# FCC SAR Compliance Test Report

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|---|---|
| **Product Name:** | Smart Phone |
| **Model:** | H1511 |
| **Report No.:** | SYBH(Z-SAR)011072015-2 |
| **FCC ID:** | QISH1511 |

| | APPROVED (Lab Manager) | PREPARED (Test Engineer) |
|---|---|---|
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| DATE | 2015-09-17 | 2015-09-17 |

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# ※ ※ Modified History ※ ※

| REV. | DESCRIPTION | ISSUED DATE | REMARK |
|---|---|---|---|
| Rev.1.0 | Initial Test Report Release | 2015-09-11 | Gong Zhong |
| Rev.1.1 | Page 210-213: Correct the Tune-up limit in Table 116 conducted power table of WiFi 5G. | 2015-09-17 | Gong Zhong |
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# 1 General Information

## 1.1 Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for H1511 is as below Table 1.

| Band | Max Reported SAR(W/kg) | | | |
|---|---|---|---|---|
| | 1-g Head | 1-g Body-worn (15mm) * | 1-g Hotspot (10mm) | 10-g Extremity (0mm)** |
| GSM850 | 1.49 | 0.30 | 0.48 | / |
| GSM1900 | 0.14 | 0.60 | 1.17 | 1.43 |
| UMTS Band II | 0.14 | 0.69 | 0.84 | 1.46 |
| UMTS Band IV | 0.12 | 0.53 | 1.14 | 3.59 |
| UMTS Band V | 1.49 | 0.32 | 0.42 | / |
| CDMA BC 0 | 1.39 | 0.41 | 0.67 | / |
| CDMA BC 1 | 0.15 | 0.67 | 1.23 | 3.49 |
| CDMA BC 10 | 1.00 | 0.44 | 0.31 | / |
| LTE Band II | 0.18 | 0.81 | 1.14 | 1.44 |
| LTE Band IV | 0.11 | 0.56 | 1.43 | 3.62 |
| LTE Band V | 1.31 | 0.30 | 0.58 | / |
| LTE Band VII | 0.50 | 0.49 | 1.33 | 3.62 |
| LTE Band XII | 1.20 | 0.21 | 0.38 | / |
| LTE Band XIII | 1.44 | 0.31 | 0.41 | / |
| LTE Band XVII | 1.28 | 0.23 | 0.31 | / |
| LTE Band XXV | 0.17 | 0.73 | 1.44 | 3.52 |
| LTE Band XXVI | 1.40 | 0.26 | 0.37 | / |
| LTE Band XXX | 0.33 | 0.52 | 1.44 | 3.26 |
| LTE Band XLI | 0.31 | 0.25 | 0.91 | 0.58 |
| WiFi 2.4G | 0.80 | 0.21 | 0.11 | / |
| WiFi 5G | 1.06 | 0.25 | 0.11 | 3.54 |
| **The highest simultaneous SAR value is 1.56 W/kg per KDB690783 D01** | | | | |

Table 1:Summary of test result

Note:

1)* For body worn operation, this device has been tested and meets FCC RF exposure guidelines when used with any accessory that contains no metal and that positions the handset a minimum of 15mm from the body. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

2)** For 10-g Extremity operation, this device has been tested and meets the 10-g SAR limits of 4.0 W/kg for general population/ uncontraolled exposure according to ANSI C95.1:1992/IEEE C95.1:1991 and Industry Canada Radio Standards Specification RSS-102.

The device is in compliance with Specific Absorption Rate（SAR）for general population/uncontraolled exposure limits according to the FCC rule §2.1093, the ANSI C95.1:1992/IEEE C95.1:1991, the NCRP Report Number 86 for uncontrolled environment, according to the Industry Canada Radio Standards Specification RSS-102 for General Population/Uncontrolled exposure, and had been tested in accordance with the measurement methods and procedures specified in IEEE Std 1528-2013.

### 1.2 RF exposure limits

| Human Exposure | Uncontrolled Environment General Population | Controlled Environment Occupational |
|---|---|---|
| **Spatial Peak SAR*** (Brain/Body/Arms/Legs) | **1.60 W/kg** | 8.00 W/kg |
| **Spatial Average SAR**** (Whole Body) | 0.08 W/kg | 0.40 W/kg |
| **Spatial Peak SAR***** (Hands/Feet/Ankle/Wrist) | **4.00 W/kg** | 20.00 W/kg |

Table 2: RF exposure limits

The limit applied in this test report is shown in **bold** letters

**Notes:**

* The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

** The Spatial Average value of the SAR averaged over the whole body.

*** The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

**Uncontrolled Environments** are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

**Controlled Environments** are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation.

### 1.3 EUT Description

| Device Information： | | | |
|---|---|---|---|
| Product Name: | Smart Phone | | |
| Model: | H1511 | | |
| FCC ID : | QISH1511 | | |
| IMEI: | 867686020089254<br>867686020088892 | | |
| Device Type : | Portable device | | |
| Device Phase: | Identical Prototype | | |
| Exposure Category: | Uncontrolled environment / general population | | |
| Hardware Version : | HL1NINAMH | | |
| Software Version : | User release M MDA | | |
| Antenna Type : | Internal antenna | | |
| Others Accessories | Headset | | |
| Device Operating Configurations: | | | |
| Supporting Mode(s) | GSM850/1900, UMTS Band II/IV/V, CDMA BC0/BC1/BC10,<br>LTE Band II/IV/V/VII/XII/XIII/XVII/XXV/XXVI/XXIX/XXX/XLI,<br>WiFi 2.4G/5G, BT, NFC | | |
| Test Modulation | GSM(GMSK/8PSK),UMTS(QPSK),CDMA(QPSK),LTE(QPSK/16QAM),<br>WiFi(DSSS/OFDM),BT(GFSK) | | |
| Device Class | B | | |
| Operating Frequency Range(s) | Band | Tx (MHz) | Rx (MHz) |
| | GSM850 | 824-849 | 869-894 |
| | GSM1900 | 1850-1910 | 1930-1990 |
| | UMTS Band II | 1850-1910 | 1930-1990 |
| | UMTS Band IV | 1710-1755 | 2110-2155 |
| | UMTS Band V | 824-849 | 869-894 |
| | CDMA BC0 | 824-849 | 869-894 |
| | CDMA BC1 | 1850-1910 | 1930-1990 |
| | CDMA BC10 | 806-824 | 851-869 |
| | LTE Band II | 1850 -1910 | 1930 -1990 |
| | LTE Band IV | 1710 -1755 | 2110 -2155 |
| | LTE Band V | 824-849 | 869-894 |
| | LTE Band VII | 2500 -2570 | 2620 -2690 |
| | LTE Band XII | 699-716 | 729-746 |
| | LTE Band XIII | 777–787 | 746–756 |
| | LTE Band XVII | 704-716 | 734-746 |
| | LTE Band XXV | 1850-1915 | 1925-1990 |
| | LTE Band XXVI | 814-849 | 859-894 |
| | LTE Band XXIX | N/A | 717-728 |
| | LTE Band XXX | 2305-2315 | 2350-2360 |
| | LTE Band XLI | 2496-2690 | 2496-2690 |
| | BT | 2402-2480 | |
| | WiFi 2.4G | 2412-2462 | |
| | WiFi 5G | 5150-5250<br>5250-5350<br>5470-5725<br>5725-5850 | |
| | NFC | 13.56 | |
| GPRS Multislot Class(10) | Max Number of Timeslots in Uplink: | 2 | |
| | Max Number of Timeslots in Downlink: | 4 | |
| | Max Total Timeslot: | 5 | |

| | | |
|---|---|---|
| EGPRS Multislot Class(10) | Max Number of Timeslots in Uplink: | 2 |
| | Max Number of Timeslots in Downlink: | 4 |
| | Max Total Timeslot: | 5 |
| HSDPA UE Category | 14 | |
| HSUPA UE Category | 6 | |
| DC-HSDPA UE Category | 24 | |
| Power Class: | 4,tested with power level 5(GSM850) | |
| | 1,tested with power level 0(GSM1900) | |
| | 3, tested with power control “all 1”(UMTS Band II) | |
| | 3, tested with power control “all 1”(UMTS Band IV) | |
| | 3, tested with power control “all 1”(UMTS Band V) | |
| | 3, tested with power control “all Up”(CDMA BC 0) | |
| | 3, tested with power control “all Up”(CDMA BC 1) | |
| | 3, tested with power control “all Up”(CDMA BC 10) | |
| | 3, tested with power control all Max.(LTE Band II) | |
| | 3, tested with power control all Max.(LTE Band IV) | |
| | 3, tested with power control all Max.(LTE Band V) | |
| | 3, tested with power control all Max.(LTE Band VII) | |
| | 3, tested with power control all Max.(LTE Band XII) | |
| | 3, tested with power control all Max.(LTE Band XIII) | |
| | 3, tested with power control all Max.(LTE Band XVII) | |
| | 3, tested with power control all Max.(LTE Band XXV) | |
| | 3, tested with power control all Max.(LTE Band XXVI) | |
| | 3, tested with power control all Max.(LTE Band XXX) | |
| | 3, tested with power control all Max.(LTE Band XLI) | |
| Test Channels (low-mid-high): | 128-190-251(GSM850) | |
| | 512-661-810(GSM1900) | |
| | 9262-9400-9538(UMTS Band II) | |
| | 1312-1413-1513(UMTS Band IV) | |
| | 4132-4182-4233(UMTS Band V) | |
| | 1013-384-777(CDMA BC 0) | |
| | 25-600-1175(CDMA BC 1) | |
| | 450-565-670(CDMA BC 10) | |
| | 18607-18900-19193(LTE Band II BW=1.4MHz) | |
| | 18615-18900-19185(LTE Band II BW=3MHz) | |
| | 18625-18900-19175(LTE Band II BW=5MHz) | |
| | 18650-18900-19150(LTE Band II BW=10MHz) | |
| | 18675-18900-19125(LTE Band II BW=15MHz) | |
| | 18700-18900-19100(LTE Band II BW=20MHz) | |
| | 19957-20175-20393(LTE Band IV BW=1.4MHz) | |
| | 19965-20175-20385(LTE Band IV BW=3MHz) | |
| | 19975-20175-20375(LTE Band IV BW=5MHz) | |
| | 20000-20175-20350(LTE Band IV BW=10MHz) | |
| | 20025-20175-20325(LTE Band IV BW=15MHz) | |
| | 20050-20175-20300(LTE Band IV BW=20MHz) | |
| | 20407-20525-20643(LTE Band V BW=1.4MHz) | |
| | 20415-20525-20635(LTE Band V BW=3MHz) | |
| | 20425-20525-20625(LTE Band V BW=5MHz) | |
| | 20450-20525-20600(LTE Band V BW=10MHz) | |
| | 20775-21100-21425(LTE Band VII BW=5MHz) | |
| | 20800-21100-21400(LTE Band VII BW=10MHz) | |
| | 20825-21100-21375(LTE Band VII BW=15MHz) | |
| | 20850-21100-21350(LTE Band VII BW=20MHz) | |

| | |
|---|---|
| Test Channels: | 23017-23095-23173(LTE Band XII BW=1.4MHz) |
| | 23025-23095-23165(LTE Band XII BW=3MHz) |
| | 23035-23095-23155(LTE Band XII BW=5MHz) |
| | 23060-23095-23130(LTE Band XII BW=10MHz) |
| | 23205-23230-23255(LTE Band XIII BW=5MHz) |
| | 23230(LTE Band XIII BW=10MHz) |
| | 23755-23790-23825(LTE Band XVII BW=5MHz) |
| | 23780-23790-23800(LTE Band XVII BW=10MHz) |
| | 26047-26365-26683(LTE Band XXV BW=1.4MHz) |
| | 26055-26365-26675(LTE Band XXV BW=3MHz) |
| | 26065-26365-26665(LTE Band XXV BW=5MHz) |
| | 26090-26365-26640(LTE Band XXV BW=10MHz) |
| | 26115-26365-26615 (LTE Band XXV BW=15MHz) |
| | 26140-26365-26590(LTE Band XXV BW=20MHz) |
| | 26697-26865-27033(LTE Band XXVI BW=1.4MHz) |
| | 26705-26865-27025(LTE Band XXVI BW=3MHz) |
| | 26715-26865-27015(LTE Band XXVI BW=5MHz) |
| | 26750-26865-26990(LTE Band XXVI BW=10MHz) |
| | 26775-26865-26965(LTE Band XXVI BW=15MHz) |
| | 27685-27710-27735(LTE Band XXX BW=5MHz) |
| | 27710 (LTE Band XXX BW=10MHz) |
| | 39675-40148-40620-41092-41565(LTE Band XLI BW=5MHz) |
| | 39700-40160-40620-41080-41540(LTE Band XLI BW=10MHz) |
| | 39725-40173-40620-41068-41515(LTE Band XLI BW=15MHz) |
| | 39750-40185-40620-41055-41490(LTE Band XLI BW=20MHz) |
| | 802.11b/g/n 20M:1-6-11 (WiFi 2.4G)<br>802.11n 40M: 3-6-9(WiFi 2.4G) |
| | 802.11a/n/ac 20M: 36-40-44-48-52-56-60-64-100-104-108-112-116-120-124-128-132-136-140-144-149-153-157-161-165<br>802.11 n/ac 40M: 38-46-54-62-102-110-118-126-134-142-151-159<br>802.11ac 80M: 42-58-106-122-138-155(WiFi 5G) |

Table 3:Device information and operating configuration

### 1.3.1 General Description

H1511 is subscriber equipment in the LTE/WCDMA/CDMA/GSM system. The GSM/GPRS/EDGE frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900. The HSPA+/UMTS frequency band is Band I and Band II and Band IV and Band V. The CDMA/1XEV-DO band is BC1 and BC0 and BC10.The LTE frequency band is B2 and B3 and B4 and B5 and B7 and B12 and B13 and B17 and B25 and B26 and B29 and B30 and B41. But only GSM850 and GSM1900MHz and WCDMA Band II and Band IV and Band V and CDMA BC1 and BC0 and BC10 and LTE B2 and LTE B4 and LTE B5 and LTE B7 and LTE B12 and LTE B13 and LTE B17 and LTE B25 and LTE B26 and LTE B29 and LTE B30 and LTE B41 bands test data included in this report. The Mobile Phone implements such functions as RF signal receiving/transmitting, LTE/HSPA/UMTS and GSM/GPRS/EDGE and CDMA2000 1x and 1XEV-DO protocol processing, voice, video MMS service, GPS, AGPS NFC and WIFI etc. Externally it provides micro SD card interface (it can also used as micro SD card interface), earphone port (to provide voice service) and USIM card interface. It also provides Bluetooth module to synchronize data between a PC and the phone, or to use the built-in modem of the phone to access the Internet with a PC, or to exchange data with other Bluetooth devices.

Battery information:

| Name | Manufacture | Serials number | Description |
|---|---|---|---|
| Rechargeable Li-ion | Huawei Technologies Co., Ltd. | NA | Battery Model: HB416683ECW<br>Rated capacity: 3450mAh<br>Nominal Voltage: ⎓ +3.8V<br>Charging Voltage: ⎓ +4.35V |

### 1.3.2 TDD LTE additional specification

The device supports TDD LTE bands. According to KDB 941225 D05 SAR for LTE Devices v02r03, for Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.
For this device, TDD LTE SAR should be tested with the highest transmission duty factor (63.33%) , which using Uplink-downlink configuration 0.The detailed TDD LTE test configuration description are provided in Section 6 of this report.

### 1.3.3 Power reduction specification

This device uses a single fixed level of power reduction through static table look-up for SAR compliance and it is triggered by a single event or operation:
1) A fixed level power reduction is applied for some frequency bands when hotspot mode becomes active. When the hotspot is disabled, the power value will be recovered.

2) A fixed level power reduction is applied for some frequency bands when simultaneously transmitting with the other antennas in certain simultaneous transmission conditions. The standalone SAR compliance still uses the standalone SAR results tested at the maximum output power level without any power reduction.

3) This device uses an infrared proximity sensor to facilitate triggering in typical user interactivity with the device. The proximity sensor is used to indicate when the phone is held close to a user's ear or used in front side of body-worn/10g extremity exposure condition. It utilizes the proximity sensor to reduce a fixed level output power in specific wireless and operating modes to ensure SAR compliance for the following scenarios:
a) To reduce the output power of Wi-Fi antennas during Wi-Fi calling (Wi-Fi VOIP) in held-to-ear scenario.
b) To reduce the output power when 2G&3G&4G sub antenna in voice mode and Wi-Fi antennas transmiting simultaneously in held-to-ear scenario or front side of body-worn/10g extremity scenario.
The procedures in KDB 616217 are applied to determine the sensor triggering distances (Refer to Section 7 for details).

The following tables summerize the key power reduction information.The detailed full power and reduced tune-up specifications and conducted power measurement results are provided in Section 7 of this report.

| WiFi antenna(s) Only | | |
|---|---|---|
| Band | Power Reduction Level Amount(dB) | |
| | WiFi Ant(WiFi VOIP) + Sensor on | WiFi Ant (WiFi VOIP) + Sensor off |
| WiFi 2.4G | 5.0 | 0.0 |
| WiFi 5G | 5.0 | 0.0 |

| 2G&3G&4G Second antenna + WiFi antenna(s) simultaneous transmission | | | |
|---|---|---|---|
| Band | Power Reduction Level Amount (dB) | | |
| | Second Antenna(Voice) + WiFi station+Sensor on | Second Antenna(Voice) +WiFi station+Sensor off | Second Antenna +WiFi Hotspot |
| GSM850 | 2.0 | 1.0 | 3.5 |
| UMTS Band V | 2.8 | 1.8 | 2.8 |
| CDMA BC0 | 3.2 | 2.2 | 3.2 |
| CDMA BC10 | 3.2 | 2.2 | 3.2 |
| LTE B5 | 1.7 | 0.7 | 1.7 |
| LTE B12 | 1.7 | 0.7 | 1.7 |
| LTE B13 | 1.7 | 0.7 | 1.7 |
| LTE B17 | 1.7 | 0.7 | 1.7 |
| LTE B26 | 1.7 | 0.7 | 1.7 |
| 2.4G WIFI | 8.0 | 6.0 | 8.0 |
| 5G WIFI | 8.0 | 6.0 | 8.0 |

| 2G&3G&4G Main antenna + WiFi antenna(s) simultaneous transmission | | |
|---|---|---|
| Band | Power Reduction Level Amount (dB) | |
| | Main Antenna(Voice) + WiFi station | Main Antenna + WiFi Hotspot |
| GSM850 | 1.0 | 2.0 |
| GSM1900 | 2.0 | 3.0 |
| UMTS Band II | 2.0 | 3.0 |
| UMTS Band IV | 2.0 | 3.0 |
| UMTS Band V | 1.0 | 2.0 |
| CDMA BC0 | 1.5 | 2.5 |
| CDMA BC1 | 2.7 | 3.7 |
| CDMA BC10 | 1.5 | 2.5 |
| LTE B2 | 1.8 | 2.8 |
| LTE B4 | 2.0 | 3.0 |
| LTE B5 | 0.0 | 1.0 |
| LTE B7 | 1.8 | 2.8 |
| LTE B12 | 0.0 | 1.0 |
| LTE B13 | 0.0 | 1.0 |
| LTE B17 | 0.0 | 1.0 |
| LTE B25 | 1.7 | 2.7 |
| LTE B26 | 0.0 | 1.0 |
| LTE B30 | 1.7 | 2.7 |
| LTE B41 | 1.7 | 2.7 |
| 2.4G WIFI | 7.0 | 7.0 |
| 5G WIFI | 7.0 | 7.0 |

### 1.3.4 Downlink LTE CA additional specification

The device supports downlink Release 10 LTE Carrier Aggregation (CA) only. It supports a maximum of 2 carriers in the downlink. Other Release 10 features are not supported, including Uplink Carrier Aggregation, Enhanced SC-FDMA and Uplink MIMO or other antenna diversity configurations etc. All uplink communications are identical to the Release 8 Specifications.

The possible downlink LTE CA combinations supported by this device are as below tables per 3GPP TS 36.101 V12.8.0. The conducted power measurement results of downlink LTE CA are provided in Section 7 of this report per 3GPP TS 36.521-1 V12.6.0. According to KDB 941225 D05A, the downlink LTE CA SAR test is not required and PAG requirements can be excluded.

**intra-band contiguous CA (per 3GPP TS 36.101 V12.8.0 Table 5.6A.1-1)**

| E-UTRA CA configuration | Component carriers in order of increasing carrier frequency | | Maximum aggregated bandwidth [MHz] | Bandwidth combination set |
|---|---|---|---|---|
| | Channel bandwidths for carrier [MHz] | Channel bandwidths for carrier [MHz] | | |
| CA_41C | 10 | 20 | 40 | 0 |
| | 15 | 15, 20 | | |
| | 20 | 10, 15, 20 | | |
| | 5, 10 | 20 | 40 | 1 |
| | 15 | 15, 20 | | |
| | 20 | 5, 10, 15, 20 | | |

**intra-band non-contiguous CA(per 3GPP TS 36.101 V12.8.0 Table 5.6A.1-3)**

| E-UTRA CA configuration | Component carriers in order of increasing carrier frequency | | Maximum aggregated bandwidth [MHz] | Bandwidth combination set |
|---|---|---|---|---|
| | Channel bandwidths for carrier [MHz] | Channel bandwidths for carrier [MHz] | | |
| CA_2A-2A | 5, 10, 15, 20 | 5, 10, 15, 20 | 40 | 0 |
| CA_4A-4A | 5, 10, 15, 20 | 5, 10, 15, 20 | 40 | 0 |
| CA_41A-41A | 10, 15, 20 | 10, 15, 20 | 40 | 0 |
| | 5, 10, 15, 20 | 5, 10, 15, 20 | 40 | 1 |

**inter-band CA (per 3GPP TS 36.101 V12.8.0 Table 5.6A.1-2)**

| E-UTRA CA configuration / Bandwidth combination set | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| E-UTRA CA Configuration | E-UTRA Bands | 1.4 MHz | 3 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz | Maximum aggregated bandwidth [MHz] | Bandwidth combination set |
| CA_2A-4A | 2 | Yes | Yes | Yes | Yes | Yes | Yes | 40 | 0 |
| | 4 | | | Yes | Yes | Yes | Yes | | |
| | 2 | | | Yes | Yes | | | 20 | 1 |
| | 4 | | | Yes | Yes | | | | |
| | 2 | | | Yes | Yes | Yes | Yes | 40 | 2 |
| | 4 | | | Yes | Yes | Yes | Yes | | |
| CA_2A-5A | 2 | | | Yes | Yes | Yes | Yes | 30 | 0 |
| | 5 | | | Yes | Yes | | | | |
| CA_2A-12A | 2 | | | Yes | Yes | Yes | Yes | 30 | 0 |
| | 12 | | | Yes | Yes | | | | |
| | 2 | | | Yes | Yes | Yes | Yes | 30 | 1 |
| | 12 | | Yes | Yes | Yes | | | | |
| CA_2A-13A | 2 | | | Yes | Yes | Yes | Yes | 30 | 0 |
| | 13 | | | | Yes | | | | |
| | 2 | | | Yes | Yes | | | 20 | 1 |
| | 13 | | | | Yes | | | | |
| CA_2A-17A | 2 | | | Yes | Yes | | | 20 | 0 |
| | 17 | | | Yes | Yes | | | | |
| CA_2A-29A | 2 | | | Yes | Yes | | | 20 | 0 |
| | 29 | | Yes | Yes | Yes | | | | |
| | 2 | | | Yes | Yes | | | 20 | 1 |
| | 29 | | | Yes | Yes | | | | |
| CA_4A-5A | 4 | | | Yes | Yes | | | 20 | 0 |
| | 5 | | | Yes | Yes | | | | |
| | 4 | | | Yes | Yes | Yes | Yes | 30 | 1 |
| | 5 | | | Yes | Yes | | | | |
| CA_4A-12A | 4 | Yes | Yes | Yes | Yes | | | 20 | 0 |
| | 12 | | | Yes | Yes | | | | |
| | 4 | Yes | Yes | Yes | Yes | Yes | Yes | 30 | 1 |
| | 12 | | | Yes | Yes | | | | |
| | 4 | | | Yes | Yes | Yes | Yes | 30 | 2 |
| | 12 | | Yes | Yes | Yes | | | | |
| | 4 | | | Yes | Yes | | | 20 | 3 |
| | 12 | | | Yes | Yes | | | | |
| | 4 | | | Yes | Yes | Yes | Yes | 30 | 4 |
| | 12 | | | Yes | Yes | | | | |
| CA_4A-13A | 4 | | | Yes | Yes | Yes | Yes | 30 | 0 |
| | 13 | | | | Yes | | | | |
| | 4 | | | Yes | Yes | | | 20 | 1 |
| | 13 | | | | Yes | | | | |
| CA_4A-17A | 4 | | | Yes | Yes | | | 20 | 0 |
| | 17 | | | Yes | Yes | | | | |
| CA_4A-29A | 4 | | | Yes | Yes | | | 20 | 0 |
| | 29 | | Yes | Yes | Yes | | | | |
| | 4 | | | Yes | Yes | | | 20 | 1 |
| | 29 | | | Yes | Yes | | | | |
| | 4 | | | Yes | Yes | Yes | Yes | 30 | 2 |
| | 29 | | | Yes | Yes | | | | |

Note:
1) For inter-band CA, all the listed bands above can be used as PCC or SCC except for LTE B29. LTE B29 can be used as SCC only.
2) The channel spacing and aggregated channel bandwidth for CA are identical to the associated specification in 3GPP TS 36.101 V12.8.0.
3) The reference test frequencies for CA refers to 3GPP TS 36.508 V12.5.0.

### 1.3.5 Dynamic antenna switching specification

The device supports the dynamic antenna switching function to optimize transmission efficiency for wide range frequency operations.

**1) Description of 2G&3G&4G dynamic antenna switching**

The device has two 2G/3G/4G Tx antennas (Main Antenna and Second Antenna). It can transmit from either Main Antenna or Second Antenna, but they can not transmit simultaneously. Second Antenna only supports GSM850,UMTS Band V, CDMA BC0, CDMA BC10, LTE B5/12/13/17/26 for FCC Bands.
For 2G&3G&4G SAR test, the Main Antenna and Second Antenna are set to the MAX transmit power level respectively and test the SAR respectively in all applicable RF exposure conditions. Some AT commands are supplied to fix the operation state and choose the antenna so that only one TX antenna is chosen and tested at a time. All independent antennas will be completely covered by the appropriate SAR measurements and all simultaneous transmission possibilities will be fully considered to ensure SAR compliance. (Refer to Section 7 for details)

**2) Description of 802.11b 2.4G Wi-Fi dynamic switching**

The device also supports the dynamic antenna switching function for 802.11b 2.4G WiFi .The device has two Wi-Fi Tx antennas (Main Wi-Fi &BT antenna and Sub WiFi Antenna). The 802.11b Wi-Fi dynamic switching is based on diversity technology. In 802.11b diversity mode, Wi-Fi function is able to judge the one of the two paths with the higher RSSI and select it as the Tx/Rx path dynamically in order to gain the best performance. 802.11b can transmit from either Main Wi-Fi antenna or Sub WiFi Antenna, but can not transmit simultaneously.
For 802.11b Wi-Fi SAR test, the test lab will set the Main Wi-Fi Antenna / Sub Wi-Fi Antenna to the MAX transmit power level respectively and test the SAR respectively in all applicable RF exposure conditions per KDB248227D01v02r01. Only one Wi-Fi TX antenna is chosen at a time. It is conservative enough to ensure the SAR compliance.

### 1.3.6 802.11g/a Wi-Fi CDD and 802.11 n/ac Wi-Fi MIMO specification

The device supports Wi-Fi CDD mode when Wi-Fi working in 802.11g/a mode.
CDD is a kind of transmit diversity mechanism implemented by applying a different phase delay (cyclic phase delay) for each OFDM subcarrier. It is used in spatial multiplexing to increase diversity between the two spatial paths. In CDD mode, both of the Wi-Fi Tx antennas are transmitting the same information with the same data rate, at the same channel and the same time. CDD means it is not one but two paths of Wi-Fi transmitting as the same time.

Besides, the device also supports Wi-Fi MIMO mode in 802.11 n/ac. It does not support 802.11 n/ac Wi-Fi SISO mode. The two Wi-Fi antennas can only transmit at the same time in 802.11 n/ac.
For 802.11 g/a WIFI CDD and 802.11n/ac Wi-Fi MIMO SAR test, only the scenario two Wi-Fi antennas transmitting at the same time are supported and need to be considered. The common Initial Test Position and OFDM Initial Test Configuration Procedures per KDB 248227D01v02r01 are applied for 2.4G Wi-Fi 802.11g/n and 5G Wi-Fi 802.11 a/n/ac SAR test respectively in all applicable RF exposure conditions.

### 1.4 Test specification(s)

| | |
|---|---|
| ANSI C95.1:1992 | Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz.( IEEE Std C95.1-1991) |
| IEEE Std 1528-2013 | Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques |
| RSS-102 | Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands (Issue 5 of March 2015) |
| KDB941225 D01 | 3G SAR Procedures v03 |
| KDB941225 D05 | SAR for LTE Devices v02r03 |
| KDB941225 D05A | LTE Rel.10 KDB Inquiry Sheet v01 |
| KDB941225 D06 | Hotspot SAR v02 |
| KDB447498 D01 | General RF Exposure Guidance v05r02 |
| KDB616217 D04 | SAR for laptop and tablets v01r01 |
| KDB648474 D04 | Handsets SAR v01r02 |
| KDB248227 D01 | SAR Guidance for IEEE 802 11 Wi-Fi SAR v02 |
| KDB865664 D01 | SAR measurement 100 MHz to 6 GHz v01r04 |
| KDB865664 D02 | SAR Reporting v01r01 |
| KDB690783 D01 | SAR Listings on Grants v01r03 |

### 1.5 Testing laboratory

| | |
|---|---|
| Test Site | The Reliability Laboratory of Huawei Technologies Co., Ltd. |
| Test Location | Zone G1,Huawei Industrial Base, Bantian Industry Area, Longgang District, Shenzhen, Guangdong, China |
| Telephone | +86 755 28780808 |
| Fax | +86 755 89652518 |
| State of accreditation | The Test laboratory (area of testing) is accredited according to ISO/IEC 17025.<br>CNAS Registration number: L0310<br>A2LA TESTING CERT #2174.01 |

### 1.6 Applicant and Manufacturer

| | |
|---|---|
| Company Name | HUAWEI TECHNOLOGIES CO., LTD |
| Address | Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C |

### 1.7 Application details

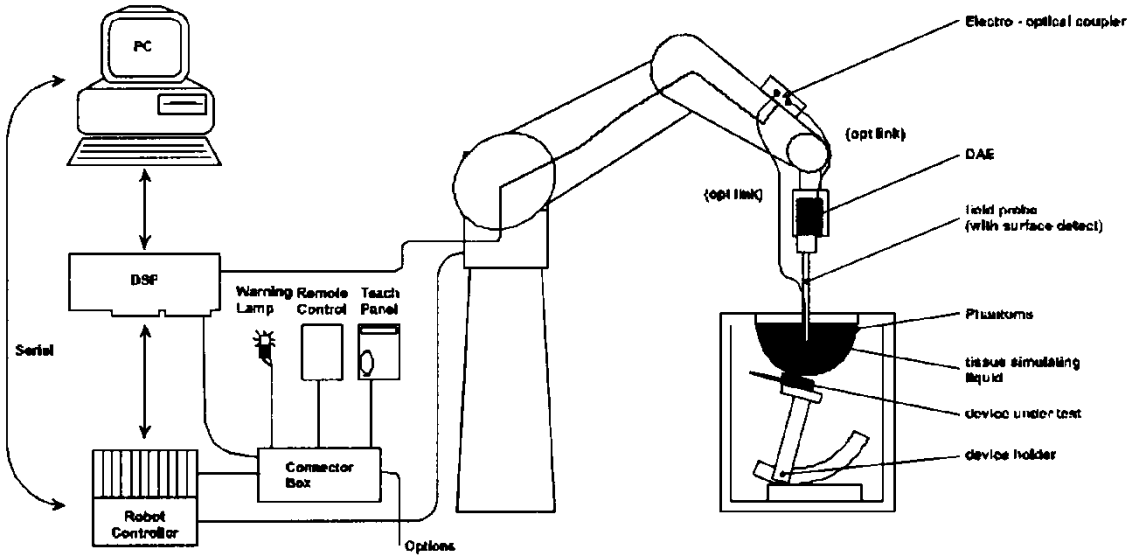
| | |
|---|---|
| Start Date of test | 2015-07-20 |
| End Date of test | 2015-09-02 |

### 1.8 Ambient Condition

| | |
|---|---|
| Ambient temperature | 20°C – 24°C |
| Relative Humidity | 30% – 70% |

# 2 SAR Measurement System

## 2.1 SAR Measurement Set-up




The DASY5 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).

- A dosimetric probe, i.e. an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.

- A data acquisition electronic (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.
- A unit to operate the optical surface detector which is connected to the EOC.
- The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY5 measurement server.
- The DASY5 measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation. A computer operating Windows 7.
- DASY5 software and SEMCAD data evaluation software.
- Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.
- The generic twin phantom enabling the testing of left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- System check dipoles allowing to validate the proper functioning of the system.

## 2.2 Test environment

The DASY5 measurement system is placed at the head end of a room with dimensions:
5 x 2.5 x 3 m³, the SAM phantom is placed in a distance of 75 cm from the side walls and 1.1m from the rear wall. Above the test system a 1.5 x 1.5 m² array of pyramid absorbers is installed to reduce reflections from the ceiling.
Picture 1 of the photo documentation shows a complete view of the test environment.
The system allows the measurement of SAR values larger than 0.005 mW/g.

## 2.3 Data Acquisition Electronics description

The data acquisition electronics (DAE) consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converte 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. They are used for mechanical surface detection and probe collision detection.

DAE4

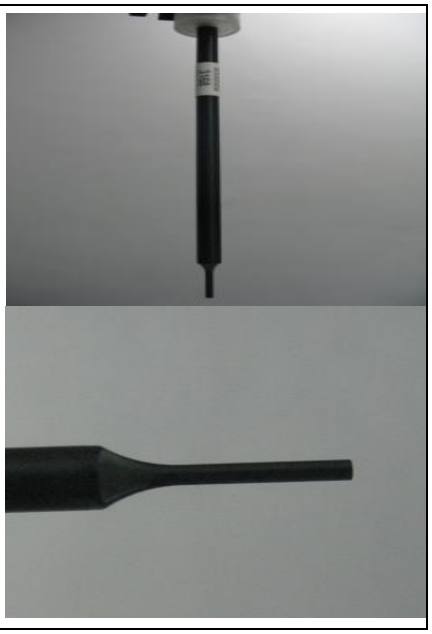
| | | |
|---|---|---|
| Input Impedance | 200MOhm | |
| The Inputs | symmetrical and floating | |
| Common mode rejection | above 80 dB | |

## 2.4 Probe description

These probes are specially designed and calibrated for use in liquids with high permittivities. They should not be used in air, since the spherical isotropy in air is poor (±2 dB). The dosimetric probes have special calibrations in various liquids at different frequencies.

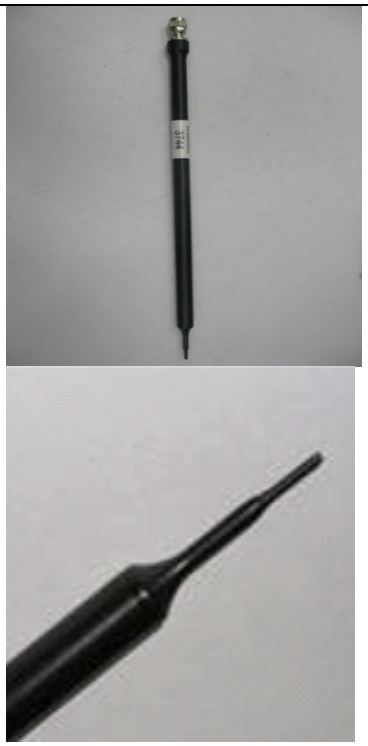
Isotropic E-Field Probe ES3DV3 for Dosimetric Measurements

| | |
|---|---|
| Construction | Symmetrical design with triangular core<br>Interleaved sensors<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g., DGBE) |
| Calibration | ISO/IEC 17025 calibration service available. |
| Frequency | 10 MHz to 4 GHz; Linearity: ± 0.2 dB (30 MHz to 4 GHz) |
| Directivity | ± 0.2 dB in HSL (rotation around probe axis)<br>± 0.3 dB in tissue material (rotation normal to probe axis) |
| Dynamic range | 5 µW/g to > 100 mW/g; Linearity: ± 0.2 dB |
| Dimensions | Overall length: 337 mm (Tip: 20 mm)<br>Tip diameter: 3.9 mm (Body: 12 mm)<br>Distance from probe tip to dipole centers: 2.0 mm |
| Application | General dosimetry up to 4 GHz<br>Dosimetry in strong gradient fields<br>Compliance tests of mobile phones |



Isotropic E-Field Probe EX3DV4 for Dosimetric Measurements

| | |
|---|---|
| Construction | Symmetrical design with triangular core<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g., DGBE) |
| Calibration | ISO/IEC 17025 calibration service available. |
| Frequency | 10 MHz to >6 GHz; Linearity: ± 0.2 dB (30 MHz to 6 GHz) |
| Directivity | ± 0.3 dB in HSL (rotation around probe axis)<br>± 0.5 dB in tissue material (rotation normal to probe axis) |
| Dynamic range | 10 µW/g to > 100 mW/g;<br>Linearity: ± 0.2 dB(noise:typically<1µW/g) |
| Dimensions | Overall length: 337 mm (Tip:20 mm)<br>Tip diameter:2.5 mm (Body:12 mm)<br>Typical distance from probe tip to dipole centers: 1mm |
| Application | High precision dosimetric measurements in any exposure scenario(e.g.,very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30% |

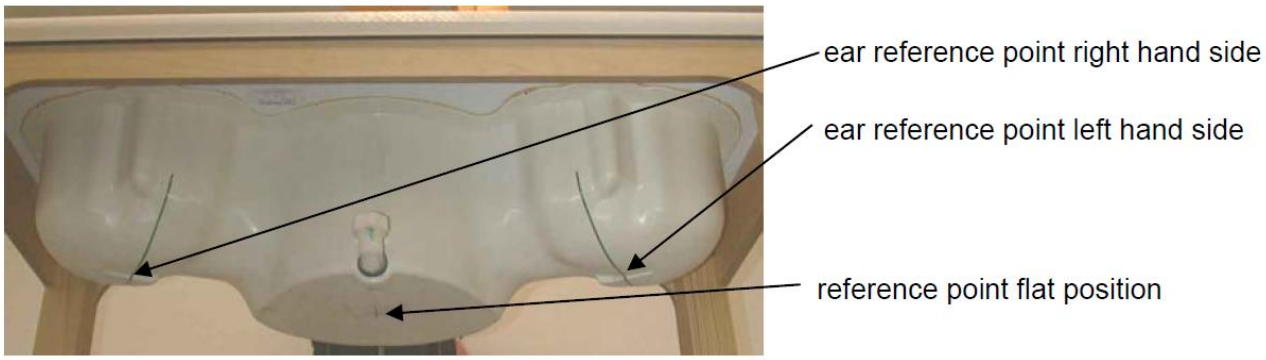


## 2.5 Phantom description

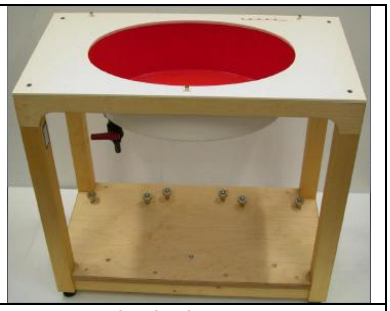
SAM Twin Phantom

| | | |
|---|---|---|
| Shell Thickness | 2mm±0.2mm;The ear region:6.0±0.2mm | |
| Filling Volume | Approximately 25 liters | |
| Dimensions | Length:1000mm; Width:500mm;<br>Height: adjustable feet | |
| Measurement Areas | Left hand<br>Right hand<br>Flat phantom | |
| The bottom plate contains three pairs of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections.<br>A white cover is provided to cover the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. Free space scans of devices on top of this phantom cover are possible. Three reference marks are provided on the phantom counter. These reference marks are used to teach the absolute phantom position relative to the robot. | | |

The following figure shows the definition of reference point:




ELI4 Phantom

| | | |
|---|---|---|
| Shell Thickness | 2mm±0.2mm |  |
| Filling Volume | Approximately 30 liters | |
| Dimensions | Major axis:600mm; Minor axis:400mm; | |
| Measurement Areas | Flat phantom | |
| The ELI4 phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30MHz to 6GHz. ELI4 is fully compatible with the latest draft of the standard IEC 62209-2 and all known tissue simulating liquids. | | |

The phantom shell material is resistant to all ingredients used in the tissue-equivalent liquid recipes. The shell of the phantom including ear spacers is constructed from low permittivity and low loss material, with a relative permittivity $2 \leq \varepsilon r \leq 5$ at ≤3 GHz,$3 \leq \varepsilon r \leq 4$ at >3 GHz and and a loss tangent ⩽0.05.

## 2.6 Device holder description

The DASY5 device holder has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65°. 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. This device holder is used for standard mobile phones or PDA's only. If necessary an additional support of polystyrene material is used.

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity ε =3 and loss tangent σ =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.
The device holder permits the device to be positioned with a tolerance of ±1° in the tilt angle.

Larger DUT's (e.g. notebooks) cannot be tested using this device holder. Instead a support of bigger polystyrene cubes and thin polystyrene plates is used to position the DUT in all relevant positions to find and measure spots with maximum SAR values.
Therefore those devices are normally only tested at the flat part of the SAM.

## 2.7 Test Equipment List

This table gives a complete overview of the SAR measurement equipment.
Devices used during the test described are marked ☒

| | Manufacturer | Device | Type | Serial number | Date of last calibration | Valid period |
|---|---|---|---|---|---|---|
| ☒ | SPEAG | Dosimetric E-Field Probe | EX3DV4 | 3736 | 2015-04-30 | One year |
| ☒ | SPEAG | Dosimetric E-Field Probe | EX3DV4 | 7350 | 2015-01-08 | One year |
| ☒ | SPEAG | Dosimetric E-Field Probe | ES3DV3 | 3168 | 2014-09-24 | One year |
| ☒ | SPEAG | 750MHz Dipole | D750V3 | 1044 | 2014-09-19 | Three years |
| ☒ | SPEAG | 835MHz Dipole | D835V2 | 4d059 | 2013-05-02 | Three years |
| ☒ | SPEAG | 1750MHz Dipole | D1750V2 | 1123 | 2014-07-08 | Three years |
| ☒ | SPEAG | 1900MHz Dipole | D1900V2 | 5d143 | 2014-09-23 | Three years |
| ☒ | SPEAG | 2300MHz Dipole | D2300V2 | 1016 | 2014-11-19 | Three years |
| ☒ | SPEAG | 2450MHz Dipole | D2450V2 | 860 | 2014-11-19 | Three years |
| ☒ | SPEAG | 2600MHz Dipole | D2600V2 | 1021 | 2015-07-24 | Three years |
| ☒ | SPEAG | 5GHz Dipole | D5GHzV2 | 1155 | 2015-04-27 | Three years |
| ☒ | SPEAG | Data acquisition electronics | DAE4 | 1236 | 2014-11-13 | One year |
| ☒ | SPEAG | Data acquisition electronics | DAE4 | 852 | 2015-04-27 | One year |
| ☒ | SPEAG | Software | DASY 5 | N/A | NCR | NCR |
| ☒ | SPEAG | Twin Phantom | SAM1 | TP-1475 | NCR | NCR |
| ☒ | SPEAG | Twin Phantom | SAM2 | TP-1474 | NCR | NCR |
| ☒ | SPEAG | Twin Phantom | SAM3 | TP-1597 | NCR | NCR |
| ☒ | SPEAG | Twin Phantom | SAM4 | TP-1620 | NCR | NCR |
| ☐ | SPEAG | Flat Phantom | ELI 4.0 | TP-1038 | NCR | NCR |
| ☐ | SPEAG | Flat Phantom | ELI 4.0 | TP-1111 | NCR | NCR |
| ☒ | R & S | Universal Radio Communication Tester | CMU 200 | 113989 | 2015-05-18 | One year |
| ☒ | R & S | Universal Radio Communication Tester | CMW 500 | 126855 | 2015-07-02 | One year |
| ☒ | Agilent | Network Analyser | E5071C | MY46213349 | 2015-02-13 | One year |
| ☒ | Agilent | Dielectric Probe Kit | 85070E | 2484 | NCR | NCR |
| ☒ | Agilent | Signal Generator | N5181A | MY47420989 | 2015-01-07 | One year |
| ☒ | MINI-CIRCUITS | Amplifier | ZHL-42W | QA1402001 | NCR | NCR |
| ☒ | MINI-CIRCUITS | Amplifier | ZVE-8G+ | N523101139 | NCR | NCR |
| ☒ | AR | Directional Coupler | DC7144M1 | 0423264 | 2015-03-31 | One year |
| ☒ | Agilent | Dual Directional Coupler | 772D | MY52180173 | 2015-01-08 | One year |
| ☒ | R & S | Power Meter | NRP | 100740 | 2015-07-02 | One year |
| ☒ | R & S | Power Meter Sensor | NRP-Z11 | 106288 | 2015-07-02 | One year |
| ☒ | Agilent | Power Meter | E4417A | MY45101339 | 2015-01-07 | One year |
| ☒ | Agilent | Power Meter Sensor | E9321A | MY44420359 | 2015-01-07 | One year |

Note:
1) Per KDB865664D01 requirements for dipole calibration, the test laboratory has adopted three-year extended calibration interval. Each measured dipole is expected to evaluate with the following criteria at least on annual interval in Appendix C.
a) There is no physical damage on the dipole;
b) System check with specific dipole is within 10% of calibrated value;
c) The most recent return-loss result, measured at least annually, deviates by no more than 20% from the previous measurement.
d) The most recent measurement of the real or imaginary parts of the impedance, measured at least annually is within 5Ω from the previous measurement.
2) Network analyzer probe calibration against air, distilled water and a shorting block performed before measuring liquid parameters.

# 3 SAR Measurement Procedure

## 3.1 Scanning procedure

The DASY5 installation includes predefined files with recommended procedures for measurements and system check. They are read-only document files and destined as fully defined but unmeasured masks. All test positions (head or body-worn) are tested with the same configuration of test steps differing only in the grid definition for the different test positions.

- The “reference” and “drift” measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the DUT’s output power and should vary max. +/- 5 %.

- The “surface check” measurement tests the optical surface detection system of the DASY5 system by repeatedly detecting the surface with the optical and mechanical surface detector and comparing the results. The output gives the detecting heights of both systems, the difference between the two systems and the standard deviation of the detection repeatability. Air bubbles or refraction in the liquid due to separation of the sugar-water mixture gives poor repeatability (above ± 0.1mm). To prevent wrong results tests are only executed when the liquid is free of air bubbles. The difference between the optical surface detection and the actual surface depends on the probe and is specified with each probe. (It does not depend on the surface reflectivity or the probe angle to the surface within ± 30°.)

- The “area scan” measures the SAR above the DUT or verification dipole on a parallel plane to the surface. It is used to locate the approximate location of the peak SAR with 2D spline interpolation. The robot performs a stepped movement along one grid axis while the local electrical field strength is measured by the probe. The probe is touching the surface of the SAM during acquisition of measurement values. The standard scan uses large grid spacing for faster measurement. Standard grid spacing for head measurements is 15 mm in x- and y- dimension(≤2GHz)，12 mm in x- and y-dimension(2-4 GHz) and 10mm in x- and y- dimension(4-6GHz). If a finer resolution is needed, the grid spacing can be reduced. Grid spacing and orientation have no influence on the SAR result. For special applications where the standard scan method does not find the peak SAR within the grid, e.g. mobile phones with flip cover, the grid can be adapted in orientation.
  Results of this coarse scan are shown in Appendix B.

- A “zoom scan” measures the field in a volume around the 2D peak SAR value acquired in the previous “coarse” scan. This is a fine grid with maximum scan spatial resolution: $\Delta x_{zoom}$, $\Delta y_{zoom}$≤ 2GHz - ≤8mm, 2-4GHz - ≤5 mm and 4-6 GHz-≤4mm; $\Delta z_{zoom}$ ≤3GHz - ≤5 mm, 3-4 GHz- ≤4mm and 4-6GHz-≤2mm where the robot additionally moves the probe along the z-axis away from the bottom of the Phantom. DASY is also able to perform repeated zoom scans if more than 1 peak is found during area scan. In this document, the evaluated peak 1g and 10g averaged SAR values are shown in the 2D-graphics in Appendix B. Test results relevant for the specified standard (see chapter 1.4.)are shown in table form form in chapter 7.2.

- A Z-axis scan measures the total SAR value at the x-and y-position of the maximum SAR value found during the cube scan. The probe is moved away in z-direction from the bottom of the SAM phantom in 2 mm steps. This measurement shows the continuity of the liquid and can - depending in the field strength – also show the liquid depth. A z-axis scan of the measurement with maximum SAR value is shown in Appendix B.

The following table summarizes the area scan and zoom scan resolutions per FCC KDB 865664D01:

| Frequency | Maximun Area Scan resolution ($\Delta x_{area}$, $\Delta y_{area}$ ) | Maximun Zoom Scan spatial resolution ($\Delta x_{Zoom}$, $\Delta y_{Zoom}$ ) | Maximun Zoom Scan spatial resolution | | | Minimum zoom scan volume (x,y,z) |
|---|---|---|---|---|---|---|
| | | | Uniform Grid | Graded Grad | | |
| | | | $\Delta z_{Zoom}(n)$ | $\Delta z_{Zoom}(1)$* | $\Delta z_{Zoom}(n>1)$* | |
| ≤2GHz | ≤15mm | ≤8mm | ≤5mm | ≤4mm | ≤1.5*$\Delta z_{Zoom}(n-1)$ | ≥30mm |
| 2-3GHz | ≤12mm | ≤5mm | ≤5mm | ≤4mm | ≤1.5*$\Delta z_{Zoom}(n-1)$ | ≥30mm |
| 3-4GHz | ≤12mm | ≤5mm | ≤4mm | ≤3mm | ≤1.5*$\Delta z_{Zoom}(n-1)$ | ≥28mm |
| 4-5GHz | ≤10mm | ≤4mm | ≤3mm | ≤2.5mm | ≤1.5*$\Delta z_{Zoom}(n-1)$ | ≥25mm |
| 5-6GHz | ≤10mm | ≤4mm | ≤2mm | ≤2mm | ≤1.5*$\Delta z_{Zoom}(n-1)$ | ≥22mm |

### 3.2 Spatial Peak SAR Evaluation

The spatial peak SAR - value for 1 and 10 g is evaluated after the Cube measurements have been done. The basis of the evaluation are the SAR values measured at the points of the fine cube grid consisting of 5 x 5 x 7 points( with 8mm horizontal resolution) or 7 x 7 x 7 points( with 5mm horizontal resolution) or 8 x 8 x 7 points( with 4mm horizontal resolution). The algorithm that finds the maximal averaged volume is separated into three different stages.

- The data between the dipole center of the probe and the surface of the phantom are extrapolated. This data cannot be measured since the center of the dipole is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is about 1 mm (see probe calibration sheet). The extrapolated data from a cube measurement can be visualized by selecting 'Graph Evaluated'.

- The maximum interpolated value is searched with a straight-forward algorithm. Around this maximum the SAR - values averaged over the spatial volumes (1g or 10 g) are computed using the 3d-spline interpolation algorithm. If the volume cannot be evaluated (i.e., if a part of the grid was cut off by the boundary of the measurement area) the evaluation will be started on the corners of the bottom plane of the cube.

- All neighboring volumes are evaluated until no neighboring volume with a higher average value is found.

**Extrapolation**

The extrapolation is based on a least square algorithm [W. Gander, Computermathematik, p.168-180]. Through the points in the first 3 cm along the z-axis, polynomials of order four are calculated. These polynomials are then used to evaluate the points between the surface and the probe tip. The points, calculated from the surface, have a distance of 1 mm from each other.

**Interpolation**

The interpolation of the points is done with a 3d-Spline. The 3d-Spline is composed of three one-dimensional splines with the "Not a knot"-condition [W. Gander, Computermathematik, p.141-150] (x, y and z -direction) [Numerical Recipes in C, Second Edition, p.123ff ].

**Volume Averaging**

At First the size of the cube is calculated. Then the volume is integrated with the trapezoidal algorithm. 8000 points (20x20x20) are interpolated to calculate the average.

**Advanced Extrapolation**

DASY5 uses the advanced extrapolation option which is able to compansate boundary effects on E-field probes.

### 3.3 Data Storage and Evaluation

Data Storage

The DASY5 software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension "DAE4". The 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 incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [°C], [mW/g], [mW/cm²], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

Data Evaluation by SEMCAD

The SEMCAD software 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 | $\sigma$ |
| | - Density | $\rho$ |

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 DASY5 components. In the direct measuring mode of the multimeter 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:

$$V_i = U_i + U_i^2 \cdot cf/dcp_i$$

with $V_i$ = compensated signal of channel i (i = x, y, z)
$U_i$ = input signal of channel i (i = x, y, z)
cf = crest factor of exciting field (DASY parameter)
$dcp_i$ = diode compression point (DASY parameter)

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

E-field probes: $E_i = (V_i / Norm_i \cdot ConvF)^{1/2}$

H-field probes: $H_i = (V_i)^{1/2} \cdot (a_{i0} + a_{i1}f + a_{i2}f^2)/f$

with $V_i$ = compensated signal of channel i (i = x, y, z)

$Norm_i$ = sensor sensitivity of channel i (i = x, y, z)
[mV/(V/m)$^2$] for E-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):

$$E_{tot} = (E_x^2 + E_Y^2 + E_z^2)^{1/2}$$

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

$$SAR = (E_{tot}^2 \cdot \sigma) / (\rho \cdot 1000)$$

with SAR = local specific absorption rate in mW/g

$E_{tot}$ = total field strength in V/m

$\sigma$ = conductivity in [mho/m] or [Siemens/m]

$\rho$ = equivalent tissue density in g/cm$^3$

Note that the density is normally set to 1 (or 1.06), to account for actual brain density rather than the density of the simulation liquid.The power flow density is calculated assuming the excitation field to be a free space field.

$P_{pwe} = E_{tot}^2 / 3770$ or $P_{pwe} = H_{tot}^2 \cdot 37.7$

with $P_{pwe}$ = equivalent power density of a plane wave in mW/cm$^2$

$E_{tot}$ = total electric field strength in V/m

$H_{tot}$ = total magnetic field strength in A/m

# 4 System Verification Procedure

## 4.1 Tissue Verification

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine of the dielectic parameter are within the tolerances of the specified target values. The measured conductivity and relative permittivity should be within ± 5% of the target values.

The following materials are used for producing the tissue-equivalent materials.

| **Ingredients** (% of weight) | **Head Tissue** | | | | | | |
|---|---|---|---|---|---|---|---|
| Frequency Band (MHz) | **750** | **835** | **1750** | **1900** | **2300** | **2450** | **2600** |
| Water | 39.2 | 41.45 | 52.64 | 55.242 | 62.82 | 62.7 | 55.242 |
| Salt (NaCl) | 2.7 | 1.45 | 0.36 | 0.306 | 0.51 | 0.5 | 0.306 |
| Sugar | 57.0 | 56.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| HEC | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Bactericide | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Triton X-100 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| DGBE | 0.0 | 0.0 | 47.0 | 44.542 | 36.67 | 36.8 | 44.452 |
| **Ingredients** (% of weight) | **Body Tissue** | | | | | | |
| Frequency Band (MHz) | **750** | **835** | **1750** | **1900** | **2300** | **2450** | **2600** |
| Water | 50.3 | 52.4 | 69.91 | 69.91 | 73.32 | 73.2 | 64.493 |
| Salt (NaCl) | 1.60 | 1.40 | 0.13 | 0.13 | 0.06 | 0.04 | 0.024 |
| Sugar | 47.0 | 45.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| HEC | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Bactericide | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Triton X-100 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| DGBE | 0.0 | 0.0 | 29.96 | 29.96 | 26.62 | 26.7 | 32.252 |

Table 4: Tissue Dielectric Properties

Salt: 99+% Pure Sodium Chloride; Sugar: 98+% Pure Sucrose; Water: De-ionized, 16MΩ+ resistivity
HEC: Hydroxyethyl Cellulose; DGBE: 99+% Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol]
Triton X-100(ultra pure): Polyethylene glycol mono [4-(1,1,3,3-tetramethylbutyl)phenyl]ether

**☒Simulating Head Liquid for 5G(HBBL3500-5800MHz), Manufactured by SPEAG:**

| Ingredients | (% by weight) |
|---|---|
| Water | 50-65% |
| Mineral oil | 10-30% |
| Emulsifiers | 8-25% |
| Sodium salt | 0-1.5% |

**☒Simulating Body Liquid for 5G(MBBL3500-5800MHz),Manufactured by SPEAG:**

| Ingredients | (% by weight) |
|---|---|
| Water | 60-80% |
| Esters,Emulsifiers,Inhibitors | 20-40% |
| Sodium salt | 0-1.5% |

| Tissue Type | Measured Frequency（MHz） | Target Tissue | | Measured Tissue | | Liquid Temp. | Test Date |
|---|---|---|---|---|---|---|---|
| | | εr (+/-5%) | σ (S/m) (+/-5%) | εr | σ (S/m) | | |
| 750H | 705 | 42.14 (40.03~44.24) | 0.89 (0.85~0.93) | 43.51 | 0.853 | 21.4°C | 2015-07-26 |
| | 710 | 42.11 (40.00~44.21) | 0.89 (0.85~0.93) | 43.55 | 0.857 | | |
| | 750 | 41.90 (39.81~43.99) | 0.89 (0.85~0.93) | 42.90 | 0.892 | | |
| 750B | 705 | 55.70 (52.92~58.48) | 0.96 (0.92~1.008) | 55.15 | 0.922 | 21.4°C | 2015-07-20 |
| | 710 | 55.70 (52.92~58.48) | 0.96 (0.92~1.008) | 55.09 | 0.928 | | |
| | 750 | 55.50 (52.73~58.27) | 0.96 (0.92~1.008) | 54.65 | 0.972 | | |
| 750B | 705 | 55.70 (52.92~58.48) | 0.96 (0.92~1.008) | 55.80 | 0.928 | 21.4°C | 2015-07-25 |
| | 710 | 55.70 (52.92~58.48) | 0.96 (0.92~1.008) | 55.67 | 0.935 | | |
| | 750 | 55.50 (52.73~58.27) | 0.96 (0.92~1.008) | 55.42 | 0.973 | | |
| 750B | 705 | 55.70 (52.92~58.48) | 0.96 (0.92~1.008) | 55.13 | 0.927 | 21.4°C | 2015-08-23 |
| | 710 | 55.70 (52.92~58.48) | 0.96 (0.92~1.008) | 55.08 | 0.931 | | |
| | 750 | 55.50 (52.73~58.27) | 0.96 (0.92~1.008) | 54.71 | 0.972 | | |
| 835H | 825 | 41.60 (39.52~43.68) | 0.90 (0.86~0.95) | 41.88 | 0.881 | 21.4°C | 2015-07-24 |
| | 835 | 41.50 (39.43~43.58) | 0.90 (0.86~0.95) | 41.78 | 0.884 | | |
| | 850 | 41.50 (39.43~43.58) | 0.92 (0.87~0.96) | 41.64 | 0.902 | | |
| 835H | 825 | 41.60 (39.52~43.68) | 0.90 (0.86~0.95) | 40.53 | 0.873 | 21.4°C | 2015-07-28 |
| | 835 | 41.50 (39.43~43.58) | 0.90 (0.86~0.95) | 40.50 | 0.879 | | |
| | 850 | 41.50 (39.43~43.58) | 0.92 (0.87~0.96) | 40.34 | 0.889 | | |
| 835H | 825 | 41.60 (39.52~43.68) | 0.90 (0.86~0.95) | 42.73 | 0.918 | 21.4°C | 2015-08-17 |
| | 835 | 41.50 (39.43~43.58) | 0.90 (0.86~0.95) | 42.53 | 0.925 | | |
| | 850 | 41.50 (39.43~43.58) | 0.92 (0.87~0.96) | 42.41 | 0.941 | | |
| 835B | 825 | 55.20 (52.44~57.96) | 0.97 (0.92~1.02) | 55.15 | 0.957 | 21.5°C | 2015-07-23 |
| | 835 | 55.20 (52.44~57.96) | 0.97 (0.92~1.02) | 55.03 | 0.966 | | |
| | 850 | 55.20 (52.44~57.96) | 0.99 (0.94~1.04) | 54.86 | 0.982 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 835B | 825 | 55.20 (52.44~57.96) | 0.97 (0.92~1.02) | 54.30 | 0.972 | 21.5°C | 2015-08-19 |
| | 835 | 55.20 (52.44~57.96) | 0.97 (0.92~1.02) | 54.19 | 0.982 | | |
| | 850 | 55.20 (52.44~57.96) | 0.99 (0.94~1.04) | 54.01 | 0.999 | | |
| 835B | 825 | 55.20 (52.44~57.96) | 0.97 (0.92~1.02) | 53.33 | 0.965 | 21.5°C | 2015-08-24 |
| | 835 | 55.20 (52.44~57.96) | 0.97 (0.92~1.02) | 53.21 | 0.976 | | |
| | 850 | 55.20 (52.44~57.96) | 0.99 (0.94~1.04) | 53.04 | 0.993 | | |
| 835B | 825 | 55.20 (52.44~57.96) | 0.97 (0.92~1.02) | 54.08 | 0.959 | 21.5°C | 2015-08-29 |
| | 835 | 55.20 (52.44~57.96) | 0.97 (0.92~1.02) | 53.97 | 0.968 | | |
| | 850 | 55.20 (52.44~57.96) | 0.99 (0.94~1.04) | 53.82 | 0.985 | | |
| 1750H | 1710 | 40.1 (38.10~42.11) | 1.35 (1.28~1.42) | 39.23 | 1.311 | 21.5°C | 2015-07-30 |
| | 1730 | 40.1 (38.10~42.11) | 1.36 (1.29~1.43) | 39.16 | 1.338 | | |
| | 1750 | 40.1 (38.10~42.11) | 1.37 (1.30~1.44) | 39.05 | 1.352 | | |
| | 1800 | 40 (38.00~42.00) | 1.4 (1.33~1.47) | 38.86 | 1.399 | | |
| 1750B | 1710 | 53.5 (50.83~56.18) | 1.46 (1.39~1.53) | 51.13 | 1.495 | 21.8°C | 2015-07-22 |
| | 1730 | 53.5 (50.83~56.18) | 1.48 (1.41~1.55) | 51.05 | 1.512 | | |
| | 1750 | 53.4 (50.73~56.07) | 1.49 (1.42~1.56) | 50.97 | 1.528 | | |
| | 1800 | 53.3 (50.64~55.97) | 1.52 (1.44~1.60) | 50.81 | 1.572 | | |
| 1750B | 1710 | 53.5 (50.83~56.18) | 1.46 (1.39~1.53) | 51.62 | 1.502 | 21.8°C | 2015-07-29 |
| | 1730 | 53.5 (50.83~56.18) | 1.48 (1.41~1.55) | 51.62 | 1.512 | | |
| | 1750 | 53.4 (50.73~56.07) | 1.49 (1.42~1.56) | 51.54 | 1.527 | | |
| | 1800 | 53.3 (50.64~55.97) | 1.52 (1.44~1.60) | 51.43 | 1.580 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1750B | 1710 | 53.5 (50.83~56.18) | 1.46 (1.39~1.53) | 51.51 | 1.403 | 21.8°C | 2015-08-28 |
| | 1730 | 53.5 (50.83~56.18) | 1.48 (1.41~1.55) | 51.44 | 1.424 | | |
| | 1750 | 53.4 (50.73~56.07) | 1.49 (1.42~1.56) | 51.36 | 1.444 | | |
| | 1800 | 53.3 (50.64~55.97) | 1.52 (1.44~1.60) | 51.19 | 1.493 | | |
| 1900H | 1850 | 40.00 (38.00~42.00) | 1.40 (1.33~1.47) | 39.39 | 1.352 | 22.0°C | 2015-07-29 |
| | 1880 | 40.00 (38.00~42.00) | 1.40 (1.33~1.47) | 39.30 | 1.388 | | |
| | 1900 | 40.00 (38.00~42.00) | 1.40 (1.33~1.47) | 39.16 | 1.405 | | |
| | 1910 | 40.00 (38.00~42.00) | 1.40 (1.33~1.47) | 39.18 | 1.416 | | |
| 1900H | 1850 | 40.00 (38.00~42.00) | 1.40 (1.33~1.47) | 38.80 | 1.356 | 22.0°C | 2015-08-01 |
| | 1880 | 40.00 (38.00~42.00) | 1.40 (1.33~1.47) | 38.71 | 1.384 | | |
| | 1900 | 40.00 (38.00~42.00) | 1.40 (1.33~1.47) | 38.63 | 1.400 | | |
| | 1910 | 40.00 (38.00~42.00) | 1.40 (1.33~1.47) | 38.59 | 1.411 | | |
| 1900H | 1850 | 40.00 (38.00~42.00) | 1.40 (1.33~1.47) | 39.74 | 1.391 | 22.0°C | 2015-08-19 |
| | 1880 | 40.00 (38.00~42.00) | 1.40 (1.33~1.47) | 39.61 | 1.421 | | |
| | 1900 | 40.00 (38.00~42.00) | 1.40 (1.33~1.47) | 39.53 | 1.439 | | |
| | 1910 | 40.00 (38.00~42.00) | 1.40 (1.33~1.47) | 39.49 | 1.448 | | |
| 1900B | 1850 | 53.30 (50.64~55.97) | 1.52 (1.44~1.60) | 52.36 | 1.469 | 21.0°C | 2015-07-21 |
| | 1880 | 53.30 (50.64~55.97) | 1.52 (1.44~1.60) | 52.28 | 1.502 | | |
| | 1900 | 53.30 (50.64~55.97) | 1.52 (1.44~1.60) | 52.21 | 1.521 | | |
| | 1910 | 53.30 (50.64~55.97) | 1.52 (1.44~1.60) | 52.18 | 1.531 | | |
| 1900B | 1850 | 53.30 (50.64~55.97) | 1.52 (1.44~1.60) | 51.83 | 1.520 | 21.0°C | 2015-07-27 |
| | 1880 | 53.30 (50.64~55.97) | 1.52 (1.44~1.60) | 51.72 | 1.551 | | |
| | 1900 | 53.30 (50.64~55.97) | 1.52 (1.44~1.60) | 51.65 | 1.571 | | |
| | 1910 | 53.30 (50.64~55.97) | 1.52 (1.44~1.60) | 51.63 | 1.583 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1900B | 1850 | 53.30 (50.64~55.97) | 1.52 (1.44~1.60) | 52.09 | 1.487 | 21.0°C | 2015-08-01 |
| | 1880 | 53.30 (50.64~55.97) | 1.52 (1.44~1.60) | 51.86 | 1.511 | | |
| | 1900 | 53.30 (50.64~55.97) | 1.52 (1.44~1.60) | 51.83 | 1.542 | | |
| | 1910 | 53.30 (50.64~55.97) | 1.52 (1.44~1.60) | 51.86 | 1.562 | | |
| 1900B | 1850 | 53.30 (50.64~55.97) | 1.52 (1.44~1.60) | 51.60 | 1.502 | 21.0°C | 2015-08-24 |
| | 1880 | 53.30 (50.64~55.97) | 1.52 (1.44~1.60) | 51.51 | 1.533 | | |
| | 1900 | 53.30 (50.64~55.97) | 1.52 (1.44~1.60) | 51.44 | 1.552 | | |
| | 1910 | 53.30 (50.64~55.97) | 1.52 (1.44~1.60) | 51.40 | 1.562 | | |
| 1900B | 1850 | 53.30 (50.64~55.97) | 1.52 (1.44~1.60) | 51.63 | 1.502 | 21.0°C | 2015-09-02 |
| | 1880 | 53.30 (50.64~55.97) | 1.52 (1.44~1.60) | 51.56 | 1.536 | | |
| | 1900 | 53.30 (50.64~55.97) | 1.52 (1.44~1.60) | 51.52 | 1.556 | | |
| | 1910 | 53.30 (50.64~55.97) | 1.52 (1.44~1.60) | 51.44 | 1.566 | | |
| 2300H | 2300 | 39.40 (37.43~41.37) | 1.67 (1.59~1.75) | 38.61 | 1.686 | 21.5°C | 2015-07-27 |
| | 2310 | 39.44 (37.47~41.41) | 1.68 (1.57~1.76) | 38.63 | 1.690 | | |
| 2300B | 2300 | 52.90 (50.26~55.55) | 1.81 (1.72~1.90) | 51.95 | 1.752 | 21.5°C | 2015-07-25 |
| | 2310 | 52.90 (50.26~55.55) | 1.81 (1.72~1.90) | 51.93 | 1.765 | | |
| 2300B | 2300 | 52.90 (50.26~55.55) | 1.81 (1.72~1.90) | 51.68 | 1.861 | 21.5°C | 2015-08-27 |
| | 2310 | 52.90 (50.26~55.55) | 1.81 (1.72~1.90) | 51.63 | 1.873 | | |
| 2450H | 2410 | 39.30 (37.34~41.26) | 1.76 (1.67~1.85) | 38.78 | 1.817 | 21.6°C | 2015-08-22 |
| | 2435 | 39.20 (37.24~41.16) | 1.79 (1.70~1.88) | 38.70 | 1.845 | | |
| | 2450 | 39.20 (37.24~41.16) | 1.80 (1.71~1.89) | 38.65 | 1.863 | | |
| | 2460 | 39.20 (37.24~41.16) | 1.81 (1.72~1.90) | 38.62 | 1.874 | | |
| 2450B | 2410 | 52.80 (50.16~55.44) | 1.91 (1.81~2.00) | 50.69 | 1.991 | 21.0°C | 2015-07-26 |
| | 2435 | 52.70 (50.07~55.34) | 1.94 (1.84~2.04) | 50.60 | 2.023 | | |
| | 2450 | 52.70 (50.07~55.34) | 1.95 (1.85~2.05) | 50.54 | 2.043 | | |
| | 2460 | 52.70 (50.07~55.34) | 1.96 (1.86~2.06) | 50.50 | 2.056 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2450B | 2410 | 52.80 (50.16~55.44) | 1.91 (1.81~2.00) | 51.65 | 1.965 | 21.0°C | 2015-08-21 |
| | 2435 | 52.70 (50.07~55.34) | 1.94 (1.84~2.04) | 51.56 | 1.993 | | |
| | 2450 | 52.70 (50.07~55.34) | 1.95 (1.85~2.05) | 51.50 | 2.010 | | |
| | 2460 | 52.70 (50.07~55.34) | 1.96 (1.86~2.06) | 51.46 | 2.021 | | |
| 2600H | 2510 | 39.12 (37.16~41.01) | 1.86 (1.77~1.96) | 38.18 | 1.873 | 21.5°C | 2015-07-30 |
| | 2535 | 39.1 (37.13~41.04) | 1.89 (1.80~1.98) | 38.06 | 1.901 | | |
| | 2560 | 39 (37.05~40.95) | 1.917 (1.82~2.01) | 37.99 | 1.933 | | |
| | 2600 | 39 (37.05~40.95) | 1.96 (1.86~2.05) | 37.83 | 1.977 | | |
| 2600H | 2510 | 39.12 (37.16~41.01) | 1.86 (1.77~1.96) | 38.10 | 1.838 | 21.5°C | 2015-08-01 |
| | 2535 | 39.1 (37.13~41.04) | 1.89 (1.80~1.98) | 38.05 | 1.874 | | |
| | 2560 | 39 (37.05~40.95) | 1.917 (1.82~2.01) | 37.88 | 1.902 | | |
| | 2600 | 39 (37.05~40.95) | 1.96 (1.86~2.05) | 37.78 | 1.948 | | |
| 2600B | 2510 | 52.62 (49.99~55.25) | 2.03 (1.93~2.13) | 51.43 | 2.104 | 21.5°C | 2015-07-28 |
| | 2535 | 52.59 (49.96~55.22) | 2.07 (1.97~2.17) | 51.36 | 2.134 | | |
| | 2560 | 52.57 (49.94~55.20) | 2.09 (1.99~2.19) | 51.28 | 2.165 | | |
| | 2600 | 52.5 (49.88~55.13) | 2.16 (2.05~2.27) | 51.16 | 2.216 | | |
| 2600B | 2510 | 52.62 (49.99~55.25) | 2.03 (1.93~2.13) | 51.19 | 2.096 | 21.5°C | 2015-07-31 |
| | 2535 | 52.59 (49.96~55.22) | 2.07 (1.97~2.17) | 51.19 | 2.128 | | |
| | 2560 | 52.57 (49.94~55.20) | 2.09 (1.99~2.19) | 51.11 | 2.158 | | |
| | 2600 | 52.5 (49.88~55.13) | 2.16 (2.05~2.27) | 51.01 | 2.200 | | |
| 2600B | 2510 | 52.62 (49.99~55.25) | 2.03 (1.93~2.13) | 50.83 | 2.098 | 21.5°C | 2015-08-26 |
| | 2535 | 52.59 (49.96~55.22) | 2.07 (1.97~2.17) | 50.74 | 2.131 | | |
| | 2560 | 52.57 (49.94~55.20) | 2.09 (1.99~2.19) | 50.70 | 2.168 | | |
| | 2600 | 52.5 (49.88~55.13) | 2.16 (2.05~2.27) | 50.58 | 2.217 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2600B | 2510 | 52.62 (49.99~55.25) | 2.03 (1.93~2.13) | 50.83 | 2.116 | 21.5°C | 2015-08-28 |
| | 2535 | 52.59 (49.96~55.22) | 2.07 (1.97~2.17) | 50.78 | 2.140 | | |
| | 2560 | 52.57 (49.94~55.20) | 2.09 (1.99~2.19) | 50.72 | 2.176 | | |
| | 2600 | 52.5 (49.88~55.13) | 2.16 (2.05~2.27) | 50.64 | 2.229 | | |
| 5G H | 5300 | 36.0 (34.20~37.80) | 4.66 (4.43~4.89) | 35.03 | 4.559 | 21.3°C | 2015-08-21 |
| | 5600 | 35.5 (33.73~37.28) | 5.07 (4.82~5.32) | 34.69 | 5.117 | | |
| | 5800 | 35.3 (33.54~37.07) | 5.27 (5.01~5.53) | 35.01 | 5.188 | | |
| 5G B | 5300 | 49.00 (46.55~51.45) | 5.30 (5.04~5.56) | 47.18 | 5.480 | 21.3°C | 2015-08-02 |
| | 5600 | 48.50 (46.08~50.92) | 5.77 (5.48~6.05) | 46.59 | 5.904 | | |
| | 5800 | 48.20 (45.79~50.61) | 6.00 (5.70~6.30) | 46.63 | 6.224 | | |
| 5G B | 5200 | 49.0 (46.55~51.45) | 5.30 (5.03~5.56) | 49.97 | 5.223 | 21.3°C | 2015-08-22 |
| | 5300 | 49.00 (46.55~51.45) | 5.30 (5.04~5.56) | 48.18 | 5.472 | | |
| | 5600 | 48.50 (46.08~50.92) | 5.77 (5.48~6.05) | 47.59 | 5.888 | | |
| | 5800 | 48.20 (45.79~50.61) | 6.00 (5.70~6.30) | 47.63 | 6.207 | | |
| 5G B | 5300 | 49.00 (46.55~51.45) | 5.30 (5.04~5.56) | 48.38 | 5.413 | 21.3°C | 2015-08-31 |
| | 5600 | 48.50 (46.08~50.92) | 5.77 (5.48~6.05) | 47.79 | 5.920 | | |
| $\varepsilon_r$= Relative permittivity, σ= Conductivity | | | | | | | |

Table 5:Measured Tissue Parameter

Note: 1）The dielectric parameters of the tissue-equivalent liquid should be measured under similar ambient conditions and within 2°C of the conditions expected during the SAR evaluation to satisfy protocol requirements.

2）KDB 865664 was ensured to be applied for probe calibration frequencies greater than or equal to 50MHz of the EUT frequencies.

3）The above measured tissue parameters were used in the DASY software to perform interpolation via the DASY software to determine actual dielectric parameters at the test frequencies. The SAR test plots may slightly differ from the table above since the DASY rounds to three significant digits.

## 4.2 System Check

The system check is performed for verifying the accuracy of the complete measurement system and performance of the software. The system check is performed with tissue equivalent material according to IEEE P1528 (described above). The following table shows system check results for all frequency bands and tissue liquids used during the tests(Graphic Plot(s) see Appendix A).

| System Check | Target SAR (1W) (+/-10%) | | Measured SAR (Normalized to 1W) | | Liquid Temp. | Test Date |
|---|---|---|---|---|---|---|
| | 1-g (mW/g) | 10-g (mW/g) | 1-g (mW/g) | 10-g (mW/g) | | |
| 750MHz Head | 8.22 (7.40~9.04) | 5.41 (4.87~5.95) | 8.40 | 5.56 | 21.4°C | 2015-07-26 |
| 835MHz Head | 9.49 (8.54~10.44) | 6.18 (5.56~6.80) | 9.32 | 6.12 | 21.4°C | 2015-07-24 |
| 835MHz Head | 9.49 (8.54~10.44) | 6.18 (5.56~6.80) | 9.56 | 6.32 | 21.4°C | 2015-07-28 |
| 835MHz Head | 9.49 (8.54~10.44) | 6.18 (5.56~6.80) | 9.80 | 6.44 | 21.4°C | 2015-08-17 |
| 1750MHz Head | 35.1 (31.59~38.61) | 18.6 (16.74~20.46) | 35.52 | 18.84 | 21.5°C | 2015-07-30 |
| 1900MHz Head | 40.80 (36.72~44.88) | 21.40 (19.26~23.54) | 41.20 | 21.60 | 22.0°C | 2015-07-29 |
| 1900MHz Head | 40.80 (36.72~44.88) | 21.40 (19.26~23.54) | 40.40 | 21.20 | 22.0°C | 2015-08-01 |
| 1900MHz Head | 40.80 (36.72~44.88) | 21.40 (19.26~23.54) | 42.00 | 22.12 | 22.0°C | 2015-08-19 |
| 2300MHz Head | 50.1 (45.09~55.11) | 24.1 (21.69~26.51) | 46.40 | 22.28 | 21.5°C | 2015-07-27 |
| 2450MHz Head | 52.30 (47.07~57.53) | 24.50 (22.05~26.95) | 54.40 | 25.88 | 21.6°C | 2015-08-22 |
| 2600MHz Head | 57.8 (52.02~63.58) | 26.3 (23.67~28.93) | 61.20 | 27.84 | 21.5°C | 2015-07-30 |
| 2600MHz Head | 57.8 (52.02~63.58) | 26.3 (23.67~28.93) | 61.60 | 28.04 | 21.5°C | 2015-08-01 |
| 5300MHz Head | 83.5 (74.15~91.85) | 23.9 (21.51~26.29) | 86.90 | 25.30 | 21.3°C | 2015-08-21 |
| 5600MHz Head | 81.9 (73.71~90.09) | 23.3 (20.97~25.63) | 79.30 | 23.00 | 21.3°C | 2015-08-21 |
| 5800MHz Head | 78.8 (70.92~80.68) | 22.4 (20.16~24.64) | 74.30 | 21.60 | 21.3°C | 2015-08-21 |
| | | | | | | |
| 750MHz Body | 8.69 (7.82~9.56) | 5.76 (4.19~6.33) | 8.52 | 5.68 | 21.4°C | 2015-07-20 |
| 750MHz Body | 8.69 (7.82~9.56) | 5.76 (4.19~6.33) | 8.28 | 5.52 | 21.4°C | 2015-07-25 |
| 750MHz Body | 8.69 (7.82~9.56) | 5.76 (4.19~6.33) | 8.88 | 6.00 | 21.4°C | 2015-08-23 |
| 835MHz Body | 9.42 (8.48~10.36) | 6.19 (5.57~6.80) | 9.48 | 6.24 | 21.5°C | 2015-07-23 |
| 835MHz Body | 9.42 (8.48~10.36) | 6.19 (5.57~6.80) | 9.56 | 6.28 | 21.5°C | 2015-08-19 |
| 835MHz Body | 9.42 (8.48~10.36) | 6.19 (5.57~6.80) | 9.44 | 6.20 | 21.5°C | 2015-08-24 |
| 835MHz Body | 9.42 (8.48~10.36) | 6.19 (5.57~6.80) | 9.16 | 6.04 | 21.5°C | 2015-08-29 |

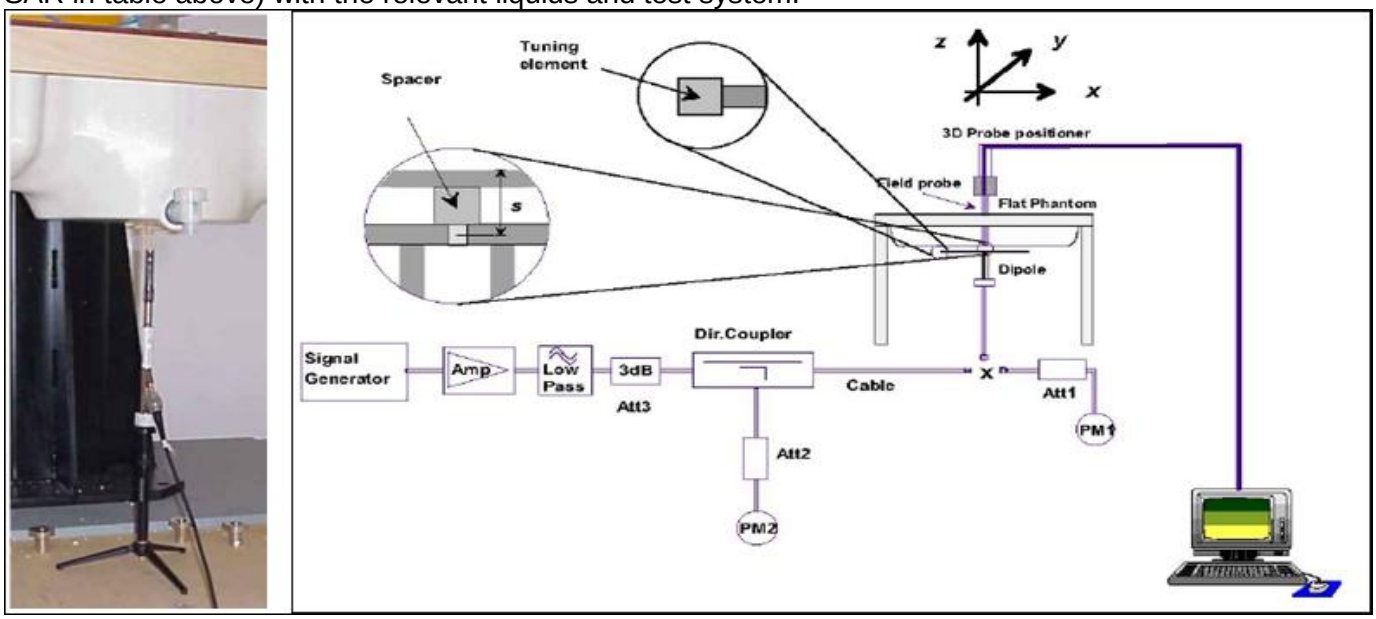
| | | | | | | |
|---|---|---|---|---|---|---|
| 1750MHz Body | 36.3 (32.67~39.93) | 19.5 (17.55~21.45) | 36.96 | 19.36 | 21.8°C | 2015-07-22 |
| 1750MHz Body | 36.3 (32.67~39.93) | 19.5 (17.55~21.45) | 37.56 | 19.64 | 21.8°C | 2015-07-29 |
| 1750MHz Body | 36.3 (32.67~39.93) | 19.5 (17.55~21.45) | 36.56 | 19.68 | 21.8°C | 2015-08-19 |
| 1750MHz Body | 36.3 (32.67~39.93) | 19.5 (17.55~21.45) | 36.16 | 19.44 | 21.8°C | 2015-08-28 |
| 1900MHz Body | 40.20 (36.18~44.22) | 21.30 (19.17~23.43) | 41.20 | 21.60 | 21.0°C | 2015-07-21 |
| 1900MHz Body | 40.20 (36.18~44.22) | 21.30 (19.17~23.43) | 42.00 | 21.72 | 21.0°C | 2015-07-27 |
| 1900MHz Body | 40.20 (36.18~44.22) | 21.30 (19.17~23.43) | 41.20 | 21.52 | 21.0°C | 2015-08-01 |
| 1900MHz Body | 40.20 (36.18~44.22) | 21.30 (19.17~23.43) | 40.80 | 21.20 | 21.0°C | 2015-08-24 |
| 1900MHz Body | 40.20 (36.18~44.22) | 21.30 (19.17~23.43) | 41.60 | 21.76 | 21.0°C | 2015-09-02 |
| 2300MHz Body | 49.9 (44.91~54.89) | 23.9 (21.51~26.29) | 47.20 | 22.64 | 21.5°C | 2015-07-25 |
| 2300MHz Body | 49.9 (44.91~54.89) | 23.9 (21.51~26.29) | 51.20 | 24.80 | 21.5°C | 2015-08-27 |
| 2450MHz Body | 51.4 (46.26~56.54) | 23.9 (21.51~26.29) | 54.40 | 25.00 | 21.0°C | 2015-07-26 |
| 2450MHz Body | 51.4 (46.26~56.54) | 23.9 (21.51~26.29) | 52.40 | 23.72 | 21.0°C | 2015-08-21 |
| 2600MHz Body | 57.5 (51.75~63.25) | 25.9 (23.31~28.49) | 60.80 | 26.76 | 21.5°C | 2015-07-28 |
| 2600MHz Body | 57.5 (51.75~63.25) | 25.9 (23.31~28.49) | 60.80 | 26.56 | 21.5°C | 2015-07-31 |
| 2600MHz Body | 57.5 (51.75~63.25) | 25.9 (23.31~28.49) | 59.60 | 27.20 | 21.5°C | 2015-08-26 |
| 2600MHz Body | 57.5 (51.75~63.25) | 25.9 (23.31~28.49) | 60.40 | 27.08 | 21.5°C | 2015-08-28 |
| 5200MHz Body | 74.7 (67.23~82.17) | 20.9 (18.81~22.99) | 75.60 | 21.20 | 21.3°C | 2015-08-22 |
| 5300MHz Body | 75.0 (67.50~82.50) | 21.0 (18.90~23.10) | 76.20 | 21.00 | 21.3°C | 2015-08-02 |
| 5300MHz Body | 75.0 (67.50~82.50) | 21.0 (18.90~23.10) | 78.20 | 21.60 | 21.3°C | 2015-08-22 |
| 5300MHz Body | 75.0 (67.50~82.50) | 21.0 (18.90~23.10) | 76.30 | 21.00 | 21.3°C | 2015-08-31 |
| 5600MHz Body | 77.8 (70.02~85.58) | 21.6 (19.44~23.76) | 79.80 | 22.00 | 21.3°C | 2015-08-02 |
| 5600MHz Body | 77.8 (70.02~85.58) | 21.6 (19.44~23.76) | 77.10 | 21.70 | 21.3°C | 2015-08-22 |
| 5600MHz Body | 77.8 (70.02~85.58) | 21.6 (19.44~23.76) | 78.40 | 22.10 | 21.3°C | 2015-08-31 |
| 5800MHz Body | 76.2 (68.58~83.82) | 21.0 (18.9~23.10) | 73.70 | 20.20 | 21.3°C | 2015-08-02 |
| 5800MHz Body | 76.2 (68.58~83.82) | 21.0 (18.9~23.10) | 73.50 | 20.80 | 21.3°C | 2015-08-22 |

Table 6:System Check Results

### 4.3 System check Procedure

The system check is performed by using a system check dipole which is positioned parallel to the planar part of the SAM phantom at the reference point. The distance of the dipole to the SAM phantom is determined by a plexiglass spacer. The dipole is connected to the signal source consisting of signal generator and amplifier via a directional coupler, N-connector cable and adaption to SMA. It is fed with a power of 250 mW(below 5GHz) or 100mW(above 5GHz). To adjust this power a power meter is used. The power sensor is connected to the cable before the system check to measure the power at this point and do adjustments at the signal generator. At the outputs of the directional coupler both return loss as well as forward power are controlled during the system check to make sure that emitted power at the dipole is kept constant. This can also be checked by the power drift measurement after the test (result on plot).

System check results have to be equal or near the values determined during dipole calibration (target SAR in table above) with the relevant liquids and test system.



# 5 SAR measurement variability and uncertainty

## 5.1 SAR measurement variability

Per KDB865664 D01 SAR measurement 100 MHz to 6 GHz v01r04, SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. The additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
2) When the original highest measured SAR is ⩾ 0.80 W/kg, repeat that measurement once.
3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ⩾ 1.45 W/kg (~ 10% from the 1-g SAR limit).
4) Perform a third repeated measurement only if the original, first or second repeated measurement is ⩾ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.

The detailed repeated measurement results are shown in Section 7.2.

## 5.2 SAR measurement uncertainty

Per KDB865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04,when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. The equivalent ratio (1.5/1.6) is applied to extremity and occupational exposure conditions.

# 6 SAR Test Configuration

## 6.1 3G SAR Test Reduction Procedure

Per KDB941225 D01v03, in the following procedures, the mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

## 6.2 GSM Test Configuration

SAR tests for GSM850 and GSM1900, a communication link is set up with a base station by air link. Using CMU200 the power lever is set to “5”and “0” in SAR of GSM850 and GSM1900. The tests in the band of GSM850 and GSM1900 are performed in the mode of GPRS/EGPRS function. Since the GPRS class is 10 for this EUT, it has at most 2 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslot is 5. The EGPRS class is 10 for this EUT, it has at most 2 timeslots in uplink, and at most 4 timeslots in downlink, the maximum total timeslot is 5.

When SAR tests for EGPRS mode is necessary, GMSK modulation should be used to minimize SAR measurement error due to higher peak-to-average power (PAR) ratios inherent in 8-PSK.

### 6.3 UMTS Test Configuration

1) Output Power Verification

Maximum output power is verified on the high, middle and low channels according to procedures described in section 5.2 of 3GPP TS 34.121, using the appropriate RMC or AMR with TPC (transmit power control) set to all “1’s” for WCDMA/HSDPA or by applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HSDPA, HSPA) are requied in the SAR report. All configurations that are not supported by the handset or cannot be measured due to technical or equipment limitations must be clearly identified.

2) WCDMA

a. Head SAR Measurements

SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”. The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the primary mode.

b. Body SAR Measurements

SAR for body-worn accessory configurations is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”. The 3G SAR test reduction procedure is applied to other spreading codes and multiple DPDCHn configurations supported by the handset with 12.2 kbps RMC as the primary mode

3) HSDPA

SAR for body exposure configurations is measured according to the “Body SAR Measurements’’ procedures of 3G device. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

Per KDB941225 D01v03, the 3G SAR test reduction procedure is applied to HSDPA body configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for HSDPA using the HSDPA body SAR procedures for the highest reported SAR body exposure configuration in 12.2 kbps RMC.

HSDPA should be configured according to UE category of a test device. The number of HS-DSCH/HS-PDSCHs, HAPRQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission condition, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4ms with a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. The $\beta_c$ and $\beta_d$ gain factors for DPCCH and DPDCH were set according to the values in the below table, $\beta_{hs}$ for HS-DPCCH is set automatically to the correct value when ΔACK, ΔNACK, ΔCQI = 8. The variation of the $\beta_c$ /$\beta_d$ ratio causes a power reduction at sub-tests 2 - 4.

| Sub-test | $\beta_c$ | $\beta_d$ | $\beta_d$ (SF) | $\beta_c/\beta_d$ | $\beta_{hs}$ (1) | CM(dB)(2) | MPR (dB) |
|---|---|---|---|---|---|---|---|
| 1 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 0.0 | 0 |
| 2 | 12/15(3) | 15/15(3) | 64 | 12/15(3) | 24/15 | 1.0 | 0 |
| 3 | 15/15 | 8/15 | 64 | 15/8 | 30/15 | 1.5 | 0.5 |
| 4 | 15/15 | 4/15 | 64 | 15/4 | 30/15 | 1.5 | 0.5 |

Note 1: △ACK, △NACK and △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 and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 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 signalled gain factors for the reference TFC (TF1,TF1) to $\beta_c$ = 11/15 and $\beta_d$ = 15/15

Table 7: Sub-tests for UMTS Release 5 HSDPA

The measurements were performed with a Fixed Reference Channel (FRC) and H-Set 1 QPSK.

| Parameter | Value |
|---|---|
| Nominal average inf. bit rate | 534 kbit/s |
| Inter-TTI Distance | 3 TTI's |
| Number of HARQ Processes | 2 Processes |
| Information Bit Payload | 3202 Bits |
| MAC-d PDU size | 336 Bits |
| Number Code Blocks | 1 Block |
| Binary Channel Bits Per TTI | 4800 Bits |
| Total Available SMLs in UE | 19200 SMLs |
| Number of SMLs per HARQ Process | 9600 SMLs |
| Coding Rate | 0.67 |
| Number of Physical Channel Codes | 5 |

Table 8:settings of required H-Set 1 QPSK acc. to 3GPP 34.121

| HS-DSCH Category | Maximum HS-DSCH Codes Received | Minimum Inter-TTI Interval | Maximum HS-DSCH Transport Block Bits/HS-DSCH TTI | Total Soft Channel Bits |
|---|---|---|---|---|
| 1 | 5 | 3 | 7298 | 19200 |
| 2 | 5 | 3 | 7298 | 28800 |
| 3 | 5 | 2 | 7298 | 28800 |
| 4 | 5 | 2 | 7298 | 38400 |
| 5 | 5 | 1 | 7298 | 57600 |
| 6 | 5 | 1 | 7298 | 67200 |
| 7 | 10 | 1 | 14411 | 115200 |
| 8 | 10 | 1 | 14411 | 134400 |
| 9 | 15 | 1 | 25251 | 172800 |
| 10 | 15 | 1 | 27952 | 172800 |
| 11 | 5 | 2 | 3630 | 14400 |
| 12 | 5 | 1 | 3630 | 28800 |
| 13 | 15 | 1 | 34800 | 259200 |
| 14 | 15 | 1 | 42196 | 259200 |
| 15 | 15 | 1 | 23370 | 345600 |
| 16 | 15 | 1 | 27952 | 345600 |

Table 9:HSDPA UE category

4) HSUPA

SAR for body exposure configurations is measured according to the “Body SAR Measurements’’ procedures of 3G device. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

Per KDB941225 D01v03, the 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for HSPA using the HSPA body SAR procedures for the highest reported body exposure SAR configuration in 12.2 kbps RMC.

Due to inner loop power control requirements in HSDPA, a commercial communication test set should be used for the output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSDPA should be configured according to the values indicated below as well as other applicable procedures described in the ‘WCDMA Handset’ and ‘Release 5 HSDPA Data Device’ sections of 3G device.

| Sub-test | $\beta_c$ | $\beta_d$ | $\beta_d$ (SF) | $\beta_c/\beta_d$ | $\beta_{hs}$(1) | $\beta_{ec}$ | $\beta_{ed}$ | $\beta_{ec}$ (SF) | $\beta_{ed}$ (code) | 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 signalled 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 signalled 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: $\beta_{ed}$ can not be set directly; it is set by Absolute Grant Value.

Table 10:Subtests for UMTS Release 6 HSUPA

| UE E-DCH Category | Maximum E-DCH Codes Transmitted | Number of HARQ Processes | E-DCH TTI(ms) | Minimum Speading Factor | Maximum E-DCH Transport Block Bits | Max Rate (Mbps) |
|---|---|---|---|---|---|---|
| 1 | 1 | 4 | 10 | 4 | 7110 | 0.7296 |
| 2 | 2 | 8 | 2 | 4 | 2798 | 1.4592 |
| | 2 | 4 | 10 | 4 | 14484 | |
| 3 | 2 | 4 | 10 | 4 | 14484 | 1.4592 |
| 4 | 2 | 8 | 2 | 2 | 5772 | 2.9185 |
| | 2 | 4 | 10 | 2 | 20000 | 2.00 |
| 5 | 2 | 4 | 10 | 2 | 20000 | 2.00 |
| 6 (No DPDCH) | 4 | 8 | 10 | 2SF2&2SF4 | 11484 | 5.76 |
| | 4 | 4 | 2 | | 20000 | 2.00 |
| 7 (No DPDCH) | 4 | 8 | 2 | 2SF2&2SF4 | 22996 | ? |
| | 4 | 4 | 10 | | 20000 | ? |
| NOTE: When 4 codes are transmitted in parallel, two codes shall be transmitted with SF2 and two with SF4.UE categories 1 to 6 support QPSK only. UE category 7 supports QPSK and 16QAM.(TS25.306-7.3.0). | | | | | | |

Table 11:HSUPA UE category

5) DC-HSDPA

SAR is required for Rel. 8 DC-HSDPA when SAR is required for Rel. 5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction. A primary and a Second serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

The following tests were completed according to procedures in section 7.3.13 of 3GPP TS 34.108 v9.5.0. A summary of these settings are illustrated below:

Downlink Physical Channels are set as per 3GPP TS34.121-1 v9.0.0 E.5.0

**Table E.5.0: Levels for HSDPA connection setup**

| Parameter During Connection setup | Unit | Value |
|---|---|---|
| P-CPICH_Ec/Ior | dB | -10 |
| P-CCPCH and SCH_Ec/Ior | dB | -12 |
| PICH _Ec/Ior | dB | -15 |
| HS-PDSCH | dB | off |
| HS-SCCH_1 | dB | off |
| DPCH_Ec/Ior | dB | -5 |
| OCNS_Ec/Ior | dB | -3.1 |

Call is set up as per 3GPP TS34.108 v9.5.0 sub clause 7.3.13

The configurations of the fixed reference channels for HSDPA RF tests are described in 3GPP TS 34.121, annex C for FDD and 3GPP TS 34.122.

The measurements were performed with a Fixed Reference Channel (FRC) H-Set 12 with QPSK

| Parameter | Value |
|---|---|
| Nominal average inf. bit rate | 60 kbit/s |
| Inter-TTI Distance | 1 TTI's |
| Number of HARQ Processes | 6 Processes |
| Information Bit Payload | 120 Bits |
| Number Code Blocks | 1 Block |
| Binary Channel Bits Per TTI | 960 Bits |
| Total Available SMLs in UE | 19200 SMLs |
| Number of SMLs per HARQ Process | 3200 SMLs |
| Coding Rate | 0.15 |
| Number of Physical Channel Codes | 1 |

Table 12:settings of required H-Set 12 QPSK acc. to 3GPP 34.121

Note:

1.The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table above.

2.Maximum number of transmission is limited to 1,i.e.,retransmission is not allowed. The redundancy and constellation version 0 shall be used.

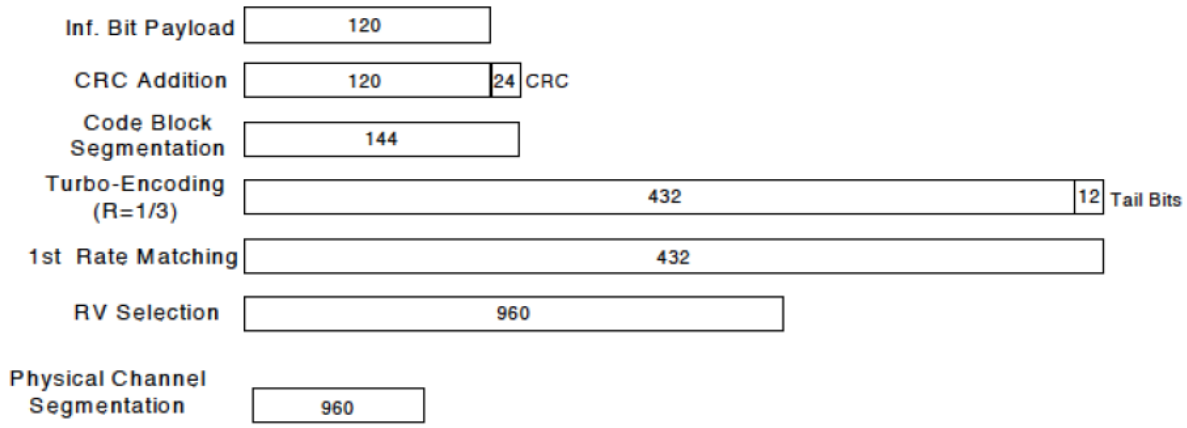



**Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)**

The following 4 Sub-tests for HSDPA were completed according to Release 5 procedures. A summary of subtest settings are illustrated below:

| Sub-test | $\beta_c$ | $\beta_d$ | $\beta_d$ (SF) | $\beta_c/\beta_d$ | $\beta_{hs}$ (1) | CM(dB)(2) | MPR (dB) |
|---|---|---|---|---|---|---|---|
| 1 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 0.0 | 0 |
| 2 | 12/15(3) | 15/15(3) | 64 | 12/15(3) | 24/15 | 1.0 | 0 |
| 3 | 15/15 | 8/15 | 64 | 15/8 | 30/15 | 1.5 | 0.5 |
| 4 | 15/15 | 4/15 | 64 | 15/4 | 30/15 | 1.5 | 0.5 |

Note 1: Δ ACK, Δ NACK and Δ CQI = 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 and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 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 signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$

Up commands are set continuously to set the UE to Max power.

Note:

1.The Dual Carriers transmission only applies to HSDPA physical channels

2.The Dual Carriers belong to the same Node and are on adjacent carriers.

3.The Dual Carriers do not support MIMO to serve UEs configured for dual cell operation

4.The Dual Carriers operate in the same frequency band .

5.The device doesn't support the modulation of 16QAM in uplink but 64QAM in downlink for DC-HSDPA mode.

6.The device doesn’t support carrier aggregation for it just can operate in Release 8.

## 6.4 CDMA Test Configuration

### 6.4.1 1x RTT Handsets

1) Output Power Verification

Maximum output power is verified on the high, middle and low channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E. Results for at least steps 3, 4 and 10 of the power measurement procedures are required in the SAR report. Steps 3 and 4 are measured using Loopback Service Option SO55 with power control bits in “All Up” condition. TDSO/SO32 may be used instead of SO55 for step 4. Step 10 is measured using TDSO/SO32 with power control bits in the “Bits Hold” condition (i.e. alternative Up/Down Bits). All power measurements defined in C.S0011/TIA-98-E that are inapplicable to the handset or cannot be measured due to technical or equipment limitations must be clearly identified in the test report.

Test Parameter setup for maximum RF output power according to section 4.4.5 of 3GPP2;

| Parameter | Units | Value |
|---|---|---|
| I or | dBm/1.23MHz | -104 |
| PilotE c/I or | dB | -7 |
| TrafficE c /I or | dB | -7.4 |

2) Head SAR

SAR for next to the ear head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55. The 3G SAR test reduction procedure is applied to RC1 with RC3 as the primary mode; otherwise, SAR is required for the channel with maximum measured output in RC1 using the head exposure configuration that results in the highest *reported* SAR in RC3.

3) Body-Worn Accessory SAR

Body-worn accessory SAR is measured in RC3 with the handset configured in TDSO/SO32 to transmit at full rate on FCH only with all other code channels disabled. The body-worn accessory procedures in KDB Publication 447498 are applied. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCHn), with FCH only as the primary mode. Otherwise, SAR is required for multiple code channel configuration (FCH + SCHn), with FCH at full rate and SCH0 enabled at 9600 bps, using the highest *reported* SAR configuration for FCH only. When multiple code channels are enabled, the transmitter output can shift by more than 0.5 dB and may lead to higher SAR drifts and SCH dropouts.

The 3G SAR test reduction procedure is applied to body-worn accessory SAR in RC1 with RC3 as the primary mode.9 Otherwise, SAR is required for RC1, with SO55 and full rate, using the highest *reported* SAR configuration for body-worn accessory exposure in RC3.

Test communication setup meet as followings:

| | |
|---|---|
| Communication standard between mobile station and base station simulator | 3GPP2 C.S0011-B |
| Radio configuration | RC3(Supporting CDMA 1X) |
| Spreading Rate | SR1 |
| Data Rate | 9600bps |
| Service Options | SO55(Loopback service) |
| Service Options | SO32(Test Data service) |
| Multiplex Options | The mobile station does not support this service |

4) Handsets with built-in Ev-Do

For handsets with Ev-Do capabilities, the 3G SAR test reduction procedure is applied to Ev-Do Rev. 0 with 1x RTT RC3 as the primary mode to determine body-worn accessory test requirements. Otherwise, body-worn accessory SAR is required for Rev. 0, at 153.6 kbps, using the highest *reported* SAR configuration for body-worn accessory exposure in RC3.

The 3G SAR test reduction procedure is applied separately to Rev. A and Rev. B, with Rev. 0 as the primary mode to determine body-worn accessory SAR test requirements. When SAR is not required for Rev. 0, the 3G SAR test reduction is applied with 1x RTT RC3 as the primary mode. Otherwise, SAR is required for Rev. A or Rev. B, with a Reverse Data Channel payload size of 4096 bits and a Termination Target of 16 slots defined for Subtype 2 and 3 Physical Layer configurations, using the highest *reported* SAR configuration for body-worn accessory exposure in Rev. 0 or RC3, as appropriate.

A Forward Traffic Channel data rate corresponding to the 2-slot version of 307.2 kbps with ACK Channel transmitting in all slots is configured in the downlink for Rev. 0, Rev. A and Rev. B.

### 6.4.2 1x Ev-Do Data Devices

1) Output Power Verification

Maximum output power is verified on the high, middle and low channels according to procedures in section 3.1.2.3.4 of 3GPP2 C.S0033-0/TIA-866 for Rev. 0, section 4.3.4 of 3GPP2 C.S0033-A for Rev. A and section 4.3.4 of 3GPP2 C.S0033-C for Rev. B. Maximum output power is measured for Rev. 0 and Rev. A in Subtype 0/1 and Subtype 2 Physical Layer configurations, respectively. For Rev. B, maximum output power is measured according to power back-off requirements using Subtype 3 Physical Layer with “test 2” and “test 3” configurations. Power is measured using “test 2” with two carries in the maximum frequency separation condition and “test 3” for N-adjacent carriers; where N is the maximum number of carriers supported by the device. Both “test 2” and “test 3” configurations are measured with the channels centered within the transmit frequency band. The device operating configurations under TAP/ETAP/MCTAP must be clearly documented in the test report; including power control, code channel and RF channel output power conditions. The measurement results are required in the SAR report with any measurement difficulties and equipment limitations clearly identified.

2) SAR Measurement

SAR is measured using the F/R TAP configurations required for Rev. 0, Rev. A and Rev. B. The AT is tested with a Reverse Data Channel rate of 153.6 kbps in Subtype 0/1 Physical Layer configurations. A Reverse Data Channel payload size of 4096 bits and Termination Target of 16 slots are used for Subtype 2 and 3. FTAP, FETAP and FMCTAP are all configured with a Forward Traffic Channel data rate corresponding to the 2-slot version of 307.2 kbps with ACK Channel transmitting in all slots. AT power control is in “All Bits Up” conditions for the TAP/ETAP/MCTAP.

Body-worn accessory and other body SAR are measured using Subtype 0/1 Physical Layer configurations for Rev. 0. The 3G SAR test reduction procedure is applied to Rev. A, Subtype 2 Physical layer configuration, with Rev. 0 as the primary mode; otherwise, SAR is measured for Rev. A using the highest *reported* SAR configuration for body-worn accessory exposure in Rev. 0.

3) 1x RTT Support

For Ev-Do data devices that also support 1x RTT voice and/or data operations, the 3G SAR test reduction procedure is applied to 1x RTT RC3 and RC1 with Ev-Do Rev. 0, Rev. A and Rev. B as the respective primary modes.16 Otherwise, the ‘Body-Worn Accessory SAR’ procedures in the ‘3GPP2 CDMA 2000 1x Handsets’ section are applied.

4) 1x-Advanced

Maximum output power is verified for 1x-Advanced by applying the 1x RTT power measurement procedures using SO75, with RC 8 in the uplink and RC11 in the downlink. Smart blanking must be disabled. The test device is configured with Forward Power Control Mode = 000 and Reverse Power Control = 400 bps; that is, 400 kHz for both uplink and downlink power control. The power measurement results must be included in the SAR report to satisfy power requirements in KDB Publication 447498 and to qualify for SAR test exclusion or to support the SAR test setup and results.

The 3G SAR test reduction procedure is applied to 1x-Advanced with 1x RTT RC3 as the primary mode. When SAR measurement is required, the 1x-Advanced power measurement configurations are used. The 1x Advanced SAR procedures are applied separately to head, body-worn accessory and other exposure conditions.

## 6.5 LTE Test Configuration

SAR for LTE band exposure configurations is measured according to the procedures of KDB 941225 D05 SAR for LTE Devices v02r03. The CMW500 WideBand Radio Communication Tester was used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing.SAR test were performed with the same number of RB and RB offsets transmitting on all TTI frames(Maximum TTI)

**1) Spectrum Plots for RB configurations**

A properly configured base station simulator was used for LTE output power measurements and SAR testing.Therefore, spectrum plots for RB configurations were not required to be included in this report.

**2) MPR**

When MPR is implemented permanently within the UE, regardless of network requirements, only those RB configurations allowed by 3GPP for the channel bandwidth and modulation combinations may be tested with MPR active. Configurations with RB allocations less than the RB thresholds required by 3GPP must be tested without MPR.

The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

**Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3**

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

**3) A-MPR**

A-MPR(Additional MPR) has been disabled for all SAR tests by using Network Signalling Value of “NS_01”on the base station simulator.

**4) LTE procedures for SAR testing**

A) Largest channel bandwidth standalone SAR test requirements

i) QPSK with 1 RB allocation

Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

ii) QPSK with 50% RB allocation

The procedures required for 1 RB allocation in i) are applied to measure the SAR for QPSK with 50% RB allocation.

iii) QPSK with 100% RB allocation

For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in i) and ii) are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

iv) Higher order modulations

For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in above sections to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

B) Other channel bandwidth standalone SAR test requirements

For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in section A) to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ½ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.

**5) TDD LTE test configuration**

According to KDB 941225 D05 SAR for LTE Devices v02r03, for Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

TDD LTE Band 41 supports 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special subframe configurations.

**Figure 4.2-1: Frame structure type 2**

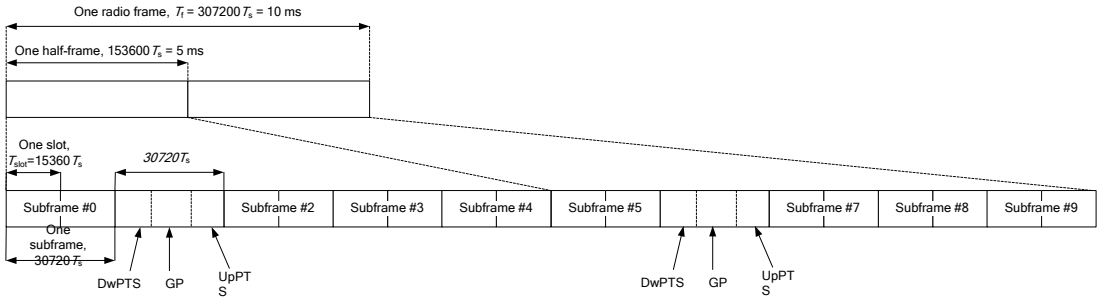



**Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS)**

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

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

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

According to Figure 4.2-1, one radio frame is configured by 10 subframes, which consist of Uplink-subframe, Downlink-subframe and Special subframe. For TDD-LTE, the Duty Cycle should be calculated on Uplink-subframes and Special subframes, due to Special subframe containing both Uplink transmissions. So for one radio frame, Duty Cycle can be calculated with formula as below. The count of Uplink subframes are according to Table 4.2-2:

Duty cycle =(30720Ts*Ups+Uplink Component*Specials)/(307200Ts)

About the uplink component of Special subframes, we can figure out by Table 4.2-1:

Uplink Component=UpPTS

In conclusion, for the TDD LTE Band, Duty Cycle can be calculated with formula as below .all these sets are ok when we test, or we can set as below.

Duty cycle =[(30720Ts*Ups)+ UpPTS *Specials]/(307200Ts)

And we can get different Duty cycles under different configurations:

| Uplink-downlink configuration | Subframe number | | | Configuration of special subframe | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Normal cyclic prefix in downlink | | | | Extended cyclic prefix in downlink | | | |
| | | | | Normal cyclic prefix in uplink | | Extended cyclic prefix in uplink | | Normal cyclic prefix in uplink | | Extended cyclic prefix in uplink | |
| | D | S | U | configuration 0~4 | configuration 5~9 | configuration 0~4 | configuration 5~9 | configuration 0~3 | configuration 4~7 | configuration 0~3 | configuration 4~7 |
| 0 | 2 | 2 | 6 | 61.43% | 62.85% | 61.67% | 63.33% | 61.43% | 62.85% | 61.67% | 63.33% |
| 1 | 4 | 2 | 4 | 41.43% | 42.85% | 41.67% | 43.33% | 41.43% | 42.85% | 41.67% | 43.33% |
| 2 | 6 | 2 | 2 | 21.43% | 22.85% | 21.67% | 23.33% | 21.43% | 22.85% | 21.67% | 23.33% |
| 3 | 6 | 1 | 3 | 30.71% | 31.43% | 30.83% | 31.67% | 30.71% | 31.43% | 30.83% | 31.67% |
| 4 | 7 | 1 | 2 | 20.71% | 21.43% | 20.83% | 21.67% | 20.71% | 21.43% | 20.83% | 21.67% |
| 5 | 8 | 1 | 1 | 10.71% | 11.43% | 10.83% | 11.67% | 10.71% | 11.43% | 10.83% | 11.67% |
| 6 | 3 | 2 | 5 | 51.43% | 52.85% | 51.67% | 53.33% | 51.43% | 52.85% | 51.67% | 53.33% |

For TDD LTE, SAR should be tested with the highest transmission duty factor (63.33%) using Uplink-downlink configuration 0 and Special subframe configuration 7 for Frame structure type 2.

## 6.6 WiFi Test Configuration

For WiFi SAR testing, a communication link is set up with the testing software for WiFi mode test. During the test,at the each test frequency channel, the EUT is operated at the RF continuous emission mode. The RF signal utilized in SAR measurement has 100% duty cycle and its crest factor is 1. The test procedures in KDB 248227D01v02r01 are applied. (Refer to KDB 248227D01v02r01 for more details)

### 6.6.1 Initial Test Position Procedure

For exposure condition with multiple test position, such as handsets operating next to the ear, devices with hotspot mode or UMPC mini-tablet , procedures for initial test position can be applied. Using the transmission mode determined by the DSSS procedure or initial test configuration, area scans are measured for all position in an exposure condition. The test position with the highest extrapolated(peak) SAR is used as the initial test position. When reported SAR for the initial test position is ≤ 0.4W/kg, no additional testing for the remaining test position is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR position until the reported SAR result is ≤ 0.8W/kg or all test position are measured. For all positions/configurations tested using the initial test position and subsequent test positions, when the *reported* SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the *reported* SAR is ≤ 1.2 W/kg or all required channels are tested.

### 6.6.2 Initial Test Configuration Procedure

An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band. SAR is measured using the highest measured maximum output power channel. For configurations with the same specified or measured maximum output power, additional transmission mode and test channel selection procedures are required (see section 5.3.2 of KDB 248227D01v02). SAR test reduction of subsequent highest output test channels is based on the *reported* SAR of the initial test configuration.

For next to the ear, hotspot mode and UMC mini-tablet exposure configurations where multiple test positions are required, the initial test position procedure is applied to minimize the number of test positions required for SAR measurement using the initial test configuration transmission mode. For fixed exposure conditions that do not have multiple SAR test positions, SAR is measured in the transmission mode determined by the initial test configuration.

When the *reported* SAR of the initial test configuration is > 0.8 W/kg, SAR measurement is required for the subsequent next highest measured output power channel(s) in the initial test configuration until the *reported* SAR is ≤ 1.2 W/kg or all required channels are tested.

### 6.6.3 Sub Test Configuration Procedure

SAR measurement requirements for the remaining 802.11 transmission mode configurations that have not been tested in the initial test configuration are determined separately for each standalone and aggregated frequency band, in each exposure condition, according to the maximum output power specified for production units.

When the highest reported SAR for the initial test configuration, according to the initial test position or fixed exposure position requirements, is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for that subsequent test configuration.

### 6.6.4 WiFi 2.4G SAR Test Procedures

Separate SAR procedures are applied to DSSS and OFDM configurations in the 2.4 GHz band to simplify DSSS test requirements. For 802.11b DSSS SAR measurements, DSSS SAR procedure applies to fixed exposure test position and initial test position procedure applies to multiple exposure test positions.

**A) 802.11b DSSS SAR Test Requirements**

SAR is measured for 2.4 GHz 802.11b DSSS using either a 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 (section 3.1 of of KDB 248227D01v02) for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

2) When the *reported* SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any *reported* SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

**B) 2.4GHz 802.11g/n OFDM SAR Test Exclusion Requirements**

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied (section 5.3 of of KDB 248227D01v02r01). 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.

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

When SAR measurement is required for 802.11 g/n OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.

### 6.6.5 WiFi 5G SAR Test Procedures

**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 the same specified maximum output power.

2) If multiple configurations have the same specified maximum output power and largest channel bandwidth, 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 bandwidth and 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 or two 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 same transmitter and antenna(s) are used for U-NII-1 and U-NII-2A bands, additional SAR test reduction applies. When band gap channels between U-NII-2C band and 5.8 GHz U-NII-3 or §15.247 band are supported, the highest maximum output power transmission mode configuration and maximum output power channel across the bands must be used to determine SAR test reduction, according to the initial test configuration and subsequent test configuration requirements. In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.

### 6.6.6 MIMO SAR Considerations

Per KDB 248227D01v02, simultaneous transmission provisions in KDB Publication 447498 should be used to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1-g SAR single transmission SAR measurement is <1.6W/kg, no additional SAR measurements for MIMO are required. Alternatively,SAR for MIMO can be measured with all antennas transmitting simultaneously at the specified maximum output power of MIMO operation.

# 7 SAR Measurement Results

## 7.1 Conducted power measurements

For the measurements a Rohde & Schwarz Radio Communication Tester CMU 200&CMW500 was used.
SAR drift measured at the same position in liquid before and after each SAR test as below 7.2 chapter.
Note: CMU200 measures GSM peak and average output power for active timeslots.For SAR the timebased average power is relevant. The difference in between depends on the duty cycle of the TDMA signal :

| No. of timeslots | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Duty Cycle | 1:8.3 | 1:4.1 | 1:2.77 | 1:2.08 |
| timebased avg. power compared to slotted avg. power | -9.19dB | -6.13dB | -4.42dB | -3.18dB |

The signalling modes differ as follows:

| mode | coding scheme | modulation |
|---|---|---|
| GPRS | CS1 to CS4 | GMSK |
| EDGE | MCS1 to MCS4 | GMSK |
| EDGE | MCS5 to MCS9 | 8PSK |

Apart from modulation change (GMSK/8PSK) coding schemes differ in code rate without influence on the RF signal. Therefore one coding scheme per mode was selected for conducted power measurements.

### 7.1.1 Conducted power measurements of GSM850(Second Antenna)

**Full Power:**

| GSM850 | | Burst-Averaged output Power (dBm) | | | | Division Factors | Frame-Averaged output Power (dBm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Tune-up | 128CH | 190CH | 251CH | | Tune-up | 128CH | 190CH | 251CH |
| GSM (CS) | | 31.50 | 30.69 | 30.63 | 30.60 | -9.19 | 22.31 | 21.50 | 21.44 | 21.41 |
| GPRS/ EDGE (GMSK) | 1 Tx Slot | 33.50 | 32.89 | 32.89 | 32.83 | -9.19 | 24.31 | 23.70 | 23.70 | 23.64 |
| | 2 Tx Slots | 31.00 | 30.32 | 30.24 | 30.10 | -6.13 | **24.87** | **24.19** | **24.11** | **23.97** |
| EDGE (8PSK) | 1 Tx Slot | 27.00 | 26.22 | 26.17 | 26.23 | -9.19 | 17.81 | 17.03 | 16.98 | 17.04 |
| | 2 Tx Slots | 25.00 | 24.34 | 24.34 | 24.35 | -6.13 | 18.87 | 18.21 | 18.21 | 18.22 |

Table 13:Conducted power measurement results of GSM850

Note:

1) The conducted power of GSM850 is measured with RMS detector.

2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timesolts.

3) Per KDB941225 D01v03, SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data 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.

**Second antenna(Voice) + WiFi Station +Sensor on：**

| GSM850 | Burst-Averaged output Power (dBm) | | | | Division Factors | Frame-Averaged output Power (dBm) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Tune-up | 128CH | 190CH | 251CH | | Tune-up | 128CH | 190CH | 251CH |
| GSM (CS) | 29.50 | 29.39 | 29.31 | 29.23 | -9.19 | 20.31 | 20.20 | 20.12 | 20.04 |

Table 14:Conducted power measurement results of GSM850

Note:

1) The conducted power of GSM850 is measured with RMS detector.

2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timesolts.

**Second antenna(Voice) + WiFi Station +Sensor off：**

| GSM850 | Burst-Averaged output Power (dBm) | | | | Division Factors | Frame-Averaged output Power (dBm) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Tune-up | 128CH | 190CH | 251CH | | Tune-up | 128CH | 190CH | 251CH |
| GSM (CS) | 30.50 | 30.36 | 30.25 | 30.06 | -9.19 | 21.31 | 21.17 | 21.06 | 20.87 |

Table 15:Conducted power measurement results of GSM850

Note:
1) The conducted power of GSM850 is measured with RMS detector.
2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timesolts.

**Second antenna + WiFi Hotspot:**

| GSM850 | | Burst-Averaged output Power (dBm) | | | | Division Factors | Frame-Averaged output Power (dBm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Tune-up | 128CH | 190CH | 251CH | | Tune-up | 128CH | 190CH | 251CH |
| GPRS/ EDGE (GMSK) | 1 Tx Slot | 30.00 | 29.95 | 29.91 | 29.86 | -9.19 | 20.81 | 20.76 | 20.72 | 20.67 |
| | 2 Tx Slots | 27.50 | 27.34 | 27.25 | 27.09 | -6.13 | **21.37** | **21.21** | **21.12** | **20.96** |
| EDGE (8PSK) | 1 Tx Slot | 27.00 | 26.61 | 26.43 | 26.29 | -9.19 | 17.81 | 17.42 | 17.24 | 17.10 |
| | 2 Tx Slots | 25.00 | 24.78 | 24.62 | 24.51 | -6.13 | 18.87 | 18.65 | 18.49 | 18.38 |

Table 16:Conducted power measurement results of GSM850

Note:
1) The conducted power of GSM850 is measured with RMS detector.
2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timesolts.
3) Per KDB941225 D01v03, SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data 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.

### 7.1.2 Conducted power measurements of UMTS Band V(Second Antenna)

**Full Power:**

| UMTS Band V | | Tune-up | Conducted Power (dBm) | | |
|---|---|---|---|---|---|
| | | | 4132CH | 4182CH | 4233CH |
| WCDMA | 12.2kbps RMC | **23.80** | **22.90** | **22.91** | **23.06** |
| HSDPA | Subtest 1 | 22.80 | 21.87 | 21.89 | 21.99 |
| | Subtest 2 | 22.30 | 21.91 | 21.80 | 21.71 |
| | Subtest 3 | 21.80 | 21.39 | 21.41 | 21.53 |
| | Subtest 4 | 21.80 | 21.39 | 21.10 | 21.22 |
| HSUPA | Subtest 1 | 22.80 | 20.95 | 21.02 | 21.15 |
| | Subtest 2 | 21.30 | 20.71 | 20.74 | 20.83 |
| | Subtest 3 | 21.30 | 20.73 | 20.76 | 20.87 |
| | Subtest 4 | 21.30 | 21.18 | 21.22 | 21.23 |
| | Subtest 5 | 22.80 | 21.44 | 21.02 | 21.56 |
| DC-HSDPA | Subtest 1 | 22.80 | 21.82 | 21.80 | 21.99 |
| | Subtest 2 | 22.30 | 21.84 | 21.72 | 21.71 |
| | Subtest 3 | 21.80 | 21.32 | 21.38 | 21.48 |
| | Subtest 4 | 21.80 | 21.34 | 21.02 | 21.14 |

Table 17: Conducted power measurement results of UMTS Band V

Note: 1) The conducted power of UMTS Band V is measured with RMS detector.
2) The bolded 12.2kbps RMC mode was selected for SAR testing(the primary mode).
3) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

**Second antenna(Voice) + WiFi Station +Sensor on：**

| UMTS Band V | | Tune-up | Conducted Power (dBm) | | |
|---|---|---|---|---|---|
| | | | 4132CH | 4182CH | 4233CH |
| WCDMA | 12.2kbps RMC | 21.00 | 19.47 | 19.61 | 19.71 |

Table 18: Conducted power measurement results of UMTS Band V

**Second antenna(Voice) + WiFi Station +Sensor off：**

| UMTS Band V | | Tune-up | Conducted Power (dBm) | | |
|---|---|---|---|---|---|
| | | | 4132CH | 4182CH | 4233CH |
| WCDMA | 12.2kbps RMC | 22.00 | 20.65 | 20.74 | 20.66 |

Table 19: Conducted power measurement results of UMTS Band V

**Second antenna + WiFi Hotspot:**

| UMTS Band V | | Tune-up | Conducted Power (dBm) | | |
|---|---|---|---|---|---|
| | | | 4132CH | 4182CH | 4233CH |
| WCDMA | 12.2kbps RMC | **21.00** | **20.91** | **20.89** | **20.87** |
| HSDPA | Subtest 1 | 20.00 | 19.92 | 19.92 | 19.84 |
| | Subtest 2 | 19.50 | 19.43 | 19.47 | 19.42 |
| | Subtest 3 | 19.00 | 18.92 | 18.95 | 18.89 |
| | Subtest 4 | 19.00 | 18.89 | 18.93 | 18.94 |
| HSUPA | Subtest 1 | 20.00 | 19.23 | 19.39 | 19.30 |
| | Subtest 2 | 18.50 | 18.42 | 18.43 | 18.41 |
| | Subtest 3 | 18.50 | 18.35 | 18.38 | 18.47 |
| | Subtest 4 | 18.50 | 18.43 | 18.32 | 18.24 |
| | Subtest 5 | 20.00 | 19.14 | 19.60 | 19.48 |
| DC-HSDPA | Subtest 1 | 20.00 | 19.85 | 19.85 | 19.78 |
| | Subtest 2 | 19.50 | 19.36 | 19.41 | 19.36 |
| | Subtest 3 | 19.00 | 18.84 | 18.88 | 18.81 |
| | Subtest 4 | 19.00 | 18.82 | 18.87 | 18.88 |

Table 20: Conducted power measurement results of UMTS Band V

Note: 1) The conducted power of UMTS Band V is measured with RMS detector.
2) The bolded 12.2kbps RMC mode was selected for SAR testing(the primary mode).
3) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

### 7.1.3 Conducted power measurements of CDMA BC0(Second Antenna)

**Full Power:**

| CDMA BC0 | | Average Power (dBm) | | | |
|---|---|---|---|---|---|
| | | Tune-up | 1013CH | 384CH | 777CH |
| RC1 | SO55 (Loopback) | 24.20 | 23.51 | 23.50 | 23.70 |
| RC3 | SO55 (Loopback) | 24.20 | 23.42 | 23.45 | 23.65 |
| | TDSO32 (FCH+SCH) | 24.20 | 23.49 | 23.60 | 23.62 |
| | TDSO32 (FCH) | 24.20 | 23.50 | 23.61 | 23.60 |
| 1x Advanced | SO75 | 24.20 | 23.48 | 23.50 | 23.52 |
| Rev 0 | FTAP/RTAP | 24.20 | 23.30 | 23.40 | 23.65 |
| Rev A | FETAP/RETAP | 24.20 | 23.10 | 23.25 | 23.45 |

Table 21: Conducted power measurement results of CDMA BC0

Note: 1) The conducted power of CDMA BC0 is measured with RMS detector.
2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

**Second antenna(Voice) + WiFi Station +Sensor on：**

| CDMA BC0 | | Average Power (dBm) | | | |
|---|---|---|---|---|---|
| | | Tune-up | 1013CH | 384CH | 777CH |
| RC1 | SO55 (Loopback) | 21.00 | 19.52 | 19.56 | 19.55 |
| RC3 | SO55 (Loopback) | 21.00 | 19.51 | 19.49 | 19.65 |
| | TDSO32 (FCH+SCH) | 21.00 | 19.54 | 19.44 | 19.47 |
| | TDSO32 (FCH) | 21.00 | 19.51 | 19.45 | 19.45 |
| 1x Advanced | SO75 | 21.00 | 19.51 | 19.48 | 19.42 |

Table 22: Conducted power measurement results of CDMA BC0

Note: 1) The conducted power of CDMA BC0 is measured with RMS detector.
2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

**Second antenna(Voice) + WiFi Station +Sensor off：**

| CDMA BC0 | | Average Power (dBm) | | | |
|---|---|---|---|---|---|
| | | Tune-up | 1013CH | 384CH | 777CH |
| RC1 | SO55 (Loopback) | 22.00 | 20.52 | 20.55 | 20.66 |
| RC3 | SO55 (Loopback) | 22.00 | 20.53 | 20.47 | 20.62 |
| | TDSO32 (FCH+SCH) | 22.00 | 20.51 | 20.49 | 20.61 |
| | TDSO32 (FCH) | 22.00 | 20.57 | 20.51 | 20.65 |
| 1x Advanced | SO75 | 22.00 | 20.54 | 20.49 | 20.61 |

Table 23: Conducted power measurement results of CDMA BC0

Note: 1) The conducted power of CDMA BC0 is measured with RMS detector.
2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

**Second antenna + WiFi Hotspot:**

| CDMA BC0 | | Average Power (dBm) | | | |
|---|---|---|---|---|---|
| | | Tune-up | 1013CH | 384CH | 777CH |
| RC1 | SO55 (Loopback) | 21.00 | 20.25 | 20.22 | 20.26 |
| RC3 | SO55 (Loopback) | 21.00 | 20.17 | 20.18 | 20.21 |
| | TDSO32 (FCH+SCH) | 21.00 | 20.12 | 20.18 | 20.22 |
| | TDSO32 (FCH) | 21.00 | 20.08 | 20.20 | 20.19 |
| 1x Advanced | SO75 | 21.00 | 20.22 | 20.24 | 20.26 |
| Rev 0 | FTAP/RTAP | 21.00 | 20.15 | 20.17 | 20.19 |
| Rev A | FETAP/RETAP | 21.00 | 20.22 | 20.23 | 20.29 |

Table 24: Conducted power measurement results of CDMA BC0

Note: 1) The conducted power of CDMA BC0 is measured with RMS detector.
2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

### 7.1.4 Conducted power measurements of CDMA BC10(Second Antenna)

**Full Power:**

| CDMA BC10 | | Average Power (dBm) | | | |
|---|---|---|---|---|---|
| | | Tune-up | 450CH | 565CH | 670CH |
| RC1 | SO55 (Loopback) | 24.20 | 23.47 | 23.52 | 23.52 |
| RC3 | SO55 (Loopback) | 24.20 | 23.45 | 23.49 | 23.49 |
| | TDSO32 (FCH+SCH) | 24.20 | 23.52 | 23.50 | 23.48 |
| | TDSO32 (FCH) | 24.20 | 23.50 | 23.51 | 23.49 |
| 1x Advanced | SO75 | 24.20 | 23.48 | 23.47 | 23.48 |
| Rev 0 | FTAP/RTAP | 24.20 | 23.40 | 23.50 | 23.38 |
| Rev A | FETAP/RETAP | 24.20 | 23.19 | 23.20 | 23.21 |

Table 25: Conducted power measurement results of CDMA BC10

Note: 1) The conducted power of CDMA BC10 is measured with RMS detector.
2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

**Second antenna(Voice) + WiFi Station +Sensor on：**

| CDMA BC10 | | Average Power (dBm) | | | |
|---|---|---|---|---|---|
| | | Tune-up | 450CH | 565CH | 670CH |
| RC1 | SO55 (Loopback) | 21.00 | 19.34 | 19.48 | 19.45 |
| RC3 | SO55 (Loopback) | 21.00 | 19.36 | 19.58 | 19.43 |
| | TDSO32 (FCH+SCH) | 21.00 | 19.31 | 19.54 | 19.47 |
| | TDSO32 (FCH) | 21.00 | 19.28 | 19.51 | 19.44 |
| 1x Advanced | SO75 | 21.00 | 19.40 | 19.46 | 19.49 |

Table 26: Conducted power measurement results of CDMA BC10

Note: 1) The conducted power of CDMA BC 10 is measured with RMS detector.
2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

**Second antenna(Voice) + WiFi Station +Sensor off：**

| CDMA BC10 | | Average Power (dBm) | | | |
|---|---|---|---|---|---|
| | | Tune-up | 450CH | 565CH | 670CH |
| RC1 | SO55 (Loopback) | 22.00 | 20.39 | 20.51 | 20.49 |
| RC3 | SO55 (Loopback) | 22.00 | 20.45 | 20.66 | 20.47 |
| | TDSO32 (FCH+SCH) | 22.00 | 20.41 | 20.61 | 20.51 |
| | TDSO32 (FCH) | 22.00 | 20.36 | 20.39 | 20.56 |
| 1x Advanced | SO75 | 22.00 | 20.61 | 20.55 | 20.67 |

Table 27: Conducted power measurement results of CDMA BC10

Note: 1) The conducted power of CDMA BC10 is measured with RMS detector.
2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

**Second antenna + WiFi Hotspot:**

| CDMA BC10 | | Average Power (dBm) | | | |
|---|---|---|---|---|---|
| | | Tune-up | 450CH | 565CH | 670CH |
| RC1 | SO55 (Loopback) | 21.00 | 20.12 | 20.16 | 20.21 |
| RC3 | SO55 (Loopback) | 21.00 | 20.15 | 20.18 | 20.20 |
| | TDSO32 (FCH+SCH) | 21.00 | 20.13 | 20.17 | 20.22 |
| | TDSO32 (FCH) | 21.00 | 20.11 | 20.18 | 20.20 |
| 1x Advanced | SO75 | 21.00 | 20.13 | 20.19 | 20.22 |
| Rev 0 | FTAP/RTAP | 21.00 | 20.26 | 20.25 | 20.28 |
| Rev A | FETAP/RETAP | 21.00 | 20.27 | 20.27 | 20.29 |

Table 28: Conducted power measurement results of CDMA BC10

Note: 1) The conducted power of CDMA BC10 is measured with RMS detector.
2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

### 7.1.5 Conducted power measurements of LTE Band V(Second Antenna)

**Full Power:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 20407CH | 20525CH | 20643CH |
| 1.4MHz | QPSK | 1 | 0 | 22.70 | 21.68 | 21.57 | 21.68 |
| | | 1 | 3 | 22.70 | 21.67 | 21.59 | 21.63 |
| | | 1 | 5 | 22.70 | 21.50 | 21.57 | 21.62 |
| | | 3 | 0 | 22.70 | 21.49 | 21.41 | 21.56 |
| | | 3 | 2 | 22.70 | 21.54 | 21.51 | 21.64 |
| | | 3 | 3 | 22.70 | 21.43 | 21.47 | 21.54 |
| | | 6 | 0 | 21.70 | 20.56 | 20.44 | 20.54 |
| | 16QAM | 1 | 0 | 21.70 | 20.71 | 20.66 | 20.79 |
| | | 1 | 3 | 21.70 | 20.99 | 20.72 | 20.90 |
| | | 1 | 5 | 21.70 | 20.69 | 20.82 | 20.82 |
| | | 3 | 0 | 21.70 | 20.58 | 20.55 | 20.65 |
| | | 3 | 2 | 21.70 | 20.60 | 20.64 | 20.65 |
| | | 3 | 3 | 21.70 | 20.50 | 20.56 | 20.63 |
| | | 6 | 0 | 20.70 | 19.69 | 19.57 | 19.75 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 20415CH | 20525CH | 20635CH |
| 3MHz | QPSK | 1 | 0 | 22.70 | 21.56 | 21.42 | 21.54 |
| | | 1 | 7 | 22.70 | 21.54 | 21.46 | 21.62 |
| | | 1 | 14 | 22.70 | 21.45 | 21.71 | 21.59 |
| | | 8 | 0 | 21.70 | 20.49 | 20.49 | 20.55 |
| | | 8 | 4 | 21.70 | 20.60 | 20.55 | 20.69 |
| | | 8 | 7 | 21.70 | 20.55 | 20.48 | 20.60 |
| | | 15 | 0 | 21.70 | 20.51 | 20.50 | 20.58 |
| | 16QAM | 1 | 0 | 21.70 | 20.91 | 20.83 | 21.05 |
| | | 1 | 7 | 21.70 | 20.89 | 21.01 | 21.00 |
| | | 1 | 14 | 21.70 | 20.84 | 20.87 | 21.04 |
| | | 8 | 0 | 20.70 | 19.63 | 19.52 | 19.62 |
| | | 8 | 4 | 20.70 | 19.69 | 19.59 | 19.76 |
| | | 8 | 7 | 20.70 | 19.63 | 19.55 | 19.75 |
| | | 15 | 0 | 20.70 | 19.59 | 19.51 | 19.63 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 20425CH | 20525CH | 20625CH |
| 5MHz | QPSK | 1 | 0 | 22.70 | 21.73 | 21.60 | 21.58 |
| | | 1 | 13 | 22.70 | 21.65 | 21.67 | 21.73 |
| | | 1 | 24 | 22.70 | 21.54 | 21.72 | 21.66 |
| | | 12 | 0 | 21.70 | 20.50 | 20.43 | 20.52 |
| | | 12 | 6 | 21.70 | 20.47 | 20.54 | 20.61 |
| | | 12 | 13 | 21.70 | 20.45 | 20.44 | 20.57 |
| | | 25 | 0 | 21.70 | 20.54 | 20.44 | 20.54 |
| | 16QAM | 1 | 0 | 21.70 | 20.79 | 20.77 | 20.81 |
| | | 1 | 13 | 21.70 | 20.79 | 20.79 | 20.91 |
| | | 1 | 24 | 21.70 | 20.79 | 20.73 | 20.85 |
| | | 12 | 0 | 20.70 | 19.64 | 19.52 | 19.62 |
| | | 12 | 6 | 20.70 | 19.58 | 19.61 | 19.71 |
| | | 12 | 13 | 20.70 | 19.58 | 19.54 | 19.75 |
| | | 25 | 0 | 20.70 | 19.56 | 19.44 | 19.60 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 20450CH | 20525CH | 20600CH |
| 10MHz | QPSK | 1 | 0 | 22.70 | **21.76** | 21.54 | 21.58 |
| | | 1 | 25 | 22.70 | 21.57 | 21.52 | 21.55 |
| | | 1 | 49 | 22.70 | 21.41 | **21.76** | **21.66** |
| | | 25 | 0 | 21.70 | **20.58** | **20.55** | 20.53 |
| | | 25 | 13 | 21.70 | 20.45 | 20.50 | **20.55** |
| | | 25 | 25 | 21.70 | 20.39 | 20.49 | 20.54 |
| | | 50 | 0 | 21.70 | 20.54 | **20.58** | 20.55 |
| | 16QAM | 1 | 0 | 21.70 | 20.69 | 20.70 | 20.74 |
| | | 1 | 25 | 21.70 | 20.38 | 20.50 | 20.47 |
| | | 1 | 49 | 21.70 | 20.56 | 20.65 | 20.71 |
| | | 25 | 0 | 20.70 | 19.64 | 19.57 | 19.50 |
| | | 25 | 13 | 20.70 | 19.56 | 19.53 | 19.58 |
| | | 25 | 25 | 20.70 | 19.43 | 19.44 | 19.59 |
| | | 50 | 0 | 20.70 | 19.54 | 19.53 | 19.49 |

Table 29: Conducted power measurement results of LTE Band V

**Second antenna(Voice) + WiFi station + Sensor on:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 20407CH | 20525CH | 20643CH |
| 1.4MHz | QPSK | 1 | 0 | 21.00 | 19.82 | 19.68 | 19.84 |
| | | 1 | 3 | 21.00 | 19.86 | 19.75 | 19.91 |
| | | 1 | 5 | 21.00 | 19.70 | 19.68 | 19.74 |
| | | 3 | 0 | 21.00 | 19.54 | 19.55 | 19.59 |
| | | 3 | 2 | 21.00 | 19.63 | 19.60 | 19.67 |
| | | 3 | 3 | 21.00 | 19.51 | 19.56 | 19.60 |
| | | 6 | 0 | 21.00 | 19.58 | 19.70 | 19.41 |
| | 16QAM | 1 | 0 | 21.00 | 19.71 | 19.56 | 19.71 |
| | | 1 | 3 | 21.00 | 19.71 | 19.62 | 19.94 |
| | | 1 | 5 | 21.00 | 19.78 | 19.56 | 19.81 |
| | | 3 | 0 | 21.00 | 19.93 | 19.64 | 19.67 |
| | | 3 | 2 | 21.00 | 20.03 | 19.88 | 19.74 |
| | | 3 | 3 | 21.00 | 19.59 | 19.55 | 19.55 |
| | | 6 | 0 | 21.00 | 19.97 | 19.50 | 19.98 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 20415CH | 20525CH | 20635CH |
| 3MHz | QPSK | 1 | 0 | 21.00 | 19.58 | 19.49 | 19.58 |
| | | 1 | 7 | 21.00 | 19.64 | 19.59 | 19.64 |
| | | 1 | 14 | 21.00 | 19.61 | 19.62 | 19.62 |
| | | 8 | 0 | 21.00 | 19.70 | 19.64 | 19.71 |
| | | 8 | 4 | 21.00 | 19.58 | 19.39 | 19.66 |
| | | 8 | 7 | 21.00 | 19.69 | 19.51 | 19.80 |
| | | 15 | 0 | 21.00 | 19.57 | 19.57 | 19.50 |
| | 16QAM | 1 | 0 | 21.00 | 19.45 | 19.66 | 19.76 |
| | | 1 | 7 | 21.00 | 19.45 | 19.68 | 19.50 |
| | | 1 | 14 | 21.00 | 19.75 | 19.81 | 19.74 |
| | | 8 | 0 | 21.00 | 19.59 | 19.38 | 19.63 |
| | | 8 | 4 | 21.00 | 19.64 | 19.55 | 19.57 |
| | | 8 | 7 | 21.00 | 19.63 | 19.82 | 19.70 |
| | | 15 | 0 | 21.00 | 19.47 | 19.32 | 19.54 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 20425CH | 20525CH | 20625CH |
| 5MHz | QPSK | 1 | 0 | 21.00 | 19.86 | 19.76 | 19.67 |
| | | 1 | 13 | 21.00 | 19.81 | 19.76 | 19.87 |
| | | 1 | 24 | 21.00 | 19.71 | 19.67 | 19.76 |
| | | 12 | 0 | 21.00 | 19.80 | 19.71 | 19.62 |
| | | 12 | 6 | 21.00 | 19.66 | 19.80 | 19.80 |
| | | 12 | 13 | 21.00 | 19.70 | 19.62 | 19.69 |
| | | 25 | 0 | 21.00 | 19.77 | 19.82 | 19.71 |
| | 16QAM | 1 | 0 | 21.00 | 19.96 | 19.77 | 20.03 |
| | | 1 | 13 | 21.00 | 19.59 | 19.65 | 19.95 |
| | | 1 | 24 | 21.00 | 19.72 | 19.56 | 19.78 |
| | | 12 | 0 | 21.00 | 19.76 | 19.69 | 19.54 |
| | | 12 | 6 | 21.00 | 19.89 | 19.91 | 19.89 |
| | | 12 | 13 | 21.00 | 19.70 | 19.54 | 19.67 |
| | | 25 | 0 | 21.00 | 19.65 | 19.90 | 19.57 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 20450CH | 20525CH | 20600CH |
| 10MHz | QPSK | 1 | 0 | 21.00 | 19.85 | 19.66 | 19.71 |
| | | 1 | 25 | 21.00 | 19.60 | 19.62 | 19.58 |
| | | 1 | 49 | 21.00 | 19.64 | 19.75 | 19.97 |
| | | 25 | 0 | 21.00 | 20.00 | 19.67 | 19.63 |
| | | 25 | 13 | 21.00 | 19.67 | 19.75 | 19.52 |
| | | 25 | 25 | 21.00 | 19.53 | 19.79 | 19.88 |
| | | 50 | 0 | 21.00 | 19.91 | 19.68 | 19.78 |
| | 16QAM | 1 | 0 | 21.00 | 19.68 | 19.46 | 19.91 |
| | | 1 | 25 | 21.00 | 19.49 | 19.42 | 19.53 |
| | | 1 | 49 | 21.00 | 19.79 | 19.70 | 19.90 |
| | | 25 | 0 | 21.00 | 19.66 | 19.74 | 19.62 |
| | | 25 | 13 | 21.00 | 19.53 | 19.54 | 19.41 |
| | | 25 | 25 | 21.00 | 19.76 | 19.57 | 20.07 |
| | | 50 | 0 | 21.00 | 19.96 | 19.52 | 19.69 |

Table 30: Conducted power measurement results of LTE Band V

**Second antenna(Voice) + WiFi station + Sensor off:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 20407CH | 20525CH | 20643CH |
| 1.4MHz | QPSK | 1 | 0 | 22.00 | 21.04 | 20.93 | 21.02 |
| | | 1 | 3 | 22.00 | 20.99 | 20.99 | 21.04 |
| | | 1 | 5 | 22.00 | 20.93 | 20.92 | 20.92 |
| | | 3 | 0 | 22.00 | 20.81 | 20.81 | 20.87 |
| | | 3 | 2 | 22.00 | 20.90 | 20.85 | 20.95 |
| | | 3 | 3 | 22.00 | 20.77 | 20.83 | 20.85 |
| | | 6 | 0 | 21.00 | 19.91 | 19.77 | 19.87 |
| | 16QAM | 1 | 0 | 21.00 | 20.12 | 19.88 | 20.06 |
| | | 1 | 3 | 21.00 | 20.35 | 20.22 | 20.07 |
| | | 1 | 5 | 21.00 | 20.05 | 20.16 | 19.97 |
| | | 3 | 0 | 21.00 | 19.96 | 19.83 | 19.94 |
| | | 3 | 2 | 21.00 | 20.02 | 19.95 | 20.02 |
| | | 3 | 3 | 21.00 | 19.87 | 19.76 | 19.95 |
| | | 6 | 0 | 20.00 | 19.01 | 18.94 | 18.99 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 20415CH | 20525CH | 20635CH |
| 3MHz | QPSK | 1 | 0 | 22.00 | 20.86 | 20.73 | 20.80 |
| | | 1 | 7 | 22.00 | 20.85 | 20.96 | 20.89 |
| | | 1 | 14 | 22.00 | 20.84 | 20.82 | 20.88 |
| | | 8 | 0 | 21.00 | 19.91 | 19.82 | 19.85 |
| | | 8 | 4 | 21.00 | 19.89 | 19.86 | 19.96 |
| | | 8 | 7 | 21.00 | 19.91 | 19.78 | 19.90 |
| | | 15 | 0 | 21.00 | 19.81 | 19.79 | 19.95 |
| | 16QAM | 1 | 0 | 21.00 | 20.37 | 20.13 | 20.33 |
| | | 1 | 7 | 21.00 | 20.33 | 20.12 | 20.39 |
| | | 1 | 14 | 21.00 | 20.44 | 20.29 | 20.30 |
| | | 8 | 0 | 20.00 | 18.97 | 18.98 | 18.94 |
| | | 8 | 4 | 20.00 | 19.00 | 18.93 | 19.03 |
| | | 8 | 7 | 20.00 | 19.03 | 18.94 | 18.99 |
| | | 15 | 0 | 20.00 | 18.90 | 18.88 | 18.98 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 20425CH | 20525CH | 20625CH |
| 5MHz | QPSK | 1 | 0 | 22.00 | 20.90 | 20.88 | 20.79 |
| | | 1 | 13 | 22.00 | 21.01 | 20.99 | 21.00 |
| | | 1 | 24 | 22.00 | 20.89 | 20.87 | 21.02 |
| | | 12 | 0 | 21.00 | 19.78 | 19.66 | 19.82 |
| | | 12 | 6 | 21.00 | 19.88 | 19.80 | 19.91 |
| | | 12 | 13 | 21.00 | 19.83 | 19.72 | 19.89 |
| | | 25 | 0 | 21.00 | 19.88 | 19.81 | 19.87 |
| | 16QAM | 1 | 0 | 21.00 | 20.17 | 20.16 | 20.10 |
| | | 1 | 13 | 21.00 | 20.31 | 20.15 | 20.29 |
| | | 1 | 24 | 21.00 | 20.22 | 19.99 | 20.22 |
| | | 12 | 0 | 20.00 | 19.01 | 18.97 | 18.88 |
| | | 12 | 6 | 20.00 | 19.03 | 18.90 | 19.00 |
| | | 12 | 13 | 20.00 | 19.10 | 19.00 | 19.03 |
| | | 25 | 0 | 20.00 | 18.87 | 18.88 | 18.87 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 20450CH | 20525CH | 20600CH |
| 10MHz | QPSK | 1 | 0 | 22.00 | 21.07 | 20.94 | 20.92 |
| | | 1 | 25 | 22.00 | 20.86 | 20.93 | 20.67 |
| | | 1 | 49 | 22.00 | 20.98 | 20.72 | 21.03 |
| | | 25 | 0 | 21.00 | 19.95 | 19.89 | 19.97 |
| | | 25 | 13 | 21.00 | 19.94 | 19.83 | 19.75 |
| | | 25 | 25 | 21.00 | 19.91 | 19.75 | 19.87 |
| | | 50 | 0 | 21.00 | 19.95 | 19.94 | 19.85 |
| | 16QAM | 1 | 0 | 21.00 | 20.13 | 20.12 | 20.11 |
| | | 1 | 25 | 21.00 | 19.43 | 19.63 | 19.56 |
| | | 1 | 49 | 21.00 | 20.00 | 19.83 | 20.11 |
| | | 25 | 0 | 20.00 | 18.98 | 18.92 | 18.87 |
| | | 25 | 13 | 20.00 | 19.03 | 18.92 | 18.84 |
| | | 25 | 25 | 20.00 | 18.83 | 18.81 | 18.90 |
| | | 50 | 0 | 20.00 | 18.89 | 18.91 | 18.90 |

Table 31: Conducted power measurement results of LTE Band V

**Second antenna + WiFi Hotspot:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 20407CH | 20525CH | 20643CH |
| 1.4MHz | QPSK | 1 | 0 | 21.00 | 19.84 | 19.72 | 19.88 |
| | | 1 | 3 | 21.00 | 19.98 | 19.76 | 19.94 |
| | | 1 | 5 | 21.00 | 19.77 | 19.75 | 19.84 |
| | | 3 | 0 | 21.00 | 19.76 | 19.55 | 19.73 |
| | | 3 | 2 | 21.00 | 19.76 | 19.63 | 19.81 |
| | | 3 | 3 | 21.00 | 19.64 | 19.58 | 19.74 |
| | | 6 | 0 | 21.00 | 19.79 | 19.68 | 19.76 |
| | 16QAM | 1 | 0 | 21.00 | 19.87 | 20.01 | 20.02 |
| | | 1 | 3 | 21.00 | 19.94 | 20.12 | 19.94 |
| | | 1 | 5 | 21.00 | 20.16 | 20.18 | 19.94 |
| | | 3 | 0 | 21.00 | 19.81 | 19.77 | 19.82 |
| | | 3 | 2 | 21.00 | 19.95 | 19.82 | 19.92 |
| | | 3 | 3 | 21.00 | 19.75 | 19.83 | 19.78 |
| | | 6 | 0 | 21.00 | 19.42 | 19.36 | 19.39 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 20415CH | 20525CH | 20635CH |
| 3MHz | QPSK | 1 | 0 | 21.00 | 19.63 | 19.51 | 19.50 |
| | | 1 | 7 | 21.00 | 19.79 | 19.66 | 19.83 |
| | | 1 | 14 | 21.00 | 19.62 | 19.63 | 19.69 |
| | | 8 | 0 | 21.00 | 19.74 | 19.80 | 19.76 |
| | | 8 | 4 | 21.00 | 19.83 | 19.77 | 19.80 |
| | | 8 | 7 | 21.00 | 19.81 | 19.75 | 19.77 |
| | | 15 | 0 | 21.00 | 19.79 | 19.71 | 19.82 |
| | 16QAM | 1 | 0 | 21.00 | 20.21 | 20.17 | 20.23 |
| | | 1 | 7 | 21.00 | 20.34 | 20.33 | 20.32 |
| | | 1 | 14 | 21.00 | 20.31 | 20.20 | 20.24 |
| | | 8 | 0 | 21.00 | 19.40 | 19.43 | 19.41 |
| | | 8 | 4 | 21.00 | 19.47 | 19.39 | 19.40 |
| | | 8 | 7 | 21.00 | 19.41 | 19.37 | 19.41 |
| | | 15 | 0 | 21.00 | 19.33 | 19.29 | 19.36 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 20425CH | 20525CH | 20625CH |
| 5MHz | QPSK | 1 | 0 | 21.00 | 19.81 | 19.73 | 19.65 |
| | | 1 | 13 | 21.00 | 19.89 | 19.84 | 19.75 |
| | | 1 | 24 | 21.00 | 19.76 | 19.68 | 19.77 |
| | | 12 | 0 | 21.00 | 19.74 | 19.70 | 19.65 |
| | | 12 | 6 | 21.00 | 19.83 | 19.75 | 19.73 |
| | | 12 | 13 | 21.00 | 19.75 | 19.68 | 19.66 |
| | | 25 | 0 | 21.00 | 19.81 | 19.72 | 19.69 |
| | 16QAM | 1 | 0 | 21.00 | 20.14 | 20.10 | 20.03 |
| | | 1 | 13 | 21.00 | 20.23 | 20.13 | 20.13 |
| | | 1 | 24 | 21.00 | 20.21 | 19.93 | 20.02 |
| | | 12 | 0 | 21.00 | 19.45 | 19.43 | 19.33 |
| | | 12 | 6 | 21.00 | 19.47 | 19.39 | 19.35 |
| | | 12 | 13 | 21.00 | 19.45 | 19.31 | 19.33 |
| | | 25 | 0 | 21.00 | 19.33 | 19.23 | 19.22 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 20450CH | 20525CH | 20600CH |
| 10MHz | QPSK | 1 | 0 | 21.00 | **19.96** | **19.91** | 19.71 |
| | | 1 | 25 | 21.00 | 19.87 | 19.67 | 19.58 |
| | | 1 | 49 | 21.00 | 19.75 | 19.90 | **19.93** |
| | | 25 | 0 | 21.00 | **19.85** | **19.83** | 19.81 |
| | | 25 | 13 | 21.00 | 19.79 | 19.70 | **19.84** |
| | | 25 | 25 | 21.00 | 19.77 | 19.76 | 19.79 |
| | | 50 | 0 | 21.00 | 19.90 | 19.75 | 19.84 |
| | 16QAM | 1 | 0 | 21.00 | 19.95 | 19.96 | 19.97 |
| | | 1 | 25 | 21.00 | 19.75 | 19.65 | 19.59 |
| | | 1 | 49 | 21.00 | 20.06 | 20.03 | 19.88 |
| | | 25 | 0 | 21.00 | 19.39 | 19.31 | 19.34 |
| | | 25 | 13 | 21.00 | 19.38 | 19.32 | 19.39 |
| | | 25 | 25 | 21.00 | 19.32 | 19.30 | 19.33 |
| | | 50 | 0 | 21.00 | 19.37 | 19.25 | 19.32 |

Table 32: Conducted power measurement results of LTE Band V

### 7.1.6 Conducted power measurements of LTE Band XII(Second Antenna)

**Full Power:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 23107CH | 23095CH | 23173CH |
| 1.4MHz | QPSK | 1 | 0 | 22.70 | 21.74 | 21.71 | 21.84 |
| | | 1 | 3 | 22.70 | 21.83 | 21.72 | 21.84 |
| | | 1 | 5 | 22.70 | 21.74 | 21.74 | 21.66 |
| | | 3 | 0 | 22.70 | 21.60 | 21.61 | 21.71 |
| | | 3 | 2 | 22.70 | 21.71 | 21.68 | 21.82 |
| | | 3 | 3 | 22.70 | 21.65 | 21.61 | 21.71 |
| | | 6 | 0 | 21.70 | 20.75 | 20.68 | 20.65 |
| | 16QAM | 1 | 0 | 21.70 | 20.90 | 20.72 | 21.07 |
| | | 1 | 3 | 21.70 | 20.93 | 21.00 | 21.13 |
| | | 1 | 5 | 21.70 | 21.03 | 20.82 | 21.02 |
| | | 3 | 0 | 21.70 | 20.72 | 20.70 | 20.77 |
| | | 3 | 2 | 21.70 | 20.85 | 20.74 | 20.84 |
| | | 3 | 3 | 21.70 | 20.77 | 20.71 | 20.78 |
| | | 6 | 0 | 20.70 | 19.91 | 19.81 | 19.82 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 23025CH | 23095CH | 23165CH |
| 3MHz | QPSK | 1 | 0 | 22.70 | 21.71 | 21.62 | 22.00 |
| | | 1 | 7 | 22.70 | 21.84 | 21.64 | 21.92 |
| | | 1 | 14 | 22.70 | 21.95 | 21.77 | 21.94 |
| | | 8 | 0 | 21.70 | 20.82 | 20.71 | 20.78 |
| | | 8 | 4 | 21.70 | 20.81 | 20.74 | 20.85 |
| | | 8 | 7 | 21.70 | 20.80 | 20.71 | 20.72 |
| | | 15 | 0 | 21.70 | 20.84 | 20.71 | 20.73 |
| | 16QAM | 1 | 0 | 21.70 | 20.99 | 21.00 | 20.85 |
| | | 1 | 7 | 21.70 | 21.09 | 21.02 | 20.94 |
| | | 1 | 14 | 21.70 | 21.01 | 20.96 | 20.82 |
| | | 8 | 0 | 20.70 | 19.86 | 19.77 | 19.73 |
| | | 8 | 4 | 20.70 | 19.86 | 19.83 | 19.86 |
| | | 8 | 7 | 20.70 | 19.83 | 19.80 | 19.76 |
| | | 15 | 0 | 20.70 | 19.83 | 19.76 | 19.83 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 23035CH | 23095CH | 23155CH |
| 5MHz | QPSK | 1 | 0 | 22.70 | 21.87 | 21.72 | 21.99 |
| | | 1 | 13 | 22.70 | 21.96 | 21.84 | 21.94 |
| | | 1 | 24 | 22.70 | 21.90 | 21.84 | 21.88 |
| | | 12 | 0 | 21.70 | 20.69 | 20.70 | 20.84 |
| | | 12 | 6 | 21.70 | 20.89 | 20.77 | 20.81 |
| | | 12 | 13 | 21.70 | 20.82 | 20.71 | 20.73 |
| | | 25 | 0 | 21.70 | 20.81 | 20.73 | 20.76 |
| | 16QAM | 1 | 0 | 21.70 | 20.86 | 20.87 | 20.96 |
| | | 1 | 13 | 21.70 | 21.01 | 21.02 | 20.89 |
| | | 1 | 24 | 21.70 | 20.92 | 20.87 | 20.77 |
| | | 12 | 0 | 20.70 | 19.77 | 19.80 | 19.89 |
| | | 12 | 6 | 20.70 | 19.95 | 19.87 | 19.83 |
| | | 12 | 13 | 20.70 | 19.91 | 19.80 | 19.82 |
| | | 25 | 0 | 20.70 | 19.80 | 19.71 | 19.76 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 23060CH | 23095CH | 23130CH |
| 10MHz | QPSK | 1 | 0 | 22.70 | 21.75 | 21.76 | 21.74 |
| | | 1 | 25 | 22.70 | **21.76** | 21.69 | 21.88 |
| | | 1 | 49 | 22.70 | 21.68 | **22.05** | **22.01** |
| | | 25 | 0 | 21.70 | **20.80** | 20.72 | 20.74 |
| | | 25 | 13 | 21.70 | 20.74 | 20.72 | 20.82 |
| | | 25 | 25 | 21.70 | 20.71 | **20.84** | **20.83** |
| | | 50 | 0 | 21.70 | 20.74 | **20.77** | 20.72 |
| | 16QAM | 1 | 0 | 21.70 | 20.93 | 20.93 | 20.85 |
| | | 1 | 25 | 21.70 | 20.83 | 20.59 | 20.87 |
| | | 1 | 49 | 21.70 | 21.08 | 21.06 | 20.83 |
| | | 25 | 0 | 20.70 | 19.84 | 19.76 | 19.74 |
| | | 25 | 13 | 20.70 | 19.79 | 19.80 | 19.87 |
| | | 25 | 25 | 20.70 | 19.77 | 19.86 | 19.83 |
| | | 50 | 0 | 20.70 | 19.67 | 19.75 | 19.83 |

Table 33: Conducted power measurement results of LTE Band XII

**Second antenna(Voice) + WiFi station + Sensor on:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 23107CH | 23095CH | 23173CH |
| 1.4MHz | QPSK | 1 | 0 | 21.00 | 19.58 | 19.61 | 19.68 |
| | | 1 | 3 | 21.00 | 19.68 | 19.64 | 19.81 |
| | | 1 | 5 | 21.00 | 19.54 | 19.57 | 19.69 |
| | | 3 | 0 | 21.00 | 19.54 | 19.52 | 19.63 |
| | | 3 | 2 | 21.00 | 19.46 | 19.42 | 19.74 |
| | | 3 | 3 | 21.00 | 19.41 | 19.46 | 19.63 |
| | | 6 | 0 | 21.00 | 19.59 | 19.72 | 19.65 |
| | 16QAM | 1 | 0 | 21.00 | 19.52 | 19.55 | 19.73 |
| | | 1 | 3 | 21.00 | 19.51 | 19.73 | 19.53 |
| | | 1 | 5 | 21.00 | 19.64 | 19.75 | 19.76 |
| | | 3 | 0 | 21.00 | 19.65 | 19.61 | 19.49 |
| | | 3 | 2 | 21.00 | 19.56 | 19.66 | 19.79 |
| | | 3 | 3 | 21.00 | 19.56 | 19.57 | 19.73 |
| | | 6 | 0 | 21.00 | 19.47 | 19.75 | 19.75 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 23025CH | 23095CH | 23165CH |
| 3MHz | QPSK | 1 | 0 | 21.00 | 19.52 | 19.48 | 19.88 |
| | | 1 | 7 | 21.00 | 19.64 | 19.52 | 19.90 |
| | | 1 | 14 | 21.00 | 19.71 | 19.66 | 19.98 |
| | | 8 | 0 | 21.00 | 19.56 | 19.55 | 20.08 |
| | | 8 | 4 | 21.00 | 19.50 | 19.65 | 19.94 |
| | | 8 | 7 | 21.00 | 19.55 | 19.53 | 19.80 |
| | | 15 | 0 | 21.00 | 19.36 | 19.55 | 19.82 |
| | 16QAM | 1 | 0 | 21.00 | 19.37 | 19.36 | 19.86 |
| | | 1 | 7 | 21.00 | 19.74 | 19.54 | 20.03 |
| | | 1 | 14 | 21.00 | 19.66 | 19.77 | 19.84 |
| | | 8 | 0 | 21.00 | 19.55 | 19.67 | 19.70 |
| | | 8 | 4 | 21.00 | 19.69 | 19.43 | 19.71 |
| | | 8 | 7 | 21.00 | 19.74 | 19.85 | 20.10 |
| | | 15 | 0 | 21.00 | 19.65 | 19.66 | 19.90 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 23035CH | 23095CH | 23155CH |
| 5MHz | QPSK | 1 | 0 | 21.00 | 19.66 | 19.58 | 19.87 |
| | | 1 | 13 | 21.00 | 19.76 | 19.59 | 19.90 |
| | | 1 | 24 | 21.00 | 19.78 | 19.70 | 19.89 |
| | | 12 | 0 | 21.00 | 19.58 | 19.66 | 19.71 |
| | | 12 | 6 | 21.00 | 19.82 | 19.76 | 20.09 |
| | | 12 | 13 | 21.00 | 19.90 | 19.60 | 19.79 |
| | | 25 | 0 | 21.00 | 19.63 | 19.45 | 19.81 |
| | 16QAM | 1 | 0 | 21.00 | 19.78 | 19.56 | 19.96 |
| | | 1 | 13 | 21.00 | 19.78 | 19.55 | 20.09 |
| | | 1 | 24 | 21.00 | 19.92 | 19.83 | 20.05 |
| | | 12 | 0 | 21.00 | 19.63 | 19.61 | 19.79 |
| | | 12 | 6 | 21.00 | 19.70 | 19.62 | 20.10 |
| | | 12 | 13 | 21.00 | 19.71 | 19.69 | 19.95 |
| | | 25 | 0 | 21.00 | 19.79 | 19.40 | 19.68 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 23060CH | 23095CH | 23130CH |
| 10MHz | QPSK | 1 | 0 | 21.00 | 19.75 | 19.86 | 19.73 |
| | | 1 | 25 | 21.00 | 19.66 | 19.51 | 19.72 |
| | | 1 | 49 | 21.00 | 19.62 | 19.85 | 19.99 |
| | | 25 | 0 | 21.00 | 19.71 | 19.78 | 19.61 |
| | | 25 | 13 | 21.00 | 19.61 | 19.43 | 19.74 |
| | | 25 | 25 | 21.00 | 19.64 | 19.84 | 20.18 |
| | | 50 | 0 | 21.00 | 19.90 | 19.92 | 19.73 |
| | 16QAM | 1 | 0 | 21.00 | 19.87 | 19.72 | 19.73 |
| | | 1 | 25 | 21.00 | 19.78 | 19.61 | 19.82 |
| | | 1 | 49 | 21.00 | 19.46 | 19.89 | 19.83 |
| | | 25 | 0 | 21.00 | 19.73 | 19.89 | 19.81 |
| | | 25 | 13 | 21.00 | 19.84 | 19.36 | 19.75 |
| | | 25 | 25 | 21.00 | 19.48 | 19.90 | 19.86 |
| | | 50 | 0 | 21.00 | 19.82 | 19.78 | 19.60 |

Table 34: Conducted power measurement results of LTE Band XII

**Second antenna(Voice) + WiFi station + Sensor off:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 23107CH | 23095CH | 23173CH |
| 1.4MHz | QPSK | 1 | 0 | 22.00 | 20.65 | 20.71 | 20.76 |
| | | 1 | 3 | 22.00 | 20.60 | 20.64 | 20.84 |
| | | 1 | 5 | 22.00 | 20.59 | 20.59 | 20.70 |
| | | 3 | 0 | 22.00 | 20.55 | 20.61 | 20.60 |
| | | 3 | 2 | 22.00 | 20.60 | 20.57 | 20.78 |
| | | 3 | 3 | 22.00 | 20.54 | 20.48 | 20.74 |
| | | 6 | 0 | 21.00 | 19.56 | 19.46 | 19.66 |
| | 16QAM | 1 | 0 | 21.00 | 19.72 | 19.73 | 20.00 |
| | | 1 | 3 | 21.00 | 19.90 | 19.79 | 20.03 |
| | | 1 | 5 | 21.00 | 19.81 | 19.77 | 20.11 |
| | | 3 | 0 | 21.00 | 19.59 | 19.65 | 19.69 |
| | | 3 | 2 | 21.00 | 19.66 | 19.58 | 19.85 |
| | | 3 | 3 | 21.00 | 19.59 | 19.57 | 19.81 |
| | | 6 | 0 | 20.00 | 18.69 | 18.62 | 18.78 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 23025CH | 23095CH | 23165CH |
| 3MHz | QPSK | 1 | 0 | 22.00 | 20.64 | 20.62 | 20.87 |
| | | 1 | 7 | 22.00 | 20.68 | 20.56 | 20.81 |
| | | 1 | 14 | 22.00 | 20.74 | 20.64 | 20.98 |
| | | 8 | 0 | 21.00 | 19.61 | 19.60 | 19.73 |
| | | 8 | 4 | 21.00 | 19.71 | 19.60 | 19.82 |
| | | 8 | 7 | 21.00 | 19.70 | 19.57 | 19.68 |
| | | 15 | 0 | 21.00 | 19.67 | 19.62 | 19.79 |
| | 16QAM | 1 | 0 | 21.00 | 19.95 | 19.93 | 19.87 |
| | | 1 | 7 | 21.00 | 20.02 | 19.93 | 19.91 |
| | | 1 | 14 | 21.00 | 19.89 | 19.91 | 20.02 |
| | | 8 | 0 | 20.00 | 18.65 | 18.70 | 18.66 |
| | | 8 | 4 | 20.00 | 18.73 | 18.66 | 18.79 |
| | | 8 | 7 | 20.00 | 18.83 | 18.62 | 18.68 |
| | | 15 | 0 | 20.00 | 18.70 | 18.67 | 18.75 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 23035CH | 23095CH | 23155CH |
| 5MHz | QPSK | 1 | 0 | 22.00 | 20.80 | 20.72 | 20.82 |
| | | 1 | 13 | 22.00 | 20.85 | 20.71 | 20.87 |
| | | 1 | 24 | 22.00 | 20.87 | 20.72 | 20.94 |
| | | 12 | 0 | 21.00 | 19.66 | 19.58 | 19.76 |
| | | 12 | 6 | 21.00 | 19.74 | 19.57 | 19.78 |
| | | 12 | 13 | 21.00 | 19.62 | 19.60 | 19.66 |
| | | 25 | 0 | 21.00 | 19.71 | 19.60 | 19.79 |
| | 16QAM | 1 | 0 | 21.00 | 19.80 | 19.78 | 19.84 |
| | | 1 | 13 | 21.00 | 19.92 | 19.90 | 19.80 |
| | | 1 | 24 | 21.00 | 19.85 | 19.70 | 19.86 |
| | | 12 | 0 | 20.00 | 18.78 | 18.71 | 18.76 |
| | | 12 | 6 | 20.00 | 18.80 | 18.67 | 18.69 |
| | | 12 | 13 | 20.00 | 18.74 | 18.69 | 18.69 |
| | | 25 | 0 | 20.00 | 18.73 | 18.56 | 18.76 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 23060CH | 23095CH | 23130CH |
| 10MHz | QPSK | 1 | 0 | 22.00 | 20.74 | 20.95 | 20.90 |
| | | 1 | 25 | 22.00 | 20.68 | 20.62 | 20.72 |
| | | 1 | 49 | 22.00 | 20.66 | 21.02 | 21.00 |
| | | 25 | 0 | 21.00 | 19.70 | 19.68 | 19.67 |
| | | 25 | 13 | 21.00 | 19.62 | 19.56 | 19.67 |
| | | 25 | 25 | 21.00 | 19.56 | 19.61 | 19.73 |
| | | 50 | 0 | 21.00 | 19.68 | 19.66 | 19.75 |
| | 16QAM | 1 | 0 | 21.00 | 19.64 | 19.84 | 19.85 |
| | | 1 | 25 | 21.00 | 19.52 | 19.39 | 19.69 |
| | | 1 | 49 | 21.00 | 19.46 | 19.77 | 19.99 |
| | | 25 | 0 | 20.00 | 18.70 | 18.65 | 18.67 |
| | | 25 | 13 | 20.00 | 18.68 | 18.64 | 18.70 |
| | | 25 | 25 | 20.00 | 18.59 | 18.62 | 18.71 |
| | | 50 | 0 | 20.00 | 18.64 | 18.63 | 18.68 |

Table 35: Conducted power measurement results of LTE Band XII

**Second antenna + WiFi Hotspot:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 23107CH | 23095CH | 23173CH |
| 1.4MHz | QPSK | 1 | 0 | 21.00 | 19.86 | 19.96 | 19.81 |
| | | 1 | 3 | 21.00 | 19.92 | 19.97 | 19.98 |
| | | 1 | 5 | 21.00 | 19.94 | 19.89 | 19.81 |
| | | 3 | 0 | 21.00 | 19.84 | 19.81 | 19.77 |
| | | 3 | 2 | 21.00 | 19.87 | 19.89 | 19.85 |
| | | 3 | 3 | 21.00 | 19.89 | 19.88 | 19.77 |
| | | 6 | 0 | 21.00 | 19.91 | 19.79 | 19.79 |
| | 16QAM | 1 | 0 | 21.00 | 19.96 | 20.14 | 19.94 |
| | | 1 | 3 | 21.00 | 20.20 | 20.24 | 20.37 |
| | | 1 | 5 | 21.00 | 20.12 | 20.16 | 20.24 |
| | | 3 | 0 | 21.00 | 19.90 | 19.89 | 19.78 |
| | | 3 | 2 | 21.00 | 19.89 | 19.96 | 19.95 |
| | | 3 | 3 | 21.00 | 19.92 | 19.90 | 19.91 |
| | | 6 | 0 | 21.00 | 19.79 | 19.63 | 19.62 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 23025CH | 23095CH | 23165CH |
| 3MHz | QPSK | 1 | 0 | 21.00 | 19.82 | 19.88 | 20.05 |
| | | 1 | 7 | 21.00 | 20.06 | 19.92 | 19.99 |
| | | 1 | 14 | 21.00 | 20.04 | 19.93 | 20.01 |
| | | 8 | 0 | 21.00 | 19.93 | 19.87 | 19.81 |
| | | 8 | 4 | 21.00 | 19.95 | 19.87 | 19.89 |
| | | 8 | 7 | 21.00 | 19.93 | 19.86 | 19.78 |
| | | 15 | 0 | 21.00 | 19.96 | 19.93 | 19.92 |
| | 16QAM | 1 | 0 | 21.00 | 20.11 | 20.23 | 20.08 |
| | | 1 | 7 | 21.00 | 20.33 | 20.24 | 20.14 |
| | | 1 | 14 | 21.00 | 20.12 | 20.17 | 20.16 |
| | | 8 | 0 | 21.00 | 19.64 | 19.59 | 19.57 |
| | | 8 | 4 | 21.00 | 19.61 | 19.60 | 19.62 |
| | | 8 | 7 | 21.00 | 19.63 | 19.57 | 19.56 |
| | | 15 | 0 | 21.00 | 19.55 | 19.61 | 19.65 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 23035CH | 23095CH | 23155CH |
| 5MHz | QPSK | 1 | 0 | 21.00 | 19.98 | 19.94 | 20.04 |
| | | 1 | 13 | 21.00 | 20.08 | 20.07 | 20.07 |
| | | 1 | 24 | 21.00 | 19.96 | 19.97 | 19.97 |
| | | 12 | 0 | 21.00 | 19.86 | 19.75 | 19.78 |
| | | 12 | 6 | 21.00 | 19.84 | 19.87 | 19.88 |
| | | 12 | 13 | 21.00 | 19.87 | 19.88 | 19.84 |
| | | 25 | 0 | 21.00 | 19.93 | 19.86 | 19.83 |
| | 16QAM | 1 | 0 | 21.00 | 20.12 | 19.97 | 20.02 |
| | | 1 | 13 | 21.00 | 19.99 | 20.19 | 19.98 |
| | | 1 | 24 | 21.00 | 19.91 | 20.02 | 20.13 |
| | | 12 | 0 | 21.00 | 19.55 | 19.60 | 19.58 |
| | | 12 | 6 | 21.00 | 19.51 | 19.65 | 19.61 |
| | | 12 | 13 | 21.00 | 19.51 | 19.69 | 19.59 |
| | | 25 | 0 | 21.00 | 19.53 | 19.54 | 19.53 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 23060CH | 23095CH | 23130CH |
| 10MHz | QPSK | 1 | 0 | 21.00 | 19.97 | 20.00 | 20.04 |
| | | 1 | 25 | 21.00 | 19.85 | 19.90 | 19.98 |
| | | 1 | 49 | 21.00 | 20.08 | 19.92 | **20.16** |
| | | 25 | 0 | 21.00 | 19.88 | 19.87 | **19.94** |
| | | 25 | 13 | 21.00 | 19.83 | 19.87 | 19.73 |
| | | 25 | 25 | 21.00 | 19.89 | 19.93 | 19.78 |
| | | 50 | 0 | 21.00 | 19.87 | 19.94 | 19.87 |
| | 16QAM | 1 | 0 | 21.00 | 19.99 | 20.02 | 19.97 |
| | | 1 | 25 | 21.00 | 19.74 | 19.70 | 19.80 |
| | | 1 | 49 | 21.00 | 19.96 | 19.92 | 20.01 |
| | | 25 | 0 | 21.00 | 19.49 | 19.46 | 19.56 |
| | | 25 | 13 | 21.00 | 19.52 | 19.62 | 19.46 |
| | | 25 | 25 | 21.00 | 19.52 | 19.59 | 19.50 |
| | | 50 | 0 | 21.00 | 19.49 | 19.58 | 19.59 |

Table 36: Conducted power measurement results of LTE Band XII

### 7.1.7 Conducted power measurements of LTE Band XIII(Second Antenna)

**Full Power:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 23205CH | 23230CH | 23255CH |
| 5MHz | QPSK | 1 | 0 | 22.70 | 21.32 | 21.47 | 21.50 |
| | | 1 | 13 | 22.70 | 21.60 | 21.48 | 21.56 |
| | | 1 | 24 | 22.70 | 21.54 | 21.46 | 21.50 |
| | | 12 | 0 | 21.70 | 20.41 | 20.61 | 20.59 |
| | | 12 | 6 | 21.70 | 20.57 | 20.61 | 20.73 |
| | | 12 | 13 | 21.70 | 20.67 | 20.55 | 20.65 |
| | | 25 | 0 | 21.70 | 20.65 | 20.64 | 20.66 |
| | 16QAM | 1 | 0 | 21.70 | 20.65 | 20.94 | 20.78 |
| | | 1 | 13 | 21.70 | 21.02 | 20.77 | 20.92 |
| | | 1 | 24 | 21.70 | 20.82 | 20.79 | 20.84 |
| | | 12 | 0 | 20.70 | 19.64 | 19.88 | 19.65 |
| | | 12 | 6 | 20.70 | 19.77 | 19.74 | 19.78 |
| | | 12 | 13 | 20.70 | 19.86 | 19.68 | 19.80 |
| | | 25 | 0 | 20.70 | 19.67 | 19.65 | 19.67 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | / | 23230CH | / |
| 10MHz | QPSK | 1 | 0 | 22.70 | / | 21.52 | / |
| | | 1 | 25 | 22.70 | / | 21.53 | / |
| | | 1 | 49 | 22.70 | / | 21.62 | / |
| | | 25 | 0 | 21.70 | / | 20.66 | / |
| | | 25 | 13 | 21.70 | / | 20.66 | / |
| | | 25 | 25 | 21.70 | / | 20.68 | / |
| | | 50 | 0 | 21.70 | / | 20.81 | / |
| | 16QAM | 1 | 0 | 21.70 | / | 20.65 | / |
| | | 1 | 25 | 21.70 | / | 20.43 | / |
| | | 1 | 49 | 21.70 | / | 20.53 | / |
| | | 25 | 0 | 20.70 | / | 19.72 | / |
| | | 25 | 13 | 20.70 | / | 19.71 | / |
| | | 25 | 25 | 20.70 | / | 19.70 | / |
| | | 50 | 0 | 20.70 | / | 19.75 | / |

Table 37: Conducted power measurement results of LTE Band XIII

**Second antenna(Voice) + WiFi station + Sensor on:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 23205CH | 23230CH | 23255CH |
| 5MHz | QPSK | 1 | 0 | 21.00 | 19.66 | 19.66 | 19.87 |
| | | 1 | 13 | 21.00 | 19.79 | 19.87 | 19.77 |
| | | 1 | 24 | 21.00 | 19.83 | 19.71 | 19.66 |
| | | 12 | 0 | 21.00 | 19.70 | 19.47 | 20.05 |
| | | 12 | 6 | 21.00 | 19.97 | 19.79 | 19.94 |
| | | 12 | 13 | 21.00 | 19.72 | 19.76 | 19.62 |
| | | 25 | 0 | 21.00 | 19.81 | 19.61 | 19.69 |
| | 16QAM | 1 | 0 | 21.00 | 19.61 | 19.49 | 19.91 |
| | | 1 | 13 | 21.00 | 19.89 | 20.07 | 19.91 |
| | | 1 | 24 | 21.00 | 19.80 | 19.69 | 19.75 |
| | | 12 | 0 | 21.00 | 19.55 | 19.79 | 20.00 |
| | | 12 | 6 | 21.00 | 19.82 | 20.04 | 19.66 |
| | | 12 | 13 | 21.00 | 19.80 | 19.62 | 19.57 |
| | | 25 | 0 | 21.00 | 19.46 | 19.85 | 19.67 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | / | 23230CH | / |
| 10MHz | QPSK | 1 | 0 | 21.00 | / | 19.68 | / |
| | | 1 | 25 | 21.00 | / | 19.62 | / |
| | | 1 | 49 | 21.00 | / | 19.69 | / |
| | | 25 | 0 | 21.00 | / | 19.66 | / |
| | | 25 | 13 | 21.00 | / | 19.82 | / |
| | | 25 | 25 | 21.00 | / | 19.52 | / |
| | | 50 | 0 | 21.00 | / | 19.71 | / |
| | 16QAM | 1 | 0 | 21.00 | / | 19.80 | / |
| | | 1 | 25 | 21.00 | / | 19.64 | / |
| | | 1 | 49 | 21.00 | / | 19.65 | / |
| | | 25 | 0 | 21.00 | / | 20.00 | / |
| | | 25 | 13 | 21.00 | / | 19.72 | / |
| | | 25 | 25 | 21.00 | / | 19.64 | / |
| | | 50 | 0 | 21.00 | / | 19.87 | / |

Table 38: Conducted power measurement results of LTE Band XIII

**Second antenna(Voice) + WiFi station + Sensor off:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 23205CH | 23230CH | 23255CH |
| 5MHz | QPSK | 1 | 0 | 22.00 | 20.70 | 20.56 | 20.76 |
| | | 1 | 13 | 22.00 | 20.72 | 20.88 | 20.82 |
| | | 1 | 24 | 22.00 | 20.81 | 20.76 | 20.78 |
| | | 12 | 0 | 21.00 | 19.68 | 19.61 | 19.67 |
| | | 12 | 6 | 21.00 | 19.63 | 19.76 | 19.66 |
| | | 12 | 13 | 21.00 | 19.59 | 19.62 | 19.62 |
| | | 25 | 0 | 21.00 | 19.76 | 19.67 | 19.61 |
| | 16QAM | 1 | 0 | 21.00 | 19.84 | 20.04 | 19.90 |
| | | 1 | 13 | 21.00 | 20.06 | 20.00 | 19.93 |
| | | 1 | 24 | 21.00 | 19.94 | 19.81 | 19.92 |
| | | 12 | 0 | 20.00 | 18.83 | 18.84 | 18.84 |
| | | 12 | 6 | 20.00 | 18.65 | 18.82 | 18.78 |
| | | 12 | 13 | 20.00 | 18.80 | 18.74 | 18.79 |
| | | 25 | 0 | 20.00 | 18.82 | 18.71 | 18.73 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | / | 23230CH | / |
| 10MHz | QPSK | 1 | 0 | 22.00 | / | 21.02 | / |
| | | 1 | 25 | 22.00 | / | 20.73 | / |
| | | 1 | 49 | 22.00 | / | 20.86 | / |
| | | 25 | 0 | 21.00 | / | 19.87 | / |
| | | 25 | 13 | 21.00 | / | 19.78 | / |
| | | 25 | 25 | 21.00 | / | 19.61 | / |
| | | 50 | 0 | 21.00 | / | 19.79 | / |
| | 16QAM | 1 | 0 | 21.00 | / | 19.80 | / |
| | | 1 | 25 | 21.00 | / | 19.61 | / |
| | | 1 | 49 | 21.00 | / | 19.58 | / |
| | | 25 | 0 | 20.00 | / | 18.86 | / |
| | | 25 | 13 | 20.00 | / | 18.84 | / |
| | | 25 | 25 | 20.00 | / | 18.74 | / |
| | | 50 | 0 | 20.00 | / | 18.74 | / |

Table 39: Conducted power measurement results of LTE Band XIII

**Second antenna + WiFi Hotspot:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 23205CH | 23230CH | 23255CH |
| 5MHz | QPSK | 1 | 0 | 21.00 | 19.70 | 19.86 | 19.92 |
| | | 1 | 13 | 21.00 | 20.05 | 19.88 | 19.94 |
| | | 1 | 24 | 21.00 | 19.78 | 19.94 | 19.92 |
| | | 12 | 0 | 21.00 | 19.67 | 19.79 | 19.83 |
| | | 12 | 6 | 21.00 | 19.85 | 19.86 | 19.87 |
| | | 12 | 13 | 21.00 | 19.71 | 19.82 | 19.79 |
| | | 25 | 0 | 21.00 | 19.84 | 19.81 | 19.76 |
| | 16QAM | 1 | 0 | 21.00 | 19.78 | 20.09 | 20.11 |
| | | 1 | 13 | 21.00 | 20.27 | 20.13 | 20.16 |
| | | 1 | 24 | 21.00 | 20.17 | 20.18 | 20.12 |
| | | 12 | 0 | 21.00 | 19.54 | 19.58 | 19.56 |
| | | 12 | 6 | 21.00 | 19.60 | 19.54 | 19.57 |
| | | 12 | 13 | 21.00 | 19.55 | 19.55 | 19.51 |
| | | 25 | 0 | 21.00 | 19.53 | 19.38 | 19.40 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 23230CH | 23230CH | 23230CH |
| 10MHz | QPSK | 1 | 0 | 21.00 | / | 19.89 | / |
| | | 1 | 25 | 21.00 | / | 19.77 | / |
| | | 1 | 49 | 21.00 | / | 20.06 | / |
| | | 25 | 0 | 21.00 | / | 19.95 | / |
| | | 25 | 13 | 21.00 | / | 19.85 | / |
| | | 25 | 25 | 21.00 | / | 19.77 | / |
| | | 50 | 0 | 21.00 | / | 19.94 | / |
| | 16QAM | 1 | 0 | 21.00 | / | 19.87 | / |
| | | 1 | 25 | 21.00 | / | 19.77 | / |
| | | 1 | 49 | 21.00 | / | 19.96 | / |
| | | 25 | 0 | 21.00 | / | 19.65 | / |
| | | 25 | 13 | 21.00 | / | 19.51 | / |
| | | 25 | 25 | 21.00 | / | 19.49 | / |
| | | 50 | 0 | 21.00 | / | 19.47 | / |

Table 40: Conducted power measurement results of LTE Band XIII

### 7.1.8 Conducted power measurements of LTE Band XVII(Second Antenna)

**Full Power:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 23755CH | 23790CH | 23825CH |
| 5MHz | QPSK | 1 | 0 | 22.70 | 21.46 | 21.37 | 21.32 |
| | | 1 | 13 | 22.70 | 21.43 | 21.48 | 21.42 |
| | | 1 | 24 | 22.70 | 21.51 | 21.51 | 21.49 |
| | | 12 | 0 | 21.70 | 20.38 | 20.45 | 20.42 |
| | | 12 | 6 | 21.70 | 20.39 | 20.49 | 20.40 |
| | | 12 | 13 | 21.70 | 20.30 | 20.39 | 20.32 |
| | | 25 | 0 | 21.70 | 20.40 | 20.43 | 20.36 |
| | 16QAM | 1 | 0 | 21.70 | 20.48 | 20.59 | 20.44 |
| | | 1 | 13 | 21.70 | 20.55 | 20.72 | 20.48 |
| | | 1 | 24 | 21.70 | 20.60 | 20.52 | 20.46 |
| | | 12 | 0 | 20.70 | 19.50 | 19.54 | 19.46 |
| | | 12 | 6 | 20.70 | 19.51 | 19.56 | 19.41 |
| | | 12 | 13 | 20.70 | 19.48 | 19.50 | 19.44 |
| | | 25 | 0 | 20.70 | 19.36 | 19.43 | 19.39 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 23780CH | 23790CH | 23800CH |
| 10MHz | QPSK | 1 | 0 | 22.70 | 21.54 | 21.38 | 21.37 |
| | | 1 | 25 | 22.70 | **21.53** | **21.54** | **21.52** |
| | | 1 | 49 | 22.70 | 21.52 | 21.52 | 21.51 |
| | | 25 | 0 | 21.70 | 20.34 | 20.37 | 20.43 |
| | | 25 | 13 | 21.70 | **20.46** | **20.53** | **20.47** |
| | | 25 | 25 | 21.70 | 20.45 | 20.34 | 20.42 |
| | | 50 | 0 | 21.70 | 20.41 | 20.50 | 20.43 |
| | 16QAM | 1 | 0 | 21.70 | 20.34 | 20.40 | 20.40 |
| | | 1 | 25 | 21.70 | 20.64 | 20.54 | 20.44 |
| | | 1 | 49 | 21.70 | 20.49 | 20.37 | 20.38 |
| | | 25 | 0 | 20.70 | 19.39 | 19.41 | 19.40 |
| | | 25 | 13 | 20.70 | 19.51 | 19.57 | 19.54 |
| | | 25 | 25 | 20.70 | 19.55 | 19.38 | 19.41 |
| | | 50 | 0 | 20.70 | 19.39 | 19.52 | 19.46 |

Table 41: Conducted power measurement results of LTE Band XVII

**Second antenna(Voice) + WiFi station + Sensor on:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 23755CH | 23790CH | 23825CH |
| 5MHz | QPSK | 1 | 0 | 21.00 | 19.93 | 19.67 | 19.92 |
| | | 1 | 13 | 21.00 | 19.82 | 19.80 | 19.85 |
| | | 1 | 24 | 21.00 | 19.77 | 19.77 | 19.86 |
| | | 12 | 0 | 21.00 | 19.97 | 19.62 | 19.87 |
| | | 12 | 6 | 21.00 | 19.75 | 19.68 | 19.89 |
| | | 12 | 13 | 21.00 | 19.68 | 19.70 | 19.88 |
| | | 25 | 0 | 21.00 | 20.03 | 19.54 | 20.07 |
| | 16QAM | 1 | 0 | 21.00 | 19.87 | 19.54 | 20.10 |
| | | 1 | 13 | 21.00 | 19.89 | 19.84 | 20.02 |
| | | 1 | 24 | 21.00 | 19.72 | 19.65 | 19.67 |
| | | 12 | 0 | 21.00 | 19.99 | 19.62 | 19.93 |
| | | 12 | 6 | 21.00 | 19.98 | 19.61 | 19.91 |
| | | 12 | 13 | 21.00 | 19.86 | 19.65 | 19.76 |
| | | 25 | 0 | 21.00 | 19.83 | 19.84 | 20.09 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 23780CH | 23790CH | 23800CH |
| 10MHz | QPSK | 1 | 0 | 21.00 | 19.63 | 19.68 | 19.67 |
| | | 1 | 25 | 21.00 | 19.61 | 19.56 | 19.69 |
| | | 1 | 49 | 21.00 | 19.64 | 19.62 | 19.62 |
| | | 25 | 0 | 21.00 | 19.87 | 19.49 | 19.55 |
| | | 25 | 13 | 21.00 | 19.42 | 19.40 | 19.61 |
| | | 25 | 25 | 21.00 | 20.00 | 19.91 | 19.83 |
| | | 50 | 0 | 21.00 | 19.82 | 19.81 | 19.84 |
| | 16QAM | 1 | 0 | 21.00 | 19.66 | 19.67 | 19.78 |
| | | 1 | 25 | 21.00 | 19.80 | 19.56 | 19.52 |
| | | 1 | 49 | 21.00 | 19.88 | 19.78 | 19.92 |
| | | 25 | 0 | 21.00 | 19.77 | 19.64 | 19.67 |
| | | 25 | 13 | 21.00 | 19.44 | 19.39 | 19.72 |
| | | 25 | 25 | 21.00 | 19.76 | 19.75 | 19.78 |
| | | 50 | 0 | 21.00 | 19.61 | 19.50 | 19.81 |

Table 42: Conducted power measurement results of LTE Band XVII

**Second antenna(Voice) + WiFi station + Sensor off:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 23755CH | 23790CH | 23825CH |
| 5MHz | QPSK | 1 | 0 | 22.00 | 20.81 | 20.73 | 20.75 |
| | | 1 | 13 | 22.00 | 20.74 | 20.82 | 20.89 |
| | | 1 | 24 | 22.00 | 20.74 | 20.75 | 20.95 |
| | | 12 | 0 | 21.00 | 19.61 | 19.57 | 19.62 |
| | | 12 | 6 | 21.00 | 19.71 | 19.65 | 19.78 |
| | | 12 | 13 | 21.00 | 19.58 | 19.62 | 19.73 |
| | | 25 | 0 | 21.00 | 19.65 | 19.66 | 19.66 |
| | 16QAM | 1 | 0 | 21.00 | 19.82 | 19.82 | 19.72 |
| | | 1 | 13 | 21.00 | 19.79 | 19.85 | 19.80 |
| | | 1 | 24 | 21.00 | 19.77 | 19.68 | 19.87 |
| | | 12 | 0 | 20.00 | 18.73 | 18.65 | 18.65 |
| | | 12 | 6 | 20.00 | 18.78 | 18.71 | 18.73 |
| | | 12 | 13 | 20.00 | 18.69 | 18.69 | 18.75 |
| | | 25 | 0 | 20.00 | 18.66 | 18.65 | 18.68 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 23780CH | 23790CH | 23800CH |
| 10MHz | QPSK | 1 | 0 | 22.00 | 20.81 | 20.72 | 20.61 |
| | | 1 | 25 | 22.00 | 20.57 | 20.55 | 20.69 |
| | | 1 | 49 | 22.00 | 20.76 | 21.03 | 21.06 |
| | | 25 | 0 | 21.00 | 19.65 | 19.57 | 19.65 |
| | | 25 | 13 | 21.00 | 19.57 | 19.69 | 19.65 |
| | | 25 | 25 | 21.00 | 19.62 | 19.60 | 19.66 |
| | | 50 | 0 | 21.00 | 19.66 | 19.63 | 19.76 |
| | 16QAM | 1 | 0 | 21.00 | 19.76 | 19.73 | 19.61 |
| | | 1 | 25 | 21.00 | 19.40 | 19.40 | 19.55 |
| | | 1 | 49 | 21.00 | 19.72 | 20.02 | 19.85 |
| | | 25 | 0 | 20.00 | 18.66 | 18.62 | 18.68 |
| | | 25 | 13 | 20.00 | 18.66 | 18.71 | 18.69 |
| | | 25 | 25 | 20.00 | 18.57 | 18.60 | 18.65 |
| | | 50 | 0 | 20.00 | 18.63 | 18.62 | 18.68 |

Table 43: Conducted power measurement results of LTE Band XVII

**Second antenna + WiFi Hospot:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 23755CH | 23790CH | 23825CH |
| 5MHz | QPSK | 1 | 0 | 21.00 | 20.03 | 20.06 | 20.09 |
| | | 1 | 13 | 21.00 | 20.09 | 20.07 | 20.07 |
| | | 1 | 24 | 21.00 | 20.01 | 20.15 | 20.01 |
| | | 12 | 0 | 21.00 | 19.83 | 19.79 | 19.87 |
| | | 12 | 6 | 21.00 | 19.91 | 19.84 | 19.88 |
| | | 12 | 13 | 21.00 | 19.83 | 19.86 | 19.91 |
| | | 25 | 0 | 21.00 | 19.79 | 19.92 | 19.91 |
| | 16QAM | 1 | 0 | 21.00 | 20.02 | 20.11 | 19.99 |
| | | 1 | 13 | 21.00 | 20.19 | 20.16 | 20.14 |
| | | 1 | 24 | 21.00 | 20.09 | 20.05 | 19.95 |
| | | 12 | 0 | 21.00 | 19.67 | 19.67 | 19.66 |
| | | 12 | 6 | 21.00 | 19.69 | 19.66 | 19.68 |
| | | 12 | 13 | 21.00 | 19.65 | 19.68 | 19.61 |
| | | 25 | 0 | 21.00 | 19.52 | 19.66 | 19.64 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 23780CH | 23790CH | 23800CH |
| 10MHz | QPSK | 1 | 0 | 21.00 | 19.89 | 20.01 | 20.03 |
| | | 1 | 25 | 21.00 | 19.76 | 19.85 | 19.96 |
| | | 1 | 49 | 21.00 | 19.90 | 19.95 | 19.86 |
| | | 25 | 0 | 21.00 | 19.86 | 19.88 | 19.90 |
| | | 25 | 13 | 21.00 | 19.89 | 19.90 | 19.91 |
| | | 25 | 25 | 21.00 | 19.92 | 19.86 | 19.89 |
| | | 50 | 0 | 21.00 | 19.93 | 19.95 | 19.96 |
| | 16QAM | 1 | 0 | 21.00 | 20.00 | 19.92 | 20.08 |
| | | 1 | 25 | 21.00 | 19.76 | 19.89 | 19.83 |
| | | 1 | 49 | 21.00 | 20.11 | 20.13 | 19.99 |
| | | 25 | 0 | 21.00 | 19.60 | 19.58 | 19.56 |
| | | 25 | 13 | 21.00 | 19.65 | 19.65 | 19.56 |
| | | 25 | 25 | 21.00 | 19.63 | 19.40 | 19.51 |
| | | 50 | 0 | 21.00 | 19.61 | 19.66 | 19.59 |

Table 44: Conducted power measurement results of LTE Band XVII

### 7.1.9 Conducted power measurements of LTE Band XXVI(Second Antenna)

**Full Power:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 26697CH | 26865CH | 27033CH |
| 1.4MHz | QPSK | 1 | 0 | 22.70 | 21.44 | 21.54 | 21.39 |
| | | 1 | 3 | 22.70 | 21.48 | 21.60 | 21.49 |
| | | 1 | 5 | 22.70 | 21.34 | 21.49 | 21.33 |
| | | 3 | 0 | 22.70 | 21.20 | 21.30 | 21.22 |
| | | 3 | 2 | 22.70 | 21.29 | 21.40 | 21.32 |
| | | 3 | 3 | 22.70 | 21.30 | 21.43 | 21.28 |
| | | 6 | 0 | 21.70 | 20.45 | 20.46 | 20.29 |
| | 16QAM | 1 | 0 | 21.70 | 20.44 | 20.53 | 20.30 |
| | | 1 | 3 | 21.70 | 20.53 | 20.67 | 20.59 |
| | | 1 | 5 | 21.70 | 20.59 | 20.48 | 20.47 |
| | | 3 | 0 | 21.70 | 20.30 | 20.34 | 20.22 |
| | | 3 | 2 | 21.70 | 20.31 | 20.33 | 20.29 |
| | | 3 | 3 | 21.70 | 20.34 | 20.38 | 20.21 |
| | | 6 | 0 | 20.70 | 19.51 | 19.44 | 19.31 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 26705CH | 26865CH | 27025CH |
| 3MHz | QPSK | 1 | 0 | 22.70 | 21.33 | 21.53 | 21.30 |
| | | 1 | 7 | 22.70 | 21.30 | 21.44 | 21.21 |
| | | 1 | 14 | 22.70 | 21.39 | 21.60 | 21.28 |
| | | 8 | 0 | 21.70 | 20.39 | 20.48 | 20.31 |
| | | 8 | 4 | 21.70 | 20.44 | 20.53 | 20.28 |
| | | 8 | 7 | 21.70 | 20.45 | 20.40 | 20.23 |
| | | 15 | 0 | 21.70 | 20.38 | 20.37 | 20.27 |
| | 16QAM | 1 | 0 | 21.70 | 20.66 | 20.56 | 20.56 |
| | | 1 | 7 | 21.70 | 20.55 | 20.56 | 20.57 |
| | | 1 | 14 | 21.70 | 20.53 | 20.48 | 20.58 |
| | | 8 | 0 | 20.70 | 19.38 | 19.42 | 19.36 |
| | | 8 | 4 | 20.70 | 19.40 | 19.43 | 19.38 |
| | | 8 | 7 | 20.70 | 19.43 | 19.31 | 19.35 |
| | | 15 | 0 | 20.70 | 19.32 | 19.44 | 19.35 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 26715CH | 26865CH | 27015CH |
| 5MHz | QPSK | 1 | 0 | 22.70 | 21.53 | 21.45 | 21.40 |
| | | 1 | 13 | 22.70 | 21.64 | 21.56 | 21.38 |
| | | 1 | 24 | 22.70 | 21.54 | 21.42 | 21.27 |
| | | 12 | 0 | 21.70 | 20.44 | 20.28 | 20.19 |
| | | 12 | 6 | 21.70 | 20.39 | 20.44 | 20.29 |
| | | 12 | 13 | 21.70 | 20.37 | 20.30 | 20.25 |
| | | 25 | 0 | 21.70 | 20.46 | 20.38 | 20.30 |
| | 16QAM | 1 | 0 | 21.70 | 20.42 | 20.50 | 20.59 |
| | | 1 | 13 | 21.70 | 20.63 | 20.62 | 20.53 |
| | | 1 | 24 | 21.70 | 20.52 | 20.50 | 20.32 |
| | | 12 | 0 | 20.70 | 19.43 | 19.34 | 19.30 |
| | | 12 | 6 | 20.70 | 19.39 | 19.46 | 19.37 |
| | | 12 | 13 | 20.70 | 19.44 | 19.33 | 19.29 |
| | | 25 | 0 | 20.70 | 19.42 | 19.38 | 19.29 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 26750CH | 26865CH | 26990CH |
| 10MHz | QPSK | 1 | 0 | 22.70 | 21.29 | 21.67 | 21.36 |
| | | 1 | 25 | 22.70 | 21.40 | 21.36 | 21.25 |
| | | 1 | 49 | 22.70 | 21.16 | 21.34 | 21.16 |
| | | 25 | 0 | 21.70 | 20.37 | 20.30 | 20.31 |
| | | 25 | 13 | 21.70 | 20.43 | 20.40 | 20.37 |
| | | 25 | 25 | 21.70 | 20.18 | 20.29 | 20.21 |
| | | 50 | 0 | 21.70 | 20.42 | 20.35 | 20.39 |
| | 16QAM | 1 | 0 | 21.70 | 20.67 | 20.62 | 20.61 |
| | | 1 | 25 | 21.70 | 20.61 | 20.41 | 20.37 |
| | | 1 | 49 | 21.70 | 20.40 | 20.54 | 20.26 |
| | | 25 | 0 | 20.70 | 19.37 | 19.34 | 19.35 |
| | | 25 | 13 | 20.70 | 19.47 | 19.41 | 19.41 |
| | | 25 | 25 | 20.70 | 19.18 | 19.34 | 19.20 |
| | | 50 | 0 | 20.70 | 19.23 | 19.31 | 19.36 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel 26775CH | Channel 26865CH | Channel 26965CH |
|---|---|---|---|---|---|---|---|
| 15MHz | QPSK | 1 | 0 | 22.70 | 21.52 | **21.46** | 21.38 |
| | | 1 | 38 | 22.70 | **21.53** | 21.34 | **21.48** |
| | | 1 | 74 | 22.70 | 21.35 | 21.30 | 21.28 |
| | | 36 | 0 | 21.70 | **20.27** | **20.35** | **20.50** |
| | | 36 | 18 | 21.70 | 20.25 | 20.27 | 20.36 |
| | | 36 | 39 | 21.70 | 20.21 | 20.27 | 20.26 |
| | | 75 | 0 | 21.70 | **20.37** | 20.28 | 20.36 |
| | 16QAM | 1 | 0 | 21.70 | 20.37 | 20.33 | 20.29 |
| | | 1 | 38 | 21.70 | 20.14 | 20.34 | 20.31 |
| | | 1 | 74 | 21.70 | 20.17 | 20.16 | 20.06 |
| | | 36 | 0 | 20.70 | 19.40 | 19.25 | 19.33 |
| | | 36 | 18 | 20.70 | 19.27 | 19.31 | 19.35 |
| | | 36 | 39 | 20.70 | 19.14 | 19.30 | 19.29 |
| | | 75 | 0 | 20.70 | 19.28 | 19.36 | 19.34 |

Table 45: Conducted power measurement results of LTE Band XXVI

**Second antenna(Voice) + WiFi station + Sensor on:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 26697CH | 26865CH | 27033CH |
| 1.4MHz | QPSK | 1 | 0 | 21.00 | 19.74 | 19.77 | 19.83 |
| | | 1 | 3 | 21.00 | 19.83 | 19.84 | 19.80 |
| | | 1 | 5 | 21.00 | 19.85 | 19.72 | 19.73 |
| | | 3 | 0 | 21.00 | 19.57 | 19.61 | 19.60 |
| | | 3 | 2 | 21.00 | 19.72 | 19.71 | 19.69 |
| | | 3 | 3 | 21.00 | 19.68 | 19.62 | 19.67 |
| | | 6 | 0 | 21.00 | 19.62 | 19.58 | 19.79 |
| | 16QAM | 1 | 0 | 21.00 | 19.89 | 19.57 | 19.64 |
| | | 1 | 3 | 21.00 | 20.00 | 20.01 | 19.69 |
| | | 1 | 5 | 21.00 | 20.01 | 19.68 | 19.65 |
| | | 3 | 0 | 21.00 | 19.71 | 19.69 | 19.76 |
| | | 3 | 2 | 21.00 | 19.95 | 19.75 | 19.82 |
| | | 3 | 3 | 21.00 | 19.96 | 19.84 | 19.64 |
| | | 6 | 0 | 21.00 | 19.60 | 19.66 | 19.99 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 26705CH | 26865CH | 27025CH |
| 3MHz | QPSK | 1 | 0 | 21.00 | 19.79 | 19.88 | 19.81 |
| | | 1 | 7 | 21.00 | 19.81 | 19.84 | 19.87 |
| | | 1 | 14 | 21.00 | 19.92 | 19.96 | 19.84 |
| | | 8 | 0 | 21.00 | 19.79 | 19.92 | 19.79 |
| | | 8 | 4 | 21.00 | 19.95 | 19.78 | 19.90 |
| | | 8 | 7 | 21.00 | 19.82 | 19.77 | 20.01 |
| | | 15 | 0 | 21.00 | 19.82 | 19.82 | 19.68 |
| | 16QAM | 1 | 0 | 21.00 | 19.87 | 19.94 | 19.91 |
| | | 1 | 7 | 21.00 | 19.88 | 19.73 | 19.91 |
| | | 1 | 14 | 21.00 | 19.93 | 19.80 | 19.72 |
| | | 8 | 0 | 21.00 | 19.95 | 20.05 | 19.87 |
| | | 8 | 4 | 21.00 | 19.64 | 19.72 | 19.95 |
| | | 8 | 7 | 21.00 | 20.10 | 20.12 | 19.86 |
| | | 15 | 0 | 21.00 | 19.92 | 20.07 | 19.78 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 26715CH | 26865CH | 27015CH |
| 5MHz | QPSK | 1 | 0 | 21.00 | 19.81 | 19.85 | 19.96 |
| | | 1 | 13 | 21.00 | 19.90 | 19.91 | 19.89 |
| | | 1 | 24 | 21.00 | 19.90 | 19.83 | 19.80 |
| | | 12 | 0 | 21.00 | 19.89 | 19.67 | 20.05 |
| | | 12 | 6 | 21.00 | 19.93 | 20.03 | 20.06 |
| | | 12 | 13 | 21.00 | 20.01 | 19.98 | 19.93 |
| | | 25 | 0 | 21.00 | 19.69 | 19.94 | 20.13 |
| | 16QAM | 1 | 0 | 21.00 | 19.70 | 19.80 | 19.82 |
| | | 1 | 13 | 21.00 | 19.84 | 20.04 | 19.90 |
| | | 1 | 24 | 21.00 | 19.78 | 19.80 | 19.81 |
| | | 12 | 0 | 21.00 | 19.92 | 19.89 | 20.05 |
| | | 12 | 6 | 21.00 | 20.08 | 20.02 | 19.78 |
| | | 12 | 13 | 21.00 | 19.77 | 19.73 | 19.86 |
| | | 25 | 0 | 21.00 | 19.90 | 19.87 | 20.00 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 26750CH | 26865CH | 26990CH |
| 10MHz | QPSK | 1 | 0 | 21.00 | 20.12 | 19.83 | 20.12 |
| | | 1 | 25 | 21.00 | 19.88 | 19.81 | 19.81 |
| | | 1 | 49 | 21.00 | 19.74 | 19.83 | 19.86 |
| | | 25 | 0 | 21.00 | 20.17 | 19.68 | 20.23 |
| | | 25 | 13 | 21.00 | 19.70 | 19.68 | 19.76 |
| | | 25 | 25 | 21.00 | 19.83 | 19.66 | 19.79 |
| | | 50 | 0 | 21.00 | 20.07 | 19.80 | 20.07 |
| | 16QAM | 1 | 0 | 21.00 | 20.20 | 19.99 | 20.01 |
| | | 1 | 25 | 21.00 | 19.85 | 19.61 | 19.69 |
| | | 1 | 49 | 21.00 | 19.66 | 19.81 | 20.04 |
| | | 25 | 0 | 21.00 | 20.24 | 19.83 | 19.93 |
| | | 25 | 13 | 21.00 | 19.98 | 19.87 | 19.90 |
| | | 25 | 25 | 21.00 | 19.57 | 19.73 | 20.01 |
| | | 50 | 0 | 21.00 | 20.09 | 19.91 | 20.16 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel 26775CH | Channel 26865CH | Channel 26965CH |
|---|---|---|---|---|---|---|---|
| 15MHz | QPSK | 1 | 0 | 21.00 | 20.04 | 20.00 | 20.03 |
| | | 1 | 38 | 21.00 | 19.80 | 19.77 | 20.08 |
| | | 1 | 74 | 21.00 | 19.88 | 19.96 | 19.80 |
| | | 36 | 0 | 21.00 | 20.15 | 20.08 | 20.10 |
| | | 36 | 18 | 21.00 | 19.72 | 19.76 | 20.25 |
| | | 36 | 39 | 21.00 | 19.92 | 19.92 | 19.62 |
| | | 75 | 0 | 21.00 | 19.98 | 19.87 | 20.01 |
| | 16QAM | 1 | 0 | 21.00 | 20.34 | 20.19 | 19.90 |
| | | 1 | 38 | 21.00 | 19.75 | 19.68 | 19.95 |
| | | 1 | 74 | 21.00 | 19.98 | 19.88 | 19.76 |
| | | 36 | 0 | 21.00 | 20.31 | 20.08 | 19.86 |
| | | 36 | 18 | 21.00 | 19.67 | 19.84 | 19.92 |
| | | 36 | 39 | 21.00 | 20.02 | 20.13 | 19.62 |
| | | 75 | 0 | 21.00 | 20.34 | 20.13 | 20.14 |

Table 46: Conducted power measurement results of LTE Band XXVI

**Second antenna(Voice) + WiFi station + Sensor off:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 26697CH | 26865CH | 27033CH |
| 1.4MHz | QPSK | 1 | 0 | 22.00 | 20.82 | 20.94 | 20.79 |
| | | 1 | 3 | 22.00 | 20.91 | 20.86 | 20.84 |
| | | 1 | 5 | 22.00 | 20.82 | 20.76 | 20.76 |
| | | 3 | 0 | 22.00 | 20.63 | 20.67 | 20.65 |
| | | 3 | 2 | 22.00 | 20.81 | 20.73 | 20.74 |
| | | 3 | 3 | 22.00 | 20.71 | 20.69 | 20.66 |
| | | 6 | 0 | 21.00 | 19.73 | 19.74 | 19.72 |
| | 16QAM | 1 | 0 | 21.00 | 19.97 | 19.97 | 19.88 |
| | | 1 | 3 | 21.00 | 20.21 | 20.02 | 20.04 |
| | | 1 | 5 | 21.00 | 20.08 | 20.08 | 20.00 |
| | | 3 | 0 | 21.00 | 19.72 | 19.70 | 19.70 |
| | | 3 | 2 | 21.00 | 19.85 | 19.76 | 19.74 |
| | | 3 | 3 | 21.00 | 19.79 | 19.74 | 19.72 |
| | | 6 | 0 | 20.00 | 18.93 | 18.87 | 18.82 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 26705CH | 26865CH | 27025CH |
| 3MHz | QPSK | 1 | 0 | 22.00 | 20.83 | 20.90 | 20.80 |
| | | 1 | 7 | 22.00 | 20.75 | 20.89 | 20.86 |
| | | 1 | 14 | 22.00 | 20.87 | 20.94 | 20.80 |
| | | 8 | 0 | 21.00 | 19.74 | 19.77 | 19.82 |
| | | 8 | 4 | 21.00 | 19.87 | 19.78 | 19.77 |
| | | 8 | 7 | 21.00 | 19.78 | 19.75 | 19.72 |
| | | 15 | 0 | 21.00 | 19.85 | 19.78 | 19.79 |
| | 16QAM | 1 | 0 | 21.00 | 20.03 | 19.98 | 20.10 |
| | | 1 | 7 | 21.00 | 20.05 | 20.01 | 20.07 |
| | | 1 | 14 | 21.00 | 20.02 | 19.95 | 20.00 |
| | | 8 | 0 | 20.00 | 18.77 | 18.78 | 18.83 |
| | | 8 | 4 | 20.00 | 18.89 | 18.79 | 18.82 |
| | | 8 | 7 | 20.00 | 18.89 | 18.81 | 18.77 |
| | | 15 | 0 | 20.00 | 18.85 | 18.80 | 18.83 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 26715CH | 26865CH | 27015CH |
| 5MHz | QPSK | 1 | 0 | 22.00 | 20.83 | 20.77 | 21.02 |
| | | 1 | 13 | 22.00 | 20.91 | 20.92 | 20.86 |
| | | 1 | 24 | 22.00 | 20.89 | 20.85 | 20.79 |
| | | 12 | 0 | 21.00 | 19.85 | 19.68 | 19.74 |
| | | 12 | 6 | 21.00 | 19.85 | 19.80 | 19.82 |
| | | 12 | 13 | 21.00 | 19.65 | 19.75 | 19.71 |
| | | 25 | 0 | 21.00 | 19.87 | 19.72 | 19.83 |
| | 16QAM | 1 | 0 | 21.00 | 19.98 | 19.82 | 20.01 |
| | | 1 | 13 | 21.00 | 20.08 | 19.97 | 20.02 |
| | | 1 | 24 | 21.00 | 19.95 | 19.93 | 19.92 |
| | | 12 | 0 | 20.00 | 18.91 | 18.72 | 18.85 |
| | | 12 | 6 | 20.00 | 18.91 | 18.80 | 18.87 |
| | | 12 | 13 | 20.00 | 18.79 | 18.82 | 18.84 |
| | | 25 | 0 | 20.00 | 18.80 | 18.75 | 18.76 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 26750CH | 26865CH | 26990CH |
| 10MHz | QPSK | 1 | 0 | 22.00 | 21.02 | 20.93 | 20.95 |
| | | 1 | 25 | 22.00 | 20.85 | 20.79 | 20.94 |
| | | 1 | 49 | 22.00 | 20.75 | 21.17 | 20.96 |
| | | 25 | 0 | 21.00 | 19.92 | 19.70 | 19.82 |
| | | 25 | 13 | 21.00 | 19.88 | 19.78 | 19.81 |
| | | 25 | 25 | 21.00 | 19.73 | 19.75 | 19.74 |
| | | 50 | 0 | 21.00 | 19.94 | 19.80 | 19.83 |
| | 16QAM | 1 | 0 | 21.00 | 20.17 | 19.99 | 20.06 |
| | | 1 | 25 | 21.00 | 19.77 | 19.88 | 19.94 |
| | | 1 | 49 | 21.00 | 19.81 | 19.86 | 19.92 |
| | | 25 | 0 | 20.00 | 18.89 | 18.68 | 18.82 |
| | | 25 | 13 | 20.00 | 18.88 | 18.79 | 18.80 |
| | | 25 | 25 | 20.00 | 18.72 | 18.75 | 18.71 |
| | | 50 | 0 | 20.00 | 18.75 | 18.77 | 18.76 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel 26775CH | Channel 26865CH | Channel 26965CH |
|---|---|---|---|---|---|---|---|
| 15MHz | QPSK | 1 | 0 | 22.00 | 20.99 | 20.96 | 21.04 |
| | | 1 | 38 | 22.00 | 20.87 | 20.77 | 20.95 |
| | | 1 | 74 | 22.00 | 20.84 | 21.02 | 20.85 |
| | | 36 | 0 | 21.00 | 19.76 | 19.70 | 19.89 |
| | | 36 | 18 | 21.00 | 19.82 | 19.83 | 19.96 |
| | | 36 | 39 | 21.00 | 19.73 | 19.77 | 19.78 |
| | | 75 | 0 | 21.00 | 19.80 | 19.73 | 19.81 |
| | 16QAM | 1 | 0 | 21.00 | 19.67 | 19.65 | 19.80 |
| | | 1 | 38 | 21.00 | 19.50 | 19.49 | 19.77 |
| | | 1 | 74 | 21.00 | 19.61 | 19.67 | 19.40 |
| | | 36 | 0 | 20.00 | 18.88 | 18.62 | 18.92 |
| | | 36 | 18 | 20.00 | 18.84 | 18.81 | 18.83 |
| | | 36 | 39 | 20.00 | 18.63 | 18.80 | 18.72 |
| | | 75 | 0 | 20.00 | 18.71 | 18.75 | 18.79 |

Table 47: Conducted power measurement results of LTE Band XXVI

**Second antenna + Hotspot:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 26697CH | 26865CH | 27033CH |
| 1.4MHz | QPSK | 1 | 0 | 21.00 | 19.92 | 19.79 | 19.84 |
| | | 1 | 3 | 21.00 | 19.84 | 19.89 | 19.80 |
| | | 1 | 5 | 21.00 | 19.80 | 19.85 | 19.78 |
| | | 3 | 0 | 21.00 | 19.69 | 19.63 | 19.60 |
| | | 3 | 2 | 21.00 | 19.71 | 19.78 | 19.71 |
| | | 3 | 3 | 21.00 | 19.67 | 19.71 | 19.65 |
| | | 6 | 0 | 21.00 | 19.76 | 19.82 | 19.72 |
| | 16QAM | 1 | 0 | 21.00 | 19.90 | 20.04 | 19.89 |
| | | 1 | 3 | 21.00 | 19.90 | 20.03 | 19.86 |
| | | 1 | 5 | 21.00 | 20.00 | 19.99 | 19.96 |
| | | 3 | 0 | 21.00 | 19.81 | 19.77 | 19.72 |
| | | 3 | 2 | 21.00 | 19.78 | 19.88 | 19.80 |
| | | 3 | 3 | 21.00 | 19.75 | 19.85 | 19.76 |
| | | 6 | 0 | 21.00 | 19.58 | 19.66 | 19.58 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 26705CH | 26865CH | 27025CH |
| 3MHz | QPSK | 1 | 0 | 21.00 | 19.92 | 19.81 | 19.87 |
| | | 1 | 7 | 21.00 | 19.88 | 19.85 | 19.74 |
| | | 1 | 14 | 21.00 | 19.86 | 19.89 | 19.84 |
| | | 8 | 0 | 21.00 | 19.77 | 19.80 | 19.80 |
| | | 8 | 4 | 21.00 | 19.75 | 19.88 | 19.80 |
| | | 8 | 7 | 21.00 | 19.74 | 19.76 | 19.78 |
| | | 15 | 0 | 21.00 | 19.70 | 19.85 | 19.75 |
| | 16QAM | 1 | 0 | 21.00 | 20.13 | 19.99 | 20.05 |
| | | 1 | 7 | 21.00 | 20.11 | 20.05 | 20.03 |
| | | 1 | 14 | 21.00 | 19.94 | 20.00 | 20.12 |
| | | 8 | 0 | 21.00 | 19.53 | 19.56 | 19.58 |
| | | 8 | 4 | 21.00 | 19.52 | 19.64 | 19.56 |
| | | 8 | 7 | 21.00 | 19.61 | 19.58 | 19.57 |
| | | 15 | 0 | 21.00 | 19.48 | 19.64 | 19.56 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 26715CH | 26865CH | 27015CH |
| 5MHz | QPSK | 1 | 0 | 21.00 | 19.93 | 19.94 | 19.93 |
| | | 1 | 13 | 21.00 | 19.87 | 20.01 | 19.97 |
| | | 1 | 24 | 21.00 | 19.83 | 19.99 | 19.91 |
| | | 12 | 0 | 21.00 | 19.69 | 19.70 | 19.73 |
| | | 12 | 6 | 21.00 | 19.71 | 19.86 | 19.80 |
| | | 12 | 13 | 21.00 | 19.63 | 19.80 | 19.72 |
| | | 25 | 0 | 21.00 | 19.81 | 19.83 | 19.79 |
| | 16QAM | 1 | 0 | 21.00 | 19.99 | 19.86 | 19.96 |
| | | 1 | 13 | 21.00 | 20.01 | 20.05 | 20.02 |
| | | 1 | 24 | 21.00 | 19.81 | 19.94 | 19.89 |
| | | 12 | 0 | 21.00 | 19.51 | 19.47 | 19.57 |
| | | 12 | 6 | 21.00 | 19.55 | 19.64 | 19.62 |
| | | 12 | 13 | 21.00 | 19.52 | 19.63 | 19.58 |
| | | 25 | 0 | 21.00 | 19.52 | 19.58 | 19.53 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 26750CH | 26865CH | 26990CH |
| 10MHz | QPSK | 1 | 0 | 21.00 | 19.98 | 19.84 | 19.99 |
| | | 1 | 25 | 21.00 | 19.78 | 19.82 | 19.81 |
| | | 1 | 49 | 21.00 | 19.71 | 19.98 | 19.82 |
| | | 25 | 0 | 21.00 | 19.78 | 19.80 | 19.75 |
| | | 25 | 13 | 21.00 | 19.79 | 19.86 | 19.82 |
| | | 25 | 25 | 21.00 | 19.72 | 19.80 | 19.73 |
| | | 50 | 0 | 21.00 | 19.90 | 19.77 | 19.81 |
| | 16QAM | 1 | 0 | 21.00 | 19.97 | 20.01 | 20.06 |
| | | 1 | 25 | 21.00 | 19.69 | 19.86 | 19.77 |
| | | 1 | 49 | 21.00 | 19.77 | 20.10 | 19.98 |
| | | 25 | 0 | 21.00 | 19.54 | 19.53 | 19.48 |
| | | 25 | 13 | 21.00 | 19.56 | 19.60 | 19.58 |
| | | 25 | 25 | 21.00 | 19.44 | 19.58 | 19.52 |
| | | 50 | 0 | 21.00 | 19.51 | 19.46 | 19.53 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel 26775CH | Channel 26865CH | Channel 26965CH |
|---|---|---|---|---|---|---|---|
| 15MHz | QPSK | 1 | 0 | s | 19.85 | 19.93 | **19.95** |
| | | 1 | 38 | 21.00 | 19.64 | 19.81 | 19.84 |
| | | 1 | 74 | 21.00 | 19.82 | 19.87 | 19.81 |
| | | 36 | 0 | 21.00 | 19.69 | 19.80 | 19.79 |
| | | 36 | 18 | 21.00 | 19.70 | 19.83 | **19.86** |
| | | 36 | 39 | 21.00 | 19.61 | 19.66 | 19.77 |
| | | 75 | 0 | 21.00 | 19.74 | 19.68 | 19.83 |
| | 16QAM | 1 | 0 | 21.00 | 19.62 | 19.63 | 19.68 |
| | | 1 | 38 | 21.00 | 19.36 | 19.64 | 19.57 |
| | | 1 | 74 | 21.00 | 19.52 | 19.63 | 19.50 |
| | | 36 | 0 | 21.00 | 19.58 | 19.47 | 19.49 |
| | | 36 | 18 | 21.00 | 19.50 | 19.55 | 19.49 |
| | | 36 | 39 | 21.00 | 19.29 | 19.43 | 19.45 |
| | | 75 | 0 | 21.00 | 19.44 | 19.43 | 19.54 |

Table 48: Conducted power measurement results of LTE Band XXVI

### 7.1.10 Conducted power measurements of GSM850 (Main Antenna)

**Full Power:**

| GSM850 | | Burst-Averaged output Power (dBm) | | | | Division Factors | Frame-Averaged output Power (dBm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Tune-up | 128CH | 190CH | 251CH | | Tune-up | 128CH | 190CH | 251CH |
| GSM (CS) | | 33.50 | 32.72 | 32.70 | 32.73 | -9.19 | 24.31 | 23.53 | 23.51 | 23.54 |
| GPRS/ EDGE (GMSK) | 1 Tx Slot | 33.50 | 32.70 | 32.71 | 32.66 | -9.19 | 24.31 | 23.51 | 23.52 | 23.47 |
| | 2 Tx Slots | 31.00 | 29.98 | 29.93 | 29.81 | -6.13 | 24.87 | 23.85 | 23.80 | 23.68 |
| EDGE (8PSK) | 1 Tx Slot | 27.00 | 25.90 | 25.90 | 25.85 | -9.19 | 17.81 | 16.71 | 16.71 | 16.66 |
| | 2 Tx Slots | 25.00 | 24.02 | 24.10 | 24.07 | -6.13 | 18.87 | 17.89 | 17.97 | 17.94 |

Table 49:Conducted power measurement results of GSM850

Note:

1) The conducted power of GSM850 is measured with RMS detector.

2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timesolts.

3) Per KDB941225 D01v03, SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data 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.

**Main antenna(Voice) + WiFi station:**

| GSM850 | Burst-Averaged output Power (dBm) | | | | Division Factors | Frame-Averaged output Power (dBm) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Tune-up | 128CH | 190CH | 251CH | | Tune-up | 128CH | 190CH | 251CH |
| GSM (CS) | 32.50 | 31.65 | 31.63 | 31.79 | -9.19 | 23.31 | 22.46 | 22.44 | 22.60 |

Table 50:Conducted power measurement results of GSM850

Note:

1) The conducted power of GSM850 is measured with RMS detector.

2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timesolts.

**Main antenna + WiFi Hotspot:**

| GSM850 | | Burst-Averaged output Power (dBm) | | | | Division Factors | Frame-Averaged output Power (dBm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Tune-up | 128CH | 190CH | 251CH | | Tune-up | 128CH | 190CH | 251CH |
| GPRS/ EDGE (GMSK) | 1 Tx Slot | 31.50 | 30.21 | 30.34 | 30.15 | -9.19 | 22.31 | 21.02 | 21.15 | 20.96 |
| | 2 Tx Slots | 29.00 | 27.88 | 27.96 | 27.82 | -6.13 | **22.87** | **21.75** | **21.83** | **21.69** |
| EDGE (8PSK) | 1 Tx Slot | 27.00 | 26.48 | 26.42 | 26.29 | -9.19 | 17.81 | 17.29 | 17.23 | 17.10 |
| | 2 Tx Slots | 25.00 | 24.03 | 23.95 | 23.83 | -6.13 | 18.87 | 17.90 | 17.82 | 17.70 |

Table 51:Conducted power measurement results of GSM850

Note:

1) The conducted power of GSM850 is measured with RMS detector.

2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timesolts.

3) Per KDB941225 D01v03, SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data 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.

### 7.1.11 Conducted power measurements of GSM1900 (Main Antenna)

**Full Power:**

| GSM1900 | | Burst-Averaged output Power (dBm) | | | | Division Factors | Frame-Averaged output Power (dBm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Tune-up | 512CH | 661CH | 810CH | | Tune-up | 512CH | 661CH | 810CH |
| GSM (CS) | | 31.00 | 30.97 | 30.94 | 30.92 | -9.19 | 21.81 | 21.78 | 21.75 | 21.73 |
| GPRS/ EDGE (GMSK) | 1 Tx Slot | 31.00 | 30.95 | 30.93 | 30.90 | -9.19 | 21.81 | 21.76 | 21.74 | 21.71 |
| | 2 Tx Slots | 28.50 | 27.72 | 27.55 | 27.48 | -6.13 | 22.37 | 21.59 | 21.42 | 21.35 |
| EDGE (8PSK) | 1 Tx Slot | 26.00 | 25.51 | 25.39 | 25.40 | -9.19 | 16.81 | 16.32 | 16.20 | 16.21 |
| | 2 Tx Slots | 24.00 | 23.23 | 23.20 | 23.19 | -6.13 | 17.87 | 17.10 | 17.07 | 17.06 |

Table 52: Conducted power measurement results of GSM1900

Note:

1) The conducted power of GSM1900 is measured with RMS detector.

2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timesolts.

3) Per KDB941225 D01v03, SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data 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.

**Main antenna(Voice) + WiFi station:**

| GSM1900 | Burst-Averaged output Power (dBm) | | | | Division Factors | Frame-Averaged output Power (dBm) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Tune-up | 512CH | 661CH | 810CH | | Tune-up | 512CH | 661CH | 810CH |
| GSM (CS) | 29.00 | 28.91 | 28.82 | 28.77 | -9.19 | 19.81 | 19.72 | 19.63 | 19.58 |

Table 53: Conducted power measurement results of GSM1900

Note:

1) The conducted power of GSM1900 is measured with RMS detector.

2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timesolts.

**Main antenna + WiFi Hotspot:**

| GSM1900 | | Burst-Averaged output Power (dBm) | | | | Division Factors | Frame-Averaged output Power (dBm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Tune-up | 512CH | 661CH | 810CH | | Tune-up | 512CH | 661CH | 810CH |
| GPRS/ EDGE (GMSK) | 1 Tx Slot | 28.00 | 27.04 | 26.95 | 26.93 | -9.19 | 18.81 | 17.85 | 17.76 | 17.74 |
| | 2 Tx Slots | 25.50 | 24.27 | 24.81 | 24.73 | -6.13 | **19.37** | **18.14** | **18.68** | **18.60** |
| EDGE (8PSK) | 1 Tx Slot | 26.00 | 25.63 | 25.58 | 25.45 | -9.19 | 16.81 | 16.44 | 16.39 | 16.26 |
| | 2 Tx Slots | 24.00 | 23.17 | 23.13 | 23.06 | -6.13 | 17.87 | 17.04 | 17.00 | 16.93 |

Table 54: Conducted power measurement results of GSM1900

Note:

1) The conducted power of GSM1900 is measured with RMS detector.

2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timesolts.

3) Per KDB941225 D01v03, SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data 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.

### 7.1.12 Conducted power measurements of UMTS Band II (Main Antenna)

**Full Power:**

| UMTS Band II | | Tune-up | Conducted Power (dBm) | | |
|---|---|---|---|---|---|
| | | | 9262CH | 9400CH | 9538CH |
| WCDMA | 12.2kbps RMC | 23.00 | **22.77** | **22.77** | **22.71** |
| HSDPA | Subtest 1 | 22.00 | 21.85 | 21.80 | 21.71 |
| | Subtest 2 | 21.50 | 21.42 | 21.35 | 21.43 |
| | Subtest 3 | 21.00 | 20.93 | 20.89 | 20.91 |
| | Subtest 4 | 21.00 | 20.88 | 20.89 | 20.93 |
| HSUPA | Subtest 1 | 22.00 | 20.87 | 20.87 | 20.80 |
| | Subtest 2 | 20.50 | 20.42 | 20.44 | 20.39 |
| | Subtest 3 | 20.50 | 20.37 | 20.35 | 20.34 |
| | Subtest 4 | 20.50 | 20.43 | 20.42 | 20.36 |
| | Subtest 5 | 22.00 | 21.33 | 21.29 | 21.23 |
| DC-HSDPA | Subtest 1 | 22.00 | 21.78 | 21.72 | 21.63 |
| | Subtest 2 | 21.50 | 21.36 | 21.28 | 21.36 |
| | Subtest 3 | 21.00 | 20.86 | 20.81 | 20.82 |
| | Subtest 4 | 21.00 | 20.81 | 20.82 | 20.81 |

Table 55: Conducted power measurement results of UMTS Band II

Note: 1) The conducted power of UMTS Band II is measured with RMS detector.

2) The bolded 12.2kbps RMC mode was selected for SAR testing(the primary mode).

3) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

**Main antenna(Voice) + WiFi station:**

| UMTS Band II | | Tune-up | Conducted Power (dBm) | | |
|---|---|---|---|---|---|
| | | | 9262CH | 9400CH | 9538CH |
| WCDMA | 12.2kbps RMC | 21.00 | **20.42** | **20.48** | **20.52** |

Table 56: Conducted power measurement results of UMTS Band II

Note: 1) The conducted power of UMTS Band II is measured with RMS detector.

**Main antenna + WiFi Hotspot:**

| UMTS Band II | | Tune-up | Conducted Power (dBm) | | |
|---|---|---|---|---|---|
| | | | 9262CH | 9400CH | 9538CH |
| WCDMA | 12.2kbps RMC | 20.00 | **19.80** | **19.85** | **19.84** |
| HSDPA | Subtest 1 | 19.00 | 18.93 | 18.91 | 18.84 |
| | Subtest 2 | 18.50 | 18.16 | 18.21 | 18.17 |
| | Subtest 3 | 18.00 | 17.88 | 17.76 | 17.81 |
| | Subtest 4 | 18.00 | 17.84 | 17.72 | 17.83 |
| HSUPA | Subtest 1 | 19.00 | 18.75 | 18.73 | 18.79 |
| | Subtest 2 | 17.50 | 17.12 | 17.09 | 17.16 |
| | Subtest 3 | 17.50 | 17.14 | 17.16 | 17.05 |
| | Subtest 4 | 17.50 | 17.21 | 17.18 | 17.08 |
| | Subtest 5 | 19.00 | 18.63 | 18.54 | 18.47 |
| DC-HSDPA | Subtest 1 | 19.00 | 18.86 | 18.82 | 18.78 |
| | Subtest 2 | 18.50 | 18.10 | 18.13 | 18.10 |
| | Subtest 3 | 18.00 | 17.81 | 17.69 | 17.72 |
| | Subtest 4 | 18.00 | 17.80 | 17.63 | 17.73 |

Table 57: Conducted power measurement results of UMTS Band II

Note: 1) The conducted power of UMTS Band II is measured with RMS detector.

2) The bolded 12.2kbps RMC mode was selected for SAR testing(the primary mode).

3) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

### 7.1.13 Conducted power measurements of UMTS Band IV (Main Antenna)

**Full Power:**

| UMTS Band IV | | Tune-up | Conducted Power (dBm) | | |
|---|---|---|---|---|---|
| | | | 1312CH | 1413CH | 1513CH |
| WCDMA | 12.2kbps RMC | 23.00 | **22.42** | **22.50** | **22.50** |
| HSDPA | Subtest 1 | 22.00 | 21.49 | 21.50 | 21.49 |
| | Subtest 2 | 21.50 | 21.31 | 21.35 | 21.33 |
| | Subtest 3 | 21.00 | 20.63 | 20.49 | 20.45 |
| | Subtest 4 | 21.00 | 20.64 | 20.82 | 20.71 |
| HSUPA | Subtest 1 | 22.00 | 20.59 | 20.60 | 20.62 |
| | Subtest 2 | 20.50 | 20.27 | 20.24 | 20.25 |
| | Subtest 3 | 20.50 | 20.28 | 20.26 | 20.20 |
| | Subtest 4 | 20.50 | 20.45 | 20.44 | 20.39 |
| | Subtest 5 | 22.00 | 20.97 | 20.89 | 20.90 |
| DC-HSDPA | Subtest 1 | 22.00 | 21.41 | 21.42 | 21.41 |
| | Subtest 2 | 21.50 | 21.22 | 21.26 | 21.28 |
| | Subtest 3 | 21.00 | 20.54 | 20.42 | 20.37 |
| | Subtest 4 | 21.00 | 20.58 | 20.76 | 20.66 |

Table 58: Conducted power measurement results of UMTS Band IV

Note: 1) The conducted power of UMTS Band IV is measured with RMS detector.

2) The bolded 12.2kbps RMC mode was selected for SAR testing(the primary mode).

3) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

**Main antenna(Voice) + WiFi Station:**

| UMTS Band IV | | Tune-up | Conducted Power (dBm) | | |
|---|---|---|---|---|---|
| | | | 1312CH | 1413CH | 1513CH |
| WCDMA | 12.2kbps RMC | 21.00 | **20.74** | **20.83** | **20.81** |

Table 59: Conducted power measurement results of UMTS Band IV

Note: 1) The conducted power of UMTS Band IV is measured with RMS detector.

**Main antenna + WiFi Hotspot:**

| UMTS Band IV | | Tune-up | Conducted Power (dBm) | | |
|---|---|---|---|---|---|
| | | | 1312CH | 1413CH | 1513CH |
| WCDMA | 12.2kbps RMC | 20.00 | 19.46 | 19.42 | 19.37 |
| HSDPA | Subtest 1 | 19.00 | 18.33 | 18.59 | 18.51 |
| | Subtest 2 | 18.50 | 18.24 | 18.46 | 18.40 |
| | Subtest 3 | 18.00 | 17.63 | 17.67 | 17.27 |
| | Subtest 4 | 18.00 | 17.86 | 17.89 | 17.92 |
| HSUPA | Subtest 1 | 19.00 | 18.22 | 18.01 | 18.04 |
| | Subtest 2 | 17.50 | 17.17 | 17.24 | 17.35 |
| | Subtest 3 | 17.50 | 17.25 | 17.28 | 17.44 |
| | Subtest 4 | 17.50 | 17.45 | 17.40 | 17.31 |
| | Subtest 5 | 19.00 | 18.38 | 18.05 | 18.04 |
| DC-HSDPA | Subtest 1 | 19.00 | 18.25 | 18.51 | 18.41 |
| | Subtest 2 | 18.50 | 18.17 | 18.40 | 18.32 |
| | Subtest 3 | 18.00 | 17.55 | 17.62 | 17.22 |
| | Subtest 4 | 18.00 | 17.79 | 17.83 | 17.82 |

Table 60: Conducted power measurement results of UMTS Band IV

Note: 1) The conducted power of UMTS Band IV is measured with RMS detector.

2) The bolded 12.2kbps RMC mode was selected for SAR testing(the primary mode).

3) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

### 7.1.14 Conducted power measurements of UMTS Band V (Main Antenna)

**Full Power:**

| UMTS Band V | | Tune-up | Conducted Power (dBm) | | |
|---|---|---|---|---|---|
| | | | 4132CH | 4182CH | 4233CH |
| WCDMA | 12.2kbps RMC | 24.50 | **23.52** | **23.66** | **23.64** |
| HSDPA | Subtest 1 | 23.50 | 22.50 | 22.60 | 22.59 |
| | Subtest 2 | 23.00 | 22.56 | 22.51 | 22.34 |
| | Subtest 3 | 22.50 | 22.05 | 21.78 | 22.14 |
| | Subtest 4 | 22.50 | 21.99 | 21.76 | 22.14 |
| HSUPA | Subtest 1 | 23.50 | 21.64 | 21.71 | 21.75 |
| | Subtest 2 | 22.00 | 21.37 | 21.44 | 21.44 |
| | Subtest 3 | 22.00 | 21.37 | 21.45 | 21.47 |
| | Subtest 4 | 22.00 | 21.83 | 21.89 | 21.92 |
| | Subtest 5 | 23.50 | 22.09 | 22.11 | 22.20 |
| DC-HSDPA | Subtest 1 | 23.50 | 22.42 | 22.52 | 22.52 |
| | Subtest 2 | 23.00 | 22.48 | 22.52 | 22.28 |
| | Subtest 3 | 22.50 | 21.95 | 21.71 | 22.09 |
| | Subtest 4 | 22.50 | 21.92 | 21.70 | 22.10 |

Table 61: Conducted power measurement results of UMTS Band V

Note: 1) The conducted power of UMTS Band V is measured with RMS detector.
2) The bolded 12.2kbps RMC mode was selected for SAR testing(the primary mode).
3) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

**Main antenna(Voice) + WiFi station:**

| UMTS Band V | | Tune-up | Conducted Power (dBm) | | |
|---|---|---|---|---|---|
| | | | 4132CH | 4182CH | 4233CH |
| WCDMA | 12.2kbps RMC | 23.50 | **22.13** | **22.29** | **22.19** |

Table 62: Conducted power measurement results of UMTS Band V

Note: 1) The conducted power of UMTS Band V is measured with RMS detector.

**Main antenna + WiFi Hotspot:**

| UMTS Band V | | Tune-up | Conducted Power (dBm) | | |
|---|---|---|---|---|---|
| | | | 4132CH | 4182CH | 4233CH |
| WCDMA | 12.2kbps RMC | 22.50 | **22.02** | **22.10** | **22.09** |
| HSDPA | Subtest 1 | 21.50 | 21.06 | 21.11 | 21.10 |
| | Subtest 2 | 21.00 | 20.93 | 20.96 | 20.96 |
| | Subtest 3 | 20.50 | 20.48 | 20.49 | 20.49 |
| | Subtest 4 | 20.50 | 20.07 | 20.42 | 20.18 |
| HSUPA | Subtest 1 | 21.50 | 20.27 | 20.46 | 20.47 |
| | Subtest 2 | 20.00 | 19.95 | 19.97 | 19.91 |
| | Subtest 3 | 20.00 | 19.67 | 19.66 | 19.64 |
| | Subtest 4 | 20.00 | 19.95 | 19.89 | 19.91 |
| | Subtest 5 | 21.50 | 20.28 | 20.27 | 20.27 |
| DC-HSDPA | Subtest 1 | 21.50 | 21.00 | 21.02 | 21.02 |
| | Subtest 2 | 21.00 | 20.88 | 20.82 | 20.88 |
| | Subtest 3 | 20.50 | 20.42 | 20.41 | 20.42 |
| | Subtest 4 | 20.50 | 19.98 | 20.36 | 20.11 |

Table 63: Conducted power measurement results of UMTS Band V

Note: 1) The conducted power of UMTS Band V is measured with RMS detector.
2) The bolded 12.2kbps RMC mode was selected for SAR testing(the primary mode).
3) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

### 7.1.15 Conducted power measurements of CDMA BC0 (Main Antenna)

**Full Power:**

| CDMA BC0 | | Average Power (dBm) | | | |
|---|---|---|---|---|---|
| | | Tune-up | 1013CH | 384CH | 777CH |
| RC1 | SO55 (Loopback) | 25.00 | 23.98 | 24.08 | 24.03 |
| RC3 | SO55 (Loopback) | 25.00 | 24.08 | 24.09 | 24.10 |
| | TDSO32 (FCH+SCH) | 25.00 | 23.99 | 24.07 | 24.12 |
| | TDSO32 (FCH) | 25.00 | 24.00 | 24.08 | 24.10 |
| 1x Advanced | SO75 | 25.00 | 24.02 | 24.05 | 24.04 |
| Rev 0 | FTAP/RTAP | 25.00 | 24.07 | 24.00 | 23.80 |
| Rev A | FETAP/RETAP | 25.00 | 23.72 | 23.80 | 23.80 |

Table 64: Conducted power measurement results of CDMA BC0

Note: 1) The conducted power of CDMA BC0 is measured with RMS detector.

2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

**Main antenna(Voice) + WiFi station:**

| CDMA BC0 | | Average Power (dBm) | | | |
|---|---|---|---|---|---|
| | | Tune-up | 1013CH | 384CH | 777CH |
| RC1 | SO55 (Loopback) | 23.50 | 23.08 | 23.15 | 22.97 |
| RC3 | SO55 (Loopback) | 23.50 | 23.18 | 23.16 | 23.17 |
| | TDSO32 (FCH+SCH) | 23.50 | 23.09 | 23.11 | 23.19 |
| | TDSO32 (FCH) | 23.50 | 23.10 | 23.19 | 23.13 |
| 1x Advanced | SO75 | 23.50 | 23.12 | 23.03 | 23.02 |

Table 65: Conducted power measurement results of CDMA BC0

Note: 1) The conducted power of CDMA BC0 is measured with RMS detector.

2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

**Main antenna + WiFi Hotspot:**

| CDMA BC0 | | Average Power (dBm) | | | |
|---|---|---|---|---|---|
| | | Tune-up | 1013CH | 384CH | 777CH |
| RC1 | SO55 (Loopback) | 22.50 | 21.52 | 21.57 | 21.50 |
| RC3 | SO55 (Loopback) | 22.50 | 21.53 | 21.58 | 21.50 |
| | TDSO32 (FCH+SCH) | 22.50 | 21.55 | 21.56 | 21.52 |
| | TDSO32 (FCH) | 22.50 | 21.56 | 21.58 | 21.51 |
| 1x Advanced | SO75 | 22.50 | 21.52 | 21.55 | 54.50 |
| Rev 0 | FTAP/RTAP | 22.50 | 21.55 | 21.65 | 21.35 |
| Rev A | FETAP/RETAP | 22.50 | 21.30 | 21.45 | 21.30 |

Table 66: Conducted power measurement results of CDMA BC0

Note: 1) The conducted power of CDMA BC0 is measured with RMS detector.

2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

### 7.1.16 Conducted power measurements of CDMA BC1 (Main Antenna)

**Full Power:**

| CDMA BC1 | | Average Power (dBm) | | | |
|---|---|---|---|---|---|
| | | Tune-up | 25CH | 600CH | 1175CH |
| RC1 | SO55 (Loopback) | 23.70 | 23.37 | 23.28 | 23.25 |
| RC3 | SO55 (Loopback) | 23.70 | 23.38 | 23.28 | 23.24 |
| | TDSO32 (FCH+SCH) | 23.70 | 23.39 | 23.29 | 23.29 |
| | TDSO32 (FCH) | 23.70 | 23.42 | 23.34 | 23.28 |
| 1x Advanced | SO75 | 23.70 | 23.40 | 23.30 | 23.26 |
| Rev 0 | FTAP/RTAP | 23.70 | 23.42 | 23.32 | 23.28 |
| Rev A | FETAP/RETAP | 23.70 | 23.35 | 23.29 | 23.24 |

Table 67: Conducted power measurement results of CDMA BC 1

Note: 1) The conducted power of CDMA BC1 is measured with RMS detector.

2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

**Main antenna(Voice) + WiFi station:**

| CDMA BC1 | | Average Power (dBm) | | | |
|---|---|---|---|---|---|
| | | Tune-up | 25CH | 600CH | 1175CH |
| RC1 | SO55 (Loopback) | 21.00 | 20.87 | 20.75 | 20.55 |
| RC3 | SO55 (Loopback) | 21.00 | 20.61 | 20.82 | 20.68 |
| | TDSO32 (FCH+SCH) | 21.00 | 20.75 | 20.85 | 20.65 |
| | TDSO32 (FCH) | 21.00 | 20.66 | 20.91 | 20.65 |
| 1x Advanced | SO75 | 21.00 | 20.66 | 20.94 | 20.70 |

Table 68: Conducted power measurement results of CDMA BC 1

Note: 1) The conducted power of CDMA BC1 is measured with RMS detector.

2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

**Main antenna + WiFi Hotspot:**

| CDMA BC1 | | Average Power (dBm) | | | |
|---|---|---|---|---|---|
| | | Tune-up | 25CH | 600CH | 1175CH |
| RC1 | SO55 (Loopback) | 20.00 | 18.60 | 18.62 | 18.50 |
| RC3 | SO55 (Loopback) | 20.00 | 18.66 | 18.61 | 18.46 |
| | TDSO32 (FCH+SCH) | 20.00 | 18.65 | 18.60 | 18.52 |
| | TDSO32 (FCH) | 20.00 | 18.70 | 18.60 | 18.58 |
| 1x Advanced | SO75 | 20.00 | 18.68 | 18.55 | 18.48 |
| Rev 0 | FTAP/RTAP | 20.00 | 18.67 | 18.66 | 18.55 |
| Rev A | FETAP/RETAP | 20.00 | 18.49 | 18.43 | 18.38 |

Table 69: Conducted power measurement results of CDMA BC 1

Note: 1) The conducted power of CDMA BC1 is measured with RMS detector.

2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

### 7.1.17 Conducted power measurements of CDMA BC10 (Main Antenna)

**Full Power:**

| CDMA BC 10 | | Average Power (dBm) | | | |
|---|---|---|---|---|---|
| | | Tune-up | 450CH | 565CH | 670CH |
| RC1 | SO55 (Loopback) | 25.00 | 24.18 | 24.24 | 24.15 |
| RC3 | SO55 (Loopback) | 25.00 | 24.15 | 24.20 | 24.13 |
| | TDSO32 (FCH+SCH) | 25.00 | 24.08 | 24.18 | 24.15 |
| | TDSO32 (FCH) | 25.00 | 24.09 | 24.15 | 24.14 |
| 1x Advanced | SO75 | 25.00 | 24.05 | 24.12 | 24.10 |
| Rev 0 | FTAP/RTAP | 25.00 | 24.10 | 24.02 | 23.94 |
| Rev A | FETAP/RETAP | 25.00 | 24.05 | 23.74 | 23.61 |

Table 70: Conducted power measurement results of CDMA BC10

Note: 1) The conducted power of CDMA BC 10 is measured with RMS detector.

2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

**Main antenna(Voice) + WiFi station:**

| CDMA BC10 | | Average Power (dBm) | | | |
|---|---|---|---|---|---|
| | | Tune-up | 450CH | 565CH | 670CH |
| RC1 | SO55 (Loopback) | 23.50 | 22.99 | 23.07 | 22.99 |
| RC3 | SO55 (Loopback) | 23.50 | 22.98 | 23.05 | 22.96 |
| | TDSO32 (FCH+SCH) | 23.50 | 22.86 | 22.98 | 22.97 |
| | TDSO32 (FCH) | 23.50 | 22.87 | 22.94 | 22.94 |
| 1x Advanced | SO75 | 23.50 | 22.91 | 22.98 | 23.01 |

Table 71: Conducted power measurement results of CDMA BC10

Note: 1) The conducted power of CDMA BC 10 is measured with RMS detector.

2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

**Main antenna + WiFi Hotspot:**

| CDMA BC 10 | | Average Power (dBm) | | | |
|---|---|---|---|---|---|
| | | Tune-up | 450CH | 565CH | 670CH |
| RC1 | SO55 (Loopback) | 22.50 | 21.53 | 21.62 | 21.50 |
| RC3 | SO55 (Loopback) | 22.50 | 21.55 | 21.65 | 21.51 |
| | TDSO32 (FCH+SCH) | 22.50 | 21.55 | 21.59 | 21.58 |
| | TDSO32 (FCH) | 22.50 | 21.59 | 21.60 | 21.57 |
| 1x Advanced | SO75 | 22.50 | 21.55 | 21.62 | 21.52 |
| Rev 0 | FTAP/RTAP | 22.50 | 21.52 | 21.45 | 21.46 |
| Rev A | FETAP/RETAP | 22.50 | 21.33 | 21.29 | 21.21 |

Table 72: Conducted power measurement results of CDMA BC10

Note: 1) The conducted power of CDMA BC10 is measured with RMS detector.

2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

### 7.1.18 Conducted power measurements of LTE Band II (Main Antenna)

**Full Power:**

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 18607CH | 18900CH | 19193CH |
| 1.4MHz | QPSK | 1 | 0 | 22.80 | 22.18 | 21.87 | 21.86 |
| | | 1 | 3 | 22.80 | 21.93 | 21.84 | 21.92 |
| | | 1 | 5 | 22.80 | 21.90 | 21.85 | 21.86 |
| | | 3 | 0 | 22.80 | 21.75 | 21.58 | 21.66 |
| | | 3 | 2 | 22.80 | 21.81 | 21.71 | 21.79 |
| | | 3 | 3 | 22.80 | 21.83 | 21.72 | 21.75 |
| | | 6 | 0 | 21.80 | 20.85 | 20.72 | 20.73 |
| | 16QAM | 1 | 0 | 21.80 | 21.02 | 20.87 | 21.09 |
| | | 1 | 3 | 21.80 | 21.08 | 20.94 | 21.21 |
| | | 1 | 5 | 21.80 | 20.97 | 20.97 | 21.20 |
| | | 3 | 0 | 21.80 | 20.75 | 20.70 | 20.80 |
| | | 3 | 2 | 21.80 | 20.82 | 20.76 | 20.87 |
| | | 3 | 3 | 21.80 | 20.76 | 20.81 | 20.85 |
| | | 6 | 0 | 20.80 | 19.89 | 19.89 | 19.93 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 18615CH | 18900CH | 19185CH |
| 3MHz | QPSK | 1 | 0 | 22.80 | 22.22 | 21.78 | 21.82 |
| | | 1 | 7 | 22.80 | 21.86 | 21.78 | 21.92 |
| | | 1 | 14 | 22.80 | 21.91 | 21.84 | 21.82 |
| | | 8 | 0 | 21.80 | 20.91 | 20.87 | 20.78 |
| | | 8 | 4 | 21.80 | 20.92 | 20.81 | 20.84 |
| | | 8 | 7 | 21.80 | 20.91 | 20.80 | 20.78 |
| | | 15 | 0 | 21.80 | 20.95 | 20.77 | 20.90 |
| | 16QAM | 1 | 0 | 21.80 | 21.13 | 20.99 | 21.10 |
| | | 1 | 7 | 21.80 | 21.13 | 20.94 | 21.07 |
| | | 1 | 14 | 21.80 | 20.99 | 20.90 | 21.04 |
| | | 8 | 0 | 20.80 | 19.90 | 19.94 | 19.78 |
| | | 8 | 4 | 20.80 | 19.89 | 19.88 | 19.83 |
| | | 8 | 7 | 20.80 | 19.88 | 19.85 | 19.86 |
| | | 15 | 0 | 20.80 | 19.94 | 19.83 | 19.92 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | | 18625CH | 18900CH | 19175CH |
| 5MHz | QPSK | 1 | 0 | 22.80 | 22.25 | 21.88 | 21.99 |
| | | 1 | 13 | 22.80 | 22.09 | 21.98 | 22.00 |
| | | 1 | 24 | 22.80 | 21.96 | 21.76 | 21.85 |
| | | 12 | 0 | 21.80 | 20.94 | 20.72 | 20.86 |
| | | 12 | 6 | 21.80 | 20.93 | 20.84 | 20.90 |
| | | 12 | 13 | 21.80 | 20.88 | 20.68 | 20.82 |
| | | 25 | 0 | 21.80 | 20.93 | 20.81 | 20.79 |
| | 16QAM | 1 | 0 | 21.80 | 21.07 | 20.95 | 21.06 |
| | | 1 | 13 | 21.80 | 21.19 | 20.99 | 21.00 |
| | | 1 | 24 | 21.80 | 20.95 | 20.82 | 21.02 |
| | | 12 | 0 | 20.80 | 19.98 | 19.91 | 19.93 |
| | | 12 | 6 | 20.80 | 20.02 | 19.86 | 19.87 |
| | | 12 | 13 | 20.80 | 20.03 | 19.83 | 19.88 |
| | | 25 | 0 | 20.80 | 19.94 | 19.87 | 19.75 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | | 18650CH | 18900CH | 19150CH |
| 10MHz | QPSK | 1 | 0 | 22.80 | 22.48 | 22.52 | 22.58 |
| | | 1 | 25 | 22.80 | 21.90 | 21.82 | 21.96 |
| | | 1 | 49 | 22.80 | 22.00 | 21.81 | 22.04 |
| | | 25 | 0 | 21.80 | 21.06 | 20.87 | 20.90 |
| | | 25 | 13 | 21.80 | 20.94 | 20.81 | 20.90 |
| | | 25 | 25 | 21.80 | 20.90 | 20.68 | 20.77 |
| | | 50 | 0 | 21.80 | 20.96 | 20.80 | 20.92 |
| | 16QAM | 1 | 0 | 21.80 | 21.31 | 21.18 | 21.21 |
| | | 1 | 25 | 21.80 | 20.88 | 20.75 | 20.82 |
| | | 1 | 49 | 21.80 | 21.02 | 20.89 | 20.82 |
| | | 25 | 0 | 20.80 | 20.08 | 19.88 | 19.93 |
| | | 25 | 13 | 20.80 | 19.97 | 19.90 | 19.96 |
| | | 25 | 25 | 20.80 | 19.89 | 19.63 | 19.78 |
| | | 50 | 0 | 20.80 | 19.89 | 19.79 | 19.94 |