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FCC SAR Compliance Test Report

Product Name: Smart Phone

Model: VTR-L09

Report No.: SYBH(Z-SAR)020032017-2

FCC ID: QISVTR-L09

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※ ※ Modified History ※ ※

REV.	DESCRIPTION	ISSUED DATE	REMARK
Rev.1.0	Initial Test Report Release.	2017-03-30	Deng Zhao

1 General Information

1.1 Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for VTR-L09 are as below Table 1.

Band	Max Reported SAR(W/kg)		
	1-g Head	1-g Body-worn (15mm) *	1-g Hotspot
GSM850	1.36	0.54	0.82
GSM1900	1.32	0.34	1.21
UMTS Band II	1.33	0.54	1.36
UMTS Band IV	1.32	0.51	0.92
UMTS Band V	1.49	0.52	0.74
LTE Band II	1.15	0.52	1.17
LTE Band IV	1.39	0.50	0.96
LTE Band V	1.15	0.44	0.67
LTE Band VII	1.06	0.54	1.36
LTE Band XII	1.32	0.26	0.34
LTE Band XVII	/	/	/
LTE Band XXVI	1.45	0.50	0.73
LTE Band XXIX	/	/	/
LTE Band XXXVIII	0.71	0.49	1.06
LTE Band XLI	1.25	0.54	1.34
WiFi 2.4G	0.94	0.16	0.32
WiFi 5G	0.98	0.07	0.16
The highest reported SAR for head, body-worn, hotspot and simultaneous transmission are 1.49W/kg, 0.54W/kg, 1.36W/kg and 1.58 W/kg respectively per KDB690783 D01.			

Table 1:Summary of test result

Note:

- 1)* For body worn operation, this device has been tested and meets FCC RF exposure guidelines when used with any accessory that contains no metal and that positions the handset a minimum of 15mm from the body. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.
- 2) According to TCB workshop October,2014 RF Exposure Prcedures Update(Overlapping LTE Bands):
 - a) Main and Second Antenna SAR for LTE Band 17 (Frequency range:704-716 MHz) is covered by LTE Band 12 (Frequency range:699-716 MHz) due to similar frequency range,same maximum tune up limit and same channel bandwidth.
 - b) Second Antenna SAR for LTE Band 38 (Frequency range: 2570-2620 MHz) is covered by LTE Band 41 (Frequency range: 2555-2655 MHz) due to similar frequency range,same maximum tune up limit and same channel bandwidth.
- 3) LTE Band 29 supports downlink only and SAR test is not required.

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

1.2 RF exposure limits

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

Table 2: RF exposure limits

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

Notes:

- * The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
- ** The Spatial Average value of the SAR averaged over the whole body.
- *** The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

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

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

1.3 EUT Description

Device Information:			
Product Name:	Smart Phone		
Model:	VTR-L09		
FCC ID :	QISVTR-L09		
IMEI:	1#:862790030196615 2#:862790030196672 3#:862790030196516		
Device Type :	Portable device		
Device Phase:	Identical Prototype		
Exposure Category:	Uncontrolled environment / general population		
Hardware Version :	HL1AVTRM		
Software Version :	D188-L29C432B083		
Antenna Type :	Internal antenna		
Others Accessories	Headset		
Device Operating Configurations:			
Supporting Mode(s)	GSM 850/1900, UMTS BandII/IV/V, LTE Band II/IV/V/VII/XII/XVII/XXVI/XXIX/XXXVIII/XLI, WiFi 2.4G; WiFi 5G; BT,NFC		
Test Modulation	GSM(GMSK/8PSK), UMTS(QPSK), LTE(QPSK/16QAM), WiFi(DSSS/OFDM), BT(GFSK)		
Device Class	B		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	GSM850	824-849	869-894
	PCS1900	1850-1910	1930-1990
	UMTS Band II	1850-1910	1930-1990
	UMTS Band IV	1710–1755	2110–2155
	UMTS Band V	824-849	869-894
	LTE Band II	1850-1910	1930-1990
	LTE Band IV	1710–1755	2110–2155
	LTE Band V	824-849	869-894
	LTE Band VII	2500-2570	2620-2690
	LTE Band XII	699-716	729-746
	LTE Band XVII	704-716	734-746
	LTE Band XXVI	814-849	859-894
	LTE Band XXIX	NA	717-728
	LTE Band XXXVIII	2570-2620	2570-2620
	LTE Band XLI	2555-2655	2555-2655
	BT	2400-2483.5	
	WiFi 2.4G	2400-2483.5	
	WiFi 5G	5150-5350 5470-5850	
	NFC	13.56	
GPRS Multislot Class(12)	Max Number of Timeslots in Uplink:		4
	Max Number of Timeslots in Downlink:		4
	Max Total Timeslot:		5
EGPRS Multislot Class(12)	Max Number of Timeslots in Uplink:		4
	Max Number of Timeslots in Downlink:		4
	Max Total Timeslot:		5
HSDPA UE Category	14		

HSUPA UE Category	6
DC-HSDPA UE Category	24
Power Class:	4, tested with power level 5(GSM850)
	1, tested with power level 0(GSM1900)
	3, tested with power control "all 1"(UMTS Band II)
	3, tested with power control "all 1"(UMTS Band IV)
	3, tested with power control "all 1"(UMTS Band V)
	3, tested with power control all Max.(LTE Band II)
	3, tested with power control all Max.(LTE Band IV)
	3, tested with power control all Max.(LTE Band V)
	3, tested with power control all Max.(LTE Band VII)
	3, tested with power control all Max.(LTE Band XII)
	3, tested with power control all Max.(LTE Band XVII)
	3, tested with power control all Max.(LTE Band XXVI)
	3, tested with power control all Max.(LTE Band XXXVIII)
	3, tested with power control all Max.(LTE Band XLI)
Test Channels (low-mid-high):	128-190-251(GSM850)
	512-661-810(GSM1900)
	9262-9400-9538(UMTS Band II)
	1312-1413-1513(UMTS Band IV)
	4132-4182-4233(UMTS Band V)
	18607-18900-19193(LTE Band II BW=1.4MHz)
	18615-18900-19185(LTE Band II BW=3MHz)
	18625-18900-19175(LTE Band II BW=5MHz)
	18650-18900-19150(LTE Band II BW=10MHz)
	18675-18900-19125 (LTE Band II BW=15MHz)
	18700-18900-19100(LTE Band II BW=20MHz)
	19957-20175-20393(LTE Band IV BW=1.4MHz)
	19965-20175-20385(LTE Band IV BW=3MHz)
	19975-20175-20375(LTE Band IV BW=5MHz)
	20000-20175-20350 (LTE Band IV BW=10MHz)
	20025-20175-20325 (LTE Band IV BW=15MHz)
	20050-20175-20300(LTE Band IV BW=20MHz)
	20407-20525-20643(LTE Band V BW=1.4MHz)
	20415-20525-20635(LTE Band V BW=3MHz)
	20425-20525-20625(LTE Band V BW=5MHz)
	20450-20525-20600(LTE Band V BW=10MHz)
	20775-21100-21425(LTE Band VII BW=5MHz)
	20800-21100-21400(LTE Band VII BW=10MHz)
	20825-21100-21375(LTE Band VII BW=15MHz)
	20850-21100-21350 (LTE Band VII BW=20MHz)
	23017-23095-23173(LTE Band XII BW=1.4MHz)
	23025-23095-23165(LTE Band XII BW=3MHz)
	23035-23095-23155(LTE Band XII BW=5MHz)
	23060-23095-23130(LTE Band XII BW=10MHz)
	23755-23790-23825(LTE Band XVII BW=5MHz)
	23780-23790-23800(LTE Band XVII BW=10MHz)
	26697-26865-27033(LTE Band XXVI BW=1.4MHz)
	26705-26865-27025(LTE Band XXVI BW=3MHz)
	26715-26865-27015(LTE Band XXVI BW=5MHz)
	26750-26865-26990(LTE Band XXVI BW=10MHz)
	26775-26865-26965(LTE Band XXVI BW=15MHz)
	37775-38000-38225(LTE Band XXXVIII BW=5MHz)

	37800-38000-38200(LTE Band XXXVIII BW=10MHz)
	37825-38000-38175 (LTE Band XXXVIII BW=15MHz)
	37850-38000-38150(LTE Band XXXVIII BW=20MHz)
	40265-40740-41215(LTE Band XLI BW=5MHz)
	40290-40740-41190(LTE Band XLI BW=10MHz)
	40315-40740-41165(LTE Band XLI BW=15MHz)
	40340-40740-41140(LTE Band XLI BW=20MHz)
	802.11b/g/n 20M:1-6-11 (WiFi 2.4G)
	802.11a/n/ac 20M: 36-40-44-48-52-56-60-64-100-104-108-112-116-120-124-128-132-136-140-144-149-153-157-161-165
	802.11 n/ac 40M: 38-46-54-62-102-110-118-126-134-142-151-159
	802.11ac 80M: 42-58-106-122-138-155(WiFi 5G)

Table 3:Device information and operating configuration

1.3.1 General Description

VTR-L09 is subscriber equipment in the LTE/ WCDMA/GSM system. The LTE frequency band is Band I, Band II, Band III, Band IV, Band V, Band VII, Band VIII, Band IX, Band XII, Band XVII, Band XVIII, Band XIX, Band XX, Band XXVI, Band XXVIII, Band XXIX, Band XXXVIII, Band XXXIX, Band XL and Band XLI. But only Band II, Band IV, Band V, Band VII, Band XII, Band XVII, Band XXVI, Band XXIX, Band XXXVIII, and Band XLI test data included in this report. The HSUPA/HSDPA/UMTS frequency band is Band I, Band II, Band IV, Band V, Band VI, Band VIII and Band XIX, But only Band II, Band IV and Band V test data can be used in this report. The GSM/GPRS/EDGE frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900, but only GSM850 and DCS1900 bands test data included in this report. The Mobile Phone implements such functions as RF signal receiving/transmitting, LTE/ WCDMA /GSM protocol processing, voice, video, MMS service, GPS, AGPS, NFC and WIFI etc. Externally it provides earphone port (to provide voice service) and dual USIM card interfaces. It also provides Bluetooth module to synchronize data between a PC and the phone, or to use the built-in modem of the phone to access the Internet with a PC, or to exchange data with other Bluetooth devices.

Battery information :

Name	Manufacture	Description
Rechargeable Li-ion	Desay Battery Co., Ltd.	Battery Model: HB386280ECW Rated capacity: 3100mAh Nominal Voltage:  +3.82V Charging Voltage:  +4.4V
	Sunwoda Electronic Co., LTD	
	SCUD (FUJIAN) Electronics Co., Ltd	

Difference description:

There are three changed points between the VTR-L09(new) and VTR-L09(old):

1) Add an alternate NAND FLASH and the related match circuit is changed as well.

Before	After
Memory type: UFS2.0 Description: Gear3 2lane RPMB 16MB@1key(G3-1lane 4MB RPMB for one exception),3.3V/1.8V,FBGA153b	Memory type: eMMC5.1 Description: CMDQ,400MHz,3.3V/1.8V,FBGA153

2) Delete a B40 SAW filter

Description: SAW Filter, 2335MHz, 2.8dB

3) PA model change, Add an alternate PA

New model modified the power Bias, the overall performance of the product does not affect.

Before	After
Model: SKY78117-14 Description: RF Multi-functional Component,HB PAMID(w/ B7 DUP),2300~2690MHz,LGA	Model: SKY78117-14A Description: RF Multi-functional Component,HB PAMID(w/ B7 DUP) w/ B7 Gain improvement,2300~2690MHz,LGA,

According to the difference description above, for the same frequency bands, the VTR-L09 (new) SAR is tested at the SAR worst case of VTR-L09 original test report (report No.: SYBH(Z-SAR)011112016-2) for each antenna, frequency band and RF exposure condition.

The differences between VTR-L09 and VTR-L29 as beow:

Model	VTR-L29	VTR-L09
Trade mark	HUAWEI	HUAWEI
Frequency-GSM	the same	the same
Frequency-WCDMA	the same	the same
Frequency-LTE	the same	the same
SIM Card	Dual	Single
Hardware Version	the same	the same
Software Version	different	different
Dimensions	the same	the same
Appearance	the same	the same
main antenna	the same	the same
BT/Wi-Fi antenna	the same	the same
DIV antenna	the same	the same
Supported CA configurations for Intra-band non-contiguous CA	CA_3A-3A Unsupported	CA_3A-3A Supported*
Others	the same	the same

Note: * It is downlink LTE CA only. Testing is Not required in bands or modes not intended/allowed for US operation.

According to the difference description above, VTR-L09 shares the same test data of VTR-L29 (report no.: SYBH(Z-SAR)017032017-2) for the same 2G&3G&4G(with SIM1) and WiFi/BT bands.

1.3.2 Dynamic antenna switching specification

The device has two 2G/3G/4G Tx antennas (Main Antenna and Second Antenna). It can transmit from either Main Antenna or Second Antenna, but they can not transmit simultaneously.

SAR test procedure for dynamic antenna switching is as below:

The Main Antenna and Second Antenna are set to the MAX transmit power level respectively and test the SAR respectively in all applicable RF exposure conditions. Some commands or test scripts are supplied to fix the operation state and choose the antenna so that only one TX antenna is chosen and tested at a time. All independent antennas will be completely covered by the appropriate SAR measurements and all simultaneous transmission possibilities will be fully considered to ensure SAR compliance.

1.3.3 Dynamic antenna tuning Test Configurations

The device also supports the dynamic antenna tuning function to optimize transmission efficiency for 1710MHz~2700MHz frequency operations, especially in any hand usage scenario.

The dynamic antenna tuning function is only applicable for some frequency bands of the 2G/3G/4G main Tx antenna: GSM1900, UMTS Band II/IV, LTE Band II/IV/VII/XXXVIII/XLI; which is located in the bottom part of the device. The 2G/3G/4G main antenna has two fixed states for these tuning bands: The two states (state 1 and state 2) shares the same antenna, RF path, test channel and conductive power. The software will choose better RSSI as the working state of the main TX antenna based on the RSSI comparison and switch algorithm.

SAR test procedure for dynamic antenna tuning is as below:

- a) Firstly, some test scripts are used to fix the tuning state at state1 or state 2, so that only one antenna tuning state is chosen at a time for SAR test.
- b) Secondly, in order to reduce the number of SAR tests required to demonstrate compliance for the two tuning states, one single point zoom scan SAR measurement between state1 and state 2 for each antenna tuning band and applicable RF exposure condition is considered to identify the higher SAR tuning state that need the full set of normally required SAR measurements and allow SAR test reduction for the other lower SAR conditions.
- c) Thirdly, full normally required SAR measurements are performed for the chosen higher SAR tuning state. The SAR worst case will also be checked for the other state in each antenna tuning band and applicable RF exposure condition to ensure the SAR compliance.

1.3.4 TDD LTE specification

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

For this device, TDD LTE SAR should be tested with the highest transmission duty factor (63.33%) , which using Uplink-downlink configuration 0. The detailed TDD LTE test configuration description are provided in Section 6 of this report.

1.3.5 Power reduction specification

This device uses a single fixed level of power reduction through static table look-up for SAR compliance and it is triggered by a single event or operation:

- 1) A fixed level power reduction is applied for some frequency bands when hotspot mode becomes active. When the hotspot is disabled, the power value will be recovered.
- 2) A fixed level power reduction is applied for some frequency bands when simultaneously transmitting with the other antennas in certain simultaneous transmission conditions. The standalone SAR compliance still uses the standalone SAR results tested at the maximum output power level without any power reduction.
- 3) This device uses a proximity sensor that shares the same metallic electrode as the main transmitting antenna to facilitate triggering in typical user interactivity with the device.

Due to the operating configurations and exposure conditions required by the device, the proximity sensor is used to indicate when the device is held close to a user's body exposure condition. It utilizes the proximity sensor to reduce the output power in specific wireless and operating modes of main antenna to ensure SAR compliance. The test procedures in KDB 616217 is applied to determine proximity sensor triggering distances, and sensor coverage for normal and tilt positions. The detailed test configuration description are provided in Section 6 of this report.

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

Band	Second Antenna Power Reduction Level Amount (dB)	
	Second Antenna+ WiFi Antenna 1 (wifi station)	
GSM850	0.5	
UMTS Band V	1.0	
LTE Band IV	0.5	
LTE Band XXVI	0.5	

Band	Main Antenna Power Reduction Level Amount (dB)		
	Hotspot on	Sensor on	Hotspot on + Sensor on
UMTS Band II	2.1	0	2.1
LTE Band II	1.5	0	1.5
LTE Band VII	0.5	4.5	5.0
LTE Band XXXVIII	0	4.5	4.5

Band	WiFi antenna Power Reduction Amount (dB)	
	Main Antenna + WiFi Antenna 1 (wifi station)	Second Antenna + WiFi Antenna 1 (wifi station)
WIFI 2.4G 802.11b	0.5	0.5
WIFI 2.4G 802.11g	0.5	0.5
WIFI 2.4G 802.11n 20M	0.5	0.5
WIFI 5G U-NII-1	2.0	2.0
WIFI 5G U-NII-2A	2.0	2.0
WIFI 5G U-NII-2C	2.0	2.0
WIFI 5G U-NII-3	0	0

1.3.6 Downlink LTE CA specification

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

The possible downlink LTE CA combinations supported by this device are as below tables per 3GPP TS 36.101 V13.5.0. The conducted power measurement results of downlink LTE CA are provided in Section 7 of this report per 3GPP TS 36.521-1 V13.3.0. According to KDB 941225 D05A, the downlink LTE CA SAR test is not required and PAG requirements can be excluded.

intra-band non-contiguous CA						
E-UTRA CA configuration / Bandwidth combination set						
E-UTRA CA configuration		Component carriers in order of increasing carrier frequency			Maximum aggregated bandwidth [MHz]	Bandwidth combination set
		Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]		
CA_41A-41A		10,15,20	10,15,20		40	0
		5,10,15,20	5,10,15,20		40	1

Test frequencies for CA_41A-41A(2555-2655MHz)

Test Frequency ID	CC-Combo / N _{RB_agg} [RB]	CC1 Note1			Wgap [MHz]	CC2 Note1		
		BW [RB]	N _{UL/DL}	f _{UL/DL} [MHz]		BW [RB]	N _{UL/DL}	f _{UL/DL} [MHz]
Max WGap	25+25	25	40265	2557.5	90.0	25	41215	2652.5
	25+50	25	40265	2557.5	85.0	50	41190	2650.0
		50	40290	2560.0	85.0	25	41215	2652.5
	25+75	25	40265	2557.5	80.0	75	41165	2647.5
		75	40315	2562.5	80.0	25	41215	2652.5
	50+50	50	40290	2560.0	80.0	50	41190	2650.0
	25+100	25	40265	2557.5	75.0	100	41140	2645.0
		100	40340	2565.0	75.0	25	41215	2652.5
	50+75	50	40290	2560.0	75.0	75	41165	2647.5
		75	40315	2562.5	75.0	50	41190	2650.0
	50+100	50	40290	2560.0	70.0	100	41140	2645.0
		100	40340	2565.0	70.0	50	41190	2650.0
	75+75	75	40315	2562.5	70.0	75	41165	2647.5
	75+100	75	40315	2562.5	65.0	100	41140	2645.0
		100	40340	2565.0	65.0	75	41165	2647.5
	100+100	100	40340	2565.0	60.0	100	41140	2645.0
Note 1: Carriers in increasing frequency order.								

intra-band contiguous CA

E-UTRA CA configuration / Bandwidth combination set					
E-UTRA CA configuration	Component carriers in order of increasing carrier frequency			Maximum aggregated bandwidth [MHz]	Bandwidth combination set
	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]		
CA_2C	5	20		40	0
	10	15, 20			
	15	10, 15, 20			
	20	5, 10, 15, 20			
CA_5B	5,10	10		20	0
	10	5			
CA_7C	15	15		40	0
	20	20			
	10	20		40	1
	15	15, 20			
	20	10, 15, 20			
CA_12B	5	5, 10		15	0
CA_38C	15	15		40	0
	20	20			
CA_41C	10	20		40	0
	15	15, 20			
	20	10, 15, 20			
	5, 10	20		40	1
	15	15, 20			
	20	5, 10, 15, 20			
	10	15, 20		40	2
	15	10, 15, 20			
	20	10, 15, 20			
	10	20		40	3
	20	20			
CA_41D	10	20		60	0
	10	15, 20			
	15	20			
	15	10, 15, 20			
	20	15, 20			
	20	10, 15, 20			

NOTE 1: The CA configuration refers to an operating band and a CA bandwidth class specified in Table 5.6A-1 (the indexing letter). Absence of a CA bandwidth class for an operating band implies support of all classes.

NOTE 2: For the supported CC bandwidth combinations, the CC downlink and uplink bandwidths are equal.

Table: Test frequencies for CA_2C

Range	CC-Combo / N _{RB_agg} [RB]	CC1 Note1					CC2 Note1				
		BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]	BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]
Low	25+100	25	18633	1853.3	633	1933.3	100	18750	1865	750	1945
		100	18700	1860	700	1940	25	18817	1871.7	817	1951.7
	50+75	50	18653	1855.3	653	1935.3	75	18773	1867.3	773	1947.3
		75	18675	1857.5	675	1937.5	50	18795	1869.5	795	1949.5
	50+100	50	18655	1855.5	655	1935.5	100	18799	1869.9	799	1949.9
		100	18700	1860	700	1940	50	18844	1874.4	844	1954.4
	75+75	75	18675	1857.5	675	1937.5	75	18825	1872.5	825	1952.5
		75	18678	1857.8	678	1937.8	100	18849	1874.9	849	1954.9
	75+100	100	18700	1860	700	1940	75	18871	1877.1	871	1957.1
		100	18700	1860	700	1940	100	18898	1879.8	898	1959.8
Mid	25+100	25	18808	1870.8	808	1950.8	100	18925	1882.5	925	1962.5
		100	18875	1877.5	875	1957.5	25	18992	1889.2	992	1969.2
	50+75	50	18829	1872.9	829	1952.9	75	18949	1884.9	949	1964.9
		75	18851	1875.1	851	1955.1	50	18971	1887.1	971	1967.1
	50+100	50	18806	1870.6	806	1950.6	100	18950	1885	950	1965
		100	18851	1875.1	851	1955.1	50	18995	1889.5	995	1969.5
	75+75	75	18825	1872.5	825	1952.5	75	18975	1887.5	975	1967.5
		75	18803	1870.3	803	1950.3	100	18974	1887.4	974	1967.4
	75+100	100	18826	1872.6	826	1952.6	75	18997	1889.7	997	1969.7
		100	18801	1870.1	801	1950.1	100	18999	1889.9	999	1969.9
	100+100	25	18983	1888.3	983	1968.3	100	19100	1900	1100	1980
		100	19050	1895	1050	1975	25	19167	1906.7	1167	1986.7
High	50+75	50	19005	1890.5	1005	1970.5	75	19125	1902.5	1125	1982.5
		75	19027	1892.7	1027	1972.7	50	19147	1904.7	1147	1984.7
	50+100	50	18956	1885.6	956	1965.6	100	19100	1900	1100	1980
		100	19001	1890.1	1001	1970.1	50	19145	1904.5	1145	1984.5
	75+75	75	18975	1887.5	975	1967.5	75	19125	1902.5	1125	1982.5
		75	18929	1882.9	929	1962.9	100	19100	1900	1100	1980
	75+100	100	18951	1885.1	951	1965.1	75	19122	1902.2	1122	1982.2
		100	18902	1880.2	902	1960.2	100	19100	1900	1100	1980
	100+100	25	18983	1888.3	983	1968.3	100	19100	1900	1100	1980
		100	19050	1895	1050	1975	25	19167	1906.7	1167	1986.7

Note 1: Carriers in increasing frequency order.

Table: Test frequencies for CA_5B

Range	CC-Combo / N _{RB_agg} [RB]	CC1 Note1					CC2 Note1				
		BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]	BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]
Low	25+50	25	20428	826.8	2428	871.8	50	20500	834	2500	879
	50+25	50	20450	829	2450	874	25	20522	836.2	2522	881.2
	50+50	50	20450	829	2450	874	50	20549	838.9	2549	883.9
Mid	25+50	25	20478	831.8	2478	876.8	50	20550	839	2550	884
	50+25	50	20500	834	2500	879	25	20572	841.2	2572	886.2
	50+50	50	20476	831.6	2476	876.6	50	20575	841.5	2575	886.5
High	25+50	25	20528	836.8	2528	881.8	50	20600	844	2600	889
	50+25	50	20550	839	2550	884	25	20622	846.2	2622	891.2
	50+50	50	20501	834.1	2501	879.1	50	20600	844	2600	889

Note 1: Carriers in increasing frequency order.

Table: Test frequencies for CA_7C

Range	CC-Combo / NRB_agg [RB]	CC1 Note1					CC2 Note1				
		BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]	BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]
Low	50+100	50	20805	2505.5	2805	2625.5	100	20949	2519.9	2949	2639.9
		100	20850	2510	2850	2630	50	20994	2524.4	2994	2644.4
	75+75	75	20825	2507.5	2825	2627.5	75	20975	2522.5	2975	2642.5
	75+100	75	20828	2507.8	2828	2627.8	100	20999	2524.9	2999	2644.9
		100	20850	2510	2850	2630	75	21021	2527.1	3021	2647.1
	100+100	100	20850	2510	2850	2630	100	21048	2529.8	3048	2649.8
Mid	50+100	50	21006	2525.6	3006	2645.6	100	21150	2540	3150	2660
		100	21051	2530.1	3051	2650.1	50	21195	2544.5	3195	2664.5
	75+75	75	21025	2527.5	3025	2647.5	75	21175	2542.5	3175	2662.5
	75+100	75	21003	2525.3	3003	2645.3	100	21174	2542.4	3174	2662.4
		100	21026	2527.6	3026	2647.6	75	21197	2544.7	3197	2664.7
	100+100	100	21001	2525.1	3001	2645.1	100	21199	2544.9	3199	2664.9
High	50+100	50	21206	2545.6	3206	2665.6	100	21350	2560	3350	2680
		100	21251	2550.1	3251	2670.1	50	21395	2564.5	3395	2684.5
	75+75	75	21225	2547.5	3225	2667.5	75	21375	2562.5	3375	2682.5
	75+100	75	21179	2542.9	3179	2662.9	100	21350	2560	3350	2680
		100	21201	2545.1	3201	2665.1	75	21372	2562.2	3372	2682.2
	100+100	100	21152	2540.2	3152	2660.2	100	21350	2560	3350	2680
Note 1: Carriers in increasing frequency order.											

Table: Test frequencies for CA_12B

Range	CC-Combo / NRB_agg [RB]	CC1 Note1					CC2 Note1				
		BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]	BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]
Low	25+25	25	23035	701.5	5035	731.5	25	23083	706.3	5083	736.3
	25+50	25	23035	701.5	5035	731.5	50	23107	708.7	5107	738.7
Mid	25+25	25	23070	705	5070	735	25	23118	709.8	5118	739.8
	25+50	25	23045	702.5	5045	732.5	50	23117	709.7	5117	739.7
High	25+25	25	23107	708.7	5107	738.7	25	23155	713.5	5155	743.5
	25+50	25	23058	703.8	5058	733.8	50	23130	711	5130	741
Note 1: Carriers in increasing frequency order.											

Table: Test frequencies for CA_38C

Range	CC-Combo / NRB_agg [RB]	CC1 Note1			CC2 Note1		
		BW [RB]	N _{UL/DL}	f _{UL/DL} [MHz]	BW [RB]	N _{UL/DL}	f _{UL/DL} [MHz]
Low	75+75	75	37825	2577.5	75	37975	2592.5
	100+100	100	37850	2580	100	38048	2599.8
Mid	75+75	75	37925	2587.5	75	38075	2602.5
	100+100	100	37900	2585	100	38098	2604.8
High	75+75	75	38025	2597.5	75	38175	2612.5
	100+100	100	37952	2590.2	100	38150	2610

Note 1: Carriers in increasing frequency order.

Table: Test frequencies for CA_41C(2555-2655MHz)

Range	CC-Combo / NRB_agg [RB]	CC1 Note1			CC2 Note1		
		BW [RB]	N _{UL/DL}	f _{UL/DL} [MHz]	BW [RB]	N _{UL/DL}	f _{UL/DL} [MHz]
Low	25+100	25	40265	2557.5	100	40382	2569.2
		100	40340	2565	25	40457	2576.7
	50+100	50	40290	2560	100	40434	2574.4
		100	40340	2565	50	40484	2579.4
	75+75	75	40315	2562.5	75	40465	2577.5
	75+100	75	40315	2562.5	100	40486	2579.6
		100	40340	2565	75	40511	2582.1
	100+100	100	40340	2565	100	40538	2584.8
Mid	25+100	25	40528	2583.8	100	40645	2595.5
		100	40595	2590.5	25	40712	2602.2
	50+100	50	40526	2583.6	100	40670	2598.0
		100	40571	2588.1	50	40715	2602.5
	75+75	75	40545	2585.5	75	40695	2600.5
	75+100	75	40523	2583.3	100	40694	2600.4
		100	40546	2585.6	75	40717	2602.7
	100+100	100	40521	2583.1	100	40719	2602.9
High	25+100	25	41023	2633.3	100	41140	2645
		100	41098	2640.8	25	41215	2652.5
	50+100	50	40996	2630.6	100	41140	2645
		100	41046	2635.6	50	41190	2650
	75+75	75	41014	2632.5	75	41165	2647.5
	75+100	75	40969	2627.9	100	41140	2645
		100	40994	2630.4	75	41165	2647.5
	100+100	100	40942	2625.2	100	41140	2645

Note 1: Carriers in increasing frequency order.

Table: Test frequencies for CA_41D(2555-2655MHz)

Range	CC-Combo / N _{RB_agg} [RB]	CC1 Note1			CC2 Note1			CC3 Note1		
		BW [RB]	N _{UL/DL}	f _{UL/DL} [MHz]	BW [RB]	N _{UL/DL}	f _{UL/DL} [MHz]	BW [RB]	N _{UL/DL}	f _{UL/DL} [MHz]
Low	50+75+100	50	40295	2560.5	75	40415	2572.5	100	40586	2589.6
		50	40295	2560.5	100	40439	2574.9	75	40610	2592.0
		75	40318	2562.8	50	40438	2574.8	100	40582	2589.2
		75	40318	2562.8	100	40489	2579.9	50	40633	2594.3
		100	40340	2565	50	40484	2579.4	75	40604	2591.4
		100	40340	2565	75	40511	2582.1	50	40631	2594.1
	50+100+100	50	40295	2560.5	100	40439	2574.9	100	40637	2594.7
		100	40340	2565	50	40484	2579.4	100	40628	2593.8
		100	40340	2565	100	40538	2584.8	50	40682	2599.2
	75+75+100	75	40318	2562.8	75	40468	2577.8	100	40639	2594.9
		75	40318	2562.8	100	40489	2579.9	75	40660	2597.0
		100	40340	2565	75	40511	2582.1	75	40661	2597.1
	75+100+100	75	40318	2562.8	100	40489	2579.9	100	40687	2599.7
		100	40340	2565	75	40511	2582.1	100	40682	2599.2
		100	40340	2565	100	40538	2584.8	75	40709	2601.9
	100+100+100	100	40340	2565	100	40538	2584.8	100	40736	2604.6
Mid	50+75+100	50	40452	2576.2	75	40572	2588.2	100	40743	2605.3
		50	40451	2576.1	100	40595	2590.5	75	40766	2607.6
		75	40477	2578.7	50	40597	2590.7	100	40741	2605.1
		75	40474	2578.4	100	40645	2595.5	50	40789	2609.9
		100	40499	2580.9	50	40643	2595.3	75	40763	2607.3
		100	40497	2580.7	75	40668	2597.8	50	40788	2609.8
	50+100+100	50	40427	2573.7	100	40571	2588.1	100	40769	2607.9
		100	40476	2578.6	50	40620	2593	100	40764	2607.4
		100	40472	2578.2	100	40670	2598	50	40814	2612.4
	75+75+100	75	40448	2575.8	75	40598	2590.8	100	40769	2607.9
		75	40449	2575.9	100	40620	2593	75	40791	2610.1
		100	40471	2578.1	75	40642	2595.2	75	40792	2610.2
	75+100+100	75	40424	2573.4	100	40595	2590.5	100	40793	2610.3
		100	40449	2575.9	75	40620	2593	100	40791	2610.1
		100	40447	2575.7	100	40645	2595.5	75	40816	2612.6
	100+100+100	100	40422	2573.2	100	40620	2593	100	40818	2612.8
High	50+75+100	50	40849	2615.9	75	40969	2627.9	100	41140	2645
		50	40847	2615.7	100	40991	2630.1	75	41162	2647.2
		75	40876	2618.6	50	40996	2630.6	100	41140	2645
		75	40870	2618.0	100	41041	2635.1	50	41185	2649.5
		100	40898	2620.8	50	41042	2635.2	75	41162	2647.2
		100	40894	2620.4	75	41065	2637.5	50	41185	2649.5
	50+100+100	50	40798	2610.8	100	40942	2625.2	100	41140	2645
		100	40852	2616.2	50	40996	2630.6	100	41140	2645
		100	40843	2615.3	100	41041	2635.1	50	41185	2649.5
	75+75+100	75	40819	2612.9	75	40969	2627.9	100	41140	2645
		75	40820	2613.0	100	40991	2630.1	75	41162	2647.2
		100	40841	2615.1	75	41012	2632.2	75	41162	2647.2
	75+100+100	75	40771	2608.1	100	40942	2625.2	100	41140	2645
		100	40798	2610.8	75	40969	2627.9	100	41140	2645
		100	40793	2610.3	100	40991	2630.1	75	41162	2647.2
	100+100+100	100	40744	2605.4	100	40942	2625.2	100	41140	2645
Note 1: Carriers in increasing frequency order.										

Inter-band CA(two bands)

E-UTRA CA configuration / Bandwidth combination set									
E-UTRA CA Configuration	E-UTRA Bands	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	Maximum aggregated bandwidth [MHz]	Bandwidth combination set
CA_1A-5A	1				Yes			20	0
	5				Yes				
	1			Yes	Yes	Yes	Yes	30	1
	5			Yes	Yes				
CA_1A-26A	1			Yes	Yes	Yes	Yes	35	0
	26			Yes	Yes	Yes			
	1			Yes	Yes			20	1
	26			Yes	Yes				
CA_2A-5A	2			Yes	Yes	Yes	Yes	30	0
	5			Yes	Yes				
CA_2A-12A	2			Yes	Yes	Yes	Yes	30	0
	12			Yes	Yes				
	2			Yes	Yes	Yes	Yes	30	1
	12		Yes	Yes	Yes				
CA_2A-17A	2			Yes	Yes			20	0
	17			Yes	Yes				
CA_2A-28A	2			Yes	Yes	Yes	Yes	40	0
	28			Yes	Yes	Yes	Yes		
CA_2A-29A	2			Yes	Yes			20	0
	29		Yes	Yes	Yes				
	2			Yes	Yes			20	1
	29			Yes	Yes				
	2			Yes	Yes	Yes	Yes	30	2
	29			Yes	Yes				
CA_2C-29A	2	See CA_2C Bandwidth Combination Set 0 in table 5.4.2A.1-1						50	0
	29			Yes	Yes				
CA_3A-5A	3				Yes	Yes	Yes	30	0
	5			Yes	Yes				
	3				Yes			20	1
	5			Yes	Yes				
	3			Yes	Yes	Yes	Yes	30	2
	5			Yes	Yes				
CA_3C-5A	3	See CA_3C Bandwidth Combination Set 0 in Table 5.4.2A.1-1						50	0
	5			Yes	Yes				
CA_3A-7A	3			Yes	Yes	Yes	Yes	40	0
	7				Yes	Yes	Yes		
CA_3A-7C	3			Yes	Yes	Yes	Yes	60	0
	7	See CA_7C Bandwidth Combination Set 0 in table 5.4.2A.1-1							
CA_3C-7A	3	See CA_3C Bandwidth Combination Set 0 in table 5.4.2A.1-1						60	0
	7			Yes	Yes	Yes	Yes		
	20			Yes	Yes	Yes	Yes		
CA_3A-26A	3			Yes	Yes	Yes	Yes	35	0
	26			Yes	Yes	Yes			
	3			Yes	Yes			20	1
	26			Yes	Yes				
CA_4A-5A	4			Yes	Yes			20	0
	5			Yes	Yes				
	4			Yes	Yes	Yes	Yes	30	1
	5			Yes	Yes				
CA_4A-12A	4	Yes	Yes	Yes	Yes			20	0
	12			Yes	Yes				

	4	Yes	Yes	Yes	Yes	Yes	Yes	30	1
	12			Yes	Yes				
	4			Yes	Yes	Yes	Yes	30	2
	12		Yes	Yes	Yes				
	4			Yes	Yes			20	3
	12			Yes	Yes				
	4			Yes	Yes	Yes	Yes	30	4
	12			Yes	Yes				
CA_4A-12B	4			Yes	Yes	Yes	Yes	35	0
	12	See CA_12B Bandwidth Combination Set 0 in Table 5.4.2A.1-1							
CA_4A-17A	4			Yes	Yes			20	0
	17			Yes	Yes				
CA_4A-28A	4			Yes	Yes	Yes	Yes	40	0
	28			Yes	Yes	Yes	Yes		
CA_4A-29A	4			Yes	Yes			20	0
	29		Yes	Yes	Yes				
	4			Yes	Yes			20	1
	29			Yes	Yes				
	4			Yes	Yes	Yes	Yes	30	2
	29			Yes	Yes				
CA_5A-7A	5	Yes	Yes	Yes	Yes			30	0
	7				Yes	Yes	Yes		
CA_7A-8A	7				Yes	Yes	Yes	30	0
	8		Yes	Yes	Yes				
CA_7A-12A	7			Yes	Yes	Yes	Yes	30	0
	12			Yes	Yes				
CA_7A-20A	7				Yes	Yes	Yes	30	0
	20			Yes	Yes				
	7				Yes	Yes	Yes	40	1
	20			Yes	Yes	Yes	Yes		
CA_7A-28A	7			Yes	Yes	Yes	Yes	35	0
	28			Yes	Yes	Yes			
	41						Yes		
CA_7C-28A	7	See CA_7C bandwidth combination set 2 in table 5.6A.1-1						60	0
	28				Yes	Yes	Yes		
CA_39A-41A	39				Yes	Yes	Yes	40	0
	41						Yes		
CA_39A-41C	39				Yes	Yes	Yes	60	0
	41						Yes		
	41						Yes		
CA_39C-41A	39		See CA_39C Bandwidth Combination Set 0 in Table 5.6A.1-1					55	0
	41						Yes		
CA_39C-41C	39		See CA_39C Bandwidth Combination Set 0 in Table 5.6A.1-1					75	0
	41						Yes		
	41						Yes		

NOTE 1: The CA Configuration refers to a combination of an operating band and a CA bandwidth class specified in Table 5.4.2A-1 (the indexing letter). Absence of a CA bandwidth class for an operating band implies support of all classes.

NOTE 2: For each band combination, all combinations of indicated bandwidths belong to the set

NOTE 3: For the supported CC bandwidth combinations, the CC downlink and uplink bandwidths are equal

Note:1) For the inter-band CA combinations above, except CA_2A-29A, CA_2C-29A, CA_4A-12A, CA_4A-12B, CA_4A-17A, CA_4A-28A, CA_4A-29A, CA_7A-8A, B8/B12/B17/B28/B29 can not be PCC, other the listed bands above can be used as PCC or SCC.

2) The channel spacing and aggregated channel bandwidth for CA are identical to the associated specification in 3GPP TS 36.101 V13.5.0.

3) The reference test frequencies for CA refers to 3GPP TS 36.508 V13.1.0

Inter-band CA(three bands)

E-UTRA CA configuration / Bandwidth combination set									
E-UTRA CA Configuration	E-UTRA Bands	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	Maximum aggregated bandwidth [MHz]	Bandwidth combination set
CA_1A-3A-5A	1			Yes	Yes	Yes	Yes	50	0
	3			Yes	Yes	Yes	Yes		
	5			Yes	Yes				
	1			Yes	Yes			40	1
	3			Yes	Yes	Yes	Yes		
	5			Yes	Yes				
CA_1A-3A-26A	1			Yes	Yes	Yes	Yes	50	0
	3			Yes	Yes	Yes	Yes		
	26			Yes	Yes				
CA_3A-7A-8A	3			Yes	Yes	Yes		40	0
	7				Yes	Yes			
	8			Yes	Yes				
	3			Yes	Yes	Yes	Yes	50	1
	7				Yes	Yes	Yes		
	8			Yes	Yes				
CA_3A-7A-20A	3			Yes	Yes	Yes	Yes	60	0
	7				Yes	Yes	Yes		
	20			Yes	Yes	Yes	Yes		
CA_3A-7A-28A	3			Yes	Yes	Yes	Yes	60	0
	7			Yes	Yes	Yes	Yes		
	28			Yes	Yes	Yes	Yes		
CA_3A-7C-28A	3				Yes	Yes	Yes	80	0
	7	See CA_7C Bandwidth Combination Set 2 in Table 5.6A.1-1							
	28				Yes	Yes	Yes		
NOTE 1: The CA Configuration refers to a combination of an operating band and a CA bandwidth class specified in Table 5.6A-1 (the indexing letter). Absence of a CA bandwidth class for an operating band implies support of all classes.									
NOTE 2: For each band combination, all combinations of indicated bandwidths belong to the set.									
NOTE 3: For the supported CC bandwidth combinations, the CC downlink and uplink bandwidths are equal.									
NOTE 4: A terminal which supports a DL CA configuration shall support all the lower order fallback DL CA combinations and it shall support at least one bandwidth combination set for each of the constituent lower order DL combinations containing all the bandwidths specified within each specific combination set of the upper order DL combination.									

NOTE 1: The CA Configuration refers to a combination of an operating band and a CA bandwidth class specified in Table 5.6A-1 (the indexing letter). Absence of a CA bandwidth class for an operating band implies support of all classes.

NOTE 2: For each band combination, all combinations of indicated bandwidths belong to the set.

NOTE 3: For the supported CC bandwidth combinations, the CC downlink and uplink bandwidths are equal.

NOTE 4: A terminal which supports a DL CA configuration shall support all the lower order fallback DL CA combinations and it shall support at least one bandwidth combination set for each of the constituent lower order DL combinations containing all the bandwidths specified within each specific combination set of the upper order DL combination.

NOTE:

- 1) All the listed bands above can be used as PCC or SCC except for CA_3A_7A_8A, B8 cannot be PCC.
- 2) The channel spacing and aggregated channel bandwidth for CA are identical to the associated specification in 3GPP TS 36.101 V13.5.0.
- 3) The reference test frequencies for CA refers to 3GPP TS 36.508 V13.1.0
- 4) Testing is not required in bands or modes not intended/allowed for US operation.

1.4 Test specification(s)

ANSI C95.1:1992 /IEEE C95.1:1991	Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz.(IEEE Std C95.1-1991)
IEEE Std 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
RSS-102	Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands (Issue 5 of March 2015)
KDB941225 D01	3G SAR Procedures v03
KDB941225 D05	SAR for LTE Devices v02r03
KDB941225 D05A	LTE Rel.10 KDB Inquiry Sheet v01r02
KDB941225 D06	Hotspot SAR v02
KDB447498 D01	General RF Exposure Guidance v05r02
KDB648474 D04	Handsets SAR v01r02
KDB248227 D01	SAR Guidance for IEEE 802.11 Wi-Fi SAR v02
KDB865664 D01	SAR measurement 100 MHz to 6 GHz v01r04
KDB865664 D02	SAR Reporting v01r01
KDB690783 D01	SAR Listings on Grants v01r03
KDB 616217 D04	SAR for laptop and tablets v01r02

1.5 Testing laboratory

Test Site	The Reliability Laboratory of Huawei Technologies Co., Ltd.
Test Location	Section G1, Huawei Base Bantian, Longgang District, Shenzhen 518129, P.R. China
Telephone	+86 755 28780808
Fax	+86 755 89652518
State of accreditation	The Test laboratory (area of testing) is accredited according to ISO/IEC 17025. CNAS Registration number: L0310 A2LA TESTING CERT #2174.01 & 2174.02 & 2174.03

1.6 Applicant and Manufacturer

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

1.7 Application details

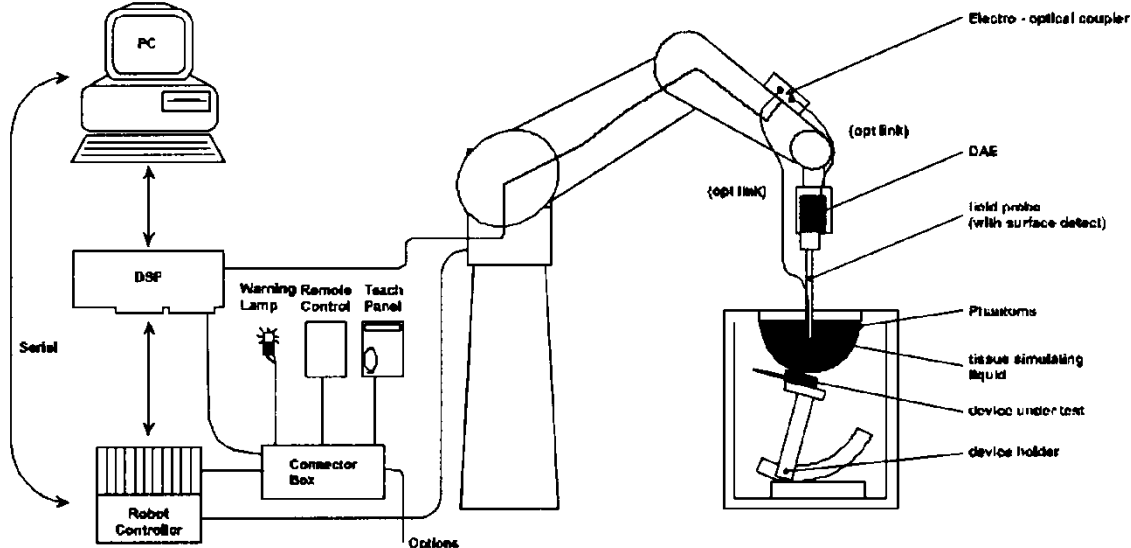
Start Date of test	2017-03-20
End Date of test	2017-03-27

1.8 Ambient Condition

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

2 SAR Measurement System

2.1 SAR Measurement Set-up



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

- A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).
- A dosimetric probe, i.e. an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- A data acquisition electronic (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- A unit to operate the optical surface detector which is connected to the EOC.
- The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY5/6 measurement server.
- The DASY measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation. A computer operating Windows 7.
- DASY5/6 software and SEMCAD data evaluation software.
- Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.
- The generic twin phantom enabling the testing of left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- System check dipoles allowing to validate the proper functioning of the system.

2.2 Test environment

The DASY measurement system is placed at the head end of a room with dimensions: 5 x 2.5 x 3 m³, the SAM phantom is placed in a distance of 75 cm from the side walls and 1.1m from the rear wall. Above the test system a 1.5 x 1.5 m² array of pyramid absorbers is installed to reduce reflections from the ceiling.

Picture 1 of the photo documentation shows a complete view of the test environment.

The system allows the measurement of SAR values larger than 0.005 mW/g.

2.3 Data Acquisition Electronics description

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

The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

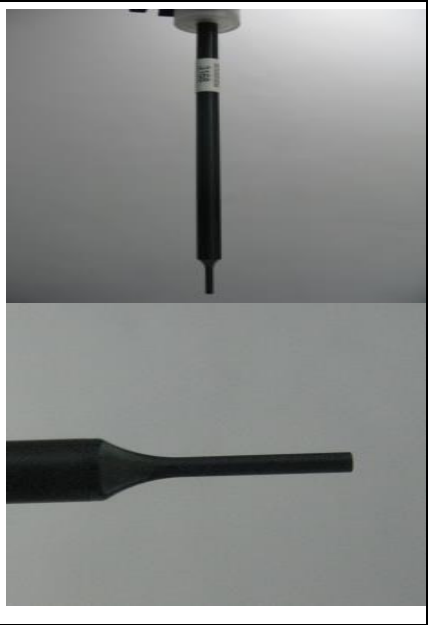
DAE4

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

2.4 Probe description

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

Isotropic E-Field Probe ES3DV3 for Dosimetric Measurements

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

Isotropic E-Field Probe EX3DV4 for Dosimetric Measurements

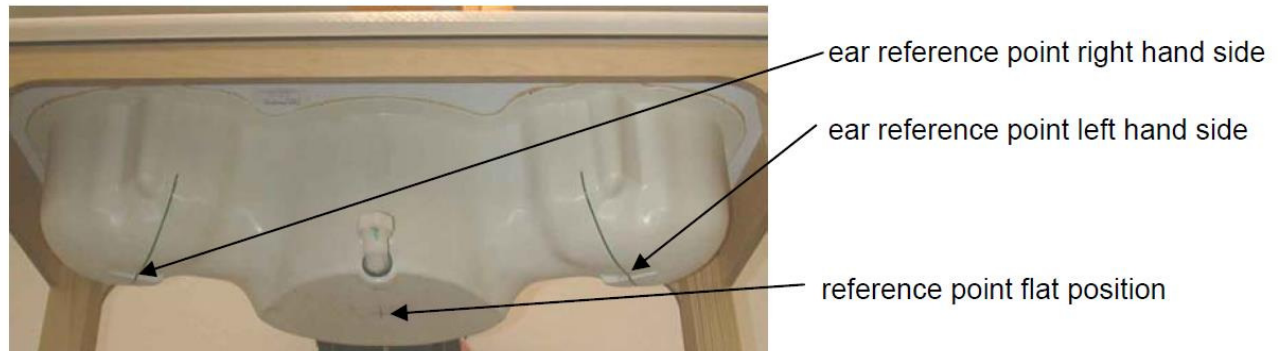
Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Calibration	ISO/IEC 17025 calibration service available.	
Frequency	10 MHz to >6 GHz; Linearity: ± 0.2 dB (30 MHz to 6 GHz)	
Directivity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

2.5 Phantom description

SAM Twin Phantom

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

The following figure shows the definition of reference point:



ELI4 Phantom

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

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

2.6 Device holder description

The DASY device holder has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65° . The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. This device holder is used for standard mobile phones or PDA's only. If necessary an additional support of polystyrene material is used.



The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon = 3$ and loss tangent $\sigma = 0.02$. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

The device holder permits the device to be positioned with a tolerance of $\pm 1^\circ$ in the tilt angle.

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

Therefore those devices are normally only tested at the flat part of the SAM.

2.7 Test Equipment List

This table gives a complete overview of the SAR measurement equipment.

Devices used during the test described are marked ☒

	Manufacturer	Device	Type	Serial number	Date of last calibration*	Valid period
☒	SPEAG	Dosimetric E-Field Probe	EX3DV4	3736	2016-04-26	One year
☒	SPEAG	Dosimetric E-Field Probe	EX3DV4	3744	2016-07-26	One year
☒	SPEAG	Dosimetric E-Field Probe	ES3DV3	3168	2016-09-27	One year
☒	SPEAG	750MHz Dipole	D750V3	1044	2016-09-28	Three years
☒	SPEAG	835MHz Dipole	D835V2	4d059	2016-04-20	Three years
☒	SPEAG	1750MHz Dipole	D1750V2	1123	2014-07-08	Three years
☒	SPEAG	1900MHz Dipole	D1900V2	5d091	2015-09-21	Three years
☒	SPEAG	2450MHz Dipole	D2450V2	860	2016-11-23	Three years
☒	SPEAG	2600MHz Dipole	D2600V2	1021	2016-07-25	Three years
☒	SPEAG	5GHz Dipole	D5GHzV2	1155	2016-04-26	Three years
☒	SPEAG	Data acquisition electronics	DAE4	852	2016-04-20	One year
☒	SPEAG	Data acquisition electronics	DAE4	1236	2016-11-22	One year
☒	SPEAG	Software	DASY	N/A	NCR	NCR
☒	SPEAG	Twin Phantom	SAM1	TP-1475	NCR	NCR
☒	SPEAG	Twin Phantom	SAM2	TP-1474	NCR	NCR
☒	SPEAG	Twin Phantom	SAM3	TP-1597	NCR	NCR
☒	SPEAG	Twin Phantom	SAM4	TP-1620	NCR	NCR
☐	SPEAG	Twin Phantom	SAM5	TP-1894	NCR	NCR
☐	SPEAG	Twin Phantom	SAM6	TP-1892	NCR	NCR
☒	R & S	Universal Radio Communication Tester	CMU 200	111379	2016-12-29	One year
☒	R & S	Universal Radio Communication Tester	CMW 500	158850	2016-06-09	One year
☒	Agilent	Network Analyser	E5071C	MY46213349	2016-12-30	One year
☒	Agilent	Dielectric Probe Kit	85070E	2484	NCR	NCR
☒	Agilent	Signal Generator	E8257D	MY49281095	2016-08-05	One year
☒	MINI-CIRCUITS	Amplifier	ZHL-42W	QA1402001	NCR	NCR
☒	AR	Directional Coupler	DC7144M1	311190	2016-05-13	NCR
☒	MINI-CIRCUITS	Amplifier	ZVE-8G+	N523101139	NCR	One year
☒	Agilent	Dual Directional Coupler	772D	MY52180173	2017-01-03	One year
☒	R & S	Power Meter	NRP	100740	2016-05-18	One year
☒	R & S	Power Meter Sensor	NRP-Z11	106288	2016-07-07	One year
☒	Agilent	Power Meter	E4417A	MY45101339	2016-12-30	One year
☒	Agilent	Power Meter Sensor	E9321A	MY44420359	2016-12-30	One year

Note: 1) Per KDB865664D01 requirements for dipole calibration, the test laboratory has adopted three-year extended calibration interval. Each measured dipole is expected to evaluate with the following criteria at least on annual interval in Appendix C.

- There is no physical damage on the dipole;
- System check with specific dipole is within 10% of calibrated value;
- The most recent return-loss result, measured at least annually, deviates by no more than 20% from the previous measurement.
- The most recent measurement of the real or imaginary parts of the impedance, measured at least annually is within 5Ω from the previous measurement.

2) Network analyzer probe calibration against air, distilled water and a shorting block performed before measuring liquid parameters.

3) *All the equipments are within the valid period when the tests are performed.

3 SAR Measurement Procedure

3.1 Scanning procedure

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

- The “reference” and “drift” measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the DUT’s output power and should vary max. +/- 5 %.
- The “surface check” measurement tests the optical surface detection system of the DASY5/6 system by repeatedly detecting the surface with the optical and mechanical surface detector and comparing the results. The output gives the detecting heights of both systems, the difference between the two systems and the standard deviation of the detection repeatability. Air bubbles or refraction in the liquid due to separation of the sugar-water mixture gives poor repeatability (above $\pm 0.1\text{mm}$). To prevent wrong results tests are only executed when the liquid is free of air bubbles. The difference between the optical surface detection and the actual surface depends on the probe and is specified with each probe. (It does not depend on the surface reflectivity or the probe angle to the surface within $\pm 30^\circ$.)
- The “area scan” measures the SAR above the DUT or verification dipole on a parallel plane to the surface. It is used to locate the approximate location of the peak SAR with 2D spline interpolation. The robot performs a stepped movement along one grid axis while the local electrical field strength is measured by the probe. The probe is touching the surface of the SAM during acquisition of measurement values. The standard scan uses large grid spacing for faster measurement. Standard grid spacing for head measurements is 15 mm in x- and y- dimension ($\leq 2\text{GHz}$), 12 mm in x- and y- dimension (2-4 GHz) and 10mm in x- and y- dimension (4-6GHz). If a finer resolution is needed, the grid spacing can be reduced. Grid spacing and orientation have no influence on the SAR result. For special applications where the standard scan method does not find the peak SAR within the grid, e.g. mobile phones with flip cover, the grid can be adapted in orientation. Results of this coarse scan are shown in Appendix B.
- A “zoom scan” measures the field in a volume around the 2D peak SAR value acquired in the previous “coarse” scan. This is a fine grid with maximum scan spatial resolution: $\Delta x_{\text{zoom}}, \Delta y_{\text{zoom}} \leq 2\text{GHz} - \leq 8\text{mm}$, 2-4GHz - $\leq 5\text{ mm}$ and 4-6 GHz- $\leq 4\text{mm}$; $\Delta z_{\text{zoom}} \leq 3\text{GHz} - \leq 5\text{ mm}$, 3-4 GHz- $\leq 4\text{mm}$ and 4-6GHz- $\leq 2\text{mm}$ where the robot additionally moves the probe along the z-axis away from the bottom of the Phantom. DASY is also able to perform repeated zoom scans if more than 1 peak is found during area scan. In this document, the evaluated peak 1g and 10g averaged SAR values are shown in the 2D-graphics in Appendix B. Test results relevant for the specified standard (see chapter 1.4.) are shown in table form in chapter 7.2.
- A Z-axis scan measures the total SAR value at the x-and y-position of the maximum SAR value found during the cube scan. The probe is moved away in z-direction from the bottom of the SAM phantom in 2 mm steps. This measurement shows the continuity of the liquid and can - depending in the field strength – also show the liquid depth. A z-axis scan of the measurement with maximum SAR value is shown in Appendix B.

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

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

3.2 Spatial Peak SAR Evaluation

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

- The data between the dipole center of the probe and the surface of the phantom are extrapolated. This data cannot be measured since the center of the dipole is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is about 1 mm (see probe calibration sheet). The extrapolated data from a cube measurement can be visualized by selecting 'Graph Evaluated'.
- The maximum interpolated value is searched with a straight-forward algorithm. Around this maximum the SAR - values averaged over the spatial volumes (1g or 10 g) are computed using the 3d-spline interpolation algorithm. If the volume cannot be evaluated (i.e., if a part of the grid was cut off by the boundary of the measurement area) the evaluation will be started on the corners of the bottom plane of the cube.
- All neighboring volumes are evaluated until no neighboring volume with a higher average value is found.

Extrapolation

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

Interpolation

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

Volume Averaging

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

Advanced Extrapolation

DASY5/6 uses the advanced extrapolation option which is able to compensates boundary effects on E-field probes.

3.3 Data Storage and Evaluation

Data Storage

The DASY5 software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension "DAE4". The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated.

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

Data Evaluation by SEMCAD

The SEMCAD software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	- Sensitivity	Norm _i , a _{i0} , a _{i1} , a _{i2}
	- Conversion factor	ConvF _i
	- Diode compression point	Dcpi
Device parameters:	- Frequency	f
	- Crest factor	cf
Media parameters:	- Conductivity	σ
	- Density	ρ

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY5 components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics.

If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_{i2} \cdot cf/dcpi$$

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

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

evaluated:

$$\begin{aligned} \text{E-field probes:} \quad E_i &= (V_i / \text{Norm}_i \cdot \text{ConvF})^{1/2} \\ \text{H-field probes:} \quad H_i &= (V_i)^{1/2} \cdot (a_{i0} + a_{i1}f + a_{i2}f^2)/f \end{aligned}$$

with V_i = compensated signal of channel i (i = x, y, z)
 Norm_i = sensor sensitivity of channel i (i = x, y, z)
 [mV/(V/m)²] for E-field Probes
 ConvF = sensitivity enhancement in solution
 a_{ij} = sensor sensitivity factors for H-field probes
 f = carrier frequency [GHz]
 E_i = electric field strength of channel i in V/m
 H_i = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{\text{tot}} = (E_x^2 + E_y^2 + E_z^2)^{1/2}$$

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

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

with SAR = local specific absorption rate in mW/g
 E_{tot} = total field strength in V/m
 σ = conductivity in [mho/m] or [Siemens/m]
 ρ = equivalent tissue density in g/cm³

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

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

with P_{pwe} = equivalent power density of a plane wave in mW/cm²
 E_{tot} = total electric field strength in V/m
 H_{tot} = total magnetic field strength in A/m

4 System Verification Procedure

4.1 Tissue Verification

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine if the dielectric parameters are within the tolerances of the specified target values. The measured conductivity and relative permittivity should be within $\pm 5\%$ of the target values.

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

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

☒ Simulating Head Liquid (HBBL600-6000MHz), Manufactured by SPEAG:

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

☒ Simulating Body Liquid (MBBL600-6000MHz), Manufactured by SPEAG:

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

Table 4: Tissue Dielectric Properties

Salt: 99+% Pure Sodium Chloride; Sugar: 98+% Pure Sucrose; Water: De-ionized, 16M Ω + 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

Tissue Type	Target Frequency	Target Tissue		Measured Tissue		Deviation (Within +/-5%)		Liquid Temp.	Test Date
		ϵ_r	σ [S/m]	ϵ_r	σ [S/m]	$\Delta\epsilon_r$	$\Delta\sigma$		
750MHz Head	705	42.14	0.89	41.51	0.853	-1.50%	-4.19%	21.6°C	2017/3/21
	710	42.11	0.89	41.50	0.858	-1.45%	-3.54%		
	750	41.90	0.89	41.39	0.870	-1.22%	-2.24%		
835MHz Head	825	41.60	0.90	41.61	0.906	0.02%	0.66%	21.5°C	2017/3/21
	835	41.50	0.90	41.51	0.913	0.02%	1.48%		
	850	41.50	0.92	41.35	0.926	-0.36%	0.68%		
1750MHz Head	1710	40.10	1.35	40.53	1.320	1.07%	-2.22%	21.8°C	2017/3/20
	1730	40.10	1.36	40.52	1.332	1.05%	-2.06%		
	1750	40.10	1.37	40.51	1.344	1.02%	-1.90%		
	1800	40.00	1.40	40.44	1.378	1.10%	-1.57%		
1900MHz Head	1850	40.00	1.40	41.51	1.377	3.78%	-1.64%	21.8°C	2017/3/20
	1880	40.00	1.40	41.48	1.395	3.70%	-0.36%		
	1900	40.00	1.40	41.45	1.405	3.63%	0.36%		
	1910	40.00	1.40	41.44	1.411	3.60%	0.79%		
2450MHz Head	2410	39.30	1.76	40.28	1.835	2.49%	4.26%	21.4°C	2017/3/22
	2435	39.20	1.79	40.26	1.856	2.70%	3.69%		
	2450	39.20	1.80	40.20	1.871	2.55%	3.94%		
	2460	39.20	1.81	40.19	1.875	2.53%	3.59%		
2600MHz Head	2510	39.12	1.86	39.98	1.930	2.20%	3.76%	21.7°C	2017/3/21
	2535	39.10	1.89	40.00	1.957	2.30%	3.54%		
	2560	39.00	1.92	39.95	1.972	2.44%	2.87%		
	2600	39.00	1.96	39.86	2.013	2.21%	2.70%		
	2610	38.98	1.97	39.87	2.022	2.28%	2.64%		
	2645	38.93	2.01	39.79	2.044	2.21%	1.69%		
5GHz Head	5250	35.90	4.71	35.35	4.513	-1.53%	-4.18%	21.8°C	2017/3/22
	5600	35.50	5.07	34.61	5.009	-2.51%	-1.20%		
	5750	35.40	5.22	34.44	5.201	-2.71%	-0.36%		

750MHz Body	705	55.70	0.96	55.38	0.937	-0.57%	-2.45%	21.4°C	2017/3/21
	710	55.70	0.96	55.41	0.939	-0.52%	-2.24%		
	750	55.50	0.96	55.34	0.959	-0.29%	-0.14%		
835MHz Body	825	55.20	0.97	53.90	0.987	-2.36%	1.77%	21.5°C	2017/3/21
	835	55.20	0.97	53.87	0.991	-2.41%	2.12%		
	850	55.20	0.99	53.81	0.996	-2.52%	0.65%		
1750MHz Body	1710	53.50	1.46	52.59	1.439	-1.70%	-1.44%	21.8°C	2017/3/20
	1730	53.50	1.48	52.60	1.453	-1.68%	-1.82%		
	1750	53.40	1.49	52.59	1.467	-1.52%	-1.54%		
	1800	53.30	1.52	52.53	1.506	-1.44%	-0.92%		
1900MHz Body	1850	53.30	1.52	53.29	1.501	-0.02%	-1.25%	21.8°C	2017/3/20
	1880	53.30	1.52	53.27	1.522	-0.06%	0.13%		
	1900	53.30	1.52	53.25	1.534	-0.09%	0.92%		
	1910	53.30	1.52	53.23	1.541	-0.13%	1.38%		
2450MHz Body	2410	52.80	1.91	52.69	1.972	-0.21%	3.25%	22.0°C	2017/3/22
	2435	52.70	1.94	52.66	1.992	-0.08%	2.68%		
	2450	52.70	1.95	52.64	2.005	-0.11%	2.82%		
	2460	52.70	1.96	52.63	2.014	-0.13%	2.76%		
2600MHz Body	2510	52.62	2.03	51.86	2.105	-1.44%	3.69%	21.8°C	2017/3/21
	2535	52.59	2.07	51.82	2.130	-1.46%	2.90%		
	2560	52.57	2.09	51.78	2.156	-1.50%	3.16%		
	2600	52.50	2.16	51.72	2.195	-1.49%	1.62%		
	2610	52.36	2.18	51.71	2.205	-1.24%	1.15%		
	2645	52.26	2.24	51.66	2.241	-1.15%	0.04%		
5GHz Body	5250	48.90	5.36	49.67	5.415	1.57%	1.03%	21.8°C	2017/3/22
	5600	48.50	5.77	49.25	5.810	1.55%	0.69%		
	5750	48.30	5.94	48.68	6.091	0.79%	2.54%		

Table 5: Measured Tissue Parameter

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

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

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

4.2 System Check

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

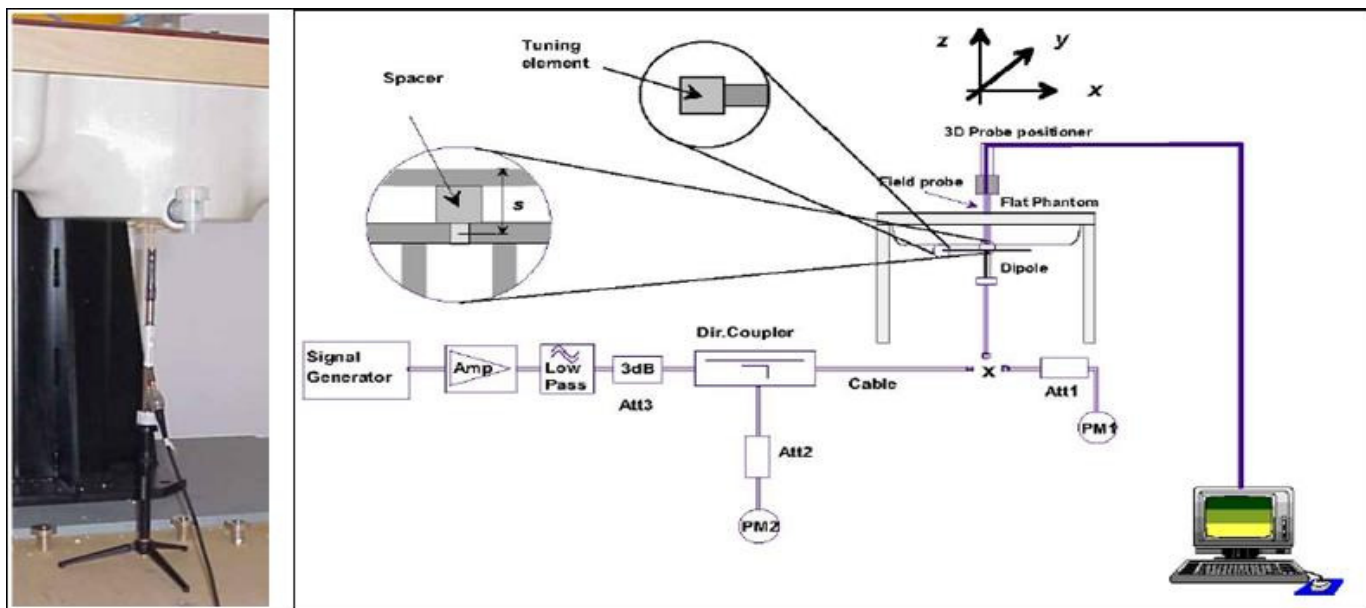
System Check	Target SAR (1W)		Measured SAR (Normalized to 1W)		Deviation (Within +/-10%)		Liquid Temp.	Test Date
	1-g (W/kg)	10-g (W/kg)	1-g (W/kg)	10-g (W/kg)	Δ 1-g	Δ 10-g		
750MHz Head	8.22	5.39	8.32	5.48	1.22%	1.67%	21.6°C	2017/3/21
835MHz Head	9.30	6.05	9.28	6.00	-0.22%	-0.83%	21.5°C	2017/3/21
1750MHz Head	35.10	18.60	34.92	18.44	-0.51%	-0.86%	21.8°C	2017/3/20
1900MHz Head	40.20	21.10	41.60	21.48	3.48%	1.80%	21.8°C	2017/3/20
2450MHz Head	51.90	24.40	52.40	24.20	0.96%	-0.82%	21.4°C	2017/3/22
2600MHz Head	57.10	25.60	57.20	25.72	0.18%	0.47%	21.7°C	2017/3/21
5250MHz Head	74.40	21.60	70.40	20.00	-5.38%	-7.41%	21.8°C	2017/3/22
750MHz Body	8.64	5.72	8.84	5.80	2.31%	1.40%	21.4°C	2017/3/21
835MHz Body	9.41	6.20	9.96	6.52	5.84%	5.16%	21.5°C	2017/3/21
1750MHz Body	36.30	19.50	36.96	19.56	1.82%	0.31%	21.8°C	2017/3/20
1900MHz Body	39.90	21.00	43.20	22.28	8.27%	6.10%	21.8°C	2017/3/20
2450MHz Body	50.60	23.80	55.60	25.36	9.88%	6.55%	22.0°C	2017/3/22
2600MHz Body	54.90	24.60	58.40	25.88	6.38%	5.20%	21.8°C	2017/3/21
5600MHz Body	76.40	21.50	78.70	22.00	3.01%	2.33%	21.8°C	2017/3/22

Table 6: System Check Results

4.3 System check Procedure

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

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



5 SAR measurement variability and uncertainty

5.1 SAR measurement variability

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

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

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

The detailed repeated measurement results are shown in Section 7.2.

5.2 SAR measurement uncertainty

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

6 SAR Test Configuration

6.1 Test Positions Configuration

6.1.1 General considerations

Per IEEE 1528-2013, two imaginary lines on the handset were established: the vertical centerline and the horizontal line (See Figure 1).

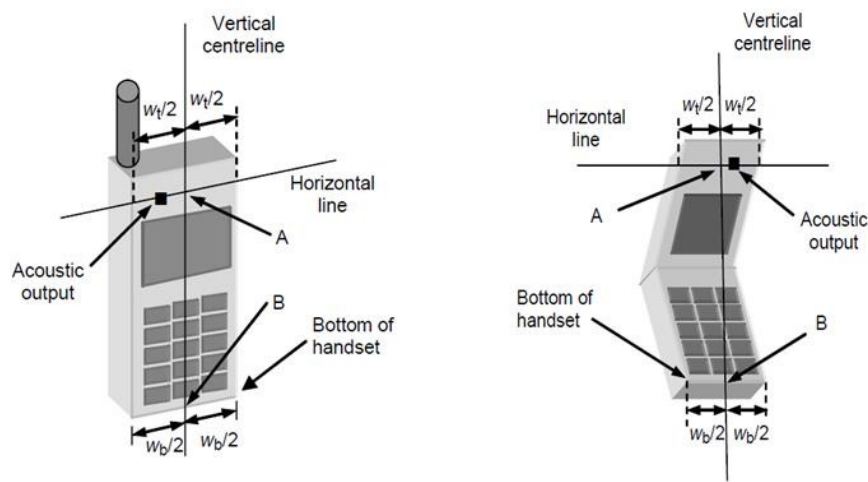


Figure 1 Hand Vertical Center & Horizontal Line Reference Points

6.1.2 Head Exposure Condition

Per IEEE 1528-2013, Head SAR measurements were made in the “cheek” position (See Figure 2) and the “tilt” position (See Figure 3). The device should be tested in both positions on left and right sides of the SAM phantom.

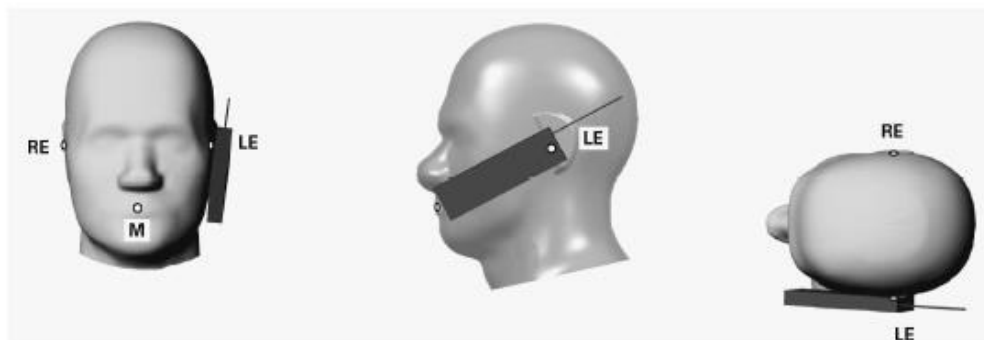


Figure 2 Front, Side and Top View of Cheek Position

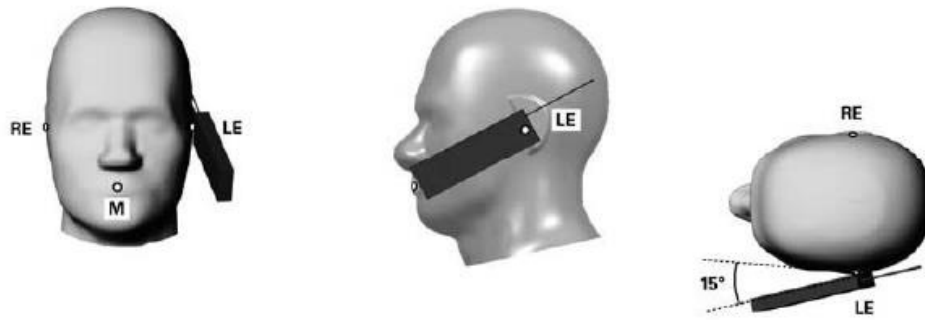


Figure 3 Front, Side and Top View of Tilt 15° Position

Note:

M Mouth reference point

LE Left ear reference point (ERP)

RE Right ear reference point(ERP)

6.1.3 Body-worn Exposure Condition

Body-worn operating configurations are tested with the holder attached to the device and positioned against a flat phantom with test separation distance of 15mm in a normal use configuration (See Figure 4). Per FCC KDB648474 D04v01, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is $> 1.2 \text{ W/kg}$, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

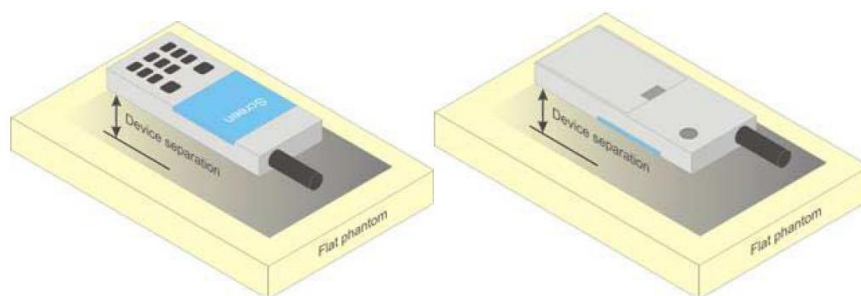


Figure 4 Test position for Body-Worn device

6.1.4 Hotspot Exposure Condition

Per FCC KDB 941225D06, The SAR test separation distance for hotspot mode is determined according to device form factor. When the overall length and width of a device is $> 9 \text{ cm} \times 5 \text{ cm}$, a test separation distance of 10 mm is required for hotspot mode SAR measurements. A test separation distance of 5 mm or less is required for smaller devices. Hotspot mode SAR is measured for all edges and surfaces of the device with a transmitting antenna located within 25 mm from that surface or edge; for the data modes, wireless technologies and frequency bands supporting hotspot mode. The SAR results are used to

determine simultaneous transmission SAR test exclusion for hotspot mode; otherwise, simultaneous transmission SAR measurement is required.

6.2 3G SAR Test Reduction Procedure

Per KDB941225 D01v03, in the following procedures, the mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq \frac{1}{4}$ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

6.3 GSM Test Configuration

SAR tests for GSM850 and GSM1900, a communication link is set up with a base station by air link. Using CMU200 the power lever is set to “5” and “0” in SAR of GSM850 and GSM1900. The tests in the band of GSM850 and GSM1900 are performed in the mode of GPRS/EGPRS function. Since the GPRS class is 12 for this EUT, it has at most 4 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslot is 5. The EGPRS class is 12 for this EUT, it has at most 4 timeslots in uplink, and at most 4 timeslots in downlink, the maximum total timeslot is 5.

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

6.4 UMTS Test Configuration

1) Output Power Verification

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

2) WCDMA

a. Head SAR Measurements

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

b. Body SAR Measurements-

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

3) HSDPA

SAR for body exposure configurations is measured according to the “Body SAR Measurements” procedures of 3G device. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq \frac{1}{4}$ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

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

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

Sub-test [↗]	β_c [↗]	β_d [↗]	β_d (SF) [↗]	β_c/β_d [↗]	$\beta_{hs}(1)$ [↗]	CM(dB)(2) [↗]	MPR (dB) [↗]
1 [↗]	2/15 [↗]	15/15 [↗]	64 [↗]	2/15 [↗]	4/15 [↗]	0.0 [↗]	0 [↗]
2 [↗]	12/15(3) [↗]	15/15(3) [↗]	64 [↗]	12/15(3) [↗]	24/15 [↗]	1.0 [↗]	0 [↗]
3 [↗]	15/15 [↗]	8/15 [↗]	64 [↗]	15/8 [↗]	30/15 [↗]	1.5 [↗]	0.5 [↗]
4 [↗]	15/15 [↗]	4/15 [↗]	64 [↗]	15/4 [↗]	30/15 [↗]	1.5 [↗]	0.5 [↗]

Note 1: ΔACK , $\Delta NACK$ and $\Delta CQI = 8$ $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$
Note 2 : CM=1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.[↗]
Note 3 : For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$ [↗]

Table 7: Sub-tests for UMTS Release 5 HSDPA

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

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

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

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

Table 9: HSDPA UE category

4) HSUPA

SAR for body exposure configurations is measured according to the “Body SAR Measurements” procedures of 3G device. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq \frac{1}{4}$ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

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

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

Sub-test [Ⓢ]	β_c [Ⓢ]	β_d [Ⓢ]	β_d (SF) [Ⓢ]	β_c/β_d [Ⓢ]	β_{hs} ⁽¹⁾ [Ⓢ]	β_{ec} [Ⓢ]	β_{ed} [Ⓢ]	β_{ec} ^(SF) [Ⓢ]	β_{ed} ^(code) [Ⓢ]	CM ⁽²⁾ [Ⓢ] (dB) [Ⓢ]	MP R [Ⓢ] (dB) [Ⓢ]	AG ⁽⁴⁾ [Ⓢ] Index [Ⓢ]	E-TFC I [Ⓢ]
1 [Ⓢ]	11/15 ⁽³⁾ [Ⓢ]	15/15 ⁽³⁾ [Ⓢ]	64 [Ⓢ]	11/15 ⁽³⁾ [Ⓢ]	22/15 [Ⓢ]	209/225 [Ⓢ]	1039/225 [Ⓢ]	4 [Ⓢ]	1 [Ⓢ]	1.0 [Ⓢ]	0.0 [Ⓢ]	20 [Ⓢ]	75 [Ⓢ]
2 [Ⓢ]	6/15 [Ⓢ]	15/15 [Ⓢ]	64 [Ⓢ]	6/15 [Ⓢ]	12/15 [Ⓢ]	12/15 [Ⓢ]	94/75 [Ⓢ]	4 [Ⓢ]	1 [Ⓢ]	3.0 [Ⓢ]	2.0 [Ⓢ]	12 [Ⓢ]	67 [Ⓢ]
3 [Ⓢ]	15/15 [Ⓢ]	9/15 [Ⓢ]	64 [Ⓢ]	15/9 [Ⓢ]	30/15 [Ⓢ]	30/15 [Ⓢ]	$\beta_{ed1}:47/15$ [Ⓢ] $\beta_{ed2}:47/15$ [Ⓢ]	4 [Ⓢ]	2 [Ⓢ]	2.0 [Ⓢ]	1.0 [Ⓢ]	15 [Ⓢ]	92 [Ⓢ]
4 [Ⓢ]	2/15 [Ⓢ]	15/15 [Ⓢ]	64 [Ⓢ]	2/15 [Ⓢ]	4/15 [Ⓢ]	2/15 [Ⓢ]	56/75 [Ⓢ]	4 [Ⓢ]	1 [Ⓢ]	3.0 [Ⓢ]	2.0 [Ⓢ]	17 [Ⓢ]	71 [Ⓢ]
5 [Ⓢ]	15/15 ⁽⁴⁾ [Ⓢ]	15/15 ⁽⁴⁾ [Ⓢ]	64 [Ⓢ]	15/15 ⁽⁴⁾ [Ⓢ]	30/15 [Ⓢ]	24/15 [Ⓢ]	134/15 [Ⓢ]	4 [Ⓢ]	1 [Ⓢ]	1.0 [Ⓢ]	0.0 [Ⓢ]	21 [Ⓢ]	81 [Ⓢ]
Note 1: Δ ACK, Δ NACK and Δ CQI = 8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$ Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference [Ⓢ] Note 3 : For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$ [Ⓢ] Note 4 : For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$ [Ⓢ] Note 5 : Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g [Ⓢ] Note 6: β_{ed} can not be set directly; it is set by Absolute Grant Value. [Ⓢ]													

Table 10:Subtests for UMTS Release 6 HSUPA

UE E-DCH Category	Maximum E-DCH Codes Transmitted	Number of HARQ Processes	E-DCH TTI(ms)	Minimum Spreading Factor	Maximum E-DCH Transport Block Bits	Max Rate (Mbps)
1	1	4	10	4	7110	0.7296
2	2	8	2	4	2798	1.4592
	2	4	10	4	14484	
3	2	4	10	4	14484	1.4592
4	2	8	2	2	5772	2.9185
	2	4	10	2	20000	2.00
5	2	4	10	2	20000	2.00
6 (No DPDCH)	4	8	10	2SF2&2SF	11484	5.76
	4	4	2	4	20000	2.00
7 (No DPDCH)	4	8	2	2SF2&2SF	22996	?
	4	4	10	4	20000	?

NOTE: When 4 codes are transmitted in parallel, two codes shall be transmitted with SF2 and two with SF4. UE categories 1 to 6 support QPSK only. UE category 7 supports QPSK and 16QAM. (TS25.306-7.3.0).

Table 11: HSUPA UE category

5) DC-HSDPA

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

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

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

Table E.5.0: Levels for HSDPA connection setup

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

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

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

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

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

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

Note:

1. The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table above.
2. Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.

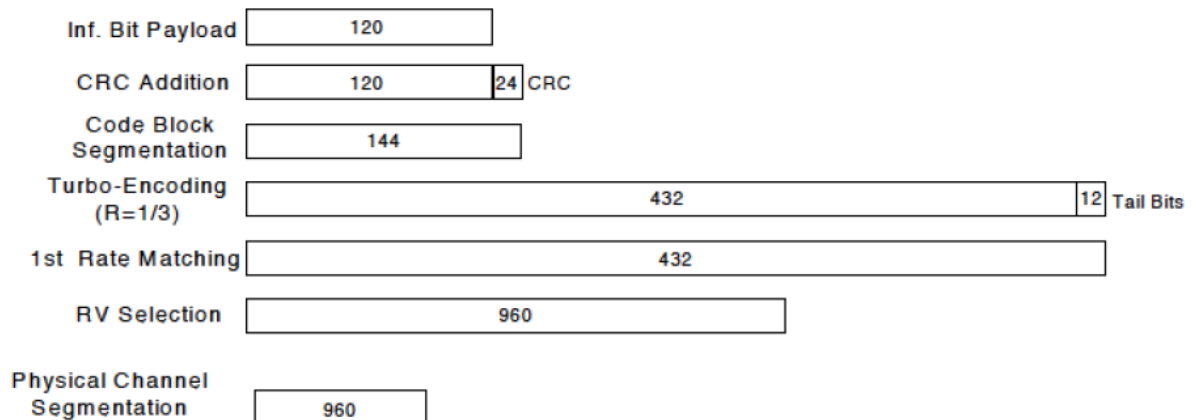


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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

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

Note 1: Δ ACK, Δ NACK and Δ CQI=8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$ ^o
Note 2: CM=1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.^o
Note 3: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$ ^o

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

Note:

- 1.The Dual Carriers transmission only applies to HSDPA physical channels
- 2.The Dual Carriers belong to the same Node and are on adjacent carriers.
- 3.The Dual Carriers do not support MIMO to serve UEs configured for dual cell operation
- 4.The Dual Carriers operate in the same frequency band .
- 5.The device doesn't support the modulation of 16QAM in uplink but 64QAM in downlink for DC-HSDPA mode.
- 6.The device doesn't support carrier aggregation for it just can operate in Release 8.

6.5 LTE Test Configuration

SAR for LTE band exposure configurations is measured according to the procedures of KDB 941225 D05. The CMW500 and/or MT8821C WideBand Radio Communication Tester was used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR test were performed with the same number of RB and RB offsets transmitting on all TTI frames (Maximum TTI)

1) Spectrum Plots for RB configurations

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

2) MPR

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

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

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

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

3) A-MPR

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

4) LTE procedures for SAR testing

A) Largest channel bandwidth standalone SAR test requirements

i) QPSK with 1 RB allocation

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

ii) QPSK with 50% RB allocation

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

iii) QPSK with 100% RB allocation

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

iv) Higher order modulations

For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in above sections to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is $> \frac{1}{2}$ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

B) Other channel bandwidth standalone SAR test requirements

For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in section A) to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is $> \frac{1}{2}$ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.

5) TDD LTE test configuration

According to KDB 941225 D05 SAR for LTE Devices v02r04, for Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

TDD LTE Band 38/41 supports 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special subframe configurations.

Figure 4.2-1: Frame structure type 2

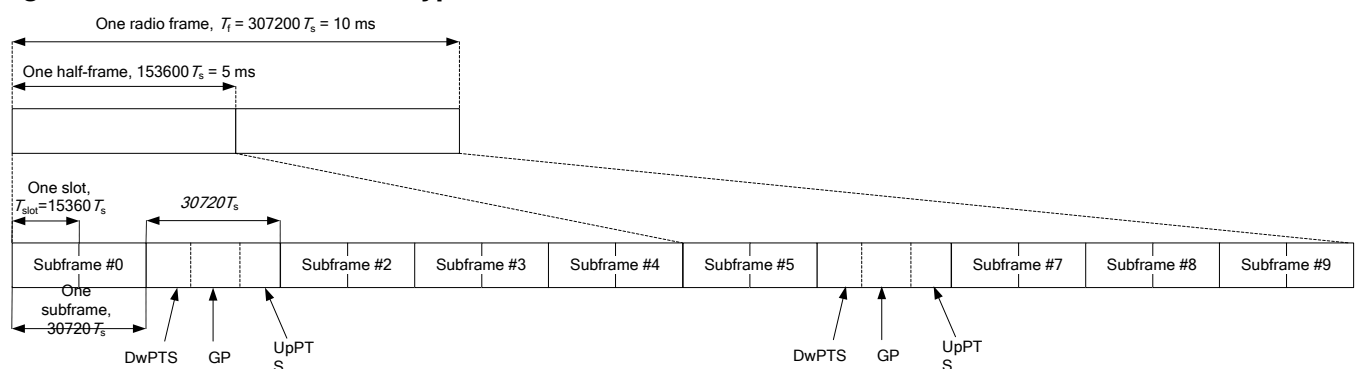


Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS)

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

Table 4.2-2: Uplink-downlink configurations

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

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

$$\text{Duty cycle} = (30720T_s \cdot \text{Ups} + \text{Uplink Component} \cdot \text{Specials}) / (307200T_s)$$

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

$$\text{Uplink Component} = \text{UpPTS}$$

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

$$\text{Duty cycle} = [(30720T_s \cdot \text{Ups}) + \text{UpPTS} \cdot \text{Specials}] / (307200T_s)$$

And we can get different Duty cycles under different configurations:

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

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

6.6 WiFi Test Configuration

For WiFi SAR testing, a communication link is set up with the testing software for WiFi mode test. During the test, at the each test frequency channel, the EUT is operated at the RF continuous emission mode. The test procedures in KDB 248227D01 are applied.

6.6.1 Initial Test Position Procedure

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

6.6.2 Initial Test Configuration Procedure

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

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

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

6.6.3 Sub Test Configuration Procedure

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

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

6.6.4 WiFi 2.4G SAR Test Procedures

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

A) 802.11b DSSS SAR Test Requirements

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

- 1) When the *reported* SAR of the highest measured maximum output power channel (section 3.1 of of KDB 248227D01v02) for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.
- 2) When the *reported* SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any *reported* SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

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

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied (section 5.3 of of KDB 248227D01v02). SAR is not required for the following 2.4 GHz OFDM conditions.

- 1) When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.
- 2) When the highest *reported* SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

C) 802.11g Wi-Fi CDD and 802.11 n Wi-Fi MIMO specification

The device supports Wi-Fi CDD mode when Wi-Fi working in 802.11g mode.

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

Besides, the device also supports Wi-Fi MIMO mode in 802.11 n. The two Wi-Fi antennas can only transmit at the same time in 802.11 n/ac. For 802.11 g/a WIFI CDD and 802.11n/ac Wi-Fi MIMO SAR test, only the scenario two Wi-Fi antennas transmitting at the same time are supported and need to be considered. The common Initial Test Position and OFDM Initial Test Configuration Procedures per KDB 248227D01v02r01 are applied for 2.4G Wi-Fi 802.11g/n SAR test respectively in all applicable RF exposure conditions.

6.6.5 WiFi 5G SAR Test Procedures

A) U-NII-1 and U-NII-2A Bands

For devices that operate in only one of the U-NII-1 and U-NII-2A bands, the normally required SAR procedures for OFDM configurations are applied. For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following:

- 1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, both bands are tested independently for SAR.
- 2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, both bands are tested independently for SAR.
- 3) The two U-NII bands may be aggregated to support a 160 MHz channel on channel number 50. Without additional testing, the maximum output power for this is limited to the lower of the maximum output power certified for the two bands. When SAR measurement is required for at least one of the bands and the highest reported SAR adjusted by the ratio of specified maximum output power of aggregated to standalone band is > 1.2 W/kg, SAR is required for the 160 MHz channel. This procedure does not apply to an aggregated band with maximum output higher than the standalone band(s); the aggregated band must be tested independently for SAR. SAR is not required when the 160 MHz channel is operating at a reduced maximum power and also qualifies for SAR test exclusion.

B) U-NII-2C and U-NII-3 Bands

The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. When Terminal Doppler Weather Radar (TDWR) restriction applies, all channels that operate at 5.60 – 5.65 GHz must be included to apply the SAR test reduction and measurement procedures.

When the same transmitter and antenna(s) are used for U-NII-2C band and U-NII-3 band or 5.8 GHz band of §15.247, the bands may be aggregated to enable additional channels with 20, 40 or 80 MHz bandwidth to span across the band gap, as illustrated in Appendix B. The maximum output power for the additional band gap channels is limited to the lower of those certified for the bands. Unless band gap channels are permanently disabled, they must be considered for SAR testing. The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. To maintain SAR measurement accuracy and to facilitate test reduction, the channels in U-NII-2C band above 5.65 GHz may be grouped with the 5.8 GHz channels in U-NII-3 or §15.247 band to enable two SAR probe calibration frequency points to cover the bands, including the band gap channels. When band gap channels are supported and the bands are not aggregated for SAR testing, band gap channels must be considered independently in each band according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

C) OFDM Transmission Mode SAR Test Configuration and Channel Selection Requirements

The initial test configuration for 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple configurations in a frequency band have the same specified maximum output power, the initial test configuration is determined according to the following steps applied sequentially.

- 1) The largest channel bandwidth configuration is selected among the multiple configurations with the same specified maximum output power.
 - 2) If multiple configurations have the same specified maximum output power and largest channel bandwidth, the lowest order modulation among the largest channel bandwidth configurations is selected.
 - 3) If multiple configurations have the same specified maximum output power, largest channel bandwidth and lowest order modulation, the lowest data rate configuration among these configurations is selected.
 - 4) When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n.
- After an initial test configuration is determined, if multiple test channels have the same measured maximum output power, the channel chosen for SAR measurement is determined according to the following. These channel selection procedures apply to both the initial test configuration and subsequent test configuration(s), with respect to the default power measurement procedures or additional power measurements required for further SAR test reduction. The same procedures also apply to subsequent highest output power channel(s) selection.
- 1) The channel closest to mid-band frequency is selected for SAR measurement.
 - 2) For channels with equal separation from mid-band frequency; for example, high and low channels or two mid-band channels, the higher frequency (number) channel is selected for SAR measurement.

D) SAR Test Requirements for OFDM configurations

When SAR measurement is required for 802.11 a/n/ac OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. When the same transmitter and antenna(s) are used for U-NII-1 and U-NII-2A bands, additional SAR test reduction applies. When band gap channels between U-NII-2C band and 5.8 GHz U-NII-3 or §15.247 band are supported, the highest maximum output power transmission mode configuration and maximum output power channel across the bands must be used to determine SAR test reduction, according to the initial test configuration and subsequent test configuration requirements. In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.

6.7 Proximity sensor power reduction Configurations

This device uses a proximity sensor that shares the same metallic electrode as the main transmitting antenna to facilitate triggering in typical user interactivity with the device.

Due to the operating configurations and exposure conditions required by the device, the proximity sensor is used to indicate when the device is held close to a user's body exposure condition. It utilizes the proximity sensor to reduce the output power in specific wireless and operating modes of main antenna to ensure SAR compliance.

The following tables summarize the key power reduction information for proximity sensor. The similar test procedures in KDB 616217 should be applied to determine proximity sensor triggering distances, and sensor coverage for normal and tilt positions. To ensure all production units are compliant, it is generally necessary to reduce the triggering distance determined from the triggering tests by 1 mm, or more if it is necessary, and use the smallest distance for movements to and from the phantom, minus 1 mm, as the sensor triggering distance for determining the SAR measurement distance.

Main antenna		
Band	Sensor Trigger Distance	Power Reduction (dB)
LTE B7	Front side: 15mm Back side: 12mm Bottom side:12mm	4.5
LTE B38	Front side: 15mm Back side: 12mm Bottom side:12mm	4.5

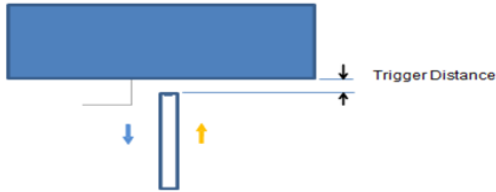
Note:

- 1) Since the capacitive proximity sensor triggering distance for the front side is 15mm, a conservative distance of 14mm was required for additional SAR test at maximum power level with sensor off.
- 2) Since the capacitive proximity sensor triggering distance for the back side and bottom side is 12mm, a conservative distance of 11mm was required for additional SAR test at maximum power level with sensor off.
- 3) SAR tests with proximity sensor power reduction are only required for the sides of frequency bands in the table above. For the other sides or other frequency bands of the device, SAR is still tested at the maximum power level with sensor off.

1) Procedures for determining proximity sensor triggering distances

The device was tested by the test lab to determine the proximity sensor triggering distances for the front side, back side and bottom side of the device. To ensure all production units are compliant, the smallest separation distance determined by the sensor triggering minus 1 mm, must be used as the test separation distance for SAR testing.

the proximity sensor triggering distance measurement method are as below:



Picture: Proximity sensor triggering distances assessment Bottom Side



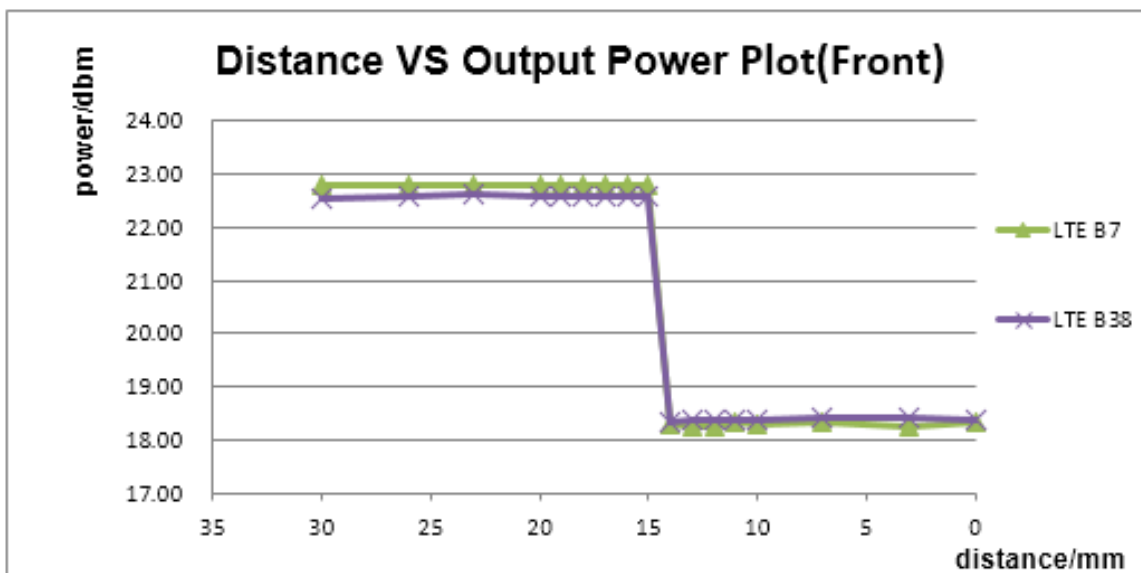
Picture: Proximity sensor triggering distances assessment Front Side and Back side

Table: Summary of Trigger Distances

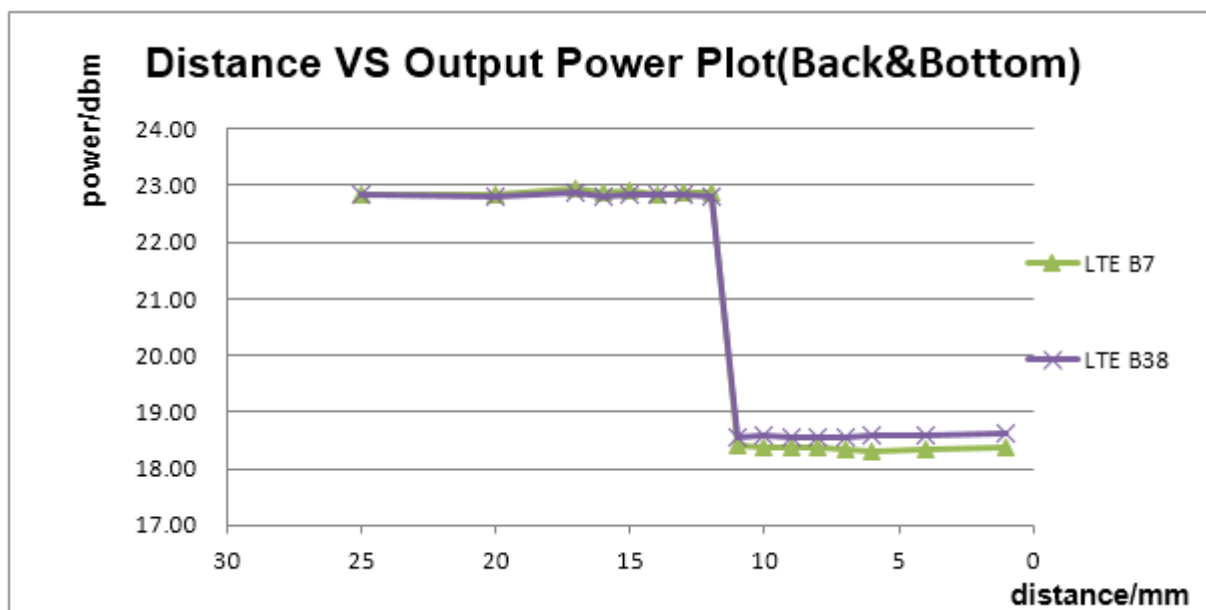
Band(MHz)	Trigger distance-Front Side		Trigger distance-Back/Bottom Side	
	Moving toward phantom	Moving away from phantom	Moving toward phantom	Moving away from phantom
LTE Band VII	15mm	15mm	12mm	12mm
LTE Band XXXVIII	15mm	15mm	12mm	12mm

The detailed conducted power measurement data to determine the triggering distances is as below:

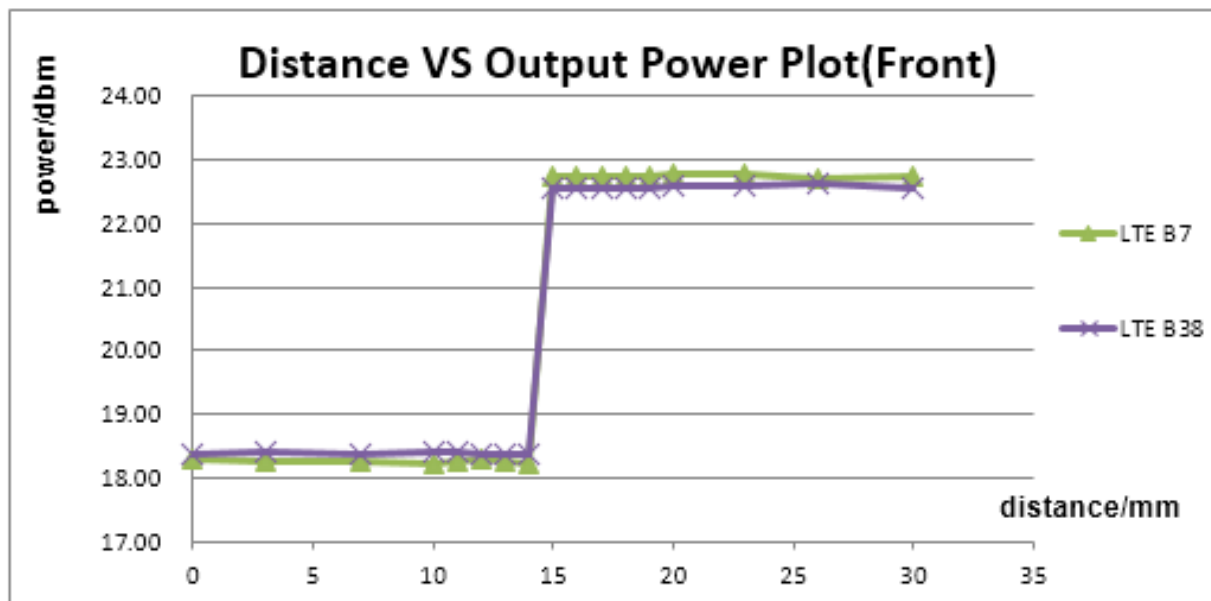
The DUT(Front side) is moved towards the flat phantom(hotspot off):



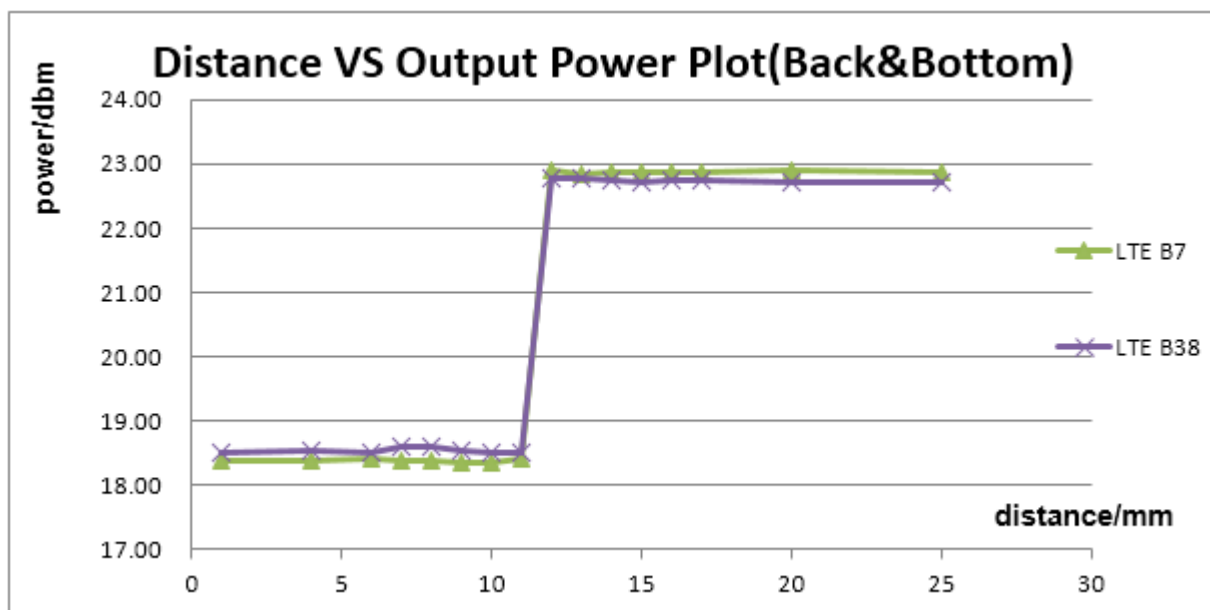
The DUT(back side,bottom side) is moved towards the flat phantom(hotspot off):



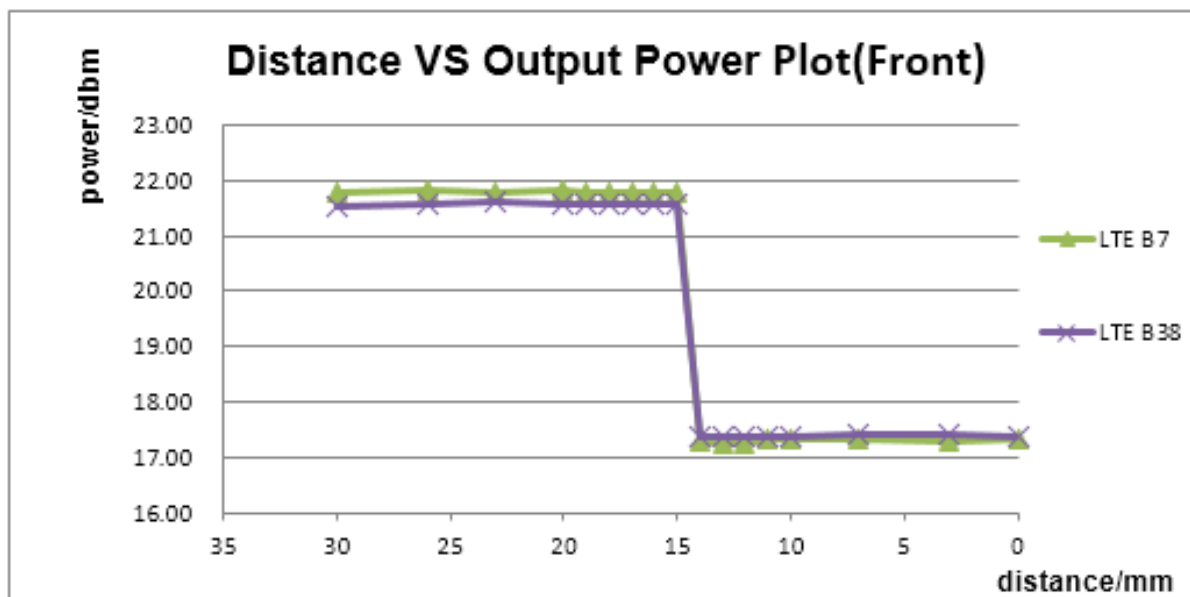
The DUT(Front side) is moved away from the flat phantom(hotspot off):



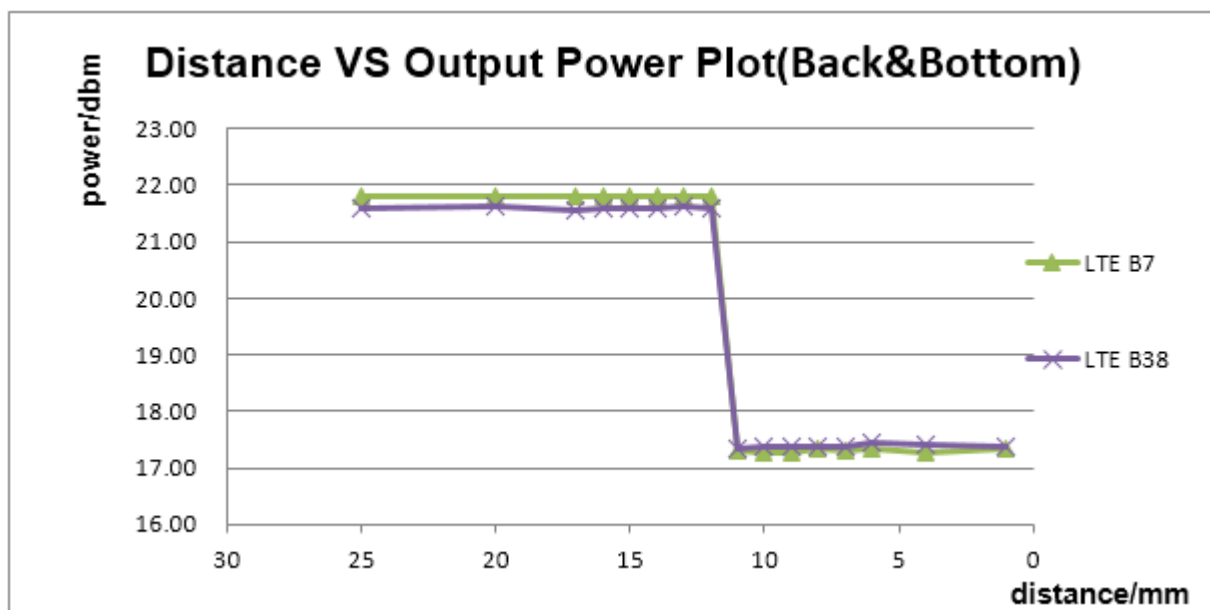
The DUT(back side,bottom side) is moved away from the flat phantom(hotspot off):



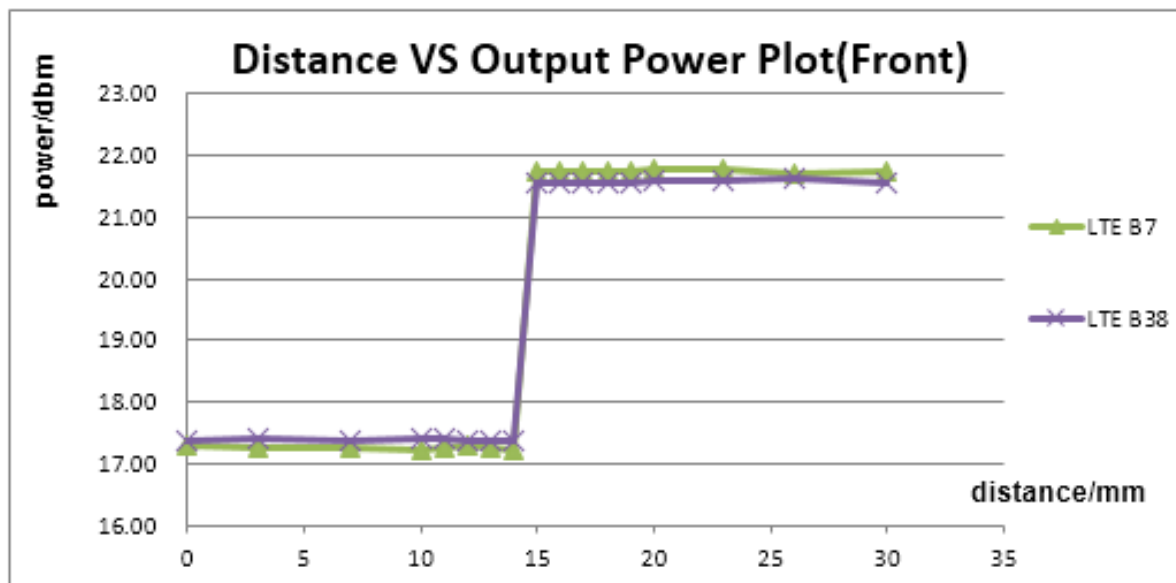
The DUT(Front side) is moved towards the flat phantom(hotspot on):



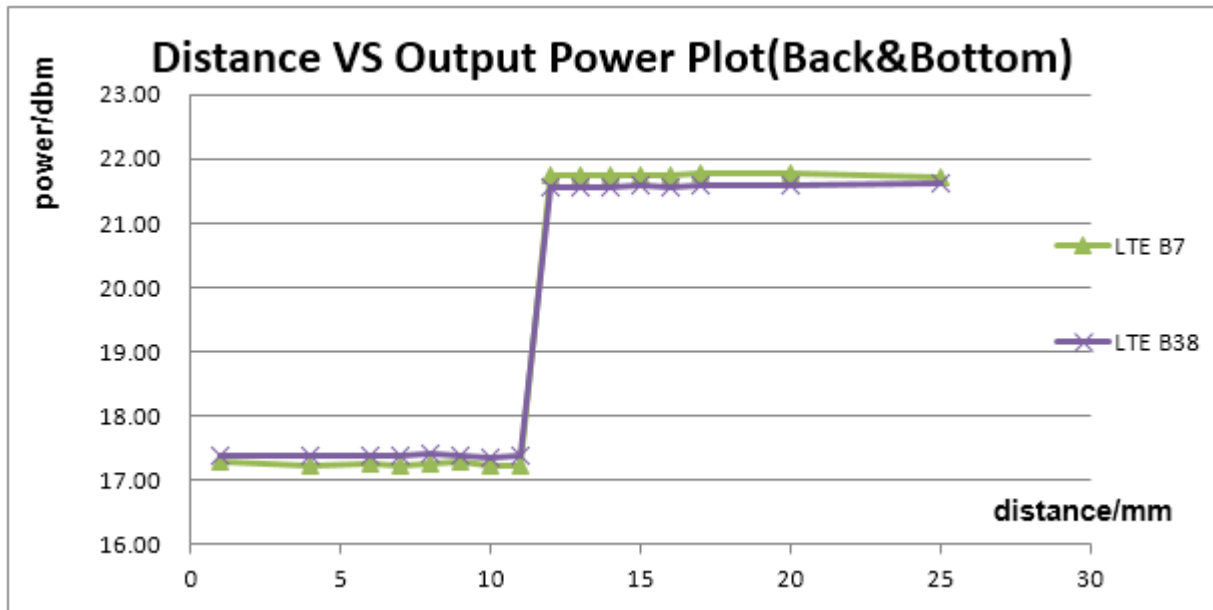
The DUT(back side,bottom side) is moved towards the flat phantom(hotspot on):



The DUT(Front side) is moved away from the flat phantom(hotspot on):



The DUT(back side,bottom side) is moved away from the flat phantom(hotspot on):



Conclusion: It can be ensured that the proximity sensor can be valid triggered for the body exposure condition(LTE Band VII/XXXVIII of Main Antenna).

2) Procedures for determining antenna and proximity sensor coverage

There is no spatial offset between the Main antenna and the proximity sensor element, so procedures for determining the proximity sensor coverage does not need to be assessed.

3) Procedures for determining device tilt angle influences to proximity sensor triggering

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

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

The proximity sensor triggering tilt angle measurement method are as below:

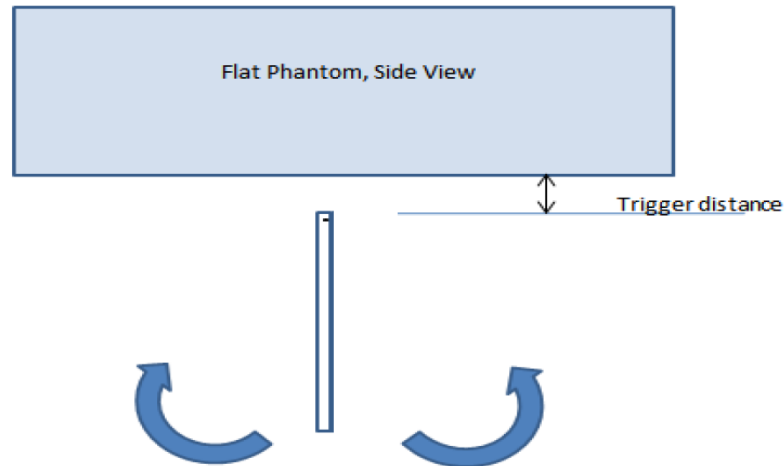


Table: Summary of Tablet Tilt Angle Influence to Proximity Sensor Triggering(Bottom side)

Band(MHz)	Minimum trigger distance at which power reduction was maintained over $\pm 45^\circ$	Power Reduction Status											
		-45°	-35°	-25°	-15°	-5°	0°	5°	15°	25°	35°	45°	
LTE Band VII	12mm	on	on	on	on	on	on	on	on	on	on	on	
LTE Band XXXVIII	12mm	on	on	on	on	on	on	on	on	on	on	on	

Conclusion: It can be ensured that the proximity sensor can be valid triggered for the DUT tilt coverage exposure condition (LTE Band VII/XXXVIII of Main Antenna)

7 SAR Measurement Results

7.1 Conducted power measurements

For the measurements a Rohde & Schwarz Radio Communication Tester CMU 200&CMW500 was used. SAR drift measured at the same position in liquid before and after each SAR test as below 7.2 chapter.

Note: CMU200 measures GSM peak and average output power for active timeslots. For SAR the timebased average power is relevant. The difference in between depends on the duty cycle of the TDMA signal :

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

The signalling modes differ as follows:

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

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

7.1.1 Conducted power measurements of GSM850 (Second Antenna)

GSM850		Burst-Averaged output Power (dBm)				Division Factors	Frame-Averaged output Power (dBm)			
		Tune-up	128CH	190CH	251CH		Tune-up	128CH	190CH	251CH
GSM (CS)		30.50	29.30	29.42	29.61	-9.19	21.31	20.11	20.23	20.42
GPRS/EDGE (GMSK)	1 Tx Slot	30.50	29.37	29.48	29.64	-9.19	21.31	20.18	20.29	20.45
	2 Tx Slots	28.50	27.51	27.64	27.68	-6.13	22.37	21.38	21.51	21.55
	3 Tx Slots	26.50	25.26	25.47	25.53	-4.42	22.08	20.84	21.05	21.11
	4 Tx Slots	24.00	22.73	22.94	23.07	-3.18	20.82	19.55	19.76	19.89
EDGE (8PSK)	1 Tx Slot	28.00	27.07	27.20	27.29	-9.19	18.81	17.88	18.01	18.10
	2 Tx Slots	25.50	24.79	24.86	24.82	-6.13	19.37	18.66	18.73	18.69
	3 Tx Slots	23.50	22.73	22.87	23.05	-4.42	19.08	18.31	18.45	18.63
	4 Tx Slots	19.50	18.54	18.51	18.59	-3.18	16.32	15.36	15.33	15.41

Table 13:Conducted power measurement results of GSM850 (Full Power)

GSM850		Burst-Averaged output Power (dBm)				Division Factors	Frame-Averaged output Power (dBm)			
		Tune-up	128CH	190CH	251CH		Tune-up	128CH	190CH	251CH
GSM (CS)		30.00	28.87	29.01	29.15	-9.19	20.81	19.68	19.82	19.96
GPRS/EDGE (GMSK)	1 Tx Slot	30.00	28.94	29.07	29.18	-9.19	20.81	19.75	19.88	19.99
	2 Tx Slots	28.00	27.08	27.23	27.22	-6.13	21.87	20.95	21.10	21.09
	3 Tx Slots	26.00	24.83	25.06	25.07	-4.42	21.58	20.41	20.64	20.65
	4 Tx Slots	23.50	22.30	22.53	22.61	-3.18	20.32	19.12	19.35	19.43
EDGE (8PSK)	1 Tx Slot	28.00	26.64	26.79	26.83	-9.19	18.81	17.45	17.60	17.64
	2 Tx Slots	25.50	24.36	24.45	24.36	-6.13	19.37	18.23	18.32	18.23
	3 Tx Slots	23.50	22.30	22.46	22.59	-4.42	19.08	17.88	18.04	18.17
	4 Tx Slots	19.50	17.98	18.10	18.13	-3.18	16.32	14.80	14.92	14.95

Table 14:Conducted power measurement results of GSM850 (After Synchronous transmission with WiFi station)

Note:

- 1) The conducted power of GSM850 is measured with RMS detector.
- 2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timeslots.
- 3) Per KDB941225 D01v03, SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.

7.1.2 Conducted power measurements of GSM1900 (Second Antenna)

GSM1900		Burst-Averaged output Power (dBm)				Division Factors	Frame-Averaged output Power (dBm)			
		Tune-up	512CH	661CH	810CH		Tune-up	512CH	661CH	810CH
GSM (CS)		25.50	24.98	24.97	24.96	-9.19	16.31	15.79	15.78	15.77
GPRS/ EDGE (GMSK)	1 Tx Slot	25.50	25.01	24.95	24.92	-9.19	16.31	15.82	15.76	15.73
	2 Tx Slots	23.50	22.73	22.69	22.64	-6.13	17.37	16.60	16.56	16.51
	3 Tx Slots	21.00	20.47	20.43	20.36	-4.42	16.58	16.05	16.01	15.94
	4 Tx Slots	20.00	19.37	19.27	19.23	-3.18	16.82	16.19	16.09	16.05
EDGE (8PSK)	1 Tx Slot	24.00	22.91	22.96	22.92	-9.19	14.81	13.72	13.77	13.73
	2 Tx Slots	21.50	20.81	20.87	20.81	-6.13	15.37	14.68	14.74	14.68
	3 Tx Slots	19.00	18.21	18.24	18.37	-4.42	14.58	13.79	13.82	13.95
	4 Tx Slots	17.00	16.09	16.12	16.21	-3.18	13.82	12.91	12.94	13.03

Table 15: Conducted power measurement results of GSM1900 (Full Power)

Note:

- 1) The conducted power of GSM1900 is measured with RMS detector.
- 2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timeslots.
- 3) Per KDB941225 D01v03, SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.

7.1.3 Conducted power measurements of UMTS Band II (Second Antenna)

UMTS Band II		Tune-up	Conducted Power (dBm)		
			9262CH	9400CH	9538CH
WCDMA	12.2kbps RMC	16.50	15.97	16.02	16.07
	12.2kbps AMR	16.50	15.95	15.99	16.05
HSDPA	Subtest 1	16.00	15.46	15.43	15.44
	Subtest 2	15.50	14.73	14.95	14.68
	Subtest 3	14.50	13.87	14.09	13.95
	Subtest 4	14.50	13.85	14.08	13.94
HSUPA	Subtest 1	13.00	12.35	12.37	12.37
	Subtest 2	12.50	11.69	12.00	11.87
	Subtest 3	12.50	11.56	11.94	11.78
	Subtest 4	12.00	11.20	11.41	11.26
	Subtest 5	13.00	12.17	12.38	12.25
DC-HSDPA	Subtest 1	16.00	15.45	15.41	15.43
	Subtest 2	15.50	14.72	14.93	14.67
	Subtest 3	14.50	13.86	14.07	13.94
	Subtest 4	14.50	13.84	14.06	13.93

Table 16: Conducted power measurement results of UMTS Band II (Full Power)

Note:

- 1) The conducted power of UMTS Band II is measured with RMS detector.
- 2) The bolded 12.2kbps RMC mode was selected for SAR testing(the primary mode).
- 3) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is $\leq \frac{1}{4}$ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

7.1.4 Conducted power measurements of UMTS Band IV (Second Antenna)

UMTS Band IV		Tune-up	Conducted Power (dBm)		
			1312CH	1413CH	1513CH
WCDMA	12.2kbps RMC	17.50	16.83	16.78	16.78
	12.2kbps AMR	17.50	16.80	16.72	16.75
HSDPA	Subtest 1	17.00	16.34	16.45	16.28
	Subtest 2	17.00	16.11	16.12	16.06
	Subtest 3	15.50	14.73	14.26	15.03
	Subtest 4	15.50	14.71	14.24	15.01
HSUPA	Subtest 1	14.00	13.39	12.57	13.50
	Subtest 2	14.00	12.75	12.32	13.07
	Subtest 3	13.50	12.59	12.10	12.87
	Subtest 4	13.00	12.34	11.85	12.62
	Subtest 5	14.00	13.51	12.89	13.37
DC-HSDPA	Subtest 1	17.00	16.31	16.44	16.27
	Subtest 2	17.00	16.08	16.11	16.05
	Subtest 3	15.50	14.70	14.25	15.02
	Subtest 4	15.50	14.68	14.23	15.00

Table 17: Conducted power measurement results of UMTS Band IV (Full Power)

Note:

- 1) The conducted power of UMTS Band IV is measured with RMS detector.
- 2) The bolded 12.2kbps RMC mode was selected for SAR testing(the primary mode).
- 3) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is $\leq \frac{1}{4}$ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

7.1.5 Conducted power measurements of UMTS Band V (Second Antenna)

UMTS Band V		Tune-up	Conducted Power (dBm)		
			4132CH	4182CH	4233CH
WCDMA	12.2kbps RMC	21.50	20.80	20.73	20.72
	12.2kbps AMR	21.50	20.75	20.71	20.73
HSDPA	Subtest 1	21.00	20.25	20.23	20.23
	Subtest 2	20.50	20.00	19.95	19.96
	Subtest 3	20.00	19.27	19.20	19.23
	Subtest 4	20.00	19.25	19.20	19.21
HSUPA	Subtest 1	18.50	17.84	17.55	17.71
	Subtest 2	18.00	16.81	17.41	17.60
	Subtest 3	18.00	17.46	17.11	17.31
	Subtest 4	18.00	17.44	17.38	17.46
	Subtest 5	18.50	17.81	17.53	17.73
DC-HSDPA	Subtest 1	21.00	20.23	20.18	20.22
	Subtest 2	20.50	19.98	19.90	19.95
	Subtest 3	20.00	19.25	19.15	19.22
	Subtest 4	20.00	19.23	19.15	19.20

Table 18: Conducted power measurement results of UMTS Band V (Full Power)

UMTS Band V		Tune-up	Conducted Power (dBm)		
			4132CH	4182CH	4233CH
WCDMA	12.2kbps RMC	20.50	19.77	19.70	19.69
	12.2kbps AMR	20.50	19.72	19.68	19.70
HSDPA	Subtest 1	20.00	19.22	19.20	19.20
	Subtest 2	19.50	18.97	18.92	18.93
	Subtest 3	19.00	18.24	18.17	18.20
	Subtest 4	19.00	18.22	18.17	18.18
HSUPA	Subtest 1	18.50	16.81	16.52	16.68
	Subtest 2	18.00	16.15	16.38	16.57
	Subtest 3	18.00	16.43	16.08	16.28
	Subtest 4	18.00	16.41	16.35	16.43
	Subtest 5	18.50	16.78	16.57	16.70
DC-HSDPA	Subtest 1	20.00	19.19	19.19	19.19
	Subtest 2	19.50	18.94	18.91	18.92
	Subtest 3	19.00	18.21	18.16	18.19
	Subtest 4	19.00	18.19	18.16	18.17

Table 19: Conducted power measurement results of UMTS Band V (After Synchronous transmission with WiFi station)

Note:

- 1) The conducted power of UMTS Band V is measured with RMS detector.
- 2) The bolded 12.2kbps RMC mode was selected for SAR testing(the primary mode).
- 3) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is $\leq \frac{1}{4}$ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

7.1.6 Conducted power measurements of LTE Band II (Second Antenna)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18607CH	18900CH	19193CH
1.4MHz	QPSK	1	0	17.00	16.09	16.81	16.88
		1	3	17.00	16.18	16.89	16.81
		1	5	17.00	16.00	16.71	16.71
		3	0	17.00	16.17	16.85	16.74
		3	2	17.00	16.19	16.87	16.97
		3	3	17.00	16.12	16.81	16.81
		6	0	16.00	14.79	15.27	15.46
	16QAM	1	0	16.00	15.14	15.81	15.87
		1	3	16.00	15.44	15.98	15.97
		1	5	16.00	15.29	15.65	15.73
		3	0	16.00	15.21	15.87	15.83
		3	2	16.00	15.31	15.80	15.87
		3	3	16.00	15.24	15.74	15.83
		6	0	15.00	13.82	14.11	14.38
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18615CH	18900CH	19185CH
3MHz	QPSK	1	0	17.00	15.38	16.60	16.20
		1	7	17.00	15.69	16.61	16.18
		1	14	17.00	15.28	16.28	15.50
		8	0	16.00	14.01	15.02	14.87
		8	4	16.00	14.09	15.01	14.75
		8	7	16.00	14.23	14.93	14.52
		15	0	16.00	14.03	14.92	14.61
	16QAM	1	0	16.00	14.57	15.43	15.20
		1	7	16.00	14.71	15.55	15.23
		1	14	16.00	14.28	15.19	14.57
		8	0	15.00	13.15	13.86	13.74
		8	4	15.00	13.24	13.80	13.64
		8	7	15.00	13.17	13.72	13.43
		15	0	15.00	13.09	13.70	13.54

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18625CH	18900CH	19175CH
5MHz	QPSK	1	0	17.00	15.46	16.71	16.64
		1	13	17.00	15.68	16.77	16.42
		1	24	17.00	15.19	16.31	15.51
		12	0	16.00	14.05	15.31	15.00
		12	6	16.00	14.13	15.38	14.99
		12	13	16.00	14.25	15.08	14.63
		25	0	16.00	14.25	15.17	14.69
	16QAM	1	0	16.00	14.62	15.91	15.90
		1	13	16.00	14.79	15.97	15.73
		1	24	16.00	14.36	15.54	14.89
		12	0	15.00	13.26	14.31	13.97
		12	6	15.00	13.07	14.29	13.95
		12	13	15.00	13.23	14.05	13.64
		25	0	15.00	13.21	14.13	13.64
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18650CH	18900CH	19150CH
10MHz	QPSK	1	0	17.00	15.50	16.74	16.42
		1	25	17.00	15.56	16.61	16.76
		1	49	17.00	15.60	16.00	15.82
		25	0	16.00	14.12	15.05	14.95
		25	13	16.00	14.36	14.99	14.93
		25	25	16.00	14.29	14.71	14.60
		50	0	16.00	14.10	14.62	14.63
	16QAM	1	0	16.00	14.56	15.63	15.73
		1	25	16.00	14.70	15.59	15.94
		1	49	16.00	14.60	14.98	15.06
		25	0	15.00	13.01	13.94	13.89
		25	13	15.00	13.05	13.84	13.88
		25	25	15.00	13.15	13.63	13.57
		50	0	15.00	13.07	13.56	13.57

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18675CH	18900CH	19125CH
15MHz	QPSK	1	0	17.00	15.33	16.56	15.84
		1	38	17.00	15.61	16.53	16.67
		1	74	17.00	15.72	15.56	15.66
		36	0	16.00	14.05	14.91	14.74
		36	18	16.00	14.02	14.72	15.00
		36	39	16.00	14.21	14.50	14.71
		75	0	16.00	14.09	14.98	14.53
	16QAM	1	0	16.00	14.64	15.77	15.05
		1	38	16.00	15.03	15.74	15.80
		1	74	16.00	15.08	14.83	14.87
		36	0	15.00	13.02	13.83	13.69
		36	18	15.00	13.21	13.67	13.91
		36	39	15.00	13.15	13.39	13.60
		75	0	15.00	13.09	13.87	13.36
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18700CH	18900CH	19100CH
20MHz	QPSK	1	0	17.00	15.28	16.56	15.57
		1	50	17.00	15.87	16.58	16.50
		1	99	17.00	15.83	15.39	15.81
		50	0	16.00	14.05	15.01	14.40
		50	25	16.00	14.46	14.63	14.88
		50	50	16.00	14.44	14.18	14.40
		100	0	16.00	14.02	14.87	14.42
	16QAM	1	0	16.00	14.53	15.72	14.73
		1	50	16.00	15.11	15.77	15.65
		1	99	16.00	15.30	14.64	14.82
		50	0	15.00	13.08	13.96	13.26
		50	25	15.00	13.40	13.55	13.82
		50	50	15.00	13.41	13.03	13.27
		100	0	15.00	13.05	13.68	13.28

Table 20: Conducted power measurement results of LTE Band II (Full Power)

7.1.7 Conducted power measurements of LTE Band IV (Second Antenna)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					19957CH	20175CH	20393CH
1.4MHz	QPSK	1	0	18.30	17.09	17.12	18.03
		1	3	18.30	17.18	17.07	18.16
		1	5	18.30	17.08	16.98	18.02
		3	0	18.30	17.10	17.06	18.05
		3	2	18.30	17.17	16.99	18.13
		3	3	18.30	17.13	17.03	18.05
		6	0	17.50	16.10	16.07	16.98
	16QAM	1	0	18.00	16.38	16.57	17.36
		1	3	18.00	16.47	16.53	17.53
		1	5	18.00	16.17	16.37	17.40
		3	0	18.00	16.30	16.40	17.14
		3	2	18.00	16.28	16.33	17.22
		3	3	18.00	16.23	16.15	17.15
		6	0	16.30	14.66	14.65	15.41
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					19965CH	20175CH	20385CH
3MHz	QPSK	1	0	18.30	16.93	17.04	17.62
		1	7	18.30	17.28	17.16	18.02
		1	14	18.30	17.03	16.67	17.79
		8	0	17.50	16.07	16.03	16.81
		8	4	17.50	16.13	16.06	16.84
		8	7	17.50	16.11	15.94	16.82
		15	0	17.50	16.11	16.01	16.76
	16QAM	1	0	18.00	16.19	16.22	16.71
		1	7	18.00	16.26	16.49	17.11
		1	14	18.00	16.33	16.05	16.85
		8	0	16.30	14.60	14.54	15.37
		8	4	16.30	14.60	14.53	15.42
		8	7	16.30	14.61	14.39	15.37
		15	0	16.30	14.57	14.47	15.32

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					19975CH	20175CH	20375CH
5MHz	QPSK	1	0	18.30	17.02	17.16	17.63
		1	13	18.30	17.45	17.21	17.98
		1	24	18.30	17.34	16.75	17.79
		12	0	17.50	16.20	16.16	16.76
		12	6	17.50	16.35	16.22	16.93
		12	13	17.50	16.32	15.94	16.83
		25	0	17.50	16.31	16.08	16.61
	16QAM	1	0	18.00	16.18	16.43	16.91
		1	13	18.00	16.53	16.59	17.33
		1	24	18.00	16.45	16.08	17.06
		12	0	16.30	14.75	14.64	15.23
		12	6	16.30	14.87	14.64	15.38
		12	13	16.30	14.78	14.36	15.34
		25	0	16.30	14.78	14.47	15.08
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20000CH	20175CH	20350CH
10MHz	QPSK	1	0	18.30	17.13	17.27	17.25
		1	25	18.30	17.81	17.20	17.88
		1	49	18.30	17.70	16.86	17.94
		25	0	17.50	16.39	16.30	16.46
		25	13	17.50	16.64	16.12	16.67
		25	25	17.50	16.72	16.06	16.81
		50	0	17.50	16.51	16.19	16.56
	16QAM	1	0	18.00	16.04	16.51	16.56
		1	25	18.00	16.73	16.52	17.04
		1	49	18.00	16.73	16.07	17.17
		25	0	16.30	14.83	14.75	14.75
		25	13	16.30	15.06	14.52	15.04
		25	25	16.30	15.15	14.46	15.18
		50	0	16.30	14.94	14.52	14.95

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20025CH	20175CH	20325CH
15MHz	QPSK	1	0	18.30	17.22	17.61	17.13
		1	38	18.30	17.97	17.34	17.75
		1	74	18.30	17.63	17.08	18.04
		36	0	17.50	16.53	16.52	16.35
		36	18	17.50	16.81	16.43	16.49
		36	39	17.50	16.87	16.18	16.66
		75	0	17.50	16.76	16.38	16.58
	16QAM	1	0	18.00	16.46	16.72	16.46
		1	38	18.00	17.27	16.55	17.05
		1	74	18.00	16.94	16.19	17.32
		36	0	16.30	15.01	14.95	14.68
		36	18	16.30	15.28	14.79	14.76
		36	39	16.30	15.31	14.58	14.98
		75	0	16.30	15.15	14.72	14.86
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20050CH	20175CH	20300CH
20MHz	QPSK	1	0	18.30	17.16	17.67	17.04
		1	50	18.30	18.05	17.26	17.45
		1	99	18.30	17.29	17.00	17.95
		50	0	17.50	16.70	16.61	16.12
		50	25	17.50	16.87	16.29	16.45
		50	50	17.50	16.78	16.10	16.44
		100	0	17.50	16.79	16.42	16.34
	16QAM	1	0	18.00	16.38	16.72	16.24
		1	50	18.00	17.31	16.44	16.67
		1	99	18.00	16.48	16.10	17.13
		50	0	16.30	15.15	15.06	14.51
		50	25	16.30	15.31	14.65	14.84
		50	50	16.30	15.23	14.49	14.85
		100	0	16.30	15.22	14.73	14.66

Table 21: Conducted power measurement results of LTE Band IV (Full Power)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					19957CH	20175CH	20393CH
1.4MHz	QPSK	1	0	17.80	16.78	16.79	17.63
		1	3	17.80	16.79	16.72	17.72
		1	5	17.80	16.65	16.52	17.54
		3	0	17.80	16.73	16.69	17.67
		3	2	17.80	16.75	16.68	17.73
		3	3	17.80	16.70	16.57	17.63
		6	0	17.00	15.71	15.59	16.62
	16QAM	1	0	17.50	15.80	15.79	16.62
		1	3	17.50	15.88	15.78	16.75
		1	5	17.50	15.62	15.64	16.58
		3	0	17.50	15.60	15.73	16.47
		3	2	17.50	15.62	15.57	16.54
		3	3	17.50	15.57	15.55	16.50
		6	0	15.80	14.15	13.91	14.84
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					19965CH	20175CH	20385CH
3MHz	QPSK	1	0	17.80	16.48	16.58	17.25
		1	7	17.80	16.79	16.76	17.63
		1	14	17.80	16.55	16.18	17.37
		8	0	17.00	15.68	15.57	16.39
		8	4	17.00	15.73	15.54	16.47
		8	7	17.00	15.72	15.39	16.43
		15	0	17.00	15.66	15.48	16.35
	16QAM	1	0	17.50	15.60	15.63	16.20
		1	7	17.50	15.96	15.75	16.61
		1	14	17.50	15.58	15.51	16.46
		8	0	15.80	14.14	14.00	14.73
		8	4	15.80	14.16	13.94	14.78
		8	7	15.80	14.16	13.84	14.78
		15	0	15.80	14.13	13.92	14.67

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					19975CH	20175CH	20393CH
5MHz	QPSK	1	0	17.80	16.59	16.61	17.13
		1	13	17.80	16.93	16.71	17.51
		1	24	17.80	16.84	16.20	17.28
		12	0	17.00	15.70	15.61	16.29
		12	6	17.00	15.85	15.6	16.39
		12	13	17.00	15.81	15.35	16.33
		25	0	17.00	15.81	15.47	16.12
	16QAM	1	0	17.50	15.66	15.78	16.40
		1	13	17.50	16.07	15.89	16.73
		1	24	17.50	15.88	15.54	16.49
		12	0	15.80	14.25	14.07	14.72
		12	6	15.80	14.35	14.07	14.75
		12	13	15.80	14.28	13.86	14.70
		25	0	15.80	14.25	13.93	14.50
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20000CH	20175CH	20350CH
10MHz	QPSK	1	0	17.80	16.69	16.78	16.82
		1	25	17.80	17.36	16.77	17.25
		1	49	17.80	17.24	16.42	17.37
		25	0	17.00	15.94	15.79	15.94
		25	13	17.00	16.17	15.55	16.16
		25	25	17.00	16.22	15.54	16.23
		50	0	17.00	16.04	15.58	16.06
	16QAM	1	0	17.50	15.80	15.84	15.92
		1	25	17.50	16.34	15.91	16.30
		1	49	17.50	16.35	15.67	16.22
		25	0	15.80	14.39	14.20	14.33
		25	13	15.80	14.59	13.96	14.54
		25	25	15.80	14.66	13.87	14.62
		50	0	15.80	14.49	14.02	14.43

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20025CH	20175CH	20325CH
15MHz	QPSK	1	0	17.80	16.75	17.01	16.75
		1	38	17.80	17.36	16.75	17.20
		1	74	17.80	17.14	16.65	17.56
		36	0	17.00	16.13	15.93	15.92
		36	18	17.00	16.34	15.79	15.98
		36	39	17.00	16.34	15.70	16.15
		75	0	17.00	16.25	15.78	16.08
	16QAM	1	0	17.50	15.85	16.18	15.89
		1	38	17.50	16.58	15.93	16.34
		1	74	17.50	16.21	15.88	16.65
		36	0	15.80	14.58	14.38	14.23
		36	18	15.80	14.78	14.21	14.36
		36	39	15.80	14.79	14.05	14.52
		75	0	15.80	14.69	14.19	14.42
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20050CH	20175CH	20300CH
20MHz	QPSK	1	0	17.80	16.80	17.07	16.62
		1	50	17.80	17.61	16.67	16.96
		1	99	17.80	16.78	16.74	17.40
		50	0	17.00	16.19	16.07	15.73
		50	25	17.00	16.26	15.70	16.04
		50	50	17.00	16.12	15.69	16.07
		100	0	17.00	16.17	15.87	15.89
	16QAM	1	0	17.50	15.94	16.11	15.84
		1	50	17.50	16.71	15.72	16.11
		1	99	17.50	16.08	15.75	16.55
		50	0	15.80	14.70	14.54	14.03
		50	25	15.80	14.75	14.13	14.33
		50	50	15.80	14.63	14.01	14.45
		100	0	15.80	14.71	14.32	14.26

Table 22: Conducted power measurement results of LTE Band IV (After Synchronous transmission with WiFi station)

7.1.8 Conducted power measurements of LTE Band V(Second Antenna)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20407CH	20525CH	20643CH
1.4MHz	QPSK	1	0	20.00	18.86	18.95	18.85
		1	3	20.00	18.94	19.00	19.12
		1	5	20.00	18.83	18.96	19.09
		3	0	20.00	18.88	18.98	18.87
		3	2	20.00	18.90	18.95	18.97
		3	3	20.00	18.89	18.95	18.54
		6	0	19.00	17.90	17.89	18.01
	16QAM	1	0	19.00	17.48	17.43	17.51
		1	3	19.00	17.57	17.69	17.86
		1	5	19.00	17.42	17.69	17.81
		3	0	19.00	17.51	17.53	17.43
		3	2	19.00	17.54	17.49	17.61
		3	3	19.00	17.50	17.49	17.72
		6	0	18.00	16.39	16.37	16.45
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20415CH	20525CH	20635CH
3MHz	QPSK	1	0	20.00	18.79	18.79	18.40
		1	7	20.00	18.92	19.02	18.93
		1	14	20.00	18.52	18.78	18.92
		8	0	19.00	17.95	17.84	17.65
		8	4	19.00	17.91	17.90	17.78
		8	7	19.00	17.76	17.81	17.85
		15	0	19.00	17.85	17.83	17.81
	16QAM	1	0	19.00	17.03	17.21	17.05
		1	7	19.00	17.18	17.73	17.27
		1	14	19.00	17.05	17.66	17.32
		8	0	18.00	16.37	16.39	16.18
		8	4	18.00	16.35	16.43	16.24
		8	7	18.00	16.18	16.44	16.30
		15	0	18.00	16.28	16.37	16.23

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20425CH	20525CH	20625CH
5MHz	QPSK	1	0	20.00	18.76	18.58	18.73
		1	13	20.00	18.80	18.94	18.80
		1	24	20.00	18.31	18.74	18.72
		12	0	19.00	17.88	17.82	17.84
		12	6	19.00	17.84	17.98	17.84
		12	13	19.00	17.62	17.87	17.61
		25	0	19.00	17.70	17.72	17.77
	16QAM	1	0	19.00	17.50	17.41	17.48
		1	13	19.00	17.49	17.79	17.55
		1	24	19.00	17.14	17.64	17.49
		12	0	18.00	16.34	16.36	16.39
		12	6	18.00	16.28	16.45	16.38
		12	13	18.00	16.07	16.41	16.11
		25	0	18.00	16.12	16.27	16.26
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20450CH	20525CH	20600CH
10MHz	QPSK	1	0	20.00	19.00	18.88	19.25
		1	25	20.00	19.38	19.45	19.39
		1	49	20.00	18.74	19.13	19.05
		25	0	19.00	18.13	18.21	18.42
		25	13	19.00	18.15	18.28	18.45
		25	25	19.00	17.89	18.25	18.29
		50	0	19.00	18.05	18.12	18.38
	16QAM	1	0	19.00	17.93	17.37	18.10
		1	25	19.00	18.01	18.12	18.23
		1	49	19.00	17.56	17.88	17.80
		25	0	18.00	16.69	16.69	16.86
		25	13	18.00	16.72	16.75	16.90
		25	25	18.00	16.46	16.76	16.78
		50	0	18.00	16.54	16.62	16.91

Table 23: Conducted power measurement results of LTE Band V(Full Power)

7.1.9 Conducted power measurements of LTE Band VII (Second Antenna)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20775CH	21100CH	21425CH
5MHz	QPSK	1	0	15.20	13.41	13.28	14.85
		1	13	15.20	13.72	13.59	14.90
		1	24	15.20	13.33	13.21	14.76
		12	0	14.20	12.56	12.43	13.93
		12	6	14.20	12.66	12.51	13.96
		12	13	14.20	12.52	12.32	13.80
		25	0	14.20	12.50	12.41	13.84
	16QAM	1	0	14.40	12.63	13.61	14.35
		1	13	14.40	12.97	13.67	14.34
		1	24	14.40	12.49	13.15	14.22
		12	0	13.20	11.51	12.27	12.79
		12	6	13.20	11.62	12.22	12.82
		12	13	13.20	11.48	11.94	12.65
		25	0	13.20	11.38	11.99	12.65
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20800CH	21100CH	21400CH
10MHz	QPSK	1	0	15.20	13.33	14.47	14.36
		1	25	15.20	13.67	14.47	14.91
		1	49	15.20	13.63	13.98	14.79
		25	0	14.20	12.62	13.38	13.50
		25	13	14.20	12.53	13.30	13.71
		25	25	14.20	12.56	13.16	13.80
		50	0	14.20	12.28	13.24	13.79
	16QAM	1	0	14.40	12.60	13.50	13.46
		1	25	14.40	12.92	13.53	14.35
		1	49	14.40	12.87	13.01	14.21
		25	0	13.20	11.58	12.13	12.41
		25	13	13.20	11.47	12.04	12.52
		25	25	13.20	11.54	11.95	12.57
		50	0	13.20	11.22	12.01	12.68

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20825CH	21100CH	21375CH
15MHz	QPSK	1	0	15.20	13.28	14.22	13.63
		1	38	15.20	13.95	14.43	14.76
		1	74	15.20	13.67	13.69	14.64
		36	0	14.20	12.50	13.38	13.19
		36	18	14.20	12.86	13.34	13.42
		36	39	14.20	12.85	13.07	13.66
		75	0	14.20	12.34	13.25	13.79
	16QAM	1	0	14.40	12.45	13.30	12.86
		1	38	14.40	13.09	13.62	13.96
		1	74	14.40	13.10	12.81	13.95
		36	0	13.20	11.39	12.15	12.01
		36	18	13.20	11.77	12.09	12.27
		36	39	13.20	11.65	11.89	12.50
		75	0	13.20	11.24	12.01	12.63
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20850CH	21100CH	21350CH
20MHz	QPSK	1	0	15.20	13.41	14.41	13.76
		1	50	15.20	14.10	14.48	14.65
		1	99	15.20	14.14	13.80	14.94
		50	0	14.20	12.83	13.21	13.61
		50	25	14.20	13.06	13.52	13.82
		50	50	14.20	12.78	13.50	13.52
		100	0	14.20	12.69	13.42	13.88
	16QAM	1	0	14.40	12.78	13.92	12.94
		1	50	14.40	13.40	13.84	13.82
		1	99	14.40	13.58	13.11	14.14
		50	0	13.20	11.71	11.91	12.45
		50	25	13.20	11.85	12.12	12.62
		50	50	13.20	11.47	12.27	12.30
		100	0	13.20	11.47	12.10	12.73

Table 24: Conducted power measurement results of LTE Band VII (Full Power)

7.1.10 Conducted power measurements of LTE Band XII (Second Antenna)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23017CH	23095CH	23173CH
1.4MHz	QPSK	1	0	22.00	20.90	20.57	21.47
		1	3	22.00	21.12	20.63	21.32
		1	5	22.00	21.20	20.46	20.90
		3	0	22.00	21.00	20.57	21.38
		3	2	22.00	21.07	20.55	21.25
		3	3	22.00	21.11	20.47	21.01
		6	0	21.00	19.54	19.11	19.82
	16QAM	1	0	22.00	20.45	20.11	21.28
		1	3	22.00	20.62	20.16	21.22
		1	5	22.00	20.80	20.15	20.81
		3	0	22.00	20.63	20.13	21.03
		3	2	22.00	20.68	20.16	20.89
		3	3	22.00	20.72	20.09	20.70
		6	0	20.00	18.17	18.11	18.36
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23025CH	23095CH	23165CH
3MHz	QPSK	1	0	22.00	20.74	20.61	21.45
		1	7	22.00	21.47	20.66	21.64
		1	14	22.00	21.27	20.36	20.71
		8	0	21.00	19.60	19.23	20.08
		8	4	21.00	20.01	19.10	20.06
		8	7	21.00	19.76	19.07	19.67
		15	0	21.00	19.65	19.09	19.95
	16QAM	1	0	22.00	20.25	20.16	21.04
		1	7	22.00	20.87	20.32	21.09
		1	14	22.00	20.76	20.04	20.34
		8	0	20.00	18.22	18.08	18.60
		8	4	20.00	18.56	18.11	18.51
		8	7	20.00	18.33	18.13	18.14
		15	0	20.00	18.06	18.06	18.45

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23035CH	23095CH	23155CH
5MHz	QPSK	1	0	22.00	20.68	20.58	20.97
		1	13	22.00	21.53	20.52	21.63
		1	24	22.00	21.61	21.31	21.54
		12	0	21.00	19.72	19.18	20.20
		12	6	21.00	19.97	19.19	20.36
		12	13	21.00	19.72	19.05	19.77
		25	0	21.00	19.70	19.19	19.92
	16QAM	1	0	22.00	20.51	20.40	20.82
		1	13	22.00	21.34	20.36	21.63
		1	24	22.00	21.37	21.20	21.38
		12	0	20.00	18.23	18.21	18.72
		12	6	20.00	18.54	18.33	18.89
		12	13	20.00	18.23	18.34	18.36
		25	0	20.00	18.22	18.21	18.39
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23060CH	23095CH	23130CH
10MHz	QPSK	1	0	22.00	21.16	21.54	20.88
		1	25	22.00	21.53	21.09	21.70
		1	49	22.00	20.53	21.31	21.12
		25	0	21.00	20.31	19.83	19.57
		25	13	21.00	20.01	19.69	20.38
		25	25	21.00	19.62	19.59	20.17
		50	0	21.00	19.94	19.62	19.96
	16QAM	1	0	22.00	21.04	21.13	20.69
		1	25	22.00	21.38	20.65	21.43
		1	49	22.00	20.33	20.86	20.91
		25	0	20.00	18.71	18.30	18.07
		25	13	20.00	18.52	18.21	18.65
		25	25	20.00	18.12	18.11	18.66
		50	0	20.00	18.45	18.12	18.43

Table 25: Conducted power measurement results of LTE Band XII (Full Power)

7.1.11 Conducted power measurements of LTE Band XVII (Second Antenna)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23755CH	23790CH	23825CH
5MHz	QPSK	1	0	22.00	20.89	20.62	21.31
		1	13	22.00	20.84	21.39	21.91
		1	24	22.00	21.51	21.87	21.86
		12	0	21.00	19.49	19.54	20.30
		12	6	21.00	19.38	19.87	20.63
		12	13	21.00	19.29	19.81	20.36
		25	0	21.00	19.46	19.76	20.42
	16QAM	1	0	22.00	20.09	20.07	20.54
		1	13	22.00	20.13	20.55	21.63
		1	24	22.00	20.68	21.67	21.12
		12	0	20.00	18.01	18.01	18.76
		12	6	20.00	18.11	18.36	19.00
		12	13	20.00	18.21	18.29	18.79
		25	0	20.00	18.06	18.25	18.88
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23780CH	23790CH	23800CH
10MHz	QPSK	1	0	22.00	21.27	21.10	21.04
		1	25	22.00	21.48	21.62	21.78
		1	49	22.00	21.86	21.84	21.49
		25	0	21.00	19.83	19.77	19.96
		25	13	21.00	20.13	20.25	20.63
		25	25	21.00	20.52	20.70	20.79
		50	0	21.00	20.14	20.32	20.52
	16QAM	1	0	22.00	20.33	20.34	20.44
		1	25	22.00	20.53	21.06	21.39
		1	49	22.00	21.21	21.36	20.83
		25	0	20.00	18.45	18.33	18.47
		25	13	20.00	18.62	18.80	19.15
		25	25	20.00	19.03	19.17	19.25
		50	0	20.00	18.69	18.85	19.07

Table 26: Conducted power measurement results of LTE Band XVII (Full Power)

7.1.12 Conducted power measurements of LTE Band XXVI (Second Antenna)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26697CH	26865CH	27033CH
1.4MHz	QPSK	1	0	21.30	20.10	19.86	20.10
		1	3	21.30	20.77	20.66	20.75
		1	5	21.30	19.87	20.38	19.79
		3	0	21.30	20.17	19.34	20.08
		3	2	21.30	19.63	19.72	19.77
		3	3	21.30	19.76	19.73	19.89
		6	0	20.50	19.50	19.19	19.50
	16QAM	1	0	20.30	19.28	19.35	19.23
		1	3	20.30	19.88	18.70	20.21
		1	5	20.30	18.76	19.26	19.22
		3	0	20.30	18.54	18.36	18.31
		3	2	20.30	18.37	18.35	18.35
		3	3	20.30	18.36	18.39	18.51
		6	0	19.30	18.19	17.95	18.41
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26705CH	26865CH	27025CH
3MHz	QPSK	1	0	21.30	20.53	20.28	20.09
		1	7	21.30	20.51	20.45	20.49
		1	14	21.30	20.28	20.25	20.41
		8	0	20.50	19.54	19.29	19.41
		8	4	20.50	19.63	19.45	19.25
		8	7	20.50	19.81	19.34	19.44
		15	0	20.50	19.45	19.37	19.53
	16QAM	1	0	20.30	19.36	19.23	19.41
		1	7	20.30	19.75	18.59	20.13
		1	14	20.30	18.62	19.74	19.00
		8	0	19.30	18.45	18.05	18.34
		8	4	19.30	18.25	18.07	18.43
		8	7	19.30	18.03	17.97	18.69
		15	0	19.30	18.16	18.18	18.73

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26715CH	26865CH	27015CH
5MHz	QPSK	1	0	21.30	20.57	20.18	20.22
		1	13	21.30	20.66	20.46	20.41
		1	24	21.30	20.85	20.91	20.95
		12	0	20.50	19.57	19.29	19.31
		12	6	20.50	19.67	19.45	19.33
		12	13	20.50	19.63	19.34	19.22
		25	0	20.50	19.35	19.56	19.41
	16QAM	1	0	20.30	19.03	19.08	19.56
		1	13	20.30	20.11	18.59	20.24
		1	24	20.30	18.70	19.28	18.75
		12	0	19.30	18.82	18.14	18.64
		12	6	19.30	18.19	18.22	18.26
		12	13	19.30	18.47	18.11	18.40
		25	0	19.30	18.34	18.40	18.63
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26750CH	26865CH	26990CH
10MHz	QPSK	1	0	21.30	20.59	20.30	20.76
		1	25	21.30	20.96	20.83	20.78
		1	49	21.30	20.36	20.48	20.32
		25	0	20.50	19.65	19.45	19.70
		25	13	20.50	19.93	19.81	19.54
		25	25	20.50	19.94	19.64	19.73
		50	0	20.50	19.78	19.49	19.83
	16QAM	1	0	20.30	19.46	19.44	19.28
		1	25	20.30	19.90	18.81	20.25
		1	49	20.30	18.65	19.36	18.87
		25	0	19.30	18.59	18.44	18.51
		25	13	19.30	18.14	18.08	18.36
		25	25	19.30	18.43	18.41	18.79
		50	0	19.30	18.13	18.01	18.43

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26775CH	26865CH	26965CH
15MHz	QPSK	1	0	21.30	19.87	19.85	19.86
		1	38	21.30	20.52	20.18	20.71
		1	74	21.30	19.52	19.94	19.58
		36	0	20.50	19.57	19.02	19.29
		36	18	20.50	19.21	19.05	19.26
		36	39	20.50	19.01	19.04	19.42
		75	0	20.50	19.02	19.02	19.38
	16QAM	1	0	20.30	19.01	19.08	19.06
		1	38	20.30	19.67	18.56	20.05
		1	74	20.30	18.53	19.24	18.73
		36	0	19.30	18.39	18.03	18.16
		36	18	19.30	18.10	18.05	18.11
		36	39	19.30	17.98	17.93	18.35
		75	0	19.30	17.95	17.93	18.25

Table 27: Conducted power measurement results of LTE Band XXVI (Second Antenna)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26697CH	26865CH	27033CH
1.4MHz	QPSK	1	0	20.80	19.59	19.35	19.59
		1	3	20.80	20.26	20.15	20.24
		1	5	20.80	19.36	19.87	19.28
		3	0	20.80	19.66	18.83	19.57
		3	2	20.80	19.12	19.21	19.26
		3	3	20.80	19.25	19.22	19.38
		6	0	20.00	18.99	18.68	18.99
	16QAM	1	0	19.80	18.77	18.84	18.72
		1	3	19.80	19.37	18.19	19.70
		1	5	19.80	18.25	18.75	18.71
		3	0	19.80	18.03	17.85	17.86
		3	2	19.80	17.86	17.84	17.84
		3	3	19.80	17.85	17.88	18.00
		6	0	18.80	17.68	17.44	17.90
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26705CH	26865CH	27025CH
3MHz	QPSK	1	0	20.80	20.05	19.80	19.61
		1	7	20.80	20.03	19.97	20.01
		1	14	20.80	19.80	19.77	19.93
		8	0	20.00	19.06	18.81	18.93
		8	4	20.00	19.15	18.97	18.77
		8	7	20.00	19.33	18.86	18.96
		15	0	20.00	18.97	18.89	19.05
	16QAM	1	0	19.80	18.88	18.75	18.93
		1	7	19.80	19.27	18.11	19.65
		1	14	19.80	18.14	19.26	18.52
		8	0	18.80	17.97	17.57	17.86
		8	4	18.80	17.77	17.59	17.95
		8	7	18.80	17.55	17.49	18.21
		15	0	18.80	17.68	17.70	18.25

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26715CH	26865CH	27015CH
5MHz	QPSK	1	0	20.80	20.04	19.65	19.69
		1	13	20.80	20.13	19.93	19.88
		1	24	20.80	20.32	20.38	20.42
		12	0	20.00	19.04	18.76	18.78
		12	6	20.00	19.14	18.92	18.80
		12	13	20.00	19.10	18.81	18.69
		25	0	20.00	18.82	19.03	18.88
	16QAM	1	0	19.80	18.50	18.55	19.03
		1	13	19.80	19.58	18.06	19.71
		1	24	19.80	18.17	18.75	18.22
		12	0	18.80	18.29	17.61	18.11
		12	6	18.80	17.66	17.69	17.73
		12	13	18.80	17.94	17.58	17.87
		25	0	18.80	17.81	17.87	18.10
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26750CH	26865CH	26990CH
10MHz	QPSK	1	0	20.80	20.06	19.77	20.23
		1	25	20.80	20.43	20.30	20.25
		1	49	20.80	19.83	19.95	19.79
		25	0	20.00	19.12	18.92	19.17
		25	13	20.00	19.40	19.28	19.01
		25	25	20.00	19.41	19.11	19.20
		50	0	20.00	19.25	18.96	19.30
	16QAM	1	0	19.80	18.93	18.91	18.75
		1	25	19.80	19.37	18.28	19.72
		1	49	19.80	18.12	18.83	18.34
		25	0	18.80	18.06	17.91	17.98
		25	13	18.80	17.61	17.55	17.83
		25	25	18.80	17.90	17.88	18.26
		50	0	18.80	17.60	17.48	17.90

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26775CH	26865CH	26965CH
15MHz	QPSK	1	0	20.80	19.40	19.38	19.39
		1	38	20.80	20.05	19.71	20.24
		1	74	20.80	19.05	19.47	19.11
		36	0	20.00	19.10	18.55	18.82
		36	18	20.00	18.74	18.58	18.79
		36	39	20.00	18.54	18.57	18.95
		75	0	20.00	18.55	18.55	18.91
	16QAM	1	0	19.80	18.54	18.61	18.59
		1	38	19.80	19.20	18.09	19.58
		1	74	19.80	18.06	18.77	18.26
		36	0	18.80	17.92	17.56	17.69
		36	18	18.80	17.63	17.58	17.64
		36	39	18.80	17.51	17.46	17.88
		75	0	18.80	17.48	17.46	17.78

Table 28: Conducted power measurement results of LTE Band XXVI (After Synchronous transmission with WiFi station)

7.1.13 Conducted power measurements of LTE Band XXXVIII (Second Antenna)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					37775CH	38000CH	38225CH
5MHz	QPSK	1	0	19.00	17.35	18.01	18.29
		1	13	19.00	17.73	18.24	18.43
		1	24	19.00	17.31	17.82	18.00
		12	0	18.00	16.56	17.21	17.48
		12	6	18.00	16.68	17.28	17.53
		12	13	18.00	16.52	17.13	17.30
		25	0	18.00	16.54	17.16	17.34
	16QAM	1	0	18.20	16.65	17.43	17.70
		1	13	18.20	17.06	17.67	17.84
		1	24	18.20	16.64	17.25	17.38
		12	0	17.00	15.52	16.28	16.52
		12	6	17.00	15.66	16.36	16.58
		12	13	17.00	15.57	16.21	16.27
		25	0	17.00	15.53	16.24	16.24
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					37800CH	38000CH	38200CH
10MHz	QPSK	1	0	19.00	17.47	18.14	18.45
		1	25	19.00	17.77	18.41	18.53
		1	49	19.00	17.63	18.23	18.23
		25	0	18.00	16.61	17.19	17.43
		25	13	18.00	16.72	17.24	17.41
		25	25	18.00	16.68	17.19	17.40
		50	0	18.00	16.54	17.21	17.41
	16QAM	1	0	18.20	16.64	17.72	17.96
		1	25	18.20	17.03	17.91	17.93
		1	49	18.20	16.85	17.82	17.68
		25	0	17.00	15.50	16.24	16.44
		25	13	17.00	15.68	16.29	16.41
		25	25	17.00	15.63	16.24	16.38
		50	0	17.00	15.52	16.28	16.38

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					37825CH	38000CH	38175CH
15MHz	QPSK	1	0	19.00	17.33	17.98	18.40
		1	38	19.00	17.87	18.45	18.67
		1	74	19.00	17.65	18.20	18.14
		36	0	18.00	16.69	17.22	17.54
		36	18	18.00	16.96	17.35	17.56
		36	39	18.00	16.84	17.30	17.42
		75	0	18.00	16.63	17.25	17.50
	16QAM	1	0	18.20	16.43	17.28	17.61
		1	38	18.20	17.01	17.76	17.94
		1	74	18.20	16.70	17.48	17.41
		36	0	17.00	15.49	16.18	16.46
		36	18	17.00	15.84	16.31	16.50
		36	39	17.00	15.82	16.25	16.36
		75	0	17.00	15.49	16.21	16.36
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					37850CH	38000CH	38150CH
20MHz	QPSK	1	0	19.00	17.82	18.36	18.69
		1	50	19.00	18.17	18.63	18.76
		1	99	19.00	18.32	18.61	18.55
		50	0	18.00	16.99	17.43	17.60
		50	25	18.00	16.93	17.49	17.76
		50	50	18.00	17.17	17.50	17.60
		100	0	18.00	17.04	17.50	17.67
	16QAM	1	0	18.20	17.21	17.54	17.85
		1	50	18.20	17.55	17.82	17.97
		1	99	18.20	17.67	17.84	17.72
		50	0	17.00	15.89	16.35	16.61
		50	25	17.00	15.84	16.42	16.73
		50	50	17.00	16.13	16.43	16.58
		100	0	17.00	15.93	16.42	16.56

Table 29: Conducted power measurement results of LTE Band XXXVIII (Full Power)

7.1.14 Conducted power measurements of LTE Band XLI (Second Antenna)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					40265CH	40740CH	41215CH
5MHz	QPSK	1	0	19.00	17.60	18.21	18.25
		1	13	19.00	17.67	18.28	18.41
		1	24	19.00	17.24	17.82	17.99
		12	0	18.00	16.72	17.25	17.40
		12	6	18.00	16.74	17.23	17.39
		12	13	18.00	16.52	17.00	17.18
		25	0	18.00	16.57	17.11	17.21
	16QAM	1	0	18.20	16.69	17.26	17.73
		1	13	18.20	16.88	17.43	17.91
		1	24	18.20	16.45	16.95	17.45
		12	0	17.00	15.63	16.35	16.10
		12	6	17.00	15.66	16.33	16.17
		12	13	17.00	15.46	16.11	15.97
		25	0	17.00	15.56	16.12	16.08
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					40290CH	40740CH	41190CH
10MHz	QPSK	1	0	19.00	17.69	18.31	18.35
		1	25	19.00	17.73	18.30	18.43
		1	49	19.00	17.43	18.00	18.23
		25	0	18.00	16.63	17.21	17.26
		25	13	18.00	16.64	17.18	17.26
		25	25	18.00	16.60	17.08	17.17
		50	0	18.00	16.76	17.14	17.18
	16QAM	1	0	18.20	16.75	17.53	17.27
		1	25	18.20	16.95	17.62	17.45
		1	49	18.20	16.56	17.24	17.12
		25	0	17.00	15.58	16.23	16.03
		25	13	17.00	15.57	16.23	16.06
		25	25	17.00	15.45	16.11	15.97
		50	0	17.00	15.70	16.19	15.92

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					40315CH	40740CH	41165CH
15MHz	QPSK	1	0	19.00	17.60	18.06	18.12
		1	38	19.00	17.73	18.29	18.41
		1	74	19.00	17.14	17.92	18.13
		36	0	18.00	16.76	17.30	17.25
		36	18	18.00	16.62	17.20	17.35
		36	39	18.00	16.45	17.08	17.16
		75	0	18.00	16.71	17.09	17.20
	16QAM	1	0	18.20	16.77	17.31	17.02
		1	38	18.20	17.10	17.68	17.50
		1	74	18.20	16.42	17.19	17.02
		36	0	17.00	15.68	16.09	16.11
		36	18	17.00	15.52	16.10	16.24
		36	39	17.00	15.32	15.94	16.01
		75	0	17.00	15.50	16.02	16.02
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					40340CH	40740CH	41140CH
20MHz	QPSK	1	0	19.00	17.94	18.35	18.05
		1	50	19.00	17.58	18.41	18.44
		1	99	19.00	17.60	18.29	18.26
		50	0	18.00	16.79	17.41	17.44
		50	25	18.00	16.54	17.35	17.34
		50	50	18.00	16.54	17.33	17.17
		100	0	18.00	16.78	17.31	17.33
	16QAM	1	0	18.20	17.13	17.30	16.98
		1	50	18.20	17.13	17.52	17.57
		1	99	18.20	16.92	17.10	17.35
		50	0	17.00	15.50	16.36	16.10
		50	25	17.00	15.37	16.32	16.21
		50	50	17.00	15.31	16.14	15.98
		100	0	17.00	15.60	16.15	16.15

Table 30: Conducted power measurement results of LTE Band XLI (Full Power)

7.1.15 Conducted power measurements of GSM850 (Main Antenna)

GSM850		Burst-Averaged output Power (dBm)				Division Factors	Frame-Averaged output Power (dBm)			
		Tune-up	128CH	190CH	251CH		Tune-up	128CH	190CH	251CH
GSM (CS)		33.50	32.51	32.54	32.62	-9.19	24.31	23.32	23.35	23.43
GPRS/EDGE (GMSK)	1 Tx Slot	33.50	32.48	32.58	32.59	-9.19	24.31	23.29	23.39	23.40
	2 Tx Slots	31.00	30.15	30.37	30.38	-6.13	24.87	24.02	24.24	24.25
	3 Tx Slots	29.00	27.95	28.17	28.22	-4.42	24.58	23.53	23.75	23.80
	4 Tx Slots	27.50	26.53	26.75	26.86	-3.18	24.32	23.35	23.57	23.68
EDGE (8PSK)	1 Tx Slot	27.50	26.64	26.82	26.83	-9.19	18.31	17.45	17.63	17.64
	2 Tx Slots	25.00	24.26	24.34	24.36	-6.13	18.87	18.13	18.21	18.23
	3 Tx Slots	23.00	21.97	22.20	22.25	-4.42	18.58	17.55	17.78	17.83
	4 Tx Slots	21.50	19.80	19.86	19.87	-3.18	18.32	16.62	16.68	16.69

Table 31: Conducted power measurement results of GSM850 (Main Antenna)

Note:

- 1) The conducted power of GSM850 is measured with RMS detector.
- 2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timeslots.
- 3) Per KDB941225 D01v03, SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.

7.1.16 Conducted power measurements of GSM1900 (Main Antenna)

GSM1900		Burst-Averaged output Power (dBm)				Division Factors	Frame-Averaged output Power (dBm)			
		Tune-up	512CH	661CH	810CH		Tune-up	512CH	661CH	810CH
GSM (CS)		31.00	30.03	30.01	29.99	-9.19	21.81	20.84	20.82	20.80
GPRS/ EDGE (GMSK)	1 Tx Slot	31.00	30.01	30.00	29.97	-9.19	21.81	20.82	20.81	20.78
	2 Tx Slots	28.00	27.63	27.32	27.29	-6.13	21.87	21.50	21.19	21.16
	3 Tx Slots	26.00	25.40	25.35	25.26	-4.42	21.58	20.98	20.93	20.84
	4 Tx Slots	24.50	23.71	23.66	23.74	-3.18	21.32	20.53	20.48	20.56
EDGE (8PSK)	1 Tx Slot	26.50	25.71	25.68	25.48	-9.19	17.31	16.52	16.49	16.29
	2 Tx Slots	24.00	23.34	23.29	23.23	-6.13	17.87	17.21	17.16	17.10
	3 Tx Slots	22.00	21.24	21.28	21.18	-4.42	17.58	16.82	16.86	16.76
	4 Tx Slots	21.00	19.71	20.02	19.89	-3.18	17.82	16.53	16.84	16.71

Table 32: Conducted power measurement results of GSM1900 (Main Antenna)

Note:

- 1) The conducted power of GSM1900 is measured with RMS detector.
- 2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timeslots.
- 3) Per KDB941225 D01v03, SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.

7.1.17 Conducted power measurements of UMTS Band II (Main Antenna)

UMTS Band II		Tune-up	Conducted Power (dBm)		
			9262CH	9400CH	9538CH
WCDMA	12.2kbps RMC	23.60	23.12	23.24	23.19
	12.2kbps AMR	23.60	23.14	23.22	23.18
HSDPA	Subtest 1	23.60	22.45	22.45	22.53
	Subtest 2	23.10	22.22	22.28	22.31
	Subtest 3	22.60	21.47	21.51	21.53
	Subtest 4	22.60	21.47	21.50	21.51
HSUPA	Subtest 1	21.10	19.85	20.27	19.65
	Subtest 2	20.10	19.01	18.85	19.03
	Subtest 3	21.10	19.78	19.51	19.45
	Subtest 4	21.10	19.91	19.47	19.57
	Subtest 5	21.10	20.17	19.81	19.85
DC-HSDPA	Subtest 1	23.60	22.43	22.44	22.50
	Subtest 2	23.10	22.20	22.27	22.28
	Subtest 3	22.60	21.45	21.50	21.50
	Subtest 4	22.60	21.45	21.49	21.48

Table 33: Conducted power measurement results of UMTS Band II (Full Power)

UMTS Band II		Tune-up	Conducted Power (dBm)		
			9262CH	9400CH	9538CH
WCDMA	12.2kbps RMC	21.50	20.99	20.94	20.98
	12.2kbps AMR	21.50	20.98	20.92	20.97
HSDPA	Subtest 1	21.00	20.44	20.46	20.42
	Subtest 2	21.00	20.25	20.23	20.23
	Subtest 3	20.00	19.48	19.45	19.47
	Subtest 4	20.00	19.48	19.44	19.45
HSUPA	Subtest 1	19.00	17.83	18.07	17.57
	Subtest 2	18.00	17.33	17.07	17.20
	Subtest 3	18.50	17.74	17.50	17.50
	Subtest 4	19.00	17.86	17.99	17.75
	Subtest 5	19.00	18.13	18.07	17.91
DC-HSDPA	Subtest 1	21.00	20.41	20.45	20.41
	Subtest 2	21.00	20.22	20.22	20.22
	Subtest 3	20.00	19.45	19.44	19.46
	Subtest 4	20.00	19.45	19.43	19.44

Table 34: Conducted power measurement results of UMTS Band II (Hotspot on)

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

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

3) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is $\leq \frac{1}{4}$ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

7.1.18 Conducted power measurements of UMTS Band IV (Main Antenna)

UMTS Band IV		Tune-up	Conducted Power (dBm)		
			1312CH	1413CH	1513CH
WCDMA	12.2kbps RMC	23.60	22.77	22.73	22.70
	12.2kbps AMR	23.60	22.76	22.71	22.68
HSDPA	Subtest 1	23.00	22.22	22.19	22.15
	Subtest 2	23.00	21.98	21.98	21.92
	Subtest 3	22.00	21.25	21.21	21.19
	Subtest 4	22.00	21.24	21.22	21.17
HSUPA	Subtest 1	21.00	19.85	19.43	19.77
	Subtest 2	20.00	18.96	18.77	18.97
	Subtest 3	20.50	19.66	19.36	19.59
	Subtest 4	20.50	19.63	19.24	19.55
	Subtest 5	21.00	20.02	19.64	19.98
DC-HSDPA	Subtest 1	23.00	22.19	22.18	22.14
	Subtest 2	23.00	21.95	21.97	21.91
	Subtest 3	22.00	21.22	21.20	21.18
	Subtest 4	22.00	21.21	21.21	21.16

Table 35: Conducted power measurement results of UMTS Band IV (Main Antenna)

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

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

3) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is $\leq \frac{1}{4}$ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

7.1.19 Conducted power measurements of UMTS Band V (Main Antenna)

UMTS Band V		Tune-up	Conducted Power (dBm)		
			4132CH	4182CH	4233CH
WCDMA	12.2kbps RMC	24.00	23.26	23.23	23.22
	12.2kbps AMR	24.00	23.24	23.22	23.23
HSDPA	Subtest 1	23.50	22.72	22.69	22.69
	Subtest 2	23.00	22.48	22.47	22.47
	Subtest 3	22.50	21.70	21.66	21.69
	Subtest 4	22.50	21.69	21.64	21.68
HSUPA	Subtest 1	21.00	20.11	20.02	20.12
	Subtest 2	20.00	19.41	19.31	19.32
	Subtest 3	21.00	19.92	19.85	19.98
	Subtest 4	21.00	19.93	19.87	19.82
	Subtest 5	21.00	20.15	20.19	20.32
DC-HSDPA	Subtest 1	23.50	22.69	22.68	22.70
	Subtest 2	23.00	22.45	22.46	22.48
	Subtest 3	22.50	21.67	21.65	21.70
	Subtest 4	22.50	21.66	21.63	21.69

Table 36: Conducted power measurement results of UMTS Band V (Main Antenna)

Note:

- 1) The conducted power of UMTS Band V is measured with RMS detector.
- 2) The bolded 12.2kbps RMC mode was selected for SAR testing(the primary mode).
- 3) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is $\leq \frac{1}{4}$ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

7.1.20 Conducted power measurements of LTE Band II (Main Antenna)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18607CH	18900CH	19193CH
1.4MHz	QPSK	1	0	24.00	22.86	23.72	23.23
		1	3	24.00	22.88	23.70	22.96
		1	5	24.00	22.79	23.51	22.63
		3	0	24.00	22.81	23.61	23.17
		3	2	24.00	22.86	23.59	22.98
		3	3	24.00	22.81	23.50	22.75
		6	0	23.00	21.32	21.89	21.86
	16QAM	1	0	24.00	22.13	22.86	22.68
		1	3	24.00	22.16	22.79	22.42
		1	5	24.00	22.02	22.62	22.22
		3	0	24.00	22.08	22.67	22.48
		3	2	24.00	22.05	22.57	22.33
		3	3	24.00	22.13	22.53	22.12
		6	0	23.00	21.37	22.00	21.85
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18615CH	18900CH	19185CH
3MHz	QPSK	1	0	24.00	22.75	23.46	23.76
		1	7	24.00	22.98	23.61	23.47
		1	14	24.00	22.71	23.19	22.53
		8	0	23.00	21.33	21.95	22.35
		8	4	23.00	21.33	21.84	22.14
		8	7	23.00	21.28	21.74	21.84
		15	0	23.00	21.28	21.77	22.07
	16QAM	1	0	24.00	22.11	22.62	23.02
		1	7	24.00	22.43	22.52	22.84
		1	14	24.00	22.16	22.16	22.14
		8	0	23.00	21.29	22.01	22.31
		8	4	23.00	21.28	21.90	22.07
		8	7	23.00	21.21	21.80	21.78
		15	0	23.00	21.20	21.71	21.99

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18625CH	18900CH	19175CH
5MHz	QPSK	1	0	24.00	22.83	23.58	23.95
		1	13	24.00	23.11	23.71	23.84
		1	24	24.00	22.80	23.19	22.54
		12	0	23.00	21.37	22.19	22.55
		12	6	23.00	21.54	22.13	22.51
		12	13	23.00	21.40	21.74	22.02
		25	0	23.00	21.39	21.89	22.16
	16QAM	1	0	24.00	22.04	22.98	23.45
		1	13	24.00	22.34	22.97	23.39
		1	24	24.00	22.05	22.43	22.17
		12	0	23.00	21.29	22.16	22.54
		12	6	23.00	21.43	22.10	22.47
		12	13	23.00	21.33	21.72	22.00
		25	0	23.00	21.18	21.89	22.11
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18650CH	18900CH	19150CH
10MHz	QPSK	1	0	24.00	22.84	23.48	23.7
		1	25	24.00	23.13	23.61	23.54
		1	49	24.00	23.22	23.16	22.80
		25	0	23.00	21.49	21.97	22.55
		25	13	23.00	21.47	21.77	22.55
		25	25	23.00	21.59	21.62	22.11
		50	0	23.00	21.58	21.48	22.18
	16QAM	1	0	24.00	22.34	22.67	22.93
		1	25	24.00	22.36	22.69	23.56
		1	49	24.00	22.45	22.17	22.34
		25	0	23.00	21.40	21.99	22.55
		25	13	23.00	21.38	21.78	22.51
		25	25	23.00	21.50	21.61	22.04
		50	0	23.00	21.48	21.43	22.19

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18675CH	18900CH	19125CH
15MHz	QPSK	1	0	24.00	22.75	23.59	23.35
		1	38	24.00	23.52	23.79	23.88
		1	74	24.00	23.20	23.05	22.72
		36	0	23.00	21.41	22.13	22.48
		36	18	23.00	21.78	21.88	22.62
		36	39	23.00	21.99	21.71	22.31
		75	0	23.00	21.76	22.17	22.18
	16QAM	1	0	24.00	22.12	22.89	22.67
		1	38	24.00	22.73	22.99	23.31
		1	74	24.00	22.64	22.28	22.14
		36	0	23.00	21.39	22.11	22.48
		36	18	23.00	21.76	21.85	22.61
		36	39	23.00	21.98	21.67	22.23
		75	0	23.00	21.72	22.13	22.14
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18700CH	18900CH	19100CH
20MHz	QPSK	1	0	24.00	22.57	23.19	23.03
		1	50	24.00	23.56	23.74	23.88
		1	99	24.00	22.74	22.89	22.75
		50	0	23.00	21.46	22.18	22.05
		50	25	23.00	22.22	21.68	22.62
		50	50	23.00	22.08	21.38	21.93
		100	0	23.00	21.61	21.93	21.99
	16QAM	1	0	24.00	22.12	22.82	22.34
		1	50	24.00	22.80	23.12	23.22
		1	99	24.00	22.21	22.39	22.12
		50	0	23.00	21.34	22.18	21.94
		50	25	23.00	22.10	21.65	22.53
		50	50	23.00	21.97	21.35	21.90
		100	0	23.00	21.47	21.87	21.95

Table 37: Conducted power measurement results of LTE Band II (Full Power)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18607CH	18900CH	19193CH
1.4MHz	QPSK	1	0	22.50	20.78	21.51	21.80
		1	3	22.50	20.90	21.47	21.65
		1	5	22.50	20.80	21.36	21.31
		3	0	22.50	20.81	21.43	21.68
		3	2	22.50	20.85	21.49	21.60
		3	3	22.50	20.79	21.42	21.42
		6	0	22.50	20.85	21.45	21.59
	16QAM	1	0	22.50	21.03	21.62	22.16
		1	3	22.50	21.09	21.52	21.97
		1	5	22.50	21.05	21.59	21.64
		3	0	22.50	20.86	21.68	21.63
		3	2	22.50	20.91	21.58	21.53
		3	3	22.50	20.85	21.42	21.42
		6	0	22.50	20.81	21.39	21.49
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18615CH	18900CH	19185CH
3MHz	QPSK	1	0	22.50	20.74	21.43	21.95
		1	7	22.50	20.98	21.52	21.87
		1	14	22.50	20.73	21.10	21.15
		8	0	22.50	20.87	21.58	22.00
		8	4	22.50	20.89	21.47	21.78
		8	7	22.50	20.84	21.38	21.51
		15	0	22.50	20.85	21.41	21.71
	16QAM	1	0	22.50	20.83	21.59	21.96
		1	7	22.50	21.11	21.63	21.87
		1	14	22.50	20.80	21.36	21.10
		8	0	22.50	20.87	21.50	22.02
		8	4	22.50	20.89	21.38	21.77
		8	7	22.50	20.84	21.29	21.52
		15	0	22.50	20.76	21.31	21.64

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18625CH	18900CH	19175CH
5MHz	QPSK	1	0	22.50	20.78	21.52	22.11
		1	13	22.50	21.08	21.56	22.12
		1	24	22.50	20.80	20.97	21.14
		12	0	22.50	20.90	21.65	22.10
		12	6	22.50	21.10	21.66	22.10
		12	13	22.50	21.06	21.29	21.66
		25	0	22.50	20.96	21.42	21.75
	16QAM	1	0	22.50	21.05	21.88	22.43
		1	13	22.50	21.33	21.89	22.39
		1	24	22.50	21.02	21.30	21.50
		12	0	22.50	20.89	21.61	22.12
		12	6	22.50	21.02	21.60	22.11
		12	13	22.50	20.96	21.22	21.65
		25	0	22.50	20.85	21.34	21.74
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18650CH	18900CH	19150CH
10MHz	QPSK	1	0	22.50	20.90	21.80	21.96
		1	25	22.50	21.18	21.66	22.32
		1	49	22.50	21.39	21.24	21.48
		25	0	22.50	21.15	21.63	22.21
		25	13	22.50	21.06	21.49	22.12
		25	25	22.50	21.18	21.24	21.76
		50	0	22.50	21.24	21.22	21.84
	16QAM	1	0	22.50	20.99	21.87	22.09
		1	25	22.50	21.32	21.76	22.48
		1	49	22.50	21.43	21.36	21.50
		25	0	22.50	21.07	21.56	22.17
		25	13	22.50	20.98	21.41	22.06
		25	25	22.50	21.10	21.25	21.73
		50	0	22.50	21.14	21.14	21.80

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18675CH	18900CH	19125CH
15MHz	QPSK	1	0	22.50	20.77	21.62	21.65
		1	38	22.50	21.39	21.54	22.23
		1	74	22.50	21.40	20.95	21.30
		36	0	22.50	20.97	21.53	22.17
		36	18	22.50	21.25	21.30	22.31
		36	39	22.50	21.49	21.19	21.94
		75	0	22.50	21.26	21.62	21.82
	16QAM	1	0	22.50	21.05	21.92	21.87
		1	38	22.50	21.65	21.79	22.47
		1	74	22.50	21.67	21.29	21.58
		36	0	22.50	20.95	21.47	22.08
		36	18	22.50	21.23	21.24	22.22
		36	39	22.50	21.44	21.13	21.90
		75	0	22.50	21.21	21.57	21.74
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18700CH	18900CH	19100CH
20MHz	QPSK	1	0	22.50	20.75	21.65	21.43
		1	50	22.50	21.51	21.56	22.14
		1	99	22.50	21.27	21.20	21.45
		50	0	22.50	21.08	21.68	21.71
		50	25	22.50	21.71	21.18	22.23
		50	50	22.50	21.63	20.86	21.60
		100	0	22.50	21.21	21.43	21.67
	16QAM	1	0	22.50	21.10	21.82	21.69
		1	50	22.50	21.85	21.64	22.34
		1	99	22.50	21.63	21.42	21.65
		50	0	22.50	21.07	21.64	21.65
		50	25	22.50	21.71	21.14	22.18
		50	50	22.50	21.63	20.94	21.56
		100	0	22.50	21.17	21.34	21.61

Table 38: Conducted power measurement results of LTE Band II (Hotspot on)

7.1.21 Conducted power measurements of LTE Band IV (Main Antenna)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					19957CH	20175CH	20393CH
1.4MHz	QPSK	1	0	24.00	23.02	22.79	23.48
		1	3	24.00	23.08	22.71	23.40
		1	5	24.00	22.93	22.46	23.12
		3	0	24.00	23.00	22.68	23.43
		3	2	24.00	23.01	22.58	23.34
		3	3	24.00	22.94	22.49	23.19
		6	0	23.00	22.02	21.70	22.42
	16QAM	1	0	23.50	22.12	22.07	22.89
		1	3	23.50	22.12	22.03	22.66
		1	5	23.50	22.05	21.82	22.58
		3	0	23.50	22.06	21.82	22.53
		3	2	23.50	21.98	21.75	22.49
		3	3	23.50	21.99	21.73	22.35
		6	0	22.50	21.44	21.33	22.00
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					19965CH	20175CH	20385CH
3MHz	QPSK	1	0	24.00	22.79	22.62	23.39
		1	7	24.00	22.94	22.74	23.41
		1	14	24.00	22.77	22.41	23.02
		8	0	23.00	21.98	21.78	22.52
		8	4	23.00	21.96	21.74	22.48
		8	7	23.00	21.93	21.62	22.37
		15	0	23.00	21.92	21.71	22.39
	16QAM	1	0	23.50	22.06	21.83	22.62
		1	7	23.50	22.21	22.10	22.70
		1	14	23.50	22.07	21.64	22.22
		8	0	22.50	21.47	21.21	22.20
		8	4	22.50	21.44	21.16	22.16
		8	7	22.50	21.42	21.04	22.05
		15	0	22.50	21.35	21.13	22.04

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					19975CH	20175CH	20375CH
5MHz	QPSK	1	0	24.00	22.95	22.66	23.40
		1	13	24.00	23.18	22.75	23.41
		1	24	24.00	22.91	22.38	23.03
		12	0	23.00	22.09	21.81	22.61
		12	6	23.00	22.18	21.83	22.69
		12	13	23.00	22.07	21.64	22.46
		25	0	23.00	22.19	21.72	22.36
	16QAM	1	0	23.50	22.17	22.04	22.75
		1	13	23.50	22.41	22.19	23.04
		1	24	23.50	22.16	21.81	22.41
		12	0	22.50	21.59	21.25	22.08
		12	6	22.50	21.70	21.28	22.20
		12	13	22.50	21.61	21.08	21.94
		25	0	22.50	21.57	21.18	21.84
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20000CH	20175CH	20350CH
10MHz	QPSK	1	0	24.00	22.82	22.75	23.20
		1	25	24.00	23.26	22.79	23.47
		1	49	24.00	22.96	22.67	23.13
		25	0	23.00	22.13	21.87	22.33
		25	13	23.00	22.23	21.76	22.42
		25	25	23.00	22.16	21.78	22.36
		50	0	23.00	22.09	21.76	22.28
	16QAM	1	0	23.50	22.19	21.86	22.52
		1	25	23.50	22.65	21.99	22.91
		1	49	23.50	22.25	21.77	22.51
		25	0	22.50	21.65	21.34	21.83
		25	13	22.50	21.77	21.22	21.92
		25	25	22.50	21.68	21.26	21.90
		50	0	22.50	21.62	21.23	21.77

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20025CH	20175CH	20325CH
15MHz	QPSK	1	0	24.00	22.97	22.79	22.97
		1	38	24.00	23.30	22.75	23.56
		1	74	24.00	22.86	22.81	23.28
		36	0	23.00	22.20	21.92	22.28
		36	18	23.00	22.26	22.00	22.39
		36	39	23.00	22.14	21.93	22.36
		75	0	23.00	22.18	21.93	22.40
	16QAM	1	0	23.50	22.23	22.07	22.45
		1	38	23.50	22.53	22.17	23.18
		1	74	23.50	22.07	22.12	22.72
		36	0	22.50	21.66	21.45	21.80
		36	18	22.50	21.72	21.48	21.83
		36	39	22.50	21.61	21.52	21.83
		75	0	22.50	21.60	21.46	21.82
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20050CH	20175CH	20300CH
20MHz	QPSK	1	0	24.00	22.96	22.83	22.91
		1	50	24.00	23.31	22.84	23.49
		1	99	24.00	22.62	22.73	23.43
		50	0	23.00	22.20	22.02	22.13
		50	25	23.00	22.15	21.93	22.45
		50	50	23.00	21.97	21.92	22.35
		100	0	23.00	22.07	22.00	22.29
	16QAM	1	0	23.50	22.38	22.29	22.17
		1	50	23.50	22.76	22.33	22.69
		1	99	23.50	22.16	22.37	22.57
		50	0	22.50	21.63	21.49	21.67
		50	25	22.50	21.59	21.39	21.97
		50	50	22.50	21.46	21.43	21.81
		100	0	22.50	21.56	21.46	21.74

Table 39: Conducted power measurement results of LTE Band IV(Full Power)

7.1.22 Conducted power measurements of LTE Band V(Main Antenna)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20407CH	20525CH	20643CH
1.4MHz	QPSK	1	0	23.50	22.55	22.18	22.19
		1	3	23.50	22.69	22.20	22.31
		1	5	23.50	22.57	22.13	22.32
		3	0	23.50	22.66	22.13	22.26
		3	2	23.50	22.72	22.14	22.32
		3	3	23.50	22.67	22.12	22.28
		6	0	22.50	21.63	21.12	21.38
	16QAM	1	0	22.50	21.28	20.66	21.16
		1	3	22.50	21.39	20.67	21.29
		1	5	22.50	21.32	20.65	21.32
		3	0	22.50	21.12	20.73	20.94
		3	2	22.50	21.19	20.66	20.99
		3	3	22.50	21.17	20.65	20.96
		6	0	22.00	21.13	20.45	20.86
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20415CH	20525CH	20635CH
3MHz	QPSK	1	0	23.50	22.45	22.07	22.34
		1	7	23.50	22.74	22.16	22.44
		1	14	23.50	22.38	22.07	22.24
		8	0	22.50	21.61	21.14	21.47
		8	4	22.50	21.65	21.14	21.35
		8	7	22.50	21.52	21.11	21.27
		15	0	22.50	21.56	21.10	21.45
	16QAM	1	0	22.50	20.85	20.61	20.76
		1	7	22.50	21.33	20.82	20.99
		1	14	22.50	20.88	20.61	20.82
		8	0	22.00	21.08	20.50	20.92
		8	4	22.00	21.13	20.49	20.89
		8	7	22.00	21.01	20.44	20.83
		15	0	22.00	21.03	20.45	20.93

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20425CH	20525CH	20625CH
5MHz	QPSK	1	0	23.50	22.33	21.92	22.54
		1	13	23.50	22.56	22.13	22.42
		1	24	23.50	22.16	21.84	22.11
		12	0	22.50	21.50	21.17	21.66
		12	6	22.50	21.55	21.21	21.63
		12	13	22.50	21.40	21.11	21.25
		25	0	22.50	21.36	21.04	21.58
	16QAM	1	0	22.50	21.02	20.64	21.28
		1	13	22.50	21.32	20.85	21.26
		1	24	22.50	20.88	20.58	20.93
		12	0	22.00	20.98	20.59	21.06
		12	6	22.00	21.06	20.58	21.08
		12	13	22.00	20.87	20.51	20.68
		25	0	22.00	20.83	20.40	21.05
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20450CH	20525CH	20600CH
10MHz	QPSK	1	0	23.50	22.69	22.25	22.45
		1	25	23.50	22.78	22.51	22.91
		1	49	23.50	22.14	22.44	22.24
		25	0	22.50	21.90	21.52	21.78
		25	13	22.50	21.88	21.49	22.11
		25	25	22.50	21.48	21.47	21.97
		50	0	22.50	21.72	21.40	22.02
	16QAM	1	0	22.50	21.57	20.90	21.19
		1	25	22.50	21.72	21.19	21.80
		1	49	22.50	20.98	20.94	21.07
		25	0	22.00	21.28	20.95	21.22
		25	13	22.00	21.33	20.92	21.51
		25	25	22.00	20.94	20.81	21.38
		50	0	22.00	21.12	20.76	21.48

Table 40: Conducted power measurement results of LTE Band V(Full Power)

7.1.23 Conducted power measurements of LTE Band VII (Main Antenna)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20775CH	21100CH	21425CH
5MHz	QPSK	1	0	23.50	22.73	22.88	22.24
		1	13	23.50	23.13	23.24	22.83
		1	24	23.50	22.53	22.94	22.78
		12	0	23.00	22.17	22.37	21.92
		12	6	23.00	22.23	22.52	22.03
		12	13	23.00	22.08	22.39	22.09
		25	0	23.00	22.08	22.36	22.01
	16QAM	1	0	23.00	22.14	22.46	21.34
		1	13	23.00	22.64	22.68	22.08
		1	24	23.00	21.95	22.50	21.87
		12	0	22.00	21.28	21.68	20.75
		12	6	22.00	21.37	21.75	20.87
		12	13	22.00	21.23	21.76	20.91
		25	0	22.00	21.14	21.60	20.83
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20800CH	21100CH	21400CH
10MHz	QPSK	1	0	23.50	22.80	22.88	21.62
		1	25	23.50	22.99	23.28	22.08
		1	49	23.50	22.45	23.25	22.46
		25	0	23.00	22.38	22.48	21.27
		25	13	23.00	22.25	22.60	21.35
		25	25	23.00	22.04	22.69	21.58
		50	0	23.00	22.02	22.59	21.47
	16QAM	1	0	23.00	22.20	21.74	21.30
		1	25	23.00	22.53	22.32	21.84
		1	49	23.00	21.85	22.14	22.00
		25	0	22.00	21.30	20.98	20.36
		25	13	22.00	21.19	21.15	20.56
		25	25	22.00	21.19	21.37	20.84
		50	0	22.00	20.91	21.16	20.71

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20825CH	21100CH	21375CH
15MHz	QPSK	1	0	23.50	22.70	22.04	21.88
		1	38	23.50	22.94	22.96	21.97
		1	74	23.50	22.11	23.04	22.60
		36	0	23.00	22.19	21.88	21.31
		36	18	23.00	22.21	22.14	21.24
		36	39	23.00	21.81	22.27	21.44
		75	0	23.00	21.92	22.18	21.63
	16QAM	1	0	23.00	21.95	21.52	21.42
		1	38	23.00	22.32	22.29	21.67
		1	74	23.00	21.56	22.30	22.17
		36	0	22.00	21.11	20.92	20.46
		36	18	22.00	21.46	21.21	20.31
		36	39	22.00	20.99	21.45	20.64
		75	0	22.00	20.87	21.22	20.85
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20850CH	21100CH	21350CH
20MHz	QPSK	1	0	23.50	23.00	22.22	22.77
		1	50	23.50	22.77	22.98	22.14
		1	99	23.50	22.28	23.33	22.96
		50	0	23.00	22.41	21.63	22.07
		50	25	23.00	22.02	22.18	21.72
		50	50	23.00	21.40	22.71	21.39
		100	0	23.00	21.84	22.34	22.08
	16QAM	1	0	23.00	22.36	21.73	22.21
		1	50	23.00	22.26	22.38	21.78
		1	99	23.00	21.66	22.78	22.34
		50	0	22.00	21.30	20.69	21.31
		50	25	22.00	21.32	21.24	20.83
		50	50	22.00	20.55	21.91	20.63
		100	0	22.00	21.09	21.37	21.19

Table 41: Conducted power measurement results of LTE Band VII (Full Power)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20775CH	21100CH	21425CH
5MHz	QPSK	1	0	19.00	17.60	17.61	17.56
		1	13	19.00	18.03	17.77	17.72
		1	24	19.00	17.65	17.42	17.51
		12	0	18.00	16.86	16.59	16.66
		12	6	18.00	17.02	16.71	16.68
		12	13	18.00	16.93	16.55	16.58
		25	0	18.00	16.84	16.56	16.60
	16QAM	1	0	18.00	17.01	16.82	16.78
		1	13	18.00	17.55	16.94	16.97
		1	24	18.00	17.12	16.61	16.85
		12	0	17.00	15.82	15.56	15.78
		12	6	17.00	15.98	15.61	15.78
		12	13	17.00	15.97	15.44	15.64
		25	0	17.00	15.75	15.51	15.68
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20800CH	21100CH	21400CH
10MHz	QPSK	1	0	19.00	17.67	17.66	17.51
		1	25	19.00	18.12	17.85	17.75
		1	49	19.00	17.88	17.73	17.68
		25	0	18.00	17.19	16.69	16.58
		25	13	18.00	17.11	16.65	16.55
		25	25	18.00	16.95	16.70	16.61
		50	0	18.00	16.82	16.63	16.67
	16QAM	1	0	18.00	17.00	16.69	16.82
		1	25	18.00	17.38	16.80	16.99
		1	49	18.00	16.98	16.72	16.97
		25	0	17.00	16.03	15.59	15.71
		25	13	17.00	16.01	15.57	15.60
		25	25	17.00	16.07	15.61	15.64
		50	0	17.00	15.72	15.52	15.73

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20825CH	21100CH	21375CH
15MHz	QPSK	1	0	19.00	17.52	17.30	17.43
		1	38	19.00	18.14	17.78	17.67
		1	74	19.00	17.63	17.63	17.49
		36	0	18.00	17.00	16.68	16.64
		36	18	18.00	17.18	16.72	16.50
		36	39	18.00	16.97	16.73	16.60
		75	0	18.00	16.63	16.74	16.96
	16QAM	1	0	18.00	16.93	16.67	16.76
		1	38	18.00	17.44	17.01	16.83
		1	74	18.00	16.98	16.86	16.74
		36	0	17.00	15.86	15.58	15.68
		36	18	17.00	16.29	15.60	15.65
		36	39	17.00	15.93	15.79	15.60
		75	0	17.00	15.73	15.59	16.01
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20850CH	21100CH	21350CH
20MHz	QPSK	1	0	19.00	17.85	17.69	17.88
		1	50	19.00	17.95	17.81	18.08
		1	99	19.00	18.00	18.11	17.85
		50	0	18.00	17.11	16.48	17.25
		50	25	18.00	17.16	16.74	17.31
		50	50	18.00	16.65	17.35	16.59
		100	0	18.00	16.83	16.91	17.39
	16QAM	1	0	18.00	17.51	17.07	17.27
		1	50	18.00	17.65	17.06	16.94
		1	99	18.00	17.34	17.36	17.06
		50	0	17.00	16.28	15.41	16.44
		50	25	17.00	16.20	15.68	16.19
		50	50	17.00	15.56	16.17	15.64
		100	0	17.00	15.98	15.84	16.51

Table 42: Conducted power measurement results of LTE Band VII (Sensor on)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20775CH	21100CH	21425CH
5MHz	QPSK	1	0	23.00	21.84	21.75	21.04
		1	13	23.00	21.54	22.18	21.77
		1	24	23.00	21.81	21.74	21.48
		12	0	23.00	22.26	22.16	21.60
		12	6	23.00	22.32	22.23	21.74
		12	13	23.00	22.26	22.10	21.80
		25	0	23.00	22.18	22.07	21.68
	16QAM	1	0	23.00	22.09	22.09	21.40
		1	13	23.00	22.41	22.31	22.06
		1	24	23.00	21.84	22.11	21.81
		12	0	23.00	21.30	21.15	21.54
		12	6	23.00	21.38	21.31	21.64
		12	13	23.00	21.18	21.16	21.18
		25	0	23.00	21.25	21.20	21.28
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20800CH	21100CH	21400CH
10MHz	QPSK	1	0	23.00	22.04	21.63	21.13
		1	25	23.00	22.44	22.29	21.50
		1	49	23.00	21.71	22.04	21.57
		25	0	23.00	22.49	22.06	21.40
		25	13	23.00	22.35	22.19	21.42
		25	25	23.00	22.11	22.24	21.56
		50	0	23.00	22.10	22.15	21.51
	16QAM	1	0	23.00	22.12	21.75	21.19
		1	25	23.00	22.45	22.41	21.81
		1	49	23.00	21.81	22.09	21.88
		25	0	23.00	21.35	21.08	21.01
		25	13	23.00	21.24	21.26	21.02
		25	25	23.00	21.31	21.46	21.13
		50	0	23.00	21.08	21.28	21.06

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20825CH	21100CH	21375CH
15MHz	QPSK	1	0	23.00	21.81	21.18	21.03
		1	38	23.00	22.21	22.22	21.39
		1	74	23.00	21.36	22.07	21.60
		36	0	23.00	22.21	21.94	21.38
		36	18	23.00	22.27	22.25	21.32
		36	39	23.00	21.84	22.29	21.45
		75	0	23.00	21.76	22.23	21.62
	16QAM	1	0	23.00	21.81	21.48	21.22
		1	38	23.00	22.31	22.43	21.50
		1	74	23.00	21.54	22.33	21.83
		36	0	23.00	21.09	21.34	21.11
		36	18	23.00	21.47	21.27	21.31
		36	39	23.00	21.04	21.46	21.35
		75	0	23.00	21.06	21.23	21.08
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20850CH	21100CH	21350CH
20MHz	QPSK	1	0	23.00	22.00	21.34	21.79
		1	50	23.00	22.00	22.31	21.53
		1	99	23.00	21.35	22.42	21.83
		50	0	23.00	22.21	21.67	22.08
		50	25	23.00	22.03	22.30	21.82
		50	50	23.00	21.40	22.74	21.58
		100	0	23.00	21.74	22.37	22.04
	16QAM	1	0	23.00	22.29	21.67	21.86
		1	50	23.00	22.35	22.34	21.64
		1	99	23.00	21.68	22.14	21.98
		50	0	23.00	21.40	21.08	21.26
		50	25	23.00	21.18	21.33	21.15
		50	50	23.00	21.21	21.89	21.22
		100	0	23.00	21.07	21.44	21.13

Table 43: Conducted power measurement results of LTE Band VII (Hotspot on)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20775CH	21100CH	21425CH
5MHz	QPSK	1	0	18.50	17.17	17.33	17.14
		1	13	18.50	17.76	17.40	17.38
		1	24	18.50	17.45	17.12	17.04
		12	0	18.50	17.52	17.37	17.40
		12	6	18.50	17.70	17.40	17.34
		12	13	18.50	17.59	17.29	17.24
		25	0	18.50	17.53	17.31	17.25
	16QAM	1	0	18.50	17.54	17.52	17.44
		1	13	18.50	18.10	17.57	17.65
		1	24	18.50	17.67	17.31	17.32
		12	0	18.50	16.76	16.67	16.71
		12	6	18.50	16.98	16.67	16.72
		12	13	18.50	16.90	16.60	16.56
		25	0	18.50	16.79	16.57	16.56
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20800CH	21100CH	21400CH
10MHz	QPSK	1	0	18.50	17.37	17.44	17.25
		1	25	18.50	17.79	17.44	17.34
		1	49	18.50	17.56	17.32	17.24
		25	0	18.50	17.79	17.45	17.32
		25	13	18.50	17.67	17.38	17.28
		25	25	18.50	17.82	17.44	17.15
		50	0	18.50	17.47	17.34	17.20
	16QAM	1	0	18.50	17.71	17.68	17.53
		1	25	18.50	18.03	17.70	17.60
		1	49	18.50	17.86	17.65	17.34
		25	0	18.50	16.61	16.62	16.63
		25	13	18.50	16.53	16.62	16.65
		25	25	18.50	16.71	16.63	16.52
		50	0	18.50	16.66	16.58	16.57

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20825CH	21100CH	21375CH
15MHz	QPSK	1	0	18.50	17.21	17.12	17.23
		1	38	18.50	17.87	17.40	17.39
		1	74	18.50	17.35	17.08	17.03
		36	0	18.50	17.65	17.44	17.35
		36	18	18.50	17.87	17.40	17.27
		36	39	18.50	17.73	17.36	17.16
		75	0	18.50	17.47	17.33	17.53
	16QAM	1	0	18.50	17.40	17.40	17.39
		1	38	18.50	18.07	17.66	17.55
		1	74	18.50	17.59	17.36	17.21
		36	0	18.50	16.56	16.55	16.74
		36	18	18.50	16.85	16.67	16.67
		36	39	18.50	16.74	16.65	16.58
		75	0	18.50	16.57	16.57	16.54
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20850CH	21100CH	21350CH
20MHz	QPSK	1	0	18.50	17.50	17.59	17.23
		1	50	18.50	17.49	17.41	17.26
		1	99	18.50	17.42	17.63	17.42
		50	0	18.50	17.91	17.18	17.81
		50	25	18.50	17.88	17.46	17.76
		50	50	18.50	17.24	17.94	17.22
		100	0	18.50	17.53	17.44	17.92
	16QAM	1	0	18.50	18.01	17.83	17.83
		1	50	18.50	18.39	17.67	17.78
		1	99	18.50	18.15	17.59	17.54
		50	0	18.50	16.82	16.54	17.19
		50	25	18.50	16.88	16.51	16.80
		50	50	18.50	16.57	16.63	16.53
		100	0	18.50	16.52	16.65	16.98

Table 44: Conducted power measurement results of LTE Band VII (Hotspot on+sensor on)

7.1.24 Conducted power measurements of LTE Band XII (Main Antenna)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23017CH	23095CH	23173CH
1.4MHz	QPSK	1	0	23.50	22.02	22.12	22.72
		1	3	23.50	22.13	22.16	22.51
		1	5	23.50	22.29	21.98	22.12
		3	0	23.50	22.17	22.04	22.57
		3	2	23.50	22.20	22.01	22.51
		3	3	23.50	22.22	21.95	22.38
		6	0	22.50	20.75	20.66	21.18
	16QAM	1	0	23.00	21.65	21.80	22.44
		1	3	23.00	21.88	21.59	22.41
		1	5	23.00	21.96	21.64	22.04
		3	0	23.00	21.67	21.65	22.23
		3	2	23.00	21.79	21.56	22.09
		3	3	23.00	21.78	21.49	21.99
		6	0	21.50	20.30	20.14	20.62
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23025CH	23095CH	23165CH
3MHz	QPSK	1	0	23.50	21.87	22.06	22.57
		1	7	23.50	22.56	22.08	22.76
		1	14	23.50	22.45	21.78	22.06
		8	0	22.50	20.77	20.81	21.30
		8	4	22.50	21.11	20.68	21.32
		8	7	22.50	20.86	20.58	21.00
		15	0	22.50	20.79	20.66	21.15
	16QAM	1	0	23.00	21.41	21.52	22.15
		1	7	23.00	22.01	21.50	22.26
		1	14	23.00	21.92	21.59	21.69
		8	0	21.50	20.31	20.33	20.77
		8	4	21.50	20.62	20.21	20.80
		8	7	21.50	20.37	20.07	20.50
		15	0	21.50	20.17	20.10	20.63

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23035CH	23095CH	23155CH
5MHz	QPSK	1	0	23.50	21.88	22.04	22.11
		1	13	23.50	22.68	21.99	22.84
		1	24	23.50	22.86	22.76	22.81
		12	0	22.50	20.86	20.74	21.41
		12	6	22.50	21.15	20.70	21.60
		12	13	22.50	20.94	20.52	21.07
		25	0	22.50	20.86	20.76	21.21
	16QAM	1	0	23.00	21.47	21.91	22.05
		1	13	23.00	22.28	21.71	22.72
		1	24	23.00	22.65	22.53	22.72
		12	0	21.50	20.28	20.20	20.87
		12	6	21.50	20.62	20.18	21.07
		12	13	21.50	20.47	20.02	20.58
		25	0	21.50	20.32	20.26	20.76
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23060CH	23095CH	23130CH
10MHz	QPSK	1	0	23.50	22.30	22.82	22.33
		1	25	23.50	22.80	22.61	22.88
		1	49	23.50	21.94	22.54	22.47
		25	0	22.50	21.48	21.27	21.05
		25	13	22.50	21.34	21.22	21.51
		25	25	22.50	21.09	21.00	21.34
		50	0	22.50	21.22	21.07	21.23
	16QAM	1	0	23.00	22.10	22.40	22.21
		1	25	23.00	22.71	22.21	22.67
		1	49	23.00	21.74	21.98	22.28
		25	0	21.50	20.88	20.82	20.51
		25	13	21.50	20.79	20.67	20.98
		25	25	21.50	20.65	20.50	20.84
		50	0	21.50	20.73	20.54	20.80

Table 45: Conducted power measurement results of LTE Band XII (Full Power)

7.1.25 Conducted power measurements of LTE Band XVII (Main Antenna)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23755CH	23790CH	23825 CH
5MHz	QPSK	1	0	23.50	22.64	22.29	22.52
		1	13	23.50	22.58	22.70	23.49
		1	24	23.50	23.09	23.47	23.34
		12	0	22.50	21.24	21.17	21.61
		12	6	22.50	21.15	21.36	21.86
		12	13	22.50	21.03	21.15	21.72
		25	0	22.50	21.23	21.23	21.70
	16QAM	1	0	23.00	21.72	21.45	21.87
		1	13	23.00	21.77	21.95	22.77
		1	24	23.00	22.22	22.83	22.75
		12	0	21.50	20.63	20.59	21.04
		12	6	21.50	20.60	20.79	21.36
		12	13	21.50	20.48	20.61	21.23
		25	0	21.50	20.65	20.69	21.23
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23780CH	23790CH	23800CH
10MHz	QPSK	1	0	23.50	22.93	22.83	22.78
		1	25	23.50	23.01	23.27	23.39
		1	49	23.50	23.37	23.40	23.03
		25	0	22.50	21.62	21.50	21.63
		25	13	22.50	21.63	21.76	22.11
		25	25	22.50	21.86	22.04	22.22
		50	0	22.50	21.66	21.83	22.11
	16QAM	1	0	23.00	22.10	22.11	21.99
		1	25	23.00	22.13	22.43	22.50
		1	49	23.00	22.44	22.62	22.26
		25	0	21.50	21.04	20.96	21.11
		25	13	21.50	21.10	21.21	21.35
		25	25	21.50	21.30	21.46	21.44
		50	0	21.50	21.12	21.25	21.37

Table 46: Conducted power measurement results of LTE Band XVII (Full Power)

7.1.26 Conducted power measurements of LTE Band XXVI (Main Antenna)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26697CH	26865CH	27033CH
1.4MHz	QPSK	1	0	23.40	21.46	21.97	21.57
		1	3	23.40	22.44	22.21	22.65
		1	5	23.40	21.54	21.52	21.45
		3	0	23.40	21.50	21.43	21.49
		3	2	23.40	21.57	21.45	21.43
		3	3	23.40	21.55	21.51	21.61
		6	0	22.40	21.03	21.04	21.37
	16QAM	1	0	22.40	20.84	21.05	20.69
		1	3	22.40	21.84	21.24	21.82
		1	5	22.40	20.82	20.51	20.61
		3	0	22.40	21.14	21.17	21.03
		3	2	22.40	21.13	21.04	21.39
		3	3	22.40	21.08	20.76	21.56
		6	0	22.40	20.96	20.93	21.30
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26705CH	26865CH	27025CH
3MHz	QPSK	1	0	23.40	21.43	22.00	21.56
		1	7	23.40	22.41	22.21	22.63
		1	14	23.40	21.59	21.45	21.41
		8	0	22.40	21.21	21.22	21.10
		8	4	22.40	21.19	21.17	21.45
		8	7	22.40	21.23	20.85	21.54
		15	0	22.40	21.10	21.08	21.35
	16QAM	1	0	22.40	20.85	21.00	20.69
		1	7	22.40	21.80	21.32	21.85
		1	14	22.40	20.87	20.57	20.56
		8	0	22.40	21.14	21.15	21.07
		8	4	22.40	21.07	21.11	21.35
		8	7	22.40	21.10	20.77	21.15
		15	0	22.40	20.91	20.94	21.32

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26715CH	26865CH	27015CH
5MHz	QPSK	1	0	23.40	21.51	21.95	21.56
		1	13	23.40	22.38	22.21	22.64
		1	24	23.40	21.54	21.48	21.49
		12	0	22.40	21.24	21.25	21.14
		12	6	22.40	21.18	21.08	21.47
		12	13	22.40	21.17	20.88	21.62
		25	0	22.40	21.05	21.04	21.35
	16QAM	1	0	22.40	20.88	21.00	20.72
		1	13	22.40	21.77	21.29	21.83
		1	24	22.40	20.88	20.55	20.59
		12	0	22.40	21.10	21.21	21.06
		12	6	22.40	21.15	21.13	21.39
		12	13	22.40	21.10	20.72	21.48
		25	0	22.40	20.96	20.98	21.29
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26750CH	26865CH	26990CH
10MHz	QPSK	1	0	23.40	21.49	21.91	21.52
		1	25	23.40	22.39	22.24	22.68
		1	49	23.40	21.58	21.46	21.46
		25	0	22.40	21.22	21.26	21.12
		25	13	22.40	21.22	21.09	21.45
		25	25	22.40	21.24	20.90	21.57
		50	0	22.40	21.03	21.02	21.34
	16QAM	1	0	22.40	20.88	20.98	20.69
		1	25	22.40	21.77	21.30	21.78
		1	49	22.40	20.84	20.50	20.54
		25	0	22.40	21.06	21.18	21.02
		25	13	22.40	21.09	21.05	21.38
		25	25	22.40	21.06	20.74	21.50
		50	0	22.40	20.97	20.95	21.34

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26775CH	26865CH	26965CH
15MHz	QPSK	1	0	23.40	21.42	21.91	21.52
		1	38	23.40	22.47	22.15	22.63
		1	74	23.40	21.51	21.45	21.43
		36	0	22.40	21.2	21.19	21.06
		36	18	22.40	21.14	21.07	21.42
		36	39	22.40	21.16	20.81	21.53
		75	0	22.40	21.01	21.00	21.33
	16QAM	1	0	22.40	20.80	20.96	20.65
		1	38	22.40	21.76	21.22	21.76
		1	74	22.40	20.78	20.49	20.52
		36	0	22.40	21.05	21.11	21.01
		36	18	22.40	21.06	21.04	21.30
		36	39	22.40	21.03	20.68	21.47
		75	0	22.40	20.91	20.89	21.28

Table 47: Conducted power measurement results of LTE Band XXVI (Full Power)

7.1.27 Conducted power measurements of LTE Band XXXVIII (Main Antenna)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					37775CH	38000CH	38225CH
5MHz	QPSK	1	0	24.50	22.89	23.09	23.80
		1	13	24.50	22.97	23.27	23.91
		1	24	24.50	22.51	22.97	23.44
		12	0	23.50	22.04	22.22	23.04
		12	6	23.50	22.06	22.28	23.09
		12	13	23.50	21.83	22.10	22.86
		25	0	23.50	21.95	22.12	22.91
	16QAM	1	0	23.50	21.96	22.00	22.90
		1	13	23.50	22.13	22.15	23.00
		1	24	23.50	21.59	21.83	22.54
		12	0	22.50	21.11	21.30	22.03
		12	6	22.50	21.16	21.34	22.08
		12	13	22.50	20.94	21.15	21.86
		25	0	22.50	21.07	21.16	21.92
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					37800CH	38000CH	38200CH
10MHz	QPSK	1	0	24.50	22.84	22.86	23.84
		1	25	24.50	22.95	23.27	23.96
		1	49	24.50	22.65	23.10	23.57
		25	0	23.50	21.99	22.14	22.94
		25	13	23.50	22.01	22.18	22.94
		25	25	23.50	21.88	22.17	22.92
		50	0	23.50	21.84	22.15	22.93
	16QAM	1	0	23.50	21.87	22.02	22.52
		1	25	23.50	22.02	22.36	22.88
		1	49	23.50	21.58	22.12	22.41
		25	0	22.50	21.03	21.21	21.98
		25	13	22.50	21.04	21.25	21.99
		25	25	22.50	20.92	21.22	21.97
		50	0	22.50	20.90	21.19	21.99

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					37825CH	38000CH	38175CH
15MHz	QPSK	1	0	24.50	22.61	22.64	23.51
		1	38	24.50	22.83	23.25	24.00
		1	74	24.50	22.53	23.11	23.48
		36	0	23.50	21.92	22.08	22.88
		36	18	23.50	22.10	22.25	22.98
		36	39	23.50	21.83	22.21	22.86
		75	0	23.50	21.76	22.11	22.91
	16QAM	1	0	23.50	21.68	21.67	22.25
		1	38	23.50	21.90	22.32	23.02
		1	74	23.50	21.51	22.15	22.49
		36	0	22.50	20.97	21.12	21.90
		36	18	22.50	21.16	21.30	22.00
		36	39	22.50	20.84	21.19	21.93
		75	0	22.50	20.82	21.14	21.95
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					37850CH	38000CH	38150CH
20MHz	QPSK	1	0	24.50	22.90	22.91	23.53
		1	50	24.50	23.11	23.47	24.02
		1	99	24.50	22.89	23.41	23.66
		50	0	23.50	22.11	22.23	22.84
		50	25	23.50	21.97	22.34	23.15
		50	50	23.50	22.03	22.44	23.01
		100	0	23.50	21.99	22.34	23.00
	16QAM	1	0	23.50	22.04	22.02	22.35
		1	50	23.50	22.19	22.50	23.00
		1	99	23.50	21.90	22.53	22.62
		50	0	22.50	21.22	21.32	21.78
		50	25	22.50	21.02	21.41	22.18
		50	50	22.50	21.06	21.43	22.02
		100	0	22.50	21.06	21.38	22.04

Table 48: Conducted power measurement results of LTE Band XXXVIII (Main Antenna)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					37775CH	38000CH	38225CH
5MHz	QPSK	1	0	20.00	18.77	18.67	19.57
		1	13	20.00	18.87	18.82	19.72
		1	24	20.00	18.31	18.41	19.34
		12	0	19.00	17.88	17.88	18.68
		12	6	19.00	17.91	17.89	18.73
		12	13	19.00	17.60	17.70	18.53
		25	0	19.00	17.77	17.73	18.56
	16QAM	1	0	19.00	17.65	17.81	18.68
		1	13	19.00	17.82	18.04	18.85
		1	24	19.00	17.22	17.60	18.48
		12	0	18.00	16.86	16.82	17.69
		12	6	18.00	16.94	16.84	17.77
		12	13	18.00	16.66	16.69	17.56
		25	0	18.00	16.71	16.69	17.48
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					37800CH	38000CH	38200CH
10MHz	QPSK	1	0	20.00	18.74	18.73	19.35
		1	25	20.00	18.77	18.92	19.69
		1	49	20.00	18.34	18.70	19.44
		25	0	19.00	17.82	17.76	18.43
		25	13	19.00	17.82	17.78	18.56
		25	25	19.00	17.63	17.74	18.57
		50	0	19.00	17.60	17.75	18.53
	16QAM	1	0	19.00	17.95	17.66	18.31
		1	25	19.00	17.95	17.94	18.71
		1	49	19.00	17.57	17.71	18.48
		25	0	18.00	16.71	16.61	17.29
		25	13	18.00	16.73	16.68	17.42
		25	25	18.00	16.54	16.64	17.45
		50	0	18.00	16.58	16.70	17.44

Bandwidth	Modulation	RB size	RB offset	TUNE-UP	Channel	Channel	Channel
					37825CH	38000CH	38175CH
15MHz	QPSK	1	0	20.00	18.64	18.47	18.92
		1	38	20.00	18.79	18.94	19.47
		1	74	20.00	18.19	18.65	19.20
		36	0	19.00	17.76	17.67	18.22
		36	18	19.00	17.86	17.82	18.49
		36	39	19.00	17.49	17.79	18.49
		75	0	19.00	17.46	17.72	18.36
	16QAM	1	0	19.00	17.73	17.60	18.02
		1	38	19.00	17.95	18.11	18.59
		1	74	19.00	17.30	17.78	18.37
		36	0	18.00	16.64	16.52	17.14
		36	18	18.00	16.76	16.68	17.37
		36	39	18.00	16.38	16.63	17.40
		75	0	18.00	16.42	16.60	17.26
Bandwidth	Modulation	RB size	RB offset	TUNE-UP	Channel	Channel	Channel
					37850CH	38000CH	38150CH
20MHz	QPSK	1	0	20.00	18.89	18.65	18.93
		1	50	20.00	18.96	18.99	19.50
		1	99	20.00	18.59	18.95	19.47
		50	0	19.00	17.84	17.85	18.08
		50	25	19.00	17.70	17.88	18.35
		50	50	19.00	17.72	17.86	18.45
		100	0	19.00	17.77	17.89	18.31
	16QAM	1	0	19.00	18.36	18.14	18.14
		1	50	19.00	18.30	18.45	18.66
		1	99	19.00	17.95	18.45	18.72
		50	0	18.00	16.88	16.81	17.16
		50	25	18.00	16.67	16.90	17.42
		50	50	18.00	16.67	16.87	17.53
		100	0	18.00	16.71	16.86	17.34

Table 49: Conducted power measurement results of LTE Band XXXVIII (Sensor on)

7.1.28 Conducted power measurements of LTE Band XLI (Main Antenna)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					40265CH	40740CH	41215CH
5MHz	QPSK	1	0	24.50	23.09	23.44	23.23
		1	13	24.50	23.42	23.54	23.41
		1	24	24.50	22.81	23.15	23.14
		12	0	23.50	22.22	22.46	22.38
		12	6	23.50	22.30	22.45	22.39
		12	13	23.50	22.09	22.26	22.19
		25	0	23.50	22.11	22.35	22.21
	16QAM	1	0	23.50	21.99	22.25	22.32
		1	13	23.50	22.32	22.45	22.56
		1	24	23.50	21.70	21.92	22.08
		12	0	22.50	21.24	21.46	21.24
		12	6	22.50	21.33	21.43	21.24
		12	13	22.50	21.05	21.24	21.06
		25	0	22.50	21.07	21.34	21.09
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					40290CH	40740CH	41190CH
10MHz	QPSK	1	0	24.50	22.90	23.31	23.32
		1	25	24.50	23.33	23.57	23.32
		1	49	24.50	22.83	23.27	23.19
		25	0	23.50	22.15	22.37	22.14
		25	13	23.50	22.23	22.41	22.18
		25	25	23.50	22.21	22.38	22.12
		50	0	23.50	22.37	22.37	22.09
	16QAM	1	0	23.50	21.75	22.23	22.06
		1	25	23.50	22.24	22.55	22.23
		1	49	23.50	21.86	22.23	21.94
		25	0	22.50	21.13	21.35	21.05
		25	13	22.50	21.19	21.39	21.07
		25	25	22.50	21.20	21.36	21.01
		50	0	22.50	21.36	21.34	21.02

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					40315CH	40740CH	41165CH
15MHz	QPSK	1	0	24.50	22.82	23.04	23.03
		1	38	24.50	23.40	23.54	23.22
		1	74	24.50	22.58	23.31	22.91
		36	0	23.50	22.32	22.38	22.16
		36	18	23.50	22.27	22.42	22.27
		36	39	23.50	22.12	22.41	22.08
		75	0	23.50	22.24	22.32	22.10
	16QAM	1	0	23.50	21.55	21.95	21.84
		1	38	23.50	22.38	22.50	22.21
		1	74	23.50	21.56	22.31	21.82
		36	0	22.50	21.31	21.34	21.10
		36	18	22.50	21.26	21.42	21.20
		36	39	22.50	21.13	21.37	21.00
		75	0	22.50	21.23	21.32	21.03
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					40340CH	40740CH	41140CH
20MHz	QPSK	1	0	24.50	23.12	23.13	23.06
		1	50	24.50	23.24	23.58	23.26
		1	99	24.50	22.71	23.54	23.13
		50	0	23.50	22.29	22.47	22.36
		50	25	23.50	22.28	22.54	22.35
		50	50	23.50	22.07	22.60	22.12
		100	0	23.50	22.23	22.45	22.30
	16QAM	1	0	23.50	22.02	22.18	21.94
		1	50	23.50	22.45	22.67	22.30
		1	99	23.50	21.87	22.66	22.10
		50	0	22.50	21.30	21.35	21.33
		50	25	22.50	21.22	21.43	21.28
		50	50	22.50	21.11	21.49	21.04
		100	0	22.50	21.27	21.42	21.25

Table 50: Conducted power measurement results of LTE Band XLI (Full Power)

7.1.29 Conducted power measurements of Downlink LTE CA

In this section, the following conducted power measurement results of downlink LTE carrier aggregation are provided to quantify downlink only carrier aggregation SAR test exclusion per KDB 941225 D05A.

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

Power test equipment: R&S Radio Communication Tester CMW500 and Anritsu Radio Communication Analyzer MT8821C were used.

A) The conducted power measurement results of downlink LTE CA are as below(Second antenna):

DL LTE CA Class	PCC								SCC1			SCC 2			SCC 3			Power		
	PCC Band	PCC Band-width (MHz)	PCC UL RB size	PCC UL RB offset	PCC DL RB size	PCC DL RB offset	PCC UL Channel	PCC DL Channel	SCC Band	SCC Band-width (MHz)	SCC DL Channel	SCC Band	SCC Band-width (MHz)	SCC DL Channel	SCC Band	SCC Band-width (MHz)	SCC DL Channel	Rel 8 LTE Tx Power (dBm)	DL LTE CA Tx Power (dBm)	Tune-up
CA_2C	2	20	1	50	100	0	19100	1100	2	20	902	/	/	/	/	/	/	16.50	16.50	17.00
CA_5B	5	10	1	25	50	0	20600	2600	5	10	2501	/	/	/	/	/	/	19.39	18.90	20.00
CA_7C	7	20	1	99	100	0	21350	3350	7	20	3152	/	/	/	/	/	/	14.94	14.80	15.20
CA_12B	12	10	1	25	50	0	23130	5130	12	5	5058	/	/	/	/	/	/	21.70	21.80	22.00
CA_38C	38	20	1	50	100	0	38150	38150	38	20	37952	/	/	/	/	/	/	18.76	18.50	19.00
CA_41C	41	20	1	50	100	0	41140	41140	41	20	40942	/	/	/	/	/	/	18.44	18.26	19.00
CA_1A-5A	5	10	1	25	50	0	20525	2525	1	20	300	/	/	/	/	/	/	19.45	19.35	20.00
CA_1A-26A	26	10	1	25	50	0	26750	8750	1	20	300	/	/	/	/	/	/	20.96	20.90	21.30
CA_2A-5A	2	5	1	13	25	0	18900	900	5	10	2525	/	/	/	/	/	/	16.77	16.80	17.00
	5	10	1	25	50	0	20525	2525	2	20	900	/	/	/	/	/	/	19.45	19.35	20.00
CA_2A-12A	2	5	1	13	25	0	18900	900	12	10	5095	/	/	/	/	/	/	16.77	16.80	17.00
	12	10	1	25	50	0	23130	5130	2	20	900	/	/	/	/	/	/	21.70	20.70	22.00
CA_2A-17A	2	5	1	13	25	0	18900	900	17	10	5790	/	/	/	/	/	/	16.77	16.80	17.00
	17	5	1	13	25	0	23825	5825	2	10	900	/	/	/	/	/	/	21.91	21.70	22.00
CA_2A-28A	2	5	1	13	25	0	18900	900	28	20	9460	/	/	/	/	/	/	16.77	16.80	17.00
CA_2A-29A	2	5	1	13	25	0	18900	900	29	10	9715	/	/	/	/	/	/	16.77	16.80	17.00
CA_3A-5A	5	10	1	25	50	0	20525	2525	3	20	1575	/	/	/	/	/	/	19.45	19.30	20.00
CA_3A-7A	7	20	1	99	100	0	21350	3350	3	20	1575	/	/	/	/	/	/	14.94	14.66	15.20

CA_3A-26A	26	10	1	25	50	0	26750	8750	3	20	1575	/	/	/	/	/	/	20.96	20.90	21.30
CA_4A-5A	4	20	1	50	100	0	20050	2050	5	10	2525	/	/	/	/	/	/	18.05	18.00	18.30
	5	10	1	25	50	0	20525	2525	4	20	2175	/	/	/	/	/	/	19.45	19.30	20.00
CA_4A-12A	4	20	1	50	100	0	20050	2050	12	10	5095	/	/	/	/	/	/	18.05	18.00	18.30
CA_4A-17A	4	5	1	13	25	0	20375	2375	17	10	5790	/	/	/	/	/	/	17.98	17.50	18.30
CA_4A-28A	4	20	1	50	100	0	20050	2050	28	20	9460	/	/	/	/	/	/	18.05	18.00	18.30
CA_4A-29A	4	20	1	50	100	0	20050	2050	29	10	9715	/	/	/	/	/	/	18.05	18.00	18.30
CA_5A-7A	5	10	1	25	50	0	20525	2525	7	20	3100	/	/	/	/	/	/	19.45	19.30	20.00
	7	20	1	99	100	0	21350	3350	5	10	2525	/	/	/	/	/	/	14.94	14.60	15.20
CA_7A-8A	7	20	1	99	100	0	21350	3350	8	10	3625	/	/	/	/	/	/	14.94	14.00	15.20
CA_7A-12A	7	20	1	99	100	0	21350	3350	12	10	5095	/	/	/	/	/	/	14.94	14.60	15.20
	12	10	1	25	50	0	23130	5130	7	20	3100	/	/	/	/	/	/	21.70	21.80	22.00
CA_7A-20A	7	20	1	99	100	0	21350	3350	20	10	6300	/	/	/	/	/	/	14.94	14.60	15.20
CA_7A-28A	7	20	1	99	100	0	21350	3350	28	20	9460	/	/	/	/	/	/	14.94	14.60	15.20
CA_39A-41A	41	20	1	50	100	0	41140	41140	39	20	38450	/	/	/	/	/	/	18.44	18.00	19.00
CA_41A-41A	41	20	1	50	100	0	41140	41140	41	20	40340	/	/	/	/	/	/	18.44	18.10	19.00
CA_1A-3A-5A	5	10	1	25	50	0	20525	2525	1	20	300	3	20	1575	/	/	/	19.45	19.30	20.00
CA_1A-3A-26A	26	10	1	25	50	0	26750	8750	1	20	300	3	20	1575	/	/	/	20.96	20.86	21.30
CA_2C-29A	2	20	1	50	100	0	19100	1100	2	20	902	29	10	9715	/	/	/	16.50	16.60	17.00
CA_3C-7A	7	20	1	99	100	0	21350	3350	3	20	1652	3	20	1775	/	/	/	14.94	14.93	15.20
CA_3C-5A	5	10	1	25	50	0	20525	2525	3	20	1652	3	20	1775	/	/	/	19.45	19.35	20.00
CA_3A-7C	7	20	1	99	100	0	21350	3350	7	20	3152	3	20	1575	/	/	/	14.94	14.70	15.20
CA_3A-7A-8A	7	20	1	99	100	0	21350	3350	3	20	1575	8	10	3625	/	/	/	14.94	14.40	15.20
CA_3A-7A-20A	7	20	1	99	100	0	21350	3350	3	20	1575	20	20	6300	/	/	/	14.94	14.60	15.20
CA_3A-7A-28A	7	20	1	99	100	0	21350	3350	3	20	1575	28	20	9460	/	/	/	14.94	14.92	15.20
CA_4A-12B	4	20	1	50	100	0	20050	2050	12	10	5130	12	5	5058	/	/	/	18.05	18.10	18.30
CA_7C-28A	7	20	1	99	100	0	21350	3350	7	20	3152	28	20	9460	/	/	/	14.94	14.87	15.20
CA_39C-41A	41	20	1	50	100	0	41140	41140	39	20	38401	39	15	38572	/	/	/	18.44	18.37	19.00
CA_39A-41C	41	20	1	50	100	0	41140	41140	41	20	40942	39	20	38450	/	/	/	18.44	17.92	19.00
CA_41D	41	20	1	50	100	0	41140	41140	41	20	40942	41	20	40744	/	/	/	18.44	17.96	19.00

CA_3A-7C-28A	7	20	1	99	100	0	21350	3350	7	20	3152	28	20	9460	3	20	1575	14.94	14.89	15.20
CA_39C-41C	41	20	1	50	100	0	41140	41140	41	20	40942	39	20	38401	39	15	38572	18.44	17.95	19.00

B) The conducted power measurement results of downlink LTE CA are as below (Main antenna):

DL LTE CA Class	PCC								SCC1			SCC 2			SCC 3			Power		
	PCC Band	PCC Band-width (MHz)	PCC UL RB size	PCC UL RB offset	PCC DL RB size	PCC DL RB offset	PCC UL Channel	PCC DL Channel	SCC Band	SCC Band-width (MHz)	SCC DL Channel	SCC Band	SCC Band-width (MHz)	SCC DL Channel	SCC Band	SCC Band-width (MHz)	SCC DL Channel	Rel 8 LTE Tx Power (dBm)	DL LTE CA Tx Power (dBm)	Tune-up
CA_5B	5	10	1	25	50	0	20600	2600	5	10	2501	/	/	/	/	/	/	22.91	22.90	23.50
CA_12B	12	10	1	25	50	0	23130	5130	12	5	5058	/	/	/	/	/	/	22.88	22.85	23.50
CA_2C	2	20	1	50	100	0	19100	1100	2	20	902	/	/	/	/	/	/	23.88	23.70	24.00
CA_7C	7	20	1	0	100	0	20850	2850	7	20	3048	/	/	/	/	/	/	23.00	22.90	23.50
CA_38C	38	20	1	50	100	0	38150	38150	38	20	37952	/	/	/	/	/	/	24.02	23.60	24.50
CA_41C	41	20	1	50	100	0	41140	41140	41	20	40942	/	/	/	/	/	/	23.26	23.10	24.50
CA_1A-5A	5	10	1	25	50	0	20600	2600	1	20	300	/	/	/	/	/	/	22.91	22.90	23.50
CA_1A-26A	26	10	1	25	50	0	26990	8990	1	20	300	/	/	/	/	/	/	22.68	22.50	23.40
CA_2A-5A	2	20	1	50	100	0	19100	1100	5	10	2525	/	/	/	/	/	/	23.88	23.80	24.00
	5	10	1	25	50	0	20600	2600	2	20	900	/	/	/	/	/	/	22.91	22.90	23.50
CA_2A-12A	2	20	1	50	100	0	19100	1100	12	10	5095	/	/	/	/	/	/	23.88	23.80	24.00
	12	10	1	25	50	0	23130	5130	2	20	900	/	/	/	/	/	/	22.88	22.90	23.50
CA_2A-17A	2	20	1	50	100	0	19100	1100	17	10	5790	/	/	/	/	/	/	23.88	23.80	24.00
	17	5	1	13	25	0	23825	5825	2	10	900	/	/	/	/	/	/	23.49	23.00	23.50
CA_2A-28A	2	20	1	50	100	0	19100	1100	28	15	9435	/	/	/	/	/	/	23.88	23.80	24.00
CA_2A-29A	2	20	1	50	100	0	19100	1100	29	10	9715	/	/	/	/	/	/	23.88	23.80	24.00
CA_3A-5A	5	10	1	25	50	0	20600	2600	3	20	1575	/	/	/	/	/	/	22.91	22.90	23.50
CA_3A-7A	7	20	1	50	100	0	21100	3100	3	20	1575	/	/	/	/	/	/	23.33	23.27	23.50
CA_3A-26A	26	10	1	25	50	0	26990	8990	3	20	1575	/	/	/	/	/	/	22.68	22.80	23.40
CA_4A-5A	4	20	1	50	100	0	20300	2300	5	10	2525	/	/	/	/	/	/	23.49	23.30	24.00
	5	10	1	25	50	0	20600	2600	4	20	2175	/	/	/	/	/	/	22.91	22.90	23.50
CA_4A-12A	4	20	1	50	100	0	20300	2300	12	10	5095	/	/	/	/	/	/	23.49	23.30	24.00
CA_4A-17A	4	20	1	50	100	0	20300	2300	17	10	5790	/	/	/	/	/	/	23.49	23.06	24.00
CA_4A-28A	4	20	1	50	100	0	20300	2300	28	20	9460	/	/	/	/	/	/	23.49	23.00	24.00
CA_4A-29A	4	20	1	50	100	0	20300	2300	29	10	9715	/	/	/	/	/	/	23.49	23.01	24.00
CA_5A-7A	5	10	1	25	50	0	20600	2600	7	20	3100	/	/	/	/	/	/	22.91	22.88	23.50

	7	20	1	50	100	0	21100	3100	5	10	2525	/	/	/	/	/	/	23.33	23.28	23.50
CA_7A-8A	7	20	1	50	100	0	21100	3100	8	10	3625	/	/	/	/	/	/	23.33	23.30	23.50
CA_7A-12A	7	20	1	50	100	0	21100	3100	12	10	5095	/	/	/	/	/	/	23.33	23.30	23.50
	12	10	1	25	50	0	23130	5130	7	20	3100	/	/	/	/	/	/	22.88	22.90	23.50
CA_7A-20A	7	20	1	50	100	0	21100	3100	20	10	6300	/	/	/	/	/	/	23.33	22.23	23.50
CA_7A-28A	7	20	1	50	100	0	21100	3100	28	15	9435	/	/	/	/	/	/	23.33	23.33	23.50
CA_39A-41A	41	20	1	50	100	0	40740	40740	41	20	40340	/	/	/	/	/	/	23.58	23.00	24.50
CA_41A-41A	41	20	1	50	100	0	40740	40740	39	20	38450	/	/	/	/	/	/	23.58	23.07	24.50
CA_1A-3A-5A	5	10	1	25	50	0	20600	2600	1	20	300	3	20	1575	/	/	/	22.91	22.90	23.50
CA_1A-3A-26A	26	10	1	25	50	0	26990	8990	1	20	300	3	20	1575	/	/	/	22.68	22.51	23.40
CA_2C-29A	2	20	1	50	100	0	19100	1100	2	20	902	29	10	9715	/	/	/	23.88	23.70	24.00
CA_3C-7A	7	20	1	50	100	0	21100	3100	3	20	1652	3	20	1775	/	/	/	23.33	23.20	23.50
CA_3C-5A	5	10	1	25	50	0	20600	2600	3	20	1652	3	20	1775	/	/	/	22.91	22.90	23.50
CA_3A-7C	7	20	1	0	100	0	20850	2850	7	20	3048	3	20	1575	/	/	/	23.00	22.97	23.50
CA_3A-7A-8A	7	20	1	50	100	0	21100	3100	3	20	1575	8	10	3625	/	/	/	23.33	23.40	23.50
CA_3A-7A-20A	7	20	1	50	100	0	21100	3100	3	20	1575	20	20	6300	/	/	/	23.33	23.40	23.50
CA_3A-7A-28A	7	20	1	50	100	0	21100	3100	3	20	1575	28	20	9460	/	/	/	23.33	23.30	23.50
CA_4A-12B	4	20	1	50	100	0	20300	2300	12	10	5130	12	5	5058	/	/	/	23.49	23.40	24.00
CA_7C-28A	7	20	1	0	100	0	20850	2850	7	20	3048	28	20	9460	/	/	/	23.33	23.40	23.50
CA_39A-41C	41	20	1	50	100	0	41140	41140	41	20	40942	39	20	38450	/	/	/	23.26	23.00	24.50
CA_41D	41	20	1	50	100	0	41140	41140	41	20	40942	41	20	40744	/	/	/	23.26	22.94	24.50
CA_39C-41A	41	20	1	50	100	0	40740	40740	39	20	38401	39	15	38572	/	/	/	23.58	22.96	24.50
CA_3A-7C-28A	7	20	1	0	100	0	20850	2850	7	20	3048	28	20	9460	3	20	1575	23.00	22.96	23.50
CA_39C-41C	41	20	1	50	100	0	41140	41140	41	20	40942	39	20	38401	39	15	38572	23.26	23.00	24.50

Note: Testing is not required in bands or modes not intended/allowed for US operation.

7.1.30 Conducted power measurements of WiFi 2.4G

The output power of WiFi antenna is as following:

Mode	Ant	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
802.11b	Ant1	1	2412	1	17	16.01	Yes
		6	2437			16.62	Yes
		11	2462			15.92	Yes
	Ant2	1	2412	1	14.5	13.63	Yes
		6	2437			13.89	Yes
		11	2462			13.49	Yes
802.11g	Ant1	1	2412	6.5	16	Not required	No
		6	2437			Not required	No
		11	2462			Not required	No
	Ant2	1	2412	6.5	13.5	Not required	No
		6	2437			Not required	No
		11	2462			Not required	No
802.11n 20M	Ant1	1	2412	13.5	15	Not required	No
		6	2437			Not required	No
		11	2462			Not required	No
	Ant2	1	2412	13.5	12.5	Not required	No
		6	2437			Not required	No
		11	2462			Not required	No

Table 51: Conducted power measurement results of WiFi 2.4G(Full power level).

Note: 1) The Average conducted power of WiFi is measured with RMS detector.

Mode	Ant	Channel	Frequency (MHz)	Data Rate	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
802.11n-20M MIMO	Ant1	1	2412	MCS0	/	13.63	/
		6	2437		/	13.86	/
		11	2462		/	13.43	/
	Ant2	1	2412	MCS0	/	11.52	/
		6	2437		/	11.75	/
		11	2462		/	11.36	/
	Sum	1	2412	MCS0	16.5	15.71	No
		6	2437			15.94	No
		11	2462			15.53	No
Mode	Ant	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
802.11g CDD	Ant1	1	2412	6	/	14.75	/
		6	2437		/	15.14	/
		11	2462		/	14.61	/
	Ant2	1	2412	6	/	12.44	/
		6	2437		/	12.74	/
		11	2462		/	12.09	/
	Sum	1	2412	6	17.5	16.76	Yes
		6	2437			17.11	Yes
		11	2462			16.54	Yes

Table 52: Conducted power measurement results of WiFi 2.4G (MIMO&CDD)

Note: 1) The Average conducted power of WiFi is measured with RMS detector.

Mode	Ant	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
802.11b	Ant1	1	2412	1	16.5	15.45	Yes
		6	2437			16.15	Yes
		11	2462			15.61	Yes
802.11g	Ant1	1	2412	6	15.5	Not required	No
		6	2437			Not required	No
		11	2462			Not required	No
802.11n 20M	Ant1	1	2412	6.5	14.5	Not required	No
		6	2437			Not required	No
		11	2462			Not required	No

Table 53: Conducted power measurement results of WiFi 2.4G (2G/3G/4G antenna simultaneous transmission with WIFI station).

Note: 1) The Average conducted power of WiFi is measured with RMS detector.

7.1.31 Conducted power measurements of WiFi 5G

Mode	Antenna	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
802.11a	Ant1	CH 36	5180	6	12.5	11.64	No
		CH 40	5200			11.68	Yes
		CH 44	5220			11.35	No
		CH 48	5240			11.27	No
		CH 52	5260			11.98	Yes
		CH 56	5280			11.76	Yes
		CH 60	5300			11.58	Yes
		CH 64	5320			11.64	Yes
		CH 100	5500			11.69	No
		CH 104	5520			11.84	No
		CH 108	5540			11.76	No
		CH 112	5560			11.84	No
		CH 116	5580			12.11	Yes
		CH 120	5600			11.96	No
		CH 124	5620			11.88	No
		CH 128	5640			12.02	No
		CH 132	5660			11.83	No
		CH 136	5680			11.61	No
		CH 140	5700			11.68	No
		CH 144	5720			11.62	No
		CH 149	5745*			11.47	No
		CH 153	5765			11.43	No
		CH 157	5785			11.41	No
		CH 161	5805			11.80	Yes
		CH 165	5825			11.46	Yes

Table 54: Conducted power measurement results of WiFi 5G 802.11a (Full Power).

Mode	Antenna	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
802.11n 20M (5GHz)	Ant1	CH 36	5180	6.5	12.5	11.74	No
		CH 40	5200			11.63	No
		CH 44	5220			11.62	No
		CH 48	5240			11.54	No
		CH 52	5260			11.49	No
		CH 56	5280			11.65	No
		CH 60	5300			11.77	No
		CH 64	5320			11.88	No
		CH 100	5500			11.81	No
		CH 104	5520			11.86	No
		CH 108	5540			11.75	No
		CH 112	5560			11.54	No
		CH 116	5580			11.62	No
		CH 120	5600			11.91	No
		CH 124	5620			11.81	No
		CH 128	5640			11.73	No
		CH 132	5660			11.87	No
		CH 136	5680			11.68	No
		CH 140	5700			11.46	No
		CH 144	5720			11.63	No
		CH 149	5745			11.47	No
		CH 153	5765			11.49	No
		CH 157	5785			11.28	No
		CH 161	5805			11.51	No
		CH 165	5825			11.48	No

Table 55: Conducted power measurement results of WiFi 5G 802.11n 20M (Full Power).

Mode	Antenna	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
802.11n 40M (5GHz)	Ant1	CH 38	5190	13.5	10	Not required	No
		CH 46	5230			Not required	No
		CH 54	5270			Not required	No
		CH 62	5310			Not required	No
		CH 102	5510			Not required	No
		CH 110	5550			Not required	No
		CH 118	5590			Not required	No
		CH 126	5630			Not required	No
		CH 134	5670			Not required	No
		CH 142	5710			Not required	No
		CH 151	5755			Not required	No
		CH 159	5795			Not required	No

Table 56: Conducted power measurement results of WiFi 5G 802.11n 40M (Full Power).

Mode	Antenna	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
802.11ac-20M (5GHz)	Ant1	CH 36	5180	6.5	12.5	11.41	No
		CH 40	5200			11.52	No
		CH 44	5220			11.66	No
		CH 48	5240			11.47	No
		CH 52	5260			11.25	No
		CH 56	5280			11.42	No
		CH 60	5300			11.26	No
		CH 64	5320			11.66	No
		CH 100	5500			11.43	No
		CH 104	5520			11.38	No
		CH 108	5540			11.54	No
		CH 112	5560			11.66	No
		CH 116	5580			11.77	No
		CH 120	5600			11.85	No
		CH 124	5620			11.65	No
		CH 128	5640			11.70	No
		CH 132	5660			11.59	No
		CH 136	5680			11.38	No
		CH 140	5700			11.46	No
		CH 144	5720			11.75	No
		CH 149	5745			11.65	No
		CH 153	5765			11.57	No
		CH 157	5785			11.71	No
		CH 161	5805			11.40	No
		CH 165	5825			11.58	No

Table 57: Conducted power measurement results of WiFi 5G 802.11ac 20M (Full Power).

Mode	Antenna	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
802.11ac-40M (5GHz)	Ant1	CH 38	5190	13.5	10	Not required	No
		CH 46	5230			Not required	No
		CH 54	5270			Not required	No
		CH 62	5310			Not required	No
		CH 102	5510			Not required	No
		CH 110	5550			Not required	No
		CH 118	5590			Not required	No
		CH 126	5630			Not required	No
		CH 134	5670			Not required	No
		CH 142	5710			Not required	No
		CH 151	5755			Not required	No
		CH 159	5795			Not required	No

Table 58: Conducted power measurement results of WiFi 5G 802.11ac 40M (Full Power).

Mode	Antenna	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
802.11ac 80M (5GHz)	Ant1	CH 42	5210	29.3	10	Not required	No
		CH 58	5290			Not required	No
		CH 106	5530			Not required	No
		CH 122	5610			Not required	No
		CH 138	5690			Not required	No
		CH 155	5775			Not required	No

Table 59: Conducted power measurement results of WiFi 5G 802.11ac 80M (Full Power).

Mode	Antenna	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
802.11a	Ant1	CH 36	5180	6	10.5	9.15	No
		CH 40	5200			8.69	No
		CH 44	5220			8.68	No
		CH 48	5240			8.71	No
		CH 52	5260			9.41	Yes
		CH 56	5280			9.32	No
		CH 60	5300			9.16	No
		CH 64	5320			9.35	No
		CH 100	5500			9.43	No
		CH 104	5520			9.35	No
		CH 108	5540			9.46	No
		CH 112	5560			9.58	No
		CH 116	5580			9.61	No
		CH 120	5600			9.49	No
		CH 124	5620			9.63	No
		CH 128	5640			9.35	No
		CH 132	5660			9.71	Yes
		CH 136	5680			9.18	No
		CH 140	5700			9.31	No
		CH 144	5720			9.21	No
		CH 149	5745*		12.5	11.47	No
		CH 153	5765			11.43	No
		CH 157	5785			11.41	No
		CH 161	5805			11.80	No
		CH 165	5825			11.46	No

Table 60: Conducted power measurement results of WiFi 5G 802.11a (2G/3G/4G antenna simultaneous transmission with WIFI station).

Mode	Antenna	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
802.11n 20M (5GHz)	Ant1	CH 36	5180	6.5	10.5	9.66	No
		CH 40	5200			9.55	No
		CH 44	5220			9.54	No
		CH 48	5240			9.46	No
		CH 52	5260			9.41	No
		CH 56	5280			9.57	No
		CH 60	5300			9.69	No
		CH 64	5320			9.73	No
		CH 100	5500			9.66	No
		CH 104	5520			9.71	No
		CH 108	5540			9.60	No
		CH 112	5560			9.39	No
		CH 116	5580			9.47	No
		CH 120	5600			9.76	No
		CH 124	5620			9.80	No
		CH 128	5640			9.72	No
		CH 132	5660			9.86	No
		CH 136	5680			9.67	No
		CH 140	5700			9.45	No
		CH 144	5720			9.62	No
		CH 149	5745		12.5	11.47	No
		CH 153	5765			11.49	No
		CH 157	5785			11.28	No
		CH 161	5805			11.51	No
		CH 165	5825			11.48	No

Table 61: Conducted power measurement results of WiFi 5G 802.11n 20M (2G/3G/4G antenna simultaneous transmission with WIFI station).

Mode	Antenna	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
802.11n 40M (5GHz)	Ant1	CH 38	5190	13.5	8	Not required	No
		CH 46	5230			Not required	No
		CH 54	5270			Not required	No
		CH 62	5310			Not required	No
		CH 102	5510			Not required	No
		CH 110	5550			Not required	No
		CH 118	5590			Not required	No
		CH 126	5630			Not required	No
		CH 134	5670			Not required	No
		CH 142	5710			Not required	No
		CH 151	5755		10	Not required	No
		CH 159	5795			Not required	No

Table 62: Conducted power measurement results of WiFi 5G 802.11n 40M (2G/3G/4G antenna simultaneous transmission with WIFI station).

Mode	Antenna	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
802.11ac-20M (5GHz)	Ant1	CH 36	5180	6.5	10.5	9.20	No
		CH 40	5200			9.31	No
		CH 44	5220			9.45	No
		CH 48	5240			9.26	No
		CH 52	5260			9.04	No
		CH 56	5280			9.21	No
		CH 60	5300			9.05	No
		CH 64	5320			9.45	No
		CH 100	5500			9.38	No
		CH 104	5520			9.33	No
		CH 108	5540			9.49	No
		CH 112	5560			9.61	No
		CH 116	5580			9.72	No
		CH 120	5600			9.80	No
		CH 124	5620			9.60	No
		CH 128	5640			9.65	No
		CH 132	5660			9.44	No
		CH 136	5680			9.23	No
		CH 140	5700			9.31	No
		CH 144	5720			9.60	No
		CH 149	5745		12.5	11.65	No
		CH 153	5765			11.57	No
		CH 157	5785			11.71	No
		CH 161	5805			11.40	No
		CH 165	5825			11.58	No

Table 63: Conducted power measurement results of WiFi 5G 802.11ac 20M (2G/3G/4G antenna simultaneous transmission with WIFI station).

Mode	Antenna	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
802.11ac-40M (5GHz)	Ant1	CH 38	5190	13.5	8	Not required	No
		CH 46	5230			Not required	No
		CH 54	5270			Not required	No
		CH 62	5310			Not required	No
		CH 102	5510			Not required	No
		CH 110	5550			Not required	No
		CH 118	5590			Not required	No
		CH 126	5630			Not required	No
		CH 134	5670			Not required	No
		CH 142	5710			Not required	No
		CH 151	5755		10	Not required	No
		CH 159	5795			Not required	No

Table 64: Conducted power measurement results of WiFi 5G 802.11ac 40M (2G/3G/4G antenna simultaneous transmission with WIFI station).

Mode	Antenna	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
802.11ac 80M (5GHz)	Ant1	CH 42	5210	29.3	8	Not required	No
		CH 58	5290			Not required	No
		CH 106	5530			Not required	No
		CH 122	5610			Not required	No
		CH 138	5690			Not required	No
		CH 155	5775		10	Not required	No

Table 65: Conducted power measurement results of WiFi 5G 802.11ac 80M (2G/3G/4G antenna simultaneous transmission with WIFI station).

7.1.32 Conducted power measurements of BT

The output power of BT antenna is as following:

BT 2450	Tune-up	Average Conducted Power (dBm)		
		0CH	39CH	78CH
DH5	10	8.38	9.58	8.02
2DH5	10	6.14	6.21	4.27
3DH5	10	5.79	6.19	4.01

BT 2450	Tune-up	Average Conducted Power (dBm)		
		0CH	19CH	39CH
BT BLE	10	2.76	2.71	1.21

Table 66: Conducted power measurement results of BT.

Note: The conducted power of BT is measured with RMS detector.

7.2 SAR measurement Results

General Notes:

- 1) Per KDB447498 D01, all SAR measurement results are scaled to the maximum tune-up tolerance limit to demonstrate SAR compliance.
- 2) Per KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.
 - $\leq 0.6\text{ W/kg}$ or 1.5 W/kg , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
 - $\leq 0.4\text{ W/kg}$ or 1.0 W/kg , for 1-g or 10-g respectively, when the transmission band is $\geq 200\text{ MHz}$.When the maximum output power variation across the required test channels is $> \frac{1}{2}\text{ dB}$, instead of the middle channel, the highest output power channel must be used.
- 3) Per KDB865664 D01, for each frequency band, repeated SAR measurement is required only when the measured SAR is $\geq 0.8\text{W/kg}$; if the deviation among the repeated measurement is $\leq 20\%$, and the measured SAR $< 1.45\text{W/Kg}$, only one repeated measurement is required.
- 4) Per KDB941225 D06, the DUT Dimension is bigger than 9 cm x 5 cm, so 10mm is chosen as the test separation distance for Hotspot mode. When the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.
- 5) Per KDB648474 D04, SAR is evaluated without a headset connected to the device. When the standalone reported body-worn SAR is $\leq 1.2\text{ W/kg}$, no additional SAR evaluations using a headset are required.
- 6) Per KDB865664 D02, SAR plot is only required for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination; Plots are also required when the measured SAR is $> 1.5\text{ W/kg}$, or $> 7.0\text{ W/kg}$ for occupational exposure. The published RF exposure KDB procedures may require additional plots; for example, to support SAR to peak location separation ratio test exclusion and/or volume scan post-processing(Refer to appendix B for details).
- 7) Additional SAR tests in simultaneous transmission fixed power reduction scenario are also tested in some frequency bands and required test positions for the SAR worst case, which are only used to ensure simultaneous transmission SAR test exclusion. The standalone SAR compliance still uses the SAR results tested at the maximum output power level.
- 8) Per KDB 648474D04, for handsets with additional batteries, the highest reported SAR for each wireless technology, frequency band, operating mode and applicable exposure condition (head, body-worn accessory, hotspot mode, etc.) must be repeated with the specific accessory attached. In addition, for test cases where the measured SAR for a handset is greater than 1.2 W/kg , these tests should also be repeated with the additional batteries.
- 9) Per KDB 648474 D04, Phones with built-in NFC functions do not require separate SAR testing and can generally be tested according to the SAR measurement procedures normally required for the phone. Influences of the hardware introduced by the built-in NFC functions are inherently considered through testing of the other transmitters that require SAR.

GSM Notes:

- 1) Per KDB941225 D01, 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.
- 2) Per KDB648474 D04v01r02, the device does not support DTM function. Body-worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.

UMTS Notes:

- 1) Per KDB941225 D01, When the maximum output power and tune-up tolerance specified for production units in a Second mode is $\leq \frac{1}{4}$ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

LTE Notes:

- 1) The LTE test configurations are determined according to KDB941225 D05 SAR for LTE Devices v02r03. The general test procedures used for SAR testing can be found in Section 6.5.
- 2) A-MPR was disabled for all SAR test by setting NS_01 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI)
- 3) According to KDB 941225 D05, for Time-Division Duplex (TDD) systems, SAR is tested using a fixed periodic duty factor according to the highest transmission duty factor (63.33%) implemented for the device and supported by the defined 3GPP LTE TDD configurations.

WiFi Notes:

Per KDB248227D01:

- 1) When reported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining test position is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR position until the reported SAR result is ≤ 0.8 W/kg or all test position are measured. For all positions/configurations tested using the initial test position and subsequent test positions, when the *reported* SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the *reported* SAR is ≤ 1.2 W/kg or all required channels are tested..
- 2) The highest SAR measured for the initial test position or initial test configuration should be used to determine SAR test exclusion according to the sum of 1-g SAR and SAR peak to location ratio provisions in KDB 447498. In addition, a test lab may also choose to perform standalone SAR measurements for test positions and 802.11 configurations that are not required by the initial test position or initial test configuration procedures and apply the results to determine simultaneous transmission SAR test exclusion, according to sum of 1-g and SAR peak to location ratio requirements to reduce the number of simultaneous transmission SAR measurements.

7.2.1 SAR measurement Result of GSM850 (Second Antenna)

Test Position of Head	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Left touch	190/836.6	GSM	0.618	0.339	0.10	29.42	30.50	0.792	/	/
Left tilt	190/836.6	GSM	0.551	0.287	-0.11	29.42	30.50	0.707	/	/
Right touch	190/836.6	GSM	0.987	0.532	0.11	29.42	30.50	1.266	/	/
Right touch	128/824.2	GSM	0.886	0.474	-0.01	29.30	30.50	1.168	/	/
Right touch	251/848.8	GSM	0.947	0.514	-0.02	29.61	30.50	1.162	/	/
Right tilt	190/836.6	GSM	0.767	0.366	-0.11	29.42	30.50	0.984	/	/
Right tilt	128/824.2	GSM	0.674	0.328	0.10	29.30	30.50	0.889	/	/
Right tilt	251/848.8	GSM	0.771	0.377	0.00	29.61	30.50	0.946	/	/
Tested at the worst position with battery 2#										
Right touch	190/836.6	GSM	1.050	0.562	0.17	29.42	30.50	1.346	/	/
Right touch-Repeated	190/836.6	GSM	0.970	0.507	-0.01	29.42	30.50	1.244	/	/
Tested at the worst position with battery 3#										
Right touch	190/836.6	GSM	1.020	0.554	-0.08	29.42	30.50	1.308	/	/
Test data of VTR-L29 (new)										
Right touch	190/836.6	GSM	1.060	0.577	0.03	29.42	30.50	1.359	/	Yes
Additional SAR test (Second antenna simultaneous transmission with WIFI antenna)										
Right touch	190/836.6	GSM	0.942	0.510	-0.08	29.01	30.00	1.183	/	/
Right touch	128/824.2	GSM	0.873	0.469	-0.01	28.87	30.00	1.132	/	/
Right touch	251/848.8	GSM	0.927	0.504	0.02	29.15	30.00	1.127	/	/

Table 67: Head SAR test results of GSM850

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Front Side	190/836.6	GSM	0.169	0.128	-0.01	29.42	30.50	0.217	/	/
Back Side	190/836.6	GSM	0.192	0.145	-0.03	29.42	30.50	0.246	/	/
Tested at the worst position with battery 2#										
Back Side	190/836.6	GSM	0.185	0.130	-0.05	29.42	30.50	0.237	/	/
Tested at the worst position with battery 3#										
Back Side	190/836.6	GSM	0.197	0.149	-0.08	29.42	30.50	0.253	/	/
Test data of VTR-L29 (new)										
Back Side	190/836.6	GSM	0.207	0.159	-0.07	29.42	30.50	0.265	/	Yes

Table 68: Body-Worn SAR test results of GSM850

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Front Side	190/836.6	GPRS 2TS	0.285	0.179	0.00	27.64	28.50	0.347	/	/
Back Side	190/836.6	GPRS 2TS	0.337	0.187	0.06	27.64	28.50	0.411	/	/
Left Side	190/836.6	GPRS 2TS	0.401	0.271	-0.09	27.64	28.50	0.489	/	/
Top Side	190/836.6	GPRS 2TS	0.203	0.100	-0.10	27.64	28.50	0.247	/	/
Tested at the worst position with battery 2#										
Left Side	190/836.6	GPRS 2TS	0.387	0.262	-0.04	27.64	28.50	0.472	/	/
Tested at the worst position with battery 3#										
Left Side	190/836.6	GPRS 2TS	0.381	0.258	-0.07	27.64	28.50	0.464	/	/
Test data of VTR-L29 (new)										
Left Side	190/836.6	GPRS 2TS	0.417	0.285	0.09	27.64	28.50	0.508	/	Yes

Table 69: Hotspot SAR test results of GSM850

7.2.2 SAR measurement Result of GSM1900 (Second Antenna)

Test Position of Head	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Left touch	661/1880	GSM	0.514	0.319	-0.01	24.97	25.50	0.581	/	/
Left tilt	661/1880	GSM	0.386	0.237	0.01	24.97	25.50	0.436	/	/
Right touch	661/1880	GSM	1.100	0.606	0.00	24.97	25.50	1.243	/	/
Right touch	512/1850.2	GSM	1.170	0.644	0.04	24.98	25.50	1.319	/	/
Right touch-repeated	512/1850.2	GSM	1.120	0.623	-0.06	24.98	25.50	1.262	/	/
Right touch	810/1909.8	GSM	1.050	0.576	0.01	24.96	25.50	1.189	/	/
Right tilt	661/1880	GSM	0.719	0.387	0.01	24.97	25.50	0.812	/	/
Right tilt	512/1850.2	GSM	0.752	0.406	0.03	24.98	25.50	0.848	/	/
Right tilt	810/1909.8	GSM	0.685	0.372	-0.03	24.96	25.50	0.776	/	/
Tested at the worst position with battery 2#										
Right touch	512/1850.2	GSM	1.030	0.573	-0.01	24.98	25.50	1.161	/	/
Tested at the worst position with battery 3#										
Right touch	512/1850.2	GSM	1.040	0.573	-0.06	24.98	25.50	1.172	/	/
Test data of VTR-L29 (new)										
Right touch	512/1850.2	GSM	0.945	0.521	-0.06	24.98	25.50	1.065	/	Yes

Table 70: Head SAR test results of GSM1900

Test Position of Body-Worn with 15mm	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Front Side	661/1880	GSM	0.087	0.054	0.09	24.97	25.50	0.099	/	/
Back Side	661/1880	GSM	0.105	0.067	0.16	24.97	25.50	0.119	/	/
Tested at the worst position with battery 2#										
Back Side	661/1880	GSM	0.098	0.060	0.01	24.97	25.50	0.111	/	/
Tested at the worst position with battery 3#										
Back Side	661/1880	GSM	0.102	0.066	0.06	24.97	25.50	0.115	/	/
Test data of VTR-L29 (new)										
Back Side	661/1880	GSM	0.073	0.046	0.11	24.97	25.50	0.083	/	Yes

Table 71: Body-Worn SAR test results of GSM1900

Test Position of Hotspot with 10mm	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Front Side	661/1880	GPRS 2TS	0.192	0.124	0.10	22.69	23.50	0.231	/	/
Back Side	661/1880	GPRS 2TS	0.211	0.134	-0.10	22.69	23.50	0.254	/	/
Left Side	661/1880	GPRS 2TS	0.252	0.150	0.03	22.69	23.50	0.304	/	/
Top Side	661/1880	GPRS 2TS	0.198	0.101	-0.02	22.69	23.50	0.239	/	/
Tested at the worst position with battery 2#										
Left Side	661/1880	GPRS 2TS	0.221	0.124	0.14	22.69	23.50	0.266	/	/
Tested at the worst position with battery 3#										
Left Side	661/1880	GPRS 2TS	0.227	0.135	0.14	22.69	23.50	0.274	/	/
Test data of VTR-L29 (new)										
Left Side	661/1880	GPRS 2TS	0.161	0.093	0.00	22.69	23.50	0.194	/	Yes

Table 72: Hotspot SAR test results of GSM1900

7.2.3 SAR measurement Result of UMTS Band II(Second Antenna)

Test Position of Head	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Left touch	9400/1880	RMC	0.419	0.264	0.01	16.02	16.50	0.468	/	/
Left tilt	9400/1880	RMC	0.326	0.202	0.07	16.02	16.50	0.364	/	/
Right touch	9400/1880	RMC	1.120	0.614	0.07	16.02	16.50	1.251	/	/
Right tilt	9400/1880	RMC	0.711	0.381	-0.10	16.02	16.50	0.794	/	/
Right touch	9262/1852.4	RMC	1.110	0.617	0.01	15.97	16.50	1.254	/	/
Right touch	9538/1907.6	RMC	1.200	0.657	0.02	16.07	16.50	1.325	/	/
Right touch-Repeated	9538/1907.6	RMC	1.180	0.649	-0.04	16.07	16.50	1.303	/	/
Tested at the worst position with battery 2#										
Right touch	9538/1907.6	RMC	1.020	0.559	-0.01	16.07	16.50	1.126	/	/
Tested at the worst position with battery 3#										
Right touch	9538/1907.6	RMC	0.976	0.538	-0.01	16.07	16.50	1.078	/	/
Test data of VTR-L29 (new)										
Right touch	9538/1907.6	RMC	0.995	0.544	-0.01	16.07	16.50	1.099	/	Yes

Table 73: Head SAR test results of UMTS Band II

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Front Side	9400/1880	RMC	0.097	0.059	0.12	16.02	16.50	0.108	/	/
Back Side	9400/1880	RMC	0.113	0.072	0.14	16.02	16.50	0.126	/	/
Tested at the worst position with battery 2#										
Back Side	9400/1880	RMC	0.102	0.066	-0.12	16.02	16.50	0.114	/	/
Tested at the worst position with battery 3#										
Back Side	9400/1880	RMC	0.109	0.070	-0.08	16.02	16.50	0.122	/	/
Test data of VTR-L29 (new)										
Back Side	9400/1880	RMC	0.102	0.065	0.14	16.02	16.50	0.114	/	Yes

Table 74: Body-Worn SAR test results of UMTS Band II

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Front Side	9400/1880	RMC	0.113	0.071	0.07	16.02	16.50	0.126	/	/
Back Side	9400/1880	RMC	0.121	0.075	0.19	16.02	16.50	0.135	/	/
Left Side	9400/1880	RMC	0.127	0.074	0.11	16.02	16.50	0.142	/	/
Top Side	9400/1880	RMC	0.097	0.049	0.01	16.02	16.50	0.108	/	/
Tested at the worst position with battery 2#										
Left Side	9400/1880	RMC	0.146	0.086	0.04	16.02	16.50	0.163	/	/
Tested at the worst position with battery 3#										
Left Side	9400/1880	RMC	0.138	0.082	0.07	16.02	16.50	0.154	/	/
Test data of VTR-L29 (new)										
Left Side	9400/1880	RMC	0.108	0.063	0.16	16.02	16.50	0.121	/	Yes

Table 75: Hotspot SAR test results of UMTS Band II

7.2.4 SAR measurement Result of UMTS Band IV(Second Antenna)

Test Position of Head	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Left touch	1413/1732.6	RMC	0.445	0.282	-0.08	16.78	17.50	0.525	/	/
Left tilt	1413/1732.6	RMC	0.383	0.232	-0.01	16.78	17.50	0.452	/	/
Right touch	1413/1732.6	RMC	1.060	0.598	-0.01	16.78	17.50	1.251	/	/
Right touch	1312/1712.4	RMC	1.010	0.570	-0.02	16.83	17.50	1.178	/	/
Right touch	1513/1752.6	RMC	1.120	0.626	0.00	16.78	17.50	1.322	/	/
Right touch-repeated	1513/1752.6	RMC	1.100	0.619	0.00	16.78	17.50	1.298	/	/
Right tilt	1413/1732.6	RMC	0.760	0.401	0.02	16.78	17.50	0.897	/	/
Right tilt	1312/1712.4	RMC	0.732	0.386	0.01	16.83	17.50	0.854	/	/
Right tilt	1513/1752.6	RMC	0.804	0.426	-0.01	16.78	17.50	0.949	/	/
Tested at the worst position with battery 2#										
Right touch	1513/1752.6	RMC	0.929	0.519	0.00	16.78	17.50	1.097	/	/
Tested at the worst position with battery 3#										
Right touch	1513/1752.6	RMC	0.929	0.518	0.06	16.78	17.50	1.097	/	/
Test data of VTR-L29 (new)										
Right touch	1513/1752.6	RMC	0.911	0.522	0.01	16.78	17.50	1.075	/	Yes

Table 76: Head SAR test results of UMTS Band IV

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Front Side	1413/1732.6	RMC	0.066	0.044	0.19	16.78	17.50	0.078	/	/
Back Side	1413/1732.6	RMC	0.084	0.048	0.03	16.78	17.50	0.099	/	/
Tested at the worst position with battery 2#										
Back Side	1413/1732.6	RMC	0.067	0.042	0.10	16.78	17.50	0.080	/	/
Tested at the worst position with battery 3#										
Back Side	1413/1732.6	RMC	0.076	0.047	0.14	16.78	17.50	0.089	/	/
Test data of VTR-L29 (new)										
Back Side	1413/1732.6	RMC	0.085	0.048	0.01	16.78	17.50	0.100	/	Yes

Table 77: Body-Worn SAR test results of UMTS Band IV

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Front Side	1413/1732.6	RMC	0.146	0.081	0.12	16.78	17.50	0.172	/	/
Back Side	1413/1732.6	RMC	0.166	0.092	-0.07	16.78	17.50	0.196	/	/
Left Side	1413/1732.6	RMC	0.150	0.086	-0.06	16.78	17.50	0.177	/	/
Top Side	1413/1732.6	RMC	0.207	0.109	0.13	16.78	17.50	0.244	/	/
Tested at the worst position with battery 2#										
Top Side	1413/1732.6	RMC	0.184	0.098	0.18	16.78	17.50	0.217	/	/
Tested at the worst position with battery 3#										
Top Side	1413/1732.6	RMC	0.136	0.072	0.13	16.78	17.50	0.161	/	/
Test data of VTR-L29 (new)										
Top Side	1413/1732.6	RMC	0.223	0.117	-0.08	16.78	17.50	0.263	/	Yes

Table 78: Hotspot SAR test results of UMTS Band IV

7.2.5 SAR measurement Result of UMTS Band V(Second Antenna)

Test Position of Head	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune- up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Left touch	4182/836.4	RMC	0.725	0.398	0.10	20.73	21.50	0.866	/	/
Left touch	4132/826.4	RMC	0.711	0.390	0.05	20.80	21.50	0.835	/	/
Left touch	4233/846.6	RMC	0.720	0.393	-0.05	20.72	21.50	0.862	/	/
Left tilt	4182/836.4	RMC	0.684	0.347	0.05	20.73	21.50	0.817	/	/
Left tilt	4132/826.4	RMC	0.648	0.336	0.04	20.80	21.50	0.761	/	/
Left tilt	4233/846.6	RMC	0.686	0.347	0.00	20.72	21.50	0.821	/	/
Right touch	4182/836.4	RMC	1.090	0.581	-0.01	20.73	21.50	1.301	/	/
Right touch	4132/826.4	RMC	1.110	0.590	0.03	20.80	21.50	1.304	/	/
Right touch	4233/846.6	RMC	1.040	0.560	-0.04	20.72	21.50	1.245	/	/
Right tilt	4182/836.4	RMC	0.920	0.443	0.00	20.73	21.50	1.098	/	/
Right tilt	4132/826.4	RMC	0.909	0.439	-0.04	20.80	21.50	1.068	/	/
Right tilt	4233/846.6	RMC	0.892	0.432	-0.05	20.72	21.50	1.067	/	/
Tested at the worst position with battery 2#										
Right touch	4132/826.4	RMC	1.270	0.651	-0.05	20.80	21.50	1.492	/	/
Right touch- repeated	4132/826.4	RMC	1.220	0.635	-0.07	20.80	21.50	1.433	/	/
Right touch- holder perturbation verification	4132/826.4	RMC	1.240	0.646	-0.07	20.80	21.50	1.457	/	/
Tested at the worst position with battery 3#										
Right touch	4132/826.4	RMC	1.220	0.633	-0.02	20.80	21.50	1.433	/	/
Test data of VTR-L29 (new)										
Right touch	4182/836.4	RMC	1.030	0.558	0.00	20.80	21.50	1.210	/	Yes
Additional SAR test (After Synchronous transmission with WiFi station)										
Right touch	4182/836.4	RMC	0.943	0.513	0.07	19.70	20.50	1.134	/	/
Right touch	4132/826.4	RMC	0.934	0.502	-0.03	19.77	20.50	1.105	/	/
Right touch	4233/846.6	RMC	0.903	0.494	-0.01	19.69	20.50	1.088	/	/

Table 79: Head SAR test results of UMTS Band V

Note: According to 201610 FCC TCB workshop RF exposure slides, when the highest reported SAR of an antenna is > 1.2 W/kg, holder perturbation verification is required for each antenna, using the highest SAR configuration among all applicable frequency bands.

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Front Side	4182/836.4	RMC	0.158	0.119	-0.03	20.73	21.50	0.189	/	/
Back Side	4182/836.4	RMC	0.186	0.140	-0.08	20.73	21.50	0.222	/	/
Tested at the worst position with battery 2#										
Back Side	4182/836.4	RMC	0.176	0.133	-0.11	20.73	21.50	0.210	/	/
Tested at the worst position with battery 3#										
Back Side	4182/836.4	RMC	0.173	0.131	-0.09	20.73	21.50	0.207	/	/
Test data of VTR-L29 (new)										
Back Side	4182/836.4	RMC	0.156	0.094	-0.08	20.73	21.50	0.186	/	Yes

Table 80: Body-Worn SAR test results of UMTS Band V

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Front Side	4182/836.4	RMC	0.264	0.150	-0.03	20.73	21.50	0.315	/	/
Back Side	4182/836.4	RMC	0.311	0.174	-0.08	20.73	21.50	0.371	/	/
Left Side	4182/836.4	RMC	0.328	0.222	-0.07	20.73	21.50	0.392	/	/
Top Side	4182/836.4	RMC	0.250	0.115	-0.13	20.73	21.50	0.298	/	/
Tested at the worst position with battery 2#										
Left Side	4182/836.4	RMC	0.343	0.231	-0.08	20.73	21.50	0.410	/	/
Tested at the worst position with battery 3#										
Left Side	4182/836.4	RMC	0.354	0.239	-0.09	20.73	21.50	0.423	/	/
Test data of VTR-L29 (new)										
Left Side	4182/836.4	RMC	0.288	0.197	0.03	20.73	21.50	0.344	/	Yes

Table 81: Hotspot SAR test results of UMTS Band V

7.2.6 SAR measurement Result of LTE Band II(Second Antenna)

Test Position of Head	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Left touch	18900/1880	20M QPSK 1RB#50	0.244	0.153	-0.04	16.58	17.00	0.269	/	/
Left tilt	18900/1880	20M QPSK 1RB#50	0.233	0.142	0.02	16.58	17.00	0.257	/	/
Right touch	18900/1880	20M QPSK 1RB#50	0.622	0.347	-0.06	16.58	17.00	0.685	/	/
Right tilt	18900/1880	20M QPSK 1RB#50	0.467	0.260	0.04	16.58	17.00	0.514	/	/
Right touch	18700/1860	20M QPSK 1RB#50	0.610	0.341	0.05	15.87	17.00	0.791	/	/
Right touch	19100/1900	20M QPSK 1RB#50	0.842	0.468	0.05	16.50	17.00	0.945	/	/
Right touch-repeated	19100/1900	20M QPSK 1RB#50	0.898	0.491	-0.12	16.50	17.00	1.008	/	/
50%RB										
Left touch	18900/1880	20M QPSK 50%RB#0	0.177	0.107	0.07	15.01	16.00	0.222	/	/
Left tilt	18900/1880	20M QPSK 50%RB#0	0.172	0.105	0.11	15.01	16.00	0.216	/	/
Right touch	18900/1880	20M QPSK 50%RB#0	0.428	0.237	0.03	15.01	16.00	0.538	/	/
Right tilt	18700/1860	20M QPSK 50%RB#0	0.331	0.185	0.05	15.01	16.00	0.416	/	/
100%RB										
Right touch	18900/1880	20M QPSK 100%RB#0	0.467	0.258	0.06	14.87	16.00	0.606	/	/
Tested at the worst position with battery 2#										
Right touch	19100/1900	20M QPSK 1RB#50	0.740	0.406	-0.05	16.50	17.00	0.830	/	/
Tested at the worst position with battery 3#										
Right touch	19100/1900	20M QPSK 1RB#50	0.728	0.401	0.00	16.50	17.00	0.817	/	/
Test data of VTR-L29 (new)										
Right touch	19100/1900	20M QPSK 1RB#50	0.721	0.409	-0.02	16.50	17.00	0.809	/	Yes

Table 82: Head SAR test results of LTE Band II

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	18900/1880	20M QPSK 1RB#50	0.071	0.040	0.19	16.58	17.00	0.078	/	/
Back Side	18900/1880	20M QPSK 1RB#50	0.056	0.036	0.07	16.58	17.00	0.061	/	/
50%RB										
Front Side	18900/1880	20M QPSK 50%RB#0	0.055	0.032	0.14	15.01	16.00	0.069	/	/
Back Side	18900/1880	20M QPSK 50%RB#0	0.045	0.029	-0.06	15.01	16.00	0.057	/	/
Tested at the worst position with battery 2#										
Front Side	18900/1880	20M QPSK 1RB#50	0.042	0.026	0.19	16.58	17.00	0.047	/	/
Tested at the worst position with battery 3#										
Front Side	18900/1880	20M QPSK 1RB#50	0.048	0.030	0.19	16.58	17.00	0.053	/	/
Test data of VTR-L29 (new)										
Front Side	18900/1880	20M QPSK 1RB#50	0.077	0.048	0.08	16.58	17.00	0.085	/	Yes

Table 83: Body-Worn SAR test results of LTE Band II

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	18900/1880	20M QPSK 1RB#50	0.091	0.057	0.15	16.58	17.00	0.100	/	/
Back Side	18900/1880	20M QPSK 1RB#50	0.096	0.060	0.17	16.58	17.00	0.105	/	/
Left Side	18900/1880	20M QPSK 1RB#50	0.106	0.062	0.01	16.58	17.00	0.117	/	/
Top Side	18900/1880	20M QPSK 1RB#50	0.071	0.036	-0.06	16.58	17.00	0.079	/	/
50%RB										
Front Side	18900/1880	20M QPSK 50%RB#0	0.069	0.041	0.15	15.01	16.00	0.087	/	/
Back Side	18900/1880	20M QPSK 50%RB#0	0.074	0.044	0.14	15.01	16.00	0.092	/	/
Left Side	18900/1880	20M QPSK 50%RB#0	0.079	0.045	0.02	15.01	16.00	0.099	/	/
Top Side	18900/1880	20M QPSK 50%RB#0	0.055	0.029	-0.02	15.01	16.00	0.070	/	/
Tested at the worst position with battery 2#										
Left Side	18900/1880	20M QPSK 1RB#50	0.089	0.051	-0.06	16.58	17.00	0.098	/	/
Tested at the worst position with battery 3#										
Left Side	18900/1880	20M QPSK 1RB#50	0.105	0.059	0.02	16.58	17.00	0.116	/	/
Test data of VTR-L29 (new)										
Left Side	18900/1880	20M QPSK 1RB#50	0.158	0.091	0.08	16.58	17.00	0.174	/	Yes

Table 84: Hotspot SAR test results of LTE Band II

7.2.7 SAR measurement Result of LTE Band IV(Second Antenna)

Test Position of Head	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducte d Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Left touch	20050/1720	20M QPSK 1RB#50	0.405	0.259	-0.03	18.05	18.30	0.429	/	/
Left tilt	20050/1720	20M QPSK 1RB#50	0.295	0.179	0.03	18.05	18.30	0.312	/	/
Right touch	20050/1720	20M QPSK 1RB#50	0.897	0.506	0.00	18.05	18.30	0.950	/	/
Right touch	20175/1732.5	20M QPSK 1RB#0	0.879	0.497	-0.02	17.67	18.30	1.016	/	/
Right touch	20300/1745	20M QPSK 1RB#99	0.992	0.558	0.02	17.95	18.30	1.075	/	/
Right tilt	20050/1720	20M QPSK 1RB#50	0.653	0.347	-0.02	18.05	18.30	0.692	/	/
50%RB										
Left touch	20050/1720	20M QPSK 50%RB#25	0.332	0.212	-0.01	16.87	17.50	0.384	/	/
Left tilt	20050/1720	20M QPSK 50%RB#25	0.265	0.156	0.04	16.87	17.50	0.306	/	/
Right touch	20050/1720	20M QPSK 50%RB#25	0.729	0.411	0.02	16.87	17.50	0.843	/	/
Right touch	20175/1732.5	20M QPSK 50%RB#0	0.826	0.465	0.02	16.61	17.50	1.014	/	/
Right touch	20300/1745	20M QPSK 50%RB#25	1.090	0.610	0.02	16.45	17.50	1.388	/	/
Right touch-repeated	20300/1745	20M QPSK 50%RB#25	1.050	0.597	-0.02	16.45	17.50	1.337	/	/
Right tilt	20050/1720	20M QPSK 50%RB#25	0.522	0.279	-0.01	16.87	17.50	0.603	/	/
100%RB										
Right touch	20050/1720	20M QPSK 100%RB#0	0.716	0.415	-0.01	16.79	17.50	0.843	/	/
Tested at the worst position with battery 2#										
Right touch	20300/1745	20M QPSK 50%RB#25	0.938	0.523	0.03	16.45	17.50	1.195	/	/
Tested at the worst position with battery 3#										
Right touch	20300/1745	20M QPSK 50%RB#25	0.988	0.551	0.08	16.45	17.50	1.258	/	/
Additional SAR test (After Synchronous transmission with WiFi station)										
Right touch	20050/1720	20M QPSK 1RB#50	0.772	0.436	0.09	17.61	17.80	0.807	/	/
Right touch	20175/1732.5	20M QPSK 1RB#0	0.710	0.406	-0.06	17.07	17.80	0.840	/	/
Right touch	20300/1745	20M QPSK 1RB#99	0.799	0.452	0.06	17.40	17.80	0.876	/	/
50%RB										
Right touch	20050/1720	20M QPSK 50%RB#25	0.611	0.345	-0.16	16.26	17.00	0.725	/	/
100%RB										

Right touch	20050/1720	20M QPSK 100%RB#0	0.655	0.375	-0.11	16.17	17.00	0.793	/	/
Test data of VTR-L29 (new)										
Right touch	20300/1745	20M QPSK 50%RB#25	0.902	0.497	0.04	16.45	17.50	1.149	/	Yes

Table 85: Head SAR test results of LTE Band IV

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducte d Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	20050/1720	20M QPSK 1RB#50	0.079	0.052	0.18	18.05	18.30	0.083	/	/
Back Side	20050/1720	20M QPSK 1RB#50	0.095	0.053	-0.07	18.05	18.30	0.100	/	/
50%RB										
Front Side	20050/1720	20M QPSK 50%RB#25	0.062	0.039	0.02	16.87	17.50	0.072	/	/
Back Side	20050/1720	20M QPSK 50%RB#25	0.069	0.043	0.06	16.87	17.50	0.079	/	/
Tested at the worst position with battery 2#										
Back Side	20050/1720	20M QPSK 1RB#50	0.088	0.050	-0.05	18.05	18.30	0.093	/	/
Tested at the worst position with battery 3#										
Back Side	20050/1720	20M QPSK 1RB#50	0.091	0.052	0.08	18.05	18.30	0.097	/	/
Test data of VTR-L29 (new)										
Back Side	20050/1720	20M QPSK 1RB#50	0.059	0.033	-0.12	18.05	18.30	0.062	/	Yes

Table 86: Body-Worn SAR test results of LTE Band IV

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	20050/1720	20M QPSK 1RB#50	0.142	0.078	0.11	18.05	18.30	0.150	/	/
Back Side	20050/1720	20M QPSK 1RB#50	0.162	0.089	0.18	18.05	18.30	0.172	/	/
Left Side	20050/1720	20M QPSK 1RB#50	0.132	0.076	-0.07	18.05	18.30	0.140	/	/
Top Side	20050/1720	20M QPSK 1RB#50	0.206	0.108	-0.18	18.05	18.30	0.218	/	/
50%RB										
Front Side	20050/1720	20M QPSK 50%RB#25	0.118	0.067	-0.11	16.87	17.50	0.136	/	/
Back Side	20050/1720	20M QPSK 50%RB#25	0.133	0.076	0.06	16.87	17.50	0.154	/	/
Left Side	20050/1720	20M QPSK 50%RB#25	0.129	0.077	-0.05	16.87	17.50	0.149	/	/
Top Side	20050/1720	20M QPSK 50%RB#25	0.199	0.102	-0.18	16.87	17.50	0.230	/	/
Tested at the worst position with battery 2#										
Top Side	20050/1720	20M QPSK 50%RB#25	0.242	0.129	-0.19	16.87	17.50	0.280	/	/
Tested at the worst position with battery 3#										
Top Side	20050/1720	20M QPSK 50%RB#25	0.146	0.076	-0.10	16.87	17.50	0.169	/	/
Test data of VTR-L29 (new)										
Top Side	20050/1720	20M QPSK 50%RB#25	0.168	0.088	-0.01	18.05	18.30	0.178	/	Yes

Table 87: Hotspot SAR test results of LTE Band IV

7.2.8 SAR measurement Result of LTE Band V(Second Antenna)

Test Position of Head	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Left touch	20525/836.5	10M QPSK 1RB#25	0.522	0.285	0.11	19.45	20.00	0.592	/	/
Left tilt	20525/836.5	10M QPSK 1RB#25	0.485	0.280	0.05	19.45	20.00	0.550	/	/
Right touch	20525/836.5	10M QPSK 1RB#25	1.010	0.542	-0.02	19.45	20.00	1.146	/	/
Right touch -repeated	20525/836.5	10M QPSK 1RB#25	0.946	0.509	0.06	19.45	20.00	1.074	/	/
Right touch	20450/829	10M QPSK 1RB#25	0.980	0.522	0.00	19.38	20.00	1.130	/	/
Right touch	20600/844	10M QPSK 1RB#25	0.820	0.441	0.03	19.39	20.00	0.944	/	/
Right tilt	20525/836.5	10M QPSK 1RB#25	0.692	0.334	0.06	19.45	20.00	0.785	/	/
Right tilt	20450/829	10M QPSK 1RB#25	0.746	0.363	0.05	19.38	20.00	0.860	/	/
Right tilt	20600/844	10M QPSK 1RB#25	0.697	0.336	0.08	19.39	20.00	0.802	/	/
50%RB										
Left touch	20600/844	10M QPSK 50%RB#13	0.450	0.246	0.05	18.45	19.00	0.511	/	/
Left tilt	20600/844	10M QPSK 50%RB#13	0.420	0.243	0.06	18.45	19.00	0.477	/	/
Right touch	20600/844	10M QPSK 50%RB#13	0.646	0.345	-0.04	18.45	19.00	0.733	/	/
Right tilt	20600/844	10M QPSK 50%RB#13	0.501	0.284	-0.04	18.45	19.00	0.569	/	/
100%RB										
Right touch	20600/844	10M QPSK 100%RB#0	0.681	0.362	0.04	18.38	19.00	0.786	/	/
Right tilt	20600/844	10M QPSK 100%RB#0	0.496	0.282	-0.04	18.38	19.00	0.572	/	/
Tested at the worst position with battery 2#										
Right touch	20525/836.5	10M QPSK 1RB#25	0.877	0.467	-0.04	19.45	20.00	0.995	/	/
Tested at the worst position with battery 3#										
Right touch	20525/836.5	10M QPSK 1RB#25	0.919	0.492	0.00	19.45	20.00	1.043	/	/
Test data of VTR-L29 (new)										
Right touch	20525/836.5	10M QPSK 1RB#25	0.972	0.52	-0.10	19.45	20.00	1.103	/	Yes

Table 88: Head SAR test results of LTE Band V

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	20525/836.5	10M QPSK 1RB#25	0.090	0.067	-0.10	19.45	20.00	0.102	/	/
Back Side	20525/836.5	10M QPSK 1RB#25	0.093	0.055	-0.16	19.45	20.00	0.105	/	/
50%RB										
Front Side	20600/844	10M QPSK 25RB#13	0.092	0.058	-0.15	18.45	19.00	0.104	/	/
Back Side	20600/844	10M QPSK 25RB#13	0.107	0.063	-0.11	18.45	19.00	0.121	/	/
Tested at the worst position with battery 2#										
Back Side	20600/844	10M QPSK 25RB#13	0.103	0.068	-0.14	18.45	19.00	0.117	/	/
Tested at the worst position with battery 3#										
Back Side	20600/844	10M QPSK 25RB#13	0.104	0.069	-0.12	18.45	19.00	0.118	/	/
Test data of VTR-L29 (new)										
Back Side	20600/844	10M QPSK 25RB#13	0.106	0.064	-0.04	18.45	19.00	0.120	/	Yes

Table 89: Body-Worn SAR test results of LTE Band V

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	20525/836.5	10M QPSK 1RB#25	0.181	0.119	-0.01	19.45	20.00	0.205	/	/
Back Side	20525/836.5	10M QPSK 1RB#25	0.217	0.134	-0.12	19.45	20.00	0.246	/	/
Left Side	20525/836.5	10M QPSK 1RB#25	0.178	0.119	-0.07	19.45	20.00	0.202	/	/
Top Side	20525/836.5	10M QPSK 1RB#25	0.130	0.065	-0.15	19.45	20.00	0.148	/	/
50%RB										
Front Side	20600/844	10M QPSK 25RB#13	0.193	0.126	-0.10	18.45	19.00	0.219	/	/
Back Side	20600/844	10M QPSK 25RB#13	0.242	0.133	-0.15	18.45	19.00	0.275	/	/
Left Side	20600/844	10M QPSK 25RB#13	0.169	0.113	-0.02	18.45	19.00	0.192	/	/
Top Side	20600/844	10M QPSK 25RB#13	0.138	0.069	-0.14	18.45	19.00	0.157	/	/
Tested at the worst position with battery 2#										
Back Side	20600/844	10M QPSK 25RB#13	0.238	0.131	-0.12	18.45	19.00	0.270	/	/
Tested at the worst position with battery 3#										
Back Side	20600/844	10M QPSK 25RB#13	0.240	0.132	-0.08	18.45	19.00	0.272	/	/
Test data of VTR-L29 (new)										
Back Side	20600/844	10M QPSK 25RB#13	0.219	0.123	0.00	18.45	19.00	0.249	/	Yes

Table 90: Hotspot SAR test results of LTE Band V

7.2.9 SAR measurement Result of LTE Band VII(Second Antenna)

Test Position of Head	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Left touch	21350/2560	20M QPSK 1RB#99	0.268	0.149	0.10	14.94	15.20	0.285	/	/
Left tilt	21350/2560	20M QPSK 1RB#99	0.274	0.138	0.18	14.94	15.20	0.291	/	/
Right touch	21350/2560	20M QPSK 1RB#99	1.000	0.501	-0.14	14.94	15.20	1.062	/	/
Right touch-repeated	21350/2560	20M QPSK 1RB#99	0.947	0.473	0.05	14.94	15.20	1.005	/	/
Right touch	20850/2510	20M QPSK 1RB#99	0.749	0.368	0.16	14.14	15.20	0.956	/	/
Right touch	21100/2535	20M QPSK 1RB#50	0.843	0.420	0.19	14.48	15.20	0.995	/	/
Right tilt	21350/2560	20M QPSK 1RB#99	0.810	0.371	0.01	14.94	15.20	0.860	/	/
Right tilt	20850/2510	20M QPSK 1RB#99	0.682	0.335	0.16	14.14	15.20	0.871	/	/
Right tilt	21100/2535	20M QPSK 1RB#50	0.616	0.301	0.19	14.48	15.20	0.727	/	/
50%RB										
Left touch	21350/2560	20M QPSK 50%RB#25	0.208	0.115	0.11	13.82	14.20	0.227	/	/
Left tilt	21350/2560	20M QPSK 50%RB#25	0.209	0.104	0.09	13.82	14.20	0.228	/	/
Right touch	21350/2560	20M QPSK 50%RB#25	0.700	0.354	0.13	13.82	14.20	0.764	/	/
Right tilt	21350/2560	20M QPSK 50%RB#25	0.608	0.280	0.16	13.82	14.20	0.664	/	/
100%RB										
Right touch	21350/2560	20M QPSK 100%RB#0	0.660	0.338	0.15	13.88	14.20	0.710	/	/
Right tilt	21350/2560	20M QPSK 100%RB#0	0.620	0.285	0.16	13.88	14.20	0.667	/	/
Tested at the worst position with battery 2#										
Right touch	21350/2560	20M QPSK 1RB#99	0.806	0.346	-0.07	14.94	15.20	0.856	/	/
Tested at the worst position with battery 3#										
Right touch	21350/2560	20M QPSK 1RB#99	0.930	0.468	0.01	14.94	15.20	0.987	/	/
Test data of VTR-L29 (new)										
Right touch	21350/2560	20M QPSK 1RB#99	0.940	0.468	0.18	14.94	15.20	0.998	/	Yes

Table 91: Head SAR test results of LTE Band VII

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	21350/2560	20M QPSK 1RB#99	0.080	0.046	-0.12	14.94	15.20	0.085	/	/
Back Side	21350/2560	20M QPSK 1RB#99	0.093	0.052	-0.07	14.94	15.20	0.099	/	/
50%RB										
Front Side	21350/2560	20M QPSK 50%RB#25	0.062	0.035	-0.09	13.82	14.20	0.068	/	/
Back Side	21350/2560	20M QPSK 50%RB#25	0.071	0.039	0.19	13.82	14.20	0.077	/	/
Tested at the worst position with battery 2#										
Back Side	21350/2560	20M QPSK 1RB#99	0.089	0.049	-0.08	14.94	15.20	0.095	/	/
Tested at the worst position with battery 3#										
Back Side	21350/2560	20M QPSK 1RB#99	0.088	0.049	-0.16	14.94	15.20	0.093	/	/
Test data of VTR-L29 (new)										
Back Side	21350/2560	20M QPSK 1RB#99	0.053	0.028	-0.04	14.94	15.20	0.056	/	Yes

Table 92: Body-Worn SAR test results of LTE Band VII

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	21350/2560	20M QPSK 1RB#99	0.163	0.090	0.09	14.94	15.20	0.173	/	/
Back Side	21350/2560	20M QPSK 1RB#99	0.184	0.098	0.02	14.94	15.20	0.195	/	/
Left Side	21350/2560	20M QPSK 1RB#99	0.162	0.085	-0.01	14.94	15.20	0.172	/	/
Top Side	21350/2560	20M QPSK 1RB#99	0.052	0.026	0.16	14.94	15.20	0.056	/	/
50%RB										
Front Side	21350/2560	20M QPSK 50%RB#25	0.124	0.068	0.15	13.82	14.20	0.135	/	/
Back Side	21350/2560	20M QPSK 50%RB#25	0.136	0.074	-0.07	13.82	14.20	0.148	/	/
Left Side	21350/2560	20M QPSK 50%RB#25	0.122	0.064	-0.03	13.82	14.20	0.133	/	/
Top Side	21350/2560	20M QPSK 50%RB#25	0.037	0.018	0.04	13.82	14.20	0.040	/	/
Tested at the worst position with battery 2#										
Back Side	21350/2560	20M QPSK 1RB#99	0.179	0.095	0.06	14.94	15.20	0.190	/	/
Tested at the worst position with battery 3#										
Back Side	21350/2560	20M QPSK 1RB#99	0.188	0.100	-0.05	14.94	15.20	0.200	/	/
Test data of VTR-L29 (new)										
Back Side	21350/2560	20M QPSK 1RB#99	0.104	0.055	0.01	14.94	15.20	0.110	/	Yes

Table 93: Hotspot SAR test results of LTE Band VII

7.2.10 SAR measurement Result of LTE Band XII(Second Antenna)

Test Position of Head	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Left touch	23130/711	10M QPSK 1RB#25	0.456	0.245	0.14	21.70	22.00	0.489	/	/
Left tilt	23130/711	10M QPSK 1RB#25	0.385	0.231	0.04	21.70	22.00	0.413	/	/
Right touch	23130/711	10M QPSK 1RB#25	0.951	0.494	0.01	21.70	22.00	1.019	/	/
Right touch	23060/704	10M QPSK 1RB#25	1.190	0.627	0.04	21.53	22.00	1.323	/	/
Right touch-repeated	23060/704	10M QPSK 1RB#25	1.160	0.676	0.02	21.53	22.00	1.290	/	/
Right touch	23095/707.5	10M QPSK 1RB#0	0.999	0.524	-0.05	21.54	22.00	1.113	/	/
Right tilt	23130/711	10M QPSK 1RB#25	0.644	0.372	0.03	21.70	22.00	0.690	/	/
50%RB										
Left touch	23130/711	10M QPSK 50%RB#13	0.312	0.192	-0.02	20.38	21.00	0.360	/	/
Left tilt	23130/711	10M QPSK 50%RB#13	0.281	0.169	0.06	20.38	21.00	0.324	/	/
Right touch	23130/711	10M QPSK 50%RB#13	0.692	0.402	0.01	20.38	21.00	0.798	/	/
Right tilt	23130/711	10M QPSK 50%RB#13	0.465	0.269	0.00	20.38	21.00	0.536	/	/
100%RB										
Right touch	23130/711	10M QPSK 100%RB#0	0.569	0.330	0.01	19.96	21.00	0.723	/	/
Tested at the worst position with battery 2#										
Right touch	23060/704	10M QPSK 1RB#25	0.851	0.435	0.00	21.53	22.00	0.946	/	/
Tested at the worst position with battery 3#										
Right touch	23060/704	10M QPSK 1RB#25	0.879	0.451	0.16	21.53	22.00	0.977	/	/
Test data of VTR-L29 (new)										
Right touch	23060/704	10M QPSK 1RB#25	1.070	0.556	0.11	21.54	22.00	1.190	/	Yes

Table 94: Head SAR test results of LTE Band XII

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	23130/711	10M QPSK 1RB#25	0.118	0.087	-0.15	21.70	22.00	0.126	/	/
Back Side	23130/711	10M QPSK 1RB#25	0.147	0.105	-0.02	21.70	22.00	0.158	/	/
50%RB										
Front Side	23130/711	10M QPSK 50%RB#13	0.088	0.062	-0.05	20.38	21.00	0.102	/	/
Back Side	23130/711	10M QPSK 50%RB#13	0.109	0.076	-0.01	20.38	21.00	0.126	/	/
Tested at the worst position with battery 2#										
Back Side	23130/711	10M QPSK 1RB#25	0.120	0.083	0.05	21.70	22.00	0.129	/	/
Tested at the worst position with battery 3#										
Back Side	23130/711	10M QPSK 1RB#25	0.122	0.088	0.00	21.70	22.00	0.131	/	/
Test data of VTR-L29 (new)										
Back Side	23130/711	10M QPSK 1RB#25	0.147	0.106	-0.11	21.70	22.00	0.158	/	Yes

Table 95: Body-Worn SAR test results of LTE Band XII

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	23130/711	10M QPSK 1RB#25	0.222	0.127	-0.10	21.70	22.00	0.238	/	/
Back Side	23130/711	10M QPSK 1RB#25	0.317	0.179	-0.14	21.70	22.00	0.340	/	/
Left Side	23130/711	10M QPSK 1RB#25	0.167	0.115	-0.01	21.70	22.00	0.179	/	/
Top Side	23130/711	10M QPSK 1RB#25	0.170	0.096	0.01	21.70	22.00	0.182	/	/
50%RB										
Front Side	23130/711	10M QPSK 50%RB#13	0.168	0.111	0.08	20.38	21.00	0.194	/	/
Back Side	23130/711	10M QPSK 50%RB#13	0.186	0.117	0.01	20.38	21.00	0.215	/	/
Left Side	23130/711	10M QPSK 50%RB#13	0.126	0.087	-0.07	20.38	21.00	0.145	/	/
Top Side	23130/711	10M QPSK 50%RB#13	0.131	0.073	0.07	20.38	21.00	0.151	/	/
Tested at the worst position with battery 2#										
Back Side	23130/711	10M QPSK 1RB#25	0.301	0.171	0.01	21.70	22.00	0.311	/	/
Tested at the worst position with battery 3#										
Back Side	23130/711	10M QPSK 1RB#25	0.290	0.165	-0.03	21.70	22.00	0.311	/	/
Test data of VTR-L29 (new)										
Back Side	23130/711	10M QPSK 1RB#25	0.275	0.153	-0.07	21.70	22.00	0.295	/	Yes

Table 96: Hotspot SAR test results of LTE Band XII

7.2.11 SAR measurement Result of LTE Band XVII(Second Antenna)

SAR for LTE Band 17 (Frequency range:704-716 MHz) is covered by LTE Band 12 (Frequency range:699-716 MHz) due to similar frequency range,same maximum tune up limit and same channel bandwidth.

7.2.12 SAR measurement Result of LTE Band XXVI(Second Antenna)

Test Position of Head	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Left touch	26965/841.5	15M QPSK 1RB#38	0.696	0.400	-0.11	20.71	21.30	0.797	/	/
Left tilt	26965/841.5	15M QPSK 1RB#38	0.647	0.344	-0.03	20.71	21.30	0.741	/	/
Right touch	26965/841.5	15M QPSK 1RB#38	0.997	0.521	0.02	20.71	21.30	1.142	/	/
Right touch	26775/822.5	15M QPSK 1RB#38	1.020	0.528	-0.04	20.52	21.30	1.221	/	/
Right touch	26865/831.5	15M QPSK 1RB#38	1.120	0.577	0.11	20.18	21.30	1.449	/	/
Right touch-Repeated	26865/831.5	15M QPSK 1RB#38	1.110	0.575	-0.03	20.18	21.30	1.437	/	/
Right tilt	26965/841.5	15M QPSK 1RB#38	0.894	0.413	0.01	20.71	21.30	1.024	/	/
Right tilt	26775/822.5	15M QPSK 1RB#38	0.835	0.390	0.03	20.52	21.30	0.999	/	/
Right tilt	26865/831.5	15M QPSK 1RB#38	0.840	0.389	-0.02	20.18	21.30	1.087	/	/
50%RB										
Left touch	26775/822.5	15M QPSK 50%RB#0	0.405	0.231	-0.17	19.57	20.50	0.502	/	/
Left tilt	26775/822.5	15M QPSK 50%RB#0	0.329	0.174	-0.07	19.57	20.50	0.408	/	/
Right touch	26775/822.5	15M QPSK 50%RB#0	0.772	0.399	0.17	19.57	20.50	0.956	/	/
Right touch	26865/831.5	15M QPSK 50%RB#18	0.849	0.445	-0.14	19.05	20.50	1.186		
Right touch	26965/841.5	15M QPSK 50%RB#39	0.850	0.446	0.05	19.42	20.50	1.090		
Right tilt	26775/822.5	15M QPSK 50%RB#0	0.577	0.270	0.01	19.57	20.50	0.715	/	/
100%RB										
Right touch	26965/841.5	15M QPSK 100%RB#0	0.837	0.435	-0.03	19.38	20.50	1.083	/	/
Right tilt	26965/841.5	15M QPSK 100%RB#0	0.756	0.444	-0.15	19.38	20.50	0.978	/	/
Tested at the worst position with battery 2#										
Right touch	26865/831.5	15M QPSK 1RB#38	1.070	0.552	0.04	20.18	21.30	1.385	/	/
Tested at the worst position with battery 3#										
Right touch	26865/831.5	15M QPSK 1RB#38	1.010	0.53	0.05	20.18	21.30	1.307	/	/
Additional SAR test(simultaneous transmission with WIFI antenna)										
1RB										
Right touch	26965/841.5	15M QPSK 1RB#38	0.855	0.446	-0.01	20.24	20.80	0.973	/	/
Right touch	26775/822.5	15M QPSK 1RB#38	0.886	0.458	0.06	20.05	20.80	1.053	/	/

Right touch	26865/831.5	15M QPSK 1RB#38	1.010	0.506	-0.07	19.71	20.80	1.298	/	/
50%RB										
Right touch	26775/822.5	15M QPSK 50%RB#0	0.695	0.352	0.01	19.10	20.00	0.855	/	/
Right touch	26865/831.5	15M QPSK 50%RB#18	0.756	0.385	-0.01	18.58	20.00	1.048	/	/
Right touch	26965/841.5	15M QPSK 50%RB#0	0.763	0.392	0.04	18.82	20.00	1.001	/	/
100%RB										
Right touch	26965/841.5	15M QPSK 1RB#38	0.748	0.368	0.00	18.91	20.00	0.961	/	/
Test data of VTR-L29 (new)										
Right touch	26865/831.5	15M QPSK 1RB#38	1.020	0.544	0.07	20.18	21.30	1.320	/	Yes

Table 97: Head SAR test results of LTE Band XXVI

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	26965/841.5	15M QPSK 1RB#38	0.142	0.107	0.00	20.71	21.30	0.163	/	/
Back Side	26965/841.5	15M QPSK 1RB#38	0.166	0.120	-0.09	20.71	21.30	0.190	/	/
50%RB										
Front Side	26775/822.5	15M QPSK 50%RB#0	0.067	0.051	-0.03	19.57	20.50	0.083	/	/
Back Side	26775/822.5	15M QPSK 50%RB#0	0.076	0.058	-0.07	19.57	20.50	0.095	/	/
Tested at the worst position with battery 2#										
Back Side	26965/841.5	15M QPSK 1RB#38	0.158	0.114	0.04	20.71	21.30	0.181	/	/
Tested at the worst position with battery 3#										
Back Side	26965/841.5	15M QPSK 1RB#38	0.158	0.114	-0.03	20.71	21.30	0.181	/	/
Test data of VTR-L29 (new)										
Back Side	26965/841.5	15M QPSK 1RB#38	0.148	0.109	-0.03	20.71	21.30	0.170	/	Yes

Table 98: Body-Worn SAR test results of LTE Band XXVI

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	26965/841.5	15M QPSK 1RB#38	0.274	0.155	-0.16	20.71	21.30	0.314	/	/
Back Side	26965/841.5	15M QPSK 1RB#38	0.389	0.213	-0.11	20.71	21.30	0.446	/	/
Left Side	26965/841.5	15M QPSK 1RB#38	0.285	0.193	-0.05	20.71	21.30	0.326	/	/
Top Side	26965/841.5	15M QPSK 1RB#38	0.271	0.133	-0.15	20.71	21.30	0.310	/	/
50%RB										
Front Side	26775/822.5	15M QPSK 50%RB#0	0.100	0.057	0.03	19.57	20.50	0.124	/	/
Back Side	26775/822.5	15M QPSK 50%RB#0	0.123	0.069	-0.03	19.57	20.50	0.152	/	/
Left Side	26775/822.5	15M QPSK 50%RB#0	0.140	0.095	-0.02	19.57	20.50	0.173	/	/
Top Side	26775/822.5	15M QPSK 50%RB#0	0.083	0.041	-0.16	19.57	20.50	0.103	/	/
Tested at the worst position with battery 2#										
Back Side	26965/841.5	15M QPSK 1RB#38	0.360	0.199	-0.02	20.71	21.30	0.412	/	/
Tested at the worst position with battery 3#										
Back Side	26965/841.5	15M QPSK 1RB#38	0.347	0.192	0.00	20.71	21.30	0.397	/	/
Test data of VTR-L29 (new)										
Back Side	26965/841.5	15M QPSK 1RB#38	0.332	0.186	0.02	20.71	21.30	0.380	/	Yes

Table 99: Hotspot SAR test results of LTE Band XXVI

7.2.13 SAR measurement Result of LTE Band XXXVIII(Second Antenna)

SAR for LTE Band 38 (Frequency range: 2570-2620 MHz) is covered by LTE Band 41 (Frequency range: 2555-2655 MHz) due to similar frequency range,same maximum tune up limit and same channel bandwidth.

7.2.14 SAR measurement Result of LTE Band XLI(Second Antenna)

Test Position of Head	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Condu cted Power (dBm)	Tune- up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Left touch	41140/2645	20M QPSK 1RB#50	0.282	0.152	0.09	18.44	19.00	0.321	/	/
Left tilt	41140/2645	20M QPSK 1RB#50	0.302	0.140	-0.14	18.44	19.00	0.344	/	/
Right touch	41140/2645	20M QPSK 1RB#50	1.100	0.548	0.07	18.44	19.00	1.251	/	/
Right touch- Repeated	41140/2645	20M QPSK 1RB#50	1.010	0.506	0.00	18.44	19.00	1.149	/	/
Right touch	40340/2565	20M QPSK 1RB#0	0.781	0.391	0.07	17.94	19.00	0.997	/	/
Right touch	40740/2605	20M QPSK 1RB#50	0.974	0.479	-0.01	18.41	19.00	1.116	/	/
Right tilt	41140/2645	20M QPSK 1RB#50	0.912	0.453	0.12	18.44	19.00	1.038	/	/
Right tilt	40340/2565	20M QPSK 1RB#0	0.687	0.320	0.01	17.94	19.00	0.877	/	/
Right tilt	40740/2605	20M QPSK 1RB#50	0.872	0.383	0.11	18.41	19.00	0.999	/	/
50%RB										
Left touch	41140/2645	20M QPSK 50%RB#0	0.228	0.122	-0.02	17.44	18.00	0.259	/	/
Left tilt	41140/2646	20M QPSK 50%RB#0	0.255	0.119	-0.12	17.44	18.00	0.290	/	/
Right touch	41140/2647	20M QPSK 50%RB#0	0.815	0.400	-0.04	17.44	18.00	0.927	/	/
Right touch	40340/2565	20M QPSK 50%RB#0	0.573	0.280	-0.04	16.79	18.00	0.757	/	/
Right touch	40740/2605	20M QPSK 50%RB#0	0.733	0.357	-0.10	17.41	18.00	0.840	/	/
Right tilt	41140/2647	20M QPSK 50%RB#0	0.662	0.299	-0.02	17.44	18.00	0.753	/	/
100%RB										
Right touch	41140/2647	20M QPSK 100%RB#0	0.922	0.452	0.10	17.33	18.00	1.076	/	/
Right tilt	41140/2647	20M QPSK 100%RB#0	0.897	0.388	0.08	17.33	18.00	1.047	/	/
Tested at the worst position with battery 2#										
Right touch	41140/2645	20M QPSK 1RB#50	0.907	0.449	0.08	18.44	19.00	1.032	/	/
Tested at the worst position with battery 3#										
Right touch	41140/2645	20M QPSK 1RB#50	1.020	0.499	0.10	18.44	19.00	1.160	/	/
Test data of VTR-L29 (new)										
Right touch	41140/2645	20M QPSK 1RB#50	0.862	0.444	-0.02	18.44	19.00	0.981	/	Yes

Table 100: Head SAR test results of LTE Band XLI

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	41140/2645	20M QPSK 1RB#50	0.103	0.057	0.15	18.44	19.00	0.117	/	/
Back Side	41140/2645	20M QPSK 1RB#50	0.100	0.054	-0.19	18.44	19.00	0.114	/	/
50%RB										
Front Side	41140/2645	20M QPSK 50%RB#0	0.084	0.047	0.04	17.44	18.00	0.096	/	/
Back Side	41140/2645	20M QPSK 50%RB#0	0.083	0.045	0.13	17.44	18.00	0.094	/	/
Tested at the worst position with battery 2#										
Front Side	41140/2645	20M QPSK 1RB#50	0.089	0.049	0.01	18.44	19.00	0.101	/	/
Tested at the worst position with battery 3#										
Front Side	41140/2645	20M QPSK 1RB#50	0.090	0.050	0.02	18.44	19.00	0.102	/	/
Test data of VTR-L29 (new)										
Front Side	41140/2645	20M QPSK 1RB#50	0.091	0.049	-0.04	18.44	19.00	0.103	/	Yes

Table 101: Body-Worn SAR test results of LTE Band XLI

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	41140/2645	20M QPSK 1RB#50	0.172	0.093	-0.10	18.44	19.00	0.196	/	/
Back Side	41140/2645	20M QPSK 1RB#50	0.223	0.117	-0.1	18.44	19.00	0.254	/	/
Left Side	41140/2645	20M QPSK 1RB#50	0.199	0.101	-0.07	18.44	19.00	0.226	/	/
Top Side	41140/2645	20M QPSK 1RB#50	0.080	0.038	0.08	18.44	19.00	0.091	/	/
50%RB										
Front Side	41140/2645	20M QPSK 50%RB#0	0.150	0.081	-0.03	17.44	18.00	0.171	/	/
Back Side	41140/2645	20M QPSK 50%RB#0	0.161	0.090	0.13	17.44	18.00	0.183	/	/
Left Side	41140/2645	20M QPSK 50%RB#0	0.165	0.086	-0.10	17.44	18.00	0.188	/	/
Top Side	41140/2645	20M QPSK 50%RB#0	0.067	0.031	-0.11	17.44	18.00	0.076	/	/
Tested at the worst position with battery 2#										
Back Side	41140/2645	20M QPSK 1RB#50	0.216	0.114	0.06	18.44	19.00	0.246	/	/
Tested at the worst position with battery 3#										
Back Side	41140/2645	20M QPSK 1RB#50	0.216	0.115	0.03	18.44	19.00	0.246	/	/
Test data of VTR-L29 (new)										
Back Side	41140/2645	20M QPSK 1RB#50	0.172	0.091	0.01	18.44	19.00	0.196	/	Yes

Table 102: Hotspot SAR test results of LTE Band XLI

7.2.15 SAR measurement Result of GSM850(Main Antenna)

Test Position of Head	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Left touch	190/836.6	GSM	0.267	0.204	0.14	32.54	33.50	0.333	/	/
Left tilt	190/836.6	GSM	0.181	0.125	0.04	32.54	33.50	0.226	/	/
Right touch	190/836.6	GSM	0.296	0.226	0.06	32.54	33.50	0.369	/	/
Right tilt	190/836.6	GSM	0.163	0.125	-0.03	32.54	33.50	0.203	/	/
Right touch	128/824.2	GSM	0.251	0.193	0.19	32.51	33.50	0.315	/	/
Right touch	251/848.8	GSM	0.372	0.283	0.08	32.62	33.50	0.456	/	/
Tested at the worst position with battery 2#										
Right touch	251/848.8	GSM	0.393	0.300	-0.11	32.62	33.50	0.481	/	/
Tested at the worst position with battery 3#										
Right touch	251/848.8	GSM	0.392	0.299	-0.05	32.62	33.50	0.480	/	/
Test data of VTR-L29 (new)										
Right touch	251/848.8	GSM	0.354	0.266	0.05	32.62	33.50	0.434	/	Yes

Table 103: Head SAR test results of GSM850

Test Position of Body-Worn with 15mm	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Front Side	190/836.6	GSM	0.302	0.229	-0.05	32.54	33.50	0.377	/	/
Back Side	190/836.6	GSM	0.330	0.250	-0.07	32.54	33.50	0.412	/	/
Tested at the worst position with battery 2#										
Back Side	190/836.6	GSM	0.308	0.218	-0.07	32.54	33.50	0.384	/	/
Tested at the worst position with battery 3#										
Back Side	190/836.6	GSM	0.311	0.237	-0.04	32.54	33.50	0.388	/	/
Test data of VTR-L29 (new)										
Back Side	190/836.6	GSM	0.432	0.331	-0.04	32.54	33.50	0.539	/	Yes

Table 104: Body-Worn SAR test results of GSM850

Test Position of Hotspot with 10mm	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Front Side	190/836.6	GPRS 2TS	0.497	0.380	-0.03	30.37	31.00	0.575	/	/
Back Side	190/836.6	GPRS 2TS	0.512	0.391	-0.11	30.37	31.00	0.592	/	/
Left Side	190/836.6	GPRS 2TS	0.368	0.250	-0.12	30.37	31.00	0.425	/	/
Right Side	190/836.6	GPRS 2TS	0.687	0.469	-0.05	30.37	31.00	0.817	/	/
Right Side	128/824.2	GPRS 2TS	0.650	0.433	0.04	30.15	31.00	0.791	/	/
Right Side	251/848.8	GPRS 2TS	0.669	0.446	-0.03	30.38	31.00	0.772	/	/
Bottom Side	190/836.6	GPRS 2TS	0.152	0.074	-0.18	30.37	31.00	0.176	/	/
Tested at the worst position with battery 2#										
Right Side	190/836.6	GPRS 2TS	0.707	0.483	0.01	30.37	31.00	0.794	/	/
Tested at the worst position with battery 3#										
Right Side	190/836.6	GPRS 2TS	0.711	0.484	0.01	30.37	31.00	0.822	/	/
Test data of VTR-L29 (new)										
Right Side	190/836.6	GPRS 2TS	0.650	0.446	0.00	30.37	31.00	0.751	/	Yes

Table 105: Hotspot SAR test results of GSM850

7.2.16 SAR measurement Result of GSM1900(Main Antenna)

Test Position of Head	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Right touch	661/1880	GSM	0.402	0.234	0.07	30.01	31.00	0.505	State 1	/
Right touch	661/1880	GSM	0.429	0.271	0.08	30.01	31.00	0.539	State 2	/
Left touch	661/1880	GSM	0.310	0.200	0.00	30.01	31.00	0.389	State 2	/
Left tilt	661/1880	GSM	0.148	0.088	0.15	30.01	31.00	0.186	State 2	/
Right tilt	661/1880	GSM	0.170	0.100	0.02	30.01	31.00	0.214	State 2	/
Right touch	512/1850.2	GSM	0.423	0.270	0.11	30.03	31.00	0.529	State 2	/
Right touch	810/1909.8	GSM	0.393	0.246	0.02	29.99	31.00	0.496	State 2	/
Tested at the worst position with battery 2#										
Right touch	661/1880	GSM	0.365	0.215	0.05	30.01	31.00	0.458	State 2	/
Tested at the worst position with battery 3#										
Right touch	661/1880	GSM	0.428	0.273	0.08	30.01	31.00	0.538	State 2	/
Test data of VTR-L29 (new)										
Right touch	661/1880	GSM	0.348	0.216	-0.04	30.01	31.00	0.437	State 2	Yes

Table 106: Head SAR test results of GSM1900

Test Position of Body-Worn with 15mm	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Front Side	661/1880	GSM	0.263	0.147	-0.06	30.01	31.00	0.330	State 2	/
Front Side	661/1880	GSM	0.274	0.156	-0.04	30.01	31.00	0.344	State 1	/
Back Side	661/1880	GSM	0.232	0.131	0.15	30.01	31.00	0.291	State 1	/
Tested at the worst position with battery 2#										
Front Side	661/1880	GSM	0.217	0.125	-0.07	30.01	31.00	0.273	State 1	/
Tested at the worst position with battery 3#										
Front Side	661/1880	GSM	0.211	0.124	-0.07	30.01	31.00	0.265	State 1	/
Test data of VTR-L29 (new)										
Front Side	661/1880	GSM	0.248	0.138	-0.16	30.01	31.00	0.311	State 1	Yes

Table 107: Body-Worn SAR test results of GSM1900

Test Position of Hotspot with 10mm	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Front Side	661/1880	GPRS 2TS	0.603	0.319	-0.13	27.32	28.00	0.705	State 1	/
Front Side	661/1880	GPRS 2TS	0.708	0.369	0.05	27.32	28.00	0.828	State 2	/
Front Side	512/1850.2	GPRS 2TS	0.475	0.262	-0.09	27.63	28.00	0.517	State 2	/
Front Side	810/1909.8	GPRS 2TS	0.768	0.395	0.04	27.29	28.00	0.904	State 2	/
Back Side	661/1880	GPRS 2TS	0.599	0.314	-0.09	27.32	28.00	0.701	State 2	/
Left Side	661/1880	GPRS 2TS	0.040	0.021	0.02	27.32	28.00	0.046	State 2	/
Right Side	661/1880	GPRS 2TS	0.393	0.225	-0.07	27.32	28.00	0.460	State 2	/
Bottom Side	661/1880	GPRS 2TS	0.688	0.342	-0.08	27.32	28.00	0.805	State 2	/
Bottom Side	512/1850.2	GPRS 2TS	0.480	0.241	0.02	27.63	28.00	0.523	State 2	/
Bottom Side	810/1909.8	GPRS 2TS	0.999	0.494	-0.17	27.29	28.00	1.176	State 2	/
Bottom side-repeated	810/1909.8	GPRS 2TS	1.030	0.507	-0.13	27.29	28.00	1.213	State 2	/
Bottom Side	810/1909.8	GPRS 2TS	0.936	0.495	-0.12	27.29	28.00	1.102	State 1	/
Tested at the worst position with battery 2#										
Bottom Side	810/1909.8	GPRS 2TS	0.859	0.427	-0.14	27.29	28.00	1.012	State 2	/
Tested at the worst position with battery 3#										
Bottom Side	810/1909.8	GPRS 2TS	0.890	0.440	-0.03	27.29	28.00	1.048	State 2	/
Test data of VTR-L29 (new)										
Bottom Side	810/1909.8	GPRS 2TS	0.835	0.413	-0.18	27.29	28.00	0.983	State 2	Yes

Table 108: Hotspot SAR test results of GSM1900

7.2.17 SAR measurement Result of UMTS Band II(Main Antenna)

Test Position of Head	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Right touch	9400/1880	RMC	0.926	0.584	-0.01	23.24	23.60	1.006	State 1	/
Right touch	9400/1880	RMC	0.955	0.603	0.10	23.24	23.60	1.038	State 2	/
Left touch	9400/1880	RMC	0.518	0.309	0.18	23.24	23.60	0.563	State 2	/
Left tilt	9400/1880	RMC	0.334	0.196	0.08	23.24	23.60	0.363	State 2	/
Right touch-Repeated	9400/1880	RMC	0.888	0.566	-0.04	23.24	23.60	0.965	State 2	/
Right tilt	9400/1880	RMC	0.287	0.175	-0.09	23.24	23.60	0.312	State 2	/
Right touch	9262/1852.4	RMC	0.923	0.590	0.08	23.12	23.60	1.031	State 2	/
Right touch	9538/1907.6	RMC	0.896	0.562	0.08	23.19	23.60	0.985	State 2	/
Tested at the worst position with battery 2#										
Right touch	9400/1880	RMC	0.856	0.542	-0.17	23.24	23.60	0.930	State 2	/
Tested at the worst position with battery 3#										
Right touch	9400/1880	RMC	0.822	0.521	0.07	23.24	23.60	0.893	State 2	/
Test data of VTR-L29 (new)										
Right touch	9400/1880	RMC	0.807	0.502	0.06	23.24	23.60	0.877	State 2	Yes

Table 109: Head SAR test results of UMTS Band II

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Front Side	9400/1880	RMC	0.447	0.256	-0.14	23.24	23.60	0.486	State 1	/
Front Side	9400/1880	RMC	0.451	0.270	-0.09	23.24	23.60	0.490	State 2	/
Back Side	9400/1880	RMC	0.493	0.272	0.15	23.24	23.60	0.536	State 2	/
Back Side	9400/1880	RMC	0.456	0.253	0.10	23.24	23.60	0.495	State 1	/
Tested at the worst position with battery 2#										
Back Side	9400/1880	RMC	0.440	0.246	0.15	23.24	23.60	0.478	State 2	/
Tested at the worst position with battery 3#										
Back Side	9400/1880	RMC	0.403	0.232	0.15	23.24	23.60	0.438	State 2	/
Test data of VTR-L29 (new)										
Back Side	9400/1880	RMC	0.482	0.261	0.06	23.24	23.60	0.524	State 2	Yes

Table 110: Body-Worn SAR test results of UMTS Band II

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducte d Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Front Side	9400/1880	RMC	0.596	0.325	-0.16	20.94	21.50	0.678	State 1	/
Front Side	9400/1880	RMC	0.629	0.339	-0.02	20.94	21.50	0.716	State 2	/
Back Side	9400/1880	RMC	0.751	0.385	-0.06	20.94	21.50	0.854	State 2	/
Back Side	9262/1852.4	RMC	0.626	0.343	0.00	20.99	21.50	0.704	State 2	/
Back Side	9538/1907.6	RMC	0.885	0.442	0.12	20.98	21.50	0.998	State 2	/
Left Side	9400/1880	RMC	0.037	0.022	0.11	20.94	21.50	0.042	State 2	/
Right Side	9400/1880	RMC	0.513	0.306	0.06	20.94	21.50	0.584	State 2	/
Bottom Side	9400/1880	RMC	0.924	0.453	0.00	20.94	21.50	1.051	State 2	/
Bottom Side	9262/1852.4	RMC	0.694	0.345	0.02	20.99	21.50	0.780	State 2	/
Bottom Side	9538/1907.6	RMC	1.210	0.588	0.03	20.98	21.50	1.364	State 2	/
Bottom Side	9538/1907.6	RMC	1.050	0.521	-0.09	20.98	21.50	1.184	State 1	/
Bottom Side-Repeated	9538/1907.6	RMC	1.200	0.627	-0.19	20.98	21.50	1.353	State 2	/
Bottom Side-holder perturbation verification	9538/1907.6	RMC	1.190	0.585	0.01	20.98	21.50	1.341	State 2	/
Tested at the worst position with battery 2#										
Bottom Side	9538/1907.6	RMC	1.030	0.511	-0.15	20.98	21.50	1.161	State 2	/
Tested at the worst position with battery 3#										
Bottom Side	9538/1907.6	RMC	1.020	0.516	-0.18	20.98	21.50	1.150	State 2	/
Test data of VTR-L29 (new)										
Bottom Side	9538/1907.6	RMC	0.868	0.435	-0.10	20.98	21.50	0.978	State 2	Yes

Table 111: Hotspot SAR test results of UMTS Band II

Note: According to 201610 FCC TCB workshop RF exposure slides, when the highest reported SAR of an antenna is > 1.2 W/kg, holder perturbation verification is required for each antenna, using the highest SAR configuration among all applicable frequency bands.

7.2.18 SAR measurement Result of UMTS Band IV(Main Antenna)

Test Position of Head	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune- up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Right touch	1413/1732.6	RMC	0.543	0.359	-0.02	22.73	23.60	0.663	State 2	/
Right touch	1413/1732.6	RMC	0.549	0.361	-0.04	22.73	23.60	0.671	State 1	/
Left touch	1413/1732.6	RMC	0.359	0.245	0.12	22.73	23.60	0.439	State 1	/
Left tilt	1413/1732.6	RMC	0.264	0.158	-0.03	22.73	23.60	0.323	State 1	/
Right tilt	1413/1732.6	RMC	0.205	0.131	-0.11	22.73	23.60	0.250	State 1	/
Right touch	1312/1712.4	RMC	0.498	0.327	0.11	22.77	23.60	0.603	State 1	/
Right touch	1513/1752.6	RMC	0.619	0.402	0.16	22.70	23.60	0.762	State 1	/
Right touch	1513/1752.6	RMC	0.554	0.332	0.07	22.70	23.60	0.682	State 2	/
Tested at the worst position with battery 2#										
Right touch	1513/1752.6	RMC	0.494	0.293	0.01	22.70	23.60	0.608	State 1	/
Tested at the worst position with battery 3#										
Right touch	1513/1752.6	RMC	0.506	0.300	-0.04	22.70	23.60	0.623	State 1	/
Test data of VTR-L29 (new)										
Right touch	1513/1752.6	RMC	0.571	0.371	0.06	22.70	23.60	0.702	State 1	Yes

Table 112: Head SAR test results of UMTS Band IV

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Front Side	1413/1732.6	RMC	0.396	0.271	0.01	22.73	23.60	0.484	State 2	/
Front Side	1413/1732.6	RMC	0.406	0.273	-0.01	22.73	23.60	0.496	State 1	/
Back Side	1413/1732.6	RMC	0.421	0.280	0.09	22.73	23.60	0.514	State 1	/
Back Side	1413/1732.6	RMC	0.380	0.240	0.04	22.73	23.60	0.464	State 2	/
Tested at the worst position with battery 2#										
Back Side	1413/1732.6	RMC	0.353	0.236	0.06	22.73	23.60	0.431	State 1	/
Tested at the worst position with battery 3#										
Back Side	1413/1732.6	RMC	0.351	0.222	-0.08	22.73	23.60	0.429	State 1	/
Test data of VTR-L29 (new)										
Back Side	1413/1732.6	RMC	0.385	0.257	0.07	22.73	23.60	0.470	State 1	Yes

Table 113: Body-Worn SAR test results of UMTS Band IV

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Back Side	1413/1732.6	RMC	0.617	0.405	0.05	22.73	23.60	0.754	State 2	/
Back Side	1413/1732.6	RMC	0.662	0.425	0.02	22.73	23.60	0.809	State 1	/
Front Side	1413/1732.6	RMC	0.606	0.395	-0.03	22.73	23.60	0.740	State 1	/
Back Side	1312/1712.4	RMC	0.761	0.494	0.04	22.77	23.60	0.921	State 1	/
Back Side	1312/1712.4	RMC	0.695	0.447	0.05	22.77	23.60	0.841	State 2	/
Back Side	1513/1752.6	RMC	0.606	0.386	0.05	22.70	23.60	0.746	State 1	/
Left Side	1413/1732.6	RMC	0.127	0.074	-0.02	22.73	23.60	0.155	State 1	/
Right Side	1413/1732.6	RMC	0.404	0.231	0.06	22.73	23.60	0.494	State 1	/
Bottom Side	1413/1732.6	RMC	0.293	0.156	0.14	22.73	23.60	0.358	State 1	/
Tested at the worst position with battery 2#										
Back Side	1312/1712.4	RMC	0.668	0.424	-0.19	22.77	23.60	0.809	State 1	/
Tested at the worst position with battery 3#										
Back Side	1312/1712.4	RMC	0.665	0.422	0.00	22.77	23.60	0.805	State 1	/
Test data of VTR-L29 (new)										
Back Side	1312/1712.4	RMC	0.726	0.446	-0.09	22.77	23.60	0.879	State 1	Yes

Table 114: Hotspot SAR test results of UMTS Band IV

7.2.19 SAR measurement Result of UMTS Band V(Main Antenna)

Test Position of Head	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Left touch	4182/836.4	RMC	0.286	0.218	0.18	23.23	24.00	0.341	/	/
Left tilt	4182/836.4	RMC	0.190	0.142	0.14	23.23	24.00	0.227	/	/
Right touch	4182/836.4	RMC	0.318	0.243	0.17	23.23	24.00	0.380	/	/
Right tilt	4182/836.4	RMC	0.177	0.135	0.01	23.23	24.00	0.211	/	/
Right touch	4132/826.4	RMC	0.305	0.233	0.10	23.26	24.00	0.362	/	/
Right touch	4233/846.6	RMC	0.342	0.261	0.16	23.22	24.00	0.409	/	/
Tested at the worst position with battery 2#										
Right touch	4233/846.6	RMC	0.429	0.324	0.06	23.22	24.00	0.513	/	/
Tested at the worst position with battery 3#										
Right touch	4233/846.6	RMC	0.415	0.316	-0.01	23.22	24.00	0.497	/	/
Test data of VTR-L29 (new)										
Right touch	4233/846.6	RMC	0.355	0.268	0.02	23.22	24.00	0.425		

Table 115: Head SAR test results of UMTS Band V

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Front Side	4182/836.4	RMC	0.366	0.278	-0.01	23.23	24.00	0.437	/	/
Back Side	4182/836.4	RMC	0.395	0.300	-0.02	23.23	24.00	0.472	/	/
Tested at the worst position with battery 2#										
Back Side	4182/836.4	RMC	0.415	0.315	-0.01	23.23	24.00	0.496	/	/
Tested at the worst position with battery 3#										
Back Side	4182/836.4	RMC	0.403	0.306	0.01	23.23	24.00	0.481	/	/
Test data of VTR-L29 (new)										
Back Side	4182/836.4	RMC	0.437	0.335	-0.03	23.23	24.00	0.522	/	Yes

Table 116: Body-Worn SAR test results of UMTS Band V

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR1-g (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Front Side	4182/836.4	RMC	0.391	0.299	-0.04	23.23	24.00	0.467	/	/
Back Side	4182/836.4	RMC	0.415	0.317	0.00	23.23	24.00	0.496	/	/
Left Side	4182/836.4	RMC	0.325	0.219	-0.09	23.23	24.00	0.388	/	/
Right Side	4182/836.4	RMC	0.578	0.391	-0.03	23.23	24.00	0.690	/	/
Bottom Side	4182/836.4	RMC	0.128	0.065	-0.14	23.23	24.00	0.153	/	/
Tested at the worst position with battery 2#										
Right Side	4182/836.4	RMC	0.622	0.42	-0.01	23.23	24.00	0.743	/	/
Tested at the worst position with battery 3#										
Right Side	4182/836.4	RMC	0.590	0.398	0.00	23.23	24.00	0.704	/	/
Test data of VTR-L29 (new)										
Right Side	4182/836.4	RMC	0.604	0.412	-0.01	23.23	24.00	0.721	/	Yes

Table 117: Hotspot SAR test results of UMTS Band V

7.2.20 SAR measurement Result of LTE Band II (Main Antenna)

Test Position of Head	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
Right touch	19100/1900	20M QPSK 1RB#50	0.751	0.435	-0.03	23.88	24.00	0.772	State 2	/
Right touch	19100/1900	20M QPSK 1RB#50	0.766	0.481	-0.10	23.88	24.00	0.787	State 1	/
Left touch	19100/1900	20M QPSK 1RB#50	0.439	0.279	0.10	23.88	24.00	0.451	State 1	/
Left tilt	19100/1900	20M QPSK 1RB#50	0.300	0.171	-0.01	23.88	24.00	0.308	State 1	/
Right tilt	19100/1900	20M QPSK 1RB#50	0.248	0.149	-0.08	23.88	24.00	0.255	State 1	/
Right touch	18700/1860	20M QPSK 1RB#50	0.942	0.601	0.13	23.56	24.00	1.042	State 1	/
Right touch	18700/1860	20M QPSK 1RB#50	0.860	0.550	0.05	23.56	24.00	0.952	State 2	/
Right touch-repeated	18700/1860	20M QPSK 1RB#50	0.940	0.600	0.03	23.56	24.00	1.040	State 1	/
Right touch	18900/1880	20M QPSK 1RB#50	0.851	0.537	0.15	23.74	24.00	0.904	State 1	/
50%RB										
Left touch	19100/1900	20M QPSK 50%RB#25	0.328	0.193	0.18	22.62	23.00	0.358	State 1	/
Left tilt	19100/1900	20M QPSK 50%RB#25	0.239	0.136	-0.05	22.62	23.00	0.261	State 1	/
Right touch	19100/1900	20M QPSK 50%RB#25	0.560	0.322	0.13	22.62	23.00	0.611	State 1	/
Right tilt	19100/1900	20M QPSK 50%RB#25	0.198	0.118	0.01	22.62	23.00	0.216	State 1	/
100%RB										
Right touch	19100/1900	20M QPSK 100%RB#0	0.543	0.314	0.05	21.99	23.00	0.685	State 1	/
Tested at the worst position with battery 2#										
Right touch	18700/1860	20M QPSK 1RB#50	0.782	0.499	0.11	23.56	24.00	0.865	State 1	/
Tested at the worst position with battery 3#										
Right touch	18700/1860	20M QPSK 1RB#50	0.800	0.510	-0.05	23.56	24.00	0.885	State 1	/
Test data of VTR-L29 (new)										
Right touch	18700/1860	20M QPSK 1RB#50	1.040	0.645	-0.03	23.56	24.00	1.151	State 1	Yes

Table 118: Head SAR test results of LTE Band II

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	19100/1900	20M QPSK 1RB#50	0.416	0.235	-0.06	23.88	24.00	0.428	State 1	/
Front Side	19100/1900	20M QPSK 1RB#50	0.479	0.269	-0.08	23.88	24.00	0.492	State 2	/
Back Side	19100/1900	20M QPSK 1RB#50	0.509	0.280	-0.04	23.88	24.00	0.523	State 2	/
Back Side	19100/1900	20M QPSK 1RB#50	0.452	0.255	-0.04	23.88	24.00	0.465	State 1	/
50%RB										
Front Side	19100/1900	20M QPSK 50%RB#25	0.329	0.186	-0.07	22.62	23.00	0.359	State 2	/
Back Side	19100/1900	20M QPSK 50%RB#25	0.368	0.209	0.11	22.62	23.00	0.402	State 2	/
Tested at the worst position with battery 2#										
Back Side	19100/1900	20M QPSK 1RB#50	0.412	0.233	0.11	23.88	24.00	0.424	State 2	/
Tested at the worst position with battery 3#										
Back Side	19100/1900	20M QPSK 1RB#50	0.478	0.27	0.12	23.88	24.00	0.491	State 2	/
Test data of VTR-L29 (new)										
Back Side	19100/1900	20M QPSK 1RB#50	0.508	0.279	-0.08	23.88	24.00	0.522	State 2	Yes

Table 119: Body-Worn SAR test results of LTE Band II

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SA R Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	19100/1900	20M QPSK 1RB#50	0.742	0.390	-0.14	22.14	22.50	0.806	State 1	/
Front Side	19100/1900	20M QPSK 1RB#50	0.779	0.401	-0.11	22.14	22.50	0.846	State 2	/
Front Side	18700/1860	20M QPSK 1RB#50	0.616	0.328	0.04	21.51	22.50	0.774	State 2	/
Front Side	18900/1880	20M QPSK 1RB#0	0.557	0.294	-0.06	21.65	22.50	0.677	State 2	/
Back Side	19100/1900	20M QPSK 1RB#50	0.805	0.404	0.07	22.14	22.50	0.875	State 2	/
Back Side	18700/1860	20M QPSK 1RB#50	0.645	0.341	0.08	21.51	22.50	0.810	State 2	/
Back Side	18900/1880	20M QPSK 1RB#0	0.594	0.317	0.04	21.65	22.50	0.722	State 2	/
Left Side	19100/1900	20M QPSK 1RB#50	0.081	0.045	-0.09	22.14	22.50	0.088	State 2	/
Right Side	19100/1900	20M QPSK 1RB#50	0.398	0.226	-0.18	22.14	22.50	0.432	State 2	/
Bottom Side	19100/1900	20M QPSK 1RB#50	0.961	0.473	-0.12	22.14	22.50	1.044	State 2	/
Bottom Side	18700/1860	20M QPSK 1RB#50	0.657	0.327	0.03	21.51	22.50	0.825	State 2	/
Bottom Side	18900/1880	20M QPSK 1RB#0	0.622	0.309	-0.07	21.65	22.50	0.756	State 2	/
50%RB										
Front Side	19100/1900	20M QPSK 50%RB#25	0.753	0.384	-0.13	22.23	22.50	0.801	State 2	/
Front Side	18700/1860	20M QPSK 50%RB#25	0.623	0.336	0.00	21.71	22.50	0.747	State 2	/
Front Side	18900/1880	20M QPSK 50%RB#0	0.544	0.285	-0.06	21.68	22.50	0.657	State 2	/
Back Side	19100/1900	20M QPSK 50%RB#25	0.816	0.408	0.12	22.23	22.50	0.868	State 2	/
Back Side	18700/1860	20M QPSK 50%RB#25	0.697	0.378	0.08	21.71	22.50	0.836	State 2	/
Back Side	18900/1880	20M QPSK 50%RB#0	0.605	0.320	0.06	21.68	22.50	0.731	State 2	/
Left Side	19100/1900	20M QPSK 50%RB#25	0.083	0.047	-0.08	22.23	22.50	0.088	State 2	/
Right Side	19100/1900	20M QPSK 50%RB#25	0.417	0.237	-0.10	22.23	22.50	0.444	State 2	/
Bottom Side	19100/1900	20M QPSK 50%RB#25	1.100	0.571	-0.08	22.23	22.50	1.171	State 2	/
Bottom Side	19100/1900	20M QPSK 50%RB#25	1.000	0.491	-0.09	22.23	22.50	1.064	State 1	/
Bottom Side-repeated	19100/1900	20M QPSK 50%RB#25	1.000	0.492	-0.15	22.23	22.50	1.064	State 2	/
Bottom Side	18700/1860	20M QPSK 50%RB#25	0.685	0.340	0.03	21.71	22.50	0.822	State 2	/

Bottom Side	18900/1880	20M QPSK 50%RB#0	0.663	0.327	-0.04	21.68	22.50	0.801	State 2	/
100%RB										
Front Side	19100/1900	20M QPSK 100%RB#0	0.704	0.385	-0.02	21.67	22.50	0.852	State 2	/
Back Side	19100/1900	20M QPSK 100%RB#0	0.744	0.404	0.16	21.67	22.50	0.901	State 2	/
Bottom Side	19100/1900	20M QPSK 100%RB#0	0.961	0.471	-0.08	21.67	22.50	1.163	State 2	/
Tested at the worst position with battery 2#										
Bottom Side	19100/1900	20M QPSK 50%RB#25	0.865	0.426	-0.12	22.23	22.50	0.920	State 2	/
Tested at the worst position with battery 3#										
Bottom Side	19100/1900	20M QPSK 50%RB#25	0.864	0.426	-0.10	22.23	22.50	0.919	State 2	/
Test data of VTR-L29 (new)										
Bottom Side	19100/1900	20M QPSK 50%RB#25	1.080	0.538	-0.07	22.23	22.50	1.149	State 2	Yes

Table 120: Hotspot SAR test results of LTE Band II

7.2.21 SAR measurement Result of LTE Band IV(Main Antenna)

Test Position of Head	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conduct ed Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tunin g State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Left touch	20300/1745	20M QPSK 1RB#50	0.339	0.230	0.02	23.49	24.00	0.381	State 1	/
Left touch	20300/1745	20M QPSK 1RB#50	0.357	0.241	-0.09	23.49	24.00	0.401	State 2	/
Left tilt	20300/1745	20M QPSK 1RB#50	0.251	0.164	0.04	23.49	24.00	0.282	State 2	/
Right touch	20300/1745	20M QPSK 1RB#50	0.445	0.293	0.07	23.49	24.00	0.500	State 2	/
Right touch	20050/1720	20M QPSK 1RB#50	0.532	0.352	-0.01	23.31	24.00	0.624	State 2	/
Right touch	20175/1732.5	20M QPSK 1RB#50	0.587	0.387	0.07	22.84	24.00	0.767	State 2	/
Right touch	20175/1732.5	20M QPSK 1RB#50	0.529	0.352	0.10	22.84	24.00	0.691	State 1	/
Right tilt	20300/1745	20M QPSK 1RB#50	0.224	0.151	-0.02	23.49	24.00	0.252	State 2	/
50%RB										
Left touch	20300/1745	20M QPSK 50RB#25	0.313	0.213	0.08	22.45	23.00	0.355	State 2	/
Left tilt	20300/1745	20M QPSK 50RB#25	0.222	0.146	0.01	22.45	23.00	0.252	State 2	/
Right touch	20300/1745	20M QPSK 50RB#25	0.379	0.248	0.07	22.45	23.00	0.430	State 2	/
Right tilt	20300/1745	20M QPSK 50RB#25	0.185	0.124	-0.11	22.45	23.00	0.210	State 2	/
Tested at the worst position with battery 2#										
Right touch	20175/1732.5	20M QPSK 1RB#50	0.551	0.370	0.11	22.84	24.00	0.720	State 2	/
Tested at the worst position with battery 3#										
Right touch	20175/1732.5	20M QPSK 1RB#50	0.513	0.344	0.05	22.84	24.00	0.670	State 2	/
Test data of VTR-L29 (new)										
Right touch	20175/1732.5	20M QPSK 1RB#50	0.581	0.382	-0.05	22.84	24.00	0.759	State 2	Yes

Table 121: Head SAR test results of LTE Band IV

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducte d Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	20300/1745	20M QPSK 1RB#50	0.326	0.207	-0.03	23.49	24.00	0.367	State 2	/
Front Side	20300/1745	20M QPSK 1RB#50	0.365	0.230	-0.09	23.49	24.00	0.410	State 1	/
Back Side	20300/1745	20M QPSK 1RB#50	0.387	0.260	-0.01	23.49	24.00	0.435	State 1	/
Back Side	20300/1745	20M QPSK 1RB#50	0.376	0.239	0.12	23.49	24.00	0.423	State 2	/
50%RB										
Front Side	20300/1745	20M QPSK 50%RB#25	0.295	0.187	0.01	22.45	23.00	0.335	State 1	/
Back Side	20300/1745	20M QPSK 50%RB#25	0.341	0.216	0.10	22.45	23.00	0.387	State 1	/
Tested at the worst position with battery 2#										
Back Side	20300/1745	20M QPSK 1RB#50	0.339	0.214	0.12	23.49	24.00	0.381	State 1	/
Tested at the worst position with battery 3#										
Back Side	20300/1745	20M QPSK 1RB#50	0.348	0.22	0.1	23.49	24.00	0.391	State 1	/
Test data of VTR-L29 (new)										
Back Side	20300/1745	20M QPSK 1RB#50	0.447	0.301	-0.05	23.49	24.00	0.503	State 1	Yes

Table 122: Body-Worn SAR test results of LTE Band IV

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	20300/1745	20M QPSK 1RB#50	0.483	0.328	-0.07	23.49	24.00	0.543	State 2	/
Front Side	20300/1745	20M QPSK 1RB#50	0.577	0.376	-0.14	23.49	24.00	0.649	State 1	/
Back Side	20300/1745	20M QPSK 1RB#50	0.625	0.396	-0.04	23.49	24.00	0.703	State 1	/
Left Side	20300/1745	20M QPSK 1RB#50	0.153	0.092	-0.14	23.49	24.00	0.172	State 1	/
Right Side	20300/1745	20M QPSK 1RB#50	0.413	0.251	0.03	23.49	24.00	0.464	State 1	/
Bottom Side	20300/1745	20M QPSK 1RB#50	0.385	0.201	0.04	23.49	24.00	0.433	State 1	/
50%RB										
Front Side	20300/1745	20M QPSK 50%RB#25	0.498	0.322	0.00	22.45	23.00	0.565	State 1	/
Back Side	20300/1745	20M QPSK 50%RB#25	0.525	0.332	0.14	22.45	23.00	0.596	State 1	/
Left Side	20300/1745	20M QPSK 50%RB#25	0.112	0.067	0.03	22.45	23.00	0.127	State 1	/
Right Side	20300/1745	20M QPSK 50%RB#25	0.355	0.215	-0.01	22.45	23.00	0.403	State 1	/
Bottom Side	20300/1745	20M QPSK 50%RB#25	0.307	0.162	0.08	22.45	23.00	0.348	State 1	/
Tested at the worst position with battery 2#										
Back Side	20300/1745	20M QPSK 1RB#50	0.706	0.459	0.02	23.49	24.00	0.794	State 1	/
Back Side	20300/1745	20M QPSK 1RB#50	0.656	0.414	0.08	23.49	24.00	0.738	State 2	/
Tested at the worst position with battery 3#										
Back Side	20300/1745	20M QPSK 1RB#50	0.645	0.409	0.10	23.49	24.00	0.725	State 1	/
Test data of VTR-L29 (new)										
Back Side	20300/1745	20M QPSK 1RB#50	0.854	0.516	-0.11	23.49	24.00	0.960	State 1	Yes
Back Side-Repeated	20300/1745	20M QPSK 1RB#50	0.792	0.487	-0.10	23.49	24.00	0.891	State 1	/
Back Side	20050/1720	20M QPSK 1RB#50	0.648	0.400	-0.05	23.49	24.00	0.729	State 1	/
Back Side	20175/1732.5	20M QPSK 1RB#50	0.678	0.415	0.00	23.49	24.00	0.762	State 1	/
Back Side	20300/1745	20M QPSK 50%RB#25	0.640	0.392	-0.01	22.45	23.00	0.726	State 1	/
Back Side	20300/1745	20M QPSK 100%RB#0	0.661	0.409	-0.05	22.29	23.00	0.778	State 1	/

Table 123: Hotspot SAR test results of LTE Band IV

7.2.22 SAR measurement Result of LTE Band V(Main Antenna)

Test Position of Head	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Left touch	20600/844	10M QPSK 1RB#25	0.242	0.182	0.17	22.91	23.50	0.277	/	/
Left tilt	20600/844	10M QPSK 1RB#25	0.168	0.115	0.02	22.91	23.50	0.192	/	/
Right touch	20600/844	10M QPSK 1RB#25	0.288	0.218	0.19	22.91	23.50	0.330	/	/
Right tilt	20600/844	10M QPSK 1RB#25	0.148	0.100	0.03	22.91	23.50	0.170	/	/
Right touch	20450/829	10M QPSK 1RB#25	0.180	0.125	0.01	22.78	23.50	0.212	/	/
Right touch	20525/836.5	10M QPSK 1RB#25	0.332	0.255	0.17	22.51	23.50	0.417	/	/
50%RB										
Left touch	20600/844	10M QPSK 50%RB#13	0.200	0.151	0.14	22.11	22.50	0.219	/	/
Left tilt	20600/844	10M QPSK 50%RB#13	0.134	0.092	0.05	22.11	22.50	0.147	/	/
Right touch	20600/844	10M QPSK 50%RB#13	0.228	0.157	0.19	22.11	22.50	0.249	/	/
Right tilt	20600/844	10M QPSK 50%RB#13	0.123	0.084	0.01	22.11	22.50	0.135	/	/
Tested at the worst position with battery 2#										
Right touch	20525/836.5	10M QPSK 1RB#25	0.414	0.313	0.03	22.51	23.50	0.520	/	/
Tested at the worst position with battery 3#										
Right touch	20525/836.5	10M QPSK 1RB#25	0.412	0.312	0.09	22.51	23.50	0.517	/	/
Test data of VTR-L29 (new)										
Right touch	20525/836.5	10M QPSK 1RB#25	0.334	0.250	0.07	22.51	23.50	0.420	/	Yes

Table 124: Head SAR test results of LTE Band V

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	20600/844	10M QPSK 1RB#25	0.327	0.231	-0.05	22.91	23.50	0.375	/	/
Back Side	20600/844	10M QPSK 1RB#25	0.366	0.277	0.00	22.91	23.50	0.419	/	/
50%RB										
Front Side	20600/844	10M QPSK 25RB#13	0.274	0.193	-0.05	22.11	22.50	0.300	/	/
Back Side	20600/844	10M QPSK 25RB#13	0.286	0.203	0.04	22.11	22.50	0.313	/	/
Tested at the worst position with battery 2#										
Back Side	20600/844	10M QPSK 1RB#25	0.355	0.269	-0.02	22.91	23.50	0.407	/	/
Tested at the worst position with battery 3#										
Back Side	20600/844	10M QPSK 1RB#25	0.358	0.271	-0.02	22.91	23.50	0.410	/	/
Test data of VTR-L29 (new)										
Back Side	20600/844	10M QPSK 1RB#25	0.386	0.296	0.00	22.91	23.50	0.442	/	Yes

Table 125: Body-Worn SAR test results of LTE Band V

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	20600/844	10M QPSK 1RB#25	0.312	0.237	-0.07	22.91	23.50	0.357	/	/
Back Side	20600/844	10M QPSK 1RB#25	0.377	0.287	-0.04	22.91	23.50	0.432	/	/
Left Side	20600/844	10M QPSK 1RB#25	0.215	0.145	-0.10	22.91	23.50	0.246	/	/
Right Side	20600/844	10M QPSK 1RB#25	0.458	0.309	-0.09	22.91	23.50	0.525	/	/
Bottom Side	20600/844	10M QPSK 1RB#25	0.108	0.053	-0.15	22.91	23.50	0.124	/	/
50%RB										
Front Side	20600/844	10M QPSK 25RB#13	0.268	0.203	-0.04	22.11	22.50	0.293	/	/
Back Side	20600/844	10M QPSK 25RB#13	0.279	0.211	0.04	22.11	22.50	0.305	/	/
Left Side	20600/844	10M QPSK 25RB#13	0.178	0.120	-0.17	22.11	22.50	0.195	/	/
Right Side	20600/844	10M QPSK 25RB#13	0.396	0.265	-0.07	22.11	22.50	0.433	/	/
Bottom Side	20600/844	10M QPSK 25RB#13	0.099	0.049	-0.16	22.11	22.50	0.109	/	/
Tested at the worst position with battery 2#										
Right Side	20600/844	10M QPSK 1RB#25	0.454	0.306	0.01	22.91	23.50	0.520	/	/
Tested at the worst position with battery 3#										
Right Side	20600/844	10M QPSK 1RB#25	0.530	0.358	-0.13	22.91	23.50	0.607	/	/
Test data of VTR-L29 (new)										
Right Side	20600/844	10M QPSK 1RB#25	0.585	0.397	-0.07	22.91	23.50	0.670	/	Yes

Table 126: Hotspot SAR test results of LTE Band V

7.2.23 SAR measurement Result of LTE Band VII(Main Antenna)

Test Position of Head	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Right touch	21100/2535	20M QPSK 1RB#99	0.384	0.222	0.04	23.33	23.50	0.399	State 1	/
Right touch	21100/2535	20M QPSK 1RB#99	0.741	0.391	0.07	23.33	23.50	0.771	State 2	/
Left touch	21100/2535	20M QPSK 1RB#99	0.288	0.162	-0.06	23.33	23.50	0.299	State 2	
Left tilt	21100/2535	20M QPSK 1RB#99	0.245	0.121	0.00	23.33	23.50	0.255	State 2	/
Right tilt	21100/2535	20M QPSK 1RB#99	0.203	0.101	0.00	23.33	23.50	0.211	State 2	/
Right touch	20850/2510	20M QPSK 1RB#0	0.350	0.187	-0.02	23.00	23.50	0.393	State 2	/
Right touch	21350/2560	20M QPSK 1RB#99	0.844	0.451	-0.10	22.96	23.50	0.956	State 2	/
50%RB										
Left touch	21100/2535	20M QPSK 50%RB#50	0.244	0.134	0.17	22.71	23.00	0.261	State 2	/
Left tilt	21100/2535	20M QPSK 50%RB#50	0.180	0.095	0.07	22.71	23.00	0.192	State 2	/
Right touch	21100/2535	20M QPSK 50%RB#50	0.727	0.391	-0.01	22.71	23.00	0.777	State 2	/
Right tilt	21100/2535	20M QPSK 50%RB#50	0.166	0.082	-0.09	22.71	23.00	0.177	State 2	/
100%RB										
Right touch	21100/2535	20M QPSK 100%RB#0	0.501	0.258	0.18	22.34	23.00	0.583	State 2	/
Tested at the worst position with battery 2#										
Right touch	21350/2560	20M QPSK 1RB#99	0.925	0.493	0.14	22.96	23.50	1.047	State 2	/
Tested at the worst position with battery 3#										
Right touch	21350/2560	20M QPSK 1RB#99	0.937	0.499	0.19	22.96	23.50	1.061	State 2	/
Right touch	21350/2560	20M QPSK 1RB#99	0.391	0.226	0.04	22.96	23.50	0.443	State 1	/
Right touch-repeated	21350/2560	20M QPSK 1RB#99	0.890	0.473	-0.18	22.96	23.50	1.008	State 2	/
Test data of VTR-L29 (new)										
Right touch	21350/2560	20M QPSK 1RB#99	0.685	0.368	0.16	22.96	23.50	0.776	State 2	Yes

Table 127: Head SAR test results of LTE Band VII

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Back Side	21100/2535	20M QPSK 1RB#99	0.339	0.194	-0.18	23.33	23.50	0.353	State 1	/
Back Side	21100/2535	20M QPSK 1RB#99	0.476	0.253	0.04	23.33	23.50	0.495	State 2	/
Front Side	21100/2535	20M QPSK 1RB#99	0.522	0.280	-0.10	23.33	23.50	0.543	State 2	/
Front Side	21100/2535	20M QPSK 1RB#99	0.411	0.215	0.01	23.33	23.50	0.427	State 1	/
50%RB										
Front Side	21100/2535	20M QPSK 50%RB#50	0.454	0.244	0.10	22.71	23.00	0.485	State 2	/
Back Side	21100/2535	20M QPSK 50%RB#50	0.418	0.218	0.01	22.71	23.00	0.447	State 2	/
Tested at the worst position with battery 2#										
Front Side	21100/2535	20M QPSK 1RB#99	0.511	0.276	-0.08	23.33	23.50	0.531	State 2	/
Tested at the worst position with battery 3#										
Front Side	21100/2535	20M QPSK 1RB#99	0.503	0.272	-0.10	23.33	23.50	0.523	State 2	/
Test data of VTR-L29 (new)										
Front Side	21100/2535	20M QPSK 1RB#99	0.340	0.158	-0.11	23.33	23.50	0.354	State 2	Yes

Table 128: Body-Worn SAR test results of LTE Band VII

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Back Side	21100/2535	20M QPSK 1RB#99	0.377	0.206	0.14	17.63	18.50	0.461	State 1	/
Back Side	21100/2535	20M QPSK 1RB#99	0.651	0.281	0.06	17.63	18.50	0.795	State 2	/
Front Side	21100/2535	20M QPSK 1RB#99	0.552	0.242	-0.18	17.63	18.50	0.674	State 2	/
Left Side	21100/2535	20M QPSK 1RB#99	0.071	0.037	-0.16	22.42	23.00	0.081	State 2	/
Right Side	21100/2535	20M QPSK 1RB#99	0.845	0.452	-0.17	22.42	23.00	0.966	State 2	/
Right Side	20850/2510	20M QPSK 1RB#0	0.514	0.264	0.07	22.00	23.00	0.647	State 2	/
Right Side	21350/2560	20M QPSK 1RB#99	0.822	0.429	0.14	21.83	23.00	1.076	State 2	/
Bottom Side	21100/2535	20M QPSK 1RB#99	0.629	0.243	0.15	17.63	18.50	0.769	State 2	/
50%RB										
Front Side	21100/2535	20M QPSK 50%RB#50	0.474	0.204	0.05	17.94	18.50	0.539	State 2	/
Back Side	21100/2535	20M QPSK 50%RB#50	0.453	0.197	-0.15	17.94	18.50	0.515	State 2	/
Left Side	21100/2535	20M QPSK 50%RB#50	0.065	0.033	0.04	22.74	23.00	0.069	State 2	/
Right Side	21100/2535	20M QPSK 50%RB#50	0.665	0.361	-0.15	22.74	23.00	0.706	State 2	/
Bottom Side	21100/2535	20M QPSK 50%RB#50	0.322	0.123	-0.11	17.94	18.50	0.366	State 2	/
100%RB										
Right Side	21100/2535	20M QPSK 100%RB#0	0.688	0.368	0.14	22.37	23.00	0.795	State 2	/
Tested at the worst position with battery 2#										
Right Side	21350/2560	20M QPSK 1RB#99	0.726	0.392	-0.11	21.83	23.00	0.950	State 2	/
Tested at the worst position with battery 3#										
Right Side	21350/2560	20M QPSK 1RB#99	0.759	0.409	-0.11	21.83	23.00	0.994	State 2	/
Additional SAR test result with sensor off										
Back Side-11mm	21350/2560	20M QPSK 1RB#99	1.040	0.453	0.00	21.83	23.00	1.362	State 2	/
Back Side	21350/2560	20M QPSK 1RB#99	0.533	0.261	0.01	21.83	23.00	0.698	State 1	/
Back Side-Repeated-11mm	21350/2560	20M QPSK 1RB#99	1.020	0.449	0.18	21.83	23.00	1.335	State 2	/
Back Side-11mm	21100/2535	20M QPSK 1RB#99	0.954	0.418	0.04	22.42	23.00	1.090	State 2	/
Back Side-11mm	20850/2510	20M QPSK 1RB#0	0.615	0.270	-0.10	22.00	23.00	0.774	State 2	/

Bottom Side-11mm	21350/2560	20M QPSK 1RB#99	1.010	0.393	-0.14	21.83	23.00	1.322	State 2	/
Bottom Side-11mm	21100/2535	20M QPSK 1RB#99	0.937	0.411	0.08	22.42	23.00	1.071	State 2	/
Bottom Side-11mm	20850/2510	20M QPSK 1RB#0	0.604	0.265	-0.01	22.00	23.00	0.760	State 2	/
Front Side-14mm	21350/2560	20M QPSK 1RB#99	0.577	0.309	0.00	21.83	23.00	0.755	State 2	/
50%RB										
Back Side-11mm	21100/2535	20M QPSK 50%RB#50	1.020	0.446	0.05	22.74	23.00	1.083	State 2	/
Back Side-11mm	20850/2510	20M QPSK 50%RB#0	0.643	0.282	0.10	22.21	23.00	0.771	State 2	/
Back Side-11mm	21350/2560	20M QPSK 50%RB#0	0.826	0.359	0.11	22.08	23.00	1.021	State 2	/
Bottom Side-11mm	21100/2535	20M QPSK 50%RB#50	1.000	0.439	0.09	22.74	23.00	1.062	State 2	/
Bottom Side-11mm	20850/2510	20M QPSK 50%RB#0	0.615	0.267	0.06	22.21	23.00	0.738	State 2	/
Bottom Side-11mm	21350/2560	20M QPSK 50%RB#0	0.796	0.348	0.13	22.08	23.00	0.984	State 2	/
Front Side-14mm	21100/2535	20M QPSK 50%RB#50	0.465	0.200	0.07	22.74	23.00	0.494	State 2	/
100%RB										
Back Side-11mm	21100/2535	20M QPSK 100%RB#0	0.884	0.386	0.07	22.37	23.00	1.022	State 2	/
Bottom Side-11mm	21100/2535	20M QPSK 100%RB#0	0.868	0.380	0.15	22.37	23.00	1.004	State 2	/
Test data of VTR-L29 (new)										
Back Side	21350/2560	20M QPSK 1RB#99	0.822	0.352	-0.14	21.83	23.00	1.076	State 2	Yes

Table 129: Hotspot SAR test results of LTE Band VII

7.2.24 SAR measurement Result of LTE Band XII(Main Antenna)

Test Position of Head	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Left touch	23130/711	10M QPSK 1RB#25	0.120	0.096	0.14	22.88	23.50	0.138	/	/
Left tilt	23130/711	10M QPSK 1RB#25	0.104	0.073	0.06	22.88	23.50	0.120	/	/
Right touch	23130/711	10M QPSK 1RB#25	0.132	0.104	-0.02	22.88	23.50	0.152	/	/
Right tilt	23130/711	10M QPSK 1RB#25	0.092	0.064	0.10	22.88	23.50	0.106	/	/
Right touch	23060/704	10M QPSK 1RB#25	0.238	0.187	-0.08	22.80	23.50	0.280	/	/
Right touch	23095/707.5	10M QPSK 1RB#0	0.180	0.127	0.19	22.82	23.50	0.211	/	/
50%RB										
Left touch	23130/711	10M QPSK 50%RB#13	0.095	0.067	0.12	21.51	22.50	0.119	/	/
Left tilt	23130/711	10M QPSK 50%RB#13	0.086	0.060	0.10	21.51	22.50	0.108	/	/
Right touch	23130/711	10M QPSK 50%RB#13	0.103	0.072	0.10	21.51	22.50	0.129	/	/
Right tilt	23130/711	10M QPSK 50%RB#13	0.075	0.053	0.13	21.51	22.50	0.095	/	/
Tested at the worst position with battery 2#										
Right touch	23060/704	10M QPSK 1RB#25	0.195	0.137	0.07	22.80	23.50	0.229	/	/
Tested at the worst position with battery 3#										
Right touch	23060/704	10M QPSK 1RB#25	0.196	0.138	0.17	22.80	23.50	0.230	/	/
Test data of VTR-L29 (new)										
Right touch	23060/704	10M QPSK 1RB#25	0.209	0.164	0.14	22.80	23.50	0.246	/	Yes

Table 130: Head SAR test results of LTE Band XII

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	23130/711	10M QPSK 1RB#25	0.176	0.126	-0.01	22.88	23.50	0.203	/	/
Back Side	23130/711	10M QPSK 1RB#25	0.188	0.144	0.02	22.88	23.50	0.217	/	/
50%RB										
Front Side	23130/711	10M QPSK 50%RB#13	0.135	0.096	-0.02	21.51	22.50	0.170	/	/
Back Side	23130/711	10M QPSK 50%RB#13	0.140	0.100	0.00	21.51	22.50	0.176	/	/
Tested at the worst position with battery 2#										
Back Side	23130/711	10M QPSK 1RB#25	0.172	0.123	0.00	22.88	23.50	0.198	/	/
Tested at the worst position with battery 3#										
Back Side	23130/711	10M QPSK 1RB#25	0.173	0.123	-0.01	22.88	23.50	0.200	/	/
Test data of VTR-L29 (new)										
Back Side	23130/711	10M QPSK 1RB#25	0.224	0.172	0.02	22.88	23.50	0.258	/	Yes

Table 131: Body-Worn SAR test results of LTE Band XII

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	23130/711	10M QPSK 1RB#25	0.221	0.169	0.06	22.88	23.50	0.255	/	/
Back Side	23130/711	10M QPSK 1RB#25	0.244	0.182	-0.01	22.88	23.50	0.281	/	/
Left Side	23130/711	10M QPSK 1RB#25	0.150	0.102	-0.03	22.88	23.50	0.173	/	/
Right Side	23130/711	10M QPSK 1RB#25	0.212	0.146	0.00	22.88	23.50	0.245	/	/
Bottom Side	23130/711	10M QPSK 1RB#25	0.091	0.054	-0.04	22.88	23.50	0.105	/	/
50%RB										
Front Side	23130/711	10M QPSK 50%RB#13	0.172	0.123	-0.03	21.51	22.50	0.216	/	/
Back Side	23130/711	10M QPSK 50%RB#13	0.189	0.133	0.00	21.51	22.50	0.237	/	/
Left Side	23130/711	10M QPSK 50%RB#13	0.115	0.079	-0.08	21.51	22.50	0.144	/	/
Right Side	23130/711	10M QPSK 50%RB#13	0.164	0.113	0.05	21.51	22.50	0.206	/	/
Bottom Side	23130/711	10M QPSK 50%RB#13	0.070	0.042	-0.04	21.51	22.50	0.088	/	/
Tested at the worst position with battery 2#										
Back Side	23130/711	10M QPSK 1RB#25	0.238	0.168	0.02	22.88	23.50	0.275	/	/
Tested at the worst position with battery 3#										
Back Side	23130/711	10M QPSK 1RB#25	0.233	0.165	0.04	22.88	23.50	0.269	/	/
Test data of VTR-L29 (new)										
Back Side	23130/711	10M QPSK 1RB#25	0.274	0.207	0.00	22.88	23.50	0.316	/	Yes

Table 132: Hotspot SAR test results of LTE Band XII

7.2.25 SAR measurement Result of LTE Band XVII(Main Antenna)

SAR for LTE Band 17 (Frequency range:704-716 MHz) is covered by LTE Band 12 (Frequency range:699-716 MHz) due to similar frequency range,same maximum tune up limit and same channel bandwidth.

7.2.26 SAR measurement Result of LTE Band XXVI(Main Antenna)

Test Position of Head	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducte d Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Left touch	26965/841.5	15M QPSK 1RB#38	0.314	0.239	-0.17	22.63	23.40	0.375	/	/
Left tilt	26965/841.5	15M QPSK 1RB#38	0.211	0.146	-0.04	22.63	23.40	0.252	/	/
Right touch	26965/841.5	15M QPSK 1RB#38	0.393	0.296	-0.08	22.63	23.40	0.469	/	/
Right tilt	26965/841.5	15M QPSK 1RB#38	0.213	0.148	0.17	22.63	23.40	0.254	/	/
Right touch	26775/822.5	15M QPSK 1RB#38	0.372	0.284	-0.01	22.47	23.40	0.461	/	/
Right touch	26865/831.5	15M QPSK 1RB#38	0.222	0.170	0.16	22.15	23.40	0.296	/	/
50%RB										
Left touch	26965/841.5	15M QPSK 50%RB#39	0.184	0.127	0.14	21.53	22.40	0.225	/	/
Left tilt	26965/841.5	15M QPSK 50%RB#39	0.130	0.090	0.12	21.53	22.40	0.159	/	/
Right touch	26965/841.5	15M QPSK 50%RB#39	0.224	0.154	0.14	21.53	22.40	0.274	/	/
Right tilt	26965/841.5	15M QPSK 50%RB#39	0.124	0.083	0.09	21.53	22.40	0.152	/	/
Tested at the worst position with battery 2#										
Right touch	26965/841.5	15M QPSK 1RB#38	0.381	0.289	0.08	22.63	23.40	0.455	/	/
Tested at the worst position with battery 3#										
Right touch	26965/841.5	15M QPSK 1RB#38	0.389	0.294	0.09	22.63	23.40	0.464	/	/
Test data of VTR-L29 (new)										
Right touch	26965/841.5	15M QPSK 1RB#38	0.396	0.295	0.10	22.63	23.40	0.473	/	Yes

Table 133: Head SAR test results of LTE Band XXVI

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	26965/841.5	15M QPSK 1RB#38	0.348	0.264	-0.12	22.63	23.40	0.416	/	/
Back Side	26965/841.5	15M QPSK 1RB#38	0.375	0.284	-0.06	22.63	23.40	0.448	/	/
50%RB										
Front Side	26965/841.5	15M QPSK 50%RB#39	0.207	0.157	-0.04	21.53	22.40	0.253	/	/
Back Side	26965/841.5	15M QPSK 50%RB#39	0.225	0.170	-0.02	21.53	22.40	0.275	/	/
Tested at the worst position with battery 2#										
Back Side	26965/841.5	15M QPSK 1RB#38	0.368	0.279	-0.04	22.63	23.40	0.439	/	/
Tested at the worst position with battery 3#										
Back Side	26965/841.5	15M QPSK 1RB#38	0.387	0.293	0.01	22.63	23.40	0.462	/	/
Test data of VTR-L29 (new)										
Back Side	26965/841.5	15M QPSK 1RB#38	0.421	0.322	-0.03	22.63	23.40	0.503	/	Yes

Table 134: Body-Worn SAR test results of LTE Band XXVI

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducte d Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	26965/841.5	15M QPSK 1RB#38	0.416	0.315	-0.14	22.63	23.40	0.497	/	/
Back Side	26965/841.5	15M QPSK 1RB#38	0.416	0.319	0.01	22.63	23.40	0.497	/	/
Left Side	26965/841.5	15M QPSK 1RB#38	0.305	0.206	-0.18	22.63	23.40	0.364	/	/
Right Side	26965/841.5	15M QPSK 1RB#38	0.608	0.410	-0.11	22.63	23.40	0.726	/	/
Bottom Side	26965/841.5	15M QPSK 1RB#38	0.146	0.073	-0.09	22.63	23.40	0.174	/	/
50%RB										
Front Side	26965/841.5	15M QPSK 50%RB#39	0.253	0.178	-0.12	21.53	22.40	0.309	/	/
Back Side	26965/841.5	15M QPSK 50%RB#39	0.253	0.179	-0.07	21.53	22.40	0.309	/	/
Left Side	26965/841.5	15M QPSK 50%RB#39	0.171	0.115	-0.09	21.53	22.40	0.209	/	/
Right Side	26965/841.5	15M QPSK 50%RB#39	0.374	0.252	-0.11	21.53	22.40	0.457	/	/
Bottom Side	26965/841.5	15M QPSK 50%RB#39	0.095	0.048	-0.07	21.53	22.40	0.116	/	/
Tested at the worst position with battery 2#										
Right Side	26965/841.5	15M QPSK 1RB#38	0.577	0.39	-0.12	22.63	23.40	0.689	/	/
Tested at the worst position with battery 3#										
Right Side	26965/841.5	15M QPSK 1RB#38	0.537	0.361	-0.15	22.63	23.40	0.641	/	/
Test data of VTR-L29 (new)										
Right Side	26965/841.5	15M QPSK 1RB#38	0.614	0.417	-0.05	22.63	23.40	0.733	/	Yes

Table 135: Hotspot SAR test results of LTE Band XXVI

7.2.27 SAR measurement Result of LTE Band XXXVIII(Main Antenna)

Test Position of Head	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conduct ed Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Right touch	38150/2610	20M QPSK 1RB#50	0.252	0.134	0.16	24.02	24.50	0.281	State 1	/
Right touch	38150/2610	20M QPSK 1RB#50	0.469	0.253	0.13	24.02	24.50	0.524	State 2	/
Left touch	38150/2610	20M QPSK 1RB#50	0.240	0.131	0.18	24.02	24.50	0.268	State 2	/
Left tilt	38150/2610	20M QPSK 1RB#50	0.228	0.105	0.14	24.02	24.50	0.255	State 2	/
Right tilt	38150/2610	20M QPSK 1RB#50	0.137	0.067	0.19	24.02	24.50	0.153	State 2	/
Right touch	37850/2580	20M QPSK 1RB#50	0.500	0.269	0.06	23.11	24.50	0.689	State 2	/
Right touch	37850/2580	20M QPSK 1RB#50	0.233	0.137	0.11	23.11	24.50	0.321	State 1	/
Right touch	38000/2595	20M QPSK 1RB#50	0.465	0.251	0.06	23.47	24.50	0.589	State 2	/
50%RB										
Left touch	38150/2610	20M QPSK 50%RB#25	0.191	0.099	0.16	23.15	23.50	0.207	State 2	/
Left tilt	38150/2610	20M QPSK 50%RB#25	0.195	0.090	0.18	23.15	23.50	0.211	State 2	/
Right touch	38150/2610	20M QPSK 50%RB#25	0.376	0.195	0.05	23.15	23.50	0.408	State 2	/
Right tilt	38150/2610	20M QPSK 50%RB#25	0.400	0.203	0.02	23.15	23.50	0.434	State 2	/
Tested at the worst position with battery 2#										
Right touch	37850/2580	20M QPSK 1RB#50	0.454	0.236	0.17	23.11	24.50	0.625	State 2	/
Tested at the worst position with battery 3#										
Right touch	37850/2580	20M QPSK 1RB#50	0.470	0.243	0.02	23.11	24.50	0.647	State 2	/
Test data of VTR-L29 (new)										
Right touch	37850/2580	20M QPSK 1RB#50	0.517	0.276	0.15	23.11	24.50	0.712	State 2	Yes

Table 136: Head SAR test results of LTE Band XXXVIII

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	38150/2610	20M QPSK 1RB#50	0.313	0.169	0.05	24.02	24.50	0.350	State 1	/
Front Side	38150/2610	20M QPSK 1RB#50	0.435	0.202	-0.05	24.02	24.50	0.486	State 2	/
Back Side	38150/2610	20M QPSK 1RB#50	0.399	0.207	-0.02	24.02	24.50	0.446	State 2	/
50%RB										
Front Side	38150/2610	20M QPSK 50%RB#25	0.408	0.175	-0.01	23.15	23.50	0.442	State 2	/
Back Side	38150/2610	20M QPSK 50%RB#25	0.330	0.169	0.02	23.15	23.50	0.358	State 2	/
Tested at the worst position with battery 2#										
Front Side	38150/2610	20M QPSK 1RB#50	0.365	0.199	0.01	24.02	24.50	0.408	State 2	/
Tested at the worst position with battery 3#										
Front Side	38150/2610	20M QPSK 1RB#50	0.354	0.192	-0.1	24.02	24.50	0.395	State 2	/
Test data of VTR-L29 (new)										
Front Side	38150/2610	20M QPSK 1RB#50	0.318	0.148	-0.14	24.02	24.50	0.355	State 2	Yes

Table 137: Body-Worn SAR test results of LTE Band XXXVIII

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Back Side	38150/2610	20M QPSK 1RB#50	0.212	0.119	0.14	19.50	20.00	0.238	State 1	/
Back Side	38150/2610	20M QPSK 1RB#50	0.444	0.189	0.08	19.50	20.00	0.498	State 2	/
Front Side	38150/2610	20M QPSK 1RB#50	0.261	0.147	-0.18	19.50	20.00	0.293	State 2	/
Left Side	38150/2610	20M QPSK 1RB#50	0.564	0.292	0.07	24.02	24.50	0.630	State 2	/
Right Side	38150/2610	20M QPSK 1RB#50	0.062	0.032	0.06	24.02	24.50	0.069	State 2	/
Bottom Side	38150/2610	20M QPSK 1RB#50	0.150	0.067	-0.02	19.50	20.00	0.168	State 2	/
50%RB										
Front Side	38150/2610	20M QPSK 50%RB#50	0.216	0.123	0.11	18.45	19.00	0.245	State 2	/
Back Side	38150/2610	20M QPSK 50%RB#50	0.308	0.154	0.13	18.45	19.00	0.350	State 2	/
Left Side	38150/2610	20M QPSK 50%RB#50	0.463	0.234	0.01	23.14	23.50	0.503	State 2	/
Right Side	38150/2610	20M QPSK 50%RB#50	0.053	0.027	0.04	23.14	23.50	0.057	State 2	/
Bottom Side	38150/2610	20M QPSK 50%RB#50	0.128	0.056	-0.05	18.45	19.00	0.145	State 2	/
Tested at the worst position with battery 2#										
Left Side	38150/2610	20M QPSK 1RB#50	0.550	0.281	0.04	24.02	24.50	0.614	State 2	/
Tested at the worst position with battery 3#										
Left Side	38150/2610	20M QPSK 1RB#50	0.501	0.258	0.08	24.02	24.50	0.560	State 2	/
Additional SAR test result with sensor off										
Back Side-11mm	38150/2610	20M QPSK 1RB#50	0.946	0.402	0.06	24.02	24.50	1.057	State 2	/
Back Side-Repeated-11mm	38150/2610	20M QPSK 1RB#50	0.933	0.412	0.14	24.02	24.50	1.042	State 2	/
Back Side	38150/2610	20M QPSK 1RB#50	0.516	0.268	0.13	24.02	24.50	0.576	State 1	/
Back Side-11mm	37850/2580	20M QPSK 1RB#50	0.699	0.322	0.07	23.11	24.50	0.963	State 2	/
Back Side-11mm	38000/2595	20M QPSK 1RB#50	0.786	0.388	0.14	23.47	24.50	0.996	State 2	/
Bottom Side-11mm	38150/2610	20M QPSK 1RB#50	0.899	0.339	0.08	24.02	24.50	1.004	State 2	/
Bottom Side-11mm	37850/2580	20M QPSK 1RB#50	0.678	0.368	0.15	23.11	24.50	0.934	State 2	/
Bottom Side-11mm	38000/2595	20M QPSK 1RB#50	0.759	0.324	0.07	23.47	24.50	0.962	State 2	/

Front Side-14mm	38150/2610	20M QPSK 1RB#50	0.510	0.232	0.03	24.02	24.50	0.570	State 2	/
50%RB										
Back Side-11mm	38150/2610	20M QPSK 50%RB#25	0.710	0.345	0.06	23.14	23.50	0.771	State 2	/
Bottom Side-11mm	38150/2610	20M QPSK 50%RB#25	0.703	0.296	0.14	23.14	23.50	0.764	State 2	/
Front Side-14mm	38150/2610	20M QPSK 1RB#50	0.457	0.232	0.01	23.14	23.50	0.496	State 2	/
100%RB										
Back Side-11mm	38150/2610	20M QPSK 100%RB#0	0.705	0.342	0.19	23.00	23.50	0.791	State 2	/
Bottom Side-11mm	38150/2610	20M QPSK 100%RB#0	0.698	0.301	0.05	23.00	23.50	0.783	State 2	/
Test data of VTR-L29 (new)										
Back Side	38150/2610	20M QPSK 1RB#50	0.813	0.328	0.05	24.02	24.50	0.908	State 2	Yes

Table 138: Hotspot SAR test results of LTE Band XXXVIII

7.2.28 SAR measurement Result of LTE Band XLI(Main Antenna)

Test Position of Head	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Right touch	40740/2605	20M QPSK 1RB#50	0.223	0.130	0.18	23.58	24.50	0.276	State 1	/
Right touch	40740/2605	20M QPSK 1RB#50	0.510	0.274	0.19	23.58	24.50	0.630	State 2	/
Left touch	40740/2605	20M QPSK 1RB#50	0.217	0.122	0.17	23.58	24.50	0.268	State 2	/
Left tilt	40740/2605	20M QPSK 1RB#50	0.196	0.098	0.16	23.58	24.50	0.242	State 2	/
Right tilt	40740/2605	20M QPSK 1RB#50	0.124	0.061	0.00	23.58	24.50	0.153	State 2	/
Right touch	40340/2565	20M QPSK 1RB#50	0.429	0.233	0.05	23.24	24.50	0.573	State 2	/
Right touch	41140/2645	20M QPSK 1RB#50	0.270	0.146	0.14	23.26	24.50	0.359	State 2	/
50%RB										
Left touch	40740/2605	20M QPSK 50%RB#50	0.167	0.093	0.02	22.60	23.50	0.205	State 2	/
Left tilt	40740/2605	20M QPSK 50%RB#50	0.171	0.084	-0.04	22.60	23.50	0.210	State 2	/
Right touch	40740/2605	20M QPSK 50%RB#50	0.407	0.217	0.07	22.60	23.50	0.501	State 2	/
Right tilt	40740/2605	20M QPSK 50%RB#50	0.108	0.055	0.00	22.60	23.50	0.133	State 2	/
Tested at the worst position with battery 2#										
Right touch	40740/2605	20M QPSK 1RB#50	0.495	0.264	0.09	23.58	24.50	0.612	State 2	/
Tested at the worst position with battery 3#										
Right touch	40740/2605	20M QPSK 1RB#50	0.501	0.268	0.00	23.58	24.50	0.619	State 2	/
Test data of VTR-L29 (new)										
Right touch	40740/2605	20M QPSK 1RB#50	0.533	0.283	-0.15	23.58	24.50	0.659	State 2	Yes

Table 139: Head SAR test results of LTE Band XLI

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Front Side	40740/2605	20M QPSK 1RB#50	0.213	0.122	0.13	23.58	24.50	0.263	State 1	/
Front Side	40740/2605	20M QPSK 1RB#50	0.437	0.228	0.06	23.58	24.50	0.540	State 2	/
Back Side	40740/2605	20M QPSK 1RB#50	0.360	0.188	0.06	23.58	24.50	0.445	State 2	/
50%RB										
Front Side	40740/2605	20M QPSK 50%RB#50	0.321	0.173	0.03	22.60	23.50	0.395	State 2	/
Back Side	40740/2605	20M QPSK 50%RB#50	0.290	0.154	0.11	22.60	23.50	0.357	State 2	/
Tested at the worst position with battery 2#										
Front Side	40740/2605	20M QPSK 1RB#50	0.413	0.212	0.12	23.58	24.50	0.510	State 2	/
Tested at the worst position with battery 3#										
Front Side	40740/2605	20M QPSK 1RB#50	0.413	0.213	-0.09	23.58	24.50	0.510	State 2	/
Test data of VTR-L29 (new)										
Front Side	40740/2605	20M QPSK 1RB#50	0.319	0.149	-0.09	23.58	24.50	0.394	State 2	Yes

Table 140: Body-Worn SAR test results of LTE Band XLI

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	Ant Tuning State	SAR Plot
			1-g	10-g						
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)										
Test data of VTR-L29(old)										
1RB										
Back Side	40740/2605	20M QPSK 1RB#50	0.428	0.229	-0.16	23.58	24.50	0.529	State 1	/
Back Side	40740/2605	20M QPSK 1RB#50	1.080	0.462	0.07	23.58	24.50	1.335	State 2	/
Back Side-repeated	40740/2605	20M QPSK 1RB#50	1.060	0.455	-0.08	23.58	24.50	1.310	State 2	/
Back Side	40340/2565	20M QPSK 1RB#50	0.896	0.384	-0.04	23.24	24.50	1.198	State 2	/
Back Side	41140/2645	20M QPSK 1RB#50	0.637	0.286	-0.11	23.26	24.50	0.847	State 2	/
Front Side	40740/2605	20M QPSK 1RB#50	0.944	0.410	-0.17	23.58	24.50	1.167	State 2	/
Front Side	40340/2565	20M QPSK 1RB#50	0.783	0.427	0.03	23.24	24.50	1.047	State 2	/
Front Side	41140/2645	20M QPSK 1RB#50	0.656	0.349	-0.06	23.26	24.50	0.873	State 2	/
Left Side	40740/2605	20M QPSK 1RB#50	0.052	0.026	-0.05	23.58	24.50	0.064	State 2	/
Right Side	40740/2605	20M QPSK 1RB#50	0.631	0.324	-0.09	23.58	24.50	0.780	State 2	/
Bottom Side	40740/2605	20M QPSK 1RB#50	0.966	0.360	-0.03	23.58	24.50	1.194	State 2	/
Bottom Side	40340/2565	20M QPSK 1RB#50	0.772	0.290	-0.14	23.24	24.50	1.032	State 2	/
Bottom Side	41140/2645	20M QPSK 1RB#50	0.531	0.216	-0.15	23.26	24.50	0.706	State 2	/
50%RB										
Front Side	40740/2605	20M QPSK 50%RB#50	0.771	0.334	0.13	22.60	23.50	0.949	State 2	/
Back Side	40740/2605	20M QPSK 50%RB#50	0.736	0.330	-0.16	22.60	23.50	0.905	State 2	/
Left Side	40740/2605	20M QPSK 50%RB#50	0.043	0.021	0.03	22.60	23.50	0.053	State 2	/
Right Side	40740/2605	20M QPSK 50%RB#50	0.533	0.266	-0.06	22.60	23.50	0.656	State 2	/
Bottom Side	40740/2605	20M QPSK 50%RB#50	0.646	0.254	-0.16	22.60	23.50	0.795	State 2	/
100%RB										
Front Side	40740/2605	20M QPSK 100%RB#0	0.711	0.312	-0.16	22.45	23.50	0.905	State 2	/
Back Side	40740/2605	20M QPSK 100%RB#0	0.786	0.339	-0.14	22.45	23.50	1.001	State 2	/
Bottom Side	40740/2605	20M QPSK 100%RB#0	0.847	0.310	-0.19	22.45	23.50	1.079	State 2	/
Tested at the worst position with battery 2#										
Back Side	40740/2605	20M QPSK 1RB#50	0.903	0.394	-0.11	23.58	24.50	1.116	State 2	/
Tested at the worst position with battery 3#										
Back Side	40740/2605	20M QPSK 1RB#50	1.070	0.462	-0.13	23.58	24.50	1.322	State 2	/

Test data of VTR-L29 (new)										
Back Side	40740/2605	20M QPSK 1RB#50	0.905	0.379	0.08	23.58	24.50	1.119	State 2	Yes

Table 141: Hotspot SAR test results of LTE Band XLI

7.2.29 SAR measurement Result of WiFi 2.4G

Test Position of Head	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled 1-g SAR (W/kg)	Actual duty factor	Reported SAR1-g (W/kg)	SAR Plot
			Area Scan	Zoom Scan							
			1-g	1-g							
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)											
Test data of VTR-L29(old)											
WiFi ANT1											
Left touch	6/2437	802.11 b	0.486	0.576	0.180	16.62	17.00	0.629	98.96%	0.635	/
Left tilt	6/2437	802.11 b	0.361	0.430	0.060	16.62	17.00	0.469	98.96%	0.474	/
Right touch	6/2437	802.11 b	0.173	/	-0.150	16.62	17.00	/	98.96%	/	/
Right tilt	6/2437	802.11 b	0.176	/	0.100	16.62	17.00	/	98.96%	/	/
Left touch	1/2412	802.11 b	0.501	0.593	-0.180	16.01	17.00	0.745	98.96%	0.753	/
Left touch	11/2462	802.11 b	0.356	0.412	0.140	15.92	17.00	0.528	98.96%	0.534	/
Tested at the worst position with battery 2#											
Left touch	1/2412	802.11 b	0.570	0.699	-0.060	16.01	17.00	0.878	98.96%	0.887	/
Tested at the worst position with battery 3#											
Left touch	1/2412	802.11 b	0.533	0.676	0.150	16.01	17.00	0.849	98.96%	0.858	/
WiFi ANT2											
Left touch	6/2437	802.11 b	0.140	/	0.140	13.89	14.50	/	98.96%	/	/
Left tilt	6/2437	802.11 b	0.107	/	0.120	13.89	14.50	/	98.96%	/	/
Right touch	6/2437	802.11 b	0.475	0.442	0.040	13.89	14.50	0.509	98.96%	0.514	/
Right tilt	6/2437	802.11 b	0.238	0.213	-0.080	13.89	14.50	0.245	98.96%	0.248	/
Right touch	1/2412	802.11 b	0.385	0.355	0.110	13.63	14.50	0.434	98.96%	0.438	
Right touch	11/2462	802.11 b	0.435	0.409	0.100	13.49	14.50	0.516	98.96%	0.522	
WiFi CDD/MIMO											
Left touch	6/2437	802.11 g	0.395	0.464	-0.040	17.11	17.50	0.508	92.90%	0.546	/
Left tilt	6/2437	802.11 g	0.342	/	0.020	17.11	17.50	/	92.90%	/	/
Right touch	6/2437	802.11 g	0.397	0.364	-0.180	17.11	17.50	0.398	92.90%	0.429	/
Right tilt	6/2437	802.11 g	0.276	/	0.110	17.11	17.50	/	92.90%	/	/
Left touch	1/2412	802.11 g	0.402	0.464	0.030	16.76	17.50	0.550	92.90%	0.592	/
Left touch	11/2462	802.11 g	0.293	0.324	0.050	16.54	17.50	0.404	92.90%	0.435	
Test data of VTR-L29 (new)											
Left touch	1/2412	802.11 b	0.859	0.744	-0.06	16.01	17.00	0.934	98.96%	0.944	Yes
Additional SAR test(2G/3G/4G antenna simultaneous transmission with WIFI antenna)											
WiFi ANT1											
Left touch	6/2437	802.11 b	0.467	0.520	0.100	16.15	16.50	0.564	98.96%	0.570	/
Right touch	6/2437	802.11 b	0.164	0.159	0.110	16.15	16.50	0.172	98.96%	0.174	/
Right tilt	6/2437	802.11 b	0.135	0.132	-0.120	16.15	16.50	0.143	98.96%	0.145	/
Test data of VTR-L29 (new)											
Left touch	1/2412	802.11 b	0.859	0.744	-0.06	16.01	17.00	0.934	98.96%	0.944	Yes
Additional SAR test(2G/3G/4G antenna simultaneous transmission with WIFI antenna) with new VTR-L29											

Left touch	6/2437	802.11 b	0.656	0.592	0.010	16.15	16.50	0.642	98.96%	0.648	/
Left tilt	6/2437	802.11 b	0.585	0.544	0.050	16.15	16.50	0.590	98.96%	0.596	/
Right touch	6/2437	802.11 b	0.178	0.182	0.070	16.15	16.50	0.197	98.96%	0.199	/
Right tilt	6/2437	802.11 b	0.155	0.163	0.040	16.15	16.50	0.177	98.96%	0.179	/

Table 142: Head SAR test results of WiFi 2.4G

Note: Per KDB248227D01, for Head SAR test of WiFi 2.4G,

1) For WiFi SISO : SAR is measured for 2.4 GHz 802.11b DSSS using the initial test position procedure. The highest *reported* SAR for DSSS is adjusted by the ratio of OFDM 802.11g/n to DSSS specified maximum output power and the adjusted SAR is < 1.2 W/kg, so SAR for 802.11g/n is not required.

2) For WiFi CDD/MIMO: SAR is measured for 2.4 GHz 802.11g CDD using the initial test position procedure. The highest adjusted SAR is < 1.2 W/kg, so SAR for 802.11n MIMO is not required.

Test Position of Body-Worn 15mm	Test channel /Freq. (MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled 1-g SAR (W/kg)	Actual duty factor	Reported SAR1-g (W/kg)	SAR Plot.
			Area Scan	Zoom Scan							
			1-g	1-g							
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)											
Test data of VTR-L29(old)											
WiFi ANT1											
Front Side	6/2437	802.11 b	0.069	/	-0.090	16.62	17.00	/	98.96%	/	/
Back Side	6/2437	802.11 b	0.097	0.098	0.130	16.62	17.00	0.107	98.96%	0.108	/
WiFi ANT2											
Front Side	6/2437	802.11 b	0.056	0.054	0.080	13.89	14.50	0.063	98.96%	0.063	/
Back Side	6/2437	802.11 b	0.058	/	-0.140	13.89	14.50	0.037	98.96%	/	/
WiFi CDD/MIMO											
Front Side	6/2437	802.11 g	/	0.054	0.120	17.11	17.50	/	92.90%	/	/
Back Side	6/2437	802.11 g	0.079	0.078	0.130	17.11	17.50	0.086	92.90%	0.092	/
Tested at the worst position with battery 2#(WiFi ANT1)											
Back Side	6/2437	802.11 b	0.096	0.096	0.010	16.62	17.00	0.105	98.96%	0.106	/
Tested at the worst position with battery 3#(WiFi ANT1)											
Back Side	6/2437	802.11 b	0.092	0.093	0.100	16.62	17.00	0.102	98.96%	0.103	/
Test data of VTR-L29 (new)											
Back Side	6/2437	802.11 b	0.148	0.147	-0.120	16.62	17.00	0.160	98.96%	0.162	Yes

Table 143: Body-Worn SAR test results of WiFi 2.4G

Note: Per KDB248227D01, for Body-worn SAR test of WiFi 2.4G,

1) For WiFi SISO : SAR is measured for 2.4 GHz 802.11b DSSS using the initial test position procedure. The highest *reported* SAR for DSSS is adjusted by the ratio of OFDM 802.11g/n to DSSS specified maximum output power and the adjusted SAR is < 1.2 W/kg, so SAR for 802.11g/n is not required.

2) For WiFi CDD/MIMO: SAR is measured for 2.4 GHz 802.11g CDD using the initial test position procedure. The highest adjusted SAR is < 1.2 W/kg, so SAR for 802.11n MIMO is not required.

Test Position of Hotspot with 10mm	Test channel /Freq. (MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled 1-g SAR (W/kg)	Actual duty factor	Reported SAR1-g (W/kg)	SAR Plot.
			Area Scan	Zoom Scan							
			1-g	1-g							
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)											
Test data of VTR-L29(old)											
WiFi ANT1											
Front Side	6/2437	802.11 b	0.119	/	0.030	16.62	17.00	/	98.96%	/	/
Back Side	6/2437	802.11 b	0.193	/	0.040	16.62	17.00	/	98.96%	/	/
Right Side	6/2437	802.11 b	0.200	0.195	-0.130	16.62	17.00	0.213	98.96%	0.215	/
Top Side	6/2437	802.11 b	0.078	/	-0.170	16.62	17.00	/	98.96%	/	/
WiFi ANT2											
Front Side	6/2437	802.11 b	0.110	0.105	0.050	13.89	14.50	0.121	98.96%	0.122	/
Back Side	6/2437	802.11 b	0.108	/	0.040	13.89	14.50	/	98.96%	/	/
Right Side	6/2437	802.11 b	0.013	/	0.180	13.89	14.50	/	98.96%	/	/
Top Side	6/2437	802.11 b	0.037	/	0.180	13.89	14.50	/	98.96%	/	/
WiFi CDD/MIMO											
Front Side	6/2437	802.11 g	0.096	/	-0.080	17.11	17.50	/	92.90%	/	/
Back Side	6/2437	802.11 g	0.163	0.158	-0.110	17.11	17.50	0.173	92.90%	0.186	/
Left Side	6/2437	802.11 g	0.082	/	-0.140	17.11	17.50	/	92.90%	/	/
Right Side	6/2437	802.11 g	0.136	/	-0.140	17.11	17.50	/	92.90%	/	/
Top Side	6/2437	802.11 g	0.108	/	-0.070	17.11	17.50	/	92.90%	/	/
Tested at the worst position with battery 2# (WiFi ANT1)											
Right Side	6/2437	802.11 b	0.178	0.172	-0.150	16.62	17.00	0.188	98.96%	0.190	/
Tested at the worst position with battery 3#(WiFi ANT1)											
Right Side	6/2437	802.11 b	0.170	0.163	-0.100	16.62	17.00	0.178	98.96%	0.180	/
Test data of VTR-L29 (new)											
Right Side	6/2437	802.11 b	0.300	0.289	-0.190	16.62	17.00	0.315	98.96%	0.319	Yes

Table 144: Hotspot SAR test results of WiFi 2.4G

Note: Per KDB248227D01, for Hotspot SAR test of WiFi 2.4G,

- 1) For WiFi SISO : SAR is measured for 2.4 GHz 802.11b DSSS using the initial test position procedure. The highest *reported* SAR for DSSS is adjusted by the ratio of OFDM 802.11g/n to DSSS specified maximum output power and the adjusted SAR is < 1.2 W/kg, so SAR for 802.11g/n is not required.
- 2) For WiFi CDD/MIMO: SAR is measured for 2.4 GHz 802.11g CDD using the initial test position procedure. The highest adjusted SAR is < 1.2 W/kg, so SAR for 802.11n MIMO is not required.

7.2.30 SAR measurement Result of WiFi 5G

Test Position of Head	Test channel /Freq. (MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Actual duty factor	Reported SAR1-g (W/kg)	SAR Plot.
			Area Scan	Zoom Scan							
			1-g	1-g							
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)											
Test data of VTR-L29(old)											
Test data of U-NII-2A											
Left touch	52/5260	802.11a	0.506	0.523	0.147	11.98	12.50	0.590	92.82%	0.635	/
Left tilt	52/5260	802.11a	0.370	0.377	0.190	11.98	12.50	0.425	92.82%	0.458	/
Right touch	52/5260	802.11a	0.185	/	0.160	11.98	12.50	/	92.82%	/	/
Right tilt	52/5260	802.11a	0.190	/	0.140	11.98	12.50	/	92.82%	/	/
Left touch	56/5280	802.11a	0.495	0.616	0.170	11.76	12.50	0.730	92.82%	0.787	/
Left touch	60/5300	802.11a	0.494	0.623	0.060	11.58	12.50	0.770	92.82%	0.830	/
Left touch	64/5320	802.11a	0.561	0.743	-0.030	11.64	12.50	0.906	92.82%	0.976	/
Test data of U-NII-2C											
Left touch	116/5580	802.11a	0.441	0.503	0.120	12.11	12.50	0.550	92.82%	0.593	/
Left tilt	116/5580	802.11a	0.388	0.384	0.160	12.11	12.50	0.420	92.82%	0.453	/
Right touch	116/5580	802.11a	0.256	/	0.160	12.11	12.50	/	92.82%	/	/
Right tilt	116/5580	802.11a	0.252	/	0.180	12.11	12.50	/	92.82%	/	/
Test data of U-NII-3											
Left touch	161/5805	802.11a	0.347	0.455	-0.010	11.80	12.50	0.535	92.82%	0.576	/
Left tilt	161/5805	802.11a	0.314	0.403	0.150	11.80	12.50	0.473	92.82%	0.510	/
Right touch	161/5805	802.11a	0.207	0.204	-0.010	11.80	12.50	0.240	92.82%	0.258	/
Right tilt	161/5805	802.11a	0.189	0.245	0.150	11.80	12.50	0.288	92.82%	0.310	/
Tested at the worst position with battery 2#											
Left touch	64/5320	802.11a	0.551	0.701	-0.020	11.64	12.50	0.855	92.82%	0.921	/
Tested at the worst position with battery 3#											
Left touch	64/5320	802.11a	0.514	0.676	0.000	11.64	12.50	0.824	92.82%	0.888	/
Test data of VTR-L29 (new)											
Left touch	64/5320	802.11a	0.574	0.644	0.160	11.64	12.50	0.785	92.82%	0.846	Yes
Additional SAR test(2G/3G/4G antenna simultaneous transmission with WIFI antenna)											
Test data of U-NII-2A											
Left touch	52/5260	802.11a	0.255	0.279	0.080	9.41	10.50	0.359	92.82%	0.386	/
Right touch	52/5260	802.11a	0.133	0.155	0.130	9.41	10.50	0.199	92.82%	0.215	/
Right tilt	52/5260	802.11a	0.104	0.115	0.170	9.41	10.50	0.148	92.82%	0.159	/
Test data of U-NII-2C											
Left touch	132/5660	802.11a	0.271	0.328	0.100	9.71	10.50	0.393	92.82%	0.424	/
Right	132/5660	802.11a	0.141	0.135	-0.140	9.71	10.50	0.162	92.82%	0.174	/

touch											
Right tilt	132/5660	802.11a	0.147	0.172	0.160	9.71	10.50	0.206	92.82%	0.222	/

Table 145: Head SAR test results of WiFi 5G

Note: For Head SAR test of WiFi 5G

1) Per KDB 248227D01, as the same maximum output power is specified for U-NII-1(5.2G) and U-NII-2A(5.3G) bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. As the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration.

2) The 802.11a mode is selected as Initial Test Configuration for SAR test according to the specified maximum output power. As the highest reported SAR for the initial test configuration is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR test for the other 802.11 modes are not required.

Test Position of Body-Worn with 15mm	Test channel /Freq. (MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Actual duty factor	Reported SAR1-g (W/kg)	SAR Plot.
			Area Scan	Zoom Scan							
			1-g	1-g							
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)											
Test data of VTR-L29(old)											
Test data of U-NII-2A											
Front Side	52/5260	802.11a	0.067	0.041	0.120	11.98	12.50	0.046	92.82%	0.050	/
Back Side	52/5260	802.11a	0.044	/	0.160	11.98	12.50	/	92.82%	/	/
Test data of U-NII-2C											
Front Side	116/5580	802.11a	0.060	0.060	0.150	12.11	12.50	0.066	92.82%	0.071	/
Back Side	116/5580	802.11a	0.041	/	0.000	12.11	12.50	/	92.82%	/	/
Test data of U-NII-3											
Front Side	161/5805	802.11a	0.052	0.048	0.120	11.80	12.50	0.056	92.82%	0.061	/
Back Side	161/5805	802.11a	0.036	/	0.000	11.80	12.50	/	92.82%	/	/
Tested at the worst position with battery 2#											
Front Side	120/5600	802.11a	0.066	0.063	0.000	12.11	12.50	0.069	92.82%	0.074	/
Tested at the worst position with battery 3#											
Front Side	120/5600	802.11a	0.058	0.053	-0.120	12.11	12.50	0.058	92.82%	0.063	/
Test data of VTR-L29 (new)											
Front Side	120/5600	802.11a	0.052	0.040	0.000	12.11	12.50	0.044	92.82%	0.047	Yes

Table 146: Body-Worn SAR test results of WiFi 5G

Note: Per KDB248227D01, for Body-Worn SAR test of WiFi 5G:

1) For WiFi 5G U-NII-1, U-NII-2A, U-NII-2C and U-NII-3 bands, the 802.11a mode is selected as Initial Test Configuration for SAR test according to the specified maximum output power. As the highest reported SAR for the initial test configuration is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR test for the other 802.11 modes are not required.

2) For WiFi 5G U-NII-1 and U-NII-2A bands, as the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. As the highest *reported* SAR is < 1.2 W/kg, SAR is not required for the U-NII-1 band.

Test Position of Hotspot with 10mm	Test channel /Freq. (MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Reported 1-g SAR (W/kg)	Actual duty factor	Reported SAR1-g (W/kg)	SAR Plot.
			Area Scan	Zoom Scan							
			1-g	1-g							
Test data from VTR-L29(report NO.:SYBH(Z-SAR)017032017-2)											
Test data of VTR-L29(old)											
Test data of U-NII-1											
Front Side	40/5200	802.11a	0.063	/	-0.120	11.68	12.50	/	92.82%	/	/
Back Side	40/5200	802.11a	0.052	/	0.000	11.68	12.50	/	92.82%	/	/
Right Side	40/5200	802.11a	0.087	0.086	0.110	11.68	12.50	0.103	92.82%	0.111	/
Top Side	40/5200	802.11a	0.043	/	0.140	11.68	12.50	/	92.82%	/	/
Test data of U-NII-3											
Front Side	161/5805	802.11a	0.072	/	-0.030	11.80	12.50	/	92.82%	/	/
Back Side	161/5805	802.11a	0.056	/	-0.140	11.80	12.50	/	92.82%	/	/
Right Side	161/5805	802.11a	0.109	0.108	0.160	11.80	12.50	0.127	92.82%	0.137	/
Top Side	161/5805	802.11a	0.028	/	-0.190	11.80	12.50	/	92.82%	/	/
Tested at the worst position with battery 2#											
Right Side	161/5805	802.11a	0.125	0.127	-0.130	11.80	12.50	0.149	92.82%	0.161	/
Tested at the worst position with battery 3#											
Right Side	161/5805	802.11a	0.078	0.077	0.070	11.80	12.50	0.090	92.82%	0.097	/
Test data of VTR-L29 (new)											
Right Side	161/5805	802.11a	0.131	0.122	0.160	11.80	12.50	0.143	92.82%	0.154	Yes

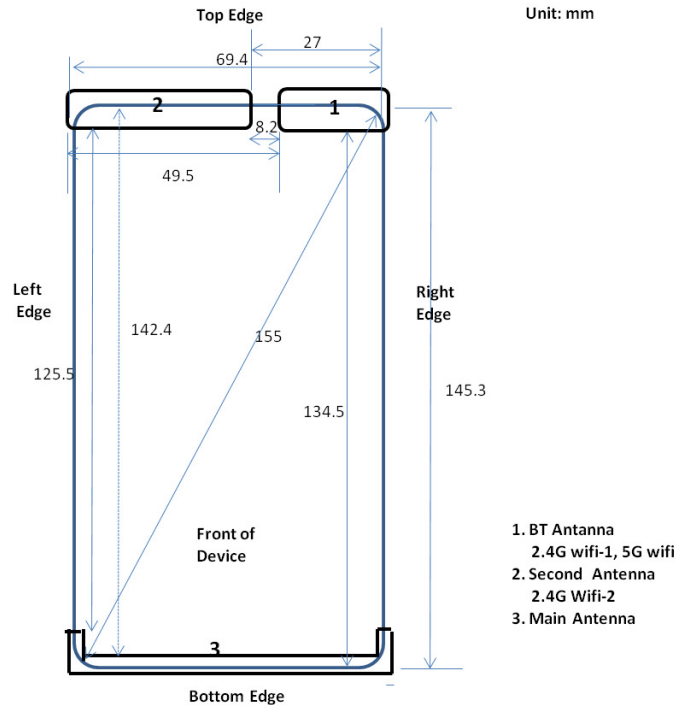
Table 147: Hotspot SAR test results of WiFi 5G

Note : For Hotspot SAR test of WiFi 5G:

- 1) As WiFi 5G hotspot is only supported for U-NII-1(5.2G) and U-NII-3 (5.8G) bands, therefore U-NII-2A (5.3G) and U-NII-2C(5.5G) were not evaluated for hotspot condition.
- 2) For U-NII-1(5.2G) and U-NII-3 (5.8G) bands, the 802.11a mode is selected as Initial Test Configuration for SAR test according to the specified maximum output power. As the highest reported SAR for the initial test configuration is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR test for the other 802.11 modes are not required.

7.3 Multiple Transmitter Evaluation

The following tables list information which is relevant for the decision if a simultaneous transmit evaluation is necessary according to FCC KDB 447498D01 General RF Exposure Guidance v05r02. The location of the antennas inside the device is shown as below picture:



Note:

- 1) The device supports the dynamic antenna switching function to optimize transmission efficiency for wide range frequency operations. It has two 2G/3G/4G Tx antennas: Main Antenna(Ant 1) and Second Antenna(Ant 2). It can transmit from either Main Antenna or Second Antenna. The Main Antenna and Second Antenna can not transmit simultaneously.
- 2) WiFi 2.4G Ant 2 and 2G&3G&4G second ant(Ant 2) share the same Tx antenna and can't transmit simultaneously. WiFi Ant 2 only supports WiFi 2.4G.
- 3) Main antenna and the proximity sensor element share the same position.
- 4) Per KDB 648474 D04, because the diagonal distance of this device is <160mm, it is not considered a "Phablet" device.

Mode	Exposure Condition	Front Side	Back Side	Left Side	Right Side	Top Side	Bottom Side
Main ant	Hotspot	Yes	Yes	Yes	Yes	No	Yes
Second ant	Hotspot	Yes	Yes	Yes	No	Yes	No
WiFi Ant1/BT	Hotspot	Yes	Yes	No	Yes	Yes	No
WiFi Ant2	Hotspot	Yes	Yes	Yes	No	Yes	No

Table 148: Sides for Hotspot SAR testing

Note:

- 1) Per KDB 941225 D06 and KDB 648474 D04, particular DUT edges were not required to be evaluated for Hotspot SAR if the antenna-to-edge distance is greater than 2.5cm;
- 2) WiFi 5G hotspot is only supported for U-NII-1 and U-NII-3, therefore U-NII-2A and U-NII-2C were not evaluated for hotspot condition.

7.3.1 Stand-alone SAR test exclusion

Per FCC KDB 447498D01v06, the 1-g SAR and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where:

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

Mode	Position	P_{max} (dBm)*	P_{max} (mW)	Distance (mm)	f (GHz)	Calculation Result	SAR Exclusion threshold	SAR test exclusion
BT	Body-Worn	10.00	10.00	15	2.480	1.05	3.00	Yes

Table 149: Standalone SAR test exclusion for BT

Note:

- 1)* - maximum possible output power declared by manufacturer
- 2) Held to ear configurations are not applicable to Bluetooth for this device.

When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

$(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})/x}] \text{ W/kg}$ for test separation distances ≤ 50 mm, where $x = 7.5$ for 1-g SAR and $x = 18.75$ for 10-g SAR.

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

Mode	Position	P_{max} (dBm)*	P_{max} (mW)	Distance (mm)	f (GHz)	X	Estimated SAR (W/Kg)*
BT	Body-worn	10.00	10.00	15	2.480	7.50	0.140

Table 150: Estimated SAR calculation for BT

Note:

- 1) * - maximum possible output power declared by manufacturer
- 2) Held to ear configurations are not applicable to Bluetooth and therefore were not considered for simultaneous transmission.

7.3.2 Simultaneous Transmission Possibilities

The Simultaneous Transmission Possibilities of this device are as below:

NO.	Simultaneous Tx Combination	Head	Body-worn	Hotspot
1	GSM Voice(Ant 1) + BT	N/A	Yes	N/A
2	GSM DATA(Ant 1) + BT	N/A	Yes	N/A
3	GSM Voice(Ant 2) + BT	N/A	Yes	N/A
4	GSM DATA (Ant 2)+ BT	N/A	Yes	N/A
5	GSM Voice(Ant 1) + WiFi 2.4G (Ant 1)	Yes	Yes	N/A
6	GSM DATA(Ant 1) + WiFi 2.4G (Ant 1)	N/A	Yes	Yes
7	GSM Voice(Ant 2) + WiFi 2.4G (Ant 1)	Yes	Yes	N/A
8	GSM DATA(Ant 2) + WiFi 2.4G (Ant 1)	N/A	Yes	Yes
9	UMTS Voice(Ant 1) + BT	N/A	Yes	N/A
10	UMTS Data(Ant 1) + BT	N/A	Yes	N/A
11	UMTS Voice(Ant 2) + BT	N/A	Yes	N/A
12	UMTS Data(Ant 2) + BT	N/A	Yes	N/A
13	UMTS Voice(Ant 1) + WiFi 2.4G (Ant 1)	Yes	Yes	N/A
14	UMTS Data (Ant 1) + WiFi 2.4G (Ant 1)	N/A	Yes	Yes
15	UMTS Voice (Ant 2) + WiFi 2.4G (Ant 1)	Yes	Yes	N/A
16	UMTS Data (Ant 2)+ WiFi 2.4G (Ant 1)	N/A	Yes	Yes
17	LTE (Ant 1) + WiFi 2.4G (Ant 1)	Yes	Yes	Yes
18	LTE(Ant 1) + BT	N/A	Yes	N/A
19	LTE (Ant 2) + WiFi 2.4G (Ant 1)	Yes	Yes	Yes
20	LTE (Ant 2) + BT	N/A	Yes	N/A
21	GSM Voice(Ant 1) + WiFi 5G	Yes	Yes	N/A
22	GSM DATA(Ant 1) + WiFi 5G	N/A	Yes	Yes
23	GSM Voice(Ant 2) + WiFi 5G	Yes	Yes	N/A
24	GSM DATA(Ant 2) + WiFi 5G	N/A	Yes	Yes
25	UMTS Voice(Ant 1) + WiFi 5G	Yes	Yes	N/A
26	UMTS Data (Ant 1) + WiFi 5G	N/A	Yes	Yes
27	UMTS Voice (Ant 2) + WiFi 5G	Yes	Yes	N/A
28	UMTS Data (Ant 2)+ WiFi 5G	N/A	Yes	Yes
29	LTE (Ant 1) + WiFi 5G	Yes	Yes	Yes
30	LTE (Ant 2) + WiFi 5G	Yes	Yes	Yes

Table 151: Simultaneous Transmission Possibilities

Note :

- 1) WiFi 2.4G, WiFi 5G and Bluetooth can't transmit simultaneously.
- 2) WiFi 2.4G has two Tx antennas. WiFi 2.4G 802.11g/n support 2*2 CDD/MIMO function.
- 3) WiFi 2.4G Ant 2 and 2G&3G&4G second ant(Ant 2) share the same Tx antenna and can't transmit simultaneously.
- 4) WiFi 2.4G Ant 2 and 2G&3G&4G main ant(Ant 1) can't transmit simultaneously by design.
- 5) 2G&3G&4G main antenna(Ant1) and second antenna(Ant 2) can't transmit simultaneously
- 6) VOIP 3rd party applications may possibly be installed and used by the user.
- 7) Held to ear configurations are not applicable to Bluetooth and therefore were not considered for simultaneous transmission.
- 8) The device does not support DTM function.

7.3.3 SAR Summation Scenario

The yellow color SAR test data in the following summed SAR tables represent that the additional SAR test results in simultaneous transmission fixed power reduction scenario are used to ensure simultaneous transmission SAR test exclusion (Also see Section 7.3). For the other SAR test data in the summed SAR tables, the more conservative SAR test results at the maximum output power level without any power reduction are used.

Test Position		Main antenna SAR _{Max} (Main Modem)												WiFi antenna 1/BT SAR _{Max}			Σ1-g SAR (1.6W/kg Limit)	SPLSR	Volume scan	
		GSM850	GSM1900	UMTS Band II	UMTS Band IV	UMTS Band V	LTE Band II	LTE Band IV	LTE Band V	LTE Band VII	LTE Band XII	LTE Band XXVI	LTE Band XXXVIII	LTE Band XLI	WiFi 2.4G	WiFi 5G				BT
Head	Left touch	0.333	0.389	0.453	0.439	0.341	0.401	0.299	0.138	0.375	0.268	0.378	0.138	0.648	0.576	/	1.211	N/A	N/A	
	Left tilt	0.226	0.186	0.363	0.323	0.227	0.305	0.282	0.192	0.255	0.120	0.252	0.255	0.596	0.576	/	0.959	N/A	N/A	
	Right touch	0.481	0.539	1.038	0.762	0.513	1.042	0.767	0.520	1.061	0.280	0.473	0.712	0.659	0.199	0.258	/	1.319	N/A	N/A
	Right tilt	0.203	0.214	0.312	0.250	0.211	0.255	0.252	0.170	0.211	0.106	0.254	0.153	0.153	0.179	0.310	/	0.622	N/A	N/A
Body-worn 15mm	Front side	0.377	0.344	0.490	0.496	0.437	0.492	0.410	0.375	0.543	0.203	0.416	0.486	0.540	0.162	0.074	0.140	0.705	N/A	N/A
	Back side	0.539	0.291	0.536	0.514	0.522	0.551	0.503	0.442	0.495	0.258	0.503	0.446	0.445	0.162	0.074	0.140	0.713	N/A	N/A
Hotspot	Front side	0.575	0.904	0.716	0.740	0.467	0.846	0.649	0.357	0.755	0.255	0.497	0.570	1.167	0.319	0.161	/	1.486	N/A	N/A
	Back side	0.592	0.701	0.998	0.921	0.496	0.875	0.794	0.432	1.362	0.316	0.497	1.057	1.335	/	/	/	1.362	N/A	N/A
	Left side	0.425	0.046	0.042	0.155	0.388	0.088	0.172	0.246	0.081	0.173	0.364	0.614	0.064	0.319	0.161	/	0.933	N/A	N/A
	Right side	0.822	0.460	0.584	0.494	0.743	0.444	0.464	0.670	1.178	0.245	0.726	0.069	0.780	/	/	/	1.178	N/A	N/A
	Top side	/	/	/	/	/	/	/	/	/	/	/	/	/	0.319	0.161	/	0.319	N/A	N/A
	Bottom side	0.176	1.213	1.364	0.358	0.153	1.171	0.433	0.124	1.322	0.105	0.174	1.004	1.194	/	/	/	1.364	N/A	N/A

Table 152: SAR Simultaneous Tx Combination of Main antenna and WiFi antenna 1/BT.

Test Position		Second antenna SAR _{Max} (Main Modem)												WiFi antenna 1/BT SAR _{Max}			Σ1-g SAR (1.6W/kg Limit)	SPLSR	Volume scan
		GSM850	GSM1900	UMTS Band II	UMTS Band IV	UMTS Band V	LTE Band II	LTE Band IV	LTE Band V	LTE Band VII	LTE Band XII	LTE Band XXVI	LTE Band XLI	WiFi 2.4G	WiFi 5G	BT			
Head	Left touch	0.792	0.581	0.468	0.525	0.866	0.269	0.429	0.592	0.285	0.489	0.797	0.321	0.648	0.576	/	1.514	N/A	N/A
	Left tilt	0.707	0.436	0.364	0.452	0.821	0.257	0.312	0.550	0.291	0.413	0.741	0.344	0.596	0.576	/	1.417	N/A	N/A
	Right touch	1.183	1.319	1.325	1.322	1.134	1.008	0.876	1.146	1.062	1.323	1.298	1.251	0.199	0.258	/	1.583	N/A	N/A
	Right tilt	0.984	0.848	0.794	0.949	1.098	0.514	0.692	0.860	0.860	0.690	1.087	1.038	0.179	0.310	/	1.408	N/A	N/A
Body 15mm	Front side	0.217	0.099	0.108	0.078	0.189	0.085	0.083	0.104	0.085	0.126	0.163	0.117	0.162	0.074	0.140	0.379	N/A	N/A
	Back side	0.265	0.119	0.126	0.100	0.222	0.061	0.100	0.121	0.099	0.158	0.190	0.114	0.162	0.074	0.140	0.427	N/A	N/A
Hotspot	Front side	0.347	0.231	0.126	0.172	0.315	0.100	0.150	0.219	0.173	0.238	0.314	0.196	0.319	0.161	/	0.666	N/A	N/A
	Back side	0.411	0.254	0.135	0.196	0.371	0.105	0.172	0.275	0.200	0.340	0.446	0.254	/	/	/	0.446	N/A	N/A
	Left side	0.508	0.304	0.163	0.177	0.423	0.174	0.149	0.202	0.172	0.179	0.326	0.226	0.319	0.161	/	0.827	N/A	N/A
	Right side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.000	N/A	N/A
	Top side	0.247	0.239	0.108	0.263	0.298	0.079	0.256	0.157	0.056	0.182	0.310	0.091	0.319	0.161	/	0.629	N/A	N/A
	Bottom side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.000	N/A	N/A

Table 153: SAR Simultaneous Tx Combination of Second antenna and WiFi antenna 1/BT.

7.3.4 Simultaneous Transmission Conclusion

The above numeral summed SAR results is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore simultaneous transmission SAR with Volume Scans is not required per KDB 447498 D01v06.

Appendix A. System Check Plots

(Pls See Appendix No.: SYBH(Z-SAR)020032017-2A, total: 15 pages)

Appendix B. SAR Measurement Plots

(Pls See Appendix No.: SYBH(Z-SAR) 020032017-2B, total: 83 pages)

Appendix C. Calibration Certificate

(Pls See Appendix No.: SYBH(Z-SAR) 020032017-2C, total: 109 pages)

Appendix D. Photo documentation

(Pls See Appendix No.: SYBH(Z-SAR) 020032017-2D, total: 6 pages)

End