FCC SAR Test Report

APPLICANT	:	Motorola Mobility LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola
MODEL NAME	:	XT1926-6, XT1926-7
FCC ID	:	IHDT56WL4
STANDARD	:	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2013

We, Sporton International (Xi'an) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Xi'an) Inc., the test report shall not be reproduced except in full.

Mark Qu

Approved by: Mark Qu / Manager

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TESTING
NVLAP LAB CODE 600154-0

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA7D2702	Rev. 01	Initial issue of report	Feb. 01, 2018

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Motorola Mobility LLC, Mobile Cellular Phone, XT1926-6, XT1926-7, are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 5mm)	Body-worn (Separation 5mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.19	1.13	1.13	1.59
		GSM1900	0.17	0.69	0.56	
	WCDMA	Band V	0.27	1.14	1.14	
		Band IV	0.35	0.97	0.73	
		Band II	0.18	0.97	0.71	
	LTE	Band 12/Band 17	0.24	0.68	0.68	
		Band 5	0.24	**1.16**	**1.16**	
		Band 4	0.27	1.14	0.92	
		Band 2	0.16	1.10	0.79	
		Band 7	0.71	0.84	0.84	
DTS	WLAN	2.4GHz WLAN	**1.03**	0.53	0.53	1.59
NII		5GHz WLAN	0.78	1.07	0.94	1.58
DSS	Bluetooth	2.4GHz Bluetooth		<0.10	<0.10	1.21

Highest 10g SAR Summary				
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)	Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	GSM	GSM1900	2.02	3.50
	WCDMA	Band IV	**3.15**	
		Band II	2.35	
	LTE	Band 4	2.67	
		Band 2	2.49	
		Band 7	2.94	
NII	WLAN	5GHz WLAN	0.94	3.50
Date of Testing:			2018/1/5~2018/1/17	

Remark: This device supports both LTE B12 / B17. Since the supported frequency span for LTE B17 falls completely within the supports frequency span for LTE B12, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B12

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR, 4.0 W/kg for Product Specific 10g SAR) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.

2. Administration Data

Testing Laboratory	
Test Site	Sporton International (Xi'an) Inc.
Test Site Location	1F, Bldg. A3, No.39, Chuangye Ave. New Industrial Park, High-Tech District Xi'an Shaanxi Province 710119 China TEL: +86-29-8860-8767 FAX: +86-29-8860-8791

Applicant	
Company Name	Motorola Mobility LLC
Address	222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

Manufacturer	
Company Name	Motorola Mobility LLC
Address	222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

3. Guidance Applied

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

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

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT1926-6, XT1926-7
FCC ID	IHDT56WL4
IMEI Code	SIM1: 351853090015691 SIM2: 351853090015709
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+ LTE: QPSK, 16QAM, 64QAM WLAN 2.4GHz 802.11b/g/n HT20 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth v3.0+EDR, Bluetooth v4.0 LE, Bluetooth v4.1 LE, Bluetooth v4.2 LE, Bluetooth v5.0 LE NFC:ASK
HW Version	DVT1B
SW Version	evert_n-userdebug 8.0.0 OPW27.88 1825 intcfg,test-keys
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype

Remark:

1. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
2. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
3. This device 2.4GHz WLAN/5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only).
4. This device does not support DTM operation and supports GRPS/EGRPS mode up to multi-slot class 12.
5. When the phone is in talking mode and receiver worked, then power reduction will be implemented immediately at WLAN2.4/5.2/5.3/5.5/5.8GHz.
6. When operating in any other radiated condition, the device uses the default power which is the same as full power level.
7. The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device. When front or back body worn condition is detected, GSM1900, WCDMA band II/IV and LTE band 2/4/7 reduced power will be active. (P-sensor can't work at detecting presence of the user's body at the four edges of the

device.)

8. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of GSM1900, WCDMA band II/IV and LTE band 2/4/7.
9. This device hotspot reduced power and P-sensor reduced power level are the same. So only show one reduced power level for hotspot reduced power and P-sensor reduced power for this application.
10. P-sensor can detect handheld state, for front/back/bottom sides of product specific 10g SAR condition, GSM1900, WCDMA band II/IV and LTE band 2/4/7 reduced powers will be active.
11. This device has three WWAN transmitter antennas. WWAN antenna 1 is located at the middle of bottom edge of the device, WWAN antenna 2 is located at the left side of bottom edge of the device, and WWAN antenna 3 is located at the right side of bottom edge of the device which can refer to antenna location chapter. WWAN antenna 1 frequency bands include GSM850/1900, WCDMA Band II/IV/V, LTE Band 2/4/5/12/17, WWAN antenna 2 frequency band only includes LTE Band 7 and WWAN antenna 3 frequency band also only includes LTE Band 7.
12. The device is capable of switching between the WWAN antenna 2 and WWAN antenna 3 based on signal strength. When WWAN antenna 2 acted as a transmitter, then WWAN antenna 3 acted as a receiver. The same as the reversed.
13. There are two different types of EUT. They are dual SIM card mobile (XT1926-7) and single SIM card mobile (XT1926-6). It is special to declare. The others are the same including circuit design, PCB board, structure and all components. After pre-scan two types of EUT, we found test result of the sample that dual SIM was the worst, so we chose dual SIM card mobile to perform all tests.
14. For dual SIM card mobile has two SIM slots and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (single active). After pre-scan two SIM cards power, we found test result of the SIM1 was the worse, so we chose SIM1 slot to perform all tests.
15. This device implements antenna tuning techniques for several WWAN (cellular) operating modes and frequencies for the purpose of improving antenna efficiency over a broad range of frequencies. Specifically, these techniques are employed in the GSM, WCDMA and LTE modes of WWAN antenna 1. In this report SAR was measured according to the normally required SAR configurations with the tuner active and worst tune state (auto tune) was used for SAR testing. The detail descriptions of the antenna tuner are included in the operational description and supplemental data for additional information on section16.

4.2 Specification of Accessory

Specification of Accessory				
AC Adapter 1(US)	Brand Name	Motorola (Salom)	Model Name	SC-22
	Power Rating	I/P: 100-240 Vac, 500mA, O/P: 5Vdc,3000mA or 9Vdc,1600mA or 12Vdc,1200mA		
AC Adapter 1(EU)	Brand Name	Motorola (Salom)	Model Name	SC-23
	Power Rating	I/P: 100-240 Vac, 500mA, O/P: 5Vdc,3000mA or 9Vdc,1600mA or 12Vdc,1200mA		
AC Adapter 1(UK)	Brand Name	Motorola (Salom)	Model Name	SC-24
	Power Rating	I/P: 100-240 Vac, 500mA, O/P: 5Vdc,3000mA or 9Vdc,1600mA or 12Vdc,1200mA		
AC Adapter 1(IN)	Brand Name	Motorola (Salom)	Model Name	SC-25
	Power Rating	I/P: 100-240 Vac, 500mA, O/P: 5Vdc,3000mA or 9Vdc,1600mA or 12Vdc,1200mA		
AC Adapter 1(AU)	Brand Name	Motorola (Salom)	Model Name	SC-26
	Power Rating	I/P: 100-240 Vac, 500mA, O/P: 5Vdc,3000mA or 9Vdc,1600mA or 12Vdc,1200mA		
AC Adapter 1(AR)	Brand Name	Motorola (Salom)	Model Name	SC-27
	Power Rating	I/P: 100-240 Vac, 500mA, O/P: 5Vdc,3000mA or 9Vdc,1600mA or 12Vdc,1200mA		
AC Adapter 2(US)	Brand Name	Motorola (Chenyang)	Model Name	SC-22
	Power Rating	I/P: 100-240 Vac, 500mA, O/P: 5Vdc,3000mA or 9Vdc,1600mA or 12Vdc,1200mA		
AC Adapter 2(EU)	Brand Name	Motorola (Chenyang)	Model Name	SC-23
	Power Rating	I/P: 100-240 Vac, 500mA, O/P: 5Vdc,3000mA or 9Vdc,1600mA or 12Vdc,1200mA		
AC Adapter 2(UK)	Brand Name	Motorola (Chenyang)	Model Name	SC-24
	Power Rating	I/P: 100-240 Vac, 500mA, O/P: 5Vdc,3000mA or 9Vdc,1600mA or 12Vdc,1200mA		
AC Adapter 2(IN)	Brand Name	Motorola (Chenyang)	Model Name	SC-25
	Power Rating	I/P: 100-240 Vac, 500mA, O/P: 5Vdc,3000mA or 9Vdc,1600mA or 12Vdc,1200mA		
AC Adapter 2(AU)	Brand Name	Motorola (Chenyang)	Model Name	SC-26
	Power Rating	I/P: 100-240 Vac, 500mA, O/P: 5Vdc,3000mA or 9Vdc,1600mA or 12Vdc,1200mA		
AC Adapter 2(AR)	Brand Name	Motorola (chenyang)	Model Name	SC-27
	Power Rating	I/P: 100-240 Vac, 500mA, O/P: 5Vdc,3000mA or 9Vdc,1600mA or 12Vdc,1200mA		
Battery	Brand Name	Motorola (ATL)	Model Name	JT40
	Power Rating	3.8Vdc,3200mAh	Type	Li-ion Polymer
Earphone 1	Brand Name	Motorola (Jiahe)	Model Name	LS-118M-12
	Signal Line Type	1.2 meter, non-shielded cable, without ferrite core		
Earphone 2	Brand Name	Motorola (Lianyun)	Model Name	TS910A-38AMS01WHR-M
	Signal Line Type	1.2 meter, non-shielded cable, without ferrite core		
USB Cable	Brand Name	Motorola (Liqi)	Model Name	L32B-053000100-ALL
	Signal Line Type	1.0 meter, shielded cable, without ferrite core		

4.3 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05	
FCC ID	IHDT56WL4
Equipment Name	Mobile Cellular Phone
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 17: 706.5 MHz ~ 713.5 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 17: 5MHz, 10MHz
uplink modulations used	QPSK, 16QAM and 64QAM
LTE Voice / Data requirements	Voice and Data
LTE Release Version	R8, Cat5
CA Support	Not Supported
LTE MPR permanently built-in by design	**Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3** Modulation | Channel bandwidth / Transmission bandwidth (N_{RB}) | MPR (dB) 1.4 MHz | 3.0 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz QPSK | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 1 16 QAM | ≤ 5 | ≤ 4 | ≤ 8 | ≤ 12 | ≤ 16 | ≤ 18 | ≤ 1 16 QAM | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 2 64 QAM | ≤ 5 | ≤ 4 | ≤ 8 | ≤ 12 | ≤ 16 | ≤ 18 | ≤ 2 64 QAM | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 3 256 QAM | ≥ 1 | ≤ 5
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.
Power reduction applied to satisfy SAR compliance	Yes 1. The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device. When front or back body worn condition is detected, LTE band 2/4/7 reduced power will be active. (P-sensor can't work at detecting presence of the user's body at the four edges of the device.) 2. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of LTE band 2/4/7. 3. P-sensor can detect handheld state, for front/back/bottom sides of product specific 10g SAR condition, LTE band 2/4/7 reduced powers will be active.

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

5. RF Exposure Limits

5.1 Uncontrolled Environment

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

5.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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

6. Specific Absorption Rate (SAR)

6.1 Introduction

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

6.2 SAR Definition

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

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

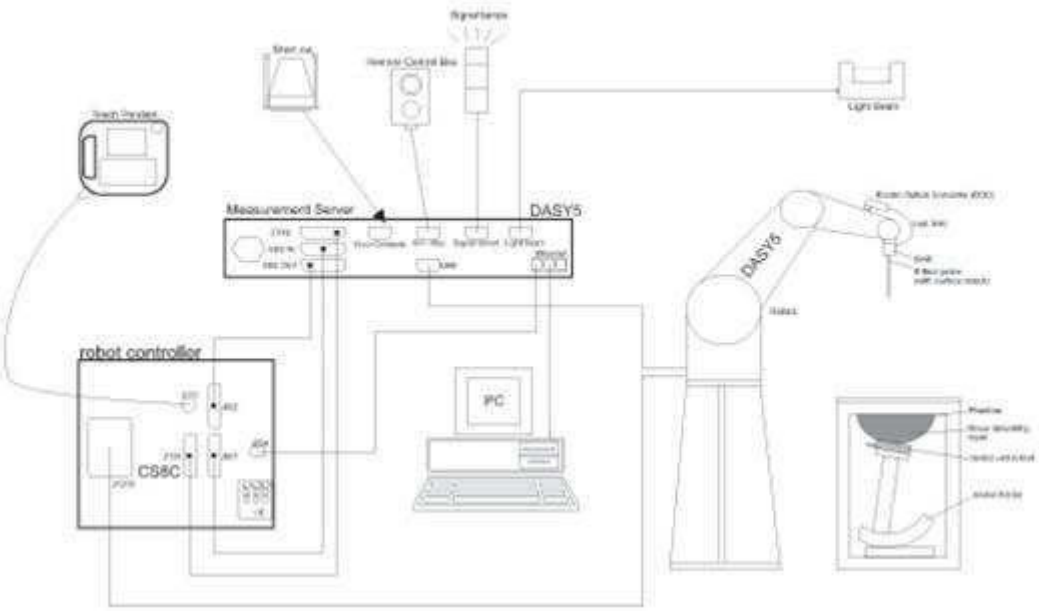
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

7. System Description and Setup

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



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

7.1 E-Field Probe

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

<EX3DV4 Probe>

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

7.2 Data Acquisition Electronics (DAE)

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

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

Fig 5.1 Photo of DAE

7.3 Phantom

<SAM Twin Phantom>

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

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

<ELI Phantom>

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

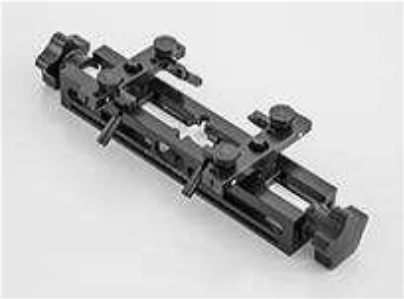
The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

7.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

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

Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

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

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

Mounting Device for Laptops

8. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

<SAR measurement>

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

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

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

8.1 Spatial Peak SAR Evaluation

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

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

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

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

8.2 Power Reference Measurement

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

8.3 Area Scan

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

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

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

8.4 Zoom Scan

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

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

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

8.5 Volume Scan Procedures

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

8.6 Power Drift Monitoring

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

9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1087	2017/3/20	2018/3/19
SPEAG	835MHz System Validation Kit	D835V2	4d151	2017/3/20	2018/3/19
SPEAG	1750MHz System Validation Kit	D1750V2	1090	2017/3/23	2018/3/22
SPEAG	1900MHz System Validation Kit	D1900V2	5d170	2017/3/22	2018/3/21
SPEAG	2450MHz System Validation Kit	D2450V2	908	2017/3/21	2018/3/20
SPEAG	2450MHz System Validation Kit	D2450V2	924	2017/3/21	2018/3/20
SPEAG	2600MHz System Validation Kit	D2600V2	1112	2017/9/18	2018/9/17
SPEAG	5000MHz System Validation Kit	D5GHzV2	1167	2017/7/26	2018/7/25
SPEAG	Data Acquisition Electronics	DAE4	1358	2017/10/24	2018/10/23
SPEAG	Data Acquisition Electronics	DAE4	1303	2017/12/19	2018/12/18
SPEAG	Dosimetric E-Field Probe	EX3DV4	3935	2017/12/14	2018/12/13
SPEAG	Dosimetric E-Field Probe	EX3DV4	3911	2017/11/28	2018/11/27
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1753	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1754	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1795	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201300653	2017/7/19	2018/7/18
Anritsu	Radio communication analyzer	MT8821C	6201692204	2017/3/29	2018/3/28
Agilent	Wireless Communication Test Set	E5515C	MY50267224	2017/9/12	2018/9/11
Agilent	Network Analyzer	E5071C	MY46523671	2017/10/18	2018/10/17
Speag	Dielectric Assessment KIT	DAK-3.5	1071	2017/11/28	2018/11/27
Agilent	Signal Generator	N5181A	MY50145381	2017/12/26	2018/12/25
Anritsu	Power Senor	ML2495A	1602009	2017/4/22	2018/4/21
Anritsu	Power Meter	MA2411B	1531051	2017/5/18	2018/5/17
Anritsu	Power Senor	MA2411B	1306099	2017/8/21	2018/8/20
Anritsu	Power Meter	ML2495A	1349001	2017/7/19	2018/7/18
R&S	CBT BLUETOOTH TESTER	CBT	100963	2017/12/26	2018/12/25
R&S	Spectrum Analyzer	FSP7	100818	2017/7/19	2018/7/18
LKM electronic	Hygrometer	DTM3000	3241	2017/7/21	2018/7/20
Anymetre	Thermo-Hygrometer	JR593	2015030903	2018/1/1	2018/12/31
ARRA	Power Divider	A3200-2	N/A	Note	
Agilent	Dual Directional Coupler	778D	50422	Note	
PASTERNACK	Dual Directional Coupler	PE2214-10	N/A	Note	
MCL	Attenuation1	BW-S10W5	N/A	Note	
Weinschel	Attenuation2	3M-20	N/A	Note	
Zhongjilianhe	Attenuation3	MVE2214-03	N/A	Note	
mini-circuits	Amplifier	ZHL-42W+	QA1341002	Note	
mini-circuits	Amplifier	ZVE-3W-83+	599201528	Note	

Note:
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

10. System Verification

10.1 Tissue Simulating Liquids

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

Fig 10.1Photo of Liquid Height for Head SAR

Fig 10.2 Photo of Liquid Height for Body SAR

10.2 Tissue Verification

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

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0
For Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7
2600	68.1	0	0	0.1	0	31.8	2.16	52.5

Simulating Liquid for 5GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	64~78%
Mineral oil	11~18%
Emulsifiers	9~15%
Additives and Salt	2~3%

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	Head	22.6	0.893	41.989	0.89	41.90	0.34	0.21	±5	2018/1/8
835	Head	22.5	0.914	41.599	0.90	41.50	1.56	0.24	±5	2018/1/5
1750	Head	22.1	1.361	40.467	1.37	40.10	-0.66	0.92	±5	2018/1/10
1900	Head	22.5	1.464	39.141	1.40	40.00	4.57	-2.15	±5	2018/1/10
2450	Head	22.7	1.861	39.654	1.80	39.20	3.39	1.16	±5	2018/1/8
2600	Head	22.4	2.038	39.033	1.96	39.00	3.98	0.08	±5	2018/1/8
5250	Head	22.6	4.748	36.885	4.71	35.90	0.81	2.74	±5	2018/1/13
5600	Head	22.6	5.189	36.135	5.07	35.50	2.35	1.79	±5	2018/1/13
5750	Head	22.5	5.363	35.849	5.22	35.40	2.74	1.27	±5	2018/1/14
750	Body	22.3	0.959	56.956	0.96	55.50	-0.10	2.62	±5	2018/1/5
835	Body	22.3	0.995	55.210	0.97	55.20	2.58	0.02	±5	2018/1/5
1750	Body	22.3	1.513	53.691	1.49	53.40	1.54	0.54	±5	2018/1/13
1900	Body	22.4	1.547	51.464	1.52	53.30	1.78	-3.44	±5	2018/1/13
2450	Body	22.4	1.964	52.500	1.95	52.70	0.72	-0.38	±5	2018/1/12
2450	Body	22.5	1.949	51.667	1.95	52.70	-0.05	-1.96	±5	2018/1/17
2600	Body	22.8	2.171	51.943	2.16	52.50	0.51	-1.06	±5	2018/1/12
5250	Body	22.5	5.436	48.397	5.36	48.90	1.42	-1.03	±5	2018/1/11
5600	Body	22.6	5.945	47.571	5.77	48.50	3.03	-1.92	±5	2018/1/11
5750	Body	22.7	6.171	47.287	5.94	48.30	3.89	-2.10	±5	2018/1/12

10.3 System Performance Check Results

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

<1g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2018/1/8	750	Head	250	1087	3935	1358	2.24	8.37	8.96	7.05
2018/1/5	835	Head	250	4d151	3935	1358	2.44	9.73	9.76	0.31
2018/1/10	1750	Head	250	1090	3935	1358	9.21	37.00	36.84	-0.43
2018/1/10	1900	Head	250	5d170	3935	1358	10.30	40.00	41.20	3.00
2018/1/8	2450	Head	250	908	3935	1358	13.00	53.20	52.00	-2.26
2018/1/8	2600	Head	250	1112	3935	1358	14.50	56.40	58.00	2.84
2018/1/13	5250	Head	100	1167	3911	1303	7.50	79.90	75.00	-6.13
2018/1/13	5600	Head	100	1167	3911	1303	8.26	83.80	82.60	-1.43
2018/1/14	5750	Head	100	1167	3911	1303	7.44	80.60	74.40	-7.69
2018/1/5	750	Body	250	1087	3935	1358	2.25	8.73	9.00	3.09
2018/1/5	835	Body	250	4d151	3935	1358	2.53	9.72	10.12	4.12
2018/1/13	1750	Body	250	1090	3935	1358	9.15	38.10	36.60	-3.94
2018/1/13	1900	Body	250	5d170	3935	1358	10.80	40.70	43.20	6.14
2018/1/12	2450	Body	250	908	3935	1358	11.70	50.90	46.80	-8.06
2018/1/17	2450	Body	250	924	3911	1303	12.00	50.50	48.00	-4.95
2018/1/12	2600	Body	250	1112	3935	1358	14.30	55.00	57.20	4.00
2018/1/11	5250	Body	100	1167	3911	1303	7.58	76.90	75.80	-1.43
2018/1/11	5600	Body	100	1167	3911	1303	7.70	80.00	77.00	-3.75
2018/1/12	5750	Body	100	1167	3911	1303	7.51	77.50	75.10	-3.10

<10g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2018/1/13	1750	Body	250	1090	3935	1358	4.93	20.60	19.72	-4.27
2018/1/13	1900	Body	250	5d170	3935	1358	5.59	21.40	22.36	4.49
2018/1/12	2600	Body	250	1112	3935	1358	6.41	24.40	25.64	5.08
2018/1/11	5250	Body	100	1167	3911	1303	2.08	21.50	20.80	-3.26
2018/1/11	5600	Body	100	1167	3911	1303	2.07	22.40	20.70	-7.59

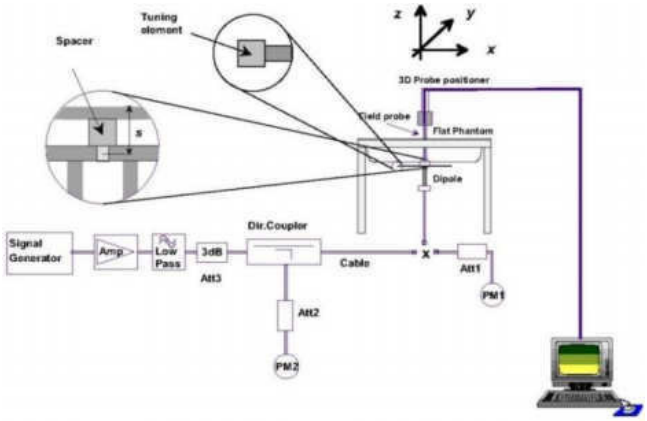


Fig 8.3.1 System Performance Check Setup

Fig 8.3.2 Setup Photo

11. RF Exposure Positions

11.1 Ear and handset reference point

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

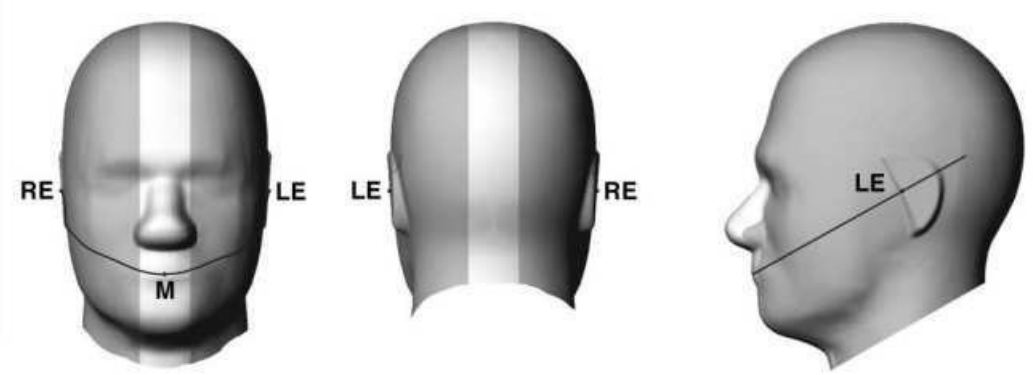


Fig 9.1.1 Front, back, and side views of SAM twin phantom

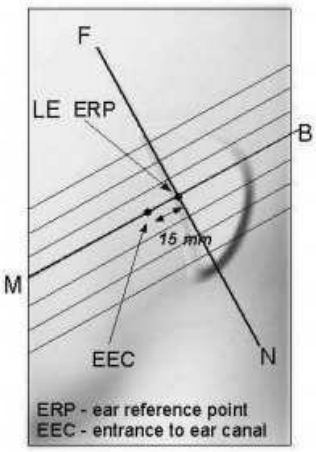


Fig 9.1.2 Close-up side view of phantom showing the ear region.

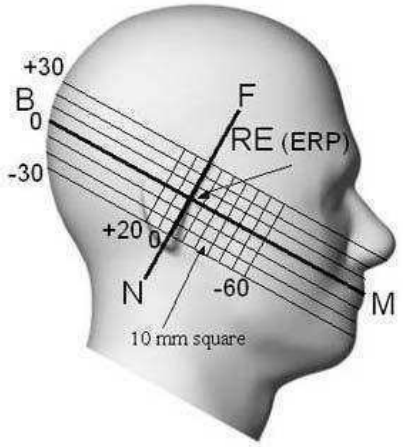


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

11.2 Definition of the cheek position

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

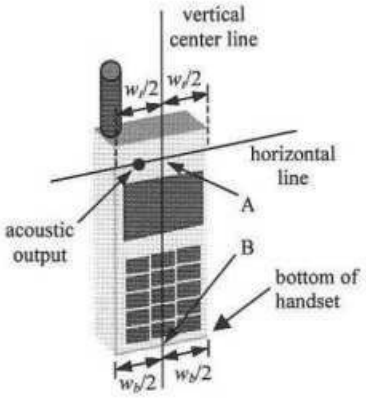


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case

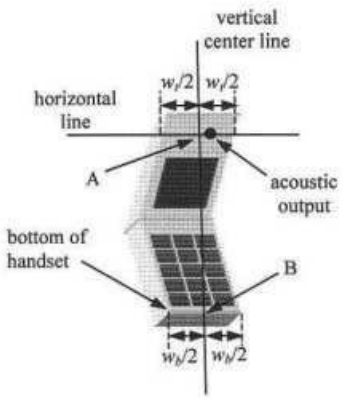


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

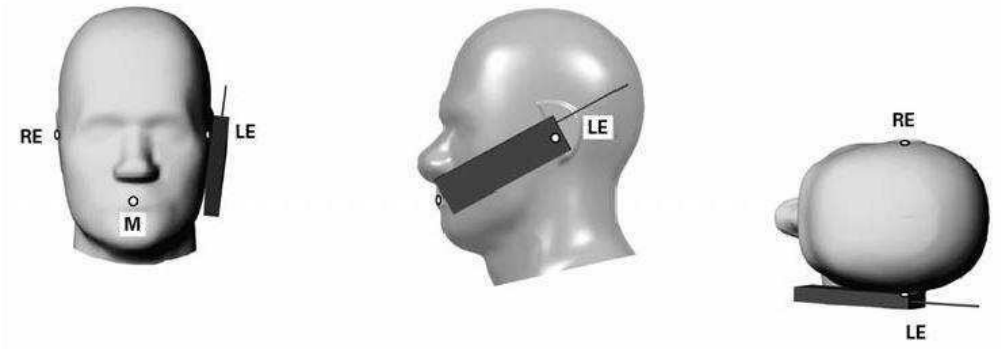


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

11.3 Definition of the tilt position

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

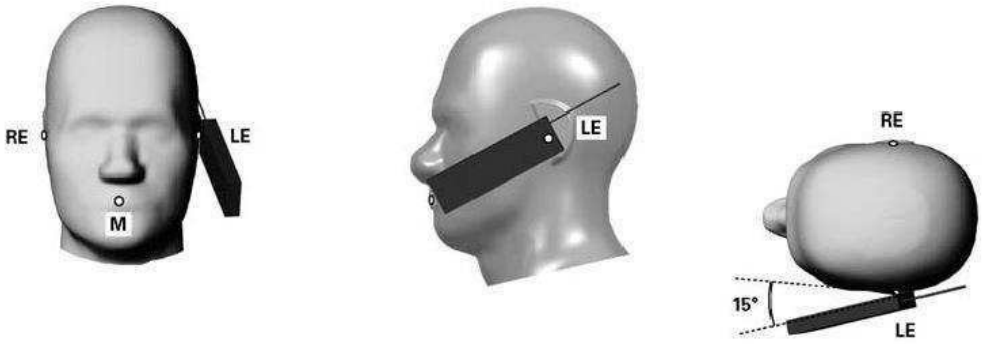


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

11.4 Body Worn Accessory

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

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

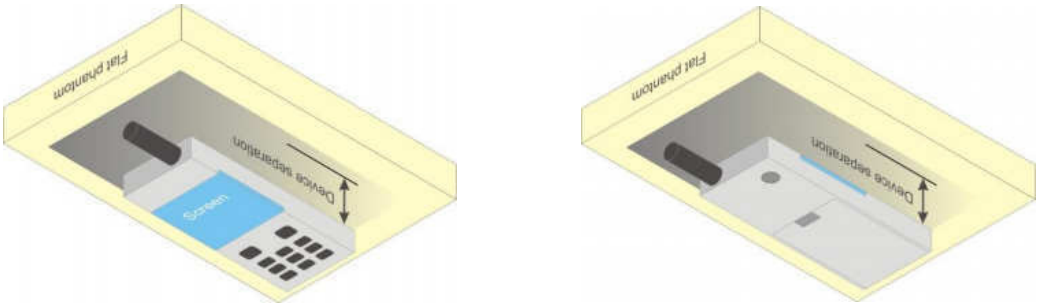


Fig 9.4 Body Worn Position

11.5 Product Specific 10g SAR Exposure

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

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.

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

11.6 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined form general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

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

12. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

1. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS 4Tx slots for GSM850/GSM1900 are considered as the primary mode.
3. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode.
4. When the phone is in talking mode and receiver worked, receiver on power will be implemented immediately in GSM1900 band, for SAR testing EUT was set in reduced on mode and GPRS 4 Tx slots due to its highest frame-average power.
5. 5.Power reduction which is triggered by hotspot mode/receiver on/p-sensor on/p-sensor detects handheld state for product specific 10g SAR condition are implemented in GSM1900 band, for SAR testing EUT was set in reduced power mode and GPRS 4 Tx slots due to its highest frame-average power.

<Full/Receiver On Power Mode>

GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
Tx Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	32.60	32.84	33.10	34.00	23.60	23.84	24.10	25.00
GPRS 1 Tx slot	32.58	32.83	33.09	34.00	23.58	23.83	24.09	25.00
GPRS 2 Tx slots	30.17	30.50	30.93	31.50	24.17	24.50	24.93	25.50
GPRS 3 Tx slots	29.00	29.34	29.47	29.50	24.74	25.08	25.21	25.24
GPRS 4 Tx slots	27.40	27.81	28.18	28.50	24.40	24.81	25.18	25.50
EDGE 1 Tx slot	26.39	26.38	26.40	27.50	17.39	17.38	17.40	18.50
EDGE 2 Tx slots	25.73	25.66	25.74	27.00	19.73	19.66	19.74	21.00
EDGE 3 Tx slots	23.61	23.57	23.63	25.00	19.35	19.31	19.37	20.74
EDGE 4 Tx slots	22.48	22.46	22.51	24.00	19.48	19.46	19.51	21.00

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.
The calculated method are shown as below:
Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

<Full Power Mode>

GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
Tx Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	29.11	28.75	28.40	30.00	20.11	19.75	19.40	21.00
GPRS 1 Tx slot	29.05	28.74	28.38	30.00	20.05	19.74	19.38	21.00
GPRS 2 Tx slots	27.40	27.09	26.76	28.00	21.40	21.09	20.76	22.00
GPRS 3 Tx slots	26.15	25.86	25.61	26.50	21.89	21.60	21.35	22.24
GPRS 4 Tx slots	24.81	24.54	24.35	25.50	21.81	21.54	21.35	22.50
EDGE 1 Tx slot	24.83	24.84	24.88	26.00	15.83	15.84	15.88	17.00
EDGE 2 Tx slots	23.11	23.12	23.25	24.50	17.11	17.12	17.25	18.50
EDGE 3 Tx slots	22.10	22.13	22.21	23.50	17.84	17.87	17.95	19.24
EDGE 4 Tx slots	21.02	21.03	21.05	22.50	18.02	18.03	18.05	19.50

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.
The calculated method are shown as below:
Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

<Receiver On Power Mode>

GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
Tx Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	29.56	29.21	28.95	30.50	20.56	20.21	19.95	21.50
GPRS 1 Tx slot	29.55	29.20	28.94	30.50	20.55	20.20	19.94	21.50
GPRS 2 Tx slots	27.83	27.43	27.13	28.50	21.83	21.43	21.13	22.50
GPRS 3 Tx slots	26.70	26.30	26.00	27.00	22.44	22.04	21.74	22.74
GPRS 4 Tx slots	25.48	25.12	24.76	26.00	22.48	22.12	21.76	23.00
EDGE 1 Tx slot	25.26	25.31	25.39	26.50	16.26	16.31	16.39	17.50
EDGE 2 Tx slots	23.65	23.67	23.78	25.00	17.65	17.67	17.78	19.00
EDGE 3 Tx slots	22.51	22.53	22.65	24.00	18.25	18.27	18.39	19.74
EDGE 4 Tx slots	21.37	21.43	21.51	23.00	18.37	18.43	18.51	20.00

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.
The calculated method are shown as below:
Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

<Reduced Power Mode for Hotspot On/P-Sensor On>

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	22.72	22.37	21.94	23.50	13.72	13.37	12.94	14.50
GPRS 1 Tx slot	22.71	22.36	21.93	23.50	13.71	13.36	12.93	14.50
GPRS 2 Tx slots	21.06	20.72	20.31	21.50	15.06	14.72	14.31	15.50
GPRS 3 Tx slots	19.95	19.46	19.00	20.00	15.69	15.20	14.74	15.74
GPRS 4 Tx slots	18.61	18.25	17.80	19.00	15.61	15.25	14.80	16.00
EDGE 1 Tx slot	18.81	18.94	19.00	19.50	9.81	9.94	10.00	10.50
EDGE 2 Tx slots	17.97	17.62	17.19	18.00	11.97	11.62	11.19	12.00
EDGE 3 Tx slots	16.86	16.45	16.00	17.00	12.60	12.19	11.74	12.74
EDGE 4 Tx slots	15.72	15.37	15.07	16.00	12.72	12.37	12.07	13.00

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.
The calculated method are shown as below:
Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

<Reduced Power Mode for Product Specific 10g SAR>

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	26.68	26.21	25.85	27.50	17.68	17.21	16.85	18.50
GPRS 1 Tx slot	26.62	26.17	25.80	27.50	17.62	17.17	16.80	18.50
GPRS 2 Tx slots	25.10	24.62	24.26	25.50	19.10	18.62	18.26	19.50
GPRS 3 Tx slots	23.90	23.44	23.06	24.00	19.64	19.18	18.80	19.74
GPRS 4 Tx slots	22.82	22.42	22.13	23.00	19.82	19.42	19.13	20.00
EDGE 1 Tx slot	22.78	22.77	22.89	23.50	13.78	13.77	13.89	14.50
EDGE 2 Tx slots	20.73	20.70	20.82	22.00	14.73	14.70	14.82	16.00
EDGE 3 Tx slots	19.56	19.55	19.65	21.00	15.30	15.29	15.39	16.74
EDGE 4 Tx slots	18.53	18.51	18.66	20.00	15.53	15.51	15.66	17.00

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.
The calculated method are shown as below:
Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

<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 HSPA+ devices supporting 16 QAM in the uplink, power measurements procedure is according to the configurations in Table C.11.1.4 of 3GPP TS 34.121-1.
4. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

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

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

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

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

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

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

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

Setup Configuration

HSUPA Setup Configuration:

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

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

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

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

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

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

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

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

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

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

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

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

C.8.1.12 Fixed Reference Channel Definition H-Set 12

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

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	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.		

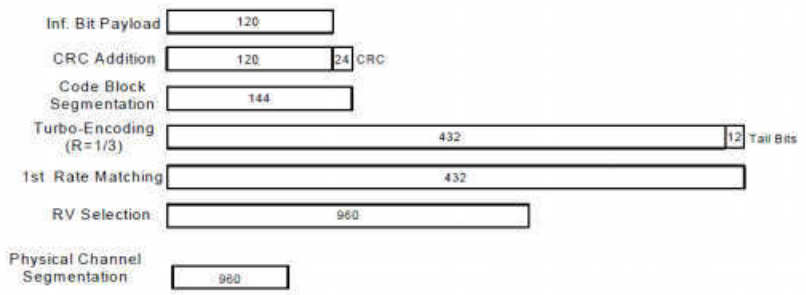


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

HSPA+ 3GPP release 7 (uplink category 7) 16QAM, 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 = 5.2E:HSPA+:UL with 16QAM
   ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.4, quoted from the TS 34.121-1 s5.2E
   iii. Set Channel Parms
   iv. Set Cell Power = -86 dBm
   v. Set Channel Type = HSPA
   vi. Set UE Target Power =21 dBm
   vii. Power Ctrl Mode= All Up Bits
   viii. Set Manual Uplink DPCH Bc/Bd = Manual
   ix. Set Manual Uplink DPCH Bc and Bd=15,15(for 34.121-1 v8.10.0 table C11.1.4 sub-test 1)
   x. Set HSPA Conn DL Channel Levels
   xi. Set HS-SCCH Configs
   xii. Set RB Test Mode Setup
   xiii. Set Common HSUPA Parameters
   xiv. Set Serving Grant
   xv. Confirm that E-TFCI is equal to the target E-TFCI of 105 for sub-test 1, and other subtest's E-TFCI
d. The transmitted maximum output power was recorded.

Table C.11.1.4: β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	$\beta_{ed}1$: 30/15 $\beta_{ed}2$: 30/15	$\beta_{ed}3$: 24/15 $\beta_{ed}4$: 24/15	3.5	2.5	14	105	105

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.
Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).
Note 3: DPDCH is not configured, therefore the β_c is set to 1 and β_d = 0 by default.
Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.
Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signaled to use the extrapolation algorithm.

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 / HSPA+ 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 / HSPA+ to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA / HSPA+) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+.

<Full/Receiver On Power Mode>

Band		WCDMA Band V			Tune-up Limit (dBm)
Tx Channel		4132	4182	4233	
Rx Channel		4357	4407	4458	
Frequency (MHz)		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	22.88	22.82	22.90	24.00
3GPP Rel 99	RMC 12.2Kbps	22.89	22.84	22.94	24.00
3GPP Rel 6	HSDPA Subtest-1	21.88	21.82	21.93	23.00
3GPP Rel 6	HSDPA Subtest-2	21.87	21.83	21.90	23.00
3GPP Rel 6	HSDPA Subtest-3	21.41	21.38	21.46	22.50
3GPP Rel 6	HSDPA Subtest-4	21.41	21.35	21.41	22.50
3GPP Rel 8	DC-HSDPA Subtest-1	21.82	21.81	21.92	23.00
3GPP Rel 8	DC-HSDPA Subtest-2	21.85	21.98	21.91	23.00
3GPP Rel 8	DC-HSDPA Subtest-3	21.27	21.55	21.45	22.50
3GPP Rel 8	DC-HSDPA Subtest-4	21.20	21.38	21.46	22.50
3GPP Rel 6	HSUPA Subtest-1	21.72	22.08	21.95	23.00
3GPP Rel 6	HSUPA Subtest-2	19.88	20.02	19.94	21.00
3GPP Rel 6	HSUPA Subtest-3	20.80	21.05	20.96	22.00
3GPP Rel 6	HSUPA Subtest-4	19.72	20.14	19.94	21.00
3GPP Rel 6	HSUPA Subtest-5	21.80	22.00	22.00	23.00
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	21.54	21.56	21.59	23.00

<Full Power Mode>

Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band 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	20.28	20.29	20.36	21.00	22.15	22.08	22.09	22.80
3GPP Rel 99	RMC 12.2Kbps	20.31	20.30	20.39	21.00	22.17	22.09	22.10	22.80
3GPP Rel 6	HSDPA Subtest-1	19.09	19.11	19.21	20.00	21.05	21.28	21.18	22.00
3GPP Rel 6	HSDPA Subtest-2	19.08	19.27	19.18	20.00	21.01	21.27	20.90	22.00
3GPP Rel 6	HSDPA Subtest-3	18.71	18.81	18.75	19.50	20.53	20.72	20.73	21.50
3GPP Rel 6	HSDPA Subtest-4	18.61	18.85	18.75	19.50	20.51	20.71	20.68	21.50
3GPP Rel 8	DC-HSDPA Subtest-1	19.11	19.28	19.12	20.00	21.04	21.18	21.12	22.00
3GPP Rel 8	DC-HSDPA Subtest-2	19.02	19.15	19.08	20.00	21.06	21.19	20.06	22.00
3GPP Rel 8	DC-HSDPA Subtest-3	18.62	18.78	18.71	19.50	20.35	20.62	20.72	21.50
3GPP Rel 8	DC-HSDPA Subtest-4	18.63	18.75	18.65	19.50	20.41	20.75	20.72	21.50
3GPP Rel 6	HSUPA Subtest-1	19.13	19.28	19.21	20.00	20.92	21.23	21.12	22.00
3GPP Rel 6	HSUPA Subtest-2	17.11	17.20	17.30	18.00	18.91	19.35	19.21	20.00
3GPP Rel 6	HSUPA Subtest-3	18.53	18.28	18.25	19.00	20.05	20.13	20.27	21.00
3GPP Rel 6	HSUPA Subtest-4	17.19	17.31	17.21	18.00	18.99	19.24	19.08	20.00
3GPP Rel 6	HSUPA Subtest-5	18.21	18.21	18.22	19.00	21.00	21.08	21.08	22.00
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	17.65	17.69	17.71	19.00	20.45	20.69	20.56	22.00

<Receiver On Power Mode>

Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band 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	22.68	22.77	22.83	24.00	22.85	22.92	22.97	24.00
3GPP Rel 99	RMC 12.2Kbps	22.70	22.79	22.84	24.00	22.87	22.93	22.99	24.00
3GPP Rel 6	HSDPA Subtest-1	21.71	21.77	21.87	23.00	21.85	21.95	21.98	23.00
3GPP Rel 6	HSDPA Subtest-2	21.70	21.80	21.85	23.00	21.84	22.03	21.97	23.00
3GPP Rel 6	HSDPA Subtest-3	21.15	21.23	21.35	22.50	21.48	21.52	21.57	22.50
3GPP Rel 6	HSDPA Subtest-4	21.18	21.26	21.33	22.50	21.45	21.49	21.60	22.50
3GPP Rel 8	DC-HSDPA Subtest-1	21.68	22.01	21.95	23.00	21.75	21.87	21.96	23.00
3GPP Rel 8	DC-HSDPA Subtest-2	21.65	21.95	21.97	23.00	21.66	21.85	21.91	23.00
3GPP Rel 8	DC-HSDPA Subtest-3	21.25	21.64	21.42	22.50	21.27	21.51	21.45	22.50
3GPP Rel 8	DC-HSDPA Subtest-4	21.23	21.42	21.51	22.50	21.20	21.42	21.46	22.50
3GPP Rel 6	HSUPA Subtest-1	21.75	22.01	21.91	23.00	21.77	22.01	21.95	23.00
3GPP Rel 6	HSUPA Subtest-2	19.73	19.87	19.82	21.00	19.78	19.87	19.94	21.00
3GPP Rel 6	HSUPA Subtest-3	20.81	21.03	20.91	22.00	20.82	21.02	20.96	22.00
3GPP Rel 6	HSUPA Subtest-4	19.75	20.01	19.93	21.00	19.76	20.03	19.94	21.00
3GPP Rel 6	HSUPA Subtest-5	21.78	22.01	22.08	23.00	21.80	21.85	21.93	23.00
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	21.34	21.69	21.74	23.00	21.34	21.36	21.46	23.00

<Reduced Power Mode for Hotspot On/P-Sensor On>

Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band 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	14.32	14.29	14.37	15.50	15.97	15.85	15.92	17.00
3GPP Rel 99	RMC 12.2Kbps	14.33	14.30	14.40	15.50	15.93	15.87	15.98	17.00
3GPP Rel 6	HSDPA Subtest-1	12.80	12.80	12.85	13.50	14.28	14.20	14.25	15.00
3GPP Rel 6	HSDPA Subtest-2	12.75	12.78	12.83	13.50	14.27	14.12	14.20	15.00
3GPP Rel 6	HSDPA Subtest-3	12.74	12.80	12.82	13.50	14.32	14.25	14.30	15.00
3GPP Rel 6	HSDPA Subtest-4	12.75	12.78	12.80	13.50	14.33	14.25	14.28	15.00
3GPP Rel 8	DC-HSDPA Subtest-1	12.48	12.41	12.61	13.50	14.25	14.21	14.31	15.00
3GPP Rel 8	DC-HSDPA Subtest-2	12.51	12.68	12.35	13.50	14.25	14.28	14.38	15.00
3GPP Rel 8	DC-HSDPA Subtest-3	11.91	12.21	12.01	13.50	13.51	13.95	13.85	15.00
3GPP Rel 8	DC-HSDPA Subtest-4	11.90	12.08	12.05	13.50	13.61	13.78	13.85	15.00
3GPP Rel 6	HSUPA Subtest-1	12.43	12.85	12.87	13.50	14.12	14.28	14.35	15.00
3GPP Rel 6	HSUPA Subtest-2	10.61	10.71	10.68	11.50	12.31	12.41	12.35	13.00
3GPP Rel 6	HSUPA Subtest-3	11.58	11.71	11.69	12.50	13.28	13.51	13.42	14.00
3GPP Rel 6	HSUPA Subtest-4	10.43	10.82	10.61	11.50	12.16	12.66	12.46	13.00
3GPP Rel 6	HSUPA Subtest-5	12.51	12.71	12.78	13.50	14.23	14.28	14.38	15.00
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	11.05	11.09	11.02	11.50	12.63	12.79	12.56	13.00

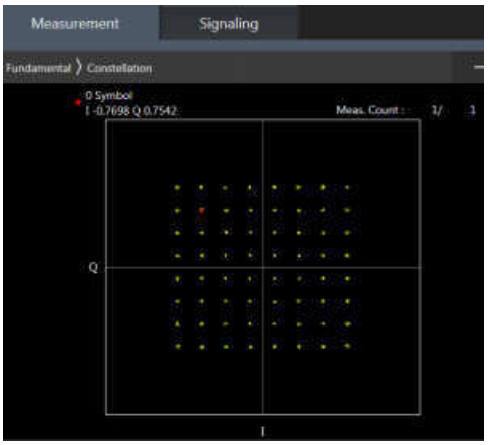
<Reduced Power Mode for Product Specific 10g SAR>

Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band 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	18.26	18.32	18.37	19.50	19.92	19.84	19.93	21.00
3GPP Rel 99	RMC 12.2Kbps	18.27	18.34	18.39	19.50	19.94	19.85	19.95	21.00
3GPP Rel 6	HSDPA Subtest-1	17.37	17.33	17.40	18.50	18.94	18.88	18.96	20.00
3GPP Rel 6	HSDPA Subtest-2	17.35	17.34	17.42	18.50	18.96	18.89	18.98	20.00
3GPP Rel 6	HSDPA Subtest-3	16.80	16.88	16.96	18.00	18.47	18.41	18.44	19.50
3GPP Rel 6	HSDPA Subtest-4	16.82	16.90	16.94	18.00	18.43	18.39	18.42	19.50
3GPP Rel 8	DC-HSDPA Subtest-1	17.32	17.48	17.40	18.50	18.51	18.85	18.78	20.00
3GPP Rel 8	DC-HSDPA Subtest-2	17.21	17.35	17.31	18.50	18.51	18.78	18.73	20.00
3GPP Rel 8	DC-HSDPA Subtest-3	16.83	17.00	16.91	18.00	18.12	18.01	18.45	19.50
3GPP Rel 8	DC-HSDPA Subtest-4	16.81	16.98	16.85	18.00	18.06	18.29	18.35	19.50
3GPP Rel 6	HSUPA Subtest-1	17.31	17.48	17.41	18.50	18.43	18.65	18.78	20.00
3GPP Rel 6	HSUPA Subtest-2	15.30	15.40	15.50	16.50	16.51	16.81	16.91	18.00
3GPP Rel 6	HSUPA Subtest-3	16.32	16.51	16.45	17.50	17.58	17.71	17.92	19.00
3GPP Rel 6	HSUPA Subtest-4	15.31	15.51	15.41	16.50	16.58	16.88	16.92	18.00
3GPP Rel 6	HSUPA Subtest-5	16.35	16.48	16.42	17.50	18.51	18.81	18.92	20.00
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	15.89	15.95	15.92	17.50	17.02	17.21	17.23	19.00

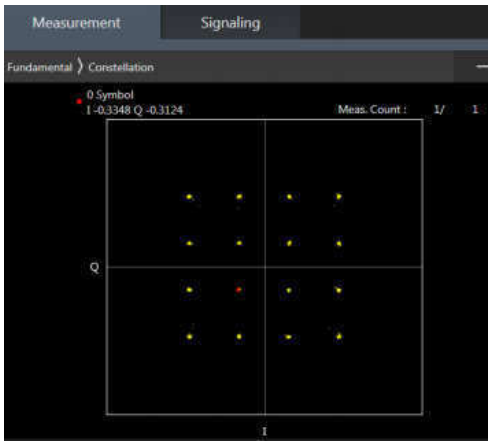
<LTE Conducted Power>

General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM/64QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B5 / B12 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 17 SAR test was covered by Band 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 ≤ 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 64QAM and 16QAM 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

<Full/Receiver On Power Mode>

<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	23.31	23.44	24	0
10	QPSK	1	25	23.26	23.38	23.39		
10	QPSK	1	49	23.29	23.40	23.40		
10	QPSK	25	0	22.33	22.41	22.46	23	1
10	QPSK	25	12	22.40	22.44	22.44		
10	QPSK	25	25	22.35	22.37	22.38		
10	QPSK	50	0	22.39	22.40	22.44		
10	16QAM	1	0	22.60	22.73	22.83	23	1
10	16QAM	1	25	22.67	22.76	22.78		
10	16QAM	1	49	22.73	22.81	22.78		
10	16QAM	25	0	21.48	21.55	21.58	22	2
10	16QAM	25	12	21.53	21.54	21.56		
10	16QAM	25	25	21.48	21.47	21.52		
10	16QAM	50	0	21.52	21.51	21.53		
10	64QAM	1	0	21.28	21.44	21.52	22	2
10	64QAM	1	25	21.31	21.62	21.71		
10	64QAM	1	49	21.26	21.46	21.57		
10	64QAM	25	0	20.38	20.52	20.63	21	3
10	64QAM	25	12	20.41	20.63	20.66		
10	64QAM	25	25	20.39	20.41	20.52		
10	64QAM	50	0	20.43	20.60	20.74		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	23.07	23.28	23.34	24	0
5	QPSK	1	12	23.25	23.34	23.33		
5	QPSK	1	24	23.22	23.41	23.37		
5	QPSK	12	0	22.25	22.41	22.42	23	1
5	QPSK	12	7	22.34	22.44	22.44		
5	QPSK	12	13	22.30	22.36	22.42		
5	QPSK	25	0	22.30	22.38	22.39		
5	16QAM	1	0	22.58	22.66	22.75	23	1
5	16QAM	1	12	22.71	22.72	22.71		
5	16QAM	1	24	22.67	22.79	22.81		
5	16QAM	12	0	21.36	21.55	21.52	22	2
5	16QAM	12	7	21.51	21.58	21.53		
5	16QAM	12	13	21.45	21.50	21.50		
5	16QAM	25	0	21.46	21.49	21.47		
5	64QAM	1	0	21.23	21.33	21.58	22	2
5	64QAM	1	12	21.19	21.52	21.81		
5	64QAM	1	24	21.13	21.41	21.65		
5	64QAM	12	0	20.29	20.46	20.69	21	3
5	64QAM	12	7	20.33	20.55	20.75		
5	64QAM	12	13	20.32	20.35	20.61		
5	64QAM	25	0	20.39	20.55	20.80		

Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	23.10	23.25	23.33	24	0
3	QPSK	1	8	23.18	23.31	23.41		
3	QPSK	1	14	23.28	23.43	23.39		
3	QPSK	8	0	22.21	22.37	22.37	23	1
3	QPSK	8	4	22.23	22.39	22.42		
3	QPSK	8	7	22.32	22.38	22.49		
3	QPSK	15	0	22.17	22.36	22.34		
3	16QAM	1	0	22.51	22.62	22.73	23	1
3	16QAM	1	8	22.65	22.70	22.82		
3	16QAM	1	14	22.64	22.74	22.78		
3	16QAM	8	0	21.43	21.56	21.54	22	2
3	16QAM	8	4	21.44	21.57	21.57		
3	16QAM	8	7	21.52	21.56	21.68		
3	16QAM	15	0	21.36	21.48	21.48		
3	64QAM	1	0	21.13	21.41	21.65	22	2
3	64QAM	1	8	21.11	21.62	21.61		
3	64QAM	1	14	21.00	21.46	21.73		
3	64QAM	8	0	20.18	20.52	20.78	21	3
3	64QAM	8	4	20.25	20.63	20.84		
3	64QAM	8	7	20.25	20.41	20.71		
3	64QAM	15	0	20.30	20.57	20.92		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	23.02	23.25	23.36	24	0
1.4	QPSK	1	3	23.07	23.32	23.41		
1.4	QPSK	1	5	23.11	23.24	23.33		
1.4	QPSK	3	0	23.10	23.30	23.38		
1.4	QPSK	3	1	23.08	23.35	23.41		
1.4	QPSK	3	3	23.17	23.31	23.38		
1.4	QPSK	6	0	22.13	22.29	22.41	23	1
1.4	16QAM	1	0	22.50	22.71	22.69	23	1
1.4	16QAM	1	3	22.58	22.78	22.75		
1.4	16QAM	1	5	22.61	22.68	22.70		
1.4	16QAM	3	0	22.26	22.46	22.52		
1.4	16QAM	3	1	22.28	22.47	22.54		
1.4	16QAM	3	3	22.32	22.41	22.50		
1.4	16QAM	6	0	21.36	21.51	21.61	22	2
1.4	64QAM	1	0	21.23	21.33	21.58	22	2
1.4	64QAM	1	3	21.19	21.52	21.81		
1.4	64QAM	1	5	21.13	21.41	21.65		
1.4	64QAM	3	0	20.29	20.46	20.69		
1.4	64QAM	3	1	20.33	20.55	20.75		
1.4	64QAM	3	3	20.32	20.35	20.61		
1.4	64QAM	6	0	20.39	20.55	20.80	21	3

<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	22.21	22.16	22.16	24	0
20	QPSK	1	49	22.20	22.18	22.05		
20	QPSK	1	99	22.18	22.22	22.45		
20	QPSK	50	0	22.06	22.11	22.06	23	1
20	QPSK	50	24	22.11	22.13	22.18		
20	QPSK	50	50	22.11	22.12	22.17		
20	QPSK	100	0	22.10	22.13	22.08		
20	16QAM	1	0	22.23	22.23	22.36	23	1
20	16QAM	1	49	22.25	22.35	22.41		
20	16QAM	1	99	22.33	22.43	22.42		
20	16QAM	50	0	21.18	21.14	21.15	22	2
20	16QAM	50	24	21.18	21.19	21.26		
20	16QAM	50	50	21.20	21.21	21.26		
20	16QAM	100	0	21.16	21.20	21.18		
20	64QAM	1	0	21.00	21.02	21.12	22	2
20	64QAM	1	49	21.16	21.25	21.37		
20	64QAM	1	99	21.19	21.39	21.43		
20	64QAM	50	0	20.11	20.19	20.28	21	3
20	64QAM	50	24	20.15	20.21	20.35		
20	64QAM	50	50	20.17	20.26	20.37		
20	64QAM	100	0	20.13	20.19	20.29		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	22.15	22.16	22.10	24	0
15	QPSK	1	37	22.14	22.02	22.09		
15	QPSK	1	74	22.15	22.13	22.16		
15	QPSK	36	0	22.10	22.11	22.15	23	1
15	QPSK	36	20	22.12	22.09	22.19		
15	QPSK	36	39	22.10	22.09	22.15		
15	QPSK	75	0	22.10	22.11	22.16		
15	16QAM	1	0	22.27	22.27	22.43	23	1
15	16QAM	1	37	22.28	22.33	22.38		
15	16QAM	1	74	22.33	22.44	22.32		
15	16QAM	36	0	21.18	21.14	21.26	22	2
15	16QAM	36	20	21.20	21.21	21.23		
15	16QAM	36	39	21.20	21.20	21.25		
15	16QAM	75	0	21.18	21.16	21.23		
15	64QAM	1	0	20.95	21.00	21.14	22	2
15	64QAM	1	37	21.11	21.22	21.33		
15	64QAM	1	74	21.23	21.35	21.38		
15	64QAM	36	0	20.16	20.14	20.25	21	3
15	64QAM	36	20	20.21	20.15	20.08		
15	64QAM	36	39	20.20	20.23	20.34		
15	64QAM	75	0	20.16	20.21	20.24		

Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	22.12	22.14	22.07	24	0
10	QPSK	1	25	22.03	22.05	22.06		
10	QPSK	1	49	22.01	22.08	22.14		
10	QPSK	25	0	22.06	22.05	22.11	23	1
10	QPSK	25	12	22.12	22.07	22.16		
10	QPSK	25	25	22.10	22.11	22.15		
10	QPSK	50	0	22.10	22.09	22.12		
10	16QAM	1	0	22.27	22.25	22.38	23	1
10	16QAM	1	25	22.35	22.35	22.36		
10	16QAM	1	49	22.38	22.43	22.43		
10	16QAM	25	0	21.15	21.15	21.19	22	2
10	16QAM	25	12	21.18	21.19	21.21		
10	16QAM	25	25	21.18	21.15	21.23		
10	16QAM	50	0	21.18	21.13	21.18		
10	64QAM	1	0	21.03	21.03	21.15	22	2
10	64QAM	1	25	21.15	21.19	21.35		
10	64QAM	1	49	21.24	21.38	21.33		
10	64QAM	25	0	20.18	20.16	20.24	21	3
10	64QAM	25	12	20.22	20.13	20.12		
10	64QAM	25	25	20.19	20.29	20.35		
10	64QAM	50	0	20.21	20.26	20.22		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	22.13	22.11	22.05	24	0
5	QPSK	1	12	22.07	22.05	22.05		
5	QPSK	1	24	22.04	22.02	22.09		
5	QPSK	12	0	22.06	22.05	22.07	23	1
5	QPSK	12	7	22.14	22.07	22.12		
5	QPSK	12	13	22.10	22.10	22.09		
5	QPSK	25	0	22.09	22.05	22.08		
5	16QAM	1	0	22.24	22.22	22.35	23	1
5	16QAM	1	12	22.36	22.37	22.36		
5	16QAM	1	24	22.37	22.37	22.44		
5	16QAM	12	0	21.12	21.11	21.15	22	2
5	16QAM	12	7	21.18	21.17	21.18		
5	16QAM	12	13	21.18	21.13	21.17		
5	16QAM	25	0	21.14	21.15	21.15		
5	64QAM	1	0	21.02	20.91	21.17	22	2
5	64QAM	1	12	21.26	21.15	21.40		
5	64QAM	1	24	21.27	21.34	21.47		
5	64QAM	12	0	20.16	20.10	20.34	21	3
5	64QAM	12	7	20.21	20.14	20.45		
5	64QAM	12	13	20.26	20.20	20.46		
5	64QAM	25	0	20.25	20.15	20.37		

<LTE Band 12>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23060	23095	23130		
Frequency (MHz)				704	707.5	711		
10	QPSK	1	0	22.81	22.98	23.19	24	0
10	QPSK	1	25	23.12	23.28	23.27		
10	QPSK	1	49	23.31	23.31	23.37		
10	QPSK	25	0	22.06	22.22	22.30	23	1
10	QPSK	25	12	22.16	22.33	22.33		
10	QPSK	25	25	22.37	22.32	22.30		
10	QPSK	50	0	22.15	22.31	22.28		
10	16QAM	1	0	22.18	22.42	22.68	23	1
10	16QAM	1	25	22.60	22.79	22.64		
10	16QAM	1	49	22.79	22.70	22.78		
10	16QAM	25	0	21.17	21.37	21.41	22	2
10	16QAM	25	12	21.29	21.49	21.42		
10	16QAM	25	25	21.50	21.41	21.41		
10	16QAM	50	0	21.28	21.43	21.42		
10	64QAM	1	0	21.77	21.85	21.96	22	2
10	64QAM	1	25	21.85	21.92	21.98		
10	64QAM	1	49	21.76	21.89	21.96		
10	64QAM	25	0	20.13	20.18	20.35	21	3
10	64QAM	25	12	20.08	20.19	20.41		
10	64QAM	25	25	20.04	20.17	20.44		
10	64QAM	50	0	20.10	20.19	20.28		
Channel				23035	23095	23155	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	22.83	23.23	23.13	24	0
5	QPSK	1	12	22.92	23.27	23.23		
5	QPSK	1	24	23.13	23.30	23.22		
5	QPSK	12	0	21.99	22.36	22.18	23	1
5	QPSK	12	7	22.09	22.34	22.28		
5	QPSK	12	13	22.08	22.33	22.27		
5	QPSK	25	0	22.06	22.31	22.12		
5	16QAM	1	0	22.19	22.69	22.54	23	1
5	16QAM	1	12	22.33	22.75	22.66		
5	16QAM	1	24	22.57	22.70	22.65		
5	16QAM	12	0	21.10	21.48	21.29	22	2
5	16QAM	12	7	21.24	21.51	21.40		
5	16QAM	12	13	21.20	21.48	21.43		
5	16QAM	25	0	21.18	21.46	21.26		
5	64QAM	1	0	21.86	21.95	21.92	22	2
5	64QAM	1	12	21.95	21.90	21.97		
5	64QAM	1	24	21.82	21.94	22.00		
5	64QAM	12	0	20.18	20.24	20.41	21	3
5	64QAM	12	7	20.11	20.22	20.50		
5	64QAM	12	13	20.06	20.19	20.49		
5	64QAM	25	0	20.14	20.24	20.34		

Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	22.83	23.18	23.19	24	0
3	QPSK	1	8	22.89	23.28	23.18		
3	QPSK	1	14	23.03	23.26	23.22		
3	QPSK	8	0	21.97	22.33	22.25	23	1
3	QPSK	8	4	21.98	22.33	22.24		
3	QPSK	8	7	22.08	22.33	22.22		
3	QPSK	15	0	21.97	22.29	22.57		
3	16QAM	1	0	22.14	22.65	22.64	23	1
3	16QAM	1	8	22.28	22.73	22.61		
3	16QAM	1	14	22.40	22.68	22.41		
3	16QAM	8	0	21.14	21.49	21.47	22	2
3	16QAM	8	4	21.14	21.53	21.43		
3	16QAM	8	7	21.23	21.49	21.38		
3	16QAM	15	0	21.07	21.41	21.33		
3	64QAM	1	0	21.77	21.85	21.98	22	2
3	64QAM	1	8	21.85	21.80	21.97		
3	64QAM	1	14	21.76	21.89	21.94		
3	64QAM	8	0	20.13	20.18	20.47	21	3
3	64QAM	8	4	20.08	20.19	20.59		
3	64QAM	8	7	20.04	20.17	20.54		
3	64QAM	15	0	20.10	20.19	20.40		
Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	22.74	23.11	23.12	24	0
1.4	QPSK	1	3	22.80	23.27	23.18		
1.4	QPSK	1	5	22.85	23.20	23.10		
1.4	QPSK	3	0	22.80	23.25	23.14		
1.4	QPSK	3	1	22.82	23.27	23.19		
1.4	QPSK	3	3	22.88	23.23	23.17		
1.4	QPSK	6	0	21.89	22.21	22.15	23	1
1.4	16QAM	1	0	22.12	22.57	22.52	23	1
1.4	16QAM	1	3	22.15	22.75	22.63		
1.4	16QAM	1	5	22.20	22.65	22.56		
1.4	16QAM	3	0	21.93	22.41	22.30		
1.4	16QAM	3	1	21.95	22.45	22.32		
1.4	16QAM	3	3	21.96	22.40	22.29		
1.4	16QAM	6	0	21.09	21.43	21.33	22	2
1.4	64QAM	1	0	21.72	21.74	21.94	22	2
1.4	64QAM	1	3	21.73	21.70	21.97		
1.4	64QAM	1	5	21.63	21.84	21.92		
1.4	64QAM	3	0	20.04	20.12	20.53		
1.4	64QAM	3	1	20.00	20.11	20.68		
1.4	64QAM	3	3	20.07	20.11	20.63		
1.4	64QAM	6	0	20.06	20.14	20.46	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	23.35	23.32	23.41	24	0
10	QPSK	1	25	23.42	23.41	23.43		
10	QPSK	1	49	23.42	23.37	23.37		
10	QPSK	25	0	22.43	22.43	22.42	23	1
10	QPSK	25	12	22.45	22.45	22.45		
10	QPSK	25	25	22.42	22.44	22.44		
10	QPSK	50	0	22.45	22.44	22.45		
10	16QAM	1	0	22.83	22.79	22.90	23	1
10	16QAM	1	25	22.90	22.80	22.79		
10	16QAM	1	49	22.87	22.83	22.81		
10	16QAM	25	0	21.60	21.59	21.58	22	2
10	16QAM	25	12	21.60	21.56	21.55		
10	16QAM	25	25	21.56	21.56	21.54		
10	16QAM	50	0	21.58	21.56	21.55		
10	64QAM	1	0	21.52	21.46	21.52	22	2
10	64QAM	1	25	21.84	21.85	21.91		
10	64QAM	1	49	21.71	21.73	21.82		
10	64QAM	25	0	20.50	20.56	20.63	21	3
10	64QAM	25	12	20.63	20.69	20.75		
10	64QAM	25	25	20.58	20.64	20.73		
10	64QAM	50	0	20.55	20.58	20.66		
Channel				23755	23790	23825	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	23.25	23.30	23.37	24	0
5	QPSK	1	12	23.37	23.41	23.38		
5	QPSK	1	24	23.36	23.29	23.36		
5	QPSK	12	0	22.42	22.45	22.43	23	1
5	QPSK	12	7	22.55	22.51	22.43		
5	QPSK	12	13	22.49	22.46	22.43		
5	QPSK	25	0	22.48	22.41	22.39		
5	16QAM	1	0	22.68	22.76	22.73	23	1
5	16QAM	1	12	22.94	22.82	22.79		
5	16QAM	1	24	22.85	22.66	22.77		
5	16QAM	12	0	21.56	21.56	21.51	22	2
5	16QAM	12	7	21.65	21.58	21.57		
5	16QAM	12	13	21.65	21.57	21.55		
5	16QAM	25	0	21.60	21.59	21.53		
5	64QAM	1	0	21.61	21.56	21.58	22	2
5	64QAM	1	12	21.94	21.95	21.90		
5	64QAM	1	24	21.77	21.78	21.86		
5	64QAM	12	0	20.55	20.62	20.69	21	3
5	64QAM	12	7	20.66	20.72	20.84		
5	64QAM	12	13	20.60	20.66	20.78		
5	64QAM	25	0	20.59	20.63	20.72		

<Full Power Mode>

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	20.54	20.73	20.70	21.5	0
20	QPSK	1	49	20.61	20.81	20.78		
20	QPSK	1	99	20.57	20.78	20.72		
20	QPSK	50	0	20.65	20.81	20.75	21.5	0
20	QPSK	50	24	20.70	20.86	20.88		
20	QPSK	50	50	20.64	20.80	20.82		
20	QPSK	100	0	20.65	20.83	20.72		
20	16QAM	1	0	20.97	21.11	21.11	21.5	0
20	16QAM	1	49	21.08	21.22	21.19		
20	16QAM	1	99	20.98	21.22	21.18		
20	16QAM	50	0	20.78	20.99	20.85	21.5	0
20	16QAM	50	24	20.80	21.05	20.97		
20	16QAM	50	50	20.76	20.97	20.92		
20	16QAM	100	0	20.74	20.96	20.85		
20	64QAM	1	0	20.88	21.01	21.05	21.5	0
20	64QAM	1	49	20.97	21.13	21.07		
20	64QAM	1	99	20.91	21.08	21.02		
20	64QAM	50	0	20.30	20.27	20.29	21	0.5
20	64QAM	50	24	20.24	20.33	20.27		
20	64QAM	50	50	20.28	20.28	20.17		
20	64QAM	100	0	20.28	20.31	20.27		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	20.56	20.86	20.83	21.5	0
15	QPSK	1	37	20.53	20.87	20.77		
15	QPSK	1	74	20.57	20.81	20.77		
15	QPSK	36	0	20.60	20.92	20.83	21.5	0
15	QPSK	36	20	20.69	20.97	20.84		
15	QPSK	36	39	20.68	20.93	20.83		
15	QPSK	75	0	20.66	20.92	20.83		
15	16QAM	1	0	20.98	20.96	20.98	21.5	0
15	16QAM	1	37	20.93	20.94	20.97		
15	16QAM	1	74	20.96	20.96	20.96		
15	16QAM	36	0	20.73	20.94	20.97	21.5	0
15	16QAM	36	20	20.83	20.98	20.99		
15	16QAM	36	39	20.80	20.96	20.98		
15	16QAM	75	0	20.79	20.97	20.96		
15	64QAM	1	0	20.92	20.89	21.19	21.5	0
15	64QAM	1	37	20.91	20.97	21.03		
15	64QAM	1	74	20.83	20.88	21.14		
15	64QAM	36	0	20.31	20.36	20.21	21	0.5
15	64QAM	36	20	20.34	20.35	20.14		
15	64QAM	36	39	20.25	20.33	20.15		
15	64QAM	75	0	20.33	20.28	20.26		

Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	20.68	20.97	20.83	21.5	0
10	QPSK	1	25	20.57	20.89	20.79		
10	QPSK	1	49	20.67	20.90	20.75		
10	QPSK	25	0	20.59	20.92	20.86	21.5	0
10	QPSK	25	12	20.59	20.92	20.83		
10	QPSK	25	25	20.65	20.88	20.79		
10	QPSK	50	0	20.67	20.89	20.82		
10	16QAM	1	0	21.07	21.39	21.16	21.5	0
10	16QAM	1	25	20.97	21.30	21.22		
10	16QAM	1	49	21.07	21.35	21.19		
10	16QAM	25	0	20.75	21.05	20.95	21.5	0
10	16QAM	25	12	20.73	21.07	20.96		
10	16QAM	25	25	20.80	21.04	20.94		
10	16QAM	50	0	20.82	21.04	20.93		
10	64QAM	1	0	20.98	21.30	21.09	21.5	0
10	64QAM	1	25	20.93	21.24	21.10		
10	64QAM	1	49	21.01	21.31	21.14		
10	64QAM	25	0	20.27	20.28	20.17	21	0.5
10	64QAM	25	12	20.26	20.31	20.10		
10	64QAM	25	25	20.31	20.36	20.07		
10	64QAM	50	0	20.35	20.38	20.15		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	20.56	20.88	20.67	21.5	0
5	QPSK	1	12	20.60	20.90	20.68		
5	QPSK	1	24	20.54	20.85	20.67		
5	QPSK	12	0	20.62	20.96	20.73	21.5	0
5	QPSK	12	7	20.63	20.96	20.77		
5	QPSK	12	13	20.57	20.89	20.71		
5	QPSK	25	0	20.58	20.90	20.70		
5	16QAM	1	0	20.96	21.27	21.04	21.5	0
5	16QAM	1	12	20.99	21.32	21.11		
5	16QAM	1	24	20.90	21.30	21.12		
5	16QAM	12	0	20.78	21.07	20.86	21.5	0
5	16QAM	12	7	20.77	21.10	20.94		
5	16QAM	12	13	20.72	21.05	20.90		
5	16QAM	25	0	20.69	21.03	20.83		
5	64QAM	1	0	20.92	21.25	21.01	21.5	0
5	64QAM	1	12	20.97	21.26	21.02		
5	64QAM	1	24	20.86	21.24	21.00		
5	64QAM	12	0	20.35	20.25	20.23	21	0.5
5	64QAM	12	7	20.36	20.26	20.20		
5	64QAM	12	13	20.33	20.23	20.12		
5	64QAM	25	0	20.28	20.26	20.18		

Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	20.63	20.86	20.75	21.5	0
3	QPSK	1	8	20.76	20.98	20.77		
3	QPSK	1	14	20.61	20.84	20.65		
3	QPSK	8	0	20.68	20.93	20.73	21.5	0
3	QPSK	8	4	20.73	20.94	20.74		
3	QPSK	8	7	20.70	20.90	20.72		
3	QPSK	15	0	20.70	20.90	20.68		
3	16QAM	1	0	21.07	21.25	21.09	21.5	0
3	16QAM	1	8	21.20	21.39	21.21		
3	16QAM	1	14	20.99	21.25	21.09		
3	16QAM	8	0	20.86	21.09	20.92	21.5	0
3	16QAM	8	4	20.95	21.11	20.94		
3	16QAM	8	7	20.85	21.07	20.92		
3	16QAM	15	0	20.72	21.04	20.85		
3	64QAM	1	0	20.92	21.20	20.97	21.5	0
3	64QAM	1	8	21.04	21.31	21.12		
3	64QAM	1	14	20.88	21.21	21.01		
3	64QAM	8	0	20.29	20.33	20.30	21	0.5
3	64QAM	8	4	20.36	20.37	20.18		
3	64QAM	8	7	20.29	20.34	20.15		
3	64QAM	15	0	20.24	20.37	20.21		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	20.36	20.75	20.58	21.5	0
1.4	QPSK	1	3	20.40	20.80	20.68		
1.4	QPSK	1	5	20.33	20.71	20.59		
1.4	QPSK	3	0	20.38	20.74	20.64		
1.4	QPSK	3	1	20.40	20.79	20.63		
1.4	QPSK	3	3	20.43	20.82	20.68		
1.4	QPSK	6	0	20.37	20.79	20.61	21.5	0
1.4	16QAM	1	0	20.73	21.10	21.00	21.5	0
1.4	16QAM	1	3	20.81	21.18	21.08		
1.4	16QAM	1	5	20.74	21.14	20.94		
1.4	16QAM	3	0	20.52	20.94	20.77		
1.4	16QAM	3	1	20.59	20.95	20.80		
1.4	16QAM	3	3	20.58	20.98	20.79		
1.4	16QAM	6	0	20.59	20.96	20.86	21.5	0
1.4	64QAM	1	0	20.69	21.07	20.95	21.5	0
1.4	64QAM	1	3	20.74	21.15	20.97		
1.4	64QAM	1	5	20.64	21.07	20.85		
1.4	64QAM	3	0	20.25	20.26	20.23		
1.4	64QAM	3	1	20.24	20.29	20.14		
1.4	64QAM	3	3	20.24	20.29	20.16		
1.4	64QAM	6	0	20.22	20.21	20.19	21	0.5

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	22.74	22.89	22.77	23.5	0
20	QPSK	1	49	22.56	22.51	22.69		
20	QPSK	1	99	22.45	22.41	22.62		
20	QPSK	50	0	22.18	22.11	22.15	22.5	1
20	QPSK	50	24	22.14	22.14	22.11		
20	QPSK	50	50	22.03	22.11	22.03		
20	QPSK	100	0	22.11	22.12	22.08		
20	16QAM	1	0	22.43	22.37	22.33	22.5	1
20	16QAM	1	49	22.42	22.33	22.33		
20	16QAM	1	99	22.07	22.01	22.33		
20	16QAM	50	0	21.23	21.24	21.28	21.5	2
20	16QAM	50	24	21.24	21.26	21.23		
20	16QAM	50	50	21.19	21.29	21.12		
20	16QAM	100	0	21.22	21.13	21.20		
20	64QAM	1	0	21.42	21.31	21.27	21.5	2
20	64QAM	1	49	21.43	21.21	21.23		
20	64QAM	1	99	21.11	21.20	21.28		
20	64QAM	50	0	20.28	20.30	20.28	20.5	3
20	64QAM	50	24	20.25	20.27	20.27		
20	64QAM	50	50	20.09	20.18	20.24		
20	64QAM	100	0	20.17	20.30	20.24		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.69	22.70	22.51	23.5	0
15	QPSK	1	37	22.47	22.55	22.48		
15	QPSK	1	74	22.58	22.38	22.59		
15	QPSK	36	0	22.18	22.18	22.14	22.5	1
15	QPSK	36	20	22.16	22.17	22.12		
15	QPSK	36	39	22.10	22.10	22.08		
15	QPSK	75	0	22.15	22.21	22.16		
15	16QAM	1	0	22.42	22.39	22.35	22.5	1
15	16QAM	1	37	22.24	22.45	22.33		
15	16QAM	1	74	22.27	22.09	22.29		
15	16QAM	36	0	21.35	21.20	21.24	21.5	2
15	16QAM	36	20	21.25	21.31	21.31		
15	16QAM	36	39	21.20	21.25	21.19		
15	16QAM	75	0	21.27	21.24	21.17		
15	64QAM	1	0	21.21	21.26	21.17	21.5	2
15	64QAM	1	37	21.07	21.29	21.29		
15	64QAM	1	74	21.10	21.01	21.17		
15	64QAM	36	0	20.32	20.20	20.09	20.5	3
15	64QAM	36	20	20.31	20.26	20.03		
15	64QAM	36	39	20.23	20.19	20.08		
15	64QAM	75	0	20.29	20.21	20.01		

Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	22.77	22.61	22.59	23.5	0
10	QPSK	1	25	22.61	22.50	22.61		
10	QPSK	1	49	22.66	22.57	22.64		
10	QPSK	25	0	22.17	22.19	22.16	22.5	1
10	QPSK	25	12	22.16	22.17	22.09		
10	QPSK	25	25	22.12	22.10	22.06		
10	QPSK	50	0	22.05	22.11	22.13		
10	16QAM	1	0	22.42	22.43	22.27	22.5	1
10	16QAM	1	25	22.33	22.42	22.27		
10	16QAM	1	49	21.98	21.96	22.00		
10	16QAM	25	0	21.35	21.22	21.24	21.5	2
10	16QAM	25	12	21.34	21.16	21.20		
10	16QAM	25	25	21.22	21.20	21.22		
10	16QAM	50	0	21.23	21.26	21.20		
10	64QAM	1	0	21.37	21.25	21.35	21.5	2
10	64QAM	1	25	21.32	21.21	21.19		
10	64QAM	1	49	21.20	21.16	21.14		
10	64QAM	25	0	20.29	20.20	20.10	20.5	3
10	64QAM	25	12	20.26	20.19	20.09		
10	64QAM	25	25	20.18	20.15	20.14		
10	64QAM	50	0	20.21	20.09	20.18		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	22.85	22.61	22.61	23.5	0
5	QPSK	1	12	22.59	22.55	22.68		
5	QPSK	1	24	22.70	22.47	22.52		
5	QPSK	12	0	22.21	22.01	22.13	22.5	1
5	QPSK	12	7	22.22	22.16	22.29		
5	QPSK	12	13	22.21	22.08	22.20		
5	QPSK	25	0	22.17	22.08	22.11		
5	16QAM	1	0	22.49	22.13	22.30	22.5	1
5	16QAM	1	12	22.31	22.21	22.31		
5	16QAM	1	24	22.33	22.15	22.16		
5	16QAM	12	0	21.44	21.17	21.35	21.5	2
5	16QAM	12	7	21.47	21.31	21.30		
5	16QAM	12	13	21.27	21.07	21.37		
5	16QAM	25	0	21.40	21.16	21.27		
5	64QAM	1	0	21.44	21.11	21.14	21.5	2
5	64QAM	1	12	21.30	21.12	21.14		
5	64QAM	1	24	21.15	21.11	21.08		
5	64QAM	12	0	20.17	20.09	20.03	20.5	3
5	64QAM	12	7	20.17	20.11	20.00		
5	64QAM	12	13	20.32	20.12	20.05		
5	64QAM	25	0	20.25	20.05	20.11		

Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	22.84	22.50	22.71	23.5	0
3	QPSK	1	8	22.85	22.73	22.85		
3	QPSK	1	14	22.83	22.68	22.82		
3	QPSK	8	0	22.26	22.18	22.36	22.5	1
3	QPSK	8	4	22.33	22.22	22.35		
3	QPSK	8	7	22.25	22.16	22.40		
3	QPSK	15	0	22.28	22.20	22.37		
3	16QAM	1	0	22.40	22.49	22.37	22.5	1
3	16QAM	1	8	22.35	22.42	22.38		
3	16QAM	1	14	22.44	22.46	22.37		
3	16QAM	8	0	21.44	21.42	21.38	21.5	2
3	16QAM	8	4	21.34	21.34	21.33		
3	16QAM	8	7	21.48	21.33	21.31		
3	16QAM	15	0	21.42	21.14	21.32		
3	64QAM	1	0	21.44	20.97	21.23	21.5	2
3	64QAM	1	8	21.16	21.01	21.12		
3	64QAM	1	14	21.11	21.06	21.10		
3	64QAM	8	0	20.16	20.07	20.00	20.5	3
3	64QAM	8	4	20.15	20.05	19.90		
3	64QAM	8	7	20.13	20.09	20.01		
3	64QAM	15	0	20.17	20.05	20.14		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.83	22.52	22.68	23.5	0
1.4	QPSK	1	3	22.84	22.75	22.81		
1.4	QPSK	1	5	22.82	22.70	22.79		
1.4	QPSK	3	0	22.25	22.20	22.33		
1.4	QPSK	3	1	22.32	22.24	22.32		
1.4	QPSK	3	3	22.34	22.28	22.37		
1.4	QPSK	6	0	22.27	22.12	22.34	22.5	1
1.4	16QAM	1	0	22.39	22.21	22.31	22.5	1
1.4	16QAM	1	3	22.44	22.44	22.36		
1.4	16QAM	1	5	22.37	22.48	22.35		
1.4	16QAM	3	0	21.59	21.44	21.55		
1.4	16QAM	3	1	21.53	21.36	21.50		
1.4	16QAM	3	3	21.57	21.35	21.48		
1.4	16QAM	6	0	21.41	21.22	21.48	21.5	2
1.4	64QAM	1	0	21.13	21.09	21.36	21.5	2
1.4	64QAM	1	3	21.09	21.08	21.19		
1.4	64QAM	1	5	21.07	21.08	21.07		
1.4	64QAM	3	0	20.15	20.09	20.00		
1.4	64QAM	3	1	20.14	20.17	20.01		
1.4	64QAM	3	3	20.12	20.11	20.08		
1.4	64QAM	6	0	20.16	20.10	20.11	20.5	3

<Receiver On Power Mode>

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	23.24	23.27	23.18	24	0
20	QPSK	1	49	23.19	23.24	23.20		
20	QPSK	1	99	23.22	23.19	23.11		
20	QPSK	50	0	22.19	22.23	22.17	23	1
20	QPSK	50	24	22.19	22.26	22.25		
20	QPSK	50	50	22.23	22.18	22.24		
20	QPSK	100	0	22.28	22.20	22.13		
20	16QAM	1	0	22.73	22.69	22.77	23	1
20	16QAM	1	49	22.63	22.66	22.58		
20	16QAM	1	99	22.57	22.62	22.60		
20	16QAM	50	0	21.38	21.34	21.26	22	2
20	16QAM	50	24	21.35	21.37	21.38		
20	16QAM	50	50	21.37	21.32	21.32		
20	16QAM	100	0	21.42	21.35	21.24		
20	64QAM	1	0	21.30	21.45	21.34	22	2
20	64QAM	1	49	21.42	21.55	21.46		
20	64QAM	1	99	21.54	21.59	21.60		
20	64QAM	50	0	20.31	20.34	20.32	21	3
20	64QAM	50	24	20.33	20.38	20.28		
20	64QAM	50	50	20.31	20.35	20.21		
20	64QAM	100	0	20.35	20.40	20.30		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	23.14	23.20	23.16	24	0
15	QPSK	1	37	23.08	23.21	23.06		
15	QPSK	1	74	23.03	23.25	23.08		
15	QPSK	36	0	22.12	22.24	22.11	23	1
15	QPSK	36	20	22.15	22.28	22.13		
15	QPSK	36	39	22.09	22.22	22.11		
15	QPSK	75	0	22.09	22.22	22.13		
15	16QAM	1	0	22.63	22.58	22.61	23	1
15	16QAM	1	37	22.48	22.65	22.42		
15	16QAM	1	74	22.40	22.64	22.51		
15	16QAM	36	0	21.32	21.38	21.26	22	2
15	16QAM	36	20	21.31	21.42	21.24		
15	16QAM	36	39	21.25	21.37	21.24		
15	16QAM	75	0	21.26	21.41	21.24		
15	64QAM	1	0	21.33	21.50	21.28	22	2
15	64QAM	1	37	21.52	21.57	21.39		
15	64QAM	1	74	21.56	21.62	21.50		
15	64QAM	36	0	20.36	20.38	20.27	21	3
15	64QAM	36	20	20.39	20.43	20.22		
15	64QAM	36	39	20.34	20.38	20.17		
15	64QAM	75	0	20.40	20.41	20.27		

Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	23.19	23.25	23.18	24	0
10	QPSK	1	25	23.09	23.16	23.15		
10	QPSK	1	49	23.08	23.15	23.10		
10	QPSK	25	0	22.09	22.20	22.19	23	1
10	QPSK	25	12	22.09	22.20	22.18		
10	QPSK	25	25	22.04	22.17	22.13		
10	QPSK	50	0	22.08	22.17	22.16		
10	16QAM	1	0	22.63	22.63	22.51	23	1
10	16QAM	1	25	22.46	22.59	22.47		
10	16QAM	1	49	22.46	22.65	22.54		
10	16QAM	25	0	21.27	21.35	21.26	22	2
10	16QAM	25	12	21.27	21.35	21.28		
10	16QAM	25	25	21.22	21.33	21.28		
10	16QAM	50	0	21.23	21.32	21.28		
10	64QAM	1	0	21.36	21.53	21.22	22	2
10	64QAM	1	25	21.62	21.67	21.35		
10	64QAM	1	49	21.61	21.67	21.45		
10	64QAM	25	0	20.39	20.44	20.19	21	3
10	64QAM	25	12	20.41	20.50	20.13		
10	64QAM	25	25	20.38	20.46	20.13		
10	64QAM	50	0	20.41	20.50	20.25		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	23.08	23.16	23.14	24	0
5	QPSK	1	12	23.09	23.17	23.14		
5	QPSK	1	24	23.03	23.15	23.08		
5	QPSK	12	0	22.12	22.23	22.16	23	1
5	QPSK	12	7	22.15	22.20	22.17		
5	QPSK	12	13	22.08	22.20	22.14		
5	QPSK	25	0	22.07	22.17	22.13		
5	16QAM	1	0	22.54	22.56	22.49	23	1
5	16QAM	1	12	22.54	22.63	22.53		
5	16QAM	1	24	22.46	22.55	22.53		
5	16QAM	12	0	21.32	21.37	21.28	22	2
5	16QAM	12	7	21.28	21.35	21.35		
5	16QAM	12	13	21.27	21.36	21.31		
5	16QAM	25	0	21.24	21.31	21.26		
5	64QAM	1	0	21.33	21.50	21.28	22	2
5	64QAM	1	12	21.52	21.57	21.39		
5	64QAM	1	24	21.56	21.62	21.50		
5	64QAM	12	0	20.36	20.38	20.27	21	3
5	64QAM	12	7	20.39	20.43	20.22		
5	64QAM	12	13	20.34	20.38	20.17		
5	64QAM	25	0	20.37	20.41	20.27		

Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	23.12	23.16	23.13	24	0
3	QPSK	1	8	23.12	23.18	23.10		
3	QPSK	1	14	23.06	23.12	23.09		
3	QPSK	8	0	22.13	22.20	22.13	23	1
3	QPSK	8	4	22.14	22.26	22.16		
3	QPSK	8	7	22.11	22.18	22.12		
3	QPSK	15	0	22.12	22.18	22.14		
3	16QAM	1	0	22.56	22.56	22.46	23	1
3	16QAM	1	8	22.56	22.64	22.48		
3	16QAM	1	14	22.46	22.51	22.45		
3	16QAM	8	0	21.35	21.40	21.34	22	2
3	16QAM	8	4	21.38	21.44	21.37		
3	16QAM	8	7	21.31	21.42	21.39		
3	16QAM	15	0	21.26	21.36	21.31		
3	64QAM	1	0	21.36	21.53	21.34	22	2
3	64QAM	1	8	21.62	21.67	21.43		
3	64QAM	1	14	21.61	21.67	21.55		
3	64QAM	8	0	20.39	20.44	20.35	21	3
3	64QAM	8	4	20.41	20.50	20.31		
3	64QAM	8	7	20.38	20.46	20.21		
3	64QAM	15	0	20.41	20.50	20.29		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	23.20	23.17	23.08	24	0
1.4	QPSK	1	3	23.20	23.26	23.18		
1.4	QPSK	1	5	23.16	23.13	23.07		
1.4	QPSK	3	0	23.15	23.19	23.15		
1.4	QPSK	3	1	23.18	23.23	23.16		
1.4	QPSK	3	3	23.14	23.18	23.13		
1.4	QPSK	6	0	22.14	22.21	22.02	23	1
1.4	16QAM	1	0	22.57	22.59	22.47	23	1
1.4	16QAM	1	3	22.64	22.69	22.56		
1.4	16QAM	1	5	22.56	22.64	22.49		
1.4	16QAM	3	0	22.30	22.35	22.25		
1.4	16QAM	3	1	22.33	22.41	22.30		
1.4	16QAM	3	3	22.25	22.36	22.29		
1.4	16QAM	6	0	21.36	21.40	21.37	22	2
1.4	64QAM	1	0	21.33	21.50	21.28	22	2
1.4	64QAM	1	3	21.52	21.57	21.39		
1.4	64QAM	1	5	21.56	21.62	21.50		
1.4	64QAM	3	0	20.36	20.38	20.27		
1.4	64QAM	3	1	20.39	20.43	20.22		
1.4	64QAM	3	3	20.34	20.38	20.17		
1.4	64QAM	6	0	20.37	20.41	20.27	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	23.46	23.19	23.32	24	0
20	QPSK	1	49	23.40	23.25	23.30		
20	QPSK	1	99	23.23	23.11	23.40		
20	QPSK	50	0	22.42	22.32	22.33	23	1
20	QPSK	50	24	22.34	22.29	22.41		
20	QPSK	50	50	22.27	22.26	22.36		
20	QPSK	100	0	22.33	22.31	22.43		
20	16QAM	1	0	22.87	22.67	22.68	23	1
20	16QAM	1	49	22.79	22.68	22.71		
20	16QAM	1	99	22.62	22.52	22.87		
20	16QAM	50	0	21.58	21.45	21.49	22	2
20	16QAM	50	24	21.49	21.44	21.61		
20	16QAM	50	50	21.44	21.41	21.54		
20	16QAM	100	0	21.42	21.41	21.54		
20	64QAM	1	0	21.51	21.32	21.35	22	2
20	64QAM	1	49	21.62	21.50	21.41		
20	64QAM	1	99	21.33	21.26	21.30		
20	64QAM	50	0	20.40	20.33	20.29	21	3
20	64QAM	50	24	20.42	20.35	20.28		
20	64QAM	50	50	20.43	20.31	20.27		
20	64QAM	100	0	20.44	20.35	20.30		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	23.43	23.19	23.34	24	0
15	QPSK	1	37	23.37	23.24	23.40		
15	QPSK	1	74	23.15	23.13	23.36		
15	QPSK	36	0	22.43	22.30	22.34	23	1
15	QPSK	36	20	22.34	22.34	22.45		
15	QPSK	36	39	22.27	22.29	22.37		
15	QPSK	75	0	22.31	22.30	22.38		
15	16QAM	1	0	22.87	22.63	22.74	23	1
15	16QAM	1	37	22.81	22.64	22.81		
15	16QAM	1	74	22.54	22.52	22.84		
15	16QAM	36	0	21.57	21.42	21.51	22	2
15	16QAM	36	20	21.50	21.49	21.59		
15	16QAM	36	39	21.47	21.45	21.54		
15	16QAM	75	0	21.43	21.44	21.55		
15	64QAM	1	0	21.48	21.29	21.29	22	2
15	64QAM	1	37	21.52	21.40	21.37		
15	64QAM	1	74	21.28	21.21	21.25		
15	64QAM	36	0	20.37	20.27	20.21	21	3
15	64QAM	36	20	20.40	20.28	20.19		
15	64QAM	36	39	20.39	20.23	20.23		
15	64QAM	75	0	20.40	20.26	20.28		

Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	23.39	23.26	23.31	24	0
10	QPSK	1	25	23.39	23.26	23.39		
10	QPSK	1	49	23.32	23.10	23.40		
10	QPSK	25	0	22.39	22.28	22.37	23	1
10	QPSK	25	12	22.39	22.28	22.38		
10	QPSK	25	25	22.35	22.25	22.34		
10	QPSK	50	0	22.37	22.26	22.36		
10	16QAM	1	0	22.83	22.66	22.72	23	1
10	16QAM	1	25	22.79	22.64	22.78		
10	16QAM	1	49	22.78	22.48	22.84		
10	16QAM	25	0	21.52	21.39	21.54	22	2
10	16QAM	25	12	21.55	21.38	21.51		
10	16QAM	25	25	21.48	21.35	21.45		
10	16QAM	50	0	21.49	21.39	21.51		
10	64QAM	1	0	21.51	21.26	21.35	22	2
10	64QAM	1	25	21.42	21.30	21.33		
10	64QAM	1	49	21.23	21.16	21.20		
10	64QAM	25	0	20.34	20.21	20.13	21	3
10	64QAM	25	12	20.38	20.21	20.10		
10	64QAM	25	25	20.35	20.15	20.19		
10	64QAM	50	0	20.36	20.17	20.26		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	23.36	23.20	23.32	24	0
5	QPSK	1	12	23.32	23.23	23.42		
5	QPSK	1	24	23.28	23.20	23.40		
5	QPSK	12	0	22.38	22.28	22.36	23	1
5	QPSK	12	7	22.42	22.28	22.47		
5	QPSK	12	13	22.38	22.22	22.42		
5	QPSK	25	0	22.34	22.24	22.32		
5	16QAM	1	0	22.78	22.59	22.73	23	1
5	16QAM	1	12	22.78	22.62	22.87		
5	16QAM	1	24	22.74	22.57	22.82		
5	16QAM	12	0	21.48	21.35	21.53	22	2
5	16QAM	12	7	21.50	21.42	21.62		
5	16QAM	12	13	21.54	21.39	21.61		
5	16QAM	25	0	21.50	21.36	21.48		
5	64QAM	1	0	21.60	21.16	21.41	22	2
5	64QAM	1	12	21.32	21.20	21.23		
5	64QAM	1	24	21.17	21.11	21.16		
5	64QAM	12	0	20.29	20.15	20.07	21	3
5	64QAM	12	7	20.35	20.18	20.01		
5	64QAM	12	13	20.33	20.13	20.14		
5	64QAM	25	0	20.32	20.12	20.20		

Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	23.32	23.19	23.40	24	0
3	QPSK	1	8	23.31	23.20	23.41		
3	QPSK	1	14	23.29	23.17	23.36		
3	QPSK	8	0	22.37	22.21	22.43	23	1
3	QPSK	8	4	22.39	22.29	22.45		
3	QPSK	8	7	22.34	22.23	22.42		
3	QPSK	15	0	22.33	22.20	22.42		
3	16QAM	1	0	22.71	22.60	22.78	23	1
3	16QAM	1	8	22.77	22.61	22.84		
3	16QAM	1	14	22.72	22.56	22.80		
3	16QAM	8	0	21.56	21.42	21.63	22	2
3	16QAM	8	4	21.59	21.45	21.67		
3	16QAM	8	7	21.54	21.42	21.64		
3	16QAM	15	0	21.49	21.37	21.55		
3	64QAM	1	0	21.51	21.06	21.35	22	2
3	64QAM	1	8	21.22	21.10	21.13		
3	64QAM	1	14	21.11	21.06	21.12		
3	64QAM	8	0	20.24	20.09	20.01	21	3
3	64QAM	8	4	20.32	20.15	19.92		
3	64QAM	8	7	20.31	20.11	20.09		
3	64QAM	15	0	20.28	20.07	20.14		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	23.26	23.13	23.34	24	0
1.4	QPSK	1	3	23.32	23.23	23.41		
1.4	QPSK	1	5	23.24	23.12	23.32		
1.4	QPSK	3	0	23.31	23.14	23.35		
1.4	QPSK	3	1	23.32	23.22	23.40		
1.4	QPSK	3	3	23.28	23.15	23.35		
1.4	QPSK	6	0	22.28	22.20	22.36	23	1
1.4	16QAM	1	0	22.65	22.50	22.71	23	1
1.4	16QAM	1	3	22.70	22.54	22.82		
1.4	16QAM	1	5	22.61	22.51	22.70		
1.4	16QAM	3	0	22.44	22.28	22.52		
1.4	16QAM	3	1	22.46	22.37	22.55		
1.4	16QAM	3	3	22.42	22.25	22.49		
1.4	16QAM	6	0	21.46	21.35	21.54	22	2
1.4	64QAM	1	0	21.60	21.16	21.41	22	2
1.4	64QAM	1	3	21.32	21.20	21.23		
1.4	64QAM	1	5	21.17	21.11	21.16		
1.4	64QAM	3	0	20.29	20.15	20.07		
1.4	64QAM	3	1	20.35	20.18	20.01		
1.4	64QAM	3	3	20.33	20.13	20.14		
1.4	64QAM	6	0	20.32	20.12	20.20	21	3

<Reduced Power Mode for Hotspot On/P-Sensor On>

<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	15.15	15.39	15.35	16	0
20	QPSK	1	49	15.19	15.28	15.30		
20	QPSK	1	99	15.16	15.16	15.27		
20	QPSK	50	0	15.20	15.23	15.19	16	0
20	QPSK	50	24	15.30	15.31	15.24		
20	QPSK	50	50	15.22	15.26	15.30		
20	QPSK	100	0	15.21	15.26	15.19		
20	16QAM	1	0	15.33	15.26	15.25	16	0
20	16QAM	1	49	15.34	15.33	15.24		
20	16QAM	1	99	15.33	15.28	15.33		
20	16QAM	50	0	15.30	15.34	15.24	16	0
20	16QAM	50	24	15.31	15.23	15.27		
20	16QAM	50	50	15.22	15.25	15.31		
20	16QAM	100	0	15.31	15.24	15.20		
20	64QAM	1	0	15.23	15.35	15.30	16	0
20	64QAM	1	49	15.30	15.36	15.32		
20	64QAM	1	99	15.23	15.34	15.30		
20	64QAM	50	0	15.24	15.36	15.20	16	0
20	64QAM	50	24	15.12	15.30	15.21		
20	64QAM	50	50	15.18	15.27	15.21		
20	64QAM	100	0	15.10	15.29	15.24		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	15.13	15.27	15.28	16	0
15	QPSK	1	37	15.05	15.23	15.23		
15	QPSK	1	74	15.06	15.33	15.20		
15	QPSK	36	0	15.12	15.35	15.26	16	0
15	QPSK	36	20	15.23	15.30	15.25		
15	QPSK	36	39	15.18	15.32	15.20		
15	QPSK	75	0	15.32	15.28	15.19		
15	16QAM	1	0	15.32	15.29	15.25	16	0
15	16QAM	1	37	15.30	15.27	15.25		
15	16QAM	1	74	15.26	15.29	15.26		
15	16QAM	36	0	15.18	15.33	15.32	16	0
15	16QAM	36	20	15.31	15.32	15.24		
15	16QAM	36	39	15.27	15.25	15.28		
15	16QAM	75	0	15.32	15.28	15.29		
15	64QAM	1	0	15.20	15.30	15.25	16	0
15	64QAM	1	37	15.23	15.36	15.26		
15	64QAM	1	74	15.11	15.28	15.20		
15	64QAM	36	0	15.19	15.33	15.21	16	0
15	64QAM	36	20	15.23	15.28	15.20		
15	64QAM	36	39	15.20	15.27	15.18		
15	64QAM	75	0	15.10	15.25	15.17		

Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	15.30	15.30	15.33	16	0
10	QPSK	1	25	15.18	15.30	15.20		
10	QPSK	1	49	15.32	15.34	15.21		
10	QPSK	25	0	15.17	15.34	15.26	16	0
10	QPSK	25	12	15.20	15.30	15.30		
10	QPSK	25	25	15.29	15.32	15.22		
10	QPSK	50	0	15.24	15.23	15.29		
10	16QAM	1	0	15.30	15.26	15.23	16	0
10	16QAM	1	25	15.12	15.25	15.19		
10	16QAM	1	49	15.23	15.25	15.12		
10	16QAM	25	0	15.24	15.33	15.30	16	0
10	16QAM	25	12	15.27	15.30	15.27		
10	16QAM	25	25	15.26	15.30	15.30		
10	16QAM	50	0	15.29	15.26	15.32		
10	64QAM	1	0	15.13	15.22	15.20	16	0
10	64QAM	1	25	15.18	15.28	15.30		
10	64QAM	1	49	15.13	15.30	15.24		
10	64QAM	25	0	15.20	15.29	15.21	16	0
10	64QAM	25	12	15.16	15.24	15.26		
10	64QAM	25	25	15.12	15.20	15.02		
10	64QAM	50	0	15.10	15.18	15.04		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	15.16	15.31	15.11	16	0
5	QPSK	1	12	15.09	15.33	15.33		
5	QPSK	1	24	15.04	15.28	15.19		
5	QPSK	12	0	15.14	15.32	15.17	16	0
5	QPSK	12	7	15.17	15.38	15.20		
5	QPSK	12	13	15.11	15.32	15.19		
5	QPSK	25	0	15.20	15.33	15.17		
5	16QAM	1	0	15.33	15.29	15.30	16	0
5	16QAM	1	12	15.20	15.35	15.30		
5	16QAM	1	24	15.31	15.34	15.30		
5	16QAM	12	0	15.28	15.32	15.22	16	0
5	16QAM	12	7	15.22	15.20	15.31		
5	16QAM	12	13	15.24	15.26	15.25		
5	16QAM	25	0	15.22	15.27	15.29		
5	64QAM	1	0	15.19	15.30	15.25	16	0
5	64QAM	1	12	15.20	15.35	15.23		
5	64QAM	1	24	15.16	15.24	15.26		
5	64QAM	12	0	15.06	15.17	15.22	16	0
5	64QAM	12	7	15.09	15.32	15.30		
5	64QAM	12	13	15.06	15.20	15.16		
5	64QAM	25	0	15.04	15.20	15.21		

Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	15.11	15.28	15.20	16	0
3	QPSK	1	8	15.07	15.26	15.19		
3	QPSK	1	14	15.03	15.24	15.24		
3	QPSK	8	0	15.07	15.31	15.19	16	0
3	QPSK	8	4	15.07	15.29	15.23		
3	QPSK	8	7	15.08	15.29	15.20		
3	QPSK	15	0	15.06	15.31	15.24		
3	16QAM	1	0	15.24	15.26	15.30	16	0
3	16QAM	1	8	15.26	15.30	15.32		
3	16QAM	1	14	15.31	15.26	15.30		
3	16QAM	8	0	15.21	15.31	15.25	16	0
3	16QAM	8	4	15.25	15.31	15.30		
3	16QAM	8	7	15.25	15.32	15.27		
3	16QAM	15	0	15.17	15.32	15.33		
3	64QAM	1	0	15.20	15.22	15.23	16	0
3	64QAM	1	8	15.21	15.27	15.21		
3	64QAM	1	14	15.22	15.30	15.23		
3	64QAM	8	0	15.10	15.26	15.16	16	0
3	64QAM	8	4	15.16	15.31	15.20		
3	64QAM	8	7	15.15	15.25	15.21		
3	64QAM	15	0	15.18	15.26	15.28		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	15.10	15.35	15.12	16	0
1.4	QPSK	1	3	15.10	15.37	15.13		
1.4	QPSK	1	5	15.07	15.23	15.04		
1.4	QPSK	3	0	15.18	15.36	15.21		
1.4	QPSK	3	1	15.13	15.35	15.23		
1.4	QPSK	3	3	15.10	15.35	15.17		
1.4	QPSK	6	0	15.10	15.36	15.17	16	0
1.4	16QAM	1	0	15.29	15.27	15.32	16	0
1.4	16QAM	1	3	15.24	15.28	15.30		
1.4	16QAM	1	5	15.18	15.33	15.32		
1.4	16QAM	3	0	15.12	15.30	15.31		
1.4	16QAM	3	1	15.15	15.24	15.25		
1.4	16QAM	3	3	15.03	15.27	15.29		
1.4	16QAM	6	0	15.07	15.20	15.24	16	0
1.4	64QAM	1	0	15.14	15.24	15.22	16	0
1.4	64QAM	1	3	15.21	15.20	15.22		
1.4	64QAM	1	5	15.20	15.26	15.23		
1.4	64QAM	3	0	15.13	15.27	15.30		
1.4	64QAM	3	1	15.16	15.16	15.22		
1.4	64QAM	3	3	15.20	15.23	15.24		
1.4	64QAM	6	0	15.25	15.18	15.26	16	0

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	17.35	17.20	17.19	18	0
20	QPSK	1	49	17.11	16.93	17.09		
20	QPSK	1	99	17.02	16.87	17.16		
20	QPSK	50	0	17.29	17.25	17.20	18	0
20	QPSK	50	24	17.30	17.19	17.17		
20	QPSK	50	50	17.16	17.12	17.12		
20	QPSK	100	0	17.24	17.22	17.25		
20	16QAM	1	0	17.24	17.27	17.23	18	0
20	16QAM	1	49	17.24	17.28	17.25		
20	16QAM	1	99	17.30	17.20	17.29		
20	16QAM	50	0	17.25	17.28	17.30	18	0
20	16QAM	50	24	17.27	17.30	17.28		
20	16QAM	50	50	17.25	17.23	17.23		
20	16QAM	100	0	17.23	17.24	17.25		
20	64QAM	1	0	17.32	17.30	17.25	18	0
20	64QAM	1	49	17.23	17.26	17.20		
20	64QAM	1	99	17.21	17.24	17.12		
20	64QAM	50	0	17.29	17.32	17.13	18	0
20	64QAM	50	24	17.04	17.24	17.26		
20	64QAM	50	50	17.32	17.19	17.20		
20	64QAM	100	0	17.30	17.23	17.16		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	17.27	17.30	17.12	18	0
15	QPSK	1	37	17.14	17.17	17.14		
15	QPSK	1	74	17.08	16.98	17.17		
15	QPSK	36	0	17.14	17.18	17.20	18	0
15	QPSK	36	20	17.15	17.21	17.23		
15	QPSK	36	39	17.08	17.10	17.17		
15	QPSK	75	0	17.11	17.11	17.17		
15	16QAM	1	0	17.29	17.21	17.22	18	0
15	16QAM	1	37	17.28	17.23	17.25		
15	16QAM	1	74	17.23	17.14	17.26		
15	16QAM	36	0	17.23	17.23	17.28	18	0
15	16QAM	36	20	17.27	17.26	17.23		
15	16QAM	36	39	17.13	17.20	17.20		
15	16QAM	75	0	17.21	17.26	17.25		
15	64QAM	1	0	17.20	17.28	17.15	18	0
15	64QAM	1	37	17.18	17.26	17.26		
15	64QAM	1	74	17.06	17.13	17.14		
15	64QAM	36	0	17.25	17.29	17.18	18	0
15	64QAM	36	20	17.21	17.20	17.29		
15	64QAM	36	39	17.22	17.24	17.20		
15	64QAM	75	0	17.18	17.28	17.25		

Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	17.30	17.16	17.27	18	0
10	QPSK	1	25	17.16	17.19	17.22		
10	QPSK	1	49	16.99	17.09	17.18		
10	QPSK	25	0	17.19	17.19	17.32	18	0
10	QPSK	25	12	17.13	17.17	17.22		
10	QPSK	25	25	17.03	17.17	17.22		
10	QPSK	50	0	17.13	17.14	17.29		
10	16QAM	1	0	17.22	17.28	17.15	18	0
10	16QAM	1	25	17.19	17.24	17.25		
10	16QAM	1	49	17.17	17.24	17.23		
10	16QAM	25	0	17.19	17.24	17.27	18	0
10	16QAM	25	12	17.22	17.16	17.21		
10	16QAM	25	25	17.15	17.16	17.21		
10	16QAM	50	0	17.19	17.24	17.21		
10	64QAM	1	0	17.16	17.28	17.22	18	0
10	64QAM	1	25	17.18	17.22	17.19		
10	64QAM	1	49	17.27	17.24	17.14		
10	64QAM	25	0	17.04	17.21	17.15	18	0
10	64QAM	25	12	17.06	17.20	17.05		
10	64QAM	25	25	17.16	17.24	17.25		
10	64QAM	50	0	17.21	17.19	17.31		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	17.24	17.05	17.19	18	0
5	QPSK	1	12	17.11	17.13	17.25		
5	QPSK	1	24	17.18	17.11	17.29		
5	QPSK	12	0	17.14	17.06	17.25	18	0
5	QPSK	12	7	17.19	17.23	17.25		
5	QPSK	12	13	17.14	17.10	17.34		
5	QPSK	25	0	17.13	17.11	17.19		
5	16QAM	1	0	17.30	17.22	17.25	18	0
5	16QAM	1	12	17.29	17.25	17.23		
5	16QAM	1	24	17.25	17.29	17.28		
5	16QAM	12	0	17.27	17.24	17.24	18	0
5	16QAM	12	7	17.22	17.24	17.24		
5	16QAM	12	13	17.28	17.27	17.30		
5	16QAM	25	0	17.25	17.29	17.26		
5	64QAM	1	0	17.06	17.26	17.08	18	0
5	64QAM	1	12	17.15	17.22	17.06		
5	64QAM	1	24	17.04	17.27	17.04		
5	64QAM	12	0	17.24	17.27	17.11	18	0
5	64QAM	12	7	17.21	17.24	17.15		
5	64QAM	12	13	17.30	17.33	17.05		
5	64QAM	25	0	17.29	17.27	17.20		

Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	17.07	17.04	17.22	18	0
3	QPSK	1	8	17.11	17.13	17.31		
3	QPSK	1	14	17.01	17.06	17.19		
3	QPSK	8	0	17.17	17.18	17.26	18	0
3	QPSK	8	4	17.13	17.20	17.28		
3	QPSK	8	7	17.11	17.15	17.29		
3	QPSK	15	0	17.12	17.21	17.25		
3	16QAM	1	0	17.29	17.23	17.30	18	0
3	16QAM	1	8	17.30	17.13	17.21		
3	16QAM	1	14	17.28	17.24	17.23		
3	16QAM	8	0	17.29	17.27	17.25	18	0
3	16QAM	8	4	17.23	17.29	17.26		
3	16QAM	8	7	17.20	17.23	17.16		
3	16QAM	15	0	17.27	17.24	17.29		
3	64QAM	1	0	17.20	17.25	17.20	18	0
3	64QAM	1	8	17.19	17.29	17.29		
3	64QAM	1	14	17.15	17.27	17.21		
3	64QAM	8	0	17.16	17.30	17.24	18	0
3	64QAM	8	4	17.15	17.27	17.22		
3	64QAM	8	7	17.04	17.32	17.10		
3	64QAM	15	0	17.04	17.29	17.18		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	17.16	17.05	17.21	18	0
1.4	QPSK	1	3	17.31	17.14	17.30		
1.4	QPSK	1	5	17.19	17.09	17.32		
1.4	QPSK	3	0	17.16	17.05	17.32		
1.4	QPSK	3	1	17.25	17.16	17.30		
1.4	QPSK	3	3	17.11	17.09	17.30		
1.4	QPSK	6	0	17.17	17.15	17.25	18	0
1.4	16QAM	1	0	17.17	17.18	17.13	18	0
1.4	16QAM	1	3	17.29	17.26	17.18		
1.4	16QAM	1	5	17.26	17.30	17.23		
1.4	16QAM	3	0	17.27	17.12	17.29		
1.4	16QAM	3	1	17.25	17.22	17.24		
1.4	16QAM	3	3	17.26	17.27	17.28		
1.4	16QAM	6	0	17.28	17.31	17.16	18	0
1.4	64QAM	1	0	17.22	17.25	17.22	18	0
1.4	64QAM	1	3	17.21	17.14	17.24		
1.4	64QAM	1	5	17.05	17.24	17.05		
1.4	64QAM	3	0	17.05	17.25	17.26		
1.4	64QAM	3	1	17.21	17.27	17.19		
1.4	64QAM	3	3	17.19	17.34	17.18		
1.4	64QAM	6	0	17.17	17.23	17.11	18	0

<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	17.01	17.06	17.12	19	0
20	QPSK	1	49	17.01	17.04	17.04		
20	QPSK	1	99	17.10	17.06	17.26		
20	QPSK	50	0	17.12	17.12	17.10	19	0
20	QPSK	50	24	17.14	17.16	17.19		
20	QPSK	50	50	17.16	17.18	17.18		
20	QPSK	100	0	17.10	17.14	17.15		
20	16QAM	1	0	17.17	17.18	17.14	19	0
20	16QAM	1	49	17.10	17.13	17.15		
20	16QAM	1	99	17.13	17.19	17.14		
20	16QAM	50	0	17.15	17.15	17.18	19	0
20	16QAM	50	24	17.18	17.15	17.19		
20	16QAM	50	50	17.12	17.21	17.20		
20	16QAM	100	0	17.16	17.09	17.18		
20	64QAM	1	0	17.10	17.02	17.08	19	0
20	64QAM	1	49	17.12	17.18	17.20		
20	64QAM	1	99	17.09	17.03	17.15		
20	64QAM	50	0	17.14	17.11	17.21	19	0
20	64QAM	50	24	17.05	17.03	17.16		
20	64QAM	50	50	17.16	17.13	17.13		
20	64QAM	100	0	17.11	17.09	17.15		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	17.03	17.07	17.11	19	0
15	QPSK	1	37	17.04	17.02	17.08		
15	QPSK	1	74	17.06	17.03	17.15		
15	QPSK	36	0	17.10	17.13	17.05	19	0
15	QPSK	36	20	17.03	17.13	17.07		
15	QPSK	36	39	17.03	17.14	17.08		
15	QPSK	75	0	17.09	17.11	17.07		
15	16QAM	1	0	17.11	17.13	17.11	19	0
15	16QAM	1	37	17.20	17.17	17.18		
15	16QAM	1	74	17.17	17.18	17.18		
15	16QAM	36	0	17.02	17.10	17.03	19	0
15	16QAM	36	20	17.08	17.13	17.08		
15	16QAM	36	39	17.11	17.12	17.12		
15	16QAM	75	0	17.05	17.08	17.04		
15	64QAM	1	0	17.09	17.12	17.15	19	0
15	64QAM	1	37	17.10	17.16	17.18		
15	64QAM	1	74	17.15	17.11	17.15		
15	64QAM	36	0	17.13	17.12	17.12	19	0
15	64QAM	36	20	17.21	17.14	17.16		
15	64QAM	36	39	17.16	17.15	17.13		
15	64QAM	75	0	17.22	17.20	17.12		

Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	17.08	17.05	17.09	19	0
10	QPSK	1	25	17.09	17.05	17.07		
10	QPSK	1	49	17.03	17.12	17.14		
10	QPSK	25	0	17.12	17.12	17.04	19	0
10	QPSK	25	12	17.06	17.14	17.06		
10	QPSK	25	25	17.06	17.15	17.15		
10	QPSK	50	0	17.16	17.14	17.05		
10	16QAM	1	0	17.19	17.23	17.17	19	0
10	16QAM	1	25	17.21	17.15	17.21		
10	16QAM	1	49	17.19	17.16	17.14		
10	16QAM	25	0	17.06	17.11	17.01	19	0
10	16QAM	25	12	17.09	17.04	17.03		
10	16QAM	25	25	17.08	17.14	17.17		
10	16QAM	50	0	17.10	17.13	17.06		
10	64QAM	1	0	17.15	17.18	17.20	19	0
10	64QAM	1	25	17.16	17.15	17.19		
10	64QAM	1	49	17.13	17.16	17.13		
10	64QAM	25	0	17.20	17.17	17.15	19	0
10	64QAM	25	12	17.24	17.13	17.11		
10	64QAM	25	25	17.22	17.18	17.18		
10	64QAM	50	0	17.18	17.15	17.13		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	17.06	17.04	17.02	19	0
5	QPSK	1	12	17.01	17.05	17.05		
5	QPSK	1	24	17.00	17.08	17.08		
5	QPSK	12	0	17.04	17.08	17.07	19	0
5	QPSK	12	7	17.13	17.06	17.11		
5	QPSK	12	13	17.05	17.05	17.12		
5	QPSK	25	0	17.05	17.13	17.11		
5	16QAM	1	0	17.20	17.23	17.20	19	0
5	16QAM	1	12	17.25	17.24	17.20		
5	16QAM	1	24	17.24	17.25	17.18		
5	16QAM	12	0	17.14	17.07	17.04	19	0
5	16QAM	12	7	17.17	17.09	17.06		
5	16QAM	12	13	17.06	17.02	17.13		
5	16QAM	25	0	17.05	17.12	17.08		
5	64QAM	1	0	17.20	17.12	17.10	19	0
5	64QAM	1	12	17.15	17.20	17.13		
5	64QAM	1	24	17.14	17.21	17.14		
5	64QAM	12	0	17.16	17.19	17.16	19	0
5	64QAM	12	7	17.18	17.22	17.13		
5	64QAM	12	13	17.12	17.16	17.20		
5	64QAM	25	0	17.11	17.15	17.15		

<Reduced Power Mode for Product Specific 10g SAR>

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	19.53	19.86	19.58	20	0
20	QPSK	1	49	19.63	19.45	19.44		
20	QPSK	1	99	19.36	19.46	19.40		
20	QPSK	50	0	19.47	19.48	19.43	20	0
20	QPSK	50	24	19.45	19.50	19.49		
20	QPSK	50	50	19.40	19.42	19.47		
20	QPSK	100	0	19.41	19.46	19.42		
20	16QAM	1	0	19.79	19.79	19.81	20	0
20	16QAM	1	49	19.74	19.84	19.79		
20	16QAM	1	99	19.73	19.85	19.85		
20	16QAM	50	0	19.57	19.63	19.55	20	0
20	16QAM	50	24	19.59	19.65	19.64		
20	16QAM	50	50	19.51	19.60	19.60		
20	16QAM	100	0	19.53	19.59	19.50		
20	64QAM	1	0	19.45	19.44	19.55	20	0
20	64QAM	1	49	19.60	19.77	19.68		
20	64QAM	1	99	19.55	19.69	19.59		
20	64QAM	50	0	19.45	19.52	19.45	20	0
20	64QAM	50	24	19.50	19.56	19.54		
20	64QAM	50	50	19.47	19.56	19.52		
20	64QAM	100	0	19.47	19.56	19.43		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	19.18	19.38	19.40	20	0
15	QPSK	1	37	19.21	19.41	19.37		
15	QPSK	1	74	19.18	19.42	19.37		
15	QPSK	36	0	19.26	19.49	19.49	20	0
15	QPSK	36	20	19.40	19.45	19.43		
15	QPSK	36	39	19.25	19.49	19.39		
15	QPSK	75	0	19.39	19.39	19.48		
15	16QAM	1	0	19.79	19.76	19.82	20	0
15	16QAM	1	37	19.83	19.75	19.70		
15	16QAM	1	74	19.47	19.80	19.65		
15	16QAM	36	0	19.35	19.57	19.54	20	0
15	16QAM	36	20	19.40	19.62	19.59		
15	16QAM	36	39	19.42	19.63	19.54		
15	16QAM	75	0	19.40	19.70	19.57		
15	64QAM	1	0	19.31	19.42	19.51	20	0
15	64QAM	1	37	19.36	19.72	19.47		
15	64QAM	1	74	19.31	19.72	19.52		
15	64QAM	36	0	19.26	19.56	19.44	20	0
15	64QAM	36	20	19.40	19.59	19.43		
15	64QAM	36	39	19.37	19.66	19.47		
15	64QAM	75	0	19.36	19.54	19.43		

Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	19.20	19.48	19.49	20	0
10	QPSK	1	25	19.10	19.31	19.33		
10	QPSK	1	49	19.23	19.39	19.56		
10	QPSK	25	0	19.21	19.45	19.44	20	0
10	QPSK	25	12	19.25	19.45	19.42		
10	QPSK	25	25	19.26	19.41	19.41		
10	QPSK	50	0	19.33	19.43	19.41		
10	16QAM	1	0	19.63	19.73	19.82	20	0
10	16QAM	1	25	19.68	19.78	19.80		
10	16QAM	1	49	19.67	19.72	19.83		
10	16QAM	25	0	19.32	19.57	19.47	20	0
10	16QAM	25	12	19.37	19.57	19.44		
10	16QAM	25	25	19.46	19.60	19.53		
10	16QAM	50	0	19.49	19.62	19.60		
10	64QAM	1	0	19.44	19.42	19.45	20	0
10	64QAM	1	25	19.68	19.64	19.66		
10	64QAM	1	49	19.69	19.70	19.71		
10	64QAM	25	0	19.46	19.40	19.43	20	0
10	64QAM	25	12	19.49	19.44	19.52		
10	64QAM	25	25	19.51	19.45	19.52		
10	64QAM	50	0	19.43	19.41	19.44		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	19.26	19.43	19.36	20	0
5	QPSK	1	12	19.26	19.48	19.47		
5	QPSK	1	24	19.21	19.39	19.35		
5	QPSK	12	0	19.28	19.46	19.37	20	0
5	QPSK	12	7	19.31	19.50	19.49		
5	QPSK	12	13	19.26	19.43	19.36		
5	QPSK	25	0	19.26	19.43	19.35		
5	16QAM	1	0	19.82	19.75	19.78	20	0
5	16QAM	1	12	19.49	19.82	19.81		
5	16QAM	1	24	19.80	19.83	19.79		
5	16QAM	12	0	19.43	19.65	19.47	20	0
5	16QAM	12	7	19.47	19.63	19.63		
5	16QAM	12	13	19.40	19.59	19.64		
5	16QAM	25	0	19.35	19.54	19.70		
5	64QAM	1	0	19.39	19.45	19.51	20	0
5	64QAM	1	12	19.68	19.66	19.65		
5	64QAM	1	24	19.71	19.68	19.74		
5	64QAM	12	0	19.44	19.42	19.46	20	0
5	64QAM	12	7	19.13	19.46	19.43		
5	64QAM	12	13	19.41	19.44	19.40		
5	64QAM	25	0	19.40	19.40	19.39		

Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	19.23	19.45	19.38	20	0
3	QPSK	1	8	19.28	19.39	19.30		
3	QPSK	1	14	19.28	19.38	19.22		
3	QPSK	8	0	19.28	19.48	19.43	20	0
3	QPSK	8	4	19.28	19.46	19.47		
3	QPSK	8	7	19.27	19.44	19.42		
3	QPSK	15	0	19.29	19.47	19.37		
3	16QAM	1	0	19.36	19.41	19.36	20	0
3	16QAM	1	8	19.47	19.56	19.50		
3	16QAM	1	14	19.27	19.44	19.43		
3	16QAM	8	0	19.44	19.70	19.59	20	0
3	16QAM	8	4	19.50	19.68	19.61		
3	16QAM	8	7	19.41	19.73	19.57		
3	16QAM	15	0	19.45	19.63	19.58		
3	64QAM	1	0	19.48	19.50	19.43	20	0
3	64QAM	1	8	19.68	19.71	19.42		
3	64QAM	1	14	19.66	19.69	19.66		
3	64QAM	8	0	19.48	19.49	19.50	20	0
3	64QAM	8	4	19.45	19.47	19.46		
3	64QAM	8	7	19.46	19.50	19.43		
3	64QAM	15	0	19.44	19.46	19.44		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	19.21	19.36	19.33	20	0
1.4	QPSK	1	3	19.26	19.48	19.40		
1.4	QPSK	1	5	19.19	19.39	19.29		
1.4	QPSK	3	0	19.22	19.41	19.34		
1.4	QPSK	3	1	19.27	19.46	19.38		
1.4	QPSK	3	3	19.21	19.44	19.36		
1.4	QPSK	6	0	19.22	19.43	19.36	20	0
1.4	16QAM	1	0	19.56	19.80	19.79	20	0
1.4	16QAM	1	3	19.66	19.85	19.85		
1.4	16QAM	1	5	19.53	19.81	19.72		
1.4	16QAM	3	0	19.36	19.59	19.50		
1.4	16QAM	3	1	19.38	19.63	19.54		
1.4	16QAM	3	3	19.35	19.57	19.55		
1.4	16QAM	6	0	19.43	19.64	19.57	20	0
1.4	64QAM	1	0	19.49	19.52	19.48	20	0
1.4	64QAM	1	3	19.65	19.66	19.62		
1.4	64QAM	1	5	19.66	19.68	19.70		
1.4	64QAM	3	0	19.43	19.44	19.40		
1.4	64QAM	3	1	19.42	19.45	19.43		
1.4	64QAM	3	3	19.41	19.46	19.42		
1.4	64QAM	6	0	19.40	19.43	19.39	20	0

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	20.86	20.55	20.63	21	0
20	QPSK	1	49	20.59	20.59	20.65		
20	QPSK	1	99	20.66	20.63	20.67		
20	QPSK	50	0	20.35	20.33	20.32	21	0
20	QPSK	50	24	20.33	20.50	20.37		
20	QPSK	50	50	20.31	20.24	20.36		
20	QPSK	100	0	20.29	20.43	20.39		
20	16QAM	1	0	20.81	20.76	20.82	21	0
20	16QAM	1	49	20.56	20.45	20.77		
20	16QAM	1	99	20.76	20.57	20.77		
20	16QAM	50	0	20.46	20.44	20.54	21	0
20	16QAM	50	24	20.40	20.46	20.51		
20	16QAM	50	50	20.40	20.38	20.46		
20	16QAM	100	0	20.49	20.42	20.48		
20	64QAM	1	0	20.62	20.56	20.58	21	0
20	64QAM	1	49	20.45	20.35	20.42		
20	64QAM	1	99	20.36	20.25	20.30		
20	64QAM	50	0	20.39	20.32	20.37	21	0
20	64QAM	50	24	20.41	20.33	20.32		
20	64QAM	50	50	20.30	20.29	20.28		
20	64QAM	100	0	20.35	20.30	20.26		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	20.55	20.42	20.22	21	0
15	QPSK	1	37	20.33	20.27	20.36		
15	QPSK	1	74	20.39	20.06	20.37		
15	QPSK	36	0	20.45	20.24	20.40	21	0
15	QPSK	36	20	20.36	20.30	20.44		
15	QPSK	36	39	20.28	20.21	20.35		
15	QPSK	75	0	20.32	20.22	20.36		
15	16QAM	1	0	20.78	20.80	20.85	21	0
15	16QAM	1	37	20.65	20.82	20.79		
15	16QAM	1	74	20.69	20.68	20.76		
15	16QAM	36	0	20.44	20.47	20.51	21	0
15	16QAM	36	20	20.54	20.41	20.56		
15	16QAM	36	39	20.44	20.46	20.54		
15	16QAM	75	0	20.45	20.42	20.55		
15	64QAM	1	0	20.55	20.51	20.56	21	0
15	64QAM	1	37	20.46	20.40	20.41		
15	64QAM	1	74	20.25	20.19	20.22		
15	64QAM	36	0	20.36	20.31	20.35	21	0
15	64QAM	36	20	20.33	20.36	20.39		
15	64QAM	36	39	20.30	20.32	20.33		
15	64QAM	75	0	20.34	20.31	20.29		

Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	20.55	20.35	20.44	21	0
10	QPSK	1	25	20.52	20.36	20.44		
10	QPSK	1	49	20.30	20.21	20.48		
10	QPSK	25	0	20.37	20.36	20.46	21	0
10	QPSK	25	12	20.42	20.37	20.44		
10	QPSK	25	25	20.37	20.29	20.33		
10	QPSK	50	0	20.30	20.31	20.38		
10	16QAM	1	0	20.77	20.52	20.70	21	0
10	16QAM	1	25	20.70	20.50	20.69		
10	16QAM	1	49	20.59	20.55	20.74		
10	16QAM	25	0	20.55	20.54	20.61	21	0
10	16QAM	25	12	20.59	20.52	20.68		
10	16QAM	25	25	20.51	20.47	20.56		
10	16QAM	50	0	20.42	20.42	20.44		
10	64QAM	1	0	20.39	20.36	20.33	21	0
10	64QAM	1	25	20.47	20.48	20.46		
10	64QAM	1	49	20.34	20.31	20.35		
10	64QAM	25	0	20.33	20.29	20.31	21	0
10	64QAM	25	12	20.31	20.29	20.33		
10	64QAM	25	25	20.29	20.24	20.26		
10	64QAM	50	0	20.36	20.31	20.32		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	20.44	20.17	20.36	21	0
5	QPSK	1	12	20.31	20.26	20.44		
5	QPSK	1	24	20.37	20.19	20.42		
5	QPSK	12	0	20.33	20.21	20.41	21	0
5	QPSK	12	7	20.36	20.31	20.50		
5	QPSK	12	13	20.33	20.27	20.48		
5	QPSK	25	0	20.31	20.30	20.36		
5	16QAM	1	0	20.79	20.50	20.73	21	0
5	16QAM	1	12	20.74	20.64	20.84		
5	16QAM	1	24	20.81	20.54	20.76		
5	16QAM	12	0	20.52	20.29	20.48	21	0
5	16QAM	12	7	20.56	20.44	20.65		
5	16QAM	12	13	20.47	20.39	20.56		
5	16QAM	25	0	20.48	20.41	20.51		
5	64QAM	1	0	20.31	20.27	20.26	21	0
5	64QAM	1	12	20.43	20.41	20.45		
5	64QAM	1	24	20.35	20.31	20.37		
5	64QAM	12	0	20.29	20.26	20.28	21	0
5	64QAM	12	7	20.36	20.37	20.41		
5	64QAM	12	13	20.34	20.33	20.36		
5	64QAM	25	0	20.28	20.25	20.26		

Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	20.44	20.17	20.43	21	0
3	QPSK	1	8	20.30	20.21	20.43		
3	QPSK	1	14	20.29	20.21	20.39		
3	QPSK	8	0	20.38	20.28	20.43	21	0
3	QPSK	8	4	20.38	20.30	20.51		
3	QPSK	8	7	20.35	20.26	20.44		
3	QPSK	15	0	20.32	20.30	20.48		
3	16QAM	1	0	20.85	20.51	20.78	21	0
3	16QAM	1	8	20.77	20.62	20.80		
3	16QAM	1	14	20.76	20.60	20.78		
3	16QAM	8	0	20.57	20.43	20.61	21	0
3	16QAM	8	4	20.61	20.46	20.64		
3	16QAM	8	7	20.53	20.41	20.63		
3	16QAM	15	0	20.49	20.42	20.58		
3	64QAM	1	0	20.39	20.31	20.30	21	0
3	64QAM	1	8	20.29	20.27	20.24		
3	64QAM	1	14	20.22	20.25	20.22		
3	64QAM	8	0	20.41	20.38	20.41	21	0
3	64QAM	8	4	20.35	20.30	20.31		
3	64QAM	8	7	20.33	20.31	20.29		
3	64QAM	15	0	20.25	20.27	20.26		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	20.35	20.08	20.37	21	0
1.4	QPSK	1	3	20.42	20.23	20.45		
1.4	QPSK	1	5	20.36	20.16	20.35		
1.4	QPSK	3	0	20.41	20.13	20.43		
1.4	QPSK	3	1	20.44	20.24	20.46		
1.4	QPSK	3	3	20.40	20.20	20.41		
1.4	QPSK	6	0	20.40	20.25	20.39	21	0
1.4	16QAM	1	0	20.77	20.45	20.74	21	0
1.4	16QAM	1	3	20.84	20.60	20.82		
1.4	16QAM	1	5	20.78	20.49	20.75		
1.4	16QAM	3	0	20.57	20.27	20.52		
1.4	16QAM	3	1	20.63	20.39	20.56		
1.4	16QAM	3	3	20.54	20.32	20.53		
1.4	16QAM	6	0	20.61	20.40	20.61	21	0
1.4	64QAM	1	0	20.35	20.30	20.33	21	0
1.4	64QAM	1	3	20.31	20.29	20.39		
1.4	64QAM	1	5	20.41	20.37	20.26		
1.4	64QAM	3	0	20.29	20.28	20.25		
1.4	64QAM	3	1	20.33	20.30	20.24		
1.4	64QAM	3	3	20.26	20.25	20.22		
1.4	64QAM	6	0	20.28	20.27	20.24	21	0

<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	21.63	21.69	21.80	22.5	0
20	QPSK	1	49	21.54	21.70	21.62		
20	QPSK	1	99	21.71	21.71	21.97		
20	QPSK	50	0	21.79	21.80	21.74	22.5	0
20	QPSK	50	24	21.74	21.81	21.82		
20	QPSK	50	50	21.77	21.81	21.81		
20	QPSK	100	0	21.80	21.78	21.81		
20	16QAM	1	0	21.87	21.90	21.92	22.5	0
20	16QAM	1	49	21.80	21.86	21.96		
20	16QAM	1	99	21.95	21.96	21.89		
20	16QAM	50	0	21.31	21.31	21.26	22.5	0
20	16QAM	50	24	21.39	21.42	21.31		
20	16QAM	50	50	21.34	21.36	21.32		
20	16QAM	100	0	21.34	21.36	21.29		
20	64QAM	1	0	21.23	21.13	21.22	22	0.5
20	64QAM	1	49	21.31	21.26	21.24		
20	64QAM	1	99	21.28	21.24	21.20		
20	64QAM	50	0	20.16	20.17	20.16	21	1.5
20	64QAM	50	24	20.30	20.21	20.27		
20	64QAM	50	50	20.33	20.26	20.35		
20	64QAM	100	0	20.25	20.21	20.30		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	21.70	21.66	21.85	22.5	0
15	QPSK	1	37	21.63	21.64	21.72		
15	QPSK	1	74	21.75	21.76	21.74		
15	QPSK	36	0	21.69	21.71	21.61	22.5	0
15	QPSK	36	20	21.59	21.74	21.69		
15	QPSK	36	39	21.74	21.69	21.63		
15	QPSK	75	0	21.71	21.69	21.68		
15	16QAM	1	0	21.95	21.94	21.95	22.5	0
15	16QAM	1	37	21.94	21.95	21.90		
15	16QAM	1	74	21.95	21.90	21.90		
15	16QAM	36	0	21.27	21.24	21.22	22.5	0
15	16QAM	36	20	21.19	21.29	21.24		
15	16QAM	36	39	21.33	21.27	21.25		
15	16QAM	75	0	21.31	21.21	21.22		
15	64QAM	1	0	21.15	21.10	21.15	22	0.5
15	64QAM	1	37	21.26	21.21	21.28		
15	64QAM	1	74	21.31	21.27	21.30		
15	64QAM	36	0	20.24	20.16	20.22	21	1.5
15	64QAM	36	20	20.16	20.18	20.16		
15	64QAM	36	39	20.19	20.21	20.27		
15	64QAM	75	0	20.15	20.13	20.16		

Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	21.70	21.72	21.70	22.5	0
10	QPSK	1	25	21.64	21.71	21.74		
10	QPSK	1	49	21.64	21.75	21.81		
10	QPSK	25	0	21.72	21.67	21.72	22.5	0
10	QPSK	25	12	21.65	21.65	21.71		
10	QPSK	25	25	21.60	21.71	21.82		
10	QPSK	50	0	21.69	21.67	21.68		
10	16QAM	1	0	21.79	21.80	21.59	22.5	0
10	16QAM	1	25	21.76	21.74	21.73		
10	16QAM	1	49	21.57	21.87	21.96		
10	16QAM	25	0	21.23	21.27	21.27	22.5	0
10	16QAM	25	12	21.27	21.35	21.26		
10	16QAM	25	25	21.25	21.25	21.46		
10	16QAM	50	0	21.21	21.28	21.22		
10	64QAM	1	0	21.15	21.05	21.16	22	0.5
10	64QAM	1	25	21.26	21.24	21.30		
10	64QAM	1	49	21.22	21.24	21.33		
10	64QAM	25	0	20.13	20.10	20.18	21	1.5
10	64QAM	25	12	20.21	20.15	20.17		
10	64QAM	25	25	20.22	20.16	20.20		
10	64QAM	50	0	20.17	20.13	20.18		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	21.69	21.53	21.73	22.5	0
5	QPSK	1	12	21.57	21.56	21.76		
5	QPSK	1	24	21.48	21.61	21.89		
5	QPSK	12	0	21.70	21.65	21.76	22.5	0
5	QPSK	12	7	21.80	21.69	21.81		
5	QPSK	12	13	21.64	21.67	21.79		
5	QPSK	25	0	21.66	21.69	21.75		
5	16QAM	1	0	21.84	21.91	21.64	22.5	0
5	16QAM	1	12	21.73	21.61	21.80		
5	16QAM	1	24	21.74	21.66	21.74		
5	16QAM	12	0	21.23	21.22	21.35	22.5	0
5	16QAM	12	7	21.25	21.29	21.40		
5	16QAM	12	13	21.18	21.25	21.37		
5	16QAM	25	0	21.22	21.24	21.33		
5	64QAM	1	0	21.16	21.12	21.16	22	0.5
5	64QAM	1	12	21.25	21.22	21.25		
5	64QAM	1	24	21.29	21.17	21.20		
5	64QAM	12	0	20.20	20.14	20.19	21	1.5
5	64QAM	12	7	20.22	20.17	20.22		
5	64QAM	12	13	20.23	20.19	20.18		
5	64QAM	25	0	20.16	20.12	20.10		

<WLAN Conducted Power>

General Note:

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

<Full Power Mode>

<2.4GHz WLAN>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	19.35	19.50	100.00
		6	2437	18.64	19.50	
		11	2462	19.47	19.50	
	802.11g 6Mbps	1	2412	17.94	18.50	94.35
		6	2437	17.33	18.50	
		11	2462	16.24	17.00	
	802.11n-HT20 MCS0	1	2412	16.81	18.00	95.00
		6	2437	16.23	18.00	
		11	2462	15.15	17.00	

<5GHz WLAN>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	15.75	16.50	95.54
		40	5200	15.66	16.50	
		44	5220	15.77	16.50	
		48	5240	15.98	16.50	
	802.11n-HT20 MCS0	36	5180	15.65	16.00	94.20
		40	5200	15.60	16.00	
		44	5220	15.80	16.00	
		48	5240	15.86	16.00	
	802.11n-HT40 MCS0	38	5190	13.03	13.50	90.10
		46	5230	13.26	13.50	
	802.11ac-VHT20 MCS0	36	5180	15.62	16.00	95.47
		40	5200	15.58	16.00	
		44	5220	15.79	16.00	
		48	5240	15.81	16.00	
	802.11ac-VHT40 MCS0	38	5190	12.91	13.50	91.14
		46	5230	13.22	13.50	
	802.11ac-VHT80 MCS0	42	5210	11.79	12.00	84.21

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	15.89	16.50	95.54
		56	5280	15.34	16.50	
		60	5300	15.62	16.50	
		64	5320	15.56	16.50	
	802.11n-HT20 MCS0	52	5260	15.81	16.00	94.20
		56	5280	15.48	16.00	
		60	5300	15.65	16.00	
		64	5320	15.64	16.00	
	802.11n-HT40 MCS0	54	5270	13.12	13.50	90.10
		62	5310	12.92	13.50	
	802.11ac-VHT20 MCS0	52	5260	15.71	16.00	95.47
		56	5280	15.44	16.00	
		60	5300	15.62	16.00	
		64	5320	15.63	16.00	
	802.11ac-VHT40 MCS0	54	5270	13.09	13.50	91.14
		62	5310	12.89	13.50	
	802.11ac-VHT80 MCS0	58	5290	10.92	12.00	84.21

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	16.06	16.50	95.54
		116	5580	15.55	16.50	
		124	5620	15.18	16.50	
		132	5660	15.46	16.50	
		140	5700	15.02	16.50	
	802.11n-HT20 MCS0	100	5500	15.97	16.00	94.20
		116	5580	15.77	16.00	
		124	5620	15.04	16.00	
		132	5660	15.17	16.00	
		140	5700	14.75	16.00	
	802.11n-HT40 MCS0	102	5510	13.14	13.50	90.10
		110	5550	13.11	13.50	
		126	5630	12.82	13.50	
		134	5670	12.43	13.50	
	802.11ac-VHT20 MCS0	100	5500	15.95	16.00	95.47
		116	5580	15.75	16.00	
		124	5620	15.02	16.00	
		132	5660	15.13	16.00	
		140	5700	14.74	16.00	
	802.11ac-VHT40 MCS0	102	5510	11.34	12.00	91.14
		110	5550	11.22	12.00	
		126	5630	10.71	12.00	
		134	5670	10.61	12.00	
	802.11ac-VHT80 MCS0	106	5530	8.84	10.00	84.21
		122	5610	12.41	13.00	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	15.02	15.50	95.54
		157	5785	14.78	15.50	
		165	5825	14.85	15.50	
	802.11n-HT20 MCS0	149	5745	13.61	14.50	94.20
		157	5785	13.47	14.50	
		165	5825	13.65	14.50	
	802.11n-HT40 MCS0	151	5755	13.17	13.50	90.10
		159	5795	13.14	13.50	
	802.11ac-VHT20 MCS0	149	5745	14.79	15.00	95.47
		157	5785	14.71	15.00	
		165	5825	14.89	15.00	
	802.11ac-VHT40 MCS0	151	5755	13.08	13.50	91.14
		159	5795	13.09	13.50	
	802.11ac-VHT80 MCS0	155	5775	11.77	12.00	84.21

<Reduced Power Mode for Receiver On>

<2.4GHz WLAN>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	16.95	17.50	100.00
		6	2437	16.54	17.50	
		11	2462	17.33	17.50	
	802.11g 6Mbps	1	2412	16.72	17.00	94.35
		6	2437	16.29	17.00	
		11	2462	16.24	17.00	
	802.11n-HT20 MCS0	1	2412	16.81	17.00	95.00
		6	2437	16.23	17.00	
		11	2462	15.15	17.00	

<5GHz WLAN>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	12.52	13.00	95.54
		40	5200	12.36	13.00	
		44	5220	12.47	13.00	
		48	5240	12.67	13.00	
	802.11n-HT20 MCS0	36	5180	11.54	12.00	94.20
		40	5200	11.31	12.00	
		44	5220	11.47	12.00	
		48	5240	11.68	12.00	
	802.11n-HT40 MCS0	38	5190	11.47	12.00	90.10
		46	5230	11.62	12.00	
	802.11ac-VHT20 MCS0	36	5180	11.46	12.00	95.47
		40	5200	11.28	12.00	
		44	5220	11.43	12.00	
		48	5240	11.64	12.00	
	802.11ac-VHT40 MCS0	38	5190	11.34	12.00	91.14
		46	5230	11.51	12.00	
	802.11ac-VHT80 MCS0	42	5210	11.79	12.00	84.21

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	12.58	13.00	95.54
		56	5280	12.27	13.00	
		60	5300	12.13	13.00	
		64	5320	12.69	13.00	
	802.11n-HT20 MCS0	52	5260	11.57	12.00	94.20
		56	5280	11.30	12.00	
		60	5300	11.12	12.00	
		64	5320	11.73	12.00	
	802.11n-HT40 MCS0	54	5270	11.66	12.00	90.10
		62	5310	11.41	12.00	
	802.11ac-VHT20 MCS0	52	5260	11.52	12.00	95.47
		56	5280	11.23	12.00	
		60	5300	11.08	12.00	
		64	5320	11.67	12.00	
	802.11ac-VHT40 MCS0	54	5270	11.53	12.00	91.14
		62	5310	11.29	12.00	
	802.11ac-VHT80 MCS0	58	5290	10.92	12.00	84.21

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	13.25	13.50	95.54
		116	5580	12.99	13.50	
		124	5620	12.38	13.50	
		132	5660	12.78	13.50	
		140	5700	12.54	13.50	
	802.11n-HT20 MCS0	100	5500	12.28	12.50	94.20
		116	5580	11.99	12.50	
		124	5620	11.33	12.50	
		132	5660	11.72	12.50	
		140	5700	11.57	12.50	
	802.11n-HT40 MCS0	102	5510	12.10	12.50	90.10
		110	5550	11.98	12.50	
		126	5630	11.62	12.50	
		134	5670	11.56	12.50	
	802.11ac-VHT20 MCS0	100	5500	12.24	12.50	95.47
		116	5580	11.91	12.50	
		124	5620	11.21	12.50	
		132	5660	11.63	12.50	
		140	5700	11.51	12.50	
	802.11ac-VHT40 MCS0	102	5510	11.34	12.00	91.14
		110	5550	11.22	12.00	
		126	5630	10.71	12.00	
		134	5670	10.61	12.00	
	802.11ac-VHT840 MCS0	106	5530	8.84	10.00	84.21
		122	5610	12.41	13.00	

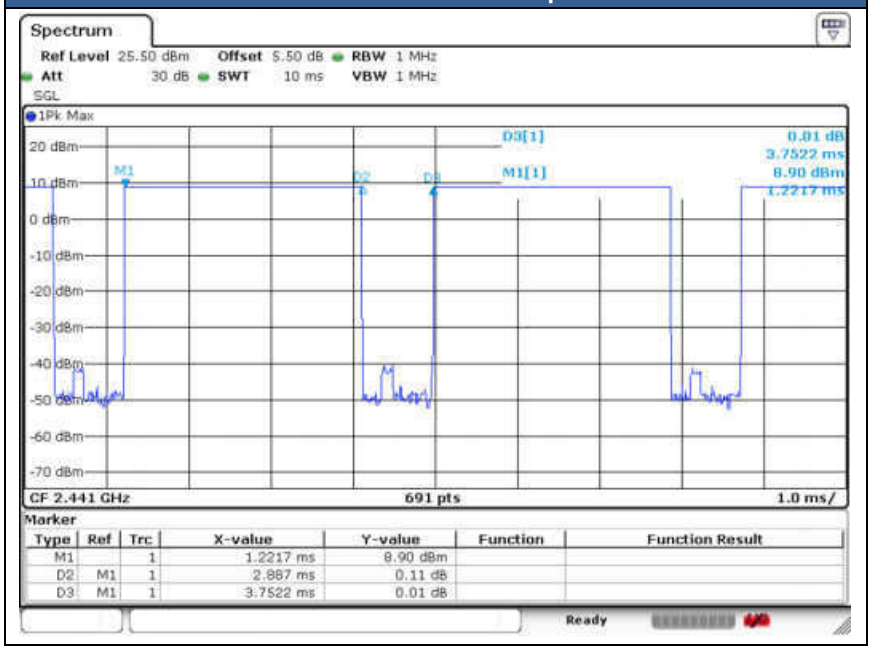
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	11.88	12.50	95.54
		157	5785	11.81	12.50	
		165	5825	11.79	12.50	
	802.11n-HT20 MCS0	149	5745	10.81	11.50	94.20
		157	5785	10.78	11.50	
		165	5825	10.70	11.50	
	802.11n-HT40 MCS0	151	5755	10.82	11.50	90.10
		159	5795	10.91	11.50	
	802.11ac-VHT20 MCS0	149	5745	10.75	11.50	95.47
		157	5785	10.67	11.50	
		165	5825	10.62	11.50	
	802.11ac-VHT40 MCS0	151	5755	10.71	11.50	91.14
		159	5795	10.86	11.50	
	802.11ac-VHT80 MCS0	155	5775	11.77	12.00	84.21

<2.4GHz Bluetooth>

General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The Bluetooth duty cycle is 76.94 % as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the theoretical duty cycle is 83.3%, therefore the actual duty cycle will be scaled up to the theoretical value of Bluetooth reported SAR calculation

Bluetooth time-domain plot

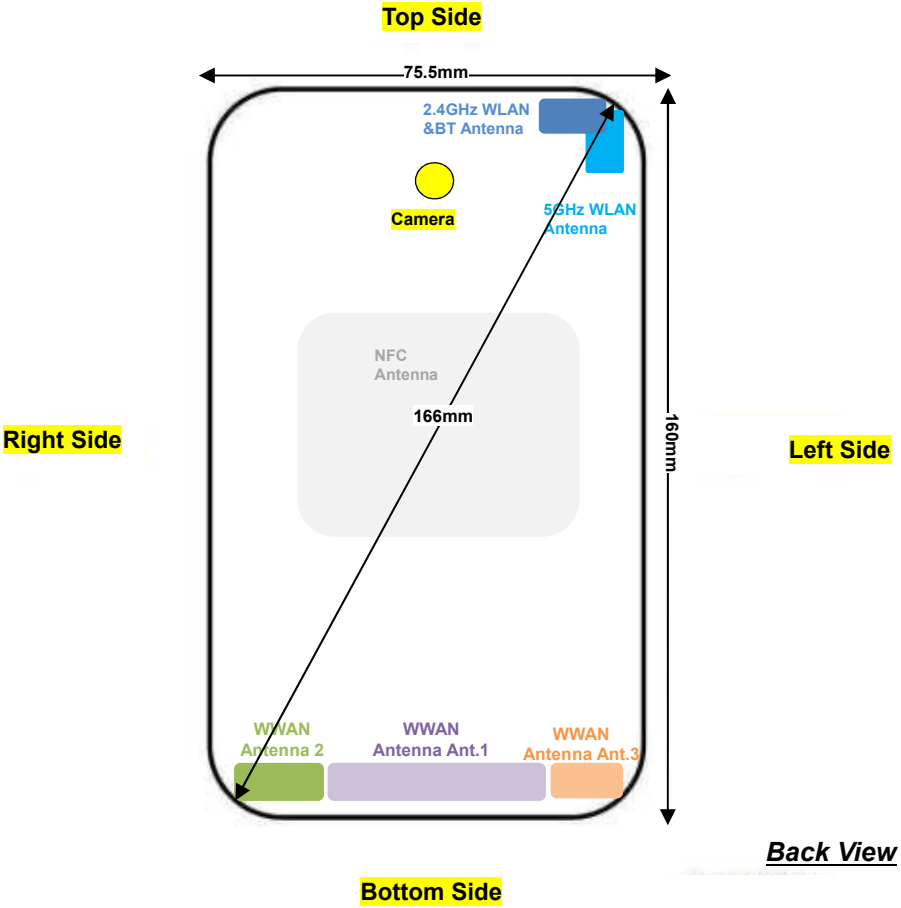


Mode	Channel	Frequency (MHz)	Average power (dBm)
			1Mbps
v3.0 with EDR	CH 00	2402	10.62
	CH 39	2441	9.62
	CH 78	2480	10.26
Tune-up limit (dBm)			12.00

Mode	Channel	Frequency (MHz)	Average power (dBm)
			GFSK
v4.0/4.1/4.2 with LE	CH 00	2402	-0.76
	CH 19	2440	-1.71
	CH 39	2480	0.59
Tune-up Limit			1.00

Mode	Channel	Frequency (MHz)	Average power (dBm)
			GFSK
v5.0 with LE	CH 00	2402	-0.71
	CH 19	2440	-1.48
	CH 39	2480	0.48
Tune-up Limit			1.00

13. Antenna Location



Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Antenna 1	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	≤ 25mm
WWAN Antenna 2	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	>25mm
WWAN Antenna 3	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm	≤ 25mm
2.4GHz WLAN & BT	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	>25mm	≤ 25mm
5GHz WLAN	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	>25mm	≤ 25mm

Positions for SAR tests; Hotspot mode						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Antenna 1	Yes	Yes	No	Yes	Yes	Yes
WWAN Antenna 2	Yes	Yes	No	Yes	Yes	No
WWAN Antenna 3	Yes	Yes	No	Yes	No	Yes
2.4GHz WLAN & BT	Yes	Yes	Yes	No	No	Yes
5GHz WLAN	Yes	Yes	Yes	No	No	Yes

General Note:

1. This device has three WWAN transmitter antennas. WWAN antenna 1 is located at the middle of bottom edge of the device, WWAN antenna 2 is located at the left side of bottom edge of the device, and WWAN antenna 3 is located at the right side of bottom edge of the device which can refer to antenna location chapter. WWAN antenna 1 frequency bands include GSM850/1900, WCDMA Band II/IV/V, LTE Band 2/4/5/12/17, WWAN antenna 2 frequency band only includes LTE Band 7 and WWAN antenna 3 frequency band also only includes LTE Band 7.
2. The device is capable of switching between the WWAN antenna 2 and WWAN antenna 3 based on signal strength. When WWAN antenna 2 acted as a transmitter, then WWAN antenna 3 acted as a receiver. The same as the reversed.
3. 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 BT/WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥ 0.8W/kg. 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. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.
5. When the phone is in talking mode and receiver worked, then power reduction will be implemented immediately at WLAN2.4/5.2/5.3/5.5/5.8GHz.
6. The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device. When front or back body worn condition is detected, GSM1900, WCDMA band II/IV and LTE band 2/4/7 reduced power will be active. (P-sensor can't work at detecting presence of the user's body at the four edges of the device.)
7. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of GSM1900, WCDMA band II/IV and LTE band 2/4/7.
8. This device hotspot reduced power and P-sensor reduced power level are the same. So only show one reduced power level for hotspot reduced power and P-sensor reduced power for this application.
9. P-sensor can detect handheld state, for front/back/bottom sides of product specific 10g SAR condition, GSM1900, WCDMA band II/IV and LTE band 2/4/7 reduced powers will be active.
10. This device has three WWAN transmitter antennas. WWAN antenna 1 is located at the middle of bottom edge of the device, WWAN antenna 2 is located at the left side of bottom edge of the device, and WWAN antenna 3 is located at the right side of bottom edge of the device which can refer to antenna location chapter. WWAN antenna 1 frequency bands include GSM850/1900, WCDMA Band II/IV/V, LTE Band 2/4/5/12/17, WWAN antenna 2 frequency band only includes LTE Band 7 and WWAN antenna 3 frequency band also only includes LTE Band 7.
11. The device is capable of switching between the WWAN antenna 2 and WWAN antenna 3 based on signal strength. When WWAN antenna 2 acted as a transmitter, then WWAN antenna 3 acted as a receiver. The same as the reversed.
12. 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 extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.
    a. For this device SAR for WWAN transmitter scaled to reduced power mode for product specific 10g SAR is higher than 1.2W/kg of GSM1900, WCDMA Band II/IV, LTE Band 2/4/7, therefore product specific 10g SAR is necessary.
    b. WLAN 5.3/5.5GHz tested the product specific 10g SAR since it has no hotspot mode.
    c. When 10-g product specific 10g SAR is considered, SAR thresholds is specified in the procedures for SAR test reduction and exclusion should be multiplied by 2.5.

GSM Note:

1. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS 4Tx slots for GSM850/GSM1900 are considered as the primary mode.
2. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode.
3. Power reduction which is triggered by hotspot mode/P-Sensor is implemented in GSM1900 band, for SAR testing EUT was set in reduced power mode and GPRS 4 Tx slots due to its highest frame-average power.
4. When the phone is in talking mode and receiver worked, receiver on power will be implemented immediately in GSM1900 band, for SAR testing EUT was set in reduced on mode and GPRS 4 Tx slots due to its highest frame-average power.
5. Power reduction which is triggered by hotspot mode/p-sensor/receiver on/p-sensor detects handheld state for product specific 10g SAR condition are implemented in GSM1900 band, for SAR testing EUT was set in reduced power mode and GPRS 4 Tx slots due to its highest frame-average power.

WCDMA 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 / HSPA+ 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 / HSPA+ to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA / HSPA+) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+.

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM/64QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / B5 / B12 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 B17 SAR test was covered by B12; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. The maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion.
   b. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.

WLAN Note:

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

14.1 Head SAR

<GSM SAR>

Plot No.	Ant.	Band	Mode	Test Position	Power Mode	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)
	1	GSM850	GPRS 4 Tx slots	Right Cheek	Receiver On	251	848.8	28.18	28.50	1.076	0.01	0.136	0.146
	1	GSM850	GPRS 4 Tx slots	Right Tilted	Receiver On	251	848.8	28.18	28.50	1.076	0.09	0.093	0.100
01	1	GSM850	GPRS 4 Tx slots	Left Cheek	Receiver On	251	848.8	28.18	28.50	1.076	0.06	0.179	**0.193**
	1	GSM850	GPRS 4 Tx slots	Left Tilted	Receiver On	251	848.8	28.18	28.50	1.076	0.14	0.093	0.100
02	1	GSM1900	GPRS 4 Tx slots	Right Cheek	Receiver On	512	1850.2	25.48	26.00	1.127	0.16	0.154	**0.174**
	1	GSM1900	GPRS 4 Tx slots	Right Tilted	Receiver On	512	1850.2	25.48	26.00	1.127	0.13	0.070	0.079
	1	GSM1900	GPRS 4 Tx slots	Left Cheek	Receiver On	512	1850.2	25.48	26.00	1.127	0.11	0.108	0.122
	1	GSM1900	GPRS 4 Tx slots	Left Tilted	Receiver On	512	1850.2	25.48	26.00	1.127	0.01	0.078	0.088

<WCDMA SAR>

Plot No.	Ant.	Band	Mode	Test Position	Power Mode	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)
	1	WCDMA Band V	RMC 12.2Kbps	Right Cheek	Receiver On	4233	846.6	22.94	24.00	1.276	0.11	0.143	0.183
	1	WCDMA Band V	RMC 12.2Kbps	Right Tilted	Receiver On	4233	846.6	22.94	24.00	1.276	0.01	0.094	0.120
03	1	WCDMA Band V	RMC 12.2Kbps	Left Cheek	Receiver On	4233	846.6	22.94	24.00	1.276	0.08	0.214	**0.273**
	1	WCDMA Band V	RMC 12.2Kbps	Left Tilted	Receiver On	4233	846.6	22.94	24.00	1.276	0.17	0.090	0.115
04	1	WCDMA Band IV	RMC 12.2Kbps	Right Cheek	Receiver On	1513	1752.6	22.99	24.00	1.262	0.17	0.280	**0.353**
	1	WCDMA Band IV	RMC 12.2Kbps	Right Tilted	Receiver On	1513	1752.6	22.99	24.00	1.262	0.11	0.090	0.114
	1	WCDMA Band IV	RMC 12.2Kbps	Left Cheek	Receiver On	1513	1752.6	22.99	24.00	1.262	0.13	0.164	0.207
	1	WCDMA Band IV	RMC 12.2Kbps	Left Tilted	Receiver On	1513	1752.6	22.99	24.00	1.262	0.11	0.109	0.138
05	1	WCDMA Band II	RMC 12.2Kbps	Right Cheek	Receiver On	9538	1907.6	22.84	24.00	1.306	0.04	0.138	**0.180**
	1	WCDMA Band II	RMC 12.2Kbps	Right Tilted	Receiver On	9538	1907.6	22.84	24.00	1.306	0.17	0.067	0.088
	1	WCDMA Band II	RMC 12.2Kbps	Left Cheek	Receiver On	9538	1907.6	22.84	24.00	1.306	0.17	0.135	0.176
	1	WCDMA Band II	RMC 12.2Kbps	Left Tilted	Receiver On	9538	1907.6	22.84	24.00	1.306	0.07	0.086	0.112

<LTE SAR>

Plot No.	Ant.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Power Mode	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)
	1	LTE Band 12	10M	QPSK	1	49	Right Cheek	Receiver On	23095	707.5	23.31	24.00	1.172	0.02	0.088	0.103
	1	LTE Band 12	10M	QPSK	25	25	Right Cheek	Receiver On	23095	707.5	22.32	23.00	1.169	0.02	0.047	0.055
	1	LTE Band 12	10M	QPSK	1	49	Right Tilted	Receiver On	23095	707.5	23.31	24.00	1.172	0.06	0.051	0.060
	1	LTE Band 12	10M	QPSK	25	25	Right Tilted	Receiver On	23095	707.5	22.32	23.00	1.169	0.03	0.026	0.030
06	1	LTE Band 12	10M	QPSK	1	49	Left Cheek	Receiver On	23095	707.5	23.31	24.00	1.172	0.03	0.203	**0.238**
	1	LTE Band 12	10M	QPSK	25	25	Left Cheek	Receiver On	23095	707.5	22.32	23.00	1.169	0.01	0.114	0.133
	1	LTE Band 12	10M	QPSK	1	49	Left Tilted	Receiver On	23095	707.5	23.31	24.00	1.172	0.07	0.052	0.061
	1	LTE Band 12	10M	QPSK	25	25	Left Tilted	Receiver On	23095	707.5	22.32	23.00	1.169	0.08	0.027	0.032
	1	LTE Band 5	10M	QPSK	1	0	Right Cheek	Receiver On	20525	836.5	23.31	24.00	1.172	0.08	0.186	0.218
	1	LTE Band 5	10M	QPSK	25	0	Right Cheek	Receiver On	20525	836.5	22.41	23.00	1.146	0.1	0.101	0.116
	1	LTE Band 5	10M	QPSK	1	0	Right Tilted	Receiver On	20525	836.5	23.31	24.00	1.172	0.18	0.100	0.117
	1	LTE Band 5	10M	QPSK	25	0	Right Tilted	Receiver On	20525	836.5	22.41	23.00	1.146	0.03	0.055	0.063
07	1	LTE Band 5	10M	QPSK	1	0	Left Cheek	Receiver On	20525	836.5	23.31	24.00	1.172	0.09	0.208	**0.244**
	1	LTE Band 5	10M	QPSK	25	0	Left Cheek	Receiver On	20525	836.5	22.41	23.00	1.146	0.05	0.123	0.141
	1	LTE Band 5	10M	QPSK	1	0	Left Tilted	Receiver On	20525	836.5	23.31	24.00	1.172	0.01	0.096	0.113
	1	LTE Band 5	10M	QPSK	25	0	Left Tilted	Receiver On	20525	836.5	22.41	23.00	1.146	0.02	0.050	0.057
08	1	LTE Band 4	20M	QPSK	1	0	Right Cheek	Receiver On	20175	1732.5	23.19	24.00	1.205	0.15	0.226	**0.272**
	1	LTE Band 4	20M	QPSK	50	0	Right Cheek	Receiver On	20175	1732.5	22.32	23.00	1.169	0.12	0.133	0.156
	1	LTE Band 4	20M	QPSK	1	0	Right Tilted	Receiver On	20175	1732.5	23.19	24.00	1.205	-0.1	0.081	0.098
	1	LTE Band 4	20M	QPSK	50	0	Right Tilted	Receiver On	20175	1732.5	22.32	23.00	1.169	0.13	0.043	0.050
	1	LTE Band 4	20M	QPSK	1	0	Left Cheek	Receiver On	20175	1732.5	23.19	24.00	1.205	0.12	0.152	0.183
	1	LTE Band 4	20M	QPSK	50	0	Left Cheek	Receiver On	20175	1732.5	22.32	23.00	1.169	0.11	0.085	0.099
	1	LTE Band 4	20M	QPSK	1	0	Left Tilted	Receiver On	20175	1732.5	23.19	24.00	1.205	0.16	0.092	0.111
	1	LTE Band 4	20M	QPSK	50	0	Left Tilted	Receiver On	20175	1732.5	22.32	23.00	1.169	0.11	0.050	0.058
	1	LTE Band 2	20M	QPSK	1	0	Right Cheek	Receiver On	18900	1880	23.27	24.00	1.183	0.17	0.130	0.154
	1	LTE Band 2	20M	QPSK	50	24	Right Cheek	Receiver On	18900	1880	22.26	23.00	1.186	0.17	0.071	0.084
	1	LTE Band 2	20M	QPSK	1	0	Right Tilted	Receiver On	18900	1880	23.27	24.00	1.183	0.07	0.058	0.069
	1	LTE Band 2	20M	QPSK	50	24	Right Tilted	Receiver On	18900	1880	22.26	23.00	1.186	0.05	0.033	0.039
09	1	LTE Band 2	20M	QPSK	1	0	Left Cheek	Receiver On	18900	1880	23.27	24.00	1.183	0.07	0.133	**0.157**
	1	LTE Band 2	20M	QPSK	50	24	Left Cheek	Receiver On	18900	1880	22.26	23.00	1.186	0.17	0.075	0.089
	1	LTE Band 2	20M	QPSK	1	0	Left Tilted	Receiver On	18900	1880	23.27	24.00	1.183	0.18	0.073	0.086
	1	LTE Band 2	20M	QPSK	50	24	Left Tilted	Receiver On	18900	1880	22.26	23.00	1.186	0.1	0.039	0.046
	2	LTE Band 7	20M	QPSK	1	99	Right Cheek	Receiver On	21350	2560	22.45	24.00	1.429	0.07	0.425	0.607
	2	LTE Band 7	20M	QPSK	50	24	Right Cheek	Receiver On	21350	2560	22.18	23.00	1.208	0.04	0.272	0.329
	2	LTE Band 7	20M	QPSK	1	99	Right Tilted	Receiver On	21350	2560	22.45	24.00	1.429	0.02	0.128	0.183
	2	LTE Band 7	20M	QPSK	50	24	Right Tilted	Receiver On	21350	2560	22.18	23.00	1.208	-0.05	0.081	0.098
	2	LTE Band 7	20M	QPSK	1	99	Left Cheek	Receiver On	21350	2560	22.45	24.00	1.429	0.18	0.279	0.399
	2	LTE Band 7	20M	QPSK	50	24	Left Cheek	Receiver On	21350	2560	22.18	23.00	1.208	0.16	0.178	0.215
	2	LTE Band 7	20M	QPSK	1	99	Left Tilted	Receiver On	21350	2560	22.45	24.00	1.429	0.11	0.221	0.316
	2	LTE Band 7	20M	QPSK	50	24	Left Tilted	Receiver On	21350	2560	22.18	23.00	1.208	0.15	0.145	0.175
	3	LTE Band 7	20M	QPSK	1	99	Right Cheek	Receiver On	21350	2560	22.45	24.00	1.429	0.07	0.314	0.449
	3	LTE Band 7	20M	QPSK	50	24	Right Cheek	Receiver On	21350	2560	22.18	23.00	1.208	0.17	0.203	0.245
	3	LTE Band 7	20M	QPSK	1	99	Right Tilted	Receiver On	21350	2560	22.45	24.00	1.429	0.16	0.413	0.590
	3	LTE Band 7	20M	QPSK	50	24	Right Tilted	Receiver On	21350	2560	22.18	23.00	1.208	0.02	0.250	0.302
10	3	LTE Band 7	20M	QPSK	1	99	Left Cheek	Receiver On	21350	2560	22.45	24.00	1.429	0.01	0.497	**0.710**
	3	LTE Band 7	20M	QPSK	50	24	Left Cheek	Receiver On	21350	2560	22.18	23.00	1.208	0.06	0.320	0.387
	3	LTE Band 7	20M	QPSK	1	99	Left Tilted	Receiver On	21350	2560	22.45	24.00	1.429	0.05	0.212	0.303
	3	LTE Band 7	20M	QPSK	50	24	Left Tilted	Receiver On	21350	2560	22.18	23.00	1.208	0.08	0.133	0.161

<WLAN 2.4GHz SAR>

Plot No.	Band	Mode	Test Position	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Max Area Scan SAR	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
11	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	Receiver On	11	2462	17.33	17.50	1.040	100	1.000	0.02	2.2	0.991	**1.031**
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	Receiver On	11	2462	17.33	17.50	1.040	100	1.000	0.01	1.99	0.962	1.000
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	Receiver On	11	2462	17.33	17.50	1.040	100	1.000	0.01	0.888	0.493	0.513
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	Receiver On	11	2462	17.33	17.50	1.040	100	1.000		0.817		
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	Receiver On	1	2412	16.95	17.50	1.135	100	1.000	-0.01		0.840	0.953
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	Receiver On	1	2412	16.95	17.50	1.135	100	1.000	-0.01		0.812	0.922

<WLAN 5GHz SAR>

Plot No.	Band	Mode	Test Position	Power Mode	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)
	WLAN5.3GHz	802.11a 6Mbps	Right Cheek	Receiver On	64	5320	12.69	13.00	1.074	95.54	1.047	0.03	0.429	0.482
12	WLAN5.3GHz	802.11a 6Mbps	Right Tilted	Receiver On	64	5320	12.69	13.00	1.074	95.54	1.047	-0.05	0.694	**0.780**
	WLAN5.3GHz	802.11a 6Mbps	Left Cheek	Receiver On	64	5320	12.69	13.00	1.074	95.54	1.047	-0.07	0.250	0.281
	WLAN5.3GHz	802.11a 6Mbps	Left Tilted	Receiver On	64	5320	12.69	13.00	1.074	95.54	1.047	-0.02	0.244	0.274
	WLAN5.5GHz	802.11a 6Mbps	Right Cheek	Receiver On	100	5500	13.25	13.50	1.059	95.54	1.047	-0.04	0.280	0.311
13	WLAN5.5GHz	802.11a 6Mbps	Right Tilted	Receiver On	100	5500	13.25	13.50	1.059	95.54	1.047	-0.03	0.387	**0.429**
	WLAN5.5GHz	802.11a 6Mbps	Left Cheek	Receiver On	100	5500	13.25	13.50	1.059	95.54	1.047	-0.05	0.140	0.155
	WLAN5.5GHz	802.11a 6Mbps	Left Tilted	Receiver On	100	5500	13.25	13.50	1.059	95.54	1.047	-0.02	0.139	0.154
	WLAN 5.8GHz	802.11a 6Mbps	Right Cheek	Receiver On	149	5745	11.88	12.50	1.153	95.54	1.047	0.04	0.263	0.318
14	WLAN 5.8GHz	802.11a 6Mbps	Right Tilted	Receiver On	149	5745	11.88	12.50	1.153	95.54	1.047	-0.04	0.358	**0.432**
	WLAN 5.8GHz	802.11a 6Mbps	Left Cheek	Receiver On	149	5745	11.88	12.50	1.153	95.54	1.047	0.07	0.146	0.176
	WLAN 5.8GHz	802.11a 6Mbps	Left Tilted	Receiver On	149	5745	11.88	12.50	1.153	95.54	1.047	-0.05	0.159	0.192

14.2 Hotspot SAR

<GSM SAR>

Plot No.	Ant.	Band	Mode	Test Position	Gap (mm)	Power Mode	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)
	1	GSM850	GPRS 4 Tx slots	Front	5	Full	251	848.8	28.18	28.50	1.076	-0.09	0.735	0.791
	1	GSM850	GPRS 4 Tx slots	Back	5	Full	251	848.8	28.18	28.50	1.076	0.01	0.940	1.012
	1	GSM850	GPRS 4 Tx slots	Back	5	Full	128	824.2	27.40	28.50	1.288	0.03	0.874	1.126
15	1	GSM850	GPRS 4 Tx slots	Back	5	Full	189	836.4	27.81	28.50	1.172	0.06	0.963	**1.129**
	1	GSM850	GPRS 4 Tx slots	Left side	5	Full	251	848.8	28.18	28.50	1.076	0.08	0.405	0.436
	1	GSM850	GPRS 4 Tx slots	Right side	5	Full	251	848.8	28.18	28.50	1.076	0.05	0.189	0.203
	1	GSM850	GPRS 4 Tx slots	Bottom side	5	Full	251	848.8	28.18	28.50	1.076	0.06	0.527	0.567
	1	GSM1900	GPRS 4 Tx slots	Front	5	Hotspot On	512	1850.2	18.61	19.00	1.094	0.15	0.509	0.557
	1	GSM1900	GPRS 4 Tx slots	Back	5	Hotspot On	512	1850.2	18.61	19.00	1.094	0.11	0.473	0.517
	1	GSM1900	GPRS 4 Tx slots	Left side	5	Hotspot On	512	1850.2	18.61	19.00	1.094	0.08	0.022	0.024
	1	GSM1900	GPRS 4 Tx slots	Right side	5	Hotspot On	512	1850.2	18.61	19.00	1.094	0.14	0.035	0.038
16	1	GSM1900	GPRS 4 Tx slots	Bottom side	5	Hotspot On	512	1850.2	18.61	19.00	1.094	0.07	0.630	**0.689**

<WCDMA SAR>

Plot No.	Ant.	Band	Mode	Test Position	Gap (mm)	Power Mode	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)
	1	WCDMA Band V	RMC 12.2Kbps	Front	5	Full	4233	846.6	22.94	24.00	1.276	0.12	0.778	0.993
	1	WCDMA Band V	RMC 12.2Kbps	Front	5	Full	4132	826.4	22.89	24.00	1.291	-0.01	0.688	0.888
	1	WCDMA Band V	RMC 12.2Kbps	Front	5	Full	4182	836.4	22.84	24.00	1.306	0.09	0.783	1.023
17	1	WCDMA Band V	RMC 12.2Kbps	Back	5	Full	4233	846.6	22.94	24.00	1.276	-0.17	0.893	**1.140**
	1	WCDMA Band V	RMC 12.2Kbps	Back	5	Full	4132	826.4	22.89	24.00	1.291	-0.01	0.861	1.112
	1	WCDMA Band V	RMC 12.2Kbps	Back	5	Full	4182	836.4	22.84	24.00	1.306	0.1	0.821	1.072
	1	WCDMA Band V	RMC 12.2Kbps	Left side	5	Full	4233	846.6	22.94	24.00	1.276	0.01	0.388	0.495
	1	WCDMA Band V	RMC 12.2Kbps	Right side	5	Full	4233	846.6	22.94	24.00	1.276	0.06	0.154	0.197
	1	WCDMA Band V	RMC 12.2Kbps	Bottom side	5	Full	4233	846.6	22.94	24.00	1.276	0.14	0.540	0.689
	1	WCDMA Band IV	RMC 12.2Kbps	Front	5	Hotspot On	1513	1752.6	15.98	17.00	1.265	0.1	0.568	0.718
	1	WCDMA Band IV	RMC 12.2Kbps	Back	5	Hotspot On	1513	1752.6	15.98	17.00	1.265	0.12	0.575	0.727
	1	WCDMA Band IV	RMC 12.2Kbps	Left side	5	Hotspot On	1513	1752.6	15.98	17.00	1.265	0.14	0.038	0.048
	1	WCDMA Band IV	RMC 12.2Kbps	Right side	5	Hotspot On	1513	1752.6	15.98	17.00	1.265	0.02	0.065	0.082
18	1	WCDMA Band IV	RMC 12.2Kbps	Bottom side	5	Hotspot On	1513	1752.6	15.98	17.00	1.265	0.06	0.766	**0.969**
	1	WCDMA Band IV	RMC 12.2Kbps	Bottom side	5	Hotspot On	1312	1712.4	15.93	17.00	1.279	0.05	0.712	0.911
	1	WCDMA Band IV	RMC 12.2Kbps	Bottom side	5	Hotspot On	1413	1732.6	15.87	17.00	1.297	0.06	0.723	0.938
	1	WCDMA Band II	RMC 12.2Kbps	Front	5	Hotspot On	9538	1907.6	14.40	15.50	1.288	0.16	0.548	0.706
	1	WCDMA Band II	RMC 12.2Kbps	Back	5	Hotspot On	9538	1907.6	14.40	15.50	1.288	0.12	0.523	0.674
	1	WCDMA Band II	RMC 12.2Kbps	Left side	5	Hotspot On	9538	1907.6	14.40	15.50	1.288	0.18	0.017	0.022
	1	WCDMA Band II	RMC 12.2Kbps	Right side	5	Hotspot On	9538	1907.6	14.40	15.50	1.288	0.15	0.018	0.023
19	1	WCDMA Band II	RMC 12.2Kbps	Bottom side	5	Hotspot On	9538	1907.6	14.40	15.50	1.288	0.05	0.752	**0.969**
	1	WCDMA Band II	RMC 12.2Kbps	Bottom side	5	Hotspot On	9262	1852.4	14.33	15.50	1.309	0.09	0.594	0.778
	1	WCDMA Band II	RMC 12.2Kbps	Bottom side	5	Hotspot On	9400	1880	14.30	15.50	1.318	0.06	0.656	0.865

<LTE SAR>

Plot No.	Ant.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	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)
	1	LTE Band 12	10M	QPSK	1	49	Front	5	Full	23095	707.5	23.31	24.00	1.172	0.08	0.303	0.355
	1	LTE Band 12	10M	QPSK	25	25	Front	5	Full	23095	707.5	22.32	23.00	1.169	0.02	0.175	0.205
20	1	LTE Band 12	10M	QPSK	1	49	Back	5	Full	23095	707.5	23.31	24.00	1.172	0.01	0.577	**0.676**
	1	LTE Band 12	10M	QPSK	25	25	Back	5	Full	23095	707.5	22.32	23.00	1.169	0.04	0.322	0.377
	1	LTE Band 12	10M	QPSK	1	49	Left side	5	Full	23095	707.5	23.31	24.00	1.172	-0.01	0.228	0.267
	1	LTE Band 12	10M	QPSK	25	25	Left side	5	Full	23095	707.5	22.32	23.00	1.169	0.04	0.120	0.140
	1	LTE Band 12	10M	QPSK	1	49	Right side	5	Full	23095	707.5	23.31	24.00	1.172	0.05	0.150	0.176
	1	LTE Band 12	10M	QPSK	25	25	Right side	5	Full	23095	707.5	22.32	23.00	1.169	0.03	0.077	0.090
	1	LTE Band 12	10M	QPSK	1	49	Bottom side	5	Full	23095	707.5	23.31	24.00	1.172	0.01	0.223	0.261
	1	LTE Band 12	10M	QPSK	25	25	Bottom side	5	Full	23095	707.5	22.32	23.00	1.169	0.04	0.123	0.144
	1	LTE Band 5	10M	QPSK	1	0	Front	5	Full	20525	836.5	23.31	24.00	1.172	0.12	0.785	0.920
	1	LTE Band 5	10M	QPSK	25	0	Front	5	Full	20525	836.5	22.41	23.00	1.146	0.06	0.438	0.502
	1	LTE Band 5	10M	QPSK	50	0	Front	5	Full	20525	836.5	22.40	23.00	1.148	0.1	0.442	0.507
21	1	LTE Band 5	10M	QPSK	1	0	Back	5	Full	20525	836.5	23.31	24.00	1.172	0.07	0.989	**1.159**
	1	LTE Band 5	10M	QPSK	25	0	Back	5	Full	20525	836.5	22.41	23.00	1.146	0.03	0.562	0.644
	1	LTE Band 5	10M	QPSK	50	0	Back	5	Full	20525	836.5	22.40	23.00	1.148	0.03	0.563	0.646
	1	LTE Band 5	10M	QPSK	1	0	Left side	5	Full	20525	836.5	23.31	24.00	1.172	0.02	0.247	0.290
	1	LTE Band 5	10M	QPSK	25	0	Left side	5	Full	20525	836.5	22.41	23.00	1.146	0.01	0.142	0.163
	1	LTE Band 5	10M	QPSK	1	0	Right side	5	Full	20525	836.5	23.31	24.00	1.172	0.07	0.110	0.129
	1	LTE Band 5	10M	QPSK	25	0	Right side	5	Full	20525	836.5	22.41	23.00	1.146	0.06	0.063	0.072
	1	LTE Band 5	10M	QPSK	1	0	Bottom side	5	Full	20525	836.5	23.31	24.00	1.172	0.13	0.522	0.612
	1	LTE Band 5	10M	QPSK	25	0	Bottom side	5	Full	20525	836.5	22.41	23.00	1.146	0.09	0.289	0.331
	1	LTE Band 4	20M	QPSK	1	0	Front	5	Hotspot On	20175	1732.5	17.20	18.00	1.202	0.1	0.639	0.768
	1	LTE Band 4	20M	QPSK	50	24	Front	5	Hotspot On	20175	1732.5	17.19	18.00	1.205	0.08	0.659	0.794
	1	LTE Band 4	20M	QPSK	1	0	Back	5	Hotspot On	20175	1732.5	17.20	18.00	1.202	0.08	0.688	0.827
	1	LTE Band 4	20M	QPSK	50	24	Back	5	Hotspot On	20175	1732.5	17.19	18.00	1.205	0.04	0.761	0.917
	1	LTE Band 4	20M	QPSK	100	0	Back	5	Hotspot On	20175	1732.5	17.22	18.00	1.197	0.03	0.716	0.857
	1	LTE Band 4	20M	QPSK	1	0	Left side	5	Hotspot On	20175	1732.5	17.20	18.00	1.202	0.01	0.045	0.054
	1	LTE Band 4	20M	QPSK	50	24	Left side	5	Hotspot On	20175	1732.5	17.19	18.00	1.205	0.03	0.043	0.052
	1	LTE Band 4	20M	QPSK	1	0	Right side	5	Hotspot On	20175	1732.5	17.20	18.00	1.202	0.09	0.083	0.100
	1	LTE Band 4	20M	QPSK	50	24	Right side	5	Hotspot On	20175	1732.5	17.19	18.00	1.205	0.12	0.083	0.100
	1	LTE Band 4	20M	QPSK	1	0	Bottom side	5	Hotspot On	20175	1732.5	17.20	18.00	1.202	0.1	0.919	1.105
22	1	LTE Band 4	20M	QPSK	50	24	Bottom side	5	Hotspot On	20175	1732.5	17.19	18.00	1.205	0.02	0.946	**1.140**
	1	LTE Band 4	20M	QPSK	100	0	Bottom side	5	Hotspot On	20175	1732.5	17.22	18.00	1.197	0.09	0.943	1.129

Plot No.	Ant.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	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)
	1	LTE Band 2	20M	QPSK	1	0	Front	5	Hotspot On	18900	1880	15.39	16.00	1.151	0.18	0.602	0.693
	1	LTE Band 2	20M	QPSK	50	24	Front	5	Hotspot On	18900	1880	15.31	16.00	1.172	0.13	0.676	0.792
	1	LTE Band 2	20M	QPSK	1	0	Back	5	Hotspot On	18900	1880	15.39	16.00	1.151	0.19	0.561	0.646
	1	LTE Band 2	20M	QPSK	50	24	Back	5	Hotspot On	18900	1880	15.31	16.00	1.172	0.16	0.597	0.700
	1	LTE Band 2	20M	QPSK	1	0	Left side	5	Hotspot On	18900	1880	15.39	16.00	1.151	0.16	0.026	0.030
	1	LTE Band 2	20M	QPSK	50	24	Left side	5	Hotspot On	18900	1880	15.31	16.00	1.172	0.11	0.026	0.030
	1	LTE Band 2	20M	QPSK	1	0	Right side	5	Hotspot On	18900	1880	15.39	16.00	1.151	0.1	0.036	0.041
	1	LTE Band 2	20M	QPSK	50	24	Right side	5	Hotspot On	18900	1880	15.31	16.00	1.172	0.17	0.033	0.039
	1	LTE Band 2	20M	QPSK	1	0	Bottom side	5	Hotspot On	18900	1880	15.39	16.00	1.151	0.11	0.767	0.883
	1	LTE Band 2	20M	QPSK	1	0	Bottom side	5	Hotspot On	18700	1860	15.15	16.00	1.216	0.01	0.699	0.850
	1	LTE Band 2	20M	QPSK	1	0	Bottom side	5	Hotspot On	19100	1900	15.35	16.00	1.161	0.1	0.816	0.948
	1	LTE Band 2	20M	QPSK	50	24	Bottom side	5	Hotspot On	18900	1880	15.31	16.00	1.172	0.12	0.799	0.937
	1	LTE Band 2	20M	QPSK	50	24	Bottom side	5	Hotspot On	18700	1860	15.30	16.00	1.175	0.11	0.726	0.853
23	1	LTE Band 2	20M	QPSK	50	24	Bottom side	5	Hotspot On	19100	1900	15.24	16.00	1.191	0.03	0.924	**1.101**
	1	LTE Band 2	20M	QPSK	100	0	Bottom side	5	Hotspot On	18900	1880	15.26	16.00	1.186	0.14	0.722	0.856
	2	LTE Band 7	20M	QPSK	1	99	Front	5	Hotspot On	21350	2560	17.26	19.00	1.493	0.15	0.497	0.742
	2	LTE Band 7	20M	QPSK	50	24	Front	5	Hotspot On	21350	2560	17.19	19.00	1.517	0.03	0.489	0.742
	2	LTE Band 7	20M	QPSK	1	99	Back	5	Hotspot On	21350	2560	17.26	19.00	1.493	0.04	0.452	0.675
	2	LTE Band 7	20M	QPSK	50	24	Back	5	Hotspot On	21350	2560	17.19	19.00	1.517	0.01	0.450	0.683
	2	LTE Band 7	20M	QPSK	1	99	Right side	5	Hotspot On	21350	2560	17.26	19.00	1.493	0.07	0.336	0.502
	2	LTE Band 7	20M	QPSK	50	24	Right side	5	Hotspot On	21350	2560	17.19	19.00	1.517	0.14	0.337	0.511
	2	LTE Band 7	20M	QPSK	1	99	Bottom side	5	Hotspot On	21350	2560	17.26	19.00	1.493	0.09	0.045	0.067
	2	LTE Band 7	20M	QPSK	50	24	Bottom side	5	Hotspot On	21350	2560	17.19	19.00	1.517	0.17	0.047	0.071
	3	LTE Band 7	20M	QPSK	1	99	Front	5	Hotspot On	21350	2560	17.26	19.00	1.493	0.13	0.556	0.830
	3	LTE Band 7	20M	QPSK	1	99	Front	5	Hotspot On	20850	2510	17.10	19.00	1.549	0.12	0.473	0.733
	3	LTE Band 7	20M	QPSK	1	99	Front	5	Hotspot On	21100	2535	17.06	19.00	1.563	0.17	0.494	0.772
24	3	LTE Band 7	20M	QPSK	50	24	Front	5	Hotspot On	21350	2560	17.19	19.00	1.517	0.18	0.554	**0.840**
	3	LTE Band 7	20M	QPSK	50	24	Front	5	Hotspot On	20850	2510	17.14	19.00	1.535	0.11	0.476	0.730
	3	LTE Band 7	20M	QPSK	50	24	Front	5	Hotspot On	21100	2535	17.16	19.00	1.528	0.07	0.502	0.767
	3	LTE Band 7	20M	QPSK	100	0	Front	5	Hotspot On	21350	2560	17.15	19.00	1.531	0.16	0.541	0.828
	3	LTE Band 7	20M	QPSK	1	99	Back	5	Hotspot On	21350	2560	17.26	19.00	1.493	0.09	0.491	0.733
	3	LTE Band 7	20M	QPSK	50	24	Back	5	Hotspot On	21350	2560	17.19	19.00	1.517	0.12	0.487	0.739
	3	LTE Band 7	20M	QPSK	1	99	Left side	5	Hotspot On	21350	2560	17.26	19.00	1.493	0.04	0.333	0.497
	3	LTE Band 7	20M	QPSK	50	24	Left side	5	Hotspot On	21350	2560	17.19	19.00	1.517	0.07	0.337	0.511
	3	LTE Band 7	20M	QPSK	1	99	Bottom side	5	Hotspot On	21350	2560	17.26	19.00	1.493	0.08	0.144	0.215
	3	LTE Band 7	20M	QPSK	50	24	Bottom side	5	Hotspot On	21350	2560	17.19	19.00	1.517	0.06	0.134	0.203

<WLAN 2.4GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Max Area Scan SAR	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	5	Full	11	2462	19.47	19.50	1.007	100	1.000	0.110	0.797	0.489	0.492
25	WLAN2.4GHz	802.11b 1Mbps	Back	5	Full	11	2462	19.47	19.50	1.007	100	1.000	0.14	0.917	0.529	**0.533**
	WLAN2.4GHz	802.11b 1Mbps	Left side	5	Full	11	2462	19.47	19.50	1.007	100	1.000		0.155		
	WLAN2.4GHz	802.11b 1Mbps	Top side	5	Full	11	2462	19.47	19.50	1.007	100	1.000		0.713		

<WLAN 5GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	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)
	WLAN5.2GHz	802.11a 6Mbps	Front	5	Full	48	5240	15.98	16.50	1.128	95.54	1.047	0.02	0.558	0.659
	WLAN5.2GHz	802.11a 6Mbps	Back	5	Full	48	5240	15.98	16.50	1.128	95.54	1.047	-0.01	0.866	1.022
	WLAN5.2GHz	802.11a 6Mbps	Left Side	5	Full	48	5240	15.98	16.50	1.128	95.54	1.047	-0.05	0.220	0.260
26	WLAN5.2GHz	802.11a 6Mbps	Top Side	5	Full	48	5240	15.98	16.50	1.128	95.54	1.047	0.03	0.910	**1.074**
	WLAN5.2GHz	802.11a 6Mbps	Back	5	Full	44	5220	15.77	16.50	1.183	95.54	1.047	0.06	0.848	1.050
	WLAN5.2GHz	802.11a 6Mbps	Top Side	5	Full	44	5220	15.77	16.50	1.183	95.54	1.047	-0.01	0.840	1.040
	WLAN 5.8GHz	802.11a 6Mbps	Front	5	Full	149	5745	15.02	15.50	1.117	95.54	1.047	0.05	0.288	0.337
	WLAN 5.8GHz	802.11a 6Mbps	Back	5	Full	149	5745	15.02	15.50	1.117	95.54	1.047	-0.02	0.402	0.470
	WLAN 5.8GHz	802.11a 6Mbps	Left Side	5	Full	149	5745	15.02	15.50	1.117	95.54	1.047	0.03	0.050	0.058
27	WLAN 5.8GHz	802.11a 6Mbps	Top Side	5	Full	149	5745	15.02	15.50	1.117	95.54	1.047	-0.05	0.421	**0.493**

<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)
28	Bluetooth	1Mbps	Front	5	0	2402	10.62	12.00	1.374	76.94	1.083	0.02	0.040	**0.060**
	Bluetooth	1Mbps	Back	5	0	2402	10.62	12.00	1.374	76.94	1.083	0.01	0.033	0.050
	Bluetooth	1Mbps	Left Side	5	0	2402	10.62	12.00	1.374	76.94	1.083	-0.02	0.004	0.005
	Bluetooth	1Mbps	Top Side	5	0	2402	10.62	12.00	1.374	76.94	1.083	0.07	0.036	0.053

14.3 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Ant.	Band	Mode	Test Position	Gap (mm)	Power Mode	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)
	1	GSM850	GPRS 4 Tx slots	Front	5	Full	251	848.8	28.18	28.50	1.076	-0.09	0.735	0.791
	1	GSM850	GPRS 4 Tx slots	Back	5	Full	251	848.8	28.18	28.50	1.076	0.01	0.940	1.012
	1	GSM850	GPRS 4 Tx slots	Back	5	Full	128	824.2	27.40	28.50	1.288	0.03	0.874	1.126
29	1	GSM850	GPRS 4 Tx slots	Back	5	Full	189	836.4	27.81	28.50	1.172	0.06	0.963	**1.129**
30	1	GSM1900	GPRS 4 Tx slots	Front	5	P-Sensor On	512	1850.2	18.61	19.00	1.094	0.15	0.509	**0.557**
	1	GSM1900	GPRS 4 Tx slots	Back	5	P-Sensor On	512	1850.2	18.61	19.00	1.094	0.11	0.473	0.517

<WCDMA SAR>

Plot No.	Ant.	Band	Mode	Test Position	Gap (mm)	Power Mode	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)
	1	WCDMA Band V	RMC 12.2Kbps	Front	5	Full	4233	846.6	22.94	24.00	1.276	0.12	0.778	0.993
	1	WCDMA Band V	RMC 12.2Kbps	Front	5	Full	4132	826.4	22.89	24.00	1.291	-0.01	0.688	0.888
	1	WCDMA Band V	RMC 12.2Kbps	Front	5	Full	4182	836.4	22.84	24.00	1.306	0.09	0.783	1.023
31	1	WCDMA Band V	RMC 12.2Kbps	Back	5	Full	4233	846.6	22.94	24.00	1.276	-0.17	0.893	**1.140**
	1	WCDMA Band V	RMC 12.2Kbps	Back	5	Full	4132	826.4	22.89	24.00	1.291	-0.01	0.861	1.112
	1	WCDMA Band V	RMC 12.2Kbps	Back	5	Full	4182	836.4	22.84	24.00	1.306	0.1	0.821	1.072
	1	WCDMA Band IV	RMC 12.2Kbps	Front	5	P-Sensor On	1513	1752.6	15.98	17.00	1.265	0.1	0.568	0.718
32	1	WCDMA Band IV	RMC 12.2Kbps	Back	5	P-Sensor On	1513	1752.6	15.98	17.00	1.265	0.12	0.575	**0.727**
33	1	WCDMA Band II	RMC 12.2Kbps	Front	5	P-Sensor On	9538	1907.6	14.40	15.50	1.288	0.16	0.548	**0.706**
	1	WCDMA Band II	RMC 12.2Kbps	Back	5	P-Sensor On	9538	1907.6	14.40	15.50	1.288	0.12	0.523	0.674

<LTE SAR>

Plot No.	Ant.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	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)
	1	LTE Band 12	10M	QPSK	1	49	Front	5	Full	23095	707.5	23.31	24.00	1.172	0.08	0.303	0.355
	1	LTE Band 12	10M	QPSK	25	25	Front	5	Full	23095	707.5	22.32	23.00	1.169	0.02	0.175	0.205
34	1	LTE Band 12	10M	QPSK	1	49	Back	5	Full	23095	707.5	23.31	24.00	1.172	0.01	0.577	**0.676**
	1	LTE Band 12	10M	QPSK	25	25	Back	5	Full	23095	707.5	22.32	23.00	1.169	0.04	0.322	0.377
	1	LTE Band 5	10M	QPSK	1	0	Front	5	Full	20525	836.5	23.31	24.00	1.172	0.12	0.785	0.920
	1	LTE Band 5	10M	QPSK	25	0	Front	5	Full	20525	836.5	22.41	23.00	1.146	0.06	0.438	0.502
	1	LTE Band 5	10M	QPSK	50	0	Front	5	Full	20525	836.5	22.40	23.00	1.148	0.1	0.442	0.507
35	1	LTE Band 5	10M	QPSK	1	0	Back	5	Full	20525	836.5	23.31	24.00	1.172	0.07	0.989	**1.159**
	1	LTE Band 5	10M	QPSK	25	0	Back	5	Full	20525	836.5	22.41	23.00	1.146	0.03	0.562	0.644
	1	LTE Band 5	10M	QPSK	50	0	Back	5	Full	20525	836.5	22.40	23.00	1.148	0.03	0.563	0.646
	1	LTE Band 4	20M	QPSK	1	0	Front	5	P-Sensor On	20175	1732.5	17.20	18.00	1.202	0.1	0.639	0.768
	1	LTE Band 4	20M	QPSK	50	24	Front	5	P-Sensor On	20175	1732.5	17.19	18.00	1.205	0.08	0.659	0.794
	1	LTE Band 4	20M	QPSK	1	0	Back	5	P-Sensor On	20175	1732.5	17.20	18.00	1.202	0.08	0.688	0.827
36	1	LTE Band 4	20M	QPSK	50	24	Back	5	P-Sensor On	20175	1732.5	17.19	18.00	1.205	0.04	0.761	**0.917**
	1	LTE Band 4	20M	QPSK	100	0	Back	5	P-Sensor On	20175	1732.5	17.22	18.00	1.197	0.03	0.716	0.857
	1	LTE Band 2	20M	QPSK	1	0	Front	5	P-Sensor On	18900	1880	15.39	16.00	1.151	0.18	0.602	0.693
37	1	LTE Band 2	20M	QPSK	50	24	Front	5	P-Sensor On	18900	1880	15.31	16.00	1.172	0.13	0.676	**0.792**
	1	LTE Band 2	20M	QPSK	1	0	Back	5	P-Sensor On	18900	1880	15.39	16.00	1.151	0.19	0.561	0.646
	1	LTE Band 2	20M	QPSK	50	24	Back	5	P-Sensor On	18900	1880	15.31	16.00	1.172	0.16	0.597	0.700
	2	LTE Band 7	20M	QPSK	1	99	Front	5	P-Sensor On	21350	2560	17.26	19.00	1.493	0.15	0.497	0.742
	2	LTE Band 7	20M	QPSK	50	24	Front	5	P-Sensor On	21350	2560	17.19	19.00	1.517	0.03	0.489	0.742
	2	LTE Band 7	20M	QPSK	1	99	Back	5	P-Sensor On	21350	2560	17.26	19.00	1.493	0.04	0.452	0.675
	2	LTE Band 7	20M	QPSK	50	24	Back	5	P-Sensor On	21350	2560	17.19	19.00	1.517	0.01	0.450	0.683
	3	LTE Band 7	20M	QPSK	1	99	Front	5	P-Sensor On	21350	2560	17.26	19.00	1.493	0.13	0.556	0.830
	3	LTE Band 7	20M	QPSK	1	99	Front	5	P-Sensor On	20850	2510	17.10	19.00	1.549	0.12	0.473	0.733
	3	LTE Band 7	20M	QPSK	1	99	Front	5	P-Sensor On	21100	2535	17.06	19.00	1.563	0.17	0.494	0.772
38	3	LTE Band 7	20M	QPSK	50	24	Front	5	P-Sensor On	21350	2560	17.19	19.00	1.517	0.18	0.554	**0.840**
	3	LTE Band 7	20M	QPSK	50	24	Front	5	P-Sensor On	20850	2510	17.14	19.00	1.535	0.11	0.476	0.730
	3	LTE Band 7	20M	QPSK	50	24	Front	5	P-Sensor On	21100	2535	17.16	19.00	1.528	0.07	0.502	0.767
	3	LTE Band 7	20M	QPSK	100	0	Front	5	P-Sensor On	21350	2560	17.15	19.00	1.531	0.16	0.541	0.828
	3	LTE Band 7	20M	QPSK	1	99	Back	5	P-Sensor On	21350	2560	17.26	19.00	1.493	0.09	0.491	0.733
	3	LTE Band 7	20M	QPSK	50	24	Back	5	P-Sensor On	21350	2560	17.19	19.00	1.517	0.12	0.487	0.739

<WLAN 2.4GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Max Area Scan SAR	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	5	Full	11	2462	19.47	19.50	1.007	100	1.000	0.110	0.797	0.489	0.492
39	WLAN2.4GHz	802.11b 1Mbps	Back	5	Full	11	2462	19.47	19.50	1.007	100	1.000	0.14	0.917	0.529	**0.533**

<WLAN 5GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	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)
	WLAN5.3GHz	802.11a 6Mbps	Front	5	Full	52	5260	15.89	16.50	1.151	95.54	1.047	0.13	0.478	0.576
40	WLAN5.3GHz	802.11a 6Mbps	Back	5	Full	52	5260	15.89	16.50	1.151	95.54	1.047	0.04	0.781	**0.941**
	WLAN5.3GHz	802.11a 6Mbps	Back	5	Full	60	5300	15.62	16.50	1.225	95.54	1.047	0.01	0.655	0.840
	WLAN5.5GHz	802.11a 6Mbps	Front	5	Full	100	5500	16.06	16.50	1.107	95.54	1.047	0.05	0.324	0.376
41	WLAN5.5GHz	802.11a 6Mbps	Back	5	Full	100	5500	16.06	16.50	1.107	95.54	1.047	-0.09	0.355	**0.411**
	WLAN 5.8GHz	802.11a 6Mbps	Front	5	Full	149	5745	15.02	15.50	1.117	95.54	1.047	0.05	0.288	0.337
42	WLAN 5.8GHz	802.11a 6Mbps	Back	5	Full	149	5745	15.02	15.50	1.117	95.54	1.047	-0.02	0.402	**0.470**

<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)
43	Bluetooth	1Mbps	Front	5	0	2402	10.62	12.00	1.374	76.94	1.083	0.02	0.040	**0.060**
	Bluetooth	1Mbps	Back	5	0	2402	10.62	12.00	1.374	76.94	1.083	0.01	0.033	0.050

14.4 Product specific 10g SAR

<GSM SAR>

Plot No.	Ant.	Band	Mode	Test Position	Gap (mm)	Power Mode	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)
	1	GSM1900	GPRS 4 Tx slots	Front	0	Handheld On	512	1850.2	22.82	23.00	1.042	0.05	1.790	1.866
	1	GSM1900	GPRS 4 Tx slots	Back	0	Handheld On	512	1850.2	22.82	23.00	1.042	0.03	1.720	1.793
44	1	GSM1900	GPRS 4 Tx slots	Bottom side	0	Handheld On	512	1850.2	22.82	23.00	1.042	-0.01	1.940	**2.022**
	1	GSM1900	GPRS 4 Tx slots	Bottom side	0	Handheld On	661	1880	22.42	23.00	1.143	0.03	1.760	2.011
	1	GSM1900	GPRS 4 Tx slots	Bottom side	0	Handheld On	810	1909.8	22.13	23.00	1.222	-0.03	1.520	1.857

<WCDMA SAR>

Plot No.	Ant.	Band	Mode	Test Position	Gap (mm)	Power Mode	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)
	1	WCDMA Band IV	RMC 12.2Kbps	Front	0	Handheld On	1513	1752.6	19.95	21.00	1.274	0.15	2.150	2.738
	1	WCDMA Band IV	RMC 12.2Kbps	Front	0	Handheld On	1312	1712.4	19.94	21.00	1.276	0.05	2.100	2.681
	1	WCDMA Band IV	RMC 12.2Kbps	Front	0	Handheld On	1413	1732.6	19.85	21.00	1.303	0.15	2.130	2.776
	1	WCDMA Band IV	RMC 12.2Kbps	Back	0	Handheld On	1513	1752.6	19.95	21.00	1.274	0.08	2.010	2.560
	1	WCDMA Band IV	RMC 12.2Kbps	Back	0	Handheld On	1312	1712.4	19.94	21.00	1.276	0.19	1.910	2.438
	1	WCDMA Band IV	RMC 12.2Kbps	Back	0	Handheld On	1413	1732.6	19.85	21.00	1.303	0.16	1.970	2.567
45	1	WCDMA Band IV	RMC 12.2Kbps	Bottom side	0	Handheld On	1513	1752.6	19.95	21.00	1.274	0.08	2.470	**3.146**
	1	WCDMA Band IV	RMC 12.2Kbps	Bottom side	0	Handheld On	1312	1712.4	19.94	21.00	1.276	0.05	2.360	3.012
	1	WCDMA Band IV	RMC 12.2Kbps	Bottom side	0	Handheld On	1413	1732.6	19.85	21.00	1.303	0.01	2.380	3.102
	1	WCDMA Band II	RMC 12.2Kbps	Front	0	Handheld On	9538	1907.6	18.39	19.50	1.291	0.09	1.390	1.795
	1	WCDMA Band II	RMC 12.2Kbps	Back	0	Handheld On	9538	1907.6	18.39	19.50	1.291	0.08	1.630	2.105
	1	WCDMA Band II	RMC 12.2Kbps	Back	0	Handheld On	9262	1852.4	18.27	19.50	1.327	0.01	1.510	2.004
	1	WCDMA Band II	RMC 12.2Kbps	Back	0	Handheld On	9400	1880	18.34	19.50	1.306	0.08	1.580	2.064
	1	WCDMA Band II	RMC 12.2Kbps	Bottom side	0	Handheld On	9538	1907.6	18.39	19.50	1.291	0.02	1.730	2.234
46	1	WCDMA Band II	RMC 12.2Kbps	Bottom side	0	Handheld On	9262	1852.4	18.27	19.50	1.327	0.14	1.770	**2.349**
	1	WCDMA Band II	RMC 12.2Kbps	Bottom side	0	Handheld On	9400	1880	18.34	19.50	1.306	0.12	1.750	2.286

<LTE SAR>

Plot No.	Ant.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	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)
	1	LTE Band 4	20M	QPSK	1	0	Front	0	Handheld On	20175	1732.5	20.55	21.00	1.109	0.01	2.250	2.496
	1	LTE Band 4	20M	QPSK	50	24	Front	0	Handheld On	20175	1732.5	20.50	21.00	1.122	0.07	2.250	2.525
	1	LTE Band 4	20M	QPSK	100	0	Front	0	Handheld On	20175	1732.5	20.43	21.00	1.140	0.18	2.050	2.338
	1	LTE Band 4	20M	QPSK	1	0	Back	0	Handheld On	20175	1732.5	20.55	21.00	1.109	0.13	2.030	2.252
	1	LTE Band 4	20M	QPSK	50	24	Back	0	Handheld On	20175	1732.5	20.50	21.00	1.122	0.11	2.040	2.289
	1	LTE Band 4	20M	QPSK	100	0	Back	0	Handheld On	20175	1732.5	20.43	21.00	1.140	0.12	2.040	2.326
47	1	LTE Band 4	20M	QPSK	1	0	Bottom side	0	Handheld On	20175	1732.5	20.55	21.00	1.109	0.02	2.410	**2.673**
	1	LTE Band 4	20M	QPSK	50	24	Bottom side	0	Handheld On	20175	1732.5	20.50	21.00	1.122	0.01	2.380	2.670
	1	LTE Band 4	20M	QPSK	100	0	Bottom side	0	Handheld On	20175	1732.5	20.43	21.00	1.140	0.07	2.330	2.657
	1	LTE Band 2	20M	QPSK	1	0	Front	0	Handheld On	18900	1880	19.86	20.00	1.033	0.09	1.770	1.828
	1	LTE Band 2	20M	QPSK	50	24	Front	0	Handheld On	18900	1880	19.50	20.00	1.122	0.09	1.800	2.020
	1	LTE Band 2	20M	QPSK	50	24	Front	0	Handheld On	18700	1860	19.45	20.00	1.135	0.09	1.810	2.054
	1	LTE Band 2	20M	QPSK	50	24	Front	0	Handheld On	19100	1900	19.49	20.00	1.125	0.09	1.610	1.811
	1	LTE Band 2	20M	QPSK	100	0	Front	0	Handheld On	18900	1880	19.46	20.00	1.132	0.04	2.010	2.276
	1	LTE Band 2	20M	QPSK	1	0	Back	0	Handheld On	18900	1880	19.86	20.00	1.033	0.02	1.820	1.880
	1	LTE Band 2	20M	QPSK	50	24	Back	0	Handheld On	18900	1880	19.50	20.00	1.122	0.02	1.920	2.154
	1	LTE Band 2	20M	QPSK	50	24	Back	0	Handheld On	18700	1860	19.45	20.00	1.135	0.02	1.860	2.111
	1	LTE Band 2	20M	QPSK	50	24	Back	0	Handheld On	19100	1900	19.49	20.00	1.125	0.03	1.870	2.103
	1	LTE Band 2	20M	QPSK	100	0	Back	0	Handheld On	18900	1880	19.46	20.00	1.132	0.13	2.020	2.287
	1	LTE Band 2	20M	QPSK	1	0	Bottom side	0	Handheld On	18900	1880	19.86	20.00	1.033	0.06	2.140	2.210
	1	LTE Band 2	20M	QPSK	1	0	Bottom side	0	Handheld On	18700	1860	19.53	20.00	1.114	0.03	2.060	2.295
	1	LTE Band 2	20M	QPSK	1	0	Bottom side	0	Handheld On	19100	1900	19.58	20.00	1.102	0.07	2.090	2.302
	1	LTE Band 2	20M	QPSK	50	24	Bottom side	0	Handheld On	18900	1880	19.50	20.00	1.122	0.07	2.210	2.480
	1	LTE Band 2	20M	QPSK	50	24	Bottom side	0	Handheld On	18700	1860	19.45	20.00	1.135	0.07	2.180	2.474
	1	LTE Band 2	20M	QPSK	50	24	Bottom side	0	Handheld On	19100	1900	19.49	20.00	1.125	0.06	2.190	2.463
48	1	LTE Band 2	20M	QPSK	100	0	Bottom side	0	Handheld On	18900	1880	19.46	20.00	1.132	0.07	2.200	**2.491**
	2	LTE Band 7	20M	QPSK	1	99	Front	0	Handheld On	21350	2560	21.97	22.50	1.130	0.02	1.360	1.537
	2	LTE Band 7	20M	QPSK	50	24	Front	0	Handheld On	21350	2560	21.82	22.50	1.169	0.03	1.420	1.661
	2	LTE Band 7	20M	QPSK	1	99	Back	0	Handheld On	21350	2560	21.97	22.50	1.130	0.07	1.500	1.695
	2	LTE Band 7	20M	QPSK	50	24	Back	0	Handheld On	21350	2560	21.82	22.50	1.169	0.06	1.440	1.684
	3	LTE Band 7	20M	QPSK	1	99	Front	0	Handheld On	21350	2560	21.97	22.50	1.130	0.01	2.350	2.655
	3	LTE Band 7	20M	QPSK	1	99	Front	0	Handheld On	20850	2510	21.71	22.50	1.199	0.03	2.080	2.495
	3	LTE Band 7	20M	QPSK	1	99	Front	0	Handheld On	21100	2535	21.71	22.50	1.199	0.03	2.190	2.627
	3	LTE Band 7	20M	QPSK	50	24	Front	0	Handheld On	21350	2560	21.82	22.50	1.169	0.08	2.250	2.631
	3	LTE Band 7	20M	QPSK	50	24	Front	0	Handheld On	20850	2510	21.74	22.50	1.191	0.06	2.130	2.537
	3	LTE Band 7	20M	QPSK	50	24	Front	0	Handheld On	21100	2535	21.81	22.50	1.172	0.04	2.220	2.602
	3	LTE Band 7	20M	QPSK	100	0	Front	0	Handheld On	21350	2560	21.81	22.50	1.172	0.09	2.260	2.649
	3	LTE Band 7	20M	QPSK	1	99	Back	0	Handheld On	21350	2560	21.97	22.50	1.130	0.09	2.440	2.757
	3	LTE Band 7	20M	QPSK	1	99	Back	0	Handheld On	20850	2510	21.71	22.50	1.199	0.02	2.210	2.651
	3	LTE Band 7	20M	QPSK	1	99	Back	0	Handheld On	21100	2535	21.71	22.50	1.199	0.07	2.250	2.699
49	3	LTE Band 7	20M	QPSK	50	24	Back	0	Handheld On	21350	2560	21.82	22.50	1.169	0.04	2.510	**2.935**
	3	LTE Band 7	20M	QPSK	50	24	Back	0	Handheld On	20850	2510	21.74	22.50	1.191	0.07	2.190	2.609
	3	LTE Band 7	20M	QPSK	50	24	Back	0	Handheld On	21100	2535	21.81	22.50	1.172	0.01	2.330	2.731
	3	LTE Band 7	20M	QPSK	100	0	Back	0	Handheld On	21350	2560	21.81	22.50	1.172	0.06	2.500	2.930

<WLAN 5GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	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)
	WLAN5.3GHz	802.11a 6Mbps	Front	0	Full	52	5260	15.89	16.50	1.151	95.54	1.047	0.08	0.604	0.728
	WLAN5.3GHz	802.11a 6Mbps	Back	0	Full	52	5260	15.89	16.50	1.151	95.54	1.047	0.05	0.421	0.507
	WLAN5.3GHz	802.11a 6Mbps	Left Side	0	Full	52	5260	15.89	16.50	1.151	95.54	1.047	0.03	0.182	0.219
50	WLAN5.3GHz	802.11a 6Mbps	Top Side	0	Full	52	5260	15.89	16.50	1.151	95.54	1.047	-0.02	0.781	**0.941**
	WLAN 5.5GHz	802.11a 6Mbps	Front	0	Full	100	5500	16.06	16.50	1.107	95.54	1.047	-0.03	0.369	0.428
	WLAN 5.5GHz	802.11a 6Mbps	Back	0	Full	100	5500	16.06	16.50	1.107	95.54	1.047	-0.01	0.162	0.188
	WLAN 5.5GHz	802.11a 6Mbps	Left Side	0	Full	100	5500	16.06	16.50	1.107	95.54	1.047	-0.06	0.043	0.050
51	WLAN 5.5GHz	802.11a 6Mbps	Top Side	0	Full	100	5500	16.06	16.50	1.107	95.54	1.047	-0.05	0.460	**0.533**

14.5 Repeated SAR Measurement

<1g SAR>

No.	Band	Mode	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	LTE Band 5		10M	QPSK	1	0	Back	5	Full	20525	836.5	23.31	24.00	1.172			0.07	0.989	1	1.159
2nd	LTE Band 5		10M	QPSK	1	0	Back	5	Full	20525	836.5	23.31	24.00	1.172			0.02	0.924	1.070	1.083
1st	LTE Band 4	-	20M	QPSK	50	24	Bottom side	5	Hotspot On	20175	1732.5	17.19	18.00	1.205	-	-	0.02	0.946	1	1.140
2nd	LTE Band 4	-	20M	QPSK	50	24	Bottom side	5	Hotspot On	20175	1732.5	17.19	18.00	1.205	-	-	0.06	0.940	1.006	1.133
1st	LTE Band 2	-	20M	QPSK	50	24	Bottom side	5	Hotspot On	19100	1900	15.24	16.00	1.191	-	-	0.03	0.924	1	1.101
2nd	LTE Band 2	-	20M	QPSK	50	24	Bottom side	5	Hotspot On	19100	1900	15.24	16.00	1.191	-	-	0.13	0.848	1.090	1.010
1st	WLAN 2.4GHz	802.11b 1Mbps	-	-	-	-	Right Cheek	0	Receiver On	11	2462	17.33	17.50	1.040	100	1.000	0.02	0.991	1	1.031
2nd	WLAN 2.4GHz	802.11b 1Mbps	-	-	-	-	Right Cheek	0	Receiver On	11	2462	17.33	17.50	1.040	100	1.000	0.01	0.978	1.013	1.017
1st	WLAN 5.2GHz	802.11a 6Mbps	-	-	-	-	Top Side	5	Full	48	5240	15.98	16.50	1.128	95.54	1.047	0.03	0.910	1	1.074
2nd	WLAN 5.2GHz	802.11a 6Mbps	-	-	-	-	Top Side	5	Full	48	5240	15.98	16.50	1.128	95.54	1.047	-0.07	0.869	1.047	1.026

<10g SAR>

No.	Band	Mode	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	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)	Ratio	Reported 10g SAR (W/kg)
1st	WCDMA Band IV	RMC 12.2Kbps	-	-	-	-	Bottom side	0	Handheld On	1513	1752.6	19.95	21.00	1.274			0.08	2.470	1	3.146
2nd	WCDMA Band IV	RMC 12.2Kbps	-	-	-	-	Bottom side	0	Handheld On	1513	1752.6	19.95	21.00	1.274			0.04	2.410	1.025	3.069
1st	LTE Band 2	-	20M	QPSK	50	24	Bottom side	0	Handheld On	18900	1880	19.50	20.00	1.122	-	-	0.07	2.210	1	2.480
2nd	LTE Band 2	-	20M	QPSK	50	24	Bottom side	0	Handheld On	18900	1880	19.50	20.00	1.122	-	-	0.06	2.200	1.005	2.468
1st	LTE Band 7		20M	QPSK	50	24	Back	0	Handheld On	21350	2560	21.82	22.50	1.169			0.04	2.510	1	2.935
2nd	LTE Band 7		20M	QPSK	50	24	Back	0	Handheld On	21350	2560	21.82	22.50	1.169			0.01	2.370	1.059	2.772

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.
3. 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				Note
		Head	Body-worn	Hotspot	Product specific 10g SAR	
1.	GSM Voice + WLAN2.4GHz	Yes	Yes			
2.	GPRS/EDGE + WLAN2.4GHz	Yes	Yes	Yes	Yes	WLAN Hotspot
3.	WCDMA + WLAN2.4GHz	Yes	Yes	Yes	Yes	WLAN Hotspot
4.	LTE + WLAN2.4GHz	Yes	Yes	Yes	Yes	WLAN Hotspot
5.	GSM Voice + WLAN5.3/5.5GHz	Yes	Yes			
6.	GPRS/EDGE + WLAN5.3/5.5GHz	Yes	Yes		Yes	WLAN Direct (GC only)
7.	WCDMA + WLAN5.3/5.5GHz	Yes	Yes		Yes	WLAN Direct (GC only)
8.	LTE + WLAN5.3/5.5GHz	Yes	Yes		Yes	WLAN Direct (GC only)
9.	GSM Voice + WLAN5.2/5.8GHz	Yes	Yes			
10.	GPRS/EDGE + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes	WLAN Hotspot/Direct(GC/GO)
11.	WCDMA + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes	WLAN Hotspot/Direct(GC/GO)
12.	LTE + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes	WLAN Hotspot/Direct(GC/GO)
13.	GSM Voice + Bluetooth		Yes			
14.	GPRS/EDGE + Bluetooth		Yes	Yes	Yes	BT Tethering
15.	WCDMA + Bluetooth		Yes	Yes	Yes	BT Tethering
16.	LTE + Bluetooth		Yes	Yes	Yes	BT Tethering

General Note:

1. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
2. EUT will choose each GSM, WCDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
3. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
4. This device 2.4GHz WLAN/ 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WLAN Direct (GC/GO), and 5.3GHz / 5.5GHz supports WLAN Direct (GC only).
5. EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment though they have independent antenna.
6. WLAN 2.4GHz and Bluetooth share the same antenna so can't transmit simultaneously.
7. According to the EUT character, WLAN 5GHz and Bluetooth can't transmit simultaneously.
8. Chose the worst zoom scan SAR of WLAN correspondingly for co-located with WWAN analysis.
9. The reported SAR summation is calculated based on the same configuration and test position.
10. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
    i) 1g Scalar SAR summation < 1.6W/kg and 10g Scalar SAR summation < 4.0W/kg.
    ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
    iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.
    iv) Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg and 10g SAR < 4.0W/kg.
    v) The SPLSR calculated results please refer to section 15.5.

15.1 Head Exposure Conditions

WWAN Band		Exposure Position	1		2	3	1+2			1+3		
			WWAN		2.4GHz WLAN	5GHz WLAN	Summed 1g SAR (W/kg)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No
			Ant.	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)						
GSM	GSM850	Right Cheek	1	0.146	1.031	0.482	1.18			0.63		
		Right Tilted	1	0.100	1.000	0.780	1.10			0.88		
		Left Cheek	1	0.193	0.513	0.281	0.71			0.47		
		Left Tilted	1	0.100	1.031	0.274	1.13			0.37		
	GSM1900	Right Cheek	1	0.174	1.031	0.482	1.21			0.66		
		Right Tilted	1	0.079	1.000	0.780	1.08			0.86		
		Left Cheek	1	0.122	0.513	0.281	0.64			0.40		
		Left Tilted	1	0.088	1.031	0.274	1.12			0.36		
WCDMA	Band V	Right Cheek	1	0.183	1.031	0.482	1.21			0.67		
		Right Tilted	1	0.120	1.000	0.780	1.12			0.90		
		Left Cheek	1	0.273	0.513	0.281	0.79			0.55		
		Left Tilted	1	0.115	1.031	0.274	1.15			0.39		
	Band IV	Right Cheek	1	0.353	1.031	0.482	1.38			0.84		
		Right Tilted	1	0.114	1.000	0.780	1.11			0.89		
		Left Cheek	1	0.207	0.513	0.281	0.72			0.49		
		Left Tilted	1	0.138	1.031	0.274	1.17			0.41		
	Band II	Right Cheek	1	0.180	1.031	0.482	1.21			0.66		
		Right Tilted	1	0.088	1.000	0.780	1.09			0.87		
		Left Cheek	1	0.176	0.513	0.281	0.69			0.46		
		Left Tilted	1	0.112	1.031	0.274	1.14			0.39		
LTE	Band 12	Right Cheek	1	0.103	1.031	0.482	1.13			0.59		
		Right Tilted	1	0.060	1.000	0.780	1.06			0.84		
		Left Cheek	1	0.238	0.513	0.281	0.75			0.52		
		Left Tilted	1	0.061	1.031	0.274	1.09			0.34		
	Band 5	Right Cheek	1	0.218	1.031	0.482	1.25			0.70		
		Right Tilted	1	0.117	1.000	0.780	1.12			0.90		
		Left Cheek	1	0.244	0.513	0.281	0.76			0.53		
		Left Tilted	1	0.113	1.031	0.274	1.14			0.39		
	Band 4	Right Cheek	1	0.272	1.031	0.482	1.30			0.75		
		Right Tilted	1	0.098	1.000	0.780	1.10			0.88		
		Left Cheek	1	0.183	0.513	0.281	0.70			0.46		
		Left Tilted	1	0.111	1.031	0.274	1.14			0.39		
	Band 2	Right Cheek	1	0.154	1.031	0.482	1.19			0.64		
		Right Tilted	1	0.069	1.000	0.780	1.07			0.85		
		Left Cheek	1	0.157	0.513	0.281	0.67			0.44		
		Left Tilted	1	0.086	1.031	0.274	1.12			0.36		
	Band 7	Right Cheek	2	0.607	1.031	0.482	**1.64**	**0.02**	**#1**	1.09		
		Right Tilted	2	0.183	1.000	0.780	1.18			0.96		
		Left Cheek	2	0.399	0.513	0.281	0.91			0.68		
		Left Tilted	2	0.316	1.031	0.274	1.35			0.59		
		Right Cheek	3	0.449	1.031	0.482	1.48			0.93		
		Right Tilted	3	0.590	1.000	0.780	**1.59**			1.37		
		Left Cheek	3	0.710	0.513	0.281	1.22			0.99		
		Left Tilted	3	0.303	1.031	0.274	1.33			0.58		

15.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1		2	3	4	1+2			1+3			1+4		
			WWAN		2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed 1g SAR (W/kg)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No
			Ant.	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)									
GSM	GSM850	Front	1	0.791	0.492	0.659	0.060	1.28			1.45			0.85		
		Back	1	1.129	0.533	1.050	0.050	**1.66**	**0.01**	**#2**	**2.18**	**0.02**	**#3**	1.18		
		Left Side	1	0.436	0.533	0.260	0.005	0.97			0.70			0.44		
		Right Side	1	0.203				0.20			0.20			0.20		
		Top Side	1		0.533	1.074	0.053	0.53			1.07			0.05		
		Bottom Side	1	0.567				0.57			0.57			0.57		
	GSM1900	Front	1	0.557	0.492	0.659	0.060	1.05			1.22			0.62		
		Back	1	0.517	0.533	1.050	0.050	1.05			1.57			0.57		
		Left Side	1	0.024	0.533	0.260	0.005	0.56			0.28			0.03		
		Right Side	1	0.038				0.04			0.04			0.04		
		Top Side	1		0.533	1.074	0.053	0.53			1.07			0.05		
		Bottom Side	1	0.689				0.69			0.69			0.69		
WCDMA	Band V	Front	1	1.023	0.492	0.659	0.060	1.52			**1.68**	**0.01**	**#4**	1.08		
		Back	1	1.140	0.533	1.050	0.050	**1.67**	**0.01**	**#5**	**2.19**	**0.02**	**#6**	1.19		
		Left Side	1	0.495	0.533	0.260	0.005	1.03			0.76			0.50		
		Right Side	1	0.197				0.20			0.20			0.20		
		Top Side	1		0.533	1.074	0.053	0.53			1.07			0.05		
		Bottom Side	1	0.689				0.69			0.69			0.69		
	Band IV	Front	1	0.718	0.492	0.659	0.060	1.21			1.38			0.78		
		Back	1	0.727	0.533	1.050	0.050	1.26			**1.78**	**0.02**	**#7**	0.78		
		Left Side	1	0.048	0.533	0.260	0.005	0.58			0.31			0.05		
		Right Side	1	0.082				0.08			0.08			0.08		
		Top Side	1		0.533	1.074	0.053	0.53			1.07			0.05		
		Bottom Side	1	0.969				0.97			0.97			0.97		
	Band II	Front	1	0.706	0.492	0.659	0.060	1.20			1.37			0.77		
		Back	1	0.674	0.533	1.050	0.050	1.21			**1.72**	**0.01**	**#8**	0.72		
		Left Side	1	0.022	0.533	0.260	0.005	0.56			0.28			0.03		
		Right Side	1	0.023				0.02			0.02			0.02		
		Top Side	1		0.533	1.074	0.053	0.53			1.07			0.05		
		Bottom Side	1	0.969				0.97			0.97			0.97		

WWAN Band		Exposure Position	1		2	3	4	1+2			1+3			1+4		
			WWAN		2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed 1g SAR (W/kg)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No
			Ant.	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)									
LTE	Band 12	Front	1	0.355	0.492	0.659	0.060	0.85			1.01			0.42		
		Back	1	0.676	0.533	1.050	0.050	1.21			**1.73**	**0.01**	**#9**	0.73		
		Left Side	1	0.267	0.533	0.260	0.005	0.80			0.53			0.27		
		Right Side	1	0.176				0.18			0.18			0.18		
		Top Side	1		0.533	1.074	0.053	0.53			1.07			0.05		
		Bottom Side	1	0.261				0.26			0.26			0.26		
	Band 5	Front	1	0.920	0.492	0.659	0.060	1.41			**1.58**			0.98		
		Back	1	1.159	0.533	1.050	0.050	**1.69**	**0.01**	**#10**	**2.21**	**0.02**	**#11**	**1.21**		
		Left Side	1	0.290	0.533	0.260	0.005	0.82			0.55			0.30		
		Right Side	1	0.129				0.13			0.13			0.13		
		Top Side	1		0.533	1.074	0.053	0.53			1.07			0.05		
		Bottom Side	1	0.612				0.61			0.61			0.61		
	Band 4	Front	1	0.794	0.492	0.659	0.060	1.29			1.45			0.85		
		Back	1	0.917	0.533	1.050	0.050	1.45			**1.97**	**0.02**	**#12**	0.97		
		Left Side	1	0.054	0.533	0.260	0.005	0.59			0.31			0.06		
		Right Side	1	0.100				0.10			0.10			0.10		
		Top Side	1		0.533	1.074	0.053	0.53			1.07			0.05		
		Bottom Side	1	1.140				1.14			1.14			1.14		
	Band 2	Front	1	0.792	0.492	0.659	0.060	1.28			1.45			0.85		
		Back	1	0.700	0.533	1.050	0.050	1.23			**1.75**	**0.02**	**#13**	0.75		
		Left Side	1	0.030	0.533	0.260	0.005	0.56			0.29			0.04		
		Right Side	1	0.041				0.04			0.04			0.04		
		Top Side	1		0.533	1.074	0.053	0.53			1.07			0.05		
		Bottom Side	1	1.101				1.10			1.10			1.10		
	Band 7	Front	2	0.742	0.492	0.659	0.060	1.23			1.40			0.80		
		Back	2	0.683	0.533	1.050	0.050	1.22			**1.73**	**0.02**	**#14**	0.73		
		Left Side	2		0.533	0.260	0.005	0.53			0.26			0.01		
		Right Side	2	0.511				0.51			0.51			0.51		
		Top Side	2		0.533	1.074	0.053	0.53			1.07			0.05		
		Bottom Side	2	0.071				0.07			0.07			0.07		
		Front	3	0.840	0.492	0.659	0.060	1.33			1.50			0.90		
		Back	3	0.739	0.533	1.050	0.050	1.27			**1.79**	**0.02**	**#15**	0.79		
		Left Side	3	0.511	0.533	0.260	0.005	1.04			0.77			0.52		
		Top Side	3		0.533	1.074	0.053	0.53			1.07			0.05		
		Bottom Side	3	0.215				0.22			0.22			0.22		

15.3 Body-Worn Accessory Exposure Conditions

WWAN Band		Exposure Position	1		2	3	4	1+2			1+3			1+4		
			WWAN		2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed 1g SAR (W/kg)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No
			Ant.	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)									
GSM	GSM850	Front	1	0.791	0.492	0.576	0.060	1.28			1.37			0.85		
		Back	1	1.129	0.533	0.941	0.050	**1.66**	**0.01**	**#2**	**2.07**	**0.02**	**#16**	1.18		
	GSM1900	Front	1	0.557	0.492	0.576	0.060	1.05			1.13			0.62		
		Back	1	0.517	0.533	0.941	0.050	1.05			1.46			0.57		
WCDMA	Band V	Front	1	1.023	0.492	0.576	0.060	1.52			**1.60**	**0.01**	**#17**	1.08		
		Back	1	1.140	0.533	0.941	0.050	**1.67**	**0.01**	**#5**	**2.08**	**0.02**	**#18**	1.19		
	Band IV	Front	1	0.718	0.492	0.576	0.060	1.21			1.29			0.78		
		Back	1	0.727	0.533	0.941	0.050	1.26			**1.67**	**0.01**	**#19**	0.78		
	Band II	Front	1	0.706	0.492	0.576	0.060	1.20			1.28			0.77		
		Back	1	0.674	0.533	0.941	0.050	1.21			**1.62**	**0.01**	**#20**	0.72		
LTE	Band 12	Front	1	0.355	0.492	0.576	0.060	0.85			0.93			0.42		
		Back	1	0.676	0.533	0.941	0.050	1.21			**1.62**	**0.01**	**#21**	0.73		
	Band 5	Front	1	0.920	0.492	0.576	0.060	1.41			1.50			0.98		
		Back	1	1.159	0.533	0.941	0.050	**1.69**	**0.01**	**#10**	**2.10**	**0.02**	**#22**	1.21		
	Band 4	Front	1	0.794	0.492	0.576	0.060	1.29			1.37			0.85		
		Back	1	0.917	0.533	0.941	0.050	1.45			**1.86**	**0.02**	**#23**	0.97		
	Band 2	Front	1	0.792	0.492	0.576	0.060	1.28			1.37			0.85		
		Back	1	0.700	0.533	0.941	0.050	1.23			**1.64**	**0.01**	**#24**	0.75		
	Band 7	Front	2	0.742	0.492	0.576	0.060	1.23			1.32			0.80		
		Back	2	0.683	0.533	0.941	0.050	1.22			**1.62**	**0.01**	**#25**	0.73		
		Front	3	0.840	0.492	0.576	0.060	1.33			1.42			0.90		
		Back	3	0.739	0.533	0.941	0.050	1.27			**1.68**	**0.02**	**#26**	0.79		

15.4 Product specific 10g SAR Exposure Conditions

WWAN Band		Exposure Position	1		2	1+2		
			WWAN Bottom		5GHz WLAN			
			Ant.	10g SAR (W/kg)	10g SAR (W/kg)	Summed 10g SAR (W/kg)	SPLSR	Case No
GSM	GSM1900	Front	1	1.866	0.728	2.59		
		Back	1	1.793	0.507	2.30		
		Bottom side	1	2.022		2.02		
WCDMA	Band IV	Front	1	2.776	0.728	**3.50**		
		Back	1	2.567	0.507	3.07		
		Bottom side	1	3.146		3.15		
	Band II	Front	1	1.795	0.728	2.52		
		Back	1	2.105	0.507	2.61		
		Bottom side	1	2.349		2.35		
LTE	Band 4	Front	1	2.525	0.728	3.25		
		Back	1	2.326	0.507	2.83		
		Bottom side	1	2.673		2.67		
	Band 2	Front	1	2.054	0.728	2.78		
		Back	1	2.154	0.507	2.66		
		Bottom side	1	2.491		2.49		
	Band 7	Front	2	1.661	0.728	2.39		
		Back	2	1.695	0.507	2.20		
		Front	3	2.655	0.728	3.38		
		Back	3	2.935	0.507	3.44		

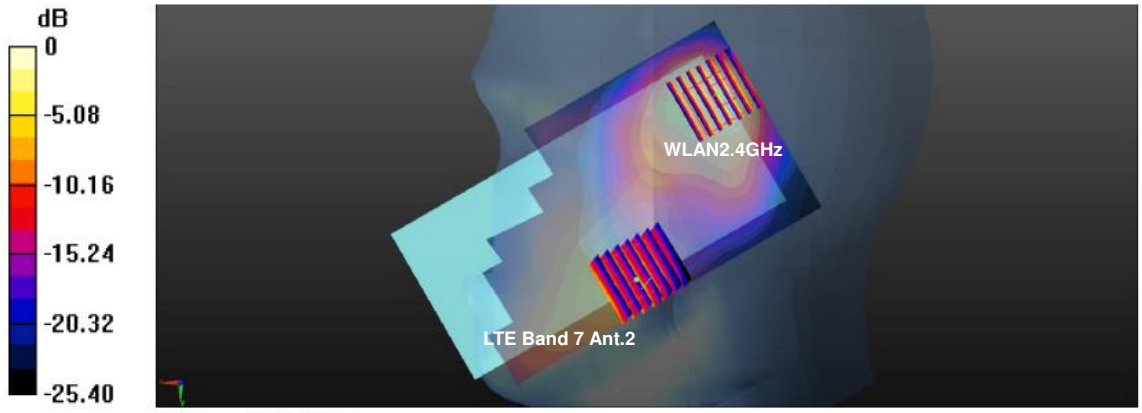
Remark: For Bluetooth Product specific 10g stand-alone SAR is not required for a transmitter or antenna, due to 1g hotspot SAR is <1.2W/kg.

15.5 SPLSR Evaluation and Analysis

General Note:

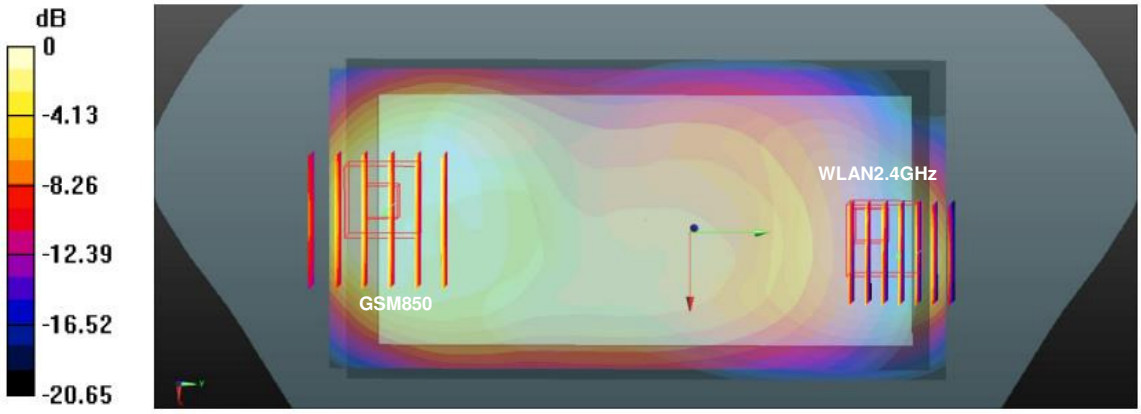
1. When standalone SAR is measured for both antennas in the pair, the peak location separation distance is computed by the square root of [(x1−x2)2 + (y1−y2)2 + (z1−z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates in the area scans or extrapolated peak SAR locations in the zoom scans, as appropriate.
2. SPLSR = (SAR1 + SAR2)1.5 / (min. separation distance, mm). If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.

Case #1	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 7 Ant.2	Right Cheek	0.607	0	4.08	6.87	-0.16	95.3	1.64	0.02	Not required
	WLAN2.4GHz		1.031	0	0.46	-1.95	-0.2				



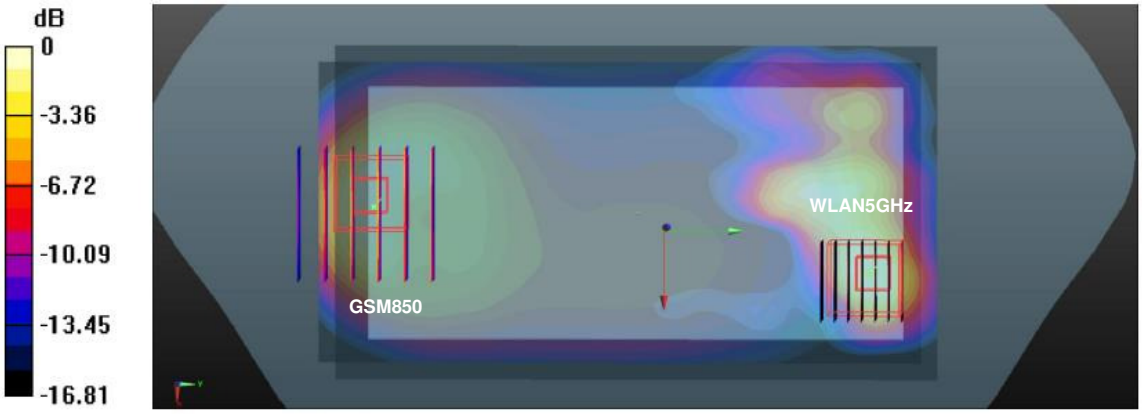
0 dB = 1.96 W/kg

Case #2	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM850	Back	1.129	5	-0.57	-7.91	-0.19	160.0	1.66	0.01	Not required
	WLAN2.4GHz		0.533	5	1.48	7.96	-0.12				



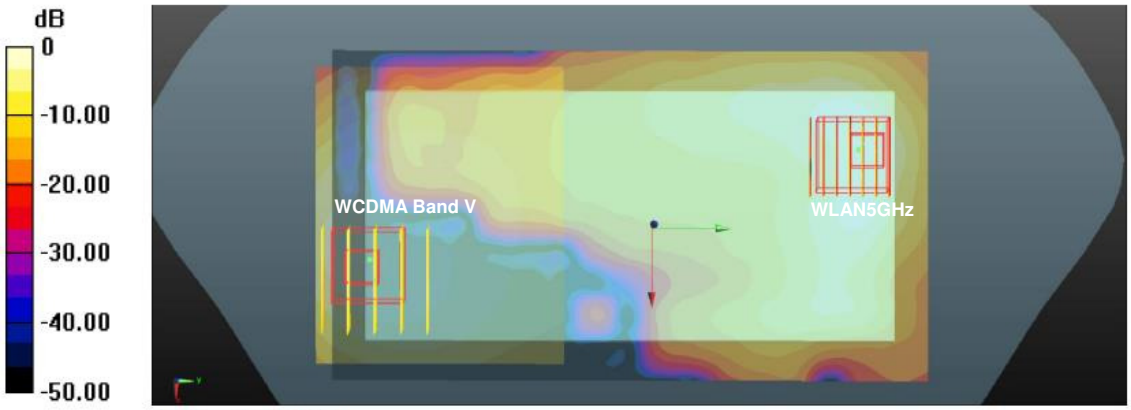
0 dB = 0.879 W/kg

Case #3	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM850	Back	1.129	5	-0.57	-7.91	-0.19	151.4	2.18	0.02	Not required
	WLAN5GHz		1.050	5	1.94	7.02	-0.13				



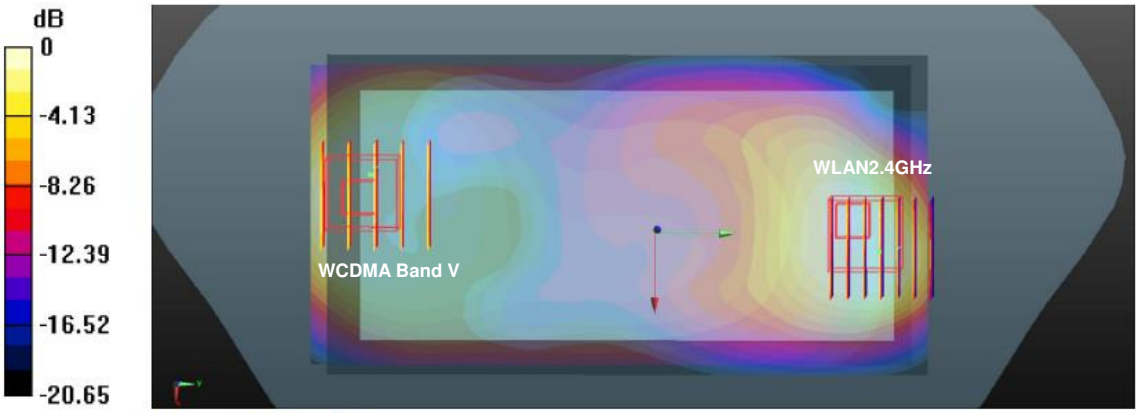
0 dB = 1.51 W/kg

Case #4	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band V	Front	1.023	5	1.89	-7.75	-0.17	153.2	1.68	0.01	Not required
	WLAN5GHz		0.659	5	-1.94	7.08	-0.14				



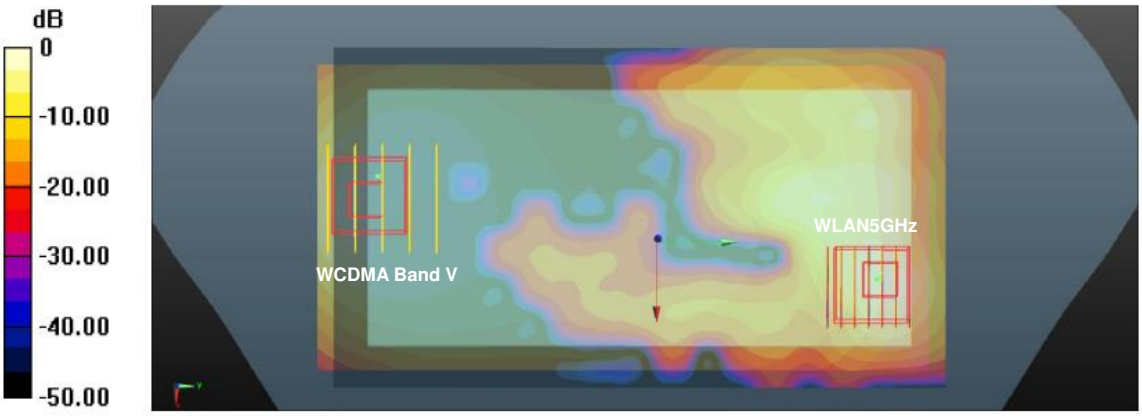
0 dB = 1.35 W/kg

Case #5	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band V	Back	1.140	5	-0.5	-8.08	-0.18	161.6	1.67	0.01	Not required
	WLAN2.4GHz		0.533	5	1.48	7.96	-0.12				



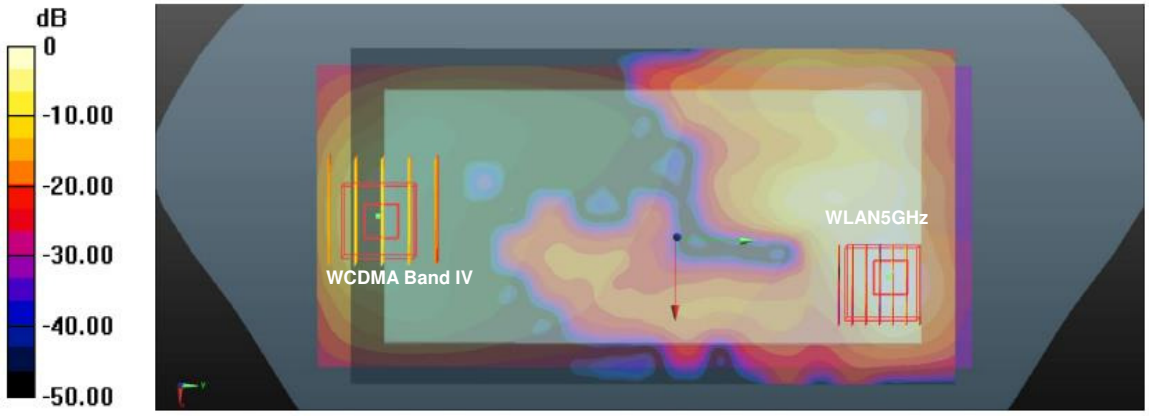
0 dB = 0.879 W/kg

Case #6	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band V	Back	1.140	5	-0.5	-8.08	-0.18	153.0	2.19	0.02	Not required
	WLAN5GHz		1.050	5	1.94	7.02	-0.13				



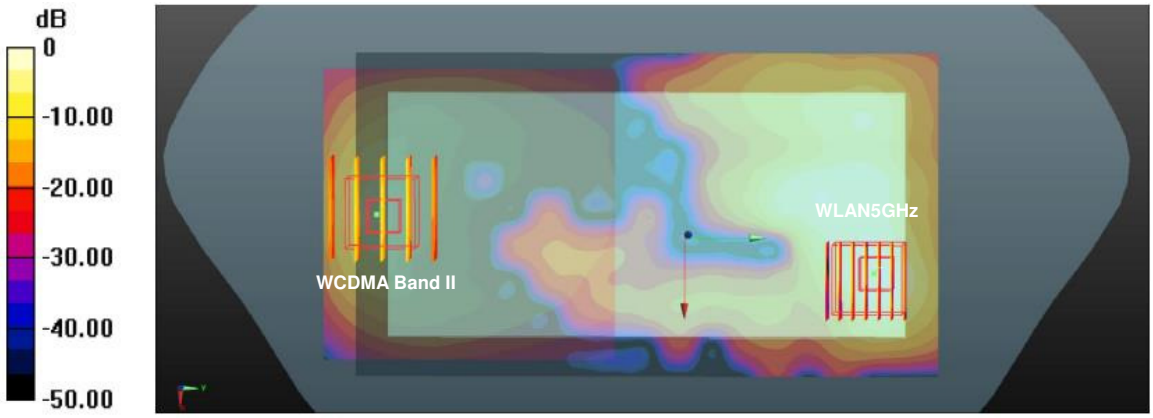
0 dB = 2.08 W/kg

Case #7	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band IV	Back	0.727	5	0.22	-8.1	-0.17	152.2	1.78	0.02	Not required
	WLAN5GHz		1.050	5	1.94	7.02	-0.13				



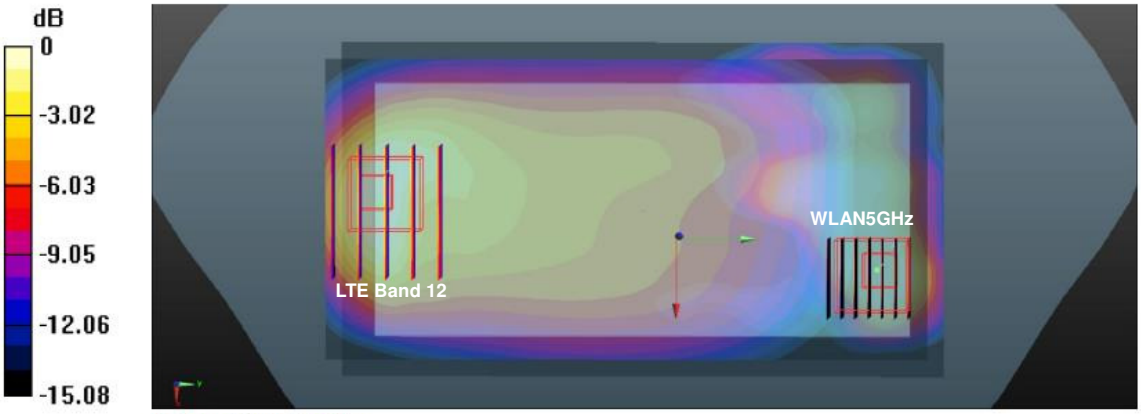
0 dB = 2.08 W/kg

Case #8	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band II	Back	0.674	5	0.22	-8.09	-0.21	152.1	1.72	0.01	Not required
	WLAN5GHz		1.050	5	1.94	7.02	-0.13				



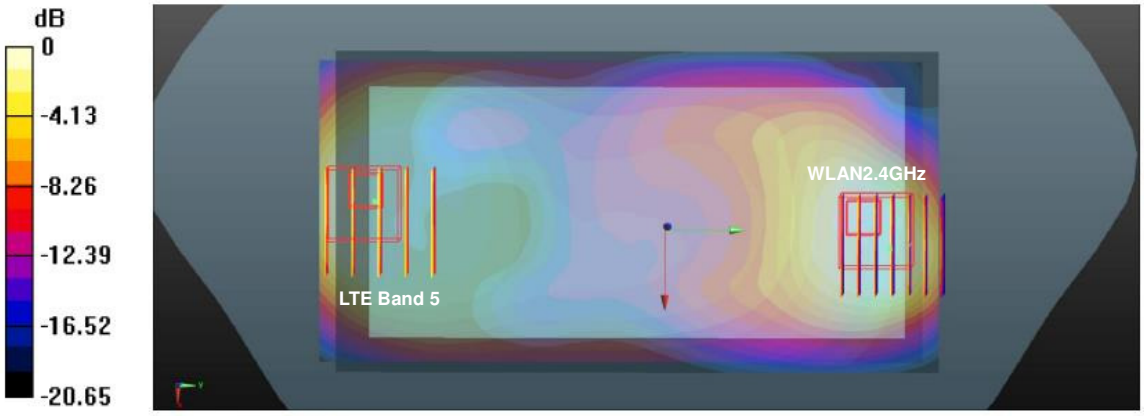
0 dB = 2.08 W/kg

Case #9	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 12	Back	0.676	5	-0.57	-8.07	-0.18	153.0	1.73	0.01	Not required
	WLAN5GHz		1.050	5	1.94	7.02	-0.13				



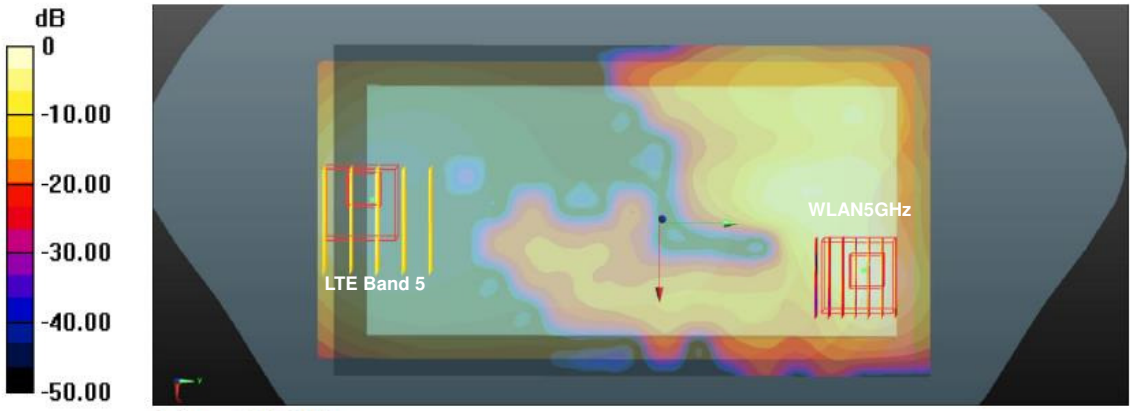
0 dB = 0.925 W/kg

Case #10	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 5	Back	1.159	5	-1.2	-7.75	-0.19	159.4	1.69	0.01	Not required
	WLAN2.4GHz		0.533	5	1.48	7.96	-0.12				



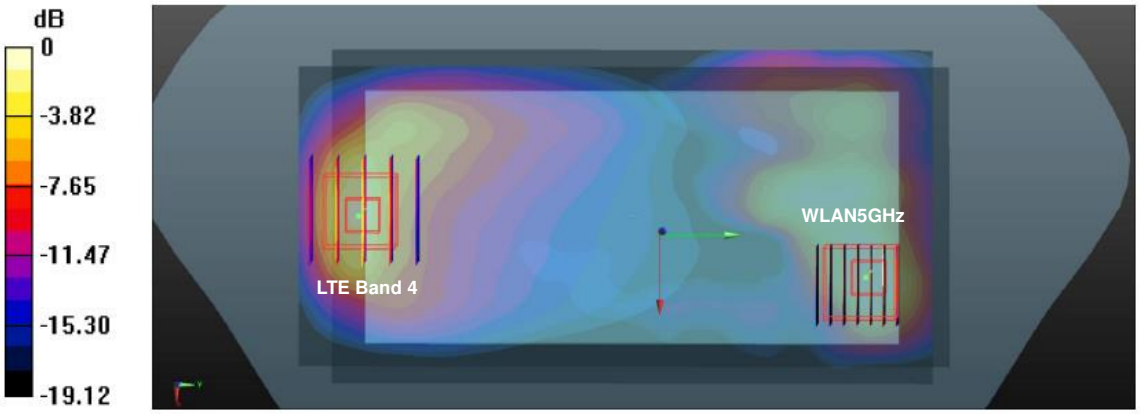
0 dB = 0.879 W/kg

Case #11	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 5	Back	1.159	5	-1.2	-7.75	-0.19	151.0	2.21	0.02	Not required
	WLAN5GHz		1.050	5	1.94	7.02	-0.13				



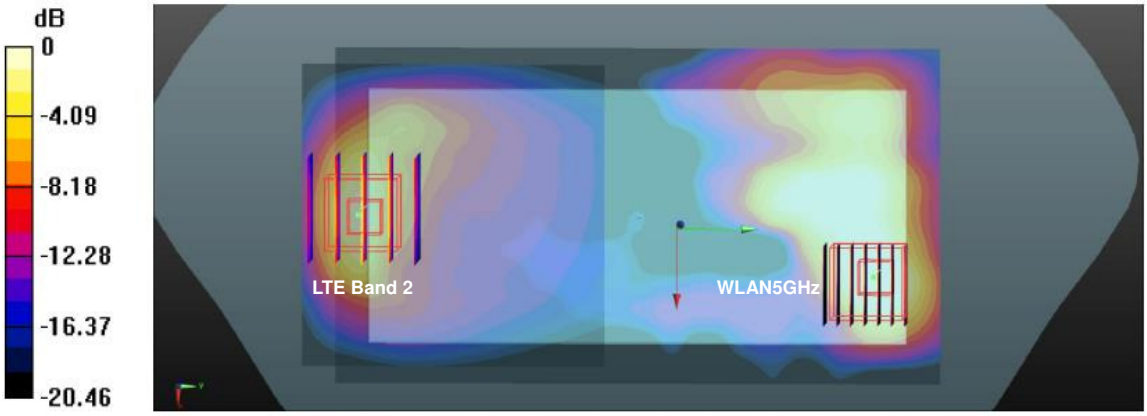
0 dB = 2.08 W/kg

Case #12	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 4	Back	0.917	5	-0.1	-8.1	-0.17	152.6	1.97	0.02	Not required
	WLAN5GHz		1.050	5	1.94	7.02	-0.13				



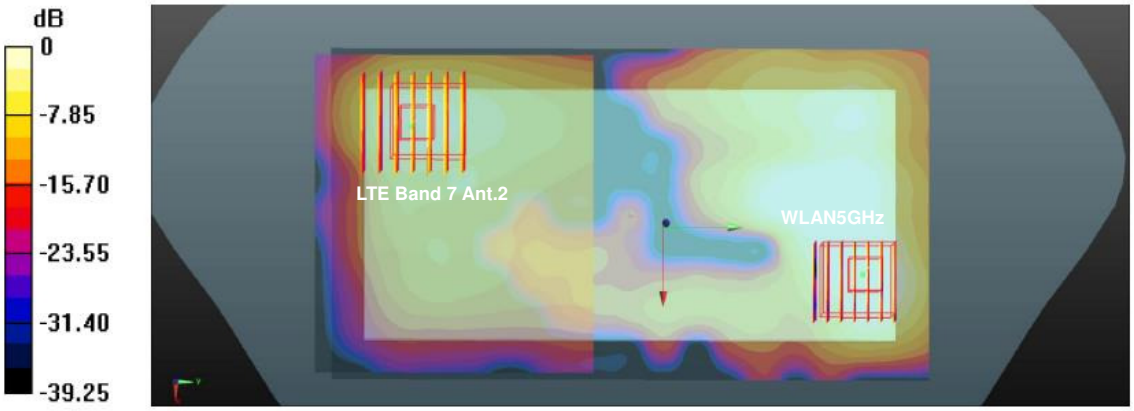
0 dB = 1.20 W/kg

Case #13	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 2	Back	0.700	5	0.22	-8.09	-0.21	152.1	1.75	0.02	Not required
	WLAN5GHz		1.050	5	1.94	7.02	-0.13				



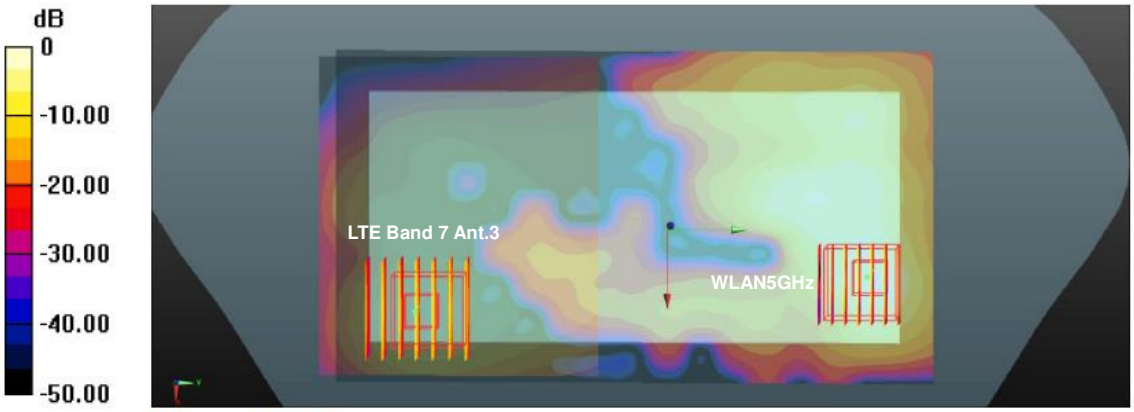
0 dB = 0.922 W/kg

Case #14	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 7 Ant.2	Back	0.683	5	-2.74	-6.52	-0.19	143.3	1.73	0.02	Not required
	WLAN5GHz		1.050	5	1.94	7.02	-0.13				



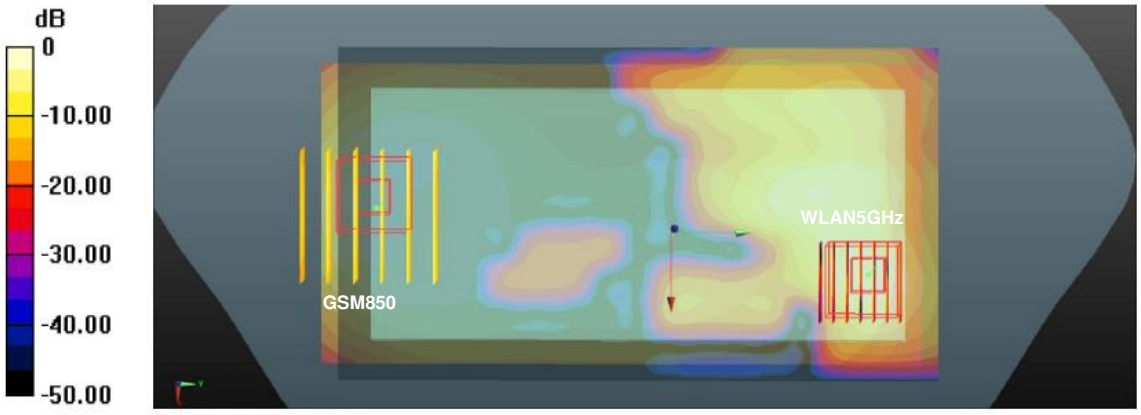
0 dB = 0.765 W/kg

Case #15	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 7 Ant.3	Back	0.739	5	2.88	-6.52	-0.18	135.7	1.79	0.02	Not required
	WLAN5GHz		1.050	5	1.94	7.02	-0.13				



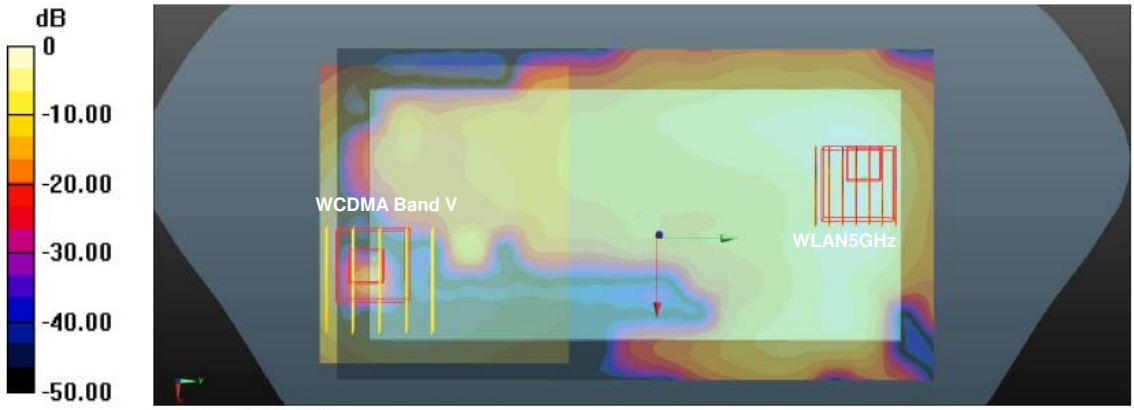
0 dB = 2.08 W/kg

Case #16	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM850	Back	1.129	5	-0.57	-7.91	-0.19	149.6	2.07	0.02	Not required
	WLAN5GHz		0.941	5	1.94	6.84	-0.14				



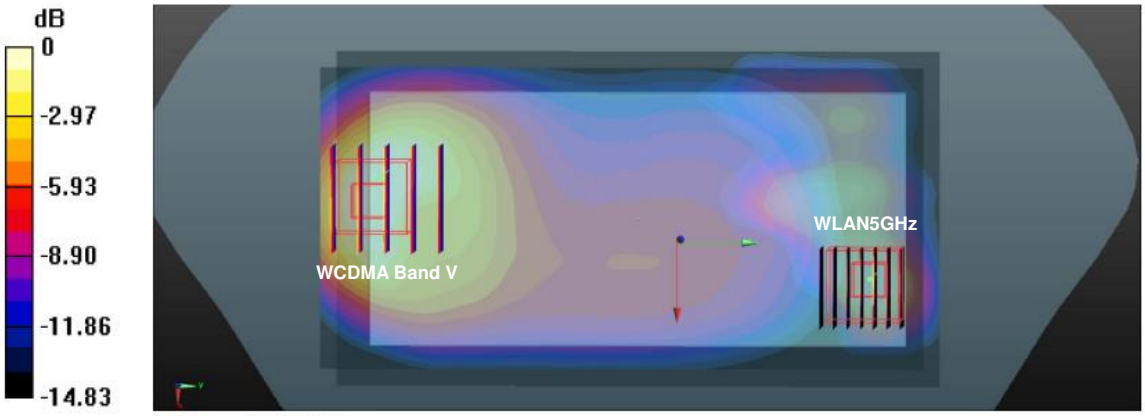
0 dB = 1.86 W/kg

Case #17	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band V	Front	1.023	5	1.89	-7.75	-0.17	137.1	1.60	0.01	Not required
	WLAN5GHz		0.576	5	0.4	5.88	-0.14				



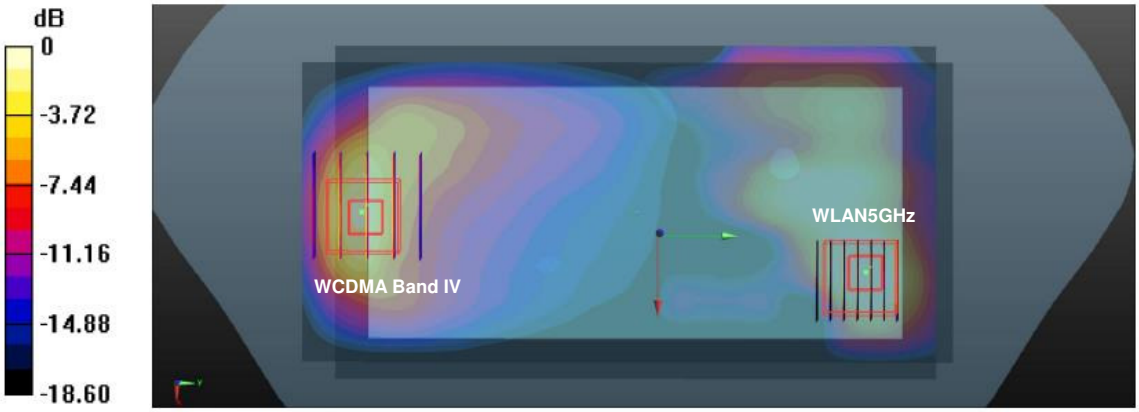
0 dB = 1.43 W/kg

Case #18	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band V	Back	1.140	5	-0.5	-8.08	-0.18	151.2	2.08	0.02	Not required
	WLAN5GHz		0.941	5	1.94	6.84	-0.14				



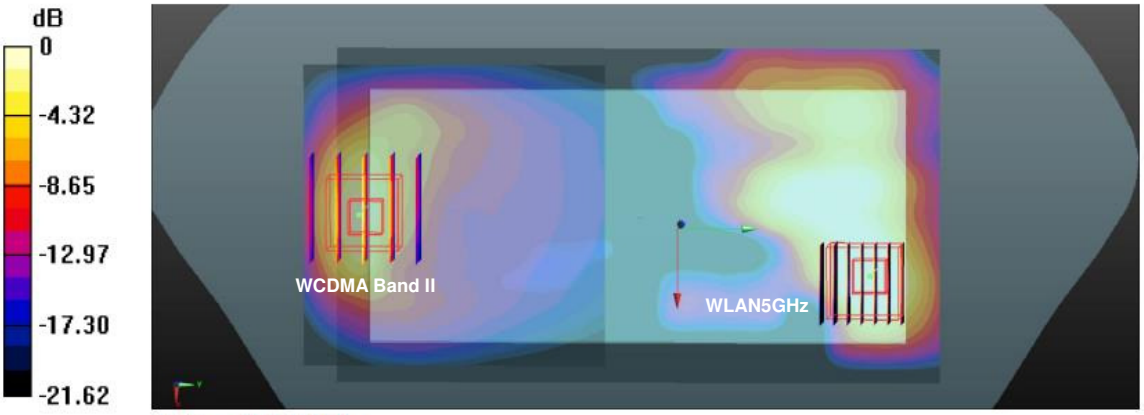
0 dB = 1.38 W/kg

Case #19	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band IV	Back	0.727	5	0.22	-8.1	-0.17	150.4	1.67	0.01	Not required
	WLAN5GHz		0.941	5	1.94	6.84	-0.14				



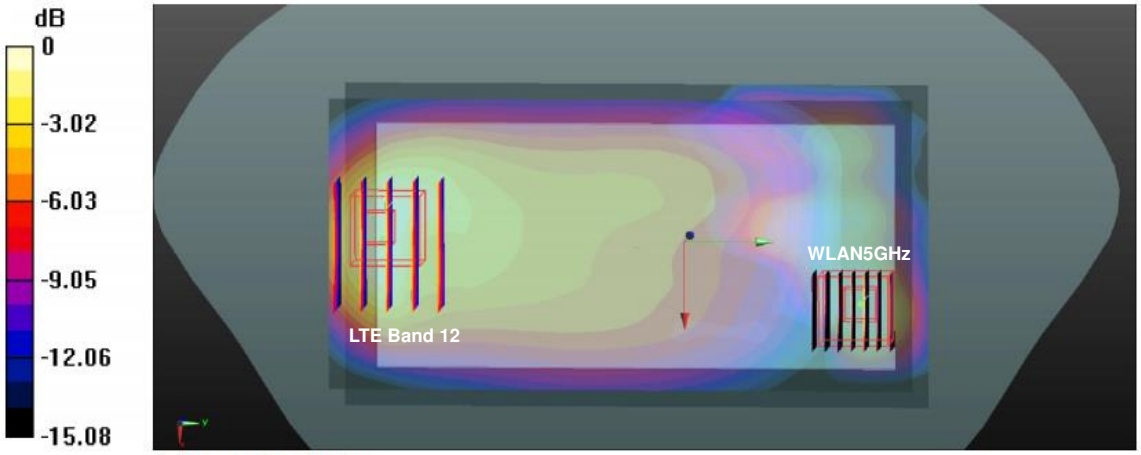
0 dB = 0.898 W/kg

Case #20	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band II	Back	0.674	5	0.22	-8.09	-0.21	150.3	1.62	0.01	Not required
	WLAN5GHz		0.941	5	1.94	6.84	-0.14				



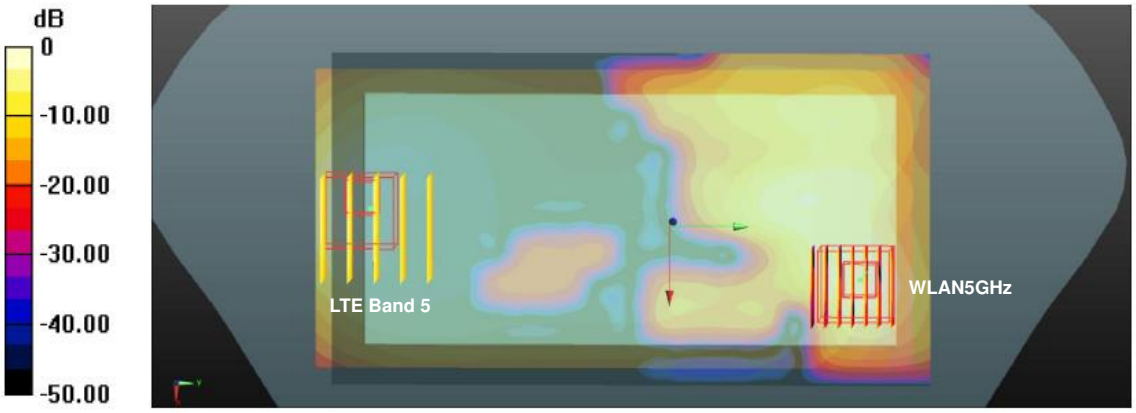
0 dB = 0.810 W/kg

Case #21	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 12	Back	0.676	5	-0.57	-8.07	-0.18	151.2	1.62	0.01	Not required
	WLAN5GHz		0.941	5	1.94	6.84	-0.14				



0 dB = 0.925 W/kg

Case #22	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 5	Back	1.159	5	-1.2	-7.75	-0.19	149.2	2.10	0.02	Not required
	WLAN5GHz		0.941	5	1.94	6.84	-0.14				



0 dB = 1.86 W/kg