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SAR TEST REPORT

Applicant Name: **SAMSUNG Electronics Co., Ltd.** 129, Samsung-ro, Yeongtong-gu, Suwon-Si, Gyeonggi-do, 16677 Rep. of Korea	**Date of Issue: Mar**. 11, 2022 **Test Report No: HCT-SR-2203-FC002** **Test Site: HCT CO., LTD.**

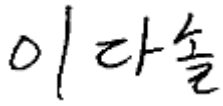
FCC ID: A3LSMA736B

Equipment Type:	**Mobile Phone**
Application Type	**Class II Permissive Change**
FCC Rule Part(s):	**CFR §2.1093**
Model Name:	**SM-A736B/DS**
Additional Model Name:	**SM-A736B**
Date of Test:	**Mar. 10, 2022**

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



Da-sol, Lee
Test Engineer
SAR Team
Certification Division

Reviewed By

Yun-jeang, Heo
Technical Manager
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REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	Mar. 11, 2022	Initial Release

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

Table of Contents

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 447498 D01 General SAR Guidance v06
- FCC KDB Publication 648474 D04 Handset SAR v01r03
- FCC KDB Publication 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- 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.

- April 2015 TCB Workshop Notes (Simultaneous transmission summation clarified)
- April 2019 TCBC Workshop Notes (Tissue Simulating Liquids)

2. Test Location

2.1 Test Laboratory

Company Name	HCT Co., Ltd.
Address	74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si,Gyeonggi-do, 17383 KOREA
Telephone	031-645-6300
Fax.	031-645-6401

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-A736B/DS
Additional Model Name	SM-A736B
Equipment Type	Mobile Phone
FCC ID	A3LSMA736B
Application Type	Class II Permissive Change
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
LTE Band 2 (PCS)	1 850.7 ㎒ ~ 1 909.3 ㎒	PCE	0.69	0.52	0.60	N/A
LTE Band 66 (AWS)	1 710.7 ㎒ ~ 1 779.3 ㎒	PCE	0.74	0.40	0.52	N/A
Simultaneous SAR per KDB 690783 D01v01r03			**1.55**	1.00	1.27	N/A
Date(s) of Tests:	Mar. 10, 2022					

4. Device Under Test Description

4.1 DUT specification

Device Wireless specification overview		
Band & Mode	**Operating Mode**	**Tx Frequency**
GSM850	Voice / Data	824.2 ㎒~ 848.8 ㎒
GSM1900	Voice / Data	1 850.2 ㎒~ 1 909.8 ㎒
UMTS Band 5	Voice / Data	826.4 ㎒~ 846.6 ㎒
UMTS Band 4	Voice / Data	1 712.4 ㎒~ 1 752.6 ㎒
UMTS Band 2	Voice / Data	1 852.4 ㎒~ 1 907.6 ㎒
LTE Band 2 (PCS)	Voice / Data	1 850.7 ㎒~ 1 909.3 ㎒
LTE Band 4 (AWS)	Voice / Data	1 710.7 ㎒~ 1 754.3 ㎒
LTE Band 5 (Cell)	Voice / Data	824.7 ㎒~ 848.3 ㎒
LTE Band 12	Voice / Data	699.7 ㎒~ 715.3 ㎒
LTE Band 13	Voice / Data	779.5 ㎒~ 784.5 ㎒
LTE Band 17	Voice / Data	706.5 ㎒~ 713.5 ㎒
LTE Band 26	Voice / Data	814.7 ㎒~ 848.3 ㎒
LTE TDD Band 41	Voice / Data	2 498.5 ㎒~ 2 687.5 ㎒
LTE Band 66 (AWS)	Voice / Data	1 710.7 ㎒ ~ 1 779.3 ㎒
NR Band n5	Voice / Data	826.5 ㎒~ 846.5 ㎒
NR Band n66	Voice / Data	1 712.5 ㎒~ 1 777.5 ㎒
U-NII-1	Voice / Data	5 180 ㎒ ~ 5 240 ㎒
U-NII-2A	Voice / Data	5 260 ㎒ ~ 5 320 ㎒
U-NII-2C	Voice / Data	5 500 ㎒ ~ 5 720 ㎒
U-NII-3	Voice / Data	5 745 ㎒ ~ 5 825 ㎒
2.4 ㎓ WLAN	Voice / Data	2 412 ㎒ ~ 2 472 ㎒
Bluetooth / LE 5.0	Data	2 402 ㎒ ~ 2 480 ㎒
NFC	Data	13.56 ㎒
Device Serial Numbers	**Mode**	**Serial Number**
	LTE Band 2, 66 (Sub #2)	UKH1583M, UKH1592M
	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 Overview of Class II Permissive chage

In this device's class II permissive change certification, the following features are enabled for software only without changing Hardware.
- When the 5G FR1 n5 band of the Main#1 Ant of this device becomes a combination condition of LTE B2 or LTE B66 as an LTE Anchor band under EN-DC connection conditions, LTE B2 and LTE B66 of the main Ant#1 are switched to sub#2 Ant . -MCC blocking is applied to n41 band.
For more detailed changes, please refer to the technical document

4.3 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.

4.3.1 Maximum PCE Output Power

The maximum output power declared in this section is burst average and not time or frame average.

Mode / Band		Voice	Burst Average GMSK (dBm)				Burst Average 8-PSK (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 850	Maximum	34.0	34.0	32.5	30.5	28.5	28.0	26.0	24.0	23.0
	Nominal	33.0	33.0	31.5	29.5	27.5	26.5	25.0	23.0	22.0
GSM 1900	Maximum	31.0	31.0	30.0	27.5	26.0	27.0	25.0	23.5	22.0
	Nominal	30.0	30.0	29.0	26.5	25.0	26.0	24.0	22.5	21.0

(Tolerance: Nominal +1dB ~-1.5dB)

Mode/ Band		ModulatedAverage(dBm)			
		3GPP UMTS	3GPPHSDPA	3GPPHSUPA	DC-HSDPA
UMTS Band 5 (850 ㎒)	Maximum	25.0	24.5	24.5	24.0
	Nominal	24.0	23.5	23.5	23.0
UMTS Band 4 (1700 ㎒)	Maximum	25.0	24.5	24.5	24.0
	Nominal	24.0	23.5	23.5	23.0
UMTS Band 2 (1900 ㎒)	Maximum	25.0	24.5	24.5	23.0
	Nominal	24.0	23.5	23.5	22.0

(Tolerance: Nominal +1dB ~-1.5dB)

Mode / Band		Modulated Average (dBm)
LTE Band 2 (PCS)	Maximum	24.5
	Nominal	23.5
LTE Band 2 (PCS)(Sub #2)	Maximum	22.0
	Nominal	21.0
LTE Band 4 (AWS)	Maximum	24.5
	Nominal	23.5
LTE Band 5 (Cell)	Maximum	25.0
	Nominal	24.0
LTE Band 12	Maximum	25.0
	Nominal	24.0
LTE Band 13	Maximum	25.0
	Nominal	24.0
LTE Band 17	Maximum	25.0
	Nominal	24.0
LTE Band 26 (Cell)	Maximum	25.0
	Nominal	24.0
LTE Band 41	Maximum	25.0
	Nominal	24.0
LTE Band 66 (AWS)	Maximum	24.5
	Nominal	23.5
LTE Band 66 (AWS)(Sub #2)	Maximum	23.0
	Nominal	22.0

(Tolerance: Nominal +1dB ~-1.5dB)

Mode / Band		Modulated Average (dBm)
NR Band n5(Cell)	Maximum	25.0
	Nominal	24.0
NR Band n66(Main #1)	Maximum	24.5
	Nominal	23.5
NR Band n66(Sub #2)	Maximum	23.0
	Nominal	22.0

(Tolerance: Nominal +1dB ~-1.5dB)

4.3.2 Reduced Output Power for 3G/4G/5G Bands –

EarJack/Grip/Hotspot

Mode / Band		Voice	Burst Average GMSK (dBm)				Burst Average 8-PSK (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 1900	Maximum	28.0	28.0	27.5	25.5	24.0	24.0	23.5	22.0	21.0
	Nominal	27.0	27.0	26.5	24.5	23.0	23.0	22.5	21.0	20.0

(Tolerance: Nominal +1dB ~-1.5dB)

EarJack/Grip/Hotspot

Mode/ Band		ModulatedAverage(dBm)			
		3GPP UMTS	3GPPHSDPA	3GPPHSUPA	DC-HSDPA
UMTS Band 4 (1700 ㎒)	Maximum	22.5	22.0	21.5	22.0
	Nominal	21.5	21.0	20.5	21.0
UMTS Band 2 (1900 ㎒)	Maximum	22.5	22.0	21.5	22.0
	Nominal	21.5	21.0	20.5	21.0

(Tolerance: Nominal +1dB ~-1.5dB)

Mode / Band		Modulated Average (dBm)			
		Hotspot	Grip	Earjack	RCV
LTE Band 2 (PCS)	Maximum	21.5	21.5	21.5	N/A
	Nominal	20.5	20.5	20.5	N/A
LTE Band 2 (PCS)(Sub #2)	Maximum	19.0	N/A	N/A	16.5
	Nominal	18.0	N/A	N/A	15.5
LTE Band 4 (AWS)	Maximum	21.5	21.5	21.5	N/A
	Nominal	20.5	20.5	20.5	N/A
LTE Band 41	Maximum	23.0	23.0	23.0	N/A
	Nominal	22.0	22.0	22.0	N/A
LTE Band 66 (AWS)	Maximum	20.5	20.5	20.5	N/A
	Nominal	19.5	19.5	19.5	N/A
LTE Band 66 (AWS)(Sub #2)	Maximum	20.0	N/A	N/A	18.0
	Nominal	19.0	N/A	N/A	17.0

(Tolerance: Nominal +1dB ~-1.5dB)

Mode / Band		Modulated Average (dBm)			
		Hotspot	Grip	Earjack	RCV
NR Band n66(Main #1)	Maximum	20.0	20.0	20.0	N/A
	Nominal	19.0	19.0	19.0	N/A
NR Band n66(Sub #2)	Maximum	18.0	N/A	N/A	18.0
	Nominal	17.0	N/A	N/A	17.0

(Tolerance: Nominal +1dB ~-1.5dB)

4.3.3 Maximum 2.4 GHz, 5 GHz WIFI output power

IEEE802.11(indBm)								
Mode	Protocol	SensorState	a	b	g	n	ac	ax
2.4GHz Wi-Fi	Ch.1~11	Inactive	N/A	19	17	17	N/A	14
	Ch.12	Inactive	N/A	11	11	11	N/A	11
	Ch.13	Inactive	N/A	11	11	11	N/A	
5GHz Wi-Fi(20MHzBW)	5200MHz	Inactive	14	N/A	N/A	14	13	12
	5300MHz	Inactive	14	N/A	N/A	14	13	12
	5500MHz	Inactive	14	N/A	N/A	14	13	12
	5700MHz	Inactive	14	N/A	N/A	14	13	12
	5800MHz	Inactive	14	N/A	N/A	14	13	12
5GHz Wi-Fi(40MHzBW)	5190MHz	Inactive	N/A	N/A	N/A	12	12	12
	5230MHz	Inactive	N/A	N/A	N/A	12	12	12
	5300MHz	Inactive	N/A	N/A	N/A	12	12	12
	5500MHz	Inactive	N/A	N/A	N/A	12	12	12
	5800MHz	Inactive	N/A	N/A	N/A	12	12	12
5GHz Wi-Fi(80MHzBW)	5200MHz	Inactive	N/A	N/A	N/A	N/A	11	**10**
	5300MHz	Inactive	N/A	N/A	N/A	N/A	11	11
	5500MHz	Inactive	N/A	N/A	N/A	N/A	11	11
	5800MHz	Inactive	N/A	N/A	N/A	N/A	11	11

(Upper Tolerance: target ~ +1.0 dB)

4.3.4 Reduced 2.4 GHz, 5 GHz WIFI output power –Receiver on.

IEEE802.11(indBm)								
Mode	Protocol	SensorState	a	b	g	n	ac	ax
2.4GHz Wi-Fi	Ch.1~11	Active	N/A	11	11	11	N/A	11
	Ch.12	Active	N/A	11	11	11	N/A	11
	Ch.13	Active	N/A	11	11	11	N/A	11
5GHz Wi-Fi(20MHzBW)	5200MHz	Active	11	N/A	N/A	11	11	11
	5300MHz	Active	11	N/A	N/A	11	11	11
	5500MHz	Active	11	N/A	N/A	11	11	11
	5700MHz	Active	11	N/A	N/A	11	11	11
	5800MHz	Active	11	N/A	N/A	11	11	11
5GHz Wi-Fi(40MHzBW)	5190MHz	Active	N/A	N/A	N/A	11	11	11
	5230MHz	Active	N/A	N/A	N/A	11	11	11
	5300MHz	Active	N/A	N/A	N/A	11	11	11
	5500MHz	Active	N/A	N/A	N/A	11	11	11
	5800MHz	Active	N/A	N/A	N/A	11	11	11
5GHz Wi-Fi(80MHzBW)	5200MHz	Active	N/A	N/A	N/A	N/A	11	10
	5300MHz	Active	N/A	N/A	N/A	N/A	11	11
	5500MHz	Active	N/A	N/A	N/A	N/A	11	11
	5800MHz	Active	N/A	N/A	N/A	N/A	11	11

(Upper Tolerance: target ~ +1.0 dB)

4.3.5Maximum Power 2.4 GHz,5 GHz 802.11ax RU Power

	SISO(ANT1)/indBm			
Tones	*2.4G 802.11ax(HE)*	*5G/20Mhz*	*5G/40Mhz*	*5G/80Mhz*
	Ch&RUindex	Ch&RUindex	Ch&RUindex	Ch&RUindex
26T	9 (Ch13:2)	9	9	9
52T	9 (Ch13:2.5)	9	9	9
106T	9 (Ch13:5)	9	9	9
242T	9 (Ch13:8)	9	9	9
484T			9	9
996T				9 (Ch42:8)

(Upper Tolerance: target ~ +1.0 dB)

4.3.6 Reduced Power 5 GHz 802.11ax RU Tx power – Receiver on

	SISO(ANT1)/indBm			
Tones	*2.4G*	*5G/20Mhz*	*5G/40Mhz*	*5G/80Mhz*
	Ch& RU index	Ch& RU index	Ch& RU index	Ch& RU index
26T	9 (Ch13:2)	9	9	9
52T	9 (Ch13:2.5)	9	9	9
106T	9 (Ch13:5)	9	9	9
242T	9 (Ch13:8)	9	9	9
484T			9	9
96T				9 (Ch42:8)

(Upper Tolerance: target ~ +1.0 dB)

4.3.7 Maximum Bluetooth Power

		Targetpower(dBm)
Bluetooth (indBm)	DH5	16.0
	2-DH5	13
	3-DH5	
Bluetooth LE (indBm)	125k	7.5
	125k HPM	13
	500k	7.5
	500k HPM	13
	1M	7.5
	1M HPM	13
	2M	7.5
	2M HPM	13

(Upper Tolerance: target ~ +1.0 dB)

4.4 LTE/NR 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 13	779.5 MHz~ 784.5 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
	NR Band n5 (Cell)	826.5 MHz~ 846.5 MHz
	NR Band n66 (AWS)	1 712.5 MHz~ 1 777.5 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 13	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
	NR Band n5 (Cell)	5 MHz, 10 MHz, 15 MHz, 20 MHz
	NR Band n66(AWS)	5 MHz, 10 MHz, 15 MHz, 20 MHz

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	1 720.0 (20050)	1 732.5 (20175)	1 745.0 (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	829.0 (20450)	836.5 (20525)	844.0 (20600)
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	704.0 (23060)	707.5 (23095)	711.0 (23130)
LTE Band 13	5 MHz	779.5 (23205)	782 (23230)	784.5 (23255)
	10 MHz		782 (23230)	
LTE Band 17	5 MHz		710 (23790)	
	10 MHz		710 (23790)	

Ch. No.&Freq.(MHz)		Low	Mid	High
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	821.5 (26765)	831.5 (26865)	841.5 (26965)
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)

LTE TDD Band 41	5 MHz	2 506.0(39750)	2 549.5(40185)	2 593.0(40620)	2 636.5(41055)	2 680.0(41490)
	10 MHz	2 506.0(39750)	2 549.5(40185)	2 593.0(40620)	2 636.5(41055)	2 680.0(41490)
	15 MHz	2 506.0(39750)	2 549.5(40185)	2 593.0(40620)	2 636.5(41055)	2 680.0(41490)
	20 MHz	2 506.0(39750)	2 549.5(40185)	2 593.0(40620)	2 636.5(41055)	2 680.0(41490)

UE Category	LTE Rel. 15, UE DL: Category 18, UL: Category 18
Modulations Supported in UL	QPSK, 16QAM, 64QAM, 256 QAM
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3	Yes
A-MPR disabled for SAR Testing.	Yes
LTE Carrier Aggregation	This device supports Inter-band & Intra-band DL-link Carrier aggregationsonly. Detaled 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 the 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.(㎒)		Low / Low-Mid	Mid	Mid-High / High
NR Band n5 (Cell)	5 ㎒	826.5 (165300)	836.5 (167300)	846.5 (169300)
	10 ㎒	829 (165800)	836.5 (167300)	844 (168800)
	15 ㎒	831.5 (166300)	836.5 (167300)	841.5 (168300)
	20 ㎒	834 (166800)	836.5 (167300)	839 (167800)
NR Band n66(AWS)	5 ㎒	1 712.5 (342500)	1 745 (349000)	1 777.5 (355500)
	10 ㎒	1 715 (343000)	1 745 (349000)	1 775 (355000)
	15 ㎒	1 717.5 (343500)	1 745 (349000)	1 772.5 (354500)
	20 ㎒	1 720 (344000)	1 745 (349000)	1 770 (354000)

Item.	Description
NR Bandn5 /n66 SCS	15 ㎑
3GPP Rel.	Rel.16
A-MPR disabled for SAR Testing.	Yes
5G NR UL/DL FR1	CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM DFT-s-OFDM: π/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 cc binations
LTE Anchor Band for NR Band n5	LTE B2, 66
LTE Anchor Band for NR Band n66(Sub #2)	LTE B2, 5, 12, 13

4.5 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.

Mode	Antenna	Rear	Front	Left	Right	Top	Bottom
GSM/GPRS/EDGE 850	Main #1	Yes	Yes	Yes	Yes	No	Yes
GSM/GPRS/EDGE 1900	Main #1	Yes	Yes	Yes	Yes	No	Yes
UMTS Band 5	Main #1	Yes	Yes	Yes	Yes	No	Yes
UMTS Band 4	Main #1	Yes	Yes	Yes	Yes	No	Yes
UMTS Band 2	Main #1	Yes	Yes	Yes	Yes	No	Yes
LTE Band 2 (PCS)	Main #1	Yes	Yes	Yes	Yes	No	Yes
LTE Band 2 (PCS)	Sub #2	Yes	Yes	Yes	No	Yes	No
LTE Band 4 (AWS)	Main #1	Yes	Yes	Yes	Yes	No	Yes
LTE Band 5 (Cell)	Main #1	Yes	Yes	Yes	Yes	No	Yes
LTE Band 12	Main #1	Yes	Yes	Yes	Yes	No	Yes
LTE Band 13	Main #1	Yes	Yes	Yes	Yes	No	Yes
LTE Band 17	Main #1	Yes	Yes	Yes	Yes	No	Yes
LTE Band 26 (Cell)	Main #1	Yes	Yes	Yes	Yes	No	Yes
LTE TDD Band 41	Main #2	Yes	Yes	Yes	No	No	Yes
LTE Band 66 (AWS)	Main #1	Yes	Yes	Yes	Yes	No	Yes
LTE Band 66(AWS)	Sub #2	Yes	Yes	Yes	No	Yes	No
NR Band n5	Main #1	Yes	Yes	Yes	Yes	No	Yes
NR Band n66(SA)	Main #1	Yes	Yes	Yes	Yes	No	Yes
NR Band n66(NSA)	Sub #2	Yes	Yes	Yes	No	Yes	No
2.4 ㎓ WLAN	Sub #2	Yes	Yes	Yes	No	Yes	No
5 ㎓ WLAN	Sub #3	Yes	Yes	Yes	No	Yes	No
Bluetooth	Sub #2	Yes	Yes	Yes	No	Yes	No

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.

4.6 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.

4.7 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	Body-Worn	Hotspot	Extremity
GSM Voice + 2.4 GHz WiFi	Yes	Yes	N/A	Yes
GSM Voice + 5 GHz WiFi	Yes	Yes	N/A	Yes
GSM Voice + Bluetooth	Yes^	Yes	N/A	Yes
GSM Voice + 5 GHz WiFi + Bluetooth	Yes^	Yes	N/A	Yes
GSMGPRS/EDGE + 2.4 GHz WiFi	Yes*	Yes	Yes	Yes
GSMGPRS/EDGE + 5 GHz WiFi	Yes*	Yes	Yes	Yes
GSMGPRS/EDGE + Bluetooth	Yes*^	Yes	Yes^	Yes
GSMGPRS/EDGE + 5 GHz WiFi + Bluetooth	Yes*^	Yes	Yes^	Yes
UMTS + 2.4 GHz WiFi	Yes	Yes	Yes	Yes
UMTS + 5 GHz WiFi	Yes	Yes	Yes	Yes
UMTS + Bluetooth	Yes^	Yes	Yes^	Yes
UMTS + 5 GHz WiFi + Bluetooth	Yes^	Yes	Yes^	Yes
LTE + 2.4 GHz WiFi	Yes*	Yes	Yes	Yes
LTE + 5 GHz WiFi	Yes*	Yes	Yes	Yes
LTE+ Bluetooth	Yes^	Yes	Yes^	Yes
LTE + 5 GHz WiFi + Bluetooth	Yes^	Yes	Yes^	Yes
LTE+ 5GNR	Yes	Yes	N/A	Yes
LTE+ 5GNR + 2.4 GHz WiFi	Yes*	Yes	Yes	Yes
LTE+ 5GNR + 5 GHz WiFi	Yes*	Yes	Yes	Yes
LTE+ 5GNR+ Bluetooth	Yes^	Yes	Yes^	Yes
LTE+ 5GNR + 5 GHz WiFi + Bluetooth	Yes^	Yes	Yes^	Yes
5GNR + 2.4 GHz WiFi	Yes*	Yes	Yes	Yes
5GNR + 5 GHz WiFi	Yes*	Yes	Yes	Yes
5GNR+ Bluetooth	Yes*^	Yes	Yes^	Yes
5GNR + 5 GHz WiFi + Bluetooth	Yes*^	Yes	Yes^	Yes

Note:
1. 2.4GHz WLAN and 2.4GHz Bluetooth cannot transmit simultaneously
2. The device does not support licensed bands simultaneously transmitting.
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. Wi-Fi Hotspot is supported for 2.4 GHz/UNII-3 of 5 GHz WLAN.
7. This device supports Bluetooth tethering. ^ BluetoothTetheringis considered.
8. * Pre-installed VOIP applications areconsidered
9. Per the manufacturer, 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.
11. This device supports VOLTE.
12. This device supports VOWIFI

4.8 SAR Test Considerations

4.8.1 Licensed Transmitter(s)

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

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

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

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 x-$\frac{Maximumtune-up(mW)}{Measured\ \ Conducted\ \ Power(mW)}$

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 (d*W*) absorbed by (dissipated in) an incremental mass (d*m*) contained in a volume element (d*V*) of a given density (*r*). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body.

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

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 (kg/㎥)
= 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.

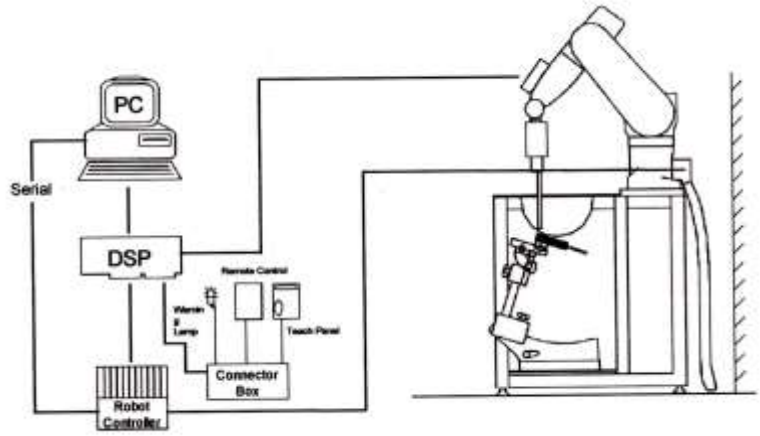

Figure 2. HCT SAR Lab. Test Measurement Set-up

The DAE consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16bit 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.

<table>
<tr><td colspan="3"></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5±1 mm</td><td>·δ·ln(2)±0.5 mm</td></tr>
<tr><td colspan="3">Maximum probe angle from probe axis to phantom surface
normal at the measurement location</td><td>30°±1°</td><td>20°±1°</td></tr>
<tr><td colspan="3" rowspan="2">MaximumareascanSpatial resolution:Δx_{Area},Δy_{Area}</td><td>≤ 2 GHz: ≤15 mm
2-3 GHz: ≤12 mm</td><td>3-4 GHz: ≤12 mm
4-6 GHz: ≤10 mm</td></tr>
<tr><td colspan="2">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.</td></tr>
<tr><td colspan="3">Maximum zoom scan Spatial resolution: Δx_{zoom},Δy_{zoom}</td><td>≤ 2 GHz: ≤8mm
2-3 GHz: ≤5mm*</td><td>3-4 GHz: ≤5 mm*
4-6 GHz: ≤4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan Spatial resolution normal to phantom surface</td><td colspan="2">uniform grid:$\Delta z_{zoom}(n)$</td><td>≤ 5 mm</td><td>3-4 GHz: ≤4 mm
4-5 GHz: ≤3 mm
5-6 GHz: ≤2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{zoom}(1)$: between1st two Points closest to phantom surface</td><td>≤ 4 mm</td><td>3-4 GHz: ≤3 mm
4-5 GHz: ≤2.5 mm
5-6 GHz: ≤2 mm</td></tr>
<tr><td>$\Delta z_{zoom}(n>1)$:between subsequent Points</td><td colspan="2">≤1.5·$\Delta z_{zoom}(n-1)$</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3-4 GHz: ≥28 mm
4-5 GHz: ≥25 mm
5-6 GHz: ≥22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
* When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

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.

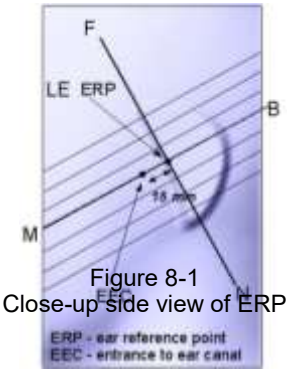

Figure 8-1
Close-up side view of ERP

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 than 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

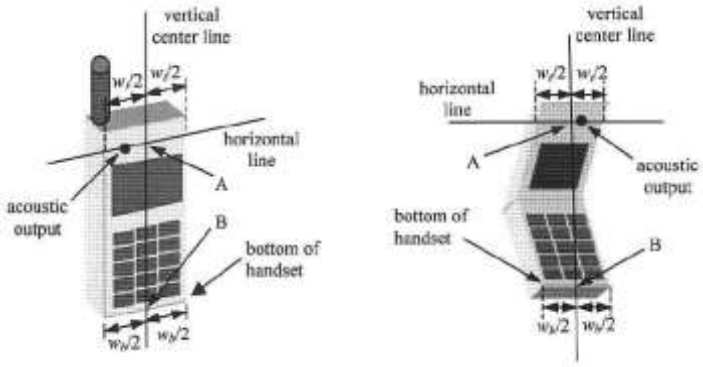

Figure 6-3. Handset vertical and horizontal reference lines

8.3 Device Holder

The device holder is made out of low-loss POM material having the following dielectric parameter; relative permittivity ε=3 and loss tangent σ =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.

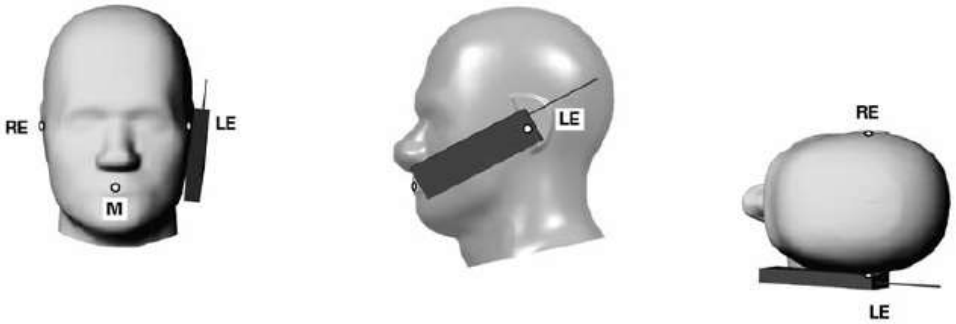

Figure 8.4 Cheek/ Touch position of the wireless device

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≥9cmx5 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 mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the Body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some Body-worn accessory SAR tests.

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

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-worm 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 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	§6.3 Coverage	§6.4 Tilt Angle	Worst case distance for Phablet SAR
GSM1900/UMTS B2/B4 LTEB2(Main #1)/B4/B41/B66(Main #1) NR n66	Rear	8	N/A	N/A	7
	Front	7	N/A	N/A	6
	Bottom	13	N/A	N/A	12

8.10 Bluetooth tethering Configurations

Per May 2017 TCBC Workshop Document 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 SAR Measurement Conditions for LTE

LTE modes are tested according to FCC KDB 941225 D05v02r05publication. 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).

10.2.1 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.

10.2.2 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.

10.2.3 A-MPR

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

10.2.4 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 ≤ 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.

11. LTE Output Power Measurement Results

11.1 LTE Maximum Output Power

[LTE Band 2 Conducted Power] Sub #2 Ant

LTE Band 2 _ 1.4 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18607Ch. 1850.7 MHz	18900Ch. 1880 MHz	19193Ch. 1909.3 MHz		
1.4 MHz	QPSK	1	0	19.65	19.99	19.65	0	0
		1	3	19.89	20.32	19.54	0	0
		1	5	20.24	19.67	19.51	0	0
		3	0	19.53	19.95	19.55	0	0
		3	1	19.78	20.34	19.57	0	0
		3	3	20.25	19.57	19.60	0	0
		6	0	19.11	19.03	18.56	0-1	1
	16QAM	1	0	18.69	19.43	18.79	0-1	1
		1	3	19.28	19.82	18.77	0-1	1
		1	5	19.72	18.84	18.92	0-1	1
		3	0	18.74	19.30	18.76	0-1	1
		3	1	19.16	19.76	18.82	0-1	1
		3	3	19.75	18.74	18.95	0-1	1
		6	0	18.40	18.25	17.98	0-2	2
	64QAM	1	0	17.55	18.07	17.61	0-2	2
		1	3	17.96	18.55	17.59	0-2	2
		1	5	18.52	17.57	17.77	0-2	2
		3	0	17.57	18.14	17.57	0-2	2
		3	1	17.95	18.63	17.57	0-2	2
		3	3	18.53	17.51	17.76	0-2	2
		6	0	17.28	17.12	16.73	0-3	3
	256QAM	1	0	14.84	14.85	14.84	0-5	5
		1	3	14.82	14.88	14.88	0-5	5
		1	5	14.89	14.84	14.82	0-5	5
		3	0	14.74	14.77	14.73	0-5	5
		3	1	14.73	14.72	14.74	0-5	5
		3	3	14.83	14.78	14.75	0-5	5
		6	0	14.76	14.77	14.84	0-5	5

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	19.53	20.03	19.59	0	0
		1	7	19.79	20.38	19.58	0	0
		1	14	20.23	19.61	19.63	0	0
		8	0	18.67	19.06	18.61	0-1	1
		8	3	18.95	19.17	18.57	0-1	1
		8	7	19.26	18.77	18.79	0-1	1
		15	0	19.15	18.97	18.59	0-1	1
	16QAM	1	0	18.82	19.35	18.88	0-1	1
		1	7	19.13	19.72	18.81	0-1	1
		1	14	19.62	18.71	18.97	0-1	1
		8	0	17.91	18.46	17.62	0-2	2
		8	3	18.42	18.58	17.88	0-2	2
		8	7	18.67	18.10	18.37	0-2	2
		15	0	18.38	18.26	17.99	0-2	2
	64QAM	1	0	17.60	18.19	17.65	0-2	2
		1	7	18.11	18.50	17.64	0-2	2
		1	14	18.48	17.54	17.76	0-2	2
		8	0	16.74	17.41	16.60	0-3	3
		8	3	17.20	17.39	16.71	0-3	3
		8	7	17.27	17.01	17.09	0-3	3
		15	0	17.16	17.11	16.72	0-3	3
	256QAM	1	0	14.90	14.88	14.78	0-5	5
		1	7	14.79	14.87	14.84	0-5	5
		1	14	14.87	14.78	14.85	0-5	5
		8	0	14.82	14.76	14.79	0-5	5
		8	3	14.75	14.73	14.77	0-5	5
		8	7	14.83	14.77	14.74	0-5	5
		15	0	14.77	14.77	14.80	0-5	5

LTE Band 2 _ 5 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18625 Ch. 1852.5 ㎒	18900 Ch. 1880 ㎒	19175 Ch. 1907.5 ㎒		
5 MHz	QPSK	1	0	19.64	20.05	19.61	0	0
		1	12	19.91	20.33	19.53	0	0
		1	24	20.23	19.53	19.55	0	0
		12	0	18.60	19.15	18.54	0-1	1
		12	6	19.05	19.22	18.54	0-1	1
		12	11	19.23	18.72	18.93	0-1	1
		25	0	19.12	19.03	18.66	0-1	1
	16QAM	1	0	18.80	19.36	18.72	0-1	1
		1	12	19.32	19.66	18.75	0-1	1
		1	24	19.64	18.85	19.06	0-1	1
		12	0	17.90	18.54	17.65	0-2	2
		12	6	18.40	18.58	18.01	0-2	2
		12	11	18.61	18.09	18.18	0-2	2
		25	0	18.43	18.33	18.07	0-2	2
	64QAM	1	0	17.53	18.10	17.53	0-2	2
		1	12	17.97	18.61	17.61	0-2	2
		1	24	18.53	17.67	17.81	0-2	2
		12	0	16.75	17.30	16.65	0-3	3
		12	6	17.20	17.43	16.74	0-3	3
		12	11	17.28	17.01	17.02	0-3	3
		25	0	17.30	17.13	16.80	0-3	3
	256QAM	1	0	14.72	14.90	14.73	0-5	5
		1	12	14.80	14.71	14.81	0-5	5
		1	24	14.88	14.75	14.79	0-5	5
		12	0	14.80	14.66	14.63	0-5	5
		12	6	14.81	14.70	14.65	0-5	5
		12	11	14.67	14.75	14.73	0-5	5
		25	0	14.75	14.73	14.82	0-5	5

LTE Band 2 _ 10 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18650 Ch. 1855 ㎒	18900 Ch. 1880 ㎒	19150 Ch. 1905 ㎒		
10 MHz	QPSK	1	0	19.60	20.01	19.61	0	0
		1	24	19.80	20.36	19.55	0	0
		1	49	20.16	19.56	19.62	0	0
		25	0	18.63	19.06	18.55	0-1	1
		25	12	18.95	19.30	18.54	0-1	1
		25	24	19.17	18.78	18.88	0-1	1
		50	0	19.00	18.87	18.60	0-1	1
	16QAM	1	0	18.80	19.28	18.77	0-1	1
		1	24	19.23	19.72	18.86	0-1	1
		1	49	19.74	18.76	19.06	0-1	1
		25	0	17.95	18.45	17.55	0-2	2
		25	12	18.35	18.57	18.01	0-2	2
		25	24	18.64	18.21	18.17	0-2	2
		50	0	18.43	18.30	18.00	0-2	2
	64QAM	1	0	17.59	18.08	17.59	0-2	2
		1	24	18.08	18.44	17.52	0-2	2
		1	49	18.52	17.62	17.71	0-2	2
		25	0	16.88	17.26	16.56	0-3	3
		25	12	17.22	17.36	16.68	0-3	3
		25	24	17.27	17.01	17.16	0-3	3
		50	0	17.26	17.19	16.86	0-3	3
	256QAM	1	0	14.86	14.83	14.84	0-5	5
		1	24	14.79	14.86	14.86	0-5	5
		1	49	14.83	14.77	14.81	0-5	5
		25	0	14.74	14.70	14.74	0-5	5
		25	12	14.77	14.68	14.72	0-5	5
		25	24	14.80	14.71	14.74	0-5	5
		50	0	14.77	14.78	14.76	0-5	5

LTE Band 2 _ 15 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18675 Ch. 1857.5 ㎒	18900 Ch. 1880 ㎒	19125 Ch. 1902.5 ㎒		
15 MHz	QPSK	1	0	19.60	19.94	19.57	0	0
		1	36	19.90	20.24	19.56	0	0
		1	74	20.29	19.52	19.53	0	0
		36	0	18.50	19.10	18.55	0-1	1
		36	18	19.09	19.26	18.56	0-1	1
		36	39	19.26	18.64	18.97	0-1	1
		75	0	19.13	18.89	18.61	0-1	1
	16QAM	1	0	18.85	19.29	18.85	0-1	1
		1	36	19.17	19.69	18.76	0-1	1
		1	74	19.61	18.74	19.04	0-1	1
		36	0	17.97	18.49	17.58	0-2	2
		36	18	18.46	18.53	17.85	0-2	2
		36	39	18.49	18.15	18.18	0-2	2
		75	0	18.40	18.43	17.97	0-2	2
	64QAM	1	0	17.60	18.21	17.56	0-2	2
		1	36	17.94	18.48	17.65	0-2	2
		1	74	18.35	17.58	17.89	0-2	2
		36	0	16.79	17.30	16.52	0-3	3
		36	18	17.30	17.44	16.64	0-3	3
		36	39	17.46	16.82	17.00	0-3	3
		75	0	17.23	17.07	16.74	0-3	3
	256QAM	1	0	14.84	14.90	14.82	0-5	5
		1	36	14.82	14.85	14.83	0-5	5
		1	74	14.86	14.86	14.80	0-5	5
		36	0	14.78	14.76	14.75	0-5	5
		36	18	14.76	14.74	14.74	0-5	5
		36	39	14.77	14.78	14.78	0-5	5
		75	0	14.81	14.83	14.85	0-5	5

LTE Band 2 _ 20 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18700 Ch. 1860 ㎒	18900 Ch. 1880 ㎒	19100 Ch. 1900 ㎒		
20 MHz	QPSK	1	0	19.55	19.87	19.58	0	0
		1	49	19.72	20.24	19.67	0	0
		1	99	20.15	19.56	19.60	0	0
		50	0	18.70	19.03	18.56	0-1	1
		50	25	18.93	19.10	18.64	0-1	1
		50	49	19.07	18.62	18.77	0-1	1
		100	0	18.95	18.84	18.59	0-1	1
	16QAM	1	0	18.65	19.27	18.68	0-1	1
		1	49	19.12	19.64	18.67	0-1	1
		1	99	19.55	18.66	18.90	0-1	1
		50	0	17.90	18.43	17.66	0-2	2
		50	25	18.33	18.50	17.84	0-2	2
		50	49	18.47	18.02	18.17	0-2	2
		100	0	18.35	18.24	17.89	0-2	2
	64QAM	1	0	17.65	18.07	17.58	0-2	2
		1	49	17.92	18.44	17.67	0-2	2
		1	99	18.35	17.66	17.70	0-2	2
		50	0	16.70	17.23	16.66	0-3	3
		50	25	17.13	17.30	16.64	0-3	3
		50	49	17.27	16.82	16.97	0-3	3
		100	0	17.15	17.04	16.69	0-3	3
	256QAM	1	0	14.93	14.91	14.87	0-5	5
		1	49	14.88	14.90	14.90	0-5	5
		1	99	14.93	14.87	14.86	0-5	5
		50	0	14.83	14.77	14.82	0-5	5
		50	25	14.81	14.78	14.82	0-5	5
		50	49	14.83	14.79	14.80	0-5	5
		100	0	14.83	14.84	14.85	0-5	5

[LTE Band 66 Conducted Power] Sub #2 Ant

LTE Band 66 _ 1.4 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				131979Ch. 1710.7 ㎒	132322 Ch. 1745 ㎒	132665 Ch. 1779.3 ㎒		
1.4 MHz	QPSK	1	0	22.13	22.33	22.49	0	0
		1	3	22.17	22.52	22.49	0	0
		1	5	22.13	22.31	22.50	0	0
		3	0	22.17	22.47	22.49	0	0
		3	1	22.14	22.49	22.64	0	0
		3	3	22.13	22.35	22.45	0	0
		6	0	21.25	21.54	21.50	0-1	1
	16QAM	1	0	21.48	21.75	21.91	0-1	1
		1	3	21.47	21.79	21.91	0-1	1
		1	5	21.46	21.73	21.80	0-1	1
		3	0	21.34	21.74	21.73	0-1	1
		3	1	21.54	21.70	21.87	0-1	1
		3	3	21.25	21.64	21.87	0-1	1
		6	0	20.64	20.63	20.61	0-2	2
	64QAM	1	0	20.83	20.85	20.93	0-2	2
		1	3	20.83	20.67	20.77	0-2	2
		1	5	20.84	20.60	20.74	0-2	2
		3	0	20.96	20.55	20.60	0-2	2
		3	1	20.96	20.65	20.61	0-2	2
		3	3	20.75	20.71	20.46	0-2	2
		6	0	19.37	19.65	19.60	0-3	3
	256QAM	1	0	16.55	16.53	16.54	0-5	5
		1	3	16.55	16.57	16.54	0-5	5
		1	5	16.52	16.55	16.57	0-5	5
		3	0	16.59	16.60	16.59	0-5	5
		3	1	16.59	16.57	16.59	0-5	5
		3	3	16.61	16.59	16.63	0-5	5
		6	0	16.57	16.60	16.63	0-5	5

LTE Band 66 _ 3 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				131987 Ch. 1711.5 ㎒	132322 Ch. 1745 ㎒	132657 Ch. 1778.5 ㎒		
3 MHz	QPSK	1	0	22.25	22.44	22.58	0	0
		1	7	22.40	22.32	22.64	0	0
		1	14	22.20	22.40	22.41	0	0
		8	0	21.32	21.47	21.67	0-1	1
		8	3	21.39	21.56	21.85	0-1	1
		8	7	21.26	21.58	21.59	0-1	1
		15	0	21.33	21.50	21.61	0-1	1
	16QAM	1	0	21.49	21.55	21.66	0-1	1
		1	7	21.56	21.88	21.96	0-1	1
		1	14	21.40	21.78	21.71	0-1	1
		8	0	20.29	20.53	20.67	0-2	2
		8	3	20.43	20.53	20.69	0-2	2
		8	7	20.20	20.52	20.63	0-2	2
		15	0	20.33	20.51	20.67	0-2	2
	64QAM	1	0	20.39	20.62	20.76	0-2	2
		1	7	20.33	20.54	20.65	0-2	2
		1	14	20.41	20.78	20.68	0-2	2
		8	0	19.37	19.52	19.66	0-3	3
		8	3	19.43	19.57	19.71	0-3	3
		8	7	19.27	19.48	19.71	0-3	3
		15	0	19.36	19.54	19.70	0-3	3
	256QAM	1	0	16.53	16.54	16.55	0-5	5
		1	7	16.55	16.56	16.53	0-5	5
		1	14	16.54	16.53	16.57	0-5	5
		8	0	16.59	16.61	16.57	0-5	5
		8	3	16.60	16.57	16.60	0-5	5
		8	7	16.61	16.57	16.62	0-5	5
		15	0	16.59	16.60	16.62	0-5	5

LTE Band 66 _ 5 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				131997 Ch. 1712.5 ㎒	132322Ch. 1745 ㎒	132647 Ch. 1777.5 ㎒		
5 MHz	QPSK	1	0	22.14	22.47	22.56	0	0
		1	12	22.09	22.49	22.51	0	0
		1	24	22.12	22.39	22.42	0	0
		12	0	21.35	21.52	21.54	0-1	1
		12	6	21.32	21.51	21.53	0-1	1
		12	11	21.19	21.52	21.63	0-1	1
		25	0	21.33	21.47	21.55	0-1	1
	16QAM	1	0	21.27	21.75	21.88	0-1	1
		1	12	21.50	21.64	21.92	0-1	1
		1	24	21.38	21.65	21.82	0-1	1
		12	0	20.29	20.52	20.60	0-2	2
		12	6	20.26	20.59	20.64	0-2	2
		12	11	20.35	20.58	20.62	0-2	2
		25	0	20.32	20.51	20.48	0-2	2
	64QAM	1	0	20.31	20.49	20.71	0-2	2
		1	12	20.35	20.59	20.69	0-2	2
		1	24	20.28	20.53	20.61	0-2	2
		12	0	19.32	19.56	19.69	0-3	3
		12	6	19.46	19.58	19.70	0-3	3
		12	11	19.41	19.61	19.64	0-3	3
		25	0	19.31	19.50	19.53	0-3	3
	256QAM	1	0	16.66	16.64	16.67	0-5	5
		1	12	16.70	16.68	16.67	0-5	5
		1	24	16.65	16.68	16.69	0-5	5
		12	0	16.71	16.70	16.69	0-5	5
		12	6	16.72	16.70	16.73	0-5	5
		12	11	16.73	16.70	16.74	0-5	5
		25	0	16.68	16.71	16.76	0-5	5

LTE Band 66 _ 10 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				132022 Ch. 1715 ㎒	132322 Ch. 1745 ㎒	132622 Ch. 1775 ㎒		
10 MHz	QPSK	1	0	21.75	21.91	22.08	0	0
		1	24	22.25	22.38	22.57	0	0
		1	49	22.03	22.27	22.40	0	0
		25	0	21.16	21.32	21.50	0-1	1
		25	12	21.26	21.45	21.60	0-1	1
		25	24	21.24	21.43	21.60	0-1	1
		50	0	21.29	21.43	21.48	0-1	1
	16QAM	1	0	21.14	21.67	21.70	0-1	1
		1	24	21.64	21.72	21.76	0-1	1
		1	49	21.62	21.49	21.72	0-1	1
		25	0	20.19	20.49	20.53	0-2	2
		25	12	20.40	20.55	20.67	0-2	2
		25	24	20.31	20.57	20.64	0-2	2
		50	0	20.28	20.46	20.47	0-2	2
	64QAM	1	0	20.19	20.39	20.43	0-2	2
		1	24	20.39	20.58	20.68	0-2	2
		1	49	20.22	20.53	20.49	0-2	2
		25	0	19.26	19.47	19.49	0-3	3
		25	12	19.33	19.58	19.61	0-3	3
		25	24	19.25	19.54	19.68	0-3	3
		50	0	19.33	19.40	19.60	0-3	3
	256QAM	1	0	16.64	16.63	16.64	0-5	5
		1	24	16.65	16.67	16.64	0-5	5
		1	49	16.63	16.63	16.66	0-5	5
		25	0	16.70	16.71	16.69	0-5	5
		25	12	16.69	16.67	16.70	0-5	5
		25	24	16.71	16.68	16.72	0-5	5
		50	0	16.69	16.71	16.72	0-5	5

LTE Band 66 _ 15 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				132047 Ch. 1717.5 ㎒	132322 Ch. 1745 ㎒	132597 Ch. 1772.5 ㎒		
15 MHz	QPSK	1	0	21.83	22.18	22.32	0	0
		1	36	22.02	22.23	22.19	0	0
		1	74	22.08	22.31	22.41	0	0
		36	0	21.16	21.35	21.40	0-1	1
		36	18	21.27	21.38	21.54	0-1	1
		36	39	21.20	21.41	21.56	0-1	1
		75	0	21.19	21.34	21.48	0-1	1
	16QAM	1	0	21.47	21.36	21.64	0-1	1
		1	36	21.28	21.85	21.73	0-1	1
		1	74	21.54	21.57	21.57	0-1	1
		36	0	20.16	20.31	20.42	0-2	2
		36	18	20.30	20.36	20.51	0-2	2
		36	39	20.26	20.38	20.46	0-2	2
		75	0	20.25	20.35	20.47	0-2	2
	64QAM	1	0	20.20	20.37	20.67	0-2	2
		1	36	20.48	20.31	20.70	0-2	2
		1	74	20.07	20.54	20.71	0-2	2
		36	0	19.25	19.35	19.51	0-3	3
		36	18	19.28	19.46	19.55	0-3	3
		36	39	19.31	19.45	19.56	0-3	3
		75	0	19.22	19.37	19.51	0-3	3
	256QAM	1	0	16.54	16.53	16.56	0-5	5
		1	36	16.55	16.56	16.53	0-5	5
		1	74	16.54	16.55	16.57	0-5	5
		36	0	16.59	16.61	16.58	0-5	5
		36	18	16.59	16.57	16.60	0-5	5
		36	39	16.60	16.58	16.61	0-5	5
		75	0	16.57	16.60	16.63	0-5	5

LTE Band 66 _ 20 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				132072 Ch. 1720 ㎒	132322 Ch. 1745 ㎒	132572 Ch. 1770 ㎒		
20 MHz	QPSK	1	0	21.79	22.10	22.39	0	0
		1	49	22.22	22.84	22.31	0	0
		1	99	22.02	22.16	22.55	0	0
		50	0	21.12	21.24	21.35	0-1	1
		50	25	21.53	21.92	21.51	0-1	1
		50	49	21.23	21.35	21.44	0-1	1
		100	0	21.19	21.29	21.48	0-1	1
	16QAM	1	0	21.14	21.25	21.60	0-1	1
		1	49	21.45	21.72	21.83	0-1	1
		1	99	21.43	21.51	21.68	0-1	1
		50	0	20.15	20.36	20.40	0-2	2
		50	25	20.35	20.43	20.58	0-2	2
		50	49	20.24	20.43	20.48	0-2	2
		100	0	20.22	20.25	20.47	0-2	2
	64QAM	1	0	20.01	20.24	20.56	0-2	2
		1	49	20.44	20.56	20.74	0-2	2
		1	99	20.25	20.50	20.60	0-2	2
		50	0	19.13	19.35	19.39	0-3	3
		50	25	19.32	19.39	19.59	0-3	3
		50	49	19.21	19.42	19.54	0-3	3
		100	0	19.23	19.32	19.48	0-3	3
	256QAM	1	0	16.53	16.52	16.54	0-5	5
		1	49	16.54	16.55	16.53	0-5	5
		1	99	16.52	16.53	16.55	0-5	5
		50	0	16.58	16.59	16.56	0-5	5
		50	25	16.58	16.57	16.58	0-5	5
		50	49	16.60	16.57	16.61	0-5	5
		100	0	16.56	16.59	16.61	0-5	5

11.1.2 LTE Reduced Conducted Power (Hotspot activated)

[LTE Band 2 Conducted Power] Sub #2 Ant

LTE Band 2 _ 1.4 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18607 Ch. 1850.7 ㎒	18900 Ch. 1880 ㎒	19193 Ch. 1909.3 ㎒		
1.4 MHz	QPSK	1	0	16.98	18.20	17.84	0	0
		1	3	17.68	18.83	18.07	0	0
		1	5	18.30	16.99	18.20	0	0
		3	0	17.30	18.68	18.44	0	0
		3	1	17.80	18.77	18.39	0	0
		3	3	18.03	18.29	18.28	0	0
		6	0	17.77	17.61	17.41	0	0
	16QAM	1	0	17.05	18.22	17.86	0	0
		1	3	17.75	18.86	18.14	0	0
		1	5	18.30	16.98	18.22	0	0
		3	0	17.37	18.76	18.50	0	0
		3	1	17.87	18.79	18.40	0	0
		3	3	18.08	18.29	18.34	0	0
		6	0	17.79	17.72	17.50	0	0
	64QAM	1	0	17.04	18.28	17.85	0	0
		1	3	17.72	18.85	18.12	0	0
		1	5	18.37	16.98	18.33	0	0
		3	0	17.32	18.74	18.48	0	0
		3	1	17.79	18.86	18.41	0	0
		3	3	18.17	18.27	18.31	0	0
		6	0	17.74	17.72	17.51	0	0
	256QAM	1	0	15.34	15.30	15.31	0-2	2
		1	3	15.40	15.43	15.40	0-2	2
		1	5	15.37	15.42	15.35	0-2	2
		3	0	15.24	15.22	15.29	0-2	2
		3	1	15.19	15.38	15.24	0-2	2
		3	3	15.32	15.27	15.25	0-2	2
		6	0	15.19	15.27	15.22	0-2	2

LTE Band 2 _ 3 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced 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	16.97	18.18	17.82	0	0
		1	7	17.75	18.82	18.11	0	0
		1	14	18.28	16.94	18.23	0	0
		8	0	17.31	18.66	18.42	0	0
		8	3	17.75	18.74	18.39	0	0
		8	7	18.04	18.28	18.29	0	0
		15	0	17.69	17.65	17.42	0	0
	16QAM	1	0	17.05	18.22	17.89	0	0
		1	7	17.80	18.85	18.15	0	0
		1	14	18.29	17.02	18.22	0	0
		8	0	17.34	18.72	18.45	0	0
		8	3	17.87	18.80	18.43	0	0
		8	7	18.13	18.32	18.37	0	0
		15	0	17.76	17.74	17.45	0	0
	64QAM	1	0	17.08	18.27	17.83	0	0
		1	7	17.69	18.85	18.11	0	0
		1	14	18.33	16.98	18.26	0	0
		8	0	17.29	18.66	18.51	0	0
		8	3	17.82	18.89	18.44	0	0
		8	7	18.10	18.29	18.33	0	0
		15	0	17.76	17.78	17.45	0	0
	256QAM	1	0	15.37	15.15	15.31	0-2	2
		1	7	15.38	15.35	15.27	0-2	2
		1	14	15.19	15.40	15.19	0-2	2
		8	0	15.25	15.22	15.15	0-2	2
		8	3	15.12	15.32	15.07	0-2	2
		8	7	15.18	15.19	15.08	0-2	2
		15	0	15.21	15.27	15.11	0-2	2

LTE Band 2 _ 5 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18625 Ch. 1852.5 ㎒	18900 Ch. 1880 ㎒	19175 Ch. 1907.5 ㎒		
5 MHz	QPSK	1	0	17.00	18.15	17.78	0	0
		1	12	17.67	18.81	18.13	0	0
		1	24	18.29	16.97	18.21	0	0
		12	0	17.30	18.69	18.45	0	0
		12	6	17.80	18.73	18.32	0	0
		12	11	18.11	18.25	18.35	0	0
		25	0	17.70	17.67	17.46	0	0
	16QAM	1	0	17.04	18.21	17.82	0	0
		1	12	17.84	18.84	18.15	0	0
		1	24	18.26	17.00	18.24	0	0
		12	0	17.40	18.78	18.49	0	0
		12	6	17.83	18.86	18.49	0	0
		12	11	18.08	18.24	18.31	0	0
		25	0	17.74	17.74	17.47	0	0
	64QAM	1	0	17.12	18.28	17.80	0	0
		1	12	17.72	18.91	18.17	0	0
		1	24	18.36	17.07	18.34	0	0
		12	0	17.39	18.74	18.55	0	0
		12	6	17.75	18.85	18.47	0	0
		12	11	18.09	18.24	18.28	0	0
		25	0	17.78	17.75	17.47	0	0
	256QAM	1	0	15.35	15.27	15.34	0-2	2
		1	12	15.30	15.33	15.29	0-2	2
		1	24	15.30	15.32	15.36	0-2	2
		12	0	15.27	15.19	15.19	0-2	2
		12	6	15.11	15.32	15.25	0-2	2
		12	11	15.24	15.22	15.26	0-2	2
		25	0	15.11	15.27	15.16	0-2	2

LTE Band 2 _ 10 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18650 Ch. 1855 ㎒	18900 Ch. 1880 ㎒	19150 Ch. 1905 ㎒		
10 MHz	QPSK	1	0	17.07	18.23	17.85	0	0
		1	24	17.74	18.90	18.17	0	0
		1	49	18.34	17.06	18.36	0	0
		25	0	17.42	18.72	18.57	0	0
		25	12	17.84	18.80	18.41	0	0
		25	24	18.11	18.30	18.41	0	0
		50	0	17.85	17.73	17.55	0	0
	16QAM	1	0	17.12	18.32	17.93	0	0
		1	24	17.85	18.85	18.29	0	0
		1	49	18.40	17.06	18.32	0	0
		25	0	17.48	18.78	18.57	0	0
		25	12	17.96	18.87	18.56	0	0
		25	24	18.23	18.41	18.42	0	0
		50	0	17.86	17.81	17.50	0	0
	64QAM	1	0	17.12	18.34	17.89	0	0
		1	24	17.81	18.50	18.25	0	0
		1	49	18.37	17.10	18.37	0	0
		25	0	17.42	18.81	18.63	0	0
		25	12	17.88	18.91	18.49	0	0
		25	24	18.22	18.38	18.43	0	0
		50	0	17.84	17.85	17.55	0	0
	256QAM	1	0	15.45	15.37	15.40	0-2	2
		1	24	15.48	15.48	15.44	0-2	2
		1	49	15.41	15.48	15.43	0-2	2
		25	0	15.31	15.29	15.38	0-2	2
		25	12	15.28	15.44	15.33	0-2	2
		25	24	15.35	15.32	15.34	0-2	2
		50	0	15.29	15.36	15.29	0-2	2

LTE Band 2 _ 15 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18675 Ch. 1857.5 ㎒	18900 Ch. 1880 ㎒	19125 Ch. 1902.5 ㎒		
15 MHz	QPSK	1	0	16.97	18.15	17.83	0	0
		1	36	17.69	18.79	18.09	0	0
		1	74	18.31	16.90	18.28	0	0
		36	0	17.30	18.64	18.44	0	0
		36	18	17.78	18.77	18.37	0	0
		36	39	18.10	18.20	18.31	0	0
		75	0	17.73	17.68	17.47	0	0
	16QAM	1	0	17.05	18.24	17.83	0	0
		1	36	17.83	18.80	18.21	0	0
		1	74	18.32	17.00	18.29	0	0
		36	0	17.41	18.74	18.48	0	0
		36	18	17.83	18.81	18.49	0	0
		36	39	18.08	18.28	18.35	0	0
		75	0	17.71	17.77	17.50	0	0
	64QAM	1	0	17.12	18.26	17.86	0	0
		1	36	17.72	18.83	18.19	0	0
		1	74	18.36	17.03	18.32	0	0
		36	0	17.35	18.67	18.48	0	0
		36	18	17.78	18.86	18.39	0	0
		36	39	18.11	18.22	18.27	0	0
		75	0	17.70	17.79	17.50	0	0
	256QAM	1	0	15.37	15.33	15.33	0-2	2
		1	36	15.32	15.40	15.31	0-2	2
		1	74	15.28	15.33	15.26	0-2	2
		36	0	15.18	15.21	15.21	0-2	2
		36	18	15.19	15.35	15.22	0-2	2
		36	39	15.26	15.23	15.21	0-2	2
		75	0	15.18	15.26	15.18	0-2	2

LTE Band 2 _ 20 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18700 Ch. 1860 ㎒	18900 Ch. 1880 ㎒	19100 Ch. 1900 ㎒		
20 MHz	QPSK	1	0	16.93	17.89	17.30	0	0
		1	49	17.68	18.65	17.58	0	0
		1	99	18.14	17.03	17.73	0	0
		50	0	17.40	18.27	17.27	0	0
		50	25	17.84	18.47	17.55	0	0
		50	49	18.13	17.85	17.85	0	0
		100	0	17.80	18.00	17.63	0	0
	16QAM	1	0	17.11	18.29	17.94	0	0
		1	49	17.89	18.91	18.26	0	0
		1	99	18.37	17.09	18.35	0	0
		50	0	17.49	18.83	18.57	0	0
		50	25	17.96	18.92	18.54	0	0
		50	49	18.20	18.38	18.44	0	0
		100	0	17.85	17.83	17.55	0	0
	64QAM	1	0	17.17	18.32	17.91	0	0
		1	49	17.81	18.95	18.25	0	0
		1	99	18.42	17.12	18.39	0	0
		50	0	17.43	18.80	18.59	0	0
		50	25	17.88	18.95	18.53	0	0
		50	49	18.22	18.37	18.40	0	0
		100	0	17.83	17.84	17.57	0	0
	256QAM	1	0	15.45	15.42	15.41	0-2	2
		1	49	15.49	15.50	15.48	0-2	2
		1	99	15.44	15.50	15.44	0-2	2
		50	0	15.35	15.30	15.39	0-2	2
		50	25	15.30	15.45	15.34	0-2	2
		50	49	15.39	15.37	15.33	0-2	2
		100	0	15.30	15.35	15.31	0-2	2

[LTE Band 66 Conducted Power] Sub #2 Ant

LTE Band 66 _ 1.4 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				131979Ch. 1710.7 ㎒	132322 Ch. 1745 ㎒	132665 Ch. 1779.3 ㎒		
1.4 MHz	QPSK	1	0	19.24	19.36	19.52	0	0
		1	3	18.69	19.46	19.13	0	0
		1	5	19.44	19.21	18.66	0	0
		3	0	18.96	19.04	19.30	0	0
		3	1	18.87	19.38	19.06	0	0
		3	3	19.00	19.30	18.89	0	0
		6	0	18.93	19.19	19.26	0	0
	16QAM	1	0	18.24	18.49	18.88	0	0
		1	3	18.69	19.23	18.73	0	0
		1	5	18.41	19.12	18.93	0	0
		3	0	17.53	17.66	17.75	0	0
		3	1	17.98	19.25	18.02	0	0
		3	3	17.63	18.75	17.78	0	0
		6	0	17.61	17.63	17.87	0	0
	64QAM	1	0	18.24	18.51	18.78	0	0
		1	3	18.65	19.21	18.71	0	0
		1	5	18.38	19.12	19.01	0	0
		3	0	17.51	17.62	17.77	0	0
		3	1	17.94	19.30	17.93	0	0
		3	3	17.62	18.79	17.78	0	0
		6	0	17.52	17.75	17.94	0	0
	256QAM	1	0	16.45	16.44	16.52	0-2	2
		1	3	16.48	16.52	16.47	0-2	2
		1	5	16.46	16.52	16.42	0-2	2
		3	0	16.51	16.47	16.41	0-2	2
		3	1	16.47	16.46	16.43	0-2	2
		3	3	16.41	16.40	16.49	0-2	2
		6	0	16.40	16.53	16.46	0-2	2

LTE Band 66 _ 3 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				131987 Ch. 1711.5 ㎒	132322 Ch. 1745 ㎒	132657 Ch. 1778.5 ㎒		
3 MHz	QPSK	1	0	18.92	19.03	19.35	0	0
		1	7	18.41	19.40	18.88	0	0
		1	14	19.12	19.08	18.51	0	0
		8	0	18.67	18.82	19.06	0	0
		8	3	18.67	19.12	18.87	0	0
		8	7	18.85	19.12	18.69	0	0
		15	0	18.85	19.05	19.17	0	0
	16QAM	1	0	18.00	18.39	18.66	0	0
		1	7	18.48	19.12	18.59	0	0
		1	14	18.27	18.96	18.83	0	0
		8	0	17.60	17.80	17.76	0	0
		8	3	18.03	19.33	18.04	0	0
		8	7	17.72	18.84	17.85	0	0
		15	0	17.66	17.74	17.95	0	0
	64QAM	1	0	18.30	18.58	18.92	0	0
		1	7	18.73	19.26	18.79	0	0
		1	14	18.46	19.17	19.08	0	0
		8	0	17.65	17.65	17.90	0	0
		8	3	18.01	19.34	18.02	0	0
		8	7	17.68	18.82	17.90	0	0
		15	0	17.67	17.80	17.99	0	0
	256QAM	1	0	16.50	16.46	16.50	0-2	2
		1	7	16.50	16.51	16.53	0-2	2
		1	14	16.49	16.53	16.46	0-2	2
		8	0	16.51	16.47	16.47	0-2	2
		8	3	16.50	16.48	16.48	0-2	2
		8	7	16.47	16.46	16.47	0-2	2
		15	0	16.48	16.49	16.50	0-2	2

LTE Band 66 _ 5 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				131997 Ch. 1712.5 ㎒	132322Ch. 1745 ㎒	132647 Ch. 1777.5 ㎒		
5 MHz	QPSK	1	0	18.98	19.06	19.41	0	0
		1	12	18.57	19.31	19.00	0	0
		1	24	19.20	19.11	18.39	0	0
		12	0	18.75	18.87	19.03	0	0
		12	6	18.74	19.21	18.91	0	0
		12	11	18.88	19.02	18.71	0	0
		25	0	18.89	18.99	19.13	0	0
	16QAM	1	0	18.47	18.75	19.13	0	0
		1	12	18.95	19.56	19.07	0	0
		1	24	18.68	19.35	19.28	0	0
		12	0	17.81	17.93	18.01	0	0
		12	6	18.21	19.49	18.21	0	0
		12	11	17.83	18.97	18.11	0	0
		25	0	17.88	17.96	18.12	0	0
	64QAM	1	0	18.51	18.78	19.04	0	0
		1	12	18.94	19.45	19.03	0	0
		1	24	18.64	19.40	19.22	0	0
		12	0	17.79	17.93	18.10	0	0
		12	6	18.22	19.48	18.24	0	0
		12	11	17.90	19.05	18.07	0	0
		25	0	17.86	17.99	18.16	0	0
	256QAM	1	0	16.48	16.49	16.48	0-2	2
		1	12	16.51	16.46	16.47	0-2	2
		1	24	16.40	16.47	16.44	0-2	2
		12	0	16.48	16.39	16.37	0-2	2
		12	6	16.43	16.44	16.44	0-2	2
		12	11	16.45	16.45	16.46	0-2	2
		25	0	16.46	16.47	16.46	0-2	2

LTE Band 66 _ 10 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				132022 Ch. 1715 ㎒	132322 Ch. 1745 ㎒	132622 Ch. 1775 ㎒		
10 MHz	QPSK	1	0	19.35	19.52	19.72	0	0
		1	24	18.88	19.65	19.26	0	0
		1	49	19.56	19.31	18.78	0	0
		25	0	19.04	19.22	19.42	0	0
		25	12	19.01	19.48	19.26	0	0
		25	24	19.22	19.45	18.97	0	0
		50	0	19.13	19.41	19.52	0	0
	16QAM	1	0	18.24	18.54	18.86	0	0
		1	24	18.66	19.27	18.77	0	0
		1	49	18.47	19.15	19.02	0	0
		25	0	17.57	17.71	17.77	0	0
		25	12	18.01	19.21	17.99	0	0
		25	24	17.69	18.75	17.90	0	0
		50	0	17.64	17.68	17.85	0	0
	64QAM	1	0	18.27	18.53	18.82	0	0
		1	24	18.64	19.29	18.80	0	0
		1	49	18.42	19.10	18.98	0	0
		25	0	17.57	17.70	17.81	0	0
		25	12	17.94	19.32	17.97	0	0
		25	24	17.65	18.80	17.90	0	0
		50	0	17.58	17.71	17.91	0	0
	256QAM	1	0	16.37	16.45	16.40	0-2	2
		1	24	16.46	16.38	16.50	0-2	2
		1	49	16.29	16.50	16.47	0-2	2
		25	0	16.38	16.33	16.29	0-2	2
		25	12	16.47	16.35	16.46	0-2	2
		25	24	16.41	16.30	16.39	0-2	2
		50	0	16.47	16.48	16.33	0-2	2

LTE Band 66 _ 15 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				132047 Ch. 1717.5 ㎒	132322 Ch. 1745 ㎒	132597 Ch. 1772.5 ㎒		
15 MHz	QPSK	1	0	19.36	19.39	19.58	0	0
		1	36	18.79	19.60	19.27	0	0
		1	74	19.45	19.27	18.76	0	0
		36	0	19.04	19.24	19.39	0	0
		36	18	18.94	19.47	19.19	0	0
		36	39	19.18	19.35	19.00	0	0
		75	0	19.06	19.40	19.48	0	0
	16QAM	1	0	18.25	18.56	18.85	0	0
		1	36	18.65	19.26	18.82	0	0
		1	74	18.49	19.13	19.06	0	0
		36	0	17.54	17.76	17.78	0	0
		36	18	17.94	19.24	18.02	0	0
		36	39	17.65	18.77	17.85	0	0
		75	0	17.63	17.68	17.86	0	0
	64QAM	1	0	18.23	18.58	18.87	0	0
		1	36	18.72	19.29	18.81	0	0
		1	74	18.41	19.17	18.99	0	0
		36	0	17.62	17.71	17.87	0	0
		36	18	17.92	19.26	17.95	0	0
		36	39	17.71	18.82	17.87	0	0
		75	0	17.56	17.76	17.98	0	0
	256QAM	1	0	16.50	16.48	16.49	0-2	2
		1	36	16.51	16.48	16.54	0-2	2
		1	74	16.48	16.48	16.49	0-2	2
		36	0	16.50	16.42	16.47	0-2	2
		36	18	16.48	16.42	16.43	0-2	2
		36	39	16.39	16.39	16.48	0-2	2
		75	0	16.39	16.51	16.44	0-2	2

LTE Band 66 _ 20 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				132072 Ch. 1720 ㎒	132322 Ch. 1745 ㎒	132572 Ch. 1770 ㎒		
20 MHz	QPSK	1	0	19.06	19.16	19.36	0	0
		1	49	18.52	19.37	18.97	0	0
		1	99	19.23	19.05	18.44	0	0
		50	0	18.77	18.94	19.08	0	0
		50	25	18.68	19.21	18.93	0	0
		50	49	18.88	19.09	18.71	0	0
		100	0	18.83	19.09	19.17	0	0
	16QAM	1	0	18.21	18.52	18.82	0	0
		1	49	18.62	19.24	18.74	0	0
		1	99	18.40	19.10	18.96	0	0
		50	0	17.56	17.68	17.72	0	0
		50	25	17.93	19.21	17.96	0	0
		50	49	17.59	18.72	17.81	0	0
		100	0	17.61	17.64	17.84	0	0
	64QAM	1	0	18.18	18.52	18.80	0	0
		1	49	18.62	19.19	18.72	0	0
		1	99	18.37	19.10	18.95	0	0
		50	0	17.53	17.61	17.78	0	0
		50	25	17.89	19.24	17.92	0	0
		50	49	17.62	18.75	17.80	0	0
		100	0	17.55	17.68	17.88	0	0
	256QAM	1	0	16.45	16.41	16.46	0-2	2
		1	49	16.44	16.49	16.50	0-2	2
		1	99	16.44	16.52	16.45	0-2	2
		50	0	16.42	16.36	16.46	0-2	2
		50	25	16.53	16.50	16.43	0-2	2
		50	49	16.37	16.41	16.40	0-2	2
		100	0	16.43	16.46	16.51	0-2	2

11.1.3 LTE Reduced Conducted Power(RCV Sensor On)

[LTE Band 2 Conducted Power] Sub #2 Ant

LTE Band 2 _ 1.4 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18607 Ch. 1850.7 ㎒	18900 Ch. 1880 ㎒	19193 Ch. 1909.3 ㎒		
1.4 MHz	QPSK	1	0	14.84	15.00	15.30	0	0
		1	3	15.13	15.58	14.60	0	0
		1	5	15.29	14.05	14.48	0	0
		3	0	15.02	15.36	14.41	0	0
		3	1	15.23	15.49	14.91	0	0
		3	3	15.41	15.11	15.07	0	0
		6	0	15.35	15.31	15.01	0	0
	16QAM	1	0	14.95	15.08	15.40	0	0
		1	3	15.16	15.58	14.61	0	0
		1	5	15.39	14.10	14.47	0	0
		3	0	15.12	15.39	14.46	0	0
		3	1	15.21	15.48	14.97	0	0
		3	3	15.47	15.22	15.07	0	0
		6	0	15.39	15.31	15.04	0	0
	64QAM	1	0	14.85	15.11	15.32	0	0
		1	3	15.18	15.65	14.62	0	0
		1	5	15.36	14.14	14.58	0	0
		3	0	15.08	15.40	14.45	0	0
		3	1	15.29	15.45	14.94	0	0
		3	3	15.41	15.16	15.06	0	0
		6	0	15.35	15.29	15.06	0	0
	256QAM	1	0	14.44	14.25	14.25	0	0
		1	3	14.67	14.96	14.90	0	0
		1	5	14.07	14.97	14.44	0	0
		3	0	14.39	14.90	14.48	0	0
		3	1	14.97	14.66	14.65	0	0
		3	3	14.69	14.32	14.45	0	0
		6	0	14.45	14.47	14.67	0	0

LTE Band 2 _ 3 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18615 Ch. 1851.5 ㎒	18900 Ch. 1880 ㎒	19185 Ch. 1908.5 ㎒		
3 MHz	QPSK	1	0	14.81	15.01	15.34	0	0
		1	7	15.07	15.56	14.59	0	0
		1	14	15.33	14.05	14.43	0	0
		8	0	15.03	15.35	14.42	0	0
		8	3	15.19	15.45	14.90	0	0
		8	7	15.36	15.15	15.07	0	0
		15	0	15.41	15.31	14.97	0	0
	16QAM	1	0	14.88	15.11	15.35	0	0
		1	7	15.08	15.60	14.67	0	0
		1	14	15.43	14.11	14.50	0	0
		8	0	15.14	15.46	14.45	0	0
		8	3	15.21	15.51	14.95	0	0
		8	7	15.49	15.22	15.07	0	0
		15	0	15.45	15.35	15.07	0	0
	64QAM	1	0	14.82	15.06	15.41	0	0
		1	7	15.16	15.59	14.57	0	0
		1	14	15.37	14.13	14.59	0	0
		8	0	15.11	15.48	14.44	0	0
		8	3	15.28	15.46	14.94	0	0
		8	7	15.36	15.20	15.14	0	0
		15	0	15.37	15.32	14.97	0	0
	256QAM	1	0	14.39	14.23	14.31	0	0
		1	7	14.71	14.88	14.82	0	0
		1	14	14.06	14.91	14.47	0	0
		8	0	14.50	15.03	14.53	0	0
		8	3	14.82	14.73	14.58	0	0
		8	7	14.78	14.42	14.45	0	0
		15	0	14.58	14.58	14.59	0	0

LTE Band 2 _ 5 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18625 Ch. 1852.5 ㎒	18900 Ch. 1880 ㎒	19175 Ch. 1907.5 ㎒		
5 MHz	QPSK	1	0	14.83	15.03	15.34	0	0
		1	12	15.06	15.53	14.58	0	0
		1	24	15.37	14.09	14.46	0	0
		12	0	15.07	15.42	14.42	0	0
		12	6	15.17	15.48	14.95	0	0
		12	11	15.40	15.15	15.08	0	0
		25	0	15.35	15.30	14.97	0	0
	16QAM	1	0	14.97	15.04	15.40	0	0
		1	12	15.14	15.60	14.63	0	0
		1	24	15.41	14.15	14.51	0	0
		12	0	15.14	15.42	14.53	0	0
		12	6	15.26	15.55	14.99	0	0
		12	11	15.46	15.23	15.09	0	0
		25	0	15.37	15.31	15.09	0	0
	64QAM	1	0	14.83	15.08	15.32	0	0
		1	12	15.19	15.64	14.59	0	0
		1	24	15.32	14.15	14.51	0	0
		12	0	15.15	15.47	14.48	0	0
		12	6	15.20	15.46	14.93	0	0
		12	11	15.33	15.22	15.09	0	0
		25	0	15.39	15.29	15.05	0	0
		1	0	14.35	14.17	14.29	0	0
		1	12	14.59	14.86	14.75	0	0
		1	24	14.05	14.93	14.45	0	0
		12	0	14.57	15.01	14.53	0	0
		12	6	14.95	14.69	14.74	0	0
		12	11	14.64	14.40	14.48	0	0
		25	0	14.48	14.54	14.72	0	0

LTE Band 2 _ 10 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18650 Ch. 1855 ㎒	18900 Ch. 1880 ㎒	19150 Ch. 1905 ㎒		
10 MHz	QPSK	1	0	14.85	14.97	15.36	0	0
		1	24	15.12	15.49	14.53	0	0
		1	49	15.34	14.12	14.42	0	0
		25	0	15.08	15.36	14.37	0	0
		25	12	15.26	15.43	14.94	0	0
		25	24	15.40	15.18	15.05	0	0
		50	0	15.40	15.27	14.91	0	0
	16QAM	1	0	14.95	15.07	15.37	0	0
		1	24	15.09	15.62	14.63	0	0
		1	49	15.38	14.19	14.45	0	0
		25	0	15.13	15.39	14.48	0	0
		25	12	15.18	15.55	14.93	0	0
		25	24	15.43	15.24	15.11	0	0
		50	0	15.37	15.36	15.08	0	0
	64QAM	1	0	14.80	15.13	15.41	0	0
		1	24	15.11	15.65	14.65	0	0
		1	49	15.32	14.18	14.53	0	0
		25	0	15.09	15.46	14.49	0	0
		25	12	15.25	15.49	14.96	0	0
		25	24	15.36	15.20	15.15	0	0
		50	0	15.41	15.29	14.98	0	0
	256QAM	1	0	14.33	14.27	14.24	0	0
		1	24	14.68	14.88	14.70	0	0
		1	49	14.10	14.93	14.47	0	0
		25	0	14.54	14.94	14.54	0	0
		25	12	14.81	14.66	14.62	0	0
		25	24	14.60	14.38	14.62	0	0
		50	0	14.54	14.55	14.59	0	0

LTE Band 2 _ 15 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18675 Ch. 1857.5 ㎒	18900 Ch. 1880 ㎒	19125 Ch. 1902.5 ㎒		
15 MHz	QPSK	1	0	14.81	14.97	15.36	0	0
		1	36	15.09	15.50	14.56	0	0
		1	74	15.37	14.10	14.49	0	0
		36	0	15.02	15.39	14.43	0	0
		36	18	15.27	15.49	14.95	0	0
		36	39	15.38	15.12	15.09	0	0
		75	0	15.40	15.30	14.99	0	0
	16QAM	1	0	14.93	15.05	15.41	0	0
		1	36	15.14	15.60	14.64	0	0
		1	74	15.45	14.14	14.46	0	0
		36	0	15.11	15.46	14.47	0	0
		36	18	15.23	15.53	14.97	0	0
		36	39	15.46	15.18	15.06	0	0
		75	0	15.46	15.31	15.04	0	0
	64QAM	1	0	14.80	15.11	15.41	0	0
		1	36	15.13	15.57	14.56	0	0
		1	74	15.41	14.11	14.56	0	0
		36	0	15.11	15.46	14.48	0	0
		36	18	15.24	15.46	14.96	0	0
		36	39	15.41	15.23	15.08	0	0
		75	0	15.35	15.27	15.06	0	0
	256QAM	1	0	14.32	14.09	14.29	0	0
		1	36	14.59	14.78	14.86	0	0
		1	74	14.17	14.93	14.32	0	0
		36	0	14.46	14.97	14.50	0	0
		36	18	14.80	14.72	14.60	0	0
		36	39	14.70	14.44	14.59	0	0
		75	0	14.62	14.57	14.72	0	0

LTE Band 2 _ 20 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				18700 Ch. 1860 ㎒	18900 Ch. 1880 ㎒	19100 Ch. 1900 ㎒		
20 MHz	QPSK	1	0	14.78	14.96	15.27	0	0
		1	49	15.06	15.48	14.52	0	0
		1	99	15.27	14.02	14.41	0	0
		50	0	15.01	15.33	14.37	0	0
		50	25	15.17	15.40	14.86	0	0
		50	49	15.33	15.08	15.02	0	0
		100	0	15.31	15.24	14.91	0	0
	16QAM	1	0	14.87	15.02	15.34	0	0
		1	49	15.07	15.53	14.60	0	0
		1	99	15.35	14.09	14.43	0	0
		50	0	15.05	15.38	14.44	0	0
		50	25	15.17	15.47	14.90	0	0
		50	49	15.41	15.16	15.03	0	0
		100	0	15.36	15.30	14.99	0	0
	64QAM	1	0	14.79	15.04	15.31	0	0
		1	49	15.10	15.56	14.55	0	0
		1	99	15.31	14.09	14.49	0	0
		50	0	15.07	15.39	14.40	0	0
		50	25	15.20	15.42	14.91	0	0
		50	49	15.33	15.15	15.05	0	0
		100	0	15.33	15.25	14.97	0	0
	256QAM	1	0	14.48	14.27	14.37	0	0
		1	49	14.77	14.98	14.90	0	0
		1	99	14.23	15.01	14.48	0	0
		50	0	14.59	15.03	14.68	0	0
		50	25	15.00	14.83	14.77	0	0
		50	49	14.81	14.49	14.63	0	0
		100	0	14.64	14.67	14.79	0	0

[LTE Band 66 Conducted Power] Sub #2 Ant

LTE Band 66 _ 1.4 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				131979Ch. 1710.7 ㎒	132322 Ch. 1745 ㎒	132665 Ch. 1779.3 ㎒		
1.4 MHz	QPSK	1	0	16.91	17.39	17.70	0	0
		1	3	17.62	17.86	17.72	0	0
		1	5	17.48	17.60	17.80	0	0
		3	0	17.49	17.60	17.74	0	0
		3	1	17.38	17.80	17.34	0	0
		3	3	17.75	17.86	17.29	0	0
		6	0	17.71	17.84	17.82	0	0
	16QAM	1	0	16.89	17.56	17.70	0	0
		1	3	17.71	17.89	17.69	0	0
		1	5	17.54	17.62	17.89	0	0
		3	0	17.59	17.66	17.85	0	0
		3	1	17.48	17.93	17.43	0	0
		3	3	17.78	17.87	17.32	0	0
		6	0	17.80	17.92	17.94	0	0
	64QAM	1	0	16.94	17.45	17.74	0	0
		1	3	17.71	17.95	17.81	0	0
		1	5	17.57	17.58	17.92	0	0
		3	0	17.53	17.76	17.87	0	0
		3	1	17.46	17.83	17.47	0	0
		3	3	17.68	17.86	17.36	0	0
		6	0	17.79	17.86	17.91	0	0
	256QAM	1	0	17.14	17.14	17.03	0	0
		1	3	17.05	17.33	17.03	0	0
		1	5	17.21	17.20	17.15	0	0
		3	0	17.04	17.05	17.05	0	0
		3	1	17.08	16.97	17.39	0	0
		3	3	17.16	17.13	17.16	0	0
		6	0	17.16	17.38	17.04	0	0

LTE Band 66 _ 3 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				131987 Ch. 1711.5 ㎒	132322 Ch. 1745 ㎒	132657 Ch. 1778.5 ㎒		
3 MHz	QPSK	1	0	16.90	17.42	17.67	0	0
		1	7	17.63	17.95	17.75	0	0
		1	14	17.42	17.63	17.81	0	0
		8	0	17.47	17.63	17.72	0	0
		8	3	17.38	17.87	17.37	0	0
		8	7	17.70	17.81	17.32	0	0
		15	0	17.72	17.75	17.82	0	0
	16QAM	1	0	16.95	17.51	17.69	0	0
		1	7	17.77	17.89	17.73	0	0
		1	14	17.54	17.62	17.81	0	0
		8	0	17.52	17.75	17.76	0	0
		8	3	17.50	17.86	17.48	0	0
		8	7	17.79	17.80	17.35	0	0
		15	0	17.77	17.92	17.95	0	0
	64QAM	1	0	16.95	17.45	17.77	0	0
		1	7	17.75	17.84	17.77	0	0
		1	14	17.50	17.56	17.94	0	0
		8	0	17.53	17.71	17.83	0	0
		8	3	17.47	17.84	17.43	0	0
		8	7	17.71	17.86	17.37	0	0
		15	0	17.84	17.87	17.89	0	0
	256QAM	1	0	17.17	17.12	17.04	0	0
		1	7	16.99	17.31	17.06	0	0
		1	14	17.18	17.21	17.21	0	0
		8	0	17.09	17.06	17.08	0	0
		8	3	17.03	16.92	17.44	0	0
		8	7	17.11	17.17	17.21	0	0
		15	0	17.18	17.40	17.06	0	0

LTE Band 66 _ 5 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				131997 Ch. 1712.5 ㎒	132322Ch. 1745 ㎒	132647 Ch. 1777.5 ㎒		
5 MHz	QPSK	1	0	16.85	17.41	17.68	0	0
		1	12	17.68	17.95	17.72	0	0
		1	24	17.42	17.62	17.87	0	0
		12	0	17.49	17.67	17.81	0	0
		12	6	17.40	17.83	17.38	0	0
		12	11	17.73	17.79	17.29	0	0
		25	0	17.70	17.75	17.81	0	0
	16QAM	1	0	16.89	17.51	17.65	0	0
		1	12	17.68	17.87	17.69	0	0
		1	24	17.47	17.63	17.86	0	0
		12	0	17.56	17.67	17.78	0	0
		12	6	17.49	17.90	17.50	0	0
		12	11	17.75	17.87	17.37	0	0
		25	0	17.81	17.86	17.99	0	0
	64QAM	1	0	16.96	17.52	17.76	0	0
		1	12	17.68	17.81	17.80	0	0
		1	24	17.59	17.65	17.93	0	0
		12	0	17.51	17.76	17.84	0	0
		12	6	17.42	17.91	17.48	0	0
		12	11	17.76	17.88	17.40	0	0
		25	0	17.84	17.83	17.90	0	0
	256QAM	1	0	17.14	17.18	17.05	0	0
		1	12	17.06	17.25	17.07	0	0
		1	24	17.16	17.21	17.16	0	0
		12	0	17.02	17.03	17.00	0	0
		12	6	16.99	17.00	17.34	0	0
		12	11	17.09	17.12	17.13	0	0
		25	0	17.13	17.39	17.01	0	0

LTE Band 66 _ 10 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				132022 Ch. 1715 ㎒	132322 Ch. 1745 ㎒	132622 Ch. 1775 ㎒		
10 MHz	QPSK	1	0	16.91	17.41	17.69	0	0
		1	24	17.64	17.87	17.76	0	0
		1	49	17.48	17.58	17.87	0	0
		25	0	17.47	17.62	17.75	0	0
		25	12	17.41	17.84	17.35	0	0
		25	24	17.73	17.81	17.29	0	0
		50	0	17.78	17.77	17.87	0	0
	16QAM	1	0	16.97	17.55	17.68	0	0
		1	24	17.74	17.90	17.74	0	0
		1	49	17.48	17.60	17.87	0	0
		25	0	17.57	17.66	17.77	0	0
		25	12	17.46	17.89	17.44	0	0
		25	24	17.84	17.83	17.36	0	0
		50	0	17.79	17.92	17.98	0	0
	64QAM	1	0	16.98	17.51	17.74	0	0
		1	24	17.74	17.96	17.77	0	0
		1	49	17.53	17.57	17.93	0	0
		25	0	17.49	17.74	17.79	0	0
		25	12	17.48	17.92	17.49	0	0
		25	24	17.73	17.91	17.37	0	0
		50	0	17.84	17.91	17.91	0	0
	256QAM	1	0	17.12	17.17	17.09	0	0
		1	24	17.00	17.27	16.99	0	0
		1	49	17.15	17.19	17.22	0	0
		25	0	17.02	17.07	17.08	0	0
		25	12	17.02	16.90	17.37	0	0
		25	24	17.15	17.16	17.18	0	0
		50	0	17.10	17.45	17.08	0	0

LTE Band 66 _ 15 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				132047 Ch. 1717.5 ㎒	132322 Ch. 1745 ㎒	132597 Ch. 1772.5 ㎒		
15 MHz	QPSK	1	0	16.88	17.38	17.61	0	0
		1	36	17.66	17.93	17.71	0	0
		1	74	17.47	17.60	17.85	0	0
		36	0	17.51	17.68	17.76	0	0
		36	18	17.39	17.87	17.34	0	0
		36	39	17.71	17.83	17.31	0	0
		75	0	17.71	17.79	17.84	0	0
	16QAM	1	0	16.90	17.50	17.66	0	0
		1	36	17.69	17.88	17.77	0	0
		1	74	17.55	17.69	17.82	0	0
		36	0	17.54	17.71	17.78	0	0
		36	18	17.45	17.91	17.42	0	0
		36	39	17.78	17.81	17.41	0	0
		75	0	17.84	17.87	17.97	0	0
	64QAM	1	0	16.94	17.48	17.76	0	0
		1	36	17.74	17.82	17.83	0	0
		1	74	17.53	17.62	17.90	0	0
		36	0	17.49	17.72	17.80	0	0
		36	18	17.47	17.89	17.47	0	0
		36	39	17.73	17.91	17.41	0	0
		75	0	17.82	17.89	17.97	0	0
	256QAM	1	0	17.21	16.99	17.10	0	0
		1	36	16.92	17.29	16.98	0	0
		1	74	17.04	17.18	17.12	0	0
		36	0	16.99	16.96	16.99	0	0
		36	18	17.02	16.83	17.43	0	0
		36	39	17.16	16.97	17.02	0	0
		75	0	17.12	17.37	16.95	0	0

LTE Band 66 _ 20 ㎒ Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power [dBm]			MPR Allowed Per 3GPP [dB]	MPR [dB]
				132072 Ch. 1720 ㎒	132322 Ch. 1745 ㎒	132572 Ch. 1770 ㎒		
20 MHz	QPSK	1	0	16.85	17.38	17.61	0	0
		1	49	17.62	17.85	17.68	0	0
		1	99	17.41	17.53	17.79	0	0
		50	0	17.43	17.59	17.72	0	0
		50	25	17.35	17.78	17.33	0	0
		50	49	17.65	17.77	17.24	0	0
		100	0	17.69	17.75	17.81	0	0
	16QAM	1	0	16.89	17.46	17.63	0	0
		1	49	17.67	17.86	17.69	0	0
		1	99	17.46	17.60	17.79	0	0
		50	0	17.50	17.65	17.76	0	0
		50	25	17.40	17.85	17.40	0	0
		50	49	17.74	17.77	17.31	0	0
		100	0	17.77	17.84	17.91	0	0
	64QAM	1	0	16.92	17.43	17.71	0	0
		1	49	17.66	17.94	17.75	0	0
		1	99	17.50	17.56	17.86	0	0
		50	0	17.44	17.68	17.79	0	0
		50	25	17.40	17.83	17.42	0	0
		50	49	17.67	17.82	17.33	0	0
		100	0	17.77	17.82	17.89	0	0
	256QAM	1	0	17.21	17.18	17.11	0	0
		1	49	17.07	17.33	17.07	0	0
		1	99	17.23	17.23	17.23	0	0
		50	0	17.11	17.09	17.10	0	0
		50	25	17.08	17.00	17.45	0	0
		50	49	17.19	17.17	17.22	0	0
		100	0	17.20	17.46	17.08	0	0

12. System Verification

12.1 Tissue Verification

The body 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. (㎒)	Measured Conductivity σ (S/m)	Measured Dielectric Constant, ε	Target Conductivity σ (S/m)	Target Dielectric Constant, ε	% dev σ	% dev ε
03/10/2022	18.4	1800H	1710	1.343	41.590	1.348	40.144	-0.37	3.60
			1750	1.387	41.380	1.371	40.080	1.17	3.24
			1800	1.435	41.127	1.400	40.000	2.50	2.82
03/10/2022	20.7	1900H	1850	1.362	41.051	1.400	40.000	-2.71	2.63
			1900	1.413	40.854	1.400	40.000	0.93	2.13
			1910	1.421	40.822	1.400	40.000	1.50	2.06

12.2 System Verification

Input Power: 50 mW

Freq. [㎒]	Date	Probe (S/N)	Dipole (S/N)	Liquid	Amb. Temp. [°C]	Liquid Temp. [°C]	1 W Target SAR_{1g} (SPEAG) [W/kg]	50mW Measured SAR_{1g} [W/kg]	1 W Normalized SAR_{1g} [W/kg]	Deviation [%]	Limit [%]
1 800	03/10/2022	3903	2d015	Head	18.5	18.4	38.8	1.90	38.0	-2.06	± 10
1 900	03/10/2022	7681	5d061	Head	20.8	20.7	41.2	2.03	40.6	-1.46	± 10

12.3 System Verification Procedure

SAR measurement was prior to assessment, the system is verified to the ± 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 ㎽ 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

LTE Band 2 Head SAR Sub #2 Ant															
Frequency		Mode	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)	
1 880	18900	QPSK	20	16.5	15.48	-0.06	Left Cheek	0	1	49	1:1	0.288	1.265	0.364	-
1 880	18900	QPSK	20	16.5	15.40	-0.07	Left Cheek	0	50	25	1:1	0.282	1.288	0.363	-
1 880	18900	QPSK	20	16.5	15.48	-0.01	Left Tilt	0	1	49	1:1	0.377	1.265	0.477	-
1 880	18900	QPSK	20	16.5	15.40	-0.03	Left Tilt	0	50	25	1:1	0.387	1.288	0.499	-
1 880	18900	QPSK	20	16.5	15.48	-0.18	Right Cheek	0	1	49	1:1	0.511	1.265	0.646	-
1 880	18900	QPSK	20	16.5	15.40	0.13	Right Cheek	0	50	25	1:1	0.462	1.288	0.595	-
1 880	18900	QPSK	20	16.5	15.48	0.11	Right Tilt	0	1	49	1:1	**0.540**	1.265	0.683	1
1 880	18900	QPSK	20	16.5	15.40	-0.10	Right Tilt	0	50	25	1:1	0.538	1.288	**0.693**	2
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 Sub #2 Ant															
Frequency		Mode	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)	
1 745	132322	QPSK	20	18.0	17.85	0.05	Left Cheek	0	1	49	1:1	0.308	1.035	0.319	-
1 745	132322	QPSK	20	18.0	17.78	-0.06	Left Cheek	0	50	25	1:1	0.321	1.052	0.338	-
1 745	132322	QPSK	20	18.0	17.85	0.16	Left Tilt	0	1	49	1:1	0.375	1.035	0.388	-
1 745	132322	QPSK	20	18.0	17.78	-0.11	Left Tilt	0	50	25	1:1	0.387	1.052	0.407	-
1 745	132322	QPSK	20	18.0	17.85	0.04	Right Cheek	0	1	49	1:1	0.381	1.035	0.394	-
1 745	132322	QPSK	20	18.0	17.78	0.10	Right Cheek	0	50	25	1:1	0.581	1.052	0.611	-
1 745	132322	QPSK	20	18.0	17.85	0.15	Right Tilt	0	1	49	1:1	0.433	1.035	0.448	-
1 745	132322	QPSK	20	18.0	17.78	0.10	Right Tilt	0	50	25	1:1	0.699	1.052	**0.735**	3
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Head 1.6 W/kg Averaged over 1 gram								

13.2 Body-worn SAR Measurement Results

LTE Band Bodyworn SAR Sub #2 Ant															
Frequency		Mode	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)				(mm)	(W/kg)		(W/kg)	
1 880	18900	LTE 2 QPSK	20	22.0	20.24	-0.10	Rear	0	1	49	1:1	15	0.345	1.500	**0.517**	4
1 880	18900		20	21.0	19.10	-0.13	Rear	1	50	25	1:1	15	0.299	1.549	0.463	-
1 880	18900		20	22.0	20.24	0.01	Front	0	1	49	1:1	15	0.210	1.500	0.315	-
1 880	18900		20	21.0	19.10	0.11	Front	1	50	25	1:1	15	0.182	1.549	0.282	-
1 745	132322	LTE 66 QPSK	20	23.0	22.84	-0.15	Rear	0	1	49	1:1	15	0.385	1.038	**0.399**	5
1 745	132322		20	22.0	21.92	0.17	Rear	1	50	25	1:1	15	0.335	1.019	0.341	-
1 745	132322		20	23.0	22.84	-0.07	Front	0	1	49	1:1	15	0.171	1.038	0.177	-
1 745	132322		20	22.0	21.92	-0.11	Front	1	50	25	1:1	15	0.157	1.019	0.160	-
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

LTE Band 2 Hotspot SAR Sub #2 Ant																
Frequency		Mode	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)				(mm)	(W/kg)		(W/kg)	
1 880	18900	QPSK	20	19.0	18.65	0.13	Rear	0	1	49	1:1	10	0.476	1.084	0.516	-
1 880	18900	QPSK	20	19.0	18.47	-0.04	Rear	0	50	25	1:1	10	0.413	1.130	0.467	-
1 880	18900	QPSK	20	19.0	18.65	0.14	Front	0	1	49	1:1	10	0.238	1.084	0.258	-
1 880	18900	QPSK	20	19.0	18.47	0.14	Front	0	50	25	1:1	10	0.251	1.130	0.284	-
1 880	18900	QPSK	20	19.0	18.65	-0.00	Left	0	1	49	1:1	10	0.062	1.084	0.067	-
1 880	18900	QPSK	20	19.0	18.47	0.19	Left	0	50	25	1:1	10	0.066	1.130	0.075	-
1 880	18900	QPSK	20	19.0	18.65	0.14	Top	0	1	49	1:1	10	**0.551**	1.084	0.597	6
1 880	18900	QPSK	20	19.0	18.47	-0.13	Top	0	50	25	1:1	10	0.530	1.130	**0.599**	7
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 Sub #2 Ant																
Frequency		Mode	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)				(mm)	(W/kg)		(W/kg)	
1 745	132322	QPSK	20	20.0	19.37	-0.15	Rear	0	1	49	1:1	10	0.256	1.156	0.296	-
1 745	132322	QPSK	20	20.0	19.21	0.15	Rear	0	50	25	1:1	10	0.399	1.199	0.479	-
1 745	132322	QPSK	20	20.0	19.37	0.15	Front	0	1	49	1:1	10	0.152	1.156	0.176	-
1 745	132322	QPSK	20	20.0	19.21	-0.09	Front	0	50	25	1:1	10	0.162	1.199	0.194	-
1 745	132322	QPSK	20	20.0	19.37	-0.15	Left	0	1	49	1:1	10	0.031	1.156	0.036	-
1 745	132322	QPSK	20	20.0	19.37	0.10	Left	0	1	49	1:1	10	0.040	1.199	0.048	-
1 745	132322	QPSK	20	20.0	19.37	0.19	Top	0	1	49	1:1	10	0.427	1.156	0.494	-
1 745	132322	QPSK	20	20.0	19.21	0.08	Top	0	50	25	1:1	10	0.430	1.199	**0.516**	8
ANSI/ IEEE C95.1 - 2005– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Body 1.6 W/kg Averaged over 1 gram									

13.4 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 hotspotoperation (with actual simultaneous transmission of a transmitter with WiFi) was not activated.

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. 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.

14. Simultaneous SAR Analysis

This device is contained 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 ≤1.6W/kg for 1g SAR and ≤4 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.

Simultaneous transmission under EN-DC conditions with n5 was evaluated by referring to the report no: HCT-SR-2202-FC003-R2 of the basic model of this device.

14.1 Head SAR Simultaneous Transmission Analysis.

Simultaneous Transmission Summation Scenario with 2.4 GHz WLAN, 5GHz WLAN & BT											
Band			Main NR SAR	EN-DC Anchor SAR	2.4 GHz WLAN RCV SAR	5 GHz WLAN RCV SAR	Bluetooth SAR	∑ 1-g SAR	∑ 1-g SAR	∑ 1-g SAR	∑ 1-g SAR	SPLSR
			(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	1+2+4
			1	2	3	4	5	1+2+3	1+2+4	1+2+5	1+2+4+5	(Yes/No)
NR n5	LTE 2	Left Touch	0.063	0.364	0.065	0.122	0.186	0.492	0.549	0.613	0.735	No
		Left Tilt	0.028	0.499	0.092	0.120	0.301	0.619	0.647	0.828	0.948	No
		Right Touch	0.095	0.646	0.085	0.530	0.278	0.826	1.271	1.019	**1.549**	No
		Right Tilt	0.036	0.693	0.101	0.269	0.342	0.830	0.998	1.071	1.340	No
	LTE 66	Left Touch	0.063	0.338	0.065	0.122	0.186	0.466	0.523	0.587	0.709	No
		Left Tilt	0.028	0.407	0.092	0.120	0.301	0.527	0.555	0.736	0.856	No
		Right Touch	0.095	0.611	0.085	0.530	0.278	0.791	1.236	0.984	1.514	No
		Right Tilt	0.036	0.735	0.101	0.269	0.342	0.872	1.040	1.113	1.382	No

14.2 BodyWorn SAR Simultaneous Transmission Analysis.

Simultaneous Transmission Summation Scenario with 2.4 GHz WLAN, 5GHz WLAN & BT												
Band			Main SAR	EN-DC Anchor SAR	2.4 GHz WLAN SAR	5 GHz WLAN SAR	Bluetooth SAR	∑ 1-g SAR	∑ 1-g SAR	∑ 1-g SAR	∑ 1-g SAR	SPLSR
			(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(Yes/No)
			1	2	3	4	5	1+2+3	1+2+4	1+2+5	1+2+4+5	
NR n5	LTE 2	Rear	0.188	0.517	0.157	0.217	0.080	0.862	0.922	0.785	**1.002**	No
		Front	0.109	0.315	0.078	0.238	0.043	0.502	0.662	0.467	0.705	No
	LTE 66	Rear	0.188	0.399	0.157	0.217	0.080	0.744	0.804	0.667	0.884	No
		Front	0.109	0.177	0.078	0.238	0.043	0.364	0.524	0.329	0.567	No

14.3 Hotspot SAR Simultaneous Transmission Analysis.

Simultaneous Transmission Summation Scenario with 2.4 GHz WLAN, 5GHz WLAN & BT												
Band			Main SAR	EN-DC Anchor SAR	2.4 GHz WLAN SAR	5 GHz WLAN SAR	Bluetooth SAR	∑ 1-g SAR	∑ 1-g SAR	∑ 1-g SAR	∑ 1-g SAR	SPLSR
			(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(Yes/No)
			1	2	3	4	5	1+2+3	1+2+4	1+2+5	1+2+4+5	
NR n5	LTE 2	Rear	0.321	0.516	0.270	0.292	0.141	1.107	1.129	0.978	**1.270**	No
		Front	0.190	0.284	0.121	0.173	0.078	0.595	0.647	0.552	0.725	No
		Left	0.054	0.075	0.073	0.895	0.045	0.202	1.024	0.174	1.069	No
		Right	0.084					0.084	0.084	0.084	0.084	No
		Top		0.599	0.364	0.093	0.211	0.963	0.692	0.810	0.903	No
		Bottom	0.107					0.107	0.107	0.107	0.107	No
	LTE 66	Rear	0.321	0.479	0.270	0.292	0.141	1.070	1.092	0.941	1.233	No
		Front	0.190	0.194	0.121	0.173	0.078	0.505	0.557	0.462	0.635	No
		Left	0.054	0.048	0.073	0.895	0.045	0.175	0.997	0.147	1.042	No
		Right	0.084					0.084	0.084	0.084	0.084	No
		Top		0.516	0.364	0.093	0.211	0.880	0.609	0.727	0.820	No
		Bottom	0.107					0.107	0.107	0.107	0.107	No

14.4 Simultaneous Transmission Conclusion

The above numerical summed SAR Results are sufficient to determine that simultaneous transmission cases will not exceed the SAR Limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v06 and IEEE1528-2013.

15. 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.

16. SAR Test Equipment

Manufacturer	Type / Model	S/N	Calib. Date	Calib.Interval	Calib.Due
SPEAG	SAM Phantom	-	N/A	N/A	N/A
HP	SAR System Control PC	-	N/A	N/A	N/A
Staubli	CS8Cspeag-TX90	F17/ 59CHA1/ C/ 01	N/A	N/A	N/A
Staubli	CS8Cspeag-TX90	F13/ 5SD0A1/ C/ 01	N/A	N/A	N/A
Staubli	TX90 XLspeag	F17/ 59CHA1/ A/ 01	N/A	N/A	N/A
Staubli	TX90 XLspeag	F13/ 5SD0A1/ A/ 01	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick)	010963	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick)	001729	N/A	N/A	N/A
TESTO	175-H1/Thermometer	40331915309	01/04/2022	Annual	01/04/2023
TESTO	175-H1/Thermometer	83348029	05/06/2021	Annual	05/06/2022
SPEAG	DAE4	446	03/29/2021	Annual	03/29/2022
SPEAG	DAE4	648	07/26/2021	Annual	07/26/2022
SPEAG	E-Field Probe EX3DV4	3903	03/24/2021	Annual	03/24/2022
SPEAG	E-Field Probe EX3DV4	7681	12/14/2021	Annual	12/14/2022
SPEAG	Dipole D1800V2	2d015	07/30/2021	Annual	07/30/2022
SPEAG	Dipole D1900V2	5d061	11/24/2021	Annual	11/24/2022
Agilent	Power Meter E4419B	MY41291386	10/06/2021	Annual	10/06/2022
Agilent	Power Meter N1911A	MY45101406	07/08/2021	Annual	07/08/2022
Agilent	Power Sensor 8481A	SG1091286	10/06/2021	Annual	10/06/2022
Agilent	Power Sensor 8481A	MY41090675	10/06/2021	Annual	10/06/2022
Agilent	Power Sensor N1921A	MY55220026	08/05/2021	Annual	08/05/2022
SPEAG	DAKS 3.5	1038	03/17/2021	Annual	03/17/2022
SPEAG	DAKS_VNA R140	0141013	04/07/2021	Annual	04/07/2022
R&S	Wireless Communication Test Set CMW500	115733	04/15/2021	Annual	04/15/2022
Agilent	11636B/Power Divider	58698	02/24/2022	Annual	02/24/2023
OSI	Power Divider	#1	06/24/2021	Annual	06/24/2022
OSI	Power Divider	#2	06/24/2021	Annual	06/24/2022
OSI	Power Divider	#3	06/24/2021	Annual	06/24/2022
OSI	Power Divider	#4	06/24/2021	Annual	06/24/2022
OSI	Power Divider	#5	06/24/2021	Annual	06/24/2022
Agilent	SIGNAL GENERATOR E4438C	MY49071736	01/03/2022	Annual	01/03/2023
Agilent	SIGNAL GENERATOR N5182A	MY47070230	05/10/2021	Annual	05/10/2022
EMPOWER	RF Power Amplifier	1084	06/25/2021	Annual	06/25/2022
EMPOWER	RF Power Amplifier	1011	10/06/2021	Annual	10/06/2022
MICRO LAB	LP Filter / LA-15N	10453	10/06/2021	Annual	10/06/2022
MICRO LAB	LP Filter / LA-30N	-	10/06/2021	Annual	10/06/2022
MICRO LAB	LP Filter / LA-60N	32011	10/06/2021	Annual	10/06/2022
HP	Attenuator (3dB) 333340A	02427	09/06/2021	Annual	09/06/2022
HP	Attenuator (20dB) 8493C	09271	09/06/2021	Annual	09/17/2022
Aeroflex/Weinschel	Fixed Coaxial Attenuator (30 dB)	CE6106	11/11/2021	Annual	11/11/2022
Agilent	Directional Bridge 86205A	3140A03878	05/28/2021	Annual	05/28/2022
Agilent	MXA Signal Analyzer N9020A	MY50510407	10/20/2021	Annual	10/20/2022
Anritsu	Radio Communication Tester MT8820C	6200695605	04/15/2021	Annual	04/15/2022
Anritsu	Radio Communication Tester MT8821C	6201502997	07/08/2021	Annual	07/08/2022
Anritsu	Radio Communication Tester MT8821C	6262044720	12/20/2021	Annual	12/20/2022
Anritsu	Radio Communication Tester MT8821C	6262287674	05/25/2021	Annual	05/25/2022
Anritsu	Radio Communication Tester MT8821C	6262287678	05/25/2021	Annual	05/25/2022
Anritsu	Radio Communication Test Station MT8000A	6262036812	12/20/2021	Annual	12/20/2022
Agilent	WIRELESS COMMUNICATION E5515C	MY48360252	07/23/2021	Annual	07/23/2022

* 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.

17. 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 abortion and distribution of electromagnetic energy in the body are very complex phenomena the 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.

18. References

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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-2203-FC002-P

Appendix B. – SAR Test Plots

Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone
Liquid Temperature:	20.7℃
Ambient Temperature:	20.8℃
Test Date:	03/10/2022
Plot No.:	1

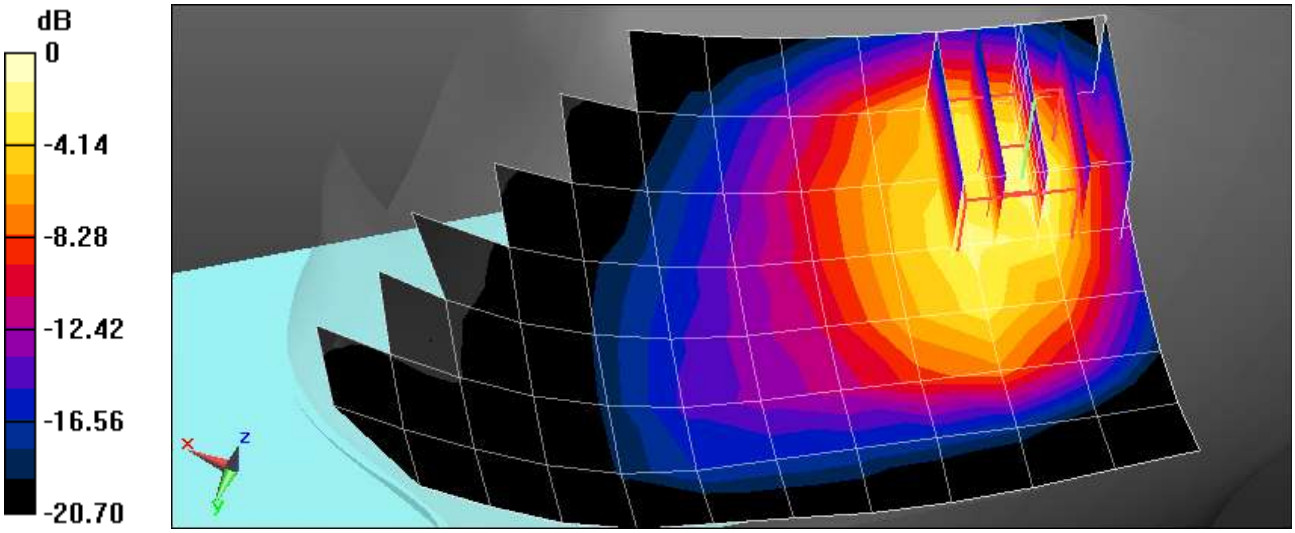
Communication System: UID 0, LTE Band 2 (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.394 S/m; ε_r = 40.928; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7681; ConvF(8.81, 8.81, 8.81) @ 1880 MHz; Calibrated: 2021-12-14
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn446; Calibrated: 2021-09-30
- Phantom: Twin-SAM V8.0 (Right-Left)
- Measurement SW: DASY52, Version 52.10 (4)

LTE Band 2 Head Right Tilt QPSK 20MHz 1RB 49offset 18900ch/Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.662 W/kg

LTE Band 2 Head Right Tilt QPSK 20MHz 1RB 49offset 18900ch/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.48 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.07 W/kg
SAR(1 g) = 0.540 W/kg; SAR(10 g) = 0.272 W/kg
Maximum value of SAR (measured) = 0.837 W/kg



0 dB = 0.837 W/kg = -0.77 dBW/kg

Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone
Liquid Temperature:	20.7℃
Ambient Temperature:	20.8℃
Test Date:	03/10/2022
Plot No.:	2

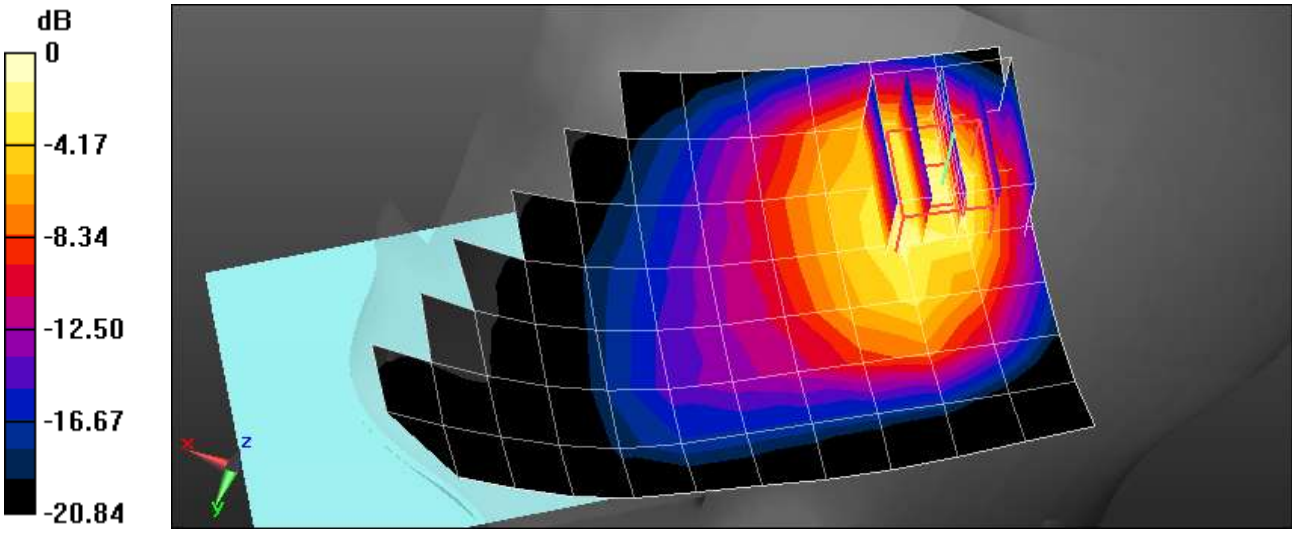
Communication System: UID 0, LTE Band 2 (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.394 S/m; ε_r = 40.928; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7681; ConvF(8.81, 8.81, 8.81) @ 1880 MHz; Calibrated: 2021-12-14
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn446; Calibrated: 2021-09-30
- Phantom: Twin-SAM V8.0 (Right-Left)
- Measurement SW: DASY52, Version 52.10 (4)

LTE Band 2 Head Right Tilt QPSK 20MHz 50RB 25offset 18900ch/Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.685 W/kg

LTE Band 2 Head Right Tilt QPSK 20MHz 50RB 25offset 18900ch/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.79 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 1.07 W/kg
SAR(1 g) = 0.538 W/kg; SAR(10 g) = 0.270 W/kg
Maximum value of SAR (measured) = 0.851 W/kg



0 dB = 0.851 W/kg = -0.70 dBW/kg

Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone
Liquid Temperature:	18.4 ℃
Ambient Temperature:	18.5 ℃
Test Date:	03/10/2022
Plot No.:	3

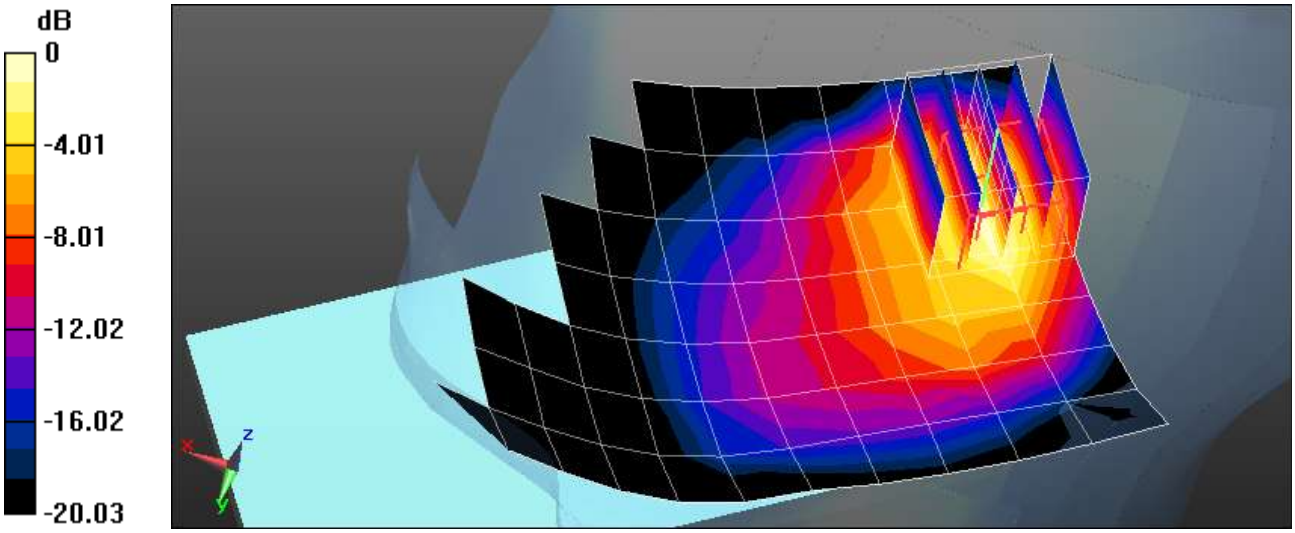
Communication System: UID 0, LTE Band66 (0); Frequency: 1745 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1745 MHz; σ = 1.384 S/m; ε_r = 41.379; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.8, 8.8, 8.8) @ 1745 MHz; Calibrated: 2021-03-24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2021-06-02
- Phantom: SAM with CRP v5.0(Front)
- Measurement SW: DASY52, Version 52.10 (4)

LTE Band 66 Head Right Tilt QPSK 20MHz 50RB 25offset 132322ch/Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.12 W/kg

LTE Band 66 Head Right Tilt QPSK 20MHz 50RB 25offset 132322ch/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.52 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 1.43 W/kg
SAR(1 g) = 0.699 W/kg; SAR(10 g) = 0.342 W/kg
Maximum value of SAR (measured) = 1.15 W/kg



0 dB = 1.15 W/kg = 0.61 dBW/kg

Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone
Liquid Temperature:	20.7℃
Ambient Temperature:	20.8℃
Test Date:	03/10/2022
Plot No.:	4

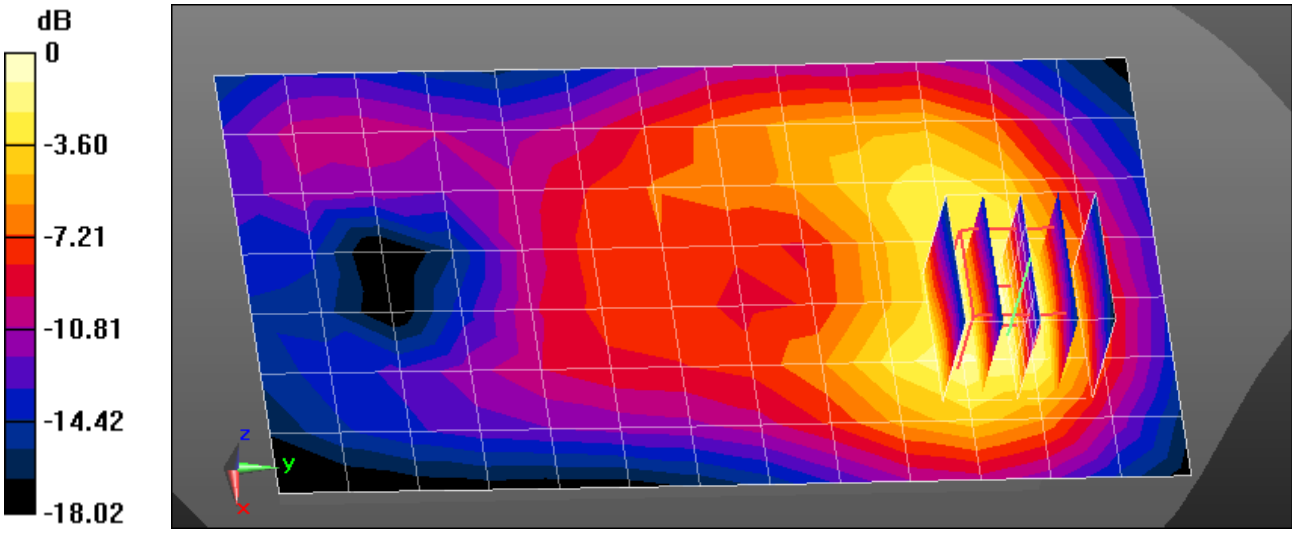
Communication System: UID 0, LTE Band 2 (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.394 S/m; ε_r = 40.928; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7681; ConvF(8.81, 8.81, 8.81) @ 1880 MHz; Calibrated: 2021-12-14
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn446; Calibrated: 2021-09-30
- Phantom: Twin-SAM V8.0 (Right-Left)
- Measurement SW: DASY52, Version 52.10 (4)

LTE Band 2 BodyWorn Rear QPSK 20MHz 1RB 49offset 18900ch/Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.447 W/kg

LTE Band 2 BodyWorn Rear QPSK 20MHz 1RB 49offset 18900ch/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.525 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.618 W/kg
SAR(1 g) = 0.345 W/kg; SAR(10 g) = 0.192 W/kg
Maximum value of SAR (measured) = 0.517 W/kg



0 dB = 0.517 W/kg = -2.87 dBW/kg

Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone
Liquid Temperature:	18.4 ℃
Ambient Temperature:	18.5 ℃
Test Date:	03/10/2022
Plot No.:	5

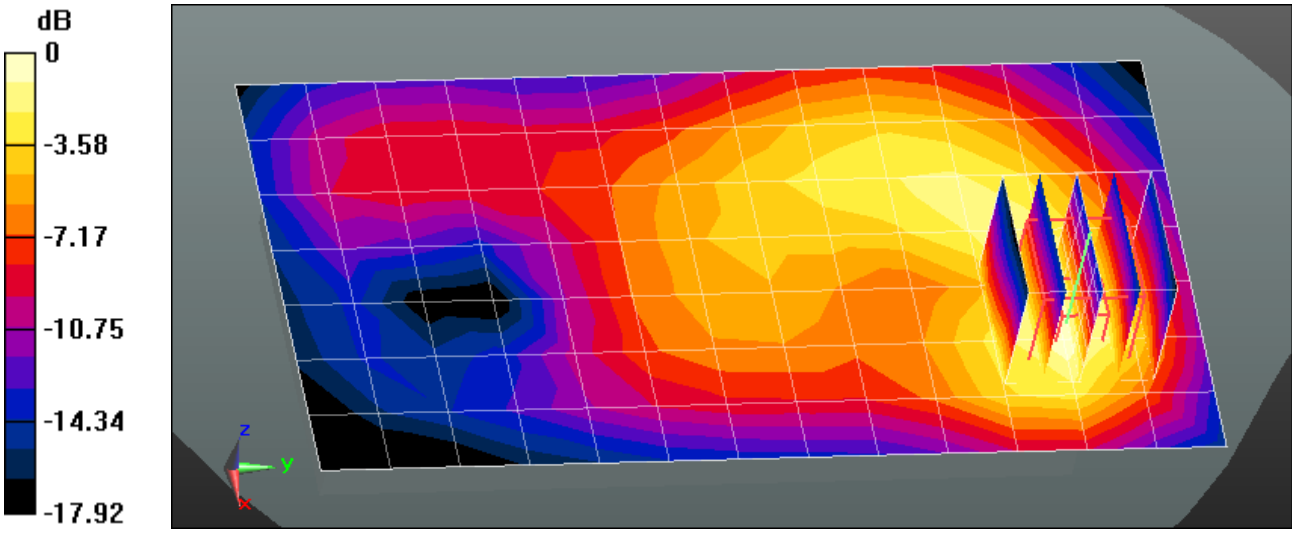
Communication System: UID 0, LTE Band66 (0); Frequency: 1745 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1745 MHz; σ = 1.384 S/m; ε_r = 41.379; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.8, 8.8, 8.8) @ 1745 MHz; Calibrated: 2021-03-24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2021-06-02
- Phantom: SAM with CRP v5.0(Front)
- Measurement SW: DASY52, Version 52.10 (4)

LTE Band 66 BodyWorn Rear QPSK 20MHz 1RB 49offset 132322ch/Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.574 W/kg

LTE Band 66 BodyWorn Rear QPSK 20MHz 1RB 49offset 132322ch/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.79 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 0.687 W/kg
SAR(1 g) = 0.385 W/kg; SAR(10 g) = 0.212 W/kg
Maximum value of SAR (measured) = 0.579 W/kg



0 dB = 0.579 W/kg = -2.37 dBW/kg

Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone
Liquid Temperature:	20.7℃
Ambient Temperature:	20.8℃
Test Date:	03/10/2022
Plot No.:	6

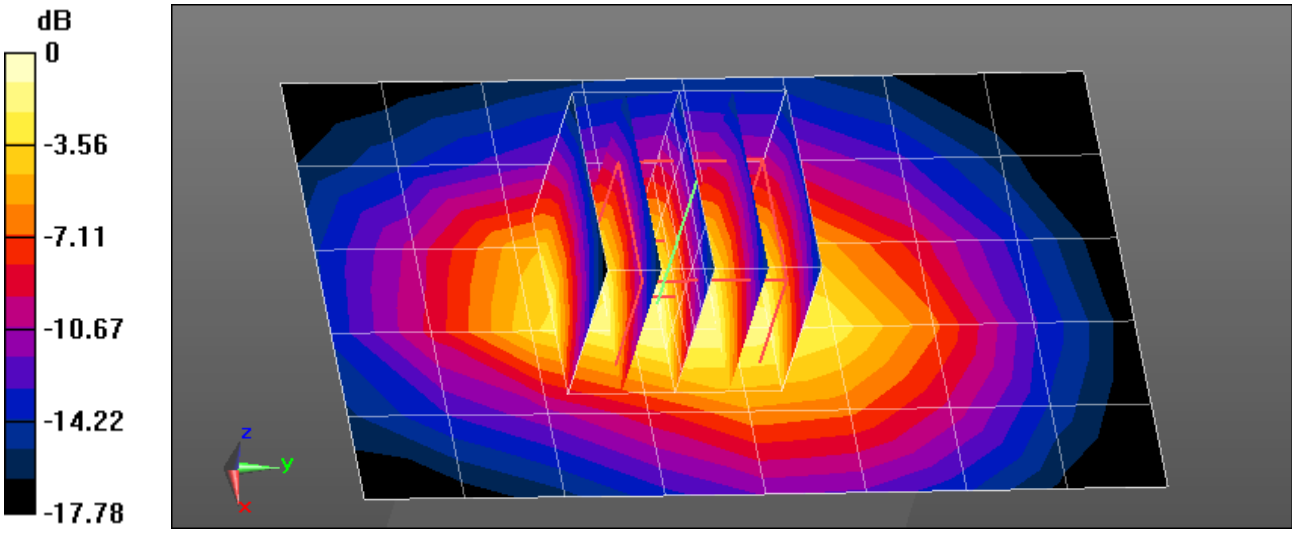
Communication System: UID 0, LTE Band 2 (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.394 S/m; ε_r = 40.928; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7681; ConvF(8.81, 8.81, 8.81) @ 1880 MHz; Calibrated: 2021-12-14
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn446; Calibrated: 2021-09-30
- Phantom: Twin-SAM V8.0 (Right-Left)
- Measurement SW: DASY52, Version 52.10 (4)

LTE Band 2 Body Top QPSK 20MHz 1RB 49offset 18900ch/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.638 W/kg

LTE Band 2 Body Top QPSK 20MHz 1RB 49offset 18900ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.71 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.994 W/kg
SAR(1 g) = 0.551 W/kg; SAR(10 g) = 0.302 W/kg
Maximum value of SAR (measured) = 0.839 W/kg



0 dB = 0.839 W/kg = -0.76 dBW/kg

Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone
Liquid Temperature:	20.7℃
Ambient Temperature:	20.8℃
Test Date:	03/10/2022
Plot No.:	7

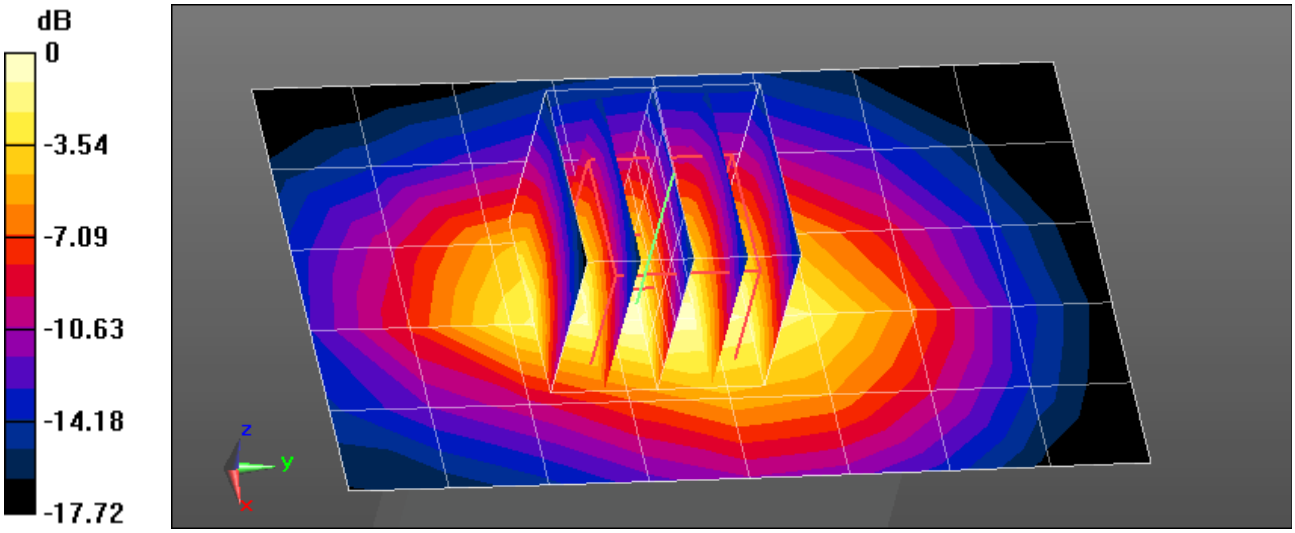
Communication System: UID 0, LTE Band 2 (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.394 S/m; ε_r = 40.928; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7681; ConvF(8.81, 8.81, 8.81) @ 1880 MHz; Calibrated: 2021-12-14
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn446; Calibrated: 2021-09-30
- Phantom: Twin-SAM V8.0 (Right-Left)
- Measurement SW: DASY52, Version 52.10 (4)

LTE Band 2 Body Top QPSK 20MHz 50RB 25offset 18900ch/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.729 W/kg

LTE Band 2 Body Top QPSK 20MHz 50RB 25offset 18900ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.18 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.938 W/kg
SAR(1 g) = 0.530 W/kg; SAR(10 g) = 0.292 W/kg
Maximum value of SAR (measured) = 0.793 W/kg



0 dB = 0.793 W/kg = -1.01 dBW/kg

Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone
Liquid Temperature:	18.4 ℃
Ambient Temperature:	18.5 ℃
Test Date:	03/10/2022
Plot No.:	8

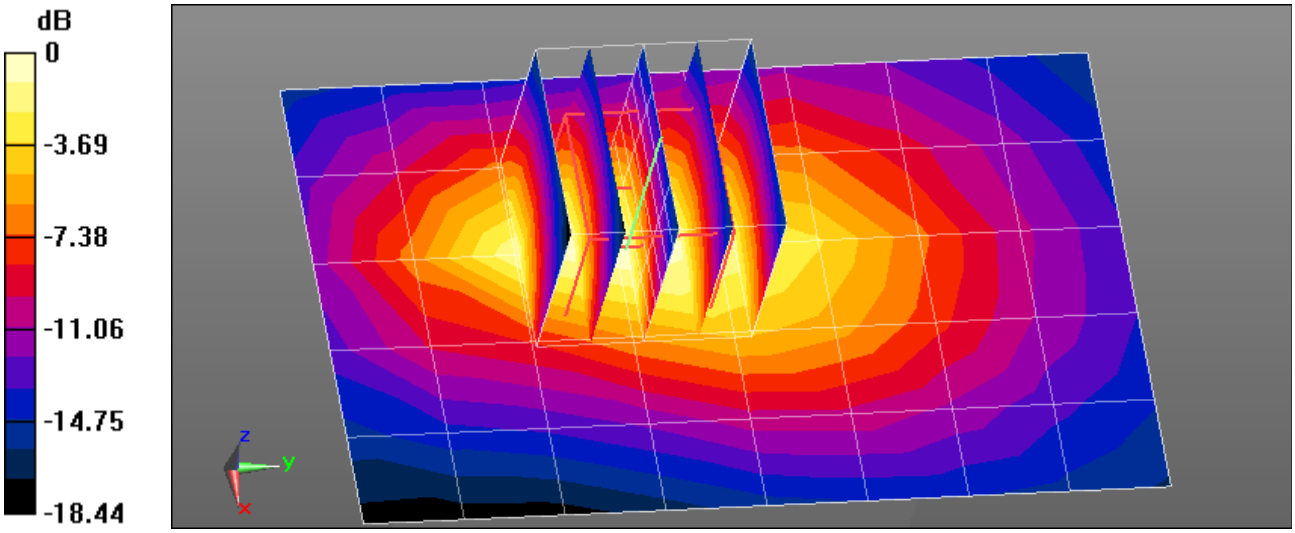
Communication System: UID 0, LTE Band66 (0); Frequency: 1745 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1745 MHz; σ = 1.384 S/m; ε_r = 41.379; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.8, 8.8, 8.8) @ 1745 MHz; Calibrated: 2021-03-24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2021-06-02
- Phantom: SAM with CRP v5.0(Front)
- Measurement SW: DASY52, Version 52.10 (4)

LTE Band 66 Body Top QPSK 20MHz 50RB 25offset 132322ch/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.682 W/kg

LTE Band 66 Body Top QPSK 20MHz 50RB 25offset 132322ch/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.17 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.811 W/kg
SAR(1 g) = 0.430 W/kg; SAR(10 g) = 0.224 W/kg
Maximum value of SAR (measured) = 0.669 W/kg



0 dB = 0.669 W/kg = -1.75 dBW/kg

Appendix C. – Dipole Verification Plots

Verification Data (1 800㎒ Head)

Test Laboratory:	HCT CO., LTD
Input Power	0.05 W
Liquid Temp:	18.4 ℃
Test Date:	03/10/2022

DUT: Dipole 1800 MHz D1800V2; Type: D1800V2;

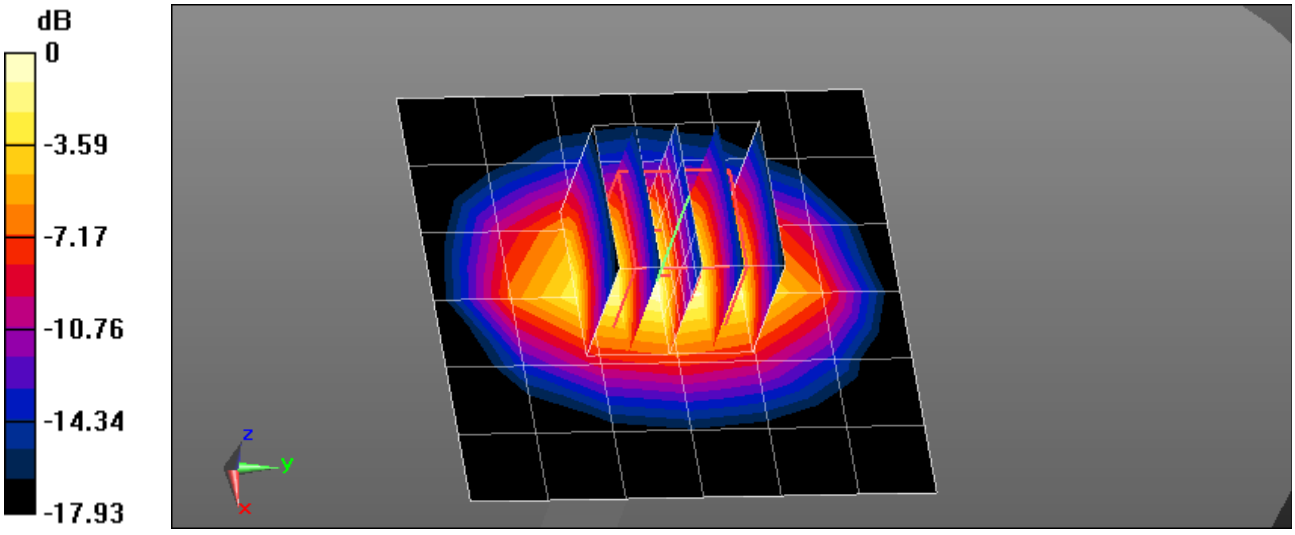
Communication System: UID 0, CW (0); Frequency: 1800 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1800 MHz; σ = 1.435 S/m; ε_r = 41.127; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(8.8, 8.8, 8.8) @ 1800 MHz; Calibrated: 2021-03-24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2021-06-02
- Phantom: SAM with CRP v5.0(Front)
- Measurement SW: DASY52, Version 52.10 (4)

1800MHz Head Verification/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.71 W/kg

1800MHz Head Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 45.46 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 3.62 W/kg
SAR(1 g) = 1.9 W/kg; SAR(10 g) = 0.992 W/kg
Maximum value of SAR (measured) = 3.00 W/kg



0 dB = 3.00 W/kg = 4.77 dBW/kg

Verification Data (1 900㎒ Head)

Test Laboratory:	HCT CO., LTD
Input Power	0.05 W
Liquid Temp:	20.7 ℃
Test Date:	03/10/2022

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2;

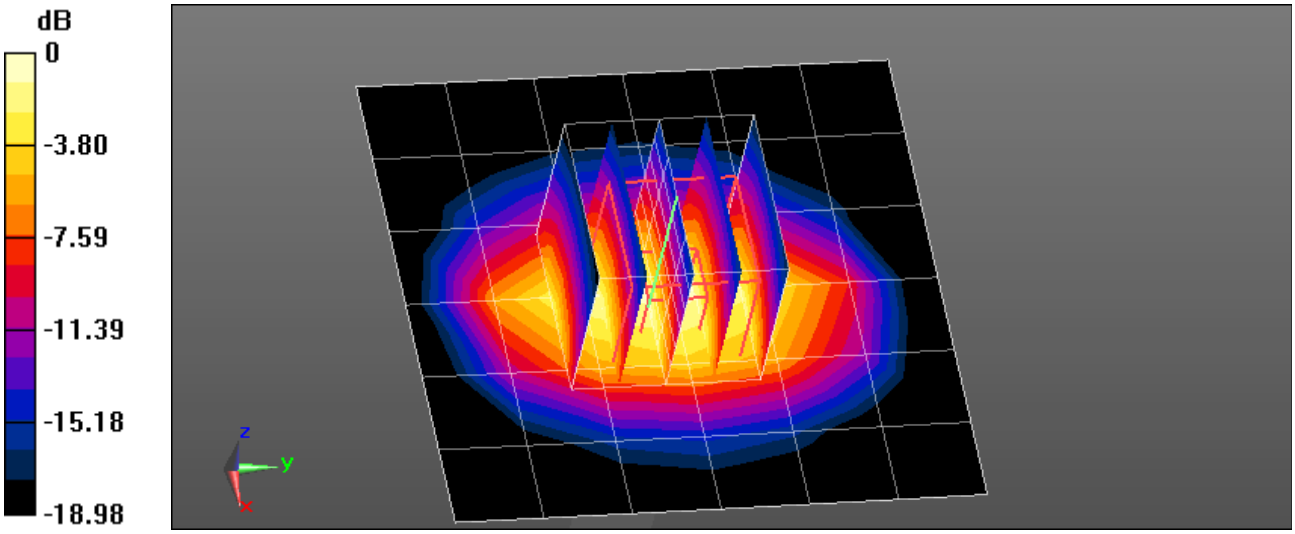
Communication System: UID 0, CW (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.413 S/m; ε_r = 40.854; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7681; ConvF(8.81, 8.81, 8.81) @ 1900 MHz; Calibrated: 2021-12-14
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn446; Calibrated: 2021-09-30
- Phantom: Twin-SAM V8.0 (Right-Left)
- Measurement SW: DASY52, Version 52.10 (4)

1900MHz Head Verification/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.98 W/kg

1900MHz Head Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 48.32 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 3.93 W/kg
SAR(1 g) = 2.03 W/kg; SAR(10 g) = 1.03 W/kg
Maximum value of SAR (measured) = 3.23 W/kg



0 dB = 3.23 W/kg = 5.09 dBW/kg

Appendix D. – SAR Tissue Characterization

The brain and muscle mixtures consist of a viscous gel using hydrox-ethyl cellulose (HEC) gelling agent and saline solution (see Table 3.1). Preservation with a bacteriacide is added and visual inspection is made to make sure air bubbles are not trapped during the mixing process. The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the desired tissue. The mixture characterizations used for the brain and muscle tissue simulating liquids are according to the data by C. Gabriel and G. Harts grove.

Ingredients (% by weight)	Frequency (㎒)											
	750		835		1 750		1 900		2 450 – 2 700		3500 - 5 800	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	41.1	51.7	40.45	53.06	52.6	68.8	54.9	70.17	71.88	73.2	65.52	78.66
Salt (NaCl)	1.4	0.9	1.45	0.94	0.4	0.2	0.18	0.39	0.16	0.1	0.0	0.0
Sugar	57.0	47.2	57.0	44.9	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
HEC	0.2	0	1.0	1.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
Bactericide	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.97	0.0	17.24	10.67
DGBE	0.0	0.0	0.0	0.0	47	31	44.92	29.44	7.99	26.7	0.0	0.0
Diethylene glycol hexyl ether	-	-	-	-	-	-	-	-	-	-	-	-

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

Composition of the Tissue Equivalent Matter

Appendix E. – SAR System Validation

Per FCC KCB 865664 D02v01r02, SAR system validation status should be document to confirm measurement accuracy. The SAR systems (including SAR probes, system components and software versions) used for this device were validated against its performance specifications prior to the SAR measurements. Reference dipoles were used with the required tissue- equivalent media for system validation, according to the procedures outlined in IEEE 1528-2013 and FCC KDB 865664 D01v01r04. Since SAR probe calibrations are frequency dependent, each probe calibration point was validated at a frequency within the valid frequency range of the probe calibration point, using the system that normally operates with the probe for routine SAR measurements and according to the required tissue-equivalent media.
A tabulated summary of the system validation status including the validation date(s), measurement frequencies, SAR probes and tissue dielectric parameters has been included.

SAR System No.	Probe	Probe Type	Probe Calibration Point		Dipole	Date	Dielectric Parameters		CW Validation			Modulation Validation		
							Measured Permittivity	Measured Conductivity	Sensitivity	Probe Linearity	Probe Isotropy	MOD. Type	Duty Factor	PAR
3	3903	EX3DV4	Head	1800	2d015	2021-09-22	40.1	1.41	PASS	PASS	PASS	N/A	N/A	N/A
17	7681	EX3DV4	Head	1900	5d061	2021-12-27	40.1	1.42	PASS	PASS	PASS	N/A	N/A	N/A

SAR System Validation Summary 1g

Note;
All measurements were performed using probes calibrated for CW signal only. Modulations in the table above represent test configurations for which the measurement system has been validated per FCC KDB Publication 865664 D01v01r04. SAR system were validated for modulated signals with a periodic duty cycle, such as GMSK, or with a high peak to average ratio (>5 dB), such as OFDM according to KDB 865664 D01v01r04.