FCC SAR Test Report

APPLICANT	:	Aava Mobile Oy
EQUIPMENT	:	Cellular Modem Module
BRAND NAME	:	Aava
MODEL NAME	:	EM7355
FCC ID	:	2ABVH-EM7355
STANDARD	:	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2013

We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

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

Reviewed by: Eric Huang / Deputy Manager

Approved by: Jones Tsai / Manager

Testing Laboratory
1190

SPORTON INTERNATIONAL INC.
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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA6N2110-01	Rev. 01	Initial issue of report	Jan. 13, 2017

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Aava Mobile Oy, Cellular Modem Module, EM7355, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary Body 1g SAR (W/kg)	Highest Simultaneous Transmission 1g SAR (W/kg)
Licensed	GSM850	0.80	1.55
	GSM1900	0.59	
	WCDMA II	0.70	
	WCDMA IV	0.86	
	WCDMA V	0.79	
	CDMA BC0	0.63	
	CDMA BC1	0.84	
	CDMA BC10	0.72	
	LTE Band 2	0.55	
	LTE Band 4	0.78	
	LTE Band 5	0.53	
	LTE Band 13	0.54	
	LTE Band 17	0.45	
	LTE Band 25	0.76	
Date of Testing:		2016/11/23 ~ 2016/11/24	

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

2. Administration Data

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL INC.
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Applicant	
Company Name	Aava Mobile Oy
Address	Nahkatehtaankatu 2, 90130 Oulu Finland

Manufacturer	
Company Name	Aava Mobile Oy
Address	Nahkatehtaankatu 2, 90130 Oulu Finland

3. Guidance Applied

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

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 616217 D04 SAR for laptop and tablets v01r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Cellular Modem Module
Brand Name	Aava
Model Name	EM7355
FCC ID	2ABVH-EM7355
IMEI Code	352233070036265
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz CDMA2000 BC0: 824.7 MHz ~ 848.31 MHz CDMA 2000 BC1: 1851.25 MHz ~ 1908.75 MHz CDMA 2000 BC10: 817.9 MHz ~ 823.1 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz
Mode	· GPRS/EGPRS · RMC 12.2Kbps · HSDPA · HSUPA · DC-HSDPA · CDMA2000 : 1xRTT/1xEv-Do(Rev.0)/1xEv-Do(Rev.A) · LTE: QPSK, 16QAM
EUT Stage	Identical Prototype
Remark: 1. Verified the WWAN worst case found in the original report ,Report number: UL-SAR-RP10710967JD01A V1.0 (FCC ID: 2ABVH-EM7355),For this report, the WLAN/BT SAR testing results can refer to original report and be used to perform transmission simultaneous analysis.	

Host Information	
Equipment Name	INARI Tablet Computer
FCC ID	UZ7ET55AE
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	· 802.11a/b/g/n HT20/HT40 · Bluetooth BR/EDR/LE · NFC:ASK

4.2 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>2ABVH-EM7355</td></tr>
<tr><td>Equipment Name</td><td>Cellular Modem Module</td></tr>
<tr><td>Operating Frequency Range of each LTE transmission band</td><td>LTE Band 02: 1850 MHz ~ 1910 MHz
LTE Band 04: 1710 MHz ~ 1755 MHz
LTE Band 05: 824 MHz ~ 849 MHz
LTE Band 13: 777 MHz ~ 787 MHz
LTE Band 17: 704 MHz ~ 716 MHz
LTE Band 25: 1850 MHz ~ 1915 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 13: 5MHz, 10MHz
LTE Band 17: 5MHz, 10MHz
LTE Band 25:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz</td></tr>
<tr><td>uplink modulations used</td><td>QPSK, and 16QAM</td></tr>
<tr><td>LTE Voice / Data requirements</td><td>1. Data only</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 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (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>
</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>
<tr><td>Power reduction applied to satisfy SAR compliance</td><td>1. Yes, Proximity Sensor.</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 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 17												
	Bandwidth 5 MHz				Bandwidth 10 MHz							
	Channel #		Freq.(MHz)		Channel #		Freq. (MHz)					
L	23755		706.5		23780		709					
M	23790		710		23790		710					
H	23825		713.5		23800		711					
LTE Band 25												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905

5. RF Exposure Limits

5.1 Uncontrolled Environment

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

5.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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

6. Specific Absorption Rate (SAR)

6.1 Introduction

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

6.2 SAR Definition

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

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

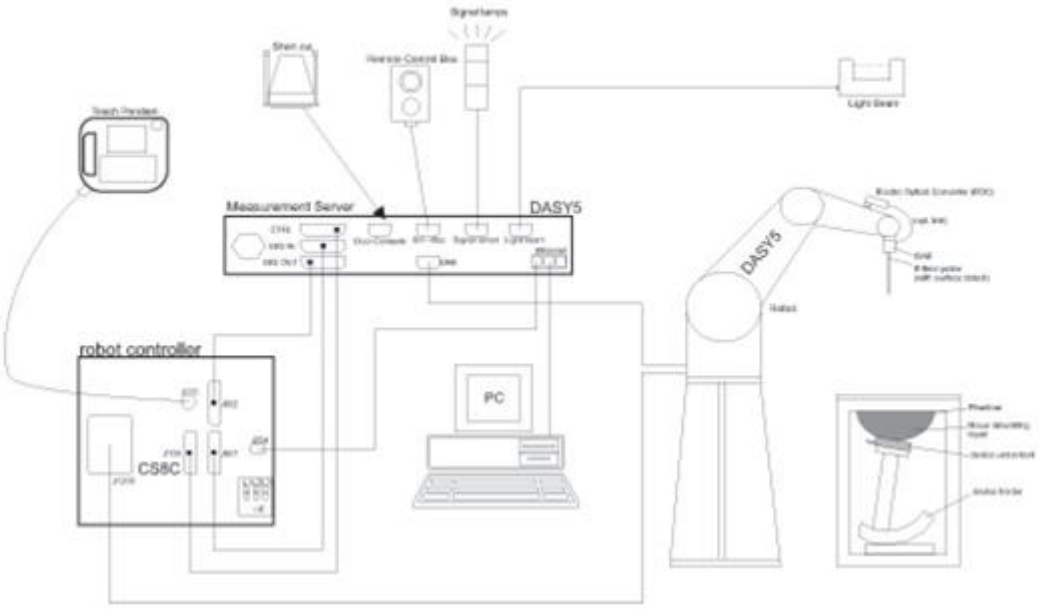
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

7. System Description and Setup

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



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

7.1 E-Field Probe

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

<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	

7.2 Data Acquisition Electronics (DAE)

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

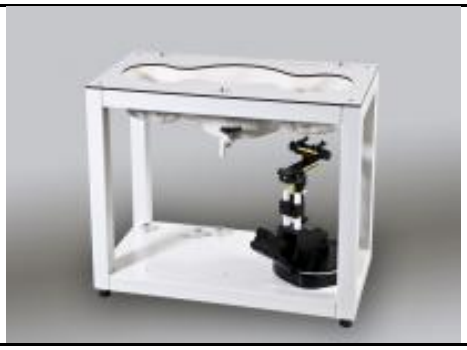
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Fig 5.1 Photo of DAE

7.3 Phantom

<SAM Twin Phantom>

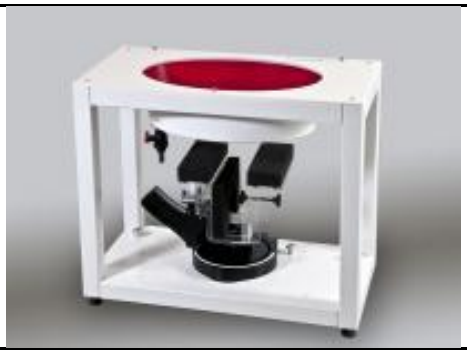
Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom



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

<ELI Phantom>

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



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

7.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

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

Mounting Device for Hand-Held Transmitters

Mounting Device Adaptor for Wide-Phones

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

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

Mounting Device for Laptops

8. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

<SAR measurement>

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

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

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

8.1 Spatial Peak SAR Evaluation

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

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

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

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

8.2 Power Reference Measurement

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

8.3 Area Scan

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

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

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

8.4 Zoom Scan

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

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

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 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.

8.5 Volume Scan Procedures

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

8.6 Power Drift Monitoring

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

9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1012	May. 18, 2016	May. 17, 2017
SPEAG	835MHz System Validation Kit	D835V2	4d200	Aug. 23, 2016	Aug. 22, 2017
SPEAG	1750MHz System Validation Kit	D1750V2	1023	Jun. 23, 2016	Jun. 22, 2017
SPEAG	1900MHz System Validation Kit	D1900V2	5d041	Sep. 30, 2016	Sep. 29, 2017
SPEAG	5GHz System Validation Kit	D5GHzV2	1006	Sep. 27, 2016	Sep. 26, 2017
SPEAG	Data Acquisition Electronics	DAE4	1388	Oct. 10, 2016	Oct. 09, 2017
SPEAG	Data Acquisition Electronics	DAE4	679	Jun. 13, 2016	Jun. 12, 2017
SPEAG	Dosimetric E-Field Probe	EX3DV4	3697	Oct. 25, 2016	Oct. 24, 2017
SPEAG	Dosimetric E-Field Probe	EX3DV4	3898	Jul. 11, 2016	Jul. 10, 2017
WonDer	Thermometer	WD-5015	TM281	Oct. 12, 2016	Oct. 11, 2017
Wisewind	Thermometer	HTC-1	TM225	Oct. 12, 2016	Oct. 11, 2017
Anritsu	Radio Communication Analyzer	MT8820C	6201381760	May. 10, 2016	May. 09, 2017
Agilent	Wireless Communication Test Set	E5515C	MY50266977	May. 17, 2016	May. 16, 2017
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Dec. 18, 2015	Dec. 17, 2016
Agilent	ENA Network Analyzer	E5071C	MY46316648	Jan. 12, 2016	Jan. 11, 2017
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Jul. 19, 2016	Jul. 18, 2017
LINE SEIKI	Digital Thermometer	LKMelectronic	DTM3000SPEZIAL	Sep. 05, 2016	Sep. 04, 2017
Anritsu	Power Meter	ML2495A	1419002	May. 10, 2016	May. 09, 2017
Anritsu	Power Sensor	MA2411B	1339124	May. 10, 2016	May. 09, 2017
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jun. 21, 2016	Jun. 20, 2017
Mini-Circuits	Power Amplifier	ZVE-8G+	D120604	Mar. 16, 2016	Mar. 15, 2017
Mini-Circuits	Power Amplifier	ZHL-42W+	QA1344002	Mar. 16, 2016	Mar. 15, 2017
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.

10. System Verification

10.1 Tissue Simulating Liquids

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

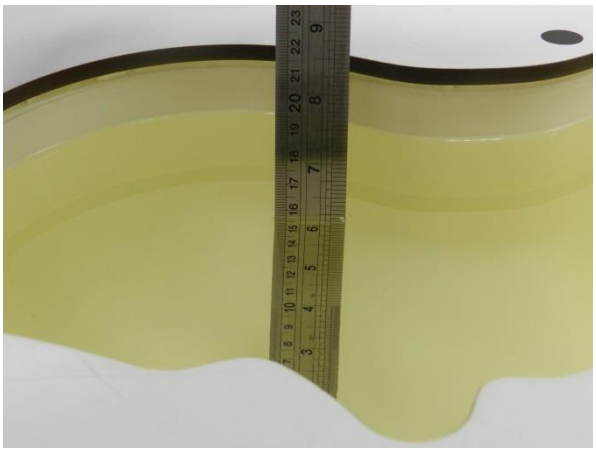


Fig 10.1Photo of Liquid Height for Head SAR

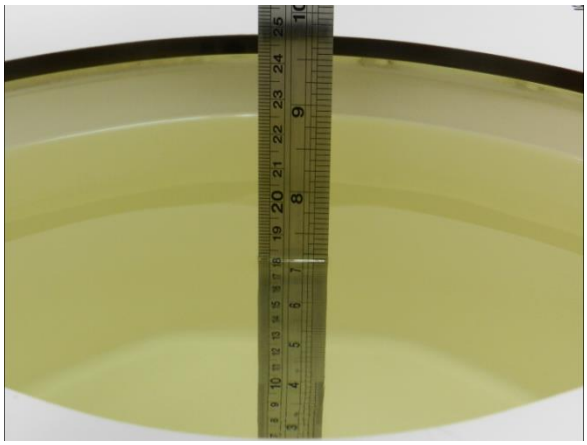


Fig 10.2 Photo of Liquid Height for Body SAR

10.2 Tissue Verification

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

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0
For Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
900	50.8	48.2	0	0.9	0.1	0	1.05	55.0
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7
2600	68.1	0	0	0.1	0	31.8	2.16	52.5

Simulating Liquid for 5GHz, Manufactured by SPEAG

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

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	MSL	22.5	0.973	53.923	0.96	55.50	1.35	-2.84	±5	2016/11/23
835	MSL	22.3	0.996	56.807	0.97	55.20	2.68	2.91	±5	2016/11/23
1750	MSL	22.7	1.491	55.338	1.49	53.40	0.07	3.63	±5	2016/11/24
1750	MSL	22.7	1.491	55.338	1.49	53.40	0.07	3.63	±5	2016/11/24
1900	MSL	22.7	1.520	55.092	1.52	53.30	0.00	3.36	±5	2016/11/24
1900	MSL	22.7	1.520	55.092	1.52	53.30	0.00	3.36	±5	2016/11/24
5250	MSL	22.4	5.423	47.485	5.36	48.95	1.18	-2.99	±5	2016/11/24

10.3 System Performance Check Results

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

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2016/11/23	750	MSL	250	D750V3-1012	EX3DV4 - SN3697	DAE4 Sn1388	2.35	8.72	9.40	7.80
2016/11/23	835	MSL	250	D835V2-4d200	EX3DV4 - SN3697	DAE4 Sn1388	2.50	9.65	10.00	3.63
2016/11/24	1750	MSL	250	D1750V2-1023	EX3DV4 - SN3697	DAE4 Sn1388	9.48	36.40	37.92	4.18
2016/11/24	1750	MSL	250	D1750V2-1023	EX3DV4 - SN3898	DAE4 Sn679	9.26	36.40	37.04	1.76
2016/11/24	1900	MSL	250	D1900V2-5d041	EX3DV4 - SN3697	DAE4 Sn1388	9.40	38.80	37.60	-3.09
2016/11/24	1900	MSL	250	D1900V2-5d041	EX3DV4 - SN3898	DAE4 Sn679	10.40	38.80	41.60	7.22
2016/11/24	5250	MSL	100	D5GHzV2-1006	EX3DV4 - SN3898	DAE4 Sn679	7.33	75.50	73.30	-2.91

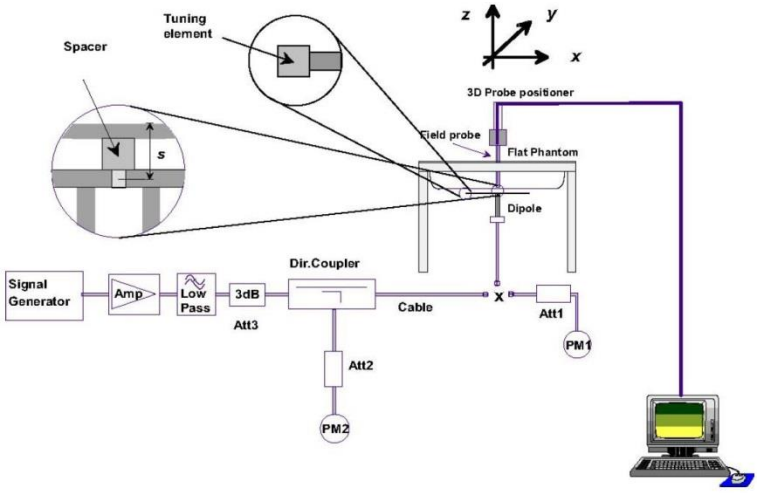


Fig 8.3.1 System Performance Check Setup

Fig 8.3.2 Setup Photo

11. RF Exposure Positions

11.1 SAR Testing for Tablet

This device can be used also in full sized tablet exposure conditions, due to its size. Per FCC KDB 616217, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. The SAR exclusion threshold in KDB 447498 D01v06 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

12. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

<Proximity Sensor Inactive>

GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GPRS 1 Tx slot	32.05	32.12	32.10	33.00	23.05	23.12	23.10	24.00
GPRS 2 Tx slots	31.95	31.89	31.77	33.00	25.95	25.89	25.77	27.00
EDGE 1 Tx slot	27.29	27.31	27.32	28.00	18.29	18.31	18.32	19.00
EDGE 2 Tx slots	27.05	27.18	27.19	28.00	21.05	21.18	21.19	22.00
EDGE 3 Tx slots	27.05	27.01	27.02	28.00	22.79	22.75	22.76	23.74
EDGE 4 Tx slots	26.85	26.88	26.91	28.00	23.85	23.88	23.91	25.00

GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GPRS 1 Tx slot	29.96	29.99	29.93	30.00	20.96	20.99	20.93	21.00
GPRS 2 Tx slots	29.95	29.97	29.91	30.00	23.95	23.97	23.91	24.00
EDGE 1 Tx slot	25.93	25.92	25.91	27.00	16.93	16.92	16.91	18.00
EDGE 2 Tx slots	25.65	25.71	25.66	27.00	19.65	19.71	19.66	21.00
EDGE 3 Tx slots	25.71	25.69	25.66	27.00	21.45	21.43	21.40	22.74
EDGE 4 Tx slots	25.55	25.51	25.41	27.00	22.55	22.51	22.41	24.00

<Proximity Sensor Active>

GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GPRS 1 Tx slot	25.71	25.62	25.53	26.50	16.71	16.62	16.53	17.50
GPRS 2 Tx slots	23.21	23.15	23.07	23.50	17.21	17.15	17.07	17.50
EDGE 1 Tx slot	25.70	25.68	25.60	27.00	16.70	16.68	16.60	18.00
EDGE 2 Tx slots	22.60	22.56	22.51	24.00	16.60	16.56	16.51	18.00
EDGE 3 Tx slots	21.00	21.01	21.05	22.00	16.74	16.75	16.79	17.74
EDGE 4 Tx slots	20.20	20.18	20.15	21.00	17.20	17.18	17.15	18.00

GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GPRS 1 Tx slot	23.45	23.49	23.42	25.00	14.45	14.49	14.42	16.00
GPRS 2 Tx slots	21.82	21.64	21.80	22.00	15.82	15.64	15.80	16.00
EDGE 1 Tx slot	23.31	23.42	23.43	25.00	14.31	14.42	14.43	16.00
EDGE 2 Tx slots	21.01	21.02	21.15	22.00	15.01	15.02	15.15	16.00
EDGE 3 Tx slots	19.25	19.31	19.32	20.00	14.99	15.05	15.06	15.74
EDGE 4 Tx slots	18.12	18.23	18.18	19.00	15.12	15.23	15.18	16.00

<WCDMA Conducted Power>

<Proximity Sensor Inactive>

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	RMC 12.2Kbps	22.83	22.95	22.99	24.00	22.94	22.96	22.94	24.00	22.82	22.85	22.82	24.00
3GPP Rel 6	HSDPA Subtest-1	22.60	22.58	22.76	24.00	22.56	22.61	22.39	24.00	22.45	22.32	22.44	24.00
3GPP Rel 6	HSDPA Subtest-2	22.71	22.61	22.87	24.00	22.49	22.54	22.52	24.00	22.57	22.38	22.52	24.00
3GPP Rel 6	HSDPA Subtest-3	22.27	22.11	22.45	23.50	22.05	22.10	21.90	23.50	21.91	21.93	21.96	23.50
3GPP Rel 6	HSDPA Subtest-4	22.35	22.21	22.40	23.50	22.10	22.11	22.02	23.50	22.00	22.10	22.15	23.50
3GPP Rel 8	DC-HSDPA Subtest-1	22.56	22.55	22.74	24.00	22.49	22.35	22.38	24.00	22.39	22.29	22.30	24.00
3GPP Rel 8	DC-HSDPA Subtest-2	22.60	22.59	22.62	24.00	22.54	22.43	22.44	24.00	22.34	22.39	22.54	24.00
3GPP Rel 8	DC-HSDPA Subtest-3	22.11	22.00	22.31	23.50	22.07	21.98	22.03	23.50	22.00	21.81	21.87	23.50
3GPP Rel 8	DC-HSDPA Subtest-4	22.21	22.23	22.42	23.50	21.87	22.11	21.98	23.50	21.99	21.91	22.02	23.50
3GPP Rel 6	HSUPA Subtest-1	22.57	22.52	22.98	24.00	22.00	22.05	22.13	24.00	22.04	22.00	22.09	24.00
3GPP Rel 6	HSUPA Subtest-2	21.40	21.50	21.23	22.00	20.99	21.06	20.97	22.00	20.81	20.91	21.06	22.00
3GPP Rel 6	HSUPA Subtest-3	21.50	21.60	21.94	23.00	21.11	21.55	21.12	23.00	21.09	21.08	21.48	23.00
3GPP Rel 6	HSUPA Subtest-4	21.72	21.57	22.00	22.00	21.03	21.41	20.99	22.00	21.42	21.24	20.95	22.00
3GPP Rel 6	HSUPA Subtest-5	22.61	22.75	22.84	24.00	22.06	22.02	22.50	24.00	22.44	22.44	22.46	24.00

<Proximity Sensor Active>

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	RMC 12.2Kbps	14.87	14.93	14.79	16.00	13.81	13.39	13.73	15.00	16.69	16.67	16.71	18.00
3GPP Rel 6	HSDPA Subtest-1	14.28	14.17	14.08	16.00	13.46	13.57	13.08	15.00	16.35	16.18	16.21	18.00
3GPP Rel 6	HSDPA Subtest-2	14.30	14.24	14.05	16.00	13.41	13.63	13.15	15.00	16.43	16.27	16.12	18.00
3GPP Rel 6	HSDPA Subtest-3	14.06	13.87	13.58	15.50	13.02	13.36	12.90	14.50	15.76	15.62	15.81	17.50
3GPP Rel 6	HSDPA Subtest-4	14.09	13.96	13.66	15.50	13.23	13.31	12.88	14.50	15.95	15.72	15.81	17.50
3GPP Rel 8	DC-HSDPA Subtest-1	14.40	14.25	14.06	16.00	13.41	13.57	13.12	15.00	16.31	16.16	16.01	18.00
3GPP Rel 8	DC-HSDPA Subtest-2	14.09	14.16	14.07	16.00	13.58	13.72	13.25	15.00	16.45	16.25	16.21	18.00
3GPP Rel 8	DC-HSDPA Subtest-3	14.20	13.96	13.84	15.50	13.18	13.15	12.69	14.50	15.89	15.52	15.67	17.50
3GPP Rel 8	DC-HSDPA Subtest-4	14.08	13.94	13.71	15.50	13.09	13.35	12.94	14.50	15.78	15.73	15.74	17.50
3GPP Rel 6	HSUPA Subtest-1	14.02	14.07	14.02	16.00	13.52	13.15	13.27	15.00	16.12	16.01	16.07	18.00
3GPP Rel 6	HSUPA Subtest-2	12.84	12.66	12.55	14.00	11.19	11.18	11.09	13.00	14.72	14.99	14.53	16.00
3GPP Rel 6	HSUPA Subtest-3	13.42	13.30	13.15	15.00	12.25	12.42	12.01	14.00	15.20	15.05	15.31	17.00
3GPP Rel 6	HSUPA Subtest-4	13.36	13.28	13.09	14.00	11.44	11.55	11.27	13.00	14.78	14.65	14.73	16.00
3GPP Rel 6	HSUPA Subtest-5	14.70	14.80	14.54	16.00	13.40	13.41	13.01	15.00	16.42	16.07	16.22	18.00

<CDMA2000 Conducted Power>

<Proximity Sensor Inactive>

Band	CDMA2000 BC0			Tune-up Limit (dBm)	CDMA2000 BC1			Tune-up Limit (dBm)	CDMA2000 BC10			Tune-up Limit (dBm)
TX Channel	1013	384	777		25	600	1175		476	580	684	
Frequency (MHz)	824.7	836.52	848.31		1851.25	1880	1908.75		817.9	820.5	823.1	
RC1 SO55	23.54	23.76	23.40	24.50	23.84	23.85	23.89	24.50	23.54	23.71	23.58	24.50
RC3 SO55	23.71	23.71	23.43	24.50	23.81	23.85	23.93	24.50	23.63	23.77	23.61	24.50
RTAP 153.6Kbps	23.41	23.79	23.45	24.50	23.72	23.91	24.01	24.50	23.68	23.73	23.71	24.50
RETAP 4096Bits	23.58	23.71	23.61	24.50	23.67	23.84	23.96	24.50	23.64	23.57	23.62	24.50

<Proximity Sensor Active>

Band	CDMA2000 BC0			Tune-up Limit (dBm)	CDMA2000 BC1			Tune-up Limit (dBm)	CDMA2000 BC10			Tune-up Limit (dBm)
TX Channel	1013	384	777		25	600	1175		476	580	684	
Frequency (MHz)	824.7	836.52	848.31		1851.25	1880	1908.75		817.9	820.5	823.1	
RC1 SO55	17.09	17.40	17.18	17.50	14.56	14.54	14.87	15.50	17.09	17.00	17.15	17.50
RC3 SO55	17.19	17.32	17.22	17.50	14.60	14.51	14.86	15.50	17.30	17.21	17.35	17.50
RTAP 153.6Kbps	17.26	17.25	17.37	17.50	14.58	14.50	14.93	15.50	17.31	17.09	17.09	17.50
RETAP 4096Bits	17.00	17.02	16.97	17.50	14.50	14.52	14.92	15.50	17.12	17.21	17.02	17.50

<LTE Conducted Power>

<Proximity Sensor Inactive>

<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	23.39	23.50	23.20	24	0
20	QPSK	1	49	23.40	23.36	23.22		
20	QPSK	1	99	23.40	23.18	23.37		
20	QPSK	50	0	22.25	22.22	22.27	23	1
20	QPSK	50	24	22.27	22.24	22.14		
20	QPSK	50	50	22.32	22.18	22.18		
20	QPSK	100	0	22.22	22.23	22.23		
20	16QAM	1	0	22.06	22.08	21.93	23	1
20	16QAM	1	49	22.08	22.12	21.97		
20	16QAM	1	99	22.01	21.93	22.03		
20	16QAM	50	0	21.36	21.24	21.18	22	2
20	16QAM	50	24	21.57	21.28	21.17		
20	16QAM	50	50	21.29	21.21	21.13		
20	16QAM	100	0	21.33	21.10	21.22		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	23.19	22.99	23.16	24	0
15	QPSK	1	37	23.09	22.99	23.28		
15	QPSK	1	74	22.83	22.98	23.10		
15	QPSK	36	0	22.12	22.17	22.16	23	1
15	QPSK	36	20	22.08	22.00	22.26		
15	QPSK	36	39	22.01	21.97	22.27		
15	QPSK	75	0	22.00	22.10	22.15		
15	16QAM	1	0	22.14	22.05	22.33	23	1
15	16QAM	1	37	21.99	22.08	22.20		
15	16QAM	1	74	21.95	21.94	22.07		
15	16QAM	36	0	21.18	21.21	21.26	22	2
15	16QAM	36	20	21.02	21.08	21.25		
15	16QAM	36	39	20.96	21.15	21.40		
15	16QAM	75	0	20.90	21.07	21.10		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	23.13	23.14	23.30	24	0
10	QPSK	1	24	23.07	22.99	23.21		
10	QPSK	1	49	22.88	23.11	23.16		
10	QPSK	25	0	22.18	22.20	22.17	23	1
10	QPSK	25	12	22.03	22.21	22.25		
10	QPSK	25	25	22.00	22.21	22.19		
10	QPSK	50	0	21.94	22.01	22.35		
10	16QAM	1	0	22.32	22.06	22.21	23	1
10	16QAM	1	25	22.01	22.20	22.32		
10	16QAM	1	49	21.83	21.99	22.09		
10	16QAM	25	0	21.24	21.22	21.38	22	2
10	16QAM	25	12	21.15	21.11	21.44		
10	16QAM	25	25	21.06	21.06	21.26		
10	16QAM	50	0	21.02	21.16	21.34		

Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	23.29	23.03	23.21	24	0
5	QPSK	1	12	23.10	22.98	23.19		
5	QPSK	1	24	22.97	23.02	23.26		
5	QPSK	12	0	22.26	22.07	22.17	23	1
5	QPSK	12	7	22.17	22.09	22.39		
5	QPSK	12	13	22.23	22.21	22.30		
5	QPSK	25	0	22.07	22.14	22.25		
5	16QAM	1	0	22.20	22.05	22.23	23	1
5	16QAM	1	12	22.12	22.20	22.34		
5	16QAM	1	24	22.01	22.13	22.18		
5	16QAM	12	0	21.30	21.31	21.19	22	2
5	16QAM	12	7	21.25	21.18	21.38		
5	16QAM	12	13	21.25	21.11	21.24		
5	16QAM	25	0	21.20	21.25	21.31		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	23.22	23.19	23.30	24	0
3	QPSK	1	8	23.14	23.12	23.15		
3	QPSK	1	14	23.11	23.05	23.19		
3	QPSK	8	0	22.24	22.21	22.35	23	1
3	QPSK	8	4	22.26	22.09	22.29		
3	QPSK	8	7	22.32	22.26	22.40		
3	QPSK	15	0	22.31	22.06	22.19		
3	16QAM	1	0	22.17	22.12	22.37	23	1
3	16QAM	1	8	22.16	22.21	22.31		
3	16QAM	1	14	22.16	22.20	22.19		
3	16QAM	8	0	21.32	21.22	21.19	22	2
3	16QAM	8	4	21.34	21.09	21.34		
3	16QAM	8	7	21.19	21.10	21.21		
3	16QAM	15	0	21.25	21.16	21.35		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	23.11	23.02	23.12	24	0
1.4	QPSK	1	3	23.19	23.19	23.24		
1.4	QPSK	1	5	23.01	23.12	23.23		
1.4	QPSK	3	0	23.24	23.10	23.23		
1.4	QPSK	3	1	23.23	23.00	23.08		
1.4	QPSK	3	3	23.20	23.03	23.23		
1.4	QPSK	6	0	22.22	22.14	22.43	23	1
1.4	16QAM	1	0	22.11	22.05	22.34	23	1
1.4	16QAM	1	3	22.27	22.09	22.35		
1.4	16QAM	1	5	22.15	22.07	22.30		
1.4	16QAM	3	0	22.21	22.14	22.32		
1.4	16QAM	3	1	22.07	22.12	22.27		
1.4	16QAM	3	3	22.25	22.24	22.31		
1.4	16QAM	6	0	21.37	21.18	21.39	22	2

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	23.09	23.65	23.40	24	0
20	QPSK	1	49	23.29	23.39	23.27		
20	QPSK	1	99	23.20	23.38	23.28		
20	QPSK	50	0	23.00	22.30	22.26	23	1
20	QPSK	50	24	22.99	22.38	22.11		
20	QPSK	50	50	22.11	22.17	21.99		
20	QPSK	100	0	22.18	22.25	22.11		
20	16QAM	1	0	22.25	22.26	22.25	23	1
20	16QAM	1	49	22.16	22.15	22.20		
20	16QAM	1	99	22.16	21.92	21.62		
20	16QAM	50	0	22.00	21.21	21.19	22	2
20	16QAM	50	24	21.99	21.13	21.14		
20	16QAM	50	50	21.15	21.10	21.06		
20	16QAM	100	0	21.13	21.26	21.12		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	23.07	23.02	23.04	24	0
15	QPSK	1	37	22.98	22.88	22.88		
15	QPSK	1	74	22.86	22.89	22.90		
15	QPSK	36	0	22.10	21.86	22.06	23	1
15	QPSK	36	20	22.06	22.01	22.09		
15	QPSK	36	39	21.87	21.99	21.80		
15	QPSK	75	0	21.90	22.05	21.89		
15	16QAM	1	0	21.96	22.12	22.14	23	1
15	16QAM	1	37	21.93	21.92	22.02		
15	16QAM	1	74	21.98	21.93	21.84		
15	16QAM	36	0	21.03	20.92	21.13	22	2
15	16QAM	36	20	20.98	21.11	21.15		
15	16QAM	36	39	21.03	21.02	20.85		
15	16QAM	75	0	20.80	20.89	21.00		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	23.11	22.97	23.15	24	0
10	QPSK	1	24	22.92	22.91	22.97		
10	QPSK	1	49	22.95	22.88	22.80		
10	QPSK	25	0	22.04	21.95	21.94	23	1
10	QPSK	25	12	22.16	22.09	21.90		
10	QPSK	25	25	22.16	22.07	21.88		
10	QPSK	50	0	21.97	21.91	21.95		
10	16QAM	1	0	22.01	22.02	22.09	23	1
10	16QAM	1	25	22.04	21.91	21.89		
10	16QAM	1	49	21.82	21.83	21.88		
10	16QAM	25	0	21.10	20.97	21.06	22	2
10	16QAM	25	12	21.10	21.11	20.95		
10	16QAM	25	25	21.10	21.01	20.97		
10	16QAM	50	0	20.94	21.06	20.86		

Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	22.97	22.90	23.02	24	0
5	QPSK	1	12	23.02	22.87	22.83		
5	QPSK	1	24	22.97	22.98	22.95		
5	QPSK	12	0	22.02	22.03	21.84	23	1
5	QPSK	12	7	22.06	21.95	21.91		
5	QPSK	12	13	22.20	21.89	21.90		
5	QPSK	25	0	22.00	22.02	21.82		
5	16QAM	1	0	22.02	22.04	22.01	23	1
5	16QAM	1	12	22.07	21.89	21.77		
5	16QAM	1	24	21.99	22.09	21.87		
5	16QAM	12	0	21.01	21.09	20.86	22	2
5	16QAM	12	7	21.10	20.98	21.01		
5	16QAM	12	13	21.04	21.01	21.02		
5	16QAM	25	0	20.96	20.99	20.82		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	23.11	23.00	23.02	24	0
3	QPSK	1	8	22.99	22.86	22.85		
3	QPSK	1	14	23.08	22.98	22.96		
3	QPSK	8	0	22.02	22.12	21.93	23	1
3	QPSK	8	4	21.92	22.08	21.99		
3	QPSK	8	7	22.14	21.94	21.95		
3	QPSK	15	0	22.02	21.98	21.82		
3	16QAM	1	0	22.06	22.04	21.94	23	1
3	16QAM	1	8	22.07	21.98	22.08		
3	16QAM	1	14	22.08	21.98	21.87		
3	16QAM	8	0	20.99	21.06	20.79	22	2
3	16QAM	8	4	21.03	21.04	20.91		
3	16QAM	8	7	21.01	21.02	21.02		
3	16QAM	15	0	21.04	20.91	20.85		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.94	22.82	23.02	24	0
1.4	QPSK	1	3	23.07	22.89	22.96		
1.4	QPSK	1	5	23.10	23.00	22.87		
1.4	QPSK	3	0	23.03	22.90	22.98		
1.4	QPSK	3	1	23.01	23.06	22.99		
1.4	QPSK	3	3	22.97	22.89	22.86		
1.4	QPSK	6	0	22.06	22.11	22.03	23	1
1.4	16QAM	1	0	22.10	21.98	21.98	23	1
1.4	16QAM	1	3	21.98	21.84	21.97		
1.4	16QAM	1	5	21.97	21.86	21.90		
1.4	16QAM	3	0	21.94	22.03	21.95		
1.4	16QAM	3	1	22.00	22.11	21.97		
1.4	16QAM	3	3	21.95	21.99	21.90		
1.4	16QAM	6	0	21.07	21.02	20.96	22	2

<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	23.19	23.11	22.96	24	0
10	QPSK	1	24	23.05	22.87	22.95		
10	QPSK	1	49	23.19	23.09	22.91		
10	QPSK	25	0	22.04	22.07	21.89	23	1
10	QPSK	25	12	22.14	22.14	22.10		
10	QPSK	25	25	22.19	22.16	22.13		
10	QPSK	50	0	22.00	21.98	22.03		
10	16QAM	1	0	21.81	21.83	21.76	23	1
10	16QAM	1	25	21.76	21.75	21.72		
10	16QAM	1	49	21.85	21.75	21.75		
10	16QAM	25	0	21.12	21.10	21.13	22	2
10	16QAM	25	12	21.12	21.24	21.09		
10	16QAM	25	25	21.18	21.15	21.12		
10	16QAM	50	0	21.11	21.08	21.07		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.51	22.52	22.75	24	0
5	QPSK	1	12	22.45	22.53	22.60		
5	QPSK	1	24	22.65	22.50	22.49		
5	QPSK	12	0	21.56	21.72	21.75	23	1
5	QPSK	12	7	21.56	21.72	21.62		
5	QPSK	12	13	21.66	21.67	21.54		
5	QPSK	25	0	21.53	21.51	21.57		
5	16QAM	1	0	21.47	21.60	21.66	23	1
5	16QAM	1	12	21.71	21.69	21.69		
5	16QAM	1	24	21.59	21.65	21.49		
5	16QAM	12	0	20.71	20.59	20.62	22	2
5	16QAM	12	7	20.68	20.62	20.74		
5	16QAM	12	13	20.71	20.63	20.59		
5	16QAM	25	0	20.58	20.63	20.57		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	22.47	22.70	22.63	24	0
3	QPSK	1	8	22.58	22.67	22.63		
3	QPSK	1	14	22.60	22.56	22.60		
3	QPSK	8	0	21.52	21.69	21.64	23	1
3	QPSK	8	4	21.70	21.71	21.61		
3	QPSK	8	7	21.49	21.60	21.67		
3	QPSK	15	0	21.65	21.80	21.62		
3	16QAM	1	0	21.48	21.65	21.57	23	1
3	16QAM	1	8	21.54	21.58	21.55		
3	16QAM	1	14	21.53	21.62	21.62		
3	16QAM	8	0	20.46	20.56	20.57	22	2
3	16QAM	8	4	20.60	20.58	20.67		
3	16QAM	8	7	20.51	20.58	20.52		
3	16QAM	15	0	20.67	20.65	20.67		

Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.48	22.63	22.58	24	0
1.4	QPSK	1	3	22.48	22.56	22.59		
1.4	QPSK	1	5	22.66	22.54	22.66		
1.4	QPSK	3	0	22.53	22.63	22.74		
1.4	QPSK	3	1	22.60	22.73	22.61		
1.4	QPSK	3	3	22.68	22.69	22.52		
1.4	QPSK	6	0	21.69	21.63	21.63	23	1
1.4	16QAM	1	0	21.46	21.66	21.64	23	1
1.4	16QAM	1	3	21.54	21.58	21.64		
1.4	16QAM	1	5	21.65	21.63	21.49		
1.4	16QAM	3	0	21.64	21.68	21.61		
1.4	16QAM	3	1	21.57	21.65	21.76		
1.4	16QAM	3	3	21.66	21.61	21.62		
1.4	16QAM	6	0	20.73	20.69	20.55	22	2

<LTE Band 13>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23230				
Frequency (MHz)				782				
10	QPSK	1	0	23.28			24	0
10	QPSK	1	24	23.24				
10	QPSK	1	49	23.20				
10	QPSK	25	0	22.22			23	1
10	QPSK	25	12	22.32				
10	QPSK	25	25	22.17				
10	QPSK	50	0	22.06				
10	16QAM	1	0	21.67			23	1
10	16QAM	1	25	21.93				
10	16QAM	1	49	21.74				
10	16QAM	25	0	21.10			22	2
10	16QAM	25	12	21.24				
10	16QAM	25	25	21.23				
10	16QAM	50	0	21.11				
Channel				23205	23230	23255	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	22.36	22.79	22.68	24	0
5	QPSK	1	12	22.79	22.62	22.73		
5	QPSK	1	24	22.70	22.75	22.69		
5	QPSK	12	0	21.52	21.60	21.77	23	1
5	QPSK	12	7	21.50	21.78	21.69		
5	QPSK	12	13	21.81	21.87	21.73		
5	QPSK	25	0	21.67	21.67	21.59		
5	16QAM	1	0	21.41	21.69	21.65	23	1
5	16QAM	1	12	21.77	21.66	21.60		
5	16QAM	1	24	21.72	21.73	21.71		
5	16QAM	12	0	20.62	20.62	20.80	22	2
5	16QAM	12	7	20.69	20.84	20.69		
5	16QAM	12	13	20.67	20.80	20.71		
5	16QAM	25	0	20.50	20.73	20.74		

<LTE Band 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	22.61	22.77	22.71	24	0
10	QPSK	1	24	22.65	22.62	22.62		
10	QPSK	1	49	22.46	22.42	22.39		
10	QPSK	25	0	21.73	21.87	21.69	23	1
10	QPSK	25	12	21.68	21.66	21.62		
10	QPSK	25	25	21.67	21.66	21.60		
10	QPSK	50	0	21.52	21.63	21.61		
10	16QAM	1	0	21.54	21.70	21.66	23	1
10	16QAM	1	25	21.82	21.70	21.84		
10	16QAM	1	49	21.54	21.67	21.43		
10	16QAM	25	0	20.66	20.62	20.63	22	2
10	16QAM	25	12	20.71	20.81	20.66		
10	16QAM	25	25	20.88	20.77	20.59		
10	16QAM	50	0	20.58	20.69	20.65		
Channel				23755	23790	23825	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	22.50	22.69	22.64	24	0
5	QPSK	1	12	22.69	22.58	22.62		
5	QPSK	1	24	22.60	22.75	22.48		
5	QPSK	12	0	21.59	21.83	21.57	23	1
5	QPSK	12	7	21.58	21.87	21.83		
5	QPSK	12	13	21.84	21.86	21.57		
5	QPSK	25	0	21.85	21.70	21.60		
5	16QAM	1	0	21.52	21.73	21.81	23	1
5	16QAM	1	12	21.59	21.76	21.66		
5	16QAM	1	24	21.63	21.63	21.36		
5	16QAM	12	0	20.56	20.75	20.70	22	2
5	16QAM	12	7	20.75	20.79	20.81		
5	16QAM	12	13	20.68	20.77	20.73		
5	16QAM	25	0	20.72	20.75	20.73		

<LTE Band 25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	23.01	22.98	23.24	24	0
20	QPSK	1	49	22.93	22.96	22.95		
20	QPSK	1	99	22.92	22.89	22.95		
20	QPSK	50	0	22.19	22.14	22.18	23	1
20	QPSK	50	24	22.01	22.12	22.05		
20	QPSK	50	50	22.02	21.86	22.06		
20	QPSK	100	0	21.92	21.98	22.15		
20	16QAM	1	0	22.03	22.04	22.20	23	1
20	16QAM	1	49	21.82	22.15	22.03		
20	16QAM	1	99	21.96	21.89	22.07		
20	16QAM	50	0	21.03	21.02	21.11	22	2
20	16QAM	50	24	20.95	21.05	21.08		
20	16QAM	50	50	20.84	20.98	21.16		
20	16QAM	100	0	20.93	21.04	21.19		
Channel				26115	26340	26615	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	23.16	23.00	23.16	24	0
15	QPSK	1	37	22.93	23.10	23.09		
15	QPSK	1	74	22.87	22.85	23.10		
15	QPSK	36	0	22.09	22.00	22.16	23	1
15	QPSK	36	20	22.00	21.97	22.06		
15	QPSK	36	39	21.90	22.01	22.29		
15	QPSK	75	0	21.90	21.96	22.04		
15	16QAM	1	0	22.09	22.05	22.16	23	1
15	16QAM	1	37	21.82	21.97	22.16		
15	16QAM	1	74	21.94	22.01	22.14		
15	16QAM	36	0	20.83	21.04	21.13	22	2
15	16QAM	36	20	21.01	21.10	21.17		
15	16QAM	36	39	20.78	20.91	21.30		
15	16QAM	75	0	20.87	20.91	20.97		
Channel				26090	26340	26640	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	23.08	23.07	23.18	24	0
10	QPSK	1	24	22.90	22.96	23.01		
10	QPSK	1	49	22.97	22.89	23.07		
10	QPSK	25	0	21.95	22.04	22.20	23	1
10	QPSK	25	12	22.03	22.12	22.20		
10	QPSK	25	25	21.89	21.96	22.14		
10	QPSK	50	0	21.86	22.12	22.20		
10	16QAM	1	0	22.07	22.08	22.06	23	1
10	16QAM	1	25	21.95	21.95	22.15		
10	16QAM	1	49	21.96	21.89	22.16		
10	16QAM	25	0	21.09	21.10	21.22	22	2
10	16QAM	25	12	20.97	21.04	21.22		
10	16QAM	25	25	20.88	21.08	21.26		
10	16QAM	50	0	20.99	21.05	21.18		

Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	23.05	22.92	23.28	24	0
5	QPSK	1	12	22.97	22.96	23.16		
5	QPSK	1	24	22.78	22.95	23.11		
5	QPSK	12	0	22.02	22.18	22.21	23	1
5	QPSK	12	7	22.01	22.15	22.16		
5	QPSK	12	13	21.93	22.03	22.15		
5	QPSK	25	0	22.09	22.05	22.22		
5	16QAM	1	0	22.09	21.99	22.16	23	1
5	16QAM	1	12	21.99	22.13	22.16		
5	16QAM	1	24	21.88	21.93	22.21		
5	16QAM	12	0	20.95	21.11	21.12	22	2
5	16QAM	12	7	21.09	21.16	21.32		
5	16QAM	12	13	20.96	21.11	21.29		
5	16QAM	25	0	20.91	21.12	21.30		
Channel				26055	26340	26675	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	23.10	23.00	23.24	24	0
3	QPSK	1	8	23.02	22.95	23.18		
3	QPSK	1	14	23.02	23.09	23.12		
3	QPSK	8	0	22.04	22.06	22.25	23	1
3	QPSK	8	4	21.96	22.07	22.23		
3	QPSK	8	7	22.05	22.06	22.25		
3	QPSK	15	0	22.03	21.95	22.23		
3	16QAM	1	0	22.02	22.13	22.27	23	1
3	16QAM	1	8	21.85	21.99	22.18		
3	16QAM	1	14	22.00	22.09	22.13		
3	16QAM	8	0	20.89	21.04	21.19	22	2
3	16QAM	8	4	20.85	21.00	21.19		
3	16QAM	8	7	20.99	20.90	21.13		
3	16QAM	15	0	20.99	21.14	21.11		
Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	22.96	22.88	23.10	24	0
1.4	QPSK	1	3	23.08	23.03	23.20		
1.4	QPSK	1	5	23.02	22.97	23.16		
1.4	QPSK	3	0	23.03	22.96	23.04		
1.4	QPSK	3	1	23.12	23.03	23.16		
1.4	QPSK	3	3	22.97	23.08	23.16		
1.4	QPSK	6	0	22.17	22.04	22.27	23	1
1.4	16QAM	1	0	22.04	22.05	22.30	23	1
1.4	16QAM	1	3	21.90	21.94	22.16		
1.4	16QAM	1	5	21.86	21.99	22.13		
1.4	16QAM	3	0	22.08	22.07	22.00		
1.4	16QAM	3	1	22.11	22.10	22.25		
1.4	16QAM	3	3	22.04	22.09	22.27		
1.4	16QAM	6	0	21.22	21.09	21.27	22	2

<Proximity Sensor Active>

<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	13.72	13.85	14.39	15	0
20	QPSK	1	49	14.83	14.31	13.76		
20	QPSK	1	99	13.42	14.32	14.17		
20	QPSK	50	0	14.54	13.98	14.49	15	0
20	QPSK	50	24	14.79	14.21	13.97		
20	QPSK	50	50	14.20	14.32	13.77		
20	QPSK	100	0	14.37	14.11	14.22		
20	16QAM	1	0	13.81	13.93	14.78	15	0
20	16QAM	1	49	14.88	14.47	13.82		
20	16QAM	1	99	13.49	14.34	14.20		
20	16QAM	50	0	14.19	13.82	14.21	15	0
20	16QAM	50	24	14.56	14.06	13.71		
20	16QAM	50	50	13.86	14.36	13.64		
20	16QAM	100	0	14.02	14.09	13.95		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	13.25	13.10	13.71	15	0
15	QPSK	1	37	13.88	13.30	13.06		
15	QPSK	1	74	13.03	14.11	14.26		
15	QPSK	36	0	13.77	13.24	13.31	15	0
15	QPSK	36	20	13.66	13.26	13.00		
15	QPSK	36	39	13.54	13.96	13.34		
15	QPSK	75	0	13.73	13.50	13.45		
15	16QAM	1	0	13.47	13.00	14.02	15	0
15	16QAM	1	37	13.99	13.84	13.16		
15	16QAM	1	74	13.10	14.31	14.36		
15	16QAM	36	0	13.47	13.02	13.05	15	0
15	16QAM	36	20	13.49	13.46	13.06		
15	16QAM	36	39	13.34	13.63	13.15		
15	16QAM	75	0	13.38	13.50	13.03		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	13.67	13.44	13.17	15	0
10	QPSK	1	24	13.99	13.56	13.20		
10	QPSK	1	49	14.18	14.08	14.16		
10	QPSK	25	0	13.85	13.43	13.27	15	0
10	QPSK	25	12	14.11	13.56	13.29		
10	QPSK	25	25	14.14	13.73	14.16		
10	QPSK	50	0	14.27	13.63	13.68		
10	16QAM	1	0	13.97	13.55	13.48	15	0
10	16QAM	1	25	14.14	13.93	13.29		
10	16QAM	1	49	14.25	14.50	14.38		
10	16QAM	25	0	13.89	13.19	13.00	15	0
10	16QAM	25	12	13.98	13.56	13.07		
10	16QAM	25	25	13.97	13.85	13.92		
10	16QAM	50	0	13.91	13.54	13.53		

Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	13.14	13.06	13.16	15	0
5	QPSK	1	12	13.72	13.55	13.67		
5	QPSK	1	24	13.66	13.53	14.77		
5	QPSK	12	0	13.45	13.41	13.42	15	0
5	QPSK	12	7	13.60	13.58	13.93		
5	QPSK	12	13	13.91	13.45	14.35		
5	QPSK	25	0	13.70	13.34	13.90		
5	16QAM	1	0	13.59	13.22	13.19	15	0
5	16QAM	1	12	14.15	13.84	13.85		
5	16QAM	1	24	14.26	13.86	14.99		
5	16QAM	12	0	13.62	13.16	13.02	15	0
5	16QAM	12	7	13.78	13.65	13.70		
5	16QAM	12	13	13.96	13.62	14.19		
5	16QAM	25	0	13.87	13.55	13.65		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	13.12	13.27	13.68	15	0
3	QPSK	1	8	13.76	13.50	14.27		
3	QPSK	1	14	13.67	13.45	14.85		
3	QPSK	8	0	13.29	13.49	13.93	15	0
3	QPSK	8	4	13.74	13.68	14.25		
3	QPSK	8	7	13.83	13.54	14.46		
3	QPSK	15	0	13.56	13.44	14.33		
3	16QAM	1	0	13.57	13.47	13.65	15	0
3	16QAM	1	8	14.12	13.99	14.38		
3	16QAM	1	14	14.07	13.68	14.93		
3	16QAM	8	0	13.55	13.49	13.60	15	0
3	16QAM	8	4	13.79	13.63	14.22		
3	16QAM	8	7	13.82	13.52	14.47		
3	16QAM	15	0	13.63	13.48	14.12		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	13.39	13.62	14.40	15	0
1.4	QPSK	1	3	13.67	13.59	14.88		
1.4	QPSK	1	5	13.73	13.52	14.98		
1.4	QPSK	3	0	13.57	13.72	14.66		
1.4	QPSK	3	1	13.59	13.76	14.77		
1.4	QPSK	3	3	13.59	13.61	14.99		
1.4	QPSK	6	0	13.59	13.64	14.84	15	0
1.4	16QAM	1	0	13.78	13.93	14.33	15	0
1.4	16QAM	1	3	14.00	13.99	14.94		
1.4	16QAM	1	5	13.98	13.94	14.99		
1.4	16QAM	3	0	13.58	13.71	14.34		
1.4	16QAM	3	1	13.55	13.63	14.47		
1.4	16QAM	3	3	13.74	13.71	14.60		
1.4	16QAM	6	0	13.72	13.76	14.50	15	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	13.56	14.04	13.97	14.5	0
20	QPSK	1	49	14.11	13.91	13.83		
20	QPSK	1	99	13.65	13.24	13.89		
20	QPSK	50	0	14.19	14.02	14.10	14.5	0
20	QPSK	50	24	14.06	13.93	13.84		
20	QPSK	50	50	14.04	13.66	13.86		
20	QPSK	100	0	14.09	13.69	13.80		
20	16QAM	1	0	13.68	14.10	14.09	14.5	0
20	16QAM	1	49	14.11	14.00	13.53		
20	16QAM	1	99	13.96	13.00	13.56		
20	16QAM	50	0	13.82	13.74	13.83	14.5	0
20	16QAM	50	24	13.73	13.72	13.84		
20	16QAM	50	50	13.77	13.44	13.25		
20	16QAM	100	0	13.72	13.73	13.79		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	12.89	13.90	13.47	14.5	0
15	QPSK	1	37	13.34	13.46	13.27		
15	QPSK	1	74	13.57	12.67	13.38		
15	QPSK	36	0	13.33	13.68	13.29	14.5	0
15	QPSK	36	20	13.31	13.51	13.34		
15	QPSK	36	39	13.39	13.45	13.17		
15	QPSK	75	0	13.26	13.40	13.19		
15	16QAM	1	0	12.89	13.79	13.20	14.5	0
15	16QAM	1	37	13.44	13.59	13.53		
15	16QAM	1	74	13.74	13.02	13.23		
15	16QAM	36	0	13.17	13.54	13.28	14.5	0
15	16QAM	36	20	13.23	13.27	13.31		
15	16QAM	36	39	13.31	12.75	12.76		
15	16QAM	75	0	13.07	13.36	13.24		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	13.21	14.04	13.71	14.5	0
10	QPSK	1	24	13.36	13.71	13.48		
10	QPSK	1	49	13.88	13.16	13.74		
10	QPSK	25	0	13.58	13.93	13.63	14.5	0
10	QPSK	25	12	13.39	13.78	13.46		
10	QPSK	25	25	13.59	13.44	13.49		
10	QPSK	50	0	13.48	13.62	13.61		
10	16QAM	1	0	13.26	14.25	13.65	14.5	0
10	16QAM	1	25	13.35	13.65	13.75		
10	16QAM	1	49	13.82	13.47	13.38		
10	16QAM	25	0	13.31	13.65	13.04	14.5	0
10	16QAM	25	12	13.27	13.41	12.91		
10	16QAM	25	25	13.40	13.02	13.48		
10	16QAM	50	0	13.38	13.61	13.02		

Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	12.94	13.69	13.59	14.5	0
5	QPSK	1	12	13.23	13.79	13.41		
5	QPSK	1	24	13.35	13.24	13.40		
5	QPSK	12	0	13.28	13.72	13.41	14.5	0
5	QPSK	12	7	13.31	13.84	13.37		
5	QPSK	12	13	13.27	13.50	13.45		
5	QPSK	25	0	13.45	13.38	13.30		
5	16QAM	1	0	12.85	13.79	13.20	14.5	0
5	16QAM	1	12	13.52	13.77	13.90		
5	16QAM	1	24	13.51	13.14	13.75		
5	16QAM	12	0	12.98	13.61	13.57	14.5	0
5	16QAM	12	7	13.03	13.58	13.55		
5	16QAM	12	13	12.95	12.83	13.50		
5	16QAM	25	0	13.05	13.57	13.41		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	12.99	13.69	13.45	14.5	0
3	QPSK	1	8	13.24	13.77	13.37		
3	QPSK	1	14	13.38	13.34	13.36		
3	QPSK	8	0	13.39	13.87	13.44	14.5	0
3	QPSK	8	4	13.35	13.79	13.54		
3	QPSK	8	7	13.34	13.45	13.37		
3	QPSK	15	0	13.35	13.57	13.36		
3	16QAM	1	0	13.42	13.79	13.78	14.5	0
3	16QAM	1	8	13.54	13.75	13.95		
3	16QAM	1	14	13.41	13.13	13.77		
3	16QAM	8	0	13.25	13.60	13.35	14.5	0
3	16QAM	8	4	13.22	13.66	13.67		
3	16QAM	8	7	13.25	13.60	13.50		
3	16QAM	15	0	13.14	13.61	13.43		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	13.26	13.81	13.95	14.5	0
1.4	QPSK	1	3	13.28	13.82	14.06		
1.4	QPSK	1	5	13.28	13.78	14.02		
1.4	QPSK	3	0	13.33	13.88	13.39		
1.4	QPSK	3	1	13.31	13.85	14.10		
1.4	QPSK	3	3	13.48	13.82	13.91		
1.4	QPSK	6	0	13.30	13.94	13.83	14.5	0
1.4	16QAM	1	0	13.46	13.76	13.57	14.5	0
1.4	16QAM	1	3	13.57	13.79	13.82		
1.4	16QAM	1	5	13.34	13.77	13.62		
1.4	16QAM	3	0	13.17	13.61	13.49		
1.4	16QAM	3	1	13.14	13.68	13.52		
1.4	16QAM	3	3	13.08	13.58	13.26		
1.4	16QAM	6	0	13.18	13.60	13.38	14.5	0

<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	15.63	15.79	15.87	17	0
10	QPSK	1	24	15.83	15.95	15.99		
10	QPSK	1	49	16.07	15.90	15.35		
10	QPSK	25	0	15.62	15.99	15.98	17	0
10	QPSK	25	12	15.89	16.04	16.05		
10	QPSK	25	25	15.98	15.96	15.25		
10	QPSK	50	0	15.81	15.99	15.96		
10	16QAM	1	0	16.22	15.60	15.67	17	0
10	16QAM	1	25	16.46	16.57	15.78		
10	16QAM	1	49	15.82	15.65	15.43		
10	16QAM	25	0	15.63	16.02	15.19	17	0
10	16QAM	25	12	15.92	16.05	15.23		
10	16QAM	25	25	15.96	15.98	15.27		
10	16QAM	50	0	15.85	16.03	15.15		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	15.42	15.47	15.40	17	0
5	QPSK	1	12	15.69	16.00	15.75		
5	QPSK	1	24	15.44	15.64	15.41		
5	QPSK	12	0	15.54	15.70	15.45	17	0
5	QPSK	12	7	15.82	16.06	15.57		
5	QPSK	12	13	15.57	15.85	15.78		
5	QPSK	25	0	15.61	15.81	15.72		
5	16QAM	1	0	15.89	15.16	15.43	17	0
5	16QAM	1	12	16.16	16.33	15.79		
5	16QAM	1	24	15.03	15.14	15.68		
5	16QAM	12	0	15.68	15.04	15.61	17	0
5	16QAM	12	7	15.85	16.02	15.78		
5	16QAM	12	13	15.80	15.19	15.46		
5	16QAM	25	0	15.77	15.00	15.52		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	15.83	15.70	15.56	17	0
3	QPSK	1	8	15.95	15.99	15.90		
3	QPSK	1	14	15.73	15.82	15.60		
3	QPSK	8	0	15.76	15.79	15.78	17	0
3	QPSK	8	4	15.86	15.94	15.96		
3	QPSK	8	7	15.87	16.01	15.68		
3	QPSK	15	0	15.77	15.87	15.80		
3	16QAM	1	0	16.26	15.24	15.61	17	0
3	16QAM	1	8	16.32	16.26	16.03		
3	16QAM	1	14	16.02	15.28	15.92		
3	16QAM	8	0	15.87	15.98	15.70	17	0
3	16QAM	8	4	16.02	16.10	15.80		
3	16QAM	8	7	16.04	16.09	15.58		
3	16QAM	15	0	15.96	15.87	15.56		

Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	15.73	15.92	15.86	17	0
1.4	QPSK	1	3	15.74	15.98	15.98		
1.4	QPSK	1	5	15.58	15.90	15.82		
1.4	QPSK	3	0	15.87	16.05	15.77		
1.4	QPSK	3	1	15.86	16.08	15.87		
1.4	QPSK	3	3	15.71	15.94	15.86		
1.4	QPSK	6	0	15.82	16.11	15.88	17	0
1.4	16QAM	1	0	16.15	16.18	15.98	17	0
1.4	16QAM	1	3	16.19	16.32	16.09		
1.4	16QAM	1	5	16.12	16.34	16.03		
1.4	16QAM	3	0	16.04	16.12	15.74		
1.4	16QAM	3	1	16.02	16.08	15.75		
1.4	16QAM	3	3	15.78	16.02	15.53		
1.4	16QAM	6	0	16.07	16.02	15.74	17	0

<LTE Band 13>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23230				
Frequency (MHz)				782				
10	QPSK	1	0	16.33			18	0
10	QPSK	1	24	16.52				
10	QPSK	1	49	16.54				
10	QPSK	25	0	16.38			18	0
10	QPSK	25	12	16.46				
10	QPSK	25	25	16.44				
10	QPSK	50	0	16.32				
10	16QAM	1	0	16.46			18	0
10	16QAM	1	25	16.68				
10	16QAM	1	49	16.51				
10	16QAM	25	0	16.26			18	0
10	16QAM	25	12	16.28				
10	16QAM	25	25	16.42				
10	16QAM	50	0	16.33				
Channel				23205	23230	23255	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	17.25	17.15	17.37	18	0
5	QPSK	1	12	17.23	17.43	17.41		
5	QPSK	1	24	17.39	17.37	17.12		
5	QPSK	12	0	17.23	17.23	17.46	18	0
5	QPSK	12	7	17.12	17.45	17.39		
5	QPSK	12	13	17.22	17.42	17.40		
5	QPSK	25	0	17.19	17.38	17.26		
5	16QAM	1	0	17.16	17.09	17.25	18	0
5	16QAM	1	12	17.10	17.28	17.29		
5	16QAM	1	24	17.34	17.34	17.13		
5	16QAM	12	0	17.33	17.26	17.43	18	0
5	16QAM	12	7	17.33	17.46	17.47		
5	16QAM	12	13	17.50	17.41	17.29		
5	16QAM	25	0	17.25	17.34	17.27		

<LTE Band 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	14.12	14.20	14.16	15.5	0
10	QPSK	1	24	14.84	14.90	14.62		
10	QPSK	1	49	14.22	14.37	14.02		
10	QPSK	25	0	14.35	14.52	14.60	15.5	0
10	QPSK	25	12	14.69	14.72	14.68		
10	QPSK	25	25	14.68	14.56	14.20		
10	QPSK	50	0	14.45	14.61	14.46		
10	16QAM	1	0	14.57	14.80	14.77	15.5	0
10	16QAM	1	25	15.32	15.35	15.09		
10	16QAM	1	49	14.64	14.84	14.46		
10	16QAM	25	0	14.36	14.52	14.57	15.5	0
10	16QAM	25	12	14.66	14.66	14.63		
10	16QAM	25	25	14.62	14.43	14.06		
10	16QAM	50	0	14.46	14.63	14.48		
Channel				23755	23790	23825	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	13.89	14.48	14.45	15.5	0
5	QPSK	1	12	13.92	14.74	14.21		
5	QPSK	1	24	14.42	14.26	13.74		
5	QPSK	12	0	14.03	14.75	14.32	15.5	0
5	QPSK	12	7	14.10	14.83	14.21		
5	QPSK	12	13	14.39	14.57	14.08		
5	QPSK	25	0	14.18	14.60	14.11		
5	16QAM	1	0	14.46	14.87	14.78	15.5	0
5	16QAM	1	12	14.42	15.12	14.62		
5	16QAM	1	24	14.89	14.74	14.19		
5	16QAM	12	0	14.02	14.67	14.49	15.5	0
5	16QAM	12	7	14.10	14.65	14.22		
5	16QAM	12	13	14.36	14.59	14.25		
5	16QAM	25	0	14.30	14.63	14.29		

<LTE Band 25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	13.36	12.93	13.41	14.5	0
20	QPSK	1	49	14.04	13.46	12.92		
20	QPSK	1	99	12.67	14.23	14.08		
20	QPSK	50	0	13.68	13.37	13.15	14.5	0
20	QPSK	50	24	13.75	13.66	13.32		
20	QPSK	50	50	13.14	13.72	13.86		
20	QPSK	100	0	13.25	13.70	13.60		
20	16QAM	1	0	13.83	12.98	13.71	14.5	0
20	16QAM	1	49	13.91	13.48	13.11		
20	16QAM	1	99	12.71	14.38	14.06		
20	16QAM	50	0	13.47	13.10	13.11	14.5	0
20	16QAM	50	24	13.47	13.20	13.06		
20	16QAM	50	50	12.70	13.76	13.61		
20	16QAM	100	0	13.03	13.71	13.09		
Channel				26115	26340	26615	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	13.32	12.75	12.51	14.5	0
15	QPSK	1	37	13.71	13.32	13.10		
15	QPSK	1	74	12.65	13.89	13.99		
15	QPSK	36	0	13.62	13.01	12.84	14.5	0
15	QPSK	36	20	13.51	13.50	13.41		
15	QPSK	36	39	13.51	13.77	14.12		
15	QPSK	75	0	13.39	13.63	13.29		
15	16QAM	1	0	13.61	12.92	12.89	14.5	0
15	16QAM	1	37	13.87	13.53	13.33		
15	16QAM	1	74	12.99	14.20	14.02		
15	16QAM	36	0	13.39	13.00	12.76	14.5	0
15	16QAM	36	20	13.40	13.14	13.36		
15	16QAM	36	39	13.27	13.66	13.76		
15	16QAM	75	0	13.36	13.36	13.54		
Channel				26090	26340	26640	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	13.45	13.07	13.11	14.5	0
10	QPSK	1	24	13.66	13.45	13.58		
10	QPSK	1	49	13.88	14.08	13.74		
10	QPSK	25	0	13.46	13.23	13.14	14.5	0
10	QPSK	25	12	13.68	13.50	13.69		
10	QPSK	25	25	13.73	13.78	14.10		
10	QPSK	50	0	13.72	13.73	13.77		
10	16QAM	1	0	13.85	13.07	13.19	14.5	0
10	16QAM	1	25	13.70	13.47	13.75		
10	16QAM	1	49	13.96	13.95	13.75		
10	16QAM	25	0	13.40	13.37	13.13	14.5	0
10	16QAM	25	12	13.61	13.28	13.38		
10	16QAM	25	25	13.54	13.49	13.85		
10	16QAM	50	0	13.63	13.35	13.47		

Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	13.08	12.93	13.65	14.5	0
5	QPSK	1	12	13.46	13.45	14.49		
5	QPSK	1	24	13.78	13.61	13.35		
5	QPSK	12	0	13.29	13.35	14.30	14.5	0
5	QPSK	12	7	13.68	13.67	14.43		
5	QPSK	12	13	13.81	13.56	14.10		
5	QPSK	25	0	13.25	13.50	14.18		
5	16QAM	1	0	13.67	13.39	13.82	14.5	0
5	16QAM	1	12	13.89	13.52	14.37		
5	16QAM	1	24	13.72	13.58	13.47		
5	16QAM	12	0	13.26	13.06	13.96	14.5	0
5	16QAM	12	7	13.51	13.28	13.99		
5	16QAM	12	13	13.66	13.39	13.85		
5	16QAM	25	0	13.45	13.21	13.81		
Channel				26055	26340	26675	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	12.99	13.34	14.44	14.5	0
3	QPSK	1	8	13.31	13.62	14.33		
3	QPSK	1	14	13.11	13.62	13.46		
3	QPSK	8	0	13.24	13.41	14.50	14.5	0
3	QPSK	8	4	13.15	13.47	14.32		
3	QPSK	8	7	13.19	13.46	13.88		
3	QPSK	15	0	13.31	13.49	14.18		
3	16QAM	1	0	13.52	13.29	14.35	14.5	0
3	16QAM	1	8	13.73	13.55	14.27		
3	16QAM	1	14	13.62	13.61	13.36		
3	16QAM	8	0	13.24	13.20	14.28	14.5	0
3	16QAM	8	4	13.24	13.34	14.12		
3	16QAM	8	7	13.51	13.32	13.71		
3	16QAM	15	0	13.29	13.15	13.89		
Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	12.93	13.41	14.02	14.5	0
1.4	QPSK	1	3	13.27	13.54	13.76		
1.4	QPSK	1	5	13.01	13.40	13.48		
1.4	QPSK	3	0	13.17	13.53	13.98		
1.4	QPSK	3	1	13.28	13.49	13.87		
1.4	QPSK	3	3	13.38	13.44	13.74		
1.4	QPSK	6	0	13.31	13.37	13.87	14.5	0
1.4	16QAM	1	0	13.56	13.50	14.22	14.5	0
1.4	16QAM	1	3	13.63	13.61	14.03		
1.4	16QAM	1	5	13.52	13.54	13.79		
1.4	16QAM	3	0	13.30	13.16	14.00		
1.4	16QAM	3	1	13.22	13.34	13.84		
1.4	16QAM	3	3	13.38	13.27	13.76		
1.4	16QAM	6	0	13.39	13.15	13.93	14.5	0

13. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.

13.1 Body SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Proximity Sensor	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	GSM850	GPRS (2 Tx slots)	Back	12mm	Inactive	128	824.2	31.95	33.00	1.274	0.03	0.624	0.795
02	GSM1900	GPRS (2 Tx slots)	Top	0mm	active	810	1909.8	21.80	22.00	1.047	-0.11	0.559	0.585

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Proximity Sensor	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)
03	WCDMA II	RMC 12.2kbps	Back	0mm	active	9400	1880	14.93	16.00	1.279	-0.08	0.550	0.704
	WCDMA IV	RMC 12.2Kbps	Back	12mm	Inactive	1513	1752.6	22.94	24.00	1.276	0.01	0.636	0.812
	WCDMA IV	RMC 12.2Kbps	Back	12mm	Inactive	1312	1712.4	22.94	24.00	1.276	-0.07	0.671	0.856
04	WCDMA IV	RMC 12.2Kbps	Back	12mm	Inactive	1413	1732.6	22.96	24.00	1.271	0.01	0.676	0.859
05	WCDMA V	RMC 12.2Kbps	Back	0mm	active	4132	826.4	16.69	18.00	1.352	-0.18	0.584	0.790

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Proximity Sensor	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
06	CDMA BC0	RTAP 153.6Kbps	Back	12mm	Inactive	384	836.52	23.79	24.50	1.178	-0.1	0.535	0.630
07	CDMA BC1	RTAP153.6Kbps	Back	12mm	Inactive	600	1880	23.91	24.50	1.146	0	0.735	0.842
	CDMA BC1	RTAP153.6Kbps	Back	12mm	Inactive	25	1851.25	23.72	24.50	1.197	-0.01	0.669	0.801
	CDMA BC1	RTAP153.6Kbps	Back	12mm	Inactive	1175	1908.75	24.01	24.50	1.119	-0.06	0.739	0.827
08	CDMA BC10	RTAP 153.6Kbps	Back	0mm	active	684	823.1	17.09	17.50	1.099	-0.16	0.659	0.724

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Proximity Sensor	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)
09	LTE Band 2	20M	QPSK	1	0	Top	0mm	active	19100	1900	14.39	15.00	1.151	-0.09	0.475	0.547
10	LTE Band 4	20M	QPSK	1	99	Back	12mm	Inactive	20175	1732.5	23.38	24.00	1.153	0.03	0.672	0.775
11	LTE Band 5	10M	QPSK	25	12	Back	0mm	active	20600	844	16.05	17.00	1.245	-0.11	0.422	0.525
12	LTE Band 13	10M	QPSK	1	24	Back	12mm	Inactive	23230	782	23.24	24.00	1.191	-0.02	0.451	0.537
13	LTE Band 17	10M	QPSK	1	24	Back	12mm	Inactive	23780	709	22.65	24.00	1.365	-0.1	0.333	0.454
14	LTE Band 25	20M	QPSK	1	0	Back	12mm	Inactive	26365	1882.5	22.98	24.00	1.265	0.16	0.597	0.755

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	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)
15	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 1	36	5180	12.80	13.00	1.047	97.4	1.027	-0.19	0.660	0.710
16	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 2	48	5240	12.70	13.00	1.072	100	1.000	0.03	0.284	0.304

Note:

1. In the above table, the WLAN SAR test is in order to evaluate for simultaneous transmission and SPLSR analysis, and the WLAN conducted power can refer to original report ,Report number: UL-SAR-RP10710967JD01A V1.0 (FCC ID: 2ABVH-EM7355).

14. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Tablet
		Body
1.	WWAN + WLAN Ant 1 + WLAN Ant 2	Yes
2.	WWAN + Bluetooth Ant 1	Yes

General Note:

1. EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment.
2. The Scaled SAR summation is calculated based on the same configuration and test position.
3. 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.
   v) The SPLSR calculated results please refer to section 14.2.

14.1 Body Exposure Conditions

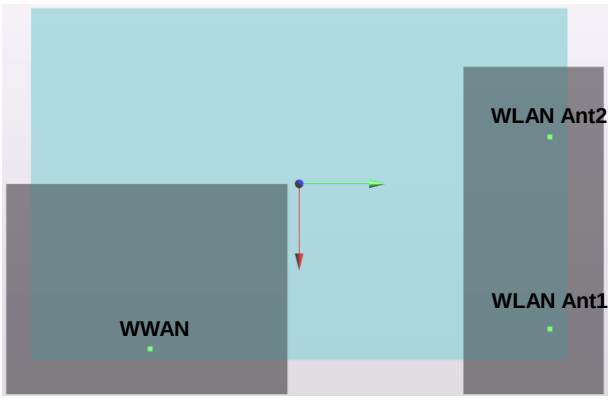
WWAN Band		Exposure Position	1	2	4	5	6	1+2 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)	SPLSR	Case No
			WWAN	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1					
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)					
GSM	GSM850	Back at 12mm	0.795	0.498	0.710	0.304	0.067	**1.293**	**1.809**	**0.862**	**0.01**	**Case 1**
	GSM1900	Top at 0mm	0.585		0.273			**0.585**	**0.858**	**0.585**		
WCDMA	WCDMA II	Back at 0mm	0.704	0.498	0.710	0.304	0.067	**1.202**	**1.718**	**0.771**	**< 0.01**	**Case 2**
	WCDMA IV	Back at 12mm	0.859	0.498	0.710	0.304	0.067	**1.357**	**1.873**	**0.926**	**< 0.01**	**Case 3**
	WCDMA V	Back at 0mm	0.790	0.498	0.710	0.304	0.067	**1.288**	**1.804**	**0.857**	**< 0.01**	**Case 4**
CDMA	CDMA BC0	Back at 12mm	0.630	0.498	0.710	0.304	0.067	**1.128**	**1.644**	**0.697**	**< 0.01**	**Case 5**
	CDMA BC1	Back at 12mm	0.842	0.498	0.710	0.304	0.067	**1.340**	**1.856**	**0.909**	**< 0.01**	**Case 6**
	CDMA BC10	Back at 0mm	0.724	0.498	0.710	0.304	0.067	**1.222**	**1.738**	**0.791**	**< 0.01**	**Case 7**
LTE	LTE Band 2	Top at 0mm	0.547		0.273			**0.547**	**0.820**	**0.547**		
	LTE Band 4	Back at 12mm	0.775	0.498	0.710	0.304	0.067	**1.273**	**1.789**	**0.842**	**< 0.01**	**Case 8**
	LTE Band 5	Back at 0mm	0.525	0.498	0.710	0.304	0.067	**1.023**	**1.539**	**0.592**		
	LTE Band 13	Back at 12mm	0.537	0.498	0.710	0.304	0.067	**1.035**	**1.551**	**0.604**		
	LTE Band 17	Back at 12mm	0.454	0.498	0.710	0.304	0.067	**0.952**	**1.468**	**0.521**		
	LTE Band 25	Back at 12mm	0.755	0.498	0.710	0.304	0.067	**1.253**	**1.769**	**0.822**	**< 0.01**	**Case 9**

14.2 SPLSR Evaluation and Analysis

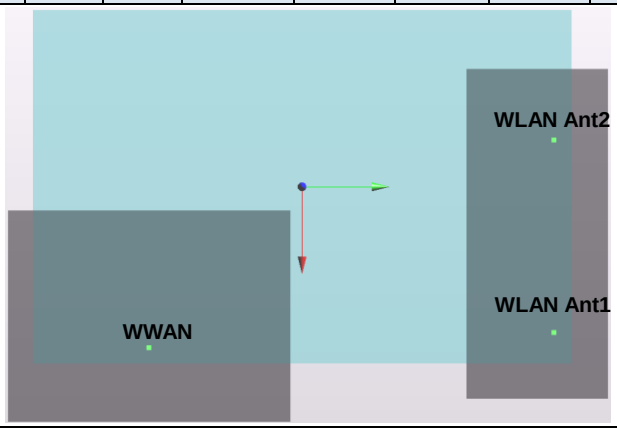
General Note:

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

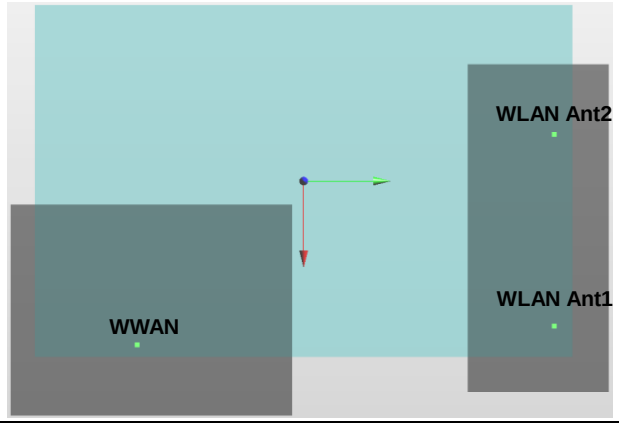
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 1	GSM850	Back	0.795	12mm	69.5	-62.5	0.7	155.4	1.51	0.01	Not required
	5GHz Ant 1		0.71	0mm	53	92	-0.64				
	GSM850	Back	0.795	12mm	69.5	-62.5	0.7	193.5	1.10	0.01	Not required
	5GHz Ant 2		0.304	0mm	-23.4	107.2	-0.41				
	5GHz Ant 1	Back	0.71	0mm	53	92	-0.64	77.9	1.01	0.01	Not required
	5GHz Ant 2		0.304	0mm	-23.4	107.2	-0.41				



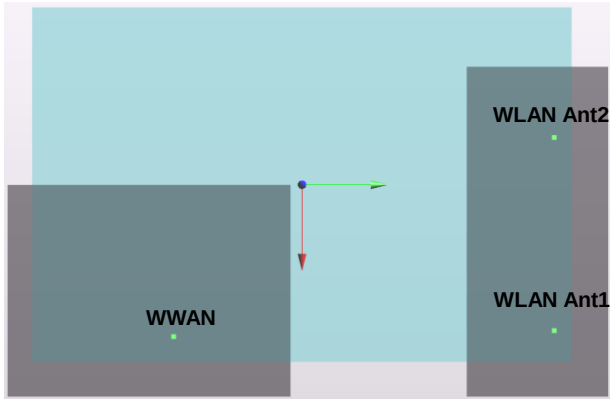
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 2	WCDMA II	Back	0.704	0mm	73.9	-57.6	2.22	1510.8	1.41	0.00	Not required
	5GHz Ant 1		0.71	0mm	53	92	-0.64				
	WCDMA II	Back	0.704	0mm	73.9	-57.6	2.22	1914.0	1.01	0.00	Not required
	5GHz Ant 2		0.304	0mm	-23.4	107.2	-0.41				
	5GHz Ant 1	Back	0.71	0mm	53	92	-0.64	779.0	1.01	0.00	Not required
	5GHz Ant 2		0.304	0mm	-23.4	107.2	-0.41				



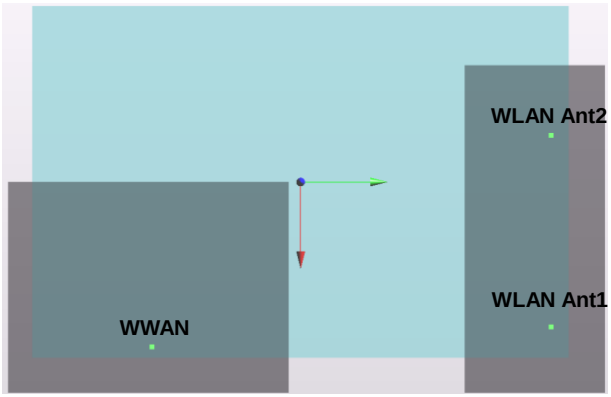
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 3	WCDMA IV	Back	0.859	12mm	69	-71.6	-2.5	1643.9	1.57	0.00	Not required
	5GHz Ant 1		0.71	0mm	53	92	-0.64				
	WCDMA IV	Back	0.859	12mm	69	-71.6	-2.5	2012.7	1.16	0.00	Not required
	5GHz Ant 2		0.304	0mm	-23.4	107.2	-0.41				
	5GHz Ant 1	Back	0.71	0mm	53	92	-0.64	779.0	1.01	0.00	Not required
	5GHz Ant 2		0.304	0mm	-23.4	107.2	-0.41				



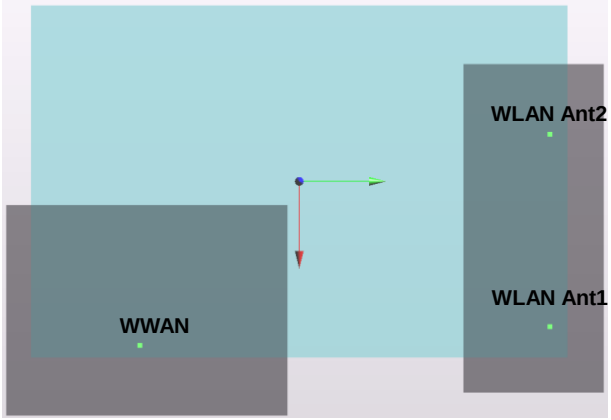
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 4	WCDMA V	Back	0.79	0mm	65.1	-53.5	1.9	1460.2	1.50	0.00	Not required
	5GHz Ant 1		0.71	0mm	53	92	-0.64				
	WCDMA V	Back	0.79	0mm	65.1	-53.5	1.9	1834.7	1.09	0.00	Not required
	5GHz Ant 2		0.304	0mm	-23.4	107.2	-0.41				
	5GHz Ant 1	Back	0.71	0mm	53	92	-0.64	779.0	1.01	0.00	Not required
	5GHz Ant 2		0.304	0mm	-23.4	107.2	-0.41				



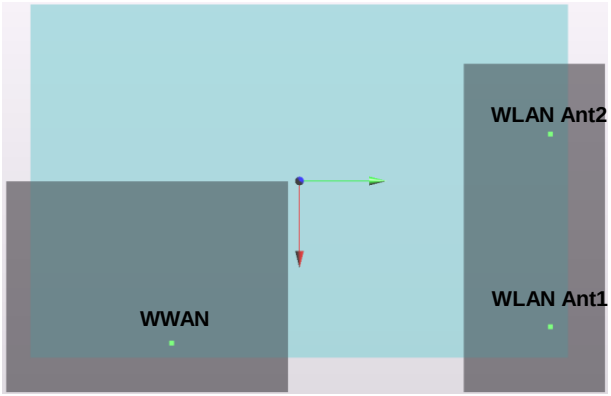
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 5	CDMA BC0	Back	0.63	12mm	69.5	-59.3	0.65	1522.0	1.34	0.00	Not required
	5GHz Ant 1		0.71	0mm	53	92	-0.64				
	CDMA BC0	Back	0.63	12mm	69.5	-59.3	0.65	1906.7	0.93	0.00	Not required
	5GHz Ant 2		0.304	0mm	-23.4	107.2	-0.41				
	5GHz Ant 1	Back	0.71	0mm	53	92	-0.64	779.0	1.01	0.00	Not required
	5GHz Ant 2		0.304	0mm	-23.4	107.2	-0.41				



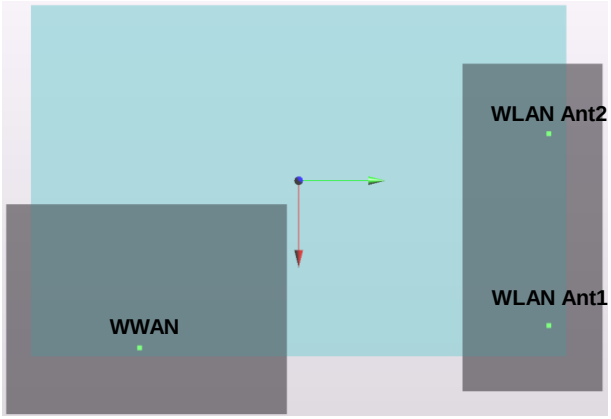
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 6	CDMA BC1	Back	0.842	12mm	72.2	-63.8	1.07	1569.9	1.55	0.00	Not required
	5GHz Ant 1		0.71	0mm	53	92	-0.64				
	CDMA BC1	Back	0.842	12mm	72.2	-63.8	1.07	1959.1	1.15	0.00	Not required
	5GHz Ant 2		0.304	0mm	-23.4	107.2	-0.41				
	5GHz Ant 1	Back	0.71	0mm	53	92	-0.64	779.0	1.01	0.00	Not required
	5GHz Ant 2		0.304	0mm	-23.4	107.2	-0.41				



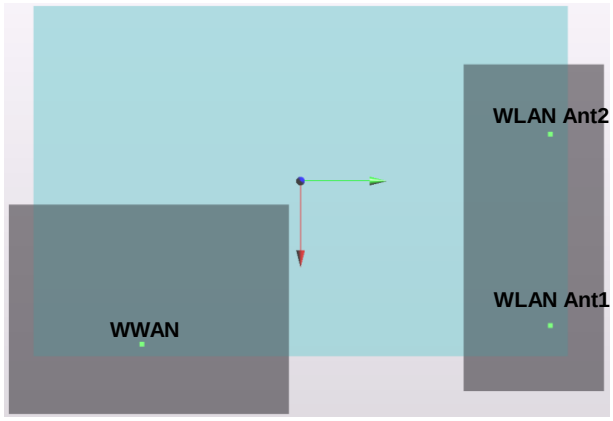
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 7	CDMA BC10	Back	0.724	0mm	68	-53.5	2.07	1463.0	1.43	0.00	Not required
	5GHz Ant 1		0.71	0mm	53	92	-0.64				
	CDMA BC10	Back	0.724	0mm	68	-53.5	2.07	1848.9	1.03	0.00	Not required
	5GHz Ant 2		0.304	0mm	-23.4	107.2	-0.41				
	5GHz Ant 1	Back	0.71	0mm	53	92	-0.64	779.0	1.01	0.00	Not required
	5GHz Ant 2		0.304	0mm	-23.4	107.2	-0.41				



	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 8	LTE Band 4	Back	0.775	12mm	72.1	-67	1.07	1601.5	1.49	0.00	Not required
	5GHz Ant 1		0.71	0mm	53	92	-0.64				
	LTE Band 4	Back	0.775	12mm	72.1	-67	1.07	1986.7	1.08	0.00	Not required
	5GHz Ant 2		0.304	0mm	-23.4	107.2	-0.41				
	5GHz Ant 1	Back	0.71	0mm	53	92	-0.64	779.0	1.01	0.00	Not required
	5GHz Ant 2		0.304	0mm	-23.4	107.2	-0.41				



	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 9	LTE Band 25	Back	0.755	12mm	70.6	-63.8	1.04	1568.0	1.47	0.00	Not required
	5GHz Ant 1		0.71	0mm	53	92	-0.64				
	LTE Band 25	Back	0.755	12mm	70.6	-63.8	1.04	1951.4	1.06	0.00	Not required
	5GHz Ant 2		0.304	0mm	-23.4	107.2	-0.41				
	5GHz Ant 1	Back	0.71	0mm	53	92	-0.64	779.0	1.01	0.00	Not required
	5GHz Ant 2		0.304	0mm	-23.4	107.2	-0.41				



Test Engineer : Nick Yu Tom Jiang and Kurt Liu

15. Uncertainty Assessment

The component of uncertainly may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainly by the statistical analysis of a series of observations is termed a Type An evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor[(a)]	1/k[(b)]	$1/\sqrt{3}$	$1/\sqrt{6}$	$1/\sqrt{2}$

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b) κ is the coverage factor

Table 15.1. Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

Error Description	Uncertainty Value (±%)	Probability	Divisor	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System							
Probe Calibration	6.0	N	1	1	1	6.0	6.0
Axial Isotropy	4.7	R	1.732	0.7	0.7	1.9	1.9
Hemispherical Isotropy	9.6	R	1.732	0.7	0.7	3.9	3.9
Boundary Effects	1.0	R	1.732	1	1	0.6	0.6
Linearity	4.7	R	1.732	1	1	2.7	2.7
System Detection Limits	1.0	R	1.732	1	1	0.6	0.6
Modulation Response	3.2	R	1.732	1	1	1.8	1.8
Readout Electronics	0.3	N	1	1	1	0.3	0.3
Response Time	0.0	R	1.732	1	1	0.0	0.0
Integration Time	2.6	R	1.732	1	1	1.5	1.5
RF Ambient Noise	3.0	R	1.732	1	1	1.7	1.7
RF Ambient Reflections	3.0	R	1.732	1	1	1.7	1.7
Probe Positioner	0.4	R	1.732	1	1	0.2	0.2
Probe Positioning	2.9	R	1.732	1	1	1.7	1.7
Max. SAR Eval.	2.0	R	1.732	1	1	1.2	1.2
Test Sample Related							
Device Positioning	3.0	N	1	1	1	3.0	3.0
Device Holder	3.6	N	1	1	1	3.6	3.6
Power Drift	5.0	R	1.732	1	1	2.9	2.9
Power Scaling	0.0	R	1.732	1	1	0.0	0.0
Phantom and Setup							
Phantom Uncertainty	6.1	R	1.732	1	1	3.5	3.5
SAR correction	0.0	R	1.732	1	0.84	0.0	0.0
Liquid Conductivity Repeatability	0.2	N	1	0.78	0.71	0.1	0.1
Liquid Conductivity (target)	5.0	R	1.732	0.78	0.71	2.3	2.0
Liquid Conductivity (mea.)	2.5	R	1.732	0.78	0.71	1.1	1.0
Temp. unc. - Conductivity	3.4	R	1.732	0.78	0.71	1.5	1.4
Liquid Permittivity Repeatability	0.15	N	1	0.23	0.26	0.0	0.0
Liquid Permittivity (target)	5.0	R	1.732	0.23	0.26	0.7	0.8
Liquid Permittivity (mea.)	2.5	R	1.732	0.23	0.26	0.3	0.4
Temp. unc. - Permittivity	0.83	R	1.732	0.23	0.26	0.1	0.1
Combined Std. Uncertainty						11.4%	11.4%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						22.9%	22.7%

Table 15.2. Uncertainty Budget for frequency range 300 MHz to 3 GHz

Error Description	Uncertainty Value (±%)	Probability	Divisor	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System							
Probe Calibration	7.0	N	1	1	1	7.0	7.0
Axial Isotropy	4.7	R	1.732	0.7	0.7	1.9	1.9
Hemispherical Isotropy	9.6	R	1.732	0.7	0.7	3.9	3.9
Boundary Effects	2.0	R	1.732	1	1	1.2	1.2
Linearity	4.7	R	1.732	1	1	2.7	2.7
System Detection Limits	1.0	R	1.732	1	1	0.6	0.6
Modulation Response	3.2	R	1.732	1	1	1.8	1.8
Readout Electronics	0.3	N	1	1	1	0.3	0.3
Response Time	0.0	R	1.732	1	1	0.0	0.0
Integration Time	2.6	R	1.732	1	1	1.5	1.5
RF Ambient Noise	3.0	R	1.732	1	1	1.7	1.7
RF Ambient Reflections	3.0	R	1.732	1	1	1.7	1.7
Probe Positioner	0.4	R	1.732	1	1	0.2	0.2
Probe Positioning	6.7	R	1.732	1	1	3.9	3.9
Max. SAR Eval.	4.0	R	1.732	1	1	2.3	2.3
Test Sample Related							
Device Positioning	3.0	N	1	1	1	3.0	3.0
Device Holder	3.6	N	1	1	1	3.6	3.6
Power Drift	5.0	R	1.732	1	1	2.9	2.9
Power Scaling	0.0	R	1.732	1	1	0.0	0.0
Phantom and Setup							
Phantom Uncertainty	6.6	R	1.732	1	1	3.8	3.8
SAR correction	0.0	R	1.732	1	0.84	0.0	0.0
Liquid Conductivity Repeatability	0.2	N	1	0.78	0.71	0.1	0.1
Liquid Conductivity (target)	5.0	R	1.732	0.78	0.71	2.3	2.0
Liquid Conductivity (mea.)	2.5	R	1.732	0.78	0.71	1.1	1.0
Temp. unc. - Conductivity	3.4	R	1.732	0.78	0.71	1.5	1.4
Liquid Permittivity Repeatability	0.15	N	1	0.23	0.26	0.0	0.0
Liquid Permittivity (target)	5.0	R	1.732	0.23	0.26	0.7	0.8
Liquid Permittivity (mea.)	2.5	R	1.732	0.23	0.26	0.3	0.4
Temp. unc. - Permittivity	0.83	R	1.732	0.23	0.26	0.1	0.1
Combined Std. Uncertainty						12.8%	12.7%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						25.5%	25.4%

Table 15.3. Uncertainty Budget for frequency range 3 GHz to 6 GHz

16. References

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

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

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

[4] SPEAG DASY System Handbook

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

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

[7] FCC KDB 941225 D01 v03r01, “3G SAR MEAUREMENT PROCEDURES”, Oct 2015

[8] FCC KDB 941225 D05 v02r05, “SAR Evaluation Considerations for LTE Devices”, Dec 2015

[9] FCC KDB 616217 D04 v01r02, “SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers”, Oct 2015

[10] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.

[11] FCC KDB 865664 D02 v01r02, “RF Exposure Compliance Reporting and Documentation Considerations” Oct 2015.