



FCC SAR TEST REPORT

FCC ID : IHDT56YR2
Equipment : Mobile Cellular Phone
Brand Name : Motorola
Applicant : Motorola Mobility LLC
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA
Manufacturer : Motorola Mobility LLC
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA
Standard : FCC 47 CFR Part 2 (2.1093)
ANSI/IEEE C95.1-1992
IEEE 1528-2013

The product was received on Mar. 26, 2020 and testing was started from Apr. 07, 2020 and completed on Apr. 17, 2020. 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 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

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History of this test report

Report No.	Version	Description	Issued Date
FA011732-01	01	Initial issue of report	Apr. 29, 2020



1. Statement of Compliance

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

Equipment Class	Frequency Band	Highest SAR Summary				Highest Simultaneous Transmission 1g SAR (W/kg)
		Head (Separation 0mm)	Body-worn (Separation 5mm)	Hotspot (Separation 5mm)	Product Specific (Separation 0mm)	
		1g SAR (W/kg)			10g SAR (W/kg)	
Licensed	GSM850	0.39	1.21	1.21	1.29	1.56
	GSM1900	0.25	1.30	1.30	1.63	
	WCDMA II	0.23	1.33	1.33	3.14	
	WCDMA IV	0.37	1.23	1.40	3.02	
	WCDMA V	0.38	1.26	1.26	1.77	
	LTE Band 2	0.34	1.26	1.32	3.02	
	LTE Band 5	0.44	1.24	1.24	1.11	
	LTE Band 7	0.23	1.21	1.35	3.15	
LTE Band 4 / 66	0.30	1.22	1.34	3.03		
DTS	2.4GHz WLAN	0.50	1.10	1.10	1.45	1.51
NII	5GHz WLAN	0.75	1.26	1.26	1.61	1.53
DSS	Bluetooth	0.09	0.23	0.23		1.56
Date of Testing:		2020/4/7 ~ 2020/4/17				

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 for Partial-Body 1g SAR, 4.0 W/kg for Product Specific 10g SAR) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications

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 D06 Hotspot Mode SAR v02r01
- FCC KDB 941225 D07 UMPC Mini Tablet v01r02



3. Equipment Under Test (EUT) Information

3.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
FCC ID	IHDT56YR2
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 66: 1710 MHz ~ 1780 MHz WLAN 2.4GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.6GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8GHz Band: 5725 MHz ~ 5825 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA LTE: QPSK, 16QAM, 64QAM WLAN: 802.11a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype
Remark:	
<ol style="list-style-type: none"> This device WLAN 2.4GHz/5.2GHz/5.8GHz supports Hotspot operation and Bluetooth support tethering applications. The device implements the power management for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity) and the device will manage to ensure the averaged power level not exceeding the associated tune-up power table. Proximity sensors are used to detect the exposure conditions and the verification is illustrated in section 4. Details about the power management decision are provided in the operational description. 	

Accessories Information				
Earphone 1	Brand Name	Motorola(Lianyun)	Model Name	MI181 (SH38C37773)
Earphone 2	Brand Name	Motorola(Cosonic)	Model Name	MI181 (SH38C44959)



3.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																															
FCC ID	IHDT56YR2																																																														
Equipment Name	Mobile Cellular Phone																																																														
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 66: 1710 MHz ~ 1780 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 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	Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3																																																														
	<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" style="text-align: center;">≥ 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 / Body-worn and extremity mode that LTE B2/B4/B5/B7/B66 power reduction applied to satisfy SAR compliance.																																																														

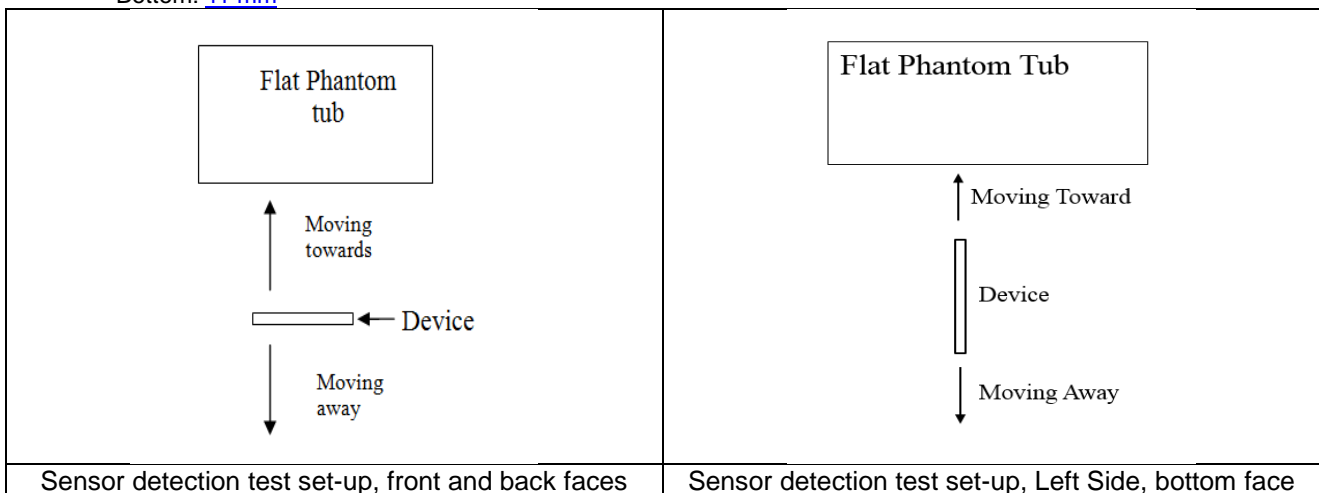


Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900
LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 5												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829				
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5				
H	20643	848.3	20635	847.5	20625	846.5	20600	844				
LTE Band 7												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510				
M	21100	2535	21100	2535	21100	2535	21100	2535				
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560				
LTE Band 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

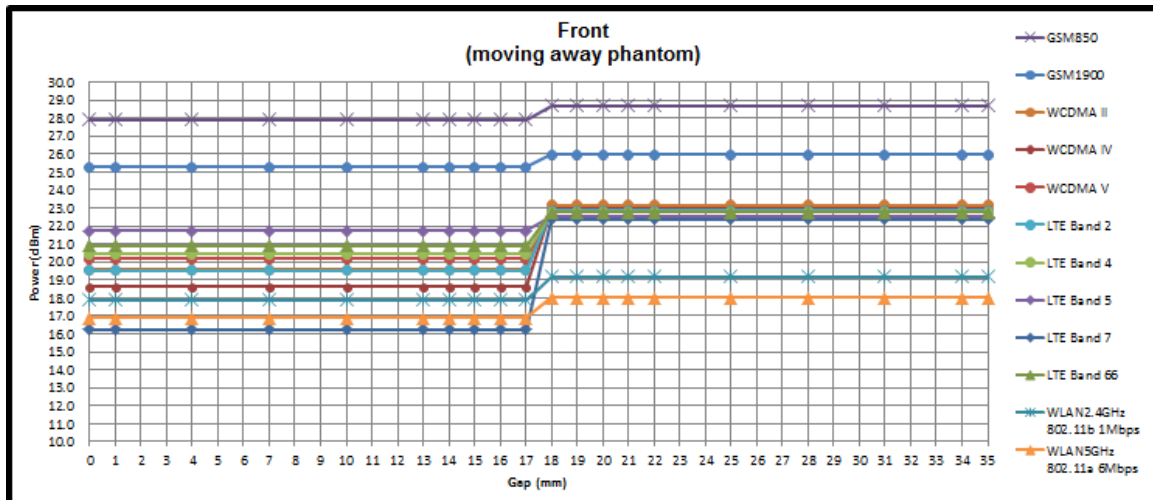
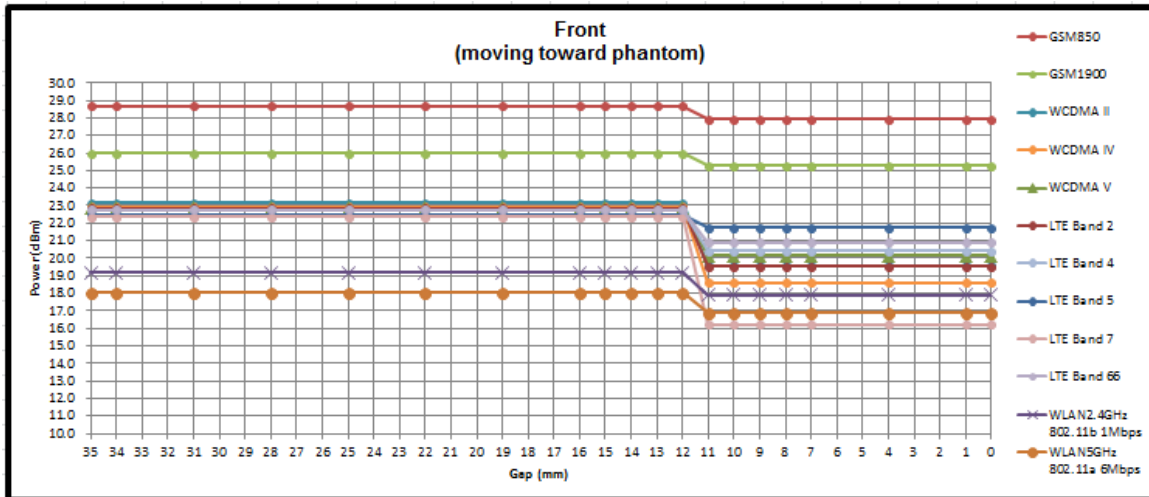
4. Proximity Sensor Triggering Test

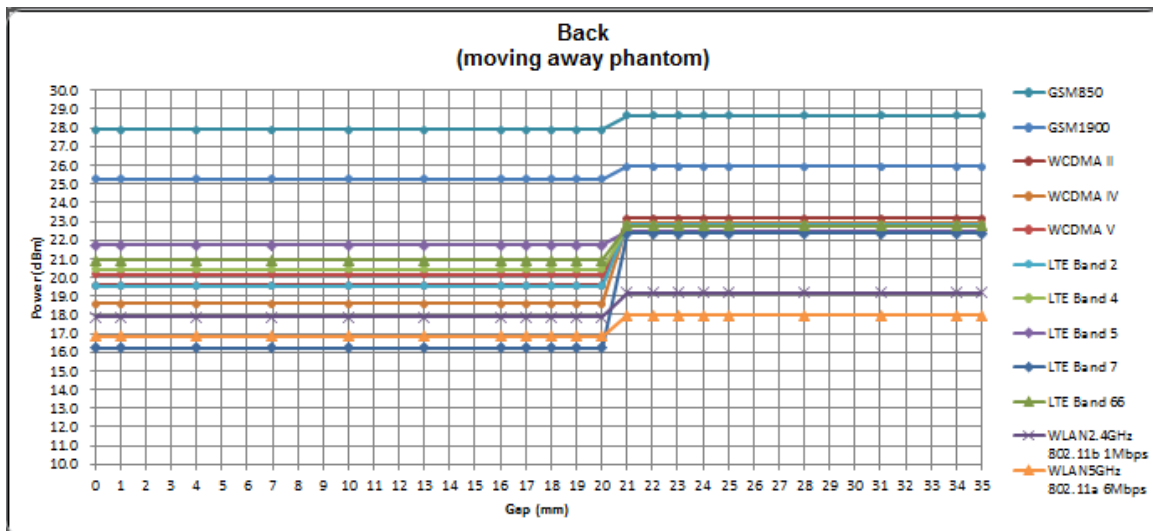
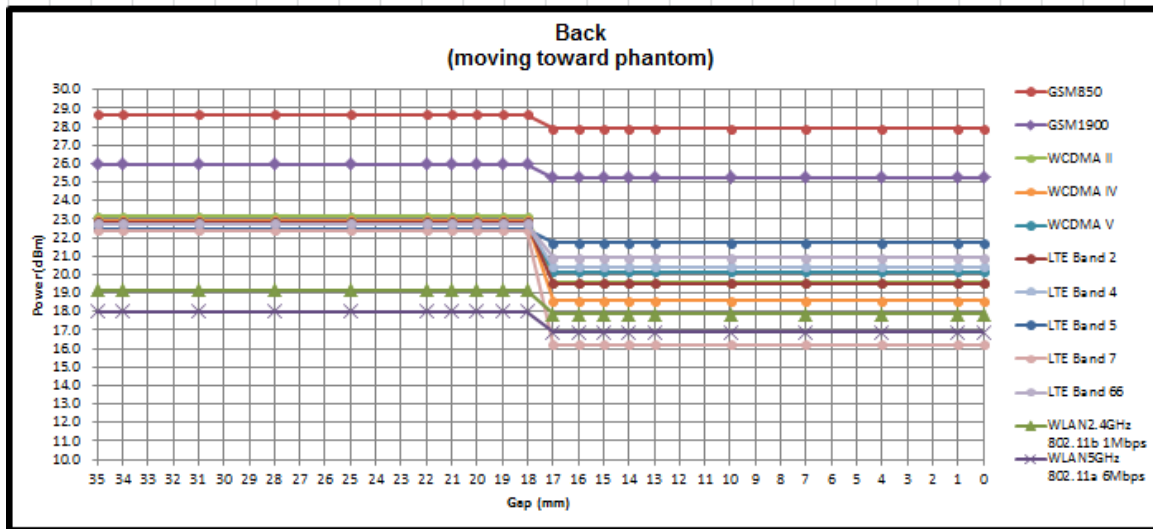
<Proximity Sensor Triggering Distance>:

1. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed and the tissue-equivalent medium for highest frequency (2600MHz) and lowest (750MHz) frequency was used for proximity sensor triggering testing.
2. Capacitive proximity sensors placed coincident with antenna elements at the top and bottom ends of the phone are utilized to determine when the device comes in proximity of the user's body at the front or back and extremity at bottom side of the device.
3. The output power will reduce to body worn and extremity power level when top and bottom sensor pad be detected.
4. The sensors used to detect the proximity of the user's body (Body-Worn condition) at the front or back surface and extremity (Product Specific condition) at bottom side of the device use a detection threshold distance. The data shown in the sections below shows the distance(s).
5. The device additionally employs proximity sensors that detect the presence of tissue near the currently active transmit antenna (if that antenna may require reduced power relative the Default power table in order to meet extremity SAR limits). The control logic is such that, if the Body-Worn, At-Head or WiFi Hotspot conditions are not detected, but tissue (as a finger or hand, for example) is detected near the transmitting antenna, the Handheld Reduced power table will be applied
6. When the sensor is active, the device will reduced maximum output powers on the GSM850/GSM1900, WCDMA B2/B4/B5 and LTE B2/B4/B5/B7/B66 and 2.4GHz/5GHz WLAN transmitter.
7. Body-worn/Hotspot SAR was tested at 5mm separation and extremity SAR was tested at 0mm separation, at the reduced power level in each associated power table. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed:
 - a. For Body-worn:
 - Front: [10 mm](#)
 - Back: [16 mm](#)
 - b. For Extremity::
 - Front: [5 mm](#)
 - Back: [9 mm](#)
 - Bottom: [11 mm](#)

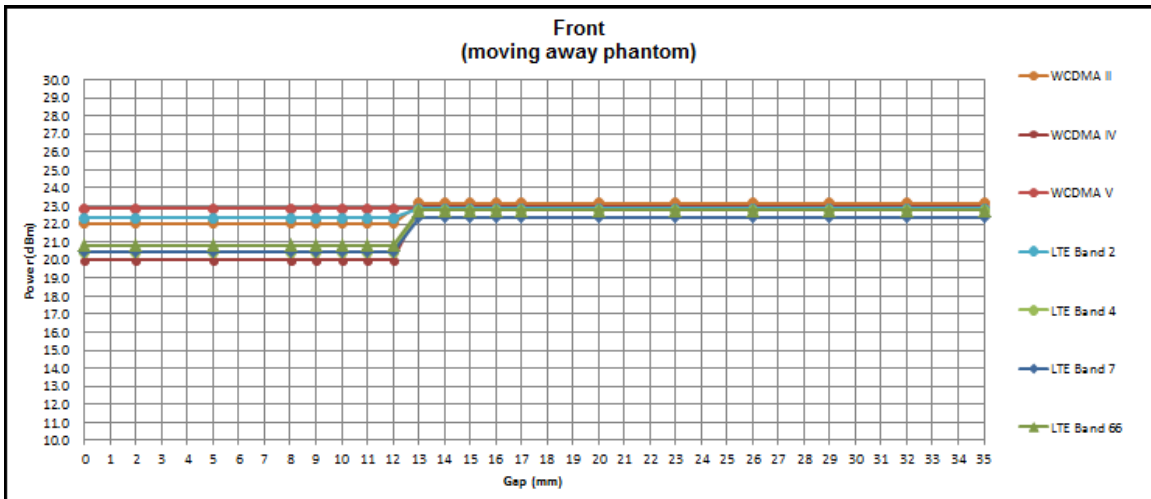
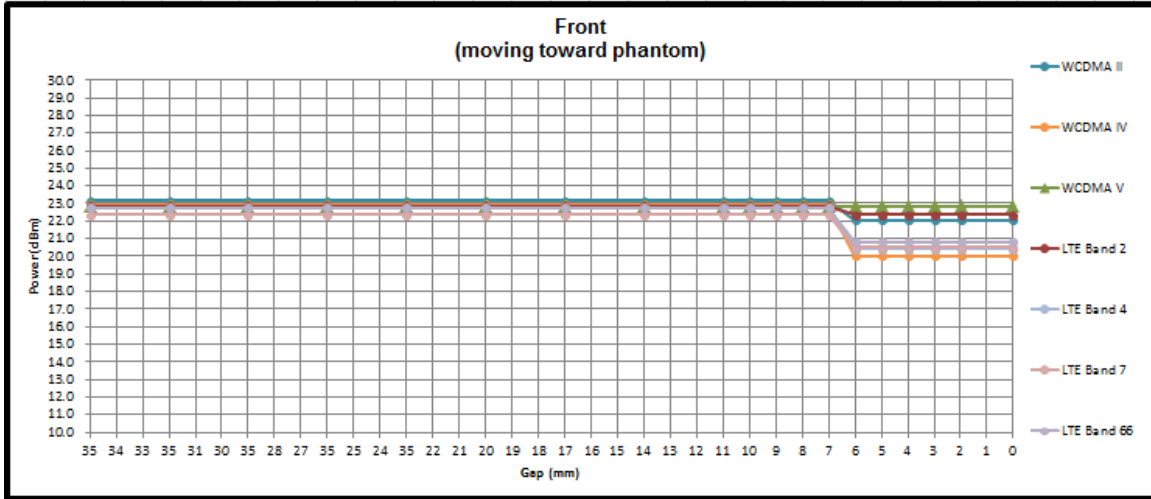


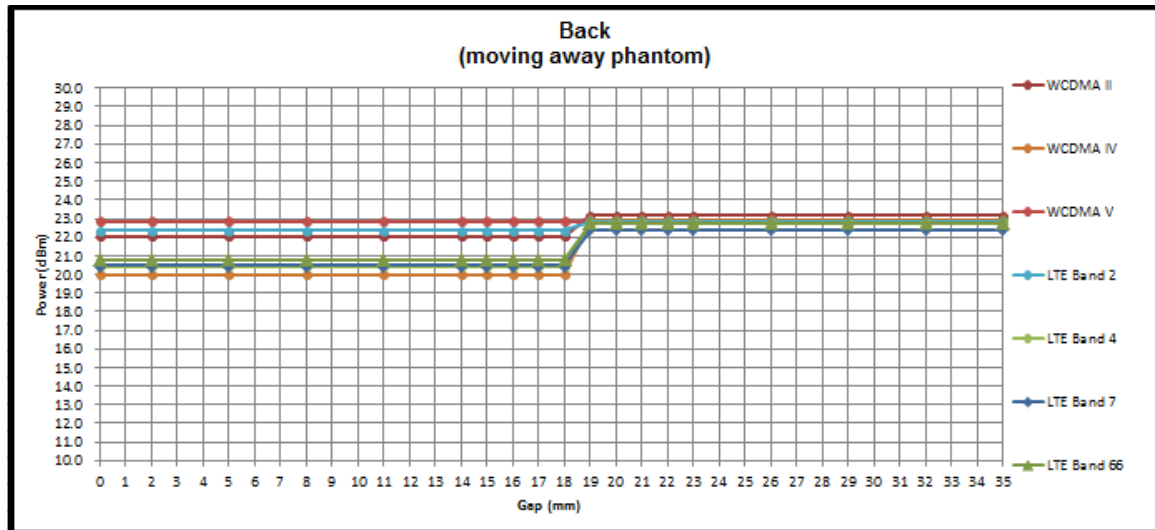
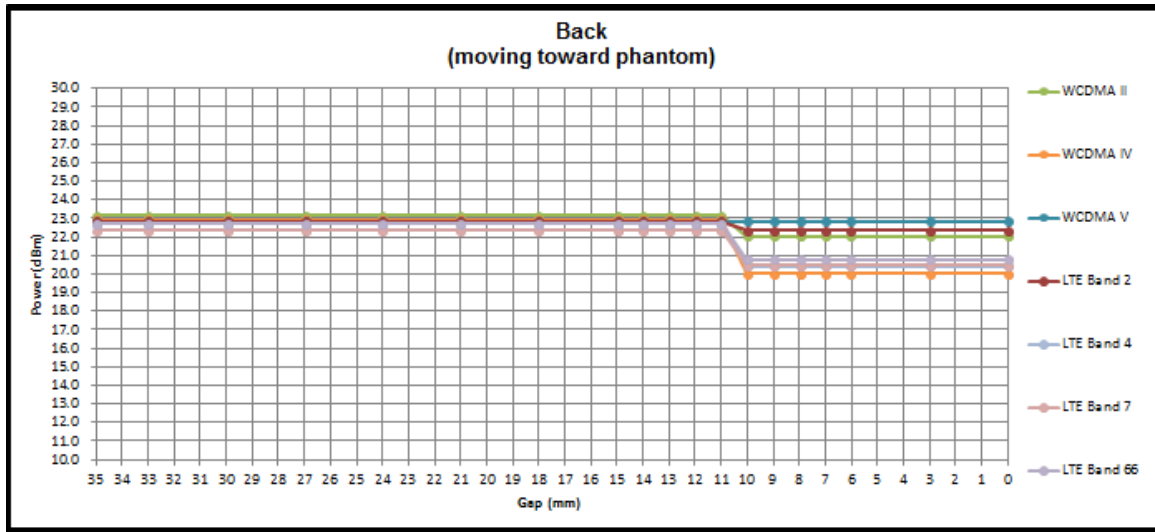
Proximity Sensor Trigger Distance (mm) of Body-worn				
Position	Front		Back	
Position	Moving towards	Moving away	Moving towards	Moving away
Minimum	11	17	17	20

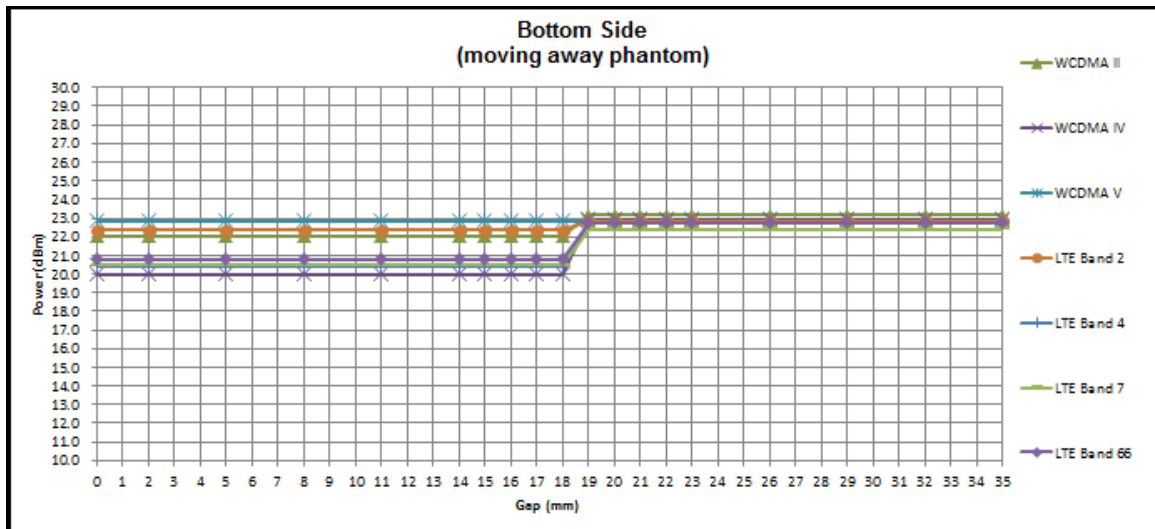
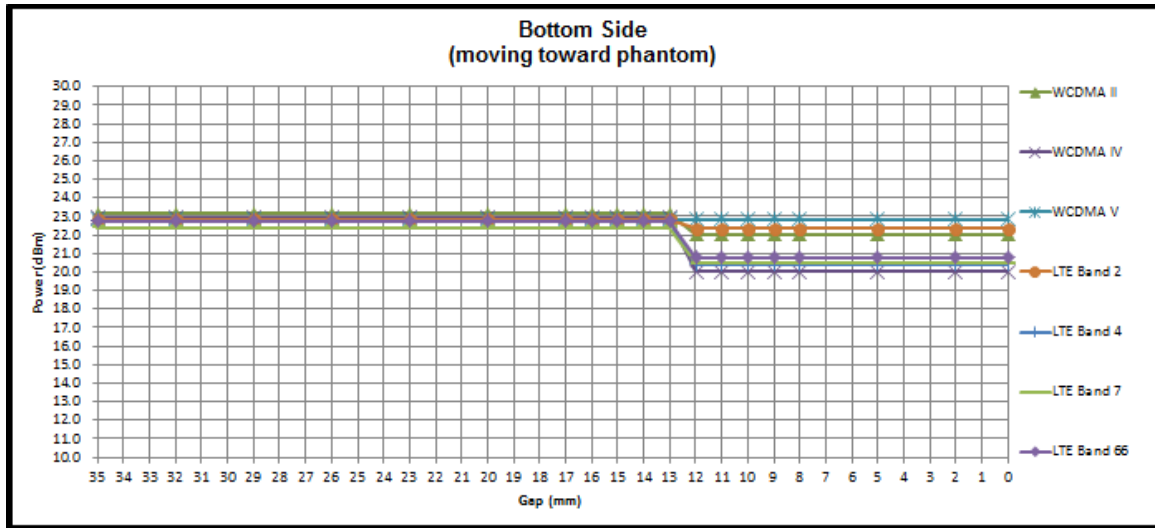




Proximity Sensor Trigger Distance (mm) of Extremity						
Position	Front		Back		Bottom Side	
Position	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	6	12	10	18	12	18









5. RF Exposure Limits

5.1 Uncontrolled Environment

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

5.2 Controlled Environment

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

imits for Occupational/Controlled Exposure (W/kg)

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

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

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

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

6. Specific Absorption Rate (SAR)

6.1 Introduction

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

6.2 SAR Definition

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

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

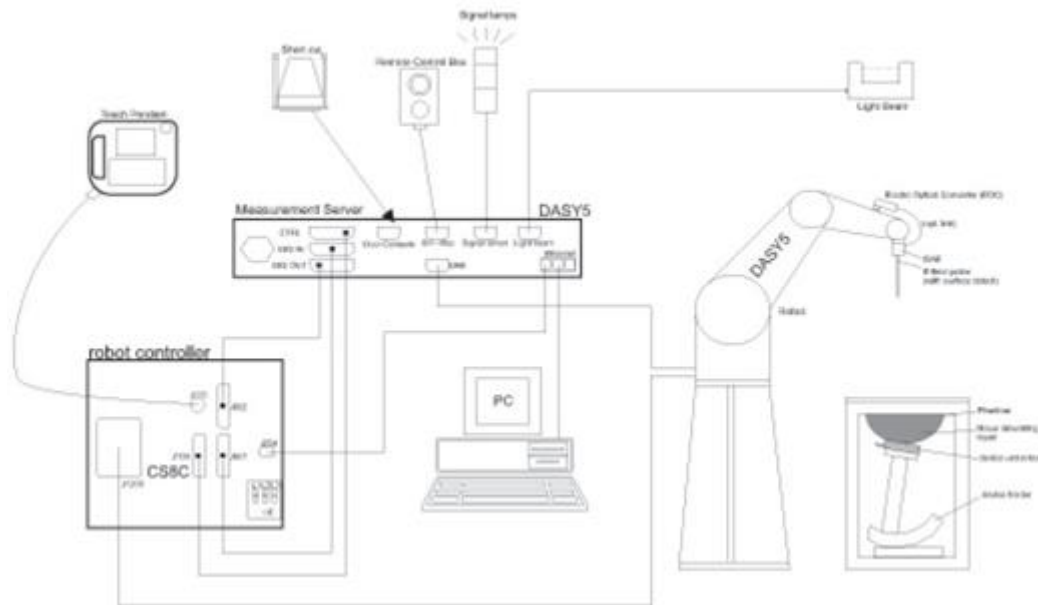
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

7. System Description and Setup

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




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


7.1 E-Field Probe

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

<ES3DV3 Probe>

Construction	Symmetric design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – 4 GHz; Linearity: ± 0.2 dB (30 MHz – 4 GHz)	
Directivity	± 0.2 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis)	
Dynamic Range	5 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	

7.2 Data Acquisition Electronics (DAE)

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


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



Fig 5.1 Photo of DAE

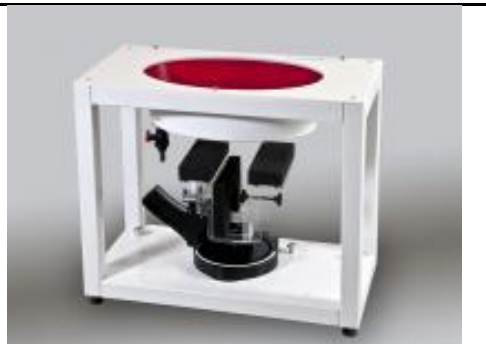
7.3 Phantom

<SAM Twin Phantom>

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

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

<ELI Phantom>

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

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

7.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

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



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

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

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



Mounting Device for Laptops

8. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

<SAR measurement>

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

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

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

8.1 Spatial Peak SAR Evaluation

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

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

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

- (a) Extraction of the measured data (grid and values) from the Zoom Scan
- (b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
- (c) Generation of a high-resolution mesh within the measured volume
- (d) Interpolation of all measured values 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

8.2 Power Reference Measurement

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

8.3 Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB) 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: $\Delta x_{Area}, \Delta y_{Area}$	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

8.4 Zoom Scan

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

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

		≤ 3 GHz	> 3 GHz	
Maximum zoom scan spatial resolution: $\Delta x_{Zoom}, \Delta y_{Zoom}$		≤ 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.				

8.5 Volume Scan Procedures

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

8.6 Power Drift Monitoring

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



9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	835MHz System Validation Kit	D835V2	4d167	Nov. 25, 2019	Nov. 24, 2020
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Nov. 19, 2018	Nov. 17, 2020
SPEAG	1900MHz System Validation Kit	D1900V2	5d041	Sep. 11, 2018	Sep. 09, 2020
SPEAG	2450MHz System Validation Kit	D2450V2	736	Aug. 31, 2018	Aug. 29, 2020
SPEAG	2600MHz System Validation Kit	D2600V2	1008	Aug. 31, 2018	Aug. 29, 2020
SPEAG	5GHz System Validation Kit	D5GHzV2	1006	Sep. 27, 2018	Sep. 25, 2020
SPEAG	Data Acquisition Electronics	DAE3	495	May. 21, 2019	May. 20, 2020
SPEAG	Data Acquisition Electronics	DAE3	577	Sep. 17, 2019	Sep. 16, 2020
SPEAG	Data Acquisition Electronics	DAE4	778	May. 21, 2019	May. 20, 2020
SPEAG	Data Acquisition Electronics	DAE4	854	May. 21, 2019	May. 20, 2020
SPEAG	Dosimetric E-Field Probe	ES3DV3	3270	Sep. 25, 2019	Sep. 24, 2020
SPEAG	Dosimetric E-Field Probe	EX3DV4	3728	Feb. 04, 2020	Feb. 03, 2021
SPEAG	Dosimetric E-Field Probe	EX3DV4	7306	Jul. 22, 2019	Jul. 21, 2020
RCPTWN	Thermometer	HTC-1	TM685-1	Nov. 12, 2019	Nov. 11, 2020
RCPTWN	Thermometer	HTC-1	TM560-2	Nov. 12, 2019	Nov. 11, 2020
Anritsu	Radio Communication Analyzer	MT8821C	6201341950	Oct. 31, 2019	Oct. 30, 2020
Agilent	Wireless Communication Test Set	E5515C	MY50266977	May. 27, 2019	May. 26, 2020
R&S	BT Base Station	CBT32	100519	Jun. 04, 2019	Jun. 03, 2020
SPEAG	Device Holder	N/A	N/A	N/A	N/A
R&S	Signal Generator	SMA100A	101091	Jul. 03, 2019	Jul. 02, 2020
Agilent	ENA Network Analyzer	E5071C	MY46104758	Sep. 06, 2019	Sep. 05, 2020
SPEAG	Dielectric Probe Kit	DAK-3.5	1146	Jul. 16, 2019	Jul. 15, 2020
LINE SEIKI	Digital Thermometer	DTM3000-spezial	3169	Sep. 10, 2019	Sep. 09, 2020
Anritsu	Power Meter	ML2495A	1036004	Aug. 08, 2019	Aug. 07, 2020
Anritsu	Power Sensor	MA2411B	1027253	Aug. 08, 2019	Aug. 07, 2020
Anritsu	Power Meter	ML2495A	1419002	May. 29, 2019	May. 28, 2020
Anritsu	Power Sensor	MA2411B	1339124	May. 29, 2019	May. 28, 2020
Agilent	Spectrum Analyzer	E4408B	MY44211028	Aug. 27, 2019	Aug. 26, 2020
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jun. 27, 2019	Jun. 26, 2020
Mini-Circuits	Power Amplifier	ZVE-8G+	6418	Oct. 16, 2019	Oct. 15, 2020
Mini-Circuits	Power Amplifier	ZVE-8G+	6382	Aug. 12, 2019	Aug. 11, 2020
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.
2. Referring to KDB 865664 D01v01r04, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The justification data of dipole D1750V2, SN: 1068, D1900V2, SN: 5d041, D2450V2, SN: 736, D2600V2, SN: 1008, D5GHzV2, SN: 1006 can be found in appendix C. The return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.

10. System Verification

10.1 Tissue Simulating Liquids

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

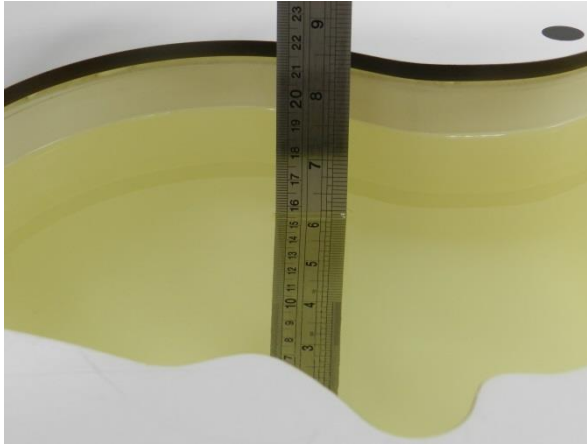


Fig 10.1 Photo of Liquid Height for Head SAR



Fig 10.2 Photo of Liquid Height for Body SAR

10.2 Tissue Verification

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

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (ϵ_r)
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

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)	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)	Date
835	22.4	0.890	40.532	0.90	41.50	-1.11	-2.33	±5	2020/4/7
835	22.5	0.886	41.178	0.90	41.50	-1.56	-0.78	±5	2020/4/12
835	22.5	0.876	41.453	0.90	41.50	-2.67	-0.11	±5	2020/4/15
1750	22.4	1.362	40.669	1.37	40.10	-0.58	1.42	±5	2020/4/8
1750	22.6	1.359	40.323	1.37	40.10	-0.80	0.56	±5	2020/4/11
1750	22.6	1.369	40.623	1.37	40.10	-0.07	1.30	±5	2020/4/13
1750	22.5	1.373	40.944	1.37	40.10	0.22	2.10	±5	2020/4/14
1750	22.5	1.338	39.730	1.37	40.10	-2.34	-0.92	±5	2020/4/15
1900	22.4	1.453	41.053	1.40	40.00	3.79	2.63	±5	2020/4/7
1900	22.6	1.373	40.070	1.40	40.00	-1.93	0.18	±5	2020/4/11
1900	22.6	1.384	40.370	1.40	40.00	-1.14	0.92	±5	2020/4/13
1900	22.5	1.388	40.691	1.40	40.00	-0.86	1.73	±5	2020/4/14
1900	22.5	1.379	40.692	1.40	40.00	-1.50	1.73	±5	2020/4/15
2450	22.4	1.783	39.373	1.80	39.20	-0.94	0.44	±5	2020/4/7
2450	22.6	1.815	38.941	1.80	39.20	0.83	-0.66	±5	2020/4/16
2450	22.5	1.815	38.941	1.80	39.20	0.83	-0.66	±5	2020/4/16
2600	22.6	1.924	37.473	1.96	39.00	-1.84	-3.92	±5	2020/4/10
2600	22.6	1.910	37.471	1.96	39.00	-2.55	-3.92	±5	2020/4/13
2600	22.5	1.956	37.521	1.96	39.00	-0.20	-3.79	±5	2020/4/14
2600	22.5	1.953	38.251	1.96	39.00	-0.36	-1.92	±5	2020/4/15
5250	22.5	4.661	36.770	4.71	35.95	-1.04	2.28	±5	2020/4/17
5600	22.5	5.067	36.378	5.07	35.50	-0.06	2.47	±5	2020/4/17
5750	22.5	5.323	36.034	5.22	35.35	1.97	1.93	±5	2020/4/17



10.3 System Performance Check Results

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

Table with 10 columns: Date, Frequency (MHz), 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 (%). It contains 28 rows of test data.

Date	Frequency (MHz)	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2020/4/7	835	250	D835V2-4d167	EX3DV4 - SN3728	DAE3 Sn495	1.48	6.21	5.92	-4.67
2020/4/12	835	250	D835V2-4d167	EX3DV4 - SN3728	DAE3 Sn495	1.48	6.21	5.92	-4.67
2020/4/15	835	250	D835V2-4d167	ES3DV3 - SN3270	DAE4 Sn778	1.47	6.21	5.88	-5.31
2020/4/8	1750	250	D1750V2-1068	EX3DV4 - SN3728	DAE3 Sn495	4.55	19.50	18.2	-6.67
2020/4/11	1750	250	D1750V2-1068	EX3DV4 - SN3728	DAE3 Sn495	4.54	19.50	18.16	-6.87
2020/4/13	1750	250	D1750V2-1068	EX3DV4 - SN3728	DAE3 Sn495	4.57	19.50	18.28	-6.26
2020/4/14	1750	250	D1750V2-1068	EX3DV4 - SN3728	DAE3 Sn495	4.58	19.50	18.32	-6.05
2020/4/15	1750	250	D1750V2-1068	ES3DV3 - SN3270	DAE4 Sn778	4.89	19.50	19.56	0.31
2020/4/7	1900	250	D1900V2-5d041	EX3DV4 - SN3728	DAE3 Sn495	5.31	21.20	21.24	0.19
2020/4/11	1900	250	D1900V2-5d041	EX3DV4 - SN3728	DAE3 Sn495	5.02	21.20	20.08	-5.28
2020/4/13	1900	250	D1900V2-5d041	EX3DV4 - SN3728	DAE3 Sn495	5.06	21.20	20.24	-4.53
2020/4/14	1900	250	D1900V2-5d041	EX3DV4 - SN3728	DAE3 Sn495	5.07	21.20	20.28	-4.34
2020/4/15	1900	250	D1900V2-5d041	ES3DV3 - SN3270	DAE4 Sn854	5.15	21.20	20.6	-2.83
2020/4/7	2450	250	D2450V2-736	EX3DV4 - SN3728	DAE3 Sn495	5.81	24.60	23.24	-5.53
2020/4/16	2450	250	D2450V2-736	EX3DV4 - SN7306	DAE3 Sn577	6.47	24.60	25.88	5.20
2020/4/16	2450	250	D2450V2-736	ES3DV3 - SN3270	DAE4 Sn778	6.42	24.60	25.68	4.39
2020/4/10	2600	250	D2600V2-1008	EX3DV4 - SN3728	DAE3 Sn495	6.32	25.30	25.28	-0.08
2020/4/13	2600	250	D2600V2-1008	EX3DV4 - SN3728	DAE3 Sn495	6.27	25.30	25.08	-0.87
2020/4/14	2600	250	D2600V2-1008	EX3DV4 - SN3728	DAE3 Sn495	6.42	25.30	25.68	1.50
2020/4/15	2600	250	D2600V2-1008	ES3DV3 - SN3270	DAE4 Sn778	6.17	25.30	24.68	-2.45
2020/4/17	5250	100	D5GHzV2-1006-5250	EX3DV4 - SN7306	DAE3 Sn577	2.13	23.20	21.3	-8.19
2020/4/17	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN7306	DAE3 Sn577	2.37	23.80	23.7	-0.42
2020/4/17	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN7306	DAE3 Sn577	2.17	22.90	21.7	-5.24

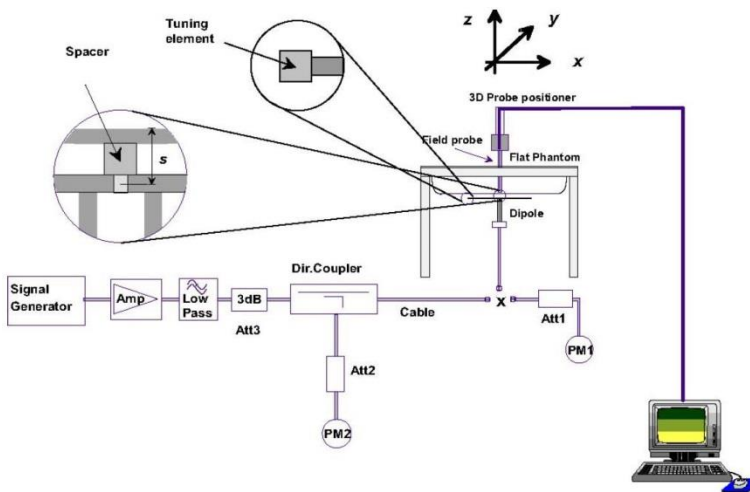


Fig 8.3.1 System Performance Check Setup



Fig 8.3.2 Setup Photo

11. RF Exposure Positions

11.1 Ear and handset reference point

Figure 9.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled “M,” the left ear reference point (ERP) is marked “LE,” and the right ERP is marked “RE.” Each ERP is 15 mm along the B-M (back-mouth) line behind the entrance-to-ear-canal (EEC) point, as shown in Figure 9.1.2 The Reference Plane is defined as passing through the two ear reference points and point M. The line N-F (neck-front), also called the reference pivoting line, is normal to the Reference Plane and perpendicular to both a line passing through RE and LE and the B-M line (see Figure 9.1.3). Both N-F and B-M lines should be marked on the exterior of the phantom shell to facilitate handset positioning. Posterior to the N-F line the ear shape is a flat surface with 6 mm thickness at each ERP, and forward of the N-F line the ear is truncated, as illustrated in Figure 9.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

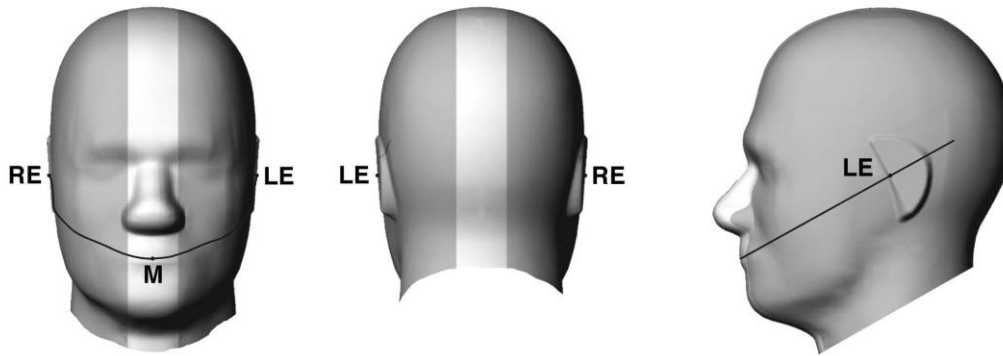


Fig 9.1.1 Front, back, and side views of SAM twin phantom

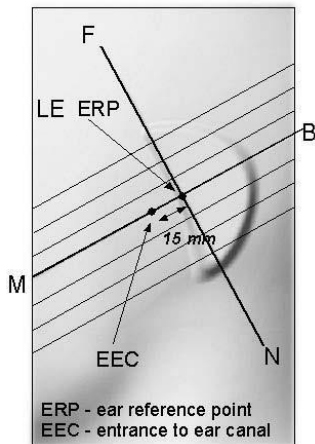


Fig 9.1.2 Close-up side view of phantom showing the ear region.

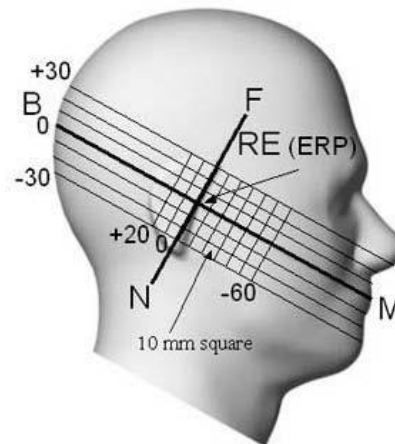


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

11.2 Definition of the cheek position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width 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.

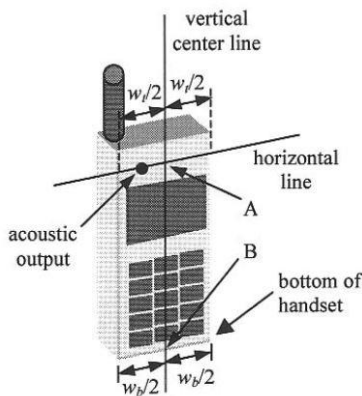


Fig 9.2.1 Handset vertical and horizontal reference lines—“fixed case”

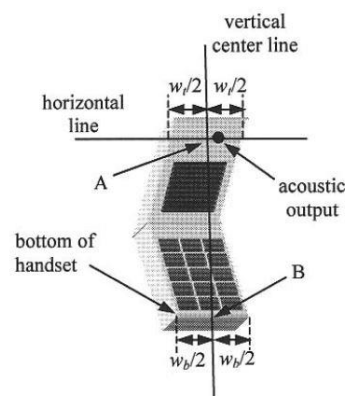


Fig 9.2.2 Handset vertical and horizontal reference lines—“clam-shell case”

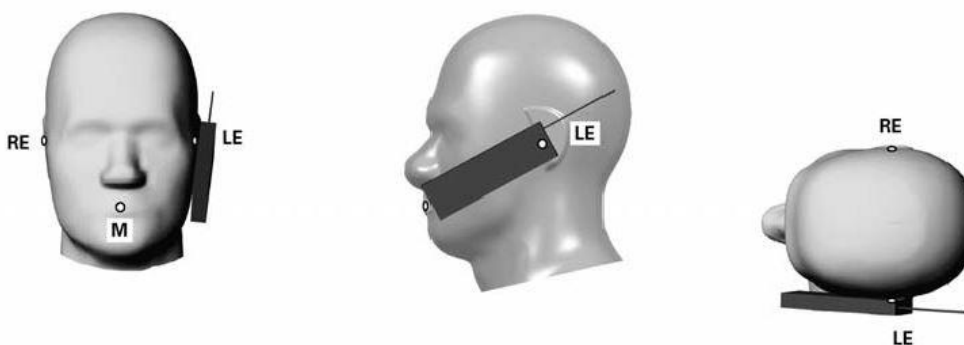


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

11.3 Definition of the tilt position

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

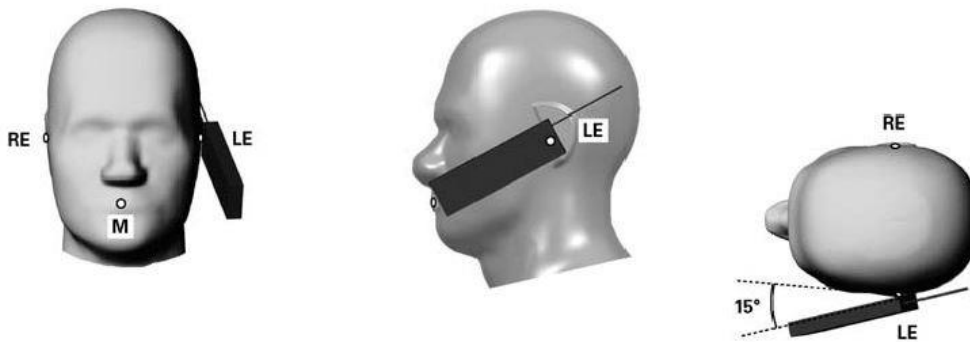


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

11.4 Body Worn Accessory

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 9.4). Per KDB648474 D04v01r03, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset attached to the handset.

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

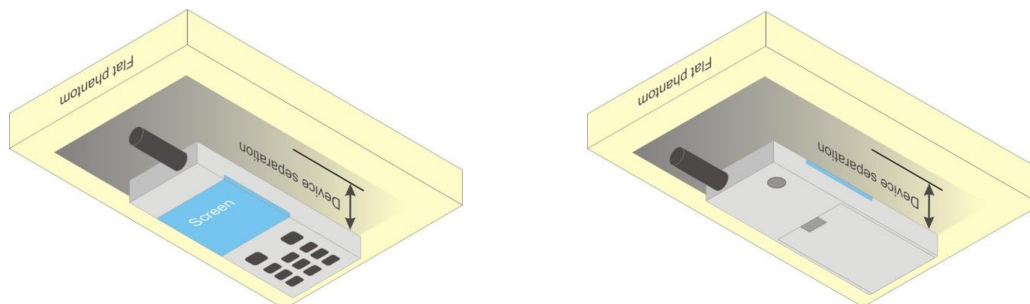


Fig 9.4 Body Worn Position



11.5 Product Specific Exposure

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

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

11.6 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets ($L \times W \geq 9$ 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.



12. GSM/UMTS/LTE Output Power (Unit: dBm)

<GSM Conducted Power>

1. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (3Tx slots) for GSM850/GSM1900 is considered as the primary mode.
3. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq \frac{1}{4}$ dB higher than the primary mode, SAR measurement is not required for the secondary mode
4. Power reduction which is implemented in GSM850/GSM1900 band, for SAR testing EUT was set in reduced power mode and GPRS 3Tx slot due to its highest frame-average power.

<Default Power Mode>

GSM850 TX Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	128	189	251		128	189	251	
	Frequency (MHz)	824.2	836.4		848.8	824.2	836.4	
GSM 1 Tx slot	32.34	32.37	32.50	33.50	23.34	23.37	23.50	24.50
GPRS 1 Tx slot	32.33	32.36	32.49	33.50	23.33	23.36	23.49	24.50
GPRS 2 Tx slots	30.33	30.26	30.11	31.00	24.33	24.26	24.11	25.00
GPRS 3 Tx slots	28.60	28.63	28.68	29.50	24.34	24.37	24.42	25.24
GPRS 4 Tx slots	26.75	26.82	26.76	27.50	23.75	23.82	23.76	24.50
EDGE 1 Tx slot	26.25	26.15	26.04	27.50	17.25	17.15	17.04	18.50
EDGE 2 Tx slots	24.93	24.83	24.67	26.50	18.93	18.83	18.67	20.50
EDGE 3 Tx slots	23.04	23.01	22.81	24.50	18.78	18.75	18.55	20.24
EDGE 4 Tx slots	21.28	21.13	21.01	22.50	18.28	18.13	18.01	19.50

GSM1900 TX Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	512	661	810		512	661	810	
	Frequency (MHz)	1850.2	1880		1909.8	1850.2	1880	
GSM 1 Tx slot	29.74	29.82	30.03	31.50	20.74	20.82	21.03	22.50
GPRS 1 Tx slot	29.73	29.81	30.02	31.50	20.73	20.81	21.02	22.50
GPRS 2 Tx slots	27.51	27.59	27.74	28.50	21.51	21.59	21.74	22.50
GPRS 3 Tx slots	25.72	25.79	25.98	27.00	21.46	21.53	21.72	22.74
GPRS 4 Tx slots	23.94	24.21	24.05	25.50	20.94	21.21	21.05	22.50
EDGE 1 Tx slot	25.32	25.52	25.57	26.50	16.32	16.52	16.57	17.50
EDGE 2 Tx slots	24.07	24.16	24.32	25.50	18.07	18.16	18.32	19.50
EDGE 3 Tx slots	22.34	22.42	22.53	23.50	18.08	18.16	18.27	19.24
EDGE 4 Tx slots	20.52	20.60	20.78	21.50	17.52	17.60	17.78	18.50



<Hotspot & Body-worn Power Mode>

GSM850 TX Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	31.82	31.85	31.94	33.00	22.82	22.85	22.94	24.00
GPRS 1 Tx slot	31.83	31.79	31.94	33.00	22.83	22.79	22.94	24.00
GPRS 2 Tx slots	29.78	29.76	29.63	30.50	23.78	23.76	23.63	24.50
GPRS 3 Tx slots	27.88	27.90	27.92	29.00	23.62	23.64	23.66	24.74
GPRS 4 Tx slots	26.16	26.27	26.24	27.00	23.16	23.27	23.24	24.00
EDGE 1 Tx slot	26.19	26.06	25.96	27.50	17.19	17.06	16.96	18.50
EDGE 2 Tx slots	24.92	24.82	24.59	26.50	18.92	18.82	18.59	20.50
EDGE 3 Tx slots	22.97	22.95	22.79	24.50	18.71	18.69	18.53	20.24
EDGE 4 Tx slots	21.26	21.06	21.01	22.50	18.26	18.06	18.01	19.50

GSM1900 TX Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	28.18	28.24	28.44	30.00	19.18	19.24	19.44	21.00
GPRS 1 Tx slot	28.15	28.25	28.45	30.00	19.15	19.25	19.45	21.00
GPRS 2 Tx slots	25.98	26.06	26.16	27.00	19.98	20.06	20.16	21.00
GPRS 3 Tx slots	25.26	25.16	25.27	26.00	21.00	20.90	21.01	21.74
GPRS 4 Tx slots	22.42	22.64	22.55	24.00	19.42	19.64	19.55	21.00
EDGE 1 Tx slot	25.32	25.51	25.55	26.50	16.32	16.51	16.55	17.50
EDGE 2 Tx slots	24.03	24.09	24.22	25.50	18.03	18.09	18.22	19.50
EDGE 3 Tx slots	22.25	22.41	22.48	23.50	17.99	18.15	18.22	19.24
EDGE 4 Tx slots	20.51	20.58	20.73	21.50	17.51	17.58	17.73	18.50

<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: $\Delta_{ACK}, \Delta_{NACK}$ 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.		

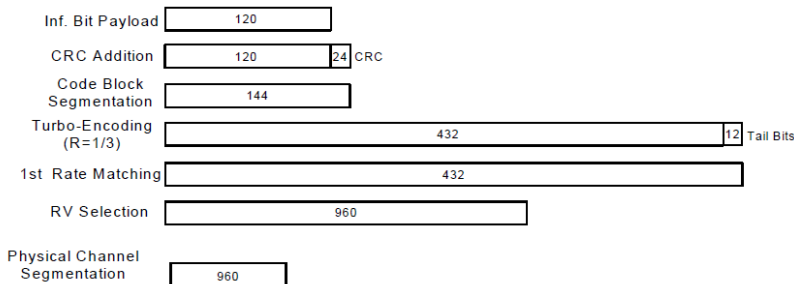


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration



<WCDMA Conducted Power>

General Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is $\leq \frac{1}{4}$ 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 $\frac{1}{4}$ 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		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938	1537	1638	1738	4357	4407	4458			
Frequency (MHz)		1852.4	1880	1907.6	1712.4	1732.6	1752.6	826.4	836.4	846.6			
3GPP Rel 99	AMR 12.2Kbps	23.16	23.01	23.10	24.00	22.75	22.91	22.90	24.00	22.74	22.76	22.85	24.00
3GPP Rel 99	RMC 12.2Kbps	23.09	23.17	23.11	24.00	22.76	22.92	22.91	24.00	22.75	22.86	22.76	24.00
3GPP Rel 6	HSDPA Subtest-1	21.67	21.56	21.50	23.00	21.32	21.47	21.50	23.00	21.51	21.50	21.62	23.00
3GPP Rel 6	HSDPA Subtest-2	21.72	21.54	21.51	23.00	21.33	21.50	21.47	23.00	21.57	21.51	21.60	23.00
3GPP Rel 6	HSDPA Subtest-3	21.24	21.13	21.02	22.50	20.81	20.96	20.98	22.50	21.04	21.02	21.11	22.50
3GPP Rel 6	HSDPA Subtest-4	21.20	21.07	21.02	22.50	20.82	20.94	21.01	22.50	21.02	21.05	21.10	22.50
3GPP Rel 8	DC-HSDPA Subtest-1	21.62	21.54	21.47	23.00	21.30	21.44	21.45	23.00	21.48	21.45	21.60	23.00
3GPP Rel 8	DC-HSDPA Subtest-2	21.69	21.53	21.46	23.00	21.32	21.45	21.44	23.00	21.52	21.48	21.59	23.00
3GPP Rel 8	DC-HSDPA Subtest-3	21.22	21.08	21.00	22.50	20.76	20.94	20.96	22.50	21.02	21.00	21.06	22.50
3GPP Rel 8	DC-HSDPA Subtest-4	21.19	21.04	20.99	22.50	20.79	20.91	21.00	22.50	20.99	21.04	21.07	22.50
3GPP Rel 6	HSUPA Subtest-1	21.66	21.57	21.52	23.00	21.39	21.49	21.53	23.00	21.50	21.49	21.60	23.00
3GPP Rel 6	HSUPA Subtest-2	19.67	19.58	19.50	21.00	19.39	19.53	19.51	21.00	19.57	19.50	19.63	21.00
3GPP Rel 6	HSUPA Subtest-3	20.68	20.54	20.55	22.00	20.35	20.53	20.56	22.00	20.56	20.57	20.62	22.00
3GPP Rel 6	HSUPA Subtest-4	19.62	19.57	19.48	21.00	19.35	19.54	19.59	21.00	19.54	19.52	19.62	21.00
3GPP Rel 6	HSUPA Subtest-5	21.70	21.60	21.50	23.00	21.40	21.50	21.60	23.00	21.50	21.50	21.60	23.00

<Hotspot & Body-worn Power Mode>

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938	1537	1638	1738	4357	4407	4458			
Frequency (MHz)		1852.4	1880	1907.6	1712.4	1732.6	1752.6	826.4	836.4	846.6			
3GPP Rel 99	AMR 12.2Kbps	19.51	19.53	19.34	20.00	18.32	18.42	18.46	19.00	21.80	21.83	21.81	23.00
3GPP Rel 99	RMC 12.2Kbps	19.52	19.58	19.44	20.00	18.48	18.60	18.59	19.00	21.86	21.87	21.86	23.00
3GPP Rel 6	HSDPA Subtest-1	18.53	18.48	18.36	19.00	17.47	17.56	17.57	18.00	20.80	20.84	20.90	22.00
3GPP Rel 6	HSDPA Subtest-2	18.55	18.54	18.54	19.00	17.47	17.38	17.46	18.00	20.87	20.82	20.93	22.00
3GPP Rel 6	HSDPA Subtest-3	18.06	18.01	17.93	18.50	16.96	16.93	16.92	17.50	20.35	20.33	20.47	21.50
3GPP Rel 6	HSDPA Subtest-4	18.06	18.02	18.02	18.50	16.96	16.92	16.95	17.50	20.37	20.33	20.41	21.50
3GPP Rel 8	DC-HSDPA Subtest-1	18.52	18.42	18.27	19.00	17.41	17.48	17.49	18.00	20.74	20.78	20.80	22.00
3GPP Rel 8	DC-HSDPA Subtest-2	18.50	18.45	18.48	19.00	17.42	17.33	17.45	18.00	20.79	20.72	20.86	22.00
3GPP Rel 8	DC-HSDPA Subtest-3	18.01	17.96	17.86	18.50	16.96	16.84	16.83	17.50	20.27	20.27	20.46	21.50
3GPP Rel 8	DC-HSDPA Subtest-4	17.97	17.94	18.01	18.50	16.93	16.86	16.88	17.50	20.30	20.32	20.33	21.50
3GPP Rel 6	HSUPA Subtest-1	18.50	18.44	18.41	19.00	17.44	17.34	17.35	18.00	20.90	20.92	21.00	22.00
3GPP Rel 6	HSUPA Subtest-2	16.43	16.40	16.38	17.00	15.25	15.15	15.25	16.00	18.90	18.86	19.02	20.00
3GPP Rel 6	HSUPA Subtest-3	17.51	17.42	17.46	18.00	16.44	16.41	16.34	17.00	19.93	19.94	19.97	21.00
3GPP Rel 6	HSUPA Subtest-4	16.51	16.41	16.43	17.00	15.44	15.36	15.42	16.00	18.87	18.90	19.03	20.00
3GPP Rel 6	HSUPA Subtest-5	18.51	18.42	18.51	19.00	17.15	17.07	17.07	18.00	21.00	20.90	21.00	22.00



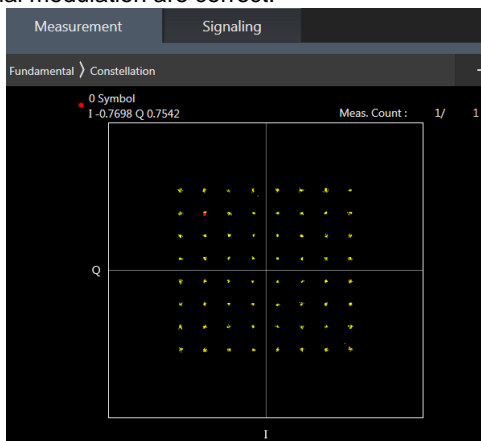
<Product Specific Power Mode>

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513	
Rx Channel		9662	9800	9938		1537	1638	1738	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6	
3GPP Rel 99	AMR 12.2Kbps	21.89	22.00	21.91	22.50	19.92	19.94	20.02	20.50
3GPP Rel 99	RMC 12.2Kbps	21.97	22.04	21.88	22.50	19.87	20.00	20.07	20.50
3GPP Rel 6	HSDPA Subtest-1	20.83	21.06	20.93	21.50	18.88	19.02	19.07	19.50
3GPP Rel 6	HSDPA Subtest-2	20.81	21.11	20.91	21.50	18.88	19.02	19.07	19.50
3GPP Rel 6	HSDPA Subtest-3	20.17	20.51	20.45	21.00	18.89	18.92	18.94	19.00
3GPP Rel 6	HSDPA Subtest-4	20.16	20.52	20.44	21.00	18.40	18.52	18.58	19.00
3GPP Rel 8	DC-HSDPA Subtest-1	20.58	20.51	20.61	21.50	18.36	18.53	18.64	19.50
3GPP Rel 8	DC-HSDPA Subtest-2	20.53	20.64	20.60	21.50	18.67	19.44	19.45	19.50
3GPP Rel 8	DC-HSDPA Subtest-3	19.99	20.04	20.10	21.00	18.22	18.77	18.84	19.00
3GPP Rel 8	DC-HSDPA Subtest-4	20.07	20.17	20.06	21.00	18.09	18.93	18.94	19.00
3GPP Rel 6	HSUPA Subtest-1	21.12	20.97	20.97	21.50	18.90	19.01	19.09	19.50
3GPP Rel 6	HSUPA Subtest-2	18.94	19.07	18.80	19.50	16.80	16.98	17.12	17.50
3GPP Rel 6	HSUPA Subtest-3	19.98	20.04	19.98	20.50	17.93	17.99	18.05	18.50
3GPP Rel 6	HSUPA Subtest-4	19.02	19.06	18.99	19.50	16.95	17.01	17.09	17.50
3GPP Rel 6	HSUPA Subtest-5	21.10	21.00	20.90	21.50	18.80	19.00	19.10	19.50

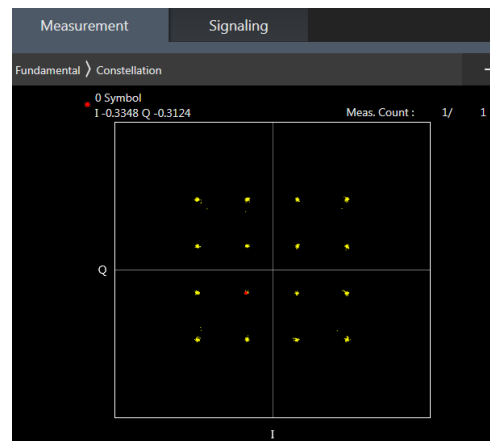
<LTE Conducted Power>

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 B5 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 4 SAR test was covered by Band 66; 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	22.75	22.84	22.63	24	0
20	QPSK	1	49	22.71	22.73	22.63		
20	QPSK	1	99	22.67	22.61	22.56		
20	QPSK	50	0	21.77	21.79	21.67	23	1
20	QPSK	50	24	21.73	21.73	21.66		
20	QPSK	50	50	21.76	21.66	21.63		
20	QPSK	100	0	21.75	21.78	21.63	23	1
20	16QAM	1	0	22.22	22.33	22.16		
20	16QAM	1	49	22.12	22.20	22.06		
20	16QAM	1	99	22.11	22.02	22.00	22	2
20	16QAM	50	0	20.87	20.86	20.76		
20	16QAM	50	24	20.83	20.91	20.77		
20	16QAM	50	50	20.87	20.83	20.76	22	2
20	16QAM	100	0	20.90	20.84	20.79		
20	64QAM	1	0	20.85	20.90	20.78		
20	64QAM	1	49	20.87	20.85	20.73	22	2
20	64QAM	1	99	20.85	20.75	20.65		
20	64QAM	50	0	19.62	19.65	19.57		
20	64QAM	50	24	19.60	19.67	19.53	21	3
20	64QAM	50	50	19.65	19.59	19.49		
20	64QAM	100	0	19.70	19.64	19.55		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.73	22.73	22.59	24	0
15	QPSK	1	37	22.69	22.67	22.59		
15	QPSK	1	74	22.54	22.55	22.50		
15	QPSK	36	0	21.73	21.76	21.60	23	1
15	QPSK	36	20	21.75	21.79	21.65		
15	QPSK	36	39	21.65	21.69	21.59		
15	QPSK	75	0	21.72	21.76	21.63	23	1
15	16QAM	1	0	22.17	22.26	22.11		
15	16QAM	1	37	22.14	22.23	22.10		
15	16QAM	1	74	21.99	22.18	22.00	22	2
15	16QAM	36	0	20.85	20.88	20.74		
15	16QAM	36	20	20.86	20.90	20.78		
15	16QAM	36	39	20.81	20.82	20.76	22	2
15	16QAM	75	0	20.79	20.86	20.76		
15	64QAM	1	0	20.84	20.87	20.77		
15	64QAM	1	37	20.78	20.82	20.73	22	2
15	64QAM	1	74	20.71	20.75	20.62		
15	64QAM	36	0	19.64	19.65	19.55		
15	64QAM	36	20	19.64	19.66	19.54	21	3
15	64QAM	36	39	19.56	19.62	19.55		
15	64QAM	75	0	19.67	19.64	19.53		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	22.69	22.77	22.58	24	0
10	QPSK	1	25	22.65	22.71	22.59		
10	QPSK	1	49	22.65	22.69	22.53		
10	QPSK	25	0	21.75	21.71	21.60	23	1



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10	QPSK	25	12	21.75	21.69	21.59		
10	QPSK	25	25	21.65	21.67	21.57		
10	QPSK	50	0	21.70	21.72	21.54		
10	16QAM	1	0	22.22	22.30	21.98	23	1
10	16QAM	1	25	22.10	22.20	22.07		
10	16QAM	1	49	22.11	22.21	21.94		
10	16QAM	25	0	20.85	20.86	20.71	22	2
10	16QAM	25	12	20.82	20.86	20.70		
10	16QAM	25	25	20.78	20.78	20.71		
10	16QAM	50	0	20.80	20.81	20.74		
10	64QAM	1	0	20.82	20.88	20.72	22	2
10	64QAM	1	25	20.76	20.84	20.64		
10	64QAM	1	49	20.76	20.76	20.55		
10	64QAM	25	0	19.60	19.65	19.45	21	3
10	64QAM	25	12	19.58	19.62	19.50		
10	64QAM	25	25	19.56	19.57	19.46		
10	64QAM	50	0	19.57	19.62	19.47		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.59	22.67	22.57	24	0
5	QPSK	1	12	22.59	22.69	22.52		
5	QPSK	1	24	22.58	22.56	22.54		
5	QPSK	12	0	21.70	21.71	21.59	23	1
5	QPSK	12	7	21.72	21.73	21.61		
5	QPSK	12	13	21.69	21.69	21.57		
5	QPSK	25	0	21.61	21.66	21.53		
5	16QAM	1	0	22.06	22.15	22.00	23	1
5	16QAM	1	12	22.14	22.13	22.00		
5	16QAM	1	24	21.94	22.00	21.94		
5	16QAM	12	0	20.84	20.86	20.75	22	2
5	16QAM	12	7	20.81	20.86	20.77		
5	16QAM	12	13	20.80	20.86	20.74		
5	16QAM	25	0	20.79	20.79	20.73		
5	64QAM	1	0	21.01	21.09	20.92	22	2
5	64QAM	1	12	21.10	21.05	20.96		
5	64QAM	1	24	20.98	21.06	20.87		
5	64QAM	12	0	19.93	19.95	19.85	21	3
5	64QAM	12	7	19.92	19.93	19.85		
5	64QAM	12	13	19.86	19.92	19.82		
5	64QAM	25	0	19.88	19.88	19.78		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	22.56	22.64	22.48	24	0
3	QPSK	1	8	22.58	22.67	22.55		
3	QPSK	1	14	22.60	22.59	22.47		
3	QPSK	8	0	21.67	21.71	21.56	23	1
3	QPSK	8	4	21.69	21.73	21.60		
3	QPSK	8	7	21.69	21.70	21.54		
3	QPSK	15	0	21.67	21.65	21.52		
3	16QAM	1	0	22.05	22.04	21.89	23	1
3	16QAM	1	8	22.07	22.11	22.04		
3	16QAM	1	14	22.04	22.05	21.84		
3	16QAM	8	0	20.91	20.90	20.77	22	2
3	16QAM	8	4	20.94	20.88	20.85		
3	16QAM	8	7	20.85	20.87	20.80		
3	16QAM	15	0	20.84	20.77	20.70		



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3	64QAM	1	0	21.06	21.04	20.92	22	2
3	64QAM	1	8	21.01	21.13	20.94		
3	64QAM	1	14	21.10	21.05	20.98		
3	64QAM	8	0	19.94	19.95	19.79	21	3
3	64QAM	8	4	19.96	19.96	19.84		
3	64QAM	8	7	19.89	19.93	19.80		
3	64QAM	15	0	19.89	19.89	19.79		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.52	22.53	22.42	24	0
1.4	QPSK	1	3	22.66	22.67	22.53		
1.4	QPSK	1	5	22.55	22.57	22.39		
1.4	QPSK	3	0	22.60	22.64	22.48		
1.4	QPSK	3	1	22.70	22.61	22.49		
1.4	QPSK	3	3	22.63	22.61	22.50		
1.4	QPSK	6	0	21.62	21.64	21.50	23	1
1.4	16QAM	1	0	22.05	22.03	21.84	23	1
1.4	16QAM	1	3	22.14	22.13	21.98		
1.4	16QAM	1	5	21.99	22.10	21.77		
1.4	16QAM	3	0	21.79	21.84	21.62		
1.4	16QAM	3	1	21.88	21.84	21.64		
1.4	16QAM	3	3	21.80	21.78	21.62		
1.4	16QAM	6	0	20.83	20.82	20.69	22	2
1.4	64QAM	1	0	20.98	21.08	20.78	22	2
1.4	64QAM	1	3	21.04	21.02	21.01		
1.4	64QAM	1	5	20.97	20.99	20.86		
1.4	64QAM	3	0	20.94	20.93	20.71		
1.4	64QAM	3	1	20.95	21.00	20.81		
1.4	64QAM	3	3	20.93	20.91	20.71		
1.4	64QAM	6	0	19.86	19.83	19.72		



<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	22.54	22.76	22.68	24	0
20	QPSK	1	49	22.61	22.70	22.73		
20	QPSK	1	99	22.60	22.55	22.58		
20	QPSK	50	0	21.64	21.69	21.64	23	1
20	QPSK	50	24	21.62	21.69	21.62		
20	QPSK	50	50	21.63	21.60	21.68		
20	QPSK	100	0	21.58	21.65	21.59	23	1
20	16QAM	1	0	22.01	22.11	22.11		
20	16QAM	1	49	22.09	22.18	22.21		
20	16QAM	1	99	22.05	22.05	22.02	22	2
20	16QAM	50	0	20.73	20.82	20.77		
20	16QAM	50	24	20.77	20.78	20.76		
20	16QAM	50	50	20.80	20.74	20.79	22	2
20	16QAM	100	0	20.76	20.78	20.72		
20	64QAM	1	0	21.00	21.12	21.12		
20	64QAM	1	49	21.05	21.14	21.16	22	2
20	64QAM	1	99	21.05	20.95	20.96		
20	64QAM	50	0	19.84	19.92	19.86		
20	64QAM	50	24	19.84	19.87	19.81	21	3
20	64QAM	50	50	19.86	19.82	19.88		
20	64QAM	100	0	19.80	19.86	19.82		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.55	22.74	22.66	24	0
15	QPSK	1	37	22.58	22.66	22.67		
15	QPSK	1	74	22.52	22.52	22.59		
15	QPSK	36	0	21.63	21.70	21.61	23	1
15	QPSK	36	20	21.68	21.70	21.76		
15	QPSK	36	39	21.60	21.62	21.69		
15	QPSK	75	0	21.59	21.66	21.61	23	1
15	16QAM	1	0	21.96	22.24	22.09		
15	16QAM	1	37	22.08	22.14	22.12		
15	16QAM	1	74	22.01	22.03	22.04	22	2
15	16QAM	36	0	20.74	20.81	20.78		
15	16QAM	36	20	20.75	20.84	20.87		
15	16QAM	36	39	20.71	20.77	20.79	22	2
15	16QAM	75	0	20.73	20.80	20.72		
15	64QAM	1	0	21.04	21.16	21.13		
15	64QAM	1	37	21.06	21.11	21.15	22	2
15	64QAM	1	74	20.95	21.03	21.04		
15	64QAM	36	0	19.84	19.92	19.85		
15	64QAM	36	20	19.85	19.91	19.97	21	3
15	64QAM	36	39	19.83	19.87	19.87		
15	64QAM	75	0	19.83	19.92	19.82		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	22.55	22.72	22.75	24	0
10	QPSK	1	25	22.51	22.70	22.71		
10	QPSK	1	49	22.56	22.58	22.58		
10	QPSK	25	0	21.52	21.70	21.73	23	1
10	QPSK	25	12	21.66	21.67	21.70		



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10	QPSK	25	25	21.57	21.61	21.65		
10	QPSK	50	0	21.63	21.65	21.72		
10	16QAM	1	0	22.01	22.21	22.19		
10	16QAM	1	25	21.95	22.17	22.16	23	1
10	16QAM	1	49	22.04	22.07	22.04		
10	16QAM	25	0	20.67	20.81	20.86		
10	16QAM	25	12	20.78	20.83	20.86	22	2
10	16QAM	25	25	20.75	20.77	20.80		
10	16QAM	50	0	20.77	20.79	20.85		
10	64QAM	1	0	20.90	21.15	21.13		
10	64QAM	1	25	20.98	21.13	21.12	22	2
10	64QAM	1	49	20.99	21.01	21.02		
10	64QAM	25	0	19.77	19.91	19.97		
10	64QAM	25	12	19.88	19.91	19.94	21	3
10	64QAM	25	25	19.84	19.86	19.89		
10	64QAM	50	0	19.83	19.89	19.93		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	22.49	22.66	22.69		
5	QPSK	1	12	22.50	22.65	22.65	24	0
5	QPSK	1	24	22.44	22.63	22.59		
5	QPSK	12	0	21.51	21.71	21.69		
5	QPSK	12	7	21.57	21.69	21.71	23	1
5	QPSK	12	13	21.51	21.69	21.69		
5	QPSK	25	0	21.53	21.63	21.67		
5	16QAM	1	0	21.92	22.11	22.11		
5	16QAM	1	12	21.97	22.19	22.04	23	1
5	16QAM	1	24	21.93	22.13	22.10		
5	16QAM	12	0	20.66	20.82	20.85		
5	16QAM	12	7	20.69	20.87	20.87	22	2
5	16QAM	12	13	20.65	20.79	20.84		
5	16QAM	25	0	20.63	20.80	20.82		
5	64QAM	1	0	20.95	21.11	21.07		
5	64QAM	1	12	20.92	21.07	21.08	22	2
5	64QAM	1	24	20.89	21.04	21.01		
5	64QAM	12	0	19.75	19.89	19.91		
5	64QAM	12	7	19.77	19.96	19.93	21	3
5	64QAM	12	13	19.76	19.89	19.91		
5	64QAM	25	0	19.73	19.86	19.90		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	22.50	22.62	22.62		
3	QPSK	1	8	22.47	22.64	22.66	24	0
3	QPSK	1	14	22.44	22.63	22.63		
3	QPSK	8	0	21.50	21.66	21.67		
3	QPSK	8	4	21.58	21.68	21.71	23	1
3	QPSK	8	7	21.52	21.68	21.68		
3	QPSK	15	0	21.51	21.65	21.67		
3	16QAM	1	0	21.92	22.11	22.04		
3	16QAM	1	8	21.98	22.12	22.01	23	1
3	16QAM	1	14	21.93	22.08	22.08		
3	16QAM	8	0	20.73	20.87	20.84		
3	16QAM	8	4	20.72	20.88	20.92	22	2
3	16QAM	8	7	20.70	20.84	20.82		
3	16QAM	15	0	20.65	20.80	20.80		
3	64QAM	1	0	20.89	21.05	21.05	22	2



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3	64QAM	1	8	20.92	21.08	21.11	21	3
3	64QAM	1	14	20.85	21.08	21.07		
3	64QAM	8	0	19.76	19.94	19.96		
3	64QAM	8	4	19.77	19.95	19.95		
3	64QAM	8	7	19.75	19.89	19.87		
3	64QAM	15	0	19.72	19.89	19.91		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.41	22.53	22.56	24	0
1.4	QPSK	1	3	22.41	22.68	22.66		
1.4	QPSK	1	5	22.41	22.52	22.55		
1.4	QPSK	3	0	22.46	22.61	22.62		
1.4	QPSK	3	1	22.48	22.64	22.67		
1.4	QPSK	3	3	22.46	22.61	22.63		
1.4	QPSK	6	0	21.44	21.63	21.62	23	1
1.4	16QAM	1	0	21.82	22.05	22.02	23	1
1.4	16QAM	1	3	21.88	22.07	22.01		
1.4	16QAM	1	5	21.73	22.01	21.98		
1.4	16QAM	3	0	21.62	21.77	21.80		
1.4	16QAM	3	1	21.68	21.86	21.83		
1.4	16QAM	3	3	21.59	21.72	21.81		
1.4	16QAM	6	0	20.65	20.77	20.79	22	2
1.4	64QAM	1	0	20.85	21.05	21.05	22	2
1.4	64QAM	1	3	20.90	21.13	21.12		
1.4	64QAM	1	5	20.78	21.05	21.00		
1.4	64QAM	3	0	20.77	20.96	20.91		
1.4	64QAM	3	1	20.78	20.91	20.87		
1.4	64QAM	3	3	20.77	20.92	20.94		
1.4	64QAM	6	0	19.65	19.79	19.82	21	3



<LTE Band 5>

Channel	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	22.48	22.49	22.39	24	0	
10	QPSK	1	25	22.46	22.44	22.45			
10	QPSK	1	49	22.46	22.38	22.39			
10	QPSK	25	0	21.48	21.57	21.43	23	1	
10	QPSK	25	12	21.51	21.54	21.52			
10	QPSK	25	25	21.52	21.45	21.47			
10	QPSK	50	0	21.52	21.56	21.38	23	1	
10	16QAM	1	0	21.87	21.82	21.74			
10	16QAM	1	25	21.84	21.83	21.83			
10	16QAM	1	49	21.88	21.86	21.79	22	2	
10	16QAM	25	0	20.61	20.61	20.57			
10	16QAM	25	12	20.71	20.63	20.67			
10	16QAM	25	25	20.68	20.58	20.57	22	2	
10	16QAM	50	0	20.70	20.63	20.52			
10	64QAM	1	0	20.80	20.89	20.79			
10	64QAM	1	25	20.77	20.78	20.77	22	2	
10	64QAM	1	49	20.79	20.71	20.74			
10	64QAM	25	0	19.70	19.71	19.68			
10	64QAM	25	12	19.81	19.75	19.74	21	3	
10	64QAM	25	25	19.77	19.66	19.68			
10	64QAM	50	0	19.79	19.72	19.58			
Channel					20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)					826.5	836.5	846.5		
5	QPSK	1	0	22.45	22.46	22.45	24	0	
5	QPSK	1	12	22.44	22.40	22.43			
5	QPSK	1	24	22.39	22.40	22.40			
5	QPSK	12	0	21.49	21.50	21.46	23	1	
5	QPSK	12	7	21.49	21.49	21.51			
5	QPSK	12	13	21.46	21.48	21.47			
5	QPSK	25	0	21.50	21.49	21.45	23	1	
5	16QAM	1	0	21.85	21.80	21.83			
5	16QAM	1	12	21.89	21.80	21.79			
5	16QAM	1	24	21.77	21.81	21.69	22	2	
5	16QAM	12	0	20.61	20.61	20.62			
5	16QAM	12	7	20.62	20.64	20.64			
5	16QAM	12	13	20.63	20.60	20.61	22	2	
5	16QAM	25	0	20.60	20.59	20.56			
5	64QAM	1	0	20.83	20.82	20.75			
5	64QAM	1	12	20.76	20.74	20.72	22	2	
5	64QAM	1	24	20.77	20.67	20.77			
5	64QAM	12	0	19.68	19.71	19.71			
5	64QAM	12	7	19.73	19.70	19.70	21	3	
5	64QAM	12	13	19.68	19.69	19.70			
5	64QAM	25	0	19.70	19.69	19.71			
Channel					20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)					825.5	836.5	847.5		
3	QPSK	1	0	22.45	22.47	22.43	24	0	
3	QPSK	1	8	22.44	22.41	22.42			
3	QPSK	1	14	22.41	22.43	22.37			
3	QPSK	8	0	21.50	21.48	21.48	23	1	
3	QPSK	8	4	21.50	21.51	21.51			



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3	QPSK	8	7	21.45	21.50	21.45		
3	QPSK	15	0	21.46	21.45	21.44		
3	16QAM	1	0	21.79	21.80	21.75	23	1
3	16QAM	1	8	21.85	21.84	21.77		
3	16QAM	1	14	21.79	21.75	21.71		
3	16QAM	8	0	20.65	20.67	20.62	22	2
3	16QAM	8	4	20.71	20.67	20.65		
3	16QAM	8	7	20.62	20.63	20.59		
3	16QAM	15	0	20.61	20.58	20.56		
3	64QAM	1	0	20.82	20.86	20.82	22	2
3	64QAM	1	8	20.79	20.78	20.74		
3	64QAM	1	14	20.84	20.72	20.77		
3	64QAM	8	0	19.71	19.71	19.68	21	3
3	64QAM	8	4	19.74	19.77	19.71		
3	64QAM	8	7	19.73	19.68	19.64		
3	64QAM	15	0	19.67	19.67	19.68		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.40	22.35	22.35	24	0
1.4	QPSK	1	3	22.48	22.44	22.42		
1.4	QPSK	1	5	22.48	22.36	22.34		
1.4	QPSK	3	0	22.45	22.43	22.36		
1.4	QPSK	3	1	22.45	22.45	22.38		
1.4	QPSK	3	3	22.43	22.39	22.40		
1.4	QPSK	6	0	21.42	21.41	21.37	23	1
1.4	16QAM	1	0	21.76	21.78	21.73	23	1
1.4	16QAM	1	3	21.86	21.75	21.72		
1.4	16QAM	1	5	21.75	21.73	21.67		
1.4	16QAM	3	0	21.56	21.54	21.51		
1.4	16QAM	3	1	21.59	21.54	21.56		
1.4	16QAM	3	3	21.55	21.50	21.51		
1.4	16QAM	6	0	20.62	20.61	20.55	22	2
1.4	64QAM	1	0	20.88	20.81	20.62	22	2
1.4	64QAM	1	3	20.90	20.85	20.81		
1.4	64QAM	1	5	20.76	20.73	20.64		
1.4	64QAM	3	0	20.69	20.72	20.62		
1.4	64QAM	3	1	20.74	20.68	20.61		
1.4	64QAM	3	3	20.66	20.62	20.59		
1.4	64QAM	6	0	19.61	19.61	19.63	21	3



<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	22.29	22.38	22.09	24	0
20	QPSK	1	49	22.24	22.25	22.09		
20	QPSK	1	99	22.35	22.34	22.13		
20	QPSK	50	0	21.34	21.39	21.16	23	1
20	QPSK	50	24	21.33	21.32	21.23		
20	QPSK	50	50	21.37	21.30	21.23		
20	QPSK	100	0	21.21	21.38	21.17		
20	16QAM	1	0	21.53	21.54	21.35	23	1
20	16QAM	1	49	21.56	21.47	21.45		
20	16QAM	1	99	21.70	21.59	21.45		
20	16QAM	50	0	20.37	20.30	20.23	22	2
20	16QAM	50	24	20.48	20.34	20.29		
20	16QAM	50	50	20.49	20.39	20.31		
20	16QAM	100	0	20.45	20.39	20.28		
20	64QAM	1	0	20.56	20.61	20.40	22	2
20	64QAM	1	49	20.57	20.60	20.40		
20	64QAM	1	99	20.64	20.65	20.51		
20	64QAM	50	0	19.50	19.38	19.33	21	3
20	64QAM	50	24	19.55	19.40	19.40		
20	64QAM	50	50	19.58	19.53	19.40		
20	64QAM	100	0	19.54	19.51	19.39		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	22.19	22.13	22.06	24	0
15	QPSK	1	37	22.25	22.16	22.09		
15	QPSK	1	74	22.27	22.27	22.23		
15	QPSK	36	0	21.33	21.20	21.15	23	1
15	QPSK	36	20	21.27	21.24	21.22		
15	QPSK	36	39	21.30	21.24	21.24		
15	QPSK	75	0	21.28	21.22	21.17		
15	16QAM	1	0	21.47	21.45	21.43	23	1
15	16QAM	1	37	21.62	21.53	21.47		
15	16QAM	1	74	21.64	21.61	21.46		
15	16QAM	36	0	20.42	20.25	20.28	22	2
15	16QAM	36	20	20.34	20.35	20.35		
15	16QAM	36	39	20.39	20.36	20.33		
15	16QAM	75	0	20.35	20.34	20.29		
15	64QAM	1	0	20.49	20.45	20.41	22	2
15	64QAM	1	37	20.55	20.52	20.34		
15	64QAM	1	74	20.53	20.60	20.49		
15	64QAM	36	0	19.49	19.36	19.35	21	3
15	64QAM	36	20	19.45	19.47	19.45		
15	64QAM	36	39	19.45	19.47	19.42		
15	64QAM	75	0	19.43	19.45	19.37		
Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	22.20	22.07	22.03	24	0
10	QPSK	1	25	22.19	22.11	22.09		
10	QPSK	1	49	22.21	22.21	22.13		
10	QPSK	25	0	21.27	21.18	21.19	23	1
10	QPSK	25	12	21.32	21.20	21.19		



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10	QPSK	25	25	21.20	21.25	21.23		
10	QPSK	50	0	21.22	21.16	21.18		
10	16QAM	1	0	21.52	21.44	21.41		
10	16QAM	1	25	21.49	21.52	21.34	23	1
10	16QAM	1	49	21.54	21.53	21.37		
10	16QAM	25	0	20.36	20.29	20.26		
10	16QAM	25	12	20.44	20.31	20.24	22	2
10	16QAM	25	25	20.29	20.35	20.31		
10	16QAM	50	0	20.33	20.29	20.26		
10	64QAM	1	0	20.44	20.46	20.37	22	2
10	64QAM	1	25	20.53	20.47	20.42		
10	64QAM	1	49	20.57	20.54	20.41		
10	64QAM	25	0	19.44	19.37	19.36	21	3
10	64QAM	25	12	19.53	19.43	19.37		
10	64QAM	25	25	19.41	19.42	19.41		
10	64QAM	50	0	19.38	19.38	19.34		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	22.20	22.10	22.06	24	0
5	QPSK	1	12	22.18	22.08	22.08		
5	QPSK	1	24	22.22	22.11	22.09		
5	QPSK	12	0	21.26	21.17	21.15	23	1
5	QPSK	12	7	21.29	21.19	21.23		
5	QPSK	12	13	21.30	21.23	21.20		
5	QPSK	25	0	21.29	21.16	21.17		
5	16QAM	1	0	21.59	21.39	21.33	23	1
5	16QAM	1	12	21.55	21.49	21.41		
5	16QAM	1	24	21.54	21.49	21.41		
5	16QAM	12	0	20.34	20.30	20.24	22	2
5	16QAM	12	7	20.39	20.32	20.37		
5	16QAM	12	13	20.39	20.35	20.36		
5	16QAM	25	0	20.33	20.27	20.28		
5	64QAM	1	0	20.49	20.44	20.38	22	2
5	64QAM	1	12	20.52	20.48	20.34		
5	64QAM	1	24	20.51	20.47	20.39		
5	64QAM	12	0	19.45	19.36	19.34	21	3
5	64QAM	12	7	19.47	19.41	19.34		
5	64QAM	12	13	19.49	19.39	19.39		
5	64QAM	25	0	19.42	19.37	19.37		



<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	22.64	22.77	22.64	24	0
20	QPSK	1	49	22.58	22.58	22.57		
20	QPSK	1	99	22.51	22.51	22.55		
20	QPSK	50	0	21.41	21.61	21.59	23	1
20	QPSK	50	24	21.41	21.41	21.58		
20	QPSK	50	50	21.41	21.41	21.53		
20	QPSK	100	0	21.46	21.59	21.46	23	1
20	16QAM	1	0	21.88	21.88	22.15		
20	16QAM	1	49	21.93	21.93	22.29		
20	16QAM	1	99	21.93	21.93	22.03	22	2
20	16QAM	50	0	20.47	20.47	20.76		
20	16QAM	50	24	20.60	20.60	20.71		
20	16QAM	50	50	20.57	20.57	20.66	22	2
20	16QAM	100	0	20.57	20.57	20.72		
20	64QAM	1	0	20.90	20.90	21.19		
20	64QAM	1	49	20.95	20.95	21.21	22	2
20	64QAM	1	99	20.93	20.93	20.97		
20	64QAM	50	0	19.57	19.57	19.81		
20	64QAM	50	24	19.67	19.67	19.79	21	3
20	64QAM	50	50	19.64	19.64	19.76		
20	64QAM	100	0	19.65	19.65	19.82		
Channel				132047	132322	132597		
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	22.66	22.73	22.70	24	0
15	QPSK	1	37	22.58	22.71	22.73		
15	QPSK	1	74	22.61	22.58	22.56		
15	QPSK	36	0	21.46	21.57	21.55	23	1
15	QPSK	36	20	21.55	21.65	21.66		
15	QPSK	36	39	21.55	21.50	21.53		
15	QPSK	75	0	21.54	21.56	21.53	23	1
15	16QAM	1	0	21.96	22.24	22.33		
15	16QAM	1	37	22.08	22.12	22.10		
15	16QAM	1	74	22.13	22.04	21.95	22	2
15	16QAM	36	0	20.56	20.64	20.71		
15	16QAM	36	20	20.66	20.77	20.77		
15	16QAM	36	39	20.66	20.60	20.64	22	2
15	16QAM	75	0	20.70	20.66	20.67		
15	64QAM	1	0	21.04	21.15	21.17		
15	64QAM	1	37	21.10	21.13	21.15	22	2
15	64QAM	1	74	21.13	20.98	20.95		
15	64QAM	36	0	19.61	19.79	19.79		
15	64QAM	36	20	19.71	19.88	19.89	21	3
15	64QAM	36	39	19.73	19.75	19.71		
15	64QAM	75	0	19.78	19.74	19.76		
Channel				132022	132322	132622		
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	22.56	22.61	22.67	24	0
10	QPSK	1	25	22.60	22.65	22.64		
10	QPSK	1	49	22.41	22.45	22.48		
10	QPSK	25	0	21.48	21.60	21.56	23	1
10	QPSK	25	12	21.48	21.58	21.54		



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10	QPSK	25	25	21.44	21.52	21.54				
10	QPSK	50	0	21.49	21.55	21.57				
10	16QAM	1	0	22.01	22.10	22.14	23	1		
10	16QAM	1	25	21.98	22.10	22.02				
10	16QAM	1	49	21.99	21.89	22.00				
10	16QAM	25	0	20.57	20.71	20.72	22	2		
10	16QAM	25	12	20.58	20.72	20.69				
10	16QAM	25	25	20.56	20.69	20.66				
10	16QAM	50	0	20.59	20.67	20.68				
10	64QAM	1	0	20.96	20.98	21.08	22	2		
10	64QAM	1	25	20.97	21.01	21.09				
10	64QAM	1	49	20.87	20.88	20.96				
10	64QAM	25	0	19.71	19.79	19.82	21	3		
10	64QAM	25	12	19.72	19.79	19.82				
10	64QAM	25	25	19.63	19.74	19.77				
10	64QAM	50	0	19.69	19.80	19.75				
Channel				131997	132322	132647			Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5				
5	QPSK	1	0	22.42	22.48	22.42	24	0		
5	QPSK	1	12	22.48	22.62	22.62				
5	QPSK	1	24	22.39	22.42	22.41				
5	QPSK	12	0	21.45	21.58	21.54	23	1		
5	QPSK	12	7	21.54	21.66	21.65				
5	QPSK	12	13	21.51	21.56	21.54				
5	QPSK	25	0	21.45	21.56	21.52				
5	16QAM	1	0	21.83	21.93	21.91	23	1		
5	16QAM	1	12	21.98	22.05	22.09				
5	16QAM	1	24	21.77	21.78	21.83				
5	16QAM	12	0	20.58	20.71	20.68	22	2		
5	16QAM	12	7	20.69	20.75	20.76				
5	16QAM	12	13	20.62	20.73	20.68				
5	16QAM	25	0	20.59	20.69	20.65				
5	64QAM	1	0	20.81	20.86	20.87				
5	64QAM	1	12	20.92	21.01	21.04	22	2		
5	64QAM	1	24	20.68	20.79	20.86				
5	64QAM	12	0	19.66	19.77	19.80				
5	64QAM	12	7	19.78	19.88	19.84	21	3		
5	64QAM	12	13	19.69	19.79	19.80				
5	64QAM	25	0	19.67	19.76	19.74				
Channel				131987	132322	132657			Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5				
3	QPSK	1	0	22.40	22.52	22.45	24	0		
3	QPSK	1	8	22.52	22.63	22.56				
3	QPSK	1	14	22.39	22.50	22.44				
3	QPSK	8	0	21.52	21.58	21.57	23	1		
3	QPSK	8	4	21.59	21.66	21.61				
3	QPSK	8	7	21.47	21.62	21.57				
3	QPSK	15	0	21.47	21.62	21.57				
3	16QAM	1	0	21.82	21.82	21.94	23	1		
3	16QAM	1	8	21.92	22.11	22.05				
3	16QAM	1	14	21.84	21.87	21.90				
3	16QAM	8	0	20.68	20.79	20.76	22	2		
3	16QAM	8	4	20.70	20.87	20.86				
3	16QAM	8	7	20.66	20.75	20.74				
3	16QAM	15	0	20.62	20.71	20.70				
3	64QAM	1	0	20.84	20.89	20.85				



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3	64QAM	1	8	20.97	21.05	21.07	21	3
3	64QAM	1	14	20.83	20.89	20.94		
3	64QAM	8	0	19.71	19.84	19.79		
3	64QAM	8	4	19.82	19.88	19.84		
3	64QAM	8	7	19.74	19.79	19.75		
3	64QAM	15	0	19.71	19.80	19.81		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	22.45	22.57	22.46	24	0
1.4	QPSK	1	3	22.55	22.64	22.57		
1.4	QPSK	1	5	22.43	22.53	22.48		
1.4	QPSK	3	0	22.48	22.58	22.59		
1.4	QPSK	3	1	22.56	22.61	22.58		
1.4	QPSK	3	3	22.50	22.59	22.53		
1.4	QPSK	6	0	21.49	21.56	21.57	23	1
1.4	16QAM	1	0	21.94	21.94	21.91	23	1
1.4	16QAM	1	3	21.94	21.96	22.12		
1.4	16QAM	1	5	21.81	21.86	21.92		
1.4	16QAM	3	0	21.66	21.74	21.75		
1.4	16QAM	3	1	21.69	21.78	21.71		
1.4	16QAM	3	3	21.66	21.70	21.69		
1.4	16QAM	6	0	20.67	20.76	20.76	22	2
1.4	64QAM	1	0	20.83	20.97	20.93	22	2
1.4	64QAM	1	3	21.05	20.95	21.11		
1.4	64QAM	1	5	20.77	20.89	20.86		
1.4	64QAM	3	0	20.78	20.84	20.78		
1.4	64QAM	3	1	20.78	20.85	20.88		
1.4	64QAM	3	3	20.81	20.82	20.79		
1.4	64QAM	6	0	19.72	19.80	19.75	21	3



<Hotspot 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	20.5	0
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	19.44	19.54	19.35	20.5	0
20	QPSK	1	49	19.33	19.45	19.32		
20	QPSK	1	99	19.40	19.37	19.17		
20	QPSK	50	0	19.46	19.52	19.35	20.5	0
20	QPSK	50	24	19.42	19.46	19.33		
20	QPSK	50	50	19.39	19.42	19.26		
20	QPSK	100	0	19.33	19.41	19.31		
20	16QAM	1	0	19.20	19.20	19.17	20.5	0
20	16QAM	1	49	19.19	19.15	19.16		
20	16QAM	1	99	19.14	19.11	19.18		
20	16QAM	50	0	19.13	19.19	19.13	20.5	0
20	16QAM	50	24	19.18	19.10	19.18		
20	16QAM	50	50	19.12	19.14	19.15		
20	16QAM	100	0	19.19	19.14	19.20		
20	64QAM	1	0	19.15	19.11	19.15	20.5	0
20	64QAM	1	49	19.16	19.20	19.12		
20	64QAM	1	99	19.15	19.12	19.15		
20	64QAM	50	0	19.18	19.17	19.14	20.5	0
20	64QAM	50	24	19.12	19.16	19.19		
20	64QAM	50	50	19.10	19.18	19.13		
20	64QAM	100	0	19.17	19.13	19.17		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	19.33	19.40	19.25	20.5	0
15	QPSK	1	37	19.33	19.41	19.22		
15	QPSK	1	74	19.26	19.27	19.20		
15	QPSK	36	0	19.38	19.46	19.27	20.5	0
15	QPSK	36	20	19.36	19.42	19.30		
15	QPSK	36	39	19.35	19.35	19.26		
15	QPSK	75	0	19.34	19.31	19.31		
15	16QAM	1	0	19.16	19.10	19.20	20.5	0
15	16QAM	1	37	19.11	19.12	19.14		
15	16QAM	1	74	19.18	19.11	19.20		
15	16QAM	36	0	19.12	19.14	19.10	20.5	0
15	16QAM	36	20	19.17	19.19	19.20		
15	16QAM	36	39	19.12	19.20	19.15		
15	16QAM	75	0	19.14	19.11	19.16		
15	64QAM	1	0	19.15	19.13	19.15	20.5	0
15	64QAM	1	37	19.20	19.18	19.17		
15	64QAM	1	74	19.14	19.17	19.20		
15	64QAM	36	0	19.10	19.13	19.16	20.5	0
15	64QAM	36	20	19.17	19.10	19.19		
15	64QAM	36	39	19.17	19.11	19.16		
15	64QAM	75	0	19.17	19.13	19.11		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	19.44	19.44	19.29	20.5	0
10	QPSK	1	25	19.32	19.43	19.21		
10	QPSK	1	49	19.27	19.34	19.13		
10	QPSK	25	0	19.40	19.43	19.27		



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10	QPSK	25	12	19.36	19.45	19.26		
10	QPSK	25	25	19.29	19.30	19.29		
10	QPSK	50	0	19.31	19.43	19.26		
10	16QAM	1	0	19.14	19.10	19.16	20.5	0
10	16QAM	1	25	19.16	19.15	19.12		
10	16QAM	1	49	19.15	19.15	19.12		
10	16QAM	25	0	19.20	19.17	19.11	20.5	0
10	16QAM	25	12	19.14	19.11	19.13		
10	16QAM	25	25	19.18	19.17	19.10		
10	16QAM	50	0	19.13	19.13	19.11		
10	64QAM	1	0	19.11	19.13	19.18	20.5	0
10	64QAM	1	25	19.14	19.16	19.19		
10	64QAM	1	49	19.14	19.15	19.16		
10	64QAM	25	0	19.19	19.12	19.20	20.5	0
10	64QAM	25	12	19.11	19.19	19.18		
10	64QAM	25	25	19.13	19.18	19.16		
10	64QAM	50	0	19.18	19.11	19.19		
Channel				18625	18900	19175		
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	19.43	19.44	19.37	20.5	0
5	QPSK	1	12	19.38	19.37	19.22		
5	QPSK	1	24	19.38	19.43	19.29		
5	QPSK	12	0	19.34	19.42	19.27	20.5	0
5	QPSK	12	7	19.43	19.51	19.33		
5	QPSK	12	13	19.29	19.37	19.29		
5	QPSK	25	0	19.27	19.34	19.24		
5	16QAM	1	0	19.17	19.18	19.19		
5	16QAM	1	12	19.20	19.14	19.18	20.5	0
5	16QAM	1	24	19.19	19.11	19.12		
5	16QAM	12	0	19.18	19.14	19.16		
5	16QAM	12	7	19.11	19.12	19.11	20.5	0
5	16QAM	12	13	19.17	19.12	19.14		
5	16QAM	25	0	19.17	19.13	19.19		
5	64QAM	1	0	19.12	19.20	19.16		
5	64QAM	1	12	19.11	19.11	19.12		
5	64QAM	1	24	19.10	19.20	19.12	20.5	0
5	64QAM	12	0	19.10	19.15	19.10		
5	64QAM	12	7	19.13	19.14	19.11		
5	64QAM	12	13	19.16	19.20	19.19		
5	64QAM	25	0	19.17	19.14	19.13		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	19.29	19.28	19.13	20.5	0
3	QPSK	1	8	19.36	19.37	19.18		
3	QPSK	1	14	19.33	19.33	19.06		
3	QPSK	8	0	19.33	19.46	19.20	20.5	0
3	QPSK	8	4	19.35	19.36	19.30		
3	QPSK	8	7	19.37	19.39	19.25		
3	QPSK	15	0	19.32	19.31	19.30		
3	16QAM	1	0	19.15	19.12	19.17	20.5	0
3	16QAM	1	8	19.16	19.17	19.10		
3	16QAM	1	14	19.10	19.17	19.19		
3	16QAM	8	0	19.10	19.15	19.10	20.5	0
3	16QAM	8	4	19.12	19.20	19.14		
3	16QAM	8	7	19.11	19.20	19.19		
3	16QAM	15	0	19.10	19.11	19.20		



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3	64QAM	1	0	19.19	19.15	19.20	20.5	0
3	64QAM	1	8	19.18	19.20	19.20		
3	64QAM	1	14	19.11	19.16	19.18		
3	64QAM	8	0	19.17	19.12	19.13	20.5	0
3	64QAM	8	4	19.16	19.14	19.16		
3	64QAM	8	7	19.11	19.12	19.10		
3	64QAM	15	0	19.12	19.12	19.17		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	19.32	19.32	19.16	20.5	0
1.4	QPSK	1	3	19.32	19.39	19.40		
1.4	QPSK	1	5	19.26	19.27	19.05		
1.4	QPSK	3	0	19.27	19.36	19.23		
1.4	QPSK	3	1	19.45	19.39	19.32		
1.4	QPSK	3	3	19.36	19.22	19.29		
1.4	QPSK	6	0	19.23	19.29	19.09	20.5	0
1.4	16QAM	1	0	19.10	19.13	19.18	20.5	0
1.4	16QAM	1	3	19.15	19.18	19.10		
1.4	16QAM	1	5	19.11	19.19	19.14		
1.4	16QAM	3	0	19.19	19.19	19.20		
1.4	16QAM	3	1	19.10	19.15	19.18		
1.4	16QAM	3	3	19.13	19.16	19.19		
1.4	16QAM	6	0	19.20	19.11	19.18	20.5	0
1.4	64QAM	1	0	19.12	19.15	19.16	20.5	0
1.4	64QAM	1	3	19.19	19.17	19.15		
1.4	64QAM	1	5	19.14	19.20	19.14		
1.4	64QAM	3	0	19.17	19.12	19.11		
1.4	64QAM	3	1	19.16	19.12	19.18		
1.4	64QAM	3	3	19.20	19.11	19.13		
1.4	64QAM	6	0	19.15	19.19	19.17	20.5	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	20.13	20.33	20.01	20.5	0
20	QPSK	1	49	20.36	20.16	20.03		
20	QPSK	1	99	19.91	19.90	20.14		
20	QPSK	50	0	20.05	20.32	19.82	20.5	0
20	QPSK	50	24	20.08	20.01	20.16		
20	QPSK	50	50	20.29	20.20	20.09		
20	QPSK	100	0	20.15	20.15	20.16	20.5	0
20	16QAM	1	0	20.03	20.23	20.15		
20	16QAM	1	49	20.19	20.04	19.95		
20	16QAM	1	99	20.16	19.91	20.11	20.5	0
20	16QAM	50	0	19.98	19.94	20.03		
20	16QAM	50	24	20.18	20.20	19.80		
20	16QAM	50	50	19.99	19.90	19.81	20.5	0
20	16QAM	100	0	20.04	19.94	19.94		
20	64QAM	1	0	19.88	20.04	19.82		
20	64QAM	1	49	19.92	19.86	20.25	20.5	0
20	64QAM	1	99	19.85	20.05	20.22		
20	64QAM	50	0	20.04	20.04	20.05		
20	64QAM	50	24	20.12	19.88	20.10	20.5	0
20	64QAM	50	50	20.17	20.17	20.15		
20	64QAM	100	0	19.89	20.12	20.19		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	20.02	20.03	20.07	20.5	0
15	QPSK	1	37	20.06	20.05	20.12		
15	QPSK	1	74	19.80	19.77	20.10		
15	QPSK	36	0	19.84	19.99	20.08	20.5	0
15	QPSK	36	20	20.00	20.12	20.16		
15	QPSK	36	39	20.21	19.89	20.27		
15	QPSK	75	0	20.00	20.05	20.00	20.5	0
15	16QAM	1	0	20.01	20.04	20.10		
15	16QAM	1	37	20.16	20.03	19.85		
15	16QAM	1	74	20.24	20.03	19.96	20.5	0
15	16QAM	36	0	20.14	20.15	19.82		
15	16QAM	36	20	20.20	20.20	20.10		
15	16QAM	36	39	20.28	20.04	19.95	20.5	0
15	16QAM	75	0	20.02	20.17	19.94		
15	64QAM	1	0	20.22	19.96	20.18		
15	64QAM	1	37	19.89	20.16	20.09	20.5	0
15	64QAM	1	74	19.89	20.07	20.15		
15	64QAM	36	0	20.00	20.06	19.75		
15	64QAM	36	20	19.75	20.22	20.07	20.5	0
15	64QAM	36	39	20.01	19.86	19.93		
15	64QAM	75	0	20.06	20.08	19.91		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	20.03	19.89	20.04	20.5	0
10	QPSK	1	25	20.00	20.10	19.95		
10	QPSK	1	49	19.73	20.05	20.07		
10	QPSK	25	0	20.17	20.11	20.12	20.5	0
10	QPSK	25	12	20.20	19.92	20.20		



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10	QPSK	25	25	19.84	19.97	20.13		
10	QPSK	50	0	20.01	19.96	19.99		
10	16QAM	1	0	20.14	20.16	19.80	20.5	0
10	16QAM	1	25	20.03	20.18	20.11		
10	16QAM	1	49	19.82	20.05	20.05		
10	16QAM	25	0	20.20	19.83	19.81	20.5	0
10	16QAM	25	12	20.21	20.02	20.04		
10	16QAM	25	25	20.28	19.95	20.03		
10	16QAM	50	0	20.06	19.86	19.88	20.5	0
10	64QAM	1	0	20.00	19.99	19.87		
10	64QAM	1	25	20.26	19.88	20.07		
10	64QAM	1	49	20.22	20.18	20.11	20.5	0
10	64QAM	25	0	19.99	20.15	20.24		
10	64QAM	25	12	20.02	20.02	20.27		
10	64QAM	25	25	20.21	20.12	19.86	20.5	0
10	64QAM	50	0	19.98	20.16	20.18		
Channel				19975	20175	20375		
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	20.11	19.98	20.05	20.5	0
5	QPSK	1	12	19.95	19.96	19.86		
5	QPSK	1	24	19.85	20.10	20.13		
5	QPSK	12	0	20.06	20.18	20.21	20.5	0
5	QPSK	12	7	20.11	19.99	20.17		
5	QPSK	12	13	19.78	20.27	19.90		
5	QPSK	25	0	19.98	20.17	20.14	20.5	0
5	16QAM	1	0	19.94	20.02	20.09		
5	16QAM	1	12	20.17	20.00	20.19		
5	16QAM	1	24	19.96	20.04	19.96	20.5	0
5	16QAM	12	0	20.23	20.03	19.79		
5	16QAM	12	7	20.06	20.01	20.14		
5	16QAM	12	13	19.97	20.00	19.74	20.5	0
5	16QAM	25	0	20.17	20.26	20.18		
5	64QAM	1	0	20.15	20.17	19.92		
5	64QAM	1	12	20.17	20.08	20.02	20.5	0
5	64QAM	1	24	20.27	20.15	20.03		
5	64QAM	12	0	20.08	19.80	20.16		
5	64QAM	12	7	20.09	19.97	20.05	20.5	0
5	64QAM	12	13	20.14	19.92	20.26		
5	64QAM	25	0	20.06	19.92	20.05		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	19.88	20.00	19.81	20.5	0
3	QPSK	1	8	19.67	19.98	20.05		
3	QPSK	1	14	19.90	20.00	20.09		
3	QPSK	8	0	20.12	19.92	19.96	20.5	0
3	QPSK	8	4	19.89	20.17	20.08		
3	QPSK	8	7	19.79	20.06	20.26		
3	QPSK	15	0	19.95	20.09	20.07	20.5	0
3	16QAM	1	0	19.88	20.21	19.91		
3	16QAM	1	8	20.11	20.19	20.13		
3	16QAM	1	14	19.99	20.10	20.03	20.5	0
3	16QAM	8	0	20.09	19.91	20.05		
3	16QAM	8	4	19.85	19.92	20.10		
3	16QAM	8	7	20.14	20.13	20.04	20.5	0
3	16QAM	15	0	20.14	20.02	20.03		
3	64QAM	1	0	20.16	20.08	20.00		



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3	64QAM	1	8	19.78	19.81	20.02	20.5	0
3	64QAM	1	14	20.02	19.80	20.00		
3	64QAM	8	0	20.11	20.10	19.91		
3	64QAM	8	4	19.99	20.03	19.87		
3	64QAM	8	7	19.98	19.85	20.04		
3	64QAM	15	0	19.79	20.12	19.99		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	19.83	20.08	19.97	20.5	0
1.4	QPSK	1	3	19.76	19.88	19.86		
1.4	QPSK	1	5	19.90	19.84	19.88		
1.4	QPSK	3	0	19.85	20.20	20.22		
1.4	QPSK	3	1	19.86	20.34	19.94		
1.4	QPSK	3	3	19.90	20.02	20.16		
1.4	QPSK	6	0	19.75	19.80	19.92	20.5	0
1.4	16QAM	1	0	20.19	19.87	20.22	20.5	0
1.4	16QAM	1	3	20.20	19.88	19.80		
1.4	16QAM	1	5	20.15	20.04	19.85		
1.4	16QAM	3	0	20.15	19.88	19.75		
1.4	16QAM	3	1	20.21	19.96	20.11		
1.4	16QAM	3	3	20.03	19.88	19.88		
1.4	16QAM	6	0	19.87	20.32	19.99	20.5	0
1.4	64QAM	1	0	19.83	19.98	19.90	20.5	0
1.4	64QAM	1	3	19.84	19.86	19.83		
1.4	64QAM	1	5	19.85	19.91	19.94		
1.4	64QAM	3	0	19.90	20.00	20.04		
1.4	64QAM	3	1	20.22	19.93	19.73		
1.4	64QAM	3	3	19.90	19.79	19.96		
1.4	64QAM	6	0	19.86	20.06	20.23	20.5	0



<LTE Band 5>

Channel	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	21.66	21.72	21.50	23.5	0
10 QPSK 1 25	21.53	21.57	21.36		
10 QPSK 1 49	21.50	21.42	21.45		
10 QPSK 25 0	21.60	21.69	21.54	22.5	1
10 QPSK 25 12	21.56	21.66	21.45		
10 QPSK 25 25	21.55	21.58	21.42		
10 QPSK 50 0	21.46	21.67	21.51	22.5	1
10 16QAM 1 0	21.44	21.43	21.42		
10 16QAM 1 25	21.44	21.40	21.43		
10 16QAM 1 49	21.39	21.38	21.39	21.5	2
10 16QAM 25 0	20.77	20.73	20.75		
10 16QAM 25 12	20.90	20.77	20.87		
10 16QAM 25 25	20.83	20.66	20.70	21.5	2
10 16QAM 50 0	20.90	20.80	20.74		
10 64QAM 1 0	20.79	20.85	20.74		
10 64QAM 1 25	20.77	20.85	20.76	21.5	2
10 64QAM 1 49	20.86	20.81	20.73		
10 64QAM 25 0	19.74	19.73	19.68		
10 64QAM 25 12	19.87	19.76	19.79	20.5	3
10 64QAM 25 25	19.80	19.65	19.67		
10 64QAM 50 0	19.85	19.78	19.71		
Channel	20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)	826.5	836.5	846.5		
5 QPSK 1 0	21.64	21.63	21.57	23.5	0
5 QPSK 1 12	21.56	21.64	21.62		
5 QPSK 1 24	21.58	21.49	21.51		
5 QPSK 12 0	21.63	21.61	21.66	22.5	1
5 QPSK 12 7	21.64	21.65	21.63		
5 QPSK 12 13	21.56	21.68	21.62		
5 QPSK 25 0	21.63	21.60	21.61	22.5	1
5 16QAM 1 0	21.36	21.41	21.37		
5 16QAM 1 12	21.31	21.42	21.46		
5 16QAM 1 24	21.39	21.46	21.20	21.5	2
5 16QAM 12 0	20.82	20.84	20.84		
5 16QAM 12 7	20.85	20.77	20.88		
5 16QAM 12 13	20.79	20.79	20.78	21.5	2
5 16QAM 25 0	20.78	20.73	20.67		
5 64QAM 1 0	20.96	20.89	20.87		
5 64QAM 1 12	20.91	20.96	20.98	21.5	2
5 64QAM 1 24	20.83	20.77	20.99		
5 64QAM 12 0	19.80	19.82	19.81		
5 64QAM 12 7	19.82	19.76	19.91	20.5	3
5 64QAM 12 13	19.76	19.79	19.83		
5 64QAM 25 0	19.81	19.80	19.72		
Channel	20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)	825.5	836.5	847.5		
3 QPSK 1 0	21.65	21.53	21.55	23.5	0
3 QPSK 1 8	21.53	21.58	21.51		
3 QPSK 1 14	21.58	21.54	21.62		
3 QPSK 8 0	21.63	21.63	21.57	22.5	1
3 QPSK 8 4	21.70	21.61	21.58		



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3	QPSK	8	7	21.68	21.58	21.53		
3	QPSK	15	0	21.70	21.64	21.59		
3	16QAM	1	0	21.42	21.29	21.31	22.5	1
3	16QAM	1	8	21.36	21.46	21.32		
3	16QAM	1	14	21.39	21.26	21.40		
3	16QAM	8	0	20.84	20.72	20.77	21.5	2
3	16QAM	8	4	20.82	20.77	20.82		
3	16QAM	8	7	20.82	20.71	20.78		
3	16QAM	15	0	20.76	20.77	20.72		
3	64QAM	1	0	20.95	20.90	20.89	21.5	2
3	64QAM	1	8	20.94	20.95	21.00		
3	64QAM	1	14	20.98	21.00	20.92		
3	64QAM	8	0	19.84	19.69	19.73	20.5	3
3	64QAM	8	4	19.92	19.84	19.79		
3	64QAM	8	7	19.86	19.78	19.72		
3	64QAM	15	0	19.82	19.78	19.73		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	21.58	21.51	21.55	23.5	0
1.4	QPSK	1	3	21.60	21.64	21.57		
1.4	QPSK	1	5	21.51	21.52	21.43		
1.4	QPSK	3	0	21.53	21.57	21.49		
1.4	QPSK	3	1	21.61	21.65	21.49		
1.4	QPSK	3	3	21.61	21.54	21.58		
1.4	QPSK	6	0	21.66	21.60	21.57	22.5	1
1.4	16QAM	1	0	21.47	21.43	21.46	22.5	1
1.4	16QAM	1	3	21.43	21.44	21.43		
1.4	16QAM	1	5	21.47	21.48	21.47		
1.4	16QAM	3	0	21.21	21.22	21.07		
1.4	16QAM	3	1	21.25	21.20	21.19		
1.4	16QAM	3	3	21.17	21.12	21.04		
1.4	16QAM	6	0	20.87	20.82	20.78	21.5	2
1.4	64QAM	1	0	20.94	20.91	20.95	21.5	2
1.4	64QAM	1	3	20.98	20.94	21.00		
1.4	64QAM	1	5	20.99	20.95	20.95		
1.4	64QAM	3	0	20.92	20.78	20.79		
1.4	64QAM	3	1	20.96	20.92	20.91		
1.4	64QAM	3	3	20.88	20.49	20.76		
1.4	64QAM	6	0	19.78	19.62	19.60	20.5	3



<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350	16.5	0
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	16.20	16.23	16.04	16.5	0
20	QPSK	1	49	16.12	16.14	16.03		
20	QPSK	1	99	16.02	16.19	16.01		
20	QPSK	50	0	16.03	16.22	16.07	16.5	0
20	QPSK	50	24	16.02	16.10	16.03		
20	QPSK	50	50	16.01	16.11	16.01		
20	QPSK	100	0	16.11	16.16	16.06	16.5	0
20	16QAM	1	0	16.23	16.23	16.15		
20	16QAM	1	49	16.20	16.10	16.14		
20	16QAM	1	99	16.04	16.19	16.09	16.5	0
20	16QAM	50	0	16.06	16.08	16.04		
20	16QAM	50	24	16.08	16.21	16.07		
20	16QAM	50	50	16.12	16.09	16.16	16.5	0
20	16QAM	100	0	16.15	16.13	16.23		
20	64QAM	1	0	16.21	16.04	16.17		
20	64QAM	1	49	16.07	16.04	16.22	16.5	0
20	64QAM	1	99	16.21	16.04	16.06		
20	64QAM	50	0	16.17	16.14	16.18		
20	64QAM	50	24	16.13	16.13	16.19	16.5	0
20	64QAM	50	50	16.20	16.03	16.23		
20	64QAM	100	0	16.20	16.18	16.20		
Channel				20825	21100	21375	16.5	0
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	16.05	15.95	15.97	16.5	0
15	QPSK	1	37	16.10	16.07	15.95		
15	QPSK	1	74	16.18	16.19	16.14		
15	QPSK	36	0	16.14	16.05	16.11	16.5	0
15	QPSK	36	20	16.12	16.12	16.11		
15	QPSK	36	39	16.18	16.16	16.12		
15	QPSK	75	0	16.11	16.11	16.12	16.5	0
15	16QAM	1	0	16.20	16.10	16.15		
15	16QAM	1	37	16.21	16.03	16.04		
15	16QAM	1	74	16.07	16.22	16.16	16.5	0
15	16QAM	36	0	16.08	16.17	16.07		
15	16QAM	36	20	16.14	16.12	16.16		
15	16QAM	36	39	16.10	16.04	16.06	16.5	0
15	16QAM	75	0	16.23	16.07	16.09		
15	64QAM	1	0	16.16	16.19	16.14		
15	64QAM	1	37	16.22	16.09	16.23	16.5	0
15	64QAM	1	74	16.19	16.17	16.07		
15	64QAM	36	0	16.17	16.12	16.16		
15	64QAM	36	20	16.22	16.12	16.19	16.5	0
15	64QAM	36	39	16.19	16.16	16.07		
15	64QAM	75	0	16.08	16.11	16.18		
Channel				20800	21100	21400	16.5	0
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	16.01	15.86	15.91	16.5	0
10	QPSK	1	25	16.06	15.92	16.11		
10	QPSK	1	49	16.09	16.05	16.04		
10	QPSK	25	0	16.14	16.02	16.08	16.5	0
10	QPSK	25	12	16.16	16.12	16.09		



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10	QPSK	25	25	16.12	16.13	16.10		
10	QPSK	50	0	16.03	16.07	16.09		
10	16QAM	1	0	16.23	16.23	16.23	16.5	0
10	16QAM	1	25	16.09	16.20	16.15		
10	16QAM	1	49	16.12	16.14	16.11		
10	16QAM	25	0	16.07	16.17	16.23	16.5	0
10	16QAM	25	12	16.23	16.23	16.09		
10	16QAM	25	25	16.05	16.17	16.06		
10	16QAM	50	0	16.22	16.07	16.20	16.5	0
10	64QAM	1	0	16.10	16.21	16.03		
10	64QAM	1	25	16.21	16.22	16.23		
10	64QAM	1	49	16.20	16.04	16.12	16.5	0
10	64QAM	25	0	16.20	16.17	16.08		
10	64QAM	25	12	16.06	16.16	16.11		
10	64QAM	25	25	16.20	16.23	16.08	16.5	0
10	64QAM	50	0	16.22	16.18	16.20		
Channel				20775	21100	21425		
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	16.13	16.02	16.07	16.5	0
5	QPSK	1	12	16.08	16.10	16.13		
5	QPSK	1	24	16.25	16.09	16.11		
5	QPSK	12	0	16.13	16.03	16.07	16.5	0
5	QPSK	12	7	16.13	16.12	16.06		
5	QPSK	12	13	16.16	16.07	16.06		
5	QPSK	25	0	16.11	16.09	16.10	16.5	0
5	16QAM	1	0	16.12	16.08	16.14		
5	16QAM	1	12	16.16	16.12	16.07		
5	16QAM	1	24	16.16	16.22	16.19	16.5	0
5	16QAM	12	0	16.12	16.07	16.16		
5	16QAM	12	7	16.14	16.21	16.08		
5	16QAM	12	13	16.17	16.03	16.07	16.5	0
5	16QAM	25	0	16.10	16.07	16.08		
5	64QAM	1	0	16.23	16.22	16.10		
5	64QAM	1	12	16.17	16.15	16.19	16.5	0
5	64QAM	1	24	16.15	16.15	16.21		
5	64QAM	12	0	16.04	16.08	16.03		
5	64QAM	12	7	16.10	16.20	16.21	16.5	0
5	64QAM	12	13	16.03	16.04	16.19		
5	64QAM	25	0	16.22	16.16	16.08		



<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	19.83	19.91	19.72	20.5	0
20	QPSK	1	49	19.80	19.85	19.62		
20	QPSK	1	99	19.69	19.81	19.61		
20	QPSK	50	0	19.75	19.77	19.61	20.5	0
20	QPSK	50	24	19.70	19.71	19.60		
20	QPSK	50	50	19.65	19.69	19.58		
20	QPSK	100	0	19.73	19.76	19.75	20.5	0
20	16QAM	1	0	19.81	19.55	19.59		
20	16QAM	1	49	19.51	19.58	19.82		
20	16QAM	1	99	19.53	19.50	19.29	20.5	0
20	16QAM	50	0	19.19	19.30	19.23		
20	16QAM	50	24	19.32	19.25	19.20		
20	16QAM	50	50	19.18	19.18	19.13	20.5	0
20	16QAM	100	0	19.20	19.24	19.19		
20	64QAM	1	0	19.43	19.63	19.60		
20	64QAM	1	49	19.37	19.76	19.84	20.5	0
20	64QAM	1	99	19.42	19.63	19.67		
20	64QAM	50	0	19.18	19.20	19.23		
20	64QAM	50	24	19.30	19.29	19.18	20.5	0
20	64QAM	50	50	19.21	19.17	19.23		
20	64QAM	100	0	19.27	19.18	19.22		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	19.83	19.85	19.87	20.5	0
15	QPSK	1	37	19.80	19.88	19.87		
15	QPSK	1	74	19.79	19.74	19.74		
15	QPSK	36	0	19.66	19.76	19.76	20.5	0
15	QPSK	36	20	19.67	19.80	19.84		
15	QPSK	36	39	19.72	19.63	19.69		
15	QPSK	75	0	19.71	19.75	19.72	20.5	0
15	16QAM	1	0	19.54	19.84	19.80		
15	16QAM	1	37	19.62	19.73	19.80		
15	16QAM	1	74	19.52	19.62	19.67	20.5	0
15	16QAM	36	0	19.12	19.31	19.25		
15	16QAM	36	20	19.25	19.35	19.32		
15	16QAM	36	39	19.21	19.18	19.18	20.5	0
15	16QAM	75	0	19.20	19.30	19.20		
15	64QAM	1	0	19.68	19.79	19.84		
15	64QAM	1	37	19.71	19.87	19.82	20.5	0
15	64QAM	1	74	19.69	19.57	19.58		
15	64QAM	36	0	19.18	19.28	19.24		
15	64QAM	36	20	19.19	19.32	19.37	20.5	0
15	64QAM	36	39	19.21	19.15	19.22		
15	64QAM	75	0	19.18	19.27	19.25		
Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	19.80	19.79	19.77	20.5	0
10	QPSK	1	25	19.78	19.77	19.84		
10	QPSK	1	49	19.68	19.71	19.59		
10	QPSK	25	0	19.64	19.85	19.73		



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10	QPSK	25	12	19.70	19.70	19.68		
10	QPSK	25	25	19.71	19.68	19.67		
10	QPSK	50	0	19.63	19.73	19.72		
10	16QAM	1	0	19.25	19.34	19.38	20.5	0
10	16QAM	1	25	19.30	19.43	19.33		
10	16QAM	1	49	19.25	19.35	19.25		
10	16QAM	25	0	19.25	19.34	19.25	20.5	0
10	16QAM	25	12	19.20	19.31	19.21		
10	16QAM	25	25	19.20	19.27	19.19		
10	16QAM	50	0	19.21	19.29	19.20		
10	64QAM	1	0	19.49	19.69	19.61	20.5	0
10	64QAM	1	25	19.56	19.56	19.67		
10	64QAM	1	49	19.29	19.47	19.58		
10	64QAM	25	0	19.17	19.27	19.37	20.5	0
10	64QAM	25	12	19.23	19.33	19.22		
10	64QAM	25	25	19.12	19.21	19.21		
10	64QAM	50	0	19.17	19.27	19.15		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	19.62	19.66	19.65	20.5	0
5	QPSK	1	12	19.79	19.69	19.63		
5	QPSK	1	24	19.62	19.64	19.50		
5	QPSK	12	0	19.71	19.71	19.61	20.5	0
5	QPSK	12	7	19.71	19.81	19.73		
5	QPSK	12	13	19.64	19.61	19.63		
5	QPSK	25	0	19.65	19.76	19.64		
5	16QAM	1	0	19.75	19.90	19.67	20.5	0
5	16QAM	1	12	19.71	19.80	19.77		
5	16QAM	1	24	19.72	19.85	19.59		
5	16QAM	12	0	19.82	19.85	19.78	20.5	0
5	16QAM	12	7	19.72	19.90	19.90		
5	16QAM	12	13	19.85	19.82	19.87		
5	16QAM	25	0	19.88	19.77	19.74		
5	64QAM	1	0	19.37	19.52	19.43	20.5	0
5	64QAM	1	12	19.42	19.67	19.64		
5	64QAM	1	24	19.35	19.44	19.44		
5	64QAM	12	0	19.33	19.33	19.35	20.5	0
5	64QAM	12	7	19.33	19.44	19.50		
5	64QAM	12	13	19.26	19.37	19.22		
5	64QAM	25	0	18.98	19.16	19.06		
Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	19.53	19.55	19.57	20.5	0
3	QPSK	1	8	19.75	19.76	19.58		
3	QPSK	1	14	19.57	19.66	19.44		
3	QPSK	8	0	19.73	19.75	19.68	20.5	0
3	QPSK	8	4	19.82	19.84	19.74		
3	QPSK	8	7	19.72	19.71	19.72		
3	QPSK	15	0	19.69	19.70	19.65		
3	16QAM	1	0	19.17	19.38	19.27	20.5	0
3	16QAM	1	8	19.21	19.46	19.38		
3	16QAM	1	14	19.25	19.34	19.28		
3	16QAM	8	0	19.24	19.35	19.30	20.5	0
3	16QAM	8	4	19.30	19.43	19.36		
3	16QAM	8	7	19.13	19.29	19.24		
3	16QAM	15	0	19.14	19.25	19.19		



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3	64QAM	1	0	19.39	19.50	19.41	20.5	0
3	64QAM	1	8	19.55	19.66	19.59		
3	64QAM	1	14	19.07	19.43	19.39		
3	64QAM	8	0	19.29	19.33	19.32	20.5	0
3	64QAM	8	4	19.31	19.42	19.44		
3	64QAM	8	7	19.26	19.31	19.32		
3	64QAM	15	0	19.14	19.15	19.06		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	19.56	19.71	19.61	20.5	0
1.4	QPSK	1	3	19.72	19.74	19.75		
1.4	QPSK	1	5	19.65	19.67	19.59		
1.4	QPSK	3	0	19.72	19.74	19.75		
1.4	QPSK	3	1	19.75	19.90	19.69		
1.4	QPSK	3	3	19.70	19.75	19.76		
1.4	QPSK	6	0	19.70	19.73	19.62	20.5	0
1.4	16QAM	1	0	19.29	19.76	19.70	20.5	0
1.4	16QAM	1	3	19.31	19.85	19.78		
1.4	16QAM	1	5	19.24	19.76	19.69		
1.4	16QAM	3	0	19.20	19.33	19.26		
1.4	16QAM	3	1	19.24	19.39	19.21		
1.4	16QAM	3	3	19.22	19.34	19.26		
1.4	16QAM	6	0	19.34	19.36	19.40	20.5	0
1.4	64QAM	1	0	19.39	19.53	19.56	20.5	0
1.4	64QAM	1	3	19.54	19.56	19.58		
1.4	64QAM	1	5	19.38	19.50	19.52		
1.4	64QAM	3	0	19.17	19.41	19.33		
1.4	64QAM	3	1	19.44	19.47	19.38		
1.4	64QAM	3	3	19.39	19.41	19.43		
1.4	64QAM	6	0	19.15	19.18	19.07	20.5	0



<Body-worn 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	19.44	19.54	19.35	20.5	0
20	QPSK	1	49	19.33	19.45	19.32		
20	QPSK	1	99	19.40	19.37	19.17		
20	QPSK	50	0	19.46	19.52	19.35	20.5	0
20	QPSK	50	24	19.42	19.46	19.33		
20	QPSK	50	50	19.39	19.42	19.26		
20	QPSK	100	0	19.33	19.41	19.31	20.5	0
20	16QAM	1	0	19.20	19.20	19.17		
20	16QAM	1	49	19.19	19.15	19.16		
20	16QAM	1	99	19.14	19.11	19.18	20.5	0
20	16QAM	50	0	19.13	19.19	19.13		
20	16QAM	50	24	19.18	19.10	19.18		
20	16QAM	50	50	19.12	19.14	19.15	20.5	0
20	16QAM	100	0	19.19	19.14	19.20		
20	64QAM	1	0	19.15	19.11	19.15		
20	64QAM	1	49	19.16	19.20	19.12	20.5	0
20	64QAM	1	99	19.15	19.12	19.15		
20	64QAM	50	0	19.18	19.17	19.14		
20	64QAM	50	24	19.12	19.16	19.19	20.5	0
20	64QAM	50	50	19.10	19.18	19.13		
20	64QAM	100	0	19.17	19.13	19.17		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	19.33	19.40	19.25	20.5	0
15	QPSK	1	37	19.33	19.41	19.22		
15	QPSK	1	74	19.26	19.27	19.20		
15	QPSK	36	0	19.38	19.46	19.27	20.5	0
15	QPSK	36	20	19.36	19.42	19.30		
15	QPSK	36	39	19.35	19.35	19.26		
15	QPSK	75	0	19.34	19.31	19.31	20.5	0
15	16QAM	1	0	19.16	19.10	19.20		
15	16QAM	1	37	19.11	19.12	19.14		
15	16QAM	1	74	19.18	19.11	19.20	20.5	0
15	16QAM	36	0	19.12	19.14	19.10		
15	16QAM	36	20	19.17	19.19	19.20		
15	16QAM	36	39	19.12	19.20	19.15	20.5	0
15	16QAM	75	0	19.14	19.11	19.16		
15	64QAM	1	0	19.15	19.13	19.15		
15	64QAM	1	37	19.20	19.18	19.17	20.5	0
15	64QAM	1	74	19.14	19.17	19.20		
15	64QAM	36	0	19.10	19.13	19.16		
15	64QAM	36	20	19.17	19.10	19.19	20.5	0
15	64QAM	36	39	19.17	19.11	19.16		
15	64QAM	75	0	19.17	19.13	19.11		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	19.44	19.44	19.29	20.5	0
10	QPSK	1	25	19.32	19.43	19.21		
10	QPSK	1	49	19.27	19.34	19.13		



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10	QPSK	25	0	19.40	19.43	19.27	20.5	0
10	QPSK	25	12	19.36	19.45	19.26		
10	QPSK	25	25	19.29	19.30	19.29		
10	QPSK	50	0	19.31	19.43	19.26	20.5	0
10	16QAM	1	0	19.14	19.10	19.16		
10	16QAM	1	25	19.16	19.15	19.12		
10	16QAM	1	49	19.15	19.15	19.12	20.5	0
10	16QAM	25	0	19.20	19.17	19.11		
10	16QAM	25	12	19.14	19.11	19.13		
10	16QAM	25	25	19.18	19.17	19.10	20.5	0
10	16QAM	50	0	19.13	19.13	19.11		
10	64QAM	1	0	19.11	19.13	19.18		
10	64QAM	1	25	19.14	19.16	19.19	20.5	0
10	64QAM	1	49	19.14	19.15	19.16		
10	64QAM	25	0	19.19	19.12	19.20		
10	64QAM	25	12	19.11	19.19	19.18	20.5	0
10	64QAM	25	25	19.13	19.18	19.16		
10	64QAM	50	0	19.18	19.11	19.19		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	19.43	19.44	19.37	20.5	0
5	QPSK	1	12	19.38	19.37	19.22		
5	QPSK	1	24	19.38	19.43	19.29		
5	QPSK	12	0	19.34	19.42	19.27	20.5	0
5	QPSK	12	7	19.43	19.51	19.33		
5	QPSK	12	13	19.29	19.37	19.29		
5	QPSK	25	0	19.27	19.34	19.24	20.5	0
5	16QAM	1	0	19.17	19.18	19.19		
5	16QAM	1	12	19.20	19.14	19.18		
5	16QAM	1	24	19.19	19.11	19.12	20.5	0
5	16QAM	12	0	19.18	19.14	19.16		
5	16QAM	12	7	19.11	19.12	19.11		
5	16QAM	12	13	19.17	19.12	19.14	20.5	0
5	16QAM	25	0	19.17	19.13	19.19		
5	64QAM	1	0	19.12	19.20	19.16		
5	64QAM	1	12	19.11	19.11	19.12	20.5	0
5	64QAM	1	24	19.10	19.20	19.12		
5	64QAM	12	0	19.10	19.15	19.10		
5	64QAM	12	7	19.13	19.14	19.11	20.5	0
5	64QAM	12	13	19.16	19.20	19.19		
5	64QAM	25	0	19.17	19.14	19.13		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	19.29	19.28	19.13	20.5	0
3	QPSK	1	8	19.36	19.37	19.18		
3	QPSK	1	14	19.33	19.33	19.06		
3	QPSK	8	0	19.33	19.46	19.20	20.5	0
3	QPSK	8	4	19.35	19.36	19.30		
3	QPSK	8	7	19.37	19.39	19.25		
3	QPSK	15	0	19.32	19.31	19.30	20.5	0
3	16QAM	1	0	19.15	19.12	19.17		
3	16QAM	1	8	19.16	19.17	19.10		
3	16QAM	1	14	19.10	19.17	19.19	20.5	0
3	16QAM	8	0	19.10	19.15	19.10		
3	16QAM	8	4	19.12	19.20	19.14		
3	16QAM	8	7	19.11	19.20	19.19	20.5	0



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3	16QAM	15	0	19.10	19.11	19.20		
3	64QAM	1	0	19.19	19.15	19.20	20.5	0
3	64QAM	1	8	19.18	19.20	19.20		
3	64QAM	1	14	19.11	19.16	19.18		
3	64QAM	8	0	19.17	19.12	19.13	20.5	0
3	64QAM	8	4	19.16	19.14	19.16		
3	64QAM	8	7	19.11	19.12	19.10		
3	64QAM	15	0	19.12	19.12	19.17		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	19.32	19.32	19.16	20.5	0
1.4	QPSK	1	3	19.32	19.39	19.40		
1.4	QPSK	1	5	19.26	19.27	19.05		
1.4	QPSK	3	0	19.27	19.36	19.23		
1.4	QPSK	3	1	19.45	19.39	19.32		
1.4	QPSK	3	3	19.36	19.22	19.29		
1.4	QPSK	6	0	19.23	19.29	19.09	20.5	0
1.4	16QAM	1	0	19.10	19.13	19.18	20.5	0
1.4	16QAM	1	3	19.15	19.18	19.10		
1.4	16QAM	1	5	19.11	19.19	19.14		
1.4	16QAM	3	0	19.19	19.19	19.20		
1.4	16QAM	3	1	19.10	19.15	19.18		
1.4	16QAM	3	3	19.13	19.16	19.19		
1.4	16QAM	6	0	19.20	19.11	19.18	20.5	0
1.4	64QAM	1	0	19.12	19.15	19.16	20.5	0
1.4	64QAM	1	3	19.19	19.17	19.15		
1.4	64QAM	1	5	19.14	19.20	19.14		
1.4	64QAM	3	0	19.17	19.12	19.11		
1.4	64QAM	3	1	19.16	19.12	19.18		
1.4	64QAM	3	3	19.20	19.11	19.13		
1.4	64QAM	6	0	19.15	19.19	19.17	20.5	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	20.39	20.42	20.39	21	0
20	QPSK	1	49	20.36	20.36	20.36		
20	QPSK	1	99	20.25	20.20	20.22		
20	QPSK	50	0	20.37	20.40	20.32	21	0
20	QPSK	50	24	20.29	20.34	20.29		
20	QPSK	50	50	20.29	20.24	20.23		
20	QPSK	100	0	20.27	20.35	20.21	21	0
20	16QAM	1	0	20.17	20.26	20.24		
20	16QAM	1	49	20.28	20.32	20.18		
20	16QAM	1	99	20.18	20.28	20.14	21	0
20	16QAM	50	0	20.14	20.30	20.22		
20	16QAM	50	24	20.29	20.21	20.12		
20	16QAM	50	50	20.22	20.19	20.20	21	0
20	16QAM	100	0	20.12	20.22	20.31		
20	64QAM	1	0	20.16	20.16	20.13		
20	64QAM	1	49	20.22	20.12	20.26	21	0
20	64QAM	1	99	20.23	20.22	20.31		
20	64QAM	50	0	20.22	20.14	20.23		
20	64QAM	50	24	20.17	20.20	20.24	20.5	0.5
20	64QAM	50	50	20.28	20.24	20.15		
20	64QAM	100	0	20.27	20.26	20.21		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	20.23	20.38	20.35	21	0
15	QPSK	1	37	20.20	20.21	20.28		
15	QPSK	1	74	20.19	20.16	20.19		
15	QPSK	36	0	20.24	20.34	20.27	21	0
15	QPSK	36	20	20.32	20.28	20.35		
15	QPSK	36	39	20.22	20.19	20.31		
15	QPSK	75	0	20.22	20.26	20.21	21	0
15	16QAM	1	0	20.18	20.16	20.23		
15	16QAM	1	37	20.23	20.29	20.13		
15	16QAM	1	74	20.25	20.32	20.31	21	0
15	16QAM	36	0	20.31	20.17	20.12		
15	16QAM	36	20	20.23	20.24	20.17		
15	16QAM	36	39	20.29	20.21	20.27	21	0
15	16QAM	75	0	20.22	20.32	20.30		
15	64QAM	1	0	20.22	20.24	20.31		
15	64QAM	1	37	20.14	20.32	20.28	21	0
15	64QAM	1	74	20.13	20.29	20.19		
15	64QAM	36	0	20.25	20.27	20.15		
15	64QAM	36	20	20.15	20.29	20.12	20.5	0.5
15	64QAM	36	39	20.30	20.13	20.12		
15	64QAM	75	0	20.23	20.30	20.28		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	20.08	20.26	20.30	21	0
10	QPSK	1	25	20.04	20.15	20.30		
10	QPSK	1	49	20.11	20.12	20.16		
10	QPSK	25	0	20.20	20.31	20.39	21	0
10	QPSK	25	12	20.25	20.22	20.31		



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10	QPSK	25	25	20.24	20.24	20.25		
10	QPSK	50	0	20.22	20.22	20.38		
10	16QAM	1	0	20.19	20.29	20.20		
10	16QAM	1	25	20.32	20.22	20.16	21	0
10	16QAM	1	49	20.20	20.16	20.27		
10	16QAM	25	0	20.27	20.21	20.21		
10	16QAM	25	12	20.31	20.26	20.18		
10	16QAM	25	25	20.30	20.27	20.16	21	0
10	16QAM	50	0	20.30	20.12	20.27		
10	64QAM	1	0	20.31	20.21	20.15		
10	64QAM	1	25	20.27	20.22	20.14	21	0
10	64QAM	1	49	20.27	20.31	20.23		
10	64QAM	25	0	20.21	20.17	20.32		
10	64QAM	25	12	20.18	20.19	20.31		
10	64QAM	25	25	20.25	20.20	20.19	20.5	0.5
10	64QAM	50	0	20.23	20.17	20.31		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	20.24	20.23	20.34		
5	QPSK	1	12	20.17	20.24	20.25	21	0
5	QPSK	1	24	20.18	20.17	20.27		
5	QPSK	12	0	20.21	20.35	20.33		
5	QPSK	12	7	20.22	20.29	20.29		
5	QPSK	12	13	20.15	20.28	20.28	21	0
5	QPSK	25	0	20.16	20.24	20.33		
5	16QAM	1	0	20.25	20.24	20.31		
5	16QAM	1	12	20.27	20.12	20.20	21	0
5	16QAM	1	24	20.32	20.12	20.18		
5	16QAM	12	0	20.25	20.12	20.13		
5	16QAM	12	7	20.13	20.20	20.19		
5	16QAM	12	13	20.32	20.12	20.13	21	0
5	16QAM	25	0	20.18	20.26	20.23		
5	64QAM	1	0	20.17	20.32	20.20		
5	64QAM	1	12	20.19	20.19	20.13	21	0
5	64QAM	1	24	20.32	20.27	20.16		
5	64QAM	12	0	20.21	20.17	20.32		
5	64QAM	12	7	20.22	20.27	20.29		
5	64QAM	12	13	20.25	20.32	20.30	20.5	0.5
5	64QAM	25	0	20.22	20.30	20.12		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	20.08	20.13	20.21		
3	QPSK	1	8	20.03	20.11	20.16	21	0
3	QPSK	1	14	20.04	20.17	20.11		
3	QPSK	8	0	20.21	20.26	20.28		
3	QPSK	8	4	20.19	20.26	20.32		
3	QPSK	8	7	20.17	20.27	20.28	21	0
3	QPSK	15	0	20.18	20.26	20.22		
3	16QAM	1	0	20.12	20.27	20.23		
3	16QAM	1	8	20.32	20.29	20.18	21	0
3	16QAM	1	14	20.19	20.27	20.32		
3	16QAM	8	0	20.26	20.19	20.22		
3	16QAM	8	4	20.25	20.32	20.13		
3	16QAM	8	7	20.20	20.29	20.21	21	0
3	16QAM	15	0	20.18	20.30	20.22		
3	64QAM	1	0	20.18	20.21	20.16	21	0



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3	64QAM	1	8	20.14	20.17	20.24	20.5	0.5
3	64QAM	1	14	20.25	20.16	20.13		
3	64QAM	8	0	20.24	20.17	20.26		
3	64QAM	8	4	20.31	20.15	20.13		
3	64QAM	8	7	20.29	20.14	20.26		
3	64QAM	15	0	20.19	20.15	20.31		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	20.12	20.22	20.27	21	0
1.4	QPSK	1	3	20.05	20.16	20.26		
1.4	QPSK	1	5	20.12	20.23	20.21		
1.4	QPSK	3	0	20.14	20.24	20.27		
1.4	QPSK	3	1	20.17	20.40	20.23		
1.4	QPSK	3	3	20.11	20.23	20.21		
1.4	QPSK	6	0	20.07	20.17	20.18	21	0
1.4	16QAM	1	0	20.21	20.16	20.23	21	0
1.4	16QAM	1	3	20.22	20.18	20.18		
1.4	16QAM	1	5	20.21	20.14	20.18		
1.4	16QAM	3	0	20.18	20.17	20.12		
1.4	16QAM	3	1	20.27	20.16	20.28		
1.4	16QAM	3	3	20.13	20.27	20.15		
1.4	16QAM	6	0	20.13	20.32	20.26	21	0
1.4	64QAM	1	0	20.19	20.13	20.29	21	0
1.4	64QAM	1	3	20.24	20.15	20.18		
1.4	64QAM	1	5	20.19	20.20	20.22		
1.4	64QAM	3	0	20.14	20.26	20.26		
1.4	64QAM	3	1	20.22	20.21	20.13		
1.4	64QAM	3	3	20.18	20.12	20.28		
1.4	64QAM	6	0	20.14	20.23	20.24	20.5	0.5



<LTE Band 5>

Channel	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	21.66	21.72	21.50	23.5	0
10	QPSK	1	25	21.53	21.57	21.36		
10	QPSK	1	49	21.50	21.42	21.45		
10	QPSK	25	0	21.60	21.69	21.54	22.5	1
10	QPSK	25	12	21.56	21.66	21.45		
10	QPSK	25	25	21.55	21.58	21.42		
10	QPSK	50	0	21.46	21.67	21.51	22.5	1
10	16QAM	1	0	21.44	21.43	21.42		
10	16QAM	1	25	21.44	21.40	21.43		
10	16QAM	1	49	21.39	21.38	21.39	21.5	2
10	16QAM	25	0	20.77	20.73	20.75		
10	16QAM	25	12	20.90	20.77	20.87		
10	16QAM	25	25	20.83	20.66	20.70	21.5	2
10	16QAM	50	0	20.90	20.80	20.74		
10	64QAM	1	0	20.79	20.85	20.74		
10	64QAM	1	25	20.77	20.85	20.76	21.5	2
10	64QAM	1	49	20.86	20.81	20.73		
10	64QAM	25	0	19.74	19.73	19.68		
10	64QAM	25	12	19.87	19.76	19.79	20.5	3
10	64QAM	25	25	19.80	19.65	19.67		
10	64QAM	50	0	19.85	19.78	19.71		
Channel	20425	20525	20625	Tune-up limit (dBm)	MPR (dB)			
Frequency (MHz)	826.5	836.5	846.5					
5	QPSK	1	0	21.64	21.63	21.57	23.5	0
5	QPSK	1	12	21.56	21.64	21.62		
5	QPSK	1	24	21.58	21.49	21.51		
5	QPSK	12	0	21.63	21.61	21.66	22.5	1
5	QPSK	12	7	21.64	21.65	21.63		
5	QPSK	12	13	21.56	21.68	21.62		
5	QPSK	25	0	21.63	21.60	21.61	22.5	1
5	16QAM	1	0	21.36	21.41	21.37		
5	16QAM	1	12	21.31	21.42	21.46		
5	16QAM	1	24	21.39	21.46	21.20	21.5	2
5	16QAM	12	0	20.82	20.84	20.84		
5	16QAM	12	7	20.85	20.77	20.88		
5	16QAM	12	13	20.79	20.79	20.78	21.5	2
5	16QAM	25	0	20.78	20.73	20.67		
5	64QAM	1	0	20.96	20.89	20.87		
5	64QAM	1	12	20.91	20.96	20.98	21.5	2
5	64QAM	1	24	20.83	20.77	20.99		
5	64QAM	12	0	19.80	19.82	19.81		
5	64QAM	12	7	19.82	19.76	19.91	20.5	3
5	64QAM	12	13	19.76	19.79	19.83		
5	64QAM	25	0	19.81	19.80	19.72		
Channel	20415	20525	20635	Tune-up limit (dBm)	MPR (dB)			
Frequency (MHz)	825.5	836.5	847.5					
3	QPSK	1	0	21.65	21.53	21.55	23.5	0
3	QPSK	1	8	21.53	21.58	21.51		
3	QPSK	1	14	21.58	21.54	21.62		
3	QPSK	8	0	21.63	21.63	21.57	22.5	1
3	QPSK	8	4	21.70	21.61	21.58		



3	QPSK	8	7	21.68	21.58	21.53		
3	QPSK	15	0	21.70	21.64	21.59		
3	16QAM	1	0	21.42	21.29	21.31	22.5	1
3	16QAM	1	8	21.36	21.46	21.32		
3	16QAM	1	14	21.39	21.26	21.40		
3	16QAM	8	0	20.84	20.72	20.77	21.5	2
3	16QAM	8	4	20.82	20.77	20.82		
3	16QAM	8	7	20.82	20.71	20.78		
3	16QAM	15	0	20.76	20.77	20.72		
3	64QAM	1	0	20.95	20.90	20.89	21.5	2
3	64QAM	1	8	20.94	20.95	21.00		
3	64QAM	1	14	20.98	21.00	20.92		
3	64QAM	8	0	19.84	19.69	19.73	20.5	3
3	64QAM	8	4	19.92	19.84	19.79		
3	64QAM	8	7	19.86	19.78	19.72		
3	64QAM	15	0	19.82	19.78	19.73		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	21.58	21.51	21.55	23.5	0
1.4	QPSK	1	3	21.60	21.64	21.57		
1.4	QPSK	1	5	21.51	21.52	21.43		
1.4	QPSK	3	0	21.53	21.57	21.49		
1.4	QPSK	3	1	21.61	21.65	21.49		
1.4	QPSK	3	3	21.61	21.54	21.58		
1.4	QPSK	6	0	21.66	21.60	21.57	22.5	1
1.4	16QAM	1	0	21.47	21.43	21.46	22.5	1
1.4	16QAM	1	3	21.43	21.44	21.43		
1.4	16QAM	1	5	21.47	21.48	21.47		
1.4	16QAM	3	0	21.21	21.22	21.07		
1.4	16QAM	3	1	21.25	21.20	21.19		
1.4	16QAM	3	3	21.17	21.12	21.04		
1.4	16QAM	6	0	20.87	20.82	20.78	21.5	2
1.4	64QAM	1	0	20.94	20.91	20.95	21.5	2
1.4	64QAM	1	3	20.98	20.94	21.00		
1.4	64QAM	1	5	20.99	20.95	20.95		
1.4	64QAM	3	0	20.92	20.78	20.79		
1.4	64QAM	3	1	20.96	20.92	20.91		
1.4	64QAM	3	3	20.88	20.49	20.76		
1.4	64QAM	6	0	19.78	19.62	19.60	20.5	3



<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	16.20	16.23	16.04	16.5	0
20	QPSK	1	49	16.12	16.14	16.03		
20	QPSK	1	99	16.02	16.19	16.01		
20	QPSK	50	0	16.03	16.22	16.07	16.5	0
20	QPSK	50	24	16.02	16.10	16.03		
20	QPSK	50	50	16.01	16.11	16.01		
20	QPSK	100	0	16.11	16.16	16.06		
20	16QAM	1	0	16.23	16.23	16.15	16.5	0
20	16QAM	1	49	16.20	16.10	16.14		
20	16QAM	1	99	16.04	16.19	16.09		
20	16QAM	50	0	16.06	16.08	16.04	16.5	0
20	16QAM	50	24	16.08	16.21	16.07		
20	16QAM	50	50	16.12	16.09	16.16		
20	16QAM	100	0	16.15	16.13	16.23		
20	64QAM	1	0	16.21	16.04	16.17	16.5	0
20	64QAM	1	49	16.07	16.04	16.22		
20	64QAM	1	99	16.21	16.04	16.06		
20	64QAM	50	0	16.17	16.14	16.18	16.5	0
20	64QAM	50	24	16.13	16.13	16.19		
20	64QAM	50	50	16.20	16.03	16.23		
20	64QAM	100	0	16.20	16.18	16.20		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	16.05	15.95	15.97	16.5	0
15	QPSK	1	37	16.10	16.07	15.95		
15	QPSK	1	74	16.18	16.19	16.14		
15	QPSK	36	0	16.14	16.05	16.11	16.5	0
15	QPSK	36	20	16.12	16.12	16.11		
15	QPSK	36	39	16.18	16.16	16.12		
15	QPSK	75	0	16.11	16.11	16.12		
15	16QAM	1	0	16.20	16.10	16.15	16.5	0
15	16QAM	1	37	16.21	16.03	16.04		
15	16QAM	1	74	16.07	16.22	16.16		
15	16QAM	36	0	16.08	16.17	16.07	16.5	0
15	16QAM	36	20	16.14	16.12	16.16		
15	16QAM	36	39	16.10	16.04	16.06		
15	16QAM	75	0	16.23	16.07	16.09		
15	64QAM	1	0	16.16	16.19	16.14	16.5	0
15	64QAM	1	37	16.22	16.09	16.23		
15	64QAM	1	74	16.19	16.17	16.07		
15	64QAM	36	0	16.17	16.12	16.16	16.5	0
15	64QAM	36	20	16.22	16.12	16.19		
15	64QAM	36	39	16.19	16.16	16.07		
15	64QAM	75	0	16.08	16.11	16.18		
Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	16.01	15.86	15.91	16.5	0
10	QPSK	1	25	16.06	15.92	16.11		
10	QPSK	1	49	16.09	16.05	16.04		
10	QPSK	25	0	16.14	16.02	16.08		



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10	QPSK	25	12	16.16	16.12	16.09		
10	QPSK	25	25	16.12	16.13	16.10		
10	QPSK	50	0	16.03	16.07	16.09		
10	16QAM	1	0	16.23	16.23	16.23	16.5	0
10	16QAM	1	25	16.09	16.20	16.15		
10	16QAM	1	49	16.12	16.14	16.11		
10	16QAM	25	0	16.07	16.17	16.23	16.5	0
10	16QAM	25	12	16.23	16.23	16.09		
10	16QAM	25	25	16.05	16.17	16.06		
10	16QAM	50	0	16.22	16.07	16.20		
10	64QAM	1	0	16.10	16.21	16.03	16.5	0
10	64QAM	1	25	16.21	16.22	16.23		
10	64QAM	1	49	16.20	16.04	16.12		
10	64QAM	25	0	16.20	16.17	16.08	16.5	0
10	64QAM	25	12	16.06	16.16	16.11		
10	64QAM	25	25	16.20	16.23	16.08		
10	64QAM	50	0	16.22	16.18	16.20		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	16.13	16.02	16.07	16.5	0
5	QPSK	1	12	16.08	16.10	16.13		
5	QPSK	1	24	16.25	16.09	16.11		
5	QPSK	12	0	16.13	16.03	16.07	16.5	0
5	QPSK	12	7	16.13	16.12	16.06		
5	QPSK	12	13	16.16	16.07	16.06		
5	QPSK	25	0	16.11	16.09	16.10		
5	16QAM	1	0	16.12	16.08	16.14	16.5	0
5	16QAM	1	12	16.16	16.12	16.07		
5	16QAM	1	24	16.16	16.22	16.19		
5	16QAM	12	0	16.12	16.07	16.16	16.5	0
5	16QAM	12	7	16.14	16.21	16.08		
5	16QAM	12	13	16.17	16.03	16.07		
5	16QAM	25	0	16.10	16.07	16.08		
5	64QAM	1	0	16.23	16.22	16.10	16.5	0
5	64QAM	1	12	16.17	16.15	16.19		
5	64QAM	1	24	16.15	16.15	16.21		
5	64QAM	12	0	16.04	16.08	16.03	16.5	0
5	64QAM	12	7	16.10	16.20	16.21		
5	64QAM	12	13	16.03	16.04	16.19		
5	64QAM	25	0	16.22	16.16	16.08		



<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	20.69	20.92	20.64	21	0
20	QPSK	1	49	20.64	20.77	20.62		
20	QPSK	1	99	20.55	20.78	20.61		
20	QPSK	50	0	20.64	20.89	20.78	21	0
20	QPSK	50	24	20.61	20.51	20.28		
20	QPSK	50	50	20.25	20.29	20.27		
20	QPSK	100	0	20.78	20.86	20.56	21	0
20	16QAM	1	0	20.70	20.15	20.87		
20	16QAM	1	49	20.31	20.37	20.72		
20	16QAM	1	99	20.10	20.39	20.34	21	0
20	16QAM	50	0	20.15	20.46	20.00		
20	16QAM	50	24	20.25	20.41	20.12		
20	16QAM	50	50	20.10	20.59	20.19	21	0
20	16QAM	100	0	20.28	20.67	20.47		
20	64QAM	1	0	20.00	20.88	20.62		
20	64QAM	1	49	20.25	20.92	20.68	21	0
20	64QAM	1	99	20.16	20.64	20.85		
20	64QAM	50	0	20.20	20.14	20.47		
20	64QAM	50	24	20.41	20.00	20.32	20.5	0.5
20	64QAM	50	50	20.37	20.37	19.90		
20	64QAM	100	0	20.02	20.12	20.47		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	20.64	20.78	20.60	21	0
15	QPSK	1	37	20.74	20.77	20.81		
15	QPSK	1	74	20.44	20.68	20.52		
15	QPSK	36	0	20.44	20.83	20.62	21	0
15	QPSK	36	20	20.66	20.46	20.15		
15	QPSK	36	39	20.16	20.11	20.10		
15	QPSK	75	0	20.65	20.66	20.54	21	0
15	16QAM	1	0	20.54	20.09	20.67		
15	16QAM	1	37	20.11	20.18	20.66		
15	16QAM	1	74	19.95	20.33	20.17	21	0
15	16QAM	36	0	20.04	20.41	19.89		
15	16QAM	36	20	20.15	20.34	19.96		
15	16QAM	36	39	19.92	20.46	20.04	21	0
15	16QAM	75	0	20.26	20.59	20.28		
15	64QAM	1	0	19.84	20.68	20.48		
15	64QAM	1	37	20.18	20.84	20.54	21	0
15	64QAM	1	74	19.99	20.49	20.78		
15	64QAM	36	0	20.08	20.04	20.37		
15	64QAM	36	20	20.36	19.99	20.28	20.5	0.5
15	64QAM	36	39	20.22	20.33	19.90		
15	64QAM	75	0	19.88	20.08	20.33		
Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	20.48	20.69	20.57	21	0
10	QPSK	1	25	20.42	20.65	20.55		
10	QPSK	1	49	20.33	20.56	20.41		
10	QPSK	25	0	20.35	20.61	20.54	21	0
10	QPSK	25	12	20.51	20.24	20.11		



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10	QPSK	25	25	20.11	20.09	20.14		
10	QPSK	50	0	20.43	20.65	20.41		
10	16QAM	1	0	20.64	20.02	20.61		
10	16QAM	1	25	20.06	20.25	20.68	21	0
10	16QAM	1	49	19.80	20.36	20.30		
10	16QAM	25	0	20.15	20.22	19.73		
10	16QAM	25	12	20.01	20.25	19.99	21	0
10	16QAM	25	25	19.89	20.39	20.02		
10	16QAM	50	0	20.16	20.45	20.25		
10	64QAM	1	0	19.76	20.87	20.32		
10	64QAM	1	25	19.99	20.77	20.33	21	0
10	64QAM	1	49	19.83	20.40	20.62		
10	64QAM	25	0	19.93	20.00	20.30		
10	64QAM	25	12	20.14	19.86	20.20	20.5	0.5
10	64QAM	25	25	20.09	20.19	19.57		
10	64QAM	50	0	19.75	20.07	20.25		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	20.36	20.57	20.34		
5	QPSK	1	12	20.35	20.57	20.59	21	0
5	QPSK	1	24	20.36	20.47	20.46		
5	QPSK	12	0	20.18	20.56	20.66		
5	QPSK	12	7	20.50	20.20	20.04	21	0
5	QPSK	12	13	19.98	19.77	19.75		
5	QPSK	25	0	20.51	20.60	20.06		
5	16QAM	1	0	20.40	19.90	20.57		
5	16QAM	1	12	20.08	20.01	20.43	21	0
5	16QAM	1	24	19.92	20.20	20.07		
5	16QAM	12	0	19.89	19.92	19.74		
5	16QAM	12	7	19.89	20.18	19.82	21	0
5	16QAM	12	13	19.77	20.12	19.96		
5	16QAM	25	0	19.99	20.39	19.95		
5	64QAM	1	0	19.77	20.45	20.39		
5	64QAM	1	12	19.83	20.68	20.30	21	0
5	64QAM	1	24	19.69	20.41	20.56		
5	64QAM	12	0	20.05	20.09	20.27		
5	64QAM	12	7	20.22	19.74	20.12	20.5	0.5
5	64QAM	12	13	20.00	20.02	19.73		
5	64QAM	25	0	19.77	19.90	20.14		
Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	20.35	20.35	20.16		
3	QPSK	1	8	20.32	20.54	20.49	21	0
3	QPSK	1	14	20.08	20.22	20.09		
3	QPSK	8	0	20.10	20.23	20.43		
3	QPSK	8	4	20.32	20.02	19.79	21	0
3	QPSK	8	7	19.75	19.83	20.06		
3	QPSK	15	0	20.55	20.39	20.18		
3	16QAM	1	0	20.33	19.76	20.59		
3	16QAM	1	8	20.02	19.98	20.42	21	0
3	16QAM	1	14	19.59	19.86	20.07		
3	16QAM	8	0	19.84	19.98	19.68		
3	16QAM	8	4	20.06	19.97	19.60	21	0
3	16QAM	8	7	19.69	20.41	19.73		
3	16QAM	15	0	19.91	20.17	20.27		
3	64QAM	1	0	19.49	20.57	20.27	21	0



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3	64QAM	1	8	19.71	20.53	20.36	20.5	0.5
3	64QAM	1	14	19.75	20.10	20.48		
3	64QAM	8	0	19.64	19.84	20.08		
3	64QAM	8	4	19.90	19.59	19.94		
3	64QAM	8	7	19.89	19.90	19.54		
3	64QAM	15	0	19.76	19.71	20.08		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	20.42	20.28	20.28	21	0
1.4	QPSK	1	3	20.40	20.09	20.38		
1.4	QPSK	1	5	20.21	20.38	20.18		
1.4	QPSK	3	0	19.92	20.59	20.39		
1.4	QPSK	3	1	20.04	19.96	19.89		
1.4	QPSK	3	3	19.89	19.93	19.78		
1.4	QPSK	6	0	20.12	20.34	20.26	21	0
1.4	16QAM	1	0	20.27	19.56	20.29	21	0
1.4	16QAM	1	3	19.68	19.90	20.44		
1.4	16QAM	1	5	19.83	19.73	19.99		
1.4	16QAM	3	0	19.48	19.91	19.63		
1.4	16QAM	3	1	19.82	19.86	19.48		
1.4	16QAM	3	3	19.67	20.30	19.60		
1.4	16QAM	6	0	19.64	20.33	19.86	21	0
1.4	64QAM	1	0	19.46	20.33	20.21	21	0
1.4	64QAM	1	3	19.73	20.37	20.16		
1.4	64QAM	1	5	19.54	20.10	20.62		
1.4	64QAM	3	0	19.82	19.60	19.90		
1.4	64QAM	3	1	19.91	19.65	19.84		
1.4	64QAM	3	3	19.82	19.98	19.45		
1.4	64QAM	6	0	19.50	19.57	20.09	20.5	0.5



<Product Specific 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	22.34	22.35	22.20	22.5	0
20	QPSK	1	49	22.28	22.34	22.22		
20	QPSK	1	99	22.14	22.30	22.08		
20	QPSK	50	0	21.86	21.91	21.72	22.5	0
20	QPSK	50	24	21.81	21.85	21.67		
20	QPSK	50	50	21.87	21.78	21.65		
20	QPSK	100	0	21.85	21.93	21.65	22.5	0
20	16QAM	1	0	22.08	22.13	21.83		
20	16QAM	1	49	22.12	22.34	21.96		
20	16QAM	1	99	22.26	22.32	21.87	21.5	1
20	16QAM	50	0	20.95	20.92	20.75		
20	16QAM	50	24	20.92	20.99	20.81		
20	16QAM	50	50	20.98	20.92	20.79	21.5	1
20	16QAM	100	0	21.02	20.92	20.92		
20	64QAM	1	0	21.41	21.46	20.95		
20	64QAM	1	49	21.36	21.30	20.96	21.5	1
20	64QAM	1	99	21.17	21.17	20.78		
20	64QAM	50	0	19.94	20.02	19.85		
20	64QAM	50	24	20.01	20.09	19.92	20.5	2
20	64QAM	50	50	19.93	19.93	19.77		
20	64QAM	100	0	20.09	20.02	19.86		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.25	22.29	22.28	22.5	0
15	QPSK	1	37	22.29	22.14	22.11		
15	QPSK	1	74	22.31	22.29	22.24		
15	QPSK	36	0	21.85	21.89	21.69	22.5	0
15	QPSK	36	20	21.82	21.85	21.69		
15	QPSK	36	39	21.81	21.87	21.72		
15	QPSK	75	0	21.91	21.84	21.68	22.5	0
15	16QAM	1	0	22.26	22.31	22.24		
15	16QAM	1	37	22.25	22.23	22.01		
15	16QAM	1	74	22.34	22.29	22.07	21.5	1
15	16QAM	36	0	21.00	21.10	20.91		
15	16QAM	36	20	21.05	21.07	20.93		
15	16QAM	36	39	20.94	20.99	20.86	21.5	1
15	16QAM	75	0	20.99	20.91	20.77		
15	64QAM	1	0	21.15	20.96	20.79		
15	64QAM	1	37	20.90	21.41	21.07	21.5	1
15	64QAM	1	74	20.77	20.60	20.95		
15	64QAM	36	0	19.98	20.09	19.98		
15	64QAM	36	20	20.05	20.17	19.86	20.5	2
15	64QAM	36	39	20.04	19.90	19.95		
15	64QAM	75	0	19.97	20.13	19.95		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	22.26	22.30	22.26	22.5	0
10	QPSK	1	25	22.27	22.33	22.33		
10	QPSK	1	49	22.29	22.29	22.16		
10	QPSK	25	0	21.91	21.89	21.82	22.5	0



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10	QPSK	25	12	21.86	21.91	21.77		
10	QPSK	25	25	21.79	21.84	21.63		
10	QPSK	50	0	21.81	21.88	21.73		
10	16QAM	1	0	22.25	22.24	21.92	22.5	0
10	16QAM	1	25	22.31	22.27	22.28		
10	16QAM	1	49	22.34	22.19	22.24		
10	16QAM	25	0	20.94	21.01	20.94	21.5	1
10	16QAM	25	12	20.90	21.16	20.90		
10	16QAM	25	25	20.93	20.87	20.92		
10	16QAM	50	0	20.98	21.05	20.95		
10	64QAM	1	0	21.30	21.43	21.14	21.5	1
10	64QAM	1	25	21.16	21.23	21.14		
10	64QAM	1	49	21.28	21.26	21.01		
10	64QAM	25	0	20.08	20.03	19.87	20.5	2
10	64QAM	25	12	20.02	20.17	19.97		
10	64QAM	25	25	19.95	19.98	19.94		
10	64QAM	50	0	19.94	20.01	19.94		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.29	22.33	22.19	22.5	0
5	QPSK	1	12	22.33	22.26	22.24		
5	QPSK	1	24	22.24	22.31	22.20		
5	QPSK	12	0	21.89	21.91	21.75	22.5	0
5	QPSK	12	7	21.90	21.88	21.84		
5	QPSK	12	13	21.83	21.83	21.81		
5	QPSK	25	0	21.81	21.93	21.73		
5	16QAM	1	0	21.98	21.92	21.88	22.5	0
5	16QAM	1	12	22.05	21.98	21.97		
5	16QAM	1	24	21.96	22.02	21.81		
5	16QAM	12	0	21.06	21.07	20.83	21.5	1
5	16QAM	12	7	21.05	21.05	21.04		
5	16QAM	12	13	21.02	21.02	20.79		
5	16QAM	25	0	20.99	21.00	20.94		
5	64QAM	1	0	21.02	21.03	20.92	21.5	1
5	64QAM	1	12	21.05	21.08	20.90		
5	64QAM	1	24	20.99	21.04	21.21		
5	64QAM	12	0	20.01	20.02	20.09	20.5	2
5	64QAM	12	7	20.08	20.11	19.99		
5	64QAM	12	13	19.95	19.97	19.95		
5	64QAM	25	0	19.93	20.06	19.81		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	22.24	22.13	22.05	22.5	0
3	QPSK	1	8	22.26	22.06	21.98		
3	QPSK	1	14	22.27	22.09	22.02		
3	QPSK	8	0	21.68	21.72	21.61	22.5	0
3	QPSK	8	4	21.83	21.73	21.68		
3	QPSK	8	7	21.71	21.75	21.57		
3	QPSK	15	0	21.64	21.71	21.57		
3	16QAM	1	0	22.17	22.22	22.24	22.5	0
3	16QAM	1	8	22.28	22.22	22.04		
3	16QAM	1	14	22.06	22.20	22.29		
3	16QAM	8	0	20.92	20.94	20.81	21.5	1
3	16QAM	8	4	20.94	20.97	20.83		
3	16QAM	8	7	20.98	20.88	20.94		
3	16QAM	15	0	20.68	20.77	20.76		



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3	64QAM	1	0	21.90	20.95	20.92	21.5	1
3	64QAM	1	8	22.15	21.07	21.09		
3	64QAM	1	14	22.26	21.11	20.96		
3	64QAM	8	0	20.88	19.91	19.72	20.5	2
3	64QAM	8	4	20.89	19.84	19.92		
3	64QAM	8	7	20.91	19.86	19.82		
3	64QAM	15	0	20.75	19.85	19.73		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.18	22.08	22.01	22.5	0
1.4	QPSK	1	3	22.27	22.22	22.09		
1.4	QPSK	1	5	22.10	22.15	21.92		
1.4	QPSK	3	0	22.09	22.17	22.03		
1.4	QPSK	3	1	22.22	22.22	22.03		
1.4	QPSK	3	3	22.18	22.17	21.98		
1.4	QPSK	6	0	21.63	21.64	21.54	22.5	0
1.4	16QAM	1	0	21.72	21.86	21.69	22.5	0
1.4	16QAM	1	3	21.90	21.83	21.71		
1.4	16QAM	1	5	21.84	21.88	21.64		
1.4	16QAM	3	0	21.67	21.71	21.49		
1.4	16QAM	3	1	21.68	21.75	21.48		
1.4	16QAM	3	3	21.64	21.72	21.54		
1.4	16QAM	6	0	20.75	20.80	20.71	21.5	1
1.4	64QAM	1	0	20.80	20.85	20.73	21.5	1
1.4	64QAM	1	3	20.94	20.91	20.75		
1.4	64QAM	1	5	21.14	20.87	20.71		
1.4	64QAM	3	0	21.01	20.89	20.84		
1.4	64QAM	3	1	20.98	20.94	20.73		
1.4	64QAM	3	3	20.83	20.91	20.70		
1.4	64QAM	6	0	19.86	19.81	19.72	20.5	2



<LTE Band 4>

Channel	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
20	20.19	20.42	20.39	21.5	0
20	20.36	20.36	20.36		
20	20.25	20.20	20.22		
20	20.37	20.40	20.22	21.5	0
20	20.29	20.34	20.29		
20	20.29	20.24	20.30		
20	20.27	20.35	20.21	21.5	0
20	20.17	20.26	20.24		
20	20.28	20.32	20.18		
20	20.18	20.28	20.14	21.5	0
20	20.14	20.30	20.22		
20	20.29	20.21	20.12		
20	20.22	20.19	20.20	21.5	0
20	20.12	20.22	20.31		
20	20.16	20.16	20.13		
20	20.22	20.12	20.26	21.5	0
20	20.23	20.22	20.31		
20	20.22	20.14	20.23		
20	20.17	20.20	20.24	20.5	1
20	20.28	20.24	20.15		
20	20.27	20.26	20.21		
Channel	20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)	1717.5	1732.5	1747.5	21.5	0
15	20.23	20.38	20.35		
15	20.20	20.21	20.28		
15	20.19	20.16	20.19	21.5	0
15	20.24	20.34	20.27		
15	20.32	20.28	20.35		
15	20.22	20.19	20.31	21.5	0
15	20.22	20.26	20.21		
15	20.18	20.16	20.23		
15	20.23	20.29	20.13	21.5	0
15	20.25	20.32	20.31		
15	20.31	20.17	20.12		
15	20.23	20.24	20.17	21.5	0
15	20.29	20.21	20.27		
15	20.22	20.32	20.30		
15	20.22	20.24	20.31	21.5	0
15	20.14	20.32	20.28		
15	20.13	20.29	20.19		
15	20.25	20.27	20.15	20.5	1
15	20.15	20.29	20.12		
15	20.30	20.13	20.12		
15	20.23	20.30	20.28	21.5	0
10	20.08	20.26	20.30		
10	20.04	20.15	20.30		
10	20.11	20.12	20.16	21.5	0
10	20.20	20.31	20.39		
10	20.25	20.22	20.31		



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10	QPSK	25	25	20.24	20.24	20.25		
10	QPSK	50	0	20.22	20.22	20.38		
10	16QAM	1	0	20.19	20.29	20.20	21.5	0
10	16QAM	1	25	20.32	20.22	20.16		
10	16QAM	1	49	20.20	20.16	20.27		
10	16QAM	25	0	20.27	20.21	20.21	21.5	0
10	16QAM	25	12	20.31	20.26	20.18		
10	16QAM	25	25	20.30	20.27	20.16		
10	16QAM	50	0	20.30	20.12	20.27	21.5	0
10	64QAM	1	0	20.31	20.21	20.15		
10	64QAM	1	25	20.27	20.22	20.14		
10	64QAM	1	49	20.27	20.31	20.23	20.5	1
10	64QAM	25	0	20.21	20.17	20.32		
10	64QAM	25	12	20.18	20.19	20.31		
10	64QAM	25	25	20.25	20.20	20.19	Tune-up limit (dBm)	MPR (dB)
10	64QAM	50	0	20.23	20.17	20.31		
Channel				19975	20175	20375		
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	20.24	20.23	20.34	21.5	0
5	QPSK	1	12	20.17	20.24	20.25		
5	QPSK	1	24	20.18	20.17	20.27		
5	QPSK	12	0	20.21	20.35	20.33	21.5	0
5	QPSK	12	7	20.22	20.29	20.29		
5	QPSK	12	13	20.15	20.28	20.28		
5	QPSK	25	0	20.16	20.24	20.33	21.5	0
5	16QAM	1	0	20.25	20.24	20.31		
5	16QAM	1	12	20.27	20.12	20.20		
5	16QAM	1	24	20.32	20.12	20.18	21.5	0
5	16QAM	12	0	20.25	20.12	20.13		
5	16QAM	12	7	20.13	20.20	20.19		
5	16QAM	12	13	20.32	20.12	20.13	20.5	1
5	16QAM	25	0	20.18	20.26	20.23		
5	64QAM	1	0	20.17	20.32	20.20		
5	64QAM	1	12	20.19	20.19	20.13	21.5	0
5	64QAM	1	24	20.32	20.27	20.16		
5	64QAM	12	0	20.21	20.17	20.32		
5	64QAM	12	7	20.22	20.27	20.29	20.5	1
5	64QAM	12	13	20.25	20.32	20.30		
5	64QAM	25	0	20.22	20.30	20.12		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	20.08	20.13	20.21	21.5	0
3	QPSK	1	8	20.03	20.11	20.16		
3	QPSK	1	14	20.04	20.17	20.11		
3	QPSK	8	0	20.21	20.26	20.28	21.5	0
3	QPSK	8	4	20.19	20.26	20.32		
3	QPSK	8	7	20.17	20.27	20.28		
3	QPSK	15	0	20.18	20.26	20.22	21.5	0
3	16QAM	1	0	20.12	20.27	20.23		
3	16QAM	1	8	20.32	20.29	20.18		
3	16QAM	1	14	20.19	20.27	20.32	21.5	0
3	16QAM	8	0	20.26	20.19	20.22		
3	16QAM	8	4	20.25	20.32	20.13		
3	16QAM	8	7	20.20	20.29	20.21	21.5	0
3	16QAM	15	0	20.18	20.30	20.22		
3	64QAM	1	0	20.18	20.21	20.16		



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3	64QAM	1	8	20.14	20.17	20.24	20.5	1
3	64QAM	1	14	20.25	20.16	20.13		
3	64QAM	8	0	20.24	20.17	20.26		
3	64QAM	8	4	20.31	20.15	20.13		
3	64QAM	8	7	20.29	20.14	20.26		
3	64QAM	15	0	20.19	20.15	20.31		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	20.12	20.22	20.27	21.5	0
1.4	QPSK	1	3	20.05	20.16	20.26		
1.4	QPSK	1	5	20.12	20.23	20.21		
1.4	QPSK	3	0	20.14	20.24	20.27		
1.4	QPSK	3	1	20.17	20.40	20.23		
1.4	QPSK	3	3	20.11	20.23	20.21		
1.4	QPSK	6	0	20.07	20.17	20.18	21.5	0
1.4	16QAM	1	0	20.21	20.16	20.23	21.5	0
1.4	16QAM	1	3	20.22	20.18	20.18		
1.4	16QAM	1	5	20.21	20.14	20.18		
1.4	16QAM	3	0	20.18	20.17	20.12		
1.4	16QAM	3	1	20.27	20.16	20.28		
1.4	16QAM	3	3	20.13	20.27	20.15		
1.4	16QAM	6	0	20.13	20.32	20.26	21.5	0
1.4	64QAM	1	0	20.19	20.13	20.29	21.5	0
1.4	64QAM	1	3	20.24	20.15	20.18		
1.4	64QAM	1	5	20.19	20.20	20.22		
1.4	64QAM	3	0	20.14	20.26	20.26		
1.4	64QAM	3	1	20.22	20.21	20.13		
1.4	64QAM	3	3	20.18	20.12	20.28		
1.4	64QAM	6	0	20.14	20.23	20.24	20.5	1



<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	20.5	0
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	20.08	20.49	20.01	20.5	0
20	QPSK	1	49	20.06	20.06	20.04		
20	QPSK	1	99	20.14	20.22	20.08		
20	QPSK	50	0	20.07	20.02	20.01	20.5	0
20	QPSK	50	24	20.11	20.08	20.03		
20	QPSK	50	50	20.20	20.12	20.10		
20	QPSK	100	0	20.09	20.04	20.09	20.5	0
20	16QAM	1	0	20.21	20.24	20.15		
20	16QAM	1	49	20.25	20.22	20.29		
20	16QAM	1	99	20.14	20.28	20.40	20.5	0
20	16QAM	50	0	20.13	20.11	20.11		
20	16QAM	50	24	20.20	20.19	20.14		
20	16QAM	50	50	20.18	20.23	20.20	20.5	0
20	16QAM	100	0	20.16	20.13	20.16		
20	64QAM	1	0	20.14	20.39	20.37		
20	64QAM	1	49	20.12	20.47	20.43	20.5	0
20	64QAM	1	99	20.23	20.45	20.37		
20	64QAM	50	0	20.22	20.18	20.07		
20	64QAM	50	24	20.27	20.25	20.18	20.5	0
20	64QAM	50	50	20.23	20.25	20.16		
20	64QAM	100	0	20.18	20.17	20.21		
Channel				20825	21100	21375	20.5	0
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	20.08	20.08	20.09	20.5	0
15	QPSK	1	37	20.19	20.04	20.03		
15	QPSK	1	74	20.12	20.16	20.16		
15	QPSK	36	0	20.18	20.07	20.07	20.5	0
15	QPSK	36	20	20.13	20.17	20.05		
15	QPSK	36	39	20.19	20.10	20.13		
15	QPSK	75	0	20.15	20.15	20.05	20.5	0
15	16QAM	1	0	20.35	20.33	20.33		
15	16QAM	1	37	20.40	20.25	20.39		
15	16QAM	1	74	20.40	20.34	20.45	20.5	0
15	16QAM	36	0	20.24	20.18	20.17		
15	16QAM	36	20	20.22	20.17	20.15		
15	16QAM	36	39	20.17	20.21	20.12	20.5	0
15	16QAM	75	0	20.14	20.19	20.20		
15	64QAM	1	0	20.28	20.23	20.19		
15	64QAM	1	37	20.40	20.34	20.15	20.5	0
15	64QAM	1	74	20.30	20.32	20.31		
15	64QAM	36	0	20.27	20.28	20.11		
15	64QAM	36	20	20.26	20.22	20.25	20.5	0
15	64QAM	36	39	20.20	20.27	20.21		
15	64QAM	75	0	20.27	20.20	20.21		
Channel				20800	21100	21400	20.5	0
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	20.18	20.04	20.11	20.5	0
10	QPSK	1	25	20.20	20.09	20.02		
10	QPSK	1	49	20.15	20.14	20.05		
10	QPSK	25	0	20.19	20.07	20.00	20.5	0
10	QPSK	25	12	20.19	20.09	20.08		



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10	QPSK	25	25	20.15	20.11	20.06		
10	QPSK	50	0	20.04	20.03	20.08		
10	16QAM	1	0	20.33	20.00	20.08	20.5	0
10	16QAM	1	25	20.38	20.27	20.08		
10	16QAM	1	49	20.36	20.16	20.09		
10	16QAM	25	0	20.19	20.17	20.12	20.5	0
10	16QAM	25	12	20.37	20.29	20.19		
10	16QAM	25	25	20.25	20.22	20.17		
10	16QAM	50	0	20.16	20.17	20.24		
10	64QAM	1	0	20.47	20.26	20.41	20.5	0
10	64QAM	1	25	20.41	20.21	20.47		
10	64QAM	1	49	20.38	20.34	20.29		
10	64QAM	25	0	20.32	20.07	20.05	20.5	0
10	64QAM	25	12	20.33	20.18	20.13		
10	64QAM	25	25	20.28	20.18	20.13		
10	64QAM	50	0	20.21	20.22	20.24		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	20.08	20.01	20.02	20.5	0
5	QPSK	1	12	20.22	20.06	20.07		
5	QPSK	1	24	20.14	20.03	20.00		
5	QPSK	12	0	20.17	20.12	20.09	20.5	0
5	QPSK	12	7	20.27	20.12	20.07		
5	QPSK	12	13	20.21	20.17	20.07		
5	QPSK	25	0	20.19	20.05	20.08		
5	16QAM	1	0	20.32	20.32	20.30	20.5	0
5	16QAM	1	12	20.32	20.30	20.33		
5	16QAM	1	24	20.36	20.36	20.29		
5	16QAM	12	0	20.28	20.13	20.14	20.5	0
5	16QAM	12	7	20.27	20.24	20.23		
5	16QAM	12	13	20.31	20.28	20.22		
5	16QAM	25	0	20.15	20.13	20.09		
5	64QAM	1	0	20.41	20.45	20.40	20.5	0
5	64QAM	1	12	20.41	20.44	20.41		
5	64QAM	1	24	20.48	20.24	20.43		
5	64QAM	12	0	20.36	20.21	20.14	20.5	0
5	64QAM	12	7	20.36	20.34	20.33		
5	64QAM	12	13	20.39	20.28	20.32		
5	64QAM	25	0	20.19	20.18	20.24		



<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	21.5	0
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	20.62	20.80	20.59	21.5	0
20	QPSK	1	49	20.16	20.39	20.32		
20	QPSK	1	99	20.14	20.09	20.17		
20	QPSK	50	0	20.13	20.30	20.33	21.5	0
20	QPSK	50	24	20.26	20.23	20.18		
20	QPSK	50	50	20.17	20.11	20.08		
20	QPSK	100	0	20.28	20.27	20.28	21.5	0
20	16QAM	1	0	20.31	20.66	20.36		
20	16QAM	1	49	20.29	20.30	19.91		
20	16QAM	1	99	20.20	20.00	20.16	21.5	0
20	16QAM	50	0	20.01	20.06	19.99		
20	16QAM	50	24	20.04	20.00	19.96		
20	16QAM	50	50	19.95	19.99	19.96	21.5	0
20	16QAM	100	0	20.13	19.91	20.02		
20	64QAM	1	0	20.44	20.49	20.58		
20	64QAM	1	49	20.43	20.54	20.65	21.5	0
20	64QAM	1	99	20.52	20.42	20.41		
20	64QAM	50	0	19.82	19.86	19.84		
20	64QAM	50	24	19.83	19.94	19.84	20.5	1
20	64QAM	50	50	19.93	19.82	19.81		
20	64QAM	100	0	19.90	19.80	19.74		
Channel				132047	132322	132597	21.5	0
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	20.29	20.39	20.30	21.5	0
15	QPSK	1	37	20.39	20.47	20.41		
15	QPSK	1	74	20.37	20.21	20.25		
15	QPSK	36	0	20.16	20.22	20.24	21.5	0
15	QPSK	36	20	20.27	20.35	20.31		
15	QPSK	36	39	20.28	20.20	20.16		
15	QPSK	75	0	20.18	20.21	20.21	21.5	0
15	16QAM	1	0	20.41	20.43	20.43		
15	16QAM	1	37	20.49	20.52	20.58		
15	16QAM	1	74	20.29	20.35	20.40	21.5	0
15	16QAM	36	0	19.93	20.04	20.09		
15	16QAM	36	20	20.05	20.20	20.18		
15	16QAM	36	39	20.05	20.00	19.93	21.5	0
15	16QAM	75	0	20.08	19.97	20.00		
15	64QAM	1	0	20.35	20.14	20.35		
15	64QAM	1	37	20.42	20.26	20.46	21.5	0
15	64QAM	1	74	20.11	20.25	20.14		
15	64QAM	36	0	19.88	19.88	19.96		
15	64QAM	36	20	19.85	19.98	20.03	20.5	1
15	64QAM	36	39	19.92	19.81	19.83		
15	64QAM	75	0	19.83	19.81	19.91		
Channel				132022	132322	132622	21.5	0
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	20.28	20.31	20.35	21.5	0
10	QPSK	1	25	20.23	20.28	20.27		
10	QPSK	1	49	20.07	20.20	20.18		
10	QPSK	25	0	20.25	20.26	20.29	21.5	0
10	QPSK	25	12	20.18	20.35	20.24		



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10	QPSK	25	25	20.17	20.22	20.22			
10	QPSK	50	0	20.25	20.29	20.30			
10	16QAM	1	0	20.20	20.11	20.06	21.5	0	
10	16QAM	1	25	19.97	20.09	20.21			
10	16QAM	1	49	19.90	19.99	19.90			
10	16QAM	25	0	20.02	20.21	20.07	21.5	0	
10	16QAM	25	12	19.97	20.10	20.10			
10	16QAM	25	25	19.98	20.08	20.00			
10	16QAM	50	0	20.08	20.09	20.05	21.5	0	
10	64QAM	1	0	20.50	20.49	20.56			
10	64QAM	1	25	20.48	20.47	20.15			
10	64QAM	1	49	20.44	20.40	20.31	20.5	1	
10	64QAM	25	0	19.84	19.94	19.77			
10	64QAM	25	12	19.80	19.80	19.90			
10	64QAM	25	25	19.68	19.77	19.78	Channel	Tune-up limit (dBm)	
10	64QAM	50	0	19.85	19.95	19.88			MPR (dB)
Channel				131997	132322	132647			
Frequency (MHz)				1712.5	1745	1777.5			
5	QPSK	1	0	19.99	20.09	20.06	21.5	0	
5	QPSK	1	12	20.19	20.27	20.25			
5	QPSK	1	24	19.97	20.09	20.04			
5	QPSK	12	0	20.20	20.29	20.26	21.5	0	
5	QPSK	12	7	20.25	20.37	20.33			
5	QPSK	12	13	20.13	20.19	20.23			
5	QPSK	25	0	20.24	20.32	20.17	21.5	0	
5	16QAM	1	0	20.08	20.54	20.54			
5	16QAM	1	12	20.20	20.31	20.19			
5	16QAM	1	24	20.04	20.48	20.46	21.5	0	
5	16QAM	12	0	20.11	20.18	20.09			
5	16QAM	12	7	20.14	20.18	20.17			
5	16QAM	12	13	19.98	20.10	19.96	20.5	1	
5	16QAM	25	0	20.01	20.10	20.01			
5	64QAM	1	0	20.27	20.28	20.30			
5	64QAM	1	12	20.53	20.52	20.52	21.5	0	
5	64QAM	1	24	20.25	20.22	20.29			
5	64QAM	12	0	19.88	19.91	19.84			
5	64QAM	12	7	19.92	20.02	19.92	20.5	1	
5	64QAM	12	13	19.85	19.95	19.82			
5	64QAM	25	0	19.78	19.89	19.89			
Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)	
Frequency (MHz)				1711.5	1745	1778.5			
3	QPSK	1	0	20.23	20.31	20.29			21.5
3	QPSK	1	8	20.27	20.42	20.32			
3	QPSK	1	14	20.12	20.19	20.21			
3	QPSK	8	0	20.27	20.34	20.28	21.5	0	
3	QPSK	8	4	20.26	20.31	20.32			
3	QPSK	8	7	20.26	20.31	20.21			
3	QPSK	15	0	20.17	20.33	20.24	21.5	0	
3	16QAM	1	0	20.08	20.18	19.90			
3	16QAM	1	8	20.24	20.25	20.29			
3	16QAM	1	14	20.01	20.12	19.86	21.5	0	
3	16QAM	8	0	20.22	20.24	20.31			
3	16QAM	8	4	20.32	20.34	20.38			
3	16QAM	8	7	20.19	20.21	20.24	21.5	0	
3	16QAM	15	0	20.20	20.21	20.16			
3	64QAM	1	0	20.34	20.44	20.33			



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3	64QAM	1	8	20.49	20.48	20.47	20.5	1
3	64QAM	1	14	20.17	20.36	20.47		
3	64QAM	8	0	20.15	20.07	20.13		
3	64QAM	8	4	20.12	20.22	19.95		
3	64QAM	8	7	20.12	20.11	20.05		
3	64QAM	15	0	19.78	19.88	19.92		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	20.22	20.26	20.18	21.5	0
1.4	QPSK	1	3	20.25	20.31	20.32		
1.4	QPSK	1	5	20.17	20.25	20.26		
1.4	QPSK	3	0	20.25	20.30	20.32		
1.4	QPSK	3	1	20.27	20.47	20.37		
1.4	QPSK	3	3	20.22	20.32	20.32		
1.4	QPSK	6	0	20.22	20.30	20.30	21.5	0
1.4	16QAM	1	0	20.27	20.54	20.59	21.5	0
1.4	16QAM	1	3	20.30	20.74	20.67		
1.4	16QAM	1	5	20.50	20.15	20.57		
1.4	16QAM	3	0	20.18	20.23	20.15		
1.4	16QAM	3	1	20.24	20.17	20.10		
1.4	16QAM	3	3	20.08	20.22	20.14		
1.4	16QAM	6	0	20.23	20.36	20.28	21.5	0
1.4	64QAM	1	0	20.38	20.40	20.34	21.5	0
1.4	64QAM	1	3	20.53	20.55	20.59		
1.4	64QAM	1	5	20.37	20.38	20.42		
1.4	64QAM	3	0	20.38	20.40	20.33		
1.4	64QAM	3	1	20.44	20.45	20.38		
1.4	64QAM	3	3	20.38	20.40	20.22		
1.4	64QAM	6	0	19.71	19.83	19.77	20.5	1



13. WiFi/Bluetooth Output Power (Unit: dBm)

General Note:

1. The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures. For "Not required", SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band. Additional output power measurements were not deemed necessary.
2. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
3. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
4. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
5. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures. 18 The initial test position procedure is described in the following:
 - a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
 - b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
 - c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.



<Default Power Mode>

<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	18.96	20.50	100.00
		6	2437	19.01	20.50	
		11	2462	19.19	20.50	
	802.11g 6Mbps	1	2412	Not Required	20.00	98.28
		6	2437		20.00	
		11	2462		20.00	
	802.11n-HT20 MCS0	1	2412		19.50	98.16
		6	2437		19.50	
		11	2462		19.50	

<5GHz WLAN ANT1>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	18.08	19.50	98.34
		40	5200	18.05	19.50	
		44	5220	17.82	19.50	
		48	5240	17.40	19.00	
	802.11n-HT20 MCS0	36	5180	Not Required	19.50	98.23
		40	5200		19.50	
		44	5220		19.50	
		48	5240		19.50	
	802.11n-HT40 MCS0	38	5190		16.00	96.47
		46	5230		18.50	
	802.11ac-VHT20 MCS0	36	5180		17.50	98.24
		40	5200		17.50	
		44	5220		17.50	
		48	5240		16.00	
	802.11ac-VHT40 MCS0	38	5190		16.00	96.48
		46	5230		16.00	
802.11ac-VHT80 MCS0	42	5210	14.00		93.06	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	17.68	19.50	98.34
		56	5280	17.95	19.50	
		60	5300	18.02	19.50	
		64	5320	17.78	19.50	
	802.11n-HT20 MCS0	52	5260	Not Required	19.50	98.23
		56	5280		19.50	
		60	5300		19.50	
		64	5320		19.50	
	802.11n-HT40 MCS0	54	5270		18.50	96.47
		62	5310		18.50	
	802.11ac-VHT20 MCS0	52	5260		16.50	98.24
		56	5280		17.50	
		60	5300		17.50	
		64	5320		17.50	
	802.11ac-VHT40 MCS0	54	5270		17.50	96.48
		62	5310		17.50	
802.11ac-VHT80 MCS0	58	5290	16.50		93.06	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	18.10	19.50	98.34
		116	5580	18.16	19.50	
		124	5620	18.18	19.50	
		132	5660	18.20	19.50	
		140	5700	18.15	19.50	
	802.11n-HT20 MCS0	100	5500	Not Required	19.50	98.23
		116	5580		19.50	
		124	5620		19.50	
		132	5660		19.50	
		140	5700		19.50	
	802.11n-HT40 MCS0	102	5510		18.50	96.47
		110	5550		18.50	
		126	5630		18.50	
		134	5670		18.50	
	802.11ac-VHT20 MCS0	100	5500		16.50	98.24
		116	5580		17.50	
		124	5620		17.50	
		132	5660		17.50	
		140	5700		17.50	
	802.11ac-VHT40 MCS0	102	5510		16.50	96.48
		110	5550		17.50	
		126	5630		17.50	
		134	5670		17.50	
	802.11ac-VHT80 MCS0	106	5530		15.00	93.06
122		5610	17.50			



<Reduced Power Mode>

<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	17.83	18.00	100.00
		6	2437	17.72	18.00	
		11	2462	17.89	18.00	
	802.11g 6Mbps	1	2412	Not Required	18.00	98.28
		6	2437		18.00	
		11	2462		18.00	
	802.11n-HT20 MCS0	1	2412		18.00	98.16
		6	2437		18.00	
		11	2462		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	Not Required	17.50	98.34
		40	5200		17.50	
		44	5220		17.50	
		48	5240		17.50	
	802.11n-HT20 MCS0	36	5180		17.50	98.23
		40	5200		17.50	
		44	5220		17.50	
		48	5240		17.50	
	802.11n-HT40 MCS0	38	5190	15.13	16.00	96.47
		46	5230	16.58	17.50	
	802.11ac-VHT20 MCS0	36	5180	Not Required	17.50	98.24
		40	5200		17.50	
		44	5220		17.50	
		48	5240		16.00	
	802.11ac-VHT40 MCS0	38	5190		16.00	96.48
		46	5230		16.00	
802.11ac-VHT80 MCS0	42	5210			14.00	93.06



5.3GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a 6Mbps	52	5260	Not Required	17.50	98.34
		56	5280		17.50	
		60	5300		17.50	
		64	5320		17.50	
	802.11n-HT20 MCS0	52	5260		17.50	98.23
		56	5280		17.50	
		60	5300		17.50	
		64	5320		17.50	
	802.11n-HT40 MCS0	54	5270		16.77	17.50
62		5310	16.89		17.50	
802.11ac-VHT20 MCS0	52	5260	Not Required	16.50	98.24	
	56	5280		17.50		
	60	5300		17.50		
	64	5320		17.50		
802.11ac-VHT40 MCS0	54	5270		17.50	96.48	
	62	5310		17.50		
802.11ac-VHT80 MCS0	58	5290		16.50	93.06	

5.5GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
	802.11a 6Mbps	100	5500	Not Required	17.00	97.93	
		116	5580		17.00		
		124	5620		17.00		
		132	5660		17.00		
		140	5700		17.00		
	802.11n-HT20 MCS0	100	5500		17.00	98.52	
		116	5580		17.00		
		124	5620		17.00		
		132	5660		17.00		
		140	5700		17.00		
	802.11n-HT40 MCS0	102	5510		16.79	17.00	96.47
		110	5550		16.89	17.00	
		126	5630		16.72	17.00	
		134	5670		16.74	17.00	
	802.11ac-VHT20 MCS0	100	5500		Not Required	16.50	98.24
		116	5580			17.00	
		124	5620			17.00	
		132	5660			17.00	
		140	5700			17.00	
802.11ac-VHT40 MCS0	102	5510	16.50			96.48	
	110	5550	17.00				
	126	5630	17.00				
	134	5670	17.00				
802.11ac-VHT80 MCS0	106	5530	13.83	15.00		92.49	
	122	5610	16.04	17.00			



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	Not Required	16.00	98.34
		157	5785		16.00	
		165	5825		16.00	
	802.11n-HT20 MCS0	149	5745		16.00	98.23
		157	5785		16.00	
		165	5825		16.00	
	802.11n-HT40 MCS0	151	5755	15.92	16.00	96.47
		159	5795		16.00	
	802.11ac-VHT20 MCS0	149	5745	Not Required	16.00	98.24
		157	5785		16.00	
		165	5825		16.00	
	802.11ac-VHT40 MCS0	151	5755		16.00	96.48
		159	5795		16.00	
	802.11ac-VHT80 MCS0	155	5775		15.57	16.00



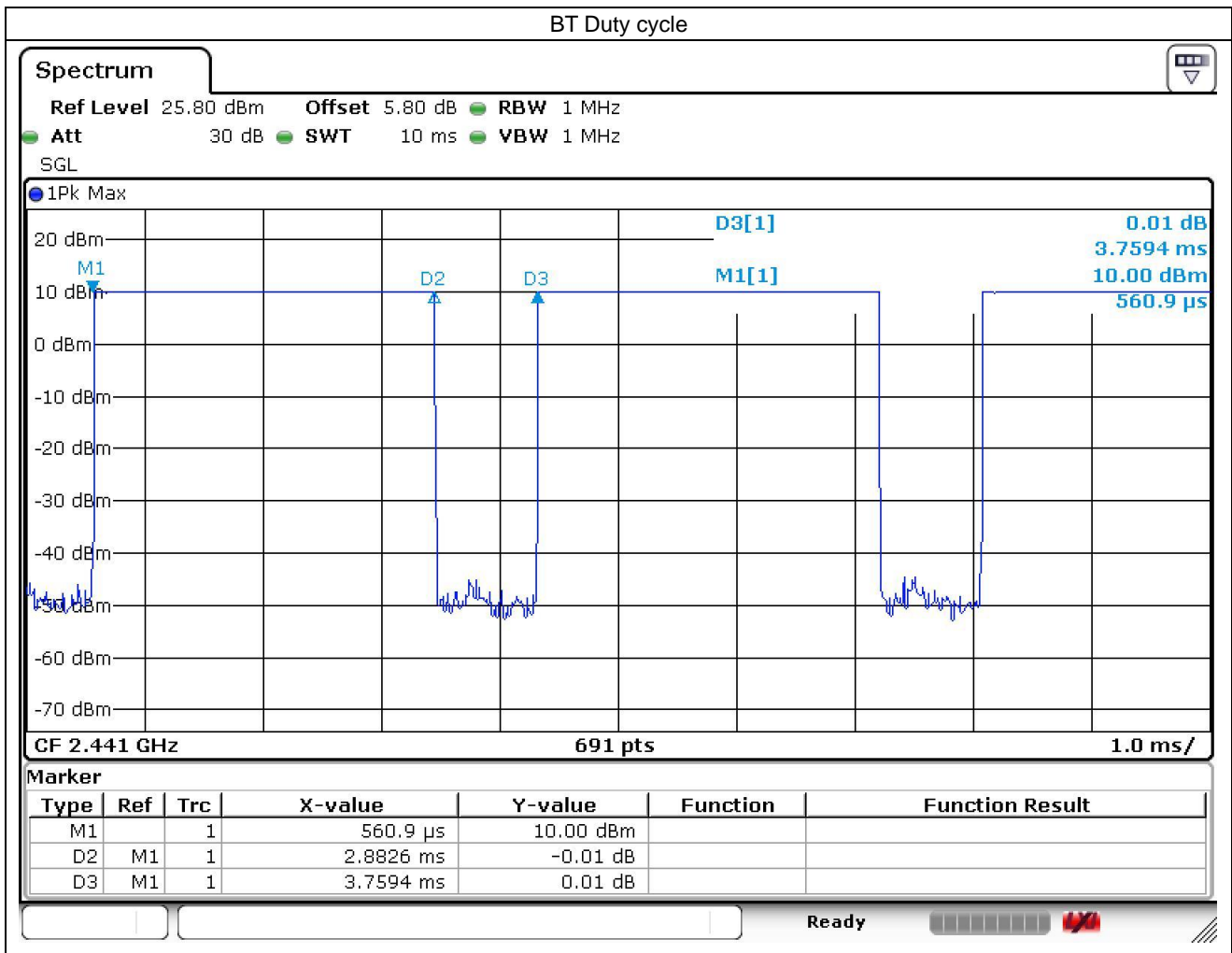
<2.4GHz Bluetooth>

Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
BR / EDR	CH 00	2402	10.88	8.85	8.76
	CH 39	2441	10.02	7.13	7.32
	CH 78	2480	11.04	9.16	8.94
Tune-up Limit			12.00	10.00	9.50

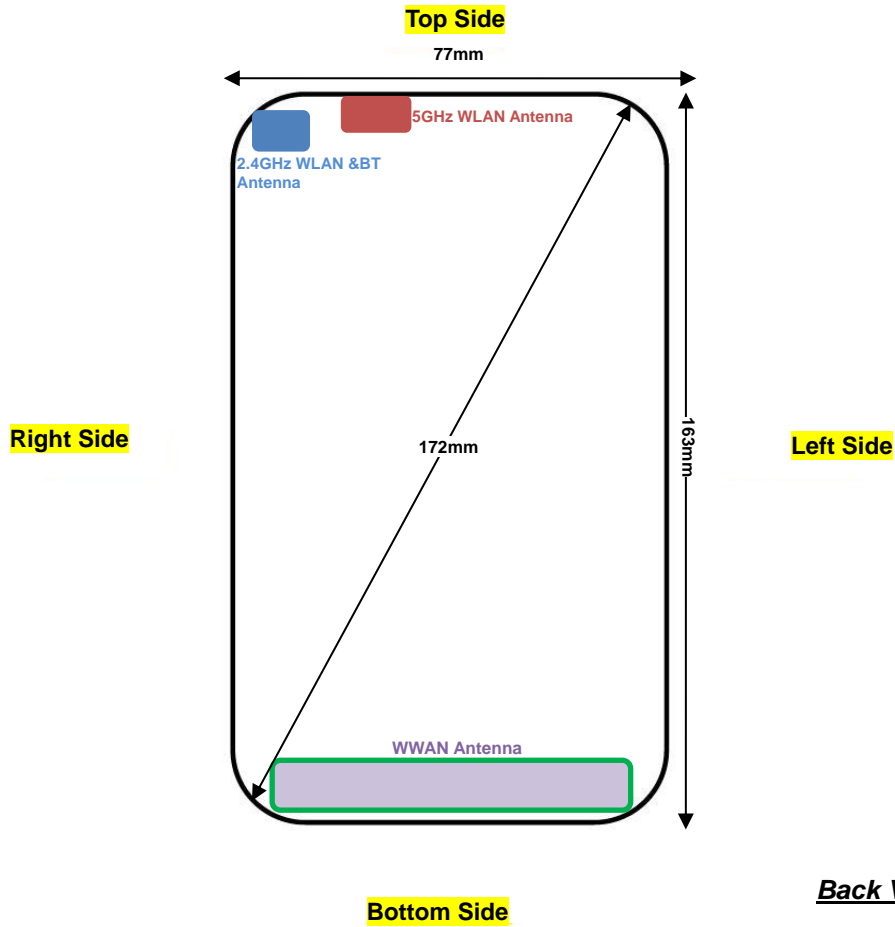
Mode	Channel	Frequency (MHz)	Average power (dBm)	
			1Mbps	2Mbps
LE	CH 00	2402	4.25	4.62
	CH 19	2440	4.36	3.83
	CH 39	2480	6.11	6.26
Tune-up Limit			6.50	6.50

General Note:

- For 2.4GHz Bluetooth SAR testing was selected 1Mbps due to its highest average power and duty cycle is 76.79% considered in SAR testing, and the duty cycle would be scaled to theoretical 83.3% in reported SAR calculation.



14. Antenna Location



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

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



15. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
 - b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
 - c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - d. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
 - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
 - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/kg.
4. Per KDB648474 D04v01r03, when the reported SAR for a 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.
5. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g product specific SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold, for this device only bottom side SAR for WWAN transmitter scaled to maximum output power is higher than 1.2W/kg of GSM850/GSM1900, WCDMA B2/B4/B5 and LTE B2/B5/B7/B66, therefore product specific SAR is necessary.
6. For 5.3GHz / 5.5GHz WLAN product specific SAR is necessary too, due to an overall diagonal dimension is > 16 cm.
7. For front and back position at hotspot exposure condition was choose higher power level between hotspot power table and body-worn power table for SAR compliance.
8. Reduced power for different RF exposure conditions:
 - a. Body worn: The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device, when operating in near-body condition by end user, the device will reduced maximum output powers on the GSM850/GSM1900, WCDMA B2/B4/B5 and LTE B2/B4/B5/B7/B66 and 2.4GHz/5GHz WLAN transmit and detail descriptions of the power reduction mechanism are included in the operational description.
 - b. Hotspot: When the mobile hotspot session is turn on by end user, the device will reduced output powers on the GSM850/GSM1900, WCDMA B2/B4/B5 and LTE B2/B4/B5/B7/B66 and 2.4GHz/5GHz WLAN transmit and detail descriptions of the power reduction mechanism are included in the operational description.
 - c. Handheld: The device additionally employs proximity sensors that detect the presence of tissue near the currently active transmit antenna, the device will reduced output powers on the WCDMA B2/B4/B5 and LTE B2/B4/B7/B66 transmitter and detail descriptions of the power reduction mechanism are included in the operational description.

GSM Note:

1. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (3Tx slots) for GSM850/GSM1900 is considered as the primary mode.
2. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq 1/4$ dB higher than the primary mode, SAR measurement is not required for the secondary mode.
3. Power reduction which is implemented in GSM850/GSM1900 band, for SAR testing EUT was set in reduced power mode and GPRS 3Tx slot due to its highest frame-average power.

**UMTS Note:**

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is $\leq \frac{1}{4}$ 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 $\frac{1}{4}$ 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 B5 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 4 SAR test was covered by Band 66; according to TCB workshop, SAR test for overlapping LTE bands can be reduced if
8. The maximum output power, including tolerance, for the smaller band is \leq the larger band to qualify for the SAR test exclusion.
 - a. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.

WLAN Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. Per KDB 248227 D01v02r02, U-NII-1 SAR testing is not required when the U-NII-2A band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band.
3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
5. During SAR testing the WLAN transmission was verified using a spectrum analyzer.



15.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (3 Tx slots)	Right Cheek	0mm	251	848.8	28.68	29.50	1.208	0.04	0.271	0.327
	GSM850	GPRS (3 Tx slots)	Right Tilted	0mm	251	848.8	28.68	29.50	1.208	0.08	0.140	0.169
01	GSM850	GPRS (3 Tx slots)	Left Cheek	0mm	251	848.8	28.68	29.50	1.208	0.18	0.319	0.385
	GSM850	GPRS (3 Tx slots)	Left Tilted	0mm	251	848.8	28.68	29.50	1.208	-0.05	0.186	0.225
	GSM1900	GPRS (3 Tx slots)	Right Cheek	0mm	810	1909.8	25.98	27.00	1.265	-0.14	0.138	0.175
	GSM1900	GPRS (3 Tx slots)	Right Tilted	0mm	810	1909.8	25.98	27.00	1.265	-0.1	0.103	0.130
02	GSM1900	GPRS (3 Tx slots)	Left Cheek	0mm	810	1909.8	25.98	27.00	1.265	0.06	0.197	0.249
	GSM1900	GPRS (3 Tx slots)	Left Tilted	0mm	810	1909.8	25.98	27.00	1.265	0.11	0.147	0.186

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Right Cheek	0mm	9400	1880	23.17	24.00	1.211	-0.08	0.115	0.139
	WCDMA II	RMC 12.2Kbps	Right Tilted	0mm	9400	1880	23.17	24.00	1.211	0.02	0.075	0.091
03	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	9400	1880	23.17	24.00	1.211	0.17	0.186	0.225
	WCDMA II	RMC 12.2Kbps	Left Tilted	0mm	9400	1880	23.17	24.00	1.211	0.08	0.096	0.116
04	WCDMA IV	RMC 12.2Kbps	Right Cheek	0mm	1413	1732.6	22.92	24.00	1.282	-0.03	0.288	0.369
	WCDMA IV	RMC 12.2Kbps	Right Tilted	0mm	1413	1732.6	22.92	24.00	1.282	0.09	0.139	0.178
	WCDMA IV	RMC 12.2Kbps	Left Cheek	0mm	1413	1732.6	22.92	24.00	1.282	0.05	0.232	0.298
	WCDMA IV	RMC 12.2Kbps	Left Tilted	0mm	1413	1732.6	22.92	24.00	1.282	0.05	0.123	0.158
	WCDMA V	RMC 12.2Kbps	Right Cheek	0mm	4182	836.4	22.86	24.00	1.300	-0.1	0.287	0.373
	WCDMA V	RMC 12.2Kbps	Right Tilted	0mm	4182	836.4	22.86	24.00	1.300	-0.01	0.200	0.260
05	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	4182	836.4	22.86	24.00	1.300	0.12	0.289	0.376
	WCDMA V	RMC 12.2Kbps	Left Tilted	0mm	4182	836.4	22.86	24.00	1.300	0.15	0.197	0.256



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
06	LTE Band 2	20M	QPSK	1	0	Right Cheek	0mm	18900	1880	22.84	24.00	1.306	-0.01	0.261	0.341
	LTE Band 2	20M	QPSK	50	0	Right Cheek	0mm	18900	1880	21.79	23.00	1.321	0.01	0.214	0.283
	LTE Band 2	20M	QPSK	1	0	Right Tilted	0mm	18900	1880	22.84	24.00	1.306	-0.16	0.159	0.208
	LTE Band 2	20M	QPSK	50	0	Right Tilted	0mm	18900	1880	21.79	23.00	1.321	-0.19	0.129	0.170
	LTE Band 2	20M	QPSK	1	0	Left Cheek	0mm	18900	1880	22.84	24.00	1.306	0.13	0.171	0.223
	LTE Band 2	20M	QPSK	50	0	Left Cheek	0mm	18900	1880	21.79	23.00	1.321	0.09	0.129	0.170
	LTE Band 2	20M	QPSK	1	0	Left Tilted	0mm	18900	1880	22.84	24.00	1.306	-0.05	0.100	0.131
	LTE Band 2	20M	QPSK	50	0	Left Tilted	0mm	18900	1880	21.79	23.00	1.321	-0.07	0.074	0.098
07	LTE Band 5	10M	QPSK	1	0	Right Cheek	0mm	20525	836.5	22.49	24.00	1.416	0.12	0.308	0.436
	LTE Band 5	10M	QPSK	25	0	Right Cheek	0mm	20525	836.5	21.57	23.00	1.390	0.04	0.175	0.243
	LTE Band 5	10M	QPSK	1	0	Right Tilted	0mm	20525	836.5	22.49	24.00	1.416	-0.14	0.185	0.262
	LTE Band 5	10M	QPSK	25	0	Right Tilted	0mm	20525	836.5	21.57	23.00	1.390	0.12	0.103	0.143
	LTE Band 5	10M	QPSK	1	0	Left Cheek	0mm	20525	836.5	22.49	24.00	1.416	-0.05	0.273	0.387
	LTE Band 5	10M	QPSK	25	0	Left Cheek	0mm	20525	836.5	21.57	23.00	1.390	0.1	0.223	0.310
	LTE Band 5	10M	QPSK	1	0	Left Tilted	0mm	20525	836.5	22.49	24.00	1.416	-0.12	0.171	0.242
	LTE Band 5	10M	QPSK	25	0	Left Tilted	0mm	20525	836.5	21.57	23.00	1.390	-0.02	0.139	0.193
08	LTE Band 7	20M	QPSK	1	0	Right Cheek	0mm	21100	2535	22.38	24.00	1.452	-0.12	0.159	0.231
	LTE Band 7	20M	QPSK	50	0	Right Cheek	0mm	21100	2535	21.39	23.00	1.449	0.01	0.114	0.165
	LTE Band 7	20M	QPSK	1	0	Right Tilted	0mm	21100	2535	22.38	24.00	1.452	-0.16	0.095	0.138
	LTE Band 7	20M	QPSK	50	0	Right Tilted	0mm	21100	2535	21.39	23.00	1.449	-0.19	0.068	0.099
	LTE Band 7	20M	QPSK	1	0	Left Cheek	0mm	21100	2535	22.38	24.00	1.452	0.13	0.137	0.199
	LTE Band 7	20M	QPSK	50	0	Left Cheek	0mm	21100	2535	21.39	23.00	1.449	-0.15	0.115	0.167
	LTE Band 7	20M	QPSK	1	0	Left Tilted	0mm	21100	2535	22.38	24.00	1.452	0.09	0.100	0.145
	LTE Band 7	20M	QPSK	50	0	Left Tilted	0mm	21100	2535	21.39	23.00	1.449	0.14	0.064	0.093
09	LTE Band 66	20M	QPSK	1	0	Right Cheek	0mm	132322	1745	22.77	24.00	1.327	0.13	0.222	0.295
	LTE Band 66	20M	QPSK	50	0	Right Cheek	0mm	132322	1745	21.61	23.00	1.377	0.19	0.141	0.194
	LTE Band 66	20M	QPSK	1	0	Right Tilted	0mm	132322	1745	22.77	24.00	1.327	0.09	0.167	0.222
	LTE Band 66	20M	QPSK	50	0	Right Tilted	0mm	132322	1745	21.61	23.00	1.377	-0.14	0.102	0.140
	LTE Band 66	20M	QPSK	1	0	Left Cheek	0mm	132322	1745	22.77	24.00	1.327	0.12	0.141	0.187
	LTE Band 66	20M	QPSK	50	0	Left Cheek	0mm	132322	1745	21.61	23.00	1.377	0.09	0.100	0.138
	LTE Band 66	20M	QPSK	1	0	Left Tilted	0mm	132322	1745	22.77	24.00	1.327	0.02	0.062	0.082
	LTE Band 66	20M	QPSK	50	0	Left Tilted	0mm	132322	1745	21.61	23.00	1.377	0.17	0.043	0.059



<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	11	2462	19.19	20.50	1.352	100	1.000	-0.08	0.161	0.218
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	11	2462	19.19	20.50	1.352	100	1.000	-0.15	0.145	0.196
10	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	11	2462	19.19	20.50	1.352	100	1.000	0.09	0.367	0.496
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	11	2462	19.19	20.50	1.352	100	1.000	0.14	0.314	0.425
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	60	5300	18.02	19.50	1.405	98.34	1.017	-0.11	0.362	0.517
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	60	5300	18.02	19.50	1.405	98.34	1.017	0.17	0.427	0.610
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	60	5300	18.02	19.50	1.405	98.34	1.017	0.11	0.402	0.574
11	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	60	5300	18.02	19.50	1.405	98.34	1.017	-0.11	0.526	0.752
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	132	5660	18.20	19.50	1.348	98.34	1.017	0.02	0.341	0.468
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	132	5660	18.20	19.50	1.348	98.34	1.017	-0.08	0.472	0.647
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	132	5660	18.20	19.50	1.348	98.34	1.017	0.06	0.449	0.616
12	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	132	5660	18.20	19.50	1.348	98.34	1.017	-0.1	0.528	0.724
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	165	5825	17.92	19.50	1.438	98.34	1.017	0.03	0.220	0.322
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	165	5825	17.92	19.50	1.438	98.34	1.017	0.12	0.309	0.452
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	165	5825	17.92	19.50	1.438	98.34	1.017	-0.05	0.249	0.364
13	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	165	5825	17.92	19.50	1.438	98.34	1.017	-0.1	0.414	0.605

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Right Cheek	0mm	78	2480	11.04	12.00	1.248	76.79	1.302	0.01	0.002	0.003
	Bluetooth	1Mbps	Right Tilted	0mm	78	2480	11.04	12.00	1.248	76.79	1.302	0.03	0.001	0.002
14	Bluetooth	1Mbps	Left Cheek	0mm	78	2480	11.04	12.00	1.248	76.79	1.302	0.19	0.056	0.091
	Bluetooth	1Mbps	Left Tilted	0mm	78	2480	11.04	12.00	1.248	76.79	1.302	-0.09	0.045	0.073



15.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (3 Tx slots)	Front	5mm	ON	251	848.8	27.92	29.00	1.282	0.02	0.527	0.676
15	GSM850	GPRS (3 Tx slots)	Back	5mm	ON	251	848.8	27.92	29.00	1.282	-0.04	0.944	1.211
	GSM850	GPRS (3 Tx slots)	Back	5mm	ON	128	824.2	27.88	29.00	1.294	-0.16	0.685	0.887
	GSM850	GPRS (3 Tx slots)	Back	5mm	ON	189	836.4	27.90	29.00	1.288	-0.13	0.796	1.025
	GSM850	GPRS (3 Tx slots)	Left Side	5mm	ON	251	848.8	27.92	29.00	1.282	-0.08	0.195	0.250
	GSM850	GPRS (3 Tx slots)	Right Side	5mm	ON	251	848.8	27.92	29.00	1.282	0.04	0.267	0.342
	GSM850	GPRS (3 Tx slots)	Bottom Side	5mm	ON	251	848.8	27.92	29.00	1.282	0.11	0.538	0.690
	GSM1900	GPRS (3 Tx slots)	Front	5mm	ON	810	1909.8	25.27	26.00	1.183	-0.03	0.669	0.791
16	GSM1900	GPRS (3 Tx slots)	Back	5mm	ON	810	1909.8	25.27	26.00	1.183	-0.12	1.100	1.301
	GSM1900	GPRS (3 Tx slots)	Back	5mm	ON	512	1850.2	25.26	26.00	1.186	-0.18	1.090	1.292
	GSM1900	GPRS (3 Tx slots)	Back	5mm	ON	661	1880	25.16	26.00	1.213	-0.03	1.070	1.298
	GSM1900	GPRS (3 Tx slots)	Left Side	5mm	ON	810	1909.8	25.27	26.00	1.183	-0.04	0.365	0.432
	GSM1900	GPRS (3 Tx slots)	Right Side	5mm	ON	810	1909.8	25.27	26.00	1.183	-0.04	0.121	0.143
	GSM1900	GPRS (3 Tx slots)	Bottom Side	5mm	ON	810	1909.8	25.27	26.00	1.183	-0.01	0.882	1.043
	GSM1900	GPRS (3 Tx slots)	Bottom Side	5mm	ON	661	1880	25.16	26.00	1.213	0.02	0.883	1.071
	GSM1900	GPRS (3 Tx slots)	Bottom Side	5mm	ON	512	1850.2	25.26	26.00	1.186	-0.01	0.987	1.170

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Front	5mm	ON	9400	1880	19.58	20.00	1.102	-0.1	0.936	1.031
	WCDMA II	RMC 12.2Kbps	Front	5mm	ON	9262	1852.4	19.52	20.00	1.117	-0.1	0.907	1.013
	WCDMA II	RMC 12.2Kbps	Front	5mm	ON	9538	1907.6	19.44	20.00	1.138	-0.15	1.160	1.320
	WCDMA II	RMC 12.2Kbps	Back	5mm	ON	9400	1880	19.58	20.00	1.102	-0.14	1.130	1.245
17	WCDMA II	RMC 12.2Kbps	Back	5mm	ON	9538	1907.6	19.44	20.00	1.138	-0.13	1.170	1.331
	WCDMA II	RMC 12.2Kbps	Back	5mm	ON	9262	1852.4	19.52	20.00	1.117	-0.16	1.080	1.206
	WCDMA II	RMC 12.2Kbps	Left Side	5mm	ON	9400	1880	19.58	20.00	1.102	-0.07	0.465	0.512
	WCDMA II	RMC 12.2Kbps	Right Side	5mm	ON	9400	1880	19.58	20.00	1.102	0.02	0.127	0.140
	WCDMA II	RMC 12.2Kbps	Bottom Side	5mm	ON	9400	1880	19.58	20.00	1.102	-0.08	1.050	1.157
	WCDMA II	RMC 12.2Kbps	Bottom Side	5mm	ON	9262	1852.4	19.52	20.00	1.117	0.04	1.020	1.139
	WCDMA II	RMC 12.2Kbps	Bottom Side	5mm	ON	9538	1907.6	19.44	20.00	1.138	0.11	1.010	1.149
	WCDMA IV	RMC 12.2Kbps	Front	5mm	ON	1413	1732.6	18.60	19.00	1.096	-0.1	0.747	0.819
	WCDMA IV	RMC 12.2Kbps	Front	5mm	ON	1312	1712.4	18.48	19.00	1.127	-0.14	0.836	0.942
	WCDMA IV	RMC 12.2Kbps	Front	5mm	ON	1513	1752.6	18.59	19.00	1.099	-0.19	0.730	0.802
	WCDMA IV	RMC 12.2Kbps	Back	5mm	ON	1413	1732.6	18.60	19.00	1.096	-0.02	1.110	1.217
	WCDMA IV	RMC 12.2Kbps	Back	5mm	ON	1312	1712.4	18.48	19.00	1.127	-0.09	1.070	1.206
	WCDMA IV	RMC 12.2Kbps	Back	5mm	ON	1513	1752.6	18.59	19.00	1.099	-0.1	1.120	1.231
	WCDMA IV	RMC 12.2Kbps	Left Side	5mm	ON	1413	1732.6	18.60	19.00	1.096	0.01	0.283	0.310
	WCDMA IV	RMC 12.2Kbps	Right Side	5mm	ON	1413	1732.6	18.60	19.00	1.096	-0.08	0.163	0.179
	WCDMA IV	RMC 12.2Kbps	Bottom Side	5mm	ON	1413	1732.6	18.60	19.00	1.096	-0.16	1.230	1.349
	WCDMA IV	RMC 12.2Kbps	Bottom Side	5mm	ON	1312	1712.4	18.48	19.00	1.127	0.05	1.140	1.285
18	WCDMA IV	RMC 12.2Kbps	Bottom Side	5mm	ON	1513	1752.6	18.59	19.00	1.099	-0.06	1.270	1.396
	WCDMA V	RMC 12.2Kbps	Front	5mm	ON	4182	836.4	21.87	23.00	1.297	0.05	0.357	0.463
	WCDMA V	RMC 12.2Kbps	Back	5mm	ON	4182	836.4	21.87	23.00	1.297	-0.01	0.947	1.228
19	WCDMA V	RMC 12.2Kbps	Back	5mm	ON	4132	826.4	21.86	23.00	1.300	-0.09	0.966	1.256
	WCDMA V	RMC 12.2Kbps	Back	5mm	ON	4233	846.6	21.86	23.00	1.300	-0.05	0.899	1.169
	WCDMA V	RMC 12.2Kbps	Left Side	5mm	ON	4182	836.4	21.87	23.00	1.297	-0.16	0.193	0.250
	WCDMA V	RMC 12.2Kbps	Right Side	5mm	ON	4182	836.4	21.87	23.00	1.297	-0.07	0.217	0.281
	WCDMA V	RMC 12.2Kbps	Bottom Side	5mm	ON	4182	836.4	21.87	23.00	1.297	-0.12	0.310	0.402



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2	20M	QPSK	1	0	Front	5mm	ON	18900	1880	19.54	20.50	1.247	-0.11	0.967	1.206
	LTE Band 2	20M	QPSK	1	0	Front	5mm	ON	18700	1860	19.44	20.50	1.276	-0.11	0.922	1.177
	LTE Band 2	20M	QPSK	1	0	Front	5mm	ON	19100	1900	19.35	20.50	1.303	-0.12	0.952	1.241
	LTE Band 2	20M	QPSK	50	0	Front	5mm	ON	18900	1880	19.52	20.50	1.253	-0.13	0.795	0.996
	LTE Band 2	20M	QPSK	50	0	Front	5mm	ON	18700	1860	19.46	20.50	1.271	-0.08	0.769	0.977
	LTE Band 2	20M	QPSK	50	0	Front	5mm	ON	19100	1900	19.35	20.50	1.303	-0.16	0.803	1.046
	LTE Band 2	20M	QPSK	100	0	Front	5mm	ON	18900	1880	19.41	20.50	1.285	-0.07	0.797	1.024
	LTE Band 2	20M	QPSK	1	0	Back	5mm	ON	18900	1880	19.54	20.50	1.247	-0.08	0.972	1.212
	LTE Band 2	20M	QPSK	1	0	Back	5mm	ON	18700	1860	19.44	20.50	1.276	-0.13	0.978	1.248
	LTE Band 2	20M	QPSK	1	0	Back	5mm	ON	19100	1900	19.35	20.50	1.303	-0.12	0.964	1.256
	LTE Band 2	20M	QPSK	50	0	Back	5mm	ON	18900	1880	19.52	20.50	1.253	-0.09	0.943	1.182
	LTE Band 2	20M	QPSK	50	0	Back	5mm	ON	18700	1860	19.46	20.50	1.271	-0.1	0.927	1.178
	LTE Band 2	20M	QPSK	50	0	Back	5mm	ON	19100	1900	19.35	20.50	1.303	-0.02	0.894	1.165
	LTE Band 2	20M	QPSK	100	0	Back	5mm	ON	18900	1880	19.41	20.50	1.285	0.01	0.937	1.204
	LTE Band 2	20M	QPSK	1	0	Left Side	5mm	ON	18900	1880	19.54	20.50	1.247	-0.02	0.344	0.429
	LTE Band 2	20M	QPSK	50	0	Left Side	5mm	ON	18900	1880	19.52	20.50	1.253	-0.02	0.355	0.445
	LTE Band 2	20M	QPSK	1	0	Right Side	5mm	ON	18900	1880	19.54	20.50	1.247	0.03	0.114	0.142
	LTE Band 2	20M	QPSK	50	0	Right Side	5mm	ON	18900	1880	19.52	20.50	1.253	-0.01	0.113	0.142
	LTE Band 2	20M	QPSK	1	0	Bottom Side	5mm	ON	18900	1880	19.54	20.50	1.247	-0.06	1.020	1.272
	LTE Band 2	20M	QPSK	1	0	Bottom Side	5mm	ON	18700	1860	19.44	20.50	1.276	-0.09	1.000	1.276
	LTE Band 2	20M	QPSK	1	0	Bottom Side	5mm	ON	19100	1900	19.35	20.50	1.303	0.02	1.010	1.316
	LTE Band 2	20M	QPSK	50	0	Bottom Side	5mm	ON	18900	1880	19.52	20.50	1.253	-0.1	1.040	1.303
	LTE Band 2	20M	QPSK	50	0	Bottom Side	5mm	ON	18700	1860	19.46	20.50	1.271	-0.13	0.983	1.249
	LTE Band 2	20M	QPSK	50	0	Bottom Side	5mm	ON	19100	1900	19.35	20.50	1.303	-0.02	1.000	1.303
20	LTE Band 2	20M	QPSK	100	0	Bottom Side	5mm	ON	18900	1880	19.41	20.50	1.285	-0.07	1.030	1.324
	LTE Band 5	10M	QPSK	1	0	Front	5mm	ON	20525	836.5	21.72	23.50	1.507	0.15	0.503	0.758
	LTE Band 5	10M	QPSK	25	0	Front	5mm	ON	20525	836.5	21.69	22.50	1.205	0.04	0.341	0.411
21	LTE Band 5	10M	QPSK	1	0	Back	5mm	ON	20525	836.5	21.72	23.50	1.507	-0.09	0.822	1.238
	LTE Band 5	10M	QPSK	25	0	Back	5mm	ON	20525	836.5	21.69	22.50	1.205	-0.17	0.765	0.922
	LTE Band 5	10M	QPSK	50	0	Back	5mm	ON	20525	836.5	21.67	22.50	1.211	-0.1	0.557	0.674
	LTE Band 5	10M	QPSK	1	0	Left Side	5mm	ON	20525	836.5	21.72	23.50	1.507	-0.15	0.215	0.324
	LTE Band 5	10M	QPSK	25	0	Left Side	5mm	ON	20525	836.5	21.69	22.50	1.205	-0.11	0.176	0.212
	LTE Band 5	10M	QPSK	1	0	Right Side	5mm	ON	20525	836.5	21.72	23.50	1.507	-0.1	0.290	0.437
	LTE Band 5	10M	QPSK	25	0	Right Side	5mm	ON	20525	836.5	21.69	22.50	1.205	-0.15	0.210	0.253
	LTE Band 5	10M	QPSK	1	0	Bottom Side	5mm	ON	20525	836.5	21.72	23.50	1.507	-0.12	0.303	0.457
	LTE Band 5	10M	QPSK	25	0	Bottom Side	5mm	ON	20525	836.5	21.69	22.50	1.205	0.11	0.305	0.368



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7	20M	QPSK	1	0	Front	5mm	ON	21100	2535	16.23	16.50	1.064	-0.1	0.364	0.387
	LTE Band 7	20M	QPSK	50	0	Front	5mm	ON	21100	2535	16.22	16.50	1.067	0.01	0.305	0.325
	LTE Band 7	20M	QPSK	1	0	Back	5mm	ON	21100	2535	16.23	16.50	1.064	-0.19	1.140	1.213
	LTE Band 7	20M	QPSK	1	0	Back	5mm	ON	20850	2510	16.20	16.50	1.072	-0.12	1.100	1.179
	LTE Band 7	20M	QPSK	1	0	Back	5mm	ON	21350	2560	16.04	16.50	1.112	-0.17	0.845	0.939
	LTE Band 7	20M	QPSK	50	0	Back	5mm	ON	21100	2535	16.22	16.50	1.067	-0.15	0.979	1.044
	LTE Band 7	20M	QPSK	50	0	Back	5mm	ON	20850	2510	16.03	16.50	1.114	-0.11	1.004	1.119
	LTE Band 7	20M	QPSK	50	0	Back	5mm	ON	21350	2560	16.07	16.50	1.104	-0.1	0.846	0.934
	LTE Band 7	20M	QPSK	50	0	Back	5mm	ON	21350	2560	16.16	16.50	1.081	-0.1	0.846	0.915
	LTE Band 7	20M	QPSK	1	0	Left Side	5mm	ON	21100	2535	16.23	16.50	1.064	-0.07	0.083	0.088
	LTE Band 7	20M	QPSK	50	0	Left Side	5mm	ON	21100	2535	16.22	16.50	1.067	0.05	0.084	0.090
	LTE Band 7	20M	QPSK	1	0	Right Side	5mm	ON	21100	2535	16.23	16.50	1.064	-0.06	0.109	0.116
	LTE Band 7	20M	QPSK	50	0	Right Side	5mm	ON	21100	2535	16.22	16.50	1.067	0.03	0.131	0.140
	LTE Band 7	20M	QPSK	1	0	Bottom Side	5mm	ON	21100	2535	16.23	16.50	1.064	0.04	1.190	1.266
22	LTE Band 7	20M	QPSK	1	0	Bottom Side	5mm	ON	20850	2510	16.20	16.50	1.072	0.01	1.260	1.350
	LTE Band 7	20M	QPSK	1	0	Bottom Side	5mm	ON	21350	2560	16.04	16.50	1.112	-0.08	1.100	1.223
	LTE Band 7	20M	QPSK	50	0	Bottom Side	5mm	ON	21100	2535	16.22	16.50	1.067	0.01	1.110	1.184
	LTE Band 7	20M	QPSK	50	0	Bottom Side	5mm	ON	20850	2510	16.03	16.50	1.114	-0.04	1.170	1.304
	LTE Band 7	20M	QPSK	50	0	Bottom Side	5mm	ON	21350	2560	16.07	16.50	1.104	0.02	1.000	1.104
	LTE Band 7	20M	QPSK	100	0	Bottom Side	5mm	ON	21100	2535	16.16	16.50	1.081	-0.05	1.100	1.190
	LTE Band 66	20M	QPSK	1	0	Front	5mm	ON	132322	1745	20.92	21.00	1.019	-0.17	0.817	0.832
	LTE Band 66	20M	QPSK	1	0	Front	5mm	ON	132072	1720	20.69	21.00	1.074	-0.1	0.735	0.789
	LTE Band 66	20M	QPSK	1	0	Front	5mm	ON	132572	1770	20.64	21.00	1.086	-0.15	0.878	0.954
	LTE Band 66	20M	QPSK	50	0	Front	5mm	ON	132322	1745	20.89	21.00	1.026	-0.11	0.506	0.519
	LTE Band 66	20M	QPSK	100	0	Front	5mm	ON	132322	1745	20.86	21.00	1.033	-0.1	0.525	0.542
	LTE Band 66	20M	QPSK	1	0	Back	5mm	ON	132322	1745	20.92	21.00	1.019	-0.14	1.170	1.192
	LTE Band 66	20M	QPSK	1	0	Back	5mm	ON	132072	1720	20.69	21.00	1.074	-0.15	1.140	1.224
	LTE Band 66	20M	QPSK	1	0	Back	5mm	ON	132572	1770	20.64	21.00	1.086	-0.15	1.060	1.152
	LTE Band 66	20M	QPSK	50	0	Back	5mm	ON	132322	1745	20.89	21.00	1.026	-0.18	1.070	1.097
	LTE Band 66	20M	QPSK	50	0	Back	5mm	ON	132072	1720	20.64	21.00	1.086	-0.15	1.050	1.141
	LTE Band 66	20M	QPSK	50	0	Back	5mm	ON	132572	1770	20.78	21.00	1.052	-0.03	1.090	1.147
	LTE Band 66	20M	QPSK	100	0	Back	5mm	ON	132322	1745	20.86	21.00	1.033	0.1	1.060	1.095
	LTE Band 66	20M	QPSK	1	0	Left Side	5mm	ON	132322	1745	19.91	20.50	1.146	-0.07	0.293	0.336
	LTE Band 66	20M	QPSK	50	0	Left Side	5mm	ON	132322	1745	19.77	20.50	1.183	0.02	0.301	0.356
	LTE Band 66	20M	QPSK	1	0	Right Side	5mm	ON	132322	1745	19.91	20.50	1.146	0.01	0.175	0.200
	LTE Band 66	20M	QPSK	50	0	Right Side	5mm	ON	132322	1745	19.77	20.50	1.183	-0.04	0.176	0.208
	LTE Band 66	20M	QPSK	1	0	Bottom Side	5mm	ON	132322	1745	19.91	20.50	1.146	-0.12	1.100	1.260
	LTE Band 66	20M	QPSK	1	0	Bottom Side	5mm	ON	132072	1720	19.83	20.50	1.167	-0.19	1.050	1.225
23	LTE Band 66	20M	QPSK	1	0	Bottom Side	5mm	ON	132572	1770	19.72	20.50	1.197	-0.14	1.120	1.340
	LTE Band 66	20M	QPSK	50	0	Bottom Side	5mm	ON	132322	1745	19.77	20.50	1.183	0.01	1.010	1.195
	LTE Band 66	20M	QPSK	50	0	Bottom Side	5mm	ON	132072	1720	19.75	20.50	1.189	0.1	0.994	1.181
	LTE Band 66	20M	QPSK	50	0	Bottom Side	5mm	ON	132572	1770	19.61	20.50	1.227	0.12	1.090	1.338
	LTE Band 66	20M	QPSK	100	0	Bottom Side	5mm	ON	132322	1745	19.76	20.50	1.186	0.19	1.040	1.233



<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	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	5mm	ON	11	2462	17.89	18.00	1.026	100	1.000	0.06	0.183	0.188
24	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	ON	11	2462	17.89	18.00	1.026	100	1.000	0.03	1.070	1.097
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	ON	1	2412	17.83	18.00	1.040	100	1.000	0.05	0.913	0.949
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	ON	6	2437	17.72	18.00	1.067	100	1.000	0.09	0.938	1.000
	WLAN2.4GHz	802.11b 1Mbps	Left Side	5mm	ON	11	2462	17.89	18.00	1.026	100	1.000	-0.17	0.020	0.021
	WLAN2.4GHz	802.11b 1Mbps	Right Side	5mm	ON	11	2462	17.89	18.00	1.026	100	1.000	0.03	0.361	0.370
	WLAN2.4GHz	802.11b 1Mbps	Top Side	5mm	ON	11	2462	17.89	18.00	1.026	100	1.000	0.02	0.504	0.517
	WLAN5GHz	802.11n-HT40 MCS0	Front	5mm	ON	46	5230	16.58	17.50	1.237	96.47	1.037	-0.15	0.140	0.180
25	WLAN5GHz	802.11n-HT40 MCS0	Back	5mm	ON	46	5230	16.58	17.50	1.237	96.47	1.037	-0.16	0.931	1.194
	WLAN5GHz	802.11n-HT40 MCS0	Back	5mm	ON	38	5190	15.13	16.00	1.223	96.47	1.037	0.06	0.640	0.812
	WLAN5GHz	802.11n-HT40 MCS0	Left Side	5mm	ON	46	5230	16.58	17.50	1.237	96.47	1.037	0.07	0.076	0.097
	WLAN5GHz	802.11n-HT40 MCS0	Right Side	5mm	ON	46	5230	16.58	17.50	1.237	96.47	1.037	0.09	0.253	0.325
	WLAN5GHz	802.11n-HT40 MCS0	Top Side	5mm	ON	46	5230	16.58	17.50	1.237	96.47	1.037	-0.16	0.484	0.621
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	5mm	ON	155	5775	15.57	16.00	1.104	93.06	1.075	-0.09	0.142	0.169
26	WLAN5GHz	802.11ac-VHT80 MCS0	Back	5mm	ON	155	5775	15.57	16.00	1.104	93.06	1.075	-0.13	1.060	1.258
	WLAN5GHz	802.11n-HT40 MCS0	Back	5mm	ON	159	5795	15.92	16.00	1.019	93.06	1.075	-0.04	0.970	1.062
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	5mm	ON	155	5775	15.57	16.00	1.104	93.06	1.075	0.16	0.018	0.021
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	5mm	ON	155	5775	15.57	16.00	1.104	93.06	1.075	0	0.187	0.222
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	5mm	ON	155	5775	15.57	16.00	1.104	93.06	1.075	0.02	0.423	0.502

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Front	5mm	78	2480	11.04	12.00	1.248	76.79	1.302	0.05	0.001	0.002
27	Bluetooth	1Mbps	Back	5mm	78	2480	11.04	12.00	1.248	76.79	1.302	-0.09	0.141	0.229
	Bluetooth	1Mbps	Left Side	5mm	78	2480	11.04	12.00	1.248	76.79	1.302	0.11	0.001	0.002
	Bluetooth	1Mbps	Right Side	5mm	78	2480	11.04	12.00	1.248	76.79	1.302	-0.06	0.063	0.102
	Bluetooth	1Mbps	Top Side	5mm	78	2480	11.04	12.00	1.248	76.79	1.302	-0.05	0.073	0.119



15.3 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	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 (3 Tx slots)	Front	5mm		ON	251	848.8	27.92	29.00	1.282	0.02	0.527	0.676
28	GSM850	GPRS (3 Tx slots)	Back	5mm		ON	251	848.8	27.92	29.00	1.282	-0.04	0.944	1.211
	GSM850	GPRS (3 Tx slots)	Back	5mm		ON	128	824.2	27.88	29.00	1.294	-0.16	0.685	0.887
	GSM850	GPRS (3 Tx slots)	Back	5mm		ON	189	836.4	27.90	29.00	1.288	-0.13	0.796	1.025
	GSM850	GPRS (3 Tx slots)	Back	5mm	Headset1	ON	251	848.8	27.92	29.00	1.282	0.03	0.757	0.971
	GSM850	GPRS (3 Tx slots)	Back	5mm	Headset2	ON	251	848.8	27.92	29.00	1.282	0.06	0.741	0.950
	GSM850	GPRS (3 Tx slots)	Front	10mm		OFF	251	848.8	28.68	29.50	1.208	0.01	0.243	0.293
	GSM850	GPRS (3 Tx slots)	Back	16mm		OFF	251	848.8	28.68	29.50	1.208	0.06	0.253	0.306
	GSM1900	GPRS (3 Tx slots)	Front	5mm		ON	810	1909.8	25.27	26.00	1.183	-0.03	0.716	0.847
29	GSM1900	GPRS (3 Tx slots)	Back	5mm		ON	810	1909.8	25.27	26.00	1.183	-0.12	1.100	1.301
	GSM1900	GPRS (3 Tx slots)	Back	5mm		ON	512	1850.2	25.26	26.00	1.186	-0.18	1.090	1.292
	GSM1900	GPRS (3 Tx slots)	Back	5mm		ON	661	1880	25.16	26.00	1.213	-0.03	1.070	1.298
	GSM1900	GPRS (3 Tx slots)	Back	5mm	Headset1	ON	810	1909.8	25.27	26.00	1.183	0.01	0.305	0.361
	GSM1900	GPRS (3 Tx slots)	Back	5mm	Headset2	ON	810	1909.8	25.27	26.00	1.183	0.03	0.301	0.356
	GSM1900	GPRS (3 Tx slots)	Front	10mm		OFF	810	1909.8	25.98	27.00	1.265	-0.01	0.259	0.328
	GSM1900	GPRS (3 Tx slots)	Back	16mm		OFF	810	1909.8	25.98	27.00	1.265	0.05	0.194	0.245

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	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	5mm		ON	9400	1880	19.58	20.00	1.102	-0.1	0.936	1.031
	WCDMA II	RMC 12.2Kbps	Front	5mm		ON	9262	1852.4	19.52	20.00	1.117	-0.1	0.907	1.013
	WCDMA II	RMC 12.2Kbps	Front	5mm		ON	9538	1907.6	19.44	20.00	1.138	-0.15	1.160	1.320
	WCDMA II	RMC 12.2Kbps	Back	5mm		ON	9400	1880	19.58	20.00	1.102	-0.14	1.130	1.245
30	WCDMA II	RMC 12.2Kbps	Back	5mm		ON	9538	1907.6	19.44	20.00	1.138	-0.13	1.170	1.331
	WCDMA II	RMC 12.2Kbps	Back	5mm		ON	9262	1852.4	19.52	20.00	1.117	-0.16	1.080	1.206
	WCDMA II	RMC 12.2Kbps	Back	5mm	Headset1	ON	9538	1907.6	19.44	20.00	1.138	0.05	0.708	0.805
	WCDMA II	RMC 12.2Kbps	Back	5mm	Headset2	ON	9538	1907.6	19.44	20.00	1.138	0.06	0.699	0.795
	WCDMA II	RMC 12.2Kbps	Front	10mm		OFF	9400	1880	23.17	24.00	1.211	0.08	0.616	0.746
	WCDMA II	RMC 12.2Kbps	Back	16mm		OFF	9400	1880	23.17	24.00	1.211	0.01	0.626	0.758
	WCDMA IV	RMC 12.2Kbps	Front	5mm		ON	1413	1732.6	18.60	19.00	1.096	-0.1	0.747	0.819
	WCDMA IV	RMC 12.2Kbps	Front	5mm		ON	1312	1712.4	18.48	19.00	1.127	-0.14	0.836	0.942
	WCDMA IV	RMC 12.2Kbps	Front	5mm		ON	1513	1752.6	18.59	19.00	1.099	-0.19	0.730	0.802
	WCDMA IV	RMC 12.2Kbps	Back	5mm		ON	1413	1732.6	18.60	19.00	1.096	-0.02	1.110	1.217
	WCDMA IV	RMC 12.2Kbps	Back	5mm		ON	1312	1712.4	18.48	19.00	1.127	-0.09	1.070	1.206
31	WCDMA IV	RMC 12.2Kbps	Back	5mm		ON	1513	1752.6	18.59	19.00	1.099	-0.1	1.120	1.231
	WCDMA IV	RMC 12.2Kbps	Back	5mm	Headset1	ON	1513	1752.6	18.59	19.00	1.099	0.01	0.780	0.857
	WCDMA IV	RMC 12.2Kbps	Back	5mm	Headset2	ON	1513	1752.6	18.59	19.00	1.099	0.05	0.772	0.848
	WCDMA IV	RMC 12.2Kbps	Front	10mm		OFF	1413	1732.6	22.92	24.00	1.282	0.03	0.551	0.707
	WCDMA IV	RMC 12.2Kbps	Back	16mm		OFF	1413	1732.6	22.92	24.00	1.282	0.09	0.549	0.704
	WCDMA V	RMC 12.2Kbps	Front	5mm		ON	4182	836.4	21.87	23.00	1.297	0.05	0.357	0.463
	WCDMA V	RMC 12.2Kbps	Back	5mm		ON	4182	836.4	21.87	23.00	1.297	-0.01	0.947	1.228
32	WCDMA V	RMC 12.2Kbps	Back	5mm		ON	4132	826.4	21.86	23.00	1.300	-0.09	0.966	1.256
	WCDMA V	RMC 12.2Kbps	Back	5mm		ON	4233	846.6	21.86	23.00	1.300	-0.05	0.899	1.169
	WCDMA V	RMC 12.2Kbps	Back	5mm	Headset1	ON	4132	826.4	21.86	23.00	1.300	0.03	0.534	0.694
	WCDMA V	RMC 12.2Kbps	Back	5mm	Headset2	ON	4132	826.4	21.86	23.00	1.300	0.09	0.523	0.680
	WCDMA V	RMC 12.2Kbps	Front	10mm		OFF	4182	836.4	22.86	24.00	1.300	0.02	0.304	0.395
	WCDMA V	RMC 12.2Kbps	Back	16mm		OFF	4182	836.4	22.86	24.00	1.300	0.06	0.368	0.478



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Headset	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2	20M	QPSK	1	0	Front	5mm		ON	18900	1880	19.54	20.50	1.247	-0.11	0.967	1.206
	LTE Band 2	20M	QPSK	1	0	Front	5mm		ON	18700	1860	19.44	20.50	1.276	-0.11	0.922	1.177
	LTE Band 2	20M	QPSK	1	0	Front	5mm		ON	19100	1900	19.35	20.50	1.303	-0.12	0.952	1.241
	LTE Band 2	20M	QPSK	50	0	Front	5mm		ON	18900	1880	19.52	20.50	1.253	-0.13	0.795	0.996
	LTE Band 2	20M	QPSK	50	0	Front	5mm		ON	18700	1860	19.46	20.50	1.271	-0.08	0.769	0.977
	LTE Band 2	20M	QPSK	50	0	Front	5mm		ON	19100	1900	19.35	20.50	1.303	-0.16	0.803	1.046
	LTE Band 2	20M	QPSK	100	0	Front	5mm		ON	18900	1880	19.41	20.50	1.285	-0.07	0.797	1.024
	LTE Band 2	20M	QPSK	1	0	Back	5mm		ON	18900	1880	19.54	20.50	1.247	-0.08	0.972	1.212
	LTE Band 2	20M	QPSK	1	0	Back	5mm		ON	18700	1860	19.44	20.50	1.276	-0.13	0.978	1.248
33	LTE Band 2	20M	QPSK	1	0	Back	5mm		ON	19100	1900	19.35	20.50	1.303	-0.12	0.964	1.256
	LTE Band 2	20M	QPSK	50	0	Back	5mm		ON	18900	1880	19.52	20.50	1.253	-0.09	0.943	1.182
	LTE Band 2	20M	QPSK	50	0	Back	5mm		ON	18700	1860	19.46	20.50	1.271	-0.1	0.927	1.178
	LTE Band 2	20M	QPSK	50	0	Back	5mm		ON	19100	1900	19.35	20.50	1.303	-0.02	0.894	1.165
	LTE Band 2	20M	QPSK	100	0	Back	5mm		ON	18900	1880	19.41	20.50	1.285	0.01	0.937	1.204
	LTE Band 2	20M	QPSK	1	0	Back	5mm	Headset1	ON	19100	1900	19.35	20.50	1.303	0.03	0.673	0.877
	LTE Band 2	20M	QPSK	1	0	Back	5mm	Headset2	ON	19100	1900	19.35	20.50	1.303	0.07	0.668	0.871
	LTE Band 2	20M	QPSK	1	0	Front	10mm		OFF	18900	1880	22.84	24.00	1.306	-0.11	0.537	0.701
	LTE Band 2	20M	QPSK	50	0	Front	10mm		OFF	18900	1880	21.79	23.00	1.321	0.06	0.416	0.550
	LTE Band 2	20M	QPSK	1	0	Back	16mm		OFF	18900	1880	22.84	24.00	1.306	0.03	0.431	0.563
	LTE Band 2	20M	QPSK	50	0	Back	16mm		OFF	18900	1880	21.79	23.00	1.321	-0.08	0.343	0.453
	LTE Band 5	10M	QPSK	1	0	Front	5mm		ON	20525	836.5	21.72	23.50	1.507	0.15	0.503	0.758
	LTE Band 5	10M	QPSK	25	0	Front	5mm		ON	20525	836.5	21.69	22.50	1.205	0.04	0.341	0.411
34	LTE Band 5	10M	QPSK	1	0	Back	5mm		ON	20525	836.5	21.72	23.50	1.507	-0.09	0.822	1.238
	LTE Band 5	10M	QPSK	25	0	Back	5mm		ON	20525	836.5	21.69	22.50	1.205	-0.17	0.765	0.922
	LTE Band 5	10M	QPSK	50	0	Back	5mm		ON	20525	836.5	21.67	22.50	1.211	-0.1	0.557	0.674
	LTE Band 5	10M	QPSK	1	0	Back	5mm	Headset1	ON	20525	836.5	21.72	23.50	1.507	0.05	0.693	1.044
	LTE Band 5	10M	QPSK	1	0	Back	5mm	Headset2	ON	20525	836.5	21.72	23.50	1.507	0.08	0.684	1.031
	LTE Band 5	10M	QPSK	1	0	Front	10mm		OFF	20525	836.5	22.49	24.00	1.416	-0.01	0.269	0.381
	LTE Band 5	10M	QPSK	25	0	Front	10mm		OFF	20525	836.5	21.57	23.00	1.390	0.09	0.148	0.206
	LTE Band 5	10M	QPSK	1	0	Back	16mm		OFF	20525	836.5	22.49	24.00	1.416	0.02	0.224	0.317
	LTE Band 5	10M	QPSK	25	0	Back	16mm		OFF	20525	836.5	21.57	23.00	1.390	0.05	0.183	0.254
	LTE Band 7	20M	QPSK	1	0	Front	5mm		ON	21100	2535	16.23	16.50	1.064	-0.1	0.364	0.387
	LTE Band 7	20M	QPSK	50	0	Front	5mm		ON	21100	2535	16.22	16.50	1.067	0.01	0.305	0.325
35	LTE Band 7	20M	QPSK	1	0	Back	5mm		ON	21100	2535	16.23	16.50	1.064	-0.19	1.140	1.213
	LTE Band 7	20M	QPSK	1	0	Back	5mm		ON	20850	2510	16.20	16.50	1.072	-0.12	1.100	1.179
	LTE Band 7	20M	QPSK	1	0	Back	5mm		ON	21350	2560	16.04	16.50	1.112	-0.17	0.845	0.939
	LTE Band 7	20M	QPSK	50	0	Back	5mm		ON	21100	2535	16.22	16.50	1.067	-0.15	0.979	1.044
	LTE Band 7	20M	QPSK	50	0	Back	5mm		ON	20850	2510	16.03	16.50	1.114	-0.11	1.004	1.119
	LTE Band 7	20M	QPSK	50	0	Back	5mm		ON	21350	2560	16.07	16.50	1.104	-0.1	0.846	0.934
	LTE Band 7	20M	QPSK	100	0	Back	5mm		ON	21350	2560	16.16	16.50	1.081	-0.1	0.846	0.915
	LTE Band 7	20M	QPSK	1	0	Back	5mm	Headset1	ON	21100	2535	16.23	16.50	1.064	0.08	1.050	1.117
	LTE Band 7	20M	QPSK	1	0	Back	5mm	Headset2	ON	21100	2535	16.23	16.50	1.064	0.01	0.998	1.062
	LTE Band 7	20M	QPSK	1	0	Front	10mm		OFF	21100	2535	22.38	24.00	1.452	0.03	0.624	0.906
	LTE Band 7	20M	QPSK	50	0	Front	10mm		OFF	21100	2535	21.39	23.00	1.449	0.06	0.390	0.565
	LTE Band 7	20M	QPSK	1	0	Back	16mm		OFF	21100	2535	22.38	24.00	1.452	0.01	0.588	0.854
	LTE Band 7	20M	QPSK	50	0	Back	16mm		OFF	21100	2535	21.39	23.00	1.449	0.08	0.351	0.509



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Headset	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 66	20M	QPSK	1	0	Front	5mm		ON	132322	1745	20.92	21.00	1.019	-0.17	0.817	0.832
	LTE Band 66	20M	QPSK	1	0	Front	5mm		ON	132072	1720	20.69	21.00	1.074	-0.1	0.735	0.789
	LTE Band 66	20M	QPSK	1	0	Front	5mm		ON	132572	1770	20.64	21.00	1.086	-0.15	0.878	0.954
	LTE Band 66	20M	QPSK	50	0	Front	5mm		ON	132322	1745	20.89	21.00	1.026	-0.11	0.506	0.519
	LTE Band 66	20M	QPSK	100	0	Front	5mm		ON	132322	1745	20.86	21.00	1.033	-0.1	0.525	0.542
	LTE Band 66	20M	QPSK	1	0	Back	5mm		ON	132572	1770	20.64	21.00	1.086	-0.15	1.060	1.152
	LTE Band 66	20M	QPSK	1	0	Back	5mm		ON	132322	1745	20.92	21.00	1.019	-0.14	1.170	1.192
36	LTE Band 66	20M	QPSK	1	0	Back	5mm		ON	132072	1720	20.69	21.00	1.074	-0.15	1.140	1.224
	LTE Band 66	20M	QPSK	50	0	Back	5mm		ON	132572	1770	20.78	21.00	1.052	-0.03	1.100	1.157
	LTE Band 66	20M	QPSK	50	0	Back	5mm		ON	132322	1745	20.89	21.00	1.026	-0.18	1.070	1.097
	LTE Band 66	20M	QPSK	50	0	Back	5mm		ON	132072	1720	20.64	21.00	1.086	-0.15	1.050	1.141
	LTE Band 66	20M	QPSK	100	0	Back	5mm		ON	132322	1745	20.86	21.00	1.033	0.1	1.060	1.095
	LTE Band 66	20M	QPSK	1	0	Back	5mm	Headset1	ON	132322	1745	20.92	21.00	1.019	0.03	1.010	1.029
	LTE Band 66	20M	QPSK	1	0	Back	5mm	Headset2	ON	132322	1745	20.92	21.00	1.019	-0.07	0.985	1.003
	LTE Band 66	20M	QPSK	1	0	Front	10mm		OFF	132322	1745	22.77	24.00	1.327	0.03	0.508	0.674
	LTE Band 66	20M	QPSK	50	0	Front	10mm		OFF	132322	1745	21.61	23.00	1.377	0.04	0.323	0.445
	LTE Band 66	20M	QPSK	1	0	Back	16mm		OFF	132322	1745	22.77	24.00	1.327	-0.03	0.501	0.665
	LTE Band 66	20M	QPSK	50	0	Back	16mm		OFF	132322	1745	21.61	23.00	1.377	-0.12	0.314	0.432

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm		ON	11	2462	17.89	18.00	1.026	100	1.000	0.06	0.183	0.188
37	WLAN2.4GHz	802.11b 1Mbps	Back	5mm		ON	11	2462	17.89	18.00	1.026	100	1.000	0.03	1.070	1.097
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm		ON	1	2412	17.83	18.00	1.040	100	1.000	0.05	0.913	0.949
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm		ON	6	2437	17.72	18.00	1.067	100	1.000	0.09	0.938	1.000
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm		OFF	11	2462	19.19	20.50	1.352	100	1.000	0.08	0.118	0.160
	WLAN2.4GHz	802.11b 1Mbps	Back	16mm		OFF	11	2462	19.19	20.50	1.352	100	1.000	-0.13	0.240	0.324
	WLAN5GHz	802.11n-HT40 MCS0	Front	5mm		ON	62	5310	16.89	17.50	1.152	96.47	1.037	-0.14	0.135	0.161
38	WLAN5GHz	802.11n-HT40 MCS0	Back	5mm		ON	62	5310	16.89	17.50	1.152	96.47	1.037	-0.18	1.040	1.242
	WLAN5GHz	802.11n-HT40 MCS0	Back	5mm		ON	54	5270	16.77	17.50	1.184	96.47	1.037	-0.03	0.972	1.194
	WLAN5GHz	802.11n-HT40 MCS0	Back	5mm	Headset1	ON	62	5310	16.89	17.50	1.152	96.47	1.037	0.07	0.993	1.186
	WLAN5GHz	802.11n-HT40 MCS0	Back	5mm	Headset2	ON	62	5310	16.89	17.50	1.152	96.47	1.037	0.05	0.981	1.172
	WLAN5GHz	802.11a 6Mbps	Front	10mm		OFF	60	5300	18.02	19.50	1.405	98.34	1.017	0.11	0.073	0.104
	WLAN5GHz	802.11a 6Mbps	Back	16mm		OFF	60	5300	18.02	19.50	1.405	98.34	1.017	-0.12	0.501	0.716
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	5mm		ON	122	5610	16.04	17.00	1.247	92.49	1.081	-0.06	0.122	0.164
39	WLAN5GHz	802.11ac-VHT80 MCS0	Back	5mm		ON	122	5610	16.04	17.00	1.247	92.49	1.081	-0.06	0.896	1.208
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	5mm		ON	106	5530	13.83	15.00	1.309	92.49	1.081	-0.15	0.581	0.822
	WLAN5GHz	802.11n-HT40 MCS0	Back	5mm		ON	110	5550	16.89	17.00	1.027	96.47	1.037	-0.08	1.040	1.107
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	5mm	Headset1	ON	122	5610	16.04	17.00	1.247	92.49	1.081	0.01	0.875	1.179
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	5mm	Headset2	ON	122	5610	16.04	17.00	1.247	92.49	1.081	0.05	0.846	1.140
	WLAN5GHz	802.11a 6Mbps	Front	10mm		OFF	132	5660	18.20	19.50	1.348	98.34	1.017	-0.02	0.068	0.093
	WLAN5GHz	802.11a 6Mbps	Back	16mm		OFF	132	5660	18.20	19.50	1.348	98.34	1.017	0.07	0.490	0.672
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	5mm		ON	155	5775	15.57	16.00	1.104	93.06	1.075	-0.09	0.142	0.169
40	WLAN5GHz	802.11ac-VHT80 MCS0	Back	5mm		ON	155	5775	15.57	16.00	1.104	93.06	1.075	-0.13	1.060	1.258
	WLAN5GHz	802.11n-HT40 MCS0	Back	5mm		ON	159	5795	15.92	16.00	1.019	96.47	1.037	-0.04	0.970	1.025
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	5mm	Headset1	ON	155	5775	15.57	16.00	1.104	93.06	1.075	0.03	0.981	1.165
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	5mm	Headset2	ON	155	5775	15.57	16.00	1.104	93.06	1.075	0.05	0.975	1.157
	WLAN5GHz	802.11a 6Mbps	Front	10mm		OFF	165	5825	17.92	19.50	1.438	98.34	1.017	0.01	0.081	0.118
	WLAN5GHz	802.11a 6Mbps	Back	16mm		OFF	165	5825	17.92	19.50	1.438	98.34	1.017	-0.11	0.532	0.778



<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Front	5mm		78	2480	11.04	12.00	1.248	76.79	1.302	0.05	0.001	0.002
41	Bluetooth	1Mbps	Back	5mm		78	2480	11.04	12.00	1.248	76.79	1.302	-0.09	0.141	0.229

15.4 Product Specific SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
42	GSM850	GPRS (3 Tx slots)	Back	0mm	OFF	251	848.8	28.68	29.50	1.208	-0.09	1.070	1.292
43	GSM1900	GPRS (3 Tx slots)	Back	0mm	OFF	810	1909.8	25.98	27.00	1.265	0.16	1.290	1.632
	GSM1900	GPRS (3 Tx slots)	Bottom Side	0mm	OFF	810	1909.8	25.98	27.00	1.265	-0.06	0.986	1.247

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Front	0mm	ON	9400	1880	22.04	22.50	1.112	-0.06	1.340	1.490
	WCDMA II	RMC 12.2Kbps	Back	0mm	ON	9400	1880	22.04	22.50	1.112	-0.02	2.600	2.891
	WCDMA II	RMC 12.2Kbps	Back	0mm	ON	9262	1852.4	21.97	22.50	1.130	-0.06	2.630	2.971
44	WCDMA II	RMC 12.2Kbps	Back	0mm	ON	9538	1907.6	21.88	22.50	1.153	-0.08	2.720	3.137
	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	ON	9400	1880	22.04	22.50	1.112	-0.11	1.440	1.601
	WCDMA II	RMC 12.2Kbps	Front	5mm	OFF	9400	1880	23.17	24.00	1.211	-0.05	0.705	0.853
	WCDMA II	RMC 12.2Kbps	Back	9mm	OFF	9400	1880	23.17	24.00	1.211	-0.07	0.637	0.771
	WCDMA II	RMC 12.2Kbps	Bottom Side	11mm	OFF	9400	1880	23.17	24.00	1.211	-0.02	0.591	0.715
	WCDMA IV	RMC 12.2Kbps	Front	0mm	ON	1413	1732.6	20.00	20.50	1.122	-0.03	1.260	1.414
	WCDMA IV	RMC 12.2Kbps	Back	0mm	ON	1413	1732.6	20.00	20.50	1.122	0.02	2.600	2.917
45	WCDMA IV	RMC 12.2Kbps	Back	0mm	ON	1312	1712.4	19.87	20.50	1.156	-0.09	2.610	3.017
	WCDMA IV	RMC 12.2Kbps	Back	0mm	ON	1513	1752.6	20.07	20.50	1.104	-0.07	2.620	2.893
	WCDMA IV	RMC 12.2Kbps	Bottom Side	0mm	ON	1413	1732.6	20.00	20.50	1.122	0.08	1.590	1.784
	WCDMA IV	RMC 12.2Kbps	Front	5mm	OFF	1413	1732.6	22.92	24.00	1.282	-0.09	0.737	0.945
	WCDMA IV	RMC 12.2Kbps	Back	9mm	OFF	1413	1732.6	22.92	24.00	1.282	-0.08	0.760	0.975
	WCDMA IV	RMC 12.2Kbps	Bottom Side	11mm	OFF	1413	1732.6	22.92	24.00	1.282	-0.05	0.686	0.880
46	WCDMA V	RMC 12.2Kbps	Back	0mm	OFF	4182	836.4	22.86	24.00	1.300	-0.09	1.360	1.768



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	LTE Band 2	20M	QPSK	1	0	Front	0mm	ON	18900	1880	22.35	22.50	1.035	-0.01	1.310	1.356
47	LTE Band 2	20M	QPSK	1	0	Back	0mm	ON	18900	1880	22.35	22.50	1.035	-0.15	2.920	3.023
	LTE Band 2	20M	QPSK	1	0	Back	0mm	ON	19100	1900	22.20	22.50	1.072	0.07	2.560	2.743
	LTE Band 2	20M	QPSK	1	0	Back	0mm	ON	18700	1860	22.34	22.50	1.038	0.01	2.640	2.739
	LTE Band 2	20M	QPSK	1	0	Bottom Side	0mm	ON	18900	1880	22.35	22.50	1.035	-0.02	1.730	1.791
	LTE Band 2	20M	QPSK	1	0	Front	5mm	OFF	18900	1880	22.84	24.00	1.306	0.02	0.614	0.802
	LTE Band 2	20M	QPSK	1	0	Back	9mm	OFF	18900	1880	22.84	24.00	1.306	0.04	0.598	0.781
	LTE Band 2	20M	QPSK	1	0	Bottom Side	11mm	OFF	18900	1880	22.84	24.00	1.306	0.11	0.479	0.626
48	LTE Band 5	10M	QPSK	1	0	Back	0mm	OFF	20525	836.5	21.72	23.50	1.507	0.03	0.738	1.112
	LTE Band 7	20M	QPSK	1	0	Front	0mm	ON	21100	2535	20.49	20.50	1.002	-0.07	1.340	1.343
	LTE Band 7	20M	QPSK	1	0	Back	0mm	ON	21100	2535	20.49	20.50	1.002	-0.16	2.590	2.596
	LTE Band 7	20M	QPSK	1	0	Back	0mm	ON	20850	2510	20.08	20.50	1.102	-0.1	2.760	3.040
49	LTE Band 7	20M	QPSK	1	0	Back	0mm	ON	21350	2560	20.01	20.50	1.119	-0.11	2.810	3.146
	LTE Band 7	20M	QPSK	1	0	Bottom Side	0mm	ON	21100	2535	20.49	20.50	1.002	0.05	1.850	1.854
	LTE Band 7	20M	QPSK	1	0	Front	5mm	OFF	21100	2535	22.38	24.00	1.452	0.01	0.692	1.005
	LTE Band 7	20M	QPSK	1	0	Back	9mm	OFF	21100	2535	22.38	24.00	1.452	0.11	0.886	1.287
	LTE Band 7	20M	QPSK	1	0	Bottom Side	11mm	OFF	21100	2535	22.38	24.00	1.452	0.15	0.785	1.140
	LTE Band 66	20M	QPSK	1	0	Front	0mm	ON	132322	1745	20.80	21.50	1.175	-0.06	1.120	1.316
	LTE Band 66	20M	QPSK	1	0	Back	0mm	ON	132322	1745	20.80	21.50	1.175	-0.15	2.400	2.820
	LTE Band 66	20M	QPSK	1	0	Back	0mm	ON	132072	1720	20.62	21.50	1.225	-0.05	2.440	2.988
50	LTE Band 66	20M	QPSK	1	0	Back	0mm	ON	132572	1770	20.59	21.50	1.233	-0.19	2.460	3.033
	LTE Band 66	20M	QPSK	1	0	Bottom Side	0mm	ON	132322	1745	20.80	21.50	1.175	-0.07	1.480	1.739
	LTE Band 66	20M	QPSK	1	0	Front	5mm	OFF	132322	1745	22.77	24.00	1.327	-0.11	0.552	0.733
	LTE Band 66	20M	QPSK	1	0	Back	9mm	OFF	132322	1745	22.77	24.00	1.327	-0.07	0.659	0.875
	LTE Band 66	20M	QPSK	1	0	Bottom Side	11mm	OFF	132322	1745	22.77	24.00	1.327	0.04	0.407	0.540

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
51	WLAN2.4GHz	802.11b 1Mbps	Back	0mm	OFF	11	2462	19.19	20.50	1.352	100	1.000	0.07	1.070	1.447
	WLAN5GHz	802.11a 6Mbps	Front	0mm	OFF	60	5300	18.02	19.50	1.405	98.34	1.017	-0.18	0.254	0.363
52	WLAN5GHz	802.11a 6Mbps	Back	0mm	OFF	60	5300	18.02	19.50	1.405	98.34	1.017	-0.08	0.958	1.369
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	OFF	60	5300	18.02	19.50	1.405	98.34	1.017	0.07	0.083	0.119
	WLAN5GHz	802.11a 6Mbps	Right Side	0mm	OFF	60	5300	18.02	19.50	1.405	98.34	1.017	0.09	0.270	0.386
	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	OFF	60	5300	18.02	19.50	1.405	98.34	1.017	0.14	0.733	1.048
	WLAN5GHz	802.11a 6Mbps	Front	0mm	OFF	132	5660	18.20	19.50	1.348	98.34	1.017	-0.13	0.201	0.276
53	WLAN5GHz	802.11a 6Mbps	Back	0mm	OFF	132	5660	18.20	19.50	1.348	98.34	1.017	-0.11	0.945	1.296
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	OFF	132	5660	18.20	19.50	1.348	98.34	1.017	0.07	0.056	0.077
	WLAN5GHz	802.11a 6Mbps	Right Side	0mm	OFF	132	5660	18.20	19.50	1.348	98.34	1.017	0.09	0.198	0.271
	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	OFF	132	5660	18.20	19.50	1.348	98.34	1.017	-0.11	0.667	0.914
54	WLAN5GHz	802.11a 6Mbps	Back	0mm	OFF	165	5825	17.92	19.50	1.438	98.34	1.017	-0.04	1.100	1.609

15.5 Repeated SAR Measurement

No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WCDMA II	RMC 12.2Kbps	Back	5mm	ON	9538	1907.6	19.44	20.00	1.138			-0.13	1.170	-	1.331
2nd	WCDMA II	RMC 12.2Kbps	Back	5mm	ON	9538	1907.6	19.44	20.00	1.138			-0.16	1.130	1.03	1.286
1st	WCDMA IV	RMC 12.2Kbps	Bottom Side	5mm	ON	1513	1752.6	18.59	19.00	1.099			-0.06	1.270	-	1.396
2nd	WCDMA IV	RMC 12.2Kbps	Bottom Side	5mm	ON	1513	1752.6	18.59	19.00	1.099			0.05	1.190	1.07	1.308
1st	WCDMA V	RMC 12.2Kbps	Back	5mm	ON	4132	826.4	21.86	23.00	1.300			-0.09	0.966	-	1.256
2nd	WCDMA V	RMC 12.2Kbps	Back	5mm	ON	4132	826.4	21.86	23.00	1.300			0.02	0.938	1.03	1.220
1st	LTE Band 7	20M_QPSK_1_0	Bottom Side	5mm	ON	20850	2510	16.20	16.50	1.072			0.01	1.260	-	1.350
2nd	LTE Band 7	20M_QPSK_1_0	Bottom Side	5mm	ON	20850	2510	16.20	16.50	1.072			0.15	1.190	1.06	1.275
1st	WLAN2.4GHZ	802.11b 1Mbps	Back	5mm	ON	11	2462	17.89	18.00	1.026	100	1.000	0.03	1.070	-	1.097
2nd	WLAN2.4GHZ	802.11b 1Mbps	Back	5mm	ON	11	2462	17.89	18.00	1.026	100	1.000	0.14	0.966	1.11	0.991
1st	WLAN5GHZ	802.11n-HT40 MCS0	Back	5mm	ON	62	5310	16.89	17.50	1.152	96.47	1.037	-0.18	1.040	-	1.242
2nd	WLAN5GHZ	802.11n-HT40 MCS0	Back	5mm	ON	62	5310	16.89	17.50	1.152	96.47	1.037	-0.18	0.971	1.07	1.160
1st	WLAN5GHZ	802.11n-HT40 MCS0	Back	5mm	ON	110	5550	16.89	17.00	1.027	96.47	1.037	-0.08	1.040	-	1.107
2nd	WLAN5GHZ	802.11n-HT40 MCS0	Back	5mm	ON	110	5550	16.89	17.00	1.027	96.47	1.037	0.03	1.010	1.03	1.075
1st	WLAN5GHZ	802.11ac-VHT80 MCS0	Back	5mm	ON	155	5775	15.57	16.00	1.104	93.06	1.075	-0.13	1.060	-	1.258
2nd	WLAN5GHZ	802.11ac-VHT80 MCS0	Back	5mm	ON	155	5775	15.57	16.00	1.104	93.06	1.075	0.02	1.050	1.01	1.247

No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Ratio	Reported 10g SAR (W/kg)
1st	WCDMA IV	RMC 12.2Kbps	Back	0mm	ON	1513	1752.6	20.07	20.50	1.104	-0.07	2.620	-	2.893
2nd	WCDMA IV	RMC 12.2Kbps	Back	0mm	ON	1513	1752.6	20.07	20.50	1.104	-0.19	2.420	1.08	2.672
1st	LTE Band 2	20M_QPSK_1_0	Back	0mm	ON	18900	1880	22.35	22.50	1.035	-0.15	2.920	-	3.023
2nd	LTE Band 2	20M_QPSK_1_0	Back	0mm	ON	18900	1880	22.35	22.50	1.035	-0.08	2.830	1.03	2.929
1st	LTE Band 7	20M_QPSK_1_0	Back	0mm	ON	21350	2560	20.01	20.50	1.119	-0.11	2.810	-	3.146
2nd	LTE Band 7	20M_QPSK_1_0	Back	0mm	ON	21350	2560	20.01	20.50	1.119	-0.07	2.620	1.07	2.933

General Note:

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



16. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product Specific
1.	WWAN + WLAN2.4GHz	Yes	Yes	Yes	Yes
2.	WWAN + Bluetooth	Yes	Yes	Yes	Yes
3.	WWAN+ WLAN5GHz	Yes	Yes	Yes	Yes
4.	WLAN2.4GHz + Bluetooth	Yes	Yes	Yes	Yes
5.	WLAN5GHz + Bluetooth	Yes	Yes	Yes	Yes

General Note:

1. This device WLAN 2.4GHz/5.2GHz/5.8GHz supports Hotspot operation and Bluetooth support tethering applications.
2. All licensed modes share the same antenna part and cannot transmit simultaneously.
3. EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment.
4. The Scaled SAR summation is calculated based on the same configuration and test position.
5. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - i) Scalar SAR summation < 1.6W/kg.
 - ii) $SPLSR = (SAR1 + SAR2)^{1.5} / (\min. \text{ separation distance, mm})$, 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 16.5



16.1 Head Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	2+4 Summed 1g SAR (W/kg)	3+4 Summed 1g SAR (W/kg)
			WWAN 1g SAR (W/kg)	2.4GHz WLAN 1g SAR (W/kg)	5GHz WLAN 1g SAR (W/kg)	Bluetooth 1g SAR (W/kg)					
GSM	GSM850	Right Cheek	0.327	0.218	0.517	0.003	0.545	0.844	0.330	0.221	0.520
		Right Tilted	0.169	0.196	0.647	0.002	0.365	0.816	0.171	0.198	0.649
		Left Cheek	0.385	0.496	0.616	0.091	0.881	1.001	0.476	0.587	0.707
		Left Tilted	0.225	0.425	0.752	0.073	0.650	0.977	0.298	0.498	0.825
	GSM1900	Right Cheek	0.175	0.218	0.517	0.003	0.393	0.692	0.178	0.221	0.520
		Right Tilted	0.130	0.196	0.647	0.002	0.326	0.777	0.132	0.198	0.649
		Left Cheek	0.249	0.496	0.616	0.091	0.745	0.865	0.340	0.587	0.707
		Left Tilted	0.186	0.425	0.752	0.073	0.611	0.938	0.259	0.498	0.825
WCDMA	WCDMA II	Right Cheek	0.139	0.218	0.517	0.003	0.357	0.656	0.142	0.221	0.520
		Right Tilted	0.091	0.196	0.647	0.002	0.287	0.738	0.093	0.198	0.649
		Left Cheek	0.225	0.496	0.616	0.091	0.721	0.841	0.316	0.587	0.707
		Left Tilted	0.116	0.425	0.752	0.073	0.541	0.868	0.189	0.498	0.825
	WCDMA IV	Right Cheek	0.369	0.218	0.517	0.003	0.587	0.886	0.372	0.221	0.520
		Right Tilted	0.178	0.196	0.647	0.002	0.374	0.825	0.180	0.198	0.649
		Left Cheek	0.298	0.496	0.616	0.091	0.794	0.914	0.389	0.587	0.707
		Left Tilted	0.158	0.425	0.752	0.073	0.583	0.910	0.231	0.498	0.825
	WCDMA V	Right Cheek	0.373	0.218	0.517	0.003	0.591	0.890	0.376	0.221	0.520
		Right Tilted	0.260	0.196	0.647	0.002	0.456	0.907	0.262	0.198	0.649
		Left Cheek	0.376	0.496	0.616	0.091	0.872	0.992	0.467	0.587	0.707
		Left Tilted	0.256	0.425	0.752	0.073	0.681	1.008	0.329	0.498	0.825
LTE	LTE Band 2	Right Cheek	0.341	0.218	0.517	0.003	0.559	0.858	0.344	0.221	0.520
		Right Tilted	0.208	0.196	0.647	0.002	0.404	0.855	0.210	0.198	0.649
		Left Cheek	0.223	0.496	0.616	0.091	0.719	0.839	0.314	0.587	0.707
		Left Tilted	0.131	0.425	0.752	0.073	0.556	0.883	0.204	0.498	0.825
	LTE Band 5	Right Cheek	0.436	0.218	0.517	0.003	0.654	0.953	0.439	0.221	0.520
		Right Tilted	0.262	0.196	0.647	0.002	0.458	0.909	0.264	0.198	0.649
		Left Cheek	0.387	0.496	0.616	0.091	0.883	1.003	0.478	0.587	0.707
		Left Tilted	0.242	0.425	0.752	0.073	0.667	0.994	0.315	0.498	0.825
	LTE Band 7	Right Cheek	0.231	0.218	0.517	0.003	0.449	0.748	0.234	0.221	0.520
		Right Tilted	0.138	0.196	0.647	0.002	0.334	0.785	0.140	0.198	0.649
		Left Cheek	0.199	0.496	0.616	0.091	0.695	0.815	0.290	0.587	0.707
		Left Tilted	0.145	0.425	0.752	0.073	0.570	0.897	0.218	0.498	0.825
	LTE Band 66	Right Cheek	0.295	0.218	0.517	0.003	0.513	0.812	0.298	0.221	0.520
		Right Tilted	0.222	0.196	0.647	0.002	0.418	0.869	0.224	0.198	0.649
		Left Cheek	0.187	0.496	0.616	0.091	0.683	0.803	0.278	0.587	0.707
		Left Tilted	0.082	0.425	0.752	0.073	0.507	0.834	0.155	0.498	0.825



16.2 Hotspot Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	2+4 Summed 1g SAR (W/kg)	3+4 Summed 1g SAR (W/kg)	1+2 SPLSR	1+2 Case No	1+3 SPLSR	1+3 Case No	
		WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth										
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)										
GSM	GSM850	Front	0.676	0.188	0.180	0.002	0.864	0.856	0.678	0.190	0.182				
		Back	1.211	1.097	1.258	0.229	2.308	2.469	1.440	1.326	1.487	0.02	Case 1	0.03	Case 10
		Left side	0.250	0.021	0.097	0.002	0.271	0.347	0.252	0.023	0.099				
		Right side	0.342	0.370	0.325	0.102	0.712	0.667	0.444	0.472	0.427				
		Top side		0.517	0.621	0.119	0.517	0.621	0.119	0.636	0.740				
		Bottom side	0.690				0.690	0.690	0.690	0.000	0.000				
	GSM1900	Front	0.791	0.188	0.180	0.002	0.979	0.971	0.793	0.190	0.182				
		Back	1.301	1.097	1.258	0.229	2.398	2.559	1.530	1.326	1.487	0.03	Case 2	0.03	Case 11
		Left side	0.432	0.021	0.097	0.002	0.453	0.529	0.434	0.023	0.099				
		Right side	0.143	0.370	0.325	0.102	0.513	0.468	0.245	0.472	0.427				
		Top side		0.517	0.621	0.119	0.517	0.621	0.119	0.636	0.740				
		Bottom side	1.170				1.170	1.170	1.170	0.000	0.000				
WCDMA	WCDMA II	Front	1.320	0.188	0.180	0.002	1.508	1.500	1.322	0.190	0.182				
		Back	1.331	1.097	1.258	0.229	2.428	2.589	1.560	1.326	1.487	0.02	Case 3	0.03	Case 12
		Left side	0.512	0.021	0.097	0.002	0.533	0.609	0.514	0.023	0.099				
		Right side	0.140	0.370	0.325	0.102	0.510	0.465	0.242	0.472	0.427				
		Top side		0.517	0.621	0.119	0.517	0.621	0.119	0.636	0.740				
		Bottom side	1.157				1.157	1.157	1.157	0.000	0.000				
	WCDMA IV	Front	0.942	0.188	0.180	0.002	1.130	1.122	0.944	0.190	0.182				
		Back	1.231	1.097	1.258	0.229	2.328	2.489	1.460	1.326	1.487	0.02	Case 4	0.03	Case 13
		Left side	0.310	0.021	0.097	0.002	0.331	0.407	0.312	0.023	0.099				
		Right side	0.179	0.370	0.325	0.102	0.549	0.504	0.281	0.472	0.427				
		Top side		0.517	0.621	0.119	0.517	0.621	0.119	0.636	0.740				
		Bottom side	1.396				1.396	1.396	1.396	0.000	0.000				
	WCDMA V	Front	0.463	0.188	0.180	0.002	0.651	0.643	0.465	0.190	0.182				
		Back	1.256	1.097	1.258	0.229	2.353	2.514	1.485	1.326	1.487	0.02	Case 5	0.03	Case 14
		Left side	0.250	0.021	0.097	0.002	0.271	0.347	0.252	0.023	0.099				
		Right side	0.281	0.370	0.325	0.102	0.651	0.606	0.383	0.472	0.427				
		Top side		0.517	0.621	0.119	0.517	0.621	0.119	0.636	0.740				
		Bottom side	0.402				0.402	0.402	0.402	0.000	0.000				
LTE	LTE Band 2	Front	1.241	0.188	0.180	0.002	1.429	1.421	1.243	0.190	0.182				
		Back	1.256	1.097	1.258	0.229	2.353	2.514	1.485	1.326	1.487	0.02	Case 6	0.03	Case 15
		Left side	0.445	0.021	0.097	0.002	0.466	0.542	0.447	0.023	0.099				
		Right side	0.142	0.370	0.325	0.102	0.512	0.467	0.244	0.472	0.427				
		Top side		0.517	0.621	0.119	0.517	0.621	0.119	0.636	0.740				
		Bottom side	1.324				1.324	1.324	1.324	0.000	0.000				
	LTE Band 5	Front	0.758	0.188	0.180	0.002	0.946	0.938	0.760	0.190	0.182				
		Back	1.238	1.097	1.258	0.229	2.335	2.496	1.467	1.326	1.487	0.02	Case 7	0.03	Case 16
		Left side	0.324	0.021	0.097	0.002	0.345	0.421	0.326	0.023	0.099				
		Right side	0.437	0.370	0.325	0.102	0.807	0.762	0.539	0.472	0.427				
		Top side		0.517	0.621	0.119	0.517	0.621	0.119	0.636	0.740				
		Bottom side	0.457				0.457	0.457	0.457	0.000	0.000				
	LTE Band 7	Front	0.387	0.188	0.180	0.002	0.575	0.567	0.389	0.190	0.182				
		Back	1.213	1.097	1.258	0.229	2.310	2.471	1.442	1.326	1.487	0.02	Case 8	0.02	Case 17
		Left side	0.090	0.021	0.097	0.002	0.111	0.187	0.092	0.023	0.099				
		Right side	0.140	0.370	0.325	0.102	0.510	0.465	0.242	0.472	0.427				
		Top side		0.517	0.621	0.119	0.517	0.621	0.119	0.636	0.740				
		Bottom side	1.350				1.350	1.350	1.350	0.000	0.000				
LTE Band 66	Front	0.954	0.188	0.180	0.002	1.142	1.134	0.956	0.190	0.182					
	Back	1.224	1.097	1.258	0.229	2.321	2.482	1.453	1.326	1.487	0.02	Case 9	0.03	Case 18	



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	Left side	0.356	0.021	0.097	0.002	0.377	0.453	0.358	0.023	0.099				
	Right side	0.208	0.370	0.325	0.102	0.578	0.533	0.310	0.472	0.427				
	Top side		0.517	0.621	0.119	0.517	0.621	0.119	0.636	0.740				
	Bottom side	1.340				1.340	1.340	1.340	0.000	0.000				



16.3 Body-Worn Accessory Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	2+4 Summed 1g SAR (W/kg)	3+4 Summed 1g SAR (W/kg)	1+2 SPLSR	1+2 Case No	1+3 SPLSR	1+3 Case No	
		WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth										
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)										
GSM	GSM850	Front	0.676	0.188	0.169	0.002	0.864	0.845	0.678	0.190	0.171				
		Back	1.211	1.097	1.258	0.229	2.308	2.469	1.440	1.326	1.487	0.02	Case 1	0.03	Case 10
		Back with Headset	0.971	1.097	1.165	0.229	2.068	2.136	1.200	1.326	1.394	0.02	Case 27	0.02	Case 19
	GSM1900	Front	0.847	0.188	0.169	0.002	1.035	1.016	0.849	0.190	0.171				
		Back	1.301	1.097	1.258	0.229	2.398	2.559	1.530	1.326	1.487	0.03	Case 2	0.03	Case 11
		Back with Headset	0.361	1.097	1.165	0.229	1.458	1.526	0.590	1.326	1.394				
WCDMA	WCDMA II	Front	1.320	0.188	0.169	0.002	1.508	1.489	1.322	0.190	0.171				
		Back	1.331	1.097	1.258	0.229	2.428	2.589	1.560	1.326	1.487	0.02	Case 3	0.03	Case 12
		Back with Headset	0.805	1.097	1.165	0.229	1.902	1.970	1.034	1.326	1.394	0.02	Case 28	0.03	Case 20
	WCDMA IV	Front	0.942	0.188	0.169	0.002	1.130	1.111	0.944	0.190	0.171				
		Back	1.231	1.097	1.258	0.229	2.328	2.489	1.460	1.326	1.487	0.02	Case 4	0.03	Case 13
		Back with Headset	0.857	1.097	1.165	0.229	1.954	2.022	1.086	1.326	1.394	0.02	Case 29	0.02	Case 21
	WCDMA V	Front	0.463	0.188	0.169	0.002	0.651	0.632	0.465	0.190	0.171				
		Back	1.256	1.097	1.258	0.229	2.353	2.514	1.485	1.326	1.487	0.02	Case 5	0.03	Case 14
		Back with Headset	0.694	1.097	1.165	0.229	1.791	1.859	0.923	1.326	1.394	0.02	Case 30	0.02	Case 22
LTE	LTE Band 2	Front	1.241	0.188	0.169	0.002	1.429	1.410	1.243	0.190	0.171				
		Back	1.256	1.097	1.258	0.229	2.353	2.514	1.485	1.326	1.487	0.02	Case 6	0.03	Case 15
		Back with Headset	0.877	1.097	1.165	0.229	1.974	2.042	1.106	1.326	1.394	0.02	Case 31	0.02	Case 23
	LTE Band 5	Front	0.758	0.188	0.169	0.002	0.946	0.927	0.760	0.190	0.171				
		Back	1.238	1.097	1.258	0.229	2.335	2.496	1.467	1.326	1.487	0.02	Case 7	0.03	Case 16
		Back with Headset	1.044	1.097	1.165	0.229	2.141	2.209	1.273	1.326	1.394	0.02	Case 32	0.02	Case 24
	LTE Band 7	Front	0.387	0.188	0.169	0.002	0.575	0.556	0.389	0.190	0.171				
		Back	1.213	1.097	1.258	0.229	2.310	2.471	1.442	1.326	1.487	0.02	Case 8	0.02	Case 17
		Back with Headset	1.117	1.097	1.165	0.229	2.214	2.282	1.346	1.326	1.394	0.02	Case 33	0.02	Case 25
	LTE Band 66	Front	0.954	0.188	0.169	0.002	1.142	1.123	0.956	0.190	0.171				
		Back	1.224	1.097	1.258	0.229	2.321	2.482	1.453	1.326	1.487	0.02	Case 9	0.03	Case 18
		Back with Headset	1.029	1.097	1.165	0.229	2.126	2.194	1.258	1.326	1.394	0.02	Case 34	0.02	Case 26



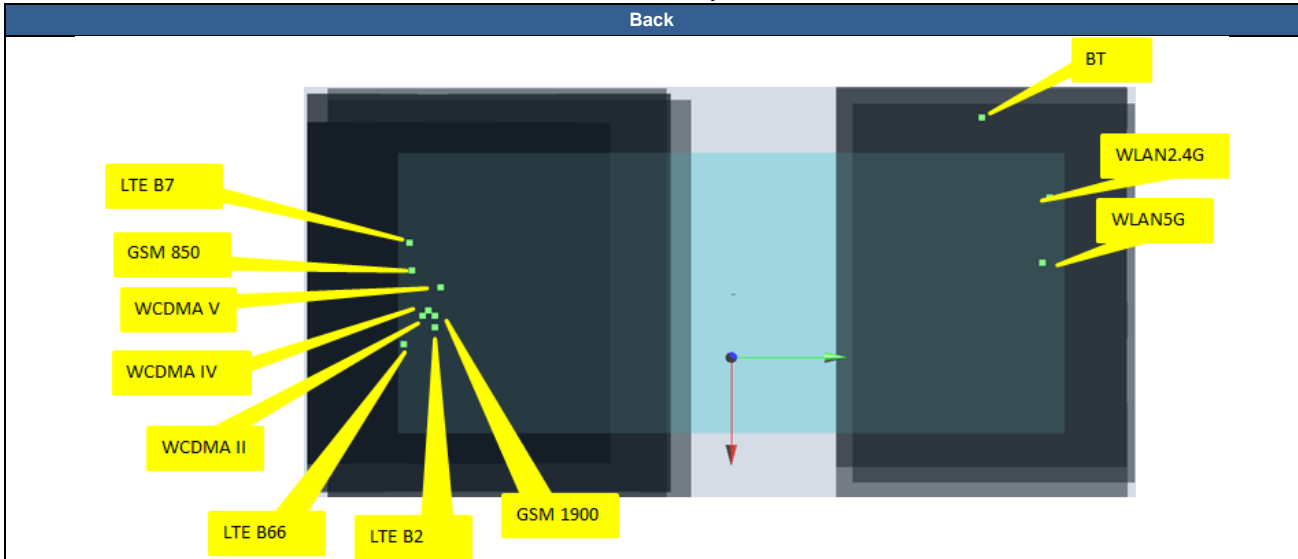
16.4 Product Specific Exposure Conditions

WWAN Band		Exposure Position	1	2	3	1+2 Summed 10g SAR (W/kg)	1+3 Summed 10g SAR (W/kg)	1+2 SPLSR	1+2 Case No	1+3 SPLSR	1+3 Case No
			WWAN 10g SAR (W/kg)	2.4GHz WLAN 10g SAR (W/kg)	5GHz WLAN 10g SAR (W/kg)						
GSM	GSM850	Back	1.292	1.447	1.609	2.739	2.901				
	GSM1900	Back	1.632	1.447	1.609	3.079	3.241				
		Bottom side	1.247			1.247	1.247				
WCDMA	WCDMA II	Front	1.490			1.490	1.490				
		Back	3.137	1.447	1.609	4.584	4.746	0.07	Case 35	0.07	Case 40
		Bottom side	1.601			1.601	1.601				
	WCDMA IV	Front	1.414			1.414	1.414				
		Back	3.017	1.447	1.609	4.464	4.626	0.06	Case 36	0.06	Case 41
		Bottom side	1.784			1.784	1.784				
WCDMA V	Back	1.768			1.768	1.768					
LTE	LTE Band 2	Front	1.356			1.356	1.356				
		Back	3.023	1.447	1.609	4.470	4.632	0.06	Case 37	0.07	Case 42
		Bottom side	1.791			1.791	1.791				
	LTE Band 5	Back	1.112	1.447	1.609	2.559	2.721				
	LTE Band 7	Front	1.343			1.343	1.343				
		Back	3.146	1.447	1.609	4.593	4.755	0.06	Case 38	0.07	Case 43
		Bottom side	1.854			1.854	1.854				
	LTE Band 66	Front	1.316			1.316	1.316				
		Back	3.033	1.447	1.609	4.480	4.642	0.06	Case 39	0.06	Case 44
Bottom side		1.739			1.739	1.739					

16.5 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
- The detail hotspot point for each transmitter in each exposure condition are showing as below figure and the minimum 3D distance for each sum combination is used for SPLSR analysis.



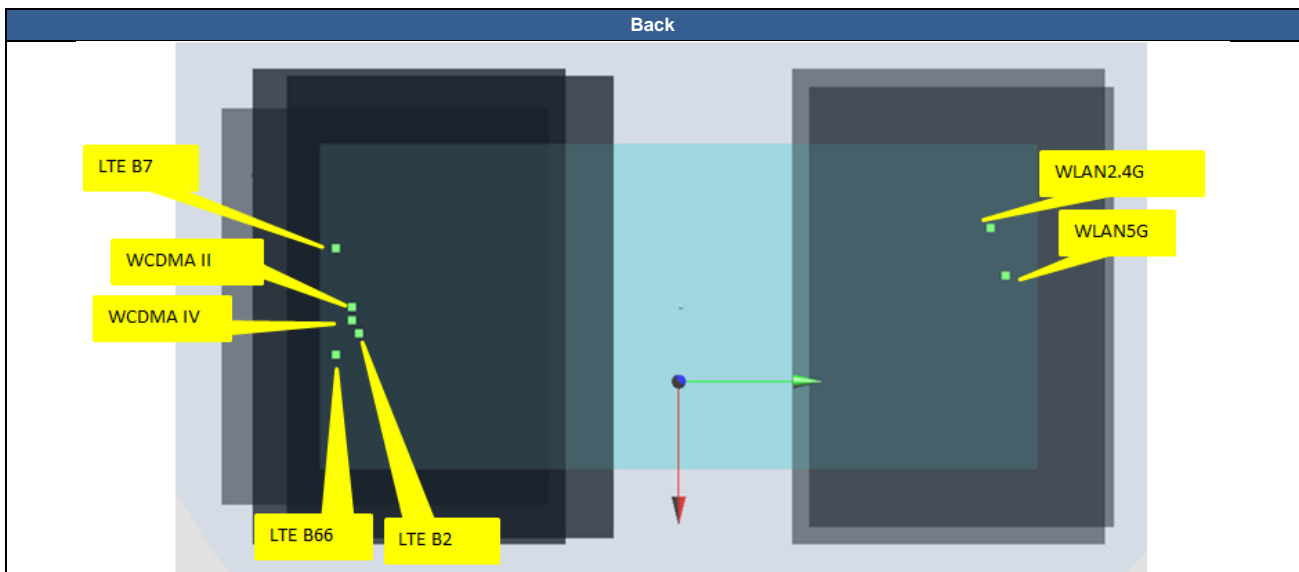
Case	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed 1g SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 1	GSM 850	Back	1.211	5mm	-1.16	-77.4	-1.48	158.9	2.31	0.02	Not required
	WLAN 2.4G		1.097	5mm	-30.2	78.81	-4.13				
Case 2	GSM 1900	Back	1.301	5mm	-1.95	-65.5	-1.4	147.1	2.40	0.03	Not required
	WLAN 2.4G		1.097	5mm	-30.2	78.81	-4.13				
Case 3	WCDMA II	Back	1.331	5mm	7.62	-78.1	-1.38	161.4	2.43	0.02	Not required
	WLAN 2.4G		1.097	5mm	-30.2	78.81	-4.13				
Case 4	WCDMA IV	Back	1.231	5mm	6.14	-78.2	-1.42	161.2	2.33	0.02	Not required
	WLAN 2.4G		1.097	5mm	-30.2	78.81	-4.13				
Case 5	WCDMA V	Back	1.256	5mm	-3.06	-76.79	-1.36	158.0	2.35	0.02	Not required
	WLAN 2.4G		1.097	5mm	-30.2	78.81	-4.13				
Case 6	LTE Band 2	Back	1.256	5mm	4.24	-75.07	-1.46	157.7	2.35	0.02	Not required
	WLAN 2.4G		1.097	5mm	-30.2	78.81	-4.13				
Case 7	LTE Band 5	Back	1.238	5mm	-3.06	-76.79	-1.36	158.0	2.34	0.02	Not required
	WLAN 2.4G		1.097	5mm	-30.2	78.81	-4.13				
Case 8	LTE Band 7	Back	1.213	5mm	-10.17	-79.6	-1.45	159.7	2.31	0.02	Not required
	WLAN 2.4G		1.097	5mm	-30.2	78.81	-4.13				



Case	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed 1g SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 9	LTE Band 66	Back	1.224	5mm	7.11	-79.39	-2.25	162.6	2.32	0.02	Not required
	WLAN 2.4G		1.097	5mm	-30.2	78.81	-4.13				
Case 10	GSM 850	Back	1.211	5mm	-1.16	-77.4	-1.48	153.7	2.47	0.03	Not required
	WLAN 5G		1.258	5mm	-7.16	76.2	-3.79				
Case 11	GSM 1900	Back	1.301	5mm	-1.95	-65.5	-1.4	141.8	2.56	0.03	Not required
	WLAN 5G		1.258	5mm	-7.16	76.2	-3.79				
Case 12	WCDMA II	Back	1.331	5mm	7.62	-78.1	-1.38	155.0	2.59	0.03	Not required
	WLAN 5G		1.258	5mm	-7.16	76.2	-3.79				
Case 13	WCDMA IV	Back	1.231	5mm	6.14	-78.2	-1.42	155.0	2.49	0.03	Not required
	WLAN 5G		1.258	5mm	-7.16	76.2	-3.79				
Case 14	WCDMA V	Back	1.256	5mm	-3.06	-76.79	-1.36	153.1	2.51	0.03	Not required
	WLAN 5G		1.258	5mm	-7.16	76.2	-3.79				
Case 15	LTE Band 2	Back	1.256	5mm	4.24	-75.07	-1.46	151.7	2.51	0.03	Not required
	WLAN 5G		1.258	5mm	-7.16	76.2	-3.79				
Case 16	LTE Band 5	Back	1.238	5mm	-3.06	-76.79	-1.36	153.1	2.50	0.03	Not required
	WLAN 5G		1.258	5mm	-7.16	76.2	-3.79				
Case 17	LTE Band 7	Back	1.213	5mm	-10.17	-79.6	-1.45	155.8	2.47	0.02	Not required
	WLAN 5G		1.258	5mm	-7.16	76.2	-3.79				
Case 18	LTE Band 66	Back	1.224	5mm	7.11	-79.39	-2.25	156.3	2.48	0.03	Not required
	WLAN 5G		1.258	5mm	-7.16	76.2	-3.79				
Case 19	GSM 850	Back with Headset	0.971	5mm	-1.18	-77.2	-1.43	153.5	2.23	0.02	Not required
	WLAN 5G		1.258	5mm	-7.16	76.2	-3.79				
Case 20	WCDMA II	Back with Headset	0.805	5mm	7.65	-77.9	-1.32	154.8	2.06	0.02	Not required
	WLAN 5G		1.258	5mm	-7.16	76.2	-3.79				
Case 21	WCDMA IV	Back with Headset	0.857	5mm	6.12	-78.12	-1.4	154.9	2.12	0.02	Not required
	WLAN 5G		1.258	5mm	-7.16	76.2	-3.79				
Case 22	WCDMA V	Back with Headset	0.694	5mm	-3.26	-76.67	-1.35	152.9	1.95	0.02	Not required
	WLAN 5G		1.258	5mm	-7.16	76.2	-3.79				



Case	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed 1g SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 23	LTE Band 2	Back with Headset	0.877	5mm	4.21	-75.11	-1.46	151.8	2.14	0.02	Not required
	WLAN 5G		1.258	5mm	-7.16	76.2	-3.79				
Case 24	LTE Band 5	Back with Headset	1.044	5mm	-3.05	-76.77	-1.35	153.0	2.30	0.02	Not required
	WLAN 5G		1.258	5mm	-7.16	76.2	-3.79				
Case 25	LTE Band 7	Back with Headset	1.117	5mm	-10.15	-79.3	-1.44	155.5	2.38	0.02	Not required
	WLAN 5G		1.258	5mm	-7.16	76.2	-3.79				
Case 26	LTE Band 66	Back with Headset	1.029	5mm	7.13	-79.37	-2.24	156.2	2.29	0.02	Not required
	WLAN 5G		1.258	5mm	-7.16	76.2	-3.79				
Case 27	GSM 850	Back with Headset	0.971	5mm	-1.18	-77.2	-1.43	158.7	2.07	0.02	Not required
	WLAN 2.4G		1.097	5mm	-30.2	78.81	-4.13				
Case 28	WCDMA II	Back with Headset	0.805	5mm	7.65	-77.9	-1.32	161.2	1.90	0.02	Not required
	WLAN 2.4G		1.097	5mm	-30.2	78.81	-4.13				
Case 29	WCDMA IV	Back with Headset	0.857	5mm	6.12	-78.12	-1.4	161.1	1.95	0.02	Not required
	WLAN 2.4G		1.097	5mm	-30.2	78.81	-4.13				
Case 30	WCDMA V	Back with Headset	0.694	5mm	-3.26	-76.67	-1.35	157.8	1.79	0.02	Not required
	WLAN 2.4G		1.097	5mm	-30.2	78.81	-4.13				
Case 31	LTE Band 2	Back with Headset	0.877	5mm	4.21	-75.11	-1.46	157.7	1.97	0.02	Not required
	WLAN 2.4G		1.097	5mm	-30.2	78.81	-4.13				
Case 32	LTE Band 5	Back with Headset	1.044	5mm	-3.05	-76.77	-1.35	158.0	2.14	0.02	Not required
	WLAN 2.4G		1.097	5mm	-30.2	78.81	-4.13				
Case 33	LTE Band 7	Back with Headset	1.117	5mm	-10.15	-79.3	-1.44	159.4	2.21	0.02	Not required
	WLAN 2.4G		1.097	5mm	-30.2	78.81	-4.13				
Case 34	LTE Band 66	Back with Headset	1.029	5mm	7.13	-79.37	-2.24	162.5	2.13	0.02	Not required
	WLAN 2.4G		1.097	5mm	-30.2	78.81	-4.13				



Case	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed 10g SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 35	WCDMA II	Back	3.137	0mm	1.62	-78.2	-1.5	148.9	4.58	0.07	Not required
	WLAN 2.4G		1.447	0mm	-16	69.6	-2.76				
Case 36	WCDMA IV	Back	3.017	0mm	7.84	-78.19	-1.43	149.7	4.46	0.06	Not required
	WLAN 2.4G		1.447	0mm	-16	69.6	-2.76				
Case 37	LTE Band 2	Back	3.023	0mm	-0.36	-75.1	-0.93	156.8	4.47	0.06	Not required
	WLAN 2.4G		1.447	0mm	-30.2	78.81	-4.13				
Case 38	LTE Band 7	Back	3.146	0mm	-11.17	-77.77	-1.32	157.8	4.59	0.06	Not required
	WLAN 2.4G		1.447	0mm	-30.2	78.81	-4.13				
Case 39	LTE Band 66	Back	3.033	0mm	20.82	-78.77	-1.24	165.7	4.48	0.06	Not required
	WLAN 2.4G		1.447	0mm	-30.2	78.81	-4.13				
Case 40	WCDMA II	Back	3.137	0mm	1.62	-78.2	-1.5	153.4	4.75	0.07	Not required
	WLAN 5G		1.609	0mm	-6.96	75	-3.03				
Case 41	WCDMA IV	Back	3.017	0mm	7.84	-78.19	-1.43	153.9	4.63	0.06	Not required
	WLAN 5G		1.609	0mm	-6.96	75	-3.03				
Case 42	LTE Band 2	Back	3.023	0mm	-0.36	-75.1	-0.93	150.3	4.63	0.07	Not required
	WLAN 5G		1.609	0mm	-6.96	75	-3.03				
Case 43	LTE Band 7	Back	3.146	0mm	-11.17	-77.77	-1.32	152.8	4.76	0.07	Not required
	WLAN 5G		1.609	0mm	-6.96	75	-3.03				
Case	Band	Position	10g SAR	Gap	SAR peak location (mm)			3D distance	Summed	SPLSR	Simultaneous SAR

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44			(W/kg)	(mm)	X	Y	Z	(mm)	10g SAR (W/kg)		
	LTE Band 66	Back	3.033	0mm	20.82	-78.77	-1.24	156.3	4.64	0.06	Not required
	WLAN 5G		1.609	0mm	-6.96	75	-3.03				

Test Engineer : White Huang Jay Jian Willy Yu Andy Chiang Lemon Su and Wilson Lin



17. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be $\leq 30\%$, 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 and highest measured 10-g SAR is less 3.75W/kg . Therefore, the measurement uncertainty table is not required in this report.

18. References

- [1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”
- [2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992
- [3] IEEE Std. 1528-2013, “IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, Sep 2013
- [4] SPEAG DASY System Handbook
- [5] FCC KDB 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.
- [6] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015
- [7] FCC KDB 648474 D04 v01r03, “SAR Evaluation Considerations for Wireless Handsets”, Oct 2015.
- [8] FCC KDB 941225 D01 v03r01, “3G SAR MEAUREMENT PROCEDURES”, Oct 2015
- [9] FCC KDB 941225 D05 v02r05, “SAR Evaluation Considerations for LTE Devices”, Dec 2015
- [10] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.
- [11] FCC KDB 941225 D07 v01r02, " SAR Evaluation Procedures for UMPC Mini-Tablet Devices", 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.