# TEST REPORT

| | | |
|---|---|---|
| **APPLICANT** | : | Bullitt Group |
| **PRODUCT NAME** | : | 4G Mobile Phone |
| **MODEL NAME** | : | S62 |
| **BRAND NAME** | : | CAT |
| **FCC ID** | : | ZL5S62 |
| **STANDARD(S)** | : | 47CFR 2.1093<br>IEEE 62209-1528 |
| **RECEIPT DATE** | : | 2020-10-10 |
| **TEST DATE** | : | 2020-10-20 to 2020-11-01 |
| **ISSUE DATE** | : | 2021-02-19 |

Edited by : Stefan Sun.
Stefan Sun

Approved by: Elvis Wang
Elvis Wang



**Kehu-Morlab Test Laboratory**
**XIAMEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.**
Unit 101, No.1732 Gangzhong Road, Xiamen Area, Pilot Free Trade Zone (Fujian) , P. R. China
Tel: +86 592 5612050
Fax: +86 592 5612095

# DIRECTORY

| Change History | | |
|---|---|---|
| **Version** | **Date** | **Reason for change** |
| 1.0 | 2021-02-19 | First edition |

# 1. SAR Results Summary

The maximum results of Specific Absorption Rate (SAR) found during test as bellows:

| Frequency Band | | Highest SAR Summary (1-g SAR,W/kg) | | |
|---|---|---|---|---|
| | | Head (Separation 0mm) | Body-worn (Separation 10mm) | Hotspot (Separation 10mm) |
| GSM | GSM850 | 0.384 | 0.476 | 0.866 |
| | GSM1900 | 0.036 | 0.377 | 0.739 |
| WCDMA | WCDMA Band II | 0.432 | 0.113 | 0.229 |
| | WCDMA Band IV | 0.081 | 0.918 | 0.918 |
| | WCDMA Band V | 0.262 | 0.251 | 0.393 |
| CDMA 2000 | BC0 | 0.152 | 0.191 | 0.264 |
| | BC1 | 0.083 | 1.010 | 1.010 |
| | BC10 | 0.134 | 0.202 | 0.268 |
| EVDO | BC0 | 0.201 | 0.247 | 0.357 |
| | BC1 | 0.095 | 0.876 | 0.876 |
| | BC10 | 0.209 | 0.270 | 0.380 |
| LTE | LTE Band 2 | 0.040 | 0.834 | 0.834 |
| | LTE Band 4 | 0.358 | 0.966 | 0.966 |
| | LTE Band 5 | 0.189 | 0.198 | 0.198 |
| | LTE Band 7 | 0.159 | 0.836 | 0.836 |
| | LTE Band 12 | 0.092 | 0.267 | 0.267 |
| | LTE Band 13 | 0.194 | 0.120 | 0.120 |
| | LTE Band 14 | 0.092 | 0.117 | 0.138 |
| | LTE Band 25 | 0.043 | 0.912 | 0.912 |
| | LTE Band 26 | 0.174 | 0.205 | 0.217 |
| | LTE Band 66 | 0.082 | 0.723 | 0.723 |
| | LTE Band 71 | 0.196 | 0.465 | 0.465 |
| | LTE Band 38 | 0.097 | 0.103 | 0.257 |
| | LTE Band 40 | 0.127 | 0.121 | 0.289 |
| | LTE Band 41 | 0.124 | 0.472 | 0.684 |
| WLAN | 2.4GHz WLAN | 0.380 | 0.134 | 0.134 |
| | 5GHz WLAN | 0.729 | 0.415 | 0.415 |
| Highest Simultaneous Transmission | | Head | Body-worn | Hotspot |
| WWAN + 2.4GHz WLAN | | 0.812 | 1.144 | 1.144 |

| | | | |
|---|---|---|---|
| WWAN + 5GHz WLAN | 1.161 | 1.425 | 1.425 |
| Max Scaled $SAR_{1g}$ (W/Kg): | Head: | 0.729 | Limit(W/kg): 1.6 W/kg |
| | Body: | 1.010 | |
| | Hotspot: | 1.010 | |

**Note:**

1.For FDD-LTE Band 17 is full covered by FDD-LTE Band 12, so only FDD-LTE Band 12 was tested.

# 2. Technical Information

**Note:** Provide by applicant.

## 2.1. Applicant and Manufacturer Information

| | |
|---|---|
| **Applicant:** | Bullitt Group |
| **Applicant Address:** | One Valpy, Valpy Street, Reading, Berkshire, RG1 1AR, United Kingdom |
| **Manufacturer:** | Bullitt Group |
| **Manufacturer Address:** | One Valpy, Valpy Street, Reading, Berkshire, RG1 1AR, United Kingdom |

## 2.2. Equipment Under Test (EUT) Description

| | |
|---|---|
| **EUT Type:** | 4G Mobile Phone |
| **Hardware Version:** | Q190_V1 |
| **Software Version:** | LTE_S02111.10_N_S62_0 |
| **Frequency Bands:** | GSM 850: 824.2 MHz ~ 848.8 MHz<br>GSM 1900: 1850.2 MHz ~ 1909.8 MHz<br>WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz<br>WCDMA Band IV: 1710 MHz ~ 1755 MHz<br>WCDMA Band V: 826.4 MHz ~ 846.6 MHz<br>CDMA 800MHz(BC0): 824.025 ~ 848.985 MHz<br>CDMA1900MHz(BC1 ): 1850 MHz ~ 1894.95MHz<br>CDMA 800MHz(BC10): 816 ~ 823.975 MHz<br>LTE Band 2: 1850 MHz ~ 1910 MHz<br>LTE Band 4: 1710 MHz ~ 1755 MHz<br>LTE Band 5: 824 MHz ~ 849 MHz<br>LTE Band 7: 2502.5MHz ~ 2567.5MHz<br>LTE Band 12: 699.7MHz ~ 715.3MHz<br>LTE Band 13:779.5 MHz ~ 784.5 MHz<br>LTE Band 14: 790.5MHz ~795.5MHz<br>LTE Band 17: 706.5MHz ~ 713.5MHz<br>LTE Band 25: 1850.7MHz ~ 1914.3MHz<br>LTE Band 26: 814.7MHz~ 848.3MHz<br>LTE Band 38: 2572.5MHz ~ 2617.5MHz<br>LTE Band 40: 2302.5MHz ~ 2397.5MHz<br>LTE Band 41: 2498.5MHz ~ 2687.5MHz<br>LTE Band 66: 1710.7MHz ~1779.3MHz |

| | |
|---|---|
| | LTE Band 71: 665.5MHz ~ 695.5MHz<br>WLAN 2.4GHz: 2412 MHz ~ 2472 MHz<br>WLAN 5.2GHz: 5180 MHz ~ 5240 MHz<br>WLAN 5.8GHz: 5745 MHz ~ 5825 MHz<br>Bluetooth: 2402 MHz ~ 2480 MHz |
| **Modulation Mode:** | GSM/GPRS: GMSK<br>EDGE: 8PSK<br>WCDMA: QPSK/16QAM<br>CDMA2000 1X:QPSK,OQPSK<br>EVDO 0:QPSK,OQPSK<br>EVDO A:QPSK,OQPSK<br>LTE: QPSK/16QAM/64QAM<br>802.11b: DSSS<br>802.11a/g/n-HT20/HT40/ac-VHT40/VHT80: OFDM<br>Bluetooth BR+EDR: GFSK, π/4-DQPSK, 8-DPSK<br>Bluetooth LE: GFSK |
| **Multi-slot Class:** | GPRS: Multi-slot Class 12; EDGE: Multi-slot Class 12; |
| **Operation Class:** | Class B |
| **Hotspot Mode:** | Support |
| **Antenna Type:** | Fixed Internal |
| **Battery:** | 2200mAh 3.8V |

**Note:** For a more detailed description, please refer to specification or user's manual supplied by the applicant and/or manufacturer.

## 2.3. Photographs of the EUT

| | |
|---|---|
| Normal Temperature (NT): | 20 ... 25 °C |
| Relative Humidity: | 30 ... 75 % |
| Air Pressure: | 980 ... 1020 hPa |

| | |
|---|---|
| Test frequency: | GSM 850MHz/1900MHz;<br>WCDMA Band II/IV/V;<br>CDMA 2000 BC0/BC1/BC10;<br>EVDO BC0/BC1/BC10;<br>FDD-LTE Band 2/4/5/7/12/13/14/25/26/66/71;<br>TDD-LTE Band 38/40/41;<br>WLAN 2.4GHz;<br>WLAN 5GHz; |

| Operation mode: | Call established |
|---|---|
| Power Level: | GSM 850 MHz Maximum output power(level 5)<br>GSM 1900MHz Maximum output power(level 0)<br>WCDMA Band II/IV/V (All Up Bits)<br>CDMA 2000 BC0/BC1/BC10(All Up Bits)<br>EVDO BC0/BC1/BC10(All Up Bits)<br>FDD-LTE Band 2/4/5/7/12/13/14/25/26/66/71(Maximum output power)<br>TDD-LTE Band 38/40/41(Maximum output power)<br>WLAN 2.4GHz (Maximum output power)<br>WLAN 5GHz (Maximum output power) |

During SAR test, EUT is in Traffic Mode (Channel Allocated) at Normal Voltage Condition. A communication link is set up with a System Simulator (SS) by air link, and a call is established.

The EUT shall use its internal transmitter. The antenna(s), battery and accessories shall be those specified by the Factory. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. If a wireless link is used, the antenna connected to the output of the base station simulator shall be placed at least 50 cm away from the handset.
The signal transmitted by the simulator to the antenna feeding point shall be lower than the output power level of the handset by at least 35 dB.

For SAR testing, EUT is in GPRS mode. In GPRS link mode, its crest factor is 2, because EUT is set in GPRS multi-slot class 12 with 4 uplink slots. In WCDMA and WI-FI mode, its crest factor is 1.

# 3. Specific Absorption Rate (SAR)

## 3.1. Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radiofield. The SAR distribution in a biological body is complicated and is usually carried out byexperimental techniques or numerical modeling. The standard recommends limits for two tiers ofgroups, occupational/controlled and general population/uncontrolled, based on a person's awarenessand ability to exercise control over his or her exposure.
Ingeneral,occupational/controlled exposurelimits are Middle than the limits for general population/uncontrolled.

## 3.2. 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)
SAR measurement can be either related to the temperature elevation in tissue by,

$$\mathbf{SAR} = \mathbf{C}\left(\frac{\boldsymbol{\delta}\mathbf{T}}{\boldsymbol{\delta}\mathbf{t}}\right)$$

Where $C$ is the specific head capacity, $\delta T$ is the temperature rise and $\delta t$ the exposure duration, or related to the electrical field in the tissue by

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

Where σ is the conductivity of the tissue, ρ is the mass density of the tissue and $|E|$ is the rmselectrical field strength.

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

# 4. RF Exposure Limits

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

| Type Exposure | Uncontrolled Environment Limit |
|---|---|
| Spatial Peak SAR (1g cube tissue for head and trunk) | 1.60W/kg |
| Spatial Peak SAR (10g cube tissue for limbs) | 4.00W/kg |
| Spatial Peak SAR (1g cube tissue for whole body) | 0.08W/kg |

**Note:**

1. This limit is according to recommendation1999/519/EC, Annex II (Basic Restrictions)
2. Occupational/Uncontrolled Environments are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure,(i.e. as a result of employment or occupation)

# 5. Applied Reference Documents

Leading reference documents for testing:

| No. | Identity | Document Title |
|---|---|---|
| 1 | 47 CFR§2.1093 | Radio Frequency Radiation Exposure Evaluation: Portable Devices |
| 2 | IEEE 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 |
| 3 | KDB 447498 D01v06 | General RF Exposure Guidance |
| 4 | KDB 248227 D01v02r02 | SAR Measurement Procedures for 802.11 Transmitters |
| 5 | KDB 865664 D01v01r04 | SAR Measurement 100 MHz to 6 GHz |
| 6 | KDB 865664 D02v01r02 | RF Exposure Reporting |
| 7 | KDB 648474 D04v01r03 | Handset SAR |
| 8 | KDB 941225 D01v03r01 | 3G SAR MEAUREMENT PROCEDURES |
| 9 | KDB 941225 D05v02r05 | SAR Evaluation Consideration for LTE Devices |
| 10 | KDB 941225 D06v02r01 | SAR Evaluation Procedures For Portable Devices With Wireless Router Capabilities |

# 6. SAR Measurement System

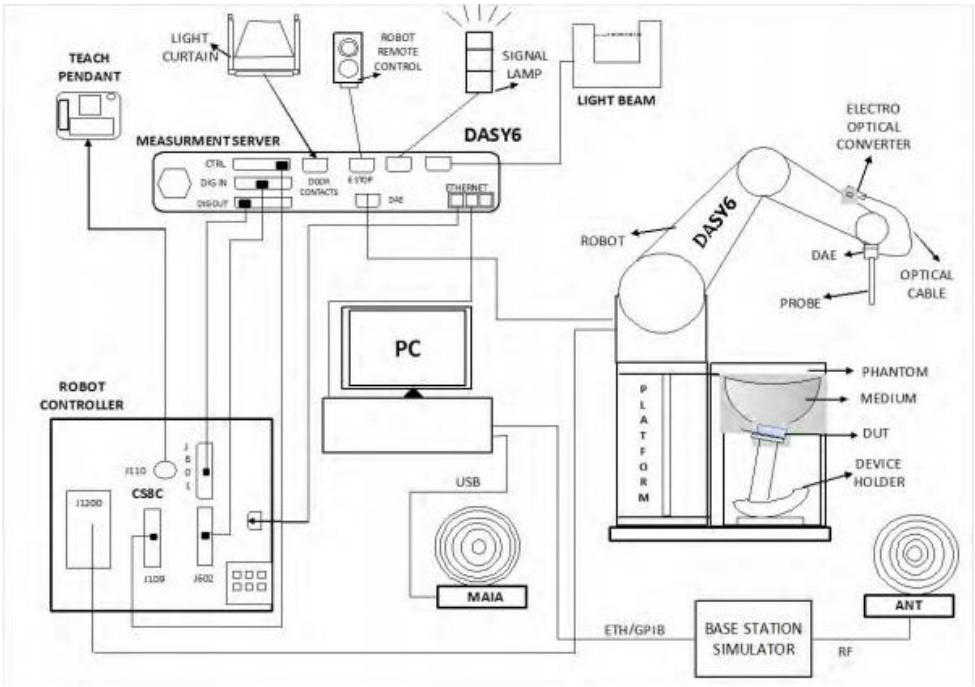



**Fig 6.1 SPEAG DASY System Configurations**

The DASY system for performance compliance tests is illustrated above graphically. This system consists of the following items:

- A standard high precision 6-axis robot (Staubli TX/RX family, with its software especially configured for SPEAG) with controller, teach pendant and software. An arm extension for accommodatingthe data acquisition electronics (DAE).
- A platform on which robot arm is mounted and phantom shells to be inserted in dedicated slots.
- 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 Win8.1/Win10 professional operating system and the cDASY6 V6.4 and

DASY5 V5.2 software. Please see 1.6 DASY6 Software Installation for detailed computer requirements.

- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

## 6.1. 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.

**E-Field ProbeSpecification**

| | |
|---|---|
| **Model** | Ex3DV4 |
| **Construction** | Symmetrical design with triangular core<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g., DGBE) |
| **Frequency** | 10 MHz to 6 GHz; Linearity: ± 0.2 dB |
| **Directivity** | ± 0.3 dB in HSL (rotation around probe axis)<br>± 0.5 dB in tissue material (rotationnormal to probe axis) |
| **Dynamic Range** | 10 μW/g to 100 mW/g; Linearity: ± 0.2 dB |
| **Dimensions** | Overall length: 330 mm (Tip: 20 mm)<br>Tip diameter: 2.5 mm (Body: 12 mm)<br>Typical distance from probe tip to dipolecenters: 1 mm |
| **Application** | High precision dosimetric measurements in any exposure scenario(e.g.,very strong gradient fields).Only probe which enables compliance testing forfrequencies up to 6 GHz with precision of better 30% |

**Fig 6.2 Photo of EX3DV4**

**E-Field Probe Calibration**

Each probe needs to be calibrated according to a dosimetric assessment procedure with accuracy better than ± 10%. The spherical isotropy shall be evaluated and within ± 0.25 dB. The sensitivity parameters (NormX, NormY, and NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested. The calibration data can be referred to appendix C of this report.

## 6.2. Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE4 or DAE3) consist 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 with a 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 mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts used for mechanical surface detection and probe collision detection.
The input impedance of both the DAE4 as well as of the DAE3 box is 200 MOhm; the inputs are symmetric and floating. Common mode rejection is above 80 dB.

**Fig 6.3 Photo of DAE**

## 6.3. Robot

The DASY6 system uses the high-precision industrial robots TX60LfromSt¨aubliSA (France). The TX robot family – the successor of the well-known RX robot family – continues to offer the features important for DASY6 applications:

• High precision (repeatability 0.02 mm)

• High reliability (industrial design)

• Low maintenance costs (virtually maintenance-free as all gears are direct drive, no belt drives)

• Jerk-free straight movements (brushless synchron motors, no stepper motors)

• Low extremely low frequency (ELF) interference (motor control fields are shielded by the closed metallic construction)

The robots are controlled by the St¨aubli CS8c robot controllers. All information regarding the use andmaintenance of the robot arm and the robot controller is provided on CDs delivered with the robot.Paper manuals are available directly from St¨aubli upon request

**Fig 6.4Robot**

## 6.4. Measurement Server

The DASY6 measurement server is based on a PC/104 CPU board with a 400 MHz intel ULVCeleron, 128 MB chip-disk and 128 MB RAM. The necessary circuits for communication with the DAE4(or DAE3) electronics box, as well as the 16-bit AD converter system for optical detection and digital I/O interface are contained on the DASY6 I/O board, which is directly connected to the PC/104 bus of the CPU board.

The measurement server performs all real-time data evaluations of field measurements and surface detection, controls robot movements, and handles safety operations.


**Fig 6.5Measurement Server**

## 6.5. Phantom

The SAM-Twin phantom (shown in frontof DASY6) is a fiberglass shell phantom with shell thickness 2 mm, except in the ear region where the thickness is increased to 6 mm. The phantom has three measurement areas:

1) Left Head
2) Right Head
3) Flat Section

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 Reference points on the phantoms (P1, P2, P3) are used to teach the absolute phantom position relative to the robot.

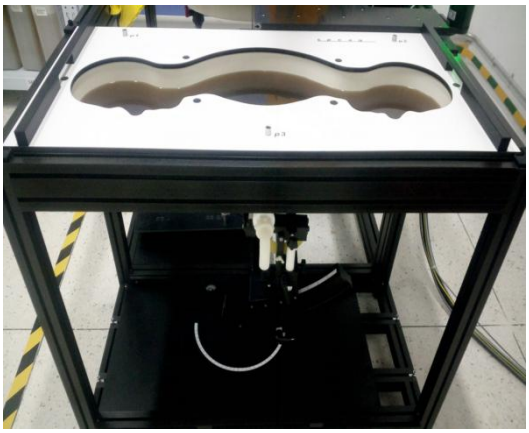


**Fig 6.6Photo of SAM Phantom**

# 7. Device Holder

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of ±0.5 mm would produce uncertainty in the SAR of ±20%. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions at which the devices must be measured are defined by the standards.

The DASY device holder is designed to cope with the different positions described in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales is the ear reference point (ERP). Thus, the device needs no repositioning when the angles are changed. The DASY device holder is constructed of low-loss polyoxymethylene (POM) material, which has the following dielectric parameters: relative permittivity $\varepsilon$ =3 and loss tangent $\delta$ =0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered


**Fig 7.1 Device Holder**

## 7.1. Data Storage and Evaluation

**Data Storage**

The DASY software stores the assessed data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all the necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files. The post-processing software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of erroneous parameter settings. For example, if a measurement has been performed with an incorrect crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be reevaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type (e.g., [V/m], [A/m], [mW/g]). Some of these units are not available in certain situations or give meaningless results, e.g., a SAR-output in a non-lose media, will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

**Data Evaluation**

The DASY post-processing software (SEMCAD) automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software.

| | | |
|---|---|---|
| **Probe parameters:** | - Sensitivity | $Norm_i$, $a_{i0}$, $a_{i1}$, $a_{i2}$ |
| | - Conversion factor | $ConvF_i$ |
| | - Diode compression point | dcpi |
| **Device parameters:** | - Frequency | f |
| | - Crest factor | cf |
| **Media parameters:** | - Conductivity | σ |
| | - Density | ρ |

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multi-meter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power.

The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \times \frac{cf}{dcp_i}$$

With Vi = compensated signal of channel i, (i = x, y, z)
Ui = input signal of channel i, (i = x, y, z)
cf = crest factor of exciting field (DASY parameter)
dcpi = diode compression point (DASY parameter)

From the compensated input signals, the primary field data for each channel can be evaluated:

$$\text{E-field Probes: } E_i = \sqrt{\frac{V_i}{Norm_i \times ConvF}}$$

$$\text{H-field Probes: } H_i = \sqrt{V_i} \times \frac{a_{i0} + a_{i1} + a_{i2} f^2}{f}$$

With $V_i$ = compensated signal of channel i, (i = x, y, z)
$Norm_i$ = sensor sensitivity of channel i, (i = x, y, z), μV/(V/m)$^2$ forE-field Probes ConvF = sensitivity enhancement in solution
$a_{ij}$ = sensor sensitivity factors for H-field probes
f = carrier frequency [GHz]
$E_i$ = electric field strength of channel i in V/m
$H_i$ = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}$$

The primary field data are used to calculate the derived field units.

$$SAR = E_{tot}^2 \times \frac{\sigma}{\rho \times 1000}$$

with SAR = local specific absorption rate in mW/g
$E_{tot}$ = total field strength in V/m
σ = conductivity in [mho/m] or [Siemens/m]
ρ = equivalent tissue density in g/cm$^3$

Note that the density is set to 1, to account for actual head tissue density rather than the density of the tissue simulating liquid.

## 7.2. Test Equipment List

| Manufacturer | Name of Equipment | Type/Model | Serial Number | Calibration | |
|---|---|---|---|---|---|
| | | | | Last Cal. | Due Date |
| SPEAG | 750MHz System Validation Kit | D750V3 | 1173 | 2018.06.21 | 2021.06.20 |
| SPEAG | 835MHz System Validation Kit | D835V2 | 4d227 | 2018.06.22 | 2021.06.21 |
| SPEAG | 1750MHz System Validation Kit | D1750V2 | 1160 | 2018.06.25 | 2021.06.24 |
| SPEAG | 1900MHz System Validation Kit | D1900V2 | 5d221 | 2018.06.22 | 2021.06.21 |
| SPEAG | 2450MHz System Validation Kit | D2450V2 | 997 | 2018.06.26 | 2021.06.25 |
| SPEAG | 2600MHz System Validation Kit | D2600V2 | 1139 | 2018.06.25 | 2021.06.24 |
| SPEAG | Dosimetric E-Field Probe | EX3DV4 | 3975 | 2020.05.20 | 2021.05.19 |

| | | | | | |
|---|---|---|---|---|---|
| SPEAG | Data Acquisition Electronics | DAE4 | 1516 | 2019.11.11 | 2021.11.10 |
| SPEAG | Dielectric Assessment KIT | DAK-3.5 | 1279 | 2019.11.03 | 2020.11.02 |
| SPEAG | SAM Twin Phantom 1 | QD 000 P40 CB | TP-1471 | NCR | NCR |
| SPEAG | SAM Twin Phantom 2 | QD 000 P40 CB | TP-1464 | NCR | NCR |
| SPEAG | Phone Positioner | N/A | N/A | NCR | NCR |
| R&S | Network Emulator | CMW500 | 124534 | 2019.04.17 | 2020.04.16 |
| Agilent | Network Analyzer | E5071B | MY42404762 | 2019.04.15 | 2020.04.14 |
| mini-circuits | Amplifier | ZHL-42W+ | 608501717 | NCR | NCR |
| mini-circuits | Amplifier | ZVE-8G+ | 754401735 | NCR | NCR |
| Agilent | Signal Generator | N5182B | MY53050509 | 2019.04.17 | 2020.04.16 |
| Agilent | Power Senor | N8482A | MY41090849 | 2020.11.23 | 2021.11.22 |
| Agilent | Power Meter | E4416A | MY45102093 | 2020.11.23 | 2021.11.22 |
| Anritsu | Power Sensor | MA2411B | N/A | 2020.11.23 | 2021.11.22 |
| Anritsu | Power Meter | NRVD | 101066 | 2020.11.23 | 2021.11.22 |
| Agilent | Dual Directional Coupler | 778D | 50422 | NA | NA |
| MCL | Attenuation1 | 351-218-010 | N/A | NA | NA |
| THERMOMETER | Thermo meter | DC-803 | N/A | 2019.11.22 | 2021.11.21 |
| N/A | Tissue Simulating Liquids | 700-6000MHz | N/A | 24H | |

**Note:**

1. The calibration certificate of DASY can be referred to appendix E of this report.
2. The Insertion Loss calibration of Dual Directional Coupler and Attenuator were characterized via the network analyzer and compensated during system check.
3. The dielectric probe kit was calibrated via the network analyzer, with the specified procedure (calibrated in pure water) and calibration kit (standard) short circuit, before the dielectric measurement. The specific procedure and calibration kit are provided by Speag.
4. In system check we need to monitor the level on the power meter, and adjust the power amplifier level to have precise power level to the dipole; the measured SAR will be normalized to 1W input power according to the ratio of1W to the input power to the dipole. For system check, the calibration of the power amplifier is deemed not critically required for correct measurement; the power meter is critical and we do have calibration for it
5. Attenuator insertion loss is calibrated by the network Analyzer, which the calibration is valid, before system check.
6. N.C.R means No Calibration Requirement.

# 8. Tissue Simulating Liquids

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15cm. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than15cm.For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than15cm, which is shown in Fig. 5.1. 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. 5.2.Thenominaldielectricvaluesofthe tissue simulating liquids in the phantom and the tolerance of 5%are listed in below table.

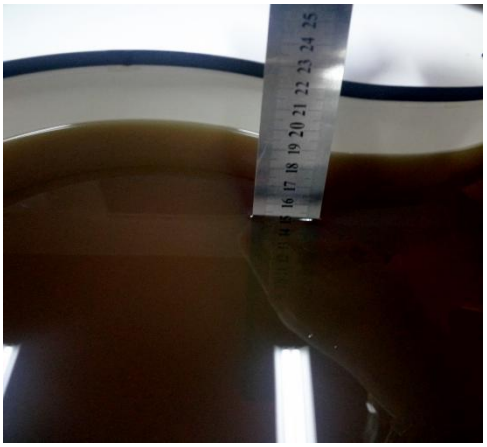


**Fig 8.1 Photo of Liquid Height for Head SAR**

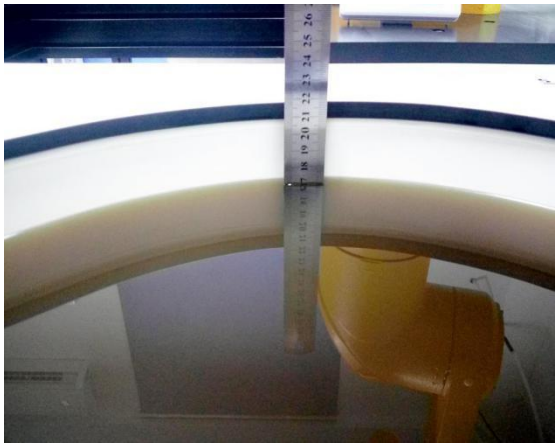


**Fig 8.2 Photo of Liquid Height for Body SAR**

The following table gives the recipes for tissue simulating liquids

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

Simulating Liquid for 5GHz, Manufactured by SPEAG

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

**Note:** Please refer to the validation results for dielectric parameters of each frequency band. The dielectric properties of the tissue simulating liquids were verified prior to the SAR evaluation using an Agilent 85033E Dielectric Probe Kit and an Agilent Network Analyzer.

**Table 1: Dielectric Performance of Tissue Simulating Liquid**

| Date | Frequency (MHz) | Tissue Type | Liquid Temp. (℃) | Conductivity (σ) | Conductivity Target (σ) | Delta (σ) (%) | Limit (%) |
|---|---|---|---|---|---|---|---|
| 2020.10.17 | 750 | HSL | 22.50 | 0.93 | 0.89 | 4.38 | ±5 |
| 2020.10.18 | 835 | HSL | 21.40 | 0.92 | 0.9 | 1.96 | ±5 |
| 2020.10.19 | 835 | HSL | 22.40 | 0.93 | 0.9 | 2.93 | ±5 |
| 2020.10.20 | 1750 | HSL | 21.73 | 1.33 | 1.4 | -4.70 | ±5 |
| 2020.10.21 | 1900 | HSL | 21.54 | 1.35 | 1.4 | -3.79 | ±5 |
| 2020.10.22 | 1900 | HSL | 21.68 | 1.40 | 1.4 | -0.33 | ±5 |
| 2020.10.23 | 2450 | HSL | 21.54 | 1.81 | 1.8 | 0.39 | ±5 |
| 2020.10.24 | 2600 | HSL | 21.22 | 1.94 | 1.96 | -1.05 | ±5 |
| 2020.10.25 | 5250 | HSL | 21.39 | 4.71 | 4.71 | -0.05 | ±5 |
| 2020.10.26 | 5750 | HSL | 21.90 | 5.37 | 5.22 | 2.93 | ±5 |

| Date | Frequency (MHz) | Tissue Type | Liquid Temp. (℃) | Permittivity ($\varepsilon_r$) | Permittivity Target ($\varepsilon_r$) | Delta ($\varepsilon_r$) (%) | Limit (%) |
|---|---|---|---|---|---|---|---|
| 2020.10.17 | 750 | HSL | 22.50 | 42.14 | 41.9 | 0.56 | ±5 |
| 2020.10.18 | 835 | HSL | 21.40 | 40.39 | 41.5 | -2.67 | ±5 |
| 2020.10.19 | 835 | HSL | 22.40 | 40.58 | 41.5 | -2.22 | ±5 |
| 2020.10.20 | 1750 | HSL | 21.73 | 38.84 | 40 | -2.89 | ±5 |
| 2020.10.21 | 1900 | HSL | 21.54 | 38.38 | 40 | -4.05 | ±5 |
| 2020.10.22 | 1900 | HSL | 21.68 | 41.91 | 40 | 4.77 | ±5 |
| 2020.10.23 | 2450 | HSL | 21.54 | 38.84 | 39.2 | -0.93 | ±5 |
| 2020.10.24 | 2600 | HSL | 21.22 | 38.99 | 39 | -0.04 | ±5 |
| 2020.10.25 | 5250 | HSL | 21.39 | 34.60 | 35.95 | -3.75 | ±5 |
| 2020.10.26 | 5750 | HSL | 21.90 | 35.94 | 35.35 | 1.67 | ±5 |

# 9. SAR System Verification

Each DASY system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY software, enable the user to conduct the system performance check and system validation. System validation kit includes a dipole, tripod holder to fix it underneath the flat phantom and a corresponding distance holder.

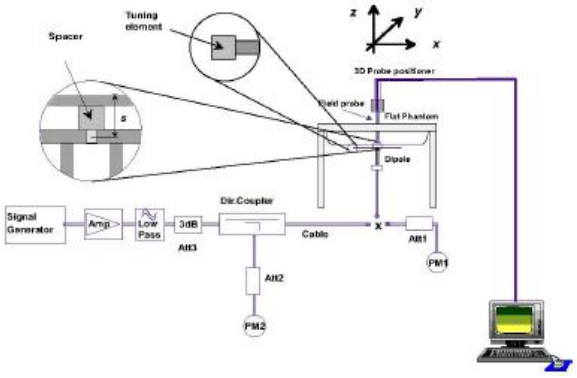
## 9.1. Purpose of System Performance check

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

## 9.2. System Setup

The output power on dipole port must be calibrated to 24 dBm (250 mW) before dipole is connected.
In the simplified setup for system evaluation, the DUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave which comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The system check verifies that the system operates within its specifications. It is performed daily or before every SAR measurement. The system check uses normal SAR measurements in the flat section of the phantom with a matched dipole at a specified distance. The system verification setup is shown as below.

**Fig 9.1 Photo of Dipole Setup Fig**




**9.2 System Setup for System Evaluation**

## 9.3. Validation Results

After system check testing, the SAR result will be normalized to 1W forward input power and compared with the reference SAR value derived from validation dipole certificate report. The deviation of system check should be within 10 %.

**<Validation Setup>**

| Frequency (MHz)2 | Tissue Type | Input Power (mW) | Dipole S/N | Probe S/N | DAE S/N |
|---|---|---|---|---|---|
| 750 | HSL | 250 | D750V3- | 3975 | 1516 |
| 835 | HSL | 250 | D835V2- | 3975 | 1516 |
| 1750 | HSL | 250 | D1750V2 | 3975 | 1516 |
| 1900 | HSL | 250 | D1900V2 | 3975 | 1516 |
| 2450 | HSL | 250 | D2450V2 | 3975 | 1516 |
| 2600 | HSL | 250 | D2600V2- | 3975 | 1516 |
| 5250 | HSL | 100 | D5GHzV2-1176 | 3975 | 1516 |
| 5750 | HSL | 100 | D5GHzV2-1176 | 3975 | 1516 |

**<1g SAR>**

| Date | Frequency (MHz) | Tissue Type | Input Power (mW) | Measured 1g SAR (W/kg) | Targeted 1g SAR (W/kg) | Normalized 1g SAR (W/kg) | Deviation (%) |
|---|---|---|---|---|---|---|---|
| 2020.10.17 | 750 | HSL | 250 | 2.01 | 8.26 | 8.04 | -2.66 |
| 2020.10.18 | 835 | HSL | 250 | 2.54 | 9.34 | 10.16 | 8.78 |
| 2020.10.19 | 835 | HSL | 250 | 2.55 | 9.34 | 10.2 | 9.21 |
| 2020.10.20 | 1750 | HSL | 250 | 9 | 37.10 | 36 | -2.96 |
| 2020.10.21 | 1900 | HSL | 250 | 9.2 | 39.50 | 36.8 | -6.84 |
| 2020.10.22 | 1900 | HSL | 250 | 9.53 | 39.50 | 38.12 | -3.49 |
| 2020.10.23 | 2450 | HSL | 250 | 12.8 | 52.90 | 51.2 | -3.21 |
| 2020.10.24 | 2600 | HSL | 250 | 13.5 | 54.00 | 54 | 0.00 |
| 2020.10.25 | 5250 | HSL | 100 | 7.94 | 78.90 | 79.4 | 0.63 |
| 2020.10.26 | 5750 | HSL | 100 | 8.32 | 80.00 | 83.2 | 4.00 |

**<10g SAR>**

| Date | Frequency (MHz)2 | Tissue Type | Input Power (mW) | Measured 10g SAR (W/kg) | Targeted 10g SAR (W/kg)3 | Normalized 10g SAR (W/kg) | Deviation (%) |
|---|---|---|---|---|---|---|---|
| 2020.10.17 | 750 | HSL | 250 | 1.31 | 5.45 | 5.24 | -3.85 |
| 2020.10.18 | 835 | HSL | 250 | 1.66 | 6.07 | 6.64 | 9.39 |
| 2020.10.19 | 835 | HSL | 250 | 1.66 | 6.07 | 6.64 | 9.39 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2020.10.20 | 1750 | HSL | 250 | 4.82 | 20.00 | 19.28 | -3.60 |
| 2020.10.21 | 1900 | HSL | 250 | 4.83 | 20.60 | 19.32 | -6.21 |
| 2020.10.22 | 1900 | HSL | 250 | 5 | 20.60 | 20 | -2.91 |
| 2020.10.23 | 2450 | HSL | 250 | 5.95 | 24.90 | 23.8 | -4.42 |
| 2020.10.24 | 2600 | HSL | 250 | 6.12 | 24.50 | 24.48 | -0.08 |
| 2020.10.25 | 5250 | HSL | 100 | 2.27 | 22.50 | 22.7 | 0.89 |
| 2020.10.26 | 5750 | HSL | 100 | 2.33 | 22.60 | 23.3 | 3.10 |

**Note:** System checks the specific test data please see Annex C

# 10. EUT Testing Position

This EUT was tested in six different positions. They are right cheek/right tilted/left cheek/left tilted for head, Front/Back of the EUT with phantom 10 mm gap, as illustrated below, please refer to Appendix B for the test setup photos.

## 10.1. Handset Reference Points

The vertical centreline passes through two points on the front side of the handset – the midpoint of the width $w_t$ of the handset at the level of the acoustic output, and the midpoint of the width $w_b$ of the bottom of the handset.

The horizontal line is perpendicular to the vertical centreline and passes the center of the acoustic output. The horizontal line is also tangential to the handset at point A.

The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centreline is not necessarily parallel to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.


**Fig. 10.1 Illustration for Cheek Position**

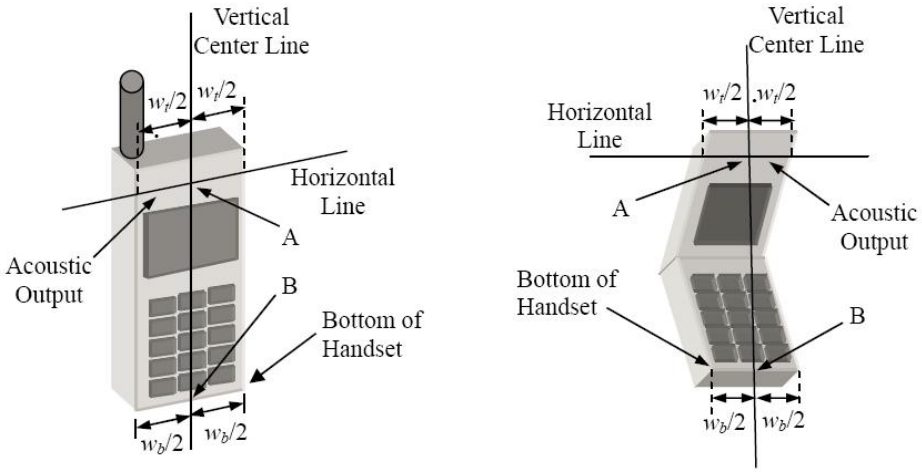



**Fig. 10.2 Illustration for Handset Vertical and Horizontal Reference Lines**

## 10.2. Positioning for Cheek / Touch

To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the three ear and mouth reference point (M: Mouth, RE: Right Ear and LE: Left Ear) and align the center of the ear piece with the line RE-LE.

To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost (see below figure)

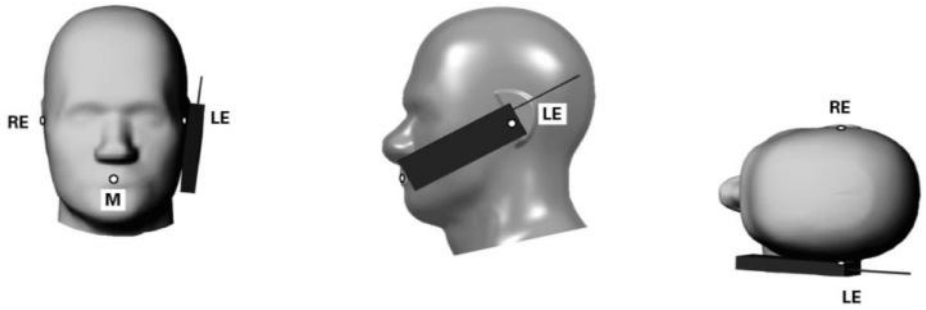



**Fig 10.3 IllustrationforCheekPosition**

## 10.3. Positioning for Ear / 15º Tilt

To position the device in the “cheek” position described above.

While maintaining the device the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost (see figure below).

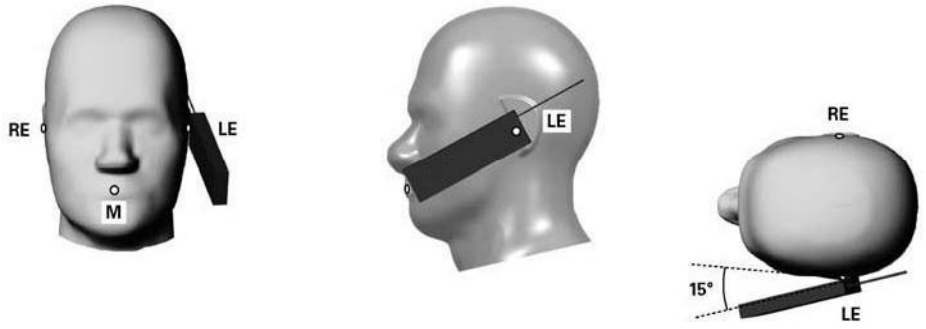



**Fig 10.4 Illustration for Tilted Position**

## 10.4. SAR Evaluations near the Mouth/Jaw Regions of the SAM Phantom

Antennas located near the bottom of a phone may require SAR measurements around the mouth and jaw regions of the SAM head phantom. This typically applies to clam-shell style phones that are generally longer in the unfolded normal use positions or to certain older style long rectangular phones.

Under these circumstances, the following procedures apply, adopted from the FCC guidance on SAR handsets document FCC KDB Publication 648474 D04v01r03. The SAR required in these regions of SAM should be measured using a flat phantom. The phone should be positioned with a separation distance of 4 mm between the ear reference point (ERP) and the outer surface of the flat phantom shell. While maintaining this distance at the ERP location, the low (bottom) edge of the phone should be lowered from the phantom to establish the same separation distance between the peak SAR locations identified by the truncated partial SAR distribution measured with the SAM phantom. The distance from the peak SAR location to the phone is determined by the straight line passing perpendicularly through the phantom surface. When it is not feasible to maintain 4 mm separation at the ERP while also establishing the required separation at the peak SAR location, the top edge of the phone will be allowed to touch the phantom with a separation < 4 mm at the ERP. The phone should not be tilted to the left or right while placed in this inclined position to the flat phantom.

## 10.5. Body-worn Configurations

The body-worn configurations shall be tested with the supplied accessories (belt-clips, holsters, etc.) attached to the device in normal use configuration.

For body-worn and other configurations a flat phantom shall be used which is comprised of material with electrical properties similar to the corresponding tissues.

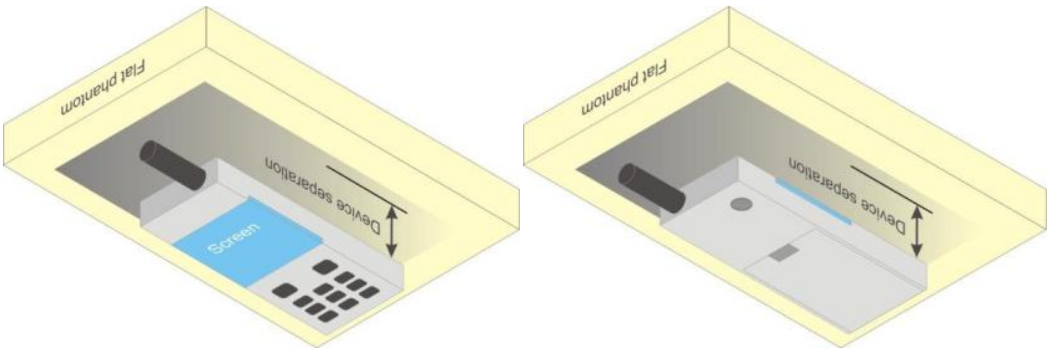



**Fig 10.5 Illustration for Body-Worn Position**

## 10.6. Hotspot Mode Exposure Position Conditions

For handsets that support hotspot mode operations, with wireless router capabilities and various web browsing functions, the relevant hand and body exposure conditions are tested according to the hotspot SAR procedures in KDB 941225. A test separation distance of 10 mm is required between the phantom and all surfaces and edges with a transmitting antenna located within 25 mm from that surface or edge. When the form factor of a handset is smaller than 9 cm x 5 cm, a test separation distance of 5 mm (instead of 10 mm) is required for testing hotspot mode. When the separation distance required for body-worn accessory testing is larger than or equal to that tested for hotspot mode, in the same wireless mode and for the same surface of the phone, the hotspot mode SAR data may be used to support body-worn accessory SAR compliance for that particular configuration (surface).

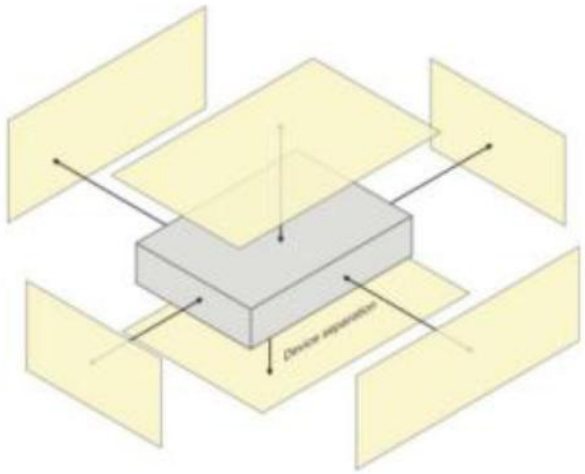


**Fig 10.6 Illustrationfor Hotspot Position**

# 11. 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

## 11.1. 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 scAnt.

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

## 11.2. 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.

## 11.3. Area Scan Procedures

Area scans are defined prior to the measurement process being executed with a user defined variable spacing between each measurement point (integral) allowing low uncertainty measurements to be conducted. Scans defined for FCC applications utilize a10mm² step integral, with 1mm interpolation used to locate the peak SAR area used for zoom scan assessments.

When an Area Scan has measured all reachable points, it computes the field maxima founding the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE1528-2003, EN 50361 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan).

## 11.4. Zoom Scan Procedures

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. A density of 1000 kg/m³ is used to represent the head and body tissue density and not the phantom liquid density, in order to be consistent with the definition of the liquid dielectric properties, i.e. the side length of the 1g cube is 10mm, with the side length of the 10 g cube 21,5mm.The zoom scan integer steps can be user defined so as to reduce uncertainty, but normal practice for typical test applications utilize a physical step of 5x5x7 (8mmx8mmx5mm) providing a volume of 32mm in the X & Y axis, and 30mm in the Z axis.

## 11.5. SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Sheppard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5 mm.

## 11.6. Power Drift Monitoring

All SAR testing is under the DUT 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 DUT 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 drift more than 5%, the SAR will be retested.

# 12. SAR Test Procedure

## 12.1. General scan Requirements

Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Boththe probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1-g SAR. Tolerances ofthe post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std 1528-2013.

| | | | ≤ 3 GHz | > 3 GHz |
|---|---|---|---|---|
| Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface | | | 5 mm ± 1 mm | ½·δ·ln(2) mm ± 0.5 mm |
| Maximum probe angle from probe axis to phantom surface normal at the measurement location | | | 30° ± 1° | 20° ± 1° |
| Maximum area scan spatial resolution: $\Delta x_{Area}$, $\Delta y_{Area}$ | | | ≤ 2 GHz: ≤ 15 mm<br>2 – 3 GHz: ≤ 12 mm | 3 – 4 GHz: ≤ 12 mm<br>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. | |
| Maximum zoom scan spatial resolution: $\Delta x_{Zoom}$, $\Delta y_{Zoom}$ | | | ≤ 2 GHz: ≤ 8 mm<br>2 – 3 GHz: ≤ 5 mm* | 3 – 4 GHz: ≤ 5 mm*<br>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<br>4 – 5 GHz: ≤ 3 mm<br>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<br>4 – 5 GHz: ≤ 2.5 mm<br>5 – 6 GHz: ≤ 2 mm |
| | | $\Delta z_{Zoom}(n>1)$: between subsequent points | ≤ 1.5·$\Delta z_{Zoom}(n-1)$ mm | |
| Minimum zoom scan volume | x, y, z | | ≥ 30 mm | 3 – 4 GHz: ≥ 28 mm<br>4 – 5 GHz: ≥ 25 mm<br>5 – 6 GHz: ≥ 22 mm |

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB Publication 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.

## 12.2. Test procedure

The Following steps are used for each test position

1. Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface.
2. Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible power drift.
3. Measurement of the SAR distribution with a grid of 8 to 16mm * 8 to16 mm and a constant distance to the inner surface of the phantom. Since the sensors cannot directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme.
4. Around this point, a cube of 30 * 30 * 30 mm or 32 * 32 * 32 mm is assessed by measuring 5 or 8 * 5 or 8*4 or 5 mm. With these data, the peak spatial-average SAR value can be calculated.

## 12.3. Description of interpolation/extrapolation scheme

The local SAR inside the phantom is measured using small dipole sensing elements inside a probe body. The probe tip must not be in contact with the phantom surface in order to minimize measurements errors, but the highest local SAR will occur at the surface of the phantom.

An extrapolation is using to determinate this highest local SAR values. The extrapolation is based on a fourth-order least-square polynomial fit of measured data. The local SAR value is then extrapolated from the liquid surface with a 1mm step.

The measurements have to be performed over a limited time (due to the duration of the battery) so the step of measurement is high. It could vary between 5 and 8 mm. To obtain an accurate assessment of the maximum SAR averaged over 10 grams and 1 gram requires a very fine resolution in the three dimensional scanned data array.

## 12.4. Wireless Router

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

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

# 13. SAR Test Configuration

**<GSM Mode>**

A summary of these settings are illustrated below:
For GSM850frequency band, the power control is set to 5 for GSM/GPRS mode (GSMK-CS1) and set to 8 for EDGE mode (MCS5); For GSM1900frequency band, the power control is set to 0 for GSM/GPRS mode (GSMK-CS1) and set to 2 for EDGE mode (MCS5)

1. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (4Tx slots) for GSM850/GSM1900 is considered as the primary mode.
3. Other configurations of GSM / GPRS / EDGE are considered as secondary modes.

**Timeslot consignations:**

**Remark:**

1. The frame-averaged power is linearly reported the maximum burst averaged power over 8 time slots. The calculated method are shown as below:
   The duty cycle "x" of different time slots as below:
   1 TX slot is 1/8, 2 TX slots is 2/8, 3 TX slots is 3/8 and 4 TX slots is 4/8
   Based on the calculation formula:
   Frame-averaged power = Burst averaged power + 10 1og (x)
   So,
   Frame-averaged power (1 TX slot) = Burst averaged power (1 TX slot)– 9.03
   Frame-averaged power (2 TX slots) = Burst averaged power (2 TX slots)– 6.02
   Frame-averaged power (3 TX slots) = Burst averaged power (3 TX slots)– 4.26
   Frame-averaged power (4 TX slots) = Burst averaged power (4 TX slots) – 3.01
2. CS1 coding scheme was used in GPRS conducted power measurements and SAR testing, MCS5 coding scheme was used in EGPRS conducted power measurements and SAR testing (if necessary).

| No. of Slots: | Slot 1 | Slot 2 | Slot 3 | Slot 4 |
|---|---|---|---|---|
| Slot Consignation: | 1Up4Down | 2Up3Down | 3Up2Down | 4Up1Down |
| Duty Cycle: | 1:8.3 | 1:4.15 | 1:2.77 | 1:2.08 |
| Correct Factor: | -9.03dB | -6.02dB | -4.26dB | -3.01dB |

**<WCDMA Mode>**

Summary of UMTS conducted power measurement:

1. The 3G SAR test reductionprocedure is applied, when the maximum output power and tune-up tolerance specified for production units in asecondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondarymode.
2. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
3. The procedures in KDB 941225 D01v03r01 are applied for 3GPP Rel. 6 HSPA to configure the device in the requiredsub-test mode(s) to determine SAR test exclusion.
4. For HSPA+ devices supporting 16 QAM in the uplink, power measurements procedure is according to theconfigurations in Table C.11.1.4 of 3GPP TS 34.121-1.
5. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA / HSPA+ is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA / HSPA+ to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA / HSPA+) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+.
6. A fixed level power reduction is applied for WCDMABand II when handset open Hotspot mode, the power reduction triggered.

**HSDPA Setup Configuration:**

| Sub-test | $\beta_c$ | $\beta_d$ | $\beta_d$ (SF) | $\beta_c/\beta_d$ | $\beta_{hs}$ (1) | CM (dB) (2) |
|---|---|---|---|---|---|---|
| 1 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 0.0 |
| 2 | 12/15 (3) | 15/15 (3) | 64 | 12/15 (3) | 24/15 | 1.0 |
| 3 | 15/15 | 8/15 | 64 | 15/8 | 30/15 | 1.5 |
| 4 | 15/15 | 4/15 | 64 | 15/4 | 30/15 | 1.5 |

Note 1: $\Delta_{ACK}$, $\Delta_{NACK}$ and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$
Note 2: CM = 1 for $\beta_c/\beta_d$ =12/15, $\beta_{hs}/\beta_c$=24/15.
Note 3: For subtest 2 the $\beta_c/\beta_d$ ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to $\beta_c$ = 11/15 and $\beta_d$ = 15/15.

**HSUPA Setup Configuration:**

| Sub-test | $\beta_c$ | $\beta_d$ | $\beta_d$ (SF) | $\beta_c/\beta_d$ | $\beta_{hs}$(1) | $\beta_{ec}$ | $\beta_{ed}$ | $\beta_{ed}$ (SF) | $\beta_{ed}$ (codes) | CM(2) (dB) | MPR (dB) | AG(4) Index | E-TFCI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11/15(3) | 15/15(3) | 64 | 11/15(3) | 22/15 | 209/225 | 1039/225 | 4 | 1 | 1.0 | 0.0 | 20 | 75 |
| 2 | 6/15 | 15/15 | 64 | 6/15 | 12/15 | 12/15 | 94/75 | 4 | 1 | 3.0 | 2.0 | 12 | 67 |
| 3 | 15/15 | 9/15 | 64 | 15/9 | 30/15 | 30/15 | $\beta_{ed1}$: 47/15<br>$\beta_{ed2}$: 47/15 | 4 | 2 | 2.0 | 1.0 | 15 | 92 |
| 4 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 2/15 | 56/75 | 4 | 1 | 3.0 | 2.0 | 17 | 71 |
| 5 | 15/15(4) | 15/15(4) | 64 | 15/15(4) | 30/15 | 24/15 | 134/15 | 4 | 1 | 1.0 | 0.0 | 21 | 81 |

Note 1: $\Delta_{ACK}$, $\Delta_{NACK}$ and $\Delta_{CQI}$ = 8 ⇔ $A_{hs} = \beta_{hs}/\beta_c$ = 30/15 ⇔ $\beta_{hs}$= 30/15 *$\beta_c$.
Note 2: CM = 1 for $\beta_c/\beta_d$ =12/15, $\beta_{hs}/\beta_c$=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.
Note 3: For subtest 1 the $\beta_c/\beta_d$ ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to $\beta_c$ = 10/15 and $\beta_d$ = 15/15.
Note 4: For subtest 5 the $\beta_c/\beta_d$ ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to $\beta_c$ = 14/15 and $\beta_d$ = 15/15.
Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.
Note 6: $\beta_{ed}$ cannot be set directly; it is set by Absolute Grant Value.

**HSPA+ 3GPP release 7 (uplink category 7) 16QAM, Setup Configuration:**

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

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

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

**<LTE Mode>**

**LTE Target MPR level**

The device implements maximum power reduction per 3GPP 36.101 requirements where the MPR target is as below table. The MPR settings are implemented configured into firmware and cannot be disabled by the end user or LTE carrier network.

| Modulation | Channel bandwidth / Transmission bandwidth configuration [RB] | | | | | | MPR | 3GPP |
|---|---|---|---|---|---|---|---|---|
| | 1.4 MHz | 3.0 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz | Target (dB) | MPR (dB) |
| QPSK | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | 1 | ≤ 1 |
| 16 QAM | ≤ 5 | ≤ 4 | ≤ 8 | ≤ 12 | ≤ 16 | ≤ 18 | 1 | ≤ 1 |
| 16 QAM | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | 2 | ≤ 2 |

**Note:** The measurement result showed some difference from the target MPR level, due to expected 0.5dBmeasurement tolerance

## LTE Bands

| LTE Bands | Channel bandwidth / Transmission bandwidth configuration [RB] | | | | | |
|---|---|---|---|---|---|---|
| | 1.4 MHz | 3.0 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz |
| 2 | v | v | v | v | v | v |
| 4 | v | v | v | v | v | v |
| 5 | v | v | v | v | N/A | N/A |
| 13 | v | v | v | v | N/A | N/A |

**Note:**

1. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and powermeasurements, spectrum plots for each RB allocation and offset configuration is not required.
2. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RBallocation, using the RB offset and required test channel combination with the highest maximum output power for RBoffsets at the upper edge, middle and lower edge of each required test channel.
3. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
4. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximumoutput power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations andthe highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highestoutput power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also betested.
5. Per KDB 941225 D05v02r05, 16QAM/64QAM output power for each RB allocation configuration is > not ½ dB higherthan the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
6. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ Dbhigher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supportedbandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
7. For LTE B4 / B5 / B7 / B17 the maximum bandwidth does not support three non-overlapping channels, per KDB941225 D05v02r05, when a device supports overlapping channelassignment in a channel bandwidth configuration,the middle channel of the group of overlapping channels should be selected for testing.
8. LTE band 2 / 12 SAR test was covered by Band 25 / 17; according to April 2015 TCB workshop, SAR test foroverlapping LTE bands can be reduced if
   a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to

qualify for the SARtest exclusion.

b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the largerband.

9. According to 2017 TCB workshop, for 64 QAM and 16 QAM should be verified by checking the signal constellation witha call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signalmodulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >>constellation" mode of the device connect to the CMW500 base station, therefore, the device 64QAM and 16QAMsignal modulation are correct.Identify if Maximum Power Reduction (MPR) is optional or mandatory, i.e. built-in by design:only mandatory MPR may be considered during SAR testing, when the maximum output poweris permanently limited by the MPR implemented within the UE; and only for the applicable RB (resource block) configurations specified in LTE standards: b) A-MPR (additional MPR) must be disabled.
10. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximumtune-up tolerance.

    a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum ratedpower 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 scalingfactor which is equal to "1/(duty cycle)"

    c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor

    d. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor

    e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoreticalduty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefixin uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result.The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
11. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of afrequency 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
12. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measuredSAR is ≥0.8W/kg.
13. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected tothe handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.

**<WLAN 2.4GHz>**

1. SAR is measured for 2.4 GHz 802.11b DSSS using either the fixed test position or, when applicable,the initial test position procedure. SAR test reduction is determined according to the following:
   1) When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS inthat exposure configuration.
   2) When the reported SAR is > 0.8 W/kg, SAR is required for that position using the nexthighest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR isrequired for the third channel; i.e., all channels require testing.
2. 2.4 GHz 802.11 g/n OFDM are additionally evaluated for SAR if the highest reported SAR for 802.11b, adjusted by the ratio of the OFDM to DSSS specified maximum output power, is > 1.2 W/kg.When SAR is required for OFDM modes in 2.4 GHz band, the Initial Test Configuration Proceduresshould be followed.
3. For held-to-ear and hotspot operations, the initial test position procedures were applied. The testposition with the highest extrapolated peak SAR will be used as the initial test position. Whenreported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining testpositions was required. Otherwise, SAR is evaluated at the subsequent highest peak SARpositions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured.
4. Justification for test configurations for WLAN per KDB Publication 248227 D02DR02-41929 for 2.4 GHz WI-FI single transmission chain operations, the highest measured maximum outputpower channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSSSAR.
5. Per KDB 248227 D01v02r02, In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements.SAR is not required for the following 2.4 GHz OFDM conditions:
   1) When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.
   2) When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

**<WLAN 5GHz>**

**A)U-NII-1 and U-NII-2A Bands**

For devices that operate in only one of the U-NII-1 and U-NII-2A bands, the normally required SAR procedures for OFDM configurations are applied. For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following：

1) When the same maximum output power is specified for both bands, begin SAR measurement in U- NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test

configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, both bands are tested independently for SAR.
2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, both bands are tested independently for SAR.
3)The two U-NII bands may be aggregated to support a 160 MHz channel on channel number 50. Without additional testing, the maximum output power for this is limited to the lower of the maximum output power certified for the two bands. When SAR measurement is required for at least one of the bands and the highest reported SAR adjusted by the ratio of specified maximum output power of aggregated to standalone band is > 1.2 W/kg, SAR is required for the 160 MHz channel. This procedure does not apply to an aggregated band with maximum output higher than the standalone band(s); the aggregated band must be tested independently for SAR. SAR is not required when the 160 MHz channel is operating at a reduced maximum power and also qualifies for SAR test exclusion.

**B)U-NII-2C and U-NII-3 Bands**

The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. when Terminal Doppler Weather Radar (TDWR) restriction applies, all channels that operate at 5.60 – 5.65 GHz must be included to apply the SAR test reduction and measurement procedures. When the same transmitter and antenna(s) are used for U-NII-2C band and U-NII-3 band or 5.8 GHz band of §15.247, the bands may be aggregated to enable additional channels with 20, 40 or 80 MHz bandwidth to span across the band gap, as illustrated in Appendix B. The maximum output power for the additional band gap channels is limited to the lower of those certified for the bands. Unless band gap channels are permanently disabled, they must be considered for SAR testing. The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. To maintain SAR measurement accuracy and to facilitate test reduction, the channels in U-NII-2C band above 5.65 GHz may be grouped with the 5.8 GHz channels in U-NII-3 or §15.247 band to enable two SAR probe calibration frequency points to cover the bands, including the band gap channels. When band gap channels are supported and the bands are not aggregated for SAR testing, band gap channels must be considered independently in each band according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

**C)OFDM Transmission Mode SAR Test Configuration and Channel Selection Requirements**

The initial test configuration for 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test

configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple configurations in a frequency band have the same specified maximum output power, the initial test configuration is determined according to the following steps applied sequentially.

1)The largest channel bandwidth configuration is selected among the multiple configurations with thesame specified maximum output power.

2)If multiple configurations have the same specified maximum output power and largest channelbandwidth, the lowest order modulation among the largest channel bandwidth configurations is selected.

3)If multiple configurations have the same specified maximum output power, largest channel bandwidthand lowest order modulation, the lowest data rate configuration among these configurations is selected.

4)When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power,largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n. After an initial test configuration is determined, if multiple test channels have the same measured maximum output power, the channel chosen for SAR measurement is determined according to the following. These channel selection procedures apply to both the initial test configuration and subsequent test configuration(s), with respect to the default power measurement procedures or additional power measurements required for further SAR test reduction. The same procedures also apply to subsequent highest output power channel(s) selection.

1)The channel closest to mid-band frequency is selected for SAR measurement.

2)For channels with equal separation from mid-band frequency; for example, high and low channels ortwo mid-band channels, the higher frequency (number) channel is selected for SAR measurement.

**D)SAR Test Requirements for OFDM configurations**

When SAR measurement is required for 802.11 a/n/ac OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. When the sametransmitter and antenna(s) are used for U-NII-1 and U-NII-2A bands, additional SAR test reduction Vapplies. When band gap channels between U-NII-2C band and 5.8 GHz U-NII-3 or §15.247 bandare supported, the highest maximum output power transmission mode configuration and maximumoutput power channel across the bands must be used to determine SAR test reduction, accordingto the initial test configuration and subsequent test configuration requirements. In applying theinitial test configuration and subsequent test configuration procedures, the 802.11 transmissionconfiguration with the highest specified maximum output power and the channel within a testconfiguration with the highest measured maximum output power should be clearly distinguished toapply the procedures.

# 14. Conducted RF Output Power

## GSM Conducted Power:

| GSM850 | Burst Average Power (dBm) | | | Tune-up | Frame-Average Power (dBm) | | | Tune-up |
|---|---|---|---|---|---|---|---|---|
| TX Channel | 128 | 190 | 251 | Limit | 128 | 190 | 251 | Limit |
| Frequency (MHz) | 824.2 | 836.6 | 848.8 | (dBm) | 824.2 | 836.6 | 848.8 | (dBm) |
| GSM 1 Tx slot | 31.10 | 31.40 | 31.42 | 31.50 | 22.10 | 22.40 | 22.42 | 22.50 |
| GPRS 1 Tx slot | 31.50 | 31.76 | 31.75 | 32.00 | 22.50 | 22.76 | 22.75 | 23.00 |
| GPRS 2 Tx slots | 30.93 | 31.04 | 30.95 | 31.50 | 24.93 | 25.04 | 24.95 | 25.50 |
| GPRS 3 Tx slots | 29.95 | 30.05 | 29.93 | 30.50 | 25.69 | 25.79 | 25.67 | 26.24 |
| GPRS 4 Tx slots | 29.02 | 29.08 | 28.94 | 29.50 | 26.02 | **26.08** | 25.94 | 26.50 |
| EDGE 1 Tx slot | 24.27 | 24.86 | 24.16 | 25.00 | 15.27 | 15.86 | 15.16 | 16.00 |
| EDGE 2 Tx slots | 24.50 | 23.90 | 23.72 | 25.00 | 18.50 | 17.90 | 17.72 | 19.00 |
| EDGE 3 Tx slots | 23.91 | 23.09 | 22.58 | 24.00 | 19.65 | 18.83 | 18.32 | 19.74 |
| EDGE 4 Tx slots | 22.60 | 22.12 | 21.59 | 23.00 | 19.60 | 19.12 | 18.59 | 20.00 |

| GSM1900 | Burst Average Power (dBm) | | | Tune-up | Frame-Average Power (dBm) | | | Tune-up |
|---|---|---|---|---|---|---|---|---|
| TX Channel | 512 | 661 | 810 | Limit | 512 | 661 | 810 | Limit |
| Frequency (MHz) | 1850.2 | 1880 | 1909.8 | (dBm) | 1850.2 | 1880 | 1909.8 | (dBm) |
| GSM 1 Tx slot | 28.97 | 29.72 | 29.86 | 30.00 | 19.97 | 20.72 | 20.86 | 21.00 |
| GPRS 1 Tx slot | 28.79 | 29.57 | 29.70 | 30.00 | 19.79 | 20.57 | 20.70 | 21.00 |
| GPRS 2 Tx slots | 28.76 | 29.36 | 29.45 | 29.50 | 22.76 | 23.36 | 23.45 | 23.50 |
| GPRS 3 Tx slots | 28.18 | 28.92 | 29.08 | 29.50 | 23.92 | 24.66 | 24.82 | 25.24 |
| GPRS 4 Tx slots | 27.72 | 28.51 | 28.65 | 29.00 | 24.72 | 25.51 | **25.65** | 26.00 |
| EDGE 1 Tx slot | 24.27 | 23.98 | 24.73 | 25.00 | 15.27 | 14.98 | 15.73 | 16.00 |
| EDGE 2 Tx slots | 23.61 | 24.53 | 24.53 | 25.00 | 17.61 | 18.53 | 18.53 | 19.00 |
| EDGE 3 Tx slots | 23.53 | 23.92 | 24.24 | 24.50 | 19.27 | 19.66 | 19.98 | 20.24 |
| EDGE 4 Tx slots | 23.01 | 23.40 | 23.53 | 24.00 | 20.01 | 20.40 | 20.53 | 21.00 |

Timeslot consignations:

| No. of Slots | Slot 1 | Slot 2 | Slot 3 | Slot 4 |
|---|---|---|---|---|
| Slot Consignation | 1Up4Down | 2Up3Down | 3Up2Down | 4Up1Down |
| Duty Cycle | 1:8.3 | 1:4.15 | 1:2.77 | 1:2.08 |
| Correct Factor | -9.03dB | -6.02dB | -4.26dB | -3.01dB |

## WCDMA Conducted Power:

| Band | WCDMA II | | | Tune-up Limit (dBm) | WCDMA IV | | | Tune-up Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| TX Channel | 9262 | 9400 | 9538 | | 1312 | 1413 | 1513 | |
| Rx Channel | 9662 | 9800 | 9938 | | 1537 | 1638 | 1738 | |
| Frequency (MHz) | 1852.4 | 1880 | 1907.6 | | 1712.4 | 1732.6 | 1752.6 | |
| AMR 12.2Kbps | 24.93 | 25.02 | 25.09 | 25.50 | 23.99 | 24.08 | 24.08 | 24.50 |
| RMC 12.2Kbps | 25.01 | **25.13** | 25.11 | **25.50** | 24.05 | **24.10** | 24.05 | **24.50** |
| HSDPA Subtest-1 | 23.40 | 23.06 | 22.77 | 23.50 | 22.68 | 22.56 | 22.79 | 23.00 |
| HSDPA Subtest-2 | 23.10 | 22.98 | 22.86 | 23.50 | 22.55 | 22.44 | 22.48 | 23.00 |
| HSDPA Subtest-3 | 22.23 | 21.96 | 21.82 | 23.00 | 21.58 | 21.30 | 21.44 | 22.50 |
| HSDPA Subtest-4 | 22.48 | 21.88 | 21.63 | 23.00 | 21.28 | 21.12 | 21.26 | 22.50 |
| HSUPA Subtest-1 | 22.94 | 22.40 | 22.28 | 23.00 | 21.94 | 21.84 | 22.23 | 22.50 |
| HSUPA Subtest-2 | 20.49 | 20.16 | 20.93 | 21.00 | 20.42 | 20.33 | 19.88 | 20.50 |
| HSUPA Subtest-3 | 21.76 | 21.60 | 21.22 | 22.00 | 21.31 | 21.23 | 21.43 | 21.50 |
| HSUPA Subtest-4 | 20.54 | 20.12 | 20.96 | 21.00 | 20.15 | 20.35 | 20.29 | 20.50 |
| HSUPA Subtest-5 | 22.65 | 22.50 | 22.21 | 23.00 | 21.84 | 21.99 | 22.11 | 22.50 |
| HSPA+ (16QAM) Subtest-1 | 19.80 | 19.60 | 19.90 | 20.50 | 19.40 | 19.03 | 19.90 | 20.00 |

| Band | WCDMA V | | | Tune-up Limit (dBm) |
|---|---|---|---|---|
| TX Channel | 4132 | 4182 | 4233 | |
| Rx Channel | 4357 | 4407 | 4458 | |
| Frequency (MHz) | 826.4 | 836.4 | 846.6 | |
| AMR 12.2Kbps | 25.26 | 25.17 | 25.24 | 25.50 |
| RMC 12.2Kbps | 25.29 | **25.31** | 25.30 | **25.50** |
| HSDPA Subtest-1 | 22.71 | 22.59 | 22.76 | 23.00 |
| HSDPA Subtest-2 | 22.31 | 22.35 | 22.62 | 23.00 |
| HSDPA Subtest-3 | 21.62 | 21.25 | 21.63 | 22.50 |
| HSDPA Subtest-4 | 21.10 | 21.44 | 21.61 | 22.50 |
| HSUPA Subtest-1 | 21.98 | 21.81 | 22.25 | 22.50 |
| HSUPA Subtest-2 | 19.69 | 20.49 | 20.47 | 20.50 |
| HSUPA Subtest-3 | 21.49 | 20.95 | 21.17 | 21.50 |
| HSUPA Subtest-4 | 20.36 | 19.97 | 20.15 | 20.50 |
| HSUPA Subtest-5 | 21.94 | 21.63 | 22.19 | 22.50 |
| HSPA+ (16QAM) Subtest-1 | 19.05 | 19.22 | 19.54 | 20.00 |

## CDMA 2000 & EVDO-0 Conducted Power:

| Band | CDMA 2000 BC0 | | | Tune-up | CDMA 2000 BC1 | | | Tune-up |
|---|---|---|---|---|---|---|---|---|
| TX Channel | 1013 | 384 | 777 | Limit | 25 | 600 | 1175 | Limit |
| Frequency (MHz) | 824.7 | 836.52 | 848.31 | (dBm) | 1851.25 | 1880 | 1908.75 | (dBm) |
| RC1 SO55 | 23.38 | 23.26 | 23.42 | 23.50 | 21.97 | 21.91 | 21.74 | 22.00 |
| RC3 SO55 | 24.78 | 24.87 | 24.73 | 25.00 | **22.00** | 21.92 | 21.78 | **22.00** |
| RC3 SO32 (F+SCH) | 24.88 | **25.02** | 24.81 | **25.50** | 21.95 | 21.93 | 21.74 | 22.00 |
| RC3 SO32 (+SCH) | 24.72 | 24.91 | 24.87 | 25.00 | 21.96 | 21.89 | 21.76 | 22.00 |
| RTAP 153.6Kbps | 24.95 | 25.01 | 24.83 | 25.50 | 25.07 | 25.05 | 24.98 | 25.50 |
| RETAP 4096Bits | 24.93 | **25.01** | 24.83 | **25.50** | 25.04 | **25.10** | 24.93 | **25.50** |

| Band | CDMA 2000 BC10 | | | Tune-up |
|---|---|---|---|---|
| TX Channel | 476 | 580 | 684 | Limit |
| Frequency (MHz) | 817.9 | 820.5 | 823.1 | (dBm) |
| RC1 SO55 | 23.61 | 22.93 | 23.47 | 24.00 |
| RC3 SO55 | 23.11 | 23.27 | 23.53 | 24.00 |
| RC3 SO32 (F+SCH) | 24.90 | 24.98 | 24.71 | 25.00 |
| RC3 SO32 (+SCH) | 24.85 | **24.99** | 24.74 | **25.00** |
| RTAP 153.6Kbps | 25.01 | 24.95 | 24.94 | 25.50 |
| RETAP 4096Bits | **25.04** | 24.94 | 24.87 | **25.50** |

## LTE Conducted Power:

### <FDD 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) |
|---|---|---|---|---|---|---|---|
| Channel | | | | 18700 | 18900 | 19100 | |
| Frequency (MHz) | | | | 1860 | 1880 | 1900 | |
| 20 | QPSK | 1 | 0 | 22.96 | **23.62** | 22.91 | 24 |
| 20 | QPSK | 1 | 49 | 23.27 | 23.28 | 23.10 | |
| 20 | QPSK | 1 | 99 | 23.54 | 23.21 | 23.02 | |
| 20 | QPSK | 50 | 0 | 22.14 | 22.16 | 21.98 | 22.5 |
| 20 | QPSK | 50 | 24 | 22.06 | 22.13 | 22.03 | |
| 20 | QPSK | 50 | 50 | **22.24** | 22.21 | 22.14 | |
| 20 | QPSK | 100 | 0 | 22.14 | 22.18 | 21.96 | |
| 20 | 16QAM | 1 | 0 | 22.21 | 22.62 | 21.73 | 23 |
| 20 | 16QAM | 1 | 49 | 22.26 | 22.04 | 21.91 | |
| 20 | 16QAM | 1 | 99 | 22.50 | 22.04 | 21.79 | |
| 20 | 16QAM | 50 | 0 | 22.11 | 22.14 | 22.03 | 22.5 |
| 20 | 16QAM | 50 | 24 | 22.16 | 21.94 | 22.05 | |
| 20 | 16QAM | 50 | 50 | 22.21 | 22.18 | 22.15 | |
| 20 | 16QAM | 100 | 0 | 21.15 | 21.24 | 21.08 | |
| 20 | 64QAM | 1 | 0 | 22.19 | 22.17 | 21.74 | 22.5 |
| 20 | 64QAM | 1 | 49 | 22.26 | 22.05 | 21.91 | |
| 20 | 64QAM | 1 | 99 | 22.45 | 22.04 | 21.80 | |
| 20 | 64QAM | 50 | 0 | 22.11 | 22.13 | 21.96 | 22.5 |
| 20 | 64QAM | 50 | 24 | 21.88 | 22.16 | 22.21 | |
| 20 | 64QAM | 50 | 50 | 22.22 | 22.17 | 22.14 | |
| 20 | 64QAM | 100 | 0 | 22.14 | 22.16 | 21.99 | |
| Channel | | | | 18675 | 18900 | 19125 | Tune-up limit (dBm) |
| Frequency (MHz) | | | | 1857.5 | 1880 | 1902.5 | |
| 15 | QPSK | 1 | 0 | 22.82 | 23.32 | 23.02 | 23.5 |
| 15 | QPSK | 1 | 37 | 23.05 | 23.17 | 23.16 | |
| 15 | QPSK | 1 | 74 | 23.17 | 23.04 | 23.07 | |
| 15 | QPSK | 36 | 0 | 22.01 | 22.26 | 21.95 | 22.5 |
| 15 | QPSK | 36 | 20 | 21.85 | 22.20 | 22.16 | |
| 15 | QPSK | 36 | 39 | 22.29 | 22.23 | 22.15 | |
| 15 | QPSK | 75 | 0 | 22.17 | 22.21 | 21.96 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 15 | 16QAM | 1 | 0 | 22.25 | 22.21 | 22.02 | 22.5 |
| 15 | 16QAM | 1 | 37 | 22.24 | 22.30 | 22.15 | |
| 15 | 16QAM | 1 | 74 | 22.25 | 22.33 | 22.04 | |
| 15 | 16QAM | 36 | 0 | 21.99 | 22.24 | 21.95 | 22.5 |
| 15 | 16QAM | 36 | 20 | 21.84 | 22.08 | 22.13 | |
| 15 | 16QAM | 36 | 39 | 22.27 | 22.20 | 22.15 | |
| 15 | 16QAM | 75 | 0 | 21.28 | 21.26 | 21.12 | |
| 15 | 64QAM | 1 | 0 | 22.25 | 22.19 | 22.04 | 22.5 |
| 15 | 64QAM | 1 | 37 | 22.29 | 22.33 | 22.16 | |
| 15 | 64QAM | 1 | 74 | 22.26 | 22.31 | 22.04 | |
| 15 | 64QAM | 36 | 0 | 22.01 | 22.23 | 21.95 | 22.5 |
| 15 | 64QAM | 36 | 20 | 22.14 | 22.06 | 21.83 | |
| 15 | 64QAM | 36 | 39 | 22.26 | 22.19 | 22.16 | |
| 15 | 64QAM | 75 | 0 | 22.17 | 22.23 | 21.98 | |
| Channel | | | | 18650 | 18900 | 19150 | Tune-up limit (dBm) |
| Frequency (MHz) | | | | 1855 | 1880 | 1905 | |
| 10 | QPSK | 1 | 0 | 22.92 | 23.39 | 23.13 | 23.5 |
| 10 | QPSK | 1 | 25 | 23.04 | 23.20 | 23.22 | |
| 10 | QPSK | 1 | 49 | 23.34 | 23.24 | 23.15 | |
| 10 | QPSK | 25 | 0 | 22.07 | 22.24 | 22.11 | 22.5 |
| 10 | QPSK | 25 | 12 | 22.03 | 22.15 | 22.04 | |
| 10 | QPSK | 25 | 25 | 22.19 | 22.23 | 22.13 | |
| 10 | QPSK | 50 | 0 | 22.16 | 22.21 | 22.17 | |
| 10 | 16QAM | 1 | 0 | 22.40 | 22.39 | 21.97 | 22.5 |
| 10 | 16QAM | 1 | 25 | 22.33 | 22.36 | 22.02 | |
| 10 | 16QAM | 1 | 49 | 22.44 | 22.45 | 21.97 | |
| 10 | 16QAM | 25 | 0 | 22.06 | 22.22 | 22.11 | 22.5 |
| 10 | 16QAM | 25 | 12 | 21.85 | 21.64 | 21.53 | |
| 10 | 16QAM | 25 | 25 | 22.20 | 22.20 | 22.13 | |
| 10 | 16QAM | 50 | 0 | 21.25 | 21.23 | 21.22 | |
| 10 | 64QAM | 1 | 0 | 22.39 | 22.39 | 21.98 | 22.5 |
| 10 | 64QAM | 1 | 25 | 22.35 | 22.34 | 22.02 | |
| 10 | 64QAM | 1 | 49 | 22.43 | 22.42 | 21.97 | |
| 10 | 64QAM | 25 | 0 | 22.06 | 22.22 | 22.11 | 22.5 |
| 10 | 64QAM | 25 | 12 | 22.05 | 22.14 | 22.03 | |
| 10 | 64QAM | 25 | 25 | 22.19 | 22.22 | 22.13 | |
| 10 | 64QAM | 50 | 0 | 22.18 | 22.20 | 22.16 | |

| Channel | | | | 18625 | 18900 | 19175 | Tune-up limit (dBm) |
|---|---|---|---|---|---|---|---|
| Frequency (MHz) | | | | 1852.5 | 1880 | 1907.5 | |
| 5 | QPSK | 1 | 0 | 22.88 | 23.33 | 23.04 | 23.5 |
| 5 | QPSK | 1 | 12 | 23.00 | 23.39 | 23.16 | |
| 5 | QPSK | 1 | 24 | 22.95 | 23.23 | 22.98 | |
| 5 | QPSK | 12 | 0 | 21.92 | 22.21 | 22.18 | 22.5 |
| 5 | QPSK | 12 | 7 | 21.84 | 21.96 | 21.85 | |
| 5 | QPSK | 12 | 13 | 21.92 | 22.22 | 22.11 | |
| 5 | QPSK | 25 | 0 | 21.92 | 22.25 | 22.10 | |
| 5 | 16QAM | 1 | 0 | 22.30 | 22.33 | 22.33 | 22.5 |
| 5 | 16QAM | 1 | 12 | 22.42 | 22.42 | 22.38 | |
| 5 | 16QAM | 1 | 24 | 22.35 | 22.35 | 22.32 | |
| 5 | 16QAM | 12 | 0 | 22.10 | 22.24 | 22.17 | 22.5 |
| 5 | 16QAM | 12 | 7 | 22.03 | 21.89 | 21.52 | |
| 5 | 16QAM | 12 | 13 | 22.03 | 22.22 | 22.10 | |
| 5 | 16QAM | 25 | 0 | 21.18 | 21.22 | 21.22 | |
| 5 | 64QAM | 1 | 0 | 22.33 | 22.30 | 22.33 | 22.5 |
| 5 | 64QAM | 1 | 12 | 22.46 | 22.46 | 22.42 | |
| 5 | 64QAM | 1 | 24 | 22.36 | 22.36 | 22.31 | |
| 5 | 64QAM | 12 | 0 | 22.07 | 22.22 | 22.15 | 22.5 |
| 5 | 64QAM | 12 | 7 | 22.00 | 21.83 | 22.08 | |
| 5 | 64QAM | 12 | 13 | 22.10 | 22.20 | 22.10 | |
| 5 | 64QAM | 25 | 0 | 22.06 | 22.20 | 22.09 | |
| Channel | | | | 18615 | 18900 | 19185 | Tune-up limit (dBm) |
| Frequency (MHz) | | | | 1851.5 | 1880 | 1908.5 | |
| 3 | QPSK | 1 | 0 | 22.79 | 23.16 | 23.15 | 23.5 |
| 3 | QPSK | 1 | 8 | 22.84 | 23.21 | 23.14 | |
| 3 | QPSK | 1 | 14 | 22.77 | 23.13 | 23.11 | |
| 3 | QPSK | 8 | 0 | 22.80 | 23.15 | 23.16 | 23.5 |
| 3 | QPSK | 8 | 4 | 22.32 | 22.06 | 22.04 | |
| 3 | QPSK | 8 | 7 | 22.83 | 23.11 | 23.09 | |
| 3 | QPSK | 15 | 0 | 21.93 | 22.17 | 22.12 | |
| 3 | 16QAM | 1 | 0 | 22.17 | 22.27 | 21.99 | 22.5 |
| 3 | 16QAM | 1 | 8 | 22.25 | 22.33 | 21.94 | |
| 3 | 16QAM | 1 | 14 | 22.19 | 22.29 | 21.94 | |
| 3 | 16QAM | 8 | 0 | 22.17 | 22.27 | 21.97 | 22.5 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3 | 16QAM | 8 | 4 | 21.89 | 21.54 | 22.01 | |
| 3 | 16QAM | 8 | 7 | 22.16 | 22.29 | 21.94 | |
| 3 | 16QAM | 15 | 0 | 20.98 | 21.12 | 21.19 | |
| 3 | 64QAM | 1 | 0 | 22.17 | 22.28 | 21.99 | |
| 3 | 64QAM | 1 | 8 | 22.25 | 22.36 | 21.98 | 22.5 |
| 3 | 64QAM | 1 | 14 | 22.20 | 22.28 | 21.97 | |
| 3 | 64QAM | 8 | 0 | 22.18 | 22.27 | 21.97 | |
| 3 | 64QAM | 8 | 4 | 21.85 | 21.62 | 21.53 | 22.5 |
| 3 | 64QAM | 8 | 7 | 22.20 | 22.28 | 21.96 | |
| 3 | 64QAM | 15 | 0 | 20.97 | 21.11 | 21.18 | |
| Channel | | | | 18607 | 18900 | 19193 | Tune-up limit (dBm) |
| Frequency (MHz) | | | | 1850.7 | 1880 | 1909.3 | |
| 1.4 | QPSK | 1 | 0 | 22.94 | 23.10 | 23.10 | |
| 1.4 | QPSK | 1 | 3 | 23.05 | 23.19 | 23.15 | |
| 1.4 | QPSK | 1 | 5 | 22.94 | 23.10 | 23.06 | 23.5 |
| 1.4 | QPSK | 3 | 0 | 22.85 | 23.02 | 23.02 | |
| 1.4 | QPSK | 3 | 1 | 22.83 | 22.94 | 22.76 | |
| 1.4 | QPSK | 3 | 3 | 22.85 | 22.91 | 22.97 | |
| 1.4 | QPSK | 6 | 0 | 21.81 | 22.21 | 22.02 | 22.5 |
| 1.4 | 16QAM | 1 | 0 | 21.94 | 22.28 | 21.92 | |
| 1.4 | 16QAM | 1 | 3 | 22.08 | 22.35 | 21.96 | |
| 1.4 | 16QAM | 1 | 5 | 21.98 | 22.27 | 21.94 | 23.5 |
| 1.4 | 16QAM | 3 | 0 | 22.87 | 23.03 | 23.00 | |
| 1.4 | 16QAM | 3 | 1 | 22.89 | 22.96 | 22.85 | |
| 1.4 | 16QAM | 3 | 3 | 22.86 | 23.01 | 22.97 | |
| 1.4 | 16QAM | 6 | 0 | 20.93 | 21.12 | 21.10 | 21.5 |
| 1.4 | 64QAM | 1 | 0 | 21.97 | 22.26 | 21.92 | |
| 1.4 | 64QAM | 1 | 3 | 22.09 | 22.38 | 21.97 | |
| 1.4 | 64QAM | 1 | 5 | 21.99 | 22.29 | 21.93 | 23.5 |
| 1.4 | 64QAM | 3 | 0 | 22.85 | 22.97 | 23.01 | |
| 1.4 | 64QAM | 3 | 1 | 21.54 | 21.69 | 21.53 | |
| 1.4 | 64QAM | 3 | 3 | 22.84 | 23.01 | 22.96 | |
| 1.4 | 64QAM | 6 | 0 | 21.80 | 22.17 | 22.05 | 22.5 |

**<FDD 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) |
|---|---|---|---|---|---|---|---|
| Channel | | | | 20050 | 20175 | 20300 | |
| Frequency (MHz) | | | | 1720 | 1732.5 | 1745 | |
| 20 | QPSK | 1 | 0 | 22.39 | 22.71 | 22.65 | 23 |
| 20 | QPSK | 1 | 49 | 22.68 | 22.75 | 22.43 | |
| 20 | QPSK | 1 | 99 | **22.80** | 22.67 | 22.51 | |
| 20 | QPSK | 50 | 0 | 21.54 | 21.69 | 21.43 | 22 |
| 20 | QPSK | 50 | 24 | 21.52 | 21.68 | 21.32 | |
| 20 | QPSK | 50 | 50 | **21.72** | 21.57 | 21.33 | |
| 20 | QPSK | 100 | 0 | 21.61 | 21.64 | 21.41 | |
| 20 | 16QAM | 1 | 0 | 21.20 | 21.73 | 21.39 | 22 |
| 20 | 16QAM | 1 | 49 | 21.39 | 21.85 | 21.28 | |
| 20 | 16QAM | 1 | 99 | 21.47 | 21.64 | 21.34 | |
| 20 | 16QAM | 50 | 0 | 21.55 | 21.70 | 21.41 | 22 |
| 20 | 16QAM | 50 | 24 | 21.16 | 21.54 | 21.39 | |
| 20 | 16QAM | 50 | 50 | 21.74 | 21.56 | 21.33 | |
| 20 | 16QAM | 100 | 0 | 20.62 | 20.67 | 20.35 | |
| 20 | 64QAM | 1 | 0 | 21.19 | 21.74 | 21.40 | 22 |
| 20 | 64QAM | 1 | 49 | 21.38 | 21.85 | 21.23 | |
| 20 | 64QAM | 1 | 99 | 21.47 | 21.67 | 21.31 | |
| 20 | 64QAM | 50 | 0 | 21.60 | 21.70 | 21.40 | 22 |
| 20 | 64QAM | 50 | 24 | 21.93 | 21.62 | 21.35 | |
| 20 | 64QAM | 50 | 50 | 21.77 | 21.57 | 21.34 | |
| 20 | 64QAM | 100 | 0 | 21.62 | 21.65 | 21.42 | |
| Channel | | | | 20025 | 20175 | 20325 | Tune-up limit (dBm) |
| Frequency (MHz) | | | | 1717.5 | 1732.5 | 1747.5 | |
| 15 | QPSK | 1 | 0 | 22.53 | 22.77 | 22.58 | 23 |
| 15 | QPSK | 1 | 37 | 22.67 | 22.71 | 22.49 | |
| 15 | QPSK | 1 | 74 | 22.75 | 22.50 | 22.40 | |
| 15 | QPSK | 36 | 0 | 21.52 | 21.77 | 21.45 | 22 |
| 15 | QPSK | 36 | 20 | 21.34 | 21.43 | 21.35 | |
| 15 | QPSK | 36 | 39 | 21.69 | 21.70 | 21.54 | |
| 15 | QPSK | 75 | 0 | 21.66 | 21.66 | 21.44 | |
| 15 | 16QAM | 1 | 0 | 21.49 | 21.92 | 21.62 | 22 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 15 | 16QAM | 1 | 37 | 21.51 | 21.88 | 21.55 | |
| 15 | 16QAM | 1 | 74 | 21.63 | 21.59 | 21.60 | |
| 15 | 16QAM | 36 | 0 | 21.48 | 21.77 | 21.45 | |
| 15 | 16QAM | 36 | 20 | 21.38 | 21.62 | 21.48 | 22 |
| 15 | 16QAM | 36 | 39 | 21.74 | 21.70 | 21.54 | |
| 15 | 16QAM | 75 | 0 | 20.69 | 20.78 | 20.42 | |
| 15 | 64QAM | 1 | 0 | 21.49 | 21.95 | 21.62 | |
| 15 | 64QAM | 1 | 37 | 21.52 | 21.88 | 21.61 | 22 |
| 15 | 64QAM | 1 | 74 | 21.61 | 21.63 | 21.60 | |
| 15 | 64QAM | 36 | 0 | 21.51 | 21.77 | 21.46 | |
| 15 | 64QAM | 36 | 20 | 21.42 | 21.67 | 21.42 | 22 |
| 15 | 64QAM | 36 | 39 | 21.73 | 21.70 | 21.53 | |
| 15 | 64QAM | 75 | 0 | 21.67 | 21.66 | 21.44 | |
| Channel | | | | 20000 | 20175 | 20350 | Tune-up |
| Frequency (MHz) | | | | 1715 | 1732.5 | 1750 | limit (dBm) |
| 10 | QPSK | 1 | 0 | 22.56 | 22.78 | 22.47 | |
| 10 | QPSK | 1 | 25 | 22.65 | 22.72 | 22.41 | 23 |
| 10 | QPSK | 1 | 49 | 22.73 | 22.66 | 22.45 | |
| 10 | QPSK | 25 | 0 | 21.50 | 21.72 | 21.38 | |
| 10 | QPSK | 25 | 12 | 21.48 | 21.62 | 21.33 | 22 |
| 10 | QPSK | 25 | 25 | 21.52 | 21.65 | 21.49 | |
| 10 | QPSK | 50 | 0 | 21.51 | 21.69 | 21.35 | |
| 10 | 16QAM | 1 | 0 | 21.38 | 21.95 | 21.55 | |
| 10 | 16QAM | 1 | 25 | 21.39 | 21.89 | 21.55 | 22 |
| 10 | 16QAM | 1 | 49 | 21.42 | 21.78 | 21.65 | |
| 10 | 16QAM | 25 | 0 | 21.50 | 21.72 | 21.38 | |
| 10 | 16QAM | 25 | 12 | 21.42 | 21.63 | 21.32 | 22 |
| 10 | 16QAM | 25 | 25 | 21.51 | 21.64 | 21.49 | |
| 10 | 16QAM | 50 | 0 | 20.56 | 20.68 | 20.26 | |
| 10 | 64QAM | 1 | 0 | 21.37 | 21.97 | 21.55 | |
| 10 | 64QAM | 1 | 25 | 21.37 | 21.87 | 21.54 | 22 |
| 10 | 64QAM | 1 | 49 | 21.43 | 21.78 | 21.64 | |
| 10 | 64QAM | 25 | 0 | 21.50 | 21.73 | 21.39 | |
| 10 | 64QAM | 25 | 12 | 21.44 | 21.62 | 21.35 | 22 |
| 10 | 64QAM | 25 | 25 | 21.53 | 21.65 | 21.50 | |
| 10 | 64QAM | 50 | 0 | 21.51 | 21.64 | 21.36 | |
| Channel | | | | 19975 | 20175 | 20375 | Tune-up |

| Frequency (MHz) | | | | 1712.5 | 1732.5 | 1752.5 | limit (dBm) |
|---|---|---|---|---|---|---|---|
| 5 | QPSK | 1 | 0 | 22.45 | 22.70 | 22.58 | 23 |
| 5 | QPSK | 1 | 12 | 22.53 | 22.73 | 22.64 | |
| 5 | QPSK | 1 | 24 | 22.48 | 22.72 | 22.57 | |
| 5 | QPSK | 12 | 0 | 21.54 | 21.72 | 21.49 | 22 |
| 5 | QPSK | 12 | 7 | 21.35 | 21.47 | 21.43 | |
| 5 | QPSK | 12 | 13 | 21.51 | 21.68 | 21.50 | |
| 5 | QPSK | 25 | 0 | 21.48 | 21.70 | 21.54 | |
| 5 | 16QAM | 1 | 0 | 21.74 | 21.87 | 21.63 | 22 |
| 5 | 16QAM | 1 | 12 | 21.79 | 22.00 | 21.74 | |
| 5 | 16QAM | 1 | 24 | 21.71 | 21.89 | 21.69 | |
| 5 | 16QAM | 12 | 0 | 21.49 | 21.72 | 21.49 | 22 |
| 5 | 16QAM | 12 | 7 | 21.00 | 21.52 | 21.34 | |
| 5 | 16QAM | 12 | 13 | 21.53 | 21.69 | 21.50 | |
| 5 | 16QAM | 25 | 0 | 20.56 | 20.68 | 20.42 | |
| 5 | 64QAM | 1 | 0 | 21.72 | 21.87 | 21.64 | 22 |
| 5 | 64QAM | 1 | 12 | 21.80 | 22.00 | 21.75 | |
| 5 | 64QAM | 1 | 24 | 21.72 | 21.89 | 21.70 | |
| 5 | 64QAM | 12 | 0 | 21.50 | 21.73 | 21.50 | 22 |
| 5 | 64QAM | 12 | 7 | 21.49 | 21.62 | 21.44 | |
| 5 | 64QAM | 12 | 13 | 21.55 | 21.69 | 21.50 | |
| 5 | 64QAM | 25 | 0 | 21.51 | 21.68 | 21.50 | |
| Channel | | | | 19965 | 20175 | 20385 | Tune-up limit (dBm) |
| Frequency (MHz) | | | | 1711.5 | 1732.5 | 1753.5 | |
| 3 | QPSK | 1 | 0 | 22.58 | 22.63 | 22.45 | 23 |
| 3 | QPSK | 1 | 8 | 22.62 | 22.73 | 22.48 | |
| 3 | QPSK | 1 | 14 | 22.62 | 22.68 | 22.45 | |
| 3 | QPSK | 8 | 0 | 22.57 | 22.63 | 22.43 | 23 |
| 3 | QPSK | 8 | 4 | 22.42 | 22.54 | 22.36 | |
| 3 | QPSK | 8 | 7 | 22.61 | 22.68 | 22.46 | |
| 3 | QPSK | 15 | 0 | 21.48 | 21.68 | 21.50 | |
| 3 | 16QAM | 1 | 0 | 21.41 | 21.81 | 21.61 | 22 |
| 3 | 16QAM | 1 | 8 | 21.38 | 21.89 | 21.65 | |
| 3 | 16QAM | 1 | 14 | 21.37 | 21.84 | 21.62 | |
| 3 | 16QAM | 8 | 0 | 21.43 | 21.77 | 21.63 | 22 |
| 3 | 16QAM | 8 | 4 | 21.32 | 21.67 | 21.52 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3 | 16QAM | 8 | 7 | 21.38 | 21.83 | 21.62 | |
| 3 | 16QAM | 15 | 0 | 20.54 | 20.66 | 20.41 | |
| 3 | 64QAM | 1 | 0 | 21.43 | 21.78 | 21.58 | |
| 3 | 64QAM | 1 | 8 | 21.39 | 21.88 | 21.66 | 22 |
| 3 | 64QAM | 1 | 14 | 21.37 | 21.83 | 21.61 | |
| 3 | 64QAM | 8 | 0 | 21.41 | 21.76 | 21.62 | |
| 3 | 64QAM | 8 | 4 | 21.42 | 21.48 | 21.70 | 22 |
| 3 | 64QAM | 8 | 7 | 21.37 | 21.81 | 21.63 | |
| 3 | 64QAM | 15 | 0 | 20.54 | 20.68 | 20.40 | |
| Channel | | | | 19957 | 20175 | 20393 | Tune-up limit (dBm) |
| Frequency (MHz) | | | | 1710.7 | 1732.5 | 1754.3 | |
| 1.4 | QPSK | 1 | 0 | 22.54 | 22.63 | 22.51 | |
| 1.4 | QPSK | 1 | 3 | 22.63 | 22.71 | 22.56 | |
| 1.4 | QPSK | 1 | 5 | 22.49 | 22.64 | 22.48 | 23 |
| 1.4 | QPSK | 3 | 0 | 22.40 | 22.46 | 22.32 | |
| 1.4 | QPSK | 3 | 1 | 22.33 | 22.41 | 22.15 | |
| 1.4 | QPSK | 3 | 3 | 22.39 | 22.42 | 22.25 | |
| 1.4 | QPSK | 6 | 0 | 21.46 | 21.71 | 21.46 | 22 |
| 1.4 | 16QAM | 1 | 0 | 21.48 | 21.77 | 21.34 | |
| 1.4 | 16QAM | 1 | 3 | 21.53 | 21.84 | 21.38 | |
| 1.4 | 16QAM | 1 | 5 | 21.44 | 21.74 | 21.35 | 22.5 |
| 1.4 | 16QAM | 3 | 0 | 22.35 | 22.49 | 22.33 | |
| 1.4 | 16QAM | 3 | 1 | 22.33 | 22.46 | 22.28 | |
| 1.4 | 16QAM | 3 | 3 | 22.32 | 22.51 | 22.32 | |
| 1.4 | 16QAM | 6 | 0 | 20.49 | 20.62 | 20.46 | 21 |
| 1.4 | 64QAM | 1 | 0 | 21.47 | 21.73 | 21.32 | |
| 1.4 | 64QAM | 1 | 3 | 21.56 | 21.81 | 21.42 | |
| 1.4 | 64QAM | 1 | 5 | 21.47 | 21.78 | 21.34 | 22.5 |
| 1.4 | 64QAM | 3 | 0 | 22.40 | 22.47 | 22.32 | |
| 1.4 | 64QAM | 3 | 1 | 22.39 | 22.43 | 22.30 | |
| 1.4 | 64QAM | 3 | 3 | 22.34 | 22.41 | 22.31 | |
| 1.4 | 64QAM | 6 | 0 | 21.46 | 21.73 | 21.50 | 22 |

**<FDD 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) |
|---|---|---|---|---|---|---|---|
| Channel | | | | 20450 | 20525 | 20600 | |
| Frequency (MHz) | | | | 829 | 836.5 | 844 | |
| 10 | QPSK | 1 | 0 | 23.79 | 23.74 | **23.87** | 24 |
| 10 | QPSK | 1 | 25 | 23.75 | 23.81 | 23.75 | |
| 10 | QPSK | 1 | 49 | 23.82 | 23.81 | 23.67 | |
| 10 | QPSK | 25 | 0 | 22.90 | 22.86 | 22.75 | 23 |
| 10 | QPSK | 25 | 12 | 22.81 | 22.78 | 22.64 | |
| 10 | QPSK | 25 | 25 | **22.95** | 22.84 | 22.58 | |
| 10 | QPSK | 50 | 0 | 22.91 | 22.84 | 22.63 | |
| 10 | 16QAM | 1 | 0 | 23.18 | 22.92 | 22.67 | 23.5 |
| 10 | 16QAM | 1 | 25 | 23.05 | 22.94 | 22.61 | |
| 10 | 16QAM | 1 | 49 | 23.04 | 22.97 | 22.50 | |
| 10 | 16QAM | 25 | 0 | 22.85 | 22.87 | 22.74 | 23 |
| 10 | 16QAM | 25 | 12 | 22.84 | 22.68 | 22.76 | |
| 10 | 16QAM | 25 | 25 | 22.92 | 22.82 | 22.59 | |
| 10 | 16QAM | 50 | 0 | 22.00 | 21.85 | 21.66 | |
| 10 | 64QAM | 1 | 0 | 23.17 | 22.92 | 22.66 | 23.5 |
| 10 | 64QAM | 1 | 25 | 23.02 | 22.95 | 22.62 | |
| 10 | 64QAM | 1 | 49 | 23.03 | 22.97 | 22.49 | |
| 10 | 64QAM | 25 | 0 | 22.86 | 22.87 | 22.74 | 23 |
| 10 | 64QAM | 25 | 12 | 22.81 | 22.76 | 22.77 | |
| 10 | 64QAM | 25 | 25 | 22.92 | 22.82 | 22.61 | |
| 10 | 64QAM | 50 | 0 | 22.95 | 22.84 | 22.60 | |
| Channel | | | | 20425 | 20525 | 20625 | Tune-up limit (dBm) |
| Frequency (MHz) | | | | 826.5 | 836.5 | 846.5 | |
| 5 | QPSK | 1 | 0 | 23.85 | 23.80 | 23.60 | 24 |
| 5 | QPSK | 1 | 12 | 23.81 | 23.83 | 23.48 | |
| 5 | QPSK | 1 | 24 | 23.80 | 23.84 | 23.53 | |
| 5 | QPSK | 12 | 0 | 22.92 | 22.84 | 22.60 | 23 |
| 5 | QPSK | 12 | 7 | 22.90 | 22.81 | 22.62 | |
| 5 | QPSK | 12 | 13 | 22.86 | 22.80 | 22.56 | |
| 5 | QPSK | 25 | 0 | 22.86 | 22.85 | 22.55 | |
| 5 | 16QAM | 1 | 0 | 23.19 | 23.03 | 22.94 | 23.5 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5 | 16QAM | 1 | 12 | 23.25 | 23.03 | 22.90 | |
| 5 | 16QAM | 1 | 24 | 23.11 | 23.06 | 22.80 | |
| 5 | 16QAM | 12 | 0 | 22.89 | 22.85 | 22.60 | |
| 5 | 16QAM | 12 | 7 | 22.84 | 22.76 | 22.65 | 23 |
| 5 | 16QAM | 12 | 13 | 22.84 | 22.81 | 22.54 | |
| 5 | 16QAM | 25 | 0 | 21.95 | 21.80 | 21.64 | |
| 5 | 64QAM | 1 | 0 | 23.18 | 23.02 | 22.94 | |
| 5 | 64QAM | 1 | 12 | 23.25 | 23.05 | 22.90 | 23.5 |
| 5 | 64QAM | 1 | 24 | 23.13 | 23.07 | 22.81 | |
| 5 | 64QAM | 12 | 0 | 22.86 | 22.85 | 22.59 | |
| 5 | 64QAM | 12 | 7 | 22.79 | 22.83 | 22.52 | 23 |
| 5 | 64QAM | 12 | 13 | 22.86 | 22.80 | 22.54 | |
| 5 | 64QAM | 25 | 0 | 22.89 | 22.83 | 22.59 | |
| Channel | | | | 20415 | 20525 | 20635 | Tune-up limit (dBm) |
| Frequency (MHz) | | | | 825.5 | 836.5 | 847.5 | |
| 3 | QPSK | 1 | 0 | 23.72 | 23.65 | 23.80 | |
| 3 | QPSK | 1 | 8 | 23.68 | 23.74 | 23.65 | 24 |
| 3 | QPSK | 1 | 14 | 23.15 | 23.16 | 23.25 | |
| 3 | QPSK | 8 | 0 | 22.87 | 22.72 | 22.82 | |
| 3 | QPSK | 8 | 4 | 22.78 | 22.70 | 22.80 | 23 |
| 3 | QPSK | 8 | 7 | 22.92 | 22.76 | 22.84 | |
| 3 | QPSK | 15 | 0 | 22.09 | 21.96 | 21.79 | |
| 3 | 16QAM | 1 | 0 | 22.52 | 22.07 | 21.76 | |
| 3 | 16QAM | 1 | 8 | 22.46 | 22.19 | 21.90 | 23 |
| 3 | 16QAM | 1 | 14 | 22.50 | 22.13 | 21.85 | |
| 3 | 16QAM | 8 | 0 | 22.60 | 22.08 | 21.77 | |
| 3 | 16QAM | 8 | 4 | 22.62 | 22.03 | 21.86 | 23 |
| 3 | 16QAM | 8 | 7 | 22.50 | 22.12 | 21.85 | |
| 3 | 16QAM | 15 | 0 | 21.04 | 20.88 | 20.85 | |
| 3 | 64QAM | 1 | 0 | 22.59 | 22.08 | 21.77 | |
| 3 | 64QAM | 1 | 8 | 22.43 | 22.19 | 21.89 | 23 |
| 3 | 64QAM | 1 | 14 | 22.48 | 22.12 | 21.84 | |
| 3 | 64QAM | 8 | 0 | 22.57 | 22.07 | 21.76 | |
| 3 | 64QAM | 8 | 4 | 22.52 | 22.06 | 21.79 | 23 |
| 3 | 64QAM | 8 | 7 | 22.47 | 22.12 | 21.84 | |
| 3 | 64QAM | 15 | 0 | 21.10 | 20.88 | 20.74 | |
| Channel | | | | 20407 | 20525 | 20643 | Tune-up |

| Frequency (MHz) | | | | 824.7 | 836.5 | 848.3 | limit (dBm) |
|---|---|---|---|---|---|---|---|
| 1.4 | QPSK | 1 | 0 | 23.83 | 23.67 | 23.58 | 24 |
| 1.4 | QPSK | 1 | 3 | 23.70 | 23.73 | 23.61 | |
| 1.4 | QPSK | 1 | 5 | 23.82 | 23.67 | 23.54 | |
| 1.4 | QPSK | 3 | 0 | 23.74 | 23.62 | 23.46 | |
| 1.4 | QPSK | 3 | 1 | 23.53 | 23.42 | 23.36 | |
| 1.4 | QPSK | 3 | 3 | 23.73 | 23.58 | 23.38 | |
| 1.4 | QPSK | 6 | 0 | 22.80 | 22.84 | 22.56 | 23 |
| 1.4 | 16QAM | 1 | 0 | 22.87 | 22.85 | 22.46 | 24 |
| 1.4 | 16QAM | 1 | 3 | 22.96 | 22.94 | 22.51 | |
| 1.4 | 16QAM | 1 | 5 | 22.88 | 22.85 | 22.35 | |
| 1.4 | 16QAM | 3 | 0 | 23.79 | 23.60 | 23.48 | |
| 1.4 | 16QAM | 3 | 1 | 23.72 | 23.54 | 23.62 | |
| 1.4 | 16QAM | 3 | 3 | 23.75 | 23.61 | 23.40 | |
| 1.4 | 16QAM | 6 | 0 | 21.91 | 21.75 | 21.61 | 22 |
| 1.4 | 64QAM | 1 | 0 | 22.89 | 22.87 | 22.44 | 24 |
| 1.4 | 64QAM | 1 | 3 | 22.95 | 22.95 | 22.47 | |
| 1.4 | 64QAM | 1 | 5 | 22.86 | 22.86 | 22.38 | |
| 1.4 | 64QAM | 3 | 0 | 23.76 | 23.63 | 23.45 | |
| 1.4 | 64QAM | 3 | 1 | 23.60 | 23.79 | 23.42 | |
| 1.4 | 64QAM | 3 | 3 | 23.75 | 23.60 | 23.39 | |
| 1.4 | 64QAM | 6 | 0 | 22.83 | 22.83 | 22.56 | 23 |

**<FDD LTE Band 7>**

| BW [MHz] | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) |
|---|---|---|---|---|---|---|---|
| Channel | | | | 20850 | 21100 | 21350 | |
| Frequency (MHz) | | | | 2510 | 2535 | 2560 | |
| 20 | QPSK | 1 | 0 | 19.95 | 20.06 | 20.24 | 21 |
| 20 | QPSK | 1 | 49 | 19.92 | 20.14 | 20.31 | |
| 20 | QPSK | 1 | 99 | 19.96 | 20.28 | **20.51** | |
| 20 | QPSK | 50 | 0 | 18.87 | 19.13 | 19.41 | 20 |
| 20 | QPSK | 50 | 24 | 19.26 | 19.20 | 19.19 | |
| 20 | QPSK | 50 | 50 | 18.92 | **19.62** | 19.52 | |
| 20 | QPSK | 100 | 0 | 18.94 | 19.24 | 19.46 | |
| 20 | 16QAM | 1 | 0 | 18.69 | 19.45 | 19.11 | 19.5 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 20 | 16QAM | 1 | 49 | 18.71 | 19.45 | 19.21 | |
| 20 | 16QAM | 1 | 99 | 18.72 | 19.47 | 19.42 | |
| 20 | 16QAM | 50 | 0 | 18.82 | 19.23 | 19.42 | |
| 20 | 16QAM | 50 | 24 | 18.93 | 19.06 | 19.25 | 20 |
| 20 | 16QAM | 50 | 50 | 18.89 | 19.17 | 19.52 | |
| 20 | 16QAM | 100 | 0 | 18.07 | 18.39 | 18.53 | |
| 20 | 64QAM | 1 | 0 | 18.68 | 19.45 | 19.12 | |
| 20 | 64QAM | 1 | 49 | 18.59 | 19.54 | 19.21 | 20 |
| 20 | 64QAM | 1 | 99 | 18.72 | 19.47 | 19.43 | |
| 20 | 64QAM | 50 | 0 | 18.92 | 19.21 | 19.43 | |
| 20 | 64QAM | 50 | 24 | 18.96 | 19.27 | 19.42 | 20 |
| 20 | 64QAM | 50 | 50 | 18.97 | 19.16 | 19.53 | |
| 20 | 64QAM | 100 | 0 | 18.88 | 19.23 | 19.46 | |
| Channel | | | | 20825 | 21100 | 21375 | Tune-up |
| Frequency (MHz) | | | | 2507.5 | 2535 | 2562.5 | limit (dBm) |
| 15 | QPSK | 1 | 0 | 19.79 | 19.96 | 20.11 | |
| 15 | QPSK | 1 | 37 | 19.73 | 20.04 | 20.35 | 20.5 |
| 15 | QPSK | 1 | 74 | 19.71 | 20.04 | 20.37 | |
| 15 | QPSK | 36 | 0 | 18.86 | 19.21 | 19.48 | |
| 15 | QPSK | 36 | 20 | 18.74 | 18.92 | 19.16 | 20 |
| 15 | QPSK | 36 | 39 | 18.94 | 19.20 | 19.50 | |
| 15 | QPSK | 75 | 0 | 18.91 | 19.21 | 19.51 | |
| 15 | 16QAM | 1 | 0 | 19.40 | 19.53 | 19.50 | |
| 15 | 16QAM | 1 | 37 | 19.31 | 19.56 | 19.67 | 20 |
| 15 | 16QAM | 1 | 74 | 19.51 | 19.52 | 19.71 | |
| 15 | 16QAM | 36 | 0 | 18.92 | 19.11 | 19.38 | |
| 15 | 16QAM | 36 | 20 | 18.95 | 19.07 | 19.23 | 20 |
| 15 | 16QAM | 36 | 39 | 18.90 | 19.20 | 19.49 | |
| 15 | 16QAM | 75 | 0 | 17.95 | 18.28 | 18.54 | |
| 15 | 64QAM | 1 | 0 | 19.39 | 19.42 | 19.51 | |
| 15 | 64QAM | 1 | 37 | 19.29 | 19.56 | 19.77 | 20 |
| 15 | 64QAM | 1 | 74 | 19.48 | 19.51 | 19.72 | |
| 15 | 64QAM | 36 | 0 | 18.90 | 19.21 | 19.47 | |
| 15 | 64QAM | 36 | 20 | 18.86 | 19.14 | 19.32 | 20 |
| 15 | 64QAM | 36 | 39 | 18.89 | 19.19 | 19.49 | |
| 15 | 64QAM | 75 | 0 | 18.86 | 19.20 | 19.50 | |
| Channel | | | | 20800 | 21100 | 21400 | Tune-up |

| Frequency (MHz) | | | | 2505 | 2535 | 2565 | limit (dBm) |
|---|---|---|---|---|---|---|---|
| 10 | QPSK | 1 | 0 | 19.74 | 20.09 | 20.19 | 20.5 |
| 10 | QPSK | 1 | 25 | 19.74 | 20.02 | 20.42 | |
| 10 | QPSK | 1 | 49 | 19.70 | 20.05 | 20.34 | |
| 10 | QPSK | 25 | 0 | 18.92 | 19.13 | 19.50 | 20 |
| 10 | QPSK | 25 | 12 | 18.98 | 19.15 | 19.55 | |
| 10 | QPSK | 25 | 25 | 18.91 | 19.16 | 19.52 | |
| 10 | QPSK | 50 | 0 | 18.85 | 19.12 | 19.44 | |
| 10 | 16QAM | 1 | 0 | 19.37 | 19.54 | 19.28 | 20 |
| 10 | 16QAM | 1 | 25 | 19.40 | 19.51 | 19.57 | |
| 10 | 16QAM | 1 | 49 | 19.36 | 19.56 | 19.51 | |
| 10 | 16QAM | 25 | 0 | 18.88 | 19.12 | 19.51 | 20 |
| 10 | 16QAM | 25 | 12 | 18.81 | 19.52 | 19.68 | |
| 10 | 16QAM | 25 | 25 | 18.87 | 19.15 | 19.52 | |
| 10 | 16QAM | 50 | 0 | 17.97 | 18.29 | 18.46 | |
| 10 | 64QAM | 1 | 0 | 19.35 | 19.54 | 19.30 | 20 |
| 10 | 64QAM | 1 | 25 | 19.39 | 19.50 | 19.47 | |
| 10 | 64QAM | 1 | 49 | 19.45 | 19.54 | 19.51 | |
| 10 | 64QAM | 25 | 0 | 18.85 | 19.12 | 19.50 | 20 |
| 10 | 64QAM | 25 | 12 | 18.88 | 19.01 | 19.63 | |
| 10 | 64QAM | 25 | 25 | 18.93 | 19.14 | 19.52 | |
| 10 | 64QAM | 50 | 0 | 18.90 | 19.11 | 19.53 | |
| Channel | | | | 20775 | 21100 | 21425 | Tune-up limit (dBm) |
| Frequency (MHz) | | | | 2502.5 | 2535 | 2567.5 | |
| 5 | QPSK | 1 | 0 | 19.83 | 20.15 | 20.27 | 20.5 |
| 5 | QPSK | 1 | 12 | 19.90 | 20.20 | 20.25 | |
| 5 | QPSK | 1 | 24 | 19.78 | 20.21 | 20.27 | |
| 5 | QPSK | 12 | 0 | 18.91 | 19.10 | 19.44 | 20 |
| 5 | QPSK | 12 | 7 | 18.85 | 18.92 | 19.63 | |
| 5 | QPSK | 12 | 13 | 18.92 | 19.12 | 19.37 | |
| 5 | QPSK | 25 | 0 | 18.92 | 19.09 | 19.43 | |
| 5 | 16QAM | 1 | 0 | 18.81 | 18.89 | 19.83 | 20 |
| 5 | 16QAM | 1 | 12 | 18.93 | 18.99 | 19.78 | |
| 5 | 16QAM | 1 | 24 | 18.82 | 19.03 | 19.74 | |
| 5 | 16QAM | 12 | 0 | 18.85 | 19.09 | 19.42 | 20 |
| 5 | 16QAM | 12 | 7 | 18.80 | 19.14 | 19.66 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5 | 16QAM | 12 | 13 | 18.86 | 19.20 | 19.34 | |
| 5 | 16QAM | 25 | 0 | 17.97 | 18.34 | 18.68 | |
| 5 | 64QAM | 1 | 0 | 18.89 | 18.99 | 19.83 | |
| 5 | 64QAM | 1 | 12 | 19.00 | 18.99 | 19.76 | 20 |
| 5 | 64QAM | 1 | 24 | 18.88 | 19.00 | 19.72 | |
| 5 | 64QAM | 12 | 0 | 18.92 | 19.07 | 19.39 | |
| 5 | 64QAM | 12 | 7 | 18.90 | 19.05 | 19.30 | 19.5 |
| 5 | 64QAM | 12 | 13 | 18.93 | 19.09 | 19.32 | |
| 5 | 64QAM | 25 | 0 | 18.83 | 19.06 | 19.49 | |

**<FDD LTE Band 12>**

| BW [MHz] | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) |
|---|---|---|---|---|---|---|---|
| Channel | | | | 23060 | 23095 | 23130 | |
| Frequency (MHz) | | | | 704 | 707.5 | 711 | |
| 10 | QPSK | 1 | 0 | 21.97 | 22.03 | **22.25** | |
| 10 | QPSK | 1 | 25 | 21.98 | 22.16 | 22.03 | 22.5 |
| 10 | QPSK | 1 | 49 | 22.10 | 22.02 | 22.08 | |
| 10 | QPSK | 25 | 0 | **21.39** | 21.30 | 21.19 | |
| 10 | QPSK | 25 | 12 | 21.22 | 21.35 | 21.06 | 21.5 |
| 10 | QPSK | 25 | 25 | 21.24 | 21.24 | 21.18 | |
| 10 | QPSK | 50 | 0 | 21.15 | 21.28 | 21.19 | |
| 10 | 16QAM | 1 | 0 | 21.67 | 21.54 | 21.30 | |
| 10 | 16QAM | 1 | 25 | 21.68 | 21.60 | 21.18 | 22 |
| 10 | 16QAM | 1 | 49 | 21.70 | 21.56 | 21.23 | |
| 10 | 16QAM | 25 | 0 | 21.17 | 21.21 | 21.20 | |
| 10 | 16QAM | 25 | 12 | 21.10 | 21.22 | 21.39 | 21.5 |
| 10 | 16QAM | 25 | 25 | 21.32 | 21.25 | 21.18 | |
| 10 | 16QAM | 50 | 0 | 20.30 | 20.36 | 20.21 | |
| 10 | 64QAM | 1 | 0 | 21.67 | 21.55 | 21.22 | |
| 10 | 64QAM | 1 | 25 | 21.78 | 21.61 | 21.18 | 22 |
| 10 | 64QAM | 1 | 49 | 21.68 | 21.46 | 21.24 | |
| 10 | 64QAM | 25 | 0 | 21.26 | 21.21 | 21.20 | |
| 10 | 64QAM | 25 | 12 | 21.18 | 21.28 | 21.37 | 21.5 |
| 10 | 64QAM | 25 | 25 | 21.20 | 21.25 | 21.19 | |
| 10 | 64QAM | 50 | 0 | 21.23 | 21.28 | 21.20 | |
| Channel | | | | 23035 | 23095 | 23155 | Tune-up |

| Frequency (MHz) | | | | 701.5 | 707.5 | 713.5 | limit (dBm) |
|---|---|---|---|---|---|---|---|
| 5 | QPSK | 1 | 0 | 22.13 | 22.09 | 21.95 | 22.5 |
| 5 | QPSK | 1 | 12 | 22.21 | 22.31 | 21.96 | |
| 5 | QPSK | 1 | 24 | 22.11 | 22.16 | 22.10 | |
| 5 | QPSK | 12 | 0 | 21.18 | 21.29 | 21.13 | 21.5 |
| 5 | QPSK | 12 | 7 | 21.19 | 21.34 | 21.11 | |
| 5 | QPSK | 12 | 13 | 21.20 | 21.23 | 21.16 | |
| 5 | QPSK | 25 | 0 | 21.24 | 21.19 | 21.15 | |
| 5 | 16QAM | 1 | 0 | 21.15 | 20.92 | 21.39 | 22 |
| 5 | 16QAM | 1 | 12 | 21.18 | 21.07 | 21.54 | |
| 5 | 16QAM | 1 | 24 | 21.18 | 21.05 | 21.50 | |
| 5 | 16QAM | 12 | 0 | 21.16 | 21.20 | 21.14 | 21.5 |
| 5 | 16QAM | 12 | 7 | 21.19 | 21.34 | 21.17 | |
| 5 | 16QAM | 12 | 13 | 21.28 | 21.23 | 21.16 | |
| 5 | 16QAM | 25 | 0 | 20.41 | 20.36 | 20.30 | |
| 5 | 64QAM | 1 | 0 | 21.15 | 20.93 | 21.51 | 22 |
| 5 | 64QAM | 1 | 12 | 21.27 | 21.08 | 21.55 | |
| 5 | 64QAM | 1 | 24 | 21.17 | 21.05 | 21.50 | |
| 5 | 64QAM | 12 | 0 | 21.15 | 21.20 | 21.14 | 21.5 |
| 5 | 64QAM | 12 | 7 | 21.14 | 21.22 | 21.00 | |
| 5 | 64QAM | 12 | 13 | 21.26 | 21.24 | 21.06 | |
| 5 | 64QAM | 25 | 0 | 21.29 | 21.19 | 21.15 | |
| Channel | | | | 23025 | 23095 | 23165 | Tune-up limit (dBm) |
| Frequency (MHz) | | | | 700.5 | 707.5 | 714.5 | |
| 3 | QPSK | 1 | 0 | 21.93 | 22.06 | 22.03 | 22.5 |
| 3 | QPSK | 1 | 8 | 22.02 | 22.03 | 22.06 | |
| 3 | QPSK | 1 | 14 | 21.99 | 22.15 | 22.09 | |
| 3 | QPSK | 8 | 0 | 21.97 | 22.04 | 22.00 | 21.5 |
| 3 | QPSK | 8 | 4 | 21.99 | 22.03 | 22.01 | |
| 3 | QPSK | 8 | 7 | 21.97 | 22.04 | 22.09 | |
| 3 | QPSK | 15 | 0 | 21.18 | 21.29 | 21.16 | |
| 3 | 16QAM | 1 | 0 | 21.72 | 21.43 | 21.20 | 22 |
| 3 | 16QAM | 1 | 8 | 21.62 | 21.55 | 21.27 | |
| 3 | 16QAM | 1 | 14 | 21.71 | 21.57 | 21.19 | |
| 3 | 16QAM | 8 | 0 | 21.73 | 21.43 | 21.22 | 22 |
| 3 | 16QAM | 8 | 4 | 21.62 | 21.55 | 21.19 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3 | 16QAM | 8 | 7 | 21.58 | 21.57 | 21.19 | |
| 3 | 16QAM | 15 | 0 | 20.22 | 20.27 | 20.18 | |
| 3 | 64QAM | 1 | 0 | 21.73 | 21.44 | 21.22 | |
| 3 | 64QAM | 1 | 8 | 21.72 | 21.56 | 21.28 | 22 |
| 3 | 64QAM | 1 | 14 | 21.70 | 21.48 | 21.19 | |
| 3 | 64QAM | 8 | 0 | 21.71 | 21.44 | 21.11 | |
| 3 | 64QAM | 8 | 4 | 21.85 | 21.00 | 21.14 | 22 |
| 3 | 64QAM | 8 | 7 | 21.69 | 21.57 | 21.18 | |
| 3 | 64QAM | 15 | 0 | 20.21 | 20.27 | 20.18 | |
| Channel | | | | 23017 | 23095 | 23173 | Tune-up limit (dBm) |
| Frequency (MHz) | | | | 699.7 | 707.5 | 715.3 | |
| 1.4 | QPSK | 1 | 0 | 22.04 | 22.05 | 22.02 | |
| 1.4 | QPSK | 1 | 3 | 22.18 | 22.15 | 22.10 | |
| 1.4 | QPSK | 1 | 5 | 22.05 | 22.03 | 22.07 | |
| 1.4 | QPSK | 3 | 0 | 21.99 | 22.10 | 22.08 | 22.5 |
| 1.4 | QPSK | 3 | 1 | 21.84 | 22.03 | 22.09 | |
| 1.4 | QPSK | 3 | 3 | 22.00 | 22.14 | 22.16 | |
| 1.4 | QPSK | 6 | 0 | 21.00 | 21.13 | 21.14 | 21.5 |
| 1.4 | 16QAM | 1 | 0 | 21.20 | 21.49 | 21.18 | |
| 1.4 | 16QAM | 1 | 3 | 21.40 | 21.54 | 21.21 | |
| 1.4 | 16QAM | 1 | 5 | 21.27 | 21.52 | 21.07 | |
| 1.4 | 16QAM | 3 | 0 | 22.07 | 22.09 | 22.07 | 22.5 |
| 1.4 | 16QAM | 3 | 1 | 21.42 | 22.01 | 22.08 | |
| 1.4 | 16QAM | 3 | 3 | 22.07 | 22.13 | 22.15 | |
| 1.4 | 16QAM | 6 | 0 | 20.21 | 20.42 | 19.99 | 20.5 |
| 1.4 | 64QAM | 1 | 0 | 21.29 | 21.40 | 21.17 | |
| 1.4 | 64QAM | 1 | 3 | 21.38 | 21.54 | 21.20 | |
| 1.4 | 64QAM | 1 | 5 | 21.25 | 21.52 | 21.06 | |
| 1.4 | 64QAM | 3 | 0 | 22.05 | 22.10 | 22.07 | 22.5 |
| 1.4 | 64QAM | 3 | 1 | 21.54 | 22.11 | 21.00 | |
| 1.4 | 64QAM | 3 | 3 | 22.05 | 22.12 | 22.14 | |
| 1.4 | 64QAM | 6 | 0 | 21.06 | 21.12 | 21.12 | 21.5 |

**<FDD 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) |
|---|---|---|---|---|---|---|---|
| Channel | | | | 23230 | | | |
| Frequency (MHz) | | | | 782 | | | |
| 10 | QPSK | 1 | 0 | **20.86** | | | 21 |
| 10 | QPSK | 1 | 25 | 20.76 | | | |
| 10 | QPSK | 1 | 49 | 20.73 | | | |
| 10 | QPSK | 25 | 0 | **19.99** | | | 20 |
| 10 | QPSK | 25 | 12 | 19.88 | | | |
| 10 | QPSK | 25 | 25 | 19.93 | | | |
| 10 | QPSK | 50 | 0 | 19.98 | | | |
| 10 | 16QAM | 1 | 0 | 20.44 | | | 20.5 |
| 10 | 16QAM | 1 | 25 | 20.40 | | | |
| 10 | 16QAM | 1 | 49 | 20.50 | | | |
| 10 | 16QAM | 25 | 0 | 19.93 | | | 20 |
| 10 | 16QAM | 25 | 12 | 19.25 | | | |
| 10 | 16QAM | 25 | 25 | 19.93 | | | |
| 10 | 16QAM | 50 | 0 | 19.04 | | | |
| 10 | 64QAM | 1 | 0 | 20.34 | | | 20.5 |
| 10 | 64QAM | 1 | 25 | 20.41 | | | |
| 10 | 64QAM | 1 | 49 | 20.50 | | | |
| 10 | 64QAM | 25 | 0 | 19.93 | | | 20 |
| 10 | 64QAM | 25 | 12 | 19.96 | | | |
| 10 | 64QAM | 25 | 25 | 19.93 | | | |
| 10 | 64QAM | 50 | 0 | 19.98 | | | |
| Channel | | | | 23205 | 23230 | 23255 | Tune-up limit (dBm) |
| Frequency (MHz) | | | | 779.5 | 782 | 784.5 | |
| 5 | QPSK | 1 | 0 | 20.96 | 20.80 | 20.94 | 21 |
| 5 | QPSK | 1 | 12 | 20.98 | 20.84 | 20.97 | |
| 5 | QPSK | 1 | 24 | 20.93 | 20.88 | 20.97 | |
| 5 | QPSK | 12 | 0 | 19.98 | 19.88 | 20.01 | 20.5 |
| 5 | QPSK | 12 | 7 | 19.99 | 20.22 | 20.09 | |
| 5 | QPSK | 12 | 13 | 19.93 | 19.95 | 20.02 | |
| 5 | QPSK | 25 | 0 | 19.94 | 19.97 | 19.99 | |
| 5 | 16QAM | 1 | 0 | 19.72 | 20.21 | 19.92 | 20.5 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5 | 16QAM | 1 | 12 | 19.76 | 20.30 | 20.08 | |
| 5 | 16QAM | 1 | 24 | 19.73 | 20.35 | 19.99 | |
| 5 | 16QAM | 12 | 0 | 19.98 | 19.87 | 19.92 | |
| 5 | 16QAM | 12 | 7 | 19.95 | 19.86 | 19.93 | 20.5 |
| 5 | 16QAM | 12 | 13 | 19.92 | 19.94 | 20.01 | |
| 5 | 16QAM | 25 | 0 | 19.11 | 19.13 | 19.10 | |
| 5 | 64QAM | 1 | 0 | 19.71 | 20.21 | 19.93 | |
| 5 | 64QAM | 1 | 12 | 19.75 | 20.30 | 20.08 | 20.5 |
| 5 | 64QAM | 1 | 24 | 19.72 | 20.35 | 19.98 | |
| 5 | 64QAM | 12 | 0 | 19.97 | 19.88 | 19.91 | |
| 5 | 64QAM | 12 | 7 | 19.86 | 19.85 | 19.90 | 20.5 |
| 5 | 64QAM | 12 | 13 | 19.91 | 19.94 | 20.01 | |
| 5 | 64QAM | 25 | 0 | 19.93 | 19.96 | 19.99 | |

**<FDD LTE Band 14>**

| BW [MHz] | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) |
|---|---|---|---|---|---|---|---|
| Channel | | | | 23330 | | | |
| Frequency (MHz) | | | | 793 | | | |
| 10 | QPSK | 1 | 0 | **21.99** | | | |
| 10 | QPSK | 1 | 25 | 21.96 | | | 22 |
| 10 | QPSK | 1 | 49 | 21.87 | | | |
| 10 | QPSK | 25 | 0 | **21.50** | | | |
| 10 | QPSK | 25 | 12 | 21.23 | | | 21.5 |
| 10 | QPSK | 25 | 25 | 21.05 | | | |
| 10 | QPSK | 50 | 0 | 21.12 | | | |
| 10 | 16QAM | 1 | 0 | 21.54 | | | |
| 10 | 16QAM | 1 | 25 | 21.51 | | | 22 |
| 10 | 16QAM | 1 | 49 | 21.52 | | | |
| 10 | 16QAM | 25 | 0 | 21.09 | | | |
| 10 | 16QAM | 25 | 12 | 21.06 | | | 21.5 |
| 10 | 16QAM | 25 | 25 | 21.04 | | | |
| 10 | 16QAM | 50 | 0 | 20.11 | | | |
| 10 | 64QAM | 1 | 0 | 21.55 | | | |
| 10 | 64QAM | 1 | 25 | 21.51 | | | 22 |
| 10 | 64QAM | 1 | 49 | 21.52 | | | |
| 10 | 64QAM | 25 | 0 | 21.09 | | | 21.5 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10 | 64QAM | 25 | 12 | 21.11 | | | |
| 10 | 64QAM | 25 | 25 | 21.03 | | | |
| 10 | 64QAM | 50 | 0 | 19.98 | | | |
| Channel | | | | 23305 | 23330 | 23355 | Tune-up limit (dBm) |
| Frequency (MHz) | | | | 790.5 | 793 | 795.5 | |
| 5 | QPSK | 1 | 0 | 21.83 | 21.84 | 21.89 | 22 |
| 5 | QPSK | 1 | 12 | 21.90 | 21.86 | 21.88 | |
| 5 | QPSK | 1 | 24 | 21.81 | 21.73 | 21.78 | |
| 5 | QPSK | 12 | 0 | 21.12 | 21.12 | 21.03 | 22 |
| 5 | QPSK | 12 | 7 | 21.19 | 21.14 | 21.93 | |
| 5 | QPSK | 12 | 13 | 21.11 | 20.98 | 21.10 | |
| 5 | QPSK | 25 | 0 | 21.13 | 21.06 | 21.10 | |
| 5 | 16QAM | 1 | 0 | 20.89 | 21.44 | 21.18 | 22 |
| 5 | 16QAM | 1 | 12 | 20.98 | 21.52 | 21.22 | |
| 5 | 16QAM | 1 | 24 | 20.89 | 21.31 | 21.06 | |
| 5 | 16QAM | 12 | 0 | 21.19 | 21.10 | 21.12 | 22 |
| 5 | 16QAM | 12 | 7 | 21.52 | 21.40 | 21.22 | |
| 5 | 16QAM | 12 | 13 | 21.07 | 21.06 | 21.09 | |
| 5 | 16QAM | 25 | 0 | 20.30 | 20.22 | 20.21 | |
| 5 | 64QAM | 1 | 0 | 20.87 | 21.44 | 21.19 | 22 |
| 5 | 64QAM | 1 | 12 | 20.95 | 21.51 | 21.21 | |
| 5 | 64QAM | 1 | 24 | 20.87 | 21.39 | 20.94 | |
| 5 | 64QAM | 12 | 0 | 21.16 | 21.08 | 21.12 | 21.5 |
| 5 | 64QAM | 12 | 7 | 21.11 | 21.09 | 21.13 | |
| 5 | 64QAM | 12 | 13 | 21.15 | 21.04 | 21.20 | |
| 5 | 64QAM | 25 | 0 | 21.07 | 21.03 | 21.07 | |

**<FDD 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) |
|---|---|---|---|---|---|---|---|
| Channel | | | | 23780 | 23790 | 23800 | |
| Frequency (MHz) | | | | 709 | 710 | 711 | |
| 10 | QPSK | 1 | 0 | 23.66 | 23.78 | 23.69 | 24 |
| 10 | QPSK | 1 | 25 | 23.66 | 23.64 | 23.67 | |
| 10 | QPSK | 1 | 49 | 23.57 | 23.52 | 23.52 | |
| 10 | QPSK | 25 | 0 | 22.74 | 22.75 | 22.75 | 23 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10 | QPSK | 25 | 12 | 22.74 | 22.70 | 22.79 | |
| 10 | QPSK | 25 | 25 | 22.65 | 22.66 | 22.69 | |
| 10 | QPSK | 50 | 0 | 22.73 | 22.63 | 22.69 | |
| 10 | 16QAM | 1 | 0 | 23.43 | 23.25 | 22.95 | |
| 10 | 16QAM | 1 | 25 | 23.37 | 23.19 | 22.93 | 23.5 |
| 10 | 16QAM | 1 | 49 | 23.28 | 23.05 | 22.68 | |
| 10 | 16QAM | 25 | 0 | 22.84 | 22.77 | 22.77 | |
| 10 | 16QAM | 25 | 12 | 22.68 | 22.70 | 22.66 | 23 |
| 10 | 16QAM | 25 | 25 | 22.64 | 22.66 | 22.59 | |
| 10 | 16QAM | 50 | 0 | 21.79 | 21.85 | 21.73 | |
| 10 | 64QAM | 1 | 0 | 23.43 | 23.27 | 22.97 | |
| 10 | 64QAM | 1 | 25 | 23.37 | 23.09 | 22.95 | 23.5 |
| 10 | 64QAM | 1 | 49 | 23.29 | 23.05 | 22.68 | |
| 10 | 64QAM | 25 | 0 | 22.83 | 22.77 | 22.77 | |
| 10 | 64QAM | 25 | 12 | 22.80 | 22.75 | 22.69 | 23 |
| 10 | 64QAM | 25 | 25 | 22.74 | 22.66 | 22.70 | |
| 10 | 64QAM | 50 | 0 | 22.71 | 22.73 | 22.69 | |
| Channel | | | | 23755 | 23790 | 23825 | Tune-up limit (dBm) |
| Frequency (MHz) | | | | 706.5 | 710 | 713.5 | |
| 5 | QPSK | 1 | 0 | 23.83 | 23.62 | 23.78 | |
| 5 | QPSK | 1 | 12 | 23.64 | 23.66 | 23.73 | 24 |
| 5 | QPSK | 1 | 24 | 23.90 | 23.61 | 23.62 | |
| 5 | QPSK | 12 | 0 | 22.84 | 22.74 | 22.75 | |
| 5 | QPSK | 12 | 7 | 22.80 | 22.79 | 22.76 | 23 |
| 5 | QPSK | 12 | 13 | 22.94 | 22.73 | 22.65 | |
| 5 | QPSK | 25 | 0 | 22.82 | 22.73 | 22.59 | |
| 5 | 16QAM | 1 | 0 | 22.64 | 23.21 | 22.85 | |
| 5 | 16QAM | 1 | 12 | 22.84 | 23.21 | 22.83 | 23.5 |
| 5 | 16QAM | 1 | 24 | 22.68 | 23.18 | 22.63 | |
| 5 | 16QAM | 12 | 0 | 22.83 | 22.74 | 22.76 | |
| 5 | 16QAM | 12 | 7 | 22.69 | 22.68 | 22.70 | 23 |
| 5 | 16QAM | 12 | 13 | 22.81 | 22.73 | 22.65 | |
| 5 | 16QAM | 25 | 0 | 22.13 | 21.90 | 21.82 | |
| 5 | 64QAM | 1 | 0 | 22.65 | 23.11 | 22.86 | |
| 5 | 64QAM | 1 | 12 | 22.84 | 23.21 | 22.84 | 23 |
| 5 | 64QAM | 1 | 24 | 22.68 | 23.17 | 22.63 | |
| 5 | 64QAM | 12 | 0 | 22.83 | 22.73 | 22.76 | 23 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5 | 64QAM | 12 | 7 | 22.80 | 22.79 | 22.74 | |
| 5 | 64QAM | 12 | 13 | 22.93 | 22.71 | 22.65 | |
| 5 | 64QAM | 25 | 0 | 22.80 | 22.71 | 22.58 | |

**<FDD 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) |
|---|---|---|---|---|---|---|---|
| Channel | | | | 26140 | 26365 | 26590 | |
| Frequency (MHz) | | | | 1860 | 1882.5 | 1905 | |
| 20 | QPSK | 1 | 0 | 23.58 | **24.10** | 23.80 | 24.5 |
| 20 | QPSK | 1 | 49 | 23.75 | 23.80 | 23.91 | |
| 20 | QPSK | 1 | 99 | 23.45 | 23.94 | 23.81 | |
| 20 | QPSK | 50 | 0 | 22.64 | 22.87 | 22.83 | 23 |
| 20 | QPSK | 50 | 24 | 22.63 | 22.80 | 22.80 | |
| 20 | QPSK | 50 | 50 | 22.84 | **22.90** | 22.82 | |
| 20 | QPSK | 100 | 0 | 22.74 | 22.92 | 22.85 | |
| 20 | 16QAM | 1 | 0 | 22.81 | 22.70 | 22.58 | 23 |
| 20 | 16QAM | 1 | 49 | 22.77 | 22.71 | 22.63 | |
| 20 | 16QAM | 1 | 99 | 22.79 | 22.73 | 22.45 | |
| 20 | 16QAM | 50 | 0 | 22.65 | 22.86 | 22.83 | 23 |
| 20 | 16QAM | 50 | 24 | 22.49 | 22.43 | 22.74 | |
| 20 | 16QAM | 50 | 50 | 22.84 | 22.89 | 22.84 | |
| 20 | 16QAM | 100 | 0 | 21.72 | 21.95 | 21.89 | |
| 20 | 64QAM | 1 | 0 | 22.79 | 22.70 | 22.61 | 23 |
| 20 | 64QAM | 1 | 49 | 22.74 | 22.71 | 22.63 | |
| 20 | 64QAM | 1 | 99 | 22.81 | 22.73 | 22.56 | |
| 20 | 64QAM | 50 | 0 | 22.66 | 22.86 | 22.83 | 23 |
| 20 | 64QAM | 50 | 24 | 22.70 | 22.75 | 22.58 | |
| 20 | 64QAM | 50 | 50 | 22.84 | 22.91 | 22.85 | |
| 20 | 64QAM | 100 | 0 | 22.74 | 22.91 | 22.84 | |
| Channel | | | | 26115 | 26340 | 26615 | Tune-up limit (dBm) |
| Frequency (MHz) | | | | 1857.5 | 1880 | 1907.5 | |
| 15 | QPSK | 1 | 0 | 23.49 | 23.88 | 23.95 | 24.5 |
| 15 | QPSK | 1 | 37 | 23.63 | 23.85 | 24.03 | |
| 15 | QPSK | 1 | 74 | 23.72 | 23.77 | 23.30 | |
| 15 | QPSK | 36 | 0 | 22.63 | 22.92 | 22.83 | 23 |
| 15 | QPSK | 36 | 20 | 22.64 | 22.88 | 22.84 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 15 | QPSK | 36 | 39 | 22.92 | 22.88 | 22.87 | |
| 15 | QPSK | 75 | 0 | 22.81 | 22.91 | 22.84 | |
| 15 | 16QAM | 1 | 0 | 22.86 | 22.93 | 22.91 | |
| 15 | 16QAM | 1 | 37 | 22.85 | 23.03 | 22.86 | 23.5 |
| 15 | 16QAM | 1 | 74 | 22.82 | 23.00 | 22.60 | |
| 15 | 16QAM | 36 | 0 | 22.64 | 22.94 | 22.83 | |
| 15 | 16QAM | 36 | 20 | 22.60 | 22.93 | 22.84 | 23 |
| 15 | 16QAM | 36 | 39 | 22.91 | 22.95 | 22.86 | |
| 15 | 16QAM | 75 | 0 | 21.86 | 21.96 | 21.92 | |
| 15 | 64QAM | 1 | 0 | 22.85 | 22.91 | 22.91 | |
| 15 | 64QAM | 1 | 37 | 22.86 | 23.01 | 22.87 | 23.5 |
| 15 | 64QAM | 1 | 74 | 22.82 | 23.00 | 22.50 | |
| 15 | 64QAM | 36 | 0 | 22.65 | 22.93 | 22.83 | |
| 15 | 64QAM | 36 | 20 | 22.76 | 22.68 | 22.80 | 23 |
| 15 | 64QAM | 36 | 39 | 22.90 | 22.94 | 22.87 | |
| 15 | 64QAM | 75 | 0 | 22.81 | 22.94 | 22.87 | |
| Channel | | | | 26090 | 26340 | 26640 | Tune-up limit |
| Frequency (MHz) | | | | 1855 | 1880 | 1910 | (dBm) |
| 10 | QPSK | 1 | 0 | 23.67 | 24.05 | 24.01 | |
| 10 | QPSK | 1 | 25 | 23.61 | 23.94 | 23.87 | 24.5 |
| 10 | QPSK | 1 | 49 | 23.86 | 23.88 | 23.51 | |
| 10 | QPSK | 25 | 0 | 22.68 | 22.89 | 22.80 | |
| 10 | QPSK | 25 | 12 | 22.66 | 22.80 | 22.46 | 23 |
| 10 | QPSK | 25 | 25 | 22.73 | 22.92 | 22.80 | |
| 10 | QPSK | 50 | 0 | 22.66 | 22.93 | 22.83 | |
| 10 | 16QAM | 1 | 0 | 22.99 | 23.07 | 22.74 | |
| 10 | 16QAM | 1 | 25 | 22.91 | 23.03 | 22.66 | 23.5 |
| 10 | 16QAM | 1 | 49 | 22.91 | 23.10 | 22.34 | |
| 10 | 16QAM | 25 | 0 | 22.68 | 22.91 | 22.77 | |
| 10 | 16QAM | 25 | 12 | 22.60 | 22.93 | 22.67 | 23 |
| 10 | 16QAM | 25 | 25 | 22.75 | 22.94 | 22.76 | |
| 10 | 16QAM | 50 | 0 | 21.73 | 21.95 | 21.88 | |
| 10 | 64QAM | 1 | 0 | 22.98 | 23.08 | 22.73 | |
| 10 | 64QAM | 1 | 25 | 22.89 | 23.02 | 22.67 | 23.5 |
| 10 | 64QAM | 1 | 49 | 22.92 | 23.12 | 22.40 | |
| 10 | 64QAM | 25 | 0 | 22.65 | 22.92 | 22.76 | |
| 10 | 64QAM | 25 | 12 | 22.60 | 22.83 | 22.70 | 23 |
| 10 | 64QAM | 25 | 25 | 22.70 | 22.92 | 22.80 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10 | 64QAM | 50 | 0 | 22.70 | 22.93 | 22.84 | |
| Channel | | | | 26065 | 26340 | 26665 | Tune-up limit |
| Frequency (MHz) | | | | 1852.5 | 1880 | 1912.5 | (dBm) |
| 5 | QPSK | 1 | 0 | 23.59 | 23.96 | 23.69 | |
| 5 | QPSK | 1 | 12 | 23.72 | 24.05 | 23.83 | 24.5 |
| 5 | QPSK | 1 | 24 | 23.64 | 23.90 | 23.46 | |
| 5 | QPSK | 12 | 0 | 22.70 | 22.91 | 22.81 | |
| 5 | QPSK | 12 | 7 | 22.73 | 22.90 | 22.83 | 23 |
| 5 | QPSK | 12 | 13 | 22.70 | 22.89 | 22.91 | |
| 5 | QPSK | 25 | 0 | 22.66 | 22.91 | 22.80 | |
| 5 | 16QAM | 1 | 0 | 22.91 | 22.99 | 22.95 | |
| 5 | 16QAM | 1 | 12 | 23.06 | 23.12 | 22.96 | 23.5 |
| 5 | 16QAM | 1 | 24 | 22.92 | 23.07 | 22.59 | |
| 5 | 16QAM | 12 | 0 | 22.70 | 22.92 | 22.84 | |
| 5 | 16QAM | 12 | 7 | 22.73 | 22.09 | 22.86 | 23 |
| 5 | 16QAM | 12 | 13 | 22.69 | 22.90 | 22.93 | |
| 5 | 16QAM | 25 | 0 | 21.79 | 21.93 | 21.80 | |
| 5 | 64QAM | 1 | 0 | 22.92 | 22.99 | 22.98 | |
| 5 | 64QAM | 1 | 12 | 22.99 | 23.13 | 22.96 | 23.5 |
| 5 | 64QAM | 1 | 24 | 22.90 | 23.08 | 22.64 | |
| 5 | 64QAM | 12 | 0 | 22.66 | 22.92 | 22.79 | |
| 5 | 64QAM | 12 | 7 | 22.73 | 22.90 | 22.74 | 23 |
| 5 | 64QAM | 12 | 13 | 22.71 | 22.90 | 22.96 | |
| 5 | 64QAM | 25 | 0 | 22.70 | 22.92 | 22.77 | |
| Channel | | | | 26055 | 26340 | 26675 | Tune-up limit |
| Frequency (MHz) | | | | 1851.5 | 1880 | 1913.5 | (dBm) |
| 3 | QPSK | 1 | 0 | 23.53 | 23.82 | 23.78 | |
| 3 | QPSK | 1 | 8 | 23.55 | 23.86 | 24.01 | 24.5 |
| 3 | QPSK | 1 | 14 | 23.50 | 23.81 | 23.65 | |
| 3 | QPSK | 8 | 0 | 23.50 | 23.83 | 23.74 | |
| 3 | QPSK | 8 | 4 | 23.42 | 23.36 | 23.65 | 24 |
| 3 | QPSK | 8 | 7 | 23.52 | 23.78 | 23.66 | |
| 3 | QPSK | 15 | 0 | 22.67 | 22.88 | 23.37 | |
| 3 | 16QAM | 1 | 0 | 22.85 | 22.99 | 22.57 | |
| 3 | 16QAM | 1 | 8 | 22.90 | 22.98 | 22.74 | 23 |
| 3 | 16QAM | 1 | 14 | 22.86 | 22.96 | 22.61 | |
| 3 | 16QAM | 8 | 0 | 22.86 | 22.97 | 22.57 | 23 |
| 3 | 16QAM | 8 | 4 | 22.94 | 22.80 | 22.84 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3 | 16QAM | 8 | 7 | 22.85 | 22.97 | 22.88 | |
| 3 | 16QAM | 15 | 0 | 21.73 | 21.84 | 23.70 | |
| 3 | 64QAM | 1 | 0 | 22.87 | 22.97 | 22.57 | |
| 3 | 64QAM | 1 | 8 | 22.90 | 23.00 | 22.73 | 23 |
| 3 | 64QAM | 1 | 14 | 22.86 | 22.96 | 22.58 | |
| 3 | 64QAM | 8 | 0 | 22.87 | 22.97 | 22.57 | |
| 3 | 64QAM | 8 | 4 | 22.98 | 22.75 | 22.76 | 23 |
| 3 | 64QAM | 8 | 7 | 22.87 | 22.98 | 22.88 | |
| 3 | 64QAM | 15 | 0 | 21.73 | 21.81 | 23.70 | |
| Channel | | | | 26047 | 26340 | 26683 | Tune-up limit |
| Frequency (MHz) | | | | 1850.7 | 1880 | 1914.3 | (dBm) |
| 1.4 | QPSK | 1 | 0 | 23.65 | 23.72 | 23.64 | |
| 1.4 | QPSK | 1 | 3 | 23.77 | 23.79 | 22.17 | |
| 1.4 | QPSK | 1 | 5 | 23.63 | 23.73 | 23.71 | 24 |
| 1.4 | QPSK | 3 | 0 | 23.54 | 23.66 | 22.96 | |
| 1.4 | QPSK | 3 | 1 | 23.48 | 23.42 | 22.34 | |
| 1.4 | QPSK | 3 | 3 | 23.51 | 23.66 | 21.67 | |
| 1.4 | QPSK | 6 | 0 | 22.57 | 22.82 | 22.20 | 23 |
| 1.4 | 16QAM | 1 | 0 | 22.64 | 22.86 | 22.53 | |
| 1.4 | 16QAM | 1 | 3 | 22.76 | 22.96 | 21.75 | |
| 1.4 | 16QAM | 1 | 5 | 22.64 | 22.88 | 22.75 | 24 |
| 1.4 | 16QAM | 3 | 0 | 23.53 | 23.66 | 23.00 | |
| 1.4 | 16QAM | 3 | 1 | 23.34 | 23.69 | 23.42 | |
| 1.4 | 16QAM | 3 | 3 | 23.50 | 23.62 | 21.71 | |
| 1.4 | 16QAM | 6 | 0 | 21.71 | 21.77 | 21.93 | 22 |
| 1.4 | 64QAM | 1 | 0 | 22.63 | 22.87 | 22.76 | |
| 1.4 | 64QAM | 1 | 3 | 22.75 | 22.95 | 21.79 | |
| 1.4 | 64QAM | 1 | 5 | 22.65 | 22.89 | 22.81 | |
| 1.4 | 64QAM | 3 | 0 | 23.52 | 23.66 | 23.03 | 24 |
| 1.4 | 64QAM | 3 | 1 | 23.40 | 23.39 | 23.32 | |
| 1.4 | 64QAM | 3 | 3 | 23.51 | 23.67 | 21.73 | |
| 1.4 | 64QAM | 6 | 0 | 22.55 | 22.80 | 22.25 | |

**<FDD LTE Band 26>**

| BW [MHz] | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) |
|---|---|---|---|---|---|---|---|
| Channel | | | | 26765 | 26865 | 26965 | |
| Frequency (MHz) | | | | 821.5 | 831.5 | 841.5 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 15 | QPSK | 1 | 0 | 23.54 | 23.60 | **23.89** | 24 |
| 15 | QPSK | 1 | 37 | 23.55 | 23.55 | 23.52 | |
| 15 | QPSK | 1 | 74 | 23.38 | 23.50 | 23.32 | |
| 15 | QPSK | 36 | 0 | **22.71** | 22.67 | 22.66 | 23 |
| 15 | QPSK | 36 | 20 | 22.70 | 22.68 | 22.54 | |
| 15 | QPSK | 36 | 39 | 22.49 | 22.71 | 22.59 | |
| 15 | QPSK | 75 | 0 | 22.67 | 22.65 | 22.70 | |
| 15 | 16QAM | 1 | 0 | 23.05 | 23.02 | 22.87 | 23.5 |
| 15 | 16QAM | 1 | 37 | 23.14 | 22.99 | 22.89 | |
| 15 | 16QAM | 1 | 74 | 23.11 | 22.95 | 22.72 | |
| 15 | 16QAM | 36 | 0 | 22.95 | 22.87 | 22.84 | 23 |
| 15 | 16QAM | 36 | 20 | 22.97 | 22.75 | 22.80 | |
| 15 | 16QAM | 36 | 39 | 22.90 | 22.89 | 22.84 | |
| 15 | 16QAM | 75 | 0 | 21.98 | 21.90 | 21.83 | |
| 15 | 64QAM | 1 | 0 | 23.06 | 23.04 | 22.87 | 23.5 |
| 15 | 64QAM | 1 | 37 | 23.13 | 23.01 | 22.89 | |
| 15 | 64QAM | 1 | 74 | 23.10 | 22.98 | 22.72 | |
| 15 | 64QAM | 36 | 0 | 22.94 | 22.87 | 22.84 | 23 |
| 15 | 64QAM | 36 | 20 | 22.86 | 22.80 | 22.74 | |
| 15 | 64QAM | 36 | 39 | 22.89 | 22.89 | 22.82 | |
| 15 | 64QAM | 75 | 0 | 22.82 | 22.85 | 22.77 | |
| Channel | | | | 26740 | 26865 | 26990 | Tune-up limit |
| Frequency (MHz) | | | | 819 | 831.5 | 844 | (dBm) |
| 10 | QPSK | 1 | 0 | 23.66 | 23.78 | 23.67 | 24 |
| 10 | QPSK | 1 | 25 | 23.76 | 23.76 | 23.73 | |
| 10 | QPSK | 1 | 49 | 23.76 | 23.81 | 23.81 | |
| 10 | QPSK | 25 | 0 | 22.94 | 22.88 | 22.77 | 23 |
| 10 | QPSK | 25 | 12 | 22.62 | 22.95 | 22.76 | |
| 10 | QPSK | 25 | 25 | 22.90 | 22.79 | 22.81 | |
| 10 | QPSK | 50 | 0 | 22.94 | 22.81 | 22.76 | |
| 10 | 16QAM | 1 | 0 | 23.03 | 23.08 | 22.69 | 23.5 |
| 10 | 16QAM | 1 | 25 | 23.05 | 22.96 | 22.76 | |
| 10 | 16QAM | 1 | 49 | 23.14 | 23.00 | 22.63 | |
| 10 | 16QAM | 25 | 0 | 22.94 | 22.88 | 22.78 | 23 |
| 10 | 16QAM | 25 | 12 | 22.88 | 22.86 | 22.63 | |
| 10 | 16QAM | 25 | 25 | 22.90 | 22.82 | 22.81 | |
| 10 | 16QAM | 50 | 0 | 22.01 | 21.88 | 21.80 | |
| 10 | 64QAM | 1 | 0 | 23.03 | 23.06 | 22.69 | 23.5 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10 | 64QAM | 1 | 25 | 23.03 | 22.98 | 22.74 | |
| 10 | 64QAM | 1 | 49 | 23.13 | 22.97 | 22.60 | |
| 10 | 64QAM | 25 | 0 | 22.94 | 22.89 | 22.77 | |
| 10 | 64QAM | 25 | 12 | 22.85 | 22.76 | 22.64 | 23 |
| 10 | 64QAM | 25 | 25 | 22.97 | 22.82 | 22.85 | |
| 10 | 64QAM | 50 | 0 | 22.93 | 22.81 | 22.74 | |
| Channel | | | | 26715 | 26865 | 27015 | Tune-up limit |
| Frequency (MHz) | | | | 816.5 | 831.5 | 846.5 | (dBm) |
| 5 | QPSK | 1 | 0 | 23.76 | 23.82 | 23.72 | |
| 5 | QPSK | 1 | 12 | 23.66 | 23.67 | 23.71 | 24 |
| 5 | QPSK | 1 | 24 | 23.79 | 23.80 | 23.65 | |
| 5 | QPSK | 12 | 0 | 22.93 | 22.88 | 22.87 | |
| 5 | QPSK | 12 | 7 | 22.96 | 22.81 | 22.83 | 23 |
| 5 | QPSK | 12 | 13 | 22.91 | 22.81 | 22.81 | |
| 5 | QPSK | 25 | 0 | 22.92 | 22.85 | 22.80 | |
| 5 | 16QAM | 1 | 0 | 23.11 | 23.11 | 23.11 | |
| 5 | 16QAM | 1 | 12 | 23.22 | 23.06 | 23.10 | 23.5 |
| 5 | 16QAM | 1 | 24 | 23.13 | 23.09 | 22.93 | |
| 5 | 16QAM | 12 | 0 | 22.93 | 22.88 | 22.86 | |
| 5 | 16QAM | 12 | 7 | 22.89 | 22.74 | 22.96 | 23 |
| 5 | 16QAM | 12 | 13 | 22.90 | 22.79 | 22.79 | |
| 5 | 16QAM | 25 | 0 | 22.02 | 21.85 | 21.88 | |
| 5 | 64QAM | 1 | 0 | 23.12 | 23.06 | 23.11 | |
| 5 | 64QAM | 1 | 12 | 23.22 | 23.08 | 23.11 | 23.5 |
| 5 | 64QAM | 1 | 24 | 23.13 | 23.10 | 22.97 | |
| 5 | 64QAM | 12 | 0 | 22.93 | 22.86 | 22.85 | |
| 5 | 64QAM | 12 | 7 | 22.74 | 22.70 | 22.85 | 23 |
| 5 | 64QAM | 12 | 13 | 22.89 | 22.83 | 22.78 | |
| 5 | 64QAM | 25 | 0 | 22.90 | 22.85 | 22.84 | |
| Channel | | | | 26705 | 26865 | 27025 | Tune-up limit |
| Frequency (MHz) | | | | 815.5 | 831.5 | 847.5 | (dBm) |
| 3 | QPSK | 1 | 0 | 23.59 | 23.53 | 23.44 | |
| 3 | QPSK | 1 | 8 | 23.64 | 23.53 | 23.32 | 24 |
| 3 | QPSK | 1 | 14 | 23.65 | 23.38 | 23.29 | |
| 3 | QPSK | 8 | 0 | 23.62 | 23.51 | 23.40 | |
| 3 | QPSK | 8 | 4 | 23.52 | 23.65 | 23.44 | 24 |
| 3 | QPSK | 8 | 7 | 23.62 | 23.46 | 23.28 | |
| 3 | QPSK | 15 | 0 | 22.84 | 22.62 | 22.39 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3 | 16QAM | 1 | 0 | 23.29 | 22.88 | 22.54 | 23.5 |
| 3 | 16QAM | 1 | 8 | 23.26 | 22.90 | 22.51 | |
| 3 | 16QAM | 1 | 14 | 23.27 | 22.85 | 22.35 | |
| 3 | 16QAM | 8 | 0 | 23.29 | 22.90 | 22.56 | 23.5 |
| 3 | 16QAM | 8 | 4 | 22.64 | 22.99 | 22.56 | |
| 3 | 16QAM | 8 | 7 | 23.26 | 22.86 | 22.35 | |
| 3 | 16QAM | 15 | 0 | 21.93 | 21.59 | 21.50 | |
| 3 | 64QAM | 1 | 0 | 23.30 | 22.91 | 22.56 | 23.5 |
| 3 | 64QAM | 1 | 8 | 23.26 | 22.92 | 22.51 | |
| 3 | 64QAM | 1 | 14 | 23.26 | 22.87 | 22.26 | |
| 3 | 64QAM | 8 | 0 | 23.29 | 22.92 | 22.46 | 23.5 |
| 3 | 64QAM | 8 | 4 | 22.93 | 22.65 | 22.43 | |
| 3 | 64QAM | 8 | 7 | 23.25 | 22.87 | 22.35 | |
| 3 | 64QAM | 15 | 0 | 21.93 | 21.60 | 21.50 | |
| Channel | | | | 26697 | 26865 | 27033 | Tune-up limit |
| Frequency (MHz) | | | | 814.7 | 831.5 | 848.3 | (dBm) |
| 1.4 | QPSK | 1 | 0 | 23.71 | 23.67 | 23.71 | 24 |
| 1.4 | QPSK | 1 | 3 | 23.81 | 23.75 | 23.75 | |
| 1.4 | QPSK | 1 | 5 | 23.82 | 23.78 | 23.72 | |
| 1.4 | QPSK | 3 | 0 | 23.65 | 23.67 | 23.62 | |
| 1.4 | QPSK | 3 | 1 | 23.34 | 23.35 | 23.62 | |
| 1.4 | QPSK | 3 | 3 | 23.72 | 23.64 | 23.57 | |
| 1.4 | QPSK | 6 | 0 | 22.83 | 22.80 | 22.68 | 23 |
| 1.4 | 16QAM | 1 | 0 | 22.77 | 22.90 | 22.60 | 24 |
| 1.4 | 16QAM | 1 | 3 | 22.85 | 22.96 | 22.62 | |
| 1.4 | 16QAM | 1 | 5 | 22.89 | 22.99 | 22.53 | |
| 1.4 | 16QAM | 3 | 0 | 23.66 | 23.68 | 23.62 | |
| 1.4 | 16QAM | 3 | 1 | 23.65 | 23.47 | 23.19 | |
| 1.4 | 16QAM | 3 | 3 | 23.75 | 23.63 | 23.54 | |
| 1.4 | 16QAM | 6 | 0 | 21.95 | 21.78 | 21.73 | 22 |
| 1.4 | 64QAM | 1 | 0 | 22.76 | 22.90 | 22.62 | 24 |
| 1.4 | 64QAM | 1 | 3 | 22.88 | 22.97 | 22.62 | |
| 1.4 | 64QAM | 1 | 5 | 22.89 | 22.99 | 22.54 | |
| 1.4 | 64QAM | 3 | 0 | 23.71 | 23.68 | 23.63 | |
| 1.4 | 64QAM | 3 | 1 | 22.99 | 23.42 | 23.54 | |
| 1.4 | 64QAM | 3 | 3 | 23.78 | 23.61 | 23.55 | |
| 1.4 | 64QAM | 6 | 0 | 22.84 | 22.82 | 22.71 | |

**<FDD LTE Band 66>**

| BW [MHz] | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) |
|---|---|---|---|---|---|---|---|
| Channel | | | | 132072 | 132322 | 132572 | |
| Frequency (MHz) | | | | 1720 | 1745 | 1770 | |
| 20 | QPSK | 1 | 0 | 20.07 | 20.10 | 19.77 | 20.5 |
| 20 | QPSK | 1 | 49 | 20.08 | **20.16** | 19.78 | |
| 20 | QPSK | 1 | 99 | 19.98 | 19.99 | 19.68 | |
| 20 | QPSK | 50 | 0 | 18.96 | **19.09** | 18.81 | 19.5 |
| 20 | QPSK | 50 | 24 | 18.93 | 19.06 | 18.74 | |
| 20 | QPSK | 50 | 50 | 18.92 | 18.90 | 18.77 | |
| 20 | QPSK | 100 | 0 | 18.92 | 18.95 | 18.74 | |
| 20 | 16QAM | 1 | 0 | 19.17 | 19.31 | 18.50 | 19.5 |
| 20 | 16QAM | 1 | 49 | 19.30 | 19.36 | 18.52 | |
| 20 | 16QAM | 1 | 99 | 19.14 | 19.16 | 18.30 | |
| 20 | 16QAM | 50 | 0 | 18.01 | 17.98 | 17.94 | 18.5 |
| 20 | 16QAM | 50 | 24 | 18.00 | 17.62 | 17.90 | |
| 20 | 16QAM | 50 | 50 | 17.97 | 17.95 | 17.89 | |
| 20 | 16QAM | 100 | 0 | 18.05 | 18.03 | 17.96 | |
| 20 | 64QAM | 1 | 0 | 19.27 | 19.31 | 18.50 | 19 |
| 20 | 64QAM | 1 | 49 | 19.31 | 19.37 | 18.51 | |
| 20 | 64QAM | 1 | 99 | 19.13 | 19.25 | 18.40 | |
| 20 | 64QAM | 50 | 0 | 18.00 | 17.98 | 17.94 | 18.5 |
| 20 | 64QAM | 50 | 24 | 17.62 | 17.99 | 17.93 | |
| 20 | 64QAM | 50 | 50 | 17.96 | 17.94 | 17.90 | |
| 20 | 64QAM | 100 | 0 | 18.04 | 18.03 | 17.95 | |
| Channel | | | | 132047 | 132322 | 132597 | Tune-up limit |
| Frequency (MHz) | | | | 1717.5 | 1745 | 1772.5 | (dBm) |
| 15 | QPSK | 1 | 0 | 19.96 | 19.99 | 19.93 | 20 |
| 15 | QPSK | 1 | 37 | 19.98 | 19.90 | 19.98 | |
| 15 | QPSK | 1 | 74 | 19.82 | 19.81 | 19.85 | |
| 15 | QPSK | 36 | 0 | 18.80 | 18.91 | 18.73 | 19.5 |
| 15 | QPSK | 36 | 20 | 18.82 | 19.11 | 18.70 | |
| 15 | QPSK | 36 | 39 | 18.81 | 18.81 | 18.74 | |
| 15 | QPSK | 75 | 0 | 18.80 | 18.85 | 18.73 | |
| 15 | 16QAM | 1 | 0 | 19.17 | 19.16 | 18.81 | 19.5 |
| 15 | 16QAM | 1 | 37 | 19.31 | 19.18 | 18.87 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 15 | 16QAM | 1 | 74 | 19.18 | 18.98 | 18.62 | |
| 15 | 16QAM | 36 | 0 | 18.06 | 17.96 | 17.81 | 18.5 |
| 15 | 16QAM | 36 | 20 | 17.73 | 17.98 | 17.77 | |
| 15 | 16QAM | 36 | 39 | 17.98 | 17.87 | 17.83 | |
| 15 | 16QAM | 75 | 0 | 17.94 | 17.95 | 17.85 | |
| 15 | 64QAM | 1 | 0 | 19.26 | 19.15 | 18.81 | 19.5 |
| 15 | 64QAM | 1 | 37 | 19.31 | 19.16 | 18.87 | |
| 15 | 64QAM | 1 | 74 | 19.17 | 18.98 | 18.63 | |
| 15 | 64QAM | 36 | 0 | 18.05 | 17.96 | 17.89 | 18.5 |
| 15 | 64QAM | 36 | 20 | 18.06 | 17.99 | 17.95 | |
| 15 | 64QAM | 36 | 39 | 17.97 | 17.86 | 17.82 | |
| 15 | 64QAM | 75 | 0 | 17.93 | 17.96 | 17.85 | |
| Channel | | | | 132022 | 132322 | 132622 | Tune-up limit |
| Frequency (MHz) | | | | 1715 | 1745 | 1775 | (dBm) |
| 10 | QPSK | 1 | 0 | 19.95 | 19.86 | 19.86 | 20 |
| 10 | QPSK | 1 | 25 | 19.83 | 19.80 | 19.86 | |
| 10 | QPSK | 1 | 49 | 19.82 | 19.80 | 19.82 | |
| 10 | QPSK | 25 | 0 | 18.95 | 18.96 | 18.78 | 19.5 |
| 10 | QPSK | 25 | 12 | 18.93 | 19.01 | 18.88 | |
| 10 | QPSK | 25 | 25 | 18.92 | 18.95 | 18.74 | |
| 10 | QPSK | 50 | 0 | 18.98 | 18.89 | 18.85 | |
| 10 | 16QAM | 1 | 0 | 19.16 | 19.10 | 19.11 | 19.5 |
| 10 | 16QAM | 1 | 25 | 19.17 | 19.08 | 19.04 | |
| 10 | 16QAM | 1 | 49 | 19.18 | 18.98 | 18.98 | |
| 10 | 16QAM | 25 | 0 | 18.12 | 18.04 | 17.80 | 18.5 |
| 10 | 16QAM | 25 | 12 | 18.63 | 17.92 | 17.74 | |
| 10 | 16QAM | 25 | 25 | 17.96 | 18.03 | 17.79 | |
| 10 | 16QAM | 50 | 0 | 18.01 | 18.04 | 17.96 | |
| 10 | 64QAM | 1 | 0 | 19.14 | 19.11 | 19.11 | 19.5 |
| 10 | 64QAM | 1 | 25 | 19.17 | 19.08 | 19.04 | |
| 10 | 64QAM | 1 | 49 | 19.07 | 18.98 | 19.07 | |
| 10 | 64QAM | 25 | 0 | 18.11 | 18.04 | 17.80 | 19 |
| 10 | 64QAM | 25 | 12 | 18.62 | 18.01 | 17.70 | |
| 10 | 64QAM | 25 | 25 | 18.05 | 18.04 | 17.78 | |
| 10 | 64QAM | 50 | 0 | 18.00 | 17.95 | 17.95 | |
| Channel | | | | 131997 | 132322 | 132647 | Tune-up limit |
| Frequency (MHz) | | | | 1712.5 | 1745 | 1777.5 | (dBm) |
| 5 | QPSK | 1 | 0 | 19.80 | 19.88 | 19.69 | 20.5 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5 | QPSK | 1 | 12 | 20.03 | 20.03 | 19.88 | |
| 5 | QPSK | 1 | 24 | 19.79 | 19.79 | 19.63 | |
| 5 | QPSK | 12 | 0 | 19.01 | 18.94 | 18.78 | 19.5 |
| 5 | QPSK | 12 | 7 | 19.08 | 19.15 | 18.66 | |
| 5 | QPSK | 12 | 13 | 18.89 | 18.91 | 18.70 | |
| 5 | QPSK | 25 | 0 | 18.93 | 18.92 | 18.72 | |
| 5 | 16QAM | 1 | 0 | 19.39 | 19.04 | 19.09 | 20 |
| 5 | 16QAM | 1 | 12 | 19.67 | 19.18 | 19.29 | |
| 5 | 16QAM | 1 | 24 | 19.40 | 18.96 | 19.06 | |
| 5 | 16QAM | 12 | 0 | 17.97 | 17.99 | 17.98 | 18.5 |
| 5 | 16QAM | 12 | 7 | 17.95 | 17.83 | 17.89 | |
| 5 | 16QAM | 12 | 13 | 17.97 | 18.06 | 17.90 | |
| 5 | 16QAM | 25 | 0 | 17.99 | 18.01 | 17.81 | |
| 5 | 64QAM | 1 | 0 | 19.39 | 19.04 | 19.22 | 20 |
| 5 | 64QAM | 1 | 12 | 19.54 | 19.26 | 19.39 | |
| 5 | 64QAM | 1 | 24 | 19.29 | 19.06 | 19.16 | |
| 5 | 64QAM | 12 | 0 | 17.96 | 18.11 | 17.88 | 18.5 |
| 5 | 64QAM | 12 | 7 | 17.82 | 18.26 | 17.83 | |
| 5 | 64QAM | 12 | 13 | 17.95 | 18.05 | 17.80 | |
| 5 | 64QAM | 25 | 0 | 17.98 | 18.00 | 17.81 | |
| Channel | | | | 131987 | 132322 | 132657 | Tune-up limit |
| Frequency (MHz) | | | | 1711.5 | 1745 | 1778.5 | (dBm) |
| 3 | QPSK | 1 | 0 | 19.79 | 19.77 | 19.74 | 20 |
| 3 | QPSK | 1 | 8 | 19.87 | 19.89 | 19.87 | |
| 3 | QPSK | 1 | 14 | 19.75 | 19.61 | 19.78 | |
| 3 | QPSK | 8 | 0 | 18.96 | 18.91 | 18.82 | 19.5 |
| 3 | QPSK | 8 | 4 | 18.86 | 18.75 | 19.13 | |
| 3 | QPSK | 8 | 7 | 18.92 | 18.85 | 18.80 | |
| 3 | QPSK | 15 | 0 | 18.94 | 18.92 | 18.82 | |
| 3 | 16QAM | 1 | 0 | 19.11 | 18.93 | 19.01 | 19.5 |
| 3 | 16QAM | 1 | 8 | 19.21 | 19.07 | 19.05 | |
| 3 | 16QAM | 1 | 14 | 19.10 | 18.89 | 18.99 | |
| 3 | 16QAM | 8 | 0 | 18.03 | 17.97 | 17.90 | 18.5 |
| 3 | 16QAM | 8 | 4 | 17.82 | 17.85 | 17.96 | |
| 3 | 16QAM | 8 | 7 | 17.99 | 18.01 | 17.89 | |
| 3 | 16QAM | 15 | 0 | 17.94 | 17.93 | 17.79 | |
| 3 | 64QAM | 1 | 0 | 19.11 | 18.92 | 19.02 | 19.5 |
| 3 | 64QAM | 1 | 8 | 19.10 | 19.07 | 19.04 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3 | 64QAM | 1 | 14 | 19.09 | 18.89 | 18.99 | |
| 3 | 64QAM | 8 | 0 | 18.01 | 17.98 | 17.88 | 18.5 |
| 3 | 64QAM | 8 | 4 | 18.09 | 17.94 | 17.63 | |
| 3 | 64QAM | 8 | 7 | 18.08 | 17.90 | 17.89 | |
| 3 | 64QAM | 15 | 0 | 18.02 | 17.93 | 17.88 | |
| Channel | | | | 131979 | 132322 | 132665 | Tune-up limit (dBm) |
| Frequency (MHz) | | | | 1710.7 | 1745 | 1779.3 | |
| 1.4 | QPSK | 1 | 0 | 19.68 | 19.92 | 19.73 | 20 |
| 1.4 | QPSK | 1 | 3 | 19.83 | 19.97 | 19.93 | |
| 1.4 | QPSK | 1 | 5 | 19.75 | 19.92 | 19.71 | |
| 1.4 | QPSK | 3 | 0 | 19.82 | 19.87 | 19.80 | |
| 1.4 | QPSK | 3 | 1 | 19.86 | 19.85 | 19.83 | |
| 1.4 | QPSK | 3 | 3 | 19.76 | 19.81 | 19.74 | |
| 1.4 | QPSK | 6 | 0 | 18.89 | 18.82 | 18.75 | 19 |
| 1.4 | 16QAM | 1 | 0 | 18.93 | 19.11 | 18.74 | 19.5 |
| 1.4 | 16QAM | 1 | 3 | 19.06 | 19.24 | 18.82 | |
| 1.4 | 16QAM | 1 | 5 | 18.99 | 19.09 | 18.63 | |
| 1.4 | 16QAM | 3 | 0 | 18.88 | 18.99 | 18.97 | |
| 1.4 | 16QAM | 3 | 1 | 18.65 | 18.74 | 18.85 | |
| 1.4 | 16QAM | 3 | 3 | 18.76 | 18.88 | 18.92 | |
| 1.4 | 16QAM | 6 | 0 | 17.98 | 17.92 | 17.90 | 18 |
| 1.4 | 64QAM | 1 | 0 | 18.89 | 19.09 | 18.76 | 19.5 |
| 1.4 | 64QAM | 1 | 3 | 19.03 | 19.22 | 18.83 | |
| 1.4 | 64QAM | 1 | 5 | 18.95 | 19.08 | 18.74 | |
| 1.4 | 64QAM | 3 | 0 | 18.86 | 18.97 | 18.98 | |
| 1.4 | 64QAM | 3 | 1 | 18.79 | 18.92 | 18.99 | |
| 1.4 | 64QAM | 3 | 3 | 18.84 | 18.96 | 18.93 | |
| 1.4 | 64QAM | 6 | 0 | 17.95 | 17.90 | 17.91 | |

**<FDD LTE Band 71>**

| BW [MHz] | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) |
|---|---|---|---|---|---|---|---|
| Channel | | | | 133222 | 133322 | 133372 | |
| Frequency (MHz) | | | | 673 | 683 | 688 | |
| 20 | QPSK | 1 | 0 | 21.54 | **22.15** | 21.58 | 22.5 |
| 20 | QPSK | 1 | 49 | 21.93 | 22.01 | 21.83 | |
| 20 | QPSK | 1 | 99 | 21.35 | 21.46 | 21.62 | |
| 20 | QPSK | 50 | 0 | 20.74 | 20.81 | 20.74 | 21 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 20 | QPSK | 50 | 24 | 20.79 | 20.65 | 20.67 | |
| 20 | QPSK | 50 | 50 | 20.79 | **20.89** | 20.52 | |
| 20 | QPSK | 100 | 0 | 20.76 | 20.85 | 20.88 | |
| 20 | 16QAM | 1 | 0 | 21.44 | 21.50 | 21.46 | |
| 20 | 16QAM | 1 | 49 | 21.15 | 21.05 | 20.93 | 21.5 |
| 20 | 16QAM | 1 | 99 | 20.86 | 20.65 | 20.54 | |
| 20 | 16QAM | 50 | 0 | 19.84 | 19.92 | 19.93 | |
| 20 | 16QAM | 50 | 24 | 19.82 | 19.83 | 19.87 | |
| 20 | 16QAM | 50 | 50 | 19.73 | 19.88 | 19.76 | 20 |
| 20 | 16QAM | 100 | 0 | 19.82 | 19.85 | 19.80 | |
| 20 | 64QAM | 1 | 0 | 21.11 | 21.24 | 20.80 | |
| 20 | 64QAM | 1 | 49 | 21.29 | 20.25 | 20.76 | 21.5 |
| 20 | 64QAM | 1 | 99 | 20.90 | 20.43 | 20.51 | |
| 20 | 64QAM | 50 | 0 | 19.77 | 19.91 | 19.92 | |
| 20 | 64QAM | 50 | 24 | 19.76 | 19.76 | 19.75 | |
| 20 | 64QAM | 50 | 50 | 19.80 | 19.80 | 19.91 | 20 |
| 20 | 64QAM | 100 | 0 | 19.81 | 19.88 | 19.91 | |
| Channel | | | | 133197 | 133297 | 133397 | Tune-up limit |
| Frequency (MHz) | | | | 670.5 | 680.5 | 690.5 | (dBm) |
| 15 | QPSK | 1 | 0 | 21.53 | 21.65 | 21.06 | |
| 15 | QPSK | 1 | 37 | 21.48 | 21.79 | 21.18 | 22 |
| 15 | QPSK | 1 | 74 | 21.61 | 21.57 | 21.09 | |
| 15 | QPSK | 36 | 0 | 20.85 | 20.96 | 20.85 | |
| 15 | QPSK | 36 | 20 | 20.80 | 20.90 | 20.96 | |
| 15 | QPSK | 36 | 39 | 20.72 | 20.77 | 20.74 | 21 |
| 15 | QPSK | 75 | 0 | 20.77 | 20.86 | 20.93 | |
| 15 | 16QAM | 1 | 0 | 20.96 | 21.50 | 20.91 | |
| 15 | 16QAM | 1 | 37 | 20.83 | 21.54 | 20.95 | 22 |
| 15 | 16QAM | 1 | 74 | 20.85 | 21.73 | 20.97 | |
| 15 | 16QAM | 36 | 0 | 20.44 | 21.03 | 20.52 | |
| 15 | 16QAM | 36 | 20 | 20.78 | 20.57 | 20.86 | |
| 15 | 16QAM | 36 | 39 | 20.39 | 20.62 | 20.54 | 21 |
| 15 | 16QAM | 75 | 0 | 20.69 | 20.74 | 20.22 | |
| 15 | 64QAM | 1 | 0 | 21.40 | 21.54 | 21.24 | |
| 15 | 64QAM | 1 | 37 | 21.10 | 21.09 | 21.67 | 22 |
| 15 | 64QAM | 1 | 74 | 21.04 | 20.91 | 21.10 | |
| 15 | 64QAM | 36 | 0 | 20.82 | 20.97 | 20.34 | |
| 15 | 64QAM | 36 | 20 | 20.93 | 20.26 | 20.26 | 21 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 15 | 64QAM | 36 | 39 | 20.62 | 20.97 | 20.53 | |
| 15 | 64QAM | 75 | 0 | 20.38 | 21.01 | 20.51 | |
| Channel | | | | 133172 | 133297 | 133422 | Tune-up limit |
| Frequency (MHz) | | | | 668 | 680.5 | 693 | (dBm) |
| 10 | QPSK | 1 | 0 | 22.01 | 22.03 | 21.94 | 22.5 |
| 10 | QPSK | 1 | 25 | 21.94 | 21.95 | 21.88 | |
| 10 | QPSK | 1 | 49 | 21.53 | 21.66 | 21.85 | |
| 10 | QPSK | 25 | 0 | 20.83 | 20.92 | 20.96 | 21.5 |
| 10 | QPSK | 25 | 12 | 20.98 | 20.96 | 21.01 | |
| 10 | QPSK | 25 | 25 | 20.84 | 20.75 | 21.04 | |
| 10 | QPSK | 50 | 0 | 20.43 | 20.92 | 20.91 | |
| 10 | 16QAM | 1 | 0 | 21.54 | 21.92 | 21.83 | 22 |
| 10 | 16QAM | 1 | 25 | 21.63 | 21.86 | 21.80 | |
| 10 | 16QAM | 1 | 49 | 20.92 | 21.72 | 21.76 | |
| 10 | 16QAM | 25 | 0 | 20.30 | 20.89 | 20.85 | 21 |
| 10 | 16QAM | 25 | 12 | 20.64 | 20.49 | 20.60 | |
| 10 | 16QAM | 25 | 25 | 20.46 | 20.86 | 20.88 | |
| 10 | 16QAM | 50 | 0 | 20.72 | 20.93 | 20.96 | |
| 10 | 64QAM | 1 | 0 | 20.94 | 21.12 | 20.85 | 22 |
| 10 | 64QAM | 1 | 25 | 21.29 | 21.67 | 21.32 | |
| 10 | 64QAM | 1 | 49 | 21.42 | 21.61 | 21.28 | |
| 10 | 64QAM | 25 | 0 | 20.32 | 20.88 | 20.66 | 21 |
| 10 | 64QAM | 25 | 12 | 20.27 | 20.33 | 20.24 | |
| 10 | 64QAM | 25 | 25 | 20.29 | 20.39 | 20.94 | |
| 10 | 64QAM | 50 | 0 | 20.64 | 20.61 | 20.72 | |
| Channel | | | | 133147 | 133297 | 133447 | Tune-up limit |
| Frequency (MHz) | | | | 665.5 | 680.5 | 695.5 | (dBm) |
| 5 | QPSK | 1 | 0 | 21.75 | 21.82 | 21.69 | 22 |
| 5 | QPSK | 1 | 12 | 21.79 | 21.80 | 21.77 | |
| 5 | QPSK | 1 | 24 | 21.53 | 21.59 | 21.67 | |
| 5 | QPSK | 12 | 0 | 20.64 | 20.75 | 20.71 | 21 |
| 5 | QPSK | 12 | 7 | 20.76 | 20.70 | 20.69 | |
| 5 | QPSK | 12 | 13 | 20.68 | 20.80 | 20.72 | |
| 5 | QPSK | 25 | 0 | 20.52 | 20.76 | 20.70 | |
| 5 | 16QAM | 1 | 0 | 21.62 | 21.73 | 21.60 | 21 |
| 5 | 16QAM | 1 | 12 | 21.59 | 21.64 | 21.54 | |
| 5 | 16QAM | 1 | 24 | 21.40 | 21.43 | 21.48 | |
| 5 | 16QAM | 12 | 0 | 20.60 | 20.72 | 20.63 | 21 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5 | 16QAM | 12 | 7 | 20.66 | 20.65 | 20.67 | |
| 5 | 16QAM | 12 | 13 | 20.68 | 20.70 | 20.62 | |
| 5 | 16QAM | 25 | 0 | 20.53 | 20.62 | 20.41 | |
| 5 | 64QAM | 1 | 0 | 21.22 | 21.45 | 21.49 | 21.5 |
| 5 | 64QAM | 1 | 12 | 21.13 | 21.37 | 21.48 | |
| 5 | 64QAM | 1 | 24 | 20.98 | 21.39 | 21.48 | |
| 5 | 64QAM | 12 | 0 | 20.25 | 20.81 | 20.61 | 21 |
| 5 | 64QAM | 12 | 7 | 20.45 | 20.26 | 20.76 | |
| 5 | 64QAM | 12 | 13 | 20.62 | 20.64 | 20.57 | |
| 5 | 64QAM | 25 | 0 | 20.48 | 20.36 | 20.96 | |

**<TDD LTE Band 38>**

| BW [MHz] | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) |
|---|---|---|---|---|---|---|---|
| Channel | | | | 37850 | 38000 | 38150 | |
| Frequency (MHz) | | | | 2580 | 2595 | 2610 | |
| 20 | QPSK | 1 | 0 | 22.74 | 22.55 | 22.55 | 23 |
| 20 | QPSK | 1 | 49 | 22.75 | 22.64 | 22.78 | |
| 20 | QPSK | 1 | 99 | 22.45 | 22.74 | **22.82** | |
| 20 | QPSK | 50 | 0 | **21.93** | 21.55 | 21.80 | 22 |
| 20 | QPSK | 50 | 24 | 21.74 | 21.85 | 21.62 | |
| 20 | QPSK | 50 | 50 | 21.65 | 21.61 | 21.87 | |
| 20 | QPSK | 100 | 0 | 21.88 | 21.61 | 21.87 | |
| 20 | 16QAM | 1 | 0 | 21.73 | 21.90 | 21.68 | 22 |
| 20 | 16QAM | 1 | 49 | 21.58 | 21.80 | 21.81 | |
| 20 | 16QAM | 1 | 99 | 21.40 | 21.90 | 21.79 | |
| 20 | 16QAM | 50 | 0 | 21.07 | 20.70 | 20.90 | 21.5 |
| 20 | 16QAM | 50 | 24 | 21.00 | 20.74 | 20.84 | |
| 20 | 16QAM | 50 | 50 | 20.87 | 20.86 | 20.99 | |
| 20 | 16QAM | 100 | 0 | 20.93 | 20.67 | 20.94 | |
| 20 | 64QAM | 1 | 0 | 21.71 | 21.82 | 21.70 | 22 |
| 20 | 64QAM | 1 | 49 | 21.56 | 21.71 | 21.83 | |
| 20 | 64QAM | 1 | 99 | 21.38 | 21.91 | 21.80 | |
| 20 | 64QAM | 50 | 0 | 21.04 | 20.60 | 20.90 | 22 |
| 20 | 64QAM | 50 | 24 | 21.06 | 21.54 | 20.98 | |
| 20 | 64QAM | 50 | 50 | 20.86 | 20.77 | 20.98 | |
| 20 | 64QAM | 100 | 0 | 20.91 | 20.69 | 20.92 | |
| Channel | | | | 37825 | 38000 | 38175 | Tune-up limit |

| Frequency (MHz) | | | | 2577.5 | 2595 | 2612.5 | (dBm) |
|---|---|---|---|---|---|---|---|
| 15 | QPSK | 1 | 0 | 22.62 | 22.67 | 22.71 | 23 |
| 15 | QPSK | 1 | 37 | 22.71 | 22.60 | 22.84 | |
| 15 | QPSK | 1 | 74 | 22.76 | 22.63 | 22.79 | |
| 15 | QPSK | 36 | 0 | 22.69 | 22.64 | 22.67 | 23 |
| 15 | QPSK | 36 | 20 | 22.64 | 22.68 | 22.66 | |
| 15 | QPSK | 36 | 39 | 22.75 | 22.50 | 22.77 | |
| 15 | QPSK | 75 | 0 | 21.77 | 21.53 | 21.91 | |
| 15 | 16QAM | 1 | 0 | 22.04 | 21.58 | 21.56 | 22.5 |
| 15 | 16QAM | 1 | 37 | 22.15 | 21.65 | 21.77 | |
| 15 | 16QAM | 1 | 74 | 22.20 | 21.66 | 21.73 | |
| 15 | 16QAM | 36 | 0 | 22.05 | 21.58 | 21.57 | 22.5 |
| 15 | 16QAM | 36 | 20 | 22.14 | 22.06 | 21.59 | |
| 15 | 16QAM | 36 | 39 | 22.21 | 21.56 | 21.63 | |
| 15 | 16QAM | 75 | 0 | 20.92 | 20.61 | 21.09 | |
| 15 | 64QAM | 1 | 0 | 22.15 | 21.57 | 21.57 | 22.5 |
| 15 | 64QAM | 1 | 37 | 22.16 | 21.64 | 21.68 | |
| 15 | 64QAM | 1 | 74 | 22.11 | 21.56 | 21.65 | |
| 15 | 64QAM | 36 | 0 | 22.16 | 21.57 | 21.58 | 22 |
| 15 | 64QAM | 36 | 20 | 22.16 | 21.55 | 21.52 | |
| 15 | 64QAM | 36 | 39 | 22.12 | 21.66 | 21.65 | |
| 15 | 64QAM | 75 | 0 | 20.92 | 20.60 | 21.00 | |
| Channel | | | | 37800 | 38000 | 38200 | Tune-up limit |
| Frequency (MHz) | | | | 2575 | 2595 | 2615 | (dBm) |
| 10 | QPSK | 1 | 0 | 22.95 | 22.53 | 22.82 | 23 |
| 10 | QPSK | 1 | 25 | 22.97 | 22.45 | 22.76 | |
| 10 | QPSK | 1 | 49 | 22.95 | 22.66 | 22.91 | |
| 10 | QPSK | 25 | 0 | 21.88 | 21.44 | 21.93 | 22.5 |
| 10 | QPSK | 25 | 12 | 21.84 | 21.43 | 21.89 | |
| 10 | QPSK | 25 | 25 | 21.94 | 21.55 | 21.95 | |
| 10 | QPSK | 50 | 0 | 22.01 | 21.48 | 21.88 | |
| 10 | 16QAM | 1 | 0 | 22.42 | 22.07 | 21.97 | 23 |
| 10 | 16QAM | 1 | 25 | 22.45 | 22.02 | 21.93 | |
| 10 | 16QAM | 1 | 49 | 22.54 | 22.12 | 21.97 | |
| 10 | 16QAM | 25 | 0 | 21.88 | 21.57 | 21.92 | 22 |
| 10 | 16QAM | 25 | 12 | 21.84 | 21.53 | 21.62 | |
| 10 | 16QAM | 25 | 25 | 21.94 | 21.56 | 21.94 | |
| 10 | 16QAM | 50 | 0 | 21.06 | 20.67 | 20.87 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10 | 64QAM | 1 | 0 | 22.43 | 21.98 | 21.86 | 23 |
| 10 | 64QAM | 1 | 25 | 22.46 | 21.93 | 21.90 | |
| 10 | 64QAM | 1 | 49 | 22.55 | 22.13 | 21.94 | |
| 10 | 64QAM | 25 | 0 | 21.88 | 21.45 | 21.89 | 22 |
| 10 | 64QAM | 25 | 12 | 21.92 | 21.52 | 21.83 | |
| 10 | 64QAM | 25 | 25 | 21.94 | 21.57 | 21.91 | |
| 10 | 64QAM | 50 | 0 | 21.91 | 21.50 | 21.95 | |
| Channel | | | | 37775 | 38000 | 38225 | Tune-up limit |
| Frequency (MHz) | | | | 2572.5 | 2595 | 2617.5 | (dBm) |
| 5 | QPSK | 1 | 0 | 22.62 | 22.67 | 22.71 | 23 |
| 5 | QPSK | 1 | 12 | 22.71 | 22.60 | 22.84 | |
| 5 | QPSK | 1 | 24 | 22.76 | 22.63 | 22.79 | |
| 5 | QPSK | 12 | 0 | 22.69 | 22.64 | 22.67 | 23 |
| 5 | QPSK | 12 | 7 | 22.64 | 22.52 | 22.63 | |
| 5 | QPSK | 12 | 13 | 22.75 | 22.50 | 22.77 | |
| 5 | QPSK | 25 | 0 | 21.77 | 21.53 | 21.91 | |
| 5 | 16QAM | 1 | 0 | 22.04 | 21.58 | 21.56 | 22.5 |
| 5 | 16QAM | 1 | 12 | 22.15 | 21.65 | 21.77 | |
| 5 | 16QAM | 1 | 24 | 22.20 | 21.66 | 21.73 | |
| 5 | 16QAM | 12 | 0 | 22.05 | 21.58 | 21.57 | 22.5 |
| 5 | 16QAM | 12 | 7 | 22.26 | 21.52 | 21.59 | |
| 5 | 16QAM | 12 | 13 | 22.21 | 21.56 | 21.63 | |
| 5 | 16QAM | 25 | 0 | 20.92 | 20.61 | 21.09 | |
| 5 | 64QAM | 1 | 0 | 22.15 | 21.57 | 21.57 | 22.5 |
| 5 | 64QAM | 1 | 12 | 22.16 | 21.64 | 21.68 | |
| 5 | 64QAM | 1 | 24 | 22.11 | 21.56 | 21.65 | |
| 5 | 64QAM | 12 | 0 | 22.16 | 21.57 | 21.58 | 22.5 |
| 5 | 64QAM | 12 | 7 | 22.18 | 21.86 | 21.54 | |
| 5 | 64QAM | 12 | 13 | 22.12 | 21.66 | 21.65 | |
| 5 | 64QAM | 25 | 0 | 20.92 | 20.60 | 21.00 | |

**<TDD LTE Band 40>**

| BW [MHz] | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) |
|---|---|---|---|---|---|---|---|
| Channel | | | | 38750 | 39150 | 39550 | |
| Frequency (MHz) | | | | 2310 | 2350 | 2390 | |
| 20 | QPSK | 1 | 0 | 23.33 | 23.20 | 22.85 | 23.5 |
| 20 | QPSK | 1 | 49 | 23.30 | 23.21 | 22.90 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 20 | QPSK | 1 | 99 | **23.41** | 23.19 | 22.95 | |
| 20 | QPSK | 50 | 0 | **22.42** | 22.30 | 22.04 | 22.5 |
| 20 | QPSK | 50 | 24 | 22.32 | 22.39 | 22.06 | |
| 20 | QPSK | 50 | 50 | 22.37 | 22.13 | 22.10 | |
| 20 | QPSK | 100 | 0 | 22.38 | 22.15 | 22.00 | |
| 20 | 16QAM | 1 | 0 | 22.06 | 22.56 | 21.87 | 23 |
| 20 | 16QAM | 1 | 49 | 22.18 | 22.27 | 21.93 | |
| 20 | 16QAM | 1 | 99 | 22.06 | 22.24 | 22.00 | |
| 20 | 16QAM | 50 | 0 | 21.62 | 21.45 | 21.13 | 22 |
| 20 | 16QAM | 50 | 24 | 21.63 | 21.52 | 21.18 | |
| 20 | 16QAM | 50 | 50 | 21.48 | 21.27 | 21.20 | |
| 20 | 16QAM | 100 | 0 | 21.43 | 21.22 | 21.16 | |
| 20 | 64QAM | 1 | 0 | 22.06 | 22.56 | 21.88 | 23 |
| 20 | 64QAM | 1 | 49 | 22.17 | 22.37 | 21.94 | |
| 20 | 64QAM | 1 | 99 | 22.15 | 22.23 | 22.01 | |
| 20 | 64QAM | 50 | 0 | 21.52 | 21.45 | 21.13 | 22 |
| 20 | 64QAM | 50 | 24 | 21.49 | 21.29 | 21.19 | |
| 20 | 64QAM | 50 | 50 | 21.48 | 21.27 | 21.21 | |
| 20 | 64QAM | 100 | 0 | 21.43 | 21.23 | 21.17 | |
| Channel | | | | 38725 | 39150 | 39575 | Tune-up limit |
| Frequency (MHz) | | | | 2307.5 | 2350 | 2392.5 | (dBm) |
| 15 | QPSK | 1 | 0 | 23.35 | 23.31 | 22.76 | 23.5 |
| 15 | QPSK | 1 | 37 | 23.38 | 23.07 | 22.85 | |
| 15 | QPSK | 1 | 74 | 23.38 | 23.09 | 22.91 | |
| 15 | QPSK | 36 | 0 | 22.40 | 22.27 | 21.98 | 22.5 |
| 15 | QPSK | 36 | 20 | 22.43 | 22.25 | 22.73 | |
| 15 | QPSK | 36 | 39 | 22.48 | 22.21 | 22.10 | |
| 15 | QPSK | 75 | 0 | 22.44 | 22.17 | 22.04 | |
| 15 | 16QAM | 1 | 0 | 22.83 | 22.77 | 22.15 | 23 |
| 15 | 16QAM | 1 | 37 | 22.87 | 22.54 | 22.26 | |
| 15 | 16QAM | 1 | 74 | 22.89 | 22.56 | 22.33 | |
| 15 | 16QAM | 36 | 0 | 21.35 | 21.29 | 21.12 | 22 |
| 15 | 16QAM | 36 | 20 | 21.39 | 21.56 | 21.26 | |
| 15 | 16QAM | 36 | 39 | 21.44 | 21.23 | 21.14 | |
| 15 | 16QAM | 75 | 0 | 21.50 | 21.28 | 21.08 | |
| 15 | 64QAM | 1 | 0 | 22.82 | 22.86 | 22.16 | 23 |
| 15 | 64QAM | 1 | 37 | 22.87 | 22.54 | 22.27 | |
| 15 | 64QAM | 1 | 74 | 22.99 | 22.56 | 22.24 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 15 | 64QAM | 36 | 0 | 21.35 | 21.30 | 21.12 | 22 |
| 15 | 64QAM | 36 | 20 | 21.33 | 21.36 | 21.15 | |
| 15 | 64QAM | 36 | 39 | 21.44 | 21.23 | 21.15 | |
| 15 | 64QAM | 75 | 0 | 21.59 | 21.28 | 21.08 | |
| Channel | | | | 38700 | 39150 | 39600 | Tune-up limit |
| Frequency (MHz) | | | | 2305 | 2350 | 2395 | (dBm) |
| 10 | QPSK | 1 | 0 | 23.35 | 23.14 | 22.87 | 23.5 |
| 10 | QPSK | 1 | 25 | 23.34 | 23.09 | 22.99 | |
| 10 | QPSK | 1 | 49 | 23.49 | 23.13 | 22.89 | |
| 10 | QPSK | 25 | 0 | 22.41 | 22.15 | 22.00 | 22.5 |
| 10 | QPSK | 25 | 12 | 21.52 | 22.13 | 22.54 | |
| 10 | QPSK | 25 | 25 | 22.50 | 22.11 | 22.14 | |
| 10 | QPSK | 50 | 0 | 22.44 | 22.16 | 22.07 | |
| 10 | 16QAM | 1 | 0 | 22.80 | 22.67 | 22.04 | 23 |
| 10 | 16QAM | 1 | 25 | 22.91 | 22.55 | 21.98 | |
| 10 | 16QAM | 1 | 49 | 22.88 | 22.49 | 21.97 | |
| 10 | 16QAM | 25 | 0 | 22.49 | 22.15 | 22.00 | 22.5 |
| 10 | 16QAM | 25 | 12 | 22.39 | 22.36 | 22.15 | |
| 10 | 16QAM | 25 | 25 | 22.49 | 22.20 | 22.15 | |
| 10 | 16QAM | 50 | 0 | 21.49 | 21.25 | 21.09 | |
| 10 | 64QAM | 1 | 0 | 22.82 | 22.59 | 21.95 | 23 |
| 10 | 64QAM | 1 | 25 | 22.82 | 22.55 | 21.98 | |
| 10 | 64QAM | 1 | 49 | 22.88 | 22.49 | 21.97 | |
| 10 | 64QAM | 25 | 0 | 22.39 | 22.16 | 22.00 | 23 |
| 10 | 64QAM | 25 | 12 | 22.36 | 22.54 | 22.43 | |
| 10 | 64QAM | 25 | 25 | 22.49 | 22.11 | 22.14 | |
| 10 | 64QAM | 50 | 0 | 22.42 | 22.16 | 22.06 | |
| Channel | | | | 38675 | 39150 | 39625 | Tune-up limit |
| Frequency (MHz) | | | | 2302.5 | 2350 | 2397.5 | (dBm) |
| 5 | QPSK | 1 | 0 | 23.04 | 23.19 | 23.03 | 23.5 |
| 5 | QPSK | 1 | 12 | 23.19 | 23.11 | 23.05 | |
| 5 | QPSK | 1 | 24 | 23.19 | 23.11 | 23.04 | |
| 5 | QPSK | 12 | 0 | 23.11 | 23.17 | 23.02 | 23.5 |
| 5 | QPSK | 12 | 7 | 23.09 | 23.19 | 23.03 | |
| 5 | QPSK | 12 | 13 | 23.19 | 23.10 | 23.04 | |
| 5 | QPSK | 25 | 0 | 22.31 | 22.12 | 22.16 | |
| 5 | 16QAM | 1 | 0 | 21.88 | 22.44 | 21.96 | 22.5 |
| 5 | 16QAM | 1 | 12 | 22.07 | 22.45 | 22.02 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5 | 16QAM | 1 | 24 | 22.07 | 22.43 | 22.02 | |
| 5 | 16QAM | 12 | 0 | 21.97 | 22.45 | 21.96 | 22.5 |
| 5 | 16QAM | 12 | 7 | 21.95 | 22.38 | 22.01 | |
| 5 | 16QAM | 12 | 13 | 22.08 | 22.43 | 22.02 | |
| 5 | 16QAM | 25 | 0 | 21.50 | 21.26 | 21.17 | |
| 5 | 64QAM | 1 | 0 | 21.88 | 22.54 | 22.06 | 23 |
| 5 | 64QAM | 1 | 12 | 22.08 | 22.46 | 22.02 | |
| 5 | 64QAM | 1 | 24 | 22.08 | 22.35 | 22.02 | |
| 5 | 64QAM | 12 | 0 | 21.88 | 22.45 | 22.06 | 22.5 |
| 5 | 64QAM | 12 | 7 | 21.84 | 22.43 | 22.00 | |
| 5 | 64QAM | 12 | 13 | 22.08 | 22.46 | 22.02 | |
| 5 | 64QAM | 25 | 0 | 21.49 | 21.27 | 21.17 | |

**<FDD LTE Band 41>**

| BW [MHz] | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Low Middle Ch. / Freq. | Power Middle Ch. / Freq. | Power High Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|
| Channel | | | | 39750 | 40185 | 40620 | 41055 | 41490 | |
| Frequency (MHz) | | | | 2506 | 2549.5 | 2593 | 2636.5 | 2680 | |
| 20 | QPSK | 1 | 0 | 25.76 | 24.24 | 25.23 | 26.46 | 27.42 | 28 |
| 20 | QPSK | 1 | 49 | 25.99 | 24.26 | 25.05 | 24.50 | 25.84 | |
| 20 | QPSK | 1 | 99 | 26.08 | 24.27 | 25.28 | 26.29 | **27.58** | |
| 20 | QPSK | 50 | 0 | 24.95 | 24.36 | 24.09 | 24.67 | 24.93 | 25.5 |
| 20 | QPSK | 50 | 24 | 24.92 | 24.38 | 24.16 | 24.87 | 24.82 | |
| 20 | QPSK | 50 | 50 | **25.20** | 24.25 | 24.13 | 24.60 | 24.97 | |
| 20 | QPSK | 100 | 0 | 25.10 | 24.28 | 24.09 | 24.62 | 24.94 | |
| 20 | 16QAM | 1 | 0 | 24.68 | 24.26 | 24.37 | 25.95 | 26.51 | 27 |
| 20 | 16QAM | 1 | 49 | 24.97 | 24.28 | 24.31 | 24.13 | 24.81 | |
| 20 | 16QAM | 1 | 99 | 25.09 | 24.23 | 24.43 | 25.79 | 26.61 | |
| 20 | 16QAM | 50 | 0 | 24.24 | 24.40 | 23.23 | 24.71 | 24.01 | 25 |
| 20 | 16QAM | 50 | 24 | 24.39 | 24.52 | 23.33 | 24.86 | 24.09 | |
| 20 | 16QAM | 50 | 50 | 24.42 | 24.28 | 23.38 | 24.62 | 24.07 | |
| 20 | 16QAM | 100 | 0 | 24.25 | 24.39 | 23.25 | 24.66 | 24.20 | |
| 20 | 64QAM | 1 | 0 | 24.68 | 24.27 | 24.39 | 25.98 | 25.83 | 26 |
| 20 | 64QAM | 1 | 49 | 24.96 | 24.28 | 24.31 | 24.14 | 24.91 | |
| 20 | 64QAM | 1 | 99 | 25.08 | 24.23 | 24.43 | 25.80 | 24.92 | |
| 20 | 64QAM | 50 | 0 | 24.13 | 24.38 | 23.23 | 24.71 | 24.21 | 25 |
| 20 | 64QAM | 50 | 24 | 24.19 | 24.33 | 23.59 | 24.79 | 24.39 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 20 | 64QAM | 50 | 50 | 24.30 | 24.28 | 23.27 | 24.65 | 24.06 | |
| 20 | 64QAM | 100 | 0 | 24.23 | 24.38 | 23.15 | 24.65 | 23.99 | |
| Channel | | | | 39725 | 40173 | 40620 | 41068 | 41515 | Tune-up limit |
| Frequency (MHz) | | | | 2503.5 | 2548.3 | 2593 | 2637.8 | 2682.5 | (dBm) |
| 15 | QPSK | 1 | 0 | 26.01 | 24.14 | 25.22 | 24.59 | 25.77 | |
| 15 | QPSK | 1 | 37 | 26.16 | 24.24 | 25.04 | 24.51 | 25.65 | 27 |
| 15 | QPSK | 1 | 74 | 26.34 | 24.22 | 25.06 | 24.46 | 25.60 | |
| 15 | QPSK | 36 | 0 | 24.95 | 24.26 | 23.99 | 24.54 | 24.89 | |
| 15 | QPSK | 36 | 20 | 24.96 | 24.22 | 23.89 | 24.59 | 24.93 | 25.5 |
| 15 | QPSK | 36 | 39 | 25.25 | 24.21 | 24.15 | 24.51 | 24.82 | |
| 15 | QPSK | 75 | 0 | 25.03 | 24.26 | 24.17 | 24.54 | 24.92 | |
| 15 | 16QAM | 1 | 0 | 25.49 | 24.30 | 24.66 | 24.59 | 25.11 | |
| 15 | 16QAM | 1 | 37 | 25.69 | 24.33 | 24.50 | 24.53 | 25.16 | 26 |
| 15 | 16QAM | 1 | 74 | 25.82 | 24.33 | 24.63 | 24.43 | 25.08 | |
| 15 | 16QAM | 36 | 0 | 23.95 | 24.36 | 23.11 | 24.59 | 23.92 | |
| 15 | 16QAM | 36 | 20 | 23.96 | 24.37 | 23.16 | 24.69 | 23.95 | 25 |
| 15 | 16QAM | 36 | 39 | 24.18 | 24.35 | 23.16 | 24.56 | 23.96 | |
| 15 | 16QAM | 75 | 0 | 24.18 | 24.37 | 23.27 | 24.63 | 23.94 | |
| 15 | 64QAM | 1 | 0 | 25.47 | 24.31 | 24.68 | 24.59 | 25.12 | |
| 15 | 64QAM | 1 | 37 | 25.78 | 24.31 | 24.61 | 24.54 | 25.12 | 26 |
| 15 | 64QAM | 1 | 74 | 25.90 | 24.30 | 24.54 | 24.44 | 25.07 | |
| 15 | 64QAM | 36 | 0 | 23.93 | 24.35 | 23.11 | 24.58 | 24.02 | |
| 15 | 64QAM | 36 | 20 | 23.89 | 24.37 | 23.14 | 24.53 | 24.09 | 25 |
| 15 | 64QAM | 36 | 39 | 24.16 | 24.34 | 23.17 | 24.55 | 23.96 | |
| 15 | 64QAM | 75 | 0 | 24.17 | 24.36 | 23.16 | 24.62 | 23.94 | |
| Channel | | | | 39700 | 40160 | 40620 | 41080 | 41540 | Tune-up limit |
| Frequency (MHz) | | | | 2501 | 2547 | 2593 | 2639 | 2685 | (dBm) |
| 10 | QPSK | 1 | 0 | 25.89 | 24.27 | 25.08 | 25.09 | 26.33 | |
| 10 | QPSK | 1 | 25 | 25.99 | 24.23 | 24.99 | 24.47 | 25.69 | 26.5 |
| 10 | QPSK | 1 | 49 | 26.13 | 24.21 | 25.21 | 25.03 | 26.34 | |
| 10 | QPSK | 25 | 0 | 24.90 | 24.27 | 23.98 | 24.65 | 24.96 | |
| 10 | QPSK | 25 | 12 | 24.96 | 24.29 | 23.99 | 24.54 | 24.94 | 25.5 |
| 10 | QPSK | 25 | 25 | 25.03 | 24.24 | 24.03 | 24.66 | 24.98 | |
| 10 | QPSK | 50 | 0 | 25.00 | 24.25 | 23.95 | 24.61 | 25.02 | |
| 10 | 16QAM | 1 | 0 | 25.49 | 24.37 | 24.51 | 24.98 | 25.56 | |
| 10 | 16QAM | 1 | 25 | 25.63 | 24.33 | 24.45 | 24.40 | 24.95 | 26 |
| 10 | 16QAM | 1 | 49 | 25.78 | 24.33 | 24.67 | 24.90 | 25.39 | |
| 10 | 16QAM | 25 | 0 | 24.86 | 24.37 | 23.88 | 24.71 | 24.95 | 25.5 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 16QAM | 25 | 12 | 24.86 | 24.39 | 23.84 | 24.99 | 24.95 | |
| 10 | 16QAM | 25 | 25 | 25.20 | 24.38 | 24.02 | 24.66 | 25.07 | |
| 10 | 16QAM | 50 | 0 | 24.12 | 24.32 | 23.12 | 24.69 | 24.02 | |
| 10 | 64QAM | 1 | 0 | 25.47 | 24.38 | 24.52 | 25.00 | 25.56 | |
| 10 | 64QAM | 1 | 25 | 25.61 | 24.33 | 24.56 | 24.40 | 25.05 | 26 |
| 10 | 64QAM | 1 | 49 | 25.85 | 24.33 | 24.57 | 24.92 | 25.57 | |
| 10 | 64QAM | 25 | 0 | 24.94 | 24.37 | 23.99 | 24.71 | 24.95 | |
| 10 | 64QAM | 25 | 12 | 24.93 | 24.35 | 24.05 | 24.86 | 24.96 | 25.5 |
| 10 | 64QAM | 25 | 25 | 25.07 | 24.39 | 24.04 | 24.66 | 24.96 | |
| 10 | 64QAM | 50 | 0 | 25.04 | 24.33 | 23.94 | 24.68 | 25.00 | |
| Channel | | | | 39675 | 40148 | 40620 | 41093 | 41565 | Tune-up limit |
| Frequency (MHz) | | | | 2498.5 | 2545.8 | 2593 | 2640.30 | 2687.5 | (dBm) |
| 5 | QPSK | 1 | 0 | 25.64 | 24.11 | 24.88 | 24.48 | 25.82 | |
| 5 | QPSK | 1 | 12 | 25.76 | 24.16 | 25.17 | 24.50 | 25.91 | 26 |
| 5 | QPSK | 1 | 24 | 25.92 | 24.07 | 25.13 | 24.48 | 25.73 | |
| 5 | QPSK | 12 | 0 | 25.59 | 24.18 | 24.94 | 24.45 | 25.86 | |
| 5 | QPSK | 12 | 7 | 25.82 | 24.16 | 25.00 | 24.46 | 25.89 | 26 |
| 5 | QPSK | 12 | 13 | 25.91 | 24.19 | 25.01 | 24.48 | 25.82 | |
| 5 | QPSK | 25 | 0 | 24.90 | 24.24 | 24.08 | 24.43 | 24.74 | |
| 5 | 16QAM | 1 | 0 | 24.40 | 24.53 | 24.40 | 24.84 | 24.90 | |
| 5 | 16QAM | 1 | 12 | 24.67 | 24.60 | 24.49 | 24.91 | 24.97 | 25 |
| 5 | 16QAM | 1 | 24 | 24.65 | 24.49 | 24.47 | 24.76 | 24.88 | |
| 5 | 16QAM | 12 | 0 | 24.59 | 24.34 | 24.50 | 24.48 | 24.79 | |
| 5 | 16QAM | 12 | 7 | 24.57 | 24.59 | 24.86 | 24.92 | 24.76 | 25 |
| 5 | 16QAM | 12 | 13 | 24.77 | 24.33 | 24.47 | 24.48 | 24.88 | |
| 5 | 16QAM | 25 | 0 | 24.07 | 24.34 | 23.20 | 24.52 | 23.83 | |
| 5 | 64QAM | 1 | 0 | 24.49 | 24.52 | 24.30 | 24.82 | 24.80 | |
| 5 | 64QAM | 1 | 12 | 24.76 | 24.58 | 24.49 | 24.90 | 24.85 | 25 |
| 5 | 64QAM | 1 | 24 | 24.63 | 24.49 | 24.47 | 24.76 | 24.77 | |
| 5 | 64QAM | 12 | 0 | 24.38 | 24.34 | 24.29 | 24.46 | 24.88 | |
| 5 | 64QAM | 12 | 7 | 24.39 | 24.36 | 24.52 | 24.97 | 24.87 | 25 |
| 5 | 64QAM | 12 | 13 | 24.63 | 24.34 | 24.46 | 24.45 | 24.77 | |
| 5 | 64QAM | 25 | 0 | 24.05 | 24.28 | 23.20 | 24.51 | 23.83 | |

**Bluetooth Conducted Power:**

| Mode | Channel | Frequency (MHz) | Average power (dBm) | | |
|---|---|---|---|---|---|
| | | | 1Mbps | 2Mbps | 3Mbps |
| BR / EDR | CH 00 | 2402 | 5.745 | 5.055 | 4.883 |
| | CH 39 | 2441 | 5.897 | 5.144 | 4.823 |
| | CH 78 | 2480 | 8.309 | 8.305 | 8.054 |
| Tune-up Limit | | | 8.5 | 8.5 | 8.5 |

| Mode | Channel | Frequency (MHz) | Average power (dBm) |
|---|---|---|---|
| | | | GFSK |
| LE | CH 00 | 2402 | 5.32 |
| | CH 19 | 2440 | 5.22 |
| | CH 39 | 2480 | 5.67 |
| Tune-up Limit | | | 6.0 |

**WLAN Conducted Power:**

**2.4GHz WLAN:**

| | Mode | Channel | Frequency (MHz) | Average power (dBm) | Tune-Up Limit | Power Setting | Duty Cycle % |
|---|---|---|---|---|---|---|---|
| 2.4GHz WLAN | 802.11b 1Mbps | CH 1 | 2412 | 20.58 | 21.00 | 14 | 100.00 |
| | | CH 6 | 2437 | 15.40 | 15.50 | 14 | |
| | | CH 11 | 2462 | 16.66 | 17.00 | 14 | |
| | 802.11g 6Mbps | CH 1 | 2412 | 15.44 | 15.50 | 14 | 100.00 |
| | | CH 6 | 2437 | 13.75 | 14.00 | 14 | |
| | | CH 11 | 2462 | 14.87 | 15.00 | 14 | |
| | 802.11n-HT20 MCS0 | CH 1 | 2412 | 15.28 | 15.50 | 14 | 100.00 |
| | | CH 6 | 2437 | 13.68 | 14.00 | 14 | |
| | | CH 11 | 2462 | 14.79 | 15.00 | 14 | |
| | 802.11n-HT40 MCS0 | CH 3 | 2422 | 16.90 | 17.00 | 14 | 100.00 |
| | | CH 6 | 2437 | 14.95 | 15.00 | 14 | |
| | | CH 9 | 2452 | 14.64 | 15.00 | 14 | |

**Note:** The WLAN 2.4G antenna gain is 0.18dBi

**5GHz WLAN:**

| | Mode | Channel | Frequency (MHz) | Average power (dBm) | Tune-Up Limit | Power Setting | Duty Cycle % |
|---|---|---|---|---|---|---|---|
| 5.2GHz WLAN | 802.11a 6Mbps | CH 36 | 5180 | 14.54 | 15.00 | 14 | 100.00 |
| | | CH 40 | 5200 | 14.27 | 14.50 | 14 | |
| | | CH 48 | 5240 | 14.64 | 15.00 | 14 | |
| | 802.11n-HT20 MCS0 | CH 36 | 5180 | 13.97 | 14.00 | 14 | 100.00 |
| | | CH 40 | 5200 | 12.65 | 13.00 | 14 | |
| | | CH 48 | 5240 | 14.67 | 15.00 | 14 | |
| | 802.11n-HT40 MCS0 | CH 38 | 5190 | 14.23 | 14.50 | 14 | 100.00 |
| | | CH 46 | 5230 | 14.99 | 15.00 | 14 | |
| | 802.11ac-VHT20 MCS0 | CH 36 | 5180 | 13.89 | 14.00 | 14 | 100.00 |
| | | CH 40 | 5200 | 12.64 | 13.00 | 14 | |
| | | CH 48 | 5240 | 14.53 | 15.00 | 14 | |
| | 802.11ac-VHT40 MCS0 | CH 38 | 5190 | 14.26 | 14.50 | 14 | 100.00 |
| | | CH 46 | 5230 | 15.04 | 15.50 | 14 | |
| | 802.11ac-VHT80 MCS0 | CH 42 | 5210 | 15.19 | 15.50 | 14 | 100.00 |

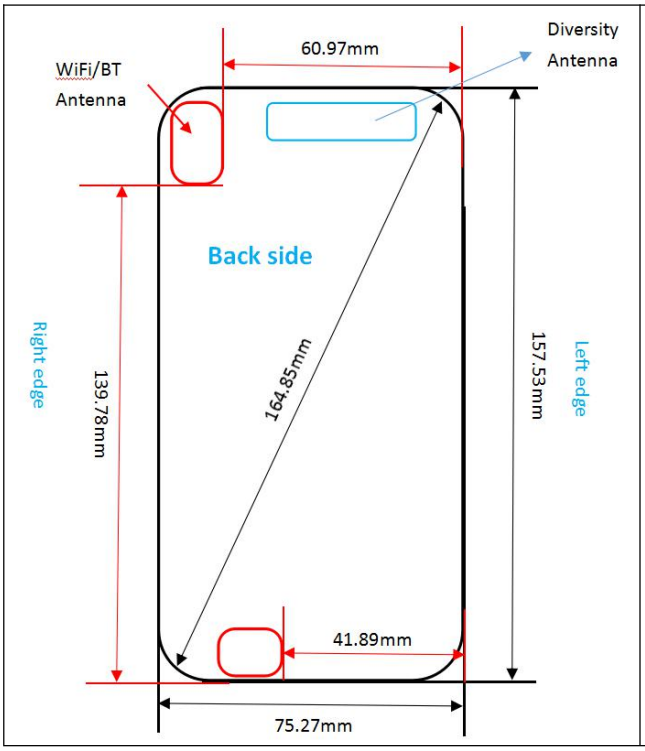
**Note:** The WLAN 5.2G antenna gain is 0.13dBi

| | Mode | Channel | Frequency (MHz) | Average power (dBm) | Tune-Up Limit | Power Setting | Duty Cycle % |
|---|---|---|---|---|---|---|---|
| 5.8GHz WLAN | 802.11a MCS0 | CH 149 | 5745 | 22.13 | 22.50 | 14 | 100.00 |
| | | CH 157 | 5785 | 22.09 | 22.50 | 14 | |
| | | CH 165 | 5825 | 21.81 | 22.00 | 14 | |
| | 802.11n-HT20 MCS0 | CH 149 | 5745 | 22.11 | 22.50 | 14 | 100.00 |
| | | CH 157 | 5785 | 21.81 | 22.00 | 14 | |
| | | CH 165 | 5825 | 21.43 | 21.50 | 14 | |
| | 802.11n-HT40 MCS0 | CH 151 | 5755 | 22.32 | 22.50 | 14 | 100.00 |
| | | CH 159 | 5795 | 22.34 | 22.50 | 14 | |
| | 802.11ac-VHT20 MCS0 | CH 149 | 5745 | 22.09 | 22.50 | 14 | 100.00 |
| | | CH 157 | 5785 | 21.90 | 22.00 | 14 | |
| | | CH 165 | 5825 | 21.50 | 21.50 | 14 | |
| | 802.11ac-VHT40 MCS0 | CH 151 | 5755 | 22.43 | 22.50 | 14 | 100.00 |
| | | CH 159 | 5795 | 22.41 | 22.50 | 14 | |
| | 802.11ac-VHT80 MCS0 | CH 155 | 5775 | 22.03 | 22.50 | 14 | 100.00 |

**Note:** The WLAN 5.8G antenna gain is 0.88dBi

# 15. Hot-Spot Mode Evaluation Procedure

## 15.1. EUT Antenna Location




Main antenna supported TX bands :
GSM 850/1900
UMTS Band II/IV/V
CDMA2000/EVDO BC0/BC1/BC10
FDD LTE Band 2/4/5/7/12/13/14/25/26/66/71
TDD LTE Band 38/40/41
WLAN antenna supported bands : 2.4GHz/5GHz
BT antenna supported bands: 2.4GHz

**Hotspot Evaluation:**

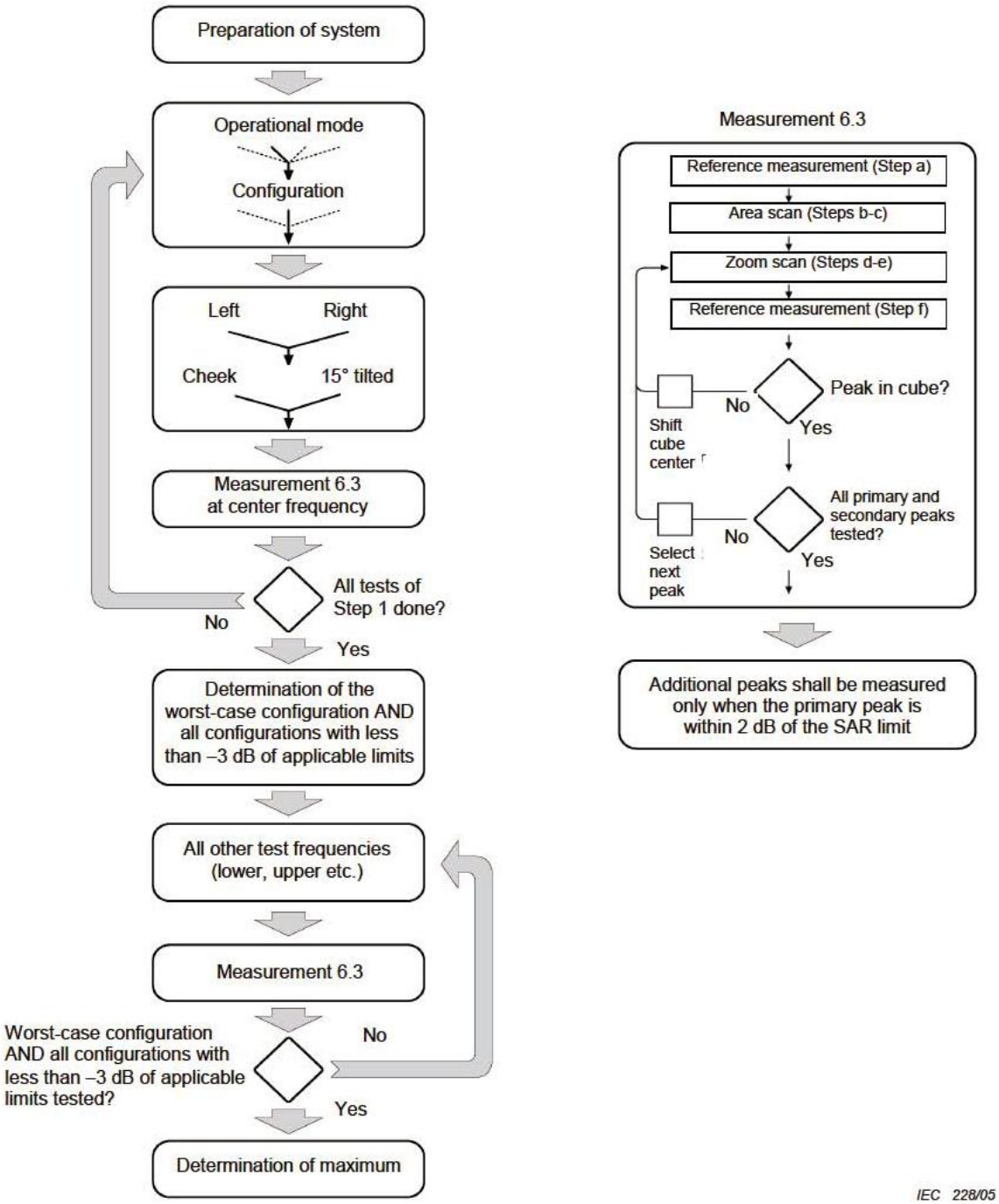
| Assessment | Hotspot side for SARTest distance: 10mm | | | | | |
|---|---|---|---|---|---|---|
| Antennas | Back | Front | Top | Bottom | Left edge | Right edge |
| WWAN Main Antenna | Yes | Yes | No | Yes | No | Yes |
| WLAN/BT Main Antenna | Yes | Yes | Yes | No | No | Yes |

**Note :**

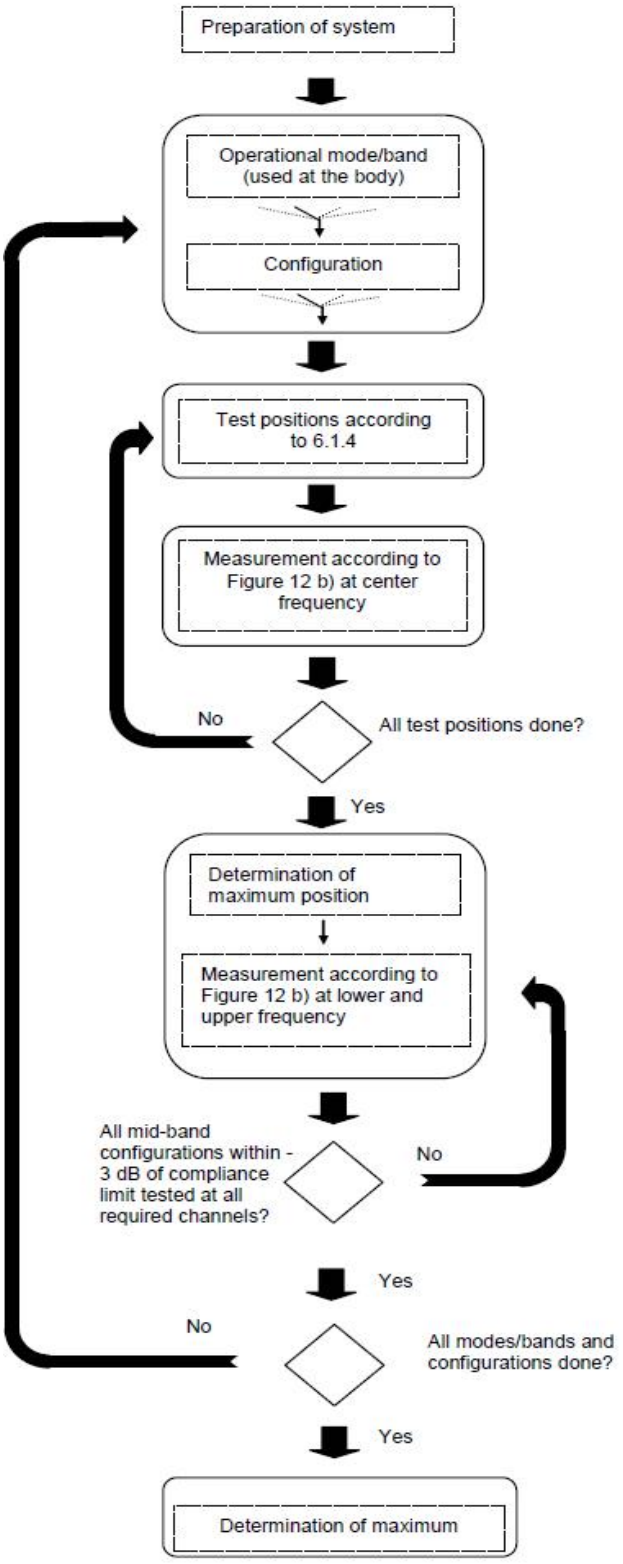
1. The SAR evaluation procedures for Portable Devices with Wireless Router function is according to KDB 941225 D06 Hotspot SAR v02r01.
2. Head/Body-worn/Hotspot mode SAR assessments are required.
3. Referring to KDB 941225 D06, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.
4. For Main antenna, SAR measurements at Top side are not required since the distance between DUT and flat phantom > 25mm.
5. For WLAN&BT antenna, SAR measurements Bottom side and Left side are not required since the distance between DUT and flat phantom > 25mm.
6. For the Diversity antenna, it supports RX only, SAR is not required.

# 16. Block diagram of the tests to be performed

## 16.1. Head



## 16.2. Body



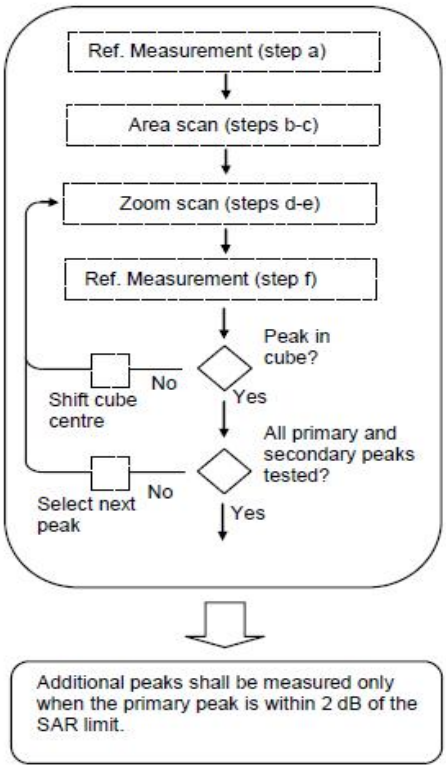




**Figure 12b – General procedure**

# 17. Test Results List

## 17.1. Test Guidance

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
4. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.
5. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for tablet modes to compare with the 1.2 W/kg SAR test reduction threshold.
6. Per KDB248227 D01v02r02,a Wi-Fi device must be configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools for SAR measurement. The test frequencies

established using test mode must correspond to the actual channel frequencies required for operations in the U.S. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92 - 96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. In addition, a periodic transmission duty factor is required for current generation SAR systems to measure SAR correctly. Unless it is permitted by specific KDB procedures or continuous transmission is specifically restricted by the device, the reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. When a device is not capable of sustaining continuous transmission or the output can become nonlinear, and it is limited by hardware design and unable to transmit at higher than 85% duty factor, a periodic duty factor within 15% of the maximum duty factor the device is capable of transmitting should be used. The reported SAR must be scaled to the maximum transmission duty factor to determine compliance. Descriptions of the procedures applied to establish the specific duty factor used for SAR testing are required in SAR reports to support the test results.

.

# 17.2. Head SAR Data

**<GSM>**

| Plot No. | Band | Mode | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|
| #1 | GSM850 | GPRS(4 TX slots) | Right Cheek | 190 | 26.08 | 26.50 | 1.102 | **0.349** | **0.384** |
| | GSM850 | GPRS(4 TX slots) | Right Tilt | 190 | 26.08 | 26.50 | 1.102 | 0.184 | 0.203 |
| | GSM850 | GPRS(4 TX slots) | Left Cheek | 190 | 26.08 | 26.50 | 1.102 | 0.336 | 0.370 |
| | GSM850 | GPRS(4 TX slots) | Left Tilt | 190 | 26.08 | 26.50 | 1.102 | 0.217 | 0.239 |
| | | | | | | | | | |
| | GSM1900 | GPRS(4Tx slot) | Right Cheek | 810 | 25.65 | 26.00 | 1.084 | 0.026 | 0.028 |
| | GSM1900 | GPRS(4Tx slot) | Right Tilt | 810 | 25.65 | 26.00 | 1.084 | 0.001 | 0.001 |
| #2 | GSM1900 | GPRS(4Tx slot) | Left Cheek | 810 | 25.65 | 26.00 | 1.084 | **0.033** | **0.036** |
| | GSM1900 | GPRS(4Tx slot) | Left Tilt | 810 | 25.65 | 26.00 | 1.084 | 0.014 | 0.016 |

**<WCDMA>**

| Plot No. | Band | Mode | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|
| | WCDMA II | RMC 12.2Kbps | Right Cheek | 9400 | 25.13 | 25.50 | 1.089 | 0.023 | 0.025 |
| | WCDMA II | RMC 12.2Kbps | Right Tilt | 9400 | 25.13 | 25.50 | 1.089 | 0.015 | 0.017 |
| #3 | WCDMA II | RMC 12.2Kbps | Left Cheek | 9400 | 25.13 | 25.50 | 1.089 | **0.397** | **0.432** |
| | WCDMA II | RMC 12.2Kbps | Left Tilt | 9400 | 25.13 | 25.50 | 1.089 | 0.201 | 0.219 |
| | | | | | | | | | |
| | WCDMA IV | RMC 12.2Kbps | Right Cheek | 1413 | 24.10 | 24.50 | 1.096 | 0.032 | 0.035 |
| | WCDMA IV | RMC 12.2Kbps | Right Tilt | 1413 | 24.10 | 24.50 | 1.096 | 0.047 | 0.052 |
| #4 | WCDMA IV | RMC 12.2Kbps | Left Cheek | 1413 | 24.10 | 24.50 | 1.096 | **0.074** | **0.081** |
| | WCDMA IV | RMC 12.2Kbps | Left Tilt | 1413 | 24.10 | 24.50 | 1.096 | 0.027 | 0.029 |
| | | | | | | | | | |
| #5 | WCDMA V | RMC 12.2Kbps | Right Cheek | 4182 | 25.31 | 25.50 | 1.045 | **0.251** | **0.262** |
| | WCDMA V | RMC 12.2Kbps | Right Tilt | 4182 | 25.31 | 25.50 | 1.045 | 0.149 | 0.156 |
| | WCDMA V | RMC 12.2Kbps | Left Cheek | 4182 | 25.31 | 25.50 | 1.045 | 0.226 | 0.236 |
| | WCDMA V | RMC 12.2Kbps | Left Tilt | 4182 | 25.31 | 25.50 | 1.045 | 0.135 | 0.141 |

## <CDMA 2000>

| Plot No. | Band | Mode | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|
| 6# | CDMA2000 BC0 | SO32(F+SCH) | Right Cheek | 384 | 25.02 | 25.50 | 1.117 | **0.136** | **0.152** |
| | CDMA2000 BC0 | SO32(F+SCH) | Right Tilt | 384 | 25.02 | 25.50 | 1.117 | 0.091 | 0.102 |
| | CDMA2000 BC0 | SO32(F+SCH) | Left Cheek | 384 | 25.02 | 25.50 | 1.117 | 0.113 | 0.126 |
| | CDMA2000 BC0 | SO32(F+SCH) | Left Tilt | 384 | 25.02 | 25.50 | 1.117 | 0.096 | 0.107 |
| | | | | | | | | | |
| | CDMA2000 BC1 | SO55(RC3) | Right Cheek | 25 | 22.00 | 22.00 | 1.000 | 0.051 | 0.051 |
| | CDMA2000 BC1 | SO55(RC3) | Right Tilt | 25 | 22.00 | 22.00 | 1.000 | 0.018 | 0.018 |
| 7# | CDMA2000 BC1 | SO55(RC3) | Left Cheek | 25 | 22.00 | 22.00 | 1.000 | **0.083** | **0.083** |
| | CDMA2000 BC1 | SO55(RC3) | Left Tilt | 25 | 22.00 | 22.00 | 1.000 | 0.029 | 0.029 |
| | | | | | | | | | |
| | CDMA2000 BC10 | SO32(+SCH) | Right Cheek | 580 | 24.99 | 25.00 | 1.002 | 0.070 | 0.070 |
| | CDMA2000 BC10 | SO32(+SCH) | Right Tilt | 580 | 24.99 | 25.00 | 1.002 | 0.120 | 0.120 |
| 8# | CDMA2000 BC10 | SO32(+SCH) | Left Cheek | 580 | 24.99 | 25.00 | 1.002 | **0.134** | **0.134** |
| | CDMA2000 BC10 | SO32(+SCH) | Left Tilt | 580 | 24.99 | 25.00 | 1.002 | 0.036 | 0.036 |

## <EVDO-0>

| Plot No. | Band | Mode | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|
| 9# | EVDO BC0 | RETAP 4096 Bits | Right Cheek | 384 | 25.01 | 25.50 | 1.119 | **0.180** | **0.201** |
| | EVDO BC0 | RETAP 4096 Bits | Right Tilt | 384 | 25.01 | 25.50 | 1.119 | 0.137 | 0.153 |
| | EVDO BC0 | RETAP 4096 Bits | Left Cheek | 384 | 25.01 | 25.50 | 1.119 | 0.167 | 0.187 |
| | EVDO BC0 | RETAP 4096 Bits | Left Tilt | 384 | 25.01 | 25.50 | 1.119 | 0.133 | 0.149 |
| | | | | | | | | | |
| | EVDO BC1 | RETAP 4096 Bits | Right Cheek | 600 | 25.10 | 25.50 | 1.096 | 0.065 | 0.071 |
| | EVDO BC1 | RETAP 4096 Bits | Right Tilt | 600 | 25.10 | 25.50 | 1.096 | 0.047 | 0.052 |
| 10# | EVDO BC1 | RETAP 4096 Bits | Left Cheek | 600 | 25.10 | 25.50 | 1.096 | **0.086** | **0.095** |
| | EVDO BC1 | RETAP 4096 Bits | Left Tilt | 600 | 25.10 | 25.50 | 1.096 | 0.024 | 0.027 |
| | | | | | | | | | |
| 11# | EVDO BC10 | RETAP 4096 Bits | Right Cheek | 476 | 25.04 | 25.50 | 1.112 | **0.188** | **0.209** |
| | EVDO BC10 | RETAP 4096 Bits | Right Tilt | 476 | 25.04 | 25.50 | 1.112 | 0.139 | 0.155 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | EVDO BC10 | RETAP 4096 Bits | Left Cheek | 476 | 25.04 | 25.50 | 1.112 | 0.161 | 0.179 |
| | EVDO BC10 | RETAP 4096 Bits | Left Tilt | 476 | 25.04 | 25.50 | 1.112 | 0.128 | 0.142 |

**<FDD-LTE>**

| Plot No. | Band | BW (MHz) | Modulation RB/offset | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| | LTE Band 2 | 20MHz | QPSK1RB#0 | Right Cheek | 18900 | 23.62 | 24.00 | 1.091 | 0.022 | 0.024 |
| | LTE Band 2 | 20MHz | QPSK1RB#0 | Right Tilt | 18900 | 23.62 | 24.00 | 1.091 | 0.009 | 0.010 |
| #12 | LTE Band 2 | 20MHz | QPSK1RB#0 | Left Cheek | 18900 | 23.62 | 24.00 | 1.091 | **0.036** | **0.040** |
| | LTE Band 2 | 20MHz | QPSK1RB#0 | Left Tilt | 18900 | 23.62 | 24.00 | 1.091 | 0.013 | 0.015 |
| | | | | | | | | | | |
| | LTE Band 2 | 20MHz | QPSK50RB#50 | Right Cheek | 18700 | 22.24 | 22.5 | 1.062 | 0.027 | 0.029 |
| | LTE Band 2 | 20MHz | QPSK50RB#50 | Right Tilt | 18700 | 22.24 | 22.5 | 1.062 | 0.010 | 0.011 |
| #13 | LTE Band 2 | 20MHz | QPSK50RB#50 | Left Cheek | 18700 | 22.24 | 22.5 | 1.062 | **0.032** | **0.034** |
| | LTE Band 2 | 20MHz | QPSK50RB#50 | Left Tilt | 18700 | 22.24 | 22.5 | 1.062 | 0.009 | 0.009 |
| | | | | | | | | | | |
| | LTE Band 4 | 20MHz | QPSK1RB#99 | Right Cheek | 20050 | 22.80 | 23.00 | 1.047 | 0.034 | 0.036 |
| | LTE Band 4 | 20MHz | QPSK1RB#99 | Right Tilt | 20050 | 22.80 | 23.00 | 1.047 | 0.016 | 0.017 |
| #14 | LTE Band 4 | 20MHz | QPSK1RB#99 | Left Cheek | 20050 | 22.80 | 23.00 | 1.047 | **0.342** | **0.358** |
| | LTE Band 4 | 20MHz | QPSK1RB#99 | Left Tilt | 20050 | 22.80 | 23.00 | 1.047 | 0.012 | 0.013 |
| | | | | | | | | | | |
| | LTE Band 4 | 20MHz | QPSK50RB#50 | Right Cheek | 20050 | 21.72 | 22.00 | 1.067 | 0.015 | 0.016 |
| | LTE Band 4 | 20MHz | QPSK50RB#50 | Right Tilt | 20050 | 21.72 | 22.00 | 1.067 | 0.009 | 0.010 |
| #15 | LTE Band 4 | 20MHz | QPSK50RB#50 | Left Cheek | 20050 | 21.72 | 22.00 | 1.067 | **0.038** | **0.040** |
| | LTE Band 4 | 20MHz | QPSK50RB#50 | Left Tilt | 20050 | 21.72 | 22.00 | 1.067 | 0.008 | 0.008 |
| | | | | | | | | | | |
| #16 | LTE Band 5 | 10MHz | QPSK1RB#0 | Right Cheek | 20600 | 23.87 | 24.00 | 1.030 | **0.183** | **0.189** |
| | LTE Band 5 | 10MHz | QPSK1RB#0 | Right Tilt | 20600 | 23.87 | 24.00 | 1.030 | 0.118 | 0.122 |
| | LTE Band 5 | 10MHz | QPSK1RB#0 | Left Cheek | 20600 | 23.87 | 24.00 | 1.030 | 0.147 | 0.151 |
| | LTE Band 5 | 10MHz | QPSK1RB#0 | Left Tilt | 20600 | 23.87 | 24.00 | 1.030 | 0.103 | 0.106 |
| | | | | | | | | | | |
| #17 | LTE Band 5 | 10MHz | QPSK25RB#25 | Right Cheek | 20450 | 22.95 | 23.00 | 1.012 | **0.095** | **0.096** |
| | LTE Band 5 | 10MHz | QPSK25RB#25 | Right Tilt | 20450 | 22.95 | 23.00 | 1.012 | 0.054 | 0.055 |
| | LTE Band 5 | 10MHz | QPSK25RB#25 | Left Cheek | 20450 | 22.95 | 23.00 | 1.012 | 0.085 | 0.086 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | LTE Band 5 | 10MHz | QPSK25RB#25 | Left Tilt | 20450 | 22.95 | 23.00 | 1.012 | 0.058 | 0.058 |
| | | | | | | | | | | |
| | LTE Band 7 | 20MHz | QPSK1RB#99 | Right Cheek | 21350 | 20.51 | 21.00 | 1.119 | 0.103 | 0.115 |
| | LTE Band 7 | 20MHz | QPSK1RB#99 | Right Tilt | 21350 | 20.51 | 21.00 | 1.119 | 0.040 | 0.045 |
| #18 | LTE Band 7 | 20MHz | QPSK1RB#99 | Left Cheek | 21350 | 20.51 | 21.00 | 1.119 | **0.142** | **0.159** |
| | LTE Band 7 | 20MHz | QPSK1RB#99 | Left Tilt | 21350 | 20.51 | 21.00 | 1.119 | 0.077 | 0.086 |
| | | | | | | | | | | |
| #19 | LTE Band 7 | 20MHz | QPSK50RB#50 | Right Cheek | 21100 | 19.62 | 20 | 1.091 | **0.067** | **0.074** |
| | LTE Band 7 | 20MHz | QPSK50RB#50 | Right Tilt | 21100 | 19.62 | 20 | 1.091 | 0.032 | 0.035 |
| | LTE Band 7 | 20MHz | QPSK50RB#50 | Left Cheek | 21100 | 19.62 | 20 | 1.091 | 0.062 | 0.067 |
| | LTE Band 7 | 20MHz | QPSK50RB#50 | Left Tilt | 21100 | 19.62 | 20 | 1.091 | 0.023 | 0.025 |
| | | | | | | | | | | |
| #20 | LTE Band 12 | 10MHz | QPSK1RB#0 | Right Cheek | 23130 | 22.25 | 22.50 | 1.059 | **0.087** | **0.092** |
| | LTE Band 12 | 10MHz | QPSK1RB#0 | Right Tilt | 23130 | 22.25 | 22.50 | 1.059 | 0.052 | 0.055 |
| | LTE Band 12 | 10MHz | QPSK1RB#0 | Left Cheek | 23130 | 22.25 | 22.50 | 1.059 | 0.082 | 0.087 |
| | LTE Band 12 | 10MHz | QPSK1RB#0 | Left Tilt | 23130 | 22.25 | 22.50 | 1.059 | 0.048 | 0.051 |
| | | | | | | | | | | |
| | LTE Band 12 | 10MHz | QPSK25RB#0 | Right Cheek | 23060 | 21.39 | 21.5 | 1.026 | 0.087 | 0.089 |
| | LTE Band 12 | 10MHz | QPSK25RB#0 | Right Tilt | 23060 | 21.39 | 21.5 | 1.026 | 0.045 | 0.046 |
| #21 | LTE Band 12 | 10MHz | QPSK25RB#0 | Left Cheek | 23060 | 21.39 | 21.5 | 1.026 | **0.089** | **0.091** |
| | LTE Band 12 | 10MHz | QPSK25RB#0 | Left Tilt | 23060 | 21.39 | 21.5 | 1.026 | 0.037 | 0.038 |
| | | | | | | | | | | |
| #22 | LTE Band 13 | 10MHz | QPSK1RB#0 | Right Cheek | 23230 | 20.86 | 21.00 | 1.033 | **0.188** | **0.194** |
| | LTE Band 13 | 10MHz | QPSK1RB#0 | Right Tilt | 23230 | 20.86 | 21.00 | 1.033 | 0.124 | 0.128 |
| | LTE Band 13 | 10MHz | QPSK1RB#0 | Left Cheek | 23230 | 20.86 | 21.00 | 1.033 | 0.154 | 0.159 |
| | LTE Band 13 | 10MHz | QPSK1RB#0 | Left Tilt | 23230 | 20.86 | 21.00 | 1.033 | 0.097 | 0.100 |
| | | | | | | | | | | |
| #23 | LTE Band 13 | 10MHz | QPSK25RB#0 | Right Cheek | 23230 | 19.99 | 20.00 | 1.002 | **0.106** | **0.106** |
| | LTE Band 13 | 10MHz | QPSK25RB#0 | Right Tilt | 23230 | 19.99 | 20.00 | 1.002 | 0.048 | 0.048 |
| | LTE Band 13 | 10MHz | QPSK25RB#0 | Left Cheek | 23230 | 19.99 | 20.00 | 1.002 | 0.067 | 0.067 |
| | LTE Band 13 | 10MHz | QPSK25RB#0 | Left Tilt | 23230 | 19.99 | 20.00 | 1.002 | 0.038 | 0.038 |
| | | | | | | | | | | |
| #24 | LTE Band 14 | 10MHz | QPSK1RB#0 | Right Cheek | 23330 | 21.99 | 22.00 | 1.002 | **0.092** | **0.092** |
| | LTE Band 14 | 10MHz | QPSK1RB#0 | Right Tilt | 23330 | 21.99 | 22.00 | 1.002 | 0.059 | 0.059 |
| | LTE Band 14 | 10MHz | QPSK1RB#0 | Left Cheek | 23330 | 21.99 | 22.00 | 1.002 | 0.075 | 0.075 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | LTE Band 14 | 10MHz | QPSK1RB#0 | Left Tilt | 23330 | 21.99 | 22.00 | 1.002 | 0.048 | 0.048 |
| | | | | | | | | | | |
| | LTE Band 14 | 10MHz | QPSK25RB#0 | Right Cheek | 23330 | 21.51 | 22.00 | 1.119 | 0.075 | 0.084 |
| | LTE Band 14 | 10MHz | QPSK25RB#0 | Right Tilt | 23330 | 21.51 | 22.00 | 1.119 | 0.038 | 0.043 |
| #25 | LTE Band 14 | 10MHz | QPSK25RB#0 | Left Cheek | 23330 | 21.51 | 22.00 | 1.119 | **0.082** | **0.092** |
| | LTE Band 14 | 10MHz | QPSK25RB#0 | Left Tilt | 23330 | 21.51 | 22.00 | 1.119 | 0.042 | 0.047 |
| | | | | | | | | | | |
| | LTE Band 25 | 20MHz | QPSK1RB#0 | Right Cheek | 26365 | 24.10 | 24.50 | 1.096 | 0.025 | 0.028 |
| | LTE Band 25 | 20MHz | QPSK1RB#0 | Right Tilt | 26365 | 24.10 | 24.50 | 1.096 | 0.012 | 0.013 |
| #26 | LTE Band 25 | 20MHz | QPSK1RB#0 | Left Cheek | 26365 | 24.10 | 24.50 | 1.096 | **0.039** | **0.043** |
| | LTE Band 25 | 20MHz | QPSK1RB#0 | Left Tilt | 26365 | 24.10 | 24.50 | 1.096 | 0.015 | 0.016 |
| | | | | | | | | | | |
| #27 | LTE Band 25 | 20MHz | QPSK50RB#50 | Right Cheek | 26365 | 22.90 | 23.00 | 1.023 | **0.030** | **0.031** |
| | LTE Band 25 | 20MHz | QPSK50RB#50 | Right Tilt | 26365 | 22.90 | 23.00 | 1.023 | 0.010 | 0.010 |
| | LTE Band 25 | 20MHz | QPSK50RB#50 | Left Cheek | 26365 | 22.90 | 23.00 | 1.023 | 0.025 | 0.025 |
| | LTE Band 25 | 20MHz | QPSK50RB#50 | Left Tilt | 26365 | 22.90 | 23.00 | 1.023 | 0.006 | 0.006 |
| | | | | | | | | | | |
| #28 | LTE Band 26 | 15MHz | QPSK1RB#0 | Right Cheek | 26965 | 23.89 | 24.00 | 1.026 | **0.170** | **0.174** |
| | LTE Band 26 | 15MHz | QPSK1RB#0 | Right Tilt | 26965 | 23.89 | 24.00 | 1.026 | 0.109 | 0.112 |
| | LTE Band 26 | 15MHz | QPSK1RB#0 | Left Cheek | 26965 | 23.89 | 24.00 | 1.026 | 0.149 | 0.153 |
| | LTE Band 26 | 15MHz | QPSK1RB#0 | Left Tilt | 26965 | 23.89 | 24.00 | 1.026 | 0.107 | 0.110 |
| | | | | | | | | | | |
| #29 | LTE Band 26 | 15MHz | QPSK36RB#0 | Right Cheek | 26765 | 22.71 | 23.00 | 1.069 | **0.141** | **0.151** |
| | LTE Band 26 | 15MHz | QPSK36RB#0 | Right Tilt | 26765 | 22.71 | 23.00 | 1.069 | 0.076 | 0.081 |
| | LTE Band 26 | 15MHz | QPSK36RB#0 | Left Cheek | 26765 | 22.71 | 23.00 | 1.069 | 0.115 | 0.123 |
| | LTE Band 26 | 15MHz | QPSK36RB#0 | Left Tilt | 26765 | 22.71 | 23.00 | 1.069 | 0.070 | 0.074 |
| | | | | | | | | | | |
| | LTE Band 66 | 20MHz | QPSK1RB#50 | Right Cheek | 132322 | 20.16 | 20.50 | 1.081 | 0.042 | 0.045 |
| | LTE Band 66 | 20MHz | QPSK1RB#50 | Right Tilt | 132322 | 20.16 | 20.50 | 1.081 | 0.019 | 0.021 |
| #30 | LTE Band 66 | 20MHz | QPSK1RB#50 | Left Cheek | 132322 | 20.16 | 20.50 | 1.081 | **0.076** | **0.082** |
| | LTE Band 66 | 20MHz | QPSK1RB#50 | Left Tilt | 132322 | 20.16 | 20.50 | 1.081 | 0.032 | 0.034 |
| | | | | | | | | | | |
| | LTE Band 66 | 20MHz | QPSK50RB#0 | Right Cheek | 132322 | 19.07 | 19.50 | 1.104 | 0.016 | 0.017 |
| | LTE Band 66 | 20MHz | QPSK50RB#0 | Right Tilt | 132322 | 19.07 | 19.50 | 1.104 | 0.010 | 0.011 |
| #31 | LTE Band 66 | 20MHz | QPSK50RB#0 | Left Cheek | 132322 | 19.07 | 19.50 | 1.104 | **0.038** | **0.042** |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | LTE Band 66 | 20MHz | QPSK50RB#0 | Left Tilt | 132322 | 19.07 | 19.50 | 1.104 | 0.008 | 0.009 |
| | | | | | | | | | | |
| #32 | LTE Band 71 | 20MHz | QPSK1RB#0 | Right Cheek | 133322 | 22.15 | 22.50 | 1.084 | **0.181** | **0.196** |
| | LTE Band 71 | 20MHz | QPSK1RB#0 | Right Tilt | 133322 | 22.15 | 22.50 | 1.084 | 0.107 | 0.116 |
| | LTE Band 71 | 20MHz | QPSK1RB#0 | Left Cheek | 133322 | 22.15 | 22.50 | 1.084 | 0.171 | 0.185 |
| | LTE Band 71 | 20MHz | QPSK1RB#0 | Left Tilt | 133322 | 22.15 | 22.50 | 1.084 | 0.104 | 0.113 |
| | | | | | | | | | | |
| #33 | LTE Band 71 | 20MHz | QPSK50RB#50 | Right Cheek | 133322 | 20.84 | 21.00 | 1.038 | **0.123** | **0.128** |
| | LTE Band 71 | 20MHz | QPSK50RB#50 | Right Tilt | 133322 | 20.84 | 21.00 | 1.038 | 0.080 | 0.083 |
| | LTE Band 71 | 20MHz | QPSK50RB#50 | Left Cheek | 133322 | 20.84 | 21.00 | 1.038 | 0.099 | 0.103 |
| | LTE Band 71 | 20MHz | QPSK50RB#50 | Left Tilt | 133322 | 20.84 | 21.00 | 1.038 | 0.070 | 0.072 |

**<TDD-LTE>**

| Plot No. | Band | Mode | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) | Plot No. |
|---|---|---|---|---|---|---|---|---|---|---|
| #34 | LTE Band 38 | 20MHz | QPSK1RB#99 | Right Cheek | 38150 | 22.82 | 23.00 | 1.042 | **0.092** | **0.097** |
| | LTE Band 38 | 20MHz | QPSK1RB#99 | Right Tilt | 38150 | 22.82 | 23.00 | 1.042 | 0.025 | 0.026 |
| | LTE Band 38 | 20MHz | QPSK1RB#99 | Left Cheek | 38150 | 22.82 | 23.00 | 1.042 | 0.090 | 0.095 |
| | LTE Band 38 | 20MHz | QPSK1RB#99 | Left Tilt | 38150 | 22.82 | 23.00 | 1.042 | 0.020 | 0.021 |
| | | | | | | | | | | |
| #35 | LTE Band 38 | 20MHz | QPSK50RB#0 | Right Cheek | 37850 | 21.80 | 22.00 | 1.047 | **0.090** | **0.095** |
| | LTE Band 38 | 20MHz | QPSK50RB#0 | Right Tilt | 37850 | 21.80 | 22.00 | 1.047 | 0.025 | 0.026 |
| | LTE Band 38 | 20MHz | QPSK50RB#0 | Left Cheek | 37850 | 21.80 | 22.00 | 1.047 | 0.088 | 0.093 |
| | LTE Band 38 | 20MHz | QPSK50RB#0 | Left Tilt | 37850 | 21.80 | 22.00 | 1.047 | 0.020 | 0.021 |
| | | | | | | | | | | |
| #36 | LTE Band 40 | 20MHz | QPSK1RB#99 | Right Cheek | 38750 | 23.41 | 23.50 | 1.021 | **0.124** | **0.127** |
| | LTE Band 40 | 20MHz | QPSK1RB#99 | Right Tilt | 38750 | 23.41 | 23.50 | 1.021 | 0.029 | 0.030 |
| | LTE Band 40 | 20MHz | QPSK1RB#99 | Left Cheek | 38750 | 23.41 | 23.50 | 1.021 | 0.096 | 0.099 |
| | LTE Band 40 | 20MHz | QPSK1RB#99 | Left Tilt | 38750 | 23.41 | 23.50 | 1.021 | 0.024 | 0.024 |
| | | | | | | | | | | |
| #37 | LTE Band 40 | 20MHz | QPSK50RB#0 | Right Cheek | 38750 | 22.42 | 22.50 | 1.019 | **0.012** | **0.012** |
| | LTE Band 40 | 20MHz | QPSK50RB#0 | Right Tilt | 38750 | 22.42 | 22.50 | 1.019 | 0.007 | 0.007 |
| | LTE Band 40 | 20MHz | QPSK50RB#0 | Left Cheek | 38750 | 22.42 | 22.50 | 1.019 | 0.012 | 0.012 |
| | LTE Band 40 | 20MHz | QPSK50RB#0 | Left Tilt | 38750 | 22.42 | 22.50 | 1.019 | 0.003 | 0.003 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| #38 | LTE Band 41 | 20MHz | QPSK1RB#99 | Right Cheek | 41490 | 27.58 | 28.00 | 1.102 | **0.112** | **0.124** |
| | LTE Band 41 | 20MHz | QPSK1RB#99 | Right Tilt | 41490 | 27.58 | 28.00 | 1.102 | 0.043 | 0.048 |
| | LTE Band 41 | 20MHz | QPSK1RB#99 | Left Cheek | 41490 | 27.58 | 28.00 | 1.102 | 0.085 | 0.094 |
| | LTE Band 41 | 20MHz | QPSK1RB#99 | Left Tilt | 41490 | 27.58 | 28.00 | 1.102 | 0.025 | 0.028 |
| | | | | | | | | | | |
| | LTE Band 41 | 20MHz | QPSK50RB#50 | Right Cheek | 39750 | 25.20 | 25.50 | 1.072 | 0.042 | 0.045 |
| | LTE Band 41 | 20MHz | QPSK50RB#50 | Right Tilt | 39750 | 25.20 | 25.50 | 1.072 | 0.017 | 0.018 |
| #39 | LTE Band 41 | 20MHz | QPSK50RB#50 | Left Cheek | 39750 | 25.20 | 25.50 | 1.072 | **0.049** | **0.052** |
| | LTE Band 41 | 20MHz | QPSK50RB#50 | Left Tilt | 39750 | 25.20 | 25.50 | 1.072 | 0.015 | 0.016 |

## <2.4G WLAN>

| Plot No. | Band | Mode | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|
| | WLAN2.4GHz | 802.11b | Right Cheek | 1 | 20.58 | 21.00 | 1.102 | 0.241 | 0.265 |
| | WLAN2.4GHz | 802.11b | Right Tilt | 1 | 20.58 | 21.00 | 1.102 | 0.238 | 0.262 |
| | WLAN2.4GHz | 802.11b | Left Cheek | 1 | 20.58 | 21.00 | 1.102 | 0.336 | 0.370 |
| #40 | WLAN2.4GHz | 802.11b | Left Tilt | 1 | 20.58 | 21.00 | 1.102 | **0.345** | **0.380** |

## <5G WLAN>

| Plot No. | Band | Mode | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|
| Band 1 | | | | | | | | | |
| | WLAN5GHz | 802.11ac 80 | Right Cheek | 42 | 15.19 | 15.50 | 1.074 | 0.343 | 0.368 |
| | WLAN5GHz | 802.11ac 80 | Right Tilt | 42 | 15.19 | 15.50 | 1.074 | 0.285 | 0.306 |
| #41 | WLAN5GHz | 802.11ac 80 | Left Cheek | 42 | 15.19 | 15.50 | 1.074 | **0.679** | **0.729** |
| | WLAN5GHz | 802.11ac 80 | Left Tilt | 42 | 15.19 | 15.50 | 1.074 | 0.592 | 0.636 |
| Band 4 | | | | | | | | | |
| | WLAN5GHz | 802.11ac 40 | Right Cheek | 151 | 22.43 | 22.50 | 1.016 | 0.254 | 0.258 |
| | WLAN5GHz | 802.11ac 40 | Right Tilt | 151 | 22.43 | 22.50 | 1.016 | 0.198 | 0.201 |
| #42 | WLAN5GHz | 802.11ac 40 | Left Cheek | 151 | 22.43 | 22.50 | 1.016 | **0.713** | **0.725** |
| | WLAN5GHz | 802.11ac 40 | Left Tilt | 151 | 22.43 | 22.50 | 1.016 | 0.432 | 0.439 |

**Note:** The WLAN Reported 1g SAR (W/kg) has been calculated together with the duty cycle scaling factor.

# 17.3. Body-worn SAR Data

**<GSM>**

| Plot No. | Band | Mode | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|
| #43 | GSM850 | GPRS(4 TX slots) | Front Side | 190 | 26.08 | 26.50 | 1.102 | **0.432** | **0.476** |
| | GSM850 | GPRS(4 TX slots) | Back Side | 190 | 26.08 | 26.50 | 1.102 | 0.379 | 0.417 |
| | | | | | | | | | |
| #44 | GSM1900 | GPRS(4 TX slots) | Front Side | 810 | 25.65 | 26.00 | 1.084 | **0.348** | **0.377** |
| | GSM1900 | GPRS(4 TX slots) | Back Side | 810 | 25.65 | 26.00 | 1.084 | 0.259 | 0.281 |

**<WCDMA>**

| Plot No. | Band | Mode | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|
| #45 | WCDMA Band II | RMC 12.2Kbps | Front Side | 9400 | 25.13 | 25.50 | 1.089 | **0.104** | **0.113** |
| | WCDMA Band II | RMC 12.2Kbps | Back Side | 9400 | 25.13 | 25.50 | 1.089 | 0.075 | 0.081 |
| | | | | | | | | | |
| | WCDMA Band IV | RMC 12.2Kbps | Front Side | 1413 | 24.10 | 24.50 | 1.096 | 0.690 | 0.757 |
| #46 | WCDMA Band IV | RMC 12.2Kbps | Back Side | 1413 | 24.10 | 24.50 | 1.096 | **0.837** | **0.918** |
| | | | | | | | | | |
| #47 | WCDMA Band V | RMC 12.2Kbps | Front Side | 4183 | 25.31 | 25.50 | 1.045 | **0.240** | **0.251** |
| | WCDMA Band V | RMC 12.2Kbps | Back Side | 4183 | 25.31 | 25.50 | 1.045 | 0.226 | 0.236 |

**<CDMA 2000>**

| Plot No. | Band | Mode | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|
| | CDMA2000 BC0 | SO32(F+SCH) | Front Side | 384 | 25.02 | 25.50 | 1.117 | 0.162 | 0.181 |
| #48 | CDMA2000 BC0 | SO32(F+SCH) | Back Side | 384 | 25.02 | 25.50 | 1.117 | **0.171** | **0.191** |
| | | | | | | | | | |
| | CDMA2000 BC1 | SO55(RC3) | Front Side | 25 | 22.00 | 22.00 | 1.000 | 0.961 | 0.961 |
| #49 | CDMA2000 BC1 | SO55(RC3) | Back Side | 25 | 22.00 | 22.00 | 1.000 | **1.010** | **1.010** |
| | | | | | | | | | |
| | CDMA2000 BC10 | SO32(+SCH) | Front Side | 580 | 24.99 | 25.00 | 1.002 | 0.198 | 0.198 |
| #50 | CDMA2000 BC10 | SO32(+SCH) | Back Side | 580 | 24.99 | 25.00 | 1.002 | **0.202** | **0.202** |

<EVDO>

| Plot No. | Band | Mode | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|
| | EVDO-0 BC0 | RETAP 4096 Bits | Front Side | 384 | 25.01 | 25.50 | 1.119 | 0.216 | 0.242 |
| #51 | EVDO-0 BC0 | RETAP 4096 Bits | Back Side | 384 | 25.01 | 25.50 | 1.119 | **0.221** | **0.247** |
| | | | | | | | | | |
| #52 | EVDO-0 BC1 | RETAP 4096 Bits | Front Side | 600 | 25.10 | 25.50 | 1.096 | **0.799** | **0.876** |
| | EVDO-0 BC1 | RETAP 4096 Bits | Back Side | 600 | 25.10 | 25.50 | 1.096 | 0.721 | 0.791 |
| | | | | | | | | | |
| #53 | EVDO-0 BC10 | RETAP 4096 Bits | Front Side | 476 | 25.04 | 25.50 | 1.112 | **0.243** | **0.270** |
| | EVDO-0 BC10 | RETAP 4096 Bits | Back Side | 476 | 25.04 | 25.50 | 1.112 | 0.243 | 0.270 |

<FDD-LTE >

| Plot No. | Band | BW (MHz) | Modulation RB/offset | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| | LTE Band 2 | 20MHz | QPSK1RB#0 | Front Side | 18900 | 23.62 | 24.00 | 1.091 | 0.459 | 0.501 |
| #54 | LTE Band 2 | 20MHz | QPSK1RB#0 | Back Side | 18900 | 23.62 | 24.00 | 1.091 | **0.764** | **0.834** |
| | | | | | | | | | | |
| #55 | LTE Band 2 | 20MHz | QPSK50RB#50 | Front Side | 18700 | 22.24 | 22.5 | 1.062 | **0.110** | **0.117** |
| | LTE Band 2 | 20MHz | QPSK50RB#50 | Back Side | 18700 | 22.24 | 22.5 | 1.062 | 0.083 | 0.088 |
| | | | | | | | | | | |
| | LTE Band 4 | 20MHz | QPSK1RB#99 | Front Side | 20050 | 22.80 | 23.00 | 1.047 | 0.846 | 0.886 |
| #56 | LTE Band 4 | 20MHz | QPSK1RB#99 | Back Side | 20050 | 22.80 | 23.00 | 1.047 | **0.923** | **0.966** |
| | | | | | | | | | | |
| #57 | LTE Band 4 | 20MHz | QPSK50RB#50 | Front Side | 20050 | 21.72 | 22.00 | 1.067 | **0.511** | **0.545** |
| | LTE Band 4 | 20MHz | QPSK50RB#50 | Back Side | 20050 | 21.72 | 22.00 | 1.067 | 0.466 | 0.497 |
| | | | | | | | | | | |
| #58 | LTE Band 5 | 10MHz | QPSK1RB#0 | Front Side | 20600 | 23.87 | 24.00 | 1.030 | **0.192** | **0.198** |
| | LTE Band 5 | 10MHz | QPSK1RB#0 | Back Side | 20600 | 23.87 | 24.00 | 1.030 | 0.186 | 0.192 |
| | | | | | | | | | | |
| #59 | LTE Band 5 | 10MHz | QPSK25RB#25 | Front Side | 20450 | 22.95 | 23.00 | 1.012 | **0.114** | **0.115** |
| | LTE Band 5 | 10MHz | QPSK25RB#25 | Back Side | 20450 | 22.95 | 23.00 | 1.012 | 0.073 | 0.074 |
| | | | | | | | | | | |
| #60 | LTE Band 7 | 20MHz | QPSK1RB#99 | Front Side | 21100 | 20.51 | 21.00 | 1.119 | **0.747** | **0.836** |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | LTE Band 7 | 20MHz | QPSK1RB#99 | Back Side | 21100 | 20.51 | 21.00 | 1.119 | 0.256 | 0.287 |
| | | | | | | | | | | |
| | LTE Band 7 | 20MHz | QPSK50RB#50 | Front Side | 21100 | 19.62 | 20 | 1.091 | 0.147 | 0.160 |
| #61 | LTE Band 7 | 20MHz | QPSK50RB#50 | Back Side | 21100 | 19.62 | 20 | 1.091 | **0.170** | **0.186** |
| | | | | | | | | | | |
| | LTE Band 12 | 10MHz | QPSK1RB#0 | Front Side | 23130 | 22.25 | 22.50 | 1.059 | 0.247 | 0.262 |
| #62 | LTE Band 12 | 10MHz | QPSK1RB#0 | Back Side | 23130 | 22.25 | 22.50 | 1.059 | **0.252** | **0.267** |
| | | | | | | | | | | |
| #63 | LTE Band 12 | 10MHz | QPSK25RB#0 | Front Side | 23060 | 21.39 | 21.5 | 1.026 | **0.103** | **0.106** |
| | LTE Band 12 | 10MHz | QPSK25RB#0 | Back Side | 23060 | 21.39 | 21.5 | 1.026 | 0.067 | 0.068 |
| | | | | | | | | | | |
| #64 | LTE Band 13 | 10MHz | QPSK1RB#0 | Front Side | 23230 | 20.86 | 21.00 | 1.033 | **0.116** | **0.120** |
| | LTE Band 13 | 10MHz | QPSK1RB#0 | Back Side | 23230 | 20.86 | 21.00 | 1.033 | 0.110 | 0.114 |
| | | | | | | | | | | |
| | LTE Band 13 | 10MHz | QPSK25RB#0 | Front Side | 23230 | 19.99 | 20.00 | 1.002 | 0.034 | 0.034 |
| #65 | LTE Band 13 | 10MHz | QPSK25RB#0 | Back Side | 23230 | 19.99 | 20.00 | 1.002 | **0.036** | **0.036** |
| | | | | | | | | | | |
| | LTE Band 14 | 10MHz | QPSK1RB#0 | Front Side | 23330 | 21.99 | 22.00 | 1.002 | 0.113 | 0.113 |
| #66 | LTE Band 14 | 10MHz | QPSK1RB#0 | Back Side | 23330 | 21.99 | 22.00 | 1.002 | **0.117** | **0.117** |
| | | | | | | | | | | |
| | LTE Band 14 | 10MHz | QPSK25RB#0 | Front Side | 23330 | 21.51 | 22.00 | 1.119 | 0.075 | 0.083 |
| #67 | LTE Band 14 | 10MHz | QPSK25RB#0 | Back Side | 23330 | 21.51 | 22.00 | 1.119 | **0.076** | **0.085** |
| | | | | | | | | | | |
| | LTE Band 25 | 20MHz | QPSK1RB#0 | Front Side | 26365 | 24.10 | 24.50 | 1.096 | 0.636 | 0.697 |
| #68 | LTE Band 25 | 20MHz | QPSK1RB#0 | Back Side | 26365 | 24.10 | 24.50 | 1.096 | **0.832** | **0.912** |
| | | | | | | | | | | |
| #69 | LTE Band 25 | 20MHz | QPSK50RB#50 | Front Side | 26365 | 22.90 | 23.00 | 1.023 | **0.169** | **0.173** |
| | LTE Band 25 | 20MHz | QPSK50RB#50 | Back Side | 26365 | 22.90 | 23.00 | 1.023 | 0.133 | 0.136 |
| | | | | | | | | | | |
| | LTE Band 26 | 15MHz | QPSK1RB#0 | Front Side | 26965 | 23.89 | 24.00 | 1.026 | 0.147 | 0.151 |
| #70 | LTE Band 26 | 15MHz | QPSK1RB#0 | Back Side | 26965 | 23.89 | 24.00 | 1.026 | **0.200** | **0.205** |
| | | | | | | | | | | |
| #71 | LTE Band 26 | 15MHz | QPSK36RB#0 | Front Side | 26765 | 22.71 | 23.00 | 1.069 | **0.059** | **0.063** |
| | LTE Band 26 | 15MHz | QPSK36RB#0 | Back Side | 26765 | 22.71 | 23.00 | 1.069 | 0.058 | 0.061 |
| | | | | | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | LTE Band 66 | 20MHz | QPSK1RB#50 | Front Side | 132322 | 20.16 | 20.50 | 1.081 | 0.591 | 0.643 |
| #72 | LTE Band 66 | 20MHz | QPSK1RB#50 | Back Side | 132322 | 20.16 | 20.50 | 1.081 | **0.665** | **0.723** |
| | | | | | | | | | | |
| #73 | LTE Band 66 | 20MHz | QPSK50RB#0 | Front Side | 132322 | 19.07 | 19.50 | 1.104 | **0.574** | **0.638** |
| | LTE Band 66 | 20MHz | QPSK50RB#0 | Back Side | 132322 | 19.07 | 19.50 | 1.104 | 0.472 | 0.524 |
| | | | | | | | | | | |
| | LTE Band 71 | 20MHz | QPSK1RB#0 | Front Side | 133322 | 22.15 | 22.50 | 1.084 | 0.291 | 0.317 |
| #74 | LTE Band 71 | 20MHz | QPSK1RB#0 | Back Side | 133322 | 22.15 | 22.50 | 1.084 | **0.426** | **0.465** |
| | | | | | | | | | | |
| | LTE Band 71 | 20MHz | QPSK50RB#50 | Front Side | 133322 | 20.84 | 21.00 | 1.038 | 0.247 | 0.258 |
| #75 | LTE Band 71 | 20MHz | QPSK50RB#50 | Back Side | 133322 | 20.84 | 21.00 | 1.038 | **0.343** | **0.358** |

**<TDD-LTE>**

| Plot No. | Band | BW (MHz) | Modulation RB/offset | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| | LTE Band 38 | 20MHz | QPSK1RB#99 | Front Side | 38150 | 22.82 | 23.00 | 1.042 | 0.074 | 0.078 |
| #76 | LTE Band 38 | 20MHz | QPSK1RB#99 | Back Side | 38150 | 22.82 | 23.00 | 1.042 | **0.099** | **0.103** |
| | | | | | | | | | | |
| | LTE Band 38 | 20MHz | QPSK50RB#0 | Front Side | 37850 | 21.80 | 22.00 | 1.047 | 0.059 | 0.062 |
| #77 | LTE Band 38 | 20MHz | QPSK50RB#0 | Back Side | 37850 | 21.80 | 22.00 | 1.047 | **0.061** | **0.064** |
| | | | | | | | | | | |
| | LTE Band 40 | 20MHz | QPSK1RB#99 | Front Side | 38750 | 23.41 | 23.50 | 1.021 | 0.072 | 0.074 |
| #78 | LTE Band 40 | 20MHz | QPSK1RB#99 | Back Side | 38750 | 23.41 | 23.50 | 1.021 | **0.118** | **0.121** |
| | | | | | | | | | | |
| | LTE Band 40 | 20MHz | QPSK50RB#0 | Front Side | 38750 | 22.42 | 22.50 | 1.019 | 0.064 | 0.066 |
| #79 | LTE Band 40 | 20MHz | QPSK50RB#0 | Back Side | 38750 | 22.42 | 22.50 | 1.019 | **0.081** | **0.083** |
| | | | | | | | | | | |
| | LTE Band 41 | 20MHz | QPSK1RB#49 | Front Side | 41490 | 27.58 | 28.00 | 1.102 | 0.267 | 0.296 |
| #80 | LTE Band 41 | 20MHz | QPSK1RB#49 | Back Side | 41490 | 27.58 | 28.00 | 1.102 | **0.426** | **0.472** |
| | | | | | | | | | | |
| | LTE Band 41 | 20MHz | QPSK50RB#0 | Front Side | 39750 | 25.20 | 25.50 | 1.072 | 0.150 | 0.162 |
| #81 | LTE Band 41 | 20MHz | QPSK50RB#0 | Back Side | 39750 | 25.20 | 25.50 | 1.072 | **0.157** | **0.169** |

**<2.4G WLAN >**

| Plot No. | Band | Mode | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|
| #82 | WLAN2.4GHz | 802.11b | Front Side | 1 | 20.58 | 21.00 | 1.102 | **0.122** | **0.134** |
| | WLAN2.4GHz | 802.11b | Back Side | 1 | 20.58 | 21.00 | 1.102 | 0.101 | 0.111 |

**<5G WLAN >**

| Plot No. | Band | Mode | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|
| Band 1 | | | | | | | | | |
| | WLAN5GHz | 802.11ac 80 | Front Side | 42 | 15.19 | 15.50 | 1.074 | 0.170 | 0.183 |
| #83 | WLAN5GHz | 802.11ac 80 | Back Side | 42 | 15.19 | 15.50 | 1.074 | **0.336** | **0.361** |
| Band 4 | | | | | | | | | |
| | WLAN5GHz | 802.11ac 40 | Front Side | 151 | 22.43 | 22.50 | 1.016 | 0.139 | 0.141 |
| #84 | WLAN5GHz | 802.11ac 40 | Back Side | 151 | 22.43 | 22.50 | 1.016 | **0.408** | **0.415** |

**Note:** The WLAN Reported 1g SAR (W/kg) has been calculated together with the duty cycle scaling factor.

# 17.4. Standalone Hotspot SAR Data

**<GSM>**

| Plot No. | Band | Mode | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|
| | GSM850 | GPRS(4 TX slots) | Front Side | 190 | 26.08 | 26.50 | 1.102 | 0.432 | 0.476 |
| | GSM850 | GPRS(4 TX slots) | Back Side | 190 | 26.08 | 26.50 | 1.102 | 0.379 | 0.417 |
| #85 | GSM850 | GPRS(4 TX slots) | Right Side | 190 | 26.08 | 26.50 | 1.102 | **0.786** | **0.866** |
| | GSM850 | GPRS(4 TX slots) | Bottom Side | 190 | 26.08 | 26.50 | 1.102 | 0.250 | 0.275 |
| | | | | | | | | | |
| | GSM1900 | GPRS(4 TX slots) | Front Side | 810 | 25.65 | 26.00 | 1.084 | 0.348 | 0.377 |
| | GSM1900 | GPRS(4 TX slots) | Back Side | 810 | 25.65 | 26.00 | 1.084 | 0.259 | 0.281 |
| | GSM1900 | GPRS(4 TX slots) | Right Side | 810 | 25.65 | 26.00 | 1.084 | 0.056 | 0.061 |
| #86 | GSM1900 | GPRS(4 TX slots) | Bottom Side | 810 | 25.65 | 26.00 | 1.084 | **0.682** | **0.739** |

**<WCDMA>**

| Plot No. | Band | Mode | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|
| | WCDMA Band II | RMC 12.2Kbps | Front Side | 9400 | 25.13 | 25.50 | 1.089 | 0.104 | 0.113 |
| | WCDMA Band II | RMC 12.2Kbps | Back Side | 9400 | 25.13 | 25.50 | 1.089 | 0.075 | 0.081 |
| | WCDMA Band II | RMC 12.2Kbps | Right Side | 9400 | 25.13 | 25.50 | 1.089 | 0.017 | 0.018 |
| #87 | WCDMA Band II | RMC 12.2Kbps | Bottom Side | 9400 | 25.13 | 25.50 | 1.089 | **0.210** | **0.229** |
| | | | | | | | | | |
| | WCDMA Band IV | RMC 12.2Kbps | Front Side | 1413 | 24.10 | 24.50 | 1.096 | 0.690 | 0.757 |
| #88 | WCDMA Band IV | RMC 12.2Kbps | Back Side | 1413 | 24.10 | 24.50 | 1.096 | **0.837** | **0.918** |
| | WCDMA Band IV | RMC 12.2Kbps | Right Side | 1413 | 24.10 | 24.50 | 1.096 | 0.122 | 0.134 |
| | WCDMA Band IV | RMC 12.2Kbps | Bottom Side | 1413 | 24.10 | 24.50 | 1.096 | 0.435 | 0.477 |
| | | | | | | | | | |
| | WCDMA Band V | RMC 12.2Kbps | Front Side | 4183 | 25.31 | 25.50 | 1.045 | 0.240 | 0.251 |
| | WCDMA Band V | RMC 12.2Kbps | Back Side | 4183 | 25.31 | 25.50 | 1.045 | 0.226 | 0.236 |
| #89 | WCDMA Band V | RMC 12.2Kbps | Right Side | 4183 | 25.31 | 25.50 | 1.045 | **0.376** | **0.393** |
| | WCDMA Band V | RMC 12.2Kbps | Bottom Side | 4183 | 25.31 | 25.50 | 1.045 | 0.079 | 0.083 |

## <CDMA 2000>

| Plot No. | Band | Mode | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|
| | CDMA2000 BC0 | SO32(F+SCH) | Front Side | 384 | 25.02 | 25.50 | 1.117 | 0.162 | 0.181 |
| | CDMA2000 BC0 | SO32(F+SCH) | Back Side | 384 | 25.02 | 25.50 | 1.117 | 0.171 | 0.191 |
| #90 | CDMA2000 BC0 | SO32(F+SCH) | Right Side | 384 | 25.02 | 25.50 | 1.117 | **0.236** | **0.264** |
| | CDMA2000 BC0 | SO32(F+SCH) | Bottom Side | 384 | 25.02 | 25.50 | 1.117 | 0.044 | 0.049 |
| | | | | | | | | | |
| | CDMA2000 BC1 | SO55(RC3) | Front Side | 25 | 22.00 | 22.00 | 1.000 | 0.961 | 0.961 |
| #91 | CDMA2000 BC1 | SO55(RC3) | Back Side | 25 | 22.00 | 22.00 | 1.000 | **1.010** | **1.010** |
| | CDMA2000 BC1 | SO55(RC3) | Right Side | 25 | 22.00 | 22.00 | 1.000 | 0.046 | 0.046 |
| | CDMA2000 BC1 | SO55(RC3) | Bottom Side | 25 | 22.00 | 22.00 | 1.000 | 0.406 | 0.406 |
| | | | | | | | | | |
| | CDMA2000 BC10 | SO32(+SCH) | Front Side | 580 | 24.99 | 25.00 | 1.002 | 0.198 | 0.198 |
| | CDMA2000 BC10 | SO32(+SCH) | Back Side | 580 | 24.99 | 25.00 | 1.002 | 0.202 | 0.202 |
| #92 | CDMA2000 BC10 | SO32(+SCH) | Right Side | 580 | 24.99 | 25.00 | 1.002 | **0.267** | **0.268** |
| | CDMA2000 BC10 | SO32(+SCH) | Bottom Side | 580 | 24.99 | 25.00 | 1.002 | 0.043 | 0.043 |

## <EVDO>

| Plot No. | Band | Mode | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|
| | EVDO BC0 | RETAP 4096 Bits | Front Side | 384 | 25.01 | 25.50 | 1.119 | 0.216 | 0.242 |
| | EVDO BC0 | RETAP 4096 Bits | Back Side | 384 | 25.01 | 25.50 | 1.119 | 0.221 | 0.247 |
| #93 | EVDO BC0 | RETAP 4096 Bits | Right Side | 384 | 25.01 | 25.50 | 1.119 | **0.319** | **0.357** |
| | EVDO BC0 | RETAP 4096 Bits | Bottom Side | 384 | 25.01 | 25.50 | 1.119 | 0.065 | 0.072 |
| | | | | | | | | | |
| #94 | EVDO BC1 | RETAP 4096 Bits | Front Side | 600 | 25.10 | 25.50 | 1.096 | **0.799** | **0.876** |
| | EVDO BC1 | RETAP 4096 Bits | Back Side | 600 | 25.10 | 25.50 | 1.096 | 0.721 | 0.791 |
| | EVDO BC1 | RETAP 4096 Bits | Right Side | 600 | 25.10 | 25.50 | 1.096 | 0.206 | 0.226 |
| | EVDO BC1 | RETAP 4096 Bits | Bottom Side | 600 | 25.10 | 25.50 | 1.096 | 0.436 | 0.478 |
| | | | | | | | | | |
| | EVDO BC10 | RETAP 4096 Bits | Front Side | 476 | 25.04 | 25.50 | 1.112 | 0.243 | 0.270 |
| | EVDO BC10 | RETAP 4096 Bits | Back Side | 476 | 25.04 | 25.50 | 1.112 | 0.243 | 0.270 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| #95 | EVDO BC10 | RETAP 4096 Bits | Right Side | 476 | 25.04 | 25.50 | 1.112 | **0.342** | **0.380** |
| | EVDO BC10 | RETAP 4096 Bits | Bottom Side | 476 | 25.04 | 25.50 | 1.112 | 0.059 | 0.066 |

**<FDD-LTE>**

| Plot No. | Band | BW (MHz) | Modulation RB/offset | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| | LTE Band 2 | 20MHz | QPSK1RB#0 | Front Side | 18900 | 23.62 | 24.00 | 1.091 | 0.459 | 0.501 |
| #96 | LTE Band 2 | 20MHz | QPSK1RB#0 | Back Side | 18900 | 23.62 | 24.00 | 1.091 | **0.764** | **0.834** |
| | LTE Band 2 | 20MHz | QPSK1RB#0 | Right Side | 18900 | 23.62 | 24.00 | 1.091 | 0.094 | 0.103 |
| | LTE Band 2 | 20MHz | QPSK1RB#0 | Bottom Side | 18900 | 23.62 | 24.00 | 1.091 | 0.291 | 0.318 |
| | | | | | | | | | | |
| | LTE Band 2 | 20MHz | QPSK50RB#50 | Front Side | 18700 | 22.24 | 22.5 | 1.062 | 0.110 | 0.117 |
| | LTE Band 2 | 20MHz | QPSK50RB#50 | Back Side | 18700 | 22.24 | 22.5 | 1.062 | 0.083 | 0.088 |
| | LTE Band 2 | 20MHz | QPSK50RB#50 | Right Side | 18700 | 22.24 | 22.5 | 1.062 | 0.019 | 0.020 |
| #97 | LTE Band 2 | 20MHz | QPSK50RB#50 | Bottom Side | 18700 | 22.24 | 22.5 | 1.062 | **0.455** | **0.483** |
| | | | | | | | | | | |
| | LTE Band 4 | 20MHz | QPSK1RB#99 | Front Side | 20050 | 22.80 | 23.00 | 1.047 | 0.846 | 0.886 |
| #98 | LTE Band 4 | 20MHz | QPSK1RB#99 | Back Side | 20050 | 22.80 | 23.00 | 1.047 | **0.923** | **0.966** |
| | LTE Band 4 | 20MHz | QPSK1RB#99 | Right Side | 20050 | 22.80 | 23.00 | 1.047 | 0.081 | 0.085 |
| | LTE Band 4 | 20MHz | QPSK1RB#99 | Bottom Side | 20050 | 22.80 | 23.00 | 1.047 | 0.888 | 0.930 |
| | | | | | | | | | | |
| | LTE Band 4 | 20MHz | QPSK50RB#50 | Front Side | 20050 | 21.72 | 22.00 | 1.067 | 0.511 | 0.545 |
| | LTE Band 4 | 20MHz | QPSK50RB#50 | Back Side | 20050 | 21.72 | 22.00 | 1.067 | 0.466 | 0.497 |
| | LTE Band 4 | 20MHz | QPSK50RB#50 | Right Side | 20050 | 21.72 | 22.00 | 1.067 | 0.069 | 0.073 |
| #99 | LTE Band 4 | 20MHz | QPSK50RB#50 | Bottom Side | 20050 | 21.72 | 22.00 | 1.067 | **0.892** | **0.951** |
| | | | | | | | | | | |
| #100 | LTE Band 5 | 10MHz | QPSK1RB#0 | Front Side | 20600 | 23.87 | 24.00 | 1.030 | **0.192** | **0.198** |
| | LTE Band 5 | 10MHz | QPSK1RB#0 | Back Side | 20600 | 23.87 | 24.00 | 1.030 | 0.186 | 0.192 |
| | LTE Band 5 | 10MHz | QPSK1RB#0 | Right Side | 20600 | 23.87 | 24.00 | 1.030 | 0.142 | 0.146 |
| | LTE Band 5 | 10MHz | QPSK1RB#0 | Bottom Side | 20600 | 23.87 | 24.00 | 1.030 | 0.038 | 0.039 |
| | | | | | | | | | | |
| #101 | LTE Band 5 | 10MHz | QPSK25RB#25 | Front Side | 20450 | 22.95 | 23.00 | 1.012 | **0.114** | **0.115** |
| | LTE Band 5 | 10MHz | QPSK25RB#25 | Back Side | 20450 | 22.95 | 23.00 | 1.012 | 0.073 | 0.074 |
| | LTE Band 5 | 10MHz | QPSK25RB#25 | Right Side | 20450 | 22.95 | 23.00 | 1.012 | 0.071 | 0.072 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | LTE Band 5 | 10MHz | QPSK25RB#25 | Bottom Side | 20450 | 22.95 | 23.00 | 1.012 | 0.059 | 0.059 |
| | | | | | | | | | | |
| #102 | LTE Band 7 | 20MHz | QPSK1RB#99 | Front Side | 21100 | 20.51 | 21.00 | 1.119 | **0.747** | **0.836** |
| | LTE Band 7 | 20MHz | QPSK1RB#99 | Back Side | 21100 | 20.51 | 21.00 | 1.119 | 0.256 | 0.287 |
| | LTE Band 7 | 20MHz | QPSK1RB#99 | Right Side | 21100 | 20.51 | 21.00 | 1.119 | 0.057 | 0.064 |
| | LTE Band 7 | 20MHz | QPSK1RB#99 | Bottom Side | 21100 | 20.51 | 21.00 | 1.119 | 0.603 | 0.675 |
| | | | | | | | | | | |
| | LTE Band 7 | 20MHz | QPSK50RB#50 | Front Side | 21100 | 19.62 | 20 | 1.091 | 0.147 | 0.160 |
| #103 | LTE Band 7 | 20MHz | QPSK50RB#50 | Back Side | 21100 | 19.62 | 20 | 1.091 | **0.170** | **0.186** |
| | LTE Band 7 | 20MHz | QPSK50RB#50 | Right Side | 21100 | 19.62 | 20 | 1.091 | 0.006 | 0.006 |
| | LTE Band 7 | 20MHz | QPSK50RB#50 | Bottom Side | 21100 | 19.62 | 20 | 1.091 | 0.105 | 0.115 |
| | | | | | | | | | | |
| | LTE Band 12 | 10MHz | QPSK1RB#0 | Front Side | 23130 | 22.25 | 22.50 | 1.059 | 0.247 | 0.262 |
| #104 | LTE Band 12 | 10MHz | QPSK1RB#0 | Back Side | 23130 | 22.25 | 22.50 | 1.059 | **0.252** | **0.267** |
| | LTE Band 12 | 10MHz | QPSK1RB#0 | Right Side | 23130 | 22.25 | 22.50 | 1.059 | 0.117 | 0.124 |
| | LTE Band 12 | 10MHz | QPSK1RB#0 | Bottom Side | 23130 | 22.25 | 22.50 | 1.059 | 0.014 | 0.015 |
| | | | | | | | | | | |
| #105 | LTE Band 12 | 10MHz | QPSK25RB#0 | Front Side | 23060 | 21.39 | 21.5 | 1.026 | **0.103** | **0.106** |
| | LTE Band 12 | 10MHz | QPSK25RB#0 | Back Side | 23060 | 21.39 | 21.5 | 1.026 | 0.067 | 0.068 |
| | LTE Band 12 | 10MHz | QPSK25RB#0 | Right Side | 23060 | 21.39 | 21.5 | 1.026 | 0.045 | 0.046 |
| | LTE Band 12 | 10MHz | QPSK25RB#0 | Bottom Side | 23060 | 21.39 | 21.5 | 1.026 | 0.081 | 0.083 |
| | | | | | | | | | | |
| #106 | LTE Band 13 | 10MHz | QPSK1RB#0 | Front Side | 23230 | 20.86 | 21.00 | 1.033 | **0.116** | **0.120** |
| | LTE Band 13 | 10MHz | QPSK1RB#0 | Back Side | 23230 | 20.86 | 21.00 | 1.033 | 0.110 | 0.114 |
| | LTE Band 13 | 10MHz | QPSK1RB#0 | Right Side | 23230 | 20.86 | 21.00 | 1.033 | 0.083 | 0.086 |
| | LTE Band 13 | 10MHz | QPSK1RB#0 | Bottom Side | 23230 | 20.86 | 21.00 | 1.033 | 0.014 | 0.015 |
| | | | | | | | | | | |
| | LTE Band 13 | 10MHz | QPSK25RB#0 | Front Side | 23230 | 19.99 | 20.00 | 1.002 | 0.034 | 0.034 |
| | LTE Band 13 | 10MHz | QPSK25RB#0 | Back Side | 23230 | 19.99 | 20.00 | 1.002 | 0.036 | 0.036 |
| | LTE Band 13 | 10MHz | QPSK25RB#0 | Right Side | 23230 | 19.99 | 20.00 | 1.002 | 0.039 | 0.039 |
| #107 | LTE Band 13 | 10MHz | QPSK25RB#0 | Bottom Side | 23230 | 19.99 | 20.00 | 1.002 | **0.050** | **0.050** |
| | | | | | | | | | | |
| | LTE Band 14 | 10MHz | QPSK1RB#0 | Front Side | 23330 | 21.99 | 22.00 | 1.002 | 0.113 | 0.113 |
| | LTE Band 14 | 10MHz | QPSK1RB#0 | Back Side | 23330 | 21.99 | 22.00 | 1.002 | 0.117 | 0.117 |
| #108 | LTE Band 14 | 10MHz | QPSK1RB#0 | Right Side | 23330 | 21.99 | 22.00 | 1.002 | **0.138** | **0.138** |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | LTE Band 14 | 10MHz | QPSK1RB#0 | Bottom Side | 23330 | 21.99 | 22.00 | 1.002 | 0.017 | 0.017 |
| | | | | | | | | | | |
| | LTE Band 14 | 10MHz | QPSK25RB#0 | Front Side | 23330 | 21.51 | 22.00 | 1.119 | 0.075 | 0.083 |
| | LTE Band 14 | 10MHz | QPSK25RB#0 | Back Side | 23330 | 21.51 | 22.00 | 1.119 | 0.076 | 0.085 |
| #109 | LTE Band 14 | 10MHz | QPSK25RB#0 | Right Side | 23330 | 21.51 | 22.00 | 1.119 | **0.087** | **0.097** |
| | LTE Band 14 | 10MHz | QPSK25RB#0 | Bottom Side | 23330 | 21.51 | 22.00 | 1.119 | 0.015 | 0.017 |
| | | | | | | | | | | |
| | LTE Band 25 | 20MHz | QPSK1RB#0 | Front Side | 26365 | 24.10 | 24.50 | 1.096 | 0.636 | 0.697 |
| #110 | LTE Band 25 | 20MHz | QPSK1RB#0 | Back Side | 26365 | 24.10 | 24.50 | 1.096 | **0.832** | **0.912** |
| | LTE Band 25 | 20MHz | QPSK1RB#0 | Right Side | 26365 | 24.10 | 24.50 | 1.096 | 0.108 | 0.118 |
| | LTE Band 25 | 20MHz | QPSK1RB#0 | Bottom Side | 26365 | 24.10 | 24.50 | 1.096 | 0.618 | 0.678 |
| | | | | | | | | | | |
| | LTE Band 25 | 20MHz | QPSK50RB#50 | Front Side | 26365 | 22.90 | 23.00 | 1.023 | 0.169 | 0.173 |
| | LTE Band 25 | 20MHz | QPSK50RB#50 | Back Side | 26365 | 22.90 | 23.00 | 1.023 | 0.133 | 0.136 |
| | LTE Band 25 | 20MHz | QPSK50RB#50 | Right Side | 26365 | 22.90 | 23.00 | 1.023 | 0.029 | 0.030 |
| #111 | LTE Band 25 | 20MHz | QPSK50RB#50 | Bottom Side | 26365 | 22.90 | 23.00 | 1.023 | **0.437** | **0.447** |
| | | | | | | | | | | |
| | LTE Band 26 | 15MHz | QPSK1RB#0 | Front Side | 26965 | 23.89 | 24.00 | 1.026 | 0.147 | 0.151 |
| | LTE Band 26 | 15MHz | QPSK1RB#0 | Back Side | 26965 | 23.89 | 24.00 | 1.026 | 0.200 | 0.205 |
| #112 | LTE Band 26 | 15MHz | QPSK1RB#0 | Right Side | 26965 | 23.89 | 24.00 | 1.026 | **0.212** | **0.217** |
| | LTE Band 26 | 15MHz | QPSK1RB#0 | Bottom Side | 26965 | 23.89 | 24.00 | 1.026 | 0.046 | 0.048 |
| | | | | | | | | | | |
| | LTE Band 26 | 15MHz | QPSK36RB#0 | Front Side | 26765 | 22.71 | 23.00 | 1.069 | 0.059 | 0.063 |
| | LTE Band 26 | 15MHz | QPSK36RB#0 | Back Side | 26765 | 22.71 | 23.00 | 1.069 | 0.058 | 0.061 |
| | LTE Band 26 | 15MHz | QPSK36RB#0 | Right Side | 26765 | 22.71 | 23.00 | 1.069 | 0.047 | 0.050 |
| #113 | LTE Band 26 | 15MHz | QPSK36RB#0 | Bottom Side | 26765 | 22.71 | 23.00 | 1.069 | **0.065** | **0.070** |
| | | | | | | | | | | |
| | LTE Band 66 | 20MHz | QPSK1RB#50 | Front Side | 132322 | 20.16 | 20.50 | 1.081 | 0.591 | 0.643 |
| #114 | LTE Band 66 | 20MHz | QPSK1RB#50 | Back Side | 132322 | 20.16 | 20.50 | 1.081 | **0.665** | **0.723** |
| | LTE Band 66 | 20MHz | QPSK1RB#50 | Right Side | 132322 | 20.16 | 20.50 | 1.081 | 0.520 | 0.566 |
| | LTE Band 66 | 20MHz | QPSK1RB#50 | Bottom Side | 132322 | 20.16 | 20.50 | 1.081 | 0.542 | 0.590 |
| | | | | | | | | | | |
| #115 | LTE Band 66 | 20MHz | QPSK50RB#0 | Front Side | 132322 | 19.07 | 19.50 | 1.104 | **0.574** | **0.638** |
| | LTE Band 66 | 20MHz | QPSK50RB#0 | Back Side | 132322 | 19.07 | 19.50 | 1.104 | 0.472 | 0.524 |
| | LTE Band 66 | 20MHz | QPSK50RB#0 | Right Side | 132322 | 19.07 | 19.50 | 1.104 | 0.195 | 0.217 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | LTE Band 66 | 20MHz | QPSK50RB#0 | Bottom Side | 132322 | 19.07 | 19.50 | 1.104 | 0.410 | 0.455 |
| | | | | | | | | | | |
| | LTE Band 71 | 20MHz | QPSK1RB#0 | Front Side | 133322 | 22.15 | 22.50 | 1.084 | 0.291 | 0.317 |
| #116 | LTE Band 71 | 20MHz | QPSK1RB#0 | Back Side | 133322 | 22.15 | 22.50 | 1.084 | **0.426** | **0.465** |
| | LTE Band 71 | 20MHz | QPSK1RB#0 | Right Side | 133322 | 22.15 | 22.50 | 1.084 | 0.016 | 0.017 |
| | LTE Band 71 | 20MHz | QPSK1RB#0 | Bottom Side | 133322 | 22.15 | 22.50 | 1.084 | 0.073 | 0.079 |
| | | | | | | | | | | |
| | LTE Band 71 | 20MHz | QPSK50RB#50 | Front Side | 133322 | 20.84 | 21.00 | 1.038 | 0.247 | 0.258 |
| #117 | LTE Band 71 | 20MHz | QPSK50RB#50 | Back Side | 133322 | 20.84 | 21.00 | 1.038 | **0.343** | **0.358** |
| | LTE Band 71 | 20MHz | QPSK50RB#50 | Right Side | 133322 | 20.84 | 21.00 | 1.038 | 0.016 | 0.017 |
| | LTE Band 71 | 20MHz | QPSK50RB#50 | Bottom Side | 133322 | 20.84 | 21.00 | 1.038 | 0.050 | 0.053 |

**<TDD-LTE>**

| Plot No. | Band | Mode | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) | Plot No. |
|---|---|---|---|---|---|---|---|---|---|---|
| | LTE Band 38 | 20MHz | QPSK1RB#99 | Front Side | 38150 | 22.82 | 23.00 | 1.042 | 0.074 | 0.078 |
| | LTE Band 38 | 20MHz | QPSK1RB#99 | Back Side | 38150 | 22.82 | 23.00 | 1.042 | 0.099 | 0.103 |
| | LTE Band 38 | 20MHz | QPSK1RB#99 | Right Side | 38150 | 22.82 | 23.00 | 1.042 | 0.016 | 0.017 |
| #118 | LTE Band 38 | 20MHz | QPSK1RB#99 | Bottom Side | 38150 | 22.82 | 23.00 | 1.042 | **0.245** | **0.257** |
| | | | | | | | | | | |
| | LTE Band 38 | 20MHz | QPSK50RB#0 | Front Side | 37850 | 21.80 | 22.00 | 1.047 | 0.059 | 0.062 |
| | LTE Band 38 | 20MHz | QPSK50RB#0 | Back Side | 37850 | 21.80 | 22.00 | 1.047 | 0.061 | 0.064 |
| | LTE Band 38 | 20MHz | QPSK50RB#0 | Right Side | 37850 | 21.80 | 22.00 | 1.047 | 0.007 | 0.007 |
| #119 | LTE Band 38 | 20MHz | QPSK50RB#0 | Bottom Side | 37850 | 21.80 | 22.00 | 1.047 | **0.239** | **0.252** |
| | | | | | | | | | | |
| | LTE Band 40 | 20MHz | QPSK1RB#99 | Front Side | 38750 | 23.41 | 23.50 | 1.021 | 0.072 | 0.074 |
| | LTE Band 40 | 20MHz | QPSK1RB#99 | Back Side | 38750 | 23.41 | 23.50 | 1.021 | 0.118 | 0.121 |
| | LTE Band 40 | 20MHz | QPSK1RB#99 | Right Side | 38750 | 23.41 | 23.50 | 1.021 | 0.032 | 0.033 |
| #120 | LTE Band 40 | 20MHz | QPSK1RB#99 | Bottom Side | 38750 | 23.41 | 23.50 | 1.021 | **0.281** | **0.289** |
| | | | | | | | | | | |
| | LTE Band 40 | 20MHz | QPSK50RB#0 | Front Side | 38750 | 22.42 | 22.50 | 1.019 | 0.064 | 0.066 |
| | LTE Band 40 | 20MHz | QPSK50RB#0 | Back Side | 38750 | 22.42 | 22.50 | 1.019 | 0.081 | 0.083 |
| | LTE Band 40 | 20MHz | QPSK50RB#0 | Right Side | 38750 | 22.42 | 22.50 | 1.019 | 0.023 | 0.024 |
| #121 | LTE Band 40 | 20MHz | QPSK50RB#0 | Bottom Side | 38750 | 22.42 | 22.50 | 1.019 | **0.117** | **0.120** |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | LTE Band 41 | 20MHz | QPSK1RB#99 | Front Side | 41490 | 27.58 | 28.00 | 1.102 | 0.267 | 0.296 |
| | LTE Band 41 | 20MHz | QPSK1RB#99 | Back Side | 41490 | 27.58 | 28.00 | 1.102 | 0.426 | 0.472 |
| | LTE Band 41 | 20MHz | QPSK1RB#99 | Right Side | 41490 | 27.58 | 28.00 | 1.102 | 0.045 | 0.050 |
| #122 | LTE Band 41 | 20MHz | QPSK1RB#99 | Bottom Side | 41490 | 27.58 | 28.00 | 1.102 | **0.617** | **0.684** |
| | | | | | | | | | | |
| | LTE Band 41 | 20MHz | QPSK50RB#50 | Front Side | 39750 | 25.20 | 25.50 | 1.072 | 0.150 | 0.162 |
| | LTE Band 41 | 20MHz | QPSK50RB#50 | Back Side | 39750 | 25.20 | 25.50 | 1.072 | 0.157 | 0.169 |
| | LTE Band 41 | 20MHz | QPSK50RB#50 | Right Side | 39750 | 25.20 | 25.50 | 1.072 | 0.103 | 0.111 |
| #123 | LTE Band 41 | 20MHz | QPSK50RB#50 | Bottom Side | 39750 | 25.20 | 25.50 | 1.072 | **0.562** | **0.606** |

**<2.4G WLAN >**

| Plot No. | Band | Mode | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|
| #124 | WLAN2.4GHz | 802.11b | Front Side | 1 | 20.58 | 21.00 | 1.102 | **0.122** | **0.134** |
| | WLAN2.4GHz | 802.11b | Back Side | 1 | 20.58 | 21.00 | 1.102 | 0.101 | 0.111 |
| | WLAN2.4GHz | 802.11b | Right Side | 1 | 20.58 | 21.00 | 1.102 | 0.028 | 0.030 |
| | WLAN2.4GHz | 802.11b | Top Side | 1 | 20.58 | 21.00 | 1.102 | 0.106 | 0.117 |

**<5G WLAN >**

| Plot No. | Band | Mode | Test Position | Ch. | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|
| Band 1 | | | | | | | | | |
| | WLAN5GHz | 802.11ac 80 | Front Side | 42 | 15.19 | 15.50 | 1.074 | 0.170 | 0.183 |
| #125 | WLAN5GHz | 802.11ac 80 | Back Side | 42 | 15.19 | 15.50 | 1.074 | **0.336** | **0.361** |
| | WLAN5GHz | 802.11ac 80 | Right Side | 42 | 15.19 | 15.50 | 1.074 | 0.076 | 0.082 |
| | WLAN5GHz | 802.11ac 80 | Top Side | 42 | 15.19 | 15.50 | 1.074 | 0.149 | 0.160 |
| | | | | | | | | | |
| | WLAN5GHz | 802.11ac 40 | Front Side | 151 | 22.43 | 22.50 | 1.016 | 0.139 | 0.141 |
| #126 | WLAN5GHz | 802.11ac 40 | Back Side | 151 | 22.43 | 22.50 | 1.016 | **0.408** | **0.415** |
| | WLAN5GHz | 802.11ac 40 | Right Side | 151 | 22.43 | 22.50 | 1.016 | 0.150 | 0.152 |
| | WLAN5GHz | 802.11ac 40 | Top Side | 151 | 22.43 | 22.50 | 1.016 | 0.088 | 0.089 |

**Note:** The WLAN Reported 1g SAR (W/kg) has been calculated together with the duty cycle scaling factor.

# 18. Stand-alone SAR test Exclusion

Per KDB 447498 D01v06 4.3.1)

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR,

Where f (GHz) is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation

The result is rounded to one decimal place for comparison

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine

**<Bluetooth Estimated >**

| Maximum tune-up tolerance (dBm) | Maximum tune-up tolerance (mW) | Minimum Distance(mm) | Frequency (GHz) | Estimated value | Test threshold |
|---|---|---|---|---|---|
| 8.5 | 7.08 | 10 | 2.402 | 1.61 | 3.0 |

The Estimated value 0.44 ≤ Test threshold 3.0, so Bluetooth no needs to be tested.

When standalone SAR is not required to be measured, per FCC KDB 447498 D01v06 4.3.2), the following equation must be used to estimate the standalone 1g SAR for simultaneous transmission assessment involving that transmitter.

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] · [√ f (GHz)/x] W/kg, for test separation distances ≤ 50 mm;

Where x = 7.5 for 1-g SAR and x = 18.75 for 10-g SAR.

**<Bluetooth Estimated SAR Calculation >**

| Mode | Max. tune-up Power (dBm) | Exposure Position | Body |
|---|---|---|---|
| | | Test Distance (mm) | 10 |
| Bluetooth | 8.5 | Estimated SAR (W/kg) | 0.215 |

**Note**：Held-to ear configuration are not applicable to Bluetooth operations and therefore were not considered for simultaneous transmission.

# 19. Simultaneous Transmission Evaluation

**Simultaneous Evaluation:**

| No. | Simultaneous transmission Condition | Head | Body-worn | Hotspot |
|---|---|---|---|---|
| 1 | WWAN + WLAN 2.4GHz | Yes | Yes | Yes |
| 2 | WWAN + WLAN 5GHz | Yes | Yes | Yes |
| 3 | WWAN +Bluetooth | No | Yes | Yes |

**Note:**

1. When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the Wi-Fi transmitter and another WWAN transmitter. Both transmitter often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions. The "Portable Hotspot" feature on the handset was NOT activated, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal.
2. The hotspot SAR result may overlap with the body-worn accessory SAR requirements, per KDB 941225 D06, the more conservative configurations can be considered, thus excluding some unnecessary body-worn accessory SAR tests.
3. GSM supports voice and data transmission, though not simultaneously. WCDMA supports voice and data transmission simultaneously.
4. Simultaneous Transmission SAR evaluation is not required for BT and Wi-Fi , because the software mechanism have been incorporated to guarantee that the WLAN and Bluetooth transmitters would not simultaneously operate.
5. Per KDB 447498D01v06, Simultaneous Transmission SAR Evaluation procedures is as followed:

   Step 1: If sum of 1 g SAR < 1.6 W/kg, Simultaneous SAR measurement is not required.

   Step 2: If sum of 1 g SAR > 1.6 W/kg, ratio of SAR to peak separation distance for pair of transmitters calculated.

   Step 3: If the ratio of SAR to peak separation distance is ≤ 0.04, Simultaneous SAR measurement is not required.

   Step 4: If the ratio of SAR to peak separation distance is > 0.04, Simultaneous SAR measurement is required and simultaneous transmission SAR value is calculated.

   (The ratio is determined by: (SAR1 + SAR2) ^ 1.5/Ri ≤ 0.04,

Ri is the separation distance between the peak SAR locations for the antenna pair in mm.

**<Head Simultaneous Transmission>**

| WWAN Band | | Exposure Position | 1 | 2 | 3 | 1+2 Summed 1g SAR (W/kg) | 1+3 Summed 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|
| | | | WWAN | 2.4GHz WLAN | 5GHz WLAN | | |
| | | | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | | |
| GSM | GSM850 | Right Cheek | 0.384 | 0.265 | 0.368 | 0.649 | 0.752 |
| | | Right Tilt | 0.203 | 0.262 | 0.306 | 0.465 | 0.509 |
| | | Left Cheek | 0.370 | 0.370 | 0.729 | 0.740 | 1.099 |
| | | Left Tilt | 0.239 | 0.380 | 0.636 | 0.619 | 0.875 |
| | GSM1900 | Right Cheek | 0.028 | 0.265 | 0.368 | 0.293 | 0.396 |
| | | Right Tilt | 0.001 | 0.262 | 0.306 | 0.263 | 0.307 |
| | | Left Cheek | 0.036 | 0.370 | 0.729 | 0.406 | 0.765 |
| | | Left Tilt | 0.016 | 0.380 | 0.636 | 0.396 | 0.652 |
| WCDMA | WCDMA Band II | Right Cheek | 0.025 | 0.265 | 0.368 | 0.290 | 0.393 |
| | | Right Tilt | 0.017 | 0.262 | 0.306 | 0.279 | 0.323 |
| | | Left Cheek | 0.432 | 0.370 | 0.729 | 0.802 | 1.161 |
| | | Left Tilt | 0.219 | 0.380 | 0.636 | 0.599 | 0.855 |
| | WCDMA Band IV | Right Cheek | 0.035 | 0.265 | 0.368 | 0.300 | 0.403 |
| | | Right Tilt | 0.052 | 0.262 | 0.306 | 0.314 | 0.358 |
| | | Left Cheek | 0.081 | 0.370 | 0.729 | 0.451 | 0.810 |
| | | Left Tilt | 0.029 | 0.380 | 0.636 | 0.409 | 0.665 |
| | WCDMA Band V | Right Cheek | 0.262 | 0.265 | 0.368 | 0.527 | 0.630 |
| | | Right Tilt | 0.156 | 0.262 | 0.306 | 0.418 | 0.462 |
| | | Left Cheek | 0.236 | 0.370 | 0.729 | 0.606 | 0.965 |
| | | Left Tilt | 0.141 | 0.380 | 0.636 | 0.521 | 0.777 |
| CDMA 2000 | CDMA 2000 BC0 | Right Cheek | 0.152 | 0.265 | 0.368 | 0.417 | 0.520 |
| | | Right Tilt | 0.102 | 0.262 | 0.306 | 0.364 | 0.408 |
| | | Left Cheek | 0.126 | 0.370 | 0.729 | 0.496 | 0.855 |
| | | Left Tilt | 0.107 | 0.380 | 0.636 | 0.487 | 0.743 |
| | CDMA 2000 BC1 | Right Cheek | 0.051 | 0.265 | 0.368 | 0.316 | 0.419 |
| | | Right Tilt | 0.018 | 0.262 | 0.306 | 0.280 | 0.324 |
| | | Left Cheek | 0.083 | 0.370 | 0.729 | 0.453 | 0.812 |
| | | Left Tilt | 0.029 | 0.380 | 0.636 | 0.409 | 0.665 |
| | CDMA 2000 BC10 | Right Cheek | 0.070 | 0.265 | 0.368 | 0.335 | 0.438 |
| | | Right Tilt | 0.120 | 0.262 | 0.306 | 0.382 | 0.426 |
| | | Left Cheek | 0.134 | 0.370 | 0.729 | 0.504 | 0.863 |
| | | Left Tilt | 0.036 | 0.380 | 0.636 | 0.416 | 0.672 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| EVDO | EVDO BC0 | Right Cheek | 0.201 | 0.265 | 0.368 | 0.466 | 0.569 |
| | | Right Tilt | 0.153 | 0.262 | 0.306 | 0.415 | 0.459 |
| | | Left Cheek | 0.187 | 0.370 | 0.729 | 0.557 | 0.916 |
| | | Left Tilt | 0.149 | 0.380 | 0.636 | 0.529 | 0.785 |
| | EVDO BC1 | Right Cheek | 0.071 | 0.265 | 0.368 | 0.336 | 0.439 |
| | | Right Tilt | 0.052 | 0.262 | 0.306 | 0.314 | 0.358 |
| | | Left Cheek | 0.095 | 0.370 | 0.729 | 0.465 | 0.824 |
| | | Left Tilt | 0.027 | 0.380 | 0.636 | 0.407 | 0.663 |
| | EVDO BC10 | Right Cheek | 0.209 | 0.265 | 0.368 | 0.474 | 0.577 |
| | | Right Tilt | 0.155 | 0.262 | 0.306 | 0.417 | 0.461 |
| | | Left Cheek | 0.179 | 0.370 | 0.729 | 0.549 | 0.908 |
| | | Left Tilt | 0.142 | 0.380 | 0.636 | 0.522 | 0.778 |
| LTE | LTE Band 2 | Right Cheek | 0.029 | 0.265 | 0.368 | 0.294 | 0.397 |
| | | Right Tilt | 0.011 | 0.262 | 0.306 | 0.273 | 0.317 |
| | | Left Cheek | 0.040 | 0.370 | 0.729 | 0.410 | 0.769 |
| | | Left Tilt | 0.015 | 0.380 | 0.636 | 0.395 | 0.651 |
| | LTE Band 4 | Right Cheek | 0.036 | 0.265 | 0.368 | 0.301 | 0.404 |
| | | Right Tilt | 0.017 | 0.262 | 0.306 | 0.279 | 0.323 |
| | | Left Cheek | 0.358 | 0.370 | 0.729 | 0.728 | 1.087 |
| | | Left Tilt | 0.013 | 0.380 | 0.636 | 0.393 | 0.649 |
| | LTE Band 5 | Right Cheek | 0.189 | 0.265 | 0.368 | 0.454 | 0.557 |
| | | Right Tilt | 0.122 | 0.262 | 0.306 | 0.384 | 0.428 |
| | | Left Cheek | 0.151 | 0.370 | 0.729 | 0.521 | 0.880 |
| | | Left Tilt | 0.106 | 0.380 | 0.636 | 0.486 | 0.742 |
| | LTE Band 7 | Right Cheek | 0.115 | 0.265 | 0.368 | 0.380 | 0.483 |
| | | Right Tilt | 0.045 | 0.262 | 0.306 | 0.307 | 0.351 |
| | | Left Cheek | 0.159 | 0.370 | 0.729 | 0.529 | 0.888 |
| | | Left Tilt | 0.086 | 0.380 | 0.636 | 0.466 | 0.722 |
| | LTE Band 12 | Right Cheek | 0.092 | 0.265 | 0.368 | 0.357 | 0.460 |
| | | Right Tilt | 0.055 | 0.262 | 0.306 | 0.317 | 0.361 |
| | | Left Cheek | 0.091 | 0.370 | 0.729 | 0.461 | 0.820 |
| | | Left Tilt | 0.051 | 0.380 | 0.636 | 0.431 | 0.687 |
| | LTE Band 13 | Right Cheek | 0.194 | 0.265 | 0.368 | 0.459 | 0.562 |
| | | Right Tilt | 0.128 | 0.262 | 0.306 | 0.390 | 0.434 |
| | | Left Cheek | 0.159 | 0.370 | 0.729 | 0.529 | 0.888 |
| | | Left Tilt | 0.100 | 0.380 | 0.636 | 0.480 | 0.736 |
| | LTE Band 14 | Right Cheek | 0.092 | 0.265 | 0.368 | 0.357 | 0.460 |
| | | Right Tilt | 0.059 | 0.262 | 0.306 | 0.321 | 0.365 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Left Cheek | 0.092 | 0.370 | 0.729 | 0.462 | 0.821 |
| | | Left Tilt | 0.075 | 0.380 | 0.636 | 0.455 | 0.711 |
| | LTE Band 25 | Right Cheek | 0.031 | 0.265 | 0.368 | 0.296 | 0.399 |
| | | Right Tilt | 0.013 | 0.262 | 0.306 | 0.275 | 0.319 |
| | | Left Cheek | 0.043 | 0.370 | 0.729 | 0.413 | 0.772 |
| | | Left Tilt | 0.016 | 0.380 | 0.636 | 0.396 | 0.652 |
| | LTE Band 26 | Right Cheek | 0.174 | 0.265 | 0.368 | 0.439 | 0.542 |
| | | Right Tilt | 0.112 | 0.262 | 0.306 | 0.374 | 0.418 |
| | | Left Cheek | 0.153 | 0.370 | 0.729 | 0.523 | 0.882 |
| | | Left Tilt | 0.110 | 0.380 | 0.636 | 0.490 | 0.746 |
| | LTE Band 38 | Right Cheek | 0.097 | 0.265 | 0.368 | 0.362 | 0.465 |
| | | Right Tilt | 0.026 | 0.262 | 0.306 | 0.288 | 0.332 |
| | | Left Cheek | 0.095 | 0.370 | 0.729 | 0.465 | 0.824 |
| | | Left Tilt | 0.021 | 0.380 | 0.636 | 0.401 | 0.657 |
| | LTE Band 40 | Right Cheek | 0.127 | 0.265 | 0.368 | 0.392 | 0.495 |
| | | Right Tilt | 0.030 | 0.262 | 0.306 | 0.292 | 0.336 |
| | | Left Cheek | 0.099 | 0.370 | 0.729 | 0.469 | 0.828 |
| | | Left Tilt | 0.024 | 0.380 | 0.636 | 0.404 | 0.660 |
| | LTE Band 41 | Right Cheek | 0.124 | 0.265 | 0.368 | 0.389 | 0.492 |
| | | Right Tilt | 0.048 | 0.262 | 0.306 | 0.310 | 0.354 |
| | | Left Cheek | 0.094 | 0.370 | 0.729 | 0.464 | 0.823 |
| | | Left Tilt | 0.028 | 0.380 | 0.636 | 0.408 | 0.664 |
| | LTE Band 66 | Right Cheek | 0.045 | 0.265 | 0.368 | 0.310 | 0.413 |
| | | Right Tilt | 0.021 | 0.262 | 0.306 | 0.283 | 0.327 |
| | | Left Cheek | 0.082 | 0.370 | 0.729 | 0.452 | 0.811 |
| | | Left Tilt | 0.034 | 0.380 | 0.636 | 0.414 | 0.670 |
| | LTE Band 71 | Right Cheek | 0.196 | 0.265 | 0.368 | 0.461 | 0.564 |
| | | Right Tilt | 0.116 | 0.262 | 0.306 | 0.378 | 0.422 |
| | | Left Cheek | 0.185 | 0.370 | 0.729 | 0.555 | 0.914 |
| | | Left Tilt | 0.113 | 0.380 | 0.636 | 0.493 | 0.749 |

**<Hotspot Simultaneous Transmission>**

| WWAN Band | | Exposure Position | 1 | 2 | 3 | 1+2 | 1+3 |
|---|---|---|---|---|---|---|---|
| | | | WWAN | 2.4GHz WLAN | 5GHz WLAN | Summed | Summed |
| | | | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) |
| GSM | GSM850 | Front Side | 0.476 | 0.134 | 0.183 | 0.610 | 0.659 |
| | | Back Side | 0.417 | 0.111 | 0.415 | 0.528 | 0.832 |
| | | Right Side | 0.866 | 0.030 | 0.152 | 0.896 | 1.018 |
| | | Bottom Side | 0.275 | 0.000 | 0.000 | 0.275 | 0.275 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| | GSM1900 | Front Side | 0.377 | 0.134 | 0.183 | 0.511 | 0.560 |
| | | Back Side | 0.281 | 0.111 | 0.415 | 0.392 | 0.696 |
| | | Right Side | 0.061 | 0.030 | 0.152 | 0.091 | 0.213 |
| | | Bottom Side | 0.739 | 0.000 | 0.000 | 0.739 | 0.739 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| WCDMA | WCDMA Band II | Front Side | 0.113 | 0.134 | 0.183 | 0.247 | 0.296 |
| | | Back Side | 0.081 | 0.111 | 0.415 | 0.192 | 0.496 |
| | | Right Side | 0.018 | 0.030 | 0.152 | 0.048 | 0.170 |
| | | Bottom Side | 0.229 | 0.000 | 0.000 | 0.229 | 0.229 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| | WCDMA Band IV | Front Side | 0.757 | 0.134 | 0.183 | 0.891 | 0.940 |
| | | Back Side | 0.918 | 0.111 | 0.415 | 1.029 | 1.333 |
| | | Right Side | 0.134 | 0.030 | 0.152 | 0.164 | 0.286 |
| | | Bottom Side | 0.477 | 0.000 | 0.000 | 0.477 | 0.477 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| | WCDMA Band V | Front Side | 0.251 | 0.134 | 0.183 | 0.385 | 0.434 |
| | | Back Side | 0.236 | 0.111 | 0.415 | 0.347 | 0.651 |
| | | Right Side | 0.393 | 0.030 | 0.152 | 0.423 | 0.545 |
| | | Bottom Side | 0.083 | 0.000 | 0.000 | 0.083 | 0.083 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| CDMA 2000 | CDMA 2000 BC0 | Front Side | 0.181 | 0.134 | 0.183 | 0.315 | 0.364 |
| | | Back Side | 0.191 | 0.111 | 0.415 | 0.302 | 0.606 |
| | | Right Side | 0.264 | 0.030 | 0.152 | 0.294 | 0.416 |
| | | Bottom Side | 0.049 | 0.000 | 0.000 | 0.049 | 0.049 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| | CDMA | Front Side | 0.961 | 0.134 | 0.183 | 1.095 | 1.144 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2000 BC1 | Back Side | 1.010 | 0.111 | 0.415 | 1.121 | 1.425 |
| | | Right Side | 0.046 | 0.030 | 0.152 | 0.076 | 0.198 |
| | | Bottom Side | 0.406 | 0.000 | 0.000 | 0.406 | 0.406 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| | CDMA 2000 BC10 | Front Side | 0.198 | 0.134 | 0.183 | 0.332 | 0.381 |
| | | Back Side | 0.202 | 0.111 | 0.415 | 0.313 | 0.617 |
| | | Right Side | 0.268 | 0.030 | 0.152 | 0.298 | 0.420 |
| | | Bottom Side | 0.043 | 0.000 | 0.000 | 0.043 | 0.043 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| EVDO | EVDO | Front Side | 0.242 | 0.134 | 0.183 | 0.376 | 0.425 |
| | | Back Side | 0.247 | 0.111 | 0.415 | 0.358 | 0.662 |
| | | Right Side | 0.357 | 0.030 | 0.152 | 0.387 | 0.509 |
| | | Bottom Side | 0.072 | 0.000 | 0.000 | 0.072 | 0.072 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| | EVDO | Front Side | 0.876 | 0.134 | 0.183 | 1.010 | 1.059 |
| | | Back Side | 0.791 | 0.111 | 0.415 | 0.902 | 1.206 |
| | | Right Side | 0.226 | 0.030 | 0.152 | 0.256 | 0.378 |
| | | Bottom Side | 0.478 | 0.000 | 0.000 | 0.478 | 0.478 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| | EVDO | Front Side | 0.270 | 0.134 | 0.183 | 0.404 | 0.453 |
| | | Back Side | 0.270 | 0.111 | 0.415 | 0.381 | 0.685 |
| | | Right Side | 0.380 | 0.030 | 0.152 | 0.410 | 0.532 |
| | | Bottom Side | 0.066 | 0.000 | 0.000 | 0.066 | 0.066 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| LTE | LTE Band 2 | Front Side | 0.501 | 0.134 | 0.183 | 0.635 | 0.684 |
| | | Back Side | 0.834 | 0.111 | 0.415 | 0.945 | 1.249 |
| | | Right Side | 0.103 | 0.030 | 0.152 | 0.133 | 0.255 |
| | | Bottom Side | 0.483 | 0.000 | 0.000 | 0.483 | 0.483 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| | LTE Band 4 | Front Side | 0.886 | 0.134 | 0.183 | 1.020 | 1.069 |
| | | Back Side | 0.966 | 0.111 | 0.415 | 1.077 | 1.381 |
| | | Right Side | 0.085 | 0.030 | 0.152 | 0.115 | 0.237 |
| | | Bottom Side | 0.951 | 0.000 | 0.000 | 0.951 | 0.951 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| | LTE Band 5 | Front Side | 0.198 | 0.134 | 0.183 | 0.332 | 0.381 |
| | | Back Side | 0.192 | 0.111 | 0.415 | 0.303 | 0.607 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Right Side | 0.146 | 0.030 | 0.152 | 0.176 | 0.298 |
| | | Bottom Side | 0.059 | 0.000 | 0.000 | 0.059 | 0.059 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| | LTE Band 7 | Front Side | 0.836 | 0.134 | 0.183 | 0.970 | 1.019 |
| | | Back Side | 0.287 | 0.111 | 0.415 | 0.398 | 0.702 |
| | | Right Side | 0.064 | 0.030 | 0.152 | 0.094 | 0.216 |
| | | Bottom Side | 0.675 | 0.000 | 0.000 | 0.675 | 0.675 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| | LTE Band 12 | Front Side | 0.262 | 0.134 | 0.183 | 0.396 | 0.445 |
| | | Back Side | 0.267 | 0.111 | 0.415 | 0.378 | 0.682 |
| | | Right Side | 0.124 | 0.030 | 0.152 | 0.154 | 0.276 |
| | | Bottom Side | 0.083 | 0.000 | 0.000 | 0.083 | 0.083 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| | LTE Band 13 | Front Side | 0.120 | 0.134 | 0.183 | 0.254 | 0.303 |
| | | Back Side | 0.114 | 0.111 | 0.415 | 0.225 | 0.529 |
| | | Right Side | 0.086 | 0.030 | 0.152 | 0.116 | 0.238 |
| | | Bottom Side | 0.050 | 0.000 | 0.000 | 0.050 | 0.050 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| | LTE Band 14 | Front Side | 0.113 | 0.134 | 0.183 | 0.247 | 0.296 |
| | | Back Side | 0.117 | 0.111 | 0.415 | 0.228 | 0.532 |
| | | Right Side | 0.138 | 0.030 | 0.152 | 0.168 | 0.290 |
| | | Bottom Side | 0.017 | 0.000 | 0.000 | 0.017 | 0.017 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| | LTE Band 25 | Front Side | 0.697 | 0.134 | 0.183 | 0.831 | 0.880 |
| | | Back Side | 0.912 | 0.111 | 0.415 | 1.023 | 1.327 |
| | | Right Side | 0.118 | 0.030 | 0.152 | 0.148 | 0.270 |
| | | Bottom Side | 0.678 | 0.000 | 0.000 | 0.678 | 0.678 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| | LTE Band 26 | Front Side | 0.151 | 0.134 | 0.183 | 0.285 | 0.334 |
| | | Back Side | 0.205 | 0.111 | 0.415 | 0.316 | 0.620 |
| | | Right Side | 0.217 | 0.030 | 0.152 | 0.247 | 0.369 |
| | | Bottom Side | 0.070 | 0.000 | 0.000 | 0.070 | 0.070 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| | LTE Band 38 | Front Side | 0.078 | 0.134 | 0.183 | 0.212 | 0.261 |
| | | Back Side | 0.103 | 0.111 | 0.415 | 0.214 | 0.518 |
| | | Right Side | 0.017 | 0.030 | 0.152 | 0.047 | 0.169 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Bottom Side | 0.257 | 0.000 | 0.000 | 0.257 | 0.257 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| | LTE Band 40 | Front Side | 0.074 | 0.134 | 0.183 | 0.208 | 0.257 |
| | | Back Side | 0.121 | 0.111 | 0.415 | 0.232 | 0.536 |
| | | Right Side | 0.033 | 0.030 | 0.152 | 0.063 | 0.185 |
| | | Bottom Side | 0.289 | 0.000 | 0.000 | 0.289 | 0.289 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| | LTE Band 41 | Front Side | 0.296 | 0.134 | 0.183 | 0.430 | 0.479 |
| | | Back Side | 0.472 | 0.111 | 0.415 | 0.583 | 0.887 |
| | | Right Side | 0.111 | 0.030 | 0.152 | 0.141 | 0.263 |
| | | Bottom Side | 0.684 | 0.000 | 0.000 | 0.684 | 0.684 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| | LTE Band 66 | Front Side | 0.643 | 0.134 | 0.183 | 0.777 | 0.826 |
| | | Back Side | 0.723 | 0.111 | 0.415 | 0.834 | 1.138 |
| | | Right Side | 0.566 | 0.030 | 0.152 | 0.596 | 0.718 |
| | | Bottom Side | 0.590 | 0.000 | 0.000 | 0.590 | 0.590 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |
| | LTE Band 71 | Front Side | 0.317 | 0.134 | 0.183 | 0.451 | 0.500 |
| | | Back Side | 0.465 | 0.111 | 0.415 | 0.576 | 0.880 |
| | | Right Side | 0.017 | 0.030 | 0.152 | 0.047 | 0.169 |
| | | Bottom Side | 0.079 | 0.000 | 0.000 | 0.079 | 0.079 |
| | | Top Side | 0.000 | 0.117 | 0.160 | 0.117 | 0.160 |

**<Body-worn Simultaneous Transmission>**

| WWAN Band | | Exposure Position | WWAN | 2.4GHz WLAN | 5GHz WLAN | WWAN+2.4G Summed 1g SAR (W/kg) | WWAN+5G Summed 1g SAR (W/kg) | WWAN+BT Summed 1g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|
| | | | 1g SAR (W/kg) | 1g SAR (W/kg) | 1g SAR (W/kg) | | | |
| GSM | GSM850 | Front Side | 0.476 | 0.134 | 0.183 | 0.610 | 0.659 | 0.691 |
| | | Back Side | 0.417 | 0.111 | 0.415 | 0.528 | 0.832 | 0.632 |
| | GSM1900 | Front Side | 0.377 | 0.134 | 0.183 | 0.511 | 0.560 | 0.592 |
| | | Back Side | 0.281 | 0.111 | 0.415 | 0.392 | 0.696 | 0.496 |
| WCDMA | WCDMA Band II | Front Side | 0.113 | 0.134 | 0.183 | 0.247 | 0.296 | 0.328 |
| | | Back Side | 0.081 | 0.111 | 0.415 | 0.192 | 0.496 | 0.296 |
| | WCDMA Band IV | Front Side | 0.757 | 0.134 | 0.183 | 0.891 | 0.940 | 0.972 |
| | | Back Side | 0.918 | 0.111 | 0.415 | 1.029 | 1.333 | 1.133 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | WCDMA Band V | Front Side | 0.251 | 0.134 | 0.183 | 0.385 | 0.434 | 0.466 |
| | | Back Side | 0.236 | 0.111 | 0.415 | 0.347 | 0.651 | 0.451 |
| CDMA 2000 | CDMA 2000 BC0 | Front Side | 0.181 | 0.134 | 0.183 | 0.315 | 0.364 | 0.396 |
| | | Back Side | 0.191 | 0.111 | 0.415 | 0.302 | 0.606 | 0.406 |
| | CDMA 2000 BC1 | Front Side | 0.961 | 0.134 | 0.183 | 1.095 | 1.144 | 1.176 |
| | | Back Side | 1.010 | 0.111 | 0.415 | 1.121 | 1.425 | 1.225 |
| | CDMA 2000 BC10 | Front Side | 0.198 | 0.134 | 0.183 | 0.332 | 0.381 | 0.413 |
| | | Back Side | 0.202 | 0.111 | 0.415 | 0.313 | 0.617 | 0.417 |
| EVDO | EVDO | Front Side | 0.242 | 0.134 | 0.183 | 0.376 | 0.425 | 0.457 |
| | | Back Side | 0.247 | 0.111 | 0.415 | 0.358 | 0.662 | 0.462 |
| | EVDO | Front Side | 0.876 | 0.134 | 0.183 | 1.010 | 1.059 | 1.091 |
| | | Back Side | 0.791 | 0.111 | 0.415 | 0.902 | 1.206 | 1.006 |
| | EVDO | Front Side | 0.270 | 0.134 | 0.183 | 0.404 | 0.453 | 0.485 |
| | | Back Side | 0.270 | 0.111 | 0.415 | 0.381 | 0.685 | 0.485 |
| LTE | LTE Band 2 | Front Side | 0.501 | 0.134 | 0.183 | 0.635 | 0.684 | 0.716 |
| | | Back Side | 0.834 | 0.111 | 0.415 | 0.945 | 1.249 | 1.049 |
| | LTE Band 4 | Front Side | 0.886 | 0.134 | 0.183 | 1.020 | 1.069 | 1.101 |
| | | Back Side | 0.966 | 0.111 | 0.415 | 1.077 | 1.381 | 1.181 |
| | LTE Band 5 | Front Side | 0.198 | 0.134 | 0.183 | 0.332 | 0.381 | 0.413 |
| | | Back Side | 0.192 | 0.111 | 0.415 | 0.303 | 0.607 | 0.407 |
| | LTE Band 7 | Front Side | 0.836 | 0.134 | 0.183 | 0.970 | 1.019 | 1.051 |
| | | Back Side | 0.287 | 0.111 | 0.415 | 0.398 | 0.702 | 0.502 |
| | LTE Band 12 | Front Side | 0.262 | 0.134 | 0.183 | 0.396 | 0.445 | 0.477 |
| | | Back Side | 0.267 | 0.111 | 0.415 | 0.378 | 0.682 | 0.482 |
| | LTE Band 13 | Front Side | 0.120 | 0.134 | 0.183 | 0.254 | 0.303 | 0.335 |
| | | Back Side | 0.114 | 0.111 | 0.415 | 0.225 | 0.529 | 0.329 |
| | LTE Band 14 | Front Side | 0.113 | 0.134 | 0.183 | 0.247 | 0.296 | 0.328 |
| | | Back Side | 0.117 | 0.111 | 0.415 | 0.228 | 0.532 | 0.332 |
| | LTE Band 25 | Front Side | 0.697 | 0.134 | 0.183 | 0.831 | 0.880 | 0.912 |
| | | Back Side | 0.912 | 0.111 | 0.415 | 1.023 | 1.327 | 1.127 |
| | LTE Band 26 | Front Side | 0.151 | 0.134 | 0.183 | 0.285 | 0.334 | 0.366 |
| | | Back Side | 0.205 | 0.111 | 0.415 | 0.316 | 0.620 | 0.420 |
| | LTE Band 38 | Front Side | 0.078 | 0.134 | 0.183 | 0.212 | 0.261 | 0.293 |
| | | Back Side | 0.103 | 0.111 | 0.415 | 0.214 | 0.518 | 0.318 |
| | LTE Band 40 | Front Side | 0.074 | 0.134 | 0.183 | 0.208 | 0.257 | 0.289 |
| | | Back Side | 0.121 | 0.111 | 0.415 | 0.232 | 0.536 | 0.336 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | LTE Band 41 | Front Side | 0.296 | 0.134 | 0.183 | 0.430 | 0.479 | 0.511 |
| | | Back Side | 0.472 | 0.111 | 0.415 | 0.583 | 0.887 | 0.687 |
| | LTE Band 66 | Front Side | 0.643 | 0.134 | 0.183 | 0.777 | 0.826 | 0.858 |
| | | Back Side | 0.723 | 0.111 | 0.415 | 0.834 | 1.138 | 0.938 |
| | LTE Band 71 | Front Side | 0.317 | 0.134 | 0.183 | 0.451 | 0.500 | 0.532 |
| | | Back Side | 0.465 | 0.111 | 0.415 | 0.576 | 0.880 | 0.680 |

# 20. 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 | Normal | Rectangular | Triangular | U-Shape |
|---|---|---|---|---|
| Multi-plying Factor[a] | 1/k[b] | $1/\sqrt{3}$ | $1/\sqrt{6}$ | $1/\sqrt{2}$ |

**Table 8.1. Standard Uncertainty for Assumed Distribution**

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

(b) $\kappa$ is the coverage factor

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 | 0.089 | 0.089 |
| 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% |

| Error Description | Uncertainty Value (±%) | Probability | Divisor | (Ci) 1g | (Ci) 10g | Standard Uncertainty (1g) (±%) | Standard Uncertainty (10g) (±%) |
|---|---|---|---|---|---|---|---|
| **Measurement System** | | | | | | | |
| Probe Calibration | 6.55 | 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 | 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 | 0.089 | 0.089 |
| 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 | 3.8 | 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** | | | | | | 12.5% | 12.5% |
| **Coverage Factor for 95 %** | | | | | | K=2 | K=2 |
| **Expanded STD Uncertainty** | | | | | | 25.1 % | 25.1% |

# Annex A General Information

**1. Identification of the Responsible Testing Laboratory**

| | |
|---|---|
| **Company Name:** | Kehu-Morlab Test Laboratory |
| **Department:** | Morlab Laboratory |
| **Address:** | Unit 101, No.1732 Gangzhong Road, Xiamen Area, Pilot Free Trade Zone (Fujian) China |
| **Responsible Test Lab Manager:** | Di Dehai |
| **Telephone:** | +86-592-5612050 |
| **Facsimile:** | +86-592-5612095 |

**2. Identification of the Responsible Testing Location**

| | |
|---|---|
| **Name:** | Kehu-Morlab Test Laboratory |
| **Address:** | Unit 101, No.1732 Gangzhong Road, Xiamen Area, Pilot Free Trade Zone (Fujian) China |

****** END OF MAIN REPORT ******