

# FCC SAR TEST REPORT

FCC ID : ZL5S62PRO  
Equipment : Rugged Smart Phone  
Brand Name : CAT  
Model Name : S62 Pro  
Applicant : Bullitt Group  
One Valpy, Valpy Street, Reading, Berkshire, England RG1 1AR  
Standard : FCC 47 CFR Part 2 (2.1093)

The product was received on Dec. 08, 2020 and testing was started from Dec. 12, 2020 and completed on Jan. 06, 2021. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample provide by manufacturer and the test data has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been pass the FCC requirement.

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



**SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory**  
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### History of this test report

Report No.	Version	Description	Issued Date
FA040406-07	01	Initial issue of report	Jan. 21, 2021



**1. Statement of Compliance**

The maximum results of Specific Absorption Rate (SAR) found during testing for Bullitt Group, Rugged Smart Phone, S62 Pro, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary				Highest Simultaneous Transmission 1g SAR (W/kg)	Highest Simultaneous Transmission 10g SAR (W/kg)
		Head (Separation 0mm)	Body-worn (Separation 10mm)	Hotspot (Separation 10mm)	Product Specific (Separation 0mm)		
		1g SAR (W/kg)			10g SAR (W/kg)		
Licensed	GSM 850	0.16	0.16	0.16		1.58	2.83
	GSM 1900	0.23	0.86	0.86	1.70		
	WCDMA II	0.30	0.99	0.96	2.16		
	WCDMA IV	1.07	0.89	1.11	2.83		
	WCDMA V	0.31	0.54	0.54			
	LTE Band 7	0.15	0.44	0.44			
	LTE Band 12 / 17	1.03	0.24	0.24			
	LTE Band 13	0.22	0.35	0.35			
	LTE Band 2 / 25	0.22	1.01	1.08	2.39		
	LTE Band 5 / 26	0.26	0.46	0.46			
	LTE Band 41	0.13	0.40	0.40			
	LTE Band 4 / 66	1.12	0.88	1.19	2.80		
	LTE Band 71	0.71	0.35	0.35			
DTS	2.4GHz WLAN	0.62	0.16	0.16		1.58	
NII	5GHz WLAN	0.57	0.18	0.17	0.61	1.55	2.83
DSS	Bluetooth	0.26	0.07	0.07		1.58	
Date of Testing:		2020/12/12 ~ 2021/1/6					

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test. This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.

**Reviewed by: Jason Wang**  
**Report Producer: Daisy Peng**



## **2. Guidance Applied**

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards, the below KDB standard may not including in the TAF code without accreditation.

- 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 616217 D04 SAR for laptop and tablets v01r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01
- FCC KDB 941225 D07 UMPC Mini Tablet v01r02



### 3. Equipment Under Test (EUT) Information

#### 3.1 General Information

Product Feature & Specification	
Equipment Name	Rugged Smart Phone
Brand Name	CAT
Model Name	S62 Pro
FCC ID	ZL5S62PRO
Sample 1	Dual SIM
Sample 2	Single SIM
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 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 41: 2555 MHz ~ 2655 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 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 NFC : 13.56 MHz
Mode	GSM/GPRS/EGPRS/DTM RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA LTE: QPSK, 16QAM, 64QAM WLAN: 802.11a/b/g/n/ac/ax HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC:ASK
GSM / (E)GPRS Dual Transfer mode	Class A – EUT can support Packet Switched and Circuit Switched Network simultaneously.
EUT Stage	Identical Prototype
Remark:	<ol style="list-style-type: none"> <li>This device WLAN 2.4GHz / 5.2GHz / 5.8GHz supports Hotspot operation and Bluetooth support tethering applications.</li> <li>The device implements the power management and sensor detection for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity) and the device will manage to ensure the power level not exceeding the associated power table. Details about the power management decision and sensor detection are provided in the operational description.</li> <li>The power state list below which the power state may have difference output power level. If some power state output power measurement was not include in section11, because the same output power level has been presented within the other power state and use the same level to do SAR tested            Power State1: default power            Power State2: when WWAN operate on the head            Power State3: when WWAN operate on the head and transmit with WiFi/BT            Power State4: when hotspot mode is turn on            Power State5: when device operate on near-body or hand-held</li> <li>The samples have same layout, circuit and components but different SIM tray. The phone software will identify the loaded sim card combinations whether with single sim card or dual sim cards.</li> </ol>



**3.2 General LTE SAR Test and Reporting Considerations**

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																															
FCC ID	ZL5S62PRO																																																														
Equipment Name	Rugged Smart Phone																																																														
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 41: 2555 MHz ~ 2655 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz																																																														
Channel Bandwidth	LTE Band 2: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 5: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 12: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 13: 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 25: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 26: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 66: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 71: 5MHz, 10MHz, 15MHz, 20MHz																																																														
uplink modulations used	QPSK / 16QAM / 64QAM																																																														
LTE Voice / Data requirements	Data only																																																														
LTE MPR permanently built-in by design	<p><b>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</b></p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (N<sub>RB</sub>)</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>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 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>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 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>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 18</td> <td>≤ 3</td> </tr> <tr> <td>256 QAM</td> <td colspan="6">≥ 1</td> <td>≤ 5</td> </tr> </tbody> </table>	Modulation	Channel bandwidth / Transmission bandwidth (N <sub>RB</sub> )						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	The device implements the power management and sensor detection for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity); power selection is determined by the device's positioning and usage scenarios.																																																														
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power measurement please referred to section 12.																																																														
LTE Carrier Aggregation Additional Information	1. This device supports LTE Carrier Aggregation (CA) in the uplink for LTE B5/B41 with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance. 2. This device supports maximum of 2 carriers in the downlink and 2 carriers in the uplink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.																																																														



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





LTE Band 26												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5		
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5		
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5		
LTE Band 41												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	40265	2557.5	40290	2560	40315	2562.5	40340	2565				
L	40585	2589.5	40590	2590	40595	2590.5	40600	2591				
M	40905	2621.5	40890	2620	40885	2619.5	40870	2618				
H	41215	2652.5	41190	2650	41165	2647.5	41140	2645				
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
LTE Band 71												
	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)		
L	133147	665.5	133172	668	133197	670.5	133222	673				
M	133297	680.5	133297	680.5	133297	680.5	133297	680.5				
H	133447	695.5	133422	693	133397	690.5	133372	688				



### 4. RF Exposure Limits

#### 4.1 Uncontrolled Environment

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

#### 4.2 Controlled Environment

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

**Limits for Occupational/Controlled Exposure (W/kg)**

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

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

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

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

## **5. Specific Absorption Rate (SAR)**

### **5.1 Introduction**

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

### **5.2 SAR Definition**

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

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

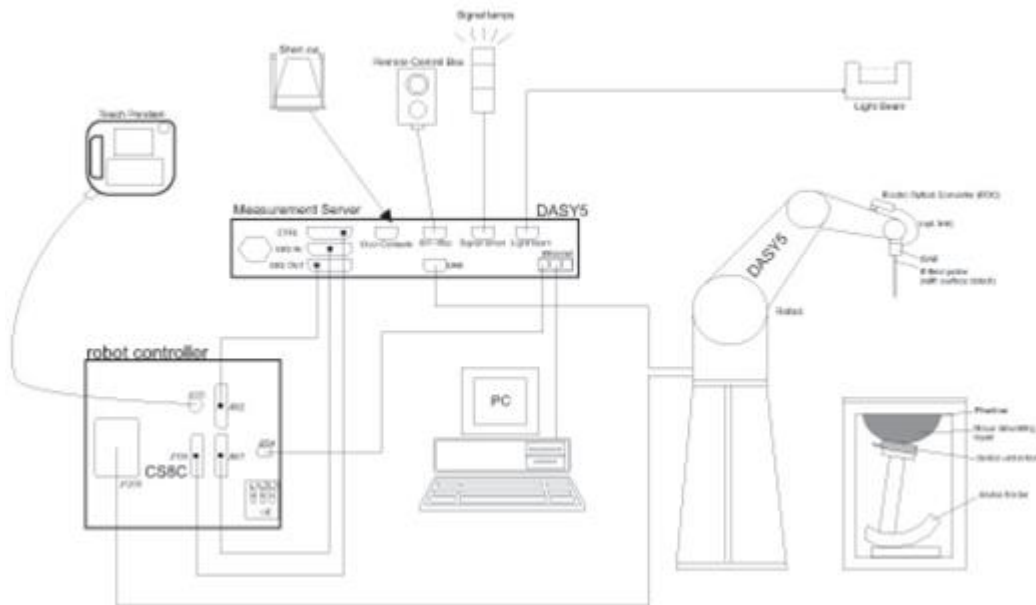
SAR is expressed in units of Watts per kilogram (W/kg)

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

Where:  $\sigma$  is the conductivity of the tissue,  $\rho$  is the mass density of the tissue and E is the RMS electrical field strength.

## 6. System Description and Setup

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



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

### 6.1 Test Site Location


The SAR measurement facilities used to collect data are within both Sporton Lab list below test site location are accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190 and 0007) and the FCC designation No. TW1190 and TW0007 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test.

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory			
Test Site Location	TW1190 No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, CHINESE TAIPEI		TW0007 No. 58, Aly. 75, Ln. 564, Wehnuia 3rd, Rd., Guishan Dist., Taoyuan City, CHINESE TAIPEI	
	SAR01-HY	SAR03-HY	SAR08-HY	SAR09-HY
Test Site No.	SAR04-HY	SAR05-HY	SAR11-HY	SAR12-HY
	SAR06-HY	SAR10-HY		


**6.2 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>**

<b>Construction</b>	Symmetric design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
<b>Frequency</b>	10 MHz – 4 GHz; Linearity: ±0.2 dB (30 MHz – 4 GHz)	
<b>Directivity</b>	±0.2 dB in TSL (rotation around probe axis) ±0.3 dB in TSL (rotation normal to probe axis)	
<b>Dynamic Range</b>	5 µW/g – >100 mW/g; Linearity: ±0.2 dB	
<b>Dimensions</b>	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>**

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

**6.3 Data Acquisition Electronics (DAE)**

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


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



**Fig 5.1 Photo of DAE**


**6.4 Phantom**

**<SAM Twin Phantom>**

<b>Shell Thickness</b>	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm	
<b>Filling Volume</b>	Approx. 25 liters	
<b>Dimensions</b>	Length: 1000 mm; Width: 500 mm; Height: adjustable feet	
<b>Measurement Areas</b>	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>**

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

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

## **6.5 Device Holder**

### **<Mounting Device for Hand-Held Transmitter>**

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



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

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

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



Mounting Device for Laptops

## **7. Measurement Procedures**

The measurement procedures are as follows:

### <Conducted power measurement>

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

### <SAR measurement>

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

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

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

### **7.1 Spatial Peak SAR Evaluation**

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

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

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

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



**7.2 Power Reference Measurement**

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

**7.3 Area Scan**

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

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

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5 \text{ mm}$
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.	

**7.4 Zoom Scan**

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

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

		≤ 3 GHz	> 3 GHz	
Maximum zoom scan spatial resolution: $\Delta x_{Zoom}, \Delta y_{Zoom}$		$\leq 2$ GHz: $\leq 8$ mm 2 – 3 GHz: $\leq 5$ mm*	3 – 4 GHz: $\leq 5$ mm* 4 – 6 GHz: $\leq 4$ mm*	
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	$\leq 5$ mm	3 – 4 GHz: $\leq 4$ mm 4 – 5 GHz: $\leq 3$ mm 5 – 6 GHz: $\leq 2$ mm	
	graded grid	$\Delta z_{Zoom}(1)$ : between 1 <sup>st</sup> two points closest to phantom surface	$\leq 4$ mm	3 – 4 GHz: $\leq 3$ mm 4 – 5 GHz: $\leq 2.5$ mm 5 – 6 GHz: $\leq 2$ 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	$\geq 30$ mm	3 – 4 GHz: $\geq 28$ mm 4 – 5 GHz: $\geq 25$ mm 5 – 6 GHz: $\geq 22$ mm	
Note: $\delta$ 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 $\leq 1.4$ W/kg, $\leq 8$ mm, $\leq 7$ mm and $\leq 5$ mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

**7.5 Volume Scan Procedures**

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

**7.6 Power Drift Monitoring**

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



### 8. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit <sup>(2)</sup>	D750V3	1107	Mar. 08, 2019	Mar. 06, 2021
SPEAG	835MHz System Validation Kit <sup>(2)</sup>	D835V2	4d167	Nov. 25, 2019	Nov. 23, 2021
SPEAG	1750MHz System Validation Kit <sup>(2)</sup>	D1750V2	1112	Mar. 07, 2019	Mar. 05, 2021
SPEAG	1900MHz System Validation Kit <sup>(2)</sup>	D1900V2	5d185	Mar. 07, 2019	Mar. 05, 2021
SPEAG	2450MHz System Validation Kit <sup>(2)</sup>	D2450V2	929	Nov. 21, 2019	Nov. 19, 2021
SPEAG	2600MHz System Validation Kit <sup>(2)</sup>	D2600V2	1008	Aug. 31, 2018	Aug. 28, 2021
SPEAG	5GHz System Validation Kit <sup>(2)</sup>	D5GHzV2	1006	Sep. 27, 2018	Sep. 24, 2021
SPEAG	Data Acquisition Electronics	DAE4	316	Dec. 20, 2019	Dec. 19, 2020
SPEAG	Data Acquisition Electronics	DAE3	495	Jul. 21, 2020	Jul. 20, 2021
SPEAG	Data Acquisition Electronics	DAE4	699	Feb. 26, 2020	Feb. 25, 2021
SPEAG	Data Acquisition Electronics	DAE4	778	Jun. 04, 2020	Jun. 03, 2021
SPEAG	Data Acquisition Electronics	DAE4	1424	Jan. 24, 2020	Jan. 23, 2021
SPEAG	Dosimetric E-Field Probe	ES3DV3	3184	Sep. 23, 2020	Sep. 22, 2021
SPEAG	Dosimetric E-Field Probe	ES3DV3	3270	Sep. 23, 2020	Sep. 22, 2021
SPEAG	Dosimetric E-Field Probe	EX3DV4	3728	Feb. 04, 2020	Feb. 03, 2021
SPEAG	Dosimetric E-Field Probe	EX3DV4	3925	Sep. 24, 2020	Sep. 23, 2021
SPEAG	Dosimetric E-Field Probe	EX3DV4	7306	Jul. 24, 2020	Jul. 23, 2021
RCPTWN	Thermometer	HTC-1	TM685-1	Nov. 10, 2020	Nov. 09, 2021
RCPTWN	Thermometer	HTC-1	TM560-2	Nov. 10, 2020	Nov. 09, 2021
Anritsu	Radio Communication Analyzer	MT8821C	6201341950	Nov. 10, 2020	Nov. 09, 2021
Keysight	Wireless Communication Test Set	E5515C	MY50267236	Mar. 18, 2020	Mar. 17, 2021
R&S	BT Base Station	CBT	100815	Feb. 15, 2020	Feb. 14, 2021
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Nov. 11, 2020	Nov. 10, 2021
Keysight	ENA Network Analyzer	E5071C	MY46101588	Jun. 10, 2020	Jun. 09, 2021
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Sep. 16, 2020	Sep. 15, 2021
LINE SEIKI	Digital Thermometer	DTM3000-spezial	2942	Nov. 06, 2020	Nov. 05, 2021
Anritsu	Power Meter	ML2495A	1419002	Aug. 19, 2020	Aug. 18, 2021
Anritsu	Power Sensor	MA2411B	1911176	Aug. 18, 2020	Aug. 17, 2021
Anritsu	Power Meter	ML2495A	1804003	Oct. 21, 2020	Oct. 20, 2021
Anritsu	Power Sensor	MA2411B	1726150	Oct. 21, 2020	Oct. 20, 2021
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jun. 30, 2020	Jun. 29, 2021
Anritsu	Spectrum Analyzer	N9010A	MY53470118	Mar. 12, 2020	Mar. 11, 2021
Mini-Circuits	Power Amplifier	ZVE-8G+	6418	Oct. 21, 2020	Oct. 20, 2021
Mini-Circuits	Power Amplifier	ZVE-8G+	479102029	Aug. 26, 2020	Aug. 25, 2021
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. The dipole calibration interval can be extended to 3 years with justification according to KDB 865664 D01. The dipoles are also not physically damaged, or repaired during the interval. The justification data in appendix C can be found which the return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration for each dipole.



### 9. System Verification

#### 9.1 Tissue Verification

The tissue dielectric parameters of tissue-equivalent media used for SAR measurements must be characterized within a temperature range of 18°C to 25°C, measured with calibrated instruments and apparatuses, such as network analyzers and temperature probes. The temperature of the tissue-equivalent medium during SAR measurement must also be within 18°C to 25°C and within ± 2°C of the temperature when the tissue parameters are characterized. The tissue dielectric measurement system must be calibrated before use. The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements.

The liquid tissue depth was at least 15cm in the phantom for all SAR testing

#### <Tissue Dielectric Parameter Check Results>

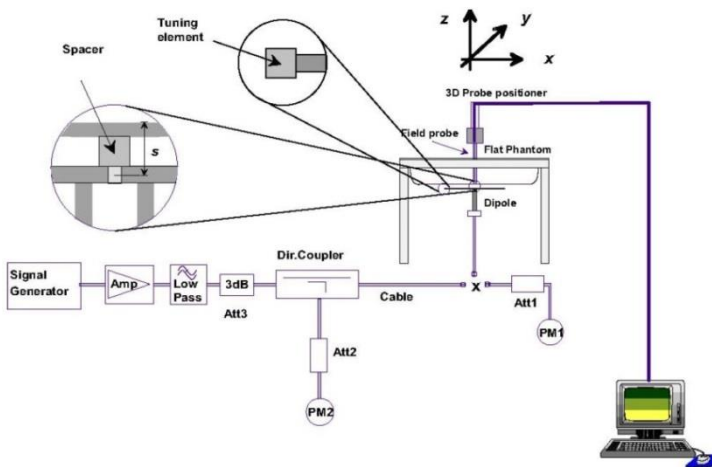
Frequency (MHz)	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ε <sub>r</sub> )	Conductivity Target (σ)	Permittivity Target (ε <sub>r</sub> )	Delta (σ) (%)	Delta (ε <sub>r</sub> ) (%)	Limit (%)	Date
750	22.3	0.900	41.722	0.89	41.90	1.12	-0.42	±5	2020/12/14
750	22.6	0.902	42.382	0.89	41.90	1.35	1.15	±5	2020/12/16
750	22.6	0.885	42.251	0.89	41.90	-0.56	0.84	±5	2020/12/16
750	22.5	0.888	42.885	0.89	41.90	-0.22	2.35	±5	2020/12/20
750	22.1	0.897	41.491	0.89	41.90	0.79	-0.98	±5	2021/1/6
835	22.6	0.883	41.034	0.90	41.50	-1.89	-1.12	±5	2020/12/15
835	22.6	0.937	42.562	0.90	41.50	4.11	2.56	±5	2020/12/16
1750	22.6	1.349	39.408	1.37	40.10	-1.53	-1.73	±5	2020/12/12
1750	22.3	1.364	40.944	1.37	40.10	-0.44	2.10	±5	2020/12/14
1750	22.6	1.348	39.771	1.37	40.10	-1.61	-0.82	±5	2020/12/18
1750	22.6	1.373	40.857	1.37	40.10	0.22	1.89	±5	2020/12/19
1750	22.5	1.394	41.008	1.37	40.10	1.75	2.26	±5	2020/12/20
1750	22.1	1.364	40.291	1.37	40.10	-0.44	0.48	±5	2021/1/6
1900	22.6	1.448	40.441	1.40	40.00	3.43	1.10	±5	2020/12/16
1900	22.1	1.426	39.592	1.40	40.00	1.86	-1.02	±5	2020/12/17
1900	22.5	1.445	40.555	1.40	40.00	3.21	1.39	±5	2020/12/18
1900	22.6	1.390	40.144	1.40	40.00	-0.71	0.36	±5	2020/12/19
2450	22.3	1.781	39.951	1.80	39.20	-1.06	1.92	±5	2020/12/17
2600	22.8	2.019	40.149	1.96	39.00	3.01	2.95	±5	2020/12/15
5250	22.3	4.603	36.950	4.71	35.95	-2.27	2.78	±5	2020/12/17
5250	22.6	4.840	37.149	4.71	35.95	2.76	3.34	±5	2020/12/18
5600	22.3	4.956	36.410	5.07	35.50	-2.25	2.56	±5	2020/12/17
5600	22.6	5.220	36.638	5.07	35.50	2.96	3.21	±5	2020/12/18
5750	22.3	5.107	36.275	5.22	35.35	-2.16	2.62	±5	2020/12/17
5750	22.6	5.390	36.455	5.22	35.35	3.26	3.13	±5	2020/12/18

**9.2 System Performance Check Results**

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

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 (%)
2020/12/14	750	250	D750V3-1107	ES3DV3 - SN3184	DAE4 Sn316	2.23	8.32	8.92	7.21
2020/12/16	750	250	D750V3-1107	ES3DV3 - SN3270	DAE3 Sn495	1.95	8.32	7.8	-6.25
2020/12/16	750	50	D750V3-1107	EX3DV4 - SN3925	DAE4 Sn778	0.389	8.32	7.78	-6.49
2020/12/20	750	250	D750V3-1107	ES3DV3 - SN3270	DAE3 Sn495	2.10	8.32	8.4	0.96
2021/1/6	750	250	D750V3-1107	EX3DV4 - SN3728	DAE4 Sn1424	2.14	8.32	8.56	2.88
2020/12/15	835	250	D835V2-4d167	ES3DV3 - SN3270	DAE3 Sn495	2.41	9.55	9.64	0.94
2020/12/16	835	50	D835V2-4d167	EX3DV4 - SN3925	DAE4 Sn778	0.473	9.55	9.46	-0.94
2020/12/12	1750	250	D1750V2-1112	ES3DV3 - SN3270	DAE3 Sn495	8.27	36.70	33.08	-9.86
2020/12/14	1750	250	D1750V2-1112	ES3DV3 - SN3270	DAE3 Sn495	8.36	36.70	33.44	-8.88
2020/12/18	1750	250	D1750V2-1112	ES3DV3 - SN3270	DAE3 Sn495	8.26	36.70	33.04	-9.97
2020/12/19	1750	250	D1750V2-1112	ES3DV3 - SN3270	DAE3 Sn495	8.41	36.70	33.64	-8.34
2020/12/20	1750	250	D1750V2-1112	ES3DV3 - SN3270	DAE3 Sn495	8.54	36.70	34.16	-6.92
2021/1/6	1750	250	D1750V2-1112	EX3DV4 - SN3728	DAE4 Sn1424	9.05	36.70	36.2	-1.36
2020/12/16	1900	250	D1900V2-5d185	ES3DV3 - SN3270	DAE3 Sn495	9.80	39.40	39.2	-0.51
2020/12/17	1900	250	D1900V2-5d185	EX3DV4 - SN3925	DAE4 Sn778	9.42	39.40	37.68	-4.37
2020/12/18	1900	250	D1900V2-5d185	ES3DV3 - SN3270	DAE3 Sn495	9.78	39.40	39.12	-0.71
2020/12/19	1900	250	D1900V2-5d185	ES3DV3 - SN3270	DAE3 Sn495	9.41	39.40	37.64	-4.47
2020/12/17	2450	250	D2450V2-929	ES3DV3 - SN3270	DAE3 Sn495	13.70	53.10	54.8	3.20
2020/12/15	2600	250	D2600V2-1008	EX3DV4 - SN3925	DAE4 Sn778	15.20	56.40	60.8	7.80
2020/12/17	5250	50	D5GHzV2-1006-5250	EX3DV4 - SN7306	DAE4 Sn699	4.24	80.70	84.8	5.08
2020/12/18	5250	100	D5GHzV2-1006-5250	EX3DV4 - SN7306	DAE4 Sn699	8.00	80.70	80	-0.87
2020/12/17	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN7306	DAE4 Sn699	8.32	83.30	83.2	-0.12
2020/12/18	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN7306	DAE4 Sn699	9.01	83.30	90.1	8.16
2020/12/17	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN7306	DAE4 Sn699	7.65	80.40	76.5	-4.85
2020/12/18	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN7306	DAE4 Sn699	7.95	80.40	79.5	-1.12

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 (%)
2020/12/20	1750	250	D1750V2-1112	ES3DV3 - SN3270	DAE3 Sn495	4.59	19.40	18.36	-5.36
2020/12/18	1900	250	D1900V2-5d185	ES3DV3 - SN3270	DAE3 Sn495	5.12	20.50	20.48	-0.10
2020/12/19	1900	250	D1900V2-5d185	ES3DV3 - SN3270	DAE3 Sn495	4.92	20.50	19.68	-4.00
2020/12/18	5250	100	D5GHzV2-1006-5250	EX3DV4 - SN7306	DAE4 Sn699	2.32	23.20	23.2	0.00
2020/12/18	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN7306	DAE4 Sn699	2.49	23.80	24.9	4.62



**Fig 8.3.1 System Performance Check Setup**



**Fig 8.3.2 Setup Photo**

## 10. RF Exposure Positions

### 10.1 Ear and handset reference point

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

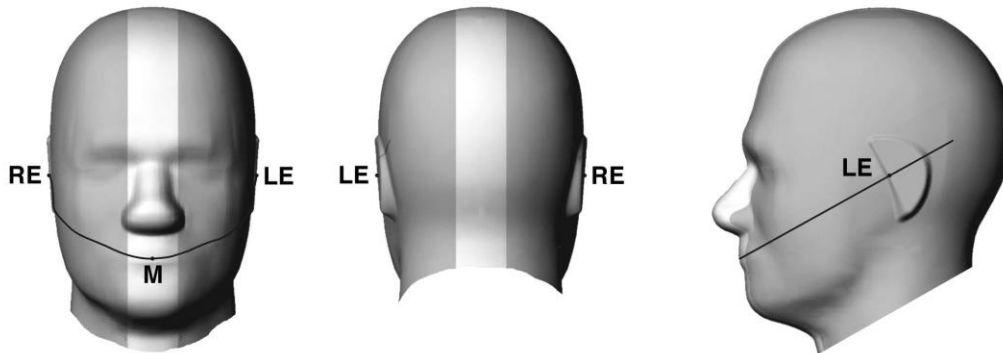


Fig 9.1.1 Front, back, and side views of SAM twin phantom

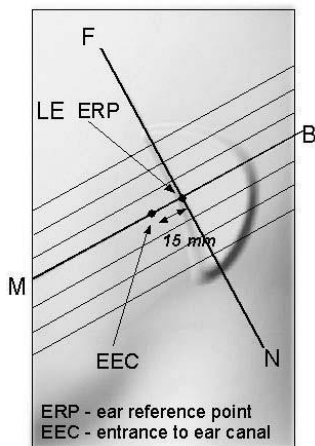


Fig 9.1.2 Close-up side view of phantom showing the ear region.

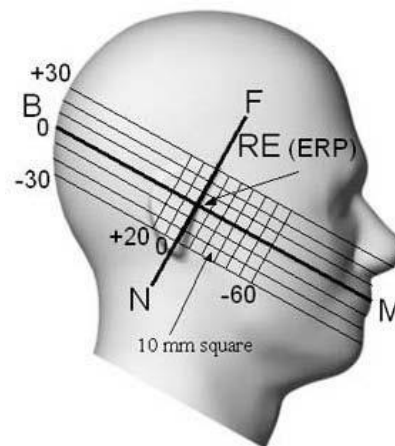
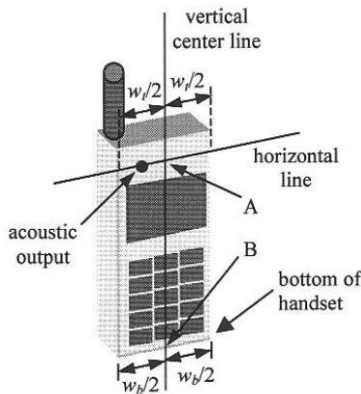


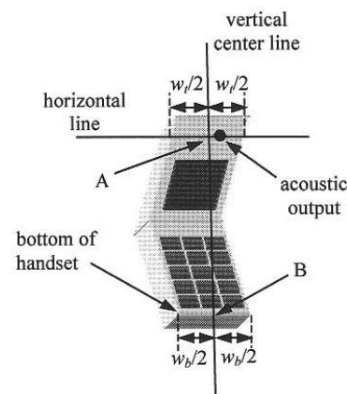
Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

**10.2 Definition of the cheek position**

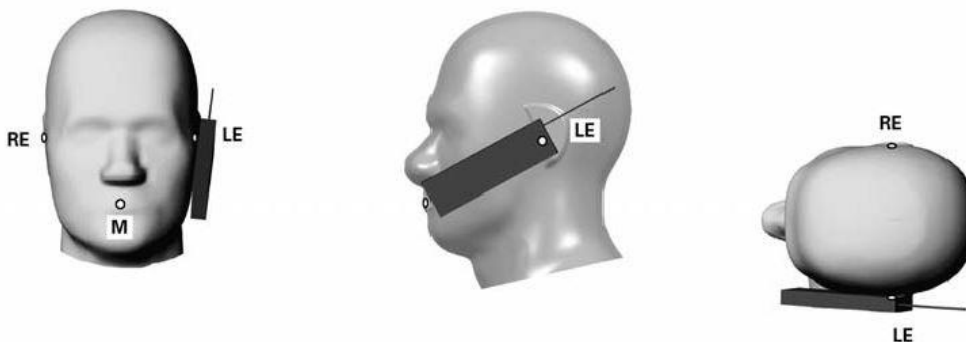
1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width  $w_t$  of the handset at the level of the acoustic output (point A in Figure 9.2.1 and Figure 9.2.2), and the midpoint of the width  $w_b$  of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 9.2.1). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 9.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 9.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 9.2.3. The actual rotation angles should be documented in the test report.



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



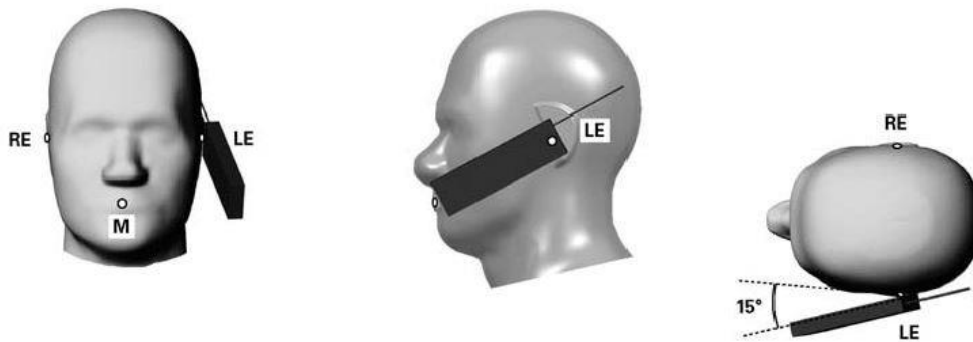
**Fig 9.2.2 Handset vertical and horizontal reference lines—“clam-shell case”**



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

**10.3 Definition of the tilt position**

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

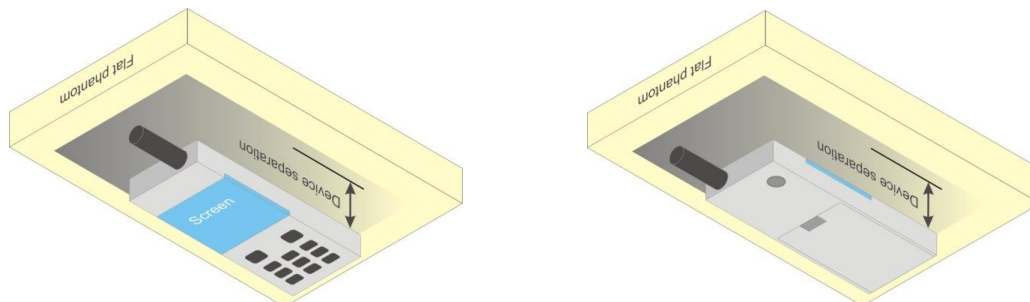


**Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.**

**10.4 Body Worn Accessory**

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

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



**Fig 9.4 Body Worn Position**





### **10.5 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  $\leq 25$  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.

### **10.6 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.



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

### <GSM Conducted Power>

**General Note:**

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

$$DTM \text{ frame average power (dBm)} = 10 * \log [\sum (\text{power of each slot, in mW}) / 8]$$
- Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
- Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE / DTM modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (4Tx slots) for GSM850 and EDGE (4 Tx slots) for GSM1900 are considered as the primary mode.
- Other configurations of GSM / GPRS / EDGE / DTM are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is  $\leq \frac{1}{4}$  dB higher than the primary mode, SAR measurement is not required for the secondary mode

### LAT\_State 1

GSM850		Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251	128		189	251		
Frequency (MHz)	824.2	836.4	848.8	824.2	836.4	848.8			
GSM 1 Tx slot	32.14	32.05	32.06	33.00	23.14	23.05	23.06	24.00	
GPRS 1 Tx slot	32.15	32.08	32.09	33.00	23.15	23.08	23.09	24.00	
GPRS 2 Tx slots	29.14	29.36	28.97	30.00	23.14	23.36	22.97	24.00	
GPRS 3 Tx slots	27.05	27.04	26.96	28.00	22.79	22.78	22.70	23.74	
GPRS 4 Tx slots	26.11	26.08	25.87	27.00	23.11	23.08	22.87	24.00	
EDGE 1 Tx slot	26.18	26.21	25.97	27.00	17.18	17.21	16.97	18.00	
EDGE 2 Tx slots	25.97	26.02	25.79	27.00	19.97	20.02	19.79	21.00	
EDGE 3 Tx slots	26.15	26.20	26.10	27.00	21.89	21.94	21.84	22.74	
EDGE 4 Tx slots	25.88	25.91	25.80	27.00	22.88	22.91	22.80	24.00	
DTM Multi-slot class 5	GSM 1 Tx slot	29.10	29.30	28.93	30.00	23.10	23.28	22.88	23.98
	GPRS 1 Tx slot	29.14	29.31	28.87	30.00				
DTM Multi-slot class 9	GSM 1 Tx slot	29.06	29.27	28.92	30.00	23.07	23.29	22.89	23.98
	GPRS 1 Tx slot	29.13	29.36	28.90	30.00				
DTM Multi-slot class 11	GSM 1 Tx slot	27.03	26.98	26.95	28.00	22.72	22.70	22.64	23.74
	GPRS 2 Tx slots	26.96	26.95	26.87	28.00				
DTM Multi-slot class 5	GSM 1 Tx slot	29.09	29.32	28.94	30.00	21.78	21.93	21.61	22.73
	EDGE 1 Tx slot	25.97	25.93	25.74	27.00				
DTM Multi-slot class 9	GSM 1 Tx slot	29.13	29.36	28.89	30.00	21.80	21.95	21.56	22.73
	EDGE 1 Tx slot	25.95	25.93	25.71	27.00				
DTM Multi-slot class 11	GSM 1 Tx slot	27.04	27.03	26.88	28.00	22.15	22.21	22.05	23.10
	EDGE 2 Tx slots	26.05	26.16	26.00	27.00				



GSM1900		Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel		512	661	810		512	661	810	
Frequency (MHz)		1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot		29.29	29.34	29.28	30.00	20.29	20.34	20.28	21.00
GPRS 1 Tx slot		29.33	29.38	29.30	30.00	20.33	20.38	20.30	21.00
GPRS 2 Tx slots		26.37	26.50	26.44	27.00	20.37	20.50	20.44	21.00
GPRS 3 Tx slots		24.35	24.46	24.30	25.00	20.09	20.20	20.04	20.74
GPRS 4 Tx slots		23.37	23.37	23.32	24.00	20.37	20.37	20.32	21.00
EDGE 1 Tx slot		25.24	25.40	25.24	26.00	16.24	16.40	16.24	17.00
EDGE 2 Tx slots		25.01	25.19	25.08	26.00	19.01	19.19	19.08	20.00
EDGE 3 Tx slots		25.10	25.20	25.02	26.00	20.84	20.94	20.76	21.74
EDGE 4 Tx slots		24.80	24.89	24.77	26.00	21.80	21.89	21.77	23.00
DTM Multi-slot class 5	GSM 1 Tx slot	26.27	26.50	26.41	27.00	20.27	20.43	20.40	20.98
	GPRS 1 Tx slot	26.32	26.40	26.44	27.00				
DTM Multi-slot class 9	GSM 1 Tx slot	26.27	26.49	26.36	27.00	20.28	20.44	20.36	20.98
	GPRS 1 Tx slot	26.34	26.44	26.40	27.00				
DTM Multi-slot class 11	GSM 1 Tx slot	24.25	24.45	24.20	25.00	19.99	20.13	19.96	20.74
	GPRS 2 Tx slots	24.25	24.36	24.23	25.00				
DTM Multi-slot class 5	GSM 1 Tx slot	26.29	26.48	26.43	27.00	19.63	19.83	19.76	20.51
	EDGE 1 Tx slot	24.91	25.11	25.01	26.00				
DTM Multi-slot class 9	GSM 1 Tx slot	26.30	26.50	26.39	27.00	19.66	19.84	19.76	20.51
	EDGE 1 Tx slot	24.95	25.12	25.06	26.00				
DTM Multi-slot class 11	GSM 1 Tx slot	24.33	24.45	24.26	25.00	20.54	20.66	20.45	21.43
	EDGE 2 Tx slots	25.02	25.13	24.92	26.00				

**LAT\_State 4**

GSM1900		Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel		512	661	810		512	661	810	
Frequency (MHz)		1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot		25.21	25.55	25.24	26.50	16.21	16.55	16.24	17.50
GPRS 1 Tx slot		25.29	25.63	25.40	26.50	16.29	16.63	16.40	17.50
GPRS 2 Tx slots		22.56	22.89	22.53	23.50	16.56	16.89	16.53	17.50
GPRS 3 Tx slots		21.17	21.41	21.10	22.00	16.91	17.15	16.84	17.74
GPRS 4 Tx slots		19.61	19.72	19.45	20.50	16.61	16.72	16.45	17.50
EDGE 1 Tx slot		25.46	25.62	25.55	26.00	16.46	16.62	16.55	17.00
EDGE 2 Tx slots		22.47	22.71	22.50	23.50	16.47	16.71	16.50	17.50
EDGE 3 Tx slots		21.01	21.38	21.06	22.00	16.75	17.12	16.80	17.74
EDGE 4 Tx slots		20.07	20.09	20.05	21.00	17.07	17.09	17.05	18.00
DTM Multi-slot class 5	GSM 1 Tx slot	22.46	22.84	22.53	23.50	16.47	16.82	16.48	17.48
	GPRS 1 Tx slot	22.52	22.84	22.47	23.50				
DTM Multi-slot class 9	GSM 1 Tx slot	22.53	22.87	22.49	23.50	16.49	16.83	16.48	17.48
	GPRS 1 Tx slot	22.49	22.84	22.52	23.50				
DTM Multi-slot class 11	GSM 1 Tx slot	21.13	21.36	21.03	22.00	16.88	17.08	16.81	17.74
	GPRS 2 Tx slots	21.14	21.33	21.09	22.00				
DTM Multi-slot class 5	GSM 1 Tx slot	22.48	22.86	22.49	23.50	16.43	16.75	16.44	17.48
	EDGE 1 Tx slot	22.42	22.68	22.44	23.50				
DTM Multi-slot class 9	GSM 1 Tx slot	22.53	22.79	22.50	23.50	16.44	16.73	16.44	17.48
	EDGE 1 Tx slot	22.40	22.71	22.43	23.50				
DTM Multi-slot class 11	GSM 1 Tx slot	21.07	21.35	21.08	22.00	16.76	17.11	16.77	17.74
	EDGE 2 Tx slots	20.99	21.38	21.01	22.00				



**LAT\_State 5**

GSM1900		Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810	512		661	810		
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8			
GSM 1 Tx slot	29.54	29.58	29.46	30.00	20.54	20.58	20.46	21.00	
GPRS 1 Tx slot	29.57	29.61	29.49	30.00	20.57	20.61	20.49	21.00	
GPRS 2 Tx slots	26.56	26.95	26.67	27.00	20.56	20.95	20.67	21.00	
GPRS 3 Tx slots	24.54	24.70	24.51	25.00	20.28	20.44	20.25	20.74	
GPRS 4 Tx slots	23.49	23.64	23.40	24.00	20.49	20.64	20.40	21.00	
EDGE 1 Tx slot	25.47	25.95	25.39	26.00	16.47	16.95	16.39	17.00	
EDGE 2 Tx slots	25.24	25.63	25.27	26.00	19.24	19.63	19.27	20.00	
EDGE 3 Tx slots	24.49	24.83	24.44	25.50	20.23	20.57	20.18	21.24	
EDGE 4 Tx slots	23.13	23.65	23.19	24.50	20.13	20.65	20.19	21.50	
DTM Multi-slot class 5	GSM 1 Tx slot	26.56	26.93	26.59	27.00	20.54	20.87	20.58	20.98
	GPRS 1 Tx slot	26.56	26.86	26.61	27.00				
DTM Multi-slot class 9	GSM 1 Tx slot	26.54	26.95	26.66	27.00	20.53	20.91	20.63	20.98
	GPRS 1 Tx slot	26.56	26.92	26.64	27.00				
DTM Multi-slot class 11	GSM 1 Tx slot	24.46	24.60	24.49	25.00	20.24	20.35	20.18	20.74
	GPRS 2 Tx slots	24.52	24.62	24.41	25.00				
DTM Multi-slot class 5	GSM 1 Tx slot	26.50	26.85	26.65	27.00	19.89	20.25	19.96	20.51
	EDGE 1 Tx slot	25.24	25.60	25.20	26.00				
DTM Multi-slot class 9	GSM 1 Tx slot	26.56	26.92	26.57	27.00	19.90	20.29	19.93	20.51
	EDGE 1 Tx slot	25.16	25.61	25.22	26.00				
DTM Multi-slot class 11	GSM 1 Tx slot	24.49	24.60	24.48	25.00	20.18	20.45	20.14	21.08
	EDGE 2 Tx slots	24.42	24.77	24.36	25.50				

**<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 ( $\beta_c$  and  $\beta_d$ ) 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:  $\beta$  values for transmitter characteristics tests with HS-DPCCH**

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c/\beta_d$	$\beta_{HS}$ (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,  $\Delta_{ACK}$  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  $\beta_c/\beta_d$  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 ( $\beta_c$  and  $\beta_d$ ) 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:  $\beta$  values for transmitter characteristics tests with HS-DPCCH and E-DCH**

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c/\beta_d$	$\beta_{HS}$ (Note1)	$\beta_{ec}$	$\beta_{ed}$ (Note 4) (Note 5)	$\beta_{ed}$ (SF)	$\beta_{ed}$ (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,  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  and  $\Delta_{CQI} = 30/15$  with  $\beta_{hs} = 30/15 * \beta_c$ . For sub-test 5,  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  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  $\beta_c/\beta_d$  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:  $\beta_{ed}$  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:**

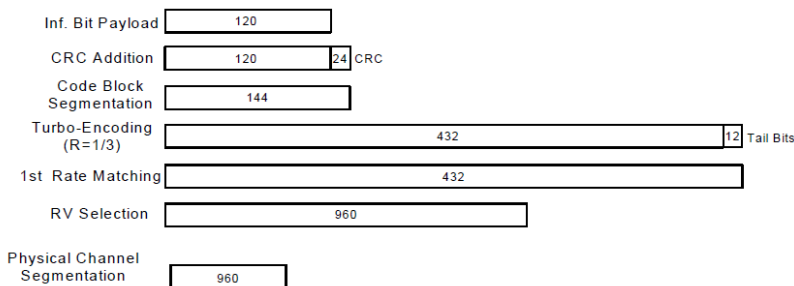
- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration below
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
  - i. Set RMC 12.2Kbps + HSDPA mode.
  - ii. Set Cell Power = -25 dBm
  - iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
  - iv. Select HSDPA Uplink Parameters
  - v. Set Gain Factors ( $\beta_c$  and  $\beta_d$ ) 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 ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA, DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

LAT\_State 1

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	23.47	23.46	23.44	24.00	23.36	23.40	23.57	24.00	23.53	23.42	23.38	24.00
3GPP Rel 99	RMC 12.2Kbps	23.54	23.43	23.41	24.00	23.39	23.42	23.59	24.00	23.54	23.44	23.39	24.00
3GPP Rel 6	HSDPA Subtest-1	22.55	22.44	22.46	23.00	22.45	22.51	22.64	23.00	22.50	22.45	22.36	23.00
3GPP Rel 6	HSDPA Subtest-2	22.56	22.48	22.49	23.00	22.44	22.53	22.62	23.00	22.41	22.43	22.43	23.00
3GPP Rel 6	HSDPA Subtest-3	22.08	21.96	21.62	22.50	21.95	22.04	22.11	22.50	22.02	22.00	21.96	22.50
3GPP Rel 6	HSDPA Subtest-4	22.11	21.96	22.00	22.50	21.94	22.04	22.19	22.50	21.99	21.96	21.94	22.50
3GPP Rel 8	DC-HSDPA Subtest-1	22.52	22.34	22.39	23.00	22.37	22.41	22.54	23.00	22.42	22.37	22.30	23.00
3GPP Rel 8	DC-HSDPA Subtest-2	22.55	22.42	22.43	23.00	22.36	22.51	22.57	23.00	22.43	22.44	22.39	23.00
3GPP Rel 8	DC-HSDPA Subtest-3	22.08	21.89	21.52	22.50	21.86	22.03	22.04	22.50	21.99	21.91	21.94	22.50
3GPP Rel 8	DC-HSDPA Subtest-4	22.04	21.93	21.97	22.50	21.94	21.99	22.10	22.50	21.98	21.93	21.92	22.50
3GPP Rel 6	HSUPA Subtest-1	22.50	22.44	22.43	22.50	22.44	22.49	22.50	22.50	22.48	22.35	22.33	22.50
3GPP Rel 6	HSUPA Subtest-2	20.54	20.47	20.46	21.00	20.44	20.49	20.62	21.00	20.51	20.49	20.42	21.00
3GPP Rel 6	HSUPA Subtest-3	21.54	21.46	21.47	22.00	21.45	21.50	21.64	22.00	21.53	21.45	21.44	22.00
3GPP Rel 6	HSUPA Subtest-4	20.50	20.48	20.47	20.50	20.43	20.47	20.50	20.50	20.46	20.35	20.32	20.50
3GPP Rel 6	HSUPA Subtest-5	22.50	22.40	22.40	22.50	22.40	22.50	22.50	22.50	22.48	22.33	22.32	22.50

LAT\_State 4

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	17.30	17.17	17.19	18.00	20.21	20.25	20.37	21.00
3GPP Rel 99	RMC 12.2Kbps	17.34	17.30	17.33	18.00	20.24	20.26	20.40	21.00
3GPP Rel 6	HSDPA Subtest-1	16.37	16.31	16.31	17.00	19.20	19.25	19.38	20.00
3GPP Rel 6	HSDPA Subtest-2	16.44	16.31	16.37	17.00	19.24	19.24	19.41	20.00
3GPP Rel 6	HSDPA Subtest-3	15.93	15.52	15.84	16.50	18.71	18.74	18.93	19.50
3GPP Rel 6	HSDPA Subtest-4	15.90	15.86	15.85	16.50	18.74	18.77	18.91	19.50
3GPP Rel 8	DC-HSDPA Subtest-1	16.28	16.18	16.28	17.00	19.14	19.22	19.32	20.00
3GPP Rel 8	DC-HSDPA Subtest-2	16.36	16.20	16.28	17.00	19.18	19.14	19.31	20.00
3GPP Rel 8	DC-HSDPA Subtest-3	15.77	15.71	15.75	16.50	18.66	18.74	18.90	19.50
3GPP Rel 8	DC-HSDPA Subtest-4	15.81	15.67	15.77	16.50	18.67	18.69	18.83	19.50
3GPP Rel 6	HSUPA Subtest-1	15.43	15.35	15.36	16.50	19.20	19.22	19.41	19.50
3GPP Rel 6	HSUPA Subtest-2	14.36	14.39	14.35	14.50	17.27	17.26	17.41	17.50
3GPP Rel 6	HSUPA Subtest-3	15.46	15.33	15.38	15.50	18.19	18.23	18.40	18.50
3GPP Rel 6	HSUPA Subtest-4	14.41	14.35	14.35	14.50	17.21	17.25	17.39	17.50
3GPP Rel 6	HSUPA Subtest-5	16.40	16.30	16.30	16.50	19.20	19.30	19.40	19.50





**LAT\_State 5**

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	20.83	20.75	20.73	21.50	21.42	21.48	21.60	22.50
3GPP Rel 99	RMC 12.2Kbps	20.86	20.78	20.76	21.50	21.51	21.56	21.67	22.50
3GPP Rel 6	HSDPA Subtest-1	19.91	19.77	19.82	20.50	20.49	20.56	20.70	21.50
3GPP Rel 6	HSDPA Subtest-2	19.86	19.79	19.83	20.50	20.52	20.59	20.74	21.50
3GPP Rel 6	HSDPA Subtest-3	19.46	19.31	19.01	20.00	20.05	20.10	20.21	21.00
3GPP Rel 6	HSDPA Subtest-4	19.41	19.31	19.34	20.00	20.02	20.07	20.23	21.00
3GPP Rel 8	DC-HSDPA Subtest-1	19.82	19.71	19.80	20.50	20.48	20.55	20.65	21.50
3GPP Rel 8	DC-HSDPA Subtest-2	19.76	19.75	19.74	20.50	20.49	20.56	20.70	21.50
3GPP Rel 8	DC-HSDPA Subtest-3	19.41	19.22	18.96	20.00	19.95	20.07	20.17	21.00
3GPP Rel 8	DC-HSDPA Subtest-4	19.35	19.28	19.32	20.00	19.99	20.06	20.19	21.00
3GPP Rel 6	HSUPA Subtest-1	19.88	19.85	19.81	20.00	20.50	20.53	20.70	21.00
3GPP Rel 6	HSUPA Subtest-2	17.91	17.75	17.80	18.00	18.51	18.52	18.62	19.00
3GPP Rel 6	HSUPA Subtest-3	18.92	18.75	18.88	19.00	19.50	19.49	19.71	20.00
3GPP Rel 6	HSUPA Subtest-4	17.90	17.78	17.85	18.00	18.51	18.60	18.67	19.00
3GPP Rel 6	HSUPA Subtest-5	19.90	19.80	19.80	20.00	20.50	20.60	20.70	21.00



**UAT\_State 1**

Band		WCDMA IV			Tune-up Limit (dBm)
TX Channel		1312	1413	1513	
Rx Channel		1537	1638	1738	
Frequency (MHz)		1712.4	1732.6	1752.6	
3GPP Rel 99	AMR 12.2Kbps	21.70	21.77	21.88	22.00
3GPP Rel 99	RMC 12.2Kbps	21.74	21.80	21.90	22.00
3GPP Rel 6	HSDPA Subtest-1	20.74	20.82	20.99	21.00
3GPP Rel 6	HSDPA Subtest-2	20.80	20.86	20.97	21.00
3GPP Rel 6	HSDPA Subtest-3	20.25	20.31	20.42	20.50
3GPP Rel 6	HSDPA Subtest-4	20.34	20.38	20.42	20.50
3GPP Rel 8	DC-HSDPA Subtest-1	20.72	20.74	20.95	21.00
3GPP Rel 8	DC-HSDPA Subtest-2	20.72	20.78	20.88	21.00
3GPP Rel 8	DC-HSDPA Subtest-3	20.20	20.30	20.34	20.50
3GPP Rel 8	DC-HSDPA Subtest-4	20.25	20.32	20.34	20.50
3GPP Rel 6	HSUPA Subtest-1	20.25	20.39	20.45	20.50
3GPP Rel 6	HSUPA Subtest-2	18.82	18.87	18.90	19.00
3GPP Rel 6	HSUPA Subtest-3	19.78	19.87	19.99	20.00
3GPP Rel 6	HSUPA Subtest-4	18.34	18.31	18.45	18.50
3GPP Rel 6	HSUPA Subtest-5	20.34	20.31	20.48	20.50

**UAT\_State 2**

Band		WCDMA IV			Tune-up Limit (dBm)
TX Channel		1312	1413	1513	
Rx Channel		1537	1638	1738	
Frequency (MHz)		1712.4	1732.6	1752.6	
3GPP Rel 99	AMR 12.2Kbps	17.31	17.40	17.51	18.00
3GPP Rel 99	RMC 12.2Kbps	17.35	17.42	17.53	18.00
3GPP Rel 6	HSDPA Subtest-1	16.40	16.30	16.54	17.00
3GPP Rel 6	HSDPA Subtest-2	16.38	16.42	16.53	17.00
3GPP Rel 6	HSDPA Subtest-3	15.89	15.92	16.04	16.50
3GPP Rel 6	HSDPA Subtest-4	15.89	15.93	16.05	16.50
3GPP Rel 8	DC-HSDPA Subtest-1	16.32	16.25	16.53	17.00
3GPP Rel 8	DC-HSDPA Subtest-2	16.30	16.41	16.45	17.00
3GPP Rel 8	DC-HSDPA Subtest-3	15.80	15.84	16.02	16.50
3GPP Rel 8	DC-HSDPA Subtest-4	15.85	15.90	16.00	16.50
3GPP Rel 6	HSUPA Subtest-1	15.36	15.43	16.48	17.00
3GPP Rel 6	HSUPA Subtest-2	14.37	14.38	14.47	15.00
3GPP Rel 6	HSUPA Subtest-3	15.38	15.46	15.54	16.00
3GPP Rel 6	HSUPA Subtest-4	14.40	14.45	14.57	15.00
3GPP Rel 6	HSUPA Subtest-5	16.40	16.40	16.47	17.00



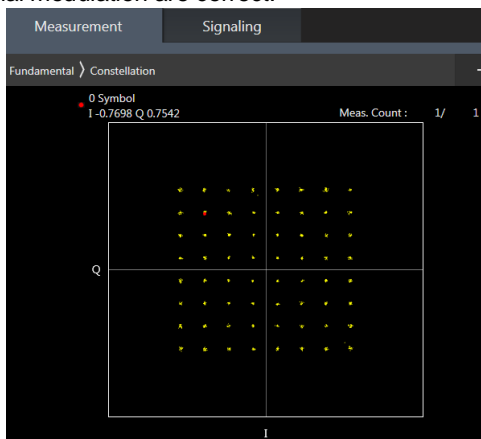
**UAT State 3**

Band		WCDMA IV			Tune-up Limit (dBm)
TX Channel		1312	1413	1513	
Rx Channel		1537	1638	1738	
Frequency (MHz)		1712.4	1732.6	1752.6	
3GPP Rel 99	AMR 12.2Kbps	16.20	16.22	16.36	17.00
3GPP Rel 99	RMC 12.2Kbps	16.21	16.25	16.38	17.00
3GPP Rel 6	HSDPA Subtest-1	15.24	15.26	15.42	16.00
3GPP Rel 6	HSDPA Subtest-2	15.23	15.24	15.41	16.00
3GPP Rel 6	HSDPA Subtest-3	14.72	14.74	14.92	15.50
3GPP Rel 6	HSDPA Subtest-4	14.73	14.75	14.92	15.50
3GPP Rel 8	DC-HSDPA Subtest-1	15.21	15.16	15.41	16.00
3GPP Rel 8	DC-HSDPA Subtest-2	15.16	15.15	15.36	16.00
3GPP Rel 8	DC-HSDPA Subtest-3	14.71	14.64	14.92	15.50
3GPP Rel 8	DC-HSDPA Subtest-4	14.64	14.75	14.86	15.50
3GPP Rel 6	HSUPA Subtest-1	15.26	15.28	15.24	16.00
3GPP Rel 6	HSUPA Subtest-2	13.21	13.25	13.30	14.00
3GPP Rel 6	HSUPA Subtest-3	14.25	14.26	14.28	15.00
3GPP Rel 6	HSUPA Subtest-4	13.24	13.29	13.31	14.00
3GPP Rel 6	HSUPA Subtest-5	15.30	15.27	15.22	16.00

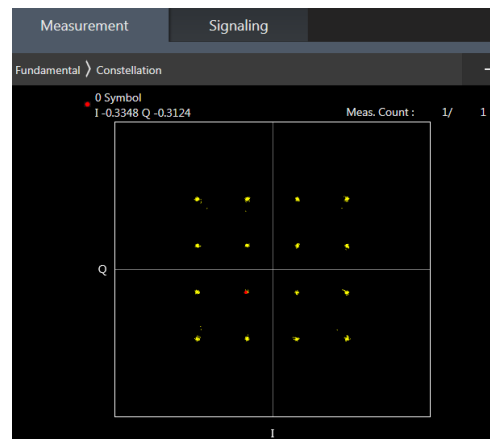
**<LTE Conducted Power>**

**General Note:**

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are  $\leq 0.8$  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  $\leq 1.45$  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  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4/B5/B12/B17/B26/B71 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE band 2/4/5/17 SAR test was covered by Band 25/66/26/12; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
  - a. the maximum output power, including tolerance, for the smaller band is  $\leq$  the larger band to qualify for the SAR test exclusion
  - b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band
10. According to 2017 TCB workshop, for 64 QAM and 16 QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



**64QAM**



**16QAM**



LAT State 1

<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	22.83	22.91	22.22	24	0
20	QPSK	1	49	22.81	22.88	22.79		
20	QPSK	1	99	22.81	22.22	22.00		
20	QPSK	50	0	21.89	21.90	21.76	23	1
20	QPSK	50	24	21.89	21.97	21.86		
20	QPSK	50	50	21.90	21.89	21.83		
20	QPSK	100	0	21.96	21.93	21.75	23	1
20	16QAM	1	0	22.03	22.23	21.50		
20	16QAM	1	49	22.14	22.21	22.13		
20	16QAM	1	99	22.15	21.56	21.01	22	2
20	16QAM	50	0	20.99	21.07	20.88		
20	16QAM	50	24	21.01	21.10	20.99		
20	16QAM	50	50	21.06	21.02	20.92	22	2
20	16QAM	100	0	21.06	21.04	20.84		
20	64QAM	1	0	21.04	21.22	20.46		
20	64QAM	1	49	21.14	21.18	21.11	22	2
20	64QAM	1	99	21.11	20.54	20.01		
20	64QAM	50	0	20.03	20.09	19.93		
20	64QAM	50	24	20.03	20.10	20.03	21	3
20	64QAM	50	50	20.08	20.05	19.96		
20	64QAM	100	0	20.07	20.07	19.86		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.63	22.77	22.41	24	0
15	QPSK	1	37	22.59	22.77	22.69		
15	QPSK	1	74	22.56	22.41	22.02		
15	QPSK	36	0	21.70	21.84	21.84	23	1
15	QPSK	36	20	21.71	21.84	21.84		
15	QPSK	36	39	21.64	21.83	21.79		
15	QPSK	75	0	21.67	21.82	21.81	23	1
15	16QAM	1	0	21.91	22.10	21.71		
15	16QAM	1	37	21.93	22.09	21.99		
15	16QAM	1	74	21.89	21.77	21.01	22	2
15	16QAM	36	0	20.82	20.98	20.96		
15	16QAM	36	20	20.86	21.02	20.94		
15	16QAM	36	39	20.80	20.96	20.88	22	2
15	16QAM	75	0	20.80	20.99	20.92		
15	64QAM	1	0	20.89	21.11	20.65		
15	64QAM	1	37	20.91	21.07	21.01	22	2
15	64QAM	1	74	20.84	20.75	20.02		
15	64QAM	36	0	19.87	20.03	20.07		
15	64QAM	36	20	19.90	20.10	20.05	21	3
15	64QAM	36	39	19.86	20.02	19.95		
15	64QAM	75	0	19.82	20.04	19.98		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	22.75	22.88	22.76	24	0
10	QPSK	1	25	22.62	22.79	22.50		
10	QPSK	1	49	22.63	22.76	22.01		
10	QPSK	25	0	21.71	21.84	21.84	23	1



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10	QPSK	25	12	21.72	21.84	21.84		
10	QPSK	25	25	21.67	21.81	21.81		
10	QPSK	50	0	21.69	21.86	21.83		
10	16QAM	1	0	21.96	22.17	22.02		
10	16QAM	1	25	21.90	22.10	21.81	23	1
10	16QAM	1	49	21.93	22.09	21.21		
10	16QAM	25	0	20.81	20.98	20.93		
10	16QAM	25	12	20.83	20.98	20.91	22	2
10	16QAM	25	25	20.79	20.93	20.88		
10	16QAM	50	0	20.81	20.98	20.90		
10	64QAM	1	0	20.95	21.18	21.05		
10	64QAM	1	25	20.89	21.10	20.89	22	2
10	64QAM	1	49	20.91	21.11	20.26		
10	64QAM	25	0	19.84	19.99	19.96		
10	64QAM	25	12	19.85	20.05	19.96	21	3
10	64QAM	25	25	19.79	20.03	19.90		
10	64QAM	50	0	19.84	20.01	19.94		
Channel				18625	18900	19175	Tune-up limit	MPR
Frequency (MHz)				1852.5	1880	1907.5	(dBm)	(dB)
5	QPSK	1	0	22.76	22.77	22.74		
5	QPSK	1	12	22.65	22.80	22.32	24	0
5	QPSK	1	24	22.61	22.77	22.24		
5	QPSK	12	0	21.72	21.84	21.81		
5	QPSK	12	7	21.73	21.89	21.84	23	1
5	QPSK	12	13	21.69	21.84	21.78		
5	QPSK	25	0	21.70	21.83	21.82		
5	16QAM	1	0	21.89	22.08	21.92		
5	16QAM	1	12	21.90	22.09	21.63	23	1
5	16QAM	1	24	21.86	22.04	21.56		
5	16QAM	12	0	20.83	21.00	20.87		
5	16QAM	12	7	20.84	21.01	20.92	22	2
5	16QAM	12	13	20.82	20.99	20.83		
5	16QAM	25	0	20.81	20.93	20.86		
5	64QAM	1	0	20.87	21.09	20.96		
5	64QAM	1	12	20.90	21.10	20.69	22	2
5	64QAM	1	24	20.86	21.04	20.65		
5	64QAM	12	0	19.91	20.10	19.97		
5	64QAM	12	7	19.94	20.08	20.01	21	3
5	64QAM	12	13	19.90	20.13	19.96		
5	64QAM	25	0	19.83	19.98	19.91		
Channel				18615	18900	19185	Tune-up limit	MPR
Frequency (MHz)				1851.5	1880	1908.5	(dBm)	(dB)
3	QPSK	1	0	22.64	22.78	22.49		
3	QPSK	1	8	22.67	22.80	22.16	24	0
3	QPSK	1	14	22.62	22.78	22.10		
3	QPSK	8	0	21.71	21.84	21.81		
3	QPSK	8	4	21.74	21.87	21.83	23	1
3	QPSK	8	7	21.71	21.83	21.80		
3	QPSK	15	0	21.72	21.86	21.84		
3	16QAM	1	0	21.87	22.07	21.76		
3	16QAM	1	8	21.93	22.11	21.48	23	1
3	16QAM	1	14	21.87	22.07	21.39		
3	16QAM	8	0	20.84	21.00	20.87		
3	16QAM	8	4	20.88	21.06	20.88	22	2
3	16QAM	8	7	20.85	21.02	20.88		
3	16QAM	15	0	20.84	20.97	20.93		



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3	64QAM	1	0	20.87	21.07	20.82	22	2
3	64QAM	1	8	20.92	21.09	20.53		
3	64QAM	1	14	20.89	21.13	20.49		
3	64QAM	8	0	19.87	20.08	19.94	21	3
3	64QAM	8	4	19.93	20.20	19.97		
3	64QAM	8	7	19.90	20.10	19.94		
3	64QAM	15	0	19.82	20.08	19.95		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.72	22.77	22.11	24	0
1.4	QPSK	1	3	22.79	22.86	22.08		
1.4	QPSK	1	5	22.70	22.77	22.02		
1.4	QPSK	3	0	22.76	22.81	22.05		
1.4	QPSK	3	1	22.85	22.85	22.07		
1.4	QPSK	3	3	22.78	22.80	22.01		
1.4	QPSK	6	0	21.79	21.83	21.81	23	1
1.4	16QAM	1	0	21.94	22.07	21.37	23	1
1.4	16QAM	1	3	22.05	22.15	21.38		
1.4	16QAM	1	5	21.93	22.05	21.29		
1.4	16QAM	3	0	21.77	21.89	21.19		
1.4	16QAM	3	1	21.86	21.94	21.21		
1.4	16QAM	3	3	21.76	21.87	21.13		
1.4	16QAM	6	0	20.95	21.02	20.91	22	2
1.4	64QAM	1	0	20.95	21.05	20.45	22	2
1.4	64QAM	1	3	21.02	21.13	20.43		
1.4	64QAM	1	5	20.97	21.03	20.36		
1.4	64QAM	3	0	20.96	21.06	20.44		
1.4	64QAM	3	1	21.04	21.11	20.45		
1.4	64QAM	3	3	20.96	21.07	20.38		
1.4	64QAM	6	0	19.90	19.99	19.88	21	3



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	23.01	23.08	23.15	24	0
20	QPSK	1	49	23.05	23.04	23.17		
20	QPSK	1	99	23.10	23.09	23.20		
20	QPSK	50	0	22.11	22.08	22.18	23	1
20	QPSK	50	24	22.10	22.08	22.26		
20	QPSK	50	50	22.12	22.09	22.27		
20	QPSK	100	0	21.99	22.09	22.22	23	1
20	16QAM	1	0	22.18	22.35	22.45		
20	16QAM	1	49	22.38	22.38	22.42		
20	16QAM	1	99	22.35	22.22	22.54	22	2
20	16QAM	50	0	21.14	21.31	21.25		
20	16QAM	50	24	21.24	21.21	21.35		
20	16QAM	50	50	21.29	21.14	21.32	22	2
20	16QAM	100	0	21.21	21.25	21.32		
20	64QAM	1	0	21.26	21.45	21.40		
20	64QAM	1	49	21.38	21.34	21.38	22	2
20	64QAM	1	99	21.41	21.24	21.50		
20	64QAM	50	0	20.27	20.33	20.26		
20	64QAM	50	24	20.28	20.30	20.38	21	3
20	64QAM	50	50	20.33	20.23	20.33		
20	64QAM	100	0	20.26	20.29	20.33		
Channel				20025	20175	20325		
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.97	23.05	23.06	24	0
15	QPSK	1	37	23.02	23.01	23.17		
15	QPSK	1	74	23.10	23.03	23.15		
15	QPSK	36	0	22.09	21.98	22.11	23	1
15	QPSK	36	20	22.05	21.99	22.25		
15	QPSK	36	39	22.04	22.01	22.25		
15	QPSK	75	0	21.98	22.07	22.14	23	1
15	16QAM	1	0	22.14	22.35	22.35		
15	16QAM	1	37	22.29	22.32	22.42		
15	16QAM	1	74	22.29	22.15	22.52	22	2
15	16QAM	36	0	21.11	21.30	21.20		
15	16QAM	36	20	21.17	21.20	21.28		
15	16QAM	36	39	21.20	21.12	21.29	22	2
15	16QAM	75	0	21.15	21.22	21.27		
15	64QAM	1	0	21.26	21.37	21.33		
15	64QAM	1	37	21.28	21.27	21.28	22	2
15	64QAM	1	74	21.36	21.14	21.47		
15	64QAM	36	0	20.25	20.26	20.18		
15	64QAM	36	20	20.28	20.21	20.34	21	3
15	64QAM	36	39	20.28	20.14	20.25		
15	64QAM	75	0	20.26	20.19	20.28		
Channel				20000	20175	20350		
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	22.95	23.06	23.10	24	0
10	QPSK	1	25	22.98	23.00	23.10		
10	QPSK	1	49	23.03	23.00	23.20		
10	QPSK	25	0	22.01	21.99	22.17	23	1
10	QPSK	25	12	22.08	22.04	22.16		





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10	QPSK	25	25	22.04	22.02	22.19		
10	QPSK	50	0	21.98	22.06	22.14		
10	16QAM	1	0	22.11	22.28	22.38		
10	16QAM	1	25	22.30	22.28	22.36	23	1
10	16QAM	1	49	22.32	22.13	22.48		
10	16QAM	25	0	21.06	21.28	21.17		
10	16QAM	25	12	21.23	21.21	21.31	22	2
10	16QAM	25	25	21.29	21.05	21.32		
10	16QAM	50	0	21.17	21.25	21.22		
10	64QAM	1	0	21.26	21.39	21.36		
10	64QAM	1	25	21.35	21.24	21.37	22	2
10	64QAM	1	49	21.39	21.23	21.48		
10	64QAM	25	0	20.17	20.24	20.24		
10	64QAM	25	12	20.20	20.23	20.28	21	3
10	64QAM	25	25	20.31	20.19	20.24		
10	64QAM	50	0	20.18	20.24	20.26		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	22.99	22.98	23.12		
5	QPSK	1	12	23.02	22.97	23.11	24	0
5	QPSK	1	24	23.10	23.01	23.18		
5	QPSK	12	0	22.07	22.04	22.10		
5	QPSK	12	7	22.10	21.98	22.21	23	1
5	QPSK	12	13	22.11	22.09	22.17		
5	QPSK	25	0	21.89	22.07	22.19		
5	16QAM	1	0	22.16	22.28	22.38		
5	16QAM	1	12	22.32	22.36	22.38	23	1
5	16QAM	1	24	22.34	22.18	22.44		
5	16QAM	12	0	21.05	21.27	21.25		
5	16QAM	12	7	21.14	21.12	21.28	22	2
5	16QAM	12	13	21.21	21.05	21.22		
5	16QAM	25	0	21.18	21.22	21.31		
5	64QAM	1	0	21.20	21.37	21.34		
5	64QAM	1	12	21.29	21.27	21.32	22	2
5	64QAM	1	24	21.34	21.19	21.49		
5	64QAM	12	0	20.22	20.30	20.23		
5	64QAM	12	7	20.22	20.30	20.34	21	3
5	64QAM	12	13	20.32	20.17	20.25		
5	64QAM	25	0	20.20	20.20	20.24		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	22.98	23.08	23.09		
3	QPSK	1	8	23.03	22.97	23.10	24	0
3	QPSK	1	14	23.08	23.08	23.13		
3	QPSK	8	0	22.07	22.02	22.17		
3	QPSK	8	4	22.06	22.07	22.18	23	1
3	QPSK	8	7	22.07	22.01	22.23		
3	QPSK	15	0	21.89	22.05	22.15		
3	16QAM	1	0	22.13	22.26	22.36		
3	16QAM	1	8	22.32	22.38	22.38	23	1
3	16QAM	1	14	22.27	22.14	22.49		
3	16QAM	8	0	21.05	21.30	21.22		
3	16QAM	8	4	21.21	21.20	21.25	22	2
3	16QAM	8	7	21.23	21.09	21.23		
3	16QAM	15	0	21.11	21.24	21.28		
3	64QAM	1	0	21.20	21.41	21.39	22	2



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3	64QAM	1	8	21.31	21.33	21.28	21	3
3	64QAM	1	14	21.40	21.24	21.48		
3	64QAM	8	0	20.25	20.23	20.22		
3	64QAM	8	4	20.25	20.27	20.28		
3	64QAM	8	7	20.28	20.20	20.32		
3	64QAM	15	0	20.26	20.21	20.33		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.87	23.01	23.08	24	0
1.4	QPSK	1	3	22.98	23.10	23.17		
1.4	QPSK	1	5	22.88	23.03	23.07		
1.4	QPSK	3	0	22.95	23.09	23.15		
1.4	QPSK	3	1	22.99	23.14	23.19		
1.4	QPSK	3	3	22.95	23.09	23.16		
1.4	QPSK	6	0	21.96	22.08	22.16	23	1
1.4	16QAM	1	0	22.14	22.33	22.39	23	1
1.4	16QAM	1	3	22.23	22.40	22.48		
1.4	16QAM	1	5	22.16	22.30	22.40		
1.4	16QAM	3	0	21.96	22.16	22.21		
1.4	16QAM	3	1	22.01	22.20	22.25		
1.4	16QAM	3	3	21.96	22.11	22.20		
1.4	16QAM	6	0	21.10	21.27	21.32	22	2
1.4	64QAM	1	0	21.14	21.35	21.40	22	2
1.4	64QAM	1	3	21.20	21.39	21.47		
1.4	64QAM	1	5	21.11	21.30	21.39		
1.4	64QAM	3	0	21.13	21.33	21.41		
1.4	64QAM	3	1	21.19	21.36	21.45		
1.4	64QAM	3	3	21.11	21.30	21.39		
1.4	64QAM	6	0	20.06	20.21	20.30	21	3



<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	23.13	23.18	23.04	24	0
10	QPSK	1	25	23.10	23.10	22.99		
10	QPSK	1	49	23.14	23.10	23.01		
10	QPSK	25	0	22.17	22.22	22.08	23	1
10	QPSK	25	12	22.21	22.18	22.07		
10	QPSK	25	25	22.21	22.08	22.02		
10	QPSK	50	0	22.24	22.16	22.07	23	1
10	16QAM	1	0	22.52	22.36	22.35		
10	16QAM	1	25	22.38	22.36	22.20		
10	16QAM	1	49	22.31	22.38	22.18	22	2
10	16QAM	25	0	21.29	21.23	21.16		
10	16QAM	25	12	21.37	21.23	21.11		
10	16QAM	25	25	21.24	21.19	21.05	22	2
10	16QAM	50	0	21.33	21.23	21.14		
10	64QAM	1	0	21.46	21.34	21.33		
10	64QAM	1	25	21.32	21.30	21.21	22	2
10	64QAM	1	49	21.25	21.37	21.17		
10	64QAM	25	0	20.28	20.23	20.17		
10	64QAM	25	12	20.36	20.24	20.15	21	3
10	64QAM	25	25	20.26	20.18	20.08		
10	64QAM	50	0	20.34	20.24	20.13		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	23.12	23.08	22.96	24	0
5	QPSK	1	12	23.09	23.09	22.90		
5	QPSK	1	24	23.06	23.01	22.97		
5	QPSK	12	0	22.08	22.10	22.07	23	1
5	QPSK	12	7	22.19	22.15	21.98		
5	QPSK	12	13	22.16	22.08	22.01		
5	QPSK	25	0	22.16	22.10	22.05	23	1
5	16QAM	1	0	22.43	22.34	22.29		
5	16QAM	1	12	22.33	22.28	22.12		
5	16QAM	1	24	22.28	22.29	22.16	22	2
5	16QAM	12	0	21.27	21.16	21.11		
5	16QAM	12	7	21.37	21.15	21.08		
5	16QAM	12	13	21.20	21.13	21.01	22	2
5	16QAM	25	0	21.33	21.14	21.12		
5	64QAM	1	0	21.37	21.31	21.27		
5	64QAM	1	12	21.29	21.24	21.18	22	2
5	64QAM	1	24	21.23	21.36	21.09		
5	64QAM	12	0	20.28	20.20	20.10		
5	64QAM	12	7	20.28	20.17	20.10	21	3
5	64QAM	12	13	20.19	20.10	20.08		
5	64QAM	25	0	20.34	20.14	20.11		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	23.05	23.13	23.00	24	0
3	QPSK	1	8	23.08	23.10	22.98		
3	QPSK	1	14	23.13	23.07	23.00		
3	QPSK	8	0	22.13	22.12	22.08	23	1
3	QPSK	8	4	22.17	22.14	22.04		



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3	QPSK	8	7	22.11	22.01	21.98		
3	QPSK	15	0	22.21	22.14	22.00		
3	16QAM	1	0	22.46	22.28	22.25	23	1
3	16QAM	1	8	22.28	22.34	22.16		
3	16QAM	1	14	22.30	22.31	22.18		
3	16QAM	8	0	21.24	21.14	21.12	22	2
3	16QAM	8	4	21.33	21.19	21.03		
3	16QAM	8	7	21.23	21.10	20.95		
3	16QAM	15	0	21.26	21.18	21.05		
3	64QAM	1	0	21.39	21.28	21.30	22	2
3	64QAM	1	8	21.32	21.23	21.13		
3	64QAM	1	14	21.19	21.34	21.11		
3	64QAM	8	0	20.26	20.18	20.17	21	3
3	64QAM	8	4	20.34	20.14	20.10		
3	64QAM	8	7	20.23	20.17	20.04		
3	64QAM	15	0	20.34	20.21	20.05		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	23.03	23.03	22.97	24	0
1.4	QPSK	1	3	23.13	23.10	23.03		
1.4	QPSK	1	5	23.03	23.01	22.97		
1.4	QPSK	3	0	23.11	23.09	23.03		
1.4	QPSK	3	1	23.14	23.12	23.08		
1.4	QPSK	3	3	23.11	23.07	23.02		
1.4	QPSK	6	0	22.13	22.09	22.05	23	1
1.4	16QAM	1	0	22.43	22.25	22.15	23	1
1.4	16QAM	1	3	22.50	22.31	22.19		
1.4	16QAM	1	5	22.42	22.27	22.12		
1.4	16QAM	3	0	22.22	22.08	21.98		
1.4	16QAM	3	1	22.25	22.13	22.04		
1.4	16QAM	3	3	22.19	22.08	21.99		
1.4	16QAM	6	0	21.29	21.19	21.18	22	2
1.4	64QAM	1	0	21.40	21.24	21.14	22	2
1.4	64QAM	1	3	21.45	21.26	21.21		
1.4	64QAM	1	5	21.39	21.21	21.15		
1.4	64QAM	3	0	21.38	21.24	21.16		
1.4	64QAM	3	1	21.40	21.28	21.22		
1.4	64QAM	3	3	21.37	21.20	21.18		
1.4	64QAM	6	0	20.23	20.14	20.11	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	23.23	23.25	23.37	24	0
20	QPSK	1	49	23.26	23.30	23.38		
20	QPSK	1	99	23.37	23.37	23.47		
20	QPSK	50	0	22.32	22.33	22.44	23	1
20	QPSK	50	24	22.33	22.37	22.47		
20	QPSK	50	50	22.47	22.40	22.48		
20	QPSK	100	0	22.43	22.38	22.44	23	1
20	16QAM	1	0	22.65	22.62	22.78		
20	16QAM	1	49	22.62	22.70	22.76		
20	16QAM	1	99	22.70	22.83	22.92	22	2
20	16QAM	50	0	21.44	21.43	21.54		
20	16QAM	50	24	21.46	21.46	21.59		
20	16QAM	50	50	21.52	21.50	21.59	22	2
20	16QAM	100	0	21.53	21.47	21.54		
20	64QAM	1	0	21.59	21.50	21.66		
20	64QAM	1	49	21.53	21.56	21.65	22	2
20	64QAM	1	99	21.61	21.73	21.83		
20	64QAM	50	0	20.45	20.44	20.55		
20	64QAM	50	24	20.47	20.47	20.55	21	3
20	64QAM	50	50	20.53	20.52	20.58		
20	64QAM	100	0	20.54	20.48	20.57		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	23.16	23.20	23.35	24	0
15	QPSK	1	37	23.22	23.20	23.34		
15	QPSK	1	74	23.29	23.33	23.40		
15	QPSK	36	0	22.30	22.23	22.43	23	1
15	QPSK	36	20	22.25	22.30	22.47		
15	QPSK	36	39	22.47	22.35	22.48		
15	QPSK	75	0	22.33	22.30	22.44	23	1
15	16QAM	1	0	22.58	22.53	22.69		
15	16QAM	1	37	22.62	22.69	22.71		
15	16QAM	1	74	22.60	22.74	22.85	22	2
15	16QAM	36	0	21.39	21.43	21.54		
15	16QAM	36	20	21.44	21.45	21.51		
15	16QAM	36	39	21.46	21.45	21.56	22	2
15	16QAM	75	0	21.43	21.41	21.49		
15	64QAM	1	0	21.55	21.50	21.59		
15	64QAM	1	37	21.48	21.52	21.59	22	2
15	64QAM	1	74	21.52	21.72	21.80		
15	64QAM	36	0	20.42	20.34	20.54		
15	64QAM	36	20	20.44	20.38	20.46	21	3
15	64QAM	36	39	20.44	20.47	20.55		
15	64QAM	75	0	20.45	20.48	20.47		
Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	23.16	23.23	23.27	24	0
10	QPSK	1	25	23.19	23.25	23.30		
10	QPSK	1	49	23.31	23.36	23.46		
10	QPSK	25	0	22.26	22.23	22.35	23	1
10	QPSK	25	12	22.33	22.32	22.46		



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10	QPSK	25	25	22.38	22.34	22.48		
10	QPSK	50	0	22.41	22.28	22.44		
10	16QAM	1	0	22.62	22.57	22.78	23	1
10	16QAM	1	25	22.57	22.70	22.68		
10	16QAM	1	49	22.65	22.82	22.82		
10	16QAM	25	0	21.35	21.33	21.50	22	2
10	16QAM	25	12	21.39	21.39	21.57		
10	16QAM	25	25	21.50	21.42	21.58		
10	16QAM	50	0	21.43	21.43	21.45		
10	64QAM	1	0	21.52	21.44	21.63	22	2
10	64QAM	1	25	21.53	21.52	21.55		
10	64QAM	1	49	21.59	21.63	21.75		
10	64QAM	25	0	20.42	20.43	20.52	21	3
10	64QAM	25	12	20.37	20.39	20.46		
10	64QAM	25	25	20.43	20.49	20.49		
10	64QAM	50	0	20.49	20.43	20.48		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	23.17	23.17	23.32	24	0
5	QPSK	1	12	23.24	23.30	23.28		
5	QPSK	1	24	23.27	23.37	23.45		
5	QPSK	12	0	22.29	22.28	22.44	23	1
5	QPSK	12	7	22.28	22.28	22.41		
5	QPSK	12	13	22.45	22.30	22.43		
5	QPSK	25	0	22.41	22.31	22.38		
5	16QAM	1	0	22.65	22.56	22.68	23	1
5	16QAM	1	12	22.60	22.60	22.67		
5	16QAM	1	24	22.66	22.83	22.86		
5	16QAM	12	0	21.42	21.43	21.54	22	2
5	16QAM	12	7	21.36	21.38	21.55		
5	16QAM	12	13	21.50	21.41	21.53		
5	16QAM	25	0	21.48	21.45	21.52		
5	64QAM	1	0	21.57	21.43	21.64	22	2
5	64QAM	1	12	21.46	21.51	21.61		
5	64QAM	1	24	21.54	21.69	21.80		
5	64QAM	12	0	20.41	20.43	20.48	21	3
5	64QAM	12	7	20.43	20.38	20.55		
5	64QAM	12	13	20.51	20.49	20.51		
5	64QAM	25	0	20.48	20.47	20.50		



<LTE Band 12>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23060	23095	23130		0
Frequency (MHz)				704	707.5	711		
10	QPSK	1	0	22.92	23.05	23.07		
10	QPSK	1	25	23.06	23.11	23.08	24	0
10	QPSK	1	49	23.11	23.12	23.11		
10	QPSK	25	0	22.12	22.19	22.15		
10	QPSK	25	12	22.23	22.18	22.17	23	1
10	QPSK	25	25	22.20	22.17	22.14		
10	QPSK	50	0	22.18	22.17	22.14		
10	16QAM	1	0	22.12	22.20	22.31	23	1
10	16QAM	1	25	22.24	22.42	22.32		
10	16QAM	1	49	22.45	22.30	22.19		
10	16QAM	25	0	21.14	21.21	21.16	22	2
10	16QAM	25	12	21.25	21.28	21.15		
10	16QAM	25	25	21.26	21.17	21.08		
10	16QAM	50	0	21.24	21.22	21.15	22	2
10	64QAM	1	0	21.06	21.15	21.29		
10	64QAM	1	25	21.22	21.40	21.26		
10	64QAM	1	49	21.39	21.25	21.16	21	3
10	64QAM	25	0	20.14	20.26	20.17		
10	64QAM	25	12	20.26	20.25	20.18		
10	64QAM	25	25	20.25	20.20	20.14	21	3
10	64QAM	50	0	20.27	20.23	20.16		
Channel				23035	23095	23155		
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	22.90	23.04	22.97	24	0
5	QPSK	1	12	23.04	23.03	23.07		
5	QPSK	1	24	23.09	23.10	23.11		
5	QPSK	12	0	22.06	22.11	22.06	23	1
5	QPSK	12	7	22.19	22.17	22.17		
5	QPSK	12	13	22.15	22.15	22.13		
5	QPSK	25	0	22.15	22.14	22.14	23	1
5	16QAM	1	0	22.06	22.17	22.28		
5	16QAM	1	12	22.22	22.37	22.28		
5	16QAM	1	24	22.38	22.21	22.12	22	2
5	16QAM	12	0	21.11	21.15	21.08		
5	16QAM	12	7	21.24	21.28	21.06		
5	16QAM	12	13	21.16	21.10	21.08	22	2
5	16QAM	25	0	21.19	21.19	21.05		
5	64QAM	1	0	21.04	21.05	21.24		
5	64QAM	1	12	21.15	21.31	21.22	22	2
5	64QAM	1	24	21.33	21.16	21.06		
5	64QAM	12	0	20.14	20.22	20.07		
5	64QAM	12	7	20.16	20.17	20.14	21	3
5	64QAM	12	13	20.22	20.12	20.09		
5	64QAM	25	0	20.22	20.14	20.15		
Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	22.91	23.01	22.98	24	0
3	QPSK	1	8	23.05	23.11	23.06		
3	QPSK	1	14	23.03	23.09	23.06		
3	QPSK	8	0	22.11	22.15	22.14	23	1
3	QPSK	8	4	22.22	22.14	22.15		



3	QPSK	8	7	22.14	22.14	22.08		
3	QPSK	15	0	22.13	22.17	22.05		
3	16QAM	1	0	22.04	22.10	22.29	23	1
3	16QAM	1	8	22.21	22.42	22.22		
3	16QAM	1	14	22.39	22.30	22.10		
3	16QAM	8	0	21.10	21.11	21.09	22	2
3	16QAM	8	4	21.25	21.22	21.09		
3	16QAM	8	7	21.26	21.12	20.98		
3	16QAM	15	0	21.22	21.14	21.15		
3	64QAM	1	0	21.01	21.15	21.20	22	2
3	64QAM	1	8	21.21	21.34	21.20		
3	64QAM	1	14	21.38	21.18	21.09		
3	64QAM	8	0	20.14	20.26	20.17	21	3
3	64QAM	8	4	20.19	20.23	20.13		
3	64QAM	8	7	20.19	20.10	20.09		
3	64QAM	15	0	20.20	20.22	20.07		
Channel				23017	23095	23173		
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	22.97	22.93	22.99	24	0
1.4	QPSK	1	3	23.05	23.00	23.09		
1.4	QPSK	1	5	22.98	22.93	23.02		
1.4	QPSK	3	0	23.01	22.99	23.02		
1.4	QPSK	3	1	23.08	23.04	23.11		
1.4	QPSK	3	3	23.04	23.00	23.05		
1.4	QPSK	6	0	22.10	22.10	22.16	23	1
1.4	16QAM	1	0	22.28	22.32	22.19	23	1
1.4	16QAM	1	3	22.29	22.42	22.24		
1.4	16QAM	1	5	22.25	22.34	22.15		
1.4	16QAM	3	0	22.11	22.16	22.05		
1.4	16QAM	3	1	22.14	22.18	22.11		
1.4	16QAM	3	3	22.09	22.12	22.04		
1.4	16QAM	6	0	21.18	21.23	21.20	22	2
1.4	64QAM	1	0	21.23	21.29	21.17	22	2
1.4	64QAM	1	3	21.25	21.36	21.21		
1.4	64QAM	1	5	21.20	21.30	21.13		
1.4	64QAM	3	0	21.25	21.30	21.19		
1.4	64QAM	3	1	21.29	21.34	21.23		
1.4	64QAM	3	3	21.22	21.29	21.17		
1.4	64QAM	6	0	20.12	20.17	20.15		





<LTE Band 13>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23230			24	0
Frequency (MHz)				782				
10	QPSK	1	0		22.93		24	0
10	QPSK	1	25		22.93			
10	QPSK	1	49		22.96			
10	QPSK	25	0		21.94		23	1
10	QPSK	25	12		21.96			
10	QPSK	25	25		21.93			
10	QPSK	50	0		21.97		23	1
10	16QAM	1	0		22.16			
10	16QAM	1	25		22.27			
10	16QAM	1	49		22.37		22	2
10	16QAM	25	0		21.09			
10	16QAM	25	12		21.07			
10	16QAM	25	25		21.04		22	2
10	16QAM	50	0		21.08			
10	64QAM	1	0		21.14			
10	64QAM	1	25		21.21		22	2
10	64QAM	1	49		21.31			
10	64QAM	25	0		20.09			
10	64QAM	25	12		20.11		21	3
10	64QAM	25	25		20.04			
10	64QAM	50	0		20.09			
Channel				23205	23230	23255	24	0
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	22.95	22.93	22.78	24	0
5	QPSK	1	12	22.95	22.90	22.87		
5	QPSK	1	24	22.93	22.89	22.86		
5	QPSK	12	0	22.02	21.99	21.85	23	1
5	QPSK	12	7	22.06	21.99	21.85		
5	QPSK	12	13	21.98	21.94	21.95		
5	QPSK	25	0	21.98	21.96	21.83	23	1
5	16QAM	1	0	22.13	22.23	22.16		
5	16QAM	1	12	22.26	22.28	22.25		
5	16QAM	1	24	22.28	22.24	22.27	22	2
5	16QAM	12	0	21.09	21.08	20.96		
5	16QAM	12	7	21.14	21.10	20.96		
5	16QAM	12	13	21.08	21.05	21.05	22	2
5	16QAM	25	0	21.06	21.07	20.92		
5	64QAM	1	0	21.12	21.21	21.09		
5	64QAM	1	12	21.22	21.21	21.18	22	2
5	64QAM	1	24	21.21	21.17	21.20		
5	64QAM	12	0	20.14	20.14	19.99		
5	64QAM	12	7	20.14	20.15	20.02	21	3
5	64QAM	12	13	20.14	20.10	20.10		
5	64QAM	25	0	20.07	20.03	19.94		



<LTE Band 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	23.01	22.98	22.98	24	0
10	QPSK	1	25	23.01	23.00	22.99		
10	QPSK	1	49	23.00	23.02	23.01		
10	QPSK	25	0	22.09	22.09	22.09	23	1
10	QPSK	25	12	22.11	22.10	22.10		
10	QPSK	25	25	22.10	22.12	22.10		
10	QPSK	50	0	22.10	22.09	22.10	23	1
10	16QAM	1	0	22.21	22.24	22.26		
10	16QAM	1	25	22.31	22.25	22.22		
10	16QAM	1	49	22.15	22.14	22.12	22	2
10	16QAM	25	0	21.19	21.19	21.13		
10	16QAM	25	12	21.18	21.15	21.14		
10	16QAM	25	25	21.13	21.10	21.08	22	2
10	16QAM	50	0	21.16	21.15	21.13		
10	64QAM	1	0	21.17	21.19	21.21		
10	64QAM	1	25	21.27	21.25	21.20	22	2
10	64QAM	1	49	21.11	21.11	21.05		
10	64QAM	25	0	20.16	20.16	20.15		
10	64QAM	25	12	20.21	20.20	20.19	21	3
10	64QAM	25	25	20.14	20.14	20.11		
10	64QAM	50	0	20.17	20.16	20.12		
Channel				23755	23790	23825	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	22.92	22.94	22.92	24	0
5	QPSK	1	12	22.95	22.91	22.93		
5	QPSK	1	24	22.91	22.97	22.92		
5	QPSK	12	0	22.04	22.09	22.06	23	1
5	QPSK	12	7	22.07	22.01	22.00		
5	QPSK	12	13	22.09	22.10	22.10		
5	QPSK	25	0	22.02	22.01	22.08	23	1
5	16QAM	1	0	22.16	22.20	22.18		
5	16QAM	1	12	22.21	22.18	22.21		
5	16QAM	1	24	22.13	22.04	22.05	22	2
5	16QAM	12	0	21.13	21.18	21.06		
5	16QAM	12	7	21.14	21.08	21.09		
5	16QAM	12	13	21.05	21.06	21.06	22	2
5	16QAM	25	0	21.06	21.06	21.11		
5	64QAM	1	0	21.17	21.12	21.21		
5	64QAM	1	12	21.21	21.19	21.14	22	2
5	64QAM	1	24	21.04	21.02	21.01		
5	64QAM	12	0	20.07	20.08	20.11		
5	64QAM	12	7	20.11	20.10	20.16	21	3
5	64QAM	12	13	20.07	20.13	20.11		
5	64QAM	25	0	20.10	20.13	20.05		



<LTE Band 25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	22.86	22.89	22.76		
20	QPSK	1	49	22.84	22.88	22.74	24	0
20	QPSK	1	99	22.83	22.92	22.75		
20	QPSK	50	0	21.84	21.88	21.79		
20	QPSK	50	24	21.96	21.94	21.82	23	1
20	QPSK	50	50	21.89	21.87	21.75		
20	QPSK	100	0	21.93	21.89	21.78		
20	16QAM	1	0	22.20	22.28	22.15	23	1
20	16QAM	1	49	22.19	22.25	22.08		
20	16QAM	1	99	22.23	22.31	21.87		
20	16QAM	50	0	20.98	21.05	20.93	22	2
20	16QAM	50	24	21.09	21.07	20.93		
20	16QAM	50	50	21.03	21.02	20.88		
20	16QAM	100	0	21.07	21.02	20.91	22	2
20	64QAM	1	0	21.20	21.26	21.11		
20	64QAM	1	49	21.17	21.23	21.03		
20	64QAM	1	99	21.17	21.27	20.91	22	2
20	64QAM	50	0	20.01	20.06	19.99		
20	64QAM	50	24	20.16	20.08	19.94		
20	64QAM	50	50	20.06	20.05	19.89	21	3
20	64QAM	100	0	20.08	20.11	19.93		
Channel				26115	26340	26615		
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	22.82	22.76	22.76		
15	QPSK	1	37	22.73	22.76	22.76	24	0
15	QPSK	1	74	22.74	22.82	22.68		
15	QPSK	36	0	21.84	21.82	21.68		
15	QPSK	36	20	21.88	21.84	21.72	23	1
15	QPSK	36	39	21.87	21.79	21.80		
15	QPSK	75	0	21.86	21.81	21.77		
15	16QAM	1	0	22.05	22.17	22.06	23	1
15	16QAM	1	37	22.09	22.17	22.05		
15	16QAM	1	74	22.14	22.20	21.77		
15	16QAM	36	0	20.92	21.00	20.93	22	2
15	16QAM	36	20	21.05	21.02	20.87		
15	16QAM	36	39	21.08	20.97	20.97		
15	16QAM	75	0	21.11	21.01	20.89	22	2
15	64QAM	1	0	21.05	21.16	21.11		
15	64QAM	1	37	21.15	21.22	21.10		
15	64QAM	1	74	21.11	21.24	20.89	22	2
15	64QAM	36	0	19.96	20.01	19.99		
15	64QAM	36	20	19.99	20.16	20.00		
15	64QAM	36	39	20.11	20.12	20.03	21	3
15	64QAM	75	0	20.10	20.09	19.94		
Channel				26090	26340	26640		
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	22.81	22.85	22.85		
10	QPSK	1	25	22.75	22.77	22.83	24	0
10	QPSK	1	49	22.75	22.89	22.83		
10	QPSK	25	0	21.78	21.77	21.89		
10	QPSK	25	12	21.80	21.80	21.89	23	1



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10	QPSK	25	25	21.72	21.76	21.82		
10	QPSK	50	0	21.77	21.77	21.87		
10	16QAM	1	0	22.14	22.22	22.12		
10	16QAM	1	25	22.07	22.15	22.07	23	1
10	16QAM	1	49	22.11	22.26	21.86		
10	16QAM	25	0	20.93	20.97	20.97		
10	16QAM	25	12	20.93	21.05	20.96	22	2
10	16QAM	25	25	20.87	20.93	20.87		
10	16QAM	50	0	20.90	20.94	20.98		
10	64QAM	1	0	21.09	21.28	21.11		
10	64QAM	1	25	21.05	21.21	21.07	22	2
10	64QAM	1	49	21.06	21.35	20.93		
10	64QAM	25	0	19.95	20.10	20.01		
10	64QAM	25	12	19.97	20.09	20.01	21	3
10	64QAM	25	25	19.93	20.06	19.97		
10	64QAM	50	0	19.92	20.06	20.03		
Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	22.74	22.86	22.84		
5	QPSK	1	12	22.75	22.81	22.85	24	0
5	QPSK	1	24	22.69	22.77	22.82		
5	QPSK	12	0	21.79	21.80	21.87		
5	QPSK	12	7	21.78	21.85	21.87	23	1
5	QPSK	12	13	21.76	21.80	21.84		
5	QPSK	25	0	21.76	21.78	21.83		
5	16QAM	1	0	22.05	22.23	22.00		
5	16QAM	1	12	22.08	22.19	22.01	23	1
5	16QAM	1	24	22.03	22.21	21.86		
5	16QAM	12	0	20.93	21.12	20.95		
5	16QAM	12	7	20.96	21.12	20.97	22	2
5	16QAM	12	13	20.94	20.98	20.89		
5	16QAM	25	0	20.90	21.04	20.91		
5	64QAM	1	0	21.05	21.20	21.05		
5	64QAM	1	12	21.06	21.23	21.01	22	2
5	64QAM	1	24	21.00	21.19	20.88		
5	64QAM	12	0	20.01	20.17	20.05		
5	64QAM	12	7	20.03	20.19	20.07	21	3
5	64QAM	12	13	20.00	20.15	19.97		
5	64QAM	25	0	19.92	20.07	19.96		
Channel				26055	26340	26675	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	22.74	22.77	22.84		
3	QPSK	1	8	22.77	22.78	22.85	24	0
3	QPSK	1	14	22.71	22.74	22.82		
3	QPSK	8	0	21.81	21.82	21.75		
3	QPSK	8	4	21.82	21.84	21.89	23	1
3	QPSK	8	7	21.79	21.81	21.76		
3	QPSK	15	0	21.80	21.82	21.82		
3	16QAM	1	0	22.04	22.13	21.90		
3	16QAM	1	8	22.07	22.20	21.85	23	1
3	16QAM	1	14	22.05	22.12	21.76		
3	16QAM	8	0	20.96	21.04	20.83		
3	16QAM	8	4	20.99	21.08	20.93	22	2
3	16QAM	8	7	20.95	21.02	20.90		
3	16QAM	15	0	20.92	21.07	20.88		
3	64QAM	1	0	21.02	21.21	21.02	22	2



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3	64QAM	1	8	21.04	21.22	20.99	21	3
3	64QAM	1	14	21.03	21.19	20.90		
3	64QAM	8	0	20.00	20.17	20.01		
3	64QAM	8	4	20.04	20.21	20.02		
3	64QAM	8	7	19.98	20.18	19.97		
3	64QAM	15	0	19.93	20.09	20.00		
Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	22.71	22.75	22.81	24	0
1.4	QPSK	1	3	22.79	22.84	22.89		
1.4	QPSK	1	5	22.71	22.74	22.75		
1.4	QPSK	3	0	22.75	22.78	22.73		
1.4	QPSK	3	1	22.84	22.86	22.83		
1.4	QPSK	3	3	22.79	22.80	22.80		
1.4	QPSK	6	0	21.77	21.78	21.80	23	1
1.4	16QAM	1	0	22.03	22.12	21.79	23	1
1.4	16QAM	1	3	22.10	22.18	21.82		
1.4	16QAM	1	5	22.00	22.10	21.74		
1.4	16QAM	3	0	21.85	21.92	21.64		
1.4	16QAM	3	1	21.91	21.96	21.70		
1.4	16QAM	3	3	21.83	21.89	21.62		
1.4	16QAM	6	0	20.96	21.01	20.85	22	2
1.4	64QAM	1	0	21.02	21.12	20.83	22	2
1.4	64QAM	1	3	21.09	21.26	20.90		
1.4	64QAM	1	5	21.00	21.20	20.77		
1.4	64QAM	3	0	21.02	21.19	20.94		
1.4	64QAM	3	1	21.06	21.25	20.98		
1.4	64QAM	3	3	21.03	21.18	20.92		
1.4	64QAM	6	0	19.90	20.05	19.92	21	3



<LTE Band 26>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26765	26865	26965		
Frequency (MHz)				821.5	831.5	841.5		
15	QPSK	1	0	23.20	23.21	23.14	24	0
15	QPSK	1	37	23.19	23.16	23.13		
15	QPSK	1	74	23.19	23.20	23.10		
15	QPSK	36	0	22.31	22.32	22.17	23	1
15	QPSK	36	20	22.30	22.26	22.16		
15	QPSK	36	39	22.31	22.18	22.13		
15	QPSK	75	0	22.25	22.26	22.20	23	1
15	16QAM	1	0	22.43	22.60	22.36		
15	16QAM	1	37	22.57	22.35	22.44		
15	16QAM	1	74	22.52	22.46	22.32	22	2
15	16QAM	36	0	21.39	21.35	21.22		
15	16QAM	36	20	21.44	21.29	21.33		
15	16QAM	36	39	21.45	21.25	21.22	22	2
15	16QAM	75	0	21.38	21.30	21.29		
15	64QAM	1	0	21.42	21.53	21.31		
15	64QAM	1	37	21.54	21.35	21.43	22	2
15	64QAM	1	74	21.49	21.43	21.33		
15	64QAM	36	0	20.41	20.37	20.24		
15	64QAM	36	20	20.44	20.31	20.34	21	3
15	64QAM	36	39	20.47	20.25	20.25		
15	64QAM	75	0	20.36	20.31	20.28		
Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	23.10	23.12	23.05	24	0
10	QPSK	1	25	23.19	23.12	23.13		
10	QPSK	1	49	23.17	23.15	23.03		
10	QPSK	25	0	22.31	22.25	22.14	23	1
10	QPSK	25	12	22.23	22.26	22.13		
10	QPSK	25	25	22.24	22.16	22.04		
10	QPSK	50	0	22.18	22.23	22.11	23	1
10	16QAM	1	0	22.41	22.56	22.31		
10	16QAM	1	25	22.54	22.28	22.44		
10	16QAM	1	49	22.47	22.41	22.28	22	2
10	16QAM	25	0	21.30	21.32	21.16		
10	16QAM	25	12	21.39	21.27	21.28		
10	16QAM	25	25	21.35	21.25	21.22	22	2
10	16QAM	50	0	21.30	21.26	21.27		
10	64QAM	1	0	21.36	21.43	21.28		
10	64QAM	1	25	21.54	21.34	21.35	22	2
10	64QAM	1	49	21.40	21.40	21.33		
10	64QAM	25	0	20.31	20.36	20.20		
10	64QAM	25	12	20.36	20.25	20.29	21	3
10	64QAM	25	25	20.46	20.23	20.22		
10	64QAM	50	0	20.27	20.25	20.24		
Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	23.15	23.13	23.04	24	0
5	QPSK	1	12	23.14	23.08	23.12		
5	QPSK	1	24	23.16	23.20	23.06		
5	QPSK	12	0	22.24	22.32	22.09	23	1
5	QPSK	12	7	22.23	22.25	22.12		



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5	QPSK	12	13	22.27	22.10	22.13		
5	QPSK	25	0	22.20	22.20	22.20		
5	16QAM	1	0	22.40	22.51	22.30	23	1
5	16QAM	1	12	22.47	22.27	22.39		
5	16QAM	1	24	22.48	22.40	22.25		
5	16QAM	12	0	21.37	21.28	21.14	22	2
5	16QAM	12	7	21.34	21.19	21.27		
5	16QAM	12	13	21.38	21.22	21.13		
5	16QAM	25	0	21.36	21.21	21.23		
5	64QAM	1	0	21.40	21.43	21.26	22	2
5	64QAM	1	12	21.45	21.25	21.37		
5	64QAM	1	24	21.42	21.41	21.24		
5	64QAM	12	0	20.36	20.30	20.16	21	3
5	64QAM	12	7	20.41	20.27	20.25		
5	64QAM	12	13	20.45	20.22	20.17		
5	64QAM	25	0	20.26	20.25	20.28		
Channel				26705	26865	27025		
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	23.18	23.17	23.07	24	0
3	QPSK	1	8	23.18	23.07	23.09		
3	QPSK	1	14	23.15	23.20	23.07		
3	QPSK	8	0	22.26	22.25	22.14	23	1
3	QPSK	8	4	22.20	22.18	22.15		
3	QPSK	8	7	22.24	22.11	22.11		
3	QPSK	15	0	22.25	22.20	22.20		
3	16QAM	1	0	22.36	22.58	22.26	23	1
3	16QAM	1	8	22.53	22.29	22.37		
3	16QAM	1	14	22.43	22.39	22.26		
3	16QAM	8	0	21.36	21.34	21.17	22	2
3	16QAM	8	4	21.35	21.19	21.28		
3	16QAM	8	7	21.35	21.21	21.12		
3	16QAM	15	0	21.36	21.22	21.25		
3	64QAM	1	0	21.36	21.43	21.24		
3	64QAM	1	8	21.46	21.32	21.42	22	2
3	64QAM	1	14	21.42	21.33	21.33		
3	64QAM	8	0	20.34	20.36	20.16		
3	64QAM	8	4	20.42	20.22	20.27	21	3
3	64QAM	8	7	20.40	20.24	20.21		
3	64QAM	15	0	20.27	20.24	20.23		
Channel				26697	26865	27033		
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	23.15	23.10	23.09	24	0
1.4	QPSK	1	3	23.18	23.17	23.16		
1.4	QPSK	1	5	23.12	23.11	23.11		
1.4	QPSK	3	0	23.18	23.14	23.14		
1.4	QPSK	3	1	23.20	23.19	23.18		
1.4	QPSK	3	3	23.17	23.16	23.15	23	1
1.4	QPSK	6	0	22.19	22.16	22.18	23	1
1.4	16QAM	1	0	22.34	22.30	22.24		
1.4	16QAM	1	3	22.43	22.38	22.31		
1.4	16QAM	1	5	22.34	22.30	22.22		
1.4	16QAM	3	0	22.17	22.15	22.10		
1.4	16QAM	3	1	22.23	22.19	22.15		
1.4	16QAM	3	3	22.17	22.12	22.10	22	2
1.4	16QAM	6	0	21.28	21.29	21.30		
1.4	64QAM	1	0	21.29	21.30	21.25		



1.4	64QAM	1	3	21.36	21.31	21.30		
1.4	64QAM	1	5	21.28	21.22	21.24		
1.4	64QAM	3	0	21.32	21.30	21.28		
1.4	64QAM	3	1	21.38	21.33	21.32		
1.4	64QAM	3	3	21.31	21.26	21.28		
1.4	64QAM	6	0	20.22	20.21	20.25		

<LTE Band 66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	23.14	23.20	23.14		
20	QPSK	1	49	23.17	23.21	23.16		
20	QPSK	1	99	23.01	23.05	22.98		
20	QPSK	50	0	22.10	22.14	22.08	23	1
20	QPSK	50	24	22.03	22.11	22.03		
20	QPSK	50	50	22.02	22.07	22.01		
20	QPSK	100	0	22.06	22.11	22.04	23	1
20	16QAM	1	0	22.42	22.47	22.52		
20	16QAM	1	49	22.53	22.43	22.44		
20	16QAM	1	99	22.37	22.45	22.26	22	2
20	16QAM	50	0	21.20	21.22	21.19		
20	16QAM	50	24	21.19	21.18	21.13		
20	16QAM	50	50	21.14	21.18	21.12	22	2
20	16QAM	100	0	21.17	21.19	21.16		
Channel				132047	132322	132597		
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	23.04	23.18	23.07	24	0
15	QPSK	1	37	23.12	23.20	23.12		
15	QPSK	1	74	22.95	22.97	22.94		
15	QPSK	36	0	22.10	22.04	21.99	23	1
15	QPSK	36	20	21.95	22.06	21.97		
15	QPSK	36	39	22.01	22.03	21.97		
15	QPSK	75	0	21.96	22.01	22.02	23	1
15	16QAM	1	0	22.38	22.41	22.47		
15	16QAM	1	37	22.50	22.34	22.38		
15	16QAM	1	74	22.33	22.43	22.16	22	2
15	16QAM	36	0	21.16	21.22	21.09		
15	16QAM	36	20	21.17	21.17	21.09		
15	16QAM	36	39	21.11	21.10	21.06	22	2
15	16QAM	75	0	21.17	21.15	21.10		
Channel				132022	132322	132622		
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	23.10	23.20	23.10	24	0
10	QPSK	1	25	23.07	23.20	23.06		
10	QPSK	1	49	23.01	23.02	22.89		
10	QPSK	25	0	22.03	22.13	22.08	23	1
10	QPSK	25	12	21.93	22.07	21.99		
10	QPSK	25	25	22.01	22.04	21.98		
10	QPSK	50	0	22.01	22.08	22.01	23	1
10	16QAM	1	0	22.37	22.38	22.43		
10	16QAM	1	25	22.50	22.40	22.42		
10	16QAM	1	49	22.32	22.38	22.20	23	1
10	16QAM	25	0	21.14	21.18	21.15		
10	16QAM	25	0	21.14	21.18	21.15	22	2





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10	16QAM	25	12	21.16	21.08	21.09		
10	16QAM	25	25	21.04	21.10	21.05		
10	16QAM	50	0	21.11	21.19	21.13		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	23.04	23.18	23.07	24	0
5	QPSK	1	12	23.07	23.13	23.12		
5	QPSK	1	24	22.99	22.96	22.88		
5	QPSK	12	0	22.08	22.11	22.02	23	1
5	QPSK	12	7	21.99	22.06	21.97		
5	QPSK	12	13	21.92	22.07	22.00		
5	QPSK	25	0	22.02	22.08	22.04		
5	16QAM	1	0	22.42	22.42	22.45	23	1
5	16QAM	1	12	22.53	22.36	22.39		
5	16QAM	1	24	22.30	22.39	22.25		
5	16QAM	12	0	21.10	21.18	21.18	22	2
5	16QAM	12	7	21.11	21.14	21.06		
5	16QAM	12	13	21.13	21.14	21.05		
5	16QAM	25	0	21.07	21.15	21.06		
Channel				131987	132322	132657		
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	23.09	23.16	23.07	24	0
3	QPSK	1	8	23.12	23.13	23.14		
3	QPSK	1	14	22.99	23.05	22.92		
3	QPSK	8	0	22.02	22.10	22.01	23	1
3	QPSK	8	4	22.02	22.01	22.00		
3	QPSK	8	7	21.95	21.98	21.93		
3	QPSK	15	0	22.02	22.10	22.02		
3	16QAM	1	0	22.37	22.38	22.50	23	1
3	16QAM	1	8	22.49	22.37	22.43		
3	16QAM	1	14	22.27	22.45	22.16		
3	16QAM	8	0	21.20	21.17	21.18	22	2
3	16QAM	8	4	21.10	21.12	21.09		
3	16QAM	8	7	21.06	21.15	21.05		
3	16QAM	15	0	21.15	21.18	21.08		
Channel				131979	132322	132665		
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	23.01	23.07	22.93	24	0
1.4	QPSK	1	3	23.11	23.15	23.05		
1.4	QPSK	1	5	23.01	23.02	22.91		
1.4	QPSK	3	0	23.08	23.10	23.00		
1.4	QPSK	3	1	23.13	23.18	23.07		
1.4	QPSK	3	3	23.08	23.11	23.03		
1.4	QPSK	6	0	22.07	22.10	22.00	23	1
1.4	16QAM	1	0	22.27	22.27	22.19	23	1
1.4	16QAM	1	3	22.35	22.35	22.30		
1.4	16QAM	1	5	22.26	22.27	22.16		
1.4	16QAM	3	0	22.08	22.11	22.02		
1.4	16QAM	3	1	22.13	22.16	22.07		
1.4	16QAM	3	3	22.06	22.10	22.02	22	2
1.4	16QAM	6	0	21.22	21.25	21.19		



<LTE Band 71>

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				133222	133322	133372		
Frequency (MHz)				673	683	688		
20	QPSK	1	0	22.83	22.86	22.85	24	0
20	QPSK	1	49	22.92	22.99	23.05		
20	QPSK	1	99	22.93	23.10	23.15		
20	QPSK	50	0	21.94	21.95	21.92	23	1
20	QPSK	50	24	21.93	21.88	22.06		
20	QPSK	50	50	21.98	21.98	22.09		
20	QPSK	100	0	22.03	21.93	22.02	23	1
20	16QAM	1	0	22.12	22.24	22.18		
20	16QAM	1	49	22.34	22.44	22.39		
20	16QAM	1	99	22.29	22.47	22.39	22	2
20	16QAM	50	0	21.04	21.15	20.98		
20	16QAM	50	24	21.03	21.12	21.04		
20	16QAM	50	50	21.06	21.20	21.35	22	2
20	16QAM	100	0	21.11	21.08	21.29		
20	64QAM	1	0	21.06	21.24	21.27		
20	64QAM	1	49	21.31	21.31	21.50	22	2
20	64QAM	1	99	21.30	21.35	21.54		
20	64QAM	50	0	20.10	20.03	20.20		
20	64QAM	50	24	20.06	20.08	20.36	21	3
20	64QAM	50	50	20.10	20.17	20.37		
20	64QAM	100	0	20.16	20.12	20.32		
Channel				133197	133297	133397	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				670.5	680.5	690.5		
15	QPSK	1	0	22.75	22.81	22.82	24	0
15	QPSK	1	37	22.88	22.97	22.99		
15	QPSK	1	74	22.84	23.04	23.06		
15	QPSK	36	0	21.91	21.92	21.92	23	1
15	QPSK	36	20	21.89	21.79	22.02		
15	QPSK	36	39	21.91	21.96	22.05		
15	QPSK	75	0	21.99	21.93	21.95	23	1
15	16QAM	1	0	22.09	22.21	22.15		
15	16QAM	1	37	22.31	22.37	22.37		
15	16QAM	1	74	22.25	22.41	22.32	22	2
15	16QAM	36	0	21.02	21.11	20.97		
15	16QAM	36	20	20.99	21.07	20.99		
15	16QAM	36	39	20.97	21.17	21.27	22	2
15	16QAM	75	0	21.09	21.01	21.29		
15	64QAM	1	0	21.06	21.17	21.19		
15	64QAM	1	37	21.22	21.22	21.40	22	2
15	64QAM	1	74	21.24	21.31	21.54		
15	64QAM	36	0	20.01	19.97	20.10		
15	64QAM	36	20	19.98	20.06	20.33	21	3
15	64QAM	36	39	20.00	20.09	20.28		
15	64QAM	75	0	20.13	20.12	20.30		
Channel				133172	133272	133422	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				668	678	693		
10	QPSK	1	0	22.79	22.84	22.81	24	0
10	QPSK	1	25	22.88	22.92	22.98		
10	QPSK	1	49	22.84	23.09	23.10		
10	QPSK	25	0	21.84	21.90	21.90	23	1
10	QPSK	25	12	21.90	21.79	22.05		



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10	QPSK	25	25	21.91	21.95	22.05		
10	QPSK	50	0	22.00	21.84	21.92		
10	16QAM	1	0	22.06	22.18	22.08	23	1
10	16QAM	1	25	22.34	22.38	22.32		
10	16QAM	1	49	22.22	22.39	22.29		
10	16QAM	25	0	20.95	21.15	20.96	22	2
10	16QAM	25	12	20.93	21.07	21.02		
10	16QAM	25	25	20.97	21.18	21.33		
10	16QAM	50	0	21.11	21.08	21.27		
10	64QAM	1	0	20.97	21.22	21.23	22	2
10	64QAM	1	25	21.25	21.23	21.40		
10	64QAM	1	49	21.30	21.32	21.50		
10	64QAM	25	0	20.03	19.97	20.19	21	3
10	64QAM	25	12	19.99	20.02	20.33		
10	64QAM	25	25	20.05	20.13	20.35		
10	64QAM	50	0	20.08	20.07	20.29		
Channel				133147	133247	133447		
Frequency (MHz)				665.5	675.5	695.5		
5	QPSK	1	0	22.82	22.84	22.82	24	0
5	QPSK	1	12	22.90	22.92	23.01		
5	QPSK	1	24	22.87	23.08	23.05		
5	QPSK	12	0	21.94	21.92	21.83	23	1
5	QPSK	12	7	21.84	21.78	22.05		
5	QPSK	12	13	21.91	21.90	22.05		
5	QPSK	25	0	22.00	21.88	21.94		
5	16QAM	1	0	22.09	22.17	22.11	23	1
5	16QAM	1	12	22.30	22.39	22.33		
5	16QAM	1	24	22.21	22.46	22.29		
5	16QAM	12	0	20.98	21.14	20.97	22	2
5	16QAM	12	7	20.96	21.04	20.98		
5	16QAM	12	13	21.06	21.20	21.25		
5	16QAM	25	0	21.01	21.07	21.22		
5	64QAM	1	0	20.96	21.21	21.21		
5	64QAM	1	12	21.28	21.22	21.41	22	2
5	64QAM	1	24	21.22	21.27	21.50		
5	64QAM	12	0	20.07	20.03	20.11		
5	64QAM	12	7	19.99	20.05	20.31	21	3
5	64QAM	12	13	20.09	20.15	20.30		
5	64QAM	25	0	20.16	20.07	20.32		



LAT State 4

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	17.82	17.87	17.63	18.5	0
20	QPSK	1	49	17.76	17.86	17.78		
20	QPSK	1	99	17.78	17.82	17.68		
20	QPSK	50	0	16.80	16.83	16.65	17.5	1
20	QPSK	50	24	16.80	16.87	16.76		
20	QPSK	50	50	16.80	16.80	16.74		
20	QPSK	100	0	16.84	16.83	16.66	17.5	1
20	16QAM	1	0	17.25	17.29	17.13		
20	16QAM	1	49	17.17	17.26	17.25		
20	16QAM	1	99	17.25	17.29	17.13	16.5	2
20	16QAM	50	0	15.90	15.94	15.78		
20	16QAM	50	24	15.90	15.96	15.88		
20	16QAM	50	50	15.94	15.94	15.81	16.5	2
20	16QAM	100	0	15.94	15.92	15.75		
20	64QAM	1	0	16.18	16.19	16.03		
20	64QAM	1	49	16.08	16.12	16.16	16.5	2
20	64QAM	1	99	16.16	16.16	15.99		
20	64QAM	50	0	14.90	14.94	14.82		
20	64QAM	50	24	14.93	14.99	14.90	15.5	3
20	64QAM	50	50	14.95	14.91	14.84		
20	64QAM	100	0	14.97	14.94	14.79		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	17.67	17.84	17.77	18.5	0
15	QPSK	1	37	17.68	17.83	17.73		
15	QPSK	1	74	17.58	17.79	17.69		
15	QPSK	36	0	16.69	16.86	16.74	17.5	1
15	QPSK	36	20	16.75	16.86	16.77		
15	QPSK	36	39	16.68	16.81	16.70		
15	QPSK	75	0	16.68	16.83	16.74	17.5	1
15	16QAM	1	0	17.08	17.25	17.27		
15	16QAM	1	37	17.07	17.24	17.19		
15	16QAM	1	74	17.01	17.27	17.16	17.5	1
15	16QAM	36	0	15.81	15.97	15.84		
15	16QAM	36	20	15.81	15.99	15.88		
15	16QAM	36	39	15.75	15.92	15.84	16.5	2
15	16QAM	75	0	15.80	15.94	15.83		
15	64QAM	1	0	15.99	16.17	16.14		
15	64QAM	1	37	15.99	16.14	16.11	16.5	2
15	64QAM	1	74	15.89	16.12	16.02		
15	64QAM	36	0	14.87	14.96	14.87		
15	64QAM	36	20	14.87	15.02	14.88	15.5	3
15	64QAM	36	39	14.81	14.97	14.82		
15	64QAM	75	0	14.79	14.97	14.84		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	17.78	17.85	17.78	18.5	0
10	QPSK	1	25	17.70	17.82	17.76		
10	QPSK	1	49	17.69	17.84	17.69		
10	QPSK	25	0	16.72	16.86	16.76	17.5	1



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10	QPSK	25	12	16.74	16.89	16.76		
10	QPSK	25	25	16.68	16.83	16.70		
10	QPSK	50	0	16.72	16.86	16.74		
10	16QAM	1	0	17.18	17.37	17.18		
10	16QAM	1	25	17.11	17.27	17.19	17.5	1
10	16QAM	1	49	17.08	17.34	17.18		
10	16QAM	25	0	15.84	15.99	15.86		
10	16QAM	25	12	15.85	15.99	15.90	16.5	2
10	16QAM	25	25	15.80	15.95	15.84		
10	16QAM	50	0	15.80	15.98	15.82		
10	64QAM	1	0	16.14	16.25	16.09		
10	64QAM	1	25	16.02	16.18	16.04	16.5	2
10	64QAM	1	49	16.01	16.19	16.04		
10	64QAM	25	0	14.85	14.99	14.85		
10	64QAM	25	12	14.86	15.02	14.86	15.5	3
10	64QAM	25	25	14.81	14.97	14.84		
10	64QAM	50	0	14.83	14.96	14.86		
Channel				18625	18900	19175	Tune-up limit	MPR
Frequency (MHz)				1852.5	1880	1907.5	(dBm)	(dB)
5	QPSK	1	0	17.72	17.85	17.75		
5	QPSK	1	12	17.74	17.79	17.77	18.5	0
5	QPSK	1	24	17.68	17.83	17.72		
5	QPSK	12	0	16.75	16.89	16.77		
5	QPSK	12	7	16.76	16.92	16.79	17.5	1
5	QPSK	12	13	16.71	16.87	16.75		
5	QPSK	25	0	16.72	16.86	16.75		
5	16QAM	1	0	17.12	17.27	17.13		
5	16QAM	1	12	17.15	17.30	17.16	17.5	1
5	16QAM	1	24	17.07	17.21	17.09		
5	16QAM	12	0	15.87	15.98	15.83		
5	16QAM	12	7	15.90	16.02	15.87	16.5	2
5	16QAM	12	13	15.87	15.96	15.84		
5	16QAM	25	0	15.83	15.96	15.82		
5	64QAM	1	0	16.02	16.18	16.03		
5	64QAM	1	12	16.03	16.17	16.04	16.5	2
5	64QAM	1	24	15.96	16.13	16.03		
5	64QAM	12	0	14.93	15.05	14.91		
5	64QAM	12	7	14.92	15.06	14.94	15.5	3
5	64QAM	12	13	14.87	15.04	14.88		
5	64QAM	25	0	14.83	14.96	14.86		
Channel				18615	18900	19185	Tune-up limit	MPR
Frequency (MHz)				1851.5	1880	1908.5	(dBm)	(dB)
3	QPSK	1	0	17.69	17.86	17.72		
3	QPSK	1	8	17.73	17.85	17.72	18.5	0
3	QPSK	1	14	17.68	17.83	17.72		
3	QPSK	8	0	16.75	16.87	16.71		
3	QPSK	8	4	16.77	16.91	16.74	17.5	1
3	QPSK	8	7	16.75	16.87	16.75		
3	QPSK	15	0	16.72	16.83	16.71		
3	16QAM	1	0	17.10	17.25	17.10		
3	16QAM	1	8	17.15	17.29	17.20	17.5	1
3	16QAM	1	14	17.06	17.22	17.16		
3	16QAM	8	0	15.91	16.01	15.87		
3	16QAM	8	4	15.93	16.07	15.92	16.5	2
3	16QAM	8	7	15.89	16.02	15.86		
3	16QAM	15	0	15.83	15.94	15.81		



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3	64QAM	1	0	16.00	16.14	15.97	16.5	2
3	64QAM	1	8	16.02	16.17	16.07		
3	64QAM	1	14	16.00	16.15	16.00		
3	64QAM	8	0	14.93	15.03	14.85	15.5	3
3	64QAM	8	4	14.96	15.06	14.90		
3	64QAM	8	7	14.88	15.00	14.86		
3	64QAM	15	0	14.84	14.96	14.83		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	17.65	17.79	17.66	18.5	0
1.4	QPSK	1	3	17.70	17.85	17.70		
1.4	QPSK	1	5	17.63	17.79	17.65		
1.4	QPSK	3	0	17.72	17.84	17.69		
1.4	QPSK	3	1	17.75	17.86	17.72		
1.4	QPSK	3	3	17.70	17.82	17.69		
1.4	QPSK	6	0	16.67	16.80	16.65	17.5	1
1.4	16QAM	1	0	17.04	17.20	17.11	17.5	1
1.4	16QAM	1	3	17.12	17.24	17.20		
1.4	16QAM	1	5	17.04	17.19	17.07		
1.4	16QAM	3	0	16.80	16.98	16.85		
1.4	16QAM	3	1	16.89	17.01	16.87		
1.4	16QAM	3	3	16.82	16.96	16.86		
1.4	16QAM	6	0	15.86	15.96	15.84	16.5	2
1.4	64QAM	1	0	15.95	16.09	16.00	16.5	2
1.4	64QAM	1	3	16.00	16.16	16.09		
1.4	64QAM	1	5	15.95	16.13	15.98		
1.4	64QAM	3	0	15.93	16.09	15.98		
1.4	64QAM	3	1	16.01	16.13	16.01		
1.4	64QAM	3	3	15.94	16.11	15.97		
1.4	64QAM	6	0	14.80	14.91	14.75	15.5	3



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	19.93	20.11	20.13		
20	QPSK	1	49	20.07	20.14	20.16	21	0
20	QPSK	1	99	20.09	20.12	20.21		
20	QPSK	50	0	19.06	19.09	19.09		
20	QPSK	50	24	19.04	19.11	19.23	20	1
20	QPSK	50	50	19.13	19.07	19.15		
20	QPSK	100	0	19.04	19.13	19.20		
20	16QAM	1	0	19.41	19.59	19.60	20	1
20	16QAM	1	49	19.58	19.66	19.61		
20	16QAM	1	99	19.63	19.57	19.71		
20	16QAM	50	0	18.18	18.30	18.21	19	2
20	16QAM	50	24	18.26	18.30	18.35		
20	16QAM	50	50	18.31	18.25	18.26		
20	16QAM	100	0	18.19	18.28	18.31	19	2
20	64QAM	1	0	18.37	18.51	18.56		
20	64QAM	1	49	18.52	18.59	18.53		
20	64QAM	1	99	18.52	18.51	18.60	18	3
20	64QAM	50	0	17.21	17.33	17.27		
20	64QAM	50	24	17.27	17.32	17.37		
20	64QAM	50	50	17.28	17.26	17.34	18	3
20	64QAM	100	0	17.19	17.34	17.33		
Channel				20025	20175	20325		
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	20.01	20.21	20.22	21	0
15	QPSK	1	37	20.09	20.14	20.20		
15	QPSK	1	74	20.06	20.19	20.24		
15	QPSK	36	0	19.09	19.20	19.25	20	1
15	QPSK	36	20	19.13	19.19	19.27		
15	QPSK	36	39	19.08	19.14	19.22		
15	QPSK	75	0	19.08	19.15	19.21	20	1
15	16QAM	1	0	19.44	19.77	19.68		
15	16QAM	1	37	19.61	19.66	19.68		
15	16QAM	1	74	19.56	19.61	19.73	19	2
15	16QAM	36	0	18.28	18.38	18.37		
15	16QAM	36	20	18.31	18.38	18.40		
15	16QAM	36	39	18.27	18.31	18.35	19	2
15	16QAM	75	0	18.23	18.28	18.34		
15	64QAM	1	0	18.39	18.64	18.58		
15	64QAM	1	37	18.50	18.62	18.56	19	2
15	64QAM	1	74	18.47	18.54	18.66		
15	64QAM	36	0	17.29	17.40	17.41		
15	64QAM	36	20	17.33	17.42	17.44	18	3
15	64QAM	36	39	17.26	17.33	17.39		
15	64QAM	75	0	17.27	17.33	17.37		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	19.97	20.15	20.12	21	0
10	QPSK	1	25	19.96	20.16	20.20		
10	QPSK	1	49	20.01	20.05	20.09		
10	QPSK	25	0	18.96	19.12	19.08	20	1
10	QPSK	25	12	19.10	19.15	19.10		



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10	QPSK	25	25	19.04	19.08	19.16		
10	QPSK	50	0	19.08	19.12	19.08		
10	16QAM	1	0	19.43	19.69	19.56	20	1
10	16QAM	1	25	19.45	19.66	19.66		
10	16QAM	1	49	19.55	19.54	19.63		
10	16QAM	25	0	18.12	18.31	18.25	19	2
10	16QAM	25	12	18.25	18.31	18.25		
10	16QAM	25	25	18.19	18.26	18.32		
10	16QAM	50	0	18.20	18.30	18.26		
10	64QAM	1	0	18.34	18.61	18.45	19	2
10	64QAM	1	25	18.36	18.57	18.57		
10	64QAM	1	49	18.43	18.45	18.57		
10	64QAM	25	0	17.15	17.34	17.27	18	3
10	64QAM	25	12	17.30	17.35	17.27		
10	64QAM	25	25	17.23	17.29	17.35		
10	64QAM	50	0	17.23	17.30	17.22		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	19.95	20.11	20.13	21	0
5	QPSK	1	12	19.97	20.09	20.17		
5	QPSK	1	24	19.90	20.05	20.11		
5	QPSK	12	0	19.00	19.14	19.20	20	1
5	QPSK	12	7	19.03	19.16	19.23		
5	QPSK	12	13	18.97	19.12	19.17		
5	QPSK	25	0	18.97	19.12	19.17		
5	16QAM	1	0	19.41	19.63	19.62	20	1
5	16QAM	1	12	19.40	19.60	19.67		
5	16QAM	1	24	19.37	19.58	19.63		
5	16QAM	12	0	18.13	18.34	18.38	19	2
5	16QAM	12	7	18.16	18.35	18.44		
5	16QAM	12	13	18.10	18.34	18.37		
5	16QAM	25	0	18.10	18.26	18.33		
5	64QAM	1	0	18.38	18.56	18.56	19	2
5	64QAM	1	12	18.38	18.56	18.56		
5	64QAM	1	24	18.33	18.49	18.55		
5	64QAM	12	0	17.23	17.43	17.42	18	3
5	64QAM	12	7	17.27	17.46	17.47		
5	64QAM	12	13	17.21	17.39	17.41		
5	64QAM	25	0	17.13	17.30	17.33		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	19.93	20.12	20.09	21	0
3	QPSK	1	8	19.93	20.10	20.17		
3	QPSK	1	14	19.90	20.06	20.13		
3	QPSK	8	0	18.96	19.13	19.18	20	1
3	QPSK	8	4	19.02	19.14	19.20		
3	QPSK	8	7	18.97	19.12	19.17		
3	QPSK	15	0	18.94	19.10	19.14	20	1
3	16QAM	1	0	19.40	19.61	19.60		
3	16QAM	1	8	19.45	19.62	19.68		
3	16QAM	1	14	19.40	19.56	19.62	19	2
3	16QAM	8	0	18.17	18.39	18.42		
3	16QAM	8	4	18.24	18.42	18.46		
3	16QAM	8	7	18.20	18.40	18.42		
3	16QAM	15	0	18.10	18.28	18.32		
3	64QAM	1	0	18.37	18.56	18.53	19	2





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3	64QAM	1	8	18.34	18.57	18.58	18	3
3	64QAM	1	14	18.33	18.50	18.56		
3	64QAM	8	0	17.22	17.41	17.41		
3	64QAM	8	4	17.26	17.46	17.46		
3	64QAM	8	7	17.21	17.39	17.42		
3	64QAM	15	0	17.12	17.28	17.30		
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	20.03	20.08	21	0
1.4	QPSK	1	3	19.97	20.10	20.14		
1.4	QPSK	1	5	19.85	20.00	20.03		
1.4	QPSK	3	0	19.93	20.07	20.12		
1.4	QPSK	3	1	19.95	20.11	20.16		
1.4	QPSK	3	3	19.93	20.08	20.10		
1.4	QPSK	6	0	18.92	19.04	19.11	20	1
1.4	16QAM	1	0	19.35	19.54	19.60	20	1
1.4	16QAM	1	3	19.41	19.61	19.64		
1.4	16QAM	1	5	19.35	19.53	19.58		
1.4	16QAM	3	0	19.08	19.30	19.35		
1.4	16QAM	3	1	19.13	19.33	19.37		
1.4	16QAM	3	3	19.08	19.26	19.33		
1.4	16QAM	6	0	18.11	18.28	18.32	19	2
1.4	64QAM	1	0	18.29	18.48	18.48	19	2
1.4	64QAM	1	3	18.34	18.57	18.56		
1.4	64QAM	1	5	18.26	18.46	18.51		
1.4	64QAM	3	0	18.24	18.42	18.47		
1.4	64QAM	3	1	18.29	18.46	18.53		
1.4	64QAM	3	3	18.24	18.43	18.48		
1.4	64QAM	6	0	17.06	17.23	17.25	18	3



<LTE Band 25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	17.07	17.12	17.02	18.5	0
20	QPSK	1	49	17.04	17.09	16.97		
20	QPSK	1	99	17.08	17.18	17.04		
20	QPSK	50	0	16.04	16.15	16.03	17.5	1
20	QPSK	50	24	16.14	16.16	16.07		
20	QPSK	50	50	16.08	16.11	16.02		
20	QPSK	100	0	16.13	16.14	16.01		
20	16QAM	1	0	16.49	16.55	16.41	17.5	1
20	16QAM	1	49	16.45	16.48	16.39		
20	16QAM	1	99	16.47	16.56	16.47		
20	16QAM	50	0	15.16	15.25	15.13	16.5	2
20	16QAM	50	24	15.28	15.26	15.13		
20	16QAM	50	50	15.21	15.24	15.10		
20	16QAM	100	0	15.23	15.22	15.11		
20	64QAM	1	0	15.41	15.46	15.31	16.5	2
20	64QAM	1	49	15.36	15.38	15.28		
20	64QAM	1	99	15.38	15.44	15.36		
20	64QAM	50	0	14.19	14.24	14.14	15.5	3
20	64QAM	50	24	14.31	14.29	14.16		
20	64QAM	50	50	14.23	14.21	14.11		
20	64QAM	100	0	14.27	14.23	14.15		
Channel				26115	26340	26615	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	17.07	17.08	16.99	18.5	0
15	QPSK	1	37	17.05	17.09	17.08		
15	QPSK	1	74	17.05	17.10	17.02		
15	QPSK	36	0	16.09	16.15	16.05	17.5	1
15	QPSK	36	20	16.08	16.18	16.02		
15	QPSK	36	39	16.13	16.10	16.06		
15	QPSK	75	0	16.18	16.13	16.05		
15	16QAM	1	0	16.47	16.50	16.38	17.5	1
15	16QAM	1	37	16.45	16.47	16.44		
15	16QAM	1	74	16.46	16.54	16.46		
15	16QAM	36	0	15.20	15.25	15.09	16.5	2
15	16QAM	36	20	15.21	15.31	15.16		
15	16QAM	36	39	15.26	15.24	15.15		
15	16QAM	75	0	15.29	15.26	15.11		
15	64QAM	1	0	15.37	15.41	15.30	16.5	2
15	64QAM	1	37	15.37	15.39	15.37		
15	64QAM	1	74	15.36	15.43	15.37		
15	64QAM	36	0	14.19	14.26	14.15		
15	64QAM	36	20	14.23	14.29	14.13	15.5	3
15	64QAM	36	39	14.31	14.25	14.23		
15	64QAM	36	74	14.26	14.24	14.14		
15	64QAM	75	0	14.26	14.24	14.14		
Channel				26090	26340	26640	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	17.10	17.13	17.11	18.5	0
10	QPSK	1	25	17.00	17.15	17.11		
10	QPSK	1	49	17.00	17.14	17.05		
10	QPSK	25	0	16.02	16.17	16.12	17.5	1
10	QPSK	25	12	16.02	16.22	16.12		



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10	QPSK	25	25	15.97	16.13	16.12		
10	QPSK	50	0	16.00	16.16	16.14		
10	16QAM	1	0	16.50	16.60	16.52	17.5	1
10	16QAM	1	25	16.40	16.55	16.49		
10	16QAM	1	49	16.41	16.53	16.51		
10	16QAM	25	0	15.15	15.29	15.23	16.5	2
10	16QAM	25	12	15.14	15.30	15.23		
10	16QAM	25	25	15.10	15.26	15.20		
10	16QAM	50	0	15.11	15.29	15.21		
10	64QAM	1	0	15.43	15.53	15.38	16.5	2
10	64QAM	1	25	15.29	15.45	15.41		
10	64QAM	1	49	15.29	15.46	15.41		
10	64QAM	25	0	14.14	14.32	14.22	15.5	3
10	64QAM	25	12	14.16	14.31	14.24		
10	64QAM	25	25	14.10	14.28	14.19		
10	64QAM	50	0	14.14	14.29	14.22		
Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	16.99	17.13	17.06	18.5	0
5	QPSK	1	12	17.00	17.14	17.09		
5	QPSK	1	24	16.94	17.07	17.04		
5	QPSK	12	0	16.05	16.19	16.08	17.5	1
5	QPSK	12	7	16.03	16.18	16.12		
5	QPSK	12	13	15.98	16.17	16.11		
5	QPSK	25	0	15.98	16.13	16.09		
5	16QAM	1	0	16.38	16.51	16.46	17.5	1
5	16QAM	1	12	16.38	16.53	16.48		
5	16QAM	1	24	16.35	16.47	16.45		
5	16QAM	12	0	15.13	15.31	15.20	16.5	2
5	16QAM	12	7	15.15	15.31	15.23		
5	16QAM	12	13	15.12	15.26	15.17		
5	16QAM	25	0	15.11	15.26	15.18		
5	64QAM	1	0	15.30	15.41	15.35	16.5	2
5	64QAM	1	12	15.28	15.41	15.36		
5	64QAM	1	24	15.25	15.36	15.33		
5	64QAM	12	0	14.20	14.30	14.22	15.5	3
5	64QAM	12	7	14.21	14.35	14.27		
5	64QAM	12	13	14.16	14.30	14.24		
5	64QAM	25	0	14.11	14.27	14.18		
Channel				26055	26340	26675	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	16.99	17.12	17.05	18.5	0
3	QPSK	1	8	17.01	17.14	17.09		
3	QPSK	1	14	16.97	17.08	17.06		
3	QPSK	8	0	16.01	16.18	16.09	17.5	1
3	QPSK	8	4	16.07	16.23	16.13		
3	QPSK	8	7	16.01	16.14	16.11		
3	QPSK	15	0	16.00	16.15	16.09		
3	16QAM	1	0	16.38	16.51	16.45	17.5	1
3	16QAM	1	8	16.41	16.56	16.50		
3	16QAM	1	14	16.35	16.48	16.43		
3	16QAM	8	0	15.19	15.31	15.24	16.5	2
3	16QAM	8	4	15.22	15.34	15.28		
3	16QAM	8	7	15.19	15.30	15.24		
3	16QAM	15	0	15.13	15.25	15.20		
3	64QAM	1	0	15.30	15.39	15.35	16.5	2



3	64QAM	1	8	15.32	15.42	15.42	15.5	3
3	64QAM	1	14	15.26	15.39	15.36		
3	64QAM	8	0	14.20	14.31	14.23		
3	64QAM	8	4	14.23	14.37	14.27		
3	64QAM	8	7	14.19	14.33	14.25		
3	64QAM	15	0	14.10	14.26	14.22		
Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	16.91	17.04	16.99	18.5	0
1.4	QPSK	1	3	17.03	17.12	17.06		
1.4	QPSK	1	5	16.93	17.05	16.99		
1.4	QPSK	3	0	16.99	17.10	17.04		
1.4	QPSK	3	1	17.04	17.14	17.06		
1.4	QPSK	3	3	16.97	17.08	17.05		
1.4	QPSK	6	0	15.95	16.10	16.04	17.5	1
1.4	16QAM	1	0	16.31	16.45	16.41	17.5	1
1.4	16QAM	1	3	16.41	16.54	16.54		
1.4	16QAM	1	5	16.32	16.46	16.41		
1.4	16QAM	3	0	16.09	16.22	16.19		
1.4	16QAM	3	1	16.17	16.29	16.25		
1.4	16QAM	3	3	16.10	16.23	16.20		
1.4	16QAM	6	0	15.15	15.26	15.21	16.5	2
1.4	64QAM	1	0	15.26	15.36	15.32	16.5	2
1.4	64QAM	1	3	15.31	15.44	15.42		
1.4	64QAM	1	5	15.24	15.34	15.32		
1.4	64QAM	3	0	15.24	15.31	15.29		
1.4	64QAM	3	1	15.29	15.37	15.38		
1.4	64QAM	3	3	15.24	15.33	15.32		
1.4	64QAM	6	0	14.07	14.20	14.16	15.5	3



<LTE Band 66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	20.12	20.21	20.16		
20	QPSK	1	49	20.19	20.24	20.22	21	0
20	QPSK	1	99	19.99	20.08	20.07		
20	QPSK	50	0	19.03	19.08	19.03		
20	QPSK	50	24	19.01	19.07	18.98	20	1
20	QPSK	50	50	18.97	19.03	18.96		
20	QPSK	100	0	19.01	19.05	19.02		
20	16QAM	1	0	19.58	19.69	19.69	20	1
20	16QAM	1	49	19.67	19.68	19.74		
20	16QAM	1	99	19.51	19.63	19.55		
20	16QAM	50	0	18.18	18.24	18.19	19	2
20	16QAM	50	24	18.16	18.19	18.13		
20	16QAM	50	50	18.14	18.21	18.12		
20	16QAM	100	0	18.18	18.19	18.18		
20	16QAM	100	0	18.18	18.19	18.18		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	20.10	20.18	20.18	21	0
15	QPSK	1	37	20.18	20.21	20.22		
15	QPSK	1	74	20.04	20.11	20.05		
15	QPSK	36	0	19.01	19.03	19.03	20	1
15	QPSK	36	20	19.12	19.15	19.09		
15	QPSK	36	39	19.00	19.02	18.99		
15	QPSK	75	0	19.02	19.04	19.04		
15	16QAM	1	0	19.58	19.65	19.63		
15	16QAM	1	37	19.67	19.66	19.73	20	1
15	16QAM	1	74	19.57	19.58	19.63		
15	16QAM	36	0	18.17	18.18	18.19		
15	16QAM	36	20	18.28	18.30	18.25	19	2
15	16QAM	36	39	18.22	18.19	18.17		
15	16QAM	36	39	18.22	18.19	18.17		
15	16QAM	75	0	18.20	18.19	18.17		
15	16QAM	75	0	18.20	18.19	18.17		
Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	20.07	20.15	20.08	21	0
10	QPSK	1	25	20.11	20.16	20.09		
10	QPSK	1	49	20.04	20.06	19.97		
10	QPSK	25	0	19.07	19.12	19.01	20	1
10	QPSK	25	12	19.07	19.09	19.03		
10	QPSK	25	25	19.04	19.05	18.98		
10	QPSK	50	0	19.06	19.08	18.99		
10	16QAM	1	0	19.56	19.57	19.58		
10	16QAM	1	25	19.58	19.60	19.64	20	1
10	16QAM	1	49	19.53	19.52	19.55		
10	16QAM	25	0	18.20	18.23	18.19		
10	16QAM	25	12	18.23	18.22	18.20	19	2
10	16QAM	25	25	18.20	18.22	18.17		
10	16QAM	25	25	18.20	18.22	18.17		
10	16QAM	50	0	18.23	18.23	18.17		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	19.91	20.00	19.88	21	0
5	QPSK	1	12	20.05	20.14	20.04		
5	QPSK	1	24	19.89	19.95	19.84		



5	QPSK	12	0	19.08	19.08	19.00	20	1
5	QPSK	12	7	19.14	19.16	19.05		
5	QPSK	12	13	19.04	19.04	18.96		
5	QPSK	25	0	19.03	19.06	18.95	20	1
5	16QAM	1	0	19.39	19.41	19.44		
5	16QAM	1	12	19.55	19.57	19.60		
5	16QAM	1	24	19.36	19.38	19.39	19	2
5	16QAM	12	0	18.22	18.18	18.18		
5	16QAM	12	7	18.28	18.30	18.32		
5	16QAM	12	13	18.19	18.17	18.19		
5	16QAM	25	0	18.18	18.16	18.14	Tune-up limit (dBm)	MPR (dB)
Channel				131987	132322	132657		
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	19.95	20.05	19.92	21	0
3	QPSK	1	8	20.06	20.12	20.04		
3	QPSK	1	14	19.93	20.01	19.86		
3	QPSK	8	0	19.11	19.12	19.02	20	1
3	QPSK	8	4	19.14	19.15	19.08		
3	QPSK	8	7	19.08	19.10	19.00		
3	QPSK	15	0	19.09	19.08	18.98		
3	16QAM	1	0	19.45	19.41	19.46	20	1
3	16QAM	1	8	19.55	19.60	19.62		
3	16QAM	1	14	19.40	19.47	19.41		
3	16QAM	8	0	18.29	18.27	18.29	19	2
3	16QAM	8	4	18.36	18.33	18.36		
3	16QAM	8	7	18.26	18.26	18.30		
3	16QAM	15	0	18.20	18.23	18.21		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	19.98	20.03	19.94	21	0
1.4	QPSK	1	3	20.06	20.15	20.06		
1.4	QPSK	1	5	19.97	20.03	19.92		
1.4	QPSK	3	0	20.04	20.11	20.02		
1.4	QPSK	3	1	20.08	20.15	20.05		
1.4	QPSK	3	3	20.05	20.10	20.02		
1.4	QPSK	6	0	19.04	19.09	18.99	20	1
1.4	16QAM	1	0	19.45	19.47	19.50	20	1
1.4	16QAM	1	3	19.55	19.57	19.58		
1.4	16QAM	1	5	19.44	19.49	19.49		
1.4	16QAM	3	0	19.21	19.24	19.25		
1.4	16QAM	3	1	19.25	19.30	19.28		
1.4	16QAM	3	3	19.17	19.24	19.23		
1.4	16QAM	6	0	18.28	18.26	18.21	19	2



LAT State 5

<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	20.87	20.95	20.75	21.5	0
20	QPSK	1	49	20.84	20.85	20.80		
20	QPSK	1	99	20.86	20.91	20.74		
20	QPSK	50	0	19.85	19.90	19.71	20.5	1
20	QPSK	50	24	19.87	19.92	19.83		
20	QPSK	50	50	19.88	19.85	19.77		
20	QPSK	100	0	19.90	19.88	19.71	20.5	1
20	16QAM	1	0	20.29	20.43	20.22		
20	16QAM	1	49	20.32	20.39	20.33		
20	16QAM	1	99	20.31	20.37	20.15	19.5	2
20	16QAM	50	0	19.03	19.05	18.90		
20	16QAM	50	24	19.04	19.07	18.96		
20	16QAM	50	50	19.07	19.04	18.95	19.5	2
20	16QAM	100	0	19.08	19.07	18.86		
20	64QAM	1	0	19.21	19.31	19.11		
20	64QAM	1	49	19.19	19.27	19.26	19.5	2
20	64QAM	1	99	19.21	19.31	19.08		
20	64QAM	50	0	17.98	18.05	17.89		
20	64QAM	50	24	18.02	18.07	18.02	18.5	3
20	64QAM	50	50	18.03	18.04	17.94		
20	64QAM	100	0	18.07	18.04	17.90		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	20.75	20.87	20.82	21.5	0
15	QPSK	1	37	20.72	20.88	20.78		
15	QPSK	1	74	20.66	20.83	20.70		
15	QPSK	36	0	19.78	19.92	19.81	20.5	1
15	QPSK	36	20	19.82	19.95	19.84		
15	QPSK	36	39	19.76	19.89	19.80		
15	QPSK	75	0	19.74	19.90	19.80	20.5	1
15	16QAM	1	0	20.17	20.32	20.32		
15	16QAM	1	37	20.18	20.36	20.20		
15	16QAM	1	74	20.13	20.31	20.12	20.5	1
15	16QAM	36	0	18.93	19.07	19.02		
15	16QAM	36	20	18.97	19.14	18.99		
15	16QAM	36	39	18.91	19.06	18.96	19.5	2
15	16QAM	75	0	18.92	19.03	19.00		
15	64QAM	1	0	19.09	19.29	19.23		
15	64QAM	1	37	19.11	19.27	19.18	19.5	2
15	64QAM	1	74	19.05	19.22	19.10		
15	64QAM	36	0	17.97	18.10	18.03		
15	64QAM	36	20	18.00	18.14	18.04	18.5	3
15	64QAM	36	39	17.91	18.08	17.98		
15	64QAM	75	0	17.89	18.09	17.95		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	20.83	20.85	20.74	21.5	0
10	QPSK	1	25	20.83	20.83	20.79		
10	QPSK	1	49	20.77	20.89	20.66		
10	QPSK	25	0	19.81	19.87	19.64	20.5	1



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10	QPSK	25	12	19.78	19.83	19.76		
10	QPSK	25	25	19.87	19.85	19.71		
10	QPSK	50	0	19.90	19.78	19.71		
10	16QAM	1	0	20.27	20.39	20.17		
10	16QAM	1	25	20.26	20.38	20.28	20.5	1
10	16QAM	1	49	20.21	20.32	20.12		
10	16QAM	25	0	19.00	18.96	18.84		
10	16QAM	25	12	19.02	19.03	18.93	19.5	2
10	16QAM	25	25	18.99	19.01	18.85		
10	16QAM	50	0	19.02	19.03	18.86		
10	64QAM	1	0	19.12	19.25	19.02		
10	64QAM	1	25	19.11	19.25	19.21	19.5	2
10	64QAM	1	49	19.18	19.31	19.04		
10	64QAM	25	0	17.95	18.00	17.87		
10	64QAM	25	12	17.99	18.07	17.98	18.5	3
10	64QAM	25	25	17.94	18.01	17.92		
10	64QAM	50	0	18.00	18.04	17.83		
Channel				18625	18900	19175	Tune-up limit	MPR
Frequency (MHz)				1852.5	1880	1907.5	(dBm)	(dB)
5	QPSK	1	0	20.81	20.93	20.71		
5	QPSK	1	12	20.82	20.75	20.72	21.5	0
5	QPSK	1	24	20.77	20.83	20.74		
5	QPSK	12	0	19.82	19.81	19.66		
5	QPSK	12	7	19.84	19.87	19.73	20.5	1
5	QPSK	12	13	19.78	19.82	19.71		
5	QPSK	25	0	19.88	19.78	19.65		
5	16QAM	1	0	20.21	20.36	20.21		
5	16QAM	1	12	20.22	20.36	20.27	20.5	1
5	16QAM	1	24	20.22	20.34	20.12		
5	16QAM	12	0	18.93	18.99	18.88		
5	16QAM	12	7	18.98	19.01	18.93	19.5	2
5	16QAM	12	13	19.00	19.00	18.85		
5	16QAM	25	0	18.98	19.05	18.85		
5	64QAM	1	0	19.17	19.22	19.06		
5	64QAM	1	12	19.09	19.18	19.25	19.5	2
5	64QAM	1	24	19.12	19.27	19.05		
5	64QAM	12	0	17.97	18.05	17.87		
5	64QAM	12	7	17.96	18.07	18.00	18.5	3
5	64QAM	12	13	17.93	17.96	17.85		
5	64QAM	25	0	18.00	18.00	17.82		
Channel				18615	18900	19185	Tune-up limit	MPR
Frequency (MHz)				1851.5	1880	1908.5	(dBm)	(dB)
3	QPSK	1	0	20.80	20.89	20.67		
3	QPSK	1	8	20.83	20.84	20.76	21.5	0
3	QPSK	1	14	20.80	20.85	20.66		
3	QPSK	8	0	19.84	19.90	19.70		
3	QPSK	8	4	19.85	19.83	19.74	20.5	1
3	QPSK	8	7	19.86	19.79	19.75		
3	QPSK	15	0	19.90	19.80	19.66		
3	16QAM	1	0	20.24	20.34	20.17		
3	16QAM	1	8	20.25	20.38	20.31	20.5	1
3	16QAM	1	14	20.26	20.30	20.12		
3	16QAM	8	0	18.95	19.00	18.90		
3	16QAM	8	4	19.03	19.00	18.86	19.5	2
3	16QAM	8	7	19.02	19.03	18.93		
3	16QAM	15	0	19.00	19.07	18.80		





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3	64QAM	1	0	19.20	19.25	19.03	19.5	2
3	64QAM	1	8	19.19	19.23	19.17		
3	64QAM	1	14	19.14	19.21	19.01		
3	64QAM	8	0	17.90	17.96	17.88	18.5	3
3	64QAM	8	4	17.92	18.02	17.94		
3	64QAM	8	7	18.01	17.98	17.89		
3	64QAM	15	0	18.00	17.99	17.89		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	20.66	20.78	20.62	21.5	0
1.4	QPSK	1	3	20.74	20.89	20.70		
1.4	QPSK	1	5	20.64	20.78	20.60		
1.4	QPSK	3	0	20.70	20.81	20.67		
1.4	QPSK	3	1	20.75	20.87	20.68		
1.4	QPSK	3	3	20.72	20.84	20.68		
1.4	QPSK	6	0	19.70	19.82	19.67	20.5	1
1.4	16QAM	1	0	20.08	20.27	20.04	20.5	1
1.4	16QAM	1	3	20.20	20.35	20.13		
1.4	16QAM	1	5	20.08	20.27	20.04		
1.4	16QAM	3	0	19.88	20.01	19.82		
1.4	16QAM	3	1	19.92	20.05	19.84		
1.4	16QAM	3	3	19.87	20.02	19.81		
1.4	16QAM	6	0	18.93	19.03	18.90	19.5	2
1.4	64QAM	1	0	19.02	19.19	19.02	19.5	2
1.4	64QAM	1	3	19.09	19.29	19.07		
1.4	64QAM	1	5	19.04	19.22	18.98		
1.4	64QAM	3	0	19.00	19.17	18.99		
1.4	64QAM	3	1	19.06	19.23	19.02		
1.4	64QAM	3	3	19.03	19.17	18.98		
1.4	64QAM	6	0	17.87	17.97	17.84	18.5	3



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	20.79	20.93	20.91	22.5	0
20	QPSK	1	49	20.89	20.98	20.99		
20	QPSK	1	99	20.90	20.92	21.00		
20	QPSK	50	0	19.87	19.96	19.92	21.5	1
20	QPSK	50	24	19.86	19.96	20.04		
20	QPSK	50	50	19.91	19.89	19.99		
20	QPSK	100	0	19.86	19.90	20.01	21.5	1
20	16QAM	1	0	20.20	20.40	20.38		
20	16QAM	1	49	20.45	20.44	20.39		
20	16QAM	1	99	20.40	20.30	20.49	20.5	2
20	16QAM	50	0	19.03	19.10	19.04		
20	16QAM	50	24	19.06	19.09	19.17		
20	16QAM	50	50	19.11	19.06	19.11	20.5	2
20	16QAM	100	0	18.98	19.10	19.16		
20	64QAM	1	0	19.13	19.31	19.31		
20	64QAM	1	49	19.34	19.39	19.31	20.5	2
20	64QAM	1	99	19.31	19.24	19.44		
20	64QAM	50	0	18.03	18.13	18.06		
20	64QAM	50	24	18.04	18.11	18.18	19.5	3
20	64QAM	50	50	18.09	18.06	18.14		
20	64QAM	100	0	18.04	18.12	18.17		
Channel				20025	20175	20325		
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	20.76	20.98	21.03	22.5	0
15	QPSK	1	37	20.89	20.95	20.99		
15	QPSK	1	74	20.84	20.94	21.04		
15	QPSK	36	0	19.89	19.95	20.05	21.5	1
15	QPSK	36	20	19.90	19.99	20.07		
15	QPSK	36	39	19.85	19.92	20.00		
15	QPSK	75	0	19.85	19.94	20.01	21.5	1
15	16QAM	1	0	20.22	20.50	20.39		
15	16QAM	1	37	20.34	20.40	20.42		
15	16QAM	1	74	20.34	20.33	20.48	20.5	2
15	16QAM	36	0	19.04	19.15	19.16		
15	16QAM	36	20	19.08	19.15	19.19		
15	16QAM	36	39	19.04	19.07	19.17	20.5	2
15	16QAM	75	0	19.07	19.12	19.15		
15	64QAM	1	0	19.19	19.38	19.36		
15	64QAM	1	37	19.28	19.33	19.34	20.5	2
15	64QAM	1	74	19.23	19.26	19.42		
15	64QAM	36	0	18.07	18.21	18.20		
15	64QAM	36	20	18.12	18.20	18.23	19.5	3
15	64QAM	36	39	18.08	18.15	18.18		
15	64QAM	75	0	18.03	18.13	18.16		
Channel				20000	20175	20350		
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	20.76	20.96	20.87	22.5	0
10	QPSK	1	25	20.74	20.92	20.97		
10	QPSK	1	49	20.81	20.81	20.93		
10	QPSK	25	0	19.77	19.95	19.89	21.5	1
10	QPSK	25	12	19.89	19.94	19.89		



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10	QPSK	25	25	19.83	19.89	19.97		
10	QPSK	50	0	19.85	19.91	19.86		
10	16QAM	1	0	20.19	20.44	20.28	21.5	1
10	16QAM	1	25	20.22	20.41	20.45		
10	16QAM	1	49	20.29	20.28	20.41		
10	16QAM	25	0	18.93	19.10	19.03	20.5	2
10	16QAM	25	12	19.03	19.12	19.05		
10	16QAM	25	25	19.00	19.06	19.13		
10	16QAM	50	0	19.02	19.09	19.00		
10	64QAM	1	0	19.15	19.38	19.21	20.5	2
10	64QAM	1	25	19.13	19.33	19.35		
10	64QAM	1	49	19.23	19.23	19.32		
10	64QAM	25	0	17.96	18.14	18.05	19.5	3
10	64QAM	25	12	18.05	18.15	18.08		
10	64QAM	25	25	18.00	18.09	18.14		
10	64QAM	50	0	18.01	18.11	18.03		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	20.66	20.86	20.82	22.5	0
5	QPSK	1	12	20.68	20.92	20.89		
5	QPSK	1	24	20.77	20.79	20.91		
5	QPSK	12	0	19.76	19.91	19.83	21.5	1
5	QPSK	12	7	19.79	19.88	19.80		
5	QPSK	12	13	19.81	19.86	19.91		
5	QPSK	25	0	19.80	19.89	19.86		
5	16QAM	1	0	20.16	20.44	20.26	21.5	1
5	16QAM	1	12	20.22	20.35	20.36		
5	16QAM	1	24	20.20	20.21	20.31		
5	16QAM	12	0	18.93	19.09	18.99	20.5	2
5	16QAM	12	7	19.02	19.10	19.04		
5	16QAM	12	13	18.95	19.03	19.07		
5	16QAM	25	0	19.02	19.03	18.92		
5	64QAM	1	0	19.10	19.34	19.20	20.5	2
5	64QAM	1	12	19.12	19.27	19.32		
5	64QAM	1	24	19.15	19.22	19.31		
5	64QAM	12	0	17.95	18.10	18.03	19.5	3
5	64QAM	12	7	17.97	18.15	17.98		
5	64QAM	12	13	17.91	18.02	18.06		
5	64QAM	25	0	18.01	18.03	18.03		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	20.73	20.90	20.85	22.5	0
3	QPSK	1	8	20.71	20.88	20.90		
3	QPSK	1	14	20.71	20.77	20.84		
3	QPSK	8	0	19.72	19.90	19.79	21.5	1
3	QPSK	8	4	19.81	19.87	19.81		
3	QPSK	8	7	19.76	19.86	19.90		
3	QPSK	15	0	19.82	19.89	19.80		
3	16QAM	1	0	20.15	20.38	20.23	21.5	1
3	16QAM	1	8	20.18	20.37	20.43		
3	16QAM	1	14	20.20	20.27	20.32		
3	16QAM	8	0	18.89	19.07	18.96	20.5	2
3	16QAM	8	4	19.02	19.08	18.99		
3	16QAM	8	7	19.00	19.03	19.12		
3	16QAM	15	0	18.95	19.02	18.90		
3	64QAM	1	0	19.07	19.33	19.11	20.5	2



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3	64QAM	1	8	19.06	19.24	19.29	19.5	3
3	64QAM	1	14	19.14	19.17	19.32		
3	64QAM	8	0	17.96	18.10	17.96		
3	64QAM	8	4	17.99	18.10	18.03		
3	64QAM	8	7	18.00	18.04	18.10		
3	64QAM	15	0	17.99	18.11	17.95		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	20.67	20.82	20.86	22.5	0
1.4	QPSK	1	3	20.75	20.91	20.94		
1.4	QPSK	1	5	20.68	20.80	20.83		
1.4	QPSK	3	0	20.73	20.86	20.92		
1.4	QPSK	3	1	20.76	20.90	20.95		
1.4	QPSK	3	3	20.73	20.87	20.94		
1.4	QPSK	6	0	19.71	19.85	19.91	21.5	1
1.4	16QAM	1	0	20.10	20.30	20.33	21.5	1
1.4	16QAM	1	3	20.19	20.37	20.44		
1.4	16QAM	1	5	20.08	20.28	20.33		
1.4	16QAM	3	0	19.89	20.09	20.12		
1.4	16QAM	3	1	19.92	20.07	20.15		
1.4	16QAM	3	3	19.87	20.04	20.11		
1.4	16QAM	6	0	18.92	19.09	19.14	20.5	2
1.4	64QAM	1	0	19.04	19.24	19.29	20.5	2
1.4	64QAM	1	3	19.12	19.35	19.38		
1.4	64QAM	1	5	19.05	19.26	19.29		
1.4	64QAM	3	0	19.02	19.21	19.26		
1.4	64QAM	3	1	19.06	19.26	19.30		
1.4	64QAM	3	3	19.03	19.24	19.28		
1.4	64QAM	6	0	17.88	18.03	18.11	19.5	3



<LTE Band 25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	20.11	20.16	20.02	21.5	0
20	QPSK	1	49	20.07	20.14	20.01		
20	QPSK	1	99	20.12	20.21	20.03		
20	QPSK	50	0	19.09	19.14	19.04	20.5	1
20	QPSK	50	24	19.18	19.19	19.05		
20	QPSK	50	50	19.11	19.10	19.00		
20	QPSK	100	0	19.14	19.15	19.02	20.5	1
20	16QAM	1	0	19.54	19.67	19.58		
20	16QAM	1	49	19.54	19.65	19.55		
20	16QAM	1	99	19.60	19.69	19.47	19.5	2
20	16QAM	50	0	18.26	18.28	18.19		
20	16QAM	50	24	18.36	18.31	18.20		
20	16QAM	50	50	18.30	18.28	18.15	19.5	2
20	16QAM	100	0	18.35	18.30	18.19		
20	64QAM	1	0	18.47	18.56	18.44		
20	64QAM	1	49	18.49	18.56	18.41	19.5	2
20	64QAM	1	99	18.48	18.63	18.38		
20	64QAM	50	0	17.25	17.29	17.18		
20	64QAM	50	24	17.38	17.33	17.21	18.5	3
20	64QAM	50	50	17.32	17.28	17.18		
20	64QAM	100	0	17.36	17.32	17.15		
Channel				26115	26340	26615	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	20.08	20.15	20.01	21.5	0
15	QPSK	1	37	20.07	20.13	20.13		
15	QPSK	1	74	20.09	20.19	20.01		
15	QPSK	36	0	19.12	19.19	19.05	20.5	1
15	QPSK	36	20	19.14	19.20	19.07		
15	QPSK	36	39	19.17	19.16	19.12		
15	QPSK	75	0	19.19	19.16	19.08	20.5	1
15	16QAM	1	0	19.55	19.62	19.52		
15	16QAM	1	37	19.55	19.62	19.56		
15	16QAM	1	74	19.58	19.69	19.48	19.5	2
15	16QAM	36	0	18.26	18.31	18.20		
15	16QAM	36	20	18.32	18.39	18.22		
15	16QAM	36	39	18.33	18.31	18.29	19.5	2
15	16QAM	75	0	18.36	18.29	18.19		
15	64QAM	1	0	18.48	18.52	18.45		
15	64QAM	1	37	18.48	18.49	18.49	19.5	2
15	64QAM	1	74	18.48	18.60	18.40		
15	64QAM	36	0	17.30	17.35	17.21		
15	64QAM	36	20	17.32	17.38	17.24	18.5	3
15	64QAM	36	39	17.35	17.33	17.29		
15	64QAM	75	0	17.33	17.29	17.20		
Channel				26090	26340	26640	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	20.02	20.10	20.01	21.5	0
10	QPSK	1	25	20.07	20.06	19.93		
10	QPSK	1	49	20.03	20.13	19.97		
10	QPSK	25	0	19.07	19.14	18.98	20.5	1
10	QPSK	25	12	19.10	19.17	18.95		



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10	QPSK	25	25	19.09	19.10	18.93		
10	QPSK	50	0	19.10	19.08	18.92		
10	16QAM	1	0	19.47	19.59	19.57	20.5	1
10	16QAM	1	25	19.54	19.56	19.47		
10	16QAM	1	49	19.52	19.61	19.37		
10	16QAM	25	0	18.18	18.20	18.10	19.5	2
10	16QAM	25	12	18.26	18.28	18.18		
10	16QAM	25	25	18.28	18.23	18.15		
10	16QAM	50	0	18.26	18.29	18.18	19.5	2
10	64QAM	1	0	18.47	18.49	18.43		
10	64QAM	1	25	18.46	18.47	18.33		
10	64QAM	1	49	18.40	18.59	18.33	18.5	3
10	64QAM	25	0	17.25	17.25	17.10		
10	64QAM	25	12	17.36	17.27	17.14		
10	64QAM	25	25	17.23	17.21	17.10		
10	64QAM	50	0	17.26	17.27	17.07		
Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	20.02	20.10	19.99	21.5	0
5	QPSK	1	12	20.07	20.10	19.99		
5	QPSK	1	24	20.10	20.12	19.94		
5	QPSK	12	0	19.09	19.10	19.01	20.5	1
5	QPSK	12	7	19.12	19.11	19.05		
5	QPSK	12	13	19.08	19.09	18.97		
5	QPSK	25	0	19.10	19.06	18.97		
5	16QAM	1	0	19.51	19.66	19.54	20.5	1
5	16QAM	1	12	19.50	19.62	19.49		
5	16QAM	1	24	19.52	19.63	19.41		
5	16QAM	12	0	18.20	18.27	18.14	19.5	2
5	16QAM	12	7	18.26	18.27	18.12		
5	16QAM	12	13	18.22	18.22	18.07		
5	16QAM	25	0	18.25	18.30	18.10		
5	64QAM	1	0	18.45	18.54	18.34		
5	64QAM	1	12	18.41	18.50	18.33	19.5	2
5	64QAM	1	24	18.41	18.61	18.34		
5	64QAM	12	0	17.21	17.28	17.17		
5	64QAM	12	7	17.36	17.27	17.20	18.5	3
5	64QAM	12	13	17.27	17.26	17.11		
5	64QAM	25	0	17.30	17.28	17.12		
Channel				26055	26340	26675		
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	20.06	20.14	19.98	21.5	0
3	QPSK	1	8	19.98	20.11	19.91		
3	QPSK	1	14	20.07	20.19	19.99		
3	QPSK	8	0	18.99	19.04	18.94	20.5	1
3	QPSK	8	4	19.16	19.13	18.98		
3	QPSK	8	7	19.11	19.08	18.91		
3	QPSK	15	0	19.06	19.07	18.99		
3	16QAM	1	0	19.53	19.64	19.57	20.5	1
3	16QAM	1	8	19.46	19.64	19.46		
3	16QAM	1	14	19.51	19.66	19.46		
3	16QAM	8	0	18.25	18.28	18.18	19.5	2
3	16QAM	8	4	18.36	18.24	18.13		
3	16QAM	8	7	18.29	18.22	18.05		
3	16QAM	15	0	18.32	18.28	18.12		
3	64QAM	1	0	18.44	18.46	18.41		



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3	64QAM	1	8	18.48	18.53	18.34	18.5	3
3	64QAM	1	14	18.44	18.60	18.38		
3	64QAM	8	0	17.22	17.29	17.11		
3	64QAM	8	4	17.28	17.33	17.11		
3	64QAM	8	7	17.32	17.25	17.10		
3	64QAM	15	0	17.29	17.22	17.08		
Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	19.91	20.05	19.93	21.5	0
1.4	QPSK	1	3	19.99	20.12	20.03		
1.4	QPSK	1	5	19.89	20.03	19.92		
1.4	QPSK	3	0	19.94	20.08	20.02		
1.4	QPSK	3	1	19.98	20.12	20.04		
1.4	QPSK	3	3	19.97	20.08	20.04		
1.4	QPSK	6	0	18.94	19.05	19.04	20.5	1
1.4	16QAM	1	0	19.34	19.52	19.40	20.5	1
1.4	16QAM	1	3	19.46	19.60	19.45		
1.4	16QAM	1	5	19.32	19.51	19.37		
1.4	16QAM	3	0	19.13	19.27	19.19		
1.4	16QAM	3	1	19.18	19.31	19.21		
1.4	16QAM	3	3	19.11	19.26	19.16		
1.4	16QAM	6	0	18.19	18.29	18.23	19.5	2
1.4	64QAM	1	0	18.30	18.42	18.35	19.5	2
1.4	64QAM	1	3	18.33	18.52	18.39		
1.4	64QAM	1	5	18.29	18.47	18.31		
1.4	64QAM	3	0	18.27	18.40	18.33		
1.4	64QAM	3	1	18.30	18.46	18.38		
1.4	64QAM	3	3	18.26	18.40	18.31		
1.4	64QAM	6	0	17.13	17.23	17.19	18.5	3



<LTE Band 66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	20.96	21.01	20.96		
20	QPSK	1	49	21.02	21.03	20.99	22.5	0
20	QPSK	1	99	20.87	20.89	20.79		
20	QPSK	50	0	19.84	19.89	19.84		
20	QPSK	50	24	19.81	19.87	19.80	21.5	1
20	QPSK	50	50	19.80	19.84	19.76		
20	QPSK	100	0	19.83	19.88	19.81		
20	16QAM	1	0	20.40	20.44	20.45	21.5	1
20	16QAM	1	49	20.54	20.41	20.45		
20	16QAM	1	99	20.42	20.33	20.27		
20	16QAM	50	0	18.99	19.01	18.97	20.5	2
20	16QAM	50	24	18.97	19.00	18.96		
20	16QAM	50	50	18.98	18.95	18.94		
20	16QAM	100	0	19.02	19.01	18.96		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	20.94	20.94	20.92	22.5	0
15	QPSK	1	37	21.01	21.00	20.98		
15	QPSK	1	74	20.92	20.90	20.78		
15	QPSK	36	0	19.82	19.84	19.79	21.5	1
15	QPSK	36	20	19.90	19.92	19.89		
15	QPSK	36	39	19.80	19.82	19.75		
15	QPSK	75	0	19.80	19.86	19.76		
15	16QAM	1	0	20.37	20.37	20.39	21.5	1
15	16QAM	1	37	20.47	20.40	20.49		
15	16QAM	1	74	20.44	20.36	20.32		
15	16QAM	36	0	18.97	18.98	18.96	20.5	2
15	16QAM	36	20	19.09	19.07	19.08		
15	16QAM	36	39	18.96	18.95	18.94		
15	16QAM	75	0	18.95	18.97	18.96		
15	16QAM	75	0	18.95	18.97	18.96		
Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	20.88	20.95	20.90	22.5	0
10	QPSK	1	25	20.96	20.98	20.95		
10	QPSK	1	49	20.86	20.86	20.72		
10	QPSK	25	0	19.83	19.81	19.75	21.5	1
10	QPSK	25	12	19.75	19.85	19.76		
10	QPSK	25	25	19.77	19.79	19.72		
10	QPSK	50	0	19.79	19.78	19.77		
10	16QAM	1	0	20.32	20.42	20.35	21.5	1
10	16QAM	1	25	20.44	20.38	20.38		
10	16QAM	1	49	20.39	20.32	20.27		
10	16QAM	25	0	18.89	19.01	18.91	20.5	2
10	16QAM	25	12	18.93	18.96	18.95		
10	16QAM	25	25	18.88	18.86	18.92		
10	16QAM	50	0	18.95	18.96	18.95		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	20.94	21.01	20.89	22.5	0
5	QPSK	1	12	21.01	20.93	20.93		
5	QPSK	1	24	20.81	20.84	20.70		





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5	QPSK	12	0	19.80	19.86	19.77	21.5	1
5	QPSK	12	7	19.73	19.83	19.77		
5	QPSK	12	13	19.79	19.81	19.73		
5	QPSK	25	0	19.77	19.80	19.77		
5	16QAM	1	0	20.36	20.36	20.43	21.5	1
5	16QAM	1	12	20.44	20.38	20.45		
5	16QAM	1	24	20.41	20.31	20.19		
5	16QAM	12	0	18.94	18.96	18.88	20.5	2
5	16QAM	12	7	18.93	18.94	18.87		
5	16QAM	12	13	18.91	18.85	18.92		
5	16QAM	25	0	18.97	18.97	18.94		
Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	20.95	20.95	20.90	22.5	0
3	QPSK	1	8	20.98	20.95	20.90		
3	QPSK	1	14	20.84	20.81	20.72		
3	QPSK	8	0	19.83	19.82	19.84	21.5	1
3	QPSK	8	4	19.77	19.79	19.74		
3	QPSK	8	7	19.74	19.75	19.70		
3	QPSK	15	0	19.82	19.88	19.81		
3	16QAM	1	0	20.40	20.34	20.41	21.5	1
3	16QAM	1	8	20.52	20.31	20.38		
3	16QAM	1	14	20.35	20.29	20.20		
3	16QAM	8	0	18.89	18.99	18.87	20.5	2
3	16QAM	8	4	18.89	18.91	18.87		
3	16QAM	8	7	18.92	18.95	18.93		
3	16QAM	15	0	19.00	19.01	18.96		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	20.81	20.80	20.71	22.5	0
1.4	QPSK	1	3	20.92	20.91	20.82		
1.4	QPSK	1	5	20.83	20.79	20.71		
1.4	QPSK	3	0	20.88	20.88	20.79		
1.4	QPSK	3	1	20.92	20.91	20.82		
1.4	QPSK	3	3	20.87	20.87	20.77		
1.4	QPSK	6	0	19.84	19.87	19.77	21.5	1
1.4	16QAM	1	0	20.20	20.19	20.24	21.5	1
1.4	16QAM	1	3	20.33	20.30	20.31		
1.4	16QAM	1	5	20.23	20.19	20.21		
1.4	16QAM	3	0	20.04	20.00	19.98		
1.4	16QAM	3	1	20.08	20.04	20.02		
1.4	16QAM	3	3	20.01	20.00	19.96		
1.4	16QAM	6	0	19.08	19.06	19.02	20.5	2



UAT State 1

<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	21.56	21.67	21.71		
20	QPSK	1	49	21.65	21.64	21.68	22	0
20	QPSK	1	99	21.60	21.60	21.69		
20	QPSK	50	0	20.67	20.70	20.71		
20	QPSK	50	24	20.67	20.71	20.79	21	1
20	QPSK	50	50	20.71	20.64	20.73		
20	QPSK	100	0	20.63	20.67	20.76		
20	16QAM	1	0	20.83	21.00	20.94	21	1
20	16QAM	1	49	20.98	20.98	20.91		
20	16QAM	1	99	21.00	20.82	21.00		
20	16QAM	50	0	19.79	19.85	19.78	20	2
20	16QAM	50	24	19.81	19.81	19.88		
20	16QAM	50	50	19.84	19.73	19.83		
20	16QAM	100	0	19.75	19.79	19.82	20	2
20	64QAM	1	0	19.81	19.99	19.94		
20	64QAM	1	49	19.94	19.98	19.88		
20	64QAM	1	99	20.00	19.80	20.00	19	3
20	64QAM	50	0	18.82	18.86	18.80		
20	64QAM	50	24	18.83	18.84	18.91		
20	64QAM	50	50	18.87	18.76	18.84	19	3
20	64QAM	100	0	18.79	18.81	18.88		
Channel				20025	20175	20325		
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	21.54	21.71	21.70		
15	QPSK	1	37	21.61	21.59	21.67	22	0
15	QPSK	1	74	21.57	21.63	21.70		
15	QPSK	36	0	20.64	20.71	20.77		
15	QPSK	36	20	20.69	20.68	20.77	21	1
15	QPSK	36	39	20.62	20.63	20.70		
15	QPSK	75	0	20.64	20.66	20.74		
15	16QAM	1	0	20.82	21.00	20.96	21	1
15	16QAM	1	37	20.94	20.98	20.93		
15	16QAM	1	74	20.96	20.86	21.00		
15	16QAM	36	0	19.75	19.84	19.81	20	2
15	16QAM	36	20	19.79	19.84	19.85		
15	16QAM	36	39	19.77	19.75	19.81		
15	16QAM	75	0	19.77	19.80	19.83	20	2
15	64QAM	1	0	19.80	20.00	19.96		
15	64QAM	1	37	19.91	19.97	19.92		
15	64QAM	1	74	19.91	19.85	20.00	19	3
15	64QAM	36	0	18.84	18.92	18.89		
15	64QAM	36	20	18.87	18.90	18.94		
15	64QAM	36	39	18.82	18.81	18.90	19	3
15	64QAM	75	0	18.80	18.85	18.87		
Channel				20000	20175	20350		
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	21.56	21.60	21.70		
10	QPSK	1	25	21.61	21.64	21.64	22	0
10	QPSK	1	49	21.51	21.51	21.59		
10	QPSK	25	0	20.65	20.69	20.65		



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10	QPSK	25	12	20.66	20.65	20.79		
10	QPSK	25	25	20.61	20.58	20.73		
10	QPSK	50	0	20.62	20.58	20.73		
10	16QAM	1	0	20.80	20.95	20.86		
10	16QAM	1	25	20.88	20.93	20.82	21	1
10	16QAM	1	49	20.96	20.74	20.96		
10	16QAM	25	0	19.69	19.83	19.77		
10	16QAM	25	12	19.78	19.78	19.86	20	2
10	16QAM	25	25	19.84	19.68	19.81		
10	16QAM	50	0	19.69	19.78	19.78		
10	64QAM	1	0	19.81	19.93	19.86		
10	64QAM	1	25	19.86	19.94	19.83	20	2
10	64QAM	1	49	19.99	19.74	19.96		
10	64QAM	25	0	18.74	18.86	18.77		
10	64QAM	25	12	18.83	18.74	18.89	19	3
10	64QAM	25	25	18.84	18.70	18.84		
10	64QAM	50	0	18.74	18.80	18.81		
Channel				19975	20175	20375	Tune-up limit	MPR
Frequency (MHz)				1712.5	1732.5	1752.5	(dBm)	(dB)
5	QPSK	1	0	21.46	21.62	21.63		
5	QPSK	1	12	21.60	21.54	21.68	22	0
5	QPSK	1	24	21.51	21.52	21.61		
5	QPSK	12	0	20.61	20.63	20.71		
5	QPSK	12	7	20.61	20.61	20.69	21	1
5	QPSK	12	13	20.65	20.55	20.68		
5	QPSK	25	0	20.59	20.58	20.70		
5	16QAM	1	0	20.83	20.98	20.87		
5	16QAM	1	12	20.95	20.94	20.82	21	1
5	16QAM	1	24	20.98	20.77	20.99		
5	16QAM	12	0	19.74	19.76	19.69		
5	16QAM	12	7	19.77	19.77	19.79	20	2
5	16QAM	12	13	19.79	19.70	19.79		
5	16QAM	25	0	19.66	19.73	19.78		
5	64QAM	1	0	19.72	19.92	19.85		
5	64QAM	1	12	19.90	19.89	19.84	20	2
5	64QAM	1	24	19.92	19.72	19.91		
5	64QAM	12	0	18.79	18.85	18.73		
5	64QAM	12	7	18.81	18.77	18.88	19	3
5	64QAM	12	13	18.77	18.72	18.78		
5	64QAM	25	0	18.70	18.75	18.79		
Channel				19965	20175	20385	Tune-up limit	MPR
Frequency (MHz)				1711.5	1732.5	1753.5	(dBm)	(dB)
3	QPSK	1	0	21.47	21.64	21.68		
3	QPSK	1	8	21.65	21.54	21.60	22	0
3	QPSK	1	14	21.57	21.60	21.67		
3	QPSK	8	0	20.58	20.68	20.67		
3	QPSK	8	4	20.59	20.65	20.76	21	1
3	QPSK	8	7	20.71	20.64	20.66		
3	QPSK	15	0	20.62	20.62	20.76		
3	16QAM	1	0	20.80	20.92	20.91		
3	16QAM	1	8	20.98	20.94	20.87	21	1
3	16QAM	1	14	20.99	20.78	20.99		
3	16QAM	8	0	19.77	19.81	19.75		
3	16QAM	8	4	19.74	19.71	19.85	20	2
3	16QAM	8	7	19.75	19.63	19.77		
3	16QAM	15	0	19.73	19.73	19.77		



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3	64QAM	1	0	19.74	19.94	19.85	20	2
3	64QAM	1	8	19.90	19.95	19.79		
3	64QAM	1	14	19.93	19.71	20.00		
3	64QAM	8	0	18.80	18.76	18.73	19	3
3	64QAM	8	4	18.83	18.74	18.89		
3	64QAM	8	7	18.87	18.71	18.84		
3	64QAM	15	0	18.76	18.80	18.82		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	21.43	21.55	21.57	22	0
1.4	QPSK	1	3	21.52	21.64	21.66		
1.4	QPSK	1	5	21.41	21.54	21.57		
1.4	QPSK	3	0	21.50	21.63	21.64		
1.4	QPSK	3	1	21.54	21.67	21.69		
1.4	QPSK	3	3	21.50	21.62	21.67		
1.4	QPSK	6	0	20.48	20.61	20.65	21	1
1.4	16QAM	1	0	20.74	20.88	20.92	21	1
1.4	16QAM	1	3	20.79	20.94	20.97		
1.4	16QAM	1	5	20.68	20.87	20.90		
1.4	16QAM	3	0	20.52	20.69	20.71		
1.4	16QAM	3	1	20.57	20.73	20.76		
1.4	16QAM	3	3	20.52	20.67	20.71		
1.4	16QAM	6	0	19.66	19.80	19.83	20	2
1.4	64QAM	1	0	19.71	19.87	19.93	20	2
1.4	64QAM	1	3	19.76	19.94	19.97		
1.4	64QAM	1	5	19.67	19.83	19.89		
1.4	64QAM	3	0	19.71	19.86	19.92		
1.4	64QAM	3	1	19.75	19.90	19.94		
1.4	64QAM	3	3	19.70	19.85	19.91		
1.4	64QAM	6	0	18.62	18.74	18.81		



<LTE Band 12>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)		
Channel				23060	23095	23130		0		
Frequency (MHz)				704	707.5	711				
10	QPSK	1	0	22.01	22.03	22.12				
10	QPSK	1	25	22.06	22.06	22.13	24	0		
10	QPSK	1	49	22.12	22.07	22.15				
10	QPSK	25	0	21.12	21.15	21.22				
10	QPSK	25	12	21.25	21.16	21.22	23	1		
10	QPSK	25	25	21.20	21.12	21.24				
10	QPSK	50	0	21.21	21.14	21.22				
10	16QAM	1	0	21.11	21.17	21.41	23	1		
10	16QAM	1	25	21.26	21.40	21.35				
10	16QAM	1	49	21.43	21.26	21.25				
10	16QAM	25	0	20.14	20.20	20.25	22	2		
10	16QAM	25	12	20.25	20.20	20.23				
10	16QAM	25	25	20.27	20.14	20.19				
10	16QAM	50	0	20.25	20.18	20.19	22	2		
10	64QAM	1	0	20.04	20.11	20.32				
10	64QAM	1	25	20.23	20.36	20.28				
10	64QAM	1	49	20.40	20.23	20.11	21	3		
10	64QAM	25	0	19.16	19.19	19.16				
10	64QAM	25	12	19.29	19.23	19.25				
10	64QAM	25	25	19.28	19.15	19.18	21	3		
10	64QAM	50	0	19.28	19.22	19.22				
Channel				23035	23095	23155			Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		0		
5	QPSK	1	0	22.03	22.00	22.09				
5	QPSK	1	12	22.06	22.00	22.10				
5	QPSK	1	24	22.12	22.01	22.12	24	0		
5	QPSK	12	0	21.11	21.09	21.17				
5	QPSK	12	7	21.23	21.11	21.22				
5	QPSK	12	13	21.10	21.08	21.16	23	1		
5	QPSK	25	0	21.14	21.05	21.19				
5	16QAM	1	0	21.03	21.12	21.38				
5	16QAM	1	12	21.25	21.30	21.28	23	1		
5	16QAM	1	24	21.33	21.25	21.25				
5	16QAM	12	0	20.09	20.10	20.17				
5	16QAM	12	7	20.25	20.16	20.23	22	2		
5	16QAM	12	13	20.25	20.05	20.19				
5	16QAM	25	0	20.15	20.16	20.15				
5	64QAM	1	0	20.02	20.05	20.31	22	2		
5	64QAM	1	12	20.13	20.27	20.28				
5	64QAM	1	24	20.39	20.16	20.11				
5	64QAM	12	0	19.13	19.15	19.12	21	3		
5	64QAM	12	7	19.26	19.17	19.24				
5	64QAM	12	13	19.21	19.12	19.15				
5	64QAM	25	0	19.18	19.14	19.15	21	3		
Channel				23025	23095	23165			Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5				0
3	QPSK	1	0	22.00	22.00	22.07				
3	QPSK	1	8	22.02	22.04	22.09				
3	QPSK	1	14	22.03	22.00	22.04	24	0		
3	QPSK	8	0	21.12	21.11	21.18				
3	QPSK	8	4	21.20	21.13	21.12				



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3	QPSK	8	7	21.18	21.06	21.14		
3	QPSK	15	0	21.17	21.05	21.20		
3	16QAM	1	0	21.10	21.16	21.40	23	1
3	16QAM	1	8	21.21	21.38	21.27		
3	16QAM	1	14	21.43	21.20	21.23		
3	16QAM	8	0	20.09	20.17	20.22	22	2
3	16QAM	8	4	20.20	20.15	20.23		
3	16QAM	8	7	20.25	20.04	20.19		
3	16QAM	15	0	20.15	20.11	20.19		
3	64QAM	1	0	20.00	20.07	20.30	22	2
3	64QAM	1	8	20.19	20.33	20.28		
3	64QAM	1	14	20.40	20.17	20.02		
3	64QAM	8	0	19.12	19.14	19.07	21	3
3	64QAM	8	4	19.22	19.13	19.22		
3	64QAM	8	7	19.19	19.13	19.16		
3	64QAM	15	0	19.21	19.22	19.14		
Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	22.03	22.01	22.04	24	0
1.4	QPSK	1	3	22.12	22.07	22.13		
1.4	QPSK	1	5	22.04	22.00	22.07		
1.4	QPSK	3	0	22.07	22.05	22.09		
1.4	QPSK	3	1	22.13	22.09	22.14		
1.4	QPSK	3	3	22.07	22.06	22.12		
1.4	QPSK	6	0	21.05	21.03	21.11	23	1
1.4	16QAM	1	0	21.21	21.26	21.14	23	1
1.4	16QAM	1	3	21.27	21.35	21.22		
1.4	16QAM	1	5	21.20	21.29	21.13		
1.4	16QAM	3	0	21.04	21.09	21.00		
1.4	16QAM	3	1	21.10	21.14	21.05		
1.4	16QAM	3	3	21.03	21.06	21.00		
1.4	16QAM	6	0	20.15	20.18	20.17	22	2
1.4	64QAM	1	0	20.21	20.24	20.14	22	2
1.4	64QAM	1	3	20.22	20.31	20.19		
1.4	64QAM	1	5	20.16	20.25	20.10		
1.4	64QAM	3	0	20.20	20.26	20.13		
1.4	64QAM	3	1	20.23	20.30	20.19		
1.4	64QAM	3	3	20.19	20.25	20.13		
1.4	64QAM	6	0	19.08	19.12	19.11	21	3



<LTE Band 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	22.66	22.64	22.62		
10	QPSK	1	25	22.70	22.68	22.68	24	0
10	QPSK	1	49	22.71	22.66	22.68		
10	QPSK	25	0	21.81	21.79	21.75		
10	QPSK	25	12	21.83	21.80	21.79	23	1
10	QPSK	25	25	21.80	21.81	21.78		
10	QPSK	50	0	21.80	21.78	21.77		
10	16QAM	1	0	21.82	21.84	21.85	23	1
10	16QAM	1	25	21.93	21.89	21.83		
10	16QAM	1	49	21.75	21.75	21.69		
10	16QAM	25	0	20.85	20.83	20.83	22	2
10	16QAM	25	12	20.86	20.83	20.81		
10	16QAM	25	25	20.80	20.79	20.77		
10	16QAM	50	0	20.84	20.81	20.80	22	2
10	64QAM	1	0	20.80	20.82	20.83		
10	64QAM	1	25	20.93	20.88	20.79		
10	64QAM	1	49	20.71	20.72	20.68	21	3
10	64QAM	25	0	19.85	19.88	19.81		
10	64QAM	25	12	19.86	19.86	19.83		
10	64QAM	25	25	19.82	19.80	19.79	21	3
10	64QAM	50	0	19.86	19.82	19.82		
Channel				23755	23790	23825		
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	22.69	22.65	22.61		
5	QPSK	1	12	22.70	22.68	22.67	24	0
5	QPSK	1	24	22.69	22.67	22.64		
5	QPSK	12	0	21.79	21.75	21.73		
5	QPSK	12	7	21.84	21.79	21.76	23	1
5	QPSK	12	13	21.81	21.76	21.72		
5	QPSK	25	0	21.81	21.76	21.75		
5	16QAM	1	0	21.85	21.90	21.76	23	1
5	16QAM	1	12	21.92	21.88	21.72		
5	16QAM	1	24	21.96	21.79	21.66		
5	16QAM	12	0	20.82	20.84	20.70	22	2
5	16QAM	12	7	20.87	20.80	20.71		
5	16QAM	12	13	20.89	20.78	20.69		
5	16QAM	25	0	20.87	20.79	20.73	22	2
5	64QAM	1	0	20.82	20.88	20.78		
5	64QAM	1	12	20.90	20.86	20.72		
5	64QAM	1	24	20.92	20.76	20.65	21	3
5	64QAM	12	0	19.91	19.86	19.75		
5	64QAM	12	7	19.96	19.89	19.77		
5	64QAM	12	13	19.92	19.84	19.75	21	3
5	64QAM	25	0	19.87	19.81	19.74		



<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	21.58	21.63	21.57		
20	QPSK	1	49	21.64	21.62	21.58	22	0
20	QPSK	1	99	21.48	21.48	21.39		
20	QPSK	50	0	20.51	20.57	20.46		
20	QPSK	50	24	20.49	20.52	20.45	21	1
20	QPSK	50	50	20.46	20.51	20.40		
20	QPSK	100	0	20.50	20.53	20.45		
20	16QAM	1	0	20.83	20.91	20.91	21	1
20	16QAM	1	49	20.98	20.86	20.77		
20	16QAM	1	99	20.88	20.83	20.62		
20	16QAM	50	0	19.63	19.63	19.50	20	2
20	16QAM	50	24	19.62	19.60	19.55		
20	16QAM	50	50	19.60	19.59	19.55		
20	16QAM	100	0	19.63	19.62	19.54		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	21.57	21.58	21.53	22	0
15	QPSK	1	37	21.62	21.55	21.55		
15	QPSK	1	74	21.52	21.51	21.39		
15	QPSK	36	0	20.48	20.40	20.39	21	1
15	QPSK	36	20	20.56	20.58	20.48		
15	QPSK	36	39	20.46	20.44	20.34		
15	QPSK	75	0	20.48	20.48	20.32		
15	16QAM	1	0	20.82	20.84	20.73	21	1
15	16QAM	1	37	20.94	20.85	20.73		
15	16QAM	1	74	20.90	20.84	20.58		
15	16QAM	36	0	19.56	19.55	19.53	20	2
15	16QAM	36	20	19.70	19.67	19.54		
15	16QAM	36	39	19.59	19.55	19.47		
15	16QAM	75	0	19.60	19.57	19.45		
Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	21.54	21.57	21.47	22	0
10	QPSK	1	25	21.56	21.57	21.44		
10	QPSK	1	49	21.48	21.48	21.35		
10	QPSK	25	0	20.52	20.56	20.42	21	1
10	QPSK	25	12	20.52	20.55	20.39		
10	QPSK	25	25	20.46	20.50	20.37		
10	QPSK	50	0	20.52	20.54	20.43		
10	16QAM	1	0	20.80	20.76	20.72	21	1
10	16QAM	1	25	20.84	20.77	20.75		
10	16QAM	1	49	20.79	20.75	20.59		
10	16QAM	25	0	19.63	19.61	19.46	20	2
10	16QAM	25	12	19.61	19.60	19.54		
10	16QAM	25	25	19.60	19.58	19.46		
10	16QAM	50	0	19.62	19.61	19.56		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	21.41	21.41	21.28	22	0
5	QPSK	1	12	21.57	21.58	21.41		
5	QPSK	1	24	21.37	21.37	21.25		





5	QPSK	12	0	20.54	20.50	20.38	21	1
5	QPSK	12	7	20.63	20.61	20.47		
5	QPSK	12	13	20.52	20.47	20.37		
5	QPSK	25	0	20.52	20.52	20.38	21	1
5	16QAM	1	0	20.68	20.62	20.63		
5	16QAM	1	12	20.81	20.76	20.72		
5	16QAM	1	24	20.67	20.61	20.51	20	2
5	16QAM	12	0	19.62	19.55	19.53		
5	16QAM	12	7	19.68	19.65	19.60		
5	16QAM	12	13	19.62	19.58	19.47		
5	16QAM	25	0	19.59	19.57	19.48	Tune-up limit (dBm)	MPR (dB)
Channel				131987	132322	132657		
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	21.39	21.31	21.26	22	0
3	QPSK	1	8	21.55	21.48	21.34		
3	QPSK	1	14	21.33	21.27	21.21		
3	QPSK	8	0	20.52	20.45	20.29	21	1
3	QPSK	8	4	20.54	20.58	20.41		
3	QPSK	8	7	20.45	20.41	20.29		
3	QPSK	15	0	20.50	20.51	20.29	21	1
3	16QAM	1	0	20.67	20.55	20.60		
3	16QAM	1	8	20.76	20.70	20.63		
3	16QAM	1	14	20.63	20.60	20.45		
3	16QAM	8	0	19.56	19.48	19.46	20	2
3	16QAM	8	4	19.68	19.65	19.59		
3	16QAM	8	7	19.58	19.53	19.46		
3	16QAM	15	0	19.49	19.54	19.44		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	21.38	21.40	21.22	22	0
1.4	QPSK	1	3	21.57	21.57	21.32		
1.4	QPSK	1	5	21.37	21.35	21.18		
1.4	QPSK	3	0	20.47	20.42	20.33		
1.4	QPSK	3	1	20.53	20.57	20.41		
1.4	QPSK	3	3	20.44	20.40	20.29		
1.4	QPSK	6	0	20.42	20.46	20.29	21	1
1.4	16QAM	1	0	20.66	20.53	20.59	21	1
1.4	16QAM	1	3	20.72	20.70	20.69		
1.4	16QAM	1	5	20.59	20.54	20.44		
1.4	16QAM	3	0	19.52	19.51	19.46		
1.4	16QAM	3	1	19.59	19.55	19.53		
1.4	16QAM	3	3	19.60	19.57	19.37		
1.4	16QAM	6	0	19.50	19.48	19.44	20	2



<LTE Band 71>

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				133222	133322	133372		
Frequency (MHz)				673	683	688		
20	QPSK	1	0	22.58	22.51	22.62		
20	QPSK	1	49	22.68	22.64	22.71		
20	QPSK	1	99	22.65	22.74	22.80		
20	QPSK	50	0	21.73	21.62	21.56	23	1
20	QPSK	50	24	21.71	21.61	21.76		
20	QPSK	50	50	21.79	21.65	21.86		
20	QPSK	100	0	21.80	21.58	21.73	23	1
20	16QAM	1	0	21.79	21.85	21.77		
20	16QAM	1	49	21.99	21.96	22.03		
20	16QAM	1	99	21.96	22.01	22.01	22	2
20	16QAM	50	0	20.82	20.69	20.66		
20	16QAM	50	24	20.82	20.71	20.83		
20	16QAM	50	50	20.86	20.73	20.92	22	2
20	16QAM	100	0	20.89	20.65	20.91		
20	64QAM	1	0	20.79	20.82	20.84		
20	64QAM	1	49	20.96	20.95	20.97	22	2
20	64QAM	1	99	20.91	20.96	20.98		
20	64QAM	50	0	19.86	19.72	19.79		
20	64QAM	50	24	19.84	19.72	20.01	21	3
20	64QAM	50	50	19.88	19.84	20.04		
20	64QAM	100	0	19.93	19.80	19.95		
Channel				133197	133297	133397	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				670.5	680.5	690.5		
15	QPSK	1	0	22.63	22.52	22.60		
15	QPSK	1	37	22.68	22.57	22.73		
15	QPSK	1	74	22.70	22.72	22.77		
15	QPSK	36	0	21.72	21.63	21.65	23	1
15	QPSK	36	20	21.72	21.62	21.71		
15	QPSK	36	39	21.78	21.60	21.81		
15	QPSK	75	0	21.68	21.59	21.67	23	1
15	16QAM	1	0	21.80	21.85	21.94		
15	16QAM	1	37	22.01	21.86	21.99		
15	16QAM	1	74	21.98	22.11	22.01	22	2
15	16QAM	36	0	20.80	20.74	20.74		
15	16QAM	36	20	20.86	20.73	20.78		
15	16QAM	36	39	20.89	20.69	20.86	22	2
15	16QAM	75	0	20.78	20.69	20.87		
15	64QAM	1	0	20.84	20.83	20.91		
15	64QAM	1	37	20.99	20.86	20.97	22	2
15	64QAM	1	74	20.94	21.03	20.98		
15	64QAM	36	0	19.89	19.79	19.87		
15	64QAM	36	20	19.91	19.79	20.01	21	3
15	64QAM	36	39	19.96	19.74	20.01		
15	64QAM	75	0	19.83	19.80	19.95		
Channel				133172	133272	133422	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				668	678	693		
10	QPSK	1	0	22.63	22.50	22.64		
10	QPSK	1	25	22.61	22.56	22.72		
10	QPSK	1	49	22.65	22.60	22.77		
10	QPSK	25	0	21.71	21.64	21.70	23	1
10	QPSK	25	12	21.78	21.65	21.72		



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10	QPSK	25	25	21.72	21.58	21.82		
10	QPSK	50	0	21.77	21.60	21.84		
10	16QAM	1	0	21.81	21.80	21.94	23	1
10	16QAM	1	25	21.91	21.86	21.92		
10	16QAM	1	49	21.99	21.86	21.98		
10	16QAM	25	0	20.75	20.70	20.74	22	2
10	16QAM	25	12	20.85	20.70	20.91		
10	16QAM	25	25	20.85	20.68	20.85		
10	16QAM	50	0	20.84	20.71	20.89		
10	64QAM	1	0	20.78	20.79	20.91	22	2
10	64QAM	1	25	20.90	20.83	20.91		
10	64QAM	1	49	20.93	20.85	20.93		
10	64QAM	25	0	19.77	19.74	19.78	21	3
10	64QAM	25	12	19.90	19.75	19.93		
10	64QAM	25	25	19.86	19.71	19.89		
10	64QAM	50	0	19.88	19.83	19.89		
Channel				133147	133247	133447	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				665.5	675.5	695.5		
5	QPSK	1	0	22.61	22.69	22.70	24	0
5	QPSK	1	12	22.63	22.57	22.79		
5	QPSK	1	24	22.60	22.60	22.78		
5	QPSK	12	0	21.69	21.63	21.79	23	1
5	QPSK	12	7	21.70	21.64	21.90		
5	QPSK	12	13	21.67	21.58	21.88		
5	QPSK	25	0	21.69	21.61	21.82		
5	16QAM	1	0	21.80	21.83	21.87	23	1
5	16QAM	1	12	21.80	21.86	21.98		
5	16QAM	1	24	21.84	21.91	21.96		
5	16QAM	12	0	20.74	20.70	20.82	22	2
5	16QAM	12	7	20.75	20.71	20.94		
5	16QAM	12	13	20.74	20.78	20.93		
5	16QAM	25	0	20.72	20.80	20.85		
5	64QAM	1	0	20.80	20.91	20.86	22	2
5	64QAM	1	12	20.79	20.93	20.97		
5	64QAM	1	24	20.84	20.98	20.95		
5	64QAM	12	0	19.81	19.86	19.90	21	3
5	64QAM	12	7	19.82	19.90	20.02		
5	64QAM	12	13	19.81	19.85	19.96		
5	64QAM	25	0	19.75	19.82	19.88		



**UAT State 2**

**<LTE Band 4>**

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	17.36	17.43	17.52		
20	QPSK	1	49	17.41	17.53	17.56	18.5	0
20	QPSK	1	99	17.50	17.54	17.60		
20	QPSK	50	0	16.43	16.50	16.48		
20	QPSK	50	24	16.44	16.52	16.58	17.5	1
20	QPSK	50	50	16.49	16.43	16.52		
20	QPSK	100	0	16.41	16.51	16.56		
20	16QAM	1	0	16.86	17.02	16.97	17.5	1
20	16QAM	1	49	16.98	17.06	17.03		
20	16QAM	1	99	16.96	16.96	17.06		
20	16QAM	50	0	15.55	15.64	15.60	16.5	2
20	16QAM	50	24	15.60	15.65	15.71		
20	16QAM	50	50	15.66	15.57	15.68		
20	16QAM	100	0	15.55	15.62	15.69	16.5	2
20	64QAM	1	0	15.76	15.86	15.94		
20	64QAM	1	49	15.91	15.98	15.93		
20	64QAM	1	99	15.86	15.88	15.95	16.5	2
20	64QAM	50	0	14.58	14.67	14.62		
20	64QAM	50	24	14.60	14.69	14.73		
20	64QAM	50	50	14.69	14.61	14.67	15.5	3
20	64QAM	50	50	14.69	14.61	14.67		
20	64QAM	100	0	14.58	14.67	14.72		
Channel				20025	20175	20325		
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	17.34	17.53	17.56		
15	QPSK	1	37	17.44	17.50	17.54	18.5	0
15	QPSK	1	74	17.34	17.50	17.57		
15	QPSK	36	0	16.43	16.52	16.56		
15	QPSK	36	20	16.48	16.54	16.58	17.5	1
15	QPSK	36	39	16.40	16.47	16.54		
15	QPSK	75	0	16.43	16.49	16.56		
15	16QAM	1	0	16.81	17.08	17.05	17.5	1
15	16QAM	1	37	16.97	17.02	17.02		
15	16QAM	1	74	16.88	16.97	17.10		
15	16QAM	36	0	15.58	15.66	15.69	16.5	2
15	16QAM	36	20	15.60	15.69	15.71		
15	16QAM	36	39	15.55	15.60	15.66		
15	16QAM	75	0	15.55	15.66	15.69	16.5	2
15	64QAM	1	0	15.78	16.00	15.96		
15	64QAM	1	37	15.86	15.91	15.95		
15	64QAM	1	74	15.83	15.94	15.98	16.5	2
15	64QAM	36	0	14.62	14.71	14.74		
15	64QAM	36	20	14.63	14.73	14.75		
15	64QAM	36	39	14.61	14.66	14.70	15.5	3
15	64QAM	36	39	14.61	14.66	14.70		
15	64QAM	75	0	14.56	14.67	14.69		
Channel				20000	20175	20350		
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	17.31	17.46	17.41		
10	QPSK	1	25	17.28	17.44	17.50	18.5	0
10	QPSK	1	49	17.32	17.37	17.43		
10	QPSK	25	0	16.28	16.45	16.41		



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10	QPSK	25	12	16.39	16.46	16.41		
10	QPSK	25	25	16.35	16.39	16.47		
10	QPSK	50	0	16.39	16.42	16.38		
10	16QAM	1	0	16.80	17.02	16.86	17.5	1
10	16QAM	1	25	16.76	16.96	17.01		
10	16QAM	1	49	16.86	16.87	16.93		
10	16QAM	25	0	15.44	15.61	15.53	16.5	2
10	16QAM	25	12	15.54	15.61	15.54		
10	16QAM	25	25	15.51	15.54	15.60		
10	16QAM	50	0	15.52	15.56	15.50		
10	64QAM	1	0	15.70	15.91	15.75	16.5	2
10	64QAM	1	25	15.72	15.91	15.93		
10	64QAM	1	49	15.81	15.80	15.85		
10	64QAM	25	0	14.45	14.62	14.55	15.5	3
10	64QAM	25	12	14.55	14.64	14.55		
10	64QAM	25	25	14.52	14.57	14.62		
10	64QAM	50	0	14.54	14.58	14.52		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	17.27	17.44	17.48	18.5	0
5	QPSK	1	12	17.30	17.42	17.46		
5	QPSK	1	24	17.25	17.40	17.43		
5	QPSK	12	0	16.32	16.46	16.51	17.5	1
5	QPSK	12	7	16.34	16.50	16.55		
5	QPSK	12	13	16.32	16.43	16.51		
5	QPSK	25	0	16.29	16.40	16.50		
5	16QAM	1	0	16.71	16.94	16.94	17.5	1
5	16QAM	1	12	16.74	16.95	17.00		
5	16QAM	1	24	16.69	16.88	16.93		
5	16QAM	12	0	15.48	15.65	15.68	16.5	2
5	16QAM	12	7	15.50	15.68	15.70		
5	16QAM	12	13	15.45	15.63	15.66		
5	16QAM	25	0	15.42	15.58	15.64		
5	64QAM	1	0	15.66	15.88	15.88	16.5	2
5	64QAM	1	12	15.72	15.89	15.93		
5	64QAM	1	24	15.63	15.80	15.83		
5	64QAM	12	0	14.53	14.69	14.71	15.5	3
5	64QAM	12	7	14.58	14.73	14.76		
5	64QAM	12	13	14.51	14.67	14.72		
5	64QAM	25	0	14.45	14.60	14.66		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	17.30	17.42	17.45	18.5	0
3	QPSK	1	8	17.30	17.44	17.53		
3	QPSK	1	14	17.28	17.41	17.47		
3	QPSK	8	0	16.32	16.47	16.53	17.5	1
3	QPSK	8	4	16.35	16.51	16.57		
3	QPSK	8	7	16.35	16.47	16.54		
3	QPSK	15	0	16.33	16.44	16.50		
3	16QAM	1	0	16.73	16.98	16.99	17.5	1
3	16QAM	1	8	16.82	16.98	17.03		
3	16QAM	1	14	16.70	16.95	16.93		
3	16QAM	8	0	15.54	15.70	15.71	16.5	2
3	16QAM	8	4	15.59	15.74	15.77		
3	16QAM	8	7	15.54	15.69	15.74		
3	16QAM	15	0	15.44	15.59	15.64		



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3	64QAM	1	0	15.67	15.90	15.92	16.5	2
3	64QAM	1	8	15.72	15.89	15.93		
3	64QAM	1	14	15.63	15.88	15.91		
3	64QAM	8	0	14.57	14.72	14.72	15.5	3
3	64QAM	8	4	14.60	14.74	14.78		
3	64QAM	8	7	14.53	14.70	14.75		
3	64QAM	15	0	14.44	14.60	14.64		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	17.29	17.37	17.43	18.5	0
1.4	QPSK	1	3	17.36	17.46	17.52		
1.4	QPSK	1	5	17.26	17.38	17.42		
1.4	QPSK	3	0	17.32	17.44	17.47		
1.4	QPSK	3	1	17.36	17.49	17.51		
1.4	QPSK	3	3	17.32	17.44	17.48		
1.4	QPSK	6	0	16.29	16.41	16.46	17.5	1
1.4	16QAM	1	0	16.73	16.93	16.95	17.5	1
1.4	16QAM	1	3	16.79	16.99	17.05		
1.4	16QAM	1	5	16.72	16.91	16.94		
1.4	16QAM	3	0	16.46	16.66	16.71		
1.4	16QAM	3	1	16.51	16.71	16.76		
1.4	16QAM	3	3	16.48	16.64	16.68		
1.4	16QAM	6	0	15.50	15.62	15.66	16.5	2
1.4	64QAM	1	0	15.63	15.85	15.86	16.5	2
1.4	64QAM	1	3	15.71	15.95	15.96		
1.4	64QAM	1	5	15.62	15.86	15.86		
1.4	64QAM	3	0	15.61	15.82	15.82		
1.4	64QAM	3	1	15.68	15.84	15.88		
1.4	64QAM	3	3	15.61	15.78	15.84		
1.4	64QAM	6	0	14.45	14.57	14.62	15.5	3



<LTE Band 66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				132072	132322	132572	18.5	0
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	17.74	17.78	17.70		
20	QPSK	1	49	17.73	17.76	17.69	17.5	1
20	QPSK	1	99	17.58	17.61	17.51		
20	QPSK	50	0	16.60	16.63	16.56		
20	QPSK	50	24	16.57	16.58	16.52	17.5	1
20	QPSK	50	50	16.53	16.58	16.48		
20	QPSK	100	0	16.57	16.63	16.53		
20	16QAM	1	0	17.22	17.24	17.20	17.5	1
20	16QAM	1	49	17.25	17.29	17.27		
20	16QAM	1	99	17.14	17.08	17.05		
20	16QAM	50	0	15.73	15.78	15.70	16.5	2
20	16QAM	50	24	15.72	15.72	15.69		
20	16QAM	50	50	15.74	15.71	15.67		
20	16QAM	100	0	15.76	15.77	15.68		
Channel				132047	132322	132597	18.5	0
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	17.53	17.57	17.50		
15	QPSK	1	37	17.59	17.58	17.55	17.5	1
15	QPSK	1	74	17.54	17.48	17.36		
15	QPSK	36	0	16.40	16.43	16.36		
15	QPSK	36	20	16.50	16.54	16.48	17.5	1
15	QPSK	36	39	16.39	16.39	16.30		
15	QPSK	75	0	16.41	16.42	16.38		
15	16QAM	1	0	17.00	17.06	16.97	17.5	1
15	16QAM	1	37	17.07	17.07	17.11		
15	16QAM	1	74	17.01	16.98	16.96		
15	16QAM	36	0	15.54	15.57	15.55	16.5	2
15	16QAM	36	20	15.65	15.65	15.61		
15	16QAM	36	39	15.53	15.51	15.52		
15	16QAM	75	0	15.56	15.55	15.50		
Channel				132022	132322	132622	18.5	0
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	17.44	17.46	17.38		
10	QPSK	1	25	17.46	17.49	17.40	17.5	1
10	QPSK	1	49	17.36	17.36	17.27		
10	QPSK	25	0	16.41	16.41	16.29		
10	QPSK	25	12	16.39	16.41	16.29	17.5	1
10	QPSK	25	25	16.37	16.36	16.26		
10	QPSK	50	0	16.39	16.39	16.26		
10	16QAM	1	0	16.93	16.87	16.90	17.5	1
10	16QAM	1	25	16.94	16.92	16.91		
10	16QAM	1	49	16.91	16.85	16.77		
10	16QAM	25	0	15.54	15.55	15.49	16.5	2
10	16QAM	25	12	15.53	15.54	15.47		
10	16QAM	25	25	15.51	15.47	15.42		
10	16QAM	50	0	15.52	15.52	15.44		
Channel				131997	132322	132647	18.5	0
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	17.29	17.33	17.21		
5	QPSK	1	12	17.48	17.44	17.37	18.5	0
5	QPSK	1	24	17.29	17.29	17.17		



5	QPSK	12	0	16.41	16.41	16.33	17.5	1
5	QPSK	12	7	16.50	16.50	16.39		
5	QPSK	12	13	16.42	16.39	16.27		
5	QPSK	25	0	16.39	16.39	16.30		
5	16QAM	1	0	16.76	16.72	16.76	17.5	1
5	16QAM	1	12	16.98	16.91	16.91		
5	16QAM	1	24	16.70	16.69	16.72		
5	16QAM	12	0	15.57	15.53	15.52	16.5	2
5	16QAM	12	7	15.65	15.63	15.61		
5	16QAM	12	13	15.55	15.52	15.49		
5	16QAM	25	0	15.53	15.52	15.43		
Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	17.37	17.39	17.25	18.5	0
3	QPSK	1	8	17.48	17.49	17.33		
3	QPSK	1	14	17.36	17.33	17.21		
3	QPSK	8	0	16.47	16.46	16.36	17.5	1
3	QPSK	8	4	16.55	16.52	16.43		
3	QPSK	8	7	16.49	16.45	16.33		
3	QPSK	15	0	16.45	16.44	16.30		
3	16QAM	1	0	16.80	16.75	16.82	17.5	1
3	16QAM	1	8	16.97	16.91	16.94		
3	16QAM	1	14	16.76	16.75	16.73		
3	16QAM	8	0	15.67	15.65	15.64	16.5	2
3	16QAM	8	4	15.73	15.72	15.69		
3	16QAM	8	7	15.66	15.63	15.62		
3	16QAM	15	0	15.60	15.58	15.47		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	17.40	17.42	17.28	18.5	0
1.4	QPSK	1	3	17.47	17.51	17.38		
1.4	QPSK	1	5	17.39	17.42	17.27		
1.4	QPSK	3	0	17.49	17.47	17.34		
1.4	QPSK	3	1	17.51	17.51	17.39		
1.4	QPSK	3	3	17.48	17.48	17.33		
1.4	QPSK	6	0	16.44	16.46	16.31	17.5	1
1.4	16QAM	1	0	16.91	16.79	16.83	17.5	1
1.4	16QAM	1	3	17.01	16.92	16.92		
1.4	16QAM	1	5	16.85	16.83	16.80		
1.4	16QAM	3	0	16.66	16.61	16.58		
1.4	16QAM	3	1	16.70	16.67	16.61		
1.4	16QAM	3	3	16.64	16.60	16.56		
1.4	16QAM	6	0	15.65	15.64	15.56		





UAT State 3

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	15.96	16.03	16.10		
20	QPSK	1	49	16.09	16.22	16.19	17	0
20	QPSK	1	99	16.15	16.26	16.28		
20	QPSK	50	0	15.13	15.15	15.11		
20	QPSK	50	24	15.11	15.18	15.24	16	1
20	QPSK	50	50	15.21	15.17	15.22		
20	QPSK	100	0	15.12	15.18	15.23		
20	16QAM	1	0	15.41	15.52	15.57	16	1
20	16QAM	1	49	15.45	15.68	15.66		
20	16QAM	1	99	15.66	15.64	15.71		
20	16QAM	50	0	14.26	14.32	14.25	15	2
20	16QAM	50	24	14.25	14.35	14.35		
20	16QAM	50	50	14.34	14.28	14.33		
20	16QAM	100	0	14.26	14.27	14.33	15	2
20	64QAM	1	0	14.31	14.36	14.49		
20	64QAM	1	49	14.44	14.60	14.51		
20	64QAM	1	99	14.60	14.60	14.64	14	3
20	64QAM	50	0	13.27	13.33	13.26		
20	64QAM	50	24	13.26	13.35	13.38		
20	64QAM	50	50	13.38	13.33	13.37	14	3
20	64QAM	100	0	13.25	13.35	13.35		
Channel				20025	20175	20325		
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	15.98	16.19	16.16		
15	QPSK	1	37	16.05	16.18	16.18	17	0
15	QPSK	1	74	16.08	16.25	16.26		
15	QPSK	36	0	15.14	15.21	15.19		
15	QPSK	36	20	15.18	15.24	15.27	16	1
15	QPSK	36	39	15.14	15.21	15.23		
15	QPSK	75	0	15.11	15.20	15.22		
15	16QAM	1	0	15.38	15.70	15.65	16	1
15	16QAM	1	37	15.50	15.57	15.52		
15	16QAM	1	74	15.51	15.70	15.70		
15	16QAM	36	0	14.25	14.32	14.34	15	2
15	16QAM	36	20	14.29	14.36	14.36		
15	16QAM	36	39	14.29	14.36	14.32		
15	16QAM	75	0	14.25	14.35	14.36	15	2
15	64QAM	1	0	14.34	14.48	14.53		
15	64QAM	1	37	14.50	14.54	14.51		
15	64QAM	1	74	14.44	14.61	14.62	14	3
15	64QAM	36	0	13.28	13.39	13.37		
15	64QAM	36	20	13.35	13.40	13.40		
15	64QAM	36	39	13.31	13.37	13.39	14	3
15	64QAM	75	0	13.31	13.33	13.34		
Channel				20000	20175	20350		
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	15.99	16.14	16.15		
10	QPSK	1	25	16.03	16.16	16.27	17	0
10	QPSK	1	49	16.08	16.13	16.26		
10	QPSK	25	0	15.02	15.18	15.19		



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10	QPSK	25	12	15.17	15.20	15.23		
10	QPSK	25	25	15.11	15.17	15.29		
10	QPSK	50	0	15.17	15.19	15.18		
10	16QAM	1	0	15.45	15.57	15.61	16	1
10	16QAM	1	25	15.43	15.70	15.64		
10	16QAM	1	49	15.56	15.57	15.69		
10	16QAM	25	0	14.16	14.33	14.30	15	2
10	16QAM	25	12	14.30	14.33	14.33		
10	16QAM	25	25	14.30	14.31	14.45		
10	16QAM	50	0	14.27	14.29	14.31		
10	64QAM	1	0	14.41	14.49	14.48	15	2
10	64QAM	1	25	14.34	14.51	14.56		
10	64QAM	1	49	14.39	14.51	14.57		
10	64QAM	25	0	13.19	13.34	13.34	14	3
10	64QAM	25	12	13.33	13.40	13.36		
10	64QAM	25	25	13.28	13.33	13.46		
10	64QAM	50	0	13.29	13.33	13.34		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	15.98	16.12	16.23	17	0
5	QPSK	1	12	15.96	16.16	16.27		
5	QPSK	1	24	15.96	16.13	16.23		
5	QPSK	12	0	15.09	15.20	15.33	16	1
5	QPSK	12	7	15.06	15.25	15.38		
5	QPSK	12	13	15.05	15.19	15.35		
5	QPSK	25	0	15.03	15.16	15.29		
5	16QAM	1	0	15.50	15.55	15.69	16	1
5	16QAM	1	12	15.41	15.60	15.67		
5	16QAM	1	24	15.42	15.59	15.66		
5	16QAM	12	0	14.20	14.36	14.45	15	2
5	16QAM	12	7	14.21	14.34	14.50		
5	16QAM	12	13	14.23	14.38	14.47		
5	16QAM	25	0	14.20	14.31	14.42		
5	64QAM	1	0	14.33	14.52	14.60	15	2
5	64QAM	1	12	14.37	14.56	14.62		
5	64QAM	1	24	14.34	14.46	14.58		
5	64QAM	12	0	13.22	13.40	13.47	14	3
5	64QAM	12	7	13.31	13.40	13.55		
5	64QAM	12	13	13.26	13.42	13.51		
5	64QAM	25	0	13.18	13.37	13.46		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	15.98	16.13	16.26	17	0
3	QPSK	1	8	16.01	16.17	16.26		
3	QPSK	1	14	16.01	16.14	16.22		
3	QPSK	8	0	15.06	15.24	15.33	16	1
3	QPSK	8	4	15.11	15.24	15.37		
3	QPSK	8	7	15.07	15.20	15.31		
3	QPSK	15	0	15.03	15.17	15.32		
3	16QAM	1	0	15.47	15.54	15.66	16	1
3	16QAM	1	8	15.50	15.65	15.64		
3	16QAM	1	14	15.38	15.62	15.56		
3	16QAM	8	0	14.27	14.42	14.49	15	2
3	16QAM	8	4	14.28	14.49	14.54		
3	16QAM	8	7	14.23	14.41	14.54		
3	16QAM	15	0	14.15	14.34	14.44		



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3	64QAM	1	0	14.35	14.55	14.56	15	2
3	64QAM	1	8	14.40	14.59	14.64		
3	64QAM	1	14	14.38	14.57	14.53		
3	64QAM	8	0	13.27	13.42	13.48	14	3
3	64QAM	8	4	13.33	13.44	13.54		
3	64QAM	8	7	13.28	13.42	13.49		
3	64QAM	15	0	13.18	13.32	13.45		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	15.90	16.08	16.18	17	0
1.4	QPSK	1	3	16.03	16.16	16.26		
1.4	QPSK	1	5	15.96	16.08	16.21		
1.4	QPSK	3	0	15.98	16.14	16.20		
1.4	QPSK	3	1	16.01	16.17	16.25		
1.4	QPSK	3	3	16.01	16.15	16.22		
1.4	QPSK	6	0	15.00	15.14	15.25	16	1
1.4	16QAM	1	0	15.38	15.58	15.60	16	1
1.4	16QAM	1	3	15.43	15.56	15.73		
1.4	16QAM	1	5	15.41	15.60	15.61		
1.4	16QAM	3	0	15.14	15.25	15.32		
1.4	16QAM	3	1	15.19	15.34	15.39		
1.4	16QAM	3	3	15.10	15.26	15.38		
1.4	16QAM	6	0	14.20	14.36	14.45	15	2
1.4	64QAM	1	0	14.33	14.44	14.58	15	2
1.4	64QAM	1	3	14.40	14.55	14.65		
1.4	64QAM	1	5	14.29	14.42	14.50		
1.4	64QAM	3	0	14.27	14.44	14.49		
1.4	64QAM	3	1	14.27	14.47	14.53		
1.4	64QAM	3	3	14.26	14.42	14.50		
1.4	64QAM	6	0	13.12	13.29	13.41	14	3



<LTE Band 12>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)		
Channel				23060	23095	23130	21.5	0		
Frequency (MHz)				704	707.5	711				
10	QPSK	1	0	19.66	19.71	19.77				
10	QPSK	1	25	19.67	19.72	19.69	20.5	1		
10	QPSK	1	49	19.67	19.59	19.61				
10	QPSK	25	0	18.76	18.84	18.83				
10	QPSK	25	12	18.85	18.81	18.75	20.5	1		
10	QPSK	25	25	18.77	18.70	18.69				
10	QPSK	50	0	18.83	18.77	18.74				
10	16QAM	1	0	18.91	18.89	19.08	20.5	1		
10	16QAM	1	25	18.89	19.02	18.94				
10	16QAM	1	49	18.97	18.89	18.79				
10	16QAM	25	0	17.80	17.93	17.90	19.5	2		
10	16QAM	25	12	17.92	17.89	17.79				
10	16QAM	25	25	17.86	17.78	17.75				
10	16QAM	50	0	17.90	17.87	17.80	19.5	2		
10	64QAM	1	0	17.86	17.86	18.02				
10	64QAM	1	25	17.85	18.01	17.91				
10	64QAM	1	49	18.01	17.75	17.75	18.5	3		
10	64QAM	25	0	16.80	16.88	16.88				
10	64QAM	25	12	16.89	16.89	16.83				
10	64QAM	25	25	16.84	16.80	16.74	18.5	3		
10	64QAM	50	0	16.87	16.84	16.80				
Channel				23035	23095	23155			Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5	21.5	0		
5	QPSK	1	0	19.63	19.63	19.69				
5	QPSK	1	12	19.66	19.72	19.68				
5	QPSK	1	24	19.65	19.68	19.61	20.5	1		
5	QPSK	12	0	18.70	18.80	18.72				
5	QPSK	12	7	18.76	18.78	18.72				
5	QPSK	12	13	18.65	18.72	18.70	20.5	1		
5	QPSK	25	0	18.74	18.77	18.73				
5	16QAM	1	0	18.86	18.92	18.97				
5	16QAM	1	12	18.99	19.08	18.78	20.5	1		
5	16QAM	1	24	18.85	18.99	18.76				
5	16QAM	12	0	17.78	17.86	17.72				
5	16QAM	12	7	17.75	17.85	17.75	19.5	2		
5	16QAM	12	13	17.75	17.83	17.69				
5	16QAM	25	0	17.76	17.86	17.74				
5	64QAM	1	0	17.84	17.89	17.88	19.5	2		
5	64QAM	1	12	17.86	17.99	17.80				
5	64QAM	1	24	17.80	17.87	17.78				
5	64QAM	12	0	16.82	16.90	16.79	18.5	3		
5	64QAM	12	7	16.81	16.90	16.76				
5	64QAM	12	13	16.77	16.83	16.75				
5	64QAM	25	0	16.78	16.84	16.73	18.5	3		
Channel				23025	23095	23165			Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5			21.5	0
3	QPSK	1	0	19.60	19.73	19.71				
3	QPSK	1	8	19.57	19.72	19.64				
3	QPSK	1	14	19.65	19.68	19.61	20.5	1		
3	QPSK	8	0	18.68	18.79	18.68				
3	QPSK	8	4	18.69	18.74	18.72				



3	QPSK	8	7	18.72	18.73	18.66		
3	QPSK	15	0	18.77	18.76	18.73		
3	16QAM	1	0	18.86	18.97	18.85	20.5	1
3	16QAM	1	8	18.79	19.06	18.80		
3	16QAM	1	14	18.84	19.00	18.80		
3	16QAM	8	0	17.72	17.89	17.74	19.5	2
3	16QAM	8	4	17.73	17.90	17.75		
3	16QAM	8	7	17.77	17.82	17.70		
3	16QAM	15	0	17.80	17.82	17.76	19.5	2
3	64QAM	1	0	17.77	17.95	17.78		
3	64QAM	1	8	17.76	17.96	17.77		
3	64QAM	1	14	17.81	17.87	17.73	18.5	3
3	64QAM	8	0	16.74	16.87	16.72		
3	64QAM	8	4	16.71	16.87	16.75		
3	64QAM	8	7	16.78	16.84	16.67		
3	64QAM	15	0	16.78	16.85	16.75		
Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	19.55	19.64	19.57	21.5	0
1.4	QPSK	1	3	19.62	19.68	19.63		
1.4	QPSK	1	5	19.52	19.63	19.52		
1.4	QPSK	3	0	19.57	19.70	19.68		
1.4	QPSK	3	1	19.65	19.76	19.69		
1.4	QPSK	3	3	19.59	19.71	19.60		
1.4	QPSK	6	0	18.62	18.69	18.58	20.5	1
1.4	16QAM	1	0	18.77	18.91	18.69	20.5	1
1.4	16QAM	1	3	18.87	19.03	18.83		
1.4	16QAM	1	5	18.66	18.89	18.76		
1.4	16QAM	3	0	18.58	18.74	18.59		
1.4	16QAM	3	1	18.63	18.80	18.61		
1.4	16QAM	3	3	18.54	18.77	18.61		
1.4	16QAM	6	0	17.71	17.84	17.71	19.5	2
1.4	64QAM	1	0	17.73	17.92	17.71	19.5	2
1.4	64QAM	1	3	17.82	17.89	17.78		
1.4	64QAM	1	5	17.69	17.88	17.68		
1.4	64QAM	3	0	17.76	17.85	17.66		
1.4	64QAM	3	1	17.76	17.91	17.74		
1.4	64QAM	3	3	17.68	17.86	17.66		
1.4	64QAM	6	0	16.61	16.76	16.65		



<LTE Band 17>

Channel	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)			
23780	23790	23800						
709	710	711						
10	QPSK	1	0	20.14	20.13	20.12	21.5	0
10	QPSK	1	25	20.06	20.04	20.02		
10	QPSK	1	49	19.93	19.93	19.94		
10	QPSK	25	0	19.12	19.15	19.16	20.5	1
10	QPSK	25	12	19.10	19.08	19.09		
10	QPSK	25	25	19.08	19.05	19.03		
10	QPSK	50	0	19.12	19.11	19.09	20.5	1
10	16QAM	1	0	19.49	19.41	19.54		
10	16QAM	1	25	19.33	19.41	19.33		
10	16QAM	1	49	19.19	19.23	19.26	19.5	2
10	16QAM	25	0	18.26	18.25	18.22		
10	16QAM	25	12	18.24	18.25	18.16		
10	16QAM	25	25	18.13	18.11	18.09	19.5	2
10	16QAM	50	0	18.19	18.19	18.17		
10	64QAM	1	0	18.40	18.41	18.45		
10	64QAM	1	25	18.36	18.37	18.31	19.5	2
10	64QAM	1	49	18.19	18.15	18.13		
10	64QAM	25	0	17.25	17.24	17.24		
10	64QAM	25	12	17.22	17.21	17.20	18.5	3
10	64QAM	25	25	17.13	17.12	17.12		
10	64QAM	50	0	17.20	17.20	17.19		
23755	23790	23825						
706.5	710	713.5						
5	QPSK	1	0	20.10	20.09	20.05	21.5	0
5	QPSK	1	12	20.09	20.01	20.01		
5	QPSK	1	24	20.03	19.95	19.97		
5	QPSK	12	0	19.11	19.10	19.06	20.5	1
5	QPSK	12	7	19.18	19.13	19.09		
5	QPSK	12	13	19.12	19.08	19.03		
5	QPSK	25	0	19.09	19.08	19.06	20.5	1
5	16QAM	1	0	19.42	19.48	19.27		
5	16QAM	1	12	19.44	19.42	19.23		
5	16QAM	1	24	19.37	19.25	19.21	19.5	2
5	16QAM	12	0	18.23	18.23	18.12		
5	16QAM	12	7	18.24	18.24	18.15		
5	16QAM	12	13	18.21	18.14	18.09	19.5	2
5	16QAM	25	0	18.23	18.17	18.10		
5	64QAM	1	0	18.38	18.43	18.31		
5	64QAM	1	12	18.38	18.33	18.21	19.5	2
5	64QAM	1	24	18.36	18.22	18.18		
5	64QAM	12	0	17.26	17.26	17.18		
5	64QAM	12	7	17.29	17.25	17.17	18.5	3
5	64QAM	12	13	17.22	17.17	17.14		
5	64QAM	25	0	17.23	17.20	17.14		



<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	16.31	16.19	16.10		
20	QPSK	1	49	16.34	16.25	16.13	17	0
20	QPSK	1	99	16.29	16.18	16.11		
20	QPSK	50	0	15.13	15.06	15.03		
20	QPSK	50	24	15.08	15.08	15.01	16	1
20	QPSK	50	50	15.08	15.10	15.03		
20	QPSK	100	0	15.07	15.11	15.04		
20	16QAM	1	0	15.57	15.61	15.62	16	1
20	16QAM	1	49	15.68	15.57	15.70		
20	16QAM	1	99	15.65	15.66	15.65		
20	16QAM	50	0	14.18	14.21	14.16	15	2
20	16QAM	50	24	14.19	14.21	14.15		
20	16QAM	50	50	14.22	14.22	14.13		
20	16QAM	100	0	14.23	14.21	14.15		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	16.32	16.12	16.12	17	0
15	QPSK	1	37	16.32	16.24	16.19		
15	QPSK	1	74	16.30	16.17	16.10		
15	QPSK	36	0	15.13	15.06	14.99	16	1
15	QPSK	36	20	15.24	15.14	15.09		
15	QPSK	36	39	15.08	15.05	14.96		
15	QPSK	75	0	15.07	15.07	14.99		
15	16QAM	1	0	15.59	15.69	15.52	16	1
15	16QAM	1	37	15.72	15.61	15.68		
15	16QAM	1	74	15.66	15.58	15.57		
15	16QAM	36	0	14.17	14.21	14.11	15	2
15	16QAM	36	20	14.30	14.30	14.22		
15	16QAM	36	39	14.20	14.18	14.14		
15	16QAM	75	0	14.23	14.18	14.12		
Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	16.20	16.11	16.07	17	0
10	QPSK	1	25	16.27	16.16	16.08		
10	QPSK	1	49	16.21	16.12	15.99		
10	QPSK	25	0	15.20	15.07	15.02	16	1
10	QPSK	25	12	15.17	15.10	15.00		
10	QPSK	25	25	15.19	15.08	14.99		
10	QPSK	50	0	15.17	15.14	15.02		
10	16QAM	1	0	15.67	15.56	15.52	16	1
10	16QAM	1	25	15.65	15.59	15.60		
10	16QAM	1	49	15.69	15.62	15.52		
10	16QAM	25	0	14.34	14.21	14.14	15	2
10	16QAM	25	12	14.34	14.20	14.16		
10	16QAM	25	25	14.34	14.23	14.14		
10	16QAM	50	0	14.32	14.22	14.16		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	16.09	16.01	15.91	17	0
5	QPSK	1	12	16.27	16.18	16.06		
5	QPSK	1	24	16.11	16.00	15.92		



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5	QPSK	12	0	15.20	15.09	15.02	16	1
5	QPSK	12	7	15.31	15.13	15.06		
5	QPSK	12	13	15.19	15.08	14.96		
5	QPSK	25	0	15.19	15.11	14.96	16	1
5	16QAM	1	0	15.49	15.41	15.30		
5	16QAM	1	12	15.71	15.55	15.60		
5	16QAM	1	24	15.51	15.38	15.35	15	2
5	16QAM	12	0	14.33	14.22	14.14		
5	16QAM	12	7	14.43	14.29	14.21		
5	16QAM	12	13	14.35	14.20	14.15		
5	16QAM	25	0	14.31	14.18	14.11	Tune-up limit (dBm)	MPR (dB)
Channel				131987	132322	132657		
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	16.18	16.04	15.96	17	0
3	QPSK	1	8	16.29	16.14	16.05		
3	QPSK	1	14	16.14	16.03	15.94		
3	QPSK	8	0	15.22	15.10	15.05	16	1
3	QPSK	8	4	15.30	15.22	15.12		
3	QPSK	8	7	15.25	15.16	15.00		
3	QPSK	15	0	15.19	15.10	14.98		
3	16QAM	1	0	15.57	15.38	15.33	16	1
3	16QAM	1	8	15.77	15.52	15.56		
3	16QAM	1	14	15.48	15.42	15.35		
3	16QAM	8	0	14.45	14.29	14.25	15	2
3	16QAM	8	4	14.49	14.37	14.29		
3	16QAM	8	7	14.40	14.27	14.23		
3	16QAM	15	0	14.40	14.24	14.12		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	16.19	16.08	15.98	17	0
1.4	QPSK	1	3	16.28	16.19	16.05		
1.4	QPSK	1	5	16.19	16.04	15.97		
1.4	QPSK	3	0	16.23	16.12	16.05		
1.4	QPSK	3	1	16.27	16.15	16.06		
1.4	QPSK	3	3	16.23	16.14	16.01		
1.4	QPSK	6	0	15.20	15.08	15.00	16	1
1.4	16QAM	1	0	15.71	15.49	15.39	16	1
1.4	16QAM	1	3	15.70	15.65	15.58		
1.4	16QAM	1	5	15.59	15.53	15.49		
1.4	16QAM	3	0	15.33	15.28	15.21		
1.4	16QAM	3	1	15.43	15.34	15.24		
1.4	16QAM	3	3	15.38	15.26	15.18		
1.4	16QAM	6	0	14.46	14.27	14.23	15	2





UAT State 4

<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	19.84	19.97	20.02		
20	QPSK	1	49	19.94	20.01	20.10	21.5	0
20	QPSK	1	99	19.92	19.98	20.11		
20	QPSK	50	0	18.95	19.04	19.01		
20	QPSK	50	24	18.97	19.05	19.11	20.5	1
20	QPSK	50	50	19.02	19.00	19.11		
20	QPSK	100	0	18.93	19.03	19.20		
20	16QAM	1	0	19.23	19.38	19.47	20.5	1
20	16QAM	1	49	19.43	19.46	19.48		
20	16QAM	1	99	19.42	19.30	19.58		
20	16QAM	50	0	18.11	18.24	18.23	19.5	2
20	16QAM	50	24	18.14	18.20	18.34		
20	16QAM	50	50	18.21	18.14	18.31		
20	16QAM	100	0	18.08	18.18	18.30	19.5	2
20	64QAM	1	0	18.18	18.38	18.41		
20	64QAM	1	49	18.32	18.44	18.43		
20	64QAM	1	99	18.36	18.27	18.53	19.5	2
20	64QAM	50	0	17.13	17.24	17.27		
20	64QAM	50	24	17.18	17.22	17.36		
20	64QAM	50	50	17.21	17.16	17.35	18.5	3
20	64QAM	100	0	17.15	17.19	17.36		
Channel				20025	20175	20325		
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	19.99	20.20	20.19		
15	QPSK	1	37	20.07	20.09	20.17	21.5	0
15	QPSK	1	74	20.04	20.14	20.20		
15	QPSK	36	0	19.12	19.18	19.23		
15	QPSK	36	20	19.15	19.21	19.24	20.5	1
15	QPSK	36	39	19.11	19.15	19.20		
15	QPSK	75	0	19.12	19.14	19.22		
15	16QAM	1	0	19.36	19.63	19.51	20.5	1
15	16QAM	1	37	19.50	19.54	19.52		
15	16QAM	1	74	19.56	19.46	19.65		
15	16QAM	36	0	18.25	18.37	18.33	19.5	2
15	16QAM	36	20	18.33	18.37	18.38		
15	16QAM	36	39	18.28	18.28	18.35		
15	16QAM	75	0	18.28	18.31	18.35	19.5	2
15	64QAM	1	0	18.34	18.61	18.47		
15	64QAM	1	37	18.46	18.52	18.49		
15	64QAM	1	74	18.44	18.42	18.57	19.5	2
15	64QAM	36	0	17.32	17.43	17.41		
15	64QAM	36	20	17.36	17.45	17.45		
15	64QAM	36	39	17.36	17.35	17.41	18.5	3
15	64QAM	75	0	17.27	17.36	17.38		
Channel				20000	20175	20350		
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	19.99	20.15	20.08		
10	QPSK	1	25	19.98	20.14	20.17	21.5	0
10	QPSK	1	49	20.01	20.08	20.08		
10	QPSK	25	0	19.00	19.16	19.10		



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10	QPSK	25	12	19.14	19.17	19.10		
10	QPSK	25	25	19.08	19.11	19.16		
10	QPSK	50	0	19.10	19.14	19.09		
10	16QAM	1	0	19.37	19.61	19.43	20.5	1
10	16QAM	1	25	19.37	19.56	19.56		
10	16QAM	1	49	19.45	19.40	19.53		
10	16QAM	25	0	18.14	18.31	18.24	19.5	2
10	16QAM	25	12	18.28	18.34	18.26		
10	16QAM	25	25	18.23	18.27	18.33		
10	16QAM	50	0	18.24	18.28	18.24		
10	64QAM	1	0	18.30	18.56	18.36	19.5	2
10	64QAM	1	25	18.33	18.52	18.51		
10	64QAM	1	49	18.41	18.38	18.49		
10	64QAM	25	0	17.16	17.36	17.28	18.5	3
10	64QAM	25	12	17.29	17.36	17.29		
10	64QAM	25	25	17.27	17.28	17.35		
10	64QAM	50	0	17.26	17.30	17.27		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	19.97	20.08	20.14	21.5	0
5	QPSK	1	12	19.95	20.10	20.15		
5	QPSK	1	24	19.94	20.06	20.09		
5	QPSK	12	0	19.02	19.16	19.20	20.5	1
5	QPSK	12	7	19.05	19.18	19.22		
5	QPSK	12	13	18.99	19.14	19.19		
5	QPSK	25	0	18.99	19.12	19.17		
5	16QAM	1	0	19.32	19.53	19.52	20.5	1
5	16QAM	1	12	19.34	19.53	19.58		
5	16QAM	1	24	19.31	19.47	19.52		
5	16QAM	12	0	18.18	18.33	18.37	19.5	2
5	16QAM	12	7	18.19	18.36	18.43		
5	16QAM	12	13	18.17	18.28	18.36		
5	16QAM	25	0	18.13	18.29	18.35		
5	64QAM	1	0	18.31	18.51	18.50	19.5	2
5	64QAM	1	12	18.30	18.49	18.52		
5	64QAM	1	24	18.28	18.41	18.49		
5	64QAM	12	0	17.25	17.43	17.44	18.5	3
5	64QAM	12	7	17.27	17.45	17.48		
5	64QAM	12	13	17.22	17.38	17.42		
5	64QAM	25	0	17.17	17.33	17.35		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	19.97	20.14	20.11	21.5	0
3	QPSK	1	8	20.01	20.14	20.14		
3	QPSK	1	14	19.94	20.10	20.10		
3	QPSK	8	0	19.04	19.18	19.21	20.5	1
3	QPSK	8	4	19.07	19.21	19.22		
3	QPSK	8	7	19.02	19.16	19.18		
3	QPSK	15	0	19.04	19.15	19.20		
3	16QAM	1	0	19.35	19.56	19.52	20.5	1
3	16QAM	1	8	19.40	19.54	19.59		
3	16QAM	1	14	19.31	19.48	19.54		
3	16QAM	8	0	18.22	18.38	18.43	19.5	2
3	16QAM	8	4	18.26	18.42	18.46		
3	16QAM	8	7	18.23	18.38	18.44		
3	16QAM	15	0	18.18	18.31	18.35		



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3	64QAM	1	0	18.29	18.47	18.52	19.5	2
3	64QAM	1	8	18.32	18.51	18.60		
3	64QAM	1	14	18.31	18.43	18.54		
3	64QAM	8	0	17.27	17.42	17.43	18.5	3
3	64QAM	8	4	17.30	17.44	17.49		
3	64QAM	8	7	17.25	17.40	17.46		
3	64QAM	15	0	17.16	17.33	17.35		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	19.92	20.07	20.07	21.5	0
1.4	QPSK	1	3	20.00	20.15	20.16		
1.4	QPSK	1	5	19.92	20.04	20.06		
1.4	QPSK	3	0	19.99	20.11	20.13		
1.4	QPSK	3	1	20.01	20.14	20.16		
1.4	QPSK	3	3	19.98	20.10	20.11		
1.4	QPSK	6	0	18.96	19.09	19.14	20.5	1
1.4	16QAM	1	0	19.30	19.48	19.49	20.5	1
1.4	16QAM	1	3	19.37	19.53	19.58		
1.4	16QAM	1	5	19.28	19.44	19.52		
1.4	16QAM	3	0	19.09	19.23	19.27		
1.4	16QAM	3	1	19.11	19.28	19.33		
1.4	16QAM	3	3	19.06	19.21	19.27		
1.4	16QAM	6	0	18.17	18.31	18.36	19.5	2
1.4	64QAM	1	0	18.24	18.42	18.47	19.5	2
1.4	64QAM	1	3	18.34	18.51	18.53		
1.4	64QAM	1	5	18.25	18.38	18.47		
1.4	64QAM	3	0	18.27	18.42	18.44		
1.4	64QAM	3	1	18.29	18.44	18.52		
1.4	64QAM	3	3	18.26	18.41	18.44		
1.4	64QAM	6	0	17.13	17.28	17.29	18.5	3



<LTE Band 66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				132072	132322	132572	21.5	0
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	20.13	20.18	20.15		
20	QPSK	1	49	20.19	20.24	20.16	20.5	1
20	QPSK	1	99	20.05	20.06	19.98		
20	QPSK	50	0	19.06	19.08	19.03		
20	QPSK	50	24	19.04	19.05	18.98	20.5	1
20	QPSK	50	50	18.99	19.04	18.94		
20	QPSK	100	0	19.06	19.08	18.99		
20	16QAM	1	0	19.53	19.55	19.55	20.5	1
20	16QAM	1	49	19.61	19.54	19.58		
20	16QAM	1	99	19.50	19.51	19.38		
20	16QAM	50	0	18.20	18.22	18.17	19.5	2
20	16QAM	50	24	18.20	18.19	18.15		
20	16QAM	50	50	18.21	18.20	18.12		
20	16QAM	100	0	18.17	18.17	18.18		
Channel				132047	132322	132597	21.5	0
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	20.15	20.18	20.12		
15	QPSK	1	37	20.22	20.23	20.19	20.5	1
15	QPSK	1	74	20.11	20.07	20.02		
15	QPSK	36	0	19.04	19.07	19.01		
15	QPSK	36	20	19.15	19.17	19.08	20.5	1
15	QPSK	36	39	19.03	19.05	18.95		
15	QPSK	75	0	19.05	19.06	18.97		
15	16QAM	1	0	19.49	19.51	19.56	20.5	1
15	16QAM	1	37	19.62	19.54	19.60		
15	16QAM	1	74	19.57	19.48	19.40		
15	16QAM	36	0	18.20	18.19	18.18	19.5	2
15	16QAM	36	20	18.30	18.29	18.28		
15	16QAM	36	39	18.21	18.18	18.14		
15	16QAM	75	0	18.25	18.17	18.17		
Channel				132022	132322	132622	21.5	0
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	20.09	20.13	20.02		
10	QPSK	1	25	20.12	20.14	20.03	20.5	1
10	QPSK	1	49	20.05	20.02	19.88		
10	QPSK	25	0	19.09	19.10	18.97		
10	QPSK	25	12	19.09	19.09	18.97	20.5	1
10	QPSK	25	25	19.07	19.07	18.92		
10	QPSK	50	0	19.08	19.08	18.93		
10	16QAM	1	0	19.44	19.44	19.43	20.5	1
10	16QAM	1	25	19.50	19.45	19.45		
10	16QAM	1	49	19.45	19.42	19.31		
10	16QAM	25	0	18.22	18.22	18.15	19.5	2
10	16QAM	25	12	18.21	18.21	18.15		
10	16QAM	25	25	18.21	18.18	18.10		
10	16QAM	50	0	18.22	18.21	18.12		
Channel				131997	132322	132647	21.5	0
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	19.96	19.96	19.88		
5	QPSK	1	12	20.11	20.13	20.00	21.5	0
5	QPSK	1	24	19.92	19.92	19.79		



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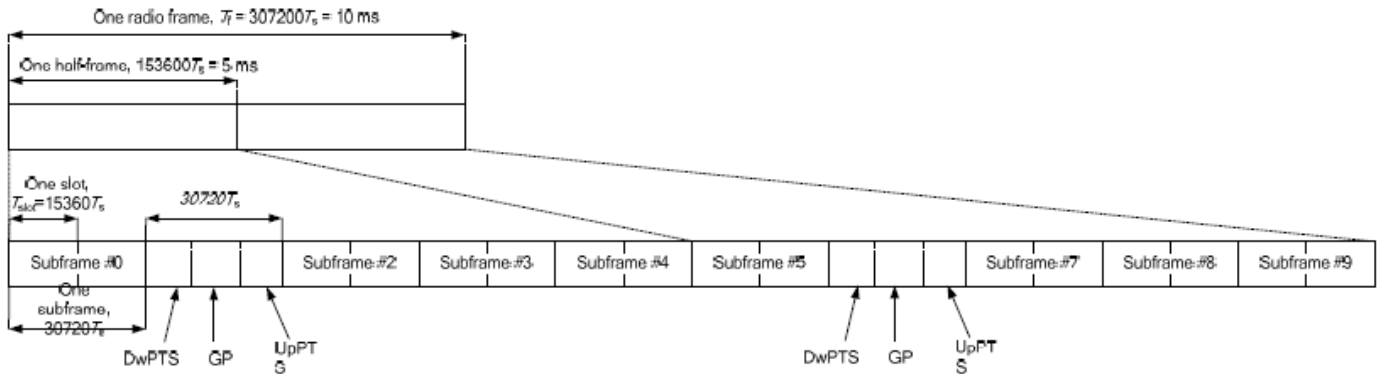
5	QPSK	12	0	19.10	19.06	18.96	20.5	1
5	QPSK	12	7	19.16	19.17	19.04		
5	QPSK	12	13	19.05	19.04	18.94		
5	QPSK	25	0	19.07	19.04	18.93	20.5	1
5	16QAM	1	0	19.34	19.30	19.37		
5	16QAM	1	12	19.47	19.44	19.44		
5	16QAM	1	24	19.31	19.27	19.21	19.5	2
5	16QAM	12	0	18.22	18.18	18.16		
5	16QAM	12	7	18.34	18.28	18.24		
5	16QAM	12	13	18.24	18.17	18.14		
5	16QAM	25	0	18.20	18.18	18.10	Tune-up limit (dBm)	MPR (dB)
Channel				131987	132322	132657		
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	20.01	20.01	19.89	21.5	0
3	QPSK	1	8	20.14	20.13	19.98		
3	QPSK	1	14	19.98	19.99	19.84		
3	QPSK	8	0	19.12	19.10	18.99	20.5	1
3	QPSK	8	4	19.21	19.18	19.05		
3	QPSK	8	7	19.12	19.12	18.98		
3	QPSK	15	0	19.11	19.15	18.98		
3	16QAM	1	0	19.39	19.33	19.33	20.5	1
3	16QAM	1	8	19.50	19.47	19.44		
3	16QAM	1	14	19.34	19.31	19.23		
3	16QAM	8	0	18.33	18.27	18.24	19.5	2
3	16QAM	8	4	18.39	18.35	18.28		
3	16QAM	8	7	18.32	18.29	18.21		
3	16QAM	15	0	18.26	18.28	18.16		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	20.03	20.05	19.88	21.5	0
1.4	QPSK	1	3	20.12	20.16	20.00		
1.4	QPSK	1	5	20.02	20.05	19.91		
1.4	QPSK	3	0	20.10	20.10	19.98		
1.4	QPSK	3	1	20.14	20.16	20.02		
1.4	QPSK	3	3	20.10	20.11	19.99		
1.4	QPSK	6	0	19.12	19.11	18.97	20.5	1
1.4	16QAM	1	0	19.39	19.33	19.33	20.5	1
1.4	16QAM	1	3	19.51	19.44	19.42		
1.4	16QAM	1	5	19.37	19.35	19.30		
1.4	16QAM	3	0	19.18	19.19	19.11		
1.4	16QAM	3	1	19.24	19.23	19.12		
1.4	16QAM	3	3	19.18	19.15	19.09		
1.4	16QAM	6	0	18.30	18.29	18.20		

**<TDD LTE SAR Measurement>**

TDD LTE configuration setup for SAR measurement

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

- a. 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations
- b. "special subframe S" contains both uplink and downlink transmissions, it has been taken into consideration to determine the transmission duty factor according to the worst case uplink and downlink cyclic prefix requirements for UpPTS
- c. Establishing connections with base station simulators ensure a consistent means for testing SAR and recommended for evaluating SAR. The Anritsu MT8820C (firmware: #22.52#004) was used for LTE output power measurements and SAR testing.



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

**Table 4.2-2: Uplink-downlink configurations.**

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

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

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

<b>Special subframe (30720·T<sub>s</sub>): Normal cyclic prefix in downlink (UpPTS)</b>			
	<b>Special subframe configuration</b>	<b>Normal cyclic prefix in uplink</b>	<b>Extended cyclic prefix in uplink</b>
<b>Uplink duty factor in one special subframe</b>	<b>0~4</b>	7.13%	8.33%
	<b>5~9</b>	14.3%	16.7%

<b>Special subframe(30720·T<sub>s</sub>): Extended cyclic prefix in downlink (UpPTS)</b>			
	<b>Special subframe configuration</b>	<b>Normal cyclic prefix in uplink</b>	<b>Extended cyclic prefix in uplink</b>
<b>Uplink duty factor in one special subframe</b>	<b>0~3</b>	7.13%	8.33%
	<b>4~7</b>	14.3%	16.7%

The highest duty factor is resulted from:

- i. Uplink-downlink configuration: 0. In a half-frame consisted of 5 subframes, uplink operation is in 3 uplink subframes and 1 special subframe.
- ii. special subframe configuration: 5-9 for normal cyclic prefix in downlink, 4-7 for extended cyclic prefix in downlink
- iii. for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is:  $(3+0.167)/5 = 63.3\%$
- iv. for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is:  $(3+0.143)/5 = 62.9\%$
- v. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix  $63.3\%/62.9\% = 1.006$  is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = measured SAR (W/kg)\* Tune-up Scaling Factor\* scaling factor for extended cyclic prefix.



LAT State1

<LTE Band 41>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Low Ch. / Freq.	Power Middle High Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				40340	40600	40870	41140		
Frequency (MHz)				2565	2591	2618	2645		
20	QPSK	1	0	23.55	23.62	23.73	23.77	24.5	0
20	QPSK	1	49	23.69	23.78	23.72	23.68		
20	QPSK	1	99	23.92	23.79	23.75	23.87		
20	QPSK	50	0	22.63	22.80	22.79	22.78	23.5	1
20	QPSK	50	24	22.66	22.83	22.80	22.79		
20	QPSK	50	50	22.64	22.82	22.75	22.71		
20	QPSK	100	0	22.67	22.80	22.73	22.72	23.5	1
20	16QAM	1	0	22.68	22.82	22.90	22.87		
20	16QAM	1	49	22.89	22.86	22.90	22.80		
20	16QAM	1	99	22.88	22.89	22.89	22.96	22.5	2
20	16QAM	50	0	21.81	21.86	21.89	21.89		
20	16QAM	50	24	21.83	21.87	21.92	21.89		
20	16QAM	50	50	21.85	21.85	21.91	21.91	22.5	2
20	16QAM	100	0	21.80	21.86	21.88	21.87		
20	64QAM	1	0	21.50	21.54	21.63	21.69		
20	64QAM	1	49	21.61	21.58	21.67	21.66	22.5	2
20	64QAM	1	99	21.61	21.64	21.71	21.76		
20	64QAM	50	0	20.78	20.84	20.90	20.87		
20	64QAM	50	24	20.79	20.83	20.90	20.91	21.5	3
20	64QAM	50	50	20.80	20.87	20.93	20.88		
20	64QAM	100	0	20.81	20.85	20.90	20.95		
Channel				40315	40595	40885	41165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2562.5	2590.5	2619.5	2647.5		
15	QPSK	1	0	23.47	23.56	23.72	23.75	24.5	0
15	QPSK	1	37	23.67	23.78	23.68	23.58		
15	QPSK	1	74	23.88	23.74	23.74	23.84		
15	QPSK	36	0	22.58	22.76	22.72	22.76	23.5	1
15	QPSK	36	20	22.59	22.74	22.75	22.69		
15	QPSK	36	39	22.55	22.79	22.66	22.65		
15	QPSK	75	0	22.67	22.76	22.67	22.69	23.5	1
15	16QAM	1	0	22.58	22.75	22.85	22.80		
15	16QAM	1	37	22.86	22.77	22.88	22.78		
15	16QAM	1	74	22.85	22.88	22.80	22.90	22.5	2
15	16QAM	36	0	21.78	21.77	21.84	21.83		
15	16QAM	36	20	21.77	21.80	21.90	21.83		
15	16QAM	36	39	21.84	21.79	21.88	21.85	22.5	2
15	16QAM	75	0	21.73	21.76	21.81	21.87		
15	64QAM	1	0	21.43	21.47	21.60	21.68		
15	64QAM	1	37	21.54	21.48	21.59	21.58	22.5	2
15	64QAM	1	74	21.61	21.55	21.63	21.73		
15	64QAM	36	0	20.68	20.81	20.85	20.81		
15	64QAM	36	20	20.74	20.73	20.88	20.87	21.5	3
15	64QAM	36	39	20.75	20.84	20.87	20.82		
15	64QAM	75	0	20.80	20.82	20.81	20.92		
Channel				40290	40590	40890	41190	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2560	2590	2620	2650		
10	QPSK	1	0	23.49	23.59	23.72	23.67	24.5	0
10	QPSK	1	25	23.65	23.69	23.69	23.63		
10	QPSK	1	49	23.88	23.79	23.71	23.78		
10	QPSK	25	0	22.54	22.80	22.76	22.73	23.5	1





10	QPSK	25	12	22.56	22.73	22.73	22.78		
10	QPSK	25	25	22.63	22.72	22.70	22.63		
10	QPSK	50	0	22.67	22.76	22.68	22.69		
10	16QAM	1	0	22.64	22.78	22.85	22.80	23.5	1
10	16QAM	1	25	22.87	22.78	22.89	22.79		
10	16QAM	1	49	22.80	22.80	22.80	22.89		
10	16QAM	25	0	21.78	21.86	21.80	21.83	22.5	2
10	16QAM	25	12	21.83	21.87	21.88	21.88		
10	16QAM	25	25	21.76	21.78	21.82	21.89		
10	16QAM	50	0	21.75	21.77	21.78	21.82		
10	64QAM	1	0	21.44	21.49	21.58	21.61	22.5	2
10	64QAM	1	25	21.61	21.49	21.60	21.56		
10	64QAM	1	49	21.59	21.61	21.62	21.73		
10	64QAM	25	0	20.70	20.75	20.81	20.78	21.5	3
10	64QAM	25	12	20.79	20.81	20.82	20.91		
10	64QAM	25	25	20.74	20.80	20.84	20.78		
10	64QAM	50	0	20.74	20.76	20.82	20.91		
Channel				40265	40585	40905	41215	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2557.5	2589.5	2621.5	2652.5		
5	QPSK	1	0	23.46	23.61	23.67	23.71	24.5	0
5	QPSK	1	12	23.65	23.78	23.70	23.64		
5	QPSK	1	24	23.88	23.77	23.67	23.77		
5	QPSK	12	0	22.61	22.74	22.73	22.76	23.5	1
5	QPSK	12	7	22.65	22.76	22.75	22.72		
5	QPSK	12	13	22.61	22.78	22.74	22.66		
5	QPSK	25	0	22.66	22.70	22.70	22.62		
5	16QAM	1	0	22.58	22.76	22.88	22.77	23.5	1
5	16QAM	1	12	22.79	22.86	22.87	22.70		
5	16QAM	1	24	22.83	22.87	22.81	22.96		
5	16QAM	12	0	21.73	21.83	21.87	21.89	22.5	2
5	16QAM	12	7	21.76	21.81	21.91	21.87		
5	16QAM	12	13	21.83	21.85	21.90	21.81		
5	16QAM	25	0	21.75	21.83	21.84	21.84		
5	64QAM	1	0	21.40	21.48	21.55	21.64	22.5	2
5	64QAM	1	12	21.56	21.58	21.66	21.59		
5	64QAM	1	24	21.55	21.56	21.68	21.70		
5	64QAM	12	0	20.69	20.79	20.84	20.83	21.5	3
5	64QAM	12	7	20.75	20.81	20.84	20.91		
5	64QAM	12	13	20.70	20.83	20.85	20.86		
5	64QAM	25	0	20.76	20.75	20.85	20.94		



<LTE Carrier Aggregation combinations>

General Note:

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

2CC Downlink Carrier Aggregation		
Number	Combination	Covered by
		Measurement Superset
1	CA_2A-4A	
2	CA_2A-66A	
3	CA_2A-5A	
4	CA_2A-12A	
5	CA_2A-13A	
6	CA_2A-71A	
7	CA_4A-5A	
8	CA_4A-12A	
9	CA_4A-13A	
10	CA_5A-66A	
11	CA_12A-66A	
12	CA_13A-66A	
13	CA_25A-26A	
14	CA_26A-41A	
15	CA_2A-2A	2CC-1
16	CA_4A-4A	2CC-1
17	CA_5A-5A	2CC-3
18	CA_25A-25A	2CC-13
19	CA_41A-41A	2CC-14
20	CA_66A-66A	2CC-2
21	CA_2C	2CC-1
22	CA_5B	2CC-3
23	CA_12B	2CC-4
24	CA_41C	2CC-14
25	CA_66C	2CC-2
26	CA_66B	2CC-2

**<Power verification when LTE Carrier Aggregation Active>**

**General Note:**

- i. According to KDB941225 D05A v01r02, Uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.
- ii. Uplink maximum output power with downlink carrier aggregation active does not show more than ¼ dB higher than the maximum output power without downlink carrier aggregation active, therefore SAR evaluation with downlink carrier aggregation active can be excluded.
- iii. The device supports downlink two carrier aggregation. For power measurement were control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
- iv. Selected highest measured power when downlink carrier aggregation is inactive for conducted power comparison with downlink carrier aggregation is active, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.
- v. For non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band.
- vi. For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

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

**<Two Carrier power verification>**

Configure	PCC							SCC				Power	
	LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	2	20	1880	18900	QPSK	1	0	4	20	2132.50	2175	23.20	23.26
	2	20	1880	18900	QPSK	1	0	66	20	2155.00	66886	23.21	23.26
	2	20	1880	18900	QPSK	1	0	5	10	881.50	2525	23.16	23.26
	2	20	1880	18900	QPSK	1	0	12	10	737.50	5095	23.23	23.26
	2	20	1880	18900	QPSK	1	0	13	10	751.00	5230	23.19	23.26
	2	20	1880	18900	QPSK	1	0	71	20	637.00	68786	23.22	23.26
	4	20	1745	20300	QPSK	1	99	5	10	881.50	2525	23.10	23.20
	4	20	1745	20300	QPSK	1	99	12	10	737.50	5095	23.19	23.20
	4	20	1745	20300	QPSK	1	99	13	10	751.00	5230	23.20	23.20
	4	20	1745	20300	QPSK	1	0	5	10	881.50	2525	21.67	21.71
	4	20	1745	20300	QPSK	1	0	12	10	737.50	5095	21.67	21.71
	4	20	1745	20300	QPSK	1	0	13	10	751.00	5230	21.70	21.71
	5	10	836.5	20525	QPSK	1	0	66	20	2155.00	66886	23.16	23.18
	12	10	707.5	23095	QPSK	1	49	66	20	2155.00	66886	23.04	23.12
	12	10	711	23130	QPSK	1	49	66	20	2155.00	66886	22.13	22.15
	13	10	782	23230	QPSK	1	49	66	20	2155.00	66886	22.88	22.96
	25	20	1880	26340	QPSK	1	99	26	15	876.50	8865	22.50	22.55
	26	15	831.5	26865	QPSK	1	0	41	20	2593.00	40620	23.17	23.21
26	15	836.5	26915	QPSK	1	0	41	20	2593.00	40620	23.12	23.21	

**<LTE Uplink carrier aggregation>**

2CC Uplink Carrier Aggregation	
Number	Combination
1	5B
2	41C

**<Intra-band>**
**General Note:**

- i. The device supports intra-band uplink carrier aggregation for LTE B66/B41/B48 with a maximum of two 20MHz component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre 3GPP requirement.
- ii. The device supports uplink carrier aggregation with a maximum of two 20MHz component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre the 3GPP requirement.
- iii. According TCB workshop, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.
- iv. According TCB workshop, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.
- v. Additional SAR measurement for LTE UL CA whit other DL CA combinations active were not required since the maximum output power for this configuration was not > 0.25dB higher than the maximum output power for UL CA active.

CA_5B										
Combination 10MHz+10MHz (50RB+50RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
20450	20549	QPSK	1	0	0	0	1	0	23.17	24
20575	20476	QPSK	1	0	1	49	2	0	23.19	24
20600	20501	QPSK	1	0	1	49	2	0	23.22	24

CA_41C										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
40340	40538	QPSK	1	0	0	0	1	0	23.16	24.5
40600	40402	QPSK	1	0	1	99	2	0	23.09	24.5
40870	40672	QPSK	1	0	1	99	2	0	23.23	24.5
41140	40942	QPSK	1	0	1	99	2	0	23.27	24.5



## **12. WiFi/Bluetooth Output Power (Unit: dBm)**

### **General Note:**

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



<2.4GHz WLAN>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	15.68	16.00	100.00
		6	2437	15.69	16.00	
		11	2462	15.37	16.00	
	802.11g 6Mbps	1	2412	18.63	19.00	98.11
		6	2437	18.79	19.00	
		11	2462	18.68	19.00	
	802.11n-HT20 MCS0	1	2412	14.64	15.00	97.97
		6	2437	14.80	15.00	
		11	2462	14.66	15.00	

<5GHz WLAN>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	14.10	15.00	98.34
		40	5200	14.30	15.00	
		44	5220	14.70	15.00	
		48	5240	14.80	15.00	
	802.11n-HT20 MCS0	36	5180	12.70	13.00	98.22
		40	5200	12.70	13.00	
		44	5220	12.70	13.00	
		48	5240	12.40	13.00	
	802.11n-HT40 MCS0	38	5190	12.60	13.00	95.94
		46	5230	12.60	13.00	
	802.11ac-VHT20 MCS0	36	5180	12.60	13.00	97.98
		40	5200	12.20	13.00	
		44	5220	12.60	13.00	
		48	5240	12.60	13.00	
	802.11ac-VHT40 MCS0	38	5190	12.60	13.00	95.96
		46	5230	12.60	13.00	
802.11ac-VHT80 MCS0	42	5210	12.70	13.00	92.08	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	15.20	15.50	98.34
		56	5280	14.40	15.00	
		60	5300	14.10	15.00	
		64	5320	14.30	15.00	
	802.11n-HT20 MCS0	52	5260	12.80	13.00	98.22
		56	5280	12.60	13.00	
		60	5300	12.70	13.00	
		64	5320	12.70	13.00	
	802.11n-HT40 MCS0	54	5270	12.80	13.00	95.94
		62	5310	12.70	13.00	
	802.11ac-VHT20 MCS0	52	5260	12.80	13.00	97.98
		56	5280	12.40	13.00	
		60	5300	12.70	13.00	
		64	5320	12.60	13.00	
	802.11ac-VHT40 MCS0	54	5270	12.80	13.00	95.96
		62	5310	12.70	13.00	
802.11ac-VHT80 MCS0	58	5290	12.50	13.00	92.08	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	17.10	17.50	98.34
		116	5580	16.80	17.00	
		124	5620	15.10	15.50	
		132	5660	15.00	15.50	
		144	5720	14.50	15.00	
	802.11n-HT20 MCS0	100	5500	12.70	13.00	98.22
		116	5580	12.50	13.00	
		124	5620	12.50	13.00	
		132	5660	12.40	13.00	
		144	5720	12.50	13.00	
	802.11n-HT40 MCS0	102	5510	12.80	13.00	95.94
		110	5550	12.70	13.00	
		126	5630	12.20	13.00	
		134	5670	12.70	13.00	
		142	5710	12.70	13.00	
	802.11ac-VHT20 MCS0	100	5500	12.60	13.00	97.98
		116	5580	12.60	13.00	
		124	5620	12.50	13.00	
		132	5660	12.40	13.00	
		144	5720	12.80	13.00	
802.11ac-VHT40 MCS0	102	5510	12.70	13.00	95.96	
	110	5550	12.60	13.00		
	126	5630	12.20	13.00		
	134	5670	12.60	13.00		
	142	5710	12.60	13.00		
802.11ac-VHT80 MCS0	106	5530	12.60	13.00	92.08	
	122	5610	12.60	13.00		
	138	5690	12.60	13.00		

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	15.00	15.50	98.34
		157	5785	14.20	15.50	
		165	5825	14.50	15.50	
	802.11n-HT20 MCS0	149	5745	12.70	13.00	98.22
		157	5785	12.60	13.00	
		165	5825	12.70	13.00	
	802.11n-HT40 MCS0	151	5755	12.80	13.00	95.94
		159	5795	12.70	13.00	
	802.11ac-VHT20 MCS0	149	5745	12.60	13.00	97.98
		157	5785	12.50	13.00	
		165	5825	12.50	13.00	
	802.11ac-VHT40 MCS0	151	5755	12.70	13.00	95.96
		159	5795	12.60	13.00	
802.11ac-VHT80 MCS0	155	5775	12.70	13.00	92.08	



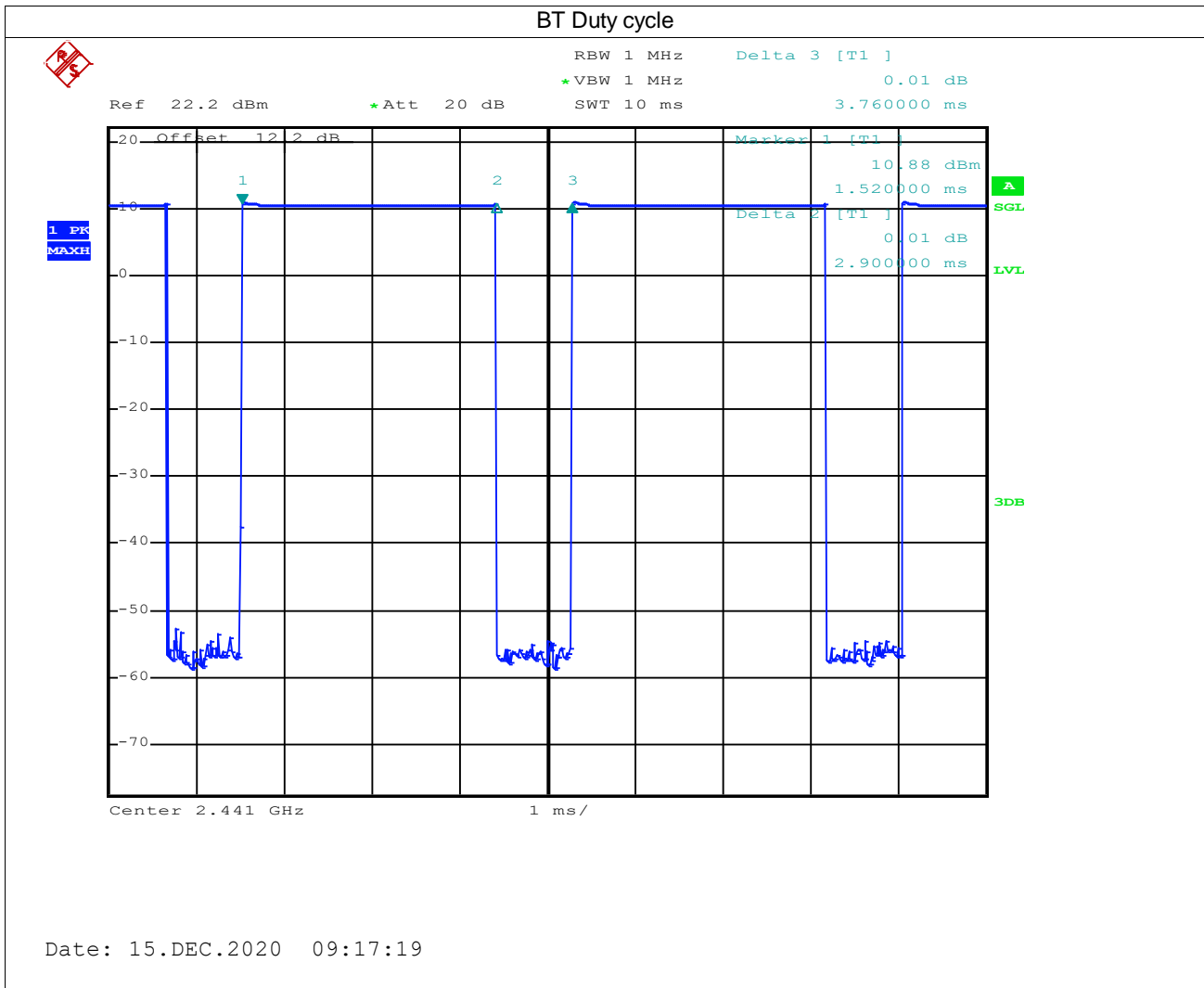
<2.4GHz Bluetooth>

Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
BR / EDR	CH 00	2402	11.59	9.15	9.26
	CH 39	2441	11.75	8.91	8.82
	CH 78	2480	11.84	9.29	9.30
Tune-up Limit			13.00	10.00	10.00

Mode	Channel	Frequency (MHz)	Average power (dBm)	
			1Mbps	2Mbps
LE	CH 00	2402	0.60	0.60
	CH 19	2440	0.80	0.80
	CH 39	2480	1.50	1.50
Tune-up Limit			1.50	1.50

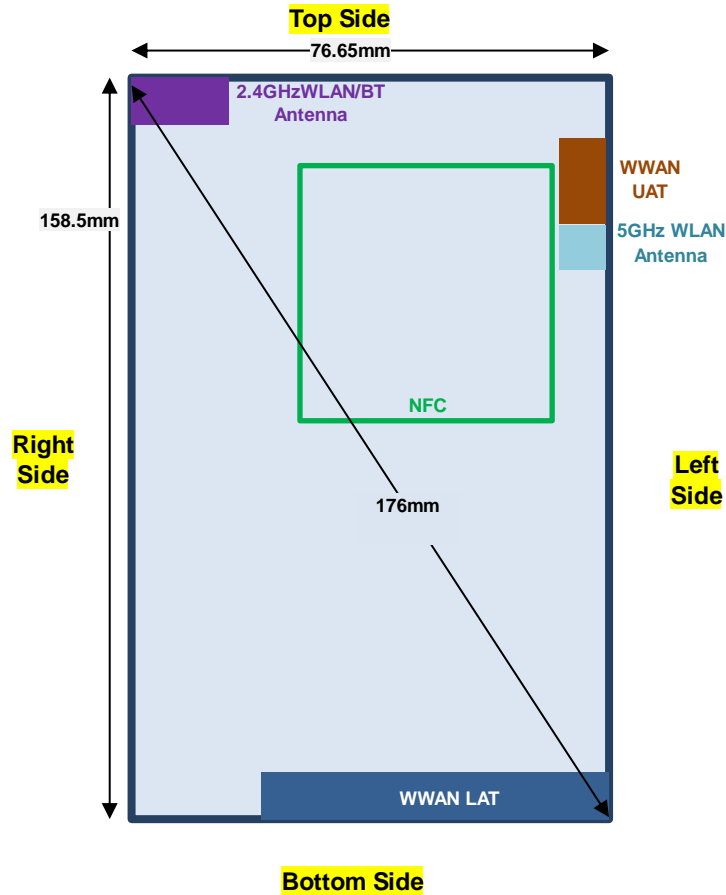
General Note:

- For 2.4GHz Bluetooth SAR testing was selected 1Mbps due to its highest average power and duty cycle is 77.13% considered in SAR testing, and the duty cycle would be scaled to theoretical 83.3% in reported SAR calculation.





### 13. Antenna Location



WWAN Antennas	Support Bands
WWAN LAT	GSM850/GSM1900, WCDMA B2/B4/B5, LTE B2/B4/B5/B7/B12/B13/B17/B25/B26/B41/B66/B71
WWAN UAT	WCDMA B4, LTE B4/B12/B17/B66/B71

Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN LAT	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	≤ 25mm
WWAN UAT	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	>25mm	≤ 25mm
BT&2.4GHz WLAN	≤ 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 LAT	Yes	Yes	No	Yes	Yes	Yes
WWAN UAT	Yes	Yes	Yes	No	Yes	Yes
BT&2.4GHz WLAN	Yes	Yes	Yes	No	Yes	No
5GHz WLAN	Yes	Yes	Yes	No	No	Yes

**General Note:**

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

## 14. SAR Test Results

### General Note:

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
  - e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix  $63.3\%/62.9\% = 1.006$  is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)\* Tune-up Scaling Factor\* scaling factor for extended cyclic prefix.
2. Per KDB 447498 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:
  - $\leq 0.8$  W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is  $\leq 100$  MHz
  - $\leq 0.6$  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
  - $\leq 0.4$  W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is  $\geq 200$  MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is  $\geq 0.8$ W/kg
4. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is  $\leq 1.2$  W/kg, SAR testing with a headset connected to the handset is not required.
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 GSM1900, WCDMA B2/B4 and LTE B25/B66, therefore product specific SAR is necessary.
6. For 5.3GHz / 5.6GHz WLAN product specific SAR is necessary too, due to an overall diagonal dimension is  $> 16$ cm.

**GSM Note:**

1. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE / DTM modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the EDGE (4Tx slots) for GSM850/GSM1900 is considered as the primary mode.
2. Other configurations of GSM / GPRS / EDGE / DTM are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is  $\leq \frac{1}{4}$  dB higher than the primary mode, SAR measurement is not required for the secondary mode.
3. Power reduction which is triggered by hotspot mode is implemented in GSM1900 band, for hotspot mode SAR testing EUT was set in reduced power mode and GPRS 4 Tx 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  $\leq 1.2$  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  $\leq 0.8$  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  $\leq 1.45$  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  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4/B5/B12/B17/B26/B71 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE band 2/4/5/17 SAR test was covered by Band 25/66/26/12; according to TCB workshop, SAR test for overlapping LTE bands can be reduced if
  - a. The maximum output power, including tolerance, for the smaller band is  $\leq$  the larger band to qualify for the SAR test exclusion.
  - b. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.



**WLAN Note:**

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is  $\leq 1.2$  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  $\leq 1.2$  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  $\leq 0.8$  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  $\leq 1.2$  W/kg or all required channels are tested.
5. During SAR testing the WLAN transmission was verified using a spectrum analyzer.
6. Since the same RF amplifier and antenna is used for WiFi / Bluetooth transmitter and the Bluetooth output power is least 2 dB below the output power of WiFi, therefore, for Bluetooth SAR testing is selected worst position from each exposure condition to be tested.

**14.1 Head SAR**

**<GSM SAR>**

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
01	GSM 850_LAT	GPRS (4 Tx slots)	Right Cheek	0mm	State 1	128	824.2	26.11	27.00	1.227	-0.06	0.126	0.155
	GSM 850_LAT	GPRS (4 Tx slots)	Right Cheek	0mm	State 1	189	836.4	26.08	27.00	1.236	0.03	0.095	0.117
	GSM 850_LAT	GPRS (4 Tx slots)	Right Cheek	0mm	State 1	251	848.8	25.87	27.00	1.297	-0.05	0.082	0.106
	GSM 850_LAT	GPRS (4 Tx slots)	Right Tilted	0mm	State 1	128	824.2	26.11	27.00	1.227	0.16	0.089	0.109
	GSM 850_LAT	GPRS (4 Tx slots)	Left Cheek	0mm	State 1	128	824.2	26.11	27.00	1.227	0.08	0.096	0.118
	GSM 850_LAT	GPRS (4 Tx slots)	Left Tilted	0mm	State 1	128	824.2	26.11	27.00	1.227	0.07	0.086	0.106
	GSM 1900_LAT	EDGE (4 Tx slots)	Right Cheek	0mm	State 1	661	1880	24.89	26.00	1.291	0.15	0.101	0.130
	GSM 1900_LAT	EDGE (4 Tx slots)	Right Tilted	0mm	State 1	661	1880	24.89	26.00	1.291	-0.03	0.107	0.138
	GSM 1900_LAT	EDGE (4 Tx slots)	Left Cheek	0mm	State 1	661	1880	24.89	26.00	1.291	-0.05	0.154	0.199
02	GSM 1900_LAT	EDGE (4 Tx slots)	Left Cheek	0mm	State 1	512	1850.2	24.80	26.00	1.318	0.10	0.174	0.229
	GSM 1900_LAT	EDGE (4 Tx slots)	Left Cheek	0mm	State 1	810	1909.8	24.77	26.00	1.327	0.04	0.119	0.158
	GSM 1900_LAT	EDGE (4 Tx slots)	Left Tilted	0mm	State 1	661	1880	24.89	26.00	1.291	0.01	0.078	0.101



<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II_LAT	RMC 12.2Kbps	Right Cheek	0mm	State 1	9262	1852.4	23.54	24.00	1.112	0.01	0.150	0.167
	WCDMA II_LAT	RMC 12.2Kbps	Right Tilted	0mm	State 1	9262	1852.4	23.54	24.00	1.112	0.01	0.190	0.211
03	WCDMA II_LAT	RMC 12.2Kbps	Left Cheek	0mm	State 1	9262	1852.4	23.54	24.00	1.112	0.00	0.265	0.295
	WCDMA II_LAT	RMC 12.2Kbps	Left Cheek	0mm	State 1	9400	1880	23.43	24.00	1.140	0.03	0.242	0.276
	WCDMA II_LAT	RMC 12.2Kbps	Left Cheek	0mm	State 1	9538	1907.6	23.41	24.00	1.146	-0.02	0.216	0.247
	WCDMA II_LAT	RMC 12.2Kbps	Left Tilted	0mm	State 1	9262	1852.4	23.54	24.00	1.112	0.05	0.140	0.156
	WCDMA IV_UAT	RMC 12.2Kbps	Right Cheek	0mm	State 2	1513	1752.6	17.53	18.00	1.114	0.01	0.863	0.962
04	WCDMA IV_UAT	RMC 12.2Kbps	Right Cheek	0mm	State 2	1312	1712.4	17.35	18.00	1.161	0.02	0.923	1.072
	WCDMA IV_UAT	RMC 12.2Kbps	Right Cheek	0mm	State 2	1413	1732.6	17.42	18.00	1.143	-0.03	0.890	1.017
	WCDMA IV_UAT	RMC 12.2Kbps	Right Tilted	0mm	State 2	1513	1752.6	17.53	18.00	1.114	0.15	0.858	0.956
	WCDMA IV_UAT	RMC 12.2Kbps	Right Tilted	0mm	State 2	1312	1712.4	17.35	18.00	1.161	-0.09	0.905	1.051
	WCDMA IV_UAT	RMC 12.2Kbps	Right Tilted	0mm	State 2	1413	1732.6	17.42	18.00	1.143	-0.03	0.881	1.007
	WCDMA IV_UAT	RMC 12.2Kbps	Left Cheek	0mm	State 2	1513	1752.6	17.53	18.00	1.114	0.01	0.645	0.719
	WCDMA IV_UAT	RMC 12.2Kbps	Left Tilted	0mm	State 2	1513	1752.6	17.53	18.00	1.114	0.16	0.726	0.809
	WCDMA IV_UAT	RMC 12.2Kbps	Left Tilted	0mm	State 2	1312	1712.4	17.35	18.00	1.161	0.17	0.752	0.873
	WCDMA IV_UAT	RMC 12.2Kbps	Left Tilted	0mm	State 2	1413	1732.6	17.42	18.00	1.143	-0.06	0.734	0.839
	WCDMA IV_UAT	RMC 12.2Kbps	Right Cheek	0mm	State 3	1513	1752.6	16.38	17.00	1.153	0.07	0.674	0.777
	WCDMA IV_UAT	RMC 12.2Kbps	Right Tilted	0mm	State 3	1513	1752.6	16.38	17.00	1.153	0.15	0.685	0.790
	WCDMA IV_UAT	RMC 12.2Kbps	Right Tilted	0mm	State 3	1312	1712.4	16.21	17.00	1.199	0.16	0.829	0.994
	WCDMA IV_UAT	RMC 12.2Kbps	Right Tilted	0mm	State 3	1413	1732.6	16.25	17.00	1.189	0.11	0.830	0.986
	WCDMA IV_UAT	RMC 12.2Kbps	Left Cheek	0mm	State 3	1513	1752.6	16.38	17.00	1.153	-0.03	0.464	0.535
	WCDMA IV_UAT	RMC 12.2Kbps	Left Tilted	0mm	State 3	1513	1752.6	16.38	17.00	1.153	-0.11	0.497	0.573
	WCDMA IV_LAT	RMC 12.2Kbps	Right Cheek	0mm	State 1	1513	1752.6	23.59	24.00	1.099	-0.11	0.152	0.167
	WCDMA IV_LAT	RMC 12.2Kbps	Right Tilted	0mm	State 1	1513	1752.6	23.59	24.00	1.099	-0.05	0.139	0.153
	WCDMA IV_LAT	RMC 12.2Kbps	Left Cheek	0mm	State 1	1513	1752.6	23.59	24.00	1.099	0.12	0.268	0.295
	WCDMA IV_LAT	RMC 12.2Kbps	Left Cheek	0mm	State 1	1312	1712.4	23.39	24.00	1.151	0.10	0.281	0.323
	WCDMA IV_LAT	RMC 12.2Kbps	Left Cheek	0mm	State 1	1413	1732.6	23.42	24.00	1.143	-0.03	0.288	0.329
	WCDMA IV_LAT	RMC 12.2Kbps	Left Tilted	0mm	State 1	1513	1752.6	23.59	24.00	1.099	-0.09	0.103	0.113
	WCDMA V_LAT	RMC 12.2Kbps	Right Cheek	0mm	State 1	4132	826.4	23.54	24.00	1.112	0.06	0.252	0.280
	WCDMA V_LAT	RMC 12.2Kbps	Right Cheek	0mm	State 1	4182	836.4	23.44	24.00	1.138	0.07	0.252	0.287
05	WCDMA V_LAT	RMC 12.2Kbps	Right Cheek	0mm	State 1	4233	846.6	23.39	24.00	1.151	0.02	0.269	0.310
	WCDMA V_LAT	RMC 12.2Kbps	Right Tilted	0mm	State 1	4132	826.4	23.54	24.00	1.112	0.01	0.137	0.152
	WCDMA V_LAT	RMC 12.2Kbps	Left Cheek	0mm	State 1	4132	826.4	23.54	24.00	1.112	-0.08	0.196	0.218
	WCDMA V_LAT	RMC 12.2Kbps	Left Tilted	0mm	State 1	4132	826.4	23.54	24.00	1.112	-0.11	0.160	0.178



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7_LAT	20M	QPSK	1	99	Right Cheek	0mm	State 1	21350	2560	23.47	24.00	1.130	-0.01	0.073	0.082
	LTE Band 7_LAT	20M	QPSK	50	50	Right Cheek	0mm	State 1	21350	2560	22.48	23.00	1.127	0.01	0.058	0.065
	LTE Band 7_LAT	20M	QPSK	1	99	Right Tilted	0mm	State 1	21350	2560	23.47	24.00	1.130	0.09	0.062	0.070
	LTE Band 7_LAT	20M	QPSK	50	50	Right Tilted	0mm	State 1	21350	2560	22.48	23.00	1.127	0.16	0.049	0.055
	LTE Band 7_LAT	20M	QPSK	1	99	Left Cheek	0mm	State 1	21350	2560	23.47	24.00	1.130	-0.18	0.133	0.150
	LTE Band 7_LAT	20M	QPSK	1	99	Left Cheek	0mm	State 1	20850	2510	23.37	24.00	1.156	-0.10	0.122	0.141
06	LTE Band 7_LAT	20M	QPSK	1	99	Left Cheek	0mm	State 1	21100	2535	23.37	24.00	1.156	-0.13	0.131	0.151
	LTE Band 7_LAT	20M	QPSK	50	50	Left Cheek	0mm	State 1	21350	2560	22.48	23.00	1.127	0.13	0.108	0.122
	LTE Band 7_LAT	20M	QPSK	1	99	Left Tilted	0mm	State 1	21350	2560	23.47	24.00	1.130	0.08	0.040	0.045
	LTE Band 7_LAT	20M	QPSK	50	50	Left Tilted	0mm	State 1	21350	2560	22.48	23.00	1.127	0.04	0.033	0.037
	LTE Band 12_UAT	10M	QPSK	1	49	Right Cheek	0mm	State 1	23095	707.5	22.07	24.00	1.560	0.1	0.523	0.816
	LTE Band 12_UAT	10M	QPSK	25	12	Right Cheek	0mm	State 1	23095	707.5	21.16	23.00	1.528	-0.03	0.428	0.654
	LTE Band 12_UAT	10M	QPSK	50	0	Right Cheek	0mm	State 1	23095	707.5	21.14	23.00	1.535	-0.09	0.413	0.634
	LTE Band 12_UAT	10M	QPSK	1	49	Right Tilted	0mm	State 1	23095	707.5	22.07	24.00	1.560	-0.01	0.420	0.655
	LTE Band 12_UAT	10M	QPSK	25	12	Right Tilted	0mm	State 1	23095	707.5	21.16	23.00	1.528	0.08	0.340	0.519
07	LTE Band 12_UAT	10M	QPSK	1	49	Left Cheek	0mm	State 1	23095	707.5	22.07	24.00	1.560	-0.05	0.660	1.029
	LTE Band 12_UAT	10M	QPSK	25	12	Left Cheek	0mm	State 1	23095	707.5	21.16	23.00	1.528	-0.04	0.525	0.802
	LTE Band 12_UAT	10M	QPSK	50	0	Left Cheek	0mm	State 1	23095	707.5	21.14	23.00	1.535	0.11	0.522	0.801
	LTE Band 12_UAT	10M	QPSK	1	49	Left Tilted	0mm	State 1	23095	707.5	22.07	24.00	1.560	-0.13	0.447	0.697
	LTE Band 12_UAT	10M	QPSK	25	12	Left Tilted	0mm	State 1	23095	707.5	21.16	23.00	1.528	-0.06	0.361	0.551
	LTE Band 12_UAT	10M	QPSK	1	25	Right Cheek	0mm	State 3	23095	707.5	19.72	21.50	1.507	-0.10	0.396	0.597
	LTE Band 12_UAT	10M	QPSK	25	0	Right Cheek	0mm	State 3	23095	707.5	18.84	20.50	1.466	-0.08	0.321	0.470
	LTE Band 12_UAT	10M	QPSK	1	25	Right Tilted	0mm	State 3	23095	707.5	19.72	21.50	1.507	-0.11	0.268	0.404
	LTE Band 12_UAT	10M	QPSK	25	0	Right Tilted	0mm	State 3	23095	707.5	18.84	20.50	1.466	-0.01	0.213	0.312
	LTE Band 12_UAT	10M	QPSK	1	25	Left Cheek	0mm	State 3	23095	707.5	19.72	21.50	1.507	-0.05	0.404	0.609
	LTE Band 12_UAT	10M	QPSK	25	0	Left Cheek	0mm	State 3	23095	707.5	18.84	20.50	1.466	-0.07	0.329	0.482
	LTE Band 12_UAT	10M	QPSK	1	25	Left Tilted	0mm	State 3	23095	707.5	19.72	21.50	1.507	-0.06	0.270	0.407
	LTE Band 12_UAT	10M	QPSK	25	0	Left Tilted	0mm	State 3	23095	707.5	18.84	20.50	1.466	-0.02	0.219	0.321
	LTE Band 12_LAT	10M	QPSK	1	49	Right Cheek	0mm	State 1	23095	707.5	23.12	24.00	1.225	-0.08	0.125	0.153
	LTE Band 12_LAT	10M	QPSK	25	0	Right Cheek	0mm	State 1	23095	707.5	22.19	23.00	1.205	0.03	0.093	0.112
	LTE Band 12_LAT	10M	QPSK	1	49	Right Tilted	0mm	State 1	23095	707.5	23.12	24.00	1.225	0.08	0.078	0.096
	LTE Band 12_LAT	10M	QPSK	25	0	Right Tilted	0mm	State 1	23095	707.5	22.19	23.00	1.205	-0.14	0.061	0.074
	LTE Band 12_LAT	10M	QPSK	1	49	Left Cheek	0mm	State 1	23095	707.5	23.12	24.00	1.225	0.05	0.118	0.145
	LTE Band 12_LAT	10M	QPSK	25	0	Left Cheek	0mm	State 1	23095	707.5	22.19	23.00	1.205	0.01	0.090	0.108
	LTE Band 12_LAT	10M	QPSK	1	49	Left Tilted	0mm	State 1	23095	707.5	23.12	24.00	1.225	0.02	0.092	0.113
	LTE Band 12_LAT	10M	QPSK	25	0	Left Tilted	0mm	State 1	23095	707.5	22.19	23.00	1.205	-0.07	0.069	0.083
08	LTE Band 13_LAT	10M	QPSK	1	49	Right Cheek	0mm	State 1	23230	782	22.96	24.00	1.271	-0.08	0.173	0.220
	LTE Band 13_LAT	10M	QPSK	25	0	Right Cheek	0mm	State 1	23230	782	21.94	23.00	1.276	0.03	0.140	0.179
	LTE Band 13_LAT	10M	QPSK	1	49	Right Tilted	0mm	State 1	23230	782	22.96	24.00	1.271	0.09	0.111	0.141
	LTE Band 13_LAT	10M	QPSK	25	0	Right Tilted	0mm	State 1	23230	782	21.94	23.00	1.276	0.05	0.095	0.121
	LTE Band 13_LAT	10M	QPSK	1	49	Left Cheek	0mm	State 1	23230	782	22.96	24.00	1.271	0.04	0.144	0.183
	LTE Band 13_LAT	10M	QPSK	25	0	Left Cheek	0mm	State 1	23230	782	21.94	23.00	1.276	-0.01	0.116	0.148
	LTE Band 13_LAT	10M	QPSK	1	49	Left Tilted	0mm	State 1	23230	782	22.96	24.00	1.271	-0.06	0.112	0.142
	LTE Band 13_LAT	10M	QPSK	25	0	Left Tilted	0mm	State 1	23230	782	21.94	23.00	1.276	-0.11	0.091	0.116
	LTE Band 25_LAT	20M	QPSK	1	99	Right Cheek	0mm	State 1	26340	1880	22.92	24.00	1.282	0.11	0.084	0.108
	LTE Band 25_LAT	20M	QPSK	50	24	Right Cheek	0mm	State 1	26140	1860	21.96	23.00	1.271	0.04	0.077	0.098
	LTE Band 25_LAT	20M	QPSK	1	99	Right Tilted	0mm	State 1	26340	1880	22.92	24.00	1.282	-0.13	0.099	0.127
	LTE Band 25_LAT	20M	QPSK	50	24	Right Tilted	0mm	State 1	26140	1860	21.96	23.00	1.271	-0.02	0.084	0.107
	LTE Band 25_LAT	20M	QPSK	1	99	Left Cheek	0mm	State 1	26340	1880	22.92	24.00	1.282	-0.1	0.136	0.174
09	LTE Band 25_LAT	20M	QPSK	1	0	Left Cheek	0mm	State 1	26140	1860	22.86	24.00	1.300	0.07	0.166	0.216
	LTE Band 25_LAT	20M	QPSK	1	0	Left Cheek	0mm	State 1	26590	1905	22.76	24.00	1.330	-0.05	0.117	0.156
	LTE Band 25_LAT	20M	QPSK	50	24	Left Cheek	0mm	State 1	26140	1860	21.96	23.00	1.271	-0.04	0.13	0.165
	LTE Band 25_LAT	20M	QPSK	1	99	Left Tilted	0mm	State 1	26340	1880	22.92	24.00	1.282	0.04	0.07	0.090
	LTE Band 25_LAT	20M	QPSK	50	24	Left Tilted	0mm	State 1	26140	1860	21.96	23.00	1.271	-0.03	0.056	0.071



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
10	LTE Band 26_LAT	15M	QPSK	1	0	Right Cheek	0mm	State 1	26865	831.5	23.21	24.00	1.199	-0.10	0.215	0.258
	LTE Band 26_LAT	15M	QPSK	36	0	Right Cheek	0mm	State 1	26865	831.5	22.32	23.00	1.169	0.07	0.175	0.205
	LTE Band 26_LAT	15M	QPSK	1	0	Right Tilted	0mm	State 1	26865	831.5	23.21	24.00	1.199	0.13	0.101	0.121
	LTE Band 26_LAT	15M	QPSK	36	0	Right Tilted	0mm	State 1	26865	831.5	22.32	23.00	1.169	-0.10	0.085	0.099
	LTE Band 26_LAT	15M	QPSK	1	0	Left Cheek	0mm	State 1	26865	831.5	23.21	24.00	1.199	-0.03	0.173	0.207
	LTE Band 26_LAT	15M	QPSK	36	0	Left Cheek	0mm	State 1	26865	831.5	22.32	23.00	1.169	0.12	0.142	0.166
	LTE Band 26_LAT	15M	QPSK	1	0	Left Tilted	0mm	State 1	26865	831.5	23.21	24.00	1.199	0.15	0.105	0.125
	LTE Band 26_LAT	15M	QPSK	36	0	Left Tilted	0mm	State 1	26865	831.5	22.32	23.00	1.169	-0.16	0.084	0.098
	LTE Band 5B_LAT	10M	QPSK	1	0	Right Cheek	0mm	State 1	20600	844	23.22	24.00	1.197	0.12	0.202	0.242
	LTE Band 66_UAT	20M	QPSK	1	0	Right Cheek	0mm	State 2	132322	1745	17.78	18.50	1.180	0.01	0.902	1.065
	LTE Band 66_UAT	20M	QPSK	1	0	Right Cheek	0mm	State 2	132072	1720	17.74	18.50	1.191	0.06	0.902	1.075
	LTE Band 66_UAT	20M	QPSK	1	0	Right Cheek	0mm	State 2	132572	1770	17.70	18.50	1.202	0.08	0.852	1.024
	LTE Band 66_UAT	20M	QPSK	50	0	Right Cheek	0mm	State 2	132322	1745	16.63	17.50	1.222	-0.13	0.699	0.854
	LTE Band 66_UAT	20M	QPSK	50	0	Right Cheek	0mm	State 2	132072	1720	16.60	17.50	1.230	-0.01	0.733	0.902
	LTE Band 66_UAT	20M	QPSK	50	0	Right Cheek	0mm	State 2	132572	1770	16.56	17.50	1.242	-0.16	0.659	0.818
	LTE Band 66_UAT	20M	QPSK	100	0	Right Cheek	0mm	State 2	132322	1745	16.63	17.50	1.222	-0.08	0.690	0.843
	LTE Band 66_UAT	20M	QPSK	1	0	Right Tilted	0mm	State 2	132322	1745	17.78	18.50	1.180	-0.01	0.855	1.009
11	LTE Band 66_UAT	20M	QPSK	1	0	Right Tilted	0mm	State 2	132072	1720	17.74	18.50	1.191	-0.12	0.943	1.123
	LTE Band 66_UAT	20M	QPSK	1	0	Right Tilted	0mm	State 2	132572	1770	17.70	18.50	1.202	0.13	0.844	1.015
	LTE Band 66_UAT	20M	QPSK	50	0	Right Tilted	0mm	State 2	132322	1745	16.63	17.50	1.222	-0.1	0.692	0.845
	LTE Band 66_UAT	20M	QPSK	50	0	Right Tilted	0mm	State 2	132072	1720	16.60	17.50	1.230	0.06	0.716	0.881
	LTE Band 66_UAT	20M	QPSK	50	0	Right Tilted	0mm	State 2	132572	1770	16.56	17.50	1.242	0.01	0.642	0.797
	LTE Band 66_UAT	20M	QPSK	100	0	Right Tilted	0mm	State 2	132322	1745	16.63	17.50	1.222	0.06	0.693	0.847
	LTE Band 66_UAT	20M	QPSK	1	0	Left Cheek	0mm	State 2	132322	1745	17.78	18.50	1.180	0	0.681	0.804
	LTE Band 66_UAT	20M	QPSK	1	0	Left Cheek	0mm	State 2	132072	1720	17.74	18.50	1.191	0.1	0.682	0.812
	LTE Band 66_UAT	20M	QPSK	1	0	Left Cheek	0mm	State 2	132572	1770	17.70	18.50	1.202	-0.13	0.606	0.729
	LTE Band 66_UAT	20M	QPSK	50	0	Left Cheek	0mm	State 2	132322	1745	16.63	17.50	1.222	-0.18	0.510	0.623
	LTE Band 66_UAT	20M	QPSK	100	0	Left Cheek	0mm	State 2	132322	1745	16.63	17.50	1.222	0.05	0.502	0.613
	LTE Band 66_UAT	20M	QPSK	1	0	Left Tilted	0mm	State 2	132322	1745	17.78	18.50	1.180	-0.15	0.730	0.862
	LTE Band 66_UAT	20M	QPSK	1	0	Left Tilted	0mm	State 2	132072	1720	17.74	18.50	1.191	-0.1	0.741	0.883
	LTE Band 66_UAT	20M	QPSK	1	0	Left Tilted	0mm	State 2	132572	1770	17.70	18.50	1.202	-0.13	0.675	0.812
	LTE Band 66_UAT	20M	QPSK	50	0	Left Tilted	0mm	State 2	132322	1745	16.63	17.50	1.222	0.19	0.567	0.693
	LTE Band 66_UAT	20M	QPSK	50	0	Left Tilted	0mm	State 2	132072	1720	16.60	17.50	1.230	-0.18	0.572	0.704
	LTE Band 66_UAT	20M	QPSK	50	0	Left Tilted	0mm	State 2	132572	1770	16.56	17.50	1.242	-0.13	0.515	0.639
	LTE Band 66_UAT	20M	QPSK	100	0	Left Tilted	0mm	State 2	132322	1745	16.63	17.50	1.222	-0.15	0.555	0.678
	LTE Band 66_UAT	20M	QPSK	1	49	Right Cheek	0mm	State 3	132072	1720	16.34	17.00	1.164	0.18	0.769	0.895
	LTE Band 66_UAT	20M	QPSK	1	49	Right Cheek	0mm	State 3	132322	1745	16.25	17.00	1.189	0.19	0.718	0.853
	LTE Band 66_UAT	20M	QPSK	1	49	Right Cheek	0mm	State 3	132572	1770	16.13	17.00	1.222	-0.14	0.681	0.832
	LTE Band 66_UAT	20M	QPSK	50	0	Right Cheek	0mm	State 3	132072	1720	15.13	16.00	1.222	0.01	0.591	0.722
	LTE Band 66_UAT	20M	QPSK	100	0	Right Cheek	0mm	State 3	132322	1745	15.11	16.00	1.227	0.19	0.552	0.678
	LTE Band 66_UAT	20M	QPSK	1	49	Right Tilted	0mm	State 3	132072	1720	16.34	17.00	1.164	0.11	0.767	0.893
	LTE Band 66_UAT	20M	QPSK	1	49	Right Tilted	0mm	State 3	132322	1745	16.25	17.00	1.189	0.02	0.711	0.845
	LTE Band 66_UAT	20M	QPSK	1	49	Right Tilted	0mm	State 3	132572	1770	16.13	17.00	1.222	0.17	0.672	0.821
	LTE Band 66_UAT	20M	QPSK	50	0	Right Tilted	0mm	State 3	132072	1720	15.13	16.00	1.222	0.10	0.589	0.720
	LTE Band 66_UAT	20M	QPSK	100	0	Right Tilted	0mm	State 3	132322	1745	15.11	16.00	1.227	0.11	0.551	0.676
	LTE Band 66_UAT	20M	QPSK	1	49	Left Cheek	0mm	State 3	132072	1720	16.34	17.00	1.164	-0.04	0.498	0.580
	LTE Band 66_UAT	20M	QPSK	50	0	Left Cheek	0mm	State 3	132072	1720	15.13	16.00	1.222	-0.15	0.403	0.492
	LTE Band 66_UAT	20M	QPSK	1	49	Left Tilted	0mm	State 3	132072	1720	16.34	17.00	1.164	-0.04	0.574	0.668
	LTE Band 66_UAT	20M	QPSK	50	0	Left Tilted	0mm	State 3	132072	1720	15.13	16.00	1.222	-0.05	0.451	0.551
	LTE Band 66_LAT	20M	QPSK	1	49	Right Cheek	0mm	State 1	132322	1745	23.21	24.00	1.199	0.09	0.127	0.152
	LTE Band 66_LAT	20M	QPSK	50	0	Right Cheek	0mm	State 1	132322	1745	22.14	23.00	1.219	-0.10	0.104	0.127
	LTE Band 66_LAT	20M	QPSK	1	49	Right Tilted	0mm	State 1	132322	1745	23.21	24.00	1.199	0.08	0.108	0.130
	LTE Band 66_LAT	20M	QPSK	50	0	Right Tilted	0mm	State 1	132322	1745	22.14	23.00	1.219	0.00	0.084	0.102
	LTE Band 66_LAT	20M	QPSK	1	49	Left Cheek	0mm	State 1	132322	1745	23.21	24.00	1.199	0.13	0.236	0.283
	LTE Band 66_LAT	20M	QPSK	1	49	Left Cheek	0mm	State 1	132072	1720	23.17	24.00	1.211	0.00	0.229	0.277
	LTE Band 66_LAT	20M	QPSK	1	49	Left Cheek	0mm	State 1	132572	1770	23.16	24.00	1.213	0.10	0.246	0.298
	LTE Band 66_LAT	20M	QPSK	50	0	Left Cheek	0mm	State 1	132322	1745	22.14	23.00	1.219	-0.09	0.191	0.233
	LTE Band 66_LAT	20M	QPSK	1	49	Left Tilted	0mm	State 1	132322	1745	23.21	24.00	1.199	0.10	0.081	0.097
	LTE Band 66_LAT	20M	QPSK	50	0	Left Tilted	0mm	State 1	132322	1745	22.14	23.00	1.219	-0.01	0.065	0.079



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 71_UAT	20M	QPSK	1	99	Right Cheek	0mm	State 1	133322	683	22.74	24.00	1.337	0.02	0.445	0.595
	LTE Band 71_UAT	20M	QPSK	50	50	Right Cheek	0mm	State 1	133322	683	21.65	23.00	1.365	0.05	0.318	0.434
	LTE Band 71_UAT	20M	QPSK	1	99	Right Tilted	0mm	State 1	133322	683	22.74	24.00	1.337	-0.03	0.345	0.461
	LTE Band 71_UAT	20M	QPSK	50	50	Right Tilted	0mm	State 1	133322	683	21.65	23.00	1.365	0.01	0.299	0.408
12	LTE Band 71_UAT	20M	QPSK	1	99	Left Cheek	0mm	State 1	133322	683	22.74	24.00	1.337	0.01	0.532	0.711
	LTE Band 71_UAT	20M	QPSK	50	50	Left Cheek	0mm	State 1	133322	683	21.65	23.00	1.365	0.00	0.415	0.566
	LTE Band 71_UAT	20M	QPSK	1	99	Left Tilted	0mm	State 1	133322	683	22.74	24.00	1.337	0.04	0.474	0.634
	LTE Band 71_UAT	20M	QPSK	50	50	Left Tilted	0mm	State 1	133322	683	21.65	23.00	1.365	-0.02	0.379	0.517
	LTE Band 71_LAT	20M	QPSK	1	49	Right Cheek	0mm	State 1	133322	683	23.10	24.00	1.230	-0.1	0.148	0.182
	LTE Band 71_LAT	20M	QPSK	50	50	Right Cheek	0mm	State 1	133322	683	21.98	23.00	1.265	0.09	0.115	0.145
	LTE Band 71_LAT	20M	QPSK	1	49	Right Tilted	0mm	State 1	133322	683	23.10	24.00	1.230	0.04	0.085	0.105
	LTE Band 71_LAT	20M	QPSK	50	50	Right Tilted	0mm	State 1	133322	683	21.98	23.00	1.265	0.07	0.066	0.083
	LTE Band 71_LAT	20M	QPSK	1	49	Left Cheek	0mm	State 1	133322	683	23.10	24.00	1.230	-0.13	0.141	0.173
	LTE Band 71_LAT	20M	QPSK	50	50	Left Cheek	0mm	State 1	133322	683	21.98	23.00	1.265	0.05	0.110	0.139
	LTE Band 71_LAT	20M	QPSK	1	49	Left Tilted	0mm	State 1	133322	683	23.10	24.00	1.230	-0.03	0.099	0.122
	LTE Band 71_LAT	20M	QPSK	50	50	Left Tilted	0mm	State 1	133322	683	21.98	23.00	1.265	0.08	0.080	0.101

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41_LAT	20M	QPSK	1	99	Right Cheek	0mm	State 1	40340	2565	23.92	24.50	1.143	62.9	1.006	0.06	0.053	0.061
	LTE Band 41_LAT	20M	QPSK	50	24	Right Cheek	0mm	State 1	40600	2591	22.83	23.50	1.167	62.9	1.006	0.07	0.040	0.047
	LTE Band 41_LAT	20M	QPSK	1	99	Right Tilted	0mm	State 1	40340	2565	23.92	24.50	1.143	62.9	1.006	-0.12	0.037	0.043
	LTE Band 41_LAT	20M	QPSK	50	24	Right Tilted	0mm	State 1	40600	2591	22.83	23.50	1.167	62.9	1.006	-0.19	0.023	0.027
	LTE Band 41_LAT	20M	QPSK	1	99	Left Cheek	0mm	State 1	40340	2565	23.92	24.50	1.143	62.9	1.006	0.00	0.100	0.115
	LTE Band 41_LAT	20M	QPSK	1	99	Left Cheek	0mm	State 1	40600	2591	23.79	24.50	1.178	62.9	1.006	0.10	0.103	0.122
	LTE Band 41_LAT	20M	QPSK	1	99	Left Cheek	0mm	State 1	40870	2618	23.75	24.50	1.189	62.9	1.006	0.13	0.107	0.128
13	LTE Band 41_LAT	20M	QPSK	1	99	Left Cheek	0mm	State 1	41140	2645	23.87	24.50	1.156	62.9	1.006	-0.12	0.112	0.130
	LTE Band 41_LAT	20M	QPSK	50	24	Left Cheek	0mm	State 1	40600	2591	22.83	23.50	1.167	62.9	1.006	-0.17	0.082	0.096
	LTE Band 41_LAT	20M	QPSK	1	99	Left Tilted	0mm	State 1	40340	2565	23.92	24.50	1.143	62.9	1.006	-0.11	0.023	0.026
	LTE Band 41_LAT	20M	QPSK	50	24	Left Tilted	0mm	State 1	40600	2591	22.83	23.50	1.167	62.9	1.006	0.19	0.018	0.021
	LTE Band 41C_LAT	20M	QPSK	1	0	Left Cheek	0mm	State 1	41140	2645	23.27	24.50	1.327	62.9	1.006	0.1	0.091	0.122



**<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	6	2437	15.69	16.00	1.074	100	1.000	0.01	0.201	0.216
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	6	2437	15.69	16.00	1.074	100	1.000	0.05	0.193	0.207
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	6	2437	15.69	16.00	1.074	100	1.000	0.07	0.459	0.493
14	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	1	2412	15.68	16.00	1.076	100	1.000	-0.03	0.572	0.616
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	11	2462	15.37	16.00	1.156	100	1.000	0.11	0.476	0.550
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	6	2437	15.69	16.00	1.074	100	1.000	0.01	0.320	0.344
15	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	52	5260	15.20	15.50	1.072	98.34	1.017	0.16	0.246	0.268
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	56	5280	14.40	15.00	1.148	98.34	1.017	0.14	0.177	0.207
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	60	5300	14.10	15.00	1.230	98.34	1.017	0.08	0.147	0.184
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	64	5320	14.30	15.00	1.175	98.34	1.017	0.07	0.158	0.189
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	52	5260	15.20	15.50	1.072	98.34	1.017	0.13	0.143	0.156
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	52	5260	15.20	15.50	1.072	98.34	1.017	0.02	0.126	0.137
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	52	5260	15.20	15.50	1.072	98.34	1.017	0.13	0.078	0.085
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	100	5500	17.10	17.50	1.096	98.34	1.017	0.19	0.363	0.405
16	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	116	5580	16.80	17.00	1.047	98.34	1.017	0.13	0.531	0.565
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	124	5620	15.10	15.50	1.096	98.34	1.017	-0.11	0.355	0.396
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	132	5660	15.00	15.50	1.122	98.34	1.017	0.04	0.400	0.456
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	144	5720	14.50	15.00	1.122	98.34	1.017	0.06	0.357	0.407
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	100	5500	17.10	17.50	1.096	98.34	1.017	0.09	0.183	0.204
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	100	5500	17.10	17.50	1.096	98.34	1.017	-0.01	0.127	0.142
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	100	5500	17.10	17.50	1.096	98.34	1.017	-0.06	0.048	0.054
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	149	5745	15.00	15.50	1.122	98.34	1.017	-0.12	0.357	0.407
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	157	5785	14.20	15.50	1.349	98.34	1.017	0.12	0.371	0.509
17	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	165	5825	14.50	15.50	1.259	98.34	1.017	0.07	0.413	0.529
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	149	5745	15.00	15.50	1.122	98.34	1.017	0.13	0.176	0.201
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	149	5745	15.00	15.50	1.122	98.34	1.017	-0.12	0.173	0.197
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	149	5745	15.00	15.50	1.122	98.34	1.017	-0.1	0.086	0.098

**<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	11.84	13.00	1.306	77.13	1.080	0.18	0.067	0.094
	Bluetooth	1Mbps	Right Tilted	0mm	78	2480	11.84	13.00	1.306	77.13	1.080	0.09	0.051	0.072
	Bluetooth	1Mbps	Left Cheek	0mm	78	2480	11.84	13.00	1.306	77.13	1.080	-0.13	0.131	0.185
18	Bluetooth	1Mbps	Left Cheek	0mm	0	2402	11.59	13.00	1.383	77.13	1.080	0.02	0.172	0.257
	Bluetooth	1Mbps	Left Cheek	0mm	39	2441	11.75	13.00	1.333	77.13	1.080	-0.03	0.162	0.233
	Bluetooth	1Mbps	Left Tilted	0mm	78	2480	11.84	13.00	1.306	77.13	1.080	-0.01	0.098	0.138



14.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
19	GSM 850_LAT	GPRS (4 Tx slots)	Front	10mm	State 1	128	824.2	26.11	27.00	1.227	-0.14	0.132	0.162
	GSM 850_LAT	GPRS (4 Tx slots)	Front	10mm	State 1	189	836.4	26.08	27.00	1.236	-0.1	0.120	0.148
	GSM 850_LAT	GPRS (4 Tx slots)	Front	10mm	State 1	251	848.8	25.87	27.00	1.297	0.01	0.111	0.144
	GSM 850_LAT	GPRS (4 Tx slots)	Back	10mm	State 1	128	824.2	26.11	27.00	1.227	0.09	0.128	0.156
	GSM 850_LAT	GPRS (4 Tx slots)	Left Side	10mm	State 1	128	824.2	26.11	27.00	1.227	0.04	0.036	0.044
	GSM 850_LAT	GPRS (4 Tx slots)	Right Side	10mm	State 1	128	824.2	26.11	27.00	1.227	0.15	0.112	0.137
	GSM 850_LAT	GPRS (4 Tx slots)	Bottom Side	10mm	State 1	128	824.2	26.11	27.00	1.227	-0.10	0.066	0.081
	GSM 1900_LAT	EDGE (4 Tx slots)	Front	10mm	State 4	661	1880	20.09	21.00	1.233	-0.02	0.246	0.303
	GSM 1900_LAT	EDGE (4 Tx slots)	Back	10mm	State 4	661	1880	20.09	21.00	1.233	-0.02	0.269	0.332
	GSM 1900_LAT	EDGE (4 Tx slots)	Left Side	10mm	State 4	661	1880	20.09	21.00	1.233	0.13	0.030	0.037
	GSM 1900_LAT	EDGE (4 Tx slots)	Right Side	10mm	State 4	661	1880	20.09	21.00	1.233	-0.19	0.025	0.031
	GSM 1900_LAT	EDGE (4 Tx slots)	Bottom Side	10mm	State 4	661	1880	20.09	21.00	1.233	-0.02	0.536	0.661
	GSM 1900_LAT	EDGE (4 Tx slots)	Bottom Side	10mm	State 4	512	1850.2	20.07	21.00	1.239	-0.15	0.494	0.612
20	GSM 1900_LAT	EDGE (4 Tx slots)	Bottom Side	10mm	State 4	810	1909.8	20.05	21.00	1.245	-0.02	0.694	0.864

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II_LAT	RMC 12.2Kbps	Front	10mm	State 4	9262	1852.4	17.34	18.00	1.164	-0.04	0.302	0.352
	WCDMA II_LAT	RMC 12.2Kbps	Back	10mm	State 4	9262	1852.4	17.34	18.00	1.164	-0.08	0.335	0.390
	WCDMA II_LAT	RMC 12.2Kbps	Left Side	10mm	State 4	9262	1852.4	17.34	18.00	1.164	-0.03	0.046	0.054
	WCDMA II_LAT	RMC 12.2Kbps	Right Side	10mm	State 4	9262	1852.4	17.34	18.00	1.164	0.00	0.036	0.042
	WCDMA II_LAT	RMC 12.2Kbps	Bottom Side	10mm	State 4	9262	1852.4	17.34	18.00	1.164	-0.18	0.729	0.849
	WCDMA II_LAT	RMC 12.2Kbps	Bottom Side	10mm	State 4	9400	1880	17.30	18.00	1.175	-0.10	0.775	0.911
21	WCDMA II_LAT	RMC 12.2Kbps	Bottom Side	10mm	State 4	9538	1907.6	17.33	18.00	1.167	-0.17	0.826	0.964
	WCDMA IV_UAT	RMC 12.2Kbps	Front	10mm	State 1	1513	1752.6	21.90	22.00	1.023	-0.02	0.586	0.600
	WCDMA IV_UAT	RMC 12.2Kbps	Front	10mm	State 1	1312	1712.4	21.74	22.00	1.062	-0.18	0.649	0.689
	WCDMA IV_UAT	RMC 12.2Kbps	Front	10mm	State 1	1413	1732.6	21.80	22.00	1.047	-0.05	0.634	0.664
	WCDMA IV_UAT	RMC 12.2Kbps	Back	10mm	State 1	1513	1752.6	21.90	22.00	1.023	0.01	0.565	0.578
	WCDMA IV_UAT	RMC 12.2Kbps	Left Side	10mm	State 1	1513	1752.6	21.90	22.00	1.023	0.06	0.152	0.156
	WCDMA IV_UAT	RMC 12.2Kbps	Top Side	10mm	State 1	1513	1752.6	21.90	22.00	1.023	0.08	0.971	0.994
	WCDMA IV_UAT	RMC 12.2Kbps	Top Side	10mm	State 1	1312	1712.4	21.74	22.00	1.062	-0.15	0.974	1.034
	WCDMA IV_UAT	RMC 12.2Kbps	Top Side	10mm	State 1	1413	1732.6	21.80	22.00	1.047	-0.07	0.967	1.013
	WCDMA IV_LAT	RMC 12.2Kbps	Front	10mm	State 4	1513	1752.6	20.40	21.00	1.148	0.02	0.503	0.578
	WCDMA IV_LAT	RMC 12.2Kbps	Back	10mm	State 4	1513	1752.6	20.40	21.00	1.148	-0.03	0.526	0.604
	WCDMA IV_LAT	RMC 12.2Kbps	Left Side	10mm	State 4	1513	1752.6	20.40	21.00	1.148	-0.10	0.135	0.155
	WCDMA IV_LAT	RMC 12.2Kbps	Right Side	10mm	State 4	1513	1752.6	20.40	21.00	1.148	-0.09	0.081	0.093
22	WCDMA IV_LAT	RMC 12.2Kbps	Bottom Side	10mm	State 4	1513	1752.6	20.40	21.00	1.148	-0.01	0.965	1.108
	WCDMA IV_LAT	RMC 12.2Kbps	Bottom Side	10mm	State 4	1312	1712.4	20.24	21.00	1.191	-0.04	0.830	0.989
	WCDMA IV_LAT	RMC 12.2Kbps	Bottom Side	10mm	State 4	1413	1732.6	20.26	21.00	1.186	-0.01	0.881	1.045
	WCDMA V_LAT	RMC 12.2Kbps	Front	10mm	State 1	4132	826.4	23.54	24.00	1.112	0.17	0.438	0.487
	WCDMA V_LAT	RMC 12.2Kbps	Front	10mm	State 1	4182	836.4	23.44	24.00	1.138	-0.18	0.454	0.516
23	WCDMA V_LAT	RMC 12.2Kbps	Front	10mm	State 1	4233	846.6	23.39	24.00	1.151	-0.19	0.471	0.542
	WCDMA V_LAT	RMC 12.2Kbps	Back	10mm	State 1	4132	826.4	23.54	24.00	1.112	0.19	0.406	0.452
	WCDMA V_LAT	RMC 12.2Kbps	Left Side	10mm	State 1	4132	826.4	23.54	24.00	1.112	-0.18	0.125	0.139
	WCDMA V_LAT	RMC 12.2Kbps	Right Side	10mm	State 1	4132	826.4	23.54	24.00	1.112	-0.10	0.319	0.355
	WCDMA V_LAT	RMC 12.2Kbps	Bottom Side	10mm	State 1	4132	826.4	23.54	24.00	1.112	-0.12	0.244	0.271



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
24	LTE Band 7_LAT	20M	QPSK	1	99	Front	10mm	State 1	21350	2560	23.47	24.00	1.130	0.03	0.369	0.417
	LTE Band 7_LAT	20M	QPSK	1	99	Front	10mm	State 1	20850	2510	23.37	24.00	1.156	0.06	0.380	0.439
	LTE Band 7_LAT	20M	QPSK	1	99	Front	10mm	State 1	21100	2535	23.37	24.00	1.156	0.01	0.375	0.434
	LTE Band 7_LAT	20M	QPSK	50	50	Front	10mm	State 1	21350	2560	22.48	23.00	1.127	0.09	0.319	0.360
	LTE Band 7_LAT	20M	QPSK	1	99	Back	10mm	State 1	21350	2560	23.47	24.00	1.130	0.18	0.287	0.324
	LTE Band 7_LAT	20M	QPSK	50	50	Back	10mm	State 1	21350	2560	22.48	23.00	1.127	-0.06	0.228	0.257
	LTE Band 7_LAT	20M	QPSK	1	99	Left Side	10mm	State 1	21350	2560	23.47	24.00	1.130	-0.12	0.364	0.411
	LTE Band 7_LAT	20M	QPSK	50	50	Left Side	10mm	State 1	21350	2560	22.48	23.00	1.127	0.04	0.262	0.295
	LTE Band 7_LAT	20M	QPSK	1	99	Right Side	10mm	State 1	21350	2560	23.47	24.00	1.130	0.01	0.047	0.053
	LTE Band 7_LAT	20M	QPSK	50	50	Right Side	10mm	State 1	21350	2560	22.48	23.00	1.127	-0.03	0.038	0.043
	LTE Band 7_LAT	20M	QPSK	1	99	Bottom Side	10mm	State 1	21350	2560	23.47	24.00	1.130	0.08	0.204	0.230
	LTE Band 7_LAT	20M	QPSK	50	50	Bottom Side	10mm	State 1	21350	2560	22.48	23.00	1.127	-0.09	0.184	0.207
25	LTE Band 12_UAT	10M	QPSK	1	25	Front	10mm	State 1	23095	707.5	22.06	24.00	1.563	0.02	0.117	0.183
	LTE Band 12_UAT	10M	QPSK	25	12	Front	10mm	State 1	23095	707.5	21.16	23.00	1.528	-0.03	0.096	0.147
	LTE Band 12_UAT	10M	QPSK	1	25	Back	10mm	State 1	23095	707.5	22.06	24.00	1.563	-0.12	0.121	0.189
	LTE Band 12_UAT	10M	QPSK	25	12	Back	10mm	State 1	23095	707.5	21.16	23.00	1.528	0.01	0.096	0.147
	LTE Band 12_UAT	10M	QPSK	1	25	Left Side	10mm	State 1	23095	707.5	22.06	24.00	1.563	0.00	0.103	0.161
	LTE Band 12_UAT	10M	QPSK	25	12	Left Side	10mm	State 1	23095	707.5	21.16	23.00	1.528	0.05	0.084	0.128
	LTE Band 12_UAT	10M	QPSK	1	25	Top Side	10mm	State 1	23095	707.5	22.06	24.00	1.563	0.02	0.082	0.128
	LTE Band 12_UAT	10M	QPSK	25	12	Top Side	10mm	State 1	23095	707.5	21.16	23.00	1.528	0.09	0.067	0.102
	LTE Band 12_LAT	10M	QPSK	1	49	Front	10mm	State 1	23095	707.5	23.12	24.00	1.225	-0.11	0.199	0.244
	LTE Band 12_LAT	10M	QPSK	25	0	Front	10mm	State 1	23095	707.5	22.19	23.00	1.205	0.19	0.158	0.190
	LTE Band 12_LAT	10M	QPSK	1	49	Back	10mm	State 1	23095	707.5	23.12	24.00	1.225	-0.12	0.198	0.242
	LTE Band 12_LAT	10M	QPSK	25	0	Back	10mm	State 1	23095	707.5	22.19	23.00	1.205	-0.18	0.161	0.194
26	LTE Band 12_LAT	10M	QPSK	1	49	Left Side	10mm	State 1	23095	707.5	23.12	24.00	1.225	-0.16	0.115	0.141
	LTE Band 12_LAT	10M	QPSK	25	0	Left Side	10mm	State 1	23095	707.5	22.19	23.00	1.205	-0.15	0.094	0.113
	LTE Band 12_LAT	10M	QPSK	1	49	Right Side	10mm	State 1	23095	707.5	23.12	24.00	1.225	-0.02	0.106	0.130
	LTE Band 12_LAT	10M	QPSK	25	0	Right Side	10mm	State 1	23095	707.5	22.19	23.00	1.205	-0.07	0.086	0.104
	LTE Band 12_LAT	10M	QPSK	1	49	Bottom Side	10mm	State 1	23095	707.5	23.12	24.00	1.225	0.13	0.121	0.148
	LTE Band 12_LAT	10M	QPSK	25	0	Bottom Side	10mm	State 1	23095	707.5	22.19	23.00	1.205	-0.11	0.067	0.081
	LTE Band 13_LAT	10M	QPSK	1	49	Front	10mm	State 1	23230	782	22.96	24.00	1.271	-0.10	0.277	0.352
	LTE Band 13_LAT	10M	QPSK	25	12	Front	10mm	State 1	23230	782	21.96	23.00	1.271	0.03	0.218	0.277
	LTE Band 13_LAT	10M	QPSK	1	49	Back	10mm	State 1	23230	782	22.96	24.00	1.271	0.11	0.253	0.322
	LTE Band 13_LAT	10M	QPSK	25	12	Back	10mm	State 1	23230	782	21.96	23.00	1.271	-0.08	0.195	0.248
	LTE Band 13_LAT	10M	QPSK	1	49	Left Side	10mm	State 1	23230	782	22.96	24.00	1.271	0.00	0.117	0.148
	LTE Band 13_LAT	10M	QPSK	25	12	Left Side	10mm	State 1	23230	782	21.96	23.00	1.271	-0.19	0.096	0.121
27	LTE Band 13_LAT	10M	QPSK	1	49	Right Side	10mm	State 1	23230	782	22.96	24.00	1.271	-0.18	0.141	0.179
	LTE Band 13_LAT	10M	QPSK	25	12	Right Side	10mm	State 1	23230	782	21.96	23.00	1.271	-0.11	0.099	0.125
	LTE Band 13_LAT	10M	QPSK	1	49	Bottom Side	10mm	State 1	23230	782	22.96	24.00	1.271	-0.06	0.168	0.213
	LTE Band 13_LAT	10M	QPSK	25	12	Bottom Side	10mm	State 1	23230	782	21.96	23.00	1.271	-0.09	0.138	0.175
	LTE Band 25_LAT	20M	QPSK	1	99	Front	10mm	State 4	26340	1880	17.18	18.50	1.355	-0.10	0.315	0.427
	LTE Band 25_LAT	20M	QPSK	50	24	Front	10mm	State 4	26340	1880	16.16	17.50	1.361	-0.06	0.258	0.351
	LTE Band 25_LAT	20M	QPSK	1	99	Back	10mm	State 4	26340	1880	17.18	18.50	1.355	-0.10	0.336	0.455
	LTE Band 25_LAT	20M	QPSK	50	24	Back	10mm	State 4	26340	1880	16.16	17.50	1.361	-0.08	0.271	0.369
	LTE Band 25_LAT	20M	QPSK	1	99	Left Side	10mm	State 4	26340	1880	17.18	18.50	1.355	-0.09	0.047	0.064
	LTE Band 25_LAT	20M	QPSK	50	24	Left Side	10mm	State 4	26340	1880	16.16	17.50	1.361	-0.07	0.042	0.057
	LTE Band 25_LAT	20M	QPSK	1	99	Right Side	10mm	State 4	26340	1880	17.18	18.50	1.355	0.03	0.039	0.053
	LTE Band 25_LAT	20M	QPSK	50	24	Right Side	10mm	State 4	26340	1880	16.16	17.50	1.361	-0.04	0.033	0.045
LTE Band 25_LAT	20M	QPSK	1	99	Bottom Side	10mm	State 4	26340	1880	17.18	18.50	1.355	-0.01	0.774	1.049	
27	LTE Band 25_LAT	20M	QPSK	1	99	Bottom Side	10mm	State 4	26140	1860	17.08	18.50	1.387	-0.17	0.709	0.983
	LTE Band 25_LAT	20M	QPSK	1	99	Bottom Side	10mm	State 4	26590	1905	17.04	18.50	1.400	-0.17	0.771	1.079
	LTE Band 25_LAT	20M	QPSK	50	24	Bottom Side	10mm	State 4	26340	1880	16.16	17.50	1.361	-0.06	0.584	0.795
LTE Band 25_LAT	20M	QPSK	100	0	Bottom Side	10mm	State 4	26340	1880	16.14	17.50	1.368	0.17	0.581	0.795	



**FCC SAR TEST REPORT**

**Report No. : FA040406-07**

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
28	LTE Band 26_LAT	15M	QPSK	1	0	Front	10mm	State 1	26865	831.5	23.21	24.00	1.199	-0.17	0.385	0.462
	LTE Band 26_LAT	15M	QPSK	36	0	Front	10mm	State 1	26865	831.5	22.32	23.00	1.169	0.19	0.313	0.366
	LTE Band 26_LAT	15M	QPSK	1	0	Back	10mm	State 1	26865	831.5	23.21	24.00	1.199	-0.12	0.351	0.421
	LTE Band 26_LAT	15M	QPSK	36	0	Back	10mm	State 1	26865	831.5	22.32	23.00	1.169	-0.07	0.294	0.344
	LTE Band 26_LAT	15M	QPSK	1	0	Left Side	10mm	State 1	26865	831.5	23.21	24.00	1.199	-0.09	0.079	0.095
	LTE Band 26_LAT	15M	QPSK	36	0	Left Side	10mm	State 1	26865	831.5	22.32	23.00	1.169	0.12	0.065	0.076
	LTE Band 26_LAT	15M	QPSK	1	0	Right Side	10mm	State 1	26865	831.5	23.21	24.00	1.199	0.13	0.182	0.218
	LTE Band 26_LAT	15M	QPSK	36	0	Right Side	10mm	State 1	26865	831.5	22.32	23.00	1.169	-0.14	0.131	0.154
	LTE Band 26_LAT	15M	QPSK	1	0	Bottom Side	10mm	State 1	26865	831.5	23.21	24.00	1.199	-0.02	0.196	0.235
	LTE Band 26_LAT	15M	QPSK	36	0	Bottom Side	10mm	State 1	26865	831.5	22.32	23.00	1.169	0.15	0.151	0.177
	LTE Band 5B_LAT	10M	QPSK	1	0	Front	10mm	State 1	20600	844	23.22	24.00	1.197	0.13	0.377	0.451
	LTE Band 66_UAT	20M	QPSK	1	49	Front	10mm	State 4	132322	1745	20.24	21.50	1.337	0.18	0.410	0.548
	LTE Band 66_UAT	20M	QPSK	50	0	Front	10mm	State 4	132322	1745	19.08	20.50	1.387	0.12	0.323	0.448
	LTE Band 66_UAT	20M	QPSK	1	49	Back	10mm	State 4	132322	1745	20.24	21.50	1.337	0.02	0.577	0.771
	LTE Band 66_UAT	20M	QPSK	50	0	Back	10mm	State 4	132322	1745	19.08	20.50	1.387	0.00	0.454	0.630
	LTE Band 66_UAT	20M	QPSK	1	49	Left Side	10mm	State 4	132322	1745	20.24	21.50	1.337	0.06	0.130	0.174
	LTE Band 66_UAT	20M	QPSK	50	0	Left Side	10mm	State 4	132322	1745	19.08	20.50	1.387	-0.08	0.104	0.144
	LTE Band 66_UAT	20M	QPSK	1	49	Top Side	10mm	State 4	132322	1745	20.24	21.50	1.337	0.01	0.701	0.937
	LTE Band 66_UAT	20M	QPSK	1	49	Top Side	10mm	State 4	132072	1720	20.19	21.50	1.352	-0.08	0.756	1.022
	LTE Band 66_UAT	20M	QPSK	1	49	Top Side	10mm	State 4	132572	1770	20.16	21.50	1.361	-0.04	0.666	0.907
	LTE Band 66_UAT	20M	QPSK	50	0	Top Side	10mm	State 4	132322	1745	19.08	20.50	1.387	-0.04	0.572	0.793
	LTE Band 66_UAT	20M	QPSK	100	0	Top Side	10mm	State 4	132322	1745	19.08	20.50	1.387	-0.05	0.561	0.778
	LTE Band 66_LAT	20M	QPSK	1	49	Front	10mm	State 4	132322	1745	20.24	21.00	1.191	-0.04	0.484	0.577
	LTE Band 66_LAT	20M	QPSK	50	0	Front	10mm	State 4	132322	1745	19.08	20.00	1.236	-0.07	0.374	0.462
	LTE Band 66_LAT	20M	QPSK	1	49	Back	10mm	State 4	132322	1745	20.24	21.00	1.191	-0.05	0.495	0.590
	LTE Band 66_LAT	20M	QPSK	50	0	Back	10mm	State 4	132322	1745	19.08	20.00	1.236	-0.05	0.383	0.473
	LTE Band 66_LAT	20M	QPSK	1	49	Left Side	10mm	State 4	132322	1745	20.24	21.00	1.191	-0.09	0.137	0.163
	LTE Band 66_LAT	20M	QPSK	50	0	Left Side	10mm	State 4	132322	1745	19.08	20.00	1.236	0.05	0.111	0.137
	LTE Band 66_LAT	20M	QPSK	1	49	Right Side	10mm	State 4	132322	1745	20.24	21.00	1.191	-0.13	0.047	0.056
	LTE Band 66_LAT	20M	QPSK	50	0	Right Side	10mm	State 4	132322	1745	19.08	20.00	1.236	-0.09	0.035	0.043
	LTE Band 66_LAT	20M	QPSK	1	49	Bottom Side	10mm	State 4	132322	1745	20.24	21.00	1.191	-0.03	0.921	1.097
	LTE Band 66_LAT	20M	QPSK	1	49	Bottom Side	10mm	State 4	132072	1720	20.19	21.00	1.205	-0.02	0.859	1.035
29	LTE Band 66_LAT	20M	QPSK	1	49	Bottom Side	10mm	State 4	132572	1770	20.22	21.00	1.197	-0.03	0.998	1.194
	LTE Band 66_LAT	20M	QPSK	50	0	Bottom Side	10mm	State 4	132322	1745	19.08	20.00	1.236	-0.04	0.702	0.868
	LTE Band 66_LAT	20M	QPSK	50	0	Bottom Side	10mm	State 4	132072	1720	19.03	20.00	1.250	-0.03	0.760	0.950
	LTE Band 66_LAT	20M	QPSK	50	0	Bottom Side	10mm	State 4	132572	1770	19.03	20.00	1.250	-0.07	0.834	1.043
	LTE Band 66_LAT	20M	QPSK	100	0	Bottom Side	10mm	State 4	132322	1745	19.05	20.00	1.245	-0.09	0.718	0.894



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 71_UAT	20M	QPSK	1	99	Front	10mm	State 1	133322	683	22.74	24.00	1.337	0.02	0.140	0.187
	LTE Band 71_UAT	20M	QPSK	50	50	Front	10mm	State 1	133322	683	21.65	23.00	1.365	0.01	0.111	0.151
	LTE Band 71_UAT	20M	QPSK	1	99	Back	10mm	State 1	133322	683	22.74	24.00	1.337	0.00	0.133	0.178
	LTE Band 71_UAT	20M	QPSK	50	50	Back	10mm	State 1	133322	683	21.65	23.00	1.365	0.05	0.105	0.143
	LTE Band 71_UAT	20M	QPSK	1	99	Left Side	10mm	State 1	133322	683	22.74	24.00	1.337	0.04	0.089	0.119
	LTE Band 71_UAT	20M	QPSK	50	50	Left Side	10mm	State 1	133322	683	21.65	23.00	1.365	-0.03	0.069	0.094
	LTE Band 71_UAT	20M	QPSK	1	99	Top Side	10mm	State 1	133322	683	22.74	24.00	1.337	-0.07	0.086	0.115
	LTE Band 71_UAT	20M	QPSK	50	50	Top Side	10mm	State 1	133322	683	21.65	23.00	1.365	0.01	0.065	0.089
30	LTE Band 71_LAT	20M	QPSK	1	49	Front	10mm	State 1	133322	683	23.10	24.00	1.230	-0.07	0.287	0.353
	LTE Band 71_LAT	20M	QPSK	50	50	Front	10mm	State 1	133322	683	21.98	23.00	1.265	0.06	0.225	0.285
	LTE Band 71_LAT	20M	QPSK	1	49	Back	10mm	State 1	133322	683	23.10	24.00	1.230	-0.05	0.282	0.347
	LTE Band 71_LAT	20M	QPSK	50	50	Back	10mm	State 1	133322	683	21.98	23.00	1.265	-0.11	0.224	0.284
	LTE Band 71_LAT	20M	QPSK	1	49	Left Side	10mm	State 1	133322	683	23.10	24.00	1.230	0.02	0.231	0.285
	LTE Band 71_LAT	20M	QPSK	50	50	Left Side	10mm	State 1	133322	683	21.98	23.00	1.265	0.11	0.150	0.189
	LTE Band 71_LAT	20M	QPSK	1	49	Right Side	10mm	State 1	133322	683	23.10	24.00	1.230	-0.14	0.260	0.320
	LTE Band 71_LAT	20M	QPSK	50	50	Right Side	10mm	State 1	133322	683	21.98	23.00	1.265	0.08	0.155	0.196
	LTE Band 71_LAT	20M	QPSK	1	49	Bottom Side	10mm	State 1	133322	683	23.10	24.00	1.230	-0.11	0.085	0.104
	LTE Band 71_LAT	20M	QPSK	50	50	Bottom Side	10mm	State 1	133322	683	21.98	23.00	1.265	-0.12	0.067	0.085

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41_LAT	20M	QPSK	1	99	Front	10mm	State 1	40340	2565	23.92	24.50	1.143	62.9	1.006	0.07	0.286	0.329
	LTE Band 41_LAT	20M	QPSK	1	99	Front	10mm	State 1	40600	2591	23.79	24.50	1.178	62.9	1.006	0.13	0.300	0.355
	LTE Band 41_LAT	20M	QPSK	1	99	Front	10mm	State 1	40870	2618	23.75	24.50	1.189	62.9	1.006	-0.15	0.296	0.354
31	LTE Band 41_LAT	20M	QPSK	1	99	Front	10mm	State 1	41140	2645	23.87	24.50	1.156	62.9	1.006	0.06	0.340	0.395
	LTE Band 41_LAT	20M	QPSK	50	24	Front	10mm	State 1	40600	2591	22.83	23.50	1.167	62.9	1.006	0.18	0.240	0.282
	LTE Band 41_LAT	20M	QPSK	1	99	Back	10mm	State 1	40340	2565	23.92	24.50	1.143	62.9	1.006	-0.12	0.221	0.254
	LTE Band 41_LAT	20M	QPSK	50	24	Back	10mm	State 1	40600	2591	22.83	23.50	1.167	62.9	1.006	0.07	0.179	0.210
	LTE Band 41_LAT	20M	QPSK	1	99	Left Side	10mm	State 1	40340	2565	23.92	24.50	1.143	62.9	1.006	-0.05	0.274	0.315
	LTE Band 41_LAT	20M	QPSK	50	24	Left Side	10mm	State 1	40600	2591	22.83	23.50	1.167	62.9	1.006	0.01	0.232	0.272
	LTE Band 41_LAT	20M	QPSK	1	99	Right Side	10mm	State 1	40340	2565	23.92	24.50	1.143	62.9	1.006	-0.03	0.033	0.038
	LTE Band 41_LAT	20M	QPSK	50	24	Right Side	10mm	State 1	40600	2591	22.83	23.50	1.167	62.9	1.006	0.17	0.001	0.001
	LTE Band 41_LAT	20M	QPSK	1	99	Bottom Side	10mm	State 1	40340	2565	23.92	24.50	1.143	62.9	1.006	-0.16	0.197	0.226
	LTE Band 41_LAT	20M	QPSK	50	24	Bottom Side	10mm	State 1	40600	2591	22.83	23.50	1.167	62.9	1.006	-0.16	0.096	0.113
	LTE Band 41C_LAT	20M	QPSK	1	0	Front	10mm	State 1	41140	2645	23.27	24.50	1.327	62.9	1.006	-0.05	0.291	0.389

**<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	Front	10mm	6	2437	15.69	16.00	1.074	100	1.000	0.10	0.117	0.126
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	6	2437	15.69	16.00	1.074	100	1.000	-0.05	0.129	0.139
32	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	1	2412	15.68	16.00	1.076	100	1.000	-0.15	0.145	0.156
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	11	2462	15.37	16.00	1.156	100	1.000	-0.04	0.111	0.128
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	6	2437	15.69	16.00	1.074	100	1.000	0.11	0.089	0.096
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	6	2437	15.69	16.00	1.074	100	1.000	0.17	0.091	0.098
	WLAN5GHz	802.11a 6Mbps	Front	10mm	48	5240	14.80	15.00	1.047	98.34	1.017	0.07	0.030	0.032
	WLAN5GHz	802.11a 6Mbps	Back	10mm	48	5240	14.80	15.00	1.047	98.34	1.017	-0.18	0.138	0.147
33	WLAN5GHz	802.11a 6Mbps	Back	10mm	36	5180	14.10	15.00	1.230	98.34	1.017	-0.19	0.135	0.169
	WLAN5GHz	802.11a 6Mbps	Back	10mm	40	5200	14.30	15.00	1.175	98.34	1.017	0.11	0.141	0.168
	WLAN5GHz	802.11a 6Mbps	Back	10mm	44	5220	14.70	15.00	1.072	98.34	1.017	0.13	0.137	0.149
	WLAN5GHz	802.11a 6Mbps	Left Side	10mm	48	5240	14.80	15.00	1.047	98.34	1.017	0.11	0.078	0.083
	WLAN5GHz	802.11a 6Mbps	Top Side	10mm	48	5240	14.80	15.00	1.047	98.34	1.017	-0.05	0.039	0.042
	WLAN5GHz	802.11a 6Mbps	Front	10mm	149	5745	15.00	15.50	1.122	98.34	1.017	0.15	0.059	0.067
34	WLAN5GHz	802.11a 6Mbps	Back	10mm	149	5745	15.00	15.50	1.122	98.34	1.017	-0.13	0.113	0.129
	WLAN5GHz	802.11a 6Mbps	Back	10mm	157	5785	14.20	15.50	1.349	98.34	1.017	0.10	0.064	0.088
	WLAN5GHz	802.11a 6Mbps	Back	10mm	165	5825	14.50	15.50	1.259	98.34	1.017	-0.15	0.086	0.110
	WLAN5GHz	802.11a 6Mbps	Left Side	10mm	149	5745	15.00	15.50	1.122	98.34	1.017	0.11	0.093	0.106
	WLAN5GHz	802.11a 6Mbps	Top Side	10mm	149	5745	15.00	15.50	1.122	98.34	1.017	0.10	0.016	0.018

**<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	10mm	78	2480	11.84	13.00	1.306	77.13	1.080	0.03	0.030	0.042
	Bluetooth	1Mbps	Back	10mm	78	2480	11.84	13.00	1.306	77.13	1.080	0.09	0.039	0.055
35	Bluetooth	1Mbps	Back	10mm	0	2402	11.59	13.00	1.383	77.13	1.080	-0.05	0.044	0.066
	Bluetooth	1Mbps	Back	10mm	39	2441	11.75	13.00	1.333	77.13	1.080	0.14	0.043	0.062
	Bluetooth	1Mbps	Right Side	10mm	78	2480	11.84	13.00	1.306	77.13	1.080	-0.10	0.025	0.035
	Bluetooth	1Mbps	Top Side	10mm	78	2480	11.84	13.00	1.306	77.13	1.080	0.07	0.018	0.025

**14.3 Body Worn Accessory SAR**

**<GSM SAR>**

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
36	GSM 850_LAT	GPRS (4 Tx slots)	Front	10mm	State 1	128	824.2	26.11	27.00	1.227	-0.14	0.132	0.162
	GSM 850_LAT	GPRS (4 Tx slots)	Front	10mm	State 1	189	836.4	26.08	27.00	1.236	-0.10	0.120	0.148
	GSM 850_LAT	GPRS (4 Tx slots)	Front	10mm	State 1	251	848.8	25.87	27.00	1.297	0.01	0.111	0.144
	GSM 850_LAT	GPRS (4 Tx slots)	Back	10mm	State 1	128	824.2	26.11	27.00	1.227	0.09	0.128	0.156
	GSM 1900_LAT	EDGE (4 Tx slots)	Front	10mm	State 5	661	1880	23.65	24.50	1.216	0.12	0.584	0.710
	GSM 1900_LAT	EDGE (4 Tx slots)	Front	10mm	State 5	512	1850.2	23.13	24.50	1.371	0.09	0.536	0.735
37	GSM 1900_LAT	EDGE (4 Tx slots)	Front	10mm	State 5	810	1909.8	23.19	24.50	1.352	-0.07	0.639	0.864
	GSM 1900_LAT	EDGE (4 Tx slots)	Back	10mm	State 5	661	1880	23.65	24.50	1.216	-0.02	0.561	0.682

**<WCDMA SAR>**

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II_LAT	RMC 12.2Kbps	Front	10mm	State 5	9262	1852.4	20.86	21.50	1.159	-0.08	0.749	0.868
	WCDMA II_LAT	RMC 12.2Kbps	Front	10mm	State 5	9400	1880	20.78	21.50	1.180	-0.08	0.756	0.892
	WCDMA II_LAT	RMC 12.2Kbps	Front	10mm	State 5	9538	1907.6	20.76	21.50	1.186	-0.15	0.775	0.919
	WCDMA II_LAT	RMC 12.2Kbps	Back	10mm	State 5	9262	1852.4	20.86	21.50	1.159	-0.08	0.794	0.920
	WCDMA II_LAT	RMC 12.2Kbps	Back	10mm	State 5	9400	1880	20.78	21.50	1.180	-0.09	0.827	0.976
38	WCDMA II_LAT	RMC 12.2Kbps	Back	10mm	State 5	9538	1907.6	20.76	21.50	1.186	-0.13	0.835	0.990
	WCDMA IV_UAT	RMC 12.2Kbps	Front	10mm	State 1	1513	1752.6	21.90	22.00	1.023	-0.02	0.586	0.600
	WCDMA IV_UAT	RMC 12.2Kbps	Front	10mm	State 1	1312	1712.4	21.74	22.00	1.062	-0.18	0.649	0.689
	WCDMA IV_UAT	RMC 12.2Kbps	Front	10mm	State 1	1413	1732.6	21.80	22.00	1.047	-0.05	0.634	0.664
	WCDMA IV_UAT	RMC 12.2Kbps	Back	10mm	State 1	1513	1752.6	21.90	22.00	1.023	0.01	0.565	0.578
39	WCDMA IV_LAT	RMC 12.2Kbps	Front	10mm	State 5	1513	1752.6	21.67	22.50	1.211	-0.13	0.736	0.891
	WCDMA IV_LAT	RMC 12.2Kbps	Front	10mm	State 5	1312	1712.4	21.51	22.50	1.256	-0.09	0.635	0.798
	WCDMA IV_LAT	RMC 12.2Kbps	Front	10mm	State 5	1413	1732.6	21.56	22.50	1.242	-0.12	0.653	0.811
	WCDMA IV_LAT	RMC 12.2Kbps	Back	10mm	State 5	1513	1752.6	21.67	22.50	1.211	-0.15	0.735	0.890
	WCDMA IV_LAT	RMC 12.2Kbps	Back	10mm	State 5	1312	1712.4	21.51	22.50	1.256	-0.13	0.643	0.808
	WCDMA IV_LAT	RMC 12.2Kbps	Back	10mm	State 5	1413	1732.6	21.56	22.50	1.242	-0.05	0.672	0.834
	WCDMA V_LAT	RMC 12.2Kbps	Front	10mm	State 1	4132	826.4	23.54	24.00	1.112	0.17	0.438	0.487
	WCDMA V_LAT	RMC 12.2Kbps	Front	10mm	State 1	4182	836.4	23.44	24.00	1.138	-0.18	0.454	0.516
40	WCDMA V_LAT	RMC 12.2Kbps	Front	10mm	State 1	4233	846.6	23.39	24.00	1.151	-0.19	0.471	0.542
	WCDMA V_LAT	RMC 12.2Kbps	Back	10mm	State 1	4132	826.4	23.54	24.00	1.112	0.19	0.406	0.452



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7_LAT	20M	QPSK	1	99	Front	10mm	State 1	21350	2560	23.47	24.00	1.130	0.03	0.369	0.417
41	LTE Band 7_LAT	20M	QPSK	1	99	Front	10mm	State 1	20850	2510	23.37	24.00	1.156	0.06	0.380	0.439
	LTE Band 7_LAT	20M	QPSK	1	99	Front	10mm	State 1	21100	2535	23.37	24.00	1.156	0.01	0.375	0.434
	LTE Band 7_LAT	20M	QPSK	50	50	Front	10mm	State 1	21350	2560	22.48	23.00	1.127	0.09	0.319	0.360
	LTE Band 7_LAT	20M	QPSK	1	99	Back	10mm	State 1	21350	2560	23.47	24.00	1.130	0.18	0.287	0.324
	LTE Band 7_LAT	20M	QPSK	50	50	Back	10mm	State 1	21350	2560	22.48	23.00	1.127	-0.06	0.228	0.257
	LTE Band 12_UAT	10M	QPSK	1	25	Front	10mm	State 1	23095	707.5	22.06	24.00	1.563	0.02	0.117	0.183
	LTE Band 12_UAT	10M	QPSK	25	12	Front	10mm	State 1	23095	707.5	21.16	23.00	1.528	-0.03	0.096	0.147
	LTE Band 12_UAT	10M	QPSK	1	25	Back	10mm	State 1	23095	707.5	22.06	24.00	1.563	-0.12	0.121	0.189
	LTE Band 12_UAT	10M	QPSK	25	12	Back	10mm	State 1	23095	707.5	21.16	23.00	1.528	0.01	0.096	0.147
42	LTE Band 12_LAT	10M	QPSK	1	49	Front	10mm	State 1	23095	707.5	23.12	24.00	1.225	-0.11	0.199	0.244
	LTE Band 12_LAT	10M	QPSK	25	0	Front	10mm	State 1	23095	707.5	22.19	23.00	1.205	0.19	0.158	0.190
	LTE Band 12_LAT	10M	QPSK	1	49	Back	10mm	State 1	23095	707.5	23.12	24.00	1.225	-0.12	0.198	0.242
	LTE Band 12_LAT	10M	QPSK	25	0	Back	10mm	State 1	23095	707.5	22.19	23.00	1.205	-0.18	0.161	0.194
43	LTE Band 13_LAT	10M	QPSK	1	49	Front	10mm	State 1	23230	782	22.96	24.00	1.271	-0.10	0.277	0.352
	LTE Band 13_LAT	10M	QPSK	25	12	Front	10mm	State 1	23230	782	21.96	23.00	1.271	0.03	0.218	0.277
	LTE Band 13_LAT	10M	QPSK	1	49	Back	10mm	State 1	23230	782	22.96	24.00	1.271	0.11	0.253	0.322
	LTE Band 13_LAT	10M	QPSK	25	12	Back	10mm	State 1	23230	782	21.96	23.00	1.271	-0.08	0.195	0.248
	LTE Band 25_LAT	20M	QPSK	1	99	Front	10mm	State 5	26340	1880	20.21	21.50	1.346	-0.16	0.706	0.950
	LTE Band 25_LAT	20M	QPSK	1	99	Front	10mm	State 5	26140	1860	20.12	21.50	1.374	-0.08	0.710	0.976
	LTE Band 25_LAT	20M	QPSK	1	99	Front	10mm	State 5	26590	1905	20.03	21.50	1.403	-0.13	0.641	0.899
	LTE Band 25_LAT	20M	QPSK	50	24	Front	10mm	State 5	26340	1880	19.19	20.50	1.352	-0.14	0.577	0.780
	LTE Band 25_LAT	20M	QPSK	100	0	Front	10mm	State 5	26340	1880	19.15	20.50	1.365	-0.14	0.571	0.779
44	LTE Band 25_LAT	20M	QPSK	1	99	Back	10mm	State 5	26340	1880	20.21	21.50	1.346	-0.02	0.748	1.007
	LTE Band 25_LAT	20M	QPSK	1	99	Back	10mm	State 5	26140	1860	20.12	21.50	1.374	0.02	0.697	0.958
	LTE Band 25_LAT	20M	QPSK	1	99	Back	10mm	State 5	26590	1905	20.03	21.50	1.403	0.03	0.712	0.999
	LTE Band 25_LAT	20M	QPSK	50	24	Back	10mm	State 5	26340	1880	19.19	20.50	1.352	-0.01	0.576	0.779
	LTE Band 25_LAT	20M	QPSK	100	0	Back	10mm	State 5	26340	1880	19.15	20.50	1.365	-0.03	0.578	0.789
45	LTE Band 26_LAT	15M	QPSK	1	0	Front	10mm	State 1	26865	831.5	23.21	24.00	1.199	-0.17	0.385	0.462
	LTE Band 26_LAT	15M	QPSK	36	0	Front	10mm	State 1	26865	831.5	22.32	23.00	1.169	0.19	0.313	0.366
	LTE Band 26_LAT	15M	QPSK	1	0	Back	10mm	State 1	26865	831.5	23.21	24.00	1.199	-0.12	0.351	0.421
	LTE Band 26_LAT	15M	QPSK	36	0	Back	10mm	State 1	26865	831.5	22.32	23.00	1.169	-0.07	0.294	0.344
	LTE Band 5B_LAT	10M	QPSK	1	0	Front	10mm	State 1	20600	844	23.22	24.00	1.197	0.13	0.377	0.451





Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 66_UAT	20M	QPSK	1	49	Front	10mm	State 1	132072	1720	21.64	22.00	1.086	-0.07	0.718	0.780
	LTE Band 66_UAT	20M	QPSK	1	0	Front	10mm	State 1	132322	1745	21.63	22.00	1.089	0.014	0.671	0.731
	LTE Band 66_UAT	20M	QPSK	1	49	Front	10mm	State 1	132572	1770	21.58	22.00	1.102	0.01	0.594	0.654
	LTE Band 66_UAT	20M	QPSK	50	0	Front	10mm	State 1	132322	1745	20.57	21.00	1.104	0.00	0.494	0.545
	LTE Band 66_UAT	20M	QPSK	1	49	Back	10mm	State 1	132072	1720	21.64	22.00	1.086	0.02	0.633	0.688
	LTE Band 66_UAT	20M	QPSK	50	0	Back	10mm	State 1	132322	1745	20.57	21.00	1.104	-0.16	0.476	0.526
	LTE Band 66_LAT	20M	QPSK	1	49	Front	10mm	State 5	132322	1745	21.03	22.50	1.403	0.00	0.614	0.861
	LTE Band 66_LAT	20M	QPSK	1	49	Front	10mm	State 5	132072	1720	21.02	22.50	1.406	0.02	0.616	0.866
	LTE Band 66_LAT	20M	QPSK	1	49	Front	10mm	State 5	132572	1770	20.99	22.50	1.416	-0.04	0.582	0.824
	LTE Band 66_LAT	20M	QPSK	50	0	Front	10mm	State 5	132322	1745	19.89	21.50	1.449	-0.05	0.464	0.672
	LTE Band 66_LAT	20M	QPSK	100	0	Front	10mm	State 5	132322	1745	19.88	21.50	1.452	-0.03	0.430	0.624
	LTE Band 66_LAT	20M	QPSK	1	49	Back	10mm	State 5	132322	1745	21.03	22.50	1.403	-0.07	0.582	0.816
	LTE Band 66_LAT	20M	QPSK	1	49	Back	10mm	State 5	132072	1720	21.02	22.50	1.406	-0.08	0.555	0.780
46	LTE Band 66_LAT	20M	QPSK	1	49	Back	10mm	State 5	132572	1770	20.99	22.50	1.416	-0.10	0.623	0.882
	LTE Band 66_LAT	20M	QPSK	50	0	Back	10mm	State 5	132322	1745	19.89	21.50	1.449	-0.07	0.448	0.649
	LTE Band 66_LAT	20M	QPSK	100	0	Back	10mm	State 5	132322	1745	19.88	21.50	1.452	-0.07	0.470	0.682
	LTE Band 71_UAT	20M	QPSK	1	99	Front	10mm	State 1	133322	683	22.74	24.00	1.337	0.02	0.140	0.187
	LTE Band 71_UAT	20M	QPSK	50	50	Front	10mm	State 1	133322	683	21.65	23.00	1.365	0.01	0.111	0.151
	LTE Band 71_UAT	20M	QPSK	1	99	Back	10mm	State 1	133322	683	22.74	24.00	1.337	0.00	0.133	0.178
	LTE Band 71_UAT	20M	QPSK	50	50	Back	10mm	State 1	133322	683	21.65	23.00	1.365	0.05	0.105	0.143
47	LTE Band 71_LAT	20M	QPSK	1	49	Front	10mm	State 1	133322	683	23.10	24.00	1.230	-0.07	0.287	0.353
	LTE Band 71_LAT	20M	QPSK	50	50	Front	10mm	State 1	133322	683	21.98	23.00	1.265	0.06	0.225	0.285
	LTE Band 71_LAT	20M	QPSK	1	49	Back	10mm	State 1	133322	683	23.10	24.00	1.230	-0.05	0.282	0.347
	LTE Band 71_LAT	20M	QPSK	50	50	Back	10mm	State 1	133322	683	21.98	23.00	1.265	-0.11	0.224	0.284

**<TDD LTE SAR>**

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41_LAT	20M	QPSK	1	99	Front	10mm	State 1	40340	2565	23.92	24.50	1.143	62.9	1.006	0.07	0.286	0.329
	LTE Band 41_LAT	20M	QPSK	1	99	Front	10mm	State 1	40600	2591	23.79	24.50	1.178	62.9	1.006	0.13	0.300	0.355
	LTE Band 41_LAT	20M	QPSK	1	99	Front	10mm	State 1	40870	2618	23.75	24.50	1.189	62.9	1.006	-0.15	0.296	0.354
48	LTE Band 41_LAT	20M	QPSK	1	99	Front	10mm	State 1	41140	2645	23.87	24.50	1.156	62.9	1.006	0.06	0.340	0.395
	LTE Band 41_LAT	20M	QPSK	50	24	Front	10mm	State 1	40600	2591	22.83	23.50	1.167	62.9	1.006	0.18	0.240	0.282
	LTE Band 41_LAT	20M	QPSK	1	99	Back	10mm	State 1	40340	2565	23.92	24.50	1.143	62.9	1.006	-0.12	0.221	0.254
	LTE Band 41_LAT	20M	QPSK	50	24	Back	10mm	State 1	40600	2591	22.83	23.50	1.167	62.9	1.006	0.07	0.179	0.210
	LTE Band 41C_LAT	20M	QPSK	1	0	Front	10mm	State 1	41140	2645	23.27	24.50	1.327	62.9	1.006	-0.05	0.291	0.389

**<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	Front	10mm	6	2437	15.69	16.00	1.074	100	1.000	0.10	0.117	0.126
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	6	2437	15.69	16.00	1.074	100	1.000	-0.05	0.129	0.139
49	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	1	2412	15.68	16.00	1.076	100	1.000	-0.15	0.145	0.156
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	11	2462	15.37	16.00	1.156	100	1.000	-0.04	0.111	0.128
	WLAN5GHz	802.11a 6Mbps	Front	10mm	52	5260	15.20	15.50	1.072	98.34	1.017	-0.08	0.022	0.024
50	WLAN5GHz	802.11a 6Mbps	Back	10mm	52	5260	15.20	15.50	1.072	98.34	1.017	-0.03	0.147	0.160
	WLAN5GHz	802.11a 6Mbps	Back	10mm	56	5280	14.40	15.00	1.148	98.34	1.017	0.06	0.117	0.137
	WLAN5GHz	802.11a 6Mbps	Back	10mm	60	5300	14.10	15.00	1.230	98.34	1.017	0.06	0.094	0.118
	WLAN5GHz	802.11a 6Mbps	Back	10mm	64	5320	14.30	15.00	1.175	98.34	1.017	-0.08	0.106	0.127
	WLAN5GHz	802.11a 6Mbps	Front	10mm	100	5500	17.10	17.50	1.096	98.34	1.017	0.06	0.055	0.061
51	WLAN5GHz	802.11a 6Mbps	Back	10mm	100	5500	17.10	17.50	1.096	98.34	1.017	-0.06	0.165	0.184
	WLAN5GHz	802.11a 6Mbps	Back	10mm	116	5580	16.80	17.00	1.047	98.34	1.017	-0.01	0.113	0.120
	WLAN5GHz	802.11a 6Mbps	Back	10mm	124	5620	15.10	15.50	1.096	98.34	1.017	-0.07	0.061	0.068
	WLAN5GHz	802.11a 6Mbps	Back	10mm	132	5660	15.00	15.50	1.122	98.34	1.017	-0.06	0.056	0.064
	WLAN5GHz	802.11a 6Mbps	Back	10mm	144	5720	14.50	15.00	1.122	98.34	1.017	-0.07	0.049	0.056
	WLAN5GHz	802.11a 6Mbps	Front	10mm	149	5745	15.00	15.50	1.122	98.34	1.017	0.15	0.059	0.067
52	WLAN5GHz	802.11a 6Mbps	Back	10mm	149	5745	15.00	15.50	1.122	98.34	1.017	-0.13	0.113	0.129
	WLAN5GHz	802.11a 6Mbps	Back	10mm	157	5785	14.20	15.50	1.349	98.34	1.017	0.10	0.064	0.088
	WLAN5GHz	802.11a 6Mbps	Back	10mm	165	5825	14.50	15.50	1.259	98.34	1.017	-0.15	0.086	0.110

**<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	10mm	78	2480	11.84	13.00	1.306	77.13	1.080	0.03	0.030	0.042
	Bluetooth	1Mbps	Back	10mm	78	2480	11.84	13.00	1.306	77.13	1.080	0.09	0.039	0.055
53	Bluetooth	1Mbps	Back	10mm	0	2402	11.59	13.00	1.383	77.13	1.080	-0.05	0.044	0.066
	Bluetooth	1Mbps	Back	10mm	39	2441	11.75	13.00	1.333	77.13	1.080	0.14	0.043	0.062



**14.4 Product Specific SAR**

**<GSM SAR>**

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	GSM 1900_LAT	EDGE (4 Tx slots)	Bottom Side	0mm	State 5	661	1880	23.65	24.50	1.216	-0.01	1.130	1.374
	GSM 1900_LAT	EDGE (4 Tx slots)	Bottom Side	0mm	State 5	512	1850.2	23.13	24.50	1.371	-0.01	1.190	1.631
54	GSM 1900_LAT	EDGE (4 Tx slots)	Bottom Side	0mm	State 5	810	1909.8	23.19	24.50	1.352	-0.10	1.260	1.704

**<WCDMA SAR>**

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	WCDMA II_LAT	RMC 12.2Kbps	Bottom Side	0mm	State 5	9538	1907.6	20.76	21.50	1.186	-0.1	1.630	1.933
55	WCDMA II_LAT	RMC 12.2Kbps	Bottom Side	0mm	State 5	9262	1852.4	20.86	21.50	1.159	-0.09	1.860	2.155
	WCDMA II_LAT	RMC 12.2Kbps	Bottom Side	0mm	State 5	9400	1880	20.78	21.50	1.180	-0.09	1.720	2.030
56	WCDMA IV_LAT	RMC 12.2Kbps	Bottom Side	0mm	State 5	1513	1752.6	21.67	22.50	1.211	-0.12	2.340	2.833
	WCDMA IV_LAT	RMC 12.2Kbps	Bottom Side	0mm	State 5	1312	1712.4	21.51	22.50	1.256	-0.13	2.170	2.726
	WCDMA IV_LAT	RMC 12.2Kbps	Bottom Side	0mm	State 5	1413	1732.6	21.56	22.50	1.242	-0.1	2.240	2.781

**<LTE SAR>**

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	LTE Band 25_LAT	20M	QPSK	1	99	Bottom Side	0mm	State 5	26340	1880	20.21	21.50	1.346	-0.12	1.680	2.261
57	LTE Band 25_LAT	20M	QPSK	1	99	Bottom Side	0mm	State 5	26140	1860	20.12	21.50	1.374	0.00	1.740	2.391
	LTE Band 25_LAT	20M	QPSK	1	99	Bottom Side	0mm	State 5	26590	1905	20.03	21.50	1.403	-0.08	1.500	2.104
	LTE Band 66_LAT	20M	QPSK	1	49	Bottom Side	0mm	State 5	132322	1745	21.03	22.50	1.403	-0.08	1.980	2.778
	LTE Band 66_LAT	20M	QPSK	1	49	Bottom Side	0mm	State 5	132072	1720	21.02	22.50	1.406	-0.07	1.930	2.714
58	LTE Band 66_LAT	20M	QPSK	1	49	Bottom Side	0mm	State 5	132572	1770	20.99	22.50	1.416	-0.03	1.980	2.803

**<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 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	WLAN5GHz	802.11a 6Mbps	Front	0mm	52	5260	15.20	15.50	1.072	98.34	1.017	0.04	0.150	0.163
59	WLAN5GHz	802.11a 6Mbps	Back	0mm	52	5260	15.20	15.50	1.072	98.34	1.017	0.09	0.557	0.607
	WLAN5GHz	802.11a 6Mbps	Back	0mm	56	5280	14.40	15.00	1.148	98.34	1.017	-0.04	0.387	0.452
	WLAN5GHz	802.11a 6Mbps	Back	0mm	60	5300	14.10	15.00	1.230	98.34	1.017	0.01	0.320	0.400
	WLAN5GHz	802.11a 6Mbps	Back	0mm	64	5320	14.30	15.00	1.175	98.34	1.017	0.13	0.285	0.341
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	52	5260	15.20	15.50	1.072	98.34	1.017	0.10	0.197	0.215
	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	52	5260	15.20	15.50	1.072	98.34	1.017	0.14	0.067	0.073
	WLAN5GHz	802.11a 6Mbps	Front	0mm	100	5500	17.10	17.50	1.096	98.34	1.017	0.12	0.292	0.326
60	WLAN5GHz	802.11a 6Mbps	Back	0mm	100	5500	17.10	17.50	1.096	98.34	1.017	-0.14	0.462	0.515
	WLAN5GHz	802.11a 6Mbps	Back	0mm	116	5580	16.80	17.00	1.047	98.34	1.017	-0.08	0.411	0.438
	WLAN5GHz	802.11a 6Mbps	Back	0mm	124	5620	15.10	15.50	1.096	98.34	1.017	0.09	0.280	0.312
	WLAN5GHz	802.11a 6Mbps	Back	0mm	132	5660	15.00	15.50	1.122	98.34	1.017	0.17	0.283	0.323
	WLAN5GHz	802.11a 6Mbps	Back	0mm	144	5720	14.50	15.00	1.122	98.34	1.017	0.11	0.296	0.338
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	100	5500	17.10	17.50	1.096	98.34	1.017	0.18	0.368	0.410
	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	100	5500	17.10	17.50	1.096	98.34	1.017	0.19	0.105	0.117



14.5 Repeated SAR Measurement

No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	LTE Band 66_LAT	20M_QPSK_1_49	Bottom Side	10mm	State 4	132572	1770	20.22	21.00	1.197	-0.03	0.998	-	1.194
2nd	LTE Band 66_LAT	20M_QPSK_1_49	Bottom Side	10mm	State 4	132572	1770	20.22	21.00	1.197	-0.11	0.975	1.02	1.167
1st	WCDMA II_LAT	RMC 12.2Kbps	Back	10mm	State 5	9538	1907.6	20.76	21.50	1.186	-0.13	0.835		0.990
2nd	WCDMA II_LAT	RMC 12.2Kbps	Back	10mm	State 5	9538	1907.6	20.76	21.50	1.186	0.04	0.814	1.03	0.965

No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Ratio	Reported 10g SAR (W/kg)
1st	WCDMA IV_LAT	RMC 12.2Kbps	Bottom Side	0mm	State 5	1513	1752.6	21.67	22.50	1.211	-0.12	2.340		2.833
2nd	WCDMA IV_LAT	RMC 12.2Kbps	Bottom Side	0mm	State 5	1513	1752.6	21.67	22.50	1.211	0.08	2.300	1.02	2.784

General Note:

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

**15. 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.	WWAN + WLAN2.4GHz + Bluetooth	Yes	Yes	Yes	Yes
5.	WWAN + 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)  $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$ , and the peak separation distance is determined from the square root of  $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$ , where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
  - iii) If  $SPLSR \leq 0.04$ , simultaneously transmission SAR measurement is not necessary.
  - iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.



**15.1 Head Exposure Conditions**

WWAN Band	Exposure Position	1	2	3	4	1+2+4 Summed 1g SAR (W/kg)	1+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 850_LAT	Right Cheek	0.155	0.216	0.565	0.094	0.465	0.814
	Right Tilted	0.109	0.207	0.204	0.072	0.388	0.385
	Left Cheek	0.118	0.616	0.197	0.257	0.991	0.572
	Left Tilted	0.106	0.344	0.098	0.138	0.588	0.342
GSM 1900_LAT	Right Cheek	0.130	0.216	0.565	0.094	0.440	0.789
	Right Tilted	0.138	0.207	0.204	0.072	0.417	0.414
	Left Cheek	0.229	0.616	0.197	0.257	1.102	0.683
	Left Tilted	0.101	0.344	0.098	0.138	0.583	0.337
WCDMA II_LAT	Right Cheek	0.167	0.216	0.565	0.094	0.477	0.826
	Right Tilted	0.211	0.207	0.204	0.072	0.490	0.487
	Left Cheek	0.295	0.616	0.197	0.257	1.168	0.749
	Left Tilted	0.156	0.344	0.098	0.138	0.638	0.392
WCDMA IV_LAT	Right Cheek	0.167	0.216	0.565	0.094	0.477	0.826
	Right Tilted	0.153	0.207	0.204	0.072	0.432	0.429
	Left Cheek	0.329	0.616	0.197	0.257	1.202	0.783
	Left Tilted	0.113	0.344	0.098	0.138	0.595	0.349
WCDMA V_LAT	Right Cheek	0.310	0.216	0.565	0.094	0.620	0.969
	Right Tilted	0.152	0.207	0.204	0.072	0.431	0.428
	Left Cheek	0.218	0.616	0.197	0.257	1.091	0.672
	Left Tilted	0.178	0.344	0.098	0.138	0.660	0.414
LTE Band 7_LAT	Right Cheek	0.082	0.216	0.565	0.094	0.392	0.741
	Right Tilted	0.070	0.207	0.204	0.072	0.349	0.346
	Left Cheek	0.151	0.616	0.197	0.257	1.024	0.605
	Left Tilted	0.045	0.344	0.098	0.138	0.527	0.281
LTE Band 12_LAT	Right Cheek	0.153	0.216	0.565	0.094	0.463	0.812
	Right Tilted	0.096	0.207	0.204	0.072	0.375	0.372
	Left Cheek	0.145	0.616	0.197	0.257	1.018	0.599
	Left Tilted	0.113	0.344	0.098	0.138	0.595	0.349
LTE Band 13_LAT	Right Cheek	0.220	0.216	0.565	0.094	0.530	0.879
	Right Tilted	0.141	0.207	0.204	0.072	0.420	0.417
	Left Cheek	0.183	0.616	0.197	0.257	1.056	0.637
	Left Tilted	0.142	0.344	0.098	0.138	0.624	0.378
LTE Band 25_LAT	Right Cheek	0.108	0.216	0.565	0.094	0.418	0.767
	Right Tilted	0.127	0.207	0.204	0.072	0.406	0.403
	Left Cheek	0.216	0.616	0.197	0.257	1.089	0.670
	Left Tilted	0.090	0.344	0.098	0.138	0.572	0.326
LTE Band 26_LAT	Right Cheek	0.258	0.216	0.565	0.094	0.568	0.917
	Right Tilted	0.121	0.207	0.204	0.072	0.400	0.397
	Left Cheek	0.207	0.616	0.197	0.257	1.080	0.661
	Left Tilted	0.125	0.344	0.098	0.138	0.607	0.361
LTE Band 41_LAT	Right Cheek	0.061	0.216	0.565	0.094	0.371	0.720
	Right Tilted	0.043	0.207	0.204	0.072	0.322	0.319
	Left Cheek	0.130	0.616	0.197	0.257	1.003	0.584
	Left Tilted	0.026	0.344	0.098	0.138	0.508	0.262
LTE Band 66_LAT	Right Cheek	0.152	0.216	0.565	0.094	0.462	0.811
	Right Tilted	0.130	0.207	0.204	0.072	0.409	0.406
	Left Cheek	0.298	0.616	0.197	0.257	1.171	0.752
	Left Tilted	0.097	0.344	0.098	0.138	0.579	0.333
LTE Band 71_LAT	Right Cheek	0.182	0.216	0.565	0.094	0.492	0.841
	Right Tilted	0.105	0.207	0.204	0.072	0.384	0.381
	Left Cheek	0.173	0.616	0.197	0.257	1.046	0.627
	Left Tilted	0.122	0.344	0.098	0.138	0.604	0.358



WWAN Band	Exposure Position	1	2	3	4	1+2+4 Summed 1g SAR (W/kg)	1+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)		
WCDMA IV_UAT	Right Cheek	0.777	0.216	0.565	0.094	<b>1.087</b>	<b>1.436</b>
	Right Tilted	0.994	0.207	0.204	0.072	<b>1.273</b>	<b>1.270</b>
	Left Cheek	0.535	0.616	0.197	0.257	<b>1.408</b>	<b>0.989</b>
	Left Tilted	0.573	0.344	0.098	0.138	<b>1.055</b>	<b>0.809</b>
LTE Band 12_UAT	Right Cheek	0.597	0.216	0.565	0.094	<b>0.907</b>	<b>1.256</b>
	Right Tilted	0.404	0.207	0.204	0.072	<b>0.683</b>	<b>0.680</b>
	Left Cheek	0.609	0.616	0.197	0.257	<b>1.482</b>	<b>1.063</b>
	Left Tilted	0.407	0.344	0.098	0.138	<b>0.889</b>	<b>0.643</b>
LTE Band 66_UAT	Right Cheek	0.895	0.216	0.565	0.094	<b>1.205</b>	<b>1.554</b>
	Right Tilted	0.893	0.207	0.204	0.072	<b>1.172</b>	<b>1.169</b>
	Left Cheek	0.580	0.616	0.197	0.257	<b>1.453</b>	<b>1.034</b>
	Left Tilted	0.668	0.344	0.098	0.138	<b>1.150</b>	<b>0.904</b>
LTE Band 71_UAT	Right Cheek	0.595	0.216	0.565	0.094	<b>0.905</b>	<b>1.254</b>
	Right Tilted	0.461	0.207	0.204	0.072	<b>0.740</b>	<b>0.737</b>
	Left Cheek	0.711	0.616	0.197	0.257	<b>1.584</b>	<b>1.165</b>
	Left Tilted	0.634	0.344	0.098	0.138	<b>1.116</b>	<b>0.870</b>



**15.2 Hotspot Exposure Conditions**

WWAN Band	Exposure Position	1	2	3	4	1+2+4 Summed 1g SAR (W/kg)	1+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 850_LAT	Front	0.162	0.126	0.067	0.042	0.330	0.271
	Back	0.156	0.156	0.169	0.066	0.378	0.391
	Left side	0.044		0.106		0.044	0.150
	Right side	0.137	0.096		0.035	0.268	0.172
	Top side		0.098	0.042	0.025	0.123	0.067
	Bottom side	0.081				0.081	0.081
GSM 1900_LAT	Front	0.303	0.126	0.067	0.042	0.471	0.412
	Back	0.332	0.156	0.169	0.066	0.554	0.567
	Left side	0.037		0.106		0.037	0.143
	Right side	0.031	0.096		0.035	0.162	0.066
	Top side		0.098	0.042	0.025	0.123	0.067
	Bottom side	0.864				0.864	0.864
WCDMA II_LAT	Front	0.352	0.126	0.067	0.042	0.520	0.461
	Back	0.390	0.156	0.169	0.066	0.612	0.625
	Left side	0.054		0.106		0.054	0.160
	Right side	0.042	0.096		0.035	0.173	0.077
	Top side		0.098	0.042	0.025	0.123	0.067
	Bottom side	0.964				0.964	0.964
WCDMA IV_LAT	Front	0.578	0.126	0.067	0.042	0.746	0.687
	Back	0.604	0.156	0.169	0.066	0.826	0.839
	Left side	0.155		0.106		0.155	0.261
	Right side	0.093	0.096		0.035	0.224	0.128
	Top side		0.098	0.042	0.025	0.123	0.067
	Bottom side	1.108				1.108	1.108
WCDMA V_LAT	Front	0.542	0.126	0.067	0.042	0.710	0.651
	Back	0.452	0.156	0.169	0.066	0.674	0.687
	Left side	0.139		0.106		0.139	0.245
	Right side	0.355	0.096		0.035	0.486	0.390
	Top side		0.098	0.042	0.025	0.123	0.067
	Bottom side	0.271				0.271	0.271
LTE Band 7_LAT	Front	0.439	0.126	0.067	0.042	0.607	0.548
	Back	0.324	0.156	0.169	0.066	0.546	0.559
	Left side	0.411		0.106		0.411	0.517
	Right side	0.053	0.096		0.035	0.184	0.088
	Top side		0.098	0.042	0.025	0.123	0.067
	Bottom side	0.230				0.230	0.230
LTE Band 12_LAT	Front	0.244	0.126	0.067	0.042	0.412	0.353
	Back	0.242	0.156	0.169	0.066	0.464	0.477
	Left side	0.141		0.106		0.141	0.247
	Right side	0.130	0.096		0.035	0.261	0.165
	Top side		0.098	0.042	0.025	0.123	0.067
	Bottom side	0.148				0.148	0.148
LTE Band 13_LAT	Front	0.352	0.126	0.067	0.042	0.520	0.461
	Back	0.322	0.156	0.169	0.066	0.544	0.557
	Left side	0.148		0.106		0.148	0.254
	Right side	0.179	0.096		0.035	0.310	0.214
	Top side		0.098	0.042	0.025	0.123	0.067
	Bottom side	0.213				0.213	0.213
LTE Band 25_LAT	Front	0.427	0.126	0.067	0.042	0.595	0.536
	Back	0.455	0.156	0.169	0.066	0.677	0.690
	Left side	0.064		0.106		0.064	0.170
	Right side	0.053	0.096		0.035	0.184	0.088
	Top side		0.098	0.042	0.025	0.123	0.067
	Bottom side	1.079				1.079	1.079
LTE Band 26_LAT	Front	0.462	0.126	0.067	0.042	0.630	0.571
	Back	0.421	0.156	0.169	0.066	0.643	0.656
	Left side	0.095		0.106		0.095	0.201
	Right side	0.218	0.096		0.035	0.349	0.253
	Top side		0.098	0.042	0.025	0.123	0.067
	Bottom side	0.235				0.235	0.235





WWAN Band	Exposure Position	1	2	3	4	1+2+4 Summed 1g SAR (W/kg)	1+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)		
LTE Band 41_LAT	Front	0.395	0.126	0.067	0.042	<b>0.563</b>	<b>0.504</b>
	Back	0.254	0.156	0.169	0.066	<b>0.476</b>	<b>0.489</b>
	Left side	0.315		0.106		<b>0.315</b>	<b>0.421</b>
	Right side	0.038	0.096		0.035	<b>0.169</b>	<b>0.073</b>
	Top side		0.098	0.042	0.025	<b>0.123</b>	<b>0.067</b>
	Bottom side	0.226				<b>0.226</b>	<b>0.226</b>
LTE Band 66_LAT	Front	0.577	0.126	0.067	0.042	<b>0.745</b>	<b>0.686</b>
	Back	0.590	0.156	0.169	0.066	<b>0.812</b>	<b>0.825</b>
	Left side	0.163		0.106		<b>0.163</b>	<b>0.269</b>
	Right side	0.056	0.096		0.035	<b>0.187</b>	<b>0.091</b>
	Top side		0.098	0.042	0.025	<b>0.123</b>	<b>0.067</b>
	Bottom side	1.194				<b>1.194</b>	<b>1.194</b>
LTE Band 71_LAT	Front	0.353	0.126	0.067	0.042	<b>0.521</b>	<b>0.462</b>
	Back	0.347	0.156	0.169	0.066	<b>0.569</b>	<b>0.582</b>
	Left side	0.285		0.106		<b>0.285</b>	<b>0.391</b>
	Right side	0.320	0.096		0.035	<b>0.451</b>	<b>0.355</b>
	Top side		0.098	0.042	0.025	<b>0.123</b>	<b>0.067</b>
	Bottom side	0.104				<b>0.104</b>	<b>0.104</b>

WWAN Band	Exposure Position	1	2	3	4	1+2+4 Summed 1g SAR (W/kg)	1+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)		
WCDMA IV_UAT	Front	0.689	0.126	0.067	0.042	<b>0.857</b>	<b>0.798</b>
	Back	0.578	0.156	0.169	0.066	<b>0.800</b>	<b>0.813</b>
	Left side	0.156		0.106		<b>0.156</b>	<b>0.262</b>
	Right side		0.096		0.035	<b>0.131</b>	<b>0.035</b>
	Top side	1.034	0.098	0.042	0.025	<b>1.157</b>	<b>1.101</b>
LTE Band 12_UAT	Front	0.183	0.126	0.067	0.042	<b>0.351</b>	<b>0.292</b>
	Back	0.189	0.156	0.169	0.066	<b>0.411</b>	<b>0.424</b>
	Left side	0.161		0.106		<b>0.161</b>	<b>0.267</b>
	Right side		0.096		0.035	<b>0.131</b>	<b>0.035</b>
LTE Band 66_UAT	Front	0.548	0.126	0.067	0.042	<b>0.716</b>	<b>0.657</b>
	Back	0.771	0.156	0.169	0.066	<b>0.993</b>	<b>1.006</b>
	Left side	0.174		0.106		<b>0.174</b>	<b>0.280</b>
	Right side		0.096		0.035	<b>0.131</b>	<b>0.035</b>
LTE Band 71_UAT	Front	0.187	0.126	0.067	0.042	<b>0.355</b>	<b>0.296</b>
	Back	0.178	0.156	0.169	0.066	<b>0.400</b>	<b>0.413</b>
	Left side	0.119		0.106		<b>0.119</b>	<b>0.225</b>
	Right side		0.096		0.035	<b>0.131</b>	<b>0.035</b>
	Top side	0.115	0.098	0.042	0.025	<b>0.238</b>	<b>0.182</b>



**15.3 Body-Worn Accessory Exposure Conditions**

WWAN Band	Exposure Position	1	2	3	4	1+2+4 Summed 1g SAR (W/kg)	1+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 850_LAT	Front	0.162	0.126	0.067	0.042	<b>0.330</b>	<b>0.271</b>
	Back	0.156	0.156	0.184	0.066	<b>0.378</b>	<b>0.406</b>
GSM 1900_LAT	Front	0.864	0.126	0.067	0.042	<b>1.032</b>	<b>0.973</b>
	Back	0.682	0.156	0.184	0.066	<b>0.904</b>	<b>0.932</b>
WCDMA II_LAT	Front	0.919	0.126	0.067	0.042	<b>1.087</b>	<b>1.028</b>
	Back	0.990	0.156	0.184	0.066	<b>1.212</b>	<b>1.240</b>
WCDMA IV_LAT	Front	0.891	0.126	0.067	0.042	<b>1.059</b>	<b>1.000</b>
	Back	0.890	0.156	0.184	0.066	<b>1.112</b>	<b>1.140</b>
WCDMA V_LAT	Front	0.542	0.126	0.067	0.042	<b>0.710</b>	<b>0.651</b>
	Back	0.452	0.156	0.184	0.066	<b>0.674</b>	<b>0.702</b>
LTE Band 7_LAT	Front	0.439	0.126	0.067	0.042	<b>0.607</b>	<b>0.548</b>
	Back	0.324	0.156	0.184	0.066	<b>0.546</b>	<b>0.574</b>
LTE Band 12_LAT	Front	0.244	0.126	0.067	0.042	<b>0.412</b>	<b>0.353</b>
	Back	0.242	0.156	0.184	0.066	<b>0.464</b>	<b>0.492</b>
LTE Band 13_LAT	Front	0.352	0.126	0.067	0.042	<b>0.520</b>	<b>0.461</b>
	Back	0.322	0.156	0.184	0.066	<b>0.544</b>	<b>0.572</b>
LTE Band 25_LAT	Front	0.976	0.126	0.067	0.042	<b>1.144</b>	<b>1.085</b>
	Back	1.007	0.156	0.184	0.066	<b>1.229</b>	<b>1.257</b>
LTE Band 26_LAT	Front	0.462	0.126	0.067	0.042	<b>0.630</b>	<b>0.571</b>
	Back	0.421	0.156	0.184	0.066	<b>0.643</b>	<b>0.671</b>
LTE Band 41_LAT	Front	0.395	0.126	0.067	0.042	<b>0.563</b>	<b>0.504</b>
	Back	0.254	0.156	0.184	0.066	<b>0.476</b>	<b>0.504</b>
LTE Band 66_LAT	Front	0.866	0.126	0.067	0.042	<b>1.034</b>	<b>0.975</b>
	Back	0.882	0.156	0.184	0.066	<b>1.104</b>	<b>1.132</b>
LTE Band 71_LAT	Front	0.353	0.126	0.067	0.042	<b>0.521</b>	<b>0.462</b>
	Back	0.347	0.156	0.184	0.066	<b>0.569</b>	<b>0.597</b>

WWAN Band	Exposure Position	1	2	3	4	1+2+4 Summed 1g SAR (W/kg)	1+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)		
WCDMA IV_UAT	Front	0.689	0.126	0.067	0.042	<b>0.857</b>	<b>0.798</b>
	Back	0.578	0.156	0.184	0.066	<b>0.800</b>	<b>0.828</b>
LTE Band 12_UAT	Front	0.183	0.126	0.067	0.042	<b>0.351</b>	<b>0.292</b>
	Back	0.189	0.156	0.184	0.066	<b>0.411</b>	<b>0.439</b>
LTE Band 66_UAT	Front	0.780	0.126	0.067	0.042	<b>0.948</b>	<b>0.889</b>
	Back	0.688	0.156	0.184	0.066	<b>0.910</b>	<b>0.938</b>
LTE Band 71_UAT	Front	0.187	0.126	0.067	0.042	<b>0.355</b>	<b>0.296</b>
	Back	0.178	0.156	0.184	0.066	<b>0.400</b>	<b>0.428</b>



**15.4 Product Specific Exposure Conditions**

WWAN Band	Exposure Position	1	2	1+2 Summed 10g SAR (W/kg)
		WWAN 10g SAR (W/kg)	5GHz WLAN 10g SAR (W/kg)	
GSM 1900_LAT	Front		0.326	<b>0.326</b>
	Back		0.607	<b>0.607</b>
	Left side		0.410	<b>0.410</b>
	Top side		0.117	<b>0.117</b>
	Bottom side	1.704		<b>1.704</b>
WCDMA II_LAT	Front		0.326	<b>0.326</b>
	Back		0.607	<b>0.607</b>
	Left side		0.410	<b>0.410</b>
	Top side		0.117	<b>0.117</b>
	Bottom side	2.155		<b>2.155</b>
WCDMA IV_LAT	Front		0.326	<b>0.326</b>
	Back		0.607	<b>0.607</b>
	Left side		0.410	<b>0.410</b>
	Top side		0.117	<b>0.117</b>
	Bottom side	2.833		<b>2.833</b>
LTE Band 25_LAT	Front		0.326	<b>0.326</b>
	Back		0.607	<b>0.607</b>
	Left side		0.410	<b>0.410</b>
	Top side		0.117	<b>0.117</b>
	Bottom side	2.391		<b>2.391</b>
LTE Band 66_LAT	Front		0.326	<b>0.326</b>
	Back		0.607	<b>0.607</b>
	Left side		0.410	<b>0.410</b>
	Top side		0.117	<b>0.117</b>
	Bottom side	2.803		<b>2.803</b>

**Test Engineer :** Ray Sun, Charles Shen, Jerry Hsu, Willy Yu, Jordar Jhuang, Shane Song and Kells Chen



## **16. Uncertainty Assessment**

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

Declaration of Conformity:

The test results with all measurement uncertainty excluded is presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

## **17. References**

- [1] FCC 47 CFR Part 2 "Frequency Allocations and Radio Treaty Matters; General Rules and Regulations"
- [2] ANSI/IEEE Std. C95.1-1992, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz", September 1992
- [3] IEEE Std. 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", Sep 2013
- [4] SPEAG DASY System Handbook
- [5] FCC KDB 248227 D01 v02r02, "SAR Guidance for IEEE 802.11 (WiFi) Transmitters", Oct 2015.
- [6] FCC KDB 447498 D01 v06, "Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies", Oct 2015
- [7] FCC KDB 648474 D04 v01r03, "SAR Evaluation Considerations for Wireless Handsets", Oct 2015.
- [8] FCC KDB 941225 D01 v03r01, "3G SAR MEAUREMENT PROCEDURES", Oct 2015
- [9] FCC KDB 941225 D05 v02r05, "SAR Evaluation Considerations for LTE Devices", Dec 2015
- [10] FCC KDB 941225 D05A v01r02, "Rel. 10 LTE SAR Test Guidance and KDB Inquiries", Oct 2015
- [11] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.
- [12] FCC KDB 941225 D07 v01r02, " SAR Evaluation Procedures for UMPC Mini-Tablet Devices", Oct 2015.
- [13] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.
- [14] FCC KDB 865664 D02 v01r02, "RF Exposure Compliance Reporting and Documentation Considerations" Oct 2015.