74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea
TEL: +82-31-645-6300 FAX: +82-31-645-6401

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:** 05. 03, 2019 **Test Report No.:** HCT-SR-1904-FC005-R1 **Test Site: HCT CO., LTD.**

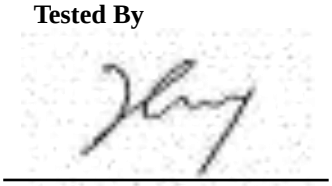
FCC ID: **A3LSMT725C**

Equipment Type:	**Tablet**
Application Type	**Certification**
FCC Rule Part(s):	**CFR §2.1093**
Model Name:	**SM-T725C**
Date of Test:	**04/15/2019 ~ 04/26/2019**

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



Min-young, Kim
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DOCUMENT HISTORY

Rev.	DATE	DESCRIPTION
HCT-SR-1904-FC005	04. 30, 2019	First Approval Report
HCT-SR-1904-FC005-R1	05. 03, 2019	Revised page 9 and page 18

Table of Contents

1. ATTESTATION OF TEST RESULT OF DEVICE UNDER TEST

Test Laboratory	
Company Name:	HCT Co., LTD
Address:	74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of Korea
Telephone:	+82 31 645 6300
Fax.:	+82 31 645 6401

Attestation of SAR test result	
Applicant Name:	SAMSUNG Electronics Co., Ltd.
FCC ID:	A3LSMT725C
Model:	SM-T725C
EUT Type:	Tablet
Application Type:	Certification

The Highest Reported SAR			
Band	Tx. Frequency (MHz)	Equipment Class	Reported 1g Body SAR (W/kg)
GSM/GPRS/EDGE 850	824.2 ~ 848.8	PCB	0.75
GSM/GPRS/EDGE 1900	1 850.2 ~ 1 909.8	PCB	0.98
UMTS 850	826.4 ~ 846.6	PCB	0.50
UMTS 1900	1 852.4 ~ 1 907.6	PCB	0.79
LTE Band 5 (Cell)	824.7 ~ 848.3	PCB	0.63
LTE Band 12	699.7 ~ 715.3	PCB	0.52
LTE Band 17	706.5 ~ 713.5	PCB	0.62
LTE TDD Band 41	2 555 ~ 2 655	PCB	0.80
802.11b	2 412 ~ 2 472	DTS	1.19
U-NII-1	5 180 ~ 5 240	NII	N/A
U-NII-2A	5 260 ~ 5 320	NII	0.75
U-NII-2C	5 500 ~ 5 720	NII	0.61
U-NII-3	5 745 ~ 5 825	NII	0.85
Bluetooth	2 402 ~ 2 480	DSS	0.32
Simultaneous SAR per KDB 690783 D01v01r03			1.53
Date(s) of Tests:	04/15/2019 ~ 04/26/2019		

2. DEVICE UNDER TEST DESCRIPTION

2.1 DUT specification

Device Wireless specification overview		
Band & Mode	**Operating Mode**	**Tx Frequency**
GSM 850	Data	824.2 ~ 848.8 MHz
GSM 1900	Data	1 850.2 ~ 1 909.8 MHz
UMTS 850	Data	826.4 ~ 846.6 MHz
UMTS 1900	Data	1 852.4 ~ 1 907.6 MHz
LTE Band 5 (Cell)	Data	824.7 ~ 848.3 MHz
LTE Band 12	Data	699.7 ~ 715.3 MHz
LTE Band 17	Data	706.5 ~ 713.5 MHz
LTE TDD Band 41	Data	2 555 ~ 2 655 MHz
2.4GHz WLAN	Data	2 412 ~ 2 472 MHz
U-NII-1	Data	5 180 ~ 5 240 MHz
U-NII-2A	Data	5 260 ~ 5 320 MHz
U-NII-2C	Data	5 500 ~ 5 720 MHz
U-NII-3	Data	5 745 ~ 5 825 MHz
Bluetooth v5.0	Data	2 402 ~ 2 480 MHz
ANT+	Data	2 402 ~ 2 480 MHz

Device Description		
Device Dimension	Overall (Length x Width): 245 mm x 160 mm Overall Diagonal: 286 mm Display Diagonal: 268 mm	
Battery Options:	Standard (Li-ion Polymer Battery)	
	Battery Model Name: EB-BT725ABU	
Device Serial Numbers	Mode	Serial Number
	BT, WLAN 5GHz, GSM850, WCDMA850, WCDMA 1900, GSM1900	QG47819U
	WLAN 2GHz, LTE Band 5, LTE Band 12, LTE Band 17, LTE Band 41	QG47830U
	The manufacturer has confirmed that the devices tested have the same physical, mechanical and thermal characteristics are within operational tolerances expected for production units.	

2.2 Power Reduction for SAR

This device utilizes a power reduction mechanism for some wireless modes and bands for SAR compliance under some conditions when the device is being used in close proximity to the user's hand. FCC KDB Publication 616217 D04v01r02 Sec.6 was used as a guideline for selecton SAR test distances for device when being used in phablet use conditions.
The reduced powers for the power reduction mechanisms were conformed via conducted power measurements at the RF Port .

2.3 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.

2.3.1 Maximum Main Output Power

Mode / Band		Voice (dBm)	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/GPRS/ EDGE 850	Maximum	33.5	33.5	31.0	29.5	28.7	27.0	25.0	24.0	23.0
	Nominal	32.5	32.5	30.0	28.5	27.7	26.0	24.0	23.0	22.0
GSM/GPRS/ EDGE 1900	Maximum	31.0	31.0	28.5	27.0	26.5	26.0	24.0	23.5	22.0
	Nominal	30.0	30.0	27.5	26.0	25.5	25.0	23.0	22.5	21.0

Mode/Band		Modulated Average (dBm)			
		3GPP WCDMA	3GPP HSDPA	3GPP HSUPA	3GPP DC-HSDPA
UMTS Band 5 (850 MHz)	Maximum	24.5	23.5	23.5	23.5
	Nominal	23.5	22.5	22.5	22.5
UMTS Band 2 (1900 MHz)	Maximum	25.0	23.5	23.5	23.5
	Nominal	24.0	22.5	22.5	22.5

Mode / Band		Modulated Average (dBm)
LTE Band 5 (Cell)	Maximum	24.5
	Nominal	23.5
LTE Band 12	Maximum	24.5
	Nominal	23.5
LTE Band 17	Maximum	24.5
	Nominal	23.5
LTE TDD Band 41	Maximum	23.5
	Nominal	22.5

2.3.2 Reduced Main Output Power (Hotspot / Grip Sensor)

Mode / Band		Voice (dBm)	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/GPRS/ EDGE 850	Maximum	27.0	27.0	23.0	21.5	19.5	21.5	20.0	18.0	16.5
	Nominal	26.0	26.0	22.0	20.5	18.5	20.5	19.0	17.0	15.5
GSM/GPRS/ EDGE 1900	Maximum	23.0	23.0	21.0	19.0	18.0	19.0	17.5	16.0	15.0
	Nominal	22.0	22.0	20.0	18.0	17.0	18.0	16.5	15.0	14.0

Mode/Band		Modulated Average (dBm)			
		3GPP WCDMA	3GPP HSDPA	3GPP HSUPA	3GPP DC-HSDPA
UMTS Band 5 (850 MHz)	Maximum	17.0	17.0	17.0	16.0
	Nominal	16.0	16.0	16.0	15.0
UMTS Band 2 (1900 MHz)	Maximum	13.5	13.5	13.5	12.0
	Nominal	12.5	12.5	12.5	11.0

Mode / Band		Modulated Average (dBm)
LTE Band 5 (Cell)	Maximum	16.0
	Nominal	15.0
LTE Band 12	Maximum	15.5
	Nominal	14.5
LTE Band 17	Maximum	17.0
	Nominal	16.0
LTE TDD Band 41	Maximum	15.0
	Nominal	14.0

2.3.3 Maximum WLAN/ Bluetooth Power

Mode/Band			Modulated Average (dBm)				
Mode	Ch.		IEEE 802.11				
			a	b	g	n	ac
2.4 GHz WIFI (Inactive)	Ch.1	Maximum	N/A	20	19.5	18.5	N/A
		Nominal	N/A	19	18.5	17.5	N/A
	Ch.2~11	Maximum	N/A	20	20	20	N/A
		Nominal	N/A	19	19	19	N/A
	Ch.12	Maximum	N/A	9	9	9	N/A
		Nominal	N/A	8	8	8	N/A
	Ch.13	Maximum	N/A	3	3	3	N/A
		Nominal	N/A	2	2	2	N/A
5 GHz WIFI (20 MHz) (Inactive)	(U-NII-1) 5200 MHz	Maximum	19	N/A	N/A	19	18
		Nominal	18	N/A	N/A	18	17
	(U-NII-2A) 5300 MHz	Maximum	19	N/A	N/A	19	18
		Nominal	18	N/A	N/A	18	17
	(U-NII-2C) 5500 MHz	Maximum	19	N/A	N/A	19	18
		Nominal	18	N/A	N/A	18	17
	(U-NII-3) 5800 MHz	Maximum	19	N/A	N/A	19	18
		Nominal	18	N/A	N/A	18	17
5 GHz WIFI (40 MHz) (Inactive)	(U-NII-1) 5190MHz	Maximum	N/A	N/A	N/A	16	16
		Nominal	N/A	N/A	N/A	15	15
	(U-NII-1) 5230MHz	Maximum	N/A	N/A	N/A	18	18
		Nominal	N/A	N/A	N/A	17	17
	(U-NII-2A) 5270MHz	Maximum	N/A	N/A	N/A	18	18
		Nominal	N/A	N/A	N/A	17	17
	(U-NII-2A) 5310MHz	Maximum	N/A	N/A	N/A	18	18
		Nominal	N/A	N/A	N/A	17	17
	(U-NII-2C) 5510MHz	Maximum	N/A	N/A	N/A	16.5	16.5
		Nominal	N/A	N/A	N/A	15.5	15.5
	(U-NII-2C) 5550MHz ~5710MHz	Maximum	N/A	N/A	N/A	18	18
		Nominal	N/A	N/A	N/A	17	17
	(U-NII-3) 5815MHz	Maximum	N/A	N/A	N/A	18	18
		Nominal	N/A	N/A	N/A	17	17
5 GHz WIFI (80 MHz) (Inactive)	(U-NII-1) 5210MHz	Maximum	N/A	N/A	N/A	N/A	14
		Nominal	N/A	N/A	N/A	N/A	13
	(U-NII-A) 5290MHz	Maximum	N/A	N/A	N/A	N/A	14.5
		Nominal	N/A	N/A	N/A	N/A	13.5
	(U-NII-2C) 5530MHz	Maximum	N/A	N/A	N/A	N/A	14
		Nominal	N/A	N/A	N/A	N/A	13
	(U-NII-2C) 5610MHz~ 5690MHz	Maximum	N/A	N/A	N/A	N/A	18
		Nominal	N/A	N/A	N/A	N/A	17
	(U-NII-3) 5775MHz	Maximum	N/A	N/A	N/A	N/A	18
		Nominal	N/A	N/A	N/A	N/A	17

Mode/Band			Modulated Average (dBm)				
Mode	Ch.		IEEE 802.11				
			a	b	g	n	ac
2.4 GHz WIFI (Active)	Ch.1~11	Maximum	N/A	13	13	13	N/A
		Nominal	N/A	12	12	12	N/A
	Ch.12	Maximum	N/A	-	-	-	N/A
		Nominal	N/A	-	-	-	N/A
	Ch.13	Maximum	N/A	-	-	-	N/A
		Nominal	N/A	-	-	-	N/A
5 GHz WIFI (20 MHz) (Active)	5200 MHz	Maximum	10	N/A	N/A	10	10
		Nominal	9	N/A	N/A	9	9
	5300 MHz	Maximum	10	N/A	N/A	10	10
		Nominal	9	N/A	N/A	9	9
	5500 MHz	Maximum	10	N/A	N/A	10	10
		Nominal	9	N/A	N/A	9	9
	5800 MHz	Maximum	10	N/A	N/A	10	10
		Nominal	9	N/A	N/A	9	9
5 GHz WIFI (40 MHz) (Active)	5200 MHz	Maximum	N/A	N/A	N/A	10	10
		Nominal	N/A	N/A	N/A	9	9
	5300 MHz	Maximum	N/A	N/A	N/A	10	10
		Nominal	N/A	N/A	N/A	9	9
	5500 MHz	Maximum	N/A	N/A	N/A	10	10
		Nominal	N/A	N/A	N/A	9	9
	5800 MHz	Maximum	N/A	N/A	N/A	10	10
		Nominal	N/A	N/A	N/A	9	9
5 GHz WIFI (80 MHz) (Active)	5200 MHz	Maximum	N/A	N/A	N/A	N/A	10
		Nominal	N/A	N/A	N/A	N/A	9
	5300 MHz	Maximum	N/A	N/A	N/A	N/A	10
		Nominal	N/A	N/A	N/A	N/A	9
	5500 MHz	Maximum	N/A	N/A	N/A	N/A	10
		Nominal	N/A	N/A	N/A	N/A	9
	5800 MHz	Maximum	N/A	N/A	N/A	N/A	10
		Nominal	N/A	N/A	N/A	N/A	9

Mode / Band		Modulated Average (dBm)
Bluetooth	Maximum	9.5
	Nominal	8.5
Bluetooth LE	Maximum	7.0
	Nominal	6.0

2.4 LTE information

Item.		Description		
Frequency Range	LTE Band 5 (Cell)	824.7 – 848.3 MHz		
	LTE Band 12	699.7 MHz~ 715.3 MHz		
	LTE Band 17	706.5 ~ 713.5 MHz		
	LTE TDD Band 41	2 555 ~ 2 655 MHz		
Channel Bandwidths	LTE Band 5 (Cell)	1.4 MHz, 3 MHz, 5 MHz, 10 MHz		
	LTE Band 12	1.4 MHz, 3 MHz, 5 MHz, 10 MHz		
	LTE Band 17	5 MHz, 10 MHz		
	LTE TDD Band 41	5 MHz, 10 MHz, 15 MHz, 20 MHz		
Channel Numbers & Freq.(MHz)		Low	Mid	High
LTE Band 5	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 17	5 MHz	706.5 (23755)	710 (23790)	713.5 (23825)
	10 MHz	709.0 (23780)	710 (23790)	711.0 (23800)
LTE Band 41	5 MHz	2 557.5 (40265)	2 605.0 (40740)	2 652.5 (41215)
	10 MHz	2 560.0 (40290)	2 605.0 (40740)	2 650.0 (41190)
	15 MHz	2 562.5 (40315)	2 605.0 (40740)	2 647.5 (41165)
	20 MHz	2 565.0 (40340)	2 605.0 (40740)	2 645.0 (41140)

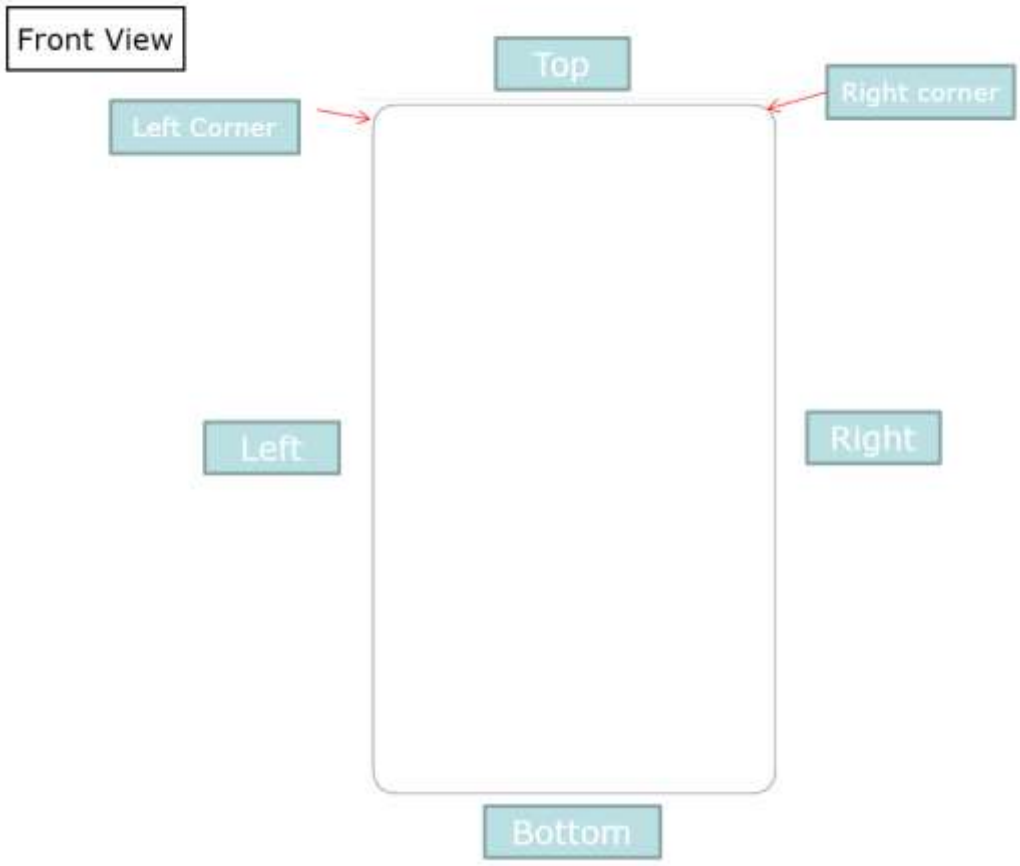
Item.	Description	
UE Category	DL UE: Category 10, UL: UE Category 5	
Modulations Supported in UL	QPSK, 16QAM, 64QAM	
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3	Yes	
A-MPR disabled for SAR Testing.	Yes	
LTE Carrier Aggregation	Down-Link CA	This device only supports Intra -Down-Link Carrier aggregation. CA_41C,CA_41D : Technical document includes all possible carrier aggregation combinations
	Up-Link CA	This device does supports Up-Link Carrier aggregation.: .: **CA_41C**
LTE Release 10 information	This device does not support full CA features on 3GPP Release 10. The following LTE Release 10 features are not supported. Uplink and Downlink Carrier aggregations, Relay, HetNet, Enhanced MIMO, eICI, WiFi offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.	

2.5 Test Methodology and Procedures

The tests documented in this report were performed in accordance with IEEE Standard 1528-2013 and the following published KDB procedures.

- FCC KDB Publication 941225 D01 3G SAR Procedures v03r01
- FCC KDB Publication 941225 D06 Hot Spot SAR v02r01
- FCC KDB Publication 941225 D05 SAR for LTE Devices v02r05
- FCC KDB Publication 941225 D05A LTE Rel.10 KDB Inquiry sheet v01r02
- FCC KDB Publication 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB Publication 447498 D01 General SAR Guidance v06
- FCC KDB Publication 616217 D04 SAR Tablet v01r02
- 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
- October 2013 TCB Workshop Notes (GPRS testing criteria)
- April 2015 TCB Workshop Notes (Simultaneous transmission summation clarified)
- Fall 2017 TCBC Workshop Notes(LTE Carrier Aggregation)

2.6 SAR Test Configurations



Full Power Condition: Sensor Inactive

Antenna	Band	Freq.	Max. Power		Separation Distances (mm)					SAR Test Exclusion Thresholds (test separation distances < 50 mm) threshold value <3					SAR Test Exclusion Thresholds(test separation distances > 50 mm) Power mW				
		[MHz]	dBm	mW	Rear	Top	Left	Right	Bottom	Rear	Top	Left	Right	Bottom	Rear	Top	Left	Right	Bottom
Main	GSM850	848.8	33.5	2238.7	0	0	46	0	234	412.50	412.50	44.84	412.50	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	distances <50 mm	1205.2
Main	GSM1900	1 909.8	31	1258.9	0	0	46	0	234	347.95	347.95	37.82	347.95	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	distances <50 mm	3151.1
Main	UMTS B5	846.6	24.5	281.8	0	0	46	0	234	51.84	51.84	5.63	51.84	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	distances <50 mm	1202.5
Main	UMTS B2	1 907.6	25	316.2	0	0	46	0	234	87.34	87.34	9.49	87.34	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	distances <50 mm	2449.0
Main	LTE B5	848.3	24.5	281.8	0	0	46	0	234	51.91	51.91	5.64	51.91	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	distances <50 mm	3206.1
Main	LTE B12	715.3	24.5	281.8	0	0	46	0	234	47.67	47.67	5.18	47.67	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	distances <50 mm	1041.4
Main	LTE B17	713.5	24.5	281.8	0	0	46	0	234	47.61	47.61	5.17	47.61	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	distances <50 mm	1039.2
Main	LTE B41	2 687.5	23.5	223.9	0	0	46	0	234	73.41	73.41	7.98	73.41	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	distances <50 mm	3138.1
WLAN	BT	2 480	9.5	8.9	0	0	0	116	234	2.80	2.80	0.30	distances > 50 mm	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	1187.2	3138.1
WLAN	2.4 GHz	2 472	20	100	0	0	0	116	234	31.45	31.45	3.42	distances > 50 mm	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	1183.68	3128.3
WLAN	5 GHz	5 825	19	79.4	0	0	0	116	234	38.33	38.33	4.17	distances > 50 mm	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	2385.2	3104.1

Antenna	Band	Freq.	Max. Power		Device Conifigurations for SAR Testing				
		[MHz]	dBm	mW	Rear	Top	Left	Right	Bottom
Main	GSM850	848.8	33.5	2238.7	Yes	Yes	Yes	Yes	No
Main	GSM1900	1 909.8	31.0	1258.9	Yes	Yes	Yes	Yes	No
Main	UMTS B5	846.6	24.5	281.8	Yes	Yes	Yes	Yes	No
Main	UMTS B2	1 907.6	25.0	316.2	Yes	Yes	Yes	Yes	No
Main	LTE B5	848.3	24.5	281.8	Yes	Yes	Yes	Yes	No
Main	LTE B12	715.3	24.5	281.8	Yes	Yes	Yes	Yes	No
Main	LTE B17	713.5	24.5	281.8	Yes	Yes	Yes	Yes	No
Main	LTE B41	2 687.5	23.5	223.9	Yes	Yes	Yes	Yes	No
WLAN	BT	2 480	9.5	8.9	Yes	Yes	Yes	No	No
WLAN	2.4 GHz	2 472	20	100.0	Yes	Yes	Yes	No	No
WLAN	5 GHz	5 825	19	79.4	Yes	Yes	Yes	No	No

Antennas <50mm to adjacent edges: According to KDB 447498 D01v06, if the calculated threshold value >3 then SAR test is required.
Antennas >50mm to adjacent edges: According to KDB 447498 D01v06, if the power threshold is less than the output power ,SAR is required.

Reduced Power Condition: Sensor Active

Main Antenna does not apply power reduction on Left Side.

For main Ant

Antenna	Band	Freq.	Max. Power		Separation Distances (mm)				SAR Test Exclusion Thresholds (test separation distances < 50 mm) threshold value <3				SAR Test Exclusion Thresholds (test separation distances > 50 mm) mW			
		[MHz]	dBm	mW	Rear	Top	Right	Bottom	Rear	Top	Right	Bottom	Rear	Top	Right	Bottom
Main	GSM850	848.8	27	501.187	0	0	0	234	92.31	92.31	92.31	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	1205.2
Main	GSM1900	1 909.8	23	199.526	0	0	0	234	17.41	55.28	55.28	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	3151.1
Main	UMTS B5	846.6	17	50.119	0	0	0	234	9.20	9.20	9.20	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	1202.5
Main	UMTS B2	1 907.6	13.5	22.387	0	0	0	234	3.59	3.59	3.59	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	2449.0
Main	LTE B5	848.3	16	39.811	0	0	0	234	7.37	7.37	7.37	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	3206.1
Main	LTE B12	715.3	15.5	35.481	0	0	0	234	5.92	5.92	5.92	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	1041.4
Main	LTE B17	713.5	17	50.119	0	0	0	234	8.45	8.45	8.45	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	1039.2
Main	LTE B41	2 687.5	15	31.623	0	0	0	234	10.49	10.49	10.49	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	3138.1

For WLAN Ant

Bluetooth mode does not apply power reduction on all sides

Antenna	Band	Freq.	Max. Power		Separation Distances (mm)					SAR Test Exclusion Thresholds (test separation distances < 50 mm) threshold value <3					SAR Test Exclusion Thresholds (test separation distances > 50 mm) mW				
		[MHz]	dBm	mW	Rear	Top	Left	Right	Bottom	Rear	Top	Left	Right	Bottom	Rear	Top	Left	Right	Bottom
WLAN	2.4 GHz	2 472	13	20	0	0	0	116	234	6.29	6.29	6.29	distances > 50 mm	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	1183.7	3128.3
WLAN	5 GHz	5 825	10	10	0	0	0	116	234	4.83	4.83	4.83	distances > 50 mm	distances > 50 mm	distances <50 mm	distances <50 mm	distances <50 mm	2385.2	3104.1

Antenna	Band	Freq.	Max. Power		Device Conifigurations for SAR Testing				
		[MHz]	dBm	mW	Rear	Top	Left	Right	Bottom
Main	GSM850	848.8	27.0	501.2	Yes	Yes	N/A	Yes	No
Main	GSM1900	1 909.8	23.0	199.5	Yes	Yes	N/A	Yes	No
Main	UMTS B5	846.6	17.0	50.1	Yes	Yes	N/A	Yes	No
Main	UMTS B2	1 907.6	13.5	22.4	Yes	Yes	N/A	Yes	No
Main	LTE B5	848.3	16.0	39.8	Yes	Yes	N/A	Yes	No
Main	LTE B12	715.3	15.5	35.5	Yes	Yes	N/A	Yes	No
Main	LTE B17	713.5	17.0	50.1	Yes	Yes	N/A	Yes	No
Main	LTE B41	2 687.5	15.0	31.6	Yes	Yes	N/A	Yes	No
WLAN	BT	2 480	9.5	8.9	Yes	Yes	Yes	No	No
WLAN	2.4 GHz	2 472	13	20.0	Yes	Yes	Yes	No	No
WLAN	5 GHz	5 825	10	10.0	Yes	Yes	Yes	No	No

Antennas <50mm to adjacent edges: According to KDB 447498 D01v06, if the calculated threshold value >3 then SAR test is required.
Antennas >50mm to adjacent edges: According to KDB 447498 D01v06, if the power threshold is less than the output power ,SAR is required.

Antennas <50mm to adjacent edges: According to KDB 447498 D01v06, if the calculated threshold value >3 then SAR test is required.

Per FCC KDB 447498 D01v06, The SAR exclusion threshold for distance < 50 mm is defined by the following equation:

$$\frac{MaxPowerofChannel(mW)}{TestSeparationDistance(mm)} * \sqrt{Frequency(GHz)} \leq 3.0(1\text{g SAR}), 7.5(10\text{g SAR})$$

Antennas >50mm to adjacent edges: According to KDB 447498 D01v06, if the power threshold is less than the output power ,SAR is required.

Per KDB 447498 D01v06 Sec 4.3.1 b) For 100 MHz to 6 GHz and test separation distances > 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following (also illustrated in Appendix B)

1) {[Power allowed at numeric threshold for 50 mm in step a)] + [(test separation distance – 50 mm)·(f(MHz)/150)]} mW, for 100 MHz to 1500 MHz

Additional Test Scenarios

Test Configurations	SAR Required	Note
Right Corner	Yes	Main Band :GSM 850/1900 /WCDMA B2, B5 LTE B5, B12, B17, B 41
Left Corner	Yes	2.4GHz /5GHz WLAN

Note; All test configurations are based on front view.
Per FCC KDB Publication 616217 D04v01r02, the rear surface and edges of tablet should be tested for SAR compliance with the tablet touching the phantom. The SAR Exclusion Threshold in KDB 447498 D01v06 can be applied to determine SAR test exclusion for adjacent edge configurations. The closet distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

2.7 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.

Simultaneous transmission paths

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	Body
GSM/GPRS/EDGE + 2.4 GHz WiFi Ant	Yes
GSM/GPRS/EDGE + 5 GHz WiFi Ant	Yes
GSM/GPRS/EDGE + 2.4 GHz Bluetooth	Yes
UMTS + 2.4 GHz WiFi Ant	Yes
UMTS + 5 GHz WiFi Ant	Yes
UMTS + 2.4 GHz Bluetooth	Yes
LTE + 2.4 GHz WiFi Ant	Yes
LTE + 5 GHz WiFi Ant	Yes
LTE + 2.4GHz Bluetooth	Yes

2.8 SAR Test Considerations

2.8.1 WiFi

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

This device supports IEEE 802.11 ac with the following features:

a) Up to 80 MHz Bandwidth only
b) No aggregate channel configurations
c) 1 Tx antenna output
d) 256 QAM is supported
e) TDWR channels are supported.
f) Straddle channels are supported

2.8.2 Bluetooth LE

Per FCC KDB 447498 D01v06, The SAR exclusion threshold for distance < 50 mm is defined by the following equation:

$$\frac{MaxPowerofChannel(mW)}{TestSeparationDistance(mm)} * \sqrt{Frequency(GHz)} \leq 3.0(1\text{g SAR}), 7.5(10\text{g SAR})$$

Mode		Frequency	Maximum Allowed Power	Separation Distance	≤ 3.0
		[MHz]	[mW]	[mm]	1-g SAR
Bluetooth LE	Body SAR	2 480	5.0	5	1.6
			5.0	5	

Based on the maximum conducted power of Bluetooth LE and antenna to use separation distance, Bluetooth LE SAR was not required [(5/5)*√2.480] = 1.6≤3.0 for 1-g SAR.

The Reported SAR for WLAN and Bluetooth

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

2.8.2 Licensed Transmitter(s)

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

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

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.

This device supports LTE Carrier Aggregation(CA) in Uplink for LTE 41 with two component carriers in the uplink. SAR measurements and conducted powers were evaluated per Fall 2017 TCBC Workshop notes(LTE Carrier aggregation).

This device supports LTE Carrier Aggregation (CA) in the downlink for LTE41 Per FCC KDB publication 941225 D05A v01r02, SAR for LTE DL CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive

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

. This device support both LTE Band 12 and LTE Band 17. Since the supported frequency span for LTE Band 17 involved completely within the supported frequency span for LTE Band 12 for Maximum Power mode, both LTE Bands have the same target power at Maximum Power mode , and both LTE bands share the same transmission path, SAR was only assessed for LTE Band 12 for Maximum Power mode.

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

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

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.

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

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

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

Where:

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

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

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

In order for a pair of simultaneous transmitting antennas with the sum 1-g of SAR> 1.6 W/kg and with the sum 10-g of SAR >4W/Kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:
$(SAR_1 + SAR_2)^{1.5}/R_i \leq 0.04$ for 1g SAR and $(SAR_1 + SAR_2)^{1.5}/R_i \leq 0.1$ for 10g SAR.

3. 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)

$$SAR = \sigma E^2 / \rho$$

Where:
σ = conductivity of the tissue-simulant material (S/m)
ρ = mass density of the tissue-simulant material (kg/㎥)
E = 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.

4. DESCRIPTION OF TEST EQUIPMENT

4.1 SAR MEASUREMENT SETUP

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

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

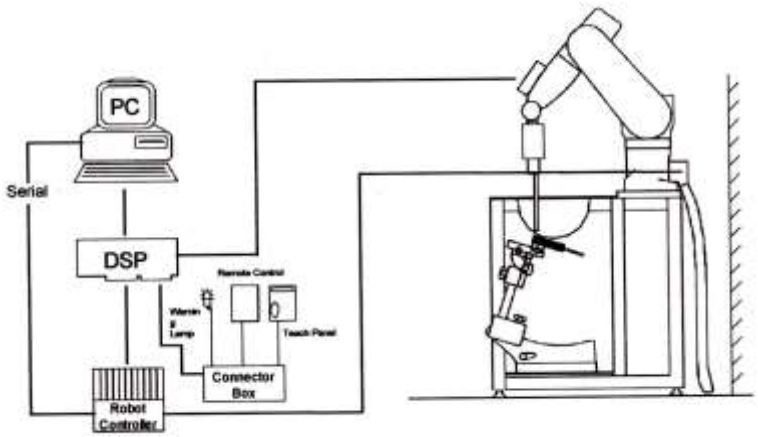


Figure 2. HCT SAR Lab. Test Measurement Set-up

The DAE consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer. The system is described in detail in.

5. 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>$^1/_2 \cdot \delta \cdot \ln(2) \pm 0.5$ 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">Maximum area scan Spatial 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>$\Delta z_{zoom}(1)$: between 1 st 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">$\leq 1.5 \cdot \Delta z_{zoom}(n-1)$</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>

6. DESCRIPTION OF TEST POSITION

6.1 Device Holder

The device holder is made out of low-loss POM material having the following dielectric parameters: relative permittivity ε and loss tangent δ=0.02

6.2 SAR Testing for Tablet Per KDB Publication 616217 D04v01r02

Per FCC KDB Publication 616217 D04v01r02, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. The SAR Exclusion Threshold in KDB 447498 D01v06 can be applied to determine SAR test exclusion for adjacent edge configuration. The closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

6.3 Proximity Sensor Considerations.

This device uses a sensor to reduce output powers in cetain use conditions when the device is used close the user's body.

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 Section 8 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.

The proximity sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions since the proximity sensor entirely covers the antennas.

7. RF EXPOSURE LIMITS

HUMAN EXPOSURE	UNCONTROLLED ENVIRONMENT General Population	CONTROLLED ENVIRONMENT Occupational
	(W/kg) or (mW/g)	(W/kg) or (mW/g)
SPATIAL PEAK SAR * (Head)	1.60	8.00
SPATIAL AVERAGE SAR ** (Whole Body)	0.08	0.40
SPATIAL PEAK SAR *** (Hands / Feet / Ankle / Wrist)	4.00	20.00

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.

8. FCC SAR GENERAL MEASUREMENT PROCEDURES

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

8.1 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.

8.2 3G SAR Test Reduction Procedure

8.2.1 GSM, GPRS AND EDGE

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

8.2.2 SAR Test Reduction

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

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

8.3 Procedures Used to Establish RF Signal for SAR

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

8.4 SAR Measurement Conditions for UMTS

8.4.1 Output Power Verification

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

8.4.2 Body SAR measurements

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

8.4.3 SAR Measurements with Rel. 5 HSDPA

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

8.4.4 SAR Measurements with Rel. 6 HSUPA

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

8.4.5 DC-HSDPA

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

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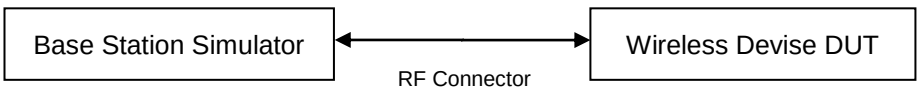


8.5 SAR Measurement Conditions for LTE

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

8.5.1 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.

8.5.2 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.

8.5.3 A-MPR

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

8.5.4 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% all0cation 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.

8.5.5 Downlink Carrier Aggregation

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

8.5.5 LTE(TDD) Considerations

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

SAR was tested with the highest transmission duty factor (63.33 %) using Uplink-downlink configuration 0 and Special subframe configuration 6.

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

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

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

Table 4.2-2: Uplink-downlink configurations.

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

Calculated Duty Cycle – Extended cyclic prefix in uplink x (T_s) x # of S + # of U
Example for calculated Duty Cycle for Uplink-Downlink Configuration 0:
Calculated Duty Cycle = (5120 x [1/(15000 x 2048)] x 2 + 0.006)/0.01 = 63.33 %
Where
T_s = 1/(15000 x 2048) seconds

8.6 SAR Testing with 802.11 Transmitters

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

8.6.1 General Device Setup

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

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

8.6.2 U-NII-1 and U-NII-2A

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

8.6.3 U-NII-2C and U-NII-3

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

8.6.4 Initial Test Position Procedure

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

8.6.5 2.4 GHz SAR test Requirements

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

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

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

8.6.6 OFDM Transmission Mode and SAR Test Channel Selection

For the 2.4 GHz and 5 GHz bands, when the same maximum output power was specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration with the largest channel bandwidth, lowest order modulation and lowest data rate and lowest order 802.11 a/g/n/ac mode. When the maximum output power of a channel is the same for equivalent OFDM configurations; for example, 802.11a, 802.11n and 802.11 ac or 802.11g and 802.11n with the same channel bandwidth, modulation and data rate etc., the lower order 802.11 mode i.2., 802.11a, then 802.11n and 802.11ac or 802.11g then 802.11n, is used for SAR measurement. When the maximum output power are the same for multiple test channels, either according to the default or additional power measurement requirements, SAR is measured using the channel closest to the middle of the frequency band or aggregated band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

8.6.7 Initial Test Configuration Procedure

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

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

8.6.8 Subsequent Test Configuration Procedures

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

9. OUTPUT POWER SPECIFICATIONS

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

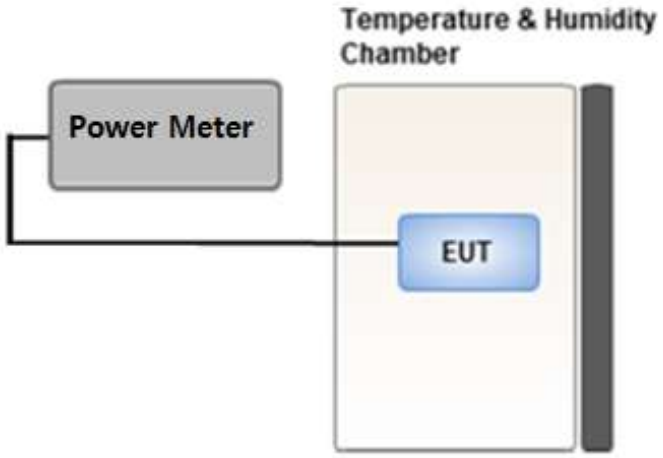
Licensed bands

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

* Test Procedure

1. When an average power meter is used to perform RF output power measurements, the fundamental condition that measurements be performed only over durations of active transmissions at maximum output power level applies. Thus, an average power meter can always be used to perform the measurement when the EUT can be configured to transmit continuously.
2. If the EUT cannot be configured to transmit continuously (i.e., burst duty cycle < 98%), then the following options can be implemented to facilitate measurement of the average power with an average power meter:
   1) Measure the duty cycle.
   2) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
   3) Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.
   4) Conducted output power(dBm) = Measured average power(dBm) + Duty cycle factor(dB)
      * Among the results in the table below, GSM and LTE B41 are included duty cycle factor.

* Test setup

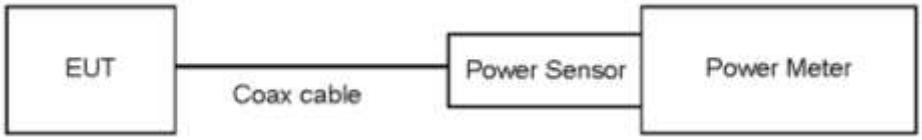


Un-Licensed bands(DTS Band)

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

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

* Test setup

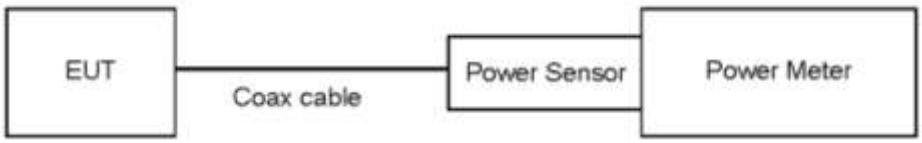


Un-Licensed bands(UNII Band)

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

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

* Test setup



9.1 GSM

9.1.1 Maximum Conducted Power

GSM Conducted output powers (Burst-Average)

Band	Channel	Voice	GPRS(GMSK) Data – CS1				EDGE Data			
		GSM (dBm)	GPRS 1 TX Slot (dBm)	GPRS 2 TX Slot (dBm)	GPRS 3 TX Slot (dBm)	GPRS 4 TX Slot (dBm)	EDGE 1 TX Slot (dBm)	EDGE 2 TX Slot (dBm)	EDGE 3 TX Slot (dBm)	EDGE 4 TX Slot (dBm)
Maximum		**33.50**	**33.50**	**31.00**	**29.50**	**28.70**	**27.00**	**25.00**	**24.00**	**23.00**
Nominal		**32.50**	**32.50**	**30.00**	**28.50**	**27.70**	**26.00**	**24.00**	**23.00**	**22.00**
GSM 850	128	32.48	32.50	29.63	27.90	26.78	26.05	23.82	22.53	21.50
	190	32.75	32.20	29.80	27.97	26.90	26.26	24.37	23.02	21.56
	251	32.76	32.70	30.11	28.31	27.22	26.24	24.23	22.97	21.87
Maximum		**31.00**	**31.00**	**28.50**	**27.00**	**26.50**	**26.00**	**24.00**	**23.50**	**22.00**
Nominal		**30.00**	**30.00**	**27.50**	**26.00**	**25.50**	**25.00**	**23.00**	**22.50**	**21.00**
GSM 1900	512	29.63	29.51	27.18	25.55	24.77	24.84	22.97	22.33	20.70
	661	29.48	29.33	27.25	25.64	25.17	24.83	22.87	22.23	20.70
	810	29.75	29.64	27.35	25.76	25.30	25.09	23.08	22.45	20.68

GSM Conducted output powers (Frame-Average)

Band	Channel	Voice	GPRS(GMSK) Data – CS1				EDGE Data			
		GSM (dBm)	GPRS 1 TX Slot (dBm)	GPRS 2 TX Slot (dBm)	GPRS 3 TX Slot (dBm)	GPRS 4 TX Slot (dBm)	EDGE 1 TX Slot (dBm)	EDGE 2 TX Slot (dBm)	EDGE 3 TX Slot (dBm)	EDGE 4 TX Slot (dBm)
Maximum		**24.47**	**24.47**	**24.98**	**25.24**	**25.69**	**17.97**	**18.98**	**19.74**	**19.99**
Nominal		**23.47**	**23.47**	**23.98**	**24.24**	**24.69**	**16.97**	**17.98**	**18.74**	**18.99**
GSM 850	128	23.45	23.47	23.61	23.64	23.77	17.02	17.80	18.27	18.49
	190	23.72	23.17	23.78	23.71	23.89	17.23	18.35	18.76	18.55
	251	23.73	23.67	24.09	24.05	24.21	17.21	18.21	18.71	18.86
Maximum		**21.97**	**21.97**	**22.48**	**22.74**	**23.49**	**16.97**	**17.98**	**19.24**	**18.99**
Nominal		**20.97**	**20.97**	**21.48**	**21.74**	**22.49**	**15.97**	**16.98**	**18.24**	**17.99**
GSM 1900	512	20.60	20.48	21.16	21.29	21.76	15.81	16.95	18.07	17.69
	661	20.45	20.30	21.23	21.38	22.16	15.80	16.85	17.97	17.69
	810	20.72	20.61	21.33	21.50	22.29	16.06	17.06	18.19	17.67

9.1.2 Reduced Conducted Power

GSM Conducted output powers (Burst-Average)

Band	Channel	Voice	GPRS(GMSK) Data – CS1				EDGE Data			
		GSM (dBm)	GPRS 1 TX Slot (dBm)	GPRS 2 TX Slot (dBm)	GPRS 3 TX Slot (dBm)	GPRS 4 TX Slot (dBm)	EDGE 1 TX Slot (dBm)	EDGE 2 TX Slot (dBm)	EDGE 3 TX Slot (dBm)	EDGE 4 TX Slot (dBm)
Maximum		**27.00**	**27.00**	**23.00**	**21.50**	**19.50**	**21.50**	**20.00**	**18.00**	**16.50**
Nominal		**26.00**	**26.00**	**22.00**	**20.50**	**18.50**	**20.50**	**19.00**	**17.00**	**15.50**
GSM 850	128	26.11	25.96	22.04	20.86	18.90	20.53	18.85	16.81	15.39
	190	26.15	26.05	22.08	21.13	18.96	21.04	19.44	17.15	15.24
	251	26.20	26.22	22.18	21.27	19.31	20.99	19.19	17.38	15.47
Maximum		**23.00**	**23.00**	**21.00**	**19.00**	**18.00**	**19.00**	**17.50**	**16.00**	**15.00**
Nominal		**22.00**	**22.00**	**20.00**	**18.00**	**17.00**	**18.00**	**16.50**	**15.00**	**14.00**
GSM 1900	512	21.93	21.83	19.77	17.86	16.87	17.99	16.36	15.21	14.35
	661	21.92	21.86	19.81	17.91	16.91	18.04	16.45	15.10	14.37
	810	21.87	21.77	19.76	17.85	17.01	18.19	16.74	15.20	14.53

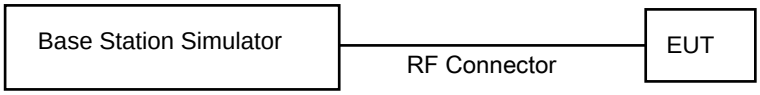
GSM Conducted output powers (Frame-Average)

Band	Channel	Voice	GPRS(GMSK) Data – CS1				EDGE Data			
		GSM (dBm)	GPRS 1 TX Slot (dBm)	GPRS 2 TX Slot (dBm)	GPRS 3 TX Slot (dBm)	GPRS 4 TX Slot (dBm)	EDGE 1 TX Slot (dBm)	EDGE 2 TX Slot (dBm)	EDGE 3 TX Slot (dBm)	EDGE 4 TX Slot (dBm)
Maximum		**17.97**	**17.97**	**16.98**	**17.24**	**16.49**	**12.47**	**13.98**	**13.74**	**13.49**
Nominal		**16.97**	**16.97**	**15.98**	**16.24**	**15.49**	**11.47**	**12.98**	**12.74**	**12.49**
GSM 850	128	17.08	16.93	16.02	16.60	15.89	11.50	12.83	12.55	12.38
	190	17.12	17.02	16.06	16.87	15.95	12.01	13.42	12.89	12.23
	251	17.17	17.19	16.16	17.01	16.30	11.96	13.17	13.12	12.46
Maximum		**13.97**	**13.97**	**14.98**	**14.74**	**14.99**	**9.97**	**11.48**	**11.74**	**11.99**
Nominal		**12.97**	**12.97**	**13.98**	**13.74**	**13.99**	**8.97**	**10.48**	**10.74**	**10.99**
GSM 1900	512	12.90	12.80	13.75	13.60	13.86	8.96	10.34	10.95	11.34
	661	12.89	12.83	13.79	13.65	13.90	9.01	10.43	10.84	11.36
	810	12.84	12.74	13.74	13.59	14.00	9.16	10.72	10.94	11.52

Note:

Time slot average factor is as follows:
1 Tx slot = 9.03 dB, Frame-Average output power = Burst-Average output power – 9.03 dB
2 Tx slot = 6.02 dB, Frame-Average output power = Burst-Average output power – 6.02 dB
3 Tx slot = 4.26 dB, Frame-Average output power = Burst-Average output power – 4.26 dB
4 Tx slot = 3.01 dB, Frame-Average output power = Burst-Average output power – 3.01 dB

GSM Class : B
GPRS Multi-slots 33 (MAX 4 Tx Uplink slots)
EDGE Multi-slots 33 (MAX 4 Tx Uplink slots)



9.2 UMTS

HSPA+

This DUT is only capable of QPSK HSPA+ in uplink. Therefore, the RF conducted power is not measured according to 941225 D01 3G SAR.

9.2.1 Maximum Conducted Power

WCDMA Band 5

3GPP Release Version	Mode	3GPP 34.121	WCDMA Band 5 [dBm]			
		Subtest	UL 4132 DL 4357	UL 4183 DL 4408	UL 4233 DL 4458	3GPP MPR [dB]
99	WCDMA	12.2 kbps RMC	22.65	22.63	22.81	-
99		12.2 kbps AMR	22.66	22.64	22.81	-
5	HSDPA	Subtest 1	21.50	21.51	21.66	0
5		Subtest 2	21.53	21.52	21.68	0
5		Subtest 3	21.02	21.02	21.20	0.5
5		Subtest 4	21.02	21.01	21.21	0.5
6	HSUPA	Subtest 1	21.53	21.52	21.67	0
6		Subtest 2	19.52	19.53	19.69	2
6		Subtest 3	20.53	20.51	20.69	1
6		Subtest 4	19.53	19.53	19.68	2
6		Subtest 5	21.53	21.52	21.67	0
8	DC-HSDPA	Subtest 1	21.64	21.73	21.79	0
8		Subtest 2	21.63	21.74	21.80	0
8		Subtest 3	21.13	21.26	21.32	0.5
8		Subtest 4	21.14	21.26	21.29	0.5

WCDMA Average Conducted output powers

WCDMA Band 2

3GPP Release Version	Mode	3GPP 34.121	WCDMA Band 2 [dBm]			
		Subtest	UL 9262 DL 9662	UL 9400 DL 9800	UL 9538 DL 9938	3GPP MPR [dB]
99	WCDMA	12.2 kbps RMC	23.89	23.9	24.18	-
99	WCDMA	12.2 kbps AMR	23.88	23.89	24.2	-
5	HSDPA	Subtest 1	22.55	22.60	22.89	0
5		Subtest 2	22.56	22.61	22.92	0
5		Subtest 3	22.07	22.10	22.40	0.5
5		Subtest 4	22.05	22.09	22.42	0.5
6	HSUPA	Subtest 1	22.53	22.58	22.91	0
6		Subtest 2	20.55	20.61	20.96	2
6		Subtest 3	21.55	21.61	21.94	1
6		Subtest 4	20.56	20.60	20.92	2
6		Subtest 5	22.54	22.58	22.92	0
8	DC-HSDPA	Subtest 1	22.62	22.54	22.67	0
8		Subtest 2	22.62	22.57	22.71	0
8		Subtest 3	22.14	22.03	22.20	0.5
8		Subtest 4	22.13	22.06	22.18	0.5

WCDMA Average Conducted output powers

9.2.2 Reduced Conducted Power

WCDMA Band 5

3GPP Release Version	Mode	3GPP 34.121	WCDMA Band 5 [dBm]			
		Subtest	UL 4132 DL 4357	UL 4183 DL 4408	UL 4233 DL 4458	3GPP MPR [dB]
99	WCDMA	12.2 kbps RMC	15.96	15.93	16.11	-
99		12.2 kbps AMR	15.96	15.94	16.11	-
5	HSDPA	Subtest 1	14.83	14.80	14.97	0
5		Subtest 2	14.82	14.81	14.98	0
5		Subtest 3	14.31	14.32	14.47	0.5
5		Subtest 4	14.34	14.25	14.48	0.5
6	HSUPA	Subtest 1	14.85	14.82	14.99	0
6		Subtest 2	12.84	12.82	12.99	2
6		Subtest 3	13.85	13.83	13.96	1
6		Subtest 4	12.85	12.84	12.98	2
6		Subtest 5	14.84	14.84	14.98	0
8	DC-HSDPA	Subtest 1	14.72	14.83	15.11	0
8		Subtest 2	14.73	14.82	15.13	0
8		Subtest 3	14.24	14.33	14.65	0.5
8		Subtest 4	14.25	14.35	14.62	0.5

WCDMA Average Conducted output powers

WCDMA Band 2

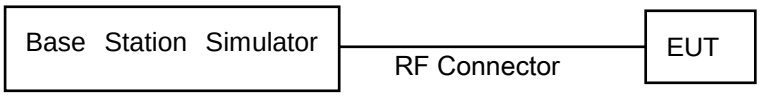
3GPP Release Version	Mode	3GPP 34.121	WCDMA Band 2 [dBm]			
		Subtest	UL 9262 DL 9662	UL 9400 DL 9800	UL 9538 DL 9938	3GPP MPR [dB]
99	WCDMA	12.2 kbps RMC	12.84	12.84	13.18	-
99	WCDMA	12.2 kbps AMR	12.84	12.83	13.19	-
5	HSDPA	Subtest 1	11.50	11.55	11.93	0
5		Subtest 2	11.50	11.55	11.92	0
5		Subtest 3	11.02	11.06	11.43	0.5
5		Subtest 4	11.02	11.07	11.44	0.5
6	HSUPA	Subtest 1	11.49	11.55	11.94	0
6		Subtest 2	9.59	9.55	9.54	2
6		Subtest 3	10.52	10.54	10.91	1
6		Subtest 4	9.48	9.54	9.93	2
6		Subtest 5	11.50	11.54	11.93	0
8	DC-HSDPA	Subtest 1	11.60	11.55	11.71	0
8		Subtest 2	11.59	11.52	11.71	0
8		Subtest 3	11.07	11.04	11.24	0.5
8		Subtest 4	11.09	11.04	11.22	0.5

WCDMA Average Conducted output powers

DC-HSDPA Configurations

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

It is expected by the manufacturer that MPR for some HSPA Subtests may be up to 2 dB more than specified by 3GPP, But also as low as 1 dB according to the chipset implementation in this model to match manufacturer.



9.3 LTE

9.3.1 Maximum Conducted Power

- LTE Band 5

LTE Band 5 _ 1.4 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				20407	20525	20643	[dB]	[dB]
				824.7 MHz	836.5 MHz	848.3 MHz		
1.4 MHz	QPSK	1	0	22.36	22.38	22.49	0	0
		1	3	22.45	22.42	22.62	0	0
		1	5	22.35	22.34	22.53	0	0
		3	0	22.38	22.37	22.53	0	0
		3	1	22.45	22.40	22.61	0	0
		3	3	22.37	22.35	22.54	0	0
		6	0	21.40	21.39	21.57	0-1	1
	16QAM	1	0	21.75	21.71	21.86	0-1	1
		1	3	21.75	21.87	21.96	0-1	1
		1	5	21.68	21.67	21.85	0-1	1
		3	0	21.48	21.52	21.66	0-1	1
		3	1	21.55	21.50	21.67	0-1	1
		3	3	21.49	21.46	21.62	0-1	1
		6	0	20.52	20.57	20.72	0-2	2
	64QAM	1	0	20.69	20.65	20.74	0-2	2
		1	3	20.74	20.77	20.93	0-2	2
		1	5	20.60	20.69	20.81	0-2	2
		3	0	20.61	20.60	20.81	0-2	2
		3	1	20.59	20.65	20.77	0-2	2
		3	3	20.62	20.57	20.72	0-2	2
		6	0	19.41	19.43	19.63	0-3	3

LTE Band 5 _ 3 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				20415	20525	20635	[dB]	[dB]
				825.5 MHz	836.5 MHz	847.5 MHz		
3 MHz	QPSK	1	0	22.30	22.47	22.59	0	0
		1	7	22.38	22.54	22.70	0	0
		1	14	22.28	22.43	22.61	0	0
		8	0	21.34	21.41	21.61	0-1	1
		8	3	21.37	21.47	21.63	0-1	1
		8	7	21.32	21.43	21.60	0-1	1
		15	0	21.30	21.48	21.62	0-1	1
	16QAM	1	0	21.52	21.73	22.02	0-1	1
		1	7	21.71	21.80	22.02	0-1	1
		1	14	21.57	21.74	21.89	0-1	1
		8	0	20.47	20.61	20.77	0-2	2
		8	3	20.48	20.58	20.82	0-2	2
		8	7	20.42	20.54	20.73	0-2	2
		15	0	20.43	20.55	20.72	0-2	2
	64QAM	1	0	20.55	20.71	20.92	0-2	2
		1	7	20.60	20.77	20.92	0-2	2
		1	14	20.54	20.68	20.84	0-2	2
		8	0	19.41	19.60	19.77	0-3	3
		8	3	19.48	19.60	19.78	0-3	3
		8	7	19.44	19.59	19.75	0-3	3
		15	0	19.39	19.54	19.72	0-3	3

LTE Band 5 _ 5 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)			MPR Allowed Per 3GPP [dB]	MPR [dB]
				20425	20525	20625	[dB]	[dB]
				826.5 MHz	836.5 MHz	846.5 MHz		
5 MHz	QPSK	1	0	22.26	22.48	22.55	0	0
		1	12	22.24	22.43	22.68	0	0
		1	24	22.37	22.47	22.59	0	0
		12	0	21.30	21.46	21.54	0-1	1
		12	6	21.46	21.51	21.67	0-1	1
		12	11	21.38	21.47	21.61	0-1	1
		25	0	21.43	21.44	21.56	0-1	1
	16QAM	1	0	21.57	21.72	21.85	0-1	1
		1	12	21.64	21.75	21.91	0-1	1
		1	24	21.75	21.86	21.94	0-1	1
		12	0	20.47	20.60	20.70	0-2	2
		12	6	20.50	20.55	20.74	0-2	2
		12	11	20.53	20.56	20.77	0-2	2
		25	0	20.50	20.55	20.62	0-2	2
	64QAM	1	0	20.54	20.77	20.79	0-2	2
		1	12	20.56	20.76	20.93	0-2	2
		1	24	20.63	20.78	20.86	0-2	2
		12	0	19.49	19.60	19.70	0-3	3
		12	6	19.60	19.61	19.81	0-3	3
		12	11	19.56	19.61	19.78	0-3	3
		25	0	19.51	19.58	19.62	0-3	3

LTE Band 5 _ 10 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)	MPR Allowed Per 3GPP	MPR
				20525	[dB]	[dB]
				836.5 MHz		
10 MHz	QPSK	1	0	22.44	0	0
		1	24	22.46	0	0
		1	49	**22.49**	0	0
		25	0	21.48	0-1	1
		25	12	**21.51**	0-1	1
		25	24	21.46	0-1	1
		50	0	21.49	0-1	1
	16QAM	1	0	21.67	0-1	1
		1	24	21.77	0-1	1
		1	49	21.83	0-1	1
		25	0	20.62	0-2	2
		25	12	20.58	0-2	2
		25	24	20.52	0-2	2
		50	0	20.56	0-2	2
	64QAM	1	0	20.71	0-2	2
		1	24	20.67	0-2	2
		1	49	20.80	0-2	2
		25	0	19.60	0-3	3
		25	12	19.57	0-3	3
		25	24	19.57	0-3	3
		50	0	19.55	0-3	3

Note: LTE Band 5 at 10 MHz Bandwidth does not support three non-overlapping channels. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the mid channel of the group of overlapping channels should be selected for testing.

- LTE Band 12

LTE Band 12 _ 1.4 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				23017	23095	23173	[dB]	[dB]
				699.7 MHz	707.5 MHz	715.3 MHz		
1.4 MHz	QPSK	1	0	22.67	22.61	22.51	0	0
		1	3	22.74	22.68	22.58	0	0
		1	5	22.61	22.59	22.49	0	0
		3	0	22.66	22.67	22.54	0	0
		3	1	22.71	22.71	22.59	0	0
		3	3	22.62	22.63	22.55	0	0
		6	0	21.66	21.67	21.60	0-1	1
	16QAM	1	0	21.85	21.90	21.84	0-1	1
		1	3	22.05	22.11	21.93	0-1	1
		1	5	21.91	22.00	21.82	0-1	1
		3	0	21.74	21.77	21.64	0-1	1
		3	1	21.80	21.74	21.64	0-1	1
		3	3	21.76	21.73	21.64	0-1	1
		6	0	20.83	20.90	20.71	0-2	2
	64QAM	1	0	20.87	20.96	20.86	0-2	2
		1	3	21.01	20.96	20.89	0-2	2
		1	5	20.90	20.90	20.73	0-2	2
		3	0	20.92	20.89	20.73	0-2	2
		3	1	20.93	20.91	20.80	0-2	2
		3	3	20.85	20.89	20.76	0-2	2
		6	0	19.75	19.78	19.69	0-3	3

LTE Band 12 _ 3 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				23025	23095	23165	[dB]	[dB]
				700.5 MHz	707.5 MHz	714.5 MHz		
3 MHz	QPSK	1	0	22.68	22.74	22.56	0	0
		1	7	22.80	22.79	22.71	0	0
		1	14	22.64	22.66	22.56	0	0
		8	0	21.76	21.73	21.63	0-1	1
		8	3	21.75	21.72	21.67	0-1	1
		8	7	21.70	21.75	21.57	0-1	1
		15	0	21.76	21.75	21.63	0-1	1
	16QAM	1	0	22.10	22.12	21.92	0-1	1
		1	7	22.03	22.17	21.89	0-1	1
		1	14	21.99	21.99	21.95	0-1	1
		8	0	20.90	20.88	20.73	0-2	2
		8	3	20.87	20.94	20.76	0-2	2
		8	7	20.82	20.87	20.72	0-2	2
		15	0	20.83	20.87	20.76	0-2	2
	64QAM	1	0	20.96	21.08	20.90	0-2	2
		1	7	21.05	21.03	20.93	0-2	2
		1	14	20.91	20.89	20.79	0-2	2
		8	0	19.88	19.90	19.75	0-3	3
		8	3	19.92	19.92	19.79	0-3	3
		8	7	19.85	19.91	19.78	0-3	3
		15	0	19.82	19.84	19.74	0-3	3

LTE Band 12 _ 5 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				23035	23095	23155	[dB]	[dB]
				701.5 MHz	707.5 MHz	713.5 MHz		
5 MHz	QPSK	1	0	22.73	22.66	22.64	0	0
		1	12	22.68	22.75	22.62	0	0
		1	24	22.62	22.63	22.58	0	0
		12	0	21.77	21.78	21.70	0-1	1
		12	6	21.76	21.78	21.67	0-1	1
		12	11	21.72	21.77	21.69	0-1	1
		25	0	21.74	21.75	21.67	0-1	1
	16QAM	1	0	22.00	22.09	21.92	0-1	1
		1	12	22.01	22.04	21.84	0-1	1
		1	24	21.86	21.94	21.90	0-1	1
		12	0	20.85	20.90	20.83	0-2	2
		12	6	20.87	20.87	20.73	0-2	2
		12	11	20.80	20.85	20.77	0-2	2
		25	0	20.79	20.86	20.74	0-2	2
	64QAM	1	0	21.03	21.03	20.94	0-2	2
		1	12	20.99	20.99	20.92	0-2	2
		1	24	20.93	20.93	20.87	0-2	2
		12	0	19.93	19.94	19.88	0-3	3
		12	6	19.91	20.00	19.84	0-3	3
		12	11	19.86	19.96	19.78	0-3	3
		25	0	19.88	19.89	19.76	0-3	3

LTE Band 12 _ 10 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)	MPR Allowed Per 3GPP	MPR
				23095	[dB]	[dB]
				707.5 MHz		
10 MHz	QPSK	1	0	**22.71**	0	0
		1	24	22.70	0	0
		1	49	22.64	0	0
		25	0	21.79	0-1	1
		25	12	**21.80**	0-1	1
		25	24	21.72	0-1	1
		50	0	21.76	0-1	1
	16QAM	1	0	22.01	0-1	1
		1	24	22.02	0-1	1
		1	49	21.99	0-1	1
		25	0	20.91	0-2	2
		25	12	20.89	0-2	2
		25	24	20.80	0-2	2
		50	0	20.88	0-2	2
	64QAM	1	0	21.05	0-2	2
		1	24	20.95	0-2	2
		1	49	20.82	0-2	2
		25	0	19.92	0-3	3
		25	12	19.91	0-3	3
		25	24	19.80	0-3	3
		50	0	19.88	0-3	3

Note: LTE Band 12 at 10 MHz Bandwidth does not support three non-overlapping channels. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the mid channel of the group of overlapping channels should be selected for testing.

- LTE Band 17

LTE Band 17 _ 5 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)	MPR Allowed Per 3GPP	MPR
				23790	[dB]	[dB]
				710 MHz		
5 MHz	QPSK	1	0	22.87	0	0
		1	12	22.84	0	0
		1	24	22.93	0	0
		12	0	21.93	0-1	1
		12	6	21.91	0-1	1
		12	11	21.88	0-1	1
		25	0	21.90	0-1	1
	16QAM	1	0	22.15	0-1	1
		1	12	22.18	0-1	1
		1	24	22.19	0-1	1
		12	0	21.02	0-2	2
		12	6	21.02	0-2	2
		12	11	20.95	0-2	2
		25	0	20.98	0-2	2
	64QAM	1	0	21.17	0-2	2
		1	12	21.09	0-2	2
		1	24	21.11	0-2	2
		12	0	20.10	0-3	3
		12	6	20.11	0-3	3
		12	11	20.01	0-3	3
		25	0	20.00	0-3	3

LTE Band 17 _ 10 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)	MPR Allowed Per 3GPP	MPR
				23790	[dB]	[dB]
				710 MHz		
10 MHz	QPSK	1	0	**22.82**	0	0
		1	24	22.82	0	0
		1	49	22.81	0	0
		25	0	**21.97**	0-1	1
		25	12	21.94	0-1	1
		25	24	21.83	0-1	1
		50	0	21.92	0-1	1
	16QAM	1	0	22.16	0-1	1
		1	24	22.08	0-1	1
		1	49	22.04	0-1	1
		25	0	21.05	0-2	2
		25	12	21.01	0-2	2
		25	24	20.93	0-2	2
		50	0	20.99	0-2	2
	64QAM	1	0	21.11	0-2	2
		1	24	21.05	0-2	2
		1	49	21.09	0-2	2
		25	0	20.05	0-3	3
		25	12	20.02	0-3	3
		25	24	19.95	0-3	3
		50	0	20.01	0-3	3

Note: LTE Band 17 at 5 MHz &10 MHz Bandwidth does not support three non-overlapping channels. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the mid channel of the group of overlapping channels should be selected for testing.

- LTE TDD Band 41

- LTE TDD Band 41 _ 5 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				40265	40740	41215	[dB]	[dB]
				2557.5 MHz	2605 MHz	2652.5 MHz		
5 MHz	QPSK	1	0	22.62	22.59	22.60	0	0
		1	12	22.61	22.61	22.56	0	0
		1	24	22.62	22.58	22.42	0	0
		12	0	21.71	21.67	21.65	0-1	1
		12	6	21.76	21.67	21.68	0-1	1
		12	11	21.72	21.63	21.63	0-1	1
		25	0	21.76	21.67	21.64	0-1	1
	16QAM	1	0	21.92	21.87	21.87	0-1	1
		1	12	21.93	21.89	21.88	0-1	1
		1	24	21.91	21.86	21.75	0-1	1
		12	0	20.86	20.77	20.77	0-2	2
		12	6	20.84	20.81	20.82	0-2	2
		12	11	20.87	20.79	20.75	0-2	2
		25	0	20.81	20.78	20.78	0-2	2
	64QAM	1	0	20.72	20.69	20.70	0-2	2
		1	12	20.74	20.68	20.67	0-2	2
		1	24	20.70	20.67	20.55	0-2	2
		12	0	19.88	19.86	19.85	0-3	3
		12	6	19.90	19.87	19.84	0-3	3
		12	11	19.87	19.83	19.81	0-3	3
		25	0	19.87	19.82	19.81	0-3	3

- LTE TDD Band 41 _ 10 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				40290	40740	41190	[dB]	[dB]
				2560 MHz	2605 MHz	2650 MHz		
10 MHz	QPSK	1	0	22.69	22.61	22.70	0	0
		1	24	22.67	22.60	22.64	0	0
		1	49	22.55	22.53	22.45	0	0
		25	0	21.79	21.67	21.71	0-1	1
		25	12	21.81	21.70	21.69	0-1	1
		25	24	21.70	21.65	21.67	0-1	1
		50	0	21.70	21.70	21.70	0-1	1
	16QAM	1	0	22.00	21.95	21.92	0-1	1
		1	24	21.99	21.91	21.91	0-1	1
		1	49	21.90	21.89	21.76	0-1	1
		25	0	20.90	20.77	20.81	0-2	2
		25	12	20.90	20.82	20.79	0-2	2
		25	24	20.80	20.75	20.73	0-2	2
		50	0	20.81	20.82	20.81	0-2	2
	64QAM	1	0	20.81	20.74	20.72	0-2	2
		1	24	20.79	20.71	20.69	0-2	2
		1	49	20.68	20.65	20.54	0-2	2
		25	0	19.96	19.87	19.85	0-3	3
		25	12	19.96	19.86	19.86	0-3	3
		25	24	19.85	19.82	19.81	0-3	3
		50	0	19.80	19.81	19.80	0-3	3

- LTE TDD Band 41 _ 15 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				40315	40740	41165	[dB]	[dB]
				2562.5 MHz	2605 MHz	2647.5 MHz		
15 MHz	QPSK	1	0	22.79	22.70	22.69	0	0
		1	36	22.68	22.59	22.58	0	0
		1	74	22.64	22.53	22.44	0	0
		36	0	21.82	21.70	21.73	0-1	1
		36	18	21.73	21.72	21.72	0-1	1
		36	39	21.69	21.65	21.64	0-1	1
		75	0	21.71	21.67	21.67	0-1	1
	16QAM	1	0	22.06	22.04	21.95	0-1	1
		1	36	21.96	21.87	21.82	0-1	1
		1	74	21.89	21.79	21.74	0-1	1
		36	0	20.87	20.79	20.75	0-2	2
		36	18	20.75	20.76	20.73	0-2	2
		36	39	20.73	20.69	20.68	0-2	2
		75	0	20.81	20.81	20.77	0-2	2
	64QAM	1	0	20.86	20.81	20.74	0-2	2
		1	36	20.76	20.68	20.62	0-2	2
		1	74	20.70	20.62	20.52	0-2	2
		36	0	19.89	19.83	19.77	0-3	3
		36	18	19.82	19.82	19.78	0-3	3
		36	39	19.79	19.78	19.70	0-3	3
		75	0	19.82	19.84	19.80	0-3	3

- LTE TDD Band 41 _ 20 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				40340	40740	41140	[dB]	[dB]
				2565 MHz	2605 MHz	2645 MHz		
20 MHz	QPSK	1	0	**22.86**	22.71	22.74	0	0
		1	49	22.63	22.58	22.59	0	0
		1	99	22.63	22.45	22.42	0	0
		50	0	21.79	21.76	**21.81**	0-1	1
		50	25	21.78	21.71	21.73	0-1	1
		50	49	21.75	21.67	21.67	0-1	1
		100	0	21.79	21.73	21.74	0-1	1
	16QAM	1	0	22.11	22.05	21.95	0-1	1
		1	49	21.90	21.90	21.83	0-1	1
		1	99	21.87	21.77	21.72	0-1	1
		50	0	20.89	20.87	20.85	0-2	2
		50	25	20.87	20.82	20.84	0-2	2
		50	49	20.86	20.81	20.77	0-2	2
		100	0	20.87	20.83	20.81	0-2	2
	64QAM	1	0	20.91	20.84	20.77	0-2	2
		1	49	20.72	20.68	20.63	0-2	2
		1	99	20.68	20.58	20.52	0-2	2
		50	0	19.88	19.87	19.87	0-3	3
		50	25	19.87	19.84	19.81	0-3	3
		50	49	19.83	19.78	19.75	0-3	3
		100	0	19.86	19.83	19.80	0-3	3

9.3.2 Reduced Conducted Power

- LTE Band 5

LTE Band 5 _ 1.4 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power (dBm)			MPR Allowed Per 3GPP	MPR
				20407	20525	20643	[dB]	[dB]
				824.7 MHz	836.5 MHz	848.3 MHz		
1.4 MHz	QPSK	1	0	14.52	14.53	14.72	0	0
		1	3	14.50	14.66	14.81	0	0
		1	5	14.42	14.59	14.76	0	0
		3	0	14.42	14.54	14.75	0	0
		3	1	14.50	14.63	14.79	0	0
		3	3	14.45	14.57	14.73	0	0
		6	0	14.42	14.62	14.75	0-1	0
	16QAM	1	0	14.58	14.7	14.87	0-1	0
		1	3	14.36	14.55	14.53	0-1	0
		1	5	14.39	14.41	14.58	0-1	0
		3	0	14.18	14.31	14.36	0-1	0
		3	1	14.22	14.25	14.32	0-1	0
		3	3	14.13	14.21	14.37	0-1	0
		6	0	14.22	14.33	14.37	0-2	0
	64QAM	1	0	14.33	14.43	14.54	0-2	0
		1	3	14.3	14.42	14.57	0-2	0
		1	5	14.32	14.41	14.52	0-2	0
		3	0	14.31	14.34	14.45	0-2	0
		3	1	14.34	14.41	14.46	0-2	0
		3	3	14.26	14.35	14.41	0-2	0
		6	0	14.15	14.24	14.3	0-3	0

LTE Band 5 _ 3 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power (dBm)			MPR Allowed Per 3GPP	MPR
				20415	20525	20635	[dB]	[dB]
				825.5 MHz	836.5 MHz	847.5 MHz		
3 MHz	QPSK	1	0	14.48	14.62	14.79	0	0
		1	7	14.58	14.73	14.84	0	0
		1	14	14.45	14.63	14.78	0	0
		8	0	14.51	14.64	14.80	0-1	0
		8	3	14.51	14.71	14.88	0-1	0
		8	7	14.50	14.64	14.82	0-1	0
		15	0	14.50	14.63	14.79	0-1	0
	16QAM	1	0	14.59	14.72	14.54	0-1	0
		1	7	14.61	14.53	14.3	0-1	0
		1	14	14.32	14.49	14.4	0-1	0
		8	0	14.22	14.39	14.38	0-2	0
		8	3	14.27	14.4	14.49	0-2	0
		8	7	14.23	14.36	14.42	0-2	0
		15	0	14.19	14.34	14.44	0-2	0
	64QAM	1	0	14.41	14.45	14.61	0-2	0
		1	7	14.4	14.61	14.61	0-2	0
		1	14	14.36	14.49	14.42	0-2	0
		8	0	14.29	14.36	14.41	0-3	0
		8	3	14.29	14.41	14.47	0-3	0
		8	7	14.26	14.37	14.4	0-3	0
		15	0	14.24	14.33	14.41	0-3	0

LTE Band 5 _ 5 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power (dBm)			MPR Allowed Per 3GPP [dB]	MPR [dB]
				20425	20525	20625	[dB]	[dB]
				826.5 MHz	836.5 MHz	846.5 MHz		
5 MHz	QPSK	1	0	14.53	14.65	14.76	0	0
		1	12	14.44	14.60	14.81	0	0
		1	24	14.55	14.69	14.75	0	0
		12	0	14.55	14.65	14.74	0-1	0
		12	6	14.63	14.71	14.87	0-1	0
		12	11	14.63	14.70	14.84	0-1	0
		25	0	14.59	14.66	14.75	0-1	0
	16QAM	1	0	14.52	14.49	14.6	0-1	0
		1	12	14.25	14.31	14.47	0-1	0
		1	24	14.26	14.49	14.41	0-1	0
		12	0	14.2	14.32	14.38	0-2	0
		12	6	14.3	14.38	14.48	0-2	0
		12	11	14.27	14.34	14.46	0-2	0
		25	0	14.28	14.34	14.31	0-2	0
	64QAM	1	0	14.39	14.49	14.36	0-2	0
		1	12	14.31	14.43	14.5	0-2	0
		1	24	14.47	14.57	14.52	0-2	0
		12	0	14.27	14.41	14.34	0-3	0
		12	6	14.41	14.44	14.45	0-3	0
		12	11	14.32	14.39	14.42	0-3	0
		25	0	14.36	14.33	14.33	0-3	0

LTE Band 5 _ 10 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power (dBm)	MPR Allowed Per 3GPP	MPR
				20525	[dB]	[dB]
				836.5 MHz		
10 MHz	QPSK	1	0	14.55	0	0
		1	24	14.59	0	0
		1	49	**14.66**	0	0
		25	0	14.68	0-1	0
		25	12	**14.73**	0-1	0
		25	24	14.67	0-1	0
		50	0	14.66	0-1	0
	16QAM	1	0	14.65	0-1	0
		1	24	14.57	0-1	0
		1	49	14.55	0-1	0
		25	0	14.38	0-2	0
		25	12	14.4	0-2	0
		25	24	14.34	0-2	0
		50	0	14.38	0-2	0
	64QAM	1	0	14.67	**0-2**	0
		1	24	14.45	**0-2**	0
		1	49	14.58	**0-2**	0
		25	0	14.37	**0-3**	0
		25	12	14.39	**0-3**	0
		25	24	14.33	**0-3**	0
		50	0	14.38	**0-3**	0

Note: LTE Band 5 at 10 MHz Bandwidth does not support three non-overlapping channels. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the mid channel of the group of overlapping channels should be selected for testing.

- LTE Band 12

LTE Band 12 _ 1.4 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power (dBm)			MPR Allowed Per 3GPP	MPR
				23017	23095	23173	[dB]	[dB]
				699.7 MHz	707.5 MHz	715.3 MHz		
1.4 MHz	QPSK	1	0	13.89	13.92	13.74	0	0
		1	3	13.95	13.98	13.86	0	0
		1	5	13.86	13.85	13.80	0	0
		3	0	13.93	13.92	13.73	0	0
		3	1	13.95	13.97	13.81	0	0
		3	3	13.93	13.95	13.79	0	0
		6	0	13.94	13.94	13.84	0-1	0
	16QAM	1	0	13.99	13.97	13.85	0-1	0
		1	3	14.09	13.99	13.89	0-1	0
		1	5	13.97	13.81	13.75	0-1	0
		3	0	13.8	13.68	13.56	0-1	0
		3	1	13.71	13.8	13.65	0-1	0
		3	3	13.75	13.7	13.59	0-1	0
		6	0	13.81	13.81	13.68	0-2	0
	64QAM	1	0	14.01	14.11	13.85	0-2	0
		1	3	13.79	13.96	13.67	0-2	0
		1	5	13.77	13.93	13.57	0-2	0
		3	0	13.75	13.84	13.54	0-2	0
		3	1	13.79	13.83	13.58	0-2	0
		3	3	13.75	13.72	13.55	0-2	0
		6	0	13.64	13.64	13.45	0-3	0

LTE Band 12 _ 3 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power (dBm)			MPR Allowed Per 3GPP	MPR
				23025	23095	23165	[dB]	[dB]
				700.5 MHz	707.5 MHz	714.5 MHz		
3 MHz	QPSK	1	0	13.99	13.97	13.84	0	0
		1	7	14.04	14.08	13.90	0	0
		1	14	13.91	13.96	13.83	0	0
		8	0	14.02	13.99	13.88	0-1	0
		8	3	13.98	14.00	13.89	0-1	0
		8	7	13.91	13.97	13.91	0-1	0
		15	0	13.97	14.03	13.97	0-1	0
	16QAM	1	0	14.10	14.09	13.68	0-1	0
		1	7	14.07	14.07	13.99	0-1	0
		1	14	13.97	13.96	13.85	0-1	0
		8	0	13.88	13.83	13.69	0-2	0
		8	3	13.92	13.89	13.69	0-2	0
		8	7	13.87	13.81	13.66	0-2	0
		15	0	13.81	13.82	13.7	0-2	0
	64QAM	1	0	13.79	13.85	13.72	0-2	0
		1	7	13.72	13.71	13.66	0-2	0
		1	14	13.86	13.89	13.74	0-2	0
		8	0	13.77	13.82	13.44	0-3	0
		8	3	13.78	13.81	13.47	0-3	0
		8	7	13.74	13.79	13.54	0-3	0
		15	0	13.74	13.75	13.42	0-3	0

LTE Band 12 _ 5 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power (dBm)			MPR Allowed Per 3GPP	MPR
				23035	23095	23155	[dB]	[dB]
				701.5 MHz	707.5 MHz	713.5 MHz		
5 MHz	QPSK	1	0	13.96	13.96	13.94	0	0
		1	12	13.94	13.98	13.81	0	0
		1	24	13.92	13.92	13.86	0	0
		12	0	14.01	14.03	13.95	0-1	0
		12	6	14.03	14.04	13.95	0-1	0
		12	11	14.01	13.99	13.90	0-1	0
		25	0	14.00	14.00	13.98	0-1	0
	16QAM	1	0	14.04	13.97	13.9	0-1	0
		1	12	14.11	14.03	13.83	0-1	0
		1	24	13.95	14.01	13.78	0-1	0
		12	0	13.85	13.86	13.72	0-2	0
		12	6	13.82	13.84	13.67	0-2	0
		12	11	13.77	13.77	13.68	0-2	0
		25	0	13.81	13.77	13.69	0-2	0
	64QAM	1	0	13.98	13.94	13.89	0-2	0
		1	12	13.95	14.04	13.8	0-2	0
		1	24	13.96	14.01	13.88	0-2	0
		12	0	13.91	13.96	13.74	0-3	0
		12	6	13.88	13.98	13.76	0-3	0
		12	11	13.87	13.93	13.69	0-3	0
		25	0	13.79	13.84	13.69	0-3	0

LTE Band 12 _ 10 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power (dBm)	MPR Allowed Per 3GPP	MPR
				23095	[dB]	[dB]
				707.5 MHz		
10 MHz	QPSK	1	0	13.95	0	0
		1	24	**13.98**	0	0
		1	49	13.85	0	0
		25	0	14.03	0-1	0
		25	12	**14.04**	0-1	0
		25	24	13.98	0-1	0
		50	0	14.02	0-1	0
	16QAM	1	0	14.04	0-1	0
		1	24	14.08	0-1	0
		1	49	13.89	0-1	0
		25	0	13.87	0-2	0
		25	12	13.84	0-2	0
		25	24	13.73	0-2	0
		50	0	13.83	0-2	0
	64QAM	1	0	14.01	0-2	0
		1	24	13.96	0-2	0
		1	49	14.01	0-2	0
		25	0	13.9	0-3	0
		25	12	13.92	0-3	0
		25	24	13.85	0-3	0
		50	0	13.81	0-3	0

Note: LTE Band 12 at 10 MHz Bandwidth does not support three non-overlapping channels. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the mid channel of the group of overlapping channels should be selected for testing.

- LTE Band 17

LTE Band 17 _ 5 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power (dBm)	MPR Allowed Per 3GPP	MPR
				23790	[dB]	[dB]
				710 MHz		
5 MHz	QPSK	1	0	15.46	0	0
		1	12	15.43	0	0
		1	24	15.48	0	0
		12	0	15.50	0-1	0
		12	6	15.51	0-1	0
		12	11	15.48	0-1	0
		25	0	15.45	0-1	0
	16QAM	1	0	15.55	0-1	0
		1	12	15.52	0-1	0
		1	24	15.41	0-1	0
		12	0	15.4	0-2	0
		12	6	15.41	0-2	0
		12	11	15.32	0-2	0
		25	0	15.29	0-2	0
	64QAM	1	0	15.51	0-2	0
		1	12	15.46	0-2	0
		1	24	15.45	0-2	0
		12	0	15.34	0-3	0
		12	6	15.35	0-3	0
		12	11	15.33	0-3	0
		25	0	15.27	0-3	0

LTE Band 17 _ 10 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Reduced Power (dBm)	MPR Allowed Per 3GPP	MPR
				23790	[dB]	[dB]
				710 MHz		
10 MHz	QPSK	1	0	15.42	0	0
		1	24	**15.47**	0	0
		1	49	15.41	0	0
		25	0	**15.51**	0-1	0
		25	12	15.49	0-1	0
		25	24	15.42	0-1	0
		50	0	15.48	0-1	0
	16QAM	1	0	15.49	0-1	0
		1	24	15.5	0-1	0
		1	49	15.43	0-1	0
		25	0	15.36	0-2	0
		25	12	15.31	0-2	0
		25	24	15.26	0-2	0
		50	0	15.29	0-2	0
	64QAM	1	0	15.43	0-2	0
		1	24	15.51	0-2	0
		1	49	15.51	0-2	0
		25	0	15.33	0-3	0
		25	12	15.3	0-3	0
		25	24	15.23	0-3	0
		50	0	15.3	0-3	0

Note: LTE Band 17 at 5 MHz &10 MHz Bandwidth does not support three non-overlapping channels. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the mid channel of the group of overlapping channels should be selected for testing.

- LTE TDD Band 41

LTE TDD Band 41 _ 5 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				40265	40740	41215	[dB]	[dB]
				2557.5 MHz	2605 MHz	2652.5 MHz		
5 MHz	QPSK	1	0	13.66	13.58	13.77	0	0
		1	12	13.64	13.59	13.75	0	0
		1	24	13.61	13.53	13.61	0	0
		12	0	13.71	13.64	13.79	0-1	0
		12	6	13.75	13.66	13.85	0-1	0
		12	11	13.71	13.61	13.79	0-1	0
		25	0	13.70	13.64	13.80	0-1	0
	16QAM	1	0	13.5	13.44	13.54	0-1	0
		1	12	13.52	13.45	13.54	0-1	0
		1	24	13.49	13.41	13.44	0-1	0
		12	0	13.46	13.38	13.51	0-2	0
		12	6	13.47	13.41	13.53	0-2	0
		12	11	13.44	13.37	13.5	0-2	0
		25	0	13.48	13.41	13.54	0-2	0
	64QAM	1	0	13.53	13.36	13.53	0-2	0
		1	12	13.47	13.35	13.54	0-2	0
		1	24	13.47	13.32	13.40	0-2	0
		12	0	13.56	13.46	13.64	0-3	0
		12	6	13.62	13.47	13.67	0-3	0
		12	11	13.56	13.45	13.63	0-3	0
		25	0	13.57	13.46	13.63	0-3	0

- LTE TDD Band 41 _ 10 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				40290	40740	41190	[dB]	[dB]
				2560 MHz	2605 MHz	2650 MHz		
10 MHz	QPSK	1	0	13.74	13.66	13.78	0	0
		1	24	13.67	13.64	13.76	0	0
		1	49	13.56	13.60	13.63	0	0
		25	0	13.75	13.65	13.83	0-1	0
		25	12	13.78	13.69	13.83	0-1	0
		25	24	13.61	13.62	13.79	0-1	0
		50	0	13.67	13.65	13.83	0-1	0
	16QAM	1	0	13.61	13.5	13.67	0-1	0
		1	24	13.57	13.49	13.53	0-1	0
		1	49	13.4	13.42	13.42	0-1	0
		25	0	13.55	13.44	13.54	0-2	0
		25	12	13.57	13.45	13.54	0-2	0
		25	24	13.42	13.4	13.52	0-2	0
		50	0	13.48	13.48	13.58	0-2	0
	64QAM	1	0	13.56	13.44	13.56	0-2	0
		1	24	13.53	13.43	13.54	0-2	0
		1	49	13.39	13.41	13.39	0-2	0
		25	0	13.66	13.52	13.67	0-3	0
		25	12	13.64	13.55	13.67	0-3	0
		25	24	13.48	13.53	13.62	0-3	0
		50	0	13.47	13.45	13.6	0-3	0

- LTE TDD Band 41 _ 15 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				40315	40740	41165	[dB]	[dB]
				2562.5 MHz	2605 MHz	2647.5 MHz		
15 MHz	QPSK	1	0	13.76	13.66	13.83	0	0
		1	36	13.68	13.55	13.70	0	0
		1	74	13.61	13.48	13.60	0	0
		36	0	13.82	13.72	13.82	0-1	0
		36	18	13.69	13.70	13.82	0-1	0
		36	39	13.64	13.66	13.77	0-1	0
		75	0	13.67	13.67	13.79	0-1	0
	16QAM	1	0	13.72	13.6	13.69	0-1	0
		1	36	13.54	13.42	13.47	0-1	0
		1	74	13.46	13.32	13.49	0-1	0
		36	0	13.54	13.41	13.53	0-2	0
		36	18	13.43	13.4	13.54	0-2	0
		36	39	13.36	13.38	13.43	0-2	0
		75	0	13.72	13.6	13.69	0-2	0
	64QAM	1	0	13.65	13.46	13.61	0-2	0
		1	36	13.54	13.44	13.51	0-2	0
		1	74	13.40	13.30	13.44	0-2	0
		36	0	13.62	13.48	13.61	0-3	0
		36	18	13.52	13.5	13.61	0-3	0
		36	39	13.44	13.45	13.56	0-3	0
		75	0	13.52	13.47	13.65	0-3	0

- LTE TDD Band 41 _ 20 MHz Bandwidth

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				40340	40740	41140	[dB]	[dB]
				2565 MHz	2605 MHz	2645 MHz		
20 MHz	QPSK	1	0	**13.84**	13.69	13.77	0	0
		1	49	13.62	13.58	13.66	0	0
		1	99	13.58	13.51	13.56	0	0
		50	0	13.75	13.71	**13.84**	0-1	0
		50	25	13.73	13.67	13.83	0-1	0
		50	49	13.66	13.65	13.79	0-1	0
		100	0	13.74	13.70	13.82	0-1	0
	16QAM	1	0	13.8	13.6	13.72	0-1	0
		1	49	13.45	13.41	13.46	0-1	0
		1	99	13.4	13.33	13.46	0-1	0
		50	0	13.57	13.52	13.66	0-2	0
		50	25	13.52	13.48	13.59	0-2	0
		50	49	13.48	13.46	13.54	0-2	0
		100	0	13.51	13.49	13.55	0-2	0
	64QAM	1	0	13.67	13.53	13.60	0-2	0
		1	49	13.42	13.39	13.51	0-2	0
		1	99	13.41	13.34	13.38	0-2	0
		50	0	13.58	13.52	13.65	0-3	0
		50	25	13.52	13.49	13.61	0-3	0
		50	49	13.5	13.46	13.57	0-3	0
		100	0	13.52	13.47	13.61	0-3	0

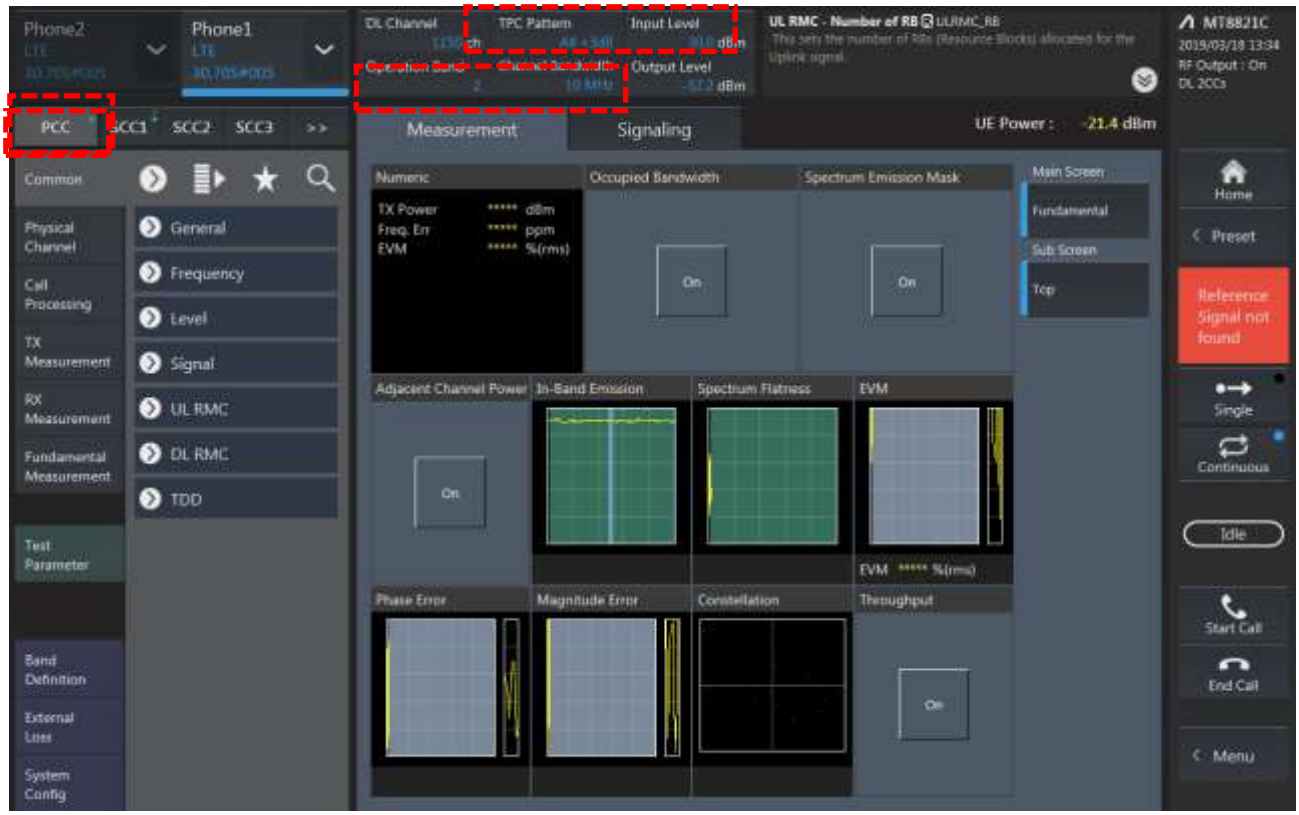
Note;

The EUT enables maximum power reduction in accordance with 3GPP 36.101. The MPR settings are configured during the manufacture process and are not configurable by the network, carrier, or end user.

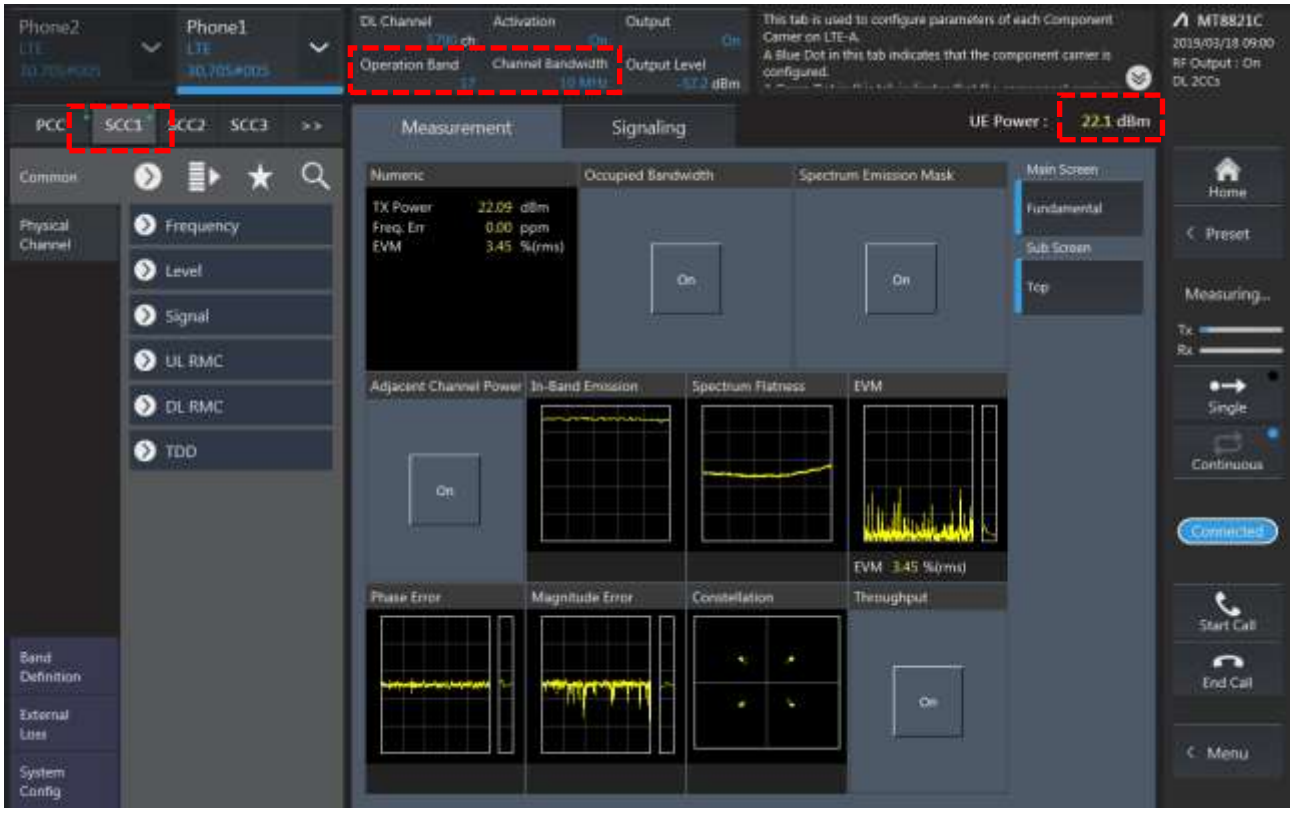
9.3.2 LTE Down-link Carrier Aggregation Conducted Powers

LTE DownLink 2CA Call Setup

1) PCC Setting :Channel /RB/BW/Modulation

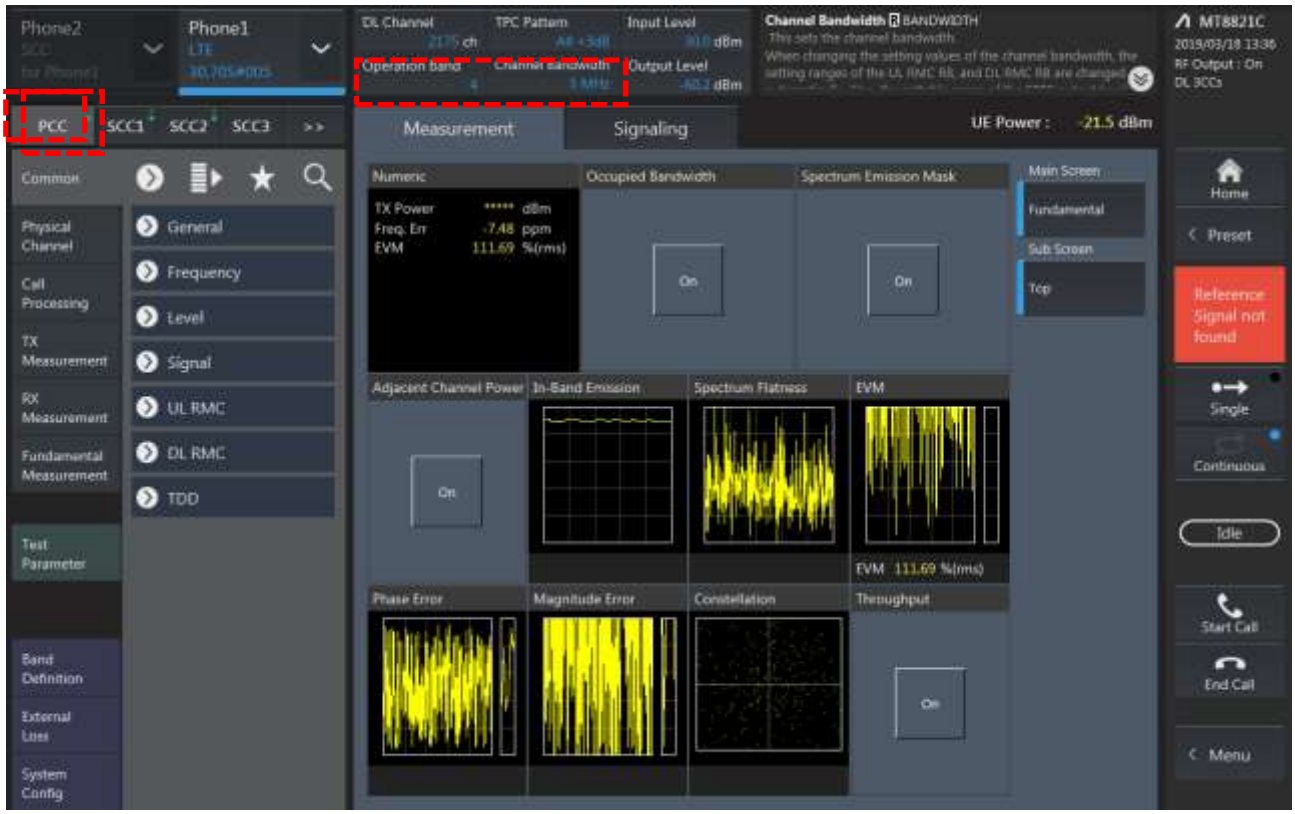


2)SCC Setting (Channel /RB/BW/Modulation) and call Connection

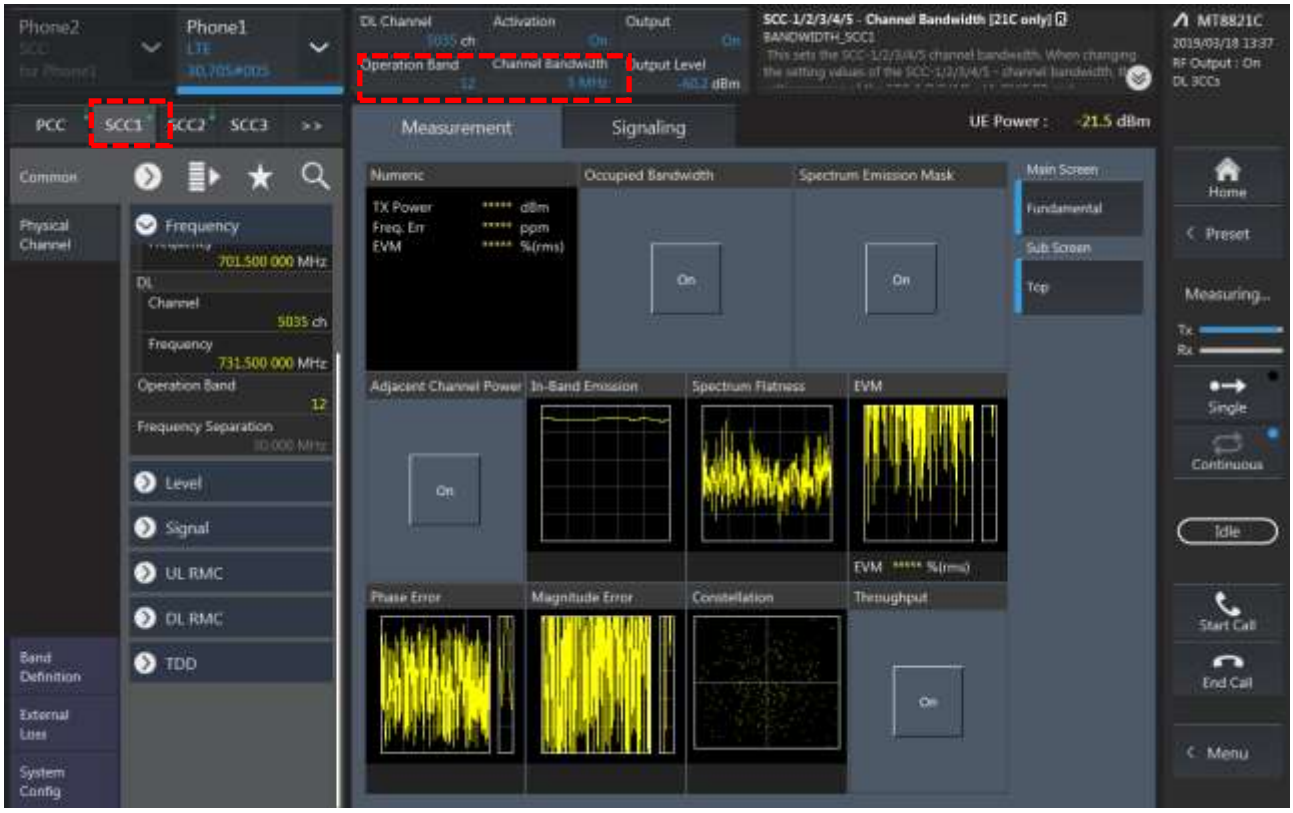


LTE DownLink 3CA Call Setup

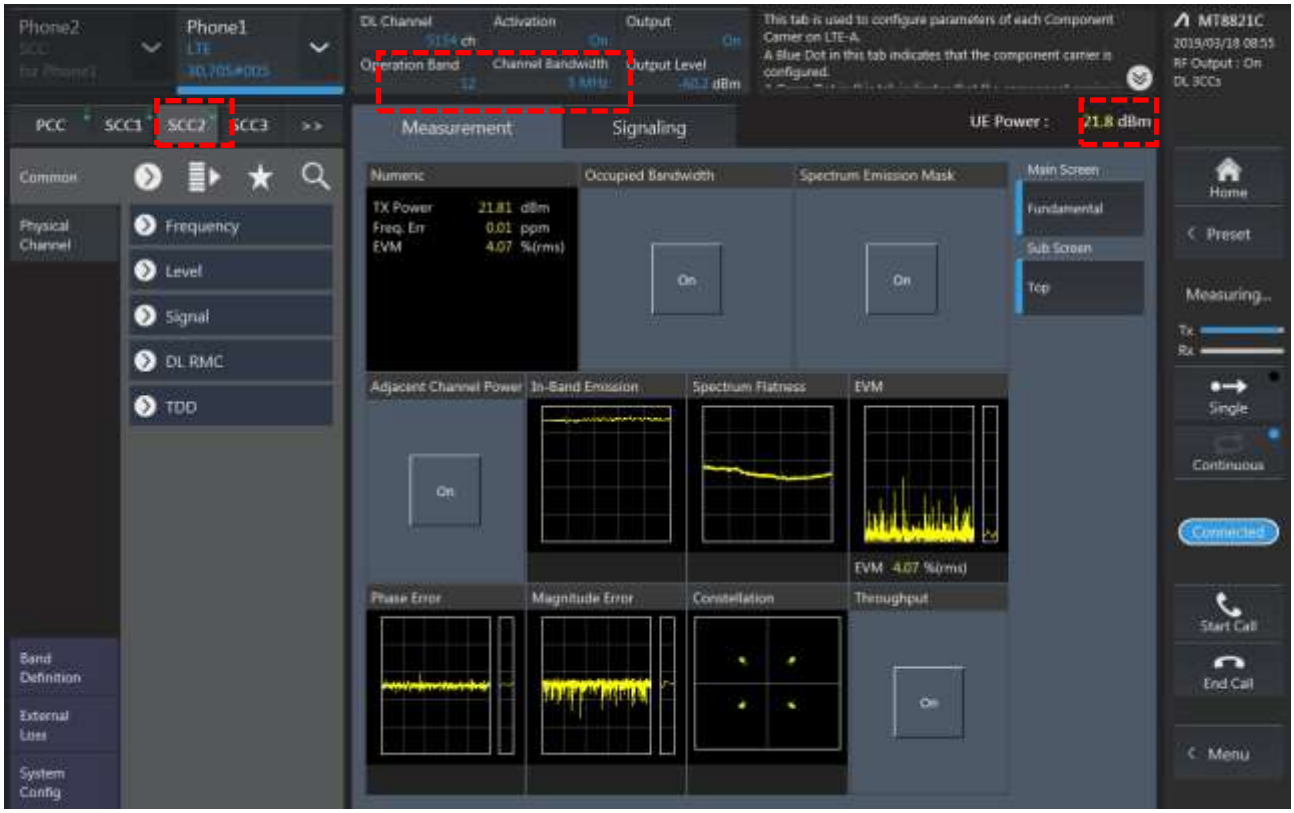
1)PCC Setting: Channel /RB/BW/Modulation



2) SCC1 Setting : Channel /RB/BW/Modulation

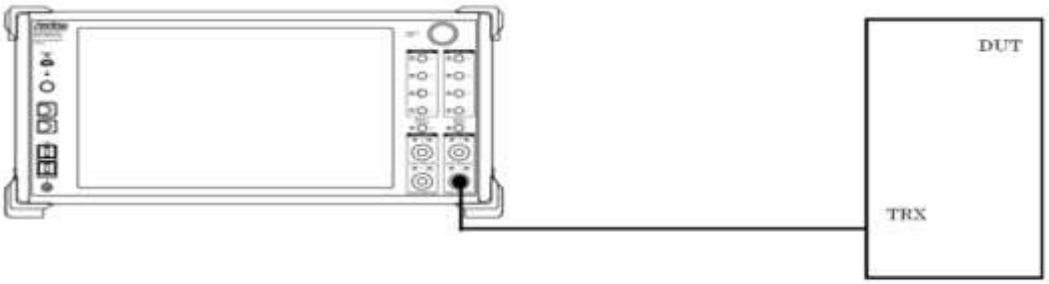


3) SCC2 Setting (Channel /RB/BW/Modulation)and call Connection



9.3.3 LTE Up-link Carrier Aggregation Conducted Powers Setup

To measure the LTE UP CA power of this device, Anritsu's MT8821C was used to check the power as follows.

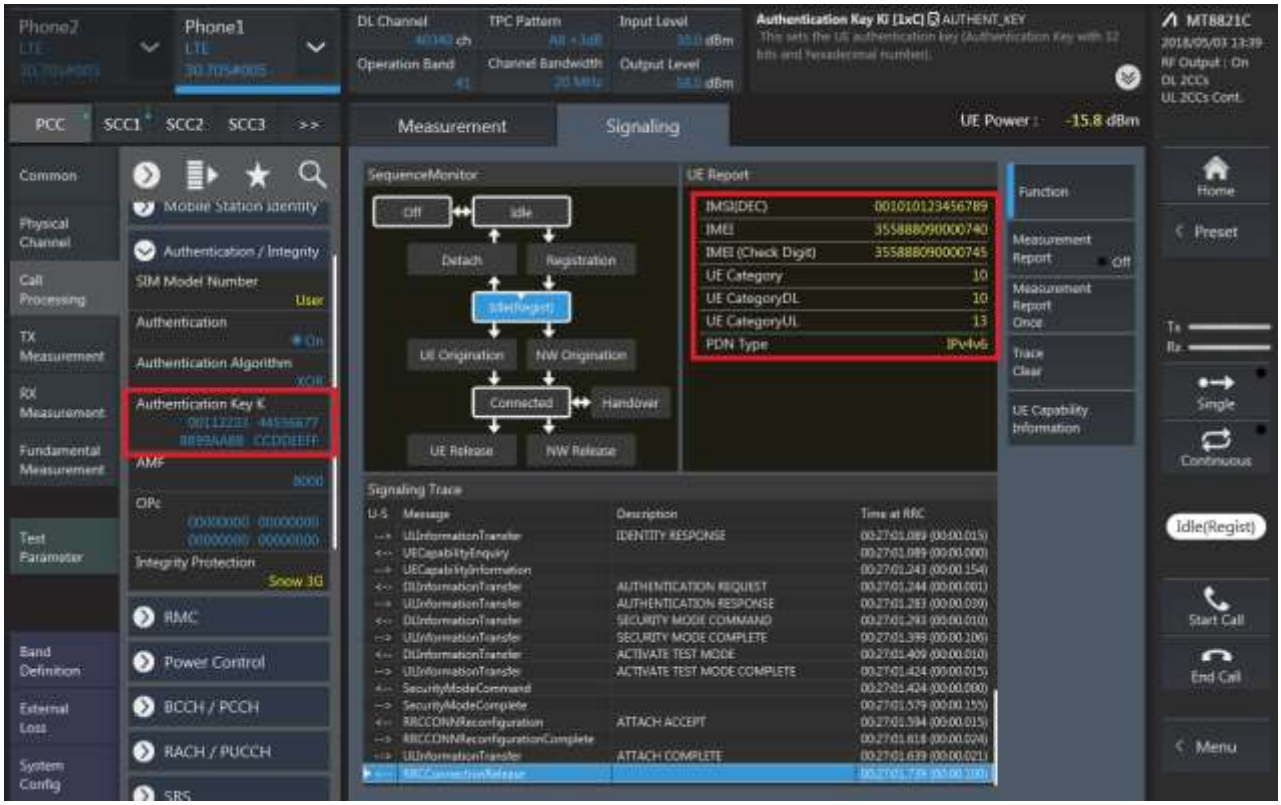


Power Measurement setup

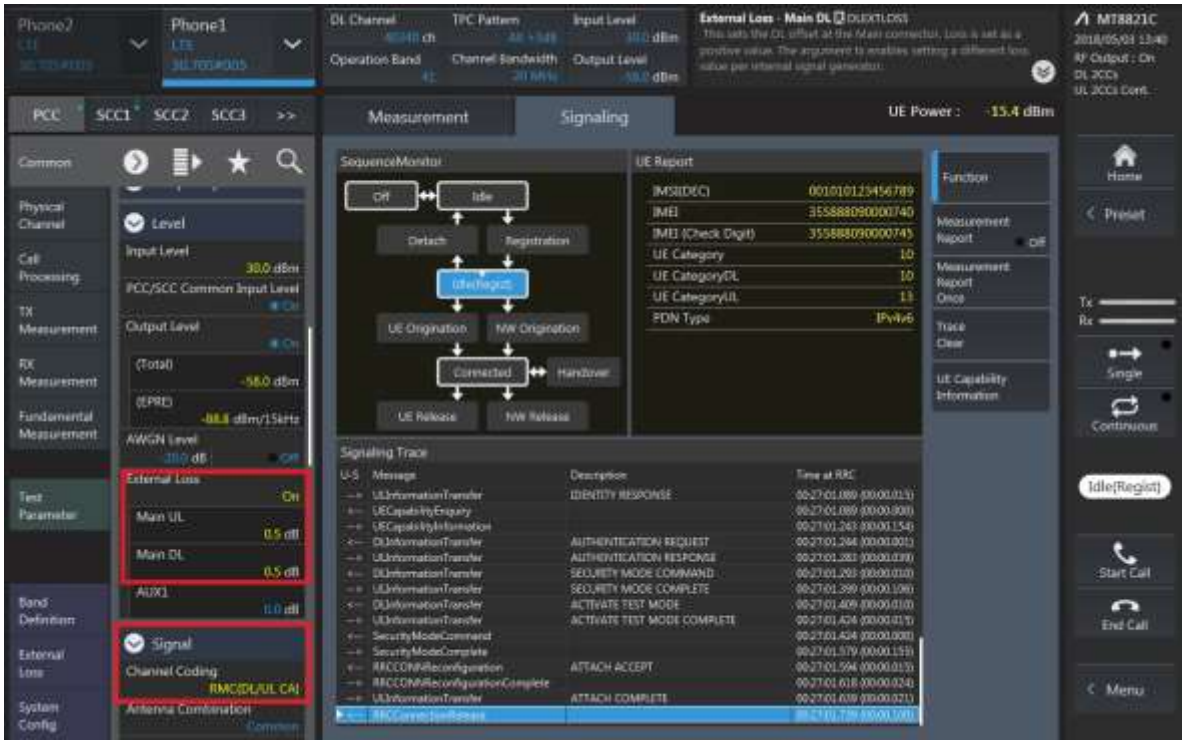
.TDD CA_41C Intra-Band Contiguous Call Connection

Set to MT8821C with following parameters:

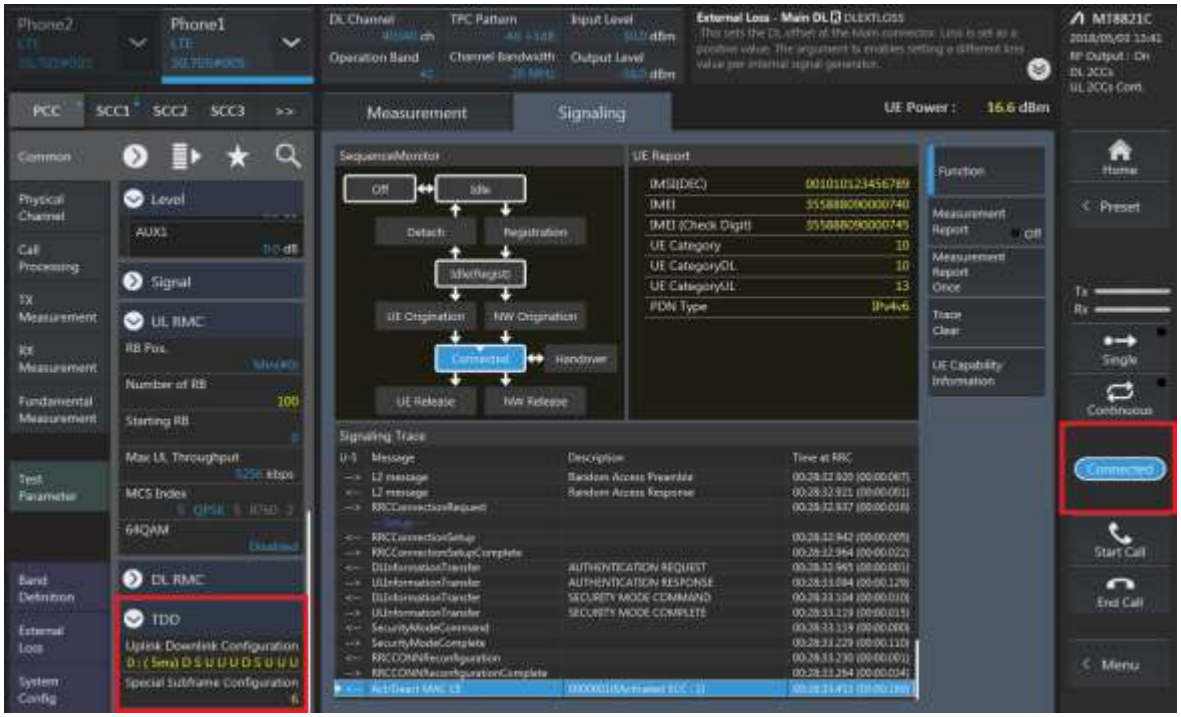
-. Set up the call box for PCC Configuration for LTE Uplink CA
-. Set up the call box for SCC Configuration for LTE Uplink CA
-. Measure the maximum output power in Uplink LTE CA conditions.



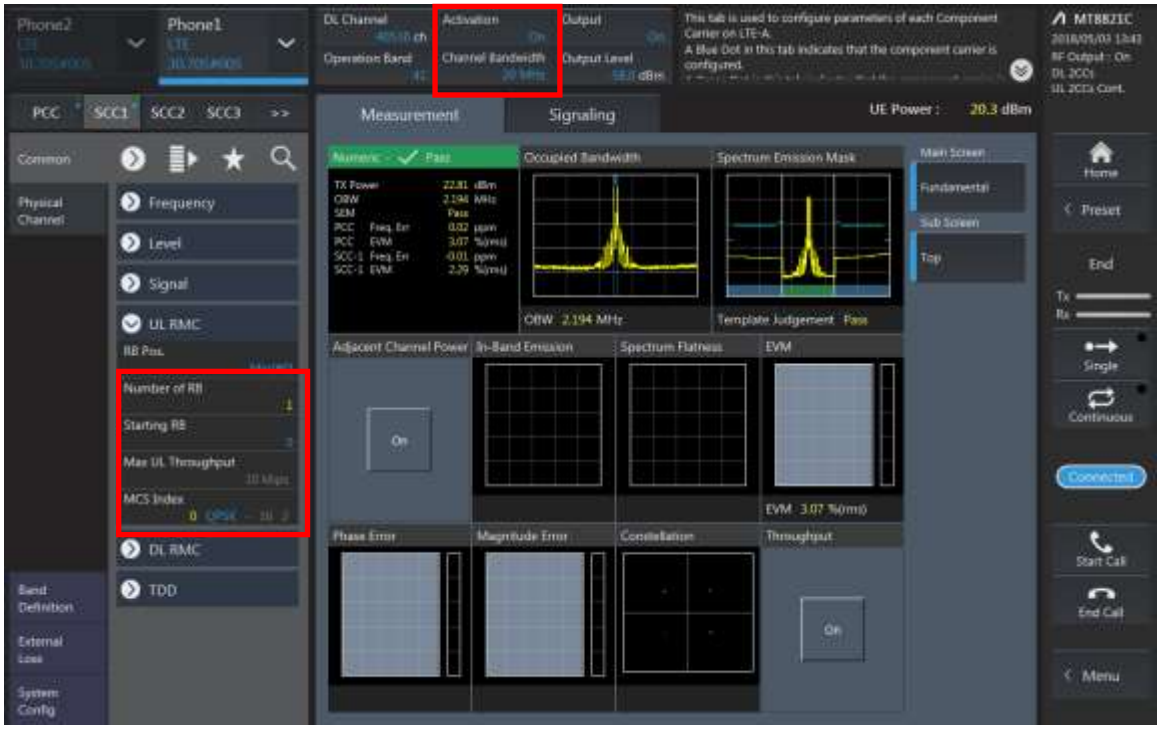
Call 1 :Select PCC Configuration for Authentication key to Register



Call 2 :Select PCC Configuration for LTE UL CA and Cable loss



Call 3 :Select PCC Configuration for LTE TDD " Uplink Downlink Configuration" set to "0"
And then Select "connect"button.



Call 4 :Set to RB, offset, BW, modulation of SCC channel.

Call 5: Set to RB, offset, BW, modulation and Max Power conditions of PCC required test channel.

2CA 41C Uplink Carrier aggregation conducted Powers

Maximum Power

PCC									SCC							Tx Power	
Band	BW	PCC UL Channel	PCC UL Frequency	PCC DL Channel	PCC DL Frequency	Modulation	RB	offset	Band	BW	SCC DL Channel	SCC DL Frequency	Modulation	RB	offset	LTE Single Carrier Tx Power (dBm)	LTE Tx Power with UL CA Enabled(dBm)
41	20	40340	2565	40340	2565	QPSK	1	99	41	20	40538	2584.8	QPSK	1	0	22.86	22.88

Reduced Power

PCC									SCC							Tx Power	
Band	BW	PCC UL Channel	PCC UL Frequency	PCC DL Channel	PCC DL Frequency	Modulation	RB	offset	Band	BW	SCC DL Channel	SCC DL Frequency	Modulation	RB	offset	LTE Single Carrier Tx Power (dBm)	LTE Tx Power with UL CA Enabled(dBm)
41	20	40340	2565	40340	2565	QPSK	1	99	41	20	40538	2584.8	QPSK	1	0	13.84	13.77

2CA 41C Downlink Carrier aggregation conducted Powers

Maximum Power

PCC									SCC						Tx Power	
Band	BW	PCC UL Channel	PCC UL Frequency	PCC DL Channel	PCC DL Frequency	Modulation	RB	offset	Band	BW	SCC DL Channel	SCC DL Frequency	RB	offset	LTE Single Carrier Tx Power (dBm)	LTE Tx Power with DL CA Enabled(dBm)
41	20	40340	2565	40340	2565	QPSK	1	49	41	20	40538	2584.8	1	0	22.86	22.99

Reduced Power

PCC									SCC						Tx Power	
Band	BW	PCC UL Channel	PCC UL Frequency	PCC DL Channel	PCC DL Frequency	Modulation	RB	offset	Band	BW	SCC DL Channel	SCC DL Frequency	RB	offset	LTE Single Carrier Tx Power (dBm)	LTE Tx Power with DL CA Enabled(dBm)
41	20	40340	2565	40340	2565	QPSK	1	49	41	20	40538	2584.8	1	0	13.84	13.94

3CA 41D Downlink Carrier aggregation conducted Powers

Maximum Power

PCC									SCC						SCC						Tx Power	
Band	BW	PCC UL Channel	PCC UL Frequency	PCC DL Channel	PCC DL Frequency	Modulation	RB	offset	Band	BW	SCC DL Channel	SCC DL Frequency	RB	offset	Band	BW	SCC DL Channel	SCC DL Frequency	RB	offset	LTE Single Carrier Tx Power (dBm)	LTE Tx Power with DL CA Enabled(dBm)
41	20	40340	2565	40340	2565	QPSK	1	49	41	20	40538	2584.8	1	0	41	20	40146	2604.6	1	0	22.86	22.92

Reduced Power

PCC									SCC						SCC						Tx Power	
Band	BW	PCC UL Channel	PCC UL Frequency	PCC DL Channel	PCC DL Frequency	Modulation	RB	offset	Band	BW	SCC DL Channel	SCC DL Frequency	RB	offset	Band	BW	SCC DL Channel	SCC DL Frequency	RB	offset	LTE Single Carrier Tx Power (dBm)	LTE Tx Power with DL CA Enabled(dBm)
41	20	40340	2565	40340	2565	QPSK	1	49	41	20	40538	2584.8	1	0	41	20	40146	2604.6	1	0	13.84	13.9

Notes :

Downlink Carrier aggregation:

1. This device only supports intra-downlink carrier aggregation. For every supported combination of downlink carrier aggregation, power measurements were performed with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.
2. All control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
3. Per FCC KDB publication 941225 D05A v01r02, Section C)3)b)ii), PCC uplink channel was selected at downlink carrier aggregation combinations. The downlink PCC channel was paired with the selected PCC uplink channel according to normal configurations without carrier aggregation.
4. For continuous intra-band carrier aggregation, the downlink channel spacing between the component carriers was set to multiple of 300kHz less than the nominal channel spacing defined in section 5.4.1A of 3GPP TS 36.521.
5. For non-continuous intra-band carrier aggregation, the downlink channel spacing between the component carriers was set to be larger than the nominal channel spacing and provided maximum separation between the component carriers.
6. All selected downlink channels remained fully within the downlink transmission band of the respective component carrier.

Uplink Carrier aggregation :

1. This device supports uplink carrier aggregation for LTE CA_41C with a maximum of 20MHz component carriers. For intraband contiguous carrier aggregation scenarios, 3GPP36.101 Table 6.2.2A-1 specifies that aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when non-contiguous RB allocation is implemented. The conducted Powers and MPR setting in this device are permanently implemented per the above 3GPP requirements.
2. Per Fall 2017 TCBC Workshop Notes, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.
3. The output power measurement of LTE Uplink CA_41C were performed the all applicable UL CA Configurations intended for U.S. operations by KDB941225 D05A and TCB workshop notes in fall of 2017..

Power Measurement setup

9.4 WiFi

WLAN Conducted power measurement method

2.4 GHz DTS Test Procedure
The transmitter output is connected to the Power Meter.

▪ Peak Power (Procedure 8.3.1.3 in KDB 558074 v05, Procedure 11.9.1.3 in ANSI 63.10-2013)
: Measure the peak power of the transmitter.

▪ Average Power (Procedure 8.3.2.3 in KDB 558074 v05, Procedure 11.9.2.3 in ANSI 63.10-2013)
1) Measure the duty cycle.
2) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.

Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

UNII Test Procedure(Power Meter)
We tested according to Procedure E.3.a in KDB 789033 D02 v02r01.

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

UNII Test Procedure(Spectrum Analyzer)
The transmitter output is connected to the Spectrum Analyzer.
We use the spectrum analyzer's integrated band power measurement function.
We tested according to Procedure E.2.d) in KDB 789033 D02 v02r01.

1) Measure the duty cycle.
2) Set span to encompass the 26 dB EBW of the signal.
3) RBW = 1 MHz.
4) VBW ≥ 3 MHz.
5) Number of points in sweep ≥ 2*span/RBW.
6) Sweep time = auto.
7) Detector = RMS.
8) Do not use sweep triggering. Allow the sweep to "free run".
9) Trace average at least 100 traces in power averaging(RMS) mode
10) Integrated bandwidth = OBW

Add 10log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

9.4.1 WiFi Maximum Conducted Power

IEEE 802.11 Average Conducted Power

Mode	Freq. [MHz]	Channel	IEEE 802.11 (2.4 GHz) Conducted Power [dBm]
802.11b	2 412	1	19.83
	2 437	6	19.68
	2 462	11	19.75
	2 467	12	8.32
	2 472	13	2.34
802.11g	2 412	1	18.96
	2 437	6	19.38
	2 462	11	19.15
	2 467	12	7.73
	2 472	13	1.61
802.11n (HT20)	2 412	1	17.76
	2 437	6	18.37
	2 462	11	18.13
	2 467	12	7.59
	2 472	13	2.73

IEEE 802.11a Average RF Power– 20 MHz Bandwidth (Maximum Conducted Power)

Mode	Freq. [MHz]	Channel	IEEE 802.11 (5 GHz) Conducted Power [dBm]
802.11a	5 180	36	18.59
	5 200	40	18.70
	5 220	44	18.65
	5 240	48	18.63
	5 260	52	18.55
	5 280	56	18.65
	5 300	60	18.75
	5 320	64	18.80
	5 500	100	18.39
	5 600	120	18.36
	5 620	124	18.32
	5 720	144	18.36
	5 745	149	18.58
	5 785	157	18.33
	5 825	165	18.31

9.4.2 WiFi Reduced Conducted Power

IEEE 802.11 Reduced Average RF Conducted Power

Mode	Freq. [MHz]	Channel	IEEE 802.11 (2.4 GHz) Conducted Power [dBm]
802.11b	2 412	1	12.89
	2 437	6	12.88
	2 462	11	12.84
802.11g	2 412	1	12.79
	2 437	6	12.90
	2 462	11	12.34
802.11n (HT20)	2 412	1	12.63
	2 437	6	12.70
	2 462	11	12.26

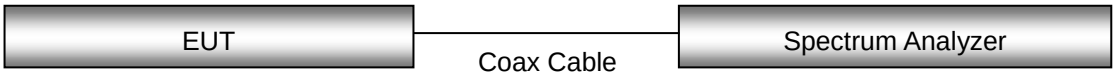
IEEE 802.11ac Reduced Average RF Conducted Power – 80 MHz Bandwidth

Mode	Freq. [MHz]	Channel	IEEE 802.11ac (5 GHz) Conducted Power [dBm]
802.11ac	5 210	42	9.23
	5 290	58	9.67
	5 530	106	9.44
	5 610	122	9.75
	5 690	138	9.55
	5 775	155	9.28

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

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

Test Configuration

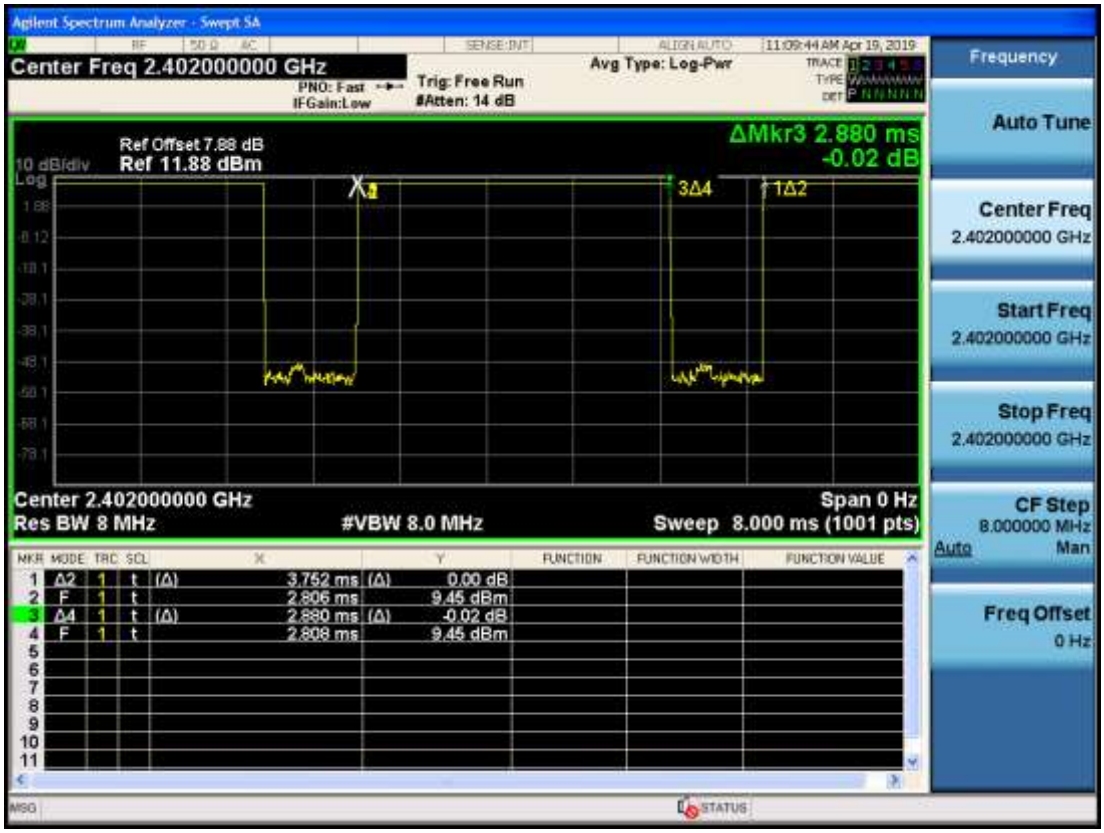


9.4.3 Bluetooth Conducted Power

The Burst averaged-conducted Power

Mode	Channel	Bluetooth Power [dBm]
DH5	0	9.33
	39	8.30
	78	8.03
2-DH5	0	8.71
	39	7.71
	78	7.42
3-DH5	0	8.71
	39	7.72
	78	7.42

Per October 2016 TCB Workshop Notes:
When call box and Bluetooth protocol are used for BT SAR measurement, time-domain plot is required to identify duty factor for supporting the test setup and result.
Bluetooth duty cycle was measured using Bluetooth tester equipment (CBT / R&S) with Bluetooth protocol. DH5 mode is the highest duty cycle and conducted power. SAR test were performed at DH5 mode.



Duty Cycle

= (BT-On time /BT-Full time) =(2.880/3.752) = 0.768 (DH5)

Duty factor= 1/Duty cycle : 1.302

10. SYSTEM VERIFICATION

10.1 Tissue Verification

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

Table for Body Tissue Verification									
Date of Tests	Tissue Temp. (°C)	Tissue Type	Freq. (MHz)	Measured Conductivity σ (S/m)	Measured Dielectric Constant, ε	Target Conductivity σ (S/m)	Target Dielectric Constant, ε	% dev σ	% dev ε
04/25/2019	19.6	750B	705	0.951	55.889	0.959	55.710	-0.83%	0.32%
			710	0.956	55.850	0.960	55.690	-0.42%	0.29%
			750	1.000	55.459	0.963	55.530	3.84%	-0.13%
04/22/2019	21.2	835B	820	0.944	56.613	0.969	55.260	-2.58%	2.45%
			835	0.963	56.466	0.970	55.200	-0.72%	2.29%
			850	0.973	56.308	0.988	55.150	-1.52%	2.10%
04/23/2019	20.4	835B	820	0.988	54.543	0.969	55.260	1.96%	-1.30%
			835	1.006	54.359	0.970	55.200	3.71%	-1.52%
			850	1.018	54.125	0.988	55.150	3.04%	-1.86%
04/24/2019	21.1	1900B	1850	1.498	52.796	1.520	53.300	-1.45%	-0.95%
			1900	1.541	52.676	1.520	53.300	1.38%	-1.17%
			1910	1.548	52.626	1.520	53.300	1.84%	-1.26%
04/29/2019	18.9	2450B	2400	1.883	53.549	1.902	52.770	-1.00%	1.48%
			2450	1.936	53.439	1.950	52.700	-0.72%	1.40%
			2500	1.995	53.320	2.021	52.640	-1.29%	1.29%
04/19/2019	20.9	2450B	2400	1.878	54.145	1.902	52.770	-1.26%	2.61%
			2450	1.925	54.035	1.950	52.700	-1.28%	2.53%
			2500	2.001	53.945	2.021	52.640	-0.99%	2.48%
04/26/2019	20.9	2600B	2500	2.002	53.414	2.021	52.640	-0.94%	1.47%
			2600	2.109	53.008	2.163	52.510	-2.50%	0.95%
			2700	2.228	52.905	2.305	52.380	-3.34%	1.00%
04/18/2019	20.8	5180B–5825B	5180	5.309	47.618	5.276	49.038	0.63%	-2.90%
			5250	5.450	47.386	5.358	48.950	1.72%	-3.20%
			5280	5.558	47.795	5.393	48.908	3.06%	-2.28%
			5320	5.573	47.169	5.439	48.852	2.46%	-3.45%
			5500	5.737	47.302	5.650	48.610	1.54%	-2.69%
			5600	5.815	46.773	5.766	48.470	0.85%	-3.50%
			5750	6.129	46.767	5.942	48.270	3.15%	-3.11%
			5800	6.049	46.698	6.000	48.200	0.82%	-3.12%
			5825	5.983	47.058	6.029	48.165	-0.76%	-2.30%

10.2 System Verification

Prior to assessment, the system is verified to the ± 10 % of the specifications at 750 MHz / 835 MHz / 1 900 MHz / 2 450 MHz / 2 600 MHz/ / 5 250 MHz / 5 600 MHz / 5 750 MHz by using the system Verification kit. (Graphic Plots Attached)

*** Input Power: 50mW**

Freq.	Date	Probe (S/N)	Dipole (S/N)	Liquid	Amb. Temp.	Liquid Temp.	1 W Target SAR_{1g} (SPEAG)	50mW Measured SAR_{1g}	1 W Normalized SAR_{1g}	Deviation	Limit [%]
[MHz]					[°C]	[°C]	[W/kg]	[W/kg]	[W/kg]	[%]	[%]
750	04/25/2019	3076	1014	Body	19.9	19.6	8.58	0.437	8.74	+ 1.86	± 10
835	04/22/2019	3797	4d165	Body	21.4	21.2	9.50	0.503	10.06	+ 5.89	± 10
835	04/23/2019	3076		Body	20.7	20.4	9.50	0.491	9.82	+ 3.37	± 10
1 900	04/24/2019	3797	5d032	Body	21.3	21.1	39.7	2.00	40.0	+ 0.76	± 10
2 450	04/29/2019	3076	743	Body	19.1	18.9	49.9	2.67	53.4	+ 7.01	± 10
2 450	04/19/2019	3797		Body	21.1	20.9	49.9	2.42	48.4	- 3.01	± 10
2 600	04/26/2019	3076	1015	Body	21.1	20.9	54.8	2.64	52.8	- 3.65	± 10
5 250	04/18/2019	3797	1253	Body	21.0	20.8	78.0	3.86	77.2	- 1.03	± 10
5 250	04/18/2019	3797		Body	21.0	20.8	81.6	4.11	82.2	+ 0.74	± 10
5 750	04/18/2019	3797		Body	21.0	20.8	77.3	4.21	84.2	+ 8.93	± 10

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

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

11. SAR TEST DATA SUMMARY

11.1 SAR Measurement Results

GSM 850 Body SAR													
Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Sensor	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)				(mm)	(W/kg)		(W/kg)	
836.6	190	GPRS 1Tx	27.0	26.05	-0.18	Rear	Active	1:8.3	0	0.488	1.245	0.608	-
836.6	190	GPRS 1Tx	27.0	26.05	0.11	Right	Active	1:8.3	0	0.044	1.245	0.055	-
836.6	190	GPRS 1Tx	27.0	26.05	0.02	Top	Active	1:8.3	0	0.166	1.245	0.207	-
836.6	190	GPRS 1Tx	27.0	26.05	-0.01	Right Corner	Active	1:8.3	0	0.026	1.245	0.032	-
836.6	190	GPRS 4Tx	28.7	26.90	0.07	Rear	Inactive	1:2.07	16	0.431	1.514	0.653	-
836.6	190	GPRS 4Tx	28.7	26.90	0.15	Left	Inactive	1:2.07	0	0.123	1.514	0.186	-
836.6	190	GPRS 4Tx	28.7	26.90	0.11	Right	Inactive	1:2.07	6	0.074	1.514	0.112	-
836.6	190	GPRS 4Tx	28.7	26.90	0.01	Top	Inactive	1:2.07	17	0.496	1.514	**0.751**	1
836.6	190	GPRS 4Tx	28.7	26.90	-0.11	Right Corner	Inactive	1:2.07	6	0.045	1.514	0.068	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population									Body 1.6 W/kg Averaged over 1 gram				

GSM 1900 Body SAR													
Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Sensor	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)				(mm)	(W/kg)		(W/kg)	
1 850.2	512	GPRS 4Tx	18.0	16.87	-0.17	Rear	Active	1:2.07	0	0.660	1.297	0.856	-
1 880	661	GPRS 4Tx	18.0	16.91	0.14	Rear	Active	1:2.07	0	0.737	1.285	0.947	-
1 909.8	810	GPRS 4Tx	18.0	17.01	-0.10	Rear	Active	1:2.07	0	0.779	1.256	**0.978**	2
1 880	661	GPRS 4Tx	18.0	16.91	0.13	Right	Active	1:2.07	0	0.034	1.285	0.044	-
1 880	661	GPRS 4Tx	18.0	16.91	0.01	Top	Active	1:2.07	0	0.331	1.285	0.425	-
1 880	661	GPRS 4Tx	18.0	16.91	0.07	Right Corner	Active	1:2.07	0	0.035	1.285	0.045	-
1 880	661	GPRS 4Tx	26.5	25.17	0.18	Rear	Inactive	1:2.07	16	0.198	1.358	0.269	-
1 880	661	GPRS 4Tx	26.5	25.17	0.19	Left	Inactive	1:2.07	0	0.183	1.358	0.249	-
1 880	661	GPRS 4Tx	26.5	25.17	0.05	Right	Inactive	1:2.07	6	0.041	1.358	0.056	-
1 880	661	GPRS 4Tx	26.5	25.17	-0.06	Top	Inactive	1:2.07	17	0.195	1.358	0.265	-
1 880	661	GPRS 4Tx	26.5	25.17	-0.10	Right Corner	Inactive	1:2.07	6	0.060	1.358	0.081	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population									Body 1.6 W/kg Averaged over 1 gram				

UMTS 850 Body SAR													
Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Sensor	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)				(mm)	(W/kg)		(W/kg)	
836.6	4183	RMC	17.0	15.93	-0.15	Rear	Active	1:1	0	0.388	1.279	**0.496**	3
836.6	4183	RMC	17.0	15.93	0.17	Right	Active	1:1	0	0.038	1.279	0.049	-
836.6	4183	RMC	17.0	15.93	0.05	Top	Active	1:1	0	0.175	1.279	0.224	-
836.6	4183	RMC	17.0	15.93	-0.13	Right Corner	Active	1:1	0	0.021	1.279	0.027	-
836.6	4183	RMC	24.5	22.63	-0.13	Rear	Inactive	1:1	16	0.286	1.538	0.440	-
836.6	4183	RMC	24.5	22.63	0.10	Left	Inactive	1:1	0	0.087	1.538	0.134	-
836.6	4183	RMC	24.5	22.63	-0.04	Right	Inactive	1:1	6	0.065	1.538	0.100	-
836.6	4183	RMC	24.5	22.63	0.07	Top	Inactive	1:1	17	0.284	1.538	0.437	-
836.6	4183	RMC	24.5	22.63	-0.06	Right Corner	Inactive	1:1	6	0.028	1.538	0.043	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population									Body 1.6 W/kg Averaged over 1 gram				

UMTS 1900 Body SAR													
Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Sensor	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)				(mm)	(W/kg)		(W/kg)	
1 880.0	9400	RMC	13.5	12.84	0.12	Rear	Active	1:1	0	0.682	1.164	0.794	4
1 880.0	9400	RMC	13.5	12.84	-0.14	Right	Active	1:1	0	0.032	0.037	0.037	-
1 880.0	9400	RMC	13.5	12.84	-0.10	Top	Active	1:1	0	0.272	0.317	0.317	-
1 880.0	9400	RMC	13.5	12.84	-0.08	Right Corner	Active	1:1	0	0.025	0.029	0.029	-
1 880.0	9400	RMC	25.0	23.9	0.11	Rear	Inactive	1:1	16	0.343	1.288	0.442	-
1 880.0	9400	RMC	25.0	23.9	0.16	Left	Inactive	1:1	0	0.260	1.288	0.335	-
1 880.0	9400	RMC	25.0	23.9	-0.01	Right	Inactive	1:1	6	0.079	1.288	0.102	-
1 880.0	9400	RMC	25.0	23.9	-0.10	Top	Inactive	1:1	17	0.353	1.288	0.455	-
1 880.0	9400	RMC	25.0	23.9	-0.10	Right Corner	Inactive	1:1	6	0.078	1.288	0.100	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population									Body 1.6 W/kg Averaged over 1 gram				

LTE Band 5 Body SAR																	
Frequency		Mode	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Sensor	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)	
836.5	20525	QPSK	10	16.0	14.66	-0.06	Rear	Active	0	1	49	1:1	0	0.361	1.361	0.491	-
836.5	20525	QPSK	10	16.0	14.73	0.03	Rear	Active	0	25	12	1:1	0	0.370	1.340	0.496	-
836.5	20525	QPSK	10	16.0	14.66	0.11	Right	Active	0	1	49	1:1	0	0.030	1.361	0.041	-
836.5	20525	QPSK	10	16.0	14.73	0.08	Right	Active	0	25	12	1:1	0	0.031	1.340	0.042	-
836.5	20525	QPSK	10	16.0	14.66	0.07	Top	Active	0	1	49	1:1	0	0.103	1.361	0.140	-
836.5	20525	QPSK	10	16.0	14.73	0.10	Top	Active	0	25	12	1:1	0	0.102	1.340	0.137	-
836.5	20525	QPSK	10	16.0	14.66	0.18	Right Corner	Active	0	1	49	1:1	0	0.026	1.361	0.035	-
836.5	20525	QPSK	10	16.0	14.73	0.10	Right Corner	Active	0	25	12	1:1	0	0.025	1.340	0.034	-
836.5	20525	QPSK	10	24.5	22.49	0.09	Rear	Inactive	0	1	49	1:1	16	0.398	1.589	**0.632**	5
836.5	20525	QPSK	10	23.5	21.51	0.03	Rear	Inactive	1	25	12	1:1	16	0.314	1.581	0.496	-
836.5	20525	QPSK	10	24.5	22.49	0.10	Left	Inactive	0	1	49	1:1	0	0.155	1.589	0.246	-
836.5	20525	QPSK	10	23.5	21.51	0.04	Left	Inactive	1	25	12	1:1	0	0.133	1.581	0.210	-
836.5	20525	QPSK	10	24.5	22.49	0.04	Right	Inactive	0	1	49	1:1	6	0.096	1.589	0.153	-
836.5	20525	QPSK	10	23.5	21.51	0.03	Right	Inactive	1	25	12	1:1	6	0.072	1.581	0.114	-
836.5	20525	QPSK	10	24.5	22.49	0.02	Top	Inactive	0	1	49	1:1	17	0.392	1.589	0.623	-
836.5	20525	QPSK	10	23.5	21.51	0.02	Top	Inactive	1	25	12	1:1	17	0.299	1.581	0.473	-
836.5	20525	QPSK	10	24.5	22.49	-0.01	Right Corner	Inactive	0	1	49	1:1	6	0.065	1.589	0.103	-
836.5	20525	QPSK	10	23.5	21.51	-0.01	Right Corner	Inactive	1	25	12	1:1	6	0.053	1.581	0.084	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population													Body 1.6 W/kg Averaged over 1 gram				

LTE Band 12 Body SAR																	
Frequency		Mode	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Sensor	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)	
707.5	23095	QPSK	10	15.5	13.98	0.01	Rear	Active	0	1	24	1:1	0	0.300	1.419	0.426	-
707.5	23095	QPSK	10	15.5	14.04	0.02	Rear	Active	0	25	12	1:1	0	0.309	1.400	0.433	-
707.5	23095	QPSK	10	15.5	13.98	0.17	Right	Active	0	1	24	1:1	0	0.026	1.419	0.037	-
707.5	23095	QPSK	10	15.5	14.04	0.06	Right	Active	0	25	12	1:1	0	0.026	1.400	0.036	-
707.5	23095	QPSK	10	15.5	13.98	0.07	Top	Active	0	1	24	1:1	0	0.152	1.419	0.216	-
707.5	23095	QPSK	10	15.5	14.04	0.09	Top	Active	0	25	12	1:1	0	0.155	1.400	0.217	-
707.5	23095	QPSK	10	15.5	13.98	0.12	Right Corner	Active	0	1	24	1:1	0	0.028	1.419	0.040	-
707.5	23095	QPSK	10	15.5	14.04	0.07	Right Corner	Active	0	25	12	1:1	0	0.029	1.400	0.041	-
707.5	23095	QPSK	10	24.5	22.71	-0.03	Rear	Inactive	0	1	0	1:1	16	0.341	1.510	**0.515**	6
707.5	23095	QPSK	10	23.5	21.80	-0.02	Rear	Inactive	1	25	12	1:1	16	0.279	1.479	0.413	-
707.5	23095	QPSK	10	24.5	22.71	-0.06	Right	Inactive	0	1	0	1:1	6	0.070	1.510	0.106	-
707.5	23095	QPSK	10	23.5	21.80	0.01	Right	Inactive	1	25	12	1:1	6	0.061	1.479	0.090	-
707.5	23095	QPSK	10	24.5	22.71	-0.03	Left	Inactive	0	1	0	1:1	0	0.119	1.510	0.180	-
707.5	23095	QPSK	10	23.5	21.80	0.05	Left	Inactive	1	25	12	1:1	0	0.113	1.479	0.167	-
707.5	23095	QPSK	10	24.5	22.71	0.07	Top	Inactive	0	1	0	1:1	17	0.228	1.510	0.344	-
707.5	23095	QPSK	10	23.5	21.80	0.06	Top	Inactive	1	25	12	1:1	17	0.190	1.479	0.281	-
707.5	23095	QPSK	10	24.5	22.71	-0.05	Right Corner	Inactive	0	1	0	1:1	6	0.058	1.510	0.088	-
707.5	23095	QPSK	10	23.5	21.80	0.06	Right Corner	Inactive	1	25	12	1:1	6	0.047	1.479	0.070	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population													Body 1.6 W/kg Averaged over 1 gram				

LTE Band 17 Body SAR																	
Frequency		Mode	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Sensor	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)	
710	23790	QPSK	10	17.0	15.47	0.03	Rear	Active	0	1	24	1:1	0	0.428	1.422	0.609	-
710	23790	QPSK	10	17.0	15.51	0.02	Rear	Active	0	25	0	1:1	0	0.440	1.409	**0.620**	7
710	23790	QPSK	10	17.0	15.47	0.11	Right	Active	0	1	24	1:1	0	0.029	1.422	0.041	-
710	23790	QPSK	10	17.0	15.51	0.12	Right	Active	0	25	0	1:1	0	0.030	1.409	0.042	-
710	23790	QPSK	10	17.0	15.47	-0.06	Top	Active	0	1	24	1:1	0	0.175	1.422	0.249	-
710	23790	QPSK	10	17.0	15.51	0.10	Top	Active	0	25	0	1:1	0	0.178	1.409	0.251	-
710	23790	QPSK	10	17.0	15.47	0.15	Right Corner	Active	0	1	24	1:1	0	0.032	1.422	0.046	-
710	23790	QPSK	10	17.0	15.51	0.13	Right Corner	Active	0	25	0	1:1	0	0.032	1.409	0.045	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population													Body 1.6 W/kg Averaged over 1 gram				

Note: SAR For Full power (Sensor Inactive mode) fo LTE band 17(Frequency Range : 704 ~ 716 MHz) is coverd by LTE Band 12(Frequency range : 699 ~ 716 MHz) due to overlapping frequency range, same maximum tune-up limit.

LTE TDD Band 41 Body SAR																	
Frequency		Mode	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Sensor	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)	
2 565	40340	QPSK	20	15.0	13.84	0.15	Rear	Active	0	1	0	1:1.58	0	0.375	1.306	0.490	-
2 645	41140	QPSK	20	15.0	13.84	0.15	Rear	Active	0	50	0	1:1.58	0	0.611	1.306	**0.798**	8
2 565	40340	QPSK	20	15.0	13.84	0.14	Right	Active	0	1	0	1:1.58	0	0.428	1.306	0.559	-
2 645	41140	QPSK	20	15.0	13.84	0.13	Right	Active	0	50	0	1:1.58	0	0.516	1.306	0.674	-
2 565	40340	QPSK	20	15.0	13.84	0.10	Top	Active	0	1	0	1:1.58	0	0.209	1.306	0.273	-
2 645	41140	QPSK	20	15.0	13.84	0.13	Top	Active	0	50	0	1:1.58	0	0.276	1.306	0.360	-
2 565	40340	QPSK	20	15.0	13.84	0.17	Right Corner	Active	0	1	0	1:1.58	0	0.086	1.306	0.112	-
2 645	41140	QPSK	20	15.0	13.84	0.10	Right Corner	Active	0	50	0	1:1.58	0	0.128	1.306	0.167	-
PCC 2 565	40340	QPSK	40	15.0	13.77	-0.19	Rear	Active	0	1	99	1:1.58	0	0.438	1.327	0.581	**
SCC 2584.8	40538									1	0						
2 565	40340	QPSK	20	23.5	22.86	0.10	Rear	Inactive	0	1	0	1:1.58	16	0.121	1.159	0.140	-
2 645	41140	QPSK	20	22.5	21.81	-0.17	Rear	Inactive	1	50	0	1:1.58	16	0.127	1.172	0.149	-
2 565	2 565	QPSK	20	23.5	22.86	0.03	Right	Inactive	0	1	0	1:1.58	6	0.467	1.159	0.541	-
2 645	2 645	QPSK	20	22.5	21.81	0.10	Right	Inactive	1	50	0	1:1.58	6	0.432	1.172	0.506	-
2 565	2 565	QPSK	20	23.5	22.86	0.10	Left	Inactive	0	1	0	1:1.58	0	0.012	1.159	0.014	-
2 645	2 645	QPSK	20	22.5	21.81	0.08	Left	Inactive	1	50	0	1:1.58	0	0.035	1.172	0.041	-
2 565	2 565	QPSK	20	23.5	22.86	-0.18	Top	Inactive	0	1	0	1:1.58	17	0.033	1.159	0.038	-
2 645	2 645	QPSK	20	22.5	21.81	-0.11	Top	Inactive	1	50	0	1:1.58	17	0.039	1.172	0.046	-
2 565	2 565	QPSK	20	23.5	22.86	0.17	Right Corner	Inactive	0	1	0	1:1.58	6	0.141	1.159	0.163	-
2 645	2 645	QPSK	20	22.5	21.81	0.05	Right Corner	Inactive	1	50	0	1:1.58	6	0.155	1.172	0.182	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population													Body 1.6 W/kg Averaged over 1 gram				

**** 2CC Uplink**

Wi-Fi (DTS) Body SAR																	
Frequency		Mode	Band width	Data Rate	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Sensor	Duty Cycle	Distance	Area Scan Peak SAR	Meas. SAR	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(Mbps)	(dBm)	(dBm)	(dB)				(mm)	(W/kg)	(W/kg)		(Duty)	(W/kg)	
2 412	1	802.11b	22	1	13	12.89	0.01	Rear	Active	98.62	0	1.84	0.851	1.026	1.014	0.885	-
2 437	6	802.11b	22	1	13	12.88	0.10	Rear	Active	98.62	0	0.829	0.497	1.028	1.014	0.518	-
2 412	1	802.11b	22	1	13	12.89	0.11	Left	Active	98.62	0	1.34	0.941	1.026	1.014	0.979	-
2 437	6	802.11b	22	1	13	12.88	0.15	Left	Active	98.62	0	1.32	0.918	1.028	1.014	0.957	-
2 462	11	802.11b	22	1	13	12.84	0.12	Left	Active	98.62	0	1.53	1.06	1.038	1.014	1.116	-
2 412	1	802.11b	22	1	13	12.89	0.19	Top	Active	98.62	0	0.247	0.274	1.026	1.014	0.285	-
2 412	1	802.11b	22	1	13	12.89	0.05	Left Corner	Active	98.62	0	0.333	0.190	1.026	1.014	0.198	-
2 412	1	802.11b	22	1	20	19.83	0.11	Rear	Inactive	98.62	8	0.439	0.346	1.040	1.014	0.365	-
2 412	1	802.11b	22	1	20	19.83	0.01	Left	Inactive	98.62	4	1.54	1.06	1.040	1.014	1.118	-
2 462	11	802.11b	22	1	20	19.75	0.09	Left	Inactive	98.62	4	1.61	1.11	1.059	1.014	1.192	9
2 412	1	802.11b	22	1	20	19.83	0.17	Top	Inactive	98.62	9	0.249	0.189	1.040	1.014	0.199	-
2 412	1	802.11b	22	1	20	19.83	-0.02	Left Corner	Inactive	98.62	6	0.188	0.148	1.040	1.014	0.156	-
2 462	11	802.11b	22	1	20	19.75	-0.04	Left	Inactive	98.62	4	1.30	0.959	1.059	1.014	1.030	**
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population											Body 1.6 W/kg Averaged over 1 gram						

Note: ** Data entry indicate Variability measurement.

Wi-Fi (NII) Body SAR																	
Frequency		Mode	Band width	Data Rate	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Sensor	Duty Cycle	Distance	Area Scan Peak SAR	Meas. SAR	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(Mbps)	(dBm)	(dBm)	(dB)				(mm)	(W/kg)	(W/kg)		(Duty)	(W/kg)	
5 290	58	802.11ac	80	MCS0	10	9.67	-0.16	Rear	Active	90.2	0	0.389	0.117	1.079	1.109	0.140	-
5 290	58	802.11ac	80	MCS0	10	9.67	-0.17	Left	Active	90.2	0	0.446	0.239	1.079	1.109	0.286	-
5 290	58	802.11ac	80	MCS0	10	9.67	-0.18	Top	Active	90.2	0	0.387	0.140	1.079	1.109	0.168	-
5 290	58	802.11ac	80	MCS0	10	9.67	-0.17	Left Corner	Active	90.2	0	0.153	0.058	1.079	1.109	0.069	-
5 320	64	802.11a	20	6Mbps	19	18.80	-0.11	Rear	Inactive	97.5	8	0.356	0.161	1.047	1.026	0.173	-
5 320	64	802.11a	20	6Mbps	19	18.80	-0.15	Left	Inactive	97.5	4	1.49	0.696	1.047	1.026	**0.748**	10
5 320	64	802.11a	20	6Mbps	19	18.80	-0.04	Top	Inactive	97.5	9	0.363	0.128	1.047	1.026	0.138	-
5 320	64	802.11a	20	6Mbps	19	18.80	0.01	Left Corner	Inactive	97.5	6	0.252	0.111	1.047	1.026	0.119	-
5 610	122	802.11ac	80	MCS0	10	9.75	0.10	Rear	Active	90.2	0	0.456	0.113	1.059	1.109	0.133	-
5 610	122	802.11ac	80	MCS0	10	9.75	-0.19	Left	Active	90.2	0	1.54	0.466	1.059	1.109	0.547	
5 610	122	802.11ac	80	MCS0	10	9.75	0.10	Top	Active	90.2	0	0.185	0.119	1.059	1.109	0.140	-
5 610	122	802.11ac	80	MCS0	10	9.75	-0.13	Left Corner	Active	90.2	0	0.203	0.102	1.059	1.109	0.120	-
5 500	100	802.11a	20	6Mbps	19	18.39	-0.14	Rear	Inactive	97.5	8	0.244	0.103	1.151	1.026	0.122	-
5 500	100	802.11a	20	6Mbps	19	18.39	-0.03	Left	Inactive	97.5	4	1.42	0.518	1.151	1.026	**0.612**	11
5 500	100	802.11a	20	6Mbps	19	18.39	-0.16	Top	Inactive	97.5	9	0.229	0.092	1.151	1.026	0.109	-
5 500	100	802.11a	20	6Mbps	19	18.39	0.02	Left Corner	Inactive	97.5	6	0.02	0.238	1.151	1.026	0.281	-
5 775	155	802.11ac	80	MCS0	10	9.28	-0.16	Rear	Active	90.2	0	0.637	0.083	1.180	1.109	0.109	-
5 775	155	802.11ac	80	MCS0	10	9.28	0.15	Left	Active	90.2	0	0.725	0.271	1.180	1.109	0.355	-
5 775	155	802.11ac	80	MCS0	10	9.28	-0.15	Top	Active	90.2	0	0.384	0.099	1.180	1.109	0.130	
5 775	155	802.11ac	80	MCS0	10	9.28	0.18	Left Corner	Active	90.2	0	0.235	0.100	1.180	1.109	0.131	-
5 745	149	802.11a	20	6Mbps	19	18.58	-0.03	Rear	Inactive	97.5	8	0.289	0.108	1.102	1.026	0.122	-
5 745	149	802.11a	20	6Mbps	19	18.58	0.11	Left	Inactive	97.5	4	1.96	0.754	1.102	1.026	**0.853**	12
5 785	157	802.11a	20	6Mbps	19	18.33	0.13	Left	Inactive	97.5	4	1.86	0.699	1.167	1.026	0.837	-
5 745	149	802.11a	20	6Mbps	19	18.58	-0.16	Top	Inactive	97.5	9	0.0387	0.00575	1.102	1.026	0.007	-
5 745	149	802.11a	20	6Mbps	19	18.58	-0.18	Left Corner	Inactive	97.5	6	0.0493	0.014	1.102	1.026	0.016	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population											Body 1.6 W/kg Averaged over 1 gram						

DSS Body SAR												
Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Distance	Meas. SAR	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dBm)	(dBm)	(dB)		(mm)	(W/kg)		(Duty)	(W/kg)	
2 402	0	Bluetooth DH5	9.5	9.33	-0.08	Rear	0	0.195	1.040	1.302	0.264	-
2 402	0	Bluetooth DH5	9.5	9.33	0.16	Left	0	0.234	1.040	1.302	**0.317**	13
2 402	0	Bluetooth DH5	9.5	9.33	-0.17	Top	0	0.090	1.040	1.302	0.122	-
2 402	0	Bluetooth DH5	9.5	9.33	-0.07	Left Corner	0	0.066	1.040	1.302	0.089	-
ANSI/ IEEE C95.1 - 2005 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Body 1.6 W/kg Averaged over 1 gram					

11.2 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in FCC KDB Publication 616217 D04v01r02 and KDB Publication 447498 D01v06
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. This device utilizes power reduction for wireless mode and technologies, as outlined in sec. 2.3. The maximum output power allowed for each transmitter and exposure condition was evaluated for SAR compliance based on expected use conditions and simultaneous scenarios.
7. FCC KDB Publication 616217 D04v01r02 Section 4.3, SAR tests are required for the back surface and edges of the tablet with the tablet touching the phantom. The SAR Exclusion Threshold in FCC KDB 447498 D01v06 was applied to determine SAR test exclusion for adjacent edge configurations.
8. 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 Please see Section 13 for variability analysis. the maximum tune-up tolerance limit.

GSM/GPRS Test Notes:

1. This EUT'S GSM and GPRS device class is B.
2. Body-Worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.
3. Justification for reduced test configurations per KDB 941225 D01v03r01: The source-based time-averaged output power was evaluated for all multi-slot operations. The multi-slot configuration with the highest frame averaged output power including tolerance was evaluated for SAR.
4. Per FCC KDB 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is $\leq$ 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is 1/2 dB, instead of the middle channel, the highest output power channel must be used.
5. Justification for reduced test configurations per KDB Publication 941225 D01v03r01 and October 2013 TCB Workshop Notes: The source-based frame-averaged output power was evaluated for all GPRS/EDGE slot configurations. The configuration with the highest target frame averaged output power was evaluated for hotspot SAR. When the maximum frame-averaged powers are equivalent across two or more slots (within 0.25 dB), the configuration with the most number of time slots was tested.

UMTS Notes:

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

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Consideration for LTE Devices in FCC KDB 941225 D05v02r05.
2. According to FCC KDB 941225 D05v02r05:
   When the reported SAR is ≤ 0.8 W/kg, testing of the 100% RB allocation and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the 1RB, 50%RB and 100%RB allocation with highest output power for that channel.
   Only one channel, and as reported SAR values for 1RB allocation and 50%RB allocation were less than 1.45W/Kg only the highest power RB offset for each allocation was required.
3. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to target MPR is indicated alongside the SAR results.
4. A-MPR was disabled for all SAR tests by setting NS=01 on the base station simulator.
5. TDD LTE was tested using UL-DL configuration 0 with 6 UL sub frames and 2S subframes using extended cyclic prefix only and special sub frame configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Sec. 4**,** the duty factor using extended cyclic prefix is 0.633(cf=1.58).
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.
7. When power reduction is applied to the LTE band, MPR = 0 is applied.

WLAN Notes:

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

Bluetooth Notes:

1. Bluetooth SAR was measured with the device connected to a call box with hopping disabled with DH5 operation and Tx Tests mode type. Per October 2016 TCBC Workshop Notes, the reported SAR was scaled to 100% transmission duty factor to determine compliance. Please see sec.9. for the time-domain plot and calculation for duty factor of the device.

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12. SIMULTANEOUS SAR ANALYSIS

12.1 Simultaneous Transmission Summation for Body

- Simultaneous Transmission Scenario with 2.4 GHz WLAN (Sensor Active)

Simultaneous Tx	Configurations	GSM 850 (W/kg)	2.4 GHz Ant (W/kg)	∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
Body SAR	Rear	0.608	0.885	1.493	No
	Left	0.186	1.116	1.302	No
	Right	0.055	0.400	0.455	No
	Top	0.207	0.285	0.492	No
	Right Corner	0.032	0.400	0.432	No
	Left Corner	0.400	0.198	0.598	No
Simultaneous Tx	**Configurations**	**GSM 1900 (W/kg)**	**2.4 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.978	0.885	1.863	Yes(#1)
	Left	0.249	1.116	1.365	No
	Right	0.044	0.400	0.444	No
	Top	0.425	0.285	0.710	No
	Right Corner	0.045	0.400	0.445	No
	Left Corner	0.400	0.198	0.598	No
Simultaneous Tx	**Configurations**	**UMTS 850 (W/kg)**	**2.4 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.496	0.885	1.381	No
	Left	0.134	1.116	1.250	No
	Right	0.049	0.400	0.449	No
	Top	0.224	0.285	0.509	No
	Right Corner	0.027	0.400	0.427	No
	Left Corner	0.400	0.198	0.598	No
Simultaneous Tx	**Configurations**	**UMTS 1900 (W/kg)**	**2.4 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.794	0.885	1.679	Yes(#2)
	Left	0.335	1.116	1.451	No
	Right	0.037	0.400	0.437	No
	Top	0.317	0.285	0.602	No
	Right Corner	0.029	0.400	0.429	No
	Left Corner	0.400	0.198	0.598	No
Simultaneous Tx	**Configurations**	**LTE 5 (W/kg)**	**2.4 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.496	0.885	1.381	No
	Left	0.246	1.116	1.362	No
	Right	0.042	0.400	0.442	No
	Top	0.140	0.285	0.425	No
	Right Corner	0.035	0.400	0.435	No
	Left Corner	0.400	0.198	0.598	No
Simultaneous Tx	**Configurations**	**LTE 12 (W/kg)**	**2.4 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.433	0.885	1.318	No
	Left	0.180	1.116	1.296	No
	Right	0.037	0.400	0.437	No
	Top	0.217	0.285	0.502	No
	Right Corner	0.041	0.400	0.441	No
	Left Corner	0.400	0.198	0.598	No
Simultaneous Tx	**Configurations**	**LTE 17 (W/kg)**	**2.4 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.620	0.885	**1.505**	No
	Left	0.180	1.116	1.296	No
	Right	0.042	0.400	0.442	No
	Top	0.251	0.285	0.536	No
	Right Corner	0.046	0.400	0.446	No
	Left Corner	0.400	0.198	0.598	No
Simultaneous Tx	**Configurations**	**LTE 41 (W/kg)**	**2.4 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.798	0.885	1.683	Yes(#3)
	Left	0.041	1.116	1.157	No
	Right	0.674	0.400	1.074	No
	Top	0.360	0.285	0.645	No
	Right Corner	0.167	0.400	0.567	No
	Left Corner	0.400	0.198	0.598	No

- Simultaneous Transmission Scenario with 2.4 GHz WLAN (Sensor Inactive)

Simultaneous Tx	Configurations	GSM 850 (W/kg)	2.4 GHz Ant (W/kg)	∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
Body SAR	Rear	0.653	0.365	1.018	No
	Left	0.186	1.192	1.378	No
	Right	0.112	0.400	0.512	No
	Top	0.751	0.199	0.95	No
	Right Corner	0.068	0.400	0.468	No
	Left Corner	0.400	0.156	0.556	No
Simultaneous Tx	**Configurations**	**GSM 1900 (W/kg)**	**2.4 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.269	0.365	0.634	No
	Left	0.249	1.192	1.441	No
	Right	0.056	0.400	0.456	No
	Top	0.265	0.199	0.464	No
	Right Corner	0.081	0.400	0.481	No
	Left Corner	0.400	0.156	0.556	No
Simultaneous Tx	**Configurations**	**UMTS 850 (W/kg)**	**2.4 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.440	0.365	0.805	No
	Left	0.134	1.192	1.326	No
	Right	0.100	0.400	0.5	No
	Top	0.437	0.199	0.636	No
	Right Corner	0.043	0.400	0.443	No
	Left Corner	0.400	0.156	0.556	No
Simultaneous Tx	**Configurations**	**UMTS 1900 (W/kg)**	**2.4 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.442	0.365	0.807	No
	Left	0.335	1.192	1.527	No
	Right	0.102	0.400	0.502	No
	Top	0.455	0.199	0.654	No
	Right Corner	0.100	0.400	0.5	No
	Left Corner	0.400	0.156	0.556	No
Simultaneous Tx	**Configurations**	**LTE 5 (W/kg)**	**2.4 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.632	0.365	0.997	No
	Left	0.246	1.192	1.438	No
	Right	0.153	0.400	0.553	No
	Top	0.623	0.199	0.822	No
	Right Corner	0.103	0.400	0.503	No
	Left Corner	0.400	0.156	0.556	No
Simultaneous Tx	**Configurations**	**LTE 12 (W/kg)**	**2.4 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.515	0.365	0.88	No
	Left	0.180	1.192	1.372	No
	Right	0.106	0.400	0.506	No
	Top	0.344	0.199	0.543	No
	Right Corner	0.088	0.400	0.488	No
	Left Corner	0.400	0.156	0.556	No
Simultaneous Tx	**Configurations**	**LTE 41 (W/kg)**	**2.4 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.149	0.365	0.514	No
	Left	0.041	1.192	1.233	No
	Right	0.603	0.400	1.003	No
	Top	0.046	0.199	0.245	No
	Right Corner	0.182	0.400	0.582	No
	Left Corner	0.400	0.156	0.556	No

- Simultaneous Transmission Scenario with 5 GHz WLAN (Sensor Active)

Simultaneous Tx	Configurations	GSM 850 (W/kg)	5 GHz Ant (W/kg)	∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
Body SAR	Rear	0.608	0.109	0.717	No
	Left	0.186	0.355	0.541	No
	Right	0.055	0.400	0.455	No
	Top	0.207	0.130	0.337	No
	Right Corner	0.032	0.400	0.432	No
	Left Corner	0.400	0.131	0.531	No
Simultaneous Tx	**Configurations**	**GSM 1900 (W/kg)**	**5 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.978	0.109	1.087	No
	Left	0.249	0.355	0.604	No
	Right	0.044	0.400	0.444	No
	Top	0.425	0.130	0.555	No
	Right Corner	0.045	0.400	0.445	No
	Left Corner	0.400	0.131	0.531	No
Simultaneous Tx	**Configurations**	**UMTS 850 (W/kg)**	**5 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.496	0.109	0.605	No
	Left	0.134	0.355	0.489	No
	Right	0.049	0.400	0.449	No
	Top	0.224	0.130	0.354	No
	Right Corner	0.027	0.400	0.427	No
	Left Corner	0.400	0.131	0.531	No
Simultaneous Tx	**Configurations**	**UMTS 1900 (W/kg)**	**5 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.794	0.109	0.903	No
	Left	0.335	0.355	0.69	No
	Right	0.037	0.400	0.437	No
	Top	0.317	0.130	0.447	No
	Right Corner	0.029	0.400	0.429	No
	Left Corner	0.400	0.131	0.531	No
Simultaneous Tx	**Configurations**	**LTE 5 (W/kg)**	**5 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.496	0.109	0.605	No
	Left	0.246	0.355	0.601	No
	Right	0.042	0.400	0.442	No
	Top	0.140	0.130	0.270	No
	Right Corner	0.035	0.400	0.435	No
	Left Corner	0.400	0.131	0.531	No
Simultaneous Tx	**Configurations**	**LTE 12 (W/kg)**	**5 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.433	0.109	0.542	No
	Left	0.180	0.355	0.535	No
	Right	0.037	0.400	0.437	No
	Top	0.217	0.130	0.347	No
	Right Corner	0.041	0.400	0.441	No
	Left Corner	0.400	0.131	0.531	No
Simultaneous Tx	**Configurations**	**LTE 17 (W/kg)**	**5 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.620	0.109	0.729	No
	Left	0.180	0.355	0.535	No
	Right	0.042	0.400	0.442	No
	Top	0.251	0.130	0.381	No
	Right Corner	0.046	0.400	0.446	No
	Left Corner	0.400	0.131	0.531	No
Simultaneous Tx	**Configurations**	**LTE 41 (W/kg)**	**5 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.798	0.109	0.907	No
	Left	0.041	0.355	0.396	No
	Right	0.674	0.400	1.074	No
	Top	0.360	0.130	0.490	No
	Right Corner	0.167	0.400	0.567	No
	Left Corner	0.400	0.131	0.531	No

- Simultaneous Transmission Scenario with 5 GHz WLAN (Inactive)

Simultaneous Tx	Configurations	GSM 850 (W/kg)	5 GHz Ant (W/kg)	∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
Body SAR	Rear	0.653	0.122	0.775	No
	Left	0.186	0.853	1.039	No
	Right	0.112	0.400	0.512	No
	Top	0.751	0.007	0.758	No
	Right Corner	0.068	0.400	0.468	No
	Left Corner	0.400	0.016	0.416	No
Simultaneous Tx	**Configurations**	**GSM 1900 (W/kg)**	**5 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.269	0.122	0.391	No
	Left	0.249	0.853	1.102	No
	Right	0.056	0.400	0.456	No
	Top	0.265	0.007	0.272	No
	Right Corner	0.081	0.400	0.481	No
	Left Corner	0.400	0.016	0.416	No
Simultaneous Tx	**Configurations**	**UMTS 850 (W/kg)**	**5 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.440	0.122	0.562	No
	Left	0.134	0.853	0.987	No
	Right	0.100	0.400	0.500	No
	Top	0.437	0.007	0.444	No
	Right Corner	0.043	0.400	0.443	No
	Left Corner	0.400	0.016	0.416	No
Simultaneous Tx	**Configurations**	**UMTS 1900 (W/kg)**	**5 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.442	0.122	0.564	No
	Left	0.335	0.853	1.188	No
	Right	0.102	0.400	0.502	No
	Top	0.455	0.007	0.462	No
	Right Corner	0.100	0.400	0.5	No
	Left Corner	0.400	0.016	0.416	No
Simultaneous Tx	**Configurations**	**LTE 5 (W/kg)**	**5 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.632	0.122	0.754	No
	Left	0.246	0.853	1.099	No
	Right	0.153	0.400	0.553	No
	Top	0.623	0.007	0.630	No
	Right Corner	0.103	0.400	0.503	No
	Left Corner	0.400	0.016	0.416	No
Simultaneous Tx	**Configurations**	**LTE 12 (W/kg)**	**5 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.515	0.122	0.637	No
	Left	0.180	0.853	1.033	No
	Right	0.106	0.400	0.506	No
	Top	0.344	0.007	0.351	No
	Right Corner	0.088	0.400	0.488	No
	Left Corner	0.400	0.016	0.416	No
Simultaneous Tx	**Configurations**	**LTE 41 (W/kg)**	**5 GHz Ant (W/kg)**	**∑ 1-g SAR (W/kg)**	**SPLSR (Yes/No)**
Body SAR	Rear	0.149	0.122	0.271	No
	Left	0.041	0.853	0.894	No
	Right	0.603	0.400	1.003	No
	Top	0.046	0.007	0.053	No
	Right Corner	0.182	0.400	0.582	No
	Left Corner	0.400	0.016	0.416	No

- Simultaneous Transmission Scenario with Bluetooth

Simultaneous Tx	Configurations	GSM 850 (W/kg)	Bluetooth (W/kg)	∑ 1-g SAR (W/kg)
Body SAR	Rear	0.653	0.264	0.917
	Left	0.186	0.317	0.503
	Right	0.112	0.400	0.512
	Top	0.751	0.122	0.873
	Right Corner	0.068	0.400	0.468
	Left Corner	0.400	0.089	0.489
Simultaneous Tx	**Configurations**	**GSM 1900 (W/kg)**	**Bluetooth (W/kg)**	**∑ 1-g SAR (W/kg)**
Body SAR	Rear	0.269	0.264	0.533
	Left	0.249	0.317	0.566
	Right	0.056	0.400	0.456
	Top	0.265	0.122	0.387
	Right Corner	0.081	0.400	0.481
	Left Corner	0.400	0.089	0.489
Simultaneous Tx	**Configurations**	**UMTS 850 (W/kg)**	**Bluetooth (W/kg)**	**∑ 1-g SAR (W/kg)**
Body SAR	Rear	0.440	0.264	0.704
	Left	0.134	0.317	0.451
	Right	0.100	0.400	0.500
	Top	0.437	0.122	0.559
	Right Corner	0.043	0.400	0.443
	Left Corner	0.400	0.089	0.489
Simultaneous Tx	**Configurations**	**UMTS 1900 (W/kg)**	**Bluetooth (W/kg)**	**∑ 1-g SAR (W/kg)**
Body SAR	Rear	0.442	0.264	0.706
	Left	0.335	0.317	0.652
	Right	0.102	0.400	0.502
	Top	0.455	0.122	0.577
	Right Corner	0.100	0.400	0.5
	Left Corner	0.400	0.089	0.489
Simultaneous Tx	**Configurations**	**LTE 5 (W/kg)**	**Bluetooth (W/kg)**	**∑ 1-g SAR (W/kg)**
Body SAR	Rear	0.632	0.264	0.896
	Left	0.246	0.317	0.563
	Right	0.153	0.400	0.553
	Top	0.623	0.122	0.745
	Right Corner	0.103	0.400	0.503
	Left Corner	0.400	0.089	0.489
Simultaneous Tx	**Configurations**	**LTE 12 (W/kg)**	**Bluetooth (W/kg)**	**∑ 1-g SAR (W/kg)**
Body SAR	Rear	0.515	0.264	0.779
	Left	0.180	0.317	0.497
	Right	0.106	0.400	0.506
	Top	0.344	0.122	0.466
	Right Corner	0.088	0.400	0.488
	Left Corner	0.400	0.089	0.489
Simultaneous Tx	**Configurations**	**LTE 41 (W/kg)**	**Bluetooth (W/kg)**	**∑ 1-g SAR (W/kg)**
Body SAR	Rear	0.149	0.264	0.413
	Left	0.041	0.317	0.358
	Right	0.603	0.400	1.003
	Top	0.046	0.122	0.168
	Right Corner	0.182	0.400	0.582
	Left Corner	0.400	0.089	0.489

Note:

1. When the antenna separation distance was >50mm, an estimated SAR of 0.4 /kg was used to determine the simultaneous transmission SAR exclusion for test positions exclude per FCC KDB Publication 447498D01v06

12.2 SAR to Peak Location Separation Ratio (SPLSR)

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

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

Where:

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

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

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

In order for a pair of simultaneous transmitting antennas with the sum 1-g of SAR> 1.6 W/kg and with the sum 10-g of SAR >4W/Kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:
$(SAR_1 + SAR_2)^{1.5}/R_i \leq 0.04$ for 1g SAR and $(SAR_1 + SAR_2)^{1.5}/R_i \leq 0.1$ for 10g SAR

Per Sec. 12, below simultaneous transmission summations need to be calculated SPLSR.

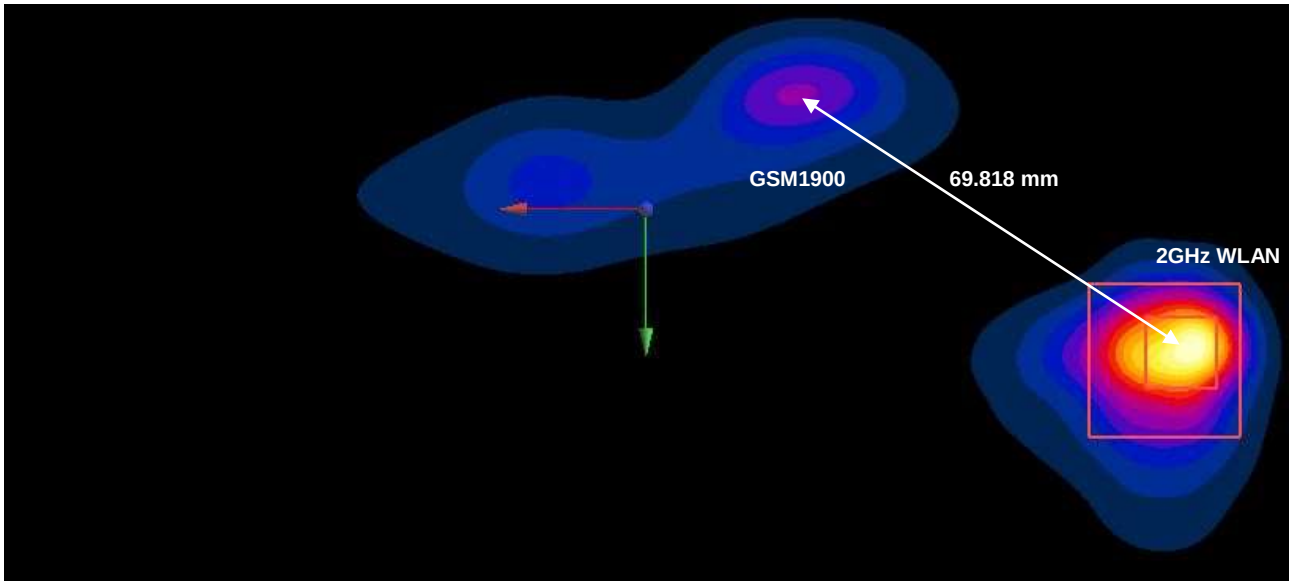
12.2.1 SPLSR Evaluation

Peak location for SAR Rear side

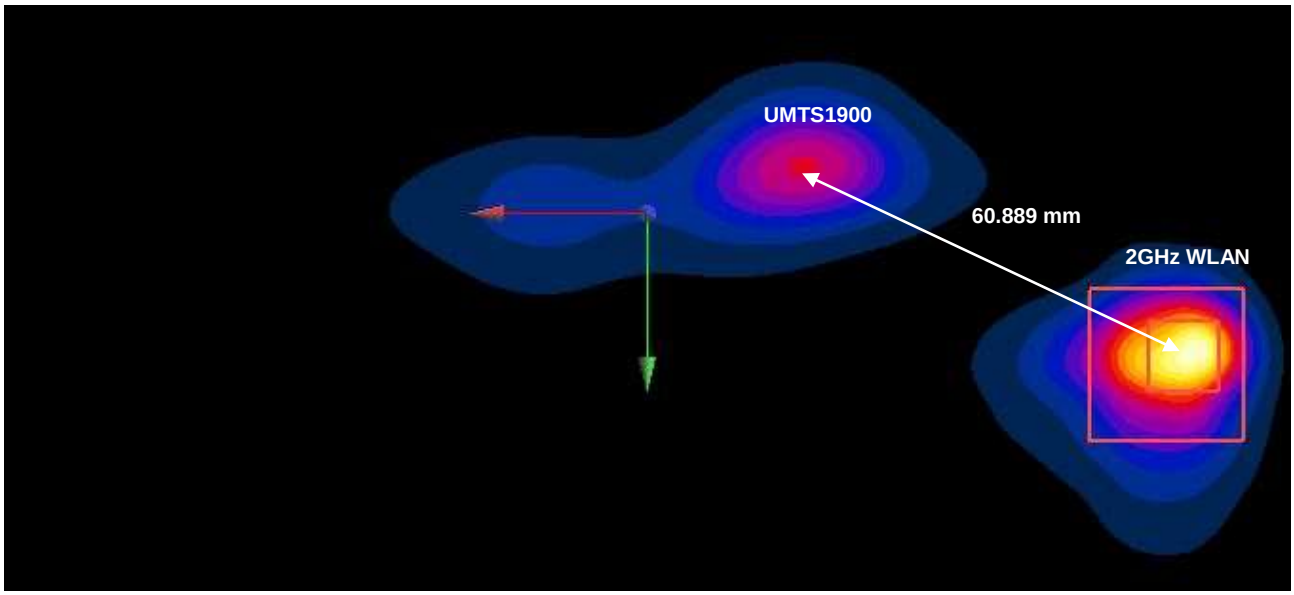
Mode/Band	X(m)	Y(m)	Z(m)	Reported 1g SAR (W/kg)
GSM1900	-0.018	-0.017	-0.172	0.978
UMTS1900	-0.0225	-0.0065	-0.172	0.794
LTE 41	0.0735	0.0096	-0.17	0.798
2.45GHz WLAN	-0.0777	0.0192	-0.169	0.885

12.2.2 SAR to Peak Location Ratio (SPLSR) Figures

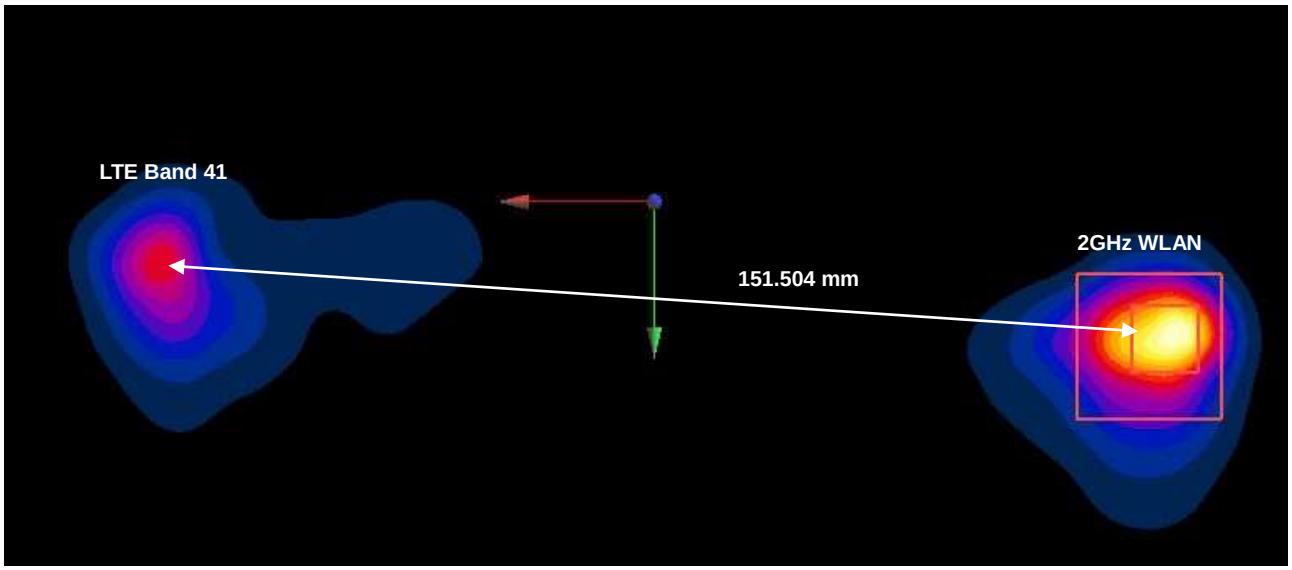
Plot No.	GSM1900	2.4GHz WLAN	Sum 1g SAR 1+2	Peak SAR Separation Distance (mm)	SPLSR
	SAR 1g(W/kg)	SAR 1g(W/kg)			
	1	2			
#1	0.978	0.885	**1.863**	69.818	0.0364



Plot No.	UMTS1900	2.4GHz WLAN	Sum 1g SAR 1+2	Peak SAR Separation Distance (mm)	SPLSR
	SAR 1g(W/kg)	SAR 1g(W/kg)			
	1	2			
#2	0.794	0.885	1.679	60.889	0.0357



Plot No.	LTE 41	2.4GHz WLAN	Sum 1g SAR 1+2	Peak SAR Separation Distance (mm)	SPLSR
	SAR 1g(W/kg)	SAR 1g(W/kg)			
	1	2			
#3	0.798	0.885	1.683	151.504	0.01



12.3 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.

13. SAR MEASUREMENT VARIABILITY AND UNCERTAINTY

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

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

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg for 1g SAR or < 2.0 W/kg for 10g SAR; steps 2) through 4) do not apply.

2) When the original highest measured 1g SAR is ≥ 0.80 W/kg or 10g SAR ≥ 2.0W/kg, repeat that measurement once.

3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg for 1g SAR or ≥ 3.625 W/kg for 10g SAR (~ 10% from the 1-g SAR limit).

4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 W/kg for 1g SAR or ≥3.75 W/kg for 10g SAR and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

Body SAR measurement variability Results

Frequency		Mode/Band	Configuration	Measured SAR	Repeated SAR	SAR Ratio
MHz	Channel			(W/kg)	(W/kg)	
2 462	11	Wi-Fi(DTS)	Left	1.11	0.959	1.16

15. MEASUREMENT UNCERTAINTY

The measured SAR was <1.5 W/Kg for 1g SAR and <3.75 W/KgFor 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	Triple Modular Phantom	-	N/A	N/A	N/A
HP	SAR System Control PC	-	N/A	N/A	N/A
Staubli	CS8Cspeag-TX90	F13/5R4XF1/C/01	N/A	N/A	N/A
Staubli	CS8Cspeag-TX90	F11/5K3RA1/C/01	N/A	N/A	N/A
Staubli	TX90 XLspeag	F13/5R4XF1/A/01	N/A	N/A	N/A
Staubli	TX90 XLspeag	F11/5K3RA1/A/01	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick)	S-1338 1332	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick)	S-1203 0309	N/A	N/A	N/A
SPEAG	DAE4	1225	11/16/2018	Annual	11/16/2019
SPEAG	DAE3	466	08/22/2018	Annual	08/22/2019
SPEAG	E-Field Probe ES3DV3	3076	07/26/2018	Annual	07/26/2019
SPEAG	E-Field Probe EX3DV4	3797	11/22/2018	Annual	11/22/2019
SPEAG	Dipole D750V3	1014	08/14/2018	Annual	08/14/2019
SPEAG	Dipole D835V2	4d165	09/18/2018	Annual	09/18/2019
SPEAG	Dipole D1900V2	5d032	02/21/2019	Annual	02/21/2020
SPEAG	Dipole D2450V2	743	01/28/2019	Annual	01/28/2020
SPEAG	Dipole D2600V2	1015	11/20/2018	Annual	11/20/2019
SPEAG	Dipole D5GHzV2	1253	11/22/2018	Annual	11/22/2019
Agilent	Power Meter E4419B	MY41291386	10/11/2018	Annual	10/11/2019
Agilent	Power Meter N1911A	MY45101406	09/06/2018	Annual	09/06/2019
Agilent	Power Sensor 8481A	SG1091286	10/11/2018	Annual	10/11/2019
Agilent	Power Sensor 8481A	MY41090873	10/11/2018	Annual	10/11/2019
Agilent	Power Sensor N1921A	MY55220026	09/06/2018	Annual	09/06/2019
SPEAG	DAKS 3.5	1038	05/29/2018	Annual	05/29/2019
SPEAG	VNA-R140	0141013	05/29/2018	Annual	05/29/2019
Agilent	WIRELESS COMMUNICATION E5515C	MY48361100	10/02/2018	Annual	10/02/2019
Agilent	Signal Generator N5182A	MY47070230	05/10/2018	Annual	05/10/2019
Agilent	11636B/Power Divider	58698	02/28/2019	Annual	03/06/2020
TESTO	175-H1/Thermometer	40332651310	01/29/2019	Annual	01/29/2020
TESTO	175-H1/Thermometer	40331949309	01/29/2019	Annual	01/29/2020
EMPOWER	RF Power Amplifier	1084	06/11/2018	Annual	06/11/2019
EMPOWER	RF Power Amplifier	1011	10/11/2018	Annual	10/11/2019
MICRO LAB	LP Filter / LA-15N	10453	10/11/2018	Annual	10/11/2019
MICRO LAB	LP Filter / LA-30N	-	10/11/2018	Annual	10/11/2019
MICRO LAB	LP Filter / LA-60N	32011	10/11/2018	Annual	10/11/2019
Apitech	Attenuator (3dB) 18B-03	1	06/07/2018	Annual	06/07/2019
Agilent	Attenuator (20dB) 33340C	13311	05/10/2018	Annual	05/10/2019
Agilent	Directional Bridge	3140A03878	06/11/2018	Annual	06/11/2019
Agilent	MXA Signal Analyzer N9020A	MY50510407	10/31/2018	Annual	10/31/2019
HP	Dual Directional Coupler	16072	10/11/2018	Annual	10/11/2019
Anritsu	Radio Communication Tester MT8820C	6200628628	07/19/2018	Annual	07/19/2019
Anritsu	Radio Communication Tester MT8821C	6201502997	08/13/2018	Annual	08/13/2019
R&S	Bluetooth CBT	100272	03/04/2019	Annual	03/04/2020

1. 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.

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Attachment 1. – SAR Test Plots

Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	04/22/2019
Plot No.:	1

DUT: SM-T725C

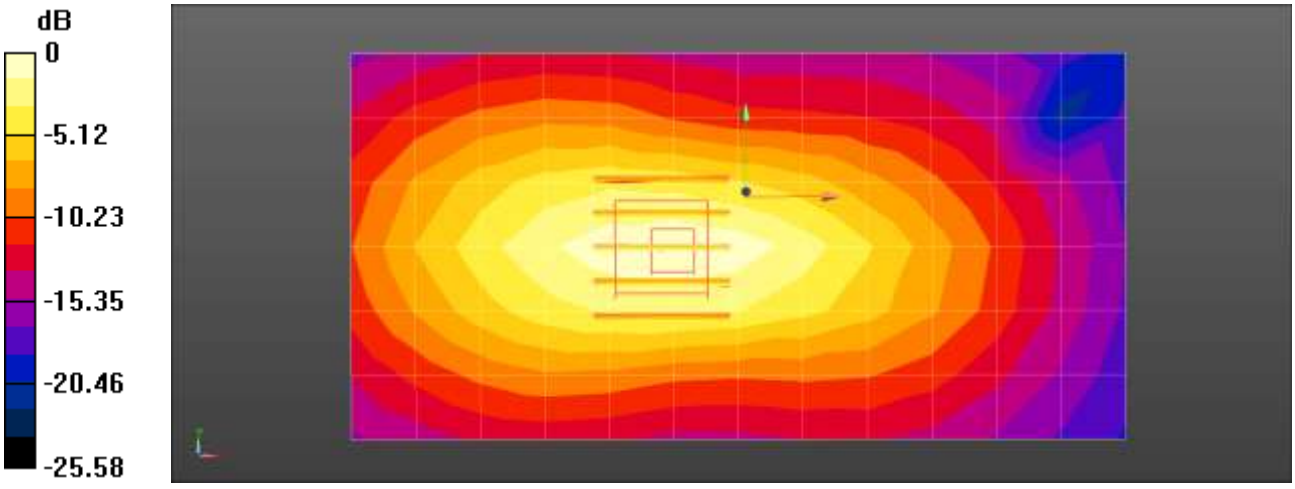
Communication System: UID 0, GSM850 GPRS 4TX (0); Frequency: 836.6 MHz;Duty Cycle: 1:2.07491
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.965 S/m; ε_r = 56.439; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3797; ConvF(9.16, 9.16, 9.16); Calibrated: 2018-11-22;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1225; Calibrated: 2018-11-16
- Phantom: MFP_V5.1C
- Measurement SW: DASY52, Version 52.8 (8);

GSM850 Body Top 4Tx 190ch/Area Scan (13x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.629 W/kg

GSM850 Body Top 4Tx 190ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.74 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.782 W/kg
SAR(1 g) = 0.496 W/kg; SAR(10 g) = 0.312 W/kg
Maximum value of SAR (measured) = 0.634 W/kg



0 dB = 0.634 W/kg = −1.98 dBW/kg

Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	04/24/2019
Plot No.:	2

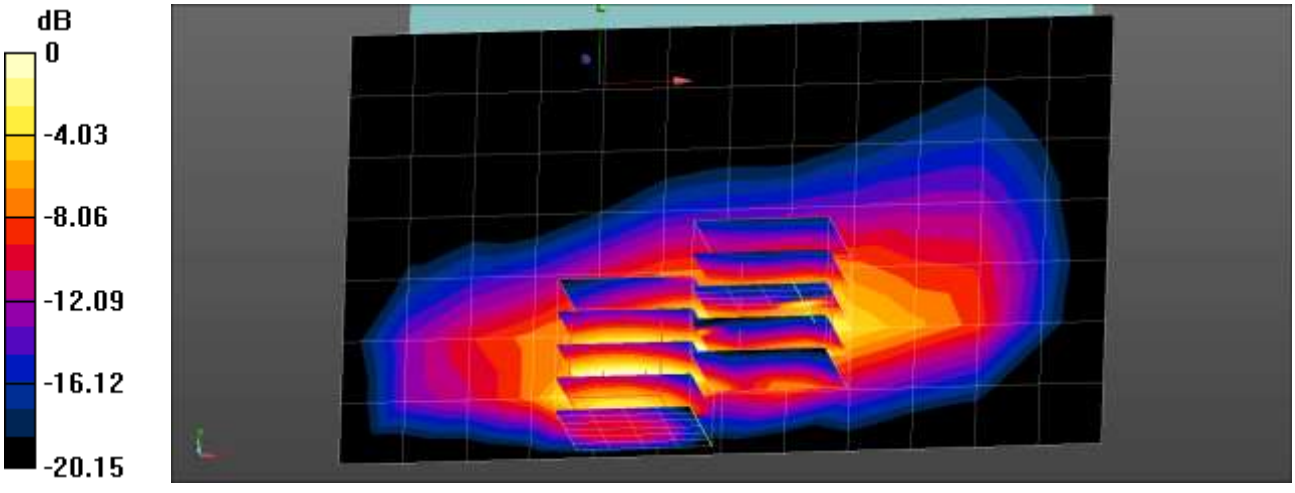
DUT: SM-T725C

Communication System: UID 0, GSM 1900 4TX (0); Frequency: 1909.8 MHz;Duty Cycle: 1:2.07491
Medium parameters used: f = 1910 MHz; σ = 1.55 S/m; ε_r = 52.626; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3797; ConvF(7.52, 7.52, 7.52); Calibrated: 2018-11-22;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1225; Calibrated: 2018-11-16
- Phantom: MFP_V5.1C
- Measurement SW: DASY52, Version 52.8 (8);

GSM1900 Body Rear 4Tx 810ch/Area Scan (13x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.560 W/kg
GSM1900 Body Rear 4Tx 810ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.01 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 1.77 W/kg
SAR(1 g) = 0.779 W/kg; SAR(10 g) = 0.310 W/kg
Maximum value of SAR (measured) = 1.27 W/kg
GSM1900 Body Rear 4Tx 810ch/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.01 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.816 W/kg
SAR(1 g) = 0.292 W/kg; SAR(10 g) = 0.123 W/kg
Maximum value of SAR (measured) = 0.461 W/kg



0 dB = 0.461 W/kg = −3.36 dBW/kg

Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	04/22/2019
Plot No.:	3

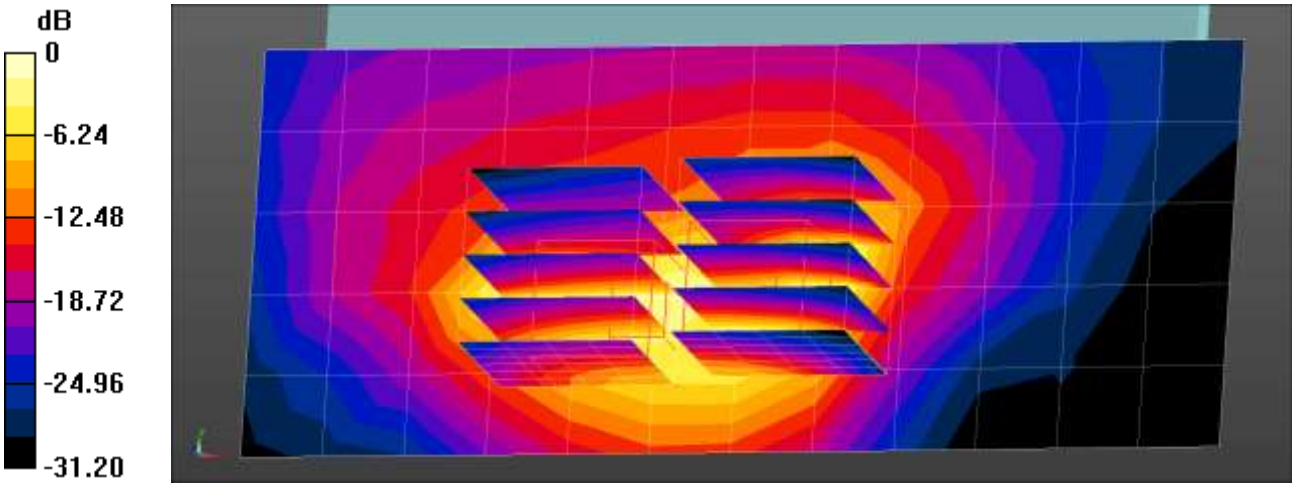
DUT: SM-T725C

Communication System: UID 0, WCDMA850 (0); Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.965 S/m; ε_r = 56.439; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3797; ConvF(9.16, 9.16, 9.16); Calibrated: 2018-11-22;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1225; Calibrated: 2018-11-16
- Phantom: MFP_V5.1C
- Measurement SW: DASY52, Version 52.8 (8);

WCDMA850 Body Rear 4183ch/Area Scan (13x6x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.853 W/kg
WCDMA850 Body Rear 4183ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.77 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 1.07 W/kg
SAR(1 g) = 0.388 W/kg; SAR(10 g) = 0.182 W/kg
Maximum value of SAR (measured) = 0.760 W/kg
WCDMA850 Body Rear 4183ch/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.77 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 1.07 W/kg
SAR(1 g) = 0.388 W/kg; SAR(10 g) = 0.178 W/kg
Maximum value of SAR (measured) = 0.714 W/kg



0 dB = 0.853 W/kg = −0.69 dBW/kg

Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	04/24/2019
Plot No.:	4

DUT: SM-T725C

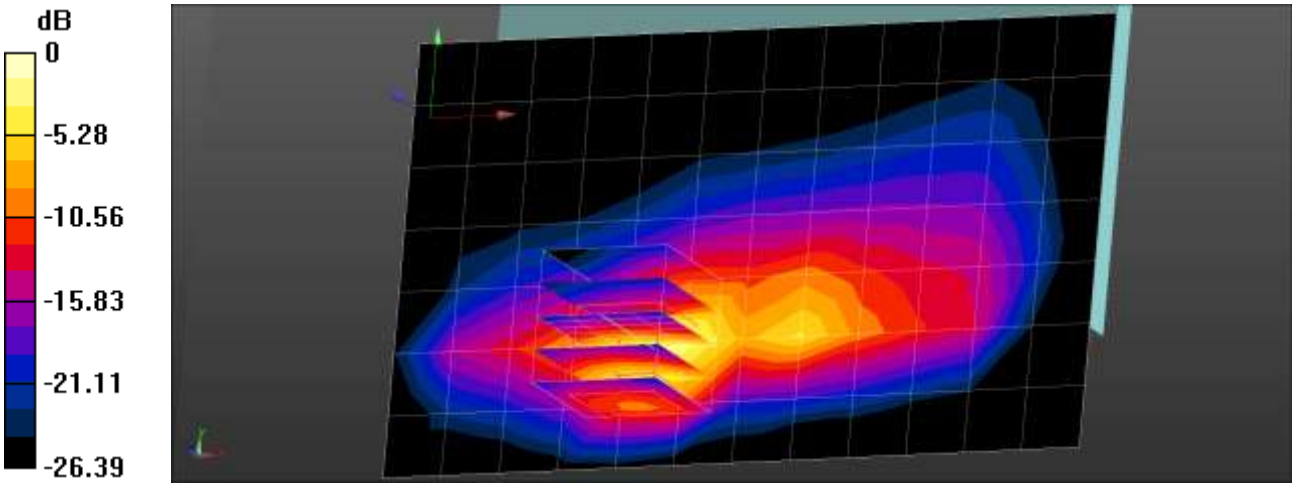
Communication System: UID 0, WCDMA1900 (0); Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.523 S/m; ε_r = 52.665; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3797; ConvF(7.52, 7.52, 7.52); Calibrated: 2018-11-22;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1225; Calibrated: 2018-11-16
- Phantom: MFP_V5.1C
- Measurement SW: DASY52, Version 52.8 (8);

WCDMA1900 Body Rear 9400ch/Area Scan (13x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.781 W/kg

WCDMA1900 Body Rear 9400ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.47 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 1.96 W/kg
SAR(1 g) = 0.682 W/kg; SAR(10 g) = 0.256 W/kg
Maximum value of SAR (measured) = 1.29 W/kg



0 dB = 1.29 W/kg = 1.11 dBW/kg

Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone
Liquid Temperature:	20.4 ℃
Ambient Temperature:	20.7 ℃
Test Date:	04/23/2019
Plot No.:	5

DUT: SM-T725C

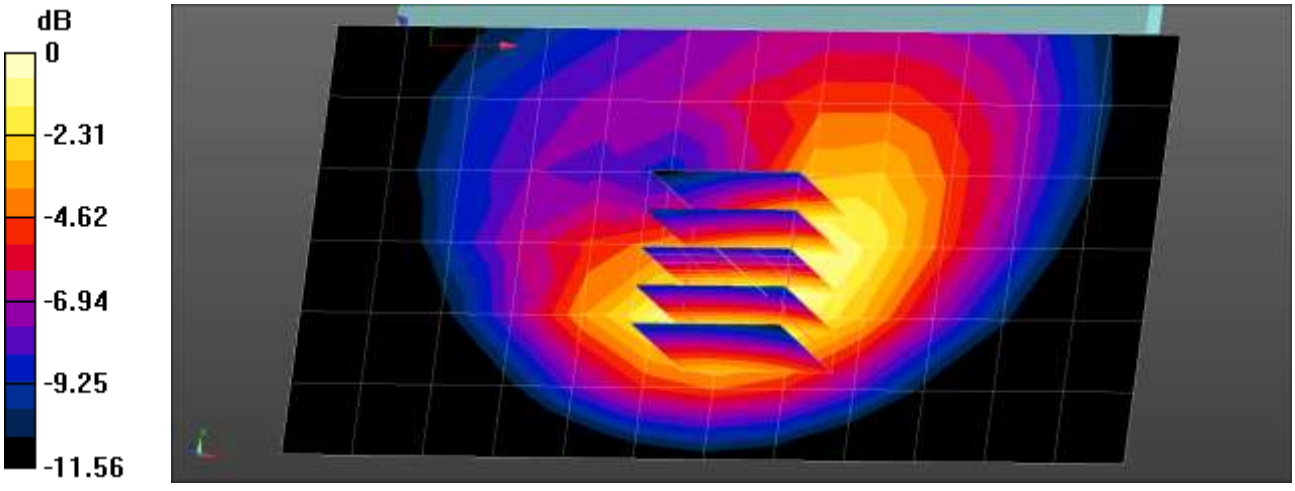
Communication System: UID 0, LTE Band 5 (0); Frequency: 836.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.5 MHz; σ = 1.007 S/m; ε_r = 54.336; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3076; ConvF(6.03, 6.03, 6.03); Calibrated: 2018-07-26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2018-08-22
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

LTE Band5 Body Rear QPSK 10MHz 1RB 49offset 20525ch Backoff 0mm/Area Scan (13x7x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.425 W/kg

LTE Band5 Body Rear QPSK 10MHz 1RB 49offset 20525ch Backoff 0mm/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.22 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.583 W/kg
SAR(1 g) = 0.398 W/kg; SAR(10 g) = 0.258 W/kg
Maximum value of SAR (measured) = 0.467 W/kg



0 dB = 0.467 W/kg = −3.31 dBW/kg

Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone
Liquid Temperature:	19.6 ℃
Ambient Temperature:	19.9 ℃
Test Date:	04/25/2019
Plot No.:	6

DUT: SM-T725C

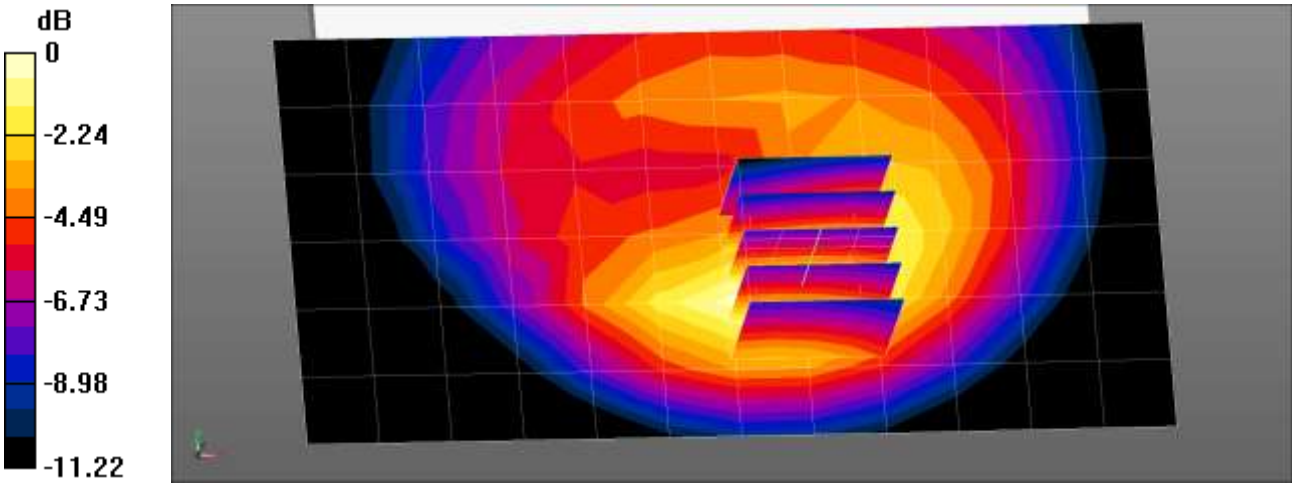
Communication System: UID 0, LTE 12 (0); Frequency: 707.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 707.5 MHz; σ = 0.955 S/m; ε_r = 55.869; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3076; ConvF(6.16, 6.16, 6.16); Calibrated: 2018-07-26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2018-08-22
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

LTE Band12 Body Rear QPSK 10MHz 1RB 0offset 23095ch Max 16mm/Area Scan (13x7x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.383 W/kg

LTE Band12 Body Rear QPSK 10MHz 1RB 0offset 23095ch Max16mm/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.00 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.486 W/kg
SAR(1 g) = 0.341 W/kg; SAR(10 g) = 0.229 W/kg
Maximum value of SAR (measured) = 0.395 W/kg



0 dB = 0.395 W/kg = −4.03 dBW/kg

Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone
Liquid Temperature:	19.6 ℃
Ambient Temperature:	19.9 ℃
Test Date:	04/25/2019
Plot No.:	7

DUT: SM-T725C

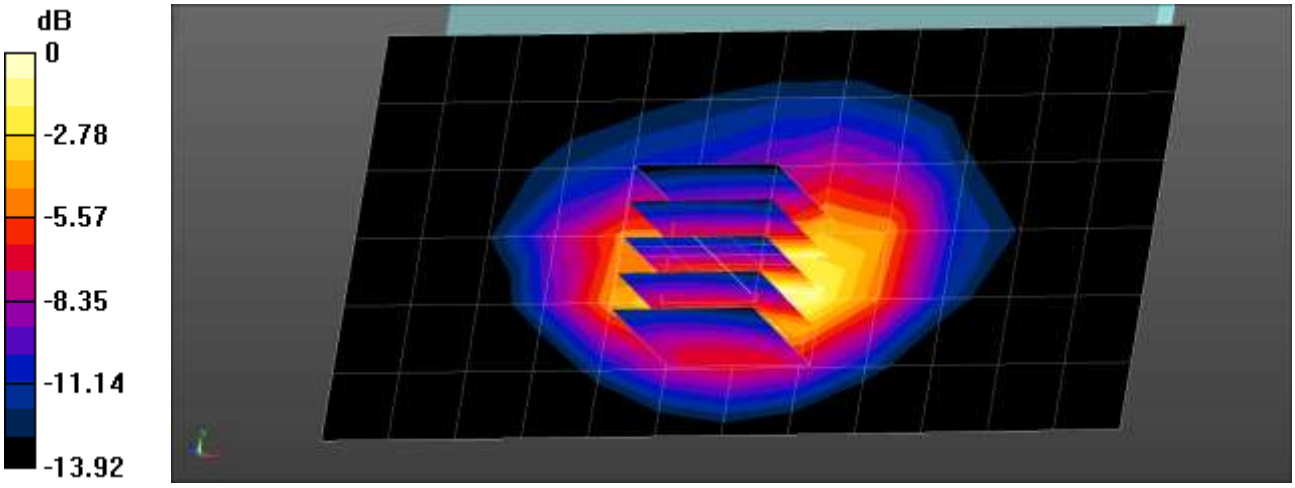
Communication System: UID 0, LTE 17 (0); Frequency: 710 MHz;Duty Cycle: 1:1
Medium parameters used: f = 710 MHz; σ = 0.957 S/m; ε_r = 55.85; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3076; ConvF(6.16, 6.16, 6.16); Calibrated: 2018-07-26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2018-08-22
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

LTE Band17 Body Rear QPSK 10MHz 25RB 0offset 23790ch Backoff 0mm/Area Scan (13x7x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.451 W/kg

LTE Band17 Body Rear QPSK 10MHz 25RB 0offset 23790ch Backoff 0mm/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.48 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.00 W/kg
SAR(1 g) = 0.440 W/kg; SAR(10 g) = 0.228 W/kg
Maximum value of SAR (measured) = 0.512 W/kg



0 dB = 0.512 W/kg = −2.91 dBW/kg

Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone
Liquid Temperature:	20.9 ℃
Ambient Temperature:	21.1 ℃
Test Date:	04/26/2019
Plot No.:	8

DUT: SM-T725C

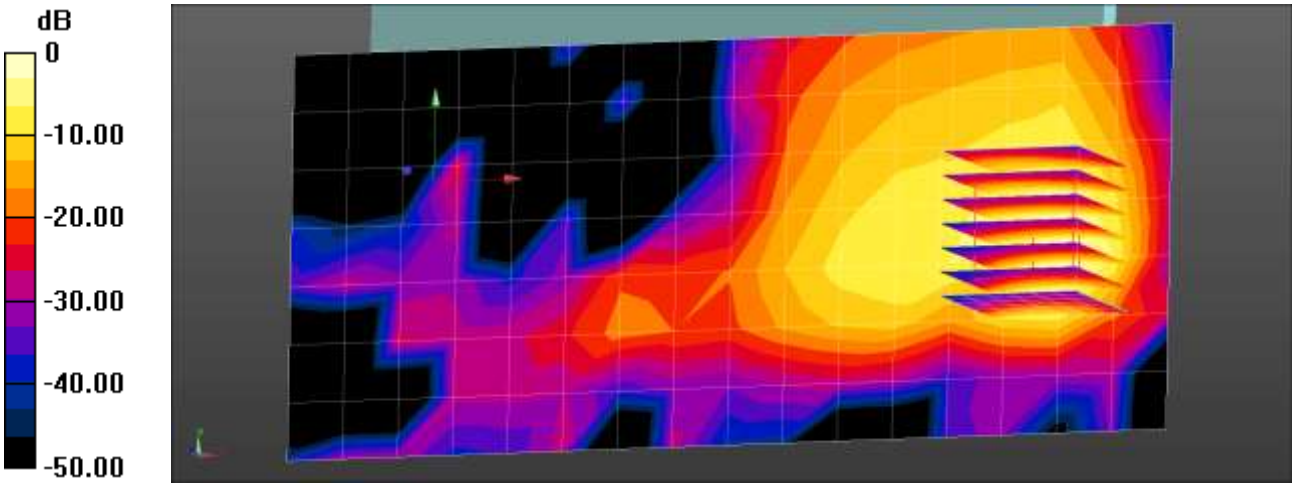
Communication System: UID 0, LTE TDD 41 (Telec 2) (0); Frequency: 2645 MHz;Duty Cycle: 1:1.58125
Medium parameters used (interpolated): f = 2645 MHz; σ = 2.165 S/m; ε_r = 53.026; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3076; ConvF(4.32, 4.32, 4.32); Calibrated: 2018-07-26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2018-08-22
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

LTE 41 Body Rear QPSK 20MHz 50RB 0offset 41140ch/Area Scan (17x8x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 0.834 W/kg

LTE 41 Body Rear QPSK 20MHz 50RB 0offset 41140ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.748 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 1.90 W/kg
SAR(1 g) = 0.611 W/kg; SAR(10 g) = 0.236 W/kg
Maximum value of SAR (measured) = 0.823 W/kg



0 dB = 0.834 W/kg = −0.79 dBW/kg

Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone
Liquid Temperature:	18.9 ℃
Ambient Temperature:	19.1 ℃
Test Date:	04/29/2019
Plot No.:	9

DUT: SM-T725C

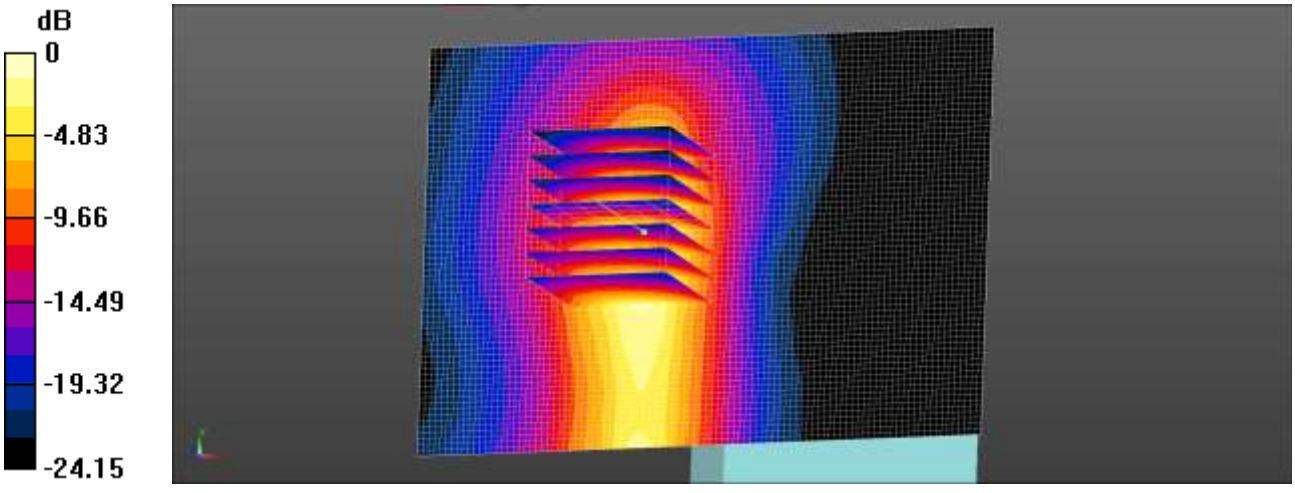
Communication System: UID 0, 2450MHz FCC (0); Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2462 MHz; σ = 1.951 S/m; ε_r = 53.395; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3076; ConvF(4.45, 4.45, 4.45); Calibrated: 2018-07-26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2018-08-22
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Ver8ion 52.8 (8);

802.11b Body Left 1Mbps 11ch Max 4mm/Area Scan (101x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.61 W/kg

802.11b Body Left 1Mbps 11ch Max 4mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.606 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 2.52 W/kg
SAR(1 g) = 1.11 W/kg; SAR(10 g) = 0.485 W/kg
Maximum value of SAR (measured) = 1.51 W/kg



0 dB = 1.51 W/kg = 1.79 dBW/kg

Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone
Liquid Temperature:	20.8 ℃
Ambient Temperature:	21.0 ℃
Test Date:	04/18/2019
Plot No.:	10

DUT: SM-T725C

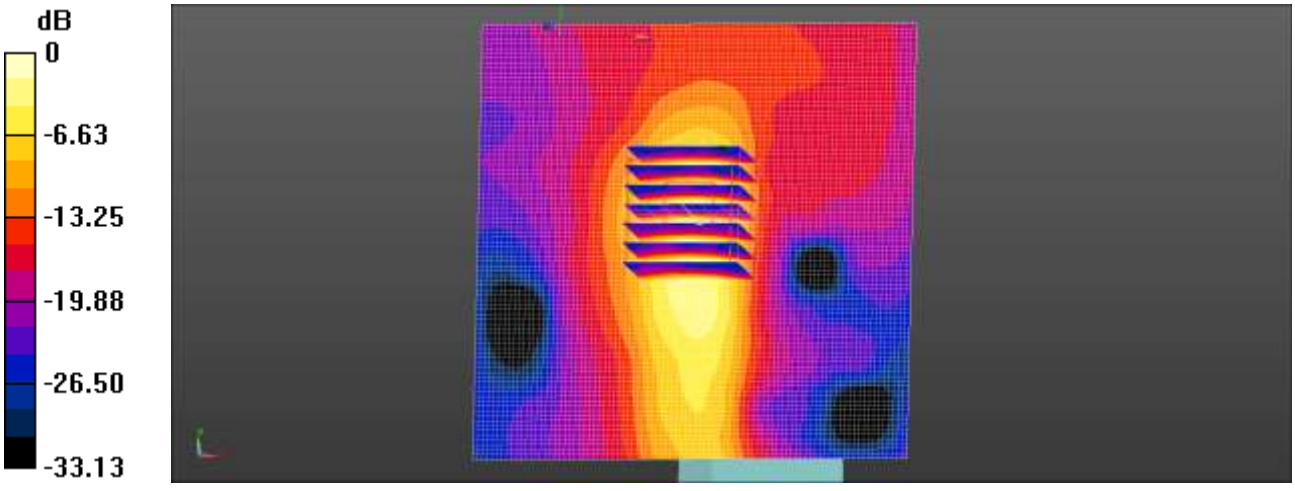
Communication System: UID 0, WIFI 5GHz (0); Frequency: 5320 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5320 MHz; σ = 5.581 S/m; ε_r = 47.169; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3797; ConvF(4.37, 4.37, 4.37); Calibrated: 2018-11-22;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1225; Calibrated: 2018-11-16
- Phantom: MFP_V5.1C
- Measurement SW: DASY52, Version 52.8 (8);

802.11a Body Left 6Mbps 64ch Max 4mm/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.49 W/kg

802.11a Body Left 6Mbps 64ch Max 4mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio:1.4
Reference Value = 17.70 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 3.27 W/kg
SAR(1 g) = 0.696 W/kg; SAR(10 g) = 0.207 W/kg
Maximum value of SAR (measured) = 1.82 W/kg



0 dB = 1.82 W/kg = 2.60 dBW/kg

Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone
Liquid Temperature:	20.8 ℃
Ambient Temperature:	21.0 ℃
Test Date:	04/18/2019
Plot No.:	11

DUT: SM-T725C

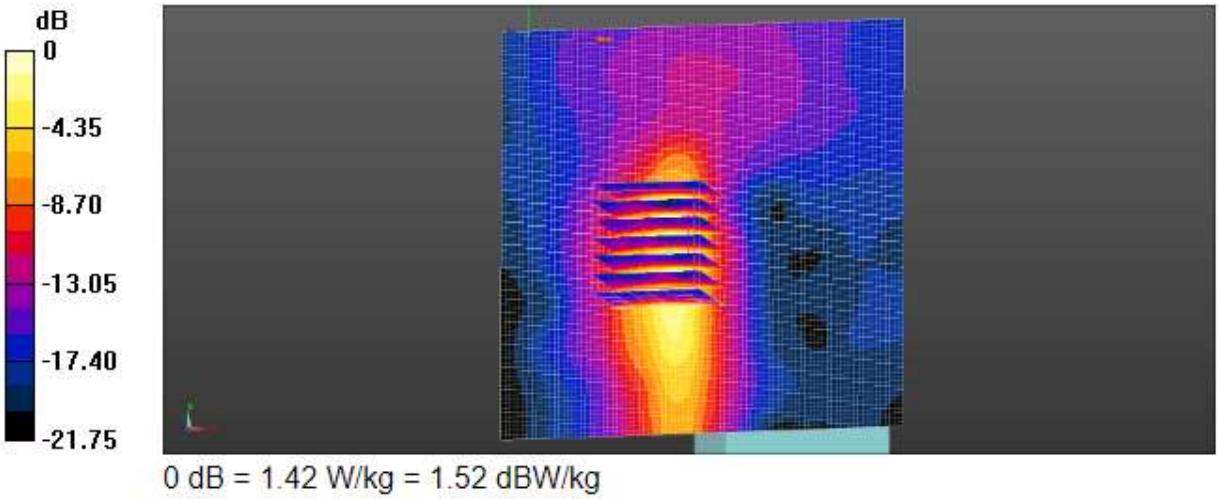
Communication System: UID 0, WIFI 5GHz (0); Frequency: 5500 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5500 MHz; σ = 5.745 S/m; εr = 47.302; ρ = 1000 kg/m3
Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3797; ConvF(3.94, 3.94, 3.94); Calibrated: 2018-11-22;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1225; Calibrated: 2018-11-16
- Phantom: MFP_V5.1C (20deg probe tilt)
- Measurement SW: DASY52, Version 52.8 (8);

802.11a Body Left 6Mbps 100ch Max 4mm/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.42 W/kg

802.11a Body Left 6Mbps 100ch Max 4mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 5.766 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 2.48 W/kg
SAR(1 g) = 0.518 W/kg; SAR(10 g) = 0.158 W/kg
Maximum value of SAR (measured) = 1.35 W/kg



Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone

Liquid Temperature:	20.8 ℃
Ambient Temperature:	21.0 ℃
Test Date:	04/18/2019
Plot No.:	12

DUT: SM-T725C

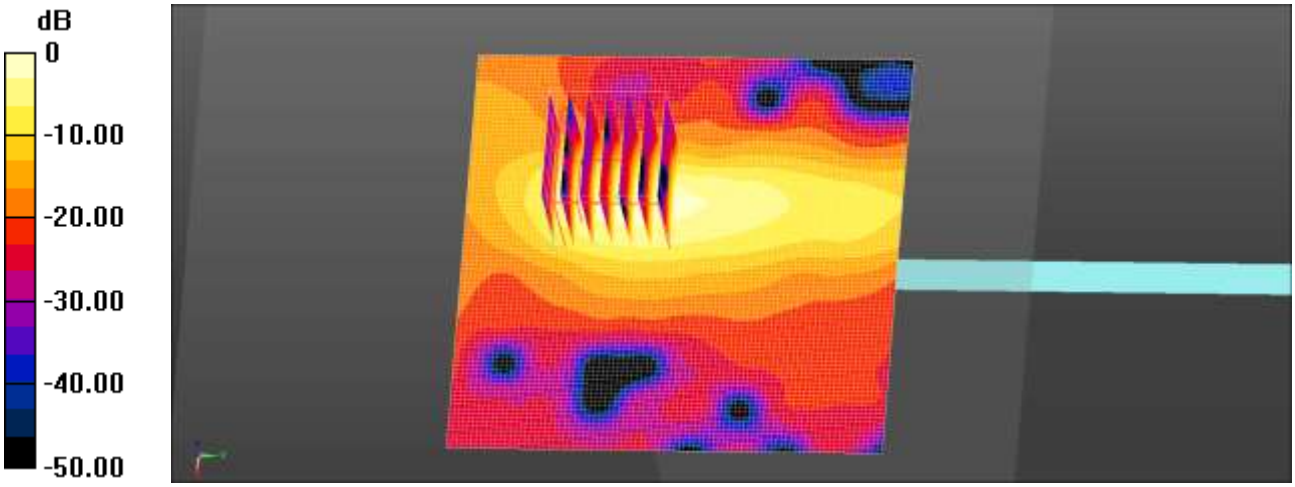
Communication System: UID 0, WIFI 5GHz (0); Frequency: 5745 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 5745 MHz; σ = 6.084 S/m; ε_r = 46.751; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3797; ConvF(4.16, 4.16, 4.16); Calibrated: 2018-11-22;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1225; Calibrated: 2018-11-16
- Phantom: MFP_V5.1C
- Measurement SW: DASY52, Version 52.8 (8);

802.11a Body Left 6Mbps 149ch 4mm/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.96 W/kg

802.11a Body Left 6Mbps 149ch 4mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio:1.4
Reference Value = 7.131 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 4.19 W/kg
SAR(1 g) = 0.754 W/kg; SAR(10 g) = 0.211 W/kg
Maximum value of SAR (measured) = 2.16 W/kg



0 dB = 1.96 W/kg = 2.92 dBW/kg

Test Laboratory:	HCT CO., LTD
EUT Type:	Mobile Phone
Liquid Temperature:	20.9 ℃

Ambient Temperature: 21.1 ℃
Test Date: 04/19/2019
Plot No.: 13

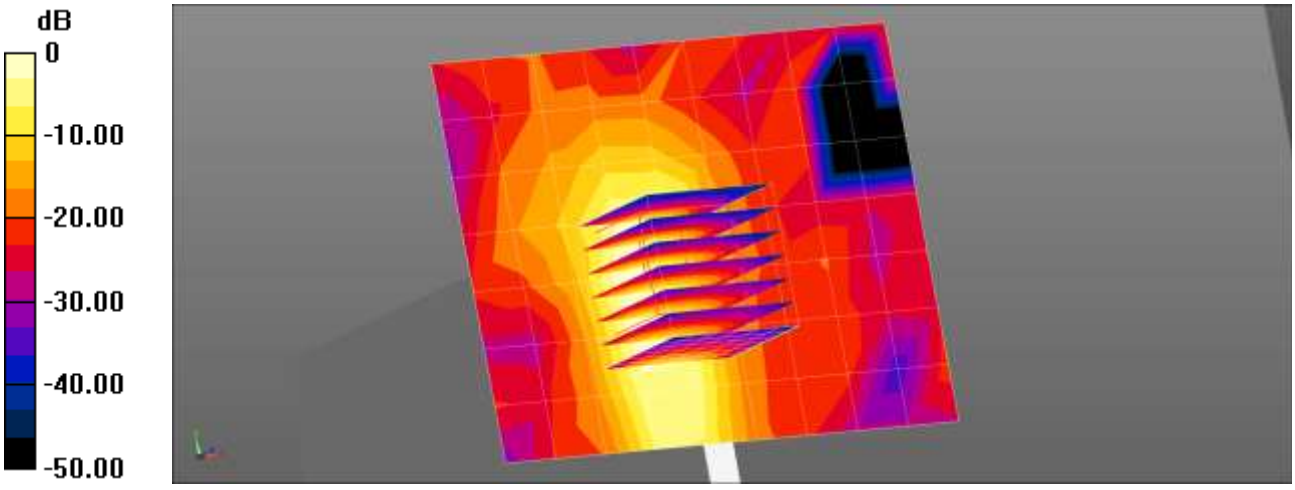
DUT: SM-T725C

Communication System: UID 0, Bluetooth (0); Frequency: 2402 MHz;Duty Cycle: 1:1.302
Medium parameters used (interpolated): f = 2402 MHz; σ = 1.879 S/m; ε_r = 54.135; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3076; ConvF(4.45, 4.45, 4.45); Calibrated: 2018-07-26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2018-08-22
- Phantom: MFP_V5.1C
- Measurement SW: DASY52, Version 52.8 (8);

BlueTooth Body Left DH5 0ch/Area Scan (10x8x1): Measurement grid: dx=12mm, dy=12mm.
Maximum value of SAR (measured) = 0.180 W/kg
BlueTooth Body Left DH5 0ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.697 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.686 W/kg
SAR(1 g) = 0.234 W/kg; SAR(10 g) = 0.090 W/kg
Maximum value of SAR (measured) = 0.358 W/kg



0 dB = 0.180 W/kg = −7.45 dBW/kg

Attachment 2. – Dipole Verification Plots

■ Verification Data (750 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	0.05 W
Liquid Temp:	19.6 ℃
Test Date:	04/25/2019

DUT: Dipole 750 MHz D750V3; Type: D750V3

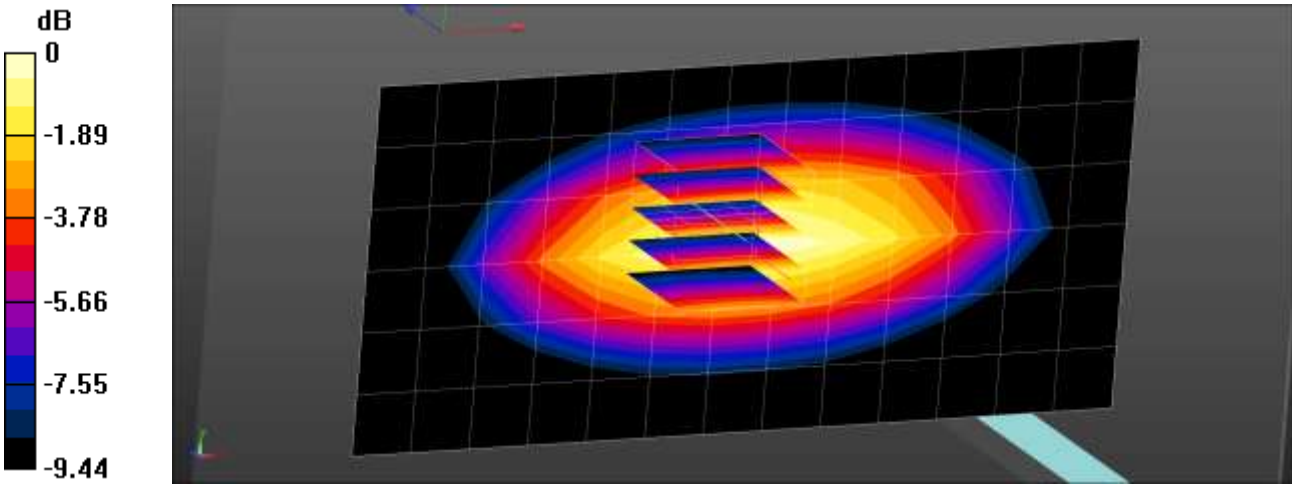
Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 750 MHz; σ = 1 S/m; ε_r = 55.459; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3076; ConvF(6.16, 6.16, 6.16); Calibrated: 2018-07-26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2018-08-22
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, V4ersion 52.8 (8);

Dipole/750MHz Body Verification/Area Scan (14x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.488 W/kg

Dipole/750MHz Body Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.13 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.631 W/kg
SAR(1 g) = 0.437 W/kg; SAR(10 g) = 0.294 W/kg
Maximum value of SAR (measured) = 0.508 W/kg



0 dB = 0.508 W/kg = −2.94 dBW/kg

■ Verification Data (835 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	0.05 W
Liquid Temp:	21.2 ℃
Test Date:	04/22/2019

DUT: Dipole 835 MHz D835V2; Type: D835V2

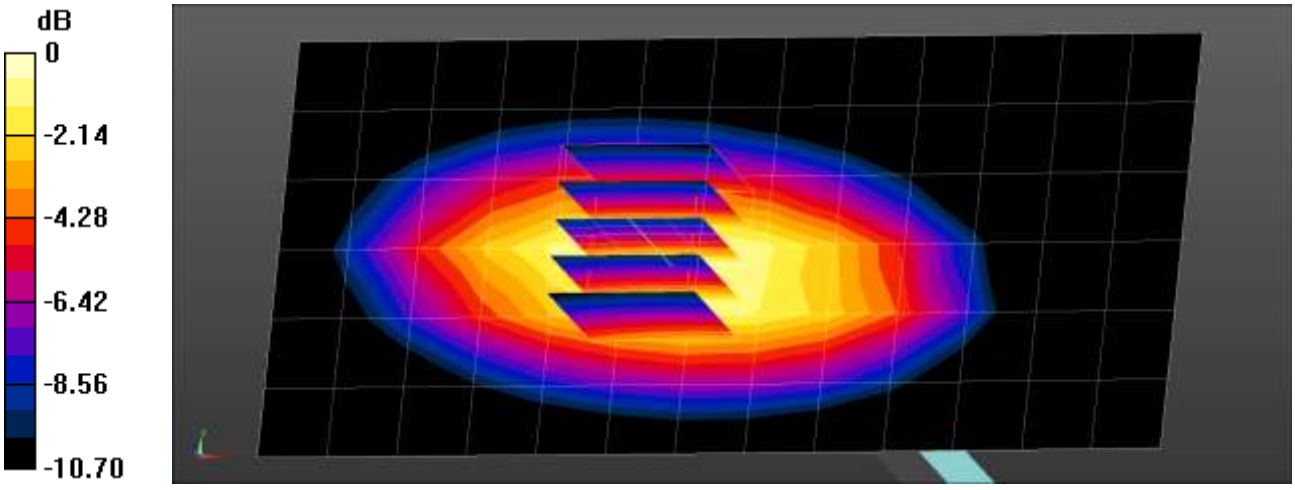
Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 835 MHz; σ = 0.963 S/m; ε_r = 56.466; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3797; ConvF(9.16, 9.16, 9.16); Calibrated: 2018-11-22;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1225; Calibrated: 2018-11-16
- Phantom: MFP_V5.1C (20deg probe tilt)
- Measurement SW: DASY52, Version 52.8 (8);

Dipole/835MHz Body Verification/Area Scan (14x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.588 W/kg

Dipole/835MHz Body Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.79 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.747 W/kg
SAR(1 g) = 0.503 W/kg; SAR(10 g) = 0.323 W/kg
Maximum value of SAR (measured) = 0.652 W/kg



0 dB = 0.652 W/kg = −1.86 dBW/kg

■ Verification Data (835 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	0.05 W
Liquid Temp:	20.4 ℃
Test Date:	04/23/2019

DUT: Dipole 835 MHz D835V2; Type: D835V2

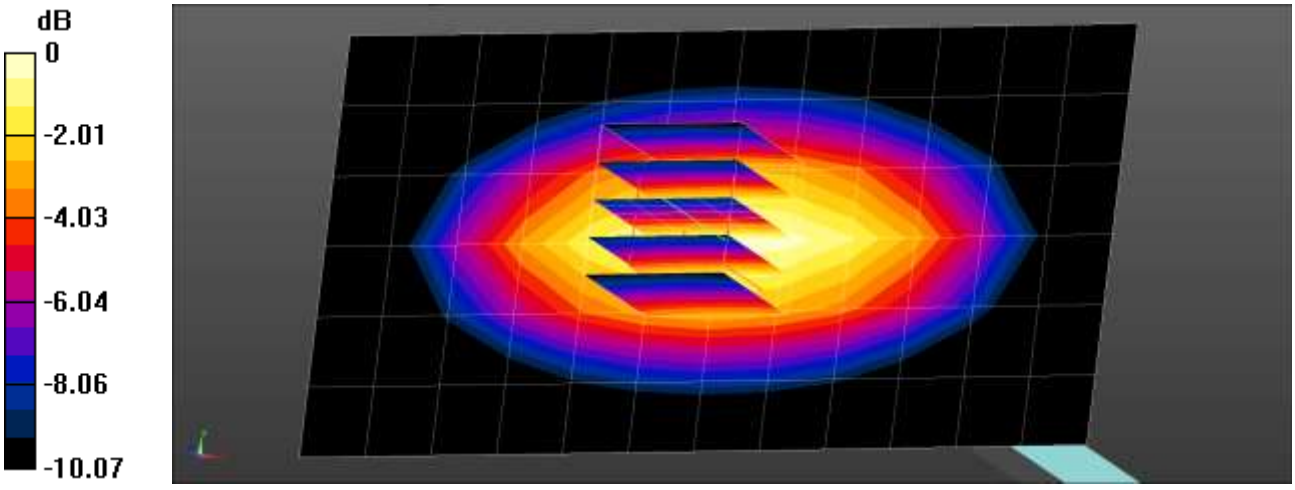
Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 835 MHz; σ = 1.006 S/m; ε_r = 54.359; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3076; ConvF(6.03, 6.03, 6.03); Calibrated: 2018-07-26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2018-08-22
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

Dipole/835MHz Body Verification/Area Scan (13x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.574 W/kg

Dipole/835MHz Body Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.64 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.713 W/kg
SAR(1 g) = 0.491 W/kg; SAR(10 g) = 0.325 W/kg
Maximum value of SAR (measured) = 0.572 W/kg



0 dB = 0.572 W/kg = −2.43 dBW/kg

■ Verification Data (1 900 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	0.05 W
Liquid Temp:	21.1 ℃
Test Date:	04/24/2019

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2

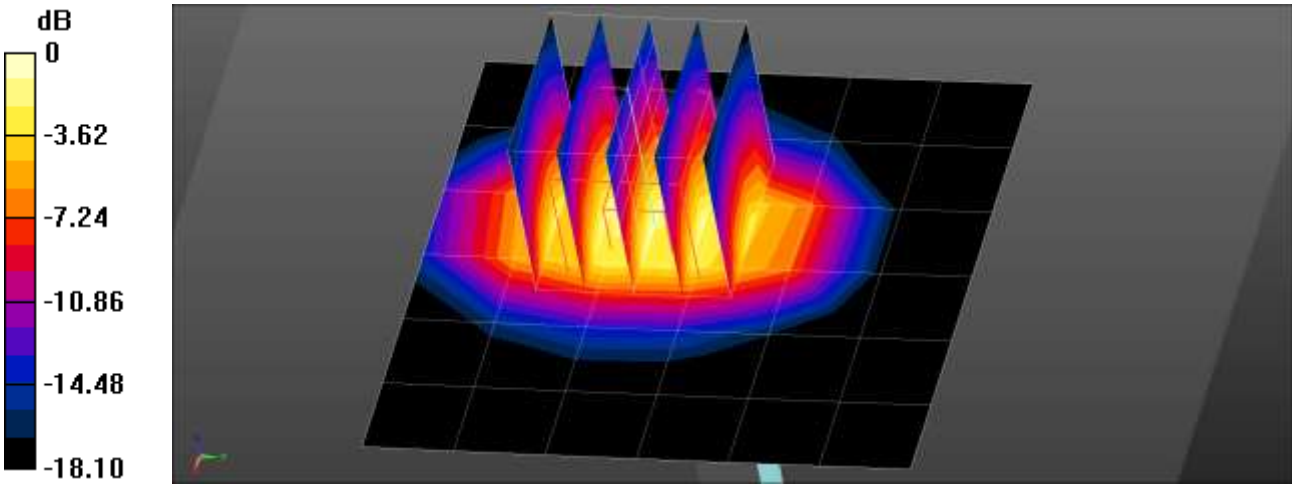
Communication System: UID 0, CW (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.541 S/m; ε_r = 52.676; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3797; ConvF(7.52, 7.52, 7.52); Calibrated: 2018-11-22;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1225; Calibrated: 2018-11-16
- Phantom: MFP_V5.1C
- Measurement SW: DASY52, Version 52.8 (8);

Dipole/1900MHz Body Verification/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.02 W/kg

Dipole/1900MHz Body Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 32.95 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 3.71 W/kg
SAR(1 g) = 2 W/kg; SAR(10 g) = 1.02 W/kg
Maximum value of SAR (measured) = 3.10 W/kg



0 dB = 3.10 W/kg = 4.91 dBW/kg

■ Verification Data (2 450 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	0.05 W
Liquid Temp:	18.9 ℃
Test Date:	04/29/2019

DUT: Dipole 2450 MHz D2450V2; Type: D2450V2

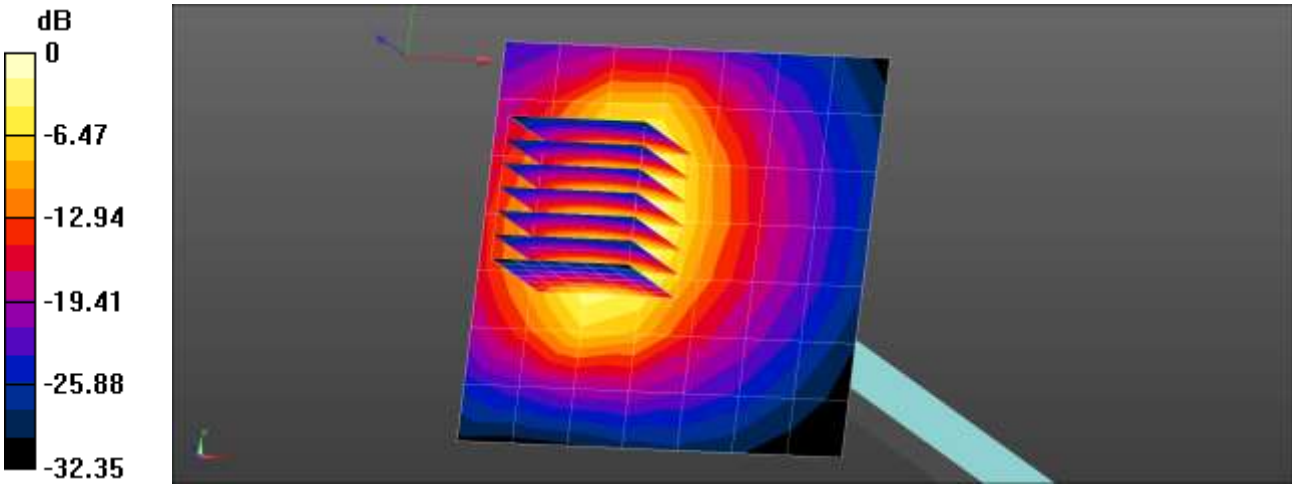
Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.936 S/m; ε_r = 53.439; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3076; ConvF(4.45, 4.45, 4.45); Calibrated: 2018-07-26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2018-08-22
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

Dipole/2450MHz Body Verification/Area Scan (8x8x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 2.79 W/kg

Dipole/2450MHz Body Verification/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.47 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 5.59 W/kg
SAR(1 g) = 2.67 W/kg; SAR(10 g) = 1.23 W/kg
Maximum value of SAR (measured) = 3.56 W/kg



0 dB = 2.79 W/kg = 4.46 dBW/kg

■ Verification Data (2 450 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	0.05 W
Liquid Temp:	20.9 ℃
Test Date:	04/19/2019

DUT: Dipole 2450 MHz D2450V2; Type: D2450V2

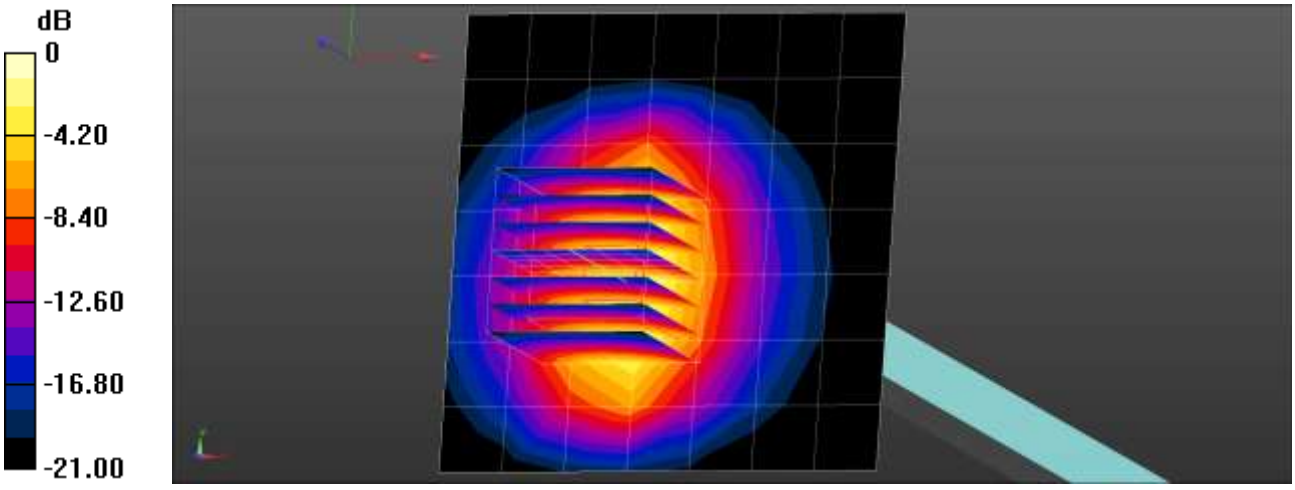
Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.925 S/m; ε_r = 54.035; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3797; ConvF(7.13, 7.13, 7.13); Calibrated: 2018-11-22;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1225; Calibrated: 2018-11-16
- Phantom: MFP_V5.1C (20deg probe tilt)
- Measurement SW: DASY52, Version 52.8 (8);

Dipole/2450MHz Body Verification/Area Scan (8x8x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 3.66 W/kg

Dipole/2450MHz Body Verification/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 33.18 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 4.73 W/kg
SAR(1 g) = 2.42 W/kg; SAR(10 g) = 1.13 W/kg
Maximum value of SAR (measured) = 3.83 W/kg



0 dB = 3.83 W/kg = 5.83 dBW/kg

■ Verification Data (2 600 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	0.05 W
Liquid Temp:	20.9 ℃
Test Date:	04/26/2019

DUT: Dipole 2600 MHz D2600V2; Type: D2600V2

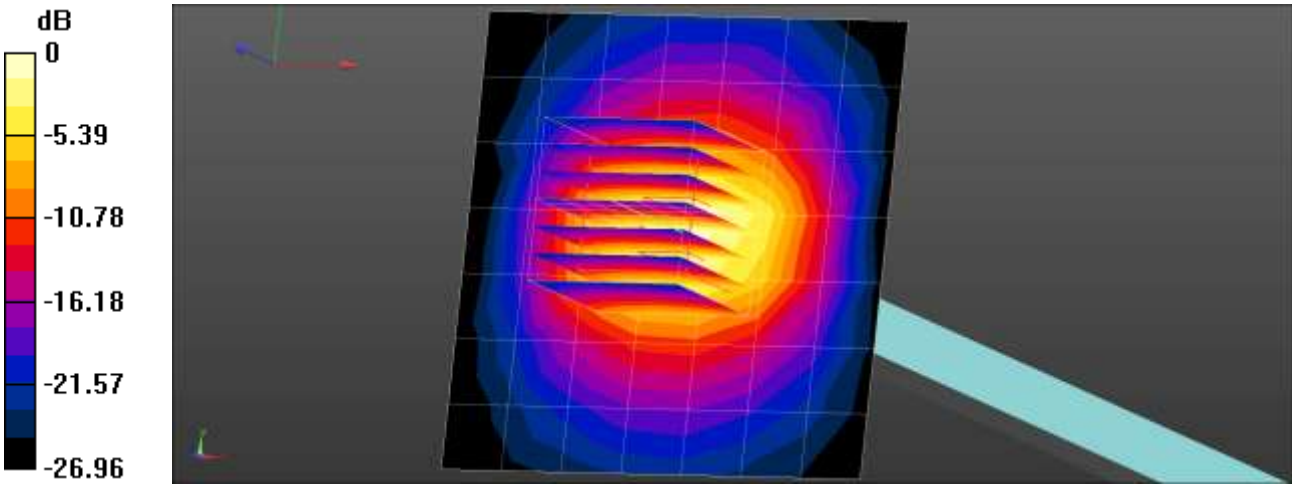
Communication System: UID 0, CW (0); Frequency: 2600 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2600 MHz; σ = 2.109 S/m; ε_r = 53.008; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: ES3DV3 - SN3076; ConvF(4.32, 4.32, 4.32); Calibrated: 2018-07-26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2018-08-22
- Phantom: Triple Flat Phantom 5.1C
- Measurement SW: DASY52, Version 52.8 (8);

Dipole/2600MHz Body Verification/Area Scan (8x8x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 2.90 W/kg

Dipole/2600MHz Body Verification/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 41.75 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 5.99 W/kg
SAR(1 g) = 2.64 W/kg; SAR(10 g) = 1.14 W/kg
Maximum value of SAR (measured) = 3.58 W/kg



0 dB = 3.58 W/kg = 5.54 dBW/kg

■ Verification Data (5 250 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	0.05 W
Liquid Temp:	20.8 ℃
Test Date:	04/18/2019

DUT: Dipole D5GHzV2; Type: D5GHzV2

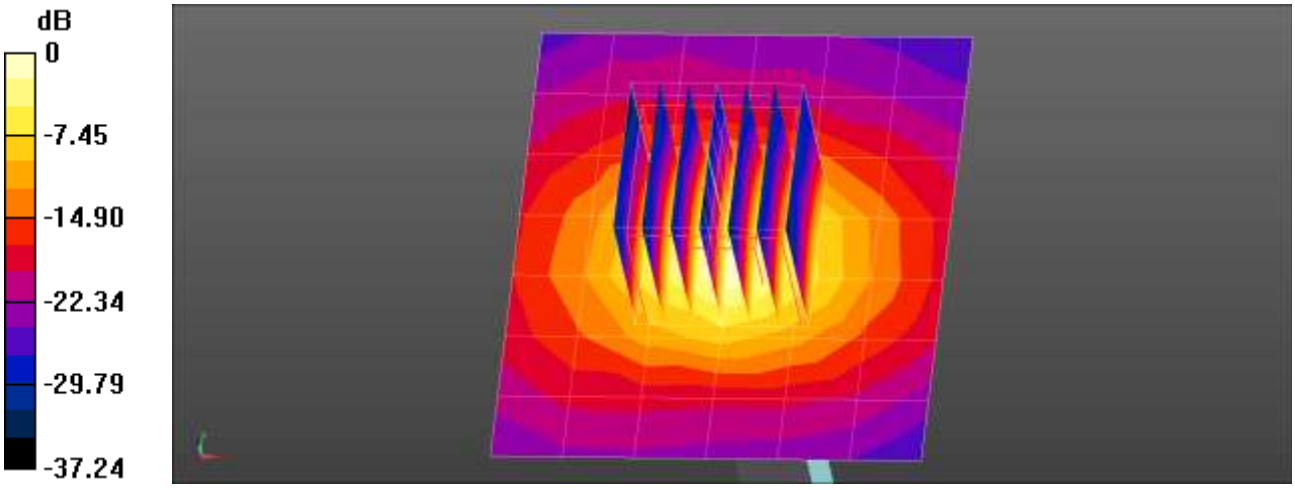
Communication System: UID 0, CW (0); Frequency: 5250 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5250 MHz; σ = 5.45 S/m; ε_r = 47.386; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3797; ConvF(4.37, 4.37, 4.37); Calibrated: 2018-11-22;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1225; Calibrated: 2018-11-16
- Phantom: MFP_V5.1C (20deg probe tilt)
- Measurement SW: DASY52, Version 52.8 (8);

Dipole/5250MHz Body Verification/Area Scan (8x7x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 8.51 W/kg

Dipole/5250MHz Body Verification/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio:1.4
Reference Value = 47.14 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 16.3 W/kg
SAR(1 g) = 3.86 W/kg; SAR(10 g) = 1.1 W/kg
Maximum value of SAR (measured) = 9.90 W/kg



0 dB = 9.90 W/kg = 9.96 dBW/kg

■ Verification Data (5 600 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	0.05 W
Liquid Temp:	20.8 ℃
Test Date:	04/18/2019

DUT: Dipole D5GHzV2; Type: D5GHzV2

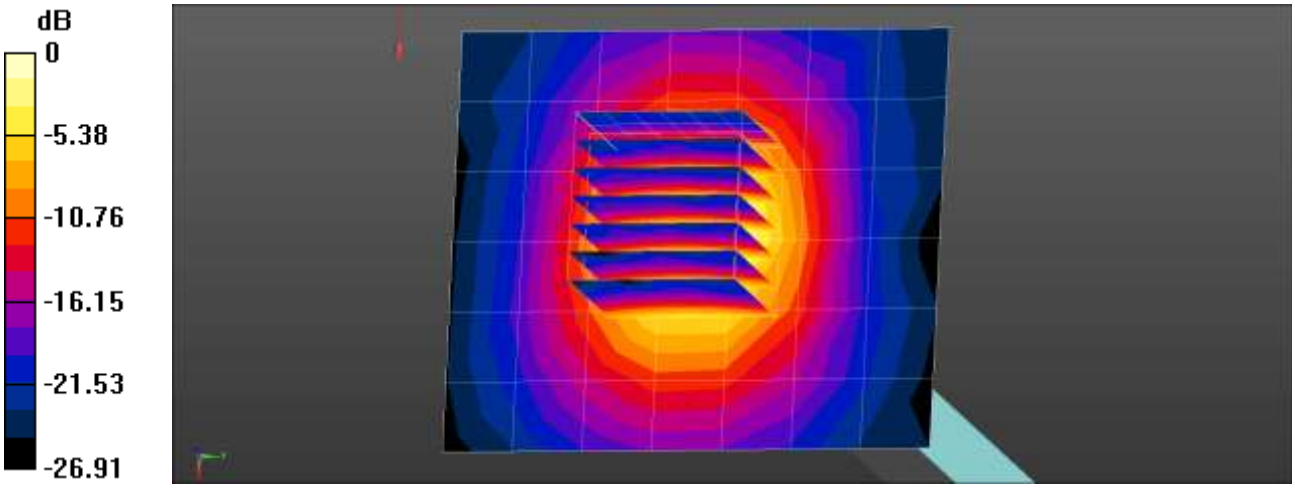
Communication System: UID 0, CW (0); Frequency: 5600 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5600 MHz; σ = 5.815 S/m; ε_r = 46.773; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3797; ConvF(3.94, 3.94, 3.94); Calibrated: 2018-11-22;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1225; Calibrated: 2018-11-16
- Phantom: MFP_V5.1C (20deg probe tilt)
- Measurement SW: DASY52, Version 52.8 (8);

Dipole/5600MHz Body Verification/Area Scan (8x7x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 8.15 W/kg

Dipole/5600MHz Body Verification/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio:1.4
Reference Value = 48.55 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 19.4 W/kg
SAR(1 g) = 4.11 W/kg; SAR(10 g) = 1.16 W/kg
Maximum value of SAR (measured) = 11.0 W/kg



0 dB = 8.15 W/kg = 9.11 dBW/kg

■ Verification Data (5 750 MHz Body)

Test Laboratory:	HCT CO., LTD
Input Power	0.05 W
Liquid Temp:	20.8 ℃
Test Date:	04/18/2019

DUT: Dipole D5GHzV2; Type: D5GHzV2

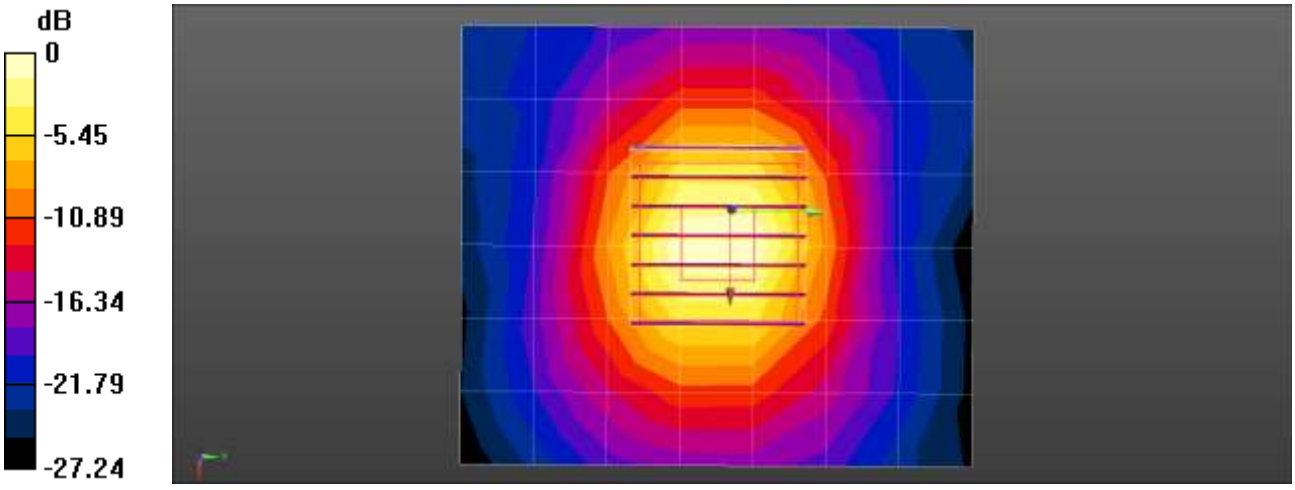
Communication System: UID 0, CW (0); Frequency: 5750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5750 MHz; σ = 6.129 S/m; ε_r = 46.767; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:

- Probe: EX3DV4 - SN3797; ConvF(4.16, 4.16, 4.16); Calibrated: 2018-11-22;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1225; Calibrated: 2018-11-16
- Phantom: MFP_V5.1C (20deg probe tilt)
- Measurement SW: DASY52, Version 52.8 (8);

Dipole/5750MHz Body Verification/Area Scan (8x7x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 8.57 W/kg

Dipole/5750MHz Body Verification/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio:1.4
Reference Value = 47.84 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 20.6 W/kg
SAR(1 g) = 4.21 W/kg; SAR(10 g) = 1.19 W/kg
Maximum value of SAR (measured) = 11.4 W/kg



0 dB = 8.57 W/kg = 9.33 dBW/kg

Attachment 3. – 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 (MHz)									
	750		835		1 900		2 450 – 2 700		5 200 - 5 800	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	41.1	51.7	40.45	53.06	54.9	70.17	71.88	73.2	65.52	78.66
Salt (NaCl)	1.4	0.9	1.45	0.94	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
HEC	0.2	0	1.0	1.0	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
Triton X-100	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	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

Attachment 4. – 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
11	3076	ES3DV3	Body	750	1014	2017-08-09	55.9	0.98	PASS	PASS	PASS	N/A	N/A	N/A
3	3797	EX3DV4	Body	835	4d165	2018-12-04	55.3	0.98	PASS	PASS	PASS	GMSK	PASS	N/A
11	3076	ES3DV3	Body	835	4d165	2018-09-28	55.5	0.97	PASS	PASS	PASS	N/A	N/A	N/A
3	3797	EX3DV4	Body	1900	5d032	2019-03-04	53.3	1.53	PASS	PASS	PASS	GMSK	PASS	N/A
11	3076	ES3DV3	Body	2450	743	2019-02-11	52.8	1.94	PASS	PASS	PASS	OFDM	N/A	PASS
3	3797	EX3DV4	Body	2450	743	2019-02-11	52.8	1.94	PASS	PASS	PASS	OFDM	N/A	PASS
11	3076	ES3DV3	Body	2600	1015	2018-12-03	52.4	2.16	PASS	PASS	PASS	TDD	PASS	N/A
3	3797	EX3DV4	Body	5250	1253	2018-12-04	48.8	5.35	PASS	PASS	PASS	OFDM	N/A	PASS
3	3797	EX3DV4	Body	5600	1253	2018-12-04	48.3	5.79	PASS	PASS	PASS	OFDM	N/A	PASS
3	3797	EX3DV4	Body	5750	1253	2018-12-04	48.4	5.96	PASS	PASS	PASS	OFDM	N/A	PASS

SAR System Validation Summary 1g

Note;

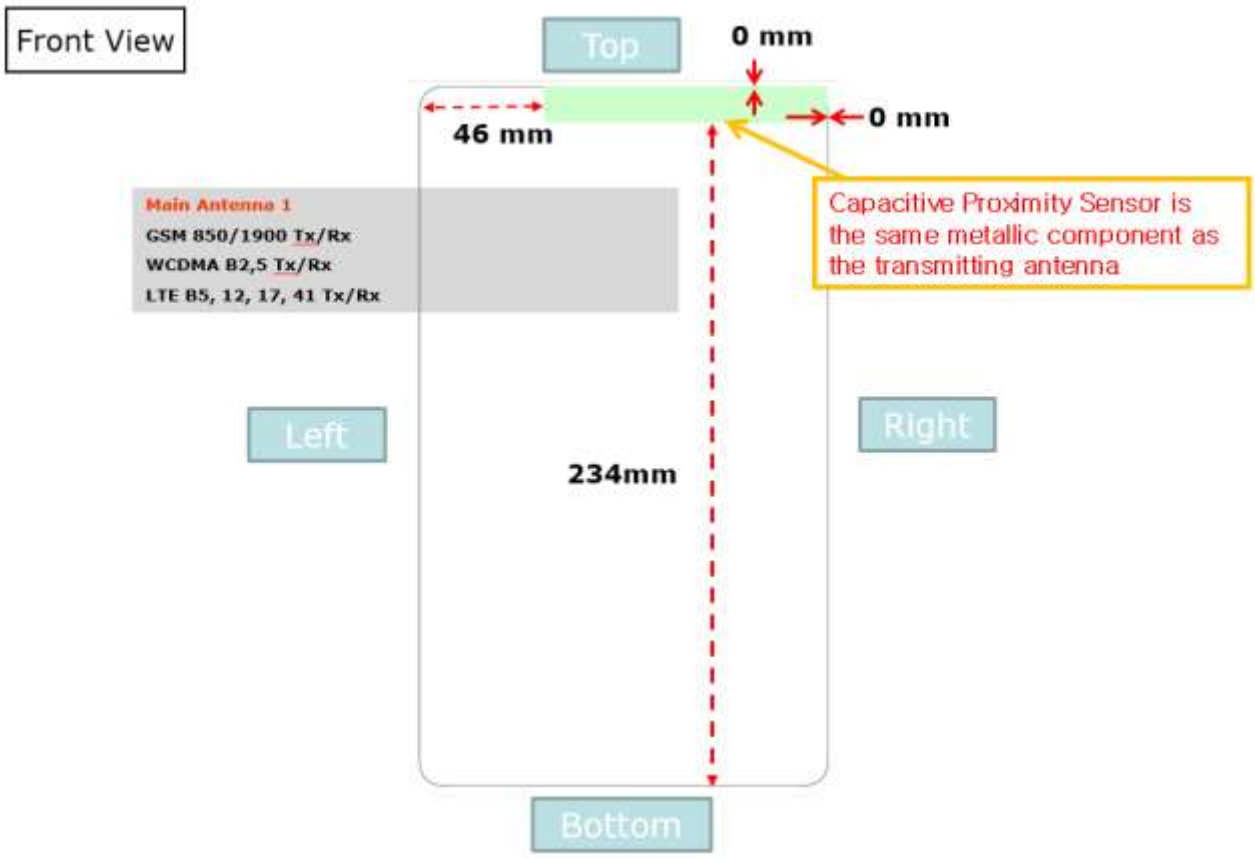
All measurement were performed using probes calibrated for CW signal only. Modulations in the table above represent test configurations for which the measurement system has been validated per FCC KDB Publication 865664 D01v01r04. SAR system were validated for modulated signals with a periodic duty cycle,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

Attachment 5. – The Verification of Power reduction

- Per the May 2017 TCBC Workshop notes, demonstration of proper functioning of the power reduction mechanism is required to support the corresponding SAR Configurations. The verification process was divided into two parts
- Evaluation of the triggering distances for proximity-based sensors.

1. Power Reduction Verification for Main Antenna

This device utilizes a power reduction mechanism for Main Antenna wireless modes and bands for SAR compliance under some conditions when the device is being used in close proximity to the user's hand. All SAR evaluations for this device were performed at the maximum allowed output Power when Proximity Sensor is activated. FCC KDB Publication 616217D04v01r02 section 6 was used as a guideline for selection SAR test distances for this device when being used in proximity senor used conditions. For detailed measurement conducted power results, please refer to the Section .9



1.1. Power Verification Procedure for Main Ant

The Power verification was performed according to the following procedure:

Power Reduction Verification for Main Bands

Mechanism(s)	Mode/Band	Conducted Power (dBm)	
		Un-triggered (Max Power)	Triggered (Reduced Power)
Proximity sensor On	GSM850 Voice	32.59	26.11
Proximity sensor On	GSM850 GPRS 1Tx	32.53	26.05
Proximity sensor On	GSM850 GPRS 2Tx	29.70	22.08
Proximity sensor On	GSM850 GPRS 3Tx	27.91	21.13
Proximity sensor On	GSM850 GPRS 4Tx	26.88	18.88
Proximity sensor On	GSM850 EGPRS 1Tx	26.24	21.01
Proximity sensor On	GSM850 EGPRS 2Tx	24.31	19.31
Proximity sensor On	GSM850 EGPRS 3Tx	23.01	17.08
Proximity sensor On	GSM850 EGPRS 4Tx	21.53	15.21
Proximity sensor On	GSM1900 Voice	29.42	21.87
Proximity sensor On	GSM1900 GPRS 1Tx	29.33	21.85
Proximity sensor On	GSM1900 GPRS 2Tx	27.24	19.81
Proximity sensor On	GSM1900 GPRS 3Tx	25.61	17.91
Proximity sensor On	GSM1900 GPRS 4Tx	25.13	16.91
Proximity sensor On	GSM1900 EGPRS 1Tx	24.83	18.04
Proximity sensor On	GSM1900 EGPRS 2Tx	22.81	16.45
Proximity sensor On	GSM1900 EGPRS 3Tx	22.23	15.10
Proximity sensor On	GSM1900 EGPRS 4Tx	20.51	14.37
Proximity sensor On	WCDMA Band 5	22.63	15.93
Proximity sensor On	WCDMA Band 2	23.60	12.84
Proximity sensor On	LTE Band 5	22.49	14.66
Proximity sensor On	LTE Band 12	22.71	13.98
Proximity sensor On	LTE Band 17	22.82	15.47
Proximity sensor On	LTE Band 41	22.86	13.84

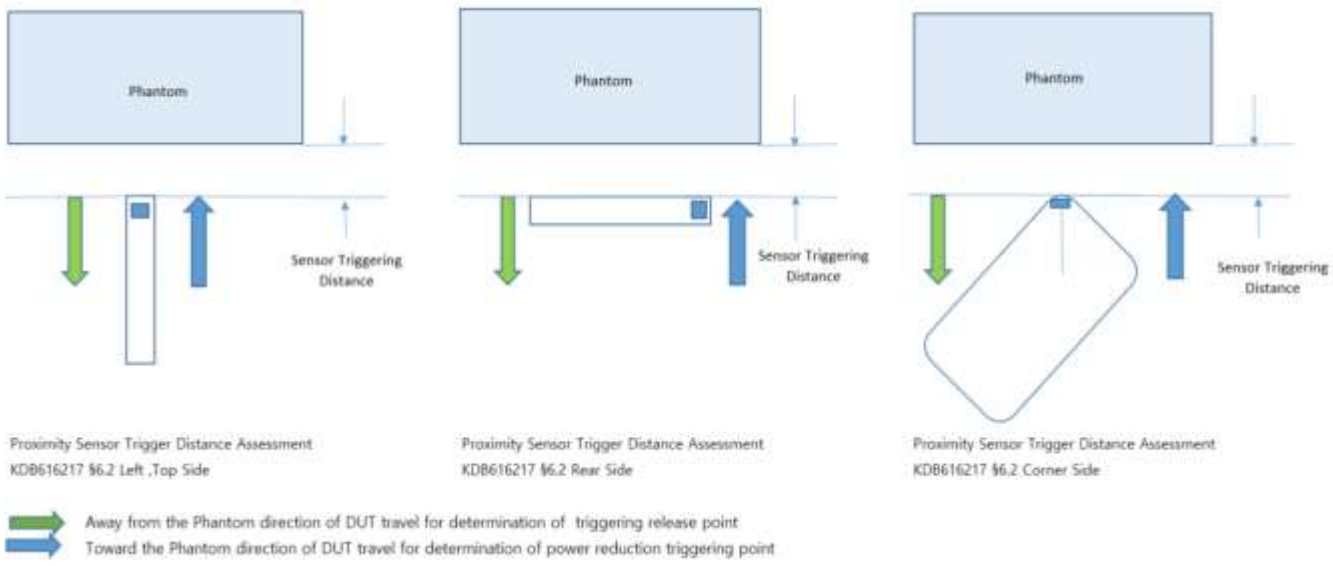
1.2. Procedures for determining proximity sensor triggering distances

(KDB 616217 D04v01r02 §6.2)

The distance verification procedure was performed according to the following procedure:

1. A base station simulator was used to establish an RF connection and to monitor the power levels. The device being tested was placed below the relevant section of the phantom with the relevant side or edge of the device facing toward the phantom.
2. The device was moved toward and away from the phantom to determine the distance at which the mechanism triggers and the output power is reduced, per KDB Publication 616217 D04v01r02 .Each applicable test position was evaluated. The distance were conformed to be the same or larger (more conservative) than the minimum distances provided by the manufacturer.
3. Step 1 and 2 were repeated for the relevant modes, as appropriate
4. Steps1 through 3 were repeated for all distance-based power reduction mechanisms.

For detailed measurement conducted power results, please refer to the Section .9



Tissue simulating liquid	Trigger distance - Rear		Trigger distance – Top		rigger distance – Right		8Trigger distance – Right corner	
	Moving toward phantom	Moving away from phantom	Moving toward phantom	Moving away from phantom	Moving toward phantom	Moving away from phantom	Moving toward phantom	Moving away from phantom
750MHz Muscle	17	18	18	19	7	8	7	9
835Mhz Muscle	17	18	18	19	7	8	7	9
1900Mhz Muscle	17	18	18	19	7	8	7	9
2600Mhz Muscle	17	18	18	19	7	8	7	9

Distance Measurement verification for Proximity sensor

Rear side – EUT Moving toward (trigger) to the Phantom GSM850

Distance	Distance to DUT Output power (dBm)									
	22	21	20	19	18	17	16	15	14	13
GSM850 Voice	32.55	32.63	32.49	32.62	32.61	26.06	26.07	26.11	26.02	26.11
GSM850 GPRS 1Tx	32.53	32.47	32.47	32.56	32.58	26.02	26.05	26.11	26.01	26
GSM850 GPRS 2Tx	29.75	29.71	29.75	29.69	29.67	22.17	22.16	22.1	22.16	22.11
GSM850 GPRS 3Tx	27.85	27.99	27.84	27.81	27.98	21.07	21.11	21.23	21.09	21.16
GSM850 GPRS 4Tx	26.79	26.89	26.96	26.85	26.96	18.96	18.79	18.86	18.88	18.88
GSM850 EGPRS 1Tx	26.25	26.24	26.24	26.34	26.25	21	21.1	20.97	20.95	20.97
GSM850 EGPRS 2Tx	24.29	24.26	24.34	24.37	24.32	19.28	19.35	19.21	19.23	19.28
GSM850 EGPRS 3Tx	23.1	22.98	23.1	22.92	23.01	17.04	17.09	17	16.98	17.01
GSM850 EGPRS 4Tx	21.43	21.6	21.61	21.48	21.63	15.2	15.19	15.31	15.13	15.2

Rear side – EUT Moving toward (trigger) to the Phantom GSM1900

Distance	Distance to DUT Output power (dBm)									
	22	21	20	19	18	17	16	15	14	13
GSM1900 Voice	29.43	29.43	29.52	29.35	29.4	21.91	21.91	21.84	21.96	21.83
GSM1900 GPRS 1Tx	29.32	29.24	29.32	29.25	29.34	21.88	21.81	21.76	21.76	21.92
GSM1900 GPRS 2Tx	27.26	27.26	27.25	27.18	27.32	19.88	19.77	19.74	19.8	19.79
GSM1900 GPRS 3Tx	25.71	25.64	25.65	25.53	25.6	17.83	17.97	17.82	18	17.84
GSM1900 GPRS 4Tx	25.19	25.07	25.09	25.06	25.12	16.85	16.81	16.86	16.97	16.94
GSM1900 EGPRS 1Tx	24.9	24.87	24.74	24.93	24.85	18.02	18.1	17.94	18.09	18.03
GSM1900 EGPRS 2Tx	22.83	22.78	22.82	22.88	22.87	16.55	16.38	16.4	16.55	16.4
GSM1900 EGPRS 3Tx	22.24	22.24	22.3	22.26	22.16	15.18	15.03	15.05	15.05	15
GSM1900 EGPRS 4Tx	20.52	20.61	20.6	20.54	20.53	14.42	14.43	14.4	14.39	14.35

Rear side – EUT Moving toward (trigger) to the Phantom WCDMAB5/B2/LTEB5/B12/B17/B41

Distance	Distance to DUT Output power (dBm)									
	22	21	20	19	18	17	16	15	14	13
WCDMA Band 5	22.59	22.6	22.7	22.6	22.69	16	15.96	16.02	15.84	15.91
WCDMA Band 2	23.62	23.59	23.7	23.64	23.6	12.93	12.77	12.84	12.77	12.9
LTE Band 5	22.55	22.57	22.5	22.48	22.44	14.67	14.62	14.59	14.64	14.57
LTE Band 12	22.66	22.65	22.8	22.67	22.76	13.88	13.91	13.99	13.91	13.93
LTE Band 17	22.75	22.9	22.78	22.91	22.8	15.4	15.37	15.55	15.55	15.52
LTE Band 41	22.81	22.8	22.8	22.84	22.85	13.77	13.85	13.91	13.8	13.76

Rear side – EUT Moving away (Release) from the Phantom GSM850

Distance	Distance to DUT Output power (dBm)									
	14	15	16	17	18	19	20	21	22	23
GSM850 Voice	26.15	26.16	26.1	26.06	26.13	32.58	32.64	32.52	32.55	32.63
GSM850 GPRS 1Tx	26.15	26.02	26.1	26.04	26.11	32.51	32.44	32.56	32.5	32.59
GSM850 GPRS 2Tx	22.04	21.98	21.99	22.12	22.05	29.68	29.73	29.72	29.8	29.67
GSM850 GPRS 3Tx	21.04	21.14	21.14	21.05	21.12	27.95	28	27.93	27.94	27.98
GSM850 GPRS 4Tx	18.95	18.86	18.97	18.82	18.89	26.91	26.78	26.87	26.89	26.96
GSM850 EGPRS 1Tx	21.11	21.08	21.11	20.93	21.05	26.24	26.16	26.18	26.31	26.16
GSM850 EGPRS 2Tx	19.29	19.23	19.28	19.38	19.32	24.41	24.22	24.33	24.41	24.27
GSM850 EGPRS 3Tx	17.16	16.99	17.08	17.13	16.99	23.07	23.07	23.03	23.11	23
GSM850 EGPRS 4Tx	15.25	15.25	15.3	15.22	15.28	21.53	21.43	21.44	21.44	21.58

Rear side – EUT Moving away (Release) from the Phantom GSM1900

Distance	Distance to DUT Output power (dBm)									
	14	15	16	17	18	19	20	21	22	23
GSM1900 Voice	21.85	21.94	21.94	21.84	21.9	29.33	29.4	29.42	29.43	29.39
GSM1900 GPRS 1Tx	21.75	21.77	21.94	21.75	21.77	29.33	29.43	29.24	29.29	29.27
GSM1900 GPRS 2Tx	19.77	19.87	19.81	19.82	19.89	27.29	27.34	27.25	27.33	27.25
GSM1900 GPRS 3Tx	17.94	17.84	17.86	17.82	17.95	25.64	25.7	25.62	25.66	25.7
GSM1900 GPRS 4Tx	16.91	16.83	16.9	16.91	16.95	25.09	25.09	25.16	25.05	25.08
GSM1900 EGPRS 1Tx	18.03	18	18.06	18.12	18.03	24.83	24.82	24.77	24.83	24.93
GSM1900 EGPRS 2Tx	16.49	16.48	16.37	16.5	16.55	22.89	22.71	22.74	22.79	22.88
GSM1900 EGPRS 3Tx	15.05	15.04	15	15.13	15.16	22.25	22.28	22.13	22.24	22.22
GSM1900 EGPRS 4Tx	14.39	14.35	14.35	14.27	14.35	20.51	20.6	20.46	20.51	20.57

Rear side – EUT Moving away (Release) from the Phantom WCDMAB5/B2/LTEB5/B12/B17/B41

Distance	Distance to DUT Output power (dBm)									
	14	15	16	17	18	19	20	21	22	23
WCDMA Band 5	15.89	16.01	15.92	15.94	15.9	22.65	22.64	22.73	22.64	22.7
WCDMA Band 2	12.78	12.83	12.87	12.77	12.79	23.69	23.53	23.63	23.68	23.66
LTE Band 5	14.73	14.65	14.64	14.59	14.56	22.54	22.58	22.42	22.44	22.42
LTE Band 12	13.95	14	14.08	14	14.01	22.61	22.73	22.74	22.77	22.69
LTE Band 17	15.48	15.45	15.37	15.37	15.42	22.82	22.8	22.89	22.74	22.77
LTE Band 41	13.94	13.94	13.93	13.82	13.75	22.89	22.95	22.96	22.84	22.83

Based on the most conservative measured triggering distance of 17mm, additional Body SAR measurements were required at 16mm from Rear side for the above modes

Top side – EUT Moving toward (trigger) to the Phantom GSM850

Distance	Distance to DUT Output power (dBm)									
	23	22	21	20	19	18	17	16	15	14
GSM850 Voice	32.62	32.61	32.59	32.53	32.49	26.11	26.05	26.21	26.01	26.14
GSM850 GPRS 1Tx	32.63	32.47	32.58	32.47	32.6	26.07	26.12	25.99	26.04	26.06
GSM850 GPRS 2Tx	29.62	29.67	29.67	29.66	29.72	22.1	22.17	22	22.07	22.02
GSM850 GPRS 3Tx	27.85	27.97	27.85	27.88	27.88	21.06	21.03	21.05	21.13	21.05
GSM850 GPRS 4Tx	26.97	26.98	26.84	26.93	26.95	18.89	18.81	18.92	18.94	18.79
GSM850 EGPRS 1Tx	26.21	26.15	26.16	26.2	26.19	20.93	21.09	20.99	20.96	21.06
GSM850 EGPRS 2Tx	24.25	24.23	24.25	24.29	24.27	19.36	19.39	19.41	19.33	19.35
GSM850 EGPRS 3Tx	23.07	23.08	23.08	22.96	23.01	16.98	17.11	17.09	17.17	17.06
GSM850 EGPRS 4Tx	21.47	21.52	21.53	21.48	21.59	15.22	15.15	15.13	15.18	15.13

Top side – EUT Moving toward (trigger) to the Phantom GSM1900

Distance	Distance to DUT Output power (dBm)									
	23	22	21	20	19	18	17	16	15	14
GSM1900 Voice	29.44	29.48	29.37	29.41	29.34	21.85	21.94	21.81	21.81	21.92
GSM1900 GPRS 1Tx	29.36	29.27	29.36	29.35	29.3	21.77	21.93	21.92	21.77	21.79
GSM1900 GPRS 2Tx	27.14	27.26	27.17	27.23	27.23	19.77	19.9	19.79	19.88	19.71
GSM1900 GPRS 3Tx	25.66	25.62	25.64	25.63	25.55	17.82	17.81	17.85	17.97	17.88
GSM1900 GPRS 4Tx	25.12	25.21	25.19	25.09	25.09	16.91	17.01	16.91	17.01	16.94
GSM1900 EGPRS 1Tx	24.89	24.79	24.87	24.75	24.82	18.03	18.06	18.13	18.02	18.04
GSM1900 EGPRS 2Tx	22.85	22.85	22.75	22.75	22.78	16.47	16.35	16.47	16.42	16.41
GSM1900 EGPRS 3Tx	22.33	22.14	22.2	22.31	22.24	15.17	15.04	15.03	15.06	15.19
GSM1900 EGPRS 4Tx	20.5	20.52	20.57	20.44	20.52	14.37	14.43	14.29	14.38	14.44

Top side – EUT Moving toward (trigger) to the Phantom WCDMAB5/B2/LTEB5/B12/B17/B41

Distance	Distance to DUT Output power (dBm)									
	23	22	21	20	19	18	17	16	15	14
WCDMA Band 5	22.58	22.63	22.53	22.72	22.71	15.89	16.02	15.88	15.91	16
WCDMA Band 2	23.64	23.65	23.68	23.54	23.67	12.82	12.8	12.88	12.82	12.77
LTE Band 5	22.53	22.56	22.47	22.55	22.52	14.58	14.71	14.69	14.62	14.63
LTE Band 12	22.74	22.76	22.8	22.7	22.73	14.05	14.06	13.98	14.07	13.91
LTE Band 17	22.83	22.91	22.79	22.83	22.77	15.41	15.39	15.44	15.4	15.4
LTE Band 41	22.86	22.89	22.77	22.8	22.93	13.87	13.94	13.81	13.9	13.84

Top side – EUT Moving away (Release) from the Phantom GSM850

Distance	Distance to DUT Output power (dBm)									
	15	16	17	18	19	20	21	22	23	24
GSM850 Voice	26.13	26.13	26.01	26.17	26.13	32.67	32.64	32.52	32.62	32.56
GSM850 GPRS 1Tx	26.1	26.02	26.14	26.15	26.05	32.62	32.45	32.48	32.48	32.46
GSM850 GPRS 2Tx	22.08	22.17	22.18	22.16	22.12	29.63	29.63	29.68	29.75	29.69
GSM850 GPRS 3Tx	21.1	21.22	21.13	21.22	21.09	27.83	27.81	27.84	27.97	27.89
GSM850 GPRS 4Tx	18.89	18.94	18.94	18.79	18.91	26.8	26.79	26.84	26.8	26.92
GSM850 EGPRS 1Tx	21.11	20.91	20.93	20.96	20.94	26.26	26.29	26.28	26.18	26.16
GSM850 EGPRS 2Tx	19.26	19.35	19.35	19.3	19.32	24.21	24.25	24.31	24.35	24.25
GSM850 EGPRS 3Tx	17.14	17.18	17.08	17.05	17.1	23.04	23.08	22.97	23.08	22.93
GSM850 EGPRS 4Tx	15.28	15.13	15.22	15.25	15.19	21.47	21.46	21.61	21.47	21.5

Top side – EUT Moving away (Release) from the Phantom GSM1900

Distance	Distance to DUT Output power (dBm)									
	15	16	17	18	19	20	21	22	23	24
GSM1900 Voice	21.83	21.78	21.77	21.92	21.89	29.35	29.48	29.44	29.36	29.35
GSM1900 GPRS 1Tx	21.78	21.94	21.86	21.87	21.85	29.42	29.4	29.41	29.25	29.28
GSM1900 GPRS 2Tx	19.89	19.88	19.83	19.75	19.74	27.3	27.25	27.32	27.21	27.31
GSM1900 GPRS 3Tx	17.86	17.87	17.92	18	17.86	25.55	25.59	25.56	25.7	25.59
GSM1900 GPRS 4Tx	16.97	16.81	16.87	16.93	16.83	25.22	25.09	25.14	25.16	25.2
GSM1900 EGPRS 1Tx	17.98	18.02	18.03	18.13	18.09	24.92	24.92	24.92	24.85	24.74
GSM1900 EGPRS 2Tx	16.49	16.54	16.37	16.35	16.53	22.87	22.76	22.75	22.88	22.73
GSM1900 EGPRS 3Tx	15.17	15.07	15.07	15.12	15.19	22.2	22.18	22.27	22.22	22.2
GSM1900 EGPRS 4Tx	14.47	14.38	14.32	14.45	14.36	20.57	20.41	20.59	20.51	20.59

Top side – EUT Moving away (Release) from the Phantom WCDMAB5/B2/LTEB5/B12/B17/B41

Distance	Distance to DUT Output power (dBm)									
	15	16	17	18	19	20	21	22	23	24
WCDMA Band 5	15.91	15.94	15.96	15.94	15.92	22.71	22.65	22.66	22.62	22.61
WCDMA Band 2	12.91	12.82	12.89	12.91	12.81	23.68	23.63	23.55	23.59	23.51
LTE Band 5	14.65	14.56	14.66	14.69	14.59	22.55	22.5	22.4	22.46	22.51
LTE Band 12	14.03	13.96	13.92	13.93	13.9	22.7	22.79	22.73	22.75	22.66
LTE Band 17	15.48	15.37	15.37	15.53	15.54	22.82	22.74	22.87	22.74	22.75
LTE Band 41	13.81	13.81	13.94	13.77	13.75	22.84	22.83	22.94	22.76	22.95

Based on the most conservative measured triggering distance of 18mm, additional Body SAR measurements were required at 17mm from Top side for the above modes

Right side – EUT Moving toward (trigger) to the Phantom GSM850

Distance	Distance to DUT Output power (dBm)									
	12	11	10	9	8	7	6	5	4	3
GSM850 Voice	32.52	32.67	32.6	32.69	32.62	26.04	26.09	26.07	26.16	26.18
GSM850 GPRS 1Tx	32.62	32.42	32.55	32.51	32.57	26.1	26.11	25.95	26.06	26.04
GSM850 GPRS 2Tx	29.63	29.61	29.62	29.75	29.63	22	21.99	22.1	22.08	22.06
GSM850 GPRS 3Tx	27.83	27.85	27.96	27.98	27.96	21.2	21.21	21.1	21.09	21.2
GSM850 GPRS 4Tx	26.9	26.8	26.78	26.8	26.95	18.82	18.92	18.88	18.78	18.88
GSM850 EGPRS 1Tx	26.19	26.28	26.29	26.16	26.19	20.94	20.92	20.95	21.1	20.96
GSM850 EGPRS 2Tx	24.3	24.24	24.39	24.27	24.31	19.37	19.33	19.38	19.28	19.24
GSM850 EGPRS 3Tx	22.95	23.07	23.08	23.04	23.03	17.06	16.99	16.98	17.06	17.13
GSM850 EGPRS 4Tx	21.6	21.45	21.43	21.52	21.62	15.11	15.12	15.28	15.24	15.27

Right side – EUT Moving toward (trigger) to the Phantom GSM1900

Distance	Distance to DUT Output power (dBm)									
	12	11	10	9	8	7	6	5	4	3
GSM1900 Voice	29.43	29.32	29.39	29.46	29.32	21.81	21.89	21.96	21.9	21.78
GSM1900 GPRS 1Tx	29.23	29.24	29.37	29.3	29.3	21.95	21.84	21.87	21.79	21.82
GSM1900 GPRS 2Tx	27.24	27.17	27.24	27.29	27.26	19.84	19.81	19.88	19.88	19.85
GSM1900 GPRS 3Tx	25.59	25.54	25.7	25.64	25.7	17.88	18	17.92	17.97	17.92
GSM1900 GPRS 4Tx	25.21	25.09	25.13	25.17	25.1	16.91	16.95	17	16.85	16.89
GSM1900 EGPRS 1Tx	24.89	24.85	24.88	24.75	24.76	18.08	18.13	17.94	17.94	18.03
GSM1900 EGPRS 2Tx	22.81	22.75	22.78	22.77	22.73	16.42	16.51	16.53	16.5	16.36
GSM1900 EGPRS 3Tx	22.32	22.27	22.18	22.29	22.17	15.07	15.08	15.13	15.05	15.18
GSM1900 EGPRS 4Tx	20.43	20.56	20.56	20.55	20.57	14.37	14.29	14.39	14.33	14.34

Right side – EUT Moving toward (trigger) to the Phantom WCDMAB5/B2/LTEB5/B12/B17/B41

Distance	Distance to DUT Output power (dBm)									
	12	11	10	9	8	7	6	5	4	3
WCDMA Band 5	23.12	23.1	23.17	23.07	23.2	15.99	15.96	15.92	15.96	16.01
WCDMA Band 2	24.19	24.26	24.15	24.15	24.12	12.81	12.79	12.72	12.87	12.83
LTE Band 2	23.64	23.67	23.78	23.77	23.68	13.84	13.77	13.85	13.79	13.86
LTE Band 5	23.01	22.91	23.05	22.91	22.89	14.42	14.46	14.31	14.4	14.4
LTE Band 12	23.34	23.4	23.22	23.3	23.22	14.16	14.11	14.08	14.17	14.06
LTE Band 17	22.91	22.82	22.81	22.92	22.94	15.55	15.53	15.58	15.48	15.54
LTE Band 41	23.43	23.47	23.46	23.36	23.44	13.84	13.73	13.88	13.74	13.72

Right side – EUT Moving away (Release) from the Phantom GSM850

Distance	Distance to DUT Output power (dBm)									
	4	5	6	7	8	9	10	11	12	13
GSM850 Voice	25.94	25.87	25.87	25.96	25.93	32.16	32.18	32.06	32.11	32.01
GSM850 GPRS 1Tx	25.85	25.81	25.94	25.81	25.93	32.11	32.14	32.18	32.06	32.22
GSM850 GPRS 2Tx	21.85	21.93	21.89	21.93	21.77	29.72	29.75	29.79	29.9	29.71
GSM850 GPRS 3Tx	20.25	20.21	20.24	20.22	20.26	28.04	28.11	28.01	28.08	28.15
GSM850 GPRS 4Tx	18.55	18.54	18.53	18.48	18.38	27.09	27.1	27.03	27.03	27.13
GSM850 EGPRS 1Tx	20.77	20.62	20.74	20.79	20.66	25.86	25.87	25.97	25.8	25.85
GSM850 EGPRS 2Tx	19.1	18.96	19.07	18.92	19.03	24.03	23.89	24.05	23.92	23.86
GSM850 EGPRS 3Tx	16.88	16.95	16.93	16.79	16.81	22.83	22.75	22.8	22.67	22.77
GSM850 EGPRS 4Tx	15.24	15.35	15.26	15.32	15.18	21.73	21.62	21.66	21.57	21.67

Right side – EUT Moving away (Release) from the Phantom GSM1900

Distance	Distance to DUT Output power (dBm)									
	4	5	6	7	8	9	10	11	12	13
GSM1900 Voice	22.38	22.33	22.26	22.27	22.37	30.08	30	30.01	29.98	30.02
GSM1900 GPRS 1Tx	22.49	22.4	22.56	22.5	22.49	30.07	30.12	30.09	29.93	29.96
GSM1900 GPRS 2Tx	20.51	20.57	20.45	20.41	20.58	27.14	27.3	27.12	27.26	27.12
GSM1900 GPRS 3Tx	18.4	18.53	18.5	18.41	18.5	25.47	25.52	25.51	25.58	25.54
GSM1900 GPRS 4Tx	17.49	17.52	17.48	17.46	17.44	25.16	25.18	25.16	25.18	25.16
GSM1900 EGPRS 1Tx	18.04	18.18	18.11	18.05	18.12	24.98	24.92	24.83	25.01	24.88
GSM1900 EGPRS 2Tx	16.64	16.66	16.7	16.66	16.73	22.99	22.99	22.96	22.95	22.99
GSM1900 EGPRS 3Tx	15.25	15.26	15.31	15.36	15.31	22.33	22.36	22.33	22.41	22.29
GSM1900 EGPRS 4Tx	14.51	14.56	14.47	14.4	14.41	20.06	20	20.14	20.05	20.03

Right side – EUT Moving away (Release) from the Phantom WCDMAB5/B2/LTEB5/B12/B17/B41

Distance	Distance to DUT Output power (dBm)									
	4	5	6	7	8	9	10	11	12	13
WCDMA Band 5	22.59	22.69	22.64	22.66	22.73	15.83	15.86	15.96	15.94	16.03
WCDMA Band 2	23.66	23.6	23.57	23.53	23.58	12.92	12.86	12.77	12.88	12.74
LTE Band 5	22.55	22.59	22.5	22.54	22.39	14.74	14.62	14.62	14.67	14.72
LTE Band 12	22.81	22.68	22.71	22.67	22.81	14.05	14	13.96	13.91	14.04
LTE Band 17	22.91	22.84	22.91	22.72	22.76	15.37	15.55	15.57	15.5	15.47
LTE Band 41	22.76	22.82	22.95	22.87	22.81	13.74	13.89	13.91	13.9	13.78

Based on the most conservative measured triggering distance of 7mm, additional Body SAR measurements were required at 6mm from Right side for the above modes

Right Corner side – EUT Moving toward (trigger) to the Phantom GSM850

Distance	Distance to DUT Output power (dBm)									
	12	11	10	9	8	7	6	5	4	3
GSM850 Voice	32.59	32.53	32.65	32.56	32.53	26.19	26.15	26.17	26.14	26.17
GSM850 GPRS 1Tx	32.61	32.59	32.51	32.54	32.58	26.1	25.96	25.95	26.15	26.03
GSM850 GPRS 2Tx	29.78	29.79	29.69	29.73	29.8	22.08	22.01	22.07	22.16	21.98
GSM850 GPRS 3Tx	27.94	28.01	27.99	27.83	28.01	21.17	21.19	21.21	21.04	21.16
GSM850 GPRS 4Tx	26.91	26.78	26.78	26.83	26.81	18.94	18.96	18.78	18.78	18.92
GSM850 EGPRS 1Tx	26.3	26.24	26.34	26.28	26.17	21.08	21.09	21	20.98	21.03
GSM850 EGPRS 2Tx	24.41	24.25	24.38	24.33	24.3	19.36	19.37	19.35	19.22	19.37
GSM850 EGPRS 3Tx	22.94	23.02	22.92	23.07	23.04	17.02	17	17.08	17.09	17.1
GSM850 EGPRS 4Tx	21.43	21.43	21.46	21.51	21.59	15.12	15.16	15.27	15.13	15.31

Right Corner – EUT Moving toward (trigger) to the Phantom GSM1900

Distance	Distance to DUT Output power (dBm)									
	12	11	10	9	8	7	6	5	4	3
GSM1900 Voice	29.5	29.38	29.49	29.45	29.52	21.97	21.81	21.95	21.82	21.82
GSM1900 GPRS 1Tx	29.32	29.24	29.35	29.4	29.4	21.85	21.79	21.9	21.89	21.93
GSM1900 GPRS 2Tx	27.14	27.29	27.15	27.19	27.34	19.86	19.8	19.9	19.86	19.78
GSM1900 GPRS 3Tx	25.56	25.56	25.56	25.54	25.64	17.86	17.88	17.88	17.86	17.9
GSM1900 GPRS 4Tx	25.11	25.18	25.21	25.13	25.17	16.97	16.81	16.87	16.86	16.87
GSM1900 EGPRS 1Tx	24.77	24.84	24.88	24.8	24.91	18.01	18.05	17.97	18.14	18.1
GSM1900 EGPRS 2Tx	22.91	22.78	22.83	22.74	22.8	16.48	16.35	16.53	16.54	16.38
GSM1900 EGPRS 3Tx	22.24	22.14	22.16	22.14	22.17	15.13	15	15.17	15.18	15.01
GSM1900 EGPRS 4Tx	20.45	20.51	20.51	20.56	20.61	14.32	14.38	14.4	14.35	14.31

Right Corner – EUT Moving toward (trigger) to the Phantom WCDMAB5/B2/LTEB5/B12/B17/B41

Distance	Distance to DUT Output power (dBm)									
	12	11	10	9	8	7	6	5	4	3
WCDMA Band 5	22.55	22.54	22.55	22.72	22.65	16.01	15.9	15.9	16.01	15.83
WCDMA Band 2	23.65	23.63	23.6	23.55	23.51	12.86	12.94	12.77	12.84	12.94
LTE Band 5	22.57	22.41	22.44	22.47	22.54	14.61	14.65	14.71	14.74	14.67
LTE Band 12	22.7	22.79	22.74	22.64	22.8	13.94	14.01	13.89	13.96	13.98
LTE Band 17	22.81	22.74	22.88	22.8	22.85	15.52	15.47	15.55	15.54	15.49
LTE Band 41	22.9	22.95	22.77	22.78	22.96	13.85	13.82	13.83	13.75	13.91

Right Corner – EUT Moving away (Release) from the Phantom GSM850

Distance	Distance to DUT Output power (dBm)									
	5	6	7	8	9	10	11	12	13	14
GSM850 Voice	26.11	26.05	26.02	26.21	26.1	32.57	32.63	32.54	32.66	32.51
GSM850 GPRS 1Tx	26.1	26.07	26.05	25.98	26.09	32.46	32.62	32.5	32.61	32.62
GSM850 GPRS 2Tx	22.03	22.1	22.18	22.18	22.15	29.61	29.8	29.71	29.72	29.77
GSM850 GPRS 3Tx	21.06	21.08	21.12	21.22	21.22	27.98	27.91	28.01	27.83	27.85
GSM850 GPRS 4Tx	18.78	18.84	18.86	18.98	18.93	26.82	26.97	26.92	26.93	26.95
GSM850 EGPRS 1Tx	21.04	21.05	21.09	21.05	21	26.23	26.2	26.2	26.16	26.24
GSM850 EGPRS 2Tx	19.33	19.27	19.3	19.29	19.39	24.37	24.37	24.39	24.37	24.34
GSM850 EGPRS 3Tx	17.1	17.06	17.18	17.16	17.08	22.94	23.09	22.95	23.06	23.06
GSM850 EGPRS 4Tx	15.2	15.25	15.14	15.14	15.15	21.49	21.53	21.57	21.53	21.44

Right Corner – EUT Moving away (Release) from the Phantom GSM1900

Distance	Distance to DUT Output power (dBm)									
	5	6	7	8	9	10	11	12	13	14
GSM1900 Voice	21.95	21.77	21.9	21.79	21.96	29.34	29.4	29.33	29.32	29.37
GSM1900 GPRS 1Tx	21.79	21.76	21.93	21.91	21.76	29.43	29.39	29.41	29.37	29.3
GSM1900 GPRS 2Tx	19.73	19.88	19.9	19.85	19.79	27.26	27.19	27.32	27.15	27.16
GSM1900 GPRS 3Tx	17.92	17.82	17.93	18.01	17.97	25.64	25.61	25.71	25.63	25.67
GSM1900 GPRS 4Tx	16.92	16.88	17.01	16.92	16.87	25.09	25.03	25.23	25.14	25.2
GSM1900 EGPRS 1Tx	18.02	17.99	18.02	18.09	18.13	24.84	24.74	24.84	24.76	24.78
GSM1900 EGPRS 2Tx	16.41	16.41	16.37	16.48	16.36	22.71	22.9	22.89	22.84	22.75
GSM1900 EGPRS 3Tx	15.01	15.12	15.1	15.14	15.05	22.27	22.13	22.29	22.25	22.2
GSM1900 EGPRS 4Tx	14.41	14.41	14.37	14.44	14.45	20.42	20.58	20.46	20.59	20.6

Right Corner – EUT Moving away (Release) from the Phantom WCDMAB5/B2/LTEB5/B12/B17/B41

Distance	Distance to DUT Output power (dBm)									
	5	6	7	8	9	10	11	12	13	14
WCDMA Band 5	15.83	15.95	15.93	15.98	15.94	22.6	22.67	22.65	22.69	22.58
WCDMA Band 2	12.9	12.92	12.77	12.76	12.85	23.54	23.61	23.61	23.53	23.66
LTE Band 5	14.67	14.61	14.69	14.66	14.71	22.45	22.5	22.49	22.59	22.45
LTE Band 12	14.03	14.03	13.96	13.9	14.06	22.8	22.79	22.71	22.66	22.64
LTE Band 17	15.43	15.5	15.49	15.46	15.54	22.73	22.87	22.74	22.79	22.84
LTE Band 41	13.92	13.76	13.74	13.89	13.77	22.89	22.9	22.84	22.95	22.79

Based on the most conservative measured triggering distance of 7mm, additional Body SAR measurements were required at 6mm from Right Corner side for the above modes

1.3 Proximity Sensor Coverage for SAR measurements

(KDB 616217 D04v01r02 §6.3)

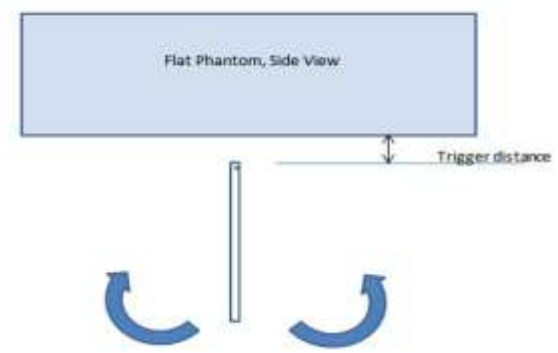
As there is no spatial offset between the antenna and the proximity sensor element, proximity sensor coverage did not need to be assessed.

1.4 Proximity Sensor Tilt Angle Assessment

(KDB 616217 D04v01r02 §6.4)

The DUT was positioned directly below the flat phantom at the minimum measured trigger distance with Top/Left side parallel to the base of the flat phantom for each band.

The EUT was rotated about Bottom side for angles up to ±45°. If the output power increased during the rotation the DUT was moved 1mm toward the phantom and the rotation repeated. This procedure was repeated until the power remained reduced for all angles up ±45°.



Proximity sensor tilt angle assessment (Bottom side) KDB 616217 §6.4

Summary of Tablet Tilt Angle influence to Proximity Sensor Triggering (Top side)

Band (MHz)	Minimum distance at which power reduction was maintained over-45°	Power reduction status										
		-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
750MHz Muscle	18mm	On	On	On	On	On	On	On	On	On	On	On
835Mhz Muscle	18 mm	On	On	On	On	On	On	On	On	On	On	On
1900 MHz Muscle	18 mm	On	On	On	On	On	On	On	On	On	On	On
2600 MHz Muscle	18 mm	On	On	On	On	On	On	On	On	On	On	On

Summary of Tablet Tilt Angle influence to Proximity Sensor Triggering (Right side)

Band (MHz)	Minimum distance at which power reduction was maintained over-45°	Power reduction status										
		-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
750MHz Muscle	7mm	On	On	On	On	On	On	On	On	On	On	On
835Mhz Muscle	7mm	On	On	On	On	On	On	On	On	On	On	On
1900 MHz Muscle	7mm	On	On	On	On	On	On	On	On	On	On	On
2600MHz Muscle	7mm	On	On	On	On	On	On	On	On	On	On	On

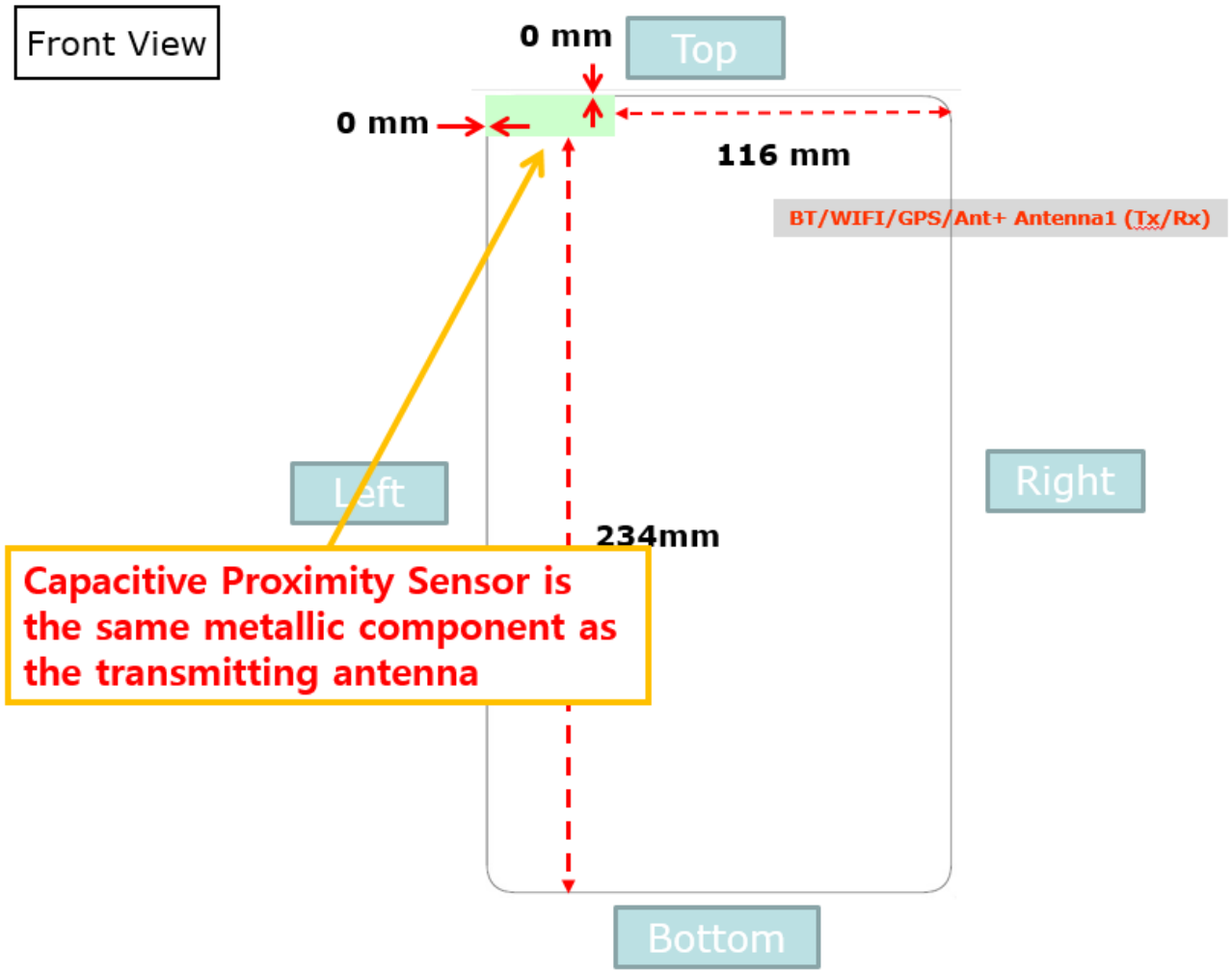
1.5 Resulting test positions for Tablet SAR measurements

Wireless technologies	Position	§6.2 Triggering Distance	§6.3 Coverage	§6.4 Tilt Angle	Worst case distance forTablet SAR
WWAN (GSM850/1900/ WCDMA B2/B5 LTE B5/B12 B17/B41)	Rear	17	N/A	N/A	16
	Top Side	18	N/A	18	17
	Right Side	7	N/A	7	6
	Right Corner	7	N/A	N/A	6

Note: FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device when being used in proximity use conditions

2. Power Reduction Verification for WLAN Antenna

This device utilizes a power reduction mechanism for WLAN Antenna wireless modes for SAR compliance under some conditions when the device is being used in close proximity to the user's hand. All SAR evaluations for this device were performed at the maximum allowed output Power when Proximity Sensor is activated. FCC KDB Publication 616217D04v01r02 section 6 was used as a guideline for selection SAR test distances for this device when being used in proximity senor used conditions. For detailed measurement conducted power results, please refer to the Section .9



2.1. Power Verification Procedure for WLAN Ant

The Power verification was performed according to the following procedure:

Power Reduction Verification for WLAN mode

Mechanism(s)	Mode/Band	Conducted Power (dBm)	
		Un-triggered (Max Power)	Triggered (Reduced Power)
Proximity sensor On	2.4GHz 802.11b	19.75	12.86
Proximity sensor On	2.4GHz 802.11g((2ch – 11ch)	19.38	12.71
Proximity sensor On	2.4GHz 802.11n(2ch – 11ch)	18.37	12.63
Proximity sensor On	5GHz 802.11a	18.45	9.21
Proximity sensor On	5GHz 802.11n 20MHz	18.11	9.01
Proximity sensor On	5GHz 802.11n 40MHz	17.45	9.55
Proximity sensor On	5GHz 802.11ac 20MHz	16.40	9.15
Proximity sensor On	5GHz 802.11ac 40MHz	17.04	9.91
Proximity sensor On	5GHz 802.11ac 80MHz	16.51	9.49

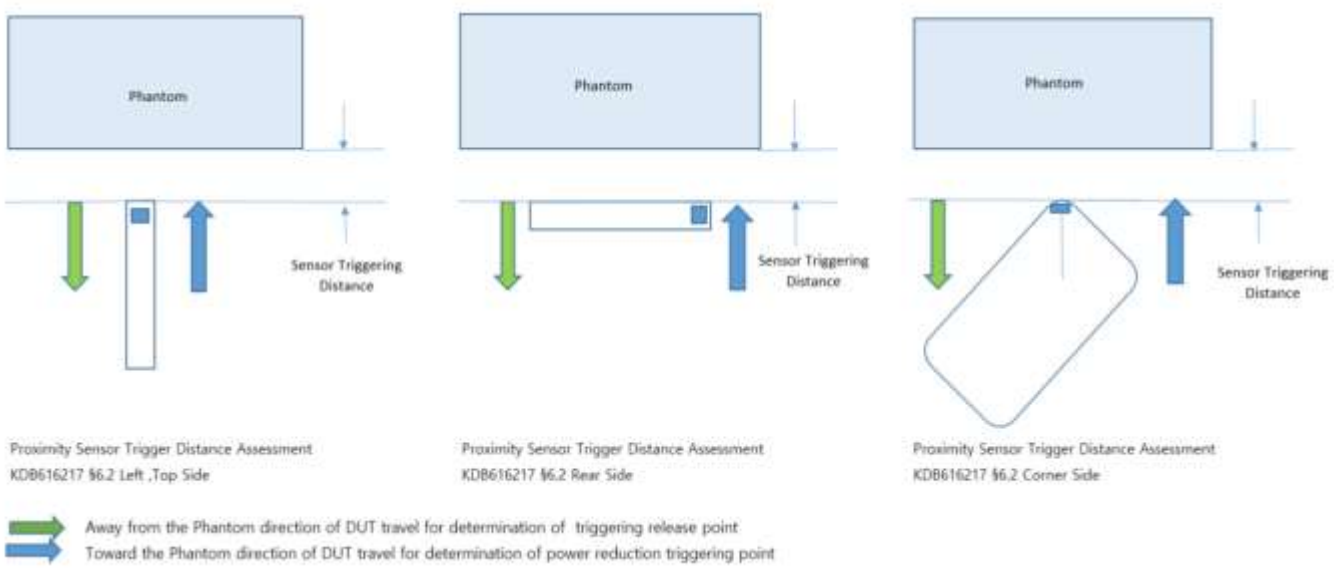
2.2. Procedures for determining proximity sensor triggering distances

(KDB 616217 D04v01r02 §6.2)

The distance verification procedure was performed according to the following procedure:

5. A base station simulator was used to establish an RF connection and to monitor the power levels. The device being tested was placed below the relevant section of the phantom with the relevant side or edge of the device facing toward the phantom.
6. The device was moved toward and away from the phantom to determine the distance at which the mechanism triggers and the output power is reduced, per KDB Publication 616217 D04v01r02 .Each applicable test position was evaluated. The distance were conformed to be the same or larger (more conservative) than the minimum distances provided by the manufacturer.
7. Step 1 and 2 were repeated for the relevant modes, as appropriate
8. Steps1 through 3 were repeated for all distance-based power reduction mechanisms.

For detailed measurement conducted power results, please refer to the Section .9



Tissue simulating liquid	Trigger distance - Rear		Trigger distance – Top		Trigger distance – Left		Trigger distance – Left corner	
	Moving toward phantom	Moving away from phantom	Moving toward phantom	Moving away from phantom	Moving toward phantom	Moving away from phantom	Moving toward phantom	Moving away from phantom
2450MHz Muscle	9	15	10	15	5	6	7	9
5000Mhz Muscle	9	15	10	15	5	6	7	9

Distance Measurement verification for Proximity sensor

Rear side – EUT Moving toward (trigger) to the Phantom

Distance	Distance to DUT Output power (dBm)									
	14	13	12	11	10	9	8	7	6	5
2.4GHz 802.11b	19.68	19.85	19.65	19.72	19.81	12.91	12.82	12.89	12.78	12.81
2.4GHz 802.11g(2ch – 11ch)	19.38	19.38	19.31	19.32	19.47	12.7	12.78	12.61	12.66	12.79
2.4GHz 802.11n(2ch – 11ch)	18.33	18.42	18.27	18.47	18.33	12.56	12.68	12.65	12.55	12.58
5GHz 802.11a	18.52	18.37	18.51	18.49	18.53	9.27	9.3	9.22	9.31	9.15
5GHz 802.11n 20MHz	18.11	18.04	18.08	18.08	18.17	9.01	8.91	9.03	8.94	9.04
5GHz 802.11n 40MHz	17.45	17.35	17.54	17.42	17.54	9.59	9.52	9.47	9.64	9.52
5GHz 802.11ac 20MHz	16.35	16.34	16.43	16.48	16.33	9.2	9.12	9.19	9.09	9.21
5GHz 802.11ac 40MHz	17.12	17.07	17.07	17.07	17.12	9.96	9.92	9.83	9.88	10.01
5GHz 802.11ac 80MHz	16.47	16.49	16.54	16.48	16.55	9.52	9.49	9.48	9.53	9.43

Rear side – EUT Moving away (Release) from the Phantom

Distance	Distance to DUT Output power (dBm)									
	11	12	13	14	15	16	17	18	19	20
2.4GHz 802.11b	12.83	12.79	12.91	12.78	12.9	19.71	19.79	19.79	19.66	19.72
2.4GHz 802.11g(2ch – 11ch)	12.65	12.77	12.78	12.76	12.81	19.48	19.42	19.41	19.48	19.43
2.4GHz 802.11n(2ch – 11ch)	12.68	12.72	12.62	12.6	12.68	18.28	18.43	18.43	18.43	18.28
5GHz 802.11a	9.27	9.19	9.25	9.12	9.11	18.47	18.43	18.44	18.39	18.46
5GHz 802.11n 20MHz	9.05	9.09	9.1	8.96	8.91	18.05	18.21	18.07	18.07	18.03
5GHz 802.11n 40MHz	9.5	9.54	9.65	9.48	9.45	17.47	17.54	17.45	17.43	17.46
5GHz 802.11ac 20MHz	9.1	9.08	9.25	9.17	9.21	16.38	16.48	16.37	16.4	16.42
5GHz 802.11ac 40MHz	9.85	9.82	9.81	9.96	9.87	16.96	17.03	17.04	16.98	17.09
5GHz 802.11ac 80MHz	9.42	9.42	9.48	9.49	9.43	16.6	16.48	16.44	16.61	16.6

Based on the most conservative measured triggering distance of 9mm, additional Body SAR measurements were required at 8mm from Rear side for the above modes

Top side – EUT Moving toward (trigger) to the Phantom

Distance	Distance to DUT Output power (dBm)									
	15	14	13	12	11	10	9	8	7	6
2.4GHz 802.11b	19.81	19.83	19.81	19.78	19.67	12.94	12.81	12.83	12.82	12.95
2.4GHz 802.11g(2ch – 11ch)	19.34	19.33	19.35	19.44	19.34	12.63	12.61	12.65	12.8	12.79
2.4GHz 802.11n(2ch – 11ch)	18.3	18.31	18.44	18.3	18.42	12.56	12.54	12.73	12.66	12.65
5GHz 802.11a	18.42	18.53	18.38	18.44	18.55	9.23	9.22	9.17	9.19	9.18
5GHz 802.11n 20MHz	18.19	18.12	18.15	18.21	18.02	9	8.94	8.93	9.06	9.02
5GHz 802.11n 40MHz	17.44	17.47	17.45	17.51	17.48	9.51	9.57	9.54	9.59	9.63
5GHz 802.11ac 20MHz	16.35	16.33	16.43	16.39	16.38	9.14	9.07	9.12	9.17	9.14
5GHz 802.11ac 40MHz	17.01	17.14	17.1	17.04	17.02	9.84	9.86	9.98	9.99	9.98
5GHz 802.11ac 80MHz	16.48	16.46	16.53	16.52	16.59	9.57	9.53	9.59	9.41	9.49

Top side – EUT Moving away (Release) from the Phantom

Distance	Distance to DUT Output power (dBm)									
	11	12	13	14	15	16	17	18	19	20
2.4GHz 802.11b	12.76	12.87	12.89	12.8	12.82	19.78	19.7	19.65	19.73	19.74
2.4GHz 802.11g(2ch – 11ch)	12.72	12.64	12.73	12.71	12.65	19.39	19.47	19.45	19.42	19.4
2.4GHz 802.11n(2ch – 11ch)	12.7	12.59	12.6	12.7	12.64	18.33	18.35	18.4	18.45	18.41
5GHz 802.11a	9.11	9.15	9.2	9.17	9.17	18.4	18.35	18.36	18.4	18.47
5GHz 802.11n 20MHz	9	8.97	9.07	9.03	8.93	18.12	18.04	18.1	18.21	18.2
5GHz 802.11n 40MHz	9.63	9.65	9.58	9.62	9.52	17.4	17.44	17.44	17.46	17.36
5GHz 802.11ac 20MHz	9.13	9.09	9.11	9.24	9.05	16.34	16.48	16.43	16.39	16.37
5GHz 802.11ac 40MHz	9.85	9.84	9.93	9.82	9.93	17.13	16.98	17.05	17.08	17.12
5GHz 802.11ac 80MHz	9.48	9.56	9.5	9.46	9.53	16.51	16.51	16.54	16.43	16.43

Based on the most conservative measured triggering distance of 10mm, additional Body SAR measurements were required at 9mm from Top side for the above modes

Left side – EUT Moving toward (trigger) to the Phantom

Distance	Distance to DUT Output power (dBm)									
	10	9	8	7	6	5	4	3	2	1
2.4GHz 802.11b	18.18	18.22	18.22	18.2	18.21	12.87	12.88	12.86	12.85	12.82
2.4GHz 802.11g(2ch – 11ch)	18.12	18.03	18.18	18.02	18.16	12.69	12.73	12.83	12.7	12.75
2.4GHz 802.11n(2ch – 11ch)	17.04	17.16	17.1	17.17	17.19	12.67	12.63	12.6	12.62	12.64
5GHz 802.11a	18.24	18.16	18.26	18.2	18.18	9.31	9.27	9.27	9.17	9.3
5GHz 802.11n 20MHz	18.1	18.13	18.16	18.1	18.02	9.1	8.96	9.04	9.02	8.99
5GHz 802.11n 40MHz	17.12	17.08	17.18	17.13	17.14	10.01	10	10.02	10.04	9.86
5GHz 802.11ac 20MHz	17.45	17.46	17.42	17.49	17.35	9.19	9.08	9.07	9.22	9.09
5GHz 802.11ac 40MHz	17.24	17.22	17.12	17.15	17.22	9.98	9.92	9.92	9.92	10
5GHz 802.11ac 80MHz	16.81	16.9	16.93	16.94	16.89	9.88	9.96	9.92	9.8	9.81

Left side – EUT Moving away (Release) from the Phantom

Distance	Distance to DUT Output power (dBm)									
	2	3	5	5	6	7	8	9	10	11
2.4GHz 802.11b	12.78	12.79	12.71	12.86	12.77	18.31	18.21	18.27	18.11	18.3
2.4GHz 802.11g(2ch – 11ch)	12.79	12.76	12.86	12.74	12.86	18.06	18.19	18.04	18.06	18.16
2.4GHz 802.11n(2ch – 11ch)	12.53	12.61	12.67	12.69	12.62	17.08	17.17	17.18	17.09	17.18
5GHz 802.11a	9.13	9.13	9.29	9.21	9.17	18.27	18.21	18.21	18.15	18.27
5GHz 802.11n 20MHz	9.01	9.1	9.06	9.08	9.08	18.09	18.06	18.1	18.03	18.1
5GHz 802.11n 40MHz	9.94	9.9	9.87	9.95	9.89	17.21	17.22	17.12	17.06	17.21
5GHz 802.11ac 20MHz	9.08	9.15	9.12	9.08	9.19	17.33	17.39	17.33	17.34	17.4
5GHz 802.11ac 40MHz	9.98	9.84	9.92	9.84	9.83	17.08	17.05	17.07	17.09	17.05
5GHz 802.11ac 80MHz	9.94	9.91	9.84	9.84	9.99	16.87	16.89	16.89	16.9	16.95

Based on the most conservative measured triggering distance of 5mm, additional Body SAR measurements were required at 4mm from Left side for the above modes

Left Corner side – EUT Moving toward (trigger) to the Phantom

Distance	Distance to DUT Output power (dBm)									
	12	11	10	9	8	7	6	5	4	3
2.4GHz 802.11b	19.85	19.68	19.76	19.69	19.82	12.92	12.79	12.88	12.91	12.83
2.4GHz 802.11g(2ch – 11ch)	19.31	19.4	19.31	19.4	19.33	12.75	12.69	12.79	12.69	12.65
2.4GHz 802.11n(2ch – 11ch)	18.28	18.33	18.34	18.32	18.34	12.62	12.64	12.59	12.62	12.64
5GHz 802.11a	18.49	18.36	18.53	18.35	18.37	9.27	9.31	9.23	9.15	9.11
5GHz 802.11n 20MHz	18.03	18.15	18.2	18.04	18.09	8.99	8.92	8.93	8.94	8.91
5GHz 802.11n 40MHz	17.55	17.4	17.43	17.55	17.43	9.52	9.54	9.51	9.48	9.58
5GHz 802.11ac 20MHz	16.3	16.32	16.46	16.43	16.32	9.08	9.14	9.09	9.19	9.15
5GHz 802.11ac 40MHz	17.02	16.96	17.02	16.94	17.05	9.94	9.83	9.89	9.96	9.89
5GHz 802.11ac 80MHz	16.56	16.52	16.51	16.47	16.48	9.43	9.4	9.46	9.57	9.59

Left Corner side – EUT Moving away (Release) from the Phantom

Distance	Distance to DUT Output power (dBm)									
	5	6	7	8	9	10	11	12	13	14
2.4GHz 802.11b	12.76	12.83	12.84	12.83	12.86	19.74	19.69	19.79	19.85	19.77
2.4GHz 802.11g(2ch – 11ch)	12.81	12.7	12.62	12.8	12.74	19.4	19.3	19.38	19.4	19.44
2.4GHz 802.11n(2ch – 11ch)	12.53	12.56	12.72	12.59	12.63	18.47	18.34	18.31	18.43	18.38
5GHz 802.11a	9.27	9.23	9.27	9.31	9.11	18.41	18.53	18.44	18.35	18.37
5GHz 802.11n 20MHz	9.01	8.91	9.08	9.05	8.91	18.14	18.19	18.18	18.03	18.1
5GHz 802.11n 40MHz	9.47	9.5	9.63	9.57	9.63	17.49	17.49	17.49	17.38	17.38
5GHz 802.11ac 20MHz	9.19	9.14	9.05	9.16	9.08	16.37	16.5	16.49	16.41	16.34
5GHz 802.11ac 40MHz	9.96	9.93	9.88	9.85	9.93	17.02	16.97	17.07	16.94	17.12
5GHz 802.11ac 80MHz	9.47	9.43	9.51	9.53	9.58	16.47	16.6	16.54	16.44	16.57

Based on the most conservative measured triggering distance of 5mm, additional Body SAR measurements were required at 4mm from Left Corner side for the above modes

2.3 Proximity Sensor Coverage for SAR measurements

(KDB 616217 D04v01r02 §6.3)

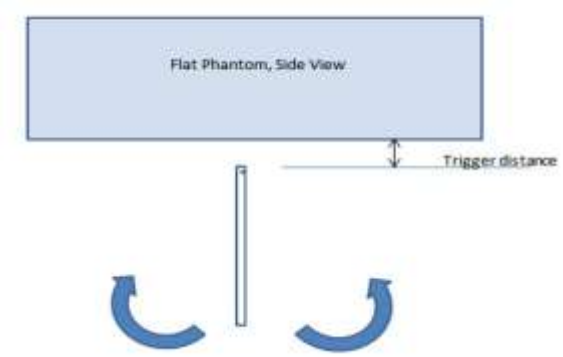
As there is no spatial offset between the antenna and the proximity sensor element, proximity sensor coverage did not need to be assessed.

2.4 Proximity Sensor Tilt Angle Assessment

(KDB 616217 D04v01r02 §6.4)

The DUT was positioned directly below the flat phantom at the minimum measured trigger distance with Top/Left side parallel to the base of the flat phantom for each band.

The EUT was rotated about Bottom side for angles up to ±45°. If the output power increased during the rotation the DUT was moved 1mm toward the phantom and the rotation repeated. This procedure was repeated until the power remained reduced for all angles up ±45°.



Proximity sensor tilt angle assessment (Bottom side) KDB 616217 §6.4

Summary of Tablet Tilt Angle influence to Proximity Sensor Triggering (Top side)

Band (MHz)	Minimum distance at which power reduction was maintained over-45°	Power reduction status										
		-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
2450 MHz Muscle	10 mm	On	On	On	On	On	On	On	On	On	On	On
5000 MHz Muscle	10 mm	On	On	On	On	On	On	On	On	On	On	On

Summary of Tablet Tilt Angle influence to Proximity Sensor Triggering (Left side)

Band (MHz)	Minimum distance at which power reduction was maintained over-45°	Power reduction status										
		-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
2450 MHz Muscle	5 mm	On	On	On	On	On	On	On	On	On	On	On
5000 MHz Muscle	5mm	On	On	On	On	On	On	On	On	On	On	On

2.5 Resulting test positions for Tablet SAR measurements

Wireless technologies	Position	§6.2 Triggering Distance	§6.3 Coverage	§6.4 Tilt Angle	Worst case distance forTablet SAR
WLAN 2.4GHz/5GHz	Rear	9	N/A	N/A	8
	Top Side	10	N/A	10	9
	Left Side	5	N/A	N/A	4
	Left Conner	7	N/A	N/A	6

Note: FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device when being used in proximity use conditions