM	1	8	22.85	22.57	22.64		
3	16QAM	1	14	22.87	22.80	22.36	22.5	2
3	16QAM	8	0	21.70	21.63	21.44		
3	16QAM	8	4	21.71	21.63	21.47		
3	16QAM	8	7	21.44	21.65	21.45	22.5	2
3	16QAM	15	0	21.66	21.56	21.39		
3	64QAM	1	0	21.81	21.71	21.57		
3	64QAM	1	8	21.80	21.54	21.55	22.5	2
3	64QAM	1	14	21.80	21.72	21.52		
3	64QAM	8	0	20.48	20.65	20.45		
3	64QAM	8	4	20.71	20.69	20.48	21.5	3
3	64QAM	8	7	20.50	20.63	20.45		
3	64QAM	15	0	20.66	20.61	20.40		



Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	23.48	23.40	23.18	24.5	0
1.4	QPSK	1	3	23.53	23.42	23.25		
1.4	QPSK	1	5	23.47	23.37	23.16		
1.4	QPSK	3	0	23.51	23.44	23.23		
1.4	QPSK	3	1	23.54	23.47	23.25		
1.4	QPSK	3	3	23.52	23.39	23.22		
1.4	QPSK	6	0	22.50	22.41	22.23	23.5	1
1.4	16QAM	1	0	22.77	22.71	22.53	23.5	1
1.4	16QAM	1	3	22.87	22.77	22.61		
1.4	16QAM	1	5	22.78	22.72	22.47		
1.4	16QAM	3	0	22.58	22.53	22.33		
1.4	16QAM	3	1	22.65	22.54	22.34		
1.4	16QAM	3	3	22.57	22.48	22.31		
1.4	16QAM	6	0	21.68	21.60	21.39	22.5	2
1.4	64QAM	1	0	21.68	21.64	21.43	22.5	2
1.4	64QAM	1	3	21.78	21.69	21.51		
1.4	64QAM	1	5	21.69	21.63	21.44		
1.4	64QAM	3	0	21.73	21.67	21.45		
1.4	64QAM	3	1	21.79	21.72	21.45		
1.4	64QAM	3	3	21.72	21.65	21.44		
1.4	64QAM	6	0	20.62	20.53	20.31	21.5	3



<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	23.84	24.10	23.90	25	0
20	QPSK	1	49	23.73	24.01	23.84		
20	QPSK	1	99	23.74	23.96	23.71		
20	QPSK	50	0	22.73	23.03	22.82	24	1
20	QPSK	50	24	22.72	22.97	22.77		
20	QPSK	50	50	22.67	22.97	22.80		
20	QPSK	100	0	22.73	23.00	22.82	24	1
20	16QAM	1	0	23.06	23.35	23.19		
20	16QAM	1	49	23.19	23.48	23.22		
20	16QAM	1	99	23.10	23.31	22.97	23	2
20	16QAM	50	0	21.81	22.12	21.93		
20	16QAM	50	24	21.81	22.11	21.90		
20	16QAM	50	50	21.81	22.11	21.91	23	2
20	16QAM	100	0	21.79	22.09	21.91		
20	64QAM	1	0	22.00	22.35	22.16		
20	64QAM	1	49	22.12	22.43	22.24	23	2
20	64QAM	1	99	22.03	22.24	21.98		
20	64QAM	50	0	20.82	21.13	20.92		
20	64QAM	50	24	20.80	21.12	20.90	22	3
20	64QAM	50	50	20.85	21.13	20.87		
20	64QAM	100	0	20.82	21.12	20.91		
Channel				132047	132322	132597		
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	23.63	24.04	23.83	25	0
15	QPSK	1	37	23.71	24.02	23.83		
15	QPSK	1	74	23.66	23.96	23.72		
15	QPSK	36	0	22.55	22.96	22.77	24	1
15	QPSK	36	20	22.65	23.08	22.91		
15	QPSK	36	39	22.58	23.02	22.68		
15	QPSK	75	0	22.57	22.97	22.79	24	1
15	16QAM	1	0	22.98	23.36	23.18		
15	16QAM	1	37	23.10	23.46	23.14		
15	16QAM	1	74	23.00	23.31	22.98	23	2
15	16QAM	36	0	21.67	22.11	21.90		
15	16QAM	36	20	21.81	22.23	22.00		
15	16QAM	36	39	21.69	22.13	21.74	23	2
15	16QAM	75	0	21.71	22.12	21.89		
15	64QAM	1	0	21.94	22.36	22.17		
15	64QAM	1	37	22.04	22.42	22.10	23	2
15	64QAM	1	74	21.97	22.27	21.99		
15	64QAM	36	0	20.76	21.15	20.93		
15	64QAM	36	20	20.81	21.24	21.05	22	3
15	64QAM	36	39	20.75	21.17	20.80		
15	64QAM	75	0	20.69	21.13	20.90		



Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	23.59	24.00	23.83	25	0
10	QPSK	1	25	23.63	24.06	23.76		
10	QPSK	1	49	23.58	23.99	23.69		
10	QPSK	25	0	22.57	23.02	22.80	24	1
10	QPSK	25	12	22.59	23.04	22.71		
10	QPSK	25	25	22.60	23.01	22.68		
10	QPSK	50	0	22.58	23.02	22.84	24	1
10	16QAM	1	0	22.97	23.38	23.14		
10	16QAM	1	25	23.01	23.42	23.08		
10	16QAM	1	49	22.96	23.39	22.96	23	2
10	16QAM	25	0	21.70	22.10	21.90		
10	16QAM	25	12	21.72	22.13	21.81		
10	16QAM	25	25	21.69	22.11	21.79	23	2
10	16QAM	50	0	21.71	22.12	21.95		
10	64QAM	1	0	21.88	22.29	22.09		
10	64QAM	1	25	21.92	22.35	22.01	23	2
10	64QAM	1	49	21.87	22.31	21.95		
10	64QAM	25	0	20.71	21.14	20.93		
10	64QAM	25	12	20.73	21.15	20.84	22	3
10	64QAM	25	25	20.70	21.13	20.82		
10	64QAM	50	0	20.72	21.14	20.91		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	23.44	23.84	23.59	25	0
5	QPSK	1	12	23.60	24.04	23.75		
5	QPSK	1	24	23.42	23.86	23.56		
5	QPSK	12	0	22.58	23.00	22.68	24	1
5	QPSK	12	7	22.65	23.07	22.76		
5	QPSK	12	13	22.55	23.01	22.66		
5	QPSK	25	0	22.56	23.01	22.70	24	1
5	16QAM	1	0	22.76	23.21	22.89		
5	16QAM	1	12	22.95	23.38	23.00		
5	16QAM	1	24	22.75	23.18	22.80	23	2
5	16QAM	12	0	21.66	22.11	21.79		
5	16QAM	12	7	21.77	22.19	21.86		
5	16QAM	12	13	21.68	22.10	21.77	23	2
5	16QAM	25	0	21.65	22.07	21.78		
5	64QAM	1	0	21.72	22.17	21.87		
5	64QAM	1	12	21.94	22.34	22.01	23	2
5	64QAM	1	24	21.72	22.13	21.76		
5	64QAM	12	0	20.73	21.16	20.85		
5	64QAM	12	7	20.82	21.27	20.94	22	3
5	64QAM	12	13	20.73	21.15	20.84		
5	64QAM	25	0	20.66	21.10	20.78		



Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	23.51	23.87	23.61	25	0
3	QPSK	1	8	23.57	24.02	23.74		
3	QPSK	1	14	23.44	23.90	23.60		
3	QPSK	8	0	22.60	23.06	22.49	24	1
3	QPSK	8	4	22.41	23.10	22.77		
3	QPSK	8	7	22.34	23.04	22.70		
3	QPSK	15	0	22.61	22.79	22.74	24	1
3	16QAM	1	0	22.58	23.22	22.89		
3	16QAM	1	8	22.73	23.36	23.02		
3	16QAM	1	14	22.83	23.23	22.88	23	2
3	16QAM	8	0	21.71	22.18	21.84		
3	16QAM	8	4	21.83	22.23	21.90		
3	16QAM	8	7	21.76	22.18	21.85	23	2
3	16QAM	15	0	21.69	22.11	21.84		
3	64QAM	1	0	21.79	22.17	21.86		
3	64QAM	1	8	21.90	22.33	21.98	23	2
3	64QAM	1	14	21.75	22.20	21.87		
3	64QAM	8	0	20.76	21.21	20.84		
3	64QAM	8	4	20.81	21.28	20.94	22	3
3	64QAM	8	7	20.73	21.17	20.89		
3	64QAM	15	0	20.49	21.16	20.63		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	23.60	23.91	23.65	25	0
1.4	QPSK	1	3	23.70	24.03	23.76		
1.4	QPSK	1	5	23.49	23.91	23.65		
1.4	QPSK	3	0	23.56	23.97	23.71		
1.4	QPSK	3	1	23.63	24.03	23.79		
1.4	QPSK	3	3	23.53	24.01	23.72		
1.4	QPSK	6	0	22.57	23.02	22.72	24	1
1.4	16QAM	1	0	22.82	23.29	22.94	24	1
1.4	16QAM	1	3	22.91	23.40	22.99		
1.4	16QAM	1	5	22.82	23.28	22.95		
1.4	16QAM	3	0	22.66	23.09	22.77		
1.4	16QAM	3	1	22.66	23.13	22.81		
1.4	16QAM	3	3	22.61	23.08	22.75		
1.4	16QAM	6	0	21.74	22.19	21.87	23	2
1.4	64QAM	1	0	21.76	22.23	21.91	23	2
1.4	64QAM	1	3	21.85	22.30	22.01		
1.4	64QAM	1	5	21.75	22.21	21.88		
1.4	64QAM	3	0	21.79	22.23	21.92		
1.4	64QAM	3	1	21.83	22.27	21.98		
1.4	64QAM	3	3	21.78	22.23	21.93		
1.4	64QAM	6	0	20.65	21.12	20.81	22	3



<Reduced Power Mode>

<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	17.84	17.80	18.06	19	0
20	QPSK	1	49	17.80	17.69	17.81		
20	QPSK	1	99	17.77	17.79	17.96		
20	QPSK	50	0	17.75	17.69	17.86	19	0
20	QPSK	50	24	17.80	17.75	17.99		
20	QPSK	50	50	17.79	17.70	17.90		
20	QPSK	100	0	17.78	17.68	17.88		
20	16QAM	1	0	18.35	18.30	18.29	19	0
20	16QAM	1	49	18.25	18.18	18.40		
20	16QAM	1	99	18.23	18.22	18.48		
20	16QAM	50	0	17.90	17.84	17.97	19	0
20	16QAM	50	24	17.94	17.89	18.02		
20	16QAM	50	50	17.94	17.81	18.12		
20	16QAM	100	0	17.91	17.83	17.99		
20	64QAM	1	0	18.31	18.17	18.14	19	0
20	64QAM	1	49	18.18	18.08	18.26		
20	64QAM	1	99	18.14	18.18	18.35		
20	64QAM	50	0	17.91	17.84	18.01	19	0
20	64QAM	50	24	17.98	17.91	18.02		
20	64QAM	50	50	17.94	17.86	18.11		
20	64QAM	100	0	17.91	17.92	18.01		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	17.78	17.72	17.84	19	0
15	QPSK	1	37	17.80	17.76	17.97		
15	QPSK	1	74	17.68	17.80	18.09		
15	QPSK	36	0	17.84	17.78	17.92	19	0
15	QPSK	36	20	17.80	17.81	18.05		
15	QPSK	36	39	17.75	17.77	18.03		
15	QPSK	75	0	17.73	17.77	18.02		
15	16QAM	1	0	18.23	18.14	18.32	19	0
15	16QAM	1	37	18.24	18.19	18.43		
15	16QAM	1	74	18.13	18.22	18.50		
15	16QAM	36	0	17.97	17.89	18.02	19	0
15	16QAM	36	20	17.91	17.96	18.17		
15	16QAM	36	39	17.90	17.89	18.17		
15	16QAM	75	0	17.88	17.92	18.12		
15	64QAM	1	0	18.22	18.13	18.25	19	0
15	64QAM	1	37	18.20	18.11	18.32		
15	64QAM	1	74	18.06	18.20	18.41		
15	64QAM	36	0	18.05	17.94	18.05	19	0
15	64QAM	36	20	17.97	18.01	18.21		
15	64QAM	36	39	17.93	17.96	18.16		
15	64QAM	75	0	17.88	17.91	18.12		



Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	17.89	17.85	17.98	19	0
10	QPSK	1	25	17.80	17.75	18.11		
10	QPSK	1	49	17.80	17.91	18.12		
10	QPSK	25	0	17.85	17.77	18.02	19	0
10	QPSK	25	12	17.82	17.79	18.05		
10	QPSK	25	25	17.72	17.78	18.13		
10	QPSK	50	0	17.73	17.76	18.04	19	0
10	16QAM	1	0	18.40	18.31	18.47		
10	16QAM	1	25	18.28	18.21	18.50		
10	16QAM	1	49	18.24	18.39	18.48	19	0
10	16QAM	25	0	17.97	17.93	18.13		
10	16QAM	25	12	18.03	17.93	18.19		
10	16QAM	25	25	17.90	17.92	18.29	19	0
10	16QAM	50	0	17.88	17.87	18.16		
10	64QAM	1	0	18.34	18.21	18.36		
10	64QAM	1	25	18.24	18.18	18.48	19	0
10	64QAM	1	49	18.18	18.28	18.43		
10	64QAM	25	0	18.04	17.94	18.16		
10	64QAM	25	12	18.05	17.97	18.17	19	0
10	64QAM	25	25	17.90	17.95	18.26		
10	64QAM	50	0	17.99	17.92	18.17		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	17.81	17.76	18.11	19	0
5	QPSK	1	12	17.81	17.78	18.11		
5	QPSK	1	24	17.77	17.76	18.14		
5	QPSK	12	0	17.84	17.79	18.16	19	0
5	QPSK	12	7	17.88	17.84	18.21		
5	QPSK	12	13	17.85	17.82	18.16		
5	QPSK	25	0	17.82	17.74	18.16	19	0
5	16QAM	1	0	18.21	18.22	18.46		
5	16QAM	1	12	18.28	18.25	18.41		
5	16QAM	1	24	18.25	18.23	18.43	19	0
5	16QAM	12	0	18.01	17.96	18.35		
5	16QAM	12	7	18.01	17.98	18.36		
5	16QAM	12	13	18.00	17.94	18.31	19	0
5	16QAM	25	0	17.95	17.91	18.29		
5	64QAM	1	0	18.20	18.13	18.47		
5	64QAM	1	12	18.23	18.14	18.46	19	0
5	64QAM	1	24	18.15	18.05	18.42		
5	64QAM	12	0	18.08	18.00	18.34		
5	64QAM	12	7	18.11	18.03	18.43	19	0
5	64QAM	12	13	18.09	18.00	18.35		
5	64QAM	25	0	17.98	17.95	18.26		



Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	17.78	17.76	18.12	19	0
3	QPSK	1	8	17.79	17.76	18.11		
3	QPSK	1	14	17.76	17.71	18.11		
3	QPSK	8	0	17.82	17.79	18.15	19	0
3	QPSK	8	4	17.87	17.83	18.19		
3	QPSK	8	7	17.81	17.79	18.15		
3	QPSK	15	0	17.81	17.80	18.17	19	0
3	16QAM	1	0	18.02	18.20	18.49		
3	16QAM	1	8	18.30	18.27	18.47		
3	16QAM	1	14	18.24	18.16	18.43	19	0
3	16QAM	8	0	18.03	17.99	18.36		
3	16QAM	8	4	18.07	18.03	18.41		
3	16QAM	8	7	18.03	17.98	18.35	19	0
3	16QAM	15	0	17.91	17.90	18.30		
3	64QAM	1	0	18.19	18.10	18.39		
3	64QAM	1	8	18.23	18.15	18.46	19	0
3	64QAM	1	14	18.19	18.08	18.44		
3	64QAM	8	0	18.08	18.01	18.32		
3	64QAM	8	4	17.89	18.04	18.35	19	0
3	64QAM	8	7	18.08	18.00	18.34		
3	64QAM	15	0	17.92	17.72	18.27		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	17.72	17.66	18.01	19	0
1.4	QPSK	1	3	17.77	17.74	18.13		
1.4	QPSK	1	5	17.72	17.67	18.06		
1.4	QPSK	3	0	17.76	17.71	18.10		
1.4	QPSK	3	1	17.79	17.76	18.13		
1.4	QPSK	3	3	17.78	17.74	18.10		
1.4	QPSK	6	0	17.74	17.72	18.09	19	0
1.4	16QAM	1	0	18.15	18.15	18.47	19	0
1.4	16QAM	1	3	18.25	18.21	18.44		
1.4	16QAM	1	5	18.15	18.11	18.46		
1.4	16QAM	3	0	17.95	17.90	18.27		
1.4	16QAM	3	1	18.01	17.95	18.33		
1.4	16QAM	3	3	17.92	17.90	18.25		
1.4	16QAM	6	0	17.94	17.94	18.31	19	0
1.4	64QAM	1	0	18.21	18.10	18.37	19	0
1.4	64QAM	1	3	18.25	18.16	18.43		
1.4	64QAM	1	5	18.17	18.05	18.34		
1.4	64QAM	3	0	18.11	18.04	18.37		
1.4	64QAM	3	1	18.20	18.09	18.40		
1.4	64QAM	3	3	18.14	18.03	18.35		
1.4	64QAM	6	0	17.91	17.87	18.21	19	0



<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	17.24	17.28	17.29	18.5	0
20	QPSK	1	49	17.12	17.25	17.25		
20	QPSK	1	99	17.02	17.12	17.23		
20	QPSK	50	0	17.27	17.32	17.39	18.5	0
20	QPSK	50	24	17.18	17.28	17.34		
20	QPSK	50	50	17.13	17.31	17.26		
20	QPSK	100	0	17.15	17.31	17.38	18.5	0
20	16QAM	1	0	17.43	17.54	17.69		
20	16QAM	1	49	17.54	17.66	17.67		
20	16QAM	1	99	17.64	17.65	17.63	18.5	0
20	16QAM	50	0	17.26	17.40	17.47		
20	16QAM	50	24	17.29	17.43	17.48		
20	16QAM	50	50	17.37	17.42	17.39	18.5	0
20	16QAM	100	0	17.25	17.38	17.45		
20	64QAM	1	0	17.33	17.42	17.60		
20	64QAM	1	49	17.43	17.53	17.55	18.5	0
20	64QAM	1	99	17.48	17.55	17.52		
20	64QAM	50	0	17.28	17.40	17.49		
20	64QAM	50	24	17.33	17.46	17.49	18.5	0
20	64QAM	50	50	17.38	17.42	17.41		
20	64QAM	100	0	17.28	17.43	17.47		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	17.06	17.29	17.38	18.5	0
15	QPSK	1	37	17.13	17.31	17.27		
15	QPSK	1	74	17.14	17.29	17.28		
15	QPSK	36	0	17.16	17.33	17.41	18.5	0
15	QPSK	36	20	17.23	17.37	17.34		
15	QPSK	36	39	17.17	17.38	17.29		
15	QPSK	75	0	17.17	17.35	17.44	18.5	0
15	16QAM	1	0	17.45	17.66	17.75		
15	16QAM	1	37	17.57	17.69	17.71		
15	16QAM	1	74	17.53	17.69	17.68	18.5	0
15	16QAM	36	0	17.30	17.44	17.53		
15	16QAM	36	20	17.34	17.49	17.48		
15	16QAM	36	39	17.32	17.44	17.44	18.5	0
15	16QAM	75	0	17.33	17.45	17.55		
15	64QAM	1	0	17.41	17.60	17.71		
15	64QAM	1	37	17.49	17.61	17.61	18.5	0
15	64QAM	1	74	17.49	17.62	17.60		
15	64QAM	36	0	17.35	17.49	17.56		
15	64QAM	36	20	17.39	17.52	17.54	18.5	0
15	64QAM	36	39	17.34	17.47	17.47		
15	64QAM	75	0	17.34	17.46	17.54		



Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	17.07	17.32	17.33	18.5	0
10	QPSK	1	25	17.07	17.33	17.35		
10	QPSK	1	49	17.14	17.33	17.30		
10	QPSK	25	0	17.08	17.33	17.34	18.5	0
10	QPSK	25	12	17.22	17.38	17.37		
10	QPSK	25	25	17.18	17.35	17.32		
10	QPSK	50	0	17.20	17.33	17.33	18.5	0
10	16QAM	1	0	17.51	17.76	17.77		
10	16QAM	1	25	17.51	17.75	17.78		
10	16QAM	1	49	17.57	17.73	17.73	18.5	0
10	16QAM	25	0	17.21	17.44	17.46		
10	16QAM	25	12	17.34	17.46	17.48		
10	16QAM	25	25	17.29	17.46	17.45	18.5	0
10	16QAM	50	0	17.32	17.47	17.44		
10	64QAM	1	0	17.40	17.64	17.64		
10	64QAM	1	25	17.41	17.64	17.68	18.5	0
10	64QAM	1	49	17.49	17.64	17.68		
10	64QAM	25	0	17.25	17.46	17.50		
10	64QAM	25	12	17.35	17.48	17.50	18.5	0
10	64QAM	25	25	17.32	17.49	17.48		
10	64QAM	50	0	17.32	17.46	17.47		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	17.04	17.34	17.28	18.5	0
5	QPSK	1	12	17.05	17.37	17.32		
5	QPSK	1	24	17.04	17.32	17.32		
5	QPSK	12	0	17.10	17.39	17.37	18.5	0
5	QPSK	12	7	17.13	17.39	17.38		
5	QPSK	12	13	17.07	17.38	17.36		
5	QPSK	25	0	17.09	17.33	17.32	18.5	0
5	16QAM	1	0	17.50	17.73	17.72		
5	16QAM	1	12	17.48	17.74	17.75		
5	16QAM	1	24	17.47	17.70	17.71	18.5	0
5	16QAM	12	0	17.22	17.47	17.49		
5	16QAM	12	7	17.29	17.54	17.52		
5	16QAM	12	13	17.21	17.46	17.51	18.5	0
5	16QAM	25	0	17.21	17.50	17.48		
5	64QAM	1	0	17.40	17.62	17.65		
5	64QAM	1	12	17.42	17.66	17.68	18.5	0
5	64QAM	1	24	17.36	17.59	17.64		
5	64QAM	12	0	17.28	17.51	17.52		
5	64QAM	12	7	17.34	17.59	17.60	18.5	0
5	64QAM	12	13	17.30	17.52	17.57		
5	64QAM	25	0	17.23	17.48	17.47		



Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	17.06	17.28	17.30	18.5	0
3	QPSK	1	8	17.07	17.29	17.29		
3	QPSK	1	14	17.06	17.25	17.30		
3	QPSK	8	0	17.12	17.32	17.34	18.5	0
3	QPSK	8	4	17.15	17.38	17.41		
3	QPSK	8	7	17.09	17.36	17.33		
3	QPSK	15	0	17.11	17.09	17.32	18.5	0
3	16QAM	1	0	17.52	17.68	17.70		
3	16QAM	1	8	17.50	17.72	17.74		
3	16QAM	1	14	17.49	17.68	17.71	18.5	0
3	16QAM	8	0	17.24	17.51	17.51		
3	16QAM	8	4	17.31	17.55	17.57		
3	16QAM	8	7	17.23	17.49	17.53	18.5	0
3	16QAM	15	0	17.23	17.45	17.45		
3	64QAM	1	0	17.42	17.60	17.61		
3	64QAM	1	8	17.44	17.39	17.65	18.5	0
3	64QAM	1	14	17.38	17.58	17.62		
3	64QAM	8	0	17.30	17.50	17.51		
3	64QAM	8	4	17.36	17.32	17.58	18.5	0
3	64QAM	8	7	17.32	17.53	17.33		
3	64QAM	15	0	17.25	17.41	17.45		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	16.96	17.27	17.25	18.5	0
1.4	QPSK	1	3	17.03	17.33	17.35		
1.4	QPSK	1	5	16.97	17.25	17.24		
1.4	QPSK	3	0	17.02	17.32	17.32		
1.4	QPSK	3	1	17.03	17.33	17.34		
1.4	QPSK	3	3	17.03	17.32	17.30		
1.4	QPSK	6	0	16.98	17.31	17.29	18.5	0
1.4	16QAM	1	0	17.39	17.67	17.69	18.5	0
1.4	16QAM	1	3	17.46	17.72	17.73		
1.4	16QAM	1	5	17.41	17.62	17.66		
1.4	16QAM	3	0	17.18	17.43	17.44		
1.4	16QAM	3	1	17.22	17.46	17.48		
1.4	16QAM	3	3	17.15	17.39	17.43		
1.4	16QAM	6	0	17.20	17.46	17.48	18.5	0
1.4	64QAM	1	0	17.33	17.57	17.62	18.5	0
1.4	64QAM	1	3	17.36	17.62	17.66		
1.4	64QAM	1	5	17.30	17.54	17.58		
1.4	64QAM	3	0	17.31	17.54	17.58		
1.4	64QAM	3	1	17.35	17.58	17.61		
1.4	64QAM	3	3	17.30	17.54	17.58		
1.4	64QAM	6	0	17.15	17.39	17.42	18.5	0



<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	17.92	17.91	17.83	19	0
20	QPSK	1	49	17.82	17.79	17.70		
20	QPSK	1	99	17.82	17.77	17.71		
20	QPSK	50	0	17.87	17.78	17.76	19	0
20	QPSK	50	24	17.85	17.75	17.70		
20	QPSK	50	50	17.82	17.76	17.75		
20	QPSK	100	0	17.83	17.77	17.77		
20	16QAM	1	0	18.42	18.22	18.14	19	0
20	16QAM	1	49	18.27	18.25	18.21		
20	16QAM	1	99	18.30	18.29	18.25		
20	16QAM	50	0	17.95	17.94	17.86	19	0
20	16QAM	50	24	18.00	17.96	17.91		
20	16QAM	50	50	17.96	17.92	17.89		
20	16QAM	100	0	17.99	17.89	17.90		
20	64QAM	1	0	18.36	18.14	18.00	19	0
20	64QAM	1	49	18.20	18.10	18.01		
20	64QAM	1	99	18.16	18.14	18.12		
20	64QAM	50	0	17.99	17.91	17.90	19	0
20	64QAM	50	24	18.02	17.96	17.91		
20	64QAM	50	50	18.01	17.94	17.90		
20	64QAM	100	0	18.02	17.92	17.88		
Channel				26115	26340	26615	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	17.92	17.74	17.74	19	0
15	QPSK	1	37	17.86	17.76	17.81		
15	QPSK	1	74	17.86	17.86	17.87		
15	QPSK	36	0	17.88	17.79	17.76	19	0
15	QPSK	36	20	17.95	17.83	17.79		
15	QPSK	36	39	17.89	17.82	17.87		
15	QPSK	75	0	17.86	17.80	17.79		
15	16QAM	1	0	18.38	18.22	18.19	19	0
15	16QAM	1	37	18.29	18.23	18.26		
15	16QAM	1	74	18.24	18.30	18.32		
15	16QAM	36	0	18.01	17.96	17.92	19	0
15	16QAM	36	20	18.08	18.01	17.97		
15	16QAM	36	39	18.01	17.98	18.03		
15	16QAM	75	0	18.00	17.91	17.91		
15	64QAM	1	0	18.39	18.19	18.11	19	0
15	64QAM	1	37	18.24	18.17	18.19		
15	64QAM	1	74	18.19	18.22	18.26		
15	64QAM	36	0	18.08	17.99	17.95	19	0
15	64QAM	36	20	18.10	18.04	18.01		
15	64QAM	36	39	18.03	17.99	18.09		
15	64QAM	75	0	18.03	17.95	17.94		



Channel				26090	26340	26640	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	17.93	17.92	17.85	19	0
10	QPSK	1	25	17.84	17.79	17.87		
10	QPSK	1	49	17.81	17.87	17.87		
10	QPSK	25	0	17.89	17.83	17.87	19	0
10	QPSK	25	12	17.81	17.82	17.91		
10	QPSK	25	25	17.77	17.81	17.87		
10	QPSK	50	0	17.77	17.81	17.90	19	0
10	16QAM	1	0	18.41	18.34	18.27		
10	16QAM	1	25	18.34	18.24	18.32		
10	16QAM	1	49	18.32	18.34	18.29	19	0
10	16QAM	25	0	18.00	17.98	18.02		
10	16QAM	25	12	17.97	18.02	18.03		
10	16QAM	25	25	17.96	17.98	18.00	19	0
10	16QAM	50	0	17.95	17.97	18.01		
10	64QAM	1	0	18.37	18.28	18.21		
10	64QAM	1	25	18.28	18.18	18.22	19	0
10	64QAM	1	49	18.22	18.23	18.25		
10	64QAM	25	0	18.03	17.99	18.02		
10	64QAM	25	12	17.99	18.02	18.05	19	0
10	64QAM	25	25	17.94	17.97	18.04		
10	64QAM	50	0	17.95	17.98	18.01		
Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	17.84	17.80	17.82	19	0
5	QPSK	1	12	17.85	17.81	17.85		
5	QPSK	1	24	17.79	17.75	17.83		
5	QPSK	12	0	17.87	17.82	17.89	19	0
5	QPSK	12	7	17.92	17.85	17.91		
5	QPSK	12	13	17.90	17.81	17.89		
5	QPSK	25	0	17.84	17.81	17.87	19	0
5	16QAM	1	0	18.32	18.25	18.25		
5	16QAM	1	12	18.27	18.27	18.28		
5	16QAM	1	24	18.28	18.24	18.23	19	0
5	16QAM	12	0	18.03	18.00	18.01		
5	16QAM	12	7	18.06	18.04	18.04		
5	16QAM	12	13	18.06	18.01	18.03	19	0
5	16QAM	25	0	18.01	17.96	17.98		
5	64QAM	1	0	18.27	18.15	18.21		
5	64QAM	1	12	18.29	18.17	18.27	19	0
5	64QAM	1	24	18.21	18.16	18.19		
5	64QAM	12	0	18.14	18.06	18.10		
5	64QAM	12	7	18.19	18.08	18.18	19	0
5	64QAM	12	13	18.16	18.05	18.12		
5	64QAM	25	0	18.02	17.92	18.03		



Channel				26055	26340	26675	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	17.56	17.75	17.61	19	0
3	QPSK	1	8	17.83	17.79	17.86		
3	QPSK	1	14	17.78	17.75	17.80		
3	QPSK	8	0	17.85	17.82	17.86	19	0
3	QPSK	8	4	17.88	17.86	17.91		
3	QPSK	8	7	17.84	17.82	17.86		
3	QPSK	15	0	17.81	17.79	17.87	19	0
3	16QAM	1	0	18.30	18.23	18.22		
3	16QAM	1	8	18.31	18.30	18.33		
3	16QAM	1	14	18.27	18.22	18.23	19	0
3	16QAM	8	0	18.03	18.04	17.82		
3	16QAM	8	4	18.08	18.05	18.07		
3	16QAM	8	7	18.07	17.80	18.05	19	0
3	16QAM	15	0	17.95	17.94	17.78		
3	64QAM	1	0	18.16	18.14	18.18		
3	64QAM	1	8	18.23	18.14	17.97	19	0
3	64QAM	1	14	18.23	17.91	18.17		
3	64QAM	8	0	17.88	18.04	17.87		
3	64QAM	8	4	17.93	18.07	17.91	19	0
3	64QAM	8	7	18.14	18.02	18.09		
3	64QAM	15	0	17.98	17.94	18.00		
Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	17.78	17.71	17.76	19	0
1.4	QPSK	1	3	17.83	17.80	17.83		
1.4	QPSK	1	5	17.73	17.74	17.76		
1.4	QPSK	3	0	17.81	17.79	17.82		
1.4	QPSK	3	1	17.85	17.81	17.85		
1.4	QPSK	3	3	17.79	17.78	17.81		
1.4	QPSK	6	0	17.78	17.75	17.80	19	0
1.4	16QAM	1	0	18.21	18.22	18.24	19	0
1.4	16QAM	1	3	18.34	18.31	18.32		
1.4	16QAM	1	5	18.22	18.20	18.19		
1.4	16QAM	3	0	17.97	17.95	17.96		
1.4	16QAM	3	1	18.01	18.05	18.03		
1.4	16QAM	3	3	17.92	17.96	17.93		
1.4	16QAM	6	0	17.98	18.00	18.03	19	0
1.4	64QAM	1	0	18.19	18.06	18.13	19	0
1.4	64QAM	1	3	18.24	18.12	18.22		
1.4	64QAM	1	5	18.15	18.05	18.10		
1.4	64QAM	3	0	18.13	18.07	18.13		
1.4	64QAM	3	1	18.24	18.12	18.20		
1.4	64QAM	3	3	18.12	18.06	18.17		
1.4	64QAM	6	0	17.92	17.90	17.98	19	0



<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	17.13	17.46	17.28	18.5	0
20	QPSK	1	49	17.25	17.57	17.31		
20	QPSK	1	99	17.17	17.38	17.16		
20	QPSK	50	0	17.16	17.45	17.24	18.5	0
20	QPSK	50	24	17.11	17.43	17.20		
20	QPSK	50	50	17.09	17.42	17.22		
20	QPSK	100	0	17.14	17.47	17.23	18.5	0
20	16QAM	1	0	17.52	17.84	17.62		
20	16QAM	1	49	17.61	17.93	17.67		
20	16QAM	1	99	17.50	17.75	17.46	18.5	0
20	16QAM	50	0	17.21	17.49	17.30		
20	16QAM	50	24	17.21	17.49	17.31		
20	16QAM	50	50	17.22	17.50	17.31	18.5	0
20	16QAM	100	0	17.22	17.51	17.29		
20	64QAM	1	0	17.39	17.69	17.51		
20	64QAM	1	49	17.52	17.78	17.57	18.5	0
20	64QAM	1	99	17.40	17.59	17.38		
20	64QAM	50	0	17.24	17.51	17.32		
20	64QAM	50	24	17.25	17.51	17.33	18.5	0
20	64QAM	50	50	17.27	17.54	17.35		
20	64QAM	100	0	17.25	17.50	17.34		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	17.17	17.49	17.27	18.5	0
15	QPSK	1	37	17.25	17.57	17.27		
15	QPSK	1	74	17.21	17.36	17.15		
15	QPSK	36	0	17.09	17.42	17.19	18.5	0
15	QPSK	36	20	17.20	17.52	17.32		
15	QPSK	36	39	17.11	17.42	17.09		
15	QPSK	75	0	17.08	17.41	17.21	18.5	0
15	16QAM	1	0	17.54	17.81	17.65		
15	16QAM	1	37	17.63	17.94	17.61		
15	16QAM	1	74	17.54	17.74	17.52	18.5	0
15	16QAM	36	0	17.17	17.46	17.28		
15	16QAM	36	20	17.27	17.61	17.41		
15	16QAM	36	39	17.22	17.54	17.19	18.5	0
15	16QAM	75	0	17.20	17.54	17.30		
15	64QAM	1	0	17.49	17.73	17.58		
15	64QAM	1	37	17.58	17.86	17.54	18.5	0
15	64QAM	1	74	17.49	17.68	17.48		
15	64QAM	36	0	17.23	17.49	17.32		
15	64QAM	36	20	17.33	17.62	17.46	18.5	0
15	64QAM	36	39	17.25	17.53	17.23		
15	64QAM	75	0	17.20	17.51	17.33		



Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	17.17	17.53	17.33	18.5	0
10	QPSK	1	25	17.19	17.53	17.22		
10	QPSK	1	49	17.15	17.47	17.16		
10	QPSK	25	0	17.14	17.50	17.26	18.5	0
10	QPSK	25	12	17.15	17.50	17.19		
10	QPSK	25	25	17.15	17.46	17.14		
10	QPSK	50	0	17.14	17.49	17.25	18.5	0
10	16QAM	1	0	17.55	17.82	17.65		
10	16QAM	1	25	17.54	17.87	17.56		
10	16QAM	1	49	17.48	17.82	17.48	18.5	0
10	16QAM	25	0	17.25	17.54	17.35		
10	16QAM	25	12	17.24	17.55	17.28		
10	16QAM	25	25	17.24	17.53	17.23	18.5	0
10	16QAM	50	0	17.23	17.55	17.35		
10	64QAM	1	0	17.46	17.74	17.58		
10	64QAM	1	25	17.50	17.77	17.52	18.5	0
10	64QAM	1	49	17.46	17.76	17.45		
10	64QAM	25	0	17.25	17.54	17.38		
10	64QAM	25	12	17.28	17.55	17.31	18.5	0
10	64QAM	25	25	17.27	17.56	17.25		
10	64QAM	50	0	17.24	17.54	17.38		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	17.01	17.34	17.06	18.5	0
5	QPSK	1	12	17.21	17.53	17.23		
5	QPSK	1	24	16.98	17.36	17.01		
5	QPSK	12	0	17.11	17.46	17.14	18.5	0
5	QPSK	12	7	17.20	17.56	17.24		
5	QPSK	12	13	17.11	17.43	17.18		
5	QPSK	25	0	17.12	17.43	17.19	18.5	0
5	16QAM	1	0	17.36	17.66	17.38		
5	16QAM	1	12	17.54	17.86	17.56		
5	16QAM	1	24	17.33	17.66	17.36	18.5	0
5	16QAM	12	0	17.25	17.55	17.23		
5	16QAM	12	7	17.32	17.64	17.34		
5	16QAM	12	13	17.22	17.56	17.26	18.5	0
5	16QAM	25	0	17.21	17.54	17.21		
5	64QAM	1	0	17.31	17.63	17.37		
5	64QAM	1	12	17.49	17.81	17.50	18.5	0
5	64QAM	1	24	17.33	17.60	17.30		
5	64QAM	12	0	17.29	17.56	17.30		
5	64QAM	12	7	17.40	17.69	17.41	18.5	0
5	64QAM	12	13	17.26	17.62	17.34		
5	64QAM	25	0	17.24	17.53	17.27		



Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	17.02	17.36	17.08	18.5	0
3	QPSK	1	8	17.17	17.47	16.96		
3	QPSK	1	14	17.01	17.36	17.08		
3	QPSK	8	0	16.91	17.50	17.00	18.5	0
3	QPSK	8	4	16.76	17.34	17.25		
3	QPSK	8	7	17.14	17.52	17.19		
3	QPSK	15	0	17.13	17.49	16.97	18.5	0
3	16QAM	1	0	17.41	17.75	17.46		
3	16QAM	1	8	17.61	17.90	17.57		
3	16QAM	1	14	17.41	17.75	17.45	18.5	0
3	16QAM	8	0	17.27	17.63	17.31		
3	16QAM	8	4	17.36	17.67	17.38		
3	16QAM	8	7	17.32	17.61	17.10	18.5	0
3	16QAM	15	0	17.26	17.59	17.27		
3	64QAM	1	0	17.32	17.44	17.33		
3	64QAM	1	8	17.44	17.79	17.52	18.5	0
3	64QAM	1	14	17.32	17.66	17.35		
3	64QAM	8	0	17.29	17.63	17.14		
3	64QAM	8	4	17.39	17.68	17.41	18.5	0
3	64QAM	8	7	17.34	17.61	17.34		
3	64QAM	15	0	17.30	17.59	17.31		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	17.05	17.41	17.16	18.5	0
1.4	QPSK	1	3	17.14	17.50	17.21		
1.4	QPSK	1	5	17.09	17.42	17.14		
1.4	QPSK	3	0	17.14	17.50	17.22		
1.4	QPSK	3	1	17.17	17.53	17.23		
1.4	QPSK	3	3	17.11	17.46	17.18		
1.4	QPSK	6	0	17.10	17.48	17.19	18.5	0
1.4	16QAM	1	0	17.47	17.82	17.53	18.5	0
1.4	16QAM	1	3	17.56	17.95	17.62		
1.4	16QAM	1	5	17.49	17.80	17.51		
1.4	16QAM	3	0	17.22	17.55	17.30		
1.4	16QAM	3	1	17.29	17.59	17.32		
1.4	16QAM	3	3	17.19	17.58	17.24		
1.4	16QAM	6	0	17.28	17.60	17.35	18.5	0
1.4	64QAM	1	0	17.34	17.66	17.40	18.5	0
1.4	64QAM	1	3	17.42	17.77	17.50		
1.4	64QAM	1	5	17.32	17.62	17.38		
1.4	64QAM	3	0	17.37	17.69	17.45		
1.4	64QAM	3	1	17.43	17.74	17.49		
1.4	64QAM	3	3	17.35	17.66	17.45		
1.4	64QAM	6	0	17.21	17.53	17.29	18.5	0

<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.

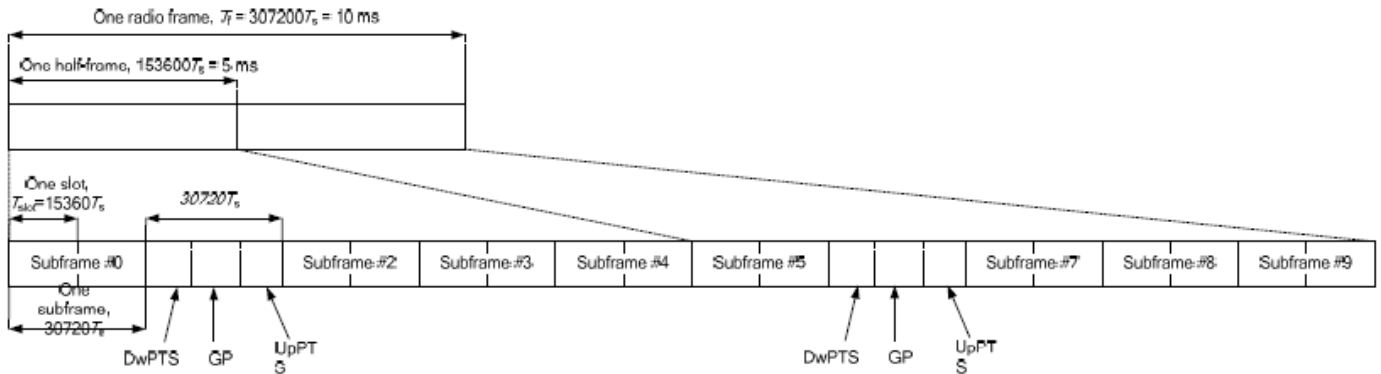


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

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 · Ts	2192 · Ts	2560 · Ts	7680 · Ts	2192 · Ts	2560 · Ts
1	19760 · Ts			20480 · Ts		
2	21952 · Ts			23040 · Ts		
3	24144 · Ts			25600 · Ts		
4	26336 · Ts			7680 · Ts	4384 · Ts	5120 · Ts
5	6592 · Ts	4384 · Ts	5120 · Ts	20480 · Ts		
6	19760 · Ts			23040 · Ts		
7	21952 · Ts			12800 · Ts		
8	24144 · Ts			-	-	
9	13168 · Ts			-	-	-

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 subframes, 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.



<Default Power Mode>

<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	24.07	24.19	24.25	25	0
20	QPSK	1	49	24.00	24.11	24.18		
20	QPSK	1	99	24.06	24.14	24.24		
20	QPSK	50	0	23.06	23.10	23.22	24	1
20	QPSK	50	24	22.99	23.08	23.09		
20	QPSK	50	50	23.05	23.09	23.21		
20	QPSK	100	0	23.03	23.06	23.09		
20	16QAM	1	0	23.14	23.30	23.29	24	1
20	16QAM	1	49	23.15	23.27	23.37		
20	16QAM	1	99	23.15	23.30	23.47		
20	16QAM	50	0	22.17	22.23	22.22	23	2
20	16QAM	50	24	22.16	22.25	22.26		
20	16QAM	50	50	22.17	22.25	22.35		
20	16QAM	100	0	22.14	22.22	22.24		
20	64QAM	1	0	21.87	22.00	22.07	23	2
20	64QAM	1	49	21.89	22.03	22.07		
20	64QAM	1	99	21.92	22.05	22.21		
20	64QAM	50	0	21.17	21.24	21.24	22	3
20	64QAM	50	24	21.19	21.24	21.25		
20	64QAM	50	50	21.15	21.28	21.37		
20	64QAM	100	0	21.16	21.24	21.22		
Channel				37825	38000	38175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2577.5	2595	2612.5		
15	QPSK	1	0	23.95	24.09	24.13	25	0
15	QPSK	1	37	23.94	24.06	24.22		
15	QPSK	1	74	24.09	24.20	24.23		
15	QPSK	36	0	23.03	23.09	23.06	24	1
15	QPSK	36	20	23.03	23.11	23.20		
15	QPSK	36	39	23.05	23.07	23.20		
15	QPSK	75	0	23.02	23.07	23.06	24	1
15	16QAM	1	0	23.14	23.21	23.24		
15	16QAM	1	37	23.17	23.28	23.37		
15	16QAM	1	74	23.25	23.38	23.47	23	2
15	16QAM	36	0	22.10	22.17	22.22		
15	16QAM	36	20	22.12	22.21	22.37		
15	16QAM	36	39	22.10	22.19	22.33		
15	16QAM	75	0	22.13	22.25	22.24	23	2
15	64QAM	1	0	21.92	22.02	22.05		
15	64QAM	1	37	21.88	22.01	22.12		
15	64QAM	1	74	21.94	22.05	22.27	22	3
15	64QAM	36	0	21.11	21.18	21.24		
15	64QAM	36	20	21.14	21.22	21.39		
15	64QAM	36	39	21.12	21.20	21.34		
15	64QAM	75	0	21.09	21.21	21.25		



Channel				37800	38000	38200	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2575	2595	2615		
10	QPSK	1	0	23.95	24.04	24.07	25	0
10	QPSK	1	25	23.94	24.10	24.05		
10	QPSK	1	49	24.02	24.16	24.12		
10	QPSK	25	0	22.97	23.05	23.01	24	1
10	QPSK	25	12	23.00	23.03	23.01		
10	QPSK	25	25	22.99	23.06	22.97		
10	QPSK	50	0	23.01	23.09	23.00	24	1
10	16QAM	1	0	23.10	23.23	23.24		
10	16QAM	1	25	23.11	23.28	23.29		
10	16QAM	1	49	23.17	23.27	23.27	23	2
10	16QAM	25	0	22.07	22.24	22.20		
10	16QAM	25	12	22.12	22.26	22.22		
10	16QAM	25	25	22.07	22.25	22.26	22	3
10	16QAM	50	0	22.11	22.18	22.21		
10	64QAM	1	0	21.86	21.99	22.09		
10	64QAM	1	25	21.84	22.02	22.02	23	2
10	64QAM	1	49	21.88	22.02	22.06		
10	64QAM	25	0	21.12	21.22	21.24		
10	64QAM	25	12	21.16	21.23	21.24	22	3
10	64QAM	25	25	21.14	21.27	21.29		
10	64QAM	50	0	21.08	21.22	21.20		
Channel				37775	38000	38225	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2572.5	2595	2617.5		
5	QPSK	1	0	23.94	24.07	24.04	25	0
5	QPSK	1	12	23.96	24.05	24.00		
5	QPSK	1	24	23.96	24.05	24.05		
5	QPSK	12	0	22.94	23.07	22.96	24	1
5	QPSK	12	7	23.01	23.09	23.02		
5	QPSK	12	13	22.97	23.12	23.04		
5	QPSK	25	0	22.95	23.06	22.99	24	1
5	16QAM	1	0	23.11	23.22	23.11		
5	16QAM	1	12	23.06	23.22	23.23		
5	16QAM	1	24	23.10	23.27	23.23	23	2
5	16QAM	12	0	22.04	22.08	22.08		
5	16QAM	12	7	22.04	22.19	22.21		
5	16QAM	12	13	22.07	22.15	22.11	23	2
5	16QAM	25	0	22.10	22.19	22.25		
5	64QAM	1	0	21.85	22.02	22.08		
5	64QAM	1	12	21.87	22.04	22.02	23	2
5	64QAM	1	24	21.90	22.04	22.03		
5	64QAM	12	0	21.09	21.21	21.18		
5	64QAM	12	7	21.16	21.24	21.18	22	3
5	64QAM	12	13	21.08	21.19	21.21		
5	64QAM	25	0	21.13	21.23	21.28		



<LTE Band 41>

Table with 11 columns: 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). Contains multiple rows of data for different channel configurations and power levels.



FCC SAR TEST REPORT

Report No. : FA882724

Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2501	2547	2593	2639	2685		
10	QPSK	1	0	23.29	23.12	23.16	23.04	23.03	24	0
10	QPSK	1	25	23.26	23.08	23.04	22.84	23.03		
10	QPSK	1	49	23.16	22.99	23.19	22.84	22.93		
10	QPSK	25	0	22.13	22.20	22.18	21.93	22.01	23	1
10	QPSK	25	12	22.18	22.27	22.21	21.82	22.03		
10	QPSK	25	25	22.17	22.13	22.15	21.95	21.99		
10	QPSK	50	0	22.11	22.07	22.16	21.90	22.02	23	1
10	16QAM	1	0	22.31	22.44	22.22	22.17	22.17		
10	16QAM	1	25	22.32	22.36	22.09	22.21	22.03		
10	16QAM	1	49	22.27	22.28	22.09	22.12	22.22	22	2
10	16QAM	25	0	21.21	21.23	21.13	21.15	21.18		
10	16QAM	25	12	21.22	21.22	21.17	21.18	21.00		
10	16QAM	25	25	21.15	21.14	21.21	21.13	21.18	22	2
10	16QAM	50	0	21.24	21.17	21.13	21.09	20.98		
10	64QAM	1	0	21.14	21.08	21.03	20.87	20.90		
10	64QAM	1	25	20.99	21.02	21.01	20.97	20.82	22	2
10	64QAM	1	49	21.04	20.94	20.86	20.86	20.87		
10	64QAM	25	0	20.24	20.33	20.13	20.05	20.09		
10	64QAM	25	12	20.39	20.38	20.23	20.15	20.14	21	3
10	64QAM	25	25	20.25	20.24	20.13	20.02	20.19		
10	64QAM	50	0	20.32	20.10	20.24	20.10	20.02		
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	23.08	23.19	22.99	22.82	22.93	24	0
5	QPSK	1	12	23.23	23.19	23.14	22.93	22.88		
5	QPSK	1	24	23.00	23.03	23.01	22.83	22.77		
5	QPSK	12	0	22.11	22.08	21.99	21.94	22.03	23	1
5	QPSK	12	7	22.11	22.18	22.05	22.00	21.92		
5	QPSK	12	13	22.26	22.12	22.14	21.92	21.95		
5	QPSK	25	0	22.20	22.15	22.11	21.95	21.89	23	1
5	16QAM	1	0	22.32	22.24	22.09	22.00	22.02		
5	16QAM	1	12	22.24	22.35	22.13	22.08	22.09		
5	16QAM	1	24	22.08	22.24	22.08	22.05	22.03	22	2
5	16QAM	12	0	21.19	21.13	21.09	20.94	21.09		
5	16QAM	12	7	21.36	21.20	21.07	20.99	20.99		
5	16QAM	12	13	21.26	21.11	21.09	21.08	21.08	22	2
5	16QAM	25	0	21.20	21.18	21.19	20.98	20.99		
5	64QAM	1	0	21.03	21.14	20.84	20.73	20.90		
5	64QAM	1	12	20.98	20.99	20.89	20.85	20.86	22	2
5	64QAM	1	24	20.90	20.95	20.92	20.94	20.89		
5	64QAM	12	0	20.19	20.29	20.23	20.02	20.05		
5	64QAM	12	7	20.34	20.34	20.10	20.07	20.16	21	3
5	64QAM	12	13	20.15	20.18	20.04	19.96	20.03		
5	64QAM	25	0	20.25	20.24	20.16	20.10	20.08		



<LTE Carrier Aggregation combinations>

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 combination bands and configurations are according to 3GPP.
2. In applying the existing power measurement procedure of KDB 941225 D05A for DL CA SAR test exclusion, only the subset with the largest number of combinations of the frequency band and CCs in each row need consideration, and that configurations require power measurement should be highlighted in the below table.

2CC			3CC		
Number	Combination	Covered by Measurement Superset	Number	Combination	Covered by Measurement Superset
1	CA_2A-5A	3CC-1	1	CA_2A-2A-5A	
2	CA_2A-13A	3CC-2	2	CA_2A-2A-13A	
3	CA_2A-12A		3	CA_4A-4A-5A	
4	CA_4A-5A	3CC-3	4	CA_4A-4A-12A	
5	CA_4A-12A	3CC-4	5	CA_4A-12B	
6	CA_4A-13A	3CC-6	6	CA_4A-4A-13A	
7	CA_4A-17A		7	CA_41A-41C	
8	CA_26A-41A				
9	CA_2C				
10	CA_5B				
11	CA_7B				
12	CA_12B				
13	CA_41C				
14	CA_2A-2A				
15	CA_4A-4A				
16	CA_5A-5A				
17	CA_7A-7A				
18	CA_25A-25A				
19	CA_41A-41A				
20	CA_66A-66A				

<Power verification when LTE Carrier Aggregation Active>

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 two carrier aggregation. For power measurement were control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
- iv. Selected highest measured power when downlink carrier aggregation is inactive for conducted power comparison with downlink carrier aggregation is active, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.
- v. For 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 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.

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

<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		2	20	1900	19100	QPSK	1	0	12	10	737.5	5095	23.98	24.09	
		12	10	711	23130	QPSK	1	0	2	20	1960	900	24.21	24.31	
		4	20	1745	20300	QPSK	1	0	17	10	740	5790	23.84	23.96	
		17	10	709	23780	QPSK	1	0	4	20	2132.5	2175	24.22	24.30	
		26	15	821.5	26765	QPSK	1	0	41	20	2593	40620	23.51	23.57	
		41	20	2549.5	40185	QPSK	1	0	26	15	876.5	8865	23.36	23.41	
Intra-Band	Non-Contiguous		2	20	1900	19100	QPSK	1	0	2	5	1932.5	625	24.02	24.09
			4	20	1745	20300	QPSK	1	0	4	5	2112.5	1975	23.92	23.96
			5	10	836.5	20525	QPSK	1	0	5	5	891.5	2625	23.41	23.49
			66	20	1745	132322	QPSK	1	0	66	20	2190	67236	23.99	24.10
			7	20	2510	20850	QPSK	1	0	7	20	2680	3350	23.26	23.39
			25	20	1860	26140	QPSK	1	0	25	20	1985	8590	24.00	24.10
			41	20	2549.5	40185	QPSK	1	0	41	20	2636.5	41055	23.28	23.41
	Contiguous		2	20	1880	19100	QPSK	1	0	2	20	1940.20	902	24.03	24.09
			41	20	2549.5	40185	QPSK	1	0	41	20	2569.30	40383	23.36	23.41
			5	10	836.5	20525	QPSK	1	0	5	5	888.70	2597	23.41	23.49
			7	20	2510	20850	QPSK	1	0	7	20	2649.80	3048	23.35	23.39
			12	10	711	23130	QPSK	1	0	12	5	733.8	5058	24.25	24.31



<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 Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	2	20	1900	19100	QPSK	1	0	2	5	1932.5	625	5	10	881.5	2525	24.02	24.09
	2	20	1900	19100	QPSK	1	0	5	10	881.5	2525	2	5	1932.5	625	24.03	24.09
	5	10	836.5	20525	QPSK	1	0	2	20	1960	900	2	5	1932.5	625	23.41	23.49
	2	20	1900	19100	QPSK	1	0	2	5	1932.5	625	13	10	751	5230	24.06	24.09
	2	20	1900	19100	QPSK	1	0	13	10	751	5230	2	5	1932.5	625	24.02	24.09
	13	10	782	23230	QPSK	1	0	2	20	1960	900	2	5	1932.5	625	23.12	23.17
	4	20	1745	20300	QPSK	1	0	4	5	2152.5	2375	5	10	881.5	2525	23.84	23.96
	4	20	1745	20300	QPSK	1	0	5	10	881.5	2525	4	5	2152.5	2375	23.88	23.96
	5	10	836.5	20525	QPSK	1	0	4	20	2132.5	2175	4	5	2152.5	2375	23.41	23.49
	4	20	1745	20300	QPSK	1	0	4	5	2152.5	2375	12	10	737.5	5095	23.84	23.96
	4	20	1745	20300	QPSK	1	0	12	10	737.5	5095	4	5	2152.5	2375	23.81	23.96
	12	10	711	23130	QPSK	1	0	4	20	2132.5	2175	4	5	2152.5	2375	23.16	24.31
	4	20	1745	20300	QPSK	1	0	4	5	2152.5	2375	13	10	751	5230	23.80	23.96
	4	20	1745	20300	QPSK	1	0	13	10	751	5230	4	5	2152.5	2375	23.86	23.96
	13	10	782	23230	QPSK	1	0	4	20	2132.5	2175	4	5	2152.5	2375	23.05	23.17
	4	20	1745	20300	QPSK	1	0	12	10	737.5	5095	12	5	730.3	5025	23.81	23.96
12	10	711	23130	QPSK	1	0	12	5	733.8	5058	4	20	2132.5	2175	24.25	24.31	
Intra-Band Contiguous	41	20	2549.5	40185	QPSK	1	0	41	20	2569.3	40383	41	5	2502.5	39715	23.28	23.41
	41	20	2549.5	40185	QPSK	1	0	41	5	2502.5	39715	41	20	2514.2	39832	23.22	23.41



<WLAN Conducted Power>

General Note:

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



<2.4GHz WLAN ANT 1>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	15.62	16.00	99.05
		2	2417	15.59	16.00	
		6	2437	15.75	16.00	
		10	2457	15.82	16.00	
		11	2462	15.84	16.00	
	802.11g 6Mbps	1	2412	15.66	16.00	94.42
		2	2417	15.58	16.00	
		6	2437	15.96	16.00	
		10	2457	15.82	16.00	
		11	2462	15.94	16.00	
	802.11n-HT20 MCS0	1	2412	15.97	16.00	94.97
		2	2417	15.95	16.00	
		6	2437	15.81	16.00	
		10	2457	15.72	16.00	
		11	2462	15.22	15.50	
	802.11n-HT40 MCS0	3	2422	15.25	15.50	88.94
		4	2427	15.77	16.00	
		6	2437	15.78	16.00	
		8	2447	14.29	14.50	
		9	2452	13.71	14.00	
	802.11ac-VHT20 MCS0	1	2412	15.91	16.00	94.08
		2	2417	15.96	16.00	
		6	2437	15.85	16.00	
		10	2457	15.76	16.00	
		11	2462	15.26	15.50	
	802.11ac-VHT40 MCS0	3	2422	15.21	15.50	88.97
		4	2427	15.61	16.00	
		6	2437	15.73	16.00	
8		2447	14.23	14.50		
9		2452	13.64	14.00		



<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	19.14	19.50	99.05
		2	2417	19.02	19.50	
		6	2437	19.46	19.50	
		10	2457	19.45	19.50	
		11	2462	19.49	19.50	
	802.11g 6Mbps	1	2412	16.52	17.00	94.86
		2	2417	16.53	17.00	
		6	2437	16.93	17.00	
		10	2457	16.96	17.00	
		11	2462	16.86	17.00	
	802.11n-HT20 MCS0	1	2412	16.40	16.50	94.50
		2	2417	17.01	17.50	
		6	2437	17.26	17.50	
		10	2457	17.49	17.50	
		11	2462	16.80	17.00	
	802.11n-HT40 MCS0	3	2422	16.09	16.50	90.73
		4	2427	16.34	16.50	
		6	2437	16.82	17.00	
		8	2447	16.07	16.50	
		9	2452	14.86	15.00	
	802.11ac-VHT20 MCS0	1	2412	16.37	16.50	94.07
		2	2417	17.02	17.50	
		6	2437	17.28	17.50	
		10	2457	17.47	17.50	
		11	2462	16.76	17.00	
802.11ac-VHT40 MCS0	3	2422	16.06	16.50	90.35	
	4	2427	16.29	16.50		
	6	2437	16.77	17.00		
	8	2447	16.04	16.50		
	9	2452	14.82	15.00		



<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	20.12	20.50	99.03
		2	2417	20.01	20.50	
		6	2437	20.41	20.50	
		10	2457	17.43	17.50	
		11	2462	17.48	17.50	
	802.11g 6Mbps	1	2412	18.51	19.00	94.42
		2	2417	19.48	19.50	
		6	2437	19.47	19.50	
		10	2457	19.43	19.50	
		11	2462	19.04	19.50	
	802.11n-HT20 MCS0	1	2412	16.85	17.00	94.47
		2	2417	20.03	20.50	
		6	2437	20.07	20.50	
		10	2457	20.10	20.50	
		11	2462	18.37	18.50	
	802.11n-HT40 MCS0	3	2422	16.82	17.00	88.94
		4	2427	18.60	19.00	
		6	2437	18.86	19.00	
		8	2447	17.05	17.50	
		9	2452	16.90	17.00	
802.11ac-VHT20 MCS0	1	2412	16.81	17.00	94.05	
	2	2417	20.01	20.50		
	6	2437	20.03	20.50		
	10	2457	20.02	20.50		
	11	2462	18.31	18.50		
802.11ac-VHT40 MCS0	3	2422	16.75	17.00	88.97	
	4	2427	18.54	19.00		
	6	2437	18.80	19.00		
	8	2447	16.98	17.00		
	9	2452	16.83	17.00		

<Beamforming Mode>

<2.4GHz WLAN Antenna 1+2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11ac-VHT20 MCS0	1	2412	18.43	18.50	100.00
		6	2437	20.32	20.50	
		11	2462	18.17	18.50	
	802.11ac-VHT40 MCS0	3	2422	19.01	19.50	100.00
		6	2437	19.97	20.00	
		9	2452	17.66	18.00	



<5GHz WLAN ANT1>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	18.20	18.50	94.86
		40	5200	18.05	18.50	
		44	5220	18.13	18.50	
		48	5240	18.03	18.50	
	802.11n-HT20 MCS0	36	5180	18.38	18.50	94.97
		40	5200	18.36	18.50	
		44	5220	18.46	18.50	
		48	5240	18.32	18.50	
	802.11n-HT40 MCS0	38	5190	16.87	17.00	90.69
		46	5230	18.22	18.50	
	802.11ac-VHT20 MCS0	36	5180	18.35	18.50	94.42
		40	5200	18.30	18.50	
		44	5220	18.40	18.50	
		48	5240	18.30	18.50	
	802.11ac-VHT40 MCS0	38	5190	16.84	17.00	90.69
		46	5230	18.18	18.50	
802.11ac-VHT80 MCS0	42	5210	16.99	17.00	86.88	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	17.63	18.00	94.86
		56	5280	17.62	18.00	
		60	5300	17.67	18.00	
		64	5320	17.64	18.00	
	802.11n-HT20 MCS0	52	5260	17.87	18.00	94.97
		56	5280	17.55	18.00	
		60	5300	17.97	18.00	
		64	5320	17.96	18.00	
	802.11n-HT40 MCS0	54	5270	17.79	18.00	90.69
		62	5310	15.07	15.50	
	802.11ac-VHT20 MCS0	52	5260	17.86	18.00	94.42
		56	5280	17.51	18.00	
		60	5300	17.95	18.00	
		64	5320	17.90	18.00	
	802.11ac-VHT40 MCS0	54	5270	17.74	18.00	90.69
		62	5310	15.05	15.50	
802.11ac-VHT80 MCS0	58	5290	13.91	14.00	86.88	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	15.53	16.00	94.86
		116	5580	15.64	16.00	
		124	5620	15.56	16.00	
		132	5660	15.52	16.00	
		144	5720	15.70	16.00	
	802.11n-HT20 MCS0	100	5500	15.69	16.00	94.97
		116	5580	15.64	16.00	
		124	5620	15.55	16.00	
		132	5660	15.60	16.00	
		144	5720	15.59	16.00	
	802.11n-HT40 MCS0	102	5510	15.61	16.00	90.69
		110	5550	15.60	16.00	
		126	5630	15.62	16.00	
		134	5670	15.89	16.00	
		142	5710	15.84	16.00	
	802.11ac-VHT20 MCS0	100	5500	15.65	16.00	94.42
		116	5580	15.61	16.00	
		124	5620	15.51	16.00	
		132	5660	15.55	16.00	
		144	5720	15.56	16.00	
802.11ac-VHT40 MCS0	102	5510	15.55	16.00	90.69	
	110	5550	15.52	16.00		
	126	5630	15.50	16.00		
	134	5670	15.84	16.00		
	142	5710	15.82	16.00		
802.11ac-VHT80 MCS0	106	5530	14.15	14.50	86.88	
	122	5610	15.82	16.00		
	138	5690	15.79	16.00		

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a MCS0	149	5745	15.98	16.00	94.86
		157	5785	15.95	16.00	
		165	5825	15.55	16.00	
	802.11n-HT20 MCS0	149	5745	15.51	16.00	94.97
		157	5785	15.77	16.00	
		165	5825	15.85	16.00	
	802.11n-HT40 MCS0	151	5755	15.59	16.00	90.69
		159	5795	15.87	16.00	
	802.11ac-VHT20 MCS0	149	5745	15.47	16.00	94.42
		157	5785	15.73	16.00	
		165	5825	15.84	16.00	
	802.11ac-VHT40 MCS0	151	5755	15.51	16.00	91.18
		159	5795	15.81	16.00	
802.11ac-VHT80 MCS0	155	5775	15.61	16.00	86.88	



<5GHz WLAN ANT2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	17.43	17.50	94.86
		40	5200	17.15	17.50	
		44	5220	17.34	17.50	
		48	5240	17.22	17.50	
	802.11n-HT20 MCS0	36	5180	17.38	17.50	94.47
		40	5200	17.14	17.50	
		44	5220	17.42	17.50	
		48	5240	17.21	17.50	
	802.11n-HT40 MCS0	38	5190	16.17	16.50	90.69
		46	5230	17.39	17.50	
	802.11ac-VHT20 MCS0	36	5180	17.33	17.50	94.82
		40	5200	17.10	17.50	
		44	5220	17.37	17.50	
		48	5240	17.15	17.50	
	802.11ac-VHT40 MCS0	38	5190	16.13	16.50	90.15
		46	5230	17.32	17.50	
802.11ac-VHT80 MCS0	42	5210	16.55	17.00	86.13	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	17.82	18.00	94.86
		56	5280	17.81	18.00	
		60	5300	17.97	18.00	
		64	5320	17.77	18.00	
	802.11n-HT20 MCS0	52	5260	17.53	18.00	94.47
		56	5280	17.82	18.00	
		60	5300	17.54	18.00	
		64	5320	17.89	18.00	
	802.11n-HT40 MCS0	54	5270	17.97	18.00	90.69
		62	5310	14.40	14.50	
	802.11ac-VHT20 MCS0	52	5260	17.45	17.50	94.82
		56	5280	17.44	17.50	
		60	5300	17.48	17.50	
		64	5320	17.81	18.00	
	802.11ac-VHT40 MCS0	54	5270	17.94	18.00	90.15
		62	5310	14.35	14.50	
802.11ac-VHT80 MCS0	58	5290	13.40	13.50	86.13	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	17.90	18.00	94.86
		116	5580	17.72	18.00	
		124	5620	17.53	18.00	
		132	5660	17.80	18.00	
		144	5720	17.62	18.00	
	802.11n-HT20 MCS0	100	5500	17.86	18.00	94.47
		116	5580	17.76	18.00	
		124	5620	17.62	18.00	
		132	5660	17.55	18.00	
		144	5720	17.74	18.00	
	802.11n-HT40 MCS0	102	5510	17.00	17.50	90.69
		110	5550	17.93	18.00	
		126	5630	17.91	18.00	
		134	5670	17.97	18.00	
		142	5710	17.94	18.00	
	802.11ac-VHT20 MCS0	100	5500	17.81	18.00	94.82
		116	5580	17.69	18.00	
		124	5620	17.58	18.00	
		132	5660	17.51	18.00	
		144	5720	17.70	18.00	
802.11ac-VHT40 MCS0	102	5510	16.92	17.00	90.15	
	110	5550	17.87	18.00		
	126	5630	17.85	18.00		
	134	5670	17.95	18.00		
	142	5710	17.92	18.00		
802.11ac-VHT80 MCS0	106	5530	16.95	17.00	86.13	
	122	5610	17.77	18.00		
	138	5690	17.67	18.00		

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a MCS0	149	5745	16.47	16.50	94.86
		157	5785	16.48	16.50	
		165	5825	16.21	16.50	
	802.11n-HT20 MCS0	149	5745	16.39	16.50	94.47
		157	5785	16.38	16.50	
		165	5825	16.09	16.50	
	802.11n-HT40 MCS0	151	5755	16.48	16.50	90.69
		159	5795	16.38	16.50	
	802.11ac-VHT20 MCS0	149	5745	16.29	16.50	94.82
		157	5785	16.23	16.50	
		165	5825	16.03	16.50	
	802.11ac-VHT40 MCS0	151	5755	16.47	16.50	90.15
		159	5795	16.34	16.50	
802.11ac-VHT80 MCS0	155	5775	16.15	16.50	86.13	



<5GHz WLAN ANT1+2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	19.93	20.00	95.31
		40	5200	19.62	20.00	
		44	5220	19.66	20.00	
		48	5240	19.51	20.00	
	802.11n-HT20 MCS0	36	5180	19.86	20.00	94.47
		40	5200	19.72	20.00	
		44	5220	19.68	20.00	
		48	5240	19.89	20.00	
	802.11n-HT40 MCS0	38	5190	19.40	19.50	88.94
		46	5230	19.96	20.00	
	802.11ac-VHT20 MCS0	36	5180	19.82	20.00	94.05
		40	5200	19.70	20.00	
		44	5220	19.64	20.00	
		48	5240	19.84	20.00	
	802.11ac-VHT40 MCS0	38	5190	19.33	19.50	89.14
		46	5230	19.90	20.00	
802.11ac-VHT80 MCS0	42	5210	16.67	17.00	86.63	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	19.62	20.00	95.31
		56	5280	19.80	20.00	
		60	5300	19.68	20.00	
		64	5320	19.91	20.00	
	802.11n-HT20 MCS0	52	5260	19.66	20.00	94.47
		56	5280	19.65	20.00	
		60	5300	19.63	20.00	
		64	5320	19.81	20.00	
	802.11n-HT40 MCS0	54	5270	19.85	20.00	88.94
		62	5310	17.14	17.50	
	802.11ac-VHT20 MCS0	52	5260	19.63	20.00	94.05
		56	5280	19.59	20.00	
		60	5300	19.60	20.00	
		64	5320	19.77	20.00	
	802.11ac-VHT40 MCS0	54	5270	19.74	20.00	89.14
		62	5310	17.06	17.50	
802.11ac-VHT80 MCS0	58	5290	14.11	14.50	86.63	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	18.45	18.50	95.31
		116	5580	18.46	18.50	
		124	5620	18.44	18.50	
		132	5660	18.37	18.50	
		144	5720	18.48	18.50	
	802.11n-HT20 MCS0	100	5500	18.43	18.50	94.47
		116	5580	18.36	18.50	
		124	5620	18.12	18.50	
		132	5660	18.30	18.50	
		144	5720	18.15	18.50	
	802.11n-HT40 MCS0	102	5510	18.09	18.50	88.94
		110	5550	18.30	18.50	
		126	5630	18.08	18.50	
		134	5670	18.49	18.50	
		142	5710	18.09	18.50	
	802.11ac-VHT20 MCS0	100	5500	18.39	18.50	94.05
		116	5580	18.33	18.50	
		124	5620	18.08	18.50	
		132	5660	18.23	18.50	
		144	5720	18.12	18.50	
802.11ac-VHT40 MCS0	102	5510	18.02	18.50	89.14	
	110	5550	18.20	18.50		
	126	5630	18.05	18.50		
	134	5670	18.39	18.50		
	142	5710	18.03	18.50		
802.11ac-VHT80 MCS0	106	5530	16.71	17.00	86.63	
	122	5610	18.49	18.50		
	138	5690	18.44	18.50		

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a MCS0	149	5745	17.71	18.00	95.31
		157	5785	17.65	18.00	
		165	5825	17.70	18.00	
	802.11n-HT20 MCS0	149	5745	17.51	18.00	94.47
		157	5785	17.61	18.00	
		165	5825	17.65	18.00	
	802.11n-HT40 MCS0	151	5755	17.65	18.00	88.94
		159	5795	17.64	18.00	
	802.11ac-VHT20 MCS0	149	5745	17.46	18.00	94.05
		157	5785	17.57	18.00	
		165	5825	17.60	18.00	
	802.11ac-VHT40 MCS0	151	5755	17.55	18.00	89.14
		159	5795	17.54	18.00	
802.11ac-VHT80 MCS0	155	5775	17.76	18.00	86.63	



<Beamforming Mode>

<5GHz WLAN Antenna 1+2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11ac-VHT20 MCS0	36	5180	19.77	20.00	100.00
		40	5200	19.62	20.00	
		44	5220	19.67	20.00	
		48	5240	19.87	20.00	
	802.11ac-VHT40 MCS0	38	5190	19.31	19.50	100.00
		46	5230	19.82	18.00	
	802.11ac-VHT80 MCS0	42	5210	18.46	18.50	100.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11ac-VHT20 MCS0	52	5260	19.96	20.00	100.00
		56	5280	19.52	20.00	
		60	5300	19.67	20.00	
		64	5320	19.86	20.00	
	802.11ac-VHT40 MCS0	54	5270	19.81	20.00	100.00
		62	5310	17.37	17.50	
	802.11ac-VHT80 MCS0	58	5290	17.31	17.50	100.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11ac-VHT20 MCS0	100	5500	18.42	18.50	100.00
		116	5580	18.17	18.50	
		124	5620	18.12	18.50	
		132	5660	18.22	18.50	
		144	5720	18.03	18.50	
	802.11ac-VHT40 MCS0	102	5510	17.86	18.00	100.00
		110	5550	18.50	18.50	
		126	5630	18.36	18.50	
		134	5670	18.00	18.50	
	802.11ac-VHT80 MCS0	142	5710	18.10	18.50	100.00
		106	5530	17.32	18.50	
		122	5610	18.24	18.50	
			138	5690	18.20	18.50

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11ac-VHT20 MCS0	149	5745	17.80	18.00	100.00
		157	5785	17.70	18.00	
		165	5825	17.87	18.00	
	802.11ac-VHT40 MCS0	151	5755	17.53	18.00	100.00
		159	5795	17.63	18.00	
	802.11ac-VHT80 MCS0	155	5775	18.00	18.00	100.00



12. Bluetooth Exclusions Applied

Mode Band	Max Average power(dBm)	
	BR/EDR	LE
2.4GHz Bluetooth	3	3

Note:

- Per KDB 447498 D01v06, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$$
 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
 - f(GHz) is the RF channel transmit frequency in GHz
 - Power and distance are rounded to the nearest mW and mm before calculation
 - The result is rounded to one decimal place for comparison

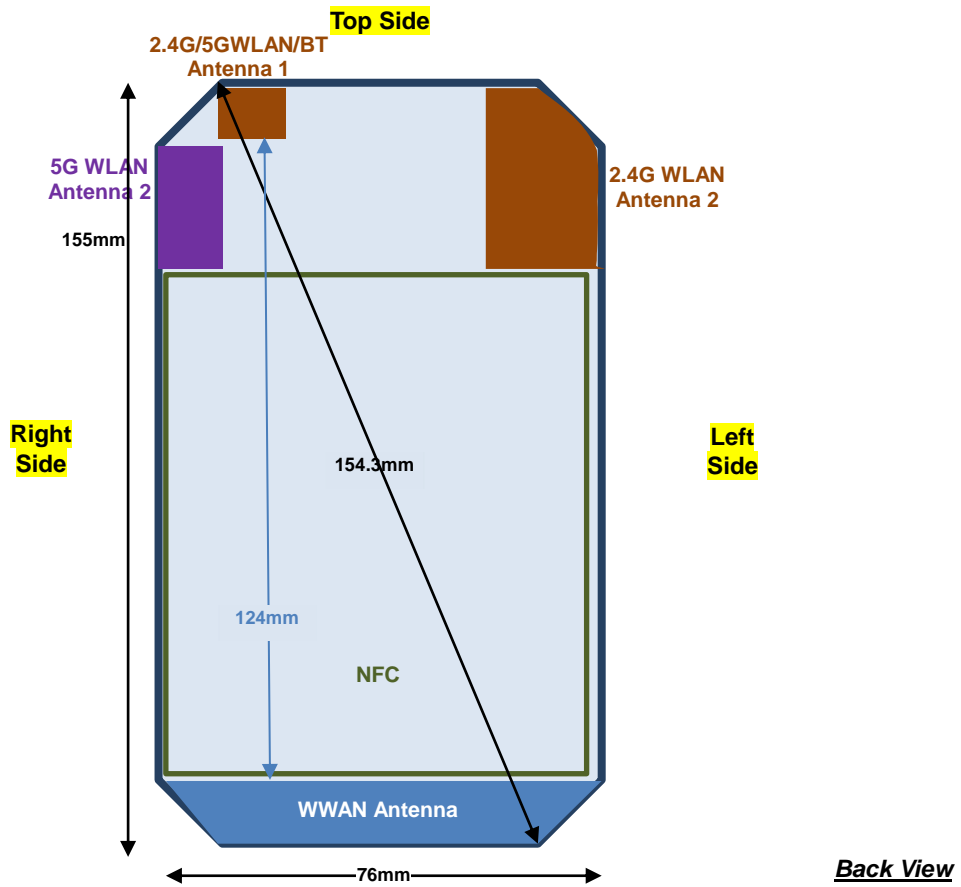
Bluetooth Max Power (dBm)	Separation Distance (mm)	Frequency (GHz)	exclusion thresholds
3	< 5	2.48	0.63

Note:

Per KDB 447498 D01v06, when the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion. The test exclusion threshold is 0.63 which is ≤ 3, SAR testing is not required.

13. Antenna Location

<Mobile Phone>



Bottom Side

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
2.4G/5GWLAN/BT Ant 1	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm
5G WLAN Ant 2	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm
2.4G WLAN Ant 2	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	>25mm	≤ 25mm
5G WLAN Ant 1+2	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm
2.4G 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
2.4G/5GWLAN/BT Ant 1	Yes	Yes	Yes	No	Yes	No
5G WLAN Ant 2	Yes	Yes	Yes	No	Yes	No
2.4G WLAN Ant 2	Yes	Yes	Yes	No	No	Yes
5G WLAN Ant 1+2	Yes	Yes	Yes	No	Yes	No
2.4G WLAN Ant 1+2	Yes	Yes	Yes	No	Yes	Yes

General Note:

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



14. SAR Test Results

General Note:

- Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - 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.
 - 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)"
 - For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - For WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
 - 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.
- 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
- Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
- 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.
- When EUT is placed into the holster, only front face of EUT will toward to the human body.

GSM Note:

- 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 (4Tx slots) for GSM850/GSM1900 is considered as the primary mode.
- 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.
- Power reduction which is triggered by hotspot mode is implemented in GSM1900 band, for hotspot mode SAR testing EUT was set in reduced power mode and GPRS 2Tx slot due to its highest frame-average power.

UMTS Note:

- Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
- 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.

**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 output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ 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 SAR test was covered by Band 25 / 66 / 26 / 12; 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 \leq 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. 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.
3. 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.
4. 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)	Battery	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (4 Tx slots)	Right Cheek	0mm	Battery 1	128	824.2	29.50	30.00	1.122	-0.03	1.020	1.144
	GSM850	GPRS (4 Tx slots)	Right Cheek	0mm	Battery 1	189	836.4	29.18	30.00	1.208	-0.1	0.955	1.153
01	GSM850	GPRS (4 Tx slots)	Right Cheek	0mm	Battery 1	251	848.8	29.48	30.00	1.127	-0.07	1.060	1.195
	GSM850	GPRS (4 Tx slots)	Right Tilted	0mm	Battery 1	128	824.2	29.50	30.00	1.122	0	0.517	0.580
	GSM850	GPRS (4 Tx slots)	Left Cheek	0mm	Battery 1	128	824.2	29.50	30.00	1.122	0.11	0.846	0.949
	GSM850	GPRS (4 Tx slots)	Left Cheek	0mm	Battery 1	189	836.4	29.18	30.00	1.208	-0.02	0.848	1.024
	GSM850	GPRS (4 Tx slots)	Left Cheek	0mm	Battery 1	251	848.8	29.48	30.00	1.127	0.01	0.911	1.027
	GSM850	GPRS (4 Tx slots)	Left Tilted	0mm	Battery 1	128	824.2	29.50	30.00	1.122	-0.01	0.595	0.668
	GSM850	GPRS (4 Tx slots)	Right Cheek	0mm	Battery 2	251	848.8	29.48	30.00	1.127	0	0.970	1.093
	GSM1900	GPRS (4 Tx slots)	Right Cheek	0mm	Battery 1	512	1850.2	26.53	27.50	1.250	0.04	0.237	0.296
	GSM1900	GPRS (4 Tx slots)	Right Tilted	0mm	Battery 1	512	1850.2	26.53	27.50	1.250	-0.18	0.124	0.155
	GSM1900	GPRS (4 Tx slots)	Left Cheek	0mm	Battery 1	512	1850.2	26.53	27.50	1.250	-0.03	0.367	0.459
02	GSM1900	GPRS (4 Tx slots)	Left Cheek	0mm	Battery 1	661	1880	25.90	27.50	1.445	0.13	0.359	0.519
	GSM1900	GPRS (4 Tx slots)	Left Cheek	0mm	Battery 1	810	1909.8	25.98	27.50	1.419	-0.05	0.203	0.288
	GSM1900	GPRS (4 Tx slots)	Left Tilted	0mm	Battery 1	512	1850.2	26.53	27.50	1.250	0.17	0.145	0.181
	GSM1900	GPRS (4 Tx slots)	Left Cheek	0mm	Battery 2	661	1880	25.90	27.50	1.445	0.03	0.330	0.477

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Battery	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	Battery 1	9538	1907.6	24.20	25.00	1.202	-0.04	0.315	0.379
	WCDMA II	RMC 12.2Kbps	Right Tilted	0mm	Battery 1	9538	1907.6	24.20	25.00	1.202	0.06	0.161	0.194
	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	Battery 1	9538	1907.6	24.20	25.00	1.202	0.08	0.347	0.417
03	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	Battery 1	9262	1852.4	23.78	25.00	1.324	0.1	0.561	0.743
	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	Battery 1	9400	1880	23.76	25.00	1.330	0.05	0.490	0.652
	WCDMA II	RMC 12.2Kbps	Left Tilted	0mm	Battery 1	9538	1907.6	24.20	25.00	1.202	0.14	0.127	0.153
	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	Battery 2	9262	1852.4	23.78	25.00	1.324	0.05	0.502	0.665
	WCDMA IV	RMC 12.2Kbps	Right Cheek	0mm	Battery 1	1413	1732.6	23.85	25.00	1.303	0.09	0.241	0.314
	WCDMA IV	RMC 12.2Kbps	Right Cheek	0mm	Battery 1	1312	1712.4	23.66	25.00	1.361	0.09	0.234	0.319
04	WCDMA IV	RMC 12.2Kbps	Right Cheek	0mm	Battery 1	1513	1752.6	23.84	25.00	1.306	0.09	0.245	0.320
	WCDMA IV	RMC 12.2Kbps	Right Tilted	0mm	Battery 1	1413	1732.6	23.85	25.00	1.303	0	0.162	0.211
	WCDMA IV	RMC 12.2Kbps	Left Cheek	0mm	Battery 1	1413	1732.6	23.85	25.00	1.303	0.09	0.136	0.177
	WCDMA IV	RMC 12.2Kbps	Left Tilted	0mm	Battery 1	1413	1732.6	23.85	25.00	1.303	-0.04	0.111	0.145
	WCDMA IV	RMC 12.2Kbps	Right Cheek	0mm	Battery 2	1513	1752.6	23.84	25.00	1.306	0.09	0.244	0.319
	WCDMA V	RMC 12.2Kbps	Right Cheek	0mm	Battery 1	4132	826.4	23.75	25.00	1.334	0.08	0.690	0.920
	WCDMA V	RMC 12.2Kbps	Right Cheek	0mm	Battery 1	4182	836.4	23.68	25.00	1.355	0.05	0.669	0.907
05	WCDMA V	RMC 12.2Kbps	Right Cheek	0mm	Battery 1	4233	846.6	23.69	25.00	1.352	0.04	0.702	0.949
	WCDMA V	RMC 12.2Kbps	Right Tilted	0mm	Battery 1	4132	826.4	23.75	25.00	1.334	-0.01	0.352	0.469
	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	Battery 1	4132	826.4	23.75	25.00	1.334	0.05	0.648	0.864
	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	Battery 1	4182	836.4	23.68	25.00	1.355	0.04	0.656	0.889
	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	Battery 1	4233	846.6	23.69	25.00	1.352	0.06	0.659	0.891
	WCDMA V	RMC 12.2Kbps	Left Tilted	0mm	Battery 1	4132	826.4	23.75	25.00	1.334	0.09	0.345	0.460
	WCDMA V	RMC 12.2Kbps	Right Cheek	0mm	Battery 2	4233	846.6	23.69	25.00	1.352	-0.08	0.674	0.911



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Battery	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	Battery 1	20850	2510	23.39	23.50	1.026	-0.14	0.642	0.658
	LTE Band 7	20M	QPSK	50	0	Right Cheek	0mm	Battery 1	20850	2510	22.47	22.50	1.007	-0.16	0.551	0.555
	LTE Band 7	20M	QPSK	1	0	Right Tilted	0mm	Battery 1	20850	2510	23.39	23.50	1.026	-0.04	0.632	0.648
	LTE Band 7	20M	QPSK	50	0	Right Tilted	0mm	Battery 1	20850	2510	22.47	22.50	1.007	0.09	0.544	0.548
	LTE Band 7	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	20850	2510	23.39	23.50	1.026	0.18	1.250	1.282
06	LTE Band 7	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	21100	2535	23.32	23.50	1.042	0.08	1.270	1.324
	LTE Band 7	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	21350	2560	23.36	23.50	1.033	0.01	1.260	1.301
	LTE Band 7	20M	QPSK	50	0	Left Cheek	0mm	Battery 1	20850	2510	22.47	22.50	1.007	0.03	1.020	1.027
	LTE Band 7	20M	QPSK	50	0	Left Cheek	0mm	Battery 1	21100	2535	22.33	22.50	1.040	0.04	1.030	1.071
	LTE Band 7	20M	QPSK	50	0	Left Cheek	0mm	Battery 1	21350	2560	22.43	22.50	1.016	0.01	1.100	1.118
	LTE Band 7	20M	QPSK	100	0	Left Cheek	0mm	Battery 1	20850	2510	22.41	22.50	1.021	0.16	0.992	1.013
	LTE Band 7	20M	QPSK	1	0	Left Tilted	0mm	Battery 1	20850	2510	23.39	23.50	1.026	0	0.533	0.547
	LTE Band 7	20M	QPSK	50	0	Left Tilted	0mm	Battery 1	20850	2510	22.47	22.50	1.007	-0.11	0.439	0.442
	LTE Band 7	20M	QPSK	1	0	Left Cheek	0mm	Battery 2	21100	2535	23.32	23.50	1.042	0.18	1.250	1.303
07	LTE Band 12	10M	QPSK	1	0	Right Cheek	0mm	Battery 1	23095	707.5	24.24	25.00	1.191	0.01	0.491	0.585
	LTE Band 12	10M	QPSK	25	0	Right Cheek	0mm	Battery 1	23095	707.5	23.12	24.00	1.225	-0.01	0.388	0.475
	LTE Band 12	10M	QPSK	1	0	Right Tilted	0mm	Battery 1	23095	707.5	24.24	25.00	1.191	-0.02	0.260	0.310
	LTE Band 12	10M	QPSK	25	0	Right Tilted	0mm	Battery 1	23095	707.5	23.12	24.00	1.225	-0.01	0.204	0.250
	LTE Band 12	10M	QPSK	1	0	Left Cheek	0mm	Battery 1	23095	707.5	24.24	25.00	1.191	-0.05	0.484	0.577
	LTE Band 12	10M	QPSK	25	0	Left Cheek	0mm	Battery 1	23095	707.5	23.12	24.00	1.225	0.02	0.381	0.467
	LTE Band 12	10M	QPSK	1	0	Left Tilted	0mm	Battery 1	23095	707.5	24.24	25.00	1.191	0.01	0.271	0.323
	LTE Band 12	10M	QPSK	25	0	Left Tilted	0mm	Battery 1	23095	707.5	23.12	24.00	1.225	0	0.215	0.263
	LTE Band 12	10M	QPSK	1	0	Right Cheek	0mm	Battery 2	23095	707.5	24.24	25.00	1.191	-0.1	0.487	0.580
08	LTE Band 13	10M	QPSK	1	0	Right Cheek	0mm	Battery 1	23230	782	23.17	24.50	1.358	0.04	0.517	0.702
	LTE Band 13	10M	QPSK	25	0	Right Cheek	0mm	Battery 1	23230	782	22.22	23.50	1.343	0.03	0.410	0.551
	LTE Band 13	10M	QPSK	1	0	Right Tilted	0mm	Battery 1	23230	782	23.17	24.50	1.358	0.02	0.296	0.402
	LTE Band 13	10M	QPSK	25	0	Right Tilted	0mm	Battery 1	23230	782	22.22	23.50	1.343	0.01	0.232	0.312
	LTE Band 13	10M	QPSK	1	0	Left Cheek	0mm	Battery 1	23230	782	23.17	24.50	1.358	-0.01	0.460	0.625
	LTE Band 13	10M	QPSK	25	0	Left Cheek	0mm	Battery 1	23230	782	22.22	23.50	1.343	-0.03	0.367	0.493
	LTE Band 13	10M	QPSK	1	0	Left Tilted	0mm	Battery 1	23230	782	23.17	24.50	1.358	0.01	0.264	0.359
	LTE Band 13	10M	QPSK	25	0	Left Tilted	0mm	Battery 1	23230	782	22.22	23.50	1.343	-0.07	0.207	0.278
	LTE Band 13	10M	QPSK	1	0	Right Cheek	0mm	Battery 2	23230	782	23.17	24.50	1.358	0.01	0.498	0.676
	LTE Band 14	10M	QPSK	1	0	Right Cheek	0mm	Battery 1	23330	793	23.29	24.50	1.321	0.02	0.476	0.629
	LTE Band 14	10M	QPSK	25	0	Right Cheek	0mm	Battery 1	23330	793	22.32	23.50	1.312	0.01	0.373	0.489
	LTE Band 14	10M	QPSK	1	0	Right Tilted	0mm	Battery 1	23330	793	23.29	24.50	1.321	0	0.268	0.354
	LTE Band 14	10M	QPSK	25	0	Right Tilted	0mm	Battery 1	23330	793	22.32	23.50	1.312	0.08	0.199	0.261
	LTE Band 14	10M	QPSK	1	0	Left Cheek	0mm	Battery 1	23330	793	23.29	24.50	1.321	-0.03	0.448	0.592
	LTE Band 14	10M	QPSK	25	0	Left Cheek	0mm	Battery 1	23330	793	22.32	23.50	1.312	-0.03	0.352	0.462
	LTE Band 14	10M	QPSK	1	0	Left Tilted	0mm	Battery 1	23330	793	23.29	24.50	1.321	-0.05	0.243	0.321
	LTE Band 14	10M	QPSK	25	0	Left Tilted	0mm	Battery 1	23330	793	22.32	23.50	1.312	-0.05	0.187	0.245
09	LTE Band 14	10M	QPSK	1	0	Right Cheek	0mm	Battery 2	23330	793	23.29	24.50	1.321	0.03	0.492	0.650



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Battery	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	Battery 1	26140	1860	24.10	25.00	1.230	0.04	0.316	0.389
	LTE Band 25	20M	QPSK	50	0	Right Cheek	0mm	Battery 1	26140	1860	22.94	24.00	1.276	0.03	0.252	0.322
	LTE Band 25	20M	QPSK	1	0	Right Tilted	0mm	Battery 1	26140	1860	24.10	25.00	1.230	-0.01	0.188	0.231
	LTE Band 25	20M	QPSK	50	0	Right Tilted	0mm	Battery 1	26140	1860	22.94	24.00	1.276	0.01	0.150	0.191
10	LTE Band 25	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	26140	1860	24.10	25.00	1.230	0	0.557	0.685
	LTE Band 25	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	26340	1880	24.02	25.00	1.253	0.07	0.517	0.648
	LTE Band 25	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	26590	1905	24.00	25.00	1.259	0.05	0.377	0.475
	LTE Band 25	20M	QPSK	50	0	Left Cheek	0mm	Battery 1	26140	1860	22.94	24.00	1.276	0.11	0.447	0.571
	LTE Band 25	20M	QPSK	1	0	Left Tilted	0mm	Battery 1	26140	1860	24.10	25.00	1.230	0.11	0.217	0.267
	LTE Band 25	20M	QPSK	50	0	Left Tilted	0mm	Battery 1	26140	1860	22.94	24.00	1.276	0.01	0.171	0.218
	LTE Band 25	20M	QPSK	1	0	Left Cheek	0mm	Battery 2	26140	1860	24.10	25.00	1.230	0.08	0.466	0.573
	LTE Band 26	15M	QPSK	1	0	Right Cheek	0mm	Battery 1	26865	831.5	23.55	24.50	1.245	-0.05	0.553	0.688
	LTE Band 26	15M	QPSK	36	0	Right Cheek	0mm	Battery 1	26865	831.5	22.53	23.50	1.250	0.08	0.446	0.558
	LTE Band 26	15M	QPSK	1	0	Right Tilted	0mm	Battery 1	26865	831.5	23.55	24.50	1.245	0.01	0.301	0.375
	LTE Band 26	15M	QPSK	36	0	Right Tilted	0mm	Battery 1	26865	831.5	22.53	23.50	1.250	-0.02	0.240	0.300
	LTE Band 26	15M	QPSK	1	0	Left Cheek	0mm	Battery 1	26865	831.5	23.55	24.50	1.245	-0.02	0.495	0.616
	LTE Band 26	15M	QPSK	36	0	Left Cheek	0mm	Battery 1	26865	831.5	22.53	23.50	1.250	-0.01	0.408	0.510
	LTE Band 26	15M	QPSK	1	0	Left Tilted	0mm	Battery 1	26865	831.5	23.55	24.50	1.245	-0.03	0.290	0.361
	LTE Band 26	15M	QPSK	36	0	Left Tilted	0mm	Battery 1	26865	831.5	22.53	23.50	1.250	0.03	0.241	0.301
11	LTE Band 26	15M	QPSK	1	0	Right Cheek	0mm	Battery 2	26865	831.5	23.55	24.50	1.245	-0.02	0.554	0.689
	LTE Band 66	20M	QPSK	1	0	Right Cheek	0mm	Battery 1	132322	1745	24.10	25.00	1.230	0.12	0.214	0.263
	LTE Band 66	20M	QPSK	1	0	Right Cheek	0mm	Battery 1	132072	1720	23.84	25.00	1.306	0.12	0.208	0.272
12	LTE Band 66	20M	QPSK	1	0	Right Cheek	0mm	Battery 1	132572	1770	23.90	25.00	1.288	0.12	0.218	0.281
	LTE Band 66	20M	QPSK	50	0	Right Cheek	0mm	Battery 1	132322	1745	23.03	24.00	1.250	0.07	0.174	0.218
	LTE Band 66	20M	QPSK	1	0	Right Tilted	0mm	Battery 1	132322	1745	24.10	25.00	1.230	0.02	0.147	0.181
	LTE Band 66	20M	QPSK	50	0	Right Tilted	0mm	Battery 1	132322	1745	23.03	24.00	1.250	0	0.120	0.150
	LTE Band 66	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	132322	1745	24.10	25.00	1.230	0.01	0.210	0.258
	LTE Band 66	20M	QPSK	50	0	Left Cheek	0mm	Battery 1	132322	1745	23.03	24.00	1.250	-0.01	0.183	0.229
	LTE Band 66	20M	QPSK	1	0	Left Tilted	0mm	Battery 1	132322	1745	24.10	25.00	1.230	0.04	0.206	0.253
	LTE Band 66	20M	QPSK	50	0	Left Tilted	0mm	Battery 1	132322	1745	23.03	24.00	1.250	0.02	0.170	0.213
	LTE Band 66	20M	QPSK	1	0	Right Cheek	0mm	Battery 2	132572	1770	23.90	25.00	1.288	0.03	0.213	0.274



<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Battery	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 38	20M	QPSK	1	0	Right Cheek	0mm	Battery 1	38150	2610	24.25	25.00	1.189	62.9	1.006	0.11	0.494	0.591
	LTE Band 38	20M	QPSK	50	0	Right Cheek	0mm	Battery 1	38150	2610	23.22	24.00	1.197	62.9	1.006	0.02	0.393	0.473
	LTE Band 38	20M	QPSK	1	0	Right Tilted	0mm	Battery 1	38150	2610	24.25	25.00	1.189	62.9	1.006	-0.04	0.434	0.519
	LTE Band 38	20M	QPSK	50	0	Right Tilted	0mm	Battery 1	38150	2610	23.22	24.00	1.197	62.9	1.006	0.04	0.357	0.430
	LTE Band 38	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	38150	2610	24.25	25.00	1.189	62.9	1.006	-0.16	0.942	1.126
	LTE Band 38	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	37850	2580	24.07	25.00	1.239	62.9	1.006	-0.02	0.921	1.148
13	LTE Band 38	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	38000	2595	24.19	25.00	1.205	62.9	1.006	-0.01	0.979	1.187
	LTE Band 38	20M	QPSK	50	0	Left Cheek	0mm	Battery 1	38150	2610	23.22	24.00	1.197	62.9	1.006	-0.01	0.771	0.928
	LTE Band 38	20M	QPSK	50	0	Left Cheek	0mm	Battery 1	37850	2580	23.06	24.00	1.242	62.9	1.006	-0.11	0.756	0.944
	LTE Band 38	20M	QPSK	50	0	Left Cheek	0mm	Battery 1	38000	2595	23.10	24.00	1.230	62.9	1.006	-0.03	0.773	0.957
	LTE Band 38	20M	QPSK	100	0	Left Cheek	0mm	Battery 1	38150	2610	23.09	24.00	1.233	62.9	1.006	-0.12	0.772	0.958
	LTE Band 38	20M	QPSK	1	0	Left Tilted	0mm	Battery 1	38150	2610	24.25	25.00	1.189	62.9	1.006	-0.17	0.333	0.398
	LTE Band 38	20M	QPSK	50	0	Left Tilted	0mm	Battery 1	38150	2610	23.22	24.00	1.197	62.9	1.006	0.01	0.274	0.330
	LTE Band 38	20M	QPSK	1	0	Left Cheek	0mm	Battery 2	38000	2595	24.19	25.00	1.205	62.9	1.006	-0.14	0.978	1.186
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Battery 1	40185	2549.5	23.41	24.00	1.146	62.9	1.006	0.14	0.352	0.406
	LTE Band 41	20M	QPSK	50	0	Right Cheek	0mm	Battery 1	40185	2549.5	22.50	23.00	1.122	62.9	1.006	0.04	0.281	0.317
	LTE Band 41	20M	QPSK	1	0	Right Tilted	0mm	Battery 1	40185	2549.5	23.41	24.00	1.146	62.9	1.006	-0.06	0.396	0.456
	LTE Band 41	20M	QPSK	50	0	Right Tilted	0mm	Battery 1	40185	2549.5	22.50	23.00	1.122	62.9	1.006	-0.16	0.312	0.352
	LTE Band 41	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	40185	2549.5	23.41	24.00	1.146	62.9	1.006	-0.18	0.903	1.041
	LTE Band 41	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	39750	2506	23.40	24.00	1.148	62.9	1.006	-0.02	0.884	1.021
	LTE Band 41	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	40620	2593	23.35	24.00	1.161	62.9	1.006	-0.12	0.958	1.119
	LTE Band 41	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	41055	2636.5	23.25	24.00	1.189	62.9	1.006	-0.07	0.972	1.162
14	LTE Band 41	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	41490	2680	23.13	24.00	1.222	62.9	1.006	-0.06	0.967	1.189
	LTE Band 41	20M	QPSK	50	0	Left Cheek	0mm	Battery 1	40185	2549.5	22.50	23.00	1.122	62.9	1.006	-0.09	0.721	0.814
	LTE Band 41	20M	QPSK	50	0	Left Cheek	0mm	Battery 1	39750	2506	22.47	23.00	1.130	62.9	1.006	-0.11	0.655	0.744
	LTE Band 41	20M	QPSK	50	0	Left Cheek	0mm	Battery 1	40620	2593	22.31	23.00	1.172	62.9	1.006	-0.14	0.719	0.848
	LTE Band 41	20M	QPSK	50	0	Left Cheek	0mm	Battery 1	41055	2636.5	22.17	23.00	1.211	62.9	1.006	-0.11	0.701	0.854
	LTE Band 41	20M	QPSK	50	0	Left Cheek	0mm	Battery 1	41490	2680	22.11	23.00	1.227	62.9	1.006	-0.03	0.771	0.952
	LTE Band 41	20M	QPSK	100	0	Left Cheek	0mm	Battery 1	40185	2549.5	22.43	23.00	1.140	62.9	1.006	-0.03	0.730	0.837
	LTE Band 41	20M	QPSK	1	0	Left Tilted	0mm	Battery 1	40185	2549.5	23.41	24.00	1.146	62.9	1.006	-0.07	0.289	0.333
	LTE Band 41	20M	QPSK	50	0	Left Tilted	0mm	Battery 1	40185	2549.5	22.50	23.00	1.122	62.9	1.006	0	0.220	0.248
	LTE Band 41	20M	QPSK	1	0	Left Cheek	0mm	Battery 2	41490	2680	23.13	24.00	1.222	62.9	1.006	-0.08	0.966	1.187



<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Battery	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	Battery 1	11	2462	15.84	16.00	1.038	99.05	1.010	0	0.381	0.399
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 1	Battery 1	11	2462	15.84	16.00	1.038	99.05	1.010	-0.02	0.291	0.305
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 1	Battery 1	11	2462	15.84	16.00	1.038	99.05	1.010	0.12	0.859	0.900
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 1	Battery 1	1	2412	15.62	16.00	1.091	99.05	1.010	0.16	0.744	0.820
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 1	Battery 1	6	2437	15.75	16.00	1.059	99.05	1.010	0.08	0.885	0.947
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 1	Battery 1	11	2462	15.84	16.00	1.038	99.05	1.010	0.11	0.591	0.619
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 1	Battery 2	6	2437	15.75	16.00	1.059	99.05	1.010	0.08	0.880	0.941
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 2	Battery 1	11	2462	19.49	19.50	1.002	99.05	1.010	0.07	0.297	0.301
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 2	Battery 1	11	2462	19.49	19.50	1.002	99.05	1.010	0.06	0.287	0.291
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 2	Battery 1	11	2462	19.49	19.50	1.002	99.05	1.010	-0.08	0.199	0.201
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 2	Battery 1	11	2462	19.49	19.50	1.002	99.05	1.010	0.05	0.206	0.209
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 2	Battery 2	11	2462	19.49	19.50	1.002	99.05	1.010	0.17	0.295	0.299
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant1+2	Battery 1	6	2437	20.41	20.50	1.021	99.03	1.010	0.021	0.504	0.520
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant1+2	Battery 1	6	2437	20.41	20.50	1.021	99.03	1.010	0.008	0.411	0.424
15	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant1+2	Battery 1	6	2437	20.41	20.50	1.021	99.03	1.010	0.01	0.960	0.990
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant1+2	Battery 1	1	2412	20.12	20.50	1.090	99.03	1.010	-0.138	0.638	0.703
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant1+2	Battery 1	11	2462	17.48	17.50	1.005	99.03	1.010	0.117	0.683	0.693
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant1+2	Battery 1	6	2437	20.41	20.50	1.021	99.03	1.010	-0.03	0.744	0.767
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant1+2	Battery 2	6	2437	20.41	20.50	1.021	99.03	1.010	0.11	0.950	0.979
	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 1	Battery 1	46	5230	18.22	18.50	1.066	90.69	1.103	-0.06	0.444	0.522
	WLAN5GHz	802.11n-HT40 MCS0	Right Tilted	0mm	Ant 1	Battery 1	46	5230	18.22	18.50	1.066	90.69	1.103	0.03	0.365	0.429
16	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 1	Battery 1	46	5230	18.22	18.50	1.066	90.69	1.103	0.03	0.680	0.799
	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 1	Battery 1	38	5190	16.87	17.00	1.029	90.69	1.103	0.15	0.500	0.568
	WLAN5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 1	Battery 1	46	5230	18.22	18.50	1.066	90.69	1.103	-0.1	0.440	0.517
	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 1	Battery 2	46	5230	18.22	18.50	1.066	90.69	1.103	0.02	0.671	0.789
	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 2	Battery 1	54	5270	17.97	18.00	1.006	90.69	1.103	-0.1	0.496	0.550
	WLAN5GHz	802.11n-HT40 MCS0	Right Tilted	0mm	Ant 2	Battery 1	54	5270	17.97	18.00	1.006	90.69	1.103	0.03	0.570	0.632
	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 2	Battery 1	54	5270	17.97	18.00	1.006	90.69	1.103	-0.16	0.836	0.928
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 2	Battery 1	60	5300	17.97	18.00	1.007	94.86	1.054	-0.15	0.891	0.946
	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 2	Battery 1	62	5310	14.40	14.50	1.022	90.69	1.103	0.09	0.331	0.373
	WLAN5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 2	Battery 1	54	5270	17.97	18.00	1.006	90.69	1.103	-0.04	0.466	0.517
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 2	Battery 2	60	5300	17.97	18.00	1.007	94.86	1.054	-0.1	0.827	0.878
	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 1+2	Battery 1	54	5270	19.85	20.00	1.035	88.94	1.124	-0.04	0.746	0.868
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1+2	Battery 1	64	5320	19.91	20.00	1.022	95.31	1.049	-0.16	0.664	0.712
	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 1+2	Battery 1	62	5310	17.14	17.50	1.086	88.94	1.124	-0.16	0.293	0.357
	WLAN5GHz	802.11n-HT40 MCS0	Right Tilted	0mm	Ant 1+2	Battery 1	54	5270	19.85	20.00	1.035	88.94	1.124	-0.05	0.800	0.931
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1+2	Battery 1	64	5320	19.91	20.00	1.022	95.31	1.049	-0.12	0.586	0.628
	WLAN5GHz	802.11n-HT40 MCS0	Right Tilted	0mm	Ant 1+2	Battery 1	62	5310	17.14	17.50	1.086	88.94	1.124	-0.09	0.301	0.367
17	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 1+2	Battery 1	54	5270	19.85	20.00	1.035	88.94	1.124	-0.09	0.960	1.117
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 1+2	Battery 1	64	5320	19.91	20.00	1.022	95.31	1.049	-0.01	1.030	1.104
	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 1+2	Battery 1	62	5310	17.14	17.50	1.086	88.94	1.124	0.09	0.451	0.550
	WLAN5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 1+2	Battery 1	54	5270	19.85	20.00	1.035	88.94	1.124	0.02	0.753	0.876
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 1+2	Battery 1	64	5320	19.91	20.00	1.022	95.31	1.049	-0.1	0.655	0.702
	WLAN5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 1+2	Battery 1	62	5310	17.14	17.50	1.086	88.94	1.124	0.14	0.385	0.470
	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 1+2	Battery 2	54	5270	19.85	20.00	1.035	88.94	1.124	-0.19	0.940	1.094



Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Battery	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	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 1	Battery 1	122	5610	15.82	16.00	1.042	86.88	1.151	-0.17	0.478	0.573
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 1	Battery 1	122	5610	15.82	16.00	1.042	86.88	1.151	0.16	0.430	0.516
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1	Battery 1	122	5610	15.82	16.00	1.042	86.88	1.151	0.11	0.511	0.613
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 1	Battery 1	122	5610	15.82	16.00	1.042	86.88	1.151	-0.16	0.459	0.551
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1	Battery 2	122	5610	15.82	16.00	1.042	86.88	1.151	0.05	0.509	0.611
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 2	Battery 1	122	5610	17.77	18.00	1.055	86.13	1.161	-0.14	0.283	0.347
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 2	Battery 1	122	5610	17.77	18.00	1.055	86.13	1.161	-0.13	0.317	0.388
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 2	Battery 1	122	5610	17.77	18.00	1.055	86.13	1.161	0.01	0.681	0.834
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 2	Battery 1	106	5530	16.95	17.00	1.012	86.13	1.161	0.14	0.572	0.672
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 2	Battery 1	138	5690	17.67	18.00	1.079	86.13	1.161	-0.18	0.542	0.679
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 2	Battery 1	122	5610	17.77	18.00	1.055	86.13	1.161	-0.19	0.294	0.360
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 2	Battery 2	122	5610	17.77	18.00	1.055	86.13	1.161	-0.14	0.597	0.731
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 1+2	Battery 1	122	5610	18.49	18.50	1.002	86.63	1.154	-0.13	0.562	0.650
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 1+2	Battery 1	122	5610	18.49	18.50	1.002	86.63	1.154	-0.11	0.589	0.681
18	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1+2	Battery 1	122	5610	18.49	18.50	1.002	86.63	1.154	0.16	0.786	0.909
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1+2	Battery 1	106	5530	16.71	17.00	1.069	86.63	1.154	-0.03	0.495	0.611
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1+2	Battery 1	138	5690	18.44	18.50	1.014	86.63	1.154	0.01	0.652	0.763
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 1+2	Battery 1	122	5610	18.49	18.50	1.002	86.63	1.154	0.12	0.564	0.652
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1+2	Battery 2	122	5610	18.49	18.50	1.002	86.63	1.154	-0.11	0.656	0.759
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 1	Battery 1	155	5775	15.61	16.00	1.094	86.88	1.151	-0.14	0.559	0.704
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 1	Battery 1	155	5775	15.61	16.00	1.094	86.88	1.151	-0.17	0.479	0.603
19	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1	Battery 1	155	5775	15.61	16.00	1.094	86.88	1.151	0.05	0.726	0.914
	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 1	Battery 1	159	5795	15.87	16.00	1.029	90.69	1.103	0.17	0.795	0.903
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 1	Battery 1	155	5775	15.61	16.00	1.094	86.88	1.151	0.11	0.525	0.661
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1	Battery 2	155	5775	15.61	16.00	1.094	86.88	1.151	0.11	0.608	0.765
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 2	Battery 1	155	5775	16.15	16.50	1.084	86.13	1.161	-0.1	0.241	0.303
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 2	Battery 1	155	5775	16.15	16.50	1.084	86.13	1.161	0.07	0.265	0.334
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 2	Battery 1	155	5775	16.15	16.50	1.084	86.13	1.161	0.15	0.347	0.437
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 2	Battery 1	155	5775	16.15	16.50	1.084	86.13	1.161	0.16	0.191	0.240
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 2	Battery 2	155	5775	16.15	16.50	1.084	86.13	1.161	-0.08	0.356	0.448
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 1+2	Battery 1	155	5775	17.76	18.00	1.057	86.63	1.154	-0.02	0.716	0.873
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 1+2	Battery 1	151	5755	17.65	18.00	1.083	88.94	1.124	0.06	0.696	0.848
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 1+2	Battery 1	155	5775	17.76	18.00	1.057	86.63	1.154	-0.01	0.656	0.800
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 1+2	Battery 1	151	5755	17.65	18.00	1.083	88.94	1.124	-0.08	0.644	0.784
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1+2	Battery 1	155	5775	17.76	18.00	1.057	86.63	1.154	-0.04	0.647	0.789
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 1+2	Battery 1	155	5775	17.76	18.00	1.057	86.63	1.154	0	0.534	0.651
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1+2	Battery 2	155	5775	17.76	18.00	1.057	86.63	1.154	0.07	0.655	0.799



14.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Battery	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (4 Tx slots)	Front	10mm	Battery 1	OFF	128	824.2	29.50	30.00	1.122	0.03	0.762	0.855
	GSM850	GPRS (4 Tx slots)	Front	10mm	Battery 1	OFF	189	836.4	29.18	30.00	1.208	-0.08	0.770	0.930
20	GSM850	GPRS (4 Tx slots)	Front	10mm	Battery 1	OFF	251	848.8	29.48	30.00	1.127	-0.03	0.826	0.931
	GSM850	GPRS (4 Tx slots)	Back	10mm	Battery 1	OFF	128	824.2	29.50	30.00	1.122	0.01	0.595	0.668
	GSM850	GPRS (4 Tx slots)	Left Side	10mm	Battery 1	OFF	128	824.2	29.50	30.00	1.122	0.03	0.329	0.369
	GSM850	GPRS (4 Tx slots)	Right Side	10mm	Battery 1	OFF	128	824.2	29.50	30.00	1.122	0.05	0.679	0.762
	GSM850	GPRS (4 Tx slots)	Bottom Side	10mm	Battery 1	OFF	128	824.2	29.50	30.00	1.122	0.09	0.174	0.195
	GSM850	GPRS (4 Tx slots)	Front	10mm	Battery 2	OFF	251	848.8	29.48	30.00	1.127	0.04	0.786	0.886
	GSM1900	GPRS (2 Tx slots)	Front	10mm	Battery 1	ON	512	1850.2	23.24	24.50	1.337	0.06	0.173	0.231
	GSM1900	GPRS (2 Tx slots)	Back	10mm	Battery 1	ON	512	1850.2	23.24	24.50	1.337	0.04	0.787	1.052
	GSM1900	GPRS (2 Tx slots)	Back	10mm	Battery 1	ON	661	1880	22.98	24.50	1.419	0.03	0.862	1.223
21	GSM1900	GPRS (2 Tx slots)	Back	10mm	Battery 1	ON	810	1909.8	22.95	24.50	1.429	0.06	0.917	1.310
	GSM1900	GPRS (2 Tx slots)	Left Side	10mm	Battery 1	ON	512	1850.2	23.24	24.50	1.337	0.02	0.153	0.204
	GSM1900	GPRS (2 Tx slots)	Right Side	10mm	Battery 1	ON	512	1850.2	23.24	24.50	1.337	-0.02	0.050	0.067
	GSM1900	GPRS (2 Tx slots)	Bottom Side	10mm	Battery 1	ON	512	1850.2	23.24	24.50	1.337	-0.17	0.527	0.704
	GSM1900	GPRS (2 Tx slots)	Back	10mm	Battery 2	ON	810	1909.8	22.95	24.50	1.429	0.13	0.898	1.283

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Battery	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Front	10mm	Battery 1	ON	9538	1907.6	17.60	18.50	1.230	0.05	0.190	0.234
	WCDMA II	RMC 12.2Kbps	Back	10mm	Battery 1	ON	9538	1907.6	17.60	18.50	1.230	0.19	1.010	1.243
	WCDMA II	RMC 12.2Kbps	Back	10mm	Battery 1	ON	9262	1852.4	17.20	18.50	1.349	0.15	0.767	1.035
22	WCDMA II	RMC 12.2Kbps	Back	10mm	Battery 1	ON	9400	1880	17.15	18.50	1.365	0.14	0.916	1.250
	WCDMA II	RMC 12.2Kbps	Left Side	10mm	Battery 1	ON	9538	1907.6	17.60	18.50	1.230	0.03	0.099	0.122
	WCDMA II	RMC 12.2Kbps	Right Side	10mm	Battery 1	ON	9538	1907.6	17.60	18.50	1.230	0.02	0.024	0.030
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	Battery 1	ON	9538	1907.6	17.60	18.50	1.230	-0.02	0.563	0.693
	WCDMA II	RMC 12.2Kbps	Back	10mm	Battery 2	ON	9400	1880	17.15	18.50	1.365	0.18	0.817	1.115
	WCDMA IV	RMC 12.2Kbps	Front	10mm	Battery 1	ON	1413	1732.6	17.30	18.50	1.318	-0.01	0.223	0.294
	WCDMA IV	RMC 12.2Kbps	Back	10mm	Battery 1	ON	1413	1732.6	17.30	18.50	1.318	0.16	0.879	1.159
23	WCDMA IV	RMC 12.2Kbps	Back	10mm	Battery 1	ON	1312	1712.4	17.11	18.50	1.377	0.16	0.862	1.187
	WCDMA IV	RMC 12.2Kbps	Back	10mm	Battery 1	ON	1513	1752.6	17.29	18.50	1.321	0.19	0.832	1.099
	WCDMA IV	RMC 12.2Kbps	Left Side	10mm	Battery 1	ON	1413	1732.6	17.30	18.50	1.318	-0.04	0.077	0.102
	WCDMA IV	RMC 12.2Kbps	Right Side	10mm	Battery 1	ON	1413	1732.6	17.30	18.50	1.318	0.02	0.056	0.074
	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	Battery 1	ON	1413	1732.6	17.30	18.50	1.318	0.07	0.458	0.604
	WCDMA IV	RMC 12.2Kbps	Back	10mm	Battery 2	ON	1312	1712.4	17.11	18.50	1.377	0.19	0.832	1.146
	WCDMA V	RMC 12.2Kbps	Front	10mm	Battery 1	OFF	4132	826.4	23.75	25.00	1.334	-0.05	0.492	0.656
24	WCDMA V	RMC 12.2Kbps	Front	10mm	Battery 1	OFF	4182	836.4	23.68	25.00	1.355	0.01	0.603	0.817
	WCDMA V	RMC 12.2Kbps	Front	10mm	Battery 1	OFF	4233	846.6	23.69	25.00	1.352	0.08	0.523	0.707
	WCDMA V	RMC 12.2Kbps	Back	10mm	Battery 1	OFF	4132	826.4	23.75	25.00	1.334	-0.09	0.489	0.652
	WCDMA V	RMC 12.2Kbps	Left Side	10mm	Battery 1	OFF	4132	826.4	23.75	25.00	1.334	-0.01	0.219	0.292
	WCDMA V	RMC 12.2Kbps	Right Side	10mm	Battery 1	OFF	4132	826.4	23.75	25.00	1.334	-0.01	0.433	0.577
	WCDMA V	RMC 12.2Kbps	Bottom Side	10mm	Battery 1	OFF	4132	826.4	23.75	25.00	1.334	0.1	0.127	0.169
	WCDMA V	RMC 12.2Kbps	Front	10mm	Battery 2	OFF	4182	836.4	23.68	25.00	1.355	0.06	0.594	0.805



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Battery	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7	20M	QPSK	1	0	Front	10mm	Battery 1	OFF	20850	2510	23.39	23.50	1.026	-0.06	1.060	1.087
	LTE Band 7	20M	QPSK	1	0	Front	10mm	Battery 1	OFF	21100	2535	23.32	23.50	1.042	-0.06	1.090	1.136
25	LTE Band 7	20M	QPSK	1	0	Front	10mm	Battery 1	OFF	21350	2560	23.36	23.50	1.033	-0.02	1.120	1.157
	LTE Band 7	20M	QPSK	50	0	Front	10mm	Battery 1	OFF	20850	2510	22.47	22.50	1.007	-0.02	0.871	0.877
	LTE Band 7	20M	QPSK	50	0	Front	10mm	Battery 1	OFF	21100	2535	22.33	22.50	1.040	-0.02	0.893	0.929
	LTE Band 7	20M	QPSK	50	0	Front	10mm	Battery 1	OFF	21350	2560	22.43	22.50	1.016	-0.02	0.916	0.931
	LTE Band 7	20M	QPSK	100	0	Front	10mm	Battery 1	OFF	20850	2510	22.41	22.50	1.021	-0.17	0.852	0.870
	LTE Band 7	20M	QPSK	1	0	Back	10mm	Battery 1	OFF	20850	2510	23.39	23.50	1.026	-0.11	0.764	0.784
	LTE Band 7	20M	QPSK	50	0	Back	10mm	Battery 1	OFF	20850	2510	22.47	22.50	1.007	0	0.527	0.531
	LTE Band 7	20M	QPSK	1	0	Left Side	10mm	Battery 1	OFF	20850	2510	23.39	23.50	1.026	-0.02	0.813	0.834
	LTE Band 7	20M	QPSK	1	0	Left Side	10mm	Battery 1	OFF	21100	2535	23.32	23.50	1.042	0	0.897	0.935
	LTE Band 7	20M	QPSK	1	0	Left Side	10mm	Battery 1	OFF	21350	2560	23.36	23.50	1.033	-0.05	0.924	0.954
	LTE Band 7	20M	QPSK	50	0	Left Side	10mm	Battery 1	OFF	20850	2510	22.47	22.50	1.007	-0.04	0.691	0.696
	LTE Band 7	20M	QPSK	100	0	Left Side	10mm	Battery 1	OFF	20850	2510	22.41	22.50	1.021	0.01	0.698	0.713
	LTE Band 7	20M	QPSK	1	0	Right Side	10mm	Battery 1	OFF	20850	2510	23.39	23.50	1.026	0.04	0.027	0.028
	LTE Band 7	20M	QPSK	50	0	Right Side	10mm	Battery 1	OFF	20850	2510	22.47	22.50	1.007	0.15	0.021	0.021
	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	Battery 1	OFF	20850	2510	23.39	23.50	1.026	-0.12	0.169	0.173
	LTE Band 7	20M	QPSK	50	0	Bottom Side	10mm	Battery 1	OFF	20850	2510	22.47	22.50	1.007	-0.09	0.144	0.145
	LTE Band 7	20M	QPSK	1	0	Front	10mm	Battery 2	OFF	21350	2560	23.36	23.50	1.033	-0.06	1.110	1.146
	LTE Band 12	10M	QPSK	1	0	Front	10mm	Battery 1	OFF	23095	707.5	24.24	25.00	1.191	-0.05	0.584	0.696
	LTE Band 12	10M	QPSK	25	0	Front	10mm	Battery 1	OFF	23095	707.5	23.12	24.00	1.225	-0.01	0.502	0.615
	LTE Band 12	10M	QPSK	1	0	Back	10mm	Battery 1	OFF	23095	707.5	24.24	25.00	1.191	-0.01	0.463	0.552
	LTE Band 12	10M	QPSK	25	0	Back	10mm	Battery 1	OFF	23095	707.5	23.12	24.00	1.225	0.05	0.407	0.498
	LTE Band 12	10M	QPSK	1	0	Left Side	10mm	Battery 1	OFF	23095	707.5	24.24	25.00	1.191	0.02	0.400	0.476
	LTE Band 12	10M	QPSK	25	0	Left Side	10mm	Battery 1	OFF	23095	707.5	23.12	24.00	1.225	0.04	0.360	0.441
	LTE Band 12	10M	QPSK	1	0	Right Side	10mm	Battery 1	OFF	23095	707.5	24.24	25.00	1.191	-0.14	0.445	0.530
	LTE Band 12	10M	QPSK	25	0	Right Side	10mm	Battery 1	OFF	23095	707.5	23.12	24.00	1.225	-0.07	0.435	0.533
	LTE Band 12	10M	QPSK	1	0	Bottom Side	10mm	Battery 1	OFF	23095	707.5	24.24	25.00	1.191	0	0.087	0.104
	LTE Band 12	10M	QPSK	25	0	Bottom Side	10mm	Battery 1	OFF	23095	707.5	23.12	24.00	1.225	0.14	0.078	0.096
26	LTE Band 12	10M	QPSK	1	0	Front	10mm	Battery 2	OFF	23095	707.5	24.24	25.00	1.191	-0.04	0.648	0.772
27	LTE Band 13	10M	QPSK	1	0	Front	10mm	Battery 1	OFF	23230	782	23.17	24.50	1.358	-0.02	0.623	0.846
	LTE Band 13	10M	QPSK	25	0	Front	10mm	Battery 1	OFF	23230	782	22.22	23.50	1.343	-0.07	0.479	0.643
	LTE Band 13	10M	QPSK	50	0	Front	10mm	Battery 1	OFF	23230	782	22.18	23.50	1.355	-0.09	0.468	0.634
	LTE Band 13	10M	QPSK	1	0	Back	10mm	Battery 1	OFF	23230	782	23.17	24.50	1.358	0.01	0.411	0.558
	LTE Band 13	10M	QPSK	25	0	Back	10mm	Battery 1	OFF	23230	782	22.22	23.50	1.343	-0.03	0.292	0.392
	LTE Band 13	10M	QPSK	1	0	Left Side	10mm	Battery 1	OFF	23230	782	23.17	24.50	1.358	0.12	0.399	0.542
	LTE Band 13	10M	QPSK	25	0	Left Side	10mm	Battery 1	OFF	23230	782	22.22	23.50	1.343	0.1	0.300	0.403
	LTE Band 13	10M	QPSK	1	0	Right Side	10mm	Battery 1	OFF	23230	782	23.17	24.50	1.358	0.01	0.466	0.633
	LTE Band 13	10M	QPSK	25	0	Right Side	10mm	Battery 1	OFF	23230	782	22.22	23.50	1.343	-0.01	0.366	0.491
	LTE Band 13	10M	QPSK	1	0	Bottom Side	10mm	Battery 1	OFF	23230	782	23.17	24.50	1.358	0.07	0.060	0.081
	LTE Band 13	10M	QPSK	25	0	Bottom Side	10mm	Battery 1	OFF	23230	782	22.22	23.50	1.343	0.04	0.049	0.066
	LTE Band 13	10M	QPSK	1	0	Front	10mm	Battery 2	OFF	23230	782	23.17	24.50	1.358	-0.08	0.619	0.841



FCC SAR TEST REPORT

Report No. : FA882724

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Battery	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
28	LTE Band 14	10M	QPSK	1	0	Front	10mm	Battery 1	OFF	23330	793	23.29	24.50	1.321	-0.02	0.556	0.735
	LTE Band 14	10M	QPSK	25	0	Front	10mm	Battery 1	OFF	23330	793	22.32	23.50	1.312	-0.03	0.433	0.568
	LTE Band 14	10M	QPSK	1	0	Back	10mm	Battery 1	OFF	23330	793	23.29	24.50	1.321	0.02	0.378	0.499
	LTE Band 14	10M	QPSK	25	0	Back	10mm	Battery 1	OFF	23330	793	22.32	23.50	1.312	0.09	0.312	0.409
	LTE Band 14	10M	QPSK	1	0	Left Side	10mm	Battery 1	OFF	23330	793	23.29	24.50	1.321	0.12	0.278	0.367
	LTE Band 14	10M	QPSK	25	0	Left Side	10mm	Battery 1	OFF	23330	793	22.32	23.50	1.312	0.14	0.204	0.268
	LTE Band 14	10M	QPSK	1	0	Right Side	10mm	Battery 1	OFF	23330	793	23.29	24.50	1.321	-0.11	0.349	0.461
	LTE Band 14	10M	QPSK	25	0	Right Side	10mm	Battery 1	OFF	23330	793	22.32	23.50	1.312	-0.11	0.349	0.458
	LTE Band 14	10M	QPSK	1	0	Bottom Side	10mm	Battery 1	OFF	23330	793	23.29	24.50	1.321	-0.06	0.061	0.081
	LTE Band 14	10M	QPSK	25	0	Bottom Side	10mm	Battery 1	OFF	23330	793	22.32	23.50	1.312	-0.06	0.049	0.064
	LTE Band 14	10M	QPSK	1	0	Front	10mm	Battery 2	OFF	23330	793	23.29	24.50	1.321	-0.13	0.553	0.731
	LTE Band 25	20M	QPSK	1	0	Front	10mm	Battery 1	ON	26140	1860	17.92	19.00	1.282	0.11	0.175	0.224
	LTE Band 25	20M	QPSK	50	0	Front	10mm	Battery 1	ON	26140	1860	17.87	19.00	1.297	0.09	0.179	0.232
	LTE Band 25	20M	QPSK	1	0	Back	10mm	Battery 1	ON	26140	1860	17.92	19.00	1.282	0.17	0.839	1.076
	LTE Band 25	20M	QPSK	1	0	Back	10mm	Battery 1	ON	26340	1880	17.91	19.00	1.285	0.15	0.924	1.188
	LTE Band 25	20M	QPSK	1	0	Back	10mm	Battery 1	ON	26590	1905	17.83	19.00	1.309	0.12	0.966	1.265
	LTE Band 25	20M	QPSK	50	0	Back	10mm	Battery 1	ON	26140	1860	17.87	19.00	1.297	0.1	0.865	1.122
	LTE Band 25	20M	QPSK	50	0	Back	10mm	Battery 1	ON	26340	1880	17.78	19.00	1.324	0.11	0.945	1.252
29	LTE Band 25	20M	QPSK	50	0	Back	10mm	Battery 1	ON	26590	1905	17.76	19.00	1.330	0.16	0.990	1.317
	LTE Band 25	20M	QPSK	100	0	Back	10mm	Battery 1	ON	26140	1860	17.83	19.00	1.309	0.1	0.884	1.157
	LTE Band 25	20M	QPSK	1	0	Left Side	10mm	Battery 1	ON	26140	1860	17.92	19.00	1.282	0.19	0.106	0.136
	LTE Band 25	20M	QPSK	50	0	Left Side	10mm	Battery 1	ON	26140	1860	17.87	19.00	1.297	0.03	0.103	0.134
	LTE Band 25	20M	QPSK	1	0	Right Side	10mm	Battery 1	ON	26140	1860	17.92	19.00	1.282	-0.06	0.053	0.068
	LTE Band 25	20M	QPSK	50	0	Right Side	10mm	Battery 1	ON	26140	1860	17.87	19.00	1.297	0.04	0.053	0.069
	LTE Band 25	20M	QPSK	1	0	Bottom Side	10mm	Battery 1	ON	26140	1860	17.92	19.00	1.282	-0.02	0.477	0.612
	LTE Band 25	20M	QPSK	50	0	Bottom Side	10mm	Battery 1	ON	26140	1860	17.87	19.00	1.297	-0.19	0.492	0.638
	LTE Band 25	20M	QPSK	50	0	Back	10mm	Battery 2	ON	26590	1905	17.76	19.00	1.330	0.19	0.917	1.220
30	LTE Band 26	15M	QPSK	1	0	Front	10mm	Battery 1	OFF	26865	831.5	23.55	24.50	1.245	0.04	0.551	0.686
	LTE Band 26	15M	QPSK	36	0	Front	10mm	Battery 1	OFF	26865	831.5	22.53	23.50	1.250	-0.04	0.427	0.534
	LTE Band 26	15M	QPSK	1	0	Back	10mm	Battery 1	OFF	26865	831.5	23.55	24.50	1.245	0.02	0.440	0.548
	LTE Band 26	15M	QPSK	36	0	Back	10mm	Battery 1	OFF	26865	831.5	22.53	23.50	1.250	0.02	0.350	0.438
	LTE Band 26	15M	QPSK	1	0	Left Side	10mm	Battery 1	OFF	26865	831.5	23.55	24.50	1.245	0.01	0.338	0.421
	LTE Band 26	15M	QPSK	36	0	Left Side	10mm	Battery 1	OFF	26865	831.5	22.53	23.50	1.250	-0.03	0.264	0.330
	LTE Band 26	15M	QPSK	1	0	Right Side	10mm	Battery 1	OFF	26865	831.5	23.55	24.50	1.245	0.01	0.455	0.566
	LTE Band 26	15M	QPSK	36	0	Right Side	10mm	Battery 1	OFF	26865	831.5	22.53	23.50	1.250	0.02	0.355	0.444
	LTE Band 26	15M	QPSK	1	0	Bottom Side	10mm	Battery 1	OFF	26865	831.5	23.55	24.50	1.245	0.09	0.089	0.111
	LTE Band 26	15M	QPSK	36	0	Bottom Side	10mm	Battery 1	OFF	26865	831.5	22.53	23.50	1.250	0.04	0.070	0.088
	LTE Band 26	15M	QPSK	1	0	Front	10mm	Battery 2	OFF	26865	831.5	23.55	24.50	1.245	-0.04	0.549	0.683
	LTE Band 66	20M	QPSK	1	49	Front	10mm	Battery 1	ON	132322	1745	17.57	18.50	1.239	0	0.184	0.228
	LTE Band 66	20M	QPSK	50	0	Front	10mm	Battery 1	ON	132322	1745	17.45	18.50	1.274	0.05	0.184	0.234
	LTE Band 66	20M	QPSK	1	49	Back	10mm	Battery 1	ON	132322	1745	17.57	18.50	1.239	0.12	0.766	0.949
	LTE Band 66	20M	QPSK	1	49	Back	10mm	Battery 1	ON	132072	1720	17.25	18.50	1.334	0.02	0.741	0.988
	LTE Band 66	20M	QPSK	1	49	Back	10mm	Battery 1	ON	132572	1770	17.31	18.50	1.315	0.08	0.715	0.940
	LTE Band 66	20M	QPSK	50	0	Back	10mm	Battery 1	ON	132322	1745	17.45	18.50	1.274	0.03	0.760	0.968
31	LTE Band 66	20M	QPSK	50	0	Back	10mm	Battery 1	ON	132072	1720	17.16	18.50	1.361	0.16	0.727	0.990
	LTE Band 66	20M	QPSK	50	0	Back	10mm	Battery 1	ON	132572	1770	17.24	18.50	1.337	0.02	0.715	0.956
	LTE Band 66	20M	QPSK	100	0	Back	10mm	Battery 1	ON	132322	1745	17.47	18.50	1.268	0.16	0.759	0.962
	LTE Band 66	20M	QPSK	1	49	Left Side	10mm	Battery 1	ON	132322	1745	17.57	18.50	1.239	0.07	0.077	0.095
	LTE Band 66	20M	QPSK	50	0	Left Side	10mm	Battery 1	ON	132322	1745	17.45	18.50	1.274	0.06	0.071	0.090
	LTE Band 66	20M	QPSK	1	49	Right Side	10mm	Battery 1	ON	132322	1745	17.57	18.50	1.239	0.1	0.051	0.063
	LTE Band 66	20M	QPSK	50	0	Right Side	10mm	Battery 1	ON	132322	1745	17.45	18.50	1.274	0.14	0.050	0.064
	LTE Band 66	20M	QPSK	1	49	Bottom Side	10mm	Battery 1	ON	132322	1745	17.57	18.50	1.239	0.07	0.451	0.559
	LTE Band 66	20M	QPSK	50	0	Bottom Side	10mm	Battery 1	ON	132322	1745	17.45	18.50	1.274	0.08	0.441	0.562
	LTE Band 66	20M	QPSK	50	0	Back	10mm	Battery 2	ON	132072	1720	17.16	18.50	1.361	0.17	0.721	0.982



<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Battery	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
32	LTE Band 38	20M	QPSK	1	0	Front	10mm	Battery 1	OFF	38150	2610	24.25	25.00	1.189	62.9	1.006	-0.02	0.933	1.116
	LTE Band 38	20M	QPSK	1	0	Front	10mm	Battery 1	OFF	37850	2580	24.07	25.00	1.239	62.9	1.006	-0.04	0.908	1.132
	LTE Band 38	20M	QPSK	1	0	Front	10mm	Battery 1	OFF	38000	2595	24.19	25.00	1.205	62.9	1.006	-0.08	0.925	1.121
	LTE Band 38	20M	QPSK	50	0	Front	10mm	Battery 1	OFF	38150	2610	23.22	24.00	1.197	62.9	1.006	0.07	0.735	0.885
	LTE Band 38	20M	QPSK	50	0	Front	10mm	Battery 1	OFF	37850	2580	23.06	24.00	1.242	62.9	1.006	0.1	0.710	0.887
	LTE Band 38	20M	QPSK	50	0	Front	10mm	Battery 1	OFF	38000	2595	23.10	24.00	1.230	62.9	1.006	0.09	0.721	0.892
	LTE Band 38	20M	QPSK	100	0	Front	10mm	Battery 1	OFF	38150	2610	23.09	24.00	1.233	62.9	1.006	0.04	0.721	0.894
	LTE Band 38	20M	QPSK	1	0	Back	10mm	Battery 1	OFF	38150	2610	24.25	25.00	1.189	62.9	1.006	0.16	0.465	0.556
	LTE Band 38	20M	QPSK	50	0	Back	10mm	Battery 1	OFF	38150	2610	23.22	24.00	1.197	62.9	1.006	0.14	0.469	0.565
	LTE Band 38	20M	QPSK	1	0	Left Side	10mm	Battery 1	OFF	38150	2610	24.25	25.00	1.189	62.9	1.006	0.12	0.578	0.691
	LTE Band 38	20M	QPSK	50	0	Left Side	10mm	Battery 1	OFF	38150	2610	23.22	24.00	1.197	62.9	1.006	0.07	0.581	0.699
	LTE Band 38	20M	QPSK	1	0	Right Side	10mm	Battery 1	OFF	38150	2610	24.25	25.00	1.189	62.9	1.006	0.12	0.031	0.037
	LTE Band 38	20M	QPSK	50	0	Right Side	10mm	Battery 1	OFF	38150	2610	23.22	24.00	1.197	62.9	1.006	0.11	0.031	0.037
	LTE Band 38	20M	QPSK	1	0	Bottom Side	10mm	Battery 1	OFF	38150	2610	24.25	25.00	1.189	62.9	1.006	0.03	0.143	0.171
	LTE Band 38	20M	QPSK	50	0	Bottom Side	10mm	Battery 1	OFF	38150	2610	23.22	24.00	1.197	62.9	1.006	0	0.142	0.171
	LTE Band 38	20M	QPSK	1	0	Front	10mm	Battery 2	OFF	37850	2580	24.07	25.00	1.239	62.9	1.006	-0.03	0.750	0.935
33	LTE Band 41	20M	QPSK	1	0	Front	10mm	Battery 1	OFF	40185	2549.5	23.41	24.00	1.146	62.9	1.006	0.03	0.671	0.773
	LTE Band 41	20M	QPSK	1	0	Front	10mm	Battery 1	OFF	39750	2506	23.40	24.00	1.148	62.9	1.006	-0.16	0.643	0.743
	LTE Band 41	20M	QPSK	1	0	Front	10mm	Battery 1	OFF	40620	2593	23.35	24.00	1.161	62.9	1.006	-0.16	0.700	0.818
	LTE Band 41	20M	QPSK	1	0	Front	10mm	Battery 1	OFF	41055	2636.5	23.25	24.00	1.189	62.9	1.006	-0.05	0.730	0.873
	LTE Band 41	20M	QPSK	1	0	Front	10mm	Battery 1	OFF	41490	2680	23.13	24.00	1.222	62.9	1.006	-0.16	0.761	0.935
	LTE Band 41	20M	QPSK	50	0	Front	10mm	Battery 1	OFF	40185	2549.5	22.50	23.00	1.122	62.9	1.006	0.04	0.549	0.620
	LTE Band 41	20M	QPSK	50	0	Front	10mm	Battery 1	OFF	39750	2506	22.47	23.00	1.130	62.9	1.006	-0.17	0.526	0.598
	LTE Band 41	20M	QPSK	50	0	Front	10mm	Battery 1	OFF	40620	2593	22.31	23.00	1.172	62.9	1.006	-0.09	0.573	0.676
	LTE Band 41	20M	QPSK	50	0	Front	10mm	Battery 1	OFF	41055	2636.5	22.17	23.00	1.211	62.9	1.006	-0.03	0.597	0.727
	LTE Band 41	20M	QPSK	50	0	Front	10mm	Battery 1	OFF	41490	2680	22.11	23.00	1.227	62.9	1.006	-0.04	0.622	0.768
	LTE Band 41	20M	QPSK	100	0	Front	10mm	Battery 1	OFF	40185	2549.5	22.43	23.00	1.140	62.9	1.006	-0.03	0.559	0.641
	LTE Band 41	20M	QPSK	1	0	Back	10mm	Battery 1	OFF	40185	2549.5	23.41	24.00	1.146	62.9	1.006	0.17	0.385	0.444
	LTE Band 41	20M	QPSK	50	0	Back	10mm	Battery 1	OFF	40185	2549.5	22.50	23.00	1.122	62.9	1.006	-0.12	0.301	0.340
	LTE Band 41	20M	QPSK	1	0	Left Side	10mm	Battery 1	OFF	40185	2549.5	23.41	24.00	1.146	62.9	1.006	0.14	0.403	0.464
	LTE Band 41	20M	QPSK	50	0	Left Side	10mm	Battery 1	OFF	40185	2549.5	22.50	23.00	1.122	62.9	1.006	0.13	0.315	0.356
	LTE Band 41	20M	QPSK	1	0	Right Side	10mm	Battery 1	OFF	40185	2549.5	23.41	24.00	1.146	62.9	1.006	-0.01	0.029	0.033
LTE Band 41	20M	QPSK	50	0	Right Side	10mm	Battery 1	OFF	40185	2549.5	22.50	23.00	1.122	62.9	1.006	-0.01	0.023	0.026	
LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	Battery 1	OFF	40185	2549.5	23.41	24.00	1.146	62.9	1.006	0.04	0.085	0.098	
LTE Band 41	20M	QPSK	50	0	Bottom Side	10mm	Battery 1	OFF	40185	2549.5	22.50	23.00	1.122	62.9	1.006	0.07	0.071	0.080	
LTE Band 41	20M	QPSK	1	0	Front	10mm	Battery 2	OFF	41490	2680	23.13	24.00	1.222	62.9	1.006	0.05	0.755	0.928	



<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Battery	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	Battery 1	11	2462	15.84	16.00	1.038	99.05	1.010	-0.04	0.142	0.149
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 1	Battery 1	11	2462	15.84	16.00	1.038	99.05	1.010	0.052	0.157	0.165
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 1	Battery 1	11	2462	15.84	16.00	1.038	99.05	1.010	0.021	0.109	0.114
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 1	Battery 1	11	2462	15.84	16.00	1.038	99.05	1.010	-0.092	0.102	0.107
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 1	Battery 2	11	2462	15.84	16.00	1.038	99.05	1.010	0.142	0.151	0.158
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 2	Battery 1	11	2462	19.49	19.50	1.002	99.05	1.010	-0.035	0.066	0.067
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 2	Battery 1	11	2462	19.49	19.50	1.002	99.05	1.010	-0.023	0.479	0.485
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 2	Battery 1	1	2412	19.14	19.50	1.086	99.05	1.010	0.155	0.183	0.201
34	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 2	Battery 1	6	2437	19.46	19.50	1.009	99.05	1.010	0.04	0.550	0.561
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 2	Battery 1	11	2462	19.49	19.50	1.002	99.05	1.010	0.054	0.137	0.139
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 2	Battery 1	11	2462	19.49	19.50	1.002	99.05	1.010	0.016	0.205	0.208
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 2	Battery 2	6	2437	19.46	19.50	1.009	99.05	1.010	-0.023	0.466	0.475
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant1+2	Battery 1	6	2437	20.41	20.50	1.021	99.03	1.010	0.122	0.143	0.147
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant1+2	Battery 1	6	2437	20.41	20.50	1.021	99.03	1.010	-0.053	0.489	0.504
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant1+2	Battery 1	1	2412	20.12	20.50	1.090	99.03	1.010	-0.066	0.336	0.370
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant1+2	Battery 1	11	2462	17.48	17.50	1.005	99.03	1.010	0.002	0.200	0.203
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant1+2	Battery 1	6	2437	20.41	20.50	1.021	99.03	1.010	0.079	0.112	0.115
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant1+2	Battery 1	6	2437	20.41	20.50	1.021	99.03	1.010	0.002	0.177	0.182
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant1+2	Battery 1	6	2437	20.41	20.50	1.021	99.03	1.010	0.111	0.191	0.197
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant1+2	Battery 2	6	2437	20.41	20.50	1.021	99.03	1.010	-0.066	0.344	0.355
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 1	Battery 1	46	5230	18.22	18.50	1.066	90.69	1.103	0.1	0.137	0.161
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 1	Battery 1	46	5230	18.22	18.50	1.066	90.69	1.103	-0.09	0.480	0.564
	WLAN5GHz	802.11n-HT40 MCS0	Right Side	10mm	Ant 1	Battery 1	46	5230	18.22	18.50	1.066	90.69	1.103	-0.16	0.299	0.351
	WLAN5GHz	802.11n-HT40 MCS0	Top Side	10mm	Ant 1	Battery 1	46	5230	18.22	18.50	1.066	90.69	1.103	-0.18	0.307	0.361
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 1	Battery 2	46	5230	18.22	18.50	1.066	90.69	1.103	-0.09	0.473	0.556
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 2	Battery 1	46	5230	17.39	17.50	1.025	90.69	1.103	0.03	0.172	0.194
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 2	Battery 1	46	5230	17.39	17.50	1.025	90.69	1.103	-0.15	0.705	0.797
	WLAN5GHz	802.11n-HT40 MCS0	Right Side	10mm	Ant 2	Battery 1	46	5230	17.39	17.50	1.025	90.69	1.103	0.02	0.786	0.888
	WLAN5GHz	802.11a 6Mbps	Right Side	10mm	Ant 2	Battery 1	36	5180	17.43	17.50	1.016	94.86	1.054	-0.03	0.781	0.837
	WLAN5GHz	802.11n-HT40 MCS0	Right Side	10mm	Ant 2	Battery 1	38	5190	16.17	16.50	1.078	90.69	1.103	0.03	0.533	0.634
	WLAN5GHz	802.11n-HT40 MCS0	Top Side	10mm	Ant 2	Battery 1	46	5230	17.39	17.50	1.025	90.69	1.103	-0.12	0.301	0.340
	WLAN5GHz	802.11n-HT40 MCS0	Right Side	10mm	Ant 2	Battery 2	46	5230	17.39	17.50	1.025	90.69	1.103	-0.1	0.773	0.874
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 1+2	Battery 1	46	5230	19.96	20.00	1.009	88.94	1.124	-0.12	0.229	0.260
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 1+2	Battery 1	46	5230	19.96	20.00	1.009	88.94	1.124	-0.19	0.791	0.897
35	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 1+2	Battery 1	36	5180	19.93	20.00	1.015	95.31	1.049	-0.05	0.905	0.964
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 1+2	Battery 1	38	5190	19.40	19.50	1.024	88.94	1.124	-0.04	0.636	0.732
	WLAN5GHz	802.11n-HT40 MCS0	Right Side	10mm	Ant 1+2	Battery 1	46	5230	19.96	20.00	1.009	88.94	1.124	-0.13	0.786	0.891
	WLAN5GHz	802.11a 6Mbps	Right Side	10mm	Ant 1+2	Battery 1	36	5180	19.93	20.00	1.015	95.31	1.049	-0.07	0.831	0.885
	WLAN5GHz	802.11n-HT40 MCS0	Right Side	10mm	Ant 1+2	Battery 1	38	5190	19.40	19.50	1.024	88.94	1.124	-0.17	0.695	0.800
	WLAN5GHz	802.11n-HT40 MCS0	Top Side	10mm	Ant 1+2	Battery 1	46	5230	19.96	20.00	1.009	88.94	1.124	-0.18	0.225	0.255
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 1+2	Battery 2	36	5180	19.93	20.00	1.015	95.31	1.049	-0.06	0.890	0.948



Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Battery	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	802.11ac-VHT80 MCS0	Front	10mm	Ant 1	Battery 1	155	5775	15.61	16.00	1.094	86.88	1.151	0.1	0.160	0.201
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 1	Battery 1	155	5775	15.61	16.00	1.094	86.88	1.151	-0.1	0.521	0.656
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	10mm	Ant 1	Battery 1	155	5775	15.61	16.00	1.094	86.88	1.151	-0.1	0.355	0.447
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	10mm	Ant 1	Battery 1	155	5775	15.61	16.00	1.094	86.88	1.151	-0.05	0.316	0.398
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 1	Battery 2	155	5775	15.61	16.00	1.094	86.88	1.151	0.02	0.524	0.660
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 2	Battery 1	155	5775	16.15	16.50	1.084	86.13	1.161	-0.05	0.083	0.104
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 2	Battery 1	155	5775	16.15	16.50	1.084	86.13	1.161	-0.16	0.424	0.534
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	10mm	Ant 2	Battery 1	155	5775	16.15	16.50	1.084	86.13	1.161	0.13	0.427	0.538
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	10mm	Ant 2	Battery 1	155	5775	16.15	16.50	1.084	86.13	1.161	-0.06	0.282	0.355
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	10mm	Ant 2	Battery 2	155	5775	16.15	16.50	1.084	86.13	1.161	0.06	0.430	0.541
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 1+2	Battery 1	155	5775	17.76	18.00	1.057	86.63	1.154	0.02	0.189	0.230
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 1+2	Battery 1	155	5775	17.76	18.00	1.057	86.63	1.154	-0.06	0.553	0.674
36	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	10mm	Ant 1+2	Battery 1	155	5775	17.76	18.00	1.057	86.63	1.154	-0.02	0.628	0.766
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	10mm	Ant 1+2	Battery 1	155	5775	17.76	18.00	1.057	86.63	1.154	-0.18	0.208	0.254
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	10mm	Ant 1+2	Battery 2	155	5775	17.76	18.00	1.057	86.63	1.154	-0.02	0.620	0.756



14.3 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Battery	Accessories	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (4 Tx slots)	Front	0mm	Battery 1	Soft Holster+ Exoskeleton	128	824.2	29.50	30.00	1.122	-0.05	0.689	0.773
	GSM850	GPRS (4 Tx slots)	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	128	824.2	29.50	30.00	1.122	-0.07	0.701	0.787
37	GSM850	GPRS (4 Tx slots)	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	189	836.4	29.18	30.00	1.208	-0.15	0.677	0.818
	GSM850	GPRS (4 Tx slots)	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	251	848.8	29.48	30.00	1.127	-0.18	0.673	0.759
	GSM850	GPRS (4 Tx slots)	Front	0mm	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	189	836.4	29.18	30.00	1.208	-0.07	0.640	0.773
	GSM1900	GPRS (4 Tx slots)	Front	0mm	Battery 1	Soft Holster+ Exoskeleton	512	1850.2	26.53	27.50	1.250	-0.15	0.208	0.260
	GSM1900	GPRS (4 Tx slots)	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	512	1850.2	26.53	27.50	1.250	-0.08	0.219	0.274
38	GSM1900	GPRS (4 Tx slots)	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	661	1880	25.90	27.50	1.445	-0.12	0.255	0.369
	GSM1900	GPRS (4 Tx slots)	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	810	1909.8	25.98	27.50	1.419	-0.1	0.174	0.247
	GSM1900	GPRS (4 Tx slots)	Front	0mm	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	661	1880	25.90	27.50	1.445	0.04	0.229	0.331

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Battery	Accessories	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	0mm	Battery 1	Soft Holster+ Exoskeleton	9538	1907.6	24.20	25.00	1.202	0.09	0.275	0.331
	WCDMA II	RMC 12.2Kbps	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	9538	1907.6	24.20	25.00	1.202	0.04	0.291	0.350
	WCDMA II	RMC 12.2Kbps	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	9262	1852.4	23.78	25.00	1.324	0.07	0.274	0.363
39	WCDMA II	RMC 12.2Kbps	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	9400	1880	23.76	25.00	1.330	0.04	0.398	0.530
	WCDMA II	RMC 12.2Kbps	Front	0mm	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	9400	1880	23.76	25.00	1.330	0	0.371	0.494
	WCDMA IV	RMC 12.2Kbps	Front	0mm	Battery 1	Soft Holster+ Exoskeleton	1413	1732.6	23.85	25.00	1.303	-0.03	0.341	0.444
	WCDMA IV	RMC 12.2Kbps	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	1413	1732.6	23.85	25.00	1.303	-0.01	0.353	0.460
40	WCDMA IV	RMC 12.2Kbps	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	1312	1712.4	23.66	25.00	1.361	0.05	0.368	0.501
	WCDMA IV	RMC 12.2Kbps	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	1513	1752.6	23.84	25.00	1.306	0.03	0.326	0.426
	WCDMA IV	RMC 12.2Kbps	Front	0mm	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	1312	1712.4	23.66	25.00	1.361	0.03	0.364	0.496
	WCDMA V	RMC 12.2Kbps	Front	0mm	Battery 1	Soft Holster+ Exoskeleton	4132	826.4	23.75	25.00	1.334	0.08	0.562	0.749
	WCDMA V	RMC 12.2Kbps	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	4132	826.4	23.75	25.00	1.334	0.06	0.580	0.773
	WCDMA V	RMC 12.2Kbps	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	4182	836.4	23.68	25.00	1.355	0.07	0.596	0.808
	WCDMA V	RMC 12.2Kbps	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	4233	846.6	23.69	25.00	1.352	0.12	0.564	0.763
41	WCDMA V	RMC 12.2Kbps	Front	0mm	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	4182	836.4	23.68	25.00	1.355	0.09	0.605	0.820

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Battery	Accessories	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	0mm	Battery 1	Soft Holster+ Exoskeleton	20850	2510	23.39	23.50	1.026	0.08	0.361	0.370
	LTE Band 7	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	20850	2510	23.39	23.50	1.026	-0.01	0.373	0.383
	LTE Band 7	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	21100	2535	23.32	23.50	1.042	-0.04	0.392	0.409
42	LTE Band 7	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	21350	2560	23.36	23.50	1.033	0.02	0.407	0.420
	LTE Band 7	20M	QPSK	50	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	20850	2510	22.47	22.50	1.007	0	0.309	0.311
	LTE Band 7	20M	QPSK	1	0	Front	0mm	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	21350	2560	23.36	23.50	1.033	-0.06	0.402	0.415
	LTE Band 12	10M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton	23095	707.5	24.24	25.00	1.191	-0.01	0.738	0.879
43	LTE Band 12	10M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	23095	707.5	24.24	25.00	1.191	-0.07	0.758	0.903
	LTE Band 12	10M	QPSK	25	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	23095	707.5	23.12	24.00	1.225	-0.03	0.594	0.727
	LTE Band 12	10M	QPSK	50	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	23095	707.5	23.07	24.00	1.239	0.11	0.637	0.789
	LTE Band 12	10M	QPSK	1	0	Front	0mm	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	23095	707.5	24.24	25.00	1.191	-0.07	0.755	0.899
	LTE Band 13	10M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton	23230	782	23.17	24.50	1.358	0.01	0.551	0.748
44	LTE Band 13	10M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	23230	782	23.17	24.50	1.358	0	0.569	0.773
	LTE Band 13	10M	QPSK	25	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	23230	782	22.22	23.50	1.343	0.08	0.460	0.618
	LTE Band 13	10M	QPSK	1	0	Front	0mm	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	23230	782	23.17	24.50	1.358	0.01	0.562	0.763



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Battery	Accessories	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 14	10M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton	23330	793	23.29	24.50	1.321	0.09	0.563	0.744
45	LTE Band 14	10M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	23330	793	23.29	24.50	1.321	0.05	0.572	0.756
	LTE Band 14	10M	QPSK	25	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	23330	793	22.32	23.50	1.312	0.05	0.462	0.606
	LTE Band 14	10M	QPSK	1	0	Front	0mm	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	23330	793	23.29	24.50	1.321	0.03	0.571	0.754
	LTE Band 25	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton	26140	1860	24.10	25.00	1.230	0.06	0.378	0.465
46	LTE Band 25	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	26140	1860	24.10	25.00	1.230	0.08	0.397	0.488
	LTE Band 25	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	26340	1880	24.02	25.00	1.253	0.03	0.292	0.366
	LTE Band 25	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	26590	1905	24.00	25.00	1.259	0.06	0.223	0.281
	LTE Band 25	20M	QPSK	50	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	26140	1860	22.94	24.00	1.276	0.04	0.316	0.403
	LTE Band 25	20M	QPSK	1	0	Front	0mm	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	26140	1860	24.10	25.00	1.230	0.06	0.393	0.483
	LTE Band 26	15M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton	26865	831.5	23.55	24.50	1.245	0.02	0.537	0.668
47	LTE Band 26	15M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	26865	831.5	23.55	24.50	1.245	0.04	0.550	0.684
	LTE Band 26	15M	QPSK	36	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	26865	831.5	22.53	23.50	1.250	0.01	0.434	0.543
	LTE Band 26	15M	QPSK	1	0	Front	0mm	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	26865	831.5	23.55	24.50	1.245	0.02	0.548	0.682
	LTE Band 66	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton	132322	1745	24.10	25.00	1.230	0.02	0.315	0.388
	LTE Band 66	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	132322	1745	24.10	25.00	1.230	0.05	0.323	0.397
48	LTE Band 66	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	132072	1720	23.84	25.00	1.306	-0.03	0.309	0.404
	LTE Band 66	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	132572	1770	23.90	25.00	1.288	0.1	0.307	0.395
	LTE Band 66	20M	QPSK	50	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	132322	1745	23.03	24.00	1.250	0.06	0.258	0.323
	LTE Band 66	20M	QPSK	1	0	Front	0mm	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	132072	1720	23.84	25.00	1.306	-0.03	0.297	0.388

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Battery	Accessories	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 38	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton	38150	2610	24.25	25.00	1.189	62.9	1.006	0.05	0.642	0.768
	LTE Band 38	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	38150	2610	24.25	25.00	1.189	62.9	1.006	0.01	0.674	0.806
49	LTE Band 38	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	37850	2580	24.07	25.00	1.239	62.9	1.006	0.05	0.671	0.836
	LTE Band 38	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	38000	2595	24.19	25.00	1.205	62.9	1.006	0.04	0.678	0.822
	LTE Band 38	20M	QPSK	50	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	38150	2610	23.22	24.00	1.197	62.9	1.006	0.01	0.526	0.633
	LTE Band 38	20M	QPSK	100	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	38150	2610	23.06	24.00	1.242	62.9	1.006	0.06	0.547	0.683
	LTE Band 38	20M	QPSK	1	0	Front	0mm	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	37850	2580	24.07	25.00	1.239	62.9	1.006	0.05	0.642	0.800
	LTE Band 41	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton	40185	2549.5	23.41	24.00	1.146	62.9	1.006	0.05	0.561	0.646
	LTE Band 41	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	40185	2549.5	23.41	24.00	1.146	62.9	1.006	-0.08	0.572	0.659
	LTE Band 41	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	39750	2506	23.40	24.00	1.148	62.9	1.006	0	0.548	0.633
	LTE Band 41	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	40620	2593	23.35	24.00	1.161	62.9	1.006	-0.05	0.597	0.698
	LTE Band 41	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	41055	2636.5	23.25	24.00	1.189	62.9	1.006	-0.08	0.622	0.744
50	LTE Band 41	20M	QPSK	1	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	41490	2680	23.13	24.00	1.222	62.9	1.006	-0.01	0.648	0.796
	LTE Band 41	20M	QPSK	50	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	40185	2549.5	22.50	23.00	1.122	62.9	1.006	0.02	0.463	0.523
	LTE Band 41	20M	QPSK	100	0	Front	0mm	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	40185	2549.5	22.43	23.00	1.140	62.9	1.006	-0.1	0.470	0.539
	LTE Band 41	20M	QPSK	1	0	Front	0mm	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	41490	2680	23.13	24.00	1.222	62.9	1.006	-0.01	0.635	0.780



FCC SAR TEST REPORT

Report No. : FA882724

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Battery	Accessories	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	0mm	Ant 1	Battery 1	Soft Holster+ Exoskeleton	11	2462	15.84	16.00	1.038	99.05	1.010	-0.015	0.056	0.059
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 1	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	11	2462	15.84	16.00	1.038	99.05	1.010	-0.08	0.060	0.063
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 1	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	1	2412	15.62	16.00	1.091	99.05	1.010	-0.085	0.048	0.053
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 1	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	6	2437	15.75	16.00	1.059	99.05	1.010	0.147	0.053	0.057
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 1	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	11	2462	15.84	16.00	1.038	99.05	1.010	-0.035	0.046	0.048
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 2	Battery 1	Soft Holster+ Exoskeleton	11	2462	19.49	19.50	1.002	99.05	1.010	0.06	0.037	0.037
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 2	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	11	2462	19.49	19.50	1.002	99.05	1.010	0.09	0.047	0.048
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 2	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	11	2462	19.49	19.50	1.002	99.05	1.010	0.16	0.045	0.046
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 1+2	Battery 1	Soft Holster+ Exoskeleton	6	2437	20.41	20.50	1.021	99.03	1.010	0.072	0.124	0.128
51	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 1+2	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	6	2437	20.41	20.50	1.021	99.03	1.010	0.08	0.144	0.148
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 1+2	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	1	2412	20.12	20.50	1.090	99.03	1.010	0.063	0.123	0.135
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 1+2	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	11	2462	17.48	17.50	1.005	99.03	1.010	0.146	0.025	0.025
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 1+2	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	6	2437	20.41	20.50	1.021	99.03	1.010	-0.133	0.139	0.143
	WLAN5GHz	802.11n-HT40 MCS0	Front	0mm	Ant 1	Battery 1	Soft Holster+ Exoskeleton	46	5230	18.22	18.50	1.066	90.69	1.103	0.15	0.082	0.096
	WLAN5GHz	802.11n-HT40 MCS0	Front	0mm	Ant 1	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	46	5230	18.22	18.50	1.066	90.69	1.103	0.18	0.085	0.100
	WLAN5GHz	802.11n-HT40 MCS0	Front	0mm	Ant 1	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	46	5230	18.22	18.50	1.066	90.69	1.103	0.15	0.083	0.098
	WLAN5GHz	802.11n-HT40 MCS0	Front	0mm	Ant 2	Battery 1	Soft Holster+ Exoskeleton	54	5270	17.97	18.00	1.006	90.69	1.103	-0.03	0.132	0.146
	WLAN5GHz	802.11n-HT40 MCS0	Front	0mm	Ant 2	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	54	5270	17.97	18.00	1.006	90.69	1.103	-0.04	0.144	0.160
	WLAN5GHz	802.11n-HT40 MCS0	Front	0mm	Ant 2	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	54	5270	17.97	18.00	1.006	90.69	1.103	-0.13	0.135	0.150
	WLAN5GHz	802.11n-HT40 MCS0	Front	0mm	Ant 1+2	Battery 1	Soft Holster+ Exoskeleton	54	5270	19.85	20.00	1.035	88.94	1.124	0.11	0.164	0.191
52	WLAN5GHz	802.11n-HT40 MCS0	Front	0mm	Ant 1+2	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	54	5270	19.85	20.00	1.035	88.94	1.124	0.1	0.174	0.203
	WLAN5GHz	802.11n-HT40 MCS0	Front	0mm	Ant 1+2	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	62	5310	17.14	17.50	1.086	88.94	1.124	0.15	0.144	0.176
	WLAN5GHz	802.11n-HT40 MCS0	Front	0mm	Ant 1+2	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	54	5270	19.85	20.00	1.035	88.94	1.124	0.13	0.168	0.196
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 1	Battery 1	Soft Holster+ Exoskeleton	122	5610	15.82	16.00	1.042	86.88	1.151	0.12	0.085	0.102
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 1	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	122	5610	15.82	16.00	1.042	86.88	1.151	0.11	0.089	0.107
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 1	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	122	5610	15.82	16.00	1.042	86.88	1.151	0.13	0.087	0.104
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 2	Battery 1	Soft Holster+ Exoskeleton	122	5610	17.77	18.00	1.055	86.13	1.161	-0.11	0.087	0.107
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 2	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	122	5610	17.77	18.00	1.055	86.13	1.161	-0.01	0.097	0.119
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 2	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	122	5610	17.77	18.00	1.055	86.13	1.161	-0.12	0.092	0.113
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 1+2	Battery 1	Soft Holster+ Exoskeleton	122	5610	18.49	18.50	1.002	86.63	1.154	0.12	0.096	0.111
53	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 1+2	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	122	5610	18.49	18.50	1.002	86.63	1.154	0.16	0.106	0.123
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 1+2	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	106	5530	16.71	17.00	1.069	86.63	1.154	0.15	0.087	0.107
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 1+2	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	138	5690	18.44	18.50	1.014	86.63	1.154	0.11	0.102	0.119
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 1+2	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	122	5610	18.49	18.50	1.002	86.63	1.154	0.15	0.099	0.114
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 1	Battery 1	Soft Holster+ Exoskeleton	155	5775	15.61	16.00	1.094	86.88	1.151	-0.19	0.075	0.094
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 1	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	155	5775	15.61	16.00	1.094	86.88	1.151	-0.09	0.085	0.107
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 1	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	155	5775	15.61	16.00	1.094	86.88	1.151	-0.05	0.079	0.099
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 2	Battery 1	Soft Holster+ Exoskeleton	155	5775	16.15	16.50	1.084	86.13	1.161	0.13	0.039	0.049
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 2	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	155	5775	16.15	16.50	1.084	86.13	1.161	0.18	0.043	0.054
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 2	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	155	5775	16.15	16.50	1.084	86.13	1.161	0.12	0.041	0.052
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 1+2	Battery 1	Soft Holster+ Exoskeleton	155	5775	17.76	18.00	1.057	86.63	1.154	0.11	0.095	0.116
54	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 1+2	Battery 1	Soft Holster+ Exoskeleton +Trigger Handle	155	5775	17.76	18.00	1.057	86.63	1.154	0.15	0.105	0.128
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 1+2	Battery 2	Soft Holster+ Exoskeleton +Trigger Handle	155	5775	17.76	18.00	1.057	86.63	1.154	0.13	0.102	0.124

14.4 Repeated SAR Measurement

No.	Band	Mode	Test Position	Gap (mm)	Antenna	Battery	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	GSM850	GPRS (4 Tx slots)	Right Cheek	0mm	-	Battery 1	-	251	848.8	29.48	30.00	1.127	-	1.000	-0.07	1.060	-	1.195
2nd	GSM850	GPRS (4 Tx slots)	Right Cheek	0mm	-	Battery 1	-	251	848.8	29.48	30.00	1.127	-	1.000	-0.19	0.830	1.28	0.936
1st	LTE Band 7	20M_QPSK_1_0	Left Cheek	0mm	-	Battery 1	-	21100	2535	23.32	23.50	1.042	-	1.000	0.08	1.270	-	1.324
2nd	LTE Band 7	20M_QPSK_1_0	Left Cheek	0mm	-	Battery 1	-	21100	2535	23.32	23.50	1.042	-	1.000	0.03	1.230	1.03	1.282
1st	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant1+2	Battery 1	-	6	2437	20.41	20.50	1.021	99.03	1.010	0.01	0.960	-	0.990
2nd	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant1+2	Battery 1	-	6	2437	20.41	20.50	1.021	99.03	1.010	0.04	0.941	1.02	0.970
1st	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant1+2	Battery 1	-	64	5320	19.91	20.00	1.022	95.31	1.049	-0.01	1.030	-	1.104
2nd	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant1+2	Battery 1	-	64	5320	19.91	20.00	1.022	95.31	1.049	0.04	1.010	1.02	1.083
1st	WCDMA II	RMC 12.2Kbps	Back	10mm	-	Battery 1	ON	9538	1907.6	17.60	18.50	1.230	-	1.000	0.19	1.010	-	1.243
2nd	WCDMA II	RMC 12.2Kbps	Back	10mm	-	Battery 1	ON	9538	1907.6	17.60	18.50	1.230	-	1.000	0.13	0.994	1.02	1.223
1st	WCDMA IV	RMC 12.2Kbps	Back	10mm	-	Battery 1	ON	1413	1732.6	17.30	18.50	1.318	-	1.000	0.16	0.879	-	1.159
2nd	WCDMA IV	RMC 12.2Kbps	Back	10mm	-	Battery 1	ON	1413	1732.6	17.30	18.50	1.318	-	1.000	-0.01	0.834	1.05	1.099
1st	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant1+2	Battery 1	-	36	5180	19.93	20.00	1.015	95.31	1.049	-0.05	0.905	-	0.964
2nd	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant1+2	Battery 1	-	36	5180	19.93	20.00	1.015	95.31	1.049	-0.16	0.883	1.03	0.940

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is $\geq 0.8W/kg$.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR $< 1.45W/kg$, only one repeated measurement is required.
3. The ratio is the difference in percentage between original and repeated *measured* SAR.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

15. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Head	Hotspot	Body-worn
1.	WWAN + 2.4GHz WLAN Ant 1	Yes	Yes	Yes
2.	WWAN + 2.4GHz WLAN Ant 2	Yes	Yes	Yes
3.	WWAN + 5GHz WLAN Ant 1	Yes	Yes	Yes
4.	WWAN + 5GHz WLAN Ant 2	Yes	Yes	Yes
5.	WWAN + 2.4GHz WLAN Ant 1 + 2.4GHz WLAN Ant 2	Yes	Yes	Yes
6.	WWAN + 5GHz WLAN Ant 1 + 5GHz WLAN Ant 2	Yes	Yes	Yes
7.	WWAN + Bluetooth Ant 1 + 5GHz WLAN Ant 2	Yes	Yes	Yes

General Note:

1. This device WLAN 2.4GHz / 5.2GHz / 5.8GHz supports Hotspot operation and Bluetooth support tethering applications.
2. WLAN and Bluetooth share the same antenna1, and cannot transmit simultaneously.
3. All licensed modes share the same antenna part and cannot transmit simultaneously.
4. EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment.
5. The Scaled SAR summation is calculated based on the same configuration and test position.
6. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - i) Scalar SAR summation < 1.6W/kg.
 - ii) $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$, 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 $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary.
 - iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
 - v) The SPLSR calculated results please refer to section 15.4.
7. For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v06 based on the formula below.
 - i) $(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm}) \cdot [\sqrt{f(\text{GHz})}]^x \text{ W/kg}$ for test separation distances $\leq 50 \text{ mm}$; 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	Head	Hotspot	Body worn
	Test separation	0 mm	10 mm	0 mm
3dBm	Estimated SAR (W/kg)	0.084 W/kg	0.042 W/kg	0.084 W/kg



15.1 Head Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	1+5 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)	1+7 Summed 1g SAR (W/kg)	1+5+8 Summed 1g SAR (W/kg)	1+2 1+3 SPLSR Case No	1+4 1+5 Case No	1+6 SPLSR Case No	1+7 SPLSR Case No	1+7 Case No	1+5+8 SPLSR Case No	1+5+8 Case No						
		WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1																				
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)																				
GSM	GSM850	Right Cheek	1.195	0.399	0.301	0.704	0.550	0.520	0.868	0.084	1.594	1.496	1.899	1.745	1.715	2.063	1.829			0.04	Case 12	0.04	Case 27	0.04	Case 41	0.03	Case 64		
		Right Tilted	0.580	0.305	0.291	0.603	0.632	0.424	0.931	0.084	0.885	0.871	1.183	1.212	1.004	1.511	1.296												
		Left Cheek	1.027	0.947	0.201	0.914	0.946	0.990	1.117	0.084	1.974	1.228	1.941	1.973	2.017	2.144	2.057	0.04	Case 1	0.04	Case 13	0.04	Case 28	0.04	Case 42	0.04	Case 65		
	GSM1900	Right Cheek	0.296	0.399	0.301	0.704	0.550	0.520	0.868	0.084	0.695	0.597	1.000	0.846	0.816	1.164	0.930												
		Right Tilted	0.155	0.305	0.291	0.603	0.632	0.424	0.931	0.084	0.460	0.446	0.758	0.787	0.579	1.086	0.871												
		Left Cheek	0.519	0.947	0.201	0.914	0.946	0.990	1.117	0.084	1.466	0.720	1.433	1.465	1.509	1.636	1.549						0.03	Case 43					
WCDMA	WCDMA II	Right Cheek	0.379	0.399	0.301	0.704	0.550	0.520	0.868	0.084	0.778	0.680	1.083	0.929	0.899	1.247	1.013												
		Right Tilted	0.194	0.305	0.291	0.603	0.632	0.424	0.931	0.084	0.499	0.485	0.797	0.826	0.618	1.125	0.910												
		Left Cheek	0.743	0.947	0.201	0.914	0.946	0.990	1.117	0.084	1.690	0.944	1.657	1.689	1.733	1.860	1.773	0.03	Case 2	0.03	Case 14	0.03	Case 29	0.03	Case 44	0.03	Case 66		
	WCDMA IV	Right Cheek	0.320	0.399	0.301	0.704	0.550	0.520	0.868	0.084	0.719	0.621	1.024	0.870	0.840	1.188	0.954												
		Right Tilted	0.211	0.305	0.291	0.603	0.632	0.424	0.931	0.084	0.516	0.502	0.814	0.843	0.635	1.142	0.927												
		Left Cheek	0.177	0.947	0.201	0.914	0.946	0.990	1.117	0.084	1.124	0.378	1.091	1.123	1.167	1.294	1.207												
	WCDMA V	Right Cheek	0.949	0.399	0.301	0.704	0.550	0.520	0.868	0.084	1.348	1.250	1.853	1.499	1.469	1.817	1.583			0.03	Case 15			0.03	Case 45				
		Right Tilted	0.469	0.305	0.291	0.603	0.632	0.424	0.931	0.084	0.774	0.760	1.072	1.101	0.893	1.400	1.185												
		Left Cheek	0.891	0.947	0.201	0.914	0.946	0.990	1.117	0.084	1.838	1.092	1.805	1.837	1.881	2.008	1.921	0.03	Case 3	0.03	Case 16	0.04	Case 30	0.04	Case 46	0.03	Case 67		
	LTE	LTE Band 7	Right Cheek	0.658	0.399	0.301	0.704	0.550	0.520	0.868	0.084	1.057	0.959	1.362	1.208	1.178	1.526	1.292											
			Right Tilted	0.648	0.305	0.291	0.603	0.632	0.424	0.931	0.084	0.953	0.939	1.251	1.280	1.072	1.579	1.364											
			Left Cheek	1.324	0.947	0.201	0.914	0.946	0.990	1.117	0.084	2.271	1.525	2.238	2.270	2.314	2.441	2.354	0.04	Case 4	0.04	Case 17	0.04	Case 31	0.04	Case 47	0.04	Case 68	
LTE Band 12		Right Cheek	0.585	0.399	0.301	0.704	0.550	0.520	0.868	0.084	0.984	0.886	1.289	1.135	1.105	1.453	1.219												
		Right Tilted	0.310	0.305	0.291	0.603	0.632	0.424	0.931	0.084	0.615	0.601	0.913	0.942	0.734	1.241	1.026												
		Left Cheek	0.577	0.947	0.201	0.914	0.946	0.990	1.117	0.084	1.524	0.778	1.491	1.523	1.567	1.694	1.607						0.03	Case 48	0.03	Case 69			
LTE Band 13		Right Cheek	0.702	0.399	0.301	0.704	0.550	0.520	0.868	0.084	1.101	1.003	1.406	1.252	1.222	1.570	1.336												
		Right Tilted	0.402	0.305	0.291	0.603	0.632	0.424	0.931	0.084	0.707	0.693	1.005	1.034	0.826	1.333	1.118												
		Left Cheek	0.625	0.947	0.201	0.914	0.946	0.990	1.117	0.084	1.572	0.826	1.539	1.571	1.615	1.742	1.655					0.03	Case 32	0.03	Case 49	0.03	Case 70		
LTE Band 14		Right Cheek	0.650	0.399	0.301	0.704	0.550	0.520	0.868	0.084	1.049	0.951	1.354	1.200	1.170	1.518	1.284												
		Right Tilted	0.354	0.305	0.291	0.603	0.632	0.424	0.931	0.084	0.659	0.645	0.957	0.986	0.778	1.285	1.070												
		Left Cheek	0.592	0.947	0.201	0.914	0.946	0.990	1.117	0.084	1.539	0.793	1.506	1.538	1.582	1.709	1.622						0.03	Case 50	0.03	Case 71			
LTE Band 25		Right Cheek	0.389	0.399	0.301	0.704	0.550	0.520	0.868	0.084	0.788	0.690	1.093	0.939	0.909	1.257	1.023												
		Right Tilted	0.231	0.305	0.291	0.603	0.632	0.424	0.931	0.084	0.536	0.522	0.834	0.863	0.655	1.162	0.947												
		Left Cheek	0.685	0.947	0.201	0.914	0.946	0.990	1.117	0.084	1.632	0.886	1.599	1.631	1.675	1.802	1.715	0.03	Case 5	0.03	Case 18	0.03	Case 33	0.03	Case 51	0.03	Case 72		
LTE Band 26		Right Cheek	0.689	0.399	0.301	0.704	0.550	0.520	0.868	0.084	1.088	0.990	1.393	1.239	1.209	1.557	1.323												
		Right Tilted	0.375	0.305	0.291	0.603	0.632	0.424	0.931	0.084	0.680	0.666	0.978	1.007	0.799	1.306	1.091												
		Left Cheek	0.616	0.947	0.201	0.914	0.946	0.990	1.117	0.084	1.563	0.817	1.530	1.562	1.606	1.733	1.646					0.03	Case 34	0.03	Case 52	0.03	Case 73		
LTE Band 38		Right Cheek	0.591	0.399	0.301	0.704	0.550	0.520	0.868	0.084	0.990	0.892	1.295	1.141	1.111	1.459	1.225												
		Right Tilted	0.519	0.305	0.291	0.603	0.632	0.424	0.931	0.084	0.824	0.810	1.122	1.151	0.943	1.450	1.235												
		Left Cheek	1.187	0.947	0.201	0.914	0.946	0.990	1.117	0.084	2.134	1.388	2.101	2.133	2.177	2.304	2.217	0.04	Case 6	0.04	Case 19	0.04	Case 35	0.04	Case 53	0.04	Case 74		
LTE Band 41		Right Cheek	0.406	0.399	0.301	0.704	0.550	0.520	0.868	0.084	0.805	0.707	1.110	0.956	0.926	1.274	1.040												
		Right Tilted	0.456	0.305	0.291	0.603	0.632	0.424	0.931	0.084	0.761	0.747	1.059	1.088	0.880	1.387	1.172												
		Left Cheek	1.189	0.947	0.201	0.914	0.946	0.990	1.117	0.084	2.136	1.390	2.103	2.135	2.179	2.306	2.219	0.04	Case 7	0.04	Case 20	0.04	Case 36	0.04	Case 54	0.04	Case 75		
LTE Band 66	Right Cheek	0.281	0.399	0.301	0.704	0.550	0.520	0.868	0.084	0.680	0.582	0.985	0.831	0.801	1.149	0.915													
	Right Tilted	0.181	0.305	0.291	0.603	0.632	0.424	0.931	0.084	0.486	0.472	0.784	0.813	0.605	1.112	0.897													
	Left Cheek	0.258	0.947	0.201	0.914	0.946	0.990	1.117	0.084	1.205	0.459	1.172	1.204	1.248	1.375	1.288													
		Left Tilted	0.253	0.619	0.209	0.661	0.517	0.767	0.876	0.084	0.872	0.462	0.914	0.770	1.020	1.129	0.854												



15.2 Hotspot Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	1+5 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)	1+7 Summed 1g SAR (W/kg)	1+5+8 Summed 1g SAR (W/kg)	1+2 1+3 SPLSR	1+2 1+3 Case No	1+4 1+5 SPLSR	1+4 1+5 Case No	1+6 SPLSR	1+6 Case No	1+7 SPLSR	1+7 Case No	1+5+8 SPLSR	1+5+8 Case No		
		WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1																		Estimated 1g SAR (W/kg)	
GSM	GSM850	Front	0.931	0.149	0.067	0.201	0.194	0.147	0.260	0.042	1.080	0.998	1.132	1.125	1.078	1.191	1.167											
		Back	0.668	0.165	0.561	0.660	0.797	0.504	0.964	0.042	0.833	1.229	1.328	1.465	1.172	1.632	1.507							0.03	Case 55			
		Left side	0.369		0.139				0.115			0.369	0.508	0.369	0.369	0.484	0.369	0.369										
		Right side	0.762	0.114		0.447	0.888	0.182	0.891	0.042	0.876	0.762	1.209	1.650	0.944	1.653	1.692			0.04	Case 21			0.04	Case 56	0.04	Case 76	
		Bottom side	0.195									0.195	0.195	0.195	0.195	0.195	0.195	0.195										
	GSM1900	Front	0.231	0.149	0.067	0.201	0.194	0.147	0.260	0.042	0.380	0.298	0.432	0.425	0.378	0.491	0.467											
		Back	1.310	0.165	0.561	0.660	0.797	0.504	0.964	0.042	1.475	1.871	1.970	2.107	1.814	2.274	2.149	0.02	Case 8	0.03	Case 22	0.02	Case 37	0.03	Case 57	0.03	Case 77	
		Left side	0.204		0.139				0.115			0.204	0.343	0.204	0.204	0.319	0.204	0.204										
		Right side	0.067	0.114		0.447	0.888	0.182	0.891	0.042	0.181	0.067	0.514	0.955	0.249	0.958	0.997											
		Bottom side	0.704									0.704	0.704	0.704	0.704	0.704	0.704	0.704										
WCDMA	WCDMA II	Front	0.234	0.149	0.067	0.201	0.194	0.147	0.260	0.042	0.383	0.301	0.435	0.428	0.381	0.494	0.470											
		Back	1.250	0.165	0.561	0.660	0.797	0.504	0.964	0.042	1.415	1.811	1.910	2.047	1.754	2.214	2.089	0.02	Case 9	0.02	Case 23	0.02	Case 38	0.03	Case 58	0.03	Case 78	
		Left side	0.122		0.139				0.115			0.122	0.261	0.122	0.122	0.237	0.122	0.122										
		Right side	0.030	0.114		0.447	0.888	0.182	0.891	0.042	0.144	0.030	0.477	0.918	0.212	0.921	0.960											
		Bottom side	0.693									0.693	0.693	0.693	0.693	0.693	0.693	0.693										
	WCDMA IV	Front	0.294	0.149	0.067	0.201	0.194	0.147	0.260	0.042	0.443	0.361	0.495	0.488	0.441	0.554	0.530											
		Back	1.187	0.165	0.561	0.660	0.797	0.504	0.964	0.042	1.352	1.748	1.847	1.984	1.691	2.151	2.026	0.02	Case 10	0.02	Case 24	0.02	Case 39	0.03	Case 59	0.02	Case 79	
		Left side	0.102		0.139				0.115			0.102	0.241	0.102	0.102	0.217	0.102	0.102										
		Right side	0.074	0.114		0.447	0.888	0.182	0.891	0.042	0.188	0.074	0.521	0.962	0.256	0.965	1.004											
		Bottom side	0.604									0.604	0.604	0.604	0.604	0.604	0.604	0.604										
	WCDMA V	Front	0.817	0.149	0.067	0.201	0.194	0.147	0.260	0.042	0.966	0.884	1.018	1.011	0.964	1.077	1.053											
		Back	0.652	0.165	0.561	0.660	0.797	0.504	0.964	0.042	0.817	1.213	1.312	1.449	1.156	1.616	1.491							0.03	Case 60			
		Left side	0.292		0.139				0.115			0.292	0.431	0.292	0.292	0.407	0.292	0.292										
		Right side	0.577	0.114		0.447	0.888	0.182	0.891	0.042	0.691	0.577	1.024	1.465	0.759	1.468	1.507											
		Bottom side	0.169									0.169	0.169	0.169	0.169	0.169	0.169	0.169										
LTE	LTE Band 7	Front	1.157	0.149	0.067	0.201	0.194	0.147	0.260	0.042	1.306	1.224	1.358	1.351	1.304	1.417	1.393											
		Back	0.784	0.165	0.561	0.660	0.797	0.504	0.964	0.042	0.949	1.345	1.444	1.581	1.288	1.748	1.623							0.02	Case 61	0.02	Case 80	
		Left side	0.954		0.139				0.115			0.954	1.093	0.954	0.954	1.069	0.954	0.954										
		Right side	0.028	0.114		0.447	0.888	0.182	0.891	0.042	0.142	0.028	0.475	0.916	0.210	0.919	0.958											
		Bottom side	0.173									0.173	0.173	0.173	0.173	0.173	0.173	0.173										
	LTE Band 12	Front	0.772	0.149	0.067	0.201	0.194	0.147	0.260	0.042	0.921	0.839	0.973	0.966	0.919	1.032	1.008											
		Back	0.552	0.165	0.561	0.660	0.797	0.504	0.964	0.042	0.717	1.113	1.212	1.349	1.056	1.516	1.391											
		Left side	0.476		0.139				0.115			0.476	0.615	0.476	0.476	0.591	0.476	0.476										
		Right side	0.533	0.114		0.447	0.888	0.182	0.891	0.042	0.647	0.533	0.980	1.421	0.715	1.424	1.463											
		Bottom side	0.104									0.104	0.104	0.104	0.104	0.104	0.104	0.104										
	LTE Band 13	Front	0.846	0.149	0.067	0.201	0.194	0.147	0.260	0.042	0.995	0.913	1.047	1.040	0.993	1.106	1.082											
		Back	0.558	0.165	0.561	0.660	0.797	0.504	0.964	0.042	0.723	1.119	1.218	1.355	1.062	1.522	1.397											
		Left side	0.542		0.139				0.115			0.542	0.681	0.542	0.542	0.657	0.542	0.542										
		Right side	0.633	0.114		0.447	0.888	0.182	0.891	0.042	0.747	0.633	1.080	1.521	0.815	1.524	1.563											
		Bottom side	0.081									0.081	0.081	0.081	0.081	0.081	0.081	0.081										
LTE Band 14	Front	0.735	0.149	0.067	0.201	0.194	0.147	0.260	0.042	0.884	0.802	0.936	0.929	0.882	0.995	0.971												
	Back	0.499	0.165	0.561	0.660	0.797	0.504	0.964	0.042	0.664	1.060	1.159	1.296	1.003	1.463	1.338												
	Left side	0.367		0.139				0.115			0.367	0.506	0.367	0.367	0.482	0.367	0.367											
	Right side	0.461	0.114		0.447	0.888	0.182	0.891	0.042	0.575	0.461	0.908	1.349	0.643	1.352	1.391												
	Bottom side	0.081									0.081	0.081	0.081	0.081	0.081	0.081	0.081											



WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	1+5 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)	1+7 Summed 1g SAR (W/kg)	1+5+8 Summed 1g SAR (W/kg)	1+2 1+3 SPLSR	1+2 1+3 Case No	1+4 1+5 SPLSR	1+4 1+5 Case No	1+6 SPLSR	1+6 Case No	1+7 SPLSR	1+7 Case No	1+5+8 SPLSR	1+5+8 Case No			
		WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1																				
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)																				
LTE	LTE Band 25	Front	0.232	0.149	0.067	0.201	0.194	0.147	0.260	0.042	0.381	0.299	0.433	0.426	0.379	0.492	0.468												
		Back	1.317	0.165	0.561	0.660	0.797	0.504	0.964	0.042	1.482	1.878	1.977	2.114	1.821	2.281	2.156	0.02	Case 11	0.03	Case 25	0.02	Case 40	0.03	Case 62	0.03	Case 81		
		Left side	0.136		0.139				0.115			0.136	0.275	0.136	0.136	0.251	0.136	0.136											
		Right side	0.069	0.114		0.447	0.888	0.182	0.891	0.042	0.183	0.069	0.516	0.957	0.251	0.960	0.999												
		Top side		0.107	0.208	0.398	0.355	0.197	0.255	0.042	0.107	0.208	0.398	0.355	0.197	0.255	0.397												
		Bottom side	0.638									0.638	0.638	0.638	0.638	0.638	0.638	0.638											
	LTE Band 26	Front	0.686	0.149	0.067	0.201	0.194	0.147	0.260	0.042	0.835	0.753	0.887	0.880	0.833	0.946	0.922												
		Back	0.548	0.165	0.561	0.660	0.797	0.504	0.964	0.042	0.713	1.109	1.208	1.345	1.052	1.512	1.387												
		Left side	0.421		0.139				0.115			0.421	0.560	0.421	0.421	0.536	0.421	0.421											
		Right side	0.566	0.114		0.447	0.888	0.182	0.891	0.042	0.680	0.566	1.013	1.454	0.748	1.457	1.496												
		Top side		0.107	0.208	0.398	0.355	0.197	0.255	0.042	0.107	0.208	0.398	0.355	0.197	0.255	0.397												
		Bottom side	0.111									0.111	0.111	0.111	0.111	0.111	0.111	0.111											
	LTE Band 38	Front	1.132	0.149	0.067	0.201	0.194	0.147	0.260	0.042	1.281	1.199	1.333	1.326	1.279	1.392	1.368												
		Back	0.565	0.165	0.561	0.660	0.797	0.504	0.964	0.042	0.730	1.126	1.225	1.362	1.069	1.529	1.404												
		Left side	0.699		0.139				0.115			0.699	0.838	0.699	0.699	0.814	0.699	0.699											
		Right side	0.037	0.114		0.447	0.888	0.182	0.891	0.042	0.151	0.037	0.484	0.925	0.219	0.928	0.967												
		Top side		0.107	0.208	0.398	0.355	0.197	0.255	0.042	0.107	0.208	0.398	0.355	0.197	0.255	0.397												
		Bottom side	0.171									0.171	0.171	0.171	0.171	0.171	0.171	0.171											
	LTE Band 41	Front	0.935	0.149	0.067	0.201	0.194	0.147	0.260	0.042	1.084	1.002	1.136	1.129	1.082	1.195	1.171												
		Back	0.444	0.165	0.561	0.660	0.797	0.504	0.964	0.042	0.609	1.005	1.104	1.241	0.948	1.408	1.283												
		Left side	0.464		0.139				0.115			0.464	0.603	0.464	0.464	0.579	0.464	0.464											
		Right side	0.033	0.114		0.447	0.888	0.182	0.891	0.042	0.147	0.033	0.480	0.921	0.215	0.924	0.963												
		Top side		0.107	0.208	0.398	0.355	0.197	0.255	0.042	0.107	0.208	0.398	0.355	0.197	0.255	0.397												
		Bottom side	0.098									0.098	0.098	0.098	0.098	0.098	0.098	0.098											
LTE Band 66	Front	0.234	0.149	0.067	0.201	0.194	0.147	0.260	0.042	0.383	0.301	0.435	0.428	0.381	0.494	0.470													
	Back	0.990	0.165	0.561	0.660	0.797	0.504	0.964	0.042	1.155	1.551	1.650	1.787	1.494	1.954	1.829			0.02	Case 26			0.02	Case 63	0.02	Case 82			
	Left side	0.095		0.139				0.115			0.095	0.234	0.095	0.095	0.210	0.095	0.095												
	Right side	0.064	0.114		0.447	0.888	0.182	0.891	0.042	0.178	0.064	0.511	0.952	0.246	0.955	0.994													
	Top side		0.107	0.208	0.398	0.355	0.197	0.255	0.042	0.107	0.208	0.398	0.355	0.197	0.255	0.397													
	Bottom side	0.562									0.562	0.562	0.562	0.562	0.562	0.562	0.562												



15.3 Body-Worn Accessory Exposure Conditions

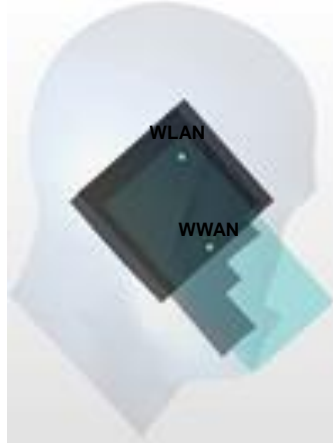
WWAN Band		Exposure Position	1	2	3	4	5	6	7	8	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	1+5 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)	1+7 Summed 1g SAR (W/kg)	1+5+8 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1							
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)							
GSM	GSM850	Front	0.818	0.063	0.048	0.107	0.160	0.148	0.203	0.084	0.881	0.866	0.925	0.978	0.966	1.021	1.062
	GSM1900	Front	0.369	0.063	0.048	0.107	0.160	0.148	0.203	0.084	0.432	0.417	0.476	0.529	0.517	0.572	0.613
WCDMA	WCDMA II	Front	0.530	0.063	0.048	0.107	0.160	0.148	0.203	0.084	0.593	0.578	0.637	0.690	0.678	0.733	0.774
	WCDMA IV	Front	0.501	0.063	0.048	0.107	0.160	0.148	0.203	0.084	0.564	0.549	0.608	0.661	0.649	0.704	0.745
	WCDMA V	Front	0.820	0.063	0.048	0.107	0.160	0.148	0.203	0.084	0.883	0.868	0.927	0.980	0.968	1.023	1.064
LTE	LTE Band 7	Front	0.420	0.063	0.048	0.107	0.160	0.148	0.203	0.084	0.483	0.468	0.527	0.580	0.568	0.623	0.664
	LTE Band 12	Front	0.903	0.063	0.048	0.107	0.160	0.148	0.203	0.084	0.966	0.951	1.010	1.063	1.051	1.106	1.147
	LTE Band 13	Front	0.773	0.063	0.048	0.107	0.160	0.148	0.203	0.084	0.836	0.821	0.880	0.933	0.921	0.976	1.017
	LTE Band 14	Front	0.756	0.063	0.048	0.107	0.160	0.148	0.203	0.084	0.819	0.804	0.863	0.916	0.904	0.959	1.000
	LTE Band 25	Front	0.488	0.063	0.048	0.107	0.160	0.148	0.203	0.084	0.551	0.536	0.595	0.648	0.636	0.691	0.732
	LTE Band 26	Front	0.684	0.063	0.048	0.107	0.160	0.148	0.203	0.084	0.747	0.732	0.791	0.844	0.832	0.887	0.928
	LTE Band 38	Front	0.836	0.063	0.048	0.107	0.160	0.148	0.203	0.084	0.899	0.884	0.943	0.996	0.984	1.039	1.080
	LTE Band 41	Front	0.796	0.063	0.048	0.107	0.160	0.148	0.203	0.084	0.859	0.844	0.903	0.956	0.944	0.999	1.040
LTE Band 66	Front	0.404	0.063	0.048	0.107	0.160	0.148	0.203	0.084	0.467	0.452	0.511	0.564	0.552	0.607	0.648	

15.4 SPLSR Evaluation and Analysis

General Note:

- SPLSR = $(SAR_1 + SAR_2)^{1.5} / (\text{min. separation distance, mm})$. If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary

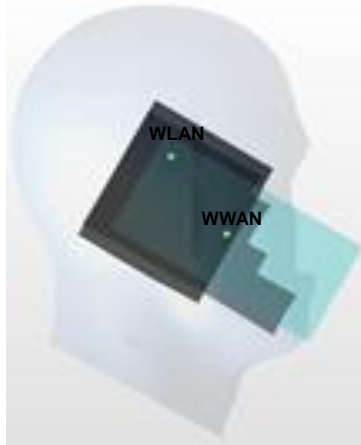
Case 1	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM850		1.027	0	X	Y	Z				
	WLAN2.4GHz Ant 1		0.947	0	17.9	17.59	-2.15				



Case 2	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA II		0.743	0	X	Y	Z				
	WLAN2.4GHz Ant 1		0.947	0	17.9	17.59	-2.15				



Case 3	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA V	Left Cheek	0.891	0	56.15	-43.31	-2.52	71.9	1.84	0.03	Not required
	WLAN2.4GHz Ant 1		0.947	0	17.9	17.59	-2.15				



Case 4	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 7	Left Cheek	1.324	0	46.43	-57.39	-2.04	80.2	2.27	0.04	Not required
	WLAN2.4GHz Ant 1		0.947	0	17.9	17.59	-2.15				



Case 5	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 25	Left Cheek	0.685	0	45.34	-52.21	-2.31	75.0	1.63	0.03	Not required
	WLAN2.4GHz Ant 1		0.947	0	17.9	17.59	-2.15				



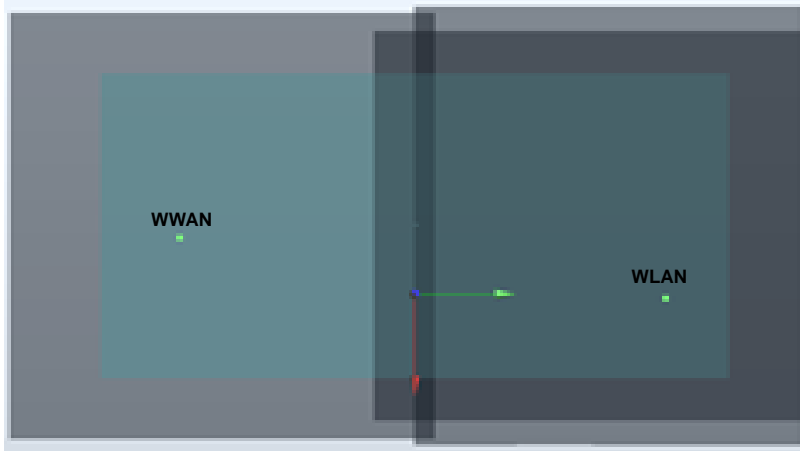
Case 6	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 38	Left Cheek	1.187	0	46.55	-57.18	-2.07	80.1	2.13	0.04	Not required
	WLAN2.4GHz Ant 1		0.947	0	17.9	17.59	-2.15				



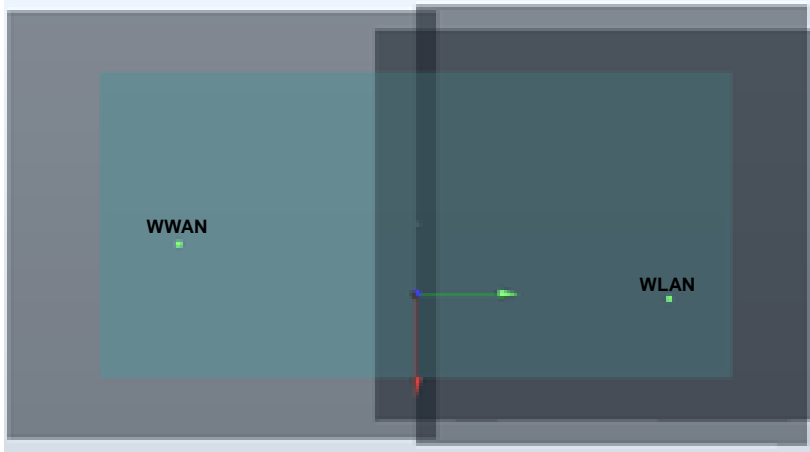
Case 7	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 41	Left Cheek	1.189	0	45.85	-54.7	-1.85	77.5	2.14	0.04	Not required
	WLAN2.4GHz Ant 1		0.947	0	17.9	17.59	-2.15				



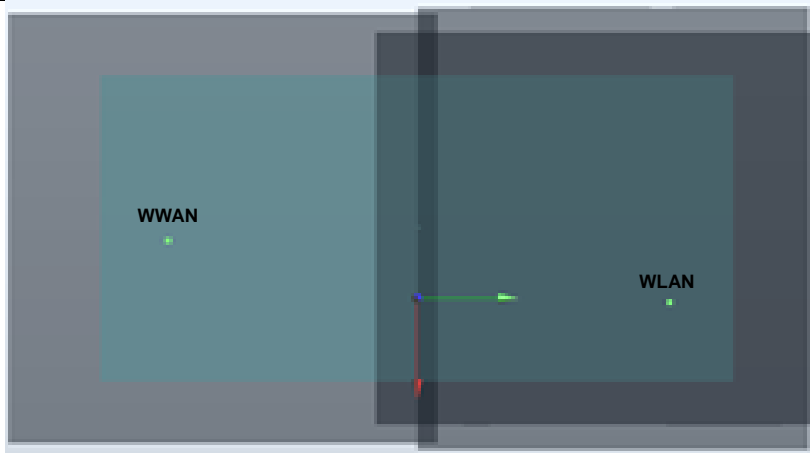
Case 8	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM1900	Back	1.31	10	7.8	-56.4	-1.75	118.8	1.87	0.02	Not required
	WLAN2.4GHz Ant 2		0.561	10	17.99	62	-0.97				



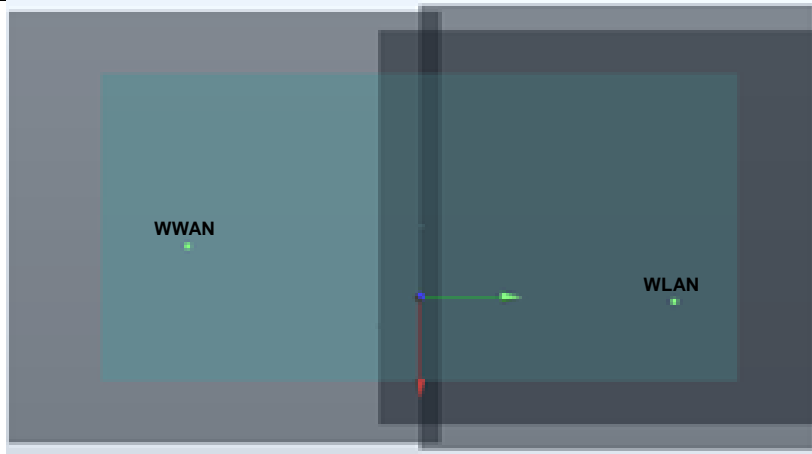
Case 9	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA II				X	Y	Z				
	WCDMA II	Back	1.25	10	7.7	-56.4	-1.77	118.8	1.81	0.02	Not required
	WLAN2.4GHz Ant 2		0.561	10	17.99	62	-0.97				



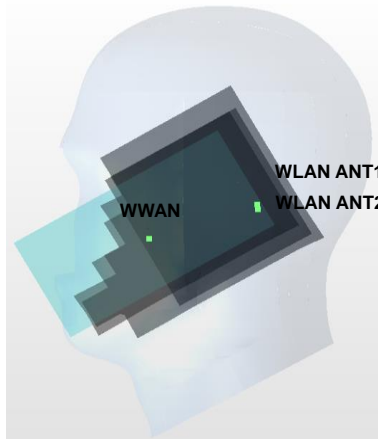
Case 10	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA IV				X	Y	Z				
	WCDMA IV	Back	1.187	10	3	-59.4	-1.75	122.3	1.75	0.02	Not required
	WLAN2.4GHz Ant 2		0.561	10	17.99	62	-0.97				



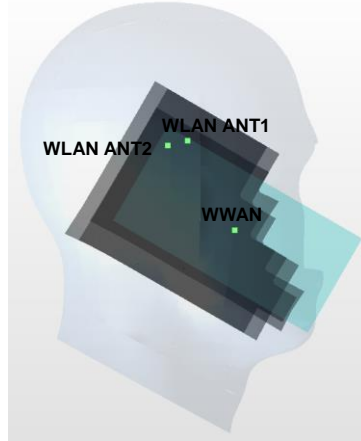
Case 11	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 25				X	Y	Z				
	WLAN2.4GHz Ant 2	Back	1.317	10	7.7	-56.5	-1.74	118.9	1.88	0.02	Not required
			0.561	10	17.99	62	-0.97				



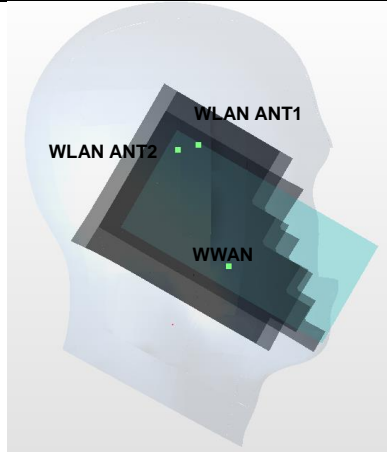
Case 12	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM850				X	Y	Z				
	WLAN5GHz Ant 1	Right Cheek	1.195	0	58.01	40.4	-2.63	74.4	1.90	0.04	Not required
			0.704	0	-14.36	25.03	5.21				
	WLAN5GHz Ant 2	Right Cheek	1.195	0	58.01	40.4	-2.63	78.4	1.75	0.03	Not required
			0.55	0	-17.38	20.48	5.23				



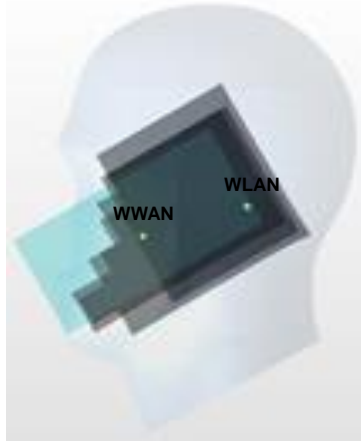
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
13	GSM850	Left Cheek	1.027	0	56.95	-41.93	-2.31	73.2	1.94	0.04	Not required
	WLAN5GHz Ant 1		0.914	0	7.97	12.43	-1.84				
	GSM850	Left Cheek	1.027	0	56.95	-41.93	-2.31	75.3	1.97	0.04	Not required
	WLAN5GHz Ant 2		0.946	0	24.87	26.24	-2.39				



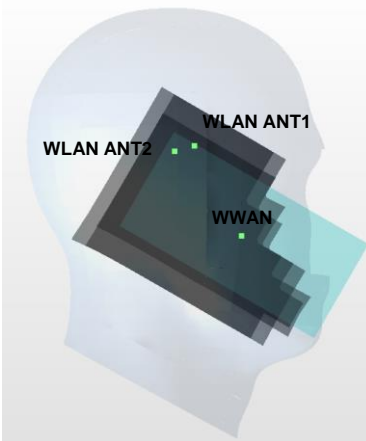
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
14	WCDMA II	Left Cheek	0.743	0	46.79	-52.92	-2.14	76.0	1.66	0.03	Not required
	WLAN5GHz Ant 1		0.914	0	7.97	12.43	-1.84				
	WCDMA II	Left Cheek	0.743	0	46.79	-52.92	-2.14	82.1	1.69	0.03	Not required
	WLAN5GHz Ant 2		0.946	0	24.87	26.24	-2.39				



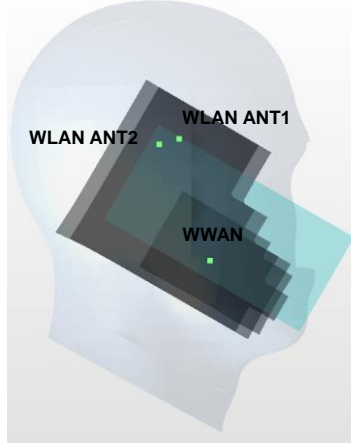
Case 15	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA V				X	Y	Z				
	WCDMA V	Right Cheek	0.949	0	59.06	48.01	-1.88	77.3	1.65	0.03	Not required
	WLAN5GHz Ant 1		0.704	0	-14.36	25.03	5.21				



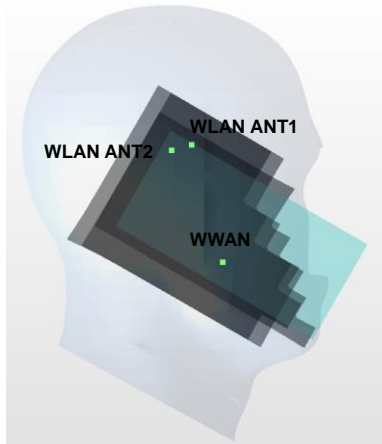
Case 16	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA V				X	Y	Z				
	WCDMA V	Left Cheek	0.891	0	56.15	-43.31	-2.52	73.7	1.81	0.03	Not required
	WLAN5GHz Ant 1		0.914	0	7.97	12.43	-1.84				
	WCDMA V	Left Cheek	0.891	0	56.15	-43.31	-2.52	76.3	1.84	0.03	Not required
	WLAN5GHz Ant 2		0.946	0	24.87	26.24	-2.39				



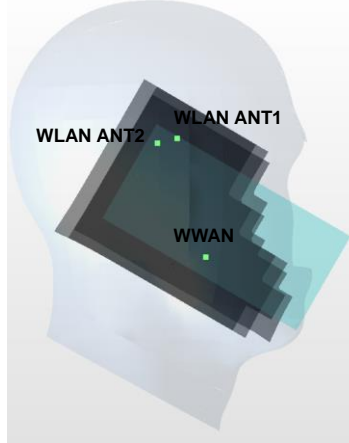
Case 17	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 7	Left Cheek	1.324	0	46.43	-57.39	-2.04				
WLAN5GHz Ant 1	0.914		0	7.97	12.43	-1.84					
LTE Band 7	Left Cheek	1.324	0	46.43	-57.39	-2.04	86.4	2.27	0.04	Not required	
WLAN5GHz Ant 2		0.946	0	24.87	26.24	-2.39					



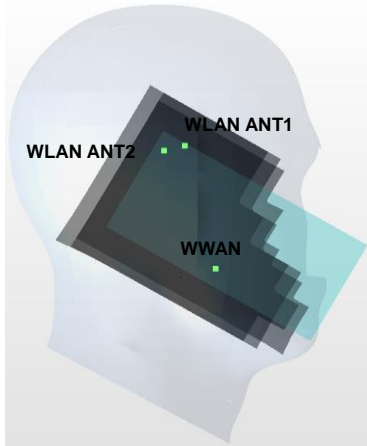
Case 18	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 25	Left Cheek	0.685	0	45.34	-52.21	-2.31				
WLAN5GHz Ant 1	0.914		0	7.97	12.43	-1.84					
LTE Band 25	Left Cheek	0.685	0	45.34	-52.21	-2.31	81.1	1.63	0.03	Not required	
WLAN5GHz Ant 2		0.946	0	24.87	26.24	-2.39					



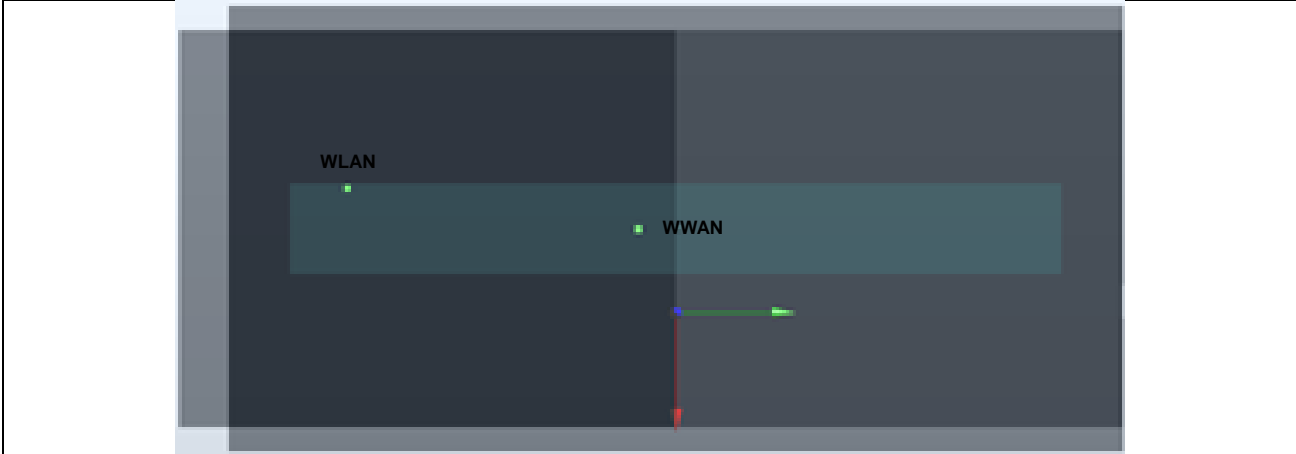
Case 19	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 38	Left Cheek	1.187	0	46.55	-57.18	-2.07				
WLAN5GHz Ant 1	0.914		0	7.97	12.43	-1.84					
LTE Band 38	Left Cheek	1.187	0	46.55	-57.18	-2.07	86.2	2.13	0.04	Not required	
WLAN5GHz Ant 2		0.946	0	24.87	26.24	-2.39					



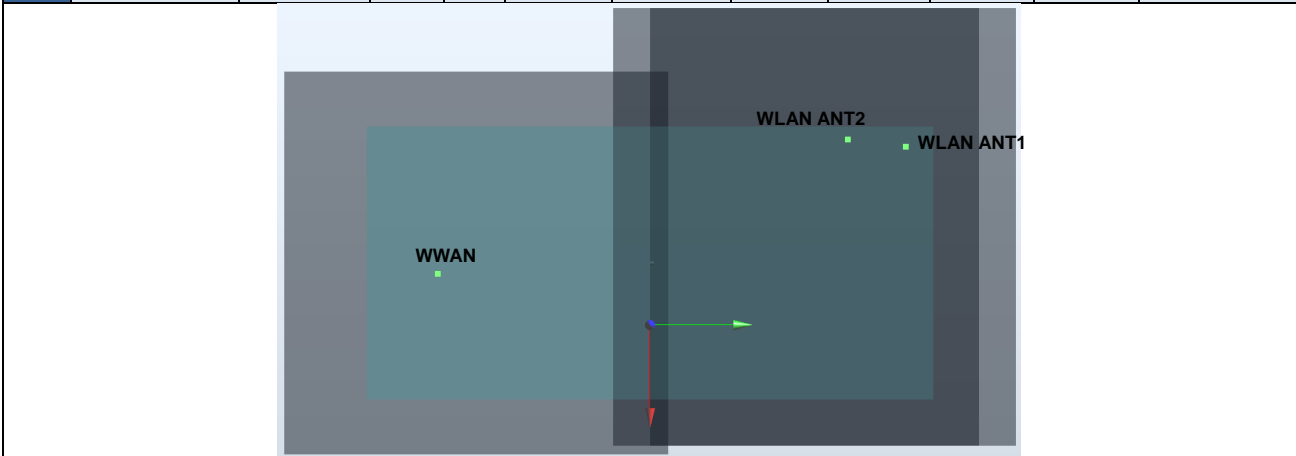
Case 20	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 41	Left Cheek	1.189	0	45.85	-54.7	-1.85				
WLAN5GHz Ant 1	0.914		0	7.97	12.43	-1.84					
LTE Band 41	Left Cheek	1.189	0	45.85	-54.7	-1.85	83.6	2.14	0.04	Not required	
WLAN5GHz Ant 2		0.946	0	24.87	26.24	-2.39					



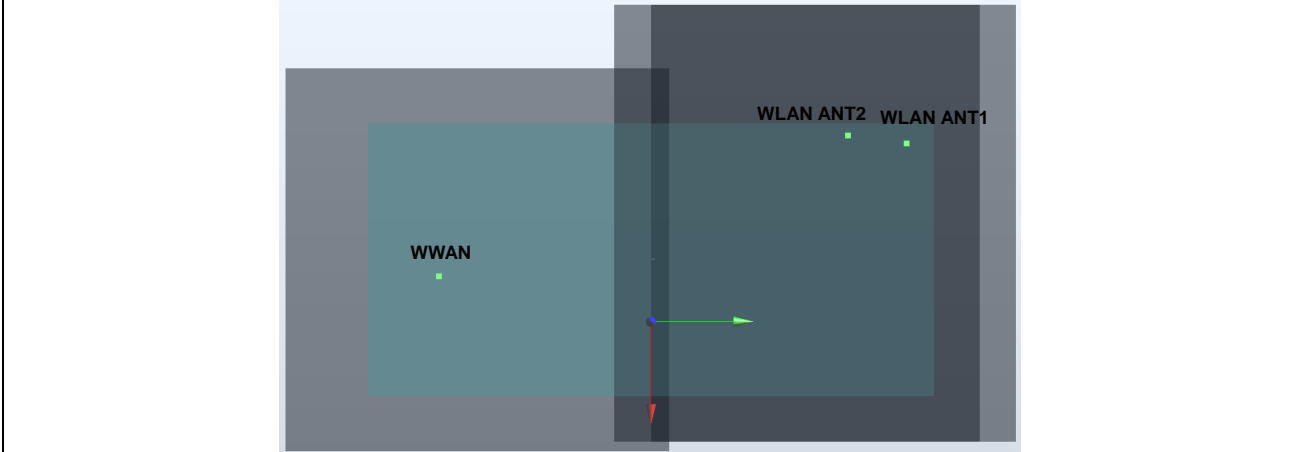
Case 21	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM850	Right Side	0.762	10	0.01	-9.13	-3.06	55.4	1.65	0.04	Not required
	WLAN5GHz Ant 2		0.888	10	-12	-63.2	-1.42				



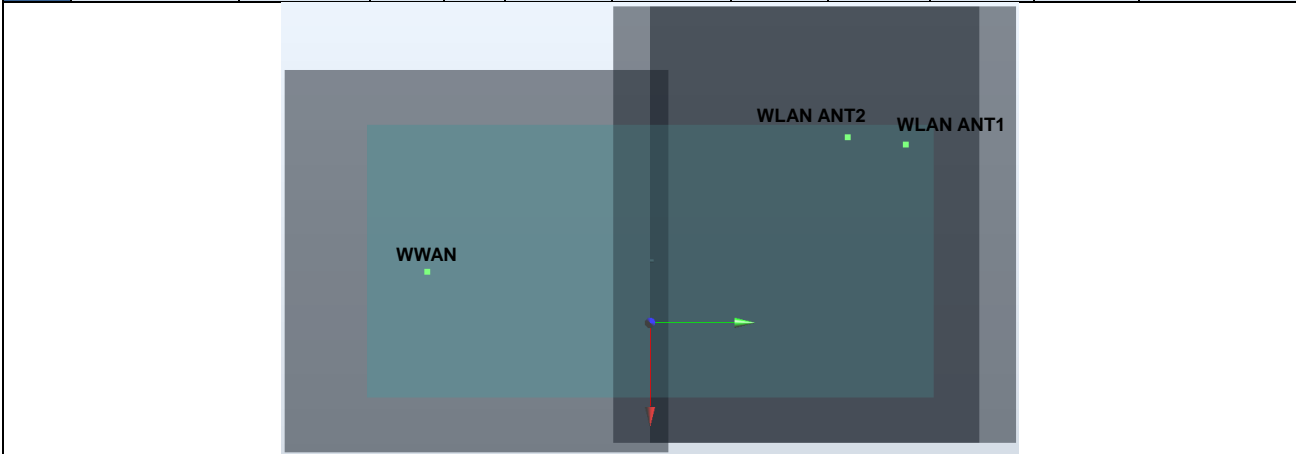
Case 22	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM1900	Back	1.31	10	7.8	-56.4	-1.75	131.4	1.97	0.02	Not required
	WLAN5GHz Ant 1		0.66	10	-28	70	-1.5				
	GSM1900	Back	1.31	10	7.8	-56.4	-1.75	119.4	2.11	0.03	Not required
	WLAN5GHz Ant 2		0.797	10	-35.6	54.8	-1.7				



Case 23	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA II				X	Y	Z				
	WLAN5GHz Ant 1	Back	1.25	10	7.7	-56.4	-1.77	131.3	1.91	0.02	Not required
WLAN5GHz Ant 2	Back	0.66	10	-28	70	-1.5					
WCDMA II	Back	1.25	10	7.7	-56.4	-1.77	119.3	2.05	0.02	Not required	
WLAN5GHz Ant 2		0.797	10	-35.6	54.8	-1.7					

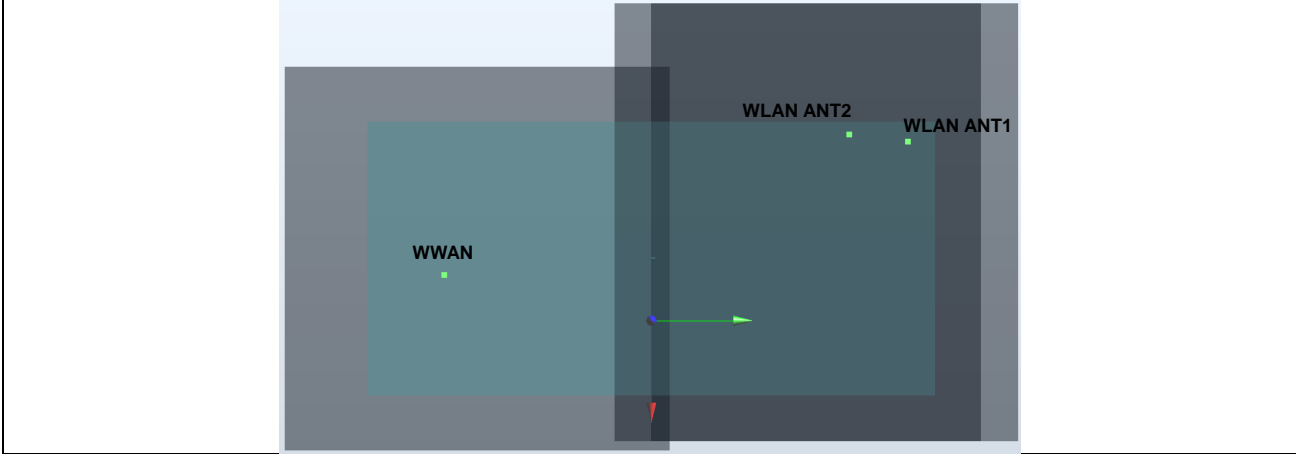


Case 24	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA IV				X	Y	Z				
	WLAN5GHz Ant 1	Back	1.187	10	3	-59.4	-1.75	133.1	1.85	0.02	Not required
WLAN5GHz Ant 2	Back	0.66	10	-28	70	-1.5					
WCDMA IV	Back	1.187	10	3	-59.4	-1.75	120.5	1.98	0.02	Not required	
WLAN5GHz Ant 2		0.797	10	-35.6	54.8	-1.7					

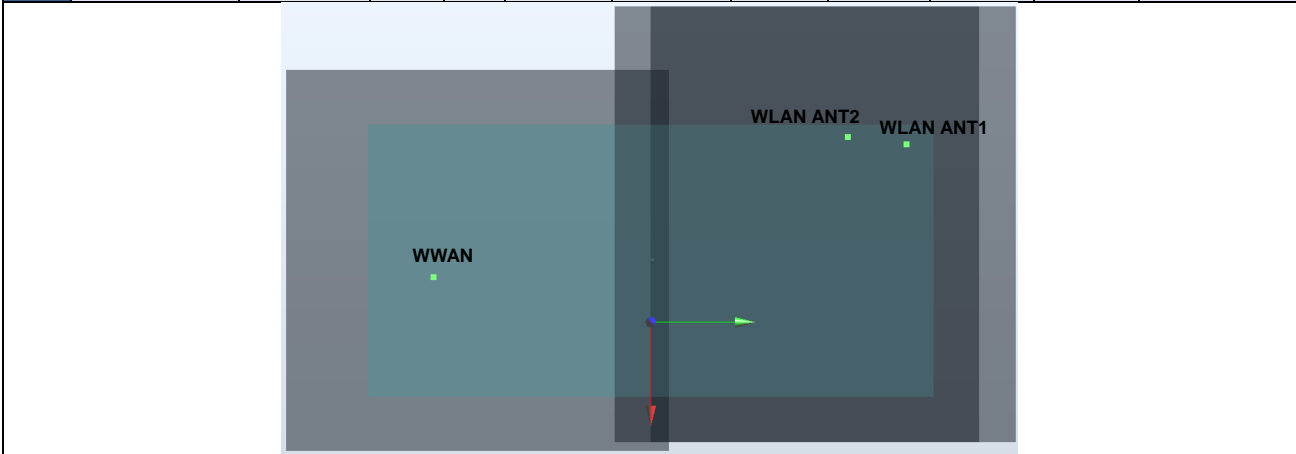




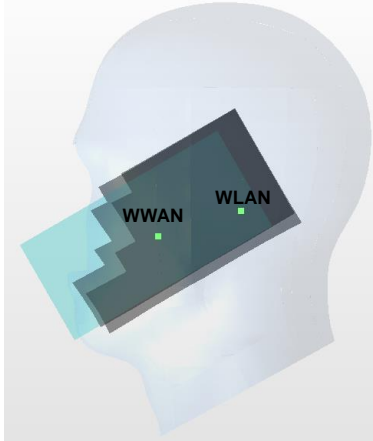
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
25	LTE Band 25	Back	1.317	10	7.7	-56.5	-1.74	131.4	1.98	0.02	Not required
	WLAN5GHz Ant 1		0.66	10	-28	70	-1.5				
	LTE Band 25	Back	1.317	10	7.7	-56.5	-1.74	119.4	2.11	0.03	Not required
	WLAN5GHz Ant 2		0.797	10	-35.6	54.8	-1.7				



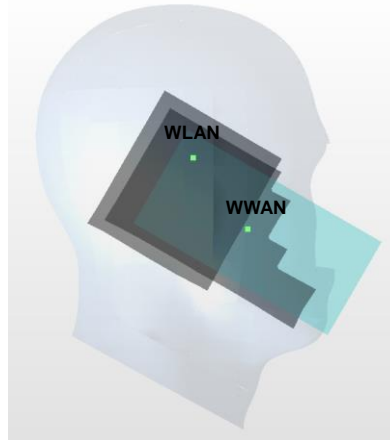
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
26	LTE Band 66	Back	0.99	10	4.5	-59.5	-1.69	133.5	1.65	0.02	Not required
	WLAN5GHz Ant 1		0.66	10	-28	70	-1.5				
	LTE Band 66	Back	0.99	10	4.5	-59.5	-1.69	121.1	1.79	0.02	Not required
	WLAN5GHz Ant 2		0.797	10	-35.6	54.8	-1.7				



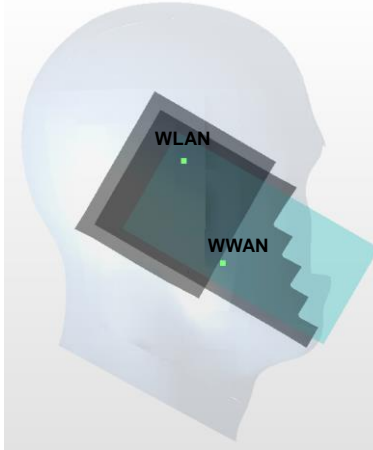
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
27	GSM850	Right Cheek	1.195	0	58.01	40.4	-2.63	58.7	1.72	0.04	Not required
	WLAN2.4GHz Ant 1+2		0.52	0	1.32	25.88	1.71				



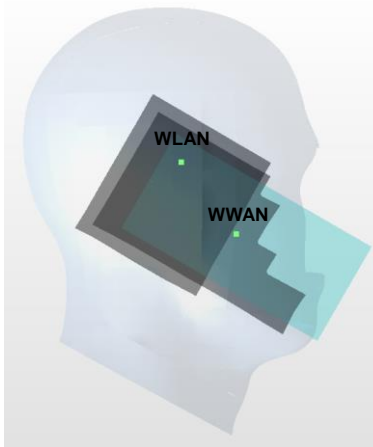
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
28	GSM850	Left Cheek	1.027	0	56.95	-41.93	-2.31	69.7	2.02	0.04	Not required
	WLAN2.4GHz Ant 1+2		0.99	0	18.06	15.87	-2.26				



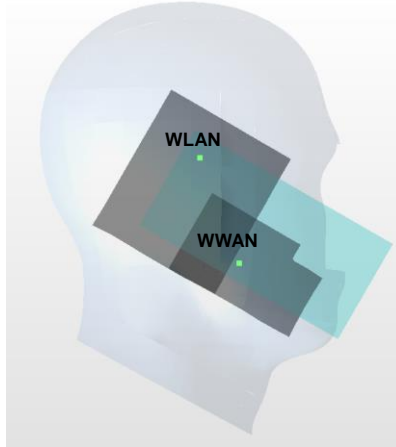
Case 29	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA II	Left Cheek	0.743	0	46.79	-52.92	-2.14	74.5	1.73	0.03	Not required
	WLAN2.4GHz Ant 1+2		0.99	0	18.06	15.87	-2.26				



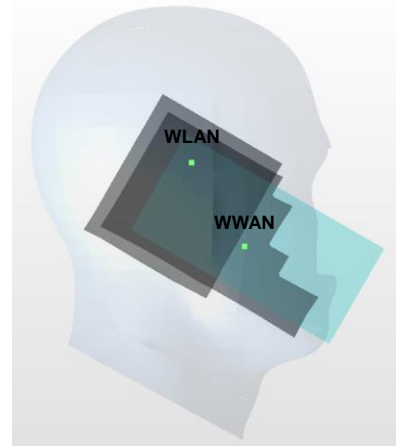
Case 30	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA V	Left Cheek	0.891	0	56.15	-43.31	-2.52	70.4	1.88	0.04	Not required
	WLAN2.4GHz Ant 1+2		0.99	0	18.06	15.87	-2.26				



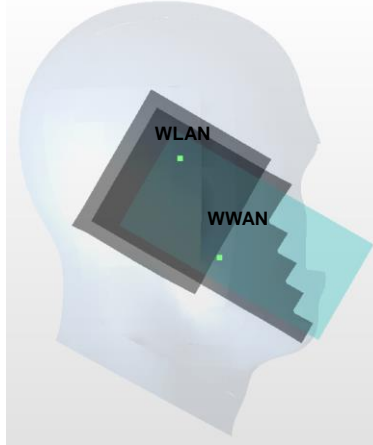
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
31	LTE Band 7	Left Cheek	1.324	0	46.43	-57.39	-2.04	78.6	2.31	0.04	Not required
	WLAN2.4GHz Ant 1+2		0.99	0	18.06	15.87	-2.26				



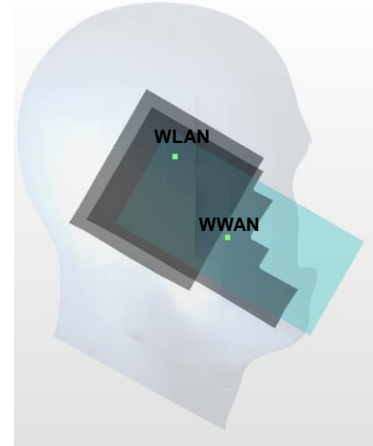
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
32	LTE Band 13	Left Cheek	0.625	0	53.35	-48.54	-3.81	73.5	1.62	0.03	Not required
	WLAN2.4GHz Ant 1+2		0.99	0	18.06	15.87	-2.26				



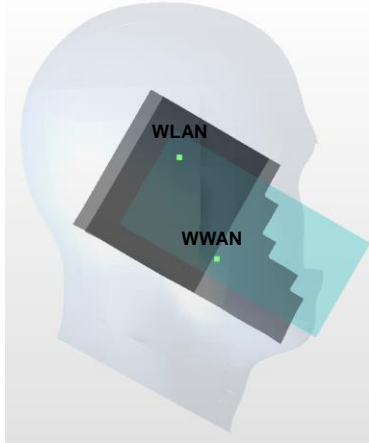
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
33	LTE Band 25	Left Cheek	0.685	0	45.34	-52.21	-2.31	73.3	1.68	0.03	Not required
	WLAN2.4GHz Ant 1+2		0.99	0	18.06	15.87	-2.26				



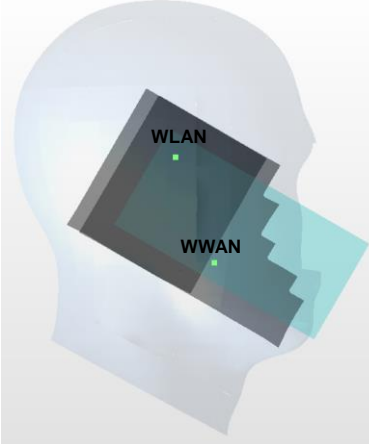
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
34	LTE Band 26	Left Cheek	0.616	0	50.96	-36.19	-3.26	61.6	1.61	0.03	Not required
	WLAN2.4GHz Ant 1+2		0.99	0	18.06	15.87	-2.26				



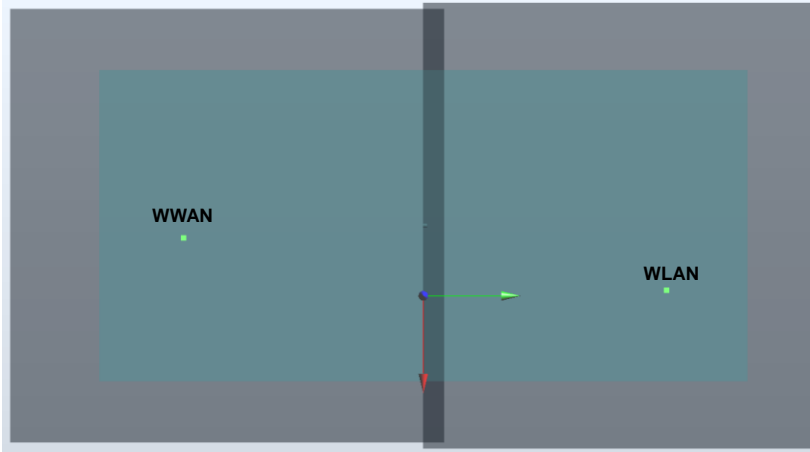
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
35	LTE Band 38	Left Cheek	1.187	0	46.55	-57.18	-2.07	78.4	2.18	0.04	Not required
	WLAN2.4GHz Ant 1+2		0.99	0	18.06	15.87	-2.26				



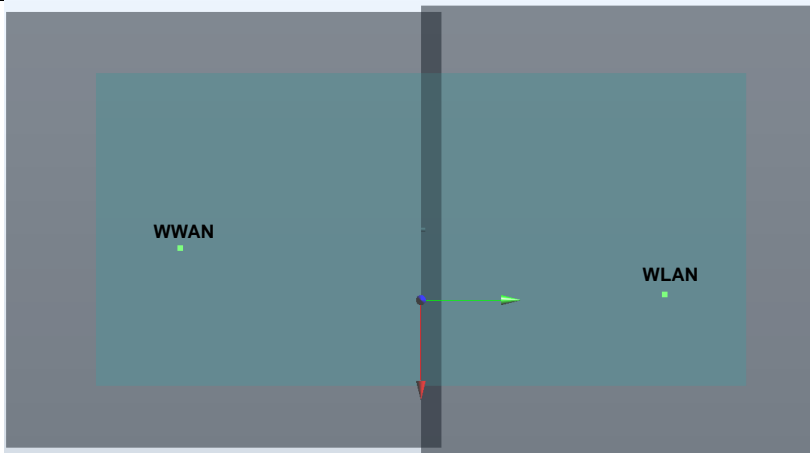
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
36	LTE Band 41	Left Cheek	1.189	0	45.85	-54.7	-1.85	75.8	2.18	0.04	Not required
	WLAN2.4GHz Ant 1+2		0.99	0	18.06	15.87	-2.26				



Case 37	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM1900				X	Y	Z				
	WLAN2.4G Ant 1+2	Back	0.504	10	15.56	59.8	-0.99	116.5	1.81	0.02	Not required

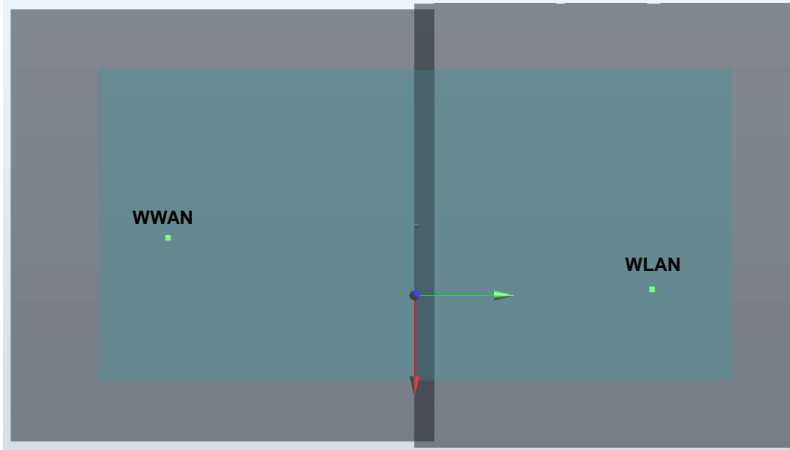


Case 38	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA II				X	Y	Z				
	WLAN2.4G Ant 1+2	Back	0.504	10	15.56	59.8	-0.99	116.5	1.75	0.02	Not required

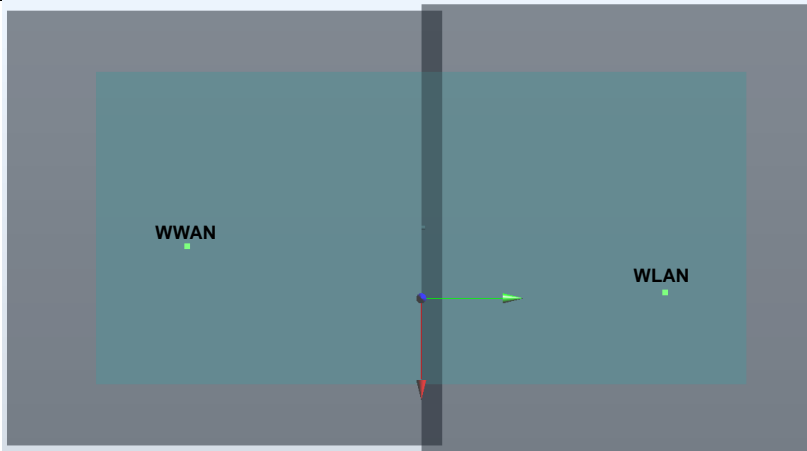




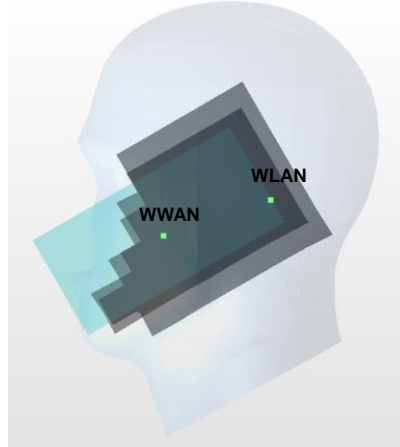
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
39	WCDMA IV	Back	1.187	10	3	-59.4	-1.75	119.9	1.69	0.02	Not required
	WLAN2.4G Ant 1+2		0.504	10	15.56	59.8	-0.99				



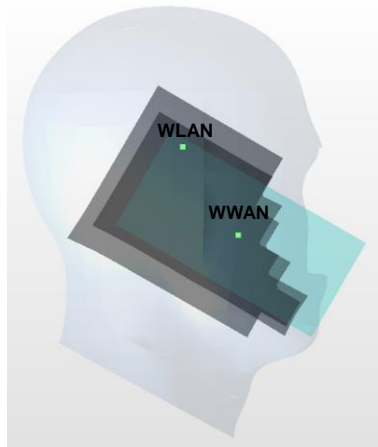
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
40	LTE Band 25	Back	1.317	10	7.7	-56.5	-1.74	116.6	1.82	0.02	Not required
	WLAN2.4G Ant 1+2		0.504	10	15.56	59.8	-0.99				



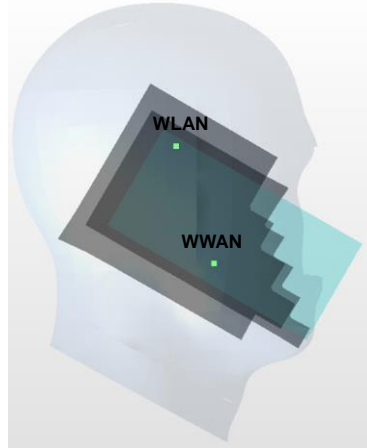
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
41	GSM850	Right Cheek	1.195	0	58.01	40.4	-2.63	77.4	2.06	0.04	Not required
	WLAN5GHz Ant 1+2		0.868	0	-16.75	21.79	5.27				



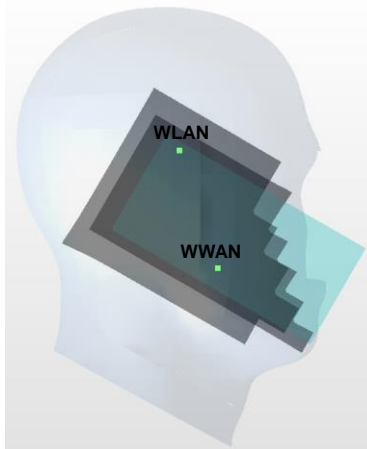
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
42	GSM850	Left Cheek	1.027	0	56.95	-41.93	-2.31	73.2	2.14	0.04	Not required
	WLAN5GHz Ant 1+2		1.117	0	28.89	25.73	-2.26				



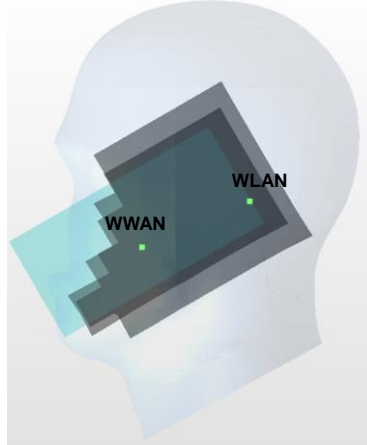
Case 43	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM1900	Left Cheek	0.519	0	46.2	-50.75	-2.41	78.4	1.64	0.03	Not required
	WLAN5GHz Ant 1+2		1.117	0	28.89	25.73	-2.26				



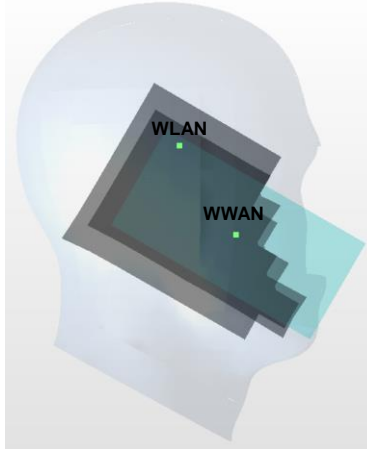
Case 44	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA II	Left Cheek	0.743	0	46.79	-52.92	-2.14	80.7	1.86	0.03	Not required
	WLAN5GHz Ant 1+2		1.117	0	28.89	25.73	-2.26				



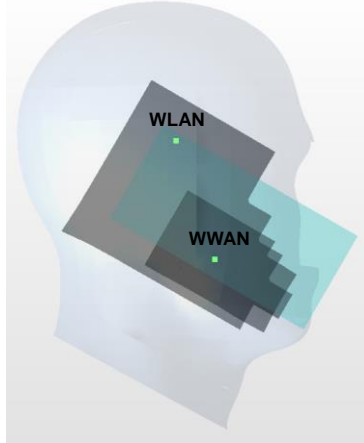
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
45	WCDMA V	Right Cheek	0.949	0	59.06	48.01	-1.88	80.5	1.82	0.03	Not required
	WLAN5GHz Ant 1+2		0.868	0	-16.75	21.79	5.27				



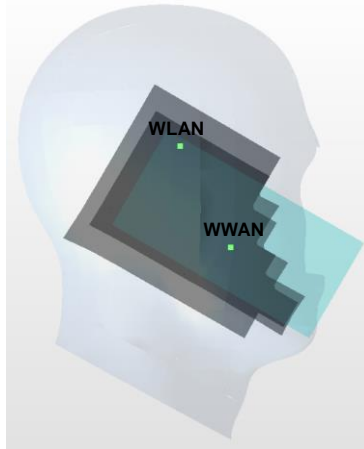
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
46	WCDMA V	Left Cheek	0.891	0	56.15	-43.31	-2.52	74.2	2.01	0.04	Not required
	WLAN5GHz Ant 1+2		1.117	0	28.89	25.73	-2.26				



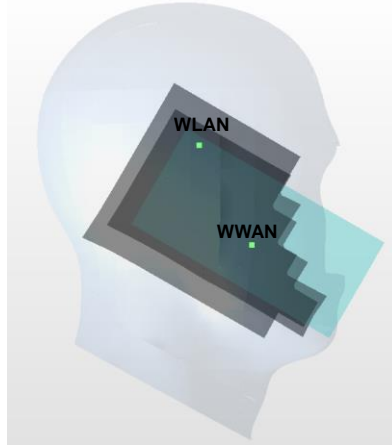
Case 47	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 7	Left Cheek	1.324	0	46.43	-57.39	-2.04	85.0	2.44	0.04	Not required
	WLAN5GHz Ant 1+2		1.117	0	28.89	25.73	-2.26				



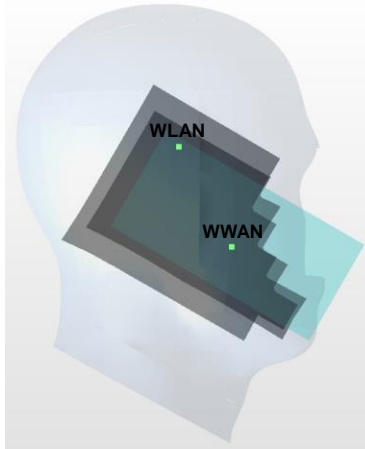
Case 48	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 12	Left Cheek	0.577	0	56.83	-44.92	-1.45	76.0	1.69	0.03	Not required
	WLAN5GHz Ant 1+2		1.117	0	28.89	25.73	-2.26				



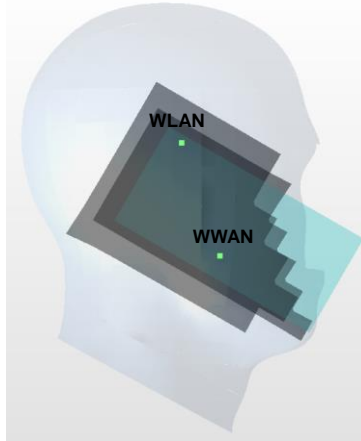
Case 49	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 13	Left Cheek	0.625	0	53.35	-48.54	-3.81	78.2	1.74	0.03	Not required
	WLAN5GHz Ant 1+2		1.117	0	28.89	25.73	-2.26				



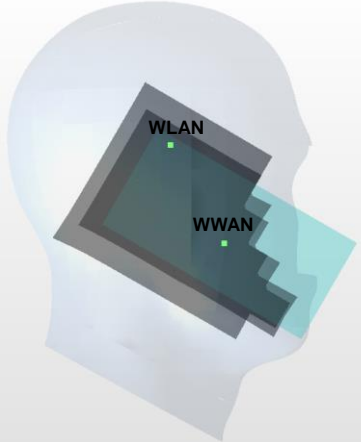
Case 50	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 14	Left Cheek	0.592	0	54.66	-49.38	-3.6	79.4	1.71	0.03	Not required
	WLAN5GHz Ant 1+2		1.117	0	28.89	25.73	-2.26				



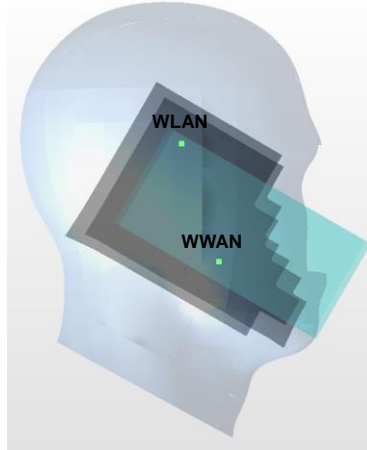
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
51	LTE Band 25	Left Cheek	0.685	0	45.34	-52.21	-2.31	79.7	1.80	0.03	Not required
	WLAN5GHz Ant 1+2		1.117	0	28.89	25.73	-2.26				



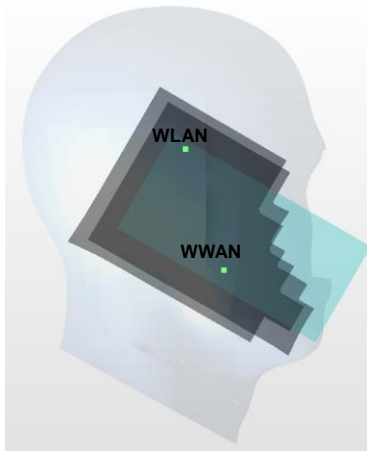
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
52	LTE Band 26	Left Cheek	0.616	0	50.96	-36.19	-3.26	65.7	1.73	0.03	Not required
	WLAN5GHz Ant 1+2		1.117	0	28.89	25.73	-2.26				



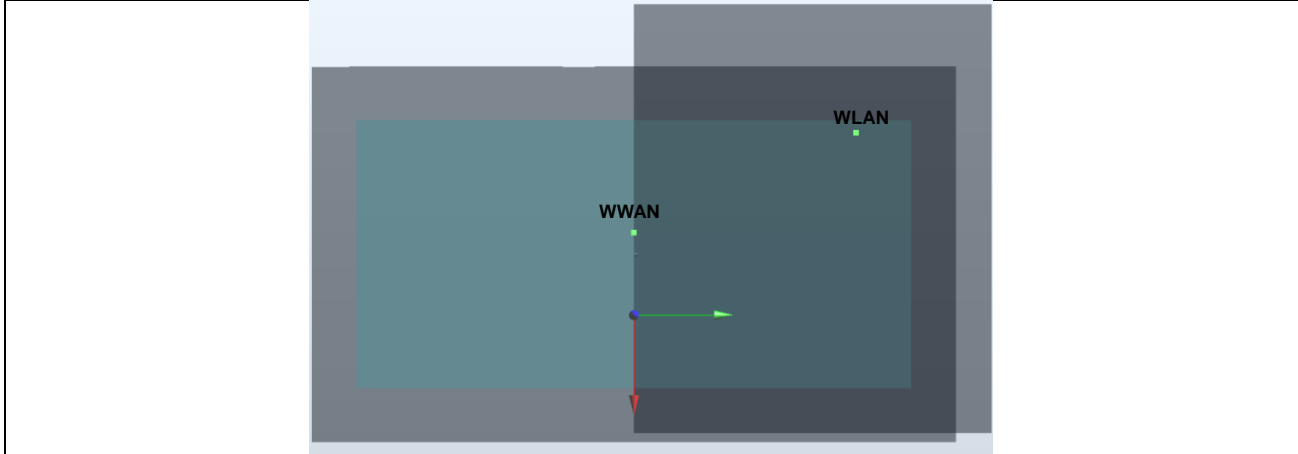
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
53	LTE Band 38	Left Cheek	1.187	0	46.55	-57.18	-2.07	84.8	2.30	0.04	Not required
	WLAN5GHz Ant 1+2		1.117	0	28.89	25.73	-2.26				



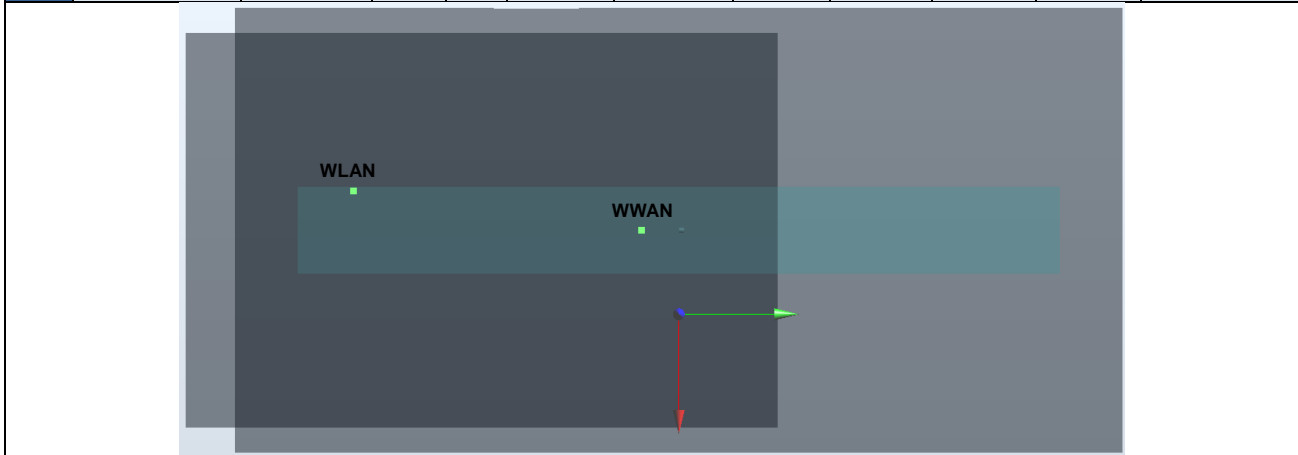
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
54	LTE Band 41	Left Cheek	1.189	0	45.85	-54.7	-1.85	82.2	2.31	0.04	Not required
	WLAN5GHz Ant 1+2		1.117	0	28.89	25.73	-2.26				



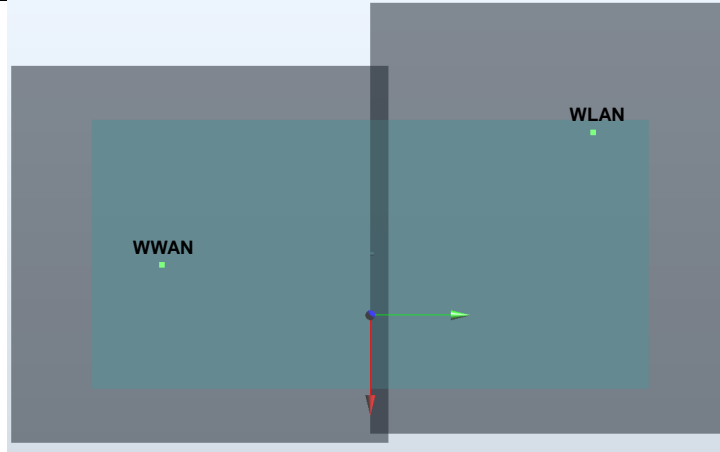
Case 55	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM850				X	Y	Z				
	WLAN5G Ant 1+2	Back	0.668	10	-12.39	-1.63	-2.98	63.7	1.63	0.03	Not required
	WLAN5G Ant 1+2		0.964	10	-34.8	58	-1.63				



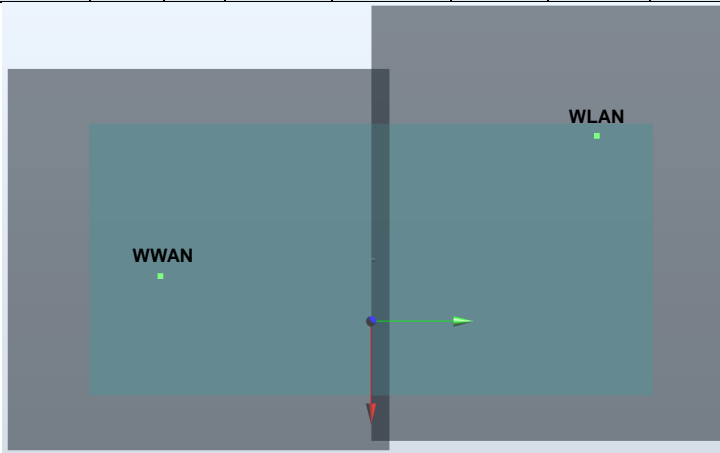
Case 56	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM850				X	Y	Z				
	WLAN5G Ant 1+2	Right Side	0.762	10	0.01	-9.13	-3.06	56.2	1.65	0.04	Not required
	WLAN5G Ant 1+2		0.891	10	-8.8	-63.6	-13.8				



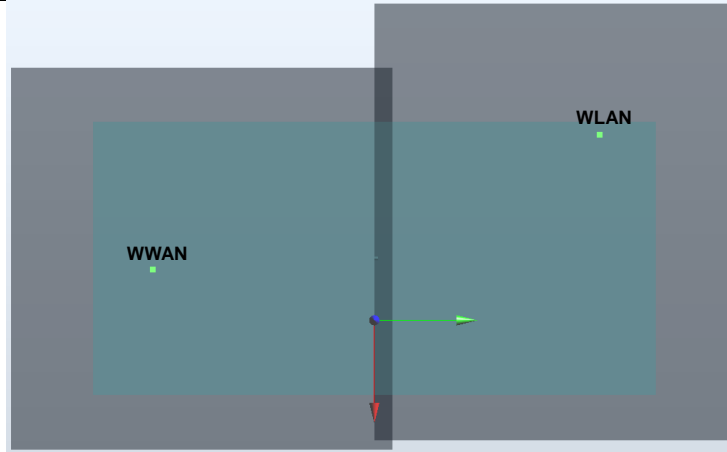
Case 57	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM1900	Back	1.31	10	7.8	-56.4	-1.75	122.1	2.27	0.03	Not required
	WLAN5G Ant 1+2		0.964	10	-34.8	58	-1.63				



Case 58	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA II	Back	1.25	10	7.7	-56.4	-1.77	122.0	2.21	0.03	Not required
	WLAN5G Ant 1+2		0.964	10	-34.8	58	-1.63				



Case 59	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA IV				X	Y	Z				
	WLAN5G Ant 1+2	Back	0.964	10	-34.8	58	-1.63	123.3	2.15	0.03	Not required
			1.187	10	3	-59.4	-1.75				



Case 60	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA V				X	Y	Z				
	WLAN5G Ant 1+2	Back	0.964	10	-34.8	58	-1.63	59.3	1.62	0.03	Not required
			0.652	10	-13.67	2.6	-2.8				



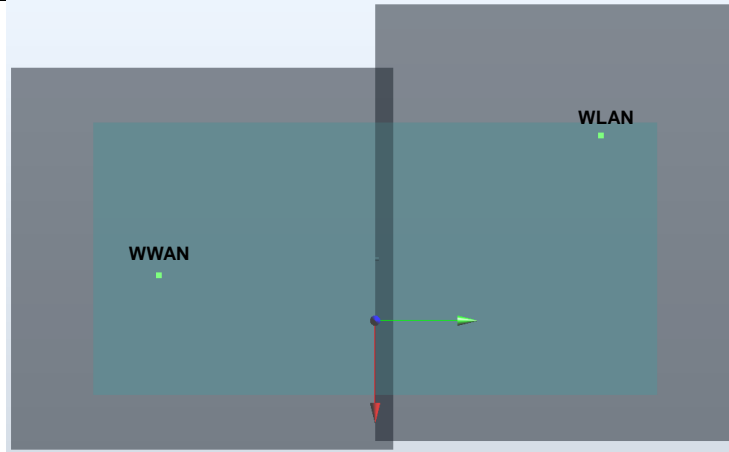
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
61	LTE Band 7	Back	0.784	10	26.24	-45.82	-2.36	120.4	1.75	0.02	Not required
	WLAN5G Ant 1+2		0.964	10	-34.8	58	-1.63				



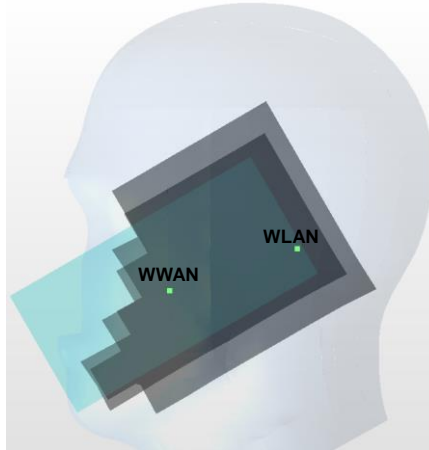
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
62	LTE Band 25	Back	1.317	10	7.7	-56.5	-1.74	122.1	2.28	0.03	Not required
	WLAN5G Ant 1+2		0.964	10	-34.8	58	-1.63				



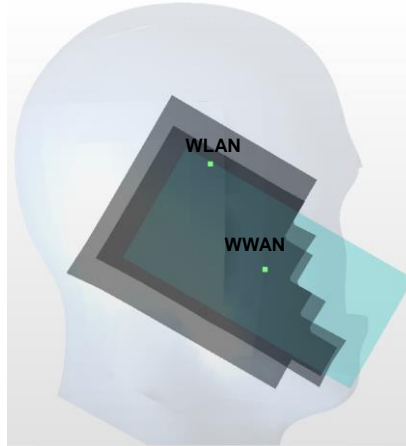
Case 63	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 66	Back	0.99	10	4.5	-59.5	-1.69	123.9	1.95	0.02	Not required
	WLAN5G Ant 1+2		0.964	10	-34.8	58	-1.63				



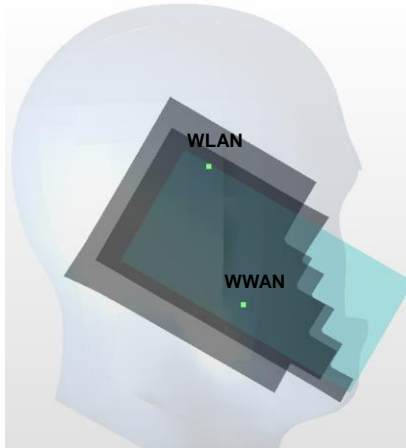
Case 64	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM850	Right Cheek	1.195	0	58.01	40.4	-2.63	78.4	1.83	0.03	Not required
	WLAN5GHz Ant 2+BT Ant1		0.634	0	-17.38	20.48	5.23				
	GSM850	Right Cheek	1.195	0				124.0	1.83	0.02	Not required
	WLAN5GHz Ant 2+BT Ant1		0.634	0							



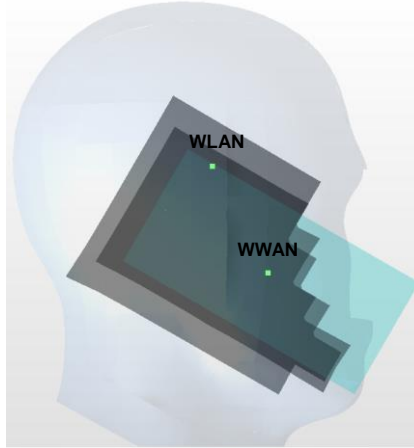
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
65	GSM850	Left Cheek	1.027	0	56.95	-41.93	-2.31	75.3	2.06	0.04	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0	24.87	26.24	-2.39				
	GSM850	Left Cheek	1.027	0				124.0	2.06	0.02	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0							



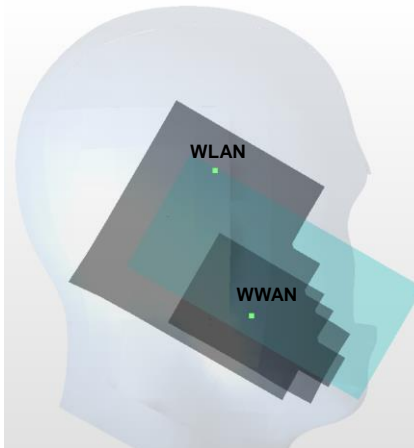
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
66	WCDMA II	Left Cheek	0.743	0	46.79	-52.92	-2.14	82.1	1.77	0.03	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0	24.87	26.24	-2.39				
	WCDMA II	Left Cheek	0.743	0				124.0	1.77	0.02	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0							



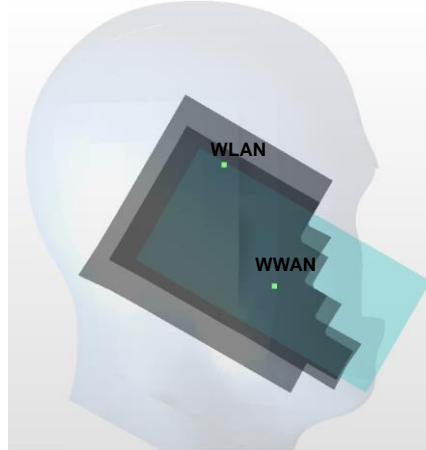
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
67	WCDMA V	Left Cheek	0.891	0	56.15	-43.31	-2.52	76.3	1.92	0.03	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0	24.87	26.24	-2.39				
	WCDMA V	Left Cheek	0.891	0				124.0	1.92	0.02	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0							



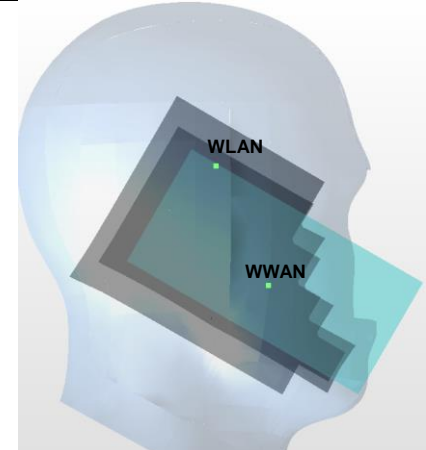
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
68	LTE Band 7	Left Cheek	1.324	0	46.43	-57.39	-2.04	86.4	2.35	0.04	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0	24.87	26.24	-2.39				
	LTE Band 7	Left Cheek	1.324	0				124.0	2.35	0.03	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0							



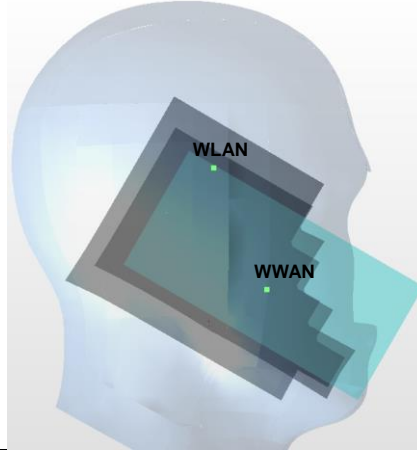
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
69	LTE Band 12	Left Cheek	0.577	0	56.83	-44.92	-1.45	78.0	1.61	0.03	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0	24.87	26.24	-2.39				
	LTE Band 12	Left Cheek	0.577	0				124.0	1.61	0.02	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0							



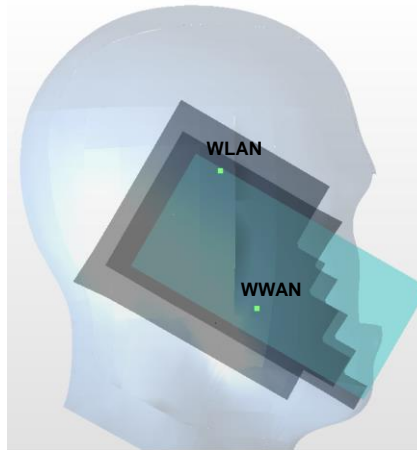
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
70	LTE Band 13	Left Cheek	0.625	0	53.35	-48.54	-3.81	80.0	1.66	0.03	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0	24.87	26.24	-2.39				
	LTE Band 13	Left Cheek	0.625	0				124.0	1.66	0.02	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0							



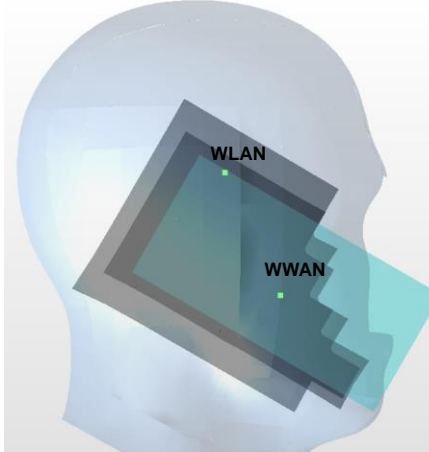
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
71	LTE Band 14	Left Cheek	0.592	0	54.66	-49.38	-3.6	81.3	1.62	0.03	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0	24.87	26.24	-2.39				
	LTE Band 14	Left Cheek	0.592	0				124.0	1.62	0.02	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0							



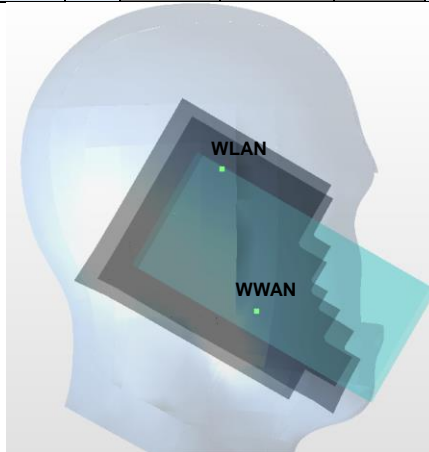
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
72	LTE Band 25	Left Cheek	0.685	0	45.34	-52.21	-2.31	81.1	1.72	0.03	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0	24.87	26.24	-2.39				
	LTE Band 25	Left Cheek	0.685	0				124.0	1.72	0.02	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0							



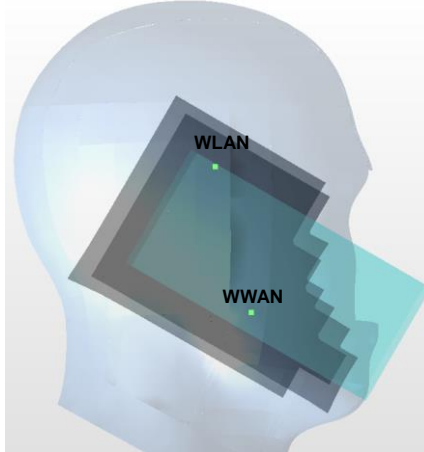
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
73	LTE Band 26	Left Cheek	0.616	0	50.96	-36.19	-3.26	67.7	1.65	0.03	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0	24.87	26.24	-2.39				
	LTE Band 26	Left Cheek	0.616	0				124.0	1.65	0.02	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0							



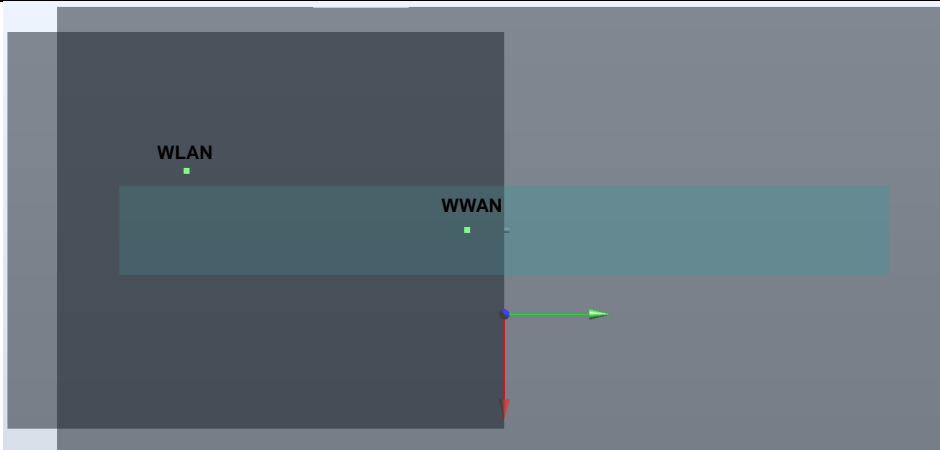
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
74	LTE Band 38	Left Cheek	1.187	0	46.55	-57.18	-2.07	86.2	2.22	0.04	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0	24.87	26.24	-2.39				
	LTE Band 38	Left Cheek	1.187	0				124.0	2.22	0.03	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0							



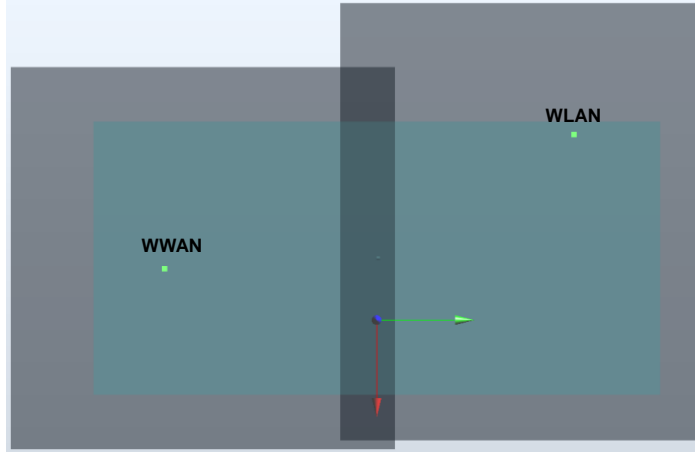
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
75	LTE Band 41	Left Cheek	1.189	0	45.85	-54.7	-1.85	83.6	2.22	0.04	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0	24.87	26.24	-2.39				
	LTE Band 41	Left Cheek	1.189	0				124.0	2.22	0.03	Not required
	WLAN5GHz Ant 2+BT Ant1		1.03	0							



Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
76	GSM850	Right Side	0.762	10	0.01	-9.13	-3.06	55.4	1.69	0.04	Not required
	WLAN5GHz Ant 2+BT Ant1		0.93	10	-12	-63.2	-1.42				
	GSM850	Right Side	0.762	10				124.0	1.69	0.02	Not required
	WLAN5GHz Ant 2+BT Ant1		0.93	10							



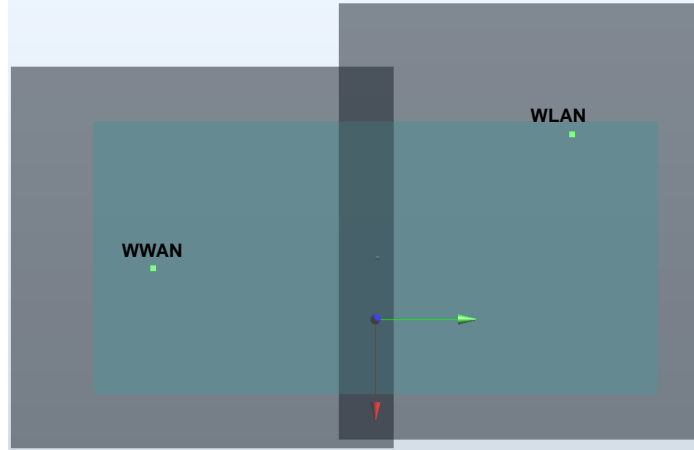
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
77	GSM1900	Back	1.31	10	7.8	-56.4	-1.75	119.4	2.15	0.03	Not required
	WLAN5GHz Ant 2+BT Ant1		0.839	10	-35.6	54.8	-1.7				
	GSM1900	Back	1.31	10				124.0	2.15	0.03	Not required
	WLAN5GHz Ant 2+BT Ant1		0.839	10							



Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
78	WCDMA II	Back	1.25	10	7.7	-56.4	-1.77	119.3	2.09	0.03	Not required
	WLAN5GHz Ant 2+BT Ant1		0.839	10	-35.6	54.8	-1.7				
	WCDMA II	Back	1.25	10				124.0	2.09	0.02	Not required
	WLAN5GHz Ant 2+BT Ant1		0.839	10							



Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
79	WCDMA IV	Back	1.187	10	3	-59.4	-1.75	120.5	2.03	0.02	Not required
	WLAN5GHz Ant 2+BT Ant1		0.839	10	-35.6	54.8	-1.7				
	WCDMA IV	Back	1.187	10				124.0	2.03	0.02	Not required
	WLAN5GHz Ant 2+BT Ant1		0.839	10							



Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
80	LTE Band 7	Back	0.784	10	26.24	-45.8	-2.36	118.1	1.62	0.02	Not required
	WLAN5GHz Ant 2+BT Ant1		0.839	10	-35.6	54.8	-1.7				
	LTE Band 7	Back	0.784	10				124.0	1.62	0.02	Not required
	WLAN5GHz Ant 2+BT Ant1		0.839	10							



Test Engineer : Nick Yu Galen Chang Iran Wang Kurt Liu Steven Chang Wilson Lin Willy Yu Andy Jiang
 Randy Lin Neil Hsiang Carter Chuang and Tom Jiang



16. Uncertainty Assessment

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

17. References

- [1] FCC 47 CFR Part 2 "Frequency Allocations and Radio Treaty Matters; General Rules and Regulations"
- [2] ANSI/IEEE Std. C95.1-1992, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz", September 1992
- [3] IEEE Std. 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", Sep 2013
- [4] SPEAG DASY System Handbook
- [5] FCC KDB 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.