FCC SAR TEST REPORT

FCC ID	:	**PY7-50241N**
Equipment	:	**GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, and NFC**
Brand Name	:	**Sony**
Applicant	:	**Sony Mobile Communications Inc. 4-12-3 Higashi-Shinagawa, Shinagawa-ku, Tokyo, 140-0002, Japan**
Manufacturer	:	**Sony Mobile Communications Inc. 4-12-3 Higashi-Shinagawa, Shinagawa-ku, Tokyo, 140-0002, Japan**
Standard	:	**FCC 47 CFR Part 2 (2.1093)**

The product was received on Aug. 08, 2020 and testing was started from Aug. 23, 2020 and completed on Sep. 16, 2020. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample provide by manufacturer and the test data has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been pass the FCC requirement.

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

Approved by: Cona Huang / Deputy Manager

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History of this test report

Report No.	Version	Description	Issued Date
FA042240-01	01	Initial issue of report	Sep. 20, 2020
FA042240-01	02	Update section1 and section15	Oct. 14, 2020
FA042240-01	03	Update section1	Nov. 18, 2020

1. Statement of Compliance

Applicant Name	Sony Mobile Communications Inc.			
EUT Description	GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, and NFC			
Brand Name	Sony			
FCC ID	PY7-50241N			
HW Version	A			
SW Version	5.108			
RF Exposure Conditions	**Equipment Class**			
	Licensed	**DTS**	**NII**	**DSS**
Head (1g SAR W/kg)	0.32	0.46	0.30	0.49
Body-Worn (1g SAR W/kg)	0.48	0.06	0.12	0.07
Wireless Router (1g SAR W/kg)	0.72	0.16		0.15
Product Specific (10g SAR W/kg)			0.39	
Highest Simultaneous Transmission (1g SAR W/kg)	Head: 1.21 Body-worn: 0.70 Hotspot: 0.72	Head: 0.85 Body-worn: 0.61 Hotspot:0.72	Head: 1.21 Body-worn: 0.70 Hotspot: NA	Head: 1.21 Body-worn:0.70 Hotspot:0.72
Highest Simultaneous Transmission (10g SAR W/kg)			Product Specific: 0.59	
Date Tested	2020/8/1 ~ 2020/9/16			
Test Result	Pass			

Remark:

1. The FCC ID: PY7-50241N and FCC ID:PY7-77310Z are identical, the HW identical, the difference are “the power of cellular LTE B2/4/66” and “the WLAN simultaneous transmission function”. The power of LTE B2/4/66 are increased by SW and hence a new FCC ID is required, and data re-use strategy is used for PY7-50241N(this device). And though PY7-77310Z(lead model) disables “the WLAN simultaneous transmission function”, PY7-50241N(this device) enables it by SW. Normally data re-use of SAR without spot check is not permitted, however, we got the FCC approval in the above limited condition. Hence the conducted power/RF results of WLAN/BT, and SAR of BT, and SAR of GSM850/1900, UMTS B2/B4/B5, LTE B7/B12 are inherited from PY7-77310Z(lead model) without spot check.
2. This device 2.4GHz WLAN support Hotspot operation and Bluetooth support tethering applications.
3. This device utilizes a proprietary mechanism to set output power for cellular operations in head mode (audio routed to the earpiece), body mode or hot spot mode. The device operates at its maximum power in all bands in head mode and power is reduced in some bands for body mode and for hot spot mode. The mechanism is described in detail in the operational description and has been reviewed and approved by FCC via manufacturer KDB inquiry. The output power for the Wi-Fi transmitter is reduced when operating in simultaneous dual band mode with both 2.4 GHz and 5GHz transmitters operational simultaneously.

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

Reviewed by: Jason Wang
Report Producer: Daisy Peng

2. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards, if the KDB standards were not list within TAF approval, because it is include in the FCC KDB 447498.

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01
- FCC KDB 941225 D07 UMPC Mini Tablet v01r02

3. Equipment Under Test (EUT) Information

3.1 General Information

Wireless Technologies	Frequency	Operating Mode	
GSM	850 1900	· GSM Voice · GPRS (GMSK) · EDGE (8PSK)	Multi-Slot Class: Class 33
	Does device support dual transfer mode? (Yes)		
W-CDMA (UMTS)	Band 2 Band 4 Band 5	· AMR / RMC 12.2Kbps · HSDPA(Rel.9) · HSUPA(Rel.9) · DC-HSDPA(Rel.9)	
LTE (FDD)	Band 2 Band 4 Band 5 Band 7 Band 12 Band 13 Band 66	· QPSK · 16QAM · 64QAM	
LTE (TDD)	Band 48		
WiFi	2.4GHz: 2412 MHz ~ 2462 MHz	· 11b · 11g · 11n (HT20) · 11ax (HE20)	
	5GHz: 5.2GHz: 5180 MHz ~ 5240 MHz 5.3GHz: 5260 MHz ~ 5320 MHz 5.5GHz: 5500 MHz ~ 5720 MHz 5.8GHz: 5745 MHz ~ 5825 MHz	· 11a · 11n (HT20) · 11n (HT40) · 11ac (VHT20) · 11ac (VHT40) · 11ac (VHT80) · 11ax (HE20) · 11ax (HE40) · 11ax (HE80)	
Bluetooth	2.4GHz	· BR / EDR / LE	
NFC	13.56MHz	· ASK	

3.2 Device Serial Number

Band	SN
WWAN	QV7100G73Y
	QV7100JX3Y
	QV7100KQ3Y
	QV7100FW3Y
	QV7100KS3Y
	QV7100MB3Y
WLAN	QV7100GU3Y
	QV7100X43Y
	QV7100X33Y

Note: Several samples were used with identical hardware to support SAR testing. The manufacturer has confirmed that the device tested gave the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.

3.3 General LTE SAR Test and Reporting Considerations

<table>
<tr><th colspan="2">Summarized necessary items addressed in KDB 941225 D05 v02r05</th></tr>
<tr><td>FCC ID</td><td>PY7-50241N</td></tr>
<tr><td>Equipment Name</td><td>GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, and NFC</td></tr>
<tr><td>Operating Frequency Range of each LTE transmission band</td><td>LTE Band 2: 1850 MHz ~ 1910 MHz
LTE Band 4: 1710 MHz ~ 1755 MHz
LTE Band 5: 824 MHz ~ 849 MHz
LTE Band 7: 2500 MHz ~ 2570 MHz
LTE Band 12: 699 MHz ~ 716 MHz
LTE Band 13: 777 MHz ~ 787 MHz
LTE Band 48: 3550 MHz ~ 3700 MHz
LTE Band 66: 1710 MHz ~ 1780 MHz</td></tr>
<tr><td>Channel Bandwidth</td><td>LTE Band 02:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 04:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 05:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 07: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 13: 5MHz, 10MHz
LTE Band 48: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 66:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz</td></tr>
<tr><td>uplink modulations used</td><td>QPSK / 16QAM / 64QAM</td></tr>
<tr><td>LTE Voice / Data requirements</td><td>Voice and Data</td></tr>
<tr><td>LTE MPR permanently built-in by design</td><td>
Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th><th rowspan="2">MPR (dB)</th></tr>
<tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr>
<tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</td></tr>
<tr><td>256 QAM</td><td colspan="6">≥ 1</td><td>≤ 5</td></tr>
</table>
</td></tr>
<tr><td>LTE A-MPR</td><td>In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)</td></tr>
<tr><td>Spectrum plots for RB configuration</td><td>A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.</td></tr>
</table>

Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900
LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 5								
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844
LTE Band 7								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510
M	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560
LTE Band 12								
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711
LTE Band 13								
	Bandwidth 5 MHz				Bandwidth 10 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23205		779.5		23230		782	
M	23230		782					
H	23255		784.5					
LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770
LTE Band 48								
	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	55265	3552.5	55290	3555	55315	3557.5	55340	3560
L M	55810	3607	55815	3607.5	55820	3608	55830	3609
M H	56170	3643	56165	3642.5	56160	3642	56150	3641
H	56715	3697.5	56690	3695	56665	3692.5	56640	3690

4. RF Exposure Limits

4.1 Uncontrolled Environment

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

4.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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

5. Specific Absorption Rate (SAR)

5.1 Introduction

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

5.2 SAR Definition

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

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

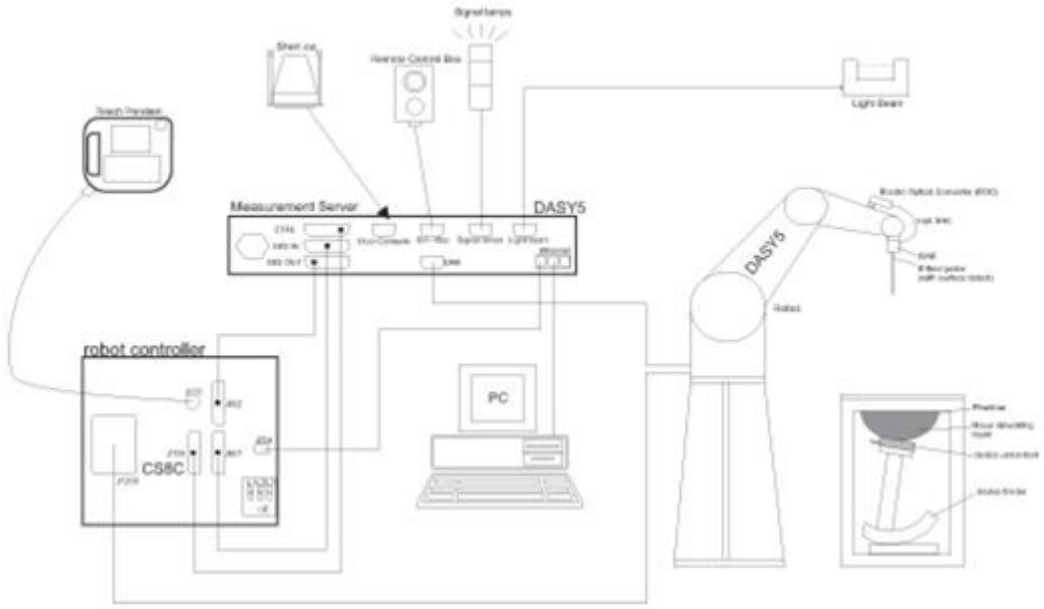
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

6. System Description and Setup

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



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

6.1 Test Side Location

Sporton Lab and below test site location are accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190 and 0007) and the FCC designation No. TW1190 and TW0007 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test.

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

6.2 E-Field Probe

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

<ES3DV3 Probe>

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

<EX3DV4 Probe>

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

6.3 Data Acquisition Electronics (DAE)

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

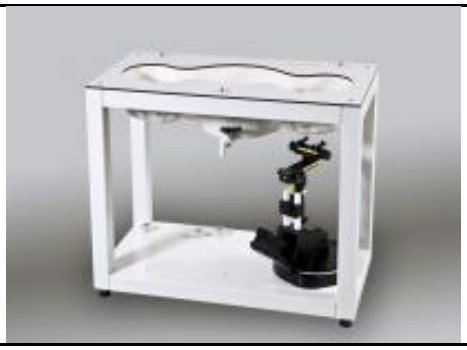
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Fig 5.1 Photo of DAE

6.4 Phantom

<SAM Twin Phantom>

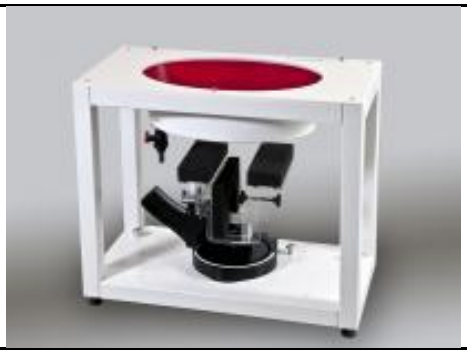
Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom



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

<ELI Phantom>

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



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

6.5 Device Holder

<Mounting Device for Hand-Held Transmitter>

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

Mounting Device for Hand-Held Transmitters

Mounting Device Adaptor for Wide-Phones

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

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

Mounting Device for Laptops

7. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

<SAR measurement>

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

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

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

7.1 Spatial Peak SAR Evaluation

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

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

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

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

7.2 Power Reference Measurement

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

7.3 Area Scan

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

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

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	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.	

7.4 Zoom Scan

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

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

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

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

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

7.5 Volume Scan Procedures

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

7.6 Power Drift Monitoring

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

8. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	1750MHz System Validation Kit(2)	D1750V2	1112	Mar. 07, 2019	Mar. 05, 2021
SPEAG	1900MHz System Validation Kit(2)	D1900V2	5d041	Sep. 11, 2018	Sep. 09, 2020
SPEAG	2450MHz System Validation Kit	D2450V2	929	Nov. 21, 2019	Nov. 20, 2020
SPEAG	5GHz System Validation Kit(2)	D5GHzV2	1006	Sep. 27, 2018	Sep. 25, 2020
SPEAG	Data Acquisition Electronics	DAE4	376	Dec. 06, 2019	Dec. 05, 2020
SPEAG	Data Acquisition Electronics	DAE4	916	Dec. 17, 2019	Dec. 16, 2020
SPEAG	Data Acquisition Electronics	DAE4	1399	Feb. 18, 2020	Feb. 17, 2021
SPEAG	Dosimetric E-Field Probe	ES3DV3	3184	Sep. 25, 2019	Sep. 24, 2020
SPEAG	Dosimetric E-Field Probe	ES3DV3	3071	Dec. 18, 2019	Dec. 17, 2020
SPEAG	Dosimetric E-Field Probe	EX3DV4	7306	Jul. 24, 2020	Jul. 23, 2021
SPEAG	Dosimetric E-Field Probe	EX3DV4	7515	Oct. 22, 2019	Oct. 21, 2020
RCPTWN	Thermometer	HTC-1	TM685-1	Nov. 12, 2019	Nov. 11, 2020
RCPTWN	Thermometer	HTC-1	TM560-2	Nov. 12, 2019	Nov. 11, 2020
Anritsu	Radio Communication Analyzer	MT8821C	6201341950	Oct. 31, 2019	Oct. 30, 2020
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Nov. 20, 2019	Nov. 19, 2020
Agilent	ENA Network Analyzer	E5071C	MY46104885	Sep. 06, 2019	Sep. 05, 2020
Agilent	ENA Network Analyzer	E5071C	MY46101588	Jun. 10, 2020	Jun. 09, 2021
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Sep. 18, 2019	Sep. 17, 2020
SPEAG	Dielectric Probe Kit	DAK-3.5	1146	Jul. 22, 2020	Jul. 21, 2021
LINE SEIKI	Digital Thermometer	DTM3000-spezial	2942	Nov. 18, 2019	Nov. 17, 2020
Anritsu	Power Meter	ML2495A	932001	Oct. 03, 2019	Oct. 02, 2020
Anritsu	Power Sensor	MA2411B	846202	Oct. 03, 2019	Oct. 02, 2020
Anritsu	Power Meter	ML2495A	1218006	Oct. 14, 2019	Oct. 13, 2020
Anritsu	Power Sensor	MA2411B	1207363	Oct. 14, 2019	Oct. 13, 2020
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jun. 30, 2020	Jun. 29, 2021
Anritsu	Spectrum Analyzer	N9010A	MY53470118	Mar. 12, 2020	Mar. 11, 2021
Mini-Circuits	Power Amplifier	ZVE-8G+	6418	Oct. 16, 2019	Oct. 15, 2020
Mini-Circuits	Power Amplifier	ZHL-42W+	715701915	May. 07, 2020	May. 06, 2021
ATM	Dual Directional Coupler	C122H-10	P610410z-02	Note 1	
Woken	Attenuator 1	WK0602-XX	N/A	Note 1	
PE	Attenuator 2	PE7005-10	N/A	Note 1	
PE	Attenuator 3	PE7005- 3	N/A	Note 1	

General Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.
2. The dipole calibration interval can be extended to 3 years with justification according to KDB 865664 D01. The dipoles are also not physically damaged, or repaired during the interval. The justification data in appendix C can be found which the return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration for each dipole.

9. System Verification

9.1 Tissue 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.

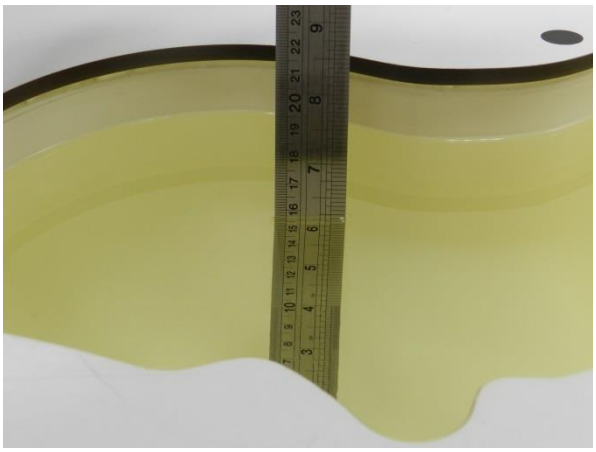


Fig 10.1Photo of Liquid Height for Head SAR

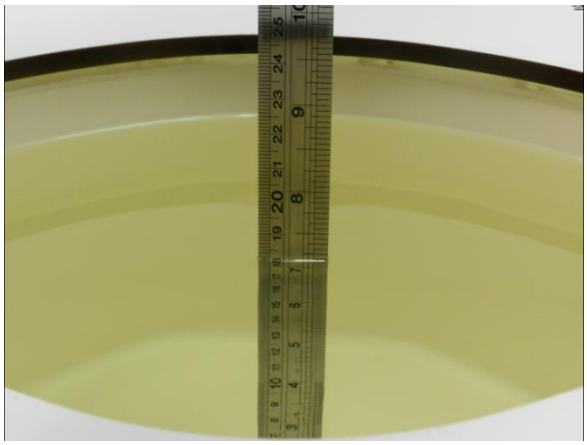


Fig 10.2 Photo of Liquid Height for Body SAR

9.2 Tissue Verification

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

Tissue check appears that head liquid is also used for body SAR test

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0

Simulating Liquid for 5GHz, Manufactured by SPEAG

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

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
1750	22.7	1.399	40.569	1.37	40.10	2.12	1.17	±5	2020/8/24
1900	22.7	1.426	40.518	1.40	40.00	1.86	1.30	±5	2020/8/24
2450	22.3	1.852	39.332	1.80	39.20	2.89	0.34	±5	2020/9/15
2450	22.4	1.842	38.777	1.80	39.20	2.33	-1.08	±5	2020/9/17
5250	22.1	4.682	36.107	4.71	35.95	-0.59	0.44	±5	2020/9/15
5250	22.1	4.653	35.731	4.71	35.95	-1.21	-0.61	±5	2020/9/16
5250	22.7	4.770	36.909	4.71	35.95	1.27	2.67	±5	2020/9/17
5600	22.1	5.033	35.583	5.07	35.50	-0.73	0.23	±5	2020/9/15
5600	22.1	5.000	35.207	5.07	35.50	-1.38	-0.83	±5	2020/9/16
5600	22.7	5.145	36.398	5.07	35.50	1.48	2.53	±5	2020/9/17
5600	22.5	5.093	36.364	5.07	35.50	0.45	2.43	±5	2020/9/18
5750	22.1	5.183	35.445	5.22	35.35	-0.71	0.27	±5	2020/9/15
5750	22.1	5.150	35.069	5.22	35.35	-1.34	-0.79	±5	2020/9/16
5750	22.7	5.307	36.184	5.22	35.35	1.67	2.36	±5	2020/9/17
5750	22.5	5.259	36.181	5.22	35.35	0.75	2.35	±5	2020/9/18

9.3 System Performance Check Results

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

Date	Frequency (MHz)	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2020/8/24	1750	250	D1750V2-1112	ES3DV3 - SN3184	DAE4 Sn916	8.99	36.70	35.96	-2.02
2020/8/24	1900	250	D1900V2-5d041	ES3DV3 - SN3184	DAE4 Sn916	9.67	40.20	38.68	-3.78
2020/9/15	2450	250	D2450V2-929	ES3DV3 - SN3071	DAE4 Sn916	12.40	53.10	49.6	-6.59
2020/9/17	2450	250	D2450V2-736	EX3DV4 - SN7306	DAE4 Sn1399	14.20	52.70	56.8	7.78
2020/9/15	5250	100	D5GHzV2-1006-5250	EX3DV4 - SN7515	DAE4 Sn376	7.55	80.70	75.5	-6.44
2020/9/16	5250	100	D5GHzV2-1128-5250	EX3DV4 - SN7515	DAE4 Sn376	7.74	80.00	77.4	-3.25
2020/9/17	5250	100	D5GHzV2-1006-5250	EX3DV4 - SN7515	DAE4 Sn376	7.94	80.70	79.4	-1.61
2020/9/15	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN7515	DAE4 Sn376	8.72	83.30	87.2	4.68
2020/9/16	5600	100	D5GHzV2-1128-5600	EX3DV4 - SN7515	DAE4 Sn376	8.66	82.40	86.6	5.10
2020/9/17	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN7515	DAE4 Sn376	8.92	83.30	89.2	7.08
2020/9/18	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN7515	DAE4 Sn376	8.87	83.30	88.7	6.48
2020/9/15	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN7515	DAE4 Sn376	8.11	80.40	81.1	0.87
2020/9/16	5750	100	D5GHzV2-1128-5750	EX3DV4 - SN7515	DAE4 Sn376	8.06	79.10	80.6	1.90
2020/9/17	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN7515	DAE4 Sn376	8.32	80.40	83.2	3.48
2020/9/18	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN7515	DAE4 Sn376	8.23	80.40	82.3	2.36

Date	Frequency (MHz)	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2020/9/15	5250	100	D5GHzV2-1006-5250	EX3DV4 - SN7515	DAE4 Sn376	2.11	23.20	21.1	-9.05
2020/9/16	5250	100	D5GHzV2-1128-5250	EX3DV4 - SN7515	DAE4 Sn376	2.16	22.90	21.6	-5.68
2020/9/17	5250	100	D5GHzV2-1006-5250	EX3DV4 - SN7515	DAE4 Sn376	2.22	23.20	22.2	-4.31
2020/9/15	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN7515	DAE4 Sn376	2.41	23.80	24.1	1.26
2020/9/16	5600	100	D5GHzV2-1128-5600	EX3DV4 - SN7515	DAE4 Sn376	2.40	23.60	24	1.69
2020/9/17	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN7515	DAE4 Sn376	2.47	23.80	24.7	3.78
2020/9/18	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN7515	DAE4 Sn376	2.51	23.80	25.1	5.46
2020/9/15	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN7515	DAE4 Sn376	2.25	22.90	22.5	-1.75
2020/9/16	5750	100	D5GHzV2-1128-5750	EX3DV4 - SN7515	DAE4 Sn376	2.24	22.60	22.4	-0.88
2020/9/17	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN7515	DAE4 Sn376	2.31	22.90	23.1	0.87
2020/9/18	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN7515	DAE4 Sn376	2.28	22.90	22.8	-0.44

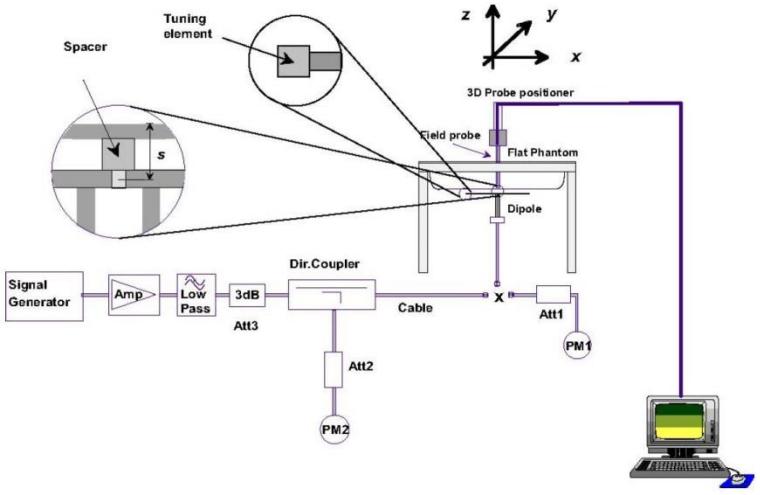


Fig 8.3.1 System Performance Check Setup

Fig 8.3.2 Setup Photo

10. RF Exposure Positions

10.1 Ear and handset reference point

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

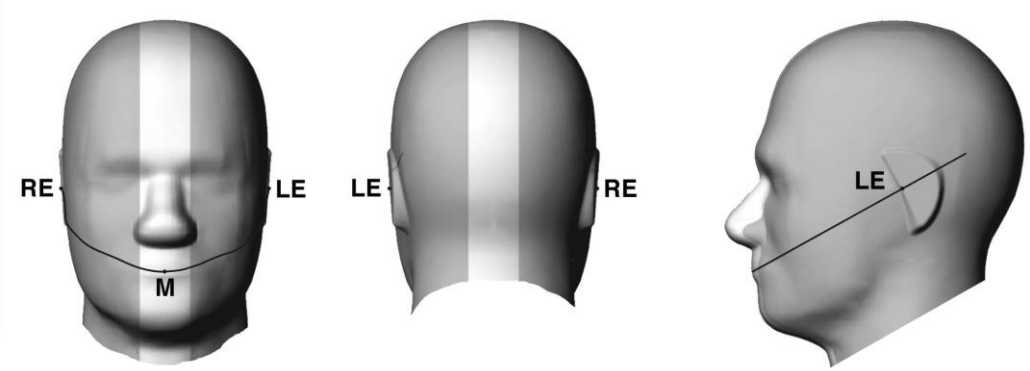


Fig 9.1.1 Front, back, and side views of SAM twin phantom

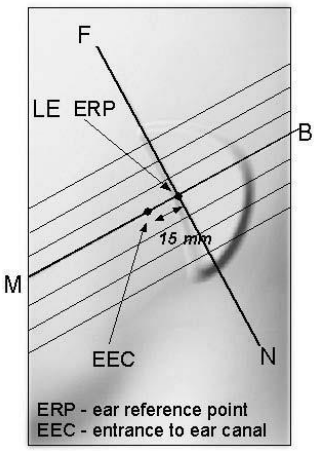


Fig 9.1.2 Close-up side view of phantom showing the ear region.

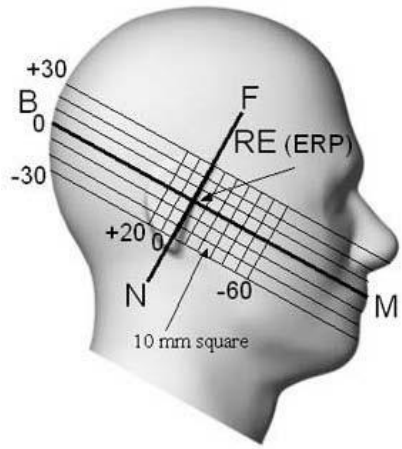


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

10.2 Definition of the cheek position

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

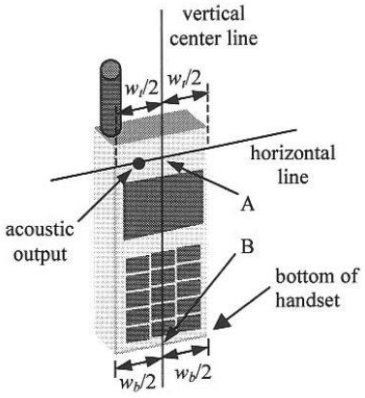


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case

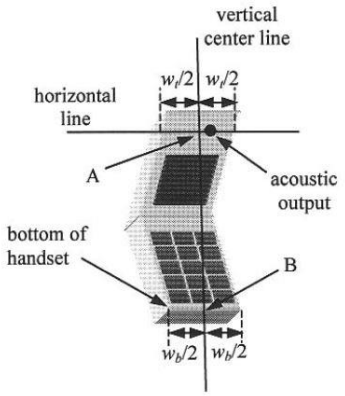


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

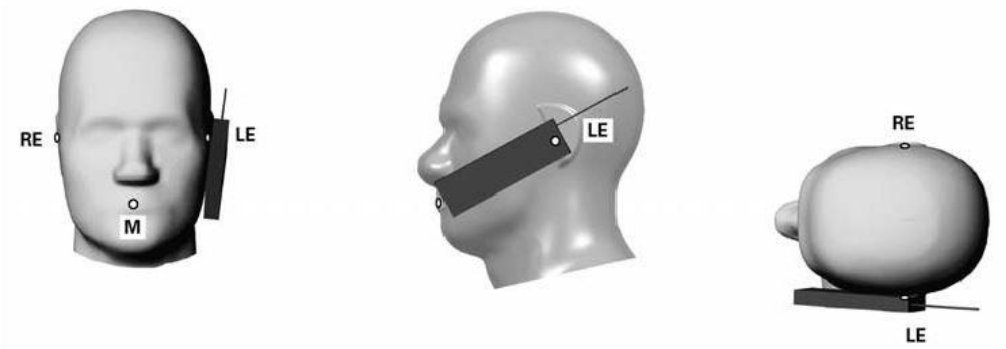


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

10.3 Definition of the tilt position

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

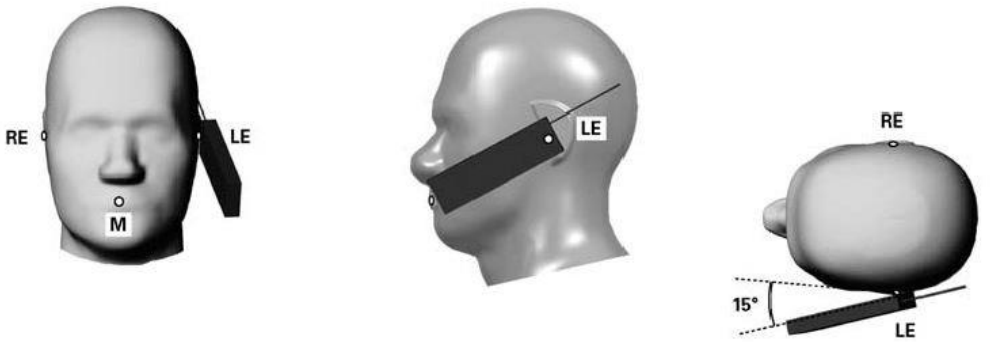


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

10.4 Body Worn Accessory

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

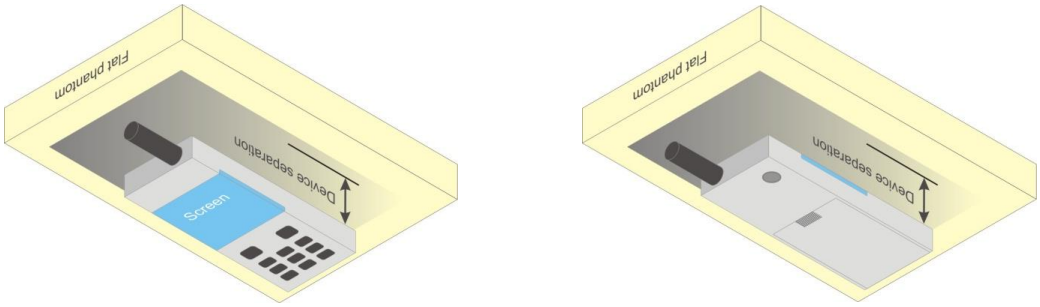


Fig 9.4 Body Worn Position

10.5 Product Specific Exposure

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

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

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

10.6 Wireless Router

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

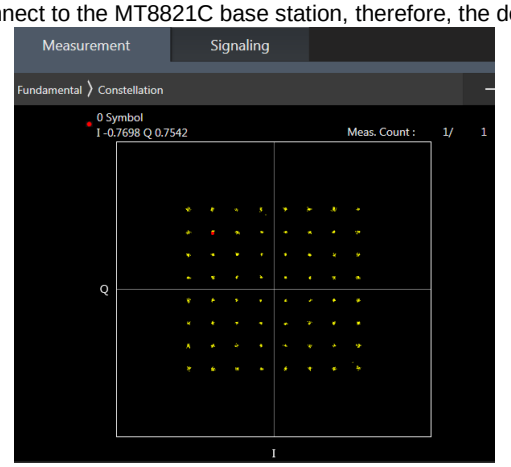
When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for 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.

11. LTE Output Power (Unit: dBm)

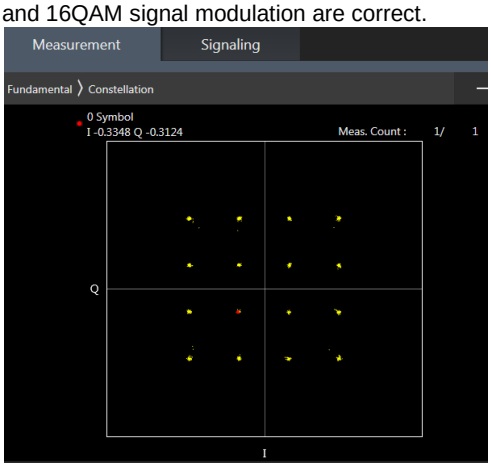
<LTE Conducted Power>

General Note:

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



64QAM



16QAM

Head 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	23.75	23.66	23.65	25	0
20	QPSK	1	49	23.65	23.65	23.59		
20	QPSK	1	99	23.59	23.54	23.55		
20	QPSK	50	0	22.83	22.70	22.66	24	1
20	QPSK	50	24	22.81	22.80	22.70		
20	QPSK	50	50	22.80	22.77	22.69		
20	QPSK	100	0	22.85	22.77	22.68		
20	16QAM	1	0	23.08	22.98	22.99	24	1
20	16QAM	1	49	23.03	22.94	22.91		
20	16QAM	1	99	22.94	22.91	22.91		
20	16QAM	50	0	21.86	21.70	21.67	23	2
20	16QAM	50	24	21.86	21.82	21.72		
20	16QAM	50	50	21.82	21.78	21.76		
20	16QAM	100	0	21.85	21.77	21.68		
20	64QAM	1	0	21.93	21.81	21.81	23	2
20	64QAM	1	49	21.90	21.83	21.79		
20	64QAM	1	99	21.84	21.82	21.77		
20	64QAM	50	0	20.86	20.73	20.70	22	3
20	64QAM	50	24	20.89	20.84	20.72		
20	64QAM	50	50	20.84	20.81	20.78		
20	64QAM	100	0	20.86	20.80	20.71		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	23.74	23.69	23.64	25	0
15	QPSK	1	37	23.70	23.65	23.63		
15	QPSK	1	74	23.71	23.64	23.62		
15	QPSK	36	0	22.88	22.72	22.69	24	1
15	QPSK	36	20	22.89	22.85	22.78		
15	QPSK	36	39	22.86	22.81	22.78		
15	QPSK	75	0	22.86	22.80	22.78		
15	16QAM	1	0	23.04	23.00	22.97	24	1
15	16QAM	1	37	23.04	22.97	22.94		
15	16QAM	1	74	23.00	22.96	22.91		
15	16QAM	36	0	21.88	21.73	21.67	23	2
15	16QAM	36	20	21.89	21.83	21.77		
15	16QAM	36	39	21.86	21.82	21.77		
15	16QAM	75	0	21.87	21.81	21.78		
15	64QAM	1	0	21.92	21.86	21.81	23	2
15	64QAM	1	37	21.96	21.91	21.86		
15	64QAM	1	74	21.92	21.88	21.84		
15	64QAM	36	0	20.91	20.74	20.72	22	3
15	64QAM	36	20	20.93	20.86	20.82		
15	64QAM	36	39	20.91	20.85	20.81		
15	64QAM	75	0	20.87	20.83	20.79		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	23.70	23.65	23.62	25	0
10	QPSK	1	25	23.69	23.63	23.57		
10	QPSK	1	49	23.66	23.66	23.59		
10	QPSK	25	0	22.84	22.71	22.66	24	1

10	QPSK	25	12	22.86	22.80	22.69		
10	QPSK	25	25	22.86	22.80	22.78		
10	QPSK	50	0	22.87	22.81	22.70		
10	16QAM	1	0	23.10	23.00	23.01		
10	16QAM	1	25	23.07	23.02	22.98	24	1
10	16QAM	1	49	23.06	23.02	23.00		
10	16QAM	25	0	21.84	21.69	21.67		
10	16QAM	25	12	21.88	21.82	21.73	23	2
10	16QAM	25	25	21.85	21.82	21.77		
10	16QAM	50	0	21.87	21.82	21.72		
10	64QAM	1	0	22.01	21.87	21.82		
10	64QAM	1	25	21.98	21.94	21.90	23	2
10	64QAM	1	49	21.94	21.95	21.89		
10	64QAM	25	0	20.88	20.74	20.71		
10	64QAM	25	12	20.92	20.86	20.75	22	3
10	64QAM	25	25	20.89	20.85	20.80		
10	64QAM	50	0	20.89	20.86	20.73		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	23.73	23.59	23.60		
5	QPSK	1	12	23.74	23.69	23.70	25	0
5	QPSK	1	24	23.74	23.71	23.68		
5	QPSK	12	0	22.87	22.71	22.73		
5	QPSK	12	7	22.87	22.83	22.77	24	1
5	QPSK	12	13	22.89	22.85	22.74		
5	QPSK	25	0	22.86	22.80	22.75		
5	16QAM	1	0	23.08	22.94	22.93		
5	16QAM	1	12	23.09	23.05	23.00	24	1
5	16QAM	1	24	23.10	23.08	23.02		
5	16QAM	12	0	21.88	21.76	21.78		
5	16QAM	12	7	21.89	21.88	21.84	23	2
5	16QAM	12	13	21.85	21.81	21.83		
5	16QAM	25	0	21.86	21.82	21.77		
5	64QAM	1	0	22.04	21.92	21.91		
5	64QAM	1	12	22.02	21.96	21.90	23	2
5	64QAM	1	24	21.99	21.99	21.95		
5	64QAM	12	0	20.90	20.78	20.80		
5	64QAM	12	7	20.93	20.90	20.84	22	3
5	64QAM	12	13	20.90	20.87	20.81		
5	64QAM	25	0	20.87	20.81	20.79		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	23.70	23.65	23.61		
3	QPSK	1	8	23.74	23.74	23.71	25	0
3	QPSK	1	14	23.73	23.68	23.67		
3	QPSK	8	0	22.86	22.81	22.72		
3	QPSK	8	4	22.90	22.82	22.77	24	1
3	QPSK	8	7	22.86	22.82	22.78		
3	QPSK	15	0	22.88	22.78	22.78		
3	16QAM	1	0	23.07	23.00	22.96		
3	16QAM	1	8	23.15	23.11	23.08	24	1
3	16QAM	1	14	23.10	23.03	23.00		
3	16QAM	8	0	21.92	21.86	21.80		
3	16QAM	8	4	21.97	21.85	21.82	23	2
3	16QAM	8	7	21.89	21.87	21.85		
3	16QAM	15	0	21.91	21.82	21.80		

3	64QAM	1	0	22.00	21.94	21.87	23	2
3	64QAM	1	8	22.10	22.03	21.99		
3	64QAM	1	14	22.03	21.97	21.93		
3	64QAM	8	0	20.91	20.84	20.82	22	3
3	64QAM	8	4	20.97	20.86	20.88		
3	64QAM	8	7	20.88	20.83	20.84		
3	64QAM	15	0	20.91	20.86	20.80		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	23.63	23.60	23.55	25	0
1.4	QPSK	1	3	23.69	23.64	23.63		
1.4	QPSK	1	5	23.65	23.57	23.53		
1.4	QPSK	3	0	23.67	23.65	23.54		
1.4	QPSK	3	1	23.73	23.70	23.58		
1.4	QPSK	3	3	23.69	23.63	23.57		
1.4	QPSK	6	0	22.76	22.69	22.66	24	1
1.4	16QAM	1	0	22.98	22.92	22.86	24	1
1.4	16QAM	1	3	23.04	22.96	22.94		
1.4	16QAM	1	5	22.97	22.92	22.90		
1.4	16QAM	3	0	22.77	22.71	22.65		
1.4	16QAM	3	1	22.81	22.77	22.74		
1.4	16QAM	3	3	22.77	22.71	22.68		
1.4	16QAM	6	0	21.85	21.77	21.72	23	2
1.4	64QAM	1	0	21.93	21.84	21.82	23	2
1.4	64QAM	1	3	21.99	21.93	21.87		
1.4	64QAM	1	5	21.93	21.86	21.82		
1.4	64QAM	3	0	21.87	21.81	21.80		
1.4	64QAM	3	1	21.93	21.88	21.83		
1.4	64QAM	3	3	21.87	21.85	21.78		
1.4	64QAM	6	0	20.77	20.73	20.70	22	3

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	23.61	23.64	23.69	25	0
20	QPSK	1	49	23.42	23.47	23.52		
20	QPSK	1	99	23.46	23.42	23.50		
20	QPSK	50	0	22.71	22.70	22.69	24	1
20	QPSK	50	24	22.70	22.61	22.63		
20	QPSK	50	50	22.63	22.62	22.63		
20	QPSK	100	0	22.63	22.67	22.59		
20	16QAM	1	0	22.92	22.94	23.02	24	1
20	16QAM	1	49	22.78	22.81	22.85		
20	16QAM	1	99	22.80	22.73	22.80		
20	16QAM	50	0	21.68	21.71	21.69	23	2
20	16QAM	50	24	21.71	21.64	21.63		
20	16QAM	50	50	21.63	21.62	21.63		
20	16QAM	100	0	21.65	21.64	21.62		
20	64QAM	1	0	21.10	21.83	21.58	23	2
20	64QAM	1	49	21.61	21.67	21.69		
20	64QAM	1	99	21.67	21.28	21.73		
20	64QAM	50	0	20.68	20.75	20.41	22	3
20	64QAM	50	24	20.71	20.68	20.64		
20	64QAM	50	50	20.66	20.43	20.66		
20	64QAM	100	0	20.69	20.67	20.65		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	23.45	23.66	23.66	25	0
15	QPSK	1	37	23.43	23.50	23.49		
15	QPSK	1	74	23.49	23.50	23.50		
15	QPSK	36	0	22.65	22.72	22.70	24	1
15	QPSK	36	20	22.63	22.67	22.63		
15	QPSK	36	39	22.62	22.68	22.66		
15	QPSK	75	0	22.69	22.65	22.65		
15	16QAM	1	0	22.67	22.96	22.94	24	1
15	16QAM	1	37	22.75	22.82	22.86		
15	16QAM	1	74	22.76	22.78	22.76		
15	16QAM	36	0	21.65	21.72	21.71	23	2
15	16QAM	36	20	21.67	21.63	21.65		
15	16QAM	36	39	21.63	21.66	21.67		
15	16QAM	75	0	21.68	21.65	21.68		
15	64QAM	1	0	21.28	21.80	21.33	23	2
15	64QAM	1	37	21.69	21.74	21.75		
15	64QAM	1	74	21.69	21.29	21.72		
15	64QAM	36	0	20.47	20.76	20.53	22	3
15	64QAM	36	20	20.70	20.72	20.68		
15	64QAM	36	39	20.67	20.45	20.70		
15	64QAM	75	0	20.69	20.70	20.67		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	23.42	23.60	23.60	25	0
10	QPSK	1	25	23.49	23.57	23.58		
10	QPSK	1	49	23.55	23.58	23.54		
10	QPSK	25	0	22.66	22.65	22.62	24	1
10	QPSK	25	12	22.67	22.69	22.64		

10	QPSK	25	25	22.67	22.76	22.72		
10	QPSK	50	0	22.70	22.66	22.65		
10	16QAM	1	0	22.75	22.98	22.96	24	1
10	16QAM	1	25	22.94	22.99	22.98		
10	16QAM	1	49	22.93	22.94	22.96		
10	16QAM	25	0	21.66	21.63	21.63	23	2
10	16QAM	25	12	21.68	21.67	21.68		
10	16QAM	25	25	21.68	21.74	21.74		
10	16QAM	50	0	21.70	21.65	21.68		
10	64QAM	1	0	21.00	21.79	21.65	23	2
10	64QAM	1	25	21.76	21.89	21.89		
10	64QAM	1	49	21.82	21.38	21.86		
10	64QAM	25	0	20.21	20.68	20.67	22	3
10	64QAM	25	12	20.65	20.72	20.69		
10	64QAM	25	25	20.72	20.58	20.78		
10	64QAM	50	0	20.61	20.69	20.73		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	23.48	23.52	23.60	25	0
5	QPSK	1	12	23.62	23.68	23.65		
5	QPSK	1	24	23.63	23.65	23.65		
5	QPSK	12	0	22.68	22.64	22.70	24	1
5	QPSK	12	7	22.70	22.66	22.76		
5	QPSK	12	13	22.66	22.71	22.73		
5	QPSK	25	0	22.65	22.67	22.69		
5	16QAM	1	0	22.82	22.87	22.94	24	1
5	16QAM	1	12	22.90	22.94	22.95		
5	16QAM	1	24	22.93	22.99	22.98		
5	16QAM	12	0	21.71	21.67	21.74	23	2
5	16QAM	12	7	21.74	21.69	21.77		
5	16QAM	12	13	21.71	21.73	21.73		
5	16QAM	25	0	21.67	21.65	21.73		
5	64QAM	1	0	21.03	21.82	21.88	23	2
5	64QAM	1	12	21.25	21.83	21.83		
5	64QAM	1	24	21.52	21.59	21.90		
5	64QAM	12	0	20.05	20.72	20.79	22	3
5	64QAM	12	7	20.27	20.75	20.84		
5	64QAM	12	13	20.40	20.77	20.80		
5	64QAM	25	0	20.18	20.70	20.74		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	23.60	23.56	23.58	25	0
3	QPSK	1	8	23.67	23.68	23.67		
3	QPSK	1	14	23.60	23.63	23.63		
3	QPSK	8	0	22.65	22.62	22.69	24	1
3	QPSK	8	4	22.71	22.70	22.73		
3	QPSK	8	7	22.70	22.70	22.71		
3	QPSK	15	0	22.65	22.65	22.69		
3	16QAM	1	0	22.89	22.87	22.91	24	1
3	16QAM	1	8	22.96	23.04	23.00		
3	16QAM	1	14	22.95	22.97	22.97		
3	16QAM	8	0	21.75	21.69	21.77	23	2
3	16QAM	8	4	21.78	21.82	21.79		
3	16QAM	8	7	21.77	21.79	21.74		
3	16QAM	15	0	21.69	21.67	21.74		
3	64QAM	1	0	21.10	21.78	21.82	23	2

3	64QAM	1	8	21.28	21.92	21.95		
3	64QAM	1	14	21.33	21.77	21.86		
3	64QAM	8	0	20.08	20.71	20.78	22	3
3	64QAM	8	4	20.17	20.82	20.79		
3	64QAM	8	7	20.20	20.77	20.77		
3	64QAM	15	0	20.13	20.67	20.71		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	23.51	23.54	23.52	25	0
1.4	QPSK	1	3	23.58	23.63	23.61		
1.4	QPSK	1	5	23.52	23.53	23.52		
1.4	QPSK	3	0	23.56	23.58	23.56		
1.4	QPSK	3	1	23.58	23.60	23.59		
1.4	QPSK	3	3	23.58	23.57	23.56		
1.4	QPSK	6	0	22.61	22.62	22.62	24	1
1.4	16QAM	1	0	22.84	22.88	22.84	24	1
1.4	16QAM	1	3	22.90	22.98	22.91		
1.4	16QAM	1	5	22.83	22.89	22.85		
1.4	16QAM	3	0	22.62	22.64	22.64		
1.4	16QAM	3	1	22.70	22.73	22.70		
1.4	16QAM	3	3	22.60	22.64	22.63		
1.4	16QAM	6	0	21.71	21.72	21.70	23	2
1.4	64QAM	1	0	21.08	21.84	21.79	23	2
1.4	64QAM	1	3	21.20	21.88	21.84		
1.4	64QAM	1	5	21.15	21.76	21.77		
1.4	64QAM	3	0	21.09	21.76	21.74		
1.4	64QAM	3	1	21.17	21.83	21.80		
1.4	64QAM	3	3	21.11	21.79	21.77		
1.4	64QAM	6	0	20.06	20.65	20.65	22	3

<LTE Band 66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	23.64	23.70	23.57	25	0
20	QPSK	1	49	23.54	23.57	23.43		
20	QPSK	1	99	23.49	23.57	23.33		
20	QPSK	50	0	22.64	22.73	22.57	24	1
20	QPSK	50	24	22.72	22.71	22.63		
20	QPSK	50	50	22.66	22.70	22.55		
20	QPSK	100	0	22.65	22.64	22.66		
20	16QAM	1	0	22.97	23.02	22.93	24	1
20	16QAM	1	49	22.88	22.94	22.76		
20	16QAM	1	99	22.87	22.88	22.68		
20	16QAM	50	0	21.64	21.71	21.60	23	2
20	16QAM	50	24	21.71	21.71	21.63		
20	16QAM	50	50	21.67	21.72	21.56		
20	16QAM	100	0	21.67	21.66	21.63		
20	64QAM	1	0	21.76	21.88	21.76	23	2
20	64QAM	1	49	21.76	21.81	21.69		
20	64QAM	1	99	21.74	21.80	21.58		
20	64QAM	50	0	20.67	20.74	20.61	22	3
20	64QAM	50	24	20.74	20.72	20.68		
20	64QAM	50	50	20.68	20.74	20.58		
20	64QAM	100	0	20.70	20.70	20.64		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	23.56	23.64	23.56	25	0
15	QPSK	1	37	23.52	23.62	23.46		
15	QPSK	1	74	23.49	23.58	23.41		
15	QPSK	36	0	22.59	22.69	22.56	24	1
15	QPSK	36	20	22.69	22.69	22.55		
15	QPSK	36	39	22.64	22.72	22.54		
15	QPSK	75	0	22.65	22.67	22.53		
15	16QAM	1	0	22.86	22.95	22.89	24	1
15	16QAM	1	37	22.82	22.95	22.80		
15	16QAM	1	74	22.81	22.86	22.69		
15	16QAM	36	0	21.61	21.68	21.55	23	2
15	16QAM	36	20	21.68	21.67	21.53		
15	16QAM	36	39	21.65	21.71	21.57		
15	16QAM	75	0	21.67	21.66	21.54		
15	64QAM	1	0	21.74	21.79	21.73	23	2
15	64QAM	1	37	21.73	21.87	21.73		
15	64QAM	1	74	21.74	21.77	21.65		
15	64QAM	36	0	20.65	20.73	20.62	22	3
15	64QAM	36	20	20.71	20.72	20.59		
15	64QAM	36	39	20.68	20.74	20.58		
15	64QAM	75	0	20.69	20.68	20.54		
Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	23.58	23.65	23.47	25	0
10	QPSK	1	25	23.49	23.59	23.41		
10	QPSK	1	49	23.48	23.55	23.37		
10	QPSK	25	0	22.65	22.68	22.54	24	1
10	QPSK	25	12	22.63	22.67	22.58		

10	QPSK	25	25	22.60	22.71	22.52		
10	QPSK	50	0	22.64	22.68	22.50		
10	16QAM	1	0	22.96	23.02	22.88	24	1
10	16QAM	1	25	22.90	22.98	22.79		
10	16QAM	1	49	22.90	22.96	22.78		
10	16QAM	25	0	21.65	21.68	21.51	23	2
10	16QAM	25	12	21.68	21.69	21.60		
10	16QAM	25	25	21.63	21.71	21.52		
10	16QAM	50	0	21.65	21.68	21.49		
10	64QAM	1	0	21.86	21.88	21.75	23	2
10	64QAM	1	25	21.84	21.90	21.75		
10	64QAM	1	49	21.78	21.83	21.71		
10	64QAM	25	0	20.68	20.73	20.54	22	3
10	64QAM	25	12	20.69	20.72	20.63		
10	64QAM	25	25	20.64	20.75	20.56		
10	64QAM	50	0	20.70	20.70	20.56		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	23.59	23.54	23.49	25	0
5	QPSK	1	12	23.62	23.69	23.50		
5	QPSK	1	24	23.52	23.60	23.44		
5	QPSK	12	0	22.67	22.67	22.57	24	1
5	QPSK	12	7	22.68	22.71	22.59		
5	QPSK	12	13	22.63	22.71	22.51		
5	QPSK	25	0	22.62	22.65	22.53		
5	16QAM	1	0	22.90	22.92	22.83	24	1
5	16QAM	1	12	22.91	23.01	22.82		
5	16QAM	1	24	22.89	22.93	22.78		
5	16QAM	12	0	21.69	21.72	21.62	23	2
5	16QAM	12	7	21.70	21.71	21.62		
5	16QAM	12	13	21.66	21.76	21.55		
5	16QAM	25	0	21.67	21.69	21.60		
5	64QAM	1	0	21.86	21.89	21.72	23	2
5	64QAM	1	12	21.86	21.91	21.71		
5	64QAM	1	24	21.82	21.90	21.66		
5	64QAM	12	0	20.75	20.79	20.68	22	3
5	64QAM	12	7	20.76	20.78	20.67		
5	64QAM	12	13	20.73	20.77	20.60		
5	64QAM	25	0	20.70	20.69	20.59		
Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	23.58	23.62	23.50	25	0
3	QPSK	1	8	23.63	23.69	23.54		
3	QPSK	1	14	23.55	23.65	23.43		
3	QPSK	8	0	22.64	22.66	22.57	24	1
3	QPSK	8	4	22.65	22.74	22.59		
3	QPSK	8	7	22.63	22.69	22.53		
3	QPSK	15	0	22.63	22.70	22.58		
3	16QAM	1	0	22.92	22.93	22.80	24	1
3	16QAM	1	8	23.00	23.07	22.86		
3	16QAM	1	14	22.89	22.96	22.82		
3	16QAM	8	0	21.76	21.73	21.62	23	2
3	16QAM	8	4	21.74	21.83	21.64		
3	16QAM	8	7	21.71	21.77	21.60		
3	16QAM	15	0	21.69	21.71	21.61		
3	64QAM	1	0	21.86	21.84	21.74	23	2

3	64QAM	1	8	21.91	22.01	21.79		
3	64QAM	1	14	21.85	21.90	21.72		
3	64QAM	8	0	20.70	20.76	20.65	22	3
3	64QAM	8	4	20.76	20.80	20.66		
3	64QAM	8	7	20.74	20.80	20.62		
3	64QAM	15	0	20.71	20.70	20.58		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	23.49	23.60	23.40	25	0
1.4	QPSK	1	3	23.54	23.64	23.47		
1.4	QPSK	1	5	23.50	23.57	23.39		
1.4	QPSK	3	0	23.54	23.60	23.44		
1.4	QPSK	3	1	23.60	23.66	23.46		
1.4	QPSK	3	3	23.52	23.61	23.44		
1.4	QPSK	6	0	22.57	22.70	22.49	24	1
1.4	16QAM	1	0	22.84	22.93	22.74	24	1
1.4	16QAM	1	3	22.88	22.98	22.76		
1.4	16QAM	1	5	22.84	22.89	22.71		
1.4	16QAM	3	0	22.64	22.70	22.51		
1.4	16QAM	3	1	22.69	22.74	22.55		
1.4	16QAM	3	3	22.62	22.71	22.50		
1.4	16QAM	6	0	21.66	21.72	21.58	23	2
1.4	64QAM	1	0	21.80	21.85	21.67	23	2
1.4	64QAM	1	3	21.86	21.89	21.71		
1.4	64QAM	1	5	21.78	21.84	21.65		
1.4	64QAM	3	0	21.74	21.84	21.63		
1.4	64QAM	3	1	21.80	21.87	21.69		
1.4	64QAM	3	3	21.72	21.81	21.61		
1.4	64QAM	6	0	20.62	20.68	20.51	22	3

Hotspot Mode

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	19.75	19.66	19.62	21	0
20	QPSK	1	49	19.70	19.63	19.57		
20	QPSK	1	99	19.63	19.56	19.55		
20	QPSK	50	0	19.88	19.70	19.66	21	0
20	QPSK	50	24	19.88	19.81	19.66		
20	QPSK	50	50	19.83	19.77	19.73		
20	QPSK	100	0	19.88	19.75	19.66		
20	16QAM	1	0	20.15	20.00	20.00	21	0
20	16QAM	1	49	20.08	19.97	19.91		
20	16QAM	1	99	19.96	19.94	19.93		
20	16QAM	50	0	19.90	19.73	19.68	21	0
20	16QAM	50	24	19.89	19.82	19.72		
20	16QAM	50	50	19.88	19.79	19.77		
20	16QAM	100	0	19.88	19.78	19.68		
20	64QAM	1	0	19.96	19.92	19.88	21	0
20	64QAM	1	49	19.94	19.88	19.86		
20	64QAM	1	99	19.87	19.83	19.87		
20	64QAM	50	0	19.92	19.75	19.72	21	0
20	64QAM	50	24	19.91	19.86	19.75		
20	64QAM	50	50	19.89	19.83	19.80		
20	64QAM	100	0	19.89	19.82	19.69		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	19.75	19.67	19.61	21	0
15	QPSK	1	37	19.71	19.62	19.60		
15	QPSK	1	74	19.68	19.64	19.64		
15	QPSK	36	0	19.83	19.67	19.65	21	0
15	QPSK	36	20	19.85	19.77	19.68		
15	QPSK	36	39	19.83	19.78	19.76		
15	QPSK	75	0	19.83	19.77	19.67		
15	16QAM	1	0	20.05	19.97	19.95	21	0
15	16QAM	1	37	20.02	19.98	19.93		
15	16QAM	1	74	19.98	19.95	19.92		
15	16QAM	36	0	19.85	19.69	19.65	21	0
15	16QAM	36	20	19.86	19.81	19.68		
15	16QAM	36	39	19.83	19.79	19.77		
15	16QAM	75	0	19.86	19.80	19.71		
15	64QAM	1	0	20.00	19.87	19.85	21	0
15	64QAM	1	37	19.99	19.91	19.86		
15	64QAM	1	74	19.91	19.87	19.88		
15	64QAM	36	0	19.91	19.78	19.73	21	0
15	64QAM	36	20	19.93	19.84	19.73		
15	64QAM	36	39	19.91	19.85	19.82		
15	64QAM	75	0	19.88	19.80	19.69		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	19.66	19.57	19.55	21	0
10	QPSK	1	25	19.64	19.57	19.56		
10	QPSK	1	49	19.67	19.59	19.59		
10	QPSK	25	0	19.81	19.66	19.60	21	0

10	QPSK	25	12	19.83	19.75	19.71		
10	QPSK	25	25	19.85	19.76	19.73		
10	QPSK	50	0	19.84	19.75	19.66		
10	16QAM	1	0	20.09	19.96	19.93		
10	16QAM	1	25	20.07	19.98	19.96	21	0
10	16QAM	1	49	20.06	20.03	19.97		
10	16QAM	25	0	19.82	19.67	19.62		
10	16QAM	25	12	19.87	19.80	19.77	21	0
10	16QAM	25	25	19.84	19.79	19.75		
10	16QAM	50	0	19.84	19.78	19.67		
10	64QAM	1	0	20.00	19.83	19.83		
10	64QAM	1	25	20.01	19.93	19.89	21	0
10	64QAM	1	49	19.98	19.90	19.85		
10	64QAM	25	0	19.85	19.69	19.69		
10	64QAM	25	12	19.91	19.82	19.79	21	0
10	64QAM	25	25	19.89	19.82	19.80		
10	64QAM	50	0	19.88	19.82	19.70		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	19.71	19.63	19.60		
5	QPSK	1	12	19.74	19.64	19.64	21	0
5	QPSK	1	24	19.75	19.66	19.61		
5	QPSK	12	0	19.79	19.72	19.68		
5	QPSK	12	7	19.86	19.77	19.73	21	0
5	QPSK	12	13	19.84	19.72	19.72		
5	QPSK	25	0	19.79	19.71	19.68		
5	16QAM	1	0	20.05	19.95	19.90		
5	16QAM	1	12	20.04	20.00	19.93	21	0
5	16QAM	1	24	20.11	19.98	19.96		
5	16QAM	12	0	19.86	19.77	19.75		
5	16QAM	12	7	19.85	19.80	19.77	21	0
5	16QAM	12	13	19.82	19.80	19.74		
5	16QAM	25	0	19.84	19.78	19.72		
5	64QAM	1	0	19.99	19.94	19.86		
5	64QAM	1	12	19.98	19.91	19.84	21	0
5	64QAM	1	24	20.00	19.93	19.90		
5	64QAM	12	0	19.91	19.83	19.75		
5	64QAM	12	7	19.96	19.87	19.80	21	0
5	64QAM	12	13	19.93	19.82	19.79		
5	64QAM	25	0	19.87	19.79	19.74		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	19.73	19.62	19.57		
3	QPSK	1	8	19.77	19.73	19.66	21	0
3	QPSK	1	14	19.74	19.69	19.61		
3	QPSK	8	0	19.80	19.72	19.67		
3	QPSK	8	4	19.83	19.74	19.72	21	0
3	QPSK	8	7	19.80	19.72	19.72		
3	QPSK	15	0	19.81	19.71	19.68		
3	16QAM	1	0	20.03	19.95	19.91		
3	16QAM	1	8	20.11	20.05	20.01	21	0
3	16QAM	1	14	20.03	19.99	19.99		
3	16QAM	8	0	19.86	19.79	19.75		
3	16QAM	8	4	19.93	19.79	19.81	21	0
3	16QAM	8	7	19.86	19.82	19.76		
3	16QAM	15	0	19.84	19.78	19.77		

3	64QAM	1	0	19.99	19.92	19.85	21	0
3	64QAM	1	8	20.05	19.99	19.96		
3	64QAM	1	14	19.99	19.94	19.89		
3	64QAM	8	0	19.89	19.83	19.76	21	0
3	64QAM	8	4	19.93	19.85	19.79		
3	64QAM	8	7	19.90	19.83	19.78		
3	64QAM	15	0	19.86	19.77	19.74		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	19.63	19.52	19.47	21	0
1.4	QPSK	1	3	19.67	19.61	19.55		
1.4	QPSK	1	5	19.65	19.56	19.50		
1.4	QPSK	3	0	19.65	19.61	19.51		
1.4	QPSK	3	1	19.70	19.65	19.58		
1.4	QPSK	3	3	19.67	19.58	19.56		
1.4	QPSK	6	0	19.72	19.68	19.61	21	0
1.4	16QAM	1	0	19.97	19.90	19.84	21	0
1.4	16QAM	1	3	20.04	19.96	19.89		
1.4	16QAM	1	5	19.98	19.89	19.83		
1.4	16QAM	3	0	19.77	19.68	19.61		
1.4	16QAM	3	1	19.81	19.73	19.69		
1.4	16QAM	3	3	19.76	19.68	19.64		
1.4	16QAM	6	0	19.84	19.76	19.71	21	0
1.4	64QAM	1	0	19.92	19.86	19.78	21	0
1.4	64QAM	1	3	19.99	19.89	19.84		
1.4	64QAM	1	5	19.91	19.84	19.76		
1.4	64QAM	3	0	19.88	19.79	19.74		
1.4	64QAM	3	1	19.94	19.85	19.80		
1.4	64QAM	3	3	19.87	19.80	19.76		
1.4	64QAM	6	0	19.77	19.67	19.66	21	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	19.69	19.72	19.74	21	0
20	QPSK	1	49	19.53	19.55	19.59		
20	QPSK	1	99	19.56	19.55	19.57		
20	QPSK	50	0	19.73	19.79	19.80	21	0
20	QPSK	50	24	19.81	19.71	19.79		
20	QPSK	50	50	19.74	19.70	19.73		
20	QPSK	100	0	19.74	19.75	19.70		
20	16QAM	1	0	20.07	20.09	20.13	21	0
20	16QAM	1	49	19.95	19.98	19.96		
20	16QAM	1	99	19.90	19.97	19.90		
20	16QAM	50	0	19.76	19.82	19.82	21	0
20	16QAM	50	24	19.81	19.75	19.82		
20	16QAM	50	50	19.75	19.74	19.74		
20	16QAM	100	0	19.76	19.73	19.72		
20	64QAM	1	0	19.91	19.99	20.00	21	0
20	64QAM	1	49	19.81	19.84	19.83		
20	64QAM	1	99	19.87	19.83	19.84		
20	64QAM	50	0	19.82	19.86	19.84	21	0
20	64QAM	50	24	19.83	19.78	19.87		
20	64QAM	50	50	19.78	19.78	19.79		
20	64QAM	100	0	19.83	19.77	19.76		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	19.70	19.76	19.78	21	0
15	QPSK	1	37	19.55	19.57	19.61		
15	QPSK	1	74	19.56	19.59	19.61		
15	QPSK	36	0	19.73	19.77	19.79	21	0
15	QPSK	36	20	19.75	19.71	19.69		
15	QPSK	36	39	19.69	19.74	19.75		
15	QPSK	75	0	19.74	19.71	19.73		
15	16QAM	1	0	20.02	20.05	20.11	21	0
15	16QAM	1	37	19.89	19.96	19.98		
15	16QAM	1	74	19.86	19.93	19.92		
15	16QAM	36	0	19.75	19.80	19.80	21	0
15	16QAM	36	20	19.77	19.72	19.73		
15	16QAM	36	39	19.71	19.74	19.77		
15	16QAM	75	0	19.77	19.73	19.73		
15	64QAM	1	0	19.92	19.96	19.98	21	0
15	64QAM	1	37	19.82	19.87	19.89		
15	64QAM	1	74	19.82	19.83	19.85		
15	64QAM	36	0	19.79	19.86	19.83	21	0
15	64QAM	36	20	19.79	19.81	19.74		
15	64QAM	36	39	19.75	19.82	19.81		
15	64QAM	75	0	19.79	19.77	19.76		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	19.64	19.64	19.69	21	0
10	QPSK	1	25	19.55	19.61	19.65		
10	QPSK	1	49	19.60	19.66	19.63		
10	QPSK	25	0	19.73	19.69	19.69	21	0
10	QPSK	25	12	19.74	19.73	19.73		

10	QPSK	25	25	19.75	19.80	19.82		
10	QPSK	50	0	19.78	19.72	19.74		
10	16QAM	1	0	20.01	20.05	20.06	21	0
10	16QAM	1	25	19.98	20.03	20.06		
10	16QAM	1	49	19.99	20.02	20.07		
10	16QAM	25	0	19.73	19.71	19.76	21	0
10	16QAM	25	12	19.80	19.75	19.79		
10	16QAM	25	25	19.77	19.82	19.85		
10	16QAM	50	0	19.78	19.73	19.79		
10	64QAM	1	0	19.93	19.89	19.95	21	0
10	64QAM	1	25	19.92	19.94	20.00		
10	64QAM	1	49	19.90	19.95	19.98		
10	64QAM	25	0	19.77	19.75	19.79	21	0
10	64QAM	25	12	19.81	19.79	19.82		
10	64QAM	25	25	19.79	19.86	19.88		
10	64QAM	50	0	19.81	19.77	19.83		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	19.66	19.59	19.67	21	0
5	QPSK	1	12	19.67	19.69	19.74		
5	QPSK	1	24	19.68	19.72	19.73		
5	QPSK	12	0	19.74	19.70	19.76	21	0
5	QPSK	12	7	19.78	19.79	19.84		
5	QPSK	12	13	19.77	19.77	19.81		
5	QPSK	25	0	19.75	19.72	19.77		
5	16QAM	1	0	19.99	19.93	19.99	21	0
5	16QAM	1	12	20.03	20.00	20.02		
5	16QAM	1	24	20.03	20.02	20.05		
5	16QAM	12	0	19.79	19.75	19.86	21	0
5	16QAM	12	7	19.80	19.82	19.87		
5	16QAM	12	13	19.80	19.83	19.85		
5	16QAM	25	0	19.75	19.72	19.84		
5	64QAM	1	0	19.94	19.92	19.97	21	0
5	64QAM	1	12	19.93	19.93	19.99		
5	64QAM	1	24	19.97	19.99	20.01		
5	64QAM	12	0	19.83	19.78	19.87	21	0
5	64QAM	12	7	19.86	19.89	19.92		
5	64QAM	12	13	19.84	19.84	19.87		
5	64QAM	25	0	19.80	19.77	19.84		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	19.62	19.62	19.68	21	0
3	QPSK	1	8	19.74	19.71	19.75		
3	QPSK	1	14	19.66	19.71	19.69		
3	QPSK	8	0	19.69	19.71	19.77	21	0
3	QPSK	8	4	19.74	19.79	19.81		
3	QPSK	8	7	19.75	19.77	19.76		
3	QPSK	15	0	19.72	19.70	19.76		
3	16QAM	1	0	19.95	19.89	20.01	21	0
3	16QAM	1	8	20.02	20.09	20.11		
3	16QAM	1	14	19.98	19.98	20.00		
3	16QAM	8	0	19.79	19.75	19.83	21	0
3	16QAM	8	4	19.85	19.85	19.87		
3	16QAM	8	7	19.82	19.83	19.84		
3	16QAM	15	0	19.80	19.75	19.84		
3	64QAM	1	0	19.92	19.88	19.93	21	0

3	64QAM	1	8	19.97	19.98	20.00		
3	64QAM	1	14	19.94	19.94	19.98		
3	64QAM	8	0	19.84	19.76	19.88	21	0
3	64QAM	8	4	19.82	19.87	19.90		
3	64QAM	8	7	19.82	19.86	19.85		
3	64QAM	15	0	19.80	19.77	19.83		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	19.58	19.60	19.61	21	0
1.4	QPSK	1	3	19.64	19.67	19.66		
1.4	QPSK	1	5	19.57	19.61	19.62		
1.4	QPSK	3	0	19.60	19.63	19.63		
1.4	QPSK	3	1	19.58	19.67	19.68		
1.4	QPSK	3	3	19.60	19.65	19.64		
1.4	QPSK	6	0	19.66	19.69	19.68	21	0
1.4	16QAM	1	0	19.92	19.94	19.93	21	0
1.4	16QAM	1	3	20.00	20.01	19.97		
1.4	16QAM	1	5	19.90	19.91	19.97		
1.4	16QAM	3	0	19.71	19.73	19.74		
1.4	16QAM	3	1	19.77	19.78	19.81		
1.4	16QAM	3	3	19.70	19.72	19.74		
1.4	16QAM	6	0	19.74	19.80	19.81	21	0
1.4	64QAM	1	0	19.87	19.88	19.88	21	0
1.4	64QAM	1	3	19.92	19.94	19.93		
1.4	64QAM	1	5	19.85	19.87	19.88		
1.4	64QAM	3	0	19.82	19.87	19.86		
1.4	64QAM	3	1	19.87	19.91	19.91		
1.4	64QAM	3	3	19.82	19.86	19.87		
1.4	64QAM	6	0	19.72	19.75	19.75	21	0

<LTE Band 66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	19.68	19.67	19.65	21	0
20	QPSK	1	49	19.60	19.60	19.55		
20	QPSK	1	99	19.57	19.57	19.46		
20	QPSK	50	0	19.70	19.69	19.66	21	0
20	QPSK	50	24	19.79	19.74	19.64		
20	QPSK	50	50	19.72	19.75	19.65		
20	QPSK	100	0	19.73	19.70	19.65		
20	16QAM	1	0	20.00	19.99	20.00	21	0
20	16QAM	1	49	19.94	19.91	19.93		
20	16QAM	1	99	19.90	19.88	19.81		
20	16QAM	50	0	19.71	19.70	19.66	21	0
20	16QAM	50	24	19.78	19.74	19.65		
20	16QAM	50	50	19.71	19.69	19.66		
20	16QAM	100	0	19.72	19.70	19.64		
20	64QAM	1	0	19.85	19.85	19.88	21	0
20	64QAM	1	49	19.79	19.78	19.80		
20	64QAM	1	99	19.77	19.75	19.71		
20	64QAM	50	0	19.71	19.70	19.72	21	0
20	64QAM	50	24	19.78	19.74	19.70		
20	64QAM	50	50	19.71	19.70	19.70		
20	64QAM	100	0	19.76	19.70	19.66		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	19.61	19.68	19.66	21	0
15	QPSK	1	37	19.60	19.65	19.54		
15	QPSK	1	74	19.58	19.63	19.50		
15	QPSK	36	0	19.66	19.73	19.65	21	0
15	QPSK	36	20	19.73	19.74	19.71		
15	QPSK	36	39	19.70	19.74	19.63		
15	QPSK	75	0	19.71	19.72	19.70		
15	16QAM	1	0	19.91	19.97	19.98	21	0
15	16QAM	1	37	19.88	19.99	19.85		
15	16QAM	1	74	19.86	19.92	19.82		
15	16QAM	36	0	19.66	19.73	19.63	21	0
15	16QAM	36	20	19.76	19.74	19.69		
15	16QAM	36	39	19.71	19.76	19.66		
15	16QAM	75	0	19.74	19.71	19.69		
15	64QAM	1	0	19.80	19.85	19.84	21	0
15	64QAM	1	37	19.82	19.88	19.80		
15	64QAM	1	74	19.74	19.79	19.73		
15	64QAM	36	0	19.68	19.77	19.74	21	0
15	64QAM	36	20	19.76	19.75	19.77		
15	64QAM	36	39	19.72	19.77	19.70		
15	64QAM	75	0	19.72	19.71	19.70		
Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	19.62	19.65	19.60	21	0
10	QPSK	1	25	19.55	19.62	19.49		
10	QPSK	1	49	19.54	19.61	19.46		
10	QPSK	25	0	19.73	19.71	19.59	21	0
10	QPSK	25	12	19.73	19.69	19.58		

10	QPSK	25	25	19.69	19.73	19.61		
10	QPSK	50	0	19.71	19.71	19.58		
10	16QAM	1	0	20.00	20.01	19.97	21	0
10	16QAM	1	25	19.93	20.00	19.90		
10	16QAM	1	49	19.93	19.96	19.83		
10	16QAM	25	0	19.72	19.73	19.58	21	0
10	16QAM	25	12	19.74	19.71	19.59		
10	16QAM	25	25	19.66	19.73	19.59		
10	16QAM	50	0	19.70	19.68	19.58		
10	64QAM	1	0	19.90	19.88	19.77	21	0
10	64QAM	1	25	19.88	19.92	19.83		
10	64QAM	1	49	19.85	19.87	19.76		
10	64QAM	25	0	19.75	19.79	19.63	21	0
10	64QAM	25	12	19.77	19.76	19.65		
10	64QAM	25	25	19.72	19.79	19.63		
10	64QAM	50	0	19.77	19.74	19.61		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	19.63	19.60	19.54	21	0
5	QPSK	1	12	19.69	19.70	19.57		
5	QPSK	1	24	19.60	19.64	19.50		
5	QPSK	12	0	19.74	19.71	19.63	21	0
5	QPSK	12	7	19.75	19.74	19.67		
5	QPSK	12	13	19.69	19.73	19.63		
5	QPSK	25	0	19.71	19.70	19.61		
5	16QAM	1	0	19.92	19.92	19.86	21	0
5	16QAM	1	12	19.93	20.00	19.84		
5	16QAM	1	24	19.89	19.95	19.82		
5	16QAM	12	0	19.73	19.75	19.67	21	0
5	16QAM	12	7	19.76	19.75	19.68		
5	16QAM	12	13	19.72	19.75	19.65		
5	16QAM	25	0	19.74	19.72	19.64		
5	64QAM	1	0	19.91	19.92	19.83	21	0
5	64QAM	1	12	19.90	19.93	19.77		
5	64QAM	1	24	19.88	19.88	19.69		
5	64QAM	12	0	19.80	19.79	19.72	21	0
5	64QAM	12	7	19.81	19.81	19.74		
5	64QAM	12	13	19.78	19.83	19.71		
5	64QAM	25	0	19.74	19.74	19.65		
Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	19.65	19.62	19.58	21	0
3	QPSK	1	8	19.70	19.74	19.60		
3	QPSK	1	14	19.60	19.68	19.54		
3	QPSK	8	0	19.72	19.70	19.66	21	0
3	QPSK	8	4	19.75	19.77	19.67		
3	QPSK	8	7	19.71	19.77	19.63		
3	QPSK	15	0	19.75	19.69	19.63		
3	16QAM	1	0	19.96	19.95	19.87	21	0
3	16QAM	1	8	19.98	20.05	19.94		
3	16QAM	1	14	19.91	19.98	19.84		
3	16QAM	8	0	19.78	19.78	19.69	21	0
3	16QAM	8	4	19.79	19.87	19.71		
3	16QAM	8	7	19.77	19.79	19.69		
3	16QAM	15	0	19.73	19.71	19.67		
3	64QAM	1	0	19.89	19.89	19.82	21	0

3	64QAM	1	8	19.98	20.01	19.85		
3	64QAM	1	14	19.91	19.94	19.75		
3	64QAM	8	0	19.80	19.77	19.72	21	0
3	64QAM	8	4	19.82	19.86	19.74		
3	64QAM	8	7	19.77	19.85	19.68		
3	64QAM	15	0	19.77	19.73	19.69		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	19.53	19.60	19.47	21	0
1.4	QPSK	1	3	19.59	19.62	19.52		
1.4	QPSK	1	5	19.43	19.58	19.46		
1.4	QPSK	3	0	19.56	19.62	19.50		
1.4	QPSK	3	1	19.62	19.66	19.54		
1.4	QPSK	3	3	19.57	19.63	19.49		
1.4	QPSK	6	0	19.66	19.69	19.57	21	0
1.4	16QAM	1	0	19.90	19.90	19.80	21	0
1.4	16QAM	1	3	19.93	19.97	19.82		
1.4	16QAM	1	5	19.89	19.92	19.66		
1.4	16QAM	3	0	19.64	19.67	19.60		
1.4	16QAM	3	1	19.69	19.74	19.61		
1.4	16QAM	3	3	19.64	19.69	19.56		
1.4	16QAM	6	0	19.69	19.77	19.65	21	0
1.4	64QAM	1	0	19.85	19.87	19.71	21	0
1.4	64QAM	1	3	19.90	19.93	19.79		
1.4	64QAM	1	5	19.81	19.81	19.68		
1.4	64QAM	3	0	19.80	19.83	19.69		
1.4	64QAM	3	1	19.82	19.88	19.76		
1.4	64QAM	3	3	19.78	19.81	19.68		
1.4	64QAM	6	0	19.68	19.70	19.59	21	0

Body-Worn Mode

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	22.22	22.19	22.19	23.5	0
20	QPSK	1	49	22.16	22.16	22.14		
20	QPSK	1	99	22.11	22.14	22.15		
20	QPSK	50	0	22.25	22.25	22.22	23.5	0
20	QPSK	50	24	22.33	22.28	22.24		
20	QPSK	50	50	22.31	22.32	22.31		
20	QPSK	100	0	22.33	22.23	22.23		
20	16QAM	1	0	22.55	22.53	22.53	23.5	0
20	16QAM	1	49	22.50	22.53	22.45		
20	16QAM	1	99	22.45	22.49	22.50		
20	16QAM	50	0	21.76	21.77	21.74	23	0.5
20	16QAM	50	24	21.84	21.79	21.75		
20	16QAM	50	50	21.81	21.85	21.81		
20	16QAM	100	0	21.83	21.74	21.74		
20	64QAM	1	0	21.91	21.84	21.87	23	0.5
20	64QAM	1	49	21.86	21.88	21.85		
20	64QAM	1	99	21.85	21.89	21.86		
20	64QAM	50	0	20.79	20.77	20.74	22	1.5
20	64QAM	50	24	20.88	20.80	20.79		
20	64QAM	50	50	20.83	20.86	20.85		
20	64QAM	100	0	20.84	20.76	20.75		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.18	22.21	22.21	23.5	0
15	QPSK	1	37	22.13	22.18	22.17		
15	QPSK	1	74	22.16	22.20	22.19		
15	QPSK	36	0	22.28	22.22	22.23	23.5	0
15	QPSK	36	20	22.32	22.26	22.33		
15	QPSK	36	39	22.27	22.36	22.31		
15	QPSK	75	0	22.28	22.26	22.30		
15	16QAM	1	0	22.43	22.52	22.53	23.5	0
15	16QAM	1	37	22.48	22.53	22.48		
15	16QAM	1	74	22.45	22.53	22.50		
15	16QAM	36	0	21.78	21.75	21.70	23	0.5
15	16QAM	36	20	21.80	21.76	21.83		
15	16QAM	36	39	21.78	21.86	21.82		
15	16QAM	75	0	21.79	21.76	21.80		
15	64QAM	1	0	21.81	21.85	21.86	23	0.5
15	64QAM	1	37	21.87	21.94	21.85		
15	64QAM	1	74	21.84	21.91	21.88		
15	64QAM	36	0	20.83	20.77	20.76	22	1.5
15	64QAM	36	20	20.83	20.80	20.85		
15	64QAM	36	39	20.84	20.89	20.83		
15	64QAM	75	0	20.80	20.79	20.83		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	22.19	22.17	22.14	23.5	0
10	QPSK	1	25	22.14	22.18	22.14		
10	QPSK	1	49	22.14	22.22	22.15		
10	QPSK	25	0	22.24	22.21	22.18	23.5	0

10	QPSK	25	12	22.30	22.25	22.22		
10	QPSK	25	25	22.30	22.35	22.32		
10	QPSK	50	0	22.30	22.26	22.22		
10	16QAM	1	0	22.53	22.53	22.50		
10	16QAM	1	25	22.49	22.54	22.50	23.5	0
10	16QAM	1	49	22.51	22.54	22.51		
10	16QAM	25	0	21.76	21.74	21.69		
10	16QAM	25	12	21.82	21.76	21.75	23	0.5
10	16QAM	25	25	21.79	21.83	21.80		
10	16QAM	50	0	21.80	21.74	21.72		
10	64QAM	1	0	21.94	21.89	21.87		
10	64QAM	1	25	21.99	21.99	21.96	23	0.5
10	64QAM	1	49	21.94	22.00	21.96		
10	64QAM	25	0	20.81	20.79	20.73		
10	64QAM	25	12	20.84	20.78	20.77	22	1.5
10	64QAM	25	25	20.84	20.87	20.86		
10	64QAM	50	0	20.84	20.78	20.77		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.17	22.15	22.14		
5	QPSK	1	12	22.22	22.22	22.20	23.5	0
5	QPSK	1	24	22.17	22.24	22.21		
5	QPSK	12	0	22.25	22.26	22.25		
5	QPSK	12	7	22.29	22.31	22.32	23.5	0
5	QPSK	12	13	22.24	22.34	22.31		
5	QPSK	25	0	22.24	22.25	22.28		
5	16QAM	1	0	22.49	22.45	22.46		
5	16QAM	1	12	22.47	22.54	22.46	23.5	0
5	16QAM	1	24	22.52	22.54	22.53		
5	16QAM	12	0	21.75	21.76	21.80		
5	16QAM	12	7	21.78	21.77	21.83	23	0.5
5	16QAM	12	13	21.76	21.82	21.81		
5	16QAM	25	0	21.76	21.77	21.78		
5	64QAM	1	0	21.95	21.92	21.94		
5	64QAM	1	12	21.92	21.98	21.91	23	0.5
5	64QAM	1	24	21.95	22.02	21.97		
5	64QAM	12	0	20.83	20.79	20.84		
5	64QAM	12	7	20.88	20.88	20.91	22	1.5
5	64QAM	12	13	20.84	20.91	20.88		
5	64QAM	25	0	20.77	20.76	20.80		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	22.13	22.14	22.19		
3	QPSK	1	8	22.21	22.30	22.24	23.5	0
3	QPSK	1	14	22.15	22.20	22.23		
3	QPSK	8	0	22.25	22.21	22.23		
3	QPSK	8	4	22.29	22.35	22.30	23.5	0
3	QPSK	8	7	22.25	22.35	22.31		
3	QPSK	15	0	22.24	22.27	22.26		
3	16QAM	1	0	22.49	22.43	22.48		
3	16QAM	1	8	22.54	22.53	22.52	23.5	0
3	16QAM	1	14	22.50	22.52	22.54		
3	16QAM	8	0	21.83	21.79	21.82		
3	16QAM	8	4	21.82	21.88	21.87	23	0.5
3	16QAM	8	7	21.81	21.88	21.83		
3	16QAM	15	0	21.82	21.79	21.78		

3	64QAM	1	0	21.94	21.92	21.92	23	0.5
3	64QAM	1	8	22.00	22.07	22.02		
3	64QAM	1	14	21.94	21.99	21.95		
3	64QAM	8	0	20.82	20.78	20.81	22	1.5
3	64QAM	8	4	20.83	20.90	20.85		
3	64QAM	8	7	20.81	20.85	20.86		
3	64QAM	15	0	20.79	20.76	20.84		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.10	22.11	22.12	23.5	0
1.4	QPSK	1	3	22.13	22.18	22.18		
1.4	QPSK	1	5	22.09	22.15	22.10		
1.4	QPSK	3	0	22.11	22.15	22.12		
1.4	QPSK	3	1	22.16	22.18	22.17		
1.4	QPSK	3	3	22.13	22.15	22.14		
1.4	QPSK	6	0	22.17	22.25	22.22	23.5	0
1.4	16QAM	1	0	22.42	22.45	22.37	23.5	0
1.4	16QAM	1	3	22.47	22.54	22.49		
1.4	16QAM	1	5	22.43	22.44	22.45		
1.4	16QAM	3	0	22.19	22.26	22.20		
1.4	16QAM	3	1	22.25	22.25	22.23		
1.4	16QAM	3	3	22.21	22.23	22.18		
1.4	16QAM	6	0	21.75	21.81	21.77	23	0.5
1.4	64QAM	1	0	21.85	21.90	21.86	23	0.5
1.4	64QAM	1	3	21.92	21.98	21.94		
1.4	64QAM	1	5	21.84	21.91	21.83		
1.4	64QAM	3	0	21.82	21.87	21.84		
1.4	64QAM	3	1	21.91	21.94	21.88		
1.4	64QAM	3	3	21.83	21.90	21.81		
1.4	64QAM	6	0	20.70	20.75	20.70	22	1.5

<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	22.12	22.08	22.12	23.5	0
20	QPSK	1	49	21.97	21.90	22.01		
20	QPSK	1	99	21.98	21.87	21.93		
20	QPSK	50	0	22.27	22.11	22.14	23.5	0
20	QPSK	50	24	22.19	22.12	22.07		
20	QPSK	50	50	22.11	22.03	22.09		
20	QPSK	100	0	22.12	22.14	22.04		
20	16QAM	1	0	22.46	22.43	22.43	23.5	0
20	16QAM	1	49	22.29	22.26	22.30		
20	16QAM	1	99	22.29	22.23	22.29		
20	16QAM	50	0	21.77	21.63	21.64	23	0.5
20	16QAM	50	24	21.70	21.63	21.60		
20	16QAM	50	50	21.62	21.56	21.60		
20	16QAM	100	0	21.65	21.61	21.56		
20	64QAM	1	0	21.44	21.74	21.78	23	0.5
20	64QAM	1	49	21.63	21.63	21.64		
20	64QAM	1	99	21.70	21.63	21.67		
20	64QAM	50	0	20.78	20.64	20.67	22	1.5
20	64QAM	50	24	20.72	20.65	20.62		
20	64QAM	50	50	20.63	20.57	20.62		
20	64QAM	100	0	20.70	20.66	20.59		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.16	22.06	22.13	23.5	0
15	QPSK	1	37	21.98	21.90	21.98		
15	QPSK	1	74	21.99	21.94	22.01		
15	QPSK	36	0	22.23	22.10	22.15	23.5	0
15	QPSK	36	20	22.14	22.09	22.15		
15	QPSK	36	39	22.13	22.06	22.12		
15	QPSK	75	0	22.18	22.11	22.09		
15	16QAM	1	0	22.45	22.38	22.44	23.5	0
15	16QAM	1	37	22.32	22.26	22.32		
15	16QAM	1	74	22.26	22.23	22.28		
15	16QAM	36	0	21.75	21.60	21.66	23	0.5
15	16QAM	36	20	21.69	21.60	21.65		
15	16QAM	36	39	21.64	21.53	21.62		
15	16QAM	75	0	21.70	21.63	21.61		
15	64QAM	1	0	21.55	21.73	21.80	23	0.5
15	64QAM	1	37	21.72	21.66	21.72		
15	64QAM	1	74	21.67	21.64	21.68		
15	64QAM	36	0	20.79	20.65	20.68	22	1.5
15	64QAM	36	20	20.69	20.67	20.70		
15	64QAM	36	39	20.65	20.63	20.66		
15	64QAM	75	0	20.71	20.63	20.63		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	22.12	21.98	22.03	23.5	0
10	QPSK	1	25	22.04	21.97	22.05		
10	QPSK	1	49	22.06	21.95	22.05		
10	QPSK	25	0	22.18	22.01	22.09	23.5	0
10	QPSK	25	12	22.20	22.14	22.13		

10	QPSK	25	25	22.22	22.13	22.21		
10	QPSK	50	0	22.22	22.13	22.14		
10	16QAM	1	0	22.44	22.37	22.42	23.5	0
10	16QAM	1	25	22.44	22.36	22.45		
10	16QAM	1	49	22.42	22.34	22.42		
10	16QAM	25	0	21.68	21.51	21.62	23	0.5
10	16QAM	25	12	21.73	21.62	21.66		
10	16QAM	25	25	21.71	21.62	21.69		
10	16QAM	50	0	21.70	21.62	21.64		
10	64QAM	1	0	21.30	21.74	21.82	23	0.5
10	64QAM	1	25	21.88	21.81	21.91		
10	64QAM	1	49	21.84	21.82	21.90		
10	64QAM	25	0	20.60	20.56	20.64	22	1.5
10	64QAM	25	12	20.72	20.67	20.66		
10	64QAM	25	25	20.72	20.69	20.76		
10	64QAM	50	0	20.76	20.63	20.67		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	22.10	22.02	22.06	23.5	0
5	QPSK	1	12	22.14	22.06	22.13		
5	QPSK	1	24	22.14	22.08	22.14		
5	QPSK	12	0	22.17	22.13	22.17	23.5	0
5	QPSK	12	7	22.24	22.11	22.23		
5	QPSK	12	13	22.25	22.12	22.21		
5	QPSK	25	0	22.21	22.13	22.18		
5	16QAM	1	0	22.42	22.33	22.39	23.5	0
5	16QAM	1	12	22.45	22.32	22.40		
5	16QAM	1	24	22.45	22.34	22.43		
5	16QAM	12	0	21.71	21.62	21.71	23	0.5
5	16QAM	12	7	21.75	21.66	21.75		
5	16QAM	12	13	21.76	21.63	21.73		
5	16QAM	25	0	21.72	21.65	21.71		
5	64QAM	1	0	21.33	21.82	21.86	23	0.5
5	64QAM	1	12	21.59	21.79	21.80		
5	64QAM	1	24	21.86	21.79	21.87		
5	64QAM	12	0	20.41	20.69	20.77	22	1.5
5	64QAM	12	7	20.60	20.69	20.79		
5	64QAM	12	13	20.78	20.68	20.76		
5	64QAM	25	0	20.55	20.65	20.72		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	22.12	21.99	22.08	23.5	0
3	QPSK	1	8	22.19	22.10	22.17		
3	QPSK	1	14	22.14	22.05	22.11		
3	QPSK	8	0	22.17	22.11	22.19	23.5	0
3	QPSK	8	4	22.21	22.11	22.24		
3	QPSK	8	7	22.22	22.08	22.19		
3	QPSK	15	0	22.20	22.10	22.14		
3	16QAM	1	0	22.42	22.32	22.36	23.5	0
3	16QAM	1	8	22.45	22.39	22.44		
3	16QAM	1	14	22.44	22.32	22.42		
3	16QAM	8	0	21.75	21.67	21.74	23	0.5
3	16QAM	8	4	21.81	21.70	21.76		
3	16QAM	8	7	21.77	21.67	21.75		
3	16QAM	15	0	21.74	21.65	21.70		
3	64QAM	1	0	21.45	21.81	21.83	23	0.5

3	64QAM	1	8	21.66	21.83	21.90		
3	64QAM	1	14	21.66	21.84	21.83		
3	64QAM	8	0	20.41	20.67	20.73	22	1.5
3	64QAM	8	4	20.56	20.71	20.75		
3	64QAM	8	7	20.55	20.65	20.74		
3	64QAM	15	0	20.47	20.63	20.71		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.06	21.95	21.98	23.5	0
1.4	QPSK	1	3	22.10	21.97	22.05		
1.4	QPSK	1	5	22.03	21.97	21.99		
1.4	QPSK	3	0	22.07	21.96	22.04		
1.4	QPSK	3	1	22.10	22.00	22.09		
1.4	QPSK	3	3	22.07	21.96	22.04		
1.4	QPSK	6	0	22.15	22.04	22.09	23.5	0
1.4	16QAM	1	0	22.36	22.24	22.29	23.5	0
1.4	16QAM	1	3	22.43	22.29	22.41		
1.4	16QAM	1	5	22.34	22.30	22.30		
1.4	16QAM	3	0	22.13	22.04	22.14		
1.4	16QAM	3	1	22.19	22.10	22.17		
1.4	16QAM	3	3	22.12	22.04	22.10		
1.4	16QAM	6	0	21.68	21.62	21.68	23	0.5
1.4	64QAM	1	0	21.38	21.72	21.76	23	0.5
1.4	64QAM	1	3	21.50	21.80	21.83		
1.4	64QAM	1	5	21.44	21.70	21.76		
1.4	64QAM	3	0	21.43	21.69	21.75		
1.4	64QAM	3	1	21.59	21.74	21.81		
1.4	64QAM	3	3	21.47	21.68	21.75		
1.4	64QAM	6	0	20.35	20.56	20.61	22	1.5

<LTE Band 66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	22.18	22.29	22.20	23.5	0
20	QPSK	1	49	22.13	22.19	22.11		
20	QPSK	1	99	22.09	22.16	21.99		
20	QPSK	50	0	22.20	22.30	22.20	23.5	0
20	QPSK	50	24	22.31	22.29	22.26		
20	QPSK	50	50	22.23	22.32	22.19		
20	QPSK	100	0	22.23	22.25	22.25		
20	16QAM	1	0	22.57	22.60	22.53	23.5	0
20	16QAM	1	49	22.51	22.55	22.40		
20	16QAM	1	99	22.45	22.50	22.33		
20	16QAM	50	0	21.75	21.81	21.72	23	0.5
20	16QAM	50	24	21.82	21.78	21.77		
20	16QAM	50	50	21.77	21.81	21.69		
20	16QAM	100	0	21.78	21.76	21.75		
20	64QAM	1	0	21.91	21.95	21.85	23	0.5
20	64QAM	1	49	21.85	21.90	21.38		
20	64QAM	1	99	21.80	21.88	21.73		
20	64QAM	50	0	20.76	20.82	20.74	22	1.5
20	64QAM	50	24	20.85	20.81	20.66		
20	64QAM	50	50	20.79	20.81	20.70		
20	64QAM	100	0	20.80	20.78	20.74		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	22.13	22.26	22.19	23.5	0
15	QPSK	1	37	22.11	22.21	22.12		
15	QPSK	1	74	22.09	22.18	22.06		
15	QPSK	36	0	22.20	22.31	22.19	23.5	0
15	QPSK	36	20	22.25	22.31	22.16		
15	QPSK	36	39	22.23	22.32	22.17		
15	QPSK	75	0	22.26	22.30	22.18		
15	16QAM	1	0	22.45	22.51	22.51	23.5	0
15	16QAM	1	37	22.44	22.56	22.41		
15	16QAM	1	74	22.41	22.51	22.37		
15	16QAM	36	0	21.71	21.79	21.67	23	0.5
15	16QAM	36	20	21.81	21.79	21.67		
15	16QAM	36	39	21.76	21.81	21.68		
15	16QAM	75	0	21.79	21.77	21.64		
15	64QAM	1	0	21.82	21.90	21.83	23	0.5
15	64QAM	1	37	21.86	21.95	21.79		
15	64QAM	1	74	21.83	21.88	21.73		
15	64QAM	36	0	20.73	20.83	20.61	22	1.5
15	64QAM	36	20	20.83	20.85	20.70		
15	64QAM	36	39	20.79	20.85	20.70		
15	64QAM	75	0	20.79	20.79	20.67		
Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	22.21	22.20	22.11	23.5	0
10	QPSK	1	25	22.12	22.18	22.03		
10	QPSK	1	49	22.12	22.18	22.04		
10	QPSK	25	0	22.28	22.27	22.13	23.5	0
10	QPSK	25	12	22.29	22.27	22.19		

10	QPSK	25	25	22.24	22.30	22.14		
10	QPSK	50	0	22.27	22.27	22.14		
10	16QAM	1	0	22.56	22.59	22.49	23.5	0
10	16QAM	1	25	22.51	22.56	22.47		
10	16QAM	1	49	22.48	22.52	22.40		
10	16QAM	25	0	21.79	21.79	21.62	23	0.5
10	16QAM	25	12	21.78	21.79	21.73		
10	16QAM	25	25	21.72	21.80	21.64		
10	16QAM	50	0	21.77	21.74	21.63		
10	64QAM	1	0	21.80	21.92	21.40	23	0.5
10	64QAM	1	25	21.92	22.01	21.85		
10	64QAM	1	49	21.84	21.96	21.82		
10	64QAM	25	0	20.80	20.81	20.67	22	1.5
10	64QAM	25	12	20.82	20.82	20.73		
10	64QAM	25	25	20.75	20.83	20.66		
10	64QAM	50	0	20.80	20.81	20.68		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	22.18	22.18	22.11	23.5	0
5	QPSK	1	12	22.22	22.26	22.08		
5	QPSK	1	24	22.13	22.21	22.04		
5	QPSK	12	0	22.30	22.31	22.21	23.5	0
5	QPSK	12	7	22.32	22.30	22.22		
5	QPSK	12	13	22.27	22.31	22.17		
5	QPSK	25	0	22.27	22.28	22.17		
5	16QAM	1	0	22.49	22.49	22.42	23.5	0
5	16QAM	1	12	22.53	22.56	22.37		
5	16QAM	1	24	22.46	22.57	22.38		
5	16QAM	12	0	21.80	21.82	21.72	23	0.5
5	16QAM	12	7	21.79	21.85	21.73		
5	16QAM	12	13	21.75	21.83	21.67		
5	16QAM	25	0	21.77	21.82	21.68		
5	64QAM	1	0	21.92	21.94	21.89	23	0.5
5	64QAM	1	12	21.91	21.95	21.80		
5	64QAM	1	24	21.90	21.92	21.73		
5	64QAM	12	0	20.85	20.89	20.77	22	1.5
5	64QAM	12	7	20.85	20.89	20.78		
5	64QAM	12	13	20.81	20.91	20.74		
5	64QAM	25	0	20.78	20.78	20.69		
Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	22.22	22.19	22.11	23.5	0
3	QPSK	1	8	22.23	22.28	22.16		
3	QPSK	1	14	22.17	22.25	22.09		
3	QPSK	8	0	22.30	22.28	22.19	23.5	0
3	QPSK	8	4	22.27	22.37	22.23		
3	QPSK	8	7	22.28	22.34	22.16		
3	QPSK	15	0	22.26	22.28	22.17		
3	16QAM	1	0	22.52	22.52	22.41	23.5	0
3	16QAM	1	8	22.59	22.59	22.46		
3	16QAM	1	14	22.48	22.57	22.42		
3	16QAM	8	0	21.82	21.86	21.74	23	0.5
3	16QAM	8	4	21.87	21.89	21.78		
3	16QAM	8	7	21.81	21.88	21.69		
3	16QAM	15	0	21.81	21.78	21.68		
3	64QAM	1	0	21.91	21.96	21.86	23	0.5

3	64QAM	1	8	22.02	22.03	21.89		
3	64QAM	1	14	21.91	21.96	21.78		
3	64QAM	8	0	20.82	20.84	20.77	22	1.5
3	64QAM	8	4	20.85	20.92	20.77		
3	64QAM	8	7	20.80	20.92	20.73		
3	64QAM	15	0	20.78	20.79	20.70		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	22.10	22.20	22.00	23.5	0
1.4	QPSK	1	3	22.16	22.24	22.09		
1.4	QPSK	1	5	22.10	22.14	22.02		
1.4	QPSK	3	0	22.18	22.20	22.03		
1.4	QPSK	3	1	22.19	22.24	22.10		
1.4	QPSK	3	3	22.15	22.20	22.03		
1.4	QPSK	6	0	22.19	22.28	22.10	23.5	0
1.4	16QAM	1	0	22.42	22.48	22.35	23.5	0
1.4	16QAM	1	3	22.47	22.54	22.43		
1.4	16QAM	1	5	22.43	22.53	22.33		
1.4	16QAM	3	0	22.23	22.29	22.12		
1.4	16QAM	3	1	22.26	22.32	22.15		
1.4	16QAM	3	3	22.21	22.25	22.10		
1.4	16QAM	6	0	21.78	21.82	21.68	23	0.5
1.4	64QAM	1	0	21.87	21.95	21.79	23	0.5
1.4	64QAM	1	3	21.92	21.98	21.82		
1.4	64QAM	1	5	21.83	21.92	21.73		
1.4	64QAM	3	0	21.82	21.88	21.73		
1.4	64QAM	3	1	21.87	21.93	21.78		
1.4	64QAM	3	3	21.82	21.90	21.69		
1.4	64QAM	6	0	20.70	20.78	20.60	22	1.5

12. WiFi Output Power (Unit: dBm)

General Note:

1. For each antenna, transmit power in SISO operation is larger than (or equal to) the power in MIMO operation, RF exposure compliance of MIMO mode can be deduced from the compliance simultaneous transmission of antennas operating in SISO mode.
2. Per KDB 248227 D01v02r02, the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is < 1.6W/kg and SAR peak to location ratio ≤ 0.04, no additional SAR measurements for MIMO.
3. 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.
4. 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).
5. 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.
6. 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.
7. Per 201904 TCBC workshops, General principles of FCC KDB Publication 248227 D01 can be applied to determine the SAR Initial Test Configurations and test reduction for 802.11ax SAR testing. For the table below the 802.11ax maximum power is SU (non-OFDMA)
8. In applying the test guidance, the IEEE 802.11 mode with the maximum output power (out of all modes) should be considered for testing
9. For modes with the same maximum output power, the guidance from section 5.3.2 a) of FCC KDB Publication 248227 D01 should be applied, with 802.11ax being considered as the highest 802.11 mode for the appropriate frequency bands
10. When SAR testing for 802.11ax is required
    a. If the maximum output power is highest for OFDMA scenarios, choose the tone size with the maximum number of tones and the highest maximum output power
    b. Otherwise, consider the fully allocated channel for SAR testing
    c. When SAR testing is required on RU sizes less than the fully allocated channel, use the RU number closest to the middle of the channel, choosing the higher RU number when two RUs are equidistant to the middle of the channel

<Normal Output Power Table 1>

<2.4GHz WLAN Chain 0>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	13.58	14.00	100.00
		6	2437	13.40	14.00	
		11	2462	13.41	14.00	
	802.11g 6Mbps	1	2412	11.61	12.00	98.74
		6	2437	13.54	14.00	
		11	2462	13.89	14.00	
	802.11n-HT20 MCS0	1	2412	11.39	12.00	100.00
		6	2437	13.35	14.00	
		11	2462	13.68	14.00	
	802.11ax-HE20 MCS0	1	2412	12.43	13.00	100.00
		6	2437	14.37	15.00	
		11	2462	13.85	14.00	

<2.4GHz WLAN Chain 1>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	6.40	7.00	100.00
		6	2437	6.72	7.00	
		11	2462	6.56	7.00	
	802.11g 6Mbps	1	2412	12.72	13.00	99.25
		6	2437	15.70	16.00	
		11	2462	15.61	16.00	
	802.11n-HT20 MCS0	1	2412	12.43	13.00	100.00
		6	2437	15.52	16.00	
		11	2462	15.41	16.00	
	802.11ax-HE20 MCS0	1	2412	12.55	13.00	100.00
		6	2437	15.61	16.00	
		11	2462	15.45	16.00	

<5GHz WLAN Chain 0>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	11.00	11.50	99.00
		40	5200	11.00	11.50	
		44	5220	11.00	11.50	
		48	5240	11.10	11.50	
	802.11n-HT20 MCS0	36	5180	11.00	11.50	100.00
		40	5200	11.00	11.50	
		44	5220	10.90	11.50	
		48	5240	11.10	11.50	
	802.11n-HT40 MCS0	38	5190	11.00	11.50	100.00
		46	5230	11.00	11.50	
	802.11ac-VHT20 MCS0	36	5180	10.90	11.50	100.00
		40	5200	10.90	11.50	
		44	5220	10.80	11.50	
		48	5240	11.00	11.50	
	802.11ac-VHT40 MCS0	38	5190	10.90	11.50	100.00
		46	5230	10.90	11.50	
	802.11ac-VHT80 MCS0	42	5210	11.00	11.50	100.00
	802.11ax-HE20 MCS0	36	5180	11.00	11.50	100.00
		40	5200	11.00	11.50	
		44	5220	11.00	11.50	
		48	5240	11.10	11.50	
	802.11ax-HE40 MCS0	38	5190	11.10	11.50	100.00
		46	5230	11.20	11.50	
	802.11ax-HE80 MCS0	42	5210	10.90	11.50	100.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	11.10	11.50	99.00
		56	5280	11.10	11.50	
		60	5300	11.00	11.50	
		64	5320	11.00	11.50	
	802.11n-HT20 MCS0	52	5260	11.00	11.50	100.00
		56	5280	11.00	11.50	
		60	5300	11.00	11.50	
		64	5320	11.00	11.50	
	802.11n-HT40 MCS0	54	5270	11.10	11.50	100.00
		62	5310	10.90	11.50	
	802.11ac-VHT20 MCS0	52	5260	10.90	11.50	100.00
		56	5280	10.90	11.50	
		60	5300	10.90	11.50	
		64	5320	10.90	11.50	
	802.11ac-VHT40 MCS0	54	5270	11.00	11.50	100.00
		62	5310	10.80	11.50	
	802.11ac-VHT80 MCS0	58	5290	10.90	11.50	100.00
	802.11ax-HE20 MCS0	52	5260	11.10	11.50	100.00
		56	5280	11.00	11.50	
		60	5300	11.00	11.50	
		64	5320	11.10	11.50	
	802.11ax-HE40 MCS0	54	5270	11.20	11.50	100.00
		62	5310	11.10	11.50	
	802.11ax-HE80 MCS0	58	5290	10.80	11.50	100.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	11.20	11.50	99.00
		116	5580	11.10	11.50	
		124	5620	11.10	11.50	
		132	5660	11.00	11.50	
		144	5720	11.00	11.50	
	802.11n-HT20 MCS0	100	5500	11.20	11.50	100.00
		116	5580	11.10	11.50	
		124	5620	11.10	11.50	
		132	5660	11.10	11.50	
		144	5720	11.10	11.50	
	802.11n-HT40 MCS0	102	5510	11.20	11.50	100.00
		110	5550	11.20	11.50	
		126	5630	11.10	11.50	
		134	5670	11.10	11.50	
		142	5710	11.20	11.50	
	802.11ac-VHT20 MCS0	100	5500	11.10	11.50	100.00
		116	5580	11.00	11.50	
		124	5620	11.00	11.50	
		132	5660	11.00	11.50	
		144	5720	11.00	11.50	
	802.11ac-VHT40 MCS0	102	5510	11.10	11.50	100.00
		110	5550	11.10	11.50	
		126	5630	11.00	11.50	
		134	5670	11.00	11.50	
		142	5710	11.10	11.50	
	802.11ac-VHT80 MCS0	106	5530	11.20	11.50	100.00
		122	5610	11.20	11.50	
		138	5690	11.00	11.50	
	802.11ax-HE20 MCS0	100	5500	11.20	11.50	100.00
		116	5580	11.00	11.50	
		124	5620	11.00	11.50	
		132	5660	11.00	11.50	
		144	5720	11.00	11.50	
	802.11ax-HE40 MCS0	102	5510	10.90	11.50	100.00
		110	5550	10.90	11.50	
		126	5630	11.10	11.50	
		134	5670	11.20	11.50	
		142	5710	11.00	11.50	
	802.11ax-HE80 MCS0	106	5530	11.20	11.50	100.00
		122	5610	10.90	11.50	
		138	5690	11.00	11.50	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	11.00	11.50	99.00
		157	5785	11.10	11.50	
		165	5825	11.00	11.50	
	802.11n-HT20 MCS0	149	5745	11.20	11.50	100.00
		157	5785	11.20	11.50	
		165	5825	11.00	11.50	
	802.11n-HT40 MCS0	151	5755	11.00	11.50	100.00
		159	5795	11.00	11.50	
	802.11ac-VHT20 MCS0	149	5745	11.10	11.50	100.00
		157	5785	11.10	11.50	
		165	5825	10.90	11.50	
	802.11ac-VHT40 MCS0	151	5755	10.90	11.50	100.00
		159	5795	10.90	11.50	
	802.11ac-VHT80 MCS0	155	5775	11.00	11.50	100.00
	802.11ax-HE20 MCS0	149	5745	11.00	11.50	100.00
		157	5785	11.10	11.50	
		165	5825	11.00	11.50	
	802.11ax-HE40 MCS0	151	5755	11.00	11.50	100.00
		159	5795	11.00	11.50	
	802.11ax-HE80 MCS0	155	5775	11.10	11.50	100.00

<5GHz WLAN Chain 1>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	11.00	11.50	99.00
		40	5200	11.00	11.50	
		44	5220	11.00	11.50	
		48	5240	11.00	11.50	
	802.11n-HT20 MCS0	36	5180	11.10	11.50	100.00
		40	5200	11.00	11.50	
		44	5220	11.00	11.50	
		48	5240	10.90	11.50	
	802.11n-HT40 MCS0	38	5190	11.10	11.50	100.00
		46	5230	11.00	11.50	
	802.11ac-VHT20 MCS0	36	5180	11.00	11.50	100.00
		40	5200	10.90	11.50	
		44	5220	10.90	11.50	
		48	5240	10.80	11.50	
	802.11ac-VHT40 MCS0	38	5190	11.00	11.50	100.00
		46	5230	10.90	11.50	
	802.11ac-VHT80 MCS0	42	5210	11.10	11.50	100.00
	802.11ax-HE20 MCS0	36	5180	11.10	11.50	100.00
		40	5200	11.00	11.50	
		44	5220	11.00	11.50	
		48	5240	11.00	11.50	
	802.11ax-HE40 MCS0	38	5190	10.90	11.50	100.00
		46	5230	10.90	11.50	
	802.11ax-HE80 MCS0	42	5210	11.00	11.50	100.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	10.90	11.50	99.00
		56	5280	10.90	11.50	
		60	5300	10.90	11.50	
		64	5320	10.90	11.50	
	802.11n-HT20 MCS0	52	5260	10.90	11.50	100.00
		56	5280	10.90	11.50	
		60	5300	10.90	11.50	
		64	5320	11.10	11.50	
	802.11n-HT40 MCS0	54	5270	11.20	11.50	100.00
		62	5310	11.00	11.50	
	802.11ac-VHT20 MCS0	52	5260	10.80	11.50	100.00
		56	5280	10.80	11.50	
		60	5300	10.80	11.50	
		64	5320	10.90	11.50	
	802.11ac-VHT40 MCS0	54	5270	11.10	11.50	100.00
		62	5310	10.90	11.50	
	802.11ac-VHT80 MCS0	58	5290	10.90	11.50	100.00
	802.11ax-HE20 MCS0	52	5260	10.90	11.50	100.00
		56	5280	10.90	11.50	
		60	5300	11.00	11.50	
		64	5320	11.00	11.50	
	802.11ax-HE40 MCS0	54	5270	10.90	11.50	100.00
		62	5310	11.10	11.50	
	802.11ax-HE80 MCS0	58	5290	10.90	11.50	100.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	10.80	11.50	99.00
		116	5580	11.00	11.50	
		124	5620	11.00	11.50	
		132	5660	11.00	11.50	
		144	5720	11.20	11.50	
	802.11n-HT20 MCS0	100	5500	10.90	11.50	100.00
		116	5580	11.00	11.50	
		124	5620	11.00	11.50	
		132	5660	11.00	11.50	
		144	5720	11.00	11.50	
	802.11n-HT40 MCS0	102	5510	11.00	11.50	100.00
		110	5550	11.10	11.50	
		126	5630	11.00	11.50	
		134	5670	11.00	11.50	
		142	5710	11.00	11.50	
	802.11ac-VHT20 MCS0	100	5500	10.80	11.50	100.00
		116	5580	10.90	11.50	
		124	5620	10.90	11.50	
		132	5660	10.90	11.50	
		144	5720	10.90	11.50	
	802.11ac-VHT40 MCS0	102	5510	10.90	11.50	100.00
		110	5550	11.00	11.50	
		126	5630	11.00	11.50	
		134	5670	10.90	11.50	
		142	5710	10.90	11.50	
	802.11ac-VHT80 MCS0	106	5530	11.10	11.50	100.00
		122	5610	11.00	11.50	
		138	5690	11.00	11.50	
	802.11ax-HE20 MCS0	100	5500	11.00	11.50	100.00
		116	5580	11.10	11.50	
		124	5620	11.10	11.50	
		132	5660	11.00	11.50	
		144	5720	11.10	11.50	
	802.11ax-HE40 MCS0	102	5510	11.00	11.50	100.00
		110	5550	11.00	11.50	
		126	5630	11.00	11.50	
		134	5670	11.10	11.50	
		142	5710	10.90	11.50	
	802.11ax-HE80 MCS0	106	5530	11.00	11.50	100.00
		122	5610	10.90	11.50	
		138	5690	10.90	11.50	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	10.90	11.50	99.00
		157	5785	11.10	11.50	
		165	5825	11.00	11.50	
	802.11n-HT20 MCS0	149	5745	11.00	11.50	100.00
		157	5785	11.00	11.50	
		165	5825	11.10	11.50	
	802.11n-HT40 MCS0	151	5755	10.90	11.50	100.00
		159	5795	11.10	11.50	
	802.11ac-VHT20 MCS0	149	5745	10.90	11.50	100.00
		157	5785	10.90	11.50	
		165	5825	11.00	11.50	
	802.11ac-VHT40 MCS0	151	5755	10.80	11.50	100.00
		159	5795	11.00	11.50	
	802.11ac-VHT80 MCS0	155	5775	11.00	11.50	100.00
	802.11ax-HE20 MCS0	149	5745	11.00	11.50	100.00
		157	5785	11.10	11.50	
		165	5825	10.90	11.50	
	802.11ax-HE40 MCS0	151	5755	10.90	11.50	100.00
		159	5795	11.10	11.50	
	802.11ax-HE80 MCS0	155	5775	10.90	11.50	100.00

<When WLAN 2.4G and 5G Transmit at the same time Power Table 2>

<2.4GHz WLAN Chain 0>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	11.90	12.00	100.00
		6	2437	11.70	12.00	
		11	2462	11.70	12.00	
	802.11g 6Mbps	1	2412	11.65	12.00	98.74
		6	2437	11.68	12.00	
		11	2462	11.61	12.00	
	802.11n-HT20 MCS0	1	2412	11.60	12.00	100.00
		6	2437	11.68	12.00	
		11	2462	11.63	12.00	
	802.11ax-HE20 MCS0	1	2412	11.68	12.00	100.00
		6	2437	11.65	12.00	
		11	2462	11.68	12.00	

<2.4GHz WLAN Chain 1>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	6.70	7.00	100.00
		6	2437	6.70	7.00	
		11	2462	6.80	7.00	
	802.11g 6Mbps	1	2412	12.80	13.00	99.25
		6	2437	13.70	14.00	
		11	2462	13.80	14.00	
	802.11n-HT20 MCS0	1	2412	12.60	13.00	100.00
		6	2437	13.55	14.00	
		11	2462	13.49	14.00	
	802.11ax-HE20 MCS0	1	2412	12.71	13.00	100.00
		6	2437	13.54	14.00	
		11	2462	13.69	14.00	

<5GHz WLAN Chain 0>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	9.08	9.50	99.00
		40	5200	9.08	9.50	
		44	5220	9.06	9.50	
		48	5240	9.09	9.50	
	802.11n-HT20 MCS0	36	5180	9.00	9.50	100.00
		40	5200	9.05	9.50	
		44	5220	9.09	9.50	
		48	5240	9.02	9.50	
	802.11n-HT40 MCS0	38	5190	9.10	9.50	100.00
		46	5230	9.08	9.50	
	802.11ac-VHT20 MCS0	36	5180	9.04	9.50	100.00
		40	5200	9.04	9.50	
		44	5220	9.08	9.50	
		48	5240	9.05	9.50	
	802.11ac-VHT40 MCS0	38	5190	9.03	9.50	100.00
		46	5230	9.04	9.50	
	802.11ac-VHT80 MCS0	42	5210	9.20	9.50	100.00
	802.11ax-HE20 MCS0	36	5180	9.02	9.50	100.00
		40	5200	9.10	9.50	
		44	5220	9.02	9.50	
		48	5240	9.04	9.50	
	802.11ax-HE40 MCS0	38	5190	9.04	9.50	100.00
		46	5230	9.08	9.50	
	802.11ax-HE80 MCS0	42	5210	9.03	9.50	100.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	9.15	9.50	99.00
		56	5280	9.16	9.50	
		60	5300	9.16	9.50	
		64	5320	9.15	9.50	
	802.11n-HT20 MCS0	52	5260	9.17	9.50	100.00
		56	5280	9.16	9.50	
		60	5300	9.17	9.50	
		64	5320	9.14	9.50	
	802.11n-HT40 MCS0	54	5270	9.18	9.50	100.00
		62	5310	9.13	9.50	
	802.11ac-VHT20 MCS0	52	5260	9.18	9.50	100.00
		56	5280	9.12	9.50	
		60	5300	9.10	9.50	
		64	5320	9.12	9.50	
	802.11ac-VHT40 MCS0	54	5270	9.13	9.50	100.00
		62	5310	9.15	9.50	
	802.11ac-VHT80 MCS0	58	5290	9.30	9.50	100.00
	802.11ax-HE20 MCS0	52	5260	9.16	9.50	100.00
		56	5280	9.12	9.50	
		60	5300	9.12	9.50	
		64	5320	9.16	9.50	
	802.11ax-HE40 MCS0	54	5270	9.12	9.50	100.00
		62	5310	9.10	9.50	
	802.11ax-HE80 MCS0	58	5290	9.16	9.50	100.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	9.24	9.50	99.00
		116	5580	9.23	9.50	
		124	5620	9.25	9.50	
		132	5660	9.21	9.50	
		144	5720	9.26	9.50	
	802.11n-HT20 MCS0	100	5500	9.27	9.50	100.00
		116	5580	9.21	9.50	
		124	5620	9.25	9.50	
		132	5660	9.21	9.50	
		144	5720	9.23	9.50	
	802.11n-HT40 MCS0	102	5510	9.20	9.50	100.00
		110	5550	9.30	9.50	
		126	5630	9.29	9.50	
		134	5670	9.26	9.50	
		142	5710	9.20	9.50	
	802.11ac-VHT20 MCS0	100	5500	9.21	9.50	100.00
		116	5580	9.30	9.50	
		124	5620	9.28	9.50	
		132	5660	9.23	9.50	
		144	5720	9.25	9.50	
	802.11ac-VHT40 MCS0	102	5510	9.22	9.50	100.00
		110	5550	9.22	9.50	
		126	5630	9.21	9.50	
		134	5670	9.29	9.50	
		142	5710	9.27	9.50	
	802.11ac-VHT80 MCS0	106	5530	9.30	9.50	100.00
		122	5610	9.40	9.50	
		138	5690	9.30	9.50	
	802.11ax-HE20 MCS0	100	5500	9.23	9.50	100.00
		116	5580	9.29	9.50	
		124	5620	9.22	9.50	
		132	5660	9.29	9.50	
		144	5720	9.30	9.50	
	802.11ax-HE40 MCS0	102	5510	9.24	9.50	100.00
		110	5550	9.22	9.50	
		126	5630	9.21	9.50	
		134	5670	9.28	9.50	
		142	5710	9.25	9.50	
	802.11ax-HE80 MCS0	106	5530	9.28	9.50	100.00
		122	5610	9.21	9.50	
		138	5690	9.24	9.50	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	9.28	9.50	99.00
		157	5785	9.21	9.50	
		165	5825	9.22	9.50	
	802.11n-HT20 MCS0	149	5745	9.20	9.50	100.00
		157	5785	9.21	9.50	
		165	5825	9.26	9.50	
	802.11n-HT40 MCS0	151	5755	9.25	9.50	100.00
		159	5795	9.20	9.50	
	802.11ac-VHT20 MCS0	149	5745	9.20	9.50	100.00
		157	5785	9.23	9.50	
		165	5825	9.25	9.50	
	802.11ac-VHT40 MCS0	151	5755	9.25	9.50	100.00
		159	5795	9.26	9.50	
	802.11ac-VHT80 MCS0	155	5775	9.40	9.50	100.00
	802.11ax-HE20 MCS0	149	5745	9.27	9.50	100.00
		157	5785	9.26	9.50	
		165	5825	9.21	9.50	
	802.11ax-HE40 MCS0	151	5755	9.28	9.50	100.00
		159	5795	9.27	9.50	
	802.11ax-HE80 MCS0	155	5775	9.24	9.50	100.00

<5GHz WLAN Chain 1>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	9.24	9.50	99.00
		40	5200	9.29	9.50	
		44	5220	9.29	9.50	
		48	5240	9.24	9.50	
	802.11n-HT20 MCS0	36	5180	9.21	9.50	100.00
		40	5200	9.27	9.50	
		44	5220	9.20	9.50	
		48	5240	9.22	9.50	
	802.11n-HT40 MCS0	38	5190	9.28	9.50	100.00
		46	5230	9.28	9.50	
	802.11ac-VHT20 MCS0	36	5180	9.25	9.50	100.00
		40	5200	9.26	9.50	
		44	5220	9.24	9.50	
		48	5240	9.21	9.50	
	802.11ac-VHT40 MCS0	38	5190	9.22	9.50	100.00
		46	5230	9.25	9.50	
	802.11ac-VHT80 MCS0	42	5210	9.40	9.50	100.00
	802.11ax-HE20 MCS0	36	5180	9.27	9.50	100.00
		40	5200	9.25	9.50	
		44	5220	9.22	9.50	
		48	5240	9.27	9.50	
	802.11ax-HE40 MCS0	38	5190	9.26	9.50	100.00
		46	5230	9.20	9.50	
	802.11ax-HE80 MCS0	42	5210	9.22	9.50	100.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	9.20	9.50	99.00
		56	5280	9.29	9.50	
		60	5300	9.28	9.50	
		64	5320	9.25	9.50	
	802.11n-HT20 MCS0	52	5260	9.21	9.50	100.00
		56	5280	9.25	9.50	
		60	5300	9.27	9.50	
		64	5320	9.21	9.50	
	802.11n-HT40 MCS0	54	5270	9.23	9.50	100.00
		62	5310	9.20	9.50	
	802.11ac-VHT20 MCS0	52	5260	9.20	9.50	100.00
		56	5280	9.24	9.50	
		60	5300	9.20	9.50	
		64	5320	9.29	9.50	
	802.11ac-VHT40 MCS0	54	5270	9.24	9.50	100.00
		62	5310	9.30	9.50	
	802.11ac-VHT80 MCS0	58	5290	9.40	9.50	100.00
	802.11ax-HE20 MCS0	52	5260	9.30	9.50	100.00
		56	5280	9.28	9.50	
		60	5300	9.30	9.50	
		64	5320	9.22	9.50	
	802.11ax-HE40 MCS0	54	5270	9.20	9.50	100.00
		62	5310	9.27	9.50	
	802.11ax-HE80 MCS0	58	5290	9.27	9.50	100.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	9.27	9.50	99.00
		116	5580	9.24	9.50	
		124	5620	9.25	9.50	
		132	5660	9.23	9.50	
		144	5720	9.30	9.50	
	802.11n-HT20 MCS0	100	5500	9.29	9.50	100.00
		116	5580	9.28	9.50	
		124	5620	9.23	9.50	
		132	5660	9.23	9.50	
		144	5720	9.28	9.50	
	802.11n-HT40 MCS0	102	5510	9.23	9.50	100.00
		110	5550	9.24	9.50	
		126	5630	9.25	9.50	
		134	5670	9.27	9.50	
		142	5710	9.27	9.50	
	802.11ac-VHT20 MCS0	100	5500	9.26	9.50	100.00
		116	5580	9.20	9.50	
		124	5620	9.30	9.50	
		132	5660	9.25	9.50	
		144	5720	9.24	9.50	
	802.11ac-VHT40 MCS0	102	5510	9.28	9.50	100.00
		110	5550	9.20	9.50	
		126	5630	9.20	9.50	
		134	5670	9.26	9.50	
		142	5710	9.26	9.50	
	802.11ac-VHT80 MCS0	106	5530	9.30	9.50	100.00
		122	5610	9.40	9.50	
		138	5690	9.40	9.50	
	802.11ax-HE20 MCS0	100	5500	9.21	9.50	100.00
		116	5580	9.21	9.50	
		124	5620	9.22	9.50	
		132	5660	9.24	9.50	
		144	5720	9.21	9.50	
	802.11ax-HE40 MCS0	102	5510	9.25	9.50	100.00
		110	5550	9.29	9.50	
		126	5630	9.26	9.50	
		134	5670	9.22	9.50	
		142	5710	9.21	9.50	
	802.11ax-HE80 MCS0	106	5530	9.28	9.50	100.00
		122	5610	9.29	9.50	
		138	5690	9.25	9.50	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	9.00	9.50	99.00
		157	5785	9.02	9.50	
		165	5825	9.09	9.50	
	802.11n-HT20 MCS0	149	5745	9.06	9.50	100.00
		157	5785	9.09	9.50	
		165	5825	9.07	9.50	
	802.11n-HT40 MCS0	151	5755	9.09	9.50	100.00
		159	5795	9.10	9.50	
	802.11ac-VHT20 MCS0	149	5745	9.04	9.50	100.00
		157	5785	9.05	9.50	
		165	5825	9.07	9.50	
	802.11ac-VHT40 MCS0	151	5755	9.04	9.50	100.00
		159	5795	9.07	9.50	
	802.11ac-VHT80 MCS0	155	5775	9.20	9.50	100.00
	802.11ax-HE20 MCS0	149	5745	9.07	9.50	100.00
		157	5785	9.10	9.50	
		165	5825	9.09	9.50	
	802.11ax-HE40 MCS0	151	5755	9.08	9.50	100.00
		159	5795	9.05	9.50	
	802.11ax-HE80 MCS0	155	5775	9.03	9.50	100.00

13. RF Exposure Conditions

Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	≤ 25mm
BT&WLAN Chain 0	≤ 25mm	≤ 25mm	>25mm	>25mm	>25mm	≤ 25mm
WLAN Chain 1	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm

Positions for SAR tests; Hotspot mode						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN	Yes	Yes	No	Yes	Yes	Yes
BT&WLAN Chain 0	Yes	Yes	No	No	No	Yes
WLAN Chain 1	Yes	Yes	Yes	No	Yes	Yes

General Note:

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

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 WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   c. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
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. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15cm or an overall diagonal dimension > 16cm, when hotspot mode applies, 10-g product specific SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, in this report all the hotspot mode results are < 1.2W/kg.
6. The 5GHz WLAN product specific SAR is necessary due to an overall diagonal dimension > 16cm.

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is > not 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 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 band 4 SAR test was covered by Band 66; according to TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. The maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion.
   b. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.

WLAN Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. Per KDB 248227 D01v02r02, U-NII-1 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. Add 802.11g mode for chain 1 just verify, due to the output power is higher.
4. 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.
5. 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.
6. During SAR testing the WLAN transmission was verified using a spectrum analyzer.
7. Power table 1 is the normal state and Power table2 are set when WLAN2.4GHz and WLAN5GHz are transmitted at the same time.

14.1 Head SAR

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
01	LTE Band 2	20M	QPSK	1	0	Right Cheek	0mm	18700	1860	23.75	25.00	1.334	-0.01	0.112	0.149
	LTE Band 2	20M	QPSK	50	0	Right Cheek	0mm	18700	1860	22.83	24.00	1.309	-0.1	0.093	0.122
	LTE Band 2	20M	QPSK	1	0	Right Tilted	0mm	18700	1860	23.75	25.00	1.334	-0.18	0.049	0.065
	LTE Band 2	20M	QPSK	50	0	Right Tilted	0mm	18700	1860	22.83	24.00	1.309	-0.09	0.047	0.062
	LTE Band 2	20M	QPSK	1	0	Left Cheek	0mm	18700	1860	23.75	25.00	1.334	-0.04	0.070	0.093
	LTE Band 2	20M	QPSK	50	0	Left Cheek	0mm	18700	1860	22.83	24.00	1.309	-0.18	0.057	0.075
	LTE Band 2	20M	QPSK	1	0	Left Tilted	0mm	18700	1860	23.75	25.00	1.334	0.04	0.059	0.079
	LTE Band 2	20M	QPSK	50	0	Left Tilted	0mm	18700	1860	22.83	24.00	1.309	-0.09	0.048	0.063
04	LTE Band 66	20M	QPSK	1	0	Right Cheek	0mm	132322	1745	23.70	25.00	1.349	-0.11	0.134	0.181
	LTE Band 66	20M	QPSK	50	0	Right Cheek	0mm	132322	1745	22.73	24.00	1.340	-0.14	0.108	0.145
	LTE Band 66	20M	QPSK	1	0	Right Tilted	0mm	132322	1745	23.70	25.00	1.349	0.11	0.048	0.065
	LTE Band 66	20M	QPSK	50	0	Right Tilted	0mm	132322	1745	22.73	24.00	1.340	0.06	0.039	0.052
	LTE Band 66	20M	QPSK	1	0	Left Cheek	0mm	132322	1745	23.70	25.00	1.349	0.02	0.084	0.113
	LTE Band 66	20M	QPSK	50	0	Left Cheek	0mm	132322	1745	22.73	24.00	1.340	-0.12	0.069	0.092
	LTE Band 66	20M	QPSK	1	0	Left Tilted	0mm	132322	1745	23.70	25.00	1.349	0.08	0.048	0.065
	LTE Band 66	20M	QPSK	50	0	Left Tilted	0mm	132322	1745	22.73	24.00	1.340	0.08	0.039	0.052

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Chain	Power Table	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)
06	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Chain 0	1	1	2412	13.58	14.00	1.102	100	1.000	0.09	0.417	0.459
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Chain 0	1	1	2412	13.58	14.00	1.102	100	1.000	0.09	0.089	0.098
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Chain 0	1	1	2412	13.58	14.00	1.102	100	1.000	0.13	0.128	0.141
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Chain 0	1	1	2412	13.58	14.00	1.102	100	1.000	-0.1	0.028	0.031
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Chain 0	2	1	2412	11.90	12.00	1.023	100	1.000	-0.06	0.158	0.162
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Chain 0	2	1	2412	11.90	12.00	1.023	100	1.000	0.09	0.031	0.032
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Chain 0	2	1	2412	11.90	12.00	1.023	100	1.000	-0.08	0.048	0.049
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Chain 0	2	1	2412	11.90	12.00	1.023	100	1.000	0.05	0.008	0.008
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Chain 1	1	6	2437	6.72	7.00	1.067	100	1.000	0.05	0.005	0.006
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Chain 1	1	6	2437	6.72	7.00	1.067	100	1.000	0.06	0.005	0.005
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Chain 1	1	6	2437	6.72	7.00	1.067	100	1.000	0.01	0.003	0.004
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Chain 1	1	6	2437	6.72	7.00	1.067	100	1.000	0.09	0.003	0.003
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Chain 1	2	11	2462	6.80	7.00	1.047	100	1.000	0.12	0.008	0.008
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Chain 1	2	11	2462	6.80	7.00	1.047	100	1.000	0.17	0.007	0.007
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Chain 1	2	11	2462	6.80	7.00	1.047	100	1.000	0.05	0.005	0.005
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Chain 1	2	11	2462	6.80	7.00	1.047	100	1.000	0.14	0.004	0.004
	WLAN2.4GHz	802.11g 6Mbps	Right Cheek	0mm	Chain 1	1	6	2437	15.70	16.00	1.072	99.25	1.008	0.19	0.064	0.069
	WLAN2.4GHz	802.11g 6Mbps	Right Tilted	0mm	Chain 1	1	6	2437	15.70	16.00	1.072	99.25	1.008	0.04	0.067	0.072
	WLAN2.4GHz	802.11g 6Mbps	Left Cheek	0mm	Chain 1	1	6	2437	15.70	16.00	1.072	99.25	1.008	-0.06	0.041	0.044
	WLAN2.4GHz	802.11g 6Mbps	Left Tilted	0mm	Chain 1	1	6	2437	15.70	16.00	1.072	99.25	1.008	0.11	0.041	0.044
	WLAN2.4GHz	802.11g 6Mbps	Right Cheek	0mm	Chain 1	2	11	2462	13.80	14.00	1.047	98.51	1.015	0.11	0.027	0.029
	WLAN2.4GHz	802.11g 6Mbps	Right Tilted	0mm	Chain 1	2	11	2462	13.80	14.00	1.047	98.51	1.015	0.16	0.023	0.024
	WLAN2.4GHz	802.11g 6Mbps	Left Cheek	0mm	Chain 1	2	11	2462	13.80	14.00	1.047	98.51	1.015	0.07	0.011	0.012
	WLAN2.4GHz	802.11g 6Mbps	Left Tilted	0mm	Chain 1	2	11	2462	13.80	14.00	1.047	98.51	1.015	0.11	0.011	0.012

Plot No.	Band	Mode	Test Position	Gap (mm)	Chain	Power Table	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Chain 0	1	58	5290	10.90	11.50	1.148	100	1.000	0.02	0.036	0.041
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Chain 0	1	58	5290	10.90	11.50	1.148	100	1.000	0	0.005	0.006
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Chain 0	1	58	5290	10.90	11.50	1.148	100	1.000	0	0.007	0.008
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Chain 0	1	58	5290	10.90	11.50	1.148	100	1.000	-0.12	0.004	0.004
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Chain 0	2	58	5290	9.30	9.50	1.047	100	1.000	0.06	0.027	0.028
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Chain 0	2	58	5290	9.30	9.50	1.047	100	1.000	0	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Chain 0	2	58	5290	9.30	9.50	1.047	100	1.000	0	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Chain 0	2	58	5290	9.30	9.50	1.047	100	1.000	0	0.001	0.001
07	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Chain 1	1	58	5290	10.90	11.50	1.148	100	1.000	0.06	0.257	0.295
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Chain 1	1	58	5290	10.90	11.50	1.148	100	1.000	0	0.208	0.239
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Chain 1	1	58	5290	10.90	11.50	1.148	100	1.000	-0.01	0.085	0.098
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Chain 1	1	58	5290	10.90	11.50	1.148	100	1.000	0.1	0.077	0.088
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Chain 1	2	58	5290	9.40	9.50	1.023	100	1.000	0.05	0.175	0.179
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Chain 1	2	58	5290	9.40	9.50	1.023	100	1.000	-0.06	0.136	0.139
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Chain 1	2	58	5290	9.40	9.50	1.023	100	1.000	-0.11	0.068	0.070
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Chain 1	2	58	5290	9.40	9.50	1.023	100	1.000	-0.03	0.036	0.037
08	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Chain 0	1	106	5530	11.20	11.50	1.072	100	1.000	0.03	0.099	0.106
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Chain 0	1	106	5530	11.20	11.50	1.072	100	1.000	0.09	0.003	0.003
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Chain 0	1	106	5530	11.20	11.50	1.072	100	1.000	0.05	0.005	0.006
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Chain 0	1	106	5530	11.20	11.50	1.072	100	1.000	0.17	0.005	0.006
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Chain 0	2	122	5610	9.40	9.50	1.023	100	1.000	-0.08	0.075	0.077
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Chain 0	2	122	5610	9.40	9.50	1.023	100	1.000	-0.18	0.012	0.012
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Chain 0	2	122	5610	9.40	9.50	1.023	100	1.000	0	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Chain 0	2	122	5610	9.40	9.50	1.023	100	1.000	-0.06	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Chain 1	1	106	5530	11.10	11.50	1.096	100	1.000	-0.03	0.088	0.096
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Chain 1	1	106	5530	11.10	11.50	1.096	100	1.000	0	0.060	0.066
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Chain 1	1	106	5530	11.10	11.50	1.096	100	1.000	0.06	0.012	0.013
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Chain 1	1	106	5530	11.10	11.50	1.096	100	1.000	0.03	0.009	0.009
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Chain 1	2	122	5610	9.40	9.50	1.023	100	1.000	0.13	0.080	0.082
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Chain 1	2	122	5610	9.40	9.50	1.023	100	1.000	-0.14	0.047	0.048
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Chain 1	2	122	5610	9.40	9.50	1.023	100	1.000	0	0.009	0.009
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Chain 1	2	122	5610	9.40	9.50	1.023	100	1.000	-0.01	0.010	0.010
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Chain 0	1	155	5775	11.00	11.50	1.122	100	1.000	0.03	0.083	0.093
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Chain 0	1	155	5775	11.00	11.50	1.122	100	1.000	0	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Chain 0	1	155	5775	11.00	11.50	1.122	100	1.000	0	0.008	0.009
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Chain 0	1	155	5775	11.00	11.50	1.122	100	1.000	0	0.001	0.002
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Chain 0	2	155	5775	9.40	9.50	1.023	100	1.000	0	0.063	0.064
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Chain 0	2	155	5775	9.40	9.50	1.023	100	1.000	0	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Chain 0	2	155	5775	9.40	9.50	1.023	100	1.000	-0.02	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Chain 0	2	155	5775	9.40	9.50	1.023	100	1.000	-0.03	0.001	0.001
09	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Chain 1	1	155	5775	11.00	11.50	1.122	100	1.000	-0.05	0.100	0.112
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Chain 1	1	155	5775	11.00	11.50	1.122	100	1.000	0	0.079	0.089
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Chain 1	1	155	5775	11.00	11.50	1.122	100	1.000	0	0.008	0.009
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Chain 1	1	155	5775	11.00	11.50	1.122	100	1.000	0	0.036	0.040
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Chain 1	2	155	5775	9.20	9.50	1.072	100	1.000	-0.19	0.075	0.080
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Chain 1	2	155	5775	9.20	9.50	1.072	100	1.000	-0.16	0.059	0.063
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Chain 1	2	155	5775	9.20	9.50	1.072	100	1.000	0.03	0.031	0.033
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Chain 1	2	155	5775	9.20	9.50	1.072	100	1.000	-0.17	0.023	0.025

14.2 Hotspot SAR

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2	20M	QPSK	1	0	Front	10mm	18700	1860	19.75	21.00	1.334	0.09	0.334	0.445
	LTE Band 2	20M	QPSK	50	0	Front	10mm	18700	1860	19.88	21.00	1.294	-0.12	0.335	0.434
	LTE Band 2	20M	QPSK	1	0	Back	10mm	18700	1860	19.75	21.00	1.334	-0.03	0.410	0.547
	LTE Band 2	20M	QPSK	50	0	Back	10mm	18700	1860	19.88	21.00	1.294	0.01	0.417	0.540
	LTE Band 2	20M	QPSK	1	0	Left Side	10mm	18700	1860	19.75	21.00	1.334	-0.13	0.040	0.053
	LTE Band 2	20M	QPSK	50	0	Left Side	10mm	18700	1860	19.88	21.00	1.294	0	0.040	0.052
	LTE Band 2	20M	QPSK	1	0	Right Side	10mm	18700	1860	19.75	21.00	1.334	-0.08	0.064	0.085
	LTE Band 2	20M	QPSK	50	0	Right Side	10mm	18700	1860	19.88	21.00	1.294	-0.06	0.064	0.083
11	LTE Band 2	20M	QPSK	1	0	Bottom Side	10mm	18700	1860	19.75	21.00	1.334	-0.18	0.537	0.716
	LTE Band 2	20M	QPSK	50	0	Bottom Side	10mm	18700	1860	19.88	21.00	1.294	-0.07	0.538	0.696
	LTE Band 66	20M	QPSK	1	0	Front	10mm	132072	1720	19.68	21.00	1.355	-0.01	0.297	0.402
	LTE Band 66	20M	QPSK	50	24	Front	10mm	132072	1720	19.79	21.00	1.321	0.03	0.338	0.447
	LTE Band 66	20M	QPSK	1	0	Back	10mm	132072	1720	19.68	21.00	1.355	-0.01	0.365	0.495
	LTE Band 66	20M	QPSK	50	24	Back	10mm	132072	1720	19.79	21.00	1.321	-0.04	0.392	0.518
	LTE Band 66	20M	QPSK	1	0	Left Side	10mm	132072	1720	19.68	21.00	1.355	0.19	0.024	0.033
	LTE Band 66	20M	QPSK	50	24	Left Side	10mm	132072	1720	19.79	21.00	1.321	-0.07	0.025	0.033
	LTE Band 66	20M	QPSK	1	0	Right Side	10mm	132072	1720	19.68	21.00	1.355	-0.1	0.075	0.102
	LTE Band 66	20M	QPSK	50	24	Right Side	10mm	132072	1720	19.79	21.00	1.321	-0.17	0.065	0.086
14	LTE Band 66	20M	QPSK	1	0	Bottom Side	10mm	132072	1720	19.68	21.00	1.355	-0.09	0.465	0.630
	LTE Band 66	20M	QPSK	50	24	Bottom Side	10mm	132072	1720	19.79	21.00	1.321	-0.02	0.435	0.575

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Table	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Chain 0	1	1	2412	13.58	14.00	1.102	100	1.000	0.07	0.072	0.079
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Chain 0	1	1	2412	13.58	14.00	1.102	100	1.000	0.14	0.129	0.142
16	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Chain 0	1	1	2412	13.58	14.00	1.102	100	1.000	0.15	0.144	0.159
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Chain 1	1	6	2437	6.72	7.00	1.067	100	1.000	0	0.001	0.001
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Chain 1	1	6	2437	6.72	7.00	1.067	100	1.000	0	0.001	0.001
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Chain 1	1	6	2437	6.72	7.00	1.067	100	1.000	0	0.001	0.001
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Chain 1	1	6	2437	6.72	7.00	1.067	100	1.000	0	0.001	0.001
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Chain 1	1	6	2437	6.72	7.00	1.067	100	1.000	0	0.001	0.001
	WLAN2.4GHz	802.11g 6Mbps	Front	10mm	Chain 1	1	6	2437	15.70	16.00	1.072	99.25	1.008	0.12	0.006	0.006
	WLAN2.4GHz	802.11g 6Mbps	Back	10mm	Chain 1	1	6	2437	15.70	16.00	1.072	99.25	1.008	0.01	0.023	0.025
	WLAN2.4GHz	802.11g 6Mbps	Left Side	10mm	Chain 1	1	6	2437	15.70	16.00	1.072	99.25	1.008	0	0.001	0.001
	WLAN2.4GHz	802.11g 6Mbps	Right Side	10mm	Chain 1	1	6	2437	15.70	16.00	1.072	99.25	1.008	0.01	0.001	0.001
	WLAN2.4GHz	802.11g 6Mbps	Top Side	10mm	Chain 1	1	6	2437	15.70	16.00	1.072	99.25	1.008	0.01	0.002	0.002

14.3 Body Worn Accessory SAR

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2	20M	QPSK	1	0	Front	15mm	18700	1860	22.22	23.50	1.343	0.13	0.301	0.404
	LTE Band 2	20M	QPSK	50	24	Front	15mm	18700	1860	22.33	23.50	1.309	0.05	0.317	0.415
	LTE Band 2	20M	QPSK	1	0	Back	15mm	18700	1860	22.22	23.50	1.343	-0.13	0.356	0.478
18	LTE Band 2	20M	QPSK	50	24	Back	15mm	18700	1860	22.33	23.50	1.309	-0.1	0.369	0.483
	LTE Band 66	20M	QPSK	1	0	Front	15mm	132322	1745	22.29	23.50	1.321	-0.13	0.282	0.373
	LTE Band 66	20M	QPSK	50	50	Front	15mm	132322	1745	22.32	23.50	1.312	0.16	0.311	0.408
	LTE Band 66	20M	QPSK	1	0	Back	15mm	132322	1745	22.29	23.50	1.321	-0.03	0.356	0.470
21	LTE Band 66	20M	QPSK	50	50	Back	15mm	132322	1745	22.32	23.50	1.312	-0.12	0.367	0.482

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Table	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	Chain 0	1	1	2412	13.58	14.00	1.102	100	1.000	0.07	0.028	0.031
23	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Chain 0	1	1	2412	13.58	14.00	1.102	100	1.000	0.09	0.056	0.062
	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	Chain 0	2	1	2412	11.90	12.00	1.023	100	1.000	-0.01	0.019	0.019
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Chain 0	2	1	2412	11.90	12.00	1.023	100	1.000	-0.15	0.024	0.025
	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	Chain 1	1	6	2437	6.72	7.00	1.067	100	1.000	0	0.001	0.001
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Chain 1	1	6	2437	6.72	7.00	1.067	100	1.000	0	0.001	0.001
	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	Chain 1	2	11	2462	6.80	7.00	1.047	100	1.000	0.01	0.001	0.001
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Chain 1	2	11	2462	6.80	7.00	1.047	100	1.000	0.01	0.001	0.001
	WLAN2.4GHz	802.11g 6Mbps	Front	15mm	Chain 1	1	6	2437	15.70	16.00	1.072	99.25	1.008	0	0.002	0.003
	WLAN2.4GHz	802.11g 6Mbps	Back	15mm	Chain 1	1	6	2437	15.70	16.00	1.072	99.25	1.008	0.08	0.007	0.007
	WLAN2.4GHz	802.11g 6Mbps	Front	15mm	Chain 1	2	11	2462	13.80	14.00	1.047	98.51	1.015	0	0.001	0.001
	WLAN2.4GHz	802.11g 6Mbps	Back	15mm	Chain 1	2	11	2462	13.80	14.00	1.047	98.51	1.015	0	0.002	0.002

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Table	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	Chain 0	1	58	5290	10.90	11.50	1.148	100	1.000	0	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Chain 0	1	58	5290	10.90	11.50	1.148	100	1.000	-0.11	0.032	0.037
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	Chain 0	2	58	5290	9.30	9.50	1.047	100	1.000	0	0.002	0.002
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Chain 0	2	58	5290	9.30	9.50	1.047	100	1.000	0.03	0.019	0.020
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	Chain 1	1	58	5290	10.90	11.50	1.148	100	1.000	0	0.001	0.001
24	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Chain 1	1	58	5290	10.90	11.50	1.148	100	1.000	-0.04	0.101	0.116
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	Chain 1	2	58	5290	9.40	9.50	1.023	100	1.000	0	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Chain 1	2	58	5290	9.40	9.50	1.023	100	1.000	-0.15	0.070	0.072
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	Chain 0	1	106	5530	11.20	11.50	1.072	100	1.000	0.05	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Chain 0	1	106	5530	11.20	11.50	1.072	100	1.000	-0.06	0.020	0.021
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	Chain 0	2	122	5610	9.40	9.50	1.023	100	1.000	0	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Chain 0	2	122	5610	9.40	9.50	1.023	100	1.000	-0.1	0.027	0.028
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	Chain 1	1	106	5530	11.10	11.50	1.096	100	1.000	0.09	0.001	0.001
25	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Chain 1	1	106	5530	11.10	11.50	1.096	100	1.000	-0.06	0.044	0.048
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	Chain 1	2	122	5610	9.40	9.50	1.023	100	1.000	0	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Chain 1	2	122	5610	9.40	9.50	1.023	100	1.000	-0.02	0.038	0.039
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	Chain 0	1	155	5775	11.00	11.50	1.122	100	1.000	0	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Chain 0	1	155	5775	11.00	11.50	1.122	100	1.000	-0.01	0.027	0.030
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	Chain 0	2	155	5775	9.40	9.50	1.023	100	1.000	0	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Chain 0	2	155	5775	9.40	9.50	1.023	100	1.000	-0.18	0.018	0.018
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	Chain 1	1	155	5775	11.00	11.50	1.122	100	1.000	0	0.001	0.001
26	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Chain 1	1	155	5775	11.00	11.50	1.122	100	1.000	-0.11	0.064	0.072
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	Chain 1	2	155	5775	9.20	9.50	1.072	100	1.000	0	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Chain 1	2	155	5775	9.20	9.50	1.072	100	1.000	-0.05	0.037	0.040

14.4 Product Specific SAR

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power table	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Chain 0	1	58	5290	10.90	11.50	1.148	100	1.000	-0.15	0.030	0.034
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	0mm	Chain 0	1	58	5290	10.90	11.50	1.148	100	1.000	-0.08	0.139	0.160
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Chain 0	1	58	5290	10.90	11.50	1.148	100	1.000	0.14	0.057	0.065
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Chain 0	2	58	5290	9.30	9.50	1.047	100	1.000	-0.08	0.022	0.023
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	0mm	Chain 0	2	58	5290	9.30	9.50	1.047	100	1.000	-0.03	0.117	0.123
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Chain 0	2	58	5290	9.30	9.50	1.047	100	1.000	0.05	0.039	0.041
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Chain 1	1	58	5290	10.90	11.50	1.148	100	1.000	-0.01	0.110	0.126
28	WLAN5GHz	802.11ac-VHT80 MCS0	Back	0mm	Chain 1	1	58	5290	10.90	11.50	1.148	100	1.000	-0.04	0.343	0.394
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Chain 1	1	58	5290	10.90	11.50	1.148	100	1.000	-0.03	0.050	0.057
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Chain 1	1	58	5290	10.90	11.50	1.148	100	1.000	-0.02	0.004	0.004
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Chain 1	1	58	5290	10.90	11.50	1.148	100	1.000	-0.08	0.028	0.032
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Chain 1	2	58	5290	9.40	9.50	1.023	100	1.000	0.11	0.102	0.104
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	0mm	Chain 1	2	58	5290	9.40	9.50	1.023	100	1.000	-0.14	0.319	0.326
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Chain 1	2	58	5290	9.40	9.50	1.023	100	1.000	-0.12	0.035	0.036
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Chain 1	2	58	5290	9.40	9.50	1.023	100	1.000	-0.02	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Chain 1	2	58	5290	9.40	9.50	1.023	100	1.000	0.03	0.025	0.026
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Chain 0	1	106	5530	11.20	11.50	1.072	100	1.000	-0.04	0.055	0.059
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	0mm	Chain 0	1	106	5530	11.20	11.50	1.072	100	1.000	-0.09	0.152	0.163
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Chain 0	1	106	5530	11.20	11.50	1.072	100	1.000	0.01	0.068	0.073
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Chain 0	2	122	5610	9.40	9.50	1.023	100	1.000	0.14	0.053	0.054
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	0mm	Chain 0	2	122	5610	9.40	9.50	1.023	100	1.000	0.16	0.122	0.125
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Chain 0	2	122	5610	9.40	9.50	1.023	100	1.000	0.13	0.053	0.054
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Chain 1	1	106	5530	11.10	11.50	1.096	100	1.000	-0.04	0.042	0.046
29	WLAN5GHz	802.11ac-VHT80 MCS0	Back	0mm	Chain 1	1	106	5530	11.10	11.50	1.096	100	1.000	-0.16	0.317	0.348
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Chain 1	1	106	5530	11.10	11.50	1.096	100	1.000	-0.07	0.029	0.032
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Chain 1	1	106	5530	11.10	11.50	1.096	100	1.000	0.04	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Chain 1	1	106	5530	11.10	11.50	1.096	100	1.000	0.03	0.008	0.009
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Chain 1	2	122	5610	9.40	9.50	1.023	100	1.000	0.18	0.053	0.054
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	0mm	Chain 1	2	122	5610	9.40	9.50	1.023	100	1.000	0.1	0.285	0.292
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Chain 1	2	122	5610	9.40	9.50	1.023	100	1.000	-0.17	0.023	0.024
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Chain 1	2	122	5610	9.40	9.50	1.023	100	1.000	0	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Chain 1	2	122	5610	9.40	9.50	1.023	100	1.000	0.02	0.006	0.006
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Chain 0	1	155	5775	11.00	11.50	1.122	100	1.000	-0.02	0.073	0.082
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	0mm	Chain 0	1	155	5775	11.00	11.50	1.122	100	1.000	-0.06	0.175	0.196
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Chain 0	1	155	5775	11.00	11.50	1.122	100	1.000	0.07	0.066	0.074
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Chain 0	2	155	5775	9.40	9.50	1.023	100	1.000	0.01	0.047	0.048
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	0mm	Chain 0	2	155	5775	9.40	9.50	1.023	100	1.000	0.07	0.131	0.134
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Chain 0	2	155	5775	9.40	9.50	1.023	100	1.000	-0.19	0.043	0.044
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Chain 1	1	155	5775	11.00	11.50	1.122	100	1.000	-0.06	0.048	0.054
30	WLAN5GHz	802.11ac-VHT80 MCS0	Back	0mm	Chain 1	1	155	5775	11.00	11.50	1.122	100	1.000	-0.1	0.297	0.333
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Chain 1	1	155	5775	11.00	11.50	1.122	100	1.000	-0.17	0.035	0.039
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Chain 1	1	155	5775	11.00	11.50	1.122	100	1.000	0	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Chain 1	1	155	5775	11.00	11.50	1.122	100	1.000	-0.17	0.007	0.008
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Chain 1	2	155	5775	9.20	9.50	1.072	100	1.000	0.07	0.026	0.028
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	0mm	Chain 1	2	155	5775	9.20	9.50	1.072	100	1.000	0.14	0.169	0.181
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Chain 1	2	155	5775	9.20	9.50	1.072	100	1.000	0.06	0.023	0.025
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Chain 1	2	155	5775	9.20	9.50	1.072	100	1.000	0.05	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Chain 1	2	155	5775	9.20	9.50	1.072	100	1.000	0.15	0.003	0.003

15. Simultaneous Transmission Analysis

Case	Cellular	WLAN Chain0 / BT	WLAN Chain1
1	GSM/GPRS/EDGE	BT/BLE	(None)
2	GSM/GPRS/EDGE	WLAN 2.4G	WLAN 2.4G
3	GSM/GPRS/EDGE	WLAN 5G	WLAN 5G
4	GSM/GPRS/EDGE	BT/BLE and WLAN 5G	WLAN 5G
5(2)	GSM/GPRS/EDGE	WLAN 2.4G and 5G	WLAN 2.4G and 5G
6	UMTS/HSPA	BT/BLE	(None)
7	UMTS/HSPA	WLAN 2.4G	WLAN 2.4G
8	UMTS/HSPA	WLAN 5G	WLAN 5G
9	UMTS/HSPA	BT/BLE and WLAN 5G	WLAN 5G
10(2)	UMTS/HSPA	WLAN 2.4G and 5G	WLAN 2.4G and 5G
11	LTE	BT/BLE	(None)
12	LTE	WLAN 2.4G	WLAN 2.4G
13	LTE	WLAN 5G	WLAN 5G
14	LTE	BT/BLE and WLAN 5G	WLAN 5G
15(2)	LTE	WLAN 2.4G and 5G	WLAN 2.4G and 5G
16	None	BT/BLE	(None)
17	None	WLAN 2.4G	WLAN 2.4G
18	None	WLAN 5G	WLAN 5G
19	None	BT/BLE and WLAN 5G	WLAN 5G
20(2)	None	WLAN 2.4G and 5G	WLAN 2.4G and 5G

General Note:

1. In this report the SAR of GSM850/1900, UMTS B2/B4/B5, LTE B7/B12 is refer to FCC ID: PY7-77310Z, Sporton SAR report no.: FA042237-02 and these results is used for Sim-Tx analysis, the detail description refer to section 1 of the report.
2. This device WLAN 2.4GHz supports Hotspot operation and Bluetooth support tethering applications.
3. When the WLAN 2.4Gz and 5GHz transmit at the same time, the device will limit different power for 2.4GHz and 5GHz WLAN, the detail description include operational description.
4. WLAN RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode.
5. The Scaled SAR summation is calculated based on the same configuration and test position.
6. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/kg.
   ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
   iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.

15.1 Head Exposure Conditions

<Normal>

WWAN Band	Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+4+5+6 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Chain 0	2.4GHz WLAN Chain 1	5GHz WLAN Chain 0	5GHz WLAN Chain 1	Bluetooth Chain 0		
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
GSM850	Right Cheek	0.317	0.459	0.069	0.106	0.295	0.488	**0.845**	**1.206**
	Right Tilted	0.131	0.098	0.072	0.006	0.239	0.082	**0.301**	**0.458**
	Left Cheek	0.309	0.141	0.044	0.009	0.098	0.121	**0.494**	**0.537**
	Left Tilted	0.131	0.031	0.044	0.006	0.088	0.023	**0.206**	**0.248**
GSM1900	Right Cheek	0.034	0.459	0.069	0.106	0.295	0.488	**0.562**	**0.923**
	Right Tilted	0.010	0.098	0.072	0.006	0.239	0.082	**0.180**	**0.337**
	Left Cheek	0.027	0.141	0.044	0.009	0.098	0.121	**0.212**	**0.255**
	Left Tilted	0.018	0.031	0.044	0.006	0.088	0.023	**0.093**	**0.135**
WCDMA II	Right Cheek	0.062	0.459	0.069	0.106	0.295	0.488	**0.590**	**0.951**
	Right Tilted	0.021	0.098	0.072	0.006	0.239	0.082	**0.191**	**0.348**
	Left Cheek	0.034	0.141	0.044	0.009	0.098	0.121	**0.219**	**0.262**
	Left Tilted	0.026	0.031	0.044	0.006	0.088	0.023	**0.101**	**0.143**
WCDMA IV	Right Cheek	0.051	0.459	0.069	0.106	0.295	0.488	**0.579**	**0.940**
	Right Tilted	0.040	0.098	0.072	0.006	0.239	0.082	**0.210**	**0.367**
	Left Cheek	0.052	0.141	0.044	0.009	0.098	0.121	**0.237**	**0.280**
	Left Tilted	0.033	0.031	0.044	0.006	0.088	0.023	**0.108**	**0.150**
WCDMA V	Right Cheek	0.289	0.459	0.069	0.106	0.295	0.488	**0.817**	**1.178**
	Right Tilted	0.114	0.098	0.072	0.006	0.239	0.082	**0.284**	**0.441**
	Left Cheek	0.288	0.141	0.044	0.009	0.098	0.121	**0.473**	**0.516**
	Left Tilted	0.131	0.031	0.044	0.006	0.088	0.023	**0.206**	**0.248**
LTE Band 2	Right Cheek	0.149	0.459	0.069	0.106	0.295	0.488	**0.677**	**1.038**
	Right Tilted	0.065	0.098	0.072	0.006	0.239	0.082	**0.235**	**0.392**
	Left Cheek	0.093	0.141	0.044	0.009	0.098	0.121	**0.278**	**0.321**
	Left Tilted	0.079	0.031	0.044	0.006	0.088	0.023	**0.154**	**0.196**
LTE Band 5	Right Cheek	0.258	0.459	0.069	0.106	0.295	0.488	**0.786**	**1.147**
	Right Tilted	0.102	0.098	0.072	0.006	0.239	0.082	**0.272**	**0.429**
	Left Cheek	0.188	0.141	0.044	0.009	0.098	0.121	**0.373**	**0.416**
	Left Tilted	0.081	0.031	0.044	0.006	0.088	0.023	**0.156**	**0.198**
LTE Band 7	Right Cheek	0.016	0.459	0.069	0.106	0.295	0.488	**0.544**	**0.905**
	Right Tilted	0.022	0.098	0.072	0.006	0.239	0.082	**0.192**	**0.349**
	Left Cheek	0.014	0.141	0.044	0.009	0.098	0.121	**0.199**	**0.242**
	Left Tilted	0.009	0.031	0.044	0.006	0.088	0.023	**0.084**	**0.126**
LTE Band 12	Right Cheek	0.153	0.459	0.069	0.106	0.295	0.488	**0.681**	**1.042**
	Right Tilted	0.061	0.098	0.072	0.006	0.239	0.082	**0.231**	**0.388**
	Left Cheek	0.192	0.141	0.044	0.009	0.098	0.121	**0.377**	**0.420**
	Left Tilted	0.052	0.031	0.044	0.006	0.088	0.023	**0.127**	**0.169**
LTE Band 13	Right Cheek	0.205	0.459	0.069	0.106	0.295	0.488	**0.733**	**1.094**
	Right Tilted	0.110	0.098	0.072	0.006	0.239	0.082	**0.280**	**0.437**
	Left Cheek	0.264	0.141	0.044	0.009	0.098	0.121	**0.449**	**0.492**
	Left Tilted	0.133	0.031	0.044	0.006	0.088	0.023	**0.208**	**0.250**
LTE Band 48	Right Cheek	0.001	0.459	0.069	0.106	0.295	0.488	**0.529**	**0.890**
	Right Tilted	0.001	0.098	0.072	0.006	0.239	0.082	**0.171**	**0.328**
	Left Cheek	0.003	0.141	0.044	0.009	0.098	0.121	**0.188**	**0.231**
	Left Tilted	0.001	0.031	0.044	0.006	0.088	0.023	**0.076**	**0.118**
LTE Band 66	Right Cheek	0.181	0.459	0.069	0.106	0.295	0.488	**0.709**	**1.070**
	Right Tilted	0.065	0.098	0.072	0.006	0.239	0.082	**0.235**	**0.392**
	Left Cheek	0.113	0.141	0.044	0.009	0.098	0.121	**0.298**	**0.341**
	Left Tilted	0.065	0.031	0.044	0.006	0.088	0.023	**0.140**	**0.182**

<2.4G and 5G Transmit at the same time>

WWAN Band	Exposure Position	1	2	3	4	5	1+2+3+4+5 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Chain 0	2.4GHz WLAN Chain 1	5GHz WLAN Chain 0	5GHz WLAN Chain 1	
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	
GSM850	Right Cheek	0.317	0.162	0.029	0.077	0.179	**0.764**
	Right Tilted	0.131	0.032	0.024	0.012	0.139	**0.338**
	Left Cheek	0.309	0.049	0.012	0.001	0.070	**0.441**
	Left Tilted	0.131	0.008	0.012	0.001	0.037	**0.189**
GSM1900	Right Cheek	0.034	0.162	0.029	0.077	0.179	**0.481**
	Right Tilted	0.010	0.032	0.024	0.012	0.139	**0.217**
	Left Cheek	0.027	0.049	0.012	0.001	0.070	**0.159**
	Left Tilted	0.018	0.008	0.012	0.001	0.037	**0.076**
WCDMA II	Right Cheek	0.062	0.162	0.029	0.077	0.179	**0.509**
	Right Tilted	0.021	0.032	0.024	0.012	0.139	**0.228**
	Left Cheek	0.034	0.049	0.012	0.001	0.070	**0.166**
	Left Tilted	0.026	0.008	0.012	0.001	0.037	**0.084**
WCDMA IV	Right Cheek	0.051	0.162	0.029	0.077	0.179	**0.498**
	Right Tilted	0.040	0.032	0.024	0.012	0.139	**0.247**
	Left Cheek	0.052	0.049	0.012	0.001	0.070	**0.184**
	Left Tilted	0.033	0.008	0.012	0.001	0.037	**0.091**
WCDMA V	Right Cheek	0.289	0.162	0.029	0.077	0.179	**0.736**
	Right Tilted	0.114	0.032	0.024	0.012	0.139	**0.321**
	Left Cheek	0.288	0.049	0.012	0.001	0.070	**0.420**
	Left Tilted	0.131	0.008	0.012	0.001	0.037	**0.189**
LTE Band 2	Right Cheek	0.149	0.162	0.029	0.077	0.179	**0.596**
	Right Tilted	0.065	0.032	0.024	0.012	0.139	**0.272**
	Left Cheek	0.093	0.049	0.012	0.001	0.070	**0.225**
	Left Tilted	0.079	0.008	0.012	0.001	0.037	**0.137**
LTE Band 5	Right Cheek	0.258	0.162	0.029	0.077	0.179	**0.705**
	Right Tilted	0.102	0.032	0.024	0.012	0.139	**0.309**
	Left Cheek	0.188	0.049	0.012	0.001	0.070	**0.320**
	Left Tilted	0.081	0.008	0.012	0.001	0.037	**0.139**
LTE Band 7	Right Cheek	0.016	0.162	0.029	0.077	0.179	**0.463**
	Right Tilted	0.022	0.032	0.024	0.012	0.139	**0.229**
	Left Cheek	0.014	0.049	0.012	0.001	0.070	**0.146**
	Left Tilted	0.009	0.008	0.012	0.001	0.037	**0.067**
LTE Band 12	Right Cheek	0.153	0.162	0.029	0.077	0.179	**0.600**
	Right Tilted	0.061	0.032	0.024	0.012	0.139	**0.268**
	Left Cheek	0.192	0.049	0.012	0.001	0.070	**0.324**
	Left Tilted	0.052	0.008	0.012	0.001	0.037	**0.110**
LTE Band 13	Right Cheek	0.205	0.162	0.029	0.077	0.179	**0.652**
	Right Tilted	0.110	0.032	0.024	0.012	0.139	**0.317**
	Left Cheek	0.264	0.049	0.012	0.001	0.070	**0.396**
	Left Tilted	0.133	0.008	0.012	0.001	0.037	**0.191**
LTE Band 48	Right Cheek	0.001	0.162	0.029	0.077	0.179	**0.448**
	Right Tilted	0.001	0.032	0.024	0.012	0.139	**0.208**
	Left Cheek	0.003	0.049	0.012	0.001	0.070	**0.135**
	Left Tilted	0.001	0.008	0.012	0.001	0.037	**0.059**
LTE Band 66	Right Cheek	0.181	0.162	0.029	0.077	0.179	**0.628**
	Right Tilted	0.065	0.032	0.024	0.012	0.139	**0.272**
	Left Cheek	0.113	0.049	0.012	0.001	0.070	**0.245**
	Left Tilted	0.065	0.008	0.012	0.001	0.037	**0.123**

15.2 Hotspot Exposure Conditions

<Normal>

WWAN Band	Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN Chain 0 1g SAR (W/kg)	3 2.4GHz WLAN Chain 1 1g SAR (W/kg)	6 Bluetooth Chain 0 1g SAR (W/kg)	1+2+3 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)
GSM850	Front	0.290	0.079	0.006	0.070	**0.375**	**0.360**
	Back	0.360	0.142	0.025	0.146	**0.527**	**0.506**
	Left side	0.296	0.159	0.001	0.154	**0.456**	**0.450**
	Right side	0.397		0.001		**0.398**	**0.397**
	Top side			0.002		**0.002**	**0.000**
	Bottom side	0.065				**0.065**	**0.065**
GSM1900	Front	0.203	0.079	0.006	0.070	**0.288**	**0.273**
	Back	0.211	0.142	0.025	0.146	**0.378**	**0.357**
	Left side	0.023	0.159	0.001	0.154	**0.183**	**0.177**
	Right side	0.033		0.001		**0.034**	**0.033**
	Top side			0.002		**0.002**	**0.000**
	Bottom side	0.300				**0.300**	**0.300**
WCDMA II	Front	0.346	0.079	0.006	0.070	**0.431**	**0.416**
	Back	0.411	0.142	0.025	0.146	**0.578**	**0.557**
	Left side	0.040	0.159	0.001	0.154	**0.200**	**0.194**
	Right side	0.058		0.001		**0.059**	**0.058**
	Top side			0.002		**0.002**	**0.000**
	Bottom side	0.491				**0.491**	**0.491**
WCDMA IV	Front	0.325	0.079	0.006	0.070	**0.410**	**0.395**
	Back	0.391	0.142	0.025	0.146	**0.558**	**0.537**
	Left side	0.028	0.159	0.001	0.154	**0.188**	**0.182**
	Right side	0.079		0.001		**0.080**	**0.079**
	Top side			0.002		**0.002**	**0.000**
	Bottom side	0.514				**0.514**	**0.514**
WCDMA V	Front	0.237	0.079	0.006	0.070	**0.322**	**0.307**
	Back	0.301	0.142	0.025	0.146	**0.468**	**0.447**
	Left side	0.284	0.159	0.001	0.154	**0.444**	**0.438**
	Right side	0.344		0.001		**0.345**	**0.344**
	Top side			0.002		**0.002**	**0.000**
	Bottom side	0.058				**0.058**	**0.058**
LTE Band 2	Front	0.445	0.079	0.006	0.070	**0.530**	**0.515**
	Back	0.547	0.142	0.025	0.146	**0.714**	**0.693**
	Left side	0.053	0.159	0.001	0.154	**0.213**	**0.207**
	Right side	0.085		0.001		**0.086**	**0.085**
	Top side			0.002		**0.002**	**0.000**
	Bottom side	0.716				**0.716**	**0.716**
LTE Band 5	Front	0.254	0.079	0.006	0.070	**0.339**	**0.324**
	Back	0.285	0.142	0.025	0.146	**0.452**	**0.431**
	Left side	0.262	0.159	0.001	0.154	**0.422**	**0.416**
	Right side	0.300		0.001		**0.301**	**0.300**
	Top side			0.002		**0.002**	**0.000**
	Bottom side	0.071				**0.071**	**0.071**
LTE Band 7	Front	0.137	0.079	0.006	0.070	**0.222**	**0.207**
	Back	0.143	0.142	0.025	0.146	**0.310**	**0.289**
	Left side	0.064	0.159	0.001	0.154	**0.224**	**0.218**
	Right side	0.030		0.001		**0.031**	**0.030**
	Top side			0.002		**0.002**	**0.000**
	Bottom side	0.253				**0.253**	**0.253**

LTE Band 12	Front	0.214	0.079	0.006	0.070	**0.299**	**0.284**
	Back	0.230	0.142	0.025	0.146	**0.397**	**0.376**
	Left side	0.285	0.159	0.001	0.154	**0.445**	**0.439**
	Right side	0.175		0.001		**0.176**	**0.175**
	Top side			0.002		**0.002**	**0.000**
	Bottom side	0.048				**0.048**	**0.048**
LTE Band 13	Front	0.346	0.079	0.006	0.070	**0.431**	**0.416**
	Back	0.364	0.142	0.025	0.146	**0.531**	**0.510**
	Left side	0.381	0.159	0.001	0.154	**0.541**	**0.535**
	Right side	0.289		0.001		**0.290**	**0.289**
	Top side			0.002		**0.002**	**0.000**
	Bottom side	0.042				**0.042**	**0.042**
LTE Band 48	Front	0.060	0.079	0.006	0.070	**0.145**	**0.130**
	Back	0.042	0.142	0.025	0.146	**0.209**	**0.188**
	Left side	0.001	0.159	0.001	0.154	**0.161**	**0.155**
	Right side	0.047		0.001		**0.048**	**0.047**
	Top side			0.002		**0.002**	**0.000**
	Bottom side	0.049				**0.049**	**0.049**
LTE Band 66	Front	0.447	0.079	0.006	0.070	**0.532**	**0.517**
	Back	0.518	0.142	0.025	0.146	**0.685**	**0.664**
	Left side	0.033	0.159	0.001	0.154	**0.193**	**0.187**
	Right side	0.102		0.001		**0.103**	**0.102**
	Top side			0.002		**0.002**	**0.000**
	Bottom side	0.630				**0.630**	**0.630**

15.3 Body-Worn Accessory Exposure Conditions

<Normal>

WWAN Band	Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+4+5+6 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Chain 0	2.4GHz WLAN Chain 1	5GHz WLAN Chain 0	5GHz WLAN Chain 1	Bluetooth Chain 0		
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
GSM850	Front	0.283	0.031	0.003	0.001	0.001	0.032	**0.317**	**0.317**
	Back	0.280	0.062	0.007	0.037	0.116	0.068	**0.349**	**0.501**
GSM1900	Front	0.094	0.031	0.003	0.001	0.001	0.032	**0.128**	**0.128**
	Back	0.129	0.062	0.007	0.037	0.116	0.068	**0.198**	**0.350**
WCDMA II	Front	0.167	0.031	0.003	0.001	0.001	0.032	**0.201**	**0.201**
	Back	0.207	0.062	0.007	0.037	0.116	0.068	**0.276**	**0.428**
WCDMA IV	Front	0.171	0.031	0.003	0.001	0.001	0.032	**0.205**	**0.205**
	Back	0.205	0.062	0.007	0.037	0.116	0.068	**0.274**	**0.426**
WCDMA V	Front	0.253	0.031	0.003	0.001	0.001	0.032	**0.287**	**0.287**
	Back	0.259	0.062	0.007	0.037	0.116	0.068	**0.328**	**0.480**
LTE Band 2	Front	0.415	0.031	0.003	0.001	0.001	0.032	**0.449**	**0.449**
	Back	0.483	0.062	0.007	0.037	0.116	0.068	**0.552**	**0.704**
LTE Band 5	Front	0.242	0.031	0.003	0.001	0.001	0.032	**0.276**	**0.276**
	Back	0.254	0.062	0.007	0.037	0.116	0.068	**0.323**	**0.475**
LTE Band 7	Front	0.057	0.031	0.003	0.001	0.001	0.032	**0.091**	**0.091**
	Back	0.062	0.062	0.007	0.037	0.116	0.068	**0.131**	**0.283**
LTE Band 12	Front	0.190	0.031	0.003	0.001	0.001	0.032	**0.224**	**0.224**
	Back	0.188	0.062	0.007	0.037	0.116	0.068	**0.257**	**0.409**
LTE Band 13	Front	0.364	0.031	0.003	0.001	0.001	0.032	**0.398**	**0.398**
	Back	0.362	0.062	0.007	0.037	0.116	0.068	**0.431**	**0.583**
LTE Band 48	Front	0.025	0.031	0.003	0.001	0.001	0.032	**0.059**	**0.059**
	Back	0.016	0.062	0.007	0.037	0.116	0.068	**0.085**	**0.237**
LTE Band 66	Front	0.408	0.031	0.003	0.001	0.001	0.032	**0.442**	**0.442**
	Back	0.482	0.062	0.007	0.037	0.116	0.068	**0.551**	**0.703**

<2.4G and 5G Transmit at the same time>

WWAN Band	Exposure Position	1	2	3	4	5	1+2+3+4+5 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Chain 0	2.4GHz WLAN Chain 1	5GHz WLAN Chain 0	5GHz WLAN Chain 1	
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	
GSM850	Front	0.283	0.019	0.001	0.002	0.001	**0.306**
	Back	0.280	0.025	0.002	0.028	0.072	**0.407**
GSM1900	Front	0.094	0.019	0.001	0.002	0.001	**0.117**
	Back	0.129	0.025	0.002	0.028	0.072	**0.256**
WCDMA II	Front	0.167	0.019	0.001	0.002	0.001	**0.190**
	Back	0.207	0.025	0.002	0.028	0.072	**0.334**
WCDMA IV	Front	0.171	0.019	0.001	0.002	0.001	**0.194**
	Back	0.205	0.025	0.002	0.028	0.072	**0.332**
WCDMA V	Front	0.253	0.019	0.001	0.002	0.001	**0.276**
	Back	0.259	0.025	0.002	0.028	0.072	**0.386**
LTE Band 2	Front	0.415	0.019	0.001	0.002	0.001	**0.438**
	Back	0.483	0.025	0.002	0.028	0.072	**0.610**
LTE Band 5	Front	0.242	0.019	0.001	0.002	0.001	**0.265**
	Back	0.254	0.025	0.002	0.028	0.072	**0.381**
LTE Band 7	Front	0.057	0.019	0.001	0.002	0.001	**0.080**
	Back	0.062	0.025	0.002	0.028	0.072	**0.189**
LTE Band 12	Front	0.190	0.019	0.001	0.002	0.001	**0.213**
	Back	0.188	0.025	0.002	0.028	0.072	**0.315**
LTE Band 13	Front	0.364	0.019	0.001	0.002	0.001	**0.387**
	Back	0.362	0.025	0.002	0.028	0.072	**0.489**
LTE Band 48	Front	0.025	0.019	0.001	0.002	0.001	**0.048**
	Back	0.016	0.025	0.002	0.028	0.072	**0.143**
LTE Band 66	Front	0.408	0.019	0.001	0.002	0.001	**0.431**
	Back	0.482	0.025	0.002	0.028	0.072	**0.609**

15.4 Product Specific Conditions

<Normal>

Exposure Position	1 WWAN 10g SAR (W/kg)	2 2.4GHz WLAN Chain 0 10g SAR (W/kg)	3 2.4GHz WLAN Chain 1 10g SAR (W/kg)	4 5GHz WLAN Chain 0 10g SAR (W/kg)	5 5GHz WLAN Chain 1 10g SAR (W/kg)	6 Bluetooth Chain 0 10g SAR (W/kg)	1+2+3 Summed 10g SAR (W/kg)	1+4+5+6 Summed 10g SAR (W/kg)
Front				0.082	0.126		**0.000**	**0.208**
Back				0.196	0.394		**0.000**	**0.590**
Left side				0.074	0.057		**0.000**	**0.131**
Right side					0.004		**0.000**	**0.004**
Top side					0.032		**0.000**	**0.032**
Bottom side							**0.000**	**0.000**

<2.4G and 5G Transmit at the same time>

Exposure Position	1 WWAN 10g SAR (W/kg)	2 2.4GHz WLAN Chain 0 10g SAR (W/kg)	3 2.4GHz WLAN Chain 1 10g SAR (W/kg)	4 5GHz WLAN Chain 0 10g SAR (W/kg)	5 5GHz WLAN Chain 1 10g SAR (W/kg)	6 Bluetooth Chain 0 10g SAR (W/kg)	1+2+3+4+5 Summed 10g SAR (W/kg)
Front				0.054	0.104		**0.158**
Back				0.134	0.326		**0.460**
Left side				0.054	0.036		**0.090**
Right side					0.001		**0.001**
Top side					0.026		**0.026**
Bottom side							**0.000**

Test Engineer： Ginger Chiang, Ray Sun, Jordar Jhuang, Willy Yu, Jeff Tsao and York Lu

16. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured 1-g SAR is less 1.5W/kg and highest measured 10-g SAR is less 3.75W/kg. Therefore, the measurement uncertainty table is not required in this report.
Declaration of Conformity:
The test results with all measurement uncertainty excluded is presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

17. References

[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

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

[4] SPEAG DASY System Handbook

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

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

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