FCC SAR TEST REPORT

FCC ID	:	**AJOTTA-1221**
Equipment	:	**Mobile phone**
Brand Name	:	**Nokia**
Model Name	:	**TA-1221, TA-1231**
Applicant	:	**HMD Global Oy** **Bertel Jungin aukio 9, 02600 Espoo, Finland**
Manufacturer	:	**HMD Global Oy** **Bertel Jungin aukio 9, 02600 Espoo, Finland**
Standard	:	**FCC 47 CFR Part 2 (2.1093)** **ANSI/IEEE C95.1-1992** **IEEE 1528-2013**

The product was received on Dec. 31, 2019 and testing was started from Jan. 19, 2020 and completed on Feb. 29, 2020. We, Sporton International (Kunshan) Inc, would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

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

Rose Wang

Reviewed by: Rose Wang / Supervisor

Kat Yin

Approved by: Kat Yin / Manager

ACCREDITED
Cert #5145.02

Sporton International (Kunshan) Inc.

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History of this test report

Report No.	Version	Description	Issued Date
FA9D3106	01	Initial issue of report	Apr. 14, 2020

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for HMD Global Oy, Mobile phone, TA-1221, TA-1231, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary			Highest Simultaneous Transmission 1g SAR (W/kg)
		Head (Separation 0mm)	Body-worn (Separation 10mm)	Hotspot (Separation 10mm)	
		1g SAR (W/kg)			
Licensed	GSM850	**0.72**	0.92	0.92	1.42
	GSM1900	0.33	0.76	1.17	
	WCDMA II	0.44	0.74	1.08	
	WCDMA IV	0.22	**1.15**	1.15	
	WCDMA V	0.59	0.65	0.65	
	LTE Band 12	0.32	0.55	0.55	
	LTE Band 13	0.50	0.65	0.65	
	LTE Band 25 / 2	0.44	0.99	1.17	
	LTE Band 26 / 5	0.49	0.53	0.57	
	LTE Band 66 / 4	0.20	1.14	**1.18**	
DTS	2.4GHz WLAN	0.70	0.22	0.22	1.42
DSS	Bluetooth	0.24			1.39
Date of Testing:		2020/1/19 ~ 2020/2/29			

Remark:
This device supports both LTE B4/2/5 and B66/25/26. Since the supported frequency span for LTE B4/2/5 falls completely within the supports frequency span for LTE B66/25/26, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B66/25/26.

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

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

2. Administration Data

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Testing Laboratory		
Test Firm	Sporton International (Kunshan) Inc.	
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958	
Test Site No.	FCC Designation No.	FCC Test Firm Registration No.
	CN1257	314309

3. Guidance Applied

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

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile phone
Brand Name	Nokia
Model Name	TA-1221, TA-1231
FCC ID	AJOTTA-1221
IMEI Code	355786100000822
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+ (16QAM uplink) LTE: QPSK, 16QAM, 64QAM WLAN: 802.11b/g/n HT20 Bluetooth BR/EDR/LE
HW Version	V1.0
SW version	00VPO_1_100
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Production Unit

Remark:

1. This device supports GPRS/EGPRS Class 12.
2. This device WLAN 2.4GHz supports Hotspot operation and Bluetooth support tethering applications.
3. Reduce power for different RF exposure conditions:
   Body worn: The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device, when operating in near-body condition by end user; the device will reduced maximum output powers on the GSM1900, WCDMA B2 / B4 and LTE B2 / B4 / B25 / B66.
   Hotspot: When the mobile hotspot session is turned on by end user, the device will reduce output powers on the GSM1900, WCDMA B2 / B4 and LTE B2 / B4 / B25 / B66.
4. When the phone is in talking mode and receiver worked, then power reduction will be implemented immediately at WLAN2.4GHz.

4.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05	
FCC ID	AJOTTA-1221
Equipment Name	Mobile phone
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 66: 1710.7 MHz ~1779.3 MHz
Channel Bandwidth	LTE Band 2:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 5:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 13: 5MHz, 10MHz LTE Band 25:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 26:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 66: 1.4MHz, 3MHz,5MHz, 10MHz, 15MHz, 20MHz
uplink modulations used	QPSK / 16QAM / 64QAM
LTE Voice / Data requirements	Data only
LTE Release	R11
CA supports	Yes, Downlink only
LTE MPR permanently built-in by design	**Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3**

Modulation	Channel bandwidth / Transmission bandwidth (N_{RB})						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5

LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.
Power reduction applied to satisfy SAR compliance	Yes, when operating in hotspot / body-worn that LTE B2 / B4 / B25 / B66 power reduction applied to satisfy SAR compliance.
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power measurement please referred to section 13.
LTE Carrier Aggregation Additional Information	1. This device supports maximum of 2 carriers in the downlink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.

Transmission (H, M, L) channel numbers and frequencies in each LTE band

LTE Band 2

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900

LTE Band 4

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745

LTE Band 5

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844

LTE Band 12

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711

LTE Band 13

	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq.(MHz)
L	23205	779.5	23230	782
M	23230	782		
H	23255	784.5		

LTE Band 25

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905

LTE Band 26

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5

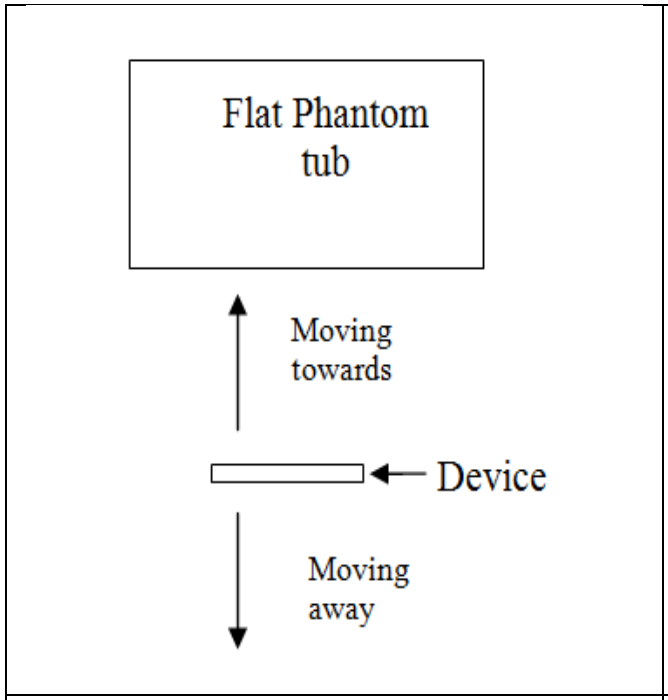
LTE Band 66

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770

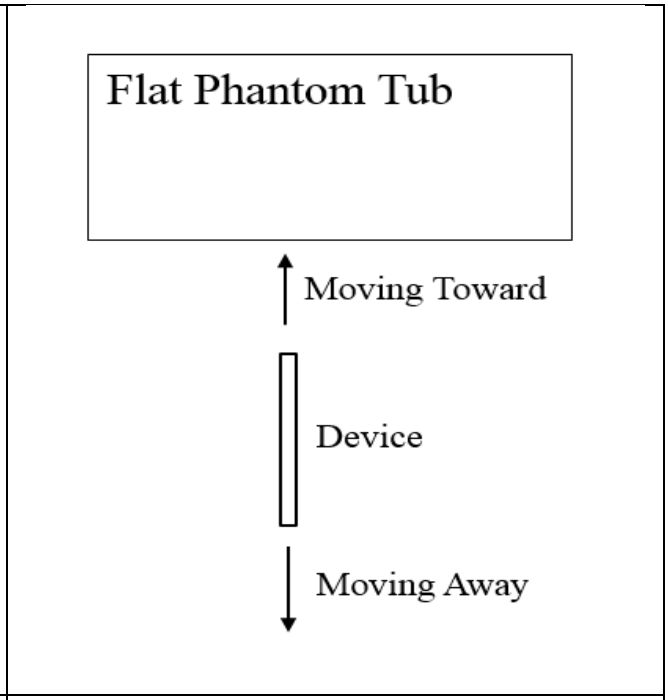
5. Proximity Sensor Triggering Test

<Proximity Sensor Triggering Distance>:

1. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed and the tissue-equivalent medium for highest frequency (1900MHz) and lowest (1750MHz) frequency was used for proximity sensor triggering testing.
2. Capacitive proximity sensors placed coincident with antenna elements at bottom ends of the phone is utilized to determine when the device comes in proximity of the user's body at the front, back or Bottom of the device.
3. The output power will reduce to body worn power level when bottom sensor pad be detected.
4. The sensors used to detect the proximity of the user's body (Body-Worn condition) at the front or back surface of the device use a detection threshold distance.
5. When the sensor is active, the device will reduced maximum output powers on the GSM1900, WCDMA B2 / B4 and LTE B2 / B4 / B25 / B66 transmitter.
6. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed for body worn:
   Front: 13 mm
   Back: 18 mm



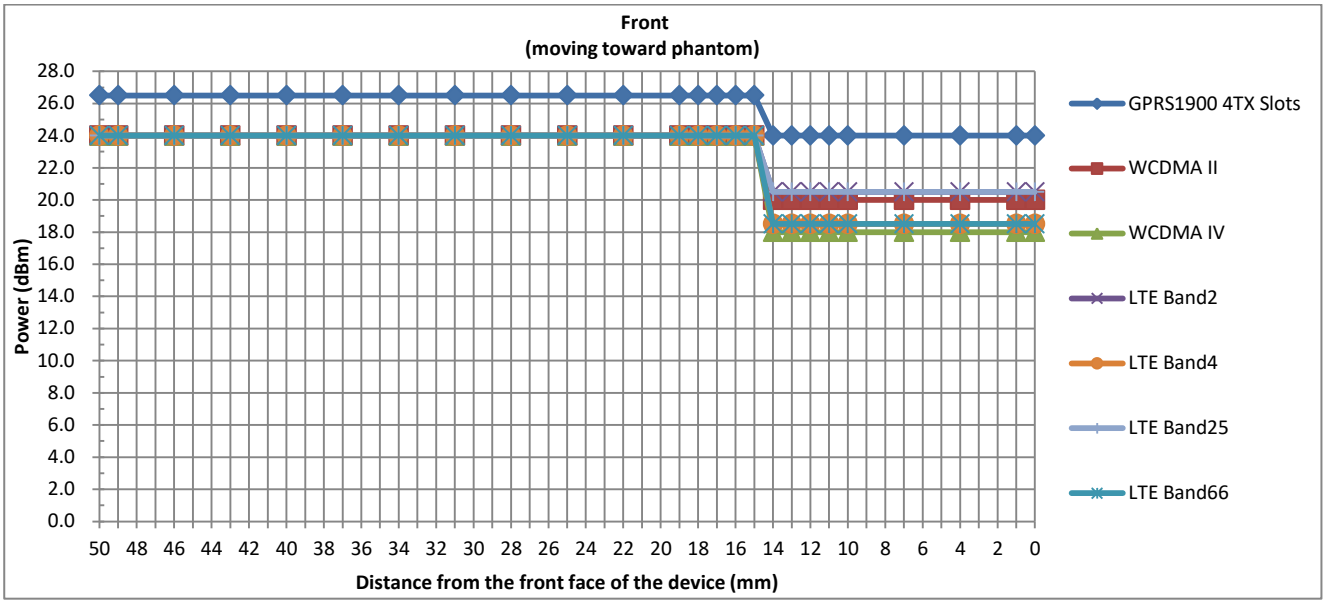
Sensor detection test set-up, front and back faces

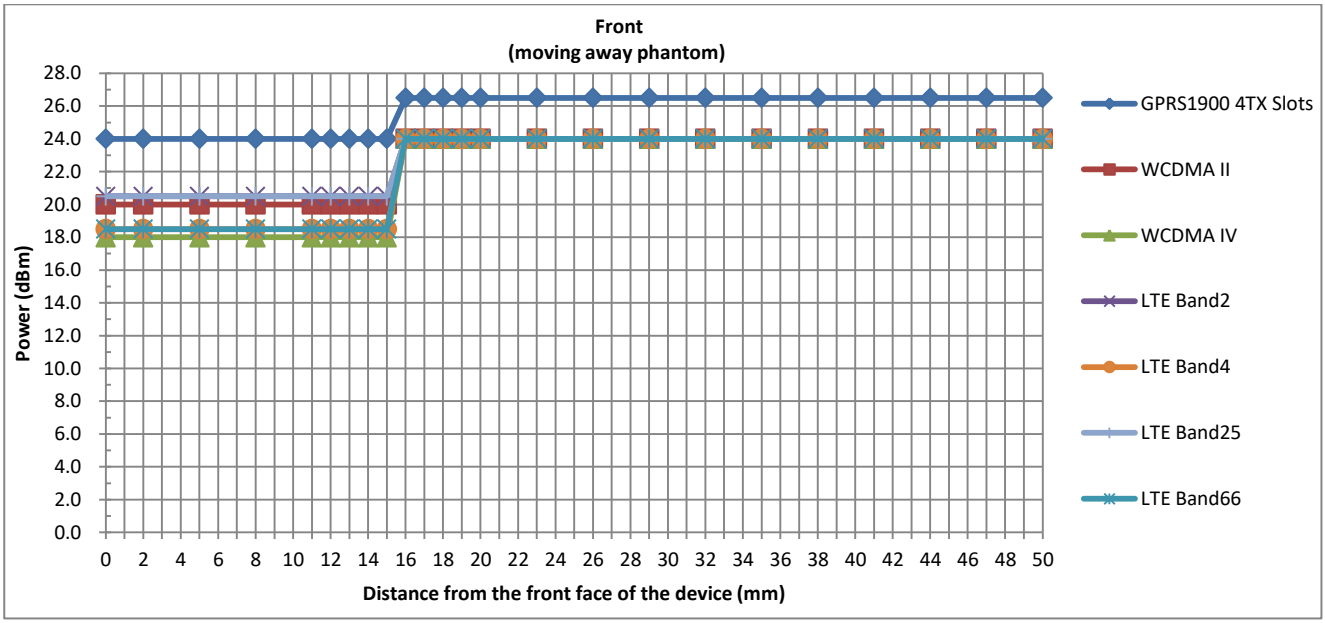


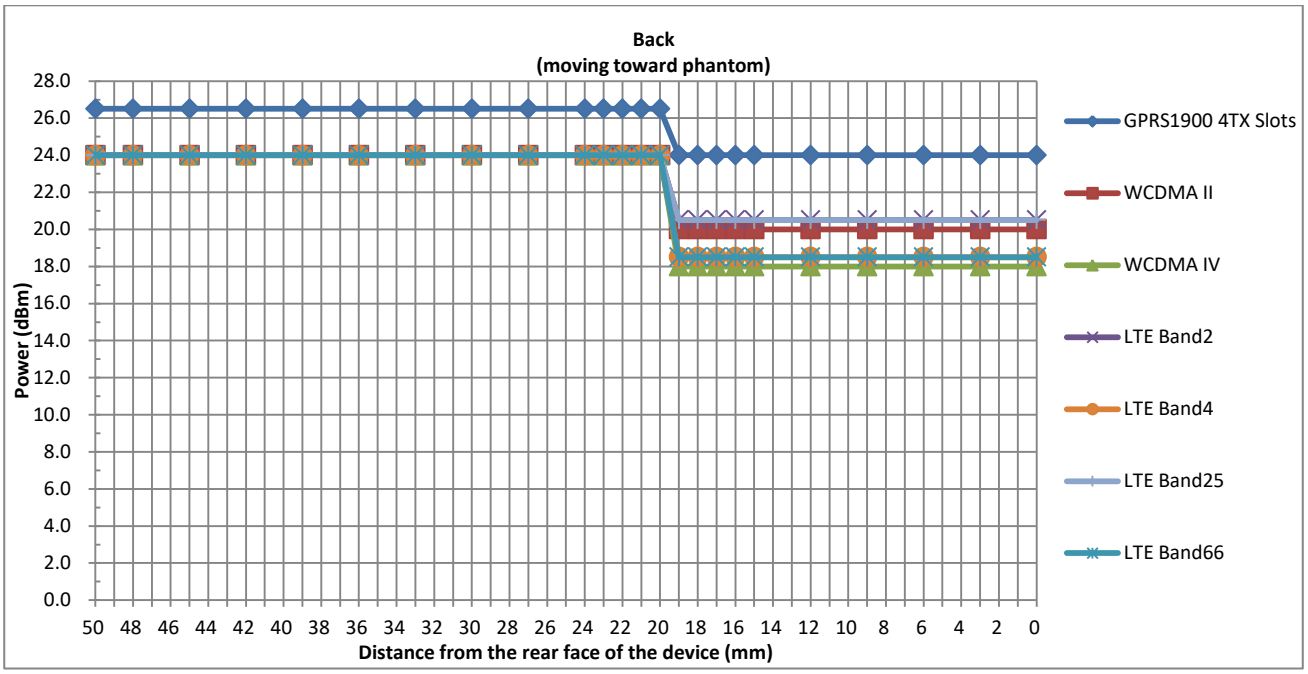
Sensor detection test set-up, bottom face

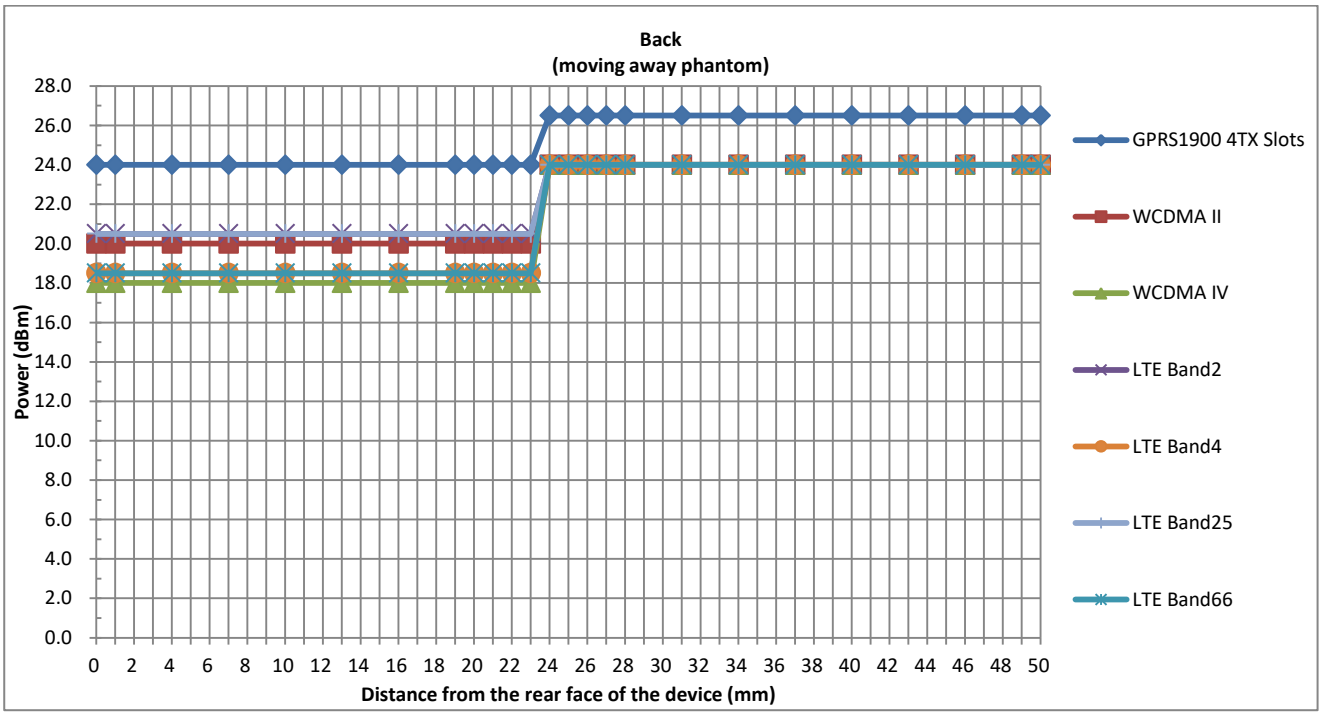
Proximity Sensor Trigger Distance (mm)						
Position	Front		Back		Bottom Side	
Position	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	14	15	19	23	15	19

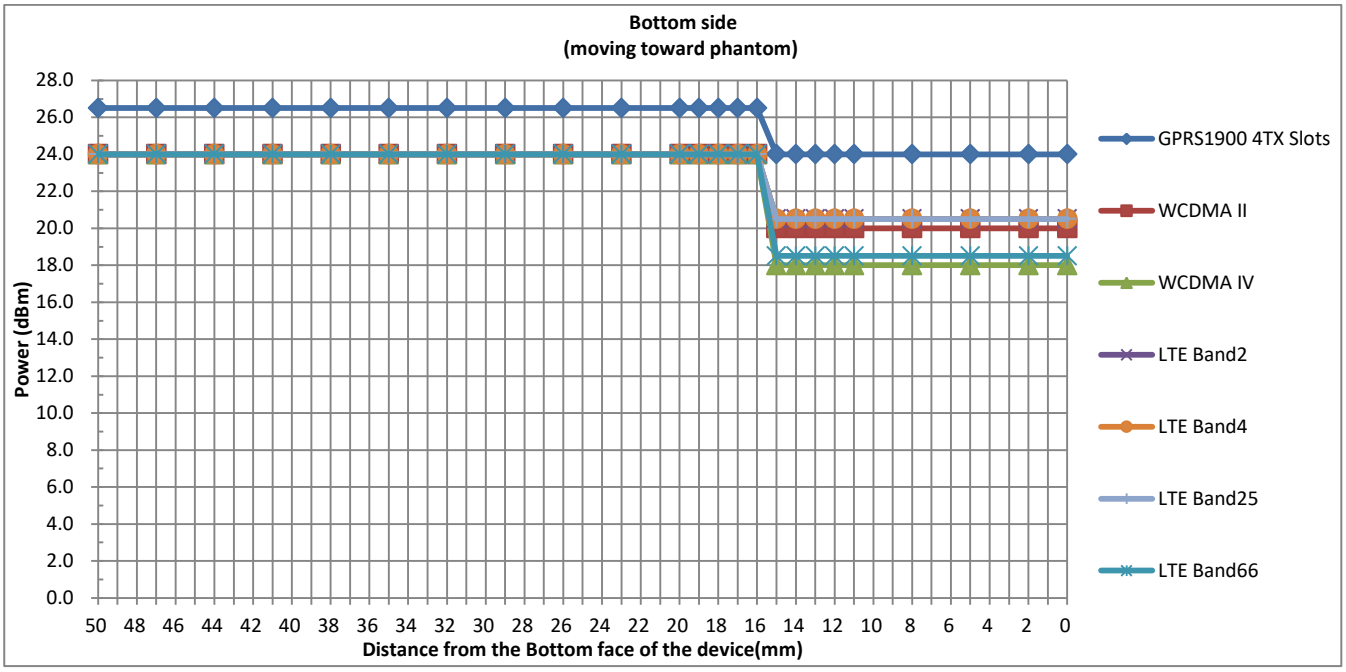
<Sensor Trigger Distance and Measured Power>

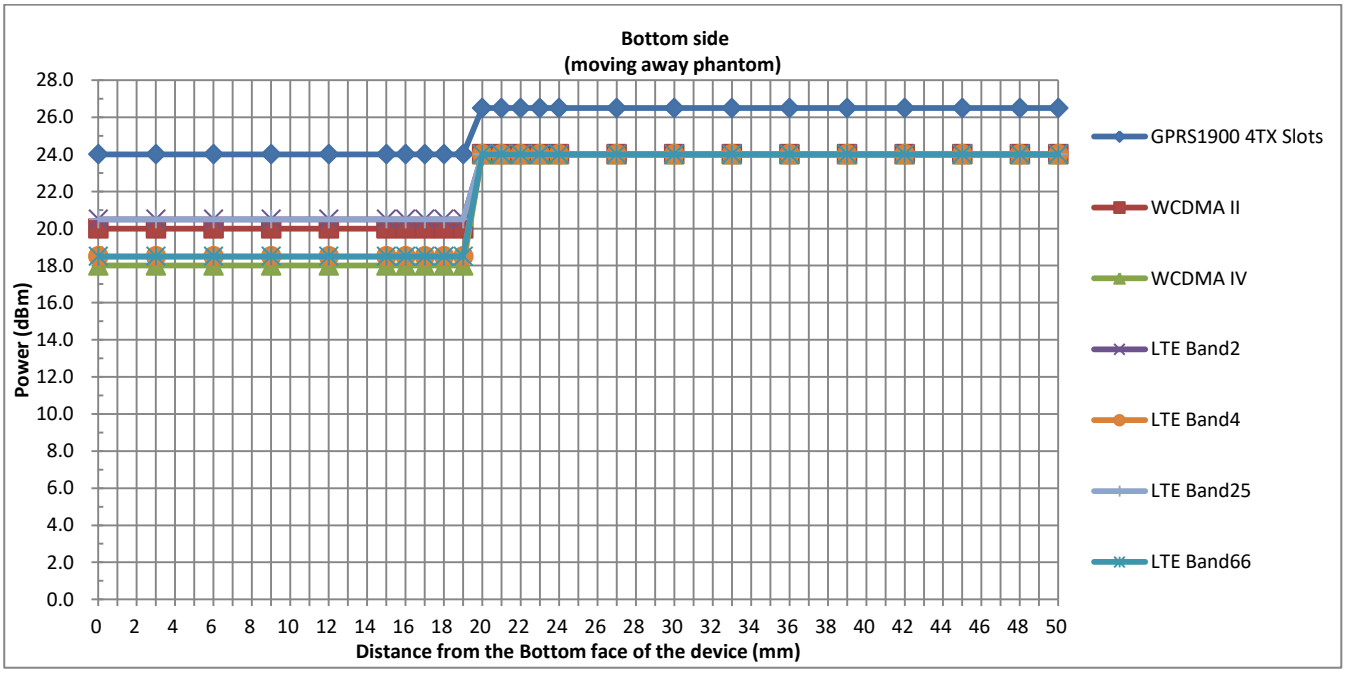





Back
(moving toward phantom)
Power (dBm)
28.0
26.0
24.0
22.0
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
50 48 46 44 42 40 38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0
Distance from the rear face of the device (mm)
GPRS1900 4TX Slots
WCDMA II
WCDMA IV
LTE Band2
LTE Band4
LTE Band25
LTE Band66

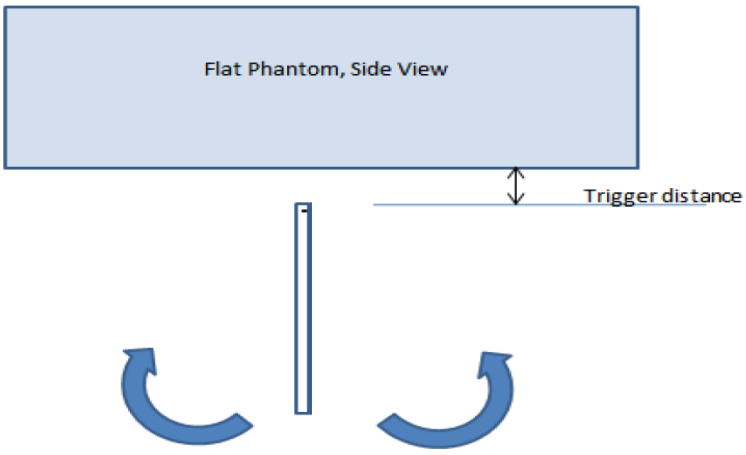

Back
(moving away phantom)
Power (dBm)
28.0
26.0
24.0
22.0
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50
Distance from the rear face of the device (mm)
GPRS1900 4TX Slots
WCDMA II
WCDMA IV
LTE Band2
LTE Band4
LTE Band25
LTE Band66


Bottom side
(moving toward phantom)
Power (dBm)
28.0
26.0
24.0
22.0
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
50 48 46 44 42 40 38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0
Distance from the Bottom face of the device(mm)
GPRS1900 4TX Slots
WCDMA II
WCDMA IV
LTE Band2
LTE Band4
LTE Band25
LTE Band66


Bottom side
(moving away phantom)
Power (dBm)
28.0
26.0
24.0
22.0
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50
Distance from the Bottom face of the device (mm)
GPRS1900 4TX Slots
WCDMA II
WCDMA IV
LTE Band2
LTE Band4
LTE Band25
LTE Band66

5.1 Tilt angle influences to proximity sensor triggering(Per KDB616217 §6.4)

The DUT was positioned directly below the flat phantom at the minimum measured trigger distance with bottom side parallel to the base of the flat phantom for each band.
The EUT was rotated about bottom side for angles up to +/- 45°. If the output power increased during the rotation the DUT was moved 1mm toward the phantom and the rotation repeated. This procedure was repeated until the power remained reduced for all angles up to +/- 45°.



Proximity Sensor Coverage Assesment(Bottom Side)

Table: Summary of Tablet Tilt Angle Influence to Proximity Sensor Triggering (Bottom Side)

Main ant Band(MHz)	Minimum trigger distance at which power reduction was maintained over ±45°	Power Reduction Status										
		-45°	-35°	-25°	-15°	-5°	0°	5°	15°	25°	35°	45°
GSM1900	15mm	on	on	on	on	on	on	on	on	on	on	on
WCDMA Band II	15mm	on	on	on	on	on	on	on	on	on	on	on
WCDMA Band IV	15mm	on	on	on	on	on	on	on	on	on	on	on
LTE Band 2	15mm	on	on	on	on	on	on	on	on	on	on	on
LTE Band 4	15mm	on	on	on	on	on	on	on	on	on	on	on
LTE Band 25	15mm	on	on	on	on	on	on	on	on	on	on	on
LTE Band 66	15mm	on	on	on	on	on	on	on	on	on	on	on

Conclusion: As is shown from the validation data, it can be ensured that the proximity sensor can be valid triggered for the DUT tilt coverage exposure condition.

6. RF Exposure Limits

6.1 Uncontrolled Environment

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

6.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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

7. Specific Absorption Rate (SAR)

7.1 Introduction

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

7.2 SAR Definition

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

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

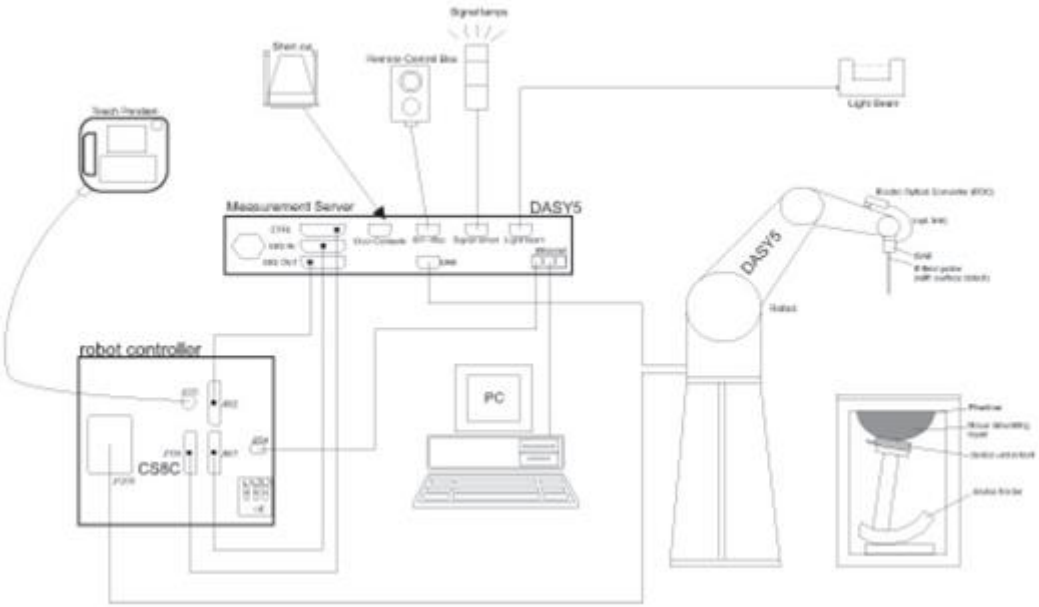
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

8. System Description and Setup

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



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

8.1 E-Field Probe

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

<ES3DV3 Probe>

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

8.2 Data Acquisition Electronics (DAE)

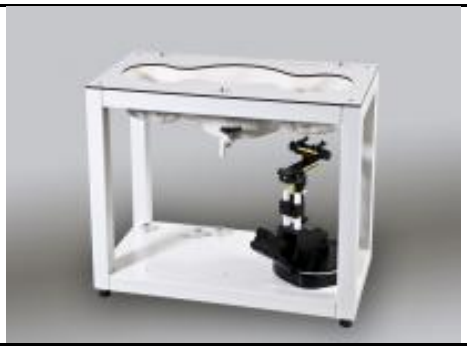
The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an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

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

Fig 5.1 Photo of DAE

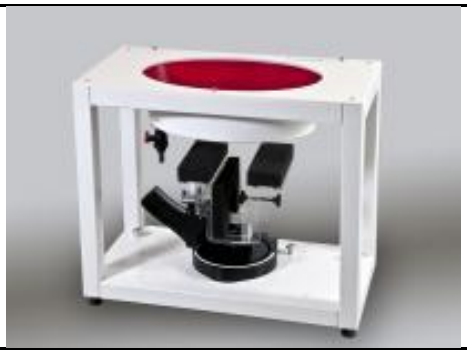
8.3 Phantom

<SAM Twin Phantom>

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

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

<ELI Phantom>

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

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

8.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

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

Mounting Device for Hand-Held Transmitters

Mounting Device Adaptor for Wide-Phones

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

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

Mounting Device for Laptops

9. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

<SAR measurement>

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

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

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

9.1 Spatial Peak SAR Evaluation

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

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

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

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

9.2 Power Reference Measurement

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

9.3 Area Scan

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

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

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

9.4 Zoom Scan

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

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

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

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

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

9.5 Volume Scan Procedures

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

9.6 Power Drift Monitoring

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

10. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1087	2019/3/27	2020/3/26
SPEAG	835MHz System Validation Kit	D835V2	4d151	2019/3/27	2020/3/26
SPEAG	1750MHz System Validation Kit	D1750V2	1090	2019/3/27	2020/3/26
SPEAG	1900MHz System Validation Kit	D1900V2	5d170	2019/3/26	2020/3/25
SPEAG	2450MHz System Validation Kit	D2450V2	908	2019/3/25	2020/3/24
SPEAG	Data Acquisition Electronics	DAE4	1338	2019/11/20	2020/11/19
SPEAG	Data Acquisition Electronics	DAE4	1210	2019/7/23	2020/7/22
SPEAG	Dosimetric E-Field Probe	ES3DV3	3293	2019/11/25	2020/11/24
SPEAG	Dosimetric E-Field Probe	EX3DV4	3857	2019/5/27	2020/5/26
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1503	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1697	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio Communication Analyzer	MT8821C	6201432831	2019/4/17	2020/4/16
Agilent	Wireless Communication Test Set	E5515C	MY52102706	2019/4/17	2020/4/16
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	2019/4/17	2020/4/16
SPEAG	Dielectric Probe Kit	DAK-3.5	1071	2019/10/28	2020/10/27
Anritsu	Vector Signal Generator	MG3710A	6201682672	2020/1/17	2021/1/16
Rohde & Schwarz	Power Meter	NRVD	102081	2019/8/15	2020/8/14
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2019/8/14	2020/8/13
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2019/8/14	2020/8/13
R&S	CBT BLUETOOTH TESTER	CBT	101246	2019/4/15	2020/4/14
EXA	Spectrum Analyzer	FSV7	100319	2019/10/18	2020/10/17
Testo	Hygrometer	608-H1	1241332088	2020/1/8	2021/1/7
FLUKE	DIGITAC THERMOMETER	51II	97240029	2019/8/15	2020/8/14
ARRA	Power Divider	A3200-2	N/A	Note 1	
MCL	Attenuation1	BW-S10W5+	N/A	Note 1	
MCL	Attenuation2	BW-S10W5+	N/A	Note 1	
MCL	Attenuation3	BW-S10W5+	N/A	Note 1	
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A	Note 1	
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B	Note 1	
Agilent	Dual Directional Coupler	778D	20500	Note 1	
Agilent	Dual Directional Coupler	11691D	MY48151020	Note 1	

General Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.

11. System Verification

11.1 Tissue Simulating Liquids

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

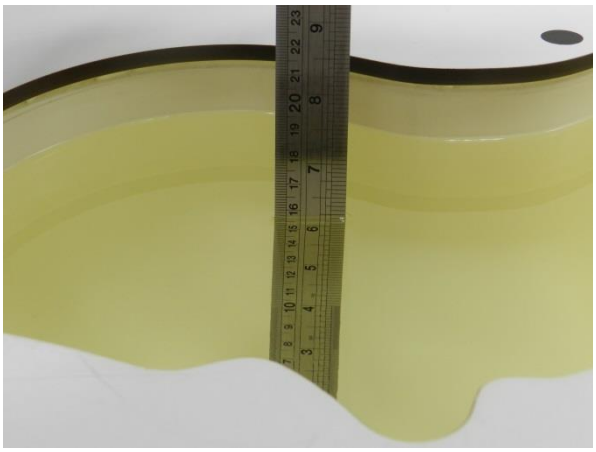


Fig 10.1Photo of Liquid Height for Head SAR

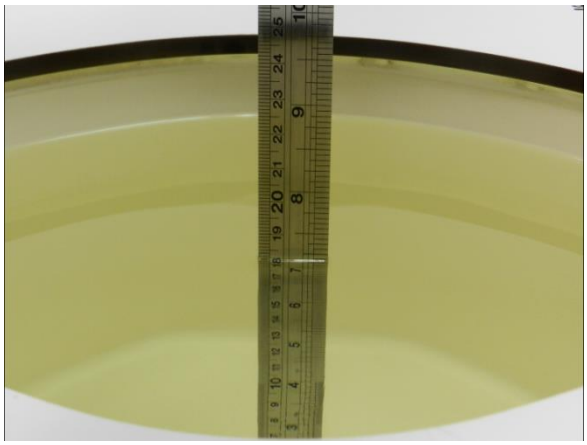


Fig 10.2 Photo of Liquid Height for Body SAR

11.2 Tissue Verification

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

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

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	22.9	0.872	41.185	0.89	41.90	-2.02	-1.71	±5	2020/1/19
835	22.7	0.911	42.730	0.90	41.50	1.22	2.96	±5	2020/1/25
1750	22.6	1.342	38.532	1.37	40.10	-2.04	-3.91	±5	2020/1/29
1900	22.8	1.390	41.480	1.40	40.00	-0.71	3.70	±5	2020/2/1
2450	22.3	1.793	40.924	1.80	39.20	-0.39	4.40	±5	2020/2/15
2450	22.6	1.860	38.535	1.80	39.20	3.33	-1.70	±5	2020/2/29

11.3 System Performance Check Results

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

Date	Frequency (MHz)	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2020/1/19	750	250	1087	3293	1338	2.18	8.36	8.72	4.31
2020/1/25	835	250	4d151	3293	1338	2.48	9.30	9.92	6.67
2020/1/29	1750	250	1090	3293	1338	8.49	36.40	33.96	-6.70
2020/2/1	1900	250	5d170	3293	1338	10.10	39.00	40.4	3.59
2020/2/15	2450	250	908	3293	1338	13.20	52.80	52.8	0.00
2020/2/29	2450	250	908	3857	1210	12.80	52.80	51.2	-3.03

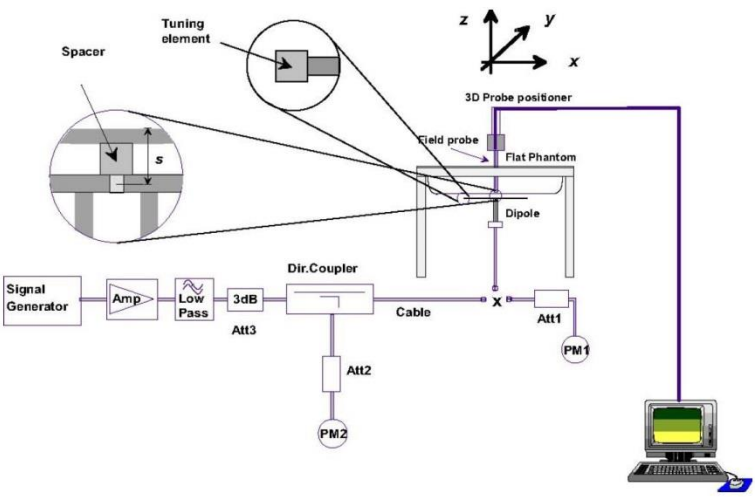


Fig 8.3.1 System Performance Check Setup

Fig 8.3.2 Setup Photo

12. RF Exposure Positions

12.1 Ear and handset reference point

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

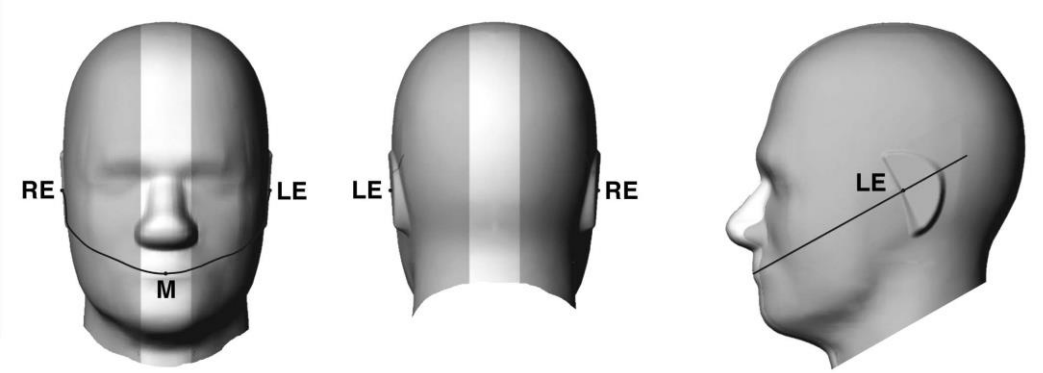


Fig 9.1.1 Front, back, and side views of SAM twin phantom

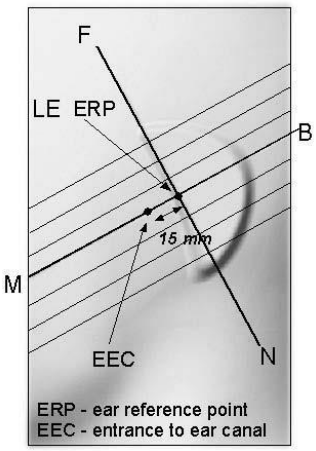


Fig 9.1.2 Close-up side view of phantom showing the ear region.

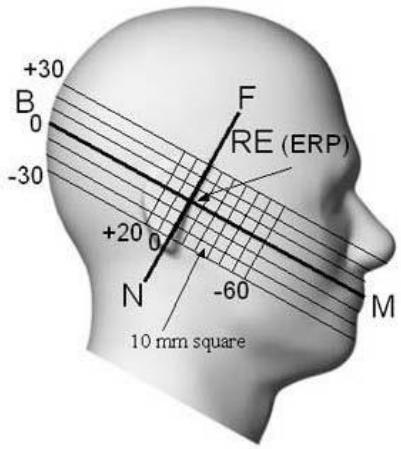


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

12.2 Definition of the cheek position

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

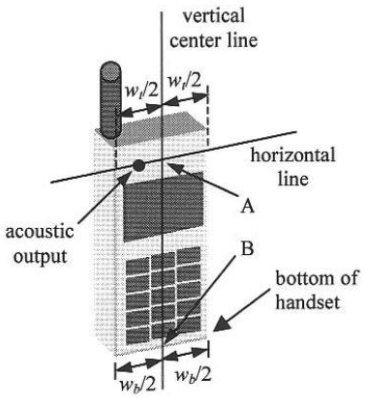


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case

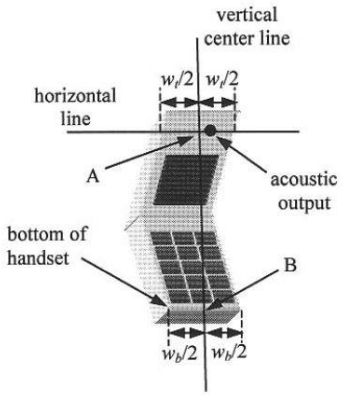


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

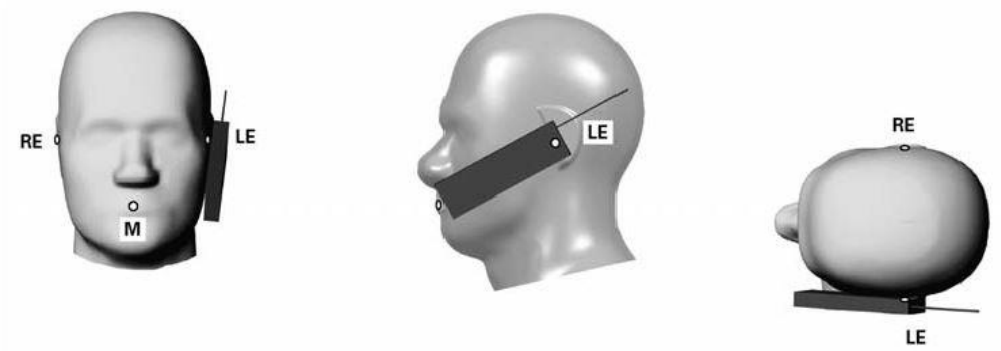


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

12.3 Definition of the tilt position

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

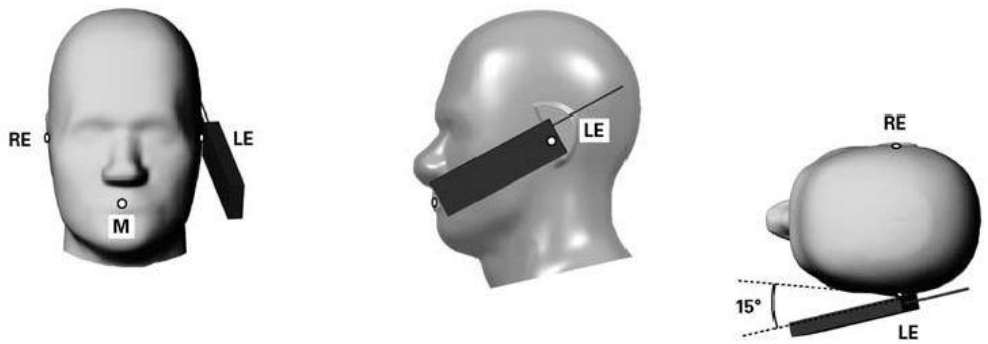


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

12.4 Body Worn Accessory

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

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

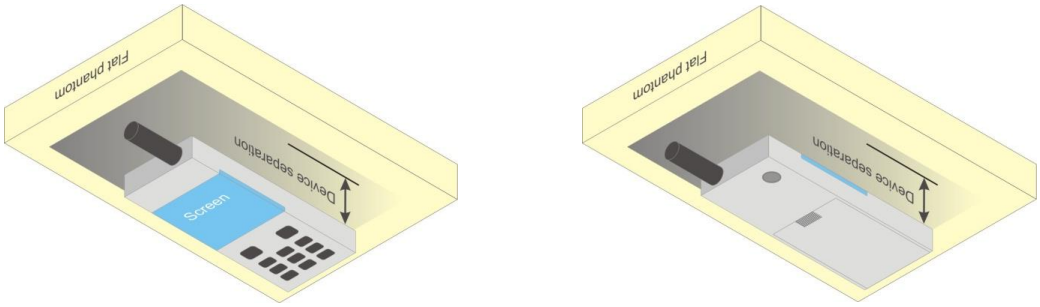


Fig 9.4 Body Worn Position

12.5 Wireless Router

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

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

13. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

1. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (4Tx slots) for GSM850/GSM1900 is considered as the primary mode.
3. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode

<Default Power Mode>

GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
Tx Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	31.86	31.84	31.83	33.00	22.86	22.84	22.83	24.00
GPRS 1 Tx slot	31.85	31.83	31.82	33.00	22.85	22.83	22.82	24.00
GPRS 2 Tx slots	31.32	31.31	31.32	32.50	25.32	25.31	25.32	26.50
GPRS 3 Tx slots	29.87	29.87	29.93	30.50	25.61	25.61	25.67	26.24
GPRS 4 Tx slots	28.86	28.86	28.89	29.50	25.86	25.86	25.89	**26.50**
EDGE 1 Tx slot	26.85	26.89	26.85	27.50	17.85	17.89	17.85	18.50
EDGE 2 Tx slots	25.77	25.81	25.75	26.50	19.77	19.81	19.75	20.50
EDGE 3 Tx slots	23.78	23.79	23.72	24.50	19.52	19.53	19.46	20.24
EDGE 4 Tx slots	22.66	22.60	22.53	23.50	19.66	19.60	19.53	20.50
GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
Tx Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	28.65	28.68	28.65	30.00	19.65	19.68	19.65	21.00
GPRS 1 Tx slot	28.64	28.67	28.64	30.00	19.64	19.67	19.64	21.00
GPRS 2 Tx slots	28.11	28.17	28.16	29.50	22.11	22.17	22.16	23.50
GPRS 3 Tx slots	26.56	26.64	26.69	27.50	22.30	22.38	22.43	23.24
GPRS 4 Tx slots	25.48	25.57	25.65	26.50	22.48	22.57	22.65	**23.50**
EDGE 1 Tx slot	25.58	25.68	25.66	26.50	16.58	16.68	16.66	17.50
EDGE 2 Tx slots	24.63	24.73	24.75	25.50	18.63	18.73	18.75	19.50
EDGE 3 Tx slots	22.73	22.82	22.80	23.50	18.47	18.56	18.54	19.24
EDGE 4 Tx slots	21.64	21.75	21.78	22.50	18.64	18.75	18.78	19.50

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

<Hotspot and Near-Body Power Mode>

GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
Tx Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	31.86	31.84	31.83	33.00	22.86	22.84	22.83	24.00
GPRS 1 Tx slot	31.85	31.83	31.82	33.00	22.85	22.83	22.82	24.00
GPRS 2 Tx slots	31.32	31.31	31.32	32.50	25.32	25.31	25.32	26.50
GPRS 3 Tx slots	29.87	29.87	29.93	30.50	25.61	25.61	25.67	26.24
GPRS 4 Tx slots	28.86	28.86	28.89	29.50	25.86	25.86	25.89	**26.50**
EDGE 1 Tx slot	26.85	26.89	26.85	27.50	17.85	17.89	17.85	18.50
EDGE 2 Tx slots	25.77	25.81	25.75	26.50	19.77	19.81	19.75	20.50
EDGE 3 Tx slots	23.78	23.79	23.72	24.50	19.52	19.53	19.46	20.24
EDGE 4 Tx slots	22.66	22.60	22.53	23.50	19.66	19.60	19.53	20.50
GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
Tx Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	26.26	26.27	26.24	27.50	17.26	17.27	17.24	18.50
GPRS 1 Tx slot	26.24	26.24	26.21	27.50	17.24	17.24	17.21	18.50
GPRS 2 Tx slots	25.59	25.59	25.57	27.00	19.59	19.59	19.57	21.00
GPRS 3 Tx slots	23.92	23.92	23.91	25.00	19.66	19.66	19.65	20.74
GPRS 4 Tx slots	22.82	22.85	22.85	24.00	19.82	19.85	19.85	**21.00**
EDGE 1 Tx slot	25.59	25.63	25.65	26.50	16.59	16.63	16.65	17.50
EDGE 2 Tx slots	24.23	24.25	24.33	25.50	18.23	18.25	18.33	19.50
EDGE 3 Tx slots	22.15	22.20	22.16	23.50	17.89	17.94	17.90	19.24
EDGE 4 Tx slots	20.89	20.98	21.06	22.50	17.89	17.98	18.06	19.50

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

<WCDMA Conducted Power>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01v03r01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.
3. For HSPA+ devices supporting 16 QAM in the uplink, power measurements procedure is according to the configurations in Table C.11.1.4 of 3GPP TS 34.121-1.
4. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

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

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

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

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

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

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

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

Setup Configuration

HSUPA Setup Configuration:

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

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

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

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

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

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

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

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

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

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

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

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

C.8.1.12 Fixed Reference Channel Definition H-Set 12

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

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.		
Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

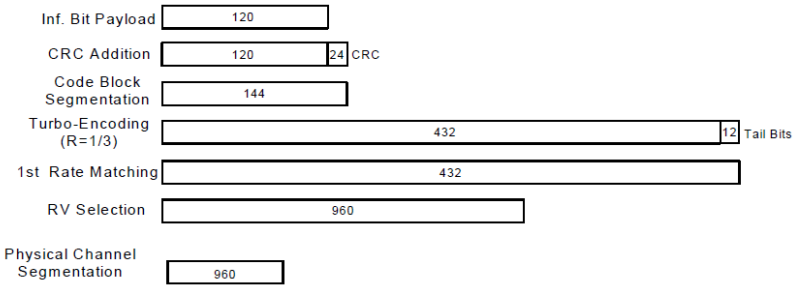


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

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

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting * :
   i. Call Configs = 5.2E:HSPA+:UL with 16QAM
   ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.4, quoted from the TS 34.121-1 s5.2E
   iii. Set Channel Parms
   iv. Set Cell Power = -86 dBm
   v. Set Channel Type = HSPA
   vi. Set UE Target Power =21 dBm
   vii. Power Ctrl Mode= All Up Bits
   viii. Set Manual Uplink DPCH Bc/Bd = Manual
   ix. Set Manual Uplink DPCH Bc and Bd=15,15(for 34.121-1 v8.10.0 table C11.1.4 sub-test 1)
   x. Set HSPA Conn DL Channel Levels
   xi. Set HS-SCCH Configs
   xii. Set RB Test Mode Setup
   xiii. Set Common HSUPA Parameters
   xiv. Set Serving Grant
   xv. Confirm that E-TFCI is equal to the target E-TFCI of 105 for sub-test 1, and other subtest's E-TFCI
d. The transmitted maximum output power was recorded.

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

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

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

Setup Configuration

<WCDMA Conducted Power>

General Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA / HSPA+ is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA / HSPA+ to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA, DC-HSDPA / HSPA+) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+.

<Default Power Mode>

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	22.92	22.97	23.10	24.00	22.94	22.96	22.90	24.00	23.18	23.18	23.24	24.00
3GPP Rel 99	RMC 12.2Kbps	22.93	22.98	**23.11**	24.00	22.95	**22.97**	22.91	24.00	23.19	23.20	**23.25**	24.00
3GPP Rel 6	HSDPA Subtest-1	21.40	21.45	21.47	23.00	21.67	21.59	21.52	23.00	22.15	22.16	22.10	23.00
3GPP Rel 6	HSDPA Subtest-2	21.35	21.39	21.48	23.00	21.59	21.54	21.49	23.00	22.14	22.07	22.06	23.00
3GPP Rel 6	HSDPA Subtest-3	20.86	20.91	20.99	22.50	21.05	21.12	21.04	22.50	21.63	21.63	21.58	22.50
3GPP Rel 6	HSDPA Subtest-4	20.84	20.81	20.99	22.50	21.13	21.11	21.08	22.50	21.63	21.56	21.62	22.50
3GPP Rel 8	DC-HSDPA Subtest-1	21.21	21.26	21.30	23.00	21.39	21.31	21.24	23.00	21.98	22.03	21.85	23.00
3GPP Rel 8	DC-HSDPA Subtest-2	21.16	21.19	21.24	23.00	21.30	21.24	21.13	23.00	21.85	21.96	21.72	23.00
3GPP Rel 8	DC-HSDPA Subtest-3	20.59	20.63	20.89	22.50	20.85	20.75	20.59	22.50	21.38	21.43	21.21	22.50
3GPP Rel 8	DC-HSDPA Subtest-4	20.54	20.60	20.85	22.50	20.82	20.73	20.54	22.50	21.34	21.38	21.19	22.50
3GPP Rel 6	HSUPA Subtest-1	19.35	19.44	19.42	21.00	19.63	19.62	19.53	21.00	20.12	20.04	20.01	21.00
3GPP Rel 6	HSUPA Subtest-2	19.39	19.48	19.49	21.00	19.56	19.53	19.58	21.00	20.15	20.11	20.06	21.00
3GPP Rel 6	HSUPA Subtest-3	20.34	20.43	20.51	22.00	20.59	20.56	20.51	22.00	21.07	21.05	21.00	22.00
3GPP Rel 6	HSUPA Subtest-4	19.08	19.14	19.15	21.00	19.12	19.10	19.00	21.00	19.60	19.56	19.55	21.00
3GPP Rel 6	HSUPA Subtest-5	20.40	20.40	20.50	22.00	20.60	20.50	20.50	22.00	21.10	21.10	21.00	22.00
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	20.34	20.23	20.21	22.00	20.40	20.43	20.34	22.00	20.34	20.21	20.31	22.00

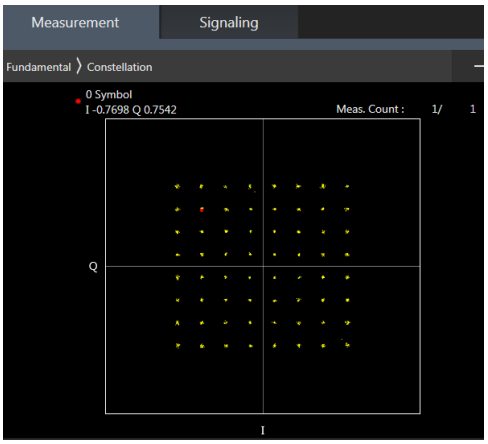
<Hotspot and Near-Body Power Mode>

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	18.71	18.78	18.56	20.00	16.60	16.85	16.84	18.00	23.18	23.18	23.24	24.00
3GPP Rel 99	RMC 12.2Kbps	18.73	18.79	**18.80**	20.00	16.62	**16.87**	16.86	18.00	23.19	23.20	**23.25**	24.00
3GPP Rel 6	HSDPA Subtest-1	17.81	17.84	17.58	19.00	15.70	15.94	15.90	17.00	22.15	22.16	22.10	23.00
3GPP Rel 6	HSDPA Subtest-2	17.71	17.75	17.50	19.00	15.64	15.87	15.77	17.00	22.14	22.07	22.06	23.00
3GPP Rel 6	HSDPA Subtest-3	17.21	17.25	17.00	18.50	15.10	15.35	15.29	16.50	21.63	21.63	21.58	22.50
3GPP Rel 6	HSDPA Subtest-4	17.17	17.23	16.93	18.50	15.10	15.37	15.32	16.50	21.63	21.56	21.62	22.50
3GPP Rel 8	DC-HSDPA Subtest-1	17.80	17.82	17.44	19.00	15.63	15.80	15.80	17.00	21.98	22.03	21.85	23.00
3GPP Rel 8	DC-HSDPA Subtest-2	17.73	17.70	17.31	19.00	15.53	15.79	15.69	17.00	21.85	21.96	21.72	23.00
3GPP Rel 8	DC-HSDPA Subtest-3	17.21	17.19	16.78	18.50	15.02	15.26	15.22	16.50	21.38	21.43	21.21	22.50
3GPP Rel 8	DC-HSDPA Subtest-4	17.18	17.10	16.80	18.50	15.04	15.17	15.19	16.50	21.34	21.38	21.19	22.50
3GPP Rel 6	HSUPA Subtest-1	15.76	15.83	15.56	17.00	13.63	13.90	13.87	15.00	20.12	20.04	20.01	21.00
3GPP Rel 6	HSUPA Subtest-2	15.76	15.77	15.50	17.00	13.62	13.79	13.76	15.00	20.15	20.11	20.06	21.00
3GPP Rel 6	HSUPA Subtest-3	16.75	16.85	16.58	18.00	14.58	14.86	14.85	16.00	21.07	21.05	21.00	22.00
3GPP Rel 6	HSUPA Subtest-4	15.32	15.37	15.09	17.00	13.19	13.39	13.38	15.00	19.60	19.56	19.55	21.00
3GPP Rel 6	HSUPA Subtest-5	16.77	16.77	16.47	18.00	14.59	14.79	14.79	16.00	21.10	21.10	21.00	22.00
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	16.60	16.79	16.37	18.00	14.42	14.66	14.67	16.00	20.34	20.21	20.31	22.00

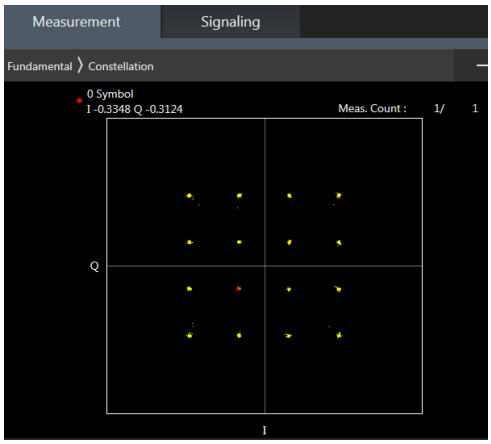
<LTE Conducted Power>

General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B5 / B12 / B26 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE band 4/2/5 SAR test was covered by Band 66/25/26; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
   b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band
10. According to 2017 TCB workshop, for 64 QAM and 16 QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



64QAM



16QAM

<Default Power Mode>

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	22.40	22.41	22.21	24	0
20	QPSK	1	49	22.20	22.05	22.10		
20	QPSK	1	99	22.21	22.31	22.13		
20	QPSK	50	0	21.00	21.24	21.03	23	1
20	QPSK	50	24	21.10	21.17	21.11		
20	QPSK	50	50	21.05	21.04	21.13		
20	QPSK	100	0	21.11	21.15	21.01		
20	16QAM	1	0	21.13	21.06	21.10	23	1
20	16QAM	1	49	21.36	21.52	21.40		
20	16QAM	1	99	21.25	21.06	21.05		
20	16QAM	50	0	20.07	20.12	20.07	22	2
20	16QAM	50	24	20.06	20.07	20.07		
20	16QAM	50	50	20.21	20.06	20.10		
20	16QAM	100	0	20.21	20.13	20.12		
20	64QAM	1	0	20.02	20.20	20.13	22	2
20	64QAM	1	49	20.27	20.44	20.42		
20	64QAM	1	99	20.10	20.10	20.17		
20	64QAM	50	0	19.00	19.15	19.04	21	3
20	64QAM	50	24	19.14	19.05	19.12		
20	64QAM	50	50	19.06	19.04	19.10		
20	64QAM	100	0	19.02	19.21	19.04		

Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.34	22.30	22.21	24	0
15	QPSK	1	37	22.30	22.04	22.25		
15	QPSK	1	74	22.12	22.13	22.04		
15	QPSK	36	0	21.12	21.13	21.08	23	1
15	QPSK	36	20	21.14	21.08	21.10		
15	QPSK	36	39	21.10	21.05	21.01		
15	QPSK	75	0	21.18	21.07	21.13		
15	16QAM	1	0	21.07	21.03	21.21	23	1
15	16QAM	1	37	21.48	21.40	21.40		
15	16QAM	1	74	21.23	21.37	21.19		
15	16QAM	36	0	20.05	20.12	20.08	22	2
15	16QAM	36	20	20.01	20.08	20.06		
15	16QAM	36	39	20.04	20.06	20.34		
15	16QAM	75	0	20.02	20.10	20.01		
15	64QAM	1	0	20.27	20.17	20.14	22	2
15	64QAM	1	37	20.59	20.55	20.14		
15	64QAM	1	74	20.21	20.14	20.38		
15	64QAM	36	0	19.08	19.12	19.06	21	3
15	64QAM	36	20	19.08	19.05	19.09		
15	64QAM	36	39	19.09	19.11	19.12		
15	64QAM	75	0	19.20	19.00	19.09		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	22.13	22.08	22.05	24	0
10	QPSK	1	25	22.06	22.12	22.29		
10	QPSK	1	49	22.09	22.05	22.11		
10	QPSK	25	0	21.13	21.21	21.22	23	1
10	QPSK	25	12	21.13	21.14	21.07		
10	QPSK	25	25	21.18	21.18	21.11		
10	QPSK	50	0	21.17	21.24	21.05		
10	16QAM	1	0	21.01	21.27	21.08	23	1
10	16QAM	1	25	21.10	21.25	21.05		
10	16QAM	1	49	21.43	21.14	21.22		
10	16QAM	25	0	20.00	20.18	20.23	22	2
10	16QAM	25	12	20.21	20.15	20.12		
10	16QAM	25	25	20.21	20.26	20.08		
10	16QAM	50	0	20.19	20.12	20.19		
10	64QAM	1	0	20.27	20.32	20.51	22	2
10	64QAM	1	25	20.45	20.46	20.70		
10	64QAM	1	49	20.32	20.30	20.71		
10	64QAM	25	0	19.11	19.20	19.20	21	3
10	64QAM	25	12	19.01	19.10	19.08		
10	64QAM	25	25	19.21	19.07	19.08		
10	64QAM	50	0	19.14	19.16	19.13		

Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.23	22.30	22.21	24	0
5	QPSK	1	12	22.40	22.34	22.17		
5	QPSK	1	24	22.34	22.21	22.37		
5	QPSK	12	0	21.12	21.12	21.17	23	1
5	QPSK	12	7	21.10	21.18	21.26		
5	QPSK	12	13	21.06	21.12	21.11		
5	QPSK	25	0	21.09	21.07	21.16		
5	16QAM	1	0	21.61	21.37	21.25	23	1
5	16QAM	1	12	21.74	21.48	21.31		
5	16QAM	1	24	21.29	21.40	21.37		
5	16QAM	12	0	20.09	20.08	20.13	22	2
5	16QAM	12	7	20.16	20.19	20.31		
5	16QAM	12	13	20.12	20.08	20.18		
5	16QAM	25	0	20.10	20.08	20.09		
5	64QAM	1	0	20.31	20.33	20.17	22	2
5	64QAM	1	12	20.30	20.60	20.54		
5	64QAM	1	24	20.14	20.48	20.26		
5	64QAM	12	0	19.21	19.10	19.19	21	3
5	64QAM	12	7	19.22	19.12	19.18		
5	64QAM	12	13	19.04	19.05	19.14		
5	64QAM	25	0	19.10	19.04	19.12		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	22.05	22.05	22.08	24	0
3	QPSK	1	8	22.17	22.07	22.14		
3	QPSK	1	14	22.08	22.12	22.15		
3	QPSK	8	0	21.18	21.08	21.12	23	1
3	QPSK	8	4	21.09	21.18	21.18		
3	QPSK	8	7	21.18	21.18	21.17		
3	QPSK	15	0	21.11	21.18	21.18		
3	16QAM	1	0	21.27	21.48	21.63	23	1
3	16QAM	1	8	21.30	21.48	21.65		
3	16QAM	1	14	21.55	21.54	21.22		
3	16QAM	8	0	20.26	20.22	20.28	22	2
3	16QAM	8	4	20.25	20.28	20.35		
3	16QAM	8	7	20.22	20.23	20.23		
3	16QAM	15	0	20.15	20.19	20.22		
3	64QAM	1	0	20.30	20.23	20.35	22	2
3	64QAM	1	8	20.14	20.60	20.23		
3	64QAM	1	14	20.15	20.27	20.31		
3	64QAM	8	0	19.30	19.07	19.25	21	3
3	64QAM	8	4	19.16	19.10	19.26		
3	64QAM	8	7	19.28	19.14	19.16		
3	64QAM	15	0	19.04	19.21	19.19		

Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.01	22.23	22.19	24	0
1.4	QPSK	1	3	22.26	22.19	22.12		
1.4	QPSK	1	5	22.05	22.05	22.09		
1.4	QPSK	3	0	22.26	22.12	22.12		
1.4	QPSK	3	1	22.20	22.28	22.22		
1.4	QPSK	3	3	22.17	22.15	22.26		
1.4	QPSK	6	0	21.26	21.19	21.09	23	1
1.4	16QAM	1	0	21.76	21.50	21.82	23	1
1.4	16QAM	1	3	21.84	21.52	21.45		
1.4	16QAM	1	5	21.39	21.87	21.84		
1.4	16QAM	3	0	21.33	21.16	21.06		
1.4	16QAM	3	1	21.10	21.36	21.30		
1.4	16QAM	3	3	21.19	21.22	21.21		
1.4	16QAM	6	0	20.31	20.34	20.50	22	2
1.4	64QAM	1	0	20.04	20.18	20.13	22	2
1.4	64QAM	1	3	20.12	20.24	20.35		
1.4	64QAM	1	5	20.17	20.10	20.05		
1.4	64QAM	3	0	20.24	20.39	20.27		
1.4	64QAM	3	1	20.21	20.26	20.45		
1.4	64QAM	3	3	20.22	20.11	20.42		
1.4	64QAM	6	0	19.21	19.10	19.39	21	3

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	22.32	22.46	22.02	24	0
20	QPSK	1	49	22.33	22.16	22.19		
20	QPSK	1	99	22.21	22.05	22.20		
20	QPSK	50	0	21.11	21.31	21.21	23	1
20	QPSK	50	24	21.27	21.30	21.19		
20	QPSK	50	50	21.27	21.17	21.09		
20	QPSK	100	0	21.11	21.12	21.05		
20	16QAM	1	0	21.50	21.44	21.23	23	1
20	16QAM	1	49	21.55	21.40	21.36		
20	16QAM	1	99	21.30	21.37	21.16		
20	16QAM	50	0	20.32	20.26	20.24	22	2
20	16QAM	50	24	20.31	20.33	20.32		
20	16QAM	50	50	20.26	20.30	20.13		
20	16QAM	100	0	20.12	20.16	20.13		
20	64QAM	1	0	20.29	20.35	20.41	22	2
20	64QAM	1	49	20.41	20.42	20.68		
20	64QAM	1	99	20.18	20.40	20.47		
20	64QAM	50	0	19.32	19.25	19.36	21	3
20	64QAM	50	24	19.29	19.23	19.36		
20	64QAM	50	50	19.31	19.23	19.14		
20	64QAM	100	0	19.19	19.13	19.16		

Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.13	22.04	22.13	24	0
15	QPSK	1	37	22.06	22.36	22.23		
15	QPSK	1	74	22.21	22.01	22.22		
15	QPSK	36	0	21.19	21.30	21.19	23	1
15	QPSK	36	20	21.24	21.31	21.14		
15	QPSK	36	39	21.28	21.31	21.13		
15	QPSK	75	0	21.22	21.28	21.10		
15	16QAM	1	0	21.12	21.28	21.23	23	1
15	16QAM	1	37	21.43	21.26	21.17		
15	16QAM	1	74	21.25	21.31	21.30		
15	16QAM	36	0	20.24	20.24	20.33	22	2
15	16QAM	36	20	20.31	20.38	20.29		
15	16QAM	36	39	20.25	20.29	20.16		
15	16QAM	75	0	20.20	20.28	20.21		
15	64QAM	1	0	20.43	20.25	20.22	22	2
15	64QAM	1	37	20.27	20.60	20.62		
15	64QAM	1	74	20.12	20.13	20.14		
15	64QAM	36	0	19.18	19.25	19.25	21	3
15	64QAM	36	20	19.19	19.32	19.24		
15	64QAM	36	39	19.30	19.20	19.15		
15	64QAM	75	0	19.22	19.16	19.27		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	22.09	22.17	22.23	24	0
10	QPSK	1	25	22.15	22.13	22.40		
10	QPSK	1	49	22.04	22.03	22.07		
10	QPSK	25	0	21.23	21.23	21.17	23	1
10	QPSK	25	12	21.21	21.30	21.21		
10	QPSK	25	25	21.22	21.20	21.23		
10	QPSK	50	0	21.25	21.22	21.14		
10	16QAM	1	0	21.32	21.44	21.45	23	1
10	16QAM	1	25	21.34	21.66	21.47		
10	16QAM	1	49	21.22	21.46	21.25		
10	16QAM	25	0	20.35	20.39	20.28	22	2
10	16QAM	25	12	20.33	20.32	20.27		
10	16QAM	25	25	20.28	20.34	20.21		
10	16QAM	50	0	20.26	20.25	20.25		
10	64QAM	1	0	20.66	20.58	20.48	22	2
10	64QAM	1	25	20.58	20.75	20.67		
10	64QAM	1	49	20.70	20.79	20.51		
10	64QAM	25	0	19.25	19.28	19.20	21	3
10	64QAM	25	12	19.29	19.27	19.19		
10	64QAM	25	25	19.28	19.22	19.13		
10	64QAM	50	0	19.11	19.25	19.12		

Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	22.13	22.18	22.08	24	0
5	QPSK	1	12	22.32	22.44	22.30		
5	QPSK	1	24	22.18	22.15	22.16		
5	QPSK	12	0	21.21	21.21	21.10	23	1
5	QPSK	12	7	21.31	21.25	21.26		
5	QPSK	12	13	21.17	21.24	21.16		
5	QPSK	25	0	21.11	21.17	21.11		
5	16QAM	1	0	21.54	21.54	21.31	23	1
5	16QAM	1	12	21.40	21.43	21.36		
5	16QAM	1	24	21.22	21.52	21.25		
5	16QAM	12	0	20.33	20.38	20.17	22	2
5	16QAM	12	7	20.36	20.43	20.36		
5	16QAM	12	13	20.22	20.23	20.22		
5	16QAM	25	0	20.26	20.33	20.20		
5	64QAM	1	0	20.50	20.64	20.31	22	2
5	64QAM	1	12	20.60	20.43	20.51		
5	64QAM	1	24	20.23	20.47	20.47		
5	64QAM	12	0	19.23	19.31	19.32	21	3
5	64QAM	12	7	19.28	19.20	19.40		
5	64QAM	12	13	19.31	19.33	19.21		
5	64QAM	25	0	19.29	19.39	19.26		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	22.15	22.21	22.11	24	0
3	QPSK	1	8	22.06	22.15	22.00		
3	QPSK	1	14	22.13	22.21	22.29		
3	QPSK	8	0	21.11	21.26	21.25	23	1
3	QPSK	8	4	21.29	21.31	21.27		
3	QPSK	8	7	21.29	21.16	21.22		
3	QPSK	15	0	21.24	21.23	21.19		
3	16QAM	1	0	21.74	21.87	21.80	23	1
3	16QAM	1	8	21.68	21.84	21.92		
3	16QAM	1	14	21.56	21.83	21.56		
3	16QAM	8	0	20.41	20.38	20.35	22	2
3	16QAM	8	4	20.45	20.55	20.31		
3	16QAM	8	7	20.53	20.55	20.54		
3	16QAM	15	0	20.24	20.19	20.21		
3	64QAM	1	0	20.46	20.61	20.40	22	2
3	64QAM	1	8	20.54	20.60	20.56		
3	64QAM	1	14	20.52	20.69	20.55		
3	64QAM	8	0	19.36	19.30	19.30	21	3
3	64QAM	8	4	19.30	19.44	19.37		
3	64QAM	8	7	19.28	19.54	19.24		
3	64QAM	15	0	19.23	19.22	19.23		

Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.05	22.02	22.09	24	0
1.4	QPSK	1	3	22.21	22.25	22.06		
1.4	QPSK	1	5	22.00	22.06	22.08		
1.4	QPSK	3	0	22.22	22.14	22.23		
1.4	QPSK	3	1	22.32	22.20	22.25		
1.4	QPSK	3	3	22.21	22.14	22.13		
1.4	QPSK	6	0	21.17	21.14	21.13	23	1
1.4	16QAM	1	0	21.43	21.91	21.47	23	1
1.4	16QAM	1	3	21.43	21.84	21.81		
1.4	16QAM	1	5	21.92	21.59	21.45		
1.4	16QAM	3	0	21.21	21.34	21.33		
1.4	16QAM	3	1	21.29	21.43	21.36		
1.4	16QAM	3	3	21.30	21.24	21.14		
1.4	16QAM	6	0	20.29	20.46	20.40	22	2
1.4	64QAM	1	0	20.12	20.33	20.10	22	2
1.4	64QAM	1	3	20.24	20.29	20.57		
1.4	64QAM	1	5	20.60	20.14	20.52		
1.4	64QAM	3	0	20.25	20.39	20.43		
1.4	64QAM	3	1	20.44	20.25	20.25		
1.4	64QAM	3	3	20.36	20.42	20.26		
1.4	64QAM	6	0	19.25	19.14	19.36	21	3

<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	22.72	22.95	22.67	24	0
10	QPSK	1	25	22.94	22.66	22.74		
10	QPSK	1	49	22.59	22.59	22.67		
10	QPSK	25	0	21.84	21.89	21.69	23	1
10	QPSK	25	12	21.84	21.87	21.69		
10	QPSK	25	25	21.71	21.76	21.70		
10	QPSK	50	0	21.77	21.92	21.78		
10	16QAM	1	0	22.24	22.39	22.54	23	1
10	16QAM	1	25	22.30	22.42	22.21		
10	16QAM	1	49	22.38	22.41	22.11		
10	16QAM	25	0	20.76	20.94	20.73	22	2
10	16QAM	25	12	20.92	20.95	20.85		
10	16QAM	25	25	20.77	20.86	20.72		
10	16QAM	50	0	20.79	20.93	20.78		
10	64QAM	1	0	20.89	21.02	21.07	22	2
10	64QAM	1	25	20.87	21.14	21.02		
10	64QAM	1	49	21.02	20.67	20.73		
10	64QAM	25	0	19.93	19.85	19.69	21	3
10	64QAM	25	12	19.87	19.95	19.75		
10	64QAM	25	25	19.77	19.92	19.83		
10	64QAM	50	0	19.83	19.95	19.76		

Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.60	22.64	22.59	24	0
5	QPSK	1	12	22.91	22.91	22.83		
5	QPSK	1	24	22.64	22.56	22.54		
5	QPSK	12	0	21.78	21.82	21.77	23	1
5	QPSK	12	7	21.84	21.84	21.78		
5	QPSK	12	13	21.77	21.77	21.71		
5	QPSK	25	0	21.78	21.80	21.73		
5	16QAM	1	0	21.92	21.90	21.92	23	1
5	16QAM	1	12	22.10	22.27	22.25		
5	16QAM	1	24	21.84	21.87	21.91		
5	16QAM	12	0	20.75	20.83	20.78	22	2
5	16QAM	12	7	20.83	20.86	20.81		
5	16QAM	12	13	20.74	20.78	20.72		
5	16QAM	25	0	20.78	20.81	20.76		
5	64QAM	1	0	20.75	20.87	20.83	22	2
5	64QAM	1	12	21.15	21.17	21.09		
5	64QAM	1	24	20.84	20.82	20.86		
5	64QAM	12	0	19.78	19.85	19.79	21	3
5	64QAM	12	7	19.84	19.89	19.81		
5	64QAM	12	13	19.74	19.79	19.73		
5	64QAM	25	0	19.75	19.81	19.71		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	22.74	22.76	22.68	24	0
3	QPSK	1	8	22.73	22.73	22.68		
3	QPSK	1	14	22.73	22.70	22.66		
3	QPSK	8	0	21.77	21.80	21.76	23	1
3	QPSK	8	4	21.85	21.84	21.80		
3	QPSK	8	7	21.78	21.79	21.73		
3	QPSK	15	0	21.77	21.78	21.75		
3	16QAM	1	0	21.97	22.01	22.10	23	1
3	16QAM	1	8	22.05	22.08	22.00		
3	16QAM	1	14	21.95	22.11	21.99		
3	16QAM	8	0	20.83	20.90	20.85	22	2
3	16QAM	8	4	20.88	20.91	20.90		
3	16QAM	8	7	20.83	20.87	20.83		
3	16QAM	15	0	20.75	20.82	20.78		
3	64QAM	1	0	20.97	20.90	20.98	22	2
3	64QAM	1	8	20.95	20.99	20.87		
3	64QAM	1	14	20.97	20.97	20.93		
3	64QAM	8	0	19.82	19.86	19.81	21	3
3	64QAM	8	4	19.84	19.88	19.80		
3	64QAM	8	7	19.80	19.83	19.81		
3	64QAM	15	0	19.76	19.78	19.74		

Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.69	22.69	22.63	24	0
1.4	QPSK	1	3	22.81	22.83	22.74		
1.4	QPSK	1	5	22.69	22.68	22.64		
1.4	QPSK	3	0	22.82	22.82	22.77		
1.4	QPSK	3	1	22.87	22.87	22.81		
1.4	QPSK	3	3	22.79	22.80	22.76		
1.4	QPSK	6	0	21.83	21.82	21.79	23	1
1.4	16QAM	1	0	21.92	22.08	21.94	23	1
1.4	16QAM	1	3	22.15	22.25	22.15		
1.4	16QAM	1	5	22.00	22.06	22.04		
1.4	16QAM	3	0	21.75	21.86	21.81		
1.4	16QAM	3	1	21.88	21.85	21.82		
1.4	16QAM	3	3	21.73	21.79	21.76		
1.4	16QAM	6	0	20.90	20.96	20.91	22	2
1.4	64QAM	1	0	20.91	20.96	20.91	22	2
1.4	64QAM	1	3	20.98	21.02	21.00		
1.4	64QAM	1	5	20.91	20.95	20.86		
1.4	64QAM	3	0	20.94	20.95	20.92		
1.4	64QAM	3	1	20.94	20.99	20.98		
1.4	64QAM	3	3	20.88	20.93	20.93		
1.4	64QAM	6	0	19.82	19.78	19.81	21	3

<LTE Band 12>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23060	23095	23130		
Frequency (MHz)				704	707.5	711		
10	QPSK	1	0	22.54	22.62	22.46	24	0
10	QPSK	1	25	22.41	22.38	22.47		
10	QPSK	1	49	22.46	22.51	22.26		
10	QPSK	25	0	21.33	21.71	21.54	23	1
10	QPSK	25	12	21.45	21.51	21.54		
10	QPSK	25	25	21.36	21.37	21.59		
10	QPSK	50	0	21.36	21.55	21.52		
10	16QAM	1	0	21.77	21.59	21.59	23	1
10	16QAM	1	25	21.89	21.73	21.85		
10	16QAM	1	49	21.39	21.85	21.56		
10	16QAM	25	0	20.40	20.69	20.65	22	2
10	16QAM	25	12	20.52	20.51	20.68		
10	16QAM	25	25	20.25	20.47	20.60		
10	16QAM	50	0	20.38	20.54	20.62		
10	64QAM	1	0	20.52	20.63	20.41	22	2
10	64QAM	1	25	20.51	20.47	20.50		
10	64QAM	1	49	20.29	20.36	20.51		
10	64QAM	25	0	19.41	19.58	19.67	21	3
10	64QAM	25	12	19.45	19.56	19.55		
10	64QAM	25	25	19.43	19.41	19.66		
10	64QAM	50	0	19.66	19.60	19.66		

Channel				23035	23095	23155	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	22.34	22.31	22.35	24	0
5	QPSK	1	12	22.61	22.57	22.59		
5	QPSK	1	24	22.29	22.28	22.31		
5	QPSK	12	0	21.41	21.54	21.42	23	1
5	QPSK	12	7	21.50	21.48	21.53		
5	QPSK	12	13	21.46	21.36	21.41		
5	QPSK	25	0	21.43	21.47	21.40		
5	16QAM	1	0	21.54	21.52	21.77	23	1
5	16QAM	1	12	21.84	21.77	21.87		
5	16QAM	1	24	21.52	21.61	21.62		
5	16QAM	12	0	20.38	20.54	20.44	22	2
5	16QAM	12	7	20.51	20.46	20.54		
5	16QAM	12	13	20.45	20.36	20.42		
5	16QAM	25	0	20.45	20.49	20.44		
5	64QAM	1	0	20.56	20.46	20.55	22	2
5	64QAM	1	12	20.80	20.76	20.82		
5	64QAM	1	24	20.55	20.52	20.47		
5	64QAM	12	0	19.38	19.54	19.47	21	3
5	64QAM	12	7	19.53	19.49	19.58		
5	64QAM	12	13	19.51	19.38	19.46		
5	64QAM	25	0	19.45	19.46	19.45		
Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	22.44	22.42	22.40	24	0
3	QPSK	1	8	22.41	22.42	22.42		
3	QPSK	1	14	22.37	22.42	22.42		
3	QPSK	8	0	21.44	21.46	21.47	23	1
3	QPSK	8	4	21.49	21.48	21.52		
3	QPSK	8	7	21.44	21.40	21.45		
3	QPSK	15	0	21.42	21.43	21.44		
3	16QAM	1	0	21.76	21.68	21.80	23	1
3	16QAM	1	8	21.78	21.60	21.71		
3	16QAM	1	14	21.73	21.72	21.65		
3	16QAM	8	0	20.54	20.50	20.57	22	2
3	16QAM	8	4	20.59	20.55	20.63		
3	16QAM	8	7	20.52	20.48	20.51		
3	16QAM	15	0	20.47	20.44	20.47		
3	64QAM	1	0	20.60	20.54	20.69	22	2
3	64QAM	1	8	20.62	20.65	20.72		
3	64QAM	1	14	20.54	20.65	20.61		
3	64QAM	8	0	19.53	19.49	19.55	21	3
3	64QAM	8	4	19.54	19.52	19.59		
3	64QAM	8	7	19.55	19.46	19.54		
3	64QAM	15	0	19.45	19.42	19.47		

Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	22.36	22.35	22.35	24	0
1.4	QPSK	1	3	22.48	22.45	22.49		
1.4	QPSK	1	5	22.36	22.38	22.36		
1.4	QPSK	3	0	22.46	22.45	22.48		
1.4	QPSK	3	1	22.52	22.52	22.52		
1.4	QPSK	3	3	22.47	22.41	22.47		
1.4	QPSK	6	0	21.45	21.46	21.48	23	1
1.4	16QAM	1	0	21.67	21.64	21.58	23	1
1.4	16QAM	1	3	21.88	21.67	21.80		
1.4	16QAM	1	5	21.62	21.54	21.56		
1.4	16QAM	3	0	21.49	21.36	21.50		
1.4	16QAM	3	1	21.58	21.44	21.46		
1.4	16QAM	3	3	21.49	21.40	21.39		
1.4	16QAM	6	0	20.55	20.58	20.61	22	2
1.4	64QAM	1	0	20.62	20.49	20.54	22	2
1.4	64QAM	1	3	20.64	20.63	20.63		
1.4	64QAM	1	5	20.59	20.47	20.49		
1.4	64QAM	3	0	20.57	20.50	20.46		
1.4	64QAM	3	1	20.62	20.44	20.67		
1.4	64QAM	3	3	20.57	20.46	20.56		
1.4	64QAM	6	0	19.46	19.43	19.45	21	3

<LTE Band 13>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23230				
Frequency (MHz)				782				
10	QPSK	1	0		22.79		24	0
10	QPSK	1	25		22.75			
10	QPSK	1	49		22.63			
10	QPSK	25	0		21.76		23	1
10	QPSK	25	12		21.75			
10	QPSK	25	25		21.69			
10	QPSK	50	0		21.77			
10	16QAM	1	0		21.68		23	1
10	16QAM	1	25		22.17			
10	16QAM	1	49		21.93			
10	16QAM	25	0		20.73		22	2
10	16QAM	25	12		20.75			
10	16QAM	25	25		20.80			
10	16QAM	50	0		20.74			
10	64QAM	1	0		20.89		22	2
10	64QAM	1	25		20.73			
10	64QAM	1	49		20.58			
10	64QAM	25	0		19.64		21	3
10	64QAM	25	12		19.76			
10	64QAM	25	25		19.73			
10	64QAM	50	0		19.74			

Channel				23205	23230	23255	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	22.52	22.50	22.50	24	0
5	QPSK	1	12	22.78	22.76	22.73		
5	QPSK	1	24	22.56	22.55	22.59		
5	QPSK	12	0	21.47	21.63	21.72	23	1
5	QPSK	12	7	21.81	21.78	21.71		
5	QPSK	12	13	21.62	21.61	21.70		
5	QPSK	25	0	21.56	21.63	21.64		
5	16QAM	1	0	21.83	21.78	21.97	23	1
5	16QAM	1	12	22.20	22.18	22.08		
5	16QAM	1	24	21.89	21.73	21.80		
5	16QAM	12	0	20.43	20.63	20.70	22	2
5	16QAM	12	7	20.80	20.71	20.62		
5	16QAM	12	13	20.67	20.62	20.69		
5	16QAM	25	0	20.61	20.68	20.77		
5	64QAM	1	0	20.92	20.82	20.69	22	2
5	64QAM	1	12	20.90	20.50	20.66		
5	64QAM	1	24	20.61	20.65	20.76		
5	64QAM	12	0	19.59	19.69	19.75	21	3
5	64QAM	12	7	19.86	19.68	19.80		
5	64QAM	12	13	19.63	19.61	19.78		
5	64QAM	25	0	19.58	19.74	19.64		

<LTE Band 25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	22.35	22.70	22.54	24	0
20	QPSK	1	49	22.55	22.63	22.52		
20	QPSK	1	99	22.27	22.29	22.41		
20	QPSK	50	0	21.48	21.65	21.61	23	1
20	QPSK	50	24	21.51	21.60	21.63		
20	QPSK	50	50	21.54	21.64	21.38		
20	QPSK	100	0	21.49	21.51	21.50		
20	16QAM	1	0	21.61	21.79	21.70	23	1
20	16QAM	1	49	22.07	22.04	21.74		
20	16QAM	1	99	21.72	21.65	21.70		
20	16QAM	50	0	20.49	20.58	20.65	22	2
20	16QAM	50	24	20.52	20.66	20.61		
20	16QAM	50	50	20.52	20.60	20.45		
20	16QAM	100	0	20.55	20.56	20.48		
20	64QAM	1	0	20.71	20.68	20.65	22	2
20	64QAM	1	49	20.62	20.92	20.67		
20	64QAM	1	99	20.73	20.44	20.49		
20	64QAM	50	0	19.55	19.71	19.56	21	3
20	64QAM	50	24	19.51	19.63	19.64		
20	64QAM	50	50	19.45	19.60	19.40		
20	64QAM	100	0	19.43	19.64	19.43		

Channel				26115	26340	26615	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	22.41	22.47	22.44	24	0
15	QPSK	1	37	22.53	22.56	22.50		
15	QPSK	1	74	22.25	22.36	22.38		
15	QPSK	36	0	21.58	21.71	21.60	23	1
15	QPSK	36	20	21.64	21.73	21.69		
15	QPSK	36	39	21.51	21.71	21.54		
15	QPSK	75	0	21.51	21.62	21.54		
15	16QAM	1	0	21.60	21.68	21.70	23	1
15	16QAM	1	37	21.92	21.63	21.92		
15	16QAM	1	74	21.56	21.70	21.48		
15	16QAM	36	0	20.53	20.73	20.59	22	2
15	16QAM	36	20	20.62	20.67	20.68		
15	16QAM	36	39	20.59	20.72	20.60		
15	16QAM	75	0	20.48	20.62	20.69		
15	64QAM	1	0	20.66	20.76	20.56	22	2
15	64QAM	1	37	20.42	20.68	20.56		
15	64QAM	1	74	20.66	20.69	20.48		
15	64QAM	36	0	19.47	19.66	19.65	21	3
15	64QAM	36	20	19.54	19.58	19.63		
15	64QAM	36	39	19.46	19.63	19.54		
15	64QAM	75	0	19.46	19.55	19.53		
Channel				26090	26340	26640	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	22.55	22.60	22.47	24	0
10	QPSK	1	25	22.53	22.63	22.66		
10	QPSK	1	49	22.48	22.61	22.44		
10	QPSK	25	0	21.54	21.69	21.67	23	1
10	QPSK	25	12	21.59	21.60	21.59		
10	QPSK	25	25	21.52	21.64	21.49		
10	QPSK	50	0	21.62	21.56	21.57		
10	16QAM	1	0	21.75	21.77	21.84	23	1
10	16QAM	1	25	21.84	21.95	21.98		
10	16QAM	1	49	21.65	21.60	21.59		
10	16QAM	25	0	20.58	20.63	20.69	22	2
10	16QAM	25	12	20.66	20.65	20.57		
10	16QAM	25	25	20.48	20.59	20.55		
10	16QAM	50	0	20.70	20.65	20.60		
10	64QAM	1	0	20.80	21.04	21.06	22	2
10	64QAM	1	25	20.78	20.84	20.95		
10	64QAM	1	49	20.72	20.73	21.08		
10	64QAM	25	0	19.46	19.63	19.68	21	3
10	64QAM	25	12	19.57	19.60	19.56		
10	64QAM	25	25	19.55	19.59	19.43		
10	64QAM	50	0	19.51	19.69	19.57		

Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	22.36	22.35	22.45	24	0
5	QPSK	1	12	22.51	22.57	22.51		
5	QPSK	1	24	22.41	22.52	22.43		
5	QPSK	12	0	21.45	21.58	21.54	23	1
5	QPSK	12	7	21.56	21.61	21.62		
5	QPSK	12	13	21.51	21.50	21.47		
5	QPSK	25	0	21.58	21.62	21.58		
5	16QAM	1	0	21.72	21.49	21.65	23	1
5	16QAM	1	12	21.54	21.80	21.71		
5	16QAM	1	24	21.58	21.69	21.63		
5	16QAM	12	0	20.44	20.68	20.66	22	2
5	16QAM	12	7	20.61	20.70	20.61		
5	16QAM	12	13	20.54	20.57	20.56		
5	16QAM	25	0	20.49	20.70	20.57		
5	64QAM	1	0	20.72	20.97	20.66	22	2
5	64QAM	1	12	20.83	20.92	20.83		
5	64QAM	1	24	20.61	20.71	20.72		
5	64QAM	12	0	19.40	19.60	19.62	21	3
5	64QAM	12	7	19.65	19.66	19.63		
5	64QAM	12	13	19.55	19.47	19.69		
5	64QAM	25	0	19.58	19.62	19.54		
Channel				26055	26340	26675	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	22.57	22.55	22.46	24	0
3	QPSK	1	8	22.61	22.69	22.45		
3	QPSK	1	14	22.53	22.60	22.58		
3	QPSK	8	0	21.47	21.64	21.54	23	1
3	QPSK	8	4	21.47	21.62	21.65		
3	QPSK	8	7	21.52	21.54	21.56		
3	QPSK	15	0	21.52	21.59	21.50		
3	16QAM	1	0	22.05	22.26	22.11	23	1
3	16QAM	1	8	22.12	22.12	22.21		
3	16QAM	1	14	21.84	21.97	21.86		
3	16QAM	8	0	20.54	20.68	20.77	22	2
3	16QAM	8	4	20.67	20.70	20.79		
3	16QAM	8	7	20.68	20.75	20.67		
3	16QAM	15	0	20.34	20.52	20.79		
3	64QAM	1	0	20.70	20.75	20.83	22	2
3	64QAM	1	8	20.69	20.99	20.89		
3	64QAM	1	14	20.78	20.86	20.88		
3	64QAM	8	0	19.62	19.62	19.72	21	3
3	64QAM	8	4	19.56	19.73	19.70		
3	64QAM	8	7	19.51	19.63	19.58		
3	64QAM	15	0	19.43	19.60	19.63		

Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	22.41	22.56	22.37	24	0
1.4	QPSK	1	3	22.51	22.55	22.63		
1.4	QPSK	1	5	22.38	22.56	22.38		
1.4	QPSK	3	0	22.49	22.62	22.53		
1.4	QPSK	3	1	22.68	22.65	22.55		
1.4	QPSK	3	3	22.45	22.55	22.48		
1.4	QPSK	6	0	21.49	21.55	21.56	23	1
1.4	16QAM	1	0	21.74	22.19	21.80	23	1
1.4	16QAM	1	3	21.80	22.16	22.14		
1.4	16QAM	1	5	21.73	21.82	21.90		
1.4	16QAM	3	0	21.47	21.50	21.58		
1.4	16QAM	3	1	21.62	21.72	21.67		
1.4	16QAM	3	3	21.53	21.48	21.43		
1.4	16QAM	6	0	20.69	20.75	20.75	22	2
1.4	64QAM	1	0	20.82	20.72	20.83	22	2
1.4	64QAM	1	3	20.64	20.84	20.84		
1.4	64QAM	1	5	20.63	20.89	20.95		
1.4	64QAM	3	0	20.46	20.88	20.71		
1.4	64QAM	3	1	20.72	20.94	20.67		
1.4	64QAM	3	3	20.60	20.68	20.78		
1.4	64QAM	6	0	19.51	19.72	19.62	21	3

<LTE Band 26>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26765	26865	26965		
Frequency (MHz)				821.5	831.5	841.5		
15	QPSK	1	0	22.68	22.95	22.73	24	0
15	QPSK	1	37	22.94	22.91	22.91		
15	QPSK	1	74	22.67	22.67	22.65		
15	QPSK	36	0	21.89	21.95	21.89	23	1
15	QPSK	36	20	21.92	21.93	21.88		
15	QPSK	36	39	21.86	21.85	21.83		
15	QPSK	75	0	21.85	21.89	21.86		
15	16QAM	1	0	21.97	22.08	22.09	23	1
15	16QAM	1	37	22.35	22.23	22.33		
15	16QAM	1	74	22.00	22.04	21.96		
15	16QAM	36	0	20.85	20.91	20.89	22	2
15	16QAM	36	20	20.88	20.88	20.88		
15	16QAM	36	39	20.80	20.81	20.83		
15	16QAM	75	0	20.83	20.88	20.88		
15	64QAM	1	0	20.93	20.91	20.99	22	2
15	64QAM	1	37	21.14	21.14	21.22		
15	64QAM	1	74	20.84	20.90	20.87		
15	64QAM	36	0	19.88	19.91	19.89	21	3
15	64QAM	36	20	19.90	19.92	19.86		
15	64QAM	36	39	19.83	19.82	19.83		
15	64QAM	75	0	19.84	19.86	19.87		

Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	22.81	22.81	22.67	24	0
10	QPSK	1	25	22.93	22.84	22.85		
10	QPSK	1	49	22.78	22.76	22.79		
10	QPSK	25	0	21.92	22.03	21.82	23	1
10	QPSK	25	12	21.90	21.97	21.82		
10	QPSK	25	25	21.86	21.77	21.79		
10	QPSK	50	0	21.90	21.93	21.87		
10	16QAM	1	0	21.90	21.98	22.13	23	1
10	16QAM	1	25	22.28	22.19	22.21		
10	16QAM	1	49	21.78	22.01	21.88		
10	16QAM	25	0	21.05	20.99	20.91	22	2
10	16QAM	25	12	20.95	20.97	20.87		
10	16QAM	25	25	20.98	20.84	20.84		
10	16QAM	50	0	20.96	20.95	20.84		
10	64QAM	1	0	20.83	20.86	20.81	22	2
10	64QAM	1	25	20.97	20.84	20.97		
10	64QAM	1	49	20.66	21.16	20.83		
10	64QAM	25	0	19.81	20.06	19.94	21	3
10	64QAM	25	12	19.89	19.91	19.90		
10	64QAM	25	25	20.04	19.79	19.83		
10	64QAM	50	0	19.98	19.94	19.80		
Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	22.68	22.69	22.64	24	0
5	QPSK	1	12	22.93	22.87	22.89		
5	QPSK	1	24	22.67	22.68	22.64		
5	QPSK	12	0	21.80	21.94	21.86	23	1
5	QPSK	12	7	21.88	21.89	21.96		
5	QPSK	12	13	21.87	21.85	21.85		
5	QPSK	25	0	21.78	21.82	21.78		
5	16QAM	1	0	21.95	21.96	22.42	23	1
5	16QAM	1	12	22.22	22.36	22.40		
5	16QAM	1	24	22.01	22.04	21.99		
5	16QAM	12	0	20.73	20.91	20.92	22	2
5	16QAM	12	7	20.94	20.88	20.85		
5	16QAM	12	13	20.76	20.70	20.85		
5	16QAM	25	0	20.90	20.93	20.87		
5	64QAM	1	0	20.70	20.93	20.72	22	2
5	64QAM	1	12	21.11	21.03	21.04		
5	64QAM	1	24	20.81	20.83	20.65		
5	64QAM	12	0	19.75	19.92	19.86	21	3
5	64QAM	12	7	19.86	19.94	19.88		
5	64QAM	12	13	19.78	19.78	19.83		
5	64QAM	25	0	19.88	19.87	19.94		

Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	22.73	22.81	22.75	24	0
3	QPSK	1	8	22.75	22.81	22.75		
3	QPSK	1	14	22.79	22.80	22.75		
3	QPSK	8	0	21.80	21.86	21.85	23	1
3	QPSK	8	4	21.87	21.88	21.85		
3	QPSK	8	7	21.83	21.86	21.83		
3	QPSK	15	0	21.82	21.88	21.82		
3	16QAM	1	0	21.97	22.19	22.10	23	1
3	16QAM	1	8	22.11	21.98	22.09		
3	16QAM	1	14	22.00	22.03	22.07		
3	16QAM	8	0	20.86	20.92	20.94	22	2
3	16QAM	8	4	20.91	20.93	20.93		
3	16QAM	8	7	20.90	20.90	20.92		
3	16QAM	15	0	20.83	20.87	20.84		
3	64QAM	1	0	20.90	21.06	21.03	22	2
3	64QAM	1	8	21.01	21.00	21.04		
3	64QAM	1	14	21.01	21.04	21.03		
3	64QAM	8	0	19.82	19.87	19.91	21	3
3	64QAM	8	4	19.87	19.90	19.89		
3	64QAM	8	7	19.88	19.90	19.90		
3	64QAM	15	0	19.77	19.85	19.80		
Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	22.67	22.75	22.72	24	0
1.4	QPSK	1	3	22.85	22.88	22.87		
1.4	QPSK	1	5	22.68	22.74	22.72		
1.4	QPSK	3	0	22.77	22.83	22.83		
1.4	QPSK	3	1	22.86	22.91	22.90		
1.4	QPSK	3	3	22.84	22.83	22.81		
1.4	QPSK	6	0	21.82	21.89	21.89	23	1
1.4	16QAM	1	0	21.96	22.00	22.00	23	1
1.4	16QAM	1	3	22.04	22.10	22.19		
1.4	16QAM	1	5	22.01	21.94	22.13		
1.4	16QAM	3	0	21.79	21.84	21.85		
1.4	16QAM	3	1	21.83	21.94	21.91		
1.4	16QAM	3	3	21.73	21.87	21.91		
1.4	16QAM	6	0	20.91	20.97	20.99	22	2
1.4	64QAM	1	0	20.80	21.00	21.02	22	2
1.4	64QAM	1	3	21.07	21.09	21.16		
1.4	64QAM	1	5	20.91	20.89	20.99		
1.4	64QAM	3	0	20.86	20.98	21.06		
1.4	64QAM	3	1	20.90	21.01	21.02		
1.4	64QAM	3	3	20.89	20.94	20.99		
1.4	64QAM	6	0	19.78	19.82	19.83	21	3

<LTE Band 66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	22.46	22.21	22.40	24	0
20	QPSK	1	49	22.30	22.24	22.25		
20	QPSK	1	99	22.00	22.33	22.34		
20	QPSK	50	0	21.27	21.19	21.07	23	1
20	QPSK	50	24	21.26	21.19	21.16		
20	QPSK	50	50	21.20	21.10	21.00		
20	QPSK	100	0	21.24	21.15	21.23		
20	16QAM	1	0	21.13	21.36	21.11	23	1
20	16QAM	1	49	21.52	21.34	21.26		
20	16QAM	1	99	21.15	21.11	21.02		
20	16QAM	50	0	20.30	20.19	20.09	22	2
20	16QAM	50	24	20.24	20.20	20.01		
20	16QAM	50	50	20.34	20.04	20.13		
20	16QAM	100	0	20.19	20.07	20.02		
20	64QAM	1	0	20.37	20.20	20.31	22	2
20	64QAM	1	49	20.50	20.35	20.46		
20	64QAM	1	99	20.29	20.21	20.14		
20	64QAM	50	0	19.24	19.22	19.17	21	3
20	64QAM	50	24	19.35	19.16	19.04		
20	64QAM	50	50	19.29	19.10	19.32		
20	64QAM	100	0	19.10	19.04	19.05		

Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	22.40	22.03	22.00	24	0
15	QPSK	1	37	22.45	22.34	22.02		
15	QPSK	1	74	22.02	22.01	22.06		
15	QPSK	36	0	21.24	21.21	21.12	23	1
15	QPSK	36	20	21.31	21.27	21.19		
15	QPSK	36	39	21.26	21.16	21.01		
15	QPSK	75	0	21.24	21.17	21.15		
15	16QAM	1	0	21.05	21.12	21.21	23	1
15	16QAM	1	37	21.16	21.05	21.12		
15	16QAM	1	74	21.21	21.13	21.00		
15	16QAM	36	0	20.28	20.23	20.05	22	2
15	16QAM	36	20	20.27	20.23	20.01		
15	16QAM	36	39	20.26	20.16	20.03		
15	16QAM	75	0	20.26	20.19	20.11		
15	64QAM	1	0	20.43	20.56	20.35	22	2
15	64QAM	1	37	20.46	20.36	20.45		
15	64QAM	1	74	20.73	20.34	20.23		
15	64QAM	36	0	19.30	19.30	19.05	21	3
15	64QAM	36	20	19.31	19.28	19.13		
15	64QAM	36	39	19.34	19.21	19.05		
15	64QAM	75	0	19.24	19.13	19.11		
Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	22.18	22.27	22.21	24	0
10	QPSK	1	25	22.16	22.26	22.05		
10	QPSK	1	49	22.09	22.08	22.12		
10	QPSK	25	0	21.24	21.26	21.15	23	1
10	QPSK	25	12	21.31	21.18	21.13		
10	QPSK	25	25	21.17	21.08	21.03		
10	QPSK	50	0	21.24	21.11	21.12		
10	16QAM	1	0	21.67	21.40	21.25	23	1
10	16QAM	1	25	21.26	21.53	21.29		
10	16QAM	1	49	21.60	21.66	21.24		
10	16QAM	25	0	20.31	20.20	20.16	22	2
10	16QAM	25	12	20.34	20.38	20.15		
10	16QAM	25	25	20.32	20.24	20.01		
10	16QAM	50	0	20.18	20.21	20.06		
10	64QAM	1	0	20.43	20.68	20.48	22	2
10	64QAM	1	25	20.60	20.55	20.37		
10	64QAM	1	49	20.57	20.46	20.40		
10	64QAM	25	0	19.27	19.30	19.22	21	3
10	64QAM	25	12	19.19	19.26	19.03		
10	64QAM	25	25	19.31	19.23	19.11		
10	64QAM	50	0	19.18	19.12	19.04		

Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	22.05	22.13	22.14	24	0
5	QPSK	1	12	22.22	22.41	22.40		
5	QPSK	1	24	22.06	22.01	22.31		
5	QPSK	12	0	21.18	21.23	21.08	23	1
5	QPSK	12	7	21.17	21.35	21.15		
5	QPSK	12	13	21.24	21.27	21.21		
5	QPSK	25	0	21.15	21.17	21.11		
5	16QAM	1	0	21.47	21.40	21.42	23	1
5	16QAM	1	12	21.51	21.77	21.47		
5	16QAM	1	24	21.43	21.47	21.60		
5	16QAM	12	0	20.23	20.31	20.10	22	2
5	16QAM	12	7	20.24	20.34	20.10		
5	16QAM	12	13	20.31	20.29	20.12		
5	16QAM	25	0	20.28	20.25	20.12		
5	64QAM	1	0	20.51	20.44	20.46	22	2
5	64QAM	1	12	20.81	20.81	20.47		
5	64QAM	1	24	20.49	20.35	20.50		
5	64QAM	12	0	19.23	19.30	19.10	21	3
5	64QAM	12	7	19.43	19.39	19.03		
5	64QAM	12	13	19.32	19.25	19.15		
5	64QAM	25	0	19.29	19.21	19.05		
Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	22.13	22.23	22.09	24	0
3	QPSK	1	8	22.00	22.19	22.23		
3	QPSK	1	14	22.05	22.23	22.11		
3	QPSK	8	0	21.25	21.13	21.05	23	1
3	QPSK	8	4	21.27	21.28	21.13		
3	QPSK	8	7	21.24	21.18	21.03		
3	QPSK	15	0	21.15	21.13	21.06		
3	16QAM	1	0	21.73	21.67	21.49	23	1
3	16QAM	1	8	21.40	21.61	21.42		
3	16QAM	1	14	21.69	21.67	21.64		
3	16QAM	8	0	20.23	20.48	20.01	22	2
3	16QAM	8	4	20.46	20.40	20.33		
3	16QAM	8	7	20.49	20.50	20.29		
3	16QAM	15	0	20.26	20.18	20.34		
3	64QAM	1	0	20.63	20.40	20.46	22	2
3	64QAM	1	8	20.61	20.55	20.39		
3	64QAM	1	14	20.63	20.65	20.37		
3	64QAM	8	0	19.14	19.23	19.06	21	3
3	64QAM	8	4	19.34	19.26	19.21		
3	64QAM	8	7	19.36	19.38	19.16		
3	64QAM	15	0	19.29	19.24	19.02		

Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	22.13	22.11	22.21	24	0
1.4	QPSK	1	3	22.21	22.20	22.06		
1.4	QPSK	1	5	22.12	22.08	22.13		
1.4	QPSK	3	0	22.12	22.10	22.07		
1.4	QPSK	3	1	22.33	22.07	22.14		
1.4	QPSK	3	3	22.16	22.16	22.01		
1.4	QPSK	6	0	21.31	21.19	21.04	23	1
1.4	16QAM	1	0	21.42	21.70	21.39	23	1
1.4	16QAM	1	3	21.65	21.60	21.32		
1.4	16QAM	1	5	21.22	21.47	21.47		
1.4	16QAM	3	0	21.24	21.36	21.26		
1.4	16QAM	3	1	21.28	21.42	21.13		
1.4	16QAM	3	3	21.22	21.33	21.01		
1.4	16QAM	6	0	20.39	20.34	20.10	22	2
1.4	64QAM	1	0	20.49	20.61	20.21	22	2
1.4	64QAM	1	3	20.64	20.38	20.55		
1.4	64QAM	1	5	20.64	20.50	20.37		
1.4	64QAM	3	0	20.61	20.63	20.31		
1.4	64QAM	3	1	20.53	20.54	20.35		
1.4	64QAM	3	3	20.58	20.43	20.26		
1.4	64QAM	6	0	19.23	19.16	19.27	21	3

<Hotspot and Near-Body Power Mode>

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	18.77	18.98	18.97	20.5	0
20	QPSK	1	49	18.88	18.85	18.83		
20	QPSK	1	99	18.78	18.78	18.86		
20	QPSK	50	0	17.77	17.94	17.83	19.5	1
20	QPSK	50	24	17.84	17.86	17.80		
20	QPSK	50	50	17.79	17.78	17.85		
20	QPSK	100	0	17.78	17.87	17.72		
20	16QAM	1	0	18.08	18.03	17.96	19.5	1
20	16QAM	1	49	18.30	18.24	18.10		
20	16QAM	1	99	17.91	17.88	17.84		
20	16QAM	50	0	16.78	16.91	16.80	18.5	2
20	16QAM	50	24	16.86	16.86	16.81		
20	16QAM	50	50	16.79	16.80	16.88		
20	16QAM	100	0	16.79	16.86	16.75		
20	64QAM	1	0	17.26	17.24	17.14	18.5	2
20	64QAM	1	49	17.44	17.41	17.30		
20	64QAM	1	99	17.03	17.06	17.04		
20	64QAM	50	0	16.11	16.22	16.12	17.5	3
20	64QAM	50	24	16.16	16.15	16.12		
20	64QAM	50	50	16.09	16.10	15.97		
20	64QAM	100	0	16.13	16.18	16.09		

Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	18.74	18.71	18.65	20.5	0
15	QPSK	1	37	18.92	18.91	18.89		
15	QPSK	1	74	18.86	18.87	18.96		
15	QPSK	36	0	17.82	17.89	17.82	19.5	1
15	QPSK	36	20	17.84	17.88	17.81		
15	QPSK	36	39	17.84	17.87	17.74		
15	QPSK	75	0	17.80	17.85	17.77		
15	16QAM	1	0	18.09	18.08	17.96	19.5	1
15	16QAM	1	37	18.33	18.34	18.17		
15	16QAM	1	74	17.97	17.98	17.94		
15	16QAM	36	0	16.77	16.87	16.81	18.5	2
15	16QAM	36	20	16.79	16.84	16.80		
15	16QAM	36	39	16.79	16.81	16.73		
15	16QAM	75	0	16.78	16.86	16.78		
15	64QAM	1	0	17.26	17.25	17.16	18.5	2
15	64QAM	1	37	17.49	17.48	17.34		
15	64QAM	1	74	17.13	17.13	17.12		
15	64QAM	36	0	16.11	16.17	16.14	17.5	3
15	64QAM	36	20	16.12	16.19	16.12		
15	64QAM	36	39	16.11	16.13	16.03		
15	64QAM	75	0	16.11	16.18	16.12		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	18.76	18.74	18.69	20.5	0
10	QPSK	1	25	18.83	18.84	18.83		
10	QPSK	1	49	18.67	18.67	18.69		
10	QPSK	25	0	17.81	17.91	17.82	19.5	1
10	QPSK	25	12	17.81	17.87	17.77		
10	QPSK	25	25	17.83	17.86	17.74		
10	QPSK	50	0	17.82	17.85	17.76		
10	16QAM	1	0	18.17	18.13	17.99	19.5	1
10	16QAM	1	25	18.22	18.25	18.11		
10	16QAM	1	49	18.07	18.08	18.04		
10	16QAM	25	0	16.81	16.91	16.85	18.5	2
10	16QAM	25	12	16.83	16.84	16.79		
10	16QAM	25	25	16.82	16.81	16.75		
10	16QAM	50	0	16.82	16.87	16.79		
10	64QAM	1	0	17.32	17.30	17.18	18.5	2
10	64QAM	1	25	17.41	17.45	17.33		
10	64QAM	1	49	17.25	17.23	17.21		
10	64QAM	25	0	16.15	16.20	16.17	17.5	3
10	64QAM	25	12	16.15	16.18	16.12		
10	64QAM	25	25	16.15	16.16	16.09		
10	64QAM	50	0	16.14	16.17	16.12		

Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	18.65	18.85	18.86	20.5	0
5	QPSK	1	12	18.94	18.87	18.88		
5	QPSK	1	24	18.77	18.85	18.86		
5	QPSK	12	0	17.79	17.83	17.76	19.5	1
5	QPSK	12	7	17.86	17.86	17.82		
5	QPSK	12	13	17.79	17.77	17.74		
5	QPSK	25	0	17.80	17.81	17.75		
5	16QAM	1	0	18.01	17.99	17.90	19.5	1
5	16QAM	1	12	18.27	18.25	18.27		
5	16QAM	1	24	17.94	17.95	17.90		
5	16QAM	12	0	16.79	16.81	16.76	18.5	2
5	16QAM	12	7	16.85	16.85	16.83		
5	16QAM	12	13	16.78	16.78	16.71		
5	16QAM	25	0	16.80	16.80	16.75		
5	64QAM	1	0	17.24	17.18	17.07	18.5	2
5	64QAM	1	12	17.48	17.49	17.44		
5	64QAM	1	24	17.14	17.16	17.09		
5	64QAM	12	0	16.08	16.11	16.08	17.5	3
5	64QAM	12	7	16.15	16.17	16.15		
5	64QAM	12	13	16.10	16.07	16.05		
5	64QAM	25	0	16.12	16.15	16.09		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	18.80	18.81	18.80	20.5	0
3	QPSK	1	8	18.85	18.83	18.85		
3	QPSK	1	14	18.75	18.78	18.81		
3	QPSK	8	0	17.89	17.88	17.84	19.5	1
3	QPSK	8	4	17.92	17.91	17.88		
3	QPSK	8	7	17.86	17.87	17.81		
3	QPSK	15	0	17.83	17.88	17.81		
3	16QAM	1	0	18.17	18.11	18.09	19.5	1
3	16QAM	1	8	18.20	18.17	18.14		
3	16QAM	1	14	18.10	18.14	18.08		
3	16QAM	8	0	16.96	16.95	16.89	18.5	2
3	16QAM	8	4	16.96	16.97	16.95		
3	16QAM	8	7	16.92	16.95	16.90		
3	16QAM	15	0	16.85	16.87	16.86		
3	64QAM	1	0	17.35	17.35	17.27	18.5	2
3	64QAM	1	8	17.40	17.39	17.33		
3	64QAM	1	14	17.31	17.33	17.30		
3	64QAM	8	0	16.24	16.25	16.17	17.5	3
3	64QAM	8	4	16.24	16.25	16.24		
3	64QAM	8	7	16.21	16.21	16.20		
3	64QAM	15	0	16.16	16.18	16.15		

Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	18.82	18.80	18.78	20.5	0
1.4	QPSK	1	3	18.94	18.94	18.93		
1.4	QPSK	1	5	18.84	18.81	18.80		
1.4	QPSK	3	0	18.93	18.89	18.88		
1.4	QPSK	3	1	18.96	18.95	18.95		
1.4	QPSK	3	3	18.91	18.90	18.90		
1.4	QPSK	6	0	17.94	17.94	17.87	19.5	1
1.4	16QAM	1	0	18.19	18.17	18.11	19.5	1
1.4	16QAM	1	3	18.31	18.30	18.24		
1.4	16QAM	1	5	18.17	18.15	18.10		
1.4	16QAM	3	0	17.97	17.96	17.90		
1.4	16QAM	3	1	18.03	17.99	17.96		
1.4	16QAM	3	3	17.97	17.95	17.88		
1.4	16QAM	6	0	17.05	17.05	16.99	18.5	2
1.4	64QAM	1	0	17.42	17.37	17.30	18.5	2
1.4	64QAM	1	3	17.51	17.49	17.41		
1.4	64QAM	1	5	17.38	17.35	17.31		
1.4	64QAM	3	0	17.34	17.33	17.29		
1.4	64QAM	3	1	17.41	17.40	17.34		
1.4	64QAM	3	3	17.33	17.31	17.24		
1.4	64QAM	6	0	16.28	16.25	16.22	17.5	3

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	16.80	17.09	16.85	18.5	0
20	QPSK	1	49	16.96	17.02	17.06		
20	QPSK	1	99	16.70	16.71	16.67		
20	QPSK	50	0	15.86	15.94	15.98	17.5	1
20	QPSK	50	24	15.90	15.97	15.96		
20	QPSK	50	50	15.88	15.86	15.78		
20	QPSK	100	0	15.91	15.93	15.89		
20	16QAM	1	0	16.23	16.23	16.21	17.5	1
20	16QAM	1	49	16.34	16.42	16.45		
20	16QAM	1	99	16.08	16.09	16.05		
20	16QAM	50	0	14.92	14.99	15.01	16.5	2
20	16QAM	50	24	14.96	15.02	15.00		
20	16QAM	50	50	14.94	14.92	14.83		
20	16QAM	100	0	14.96	14.97	14.91		
20	64QAM	1	0	16.04	16.05	16.07	16.5	2
20	64QAM	1	49	16.19	16.23	16.24		
20	64QAM	1	99	15.91	15.93	15.87		
20	64QAM	50	0	14.92	14.96	14.98	15.5	3
20	64QAM	50	24	14.95	15.01	14.99		
20	64QAM	50	50	14.93	14.91	14.82		
20	64QAM	100	0	14.94	14.96	14.93		

Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	16.88	16.92	16.92	18.5	0
15	QPSK	1	37	16.92	16.92	16.88		
15	QPSK	1	74	16.77	16.83	16.74		
15	QPSK	36	0	15.92	15.98	16.00	17.5	1
15	QPSK	36	20	15.97	16.02	15.95		
15	QPSK	36	39	15.95	15.94	15.87		
15	QPSK	75	0	15.94	15.97	15.91		
15	16QAM	1	0	16.26	16.25	16.26	17.5	1
15	16QAM	1	37	16.41	16.51	16.45		
15	16QAM	1	74	16.14	16.16	16.11		
15	16QAM	36	0	14.95	15.01	15.00	16.5	2
15	16QAM	36	20	14.99	15.03	14.95		
15	16QAM	36	39	14.94	14.95	14.85		
15	16QAM	75	0	14.99	15.01	14.94		
15	64QAM	1	0	16.07	16.10	16.09	16.5	2
15	64QAM	1	37	16.25	16.29	16.27		
15	64QAM	1	74	15.96	15.99	15.94		
15	64QAM	36	0	14.94	15.00	15.00	15.5	3
15	64QAM	36	20	14.97	15.01	14.95		
15	64QAM	36	39	14.93	14.95	14.87		
15	64QAM	75	0	14.98	15.01	14.95		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	16.87	16.89	16.91	18.5	0
10	QPSK	1	25	16.95	16.98	16.93		
10	QPSK	1	49	16.77	16.83	16.81		
10	QPSK	25	0	15.88	15.96	15.94	17.5	1
10	QPSK	25	12	15.89	15.95	15.88		
10	QPSK	25	25	15.89	15.90	15.87		
10	QPSK	50	0	15.86	15.95	15.87		
10	16QAM	1	0	16.25	16.27	16.29	17.5	1
10	16QAM	1	25	16.34	16.37	16.38		
10	16QAM	1	49	16.18	16.23	16.18		
10	16QAM	25	0	14.91	14.98	14.99	16.5	2
10	16QAM	25	12	14.95	15.00	14.93		
10	16QAM	25	25	14.91	14.97	14.91		
10	16QAM	50	0	14.92	15.01	14.91		
10	64QAM	1	0	16.09	16.13	16.13	16.5	2
10	64QAM	1	25	16.14	16.19	16.16		
10	64QAM	1	49	16.00	16.06	16.04		
10	64QAM	25	0	14.91	15.00	14.98	15.5	3
10	64QAM	25	12	14.92	14.99	14.92		
10	64QAM	25	25	14.92	14.96	14.90		
10	64QAM	50	0	14.91	14.98	14.88		

Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	16.79	16.82	16.74	18.5	0
5	QPSK	1	12	17.01	17.03	17.00		
5	QPSK	1	24	16.71	16.78	16.74		
5	QPSK	12	0	15.84	15.93	15.89	17.5	1
5	QPSK	12	7	15.92	15.94	15.87		
5	QPSK	12	13	15.85	15.88	15.86		
5	QPSK	25	0	15.87	15.93	15.88		
5	16QAM	1	0	16.14	16.17	16.09	17.5	1
5	16QAM	1	12	16.40	16.44	16.34		
5	16QAM	1	24	16.09	16.13	16.07		
5	16QAM	12	0	14.87	14.98	14.93	16.5	2
5	16QAM	12	7	14.96	14.96	14.92		
5	16QAM	12	13	14.88	14.92	14.89		
5	16QAM	25	0	14.92	14.97	14.92		
5	64QAM	1	0	15.99	16.06	15.96	16.5	2
5	64QAM	1	12	16.21	16.25	16.21		
5	64QAM	1	24	15.93	16.00	15.96		
5	64QAM	12	0	14.85	14.92	14.88	15.5	3
5	64QAM	12	7	14.93	14.94	14.89		
5	64QAM	12	13	14.85	14.89	14.87		
5	64QAM	25	0	14.90	14.96	14.92		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	16.86	16.92	16.89	18.5	0
3	QPSK	1	8	16.82	16.93	16.93		
3	QPSK	1	14	16.81	16.90	16.90		
3	QPSK	8	0	15.87	15.92	15.89	17.5	1
3	QPSK	8	4	15.95	15.96	15.91		
3	QPSK	8	7	15.88	15.91	15.92		
3	QPSK	15	0	15.85	15.89	15.86		
3	16QAM	1	0	16.23	16.27	16.26	17.5	1
3	16QAM	1	8	16.17	16.25	16.29		
3	16QAM	1	14	16.20	16.26	16.27		
3	16QAM	8	0	14.99	15.03	14.99	16.5	2
3	16QAM	8	4	15.03	15.08	15.02		
3	16QAM	8	7	15.00	15.03	15.00		
3	16QAM	15	0	14.91	14.94	14.92		
3	64QAM	1	0	16.05	16.10	16.09	16.5	2
3	64QAM	1	8	16.05	16.09	16.12		
3	64QAM	1	14	16.03	16.16	16.12		
3	64QAM	8	0	14.95	14.97	14.94	15.5	3
3	64QAM	8	4	15.00	15.01	14.98		
3	64QAM	8	7	14.96	14.95	14.97		
3	64QAM	15	0	14.89	14.92	14.89		

Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	16.87	16.92	16.88	18.5	0
1.4	QPSK	1	3	17.05	16.88	17.00		
1.4	QPSK	1	5	16.88	16.92	16.89		
1.4	QPSK	3	0	16.99	17.02	17.00		
1.4	QPSK	3	1	17.04	16.88	16.99		
1.4	QPSK	3	3	17.00	17.03	16.98		
1.4	QPSK	6	0	15.97	15.97	15.98	17.5	1
1.4	16QAM	1	0	16.27	16.32	16.25	17.5	1
1.4	16QAM	1	3	16.40	16.40	16.39		
1.4	16QAM	1	5	16.27	16.26	16.26		
1.4	16QAM	3	0	16.05	16.03	16.03		
1.4	16QAM	3	1	16.12	16.12	16.10		
1.4	16QAM	3	3	16.04	16.05	16.02		
1.4	16QAM	6	0	15.10	15.13	15.12	16.5	2
1.4	64QAM	1	0	16.08	16.15	16.09	16.5	2
1.4	64QAM	1	3	16.19	16.23	16.22		
1.4	64QAM	1	5	16.08	16.11	16.11		
1.4	64QAM	3	0	16.08	16.08	16.05		
1.4	64QAM	3	1	16.13	16.16	16.13		
1.4	64QAM	3	3	16.08	16.07	16.08		
1.4	64QAM	6	0	15.02	15.03	15.00	15.5	3

<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	22.72	22.95	22.67	24	0
10	QPSK	1	25	22.94	22.66	22.74		
10	QPSK	1	49	22.59	22.59	22.67		
10	QPSK	25	0	21.84	21.89	21.69	23	1
10	QPSK	25	12	21.84	21.87	21.69		
10	QPSK	25	25	21.71	21.76	21.70		
10	QPSK	50	0	21.77	21.92	21.78		
10	16QAM	1	0	22.24	22.39	22.54	23	1
10	16QAM	1	25	22.30	22.42	22.21		
10	16QAM	1	49	22.38	22.41	22.11		
10	16QAM	25	0	20.76	20.94	20.73	22	2
10	16QAM	25	12	20.92	20.95	20.85		
10	16QAM	25	25	20.77	20.86	20.72		
10	16QAM	50	0	20.79	20.93	20.78		
10	64QAM	1	0	20.89	21.02	21.07	22	2
10	64QAM	1	25	20.87	21.14	21.02		
10	64QAM	1	49	21.02	20.67	20.73		
10	64QAM	25	0	19.93	19.85	19.69	21	3
10	64QAM	25	12	19.87	19.95	19.75		
10	64QAM	25	25	19.77	19.92	19.83		
10	64QAM	50	0	19.83	19.95	19.76		

Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.60	22.64	22.59	24	0
5	QPSK	1	12	22.91	22.91	22.83		
5	QPSK	1	24	22.64	22.56	22.54		
5	QPSK	12	0	21.78	21.82	21.77	23	1
5	QPSK	12	7	21.84	21.84	21.78		
5	QPSK	12	13	21.77	21.77	21.71		
5	QPSK	25	0	21.78	21.80	21.73		
5	16QAM	1	0	21.92	21.90	21.92	23	1
5	16QAM	1	12	22.10	22.27	22.25		
5	16QAM	1	24	21.84	21.87	21.91		
5	16QAM	12	0	20.75	20.83	20.78	22	2
5	16QAM	12	7	20.83	20.86	20.81		
5	16QAM	12	13	20.74	20.78	20.72		
5	16QAM	25	0	20.78	20.81	20.76		
5	64QAM	1	0	20.75	20.87	20.83	22	2
5	64QAM	1	12	21.15	21.17	21.09		
5	64QAM	1	24	20.84	20.82	20.86		
5	64QAM	12	0	19.78	19.85	19.79	21	3
5	64QAM	12	7	19.84	19.89	19.81		
5	64QAM	12	13	19.74	19.79	19.73		
5	64QAM	25	0	19.75	19.81	19.71		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	22.74	22.76	22.68	24	0
3	QPSK	1	8	22.73	22.73	22.68		
3	QPSK	1	14	22.73	22.70	22.66		
3	QPSK	8	0	21.77	21.80	21.76	23	1
3	QPSK	8	4	21.85	21.84	21.80		
3	QPSK	8	7	21.78	21.79	21.73		
3	QPSK	15	0	21.77	21.78	21.75		
3	16QAM	1	0	21.97	22.01	22.10	23	1
3	16QAM	1	8	22.05	22.08	22.00		
3	16QAM	1	14	21.95	22.11	21.99		
3	16QAM	8	0	20.83	20.90	20.85	22	2
3	16QAM	8	4	20.88	20.91	20.90		
3	16QAM	8	7	20.83	20.87	20.83		
3	16QAM	15	0	20.75	20.82	20.78		
3	64QAM	1	0	20.97	20.90	20.98	22	2
3	64QAM	1	8	20.95	20.99	20.87		
3	64QAM	1	14	20.97	20.97	20.93		
3	64QAM	8	0	19.82	19.86	19.81	21	3
3	64QAM	8	4	19.84	19.88	19.80		
3	64QAM	8	7	19.80	19.83	19.81		
3	64QAM	15	0	19.76	19.78	19.74		

Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.69	22.69	22.63	24	0
1.4	QPSK	1	3	22.81	22.83	22.74		
1.4	QPSK	1	5	22.69	22.68	22.64		
1.4	QPSK	3	0	22.82	22.82	22.77		
1.4	QPSK	3	1	22.87	22.87	22.81		
1.4	QPSK	3	3	22.79	22.80	22.76		
1.4	QPSK	6	0	21.83	21.82	21.79	23	1
1.4	16QAM	1	0	21.92	22.08	21.94	23	1
1.4	16QAM	1	3	22.15	22.25	22.15		
1.4	16QAM	1	5	22.00	22.06	22.04		
1.4	16QAM	3	0	21.75	21.86	21.81		
1.4	16QAM	3	1	21.88	21.85	21.82		
1.4	16QAM	3	3	21.73	21.79	21.76		
1.4	16QAM	6	0	20.90	20.96	20.91	22	2
1.4	64QAM	1	0	20.91	20.96	20.91	22	2
1.4	64QAM	1	3	20.98	21.02	21.00		
1.4	64QAM	1	5	20.91	20.95	20.86		
1.4	64QAM	3	0	20.94	20.95	20.92		
1.4	64QAM	3	1	20.94	20.99	20.98		
1.4	64QAM	3	3	20.88	20.93	20.93		
1.4	64QAM	6	0	19.82	19.78	19.81	21	3

<LTE Band 12>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23060	23095	23130		
Frequency (MHz)				704	707.5	711		
10	QPSK	1	0	22.54	22.62	22.46	24	0
10	QPSK	1	25	22.41	22.38	22.47		
10	QPSK	1	49	22.46	22.51	22.26		
10	QPSK	25	0	21.33	21.71	21.54	23	1
10	QPSK	25	12	21.45	21.51	21.54		
10	QPSK	25	25	21.36	21.37	21.59		
10	QPSK	50	0	21.36	21.55	21.52		
10	16QAM	1	0	21.77	21.59	21.59	23	1
10	16QAM	1	25	21.89	21.73	21.85		
10	16QAM	1	49	21.39	21.85	21.56		
10	16QAM	25	0	20.40	20.69	20.65	22	2
10	16QAM	25	12	20.52	20.51	20.68		
10	16QAM	25	25	20.25	20.47	20.60		
10	16QAM	50	0	20.38	20.54	20.62		
10	64QAM	1	0	20.52	20.63	20.41	22	2
10	64QAM	1	25	20.51	20.47	20.50		
10	64QAM	1	49	20.29	20.36	20.51		
10	64QAM	25	0	19.41	19.58	19.67	21	3
10	64QAM	25	12	19.45	19.56	19.55		
10	64QAM	25	25	19.43	19.41	19.66		
10	64QAM	50	0	19.66	19.60	19.66		

Channel				23035	23095	23155	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	22.34	22.31	22.35	24	0
5	QPSK	1	12	22.61	22.57	22.59		
5	QPSK	1	24	22.29	22.28	22.31		
5	QPSK	12	0	21.41	21.54	21.42	23	1
5	QPSK	12	7	21.50	21.48	21.53		
5	QPSK	12	13	21.46	21.36	21.41		
5	QPSK	25	0	21.43	21.47	21.40		
5	16QAM	1	0	21.54	21.52	21.77	23	1
5	16QAM	1	12	21.84	21.77	21.87		
5	16QAM	1	24	21.52	21.61	21.62		
5	16QAM	12	0	20.38	20.54	20.44	22	2
5	16QAM	12	7	20.51	20.46	20.54		
5	16QAM	12	13	20.45	20.36	20.42		
5	16QAM	25	0	20.45	20.49	20.44		
5	64QAM	1	0	20.56	20.46	20.55	22	2
5	64QAM	1	12	20.80	20.76	20.82		
5	64QAM	1	24	20.55	20.52	20.47		
5	64QAM	12	0	19.38	19.54	19.47	21	3
5	64QAM	12	7	19.53	19.49	19.58		
5	64QAM	12	13	19.51	19.38	19.46		
5	64QAM	25	0	19.45	19.46	19.45		
Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	22.44	22.42	22.40	24	0
3	QPSK	1	8	22.41	22.42	22.42		
3	QPSK	1	14	22.37	22.42	22.42		
3	QPSK	8	0	21.44	21.46	21.47	23	1
3	QPSK	8	4	21.49	21.48	21.52		
3	QPSK	8	7	21.44	21.40	21.45		
3	QPSK	15	0	21.42	21.43	21.44		
3	16QAM	1	0	21.76	21.68	21.80	23	1
3	16QAM	1	8	21.78	21.60	21.71		
3	16QAM	1	14	21.73	21.72	21.65		
3	16QAM	8	0	20.54	20.50	20.57	22	2
3	16QAM	8	4	20.59	20.55	20.63		
3	16QAM	8	7	20.52	20.48	20.51		
3	16QAM	15	0	20.47	20.44	20.47		
3	64QAM	1	0	20.60	20.54	20.69	22	2
3	64QAM	1	8	20.62	20.65	20.72		
3	64QAM	1	14	20.54	20.65	20.61		
3	64QAM	8	0	19.53	19.49	19.55	21	3
3	64QAM	8	4	19.54	19.52	19.59		
3	64QAM	8	7	19.55	19.46	19.54		
3	64QAM	15	0	19.45	19.42	19.47		

Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	22.36	22.35	22.35	24	0
1.4	QPSK	1	3	22.48	22.45	22.49		
1.4	QPSK	1	5	22.36	22.38	22.36		
1.4	QPSK	3	0	22.46	22.45	22.48		
1.4	QPSK	3	1	22.52	22.52	22.52		
1.4	QPSK	3	3	22.47	22.41	22.47		
1.4	QPSK	6	0	21.45	21.46	21.48	23	1
1.4	16QAM	1	0	21.67	21.64	21.58	23	1
1.4	16QAM	1	3	21.88	21.67	21.80		
1.4	16QAM	1	5	21.62	21.54	21.56		
1.4	16QAM	3	0	21.49	21.36	21.50		
1.4	16QAM	3	1	21.58	21.44	21.46		
1.4	16QAM	3	3	21.49	21.40	21.39		
1.4	16QAM	6	0	20.55	20.58	20.61	22	2
1.4	64QAM	1	0	20.62	20.49	20.54	22	2
1.4	64QAM	1	3	20.64	20.63	20.63		
1.4	64QAM	1	5	20.59	20.47	20.49		
1.4	64QAM	3	0	20.57	20.50	20.46		
1.4	64QAM	3	1	20.62	20.44	20.67		
1.4	64QAM	3	3	20.57	20.46	20.56		
1.4	64QAM	6	0	19.46	19.43	19.45	21	3

<LTE Band 13>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23230				
Frequency (MHz)				782				
10	QPSK	1	0		22.79		24	0
10	QPSK	1	25		22.75			
10	QPSK	1	49		22.63			
10	QPSK	25	0		21.76		23	1
10	QPSK	25	12		21.75			
10	QPSK	25	25		21.69			
10	QPSK	50	0		21.77			
10	16QAM	1	0		21.68		23	1
10	16QAM	1	25		22.17			
10	16QAM	1	49		21.93			
10	16QAM	25	0		20.73		22	2
10	16QAM	25	12		20.75			
10	16QAM	25	25		20.80			
10	16QAM	50	0		20.74			
10	64QAM	1	0		20.89		22	2
10	64QAM	1	25		20.73			
10	64QAM	1	49		20.58			
10	64QAM	25	0		19.64		21	3
10	64QAM	25	12		19.76			
10	64QAM	25	25		19.73			
10	64QAM	50	0		19.74			

Channel				23205	23230	23255	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	22.52	22.50	22.50	24	0
5	QPSK	1	12	22.78	22.76	22.73		
5	QPSK	1	24	22.56	22.55	22.59		
5	QPSK	12	0	21.47	21.63	21.72	23	1
5	QPSK	12	7	21.81	21.78	21.71		
5	QPSK	12	13	21.62	21.61	21.70		
5	QPSK	25	0	21.56	21.63	21.64		
5	16QAM	1	0	21.83	21.78	21.97	23	1
5	16QAM	1	12	22.20	22.18	22.08		
5	16QAM	1	24	21.89	21.73	21.80		
5	16QAM	12	0	20.43	20.63	20.70	22	2
5	16QAM	12	7	20.80	20.71	20.62		
5	16QAM	12	13	20.67	20.62	20.69		
5	16QAM	25	0	20.61	20.68	20.77		
5	64QAM	1	0	20.92	20.82	20.69	22	2
5	64QAM	1	12	20.90	20.50	20.66		
5	64QAM	1	24	20.61	20.65	20.76		
5	64QAM	12	0	19.59	19.69	19.75	21	3
5	64QAM	12	7	19.86	19.68	19.80		
5	64QAM	12	13	19.63	19.61	19.78		
5	64QAM	25	0	19.58	19.74	19.64		

<LTE Band 25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	19.02	19.07	19.06	20.5	0
20	QPSK	1	49	18.94	18.99	18.96		
20	QPSK	1	99	18.61	18.66	18.62		
20	QPSK	50	0	18.02	18.21	18.16	19.5	1
20	QPSK	50	24	18.08	18.16	18.10		
20	QPSK	50	50	18.03	18.11	17.91		
20	QPSK	100	0	18.01	18.15	18.06		
20	16QAM	1	0	18.23	18.33	18.25	19.5	1
20	16QAM	1	49	18.51	18.54	18.46		
20	16QAM	1	99	18.16	18.23	18.15		
20	16QAM	50	0	17.04	17.26	17.19	18.5	2
20	16QAM	50	24	17.11	17.18	17.12		
20	16QAM	50	50	17.06	17.15	16.94		
20	16QAM	100	0	17.04	17.17	17.07		
20	64QAM	1	0	17.41	17.53	17.44	18.5	2
20	64QAM	1	49	17.67	17.69	17.65		
20	64QAM	1	99	17.33	17.38	17.33		
20	64QAM	50	0	16.39	16.57	16.50	17.5	3
20	64QAM	50	24	16.44	16.50	16.45		
20	64QAM	50	50	16.39	16.47	16.25		
20	64QAM	100	0	16.38	16.52	16.40		

Channel				26115	26340	26615	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	18.77	18.87	18.82	20.5	0
15	QPSK	1	37	19.01	19.03	19.02		
15	QPSK	1	74	18.71	18.79	18.74		
15	QPSK	36	0	18.06	18.22	18.14	19.5	1
15	QPSK	36	20	18.10	18.16	18.10		
15	QPSK	36	39	18.08	18.15	17.97		
15	QPSK	75	0	18.08	18.18	18.07		
15	16QAM	1	0	18.26	18.38	18.31	19.5	1
15	16QAM	1	37	18.56	18.60	18.56		
15	16QAM	1	74	18.21	18.32	18.24		
15	16QAM	36	0	17.07	17.21	17.13	18.5	2
15	16QAM	36	20	17.12	17.16	17.12		
15	16QAM	36	39	17.11	17.16	16.99		
15	16QAM	75	0	17.10	17.20	17.08		
15	64QAM	1	0	17.46	17.55	17.48	18.5	2
15	64QAM	1	37	17.75	17.74	17.66		
15	64QAM	1	74	17.40	17.50	17.43		
15	64QAM	36	0	16.40	16.53	16.47	17.5	3
15	64QAM	36	20	16.44	16.50	16.43		
15	64QAM	36	39	16.41	16.48	16.32		
15	64QAM	75	0	16.45	16.52	16.41		
Channel				26090	26340	26640	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	18.75	18.88	18.83	20.5	0
10	QPSK	1	25	18.91	18.94	18.90		
10	QPSK	1	49	18.75	18.83	18.74		
10	QPSK	25	0	18.00	18.16	18.13	19.5	1
10	QPSK	25	12	18.05	18.14	18.07		
10	QPSK	25	25	18.04	18.10	17.94		
10	QPSK	50	0	18.05	18.14	18.05		
10	16QAM	1	0	18.30	18.39	18.35	19.5	1
10	16QAM	1	25	18.44	18.49	18.43		
10	16QAM	1	49	18.29	18.35	18.30		
10	16QAM	25	0	17.06	17.20	17.14	18.5	2
10	16QAM	25	12	17.10	17.15	17.07		
10	16QAM	25	25	17.10	17.14	16.96		
10	16QAM	50	0	17.10	17.18	17.06		
10	64QAM	1	0	17.49	17.59	17.53	18.5	2
10	64QAM	1	25	17.62	17.69	17.60		
10	64QAM	1	49	17.48	17.55	17.49		
10	64QAM	25	0	16.37	16.52	16.46	17.5	3
10	64QAM	25	12	16.45	16.49	16.41		
10	64QAM	25	25	16.42	16.45	16.29		
10	64QAM	50	0	16.43	16.50	16.37		

Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	18.66	18.77	18.68	20.5	0
5	QPSK	1	12	18.93	19.05	18.96		
5	QPSK	1	24	18.68	18.77	18.68		
5	QPSK	12	0	17.95	18.09	18.08	19.5	1
5	QPSK	12	7	18.07	18.14	18.08		
5	QPSK	12	13	17.99	18.04	17.95		
5	QPSK	25	0	18.02	18.08	18.01		
5	16QAM	1	0	18.18	18.28	18.20	19.5	1
5	16QAM	1	12	18.42	18.53	18.48		
5	16QAM	1	24	18.19	18.26	18.21		
5	16QAM	12	0	17.00	17.12	17.05	18.5	2
5	16QAM	12	7	17.09	17.15	17.06		
5	16QAM	12	13	17.05	17.10	16.97		
5	16QAM	25	0	17.08	17.14	17.04		
5	64QAM	1	0	17.40	17.48	17.41	18.5	2
5	64QAM	1	12	17.67	17.72	17.69		
5	64QAM	1	24	17.40	17.51	17.40		
5	64QAM	12	0	16.31	16.44	16.36	17.5	3
5	64QAM	12	7	16.42	16.48	16.39		
5	64QAM	12	13	16.33	16.41	16.28		
5	64QAM	25	0	16.37	16.46	16.37		
Channel				26055	26340	26675	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	18.78	18.89	18.83	20.5	0
3	QPSK	1	8	18.79	18.88	18.82		
3	QPSK	1	14	18.79	18.87	18.80		
3	QPSK	8	0	18.02	18.13	18.08	19.5	1
3	QPSK	8	4	18.04	18.15	18.09		
3	QPSK	8	7	18.04	18.12	18.04		
3	QPSK	15	0	17.98	18.11	18.02		
3	16QAM	1	0	18.35	18.43	18.31	19.5	1
3	16QAM	1	8	18.33	18.41	18.33		
3	16QAM	1	14	18.30	18.42	18.36		
3	16QAM	8	0	17.11	17.24	17.13	18.5	2
3	16QAM	8	4	17.12	17.25	17.15		
3	16QAM	8	7	17.12	17.20	17.10		
3	16QAM	15	0	17.05	17.17	17.07		
3	64QAM	1	0	17.47	17.60	17.52	18.5	2
3	64QAM	1	8	17.52	17.58	17.52		
3	64QAM	1	14	17.52	17.61	17.55		
3	64QAM	8	0	16.42	16.53	16.44	17.5	3
3	64QAM	8	4	16.44	16.54	16.44		
3	64QAM	8	7	16.42	16.49	16.41		
3	64QAM	15	0	16.35	16.45	16.37		

Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	18.75	18.88	18.79	20.5	0
1.4	QPSK	1	3	18.87	19.01	18.92		
1.4	QPSK	1	5	18.76	18.92	18.80		
1.4	QPSK	3	0	18.87	19.01	18.92		
1.4	QPSK	3	1	18.92	18.92	18.76		
1.4	QPSK	3	3	18.76	18.92	18.80		
1.4	QPSK	6	0	18.07	18.16	18.07	19.5	1
1.4	16QAM	1	0	18.28	18.42	18.34	19.5	1
1.4	16QAM	1	3	18.38	18.54	18.44		
1.4	16QAM	1	5	18.28	18.44	18.34		
1.4	16QAM	3	0	18.08	18.20	18.10		
1.4	16QAM	3	1	18.15	18.26	18.19		
1.4	16QAM	3	3	18.04	18.18	18.13		
1.4	16QAM	6	0	17.20	17.29	17.20	18.5	2
1.4	64QAM	1	0	17.47	17.59	17.52	18.5	2
1.4	64QAM	1	3	17.55	17.66	17.63		
1.4	64QAM	1	5	17.46	17.62	17.52		
1.4	64QAM	3	0	17.44	17.56	17.48		
1.4	64QAM	3	1	17.50	17.60	17.55		
1.4	64QAM	3	3	17.41	17.56	17.49		
1.4	64QAM	6	0	16.42	16.54	16.45	17.5	3

<LTE Band 26>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26765	26865	26965		
Frequency (MHz)				821.5	831.5	841.5		
15	QPSK	1	0	22.68	22.95	22.73	24	0
15	QPSK	1	37	22.94	22.91	22.91		
15	QPSK	1	74	22.67	22.67	22.65		
15	QPSK	36	0	21.89	21.95	21.89	23	1
15	QPSK	36	20	21.92	21.93	21.88		
15	QPSK	36	39	21.86	21.85	21.83		
15	QPSK	75	0	21.85	21.89	21.86		
15	16QAM	1	0	21.97	22.08	22.09	23	1
15	16QAM	1	37	22.35	22.23	22.33		
15	16QAM	1	74	22.00	22.04	21.96		
15	16QAM	36	0	20.85	20.91	20.89	22	2
15	16QAM	36	20	20.88	20.88	20.88		
15	16QAM	36	39	20.80	20.81	20.83		
15	16QAM	75	0	20.83	20.88	20.88		
15	64QAM	1	0	20.93	20.91	20.99	22	2
15	64QAM	1	37	21.14	21.14	21.22		
15	64QAM	1	74	20.84	20.90	20.87		
15	64QAM	36	0	19.88	19.91	19.89	21	3
15	64QAM	36	20	19.90	19.92	19.86		
15	64QAM	36	39	19.83	19.82	19.83		
15	64QAM	75	0	19.84	19.86	19.87		

Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	22.81	22.81	22.67	24	0
10	QPSK	1	25	22.93	22.84	22.85		
10	QPSK	1	49	22.78	22.76	22.79		
10	QPSK	25	0	21.92	22.03	21.82	23	1
10	QPSK	25	12	21.90	21.97	21.82		
10	QPSK	25	25	21.86	21.77	21.79		
10	QPSK	50	0	21.90	21.93	21.87		
10	16QAM	1	0	21.90	21.98	22.13	23	1
10	16QAM	1	25	22.28	22.19	22.21		
10	16QAM	1	49	21.78	22.01	21.88		
10	16QAM	25	0	21.05	20.99	20.91	22	2
10	16QAM	25	12	20.95	20.97	20.87		
10	16QAM	25	25	20.98	20.84	20.84		
10	16QAM	50	0	20.96	20.95	20.84		
10	64QAM	1	0	20.83	20.86	20.81	22	2
10	64QAM	1	25	20.97	20.84	20.97		
10	64QAM	1	49	20.66	21.16	20.83		
10	64QAM	25	0	19.81	20.06	19.94	21	3
10	64QAM	25	12	19.89	19.91	19.90		
10	64QAM	25	25	20.04	19.79	19.83		
10	64QAM	50	0	19.98	19.94	19.80		
Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	22.68	22.69	22.64	24	0
5	QPSK	1	12	22.93	22.87	22.89		
5	QPSK	1	24	22.67	22.68	22.64		
5	QPSK	12	0	21.80	21.94	21.86	23	1
5	QPSK	12	7	21.88	21.89	21.96		
5	QPSK	12	13	21.87	21.85	21.85		
5	QPSK	25	0	21.78	21.82	21.78		
5	16QAM	1	0	21.95	21.96	22.42	23	1
5	16QAM	1	12	22.22	22.36	22.40		
5	16QAM	1	24	22.01	22.04	21.99		
5	16QAM	12	0	20.73	20.91	20.92	22	2
5	16QAM	12	7	20.94	20.88	20.85		
5	16QAM	12	13	20.76	20.70	20.85		
5	16QAM	25	0	20.90	20.93	20.87		
5	64QAM	1	0	20.70	20.93	20.72	22	2
5	64QAM	1	12	21.11	21.03	21.04		
5	64QAM	1	24	20.81	20.83	20.65		
5	64QAM	12	0	19.75	19.92	19.86	21	3
5	64QAM	12	7	19.86	19.94	19.88		
5	64QAM	12	13	19.78	19.78	19.83		
5	64QAM	25	0	19.88	19.87	19.94		

Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	22.73	22.81	22.75	24	0
3	QPSK	1	8	22.75	22.81	22.75		
3	QPSK	1	14	22.79	22.80	22.75		
3	QPSK	8	0	21.80	21.86	21.85	23	1
3	QPSK	8	4	21.87	21.88	21.85		
3	QPSK	8	7	21.83	21.86	21.83		
3	QPSK	15	0	21.82	21.88	21.82		
3	16QAM	1	0	21.97	22.19	22.10	23	1
3	16QAM	1	8	22.11	21.98	22.09		
3	16QAM	1	14	22.00	22.03	22.07		
3	16QAM	8	0	20.86	20.92	20.94	22	2
3	16QAM	8	4	20.91	20.93	20.93		
3	16QAM	8	7	20.90	20.90	20.92		
3	16QAM	15	0	20.83	20.87	20.84		
3	64QAM	1	0	20.90	21.06	21.03	22	2
3	64QAM	1	8	21.01	21.00	21.04		
3	64QAM	1	14	21.01	21.04	21.03		
3	64QAM	8	0	19.82	19.87	19.91	21	3
3	64QAM	8	4	19.87	19.90	19.89		
3	64QAM	8	7	19.88	19.90	19.90		
3	64QAM	15	0	19.77	19.85	19.80		
Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	22.67	22.75	22.72	24	0
1.4	QPSK	1	3	22.85	22.88	22.87		
1.4	QPSK	1	5	22.68	22.74	22.72		
1.4	QPSK	3	0	22.77	22.83	22.83		
1.4	QPSK	3	1	22.86	22.91	22.90		
1.4	QPSK	3	3	22.84	22.83	22.81		
1.4	QPSK	6	0	21.82	21.89	21.89	23	1
1.4	16QAM	1	0	21.96	22.00	22.00	23	1
1.4	16QAM	1	3	22.04	22.10	22.19		
1.4	16QAM	1	5	22.01	21.94	22.13		
1.4	16QAM	3	0	21.79	21.84	21.85		
1.4	16QAM	3	1	21.83	21.94	21.91		
1.4	16QAM	3	3	21.73	21.87	21.91		
1.4	16QAM	6	0	20.91	20.97	20.99	22	2
1.4	64QAM	1	0	20.80	21.00	21.02	22	2
1.4	64QAM	1	3	21.07	21.09	21.16		
1.4	64QAM	1	5	20.91	20.89	20.99		
1.4	64QAM	3	0	20.86	20.98	21.06		
1.4	64QAM	3	1	20.90	21.01	21.02		
1.4	64QAM	3	3	20.89	20.94	20.99		
1.4	64QAM	6	0	19.78	19.82	19.83	21	3

<LTE Band 66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	17.10	17.06	17.03	18.5	0
20	QPSK	1	49	17.04	17.01	16.94		
20	QPSK	1	99	16.89	16.82	16.66		
20	QPSK	50	0	15.96	15.94	15.93	17.5	1
20	QPSK	50	24	15.95	15.90	15.84		
20	QPSK	50	50	15.90	15.77	15.69		
20	QPSK	100	0	15.89	15.84	15.81		
20	16QAM	1	0	16.21	16.21	16.16	17.5	1
20	16QAM	1	49	16.21	16.40	16.29		
20	16QAM	1	99	16.08	16.01	15.92		
20	16QAM	50	0	14.96	15.01	14.97	16.5	2
20	16QAM	50	24	15.01	15.00	14.90		
20	16QAM	50	50	14.96	14.82	14.72		
20	16QAM	100	0	14.93	14.90	14.84		
20	64QAM	1	0	16.03	16.01	15.98	16.5	2
20	64QAM	1	49	16.24	16.23	16.15		
20	64QAM	1	99	15.90	15.86	15.75		
20	64QAM	50	0	14.95	14.97	14.96	15.5	3
20	64QAM	50	24	15.00	14.96	14.90		
20	64QAM	50	50	14.93	14.81	14.70		
20	64QAM	100	0	14.93	14.87	14.84		

Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	17.09	16.88	16.82	18.5	0
15	QPSK	1	37	17.03	17.01	16.93		
15	QPSK	1	74	16.77	16.73	16.73		
15	QPSK	36	0	15.95	15.96	15.89	17.5	1
15	QPSK	36	20	15.99	15.93	15.86		
15	QPSK	36	39	15.94	15.85	15.75		
15	QPSK	75	0	15.94	15.88	15.82		
15	16QAM	1	0	16.22	16.23	16.15	17.5	1
15	16QAM	1	37	16.47	16.48	16.27		
15	16QAM	1	74	16.14	16.08	16.14		
15	16QAM	36	0	14.95	14.98	14.91	16.5	2
15	16QAM	36	20	14.99	14.94	14.87		
15	16QAM	36	39	14.96	14.89	14.76		
15	16QAM	75	0	14.96	14.92	14.86		
15	64QAM	1	0	16.07	16.10	15.97	16.5	2
15	64QAM	1	37	16.28	16.32	16.19		
15	64QAM	1	74	15.98	15.95	15.84		
15	64QAM	36	0	14.97	14.97	14.89	15.5	3
15	64QAM	36	20	15.00	14.93	14.88		
15	64QAM	36	39	14.96	14.89	14.75		
15	64QAM	75	0	14.96	14.91	14.85		
Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	16.87	16.88	16.82	18.5	0
10	QPSK	1	25	16.99	16.98	16.86		
10	QPSK	1	49	16.84	16.77	16.86		
10	QPSK	25	0	15.88	15.94	15.87	17.5	1
10	QPSK	25	12	15.95	15.93	15.83		
10	QPSK	25	25	15.92	15.87	15.76		
10	QPSK	50	0	15.91	15.90	15.82		
10	16QAM	1	0	16.29	16.28	16.21	17.5	1
10	16QAM	1	25	16.40	16.39	16.22		
10	16QAM	1	49	16.25	16.19	16.07		
10	16QAM	25	0	14.94	14.99	14.91	16.5	2
10	16QAM	25	12	14.99	14.98	14.86		
10	16QAM	25	25	14.98	14.91	14.78		
10	16QAM	50	0	14.97	14.94	14.88		
10	64QAM	1	0	16.09	16.09	16.00	16.5	2
10	64QAM	1	25	16.20	16.19	16.04		
10	64QAM	1	49	16.05	15.99	15.88		
10	64QAM	25	0	14.96	14.98	14.92	15.5	3
10	64QAM	25	12	14.98	14.98	14.85		
10	64QAM	25	25	14.97	14.90	14.77		
10	64QAM	50	0	14.94	14.93	14.85		

Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	16.73	16.74	16.74	18.5	0
5	QPSK	1	12	17.03	17.01	16.93		
5	QPSK	1	24	16.71	16.73	16.71		
5	QPSK	12	0	15.81	15.89	15.81	17.5	1
5	QPSK	12	7	15.88	15.92	15.79		
5	QPSK	12	13	15.85	15.86	15.75		
5	QPSK	25	0	15.83	15.88	15.77		
5	16QAM	1	0	16.07	16.13	15.98	17.5	1
5	16QAM	1	12	16.38	16.41	16.37		
5	16QAM	1	24	16.07	16.08	15.99		
5	16QAM	12	0	14.85	14.90	14.81	16.5	2
5	16QAM	12	7	14.93	14.99	14.84		
5	16QAM	12	13	14.87	14.89	14.77		
5	16QAM	25	0	14.86	14.92	14.80		
5	64QAM	1	0	15.93	15.97	15.85	16.5	2
5	64QAM	1	12	16.23	16.22	16.19		
5	64QAM	1	24	15.91	15.96	15.85		
5	64QAM	12	0	14.83	14.89	14.80	15.5	3
5	64QAM	12	7	14.90	14.93	14.81		
5	64QAM	12	13	14.84	14.89	14.76		
5	64QAM	25	0	14.87	14.92	14.80		
Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	16.81	16.84	16.77	18.5	0
3	QPSK	1	8	16.81	16.88	16.79		
3	QPSK	1	14	16.79	16.87	16.78		
3	QPSK	8	0	15.82	15.88	15.78	17.5	1
3	QPSK	8	4	15.87	15.92	15.83		
3	QPSK	8	7	15.83	15.87	15.79		
3	QPSK	15	0	15.80	15.85	15.74		
3	16QAM	1	0	16.23	16.26	16.12	17.5	1
3	16QAM	1	8	16.21	16.23	16.12		
3	16QAM	1	14	16.19	16.21	16.09		
3	16QAM	8	0	14.95	15.01	14.88	16.5	2
3	16QAM	8	4	14.99	15.02	14.95		
3	16QAM	8	7	14.96	14.99	14.87		
3	16QAM	15	0	14.87	14.92	14.80		
3	64QAM	1	0	16.04	16.10	15.94	16.5	2
3	64QAM	1	8	16.05	16.11	15.99		
3	64QAM	1	14	16.03	16.07	15.94		
3	64QAM	8	0	14.89	14.95	14.84	15.5	3
3	64QAM	8	4	14.95	15.00	14.89		
3	64QAM	8	7	14.89	14.93	14.85		
3	64QAM	15	0	14.84	14.89	14.77		

Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	16.83	16.87	16.81	18.5	0
1.4	QPSK	1	3	17.02	17.04	16.92		
1.4	QPSK	1	5	16.85	16.87	16.8		
1.4	QPSK	3	0	16.94	16.98	16.89		
1.4	QPSK	3	1	17.01	17.05	16.94		
1.4	QPSK	3	3	16.96	16.99	16.91		
1.4	QPSK	6	0	15.92	15.99	15.87	17.5	1
1.4	16QAM	1	0	16.21	16.26	16.15	17.5	1
1.4	16QAM	1	3	16.39	16.39	16.28		
1.4	16QAM	1	5	16.25	16.29	16.13		
1.4	16QAM	3	0	16.01	16.02	15.91		
1.4	16QAM	3	1	16.05	16.06	15.96		
1.4	16QAM	3	3	15.99	15.98	15.9		
1.4	16QAM	6	0	15.05	15.09	15.01	16.5	2
1.4	64QAM	1	0	16.08	16.11	16.02	16.5	2
1.4	64QAM	1	3	16.2	16.22	16.14		
1.4	64QAM	1	5	16.05	16.1	15.98		
1.4	64QAM	3	0	16.02	16.07	15.99		
1.4	64QAM	3	1	16.06	16.12	16.01		
1.4	64QAM	3	3	16.03	16.03	15.98		
1.4	64QAM	6	0	14.98	15.01	14.91	15.5	3

<LTE Carrier Aggregation combinations>

General Note:

1. This device supports Carrier Aggregation on downlink only for inter and intra band, Uplink CA is not supported. For the device supports combination bands and configurations are according to 3GPP.
2. In applying the existing power measurement procedure of KDB 941225 D05A for DL CA SAR test exclusion, only the subset with the largest number of combinations of the frequency band and CCs in each row need consideration, and that configurations require power measurement should be highlighted in the below table.

2CC Downlink Carrier Aggregation		
Number	Combination	Covered by Measurement Superset
1	2A-2A	
2	2A-4A	
3	2A-5A	
4	2A-13A	
5	2A-66A	
6	4A-4A	
7	4A-5A	
8	4A-13A	
9	5A-5A	
10	5A-66A	
11	5B	
12	13A-66A	
13	66B	
14	66C	
15	66A-66A	

<Power verification when LTE Carrier Aggregation Active>

General Note:

i. According to KDB941225 D05A v01r02, Uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.

ii. Uplink maximum output power with downlink carrier aggregation active does not show more than ¼ dB higher than the maximum output power without downlink carrier aggregation active, therefore SAR evaluation with downlink carrier aggregation active can be excluded.

iii. The device supports downlink two carrier aggregation. For power measurement were control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.

iv. Selected highest measured power when downlink carrier aggregation is inactive for conducted power comparison with downlink carrier aggregation is active, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.

v. For non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band.

vi. For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

$$\text{Nominal channel spacing} = \left\lfloor \frac{BW_{Channel(1)} + BW_{Channel(2)} - 0.1\left|BW_{Channel(1)} - BW_{Channel(2)}\right|}{0.6} \right\rfloor 0.3 \ \ [\text{MHz}]$$

<Two Carrier power verification>

<Default Power Mode>

Configure		CA List	PCC							SCC				Power	
			LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx. Power (dBm)	Without CA Tx. Power (dBm)
Inter-Band		CA_2A-4A	Band 2	20M	1880	18900	QPSK	1	0	Band 4	20M	2132.5	2175	22.44	22.41
		CA_2A-5A	Band 2	20M	1880	18900	QPSK	1	0	Band 5	10M	881.5	2525	22.48	22.41
		CA_2A-13A	Band 2	20M	1880	18900	QPSK	1	0	Band 13	10M	751	5230	22.47	22.41
		CA_2A-66A	Band 2	20M	1880	18900	QPSK	1	0	Band 66	20M	2155	66886	22.45	22.41
		CA_4A-5A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 5	10M	881.5	2525	22.48	22.46
		CA_4A-13A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 13	10M	751	5230	22.47	22.46
		CA_5A-66A	Band 5	10M	836.5	20525	QPSK	1	0	Band 66	20M	2155	66886	22.94	22.95
		CA_13A-66A	Band 13	10M	782	23230	QPSK	1	0	Band 66	20M	2155	66886	22.87	22.79
Intra-Band	Contiguous	CA_5B	Band 5	10M	836.5	20525	QPSK	1	0	Band 5	5M	871.5	2425	22.83	22.95
		CA_66B	Band 66	15M	1717.5	132047	QPSK	1	37	Band 66	5M	2121.8	66554	22.55	22.45
		CA_66C	Band 66	20M	1720	132072	QPSK	1	0	Band 66	20M	2139.8	66734	22.15	22.46
	Non-Contiguous	CA_2A-2A	Band 2	20M	1880	18900	QPSK	1	0	Band 2	5M	1987.5	1175	22.47	22.41
		CA_4A-4A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	22.49	22.46
		CA_5A-5A	Band 5	10M	836.5	20525	QPSK	1	0	Band 5	5M	891.5	2625	23.03	22.95
		CA_66A-66A	Band 66	20M	1720	132072	QPSK	1	0	Band 66	5M	2197.5	67311	22.45	22.46

<Hotspot and Near-Body Power Mode>

Configure		CA List	PCC							SCC				Power	
			LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx. Power (dBm)	Without CA Tx. Power (dBm)
Inter-Band		CA_2A-4A	Band 2	20M	1880	18900	QPSK	1	0	Band 4	20M	2132.5	2175	18.47	18.98
		CA_2A-5A	Band 2	20M	1880	18900	QPSK	1	0	Band 5	10M	881.5	2525	18.51	18.98
		CA_2A-13A	Band 2	20M	1880	18900	QPSK	1	0	Band 13	10M	751	5230	18.51	18.98
		CA_2A-66A	Band 2	20M	1880	18900	QPSK	1	0	Band 66	20M	2155	66886	18.50	18.98
		CA_4A-5A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 5	10M	881.5	2525	16.67	17.09
		CA_4A-13A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 13	10M	751	5230	16.62	17.09
Intra-Band	Contiguous	CA_66B	Band 66	15M	1717.5	132047	QPSK	1	37	Band 66	5M	2121.8	66554	16.77	17.09
		CA_66C	Band 66	20M	1720	132072	QPSK	1	0	Band 66	20M	2139.8	66734	16.63	17.10
	Non-Contiguous	CA_2A-2A	Band 2	20M	1880	18900	QPSK	1	0	Band 2	5M	1987.5	1175	18.53	18.98
		CA_4A-4A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	16.63	17.09
		CA_66A-66A	Band 66	20M	1720	132072	QPSK	1	0	Band 66	5M	2197.5	67311	16.61	17.10

<WLAN Conducted Power>

General Note:

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

<Full Power Mode>

<2.4GHz WLAN>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	16.61	17.50	100.00
		6	2437	16.34	17.50	
		11	2462	16.67	17.50	
	802.11g 6Mbps	1	2412	14.46	15.50	96.97
		6	2437	14.18	15.50	
		11	2462	13.75	15.00	
	802.11n-HT20 MCS0	1	2412	13.17	14.00	96.76
		6	2437	12.70	14.00	
		11	2462	12.12	13.00	

<Reduced Power Mode for Receiver On>

<2.4GHz WLAN>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	14.71	15.50	100.00
		6	2437	14.47	15.50	
		11	2462	14.82	15.50	
	802.11g 6Mbps	1	2412	14.46	15.50	96.97
		6	2437	14.18	15.50	
		11	2462	13.75	15.00	
	802.11n-HT20 MCS0	1	2412	13.17	14.00	96.76
		6	2437	12.70	14.00	
		11	2462	12.12	13.00	

<2.4GHz Bluetooth>

Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
BR / EDR	CH 00	2402	8.22	6.59	6.65
	CH 39	2441	9.24	7.46	7.38
	CH 78	2480	9.22	6.94	7.34
Tune-up Limit			11		

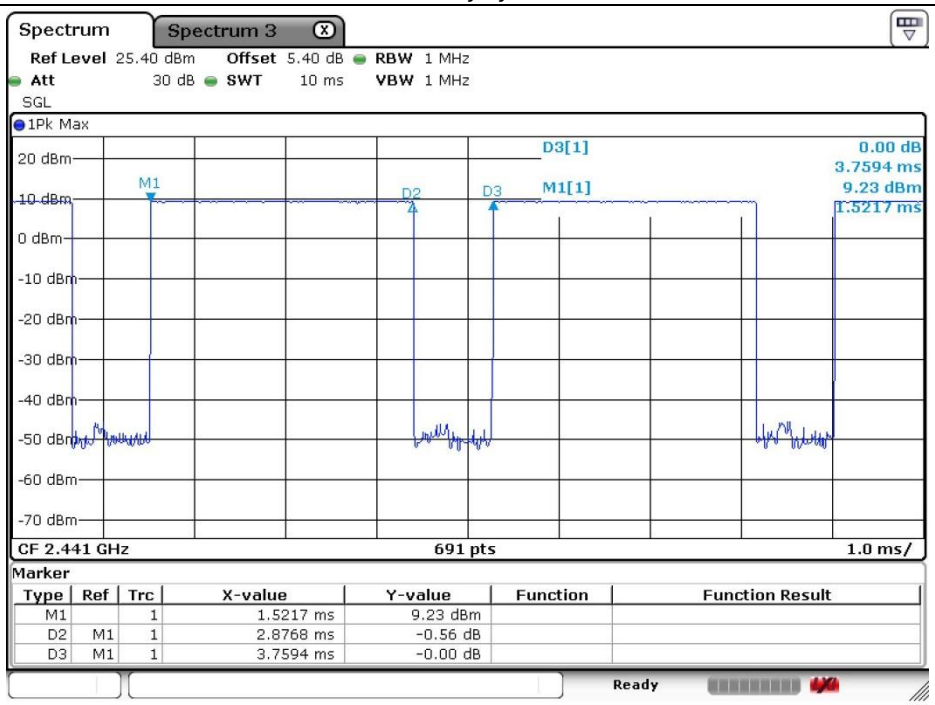
Mode	Channel	Frequency (MHz)	Average power (dBm)
			GFSK
LE v4.0	CH 00	2402	-4.89
	CH 19	2440	-3.44
	CH 39	2480	-3.07
Tune-up Limit			-1

Mode	Channel	Frequency (MHz)	Average power (dBm)
			2Mbps
LE v5.0	CH 00	2402	-4.81
	CH 19	2440	-3.49
	CH 39	2480	-3.24
Tune-up Limit			-1

General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps due to its highest average power and duty cycle is 76.52% considered in SAR testing, and the duty cycle would be scaled to theoretical 83.3% in reported SAR calculation.

BT Duty cycle



14. Bluetooth Exclusions Applied

Mode Band	Max Average power(dBm)	
	BR/EDR	LE
2.4GHz Bluetooth	11.00	-1.00

Note:

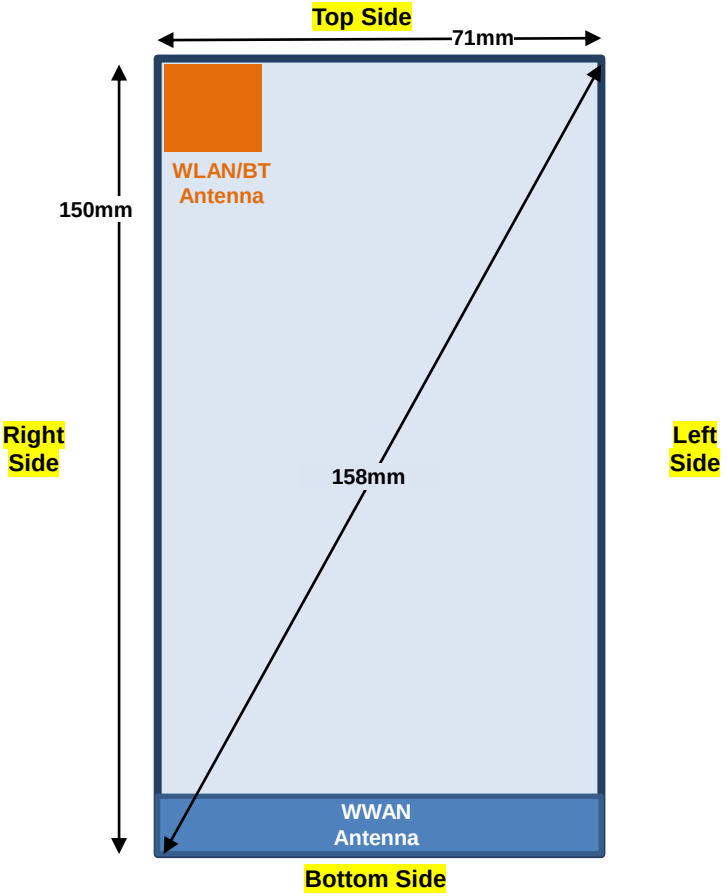
1. Per KDB 447498 D01v06, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm*)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison

Hotspot & Body Worn SAR			
Bluetooth Max Power (dBm)	Separation Distance (mm)	Frequency (GHz)	Exclusion thresholds
11.00	10	2.48	2.0

Note: Per KDB 447498 D01v06, a distance of 10 mm is applied to determine SAR test exclusion. The test exclusion threshold is 2.0 which is <= 3, hotspot and Body Worn SAR testing is not required.

15. Antenna Location

<Mobile Phone>



Back View

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

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

General Note:

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

16. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   · ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   · ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   · ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
4. Reduced power for different RF exposure conditions:
   Body worn: The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device, when operating in near-body condition by end user, the device will reduced maximum output powers on the GSM1900, WCDMA B2 / B4 and LTE B2 / B4 / B25/ B66.
   Hotspot: When the mobile hotspot session is turn on by end user, the device will reduced output powers on the GSM1900, WCDMA B2 / B4 and LTE B2 / B4 / B25/ B66 and detail descriptions of the power reduction mechanism are included in the operational description.
   When the phone is in talking mode and receiver worked, then power reduction will be implemented immediately at WLAN2.4GHz.
5. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.
6. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed for body worn:
   Front: 13 mm
   Back: 18 mm

GSM Note:

1. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (4Tx slots) for GSM850/GSM1900 is considered as the primary mode.
2. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

UMTS Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA / HSPA+ is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA / HSPA+ to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA, DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+.

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / B5 / B12 / B26 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE band 4/2/5 SAR test was covered by Band 66/25/26; according to TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. The maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion.
   b. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.

WLAN Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
3. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
4. During SAR testing the WLAN transmission was verified using a spectrum analyzer.
5. Since the same RF amplifier and antenna is used for WiFi / Bluetooth transmitter and the Bluetooth output power is least 2 dB below the output power of WiFi, therefore, for Bluetooth SAR testing is selected worst position from each exposure condition to be tested.

16.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS 4 Tx slots	Right Cheek	0mm	Full	251	848.8	28.89	29.50	1.151	-0.03	0.610	0.702
	GSM850	GPRS 4 Tx slots	Right Tilted	0mm	Full	251	848.8	28.89	29.50	1.151	-0.03	0.306	0.352
01	GSM850	GPRS 4 Tx slots	Left Cheek	0mm	Full	251	848.8	28.89	29.50	1.151	0.01	0.626	**0.720**
	GSM850	GPRS 4 Tx slots	Left Tilted	0mm	Full	251	848.8	28.89	29.50	1.151	0.11	0.297	0.342
	GSM1900	GPRS 4 Tx slots	Right Cheek	0mm	Full	810	1909.8	25.65	26.50	1.216	-0.13	0.259	0.315
	GSM1900	GPRS 4 Tx slots	Right Tilted	0mm	Full	810	1909.8	25.65	26.50	1.216	-0.17	0.141	0.171
02	GSM1900	GPRS 4 Tx slots	Left Cheek	0mm	Full	810	1909.8	25.65	26.50	1.216	-0.07	0.267	**0.325**
	GSM1900	GPRS 4 Tx slots	Left Tilted	0mm	Full	810	1909.8	25.65	26.50	1.216	0.08	0.190	0.231

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA V	RMC 12.2Kbps	Right Cheek	0mm	Full	4233	846.6	23.25	24.00	1.189	-0.09	0.479	0.569
	WCDMA V	RMC 12.2Kbps	Right Tilted	0mm	Full	4233	846.6	23.25	24.00	1.189	-0.08	0.247	0.294
03	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	Full	4233	846.6	23.25	24.00	1.189	0.01	0.493	**0.586**
	WCDMA V	RMC 12.2Kbps	Left Tilted	0mm	Full	4233	846.6	23.25	24.00	1.189	0.03	0.227	0.270
04	WCDMA IV	RMC 12.2Kbps	Right Cheek	0mm	Full	1413	1732.6	22.97	24.00	1.268	-0.06	0.172	**0.218**
	WCDMA IV	RMC 12.2Kbps	Right Tilted	0mm	Full	1413	1732.6	22.97	24.00	1.268	-0.02	0.142	0.180
	WCDMA IV	RMC 12.2Kbps	Left Cheek	0mm	Full	1413	1732.6	22.97	24.00	1.268	0.02	0.162	0.205
	WCDMA IV	RMC 12.2Kbps	Left Tilted	0mm	Full	1413	1732.6	22.97	24.00	1.268	-0.03	0.115	0.146
05	WCDMA II	RMC 12.2Kbps	Right Cheek	0mm	Full	9538	1907.6	23.11	24.00	1.227	0.05	0.359	**0.441**
	WCDMA II	RMC 12.2Kbps	Right Tilted	0mm	Full	9538	1907.6	23.11	24.00	1.227	-0.07	0.176	0.216
	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	Full	9538	1907.6	23.11	24.00	1.227	0.17	0.309	0.379
	WCDMA II	RMC 12.2Kbps	Left Tilted	0mm	Full	9538	1907.6	23.11	24.00	1.227	0.11	0.227	0.279

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
06	LTE Band 12	10M	QPSK	1	0	Right Cheek	0mm	Full	23095	707.5	22.62	24.00	1.374	0.14	0.233	**0.320**
	LTE Band 12	10M	QPSK	25	0	Right Cheek	0mm	Full	23095	707.5	21.71	23.00	1.346	0.08	0.216	0.291
	LTE Band 12	10M	QPSK	1	0	Right Tilted	0mm	Full	23095	707.5	22.62	24.00	1.374	-0.14	0.152	0.209
	LTE Band 12	10M	QPSK	25	0	Right Tilted	0mm	Full	23095	707.5	21.71	23.00	1.346	-0.11	0.140	0.188
	LTE Band 12	10M	QPSK	1	0	Left Cheek	0mm	Full	23095	707.5	22.62	24.00	1.374	0.01	0.227	0.312
	LTE Band 12	10M	QPSK	25	0	Left Cheek	0mm	Full	23095	707.5	21.71	23.00	1.346	-0.02	0.212	0.285
	LTE Band 12	10M	QPSK	1	0	Left Tilted	0mm	Full	23095	707.5	22.62	24.00	1.374	-0.04	0.153	0.210
	LTE Band 12	10M	QPSK	25	0	Left Tilted	0mm	Full	23095	707.5	21.71	23.00	1.346	-0.01	0.143	0.192
	LTE Band 13	10M	QPSK	1	0	Right Cheek	0mm	Full	23230	782	22.79	24.00	1.321	-0.03	0.369	0.488
	LTE Band 13	10M	QPSK	25	0	Right Cheek	0mm	Full	23230	782	21.76	23.00	1.330	0.15	0.316	0.420
	LTE Band 13	10M	QPSK	1	0	Right Tilted	0mm	Full	23230	782	22.79	24.00	1.321	-0.05	0.239	0.316
	LTE Band 13	10M	QPSK	25	0	Right Tilted	0mm	Full	23230	782	21.76	23.00	1.330	-0.06	0.209	0.278
07	LTE Band 13	10M	QPSK	1	0	Left Cheek	0mm	Full	23230	782	22.79	24.00	1.321	-0.08	0.379	**0.501**
	LTE Band 13	10M	QPSK	25	0	Left Cheek	0mm	Full	23230	782	21.76	23.00	1.330	0.07	0.322	0.428
	LTE Band 13	10M	QPSK	1	0	Left Tilted	0mm	Full	23230	782	22.79	24.00	1.321	-0.02	0.227	0.300
	LTE Band 13	10M	QPSK	25	0	Left Tilted	0mm	Full	23230	782	21.76	23.00	1.330	-0.01	0.194	0.258

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 26	15M	QPSK	1	0	Right Cheek	0mm	Full	26865	831.5	22.95	24.00	1.274	0.09	0.356	0.453
	LTE Band 26	15M	QPSK	36	0	Right Cheek	0mm	Full	26865	831.5	21.95	23.00	1.274	0.05	0.320	0.408
	LTE Band 26	15M	QPSK	1	0	Right Tilted	0mm	Full	26865	831.5	22.95	24.00	1.274	0	0.222	0.283
	LTE Band 26	15M	QPSK	36	0	Right Tilted	0mm	Full	26865	831.5	21.95	23.00	1.274	-0.09	0.199	0.253
08	LTE Band 26	15M	QPSK	1	0	Left Cheek	0mm	Full	26865	831.5	22.95	24.00	1.274	0.01	0.381	**0.485**
	LTE Band 26	15M	QPSK	36	0	Left Cheek	0mm	Full	26865	831.5	21.95	23.00	1.274	-0.02	0.344	0.438
	LTE Band 26	15M	QPSK	1	0	Left Tilted	0mm	Full	26865	831.5	22.95	24.00	1.274	-0.03	0.218	0.278
	LTE Band 26	15M	QPSK	36	0	Left Tilted	0mm	Full	26865	831.5	21.95	23.00	1.274	-0.04	0.194	0.247
	LTE Band 66	20M	QPSK	1	0	Right Cheek	0mm	Full	132072	1720	22.46	24.00	1.426	0.09	0.136	0.194
	LTE Band 66	20M	QPSK	50	0	Right Cheek	0mm	Full	132072	1720	21.27	23.00	1.489	0.06	0.109	0.162
	LTE Band 66	20M	QPSK	1	0	Right Tilted	0mm	Full	132072	1720	22.46	24.00	1.426	-0.03	0.125	0.178
	LTE Band 66	20M	QPSK	50	0	Right Tilted	0mm	Full	132072	1720	21.27	23.00	1.489	0.11	0.097	0.144
09	LTE Band 66	20M	QPSK	1	0	Left Cheek	0mm	Full	132072	1720	22.46	24.00	1.426	0.09	0.141	**0.201**
	LTE Band 66	20M	QPSK	50	0	Left Cheek	0mm	Full	132072	1720	21.27	23.00	1.489	0.02	0.117	0.174
	LTE Band 66	20M	QPSK	1	0	Left Tilted	0mm	Full	132072	1720	22.46	24.00	1.426	0.02	0.092	0.131
	LTE Band 66	20M	QPSK	50	0	Left Tilted	0mm	Full	132072	1720	21.27	23.00	1.489	-0.01	0.079	0.117
10	LTE Band 25	20M	QPSK	1	0	Right Cheek	0mm	Full	26340	1880	22.70	24.00	1.349	-0.04	0.325	**0.438**
	LTE Band 25	20M	QPSK	50	0	Right Cheek	0mm	Full	26340	1880	21.65	23.00	1.365	0.11	0.273	0.373
	LTE Band 25	20M	QPSK	1	0	Right Tilted	0mm	Full	26340	1880	22.70	24.00	1.349	-0.07	0.160	0.216
	LTE Band 25	20M	QPSK	50	0	Right Tilted	0mm	Full	26340	1880	21.65	23.00	1.365	0	0.136	0.186
	LTE Band 25	20M	QPSK	1	0	Left Cheek	0mm	Full	26340	1880	22.70	24.00	1.349	0.01	0.267	0.360
	LTE Band 25	20M	QPSK	50	0	Left Cheek	0mm	Full	26340	1880	21.65	23.00	1.365	0.05	0.226	0.308
	LTE Band 25	20M	QPSK	1	0	Left Tilted	0mm	Full	26340	1880	22.70	24.00	1.349	0.03	0.201	0.271
	LTE Band 25	20M	QPSK	50	0	Left Tilted	0mm	Full	26340	1880	21.65	23.00	1.365	0.12	0.166	0.227

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Reduced	11	2462	14.82	15.50	1.169	100	1.000	-0.03	0.248	0.290
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Reduced	11	2462	14.82	15.50	1.169	100	1.000	0.03	0.243	0.284
11	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Reduced	11	2462	14.82	15.50	1.169	100	1.000	-0.02	0.600	**0.702**
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Reduced	11	2462	14.82	15.50	1.169	100	1.000	0.02	0.528	0.617

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
12	Bluetooth	1Mbps	Left Cheek	0mm	39	2441	9.24	11.00	1.499	76.52	1.089	-0.03	0.144	**0.235**

Note：Based on WLAN2.4GHz and Bluetooth share the same antenna, so Bluetooth RF exposure evaluation chose the worst positon of WLAN 2.4GHz Ant to perform Bluetooth SAR test, and used this Bluetooth SAR value conservatively represent other position do co-located analysis with WWAN.

16.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS 4 Tx slots	Front	10mm	Full	251	848.8	28.89	29.50	1.151	-0.02	0.537	0.618
13	GSM850	GPRS 4 Tx slots	Back	10mm	Full	251	848.8	28.89	29.50	1.151	0.03	0.802	**0.923**
	GSM850	GPRS 4 Tx slots	Back	10mm	Full	128	824.2	28.86	29.50	1.159	-0.12	0.730	0.846
	GSM850	GPRS 4 Tx slots	Back	10mm	Full	189	836.4	28.86	29.50	1.159	-0.09	0.646	0.749
	GSM850	GPRS 4 Tx slots	Left Side	10mm	Full	251	848.8	28.89	29.50	1.151	0.01	0.567	0.653
	GSM850	GPRS 4 Tx slots	Right Side	10mm	Full	251	848.8	28.89	29.50	1.151	-0.09	0.509	0.586
	GSM850	GPRS 4 Tx slots	Bottom Side	10mm	Full	251	848.8	28.89	29.50	1.151	-0.05	0.201	0.231
	GSM1900	GPRS 4 Tx slots	Front	10mm	Reduced	810	1909.8	22.85	24.00	1.303	-0.02	0.355	0.463
	GSM1900	GPRS 4 Tx slots	Back	10mm	Reduced	810	1909.8	22.85	24.00	1.303	-0.03	0.579	0.755
	GSM1900	GPRS 4 Tx slots	Left Side	10mm	Reduced	810	1909.8	22.85	24.00	1.303	-0.16	0.124	0.162
	GSM1900	GPRS 4 Tx slots	Right Side	10mm	Reduced	810	1909.8	22.85	24.00	1.303	-0.05	0.083	0.108
	GSM1900	GPRS 4 Tx slots	Bottom Side	10mm	Reduced	810	1909.8	22.85	24.00	1.303	0.06	0.799	1.041
14	GSM1900	GPRS 4 Tx slots	Bottom Side	10mm	Reduced	512	1850.2	22.82	24.00	1.312	0.13	0.895	**1.174**
	GSM1900	GPRS 4 Tx slots	Bottom Side	10mm	Reduced	661	1880	22.85	24.00	1.303	0.09	0.889	1.159

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA V	RMC 12.2Kbps	Front	10mm	Full	4233	846.6	23.25	24.00	1.189	0.02	0.386	0.459
15	WCDMA V	RMC 12.2Kbps	Back	10mm	Full	4233	846.6	23.25	24.00	1.189	-0.07	0.543	**0.645**
	WCDMA V	RMC 12.2Kbps	Left Side	10mm	Full	4233	846.6	23.25	24.00	1.189	0.04	0.381	0.453
	WCDMA V	RMC 12.2Kbps	Right Side	10mm	Full	4233	846.6	23.25	24.00	1.189	-0.08	0.358	0.425
	WCDMA V	RMC 12.2Kbps	Bottom Side	10mm	Full	4233	846.6	23.25	24.00	1.189	0.05	0.143	0.170
	WCDMA IV	RMC 12.2Kbps	Front	10mm	Reduced	1413	1732.6	16.87	18.00	1.297	-0.02	0.361	0.468
	WCDMA IV	RMC 12.2Kbps	Back	10mm	Reduced	1413	1732.6	16.87	18.00	1.297	-0.08	0.860	1.116
	WCDMA IV	RMC 12.2Kbps	Back	10mm	Reduced	1312	1712.4	16.62	18.00	1.374	-0.03	0.789	1.084
	WCDMA IV	RMC 12.2Kbps	Back	10mm	Reduced	1513	1752.6	16.86	18.00	1.300	-0.09	0.788	1.025
	WCDMA IV	RMC 12.2Kbps	Left Side	10mm	Reduced	1413	1732.6	16.87	18.00	1.297	-0.17	0.037	0.048
	WCDMA IV	RMC 12.2Kbps	Right Side	10mm	Reduced	1413	1732.6	16.87	18.00	1.297	-0.08	0.032	0.042
16	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	Reduced	1413	1732.6	16.87	18.00	1.297	0.12	0.883	**1.145**
	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	Reduced	1312	1712.4	16.62	18.00	1.374	0.07	0.771	1.059
	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	Reduced	1513	1752.6	16.86	18.00	1.300	0.09	0.808	1.051
	WCDMA II	RMC 12.2Kbps	Front	10mm	Reduced	9538	1907.6	18.80	20.00	1.318	-0.07	0.314	0.414
	WCDMA II	RMC 12.2Kbps	Back	10mm	Reduced	9538	1907.6	18.80	20.00	1.318	-0.05	0.558	0.736
	WCDMA II	RMC 12.2Kbps	Left Side	10mm	Reduced	9538	1907.6	18.80	20.00	1.318	-0.05	0.123	0.162
	WCDMA II	RMC 12.2Kbps	Right Side	10mm	Reduced	9538	1907.6	18.80	20.00	1.318	-0.01	0.072	0.095
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	Reduced	9538	1907.6	18.80	20.00	1.318	0.04	0.692	0.912
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	Reduced	9400	1880	18.73	20.00	1.340	0.05	0.789	1.057
17	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	Reduced	9262	1852.4	18.79	20.00	1.321	0.15	0.815	**1.077**

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 12	10M	QPSK	1	0	Front	10mm	Full	23095	707.5	22.62	24.00	1.374	-0.05	0.288	0.396
	LTE Band 12	10M	QPSK	25	0	Front	10mm	Full	23095	707.5	21.71	23.00	1.346	-0.09	0.257	0.346
18	LTE Band 12	10M	QPSK	1	0	Back	10mm	Full	23095	707.5	22.62	24.00	1.374	-0.04	0.401	**0.551**
	LTE Band 12	10M	QPSK	25	0	Back	10mm	Full	23095	707.5	21.71	23.00	1.346	-0.08	0.367	0.494
	LTE Band 12	10M	QPSK	1	0	Left Side	10mm	Full	23095	707.5	22.62	24.00	1.374	-0.06	0.231	0.317
	LTE Band 12	10M	QPSK	25	0	Left Side	10mm	Full	23095	707.5	21.71	23.00	1.346	-0.03	0.212	0.285
	LTE Band 12	10M	QPSK	1	0	Right Side	10mm	Full	23095	707.5	22.62	24.00	1.374	-0.04	0.281	0.386
	LTE Band 12	10M	QPSK	25	0	Right Side	10mm	Full	23095	707.5	21.71	23.00	1.346	-0.05	0.256	0.345
	LTE Band 12	10M	QPSK	1	0	Bottom Side	10mm	Full	23095	707.5	22.62	24.00	1.374	-0.02	0.055	0.075
	LTE Band 12	10M	QPSK	25	0	Bottom Side	10mm	Full	23095	707.5	21.71	23.00	1.346	0.04	0.049	0.066
	LTE Band 13	10M	QPSK	1	0	Front	10mm	Full	23230	782	22.79	24.00	1.321	-0.1	0.405	0.535
	LTE Band 13	10M	QPSK	25	0	Front	10mm	Full	23230	782	21.76	23.00	1.330	-0.03	0.351	0.467
19	LTE Band 13	10M	QPSK	1	0	Back	10mm	Full	23230	782	22.79	24.00	1.321	-0.07	0.494	**0.653**
	LTE Band 13	10M	QPSK	25	0	Back	10mm	Full	23230	782	21.76	23.00	1.330	0.03	0.469	0.624
	LTE Band 13	10M	QPSK	1	0	Left Side	10mm	Full	23230	782	22.79	24.00	1.321	-0.03	0.365	0.482
	LTE Band 13	10M	QPSK	25	0	Left Side	10mm	Full	23230	782	21.76	23.00	1.330	-0.02	0.213	0.283
	LTE Band 13	10M	QPSK	1	0	Right Side	10mm	Full	23230	782	22.79	24.00	1.321	-0.03	0.364	0.481
	LTE Band 13	10M	QPSK	25	0	Right Side	10mm	Full	23230	782	21.76	23.00	1.330	-0.1	0.203	0.270
	LTE Band 13	10M	QPSK	1	0	Bottom Side	10mm	Full	23230	782	22.79	24.00	1.321	-0.01	0.080	0.106
	LTE Band 13	10M	QPSK	25	0	Bottom Side	10mm	Full	23230	782	21.76	23.00	1.330	-0.11	0.068	0.090
	LTE Band 26	15M	QPSK	1	0	Front	10mm	Full	26865	831.5	22.95	24.00	1.274	-0.11	0.354	0.451
	LTE Band 26	15M	QPSK	36	0	Front	10mm	Full	26865	831.5	21.95	23.00	1.274	-0.06	0.305	0.388
	LTE Band 26	15M	QPSK	1	0	Back	10mm	Full	26865	831.5	22.95	24.00	1.274	0.03	0.414	0.527
	LTE Band 26	15M	QPSK	36	0	Back	10mm	Full	26865	831.5	21.95	23.00	1.274	-0.04	0.351	0.447
20	LTE Band 26	15M	QPSK	1	0	Left Side	10mm	Full	26865	831.5	22.95	24.00	1.274	-0.01	0.445	**0.567**
	LTE Band 26	15M	QPSK	36	0	Left Side	10mm	Full	26865	831.5	21.95	23.00	1.274	-0.02	0.380	0.484
	LTE Band 26	15M	QPSK	1	0	Right Side	10mm	Full	26865	831.5	22.95	24.00	1.274	-0.07	0.337	0.429
	LTE Band 26	15M	QPSK	36	0	Right Side	10mm	Full	26865	831.5	21.95	23.00	1.274	-0.05	0.289	0.368
	LTE Band 26	15M	QPSK	1	0	Bottom Side	10mm	Full	26865	831.5	22.95	24.00	1.274	0	0.097	0.123
	LTE Band 26	15M	QPSK	36	0	Bottom Side	10mm	Full	26865	831.5	21.95	23.00	1.274	-0.07	0.086	0.110
	LTE Band 66	20M	QPSK	1	0	Front	10mm	Reduced	132072	1720	17.10	18.50	1.380	-0.09	0.341	0.471
	LTE Band 66	20M	QPSK	50	0	Front	10mm	Reduced	132072	1720	15.96	17.50	1.426	-0.02	0.282	0.402
	LTE Band 66	20M	QPSK	1	0	Back	10mm	Reduced	132072	1720	17.10	18.50	1.380	-0.02	0.814	1.124
	LTE Band 66	20M	QPSK	1	0	Back	10mm	Reduced	132322	1745	17.06	18.50	1.393	-0.01	0.796	1.109
	LTE Band 66	20M	QPSK	1	0	Back	10mm	Reduced	132572	1770	17.03	18.50	1.403	-0.01	0.695	0.975
	LTE Band 66	20M	QPSK	50	0	Back	10mm	Reduced	132072	1720	15.96	17.50	1.426	-0.03	0.668	0.952
	LTE Band 66	20M	QPSK	50	0	Back	10mm	Reduced	132322	1745	15.94	17.50	1.432	-0.06	0.649	0.929
	LTE Band 66	20M	QPSK	50	0	Back	10mm	Reduced	132572	1770	15.93	17.50	1.435	-0.03	0.544	0.781
	LTE Band 66	20M	QPSK	100	0	Back	10mm	Reduced	132072	1720	15.89	17.50	1.449	-0.04	0.672	0.974
	LTE Band 66	20M	QPSK	1	0	Left Side	10mm	Reduced	132072	1720	17.10	18.50	1.380	-0.06	0.037	0.051
	LTE Band 66	20M	QPSK	50	0	Left Side	10mm	Reduced	132072	1720	15.96	17.50	1.426	-0.02	0.030	0.042
	LTE Band 66	20M	QPSK	1	0	Right Side	10mm	Reduced	132072	1720	17.10	18.50	1.380	-0.06	0.036	0.050
	LTE Band 66	20M	QPSK	50	0	Right Side	10mm	Reduced	132072	1720	15.96	17.50	1.426	-0.03	0.029	0.041
	LTE Band 66	20M	QPSK	1	0	Bottom Side	10mm	Reduced	132072	1720	17.10	18.50	1.380	0.11	0.793	1.095
21	LTE Band 66	20M	QPSK	1	0	Bottom Side	10mm	Reduced	132322	1745	17.06	18.50	1.393	0.01	0.844	**1.176**
	LTE Band 66	20M	QPSK	1	0	Bottom Side	10mm	Reduced	132572	1770	17.03	18.50	1.403	0.09	0.732	1.027
	LTE Band 66	20M	QPSK	50	0	Bottom Side	10mm	Reduced	132072	1720	15.96	17.50	1.426	0.08	0.661	0.942
	LTE Band 66	20M	QPSK	50	0	Bottom Side	10mm	Reduced	132322	1745	15.94	17.50	1.432	0.04	0.665	0.952
	LTE Band 66	20M	QPSK	50	0	Bottom Side	10mm	Reduced	132572	1770	15.93	17.50	1.435	0.02	0.580	0.833
	LTE Band 66	20M	QPSK	100	0	Bottom Side	10mm	Reduced	132072	1720	15.89	17.50	1.449	0.07	0.670	0.971

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 25	20M	QPSK	1	0	Front	10mm	Reduced	26340	1880	19.07	20.50	1.390	-0.09	0.359	0.499
	LTE Band 25	20M	QPSK	50	0	Front	10mm	Reduced	26340	1880	18.21	19.50	1.346	-0.09	0.300	0.404
	LTE Band 25	20M	QPSK	1	0	Back	10mm	Reduced	26340	1880	19.07	20.50	1.390	-0.05	0.658	0.915
	LTE Band 25	20M	QPSK	1	0	Back	10mm	Reduced	26140	1860	19.02	20.50	1.406	-0.08	0.707	0.994
	LTE Band 25	20M	QPSK	1	0	Back	10mm	Reduced	26590	1905	19.06	20.50	1.393	-0.07	0.604	0.841
	LTE Band 25	20M	QPSK	50	0	Back	10mm	Reduced	26340	1880	18.21	19.50	1.346	-0.03	0.544	0.732
	LTE Band 25	20M	QPSK	100	0	Back	10mm	Reduced	26340	1880	18.15	19.50	1.365	-0.04	0.531	0.725
	LTE Band 25	20M	QPSK	1	0	Left Side	10mm	Reduced	26340	1880	19.07	20.50	1.390	-0.14	0.094	0.130
	LTE Band 25	20M	QPSK	50	0	Left Side	10mm	Reduced	26340	1880	18.21	19.50	1.346	-0.02	0.080	0.107
	LTE Band 25	20M	QPSK	1	0	Right Side	10mm	Reduced	26340	1880	19.07	20.50	1.390	-0.06	0.070	0.097
	LTE Band 25	20M	QPSK	50	0	Right Side	10mm	Reduced	26340	1880	18.21	19.50	1.346	-0.16	0.060	0.080
	LTE Band 25	20M	QPSK	1	0	Bottom Side	10mm	Reduced	26340	1880	19.07	20.50	1.390	0.1	0.796	1.106
22	LTE Band 25	20M	QPSK	1	0	Bottom Side	10mm	Reduced	26140	1860	19.02	20.50	1.406	0.02	0.832	**1.170**
	LTE Band 25	20M	QPSK	1	0	Bottom Side	10mm	Reduced	26590	1905	19.06	20.50	1.393	0.07	0.769	1.071
	LTE Band 25	20M	QPSK	50	0	Bottom Side	10mm	Reduced	26340	1880	18.21	19.50	1.346	0.16	0.652	0.878
	LTE Band 25	20M	QPSK	50	0	Bottom Side	10mm	Reduced	26140	1860	18.02	19.50	1.406	0.05	0.648	0.911
	LTE Band 25	20M	QPSK	50	0	Bottom Side	10mm	Reduced	26590	1905	18.16	19.50	1.361	0.02	0.651	0.886
	LTE Band 25	20M	QPSK	100	0	Bottom Side	10mm	Reduced	26340	1880	18.15	19.50	1.365	0.09	0.642	0.876

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Full	11	2462	16.67	17.50	1.211	100	1.000	-0.01	0.166	0.201
23	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Full	11	2462	16.67	17.50	1.211	100	1.000	0.08	0.182	**0.220**
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Full	11	2462	16.67	17.50	1.211	100	1.000	-0.13	0.130	0.157
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Full	11	2462	16.67	17.50	1.211	100	1.000	0.02	0.106	0.128

16.3 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS 4 Tx slots	Front	10mm	Full	251	848.8	28.89	29.50	1.151	-0.02	0.537	0.618
24	GSM850	GPRS 4 Tx slots	Back	10mm	Full	251	848.8	28.89	29.50	1.151	0.03	0.802	**0.923**
	GSM850	GPRS 4 Tx slots	Back	10mm	Full	128	824.2	28.86	29.50	1.159	-0.12	0.730	0.846
	GSM850	GPRS 4 Tx slots	Back	10mm	Full	189	836.4	28.86	29.50	1.159	-0.09	0.646	0.749
	GSM1900	GPRS 4 Tx slots	Front	10mm	Reduced	810	1909.8	22.85	24.00	1.303	-0.02	0.355	0.463
25	GSM1900	GPRS 4 Tx slots	Back	10mm	Reduced	810	1909.8	22.85	24.00	1.303	-0.03	0.579	**0.755**
	GSM1900	GPRS 4 Tx slots	Front	13mm	Full	810	1909.8	25.65	26.50	1.216	-0.16	0.557	0.677
	GSM1900	GPRS 4 Tx slots	Back	18mm	Full	810	1909.8	25.65	26.50	1.216	-0.03	0.466	0.567

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA V	RMC 12.2Kbps	Front	10mm	Full	4233	846.6	23.25	24.00	1.189	0.02	0.386	0.459
26	WCDMA V	RMC 12.2Kbps	Back	10mm	Full	4233	846.6	23.25	24.00	1.189	-0.07	0.543	**0.645**
	WCDMA IV	RMC 12.2Kbps	Front	10mm	Reduced	1413	1732.6	16.87	18.00	1.297	-0.02	0.361	0.468
	WCDMA IV	RMC 12.2Kbps	Back	10mm	Reduced	1413	1732.6	16.87	18.00	1.297	-0.08	0.860	1.116
	WCDMA IV	RMC 12.2Kbps	Back	10mm	Reduced	1312	1712.4	16.62	18.00	1.374	-0.03	0.789	1.084
	WCDMA IV	RMC 12.2Kbps	Back	10mm	Reduced	1513	1752.6	16.86	18.00	1.300	-0.09	0.788	1.025
27	WCDMA IV	RMC 12.2Kbps	Front	13mm	Full	1413	1732.6	22.97	24.00	1.268	-0.05	0.905	**1.147**
	WCDMA IV	RMC 12.2Kbps	Front	13mm	Full	1312	1712.4	22.95	24.00	1.274	-0.12	0.862	1.098
	WCDMA IV	RMC 12.2Kbps	Front	13mm	Full	1513	1752.6	22.91	24.00	1.285	-0.09	0.856	1.100
	WCDMA IV	RMC 12.2Kbps	Back	18mm	Full	1413	1732.6	22.97	24.00	1.268	-0.03	0.920	1.166
	WCDMA IV	RMC 12.2Kbps	Back	18mm	Full	1312	1712.4	22.95	24.00	1.274	-0.03	0.913	1.163
	WCDMA IV	RMC 12.2Kbps	Back	18mm	Full	1513	1752.6	22.91	24.00	1.285	-0.02	0.897	1.153
	WCDMA II	RMC 12.2Kbps	Front	10mm	Reduced	9538	1907.6	18.80	20.00	1.318	-0.07	0.314	0.414
	WCDMA II	RMC 12.2Kbps	Back	10mm	Reduced	9538	1907.6	18.80	20.00	1.318	-0.05	0.558	0.736
28	WCDMA II	RMC 12.2Kbps	Front	13mm	Full	9538	1907.6	23.11	24.00	1.227	-0.01	0.602	**0.739**
	WCDMA II	RMC 12.2Kbps	Back	18mm	Full	9538	1907.6	23.11	24.00	1.227	-0.09	0.485	0.595

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 12	10M	QPSK	1	0	Front	10mm	Full	23095	707.5	22.62	24.00	1.374	-0.05	0.288	0.396
	LTE Band 12	10M	QPSK	25	0	Front	10mm	Full	23095	707.5	21.71	23.00	1.346	-0.09	0.257	0.346
29	LTE Band 12	10M	QPSK	1	0	Back	10mm	Full	23095	707.5	22.62	24.00	1.374	-0.04	0.401	**0.551**
	LTE Band 12	10M	QPSK	25	0	Back	10mm	Full	23095	707.5	21.71	23.00	1.346	-0.08	0.367	0.494
	LTE Band 13	10M	QPSK	1	0	Front	10mm	Full	23230	782	22.79	24.00	1.321	-0.1	0.405	0.535
	LTE Band 13	10M	QPSK	25	0	Front	10mm	Full	23230	782	21.76	23.00	1.330	-0.03	0.351	0.467
30	LTE Band 13	10M	QPSK	1	0	Back	10mm	Full	23230	782	22.79	24.00	1.321	-0.07	0.494	**0.653**
	LTE Band 13	10M	QPSK	25	0	Back	10mm	Full	23230	782	21.76	23.00	1.330	0.03	0.469	0.624
	LTE Band 26	15M	QPSK	1	0	Front	10mm	Full	26865	831.5	22.95	24.00	1.274	-0.11	0.354	0.451
	LTE Band 26	15M	QPSK	36	0	Front	10mm	Full	26865	831.5	21.95	23.00	1.274	-0.06	0.305	0.388
31	LTE Band 26	15M	QPSK	1	0	Back	10mm	Full	26865	831.5	22.95	24.00	1.274	0.03	0.414	**0.527**
	LTE Band 26	15M	QPSK	36	0	Back	10mm	Full	26865	831.5	21.95	23.00	1.274	-0.04	0.351	0.447
	LTE Band 66	20M	QPSK	1	0	Front	10mm	Reduced	132072	1720	17.10	18.50	1.380	-0.09	0.341	0.471
	LTE Band 66	20M	QPSK	50	0	Front	10mm	Reduced	132072	1720	15.96	17.50	1.426	-0.02	0.282	0.402
	LTE Band 66	20M	QPSK	1	0	Back	10mm	Reduced	132072	1720	17.10	18.50	1.380	-0.02	0.814	1.124
	LTE Band 66	20M	QPSK	1	0	Back	10mm	Reduced	132322	1745	17.06	18.50	1.393	-0.01	0.796	1.109
	LTE Band 66	20M	QPSK	1	0	Back	10mm	Reduced	132572	1770	17.03	18.50	1.403	-0.01	0.695	0.975
	LTE Band 66	20M	QPSK	50	0	Back	10mm	Reduced	132072	1720	15.96	17.50	1.426	-0.03	0.668	0.952
	LTE Band 66	20M	QPSK	50	0	Back	10mm	Reduced	132322	1745	15.94	17.50	1.432	-0.06	0.649	0.929
	LTE Band 66	20M	QPSK	50	0	Back	10mm	Reduced	132572	1770	15.93	17.50	1.435	-0.03	0.544	0.781
	LTE Band 66	20M	QPSK	100	0	Back	10mm	Reduced	132072	1720	15.89	17.50	1.449	-0.04	0.672	0.974
	LTE Band 66	20M	QPSK	1	0	Front	13mm	Full	132072	1720	22.46	24.00	1.426	0.11	0.733	1.045
	LTE Band 66	20M	QPSK	1	0	Front	13mm	Full	132322	1745	22.21	24.00	1.510	-0.06	0.753	1.137
	LTE Band 66	20M	QPSK	1	0	Front	13mm	Full	132572	1770	22.40	24.00	1.445	0.09	0.683	0.987
32	LTE Band 66	20M	QPSK	1	0	Back	18mm	Full	132072	1720	22.46	24.00	1.426	-0.07	0.802	**1.143**
	LTE Band 66	20M	QPSK	1	0	Back	18mm	Full	132322	1745	22.21	24.00	1.510	-0.01	0.748	1.130
	LTE Band 66	20M	QPSK	1	0	Back	18mm	Full	132572	1770	22.40	24.00	1.445	-0.02	0.664	0.960
	LTE Band 25	20M	QPSK	1	0	Front	10mm	Reduced	26340	1880	19.07	20.50	1.390	-0.09	0.359	0.499
	LTE Band 25	20M	QPSK	50	0	Front	10mm	Reduced	26340	1880	18.21	19.50	1.346	-0.09	0.300	0.404
	LTE Band 25	20M	QPSK	1	0	Back	10mm	Reduced	26340	1880	19.07	20.50	1.390	-0.05	0.658	0.915
33	LTE Band 25	20M	QPSK	1	0	Back	10mm	Reduced	26140	1860	19.02	20.50	1.406	-0.08	0.707	**0.994**
	LTE Band 25	20M	QPSK	1	0	Back	10mm	Reduced	26590	1905	19.06	20.50	1.393	-0.07	0.604	0.841
	LTE Band 25	20M	QPSK	50	0	Back	10mm	Reduced	26340	1880	18.21	19.50	1.346	-0.03	0.544	0.732
	LTE Band 25	20M	QPSK	100	0	Back	10mm	Reduced	26340	1880	18.15	19.50	1.365	-0.04	0.531	0.725
	LTE Band 25	20M	QPSK	1	0	Front	13mm	Full	26340	1880	22.70	24.00	1.349	-0.12	0.658	0.888
	LTE Band 25	20M	QPSK	1	0	Front	13mm	Full	26140	1860	22.35	24.00	1.462	-0.06	0.640	0.936
	LTE Band 25	20M	QPSK	1	0	Front	13mm	Full	26590	1905	22.54	24.00	1.400	0.03	0.638	0.893
	LTE Band 25	20M	QPSK	1	0	Back	18mm	Full	26140	1860	22.35	24.00	1.462	-0.07	0.627	0.917
	LTE Band 25	20M	QPSK	1	0	Back	18mm	Full	26340	1880	22.70	24.00	1.349	0.09	0.619	0.835
	LTE Band 25	20M	QPSK	1	0	Back	18mm	Full	26590	1905	22.54	24.00	1.400	-0.01	0.550	0.770

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Full	11	2462	16.67	17.50	1.211	100	1.000	-0.01	0.166	0.201
34	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Full	11	2462	16.67	17.50	1.211	100	1.000	0.08	0.182	**0.220**

16.4 Repeated SAR Measurement

No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Full	11	2462	16.67	17.50	1.211	0.07	0.919	1	1.113
2nd	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Full	11	2462	16.67	17.50	1.211	-0.01	0.915	1.004	1.108
1st	GSM850	GPRS 4 Tx slots	Back	10mm	Full	251	848.8	28.89	29.50	1.151	0.03	0.802	1	0.923
2nd	GSM850	GPRS 4 Tx slots	Back	10mm	Full	251	848.8	28.89	29.50	1.151	-0.09	0.801	1.001	0.922
1st	GSM1900	GPRS 4 Tx slots	Bottom Side	10mm	Reduced	512	1850.2	22.82	24.00	1.312	0.13	0.895	1	1.174
2nd	GSM1900	GPRS 4 Tx slots	Bottom Side	10mm	Reduced	512	1850.2	22.82	24.00	1.312	0.03	0.891	1.004	1.169
1st	WCDMA IV	RMC 12.2Kbps	Back	18mm	Reduced	1413	1732.6	22.97	24.00	1.268	-0.03	0.920	1	1.166
2nd	WCDMA IV	RMC 12.2Kbps	Back	18mm	Reduced	1413	1732.6	22.97	24.00	1.268	0.09	0.911	1.010	1.155

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.
3. The ratio is the difference in percentage between original and repeated *measured SAR*.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

17. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Portable Handset		
		Head	Body-worn	Hotspot
1.	GSM Voice + WLAN2.4GHz	Yes	Yes	
2.	GPRS/EDGE + WLAN2.4GHz	Yes	Yes	Yes
3.	WCDMA + WLAN2.4GHz	Yes	Yes	Yes
4.	LTE + WLAN2.4GHz	Yes	Yes	Yes
5.	GSM Voice + Bluetooth	Yes	Yes	
6.	GPRS/EDGE + Bluetooth	Yes	Yes	Yes
7.	WCDMA+ Bluetooth	Yes	Yes	Yes
8.	LTE + Bluetooth	Yes	Yes	Yes

General Note:

1. This device WLAN 2.4GHz supports Hotspot operation and Bluetooth support tethering applications.
2. WLAN and Bluetooth share the same antenna, and cannot transmit simultaneously.
3. All licensed modes share the same antenna part and cannot transmit simultaneously.
4. The Scaled SAR summation is calculated based on the same configuration and test position.
5. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/kg.
   ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
   iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
6. For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v06 based on the formula below.
   i) (*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)]·[√f(GHz)/*x*] W/kg for *test separation distances* ≤ 50 mm; where *x* = 7.5 for 1-g SAR, and *x* = 18.75 for 10-g SAR.
   ii) When the minimum separation distance is < 5mm, the distance is used 5mm to determine SAR test exclusion.
   iii) 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the *test separation distances* is > 50 mm.

Bluetooth Max Power	Exposure Position	Hotspot	Body worn		
	Test separation	10 mm	10 mm	13 mm	18 mm
11.00 dBm	Estimated SAR (W/kg)	0.264 W/kg	0.264 W/kg	0.203 W/kg	0.147 W/kg

17.1 Head Exposure Conditions

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN 1g SAR (W/kg)	3 Bluetooth 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)
GSM	GSM850	Right Cheek	0.702	0.290	0.235	**0.99**	**0.94**
		Right Tilted	0.352	0.284	0.235	**0.64**	**0.59**
		Left Cheek	0.720	0.702	0.235	**1.42**	**0.96**
		Left Tilted	0.342	0.617	0.235	**0.96**	**0.58**
	GSM1900	Right Cheek	0.315	0.290	0.235	**0.61**	**0.55**
		Right Tilted	0.171	0.284	0.235	**0.46**	**0.41**
		Left Cheek	0.325	0.702	0.235	**1.03**	**0.56**
		Left Tilted	0.231	0.617	0.235	**0.85**	**0.47**
WCDMA	WCDMA II	Right Cheek	0.441	0.290	0.235	**0.73**	**0.68**
		Right Tilted	0.216	0.284	0.235	**0.50**	**0.45**
		Left Cheek	0.379	0.702	0.235	**1.08**	**0.61**
		Left Tilted	0.279	0.617	0.235	**0.90**	**0.51**
	WCDMA IV	Right Cheek	0.218	0.290	0.235	**0.51**	**0.45**
		Right Tilted	0.180	0.284	0.235	**0.46**	**0.42**
		Left Cheek	0.205	0.702	0.235	**0.91**	**0.44**
		Left Tilted	0.146	0.617	0.235	**0.76**	**0.38**
	WCDMA V	Right Cheek	0.569	0.290	0.235	**0.86**	**0.80**
		Right Tilted	0.294	0.284	0.235	**0.58**	**0.53**
		Left Cheek	0.586	0.702	0.235	**1.29**	**0.82**
		Left Tilted	0.270	0.617	0.235	**0.89**	**0.51**
LTE	LTE Band 12	Right Cheek	0.320	0.290	0.235	**0.61**	**0.56**
		Right Tilted	0.209	0.284	0.235	**0.49**	**0.44**
		Left Cheek	0.312	0.702	0.235	**1.01**	**0.55**
		Left Tilted	0.210	0.617	0.235	**0.83**	**0.45**
	LTE Band 13	Right Cheek	0.488	0.290	0.235	**0.78**	**0.72**
		Right Tilted	0.316	0.284	0.235	**0.60**	**0.55**
		Left Cheek	0.501	0.702	0.235	**1.20**	**0.74**
		Left Tilted	0.300	0.617	0.235	**0.92**	**0.54**
	LTE Band 26	Right Cheek	0.453	0.290	0.235	**0.74**	**0.69**
		Right Tilted	0.283	0.284	0.235	**0.57**	**0.52**
		Left Cheek	0.485	0.702	0.235	**1.19**	**0.72**
		Left Tilted	0.278	0.617	0.235	**0.90**	**0.51**
	LTE Band 66	Right Cheek	0.194	0.290	0.235	**0.48**	**0.43**
		Right Tilted	0.178	0.284	0.235	**0.46**	**0.41**
		Left Cheek	0.201	0.702	0.235	**0.90**	**0.44**
		Left Tilted	0.131	0.617	0.235	**0.75**	**0.37**
	LTE Band 25	Right Cheek	0.438	0.290	0.235	**0.73**	**0.67**
		Right Tilted	0.216	0.284	0.235	**0.50**	**0.45**
		Left Cheek	0.360	0.702	0.235	**1.06**	**0.60**
		Left Tilted	0.271	0.617	0.235	**0.89**	**0.51**

17.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1	2	3	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN	Bluetooth		
			1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)		
GSM	GSM850	Front	0.618	0.201	0.264	**0.82**	**0.88**
		Back	0.923	0.220	0.264	**1.14**	**1.19**
		Left side	0.653			**0.65**	**0.65**
		Right side	0.586	0.157	0.264	**0.74**	**0.85**
		Top side		0.128	0.264	**0.13**	**0.26**
		Bottom side	0.231			**0.23**	**0.23**
	GSM1900	Front	0.463	0.201	0.264	**0.66**	**0.73**
		Back	0.755	0.220	0.264	**0.98**	**1.02**
		Left side	0.162			**0.16**	**0.16**
		Right side	0.108	0.157	0.264	**0.27**	**0.37**
		Top side		0.128	0.264	**0.13**	**0.26**
		Bottom side	1.174			**1.17**	**1.17**
WCDMA	WCDMA II	Front	0.414	0.201	0.264	**0.62**	**0.68**
		Back	0.736	0.220	0.264	**0.96**	**1.00**
		Left side	0.162			**0.16**	**0.16**
		Right side	0.095	0.157	0.264	**0.25**	**0.36**
		Top side		0.128	0.264	**0.13**	**0.26**
		Bottom side	1.077			**1.08**	**1.08**
	WCDMA IV	Front	0.468	0.201	0.264	**0.67**	**0.73**
		Back	1.116	0.220	0.264	**1.34**	**1.38**
		Left side	0.048			**0.05**	**0.05**
		Right side	0.042	0.157	0.264	**0.20**	**0.31**
		Top side		0.128	0.264	**0.13**	**0.26**
		Bottom side	1.145			**1.15**	**1.15**
	WCDMA V	Front	0.459	0.201	0.264	**0.66**	**0.72**
		Back	0.645	0.220	0.264	**0.87**	**0.91**
		Left side	0.453			**0.45**	**0.45**
		Right side	0.425	0.157	0.264	**0.58**	**0.69**
		Top side		0.128	0.264	**0.13**	**0.26**
		Bottom side	0.170			**0.17**	**0.17**

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN 1g SAR (W/kg)	3 Bluetooth Estimated 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)
LTE	LTE Band 12	Front	0.396	0.201	0.264	**0.60**	**0.66**
		Back	0.551	0.220	0.264	**0.77**	**0.82**
		Left side	0.317			**0.32**	**0.32**
		Right side	0.386	0.157	0.264	**0.54**	**0.65**
		Top side		0.128	0.264	**0.13**	**0.26**
		Bottom side	0.075			**0.08**	**0.08**
	LTE Band 13	Front	0.535	0.201	0.264	**0.74**	**0.80**
		Back	0.653	0.220	0.264	**0.87**	**0.92**
		Left side	0.482			**0.48**	**0.48**
		Right side	0.481	0.157	0.264	**0.64**	**0.75**
		Top side		0.128	0.264	**0.13**	**0.26**
		Bottom side	0.106			**0.11**	**0.11**
	LTE Band 26	Front	0.451	0.201	0.264	**0.65**	**0.72**
		Back	0.527	0.220	0.264	**0.75**	**0.79**
		Left side	0.567			**0.57**	**0.57**
		Right side	0.429	0.157	0.264	**0.59**	**0.69**
		Top side		0.128	0.264	**0.13**	**0.26**
		Bottom side	0.123			**0.12**	**0.12**
	LTE Band 66	Front	0.471	0.201	0.264	**0.67**	**0.74**
		Back	1.124	0.220	0.264	**1.34**	**1.39**
		Left side	0.051			**0.05**	**0.05**
		Right side	0.050	0.157	0.264	**0.21**	**0.31**
		Top side		0.128	0.264	**0.13**	**0.26**
		Bottom side	1.176			**1.18**	**1.18**
	LTE Band 25	Front	0.499	0.201	0.264	**0.70**	**0.76**
		Back	0.994	0.220	0.264	**1.21**	**1.26**
		Left side	0.130			**0.13**	**0.13**
		Right side	0.097	0.157	0.264	**0.25**	**0.36**
		Top side		0.128	0.264	**0.13**	**0.26**
		Bottom side	1.170			**1.17**	**1.17**

17.3 Body-Worn Accessory Exposure Conditions

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN 1g SAR (W/kg)	3 Bluetooth Estimated 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)
GSM	GSM850	Front	0.618	0.201	0.264	**0.82**	**0.88**
		Back	0.923	0.220	0.264	**1.14**	**1.19**
	GSM1900	Front	0.463	0.201	0.264	**0.66**	**0.73**
		Back	0.755	0.220	0.264	**0.98**	**1.02**
		Front at 13mm	0.677	0.201	0.203	**0.88**	**0.88**
		Back at 18mm	0.567	0.220	0.147	**0.79**	**0.71**
WCDMA	WCDMA II	Front	0.414	0.201	0.264	**0.62**	**0.68**
		Back	0.736	0.220	0.264	**0.96**	**1.00**
		Front at 13mm	0.739	0.201	0.203	**0.94**	**0.94**
		Back at 18mm	0.595	0.220	0.147	**0.82**	**0.74**
	WCDMA IV	Front	0.468	0.201	0.264	**0.67**	**0.73**
		Back	1.116	0.220	0.264	**1.34**	**1.38**
		Front at 13mm	1.147	0.201	0.203	**1.35**	**1.35**
		Back at 18mm	1.166	0.220	0.147	**1.39**	**1.31**
	WCDMA V	Front	0.459	0.201	0.264	**0.66**	**0.72**
		Back	0.645	0.220	0.264	**0.87**	**0.91**
LTE	LTE Band 12	Front	0.396	0.201	0.264	**0.60**	**0.66**
		Back	0.551	0.220	0.264	**0.77**	**0.82**
	LTE Band 13	Front	0.535	0.201	0.264	**0.74**	**0.80**
		Back	0.653	0.220	0.264	**0.87**	**0.92**
	LTE Band 26	Front	0.451	0.201	0.264	**0.65**	**0.72**
		Back	0.527	0.220	0.264	**0.75**	**0.79**
	LTE Band 66	Front	0.471	0.201	0.264	**0.67**	**0.74**
		Back	1.124	0.220	0.264	**1.34**	**1.39**
		Front at 13mm	1.137	0.201	0.203	**1.34**	**1.34**
		Back at 18mm	1.143	0.220	0.147	**1.36**	**1.29**
	LTE Band 25	Front	0.499	0.201	0.264	**0.70**	**0.76**
		Back	0.994	0.220	0.264	**1.21**	**1.26**
		Front at 13mm	0.936	0.201	0.203	**1.14**	**1.14**
		Back at 18mm	0.917	0.220	0.147	**1.14**	**1.06**

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18. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured 1-g SAR is less 1.5W/kg. Therefore, the measurement uncertainty table is not required in this report.

19. References

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

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

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

[4] SPEAG DASY System Handbook

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

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

[7] FCC KDB 648474 D04 v01r03, “SAR Evaluation Considerations for Wireless Handsets”, Oct 2015.

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

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

[10] FCC KDB 941225 D05A v01r02, “Rel. 10 LTE SAR Test Guidance and KDB Inquiries”, Oct 2015

[11] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.

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

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