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CNAS L0310



FCC SAR Compliance Test Report

Product Name: Smart Phone

Model: MHA-L09

Report No.: SYBH(Z-SAR)030052017-2

FCC ID: QISMHA-L09

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DATE	2017-09-12	2017-09-12

Reliability Laboratory of Huawei Technologies Co., Ltd.

(Global Compliance and Testing Center of Huawei Technologies Co., Ltd)

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※ ※ Modified History ※ ※

REV.	DESCRIPTION	ISSUED DATE	REMARK
Rev.1.0	Initial Test Report Release	2017-09-12	Li Wei

1 General Information

1.1 Statement of Compliance

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

Band	Max Reported SAR(W/kg)			
	1-g Head SAR	1-g Body-worn SAR(15mm) *	1-g Hotspot SAR(10mm)	Product Specific 10-g SAR (0mm)**
GSM850	1.38	0.43	0.90	/
GSM1900	1.21	0.35	1.39	0.26
UMTS Band II	1.35	0.60	1.29	2.69
UMTS Band IV	1.35	0.38	0.69	/
UMTS Band V	1.29	0.45	0.76	/
LTE Band II	1.37	0.57	1.23	0.33
LTE Band IV	1.29	0.37	0.63	/
LTE Band V	1.20	0.36	0.54	/
LTE Band VII	0.89	0.34	0.70	/
LTE Band XII	1.26	0.22	0.29	/
LTE Band XVII	0.92	0.31	0.45	/
LTE Band XXVI	1.42	0.28	0.58	/
LTE Band XXXVIII	1.25	0.39	1.12	/
LTE Band XLI	1.30	0.18	0.63	/
WiFi 2.4G	1.31	0.10	0.21	/
WiFi 5G	1.35	0.11	0.21	0.91
BT	/	/	/	/
The highest reported SAR for head, body-worn, hotspot, simultaneous transmission and product specific 10-g SAR exposure conditions are 1.42W/kg, 0.60W/kg, 1.39W/kg, 1.59W/kg and 2.69 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)** For Product Specific 10-g operation, this device has been tested and meets the 10-g SAR limits of 4.0 W/kg for general population/ uncontroalld exposure according to ANSI C95.1:1992/IEEE C95.1:1991 and Industry Canada Radio Standards Specification RSS-102.

The device is in compliance with Specific Absorption Rate(SAR) for general population/uncontroalld 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:	MHA-L09		
FCC ID :	QISMHA-L09		
SN.:	1#: AHK5T17519000002 2#: AHK5T17519000001 3#: AHK5T17519000005		
Device Type :	Portable device		
Device Phase:	Identical Prototype		
Exposure Category:	Uncontrolled environment / general population		
Hardware Version :	HL1AMHAM		
Software Version :	MHA-L09C900B186		
Antenna Type :	Internal antenna		
Others Accessories	Headset		
Device Operating Configurations:			
Supporting Mode(s)	GSM850/1900, UMTS Band II/IV/V, LTE Band II/IV/V/VII/XII/XVII/XXVI/XXXVIII/XLI, WiFi 2.4G/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
	GSM1900	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
LTE CA	Downlink LTE CA only
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)

Test Channels (low-mid-high):	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
	802.11n 40M:3-6-9 (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: 38-46-54-62-102-110-118-126-134-151-159
	802.11ac 80M: 42-58-106-122-138-155(WiFi 5G)

Table 3: Device information and operating configuration

Note: LTE B29 supports downlink only.

1.3.1 General Description

MHA-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, BandXVII, 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 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	Serials number	Description
Rechargeable Li-ion	SCUD	NA	Battery Model: HB396689ECW Rated capacity: 3900mAh
	Sunwoda	NA	Nominal Voltage:  +3.82V Charging Voltage:  +4.4V

Difference description:

1) PA models changed, new models 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
Model: SKY78114-14 Description: RF Multi-functional Component,MB PAMID(w/ B1/2/3/4 Dup),1710~2025 MHz,LGA,Terminal Dedicated	Model: SKY78114-21 Description: RF Multi-functional Component,MB PAMID(w/ B1/2/3/4 Dup),1710~2025 MHz,LGA,Terminal Dedicated, but this change only affects B3/4.

2) Other change or adjustment details are as follows:

Change point	Influencing Bands
Adjust a capacitor of antenna, PCB and other components do not change	LTE Band 2/41, WCDMA Band II, GSM 1900
Adjust a capacitor of antenna, PCB and other components do not change	LTE Band 38
Reduce power of LTE Band 7 second antenna 2.5dB.	LTE Band 7(second antenna)
Reduce power of LTE Band 38 second antenna 0.5dB.	LTE Band 38(second antenna)

3) Delete one kind of optional battery (Manufacture: Desay) because this manufacture's battery has not been built-in mass product for sale. Only two kinds of optional battery(Manufacture: SCUD and Sunwoda) are available.

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

Model	MHA-L29	MHA-L09
Trade mark	HUAWEI	HUAWEI
FCC ID	QISMHA-L29	QISMHA-L09
Frequency-GSM	the same	the same
Frequency-WCDMA	the same	the same
Frequency-LTE	the same	the same
SIM Card	double	Single change nano-tray to SD-tray
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
Others	the same	the same

According to the difference description above, MHA-L09 shares the same test data of MHA-L29 (report no.: SYBH(Z-SAR)028052017-2) for 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 AT commands 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 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.

1.3.4 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.

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	Power Reduction Level Amount (dB)	
	Main Antenna	
	Hotspot is active	Hotspot is disabled
UMTS Band II	2.0	0.0
LTE Band II	2.0	0.0

2G&3G&4G antenna + WiFi antenna simultaneous transmission		
Band	Power Reduction Amount (dB)	
	Main Antenna + WiFi	Second Antenna + WiFi
WIFI 2.4G 802.11b	2.5	2.5
WIFI 2.4G 802.11g	2.0	2.0
WIFI 2.4G 802.11n 20M	1.5	1.5
WIFI 2.4G 802.11n 40M	0.0	0.0
WIFI 5G 802.11a	1.5	1.5
WIFI 5G 802.11n 20M	2.3	2.3
WIFI 5G 802.11n 40M	2.3	2.3
WIFI 5G 802.11ac 20M	2.0	2.0
WIFI 5G 802.11ac 40M	1.5	1.5
WIFI 5G 802.11ac 80M	0.5	0.5

1.3.5 Downlink LTE CA specification

The device supports downlink LTE Carrier Aggregation (CA) only. Other Release 10 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 V13.2.1. The conducted power measurement results of downlink LTE CA are provided in Section 7 of this report per 3GPP TS 36.521-1 V13.0.1. According to KDB 941225 D05A, the downlink LTE CA SAR test is not required and PAG requirements can be excluded.

intra-band contiguous CA(per 3GPP TS 36.101 V13.2.1 Table 5.6A.1-1)

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_7C	15	15		40	0
	20	20			
	10	20		40	1
	15	15, 20			
	20	10, 15, 20			
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			
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_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_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

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	2592.1
		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.

inter-band CA (per 3GPP TS 36.101 V13.2.1 Table 5.6A.1-2)

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_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_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		
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-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			
CA_39A-41A	39				Yes	Yes	Yes	40	0
	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

Table 5.5A-2: Inter-band CA operating bands(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-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 5.4.2A-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 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) For the inter-band CA combinations, Except CA_4A-28A,CA_4A-17A, B17/B28 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 V13.2.1.
- 3) The reference test frequencies for CA refers to 3GPP TS 36.508 V12.5.0.

1.4 Test specification(s)

ANSI C95.1:1992	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 v03r01
KDB941225 D05	SAR for LTE Devices v02r05
KDB941225 D05A	LTE Rel.10 KDB Inquiry Sheet v01r02
KDB941225 D06	Hotspot SAR v02r01
KDB447498 D01	General RF Exposure Guidance v06
KDB616217 D04	SAR for laptop and tablets v01r02
KDB648474 D04	Handsets SAR v01r03
KDB248227 D01	SAR Guidance for IEEE 802 11 Wi-Fi SAR v02r02
KDB865664 D01	SAR measurement 100 MHz to 6 GHz v01r04
KDB865664 D02	SAR Reporting v01r02
KDB690783 D01	SAR Listings on Grants v01r03

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

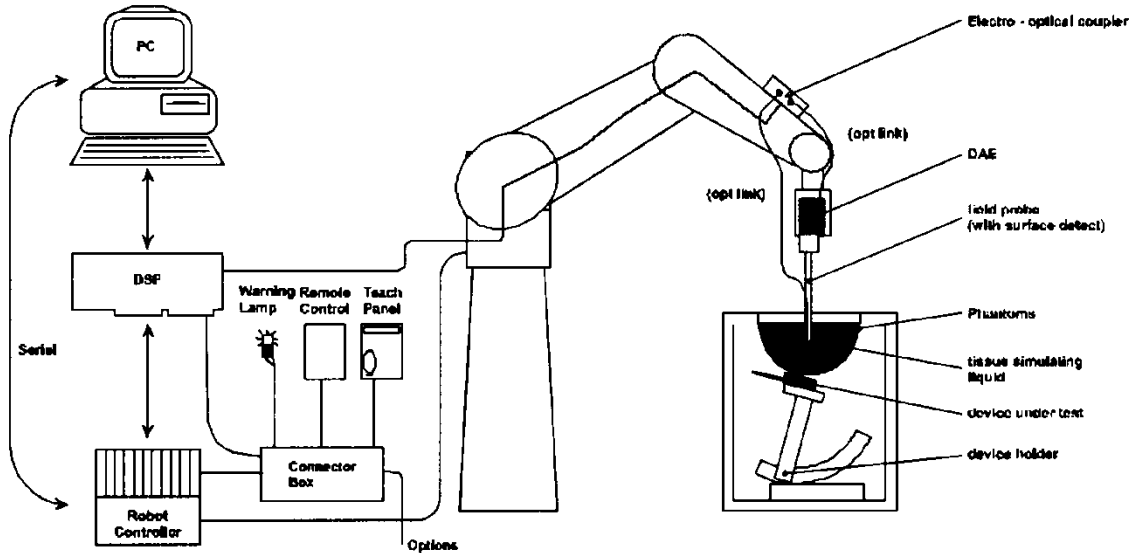
Start Date of test	2017-06-06
End Date of test	2017-09-07

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 DASY5 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 measurement server.
- The DASY5 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 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 DASY5 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-converte 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.

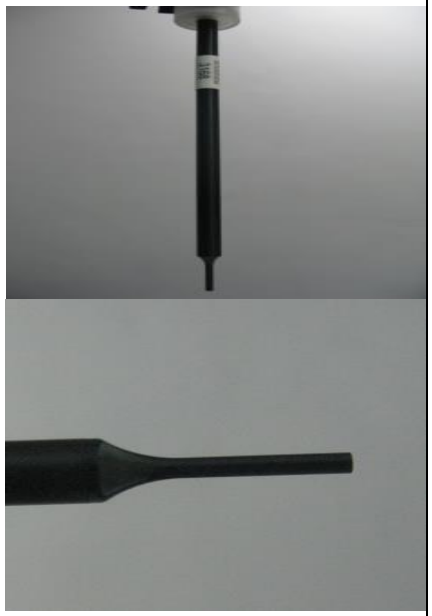
DAE4

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 μ 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 μ W/g to > 100 mW/g; Linearity: ± 0.2 dB (noise: typically < 1 μ 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%	

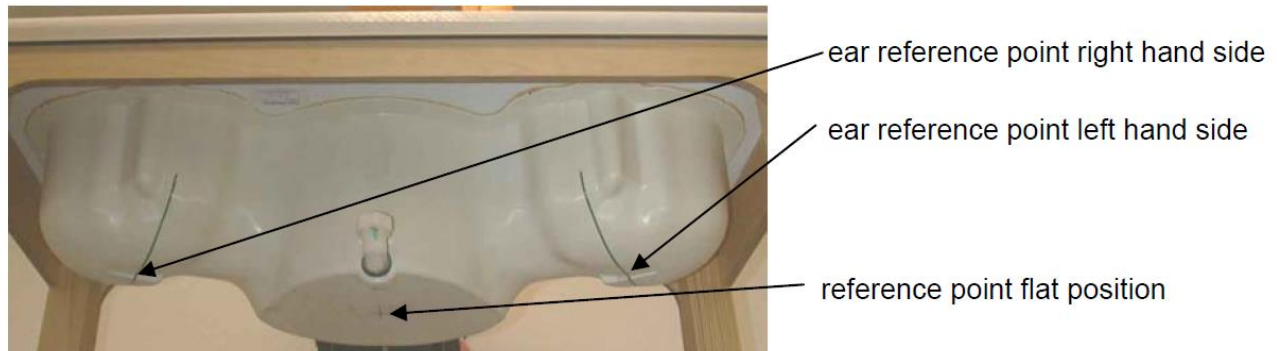
2.5 Phantom description

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 DASY5 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	2017-04-27	One year
☒	SPEAG	Dosimetric E-Field Probe	EX3DV4	3578	2017-05-05	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	1145	2016-02-02	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	2017-07-21	Three years
☒	SPEAG	2600MHz Dipole	D2600V2	1058	2017-06-17	Three years
☒	SPEAG	5GHz Dipole	D5GHzV2	1155	2017-04-26	Three years
☒	SPEAG	Data acquisition electronics	DAE4	851	2016-07-22	One year
☒	SPEAG	Data acquisition electronics	DAE4	852	2017-04-27	One year
☒	SPEAG	Data acquisition electronics	DAE4	1236	2017-07-21	One year
☒	SPEAG	Data acquisition electronics	DAE4	918	2017-06-26	One year
☒	SPEAG	Software	DASY 5	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
☒	R & S	Universal Radio Communication Tester	CMU 200	111379	2016-12-29	One year
☒	R & S	Universal Radio Communication Tester	CMW 500	158850	2017-06-13	One year
☒	Anritsu	Radio Communication Analyzer	MT8821C	6201588598	2017-05-22	One year
☒	Agilent	Network Analyser	E5071C	MY46213349	2016-12-30	One year
☒	Agilent	Dielectric Probe Kit	85070E	2484	NCR	NCR
☒	Agilent	Signal Generator	N5181A	MY50145341	2016-11-14	One year
☒	MINI-CIRCUITS	Amplifier	ZHL-42W	QA1402001	NCR	NCR
☒	MINI-CIRCUITS	Amplifier	ZVE-8G+	N523101139	NCR	NCR
☒	AR	Directional Coupler	DC7144M1	0423264	2017-04-12	One year
☒	Agilent	Dual Directional Coupler	772D	MY52180173	2017-01-03	One year
☒	R & S	Power Meter Sensor	E9321A	MY54130007	2017-04-10	One year
☒	R & S	Power Meter Sensor	E9321A	MY54130001	2017-04-10	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 DASY5 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 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 ($\Delta x_{area}, \Delta y_{area}$)	Maximun Zoom Scan spatial resolution ($\Delta x_{Zoom}, \Delta y_{Zoom}$)	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 uses the advanced extrapolation option which is able to compansate 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	$\text{Norm}_i, a_{i0}, a_{i1}, a_{i2}$
	- 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:

$$V_i = U_i + U_i^2 \cdot cf/dcpi$$

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	2300	2450	2600
Water	39.2	41.45	52.64	55.242	62.82	62.7	55.242
Salt (NaCl)	2.7	1.45	0.36	0.306	0.51	0.5	0.306
Sugar	57.0	56.0	0.0	0.0	0.0	0.0	0.0
HEC	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Bactericide	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DGBE	0.0	0.0	47.0	44.542	36.67	36.8	44.452
Ingredients (% of weight)	Body Tissue						
Frequency Band (MHz)	750	835	1750	1900	2300	2450	2600
Water	50.3	52.4	69.91	69.91	73.32	73.2	64.493
Salt (NaCl)	1.60	1.40	0.13	0.13	0.06	0.04	0.024
Sugar	47.0	45.0	0.0	0.0	0.0	0.0	0.0
HEC	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Bactericide	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DGBE	0.0	0.0	29.96	29.96	26.62	26.7	32.252

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

☒ 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%

Tissue Type	Measured Frequency (MHz)	Target Tissue		Measured Tissue		Deviation (Within +/-5%)		Liquid Temp.	Test Date
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$		
750H	705	42.14	0.89	42.53	0.908	0.93%	2.03%	21.6°C	2017/06/25
	710	42.11	0.89	42.51	0.910	0.95%	2.26%		
	750	41.90	0.89	42.38	0.924	1.15%	3.87%		
750B	705	55.70	0.96	56.17	0.954	0.84%	-0.67%	21.5°C	2017/06/25
	710	55.70	0.96	56.16	0.956	0.83%	-0.46%		
	750	55.50	0.96	56.07	0.971	1.03%	1.13%		
835H	825	41.60	0.90	41.94	0.897	0.82%	-0.30%	21.6°C	2017/06/24
	835	41.50	0.90	41.87	0.900	0.89%	0.00%		
	850	41.50	0.92	41.69	0.908	0.46%	-1.36%		
835B	825	55.20	0.97	54.30	0.947	-1.63%	-2.36%	21.7°C	2017/06/26
	835	55.20	0.97	54.26	0.951	-1.70%	-1.95%		
	850	55.20	0.99	54.20	0.958	-1.81%	-3.23%		
835B	825	55.20	0.97	53.09	0.981	-3.82%	1.15%	21.4°C	2017/08/25
	835	55.20	0.97	53.06	0.985	-3.88%	1.49%		
	850	55.20	0.99	53.00	0.992	-3.99%	0.21%		
1750H	1710	40.1	1.35	39.66	1.321	-1.10%	-2.15%	21.3°C	2017/06/25
	1730	40.1	1.36	39.61	1.334	-1.22%	-1.91%		
	1750	40.1	1.37	39.63	1.346	-1.17%	-1.75%		
	1800	40.0	1.40	39.46	1.375	-1.35%	-1.79%		
1750H	1710	40.1	1.35	40.13	1.348	0.07%	-0.15%	21.7°C	2017/08/23
	1730	40.1	1.36	40.11	1.359	0.02%	-0.07%		
	1750	40.1	1.37	40.09	1.370	-0.02%	0.00%		
	1800	40.0	1.40	40.02	1.403	0.05%	0.21%		
1750B	1710	53.50	1.46	51.69	1.407	-3.38%	-3.63%	21.5°C	2017/06/06
	1730	53.50	1.48	51.73	1.413	-3.31%	-4.53%		
	1750	53.40	1.49	51.68	1.431	-3.22%	-3.96%		
	1800	53.30	1.52	51.69	1.467	-3.02%	-3.49%		
1750B	1710	53.50	1.46	51.77	1.396	-3.23%	-4.38%	21.3°C	2017/06/26
	1730	53.50	1.48	51.76	1.410	-3.25%	-4.73%		
	1750	53.40	1.49	51.77	1.421	-3.05%	-4.63%		
	1800	53.30	1.52	51.65	1.458	-3.10%	-4.08%		
1750B	1710	53.50	1.46	52.32	1.481	-2.21%	1.44%	21.6°C	2017/06/28
	1730	53.50	1.48	52.36	1.490	-2.13%	0.68%		
	1750	53.40	1.49	52.29	1.503	-2.08%	0.87%		
	1800	53.30	1.52	52.28	1.543	-1.91%	1.51%		
1900H	1850	40.00	1.40	39.45	1.370	-1.37%	-2.14%	21.3°C	2017/06/24
	1880	40.00	1.40	39.42	1.388	-1.45%	-0.86%		
	1900	40.00	1.40	39.37	1.397	-1.58%	-0.21%		
	1910	40.00	1.40	39.43	1.404	-1.43%	0.29%		

1900B	1850	40.00	1.40	52.53	1.520	-1.44%	0.00%	21.6°C	2017/06/26
	1880	40.00	1.40	52.49	1.540	-1.52%	1.32%		
	1900	40.00	1.40	52.47	1.553	-1.56%	2.17%		
	1910	40.00	1.40	52.47	1.560	-1.56%	2.63%		
1900B	1850	53.30	1.52	52.33	1.476	-1.82%	-2.89%	21.7°C	2017/09/07
	1880	53.30	1.52	52.27	1.496	-1.93%	-1.58%		
	1900	53.30	1.52	52.23	1.508	-2.01%	-0.79%		
	1910	53.30	1.52	52.20	1.515	-2.06%	-0.33%		
2450H	2410	39.30	1.76	38.29	1.783	-2.57%	1.31%	21.5°C	2017/08/28
	2435	39.20	1.79	38.26	1.800	-2.40%	0.56%		
	2450	39.20	1.80	38.23	1.811	-2.47%	0.61%		
	2460	39.20	1.81	38.21	1.819	-2.53%	0.50%		
2450B	2410	52.80	1.91	50.69	1.971	-4.00%	3.19%	21.4°C	2017/08/28
	2435	52.70	1.94	50.66	1.992	-3.87%	2.68%		
	2450	52.70	1.95	50.65	2.006	-3.89%	2.87%		
	2460	52.70	1.96	50.64	2.015	-3.91%	2.81%		
2600H	2510	39.12	1.86	38.75	1.889	-0.95%	1.56%	21.2°C	2017/06/28
	2535	39.10	1.89	38.73	1.909	-0.95%	1.01%		
	2560	39.00	1.92	38.69	1.932	-0.79%	0.78%		
	2600	39.00	1.96	38.62	1.969	-0.97%	0.46%		
	2610	38.99	1.97	38.60	1.976	-1.00%	0.30%		
	2645	38.94	2.01	38.53	2.007	-1.05%	-0.15%		
2600H	2510	39.12	1.86	38.40	1.893	-1.84%	1.77%	21.1°C	2017/08/01
	2535	39.10	1.89	38.34	1.915	-1.94%	1.32%		
	2560	39.00	1.92	38.32	1.943	-1.74%	1.36%		
	2600	39.00	1.96	38.23	1.976	-1.97%	0.82%		
	2610	38.99	1.97	38.20	1.979	-2.03%	0.46%		
	2645	38.94	2.01	38.16	2.016	-2.00%	0.30%		
2600B	2510	52.62	2.03	50.73	2.095	-3.59%	3.20%	21.6°C	2017/06/26
	2535	52.59	2.07	50.69	2.119	-3.61%	2.37%		
	2560	52.57	2.09	50.65	2.144	-3.65%	2.58%		
	2600	52.50	2.16	50.58	2.182	-3.66%	1.02%		
	2610	52.49	2.17	50.57	2.191	-3.66%	0.97%		
	2645	52.44	2.22	50.51	2.227	-3.68%	0.32%		
2600B	2510	52.62	2.03	51.29	2.127	-2.53%	4.78%	21.7°C	2017/06/28
	2535	52.59	2.07	51.89	2.152	-1.33%	3.96%		
	2560	52.57	2.09	51.85	2.182	-1.37%	4.40%		
	2600	52.50	2.16	51.78	2.224	-1.37%	2.96%		
	2610	52.49	2.17	51.75	2.234	-1.41%	2.95%		
	2645	52.44	2.22	51.68	2.272	-1.45%	2.34%		

2600B	2510	52.62	2.03	50.60	2.043	-3.84%	0.64%	21.8°C	2017/07/31
	2535	52.59	2.07	50.61	2.066	-3.76%	-0.19%		
	2560	52.57	2.09	50.51	2.094	-3.92%	0.19%		
	2600	52.50	2.16	50.45	2.133	-3.91%	-1.25%		
	2610	52.49	2.17	50.47	2.134	-3.85%	-1.66%		
	2645	52.44	2.22	50.40	2.174	-3.89%	-2.07%		
2600B	2510	52.62	2.03	50.43	2.126	-4.16%	4.73%	21.5°C	2017/08/25
	2535	52.59	2.07	50.39	2.150	-4.18%	3.86%		
	2560	52.57	2.09	50.34	2.176	-4.24%	4.11%		
	2600	52.50	2.16	50.27	2.215	-4.25%	2.55%		
	2610	52.49	2.17	50.25	2.225	-4.27%	2.53%		
	2645	52.44	2.22	50.19	2.260	-4.29%	1.80%		
5G H	5600	35.50	5.07	34.61	4.949	-2.51%	-2.39%	21.6°C	2017/08/28
	5750	35.40	5.22	34.10	5.100	-3.67%	-2.30%	21.6°C	2017/08/28
5G B	5600	48.50	5.77	48.02	5.744	-0.99%	-0.45%	21.6°C	2017/08/28
	5750	48.30	5.94	47.45	6.024	-1.76%	1.41%	21.6°C	2017/08/28

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

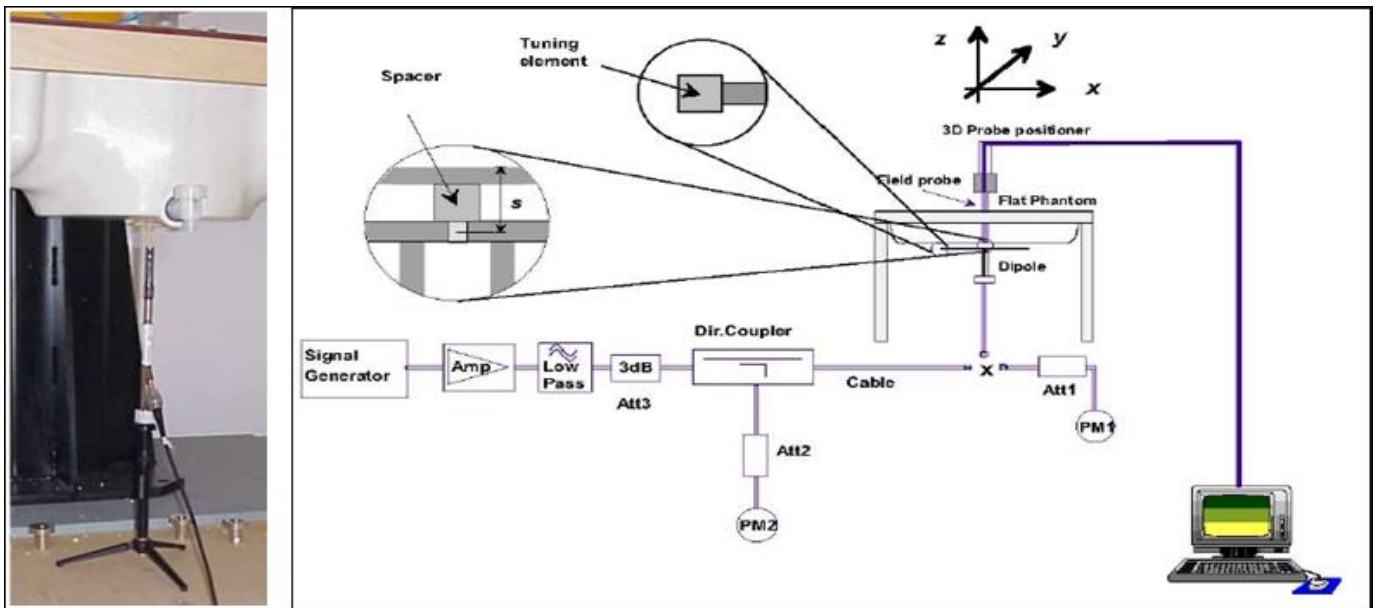
The system check is performed for verifying the accuracy of the complete measurement system and performance of the software. The system check is performed with tissue equivalent material according to IEEE 1528 (described above). The following table shows system check results for all frequency bands and 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)	1-g (W/kg)	10-g (W/kg)		
750MHz Head	8.22	5.39	8.32	5.44	1.22%	0.93%	21.6°C	2017/06/25
835MHz Head	9.30	6.05	9.64	6.28	3.66%	3.80%	21.6°C	2017/06/24
1750MHz Head	36.10	19.10	34.08	18.04	-5.60%	-5.55%	21.3°C	2017/06/25
1750MHz Head	36.10	19.10	39.32	20.72	8.92%	8.48%	21.7°C	2017/08/23
1900MHz Head	40.20	21.10	39.40	20.28	-1.99%	-3.89%	21.3°C	2017/06/24
2450MHz Head	51.90	24.40	52.00	24.12	0.19%	-1.15%	21.5°C	2017/08/28
2600MHz Head	57.00	25.50	54.80	24.88	-3.86%	-2.43%	21.2°C	2017/06/28
2600MHz Head	58.70	26.10	56.80	25.88	-3.24%	-0.84%	21.1°C	2017/08/01
5600MHz Head	81.10	23.00	76.20	21.80	-6.04%	-5.22%	21.6°C	2017/08/28
5750MHz Head	77.20	21.90	77.10	22.10	-0.13%	0.91%	21.6°C	2017/08/28
750MHz Body	8.64	5.72	9.00	5.92	4.17%	3.50%	21.5°C	2017/06/25
835MHz Body	9.41	6.20	9.84	6.48	4.57%	4.52%	21.7°C	2017/06/26
835MHz Body	9.41	6.20	10.12	6.60	7.55%	6.45%	21.4°C	2017/08/25
1750MHz Body	36.50	19.40	34.92	18.56	-4.33%	-4.33%	21.5°C	2017/06/06
1750MHz Body	36.50	19.40	36.52	19.40	0.05%	0.00%	21.3°C	2017/06/26
1750MHz Body	36.50	19.40	36.68	19.48	0.49%	0.41%	21.6°C	2017/06/28
1900MHz Body	39.90	21.00	43.20	22.36	8.27%	6.48%	21.6°C	2017/06/26
1900MHz Body	39.90	21.00	40.40	21.32	1.25%	1.52%	21.7°C	2017/09/07
2450MHz Body	50.60	23.80	48.40	22.36	-4.35%	-6.05%	21.4°C	2017/08/28
2600MHz Body	54.30	24.30	57.20	25.32	5.34%	4.20%	21.6°C	2017/06/26
2600MHz Body	54.30	24.30	54.80	24.76	0.92%	1.89%	21.7°C	2017/06/28
2600MHz Body	54.30	24.30	51.60	23.32	-4.97%	-4.03%	21.8°C	2017/07/31
2600MHz Body	55.90	24.90	56.40	25.08	0.89%	0.72%	21.5°C	2017/08/25
5600MHz Body	78.70	22.10	77.20	21.40	-1.91%	-3.17%	21.6°C	2017/08/28
5750MHz Body	75.90	21.20	69.80	19.60	-8.04%	-7.55%	21.6°C	2017/08/28

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 3GHz) or 100mW(3-6GHz). 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).

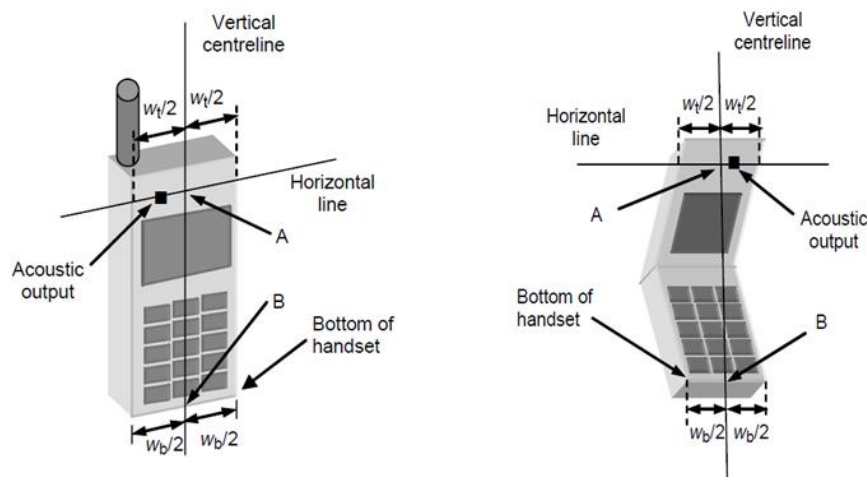


Figure 1 Hand Vertical Center & Horizontal Line Reference Points

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.

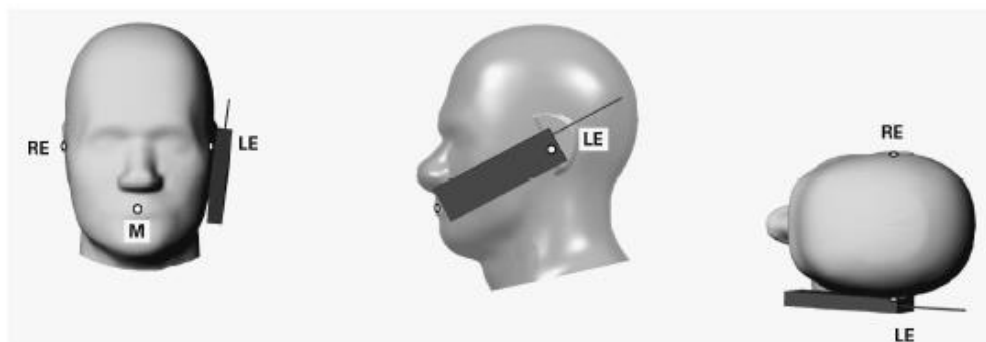


Figure 2 Front, Side and Top View of Cheek Position

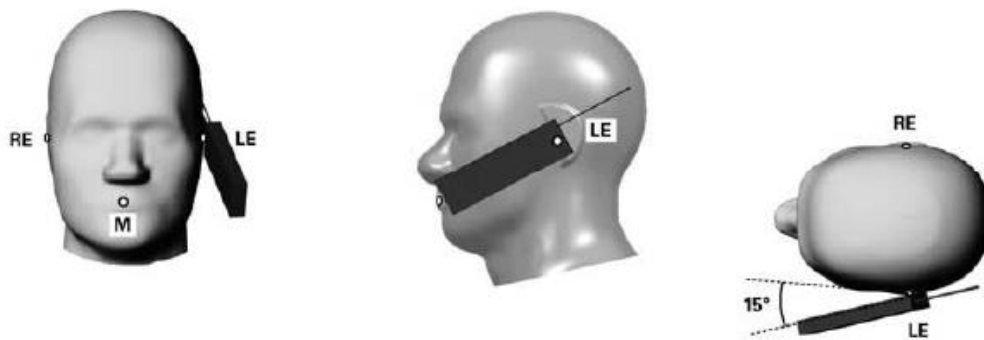


Figure 3 Front, Side and Top View of Tilt 15° Position

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 D04, 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.

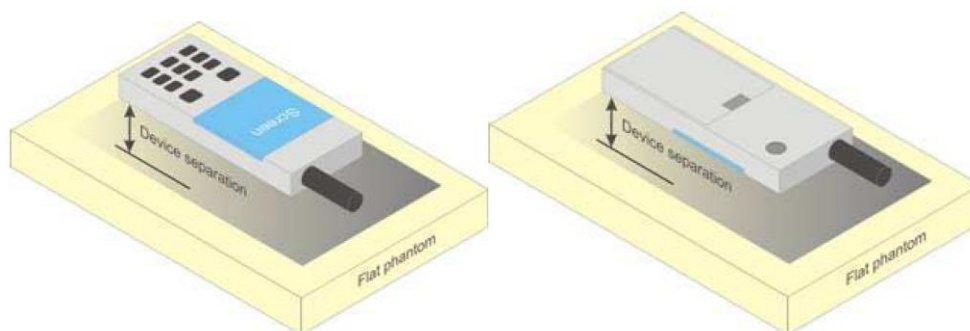


Figure 4 Test position for Body-Worn device

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.

6.1.5 Product Specific 10-g Exposure Condition

Per FCC KDB 648474D04, for smart phones with a display diagonal dimension $> 15.0\text{ cm}$ or an overall diagonal dimension $> 16.0\text{ cm}$ that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, the device is marketed as “Phablet”.

The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at $\leq 25\text{ mm}$ from that surface or edge, in direct contact with a flat phantom, for Product Specific 10-g SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions. The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR $> 1.2\text{ W/kg}$; however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.

6.2 3G SAR Test Reduction Procedure

Per KDB941225 D01, 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 $\leq \frac{1}{4}\text{ dB}$ 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 $\leq 1.2\text{ W/kg}$, 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 level 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. Otherwise, SAR is measured for 12.2 kbps AMR in 3.4 kbps SRB (signaling radio bearer) using the highest reported SAR configuration in 12.2 kbps RMC for head exposure.

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 D01, 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, HARQ 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 ^o	β_c ^o	β_d ^o	β_d (SF) ^o	β_c / β_d ^o	β_{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: 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, 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

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 ¹	β_c ²	β_d ²	β_d (SF) ²	β_c/β_d ²	$\beta_{hs}^{(1)}$ ²	β_{ec} ²	β_{ed} ²	β_{ec} (SF) ²	β_{ed} (code) ²	CM ⁽²⁾ ² (dB) ²	MP R ² (dB) ²	AG ⁽⁴⁾ Inde ² x ²	E-TFC I ²
1 ²	11/15 ⁽³⁾ ²	15/15 ⁽³⁾ ²	64 ²	11/15 ⁽³⁾ ²	22/15 ²	209/225 ²	1039/225 ²	4 ²	1 ²	1.0 ²	0.0 ²	20 ²	75 ²
2 ²	6/15 ²	15/15 ²	64 ²	6/15 ²	12/15 ²	12/15 ²	94/75 ²	4 ²	1 ²	3.0 ²	2.0 ²	12 ²	67 ²
3 ²	15/15 ²	9/15 ²	64 ²	15/9 ²	30/15 ²	30/15 ²	$\beta_{ed1}:47/15$ $\beta_{ed2}:47/15$ ²	4 ²	2 ²	2.0 ²	1.0 ²	15 ²	92 ²
4 ²	2/15 ²	15/15 ²	64 ²	2/15 ²	4/15 ²	2/15 ²	56/75 ²	4 ²	1 ²	3.0 ²	2.0 ²	17 ²	71 ²
5 ²	15/15 ⁽⁴⁾ ²	15/15 ⁽⁴⁾ ²	64 ²	15/15 ⁽⁴⁾ ²	30/15 ²	24/15 ²	134/15 ²	4 ²	1 ²	1.0 ²	0.0 ²	21 ²	81 ²
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 ² 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 $\beta_d = 15/15$ ² 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 $\beta_d = 15/15$ ² 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 ² Note 6: β_{ed} can not be set directly; it is set by Absolute Grant Value. ²													

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.

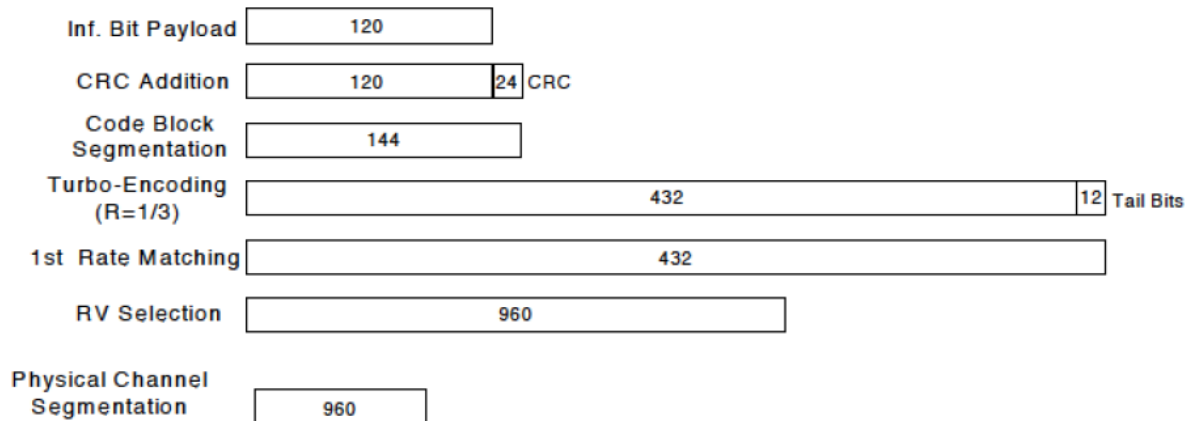


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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: 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, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.
 Note 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 $\beta_d=15/15$

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 SAR for LTE Devices. The CMW500 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

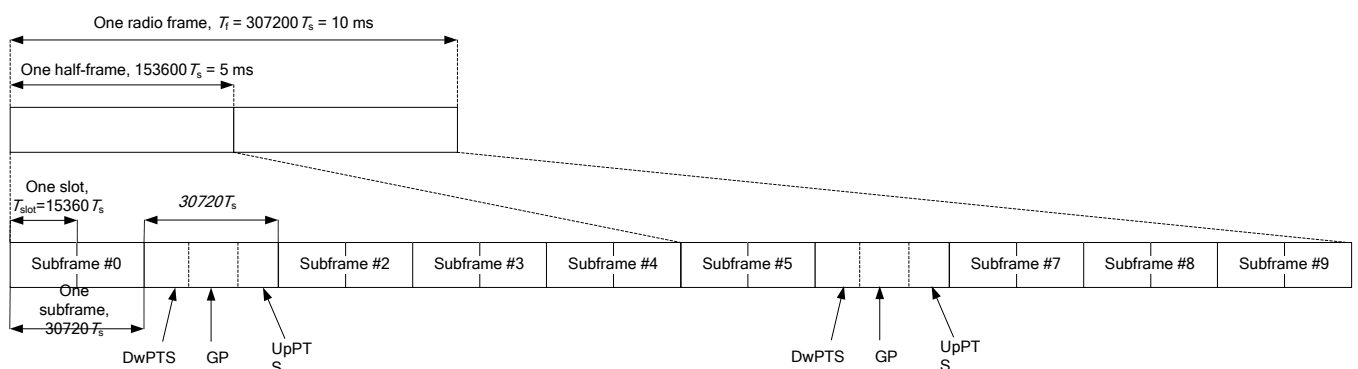


Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS)

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	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$			$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	
9	$13168 \cdot T_s$			-	-	

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 248227D01). 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 248227D01) 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 248227D01). 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) SAR Test Requirements for OFDM configurations

When SAR measurement is required for 802.11 g/n OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. 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.

6.6.5 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.

7 SAR Measurement Results

7.1 Conducted power measurements

For the measurements, the Rohde & Schwarz Radio Communication Tester CMU 200&CMW500 and Anritsu Radio Communication Analyzer MT8821C were 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)		31.50	30.91	30.98	31.02	-9.19	22.31	21.72	21.79	21.83
GPRS/EDGE (GMSK)	1 Tx Slot	31.50	30.89	30.97	30.99	-9.19	22.31	21.70	21.78	21.80
	2 Tx Slots	30.50	29.65	29.77	29.72	-6.13	24.37	23.52	23.64	23.59
	3 Tx Slots	29.50	28.37	28.45	28.52	-4.42	25.08	23.95	24.03	24.10
	4 Tx Slots	27.00	26.04	26.06	26.13	-3.18	23.82	22.86	22.88	22.95
EDGE (8PSK)	1 Tx Slot	27.50	26.97	27.14	27.22	-9.19	18.31	17.78	17.95	18.03
	2 Tx Slots	25.50	24.74	24.79	24.77	-6.13	19.37	18.61	18.66	18.64
	3 Tx Slots	23.50	22.58	22.85	22.79	-4.42	19.08	18.16	18.43	18.37
	4 Tx Slots	22.50	21.24	21.31	21.32	-3.18	19.32	18.06	18.13	18.14

Table 13:Conducted power measurement results of GSM850

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)		28.50	28.43	28.14	28.09	-9.19	19.31	19.24	18.95	18.9
GPRS/ EDGE (GMSK)	1 Tx Slot	28.50	28.42	28.15	28.08	-9.19	19.31	19.23	18.96	18.89
	2 Tx Slots	27.50	26.18	26.14	25.98	-6.13	21.37	20.05	20.01	19.85
	3 Tx Slots	25.50	24.01	23.79	23.67	-4.42	21.08	19.59	19.37	19.25
	4 Tx Slots	24.00	23.74	23.61	23.59	-3.18	20.82	20.56	20.43	20.41
EDGE (8PSK)	1 Tx Slot	27.00	26.37	26.35	26.18	-9.19	17.81	17.18	17.16	16.99
	2 Tx Slots	24.50	23.97	23.92	23.79	-6.13	18.37	17.84	17.79	17.66
	3 Tx Slots	22.50	21.98	21.96	21.64	-4.42	18.08	17.56	17.54	17.22
	4 Tx Slots	21.50	20.72	20.68	20.45	-3.18	18.32	17.54	17.5	17.27

Table 14: Conducted power measurement results of GSM1900

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	18.50	17.75	17.85	17.72
	12.2kbps AMR	18.50	17.72	17.83	17.71
HSDPA	Subtest 1	18.50	17.25	17.26	17.27
	Subtest 2	17.50	16.97	17.02	16.99
	Subtest 3	17.00	16.08	16.07	16.08
	Subtest 4	17.00	16.09	16.09	16.13
HSUPA	Subtest 1	15.00	14.05	13.97	13.88
	Subtest 2	15.00	13.45	13.66	13.42
	Subtest 3	15.00	13.21	13.18	13.15
	Subtest 4	15.00	14.09	13.79	14.01
	Subtest 5	15.00	14.32	14.35	14.02
DC-HSDPA	Subtest 1	18.50	17.22	17.24	17.27
	Subtest 2	17.50	16.95	17.00	16.99
	Subtest 3	17.00	16.01	16.04	16.08
	Subtest 4	17.00	16.01	16.02	16.13

Table 15: Conducted power measurement results of UMTS Band II

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	19.50	19.40	19.21	19.23
	12.2kbps AMR	19.50	19.37	19.23	19.21
HSDPA	Subtest 1	19.50	18.83	18.76	18.75
	Subtest 2	19.00	18.61	18.53	18.54
	Subtest 3	18.50	17.82	17.73	17.75
	Subtest 4	18.50	17.81	17.73	17.75
HSUPA	Subtest 1	17.00	16.56	15.83	15.98
	Subtest 2	16.50	15.57	15.31	15.53
	Subtest 3	16.50	16.14	15.25	15.89
	Subtest 4	17.00	16.01	15.89	15.94
	Subtest 5	17.00	16.53	15.91	16.15
DC-HSDPA	Subtest 1	19.50	18.80	18.73	18.71
	Subtest 2	19.00	18.62	18.52	18.50
	Subtest 3	18.50	17.79	17.70	17.72
	Subtest 4	18.50	17.78	17.71	17.74

Table 16: Conducted power measurement results of UMTS Band IV

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	20.31	20.34	20.22
	12.2kbps AMR	21.50	20.29	20.33	20.20
HSDPA	Subtest 1	21.00	19.87	19.83	19.74
	Subtest 2	20.50	19.65	19.61	19.52
	Subtest 3	20.00	18.85	18.83	18.75
	Subtest 4	20.00	18.83	18.81	18.73
HSUPA	Subtest 1	19.00	17.04	16.97	17.04
	Subtest 2	18.00	16.54	16.45	16.58
	Subtest 3	18.00	16.37	16.38	16.32
	Subtest 4	18.00	17.06	16.99	16.92
	Subtest 5	18.50	17.36	17.26	17.24
DC-HSDPA	Subtest 1	21.00	19.81	19.79	19.71
	Subtest 2	20.50	19.60	19.58	19.50
	Subtest 3	20.00	18.82	18.82	18.73
	Subtest 4	20.00	18.81	18.80	18.70

Table 17: Conducted power measurement results of UMTS Band V

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	18.50	17.80	17.93	17.81
		1	3	18.50	17.78	17.93	17.78
		1	5	18.50	17.69	17.89	17.48
		3	0	18.50	17.76	17.98	17.79
		3	2	18.50	17.77	17.92	17.72
		3	3	18.50	17.77	17.89	17.60
		6	0	18.00	16.79	16.91	16.75
	16QAM	1	0	17.50	16.97	17.03	17.10
		1	3	17.50	17.08	17.11	17.00
		1	5	17.50	16.91	17.02	16.72
		3	0	17.50	16.82	17.06	16.98
		3	2	17.50	16.86	16.95	16.91
		3	3	17.50	16.81	16.77	16.67
		6	0	16.50	15.78	15.84	15.60
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18615CH	18900CH	19185CH
3MHz	QPSK	1	0	18.50	17.62	17.79	17.85
		1	7	18.50	17.92	17.99	17.91
		1	14	18.50	17.57	17.79	17.29
		8	0	18.00	16.80	16.87	16.86
		8	4	18.00	16.83	16.89	16.81
		8	7	18.00	16.80	16.87	16.69
		15	0	18.00	16.84	16.84	16.72
	16QAM	1	0	17.50	16.74	16.61	16.81
		1	7	17.50	17.08	17.03	16.92
		1	14	17.50	16.46	16.56	16.16
		8	0	16.50	15.61	15.77	15.85
		8	4	16.50	15.65	15.83	15.74
		8	7	16.50	15.61	15.79	15.59
		15	0	16.50	15.80	15.69	15.66

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18625CH	18900CH	19175CH
5MHz	QPSK	1	0	18.50	17.73	17.75	17.66
		1	13	18.50	18.04	18.08	18.00
		1	24	18.50	17.47	17.78	17.29
		12	0	18.00	16.97	16.95	16.92
		12	6	18.00	16.99	17.06	16.96
		12	13	18.00	16.78	16.90	16.72
		25	0	18.00	16.86	16.87	16.63
	16QAM	1	0	17.50	16.62	16.97	16.59
		1	13	17.50	16.98	17.30	17.02
		1	24	17.50	16.31	16.97	16.32
		12	0	16.50	15.58	15.83	15.66
		12	6	16.50	15.60	15.96	15.77
		12	13	16.50	15.40	15.81	15.45
		25	0	16.50	15.44	15.73	15.30
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18650CH	18900CH	19150CH
10MHz	QPSK	1	0	18.50	17.81	17.14	17.44
		1	25	18.50	17.71	18.11	17.83
		1	49	18.50	17.13	17.90	17.44
		25	0	18.00	16.80	16.74	16.68
		25	13	18.00	16.54	16.98	16.73
		25	25	18.00	16.27	16.99	16.54
		50	0	18.00	16.53	16.78	16.54
	16QAM	1	0	17.50	16.78	16.59	16.58
		1	25	17.50	16.86	17.32	17.06
		1	49	17.50	16.04	17.12	16.70
		25	0	16.50	15.45	15.59	15.64
		25	13	16.50	15.23	15.87	15.71
		25	25	16.50	15.15	15.87	15.43
		50	0	16.50	15.20	15.60	15.42

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18675CH	18900CH	19125CH
15MHz	QPSK	1	0	18.50	17.53	17.14	17.09
		1	38	18.50	17.35	18.09	17.74
		1	74	18.50	16.84	17.50	17.28
		36	0	18.00	16.75	16.58	16.49
		36	18	18.00	16.47	16.87	16.75
		36	39	18.00	16.07	16.85	16.56
		75	0	18.00	16.38	16.78	16.44
	16QAM	1	0	17.50	16.82	16.39	16.10
		1	38	17.50	16.55	17.29	16.93
		1	74	17.50	16.02	16.74	16.47
		36	0	16.50	15.59	15.45	15.37
		36	18	16.50	15.30	15.75	15.67
		36	39	16.50	15.03	15.80	15.53
		75	0	16.50	15.20	15.63	15.34
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18700CH	18900CH	19100CH
20MHz	QPSK	1	0	18.50	17.39	16.88	17.41
		1	50	18.50	17.52	17.95	17.53
		1	99	18.50	16.53	17.41	17.28
		50	0	18.00	16.55	16.34	16.37
		50	25	18.00	16.62	16.87	16.41
		50	50	18.00	16.04	16.61	16.12
		100	0	18.00	16.34	16.55	16.24
	16QAM	1	0	17.50	16.35	16.33	16.24
		1	50	17.50	16.26	17.31	16.79
		1	99	17.50	16.01	16.46	16.38
		50	0	16.50	15.06	15.15	15.20
		50	25	16.50	15.38	15.60	15.56
		50	50	16.50	15.04	15.55	15.13
		100	0	16.50	15.26	15.41	15.15

Table 18: Conducted power measurement results of LTE Band II

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	19.30	17.74	18.35	17.65
		1	3	19.30	17.78	18.31	18.01
		1	5	19.30	17.57	18.04	17.57
		3	0	19.20	17.75	18.32	17.66
		3	2	19.20	17.76	18.22	17.71
		3	3	19.20	17.67	18.12	17.50
		6	0	19.20	17.73	18.22	17.55
	16QAM	1	0	19.20	17.97	18.58	17.88
		1	3	19.20	17.98	18.60	18.21
		1	5	19.20	17.66	18.33	17.74
		3	0	19.20	17.82	18.35	18.28
		3	2	19.20	17.82	18.24	18.38
		3	3	19.20	17.73	18.15	18.26
		6	0	19.20	17.71	18.23	17.23
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					19965CH	20175CH	20385CH
3MHz	QPSK	1	0	19.30	17.32	18.20	17.75
		1	7	19.30	18.47	18.01	18.05
		1	14	19.30	17.68	17.31	17.77
		8	0	19.20	18.11	18.39	17.41
		8	4	19.20	18.66	18.05	17.66
		8	7	19.20	18.44	17.67	17.50
		15	0	19.20	18.29	17.91	17.69
	16QAM	1	0	19.20	17.37	18.60	17.88
		1	7	19.20	19.05	18.62	18.26
		1	14	19.20	18.05	17.39	17.83
		8	0	19.20	18.17	18.34	17.59
		8	4	19.20	18.58	18.15	17.69
		8	7	19.20	18.37	17.70	17.55
		15	0	19.20	18.23	17.91	17.60

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					19975CH	20175CH	20375CH
5MHz	QPSK	1	0	19.30	17.45	18.21	17.65
		1	13	19.30	18.71	18.20	18.02
		1	24	19.30	17.68	17.46	17.59
		12	0	18.50	18.23	18.30	17.66
		12	6	19.20	18.66	18.17	17.53
		12	13	19.20	18.42	17.87	17.50
		25	0	19.20	18.27	18.05	17.61
	16QAM	1	0	19.20	17.30	18.65	17.89
		1	13	19.20	19.07	18.60	18.31
		1	24	19.20	18.07	17.52	17.70
		12	0	19.20	18.19	18.31	17.51
		12	6	19.20	18.66	18.08	17.66
		12	13	19.20	18.36	17.77	17.51
		25	0	19.20	18.27	17.90	17.60
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20000CH	20175CH	20350CH
10MHz	QPSK	1	0	19.30	17.77	18.41	18.11
		1	25	19.30	18.51	18.42	18.12
		1	49	19.30	18.40	18.00	17.99
		25	0	19.20	18.07	18.37	17.79
		25	13	19.20	18.42	18.25	17.67
		25	25	19.20	18.71	17.89	17.69
		50	0	19.20	18.23	18.22	17.82
	16QAM	1	0	19.20	18.32	19.19	18.20
		1	25	19.20	19.11	18.60	18.31
		1	49	19.20	18.80	18.05	18.05
		25	0	19.20	18.11	18.25	17.79
		25	13	19.20	18.41	18.12	17.82
		25	25	19.20	18.51	18.04	17.72
		50	0	19.20	18.39	18.17	17.79

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20025CH	20175CH	20325CH
15MHz	QPSK	1	0	19.30	17.71	18.49	18.00
		1	38	19.30	18.46	18.40	18.10
		1	74	19.30	18.43	17.75	17.75
		36	0	19.20	18.00	18.27	17.75
		36	18	19.20	18.45	18.20	17.77
		36	39	19.20	18.66	17.88	17.63
		75	0	19.20	18.30	18.14	17.77
	16QAM	1	0	19.20	18.13	19.18	18.27
		1	38	19.20	19.15	18.66	18.34
		1	74	19.20	18.85	18.02	18.00
		36	0	19.20	18.04	18.24	17.73
		36	18	19.20	18.47	18.11	17.69
		36	39	19.20	18.65	17.84	17.56
		75	0	19.20	18.33	18.10	17.75
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20050CH	20175CH	20300CH
20MHz	QPSK	1	0	19.30	17.33	18.28	17.50
		1	50	19.30	18.18	18.26	17.50
		1	99	19.30	17.80	17.31	17.52
		50	0	19.20	18.21	18.37	17.62
		50	25	19.20	18.36	18.04	17.67
		50	50	19.20	18.31	17.70	17.57
		100	0	19.20	18.22	17.99	17.67
	16QAM	1	0	19.20	17.32	18.62	17.82
		1	50	19.20	19.01	18.66	18.22
		1	99	19.20	18.00	17.49	17.78
		50	0	19.20	18.16	18.38	17.57
		50	25	19.20	18.53	18.05	17.63
		50	50	19.20	18.31	17.72	17.52
		100	0	19.20	18.20	17.98	17.62

Table 19: Conducted power measurement results of LTE Band IV

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	22.00	20.96	21.06	21.20
		1	3	22.00	21.22	21.13	21.22
		1	5	22.00	21.19	21.07	21.04
		3	0	22.00	21.01	21.05	21.14
		3	2	22.00	21.16	21.04	21.14
		3	3	22.00	21.17	21.01	21.12
		6	0	21.50	20.04	20.02	20.14
	16QAM	1	0	21.50	20.20	20.24	20.42
		1	3	21.50	20.28	20.27	20.66
		1	5	21.50	20.23	20.22	20.46
		3	0	21.50	19.93	20.07	20.15
		3	2	21.50	20.20	20.06	20.23
		3	3	21.50	20.20	20.05	20.21
		6	0	20.50	18.94	18.94	19.13
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20415CH	20525CH	20635CH
3MHz	QPSK	1	0	22.00	20.73	20.92	21.14
		1	7	22.00	21.44	21.10	21.30
		1	14	22.00	20.98	20.85	20.91
		8	0	21.50	20.07	19.99	20.16
		8	4	21.50	20.28	20.08	20.25
		8	7	21.50	20.15	20.00	20.11
		15	0	21.50	20.13	20.05	20.28
	16QAM	1	0	21.50	19.94	20.01	20.01
		1	7	21.50	20.69	20.21	20.33
		1	14	21.50	19.92	20.07	19.83
		8	0	20.50	19.05	18.94	19.04
		8	4	20.50	19.19	18.99	19.19
		8	7	20.50	19.08	18.94	19.06
		15	0	20.50	19.09	18.91	19.19

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20425CH	20525CH	20625CH
5MHz	QPSK	1	0	22.00	20.77	21.01	21.23
		1	13	22.00	21.34	21.13	21.36
		1	24	22.00	20.98	20.76	20.76
		12	0	21.50	20.11	20.05	20.30
		12	6	21.50	20.33	20.09	20.42
		12	13	21.50	20.11	19.93	20.06
		25	0	21.50	20.11	19.97	20.23
	16QAM	1	0	21.50	19.88	20.13	20.52
		1	13	21.50	20.47	20.23	20.67
		1	24	21.50	20.08	19.88	20.14
		12	0	20.50	19.08	18.93	19.34
		12	6	20.50	19.23	18.96	19.41
		12	13	20.50	19.09	18.80	18.96
		25	0	20.50	19.05	18.83	19.06
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20450CH	20525CH	20600CH
10MHz	QPSK	1	0	22.00	21.25	21.29	21.32
		1	25	22.00	21.88	21.55	21.95
		1	49	22.00	21.14	21.13	21.22
		25	0	21.50	20.66	20.49	20.41
		25	13	21.50	20.80	20.48	20.72
		25	25	21.50	20.52	20.29	20.66
		50	0	21.50	20.53	20.29	20.64
	16QAM	1	0	21.50	20.43	20.36	20.41
		1	25	21.50	20.98	20.71	21.17
		1	49	21.50	20.33	20.32	20.30
		25	0	20.50	19.56	19.51	19.35
		25	13	20.50	19.69	19.49	19.72
		25	25	20.50	19.37	19.21	19.68
		50	0	20.50	19.39	19.17	19.67

Table 20: Conducted power measurement results of LTE Band V

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	15.00	13.51	13.31	13.30
		1	13	15.00	13.83	13.34	13.44
		1	24	15.00	13.51	13.19	13.02
		12	0	14.50	13.59	13.30	13.22
		12	6	14.50	13.72	13.41	13.35
		12	13	14.50	13.59	13.22	13.16
		25	0	14.50	13.11	13.21	12.94
	16QAM	1	0	14.50	13.24	12.93	13.25
		1	13	14.50	13.05	13.64	13.11
		1	24	14.50	13.14	13.06	13.11
		12	0	13.50	13.11	12.97	12.85
		12	6	13.50	12.94	13.21	12.71
		12	13	13.50	12.59	13.22	12.87
		25	0	13.50	12.28	12.79	12.55
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20800CH	21100CH	21400CH
10MHz	QPSK	1	0	15.00	13.33	13.05	13.05
		1	25	15.00	13.84	13.85	13.39
		1	49	15.00	12.91	12.93	13.06
		25	0	14.50	13.19	13.01	13.21
		25	13	14.50	13.82	13.30	13.19
		25	25	14.50	13.58	13.24	13.34
		50	0	14.50	13.22	13.06	13.33
	16QAM	1	0	14.50	13.01	13.21	12.98
		1	25	14.50	13.29	13.22	12.77
		1	49	14.50	13.11	13.15	13.04
		25	0	13.50	12.88	12.88	12.58
		25	13	13.50	12.99	13.05	12.62
		25	25	13.50	12.96	12.98	12.77
		50	0	13.50	12.71	12.79	12.66

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20825CH	21100CH	21375CH
15MHz	QPSK	1	0	15.00	13.21	13.87	13.66
		1	38	15.00	13.77	13.91	13.71
		1	74	15.00	13.67	14.43	13.89
		36	0	14.50	13.10	13.21	12.85
		36	18	14.50	13.40	13.72	12.88
		36	39	14.50	13.36	13.75	12.87
		75	0	14.50	13.19	13.47	13.03
	16QAM	1	0	14.50	13.91	13.27	13.52
		1	38	14.50	13.44	13.21	12.65
		1	74	14.50	13.93	14.30	13.90
		36	0	13.50	12.81	12.65	12.77
		36	18	13.50	12.92	13.15	12.76
		36	39	13.50	13.07	13.11	12.55
		75	0	13.50	12.72	12.77	12.69
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20850CH	21100CH	21350CH
20MHz	QPSK	1	0	15.00	13.06	13.19	13.05
		1	50	15.00	13.62	13.41	13.09
		1	99	15.00	12.69	13.63	13.12
		50	0	14.50	13.18	12.78	12.72
		50	25	14.50	13.22	13.45	12.68
		50	50	14.50	12.87	13.22	12.66
		100	0	14.50	13.07	13.07	13.09
	16QAM	1	0	14.50	13.18	12.81	13.33
		1	50	14.50	13.55	13.56	13.21
		1	99	14.50	13.05	13.85	13.37
		50	0	13.50	12.99	12.77	12.99
		50	25	13.50	13.18	13.10	13.01
		50	50	13.50	12.69	13.21	12.96
		100	0	13.50	12.77	12.89	12.95

Table 21: Conducted power measurement results of LTE Band VII

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

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23107CH	23095CH	23173CH
1.4MHz	QPSK	1	0	22.50	21.50	20.93	21.17
		1	3	22.50	21.51	21.08	20.91
		1	5	22.50	21.61	20.93	20.60
		3	0	22.50	21.46	20.97	21.13
		3	2	22.50	21.40	20.98	20.82
		3	3	22.50	21.42	20.94	20.70
		6	0	22.00	21.35	20.99	20.83
	16QAM	1	0	22.00	21.58	21.33	21.23
		1	3	22.00	21.69	21.45	21.04
		1	5	22.00	21.70	21.04	20.76
		3	0	22.00	21.46	21.03	21.12
		3	2	22.00	21.47	21.04	20.84
		3	3	22.00	21.48	21.05	20.73
		6	0	21.00	20.40	20.10	19.85
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23025CH	23095CH	23165CH
3MHz	QPSK	1	0	22.50	21.25	20.74	21.48
		1	7	22.50	21.69	21.08	21.31
		1	14	22.50	21.37	20.87	20.63
		8	0	22.00	21.34	20.99	21.39
		8	4	22.00	21.56	20.99	21.18
		8	7	22.00	21.32	20.93	20.80
		15	0	22.00	21.12	20.94	21.13
	16QAM	1	0	22.00	21.27	21.13	21.73
		1	7	22.00	21.79	21.44	21.64
		1	14	22.00	21.54	21.24	20.60
		8	0	21.00	20.48	20.08	20.67
		8	4	21.00	20.64	20.08	20.45
		8	7	21.00	20.46	20.03	20.00
		15	0	21.00	20.30	20.00	20.26

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23035CH	23095CH	23155CH
5MHz	QPSK	1	0	22.50	21.25	20.79	21.17
		1	13	22.50	21.78	21.10	21.63
		1	24	22.50	21.78	21.86	21.18
		12	0	22.00	21.45	20.80	21.72
		12	6	22.00	21.65	20.93	21.72
		12	13	22.00	21.20	20.92	20.97
		25	0	22.00	21.29	21.04	21.20
	16QAM	1	0	22.00	21.35	20.87	21.28
		1	13	22.00	21.79	21.20	21.68
		1	24	22.00	21.85	21.96	21.34
		12	0	21.00	20.32	19.96	20.74
		12	6	21.00	20.55	20.04	20.82
		12	13	21.00	20.14	20.02	20.17
		25	0	21.00	20.28	20.13	20.35
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23060CH	23095CH	23130CH
10MHz	QPSK	1	0	22.50	21.52	21.46	21.18
		1	25	22.50	21.70	21.52	21.97
		1	49	22.50	20.98	21.34	20.55
		25	0	22.00	21.82	21.35	21.37
		25	13	22.00	21.50	21.44	21.84
		25	25	22.00	21.27	21.38	21.47
		50	0	22.00	21.57	21.36	21.47
	16QAM	1	0	22.00	21.79	21.90	21.43
		1	25	22.00	21.90	21.82	21.98
		1	49	22.00	21.15	21.66	20.88
		25	0	21.00	20.78	20.46	20.60
		25	13	21.00	20.48	20.59	20.98
		25	25	21.00	20.33	20.36	20.55
		50	0	21.00	20.62	20.41	20.54

Table 22: Conducted power measurement results of LTE Band XII

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	24.50	22.72	23.00	23.38
		1	13	24.50	23.13	23.59	23.65
		1	24	24.50	23.90	24.20	23.09
		12	0	24.00	22.06	22.43	22.64
		12	6	24.00	22.06	22.68	22.64
		12	13	24.00	22.16	22.37	22.23
		25	0	24.00	22.10	22.50	22.46
	16QAM	1	0	24.00	22.08	22.34	22.79
		1	13	24.00	22.36	22.95	23.08
		1	24	24.00	23.13	23.48	22.56
		12	0	23.00	21.14	21.59	21.64
		12	6	23.00	21.20	21.82	21.67
		12	13	23.00	21.29	21.53	21.32
		25	0	23.00	21.21	21.62	21.41
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23780CH	23790CH	23800CH
10MHz	QPSK	1	0	24.50	23.43	23.33	23.36
		1	25	24.50	23.98	24.20	24.18
		1	49	24.50	23.94	23.72	23.01
		25	0	24.00	22.73	22.73	22.86
		25	13	24.00	22.97	23.10	23.39
		25	25	24.00	23.12	23.06	23.05
		50	0	24.00	22.92	23.00	23.16
	16QAM	1	0	24.00	22.68	22.50	22.60
		1	25	24.00	23.39	23.32	23.48
		1	49	24.00	23.16	22.80	22.28
		25	0	23.00	21.67	21.69	21.76
		25	13	23.00	21.96	22.04	22.24
		25	25	23.00	22.12	22.00	21.89
		50	0	23.00	21.87	22.00	22.08

Table 23: Conducted power measurement results of LTE Band XVII

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	22.40	21.63	21.72	21.62
		1	3	22.40	21.52	21.63	21.58
		1	5	22.40	21.43	21.50	21.43
		3	0	22.40	21.61	21.64	21.60
		3	2	22.40	21.55	21.53	21.49
		3	3	22.40	21.41	21.48	21.52
		6	0	22.00	20.76	20.52	20.56
	16QAM	1	0	21.50	19.85	20.80	20.82
		1	3	21.50	21.02	20.79	20.76
		1	5	21.50	21.04	20.57	20.54
		3	0	21.50	19.97	20.66	20.63
		3	2	21.50	20.93	20.56	20.52
		3	3	21.50	20.95	20.50	20.46
		6	0	21.00	19.95	19.44	19.42
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26705CH	26865CH	27025CH
3MHz	QPSK	1	0	22.40	21.69	21.51	21.49
		1	7	22.40	21.65	21.68	21.66
		1	14	22.40	21.65	21.23	21.21
		8	0	22.00	21.64	20.66	20.63
		8	4	22.00	21.67	20.54	20.52
		8	7	22.00	21.67	20.42	20.40
		15	0	22.00	21.67	20.54	20.53
	16QAM	1	0	21.50	20.51	20.64	20.64
		1	7	21.50	20.61	20.76	20.62
		1	14	21.50	20.61	20.25	20.30
		8	0	21.00	20.52	19.49	19.53
		8	4	21.00	20.51	19.43	19.42
		8	7	21.00	20.61	19.29	19.30
		15	0	21.00	20.52	19.40	19.43

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26715CH	26865CH	27015CH
5MHz	QPSK	1	0	22.40	21.48	21.53	20.91
		1	13	22.40	21.32	21.67	21.98
		1	24	22.40	21.32	22.01	22.00
		12	0	22.00	20.59	20.62	21.11
		12	6	22.00	20.59	20.57	21.59
		12	13	22.00	20.60	20.33	21.44
		25	0	22.00	20.60	20.72	20.09
	16QAM	1	0	21.50	20.68	20.49	20.06
		1	13	21.50	20.43	20.57	21.33
		1	24	21.50	20.43	21.12	21.48
		12	0	21.00	19.53	19.59	19.92
		12	6	21.00	19.53	19.53	20.90
		12	13	21.00	19.53	19.34	20.93
		25	0	21.00	19.54	19.65	19.68
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26750CH	26865CH	26990CH
10MHz	QPSK	1	0	22.40	20.86	21.96	20.87
		1	25	22.40	21.95	21.80	21.98
		1	49	22.40	21.65	21.68	21.60
		25	0	22.00	20.06	21.28	20.04
		25	13	22.00	20.18	21.54	20.16
		25	25	22.00	20.28	21.10	20.31
		50	0	22.00	20.38	21.11	20.37
	16QAM	1	0	21.50	20.06	21.34	19.90
		1	25	21.50	21.48	21.44	21.40
		1	49	21.50	20.96	20.94	20.80
		25	0	21.00	19.12	20.18	19.05
		25	13	21.00	19.11	20.45	19.13
		25	25	21.00	19.27	19.98	19.19
		50	0	21.00	19.26	20.10	19.21

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26775CH	26865CH	26965CH
15MHz	QPSK	1	0	22.40	20.83	20.97	20.84
		1	38	22.40	21.61	21.56	21.69
		1	74	22.40	20.63	20.55	20.69
		36	0	22.00	20.11	20.49	20.18
		36	18	22.00	20.62	20.47	20.63
		36	39	22.00	20.52	20.05	20.64
		75	0	22.00	20.47	20.31	20.48
	16QAM	1	0	21.50	19.99	20.08	19.91
		1	38	21.50	20.89	20.87	20.80
		1	74	21.50	19.84	19.78	19.73
		36	0	21.00	19.15	19.56	19.04
		36	18	21.00	19.56	19.48	19.55
		36	39	21.00	19.62	19.13	19.56
		75	0	21.00	19.42	19.26	19.38

Table 24: Conducted power measurement results of LTE Band XXVI

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	17.50	17.42	16.67	17.45
		1	13	17.50	16.30	16.12	15.99
		1	24	17.50	15.75	16.29	16.12
		12	0	17.50	16.41	15.54	16.69
		12	6	17.50	16.25	15.69	16.22
		12	13	17.50	15.81	15.85	15.58
		25	0	17.50	16.01	15.72	15.90
	16QAM	1	0	17.50	16.17	15.87	17.02
		1	13	17.50	16.63	16.67	16.79
		1	24	17.50	16.64	16.36	16.80
		12	0	17.00	16.15	15.52	16.49
		12	6	17.00	16.37	15.81	16.15
		12	13	17.00	16.31	15.97	16.19
		25	0	17.00	15.62	15.97	16.30
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					37800CH	38000CH	38200CH
10MHz	QPSK	1	0	17.50	17.22	16.77	17.33
		1	25	17.50	16.10	16.22	15.87
		1	49	17.50	15.55	16.39	16.00
		25	0	17.50	16.21	15.51	16.57
		25	13	17.50	16.05	15.79	16.10
		25	25	17.50	15.61	15.95	15.56
		50	0	17.50	15.81	15.82	15.78
	16QAM	1	0	17.50	15.97	15.97	16.90
		1	25	17.50	16.43	16.77	16.67
		1	49	17.50	16.44	16.46	16.68
		25	0	17.00	15.95	15.62	16.37
		25	13	17.00	16.17	15.91	16.03
		25	25	17.00	16.11	16.07	16.07
		50	0	17.00	15.42	16.07	16.18

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					37825CH	38000CH	38175CH
15MHz	QPSK	1	0	17.50	17.35	16.90	17.46
		1	38	17.50	16.23	16.35	16.00
		1	74	17.50	15.68	16.52	16.13
		36	0	17.50	16.34	15.63	16.70
		36	18	17.50	16.18	15.92	16.23
		36	39	17.50	15.74	16.08	15.59
		75	0	17.50	15.94	15.95	15.91
	16QAM	1	0	17.50	16.10	16.10	17.03
		1	38	17.50	16.56	16.90	16.80
		1	74	17.50	16.57	16.59	16.81
		36	0	17.00	16.08	15.75	16.50
		36	18	17.00	16.30	16.04	16.16
		36	39	17.00	16.24	16.20	16.20
		75	0	17.00	15.55	16.20	16.31
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					37850CH	38000CH	38150CH
20MHz	QPSK	1	0	17.50	16.65	15.73	16.62
		1	50	17.50	16.59	15.57	16.20
		1	99	17.50	15.59	16.66	17.50
		50	0	17.50	15.91	15.91	16.56
		50	25	17.50	16.37	16.12	16.18
		50	50	17.50	16.12	16.29	16.31
		100	0	17.50	15.91	16.12	16.47
	16QAM	1	0	17.50	16.16	16.17	17.23
		1	50	17.50	16.86	16.98	16.80
		1	99	17.50	16.77	17.09	16.81
		50	0	17.00	16.18	15.85	16.51
		50	25	17.00	16.35	16.04	16.16
		50	50	17.00	16.03	16.23	16.28
		100	0	17.00	15.85	16.10	16.41

Table 25: Conducted power measurement results of LTE Band XXXVIII

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	18.00	16.55	16.65	16.51
		1	13	18.00	16.98	16.90	16.81
		1	24	18.00	16.72	16.64	16.44
		12	0	17.00	15.79	15.70	15.64
		12	6	17.00	15.93	15.74	15.70
		12	13	17.00	15.85	15.70	15.58
		25	0	17.00	15.80	15.71	15.68
	16QAM	1	0	17.00	15.53	15.73	15.25
		1	13	17.00	15.99	15.98	15.61
		1	24	17.00	15.71	15.72	15.28
		12	0	16.00	14.79	14.58	14.52
		12	6	16.00	14.93	14.63	14.57
		12	13	16.00	14.85	14.58	14.45
		25	0	16.00	14.74	14.57	14.47
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					40290CH	40740CH	41190CH
10MHz	QPSK	1	0	18.00	16.72	16.61	16.26
		1	25	18.00	17.27	16.89	16.64
		1	49	18.00	17.01	16.89	16.62
		25	0	17.00	15.96	15.66	15.36
		25	13	17.00	16.13	15.78	15.59
		25	25	17.00	16.10	15.81	15.48
		50	0	17.00	16.02	15.75	15.79
	16QAM	1	0	17.00	15.84	15.97	15.26
		1	25	17.00	16.44	16.28	15.63
		1	49	17.00	16.17	16.25	15.60
		25	0	16.00	14.81	14.58	14.18
		25	13	16.00	14.98	14.71	14.52
		25	25	16.00	14.95	14.73	14.34
		50	0	16.00	14.88	14.69	14.62

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					40315CH	40740CH	41165CH
15MHz	QPSK	1	0	18.00	16.65	16.42	16.10
		1	38	18.00	17.35	16.90	16.38
		1	74	18.00	16.84	17.03	16.42
		36	0	17.00	16.01	15.62	15.32
		36	18	17.00	16.31	15.76	15.49
		36	39	17.00	16.17	15.91	15.64
		75	0	17.00	16.14	15.78	15.87
	16QAM	1	0	17.00	15.63	15.61	15.25
		1	38	17.00	16.40	16.11	15.60
		1	74	17.00	15.86	16.21	15.60
		36	0	16.00	14.93	14.51	14.10
		36	18	16.00	15.20	14.66	14.26
		36	39	16.00	15.04	14.80	14.45
		75	0	16.00	14.99	14.67	14.77
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					40340CH	40740CH	41140CH
20MHz	QPSK	1	0	18.00	16.96	16.47	16.81
		1	50	18.00	17.43	16.84	16.41
		1	99	18.00	16.86	17.35	16.83
		50	0	17.00	16.35	15.76	15.85
		50	25	17.00	16.33	15.88	15.45
		50	50	17.00	16.21	16.13	15.61
		100	0	17.00	16.24	15.98	16.21
	16QAM	1	0	17.00	16.34	15.68	16.04
		1	50	17.00	16.45	16.12	15.65
		1	99	17.00	16.30	16.31	15.98
		50	0	16.00	15.19	14.70	14.72
		50	25	16.00	15.24	14.81	14.28
		50	50	16.00	15.07	15.06	14.48
		100	0	16.00	15.10	14.90	15.01

Table 26: Conducted power measurement results of LTE Band XLI

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	32.64	32.73	32.72	-9.19	24.31	23.45	23.54	23.53
GPRS/EDGE (GMSK)	1 Tx Slot	33.50	32.65	32.71	32.73	-9.19	24.31	23.46	23.52	23.54
	2 Tx Slots	32.50	31.61	31.64	31.68	-6.13	26.37	25.48	25.51	25.55
	3 Tx Slots	30.50	28.82	29.06	29.02	-4.42	26.08	24.40	24.64	24.60
	4 Tx Slots	28.00	27.51	27.76	27.67	-3.18	24.82	24.33	24.58	24.49
EDGE (8PSK)	1 Tx Slot	27.50	26.48	26.53	26.72	-9.19	18.31	17.29	17.34	17.53
	2 Tx Slots	26.50	25.43	25.56	25.65	-6.13	20.37	19.30	19.43	19.52
	3 Tx Slots	24.50	23.01	23.13	23.38	-4.42	20.08	18.59	18.71	18.96
	4 Tx Slots	23.50	22.07	22.21	22.29	-3.18	20.32	18.89	19.03	19.11

Table 27: Conducted power measurement results of GSM850

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)		30.50	29.65	29.52	29.46	-9.19	21.31	20.46	20.33	20.27
GPRS/ EDGE (GMSK)	1 Tx Slot	30.50	29.63	29.54	29.48	-9.19	21.31	20.44	20.35	20.29
	2 Tx Slots	29.50	28.53	28.51	28.36	-6.13	23.37	22.40	22.38	22.23
	3 Tx Slots	27.50	26.21	26.24	26.15	-4.42	23.08	21.79	21.82	21.73
	4 Tx Slots	25.50	24.58	24.57	24.54	-3.18	22.32	21.40	21.39	21.36
EDGE (8PSK)	1 Tx Slot	26.50	25.94	25.86	25.82	-9.19	17.31	16.75	16.67	16.63
	2 Tx Slots	25.50	24.51	24.49	24.38	-6.13	19.37	18.38	18.36	18.25
	3 Tx Slots	23.50	22.54	22.51	22.35	-4.42	19.08	18.12	18.09	17.93
	4 Tx Slots	22.50	21.39	21.37	21.48	-3.18	19.32	18.21	18.19	18.30

Table 28: Conducted power measurement results of GSM1900

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	24.50	23.42	23.48	23.45
	12.2kbps AMR	24.50	23.40	23.45	23.44
HSDPA	Subtest 1	24.50	22.95	22.90	22.93
	Subtest 2	23.00	22.72	22.68	22.72
	Subtest 3	22.50	21.98	21.93	21.99
	Subtest 4	22.50	21.95	21.93	21.97
HSUPA	Subtest 1	21.00	20.20	20.39	20.03
	Subtest 2	21.00	20.22	19.54	19.33
	Subtest 3	21.00	19.90	20.00	19.86
	Subtest 4	21.00	20.03	20.00	20.08
	Subtest 5	21.00	20.46	20.29	20.28
DC-HSDPA	Subtest 1	24.50	22.88	22.89	22.95
	Subtest 2	23.00	22.65	22.64	22.73
	Subtest 3	22.50	21.91	21.91	21.94
	Subtest 4	22.50	21.90	21.88	21.92

Table 29: Conducted power measurement results of UMTS Band II(Hotspot disable)

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 D01v03r01, 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.

UMTS Band II		Tune-up	Conducted Power (dBm)		
			9262CH	9400CH	9538CH
WCDMA	12.2kbps RMC	22.50	21.87	21.88	21.91
	12.2kbps AMR	22.50	21.86	21.88	21.89
HSDPA	Subtest 1	22.50	21.32	21.38	21.38
	Subtest 2	22.00	21.11	21.16	21.16
	Subtest 3	21.50	20.34	20.37	20.36
	Subtest 4	21.50	20.32	20.37	20.35
HSUPA	Subtest 1	19.50	18.69	19.07	18.88
	Subtest 2	19.50	18.01	17.86	17.90
	Subtest 3	19.50	18.03	17.94	17.84
	Subtest 4	19.50	18.64	18.39	18.53
	Subtest 5	19.50	18.96	18.76	18.76
DC-HSDPA	Subtest 1	22.50	21.30	21.35	21.33
	Subtest 2	22.00	21.09	21.14	21.14
	Subtest 3	21.50	20.32	20.34	20.31
	Subtest 4	21.50	20.30	20.36	20.32

Table 30: Conducted power measurement results of UMTS Band II(Hotspot activated)

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 D01v03r01, 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	24.00	23.59	23.44	23.45
	12.2kbps AMR	24.00	23.54	23.43	23.41
HSDPA	Subtest 1	23.50	23.05	22.90	22.94
	Subtest 2	23.00	22.81	22.69	22.71
	Subtest 3	22.50	22.07	21.94	21.98
	Subtest 4	22.50	22.06	21.92	21.96
HSUPA	Subtest 1	21.50	20.47	20.81	20.11
	Subtest 2	21.00	19.63	19.54	19.50
	Subtest 3	21.00	20.20	19.69	19.96
	Subtest 4	21.50	20.33	19.74	19.89
	Subtest 5	21.50	20.59	20.14	20.21
DC-HSDPA	Subtest 1	23.50	23.00	22.89	22.92
	Subtest 2	23.00	22.83	22.66	22.73
	Subtest 3	22.50	22.11	21.92	21.97
	Subtest 4	22.50	22.04	21.90	21.94

Table 31: Conducted power measurement results of UMTS Band IV

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 D01v03r01, 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	24.50	23.34	23.35	23.23
	12.2kbps AMR	24.50	23.32	23.31	23.25
HSDPA	Subtest 1	24.00	22.84	22.81	22.70
	Subtest 2	23.50	22.62	22.58	22.52
	Subtest 3	23.00	21.85	21.84	21.74
	Subtest 4	23.00	21.83	21.81	21.73
HSUPA	Subtest 1	22.00	20.16	20.33	20.40
	Subtest 2	21.00	19.38	19.24	19.81
	Subtest 3	21.00	19.97	19.66	19.66
	Subtest 4	21.00	19.99	19.79	19.72
	Subtest 5	21.50	20.22	19.99	20.14
DC-HSDPA	Subtest 1	24.00	22.80	22.75	22.67
	Subtest 2	23.50	22.61	22.51	22.53
	Subtest 3	23.00	21.83	21.80	21.75
	Subtest 4	23.00	21.76	21.76	21.78

Table 32: Conducted power measurement results of UMTS Band V

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	23.50	22.75	23.11	22.68
		1	3	23.50	22.77	23.12	22.40
		1	5	23.50	22.69	23.03	22.06
		3	0	23.50	22.65	23.11	22.56
		3	2	23.50	22.73	23.03	22.39
		3	3	23.50	22.64	22.98	22.25
		6	0	23.00	21.70	22.21	21.51
	16QAM	1	0	23.00	21.73	22.44	22.11
		1	3	23.00	21.79	22.38	21.97
		1	5	23.00	21.71	22.36	21.52
		3	0	23.00	21.66	22.45	21.82
		3	2	23.00	21.68	22.24	21.51
		3	3	23.00	21.77	22.21	21.54
		6	0	22.00	20.61	21.31	20.53
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18615CH	18900CH	19185CH
3MHz	QPSK	1	0	23.50	22.52	23.03	23.23
		1	7	23.50	22.73	23.16	23.08
		1	14	23.50	22.49	22.87	22.17
		8	0	23.00	21.72	22.19	22.27
		8	4	23.00	21.78	22.22	22.06
		8	7	23.00	21.71	22.11	21.77
		15	0	23.00	21.76	22.17	22.03
	16QAM	1	0	23.00	21.44	22.39	22.29
		1	7	23.00	21.67	22.18	22.23
		1	14	23.00	21.44	21.91	21.38
		8	0	22.00	20.70	21.43	21.28
		8	4	22.00	20.76	21.32	21.09
		8	7	22.00	20.70	21.22	20.77
		15	0	22.00	20.70	21.20	20.97

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18625CH	18900CH	19175CH
5MHz	QPSK	1	0	23.50	22.58	23.04	23.01
		1	13	23.50	22.88	23.17	23.05
		1	24	23.50	22.31	22.74	21.94
		12	0	23.00	21.84	22.33	22.14
		12	6	23.00	21.93	22.29	22.27
		12	13	23.00	21.76	22.11	21.74
		25	0	23.00	21.83	22.17	21.92
	16QAM	1	0	23.00	22.02	22.70	22.50
		1	13	23.00	22.38	22.79	22.51
		1	24	23.00	21.83	22.34	21.45
		12	0	22.00	20.95	21.49	21.33
		12	6	22.00	21.06	21.40	21.31
		12	13	22.00	20.91	21.24	20.85
		25	0	22.00	20.90	21.25	20.96
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18650CH	18900CH	19150CH
10MHz	QPSK	1	0	23.50	22.49	23.33	22.84
		1	25	23.50	22.56	23.24	23.36
		1	49	23.50	22.39	22.86	22.43
		25	0	23.00	21.69	22.34	22.35
		25	13	23.00	21.52	22.28	22.41
		25	25	23.00	21.41	22.10	22.10
		50	0	23.00	21.62	22.14	21.97
	16QAM	1	0	23.00	21.94	22.61	22.17
		1	25	23.00	21.80	22.55	22.71
		1	49	23.00	21.70	22.00	21.79
		25	0	22.00	20.84	21.41	21.24
		25	13	22.00	20.65	21.28	21.30
		25	25	22.00	20.52	21.12	21.00
		50	0	22.00	20.68	21.16	21.05

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18675CH	18900CH	19125CH
15MHz	QPSK	1	0	23.50	22.52	22.52	22.35
		1	38	23.50	22.55	23.22	23.26
		1	74	23.50	22.26	22.49	22.43
		36	0	23.00	21.66	22.24	21.94
		36	18	23.00	21.54	22.20	22.27
		36	39	23.00	21.49	22.00	22.20
		75	0	23.00	21.58	22.15	21.91
	16QAM	1	0	23.00	22.00	21.71	21.89
		1	38	23.00	21.92	22.46	22.60
		1	74	23.00	21.71	21.67	21.84
		36	0	22.00	20.63	21.35	20.89
		36	18	22.00	20.51	21.26	21.30
		36	39	22.00	20.45	21.08	21.19
		75	0	22.00	20.49	21.26	20.96
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18700CH	18900CH	19100CH
20MHz	QPSK	1	0	23.50	21.98	22.19	21.84
		1	50	23.50	22.56	23.17	22.70
		1	99	23.50	22.28	22.15	22.15
		50	0	23.00	21.45	22.15	21.52
		50	25	23.00	21.61	22.14	21.83
		50	50	23.00	21.57	21.79	21.63
		100	0	23.00	21.52	22.03	21.56
	16QAM	1	0	23.00	21.87	22.06	21.65
		1	50	23.00	22.09	22.73	21.94
		1	99	23.00	22.23	22.03	21.95
		50	0	22.00	20.52	21.21	20.58
		50	25	22.00	20.50	21.21	20.84
		50	50	22.00	20.63	20.84	20.70
		100	0	22.00	20.43	21.00	20.59

Table 33: Conducted power measurement results of LTE Band II(Hotspot disable)

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18607CH	18900CH	19193CH
1.4MHz	QPSK	1	0	21.50	20.60	20.76	20.88
		1	3	21.50	20.63	20.80	20.73
		1	5	21.50	20.50	20.71	20.41
		3	0	21.50	20.52	20.84	20.84
		3	2	21.50	20.53	20.72	20.73
		3	3	21.50	20.65	20.68	20.59
		6	0	21.00	20.62	20.69	20.69
	16QAM	1	0	21.00	20.62	20.93	20.78
		1	3	21.00	20.63	20.98	20.71
		1	5	21.00	20.74	20.79	20.41
		3	0	21.00	20.62	20.84	20.89
		3	2	21.00	20.70	20.77	20.78
		3	3	21.00	20.62	20.73	20.65
		6	0	20.00	19.50	19.72	19.72
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18615CH	18900CH	19185CH
3MHz	QPSK	1	0	21.50	20.53	20.74	20.79
		1	7	21.50	20.81	20.88	21.00
		1	14	21.50	20.52	20.69	20.28
		8	0	21.00	20.63	20.84	20.93
		8	4	21.00	20.65	20.80	20.88
		8	7	21.00	20.65	20.77	20.69
		15	0	21.00	20.66	20.76	20.78
	16QAM	1	0	21.00	20.75	20.83	20.86
		1	7	21.00	20.76	20.89	20.91
		1	14	21.00	20.57	20.91	20.55
		8	0	20.00	19.61	19.74	19.80
		8	4	20.00	19.63	19.72	19.76
		8	7	20.00	19.63	19.69	19.63
		15	0	20.00	19.69	19.71	19.70

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18625CH	18900CH	19175CH
5MHz	QPSK	1	0	21.50	20.63	20.80	20.68
		1	13	21.50	20.85	20.96	21.06
		1	24	21.50	20.49	20.55	20.39
		12	0	21.00	20.81	20.88	20.97
		12	6	21.00	20.86	20.99	20.98
		12	13	21.00	20.64	20.78	20.78
		25	0	21.00	20.73	20.81	20.66
	16QAM	1	0	21.00	20.74	20.95	20.78
		1	13	21.00	20.87	20.83	20.89
		1	24	21.00	20.57	20.75	20.43
		12	0	20.00	19.80	19.92	19.90
		12	6	20.00	19.78	19.99	19.94
		12	13	20.00	19.62	19.80	19.76
		25	0	20.00	19.73	19.82	19.61
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18650CH	18900CH	19150CH
10MHz	QPSK	1	0	21.50	20.57	20.37	20.33
		1	25	21.50	20.83	20.99	20.76
		1	49	21.50	20.53	20.75	20.52
		25	0	21.00	20.80	20.77	20.57
		25	13	21.00	20.64	20.86	20.75
		25	25	21.00	20.56	20.84	20.60
		50	0	21.00	20.66	20.68	20.44
	16QAM	1	0	21.00	20.88	20.63	20.61
		1	25	21.00	20.84	20.83	20.75
		1	49	21.00	20.80	20.91	20.73
		25	0	20.00	19.65	19.71	19.56
		25	13	20.00	19.55	19.85	19.65
		25	25	20.00	19.47	19.83	19.51
		50	0	20.00	19.56	19.65	19.47

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18675CH	18900CH	19125CH
15MHz	QPSK	1	0	21.50	20.34	20.25	20.21
		1	38	21.50	20.62	20.92	20.54
		1	74	21.50	20.02	20.46	20.36
		36	0	21.00	20.81	20.67	20.62
		36	18	21.00	20.70	20.80	20.68
		36	39	21.00	20.55	20.76	20.64
		75	0	21.00	20.59	20.74	20.48
	16QAM	1	0	21.00	20.76	20.50	20.48
		1	38	21.00	20.84	20.95	20.80
		1	74	21.00	20.43	20.81	20.66
		36	0	20.00	19.71	19.62	19.57
		36	18	20.00	19.68	19.78	19.68
		36	39	20.00	19.53	19.82	19.57
		75	0	20.00	19.55	19.74	19.42
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					18700CH	18900CH	19100CH
20MHz	QPSK	1	0	21.50	20.19	19.87	20.23
		1	50	21.50	20.86	20.93	20.55
		1	99	21.50	19.59	20.18	20.29
		50	0	21.00	20.65	20.43	20.57
		50	25	21.00	20.73	20.74	20.62
		50	50	21.00	20.43	20.62	20.22
		100	0	21.00	20.52	20.61	20.37
	16QAM	1	0	21.00	20.71	20.29	20.62
		1	50	21.00	20.88	20.99	20.75
		1	99	21.00	20.22	20.63	20.73
		50	0	20.00	19.52	19.32	19.54
		50	25	20.00	19.61	19.64	19.66
		50	50	20.00	19.36	19.59	19.21
		100	0	20.00	19.45	19.51	19.39

Table 34: Conducted power measurement results of LTE Band II(Hotspot activated)

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	22.25	22.75	23.02
		1	3	24.00	22.36	22.24	23.03
		1	5	24.00	22.20	22.34	22.93
		3	0	24.00	22.27	22.10	22.85
		3	2	24.00	22.29	22.22	22.90
		3	3	24.00	22.24	22.35	22.87
		6	0	23.00	21.02	21.05	21.48
	16QAM	1	0	23.00	21.50	22.18	22.28
		1	3	23.00	21.55	21.54	22.35
		1	5	23.00	21.35	21.63	22.30
		3	0	23.00	21.50	21.90	22.19
		3	2	23.00	21.51	21.35	22.22
		3	3	23.00	21.42	21.39	22.20
		6	0	22.50	20.54	20.82	20.97
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					19965CH	20175CH	20385CH
3MHz	QPSK	1	0	24.00	22.21	22.66	22.66
		1	7	24.00	22.37	22.24	23.07
		1	14	24.00	22.23	22.56	22.87
		8	0	23.00	21.06	21.34	21.40
		8	4	23.00	21.10	21.07	21.51
		8	7	23.00	21.14	21.06	21.42
		15	0	23.00	21.06	21.11	21.48
	16QAM	1	0	23.00	21.51	21.91	21.65
		1	7	23.00	21.57	21.57	22.07
		1	14	23.00	21.53	21.88	21.85
		8	0	22.50	20.61	20.87	20.94
		8	4	22.50	20.51	20.57	21.04
		8	7	22.50	20.69	20.56	20.95
		15	0	22.50	20.76	20.56	20.90

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					19975CH	20175CH	20375CH
5MHz	QPSK	1	0	24.00	22.32	22.83	22.84
		1	13	24.00	22.49	22.42	22.85
		1	24	24.00	22.29	22.65	22.74
		12	0	23.00	21.12	21.18	21.17
		12	6	23.00	21.05	21.21	21.45
		12	13	23.00	21.20	21.10	21.45
		25	0	23.00	21.09	21.01	21.10
	16QAM	1	0	23.00	21.69	22.39	21.98
		1	13	23.00	21.70	21.87	22.08
		1	24	23.00	21.71	22.17	21.98
		12	0	22.50	20.56	20.67	20.68
		12	6	22.50	20.58	20.76	20.90
		12	13	22.50	20.64	20.61	20.86
		25	0	22.50	20.63	20.66	20.75
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20000CH	20175CH	20350CH
10MHz	QPSK	1	0	24.00	22.14	22.82	23.08
		1	25	24.00	22.82	22.43	22.91
		1	49	24.00	22.75	22.54	22.93
		25	0	23.00	21.11	21.22	21.09
		25	13	23.00	21.06	21.24	21.10
		25	25	23.00	21.14	21.08	21.16
		50	0	23.00	21.06	21.12	21.20
	16QAM	1	0	23.00	21.30	22.02	21.56
		1	25	23.00	22.20	21.57	22.03
		1	49	23.00	21.92	21.64	21.93
		25	0	22.50	20.63	20.71	20.53
		25	13	22.50	20.52	20.68	20.51
		25	25	22.50	20.66	20.51	20.67
		50	0	22.50	20.65	20.55	20.56

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20025CH	20175CH	20325CH
15MHz	QPSK	1	0	24.00	22.30	22.96	22.61
		1	38	24.00	22.92	22.53	22.79
		1	74	24.00	22.88	22.44	22.76
		36	0	23.00	21.09	21.03	21.05
		36	18	23.00	21.27	21.41	21.24
		36	39	23.00	21.40	21.10	21.10
		75	0	23.00	21.09	21.19	21.06
	16QAM	1	0	23.00	21.54	22.14	21.95
		1	38	23.00	22.14	21.50	21.96
		1	74	23.00	21.90	21.57	22.06
		36	0	22.50	20.59	20.61	20.58
		36	18	22.50	20.78	20.93	20.61
		36	39	22.50	20.91	20.59	20.55
		75	0	22.50	20.60	20.73	20.63
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20050CH	20175CH	20300CH
20MHz	QPSK	1	0	24.00	22.03	22.53	22.17
		1	50	24.00	22.54	22.09	22.18
		1	99	24.00	22.43	22.13	22.16
		50	0	23.00	21.12	21.28	21.10
		50	25	23.00	21.30	21.26	21.23
		50	50	23.00	21.27	21.03	21.01
		100	0	23.00	21.04	21.03	21.01
	16QAM	1	0	23.00	21.45	22.07	21.80
		1	50	23.00	21.85	21.22	21.46
		1	99	23.00	21.96	21.53	21.84
		50	0	22.50	20.52	20.81	20.55
		50	25	22.50	20.82	20.66	20.55
		50	50	22.50	20.79	20.54	20.61
		100	0	22.50	20.55	20.62	20.54

Table 35: Conducted power measurement results of LTE Band IV

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	24.00	22.57	22.34	22.35
		1	3	24.00	22.88	22.39	22.33
		1	5	24.00	22.79	22.35	22.20
		3	0	24.00	22.64	22.29	22.30
		3	2	24.00	22.77	22.39	22.30
		3	3	24.00	22.81	22.37	22.22
		6	0	23.00	21.68	21.27	21.18
	16QAM	1	0	23.00	21.61	21.38	21.38
		1	3	23.00	21.87	21.52	21.65
		1	5	23.00	21.79	21.48	21.28
		3	0	23.00	21.70	21.28	21.29
		3	2	23.00	21.83	21.31	21.36
		3	3	23.00	21.77	21.36	21.30
		6	0	22.00	20.73	20.25	20.25
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20415CH	20525CH	20635CH
3MHz	QPSK	1	0	24.00	22.35	22.22	22.27
		1	7	24.00	22.93	22.45	22.41
		1	14	24.00	22.39	22.23	22.05
		8	0	23.00	21.78	21.27	21.33
		8	4	23.00	21.90	21.33	21.38
		8	7	23.00	21.66	21.29	21.21
		15	0	23.00	21.77	21.29	21.43
	16QAM	1	0	23.00	21.49	21.26	21.42
		1	7	23.00	22.08	21.47	21.69
		1	14	23.00	21.62	21.25	21.24
		8	0	22.00	20.73	20.24	20.39
		8	4	22.00	20.81	20.30	20.38
		8	7	22.00	20.64	20.26	20.21
		15	0	22.00	20.63	20.20	20.35

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20425CH	20525CH	20625CH
5MHz	QPSK	1	0	24.00	22.45	22.28	22.75
		1	13	24.00	22.80	22.50	22.52
		1	24	24.00	22.29	22.24	22.01
		12	0	23.00	21.68	21.27	21.71
		12	6	23.00	21.87	21.35	21.65
		12	13	23.00	21.61	21.27	21.18
		25	0	23.00	21.65	21.25	21.52
	16QAM	1	0	23.00	21.54	21.30	21.79
		1	13	23.00	21.80	21.53	21.60
		1	24	23.00	21.39	21.32	21.10
		12	0	22.00	20.74	20.24	20.63
		12	6	22.00	20.80	20.31	20.60
		12	13	22.00	20.53	20.27	20.21
		25	0	22.00	20.53	20.17	20.40
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20450CH	20525CH	20600CH
10MHz	QPSK	1	0	24.00	22.90	22.45	22.77
		1	25	24.00	23.22	22.87	23.35
		1	49	24.00	22.40	22.74	22.30
		25	0	23.00	22.11	21.73	22.03
		25	13	23.00	22.30	21.80	22.20
		25	25	23.00	21.69	21.69	22.01
		50	0	23.00	21.91	21.65	22.15
	16QAM	1	0	23.00	22.04	21.57	21.83
		1	25	23.00	22.19	22.02	22.50
		1	49	23.00	21.58	21.82	21.44
		25	0	22.00	21.00	20.67	21.01
		25	13	22.00	21.06	20.74	21.13
		25	25	22.00	20.63	20.69	21.00
		50	0	22.00	20.85	20.56	21.09

Table 36: Conducted power measurement results of LTE Band V

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	23.00	21.02	21.06	21.01
		1	13	23.00	22.02	21.54	21.69
		1	24	23.00	21.59	21.08	21.03
		12	0	22.00	20.97	20.62	20.76
		12	6	22.00	21.07	20.64	20.79
		12	13	22.00	21.06	20.60	20.66
		25	0	22.00	20.57	20.59	20.50
	16QAM	1	0	22.00	20.71	20.67	20.62
		1	13	22.00	21.24	21.11	20.82
		1	24	22.00	20.74	20.52	20.35
		12	0	21.00	20.00	19.81	19.83
		12	6	21.00	20.15	19.81	19.84
		12	13	21.00	20.12	19.74	19.73
		25	0	21.00	19.64	19.58	19.55
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20800CH	21100CH	21400CH
10MHz	QPSK	1	0	23.00	21.41	21.04	21.39
		1	25	23.00	22.37	21.59	21.61
		1	49	23.00	22.00	21.28	21.31
		25	0	22.00	20.77	20.46	20.75
		25	13	22.00	21.40	20.60	20.55
		25	25	22.00	21.45	20.61	20.51
		50	0	22.00	21.02	20.49	20.63
	16QAM	1	0	22.00	20.63	20.17	20.75
		1	25	22.00	21.63	20.69	20.90
		1	49	22.00	21.19	20.56	20.54
		25	0	21.00	19.79	19.65	19.85
		25	13	21.00	20.41	19.72	19.65
		25	25	21.00	20.53	19.66	19.61
		50	0	21.00	20.07	19.60	19.72

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20825CH	21100CH	21375CH
15MHz	QPSK	1	0	23.00	22.53	22.06	22.71
		1	38	23.00	22.45	21.57	21.60
		1	74	23.00	22.96	22.55	22.26
		36	0	22.00	20.93	20.20	20.98
		36	18	22.00	21.27	20.58	20.75
		36	39	22.00	21.63	20.65	20.50
		75	0	22.00	21.18	20.45	20.82
	16QAM	1	0	22.00	21.67	21.11	21.85
		1	38	22.00	21.69	20.72	20.82
		1	74	22.00	22.00	21.81	21.54
		36	0	21.00	19.97	19.34	20.02
		36	18	21.00	20.30	19.74	19.79
		36	39	21.00	20.67	19.80	19.55
		75	0	21.00	20.21	19.53	19.86
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20850CH	21100CH	21350CH
20MHz	QPSK	1	0	23.00	21.54	21.07	22.12
		1	50	23.00	22.55	21.88	21.73
		1	99	23.00	21.62	21.54	21.60
		50	0	22.00	21.15	20.43	21.19
		50	25	22.00	21.57	20.62	20.94
		50	50	22.00	21.15	20.87	20.64
		100	0	22.00	21.08	20.56	21.00
	16QAM	1	0	22.00	20.94	20.65	21.60
		1	50	22.00	21.98	21.02	21.21
		1	99	22.00	21.01	21.34	20.92
		50	0	21.00	20.23	19.50	20.26
		50	25	21.00	20.64	19.71	19.98
		50	50	21.00	20.24	19.94	19.77
		100	0	21.00	20.24	19.67	20.08

Table 37: Conducted power measurement results of LTE Band VII

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

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23107CH	23095CH	23173CH
1.4MHz	QPSK	1	0	23.50	22.08	21.95	22.60
		1	3	23.50	22.26	22.03	22.28
		1	5	23.50	22.34	21.91	21.84
		3	0	23.50	22.08	21.99	22.56
		3	2	23.50	22.17	22.06	22.26
		3	3	23.50	22.28	21.97	22.05
		6	0	23.00	21.21	21.13	21.40
	16QAM	1	0	22.50	21.52	21.49	21.90
		1	3	22.50	21.69	21.37	21.57
		1	5	22.50	21.52	21.43	21.10
		3	0	22.50	21.31	21.14	21.71
		3	2	22.50	21.39	21.20	21.41
		3	3	22.50	21.39	21.12	21.17
		6	0	22.00	20.36	20.22	20.41
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23025CH	23095CH	23165CH
3MHz	QPSK	1	0	23.50	21.96	21.88	22.83
		1	7	23.50	22.56	22.13	22.77
		1	14	23.50	22.42	21.92	21.71
		8	0	23.00	21.30	21.18	21.85
		8	4	23.00	21.64	21.14	21.74
		8	7	23.00	21.47	21.06	21.35
		15	0	23.00	21.28	21.16	21.62
	16QAM	1	0	22.50	21.33	21.36	21.88
		1	7	22.50	21.90	21.59	21.91
		1	14	22.50	21.77	21.43	20.80
		8	0	22.00	20.52	20.27	20.99
		8	4	22.00	20.77	20.25	20.89
		8	7	22.00	20.57	20.16	20.50
		15	0	22.00	20.21	20.16	20.60

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23035CH	23095CH	23155CH
5MHz	QPSK	1	0	23.50	22.00	22.00	22.32
		1	13	23.50	22.75	22.13	22.94
		1	24	23.50	23.01	22.88	22.51
		12	0	23.00	21.41	21.13	21.92
		12	6	23.00	21.70	21.14	22.08
		12	13	23.00	21.40	21.06	21.50
		25	0	23.00	21.37	21.25	21.69
	16QAM	1	0	22.50	21.33	21.31	21.61
		1	13	22.50	22.07	21.45	22.13
		1	24	22.50	22.37	22.20	21.80
		12	0	22.00	20.43	20.17	20.98
		12	6	22.00	20.74	20.18	21.12
		12	13	22.00	20.48	20.18	20.51
		25	0	22.00	20.45	20.26	20.70
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23060CH	23095CH	23130CH
10MHz	QPSK	1	0	23.50	22.45	22.83	22.19
		1	25	23.50	22.88	22.61	22.98
		1	49	23.50	22.03	22.46	22.04
		25	0	23.00	21.92	21.67	21.59
		25	13	23.00	21.75	21.64	21.97
		25	25	23.00	21.43	21.48	21.82
		50	0	23.00	21.72	21.50	21.81
	16QAM	1	0	22.50	21.79	22.09	21.55
		1	25	22.50	22.30	21.92	22.29
		1	49	22.50	21.43	21.80	21.31
		25	0	22.00	20.93	20.70	20.70
		25	13	22.00	20.77	20.77	21.06
		25	25	22.00	20.55	20.60	20.91
		50	0	22.00	20.67	20.55	20.78

Table 38: Conducted power measurement results of LTE Band XII

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	23825CH
5MHz	QPSK	1	0	24.00	22.61	22.40	22.86
		1	13	24.00	22.67	22.95	23.45
		1	24	24.00	23.26	23.69	22.78
		12	0	23.00	21.68	21.66	22.11
		12	6	23.00	21.61	21.92	22.26
		12	13	23.00	21.49	21.81	21.92
		25	0	23.00	21.64	21.77	22.04
	16QAM	1	0	23.00	21.64	21.46	22.24
		1	13	23.00	21.89	22.12	22.74
		1	24	23.00	22.33	22.91	22.23
		12	0	22.00	20.69	20.83	21.18
		12	6	22.00	20.65	21.08	21.33
		12	13	22.00	20.64	20.87	21.02
		25	0	22.00	20.68	20.89	21.08
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23780CH	23790CH	23800CH
10MHz	QPSK	1	0	24.00	22.78	22.61	22.64
		1	25	24.00	23.26	23.35	23.50
		1	49	24.00	23.25	23.14	22.43
		25	0	23.00	21.96	21.99	22.06
		25	13	23.00	22.16	22.36	22.56
		25	25	23.00	22.35	22.50	22.50
		50	0	23.00	22.13	22.30	22.44
	16QAM	1	0	23.00	22.06	21.90	21.94
		1	25	23.00	22.46	22.68	22.75
		1	49	23.00	22.51	22.32	21.66
		25	0	22.00	21.05	21.06	21.17
		25	13	22.00	21.25	21.43	21.67
		25	25	22.00	21.49	21.44	21.51
		50	0	22.00	21.25	21.35	21.52

Table 39: Conducted power measurement results of LTE Band XVII

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	24.00	23.54	23.31	23.56
		1	3	24.00	23.40	23.44	23.67
		1	5	24.00	23.13	23.31	23.60
		3	0	24.00	23.40	23.19	23.61
		3	2	24.00	23.30	23.29	23.64
		3	3	24.00	23.16	23.28	23.61
		6	0	23.00	22.35	22.27	22.56
	16QAM	1	0	23.70	22.43	21.99	22.56
		1	3	23.70	22.38	22.26	22.70
		1	5	23.70	22.13	21.99	22.58
		3	0	23.70	22.35	22.14	22.45
		3	2	23.70	22.26	22.19	22.44
		3	3	23.70	22.14	22.24	22.41
		6	0	22.20	21.40	21.03	21.38
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26705CH	26865CH	27025CH
3MHz	QPSK	1	0	24.00	23.30	23.12	23.30
		1	7	24.00	23.14	23.35	23.71
		1	14	24.00	22.69	23.30	23.40
		8	0	23.00	22.31	22.36	22.46
		8	4	23.00	22.15	22.42	22.48
		8	7	23.00	21.98	22.31	22.42
		15	0	23.00	22.15	22.37	22.39
	16QAM	1	0	23.70	22.38	22.28	22.21
		1	7	23.70	22.22	22.54	22.57
		1	14	23.70	21.71	22.30	22.25
		8	0	22.20	21.27	21.31	21.29
		8	4	22.20	21.17	21.36	21.38
		8	7	22.20	20.98	21.31	21.34
		15	0	22.20	21.01	21.24	21.31

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26715CH	26865CH	27015CH
5MHz	QPSK	1	0	24.00	23.20	22.69	22.91
		1	13	24.00	22.94	23.04	23.36
		1	24	24.00	23.58	23.89	23.96
		12	0	23.00	22.13	22.11	22.37
		12	6	23.00	22.05	22.13	22.48
		12	13	23.00	22.07	22.13	22.23
		25	0	23.00	22.06	22.17	22.35
	16QAM	1	0	23.70	22.41	22.19	22.27
		1	13	23.70	22.25	22.54	22.78
		1	24	23.70	22.77	23.39	23.51
		12	0	22.20	21.07	21.20	21.23
		12	6	22.20	20.98	21.22	21.26
		12	13	22.20	20.98	21.24	21.14
		25	0	22.20	20.96	21.31	21.21
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26750CH	26865CH	26990CH
10MHz	QPSK	1	0	24.00	23.76	23.73	23.71
		1	25	24.00	23.82	23.79	23.75
		1	49	24.00	23.82	23.78	23.76
		25	0	23.00	22.68	22.64	22.63
		25	13	23.00	22.93	22.90	22.89
		25	25	23.00	22.79	22.76	22.75
		50	0	23.00	22.84	22.82	22.81
	16QAM	1	0	23.70	23.20	23.15	22.97
		1	25	23.70	23.06	23.00	23.04
		1	49	23.70	22.97	22.95	22.98
		25	0	22.20	21.65	21.67	21.65
		25	13	22.20	21.81	21.84	21.82
		25	25	22.20	21.65	21.72	21.71
		50	0	22.20	21.70	21.73	21.72

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26775CH	26865CH	26965CH
15MHz	QPSK	1	0	24.00	22.85	23.06	22.56
		1	38	24.00	23.34	23.16	23.52
		1	74	24.00	22.81	22.65	22.39
		36	0	23.00	22.11	22.31	22.07
		36	18	23.00	22.38	22.11	22.47
		36	39	23.00	22.10	21.84	22.40
		75	0	23.00	22.34	22.07	22.34
	16QAM	1	0	23.70	21.93	22.05	21.80
		1	38	23.70	22.54	22.25	22.76
		1	74	23.70	21.77	21.74	21.78
		36	0	22.20	21.01	21.19	20.88
		36	18	22.20	21.23	21.05	21.45
		36	39	22.20	20.91	20.73	21.38
		75	0	22.20	21.12	20.99	21.20

Table 40: Conducted power measurement results of LTE Band XXVI

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	24.00	23.34	22.68	22.16
		1	13	24.00	23.29	22.95	22.97
		1	24	24.00	23.05	22.73	23.86
		12	0	23.00	22.52	21.90	21.38
		12	6	23.00	22.46	21.88	21.96
		12	13	23.00	22.28	21.80	22.44
		25	0	23.00	22.10	21.86	21.53
	16QAM	1	0	23.00	22.55	22.13	21.37
		1	13	23.00	22.53	22.23	22.24
		1	24	23.00	22.72	22.52	22.77
		12	0	22.00	21.49	20.97	20.47
		12	6	22.00	21.44	20.98	20.99
		12	13	22.00	21.26	20.88	21.47
		25	0	22.00	21.00	20.90	20.52
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					37800CH	38000CH	38200CH
10MHz	QPSK	1	0	24.00	23.45	22.78	22.04
		1	25	24.00	23.34	22.77	22.29
		1	49	24.00	22.87	22.78	23.70
		25	0	23.00	22.09	21.66	21.20
		25	13	23.00	22.05	21.95	21.02
		25	25	23.00	22.11	21.45	21.48
		50	0	23.00	21.91	21.53	21.22
	16QAM	1	0	23.00	22.82	22.68	21.71
		1	25	23.00	22.63	22.29	21.60
		1	49	23.00	22.21	22.15	22.96
		25	0	22.00	20.96	20.69	20.26
		25	13	22.00	20.93	21.01	20.02
		25	25	22.00	21.06	20.48	20.49
		50	0	22.00	20.90	20.58	20.16

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					37825CH	38000CH	38175CH
15MHz	QPSK	1	0	24.00	22.91	22.99	23.29
		1	38	24.00	23.88	22.91	22.08
		1	74	24.00	22.75	22.83	23.33
		36	0	23.00	21.40	21.41	21.28
		36	18	23.00	21.58	21.54	21.03
		36	39	23.00	21.60	21.52	21.22
		75	0	23.00	21.53	21.52	21.14
	16QAM	1	0	23.00	22.73	22.58	22.84
		1	38	23.00	22.76	22.14	21.23
		1	74	23.00	22.16	21.99	22.40
		36	0	22.00	20.89	20.38	20.37
		36	18	22.00	21.06	20.57	20.04
		36	39	22.00	20.78	20.57	20.22
		75	0	22.00	20.82	20.54	20.19
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					37850CH	38000CH	38150CH
20MHz	QPSK	1	0	24.00	22.92	22.31	22.61
		1	50	24.00	22.82	22.79	22.17
		1	99	24.00	22.01	22.99	23.32
		50	0	23.00	22.18	21.68	21.68
		50	25	23.00	22.09	21.71	21.32
		50	50	23.00	21.78	21.66	21.29
		100	0	23.00	21.66	21.26	21.08
	16QAM	1	0	23.00	21.99	21.53	22.01
		1	50	23.00	22.52	22.29	21.60
		1	99	23.00	21.26	21.61	22.15
		50	0	22.00	21.16	20.67	20.73
		50	25	22.00	21.03	20.77	20.37
		50	50	22.00	20.77	20.75	20.26
		100	0	22.00	20.52	20.39	20.16

Table 41: Conducted power measurement results of LTE Band XXXVIII

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	24.00	22.88	22.93	23.19
		1	13	24.00	23.13	23.10	23.48
		1	24	24.00	22.84	22.64	22.82
		12	0	23.50	22.09	22.10	22.47
		12	6	23.50	22.16	22.11	22.51
		12	13	23.50	22.02	22.02	22.36
		25	0	23.50	22.04	22.07	22.41
	16QAM	1	0	23.50	22.24	22.41	22.48
		1	13	23.50	22.49	22.53	22.69
		1	24	23.50	21.98	22.15	22.16
		12	0	22.50	21.15	21.11	21.50
		12	6	22.50	21.08	21.13	21.52
		12	13	22.50	21.08	21.13	21.37
		25	0	22.50	21.02	21.02	21.40
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					40290CH	40740CH	41190CH
10MHz	QPSK	1	0	24.00	22.90	22.94	23.15
		1	25	24.00	23.37	23.14	23.39
		1	49	24.00	23.17	22.68	23.02
		25	0	23.50	22.22	22.19	22.32
		25	13	23.50	22.34	22.18	22.53
		25	25	23.50	22.35	22.17	22.31
		50	0	23.50	22.28	22.19	22.68
	16QAM	1	0	23.50	21.89	22.14	22.49
		1	25	23.50	22.47	22.28	22.89
		1	49	23.50	22.27	22.04	22.43
		25	0	22.50	21.09	21.14	21.35
		25	13	22.50	21.26	21.17	21.49
		25	25	22.50	21.27	21.12	21.26
		50	0	22.50	21.16	21.13	21.61

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					40315CH	40740CH	41165CH
15MHz	QPSK	1	0	24.00	22.73	22.71	22.98
		1	38	24.00	23.41	23.09	23.24
		1	74	24.00	23.36	23.07	23.19
		36	0	23.50	22.27	22.18	22.34
		36	18	23.50	22.55	22.17	22.44
		36	39	23.50	22.60	22.22	22.50
		75	0	23.50	22.46	22.20	22.84
	16QAM	1	0	23.50	21.66	22.21	22.26
		1	38	23.50	22.48	22.46	22.47
		1	74	23.50	22.44	22.44	22.34
		36	0	22.50	21.17	21.11	21.28
		36	18	22.50	21.45	21.11	21.39
		36	39	22.50	21.50	21.15	21.38
		75	0	22.50	21.33	21.13	21.75
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					40340CH	40740CH	41140CH
20MHz	QPSK	1	0	24.00	22.47	22.46	23.01
		1	50	24.00	23.75	23.16	23.36
		1	99	24.00	23.73	23.41	23.54
		50	0	23.50	22.53	22.35	22.82
		50	25	23.50	22.68	22.27	22.42
		50	50	23.50	22.83	22.39	22.54
		100	0	23.50	22.65	22.39	23.15
	16QAM	1	0	23.50	22.61	22.63	22.88
		1	50	23.50	23.22	22.77	22.63
		1	99	23.50	23.34	23.09	22.74
		50	0	22.50	21.45	21.27	21.80
		50	25	22.50	21.61	21.15	21.38
		50	50	22.50	21.77	21.25	21.42
		100	0	22.50	21.60	21.35	22.05

Table 42: Conducted power measurement results of LTE Band XLI

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 Conducted Power are as below(Main antenna):

DL LTE CA Class	PCC								SCC			Power		
	PCC Band	PCC Bandwidth (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 Bandwidth (MHz)	SCC DL Channel	Rel 8 LTE Tx Power(dBm)	DL LTE CA Tx Power(dBm)	
CA_7C	7	20	1	0	100	0	20850	2850	7	20	3048	21.54	21.51	
CA_38C	38	15	1	38	75	0	37825	37825	38	15	37975	23.88	23.86	
CA_41C	41	20	1	99	100	0	40340	40340	41	20	40538	23.75	23.70	
CA_1A-5A	5	10	1	25	50	0	20600	2600	1	10	300	23.35	23.39	
CA_1A-26A	26	5	1	24	25	0	26865	8865	1	10	300	23.89	23.77	
CA_3A-5A	5	10	1	25	50	0	20600	2600	3	10	1575	23.35	23.40	
CA_3A-7A	7	10	1	25	50	0	21100	3100	3	10	1575	21.59	21.55	
CA_4A-17A	4	10	1	0	50	0	20350	2350	17	10	5790	23.08	23.07	
CA_4A-28A	4	10	1	0	50	0	20350	2350	28	10	9410	23.08	23.05	
CA_4A-29A	4	10	1	0	50	0	20350	2350	29	10	9715	23.08	23.06	
CA_5A-7A	5	10	1	25	50	0	20600	2600	7	10	3100	23.35	23.28	
	7	10	1	25	50	0	21100	3100	5	10	2525	21.59	21.54	
CA_7A-20A	7	10	1	25	50	0	21100	3100	20	10	6300	21.59	21.60	
CA_7A-28A	7	10	1	25	50	0	21100	3100	28	10	9410	21.59	21.57	
CA_39A-41A	41	20	1	99	100	0	40340	40340	39	20	38450	23.75	23.59	

DL LTE CA Class	PCC								SCC 1			SCC 2			Power	
	PCC Band	PCC Bandwidth (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 Bandwidth (MHz)	SCC DL Channel	SCC Band	SCC Bandwidth (MHz)	SCC DL Channel	Rel 8 LTE Tx Power(dBm)	DL LTE CA Tx Power(dBm)
CA_3C-7A	7	10	1	25	50	0	21100	3100	3	10	1481	3	20	1625	21.59	21.56
CA_3A-7C	7	20	1	0	100	0	20850	2850	7	20	3048	3	20	1625	23.25	23.21
CA_1A-3A-5A	5	10	1	25	50	0	20600	2600	1	10	300	3	10	1575	23.35	23.38
CA_1A-3A-26A	26	5	1	0	25	0	26865	8865	1	10	300	3	10	1575	23.89	23.58
CA_3A-7A-20A	7	10	1	25	50	0	21100	3100	20	10	6300	3	10	1575	21.59	21.53
CA_3A-7A-28A	7	10	1	25	50	0	21100	3100	28	10	9410	3	10	1575	21.59	21.54

DL LTE CA Class	PCC								SCC 1			SCC 2			SCC 3			Power	
	PCC Band	PCC Bandwidth (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 Bandwidth (MHz)	SCC DL Channel	SCC Band	SCC Bandwidth (MHz)	SCC DL Channel	SCC Band	SCC Bandwidth (MHz)	SCC DL Channel	Rel 8 LTE Tx Power(dBm)	DL LTE CA Tx Power(dBm)
CA_3A-7C-28A	7	20	1	0	100	0	20850	2850	7	20	3048	28	10	9410	3	10	1575	21.54	21.52

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

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

DL LTE CA Class	PCC								SCC			Power	
	PCC Band	PCC Bandwidth (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 Bandwidth (MHz)	SCC DL Channel	Rel 8 LTE Tx Power(dBm)	DL LTE CA Tx Power(dBm)
CA_7C	7	20	1	99	100	0	21350	3350	7	20	3152	13.12	13.08
CA_38C	38	20	1	50	100	0	38150	38150	38	20	37952	17.58	17.60
CA_41C	41	20	1	99	100	0	40340	40340	41	20	40538	17.43	17.50
CA_1A-5A	5	10	1	25	50	0	20600	2600	1	10	300	21.95	21.96
CA_1A-26A	26	5	1	24	25	0	26865	8865	1	5	300	22.01	22.01
CA_3A-5A	5	10	1	25	50	0	20600	2600	3	10	1575	21.95	21.97
CA_3A-7A	7	10	1	25	50	0	21100	3100	3	10	1575	13.85	13.80
CA_4A-17A	4	10	1	25	50	0	20350	2350	17	10	5790	19.93	19.88
CA_4A-28A	4	10	1	25	50	0	20350	2350	28	10	9410	19.93	19.87
CA_4A-29A	4	10	1	25	50	0	20350	2350	29	10	9715	19.93	19.88
CA_5A-7A	5	10	1	25	50	0	20600	2600	7	10	3100	21.95	22.01
	7	10	1	25	50	0	21100	3100	5	10	2525	13.85	13.83
CA_7A-20A	7	10	1	25	50	0	21100	3100	20	10	6300	13.85	13.79
CA_7A-28A	7	10	1	25	50	0	21100	3100	28	10	9410	13.85	13.82
CA_39A-41A	41	20	1	50	100	0	40340	40340	39	20	38450	17.43	17.36

DL LTE CA Class	PCC								SCC 1			SCC 2			Power	
	PCC Band	PCC Bandwidth (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 Bandwidth (MHz)	SCC DL Channel	SCC Band	SCC Bandwidth (MHz)	SCC DL Channel	Rel 8 LTE Tx Power(dBm)	DL LTE CA Tx Power(dBm)
CA_3C-7A	7	10	1	25	50	0	21100	3100	3	10	1481	3	20	1625	13.85	13.81
CA_3A-7C	7	20	1	99	100	0	21350	3350	7	20	3152	3	20	1575	13.12	13.11
CA_1A-3A-5A	5	10	1	25	50	0	20600	2600	1	10	300	3	10	1575	21.95	21.95
CA_1A-3A-26A	26	5	1	24	25	0	26865	8865	1	10	300	3	10	1900	22.01	22.00
CA_3A-7A-20A	7	10	1	25	50	0	21100	3100	20	10	6300	3	10	1575	13.85	13.80
CA_3A-7A-28A	7	10	1	25	50	0	21100	3100	28	10	6410	3	10	1575	13.85	13.83

DL LTE CA Class	PCC								SCC 1			SCC 2			SCC 3			Power	
	PCC Band	PCC Bandwidth (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 Bandwidth (MHz)	SCC DL Channel	SCC Band	SCC Bandwidth (MHz)	SCC DL Channel	SCC Band	SCC Bandwidth (MHz)	SCC DL Channel	Rel 8 LTE Tx Power(dBm)	DL LTE CA Tx Power(dBm)
CA_3A-7C-28A	7	20	1	99	100	0	21350	3350	7	20	3152	28	10	9410	3	10	1575	13.12	13.09

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

Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
802.11b	1	2412	1	17.00	15.89	Yes
	6	2437		17.00	16.75	Yes
	11	2462		17.00	16.69	Yes
802.11g	1	2412	6	16.50	Not Required	No
	6	2437		16.50	Not Required	No
	11	2462		16.50	Not Required	No
802.11n 20M	1	2412	6.5	16.00	Not Required	No
	6	2437		16.00	Not Required	No
	11	2462		16.00	Not Required	No
802.11n 40M	3	2422	13.5	13.00	Not Required	No
	6	2437		13.00	Not Required	No
	9	2452		13.00	Not Required	No

Table 43: 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	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
802.11b	1	2412	1	14.50	13.13	No
	6	2437		14.50	14.20	Yes
	11	2462		14.50	14.00	No
802.11g	1	2412	6	14.50	12.63	No
	6	2437		14.50	13.97	No
	11	2462		14.50	13.93	No
802.11n 20M	1	2412	6.5	14.50	12.87	No
	6	2437		14.50	14.12	No
	11	2462		14.50	14.03	No
802.11n 40M	3	2422	13.5	13.00	Not Required	No
	6	2437		13.00	Not Required	No
	9	2452		13.00	Not Required	No

Table 44: Conducted power measurement results of WiFi 2.4G(2G&3G&4G antenna + WiFi simultaneous transmission)

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

7.1.31 Conducted power measurements of WiFi 5G

Band (GHz)	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
5.2G	802.11a	CH 36	5180	6M	13.00	Not Required	No
		CH 40	5200		13.00	Not Required	No
		CH 44	5220		13.00	Not Required	No
		CH 48	5240		13.00	Not Required	No
	802.11n 20M	CH 36	5180	6.5M	13.80	12.19	No
		CH 40	5200		13.80	12.01	No
		CH 44	5220		13.80	12.07	No
		CH 48	5240		13.80	12.03	No
	802.11n 40M	CH 38	5190	13.5M	13.80	12.54	No
		CH 46	5230		13.80	12.50	No
	802.11ac 20M	CH 36	5180	6.5M	13.50	Not Required	No
		CH 40	5200		13.50	Not Required	No
		CH 44	5220		13.50	Not Required	No
		CH 48	5240		13.50	Not Required	No
	802.11ac 40M	CH 38	5190	13.5M	13.00	Not Required	No
		CH 46	5230		13.00	Not Required	No
	802.11ac 80M	CH 42	5210	29.3M	12.00	Not Required	No
Band (GHz)	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
5.3G	802.11a	CH 52	5260	6M	13.00	Not Required	No
		CH 56	5280		13.00	Not Required	No
		CH 60	5300		13.00	Not Required	No
		CH 64	5320		13.00	Not Required	No
	802.11n 20M	CH 52	5260	6.5M	13.80	12.44	No
		CH 56	5280		13.80	12.35	No
		CH 60	5300		13.80	12.73	No
		CH 64	5320		13.80	12.66	No
	802.11n 40M	CH 54	5270	13.5M	13.80	12.91	Yes
		CH 62	5310		13.80	12.86	No
	802.11ac 20M	CH 52	5260	6.5M	13.50	Not Required	No
		CH 56	5280		13.50	Not Required	No
		CH 60	5300		13.50	Not Required	No
		CH 64	5320		13.50	Not Required	No
	802.11ac 40M	CH 54	5270	13.5M	13.00	Not Required	No
		CH 62	5310		13.00	Not Required	No
	802.11ac 80M	CH 58	5290	29.3M	12.00	Not Required	No

Band (GHz)	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
5.5G	802.11a	CH 100	5500	6M	12.50	Not Required	No
		CH 104	5520		12.50	Not Required	No
		CH 108	5540		12.50	Not Required	No
		CH 112	5560		12.50	Not Required	No
		CH 116	5580		12.50	Not Required	No
		CH 120	5600		12.50	Not Required	No
		CH 124	5620		12.50	Not Required	No
		CH 128	5640		12.50	Not Required	No
		CH 132	5660		12.50	Not Required	No
		CH 136	5680		12.50	Not Required	No
		CH 140	5700		12.50	Not Required	No
		CH 144	5720		12.50	Not Required	No
	802.11n 20M	CH 100	5500	6.5M	13.80	12.34	No
		CH 104	5520		13.80	12.41	No
		CH 108	5540		13.80	12.72	Yes
		CH 112	5560		13.80	12.42	No
		CH 116	5580		13.80	12.36	No
		CH 120	5600		13.80	12.75	Yes
		CH 124	5620		13.80	12.56	No
		CH 128	5640		13.80	12.45	No
		CH 132	5660		13.80	12.34	No
		CH 136	5680		13.80	12.32	No
		CH 140	5700		13.80	12.45	No
		CH 144	5720		13.80	12.61	No
	802.11n 40M	CH 102	5510	13.5M	13.80	12.87	Yes
		CH 110	5550		13.80	12.91	Yes
		CH 118	5590		13.80	12.94	Yes
		CH 126	5630		13.80	12.85	Yes
		CH 134	5670		13.80	12.84	Yes
		CH 142	5710		13.80	12.81	Yes
	802.11ac 20M	CH 100	5500	6.5M	13.50	11.99	No
		CH 104	5520		13.50	12.09	No
		CH 108	5540		13.50	11.97	No
		CH 112	5560		13.50	11.97	No
		CH 116	5580		13.50	12.01	No
		CH 120	5600		13.50	12.28	Yes
		CH 124	5620		13.50	12.02	No
		CH 128	5640		13.50	12.05	No
		CH 132	5660		13.50	12.07	No
		CH 136	5680		13.50	11.93	No
		CH 140	5700		13.50	12.01	No
		CH 144	5720		13.50	12.03	No

Band (GHz)	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
5.5G	802.11ac 40M	CH 102	5510	13.5M	13.00	Not Required	No
		CH 110	5550		13.00	Not Required	No
		CH 118	5590		13.00	Not Required	No
		CH 126	5630		13.00	Not Required	No
		CH 134	5670		13.00	Not Required	No
		CH 142	5710		13.00	Not Required	No
	802.11ac 80M	CH 106	5530	29.3M	12.00	Not Required	No
		CH 122	5610		12.00	Not Required	No
		CH 138	5690		12.00	Not Required	No
Band (GHz)	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
5.8G	802.11a	CH 149	5745	6M	13.00	Not Required	No
		CH 153	5765		13.00	Not Required	No
		CH 157	5785		13.00	Not Required	No
		CH 161	5805		13.00	Not Required	No
		CH 165	5825		13.00	Not Required	No
	802.11n 20M	CH 149	5745	6.5M	13.80	12.83	No
		CH 153	5765		13.80	13.01	No
		CH 157	5785		13.80	12.61	No
		CH 161	5805		13.80	12.48	No
		CH 165	5825		13.80	12.63	No
	802.11n 40M	CH 151	5755	13.5M	13.80	13.75	Yes
		CH 159	5795		13.80	13.34	No
	802.11ac 20M	CH 149	5745	6.5M	13.50	Not Required	No
		CH 153	5765		13.50	Not Required	No
		CH 157	5785		13.50	Not Required	No
		CH 161	5805		13.50	Not Required	No
		CH 165	5825		13.50	Not Required	No
	802.11ac 40M	CH 151	5755	13.5M	13.00	Not Required	No
		CH 159	5795		13.00	Not Required	No
	802.11ac 80M	CH 155	5775	29.3M	12.00	Not Required	No

Table 45: Conducted power measurement results of WiFi 5G(Full power level).

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

Band (GHz)	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
5.2G	802.11a	CH 36	5180	6M	11.50	9.77	No
		CH 40	5200		11.50	9.99	No
		CH 44	5220		11.50	9.77	No
		CH 48	5240		11.50	9.91	No
	802.11n 20M	CH 36	5180	6.5M	11.50	9.79	No
		CH 40	5200		11.50	9.98	No
		CH 44	5220		11.50	10.15	No
		CH 48	5240		11.50	10.10	No
	802.11n 40M	CH 38	5190	13.5M	11.50	10.07	No
		CH 46	5230		11.50	10.26	No
	802.11ac 20M	CH 36	5180	6.5M	11.50	10.49	No
		CH 40	5200		11.50	10.59	No
		CH 44	5220		11.50	10.58	No
		CH 48	5240		11.50	10.74	No
	802.11ac 40M	CH 38	5190	13.5M	11.50	10.53	No
		CH 46	5230		11.50	10.43	No
	802.11ac 80M	CH 42	5210	29.3M	11.50	10.70	No
Band (GHz)	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
5.3G	802.11a	CH 52	5260	6M	11.50	10.32	No
		CH 56	5280		11.50	10.06	No
		CH 60	5300		11.50	10.17	No
		CH 64	5320		11.50	10.30	No
	802.11n 20M	CH 52	5260	6.5M	11.50	10.65	No
		CH 56	5280		11.50	10.73	No
		CH 60	5300		11.50	10.38	No
		CH 64	5320		11.50	10.61	No
	802.11n 40M	CH 54	5270	13.5M	11.50	10.43	No
		CH 62	5310		11.50	10.41	No
	802.11ac 20M	CH 52	5260	6.5M	11.50	11.14	No
		CH 56	5280		11.50	11.12	No
		CH 60	5300		11.50	11.18	No
		CH 64	5320		11.50	11.21	No
	802.11ac 40M	CH 54	5270	13.5M	11.50	11.06	No
		CH 62	5310		11.50	11.13	No
	802.11ac 80M	CH 58	5290	29.3M	11.50	10.89	Yes

Band (GHz)	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
5.5G	802.11a	CH 100	5500	6M	11.50	10.14	No
		CH 104	5520		11.50	10.18	No
		CH 108	5540		11.50	10.17	No
		CH 112	5560		11.50	10.15	No
		CH 116	5580		11.50	10.07	No
		CH 120	5600		11.50	10.08	No
		CH 124	5620		11.50	9.87	No
		CH 128	5640		11.50	9.94	No
		CH 132	5660		11.50	9.69	No
		CH 136	5680		11.50	9.74	No
		CH 140	5700		11.50	10.04	No
		CH 144	5720		11.50	10.27	No
	802.11n 20M	CH 100	5500	6.5M	11.50	10.48	No
		CH 104	5520		11.50	10.71	No
		CH 108	5540		11.50	10.42	No
		CH 112	5560		11.50	10.41	No
		CH 116	5580		11.50	10.30	No
		CH 120	5600		11.50	10.24	No
		CH 124	5620		11.50	10.44	No
		CH 128	5640		11.50	10.04	No
		CH 132	5660		11.50	9.97	No
		CH 136	5680		11.50	10.13	No
		CH 140	5700		11.50	10.31	No
		CH 144	5720		11.50	10.44	No
	802.11n 40M	CH 102	5510	13.5M	11.50	10.61	No
		CH 110	5550		11.50	10.56	No
		CH 118	5590		11.50	10.55	No
		CH 126	5630		11.50	10.47	No
		CH 134	5670		11.50	10.38	No
		CH 142	5710		11.50	10.53	No
	802.11ac 20M	CH 100	5500	6.5M	11.50	10.92	No
		CH 104	5520		11.50	11.02	No
		CH 108	5540		11.50	10.96	No
		CH 112	5560		11.50	10.75	No
		CH 116	5580		11.50	10.79	No
		CH 120	5600		11.50	10.94	No
		CH 124	5620		11.50	10.93	No
		CH 128	5640		11.50	10.77	No
		CH 132	5660		11.50	10.59	No
		CH 136	5680		11.50	10.73	No
		CH 140	5700		11.50	10.85	No
		CH 144	5720		11.50	11.01	No

Band (GHz)	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
5.5G	802.11ac 40M	CH 102	5510	13.5M	11.50	10.83	No
		CH 110	5550		11.50	10.78	No
		CH 118	5590		11.50	11.10	No
		CH 126	5630		11.50	11.06	No
		CH 134	5670		11.50	10.78	No
		CH 142	5710		11.50	10.93	No
	802.11ac 80M	CH 106	5530	29.3M	11.50	11.06	Yes
		CH 122	5610		11.50	10.83	No
		CH 138	5690		11.50	10.85	No
Band (GHz)	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Tune-up	Average Power (dBm)	SAR Test (Yes/No)
5.8G	802.11a	CH 149	5745	6M	11.50	10.73	No
		CH 153	5765		11.50	10.55	No
		CH 157	5785		11.50	10.41	No
		CH 161	5805		11.50	10.06	No
		CH 165	5825		11.50	9.83	No
	802.11n 20M	CH 149	5745	6.5M	11.50	10.92	No
		CH 153	5765		11.50	10.76	No
		CH 157	5785		11.50	10.53	No
		CH 161	5805		11.50	10.48	No
		CH 165	5825		11.50	10.35	No
	802.11n 40M	CH 151	5755	13.5M	11.50	10.96	No
		CH 159	5795		11.50	10.56	No
	802.11ac 20M	CH 149	5745	6.5M	11.50	11.36	No
		CH 153	5765		11.50	11.10	No
		CH 157	5785		11.50	10.89	No
		CH 161	5805		11.50	10.87	No
		CH 165	5825		11.50	10.91	No
	802.11ac 40M	CH 151	5755	13.5M	11.50	11.48	No
		CH 159	5795		11.50	11.16	No
	802.11ac 80M	CH 155	5775	29.3M	11.50	11.22	Yes

Table 46: Conducted power measurement results of WiFi 5G(2G&3G&4G antenna + WiFi simultaneous transmission)

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

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	11.0	8.55	9.46	7.73
2DH5	11.0	4.27	5.83	4.78
3DH5	11.0	3.85	5.7	4.71

BT 2450	Tune-up	Average Conducted Power (dBm)		
		0CH	19CH	39CH
BLE	11.0	4.03	5.11	2.95

Table 47: 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 detailed SAR plots).

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 648474 D04, 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 D04, 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. 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 KDB248227 D01:

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.

3) For WiFi 2.4G, SAR is measured for 2.4 GHz 802.11b DSSS using the initial test position procedure. SAR is not required for the 2.4 GHz 802.11g/n OFDM conditions when KDB Publication 447498 SAR test exclusion applies to the OFDM configuration or 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.

4) WiFi 5G hotspot is only supported for U-NII-1 and U-NII-3, therefore U-NII-2A and U-NII-2C SAR were not evaluated for hotspot condition.

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Left touch	190/836.6	GSM	0.752	0.400	-0.04	30.98	31.50	0.848	/
Left touch	128/824.2	GSM	0.620	0.332	-0.01	30.91	31.50	0.710	/
Left touch	251/848.8	GSM	0.761	0.410	-0.01	31.02	31.50	0.850	/
Left tilt	190/836.6	GSM	0.734	0.464	-0.19	30.98	31.50	0.827	/
Left tilt	128/824.2	GSM	0.496	0.253	0.03	30.91	31.50	0.568	/
Left tilt	251/848.8	GSM	0.713	0.367	-0.12	31.02	31.50	0.796	/
Right touch	190/836.6	GSM	1.220	0.632	-0.19	30.98	31.50	1.375	/
Right touch-Repeated	190/836.6	GSM	1.110	0.583	-0.03	30.98	31.50	1.251	/
Right touch	128/824.2	GSM	0.992	0.516	0.03	30.91	31.50	1.136	/
Right touch	251/848.8	GSM	1.180	0.625	-0.07	31.02	31.50	1.318	/
Right tilt	190/836.6	GSM	1.020	0.512	0.11	30.98	31.50	1.150	/
Right tilt	128/824.2	GSM	0.811	0.404	-0.01	30.91	31.50	0.929	/
Right tilt	251/848.8	GSM	0.827	0.413	-0.02	31.02	31.50	0.924	/
Tested at the worst position with battery 2#									
Right touch	190/836.6	GSM	1.100	0.579	-0.08	30.98	31.50	1.240	/
Tested at the worst position with battery 3#									
Right touch	190/836.6	GSM	1.110	0.585	-0.01	30.98	31.50	1.251	/
Test data of MHA-L29 (new)									
Right touch	190/836.6	GSM	1.010	0.547	-0.01	30.98	31.50	1.138	Yes

Table 48: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	190/836.6	GSM	0.127	0.076	0.04	30.98	31.50	0.143	/
Back Side	190/836.6	GSM	0.164	0.097	-0.01	30.98	31.50	0.185	/
Tested at the worst position with battery 2#									
Back Side	190/836.6	GSM	0.149	0.093	-0.09	30.98	31.50	0.168	/
Tested at the worst position with battery 3#									
Back Side	190/836.6	GSM	0.154	0.096	0.06	30.98	31.50	0.174	/
Test data of MHA-L29 (new)									
Back Side	190/836.6	GSM	0.188	0.112	-0.08	30.98	31.50	0.212	Yes

Table 49: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	190/836.6	GPRS 3TS	0.433	0.248	0.08	28.45	29.50	0.551	/
Back Side	190/836.6	GPRS 3TS	0.518	0.291	0.00	28.45	29.50	0.660	/
Left Side	190/836.6	GPRS 3TS	0.235	0.159	-0.13	28.45	29.50	0.299	/
Top Side	190/836.6	GPRS 3TS	0.493	0.239	-0.03	28.45	29.50	0.628	/
Tested at the worst position with battery 2#									
Back Side	190/836.6	GPRS 3TS	0.470	0.306	-0.06	28.45	29.50	0.599	/
Tested at the worst position with battery 3#									
Back Side	190/836.6	GPRS 3TS	0.482	0.273	-0.06	28.45	29.50	0.614	/
Test data of MHA-L29 (new)									
Back Side	190/836.6	GPRS 3TS	0.703	0.395	-0.07	28.45	29.50	0.895	/
Back Side	128/824.2	GPRS 3TS	0.696	0.391	-0.06	28.37	29.50	0.903	/
Back Side	251/848.8	GPRS 3TS	0.710	0.399	-0.12	28.52	29.50	0.890	Yes

Table 50: Hotspot SAR test results of GSM850

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Left touch	661/1880	GSM	0.354	0.221	0.02	28.14	28.50	0.385	/
Left tilt	661/1880	GSM	0.336	0.202	-0.02	28.14	28.50	0.365	/
Right touch	661/1880	GSM	1.110	0.626	0.04	28.14	28.50	1.206	/
Right touch	512/1850.2	GSM	1.190	0.675	-0.08	28.43	28.50	1.209	/
Right touch-Repeated	512/1850.2	GSM	1.070	0.621	-0.03	28.43	28.50	1.087	/
Right touch	810/1909.8	GSM	1.040	0.579	0.01	28.09	28.50	1.143	/
Right tilt	661/1880	GSM	0.737	0.397	-0.05	28.14	28.50	0.801	/
Right tilt	512/1850.2	GSM	0.793	0.424	0.01	28.43	28.50	0.806	/
Right tilt	810/1909.8	GSM	0.658	0.365	0.05	28.09	28.50	0.723	/
Tested at the worst position with battery 2#									
Right touch	512/1850.2	GSM	0.944	0.536	-0.14	28.43	28.50	0.959	/
Tested at the worst position with battery 3#									
Right touch	512/1850.2	GSM	0.838	0.486	-0.08	28.43	28.50	0.852	/
Test data of MHA-L29 (new)									
Right touch	512/1850.2	GSM	0.909	0.504	0.09	28.43	28.50	0.924	Yes

Table 51: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	661/1880	GSM	0.160	0.104	0.17	28.14	28.50	0.174	/
Back Side	661/1880	GSM	0.132	0.085	0.18	28.14	28.50	0.143	/
Tested at the worst position with battery 2#									
Front Side	661/1880	GSM	0.141	0.091	0.06	28.14	28.50	0.153	/
Tested at the worst position with battery 3#									
Front Side	661/1880	GSM	0.103	0.063	0.19	28.14	28.50	0.112	/
Test data of MHA-L29 (new)									
Front Side	661/1880	GSM	0.070	0.045	0.18	28.14	28.50	0.076	Yes

Table 52: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	661/1880	GPRS 2TS	0.318	0.170	0.05	26.14	27.50	0.435	/
Back Side	661/1880	GPRS 2TS	0.315	0.167	0.06	26.14	27.50	0.431	/
Left Side	661/1880	GPRS 2TS	0.378	0.222	0.02	26.14	27.50	0.517	/
Top Side	661/1880	GPRS 2TS	0.445	0.229	0.04	26.14	27.50	0.609	/
Tested at the worst position with battery 2#									
Top Side	661/1880	GPRS 2TS	0.414	0.208	0.12	26.14	27.50	0.566	/
Tested at the worst position with battery 3#									
Top Side	661/1880	GPRS 2TS	0.440	0.226	0.16	26.14	27.50	0.602	/
Test data of MHA-L29 (new)									
Top Side	661/1880	GPRS 2TS	0.191	0.100	-0.09	26.14	27.50	0.261	Yes

Table 53: Hotspot SAR test results of GSM1900

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Left touch	9400/1880	RMC	0.475	0.357	-0.14	17.85	18.50	0.552	/
Left tilt	9400/1880	RMC	0.307	0.190	0.15	17.85	18.50	0.357	/
Right touch	9400/1880	RMC	1.020	0.572	0.02	17.85	18.50	1.185	/
Right touch	9262/1852.4	RMC	0.970	0.548	0.01	17.75	18.50	1.153	/
Right touch	9538/1907.6	RMC	1.130	0.627	0.05	17.72	18.50	1.352	/
Right touch-Repeated	9538/1907.6	RMC	1.100	0.611	-0.09	17.72	18.50	1.316	/
Right tilt	9400/1880	RMC	0.775	0.424	0.01	17.85	18.50	0.900	/
Right tilt	9262/1852.4	RMC	0.742	0.402	0.05	17.75	18.50	0.882	/
Right tilt	9538/1907.6	RMC	0.809	0.444	0.03	17.72	18.50	0.968	/
Tested at the worst position with battery 2#									
Right touch	9538/1907.6	RMC	0.960	0.527	0.03	17.72	18.50	1.149	/
Tested at the worst position with battery 3#									
Right touch	9538/1907.6	RMC	0.831	0.459	0.01	17.72	18.50	0.994	/
Test data of MHA-L29 (new)									
Right touch	9538/1907.6	RMC	0.680	0.367	-0.11	17.72	18.50	0.814	Yes

Table 54: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	9400/1880	RMC	0.125	0.067	0.11	17.85	18.50	0.145	/
Back Side	9400/1880	RMC	0.143	0.078	0.00	17.85	18.50	0.166	/
Tested at the worst position with battery 2#									
Back Side	9400/1880	RMC	0.131	0.077	0.04	17.85	18.50	0.152	/
Tested at the worst position with battery 3#									
Back Side	9400/1880	RMC	0.130	0.077	-0.17	17.85	18.50	0.151	/
Test data of MHA-L29 (new)									
Back Side	9400/1880	RMC	0.056	0.036	0.12	17.85	18.50	0.065	Yes

Table 55: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	9400/1880	RMC	0.254	0.134	0.06	17.85	18.50	0.295	/
Back Side	9400/1880	RMC	0.254	0.134	-0.10	17.85	18.50	0.295	/
Left Side	9400/1880	RMC	0.290	0.171	0.12	17.85	18.50	0.337	/
Top Side	9400/1880	RMC	0.440	0.223	0.03	17.85	18.50	0.511	/
Tested at the worst position with battery 2#									
Top Side	9400/1880	RMC	0.405	0.206	0.11	17.85	18.50	0.470	/
Tested at the worst position with battery 3#									
Top Side	9400/1880	RMC	0.405	0.207	-0.03	17.85	18.50	0.470	/
Test data of MHA-L29 (new)									
Top Side	9400/1880	RMC	0.128	0.068	-0.13	17.85	18.50	0.149	Yes

Table 56: Hotspot SAR test results of UMTS Band II

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Left touch	1413/1732.6	RMC	0.383	0.229	-0.07	19.21	19.50	0.409	/
Left tilt	1413/1732.6	RMC	0.457	0.240	0.06	19.21	19.50	0.489	/
Right touch	1413/1732.6	RMC	1.080	0.623	0.15	19.21	19.50	1.155	/
Right touch	1312/1712.4	RMC	1.100	0.615	0.13	19.40	19.50	1.126	/
Right touch	1513/1752.6	RMC	1.230	0.692	0.02	19.23	19.50	1.309	/
Right touch-Repeated	1513/1752.6	RMC	1.270	0.698	-0.12	19.23	19.50	1.351	/
Right tilt	1413/1732.6	RMC	1.040	0.523	0.03	19.21	19.50	1.112	/
Right tilt	1312/1712.4	RMC	1.010	0.489	0.03	19.40	19.50	1.034	/
Right tilt	1513/1752.6	RMC	1.060	0.529	0.03	19.23	19.50	1.128	/
Tested at the worst position with battery 2#									
Right touch	1513/1752.6	RMC	1.030	0.579	0.11	19.23	19.50	1.096	/
Tested at the worst position with battery 3#									
Right touch	1513/1752.6	RMC	1.160	0.656	0.03	19.23	19.50	1.234	/
Test data of MHA-L29 (new)									
Right touch	1513/1752.6	RMC	1.040	0.590	0.04	19.23	19.50	1.107	Yes

Table 57: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	1413/1732.6	RMC	0.101	0.058	0.11	19.21	19.50	0.108	/
Back Side	1413/1732.6	RMC	0.092	0.053	0.14	19.21	19.50	0.098	/
Tested at the worst position with battery 2#									
Front Side	1413/1732.6	RMC	0.100	0.058	0.15	19.21	19.50	0.107	/
Tested at the worst position with battery 3#									
Front Side	1413/1732.6	RMC	0.084	0.048	0.11	19.21	19.50	0.090	/
Test data of MHA-L29 (new)									
Front Side	1413/1732.6	RMC	0.081	0.046	-0.19	19.21	19.50	0.087	Yes

Table 58: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	1413/1732.6	RMC	0.232	0.126	0.14	19.21	19.50	0.248	/
Back Side	1413/1732.6	RMC	0.203	0.110	0.14	19.21	19.50	0.217	/
Left Side	1413/1732.6	RMC	0.219	0.132	0.00	19.21	19.50	0.234	/
Top Side	1413/1732.6	RMC	0.299	0.158	0.19	19.21	19.50	0.320	/
Tested at the worst position with battery 2#									
Top Side	1413/1732.6	RMC	0.285	0.152	0.11	19.21	19.50	0.305	/
Tested at the worst position with battery 3#									
Top Side	1413/1732.6	RMC	0.290	0.155	0.08	19.21	19.50	0.310	/
Test data of MHA-L29 (new)									
Top Side	1413/1732.6	RMC	0.206	0.110	-0.09	19.21	19.50	0.220	Yes

Table 59: Hotspot SAR test results of UMTS Band IV

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Left touch	4182/836.4	RMC	0.617	0.331	-0.08	20.34	21.50	0.806	/
Left touch	4132/826.4	RMC	0.606	0.325	0.03	20.31	21.50	0.797	/
Left touch	4233/846.6	RMC	0.602	0.323	0.01	20.22	21.50	0.808	/
Left tilt	4182/836.4	RMC	0.537	0.276	0.05	20.34	21.50	0.701	/
Right touch	4182/836.4	RMC	0.910	0.464	-0.14	20.34	21.50	1.189	/
Right touch	4132/826.4	RMC	0.945	0.481	-0.07	20.31	21.50	1.243	/
Right touch-Repeated	4132/826.4	RMC	0.977	0.496	-0.01	20.31	21.50	1.285	/
Right touch	4233/846.6	RMC	0.798	0.417	-0.12	20.22	21.50	1.072	/
Right tilt	4182/836.4	RMC	0.722	0.363	-0.01	20.34	21.50	0.943	/
Right tilt	4132/826.4	RMC	0.734	0.371	0.04	20.31	21.50	0.965	/
Right tilt	4233/846.6	RMC	0.698	0.351	0.04	20.22	21.50	0.937	/
Tested at the worst position with battery 2#									
Right touch	4132/826.4	RMC	0.895	0.463	-0.02	20.31	21.50	1.177	/
Tested at the worst position with battery 3#									
Right touch	4132/826.4	RMC	0.937	0.481	-0.01	20.31	21.50	1.232	/
Test data of MHA-L29 (new)									
Right touch	4132/826.4	RMC	0.824	0.427	0.00	20.31	21.50	1.084	Yes

Table 60: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	4182/836.4	RMC	0.110	0.075	-0.11	20.34	21.50	0.144	/
Back Side	4182/836.4	RMC	0.131	0.094	-0.02	20.34	21.50	0.171	/
Tested at the worst position with battery 2#									
Back Side	4182/836.4	RMC	0.114	0.079	-0.07	20.34	21.50	0.149	/
Tested at the worst position with battery 3#									
Back Side	4182/836.4	RMC	0.114	0.079	-0.03	20.34	21.50	0.149	/
Test data of MHA-L29 (new)									
Back Side	4182/836.4	RMC	0.135	0.081	-0.05	20.34	21.50	0.176	Yes

Table 61: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	4182/836.4	RMC	0.242	0.138	0.08	20.34	21.50	0.316	/
Back Side	4182/836.4	RMC	0.297	0.165	-0.05	20.34	21.50	0.388	/
Left Side	4182/836.4	RMC	0.224	0.150	-0.13	20.34	21.50	0.293	/
Top Side	4182/836.4	RMC	0.276	0.134	0.08	20.34	21.50	0.361	/
Tested at the worst position with battery 2#									
Back Side	4182/836.4	RMC	0.305	0.169	-0.14	20.34	21.50	0.398	/
Tested at the worst position with battery 3#									
Back Side	4182/836.4	RMC	0.254	0.143	-0.01	20.34	21.50	0.332	/
Test data of MHA-L29 (new)									
Back Side	4182/836.4	RMC	0.302	0.171	0.04	20.34	21.50	0.394	Yes

Table 62: Hotspot SAR test results of UMTS Band V

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Left touch	18900/1880	20M QPSK 1RB#50	0.434	0.270	0.08	17.95	18.50	0.493	/
Left tilt	18900/1880	20M QPSK 1RB#50	0.363	0.203	-0.02	17.95	18.50	0.412	/
Right touch	18900/1880	20M QPSK 1RB#50	1.170	0.653	-0.01	17.95	18.50	1.328	/
Right touch-Repeated	18900/1880	20M QPSK 1RB#50	1.210	0.667	-0.01	17.95	18.50	1.373	/
Right touch	18700/1860	20M QPSK 1RB#50	0.740	0.420	0.01	17.52	18.50	0.927	/
Right touch	19100/1900	20M QPSK 1RB#50	0.718	0.400	0.06	17.53	18.50	0.898	/
Right tilt	18900/1880	20M QPSK 1RB#50	0.869	0.462	0.12	17.95	18.50	0.986	/
Right tilt	18700/1860	20M QPSK 1RB#50	0.560	0.295	0.07	17.52	18.50	0.702	/
Right tilt	19100/1900	20M QPSK 1RB#50	0.562	0.300	0.06	17.53	18.50	0.703	/
50%RB									
Left touch	18900/1880	20M QPSK 50%RB#25	0.322	0.199	0.03	16.87	18.00	0.418	/
Left tilt	18900/1880	20M QPSK 50%RB#25	0.271	0.151	0.01	16.87	18.00	0.352	/
Right touch	18900/1880	20M QPSK 50%RB#25	0.844	0.478	0.01	16.87	18.00	1.095	/
Right touch	18700/1860	20M QPSK 50%RB#25	0.560	0.316	0.01	16.62	18.00	0.769	/
Right touch	19100/1900	20M QPSK 50%RB#25	0.877	0.495	0.05	16.41	18.00	1.265	/
Right tilt	18900/1880	20M QPSK 50%RB#25	0.672	0.353	-0.04	16.87	18.00	0.872	/
Right tilt	18700/1860	20M QPSK 50%RB#25	0.428	0.226	0.07	16.62	18.00	0.588	/
Right tilt	19100/1900	20M QPSK 50%RB#25	0.697	0.398	-0.03	16.41	18.00	1.005	/
100%RB									
Right touch	18900/1880	20M QPSK 100%RB#0	0.784	0.443	0.03	16.55	18.00	1.095	/
Right tilt	18900/1880	20M QPSK 100%RB#0	0.623	0.358	-0.06	16.55	18.00	0.870	/

Tested at the worst position with battery 2#									
Right touch	18900/1880	20M QPSK 1RB#50	1.100	0.612	0.04	17.95	18.50	1.249	/
Tested at the worst position with battery 3#									
Right touch	18900/1880	20M QPSK 1RB#50	0.934	0.517	0.07	17.95	18.50	1.060	/
Test data of MHA-L29 (new)									
Right touch	18900/1880	20M QPSK 1RB#50	0.590	0.324	0.04	17.95	18.50	0.670	Yes

Table 63: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	18900/1880	20M QPSK 1RB#50	0.111	0.072	-0.07	17.95	18.50	0.126	/
Back Side	18900/1880	20M QPSK 1RB#50	0.100	0.065	0.19	17.95	18.50	0.114	/
50%RB									
Front Side	18900/1880	20M QPSK 50%RB#25	0.080	0.049	0.19	16.87	18.00	0.103	/
Back Side	18900/1880	20M QPSK 50%RB#25	0.072	0.044	-0.12	16.87	18.00	0.093	/
Tested at the worst position with battery 2#									
Front Side	18900/1880	20M QPSK 1RB#50	0.110	0.071	0.07	17.95	18.50	0.125	/
Tested at the worst position with battery 3#									
Front Side	18900/1880	20M QPSK 1RB#50	0.110	0.071	0.04	17.95	18.50	0.125	/
Test data of MHA-L29 (new)									
Front Side	18900/1880	20M QPSK 1RB#50	0.087	0.055	0.12	17.95	18.50	0.099	Yes

Table 64: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	18900/1880	20M QPSK 1RB#50	0.214	0.115	0.11	17.95	18.50	0.243	/
Back Side	18900/1880	20M QPSK 1RB#50	0.203	0.108	-0.15	17.95	18.50	0.230	/
Left Side	18900/1880	20M QPSK 1RB#50	0.228	0.135	-0.19	17.95	18.50	0.259	/
Top Side	18900/1880	20M QPSK 1RB#50	0.308	0.159	-0.16	17.95	18.50	0.350	/
50%RB									
Front Side	18900/1880	20M QPSK 50%RB#25	0.136	0.081	0.15	16.87	18.00	0.176	/
Back Side	18900/1880	20M QPSK 50%RB#25	0.150	0.085	-0.04	16.87	18.00	0.195	/
Left Side	18900/1880	20M QPSK 50%RB#25	0.170	0.100	0.00	16.87	18.00	0.221	/
Top Side	18900/1880	20M QPSK 50%RB#25	0.225	0.109	-0.17	16.87	18.00	0.292	/
Tested at the worst position with battery 2#									
Top Side	18900/1880	20M QPSK 1RB#50	0.306	0.159	0.05	17.95	18.50	0.347	/
Tested at the worst position with battery 3#									
Top Side	18900/1880	20M QPSK 1RB#50	0.265	0.140	0.11	17.95	18.50	0.301	/
Test data of MHA-L29 (new)									
Top Side	18900/1880	20M QPSK 1RB#50	0.241	0.126	-0.13	17.95	18.50	0.274	Yes

Table 65: Hotspot SAR test results of LTE Band II

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
1RB									
Left touch	20175/1732.5	20M QPSK 1RB#0	0.245	0.154	-0.02	18.28	19.30	0.310	/
Left tilt	20175/1732.5	20M QPSK 1RB#0	0.311	0.166	-0.04	18.28	19.30	0.393	/
Right touch	20175/1732.5	20M QPSK 1RB#0	0.734	0.426	-0.12	18.28	19.30	0.928	/
Right touch	20050/1720	20M QPSK 1RB#50	0.996	0.575	-0.14	18.18	19.30	1.289	Yes
Right touch-repeated	20050/1720	20M QPSK 1RB#50	0.971	0.560	-0.10	18.18	19.30	1.257	/
Right touch	20300/1745	20M QPSK 1RB#99	0.814	0.469	-0.13	17.52	19.30	1.226	/
Right tilt	20175/1732.5	20M QPSK 1RB#0	0.566	0.290	-0.09	18.28	19.30	0.716	/
50%RB									
Left touch	20175/1732.5	20M QPSK 50%RB#0	0.202	0.127	0.01	18.37	19.20	0.245	/
Left tilt	20175/1732.5	20M QPSK 50%RB#0	0.239	0.141	0.17	18.37	19.20	0.289	/
Right touch	20175/1732.5	20M QPSK 50%RB#0	0.562	0.323	-0.02	18.37	19.20	0.680	/
Right tilt	20175/1732.5	20M QPSK 50%RB#0	0.474	0.243	-0.01	18.37	19.20	0.574	/
100%RB									
Right touch	20050/1720	20M QPSK 100%RB#0	0.750	0.432	0.00	18.22	19.20	0.940	/
Tested at the worst position with battery 2#									
Right touch	20050/1720	20M QPSK 1RB#50	0.941	0.543	-0.10	18.18	19.30	1.218	/

Table 66: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
1RB									
Front Side	20175/1732.5	20M QPSK 1RB#0	0.097	0.056	0.15	18.28	19.30	0.123	/
Back Side	20175/1732.5	20M QPSK 1RB#0	0.086	0.052	-0.05	18.28	19.30	0.109	/
50%RB									
Front Side	20175/1732.5	20M QPSK 50%RB#0	0.054	0.030	0.13	18.37	19.20	0.065	/
Back Side	20175/1732.5	20M QPSK 50%RB#0	0.047	0.028	-0.05	18.37	19.20	0.057	/
Tested at the worst position with battery 2#									
Front Side	20175/1732.5	20M QPSK 1RB#0	0.103	0.059	0.17	18.28	19.30	0.130	Yes

Table 67: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
1RB									
Front Side	20175/1732.5	20M QPSK 1RB#0	0.203	0.110	0.05	18.28	19.30	0.257	/
Back Side	20175/1732.5	20M QPSK 1RB#0	0.178	0.098	0.10	18.28	19.30	0.225	/
Left Side	20175/1732.5	20M QPSK 1RB#0	0.167	0.095	0.02	18.28	19.30	0.211	/
Top Side	20175/1732.5	20M QPSK 1RB#0	0.314	0.164	-0.05	18.28	19.30	0.397	Yes
50%RB									
Front Side	20175/1732.5	20M QPSK 50%RB#0	0.106	0.058	-0.07	18.37	19.20	0.128	/
Back Side	20175/1732.5	20M QPSK 50%RB#0	0.098	0.054	-0.19	18.37	19.20	0.118	/
Left Side	20175/1732.5	20M QPSK 50%RB#0	0.094	0.056	0.19	18.37	19.20	0.114	/
Top Side	20175/1732.5	20M QPSK 50%RB#0	0.168	0.087	0.07	18.37	19.20	0.203	/
Tested at the worst position with battery 2#									
Top Side	20175/1732.5	20M QPSK 1RB#0	0.289	0.153	0.06	18.28	19.30	0.366	/

Table 68: Hotspot SAR test results of LTE Band IV

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Left touch	20600/844	10M QPSK 1RB#25	0.841	0.447	0.19	21.95	22.00	0.851	/
Left touch	20450/829	10M QPSK 1RB#25	0.690	0.367	0.10	21.88	22.00	0.709	/
Left touch	20525/836.5	10M QPSK 1RB#25	0.682	0.436	-0.11	21.55	22.00	0.756	/
Left tilt	20600/844	10M QPSK 1RB#25	0.594	0.304	-0.11	21.95	22.00	0.601	/
Right touch	20600/844	10M QPSK 1RB#25	1.190	0.624	-0.16	21.95	22.00	1.204	/
Right touch -Repeated	20600/844	10M QPSK 1RB#25	1.000	0.533	-0.02	21.95	22.00	1.012	/
Right touch	20450/829	10M QPSK 1RB#25	1.100	0.576	0.03	21.88	22.00	1.131	/
Right touch	20525/836.5	10M QPSK 1RB#25	1.170	0.616	-0.04	21.55	22.00	1.298	/
Right tilt	20600/844	10M QPSK 1RB#25	0.975	0.471	0.18	21.95	22.00	0.986	/
Right tilt	20450/829	10M QPSK 1RB#25	0.936	0.451	0.00	21.88	22.00	0.962	/
Right tilt	20525/836.5	10M QPSK 1RB#25	0.951	0.460	0.07	21.55	22.00	1.055	/
50%RB									
Left touch	20450/829	10M QPSK 50%RB#13	0.641	0.411	0.11	20.80	21.50	0.753	/
Left tilt	20450/829	10M QPSK 50%RB#13	0.574	0.353	0.04	20.80	21.50	0.674	/
Right touch	20450/829	10M QPSK 50%RB#13	0.861	0.443	0.16	20.80	21.50	1.012	/
Right touch	20525/836.5	10M QPSK 50%RB#0	0.869	0.449	0.01	20.49	21.50	1.097	/
Right touch	20600/844	10M QPSK 50%RB#13	0.799	0.415	0.02	20.72	21.50	0.956	/
Right tilt	20450/829	10M QPSK 50%RB#13	0.734	0.362	0.05	20.80	21.50	0.862	/
100%RB									
Left touch	20600/844	10M QPSK 100%RB#0	0.583	0.359	0.04	20.64	21.50	0.711	/
Right touch	20600/844	10M QPSK 100%RB#0	0.842	0.436	0.01	20.64	21.50	1.026	
Right tilt	20600/844	10M QPSK 100%RB#0	0.737	0.365	0.11	20.64	21.50	0.898	/

Tested at the worst position with battery 2#									
Right touch	20600/844	10M QPSK 1RB#25	1.060	0.558	-0.02	21.95	22.00	1.072	/
Tested at the worst position with battery 3#									
Right touch	20600/844	10M QPSK 1RB#25	1.080	0.564	0.03	21.95	22.00	1.093	/
Test data of MHA-L29 (new)									
Right touch	20600/844	10M QPSK 1RB#25	1.010	0.538	-0.12	21.95	22.00	1.022	Yes

Table 69: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	20600/844	10M QPSK 1RB#25	0.206	0.122	-0.02	21.95	22.00	0.208	/
Back Side	20600/844	10M QPSK 1RB#25	0.224	0.132	-0.04	21.95	22.00	0.227	/
50%RB									
Front Side	20450/829	10M QPSK 50%RB#13	0.123	0.075	0.06	20.80	21.50	0.145	/
Back Side	20450/829	10M QPSK 50%RB#13	0.124	0.084	0.01	20.80	21.50	0.146	/
Tested at the worst position with battery 2#									
Back Side	20600/844	10M QPSK 1RB#25	0.212	0.151	-0.04	21.95	22.00	0.214	/
Tested at the worst position with battery 3#									
Back Side	20600/844	10M QPSK 1RB#25	0.200	0.119	0.01	21.95	22.00	0.202	/
Test data of MHA-L29 (new)									
Back Side	20600/844	10M QPSK 1RB#25	0.188	0.113	-0.03	21.95	22.00	0.190	Yes

Table 70: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	20600/844	10M QPSK 1RB#25	0.400	0.224	-0.14	21.95	22.00	0.405	/
Back Side	20600/844	10M QPSK 1RB#25	0.433	0.244	-0.07	21.95	22.00	0.438	/
Left Side	20600/844	10M QPSK 1RB#25	0.351	0.236	-0.12	21.95	22.00	0.355	/
Top Side	20600/844	10M QPSK 1RB#25	0.443	0.215	0.15	21.95	22.00	0.448	/
50%RB									
Front Side	20450/829	10M QPSK 50%RB#13	0.246	0.138	0.03	20.80	21.50	0.289	/
Back Side	20450/829	10M QPSK 50%RB#13	0.272	0.159	-0.04	20.80	21.50	0.320	/
Left Side	20450/829	10M QPSK 50%RB#13	0.193	0.131	-0.14	20.80	21.50	0.227	/
Top Side	20450/829	10M QPSK 50%RB#13	0.269	0.131	0.11	20.80	21.50	0.316	/
Tested at the worst position with battery 2#									
Top Side	20600/844	10M QPSK 1RB#25	0.438	0.213	0.09	21.95	22.00	0.443	/
Tested at the worst position with battery 3#									
Top Side	20600/844	10M QPSK 1RB#25	0.398	0.195	0.13	21.95	22.00	0.403	/
Test data of MHA-L29 (new)									
Top Side	20600/844	10M QPSK 1RB#25	0.363	0.181	-0.09	21.95	22.00	0.367	Yes

Table 71: Hotspot SAR test results of LTE Band V

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
1RB									
Left touch	21100/2535	20M QPSK 1RB#99	0.151	0.074	-0.03	13.63	15.00	0.207	/
Left tilt	21100/2535	20M QPSK 1RB#99	0.162	0.073	0.18	13.63	15.00	0.222	/
Right touch	21100/2535	20M QPSK 1RB#99	0.488	0.229	0.10	13.63	15.00	0.669	/
Right tilt	21100/2535	20M QPSK 1RB#99	0.546	0.232	-0.04	13.63	15.00	0.749	/
50%RB									
Left touch	21100/2535	20M QPSK 50%RB#25	0.164	0.080	-0.05	13.45	14.50	0.209	/
Left tilt	21100/2535	20M QPSK 50%RB#25	0.198	0.090	0.15	13.45	14.50	0.252	/
Right touch	21100/2535	20M QPSK 50%RB#25	0.625	0.301	-0.14	13.45	14.50	0.796	/
Right tilt	21100/2535	20M QPSK 50%RB#25	0.649	0.277	0.19	13.45	14.50	0.827	Yes
Right tilt	20850/2510	20M QPSK 50%RB#25	0.486	0.206	0.14	13.22	14.50	0.653	/
Right tilt	21350/2560	20M QPSK 50%RB#0	0.591	0.248	-0.17	12.72	14.50	0.890	/
100%RB									
Right tilt	21350/2560	20M QPSK 100%RB#0	0.554	0.242	-0.08	13.09	14.50	0.766	/
Tested at the worst position with battery 2#									
Right tilt	21350/2560	20M QPSK 50%RB#0	0.535	0.225	-0.06	12.72	14.50	0.806	/

Table 72: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
1RB									
Front Side	21100/2535	20M QPSK 1RB#99	0.056	0.030	-0.17	13.63	15.00	0.077	Yes
Back Side	21100/2535	20M QPSK 1RB#99	0.048	0.026	-0.14	13.63	15.00	0.066	/
50%RB									
Front Side	21100/2535	20M QPSK 50%RB#25	0.051	0.029	-0.14	13.45	14.50	0.064	/
Back Side	21100/2535	20M QPSK 50%RB#25	0.044	0.025	-0.10	13.45	14.50	0.056	/
Tested at the worst position with battery 2#									
Front Side	21100/2535	20M QPSK 1RB#99	0.046	0.025	-0.10	13.63	15.00	0.063	/

Table 73: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
1RB									
Front Side	21100/2535	20M QPSK 1RB#99	0.101	0.055	0.14	13.63	15.00	0.138	/
Back Side	21100/2535	20M QPSK 1RB#99	0.086	0.046	0.17	13.63	15.00	0.118	/
Left Side	21100/2535	20M QPSK 1RB#99	0.143	0.075	0.02	13.63	15.00	0.196	/
Top Side	21100/2535	20M QPSK 1RB#99	0.079	0.034	0.03	13.63	15.00	0.108	/
50%RB									
Front Side	21100/2535	20M QPSK 50%RB#25	0.104	0.056	-0.09	13.45	14.50	0.132	/
Back Side	21100/2535	20M QPSK 50%RB#25	0.095	0.050	-0.07	13.45	14.50	0.121	/
Left Side	21100/2535	20M QPSK 50%RB#25	0.123	0.065	0.03	13.45	14.50	0.157	/
Top Side	21100/2535	20M QPSK 50%RB#25	0.075	0.033	-0.01	13.45	14.50	0.095	/
Tested at the worst position with battery 2#									
Left Side	21100/2535	20M QPSK 1RB#99	0.144	0.075	-0.15	13.63	15.00	0.197	Yes

Table 74: Hotspot SAR test results of LTE Band VII

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Left touch	23130/711	10M QPSK 1RB#25	0.274	0.150	-0.10	21.97	22.50	0.310	/
Left tilt	23130/711	10M QPSK 1RB#25	0.211	0.320	0.02	21.97	22.50	0.238	/
Right touch	23130/711	10M QPSK 1RB#25	0.789	0.388	-0.14	21.97	22.50	0.891	/
Right touch	23060/704	10M QPSK 1RB#25	1.050	0.518	-0.14	21.70	22.50	1.262	/
Right touch -Repeated	23060/704	10M QPSK 1RB#25	1.010	0.496	-0.10	21.70	22.50	1.214	/
Right touch	23095/707.5	10M QPSK 1RB#25	0.832	0.408	-0.02	21.52	22.50	1.043	/
Right tilt	23130/711	10M QPSK 1RB#25	0.427	0.229	0.02	21.97	22.50	0.482	/
50%RB									
Left touch	23130/711	10M QPSK 50%RB#13	0.391	0.214	0.03	21.84	22.50	0.455	/
Left tilt	23130/711	10M QPSK 50%RB#13	0.291	0.189	-0.09	21.84	22.50	0.339	/
Right touch	23130/711	10M QPSK 50%RB#13	0.578	0.297	-0.18	21.84	22.50	0.673	/
Right tilt	23130/711	10M QPSK 50%RB#13	0.610	0.328	0.04	21.84	22.50	0.710	/
100%RB									
Right touch	23060/704	10M QPSK 100%RB#0	0.573	0.294	-0.18	21.57	22.50	0.710	/
Tested at the worst position with battery 2#									
Right touch	23060/704	10M QPSK 1RB#25	1.020	0.506	-0.07	21.70	22.50	1.226	/
Tested at the worst position with battery 3#									
Right touch	23060/704	10M QPSK 1RB#25	1.030	0.510	-0.10	21.70	22.50	1.238	/
Test data of MHA-L29 (new)									
Right touch	23060/704	10M QPSK 1RB#25	0.854	0.443	-0.04	21.70	22.50	1.027	Yes

Table 75: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	23130/711	10M QPSK 1RB#25	0.062	0.037	0.17	21.97	22.50	0.070	/
Back Side	23130/711	10M QPSK 1RB#25	0.064	0.039	0.00	21.97	22.50	0.073	/
50%RB									
Front Side	23130/711	10M QPSK 50%RB#13	0.067	0.040	0.07	21.84	22.50	0.078	/
Back Side	23130/711	10M QPSK 50%RB#13	0.097	0.058	-0.19	21.84	22.50	0.112	/
Tested at the worst position with battery 2#									
Back Side	23130/711	10M QPSK 50%RB#13	0.084	0.051	-0.03	21.84	22.50	0.097	/
Tested at the worst position with battery 3#									
Back Side	23130/711	10M QPSK 50%RB#13	0.090	0.054	0.08	21.84	22.50	0.104	/
Test data of MHA-L29 (new)									
Back Side	23130/711	10M QPSK 50%RB#13	0.059	0.035	0.02	21.84	22.50	0.068	Yes

Table 76: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	23130/711	10M QPSK 1RB#25	0.124	0.071	0.11	21.97	22.50	0.140	/
Back Side	23130/711	10M QPSK 1RB#25	0.148	0.098	0.10	21.97	22.50	0.167	/
Left Side	23130/711	10M QPSK 1RB#25	0.080	0.055	0.02	21.97	22.50	0.091	/
Top Side	23130/711	10M QPSK 1RB#25	0.131	0.066	0.18	21.97	22.50	0.148	/
50%RB									
Front Side	23130/711	10M QPSK 50%RB#13	0.181	0.103	0.08	21.84	22.50	0.211	/
Back Side	23130/711	10M QPSK 50%RB#13	0.226	0.126	0.05	21.84	22.50	0.263	/
Left Side	23130/711	10M QPSK 50%RB#13	0.104	0.071	-0.08	21.84	22.50	0.121	/
Top Side	23130/711	10M QPSK 50%RB#13	0.184	0.093	0.11	21.84	22.50	0.214	/
Tested at the worst position with battery 2#									
Back Side	23130/711	10M QPSK 50%RB#13	0.213	0.132	0.13	21.84	22.50	0.248	/
Tested at the worst position with battery 3#									
Back Side	23130/711	10M QPSK 50%RB#13	0.194	0.111	0.14	21.84	22.50	0.226	/
Test data of MHA-L29 (new)									
Back Side	23130/711	10M QPSK 50%RB#13	0.235	0.133	-0.07	21.84	22.50	0.274	Yes

Table 77: Hotspot SAR test results of LTE Band XII

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

7.2.11 SAR measurement Result of LTE Band XVII(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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Left touch	23790/710	10M QPSK 1RB#25	0.403	0.220	-0.19	24.20	24.50	0.432	/
Left tilt	23790/710	10M QPSK 1RB#25	0.370	0.216	0.13	24.20	24.50	0.396	/
Right touch	23790/710	10M QPSK 1RB#25	0.726	0.362	-0.17	24.20	24.50	0.778	/
Right tilt	23790/710	10M QPSK 1RB#25	0.640	0.344	0.02	24.20	24.50	0.686	/
Right touch	23780/709	10M QPSK 1RB#25	0.712	0.354	-0.04	23.98	24.50	0.803	/
Right touch	23800/711	10M QPSK 1RB#25	0.761	0.380	-0.05	24.18	24.50	0.819	/
50%RB									
Left touch	23800/711	10M QPSK 50%RB#13	0.340	0.203	0.18	23.39	24.00	0.391	/
Left tilt	23800/711	10M QPSK 50%RB#13	0.316	0.185	0.04	23.39	24.00	0.364	/
Right touch	23800/711	10M QPSK 50%RB#13	0.626	0.309	0.04	23.39	24.00	0.720	/
Right tilt	23800/711	10M QPSK 50%RB#13	0.536	0.291	-0.02	23.39	24.00	0.617	/
100%RB									
Right touch	23800/711	10M QPSK 100%RB#0	0.625	0.309	0.04	23.16	24.00	0.758	/
Tested at the worst position with battery 2#									
Right touch	23800/711	10M QPSK 1RB#25	0.700	0.352	-0.01	24.18	24.50	0.754	/
Tested at the worst position with battery 3#									
Right touch	23800/711	10M QPSK 1RB#25	0.697	0.351	0.02	24.18	24.50	0.750	/
Test data of MHA-L29 (new)									
Right touch	23790/710	10M QPSK 1RB#25	0.853	0.442	-0.01	24.18	24.50	0.918	Yes

Table 78: Head SAR test results of LTE Band XVII

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	23790/710	10M QPSK 1RB#25	0.077	0.047	0.06	24.20	24.50	0.082	/
Back Side	23790/710	10M QPSK 1RB#25	0.098	0.059	0.11	24.20	24.50	0.105	/
50%RB									
Front Side	23800/711	10M QPSK 50%RB#13	0.067	0.040	0.10	23.39	24.00	0.077	/
Back Side	23800/711	10M QPSK 50%RB#13	0.085	0.055	-0.02	23.39	24.00	0.097	/
Tested at the worst position with battery 2#									
Back Side	23790/710	10M QPSK 1RB#25	0.092	0.055	0.10	24.20	24.50	0.098	/
Tested at the worst position with battery 3#									
Back Side	23790/710	10M QPSK 1RB#25	0.094	0.061	0.05	24.20	24.50	0.101	/
Test data of MHA-L29 (new)									
Back Side	23790/710	10M QPSK 1RB#25	0.144	0.086	0.00	24.20	24.50	0.154	Yes

Table 79: Body-Worn SAR test results of LTE Band XVII

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	23790/710	10M QPSK 1RB#25	0.203	0.114	0.15	24.20	24.50	0.218	/
Back Side	23790/710	10M QPSK 1RB#25	0.202	0.115	0.05	24.20	24.50	0.216	/
Left Side	23790/710	10M QPSK 1RB#25	0.111	0.076	-0.05	24.20	24.50	0.119	/
Top Side	23790/710	10M QPSK 1RB#25	0.173	0.085	0.13	24.20	24.50	0.185	/
50%RB									
Front Side	23800/711	10M QPSK 50%RB#13	0.195	0.123	0.13	23.39	24.00	0.224	/
Back Side	23800/711	10M QPSK 50%RB#13	0.192	0.119	0.00	23.39	24.00	0.221	/
Left Side	23800/711	10M QPSK 50%RB#13	0.101	0.069	0.03	23.39	24.00	0.116	/
Top Side	23800/711	10M QPSK 50%RB#13	0.169	0.087	0.15	23.39	24.00	0.194	/
Tested at the worst position with battery 2#									
Front Side	23800/711	10M QPSK 50%RB#13	0.170	0.105	0.19	23.39	24.00	0.196	/
Tested at the worst position with battery 3#									
Front Side	23800/711	10M QPSK 50%RB#13	0.169	0.096	0.19	23.39	24.00	0.194	/
Test data of MHA-L29 (new)									
Front Side	23800/711	10M QPSK 50%RB#13	0.394	0.222	0.07	23.39	24.00	0.453	Yes

Table 80: Hotspot SAR test results of LTE Band XVII

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	Condu cted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Left touch	26965/841.5	15M QPSK 1RB#38	0.788	0.430	-0.13	21.69	22.40	0.928	/
Left touch	26775/822.5	15M QPSK 1RB#38	0.623	0.339	0.11	21.61	22.40	0.747	/
Left touch	26865/831.5	15M QPSK 1RB#38	0.588	0.320	0.09	21.56	22.40	0.713	/
Left tilt	26965/841.5	15M QPSK 1RB#38	0.715	0.371	0.16	21.69	22.40	0.842	/
Left tilt	26775/822.5	15M QPSK 1RB#38	0.548	0.286	0.06	21.61	22.40	0.657	/
Left tilt	26865/831.5	15M QPSK 1RB#38	0.469	0.288	0.06	21.56	22.40	0.569	/
Right touch	26965/841.5	15M QPSK 1RB#38	1.160	0.607	-0.02	21.69	22.40	1.366	/
Right touch	26775/822.5	15M QPSK 1RB#38	1.120	0.576	0.02	21.61	22.40	1.343	/
Right touch	26865/831.5	15M QPSK 1RB#38	1.140	0.593	-0.11	21.56	22.40	1.383	/
Right tilt	26965/841.5	15M QPSK 1RB#38	1.030	0.501	0.08	21.69	22.40	1.213	/
Right tilt	26775/822.5	15M QPSK 1RB#38	0.905	0.445	0.06	21.61	22.40	1.086	/
Right tilt	26865/831.5	15M QPSK 1RB#38	0.880	0.432	0.02	21.56	22.40	1.068	/
50%RB									
Left touch	26965/841.5	15M QPSK 50%RB#39	0.441	0.245	-0.16	20.64	22.00	0.603	/
Left tilt	26965/841.5	15M QPSK 50%RB#39	0.464	0.284	-0.12	20.64	22.00	0.635	/
Right touch	26965/841.5	15M QPSK 50%RB#39	0.747	0.398	-0.02	20.64	22.00	1.022	/
Right touch	26775/822.5	15M QPSK 50%RB#18	0.723	0.384	-0.12	20.62	22.00	0.993	/
Right touch	26865/831.5	15M QPSK 50%RB#0	0.795	0.422	0.01	20.49	22.00	1.126	/
Right tilt	26965/841.5	15M QPSK 50%RB#39	0.731	0.355	0.04	20.64	22.00	1.000	/
Right tilt	26775/822.5	15M QPSK 50%RB#18	0.715	0.348	0.07	20.62	22.00	0.982	/
Right tilt	26865/831.5	15M QPSK 50%RB#0	0.723	0.352	0.12	20.49	22.00	1.024	/

100%RB									
Left touch	26965/841.5	15M QPSK 100%RB#0	0.474	0.226	-0.19	20.48	22.00	0.673	/
Left tilt	26965/841.5	15M QPSK 100%RB#0	0.465	0.284	-0.17	20.48	22.00	0.660	/
Right touch	26965/841.5	15M QPSK 100%RB#0	0.844	0.445	-0.03	20.48	22.00	1.198	/
Right tilt	26965/841.5	15M QPSK 100%RB#0	0.761	0.371	0.01	20.48	22.00	1.080	/
Tested at the worst position with battery 2#									
Right touch	26865/831.5	15M QPSK 1RB#38	1.170	0.612	0.00	21.56	22.40	1.420	/
Right touch- Repeated	26865/831.5	15M QPSK 1RB#38	1.140	0.597	-0.09	21.56	22.40	1.383	/
Tested at the worst position with battery 3#									
Right touch	26865/831.5	15M QPSK 1RB#38	1.130	0.594	-0.04	21.56	22.40	1.371	/
Test data of MHA-L29 (new)									
Right touch	26865/831.5	15M QPSK 1RB#38	0.940	0.497	0.05	21.56	22.40	1.141	Yes

Table 81: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	26965/841.5	15M QPSK 1RB#38	0.154	0.093	0.00	21.69	22.40	0.181	/
Back Side	26965/841.5	15M QPSK 1RB#38	0.189	0.137	-0.01	21.69	22.40	0.223	/
50%RB									
Front Side	26965/841.5	15M QPSK 50%RB#39	0.112	0.076	0.06	20.64	22.00	0.153	/
Back Side	26965/841.5	15M QPSK 50%RB#39	0.127	0.088	0.07	20.64	22.00	0.174	/
Tested at the worst position with battery 2#									
Back Side	26965/841.5	15M QPSK 1RB#38	0.168	0.100	-0.02	21.69	22.40	0.198	/
Tested at the worst position with battery 3#									
Back Side	26965/841.5	15M QPSK 1RB#38	0.164	0.098	0.00	21.69	22.40	0.193	/
Test data of MHA-L29 (new)									
Back Side	26965/841.5	15M QPSK 1RB#38	0.234	0.138	-0.03	21.69	22.40	0.276	Yes

Table 82: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	26965/841.5	15M QPSK 1RB#38	0.338	0.193	0.10	21.69	22.40	0.398	/
Back Side	26965/841.5	15M QPSK 1RB#38	0.393	0.221	-0.01	21.69	22.40	0.463	/
Left Side	26965/841.5	15M QPSK 1RB#38	0.300	0.201	-0.10	21.69	22.40	0.353	/
Top Side	26965/841.5	15M QPSK 1RB#38	0.379	0.185	0.19	21.69	22.40	0.446	/
50%RB									
Front Side	26965/841.5	15M QPSK 50%RB#39	0.254	0.149	0.02	20.64	22.00	0.347	/
Back Side	26965/841.5	15M QPSK 50%RB#39	0.290	0.174	0.05	20.64	22.00	0.397	/
Left Side	26965/841.5	15M QPSK 50%RB#39	0.224	0.150	-0.09	20.64	22.00	0.306	/
Top Side	26965/841.5	15M QPSK 50%RB#39	0.252	0.138	0.11	20.64	22.00	0.345	/
Tested at the worst position with battery 2#									
Back Side	26965/841.5	15M QPSK 1RB#38	0.385	0.216	0.00	21.69	22.40	0.453	/
Tested at the worst position with battery 3#									
Back Side	26965/841.5	15M QPSK 1RB#38	0.385	0.214	0.16	21.69	22.40	0.453	/
Test data of MHA-L29 (new)									
Back Side	26965/841.5	15M QPSK 1RB#38	0.496	0.275	0.00	21.69	22.40	0.584	Yes

Table 83: Hotspot SAR test results of LTE Band XXVI

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

7.2.13 SAR measurement Result of LTE Band XXXVIII(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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Left touch	38000/2595	20M QPSK 1RB#99	0.308	0.148	0.00	17.61	18.00	0.337	/
Left tilt	38000/2595	20M QPSK 1RB#99	0.361	0.162	0.16	17.61	18.00	0.395	/
Right touch	38000/2595	20M QPSK 1RB#99	1.090	0.509	0.14	17.61	18.00	1.192	/
Right touch	37850/2580	20M QPSK 1RB#0	0.730	0.332	0.12	17.46	18.00	0.827	/
Right touch	38150/2610	20M QPSK 1RB#50	1.130	0.527	0.16	17.58	18.00	1.245	/
Right touch-Repeated	38150/2610	20M QPSK 1RB#50	1.100	0.448	0.17	17.58	18.00	1.212	/
Right tilt	38000/2595	20M QPSK 1RB#99	0.902	0.416	-0.01	17.61	18.00	0.987	/
Right tilt	37850/2580	20M QPSK 1RB#0	0.599	0.247	0.09	17.46	18.00	0.678	/
Right tilt	38150/2610	20M QPSK 1RB#50	0.939	0.383	0.09	17.58	18.00	1.034	/
50%RB									
Left touch	38150/2610	20M QPSK 50%RB#0	0.258	0.129	0.14	16.78	17.00	0.271	/
Left tilt	38150/2610	20M QPSK 50%RB#0	0.296	0.139	0.17	16.78	17.00	0.311	/
Right touch	38150/2610	20M QPSK 50%RB#0	0.881	0.409	0.09	16.78	17.00	0.927	/
Right touch	37850/2580	20M QPSK 50%RB#0	0.647	0.293	0.09	16.22	17.00	0.774	/
Right touch	38150/2610	20M QPSK 50%RB#50	1.010	0.470	0.09	16.30	17.00	1.187	/
Right tilt	38150/2610	20M QPSK 50%RB#0	0.882	0.360	0.00	16.78	17.00	0.928	/
Right tilt	37850/2580	20M QPSK 50%RB#0	0.562	0.235	0.00	16.22	17.00	0.673	/
Right tilt	38000/2595	20M QPSK 50%RB#50	0.933	0.388	0.06	16.30	17.00	1.096	/
100%RB									
Right touch	38150/2610	20M QPSK 100%RB#0	0.826	0.371	0.09	16.22	17.00	0.989	/
Right tilt	38150/2610	20M QPSK 100%RB#0	0.732	0.304	0.04	16.22	17.00	0.876	/
Tested at the worst position with battery 2#									
Right touch	38150/2610	20M QPSK 1RB#50	0.823	0.379	0.05	17.58	18.00	0.907	/

Tested at the worst position with battery 3#									
Right touch	38150/2610	20M QPSK 1RB#50	0.906	0.409	-0.03	17.58	18.00	0.998	/
Test data of MHA-L29 (new)									
Right touch	38150/2610	20M QPSK 1RB#50	0.763	0.365	0.00	16.20	17.50	1.029	Yes

Table 84: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	38000/2595	20M QPSK 1RB#99	0.097	0.054	0.13	17.61	18.00	0.106	/
Back Side	38000/2595	20M QPSK 1RB#99	0.072	0.041	-0.08	17.61	18.00	0.079	/
50%RB									
Front Side	38150/2610	20M QPSK 50%RB#0	0.061	0.034	0.13	16.78	17.00	0.065	/
Back Side	38150/2610	20M QPSK 50%RB#0	0.055	0.030	-0.03	16.78	17.00	0.058	/
Tested at the worst position with battery 2#									
Front Side	38000/2595	20M QPSK 1RB#99	0.073	0.040	0.05	17.61	18.00	0.079	/
Tested at the worst position with battery 3#									
Front Side	38000/2595	20M QPSK 1RB#99	0.080	0.044	0.05	17.61	18.00	0.087	/
Test data of MHA-L29 (new)									
Front Side	38000/2595	20M QPSK 1RB#99	0.078	0.043	-0.11	16.66	17.50	0.094	Yes

Table 85: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	38000/2595	20M QPSK 1RB#99	0.159	0.085	0.08	17.61	18.00	0.174	/
Back Side	38000/2595	20M QPSK 1RB#99	0.140	0.074	-0.02	17.61	18.00	0.153	/
Left Side	38000/2595	20M QPSK 1RB#99	0.214	0.108	-0.03	17.61	18.00	0.234	/
Top Side	38000/2595	20M QPSK 1RB#99	0.137	0.061	-0.12	17.61	18.00	0.150	/
50%RB									
Front Side	38150/2610	20M QPSK 50%RB#0	0.120	0.065	0.07	16.78	17.00	0.126	/
Back Side	38150/2610	20M QPSK 50%RB#0	0.110	0.061	0.05	16.78	17.00	0.116	/
Left Side	38150/2610	20M QPSK 50%RB#0	0.169	0.084	0.04	16.78	17.00	0.178	/
Top Side	38150/2610	20M QPSK 50%RB#0	0.108	0.048	-0.07	16.78	17.00	0.114	/
Tested at the worst position with battery 2#									
Left Side	38000/2595	20M QPSK 1RB#99	0.185	0.091	0.06	17.61	18.00	0.202	/
Tested at the worst position with battery 3#									
Left Side	38000/2595	20M QPSK 1RB#99	0.166	0.082	0.12	17.61	18.00	0.182	/
Test data of MHA-L29 (new)									
Left Side	38000/2595	20M QPSK 1RB#99	0.177	0.088	0.07	16.66	17.50	0.215	Yes

Table 86: Hotspot SAR test results of LTE Band XXXVIII

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Left touch	40340/2565	20M QPSK 1RB#50	0.138	0.066	0.08	17.43	18.00	0.157	/
Left tilt	40340/2565	20M QPSK 1RB#50	0.157	0.077	0.14	17.43	18.00	0.179	/
Right touch	40340/2565	20M QPSK 1RB#50	0.909	0.444	0.07	17.43	18.00	1.036	/
Right touch	40740/2605	20M QPSK 1RB#99	0.800	0.367	0.15	17.35	18.00	0.929	/
Right touch	41140/2645	20M QPSK 1RB#99	0.979	0.446	0.11	16.83	18.00	1.282	/
Right touch-repeated	41140/2645	20M QPSK 1RB#99	0.989	0.450	0.10	16.83	18.00	1.295	/
Right tilt	40340/2565	20M QPSK 1RB#50	0.589	0.272	0.07	17.43	18.00	0.672	/
50%RB									
Left touch	40340/2565	20M QPSK 50%RB#0	0.123	0.063	0.11	16.35	17.00	0.143	/
Left tilt	40340/2565	20M QPSK 50%RB#0	0.158	0.070	0.15	16.35	17.00	0.184	/
Right touch	40340/2565	20M QPSK 50%RB#0	0.752	0.376	0.19	16.35	17.00	0.873	/
Right touch	40740/2605	20M QPSK 50%RB#50	0.781	0.389	0.07	16.13	17.00	0.954	/
Right touch	41140/2645	20M QPSK 50%RB#0	0.806	0.400	0.15	15.85	17.00	1.050	/
Right tilt	40340/2565	20M QPSK 50%RB#0	0.667	0.316	0.00	16.35	17.00	0.775	/
100%RB									
Right touch	40340/2565	20M QPSK 100%RB#0	0.451	0.209	0.14	16.24	17.00	0.537	/
Tested at the worst position with battery 2#									
Right touch	41140/2645	20M QPSK 1RB#99	0.916	0.416	0.16	16.83	18.00	1.199	/
Tested at the worst position with battery 3#									
Right touch	41140/2645	20M QPSK 1RB#99	0.786	0.373	0.10	16.83	18.00	1.029	/
Test data of MHA-L29 (new)									
Right touch	41140/2645	20M QPSK 1RB#99	0.650	0.298	0.12	16.83	18.00	0.851	Yes

Table 87: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	40340/2565	20M QPSK 1RB#50	0.035	0.019	-0.11	17.43	18.00	0.040	/
Back Side	40340/2565	20M QPSK 1RB#50	0.032	0.016	0.01	17.43	18.00	0.036	/
50%RB									
Front Side	40340/2565	20M QPSK 50%RB#0	0.033	0.017	0.00	16.35	17.00	0.038	/
Back Side	40340/2565	20M QPSK 50%RB#0	0.030	0.016	0.18	16.35	17.00	0.034	/
Tested at the worst position with battery 2#									
Front Side	40340/2565	20M QPSK 1RB#50	0.033	0.018	0.05	17.43	18.00	0.038	/
Tested at the worst position with battery 3#									
Front Side	40340/2565	20M QPSK 1RB#50	0.025	0.013	0.06	17.43	18.00	0.028	/
Test data of MHA-L29 (new)									
Front Side	40340/2565	20M QPSK 1RB#50	0.030	0.016	0.16	17.43	18.00	0.034	Yes

Table 88: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	40340/2565	20M QPSK 1RB#50	0.067	0.035	0.11	17.43	18.00	0.076	/
Back Side	40340/2565	20M QPSK 1RB#50	0.045	0.023	-0.08	17.43	18.00	0.052	/
Left Side	40340/2565	20M QPSK 1RB#50	0.077	0.039	-0.08	17.43	18.00	0.088	/
Top Side	40340/2565	20M QPSK 1RB#50	0.045	0.020	0.11	17.43	18.00	0.051	/
50%RB									
Front Side	40340/2565	20M QPSK 50%RB#0	0.049	0.026	-0.08	16.35	17.00	0.057	/
Back Side	40340/2565	20M QPSK 50%RB#0	0.046	0.024	0.01	16.35	17.00	0.054	/
Left Side	40340/2565	20M QPSK 50%RB#0	0.076	0.038	0.05	16.35	17.00	0.088	/
Top Side	40340/2565	20M QPSK 50%RB#0	0.043	0.020	0.15	16.35	17.00	0.050	/
Tested at the worst position with battery 2#									
Left Side	40340/2565	20M QPSK 1RB#50	0.098	0.048	0.07	17.43	18.00	0.112	/
Tested at the worst position with battery 3#									
Left Side	40340/2565	20M QPSK 1RB#50	0.118	0.060	0.04	17.43	18.00	0.135	/
Test data of MHA-L29 (new)									
Left Side	40340/2565	20M QPSK 1RB#50	0.080	0.041	-0.08	17.43	18.00	0.091	Yes

Table 89: Hotspot SAR test results of LTE Band XLI

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Left touch	190/836.6	GSM	0.272	0.209	0.14	32.73	33.50	0.325	/
Left tilt	190/836.6	GSM	0.178	0.137	0.05	32.73	33.50	0.213	/
Right touch	190/836.6	GSM	0.301	0.230	0.00	32.73	33.50	0.359	/
Right tilt	190/836.6	GSM	0.169	0.134	-0.07	32.73	33.50	0.202	/
Right touch	128/824.2	GSM	0.277	0.213	0.01	32.64	33.50	0.338	/
Right touch	251/848.8	GSM	0.346	0.263	-0.05	32.72	33.50	0.414	/
Tested at the worst position with battery 2#									
Right touch	251/848.8	GSM	0.352	0.267	-0.14	32.72	33.50	0.421	/
Tested at the worst position with battery 3#									
Right touch	251/848.8	GSM	0.340	0.259	0.04	32.72	33.50	0.407	/
Test data of MHA-L29 (new)									
Right touch	251/848.8	GSM	0.188	0.146	-0.19	32.72	33.50	0.225	Yes

Table 90: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	190/836.6	GSM	0.323	0.247	-0.17	32.73	33.50	0.386	/
Back Side	190/836.6	GSM	0.360	0.274	-0.01	32.73	33.50	0.430	/
Tested at the worst position with SIM2									
Back Side	190/836.6	GSM	0.354	0.270	-0.02	32.73	33.50	0.423	/
Tested at the worst position with battery 2#									
Back Side	190/836.6	GSM	0.356	0.271	-0.06	32.73	33.50	0.425	/
Tested at the worst position with battery 3#									
Back Side	190/836.6	GSM	0.334	0.236	-0.02	32.73	33.50	0.399	/
Test data of MHA-L29 (new)									
Back Side	190/836.6	GSM	0.215	0.165	-0.05	32.73	33.50	0.257	Yes

Table 91: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	190/836.6	GPRS 2TS	0.354	0.271	-0.12	31.64	32.50	0.432	/
Back Side	190/836.6	GPRS 2TS	0.415	0.316	-0.02	31.64	32.50	0.506	/
Left Side	190/836.6	GPRS 2TS	0.429	0.287	-0.06	31.64	32.50	0.523	/
Right Side	190/836.6	GPRS 2TS	0.624	0.420	-0.11	31.64	32.50	0.761	/
Bottom Side	190/836.6	GPRS 2TS	0.163	0.082	-0.09	31.64	32.50	0.199	/
Tested at the worst position with battery 2#									
Right Side	190/836.6	GPRS 2TS	0.585	0.395	-0.13	31.64	32.50	0.713	/
Tested at the worst position with battery 3#									
Right Side	190/836.6	GPRS 2TS	0.551	0.373	0.11	31.64	32.50	0.672	/
Test data of MHA-L29 (new)									
Right Side	190/836.6	GPRS 2TS	0.368	0.252	-0.13	31.64	32.50	0.449	Yes

Table 92: Hotspot SAR test results of GSM850

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Left touch	661/1880	GSM	0.118	0.075	-0.02	29.52	30.50	0.148	/
Left tilt	661/1880	GSM	0.111	0.065	0.06	29.52	30.50	0.139	/
Right touch	661/1880	GSM	0.234	0.145	0.12	29.52	30.50	0.293	/
Right tilt	661/1880	GSM	0.088	0.050	0.07	29.52	30.50	0.110	/
Right touch	512/1850.2	GSM	0.264	0.166	0.11	29.65	30.50	0.321	/
Right touch	810/1909.8	GSM	0.163	0.100	0.11	29.46	30.50	0.207	/
Tested at the worst position with battery 2#									
Right touch	512/1850.2	GSM	0.252	0.160	0.12	29.65	30.50	0.306	/
Tested at the worst position with battery 3#									
Right touch	512/1850.2	GSM	0.251	0.159	0.17	29.65	30.50	0.305	/
Test data of MHA-L29 (new)									
Right touch	512/1850.2	GSM	0.117	0.073	0.07	29.65	30.50	0.142	Yes

Table 93: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	661/1880	GSM	0.259	0.147	0.11	29.52	30.50	0.325	/
Back Side	661/1880	GSM	0.275	0.153	0.18	29.52	30.50	0.345	/
Tested at the worst position with battery 2#									
Back Side	661/1880	GSM	0.243	0.136	0.09	29.52	30.50	0.305	/
Tested at the worst position with battery 3#									
Back Side	661/1880	GSM	0.200	0.111	0.02	29.52	30.50	0.251	/
Test data of MHA-L29 (new)									
Back Side	661/1880	GSM	0.126	0.071	-0.19	29.52	30.50	0.158	Yes

Table 94: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	661/1880	GPRS 2TS	0.613	0.322	0.17	28.51	29.50	0.770	/
Back Side	661/1880	GPRS 2TS	0.628	0.323	0.19	28.51	29.50	0.789	/
Left Side	661/1880	GPRS 2TS	0.103	0.056	-0.05	28.51	29.50	0.129	/
Right Side	661/1880	GPRS 2TS	0.330	0.196	0.02	28.51	29.50	0.414	/
Bottom Side	661/1880	GPRS 2TS	1.110	0.587	-0.04	28.51	29.50	1.394	/
Bottom Side-Repeated	661/1880	GPRS 2TS	1.050	0.552	0.04	28.51	29.50	1.319	/
Bottom Side	512/1850.2	GPRS 2TS	0.919	0.485	0.11	28.53	29.50	1.149	/
Bottom Side	810/1909.8	GPRS 2TS	1.020	0.540	0.14	28.36	29.50	1.326	/
Tested at the worst position with battery 2#									
Bottom Side	661/1880	GPRS 2TS	0.802	0.421	0.09	28.51	29.50	1.007	/
Tested at the worst position with battery 3#									
Bottom Side	661/1880	GPRS 2TS	0.794	0.419	0.17	28.51	29.50	0.997	/
Test data of MHA-L29 (new)									
Bottom Side	661/1880	GPRS 2TS	0.575	0.304	-0.16	28.51	29.50	0.722	Yes

Table 95: Hotspot SAR test results of GSM1900

Per KDB648474D04, when hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold:

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)	Product Specific 10-g SAR Exclusion
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	661/1880	GPRS 2TS	0.613	0.322	0.17	28.51	29.50	0.770	Yes
Back Side	661/1880	GPRS 2TS	0.628	0.323	0.19	28.51	29.50	0.789	Yes
Left Side	661/1880	GPRS 2TS	0.103	0.056	-0.05	28.51	29.50	0.129	Yes
Right Side	661/1880	GPRS 2TS	0.330	0.196	0.02	28.51	29.50	0.414	Yes
Bottom Side	661/1880	GPRS 2TS	1.110	0.587	-0.04	28.51	29.50	1.394	No
Bottom Side-Repeated	661/1880	GPRS 2TS	1.050	0.552	0.04	28.51	29.50	1.319	No
Bottom Side	512/1850.2	GPRS 2TS	0.919	0.485	0.11	28.53	29.50	1.149	Yes
Bottom Side	810/1909.8	GPRS 2TS	1.020	0.540	0.14	28.36	29.50	1.326	No
Tested at the worst position with battery 2#									
Bottom Side	661/1880	GPRS 2TS	0.802	0.421	0.09	28.51	29.50	1.007	Yes
Tested at the worst position with battery 3#									
Bottom Side	661/1880	GPRS 2TS	0.794	0.419	0.17	28.51	29.50	0.997	Yes
Test data of MHA-L29 (new)									
Bottom Side	661/1880	GPRS 2TS	0.575	0.304	-0.16	28.51	29.50	0.722	Yes

Table 96: Product Specific 10-g SAR test reduction evaluation of GSM1900

Note : According to the table above , only **Bottom Side** Product Specific 10-g SAR test is required for this frequency band:

Test Position of Product Specific 10-g SAR with 0mm	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR10-g (W/kg)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Bottom Side	661/1880	GPRS 2TS	0.491	0.207	-0.10	28.51	29.50	0.260	/
Tested at the worst position with battery 2#									
Bottom Side	661/1880	GPRS 2TS	0.351	0.185	-0.11	28.51	29.50	0.232	/
Tested at the worst position with battery 3#									
Bottom Side	661/1880	GPRS 2TS	0.462	0.196	0.17	28.51	29.50	0.246	/
Test data of MHA-L29 (new)									
Bottom Side	661/1880	GPRS 2TS	0.288	0.135	-0.05	28.51	29.50	0.170	Yes

Table 97: Product Specific 10-g SAR 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Left touch	9400/1880	RMC	0.232	0.150	0.17	23.48	24.50	0.293	/
Left tilt	9400/1880	RMC	0.194	0.116	0.06	23.48	24.50	0.245	/
Right touch	9400/1880	RMC	0.515	0.315	0.12	23.48	24.50	0.651	/
Right tilt	9400/1880	RMC	0.174	0.097	-0.09	23.48	24.50	0.220	/
Right touch	9262/1852.4	RMC	0.622	0.385	0.18	23.42	24.50	0.798	/
Right touch	9538/1907.6	RMC	0.371	0.225	0.12	23.45	24.50	0.472	/
Tested at the worst position with battery 2#									
Right touch	9262/1852.4	RMC	0.484	0.308	0.13	23.42	24.50	0.621	/
Tested at the worst position with battery 3#									
Right touch	9262/1852.4	RMC	0.324	0.204	0.18	23.42	24.50	0.415	/
Test data of MHA-L29 (new)									
Right touch	9262/1852.4	RMC	0.339	0.216	0.14	23.42	24.50	0.435	Yes

Table 98: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	9400/1880	RMC	0.370	0.214	0.09	23.48	24.50	0.468	/
Back Side	9400/1880	RMC	0.475	0.266	0.14	23.48	24.50	0.601	/
Tested at the worst position with battery 2#									
Back Side	9400/1880	RMC	0.464	0.263	0.13	23.48	24.50	0.587	/
Tested at the worst position with battery 3#									
Back Side	9400/1880	RMC	0.458	0.260	0.12	23.48	24.50	0.579	/
Test data of MHA-L29 (new)									
Back Side	9400/1880	RMC	0.104	0.058	0.09	23.48	24.50	0.132	Yes

Table 99: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	9400/1880	RMC	0.566	0.312	-0.08	21.88	22.50	0.653	/
Back Side	9400/1880	RMC	0.849	0.443	0.07	21.88	22.50	0.979	/
Back Side	9262/1852.4	RMC	0.866	0.455	0.09	21.87	22.50	1.001	/
Back Side	9538/1907.6	RMC	0.725	0.379	0.03	21.91	22.50	0.830	/
Left Side	9400/1880	RMC	0.193	0.107	0.06	21.88	22.50	0.223	/
Right Side	9400/1880	RMC	0.378	0.214	0.08	21.88	22.50	0.436	/
Bottom Side	9400/1880	RMC	1.120	0.600	-0.16	21.88	22.50	1.292	/
Bottom Side	9262/1852.4	RMC	0.922	0.494	-0.13	21.87	22.50	1.066	/
Bottom Side	9538/1907.6	RMC	1.130	0.603	-0.18	21.91	22.50	1.294	/
Bottom Side-Repeated	9538/1907.6	RMC	1.100	0.590	0.12	21.91	22.50	1.260	/
Tested at the worst position with battery 2#									
Bottom Side	9538/1907.6	RMC	1.120	0.604	0.15	21.91	22.50	1.283	/
Tested at the worst position with battery 3#									
Bottom Side	9538/1907.6	RMC	1.120	0.599	0.06	21.91	22.50	1.283	/
Test data of MHA-L29 (new)									
Bottom Side	9538/1907.6	RMC	0.942	0.515	-0.14	21.91	22.50	1.079	Yes

Table 100: Hotspot SAR test results of UMTS Band II

Per KDB648474D04, when hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold:

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)	Product Specific 10-g SAR Exclusion
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	9400/1880	RMC	0.566	0.312	-0.08	21.88	24.50	1.035	Yes
Back Side	9400/1880	RMC	0.849	0.443	0.07	21.88	24.50	1.552	No
Back Side	9262/1852.4	RMC	0.866	0.455	0.09	21.87	24.50	1.587	No
Back Side	9538/1907.6	RMC	0.725	0.379	0.03	21.91	24.50	1.316	No
Left Side	9400/1880	RMC	0.193	0.107	0.06	21.88	24.50	0.353	Yes
Right Side	9400/1880	RMC	0.378	0.214	0.08	21.88	24.50	0.691	Yes
Bottom Side	9400/1880	RMC	1.120	0.600	-0.16	21.88	24.50	2.047	No
Bottom Side	9262/1852.4	RMC	0.922	0.494	-0.13	21.87	24.50	1.689	No
Bottom Side	9538/1907.6	RMC	1.130	0.603	-0.18	21.91	24.50	2.052	No
Bottom Side-Repeated	9538/1907.6	RMC	1.100	0.590	0.12	21.91	24.50	1.997	No
Tested at the worst position with battery 2#									
Bottom Side	9538/1907.6	RMC	1.120	0.604	0.15	21.91	24.50	2.033	No
Tested at the worst position with battery 3#									
Bottom Side	9538/1907.6	RMC	1.120	0.599	0.06	21.91	24.50	2.033	No
Test data of MHA-L29 (new)									
Bottom Side	9538/1907.6	RMC	0.942	0.515	-0.14	21.91	24.50	1.710	No

Table 101: Product Specific 10-g SAR test reduction evaluation of UMTS Band II

Note : According to the table above , only **Back Side** and **Bottom Side** Product Specific 10-g SAR test are required for this frequency band:

Test Position of Product Specific 10-g SAR with 0mm	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR10-g (W/kg)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Back Side	9400/1880	RMC	4.870	2.050	0.17	23.48	24.50	2.593	/
Back Side	9262/1852.4	RMC	4.560	1.900	0.17	23.42	24.50	2.436	/
Back Side	9538/1907.6	RMC	5.130	2.160	0.12	23.45	24.50	2.751	/
Back Side-Repeated	9538/1907.6	RMC	5.010	2.110	0.12	23.45	24.50	2.687	/
Bottom Side	9400/1880	RMC	0.814	0.349	-0.14	23.48	24.50	0.441	/
Tested at the worst position with battery 2#									
Back Side	9538/1907.6	RMC	3.770	1.820	0.13	23.45	24.50	2.318	/
Tested at the worst position with battery 3#									
Back Side	9538/1907.6	RMC	3.650	1.550	0.04	23.45	24.50	1.974	/
Test data of MHA-L29 (new)									
Back Side	9538/1907.6	RMC	4.650	1.970	-0.19	23.45	24.50	2.509	Yes

Table 102: Product Specific 10-g SAR results of UMTS Band II

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Left touch	1413/1732.6	RMC	0.338	0.231	0.16	23.44	24.00	0.385	/
Left tilt	1413/1732.6	RMC	0.267	0.162	0.07	23.44	24.00	0.304	/
Right touch	1413/1732.6	RMC	0.593	0.391	0.19	23.44	24.00	0.675	/
Right tilt	1413/1732.6	RMC	0.243	0.147	0.01	23.44	24.00	0.276	/
Right touch	1312/1712.4	RMC	0.598	0.394	0.05	23.59	24.00	0.657	/
Right touch	1513/1752.6	RMC	0.656	0.423	0.14	23.45	24.00	0.745	/
Tested at the worst position with battery 2#									
Right touch	1513/1752.6	RMC	0.536	0.351	0.11	23.45	24.00	0.608	/
Tested at the worst position with battery 3#									
Right touch	1513/1752.6	RMC	0.549	0.360	0.13	23.45	24.00	0.623	/
Test data of MHA-L29 (new)									
Right touch	1513/1752.6	RMC	0.464	0.305	-0.13	23.45	24.00	0.527	Yes

Table 103: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	1413/1732.6	RMC	0.333	0.228	-0.09	23.44	24.00	0.379	/
Back Side	1413/1732.6	RMC	0.288	0.197	-0.01	23.44	24.00	0.328	/
Tested at the worst position with battery 2#									
Front Side	1413/1732.6	RMC	0.306	0.195	-0.07	23.44	24.00	0.348	/
Tested at the worst position with battery 3#									
Front Side	1413/1732.6	RMC	0.280	0.192	0.10	23.44	24.00	0.319	/
Test data of MHA-L29 (new)									
Front Side	1413/1732.6	RMC	0.269	0.183	0.14	23.44	24.00	0.306	Yes

Table 104: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	1413/1732.6	RMC	0.529	0.329	-0.19	23.44	24.00	0.602	/
Back Side	1413/1732.6	RMC	0.604	0.370	0.00	23.44	24.00	0.687	/
Left Side	1413/1732.6	RMC	0.169	0.095	-0.05	23.44	24.00	0.192	/
Right Side	1413/1732.7	RMC	0.544	0.331	0.19	23.44	24.00	0.619	/
Bottom Side	1413/1732.6	RMC	0.419	0.235	0.13	23.44	24.00	0.477	/
Tested at the worst position with battery 2#									
Back Side	1413/1732.6	RMC	0.501	0.302	0.02	23.44	24.00	0.570	/
Tested at the worst position with battery 3#									
Back Side	1413/1732.6	RMC	0.557	0.343	-0.01	23.44	24.00	0.634	/
Test data of MHA-L29 (new)									
Back Side	1413/1732.6	RMC	0.377	0.242	-0.01	23.44	24.00	0.429	Yes

Table 105: Hotspot SAR test results of UMTS Band IV

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Left touch	4182/836.4	RMC	0.309	0.236	0.02	23.35	24.50	0.403	/
Left tilt	4182/836.4	RMC	0.259	0.169	0.09	23.35	24.50	0.338	/
Right touch	4182/836.4	RMC	0.367	0.277	0.10	23.35	24.50	0.478	/
Right tilt	4182/836.4	RMC	0.242	0.168	0.02	23.35	24.50	0.315	/
Right touch	4132/826.4	RMC	0.352	0.268	0.14	23.34	24.50	0.460	/
Right touch	4233/846.6	RMC	0.374	0.281	0.15	23.23	24.50	0.501	/
Tested at the worst position with battery 2#									
Right touch	4233/846.6	RMC	0.367	0.277	0.06	23.23	24.50	0.492	/
Tested at the worst position with battery 3#									
Right touch	4233/846.6	RMC	0.361	0.273	0.07	23.23	24.50	0.484	/
Test data of MHA-L29 (new)									
Right touch	4233/846.6	RMC	0.269	0.208	0.01	23.23	24.50	0.360	Yes

Table 106: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	4182/836.4	RMC	0.311	0.236	0.02	23.35	24.50	0.405	/
Back Side	4182/836.4	RMC	0.344	0.262	-0.02	23.35	24.50	0.448	/
Tested at the worst position with battery 2#									
Back Side	4182/836.4	RMC	0.337	0.238	-0.03	23.35	24.50	0.439	/
Tested at the worst position with battery 3#									
Back Side	4182/836.4	RMC	0.329	0.233	-0.03	23.35	24.50	0.429	/
Test data of MHA-L29 (new)									
Back Side	4182/836.4	RMC	0.262	0.201	-0.02	23.35	24.50	0.341	Yes

Table 107: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	4182/836.4	RMC	0.317	0.225	-0.07	23.35	24.50	0.413	/
Back Side	4182/836.4	RMC	0.381	0.289	-0.02	23.35	24.50	0.497	/
Left Side	4182/836.4	RMC	0.254	0.171	-0.13	23.35	24.50	0.331	/
Right Side	4182/836.4	RMC	0.586	0.391	-0.05	23.35	24.50	0.764	/
Bottom Side	4182/836.4	RMC	0.194	0.099	0.06	23.35	24.50	0.253	/
Tested at the worst position with battery 2#									
Right Side	4182/836.4	RMC	0.566	0.374	-0.11	23.35	24.50	0.738	/
Tested at the worst position with battery 3#									
Right Side	4182/836.4	RMC	0.533	0.359	0.01	23.35	24.50	0.695	/
Test data of MHA-L29 (new)									
Right Side	4182/836.4	RMC	0.247	0.168	-0.11	23.35	24.50	0.322	Yes

Table 108: Hotspot SAR test results of UMTS Band V

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Left touch	18900/1880	20M QPSK 1RB#50	0.186	0.119	0.18	23.17	23.50	0.201	/
Left tilt	18900/1880	20M QPSK 1RB#50	0.166	0.098	0.06	23.17	23.50	0.179	/
Right touch	18900/1880	20M QPSK 1RB#50	0.333	0.210	0.02	23.17	23.50	0.359	/
Right tilt	18900/1880	20M QPSK 1RB#50	0.143	0.078	0.03	23.17	23.50	0.154	/
Right touch	18700/1860	20M QPSK 1RB#50	0.489	0.309	0.08	22.56	23.50	0.607	/
Right touch	19100/1900	20M QPSK 1RB#50	0.249	0.144	0.18	22.70	23.50	0.299	/
50%RB									
Left touch	18900/1880	20M QPSK 50%RB#0	0.142	0.083	0.11	22.15	23.00	0.173	/
Left tilt	18900/1880	20M QPSK 50%RB#0	0.127	0.074	0.14	22.15	23.00	0.154	/
Right touch	18900/1880	20M QPSK 50%RB#0	0.259	0.150	0.14	22.15	23.00	0.315	/
Right tilt	18900/1880	20M QPSK 50%RB#0	0.116	0.063	0.05	22.15	23.00	0.141	/
Tested at the worst position with battery 2#									
Right touch	18700/1860	20M QPSK 1RB#50	0.494	0.312	0.14	22.56	23.50	0.613	/
Tested at the worst position with battery 3#									
Right touch	18700/1860	20M QPSK 1RB#50	0.490	0.309	0.08	22.56	23.50	0.608	/
Test data of MHA-L29 (new)									
Right touch	18700/1860	20M QPSK 1RB#50	0.392	0.250	0.05	22.56	23.50	0.487	Yes

Table 109: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	18900/1880	20M QPSK 1RB#50	0.344	0.192	-0.10	23.17	23.50	0.371	/
Back Side	18900/1880	20M QPSK 1RB#50	0.523	0.295	0.15	23.17	23.50	0.564	/
50%RB									
Front Side	18900/1880	20M QPSK 50%RB#0	0.248	0.145	-0.14	22.15	23.00	0.302	/
Back Side	18900/1880	20M QPSK 50%RB#0	0.344	0.194	-0.02	22.15	23.00	0.418	/
Tested at the worst position with battery 2#									
Back Side	18900/1880	20M QPSK 1RB#50	0.525	0.295	0.15	23.17	23.50	0.566	/
Tested at the worst position with battery 3#									
Back Side	18900/1880	20M QPSK 1RB#50	0.506	0.287	0.16	23.17	23.50	0.546	/
Test data of MHA-L29 (new)									
Back Side	18900/1880	20M QPSK 1RB#50	0.383	0.214	0.00	23.17	23.50	0.413	Yes

Table 110: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	18900/1880	20M QPSK 1RB#50	0.414	0.226	0.11	20.93	21.50	0.472	/
Back Side	18900/1880	20M QPSK 1RB#50	0.616	0.320	0.00	20.93	21.50	0.702	/
Left Side	18900/1880	20M QPSK 1RB#50	0.136	0.076	-0.12	20.93	21.50	0.155	/
Right Side	18900/1880	20M QPSK 1RB#50	0.331	0.196	0.03	20.93	21.50	0.377	/
Bottom Side	18900/1880	20M QPSK 1RB#50	0.898	0.477	-0.05	20.93	21.50	1.024	/
Bottom Side	18700/1860	20M QPSK 1RB#50	1.060	0.563	-0.01	20.86	21.50	1.228	/
Bottom Side-Repeated	18700/1860	20M QPSK 1RB#50	1.000	0.526	0.00	20.86	21.50	1.159	/
Bottom Side	19100/1900	20M QPSK 1RB#50	0.851	0.451	-0.03	20.55	21.50	1.059	/
50%RB									
Front Side	18900/1880	20M QPSK 50%RB#25	0.381	0.205	-0.15	20.74	21.00	0.405	/
Back Side	18900/1880	20M QPSK 50%RB#25	0.573	0.297	0.05	20.74	21.00	0.608	/
Left Side	18900/1880	20M QPSK 50%RB#25	0.129	0.075	-0.09	20.74	21.00	0.137	/
Right Side	18900/1880	20M QPSK 50%RB#25	0.313	0.160	0.02	20.74	21.00	0.332	/
Bottom Side	18900/1880	20M QPSK 50%RB#25	0.871	0.461	-0.06	20.74	21.00	0.925	/
Bottom Side	18700/1860	20M QPSK 50%RB#25	0.968	0.512	-0.06	20.73	21.00	1.030	/
Bottom Side	19100/1900	20M QPSK 50%RB#25	0.877	0.466	-0.09	20.62	21.00	0.957	/
100%RB									
Bottom Side	18900/1880	20M QPSK 100%RB#0	0.859	0.455	-0.07	20.61	21.00	0.940	/
Tested at the worst position with battery 2#									
Bottom Side	18700/1860	20M QPSK 1RB#50	0.946	0.502	-0.03	20.86	21.50	1.096	/
Tested at the worst position with battery 3#									
Bottom Side	18700/1860	20M QPSK 1RB#50	0.950	0.503	-0.06	20.86	21.50	1.101	/
Test data of MHA-L29 (new)									
Bottom Side	18700/1860	20M QPSK 1RB#50	0.797	0.423	-0.17	20.86	21.50	0.924	Yes

Table 111: Hotspot SAR test results of LTE Band II

Per KDB648474D04, when hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold:

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)	Product Specific 10-g SAR Exclusion
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	18900/1880	20M QPSK 1RB#50	0.414	0.226	0.11	20.93	23.50	0.748	Yes
Back Side	18900/1880	20M QPSK 1RB#50	0.616	0.320	0.00	20.93	23.50	1.113	Yes
Left Side	18900/1880	20M QPSK 1RB#50	0.136	0.076	-0.12	20.93	23.50	0.246	Yes
Right Side	18900/1880	20M QPSK 1RB#50	0.331	0.196	0.03	20.93	23.50	0.598	Yes
Bottom Side	18900/1880	20M QPSK 1RB#50	0.898	0.477	-0.05	20.93	23.50	1.623	No
Bottom Side	18700/1860	20M QPSK 1RB#50	1.060	0.563	-0.01	20.86	23.50	1.947	No
Bottom Side Repeated	18700/1860	20M QPSK 1RB#50	1.000	0.526	0.00	20.86	23.50	1.837	No
Bottom Side	19100/1900	20M QPSK 1RB#50	0.851	0.451	-0.03	20.55	23.50	1.679	No
50%RB									
Front Side	18900/1880	20M QPSK 50%RB#25	0.381	0.205	-0.15	20.74	23.00	0.641	Yes
Back Side	18900/1880	20M QPSK 50%RB#25	0.573	0.297	0.05	20.74	23.00	0.964	Yes
Left Side	18900/1880	20M QPSK 50%RB#25	0.129	0.075	-0.09	20.74	23.00	0.217	Yes
Right Side	18900/1880	20M QPSK 50%RB#25	0.313	0.160	0.02	20.74	23.00	0.527	Yes
Bottom Side	18900/1880	20M QPSK 50%RB#25	0.871	0.461	-0.06	20.74	23.00	1.466	No
Bottom Side	18700/1860	20M QPSK 50%RB#25	0.968	0.512	-0.06	20.73	23.00	1.633	No
Bottom Side	19100/1900	20M QPSK 50%RB#25	0.877	0.466	-0.09	20.62	23.00	1.517	No
100%RB									
Bottom Side	18900/1880	20M QPSK 100%RB#0	0.859	0.455	-0.07	20.61	23.00	1.489	No
Tested at the worst position with battery 2#									
Bottom Side	18700/1860	20M QPSK 1RB#50	0.946	0.502	-0.03	20.86	23.50	1.737	No
Tested at the worst position with battery 3#									
Bottom Side	18700/1860	20M QPSK 1RB#50	0.950	0.503	-0.06	20.86	23.50	1.745	No

Test data of MHA-L29 (new)

Bottom Side	18700/1860	20M QPSK 1RB#50	0.797	0.423	-0.17	20.86	23.50	1.464	No
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Table 112: Product Specific 10-g SAR test reduction evaluation of LTE Band II

Note : According to the table above , only **Bottom Side** Product Specific 10-g SAR test is required for this frequency band:

Test Position of Product Specific 10-g SAR with 0mm	Test channel /Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune- up Power (dBm)	Scaled SAR10-g (W/kg)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Bottom Side	18900/1880	20M QPSK 1RB#50	0.670	0.293	-0.15	23.17	23.50	0.316	/
50%RB									
Bottom Side	18900/1880	20M QPSK 50%RB#0	0.624	0.275	-0.15	22.15	23.00	0.334	/
Tested at the worst position with battery 2#									
Bottom Side	18900/1880	20M QPSK 50%RB#0	0.628	0.266	-0.18	22.15	23.00	0.324	/
Tested at the worst position with battery 3#									
Bottom Side	18900/1880	20M QPSK 50%RB#0	0.622	0.271	0.16	22.15	23.00	0.330	/
Test data of MHA-L29 (new)									
Bottom Side	18900/1880	20M QPSK 50%RB#0	0.434	0.187	0.01	22.15	23.00	0.227	Yes

Table 113: Product Specific 10-g SAR 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)	Conducte d Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
1RB									
Left touch	20050/1720	20M QPSK 1RB#50	0.316	0.200	-0.15	22.54	24.00	0.442	/
Left tilt	20050/1720	20M QPSK 1RB#50	0.273	0.165	0.03	22.54	24.00	0.382	/
Right touch	20050/1720	20M QPSK 1RB#50	0.656	0.430	-0.13	22.54	24.00	0.918	/
Right touch	20175/1732.5	20M QPSK 1RB#0	0.557	0.337	-0.16	22.53	24.00	0.781	/
Right touch	20300/1745	20M QPSK 1RB#50	0.705	0.460	0.18	22.18	24.00	1.072	Yes
Right tilt	20050/1720	20M QPSK 1RB#50	0.262	0.176	0.05	22.54	24.00	0.367	/
50%RB									
Left touch	20050/1720	20M QPSK 50%RB#25	0.221	0.140	0.15	21.30	23.00	0.327	/
Left tilt	20050/1720	20M QPSK 50%RB#25	0.187	0.113	-0.09	21.30	23.00	0.277	/
Right touch	20050/1720	20M QPSK 50%RB#25	0.458	0.301	0.07	21.30	23.00	0.677	/
Right tilt	20050/1720	20M QPSK 50%RB#25	0.181	0.121	-0.01	21.30	23.00	0.268	/
100%RB									
Right touch	20050/1720	20M QPSK 100%RB#0	0.364	0.221	0.15	21.04	23.00	0.572	/
Tested at the worst position with battery 2#									
Right touch	20300/1745	20M QPSK 1RB#50	0.625	0.409	0.10	22.18	24.00	0.950	/

Table 114: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
1RB									
Front Side	20050/1720	20M QPSK 1RB#50	0.222	0.153	-0.04	22.54	24.00	0.311	/
Back Side	20050/1720	20M QPSK 1RB#50	0.267	0.183	0.00	22.54	24.00	0.374	Yes
50%RB									
Front Side	20050/1720	20M QPSK 50%RB#25	0.171	0.110	-0.07	21.30	23.00	0.253	/
Back Side	20050/1720	20M QPSK 50%RB#25	0.180	0.115	-0.01	21.30	23.00	0.266	/
Tested at the worst position with battery 2#									
Back Side	20050/1720	20M QPSK 1RB#50	0.230	0.158	0.05	22.54	24.00	0.322	/

Table 115: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
1RB									
Front Side	20050/1720	20M QPSK 1RB#50	0.426	0.294	-0.15	22.54	24.00	0.596	/
Back Side	20050/1720	20M QPSK 1RB#50	0.447	0.291	0.10	22.54	24.00	0.626	Yes
Left Side	20050/1720	20M QPSK 1RB#50	0.167	0.097	-0.09	22.54	24.00	0.234	/
Right Side	20050/1720	20M QPSK 1RB#50	0.370	0.218	0.05	22.54	24.00	0.518	/
Bottom Side	20050/1720	20M QPSK 1RB#50	0.243	0.136	0.05	22.54	24.00	0.340	/
50%RB									
Front Side	20050/1720	20M QPSK 50%RB#25	0.288	0.182	-0.05	21.30	23.00	0.426	/
Back Side	20050/1720	20M QPSK 50%RB#25	0.296	0.183	0.04	21.30	23.00	0.438	/
Left Side	20050/1720	20M QPSK 50%RB#25	0.111	0.065	0.00	21.30	23.00	0.164	/
Right Side	20050/1720	20M QPSK 50%RB#25	0.252	0.148	-0.02	21.30	23.00	0.373	/
Bottom Side	20050/1720	20M QPSK 50%RB#25	0.166	0.089	-0.13	21.30	23.00	0.246	/
Tested at the worst position with battery 2#									
Back Side	20050/1720	20M QPSK 1RB#50	0.415	0.267	-0.15	22.54	24.00	0.581	/

Table 116: Hotspot SAR test results of LTE Band IV

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Left touch	20600/844	10M QPSK 1RB#25	0.257	0.195	0.05	23.35	24.00	0.298	/
Left tilt	20600/844	10M QPSK 1RB#25	0.222	0.148	0.10	23.35	24.00	0.258	/
Right touch	20600/844	10M QPSK 1RB#25	0.320	0.242	0.11	23.35	24.00	0.372	/
Right tilt	20600/844	10M QPSK 1RB#25	0.199	0.135	0.05	23.35	24.00	0.231	/
Right touch	20450/829	10M QPSK 1RB#25	0.310	0.236	0.06	23.22	24.00	0.371	/
Right touch	20525/836.5	10M QPSK 1RB#25	0.258	0.196	0.04	22.87	24.00	0.335	/
50%RB									
Left touch	20450/829	10M QPSK 50%RB#13	0.215	0.148	0.17	22.30	23.00	0.253	/
Left tilt	20450/829	10M QPSK 50%RB#13	0.180	0.123	0.15	22.30	23.00	0.211	/
Right touch	20450/829	10M QPSK 50%RB#13	0.236	0.163	0.11	22.30	23.00	0.277	/
Right tilt	20450/829	10M QPSK 50%RB#13	0.166	0.116	0.13	22.30	23.00	0.195	/
Tested at the worst position with battery 2#									
Right touch	20600/844	10M QPSK 1RB#25	0.314	0.238	-0.08	23.35	24.00	0.365	/
Tested at the worst position with battery 3#									
Right touch	20600/844	10M QPSK 1RB#25	0.303	0.238	0.13	23.35	24.00	0.352	/
Test data of MHA-L29 (new)									
Right touch	20600/844	10M QPSK 1RB#25	0.290	0.226	-0.02	23.35	24.00	0.337	Yes

Table 117: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	20600/844	10M QPSK 1RB#25	0.261	0.198	0.01	23.35	24.00	0.303	/
Back Side	20600/844	10M QPSK 1RB#25	0.293	0.222	0.01	23.35	24.00	0.340	/
50%RB									
Front Side	20450/829	10M QPSK 50%RB#13	0.191	0.102	0.01	22.30	23.00	0.224	/
Back Side	20450/829	10M QPSK 50%RB#13	0.205	0.145	0.01	22.30	23.00	0.241	/
Tested at the worst position with battery 2#									
Back Side	20600/844	10M QPSK 1RB#25	0.291	0.221	0.05	23.35	24.00	0.338	/
Tested at the worst position with battery 3#									
Back Side	20600/844	10M QPSK 1RB#25	0.266	0.189	0.02	23.35	24.00	0.309	/
Test data of MHA-L29 (new)									
Back Side	20600/844	10M QPSK 1RB#25	0.309	0.237	0.00	23.35	24.00	0.359	Yes

Table 118: 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)		Scaled SAR _{1-g} (W/kg)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	20600/844	10M QPSK 1RB#25	0.279	0.190	-0.02	23.35	24.00	0.324	/
Back Side	20600/844	10M QPSK 1RB#25	0.316	0.193	0.01	23.35	24.00	0.367	/
Left Side	20600/844	10M QPSK 1RB#25	0.213	0.141	0.01	23.35	24.00	0.247	/
Right Side	20600/844	10M QPSK 1RB#25	0.467	0.314	0.15	23.35	24.00	0.542	/
Bottom Side	20600/844	10M QPSK 1RB#25	0.150	0.075	0.13	23.35	24.00	0.174	/
50%RB									
Front Side	20450/829	10M QPSK 50%RB#13	0.189	0.134	-0.02	22.30	23.00	0.222	/
Back Side	20450/829	10M QPSK 50%RB#13	0.224	0.157	0.01	22.30	23.00	0.263	/
Left Side	20450/829	10M QPSK 50%RB#13	0.181	0.120	0.03	22.30	23.00	0.213	/
Right Side	20450/829	10M QPSK 50%RB#13	0.308	0.208	0.05	22.30	23.00	0.362	/
Bottom Side	20450/829	10M QPSK 50%RB#13	0.074	0.043	0.17	22.30	23.00	0.087	/
Tested at the worst position with battery 2#									
Right Side	20600/844	10M QPSK 1RB#25	0.464	0.312	0.16	23.35	24.00	0.539	/
Tested at the worst position with battery 3#									
Right Side	20600/844	10M QPSK 1RB#25	0.466	0.313	0.09	23.35	24.00	0.541	/
Test data of MHA-L29 (new)									
Right Side	20600/844	10M QPSK 1RB#25	0.310	0.212	-0.09	23.35	24.00	0.360	Yes

Table 119: Hotspot SAR test results of LTE Band V

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
1RB									
Left touch	20850/2510	20M QPSK 1RB#50	0.336	0.186	0.06	22.55	23.00	0.373	Yes
Left tilt	20850/2510	20M QPSK 1RB#50	0.185	0.095	0.00	22.55	23.00	0.205	/
Right touch	20850/2510	20M QPSK 1RB#50	0.262	0.142	0.17	22.55	23.00	0.291	/
Right tilt	20850/2510	20M QPSK 1RB#50	0.137	0.065	0.17	22.55	23.00	0.152	/
Left touch	21100/2535	20M QPSK 1RB#50	0.183	0.102	0.10	21.88	23.00	0.237	/
Left touch	21350/2560	20M QPSK 1RB#0	0.154	0.080	0.13	22.12	23.00	0.189	/
50%RB									
Left touch	20850/2510	20M QPSK 50%RB#25	0.256	0.142	0.19	21.57	22.00	0.283	/
Left tilt	20850/2510	20M QPSK 50%RB#25	0.154	0.079	0.12	21.57	22.00	0.170	/
Right touch	20850/2510	20M QPSK 50%RB#25	0.216	0.117	-0.01	21.57	22.00	0.238	/
Right tilt	20850/2510	20M QPSK 50%RB#25	0.112	0.053	-0.02	21.57	22.00	0.124	/
Tested at the worst position with battery 2#									
Left touch	20850/2510	20M QPSK 1RB#50	0.335	0.188	0.19	22.55	23.00	0.372	/

Table 120: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
1RB									
Front Side	20850/2510	20M QPSK 1RB#50	0.310	0.166	-0.14	22.55	23.00	0.344	Yes
Back Side	20850/2510	20M QPSK 1RB#50	0.295	0.157	-0.18	22.55	23.00	0.327	/
50%RB									
Front Side	20850/2510	20M QPSK 50%RB#25	0.261	0.141	-0.19	21.57	22.00	0.288	/
Back Side	20850/2510	20M QPSK 50%RB#25	0.250	0.136	0.17	21.57	22.00	0.276	/
Tested at the worst position with battery 2#									
Front Side	20850/2510	20M QPSK 1RB#50	0.278	0.149	-0.15	22.55	23.00	0.308	/

Table 121: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
1RB									
Front Side	20850/2510	20M QPSK 1RB#50	0.630	0.295	-0.03	22.55	23.00	0.699	Yes
Back Side	20850/2510	20M QPSK 1RB#50	0.515	0.258	0.09	22.55	23.00	0.571	/
Left Side	20850/2510	20M QPSK 1RB#50	0.144	0.075	0.07	22.55	23.00	0.160	/
Right Side	20850/2510	20M QPSK 1RB#50	0.356	0.185	-0.14	22.55	23.00	0.395	/
Bottom Side	20850/2510	20M QPSK 1RB#50	0.433	0.169	-0.01	22.55	23.00	0.480	/
50%RB									
Front Side	20850/2510	20M QPSK 50%RB#25	0.458	0.234	-0.18	21.57	22.00	0.506	/
Back Side	20850/2510	20M QPSK 50%RB#25	0.473	0.241	0.01	21.57	22.00	0.522	/
Right Side	20850/2510	20M QPSK 50%RB#25	0.266	0.140	-0.06	21.57	22.00	0.294	/
Left Side	20850/2510	20M QPSK 50%RB#25	0.195	0.101	-0.15	21.57	22.00	0.215	/
Bottom Side	20850/2510	20M QPSK 50%RB#25	0.391	0.187	0.01	21.57	22.00	0.432	/
Tested at the worst position with battery 2#									
Front Side	20850/2510	20M QPSK 1RB#50	0.542	0.254	-0.13	22.55	23.00	0.601	/

Table 122: Hotspot SAR test results of LTE Band VII

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Left touch	23130/711	10M QPSK 1RB#25	0.096	0.067	0.13	22.98	23.50	0.109	/
Left tilt	23130/711	10M QPSK 1RB#25	0.097	0.060	0.10	22.98	23.50	0.109	/
Right touch	23130/711	10M QPSK 1RB#25	0.126	0.100	-0.12	22.98	23.50	0.142	/
Right touch	23060/704	10M QPSK 1RB#25	0.175	0.139	0.02	22.88	23.50	0.202	/
Right touch	23095/707.5	10M QPSK 1RB#0	0.173	0.138	-0.02	22.83	23.50	0.202	/
Right tilt	23130/711	10M QPSK 1RB#25	0.065	0.046	0.11	22.98	23.50	0.073	/
50%RB									
Left touch	23130/711	10M QPSK 50%RB#13	0.097	0.068	-0.11	21.97	23.00	0.123	/
Left tilt	23130/711	10M QPSK 50%RB#13	0.081	0.051	0.03	21.97	23.00	0.103	/
Right touch	23130/711	10M QPSK 50%RB#13	0.119	0.084	0.03	21.97	23.00	0.151	/
Right tilt	23130/711	10M QPSK 50%RB#13	0.066	0.047	0.02	21.97	23.00	0.084	/
Tested at the worst position with battery 2#									
Right touch	23060/704	10M QPSK 1RB#25	0.176	0.139	0.07	22.88	23.50	0.203	/
Tested at the worst position with battery 3#									
Right touch	23060/704	10M QPSK 1RB#25	0.166	0.116	0.01	22.88	23.50	0.191	/
Test data of MHA-L29 (new)									
Right touch	23060/704	10M QPSK 1RB#25	0.268	0.209	0.04	22.88	23.50	0.309	Yes

Table 123: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	23130/711	10M QPSK 1RB#25	0.126	0.091	0.02	22.98	23.50	0.142	/
Back Side	23130/711	10M QPSK 1RB#25	0.150	0.117	0.03	22.98	23.50	0.169	/
50%RB									
Front Side	23130/711	10M QPSK 50%RB#13	0.127	0.091	0.00	21.97	23.00	0.161	/
Back Side	23130/711	10M QPSK 50%RB#13	0.170	0.131	-0.04	21.97	23.00	0.216	/
Tested at the worst position with battery 2#									
Back Side	23130/711	10M QPSK 50%RB#13	0.165	0.117	0.00	21.97	23.00	0.209	/
Tested at the worst position with battery 3#									
Back Side	23130/711	10M QPSK 50%RB#13	0.167	0.118	-0.01	21.97	23.00	0.212	/
Test data of MHA-L29 (new)									
Back Side	23130/711	10M QPSK 50%RB#13	0.163	0.125	-0.03	21.97	23.00	0.207	Yes

Table 124: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	23130/711	10M QPSK 1RB#25	0.186	0.118	0.01	22.98	23.50	0.210	/
Back Side	23130/711	10M QPSK 1RB#25	0.190	0.114	0.02	22.98	23.50	0.214	/
Left Side	23130/711	10M QPSK 1RB#25	0.129	0.088	-0.05	22.98	23.50	0.145	/
Right Side	23130/711	10M QPSK 1RB#25	0.196	0.135	0.00	22.98	23.50	0.221	/
Bottom Side	23130/711	10M QPSK 1RB#25	0.158	0.080	-0.02	22.98	23.50	0.178	/
50%RB									
Front Side	23130/711	10M QPSK 50%RB#13	0.187	0.119	0.05	21.97	23.00	0.237	/
Back Side	23130/711	10M QPSK 50%RB#13	0.192	0.115	-0.01	21.97	23.00	0.243	/
Left Side	23130/711	10M QPSK 50%RB#13	0.130	0.088	-0.03	21.97	23.00	0.165	/
Right Side	23130/711	10M QPSK 50%RB#13	0.207	0.143	0.03	21.97	23.00	0.262	/
Bottom Side	23130/711	10M QPSK 50%RB#13	0.152	0.077	0.00	21.97	23.00	0.193	/
Tested at the worst position with battery 2#									
Right Side	23130/711	10M QPSK 50%RB#13	0.203	0.140	0.06	21.97	23.00	0.257	/
Tested at the worst position with battery 3#									
Right Side	23130/711	10M QPSK 50%RB#13	0.202	0.140	-0.08	21.97	23.00	0.256	/
Test data of MHA-L29 (new)									
Right Side	23095/707.5	10M QPSK 50%RB#13	0.231	0.160	-0.12	21.97	23.00	0.293	Yes

Table 125: Hotspot SAR test results of LTE Band XII

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

7.2.25 SAR measurement Result of LTE Band XVII(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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Left touch	23800/711	10M QPSK 1RB#25	0.149	0.103	0.14	23.50	24.00	0.167	/
Left tilt	23800/711	10M QPSK 1RB#25	0.110	0.068	0.11	23.50	24.00	0.123	/
Right touch	23800/711	10M QPSK 1RB#25	0.186	0.146	-0.06	23.50	24.00	0.209	/
Right tilt	23800/711	10M QPSK 1RB#25	0.093	0.065	0.11	23.50	24.00	0.104	/
Right touch	23780/709	10M QPSK 1RB#25	0.160	0.126	-0.14	23.26	24.00	0.190	/
Right touch	23790/710	10M QPSK 1RB#25	0.172	0.136	0.02	23.35	24.00	0.200	/
50%RB									
Left touch	23800/711	10M QPSK 50%RB#13	0.123	0.086	0.14	22.56	23.00	0.136	/
Left tilt	23800/711	10M QPSK 50%RB#13	0.078	0.048	0.14	22.56	23.00	0.086	/
Right touch	23800/711	10M QPSK 50%RB#13	0.146	0.102	0.05	22.56	23.00	0.162	/
Right tilt	23800/711	10M QPSK 50%RB#13	0.078	0.055	-0.06	22.56	23.00	0.087	/
Tested at the worst position with battery 2#									
Right touch	23800/711	10M QPSK 1RB#25	0.207	0.162	0.18	23.50	24.00	0.232	/
Tested at the worst position with battery 3#									
Right touch	23800/711	10M QPSK 1RB#25	0.201	0.141	0.10	23.50	24.00	0.226	/
Test data of MHA-L29 (new)									
Right touch	23800/711	10M QPSK 1RB#25	0.213	0.165	-0.07	23.50	24.00	0.239	Yes

Table 126: Head SAR test results of LTE Band XVII

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	23800/711	10M QPSK 1RB#25	0.192	0.139	-0.01	23.50	24.00	0.215	/
Back Side	23800/711	10M QPSK 1RB#25	0.272	0.213	0.04	23.50	24.00	0.305	/
50%RB									
Front Side	23800/711	10M QPSK 50%RB#13	0.162	0.117	0.03	22.56	23.00	0.179	/
Back Side	23800/711	10M QPSK 50%RB#13	0.175	0.125	0.04	22.56	23.00	0.194	/
Tested at the worst position with battery 2#									
Back Side	23800/711	10M QPSK 1RB#25	0.229	0.164	0.03	23.50	24.00	0.257	/
Tested at the worst position with battery 3#									
Back Side	23800/711	10M QPSK 1RB#25	0.224	0.161	-0.01	23.50	24.00	0.251	/
Test data of MHA-L29 (new)									
Back Side	23800/711	10M QPSK 1RB#25	0.254	0.196	-0.04	23.50	24.00	0.285	Yes

Table 127: Body-Worn SAR test results of LTE Band XVII

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	23800/711	10M QPSK 1RB#25	0.258	0.175	-0.02	23.50	24.00	0.289	/
Back Side	23800/711	10M QPSK 1RB#25	0.349	0.203	0.02	23.50	24.00	0.392	/
Left Side	23800/711	10M QPSK 1RB#25	0.204	0.138	0.00	23.50	24.00	0.229	/
Right Side	23800/711	10M QPSK 1RB#25	0.309	0.211	0.12	23.50	24.00	0.347	/
Bottom Side	23800/711	10M QPSK 1RB#25	0.221	0.112	0.08	23.50	24.00	0.248	/
50%RB									
Front Side	23800/711	10M QPSK 50%RB#13	0.202	0.140	-0.03	22.56	23.00	0.224	/
Back Side	23800/711	10M QPSK 50%RB#13	0.278	0.161	0.00	22.56	23.00	0.308	/
Left Side	23800/711	10M QPSK 50%RB#13	0.154	0.104	0.04	22.56	23.00	0.170	/
Right Side	23800/711	10M QPSK 50%RB#13	0.286	0.195	0.06	22.56	23.00	0.316	/
Bottom Side	23800/711	10M QPSK 50%RB#13	0.168	0.085	0.11	22.56	23.00	0.186	/
Tested at the worst position with battery 2#									
Back Side	23800/711	10M QPSK 1RB#25	0.308	0.218	0.02	23.50	24.00	0.346	/
Tested at the worst position with battery 3#									
Back Side	23800/711	10M QPSK 1RB#25	0.317	0.223	0.05	23.50	24.00	0.356	/
Test data of MHA-L29 (new)									
Back Side	23800/711	10M QPSK 1RB#25	0.238	0.140	-0.13	23.50	24.00	0.267	Yes

Table 128: Hotspot SAR test results of LTE Band XVII

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Left touch	26965/841.5	15M QPSK 1RB#38	0.217	0.164	0.01	23.52	24.00	0.242	/
Left tilt	26965/841.5	15M QPSK 1RB#38	0.173	0.117	0.16	23.52	24.00	0.193	/
Right touch	26965/841.5	15M QPSK 1RB#38	0.249	0.188	0.17	23.52	24.00	0.278	/
Right tilt	26965/841.5	15M QPSK 1RB#38	0.164	0.112	0.09	23.52	24.00	0.183	/
Right touch	26775/822.5	15M QPSK 1RB#38	0.233	0.178	0.14	23.34	24.00	0.271	/
Right touch	26865/831.5	15M QPSK 1RB#38	0.292	0.222	0.15	23.16	24.00	0.354	/
50%RB									
Left touch	26965/841.5	15M QPSK 50%RB#18	0.177	0.122	0.11	22.47	23.00	0.200	/
Left tilt	26965/841.5	15M QPSK 50%RB#18	0.145	0.099	0.16	22.47	23.00	0.164	/
Right touch	26965/841.5	15M QPSK 50%RB#18	0.200	0.138	0.02	22.47	23.00	0.226	/
Right tilt	26965/841.5	15M QPSK 50%RB#18	0.135	0.092	0.11	22.47	23.00	0.153	/
Tested at the worst position with battery 2#									
Right touch	26865/831.5	15M QPSK 1RB#38	0.293	0.223	0.07	23.16	24.00	0.356	/
Tested at the worst position with battery 3#									
Right touch	26865/831.5	15M QPSK 1RB#38	0.296	0.224	0.11	23.16	24.00	0.359	/
Test data of MHA-L29 (new)									
Right touch	26865/831.5	15M QPSK 1RB#38	0.235	0.183	0.07	23.16	24.00	0.285	Yes

Table 129: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	26965/841.5	15M QPSK 1RB#38	0.157	0.119	-0.03	23.52	24.00	0.175	/
Back Side	26965/841.5	15M QPSK 1RB#38	0.188	0.142	0.06	23.52	24.00	0.210	/
50%RB									
Front Side	26965/841.5	15M QPSK 50%RB#18	0.126	0.089	-0.01	22.47	23.00	0.142	/
Back Side	26965/841.5	15M QPSK 50%RB#18	0.139	0.099	-0.04	22.47	23.00	0.157	/
Tested at the worst position with battery 2#									
Back Side	26965/841.5	15M QPSK 1RB#38	0.188	0.143	-0.01	23.52	24.00	0.210	/
Tested at the worst position with battery 3#									
Back Side	26965/841.5	15M QPSK 1RB#38	0.174	0.132	0.03	23.52	24.00	0.194	/
Test data of MHA-L29 (new)									
Back Side	26965/841.5	15M QPSK 1RB#38	0.215	0.163	0.02	23.52	24.00	0.240	Yes

Table 130: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	26965/841.5	15M QPSK 1RB#38	0.163	0.115	0.02	23.52	24.00	0.182	/
Back Side	26965/841.5	15M QPSK 1RB#38	0.205	0.154	0.04	23.52	24.00	0.229	/
Left Side	26965/841.5	15M QPSK 1RB#38	0.129	0.085	0.00	23.52	24.00	0.144	/
Right Side	26965/841.5	15M QPSK 1RB#38	0.127	0.083	0.00	23.52	24.00	0.142	/
Bottom Side	26965/841.5	15M QPSK 1RB#38	0.103	0.052	0.01	23.52	24.00	0.115	/
50%RB									
Front Side	26965/841.5	15M QPSK 50%RB#18	0.146	0.103	0.02	22.47	23.00	0.165	/
Back Side	26965/841.5	15M QPSK 50%RB#18	0.174	0.122	0.06	22.47	23.00	0.197	/
Left Side	26965/841.5	15M QPSK 50%RB#18	0.109	0.072	-0.06	22.47	23.00	0.123	/
Right Side	26965/841.5	15M QPSK 50%RB#18	0.107	0.071	-0.06	22.47	23.00	0.121	/
Bottom Side	26965/841.5	15M QPSK 50%RB#18	0.093	0.047	-0.05	22.47	23.00	0.105	/
Tested at the worst position with battery 2#									
Back Side	26965/841.5	15M QPSK 1RB#38	0.183	0.130	0.00	23.52	24.00	0.204	/
Tested at the worst position with battery 3#									
Back Side	26965/841.5	15M QPSK 1RB#38	0.191	0.146	0.03	23.52	24.00	0.213	/
Test data of MHA-L29 (new)									
Back Side	26965/841.5	15M QPSK 1RB#38	0.245	0.186	0.02	23.52	24.00	0.274	Yes

Table 131: Hotspot SAR test results of LTE Band XXVI

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{1-g} (W/kg)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
1RB									
Left touch	38150/2610	20M QPSK 1RB#99	0.328	0.176	0.05	23.32	24.00	0.384	/
Left tilt	38150/2610	20M QPSK 1RB#99	0.107	0.054	0.00	23.32	24.00	0.125	/
Right touch	38150/2610	20M QPSK 1RB#99	0.241	0.122	0.11	23.32	24.00	0.282	/
Right tilt	38150/2610	20M QPSK 1RB#99	0.180	0.092	0.17	23.32	24.00	0.211	/
Left touch	37850/2580	20M QPSK 1RB#0	0.096	0.050	0.19	22.92	24.00	0.123	/
Left touch	38000/2595	20M QPSK 1RB#50	0.125	0.065	0.07	22.99	24.00	0.158	/
50%RB									
Left touch	37850/2580	20M QPSK 50%RB#0	0.095	0.050	-0.10	22.18	23.00	0.115	/
Left tilt	37850/2580	20M QPSK 50%RB#0	0.048	0.024	0.19	22.18	23.00	0.057	/
Right touch	37850/2580	20M QPSK 50%RB#0	0.101	0.053	-0.13	22.18	23.00	0.122	/
Right tilt	37850/2580	20M QPSK 50%RB#0	0.038	0.019	0.12	22.18	23.00	0.046	/
Tested at the worst position with battery 2#									
Left touch	38150/2610	20M QPSK 1RB#99	0.386	0.212	0.03	23.32	24.00	0.451	Yes

Table 132: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
1RB									
Front Side	38150/2610	20M QPSK 1RB#99	0.254	0.131	0.10	23.32	24.00	0.297	/
Back Side	38150/2610	20M QPSK 1RB#99	0.334	0.157	-0.16	23.32	24.00	0.391	/
50%RB									
Front Side	37850/2580	20M QPSK 50%RB#0	0.134	0.070	0.07	22.18	23.00	0.162	/
Back Side	37850/2580	20M QPSK 50%RB#0	0.112	0.059	-0.02	22.18	23.00	0.135	/
Tested at the worst position with battery 2#									
Back Side	38150/2610	20M QPSK 1RB#99	0.336	0.165	-0.07	23.32	24.00	0.393	Yes

Table 133: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
1RB									
Front Side	38150/2610	20M QPSK 1RB#99	0.547	0.254	-0.11	23.32	24.00	0.640	/
Back Side	38150/2610	20M QPSK 1RB#99	0.956	0.419	-0.03	23.32	24.00	1.118	Yes
Back Side-Repeated	38150/2610	20M QPSK 1RB#99	0.897	0.395	-0.04	23.32	24.00	1.049	/
Back Side	38000/2595	20M QPSK 1RB#99	0.594	0.263	0.01	22.99	24.00	0.750	/
Back Side	37850/2580	20M QPSK 1RB#0	0.355	0.188	-0.09	22.92	24.00	0.455	/
Left Side	38150/2610	20M QPSK 1RB#99	0.230	0.113	-0.02	23.32	24.00	0.269	/
Right Side	38150/2610	20M QPSK 1RB#99	0.515	0.255	-0.06	23.32	24.00	0.602	/
Bottom Side	38150/2610	20M QPSK 1RB#99	0.427	0.199	-0.08	23.32	24.00	0.499	/
50%RB									
Front Side	37850/2580	20M QPSK 50%RB#0	0.249	0.135	0.19	22.18	23.00	0.301	/
Back Side	37850/2580	20M QPSK 50%RB#0	0.346	0.182	-0.16	22.18	23.00	0.418	/
Left Side	37850/2580	20M QPSK 50%RB#0	0.053	0.026	0.11	22.18	23.00	0.064	/
Right Side	37850/2580	20M QPSK 50%RB#0	0.187	0.094	0.01	22.18	23.00	0.226	/
Bottom Side	37850/2580	20M QPSK 50%RB#0	0.196	0.091	0.01	22.18	23.00	0.237	/
100%RB									
Back Side	37850/2580	20M QPSK 100%RB#0	0.447	0.211	-0.19	21.66	23.00	0.609	/
Tested at the worst position with battery 2#									
Back Side	38150/2610	20M QPSK 1RB#99	0.660	0.279	-0.10	23.32	24.00	0.772	/

Table 134: Hotspot SAR test results of LTE Band XXXVIII

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Left touch	40340/2565	20M QPSK 1RB#50	0.145	0.074	0.03	23.75	24.00	0.154	/
Left tilt	40340/2565	20M QPSK 1RB#50	0.043	0.021	0.15	23.75	24.00	0.045	/
Right touch	40340/2565	20M QPSK 1RB#50	0.104	0.054	0.00	23.75	24.00	0.110	/
Right tilt	40340/2565	20M QPSK 1RB#50	0.053	0.025	0.14	23.75	24.00	0.056	/
Left touch	40740/2605	20M QPSK 1RB#99	0.181	0.095	0.06	23.41	24.00	0.207	/
Left touch	41140/2645	20M QPSK 1RB#99	0.180	0.093	0.08	23.54	24.00	0.200	/
50%RB									
Left touch	40340/2565	20M QPSK 50%RB#50	0.107	0.056	0.01	22.83	23.50	0.125	/
Left tilt	40340/2565	20M QPSK 50%RB#50	0.045	0.022	0.03	22.83	23.50	0.053	/
Right touch	40340/2565	20M QPSK 50%RB#50	0.107	0.055	0.10	22.83	23.50	0.125	/
Right tilt	40340/2565	20M QPSK 50%RB#50	0.079	0.038	0.05	22.83	23.50	0.092	/
Tested at the worst position with battery 2#									
Left touch	40740/2605	20M QPSK 1RB#99	0.127	0.066	0.03	23.41	24.00	0.145	/
Tested at the worst position with battery 3#									
Left touch	40740/2605	20M QPSK 1RB#99	0.118	0.062	0.19	23.41	24.00	0.135	/
Test data of MHA-L29 (new)									
Left touch	40740/2605	20M QPSK 1RB#99	0.260	0.140	0.11	23.41	24.00	0.298	Yes

Table 135: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	40340/2565	20M QPSK 1RB#50	0.105	0.056	0.10	23.75	24.00	0.111	/
Back Side	40340/2565	20M QPSK 1RB#50	0.097	0.052	0.07	23.75	24.00	0.103	/
50%RB									
Front Side	40340/2565	20M QPSK 50%RB#50	0.112	0.054	0.00	22.83	23.50	0.131	/
Back Side	40340/2565	20M QPSK 50%RB#50	0.117	0.052	0.13	22.83	23.50	0.137	/
Tested at the worst position with battery 2#									
Back Side	40340/2565	20M QPSK 50%RB#50	0.086	0.039	0.10	22.83	23.50	0.100	/
Tested at the worst position with battery 3#									
Back Side	40340/2565	20M QPSK 50%RB#50	0.080	0.037	0.13	22.83	23.50	0.093	/
Test data of MHA-L29 (new)									
Back Side	40340/2565	20M QPSK 50%RB#50	0.158	0.081	0.07	22.83	23.50	0.184	Yes

Table 136: 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)	SAR Plot
			1-g	10-g					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
1RB									
Front Side	40340/2565	20M QPSK 1RB#50	0.444	0.186	0.11	23.75	24.00	0.470	/
Back Side	40340/2565	20M QPSK 1RB#50	0.533	0.222	0.07	23.75	24.00	0.565	/
Left Side	40340/2565	20M QPSK 1RB#50	0.098	0.050	0.00	23.75	24.00	0.104	/
Right Side	40340/2565	20M QPSK 1RB#50	0.364	0.184	0.14	23.75	24.00	0.386	/
Bottom Side	40340/2565	20M QPSK 1RB#50	0.263	0.108	-0.01	23.75	24.00	0.279	/
50%RB									
Front Side	40340/2565	20M QPSK 50%RB#50	0.249	0.130	0.08	22.83	23.50	0.291	/
Back Side	40340/2565	20M QPSK 50%RB#50	0.310	0.133	0.15	22.83	23.50	0.362	/
Left Side	40340/2565	20M QPSK 50%RB#50	0.068	0.035	0.15	22.83	23.50	0.080	/
Right Side	40340/2565	20M QPSK 50%RB#50	0.244	0.124	0.08	22.83	23.50	0.285	/
Bottom Side	40340/2565	20M QPSK 50%RB#50	0.176	0.071	0.06	22.83	23.50	0.205	/
Tested at the worst position with battery 2#									
Back Side	40340/2565	20M QPSK 1RB#50	0.396	0.168	0.05	23.75	24.00	0.419	/
Tested at the worst position with battery 3#									
Back Side	40340/2565	20M QPSK 1RB#50	0.360	0.157	0.17	23.75	24.00	0.381	/
Test data of MHA-L29 (new)									
Back Side	40340/2565	20M QPSK 1RB#50	0.592	0.294	0.09	23.75	24.00	0.627	Yes

Table 137: Hotspot SAR test results of LTE Band XLI

Note: Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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 SAR _{1-g} (W/kg)	SAR Plot
			1-g Area Scan	1-g Zoom Scan					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Left touch	6/2437	802.11 b	1.020	1.220	0.04	16.75	17.00	1.292	/
Left touch-Repeated	6/2437	802.11 b	1.190	1.190	0.10	16.75	17.00	1.261	/
Left touch	11/2462	802.11 b	0.949	1.170	0.11	16.69	17.00	1.257	/
Left touch	1/2412	802.11 b	0.840	1.000	-0.15	15.89	17.00	1.291	/
Left tilt	6/2437	802.11 b	0.886	0.979	0.12	16.75	17.00	1.037	/
Left tilt	11/2462	802.11 b	0.901	1.020	0.09	16.69	17.00	1.095	/
Right touch	6/2437	802.11 b	0.289	0.309	0.06	16.75	17.00	0.327	/
Right tilt	6/2437	802.11 b	0.335	0.340	0.14	16.75	17.00	0.360	/
Tested at the worst position with battery 2#									
Left touch	6/2437	802.11 b	0.972	1.010	0.08	16.75	17.00	1.070	/
Tested at the worst position with battery 3#									
Left touch	6/2437	802.11 b	0.900	0.982	-0.14	16.75	17.00	1.040	/
Additional SAR test(simultaneous transmission with 2G&3G&4G antenna)									
Left touch	6/2437	802.11 b	0.587	0.545	0.13	14.20	14.50	0.584	/
Left tilt	6/2437	802.11 b	0.556	0.541	0.07	14.20	14.50	0.580	/
Right touch	6/2437	802.11 b	0.134	0.140	0.11	14.20	14.50	0.150	/
Right tilt	6/2437	802.11 b	0.161	0.176	0.11	14.20	14.50	0.189	/
Test data of MHA-L29 (new)									
Left touch	6/2437	802.11b	0.785	0.745	-0.14	16.75	17.00	0.789	Yes

Table 138: Head SAR test results of WiFi 2.4G

According to KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at maximum tune-up tolerance limit. The scaled reported SAR is presented as below.

Test Position of Head	Test channel / Freq.(MHz)	Test Mode	Scaled SAR _{1-g} (W/kg)	Actual duty factor	Maximum duty factor	Scaled Reported SAR _{1-g} (W/kg)
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2						
Test data of MHA-L29(old)						
Left touch	6/2437	802.11 b	1.292	99%	100%	1.305
Left touch-Repeated	6/2437	802.11 b	1.261	99%	100%	1.273
Left touch	11/2462	802.11 b	1.257	99%	100%	1.269
Left touch	1/2412	802.11 b	1.291	99%	100%	1.304
Left tilt	6/2437	802.11 b	1.037	99%	100%	1.047
Left tilt	11/2462	802.11 b	1.095	99%	100%	1.107
Right touch	6/2437	802.11 b	0.327	99%	100%	0.331
Right tilt	6/2437	802.11 b	0.360	99%	100%	0.364
Tested at the worst position with battery 2#						
Left touch	6/2437	802.11 b	1.070	99%	100%	1.081
Tested at the worst position with Battery 3#						
Left touch	6/2437	802.11 b	1.040	99%	100%	1.051
Additional SAR test(simultaneous transmission with 2G&3G&4G antenna)						
Left touch	6/2437	802.11 b	0.584	99%	100%	0.590
Left tilt	6/2437	802.11 b	0.580	99%	100%	0.586
Right touch	6/2437	802.11 b	0.150	99%	100%	0.152
Right tilt	6/2437	802.11 b	0.189	99%	100%	0.190
Test data of MHA-L29 (new)						
Left touch	6/2437	802.11 b	0.789	99%	100%	0.797

Mode	Tune-up (dBm)	Tune-up (mW)	Highest Reported SAR(W/kg)	Adjusted SAR (W/kg)	SAR test
802.11b	17.00	50.12	1.305	/	Yes
802.11g	16.50	44.67	/	1.163	No
802.11n 20M	16.00	39.81	/	1.037	No
802.11n 40M	13.00	19.95	/	0.520	No

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

- 1) SAR is measured for 2.4 GHz 802.11b DSSS using the initial test position procedure.
- 2) As 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.

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)	SAR Plot
			1-g Area Scan	1-g Zoom Scan					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	6/2437	802.11 b	0.087	0.093	0.02	16.75	17.00	0.098	/
Back Side	6/2437	802.11 b	0.081	0.086	0.06	16.75	17.00	0.091	/
Tested at the worst position with battery 2#									
Front Side	6/2437	802.11 b	0.087	0.091	-0.06	16.75	17.00	0.096	/
Tested at the worst position with battery 3#									
Front Side	6/2437	802.11 b	0.074	0.075	-0.01	16.75	17.00	0.079	/
Test data of MHA-L29 (new)									
Front Side	6/2437	802.11 b	0.067	0.067	-0.19	16.75	17.00	0.071	Yes

Table 139: Body-Worn SAR test results of WiFi 2.4G

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	Scaled SAR _{1-g} (W/kg)	Actual duty factor	Maximum duty factor	Scaled Reported SAR _{1-g} (W/kg)
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2						
Test data of MHA-L29(old)						
Front Side	6/2437	802.11 b	0.098	99%	100%	0.099
Back Side	6/2437	802.11 b	0.091	99%	100%	0.092
Tested at the worst position with battery 2#						
Front Side	6/2437	802.11 b	0.096	99%	100%	0.097
Tested at the worst position with Battery 3#						
Front Side	6/2437	802.11 b	0.079	99%	100%	0.080
Test data of MHA-L29 (new)						
Front Side	6/2437	802.11 b	0.071	99%	100%	0.072

Mode	Tune-up (dBm)	Tune-up (mW)	Highest Reported SAR(W/kg)	Adjusted SAR (W/kg)	SAR test
802.11b	17.00	50.12	0.099	/	Yes
802.11g	16.50	44.67	/	0.088	No
802.11n 20M	16.00	39.81	/	0.079	No
802.11n 40M	13.00	19.95	/	0.039	No

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

- 1) SAR is measured for 2.4 GHz 802.11b DSSS using the initial test position procedure.
- 2) As 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.

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)	SAR Plot
			1-g Area Scan	1-g Zoom Scan					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
Front Side	6/2437	802.11 b	0.184	0.200	-0.10	16.75	17.00	0.212	/
Back Side	6/2437	802.11 b	0.179	0.193	0.17	16.75	17.00	0.204	/
Right Side	6/2437	802.11 b	0.182	0.185	0.03	16.75	17.00	0.196	/
Top Side	6/2437	802.11 b	0.111	0.133	-0.04	16.75	17.00	0.141	/
Tested at the worst position with battery 2#									
Front Side	6/2437	802.11 b	0.170	0.183	-0.08	16.75	17.00	0.194	/
Tested at the worst position with battery 3#									
Front Side	6/2437	802.11 b	0.158	0.170	-0.12	16.75	17.00	0.180	/
Test data of MHA-L29 (new)									
Front Side	6/2437	802.11 b	0.135	0.136	-0.11	16.75	17.00	0.144	Yes

Table 140: Hotspot SAR test results of WiFi 2.4G

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	Scaled SAR _{1-g} (W/kg)	Actual duty factor	Maximum duty factor	Scaled Reported SAR _{1-g} (W/kg)
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2						
Test data of MHA-L29(old)						
Front Side	6/2437	802.11 b	0.212	99%	100%	0.214
Back Side	6/2437	802.11 b	0.204	99%	100%	0.207
Right Side	6/2437	802.11 b	0.196	99%	100%	0.198
Top Side	6/2437	802.11 b	0.141	99%	100%	0.142
Tested at the worst position with battery 2#						
Front Side	6/2437	802.11 b	0.194	99%	100%	0.196
Tested at the worst position with Battery 3#						
Front Side	6/2437	802.11 b	0.180	99%	100%	0.182
Test data of MHA-L29 (new)						
Front Side	6/2437	802.11 b	0.144	99%	100%	0.146

Mode	Tune-up (dBm)	Tune-up (mW)	Highest Reported SAR(W/kg)	Adjusted SAR (W/kg)	SAR test
802.11b	17.00	50.12	0.214	/	Yes
802.11g	16.50	44.67	/	0.191	No
802.11n 20M	16.00	39.81	/	0.170	No
802.11n 40M	13.00	19.95	/	0.085	No

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

- 1) SAR is measured for 2.4 GHz 802.11b DSSS using the initial test position procedure.
- 2) As 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.
- 3) Per KDB 648474 D04, Product Specific 10-g SAR test is not required for this frequency band since hotspot mode 1-g reported SAR < 1.2 W/kg.

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)	Scaled SAR _{1-g} (W/kg)	SAR Plot
			1-g Area Scan	1-g Zoom Scan					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
5.3G U-NII-2A Band (802.11n 40M)									
Left touch	54/5270	802.11n 40M	0.554	0.500	0.18	12.91	13.80	0.614	/
Left tilt	54/5270	802.11n 40M	0.463	0.451	0.14	12.91	13.80	0.554	/
Right touch	54/5270	802.11n 40M	0.195	0.186	0.02	12.91	13.80	0.228	/
Right tilt	54/5270	802.11n 40M	0.192	0.183	0.16	12.91	13.80	0.225	/
5.5G U-NII-2C Band (802.11n 40M)									
Left touch	118/5590	802.11n 40M	0.926	0.930	0.12	12.94	13.80	1.134	/
Left touch	110/5550	802.11n 40M	0.894	0.854	0.11	12.91	13.80	1.048	/
Left touch	102/5510	802.11n 40M	0.850	0.797	0.19	12.87	13.80	0.987	/
Left touch	126/5630	802.11n 40M	0.902	0.895	0.13	12.85	13.80	1.114	/
Left touch	134/5670	802.11n 40M	0.764	0.757	0.15	12.84	13.80	0.944	/
Left touch	142/5710	802.11n 40M	0.706	0.684	0.12	12.81	13.80	0.859	/
Left tilt	118/5590	802.11n 40M	0.744	0.775	0.18	12.94	13.80	0.945	/
Left tilt	110/5550	802.11n 40M	0.705	0.702	0.18	12.91	13.80	0.862	/
Right touch	118/5590	802.11n 40M	0.256	0.263	0.12	12.94	13.80	0.321	/
Right tilt	118/5590	802.11n 40M	0.189	0.188	0.19	12.94	13.80	0.229	/
5.8G U-NII-3 Band (802.11n 40M)									
Left touch	151/5755	802.11n 40M	0.587	0.594	-0.11	13.75	13.80	0.601	/
Left tilt	151/5755	802.11n 40M	0.452	0.431	0.12	13.75	13.80	0.436	/
Right touch	151/5755	802.11n 40M	0.099	0.083	0.00	13.75	13.80	0.084	/
Right tilt	151/5755	802.11n 40M	0.080	/	0.00	13.75	13.80	/	/
5.5G U-NII-2C Band (802.11n 20M)									
Left touch	120/5600	802.11n	0.769	0.784	0.04	12.75	13.80	0.998	/
Left touch	108/5540	802.11n	0.848	0.828	-0.01	12.72	13.80	1.062	/
Left tilt	120/5600	802.11n	0.618	0.611	0.08	12.75	13.80	0.778	/
Left tilt	108/5540	802.11n	0.646	0.639	0.04	12.72	13.80	0.819	/

Right touch	120/5600	802.11n	0.213	0.228	0.04	12.75	13.80	0.290	/
Right tilt	120/5600	802.11n	0.217	0.230	0.08	12.75	13.80	0.293	/
5.5G U-NII-2C Band (802.11ac 20M)									
Left touch	120/5600	802.11ac	0.956	0.949	0.11	12.28	13.50	1.257	/
Left touch-Repeated	120/5600	802.11ac	0.884	0.867	0.14	12.28	13.50	1.148	/
Left touch	104/5520	802.11ac	0.766	0.750	0.15	12.09	13.50	1.038	/
Left tilt	120/5600	802.11ac	0.713	0.711	0.06	12.20	13.50	0.959	/
Left tilt	104/5520	802.11ac	0.666	0.634	0.16	12.09	13.50	0.877	/
Right touch	120/5600	802.11ac	0.266	/	-0.15	12.20	13.50	/	/
Right tilt	120/5600	802.11ac	0.266	/	0.17	12.20	13.50	/	/
Tested at the worst position with battery 2#									
Left touch	120/5600	802.11ac	0.866	0.839	0.100	12.28	13.80	1.191	/
Tested at the worst position with battery 3#									
Left touch	120/5600	802.11ac	0.808	0.791	0.190	12.28	13.80	1.122	/
Additional SAR test(simultaneous transmission with 2G&3G&4G antenna)									
5.3G U-NII-2A Band (802.11ac 80M)									
Left touch	58/5290	802.11ac 80M	0.383	0.377	0.18	10.89	11.50	0.434	/
Left tilt	58/5290	802.11ac 80M	0.336	0.348	0.14	10.89	11.50	0.400	/
Right touch	58/5290	802.11ac 80M	0.115	0.104	0.00	10.89	11.50	0.120	/
Right tilt	58/5290	802.11ac 80M	0.101	0.089	0.14	10.89	11.50	0.102	/
5.5G U-NII-2C Band (802.11ac 80M)									
Left touch	106/5530	802.11ac 80M	0.537	0.513	0.01	11.06	11.50	0.568	/
Left tilt	106/5530	802.11ac 80M	0.511	0.506	-0.18	11.06	11.50	0.560	/
Right touch	106/5530	802.11ac 80M	0.165	0.157	0.13	11.06	11.50	0.174	Yes
Right tilt	106/5530	802.11ac 80M	0.165	0.155	0.15	11.06	11.50	0.172	Yes
5.8G U-NII-3 Band (802.11ac 80M)									
Left touch	155/5775	802.11ac 80M	0.397	0.362	0.14	11.22	11.50	0.386	/
Left tilt	155/5775	802.11ac 80M	0.303	0.251	0.07	11.22	11.50	0.268	/
Right touch	155/5775	802.11ac 80M	0.086	0.077	0.00	11.22	11.50	0.082	/
Right tilt	155/5775	802.11ac 80M	0.076	0.071	0.13	11.22	11.50	0.076	/
Test data of MHA-L29 (new)									
Left touch	120/5600	802.11ac	0.690	0.841	0.19	12.28	13.50	1.114	Yes

Table 141: Head SAR test results of WiFi 5G

According to KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at maximum tune-up tolerance limit. The scaled reported SAR is presented as below.

Test Position of Head	Test channel / Freq.(MHz)	Test Mode	Scaled SAR _{1-g} (W/kg)	Actual duty factor	Maximum duty factor	Scaled Reported SAR _{1-g} (W/kg)
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2						
Test data of MHA-L29(old)						
5.3G U-NII-2A Band (802.11n 40M)						
Left touch	54/5270	802.11n 40M	0.614	87%	100%	0.705
Left tilt	54/5270	802.11n 40M	0.554	87%	100%	0.636
Right touch	54/5270	802.11n 40M	0.228	87%	100%	0.262
Right tilt	54/5270	802.11n 40M	0.225	87%	100%	0.258
5.5G U-NII-2C Band (802.11n 40M)						
Left touch	118/5590	802.11n 40M	1.134	87%	100%	1.303
Left touch	110/5550	802.11n 40M	1.048	87%	100%	1.205
Left touch	102/5510	802.11n 40M	0.987	87%	100%	1.135
Left touch	126/5630	802.11n 40M	1.114	87%	100%	1.280
Left touch	134/5670	802.11n 40M	0.944	87%	100%	1.085
Left touch	142/5710	802.11n 40M	0.859	87%	100%	0.987
Left tilt	118/5590	802.11n 40M	0.945	87%	100%	1.086
Left tilt	110/5550	802.11n 40M	0.862	87%	100%	0.990
Right touch	118/5590	802.11n 40M	0.321	87%	100%	0.368
Right tilt	118/5590	802.11n 40M	0.229	87%	100%	0.263
5.8G U-NII-3 Band (802.11n 40M)						
Left touch	151/5755	802.11n 40M	0.601	87%	100%	0.691
Left tilt	151/5755	802.11n 40M	0.436	87%	100%	0.501
Right touch	151/5755	802.11n 40M	0.084	87%	100%	0.096
Right tilt	151/5755	802.11n 40M	/	87%	100%	/
5.5G U-NII-2C Band (802.11n 20M)						
Left touch	120/5600	802.11n	0.998	93%	100%	1.074
Left touch	108/5540	802.11n	1.062	93%	100%	1.142
Left tilt	120/5600	802.11n	0.778	93%	100%	0.837
Left tilt	108/5540	802.11n	0.819	93%	100%	0.881
Right touch	120/5600	802.11n	0.290	93%	100%	0.312
Right tilt	120/5600	802.11n	0.293	93%	100%	0.315
5.5G U-NII-2C Band (802.11ac 20M)						
Left touch	120/5600	802.11ac	1.257	93%	100%	1.351
Left touch-Repeated	120/5600	802.11ac	1.148	93%	100%	1.235
Left touch	104/5520	802.11ac	1.038	93%	100%	1.116
Left tilt	120/5600	802.11ac	0.959	93%	100%	1.031
Left tilt	104/5520	802.11ac	0.877	93%	100%	0.943
Right touch	120/5600	802.11ac	/	93%	100%	/
Right tilt	120/5600	802.11ac	/	93%	100%	/
Tested at the worst position with battery 2#						
Left touch	120/5600	802.11ac	1.191	93%	100%	1.280
Tested at the worst position with Battery 3#						
Left touch	120/5600	802.11ac	1.122	93%	100%	1.207

Additional SAR test(simultaneous transmission with 2G&3G&4G antenna)

5.3G U-NII-2A Band (802.11ac 80M)

Left touch	58/5290	802.11ac 80M	0.434	86%	100%	0.504
Left tilt	58/5290	802.11ac 80M	0.400	86%	100%	0.466
Right touch	58/5290	802.11ac 80M	0.120	86%	100%	0.139
Right tilt	58/5290	802.11ac 80M	0.102	86%	100%	0.119

5.5G U-NII-2C Band (802.11ac 80M)

Left touch	106/5530	802.11ac 80M	0.568	86%	100%	0.660
Left tilt	106/5530	802.11ac 80M	0.560	86%	100%	0.651
Right touch	106/5530	802.11ac 80M	0.174	86%	100%	0.202
Right tilt	106/5530	802.11ac 80M	0.172	86%	100%	0.199

5.8G U-NII-3 Band (802.11ac 80M)

Left touch	155/5775	802.11ac 80M	0.386	86%	100%	0.449
Left tilt	155/5775	802.11ac 80M	0.268	86%	100%	0.311
Right touch	155/5775	802.11ac 80M	0.082	86%	100%	0.095
Right tilt	155/5775	802.11ac 80M	0.076	86%	100%	0.088

Test data of MHA-L29 (new)

Left touch	120/5600	802.11ac	1.114	93%	100%	1.198
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Mode	Tune-up (dBm)	Tune-up(mW)	Highest Reported SAR _{1-g} (W/kg)	Adjusted SAR _{1-g} (W/kg)	SAR test
5.3G U-NII-2A Band					
802.11n 40M	13.8	23.99	0.705	/	Yes
802.11n 20M	13.8	23.99	/	0.705	No
802.11a	13.0	19.95	/	0.586	No
802.11ac 20M	13.5	22.39	/	0.658	No
802.11ac 40M	13.0	19.95	/	0.586	No
802.11ac 80M	12.0	15.85	/	0.466	No
5.5G U-NII-2C Band					
802.11n 40M	13.8	23.99	1.303	/	Yes
802.11n 20M	13.8	23.99	/	1.303	Yes
802.11a	13.0	19.95	/	1.084	No
802.11ac 20M	13.5	22.39	/	1.216	Yes
802.11ac 40M	13.0	19.95	/	1.084	No
802.11ac 80M	12.0	15.85	/	0.861	No
5.8G U-NII-3 Band					
802.11n 40M	13.8	23.99	0.691	/	Yes
802.11n 20M	13.8	23.99	/	0.691	No

802.11a	13.0	19.95	/	0.575	No
802.11ac 20M	13.5	22.39	/	0.645	No
802.11ac 40M	13.0	19.95	/	0.575	No
802.11ac 80M	12.0	15.85	/	0.457	No

Note: Per KDB248227D01, for Head SAR test of WiFi 5G:

1) For the full power level scenario,

a) For U-NII-2A, U-NII-2C, U-NII-3 bands, the 802.11n 40M is selected as Initial Test Configuration for SAR test according to the specified maximum output power and largest channel bandwidth. As for U-NII-2A and U-NII-3 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; As for U-NII-2C 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 802.11n/11ac(20M) modes are required.

b) For WiFi 5G U-NII-1 and U-NII-2A bands, as the same maximum output power is specified for the bands, begin SAR measurement in the 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.

2) For additional simultaneous transmission power reduction scenario,

a) For U-NII-2A, U-NII-2C, U-NII-3 bands, the 802.11ac 80M is selected as Initial Test Configuration for SAR test according to the specified maximum output power and largest channel bandwidth. 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.

b) 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 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)	SAR Plot
			1-g Area Scan	1-g Zoom Scan					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
5.3G U-NII-2A band (802.11n 40M)									
Front Side	54/5270	802.11n 40M	0.063	0.050	0.11	12.91	13.80	0.061	/
Back Side	54/5270	802.11n 40M	0.003	/	0.00	12.91	13.80	/	/
5.5G U-NII-2C band (802.11n 40M)									
Front Side	118/5590	802.11n 40M	0.067	0.056	-0.16	12.94	13.80	0.068	/
Back Side	118/5590	802.11n 40M	0.010	/	0.00	12.94	13.80	/	/
5.8G U-NII-3 band (802.11a)									
Front Side	151/5755	802.11n 40M	0.061	0.047	0.00	13.75	13.80	0.048	/
Back Side	151/5755	802.11n 40M	0.001	/	0.00	13.75	13.80	/	/
Tested at the worst position with battery 2#									
Front Side	118/5590	802.11n 40M	0.065	0.069	0.09	12.94	13.80	0.084	/
Tested at the worst position with battery 3#									
Front Side	118/5590	802.11n 40M	0.066	0.061	0.09	12.94	13.80	0.075	/
Test data of MHA-L29 (new)									
Front Side	118/5590	802.11n 40M	0.077	0.076	-0.11	12.94	13.80	0.093	Yes

Table 142: Body-Worn SAR test results of WiFi 5G

According to KDB248227 D01,The reported SAR must be scaled to 100% transmission duty factor to determine compliance at maximum tune-up tolerance limit.The scaled reported SAR is presented as below.

Test Position of Body-Worn with 15mm	Test channel / Freq.(MHz)	Test Mode	Scaled SAR _{1-g} (W/kg)	Actual duty factor	Maximum duty factor	Scaled Reported SAR _{1-g} (W/kg)
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2						
Test data of MHA-L29(old)						
5.3G U-NII-2A Band (802.11n 40M)						
Front Side	54/5270	802.11n 40M	0.061	87%	100%	0.070
Back Side	54/5270	802.11n 40M	/	87%	100%	/
5.5G U-NII-2C Band (802.11n 40M)						
Front Side	118/5590	802.11n 40M	0.068	87%	100%	0.079
Back Side	118/5590	802.11n 40M	/	87%	100%	/
5.8G U-NII-3 Band (802.11n 40M)						

Front Side	151/5755	802.11n 40M	0.048	87%	100%	0.055
Back Side	151/5755	802.11n 40M	/	87%	100%	/
Tested at the worst position with battery 2#						
Front Side	118/5590	802.11n 40M	0.084	87%	100%	0.097
Tested at the worst position with Battery 3#						
Front Side	118/5590	802.11n 40M	0.075	87%	100%	0.086
Test data of MHA-L29 (new)						
Front Side	118/5590	802.11n 40M	0.093	87%	100%	0.107

Mode	Tune-up (dBm)	Tune-up(mW)	Highest Reported SAR _{1-g} (W/kg)	Adjusted SAR _{1-g} (W/kg)	SAR test
5.3G U-NII-2A Band					
802.11n 40M	13.8	23.99	0.070	/	Yes
802.11n 20M	13.8	23.99	/	0.070	No
802.11a	13.0	19.95	/	0.058	No
802.11ac 20M	13.5	22.39	/	0.065	No
802.11ac 40M	13.0	19.95	/	0.058	No
802.11ac 80M	12.0	15.85	/	0.046	No
5.5G U-NII-2C Band					
802.11n 40M	13.8	23.99	0.107	/	Yes
802.11n 20M	13.8	23.99	/	0.107	No
802.11a	13.0	19.95	/	0.089	No
802.11ac 20M	13.5	22.39	/	0.100	No
802.11ac 40M	13.0	19.95	/	0.089	No
802.11ac 80M	12.0	15.85	/	0.071	No
5.8G U-NII-3 Band					
802.11n 40M	13.8	23.99	0.055	/	Yes
802.11n 20M	13.8	23.99	/	0.055	No
802.11a	13.0	19.95	/	0.046	No
802.11ac 20M	13.5	22.39	/	0.051	No
802.11ac 40M	13.0	19.95	/	0.046	No
802.11ac 80M	12.0	15.85	/	0.036	No

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

- 1) For WiFi 5G U-NII-1, U-NII-2A 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 U-NII-2A, U-NII-2C, U-NII-3 bands, the 802.11n 40M is selected as Initial Test Configuration for SAR test according to the specified maximum output power and largest channel bandwidth. 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.
- 3) 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)	Scaled SAR _{1-g} (W/kg)	SAR Plot
			1-g Area Scan	1-g Zoom Scan					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
5.2G U-NII-1 band (802.11n 40M)									
Front Side	38/5190	802.11n 40M	0.065	/	0.13	12.54	13.80	/	/
Back Side	38/5190	802.11n 40M	0.016	/	0.19	12.54	13.80	/	/
Right Side	38/5190	802.11n 40M	0.073	0.074	0.11	12.54	13.80	0.098	/
Top Side	38/5190	802.11n 40M	0.053	/	0.07	12.54	13.80	/	/
5.8G U-NII-3 band (802.11n 40M)									
Front Side	151/5755	802.11n 40M	0.088	/	0.19	13.75	13.80	/	/
Back Side	151/5755	802.11n 40M	0.009	/	0.00	13.75	13.80	/	/
Right Side	151/5755	802.11n 40M	0.137	0.139	0.11	13.75	13.80	0.141	/
Top Side	151/5755	802.11n 40M	0.062	/	0.16	13.75	13.80	/	/
Tested at the worst position with battery 2#									
Right Side	151/5755	802.11n 40M	0.111	0.112	0.15	13.75	13.80	0.113	/
Tested at the worst position with battery 3#									
Right Side	151/5755	802.11n 40M	0.123	0.128	0.13	13.75	13.80	0.129	/
Test data of MHA-L29 (new)									
Right Side	151/5755	802.11n 40M	0.177	0.177	0.10	13.75	13.80	0.179	Yes

Table 143: Hotspot SAR test results of WiFi 5G(5.2G&5.8G)

According to KDB248227 D01,The reported SAR must be scaled to 100% transmission duty factor to determine compliance at maximum tune-up tolerance limit.The scaled reported SAR is presented as below.

Test Position of Hotspot with 10mm	Test channel / Freq.(MHz)	Test Mode	Scaled SAR _{1-g} (W/kg)	Actual duty factor	Maximum duty factor	Scaled Reported SAR _{1-g} (W/kg)
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2						
Test data of MHA-L29(old)						
5.2G U-NII-1 band (802.11n 40M)						
Front Side	38/5190	802.11n 40M	/	87%	100%	/
Back Side	38/5190	802.11n 40M	/	87%	100%	/
Right Side	38/5190	802.11n 40M	0.098	87%	100%	0.113
Top Side	38/5190	802.11n 40M	/	87%	100%	/

5.8G U-NII-3 band (802.11n 40M)						
Front Side	151/5755	802.11n 40M	/	87%	100%	/
Back Side	151/5755	802.11n 40M	/	87%	100%	/
Right Side	151/5755	802.11n 40M	0.141	87%	100%	0.162
Top Side	151/5755	802.11n 40M	/	87%	100%	/
Tested at the worst position with battery 2#						
Right Side	151/5755	802.11n 40M	0.113	87%	100%	0.130
Tested at the worst position with Battery 3#						
Right Side	151/5755	802.11n 40M	0.129	87%	100%	0.149
Test data of MHA-L29 (new)						
Right Side	151/5755	802.11n 40M	0.179	87%	100%	0.206

Mode	Tune-up (dBm)	Tune-up(mW)	Highest Reported SAR _{1-g} (W/kg)	Adjusted SAR _{1-g} (W/kg)	SAR test
5.2G U-NII-1 band					
802.11n 40M	13.8	23.99	0.113	/	Yes
802.11n 20M	13.8	23.99	/	0.113	No
802.11a	13.0	19.95	/	0.094	No
802.11ac 20M	13.5	22.39	/	0.105	No
802.11ac 40M	13.0	19.95	/	0.094	No
802.11ac 80M	12.0	15.85	/	0.075	No
5.8G U-NII-3 band					
802.11n 40M	13.8	23.99	0.206	/	Yes
802.11n 20M	13.8	23.99	/	0.206	No
802.11a	13.0	19.95	/	0.171	No
802.11ac 20M	13.5	22.39	/	0.192	No
802.11ac 40M	13.0	19.95	/	0.171	No
802.11ac 80M	12.0	15.85	/	0.136	No

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 802.11n 40M 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 Product Specific 10-g SAR with 0mm	Test channel / Freq.(MHz)	Test Mode	SAR Value (W/kg)		Power Drift (dB)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR _{10-g} (W/kg)	SAR Plot
			10-g Area Scan	10-g Zoom Scan					
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2									
Test data of MHA-L29(old)									
5.3G U-NII-2A Band (802.11n 40M)									
Front Side	54/5270	802.11n 40M	0.491	0.466	0.19	12.91	13.80	0.572	/
Back Side	54/5270	802.11n 40M	0.114	/	0.19	12.91	13.80	/	/
Right Side	54/5270	802.11n 40M	0.421	/	-0.18	12.91	13.80	/	/
Top Side	54/5270	802.11n 40M	0.158	/	0.05	12.91	13.80	/	/
5.5G U-NII-2C band (802.11n 40M)									
Front Side	118/5590	802.11n 40M	0.589	/	0.03	12.94	13.80	/	/
Back Side	118/5590	802.11n 40M	0.195	/	0.00	12.94	13.80	/	/
Right Side	118/5590	802.11n 40M	0.533	0.623	0.08	12.94	13.80	0.759	/
Top Side	118/5590	802.11n 40M	0.247	/	0.18	12.94	13.80	/	/
Tested at the worst position with battery 2#									
Right Side	118/5590	802.11n 40M	0.413	0.456	-0.08	12.94	13.80	0.556	/
Tested at the worst position with battery 3#									
Right Side	118/5590	802.11n 40M	0.498	0.566	0.19	12.94	13.80	0.690	/
Test data of MHA-L29 (new)									
Right Side	118/5590	802.11n 40M	0.533	0.652	0.10	12.94	13.80	0.795	Yes

Table 144: Product Specific 10-g SAR results of WiFi 5G(5.3G&5.5G)

According to KDB248227 D01,The reported SAR must be scaled to 100% transmission duty factor to determine compliance at maximum tune-up tolerance limit.The scaled reported SAR is presented as below.

Test Position of Product Specific 10-g SAR with 0mm	Test channel / Freq.(MHz)	Test Mode	Scaled SAR _{10-g} (W/kg)	Actual duty factor	Maximum duty factor	Scaled Reported SAR _{10-g} (W/kg)
Test data of MHA-L29 from the report no.:SYBH(Z-SAR)028052017-2						
Test data of MHA-L29(old)						
5.3G U-NII-2A Band (802.11n 40M)						
Front Side	54/5270	802.11n 40M	0.572	87%	100%	0.657
Back Side	54/5270	802.11n 40M	/	87%	100%	/
Right Side	54/5270	802.11n 40M	/	87%	100%	/
Top Side	54/5270	802.11n 40M	/	87%	100%	/

5.5G U-NII-2C band (802.11n 40M)						
Front Side	118/5590	802.11n 40M	/	87%	100%	/
Back Side	118/5590	802.11n 40M	/	87%	100%	/
Right Side	118/5590	802.11n 40M	0.759	87%	100%	0.873
Top Side	118/5590	802.11n 40M	/	87%	100%	/
Tested at the worst position with battery 2#						
Right Side	118/5590	802.11n 40M	0.556	87%	100%	0.639
Tested at the worst position with Battery 3#						
Right Side	118/5590	802.11n 40M	0.690	87%	100%	0.793
Test data of MHA-L29 (new)						
Right Side	118/5590	802.11n 40M	0.795	87%	100%	0.914

Mode	Tune-up (dBm)	Tune-up(mW)	Highest Reported SAR _{10-g} (W/kg)	Adjusted SAR _{10-g} (W/kg)	SAR test
5.3G U-NII-2A Band					
802.11n 40M	13.8	23.99	0.657	/	Yes
802.11n 20M	13.8	23.99	/	0.657	No
802.11a	13.0	19.95	/	0.546	No
802.11ac 20M	13.5	22.39	/	0.613	No
802.11ac 40M	13.0	19.95	/	0.546	No
802.11ac 80M	12.0	15.85	/	0.434	No
5.5G U-NII-2C band					
802.11n 40M	13.8	23.99	0.914	/	Yes
802.11n 20M	13.8	23.99	/	0.914	No
802.11a	13.0	19.95	/	0.760	No
802.11ac 20M	13.5	22.39	/	0.853	No
802.11ac 40M	13.0	19.95	/	0.760	No
802.11ac 80M	12.0	15.85	/	0.604	No

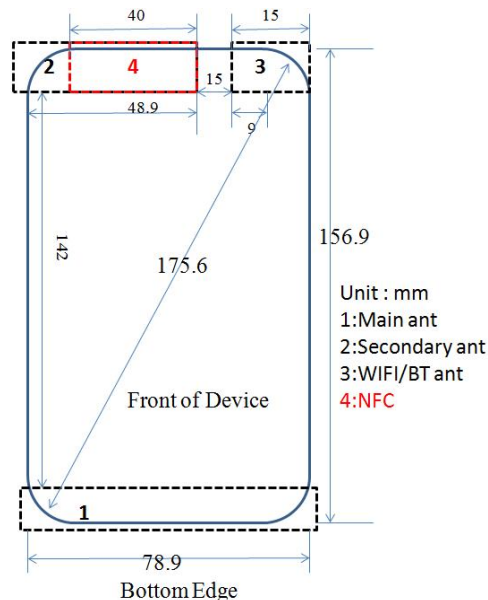
Note : For Product Specific 10-g SAR test of WiFi 5G:

- 1) As U-NII-2A (5.3G) and U-NII-2C(5.5G) do not support hotspot function, so full Product Specific 10-g SAR tests were evaluated for U-NII-2A (5.3G) and U-NII-2C(5.5G) bands.
- 2) For U-NII-2A(5.3G) and U-NII-2C(5.5G) bands, the 802.11n 40M 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. The equivalent ratio (1.2/1.6) should be applied to product specific 10-g SAR exposure conditions(4.0W/kg Limit).

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 v06.

The location of the antennas inside the device is shown as below picture:



Note:

- 1) Per KDB 648474 D04, because the diagonal distance of this device is > 160mm, it is considered a “Phablet” device.
- 2) 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.
- 2) 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.
- 3) Per KDB 941225 D06, particular DUT edges were not required to be evaluated for Hotspot SAR if the antenna-to-edge distance is greater than 2.5cm.

Mode	Exposure Condition	Front Side	Back Side	Left Side	Right Side	Top Side	Bottom Side
Main antenna	Hotspot/ product specific 10-g SAR	Yes	Yes	Yes	Yes	No	Yes
Second antenna	Hotspot/ product specific 10-g SAR	Yes	Yes	Yes	No	Yes	No
WiFi/BT antenna	Hotspot/ product specific 10-g SAR	Yes	Yes	No	Yes	Yes	No

Table 145: Sides for Hotspot SAR/ Product Specific 10-g SAR testing

Note:

- 2) Per KDB 648474 D04, when hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg;
- 3) 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:

1) 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 product specific 10-g 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	11.00	12.59	15	2.480	1.32	3.00	Yes
BT	product specific 10-g SAR	11.00	12.59	5	2.480	3.97	7.50	Yes

Table 146: 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	11.00	12.59	15	2.480	7.50	0.176
BT	product specific 10-g SAR	11.00	12.59	5	2.480	18.75	0.211

Table 147: 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.	Configuration	Head	Body-worn	Hotspot	Product Specific 10-g
1	GSM(Voice) + BT	No	Yes	No	Yes
2	GSM(Data) + BT	No	No	No	Yes
3	GSM(Voice)+ WiFi 2.4G	Yes	Yes	No	Yes
4	GSM(Data) + WiFi 2.4G	No	No	Yes	Yes
5	GSM(Voice)+ WiFi 5G	Yes	Yes	No	Yes
6	GSM(Data) + WiFi 5G	No	No	Yes	Yes
7	UMTS(Voice) + BT	No	Yes	No	Yes
8	UMTS(Data) + BT	No	Yes	No	Yes
9	UMTS(Voice) + WiFi 2.4G	Yes	Yes	No	Yes
10	UMTS(Data) + WiFi 2.4G	No	Yes	Yes	Yes
11	UMTS(Voice) + WiFi 5G	Yes	Yes	No	Yes
12	UMTS(Data) + WiFi 5G	No	Yes	Yes	Yes
13	LTE + BT	No	Yes	No	Yes
14	LTE + WiFi 2.4G	Yes	Yes	Yes	Yes
15	LTE + WiFi 5G	Yes	Yes	Yes	Yes

Table 148: Simultaneous Transmission Possibilities

Note:

- 1) The device can transmit from either 2G&3G&4G Main antenna or 2G&3G&4G Second antenna, but Main antenna and Second antenna can't transmit simutanously,
- 2) WiFi 2.4G and WiFi 5G can't transmit simutanously.
- 3) WiFi 2.4G/5G and BT can't transmit simutanously.
- 4) WiFi 5G hotspot is only supported for U-NII-1 and U-NII-3 bands.
- 5) The device does not support GSM DTM function. Body-worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.
- 6) Held to ear configurations are not applicable to Bluetooth for this device.
- 7) LTE VOIP 3rd party applications may possibly be installed and used by the user.
- 8) The device supports VoLTE function.
- 9) The device supports WiFi VOIP 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. 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 simultaneous transmission power reduction are used.

Test Position		Second antenna SAR _{Max}														WiFi/BT antenna SAR _{Max}		Σ1-g or Product Specific 10-g SAR	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 XVII	LTE Band XXVI	LTE Band XXXVIII	LTE Band XLI	WiFi 2.4G	BT			
Head	Left touch	0.850	0.385	0.552	0.409	0.808	0.493	0.310	0.851	0.209	0.455	0.432	0.928	0.337	0.157	0.590	/	1.518	N/A	N/A
	Left tilt	0.827	0.365	0.357	0.489	0.701	0.412	0.393	0.601	0.252	0.339	0.396	0.842	0.395	0.184	0.586	/	1.428	N/A	N/A
	Right touch	1.375	1.209	1.352	1.351	1.285	1.373	1.289	1.204	0.796	1.262	0.918	1.420	1.245	1.295	0.152	/	1.572	N/A	N/A
	Right tilt	1.150	0.806	0.968	1.128	0.965	1.005	0.716	1.055	0.890	0.710	0.686	1.213	1.096	0.775	0.190	/	1.403	N/A	N/A
Body 15mm	Front side	0.143	0.174	0.145	0.108	0.144	0.126	0.130	0.208	0.077	0.078	0.082	0.181	0.106	0.040	0.099	0.176	0.384	N/A	N/A
	Back side	0.185	0.143	0.166	0.098	0.176	0.114	0.109	0.227	0.066	0.112	0.154	0.276	0.079	0.036	0.099	0.176	0.452	N/A	N/A
Hotspot 10mm	Front side	0.551	0.435	0.295	0.248	0.316	0.243	0.257	0.405	0.138	0.211	0.224	0.398	0.174	0.076	0.214	/	0.765	N/A	N/A
	Back side	0.903	0.431	0.295	0.217	0.398	0.230	0.225	0.438	0.121	0.274	0.453	0.584	0.153	0.054	0.214	/	1.117	N/A	N/A
	Left side	0.299	0.517	0.337	0.234	0.293	0.259	0.211	0.355	0.197	0.121	0.119	0.353	0.234	0.135	/	/	0.517	N/A	N/A
	Right side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.214	/	0.214	N/A	N/A
	Top side	0.628	0.609	0.511	0.320	0.361	0.350	0.397	0.448	0.108	0.214	0.194	0.446	0.150	0.051	0.214	/	0.842	N/A	N/A
	Bottom side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	N/A	N/A
Product Specific 10-g 0mm	Front side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.211	0.211	N/A	N/A
	Back side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.211	0.211	N/A	N/A
	Left side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	N/A	N/A
	Right side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.211	0.211	N/A	N/A
	Top side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.211	0.211	N/A	N/A
	Bottom side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	N/A	N/A

Table 149: SAR Simultaneous Tx Combination of Second antenna and 2.4G WiFi/BT.

Test Position		Second antenna SAR _{Max}														WiFi/BT antenna SAR _{Max}		Σ1-g or Product Specific 10-g SAR	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 XVII	LTE Band XXVI	LTE Band XXXVIII	LTE Band XLI	WiFi 5G	BT			
Head	Left touch	0.850	0.385	0.552	0.409	0.808	0.493	0.310	0.851	0.209	0.455	0.432	0.928	0.337	0.157	0.660	/	1.588	N/A	N/A
	Left tilt	0.827	0.365	0.357	0.489	0.701	0.412	0.393	0.601	0.252	0.339	0.396	0.842	0.395	0.184	0.651	/	1.493	N/A	N/A
	Right touch	1.375	1.209	1.352	1.351	1.285	1.373	1.289	1.204	0.796	1.262	0.918	1.420	1.245	1.295	0.202	/	1.622	See 7.3.4	N/A
	Right tilt	1.150	0.806	0.968	1.128	0.965	1.005	0.716	1.055	0.890	0.710	0.686	1.213	1.096	0.775	0.199	/	1.412	N/A	N/A
Body 15mm	Front side	0.143	0.174	0.145	0.108	0.144	0.126	0.130	0.208	0.077	0.078	0.082	0.181	0.106	0.040	0.107	0.315	N/A	N/A	N/A
	Back side	0.185	0.143	0.166	0.098	0.176	0.114	0.109	0.227	0.066	0.112	0.154	0.276	0.079	0.036	0.107	0.383	N/A	N/A	N/A
Hotspot 10mm	Front side	0.551	0.435	0.295	0.248	0.316	0.243	0.257	0.405	0.138	0.211	0.224	0.398	0.174	0.076	0.206	0.757	N/A	N/A	N/A
	Back side	0.903	0.431	0.295	0.217	0.398	0.230	0.225	0.438	0.121	0.274	0.453	0.584	0.153	0.054	0.206	1.109	N/A	N/A	N/A
	Left side	0.299	0.517	0.337	0.234	0.293	0.259	0.211	0.355	0.197	0.121	0.119	0.353	0.234	0.135	/	0.517	N/A	N/A	N/A
	Right side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.206	0.206	N/A	N/A	N/A
	Top side	0.628	0.609	0.511	0.320	0.361	0.350	0.397	0.448	0.108	0.214	0.194	0.446	0.150	0.051	0.206	0.834	N/A	N/A	N/A
	Bottom side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	N/A	N/A	N/A
Product Specific 10-g 0mm	Front side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.914	0.914	N/A	N/A	N/A
	Back side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.914	0.914	N/A	N/A	N/A
	Left side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	N/A	N/A	N/A
	Right side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.914	0.914	N/A	N/A	N/A
	Top side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.914	0.914	N/A	N/A	N/A
	Bottom side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	N/A	N/A	N/A

Table 150: SAR Simultaneous Tx Combination of Second antenna and 5G WiFi.

	Test Position	Second antenna SAR _{Max}														Second antenna 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 XVII	LTE Band XXVI	LTE Band XXXVIII	LTE Band XLI	WiFi 5G	BT			
Right touch		1.375	/	/	/	/	/	/	/	/	/	/	/	/	/	0.202	1.577	N/A	Not Required	
		/	1.209	/	/	/	/	/	/	/	/	/	/	/	/	0.202	1.411	N/A	Not Required	
		/	/	1.352	/	/	/	/	/	/	/	/	/	/	/	0.202	1.554	N/A	Not Required	
		/	/	/	1.351	/	/	/	/	/	/	/	/	/	/	0.202	1.553	N/A	Not Required	
		/	/	/	/	1.285	/	/	/	/	/	/	/	/	/	0.202	1.487	N/A	Not Required	
		/	/	/	/	/	1.373	/	/	/	/	/	/	/	/	0.202	1.575	N/A	Not Required	
		/	/	/	/	/	/	1.289	/	/	/	/	/	/	/	0.202	1.491	N/A	Not Required	
		/	/	/	/	/	/	/	1.204	/	/	/	/	/	/	0.202	1.406	N/A	Not Required	
		/	/	/	/	/	/	/	/	0.796	/	/	/	/	/	0.202	0.998	N/A	Not Required	
		/	/	/	/	/	/	/	/	/	1.262	/	/	/	/	0.202	1.464	N/A	Not Required	
		/	/	/	/	/	/	/	/	/	/	0.918	/	/	/	0.202	1.120	N/A	Not Required	
		/	/	/	/	/	/	/	/	/	/	/	1.420	/	/	0.202	1.622	0.029	Not Required	
		/	/	/	/	/	/	/	/	/	/	/	/	1.245	/	0.202	1.447	N/A	Not Required	
		/	/	/	/	/	/	/	/	/	/	/	/	/	1.295	0.202	1.497	N/A	Not Required	

Table 151: SAR Simultaneous Tx Combination of Second antenna and 5G WiFi.

Test Position		Main antenna SAR _{Max}														WiFi/BT antenna SAR _{Max}		Σ1-g or Product Specific 10-g SAR	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 XVII	LTE Band XXVI	LTE Band XXXVIII	LTE Band XLI	WiFi 2.4G	BT			
Head	Left touch	0.325	0.148	0.293	0.385	0.403	0.201	0.442	0.298	0.373	0.123	0.167	0.242	0.451	0.298	0.590	/	1.041	N/A	N/A
	Left tilt	0.213	0.139	0.245	0.304	0.338	0.179	0.382	0.258	0.205	0.109	0.123	0.193	0.125	0.053	0.586	/	0.968	N/A	N/A
	Right touch	0.421	0.321	0.798	0.745	0.501	0.613	1.072	0.372	0.291	0.309	0.239	0.359	0.282	0.125	0.152	/	1.224	N/A	N/A
	Right tilt	0.202	0.110	0.220	0.276	0.315	0.154	0.367	0.231	0.152	0.084	0.104	0.183	0.211	0.092	0.190	/	0.557	N/A	N/A
Body-worn 15mm	Front side	0.386	0.325	0.468	0.379	0.405	0.371	0.311	0.303	0.344	0.161	0.215	0.175	0.297	0.131	0.099	0.176	0.644	N/A	N/A
	Back side	0.430	0.345	0.601	0.328	0.448	0.566	0.374	0.359	0.327	0.216	0.305	0.240	0.393	0.184	0.099	0.176	0.777	N/A	N/A
Hotspot 10mm	Front side	0.432	0.770	0.653	0.602	0.413	0.472	0.596	0.324	0.699	0.237	0.289	0.182	0.640	0.470	0.214	/	0.984	N/A	N/A
	Back side	0.506	0.789	1.001	0.687	0.497	0.702	0.626	0.367	0.571	0.243	0.392	0.274	1.118	0.627	0.214	/	1.332	N/A	N/A
	Left side	0.523	0.129	0.223	0.192	0.331	0.155	0.234	0.247	0.215	0.165	0.229	0.144	0.269	0.104	/	/	0.523	N/A	N/A
	Right side	0.761	0.414	0.436	0.619	0.764	0.377	0.518	0.542	0.395	0.293	0.347	0.142	0.602	0.386	0.214	/	0.978	N/A	N/A
	Top side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.214	/	0.214	N/A	N/A
	Bottom side	0.199	1.394	1.294	0.477	0.253	1.228	0.340	0.174	0.480	0.193	0.248	0.115	0.499	0.279	/	/	1.394	N/A	N/A
Prouduct Specific 10-g 0mm	Front side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.211	0.211	N/A	N/A
	Back side	/	/	2.687	/	/	/	/	/	/	/	/	/	/	/	/	0.211	2.898	N/A	N/A
	Left side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.000	N/A	N/A
	Right side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.211	0.211	N/A	N/A
	Top side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.211	0.211	N/A	N/A
	Bottom side	/	0.260	0.441	/	/	0.334	/	/	/	/	/	/	/	/	/	/	0.441	N/A	N/A

Table 152: SAR Simultaneous Tx Combination of Main antenna and 2.4G WiFi/BT.

Test Position		Main antenna SAR _{Max}														WiFi/BT antenna SAR _{Max}		Σ1-g or Product Specific 10-g SAR	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 XVII	LTE Band XXVI	LTE Band XXXVIII	LTE Band XLI	WiFi 5G				
Head	Left touch	0.325	0.148	0.293	0.385	0.403	0.201	0.442	0.298	0.373	0.123	0.167	0.242	0.451	0.298	0.660	/	1.111	N/A	N/A
	Left tilt	0.213	0.139	0.245	0.304	0.338	0.179	0.382	0.258	0.205	0.109	0.123	0.193	0.125	0.053	0.651	/	1.033	N/A	N/A
	Right touch	0.421	0.321	0.798	0.745	0.501	0.613	1.072	0.372	0.291	0.309	0.239	0.359	0.282	0.125	0.202	/	1.274	N/A	N/A
	Right tilt	0.202	0.110	0.220	0.276	0.315	0.154	0.367	0.231	0.152	0.084	0.104	0.183	0.211	0.092	0.199	/	0.566	N/A	N/A
Body-worn 15mm	Front side	0.386	0.325	0.468	0.379	0.405	0.371	0.311	0.303	0.344	0.161	0.215	0.175	0.297	0.131	0.107	/	0.575	N/A	N/A
	Back side	0.430	0.345	0.601	0.328	0.448	0.566	0.374	0.359	0.327	0.216	0.305	0.240	0.393	0.184	0.107	/	0.708	N/A	N/A
Hotspot 10mm	Front side	0.432	0.770	0.653	0.602	0.413	0.472	0.596	0.324	0.699	0.237	0.289	0.182	0.640	0.470	0.206	/	0.976	N/A	N/A
	Back side	0.506	0.789	1.001	0.687	0.497	0.702	0.626	0.367	0.571	0.243	0.392	0.274	1.118	0.627	0.206	/	1.324	N/A	N/A
	Left side	0.523	0.129	0.223	0.192	0.331	0.155	0.234	0.247	0.215	0.165	0.229	0.144	0.269	0.104	/	/	0.523	N/A	N/A
	Right side	0.761	0.414	0.436	0.619	0.764	0.377	0.518	0.542	0.395	0.293	0.347	0.142	0.602	0.386	0.206	/	0.970	N/A	N/A
	Top side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.206	/	0.206	N/A	N/A
	Bottom side	0.199	1.394	1.294	0.477	0.253	1.228	0.340	0.174	0.480	0.193	0.248	0.115	0.499	0.279	/	/	1.394	N/A	N/A
Prouduct Specific 10-g 0mm	Front side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.914	/	0.914	N/A	N/A
	Back side	/	/	2.687	/	/	/	/	/	/	/	/	/	/	/	0.914	/	3.601	N/A	N/A
	Left side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.000	N/A	N/A
	Right side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.914	/	0.914	N/A	N/A
	Top side	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0.914	/	0.914	N/A	N/A
	Bottom side	/	0.260	0.441	/	/	0.334	/	/	/	/	/	/	/	/	/	/	0.441	N/A	N/A

Table 153: SAR Simultaneous Tx Combination of Main antenna and 5G WiFi.

7.3.4 SPLSR Evaluation Analysis

According to KDB447498 D01v06, When the sum of SAR is larger than the limit, SAR test exclusion is determined by the SAR to peak location separation ratio(SPLSR).When the SAR to peak location ratio for each pair of antennas is $\leq 1\text{-g } 0.04$ and $10\text{-g } 0.10$, simultaneous SAR evaluation is not required. When SAR is measured for both antennas in the pair, the peak location separation distance is computed by the following fomula:

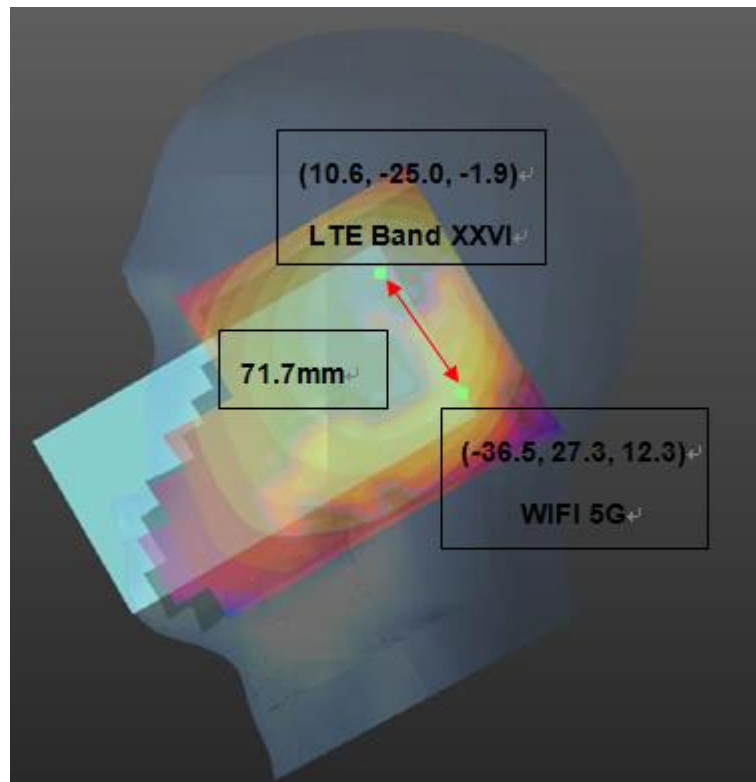
$$\text{Distance}_{\text{Tx1-Tx2}} = R_i = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2}$$

$$\text{SPLS Ratio} = (\text{SAR}_1 + \text{SAR}_2)^{1.5} / R_i$$

When standalone test exclusion applies, SAR is estimated; the peak location is assumed to be at the feed-point or geometric center of the antenna.

- 1) The sum of aggregate 1-g SAR was above 1.6W/kg for Right touch configuration with LTE Band XXVI(Second antenna) and WiFi 5G.

The Peak SAR location plot is as below:



The SAR to peak location ratio calculation is as below:

Test Position	LTE Band XXVI (W/kg)	WiFi 5G (W/kg)	Ri(mm)	SPLSR	Ratio Limit	Simultaneous SAR
Right touch	1.420	0.202	71.7	0.029	0.04	Not required

7.3.5 Simultaneous Transmission Conclusion

The above numeral summed SAR results and/or SPLSR analysis 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)030052017-2A, total: 26 pages)

Appendix B. SAR Measurement Plots

(Pls See Appendix No.: SYBH(Z-SAR)030052017-2B, total: 110 pages)

Appendix C. Calibration Certificate

(Pls See Appendix No.: SYBH(Z-SAR)030052017-2C, total: 122 pages)

Appendix D. Photo documentation

(Pls See Appendix No.: SYBH(Z-SAR)030052017-2D, total: 6 pages)

End