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# SAR TEST REPORT

<b>Applicant Name:</b> <b>SAMSUNG Electronics Co., Ltd.</b> 129, Samsung-ro, Yeongtong-gu, Suwon-Si, Gyeonggi-do, 16677 Rep. of Korea	<b>Date of Issue: May 25, 2023</b> <b>Test Report No.: HCT-SR-2305-FC018</b> <b>Test Site: HCT CO., LTD.</b>
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**FCC ID:**

**A3LSMM346B**

<b>Equipment Type:</b>	<b>Mobile Phone</b>
<b>Application Type</b>	<b>Certification</b>
<b>FCC Rule Part(s):</b>	<b>CFR §2.1093</b>
<b>Model Name:</b>	<b>SM-M346B/DS</b>
<b>Date of Test:</b>	<b>Apr. 24, 2023 ~ May 19, 2023</b>

This device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in FCC KDB procedures and had been tested in accordance with the measurement procedures specified in FCC KDB procedures.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Tested By

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**REVISION HISTORY**

The revision history for this test report is shown in table.

<b>Revision No.</b>	<b>Date of Issue</b>	<b>Description</b>
0	May 25, 2023	Initial Release

This test results were applied only to the test methods required by the standard.

The above Test Report is not related to the accredited test result by (KS Q) ISO/IEC 17025 and KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA.

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## 1. Test Regulations

The tests documented in this report were performed in accordance with FCC CFR § 2.1093, IEEE 1528-2013, ANSI C63.26-2015 the following FCC Published RF exposure KDB procedures:

- FCC KDB Publication 941225 D01 3G SAR Procedures v03r01
- FCC KDB Publication 941225 D06 Hot Spot SAR v02r01
- FCC KDB Publication 941225 D05 SAR for LTE Devices v02r05
- FCC KDB Publication 941225 D05A LTE Rel.10 KDB Inquiry sheet v01r02
- FCC KDB Publication 248227 D01 802.11 WLANSAR v02r02
- FCC KDB Publication 447498 D01 General SAR Guidance v06
- FCC KDB Publication 648474 D04 Handset SAR v01r03
- FCC KDB Publication 616217 D04 v01r02 (Proximity Sensor)
- FCC KDB Publication 865664 D02 SAR Reporting v01r02
- FCC KDB Publication 690783 D01 SAR Listings on Grants v01r03
- FCC KDB Publication 971168 D01 Power Meas License Digital Systems v03r01

In Addition to the above, the following information was used.

- October 2013 TCB Workshop Notes (GPRS testing criteria)
- October 2014 TCB Workshop Notes (Overlapping LTE Bands)
- April 2015 TCB Workshop Notes (Simultaneous transmission summation clarified)
- October 2016 TCB Workshop Notes (Bluetooth Duty Factor)
- November 2017 TCBC Workshop Notes (LTE Carrier Aggregation)
- April 2018 TCBC Workshop Notes (LTE DL CA SAR Test Exclusion)
- November 2019 TCBC Workshop Notes (SPLSR Hotspot Combination)
- April 2022 TCBC Workshop Notes (Sum-Peak Location Separation Ratio)

## 2. Test Location

### 2.1 Test Laboratory

Company Name	HCT Co., Ltd.
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### 2.2 Test Facilities

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

Korea	National Radio Research Agency (Designation No. KR0032)
	KOLAS (Testing No. KT197)

## 3. Information of the EUT

### 3.1 General Information of the EUT

Model Name	SM-M346B/DS
Equipment Type	Mobile Phone
FCC ID	A3LSMM346B
Application Type	Certification
Applicant	SAMSUNG Electronics Co., Ltd.

### 3.2 Attestation of test result of device under test

The Highest Reported SAR							
Band	Tx. Frequency	Equipment Class	Reported SAR (W/kg)				
			1g Head	1g Body-Worn	1g Hotspot	10g Extremity	
GSM/GPRS/EDGE 850	824.2 MHz ~ 848.8 MHz	PCE	0.54	<b>0.77</b>	0.81	<b>1.38</b>	
GSM/GPRS/EDGE 1900	1 850.2 MHz ~ 1 909.8 MHz	PCE	<0.10	0.35	0.48	N/A	
UMTS Band 2	1 852.4 MHz ~ 1 907.6 MHz	PCE	0.16	0.36	0.48	N/A	
UMTS Band 4	1 712.4 MHz ~ 1 752.6 MHz	PCE	0.16	0.40	0.54	N/A	
UMTS Band 5	826.4 MHz ~ 846.6 MHz	PCE	0.29	0.49	<b>1.19</b>	N/A	
LTE Band 2 (PCS)	1 850.7 MHz ~ 1 909.3 MHz	PCE	0.40	0.25	0.71	N/A	
LTE Band 4 (AWS)	1 710.7 MHz ~ 1 754.3 MHz	PCE	N/A	N/A	N/A	N/A	
LTE Band 5 (Cell)	824.7 MHz ~ 848.3 MHz	PCE	0.23	0.28	0.71	N/A	
LTE Band 12	699.7 MHz ~ 715.3 MHz	PCE	<0.10	0.17	0.33	N/A	
LTE Band 17	706.5 MHz ~ 713.5 MHz	PCE	N/A	N/A	N/A	N/A	
LTE Band 26(Cell)	814.7 MHz ~ 848.3 MHz	PCE	0.20	0.25	0.65	N/A	
LTE Band 41	2 498.5 MHz ~ 2 687.5 MHz	PCE	<0.10	0.26	0.25	N/A	
LTE Band 66 (AWS)	1 710.7 MHz ~ 1 779.3 MHz	PCE	0.34	0.19	0.46	N/A	
NR Band n5	826.5 MHz ~ 846.5 MHz	PCE	0.20	0.33	0.52	N/A	
NR Band n41	2 501.01 MHz ~ 2 685 MHz	PCE	<b>0.89</b>	0.38	0.71	N/A	
NR Band n66	1 712.5 MHz ~ 1 777.5 MHz	PCE	<0.10	0.16	0.38	N/A	
802.11b	2 412 MHz ~ 2 472 MHz	DTS	0.11	<0.10	0.25	N/A	
U-NII-1	5 180 MHz ~ 5 240 MHz	NII	N/A	N/A	N/A	N/A	
U-NII-2A	5 260 MHz ~ 5 320 MHz	NII	0.23	0.62	N/A	0.61	
U-NII-2C	5 500 MHz ~ 5 720 MHz	NII	0.69	0.53	N/A	0.88	
U-NII-3	5 745 MHz ~ 5 825 MHz	NII	0.49	0.44	0.92	N/A	
Bluetooth	2 402 MHz ~ 2 480 MHz	DSS	<0.10	<0.10	<0.10	N/A	
NFC	13.56 MHz	DXX	N/A	N/A	N/A	<0.10	
Simultaneous SAR per KDB 690783 D01v01r03			<b>1.48</b>	<b>1.40</b>	<b>1.57</b>	<b>2.10</b>	
Date(s) of Tests:	Apr. 24, 2023 ~ May 19, 2023						

## 4. Device Under Test Description

### 4.1 DUT specification

Device Wireless specification overview		
Band& Mode	Operating Mode	Tx Frequency
GSM/GPRS/EDGE 850	Voice / Data	824.2 MHz ~ 848.8 MHz
GSM/GPRS/EDGE 1900	Voice / Data	1 850.2 MHz ~ 1 909.8 MHz
UMTS Band 5	Voice / Data	826.4 MHz ~ 846.6 MHz
UMTS Band 4	Voice / Data	1 712.4 MHz ~ 1 752.6 MHz
UMTS Band 2	Voice / Data	1 852.4 MHz ~ 1 907.6 MHz
LTE Band 2 (PCS)	Voice / Data	1 850.7 MHz ~ 1 909.3 MHz
LTE Band 4 (AWS)	Voice / Data	1 710.7 MHz ~ 1 754.3 MHz
LTE Band 5 (Cell)	Voice / Data	824.7 MHz ~ 848.3 MHz
LTE Band 12	Voice / Data	699.7 MHz ~ 715.3 MHz
LTE Band 17	Voice / Data	706.5 MHz ~ 713.5 MHz
LTE Band 26	Voice / Data	814.7 MHz ~ 848.3 MHz
LTE Band 41	Voice / Data	2 498.5 MHz ~ 2 687.5 MHz
LTE Band 66 (AWS)	Voice / Data	1 710.7 MHz ~ 1 779.3 MHz
NR Band n5	Voice / Data	826.5 MHz ~ 846.5 MHz
NR Band n41	Voice / Data	2 501.01 MHz ~ 2 685 MHz
NR Band n66	Voice / Data	1 712.5 MHz ~ 1 777.5 MHz
U-NII-1	Voice / Data	5 180 MHz ~ 5 240 MHz
U-NII-2A	Voice / Data	5 260 MHz ~ 5 320 MHz
U-NII-2C	Voice / Data	5 500 MHz ~ 5 720 MHz
U-NII-3	Voice / Data	5 745 MHz ~ 5 825 MHz
2.4 GHz WLAN	Voice / Data	2 412 MHz ~ 2 472 MHz
Bluetooth 5.3	Data	2 402 MHz ~ 2 480 MHz
NFC	Data	13.56 MHz
Device Wireless specification overview		
Device Description		
HW version	REV1.0	
SW version	M346B.001	
Device Serial Numbers	Mode	Serial Number
	GSM850 / UMTS B5 / LTE B5 / LTE B12 / LTE B26 / LTE B41 / NR n5 / NR n41	WDE2498M / WDE2508M
	GSM1900 / UMTS B2 / UMTS B4 / LTE B2 / LTE B66	WDE2392M / WDE2462M WE33682M / WE33522M
	WLAN 2.4G / WLAN 5G / Bluetooth	WDA5413M / WDA5392M
	NFC	WDE2498M
The manufacturer has confirmed that the devices tested have the same physical, mechanical and thermal characteristics are within operational tolerances expected for production units.		

## 4.2 Time-Averaging Algorithm for RF Exposure Compliance

This DUT is equipped with an LSI chipset to which the Samsung S.LSI proprietary TAS (Time Average SAR) algorithm is applied.

FCC RF exposure limit is based on time averaged RF exposure. The SAR regulatory specification is defined over certain measurement duration allowing for time-averaging. The Samsung S.LSI proprietary TAS (Time Average SAR) algorithm has been designed to meet the compliance limits over the required duration, while still allowing dynamic control of transmit power to satisfy the performance of the system.

This feature performs time averaging SAR algorithm in real time to control and manage transmitting power and ensure the time-averaged RF exposure is in compliance with FCC requirements all the time.

The 2G/3G communication mode and WLAN/BT mode are not controlled by The Samsung S.LSI proprietary TAS (Time Average SAR) algorithm.

In the wireless mode of 2G/3G, the output power is not dynamically controlled by the TAS algorithm, but the static P<sub>limit</sub> output is applied to comply with the SAR<sub>Target</sub> specified by the manufacturer.

The Samsung S.LSI TAS algorithm allows the device to transmit at higher power instantaneously, as high as P<sub>max</sub>, when needed, but enforces power limiting to maintain time-averaged transmit power to P<sub>limit</sub>. Below table shows P<sub>limit</sub> NV settings and maximum tune up output power P<sub>max</sub> configured for this DUT for various transmit conditions (Radio SAR indicator RSI).

Note that the device uncertainty for sub-6GHz WWAN is 1.0dB for this DUT.

The purpose of this report is to demonstrate that the DUT meets FCC SAR limits when transmitting in static transmission configurations at P<sub>limit</sub> specified by manufacturer.

**Measurement Condition:** All conducted power and SAR measurements in this report were performed by P<sub>limit</sub> in static Power condition.



4G/5G Plimit For S.LSI TAS Algorithm							Pmax Maximum Tune-up Output Power
SAR Exposure Configuration			Body Worn SAR Max Power FREE	Phablet SAR Max Power FREE	Phablet SAR Grip ON Ear-jack	Head SAR RCV-ON	
			15 mm	12, 11, and 0 mm	0 mm	0 mm	10 mm
Averaging volume			1g	10g	10g	1g	1g
Mode	Band	Antenna	RSI=0	RSI=3,4	RSI=1	RSI=2	[dBm]
LTE FDD	2	Main 2	20.5	20.5	20.5	20.5	23.5
LTE FDD	2	Main 3	20.5	20.5	20.5	20.5	23.5
LTE FDD	5	Main 1	28.9	28.9	31.7	26.8	24.3
LTE FDD	12(17)	Main 1	29.0	29.0	35.3	29.8	24.0
LTE FDD	26	Main 1	28.6	28.6	32.0	26.9	24.0
LTE TDD	41	Main 2	26.3	18.0	32.6	18.0	21.5*
LTE FDD	66(4)	Main 2	20.0	20.0	20.0	20.0	23.5
LTE FDD	66	Main 3	20.0	20.0	20.0	20.0	23.5
NR FDD	n5	Main 1	28.7	28.7	31.5	27.3	23.5
NR FDD	n66	Main 2	19.5	19.5	19.5	19.5	23.5
NR TDD	n41	Main 2	19.0	19.0	19.0	19.0	23.0
NR TDD	n41	Sub 5	22.4	22.4	23.6	23.3	19.0
NR TDD	n41	Sub 4	29.8	29.8	49.7	36.7	19.0
NR TDD	n41	Sub 1	22.3	22.3	18.5	23.0	17.0

**Note**

1. Radio SAR indicator (RSI) in the table above means the SAR test configuration of each mobile communication technology.
2. The GSM/UMTS mode and WLAN/BT mode are not controlled by The Samsung S.LSI proprietary TAS (Time Average SAR) algorithm.
3. Plimit and Tune up output power Pmax in above table correspond to average power level after accounting for duty cycle in the case of TDD Modulation schemes (LTE TDD)
4. Maximum tune up output Power Pmax is used to configure DUT during RF tune up procedure. The maximum allowed output power is equal to Tune up power +1 dB device design uncertainty.
5. SAR values in this report were scaled to this maximum time-averaged output power to determine compliance per KDB Publication 447498 D01v06.

### 4.3 Power Reduction for SAR

This device utilizes power reduction mechanisms for some wireless modes and bands for SAR compliance under hotspot conditions and under some conditions when the device is being used in close proximity to the user’s hand. All hotspot SAR evaluations for this device were performed at the maximum allowed output power when Hotspot is enabled. FCC KDB Publication 616217 D04v01r02 Sec.6 was used as a guideline for selection SAR test distances for device when being used in phablet use conditions.

This device uses an independent fixed level power reduction mechanism for WLAN operations when during all voice or VoIP held to ear scenarios. Per FCC Guidance, the held-to-ear exposure conditions were evaluated at reduced power according to the head SAR positions described in IEEE 1528-2013. Detailed descriptions of the power reduction mechanism are included in the operational description.

The reduced powers for the power reduction mechanisms were conformed via conducted power measurements at the RF Port.

### 4.4 Nominal and Maximum Output Power Specifications

This device operates using the following maximum output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB publication 447498 D01v06.

The contents of RSI are as follows.

- RSI (0): Free, Maximum Power- body worn/Phablet Max
- RSI (1): Reduced- RCV On
- RSI (2): Reduced- Hotspot Mode On
- RSI (3): Reduced- Earjack
- RSI (4): Reduced- Capacitive Sensor On

#### 4.4.1 2G/3G/4G/5G Nominal and Maximum Output Power

##### A. GSM Modes

Mode	RSI (Radio SAR indicator)	Voice	Burst Average GMSK				Burst Average EDGE 8-PSK			
		(in dBm)	(in dBm)				(in dBm)			
		1 Tx Slot	1 Tx Slot	2 Tx Slot	3 Tx Slot	4 Tx Slot	1 Tx Slot	2 Tx Slot	3 Tx Slot	4 Tx Slot
GSM/ GPRS/ EDGE 850	<b>Pmax</b>	33.5	33.5	30.5	30.0	28.0	27.0	25.0	23.8	22.6
	RSI=0(Body-Worn or Phablet Max)	33.5	33.5	30.5	30.0	28.0	27.0	25.0	23.8	22.6
	RSI=1(RCV On)	33.5	33.5	30.5	30.0	28.0	27.0	25.0	23.8	22.6
	RSI=2(Hospost On)	30.5	30.5	28.0	26.0	25.5	24	22	20.8	19.6
	RSI=3(Earjack)	30.5	30.5	28.0	26.0	25.5	24	22	20.8	19.6
	RSI=4(Grip On)	30.5	30.5	28.0	26.0	25.5	24	22	20.8	19.6
GSM/ GPRS/ EDGE 1900	<b>Pmax</b>	30.5	30.5	28.0	27.3	26.1	26.0	24.0	22.8	21.6
	RSI=0(Body-Worn or Phablet Max)	30.5	30.5	28.0	27.3	26.1	26.0	24.0	22.8	21.6
	RSI=1(RCV On)	30.5	30.5	28.0	27.3	26.1	26.0	24.0	22.8	21.6
	RSI=2(Hospost On)	28.0	28.0	25.5	24.3	23.1	23.5	21.5	19.8	18.6
	RSI=3(Earjack)	28.0	28.0	25.5	24.3	23.1	23.5	21.5	19.8	18.6
	RSI=4(Grip On)	28.0	28.0	25.5	24.3	23.1	23.5	21.5	19.8	18.6

(Tolerance: -1.5 dB~ +1 dB)

**B. UMTS Modes**

Mode/Band	RSI (Radio SAR indicator)	Modulated Average (dBm)			
		3GPP Rel99	HSDPA	HSUPA	DC-HSDPA
			3GPP Rel.5	3GPP Rel.6	3GPP Rel.8
UMTS B2	Pmax	23.5	23.0	22.0	21.5
	RSI=0(Body-Worn or Phablet Max)	23.5	23.0	22.0	21.5
	RSI=1(RCV On)	23.5	23.0	22.0	21.5
	RSI=2(Hospost On)	20.5	20.0	19.5	19.0
	RSI=3(Earjack)	20.5	20.0	19.5	19.0
	RSI=4(Grip On)	20.5	20.0	19.5	19.0
UMTS B4	Pmax	24.0	21.5	22.1	21.5
	RSI=0(Body-Worn or Phablet Max)	24.0	21.5	22.1	21.5
	RSI=1(RCV On)	24.0	21.5	22.1	21.5
	RSI=2(Hospost On)	21.0	20.0	20.0	19.0
	RSI=3(Earjack)	21.0	20.0	20.0	19.0
	RSI=4(Grip On)	21.0	20.0	20.0	19.0
UMTS B5	Pmax	24.0	23.0	22.0	22.0
	RSI=0(Body-Worn or Phablet Max)	24.0	23.0	22.0	22.0
	RSI=1(RCV On)	24.0	23.0	22.0	22.0
	RSI=2(Hospost On)	24.0	23.0	22.0	22.0
	RSI=3(Earjack)	24.0	23.0	22.0	22.0
	RSI=4(Grip On)	24.0	23.0	22.0	22.0

(Tolerance: -1.5 dB~+1.0 dB)

**C. LTE Modes**

Mode / Band	Antenna	Pmax (in dBm)	Plimit (in dBm) Burst Average Power				
			RSI=0	RSI=1	RSI=2	RSI=3	RSI= 4
		Burst Average Power	Body Worn Phablet max	RCV On	Hotspot On	Earjack	Grip On
LTE B2	Main 2	23.5	20.5	20.5	20.5	20.5	20.5
LTE B2	Main 3	23.5	20.5	20.5	20.5	20.5	20.5
LTE B4	Main 2	23.5	20.0	20.0	20.0	20.0	20.0
LTE B5	Main 1	24.3	24.3	24.3	24.3	24.3	24.3
LTE B12	Main 1	24.0	24.0	24.0	24.0	24.0	24.0
LTE B17	Main 1	24.0	24.0	24.0	24.0	24.0	24.0
LTE B26	Main 1	24.0	24.0	24.0	24.0	24.0	24.0
LTE B41	Main 2	23.5	23.5	23.5	20.0	20.0	20.0
LTE B66	Main 2	23.5	20.0	20.0	20.0	20.0	20.0
LTE B66	Main 3	23.5	20.0	20.0	20.0	20.0	20.0

(Tolerance: -1.5 dB~+1.0 dB)

**D. 5G NR Sub6**

Mode / Band	Antenna	Pmax (in dBm)	Plimit (in dBm) Burst Average Power				
			RSI=0	RSI=1	RSI=2	RSI=3	RSI= 4
		Burst Average Power	Body Worn Phablet max	RCV On	Hotspot On	Earjack	Grip On
NR n5	Main 1	23.5	23.5	23.5	23.5	23.5	23.5
NR n66	Main 2	23.5	19.5	19.5	19.5	19.5	19.5
NR n41	Main 2	23.0	19.0	19.0	19.0	19.0	19.0
NR n41 SRS	Sub 5	19.0	19.0	19.0	19.0	19.0	19.0
NR n41 SRS	Sub 4	19.0	19.0	19.0	19.0	19.0	19.0
NR n41 SRS	Sub 1	17.0	17.0	17.0	17.0	17.0	17.0

(Tolerance: -1.5 dB~+1.0 dB)

### 4.4.2 Maximum output power

#### 2.4 GHz, 5 GHz WIFI

Mode	Band	SISO				
		a	b	g	n	ac
2.4GHz	2.45GHz		18 12ch-7 13ch-7	16 (Up to 36M) 14 (From 48M to 54M) 12ch-7 13ch-7	16 (Up to MCS#4) 14 (From MCS#5 to #7) 12ch-5 13ch-5	
5GHz (20MHz)	5200MHz	16 (Up to 36M) 14 (From 48M to 54M)			16 (Up to MCS#4) 14 (From MCS#5 to #7)	16 (Up to MCS#4) 14 (From MCS#5 to #7) 13 (MCS#8)
	5300MHz	16 (Up to 36M) 14 (From 48M to 54M)			16 (Up to MCS#4) 14 (From MCS#5 to #7)	16 (Up to MCS#4) 14 (From MCS#5 to #7) 13 (MCS#8)
	5500MHz	16 (Up to 36M) 14 (From 48M to 54M)			16 (Up to MCS#4) 14 (From MCS#5 to #7)	16 (Up to MCS#4) 14 (From MCS#5 to #7) 13 (MCS#8)
	5800MHz	15 (Up to 36M) 14 (From 48M to 54M)			15 (Up to MCS#4) 14 (From MCS#5 to #7)	15 (Up to MCS#4) 14 (From MCS#5 to #7) 13 (MCS#8)
5GHz (40MHz)	5200MHz				14 (Up to MCS#4) 13 (From MCS#5 to #7) 38ch-12 (Up to MCS#7)	14 (Up to MCS#4) 13 (From MCS#5 to #7) 38ch-12 (Up to MCS#7) 12 (From MCS#8 to #9)
	5300MHz				14 (Up to MCS#4) 13 (From MCS#5 to #7) 62ch-12 (Up to MCS#7)	14 (Up to MCS#4) 13 (From MCS#5 to #7) 62ch-12 (Up to MCS#7) 12 (From MCS#8 to #9)
	5500MHz				14 (Up to MCS#4) 13 (From MCS#5 to #7) 102ch-12 (Up to MCS#7)	14 (Up to MCS#4) 13 (From MCS#5 to #7) 102ch-12 (Up to MCS#7) 12 (From MCS#8 to #9)
	5800MHz				14 (Up to MCS#4) 13 (From MCS#5 to #7)	14 (Up to MCS#4) 13 (From MCS#5 to #7) 12 (From MCS#8 to #9)
5GHz (80MHz)	5200MHz					8 (Up to MCS#9)
	5300MHz					8 (Up to MCS#9)
	5500MHz					13 (Up to MCS#4) 12 (From MCS#5 to #7) 11 (From MCS#8 to #9) 106ch-8 (Up to MCS#9)
	5800MHz					13 (Up to MCS#4) 12 (From MCS#5 to #7) 11 (From MCS#8 to #9)

(Tolerance: Target +1dB)

### 4.4.3 Reduced output power

#### 2.4 GHz, 5 GHz WIFI (RCV On, Grip Sensor On)

Mode	Band	SISO				
		a	b	g	n	ac
2.4GHz	2.45GHz		13 12ch: 7 13ch :7	13 12ch: 7 13ch :7	13 12ch: 5 13ch :5	
5GHz (20MHz)	5200MHz	12			12	12
	5300MHz	12			12	12
	5500MHz	12			12	12
	5800MHz	12			12	12
5GHz (40MHz)	5200MHz				12	12
	5300MHz				12	12
	5500MHz				12	12
	5800MHz				12	12
5GHz (80MHz)	5200MHz					8
	5300MHz					8
	5500MHz					12 106ch-8 11 (From MCS#8 to #9)
	5800MHz					12 11 (From MCS#8 to #9)

(Tolerance: Target +1dB)

#### 4.4.5 Maximum Bluetooth Power

Mode / Band	Modulated Average (dBm)	
Bluetooth (1Mbps)	Maximum	10.0
	Nominal	9.0
Bluetooth (EDR)	Maximum	8.0
	Nominal	7.0
Bluetooth (LE Legacy)	Maximum	9.5
	Nominal	8.5

(Tolerance: Target +1dB)

#### 4.5 LTE Information

Item.	Description	
Frequency Range	LTE Band 2 (PCS)	1 850.7 MHz~ 1 909.3 MHz
	LTE Band 4 (AWS)	1 710.7 MHz~ 1 754.3 MHz
	LTE Band 5 (Cell)	824.7 MHz~ 848.3 MHz
	LTE Band 12	699.7 MHz~ 715.3 MHz
	LTE Band 17	706.5 MHz~ 713.5 MHz
	LTE Band 26 (Cell)	814.7 MHz~ 848.3 MHz
	LTE TDD Band 41	2 498.5 MHz ~ 2 687.5 MHz
	LTE Band 66 (AWS)	1 710.7 MHz ~ 1 779.3 MHz
Channel Bandwidths	LTE Band 2 (PCS)	1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz
	LTE Band 4 (AWS)	1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz
	LTE Band 5 (Cell)	1.4 MHz, 3 MHz, 5 MHz, 10 MHz
	LTE Band 12	1.4 MHz, 3 MHz, 5 MHz, 10 MHz
	LTE Band 17	5 MHz, 10 MHz
	LTE Band 26 (Cell)	1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz
	LTE TDD Band 41	5 MHz, 10 MHz, 15 MHz, 20 MHz
	LTE Band 66 (AWS)	1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz
UE Category	LTE Rel. 15 DL: Category 18, UL: Category 18	
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3	Yes	
A-MPR disabled for SAR Testing.	Yes	
LTE Carrier Aggregation	Down-Link CA	This device supports DL-link Carrier aggregations Inter-band & Intra-band DL 2CA, DL 3CA detailed information of Down-Link CA are included in the Appendix.I and Technical Description document
LTE Release information	This device does not support full CA features on 3GPP Release 15. It supports carrier aggregation, downlink MIMO. All other uplink communications are identical to te release 8 specifications. The following LTE Release 15 Features are not supported: Relay, Hetnet, Enhanced eICI, MDH, cross-carrier Scheduling, Enhanced SC-FDMA.	

Ch. No.&Freq. (MHz)		Low		Mid		High	
LTE Band 2 (PCS)	1.4 MHz	1 850.7 (18607)		1 880.0 (18900)		1 909.3 (19193)	
	3 MHz	1 851.5 (18615)		1 880.0 (18900)		1 908.5 (19185)	
	5 MHz	1 852.5 (18625)		1 880.0 (18900)		1 907.5 (19175)	
	10 MHz	1 855.0 (18650)		1 880.0 (18900)		1 905.0 (19150)	
	15 MHz	1 857.5 (18675)		1 880.0 (18900)		1 902.5 (19125)	
	20 MHz	1 860.0 (18700)		1 880.0 (18900)		1 900.0 (19100)	
LTE Band 4 (AWS)	1.4 MHz	1 710.7 (19957)		1 732.5 (20175)		1 754.3 (20393)	
	3 MHz	1 711.5 (19965)		1 732.5 (20175)		1 753.5 (20385)	
	5 MHz	1 712.5 (19975)		1 732.5 (20175)		1 752.5 (20375)	
	10 MHz	1 715.0 (20000)		1 732.5 (20175)		1 750.0 (20350)	
	15 MHz	1 717.5 (20025)		1 732.5 (20175)		1 747.5 (20325)	
	20 MHz	1 720 (20050)		1 732.5 (20175)		1 745 (20300)	
LTE Band 5 (Cell)	1.4 MHz	824.7 (20407)		836.5 (20525)		848.3 (20643)	
	3 MHz	825.5 (20415)		836.5 (20525)		847.5 (20635)	
	5 MHz	826.5 (20425)		836.5 (20525)		846.5 (20625)	
	10 MHz			836.5 (20525)			
LTE Band 12	1.4 MHz	699.7 (23017)		707.5 (23095)		715.3 (23173)	
	3 MHz	700.5 (23025)		707.5 (23095)		714.5 (23165)	
	5 MHz	701.5 (23035)		707.5 (23095)		713.5 (23155)	
	10 MHz	704 (23060)		707.5 (23095)		711 (23130)	
LTE Band 17	5 MHz	706.5 (23755)		710.0(23790)		713.5 (23825)	
	10 MHz	709 (23780)		710.0(23790)		711 (23800)	
LTE Band 26 (Cell)	1.4 MHz	814.7 (26697)		831.5 (26865)		848.3 (27033)	
	3 MHz	815.5 (26705)		831.5 (26865)		847.5 (27025)	
	5 MHz	816.5 (26715)		831.5 (26865)		846.5 (27015)	
	10 MHz	819.0 (26740)		831.5 (26865)		844.0 (26990)	
	15 MHz			831.5 (26865)			
LTE TDD Band 41	5 MHz	2506.0(39750)	2549.5(40185)	2593.0(40620)	2636.5(41055)	2680.0(41490)	
	10 MHz	2506.0(39750)	2549.5(40185)	2593.0(40620)	2636.5(41055)	2680.0(41490)	
	15 MHz	2506.0(39750)	2549.5(40185)	2593.0(40620)	2636.5(41055)	2680.0(41490)	
	20 MHz	2506.0(39750)	2549.5(40185)	2593.0(40620)	2636.5(41055)	2680.0(41490)	
LTE Band 66 (AWS)	1.4 MHz	1 710.7 (131979)		1 745 (132322)		1 779.3 (132665)	
	3 MHz	1 711.5 (131987)		1 745 (132322)		1 778.5 (132657)	
	5 MHz	1 712.5 (131997)		1 745 (132322)		1 777.5 (132647)	
	10 MHz	1 715.0 (132022)		1 745 (132322)		1 775.0 (132622)	
	15 MHz	1 717.5 (132047)		1 745 (132322)		1 772.5 (132597)	
	20 MHz	1 720.0 (132072)		1 745 (132322)		1 770.0 (132572)	



### 4.6 5G NR Sub6 Information

Item.		Description
Frequency Range	NR Band n5 (Cell)	826.5 MHz ~ 846.5 MHz
	NR Band n41	2 501.01 MHz ~ 2 685 MHz
	NR Band n66 (AWS)	1 712.5 MHz ~ 1 777.5 MHz
Channel Bandwidths	NR Band n5 (Cell)	5 MHz, 10 MHz, 15 MHz, 20 MHz
	NR Band n41	10 MHz, 15 MHz, 20 MHz, 30 MHz, 40 MHz, 50 MHz, 60 MHz, 80 MHz, 90 MHz, 100 MHz
	NR Band n66 (AWS)	5 MHz, 10 MHz, 15 MHz, 20 MHz
NR Band n5/ n66 SCS		15 kHz
NR Band n41 SCS		30 kHz
A-MPR disabled for SAR Testing.		Yes
5G NR UL/DL FR1		CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM DFT-s-OFDM: $\pi/2$ -BPSK(UL Only), QPSK, 16QAM, 64QAM, 256QAM
Non-Standalone & StandAlone are supported. More detailed specifications of the 5G NR bands are contained in the Technical description document.		
EN-DC Carrier Aggregation Possible Combinations		The technical description includes all the possible carrier aggregation combinations
LTE Anchor Bands for NR Band n5 (Cell)		LTE B66
LTE Anchor Bands for NR Band n41		LTE B2/B26/B66
LTE Anchor Bands for NR Band n66 (AWS)		LTE B5/B12

Ch. No.& Freq.(MHz)	Low / Low-Mid		Mid	Mid-High / High		
NR Band n5 (Cell)	5 MHz	826.5 (165300)		846.5 (169300)		
	10 MHz			836.5 (167300)		
	15 MHz			836.5 (167300)		
	20 MHz			836.5 (167300)		
NR Band n66 (AWS)	5 MHz	1 712.5 (342500)		1 777.5 (355500)		
	10 MHz	1 715 (343000)		1 775 (355000)		
	15 MHz	1 717.5 (343500)		1 772.5 (354500)		
	20 MHz	1 720 (344000)		1 770 (354000)		
NR Band n41	10 MHz	2 501.01 (500202)	2 547.00 (509400)	2 592.99 (518598)	2 639.01 (527802)	2 685.00 (537000)
	15 MHz	2 503.50 (500700)	2 548.32 (509664)	2 592.99 (518598)	2 637.81 (527562)	2 682.48 (536496)
	20 MHz	2 506.02 (501204)	2 549.49 (509898)	2 592.99 (518598)	2 636.49 (527298)	2 679.99 (535998)
	30 MHz	2 511.00 (502200)	2 552.01 (510402)	2 592.99 (518598)	2 634.00 (526800)	2 674.98 (534996)
	40 MHz	2 516.01 (503202)	2 567.34 (513468)		2 618.67 (523734)	2 670.00 (534000)
	50 MHz	2 521.02 (504204)		2 592.99 (518598)		2 664.99 (532998)
	60 MHz	2 526.00 (505200)		2 592.99 (518598)		2 659.98 (531996)
	80 MHz	2 536.02 (507204)				2 649.99 (529998)
	90 MHz	2 541.00 (508200)				2 644.98 (528996)
	100 MHz			2 592.99 (518598)		

### 4.7 DUT Antenna Locations

The overall dimensions of this device are > 9 X 5 cm. A diagram showing device antenna can be found in SAR\_setup\_photos. Since the diagonal dimension of this device is > 160 mm and < 200 mm, it is considered a “phablet”.

This model allows users to exchange data or media files with other Bluetooth enabled devices using Bluetooth, which means they can connect to other Bluetooth enabled devices via Bluetooth tethering. Therefore, SAR test was performed for additional simultaneous transmissions.

Head and Bluetooth Tethering SAR were evaluated for BT BR tethering applications.

Antenna	Mode	Rear	Front	Left	Right	Bottom	Top
Main 1	GSM/GPRS/EDGE 850	Yes	Yes	Yes	Yes	Yes	No
Main 2	GSM/GPRS/EDGE 1900	Yes	Yes	Yes	No	Yes	No
Main 1	UMTS Band 5	Yes	Yes	Yes	Yes	Yes	No
Main 2	UMTS Band 4	Yes	Yes	Yes	No	Yes	No
Main 2	UMTS Band 2	Yes	Yes	Yes	No	Yes	No
Main 2	LTE Band 2	Yes	Yes	Yes	No	Yes	No
Main 3	LTE Band 2	Yes	Yes	Yes	No	No	Yes
Main 1	LTE Band 5	Yes	Yes	Yes	Yes	Yes	No
Main 1	LTE Band 12	Yes	Yes	Yes	Yes	Yes	No
Main 1	LTE Band 26	Yes	Yes	Yes	Yes	Yes	No
Main 2	LTE TDD Band 41	Yes	Yes	Yes	No	Yes	No
Main 2	LTE Band 66	Yes	Yes	Yes	No	Yes	No
Main 3	LTE Band 66	Yes	Yes	Yes	No	No	Yes
Main 1	NR Band n5	Yes	Yes	Yes	Yes	Yes	No
Main 2	NR Band n41	Yes	Yes	Yes	No	Yes	No
Sub 5	NR Band n41 SRS	Yes	Yes	No	No	No	Yes
Sub 4	NR Band n41 SRS	Yes	Yes	No	Yes	No	Yes
Sub 1	NR Band n41 SRS	Yes	Yes	No	Yes	No	Yes
Main 2	NR Band n66	Yes	Yes	Yes	No	Yes	No
WiFi	2.4 GHz WLAN	Yes	Yes	Yes	No	No	Yes
WiFi	5 GHz WLAN	Yes	Yes	Yes	No	No	Yes
WiFi	Bluetooth	Yes	Yes	Yes	No	No	Yes
NFC	NFC	Yes	Yes	Yes	No	No	Yes

Particular EUT edges were not required to be evaluated for Bluetooth Tethering and Hotspot SAR if the edges were > 25 mm from the transmitting antenna according to FCC KDB 941225 D06v02r01 on page 2.

The distance between the transmit antennas and the edges of the device are included in the filing.

- Note: All test configurations are based on front view position.

### 4.8 Near Field Communications (NFC) Antenna

This EUT has NFC operations. The NFC antenna is integrated into the device for this model. Therefore, all SAR tests were performed with the device which already incorporates the NFC antenna. A diagram showing the location of the NFC antenna can be found in SAR \_ Setup\_ photos.

### 4.9 SAR Summation Scenario

According to FCC KDB 447498 D01v06, transmitters are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds. Possible transmission paths for the EUT are shown below paths and are mode in same rectangle to indicate communication modes which share the same path. Modes which share the same transmission path cannot transmit simultaneously with one another.

This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to FCC KDB 447498 D01v06.

Simultaneous Transmission Scenarios					
Applicable Combination	Head	BodyWorn	Hotspot	Extremity	
GSM Voice + 2.4 GHz WiFi	Yes	Yes	Yes	Yes	Yes
GSM Voice + 5 GHz WiFi	Yes	Yes	Yes	Yes	Yes
GSM Voice + Bluetooth	Yes^	Yes^	Yes^	Yes^	Yes^
GSM Voice + 5 GHz WiFi + Bluetooth	Yes^	Yes^	Yes^	Yes^	Yes^
GSMGPRS/EDGE + 2.4 GHz WiFi	Yes	Yes	Yes	Yes	Yes
GSMGPRS/EDGE + 5 GHz WiFi	Yes	Yes	Yes	Yes	Yes
GSMGPRS/EDGE + Bluetooth	Yes^	Yes^	Yes^	Yes^	Yes^
GSMGPRS/EDGE + 5 GHz WiFi + Bluetooth	Yes^	Yes^	Yes^	Yes^	Yes^
UMTS + 2.4 GHz WiFi	Yes	Yes	Yes	Yes	Yes
UMTS + 5 GHz WiFi	Yes	Yes	Yes	Yes	Yes
UMTS + Bluetooth	Yes^	Yes^	Yes^	Yes^	Yes^
UMTS + 5 GHz WiFi + Bluetooth	Yes^	Yes^	Yes^	Yes^	Yes^
LTE + 2.4 GHz WiFi	Yes	Yes	Yes	Yes	Yes
LTE + 5 GHz WiFi	Yes	Yes	Yes	Yes	Yes
LTE+ Bluetooth	Yes^	Yes^	Yes^	Yes^	Yes^
LTE + 5 GHz WiFi + Bluetooth	Yes^	Yes^	Yes^	Yes^	Yes^
LTE+ 5G NR	Yes	Yes	Yes	Yes	Yes
LTE+ 5G NR + 2.4 GHz WiFi	Yes	Yes	Yes	Yes	Yes
LTE+ 5G NR + 5 GHz WiFi	Yes	Yes	Yes	Yes	Yes
LTE+ 5G NR + 5 GHz WiFi + Bluetooth	Yes^	Yes^	Yes^	Yes^	Yes^
5G NR + 2.4 GHz WiFi	Yes	Yes	Yes	Yes	Yes
5G NR + 5 GHz WiFi	Yes	Yes	Yes	Yes	Yes
5G NR+ Bluetooth	Yes^	Yes^	Yes^	Yes^	Yes^
5G NR + 5 GHz WiFi + Bluetooth	Yes^	Yes^	Yes^	Yes^	Yes^

Note:

1. Bluetooth cannot transmit simultaneously with 2.4GHz WLAN.
2. 5GHz WLAN can transmit simultaneously with Bluetooth.
3. UMTS +WLAN scenario also represents the UMTS Voice/DATA + WLAN hotspot scenario.
4. VoIP is supported in GPRS/EDGE.
5. The highest reported SAR for each exposure condition is used for SAR summation purpose.
6. WLAN Hotspot is supported for 2.4 GHz/UNII-3 of 5 GHz WLAN.
7. Per the manufacture, WIFI Direct is not expected to be used in conjunction with a held to ear or body-worn accessory voice call. Therefore, there are no simultaneous transmission scenarios involving WIFI direct beyond that listed in the above table.
8. This device supports Bluetooth tethering. ^ Bluetooth Tethering is considered.
9. \* Pre-installed VOIP applications are considered.
10. This device supports VoLTE/ VoWiFi.
11. NFC was evaluated for phablet based on expected usage conditions.

## 4.10 SAR Test Considerations

### 4.10.1 WiFi

Since wireless router operations are not allowed by the chipset firmware using U-NII-1, U-NII-2A & U-NII-2C WiFi, WiFi Hotspot SAR test and combinations are considered only 2.4 GHz and U-NII-3 for SAR with respected to wireless router configurations according to FCC KDB 941225 D06v02r01.

Since U-NII-1 and U-NII-2A bands have the same maximum output power and the highest reported SAR for U-NII-2A is less than 1.2 W/kg for 1g SAR and is less than 3.0 W/kg for 10g SAR, SAR is not required for U-NII-1 band according to FCC KDB 248227D01v02r02.

This device supports IEEE 802.11 ac with the following features:

- a) Up to 80MHz Bandwidth only for 5 GHz
- b) 1Tx Antenna output
- c) Up to 256 QAM is supported
- d) TDWR and Band gap channels are supported for 5 GHz
- e) Straddle channels are supported.

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the diagonal dimension is greater than 160mm and less than 200mm. Phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg. Because wireless router operations are not supported for U-NII-1, U-NII-2A & U-NII-2C WLAN, phablet SAR tests were performed. Phablet SAR was not evaluated for 2.4 GHz WIFI, 2.4 GHz Bluetooth, and U-NII-3 WLAN operations since wireless router 1g SAR was < 1.2 W/kg.

### 4.8.2 Licensed Transmitter(s)

GSM/GPRS/EDGE DTM is not supported for US Bands. Therefore, the GSM Voice modes in this report do not transmit simultaneously with GPRS/EDGE Data.

LTE SAR for the higher modulations and lower Bandwidths were not tested since the maximum average output power of all required channels and configurations was not more than 0.5 dB higher than the highest Bandwidth; and the reported LTE SAR for the highest Bandwidth was less than 1.45 W/kg for all configurations according to FCC KDB 941225 D05v02r05.

Per FCC KDB 648474 D04v01r03, this device is considered a "Phablet" since the diagonal dimension is greater than 160 mm and less than 200 mm. Therefore, extremity SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR >1.2 W/kg. When hotspot mode applies, 10g SAR required only for the surfaces and edges with hotspot mode scaled to the maximum output power (including tolerance) is 1g SAR > 1.2 W/kg.

This Device supports 256QAM on the uplink and 256QAM on the downlink for LTE Operations. Conducted powers for 64QAMuplink configurations were measured per section 5.1 of FCC KDB 941225 D05v02r05. SAR was not required for 256QAM since the highest maximum output power for 256QAM is  $\leq 0.5$ dB higher than the same configuration in QPSK and the reported SAR for QPSK configuration is  $\leq 1.45$  W/Kg, per section 5.2.4 for FCC KDB941225 D05v02r05.

This device supports downlink 4x4 MIMO operations for some LTE Bands. Per May 2017 TCB Workshop Notes, SAR for 4x4 DL MIMO was not needed since the maximum average output power in 4x4 DL MIMO mode was not more than 0.25 dB higher than the maximum output power with 4x4 DL MIMO inactive.

This device supports LTE capabilities with overlapping transmission frequency ranges. When the supported frequency range of LTE Band falls completely within an LTE Band with a larger transmission frequency range, both LTE bands have the same target power or the band with the larger transmission frequency range has a higher target power and both LTE bands share the same transmission path and signal characteristics, SAR was only tested for the band with the larger transmission frequency range.

LTE Band 4 (1 710.7 MHz ~ 1 754.3 MHz) is covered by LTE Band 66 (1 710.7 MHz ~ 1 779.3 MHz) each both LTE bands have the same target powers

LTE Band 17 (706.5 MHz~ 713.5 MHz) is covered by LTE Band 12 (699.7 MHz~ 715.3 MHz) each both LTE bands have the same target powers

This device supports LTE Carrier Aggregation (CA) in the downlink. All uplink communications are identical to Release 8 specifications. Per FCC KDB publication 941225 D05A v01r02, SAR for LTE DL CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive.

This device is only capable of QPSK HSUPA in the uplink. Therefore, no additional SAR tests are required beyond that described for devices with HSUPA in KDB 941225 D01v03r01.

Per FCC KDB 941225 D01v03r01, 12.2 kbps RMC is the primary mode and HSPA (HSUPA/HSDPA with RMC) is the secondary mode.

Per FCC KDB 941225 D01v03r01, The SAR test exclusion is applied to the secondary mode by the following equation.

$$Adjusted\ SAR = Highest\ Reported\ SAR \times \frac{Secondary\ Max\ tune - up\ (mW)}{Primary\ Max\ tune - up\ (mW)} \leq 1.2\ W/kg.$$

Based on the highest Reported SAR, the secondary mode is not required.

Per FCC KDB 690783 1 D01 SAR Listings on Grants v01r03 and KDB 447498 D01 General RF Exposure Guidance v06 The SAR numbers listed must be consistent with the highest reported test results required by the published RF exposure KDB procedures. When the measured SAR is not at the maximum tune-up tolerance limit or maximum output power allowed for production units, the measured results are scaled to the maximum conditions to determine compliance; the scaled results are referred to as the reported SAR.

$$The\ Reported\ SAR = The\ Measured\ SAR \times \frac{Maximum\ tune - up\ (mW)}{Measured\ Conducted\ Power\ (mW)}$$

The Reported SAR for WLAN and Bluetooth

$$The\ Reported\ SAR = The\ Measured\ SAR \times \frac{Maximum\ tune - up\ (mW)}{Measured\ Conducted\ Power\ (mW)} \times Duty\ factor$$

FCC KDB 447498 D01v06 General RF Exposure Guidance introduces a new formula for calculating the SAR a Peak Location Separation Ratio (SPLSR) between pairs of simultaneously transmitting antennas:

$$SPLSR_i = (SAR_1 + SAR_2)^{1.5} / R_i$$

Where:

$SAR_1$  is the highest measured or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition

$SAR_2$  is the highest measured of estimated SAR for the second of a pair of simultaneous transmitting antennas, in the same test operating mode and exposure condition as the first

$R_i$  is the separation distance between the pair of simultaneous transmitting antennas, When the SAR is measured, for both antennas in the pair, it is determined by the actual x, y and z coordinates in the 1-g SAR for each SAR peak location, based on the extrapolated and interpolated result in the zoom scan measurement, using the formula of  $[(X_1 - X_2)^2 + (Y_1 - Y_2)^2 + (Z_1 - Z_2)^2]$

In order for a pair of simultaneous transmitting antennas with the sum 1-g of SAR > 1.6 W/kg and with the sum 10-g of SAR > 4W/Kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:

$$(SAR_1 + SAR_2)^{1.5} / R_i \leq 0.04\ for\ 1g\ SAR\ and\ (SAR_1 + SAR_2)^{1.5} / R_i \leq 0.1\ for\ 10g\ SAR.$$

## 5. Introduction

The FCC has adopted the guidelines for evaluating the environmental effects of radio frequency radiation in ET Docket 93-62 on Aug. 6, 1996 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices.

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz. 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York 10017. The measurement procedure described in IEEE/ANSI C95.3-1992 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave is used for guidance in measuring SAR due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in Biological Effects and Exposure Criteria for Radio Frequency Electromagnetic Fields," NCRP Report No. 86 NCRP, 1986, Bethesda, MD 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

### SAR Definition

Specific Absorption Rate (SAR) is defined as the time derivative of the incremental electromagnetic energy ( $dW$ ) absorbed by (dissipated in) an incremental mass ( $dm$ ) contained in a volume element ( $dV$ ) of a given density ( $\rho$ ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body.

$$SAR = \frac{d}{dt} \left( \frac{dW}{dm} \right)$$

Figure 1. SAR Mathematical Equation  
*SAR is expressed in units of Watts per Kilogram (W/kg)*

Where:

- = conductivity of the tissue-simulant material (S/m)
- = mass density of the tissue-simulant material ( $\text{kg/m}^3$ )
- = Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relations to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.

## 6. Description of test equipment

### 6.1 SAR MEASUREMENT SETUP

These measurements are performed using the DASY4 automated dosimetric assessment system. It is made by Schmid & Partner Engineering AG (SPEAG) in Zurich, Switzerland. It consists of high precision robotics system (Staubli), robot controller, Pentium III computer, near-field probe, probe alignment sensor, and the generic twin phantom containing the brain equivalent material. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF) (see Figure.2).

A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and remote control, is used to drive the robot motors. The PC with Windows XP or Windows 7 is working with SAR Measurement system DASY4 & DASY5, A/D interface card, monitor, mouse, and keyboard. The Staubli Robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card.

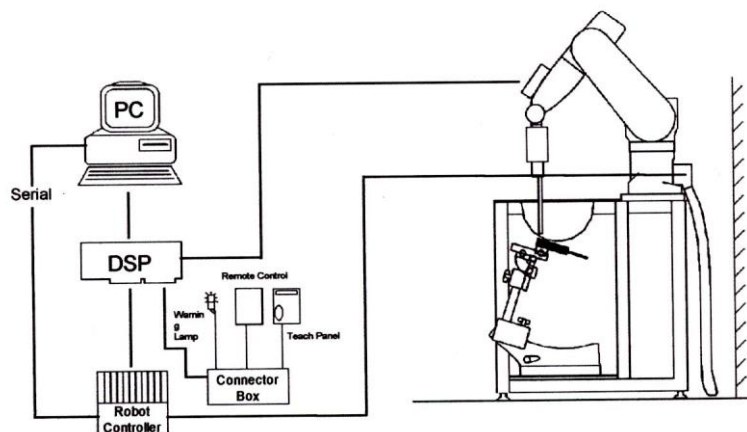


Figure 2. HCT SAR Lab. Test Measurement Set-up

The 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 PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer. The system is described in detail in.



## 7. SAR Measurement Procedure

The evaluation was performed using the following procedure compliant to FCC KDB Publication 865664 D01v01r04 and IEEE 1528-2013.

1. The SAR distribution at the exposed side of the head or body was measured at a distance no more than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the DUT's head and body area and the horizontal grid resolution was depending on the FCC KDB 865664 D01v01r04 table 4-1 & IEEE 1528-2013.
2. Based on step, the area of the maximum absorption was determined by sophisticated interpolations routines implemented in DASY software. When an Area Scan has measured all reachable point. DASY system computes the field maximal found in the scanned are, within a range of the maximum. SAR at this fixed point was measured and used as a reference value.
3. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB 865664 D01v01r04 table 4-1 and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (reference from the DASY manual.)
  - a. The data at the surface were extrapolated, since the center of the dipoles is no more than 2.7 mm away from the tip of the probe (it is different from the probe type) and the distance between the surface and the lowest measuring point is 1.2 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.
  - b. The maximum interpolated value was searched with a straight-forward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed using the 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot" condition (in x, y, and z directions. The volume was integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the average.
  - c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan. If the value changed by more than 5 %, the SAR evaluation and drift measurements were repeated.



Area scan and zoom scan resolution setting follow KDB 865664 D01v01r04 quoted below.

		≤ 3 GHz	> 3 GHz	
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface		5±1 mm	$\cdot \delta \cdot \ln(2) \pm 0.5$ mm	
Maximum probe angle from probe axis to phantom surface normal at the measurement location		30°±1°	20°±1°	
Maximum areascan Spatial resolution: $\Delta x_{Area}, \Delta y_{Area}$		≤ 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.		
Maximum zoom scan Spatial resolution: $\Delta x_{zoom}, \Delta y_{zoom}$		≤ 2 GHz: ≤8mm 2-3 GHz: ≤5mm*	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 1 <sup>st</sup> two Points closest to phantom surface	≤ 4 mm	3-4 GHz: ≤3 mm 4-5 GHz: ≤2.5 mm 5-6 GHz: ≤2 mm
		$\Delta z_{zoom}(n>1)$ : between subsequent Points	≤1.5· $\Delta z_{zoom}(n-1)$	
Minimum zoom scan volume	x, y, z	≥ 30 mm	3-4 GHz: ≥28 mm 4-5 GHz: ≥25 mm 5-6 GHz: ≥22 mm	
Note: $\delta$ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details. * When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

## 8. Description of Test Position

### 8.1 EAR REFERENCE POINT

Figure 8-2 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 on the B-M (back-mouth) line located 15 mm behind the entrance-to-ear-canal (EEC) point, as shown in Figure 6-1. The Reference Plane is defined as passing through the two ears reference point and point M. The line N-F (Neck-Front), also called the Reference Pivoting Line, is not perpendicular to the reference plane (See Figure 5-1), Line B-M is perpendicular to the N-F line. Both N-F and B-M lines are marked on the external phantom shell to facilitate handset positioning.

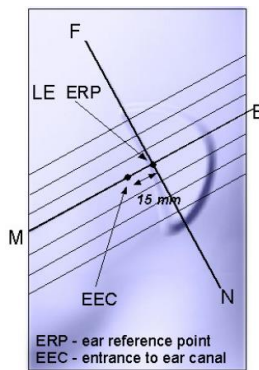


Figure 8-1  
Close-up side view of ERP

### 8.2 HANDSET REFERENCE POINTS

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The device under test was placed in a normal operating position with the acoustic output located along the “vertical centerline” on the front of the device aligned to the “ear reference point” (see Figure 8-3). The acoustic output was then located at the same level as the center of the ear reference point. The device under test was positioned so that the “vertical centerline” was bisecting the front surface of the handset at its top and bottom edges, positioning the “ear reference point” on the outer surface of the both the left and right head phantoms on the ear reference point.



Figure 8-2  
Front, back and side views of SAM Twin Phantom

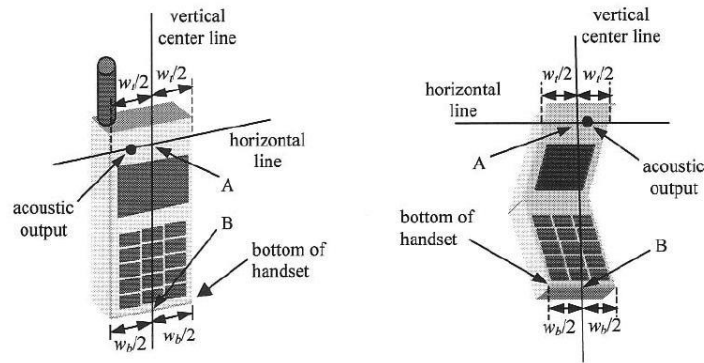


Figure 6-3. Handset vertical and horizontal reference lines

**8.3 Device Holder**

The device holder is made out of low-loss POM material having the following dielectric parameter; relative permittivity  $\epsilon=3$  and loss tangent  $\sigma=0.02$ .

**8.4 Position for cheek**

Figure 6.4. shows 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.

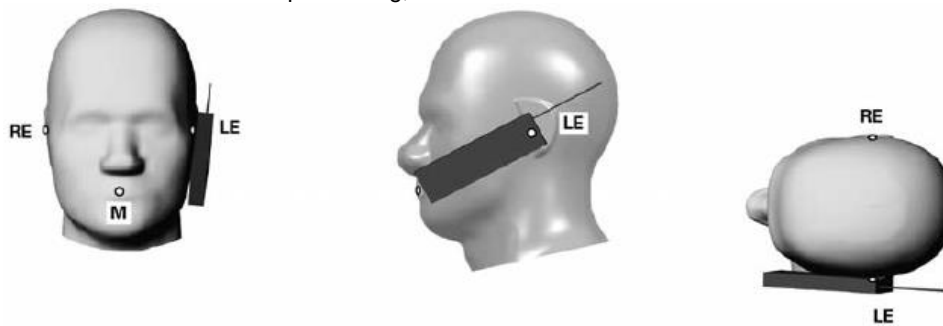


Figure 8.4 Cheek/ Touch position of the wireless device

### 8.5 Definition of the “tilted” position

Figure 6.5. shows tilted position. Place the device in the cheek position. Then while maintaining the orientation of the device, retract the device parallel to the reference plane far enough away from the phantom to enable a rotation of the device by 15°.

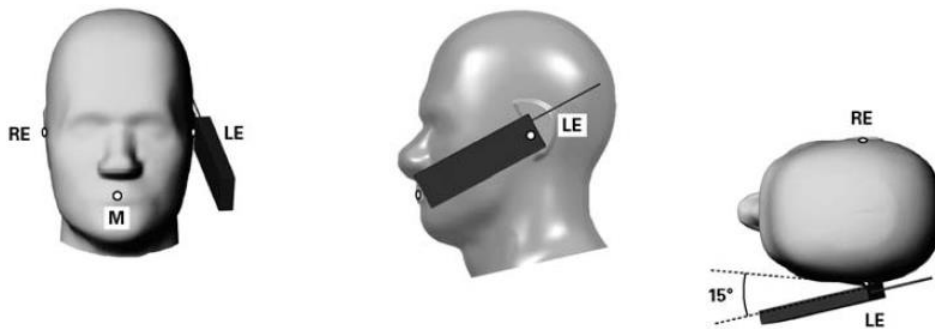


Figure 8.5. Tilt 15° position of the wireless device

### 8.6 Body-Worn Accessory Configurations

Body-worn operating configurations are tested with the belt-dips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 6-6). Per FCC KDB Publication 648474 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 Publication 447498 D01v06 should be used to test for Body-worn accessory SAR compliance, without a headset connected to it. When the reported SAR for a 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 headset attached to the handset.

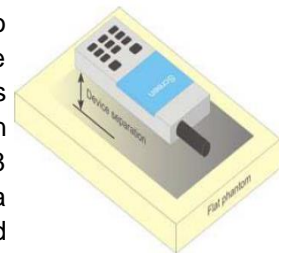


Figure 8-6  
Sample Body-Worn Diagram

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. 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 tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-dip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

## 8.7 Wireless Router Configurations

Some battery-operated handsets have the capability to transmit and receive user data through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06v02r01 where SAR test considerations for handsets (L x W ≥ 9cm x 5 cm) are based on a composite test separation distance of 10 mm from the front back and edges of the device containing transmitting antennas within 2.5 cm of their edges, determined from general mix used 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.

## 8.8 Extremity Exposure Configurations

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions: i.e., hands, wrists, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user's body, SAR compliance for the body is also required. The 1-g body and 10-g extremity SAR Exclusion Thresholds found in KDB Publication 447498 D01v06 should be applied to determine SAR test requirements.

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear. the phablets procedures outlined in KDB Publication 648474 D04 v01r03 should be applied to evaluate SAR compliance. A device marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance. In addition to the normally required head and body-worn accessory SAR test procedures required for handsets, the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna ≤ 25 mm from that surface or edge, in direct contact with the phantom, for 10-g SAR. The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g SAR is required only for the surfaces and edges with hotspot mode scaled to the maximum output power (including tolerance) is 1-g SAR > 1.2 W/kg.

### 8.9 Additional Test Positions due to Proximity Conditions

This device uses a grip sensor to reduce output powers in extremity (hand-held) use conditions.

When the sensor detects a user is touching the device on or near to the antenna the device reduces the maximum allowed output power. However, the proximity sensor is not active when the device is moved beyond the sensor triggering distance and the maximum output power is no longer limited. Therefore, an additional exposure condition is needed in the vicinity of the triggering distance to ensure SAR is compliant when the device is allowed to operate at a non-reduced output power level.

FCC KDB 616217 D04 v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device at these additional exposure conditions. The smallest separation distance determined by the sensor triggering and sensor coverage for each applicable edge, minus 1 mm, was used as the test separation distance for SAR testing. Sensor triggering distance summary data is included in below table.

Wireless technologies	Position	§6.2 Triggering Distance (mm)	§6.3 Coverage	§6.4 Tilt Angle	Worst case distance for Phablet SAR (mm)
Main 2,3(GSM 850/1900, UMTS B2/B4, LTE B2/B4/B66, NR n41/n66)	Rear	13	N/A	N/A	12
	Bottom	12	N/A	N/A	11
WiFi(802.11b,g,n,a,ac)	Rear	11	N/A	N/A	10
	Top	6	N/A	N/A	5

### 8.10 Bluetooth tethering Configurations

Per May 2017 TCBC Workshop documents, when Bluetooth tethering applies, simultaneous transmission SAR needs consideration.

This model allows users to exchange data or media files with other Bluetooth enabled devices using Bluetooth, which means they can connect to other Bluetooth enabled devices via Bluetooth tethering.

Therefore, SAR test was performed for additional simultaneous transmissions.

Head and Bluetooth tethering SAR were evaluated for BT BR tethering applications.

## 9. RF Exposure Limits

HUMAN EXPOSURE	UNCONTROLLED ENVIRONMENT General Population (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT Occupational (W/kg) or (mW/g)
SPATIAL PEAK SAR * (Partial Body)	1.6	8.0
SPATIAL AVERAGE SAR ** (Whole Body)	0.08	0.4
SPATIAL PEAK SAR *** (Hands / Feet / Ankle / Wrist)	4.0	20.0

**NOTES:**

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

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

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

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

**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. This 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.

## 10. FCC SAR General Measurement Procedures

Power Measurements for licensed transmitters are performed using a base simulator under digital average power.

### 10.1 Measured and Reported SAR

Per FCC KDB Publication 447498 D01v06, when SAR is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance. For simultaneous transmission, the measured aggregate SAR must be scaled according to the sum of the differences between the maximum tune-up tolerance and actual power used to test each transmitter. When SAR is measured at or scaled to the maximum tune-up tolerance limit, the results are referred to as Reported SAR. The highest reported SAR results are identified on the grant of equipment authorization according to procedures in KDB 690783 D01v01r03.

### 10.2 3G SAR Test Reduction Procedure

#### 10.2.1 GSM, GPRS AND EDGE

The following procedures may be considered for each frequency Band to determine SAR test reduction for devices operating in GSM/GPRS/EDGE modes to demonstrate RF exposure compliance. GSM voice mode transmits with 1 time-slot. GPRS and EDGE may transmit up to 4 time slots in the 8 time-slots frame according to the multi-slot class implemented in a device.

#### 10.2.2 SAR Test Reduction

In FCC KDB 941225 D01v03r01, certain transmission modes within a frequency Band and wireless mode evaluated for SAR are defined as primary modes. The equivalent modes considered for SAR test reduction are denoted as secondary modes. When the maximum output power including tune up tolerance specified for production units in a secondary mode is  $\leq 0.25$  dB higher than the primary mode or when the highest reported SAR of the primary mode, scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode, is  $\leq 1.2$  W/kg, SAR measurements are not required for the secondary mode. These criteria are referred to as the 3G SAR test reduction procedure. When the 3G SAR test reduction procedure is not satisfied, SAR measurements are additionally required for the secondary mode.

SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested

#### 10.2.3 Procedures Used to Establish RF Signal for SAR

The following procedures are according to FCC KDB 941225 D01v03r01-3G SAR Measurement Procedures. The handset was placed into a simulated call using a base station simulator in a shielded chamber. Such test signals offer a consistent means for testing SAR and are recommended for evaluation SAR measurements were taken with a fully charged battery. In order to verify that the device was tested and maintained at full power, this was configured with the base station simulator. The SAR measurement Software calculates a reference point at the start and end of the test to Check for power drifts. If conducted Power deviations of more than 5 % occurred, the tests were repeated.



### 10.3 SAR Measurement Conditions for UMTS

#### 10.3.1 Output Power Verification

Maximum output power is verified on the High, Middle and Low channels according to the general descriptions in sec. 5.2 of 3GPP TS 34.121, using the appropriate RMC with TPC (transmit power control) set to all “1s” or applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HS-DPCCH etc) are tabulated in this test report. All configurations that are not supported by the DUT or cannot be measured due to technical or equipment limitations are identified.

#### 10.3.2 Body SAR measurements

SAR for body exposure configurations is measured using the 12.2kbps RMC with the TPC bits all “1s”. the 3G SAR test reduction procedure is applied to other spreading codes and multiple DPDCHn configurations supported by the handset with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using and applicable RMC configuration with the corresponding spreading code or DPDCHn, for the highest reported SAR configuration in 12.2kbps RMC.

#### 10.3.3 SAR Measurements with Rel. 5 HSDPA

The 3G SAR test reduction procedure is applied to HSDPA body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSDPA is measured using and FRC with H-SET 1 in Sub-test and a 12.2 kbps RMC without HSDPA. Handsets with both HSDPA and HSUPA are tested according to release 6 HSPA test procedures. 8.4.5 SAR Measurement with Rel.6 HSUPA the 3G SAR test Reduction Procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSPA is measured with E-DCH Sub-test 5, Using H-Set 1 and QPSK for FRC and a 12.2kbps RMC configured in Test Loop Mode 1 and Power Control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA. When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing.

#### 10.3.4 SAR Measurements with Rel. 6 HSUPA

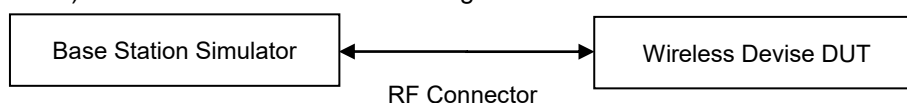
The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA.

#### 10.3.5 DC-HSDPA

SAR is required for Rel.8 DC-HSDPA when SAR is required for Rel.5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in table C.8.1.12 of 3GPP TS34.121-1 to determine SAR test reduction. Primary and secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

##### DC-HSDPA Configurations

- ◆ 3GPP specification TS 34.121-1 Release 8. was used for used for DC-HSDPA guidance.
- ◆ H-set 12(QPSK)was conformed to be used during DC-HSDPA measurements.



## 10.4 SAR Measurement Conditions for LTE

LTE modes are tested according to FCC KDB 941225 D05v02r05 publication. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluation SAR [4]. The R&S CMW500 or Anritsu MT8820C simulators are used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

### 10.4.1 Spectrum Plots for RB Configurations

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

### 10.4.2 MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36. 101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

### 10.4.3 A-MPR

A-MPR (Additional MPR) has been disabled for all SAR tests by setting NS=01 on the base station simulator.

### 10.4.4 Required RB Size and RB offsets for SAR testing

According to FCC KDB 941225 D05v02r05

- a. Per sec 4.2.1, SAR is required for QPSK 1 RB Allocation for the largest Bandwidth
  - i. The required channel and offset combination with the highest maximum output power is required for SAR.
  - ii. When the reported SAR is  $\leq 0.8$  W/Kg, testing of the remaining RB offset configurations and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
  - iii. When the reported SAR for a required test channel is  $> 1.45$  W/kg, SAR is required for all RB offset configurations for that channel.
- b. Per Sec 4.2.2, SAR is required for 50% RB allocation using the largest Bandwidth following the same procedures outlined in Sec 4.2.1.
- c. Per Sec. 4.2.3, QPSK SAR is not required for the 100% allocation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is  $< 0.8$  W/kg.
- d. Per Sec. 4.2.4 and 4.3, SAR test for higher order modulations and lower Bandwidths configurations are not required when the conducted power of the required test configurations determined by Sec. 4.2.1 through 4.2.3 is less than or equal to 1/2 dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is  $< 1.45$  W/Kg.

### 10.4.5 Downlink Carrier Aggregation

Conducted power measurements with LTE Carrier aggregation (CA) downlink only active are made in accordance to KDB publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier (SCC) on the downlink only. All uplink communications and acknowledgements remain identical to specifications when downlink carrier aggregation is inactive on the PCC. For every supported combination of downlink only carrier aggregation, additional conducted output Powers are measured with downlink carrier aggregation active for the configuration with highest measured maximum conducted power with the downlink carrier aggregation inactive measured among the channel Bandwidth, modulation and RB combinations in each frequency Band. Per FCC KDB Publication 941225 D05Av01r02, no SAR measurements are required for carrier aggregation configurations when the average output power with downlink only carrier aggregation active is not more than 0.25dB higher than the average output power with downlink only carrier aggregation inactive.

### 10.4.6 LTE(TDD) Considerations

According to KDB 941225 D05v02r05, for Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

SAR was tested with the highest transmission duty factor (63.33 %) using Uplink-downlink configuration 0 and Special subframe configuration 6. LTE TDD Band 41 supports 3GPP TS 36.211 section 4.2 for Type 2 Frame and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special sub frame configurations.

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

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

Calculated Duty Cycle – Extended cyclic prefix in uplink x (T<sub>s</sub>) x no of S + no of U

Table 4.2-2: Uplink-downlink configurations.

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

Example for calculated Duty Cycle for Uplink-Downlink Configuration 0:

$$\text{Calculated Duty Cycle} = (5120 \times (1/(15000 \times 2048))) \times 2 + 0.006 / 0.01\% = 63.33\%$$

Where

$$T_s = 1/(15000 \times 2048) \text{ seconds}$$

### 10.4.7 The Call Box Setup for LTE(TDD)

When you Want to Test for LTE TDD, Please Change Frame Structure TDD and TDD Uplink Downlink Configuration 0 and Special Subframe Configuration 6.

2018/01/08 11:00 Idle( Regist ) Phone-2 W-CDMA Phone-1 LTE  
 <Fundamental Measurement> Output Main Continuous

Reference Signal not found UE Power : -21.5 dBm

Power Measurement (Meas. Count : 11/ 20)  
 Avg. Max. Min. Limit  
 TX Power \*\*\*\*\* dBm 20.3 to 25.7 dBm  
 Channel Power \*\*\*\*\* dBm

Modulation Analysis View (Meas. Count : 1/ 1)

Common Parameter  
 Test Parameter TX1 - Max. Power(QPSK/1 RB)

Call Processing On Scenario Normal

Frequency  
 Frame Structure TDD  
 Channel Bandwidth FDD Hz  
 TDD 20 CH = 2593.000000 MHz  
 UL Channel & Frequency  
 DL Channel & Frequency 40620 CH = 2593.000000 MHz  
 Operation Band 41  
 Frequency Separation ( 0 )MHz

Level  
 Input Level 30.0 dBm

Parameter Common  
 Physical Channel  
 Call Processing  
 TX Measurement Setup  
 RX Measurement Setup  
 Fundamental Measurement

2018/01/08 11:01 Idle( Regist ) Phone-2 W-CDMA Phone-1 LTE  
 <Fundamental Measurement> Output Main Continuous

Reference Signal not found UE Power : -21.5 dBm

Power Measurement (Meas. Count : 11/ 20)  
 Avg. Max. Min. Limit  
 TX Power \*\*\*\*\* dBm 20.3 to 25.7 dBm  
 Channel Power \*\*\*\*\* dBm

Modulation Analysis View (Meas. Count : 1/ 1)

MCS Index (-) 5 (QPSK) ( 5 ) ( 2216 ) - -  
 MCS Index (5) 5 (QPSK) ( 5 ) ( 1864 ) 4 -  
 MCS Index (0) 5 (QPSK) ( 5 ) ( 2216 ) - 2  
 MCS Index (1,6) N/A (----) ( -- ) ( ---- ) - 2  
 CFI 3

TDD subframe 0 1 2 3 4 5 6 7 8 9  
 Uplink Downlink Configuration 0 : ( 5ms ) D S U U U D S U U U  
 Special Subframe Configuration 6

Physical Channel Parameter  
 PSS Power 0.0 dB  
 SSS Power 0.0 dB  
 PBCH Power 0.0 dB  
 PCFICH Power 0.0 dB  
 PHICH Power 0.0 dB

Parameter Common  
 Physical Channel  
 Call Processing  
 TX Measurement Setup  
 RX Measurement Setup  
 Fundamental Measurement

## 10.5 SAR Testing with 802.11 Transmitters

The normal network operating configurations of 802.11 transmitters are not suitable for SAR measurements. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipsetbased test mode software to ensure the results are consistent and reliable. See KDB Publication 248227 D01v02r02 for more details.

### 10.5.1 General Device Setup

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters.

A periodic duty factor is required for current generation SAR system to measure SAR. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92-96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. The reported SAR is scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

### 10.5.2 U-NII-1 and U-NII-2A

For devices that operate in both U-NII-1 and U-NII2A Bands, when the same maximum output power is specified for both Bands, SAR measurement using OFDM SAR test procedures is not required for U-NII-1 unless the highest reported SAR for U-NII-2A is  $> 1.2$  W/kg for 1g SAR or  $> 3.0$  W/kg for 10g SAR. When different maximum output powers are specified for the Bands, SAR measurement for the U-NII Band with the lower maximum output power is not required unless the highest reported SAR for the U-NII Band with the higher maximum output power, adjusted by the ratio of lower to higher specified maximum output power for the two Bands, is  $> 1.2$  W/kg for 1g SAR or  $> 3.0$  W/kg for 10g SAR.

### 10.5.3 U-NII-2C and U-NII-3

The frequency range covered by U-NII-2C and U-NII-3 is 380 MHz (5.47 GHz – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. When Terminal Doppler Weather Radar (TDWR) restriction applies, the channels at 5.60 GHz – 5.65 GHz in U-NII-2C Band must be disabled with acceptable mechanisms and documented in the equipment certification.

Unless Band gap channels are permanently disabled, SAR must be considered for these channels.

### 10.5.4 Initial Test Position Procedure

For exposure conditions with multiple test positions, such as handset operating next to the ear, devices with hotspot mode or UMPC mini-tablet, procedures for initial test position can be applied. Using the transmission mode determined by the DSSS procedure or initial test configuration, area scans are measured for all positions in an exposure condition. The test position with the highest extrapolated (peak) SAR is used as the initial test position. When reported SAR for the initial test position is  $\leq 0.4$  W/kg for 1g SAR and  $\leq 1.0$  W/kg for 10g SAR, no additional testing for the remaining test position is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is  $\leq 0.8$  W/kg for 1g SAR and  $\leq 2.0$  W/kg for 10g SAR or all test positions are measured.



#### 10.5.5 2.4 GHz SAR test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either the fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

- 1) When the reported SAR of the highest measured maximum output power channel for the exposure configuration is  $\leq 0.8$  W/kg, no further SAR testing is required for 802.11b DSSS is that exposure configuration.
- 2) When the reported SAR is  $> 0.8$  W/kg, SAR is required for that position using the next highest measured output power channel. When any reported SAR is  $> 1.2$  W/kg, SAR is required for the third channel; i.e., all channels require testing.

2.4 GHz 802.11 g/n OFDM are additionally evaluated for SAR if the highest reported SAR for 802.11b, adjusted by the ratio of the OFDM to DSSS specified maximum output power, is  $> 1.2$  W/kg. When SAR is required for OFDM modes in 2.4 GHz Band, the Initial Test Configuration Procedures should be followed.

#### 10.5.6 OFDM Transmission Mode and SAR Test Channel Selection

For the 2.4 GHz and 5 GHz Bands, when the same maximum output power was specified for multiple OFDM transmission mode configurations in a frequency Band or aggregated Band, SAR is measured using the configuration with the largest channel Bandwidth, lowest order modulation and lowest data rate and lowest order 802.11 a/g/n/ac mode. When the maximum output power of a channel is the same for equivalent OFDM configurations; for example, 802.11a, 802.11n and 802.11 ac or 802.11g and 802.11n with the same channel Bandwidth, modulation and data rate etc., the lower order 802.11 mode i.e., 802.11a, then 802.11n and 802.11ac or 802.11g then 802.11n, is used for SAR measurement. When the maximum output power is the same for multiple test channels, either according to the default or additional power measurement requirements, SAR is measured using the channel closest to the middle of the frequency Band or aggregated Band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

#### 10.5.7 Initial Test Configuration Procedure

For OFDM, in both 2.4 GHz and 5 GHz Bands, an initial test configuration is determined for each frequency Band and aggregated Band, according to the transmission mode with the highest maximum output power specified for SAR measurements. When the same maximum output power is specified for multiple OFDM transmission mode configurations in a frequency Band or aggregated Band, SAR is measured using the configuration(s) with the largest channel Bandwidth, lowest order modulation, and lowest data rate. If the average RF output powers of the highest identical transmission modes are within 0.25 dB of each other, mid channel of the transmission mode with highest average RF output power is the initial test channel. Otherwise, the channel of the transmission mode with the highest average RF output conducted power will be the initial test configuration.

When the reported SAR is  $\leq 0.8$  W/kg, no additional measurements on other test channels are required. Otherwise, SAR is evaluated using the subsequent highest average RF output channel until the reported SAR result is 1.2 W/kg or all channels are measured. When there are multiple untested channels having the same subsequent highest average RF output power, the channel with higher frequency from the lowest 802.11 mode is considered for SAR measurements.

#### 10.5.8 Subsequent Test Configuration Procedures

For OFDM configurations in each frequency Band and aggregated Band, SAR is evaluated for initial test configuration using the fixed test position or the initial test position on procedure. When the highest reported SAR (for the initial test configuration), adjusted by the ratio of the specified maximum output power of the subsequent test configuration to initial test configuration, is  $\leq 1.2$  W/kg for 1g SAR and  $\leq 3.0$  W/kg for 10g SAR, no additional SAR tests for the subsequent test configurations are required.

## 11. Output Power Specifications

This device operates using the following maximum output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB publication 447498 D01v06.

### Licensed Bands

Test Description	Test Procedure Used
Conducted Output Power	- KDB 971168 D01 v03r01 - Section 5.2.4 - ANSI C63.26-2015 - Section 5.2.1 & 5.2.4.2

### Test Overview

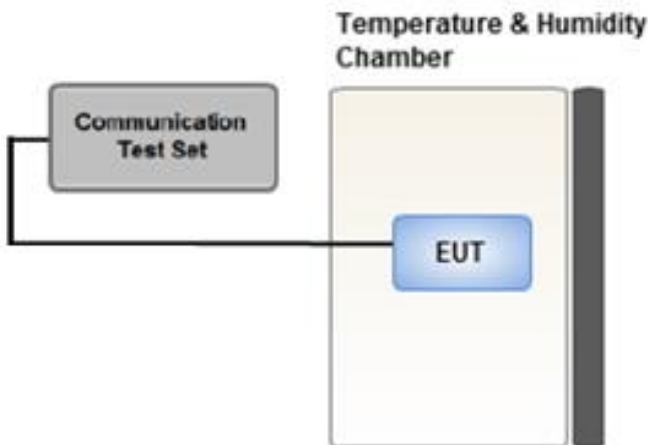
According to ANSI C63.26-2015 Section 5.2.1 when measuring the maximum RF output power from such devices, control over the EUT must be provided either through special test software (provided by manufacturer specifically for compliance testing, but not accessible by an end user) or through use of a base station emulator, communications test set, call box, or similar instrumentation that is capable of establishing a communications link with the EUT to enable control over variable parameters (e.g., output power, OBW, etc.).

In some cases, these instruments also include basic digital spectrum analyzer and/or power meter capabilities that can be utilized to measure the RF output power if the specified detectors and requirements can be realized and the measurement functions have been calibrated.

### Test Procedure

1. The RF port of the EUT was connected to the Communication Tester via an RF cable.
2. Conducted average power was measured using a calibrated Radio Communication Tester.

### Test setup



## 11.1 GSM

### 11.1.1 GSM Maximum Conducted Output Power

(Pmax, RSI=0,1)

Mode / Band	Voice	GPRS(GMSK) Data – CS1(dBm)				EDGE Data (dBm)			
	GSM	GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot	EDGE 1 TX Slot	EDGE 2 TX Slot	EDGE 3 TX Slot	EDGE 4 TX Slot
Maximum	<b>34.50</b>	<b>34.50</b>	<b>31.50</b>	<b>31.00</b>	<b>29.00</b>	<b>28.00</b>	<b>26.00</b>	<b>24.80</b>	<b>23.60</b>
Nominal	<b>33.50</b>	<b>33.50</b>	<b>30.50</b>	<b>30.00</b>	<b>28.00</b>	<b>27.00</b>	<b>25.00</b>	<b>23.80</b>	<b>22.60</b>
GSM 850	128	33.32	33.36	31.05	29.88	28.30	26.11	24.41	23.04
	190	33.30	33.34	31.11	29.97	28.40	26.62	24.85	23.22
	251	33.42	33.45	31.47	30.11	28.76	26.93	24.97	23.38
Maximum	<b>31.50</b>	<b>31.50</b>	<b>29.00</b>	<b>28.30</b>	<b>27.10</b>	<b>27.00</b>	<b>25.00</b>	<b>23.80</b>	<b>22.60</b>
Nominal	<b>30.50</b>	<b>30.50</b>	<b>28.00</b>	<b>27.30</b>	<b>26.10</b>	<b>26.00</b>	<b>24.00</b>	<b>22.80</b>	<b>21.60</b>
GSM 1900	512	30.76	30.87	28.82	27.33	25.87	25.86	23.99	22.70
	661	30.41	30.48	28.24	26.76	25.43	25.45	23.61	22.08
	810	30.58	30.63	28.35	26.90	25.51	25.76	23.84	22.34

GSM Conducted output powers (Burst-Average)

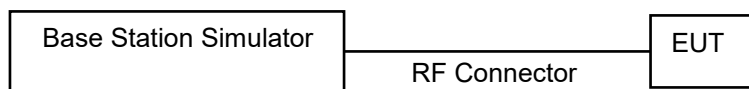
Mode / Band	Voice	GPRS(GMSK) Data – CS1(dBm)				EDGE Data (dBm)			
	GSM	GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot	EDGE 1 TX Slot	EDGE 2 TX Slot	EDGE 3 TX Slot	EDGE 4 TX Slot
Maximum	<b>25.47</b>	<b>25.47</b>	<b>25.48</b>	<b>26.74</b>	<b>25.99</b>	<b>18.97</b>	<b>19.98</b>	<b>20.54</b>	<b>20.59</b>
Nominal	<b>24.47</b>	<b>24.47</b>	<b>24.48</b>	<b>25.74</b>	<b>24.99</b>	<b>17.97</b>	<b>18.98</b>	<b>19.54</b>	<b>19.59</b>
GSM 850	128	24.29	24.33	25.03	25.62	25.29	17.08	18.39	18.78
	190	24.27	24.31	25.09	25.71	25.39	17.59	18.83	18.96
	251	24.39	24.42	25.45	25.85	25.75	17.90	18.95	19.12
Maximum	<b>22.47</b>	<b>22.47</b>	<b>22.98</b>	<b>24.04</b>	<b>24.09</b>	<b>17.97</b>	<b>18.98</b>	<b>19.54</b>	<b>19.59</b>
Nominal	<b>21.47</b>	<b>21.47</b>	<b>21.98</b>	<b>23.04</b>	<b>23.09</b>	<b>16.97</b>	<b>17.98</b>	<b>18.54</b>	<b>18.59</b>
GSM 1900	512	21.73	21.84	22.80	23.07	22.86	16.83	17.97	18.44
	661	21.38	21.45	22.22	22.50	22.42	16.42	17.59	17.82
	810	21.55	21.60	22.33	22.64	22.50	16.73	17.82	18.08

GSM Conducted output powers (Frame-Average)

**Note:**

Time slot average factor is as follows:

- 1 Tx slot = 9.03 dB, Frame-Average output power = Burst-Average output power – 9.03 dB
- 2 Tx slot = 6.02 dB, Frame-Average output power = Burst-Average output power – 6.02 dB
- 3 Tx slot = 4.26 dB, Frame-Average output power = Burst-Average output power – 4.26 dB
- 4 Tx slot = 3.01 dB, Frame-Average output power = Burst-Average output power – 3.01 dB





**11.1.2 GSM Reduced Conducted Output Power (Earjack, Grip Sensor On, Hotspot On)**  
(RSI=2,3,4)

Mode / Band		Voice	GPRS(GMSK) Data – CS1(dBm)				EDGE Data (dBm)			
		GSM	GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot	EDGE 1 TX Slot	EDGE 2 TX Slot	EDGE 3 TX Slot	EDGE 4 TX Slot
Maximum		<b>31.50</b>	<b>31.50</b>	<b>29.00</b>	<b>27.00</b>	<b>26.50</b>	<b>25.00</b>	<b>23.00</b>	<b>21.80</b>	<b>20.60</b>
Nominal		<b>30.50</b>	<b>30.50</b>	<b>28.00</b>	<b>26.00</b>	<b>25.50</b>	<b>24.00</b>	<b>22.00</b>	<b>20.80</b>	<b>19.60</b>
GSM 850	128	30.41	30.37	28.32	26.85	25.98	23.50	21.43	20.29	18.90
	190	30.60	30.52	28.96	26.97	26.11	23.80	21.77	20.38	19.28
	251	30.65	30.69	28.81	26.96	26.30	23.93	22.03	20.70	19.13
Maximum		<b>29.00</b>	<b>29.00</b>	<b>26.50</b>	<b>25.30</b>	<b>24.10</b>	<b>24.50</b>	<b>22.50</b>	<b>20.80</b>	<b>19.60</b>
Nominal		<b>28.00</b>	<b>28.00</b>	<b>25.50</b>	<b>24.30</b>	<b>23.10</b>	<b>23.50</b>	<b>21.50</b>	<b>19.80</b>	<b>18.60</b>
GSM 1900	512	27.75	27.72	25.88	24.20	22.66	23.03	21.14	19.95	18.47
	661	27.32	27.28	25.45	23.67	22.48	22.58	20.50	19.44	18.28
	810	27.31	27.27	25.47	24.19	23.06	23.00	21.18	19.97	18.57

GSM Conducted output powers (Burst-Average)

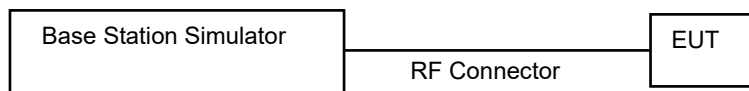
Mode / Band		Voice	GPRS(GMSK) Data – CS1(dBm)				EDGE Data (dBm)			
		GSM	GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot	EDGE 1 TX Slot	EDGE 2 TX Slot	EDGE 3 TX Slot	EDGE 4 TX Slot
Maximum		<b>22.47</b>	<b>22.47</b>	<b>22.98</b>	<b>22.74</b>	<b>23.49</b>	<b>15.97</b>	<b>16.98</b>	<b>17.54</b>	<b>17.59</b>
Nominal		<b>21.47</b>	<b>21.47</b>	<b>21.98</b>	<b>21.74</b>	<b>22.49</b>	<b>14.97</b>	<b>15.98</b>	<b>16.54</b>	<b>16.59</b>
GSM 850	128	21.38	21.34	22.30	22.59	22.97	14.47	15.41	16.03	15.89
	190	21.57	21.49	22.94	22.71	23.10	14.77	15.75	16.12	16.27
	251	21.62	21.66	22.79	22.70	23.29	14.90	16.01	16.44	16.12
Maximum		<b>19.97</b>	<b>19.97</b>	<b>20.48</b>	<b>21.04</b>	<b>21.09</b>	<b>15.47</b>	<b>16.48</b>	<b>16.54</b>	<b>16.59</b>
Nominal		<b>18.97</b>	<b>18.97</b>	<b>19.48</b>	<b>20.04</b>	<b>20.09</b>	<b>14.47</b>	<b>15.48</b>	<b>15.54</b>	<b>15.59</b>
GSM 1900	512	18.72	18.69	19.86	19.94	19.65	14.00	15.12	15.69	15.46
	661	18.29	18.25	19.43	19.41	19.47	13.55	14.48	15.18	15.27
	810	18.28	18.24	19.45	19.93	20.05	13.97	15.16	15.71	15.56

GSM Conducted output powers (Frame-Average)

**Note:**

Time slot average factor is as follows:

- 1 Tx slot = 9.03 dB, Frame-Average output power = Burst-Average output power – 9.03 dB
- 2 Tx slot = 6.02 dB, Frame-Average output power = Burst-Average output power – 6.02 dB
- 3 Tx slot = 4.26 dB, Frame-Average output power = Burst-Average output power – 4.26 dB
- 4 Tx slot = 3.01 dB, Frame-Average output power = Burst-Average output power – 3.01 dB



## 11.2 UMTS

### HSPA+

This DUT is capable of HSPA+ in downlink. Therefore, the RF conducted power is not measured according to 941225 D01v03r01 3G SAR.

### 11.2.1 UMTS Maximum Conducted Output Power

#### UMTS Band 5 Maximum Conducted Output Power (Pmax, RSI=0,1)

3GPP Release Version	Mode	3GPP 34.121	UMTS Band 5 [dBm]			3GPP MPR
		Subtest	UL4132 DL4357	UL4183 DL4408	UL4233 DL4458	
99	UMTS	12.2 kbps RMC	23.35	23.55	23.59	-
99		12.2 kbps AMR	23.05	23.11	23.32	-
2	HSDPA	Subtest 1	22.61	22.78	22.81	0
5		Subtest 2	22.06	22.32	22.35	0
5		Subtest 3	21.55	21.76	21.78	0.5
5		Subtest 4	21.09	21.28	21.30	0.5
6	HSUPA	Subtest 1	21.54	21.72	21.77	0
6		Subtest 2	19.52	19.73	19.77	2
6		Subtest 3	20.54	20.73	20.79	1
6		Subtest 4	19.52	19.74	19.78	2
6		Subtest 5	22.59	22.79	22.81	0
8	DC-HSDPA	Subtest1	22.46	22.84	22.74	0
8		Subtest2	22.07	22.10	22.05	0
8		Subtest3	21.04	21.03	21.05	0.5
8		Subtest4	21.10	21.02	21.04	0.5

UMTS Average Conducted output powers

#### UMTS Band 4 Maximum Conducted Output Power (Pmax, RSI=0,1)

3GPP Release Version	Mode	3GPP 34.121	UMTS Band4 [dBm]			3GPP MPR
		Subtest	UL 1312 DL 1537	UL 1412 DL 1637	UL 1513 DL 1738	
99	UMTS	12.2 kbps RMC	23.01	23.68	23.72	-
99		12.2 kbps AMR	23.04	23.67	23.66	-
2	HSDPA	Subtest 1	21.46	22.11	22.24	0
5		Subtest 2	21.35	22.13	22.09	0
5		Subtest 3	20.45	21.17	21.20	0.5
5		Subtest 4	20.44	21.20	21.22	0.5
6	HSUPA	Subtest 1	21.39	22.13	21.69	0
6		Subtest 2	19.02	19.72	19.77	2
6		Subtest 3	19.64	20.20	20.26	1
6		Subtest 4	19.16	20.01	19.33	2
6		Subtest 5	23.06	23.09	23.04	0
8	DC-HSDPA	Subtest1	21.38	21.76	22.09	0
8		Subtest2	20.40	20.65	21.11	0
8		Subtest3	19.53	19.67	20.07	0.5
8		Subtest4	19.52	19.71	20.06	0.5

UMTS Average Conducted output powers

UMTS Band 2 Maximum Conducted Output Power (Pmax, RSI=0,1)

3GPP Release Version	Mode	3GPP 34.121	UMTS Band 2 [dBm]			3GPP MPR
		Subtest	UL9262 DL9662	UL9400 DL9800	UL9538 DL9938	
99	UMTS	12.2 kbps RMC	23.20	23.16	23.10	-
99		12.2 kbps AMR	23.30	23.25	23.18	-
2	HSDPA	Subtest 1	22.71	22.65	22.62	0
5		Subtest 2	22.28	22.16	22.14	0
5		Subtest 3	21.72	21.66	21.62	0.5
5		Subtest 4	21.23	21.14	21.09	0.5
6	HSUPA	Subtest 1	21.71	21.63	21.61	0
6		Subtest 2	19.25	19.18	19.14	2
6		Subtest 3	19.73	19.65	19.61	1
6		Subtest 4	19.74	19.64	19.60	2
6		Subtest 5	22.73	22.65	22.63	0
8	DC-HSDPA	Subtest 1	22.38	22.23	22.40	0
8		Subtest2	21.89	21.79	22.01	0
8		Subtest3	20.91	20.75	21.20	0.5
8		Subtest4	20.88	20.79	20.90	0.5

UMTS Average Conducted output powers

DC-HSDPA Configurations

- ◆ 3GPP specification TS 34.121-1 Release 8. was used for used for DC-HSDPA guidance.
- ◆ H-set 12(QPSK)was conformed to be used during DC-HSDPA measurements.



**11.2.2 UMTS Reduced Conducted Output Power (Earjack, Grip Sensor On, Hotspot On)**

UMTS Band 4 (RSI=2,3,4)

3GPP Release Version	Mode	3GPP 34.121	UMTS Band4 [dBm]			3GPP MPR
		Subtest	UL 1312 DL 1537	UL 1412 DL 1637	UL 1513 DL 1738	
99	UMTS	12.2 kbps RMC	20.02	20.73	20.78	-
99		12.2 kbps AMR	20.03	20.68	20.70	-
2	HSDPA	Subtest 1	19.93	20.71	20.74	0
5		Subtest 2	19.99	20.71	20.73	0
5		Subtest 3	20.05	20.72	20.74	0
5		Subtest 4	20.04	20.72	20.75	0
6	HSUPA	Subtest 1	18.95	19.77	19.82	0
6		Subtest 2	18.94	19.76	19.82	0
6		Subtest 3	18.93	19.78	19.78	0
6		Subtest 4	18.93	19.76	19.38	0
6		Subtest 5	19.96	20.69	20.71	0
8	DC-HSDPA	Subtest 1	18.84	19.45	19.50	0
8		Subtest2	18.88	19.41	19.52	0
8		Subtest3	18.86	19.44	19.52	0
8		Subtest4	18.88	19.42	19.48	0

UMTS Average Conducted output powers

UMTS Band 2 (RSI=2,3,4)

3GPP Release Version	Mode	3GPP 34.121	UMTS Band 2 [dBm]			3GPP MPR
		Subtest	UL9262 DL9662	UL9400 DL9800	UL9538 DL9938	
99	UMTS	12.2 kbps RMC	20.27	20.21	20.17	-
99		12.2 kbps AMR	20.02	20.05	20.09	-
2	HSDPA	Subtest 1	20.27	20.19	20.16	0
5		Subtest 2	20.28	20.29	20.19	0
5		Subtest 3	20.30	20.22	20.23	0
5		Subtest 4	20.27	20.21	20.22	0
6	HSUPA	Subtest 1	19.32	19.25	19.20	0
6		Subtest 2	19.30	19.22	19.22	0
6		Subtest 3	19.31	19.21	19.21	0
6		Subtest 4	19.27	19.20	19.19	0
6		Subtest 5	20.24	20.17	20.10	0
8	DC-HSDPA	Subtest 1	19.28	18.96	19.16	0
8		Subtest2	19.31	18.97	19.18	0
8		Subtest3	19.30	18.97	19.14	0
8		Subtest4	19.34	18.95	19.19	0

UMTS Average Conducted output powers

DC-HSDPA Configurations

- ◆ 3GPP specification TS 34.121-1 Release 8. was used for used for DC-HSDPA guidance.
- ◆ H-set 12(QPSK)was conformed to be used during DC-HSDPA measurements.



### 11.3 LTE Maximum Output Power

LTE B2/B13/B41 does not support three non-overlapping channels at each supported max bandwidth. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the mid channel of the group of overlapping channels should be selected for testing.

#### 11.3.1 LTE Maximum Conducted Power

##### [ LTE Band 2 Conducted Power] (RSI=0,1,2,3,4) Ant. Main #2

LTE Band 2 \_ 1.4 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18607 Ch. 1850.7 MHz	18900 Ch. 1880 MHz	19193 Ch. 1909.3 MHz		
1.4 MHz	QPSK	1	0	19.73	19.65	19.84	0	0
		1	3	19.68	19.59	19.77	0	0
		1	5	19.76	19.67	19.79	0	0
		3	0	19.73	19.68	19.79	0	0
		3	1	19.76	19.74	19.76	0	0
		3	3	19.68	19.61	19.75	0	0
		6	0	19.78	19.71	19.87	0-1	0
	16QAM	1	0	20.01	19.96	20.05	0-1	0
		1	3	20.03	19.93	20.13	0-1	0
		1	5	20.05	19.89	20.08	0-1	0
		3	0	19.89	19.75	19.95	0-1	0
		3	1	19.96	19.81	20.02	0-1	0
		3	3	19.88	19.74	20.00	0-1	0
	64QAM	6	0	19.85	19.74	19.97	0-2	0
		1	0	19.90	19.90	20.04	0-2	0
		1	3	19.73	19.75	19.95	0-2	0
		1	5	19.92	19.94	20.03	0-2	0
		3	0	19.84	19.74	19.93	0-2	0
		3	1	19.73	19.86	20.00	0-2	0
	256QAM	3	3	19.76	19.79	19.93	0-2	0
		6	0	19.80	19.75	19.88	0-3	0
		1	0	18.46	18.35	18.54	0-5	2
		1	3	18.36	18.23	18.39	0-5	2
		1	5	18.42	18.32	18.51	0-5	2
		3	0	18.32	18.25	18.43	0-5	2
		3	1	18.32	18.27	18.46	0-5	2
	3	3	18.41	18.26	18.40	0-5	2	
		6	0	18.29	18.21	18.42	0-5	2

LTE Band 2\_ 3 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18615 Ch. 1851.5 MHz	18900 Ch. 1880 MHz	19185 Ch. 1908.5 MHz		
3 MHz	QPSK	1	0	19.79	19.67	19.88	0	0
		1	7	19.78	19.67	19.83	0	0
		1	14	19.77	19.65	19.80	0	0
		8	0	19.78	19.71	19.88	0-1	0
		8	3	19.84	19.74	19.95	0-1	0
		8	7	19.86	19.74	19.89	0-1	0
	16QAM	15	0	19.83	19.75	19.94	0-1	0
		1	0	19.92	19.95	19.96	0-1	0
		1	7	19.90	19.87	20.13	0-1	0
		1	14	20.11	20.00	20.01	0-1	0
		8	0	19.91	19.76	19.96	0-2	0
		8	3	19.90	19.79	20.01	0-2	0
	64QAM	8	7	19.87	19.78	19.94	0-2	0
		15	0	19.84	19.78	20.00	0-2	0
		1	0	19.99	19.89	20.15	0-2	0
		1	7	19.99	19.86	20.03	0-2	0
		1	14	19.94	19.85	20.08	0-2	0
		8	0	19.83	19.74	19.95	0-3	0
	256QAM	8	3	19.84	19.77	19.91	0-3	0
		8	7	19.90	19.78	19.91	0-3	0
		15	0	19.88	19.80	19.97	0-3	0
		1	0	18.37	18.31	18.54	0-5	2
		1	7	18.36	18.35	18.47	0-5	2
		1	14	18.41	18.38	18.49	0-5	2
	8	0	18.35	18.25	18.43	0-5	2	
	8	3	18.36	18.31	18.47	0-5	2	
	8	7	18.40	18.31	18.48	0-5	2	
	15	0	18.35	18.23	18.41	0-5	2	

LTE Band 2 \_ 5 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18625 Ch. 1852.5 MHz	18900 Ch. 1880 MHz	19175 Ch. 1907.5 MHz		
5 MHz	QPSK	1	0	19.77	19.68	19.85	0	0
		1	12	19.83	19.67	19.89	0	0
		1	24	19.83	19.71	19.89	0	0
		12	0	19.85	19.74	19.93	0-1	0
		12	6	19.85	19.74	19.89	0-1	0
		12	11	19.83	19.73	19.94	0-1	0
		25	0	19.81	19.70	19.94	0-1	0
	16QAM	1	0	19.98	19.95	20.11	0-1	0
		1	12	20.01	19.87	20.02	0-1	0
		1	24	19.99	20.06	20.05	0-1	0
		12	0	19.88	19.79	19.98	0-2	0
		12	6	19.88	19.79	19.97	0-2	0
		12	11	19.94	19.81	20.01	0-2	0
		25	0	19.87	19.75	19.93	0-2	0
	64QAM	1	0	20.04	19.94	20.15	0-2	0
		1	12	19.92	19.80	20.15	0-2	0
		1	24	20.00	19.89	20.12	0-2	0
		12	0	19.96	19.78	19.94	0-3	0
		12	6	19.90	19.75	19.92	0-3	0
		12	11	19.94	19.79	19.99	0-3	0
		25	0	19.81	19.73	19.86	0-3	0
	256QAM	1	0	18.53	18.37	18.44	0-5	2
		1	12	18.51	18.13	18.47	0-5	2
		1	24	18.43	18.39	18.53	0-5	2
		12	0	18.37	18.24	18.47	0-5	2
		12	6	18.37	18.21	18.43	0-5	2
		12	11	18.45	18.26	18.45	0-5	2
		25	0	18.38	18.20	18.41	0-5	2

LTE Band 2 \_ 10 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]	
				18650 Ch. 1855 MHz	18900 Ch. 1880 MHz	19150 Ch. 1905 MHz			
10 MHz	QPSK	1	0	19.88	19.70	19.84	0	0	
		1	24	19.79	19.65	19.87	0	0	
		1	49	19.85	19.71	19.89	0	0	
		25	0	19.86	19.69	19.91	0-1	0	
		25	12	19.88	19.71	19.93	0-1	0	
		25	24	19.91	19.75	19.92	0-1	0	
	16QAM	50	0	19.88	19.74	19.93	0-1	0	
		1	0	20.15	19.92	20.01	0-1	0	
		1	24	20.12	19.92	19.91	0-1	0	
		1	49	20.33	19.93	20.13	0-1	0	
		25	0	19.94	19.73	19.90	0-2	0	
		25	12	19.93	19.75	19.97	0-2	0	
	64QAM	25	24	19.92	19.74	19.92	0-2	0	
		50	0	19.94	19.75	19.97	0-2	0	
		1	0	20.16	19.90	20.02	0-2	0	
		1	24	19.98	19.95	20.06	0-2	0	
		1	49	20.13	19.79	19.97	0-2	0	
		25	0	19.96	19.73	19.93	0-3	0	
	256QAM	25	12	19.89	19.73	19.94	0-3	0	
		25	24	19.92	19.76	19.96	0-3	0	
		50	0	19.90	19.75	19.94	0-3	0	
		1	0	18.57	18.35	18.48	0-5	2	
		1	24	18.57	18.31	18.58	0-5	2	
		1	49	18.58	18.42	18.55	0-5	2	
		25	0	18.43	18.24	18.42	0-5	2	
		25	12	18.44	18.24	18.42	0-5	2	
	25	24	18.43	18.26	18.45	0-5	2		
			50	0	18.38	18.22	18.42	0-5	2



LTE Band 2 \_ 15 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18675 Ch. 1857.5 MHz	18900 Ch. 1880 MHz	19125 Ch. 1902.5 MHz		
15 MHz	QPSK	1	0	19.96	19.64	19.72	0	0
		1	36	19.99	19.70	19.84	0	0
		1	74	19.97	19.73	19.83	0	0
		36	0	20.00	19.67	19.80	0-1	0
		36	18	19.98	19.76	19.88	0-1	0
		36	39	20.03	19.73	19.83	0-1	0
		75	0	19.98	19.71	19.85	0-1	0
	16QAM	1	0	20.14	19.86	19.96	0-1	0
		1	36	20.23	19.91	19.89	0-1	0
		1	74	20.20	20.01	20.05	0-1	0
		36	0	20.04	19.74	19.86	0-2	0
		36	18	20.05	19.73	19.90	0-2	0
		36	39	20.05	19.78	19.88	0-2	0
		75	0	19.99	19.75	19.79	0-2	0
	64QAM	1	0	20.12	19.96	19.83	0-2	0
		1	36	20.14	19.82	19.89	0-2	0
		1	74	20.21	20.01	19.98	0-2	0
		36	0	20.07	19.75	19.82	0-3	0
		36	18	20.10	19.80	19.87	0-3	0
		36	39	20.07	19.77	19.90	0-3	0
		75	0	20.01	19.73	19.82	0-3	0
	256QAM	1	0	18.60	18.27	18.37	0-5	2
		1	36	18.66	18.32	18.49	0-5	2
		1	74	18.61	18.38	18.47	0-5	2
		36	0	18.59	18.25	18.37	0-5	2
		36	18	18.55	18.26	18.41	0-5	2
		36	39	18.54	18.29	18.42	0-5	2
		75	0	18.54	18.21	18.33	0-5	2

LTE Band 2 \_ 20 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18700 Ch. 1860 MHz	18900 Ch. 1880 MHz	19100 Ch. 1900 MHz		
20 MHz	QPSK	1	0	19.96	19.61	19.54	0	0
		1	49	<b>20.00</b>	19.71	19.65	0	0
		1	99	19.89	19.66	19.66	0	0
		50	0	19.99	19.70	19.65	0-1	0
		50	25	<b>20.01</b>	19.73	19.76	0-1	0
		50	49	20.00	19.76	19.75	0-1	0
	16QAM	100	0	20.00	19.67	19.69	0-1	0
		1	0	20.17	19.88	19.85	0-1	0
		1	49	20.21	19.73	19.68	0-1	0
		1	99	20.13	19.86	19.79	0-1	0
		50	0	20.01	19.68	19.67	0-2	0
		50	25	20.04	19.78	19.76	0-2	0
	64QAM	50	49	20.03	19.75	19.77	0-2	0
		100	0	20.01	19.74	19.72	0-2	0
		1	0	20.21	19.86	19.84	0-2	0
		1	49	20.27	19.92	19.84	0-2	0
		1	99	20.10	19.96	19.94	0-2	0
		50	0	19.98	19.72	19.68	0-3	0
	256QAM	50	25	20.04	19.74	19.75	0-3	0
		50	49	20.04	19.76	19.75	0-3	0
		100	0	20.02	19.72	19.72	0-3	0
		1	0	18.65	18.24	18.15	0-5	2
		1	49	18.59	18.27	18.34	0-5	2
		1	99	18.58	18.37	18.34	0-5	2
		50	0	18.55	18.17	18.13	0-5	2
		50	25	18.56	18.24	18.25	0-5	2
		50	49	18.53	18.26	18.25	0-5	2
		100	0	18.53	18.21	18.23	0-5	2

**[ LTE Band 2 Conducted Power ] – (RSI=0,1,2,3,4) Ant. Main #3**

LTE Band 2 \_ 1.4 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18607 Ch. 1850.7 MHz	18900 Ch. 1880 MHz	19193 Ch. 1909.3 MHz		
1.4 MHz	QPSK	1	0	20.36	20.68	20.39	0	0
		1	3	20.75	20.75	20.73	0	0
		1	5	20.66	20.64	20.70	0	0
		3	0	20.84	20.73	20.71	0	0
		3	1	20.81	20.80	20.93	0	0
		3	3	20.89	20.79	20.92	0	0
		6	0	20.84	20.75	20.79	0-1	0
	16QAM	1	0	20.69	20.67	20.74	0-1	0
		1	3	20.62	20.54	20.59	0-1	0
		1	5	20.51	20.49	20.55	0-1	0
		3	0	20.76	20.69	20.68	0-1	0
		3	1	20.63	20.55	20.61	0-1	0
		3	3	20.61	20.46	20.49	0-1	0
		6	0	20.55	20.49	20.61	0-2	0
	64QAM	1	0	20.59	20.65	20.71	0-2	0
		1	3	20.67	20.69	20.72	0-2	0
		1	5	20.58	20.56	20.52	0-2	0
		3	0	20.60	20.63	20.66	0-2	0
		3	1	20.69	20.64	20.66	0-2	0
		3	3	20.64	20.58	20.61	0-2	0
		6	0	20.72	20.61	20.70	0-3	0
	256QAM	1	0	19.30	19.21	19.29	0-5	2
		1	3	19.01	18.94	19.01	0-5	2
		1	5	19.00	19.06	19.00	0-5	2
		3	0	19.16	18.99	19.09	0-5	2
		3	1	19.09	19.04	19.04	0-5	2
		3	3	19.03	19.01	19.01	0-5	2
		6	0	19.15	19.07	19.04	0-5	2

LTE Band 2\_ 3 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18615 Ch. 1851.5 MHz	18900 Ch. 1880 MHz	19185 Ch. 1908.5 MHz		
3 MHz	QPSK	1	0	20.42	20.71	20.37	0	0
		1	7	20.75	20.71	20.70	0	0
		1	14	20.62	20.61	20.67	0	0
		8	0	20.85	20.77	20.70	0-1	0
		8	3	20.86	20.81	20.90	0-1	0
		8	7	20.92	20.84	20.88	0-1	0
	15	0	20.80	20.73	20.74	0-1	0	
	16QAM	1	0	20.76	20.68	20.71	0-1	0
		1	7	20.59	20.49	20.62	0-1	0
		1	14	20.55	20.48	20.49	0-1	0
		8	0	20.73	20.60	20.60	0-2	0
		8	3	20.64	20.56	20.60	0-2	0
		8	7	20.53	20.51	20.46	0-2	0
	15	0	20.61	20.50	20.62	0-2	0	
	64QAM	1	0	20.64	20.62	20.72	0-2	0
		1	7	20.71	20.70	20.73	0-2	0
		1	14	20.66	20.57	20.60	0-2	0
		8	0	20.70	20.63	20.74	0-3	0
		8	3	20.61	20.58	20.73	0-3	0
		8	7	20.64	20.56	20.64	0-3	0
	15	0	20.68	20.64	20.68	0-3	0	
	256QAM	1	0	19.31	19.23	19.27	0-5	2
		1	7	18.96	18.93	18.98	0-5	2
		1	14	19.04	19.02	19.01	0-5	2
		8	0	19.11	18.99	19.12	0-5	2
		8	3	19.04	18.96	19.10	0-5	2
		8	7	18.99	19.00	19.03	0-5	2
		15	0	19.09	19.04	19.11	0-5	2

LTE Band 2 \_ 5 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18625 Ch. 1852.5 MHz	18900 Ch. 1880 MHz	19175 Ch. 1907.5 MHz		
5 MHz	QPSK	1	0	20.41	20.68	20.40	0	0
		1	12	20.71	20.74	20.72	0	0
		1	24	20.67	20.56	20.71	0	0
		12	0	20.85	20.72	20.78	0-1	0
		12	6	20.82	20.79	20.86	0-1	0
		12	11	20.84	20.82	20.95	0-1	0
		25	0	20.81	20.74	20.75	0-1	0
	16QAM	1	0	20.76	20.69	20.79	0-1	0
		1	12	20.60	20.47	20.56	0-1	0
		1	24	20.54	20.48	20.50	0-1	0
		12	0	20.76	20.66	20.67	0-2	0
		12	6	20.59	20.56	20.65	0-2	0
		12	11	20.54	20.45	20.47	0-2	0
		25	0	20.57	20.49	20.54	0-2	0
	64QAM	1	0	20.61	20.66	20.74	0-2	0
		1	12	20.69	20.67	20.71	0-2	0
		1	24	20.56	20.52	20.60	0-2	0
		12	0	20.65	20.63	20.73	0-3	0
		12	6	20.65	20.64	20.70	0-3	0
		12	11	20.64	20.56	20.68	0-3	0
		25	0	20.75	20.63	20.72	0-3	0
	256QAM	1	0	19.23	19.28	19.37	0-5	2
		1	12	19.00	18.91	19.00	0-5	2
		1	24	19.02	19.04	19.07	0-5	2
		12	0	19.08	19.00	19.11	0-5	2
		12	6	19.11	19.00	19.05	0-5	2
		12	11	19.03	19.02	19.05	0-5	2
25		0	19.07	19.01	19.04	0-5	2	

LTE Band 2 \_ 10 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18650 Ch. 1855 MHz	18900 Ch. 1880 MHz	19150 Ch. 1905 MHz		
10 MHz	QPSK	1	0	20.39	20.74	20.41	0	0
		1	24	20.71	20.68	20.77	0	0
		1	49	20.65	20.61	20.72	0	0
		25	0	20.80	20.71	20.74	0-1	0
		25	12	20.85	20.83	20.87	0-1	0
		25	24	20.91	20.81	20.90	0-1	0
	16QAM	50	0	20.78	20.75	20.76	0-1	0
		1	0	20.75	20.67	20.80	0-1	0
		1	24	20.59	20.47	20.55	0-1	0
		1	49	20.59	20.54	20.57	0-1	0
		25	0	20.70	20.61	20.68	0-2	0
		25	12	20.57	20.57	20.65	0-2	0
	64QAM	25	24	20.54	20.44	20.52	0-2	0
		50	0	20.54	20.52	20.58	0-2	0
		1	0	20.62	20.63	20.65	0-2	0
		1	24	20.71	20.67	20.76	0-2	0
		1	49	20.63	20.55	20.60	0-2	0
		25	0	20.66	20.67	20.71	0-3	0
	256QAM	25	12	20.63	20.63	20.74	0-3	0
		25	24	20.67	20.56	20.61	0-3	0
		50	0	20.69	20.57	20.75	0-3	0
		1	0	19.25	19.22	19.35	0-5	2
		1	24	18.95	18.94	18.97	0-5	2
		1	49	19.05	19.02	19.03	0-5	2
		25	0	19.09	19.05	19.09	0-5	2
		25	12	19.05	18.95	19.06	0-5	2
		25	24	19.01	19.02	19.00	0-5	2
		50	0	19.07	19.02	19.10	0-5	2

LTE Band 2 \_ 15 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18675 Ch. 1857.5 MHz	18900 Ch. 1880 MHz	19125 Ch. 1902.5 MHz		
15 MHz	QPSK	1	0	20.34	20.77	20.45	0	0
		1	36	20.78	20.69	20.76	0	0
		1	74	20.62	20.58	20.72	0	0
		36	0	20.85	20.69	20.75	0-1	0
		36	18	20.89	20.82	20.88	0-1	0
		36	39	20.85	20.80	20.91	0-1	0
		75	0	20.82	20.69	20.79	0-1	0
	16QAM	1	0	20.71	20.66	20.74	0-1	0
		1	36	20.57	20.52	20.60	0-1	0
		1	74	20.53	20.48	20.51	0-1	0
		36	0	20.74	20.60	20.64	0-2	0
		36	18	20.57	20.63	20.68	0-2	0
		36	39	20.60	20.52	20.55	0-2	0
		75	0	20.59	20.52	20.63	0-2	0
	64QAM	1	0	20.58	20.66	20.69	0-2	0
		1	36	20.69	20.66	20.74	0-2	0
		1	74	20.60	20.48	20.51	0-2	0
		36	0	20.64	20.63	20.71	0-3	0
		36	18	20.61	20.56	20.74	0-3	0
		36	39	20.65	20.56	20.64	0-3	0
		75	0	20.70	20.64	20.70	0-3	0
	256QAM	1	0	19.31	19.29	19.35	0-5	2
		1	36	18.97	18.96	18.99	0-5	2
		1	74	19.07	18.98	19.04	0-5	2
		36	0	19.10	19.02	19.11	0-5	2
		36	18	19.10	18.96	19.09	0-5	2
		36	39	19.04	19.01	19.03	0-5	2
		75	0	19.08	19.01	19.04	0-5	2

LTE Band 2 \_ 20 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18700 Ch. 1860 MHz	18900 Ch. 1880 MHz	19100 Ch. 1900 MHz		
20 MHz	QPSK	1	0	20.43	20.77	20.46	0	0
		1	49	20.77	<b>20.78</b>	20.76	0	0
		1	99	20.70	20.64	20.73	0	0
		50	0	20.86	20.78	20.79	0-1	0
		50	25	20.80	<b>20.88</b>	20.86	0-1	0
		50	49	20.82	20.87	20.86	0-1	0
	16QAM	100	0	20.87	20.77	20.84	0-1	0
		1	0	20.78	20.74	20.80	0-1	0
		1	49	20.66	20.56	20.63	0-1	0
		1	99	20.61	20.57	20.58	0-1	0
		50	0	20.77	20.69	20.69	0-2	0
		50	25	20.66	20.65	20.70	0-2	0
	64QAM	50	49	20.62	20.54	20.56	0-2	0
		100	0	20.61	20.59	20.63	0-2	0
		1	0	20.67	20.67	20.75	0-2	0
		1	49	20.75	20.74	20.77	0-2	0
		1	99	20.66	20.58	20.61	0-2	0
		50	0	20.70	20.67	20.74	0-3	0
	256QAM	50	25	20.69	20.65	20.74	0-3	0
		50	49	20.69	20.62	20.68	0-3	0
		100	0	20.76	20.66	20.75	0-3	0
		1	0	19.32	19.30	19.37	0-5	2
		1	49	19.04	19.01	19.02	0-5	2
		1	99	19.09	19.07	19.07	0-5	2
		50	0	19.16	19.07	19.16	0-5	2
		50	25	19.13	19.05	19.14	0-5	2
		50	49	19.09	19.06	19.06	0-5	2
		100	0	19.15	19.07	19.12	0-5	2



[ LTE Band 4 Conducted Power] (RSI=0,1,2,3,4) Ant. Main #2

LTE Band 4 \_ 1.4 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				19957 Ch. 1710.7 MHz	20175 Ch. 1732.5 MHz	20393 Ch. 1754.3 MHz		
1.4 MHz	QPSK	1	0	19.13	20.01	19.95	0	0
		1	3	19.06	19.90	19.85	0	0
		1	5	19.13	20.05	19.92	0	0
		3	0	19.14	20.02	19.92	0	0
		3	1	19.12	19.95	19.98	0	0
		3	3	19.09	19.95	19.89	0	0
	16QAM	6	0	19.21	20.09	19.98	0-1	0
		1	0	19.41	20.24	20.03	0-1	0
		1	3	19.39	20.18	20.18	0-1	0
		1	5	19.29	20.17	20.25	0-1	0
		3	0	19.26	20.17	20.08	0-1	0
		3	1	19.32	20.18	20.07	0-1	0
	64QAM	3	3	19.30	20.21	20.01	0-1	0
		6	0	19.26	20.16	20.01	0-2	0
		1	0	19.31	20.28	20.10	0-2	0
		1	3	19.37	20.10	20.07	0-2	0
		1	5	19.30	20.22	20.17	0-2	0
		3	0	19.19	20.14	20.01	0-2	0
	256QAM	3	1	19.28	19.59	20.03	0-2	0
		3	3	19.21	20.11	20.05	0-2	0
		6	0	19.19	20.07	19.42	0-3	0
		1	0	17.73	18.67	18.67	0-5	1.5
		1	3	17.89	18.60	18.57	0-5	1.5
		1	5	17.79	18.60	18.62	0-5	1.5
		3	0	17.71	18.57	18.51	0-5	1.5
		3	1	17.74	18.69	18.48	0-5	1.5
		3	3	17.78	18.69	18.56	0-5	1.5
		6	0	17.67	18.61	18.45	0-5	1.5

LTE Band 4 \_ 3 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]	
				19965 Ch. 1711.5 MHz	20175 Ch. 1732.5 MHz	20385 Ch. 1753.5 MHz			
3 MHz	QPSK	1	0	19.21	20.06	20.01	0	0	
		1	7	19.19	20.09	20.01	0	0	
		1	14	19.18	20.05	19.98	0	0	
		8	0	19.25	20.09	19.97	0-1	0	
		8	3	19.21	20.11	20.01	0-1	0	
		8	7	19.26	20.13	20.03	0-1	0	
	16QAM	15	0	19.25	20.11	20.05	0-1	0	
		1	0	19.33	20.31	20.22	0-1	0	
		1	7	19.46	20.24	20.15	0-1	0	
		1	14	19.43	20.38	20.17	0-1	0	
		8	0	19.26	20.10	20.12	0-2	0	
		8	3	19.35	20.24	20.14	0-2	0	
	64QAM	8	7	19.34	20.18	20.17	0-2	0	
		15	0	19.33	20.17	20.07	0-2	0	
		1	0	19.42	20.28	20.16	0-2	0	
		1	7	19.37	20.26	20.19	0-2	0	
		1	14	19.43	20.36	20.18	0-2	0	
		8	0	19.29	20.10	20.15	0-3	0	
	256QAM	8	3	19.30	20.17	19.41	0-3	0	
		8	7	19.28	20.09	20.09	0-3	0	
		15	0	19.30	20.13	20.09	0-3	0	
		1	0	17.91	18.72	18.70	0-5	1.5	
		1	7	17.96	18.65	18.64	0-5	1.5	
		1	14	17.88	18.64	18.69	0-5	1.5	
		256QAM	8	0	17.82	18.61	18.54	0-5	1.5
			8	3	17.79	18.64	18.57	0-5	1.5
			8	7	17.79	18.67	18.57	0-5	1.5
			15	0	17.72	18.60	18.53	0-5	1.5

LTE Band 4 \_ 5 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				19975 Ch. 1712.5 MHz	20175 Ch. 1732.5 MHz	20375 Ch. 1752.5 MHz		
5 MHz	QPSK	1	0	19.22	20.09	19.98	0	0
		1	12	19.24	20.12	20.03	0	0
		1	24	19.31	20.13	20.05	0	0
		12	0	19.29	20.06	20.04	0-1	0
		12	6	19.25	20.11	20.06	0-1	0
		12	11	19.36	20.13	20.10	0-1	0
		25	0	19.25	20.13	20.00	0-1	0
	16QAM	1	0	19.37	20.31	20.18	0-1	0
		1	12	19.24	20.20	20.10	0-1	0
		1	24	19.43	20.27	20.26	0-1	0
		12	0	19.34	20.23	20.13	0-2	0
		12	6	19.32	20.12	20.09	0-2	0
		12	11	19.41	20.19	20.11	0-2	0
		25	0	19.34	20.11	20.05	0-2	0
	64QAM	1	0	19.51	20.25	20.17	0-2	0
		1	12	19.48	20.26	20.18	0-2	0
		1	24	19.52	20.35	20.19	0-2	0
		12	0	19.34	20.16	20.11	0-3	0
		12	6	19.31	20.15	20.12	0-3	0
		12	11	19.37	20.23	20.16	0-3	0
		25	0	19.28	20.09	20.04	0-3	0
	256QAM	1	0	17.87	18.84	18.67	0-5	1.5
		1	12	17.87	18.64	18.60	0-5	1.5
		1	24	18.01	18.70	18.75	0-5	1.5
		12	0	17.77	18.61	18.57	0-5	1.5
		12	6	17.81	18.65	18.61	0-5	1.5
		12	11	17.86	18.65	18.57	0-5	1.5
25		0	17.76	18.62	18.55	0-5	1.5	

LTE Band 4 \_ 10 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				20000 Ch. 1715 MHz	20175 Ch. 1732.5 MHz	20350 Ch. 1750 MHz		
10 MHz	QPSK	1	0	19.25	20.08	20.00	0	0
		1	24	19.28	20.05	19.92	0	0
		1	49	19.30	20.07	19.99	0	0
		25	0	19.26	20.09	19.98	0-1	0
		25	12	19.32	20.12	20.07	0-1	0
		25	24	19.31	20.10	20.08	0-1	0
	16QAM	50	0	19.30	20.06	20.00	0-1	0
		1	0	19.46	20.22	20.25	0-1	0
		1	24	19.50	20.24	20.08	0-1	0
		1	49	19.55	20.36	20.26	0-1	0
		25	0	19.26	20.11	20.06	0-2	0
		25	12	19.33	20.09	20.04	0-2	0
	64QAM	25	24	19.38	20.11	20.10	0-2	0
		50	0	19.34	20.12	20.04	0-2	0
		1	0	19.36	20.18	20.09	0-2	0
		1	24	19.47	20.20	20.11	0-2	0
		1	49	19.56	20.29	20.23	0-2	0
		25	0	19.26	20.06	20.04	0-3	0
	256QAM	25	12	19.33	20.13	20.07	0-3	0
		25	24	19.32	20.09	20.07	0-3	0
		50	0	19.35	20.15	20.06	0-3	0
		1	0	17.87	18.72	18.65	0-5	1.5
		1	24	17.88	18.66	18.67	0-5	1.5
		1	49	18.01	18.76	18.65	0-5	1.5
		25	0	17.82	18.63	18.56	0-5	1.5
		25	12	17.81	18.61	18.51	0-5	1.5
		25	24	17.87	18.61	18.56	0-5	1.5
	50	0	17.82	18.61	18.51	0-5	1.5	

LTE Band 4 \_ 15 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				20025 Ch. 1717.5 MHz	20175 Ch. 1732.5 MHz	20325 Ch. 1747.5 MHz		
15 MHz	QPSK	1	0	19.21	20.00	19.94	0	0
		1	36	19.33	20.07	20.01	0	0
		1	74	19.38	20.10	20.03	0	0
		36	0	19.29	20.09	20.04	0-1	0
		36	18	19.40	20.10	20.04	0-1	0
		36	39	19.37	20.12	20.03	0-1	0
		75	0	19.35	20.06	20.03	0-1	0
	16QAM	1	0	19.39	20.33	20.27	0-1	0
		1	36	19.56	20.20	20.07	0-1	0
		1	74	19.62	20.32	20.28	0-1	0
		36	0	19.31	20.10	20.03	0-2	0
		36	18	19.34	20.11	20.04	0-2	0
		36	39	19.39	20.11	20.04	0-2	0
		75	0	19.32	20.10	20.04	0-2	0
	64QAM	1	0	19.46	20.24	20.13	0-2	0
		1	36	19.48	20.26	20.07	0-2	0
		1	74	19.69	20.29	20.15	0-2	0
		36	0	19.32	20.11	20.04	0-3	0
		36	18	19.42	20.15	20.07	0-3	0
		36	39	19.41	20.17	20.09	0-3	0
		75	0	19.35	20.13	20.03	0-3	0
	256QAM	1	0	17.87	18.64	18.58	0-5	1.5
		1	36	17.85	18.65	18.62	0-5	1.5
		1	74	18.04	18.74	18.58	0-5	1.5
		36	0	17.83	18.62	18.49	0-5	1.5
		36	18	17.88	18.69	18.55	0-5	1.5
		36	39	17.92	18.69	18.57	0-5	1.5
		75	0	17.84	18.59	18.49	0-5	1.5

LTE Band 4 \_ 20 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]	MPR Allowed Per 3GPP [dB]	MPR [dB]
				20175 Ch. 1732.5 MHz		
20 MHz	QPSK	1	0	19.99	0	0
		1	49	20.03	0	0
		1	99	20.04	0	0
		50	0	20.03	0-1	0
		50	25	20.12	0-1	0
		50	49	20.07	0-1	0
	16QAM	100	0	20.07	0-1	0
		1	0	20.18	0-1	0
		1	49	20.29	0-1	0
		1	99	20.22	0-1	0
		50	0	20.09	0-2	0
		50	25	20.12	0-2	0
	64QAM	50	49	20.11	0-2	0
		100	0	20.09	0-2	0
		1	0	20.13	0-2	0
		1	49	20.21	0-2	0
		1	99	20.22	0-2	0
		50	0	20.09	0-3	0
	256QAM	50	25	20.13	0-3	0
		50	49	20.12	0-3	0
		100	0	20.09	0-3	0
		1	0	18.55	0-5	1.5
		1	49	18.67	0-5	1.5
		1	99	18.70	0-5	1.5
		50	0	18.58	0-5	1.5
		50	25	18.58	0-5	1.5
		50	49	18.63	0-5	1.5
		100	0	18.63	0-5	1.5

[ LTE Band 5 Conducted Power] (Pmax, RSI=0,1,2,3,4) Ant. Main #1

LTE Band 5 \_ 1.4 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				20407 Ch. 824.7 MHz	20525 Ch. 836.5 MHz	20643 Ch. 848.3 MHz		
1.4 MHz	QPSK	1	0	23.23	23.81	23.33	0	0
		1	3	23.58	23.23	23.24	0	0
		1	5	23.19	23.31	23.85	0	0
		3	0	23.23	23.83	23.32	0	0
		3	1	23.53	23.29	23.30	0	0
		3	3	23.12	23.28	23.81	0	0
	16QAM	6	0	22.72	22.88	22.86	0-1	1
		1	0	23.03	23.08	23.00	0-1	1
		1	3	22.94	22.96	22.87	0-1	1
		1	5	22.92	23.07	23.02	0-1	1
		3	0	22.78	22.93	22.95	0-1	1
		3	1	22.83	22.96	23.00	0-1	1
	64QAM	3	3	22.85	22.96	23.02	0-1	1
		6	0	21.77	21.90	21.86	0-2	2
		1	0	22.89	22.05	22.00	0-2	2
		1	3	22.64	21.92	21.99	0-2	2
		1	5	22.77	22.02	22.10	0-2	2
		3	0	22.75	21.93	21.89	0-2	2
	256QAM	3	1	22.75	21.86	21.98	0-2	2
		3	3	22.73	21.93	21.93	0-2	2
		6	0	21.68	20.93	20.88	0-3	3
		1	0	18.80	18.96	19.05	0-5	5
		1	3	18.71	18.82	18.83	0-5	5
		1	5	18.87	18.96	18.86	0-5	5
	3	0	18.74	18.88	18.93	0-5	5	
	3	1	18.78	18.98	19.00	0-5	5	
	3	3	18.82	18.94	18.96	0-5	5	
	6	0	18.74	18.87	18.86	0-5	5	

LTE Band 5 \_ 3 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				20415 Ch. 825.5 MHz	20525 Ch. 836.5 MHz	20635 Ch. 847.5 MHz		
3 MHz	QPSK	1	0	23.40	23.87	23.39	0	0
		1	7	23.25	23.32	23.40	0	0
		1	14	23.21	23.34	23.37	0	0
		8	0	22.76	22.91	22.89	0-1	1
		8	3	22.78	22.91	22.94	0-1	1
		8	7	22.78	22.92	22.94	0-1	1
	16QAM	15	0	22.78	22.89	22.90	0-1	1
		1	0	22.90	23.08	23.02	0-1	1
		1	7	22.77	22.90	23.06	0-1	1
		1	14	22.91	23.03	23.02	0-1	1
		8	0	21.81	21.94	21.94	0-2	2
		8	3	21.89	21.96	21.94	0-2	2
	64QAM	8	7	21.87	22.02	21.98	0-2	2
		15	0	21.83	21.96	21.93	0-2	2
		1	0	21.82	22.04	22.11	0-2	2
		1	7	21.79	21.98	22.04	0-2	2
		1	14	21.90	21.97	22.12	0-2	2
		8	0	20.77	20.88	20.94	0-3	3
	256QAM	8	3	20.77	20.89	20.93	0-3	3
		8	7	20.81	20.89	20.93	0-3	3
		15	0	20.81	20.95	20.89	0-3	3
		1	0	18.87	19.05	19.05	0-5	5
		1	7	18.86	18.97	18.94	0-5	5
		1	14	18.90	19.00	18.94	0-5	5
		8	0	18.80	18.97	18.92	0-5	5
		8	3	18.82	18.93	18.93	0-5	5
		8	7	18.82	19.00	18.96	0-5	5
	15	0	18.74	18.87	18.92	0-5	5	



LTE Band 5 \_ 5 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				20425 Ch. 826.5 MHz	20525 Ch. 836.5 MHz	20625 Ch. 846.5 MHz		
5 MHz	QPSK	1	0	23.23	23.31	23.35	0	0
		1	12	23.33	23.35	23.77	0	0
		1	24	23.23	23.85	23.43	0	0
		12	0	22.80	22.92	22.93	0-1	1
		12	6	22.77	22.91	22.97	0-1	1
		12	11	22.77	22.91	22.95	0-1	1
	16QAM	25	0	22.80	22.93	22.99	0-1	1
		1	0	23.01	23.12	23.13	0-1	1
		1	12	22.93	22.97	23.10	0-1	1
		1	24	22.93	23.11	23.16	0-1	1
		12	0	21.80	21.97	21.96	0-2	2
		12	6	21.90	21.95	21.98	0-2	2
	64QAM	12	11	21.82	21.98	21.93	0-2	2
		25	0	21.80	21.92	21.97	0-2	2
		1	0	22.02	22.05	22.14	0-2	2
		1	12	21.95	22.05	22.05	0-2	2
		1	24	22.02	22.01	22.13	0-2	2
		12	0	20.82	20.94	20.97	0-3	3
	256QAM	12	6	20.82	20.95	20.93	0-3	3
		12	11	20.80	20.95	20.95	0-3	3
		25	0	20.79	20.93	20.95	0-3	3
		1	0	18.96	19.04	19.00	0-5	5
		1	12	18.91	18.99	19.12	0-5	5
		1	24	18.74	19.07	19.10	0-5	5
		12	0	18.83	18.93	18.94	0-5	5
		12	6	18.81	18.92	18.93	0-5	5
		12	11	18.85	18.97	18.99	0-5	5
25		0	18.80	18.91	18.95	0-5	5	

LTE Band 5 \_ 10 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]	MPR Allowed Per 3GPP [dB]	MPR [dB]
				20525 Ch. 836.5 MHz		
10 MHz	QPSK	1	0	<b>23.88</b>	0	0
		1	24	23.30	0	0
		1	49	23.33	0	0
		25	0	<b>22.94</b>	0-1	1
		25	12	22.92	0-1	1
		25	24	22.92	0-1	1
		50	0	22.96	0-1	1
	16QAM	1	0	23.09	0-1	1
		1	24	22.95	0-1	1
		1	49	23.08	0-1	1
		25	0	21.93	0-2	2
		25	12	21.94	0-2	2
		25	24	21.95	0-2	2
		50	0	21.94	0-2	2
	64QAM	1	0	22.10	0-2	2
		1	24	22.10	0-2	2
		1	49	22.20	0-2	2
		25	0	20.91	0-3	3
		25	12	20.93	0-3	3
		25	24	20.90	0-3	3
		50	0	20.95	0-3	3
	256QAM	1	0	19.13	0-5	5
		1	24	18.98	0-5	5
		1	49	18.92	0-5	5
25		0	18.95	0-5	5	
25		12	18.92	0-5	5	
25		24	18.88	0-5	5	
50		0	18.93	0-5	5	

**[LTE Band 12 Conducted Power] (Pmax, RSI=0,1,2,3,4) Ant. Main #1**

LTE Band 12 \_ 1.4 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				23017 Ch. 699.7 MHz	23095 Ch. 707.5 MHz	23173 Ch. 715.3 MHz		
1.4 MHz	QPSK	1	0	22.94	23.09	23.73	0	0
		1	3	22.81	23.12	23.14	0	0
		1	5	23.45	23.13	23.19	0	0
		3	0	22.92	23.10	23.72	0	0
		3	1	22.95	23.11	23.15	0	0
		3	3	23.40	23.10	23.14	0	0
	16QAM	6	0	22.49	22.65	22.70	0-1	1
		1	0	22.65	22.68	22.87	0-1	1
		1	3	22.65	22.75	22.85	0-1	1
		1	5	22.60	22.73	22.88	0-1	1
		3	0	22.60	22.69	22.79	0-1	1
		3	1	22.60	22.75	22.89	0-1	1
	64QAM	3	3	22.54	22.72	22.81	0-1	1
		6	0	21.55	21.64	21.82	0-2	2
		1	0	21.78	21.86	21.92	0-2	2
		1	3	21.67	21.77	21.87	0-2	2
		1	5	21.72	21.75	21.91	0-2	2
		3	0	21.53	21.66	21.83	0-2	2
	256QAM	3	1	21.60	21.70	21.91	0-2	2
		3	3	21.58	21.70	21.82	0-2	2
		6	0	20.51	20.66	20.78	0-3	3
		1	0	18.53	18.69	18.81	0-5	5
		1	3	18.42	18.53	18.67	0-5	5
		1	5	18.60	18.68	18.83	0-5	5
		3	0	18.50	18.69	18.77	0-5	5
		3	1	18.50	18.66	18.82	0-5	5
		3	3	18.59	18.70	18.88	0-5	5
		6	0	18.50	18.64	18.72	0-5	5

LTE Band 12 \_ 3 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				23025 Ch. 700.5 MHz	23095 Ch. 707.5 MHz	23165 Ch. 714.5 MHz		
3 MHz	QPSK	1	0	23.04	23.17	23.29	0	0
		1	7	23.02	23.24	23.83	0	0
		1	14	23.45	23.09	23.17	0	0
		8	0	22.54	22.68	22.82	0-1	1
		8	3	22.56	22.70	22.82	0-1	1
		8	7	22.57	22.72	22.81	0-1	1
		15	0	22.55	22.69	22.85	0-1	1
	16QAM	1	0	22.75	22.80	22.98	0-1	1
		1	7	22.56	22.79	22.83	0-1	1
		1	14	22.73	22.78	22.95	0-1	1
		8	0	21.65	21.67	21.87	0-2	2
		8	3	21.61	21.79	21.94	0-2	2
		8	7	21.66	21.78	21.87	0-2	2
		15	0	21.64	21.77	21.83	0-2	2
	64QAM	1	0	21.74	21.91	22.00	0-2	2
		1	7	21.56	21.70	21.93	0-2	2
		1	14	21.74	21.78	21.95	0-2	2
		8	0	20.56	20.62	20.80	0-3	3
		8	3	20.50	20.66	20.82	0-3	3
		8	7	20.52	20.65	20.83	0-3	3
		15	0	20.59	20.62	20.87	0-3	3
	256QAM	1	0	18.68	18.70	18.90	0-5	5
		1	7	18.62	18.69	18.86	0-5	5
		1	14	18.58	18.73	18.81	0-5	5
		8	0	18.56	18.67	18.82	0-5	5
		8	3	18.55	18.62	18.83	0-5	5
		8	7	18.56	18.67	18.83	0-5	5
15		0	18.55	18.63	18.78	0-5	5	

LTE Band 12 \_ 5 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				23035 Ch. 701.5 MHz	23095 Ch. 707.5 MHz	23155 Ch. 713.5 MHz		
5 MHz	QPSK	1	0	22.99	23.70	23.29	0	0
		1	12	23.06	23.17	23.31	0	0
		1	24	23.56	23.19	23.83	0	0
		12	0	22.55	22.71	22.83	0-1	1
		12	6	22.56	22.72	22.85	0-1	1
		12	11	22.54	22.69	22.82	0-1	1
		25	0	22.62	22.85	22.88	0-1	1
	16QAM	1	0	22.75	22.91	23.07	0-1	1
		1	12	22.69	22.72	22.78	0-1	1
		1	24	22.68	22.84	22.97	0-1	1
		12	0	21.66	21.72	21.90	0-2	2
		12	6	21.62	21.74	21.88	0-2	2
		12	11	21.66	21.77	21.88	0-2	2
		25	0	21.63	21.80	21.88	0-2	2
	64QAM	1	0	21.72	21.71	21.95	0-2	2
		1	12	21.69	21.83	21.93	0-2	2
		1	24	21.66	21.74	22.00	0-2	2
		12	0	20.61	20.71	20.86	0-3	3
		12	6	20.59	20.66	20.84	0-3	3
		12	11	20.62	20.68	20.87	0-3	3
		25	0	20.58	20.75	20.84	0-3	3
	256QAM	1	0	18.63	18.71	18.89	0-5	5
		1	12	18.58	18.72	18.85	0-5	5
		1	24	18.60	18.74	18.86	0-5	5
		12	0	18.57	18.65	18.83	0-5	5
		12	6	18.55	18.69	18.82	0-5	5
		12	11	18.56	18.68	18.83	0-5	5
		25	0	18.58	18.71	18.89	0-5	5

LTE Band 12 \_ 10 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]	MPR Allowed Per 3GPP [dB]	MPR [dB]
				23095 Ch. 707.5 MHz		
10 MHz	QPSK	1	0	23.22	0	0
		1	24	<b>23.61</b>	0	0
		1	49	23.14	0	0
		25	0	<b>22.84</b>	0-1	1
		25	12	22.81	0-1	1
		25	24	22.82	0-1	1
		50	0	22.87	0-1	1
	16QAM	1	0	22.93	0-1	1
		1	24	22.73	0-1	1
		1	49	22.85	0-1	1
		25	0	21.80	0-2	2
		25	12	21.80	0-2	2
		25	24	21.74	0-2	2
		50	0	21.81	0-2	2
	64QAM	1	0	21.95	0-2	2
		1	24	21.78	0-2	2
		1	49	21.79	0-2	2
		25	0	20.74	0-3	3
		25	12	20.75	0-3	3
		25	24	20.74	0-3	3
		50	0	20.80	0-3	3
	256QAM	1	0	18.79	0-5	5
		1	24	18.71	0-5	5
		1	49	18.84	0-5	5
		25	0	18.77	0-5	5
		25	12	18.77	0-5	5
		25	24	18.72	0-5	5
50		0	18.74	0-5	5	

[ LTE Band 17 Conducted Power] (Pmax, RSI=0,1,2,3,4) Ant. Main #1

LTE Band 17 \_ 5 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				23755ch. 706.5 MHz	23790ch. 710 MHz	23825ch. 713.5 MHz		
5 MHz	QPSK	1	0	23.13	23.21	23.24	0	0
		1	12	23.65	23.23	23.82	0	0
		1	24	23.13	23.70	23.28	0	0
		12	0	22.69	22.79	22.86	0-1	1
		12	6	22.70	22.79	22.83	0-1	1
		12	11	22.67	22.81	22.84	0-1	1
		25	0	22.83	22.86	22.85	0-1	1
	16QAM	1	0	22.95	22.88	23.04	0-1	1
		1	12	22.70	22.80	22.80	0-1	1
		1	24	22.85	23.04	23.01	0-1	1
		12	0	21.73	21.84	21.94	0-2	2
		12	6	21.73	21.82	21.91	0-2	2
		12	11	21.74	21.87	21.88	0-2	2
		25	0	21.79	21.84	21.88	0-2	2
	64QAM	1	0	21.71	21.88	22.02	0-2	2
		1	12	21.70	21.82	21.92	0-2	2
		1	24	21.77	22.03	22.07	0-2	2
		12	0	20.69	20.75	20.87	0-3	3
		12	6	20.64	20.78	20.88	0-3	3
		12	11	20.69	20.79	20.88	0-3	3
		25	0	20.71	20.81	20.83	0-3	3
	256QAM	1	0	18.73	18.86	18.91	0-5	5
		1	12	18.76	18.82	18.88	0-5	5
		1	24	18.68	18.87	18.80	0-5	5
		12	0	18.66	18.67	18.83	0-5	5
		12	6	18.63	18.77	18.84	0-5	5
		12	11	18.64	18.77	18.88	0-5	5
		25	0	18.73	18.79	18.82	0-5	5

LTE Band 17 \_ 10 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]		MPR Allowed Per 3GPP [dB]	MPR [dB]
				23790ch.	710 MHz		
10 MHz	QPSK	1	0	23.79	0	0	
		1	24	23.21	0	0	
		1	49	23.18	0	0	
		25	0	22.92	0-1	1	
		25	12	22.87	0-1	1	
		25	24	22.85	0-1	1	
	16QAM	50	0	22.90	0-1	1	
		1	0	22.88	0-1	1	
		1	24	22.81	0-1	1	
		1	49	22.91	0-1	1	
		25	0	21.87	0-2	2	
		25	12	21.85	0-2	2	
	64QAM	25	24	21.83	0-2	2	
		50	0	21.87	0-2	2	
		1	0	21.94	0-2	2	
		1	24	21.80	0-2	2	
		1	49	21.88	0-2	2	
		25	0	20.82	0-3	3	
	256QAM	25	12	20.81	0-3	3	
		25	24	20.82	0-3	3	
		50	0	20.90	0-3	3	
		1	0	18.77	0-5	5	
		1	24	18.74	0-5	5	
		1	49	18.79	0-5	5	
	25	0	18.83	0-5	5		
	25	12	18.82	0-5	5		
	25	24	18.77	0-5	5		
	50	0	18.82	0-5	5		



[ LTE Band 26 Conducted Power ](Pmax, RSI=0,1,2,3,4) Ant. Main #1

LTE Band 26 \_ 1.4 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				26697 Ch. 814.7 MHz	26865 Ch. 831.5 MHz	27033 Ch. 848.3 MHz		
1.4 MHz	QPSK	1	0	22.86	22.97	23.04	0	0
		1	3	22.79	22.90	23.50	0	0
		1	5	23.37	23.01	23.04	0	0
		3	0	22.83	23.00	23.03	0	0
		3	1	22.88	23.48	23.59	0	0
		3	3	23.30	22.95	23.05	0	0
		6	0	22.36	22.47	22.61	0-1	1
	16QAM	1	0	22.60	22.62	22.73	0-1	1
		1	3	22.55	22.60	22.60	0-1	1
		1	5	22.50	22.68	22.74	0-1	1
		3	0	22.45	22.53	22.61	0-1	1
		3	1	22.44	22.63	22.67	0-1	1
		3	3	22.51	22.63	22.68	0-1	1
		6	0	21.50	21.60	21.67	0-2	2
	64QAM	1	0	21.63	21.68	21.79	0-2	2
		1	3	21.54	21.55	21.73	0-2	2
		1	5	21.54	21.69	21.80	0-2	2
		3	0	21.46	21.52	21.66	0-2	2
		3	1	21.52	21.57	21.66	0-2	2
		3	3	21.51	21.63	21.63	0-2	2
		6	0	20.43	20.49	20.57	0-3	3
	256QAM	1	0	18.39	18.58	18.65	0-5	5
		1	3	18.46	18.50	18.61	0-5	5
		1	5	18.49	18.56	18.64	0-5	5
		3	0	18.46	18.51	18.56	0-5	5
		3	1	18.47	18.56	18.59	0-5	5
		3	3	18.47	18.59	18.62	0-5	5
6		0	18.38	18.53	18.59	0-5	5	

LTE Band 26 \_ 3 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				26705 Ch. 815.5 MHz	26865 Ch. 831.5 MHz	27025 Ch. 847.5 MHz		
3 MHz	QPSK	1	0	22.91	23.01	23.08	0	0
		1	7	22.97	23.07	23.10	0	0
		1	14	22.87	22.98	23.55	0	0
		8	0	22.45	22.58	22.62	0-1	1
		8	3	22.50	22.53	22.65	0-1	1
		8	7	22.45	22.56	22.66	0-1	1
	16QAM	15	0	22.48	22.56	22.67	0-1	1
		1	0	22.59	22.60	22.67	0-1	1
		1	7	22.66	22.51	22.74	0-1	1
		1	14	22.72	22.67	22.82	0-1	1
		8	0	21.56	21.61	21.68	0-2	2
		8	3	21.59	21.67	21.68	0-2	2
	64QAM	8	7	21.62	21.63	21.76	0-2	2
		15	0	21.54	21.61	21.67	0-2	2
		1	0	21.78	21.75	21.81	0-2	2
		1	7	21.65	21.44	21.80	0-2	2
		1	14	21.69	21.79	21.80	0-2	2
		8	0	20.47	20.51	20.57	0-3	3
	256QAM	8	3	20.46	20.56	20.64	0-3	3
		8	7	20.48	20.57	20.63	0-3	3
		15	0	20.51	20.58	20.59	0-3	3
		1	0	18.50	18.70	18.65	0-5	5
		1	7	18.50	18.61	18.73	0-5	5
		1	14	18.57	18.57	18.67	0-5	5
		8	0	18.48	18.53	18.61	0-5	5
		8	3	18.53	18.54	18.62	0-5	5
		8	7	18.43	18.54	18.61	0-5	5
		15	0	18.48	18.51	18.53	0-5	5

LTE Band 26 \_ 5 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				26715 Ch. 816.5 MHz	26865 Ch. 831.5 MHz	27015 Ch. 846.5 MHz		
5 MHz	QPSK	1	0	22.84	22.99	23.60	0	0
		1	12	23.44	23.05	23.13	0	0
		1	24	22.90	23.09	23.13	0	0
		12	0	22.47	22.56	22.62	0-1	1
		12	6	22.48	22.55	22.68	0-1	1
		12	11	22.48	22.56	22.64	0-1	1
		25	0	22.46	22.58	22.75	0-1	1
	16QAM	1	0	22.56	22.72	22.74	0-1	1
		1	12	22.46	22.55	22.73	0-1	1
		1	24	22.60	22.71	22.82	0-1	1
		12	0	21.55	21.62	21.69	0-2	2
		12	6	21.55	21.68	21.69	0-2	2
		12	11	21.58	21.67	21.75	0-2	2
		25	0	21.52	21.59	21.68	0-2	2
	64QAM	1	0	21.72	21.79	21.74	0-2	2
		1	12	21.64	21.74	21.76	0-2	2
		1	24	21.72	21.79	21.83	0-2	2
		12	0	20.47	20.57	20.61	0-3	3
		12	6	20.44	20.54	20.61	0-3	3
		12	11	20.53	20.56	20.66	0-3	3
		25	0	20.49	20.58	20.67	0-3	3
	256QAM	1	0	18.57	18.61	18.69	0-5	5
		1	12	18.65	18.58	18.55	0-5	5
		1	24	18.53	18.65	18.72	0-5	5
		12	0	18.48	18.53	18.61	0-5	5
		12	6	18.46	18.54	18.60	0-5	5
		12	11	18.46	18.54	18.64	0-5	5
		25	0	18.49	18.60	18.67	0-5	5

LTE Band 26 \_ 10 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				26740 Ch. 819 MHz	26865 Ch. 831.5 MHz	26990 Ch. 844 MHz		
10 MHz	QPSK	1	0	22.91	23.06	23.19	0	0
		1	24	23.41	22.94	23.09	0	0
		1	49	22.88	23.45	23.61	0	0
		25	0	22.49	22.62	22.73	0-1	1
		25	12	22.49	22.61	22.72	0-1	1
		25	24	22.47	22.63	22.76	0-1	1
		50	0	22.54	22.66	22.76	0-1	1
	16QAM	1	0	22.64	22.71	22.80	0-1	1
		1	24	22.49	22.59	22.74	0-1	1
		1	49	22.55	22.76	22.84	0-1	1
		25	0	21.52	21.61	21.73	0-2	2
		25	12	21.50	21.62	21.71	0-2	2
		25	24	21.50	21.59	21.67	0-2	2
		50	0	21.55	21.66	21.75	0-2	2
	64QAM	1	0	21.74	21.79	21.96	0-2	2
		1	24	21.68	21.84	21.79	0-2	2
		1	49	21.63	21.82	21.78	0-2	2
		25	0	20.46	20.59	20.69	0-3	3
		25	12	20.49	20.56	20.70	0-3	3
		25	24	20.47	20.59	20.73	0-3	3
		50	0	20.56	20.67	20.76	0-3	3
	256QAM	1	0	18.52	18.59	18.78	0-5	5
		1	24	18.47	18.58	18.70	0-5	5
		1	49	18.45	18.67	18.70	0-5	5
25		0	18.48	18.57	18.72	0-5	5	
25		12	18.45	18.61	18.71	0-5	5	
25		24	18.45	18.60	18.72	0-5	5	
50		0	18.50	18.63	18.72	0-5	5	

LTE Band 26 \_ 15 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]		MPR Allowed Per 3GPP [dB]	MPR [dB]
				26865 Ch. 831.5 MHz			
15 MHz	QPSK	1	0	<b>23.52</b>	0	0	
		1	36	23.02	0	0	
		1	74	23.05	0	0	
		36	0	22.60	0-1	1	
		36	18	<b>22.62</b>	0-1	1	
		36	39	22.58	0-1	1	
		75	0	22.59	0-1	1	
	16QAM	1	0	22.79	0-1	1	
		1	36	22.63	0-1	1	
		1	74	22.65	0-1	1	
		36	0	21.62	0-2	2	
		36	18	21.59	0-2	2	
		36	39	21.58	0-2	2	
		75	0	21.55	0-2	2	
	64QAM	1	0	21.79	0-2	2	
		1	36	21.69	0-2	2	
		1	74	21.70	0-2	2	
		36	0	20.56	0-3	3	
		36	18	20.58	0-3	3	
		36	39	20.58	0-3	3	
		75	0	20.55	0-3	3	
	256QAM	1	0	18.60	0-5	5	
		1	36	18.57	0-5	5	
		1	74	18.55	0-5	5	
		36	0	18.61	0-5	5	
		36	18	18.60	0-5	5	
		36	39	18.60	0-5	5	
		75	0	18.55	0-5	5	

[ LTE Band 41 Conducted Power] (Pmax, RSI = 0,1) Ant. Main #2

LTE Band 41 \_ 5 MHz Bandwidth

Band width	Modulation	RB Size	RB Offset	Max. Average Power [dBm]					MPR [dB]
				39750 Ch. 2506.0 MHz	40185 Ch. 2549.5 MHz	40620 Ch. 2593.0 MHz	41055 Ch. 2636.5 MHz	41490 Ch. 2680.0 MHz	
5 MHz	QPSK	1	0	22.38	22.66	23.49	22.74	22.63	0
		1	12	22.43	22.94	23.55	22.86	22.64	0
		1	24	22.45	23.10	23.52	22.83	22.56	0
		12	0	21.95	22.11	22.59	22.34	22.08	1
		12	6	21.94	22.11	22.60	22.34	22.09	1
		12	11	21.98	22.12	22.62	22.36	22.07	1
		25	0	22.00	22.12	22.62	22.39	22.08	1
	16QAM	1	0	21.96	22.04	22.53	22.23	21.95	1
		1	12	21.96	22.02	22.41	22.22	21.82	1
		1	24	21.92	22.01	22.53	22.27	21.96	1
		12	0	20.91	21.06	21.54	21.29	21.00	2
		12	6	20.87	21.07	21.56	21.28	21.03	2
		12	11	20.90	21.07	21.54	21.27	21.01	2
		25	0	21.03	21.08	21.57	21.32	21.04	2
	64QAM	1	0	21.89	21.19	21.48	21.18	21.08	2
		1	12	21.83	21.16	21.39	21.29	21.05	2
		1	24	21.83	21.14	21.42	21.26	21.03	2
		12	0	20.91	20.09	20.59	20.30	20.01	3
		12	6	20.88	20.07	20.59	20.30	20.00	3
		12	11	20.93	20.10	20.58	20.30	20.03	3
		25	0	20.95	20.07	20.56	20.32	20.05	3
	256QAM	1	0	17.89	17.87	18.40	18.17	17.94	5
		1	12	17.82	17.88	18.32	18.18	17.93	5
		1	24	17.82	17.86	18.40	18.15	17.93	5
		12	0	17.98	18.11	18.58	18.36	18.05	5
		12	6	17.97	18.12	18.60	18.37	18.07	5
		12	11	18.00	18.14	18.60	18.40	18.08	5
		25	0	18.01	18.11	18.62	18.38	18.08	5

LTE Band 41 \_ 10 MHz Bandwidth

Band width	Modulation	RB Size	RB Offset	Max. Average Power [dBm]					MPR [dB]
				39750 Ch. 2506.0 MHz	40185 Ch. 2549.5 MHz	40620 Ch. 2593.0 MHz	41055 Ch. 2636.5 MHz	41490 Ch. 2680.0 MHz	
10 MHz	QPSK	1	0	22.58	22.90	23.33	22.87	22.62	0
		1	24	22.44	22.78	23.21	22.78	22.54	0
		1	49	22.46	22.76	23.07	22.80	22.49	0
		25	0	22.01	22.15	22.66	22.39	22.11	1
		25	12	21.99	22.15	22.63	22.42	22.11	1
		25	24	22.02	22.17	22.64	22.42	22.11	1
	16QAM	50	0	22.05	22.18	22.67	22.47	22.13	1
		1	0	21.79	22.00	22.57	22.23	22.02	1
		1	24	21.73	21.92	22.37	22.16	21.93	1
		1	49	21.91	22.03	22.44	22.26	21.93	1
		25	0	20.95	21.12	21.62	21.34	21.10	2
		25	12	20.93	21.13	21.60	21.35	21.07	2
	64QAM	25	24	20.93	21.10	21.59	21.35	21.05	2
		50	0	21.01	21.12	21.63	21.41	21.07	2
		1	0	20.96	21.07	21.64	21.36	21.01	2
		1	24	20.91	21.05	21.57	21.36	20.97	2
		1	49	20.94	21.12	21.62	21.40	21.01	2
		25	0	19.95	20.06	20.59	20.35	20.05	3
	256QAM	25	12	19.93	20.09	20.56	20.35	20.03	3
		25	24	19.94	20.09	20.56	20.36	20.02	3
		50	0	20.01	20.13	20.62	20.40	20.09	3
		1	0	17.79	17.85	18.42	18.19	17.90	5
		1	24	17.72	17.81	18.30	18.18	17.83	5
		1	49	17.75	17.98	18.35	18.22	17.85	5
		25	0	18.02	18.13	18.64	18.40	18.11	5
		25	12	18.00	18.13	18.61	18.40	18.09	5
		25	24	18.00	18.14	18.62	18.41	18.08	5
50		0	18.05	18.15	18.65	18.44	18.11	5	

LTE Band 41 \_ 15 MHz Bandwidth

Band width	Modulation	RB Size	RB Offset	Max. Average Power [dBm]					MPR [dB]
				39750 Ch. 2506.0 MHz	40185 Ch. 2549.5 MHz	40620 Ch. 2593.0 MHz	41055 Ch. 2636.5 MHz	41490 Ch. 2680.0 MHz	
15 MHz	QPSK	1	0	22.43	22.55	23.25	22.78	22.75	0
		1	36	22.45	22.66	23.18	22.87	22.72	0
		1	74	22.48	22.64	23.15	22.86	22.58	0
		36	0	22.02	22.14	22.67	22.39	22.14	1
		36	18	22.01	22.13	22.66	22.39	22.11	1
		36	39	22.02	22.16	22.64	22.41	22.08	1
	16QAM	75	0	22.02	22.14	22.64	22.40	22.11	1
		1	0	21.97	22.07	22.65	22.17	21.97	1
		1	36	21.90	22.12	22.42	22.11	21.77	1
		1	74	21.96	22.11	22.53	22.24	21.87	1
		36	0	20.97	21.09	21.63	21.33	21.09	2
		36	18	20.95	21.08	21.60	21.32	21.05	2
	64QAM	36	39	20.95	21.09	21.59	21.35	21.02	2
		75	0	21.00	21.11	21.61	21.38	21.07	2
		1	0	20.99	21.21	21.74	21.38	21.13	2
		1	36	20.81	21.24	21.64	21.40	21.04	2
		1	74	20.97	21.27	21.63	21.42	20.99	2
		36	0	20.00	20.10	20.62	20.34	20.08	3
	256QAM	36	18	19.98	20.10	20.61	20.35	20.06	3
		36	39	19.95	20.10	20.57	20.37	20.03	3
		75	0	19.99	20.12	20.60	20.35	20.07	3
		1	0	17.85	17.80	18.44	18.08	17.98	5
		1	36	17.77	17.82	18.36	18.10	17.91	5
		1	74	17.81	17.83	18.45	18.12	17.87	5
		36	0	18.01	18.12	18.63	18.39	18.12	5
		36	18	17.99	18.12	18.62	18.39	18.09	5
		36	39	17.99	18.16	18.60	18.43	18.09	5
75		0	18.01	18.12	18.61	18.38	18.09	5	



LTE Band 41 \_ 20 MHz Bandwidth

Band width	Modulation	RB Size	RB Offset	Max. Average Power [dBm]					MPR [dB]
				39750 Ch. 2506.0 MHz	40185 Ch. 2549.5 MHz	40620 Ch. 2593.0 MHz	41055 Ch. 2636.5 MHz	41490 Ch. 2680.0 MHz	
20 MHz	QPSK	1	0	22.67	22.59	<b>23.53</b>	23.26	22.60	0
		1	49	22.60	22.59	23.50	23.27	22.53	0
		1	99	22.64	22.62	23.49	23.30	22.51	0
		50	0	22.07	22.18	<b>22.70</b>	22.43	22.15	1
		50	25	22.05	22.21	22.67	22.47	22.12	1
		50	49	22.03	22.21	22.67	22.48	22.10	1
	16QAM	100	0	22.05	22.16	22.65	22.42	22.11	1
		1	0	21.84	21.96	22.55	22.21	22.05	1
		1	49	21.79	21.87	22.42	22.12	21.85	1
		1	99	21.90	22.01	22.46	22.25	21.89	1
		50	0	21.05	21.14	21.67	21.38	21.13	2
		50	25	21.03	21.17	21.63	21.40	21.09	2
	64QAM	50	49	21.00	21.17	21.62	21.40	21.06	2
		100	0	21.05	21.17	21.67	21.40	21.11	2
		1	0	21.03	21.06	21.71	21.42	21.20	2
		1	49	20.97	21.10	21.58	21.39	21.06	2
		1	99	21.00	21.16	21.65	21.45	20.97	2
		50	0	20.05	20.14	20.65	20.38	20.13	3
	256QAM	50	25	20.02	20.15	20.63	20.40	20.09	3
		50	49	20.00	20.15	20.62	20.40	20.06	3
		100	0	19.99	20.10	20.61	20.34	20.05	3
		1	0	17.82	17.90	18.53	18.07	18.00	5
		1	49	17.76	17.88	18.42	18.08	17.89	5
		1	99	17.77	17.95	18.42	18.16	17.86	5
	256QAM	50	0	18.07	18.16	18.69	18.41	18.15	5
		50	25	18.05	18.19	18.67	18.43	18.12	5
		50	49	18.04	18.19	18.66	18.44	18.10	5
		100	0	18.01	18.11	18.63	18.36	18.08	5

Note; LTE Band 41 has 5 required test channels per FCC KDB 447498 D01v06.

[ LTE Band 41 Conducted Power] (RSI = 2,3,4) Ant. Main #2

LTE Band 41 \_ 5 MHz Bandwidth

Band width	Modulation	RB Size	RB Offset	Max. Average Power [dBm]					MPR [dB]
				39750 Ch. 2506.0 MHz	40185 Ch. 2549.5 MHz	40620 Ch. 2593.0 MHz	41055 Ch. 2636.5 MHz	41490 Ch. 2680.0 MHz	
5 MHz	QPSK	1	0	19.29	19.48	19.96	19.65	19.36	0
		1	12	19.33	19.60	20.02	19.77	19.46	0
		1	24	19.36	19.56	20.00	19.74	19.41	0
		12	0	19.37	19.54	20.01	19.74	19.44	0
		12	6	19.37	19.54	20.03	19.74	19.45	0
		12	11	19.40	19.55	20.03	19.75	19.46	0
		25	0	19.39	19.52	20.01	19.74	19.43	0
	16QAM	1	0	19.38	19.48	19.83	19.68	19.36	0
		1	12	19.36	19.46	19.68	19.64	19.34	0
		1	24	19.42	19.46	19.84	19.73	19.33	0
		12	0	19.36	19.53	19.97	19.78	19.44	0
		12	6	19.34	19.53	19.99	19.77	19.43	0
		12	11	19.35	19.52	19.98	19.77	19.42	0
		25	0	19.43	19.54	20.01	19.73	19.41	0
	64QAM	1	0	19.18	19.50	19.94	19.82	19.63	0
		1	12	19.13	19.51	19.93	19.82	19.61	0
		1	24	19.22	19.53	19.98	19.83	19.62	0
		12	0	19.35	19.53	20.00	19.79	19.50	0
		12	6	19.32	19.51	20.00	19.78	19.48	0
		12	11	19.36	19.54	20.01	19.81	19.51	0
		25	0	19.41	19.54	20.02	19.76	19.43	0
	256QAM	1	0	17.68	17.78	18.32	18.06	17.78	1.5
		1	12	17.62	17.83	18.25	18.10	17.73	1.5
		1	24	17.66	17.80	18.24	18.07	17.60	1.5
		12	0	17.91	18.07	18.57	18.31	18.00	1.5
12		6	17.92	18.07	18.60	18.31	18.04	1.5	
12		11	17.95	18.09	18.59	18.35	18.03	1.5	
25		0	17.97	18.07	18.56	18.34	18.00	1.5	

LTE Band 41 \_ 10 MHz Bandwidth

Band width	Modulation	RB Size	RB Offset	Max. Average Power [dBm]					MPR [dB]
				39750 Ch. 2506.0 MHz	40185 Ch. 2549.5 MHz	40620 Ch. 2593.0 MHz	41055 Ch. 2636.5 MHz	41490 Ch. 2680.0 MHz	
10 MHz	QPSK	1	0	19.35	19.55	20.00	19.75	19.53	0
		1	24	19.27	19.48	19.92	19.69	19.44	0
		1	49	19.27	19.50	19.89	19.72	19.40	0
		25	0	19.36	19.53	19.99	19.76	19.50	0
		25	12	19.34	19.55	19.99	19.77	19.49	0
		25	24	19.35	19.55	19.99	19.79	19.48	0
	16QAM	50	0	19.36	19.55	19.99	19.80	19.49	0
		1	0	19.37	19.43	19.88	19.68	19.46	0
		1	24	19.19	19.34	19.77	19.59	19.31	0
		1	49	19.32	19.48	19.87	19.73	19.25	0
		25	0	19.38	19.54	20.03	19.76	19.48	0
		25	12	19.35	19.54	20.00	19.77	19.49	0
	64QAM	25	24	19.36	19.55	20.01	19.78	19.46	0
		50	0	19.37	19.56	20.00	19.79	19.47	0
		1	0	19.30	19.48	19.96	19.90	19.55	0
		1	24	19.26	19.46	19.88	19.89	19.50	0
		1	49	19.31	19.46	19.91	19.92	19.51	0
		25	0	19.37	19.49	20.01	19.77	19.50	0
	256QAM	25	12	19.35	19.50	20.00	19.78	19.51	0
		25	24	19.37	19.51	19.99	19.78	19.48	0
		50	0	19.40	19.57	20.04	19.82	19.51	0
		1	0	17.68	17.81	18.41	18.05	17.80	1.5
		1	24	17.64	17.78	18.35	18.01	17.73	1.5
		1	49	17.70	17.82	18.37	18.09	17.73	1.5
	25	0	17.96	18.09	18.57	18.33	18.06	1.5	
	25	12	17.94	18.10	18.58	18.36	18.05	1.5	
	25	24	17.94	18.10	18.56	18.36	18.04	1.5	
	50	0	17.97	18.11	18.60	18.39	18.07	1.5	

LTE Band 41 \_ 15 MHz Bandwidth

Band width	Modulation	RB Size	RB Offset	Max. Average Power [dBm]					MPR [dB]
				39750 Ch. 2506.0 MHz	40185 Ch. 2549.5 MHz	40620 Ch. 2593.0 MHz	41055 Ch. 2636.5 MHz	41490 Ch. 2680.0 MHz	
15 MHz	QPSK	1	0	19.36	19.51	20.00	19.69	19.50	0
		1	36	19.35	19.61	20.01	19.80	19.52	0
		1	74	19.39	19.58	19.98	19.79	19.44	0
		36	0	19.41	19.56	20.05	19.77	19.52	0
		36	18	19.41	19.56	20.04	19.78	19.49	0
		36	39	19.40	19.58	20.02	19.80	19.47	0
	16QAM	75	0	19.41	19.55	20.03	19.78	19.49	0
		1	0	19.30	19.40	19.95	19.64	19.37	0
		1	36	19.18	19.35	19.77	19.60	19.38	0
		1	74	19.31	19.42	19.91	19.68	19.31	0
		36	0	19.40	19.53	20.02	19.73	19.49	0
		36	18	19.39	19.53	20.00	19.73	19.45	0
	64QAM	36	39	19.38	19.56	20.00	19.77	19.43	0
		75	0	19.43	19.55	20.03	19.78	19.49	0
		1	0	19.43	19.65	20.09	19.87	19.80	0
		1	36	19.35	19.67	20.03	19.93	19.78	0
		1	74	19.40	19.68	20.05	19.96	19.65	0
		36	0	19.44	19.51	20.04	19.76	19.52	0
	256QAM	36	18	19.43	19.52	20.04	19.77	19.51	0
		36	39	19.42	19.55	20.00	19.80	19.47	0
		75	0	19.43	19.55	20.04	19.80	19.51	0
		1	0	17.80	17.81	18.38	18.02	17.92	1.5
		1	36	17.72	17.85	18.37	18.02	17.79	1.5
		1	74	17.73	17.94	18.38	18.09	17.75	1.5
	36	0	17.97	18.07	18.60	18.31	18.07	1.5	
	36	18	17.95	18.07	18.60	18.32	18.03	1.5	
	36	39	17.95	18.10	18.57	18.36	18.03	1.5	
	75	0	17.95	18.07	18.58	18.31	18.03	1.5	

LTE Band 41 \_ 20 MHz Bandwidth

Band width	Modulation	RB Size	RB Offset	Max. Average Power [dBm]					MPR [dB]
				39750 Ch. 2506.0 MHz	40185 Ch. 2549.5 MHz	40620 Ch. 2593.0 MHz	41055 Ch. 2636.5 MHz	41490 Ch. 2680.0 MHz	
20 MHz	QPSK	1	0	19.42	19.52	20.07	19.73	19.55	0
		1	49	19.33	19.51	19.98	19.72	19.44	0
		1	99	19.34	19.54	19.94	19.75	19.38	0
		50	0	19.43	19.54	20.06	19.77	19.53	0
		50	25	19.41	19.58	20.03	19.80	19.49	0
		50	49	19.40	19.57	20.01	19.80	19.47	0
	16QAM	100	0	19.41	19.54	20.03	19.79	19.48	0
		1	0	19.28	19.47	19.91	19.74	19.61	0
		1	49	19.14	19.30	19.79	19.66	19.43	0
		1	99	19.19	19.40	19.88	19.79	19.39	0
		50	0	19.44	19.55	20.04	19.78	19.53	0
		50	25	19.41	19.56	20.01	19.80	19.50	0
	64QAM	50	49	19.40	19.56	20.00	19.81	19.46	0
		100	0	19.46	19.59	20.07	19.83	19.54	0
		1	0	19.45	19.59	19.96	19.92	19.68	0
		1	49	19.32	19.62	19.93	19.93	19.59	0
		1	99	19.41	19.68	19.97	20.00	19.55	0
		50	0	19.46	19.56	20.09	19.81	19.57	0
	256QAM	50	25	19.45	19.57	20.06	19.84	19.54	0
		50	49	19.44	19.58	20.05	19.84	19.50	0
		100	0	19.42	19.54	20.04	19.80	19.50	0
		1	0	17.84	17.82	18.37	17.97	17.86	1.5
		1	49	17.73	17.87	18.29	17.97	17.76	1.5
		1	99	17.86	17.92	18.32	18.04	17.75	1.5
	50	0	18.03	18.11	18.64	18.36	18.11	1.5	
	50	25	18.01	18.14	18.61	18.39	18.10	1.5	
	50	49	17.99	18.15	18.61	18.40	18.07	1.5	
	100	0	17.97	18.07	18.58	18.33	18.03	1.5	

Note; LTE Band 41 has 5 required test channels per FCC KDB 447498 D01v06.

**[LTE Band 66 Conducted Power](RSI = 0,1,2,3,4) Ant. Main #2**

LTE Band 66 \_ 1.4 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				131979Ch. 1710.7 MHz	132322 Ch. 1745 MHz	132665 Ch. 1779.3 MHz		
1.4 MHz	QPSK	1	0	19.62	20.44	20.04	0	0
		1	3	19.57	20.34	20.03	0	0
		1	5	19.64	20.44	20.08	0	0
		3	0	19.65	20.45	20.09	0	0
		3	1	19.65	20.46	20.00	0	0
		3	3	19.61	20.41	20.02	0	0
	16QAM	6	0	19.68	20.45	20.11	0-1	0
		1	0	19.94	20.69	20.29	0-1	0
		1	3	19.88	20.62	20.32	0-1	0
		1	5	19.78	20.61	20.23	0-1	0
		3	0	19.80	20.54	20.22	0-1	0
		3	1	19.80	20.60	20.32	0-1	0
	64QAM	3	3	19.81	20.57	20.18	0-1	0
		6	0	19.68	20.57	20.13	0-2	0
		1	0	19.78	20.73	20.37	0-2	0
		1	3	19.74	20.59	20.23	0-2	0
		1	5	19.88	20.65	20.33	0-2	0
		3	0	19.73	20.51	20.21	0-2	0
	256QAM	3	1	19.78	20.57	20.20	0-2	0
		3	3	19.79	20.61	20.17	0-2	0
		6	0	19.72	20.51	20.20	0-3	0
		1	0	18.23	18.54	18.18	0-5	1
		1	3	18.13	18.88	18.62	0-5	1
		1	5	18.31	18.97	18.69	0-5	1
	3	0	18.25	18.93	18.56	0-5	1	
	3	1	18.22	18.98	18.59	0-5	1	
	3	3	18.25	18.99	18.63	0-5	1	
	6	0	18.18	18.93	18.54	0-5	1	

LTE Band 66 \_ 3 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				131987 Ch. 1711.5 MHz	132322 Ch. 1745 MHz	132657 Ch. 1778.5 MHz		
3 MHz	QPSK	1	0	19.71	20.51	20.22	0	0
		1	7	19.69	20.50	20.17	0	0
		1	14	19.68	20.47	20.10	0	0
		8	0	19.70	20.52	20.15	0-1	0
		8	3	19.70	20.53	20.20	0-1	0
		8	7	19.77	20.52	20.20	0-1	0
	16QAM	15	0	19.74	20.54	20.19	0-1	0
		1	0	20.07	20.63	20.36	0-1	0
		1	7	19.68	20.76	20.42	0-1	0
		1	14	19.99	20.82	20.28	0-1	0
		8	0	19.78	20.62	20.23	0-2	0
		8	3	19.87	20.60	20.24	0-2	0
	64QAM	8	7	19.88	20.65	20.26	0-2	0
		15	0	19.79	20.57	20.27	0-2	0
		1	0	19.92	20.73	20.41	0-2	0
		1	7	19.90	20.47	20.48	0-2	0
		1	14	20.01	20.67	20.38	0-2	0
		8	0	19.74	20.58	20.21	0-3	0
	256QAM	8	3	19.82	20.58	20.22	0-3	0
		8	7	19.85	20.55	20.26	0-3	0
		15	0	19.81	20.58	20.23	0-3	0
		1	0	18.25	18.54	18.22	0-5	1
		1	7	18.33	19.09	18.57	0-5	1
		1	14	18.35	19.07	18.56	0-5	1
		8	0	18.28	19.00	18.56	0-5	1
		8	3	18.28	19.02	18.61	0-5	1
		8	7	18.28	19.01	18.58	0-5	1
		15	0	18.22	18.97	18.54	0-5	1

LTE Band 66 \_ 5 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				131997 Ch. 1712.5 MHz	132322Ch. 1745 MHz	132647 Ch. 1777.5 MHz		
5 MHz	QPSK	1	0	19.71	20.50	20.11	0	0
		1	12	19.78	20.47	20.15	0	0
		1	24	19.80	20.55	20.20	0	0
		12	0	19.80	20.52	20.19	0-1	0
		12	6	19.80	20.53	20.16	0-1	0
		12	11	19.84	20.58	20.19	0-1	0
	16QAM	25	0	19.77	20.53	20.16	0-1	0
		1	0	19.97	20.76	20.29	0-1	0
		1	12	19.99	20.74	20.27	0-1	0
		1	24	20.04	20.83	20.48	0-1	0
		12	0	19.76	20.60	20.21	0-2	0
		12	6	19.82	20.59	20.21	0-2	0
	64QAM	12	11	19.83	20.55	20.30	0-2	0
		25	0	19.77	20.54	20.23	0-2	0
		1	0	19.87	20.70	20.39	0-2	0
		1	12	19.90	20.64	20.26	0-2	0
		1	24	19.96	20.72	20.35	0-2	0
		12	0	19.88	20.58	20.26	0-3	0
	256QAM	12	6	19.91	20.60	20.23	0-3	0
		12	11	19.86	20.60	20.26	0-3	0
		25	0	19.79	20.54	20.19	0-3	0
		1	0	18.34	18.59	18.28	0-5	1
		1	12	18.39	19.06	18.53	0-5	1
		1	24	18.30	19.12	18.66	0-5	1
		12	0	18.26	19.02	18.54	0-5	1
		12	6	18.29	18.99	18.60	0-5	1
		12	11	18.28	19.01	18.60	0-5	1
25		0	18.28	18.96	18.59	0-5	1	



LTE Band 66 \_ 10 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				132022 Ch. 1715 MHz	132322 Ch. 1745 MHz	132622 Ch. 1775 MHz		
10 MHz	QPSK	1	0	19.76	20.52	20.09	0	0
		1	24	19.74	20.42	20.10	0	0
		1	49	19.80	20.49	20.14	0	0
		25	0	19.77	20.47	20.12	0-1	0
		25	12	19.81	20.51	20.14	0-1	0
		25	24	19.80	20.52	20.18	0-1	0
	16QAM	50	0	19.77	20.52	20.13	0-1	0
		1	0	19.92	20.72	20.23	0-1	0
		1	24	19.99	20.60	20.39	0-1	0
		1	49	20.10	20.70	20.37	0-1	0
		25	0	19.77	20.56	20.13	0-2	0
		25	12	19.82	20.57	20.14	0-2	0
	64QAM	25	24	19.78	20.57	20.14	0-2	0
		50	0	19.80	20.53	20.18	0-2	0
		1	0	20.00	20.68	20.12	0-2	0
		1	24	19.89	20.58	20.18	0-2	0
		1	49	20.05	20.56	20.30	0-2	0
		25	0	19.80	20.49	20.10	0-3	0
	256QAM	25	12	19.80	20.52	20.15	0-3	0
		25	24	19.86	20.52	20.18	0-3	0
		50	0	19.82	20.55	20.16	0-3	0
		1	0	18.32	18.55	18.30	0-5	1
		1	24	18.34	19.08	18.58	0-5	1
		1	49	18.47	19.17	18.71	0-5	1
		25	0	18.31	18.97	18.55	0-5	1
		25	12	18.36	18.95	18.54	0-5	1
		25	24	18.32	19.02	18.60	0-5	1
		50	0	18.30	18.96	18.55	0-5	1

LTE Band 66 \_ 15 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				132047 Ch. 1717.5 MHz	132322 Ch. 1745 MHz	132597 Ch. 1772.5 MHz		
15 MHz	QPSK	1	0	19.67	20.41	19.99	0	0
		1	36	19.83	20.53	20.15	0	0
		1	74	19.86	20.55	20.15	0	0
		36	0	19.78	20.51	20.15	0-1	0
		36	18	19.84	20.55	20.15	0-1	0
		36	39	19.89	20.55	20.17	0-1	0
		75	0	19.82	20.51	20.12	0-1	0
	16QAM	1	0	20.00	20.64	20.35	0-1	0
		1	36	20.02	20.65	20.37	0-1	0
		1	74	20.08	20.72	20.45	0-1	0
		36	0	19.85	20.53	20.17	0-2	0
		36	18	19.86	20.55	20.15	0-2	0
		36	39	19.88	20.56	20.21	0-2	0
		75	0	19.87	20.55	20.11	0-2	0
	64QAM	1	0	19.97	20.63	20.09	0-2	0
		1	36	19.96	20.71	20.23	0-2	0
		1	74	20.16	20.75	20.43	0-2	0
		36	0	19.87	20.57	20.14	0-3	0
		36	18	19.88	20.59	20.19	0-3	0
		36	39	19.92	20.56	20.24	0-3	0
		75	0	19.87	20.51	20.13	0-3	0
	256QAM	1	0	18.38	18.56	18.31	0-5	1
		1	36	18.46	19.09	18.72	0-5	1
		1	74	18.50	19.20	18.65	0-5	1
		36	0	18.31	18.98	18.58	0-5	1
		36	18	18.33	19.00	18.59	0-5	1
		36	39	18.40	18.99	18.62	0-5	1
75		0	18.31	18.93	18.56	0-5	1	

LTE Band 66 \_ 20 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				132072 Ch. 1720 MHz	132322 Ch. 1745 MHz	132572 Ch. 1770 MHz		
20 MHz	QPSK	1	0	19.76	20.40	20.03	0	0
		1	49	19.84	20.48	20.12	0	0
		1	99	19.86	<b>20.49</b>	20.14	0	0
		50	0	19.83	20.47	20.14	0-1	0
		50	25	19.87	<b>20.50</b>	20.22	0-1	0
		50	49	19.90	20.49	20.16	0-1	0
	16QAM	100	0	19.88	20.50	20.14	0-1	0
		1	0	19.99	20.66	20.19	0-1	0
		1	49	20.08	20.62	20.43	0-1	0
		1	99	20.23	20.78	20.36	0-1	0
		50	0	19.86	20.47	20.11	0-2	0
		50	25	19.91	20.57	20.19	0-2	0
	64QAM	50	49	19.99	20.51	20.16	0-2	0
		100	0	19.92	20.53	20.16	0-2	0
		1	0	19.96	20.67	20.27	0-2	0
		1	49	20.01	20.74	20.36	0-2	0
		1	99	20.05	20.65	20.37	0-2	0
		50	0	19.89	20.49	20.14	0-3	0
	256QAM	50	25	19.93	20.55	20.23	0-3	0
		50	49	19.97	20.57	20.23	0-3	0
		100	0	19.92	20.51	20.15	0-3	0
		1	0	18.38	18.63	18.40	0-5	1
		1	49	18.48	19.07	18.75	0-5	1
		1	99	18.58	19.02	18.71	0-5	1
		50	0	18.39	18.92	18.59	0-5	1
		50	25	18.43	18.99	18.61	0-5	1
		50	49	18.44	18.99	18.64	0-5	1
		100	0	18.40	18.92	18.63	0-5	1

[LTE Band 66 Conducted Power](RSI = 0,1,2,3,4) Ant. Main #3

LTE Band 66 \_ 1.4 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				131979Ch. 1710.7 MHz	132322 Ch. 1745 MHz	132665 Ch. 1779.3 MHz		
1.4 MHz	QPSK	1	0	20.14	20.47	20.38	0	0
		1	3	20.06	20.41	20.30	0	0
		1	5	20.20	20.52	20.44	0	0
		3	0	20.13	20.48	20.39	0	0
		3	1	20.15	20.39	20.41	0	0
		3	3	20.21	20.40	20.39	0	0
	16QAM	6	0	20.21	20.49	20.45	0-1	0
		1	0	20.33	20.85	20.64	0-1	0
		1	3	20.47	20.66	20.63	0-1	0
		1	5	20.36	20.63	20.72	0-1	0
		3	0	20.30	20.59	20.65	0-1	0
		3	1	20.33	20.73	20.65	0-1	0
	64QAM	3	3	20.19	20.70	20.59	0-1	0
		6	0	20.25	20.51	20.54	0-2	0
		1	0	20.40	20.57	20.65	0-2	0
		1	3	20.34	20.54	20.45	0-2	0
		1	5	20.34	20.64	20.58	0-2	0
		3	0	20.24	20.58	20.53	0-2	0
	256QAM	3	1	20.33	20.52	20.56	0-2	0
		3	3	20.34	20.57	20.58	0-2	0
		6	0	20.33	20.50	20.42	0-3	0
		1	0	18.85	19.13	19.12	0-5	1.5
		1	3	18.85	19.01	19.02	0-5	1.5
		1	5	18.79	19.00	19.04	0-5	1.5
		3	0	18.71	19.01	18.97	0-5	1.5
		3	1	18.75	18.99	19.01	0-5	1.5
		3	3	18.80	19.18	18.99	0-5	1.5
6		0	18.64	18.96	18.97	0-5	1.5	

LTE Band 66 \_ 3 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				131987 Ch. 1711.5 MHz	132322 Ch. 1745 MHz	132657 Ch. 1778.5 MHz		
3 MHz	QPSK	1	0	20.16	20.46	20.50	0	0
		1	7	20.05	20.38	20.36	0	0
		1	14	20.15	20.46	20.42	0	0
		8	0	20.25	20.48	20.54	0-1	0
		8	3	20.24	20.56	20.58	0-1	0
		8	7	20.29	20.62	20.53	0-1	0
	16QAM	15	0	20.28	20.51	20.52	0-1	0
		1	0	20.53	20.62	20.77	0-1	0
		1	7	20.33	20.53	20.74	0-1	0
		1	14	20.28	20.73	20.83	0-1	0
		8	0	20.25	20.55	20.52	0-2	0
		8	3	20.30	20.56	20.52	0-2	0
	64QAM	8	7	20.23	20.62	20.59	0-2	0
		15	0	20.22	20.52	20.50	0-2	0
		1	0	20.41	20.84	20.72	0-2	0
		1	7	20.40	20.68	20.71	0-2	0
		1	14	20.47	20.79	20.69	0-2	0
		8	0	20.19	20.63	20.52	0-3	0
	256QAM	8	3	20.26	20.54	20.54	0-3	0
		8	7	20.26	20.56	20.53	0-3	0
		15	0	20.35	20.59	20.55	0-3	0
		1	0	18.86	19.13	19.15	0-5	1.5
		1	7	18.87	19.15	19.08	0-5	1.5
		1	14	18.88	19.11	19.21	0-5	1.5
		8	0	18.68	19.04	19.04	0-5	1.5
		8	3	18.69	18.98	19.09	0-5	1.5
		8	7	18.71	19.12	19.04	0-5	1.5
		15	0	18.73	19.01	19.05	0-5	1.5

LTE Band 66 \_ 5 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				131997 Ch. 1712.5 MHz	132322Ch. 1745 MHz	132647 Ch. 1777.5 MHz		
5 MHz	QPSK	1	0	20.13	20.41	20.31	0	0
		1	12	20.08	20.41	20.37	0	0
		1	24	20.22	20.49	20.42	0	0
		12	0	20.25	20.54	20.51	0-1	0
		12	6	20.31	20.49	20.54	0-1	0
		12	11	20.28	20.61	20.49	0-1	0
	16QAM	25	0	20.18	20.48	20.54	0-1	0
		1	0	20.44	20.91	20.60	0-1	0
		1	12	20.34	20.46	20.53	0-1	0
		1	24	20.34	20.75	20.67	0-1	0
		12	0	20.35	20.57	20.55	0-2	0
		12	6	20.30	20.64	20.48	0-2	0
	64QAM	12	11	20.31	20.65	20.55	0-2	0
		25	0	20.26	20.50	20.46	0-2	0
		1	0	20.45	20.78	20.74	0-2	0
		1	12	20.48	20.65	20.68	0-2	0
		1	24	20.42	20.71	20.71	0-2	0
		12	0	20.36	20.54	20.55	0-3	0
	256QAM	12	6	20.29	20.53	20.51	0-3	0
		12	11	20.34	20.63	20.58	0-3	0
		25	0	20.31	20.55	20.49	0-3	0
		1	0	19.02	19.21	19.27	0-5	1.5
		1	12	18.90	19.24	19.12	0-5	1.5
		1	24	18.89	19.24	19.23	0-5	1.5
		12	0	18.80	19.01	19.03	0-5	1.5
		12	6	18.80	19.06	19.01	0-5	1.5
		12	11	18.80	19.13	19.01	0-5	1.5
		25	0	18.74	19.06	19.02	0-5	1.5

LTE Band 66 \_ 10 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				132022 Ch. 1715 MHz	132322 Ch. 1745 MHz	132622 Ch. 1775 MHz		
10 MHz	QPSK	1	0	20.18	20.42	20.40	0	0
		1	24	20.12	20.45	20.28	0	0
		1	49	20.24	20.48	20.34	0	0
		25	0	20.27	20.49	20.49	0-1	0
		25	12	20.24	20.51	20.43	0-1	0
		25	24	20.24	20.55	20.48	0-1	0
	16QAM	50	0	20.26	20.57	20.53	0-1	0
		1	0	20.50	20.68	20.69	0-1	0
		1	24	20.32	20.62	20.65	0-1	0
		1	49	20.39	20.91	20.73	0-1	0
		25	0	20.29	20.56	20.54	0-2	0
		25	12	20.30	20.66	20.49	0-2	0
	64QAM	25	24	20.28	20.53	20.45	0-2	0
		50	0	20.28	20.51	20.48	0-2	0
		1	0	20.43	20.73	20.64	0-2	0
		1	24	20.41	20.69	20.63	0-2	0
		1	49	20.53	20.87	20.61	0-2	0
		25	0	20.30	20.50	20.44	0-3	0
	256QAM	25	12	20.24	20.57	20.44	0-3	0
		25	24	20.29	20.52	20.52	0-3	0
		50	0	20.34	20.59	20.50	0-3	0
		1	0	18.84	19.16	19.10	0-5	1.5
		1	24	18.88	19.17	19.05	0-5	1.5
		1	49	18.99	19.22	19.12	0-5	1.5
	25	0	18.74	19.07	18.95	0-5	1.5	
	25	12	18.70	19.06	19.00	0-5	1.5	
	25	24	18.75	19.06	19.03	0-5	1.5	
	50	0	18.81	19.06	18.96	0-5	1.5	

LTE Band 66 \_ 15 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				132047 Ch. 1717.5 MHz	132322 Ch. 1745 MHz	132597 Ch. 1772.5 MHz		
15 MHz	QPSK	1	0	20.16	20.34	20.32	0	0
		1	36	20.12	20.43	20.43	0	0
		1	74	20.22	20.52	20.38	0	0
		36	0	20.21	20.53	20.45	0-1	0
		36	18	20.28	20.56	20.51	0-1	0
		36	39	20.29	20.59	20.51	0-1	0
		75	0	20.28	20.55	20.42	0-1	0
	16QAM	1	0	20.39	20.82	20.56	0-1	0
		1	36	20.42	20.71	20.52	0-1	0
		1	74	20.51	20.76	20.64	0-1	0
		36	0	20.32	20.52	20.45	0-2	0
		36	18	20.30	20.59	20.51	0-2	0
		36	39	20.31	20.63	20.47	0-2	0
		75	0	20.26	20.55	20.40	0-2	0
	64QAM	1	0	20.55	20.69	20.50	0-2	0
		1	36	20.35	20.74	20.50	0-2	0
		1	74	20.43	20.74	20.51	0-2	0
		36	0	20.29	20.54	20.53	0-3	0
		36	18	20.33	20.62	20.49	0-3	0
		36	39	20.30	20.58	20.58	0-3	0
		75	0	20.25	20.55	20.44	0-3	0
	256QAM	1	0	18.79	19.18	18.86	0-5	1.5
		1	36	18.89	19.25	19.06	0-5	1.5
		1	74	19.01	19.24	19.20	0-5	1.5
		36	0	18.75	19.04	19.01	0-5	1.5
		36	18	18.85	19.05	18.95	0-5	1.5
		36	39	18.83	19.14	18.95	0-5	1.5
		75	0	18.77	19.08	18.98	0-5	1.5



LTE Band 66 \_ 20 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				132072 Ch. 1720 MHz	132322 Ch. 1745 MHz	132572 Ch. 1770 MHz		
20 MHz	QPSK	1	0	20.08	20.31	20.22	0	0
		1	49	20.14	20.38	20.36	0	0
		1	99	20.26	<b>20.55</b>	20.42	0	0
		50	0	20.30	20.53	20.35	0-1	0
		50	25	20.32	<b>20.67</b>	20.52	0-1	0
		50	49	20.28	20.54	20.47	0-1	0
	16QAM	100	0	20.31	20.56	20.47	0-1	0
		1	0	20.46	20.45	20.56	0-1	0
		1	49	20.51	20.58	20.68	0-1	0
		1	99	20.56	20.61	20.71	0-1	0
		50	0	20.27	20.44	20.45	0-2	0
		50	25	20.32	20.58	20.52	0-2	0
	64QAM	50	49	20.33	20.56	20.45	0-2	0
		100	0	20.32	20.53	20.45	0-2	0
		1	0	20.35	20.55	20.40	0-2	0
		1	49	20.47	20.73	20.56	0-2	0
		1	99	20.45	20.81	20.73	0-2	0
		50	0	20.33	20.55	20.40	0-3	0
	256QAM	50	25	20.36	20.63	20.46	0-3	0
		50	49	20.32	20.62	20.46	0-3	0
		100	0	20.25	20.47	20.46	0-3	0
		1	0	18.77	19.06	18.81	0-5	1.5
		1	49	18.85	19.18	18.90	0-5	1.5
		1	99	18.94	19.20	19.02	0-5	1.5
		50	0	18.76	18.96	19.00	0-5	1.5
		50	25	18.81	19.07	19.02	0-5	1.5
		50	49	18.81	19.10	19.03	0-5	1.5
		100	0	18.87	19.06	18.95	0-5	1.5

## 11.4 NR Maximum Output Power

### 11.4.1 NR Band Maximum Conducted Power

[ NR Band n5 Conducted Power ](Pmax, RSI=0,1,2,3,4) Ant. Main #1

NR Band n5\_ 5 MHz Bandwidth

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR [dB]
						165300	167300	169300	
						826.5 MHz	836.5 MHz	846.5 MHz	
5 MHz	15	DFT-s OFDM	pi/2 BPSK	1	1	23.56	23.64	23.63	0
				1	13	23.79	23.52	23.55	0
				1	23	23.75	23.53	23.65	0
				12	0	23.39	23.16	23.15	0.5
				12	7	23.82	23.57	23.63	0
				12	13	23.32	23.07	23.27	0.5
			QPSK	25	0	23.38	23.16	23.18	0.5
				1	1	23.30	23.51	23.54	0
				1	13	23.66	23.44	23.44	0
				1	23	23.70	23.46	23.57	0
				12	0	22.87	22.65	22.67	1
				12	7	23.80	23.61	23.66	0
			16QAM	12	13	22.80	22.56	22.78	1
				25	0	22.87	22.65	22.68	1
				1	1	23.26	23.00	23.02	1
			64QAM	1	1	21.32	21.07	21.07	2.5
				1	1	19.16	18.88	18.92	4.5
				1	1	22.46	22.18	22.17	1.5
256QAM	1	1	19.16	18.88	18.92	4.5			
	1	1	22.46	22.18	22.17	1.5			
	1	1	22.46	22.18	22.17	1.5			
CP	QPSK	1	1	22.46	22.18	22.17	1.5		

NR Band n5\_ 10 MHz Bandwidth

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR [dB]
							167300		
							836.5 MHz		
10 MHz	15	DFT-s OFDM	pi/2 BPSK	1	1		23.61		0
				1	26		23.51		0
				1	50		23.54		0
				25	0		23.18		0.5
				25	14		23.18		0
				25	27		22.87		0.5
			QPSK	50	0		22.95		0.5
				1	1		23.52		0
				1	26		23.44		0
				1	50		23.47		0
				25	0		22.73		1
				25	14		23.67		0
			16QAM	25	27		22.62		1
				50	0		22.70		1
				1	1		23.03		1
			64QAM	1	1		21.06		2.5
				1	1		18.91		4.5
				1	1		22.15		1.5
CP	QPSK	1	1		22.15		1.5		

NR Band n5\_ 15 MHz Bandwidth

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max. Average Power [dBm]		MPR [dB]
						167300	836.5 MHz	
15 MHz	15	DFT-s OFDM	pi/2 BPSK	1	1		23.82	0
				1	40		23.71	0
				1	77		23.66	0
				36	0		23.36	0.5
				36	22		23.81	0
				36	43		23.19	0.5
				75	0		23.33	0.5
			QPSK	1	1		23.56	0
				1	40		23.56	0
				1	77		23.59	0
				36	0		22.89	1
				36	22		23.76	0
				36	43		22.68	1
				75	0		22.82	1
		16QAM	1	1		22.73	1	
		64QAM	1	1		21.30	2.5	
256QAM	1	1		19.12	4.5			
CP	QPSK	1	1		22.42	1.5		

NR Band n5\_ 20 MHz Bandwidth

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max. Average Power [dBm]		MPR [dB]
						167300	836.5 MHz	
20 MHz	15	DFT-s OFDM	pi/2 BPSK	1	1		23.84	0
				1	53		23.60	0
				1	104		23.62	0
				50	0		22.90	0.5
				50	28		23.56	0
				50	56		22.75	0.5
				100	0		22.81	0.5
			QPSK	1	1		<b>23.94</b>	0
				1	53		23.72	0
				1	104		23.71	0
				50	0		23.37	1
				50	28		<b>23.76</b>	0
				50	56		23.27	1
				100	0		23.32	1
		16QAM	1	1		23.30	1	
		64QAM	1	1		21.38	2.5	
256QAM	1	1		19.20	4.5			
CP	QPSK	1	1		<b>22.46</b>	1.5		

[ NR Band n41 Conducted Power] (RSI = 0,1,2,3,4) Ant. Main #2

NR Band n41 \_10 Mhz Bandwidth

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max. Average Power (dBm)					MPR [dB]
						500202	509400	518598	527802	537000	
						2501.01 MHz	2547 MHz	2592.99 MHz	2639.01 MHz	2685 MHz	
10 Mhz	30	DFT-s	pi/2 BPSK	1	1	18.71	18.52	18.86	18.40	18.25	0
				1	12	18.64	18.53	18.90	18.40	18.21	0
				1	22	18.74	18.53	18.80	18.42	18.18	0
				12	0	18.73	18.58	18.94	18.42	18.11	0
				12	6	18.80	18.56	18.92	18.43	18.19	0
				12	12	18.72	18.56	18.92	18.42	18.09	0
			QPSK	24	0	18.78	18.59	18.89	18.40	18.18	0
				1	1	18.64	18.53	18.83	18.42	18.21	0
				1	12	18.67	18.46	18.84	18.36	18.16	0
				1	22	18.72	18.56	18.73	18.43	18.17	0
				12	0	18.74	18.52	18.90	18.37	18.01	0
				12	6	18.69	18.60	18.96	18.48	18.14	0
			16QAM	12	12	18.68	18.56	18.94	18.43	18.27	0
				24	0	18.71	18.52	18.89	18.42	18.15	0
				1	1	18.83	18.72	19.09	18.54	18.11	0
			64QAM	1	1	18.76	18.63	18.90	18.38	18.20	0
1	1	18.54		18.47	18.77	18.37	18.19	0.5			
256QAM	1	1	18.54	18.47	18.77	18.37	18.19	0.5			
CP	QPSK	1	1	18.80	18.58	19.01	18.47	18.02	0		

NR Band n41 \_15 Mhz Bandwidth

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max. Average Power (dBm)					MPR [dB]
						500700	509664	518598	527562	536496	
						2503.5 MHz	2548.32 MHz	2592.99 MHz	2637.81 MHz	2682.48 MHz	
15 Mhz	30	DFT-s	pi/2 BPSK	1	1	18.72	18.55	18.90	18.40	18.40	0
				1	18	18.72	18.53	18.91	18.40	18.33	0
				1	36	18.82	18.62	18.87	18.49	18.38	0
				18	0	18.81	18.61	18.99	18.48	18.44	0
				18	9	18.80	18.61	18.99	18.49	18.42	0
				18	18	18.81	18.63	18.98	18.49	18.43	0
			QPSK	36	0	18.78	18.60	18.98	18.47	18.40	0
				1	1	18.73	18.58	18.88	18.43	18.41	0
				1	18	18.69	18.53	18.91	18.40	18.34	0
				1	36	18.81	18.61	18.82	18.50	18.39	0
				18	0	18.76	18.58	18.94	18.47	18.42	0
				18	9	18.78	18.61	18.97	18.50	18.42	0
			16QAM	18	18	18.78	18.63	18.94	18.50	18.44	0
				36	0	18.77	18.60	18.97	18.51	18.45	0
				1	1	18.88	18.76	19.18	18.64	18.63	0
			64QAM	1	1	18.82	18.64	18.96	18.47	18.46	0
1	1	18.62		18.53	18.86	18.41	18.37	0.5			
256QAM	1	1	18.62	18.53	18.86	18.41	18.37	0.5			
CP	QPSK	1	1	18.82	18.66	19.02	18.49	18.43	0		

NR Band n41\_20 Mhz Bandwidth

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max. Average Power (dBm)					MPR [dB]
						501204	509898	518598	527298	535998	
						2506.02	2549.49	2592.99	2636.49	2679.99	
						MHz	MHz	MHz	MHz	MHz	
20 Mhz	30	DFT-s	pi/2 BPSK	1	1	18.52	18.59	18.88	18.32	18.37	0
				1	26	18.58	18.59	18.95	18.42	18.36	0
				1	49	18.61	18.60	18.81	18.45	18.36	0
				25	0	18.61	18.62	19.00	18.45	18.44	0
				25	13	18.64	18.66	18.96	18.47	18.40	0
				25	26	18.66	18.66	18.94	18.50	18.39	0
			50	0	18.60	18.62	18.98	18.47	18.38	0	
			QPSK	1	1	18.51	18.60	18.83	18.32	18.37	0
				1	26	18.55	18.58	18.88	18.43	18.36	0
				1	49	18.62	18.60	18.76	18.46	18.35	0
				25	0	18.57	18.59	18.92	18.42	18.41	0
				25	13	18.56	18.63	18.98	18.48	18.41	0
				25	26	18.66	18.63	18.92	18.50	18.43	0
			50	0	18.61	18.62	18.97	18.48	18.41	0	
			16QAM	1	1	18.61	18.65	18.99	18.55	18.66	0
			64QAM	1	1	18.58	18.66	18.90	18.45	18.49	0
256QAM	1	1	18.41	18.67	18.84	18.26	18.33	0.5			
CP	QPSK	1	1	18.57	18.66	18.96	18.44	18.45	0		

NR Band n41\_30 Mhz Bandwidth

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max. Average Power (dBm)					MPR [dB]
						502200	510402	518598	526800	534996	
						2511	2552.01	2592.99	2634	2674.98	
						MHz	MHz	MHz	MHz	MHz	
30 Mhz	30	DFT-s	pi/2 BPSK	1	1	18.66	18.65	18.86	18.43	18.52	0
				1	39	18.78	18.70	19.02	18.67	18.54	0
				1	76	18.71	18.54	18.66	18.57	18.42	0
				36	0	18.74	18.68	18.92	18.54	18.55	0
				36	21	18.81	18.74	18.99	18.65	18.52	0
				36	42	18.79	18.74	18.88	18.66	18.48	0
			75	0	18.78	18.70	18.99	18.61	18.50	0	
			QPSK	1	1	18.61	18.68	18.77	18.41	18.54	0
				1	39	18.77	18.74	18.96	18.64	18.52	0
				1	76	18.69	18.68	18.63	18.59	18.43	0
				36	0	18.69	18.66	18.90	18.51	18.53	0
				36	21	18.79	18.71	19.00	18.64	18.57	0
				36	42	18.80	18.71	18.87	18.68	18.48	0
			75	0	18.80	18.70	19.00	18.64	18.52	0	
			16QAM	1	1	18.79	18.94	18.97	18.68	18.81	0
			64QAM	1	1	18.66	18.72	18.87	18.50	18.61	0
256QAM	1	1	18.65	18.68	18.71	18.28	18.55	0.5			
CP	QPSK	1	1	18.66	18.71	18.89	18.52	18.61	0		

NR Band n41 \_40 MHz Bandwidth

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max. Average Power (dBm)					MPR [dB]
						503202	513468		523734	534000	
						2516.01 MHz	2567.34 MHz		2618.67 MHz	2670 MHz	
40 MHz	30	DFT-s	pi/2 BPSK	1	1	18.50	18.45		18.71	18.49	0
				1	53	18.68	18.60		18.45	18.48	0
				1	104	18.58	18.75		18.48	18.34	0
				50	0	18.60	18.58		18.58	18.54	0
				50	28	18.69	18.64		18.40	18.46	0
				50	56	18.65	18.76		18.45	18.39	0
			100	0	18.67	18.61		18.38	18.42	0	
			QPSK	1	1	18.49	18.45		18.65	18.48	0
				1	53	18.70	18.63		18.41	18.49	0
				1	104	18.56	18.76		18.47	18.36	0
				50	0	18.60	18.54		18.55	18.52	0
				50	28	18.69	18.64		18.40	18.47	0
				50	56	18.64	18.74		18.48	18.43	0
			100	0	18.66	18.63		18.42	18.46	0	
			16QAM	1	1	18.73	18.57		19.02	18.85	0
			64QAM	1	1	18.36	18.52		18.71	18.50	0
			256QAM	1	1	18.49	18.54		18.86	18.31	0.5
			CP	QPSK	1	1	18.55	18.59		18.82	18.53

NR Band n41 \_50 MHz Bandwidth

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max. Average Power (dBm)					MPR [dB]
						504204		518598		532998	
						2521.02 MHz		2592.99 MHz		2664.99 MHz	
50 MHz	30	DFT-s	pi/2 BPSK	1	1	18.60		18.65		18.35	0
				1	67	18.79		18.94		18.52	0
				1	131	18.61		18.41		18.38	0
				64	0	18.75		18.86		18.66	0
				64	35	18.82		18.98		18.56	0
				64	69	18.73		18.72		18.46	0
			128	0	18.78		18.97		18.51	0	
			QPSK	1	1	18.56		18.65		18.32	0
				1	67	18.75		18.93		18.55	0
				1	131	18.66		18.36		18.40	0
				64	0	18.73		18.82		18.64	0
				64	35	18.80		18.97		18.57	0
				64	69	18.74		18.71		18.51	0
			128	0	18.76		18.97		18.57	0	
			16QAM	1	1	18.78		18.62		18.38	0
			64QAM	1	1	18.56		18.89		18.32	0
			256QAM	1	1	18.47		18.49		18.17	0.5
			CP	QPSK	1	1	18.63		18.62		18.40

NR Band n41\_60 MHz Bandwidth

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max. Average Power (dBm)				MPR [dB]	
						505200		518598			531996
						2526		2592.99			2659.98
						MHz	MHz	MHz			
60 MHz	30	DFT-s	pi/2 BPSK	1	1	18.46		18.57		18.36	0
				1	81	18.65		19.01		18.56	0
				1	160	18.56		18.33		18.31	0
				81	0	18.63		18.85		18.51	0
				81	41	18.65		19.01		18.54	0
				81	81	18.62		18.70		18.42	0
			162	0	18.61		18.95		18.51	0	
			QPSK	1	1	18.43		18.56		18.35	0
				1	81	18.67		18.99		18.56	0
				1	160	18.59		18.31		18.35	0
				81	0	18.62		18.82		18.51	0
				81	41	18.65		18.99		18.56	0
				81	81	18.63		18.68		18.44	0
			16QAM	162	0	18.63		18.96		18.54	0
				1	1	18.71		18.60		18.45	0
				1	1	18.38		18.51		18.28	0
			256QAM	1	1	18.41		18.48		18.28	0.5
CP	QPSK	1	1	18.50		18.66		18.45	0		

NR Band n41\_80 MHz Bandwidth

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max. Average Power (dBm)				MPR [dB]	
						507204					529998
						2536.02					2649.99
						MHz	MHz	MHz			
80 MHz	30	DFT-s	pi/2 BPSK	1	1	18.39				18.36	0
				1	109	18.51				18.52	0
				1	215	18.64				18.30	0
				108	0	18.59				18.43	0
				108	55	18.59				18.55	0
				108	109	18.57				18.39	0
			216	0	18.55				18.52	0	
			QPSK	1	1	18.39				18.34	0
				1	109	18.51				18.52	0
				1	215	18.67				18.36	0
				108	0	18.56				18.44	0
				108	55	18.60				18.58	0
				108	109	18.59				18.44	0
			216	0	18.57				18.55	0	
			16QAM	1	1	18.60				18.62	0
			64QAM	1	1	18.43				18.40	0
			256QAM	1	1	18.33				18.32	0.5
CP	QPSK	1	1	18.45				18.41	0		

NR Band n41\_90 MHz Bandwidth

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max. Average Power (dBm)				MPR [dB]
						508200			528996	
						2541 MHz			2644.98 MHz	
90 MHz	30	DFT-s	pi/2 BPSK	1	1	18.49			18.62	0
				1	123	18.65			18.61	0
				1	243	18.73			18.26	0
				120	0	18.67			18.39	0
				120	63	18.69			18.61	0
				120	125	18.65			18.42	0
				243	0	18.66			18.55	0
			QPSK	1	1	18.47			18.61	0
				1	123	18.68			18.63	0
				1	243	18.73			18.31	0
				120	0	18.69			18.42	0
				120	63	18.70			18.67	0
				120	125	18.68			18.45	0
			16QAM	1	1	18.69			18.76	0
				1	1	18.57			18.71	0
				1	1	18.34			18.50	0.5
CP	QPSK	1	1	18.55			18.71	0		

NR Band n41\_100 MHz Bandwidth

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max. Average Power (dBm)				MPR [dB]
								518598		
								2592.99 MHz		
100 MHz	30	DFT-s	pi/2 BPSK	1	1			18.40		0
				1	137			18.88		0
				1	271			18.98		0
				135	0			18.64		0
				135	69			18.96		0
				135	138			18.41		0
				270	0			18.94		0
			QPSK	1	1			18.44		0
				1	137			<b>19.05</b>		0
				1	271			19.04		0
				135	0			18.66		0
				135	69			<b>18.97</b>		0
				135	138			18.44		0
			16QAM	1	1			18.40		0
				1	1			18.48		0
				1	1			18.36		0.5
CP	QPSK	1	1			<b>18.54</b>		0		



[ NR Band n66 Conducted Power ](RSI =0,1,2,3,4) Ant. Main #2

NR Band n66 \_5 MHz Bandwidth

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR [dB]	
						342500	349000	355500		
						1712.5 MHz	1745 MHz	1777.5 MHz		
5 MHz	15	DFT-s OFDM	pi/2 BPSK	1	1	19.52	19.46	19.02	0	
				1	13	19.42	19.39	19.02	0	
				1	23	19.52	19.49	19.03	0	
				12	0	19.48	19.50	19.04	0	
				12	7	19.49	19.47	19.03	0	
				12	13	19.51	19.46	19.03	0	
			25	0	19.50	19.47	19.05	0		
			QPSK	1	1	19.54	19.47	19.09	0	
				1	13	19.43	19.39	19.00	0	
				1	23	19.53	19.47	19.07	0	
				12	0	19.47	19.47	19.01	0	
				12	7	19.48	19.47	19.02	0	
				12	13	19.51	19.46	19.01	0	
				25	0	19.46	19.46	19.07	0	
				16QAM	1	1	19.55	19.45	19.21	0
			64QAM	1	1	19.57	19.63	19.11	0	
			256QAM	1	1	19.49	19.36	18.97	0.5	
			CP	QPSK	1	1	19.44	19.44	19.05	0

NR Band n66 \_ 10 MHz Bandwidth

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR [dB]	
						343000	349000	355000		
						1715 MHz	1745 MHz	1775 MHz		
10 MHz	15	DFT-s OFDM	pi/2 BPSK	1	1	19.57	19.47	19.06	0	
				1	26	19.75	19.62	19.13	0	
				1	50	19.61	19.41	19.06	0	
				25	0	19.54	19.48	19.04	0	
				25	14	19.57	19.48	19.07	0	
				25	27	19.61	19.46	19.09	0	
			50	0	19.60	19.48	19.08	0		
			QPSK	1	1	19.51	19.48	19.08	0	
				1	26	19.64	19.62	19.16	0	
				1	50	19.61	19.46	19.06	0	
				25	0	19.54	19.50	19.06	0	
				25	14	19.60	19.48	19.11	0	
				25	27	19.62	19.48	19.08	0	
				50	0	19.58	19.45	19.09	0	
				16QAM	1	1	19.56	19.40	19.11	0
			64QAM	1	1	19.50	19.55	19.12	0	
			256QAM	1	1	19.50	19.33	18.86	0.5	
			CP	QPSK	1	1	19.52	19.48	19.01	0

NR Band n66 \_ 15 MHz Bandwidth

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR [dB]
						343500	349000	354500	
						1717.5 MHz	1745 MHz	1772.5 MHz	
15 MHz	15	DFT-s OFDM	pi/2 BPSK	1	1	19.49	19.37	18.91	0
				1	40	19.50	19.40	18.89	0
				1	77	19.55	19.33	18.94	0
				36	0	19.50	19.42	18.96	0
				36	22	19.55	19.45	18.98	0
				36	43	19.59	19.43	19.02	0
			75	0	19.53	19.45	18.97	0	
			QPSK	1	1	19.43	19.43	18.86	0
				1	40	19.48	19.42	18.85	0
				1	77	19.54	19.37	18.88	0
				36	0	19.52	19.45	18.97	0
				36	22	19.57	19.47	18.97	0
				36	43	19.60	19.44	19.00	0
			75	0	19.55	19.44	18.95	0	
			16QAM	1	1	19.47	19.55	18.84	0
			64QAM	1	1	19.52	19.56	18.95	0
			256QAM	1	1	19.48	19.33	18.77	0.5
			CP	QPSK	1	1	19.43	19.37	18.92

NR Band n66 \_ 20 MHz Bandwidth

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR [dB]
						344000	349000	354000	
						1720 MHz	1745 MHz	1770 MHz	
20 MHz	15	DFT-s OFDM	pi/2 BPSK	1	1	19.33	19.35	18.95	0
				1	53	19.64	19.62	19.14	0
				1	104	19.49	19.26	18.92	0
				50	0	19.43	19.43	19.01	0
				50	28	19.50	19.47	19.08	0
				50	56	19.55	19.40	19.03	0
			100	0	19.52	19.42	19.03	0	
			QPSK	1	1	19.32	19.34	18.98	0
				1	53	<b>19.56</b>	19.51	19.18	0
				1	104	19.46	19.24	18.92	0
				50	0	19.44	19.42	18.99	0
				50	28	19.53	19.47	19.05	0
				50	56	<b>19.54</b>	19.42	19.03	0
			100	0	19.49	19.45	19.01	0	
			16QAM	1	1	19.33	19.32	19.17	0
			64QAM	1	1	19.34	19.13	19.06	0
			256QAM	1	1	19.35	19.35	18.90	0.5
			CP	QPSK	1	1	<b>19.33</b>	19.30	18.96

**[ NR Band n41 Conducted Power] – Antenna: SRS**

The output Power of the SRS signal was measured by the manufacturer's FTM Mode as follows.

NR Band n41\_ 100 MHz Bandwidth – Antenna. Sub5

Bandwidth	SCS(kHz)	Modulation	Max. Average Power [dBm]				MPR [dB]	
					518598			
					2592.99 MHz			
100 MHz	30	Zad-off chu sequence			19.93			0

NR Band n41\_ 100 MHz Bandwidth – Antenna. Sub4

Bandwidth	SCS(kHz)	Modulation	Max. Average Power [dBm]				MPR [dB]	
					518598			
					2592.99 MHz			
100 MHz	30	Zad-off chu sequence			19.67			0

NR Band n41\_ 100 MHz Bandwidth - Antenna : Sub1

Bandwidth	SCS(kHz)	Modulation	Max. Average Power [dBm]				MPR [dB]	
					518598			
					2592.99 MHz			
100 MHz	30	Zad-off chu sequence			17.09			0

## 11.5 WIFI Conducted Power measurement method

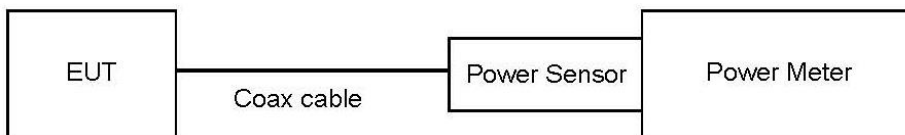
### Un-Licensed Bands (DTS Band)

Test Description	Test Procedure Used
Conducted Output Power	- KDB 558074 v05 - Section 8.3.2.3 - ANSI 63.10-2013 - Section 11.9.2.3

#### Test Procedure

1. Measure the duty cycle.
2. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
3. Add  $10 \log(1/x)$ , where  $x$  is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

#### Test setup



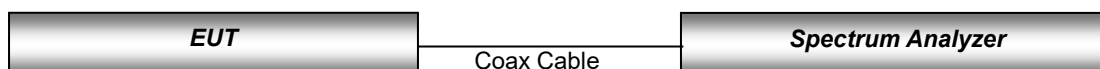
### Un-Licensed Bands (NII Band)

Test Description	Test Procedure Used
Conducted Output Power	- KDB 789033 D02 v02r01 - Section E.3.a

#### Test Procedure

1. Measure the duty cycle.
2. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
3. Add  $10 \log(1/x)$ , where  $x$  is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

#### Test setup



**11.5.1 IEEE 802.11 (2.4 GHz) Maximum Conducted Power**

Ant.1

Mode	Frequency [MHz]	Channel	IEEE 802.11 (2.4 GHz) Average Conducted Power [dBm]
802.11b	2 412	1	18.06
	2 437	6	17.41
	2 462	11	17.62
	2 467	12	7.30
	2 472	13	7.08

**11.5.2 IEEE 802.11 (2.4 GHz) Reduced Conducted Power (RCV On / Grip Sensor On)**

Ant.1

Mode	Frequency [MHz]	Channel	IEEE 802.11 (2.4 GHz) Reduced Average Conducted Power [dBm]
802.11b	2 412	1	13.06
	2 437	6	12.63
	2 462	11	12.54
	2 467	12	7.30
	2 472	13	7.08

**11.5.3 IEEE 802.11 (5 GHz) Maximum Conducted Power**

Ant.1

Mode	Frequency [MHz]	Channel	IEEE 802.11 (5 GHz) Average Conducted Power [dBm]
802.11a (20 MHz BW)	5 180	36	15.67
	5 200	40	15.56
	5 220	44	15.48
	5 240	48	15.51
	5 260	52	15.95
	5 280	56	15.35
	5 300	60	16.00
	5 320	64	15.62
	5 500	100	15.04
	5 600	120	15.06
	5 620	124	15.36
	5 720	144	16.12
	5 745	149	14.84
	5 785	157	14.68
	5 825	165	15.45

**11.5.4 IEEE 802.11 (5 GHz) Reduced Conducted Power (RCV On / Grip Sensor On)**

**Ant.1**

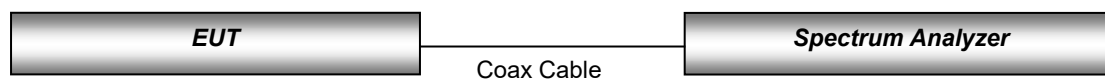
Mode	Frequency [MHz]	Channel	IEEE 802.11 (5 GHz) Average Conducted Power [dBm]
802.11n (40 MHz BW)	5 190	38	11.70
	5 230	46	11.75
	5 270	54	11.80
	5 310	62	11.78
	5 510	102	11.20
	5 590	118	11.19
	5 630	126	11.85
	5 710	142	11.79
	5 755	151	11.53
	5 795	159	11.48

Mode	Frequency [MHz]	Channel	IEEE 802.11 (5 GHz) Average Conducted Power [dBm]
802.11ac (80 MHz BW)	5 210	42	8.20
	5 290	58	7.44
	5 530	106	7.57
	5 610	122	11.10
	5 690	138	11.63
	5 775	155	11.20

Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02:

- Power measurements were performed for the transmission mode configuration with the highest maximum output power specified for production units.
- For transmission mode with the same maximum output power specification, powers were measured for the largest channel Bandwidth, lowest order modulation and lowest data rate.
- For transmission modes with identical maximum specified output power, channel Bandwidth, modulation and data rates, power measurements were required for all identical configurations.
- For each transmission mode configuration, powers were measured for the highest and lowest channels; and at the mid-Band channel(s) when there were at least 3 channels supported. For configurations with multiple mid-Band channels, due to an even number of channels, both channels were measured.

**Test Configuration**



## 11.6 Bluetooth

### Maximum Conducted Power

The Burst averaged-conducted power

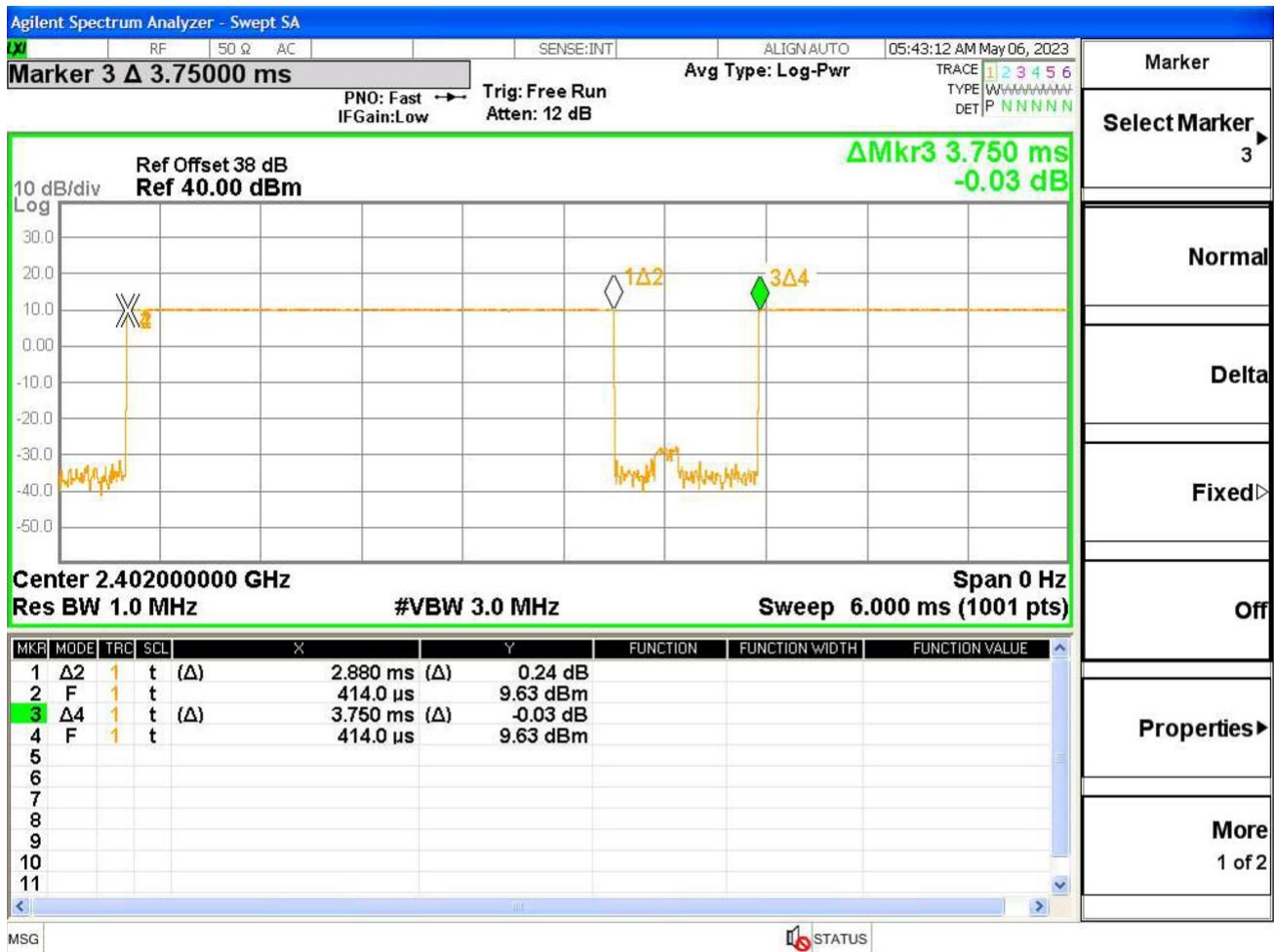
Mode	Frequency [MHz]	Channel	Bluetooth Power [dBm]
DH5	2 402	0	9.66
	2 441	39	9.58
	2 480	78	8.18
2-DH5	2 402	0	7.13
	2 441	39	7.18
	2 480	78	6.02
3-DH5	2 402	0	7.12
	2 441	39	7.19
	2 480	78	6.01

Mode	Packet length	Frequency [MHz]	Channel	Bluetooth Power [dBm]
LE 1M	37	2 402	0	8.57
		2 440	19	8.59
		2 480	39	7.68
	255	2 402	0	8.53
		2 440	19	8.56
		2 480	39	7.71
LE 2M	37	2 402	0	8.61
		2 440	19	8.59
		2 480	39	7.65
	255	2 402	0	8.37
		2 440	19	8.45
		2 480	39	7.56
LE 125k	37	2 402	0	8.43
		2 440	19	8.50
		2 480	39	7.62
	255	2 402	0	8.46
		2 440	19	8.49
		2 480	39	7.60
LE 500k	37	2 402	0	8.41
		2 440	19	8.46
		2 480	39	7.55
	255	2 402	0	8.66
		2 440	19	8.60
		2 480	39	7.67

Per October 2016 TCB Workshop Notes:

When call box and Bluetooth protocol are used for Bluetooth SAR measurement, time-domain plot is required to identify duty factor for supporting the test setup and result.

Bluetooth duty cycle was measured using Bluetooth tester equipment (CBT / R&S) with Bluetooth DH5 / LE mode.



Bluetooth Duty Cycle [BDR]

Duty Cycle = (BT-On time /BT-Full time) =(2.880/3.750) = 0.768 x 100% = 76.8% (DH5)

Duty Factor = 1/0.768 = 1.302



## 12. System Verification

### 12.1 Tissue Verification

The Tissue simulating material is calibrated by HCT using the DAKS 3.5 to determine the conductivity and permittivity.

Table for Head Tissue Verification									
Date of Tests	Tissue Temp. (°C)	Tissue Type	Freq. (MHz)	Measured Conductivity $\sigma$ (S/m)	Measured Dielectric Constant, $\epsilon$	Target Conductivity $\sigma$ (S/m)	Target Dielectric Constant, $\epsilon$	% dev $\sigma$	% dev $\epsilon$
04/25/2023	20.2	750H	705	0.867	43.057	0.889	42.174	- 2.47	+ 2.09
			710	0.872	42.982	0.890	42.148	- 2.02	+ 1.98
			750	0.915	42.387	0.893	41.940	+ 2.46	+ 1.07
05/03/2023	21.7	835H	820	0.920	42.079	0.899	41.577	+ 2.34	+ 1.21
			835	0.936	41.875	0.900	41.500	+ 4.00	+ 0.90
			850	0.951	41.674	0.916	41.500	+ 3.82	+ 0.42
04/24/2023	20.9	835H	820	0.924	41.000	0.899	41.577	+ 2.78	- 1.39
			835	0.940	40.795	0.900	41.500	+ 4.44	- 1.70
			850	0.955	40.593	0.916	41.500	+ 4.26	- 2.19
04/26/2023	21.4	835H	820	0.924	42.208	0.899	41.577	+ 2.78	+ 1.52
			835	0.940	42.003	0.900	41.500	+ 4.44	+ 1.21
			850	0.955	41.801	0.916	41.500	+ 4.26	+ 0.73
04/28/2023	22.5	835H	820	0.897	42.904	0.899	41.577	- 0.22	+ 3.19
			835	0.912	42.698	0.900	41.500	+ 1.33	+ 2.89
			850	0.927	42.495	0.916	41.500	+ 1.20	+ 2.40
05/04/2023	20.3	835H	820	0.924	42.273	0.899	41.577	+ 2.78	+ 1.67
			835	0.940	42.069	0.900	41.500	+ 4.44	+ 1.37
			850	0.956	41.869	0.916	41.500	+ 4.37	+ 0.89
04/27/2023	22.0	1800H	1710	1.315	39.826	1.348	40.144	- 2.45	- 0.79
			1750	1.351	39.728	1.371	40.080	- 1.46	- 0.88
			1800	1.398	39.576	1.400	40.000	- 0.14	- 1.06
05/05/2023	20.2	1800H	1710	1.340	40.264	1.348	40.144	- 0.59	+ 0.30
			1750	1.365	40.156	1.371	40.080	- 0.44	+ 0.19
			1800	1.393	40.002	1.400	40.000	- 0.50	+ 0.01
05/02/2023	22.3	1800H	1710	1.288	39.764	1.348	40.144	- 4.45	- 0.95
			1750	1.331	39.618	1.371	40.080	- 2.92	- 1.15
			1800	1.383	39.384	1.400	40.000	- 1.21	- 1.54
05/04/2023	20.0	1800H	1710	1.317	39.803	1.348	40.144	- 2.30	- 0.85
			1750	1.353	39.694	1.371	40.080	- 1.31	- 0.96
			1800	1.396	39.513	1.400	40.000	- 0.29	- 1.22
04/28/2023	22.0	1900H	1850	1.363	39.374	1.400	40.000	- 2.64	- 1.57
			1900	1.413	39.169	1.400	40.000	+ 0.93	- 2.08
			1910	1.422	39.124	1.400	40.000	+ 1.57	- 2.19
05/02/2023	22.9	1900H	1850	1.371	39.150	1.400	40.000	- 2.07	- 2.13
			1900	1.420	38.944	1.400	40.000	+ 1.43	- 2.64
			1910	1.430	38.902	1.400	40.000	+ 2.14	- 2.75
05/08/2023	20.6	1900H	1850	1.371	40.176	1.400	40.000	- 2.07	+ 0.44
			1900	1.421	39.972	1.400	40.000	+ 1.50	- 0.07
			1910	1.431	39.928	1.400	40.000	+ 2.21	- 0.18
05/03/2023	22.5	1900H	1850	1.355	39.053	1.400	40.000	- 3.21	- 2.37
			1900	1.403	38.891	1.400	40.000	+ 0.21	- 2.77
			1910	1.414	38.865	1.400	40.000	+ 1.00	- 2.84

Table for Head Tissue Verification									
Date of Tests	Tissue Temp. (°C)	Tissue Type	Freq. (MHz)	Measured Conductivity $\sigma$ (S/m)	Measured Dielectric Constant, $\epsilon$	Target Conductivity $\sigma$ (S/m)	Target Dielectric Constant, $\epsilon$	% dev $\sigma$	% dev $\epsilon$
04/25/2023	22.7	2450H	2400	1.801	39.450	1.756	39.290	+ 2.56	+ 0.41
			2450	1.859	39.240	1.800	39.200	+ 3.28	+ 0.10
			2500	1.917	39.059	1.855	39.140	+ 3.34	- 0.21
04/28/2023	21.1	2450H	2400	1.754	38.953	1.756	39.290	- 0.11	- 0.86
			2450	1.812	38.746	1.800	39.200	+ 0.67	- 1.16
			2500	1.869	38.568	1.855	39.140	+ 0.75	- 1.46
04/27/2023	21.0	2600H	2500	1.922	39.449	1.855	39.140	+ 3.61	+ 0.79
			2550	1.977	39.255	1.909	39.070	+ 3.56	+ 0.47
			2600	2.035	39.049	1.964	39.010	+ 3.62	+ 0.10
05/19/2023	22.1	2600H	2500	1.920	38.054	1.855	39.140	+ 3.50	- 2.77
			2550	1.975	37.861	1.909	39.070	+ 3.46	- 3.09
			2600	2.033	37.654	1.964	39.010	+ 3.51	- 3.48
05/08/2023	19.8	2600H	2500	1.865	39.353	1.855	39.140	+ 0.54	+ 0.54
			2550	1.918	39.160	1.909	39.070	+ 0.47	+ 0.23
			2600	1.975	38.955	1.964	39.010	+ 0.56	- 0.14
05/02/2023	22.5	5250H	5180	4.681	36.925	4.635	36.010	+ 0.99	+ 2.54
			5250	4.817	36.710	4.706	35.930	+ 2.36	+ 2.17
			5280	4.874	36.690	4.737	35.894	+ 2.89	+ 2.22
			5320	4.934	36.714	4.778	35.846	+ 3.26	+ 2.42
05/03/2023	20.3	5600H	5500	4.950	36.639	4.963	35.640	- 0.26	+ 2.80
			5600	5.010	36.415	5.065	35.530	- 1.09	+ 2.49
05/04/2023	22.5	5750H	5750	5.281	36.208	5.219	35.360	+ 1.19	+ 2.40
			5800	5.249	36.185	5.270	35.300	- 0.40	+ 2.51
			5825	5.241	36.137	5.296	35.270	- 1.04	+ 2.46

**- Extremity**

Table for Head Tissue Verification									
Date of Tests	Tissue Temp. (°C)	Tissue Type	Freq. (MHz)	Measured Conductivity $\sigma$ (S/m)	Measured Dielectric Constant, $\epsilon$	Target Conductivity $\sigma$ (S/m)	Target Dielectric Constant, $\epsilon$	% dev $\sigma$	% dev $\epsilon$
05/01/2023	21.6	13H	12	0.748	54.719	0.750	55.000	- 0.27	- 0.51
			13	0.721	53.654	0.750	55.000	- 3.87	- 2.45
			14	0.756	54.996	0.750	55.000	+ 0.80	- 0.01
05/05/2023	20.0	835H	820	0.918	42.471	0.899	41.577	+ 2.11	+ 2.15
			835	0.934	42.264	0.900	41.500	+ 3.78	+ 1.84
			850	0.949	42.064	0.916	41.500	+ 3.60	+ 1.36
05/19/2023	20.8	835H	820	0.915	42.417	0.899	41.577	+ 1.78	+ 2.02
			835	0.931	42.189	0.900	41.500	+ 3.44	+ 1.66
			850	0.947	42.016	0.916	41.500	+ 3.38	+ 1.24
05/02/2023	22.5	5250H	5180	4.681	36.925	4.635	36.010	+ 0.99	+ 2.54
			5250	4.817	36.710	4.706	35.930	+ 2.36	+ 2.17
			5280	4.874	36.690	4.737	35.894	+ 2.89	+ 2.22
			5320	4.934	36.714	4.778	35.846	+ 3.26	+ 2.42
05/03/2023	20.3	5600H	5500	4.950	36.639	4.963	35.640	- 0.26	+ 2.80
			5600	5.010	36.415	5.065	35.530	- 1.09	+ 2.49

## 12.2 System Verification

Input Power: 50 mW

Freq. [MHz]	Date	Probe (S/N)	Dipole (S/N)	Liquid	Amb. Temp. [°C]	Liquid Temp. [°C]	1 W Target SAR <sub>1g</sub> (SPEAG) [W/kg]	50mW Measured SAR <sub>1g</sub> [W/kg]	1 W Normalized SAR <sub>1g</sub> [W/kg]	Deviation [%]	Limit [%]
750	04/25/2023	7655	1014	Head	20.3	20.2	8.71	0.413	8.26	- 5.17	± 10
835	04/24/2023	7655	441	Head	21.0	20.9	9.73	0.518	10.36	+ 6.47	± 10
835	04/26/2023	7655		Head	21.5	21.4	9.73	0.518	10.36	+ 6.47	± 10
835	05/03/2023	7655		Head	21.8	21.7	9.73	0.515	10.30	+ 5.86	± 10
835	05/04/2023	7655		Head	20.4	20.3	9.73	0.520	10.40	+ 6.89	± 10
835	04/28/2023	7655		Head	22.6	22.5	9.73	0.503	10.06	+ 3.39	± 10
1 800	04/27/2023	7732		2d007	Head	22.1	22.0	38.2	1.850	37.00	- 3.14
1 800	05/05/2023	7732	Head		20.3	20.2	38.2	1.950	39.00	+ 2.09	± 10
1 800	05/02/2023	3076	Head		22.4	22.3	38.2	2.010	40.20	+ 5.24	± 10
1 800	05/04/2023	7732	Head		20.1	20.0	38.2	1.950	39.00	+ 2.09	± 10
1 900	04/28/2023	7732	5d061	Head	22.1	22.0	38.9	1.960	39.20	+ 0.77	± 10
1 900	05/02/2023	7732		Head	23.0	22.9	38.9	1.940	38.80	- 0.26	± 10
1 900	05/08/2023	3076		Head	20.7	20.6	38.9	2.100	42.00	+ 7.97	± 10
1 900	05/03/2023	7732		Head	22.6	22.5	38.9	2.070	41.40	+ 6.43	± 10
2 450	04/28/2023	3768	743	Head	21.2	21.1	53.2	2.500	50.00	- 6.02	± 10
2 450	04/25/2023	3768		Head	22.8	22.7	53.2	2.650	53.00	- 0.38	± 10
2 600	04/27/2023	3768	1015	Head	21.1	21.0	56.3	2.880	57.60	+ 2.31	± 10
2 600	05/19/2023	3768		Head	22.2	22.1	56.3	2.880	57.60	+ 2.31	± 10
2 600	05/08/2023	3768		Head	19.9	19.8	56.3	2.800	56.00	- 0.53	± 10
5 250	05/02/2023	7679	1253	Head	22.6	22.5	80.4	4.340	86.80	+ 7.96	± 10
5 600	05/03/2023	7679		Head	20.4	20.3	82.1	3.940	78.80	- 4.02	± 10
5 750	05/04/2023	7679		Head	22.6	22.5	79.9	4.030	80.60	+ 0.88	± 10

### System Verification Results – Extremity SAR

Input Power: 50 mW

Freq. [MHz]	Date	Probe (S/N)	Dipole (S/N)	Liquid	Amb. Temp. [°C]	Liquid Temp. [°C]	1 W Target SAR <sub>10g</sub> (SPEAG) [W/kg]	50mW Measured SAR <sub>10g</sub> [W/kg]	1 W Normalized SAR <sub>10g</sub> [W/kg]	Deviation [%]	Limit [%]
13	05/01/2023	7655	1016	Head	21.7	21.6	0.353	0.019	0.38	+ 7.65	± 10
835	05/05/2023	7655	441	Head	20.1	20.0	6.33	0.332	6.64	+ 4.90	± 10
835	05/19/2023	7751		Head	20.9	20.8	6.33	0.324	6.48	+2.37	± 10
5 250	05/02/2023	7679	1253	Head	22.6	22.5	22.9	1.250	25.00	+ 9.17	± 10
5 600	05/03/2023	7679		Head	20.4	20.3	23.5	1.160	23.20	- 1.28	± 10

### 12.3 System Verification Procedure

SAR measurement was prior to assessment; the system is verified to the  $\pm 10\%$  of the specifications at each frequency Band by using the system verification kit. (Graphic Plots Attached)

- Cabling the system, using the verification kit equipment.
- Generate about 50 mW Input level from the signal generator to the Dipole Antenna.
- Dipole antenna was placed below the flat phantom.
- The measured one-gram SAR at the surface of the phantom above the dipole feed-point should be within 10 % of the target reference value.
- The results are normalized to 1 W input power.

Note;

SAR Verification was performed according to the FCC KDB 865664 D01v01r04.

### 13. SAR Test Data Summary

#### 13.1 SAR Measurement Results

GSM 850 Head SAR												
Frequency		Mode	Ant.	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.			(dB)	(dB)	(dB)			(W/kg)		(W/kg)	
836.6	190	GSM	M1	34.5	33.30	0.18	Left Cheek	1:8.30	0.188	1.318	0.248	-
836.6	190	GSM	M1	34.5	33.30	0.07	Left Tilt	1:8.30	0.093	1.318	0.123	-
836.6	190	GSM	M1	34.5	33.30	-0.16	Right Cheek	1:8.30	0.222	1.318	0.293	-
836.6	190	GSM	M1	34.5	33.30	-0.06	Right Tilt	1:8.30	0.113	1.318	0.149	-
836.6	190	GPRS 3TX	M1	31.0	29.97	0.17	Left Cheek	1:2.77	0.328	1.268	0.416	-
836.6	190	GPRS 3TX	M1	31.0	29.97	-0.10	Left Tilt	1:2.77	0.188	1.268	0.238	-
836.6	190	GPRS 3TX	M1	31.0	29.97	-0.04	Right Cheek	1:2.77	<b>0.422</b>	1.268	<b>0.535</b>	A1
836.6	190	GPRS 3TX	M1	31.0	29.97	0.05	Right Tilt	1:2.77	0.207	1.268	0.262	-
ANSI/ IEEE C95.1 - 2005- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Head 1.6 W/kg Averaged over 1 gram					

GSM 1900 Head SAR												
Frequency		Mode	Ant.	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.			(dB)	(dB)	(dB)			(W/kg)		(W/kg)	
1 880	661	GSM	M2	31.5	30.41	-0.10	Left Cheek	1:8.30	0.038	1.285	0.049	-
1 880	661	GSM	M2	31.5	30.41	0.07	Left Tilt	1:8.30	0.025	1.285	0.032	-
1 880	661	GSM	M2	31.5	30.41	0.07	Right Cheek	1:8.30	0.049	1.285	0.063	-
1 880	661	GSM	M2	31.5	30.41	0.15	Right Tilt	1:8.30	0.031	1.285	0.040	-
1 880	661	GPRS 4TX	M2	27.1	25.43	0.16	Left Cheek	1:2.07	0.041	1.469	0.060	-
1 880	661	GPRS 4TX	M2	27.1	25.43	-0.11	Left Tilt	1:2.07	0.026	1.469	0.038	-
1 880	661	GPRS 4TX	M2	27.1	25.43	-0.18	Right Cheek	1:2.07	<b>0.059</b>	1.469	<b>0.087</b>	A2
1 880	661	GPRS 4TX	M2	27.1	25.43	0.14	Right Tilt	1:2.07	0.039	1.469	0.057	-
ANSI/ IEEE C95.1 - 2005- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Head 1.6 W/kg Averaged over 1 gram					

UMTS Band 2 Head SAR												
Frequency		Mode	Ant.	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.			(dB)	(dB)	(dB)			(W/kg)		(W/kg)	
1 880	9400	RMC	M2	24.5	23.16	-0.02	Left Cheek	1:1	<b>0.115</b>	1.361	<b>0.157</b>	A3
1 880	9400	RMC	M2	24.5	23.16	0.14	Left Tilt	1:1	0.071	1.361	0.097	-
1 880	9400	RMC	M2	24.5	23.16	-0.18	Right Cheek	1:1	0.114	1.361	0.155	-
1 880	9400	RMC	M2	24.5	23.16	0.14	Right Tilt	1:1	0.090	1.361	0.123	-
ANSI/ IEEE C95.1 - 2005- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Head 1.6 W/kg (mW/g) Averaged over 1 gram					

**UMTS Band 4 Head SAR**

Frequency		Mode	Ant.	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.			(dB)	(dB)	(dB)			(W/kg)		(W/kg)	
1 732.4	1412	RMC	M2	25.0	23.68	0.11	Left Cheek	1:1	0.100	1.355	0.136	-
1 732.4	1412	RMC	M2	25.0	23.68	-0.10	Left Tilt	1:1	0.082	1.355	0.111	-
1 732.4	1412	RMC	M2	25.0	23.68	0.10	Right Cheek	1:1	<b>0.119</b>	1.355	<b>0.161</b>	A4
1 732.4	1412	RMC	M2	25.0	23.68	0.18	Right Tilt	1:1	0.088	1.355	0.119	-
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Head 1.6 W/kg (mW/g) Averaged over 1 gram					

**UMTS Band 5 Head SAR**

Frequency		Mode	Ant.	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.			(dB)	(dB)	(dB)			(W/kg)		(W/kg)	
836.6	4183	RMC	M1	25.0	23.55	-0.12	Left Cheek	1:1	0.161	1.396	0.225	-
836.6	4183	RMC	M1	25.0	23.55	0.10	Left Tilt	1:1	0.090	1.396	0.126	-
836.6	4183	RMC	M1	25.0	23.55	-0.18	Right Cheek	1:1	<b>0.209</b>	1.396	<b>0.292</b>	A5
836.6	4183	RMC	M1	25.0	23.55	0.09	Right Tilt	1:1	0.110	1.396	0.154	-
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Head 1.6 W/kg (mW/g) Averaged over 1 gram					

**LTE Band 2 Head SAR**

Frequency		Mode	Ant.	Band width (Mhz)	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR	RB Size	RB Offset	Duty Cycle	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.				(dBm)	(dBm)	(dB)		(dB)	(dB)	(W/kg)		(W/kg)			
1 860	18700	QPSK	M2	20	21.5	20.00	0.18	Left Cheek	0	1	49	1:1	0.050	1.413	0.071	-
1 860	18700	QPSK	M2	20	21.5	20.01	0.14	Left Cheek	0	50	25	1:1	<b>0.051</b>	1.409	<b>0.072</b>	A6
1 860	18700	QPSK	M2	20	21.5	20.00	0.18	Left Tilt	0	1	49	1:1	0.036	1.413	0.051	-
1 860	18700	QPSK	M2	20	21.5	20.01	0.16	Left Tilt	0	50	25	1:1	0.035	1.409	0.049	-
1 860	18700	QPSK	M2	20	21.5	20.00	-0.13	Right Cheek	0	1	49	1:1	0.039	1.413	0.055	-
1 860	18700	QPSK	M2	20	21.5	20.01	0.15	Right Cheek	0	50	25	1:1	0.040	1.409	0.056	-
1 860	18700	QPSK	M2	20	21.5	20.00	0.18	Right Tilt	0	1	49	1:1	0.028	1.413	0.040	-
1 860	18700	QPSK	M2	20	21.5	20.01	0.18	Right Tilt	0	50	25	1:1	0.028	1.409	0.039	-
1 880	18900	QPSK	M3	20	21.5	20.78	0.10	Left Cheek	0	1	49	1:1	0.134	1.180	0.158	-
1 880	18900	QPSK	M3	20	21.5	20.88	0.02	Left Cheek	0	50	25	1:1	0.139	1.153	0.160	-
1 880	18900	QPSK	M3	20	21.5	20.78	0.13	Left Tilt	0	1	49	1:1	0.072	1.180	0.085	-
1 880	18900	QPSK	M3	20	21.5	20.88	0.15	Left Tilt	0	50	25	1:1	0.073	1.153	0.084	-
1 880	18900	QPSK	M3	20	21.5	20.78	0.17	Right Cheek	0	1	49	1:1	0.337	1.180	<b>0.398</b>	A7
1 880	18900	QPSK	M3	20	21.5	20.88	0.13	Right Cheek	0	50	25	1:1	<b>0.340</b>	1.153	0.392	-
1 880	18900	QPSK	M3	20	21.5	20.78	0.16	Right Tilt	0	1	49	1:1	0.147	1.180	0.174	-
1 880	18900	QPSK	M3	20	21.5	20.88	0.17	Right Tilt	0	50	25	1:1	0.146	1.153	0.168	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population									Head 1.6 W/kg Averaged over 1 gram							

**LTE Band 5 Head SAR**

Frequency		Mode	Ant.	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR	RB Size	RB Offset	Duty Cycle	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.			(MHz)	(dBm)	(dBm)	(dB)		(dB)				(W/kg)		(W/kg)	
836.5	20525	QPSK	M1	10	25.3	23.88	0.12	Left Cheek	0	1	0	1:1	0.122	1.387	0.169	-
836.5	20525	QPSK	M1	10	24.3	22.94	0.18	Left Cheek	1	25	0	1:1	0.098	1.368	0.134	-
836.5	20525	QPSK	M1	10	25.3	23.88	0.08	Left Tilt	0	1	0	1:1	0.054	1.387	0.075	-
836.5	20525	QPSK	M1	10	24.3	22.94	0.13	Left Tilt	1	25	0	1:1	0.049	1.368	0.067	-
836.5	20525	QPSK	M1	10	25.3	23.88	-0.02	Right Cheek	0	1	0	1:1	<b>0.166</b>	1.387	<b>0.230</b>	A8
836.5	20525	QPSK	M1	10	24.3	22.94	0.19	Right Cheek	1	25	0	1:1	0.138	1.368	0.189	-
836.5	20525	QPSK	M1	10	25.3	23.88	-0.11	Right Tilt	0	1	0	1:1	0.075	1.387	0.104	-
836.5	20525	QPSK	M1	10	24.3	22.94	-0.07	Right Tilt	1	25	0	1:1	0.062	1.368	0.085	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population									Head 1.6 W/kg Averaged over 1 gram							

**LTE Band 12 Head SAR**

Frequency		Mode	Ant.	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR	RB Size	RB Offset	Duty Cycle	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.			(MHz)	(dBm)	(dBm)	(dB)		(dB)				(W/kg)		(W/kg)	
707.5	23095	QPSK	M1	10	25.0	23.61	0.18	Left Cheek	0	1	24	1:1	0.062	1.377	0.085	-
707.5	23095	QPSK	M1	10	24.0	22.84	0.19	Left Cheek	1	25	0	1:1	0.048	1.306	0.063	-
707.5	23095	QPSK	M1	10	25.0	23.61	0.19	Left Tilt	0	1	24	1:1	0.031	1.377	0.043	-
707.5	23095	QPSK	M1	10	24.0	22.84	-0.15	Left Tilt	1	25	0	1:1	0.023	1.306	0.030	-
707.5	23095	QPSK	M1	10	25.0	23.61	0.11	Right Cheek	0	1	24	1:1	<b>0.068</b>	1.377	<b>0.094</b>	A9
707.5	23095	QPSK	M1	10	24.0	22.84	0.07	Right Cheek	1	25	0	1:1	0.065	1.306	0.085	-
707.5	23095	QPSK	M1	10	25.0	23.61	-0.19	Right Tilt	0	1	24	1:1	0.037	1.377	0.051	-
707.5	23095	QPSK	M1	10	24.0	22.84	-0.10	Right Tilt	1	25	0	1:1	0.032	1.306	0.042	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population									Head 1.6 W/kg Averaged over 1 gram							

**LTE Band 26 Head SAR**

Frequency		Mode	Ant.	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR	RB Size	RB Offset	Duty Cycle	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.			(MHz)	(dBm)	(dBm)	(dB)		(dB)				(W/kg)		(W/kg)	
831.5	26865	QPSK	M1	15	25.0	23.52	0.17	Left Cheek	0	1	0	1:1	0.104	1.406	0.146	-
831.5	26865	QPSK	M1	15	24.0	22.62	-0.06	Left Cheek	1	36	18	1:1	0.095	1.374	0.131	-
831.5	26865	QPSK	M1	15	25.0	23.52	-0.11	Left Tilt	0	1	0	1:1	0.053	1.406	0.075	-
831.5	26865	QPSK	M1	15	24.0	22.62	0.03	Left Tilt	1	36	18	1:1	0.045	1.374	0.062	-
831.5	26865	QPSK	M1	15	25.0	23.52	-0.19	Right Cheek	0	1	0	1:1	<b>0.141</b>	1.406	<b>0.198</b>	A10
831.5	26865	QPSK	M1	15	24.0	22.62	0.17	Right Cheek	1	36	18	1:1	0.123	1.374	0.169	-
831.5	26865	QPSK	M1	15	25.0	23.52	-0.02	Right Tilt	0	1	0	1:1	0.066	1.406	0.093	-
831.5	26865	QPSK	M1	15	24.0	22.62	-0.13	Right Tilt	1	36	18	1:1	0.061	1.374	0.084	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population									Head 1.6 W/kg Averaged over 1 gram							



**LTE Band 41 Head SAR**

Frequency		Mode	Ant.	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR	RB Size	RB Offset	Duty Cycle	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.			(MHz)	(dBm)	(dBm)	(dB)		(dB)	(dB)	(W/kg)		(W/kg)			
2 593	40620	QPSK	M2	20	24.5	23.53	0.12	Left Cheek	0	1	0	1:1.58	<b>0.079</b>	1.250	<b>0.099</b>	A11
2 593	40620	QPSK	M2	20	23.5	22.70	0.15	Left Cheek	1	50	0	1:1.58	0.063	1.202	0.076	-
2 593	40620	QPSK	M2	20	24.5	23.53	0.16	Left Tilt	0	1	0	1:1.58	0.027	1.250	0.034	-
2 593	40620	QPSK	M2	20	23.5	22.70	0.14	Left Tilt	1	50	0	1:1.58	0.020	1.202	0.024	-
2 593	40620	QPSK	M2	20	24.5	23.53	-0.18	Right Cheek	0	1	0	1:1.58	0.045	1.250	0.056	-
2 593	40620	QPSK	M2	20	23.5	22.70	0.10	Right Cheek	1	50	0	1:1.58	0.031	1.202	0.037	-
2 593	40620	QPSK	M2	20	24.5	23.53	0.17	Right Tilt	0	1	0	1:1.58	0.064	1.250	0.080	-
2 593	40620	QPSK	M2	20	23.5	22.70	-0.13	Right Tilt	1	50	0	1:1.58	0.056	1.202	0.067	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population									Head 1.6 W/kg Averaged over 1 gram							

**LTE Band 66 Head SAR**

Frequency		Mode	Ant.	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR	RB Size	RB Offset	Duty Cycle	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.			(MHz)	(dBm)	(dBm)	(dB)		(dB)	(dB)	(W/kg)		(W/kg)			
1 745	132322	QPSK	M2	20	21.0	20.49	-0.02	Left Cheek	0	1	99	1:1	<b>0.057</b>	1.125	<b>0.064</b>	A12
1 745	132322	QPSK	M2	20	21.0	20.50	-0.10	Left Cheek	0	50	25	1:1	0.044	1.122	0.049	-
1 745	132322	QPSK	M2	20	21.0	20.49	0.06	Left Tilt	0	1	99	1:1	0.036	1.125	0.041	-
1 745	132322	QPSK	M2	20	21.0	20.50	0.19	Left Tilt	0	50	25	1:1	0.035	1.122	0.039	-
1 745	132322	QPSK	M2	20	21.0	20.49	-0.13	Right Cheek	0	1	99	1:1	0.040	1.125	0.045	-
1 745	132322	QPSK	M2	20	21.0	20.50	0.15	Right Cheek	0	50	25	1:1	0.037	1.122	0.042	-
1 745	132322	QPSK	M2	20	21.0	20.49	0.11	Right Tilt	0	1	99	1:1	0.028	1.125	0.032	-
1 745	132322	QPSK	M2	20	21.0	20.50	0.10	Right Tilt	0	50	25	1:1	0.027	1.122	0.030	-
1 745	132322	QPSK	M3	20	21.0	20.55	-0.14	Left Cheek	0	1	99	1:1	0.105	1.109	0.116	-
1 745	132322	QPSK	M3	20	21.0	20.67	0.12	Left Cheek	0	50	25	1:1	0.107	1.079	0.115	-
1 745	132322	QPSK	M3	20	21.0	20.55	0.10	Left Tilt	0	1	99	1:1	0.066	1.109	0.073	-
1 745	132322	QPSK	M3	20	21.0	20.67	-0.17	Left Tilt	0	50	25	1:1	0.068	1.079	0.073	-
1 745	132322	QPSK	M3	20	21.0	20.55	0.18	Right Cheek	0	1	99	1:1	0.298	1.109	0.330	-
1 745	132322	QPSK	M3	20	21.0	20.67	-0.18	Right Cheek	0	50	25	1:1	0.311	1.079	<b>0.336</b>	A13
1 745	132322	QPSK	M3	20	21.0	20.55	0.05	Right Tilt	0	1	99	1:1	0.128	1.109	0.142	-
1 745	132322	QPSK	M3	20	21.0	20.67	0.16	Right Tilt	0	50	25	1:1	0.136	1.079	0.147	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population									Head 1.6 W/kg Averaged over 1 gram							



**NR Band n5 (Cell) Head SAR**

Frequency		Mode	Ant.	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR	RB Size	RB Offset	Duty Cycle	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.			(Mhz)	(dBm)	(dBm)	(dB)		(dB)	(dB)	(dB)			(W/kg)		
836.5	167300	DFT-s OFDM QPSK	M1	20	24.5	23.94	-0.10	Left Cheek	0	1	1	1:1	0.146	1.138	0.166	-
836.5	167300	DFT-s OFDM QPSK	M1	20	24.5	23.76	-0.12	Left Cheek	0	50	28	1:1	0.124	1.186	0.147	-
836.5	167300	DFT-s OFDM QPSK	M1	20	24.5	23.94	0.06	Left Tilt	0	1	1	1:1	0.070	1.138	0.080	-
836.5	167300	DFT-s OFDM QPSK	M1	20	24.5	23.76	0.09	Left Tilt	0	50	28	1:1	0.067	1.186	0.079	-
836.5	167300	DFT-s OFDM QPSK	M1	20	24.5	23.94	-0.17	Right Cheek	0	1	1	1:1	<b>0.175</b>	1.138	<b>0.199</b>	A14
836.5	167300	DFT-s OFDM QPSK	M1	20	24.5	23.76	-0.06	Right Cheek	0	50	28	1:1	0.167	1.186	0.198	-
836.5	167300	DFT-s OFDM QPSK	M1	20	24.5	23.94	-0.11	Right Tilt	0	1	1	1:1	0.093	1.138	0.106	-
836.5	167300	DFT-s OFDM QPSK	M1	20	24.5	23.76	-0.09	Right Tilt	0	50	28	1:1	0.086	1.186	0.102	-
836.5	167300	CP OFDM QPSK	M1	20	23.0	22.46	-0.16	Right Cheek	1.5	1	1	1:1	0.136	1.132	0.154	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population									Head 1.6 W/kg Averaged over 1 gram							

**NR Band n41 Head SAR**

Frequency		Mode	Ant.	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR	RB Size	RB Offset	Duty Cycle	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.			(Mhz)	(dBm)	(dBm)	(dB)		(dB)	(dB)	(dB)				(W/kg)	
2592.99	518598	DFT-s OFDM QPSK	M2	100	20.0	19.05	-0.11	Left Cheek	0	1	137	1:1	0.030	1.245	0.037	-
2592.99	518598	DFT-s OFDM QPSK	M2	100	20.0	18.97	0.00	Left Cheek	0	135	69	1:1	0.029	1.268	0.037	-
2592.99	518598	DFT-s OFDM QPSK	M2	100	20.0	19.05	0.19	Left Tilt	0	1	137	1:1	0.015	1.245	0.019	-
2592.99	518598	DFT-s OFDM QPSK	M2	100	20.0	18.97	0.13	Left Tilt	0	135	69	1:1	0.015	1.268	0.019	-
2592.99	518598	DFT-s OFDM QPSK	M2	100	20.0	19.05	0.00	Right Cheek	0	1	137	1:1	0.021	1.245	0.026	-
2592.99	518598	DFT-s OFDM QPSK	M2	100	20.0	18.97	0.00	Right Cheek	0	135	69	1:1	<b>0.034</b>	1.268	<b>0.043</b>	A15
2592.99	518598	DFT-s OFDM QPSK	M2	100	20.0	19.05	-0.19	Right Tilt	0	1	137	1:1	0.023	1.245	0.029	-
2592.99	518598	DFT-s OFDM QPSK	M2	100	20.0	18.97	0.18	Right Tilt	0	135	69	1:1	0.028	1.268	0.036	-
2592.99	518598	CP OFDM QPSK	M2	100	20.0	18.54	-0.10	Right Cheek	0	1	1	1:1	0.015	1.400	0.021	-
2592.99	518598	SRS CW	S5	100	20.0	19.93	-0.16	Left Cheek	0	-	-	1:1	0.425	1.016	0.432	-
2592.99	518598	SRS CW	S5	100	20.0	19.93	-0.09	Left Tilt	0	-	-	1:1	0.431	1.016	<b>0.438</b>	A16
2592.99	518598	SRS CW	S5	100	20.0	19.93	0.13	Right Cheek	0	-	-	1:1	0.300	1.016	0.305	-
2592.99	518598	SRS CW	S5	100	20.0	19.93	0.17	Right Tilt	0	-	-	1:1	0.339	1.016	0.344	-
2592.99	518598	SRS CW	S4	100	20.0	19.67	0.00	Left Cheek	0	-	-	1:1	0	1.079	0.000	-
2592.99	518598	SRS CW	S4	100	20.0	19.67	0.00	Left Tilt	0	-	-	1:1	0	1.079	0.000	-
2592.99	518598	SRS CW	S4	100	20.0	19.67	0.00	Right Cheek	0	-	-	1:1	0	1.079	0.000	-
2592.99	518598	SRS CW	S4	100	20.0	19.67	0.00	Right Tilt	0	-	-	1:1	0	1.079	0.000	-
2592.99	518598	SRS CW	S1	100	18.0	17.09	-0.03	Left Cheek	0	-	-	1:1	0.618	1.233	0.762	-
2592.99	518598	SRS CW	S1	100	18.0	17.09	0.01	Left Tilt	0	-	-	1:1	0.721	1.233	<b>0.889</b>	A17
2592.99	518598	SRS CW	S1	100	18.0	17.09	-0.02	Right Cheek	0	-	-	1:1	0.208	1.233	0.256	-
2592.99	518598	SRS CW	S1	100	18.0	17.09	-0.09	Right Tilt	0	-	-	1:1	0.267	1.233	0.329	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population									Head 1.6 W/kg Averaged over 1 gram							

**NR Band n66 Head SAR**

Frequency		Mode	Ant.	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR	RB Size	RB Offset	Duty Cycle	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.			(MHz)	(dBm)	(dBm)	(dB)		(dB)	(dB)	(W/kg)	(Duty)	(W/kg)			
1 720	344000	DFT-s OFDM QPSK	M2	20	20.5	19.56	0.11	Left Cheek	0	1	53	1:1	0.049	1.242	0.061	-
1 720	344000	DFT-s OFDM QPSK	M2	20	20.5	19.54	0.07	Left Cheek	0	50	56	1:1	0.047	1.247	0.059	-
1 720	344000	DFT-s OFDM QPSK	M2	20	20.5	19.56	0.08	Left Tilt	0	1	53	1:1	0.044	1.242	0.055	-
1 720	344000	DFT-s OFDM QPSK	M2	20	20.5	19.54	-0.09	Left Tilt	0	50	56	1:1	0.042	1.247	0.052	-
1 720	344000	DFT-s OFDM QPSK	M2	20	20.5	19.56	0.05	Right Cheek	0	1	53	1:1	0.054	1.242	0.067	-
1 720	344000	DFT-s OFDM QPSK	M2	20	20.5	19.54	0.07	Right Cheek	0	50	56	1:1	<b>0.070</b>	1.247	<b>0.087</b>	A18
1 720	344000	DFT-s OFDM QPSK	M2	20	20.5	19.56	0.02	Right Tilt	0	1	53	1:1	0.043	1.242	0.053	-
1 720	344000	DFT-s OFDM QPSK	M2	20	20.5	19.54	0.11	Right Tilt	0	50	56	1:1	0.040	1.247	0.050	-
1 720	344000	CP OFDM QPSK	M2	20	20.5	19.33	0.14	Right Cheek	0	1	1	1:1	0.038	1.309	0.050	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population									Head 1.6 W/kg Averaged over 1 gram							

**DTS Head SAR**

Frequency		Mode	Ant.	Band width	Data Rate	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Ant. Config.	Duty Cycle	Area Scan Peak SAR	Meas. SAR	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.			(MHz)		(dBm)	(dBm)	(dB)				(W/kg)	(W/kg)	(Duty)	(W/kg)		
2 412	1	802.11b	WiFi	20	1Mbps	14.0	13.06	-0.18	Left Cheek	Ant.1	99.0	0.116	0.072	1.242	1.010	0.090	-
2 412	1	802.11b	WiFi	20	1Mbps	14.0	13.06	-0.08	Left Tilt	Ant.1	99.0	0.142	<b>0.087</b>	1.242	1.010	<b>0.109</b>	A19
2 412	1	802.11b	WiFi	20	1Mbps	14.0	13.06	0.09	Right Cheek	Ant.1	99.0	0.203	0.082	1.242	1.010	0.103	-
2 412	1	802.11b	WiFi	20	1Mbps	14.0	13.06	0.11	Right Tilt	Ant.1	99.0	0.139	0.086	1.242	1.010	0.108	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population										Head 1.6 W/kg Averaged over 1 gram							

**NII Head SAR**

Frequency		Mode	Ant.	Band width	Data Rate	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Ant. Config.	Duty Cycle	Area Scan Peak SAR	Meas. SAR	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.			(Mhz)	(Mbps)	(dBm)	(dBm)	(dB)				(W/kg)	(W/kg)	(Duty)	(W/kg)		
5 270	54	802.11n	WiFi	40	MCS0	13.0	11.80	-0.12	Left Cheek	Ant.1	88.0	0.775	0.137	1.318	1.136	0.205	-
5 270	54	802.11n	WiFi	40	MCS0	13.0	11.80	0.18	Left Tilt	Ant.1	88.0	0.686	0.154	1.318	1.136	0.231	-
5 270	54	802.11n	WiFi	40	MCS0	13.0	11.80	0.17	Right Cheek	Ant.1	88.0	0.304	0.125	1.318	1.136	0.187	-
5 270	54	802.11n	WiFi	40	MCS0	13.0	11.80	-0.10	Right Tilt	Ant.1	88.0	0.592	0.143	1.318	1.136	0.214	-
5 690	138	802.11ac	WiFi	80	MCS0	13.0	11.63	0.13	Left Cheek	Ant.1	89.7	0.877	0.307	1.371	1.114	0.469	-
5 690	138	802.11ac	WiFi	80	MCS0	13.0	11.63	0.10	Left Tilt	Ant.1	89.7	1.15	0.344	1.371	1.114	0.525	-
5 690	138	802.11ac	WiFi	80	MCS0	13.0	11.63	-0.10	Right Cheek	Ant.1	89.7	1.76	<b>0.454</b>	1.371	1.114	<b>0.693</b>	A20
5 690	138	802.11ac	WiFi	80	MCS0	13.0	11.63	-0.14	Right Tilt	Ant.1	89.7	1.44	0.429	1.371	1.114	0.655	-
5 775	155	802.11ac	WiFi	80	MCS0	13.0	11.20	0.09	Left Cheek	Ant.1	89.7	0.837	0.218	1.514	1.114	0.368	-
5 775	155	802.11ac	WiFi	80	MCS0	13.0	11.20	0.14	Left Tilt	Ant.1	89.7	0.972	0.293	1.514	1.114	0.494	-
5 775	155	802.11ac	WiFi	80	MCS0	13.0	11.20	-0.10	Right Cheek	Ant.1	89.7	1.16	0.205	1.514	1.114	0.346	-
5 775	155	802.11ac	WiFi	80	MCS0	13.0	11.20	0.14	Right Tilt	Ant.1	89.7	0.786	0.256	1.514	1.114	0.432	-
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population										Head 1.6 W/kg Averaged over 1 gram							

**DSS Head SAR**

Frequency		Mode	Ant.	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Meas. SAR	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.			(dBm)	(dBm)	(dB)		(W/kg)			(W/kg)	
2 402	0	Bluetooth DH5	WiFi	10.0	9.66	-0.08	Left Cheek	0.038	1.081	1.302	0.053	-
2 402	0	Bluetooth DH5	WiFi	10.0	9.66	-0.18	Left Tilt	<b>0.043</b>	1.081	1.302	<b>0.061</b>	A21
2 402	0	Bluetooth DH5	WiFi	10.0	9.66	0.04	Right Cheek	0.042	1.081	1.302	0.059	-
2 402	0	Bluetooth DH5	WiFi	10.0	9.66	0.02	Right Tilt	0.042	1.081	1.302	0.059	-
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population								Head 1.6 W/kg (mW/g) Averaged over 1 gram				

### 13.2 Body-worn SAR Measurement Results

GSM/UMTS Bodyworn SAR													
Frequency		Mode	Ant.	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.			(dB)	(dB)	(dB)			(mm)	(W/kg)		(W/kg)	
836.6	190	GSM850   VOICE	M1	34.5	33.30	0.04	Rear	1:8.30	15	0.471	1.318	0.621	-
836.6	190		M1	34.5	33.30	0.11	Front	1:8.30	15	0.187	1.318	0.247	-
836.6	190	GSM850   GPRS 3TX	M1	31.0	29.97	-0.09	Rear	1:2.77	15	<b>0.606</b>	1.268	<b>0.768</b>	B1
836.6	190		M1	31.0	29.97	-0.01	Front	1:2.77	15	0.329	1.268	0.417	-
1 880	661	GSM1900   VOICE	M2	31.5	30.41	-0.13	Rear	1:8.30	15	0.207	1.285	0.266	-
1 880	661		M2	31.5	30.41	0.10	Front	1:8.30	15	0.123	1.285	0.158	-
1 880	661	GSM1900   GPRS 4TX	M2	27.1	25.43	-0.16	Rear	1:2.07	15	<b>0.239</b>	1.469	<b>0.351</b>	B2
1 880	661		M2	27.1	25.43	-0.08	Front	1:2.07	15	0.139	1.469	0.204	-
1 880	9400	UMTS Band 2   RMC	M2	24.5	23.16	-0.11	Rear	1:1	15	<b>0.262</b>	1.361	<b>0.357</b>	B3
1 880	9400		M2	24.5	23.16	0.06	Front	1:1	15	0.193	1.361	0.263	-
1 732.4	1412	UMTS Band 4   RMC	M2	25.0	23.68	-0.09	Rear	1:1	15	<b>0.297</b>	1.355	<b>0.402</b>	B4
1 732.4	1412		M2	25.0	23.68	0.02	Front	1:1	15	0.286	1.355	0.388	-
836.6	4183	UMTS Band 5   RMC	M1	25.0	23.55	0.02	Rear	1:1	15	<b>0.354</b>	1.396	<b>0.494</b>	B5
836.6	4183		M1	25.0	23.55	-0.02	Front	1:1	15	0.183	1.396	0.255	-
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Body 1.6 W/kg Averaged over 1 gram						

LTE Band Bodyworn SAR																	
Frequency		Mode	Ant.	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR	RB Size	RB offset	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.																
1 860	18700	LTE 2 QPSK	M2	20	21.5	20.00	-0.02	Rear	0	1	49	1:1	15	0.097	1.413	0.137	-
1 860	18700		M2	20	21.5	20.01	-0.10	Rear	0	50	25	1:1	15	<b>0.112</b>	1.409	<b>0.158</b>	B6
1 860	18700		M2	20	21.5	20.00	0.01	Front	0	1	49	1:1	15	0.072	1.413	0.102	-
1 860	18700		M2	20	21.5	20.01	-0.04	Front	0	50	25	1:1	15	0.073	1.409	0.103	-
1 880	18900	LTE 2 QPSK	M3	20	21.5	20.78	0.08	Rear	0	1	49	1:1	15	0.209	1.180	<b>0.247</b>	B7
1 880	18900		M3	20	21.5	20.88	0.09	Rear	0	50	25	1:1	15	<b>0.212</b>	1.153	0.245	-
1 880	18900		M3	20	21.5	20.78	0.12	Front	0	1	49	1:1	15	0.058	1.180	0.068	-
1 880	18900		M3	20	21.5	20.88	0.09	Front	0	50	25	1:1	15	0.059	1.153	0.068	-
836.5	20525	LTE 5 QPSK	M1	10	25.3	23.88	-0.01	Rear	0	1	0	1:1	15	<b>0.198</b>	1.387	<b>0.275</b>	B8
836.5	20525		M1	10	24.3	22.94	0.18	Rear	1	25	0	1:1	15	0.136	1.368	0.186	-
836.5	20525		M1	10	25.3	23.88	0.00	Front	0	1	0	1:1	15	0.132	1.387	0.183	-
836.5	20525		M1	10	24.3	22.94	0.08	Front	1	25	0	1:1	15	0.118	1.368	0.161	-
707.5	23095	LTE 12 QPSK	M1	10	25.0	23.61	-0.00	Rear	0	1	24	1:1	15	0.110	1.377	0.151	-
707.5	23095		M1	10	24.0	22.84	-0.13	Rear	1	25	0	1:1	15	<b>0.126</b>	1.306	<b>0.165</b>	B9
707.5	23095		M1	10	25.0	23.61	-0.18	Front	0	1	24	1:1	15	0.076	1.377	0.105	-
707.5	23095		M1	10	24.0	22.84	0.10	Front	1	25	0	1:1	15	0.069	1.306	0.090	-
831.5	26865	LTE 26 QPSK	M1	15	25.0	23.52	0.01	Rear	0	1	0	1:1	15	<b>0.177</b>	1.406	<b>0.249</b>	B10
831.5	26865		M1	15	24.0	22.62	-0.00	Rear	1	36	18	1:1	15	0.177	1.374	0.243	-
831.5	26865		M1	15	25.0	23.52	-0.06	Front	0	1	0	1:1	15	0.116	1.406	0.163	-
831.5	26865		M1	15	24.0	22.62	-0.16	Front	1	36	18	1:1	15	0.091	1.374	0.125	-
2 593	40620	LTE 41 QPSK	M2	20	24.5	23.53	-0.19	Rear	0	1	0	1:1.58	15	<b>0.210</b>	1.250	<b>0.263</b>	B11
2 593	40620		M2	20	23.5	22.70	-0.17	Rear	0	50	0	1:1.58	15	0.177	1.202	0.213	-
2 593	40620		M2	20	24.5	23.53	-0.13	Front	0	1	0	1:1.58	15	0.124	1.250	0.155	-
2 593	40620		M2	20	23.5	22.70	-0.18	Front	0	50	0	1:1.58	15	0.105	1.202	0.126	-
1 745	132322	LTE 66 QPSK	M2	20	21.0	20.49	-0.01	Rear	0	1	99	1:1	15	<b>0.166</b>	1.125	<b>0.187</b>	B12
1 745	132322		M2	20	21.0	20.50	-0.04	Rear	0	50	25	1:1	15	0.163	1.122	0.183	-
1 745	132322		M2	20	21.0	20.49	0.09	Front	0	1	99	1:1	15	0.086	1.125	0.097	-
1 745	132322		M2	20	21.0	20.50	0.11	Front	0	50	25	1:1	15	0.083	1.122	0.093	-
1 745	132322	LTE 66 QPSK	M3	20	21.0	20.55	0.17	Rear	0	1	99	1:1	15	0.136	1.109	0.151	-
1 745	132322		M3	20	21.0	20.67	-0.16	Rear	0	50	25	1:1	15	<b>0.144</b>	1.079	<b>0.155</b>	B13
1 745	132322		M3	20	21.0	20.55	-0.06	Front	0	1	99	1:1	15	0.039	1.109	0.043	-
1 745	132322		M3	20	21.0	20.67	0.18	Front	0	50	25	1:1	15	0.041	1.079	0.044	-
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population									Body 1.6 W/kg Averaged over 1 gram								

NR Band Bodyworn SAR																	
Frequency		Mode	Ant.	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MP R	RB Size	RB offset	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.																
836.5	167300	NR n5 DFT-s OFDM QPSK	M1	20	24.5	23.94	-0.01	Rear	0	1	1	1:1	15	<b>0.279</b>	1.138	0.317	-
836.5	167300		M1	20	24.5	23.76	0.03	Rear	0	50	28	1:1	15	0.278	1.186	<b>0.330</b>	B14
836.5	167300		M1	20	24.5	23.94	-0.01	Front	0	1	1	1:1	15	0.154	1.138	0.175	-
836.5	167300		M1	20	24.5	23.76	0.04	Front	0	50	28	1:1	15	0.150	1.186	0.178	-
836.5	167300	CP OFDM QPSK	M1	20	23.0	22.46	0.03	Rear	1.5	1	1	1:1	15	0.180	1.132	0.204	-
2592.99	518598	NR n41 DFT-s OFDM QPSK	M2	100	20.0	19.05	-0.05	Rear	0	1	137	1:1	15	<b>0.301</b>	1.245	<b>0.375</b>	B15
2592.99	518598		M2	100	20.0	18.97	0.03	Rear	0	135	69	1:1	15	0.284	1.268	0.360	-
2592.99	518598		M2	100	20.0	19.05	-0.14	Front	0	1	137	1:1	15	0.121	1.245	0.151	-
2592.99	518598		M2	100	20.0	18.97	-0.15	Front	0	135	69	1:1	15	0.121	1.268	0.153	-
2592.99	518598	CP OFDM QPSK	M2	100	20.0	18.54	-0.15	Rear	0	1	1	1:1	15	0.213	1.400	0.298	-
2592.99	518598	NR n41 SRS	S5	100	20.0	19.93	0.16	Rear	0	-	-	1:1	15	0.175	1.016	<b>0.178</b>	-
2592.99	518598	NR n41 SRS	S5	100	20.0	19.93	-0.00	Front	0	-	-	1:1	15	0.038	1.016	0.039	-
2592.99	518598	NR n41 SRS	S4	100	20.0	19.67	0.00	Rear	0	-	-	1:1	15	0.0031	1.079	<b>0.003</b>	-
2592.99	518598	NR n41 SRS	S4	100	20.0	19.67	0.00	Front	0	-	-	1:1	15	0	1.079	0.000	-
2592.99	518598	NR n41 SRS	S1	100	18.0	17.09	0.00	Rear	0	-	-	1:1	15	0.113	1.233	<b>0.139</b>	-
2592.99	518598	NR n41 SRS	S1	100	18.0	17.09	0.00	Front	0	-	-	1:1	15	0.053	1.233	0.065	-
1 720	344000	NR n66 DFT-s OFDM QPSK	M2	20	20.5	19.56	0.12	Rear	0	1	53	1:1	15	0.120	1.242	0.149	-
1 720	344000		M2	20	20.5	19.54	0.10	Rear	0	50	56	1:1	15	<b>0.129</b>	1.247	<b>0.161</b>	B16
1 720	344000		M2	20	20.5	19.56	0.04	Front	0	1	53	1:1	15	0.091	1.242	0.113	-
1 720	344000		M2	20	20.5	19.54	0.17	Front	0	50	56	1:1	15	0.099	1.247	0.123	-
1 720	344000	CP OFDM QPSK	M2	20	20.5	19.33	0.11	Rear	0	1	1	1:1	15	0.114	1.309	0.149	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population									Body 1.6 W/kg Averaged over 1 gram								

DTS Bodyworn SAR																		
Frequency		Mode	Ant.	Band width	Data Rate	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Ant. Config.	Duty Cycle	Distance	Area Scan Peak SAR	Meas. SAR	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.																	
2 412	1	802.11b	WiFi	20	1Mbps	19.0	18.06	-0.12	Rear	Ant.1	99.0	15	0.131	<b>0.078</b>	1.242	1.010	<b>0.098</b>	B17
2 412	1	802.11b	WiFi	20	1Mbps	19.0	18.06	-0.14	Front	Ant.1	99.0	15	0.0451	0.029	1.242	1.010	0.036	-
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population									Body 1.6 W/kg Averaged over 1 gram									

NII Bodyworn SAR																		
Frequency		Mode	Ant.	Band width	Data Rate	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Ant. Config.	Duty Cycle	Distance	Area Scan Peak SAR	Meas. SAR	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.																	
5 300	60	802.11a	WiFi	20	6Mbps	17.0	16.00	0.00	Rear	Ant.1	94.7	15	1.050	<b>0.463</b>	1.259	1.056	<b>0.616</b>	B18
5 300	60	802.11a	WiFi	20	6Mbps	17.0	16.00	0.00	Front	Ant.1	94.7	15	0.334	0.062	1.259	1.056	0.082	-
5 720	144	802.11a	WiFi	20	6Mbps	17.0	16.12	0.00	Rear	Ant.1	94.7	15	0.920	0.409	1.225	1.056	0.529	-
5 720	144	802.11a	WiFi	20	6Mbps	17.0	16.12	0.00	Front	Ant.1	94.7	15	0.471	0.104	1.225	1.056	0.134	-
5 825	165	802.11a	WiFi	20	6Mbps	16.0	15.45	0.00	Rear	Ant.1	94.7	15	0.876	0.365	1.135	1.056	0.437	-
5 825	165	802.11a	WiFi	20	6Mbps	16.0	15.45	0.00	Front	Ant.1	94.7	15	0.398	0.157	1.135	1.056	0.188	-
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population										Body 1.6 W/kg Averaged over 1 gram								

DSS Body-Worn SAR													
Frequency		Mode	Ant.	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Distance	Meas. SAR	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.												
2 402	0	Bluetooth DH5	WiFi	10.0	9.66	0.00	Rear	15	<b>0.011</b>	1.081	1.302	<b>0.015</b>	B19
2 402	0	Bluetooth DH5	WiFi	10.0	9.66	0.00	Front	15	0.00482	1.081	1.302	0.007	-
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population								Body 1.6 W/kg Averaged over 1 gram					



### 13.3 Hotspot SAR Measurement Results

GSM 850 Hotspot SAR													
Frequency		Mode	Ant.	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.			(dB)	(dB)	(dB)							
836.6	190	GPRS 4TX	M1	26.5	26.11	0.08	Rear	1:2.07	10	<b>0.740</b>	1.094	<b>0.810</b>	C1
824.2	128	GPRS 4TX	M1	26.5	25.98	-0.11	Rear	1:2.07	10	0.705	1.127	0.795	
848.8	251	GPRS 4TX	M1	26.5	26.30	-0.00	Rear	1:2.07	10	0.673	1.047	0.705	
836.6	190	GPRS 4TX	M1	26.5	26.11	-0.18	Front	1:2.07	10	0.182	1.094	0.199	-
836.6	190	GPRS 4TX	M1	26.5	26.11	-0.08	Left	1:2.07	10	0.156	1.094	0.171	-
836.6	190	GPRS 4TX	M1	26.5	26.11	-0.05	Right	1:2.07	10	0.261	1.094	0.286	-
836.6	190	GPRS 4TX	M1	26.5	26.11	0.12	Bottom	1:2.07	10	0.431	1.094	0.472	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population								Body 1.6 W/kg Averaged over 1 gram					

GSM 1900 Hotspot SAR													
Frequency		Mode	Ant.	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.			(dB)	(dB)	(dB)							
1 909.8	810	GPRS 4TX	M2	24.1	23.06	-0.10	Rear	1:2.07	10	0.342	1.271	0.435	-
1 909.8	810	GPRS 4TX	M2	24.1	23.06	0.04	Front	1:2.07	10	0.140	1.271	0.178	-
1 909.8	810	GPRS 4TX	M2	24.1	23.06	0.14	Left	1:2.07	10	0.084	1.271	0.107	-
1 909.8	810	GPRS 4TX	M2	24.1	23.06	0.09	Bottom	1:2.07	10	<b>0.375</b>	1.271	<b>0.477</b>	C2
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population								Body 1.6 W/kg Averaged over 1 gram					

UMTS Band 2 Hotspot SAR													
Frequency		Mode	Ant.	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.			(dB)	(dB)	(dB)							
1 880	9400	RMC	M2	21.5	20.21	0.01	Rear	1:1	10	<b>0.352</b>	1.346	<b>0.474</b>	C3
1 880	9400	RMC	M2	21.5	20.21	-0.10	Front	1:1	10	0.155	1.346	0.209	-
1 880	9400	RMC	M2	21.5	20.21	0.12	Left	1:1	10	0.107	1.346	0.144	-
1 880	9400	RMC	M2	21.5	20.21	0.03	Bottom	1:1	10	0.286	1.346	0.385	-
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population								Body 1.6 W/kg Averaged over 1 gram					



UMTS Band 4 Hotspot SAR													
Frequency		Mode	Ant.	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.			(dB)	(dB)	(dB)						(mm)	
1 732.4	1412	RMC	M2	22.0	20.73	0.03	Rear	1:1	10	<b>0.406</b>	1.340	<b>0.544</b>	C4
1 732.4	1412	RMC	M2	22.0	20.73	-0.05	Front	1:1	10	0.136	1.340	0.182	-
1 732.4	1412	RMC	M2	22.0	20.73	0.10	Left	1:1	10	0.132	1.340	0.177	-
1 732.4	1412	RMC	M2	22.0	20.73	0.11	Bottom	1:1	10	0.239	1.340	0.320	-
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Body 1.6 W/kg Averaged over 1 gram						

UMTS Band 5 Hotspot SAR													
Frequency		Mode	Ant.	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.			(dB)	(dB)	(dB)						(mm)	
836.6	4183	RMC	M1	25.0	23.55	0.04	Rear	1:1	10	0.811	1.396	1.132	-
826.4	4132	RMC	M1	25.0	23.35	0.05	Rear	1:1	10	0.734	1.462	1.073	-
846.6	4233	RMC	M1	25.0	23.59	0.06	Rear	1:1	10	<b>0.862</b>	1.384	<b>1.193</b>	C5
836.6	4183	RMC	M1	25.0	23.55	0.16	Front	1:1	10	0.178	1.396	0.248	-
836.6	4183	RMC	M1	25.0	23.55	-0.03	Left	1:1	10	0.140	1.396	0.195	-
836.6	4183	RMC	M1	25.0	23.55	-0.01	Right	1:1	10	0.294	1.396	0.410	-
836.6	4183	RMC	M1	25.0	23.55	0.13	Bottom	1:1	10	0.320	1.396	0.447	-
846.6	4233	RMC	M1	25.0	23.59	0.04	Rear	1:1	10	0.860	1.384	1.190	*
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Body 1.6 W/kg Averaged over 1 gram						

Note: \* Data entry indicate Variability measurement.

**LTE Band 2 Hotspot SAR**

Frequency		Mode	Ant.	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR (dB)	RB Size	RB Offset	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.			(MHz)	(dBm)	(dBm)	(dB)						(mm)	(W/kg)		(W/kg)	
1 860	18700	QPSK	M2	20	21.5	20.00	-0.16	Rear	0	1	49	1:1	10	0.215	1.413	0.304	-
1 860	18700	QPSK	M2	20	21.5	20.01	0.02	Rear	0	50	25	1:1	10	0.219	1.409	0.309	-
1 860	18700	QPSK	M2	20	21.5	20.00	0.04	Front	0	1	49	1:1	10	0.095	1.413	0.134	-
1 860	18700	QPSK	M2	20	21.5	20.01	0.08	Front	0	50	25	1:1	10	0.093	1.409	0.131	-
1 860	18700	QPSK	M2	20	21.5	20.00	0.17	Left	0	1	49	1:1	10	0.110	1.413	0.155	-
1 860	18700	QPSK	M2	20	21.5	20.01	0.10	Left	0	50	25	1:1	10	0.109	1.409	0.154	-
1 860	18700	QPSK	M2	20	21.5	20.00	0.04	Bottom	0	1	49	1:1	10	0.492	1.413	0.695	-
1 860	18700	QPSK	M2	20	21.5	20.01	0.03	Bottom	0	50	25	1:1	10	<b>0.503</b>	1.409	<b>0.709</b>	C6
1 880	18900	QPSK	M3	20	21.5	20.78	-0.07	Rear	0	1	49	1:1	10	0.442	1.180	<b>0.522</b>	C7
1 880	18900	QPSK	M3	20	21.5	20.88	-0.07	Rear	0	50	25	1:1	10	<b>0.445</b>	1.153	0.513	-
1 880	18900	QPSK	M3	20	21.5	20.78	0.13	Front	0	1	49	1:1	10	0.097	1.180	0.114	-
1 880	18900	QPSK	M3	20	21.5	20.88	0.16	Front	0	50	25	1:1	10	0.099	1.153	0.114	-
1 880	18900	QPSK	M3	20	21.5	20.78	0.10	Left	0	1	49	1:1	10	0.255	1.180	0.301	-
1 880	18900	QPSK	M3	20	21.5	20.88	0.18	Left	0	50	25	1:1	10	0.265	1.153	0.306	-
1 880	18900	QPSK	M3	20	21.5	20.78	0.19	Top	0	1	49	1:1	10	0.061	1.180	0.072	-
1 880	18900	QPSK	M3	20	21.5	20.88	-0.17	Top	0	50	25	1:1	10	0.060	1.153	0.069	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population										Body 1.6 W/kg Averaged over 1 gram							

**LTE Band 5 Hotspot SAR**

Frequency		Mode	Ant.	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR (dB)	RB Size	RB Offset	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.			(MHz)	(dBm)	(dBm)	(dB)						(mm)	(W/kg)		(W/kg)	
836.5	20525	QPSK	M1	10	25.3	23.88	-0.04	Rear	0	1	0	1:1	10	<b>0.510</b>	1.387	<b>0.707</b>	C8
836.5	20525	QPSK	M1	10	24.3	22.94	-0.01	Rear	1	25	0	1:1	10	0.453	1.368	0.620	-
836.5	20525	QPSK	M1	10	25.3	23.88	-0.16	Front	0	1	0	1:1	10	0.127	1.387	0.176	-
836.5	20525	QPSK	M1	10	24.3	22.94	-0.01	Front	1	25	0	1:1	10	0.111	1.368	0.152	-
836.5	20525	QPSK	M1	10	25.3	23.88	0.17	Left	0	1	0	1:1	10	0.107	1.387	0.148	-
836.5	20525	QPSK	M1	10	24.3	22.94	0.01	Left	1	25	0	1:1	10	0.093	1.368	0.127	-
836.5	20525	QPSK	M1	10	25.3	23.88	0.02	Right	0	1	0	1:1	10	0.222	1.387	0.308	-
836.5	20525	QPSK	M1	10	24.3	22.94	0.02	Right	1	25	0	1:1	10	0.195	1.368	0.267	-
836.5	20525	QPSK	M1	10	25.3	23.88	-0.13	Bottom	0	1	0	1:1	10	0.210	1.387	0.291	-
836.5	20525	QPSK	M1	10	24.3	22.94	0.04	Bottom	1	25	0	1:1	10	0.183	1.368	0.250	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population										Body 1.6 W/kg Averaged over 1 gram							

**LTE Band 12 Hotspot SAR**

Frequency		Mode	Ant.	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR (dB)	RB Size	RB Offset	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.			(Mhz)	(dBm)	(dBm)	(dB)						(mm)	(W/kg)	(W/kg)	(W/kg)	
707.5	23095	QPSK	M1	10	25.0	23.61	0.13	Rear	0	1	24	1:1	10	<b>0.240</b>	1.377	<b>0.331</b>	C9
707.5	23095	QPSK	M1	10	24.0	22.84	0.00	Rear	1	25	0	1:1	10	0.188	1.306	0.246	-
707.5	23095	QPSK	M1	10	25.0	23.61	-0.01	Front	0	1	24	1:1	10	0.067	1.377	0.092	-
707.5	23095	QPSK	M1	10	24.0	22.84	0.04	Front	1	25	0	1:1	10	0.061	1.306	0.080	-
707.5	23095	QPSK	M1	10	25.0	23.61	-0.13	Left	0	1	24	1:1	10	0.045	1.377	0.062	-
707.5	23095	QPSK	M1	10	24.0	22.84	-0.01	Left	1	25	0	1:1	10	0.041	1.306	0.054	-
707.5	23095	QPSK	M1	10	25.0	23.61	0.01	Right	0	1	24	1:1	10	0.095	1.377	0.131	-
707.5	23095	QPSK	M1	10	24.0	22.84	-0.01	Right	1	25	0	1:1	10	0.086	1.306	0.112	-
707.5	23095	QPSK	M1	10	25.0	23.61	-0.07	Bottom	0	1	24	1:1	10	0.077	1.377	0.106	-
707.5	23095	QPSK	M1	10	24.0	22.84	0.11	Bottom	1	25	0	1:1	10	0.063	1.306	0.082	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population									Body 1.6 W/kg Averaged over 1 gram								

**LTE Band 26 Hotspot SAR**

Frequency		Mode	Ant.	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR (dB)	RB Size	RB Offset	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.			(Mhz)	(dBm)	(dBm)	(dB)						(mm)	(W/kg)	(W/kg)	(W/kg)	
831.5	26865	QPSK	M1	15	25.0	23.52	-0.02	Rear	0	1	0	1:1	10	<b>0.459</b>	1.406	<b>0.645</b>	C10
831.5	26865	QPSK	M1	15	24.0	22.62	-0.01	Rear	1	36	18	1:1	10	0.418	1.374	0.574	-
831.5	26865	QPSK	M1	15	25.0	23.52	-0.12	Front	0	1	0	1:1	10	0.114	1.406	0.160	-
831.5	26865	QPSK	M1	15	24.0	22.62	-0.05	Front	1	36	18	1:1	10	0.103	1.374	0.142	-
831.5	26865	QPSK	M1	15	25.0	23.52	-0.10	Left	0	1	0	1:1	10	0.091	1.406	0.128	-
831.5	26865	QPSK	M1	15	24.0	22.62	-0.02	Left	1	36	18	1:1	10	0.087	1.374	0.120	-
831.5	26865	QPSK	M1	15	25.0	23.52	-0.12	Right	0	1	0	1:1	10	0.176	1.406	0.247	-
831.5	26865	QPSK	M1	15	24.0	22.62	-0.01	Right	1	36	18	1:1	10	0.180	1.374	0.247	-
831.5	26865	QPSK	M1	15	25.0	23.52	0.12	Bottom	0	1	0	1:1	10	0.161	1.406	0.226	-
831.5	26865	QPSK	M1	15	24.0	22.62	0.11	Bottom	1	36	18	1:1	10	0.162	1.374	0.223	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population									Body 1.6 W/kg Averaged over 1 gram								

**LTE Band 41 Hotspot SAR**

Frequency		Mode	Ant.	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR (dB)	RB Size	RB Offset	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.			(Mhz)	(dBm)	(dBm)	(dB)						(mm)	(W/kg)	(W/kg)	(W/kg)	
2 593	40620	QPSK	M2	20	21	20.07	-0.02	Rear	0	1	0	1:1.58	10	0.192	1.239	0.238	-
2 593	40620	QPSK	M2	20	21	20.06	0.17	Rear	0	50	0	1:1.58	10	<b>0.201</b>	1.242	<b>0.250</b>	C11
2 593	40620	QPSK	M2	20	21	20.07	0.11	Front	0	1	0	1:1.58	10	0.111	1.239	0.138	-
2 593	40620	QPSK	M2	20	21	20.06	-0.16	Front	0	50	0	1:1.58	10	0.114	1.242	0.142	-
2 593	40620	QPSK	M2	20	21	20.07	0.12	Left	0	1	0	1:1.58	10	0.087	1.239	0.108	-
2 593	40620	QPSK	M2	20	21	20.06	0.11	Left	0	50	0	1:1.58	10	0.085	1.242	0.106	-
2 593	40620	QPSK	M2	20	21	20.07	0.13	Bottom	0	1	0	1:1.58	10	0.165	1.239	0.204	-
2 593	40620	QPSK	M2	20	21	20.06	0.10	Bottom	0	50	0	1:1.58	10	0.160	1.242	0.199	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population									Body 1.6 W/kg Averaged over 1 gram								

LTE Band 66 Hotspot SAR																	
Frequency		Mode	Ant.	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR	RB Size	RB Offset	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.																
1 745	132322	QPSK	M2	20	21.0	20.49	-0.12	Rear	0	1	99	1:1	10	<b>0.407</b>	1.125	<b>0.458</b>	C12
1 745	132322	QPSK	M2	20	21.0	20.50	-0.07	Rear	0	50	25	1:1	10	0.394	1.122	0.442	-
1 745	132322	QPSK	M2	20	21.0	20.49	-0.07	Front	0	1	99	1:1	10	0.122	1.125	0.137	-
1 745	132322	QPSK	M2	20	21.0	20.50	0.14	Front	0	50	25	1:1	10	0.119	1.122	0.134	-
1 745	132322	QPSK	M2	20	21.0	20.49	-0.07	Left	0	1	99	1:1	10	0.126	1.125	0.142	-
1 745	132322	QPSK	M2	20	21.0	20.50	-0.09	Left	0	50	25	1:1	10	0.126	1.122	0.141	-
1 745	132322	QPSK	M2	20	21.0	20.49	-0.02	Bottom	0	1	99	1:1	10	0.324	1.125	0.365	-
1 745	132322	QPSK	M2	20	21.0	20.50	0.00	Bottom	0	50	25	1:1	10	0.323	1.122	0.362	-
1 745	132322	QPSK	M3	20	21.0	20.55	-0.18	Rear	0	1	99	1:1	10	0.316	1.109	0.350	-
1 745	132322	QPSK	M3	20	21.0	20.67	-0.10	Rear	0	50	25	1:1	10	<b>0.327</b>	1.079	<b>0.353</b>	C13
1 745	132322	QPSK	M3	20	21.0	20.55	0.10	Front	0	1	99	1:1	10	0.086	1.109	0.095	-
1 745	132322	QPSK	M3	20	21.0	20.67	0.13	Front	0	50	25	1:1	10	0.091	1.079	0.098	-
1 745	132322	QPSK	M3	20	21.0	20.55	-0.10	Left	0	1	99	1:1	10	0.165	1.109	0.183	-
1 745	132322	QPSK	M3	20	21.0	20.67	-0.01	Left	0	50	25	1:1	10	0.171	1.079	0.185	-
1 745	132322	QPSK	M3	20	21.0	20.55	0.08	Top	0	1	99	1:1	10	0.035	1.109	0.039	-
1 745	132322	QPSK	M3	20	21.0	20.67	0.19	Top	0	50	25	1:1	10	0.032	1.079	0.035	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population										Body 1.6 W/kg Averaged over 1 gram							

NR Band n5 (Cell) Hotspot SAR																	
Frequency		Mode	Ant.	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR	RB Size	RB Offset	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.																
836.5	167300	DFT-s OFDM QPSK	M1	20	24.5	23.94	-0.00	Rear	0	1	1	1:1	10	0.436	1.138	0.496	-
836.5	167300	DFT-s OFDM QPSK	M1	20	24.5	23.76	-0.04	Rear	0	50	28	1:1	10	<b>0.442</b>	1.186	<b>0.524</b>	C14
836.5	167300	DFT-s OFDM QPSK	M1	20	24.5	23.94	0.04	Front	0	1	1	1:1	10	0.142	1.138	0.162	-
836.5	167300	DFT-s OFDM QPSK	M1	20	24.5	23.76	-0.04	Front	0	50	28	1:1	10	0.122	1.186	0.145	-
836.5	167300	DFT-s OFDM QPSK	M1	20	24.5	23.94	-0.07	Left	0	1	1	1:1	10	0.113	1.138	0.129	-
836.5	167300	DFT-s OFDM QPSK	M1	20	24.5	23.76	0.06	Left	0	50	28	1:1	10	0.103	1.186	0.122	-
836.5	167300	DFT-s OFDM QPSK	M1	20	24.5	23.94	-0.04	Right	0	1	1	1:1	10	0.241	1.138	0.274	-
836.5	167300	DFT-s OFDM QPSK	M1	20	24.5	23.76	0.01	Right	0	50	28	1:1	10	0.229	1.186	0.272	-
836.5	167300	DFT-s OFDM QPSK	M1	20	24.5	23.94	0.18	Bottom	0	1	1	1:1	10	0.305	1.138	0.347	-
836.5	167300	DFT-s OFDM QPSK	M1	20	24.5	23.76	0.10	Bottom	0	50	28	1:1	10	0.222	1.186	0.263	-
836.5	167300	CP OFDM QPSK	M1	20	23.0	22.46	-0.03	Rear	1.5	1	1	1:1	10	0.344	1.132	0.390	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population										Body 1.6 W/kg Averaged over 1 gram							

**NR Band n41 Hotspot SAR**

Frequency		Mode	Ant.	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR	RB Size	RB Offset	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.			(Mhz)	(dBm)	(dBm)	(dB)		(dB)	(dB)	(mm)		(W/kg)	(W/kg)			
2592.99	518598	DFT-s OFDM QPSK	M2	100	20.0	19.05	0.16	Rear	0	1	137	1:1	10	<b>0.568</b>	1.245	<b>0.707</b>	C15
2592.99	518598	DFT-s OFDM QPSK	M2	100	20.0	18.97	-0.17	Rear	0	135	69	1:1	10	0.528	1.268	0.670	-
2592.99	518598	DFT-s OFDM QPSK	M2	100	20.0	18.94	-0.12	Rear	0	270	0	1:1	10	0.438	1.276	0.559	-
2592.99	518598	DFT-s OFDM QPSK	M2	100	20.0	19.05	0.08	Front	0	1	137	1:1	10	0.224	1.245	0.279	-
2592.99	518598	DFT-s OFDM QPSK	M2	100	20.0	18.97	-0.10	Front	0	135	69	1:1	10	0.204	1.268	0.259	-
2592.99	518598	DFT-s OFDM QPSK	M2	100	20.0	19.05	0.11	Left	0	1	137	1:1	10	0.109	1.245	0.136	-
2592.99	518598	DFT-s OFDM QPSK	M2	100	20.0	18.97	0.10	Left	0	135	69	1:1	10	0.094	1.268	0.119	-
2592.99	518598	DFT-s OFDM QPSK	M2	100	20.0	19.05	0.10	Bottom	0	1	137	1:1	10	0.338	1.245	0.421	-
2592.99	518598	DFT-s OFDM QPSK	M2	100	20.0	18.97	0.16	Bottom	0	135	69	1:1	10	0.328	1.268	0.416	-
2592.99	518598	CP OFDM QPSK	M2	100	20.0	18.54	-0.17	Rear	0	1	1	1:1	10	0.374	1.400	0.524	-
2592.99	518598	SRS CW	S5	100	20.0	19.93	-0.12	Rear	0	-	-	1:1	10	0.455	1.016	0.462	-
2592.99	518598	SRS CW	S5	100	20.0	19.93	0.00	Front	0	-	-	1:1	10	0.072	1.016	0.073	-
2592.99	518598	SRS CW	S5	100	20.0	19.93	0.12	Top	0	-	-	1:1	10	0.203	1.016	0.206	-
2592.99	518598	SRS CW	S4	100	20.0	19.67	-0.02	Rear	0	-	-	1:1	10	0.020	1.079	0.022	-
2592.99	518598	SRS CW	S4	100	20.0	19.67	0.00	Front	0	-	-	1:1	10	0.00444	1.079	0.005	-
2592.99	518598	SRS CW	S4	100	20.0	19.67	0.05	Right	0	-	-	1:1	10	0.00316	1.079	0.003	-
2592.99	518598	SRS CW	S4	100	20.0	19.67	0.00	Top	0	-	-	1:1	10	0	1.079	0.000	-
2592.99	518598	SRS CW	S1	100	18.0	17.09	0.00	Rear	0	-	-	1:1	10	0.254	1.233	0.313	-
2592.99	518598	SRS CW	S1	100	18.0	17.09	0.00	Front	0	-	-	1:1	10	0.133	1.233	0.164	-
2592.99	518598	SRS CW	S1	100	18.0	17.09	0.04	Right	0	-	-	1:1	10	0.033	1.233	0.041	-
2592.99	518598	SRS CW	S1	100	18.0	17.09	0.14	Top	0	-	-	1:1	10	0.204	1.233	0.252	-

ANSI/ IEEE C95.1 - 2005 – Safety Limit  
Spatial Peak  
Uncontrolled Exposure/ General Population

Body  
1.6 W/kg  
Averaged over 1 gram

**NR Band n66 Hotspot SAR**

Frequency		Mode	Ant.	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	MPR	RB Size	RB Offset	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.			(Mhz)	(dBm)	(dBm)	(dB)		(dB)	(dB)	(mm)		(W/kg)	(W/kg)			
1 720	344000	DFT-s OFDM QPSK	M2	20	20.5	19.56	0.07	Rear	0	1	53	1:1	10	<b>0.307</b>	1.242	<b>0.381</b>	C16
1 720	344000	DFT-s OFDM QPSK	M2	20	20.5	19.54	0.08	Rear	0	50	56	1:1	10	0.294	1.247	0.367	-
1 720	344000	DFT-s OFDM QPSK	M2	20	20.5	19.56	0.10	Front	0	1	53	1:1	10	0.150	1.242	0.186	-
1 720	344000	DFT-s OFDM QPSK	M2	20	20.5	19.54	0.16	Front	0	50	56	1:1	10	0.163	1.247	0.203	-
1 720	344000	DFT-s OFDM QPSK	M2	20	20.5	19.56	0.03	Left	0	1	53	1:1	10	0.133	1.242	0.165	-
1 720	344000	DFT-s OFDM QPSK	M2	20	20.5	19.54	0.19	Left	0	50	56	1:1	10	0.122	1.247	0.152	-
1 720	344000	DFT-s OFDM QPSK	M2	20	20.5	19.56	0.17	Bottom	0	1	53	1:1	10	0.201	1.242	0.250	-
1 720	344000	DFT-s OFDM QPSK	M2	20	20.5	19.54	0.03	Bottom	0	50	56	1:1	10	0.234	1.247	0.292	-
1 720	344000	CP OFDM QPSK	M2	20	20.5	19.33	0.04	Rear	0	1	1	1:1	10	0.268	1.309	0.351	-

ANSI/ IEEE C95.1 - 2005 – Safety Limit  
Spatial Peak  
Uncontrolled Exposure/ General Population

Body  
1.6 W/kg  
Averaged over 1 gram

**DTS Hotspot SAR**

Frequency		Mode	Ant.	Band width	Data Rate	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Ant. Config.	Duty Cycle	Distance	Area Scan Peak SAR	Meas. SAR	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.																	
2 412	1	802.11b	WiFi	20	1Mbps	19.0	18.06	0.18	Rear	Ant.1	99.0	10	0.347	<b>0.199</b>	1.242	1.010	<b>0.250</b>	C17
2 412	1	802.11b	WiFi	20	1Mbps	19.0	18.06	-0.08	Front	Ant.1	99.0	10	0.104	0.066	1.242	1.010	0.083	-
2 412	1	802.11b	WiFi	20	1Mbps	19.0	18.06	0.16	Left	Ant.1	99.0	10	0.0624	0.038	1.242	1.010	0.048	-
2 412	1	802.11b	WiFi	20	1Mbps	19.0	18.06	0.11	Top	Ant.1	99.0	10	0.213	0.135	1.242	1.010	0.169	-
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population										Body 1.6 W/kg Averaged over 1 gram								

**NII Hotspot SAR**

Frequency		Mode	Ant.	Band width	Data Rate	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Ant. Config.	Duty Cycle	Distance	Area Scan Peak SAR	Meas. SAR	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.																	
5 825	162	802.11a	WiFi	20	6Mbps	16.0	15.45	0.00	Rear	Ant.1	94.7	10	1.40	0.594	1.135	1.056	0.712	-
5 825	162	802.11a	WiFi	20	6Mbps	16.0	15.45	0.00	Front	Ant.1	94.7	10	0.536	0.215	1.135	1.056	0.258	-
5 825	162	802.11a	WiFi	20	6Mbps	16.0	15.45	-0.11	Left	Ant.1	94.7	10	0.158	0.066	1.135	1.056	0.079	-
5 825	162	802.11a	WiFi	20	6Mbps	16.0	15.45	0.19	Top	Ant.1	94.7	10	1.67	<b>0.748</b>	1.135	1.056	0.896	-
5 745	149	802.11a	WiFi	20	6Mbps	16.0	14.84	0.11	Top	Ant.1	94.7	10	1.55	0.666	1.306	1.056	<b>0.918</b>	C18
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population										Body 1.6 W/kg Averaged over 1 gram								

**DSS Hotspot SAR**

Frequency		Mode	Ant.	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Distance	Meas. SAR	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.												
2 402	0	Bluetooth DH5	WiFi	10.0	9.66	0.00	Rear	10	<b>0.033</b>	1.081	1.302	<b>0.046</b>	C19
2 402	0	Bluetooth DH5	WiFi	10.0	9.66	0.00	Front	10	0.00857	1.081	1.302	0.012	-
2 402	0	Bluetooth DH5	WiFi	10.0	9.66	-0.09	Left	10	0.00429	1.081	1.302	0.006	-
2 402	0	Bluetooth DH5	WiFi	10.0	9.66	0.10	Top	10	0.019	1.081	1.302	0.027	-
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population								Body 1.6 W/kg Averaged over 1 gram					



### 13.4 Phablet SAR Measurement Considerations

Per FCC KDB 648474 D04v01r03, this device is considered a “Phablet” since the diagonal dimension is greater than 160 mm and less than 200 mm. Therefore, extremity SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR >1.2 W/kg. When hotspot mode applies, 10g SAR required only for the surfaces and edges with hotspot mode scaled to the maximum output power (including tolerance) is 1g SAR > 1.2 W/kg.

### 13.5 Phablet SAR Measurement Results

GSM 850 Phablet SAR 10g														
Frequency		Mode	Ant.	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Sensor	Duty Cycle	Distance (mm)	Meas. SAR(10g)	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.			(dB)	(dB)	(dB)					(W/kg)		(W/kg)	
836.6	190	GPRS 4TX	M1	26.5	26.11	0.00	Rear	On	1:2.07	0	<b>1.260</b>	1.094	<b>1.378</b>	D1
836.6	190	GPRS 3TX	M1	31.0	29.97	0.09	Front	N/A	1:2.77	0	0.893	1.268	1.132	-
836.6	190	GPRS 3TX	M1	31.0	29.97	-0.16	Left	N/A	1:2.77	0	0.240	1.268	0.304	-
836.6	190	GPRS 3TX	M1	31.0	29.97	-0.12	Right	N/A	1:2.77	0	0.830	1.268	1.052	-
836.6	190	GPRS 4TX	M1	26.5	26.11	0.17	Bottom	On	1:2.07	0	1.030	1.094	1.127	-
836.6	190	GPRS 3TX	M1	31.0	29.97	0.05	Rear	Off	1:2.77	12	0.618	1.268	0.784	-
836.6	190	GPRS 3TX	M1	31.0	29.97	0.19	Bottom	Off	1:2.77	11	0.347	1.268	0.440	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Hand 4.0 W/kg Averaged over 10 gram							

NII Phablet SAR 10g																			
Frequency		Mode	Ant.	Band width (MHz)	Data Rate	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Sensor	Ant. Config.	Duty Cycle	Distance (mm)	Area Scan Peak SAR	Meas. SAR(10g)	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
Mhz	Ch.					(dBm)	(dBm)	(dB)						(W/kg)	10g(W/kg)		(Duty)	(W/kg)	
5 270	54	802.11n	WiFi	40	MCS0	13.0	11.80	0.00	Rear	On	Ant.1	88.0	0	3.24	0.255	1.318	1.136	0.382	-
5 300	60	802.11a	WiFi	20	6Mbps	17.0	16.00	0.00	Front	N/A	Ant.1	94.7	0	2.74	0.213	1.259	1.056	0.283	-
5 300	60	802.11a	WiFi	20	6Mbps	17.0	16.00	0.00	Left	N/A	Ant.1	94.7	0	0.246	0.012	1.259	1.056	0.016	-
5 270	54	802.11n	WiFi	40	MCS0	13.0	11.80	0.14	Top	On	Ant.1	88.0	0	4.29	0.368	1.318	1.136	0.551	-
5 300	60	802.11a	WiFi	20	6Mbps	17.0	16.00	0.00	Rear	Off	Ant.1	94.7	10	1.26	0.157	1.259	1.056	0.209	-
5 300	60	802.11a	WiFi	20	6Mbps	17.0	16.00	0.16	Top	Off	Ant.1	94.7	5	3.55	0.458	1.259	1.056	0.609	-
5 590	138	802.11ac	WiFi	80	MCS0	13.0	11.63	0.00	Rear	On	Ant.1	89.7	0	5.85	0.473	1.371	1.114	0.722	-
5 720	144	802.11a	WiFi	20	6Mbps	17.0	16.12	0.00	Front	N/A	Ant.1	94.7	0	3.10	0.328	1.225	1.056	0.424	-
5 720	144	802.11a	WiFi	20	6Mbps	17.0	16.12	0.00	Left	N/A	Ant.1	94.7	0	0.867	0.073	1.225	1.056	0.094	-
5 590	138	802.11ac	WiFi	80	MCS0	13.0	11.63	0.18	Top	On	Ant.1	89.7	0	6.19	<b>0.578</b>	1.371	1.114	<b>0.883</b>	D2
5 720	144	802.11a	WiFi	20	6Mbps	17.0	16.12	0.00	Rear	Off	Ant.1	94.7	10	2.92	0.344	1.225	1.056	0.445	-
5 720	144	802.11a	WiFi	20	6Mbps	17.0	16.12	0.18	Top	Off	Ant.1	94.7	5	3.61	0.524	1.225	1.056	0.678	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population										Hand 4.0 W/kg Averaged over 10 gram									

NFC Phablet SAR 10g									
Frequency	Mode	Ant.	Type	Power Drift	Test Position	Ant. Config.	Distance	Meas. SAR(10g)	Plot No.
MHz				(dB)			(mm)	(W/kg)	
13.56	NFC	NFC	Type-A	0.00	Rear	NFC	0	<b>0.000</b>	D3
13.56	NFC	NFC	Type-A	0.00	Front	NFC	0	0.000	-
13.56	NFC	NFC	Type-A	0.00	Left	NFC	0	0.000	-
13.56	NFC	NFC	Type-A	0.00	Top	NFC	0	0.000	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population					Hand 4.0 W/kg Averaged over 10 gram				



## 13.6 SAR Test Notes

### General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, FCC KDB Procedure.
2. Batteries are fully charged at the beginning of the SAR measurements. A standard battery was used for all SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB 447498 D01v06.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 15 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.
7. Per FCC KDB 648474 D04v01r03, SAR was evaluated without a headset connected to the device. Since the standalone reported SAR was 1.2 W/kg, no additional SAR evaluation using a headset cable were required.
8. Per KDB 648474 D04v01r03, this device is considered a "Phablet" since the diagonal dimension is > 160 mm and < 200 mm. When hotspot mode applies, extremity SAR is required only for the surfaces and edges with hotspot mode scaled to the maximum output power (with tolerance) is 1 g SAR > 1.2 W/kg.
9. Per FCC KDB 865664 D01v01r04, variability SAR measurement were performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg for 1g SAR and >2 for 10g SAR Please see Section 15 for variability analysis.
10. This device utilizes power reduction for some wireless mode and technologies, as outlined in sec. 4 The maximum output power allowed for each transmitter and exposure condition was evaluated for SAR compliance based on expected use conditions and simultaneous scenarios.
11. During SAR testing for the Hotspot conditions per KDB 941225 D06v02r01, the actual portable hotspot operation (with actual simultaneous transmission of a transmitter with WiFi) was not activated.
12. This device uses The Samsung S.LSI proprietary TAS (Time Average SAR) algorithm for 4G/5G operations to control and managetransmitting power in real time to ensure RF Exposure compliance. Per FCC Guidance, SAR Test at the Plimit and Pmax output power for eachband/mode/exposure condition (RSI).

### GSM/GPRS Test Notes:

1. This EUT'S GSM and GPRS device class is B.
2. This device supports GPRS VOIP in the head and the body-worn configurations therefore GPRS was additionally evaluated for head and body-worn compliance.
3. Justification for reduced test configurations per KDB 941225 D01v03r01: The source-based time-averaged output power was evaluated for all multi-slot operations. The multi-slot configuration with the highest frame averaged output power including tolerance was evaluated for SAR.
4. Per FCC KDB 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is 1/2 dB, instead of the middle channel, the highest output power channel must be used.

**UMTS Notes:**

1. The 12.2 kbps RMC mode is the primary mode per KDB 941225 D01v03r01.
2. UMTS SAR was tested under RMC 12.2 kbps with HSPA inactive per KDB publication 941225 D01v03r01. AMR and HSPA SAR was not required per the 3G Test Reduction Procedure in KDB Publication 941225 D01v03r01.
3. Per FCC KDB 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the channel highest output power channel was used.

**LTE Notes:**

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Consideration for LTE Devices in FCC KDB 941225 D05v02r05.
2. According to FCC KDB 941225 D05v02r05:  
When the reported SAR is 0.8 W/kg, testing of the 100% RB allocation and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the 1RB, 50%RB and 100%RB allocation with highest output power for that channel.  
Only one channel, and as reported SAR values for 1RB allocation and 50%RB allocation were less than 1.45W/Kg only the highest power RB offset for each allocation was required.
3. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to target MPR is indicated alongside the SAR results.
4. When Power reduction is applied, MPR is 0 for some modes.
5. A-MPR was disabled for all SAR tests by setting NS=01 on the base station simulator.
6. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) LTE TDD Band 41 SAR measured at the highest output power channel for each test configuration is 0.6 W/kg then testing at the other channels is not required for such test configurations.
7. TDD LTE (Power Class 3) was tested using UL-DL configuration 0 with 6 UL sub frames and 2S subframes using extended cyclic prefix only and special sub frame configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Sec. 4, the duty factor using extended cyclic prefix is 0.633(cf=1.58).
8. Per KDB 941225 D05Av01r02, SAR for LTE Carrier Aggregation operations was not needed because the maximum average output power in LTE CA mode was not > 0.25 dB higher than the maximum output power when downlink CA was not activated.
9. SAR test reduction is applied using the following criteria:  
Start with the largest channel Bandwidth and measure SAR for QPSK with 1 RB, and 50% RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is >0.8 W/kg, testing for other Channels is performed at the highest output power level for 1RB, and 50% RB configuration for that channel. Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are >0.8 W/kg, testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation <1.45 W/kg. Testing for 16-QAM modulation is not required because the reported SAR for QPSK is <1.45 W/kg and its output power is not more than 0.5 dB higher than that a QPSK. Testing for the other channel Bandwidths is not required because the reported SAR for the highest channel Bandwidth is <1.45 W/kg and its output power is not more than 0.5 dB higher than that of the highest channel Bandwidth.

**NR Notes:**

1. More detailed specifications of the NR bands are contained in the Technical description document.
2. This device additionally supports some EN-DC conditions where additional LTE carriers are added on the downlink only.
3. For NR modulations and RB Sizes/Offsets were selected for testing such that configurations with the highest output power was evaluated for SAR tests.
4. Simultaneous transmission analysis for EN-DC operations is addressed in the TAS Validation Report.

**WLAN Notes:**

1. For held-to-ear and hotspot operations, the initial test position procedures were applied. For initial test position, the highest extrapolated peak SAR will be used. When reported SAR for the initial test position is  $\leq 0.4$  W/kg for 1g SAR and  $\leq 1.0$  W/kg for 10g SAR, no additional testing for the remaining test positions was required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR results is  $\leq 0.8$  W/kg for 1g SAR and  $\leq 2.0$  W/kg for 10g SAR or all test position are measured.
2. Per KDB 2482227 D01v02r02 justification for test configurations of 2.4 GHz WiFi Single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11 g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR
3. Per KDB 2482227 D01v02r02 justification for test configurations of 5 GHz WiFi Single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission mode was not investigated since the highest reported SAR for initial test configuration adjusted by the ration of maximum output powers is less than 1.2 W/kg for 1g SAR and less than 3.0 W/kg for 10 g SAR.
4. When the maximum reported 1g averaged SAR is  $\leq 0.8$  W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was  $\leq 1.20$  W/kg or all test channels were measured.
5. The device was configured to transmit continuously at the required data rated, channel Bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance. Procedures used to measure the duty factor are identical to that in the associated WLAN test reports.

**Bluetooth Notes:**

1. Bluetooth SAR was measured with the device connected to a call box with hopping disabled with DH5 operation and Tx Tests mode type. Per October 2016 TCBC Workshop Notes, the reported SAR was scaled to 100% transmission duty factor to determine compliance. Please see sec.11 for the time-domain plot and calculation for duty factor of the device.
2. Head and Bluetooth tethering SAR were evaluated for BT BR tethering applications.

## 14. Simultaneous SAR Analysis

This device is containing transmitters that may operate simultaneously. Therefore, simultaneous transmission analysis is required. Per KDB Publication 447498 D01v06 4.3.2, simultaneous transmission SAR test exclusion may be applied when the sum of 1g SAR and 10g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is  $\leq 1.6\text{W/kg}$  for 1g SAR and  $\leq 4\text{ W/kg}$  for 10g SAR. The different test positions in an exposure condition may be considered collectively to determine SAR exclusion according to the sum of 1g or 10g SAR.

**14.1 Head SAR Simultaneous Transmission Analysis.**

Band	Ant	Configuration	Main	2.4GHz SISO	5GHz SISO	Bluetooth	Σ	Σ	Σ	Σ
			(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)
			1	2	3	4	1+2	1+3	1+4	1+3+4
GSM 850	M1	Left Touch	0.416	0.090	0.469	0.053	0.506	0.885	0.469	0.938
		Left Tilt	0.238	0.109	0.525	0.061	0.347	0.763	0.299	0.824
		Right Touch	0.535	0.103	0.693	0.059	0.638	1.228	0.594	1.287
		Right Tilt	0.262	0.108	0.655	0.059	0.370	0.917	0.321	0.976
GSM1900	M2	Left Touch	0.060	0.090	0.469	0.053	0.150	0.529	0.113	0.582
		Left Tilt	0.038	0.109	0.525	0.061	0.147	0.563	0.099	0.624
		Right Touch	0.087	0.103	0.693	0.059	0.190	0.780	0.146	0.839
		Right Tilt	0.057	0.108	0.655	0.059	0.165	0.712	0.116	0.771
UMTS Band 2	M2	Left Touch	0.157	0.090	0.469	0.053	0.247	0.626	0.210	0.679
		Left Tilt	0.097	0.109	0.525	0.061	0.206	0.622	0.158	0.683
		Right Touch	0.155	0.103	0.693	0.059	0.258	0.848	0.214	0.907
		Right Tilt	0.122	0.108	0.655	0.059	0.230	0.777	0.181	0.836
UMTS Band 4	M2	Left Touch	0.136	0.090	0.469	0.053	0.226	0.605	0.189	0.658
		Left Tilt	0.111	0.109	0.525	0.061	0.220	0.636	0.172	0.697
		Right Touch	0.161	0.103	0.693	0.059	0.264	0.854	0.220	0.913
		Right Tilt	0.119	0.108	0.655	0.059	0.227	0.774	0.178	0.833
UMTS Band 5	M1	Left Touch	0.225	0.090	0.469	0.053	0.315	0.694	0.278	0.747
		Left Tilt	0.126	0.109	0.525	0.061	0.235	0.651	0.187	0.712
		Right Touch	0.292	0.103	0.693	0.059	0.395	0.985	0.351	1.044
		Right Tilt	0.154	0.108	0.655	0.059	0.262	0.809	0.213	0.868
LTE Band 2	M2	Left Touch	0.072	0.090	0.469	0.053	0.162	0.541	0.125	0.594
		Left Tilt	0.051	0.109	0.525	0.061	0.160	0.576	0.112	0.637
		Right Touch	0.056	0.103	0.693	0.059	0.159	0.749	0.115	0.808
		Right Tilt	0.040	0.108	0.655	0.059	0.148	0.695	0.099	0.754
LTE Band 2	M3	Left Touch	0.160	0.090	0.469	0.053	0.250	0.629	0.213	0.682
		Left Tilt	0.085	0.109	0.525	0.061	0.194	0.610	0.146	0.671
		Right Touch	0.398	0.103	0.693	0.059	0.501	1.091	0.457	1.150
		Right Tilt	0.174	0.108	0.655	0.059	0.282	0.829	0.233	0.888
LTE Band 5	M1	Left Touch	0.169	0.090	0.469	0.053	0.259	0.638	0.222	0.691
		Left Tilt	0.075	0.109	0.525	0.061	0.184	0.600	0.136	0.661
		Right Touch	0.230	0.103	0.693	0.059	0.333	0.923	0.289	0.982
		Right Tilt	0.104	0.108	0.655	0.059	0.212	0.759	0.163	0.818
LTE Band 12	M1	Left Touch	0.085	0.090	0.469	0.053	0.175	0.554	0.138	0.607
		Left Tilt	0.043	0.109	0.525	0.061	0.152	0.568	0.104	0.629
		Right Touch	0.094	0.103	0.693	0.059	0.197	0.787	0.153	0.846
		Right Tilt	0.051	0.108	0.655	0.059	0.159	0.706	0.110	0.765
LTE Band 26	M1	Left Touch	0.146	0.090	0.469	0.053	0.236	0.615	0.199	0.668
		Left Tilt	0.075	0.109	0.525	0.061	0.184	0.600	0.136	0.661
		Right Touch	0.198	0.103	0.693	0.059	0.301	0.891	0.257	0.950
		Right Tilt	0.093	0.108	0.655	0.059	0.201	0.748	0.152	0.807
LTE Band 41	M2	Left Touch	0.099	0.090	0.469	0.053	0.189	0.568	0.152	0.621
		Left Tilt	0.034	0.109	0.525	0.061	0.143	0.559	0.095	0.620
		Right Touch	0.056	0.103	0.693	0.059	0.159	0.749	0.115	0.808
		Right Tilt	0.080	0.108	0.655	0.059	0.188	0.735	0.139	0.794

Band	Ant	Configuration	Main	2.4GHz SISO	5GHz SISO	Bluetooth	Σ	Σ	Σ	Σ
			(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)
			1	2	3	4	1+2	1+3	1+4	1+3+4
LTE Band 66	M2	Left Touch	0.116	0.090	0.469	0.053	0.206	0.585	0.169	0.638
		Left Tilt	0.073	0.109	0.525	0.061	0.182	0.598	0.134	0.659
		Right Touch	0.336	0.103	0.693	0.059	0.439	1.029	0.395	1.088
		Right Tilt	0.147	0.108	0.655	0.059	0.255	0.802	0.206	0.861
LTE Band 66	M3	Left Touch	0.166	0.090	0.469	0.053	0.256	0.635	0.219	0.688
		Left Tilt	0.080	0.109	0.525	0.061	0.189	0.605	0.141	0.666
		Right Touch	0.199	0.103	0.693	0.059	0.302	0.892	0.258	0.951
		Right Tilt	0.106	0.108	0.655	0.059	0.214	0.761	0.165	0.820
NR Band n5	M1	Left Touch	0.037	0.090	0.469	0.053	0.127	0.506	0.090	0.559
		Left Tilt	0.019	0.109	0.525	0.061	0.128	0.544	0.080	0.605
		Right Touch	0.043	0.103	0.693	0.059	0.146	0.736	0.102	0.795
		Right Tilt	0.036	0.108	0.655	0.059	0.144	0.691	0.095	0.750
NR Band n41	M2	Left Touch	0.432	0.090	0.469	0.053	0.522	0.901	0.485	0.954
		Left Tilt	0.438	0.109	0.525	0.061	0.547	0.963	0.499	1.024
		Right Touch	0.305	0.103	0.693	0.059	0.408	0.998	0.364	1.057
		Right Tilt	0.344	0.108	0.655	0.059	0.452	0.999	0.403	1.058
NR Band n41 SRS#B	S5	Left Touch	0.000	0.090	0.469	0.053	0.090	0.469	0.053	0.522
		Left Tilt	0.000	0.109	0.525	0.061	0.109	0.525	0.061	0.586
		Right Touch	0.000	0.103	0.693	0.059	0.103	0.693	0.059	0.752
		Right Tilt	0.000	0.108	0.655	0.059	0.108	0.655	0.059	0.714
NR Band n41 SRS#C	S4	Left Touch	0.762	0.090	0.469	0.053	0.852	1.231	0.815	1.284
		Left Tilt	0.889	0.109	0.525	0.061	0.998	1.414	0.950	<b>1.475</b>
		Right Touch	0.256	0.103	0.693	0.059	0.359	0.949	0.315	1.008
		Right Tilt	0.329	0.108	0.655	0.059	0.437	0.984	0.388	1.043
NR Band n41 SRS#D	S1	Left Touch	0.061	0.090	0.469	0.053	0.151	0.530	0.114	0.583
		Left Tilt	0.055	0.109	0.525	0.061	0.164	0.580	0.116	0.641
		Right Touch	0.087	0.103	0.693	0.059	0.190	0.780	0.146	0.839
		Right Tilt	0.053	0.108	0.655	0.059	0.161	0.708	0.112	0.767
NR Band n66	M2	Left Touch	0.116	0.090	0.469	0.053	0.206	0.585	0.169	0.638
		Left Tilt	0.073	0.109	0.525	0.061	0.182	0.598	0.134	0.659
		Right Touch	0.336	0.103	0.693	0.059	0.439	1.029	0.395	1.088
		Right Tilt	0.147	0.108	0.655	0.059	0.255	0.802	0.206	0.861

**14.2 Body-Worn SAR Simultaneous Transmission Analysis.**

Band	Ant	Configuration	Main	2.4GHz SISO	5GHz SISO	Bletooth	Σ	Σ	Σ	Σ
			(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)
			1	2	3	4	1+2	1+3	1+4	1+3+4
GSM 850	M1	Rear	0.768	0.098	0.616	0.015	0.866	1.384	0.783	<b>1.399</b>
		Front	0.417	0.036	0.188	0.007	0.453	0.605	0.424	0.612
GSM1900	M2	Rear	0.351	0.098	0.616	0.015	0.449	0.967	0.366	0.982
		Front	0.204	0.036	0.188	0.007	0.240	0.392	0.211	0.399
UMTS Band 2	M2	Rear	0.357	0.098	0.616	0.015	0.455	0.973	0.372	0.988
		Front	0.263	0.036	0.188	0.007	0.299	0.451	0.270	0.458
UMTS Band 4	M2	Rear	0.402	0.098	0.616	0.015	0.500	1.018	0.417	1.033
		Front	0.388	0.036	0.188	0.007	0.424	0.576	0.395	0.583
UMTS Band 5	M1	Rear	0.494	0.098	0.616	0.015	0.592	1.110	0.509	1.125
		Front	0.255	0.036	0.188	0.007	0.291	0.443	0.262	0.450
LTE Band 2	M2	Rear	0.158	0.098	0.616	0.015	0.256	0.774	0.173	0.789
		Front	0.103	0.036	0.188	0.007	0.139	0.291	0.110	0.298
LTE Band 2	M3	Rear	0.247	0.098	0.616	0.015	0.345	0.863	0.262	0.878
		Front	0.068	0.036	0.188	0.007	0.104	0.256	0.075	0.263
LTE Band 5	M1	Rear	0.275	0.098	0.616	0.015	0.373	0.891	0.290	0.906
		Front	0.183	0.036	0.188	0.007	0.219	0.371	0.190	0.378
LTE Band 12	M1	Rear	0.165	0.098	0.616	0.015	0.263	0.781	0.180	0.796
		Front	0.105	0.036	0.188	0.007	0.141	0.293	0.112	0.300
LTE Band 26	M1	Rear	0.249	0.098	0.616	0.015	0.347	0.865	0.264	0.880
		Front	0.163	0.036	0.188	0.007	0.199	0.351	0.170	0.358
LTE Band 41	M2	Rear	0.263	0.098	0.616	0.015	0.361	0.879	0.278	0.894
		Front	0.155	0.036	0.188	0.007	0.191	0.343	0.162	0.350
LTE Band 66	M2	Rear	0.187	0.098	0.616	0.015	0.285	0.803	0.202	0.818
		Front	0.097	0.036	0.188	0.007	0.133	0.285	0.104	0.292
LTE Band 66	M3	Rear	0.155	0.098	0.616	0.015	0.253	0.771	0.170	0.786
		Front	0.044	0.036	0.188	0.007	0.080	0.232	0.051	0.239
NR Band n5	M1	Rear	0.330	0.098	0.616	0.015	0.428	0.946	0.345	0.961
		Front	0.178	0.036	0.188	0.007	0.214	0.366	0.185	0.373
NR Band n41	M2	Rear	0.375	0.098	0.616	0.015	0.473	0.991	0.390	1.006
		Front	0.153	0.036	0.188	0.007	0.189	0.341	0.160	0.348
NR Band n41 SRS#B	S5	Rear	0.178	0.098	0.616	0.015	0.276	0.794	0.193	0.809
		Front	0.039	0.036	0.188	0.007	0.075	0.227	0.046	0.234
NR Band n41 SRS#C	S4	Rear	0.003	0.098	0.616	0.015	0.101	0.619	0.018	0.634
		Front	0.000	0.036	0.188	0.007	0.036	0.188	0.007	0.195
NR Band n41 SRS#D	S1	Rear	0.139	0.098	0.616	0.015	0.237	0.755	0.154	0.770
		Front	0.065	0.036	0.188	0.007	0.101	0.253	0.072	0.260
NR Band n66	M2	Rear	0.161	0.098	0.616	0.015	0.259	0.777	0.176	0.792
		Front	0.123	0.036	0.188	0.007	0.159	0.311	0.130	0.318



### 14.3 Hotspot SAR Simultaneous Transmission Analysis.

Band	ANT	Configuration	Main	2.4GHz SISO	5GHz SISO	Bluetooth	Σ	Σ	Σ	Σ	SPLSR (Yes/No)
			(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	
			1	2	3	4	1+2	1+3	1+4	1+3+4	
GSM 850	M1	Rear	0.810	0.250	0.712	0.046	1.060	1.522	0.856	<b>1.568</b>	No
		Front	0.199	0.083	0.258	0.012	0.282	0.457	0.211	0.469	No
		Left	0.171	0.048	0.079	0.006	0.219	0.250	0.177	0.256	No
		Right	0.286				0.286	0.286	0.286	0.286	No
		Top		0.169	0.918	0.027	0.169	0.918	0.027	0.945	No
		Bottom	0.472				0.472	0.472	0.472	0.472	No
GSM1900	M2	Rear	0.435	0.250	0.712	0.046	0.685	1.147	0.481	1.193	No
		Front	0.178	0.083	0.258	0.012	0.261	0.436	0.190	0.448	No
		Left	0.107	0.048	0.079	0.006	0.155	0.186	0.113	0.192	No
		Right					0.000	0.000	0.000	0.000	No
		Top		0.169	0.918	0.027	0.169	0.918	0.027	0.945	No
		Bottom	0.477				0.477	0.477	0.477	0.477	No
UMTS Band 2	M2	Rear	0.474	0.250	0.712	0.046	0.724	1.186	0.520	1.232	No
		Front	0.209	0.083	0.258	0.012	0.292	0.467	0.221	0.479	No
		Left	0.144	0.048	0.079	0.006	0.192	0.223	0.150	0.229	No
		Right					0.000	0.000	0.000	0.000	No
		Top		0.169	0.918	0.027	0.169	0.918	0.027	0.945	No
		Bottom	0.385				0.385	0.385	0.385	0.385	No
UMTS Band 4	M2	Rear	0.544	0.250	0.712	0.046	0.794	1.256	0.590	1.302	No
		Front	0.182	0.083	0.258	0.012	0.265	0.440	0.194	0.452	No
		Left	0.177	0.048	0.079	0.006	0.225	0.256	0.183	0.262	No
		Right					0.000	0.000	0.000	0.000	No
		Top		0.169	0.918	0.027	0.169	0.918	0.027	0.945	No
		Bottom	0.320				0.320	0.320	0.320	0.320	No
UMTS Band 5	M1	Rear	1.193	0.250	0.712	0.046	1.443	1.905	1.239	1.951	Yes(#1,#2)
		Front	0.248	0.083	0.258	0.012	0.331	0.506	0.260	0.518	No
		Left	0.195	0.048	0.079	0.006	0.243	0.274	0.201	0.280	No
		Right	0.410				0.410	0.410	0.410	0.410	No
		Top		0.169	0.918	0.027	0.169	0.918	0.027	0.945	No
		Bottom	0.447				0.447	0.447	0.447	0.447	No
LTE Band 2	M2	Rear	0.309	0.250	0.712	0.046	0.559	1.021	0.355	1.067	No
		Front	0.134	0.083	0.258	0.012	0.217	0.392	0.146	0.404	No
		Left	0.155	0.048	0.079	0.006	0.203	0.234	0.161	0.240	No
		Right					0.000	0.000	0.000	0.000	No
		Top		0.169	0.918	0.027	0.169	0.918	0.027	0.945	No
		Bottom	0.709				0.709	0.709	0.709	0.709	No
LTE Band 2	M3	Rear	0.522	0.250	0.712	0.046	0.772	1.234	0.568	1.280	No
		Front	0.114	0.083	0.258	0.012	0.197	0.372	0.126	0.384	No
		Left	0.306	0.048	0.079	0.006	0.354	0.385	0.312	0.391	No
		Right					0.000	0.000	0.000	0.000	No
		Top	0.072	0.169	0.918	0.027	0.241	0.990	0.099	1.017	No
		Bottom					0.000	0.000	0.000	0.000	No
LTE Band 5	M1	Rear	0.707	0.250	0.712	0.046	0.957	1.419	0.753	1.465	No
		Front	0.176	0.083	0.258	0.012	0.259	0.434	0.188	0.446	No
		Left	0.148	0.048	0.079	0.006	0.196	0.227	0.154	0.233	No
		Right	0.308				0.308	0.308	0.308	0.308	No
		Top		0.169	0.918	0.027	0.169	0.918	0.027	0.945	No
		Bottom	0.291				0.291	0.291	0.291	0.291	No



Band	ANT	Configuration	Main	2.4GHz SISO	5GHz SISO	Bluetooth	Σ	Σ	Σ	Σ
			(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)
			1	2	3	4	1+2	1+3	1+4	1+3+4
LTE Band 12	M1	Rear	0.331	0.250	0.712	0.046	0.581	1.043	0.377	1.089
		Front	0.092	0.083	0.258	0.012	0.175	0.350	0.104	0.362
		Left	0.062	0.048	0.079	0.006	0.110	0.141	0.068	0.147
		Right	0.131				0.131	0.131	0.131	0.131
		Top		0.169	0.918	0.027	0.169	0.918	0.027	0.945
		Bottom	0.106				0.106	0.106	0.106	0.106
LTE Band 26	M1	Rear	0.645	0.250	0.712	0.046	0.895	1.357	0.691	1.403
		Front	0.160	0.083	0.258	0.012	0.243	0.418	0.172	0.430
		Left	0.128	0.048	0.079	0.006	0.176	0.207	0.134	0.213
		Right	0.247				0.247	0.247	0.247	0.247
		Top		0.169	0.918	0.027	0.169	0.918	0.027	0.945
		Bottom	0.226				0.226	0.226	0.226	0.226
LTE 41	M2	Rear	0.250	0.250	0.712	0.046	0.500	0.962	0.296	1.008
		Front	0.142	0.083	0.258	0.012	0.225	0.400	0.154	0.412
		Left	0.108	0.048	0.079	0.006	0.156	0.187	0.114	0.193
		Right					0.000	0.000	0.000	0.000
		Top		0.169	0.918	0.027	0.169	0.918	0.027	0.945
		Bottom	0.204				0.204	0.204	0.204	0.204
LTE Band 66	M2	Rear	0.458	0.250	0.712	0.046	0.708	1.170	0.504	1.216
		Front	0.137	0.083	0.258	0.012	0.220	0.395	0.149	0.407
		Left	0.142	0.048	0.079	0.006	0.190	0.221	0.148	0.227
		Right					0.000	0.000	0.000	0.000
		Top		0.169	0.918	0.027	0.169	0.918	0.027	0.945
		Bottom	0.365				0.365	0.365	0.365	0.365
LTE Band 66	M3	Rear	0.353	0.250	0.712	0.046	0.603	1.065	0.399	1.111
		Front	0.098	0.083	0.258	0.012	0.181	0.356	0.110	0.368
		Left	0.185	0.048	0.079	0.006	0.233	0.264	0.191	0.270
		Right					0.000	0.000	0.000	0.000
		Top	0.039	0.169	0.918	0.027	0.208	0.957	0.066	0.984
		Bottom					0.000	0.000	0.000	0.000
NR Band n5	M1	Rear	0.524	0.250	0.712	0.046	0.774	1.236	0.570	1.282
		Front	0.162	0.083	0.258	0.012	0.245	0.420	0.174	0.432
		Left	0.129	0.048	0.079	0.006	0.177	0.208	0.135	0.214
		Right	0.274				0.274	0.274	0.274	0.274
		Top		0.169	0.918	0.027	0.169	0.918	0.027	0.945
		Bottom	0.347				0.347	0.347	0.347	0.347

Band	ANT	Configuration	Main	2.4GHz SISO	5GHz SISO	Bluetooth	Σ	Σ	Σ	Σ
			(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)
			1	2	3	4	1+2	1+3	1+4	1+3+4
NR Band n41	M2	Rear	0.707	0.250	0.712	0.046	0.957	1.419	0.753	1.465
		Front	0.279	0.083	0.258	0.012	0.362	0.537	0.291	0.549
		Left	0.136	0.048	0.079	0.006	0.184	0.215	0.142	0.221
		Right					0.000	0.000	0.000	0.000
		Top		0.169	0.918	0.027	0.169	0.918	0.027	0.945
		Bottom	0.421				0.421	0.421	0.421	0.421
NR Band n41 SRS#B	S5	Rear	0.462	0.250	0.712	0.046	0.712	1.174	0.508	1.220
		Front	0.073	0.083	0.258	0.012	0.156	0.331	0.085	0.343
		Left		0.048	0.079	0.006	0.048	0.079	0.006	0.085
		Right					0.000	0.000	0.000	0.000
		Top	0.206	0.169	0.918	0.027	0.375	1.124	0.233	1.151
		Bottom					0.000	0.000	0.000	0.000
NR Band n41 SRS#C	S4	Rear	0.022	0.250	0.712	0.046	0.272	0.734	0.068	0.780
		Front	0.005	0.083	0.258	0.012	0.088	0.263	0.017	0.275
		Left		0.048	0.079	0.006	0.048	0.079	0.006	0.085
		Right	0.003				0.003	0.003	0.003	0.003
		Top	0.000	0.169	0.918	0.027	0.169	0.918	0.027	0.945
		Bottom					0.000	0.000	0.000	0.000
NR Band n41 SRS#D	S1	Rear	0.313	0.250	0.712	0.046	0.563	1.025	0.359	1.071
		Front	0.164	0.083	0.258	0.012	0.247	0.422	0.176	0.434
		Left		0.048	0.079	0.006	0.048	0.079	0.006	0.085
		Right	0.041				0.041	0.041	0.041	0.041
		Top	0.252	0.169	0.918	0.027	0.421	1.170	0.279	1.197
		Bottom					0.000	0.000	0.000	0.000
NR Band n66	M2	Rear	0.381	0.250	0.712	0.046	0.631	1.093	0.427	1.139
		Front	0.203	0.083	0.258	0.012	0.286	0.461	0.215	0.473
		Left	0.165	0.048	0.079	0.006	0.213	0.244	0.171	0.250
		Right					0.000	0.000	0.000	0.000
		Top		0.169	0.918	0.027	0.169	0.918	0.027	0.945
		Bottom	0.292				0.292	0.292	0.292	0.292

**14.4 Phablet SAR Simultaneous Transmission Analysis.**

Band	Ant	Configuration	Main	5GHz SISO	$\Sigma$
			(W/kg)	(W/kg)	(W/kg)
			1	2	1+2
GSM 850	M1	Rear	1.378	0.722	<b>2.100</b>
		Front	1.132	0.424	1.556
		Left	0.304	0.094	0.398
		Right	1.052		1.052
		Top		0.883	0.883
		Bottom	1.127		1.127

### 14.5 SAR to Peak Location Separation Ratio (SPLSR)

FCC KDB 447498 D01v06 General RF Exposure Guidance introduces a new formula for calculating the SAR a Peak Location Separation Ratio(SPLSR) between pairs of simultaneously transmitting antennas:

$$SPLSR_i = (SAR_1 + SAR_2)^{1.5} / R_i$$

Where:

$SAR_1$  is the highest measured or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition

$SAR_2$  is the highest measured of estimated SAR for the second of a pair of simultaneous transmitting antennas, in the same test operating mode and exposure condition as the first

$R_i$  is the separation distance between the pair of simultaneous transmitting antennas, When the SAR is measured, for both antennas in the pair, it is determined by the actual x, y and z coordinates in the 1-g SAR for each SAR peak location, based on the extrapolated and interpolated result in the zoom scan measurement, using the formula of  $[(X_1 - X_2)^2 + (Y_1 - Y_2)^2 + (Z_1 - Z_2)^2]$

In order for a pair of simultaneous transmitting antennas with the sum 1-g of SAR > 1.6 W/kg and with the sum 10-g of SAR > 4 W/Kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:

$$(SAR_1 + SAR_2)^{1.5} / R_i \leq 0.04 \text{ for 1g SAR and } (SAR_1 + SAR_2)^{1.5} / R_i \leq 0.1 \text{ for 10g SAR}$$

#### SPLSR Evaluation

Mode/Band	X(mm)	Y(mm)	Z(mm)	Reported SAR [W/kg]
UMTS Band 5	-23.0	-75.0	-205.0	1.193
WLAN 5GHz Ant2	-22.0	74.0	-203.0	0.712
Bluetooth	-0.8	81.6	-208.0	0.046

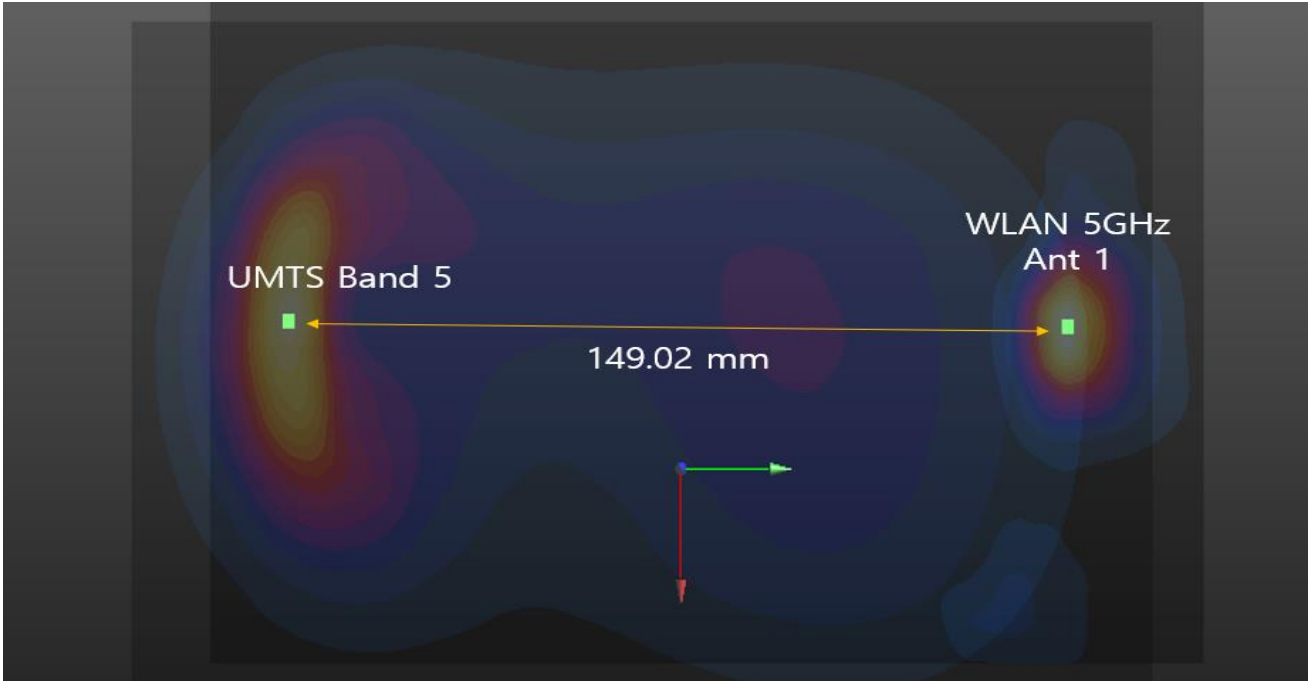
#### 14.5.1 SPLSR for Hotspot SAR

Body Postion	Mode		1+2 Summation Reported SAR 1g SAR		1+2 Peak SAR Separation Distance	1+2 SPLSR	Plot
			[W/kg]		[W/kg]		
			1	2	1+2		
Hotspot	UMTS 5	5 GHz	1.905	1.905	149.02	0.018	#1

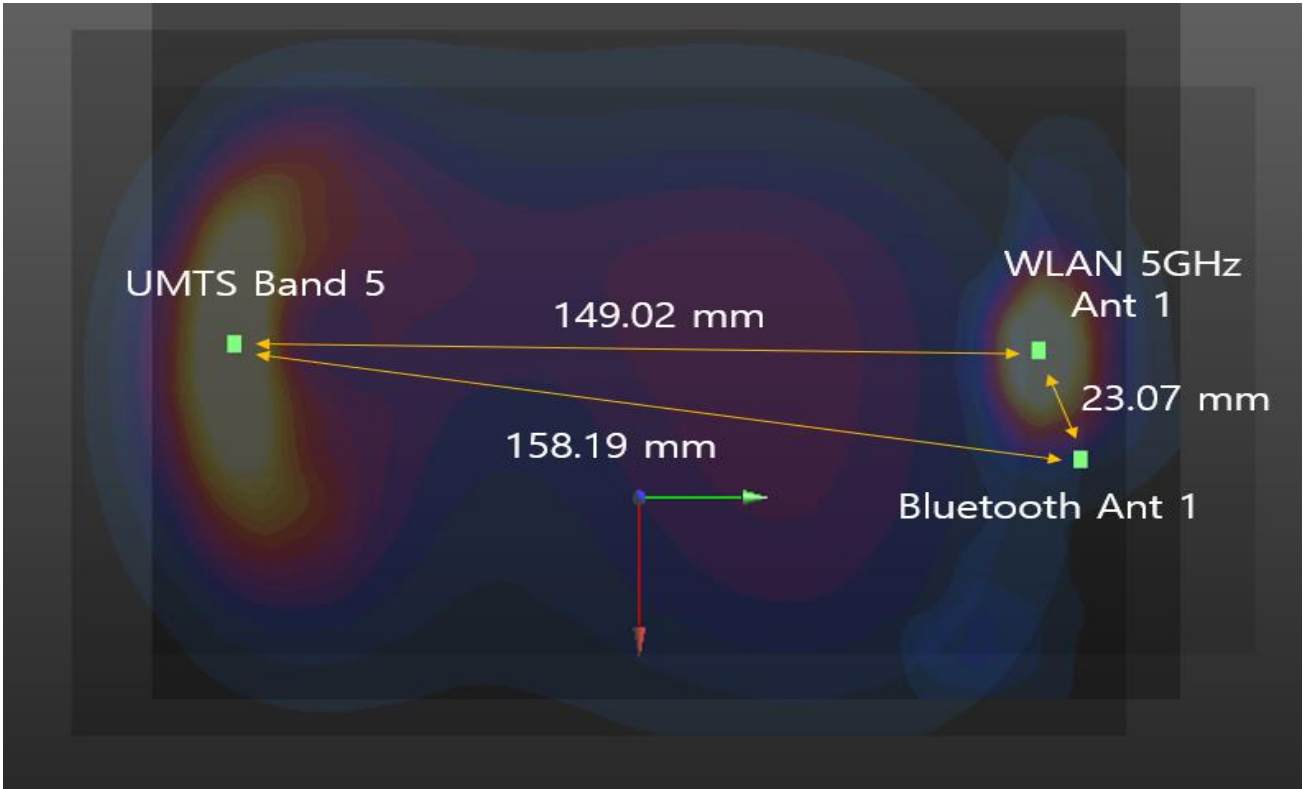
Body Postion	Mode			1+2 Summation Reported SAR 1g	1+3 Summation Reported SAR 1g	2+3 Summation Reported SAR 1g	1+2 Peak SAR Separation Distance	1+3 Peak SAR Separation Distance	2+3 Peak SAR Separation Distance	1+2 SPLSR	1+3 SPLSR	2+3 SPLSR	Plot
				[W/kg]	[W/kg]	[W/kg]	[W/kg]	[W/kg]	[W/kg]				
				1+2	1+3	[mm]	[mm]	[mm]	[mm]				
Hotspot	UMTS 5	5 GHz	BT	1.905	1.239	0.758	149.02	158.19	23.07	0.018	0.009	0.029	#2

SPLSR Plot

#1 UMTS Band 5 + 5 GHz WLAN



#2 UMTS Band 5 + 5 GHz WLAN + Bluetooth



## 14.6 Simultaneous Transmission Conclusion

The above numerical summed SAR Results and SPLSR for all the combinations are sufficient to determine that simultaneous transmission cases will not exceed the SAR Limit and therefore measured volumetric simultaneous SAR summation is not required per FCC KDB Publication 447498 D01v06 and IEEE1528-2013.

## 15. SAR Measurement Variability and Uncertainty

In accordance with KDB procedure 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz, SAR additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR Measurement variability was assessed using the following procedures for each frequency band:

- 1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg for 1g SAR or < 2.0 W/kg for 10g SAR; steps 2) through 4) do not apply.
- 2) When the original highest measured 1g SAR is  $\geq 0.80$  W/kg or 10g SAR  $\geq 2.0$ W/kg, repeat that measurement once.
- 3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is  $\geq 1.45$  W/kg for 1g SAR or  $\geq 3.625$  W/kg for 10g SAR (~ 10% from the 1-g SAR limit).
- 4) Perform a third repeated measurement only if the original, first or second repeated measurement is  $\geq 1.5$  W/kg for 1g SAR or  $\geq 3.75$  W/kg for 10g SAR and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

Hotspot SAR measurement variability Results

Frequency		Mode/Band	Configuration	Measured SAR (W/kg)	Repeated SAR (W/kg)	SAR Ratio
MHz	Channel					
846.6	4233	UMTS B5	Rear	0.862	0.860	1.00

## 16. Measurement Uncertainty

The measured SAR was  $<1.5$  W/Kg for 1g SAR and  $<3.75$  W/Kg For 10g SAR for all frequency Bands. Therefore, per KDB Publication 865664 D01v01r04, the extended measurement uncertainty analysis per IEEE1528-2013 was not required.



## 17. SAR Test Equipment

Manufacturer	Type / Model	S/N	Calib. Date	Calib.Interval	Calib.Due
SPEAG	SAM Phantom	-	N/A	N/A	N/A
SPEAG	ELI Phantom	-	N/A	N/A	N/A
Staubli	CS8Cspeag-TX90	F13/5R4XF1/C/01	N/A	N/A	N/A
Staubli	CS8Cspeag-TX90	F13/5SD0A1/C/01	N/A	N/A	N/A
Staubli	CS8Cspeag-TX90L	F07/55B8A1/C/01	N/A	N/A	N/A
Staubli	CS8Cspeag-TX90	F07/56W9A1/C/01	N/A	N/A	N/A
Staubli	CS8Cspeag-TX90	F11/ 5K3RA1/ C/ 01	N/A	N/A	N/A
Staubli	TX90 XLspeag	F13/ 5R4XF1/ A/ 01	N/A	N/A	N/A
Staubli	TX90 XLspeag	F13/ 5SD0A1/ A/ 01	N/A	N/A	N/A
Staubli	TX90 XLspeag	F07/55B8A1/A/01	N/A	N/A	N/A
Staubli	TX90 XLspeag	F07/56W9A1/A/01	N/A	N/A	N/A
Staubli	TX90 XLspeag	F11/ 5K3RA1/ A/ 01	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick) D21142605	S-1338 1332	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick) D21142605	001729	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick) D21139902	S-0306	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick) D21142102	S-0602	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick) D21142603	S-1203 0309	N/A	N/A	N/A
TESTO	175-H1/Thermometer	40332651310	12/29/2022	Annual	12/29/2023
TESTO	608-H1/Thermometer	83348029	03/27/2023	Annual	03/27/2024
TESTO	608-H1/Thermometer	83348021	03/27/2023	Annual	03/27/2024
TESTO	608-H1/Thermometer	83406789	07/07/2022	Annual	07/07/2023
TESTO	175-H1/Thermometer	40331936309	12/29/2022	Annual	12/29/2023
SPEAG	DAE4	1750	10/10/2022	Annual	10/10/2023
SPEAG	DAE4	1464	06/15/2022	Annual	06/15/2023
SPEAG	DAE4	1422	08/18/2022	Annual	08/18/2023
SPEAG	DAE4	1629	08/17/2022	Annual	08/17/2023
SPEAG	DAE4	869	03/23/2023	Annual	03/23/2024
SPEAG	DAE4	1225	03/06/2023	Annual	03/06/2024
SPEAG	E-Field Probe EX3DV4	7655	06/20/2022	Annual	06/20/2023
SPEAG	E-Field Probe EX3DV4	7732	06/30/2022	Annual	06/30/2023
SPEAG	E-Field Probe ES3DV3	3076	07/20/2022	Annual	07/20/2023
SPEAG	E-Field Probe EX3DV4	3768	06/30/2022	Annual	06/30/2023
SPEAG	E-Field Probe EX3DV4	7679	08/19/2022	Annual	08/19/2023
SPEAG	E-Field Probe EX3DV4	7751	10/07/2022	Annual	10/07/2023
SPEAG	CLA13	1016	11/16/2022	Annual	11/16/2023
SPEAG	Dipole D750V3	1014	05/25/2022	Annual	05/25/2023
SPEAG	Dipole D835V2	441	07/15/2022	Annual	07/15/2023
SPEAG	Dipole D1800V2	2d007	07/18/2022	Annual	07/18/2023
SPEAG	Dipole D1900V2	5d061	01/23/2023	Annual	01/23/2024
SPEAG	Dipole D2450V2	743	05/31/2022	Annual	05/31/2023
SPEAG	Dipole D2600V2	1015	07/15/2022	Annual	07/15/2023
SPEAG	Dipole D5GHzV2	1253	05/31/2022	Annual	05/31/2023
Agilent	Power Meter E4419B	MY41291386	09/27/2022	Annual	09/27/2023
Agilent	Power Meter N1911A	MY45101406	06/27/2022	Annual	06/27/2023
Agilent	Power Sensor 8481A	SG1091286	09/27/2022	Annual	09/27/2023
H.P	Power Sensor 8481A	MY41090873	01/27/2023	Annual	01/27/2024
Agilent	Power Sensor 8481A	MY41090675	09/27/2022	Annual	09/27/2023
Agilent	Wideband Power Sensor N1921A	MY55220026	08/02/2022	Annual	08/02/2023
Agilent	11636B/Power Divider	58698	01/26/2023	Annual	01/26/2024
SPEAG	DAKS 3.5	1038	01/25/2023	Annual	01/25/2024
Agilent	WIRELESS COMMUNICATION E5515C	MY48361100	09/27/2022	Annual	09/27/2023
R&S	Wireless Communication Test Set CMW500	115733	03/23/2023	Annual	03/23/2024
Agilent	SIGNAL GENERATOR N5182A	MY47070230	03/23/2023	Annual	03/23/2024

Manufacturer	Type / Model	S/N	Calib. Date	Calib.Interval	Calib.Due
EMPOWER	RF Power Amplifier	1084	06/20/2022	Annual	06/20/2023
EMPOWER	RF Power Amplifier	1041D/C0508	06/20/2022	Annual	06/20/2023
MICRO LAB	LP Filter / LA-15N	10453	09/27/2022	Annual	09/27/2023
MICRO LAB	LP Filter / LA-30N	-	09/27/2022	Annual	09/27/2023
MICRO LAB	LP Filter / LA-60N	32011	09/27/2022	Annual	09/27/2023
Agilent	Attenuator (3dB) 8693B	MY39260298	08/25/2022	Annual	08/25/2023
HP	Attenuator (3dB) 33340A	02427	08/25/2022	Annual	08/25/2023
Agilent	Attenuator (30dB) 8491A	52151	06/17/2022	Annual	06/17/2023
Agilent	Directional Bridge 86205A	3140A04581	04/25/2023	Annual	04/25/2024
OSI	Power Divider	#3	06/17/2022	Annual	06/17/2023
HP	Dual Directional Coupler	16072	09/27/2022	Annual	09/27/2023
Anritsu	Radio Communication Test Station MT8000A	6262036812	12/08/2022	Annual	12/08/2023
Anritsu	Radio Communication Tester MT8820C	6201074225	01/25/2023	Annual	01/25/2024
Anritsu	Radio Communication Tester MT8820C	6200695605	03/23/2023	Annual	03/23/2024
Anritsu	Radio Communication Tester MT8821C	6201502997	06/27/2022	Annual	06/27/2023
Anritsu	Radio Communication Tester MT8821C	6262044720	12/07/2022	Annual	12/07/2023
Agilent	WIRELESS COMMUNICATION E5515C	MY50260992	06/27/2022	Annual	06/27/2023
ROHDE&SCHWARZ	BLUETOOTH TESTER CBT	100272	01/25/2023	Annual	01/25/2024

\* The E-field probe was calibrated by SPEAG, by the waveguide technique procedure. Dipole Verification measurement is performed by HCT Lab. before each test. The brain/body simulating material is calibrated by HCT using the DAKS 3.5 to determine the conductivity and permittivity (dielectric constant) of the brain/body-equivalent material.

## 18. Conclusion

The SAR measurement indicates that the EUT complies with the RF radiation exposure limits of the ANSI/ IEEE C95.1 - 2005.

These measurements were taken to simulate the RF effects exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body are very complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables.

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## Appendix A. DUT Ant. Information & SETUP PHOTO

Please refer to test DUT Ant. Information & setup photo file no. as follows:

Report No.
HCT-SR-2305-FC018-P