FCC SAR Compliance Test Report

Product Name:	Smart Phone
Model:	H1511
Report No.:	SYBH(Z-SAR)011072015-2
FCC ID:	QISH1511

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DATE	2015-09-17	2015-09-17

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※ ※ Modified History ※ ※

REV.	DESCRIPTION	ISSUED DATE	REMARK
Rev.1.0	Initial Test Report Release	2015-09-11	Gong Zhong
Rev.1.1	Page 210-213: Correct the Tune-up limit in Table 116 conducted power table of WiFi 5G.	2015-09-17	Gong Zhong

1 General Information

1.1 Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for H1511 is as below Table 1.

Band	Max Reported SAR(W/kg)			
	1-g Head	1-g Body-worn (15mm) *	1-g Hotspot (10mm)	10-g Extremity (0mm)**
GSM850	1.49	0.30	0.48	/
GSM1900	0.14	0.60	1.17	1.43
UMTS Band II	0.14	0.69	0.84	1.46
UMTS Band IV	0.12	0.53	1.14	3.59
UMTS Band V	1.49	0.32	0.42	/
CDMA BC 0	1.39	0.41	0.67	/
CDMA BC 1	0.15	0.67	1.23	3.49
CDMA BC 10	1.00	0.44	0.31	/
LTE Band II	0.18	0.81	1.14	1.44
LTE Band IV	0.11	0.56	1.43	3.62
LTE Band V	1.31	0.30	0.58	/
LTE Band VII	0.50	0.49	1.33	3.62
LTE Band XII	1.20	0.21	0.38	/
LTE Band XIII	1.44	0.31	0.41	/
LTE Band XVII	1.28	0.23	0.31	/
LTE Band XXV	0.17	0.73	1.44	3.52
LTE Band XXVI	1.40	0.26	0.37	/
LTE Band XXX	0.33	0.52	1.44	3.26
LTE Band XLI	0.31	0.25	0.91	0.58
WiFi 2.4G	0.80	0.21	0.11	/
WiFi 5G	1.06	0.25	0.11	3.54
The highest simultaneous SAR value is 1.56 W/kg 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 10-g Extremity operation, this device has been tested and meets the 10-g SAR limits of 4.0 W/kg for general population/ uncontraolled 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/uncontraolled exposure limits according to the FCC rule §2.1093, the ANSI C95.1:1992/IEEE C95.1:1991, the NCRP Report Number 86 for uncontrolled environment, according to the Industry Canada Radio Standards Specification RSS-102 for General Population/Uncontrolled exposure, and had been tested in accordance with the measurement methods and procedures specified in IEEE Std 1528-2013.

1.2 RF exposure limits

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

Table 2: RF exposure limits

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

Notes:

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

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

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

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

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

1.3 EUT Description

Device Information:			
Product Name:	Smart Phone		
Model:	H1511		
FCC ID :	QISH1511		
IMEI:	867686020089254 867686020088892		
Device Type :	Portable device		
Device Phase:	Identical Prototype		
Exposure Category:	Uncontrolled environment / general population		
Hardware Version :	HL1NINAMH		
Software Version :	User release M MDA		
Antenna Type :	Internal antenna		
Others Accessories	Headset		
Device Operating Configurations:			
Supporting Mode(s)	GSM850/1900, UMTS Band II/IV/V, CDMA BC0/BC1/BC10, LTE Band II/IV/V/VII/XII/XIII/XVII/XXV/XXVI/XXIX/XXX/XLI, WiFi 2.4G/5G, BT, NFC		
Test Modulation	GSM(GMSK/8PSK),UMTS(QPSK),CDMA(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
	CDMA BC0	824-849	869-894
	CDMA BC1	1850-1910	1930-1990
	CDMA BC10	806-824	851-869
	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 XIII	777–787	746–756
	LTE Band XVII	704-716	734-746
	LTE Band XXV	1850-1915	1925-1990
	LTE Band XXVI	814-849	859-894
	LTE Band XXIX	N/A	717-728
	LTE Band XXX	2305-2315	2350-2360
	LTE Band XLI	2496-2690	2496-2690
	BT	2402-2480	
	WiFi 2.4G	2412-2462	
	WiFi 5G	5150-5250 5250-5350 5470-5725 5725-5850	
	NFC	13.56	
GPRS Multislot Class(10)	Max Number of Timeslots in Uplink:		2
	Max Number of Timeslots in Downlink:		4
	Max Total Timeslot:		5

EGPRS Multislot Class(10)	Max Number of Timeslots in Uplink:	2
	Max Number of Timeslots in Downlink:	4
	Max Total Timeslot:	5
HSDPA UE Category	14	
HSUPA UE Category	6	
DC-HSDPA UE Category	24	
Power Class:	4,tested with power level 5(GSM850)	
	1,tested with power level 0(GSM1900)	
	3, tested with power control “all 1”(UMTS Band II)	
	3, tested with power control “all 1”(UMTS Band IV)	
	3, tested with power control “all 1”(UMTS Band V)	
	3, tested with power control “all Up”(CDMA BC 0)	
	3, tested with power control “all Up”(CDMA BC 1)	
	3, tested with power control “all Up”(CDMA BC 10)	
	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 XIII)	
	3, tested with power control all Max.(LTE Band XVII)	
	3, tested with power control all Max.(LTE Band XXV)	
	3, tested with power control all Max.(LTE Band XXVI)	
	3, tested with power control all Max.(LTE Band XXX)	
	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)	
	1013-384-777(CDMA BC 0)	
	25-600-1175(CDMA BC 1)	
	450-565-670(CDMA BC 10)	
	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)	

Test Channels:	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)
	23205-23230-23255(LTE Band XIII BW=5MHz)
	23230(LTE Band XIII BW=10MHz)
	23755-23790-23825(LTE Band XVII BW=5MHz)
	23780-23790-23800(LTE Band XVII BW=10MHz)
	26047-26365-26683(LTE Band XXV BW=1.4MHz)
	26055-26365-26675(LTE Band XXV BW=3MHz)
	26065-26365-26665(LTE Band XXV BW=5MHz)
	26090-26365-26640(LTE Band XXV BW=10MHz)
	26115-26365-26615 (LTE Band XXV BW=15MHz)
	26140-26365-26590(LTE Band XXV BW=20MHz)
	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)
	27685-27710-27735(LTE Band XXX BW=5MHz)
	27710 (LTE Band XXX BW=10MHz)
	39675-40148-40620-41092-41565(LTE Band XLI BW=5MHz)
	39700-40160-40620-41080-41540(LTE Band XLI BW=10MHz)
	39725-40173-40620-41068-41515(LTE Band XLI BW=15MHz)
	39750-40185-40620-41055-41490(LTE Band XLI BW=20MHz)
	802.11b/g/n 20M:1-6-11 (WiFi 2.4G) 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: 38-46-54-62-102-110-118-126-134-142-151-159 802.11ac 80M: 42-58-106-122-138-155(WiFi 5G)

Table 3:Device information and operating configuration

1.3.1 General Description

H1511 is subscriber equipment in the LTE/WCDMA/CDMA/GSM system. The GSM/GPRS/EDGE frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900. The HSPA+/UMTS frequency band is Band I and Band II and Band IV and Band V. The CDMA/1XEV-DO band is BC1 and BC0 and BC10.The LTE frequency band is B2 and B3 and B4 and B5 and B7 and B12 and B13 and B17 and B25 and B26 and B29 and B30 and B41. But only GSM850 and GSM1900MHz and WCDMA Band II and Band IV and Band V and CDMA BC1 and BC0 and BC10 and LTE B2 and LTE B4 and LTE B5 and LTE B7 and LTE B12 and LTE B13 and LTE B17 and LTE B25 and LTE B26 and LTE B29 and LTE B30 and LTE B41 bands test data included in this report. The Mobile Phone implements such functions as RF signal receiving/transmitting, LTE/HSPA/UMTS and GSM/GPRS/EDGE and CDMA2000 1x and 1XEV-DO protocol processing, voice, video MMS service, GPS, AGPS NFC and WIFI etc. Externally it provides micro SD card interface (it can also used as micro SD card interface), earphone port (to provide voice service) and USIM card interface. 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	Huawei Technologies Co., Ltd.	NA	Battery Model: HB416683ECW Rated capacity: 3450mAh Nominal Voltage: ⎓ +3.8V Charging Voltage: ⎓ +4.35V

1.3.2 TDD LTE additional specification

The device supports TDD LTE bands. According to KDB 941225 D05 SAR for LTE Devices v02r03, 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.

1.3.3 Power reduction specification

This device uses a single fixed level of power reduction through static table look-up for SAR compliance and it is triggered by a single event or operation:
1) A fixed level power reduction is applied for some frequency bands when hotspot mode becomes active. When the hotspot is disabled, the power value will be recovered.

2) A fixed level power reduction is applied for some frequency bands when simultaneously transmitting with the other antennas in certain simultaneous transmission conditions. The standalone SAR compliance still uses the standalone SAR results tested at the maximum output power level without any power reduction.

3) This device uses an infrared proximity sensor to facilitate triggering in typical user interactivity with the device. The proximity sensor is used to indicate when the phone is held close to a user's ear or used in front side of body-worn/10g extremity exposure condition. It utilizes the proximity sensor to reduce a fixed level output power in specific wireless and operating modes to ensure SAR compliance for the following scenarios:
a) To reduce the output power of Wi-Fi antennas during Wi-Fi calling (Wi-Fi VOIP) in held-to-ear scenario.
b) To reduce the output power when 2G&3G&4G sub antenna in voice mode and Wi-Fi antennas transmiting simultaneously in held-to-ear scenario or front side of body-worn/10g extremity scenario.
The procedures in KDB 616217 are applied to determine the sensor triggering distances (Refer to Section 7 for details).

The following tables summerize 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.

WiFi antenna(s) Only		
Band	Power Reduction Level Amount(dB)	
	WiFi Ant(WiFi VOIP) + Sensor on	WiFi Ant (WiFi VOIP) + Sensor off
WiFi 2.4G	5.0	0.0
WiFi 5G	5.0	0.0

2G&3G&4G Second antenna + WiFi antenna(s) simultaneous transmission			
Band	Power Reduction Level Amount (dB)		
	Second Antenna(Voice) + WiFi station+Sensor on	Second Antenna(Voice) +WiFi station+Sensor off	Second Antenna +WiFi Hotspot
GSM850	2.0	1.0	3.5
UMTS Band V	2.8	1.8	2.8
CDMA BC0	3.2	2.2	3.2
CDMA BC10	3.2	2.2	3.2
LTE B5	1.7	0.7	1.7
LTE B12	1.7	0.7	1.7
LTE B13	1.7	0.7	1.7
LTE B17	1.7	0.7	1.7
LTE B26	1.7	0.7	1.7
2.4G WIFI	8.0	6.0	8.0
5G WIFI	8.0	6.0	8.0

2G&3G&4G Main antenna + WiFi antenna(s) simultaneous transmission		
Band	Power Reduction Level Amount (dB)	
	Main Antenna(Voice) + WiFi station	Main Antenna + WiFi Hotspot
GSM850	1.0	2.0
GSM1900	2.0	3.0
UMTS Band II	2.0	3.0
UMTS Band IV	2.0	3.0
UMTS Band V	1.0	2.0
CDMA BC0	1.5	2.5
CDMA BC1	2.7	3.7
CDMA BC10	1.5	2.5
LTE B2	1.8	2.8
LTE B4	2.0	3.0
LTE B5	0.0	1.0
LTE B7	1.8	2.8
LTE B12	0.0	1.0
LTE B13	0.0	1.0
LTE B17	0.0	1.0
LTE B25	1.7	2.7
LTE B26	0.0	1.0
LTE B30	1.7	2.7
LTE B41	1.7	2.7
2.4G WIFI	7.0	7.0
5G WIFI	7.0	7.0

1.3.4 Downlink LTE CA additional specification

The device supports downlink Release 10 LTE Carrier Aggregation (CA) only. It supports a maximum of 2 carriers in the downlink. 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 V12.8.0. The conducted power measurement results of downlink LTE CA are provided in Section 7 of this report per 3GPP TS 36.521-1 V12.6.0. 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 V12.8.0 Table 5.6A.1-1)

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]		
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		

intra-band non-contiguous CA(per 3GPP TS 36.101 V12.8.0 Table 5.6A.1-3)

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]		
CA_2A-2A	5, 10, 15, 20	5, 10, 15, 20	40	0
CA_4A-4A	5, 10, 15, 20	5, 10, 15, 20	40	0
CA_41A-41A	10, 15, 20	10, 15, 20	40	0
	5, 10, 15, 20	5, 10, 15, 20	40	1

inter-band CA (per 3GPP TS 36.101 V12.8.0 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_2A-4A	2	Yes	Yes	Yes	Yes	Yes	Yes	40	0
	4			Yes	Yes	Yes	Yes		
	2			Yes	Yes			20	1
	4			Yes	Yes				
	2			Yes	Yes	Yes	Yes	40	2
	4			Yes	Yes	Yes	Yes		
CA_2A-5A	2			Yes	Yes	Yes	Yes	30	0
	5			Yes	Yes				
CA_2A-12A	2			Yes	Yes	Yes	Yes	30	0
	12			Yes	Yes				
	2			Yes	Yes	Yes	Yes	30	1
	12		Yes	Yes	Yes				
CA_2A-13A	2			Yes	Yes	Yes	Yes	30	0
	13				Yes				
	2			Yes	Yes			20	1
	13				Yes				
CA_2A-17A	2			Yes	Yes			20	0
	17			Yes	Yes				
CA_2A-29A	2			Yes	Yes			20	0
	29		Yes	Yes	Yes				
	2			Yes	Yes			20	1
	29			Yes	Yes				
CA_4A-5A	4			Yes	Yes			20	0
	5			Yes	Yes				
	4			Yes	Yes	Yes	Yes	30	1
	5			Yes	Yes				
CA_4A-12A	4	Yes	Yes	Yes	Yes			20	0
	12			Yes	Yes				
	4	Yes	Yes	Yes	Yes	Yes	Yes	30	1
	12			Yes	Yes				
	4			Yes	Yes	Yes	Yes	30	2
	12		Yes	Yes	Yes				
	4			Yes	Yes			20	3
	12			Yes	Yes				
	4			Yes	Yes	Yes	Yes	30	4
	12			Yes	Yes				
CA_4A-13A	4			Yes	Yes	Yes	Yes	30	0
	13				Yes				
	4			Yes	Yes			20	1
	13				Yes				
CA_4A-17A	4			Yes	Yes			20	0
	17			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				

Note:
1) For inter-band CA, all the listed bands above can be used as PCC or SCC except for LTE B29. LTE B29 can be used as SCC only.
2) The channel spacing and aggregated channel bandwidth for CA are identical to the associated specification in 3GPP TS 36.101 V12.8.0.
3) The reference test frequencies for CA refers to 3GPP TS 36.508 V12.5.0.

1.3.5 Dynamic antenna switching specification

The device supports the dynamic antenna switching function to optimize transmission efficiency for wide range frequency operations.

1) Description of 2G&3G&4G dynamic antenna switching

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. Second Antenna only supports GSM850,UMTS Band V, CDMA BC0, CDMA BC10, LTE B5/12/13/17/26 for FCC Bands.
For 2G&3G&4G SAR test, 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. (Refer to Section 7 for details)

2) Description of 802.11b 2.4G Wi-Fi dynamic switching

The device also supports the dynamic antenna switching function for 802.11b 2.4G WiFi .The device has two Wi-Fi Tx antennas (Main Wi-Fi &BT antenna and Sub WiFi Antenna). The 802.11b Wi-Fi dynamic switching is based on diversity technology. In 802.11b diversity mode, Wi-Fi function is able to judge the one of the two paths with the higher RSSI and select it as the Tx/Rx path dynamically in order to gain the best performance. 802.11b can transmit from either Main Wi-Fi antenna or Sub WiFi Antenna, but can not transmit simultaneously.
For 802.11b Wi-Fi SAR test, the test lab will set the Main Wi-Fi Antenna / Sub Wi-Fi Antenna to the MAX transmit power level respectively and test the SAR respectively in all applicable RF exposure conditions per KDB248227D01v02r01. Only one Wi-Fi TX antenna is chosen at a time. It is conservative enough to ensure the SAR compliance.

1.3.6 802.11g/a Wi-Fi CDD and 802.11 n/ac Wi-Fi MIMO specification

The device supports Wi-Fi CDD mode when Wi-Fi working in 802.11g/a mode.
CDD is a kind of transmit diversity mechanism implemented by applying a different phase delay (cyclic phase delay) for each OFDM subcarrier. It is used in spatial multiplexing to increase diversity between the two spatial paths. In CDD mode, both of the Wi-Fi Tx antennas are transmitting the same information with the same data rate, at the same channel and the same time. CDD means it is not one but two paths of Wi-Fi transmitting as the same time.

Besides, the device also supports Wi-Fi MIMO mode in 802.11 n/ac. It does not support 802.11 n/ac Wi-Fi SISO mode. The two Wi-Fi antennas can only transmit at the same time in 802.11 n/ac.
For 802.11 g/a WIFI CDD and 802.11n/ac Wi-Fi MIMO SAR test, only the scenario two Wi-Fi antennas transmitting at the same time are supported and need to be considered. The common Initial Test Position and OFDM Initial Test Configuration Procedures per KDB 248227D01v02r01 are applied for 2.4G Wi-Fi 802.11g/n and 5G Wi-Fi 802.11 a/n/ac SAR test respectively in all applicable RF exposure conditions.

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 v03
KDB941225 D05	SAR for LTE Devices v02r03
KDB941225 D05A	LTE Rel.10 KDB Inquiry Sheet v01
KDB941225 D06	Hotspot SAR v02
KDB447498 D01	General RF Exposure Guidance v05r02
KDB616217 D04	SAR for laptop and tablets v01r01
KDB648474 D04	Handsets SAR v01r02
KDB248227 D01	SAR Guidance for IEEE 802 11 Wi-Fi SAR v02
KDB865664 D01	SAR measurement 100 MHz to 6 GHz v01r04
KDB865664 D02	SAR Reporting v01r01
KDB690783 D01	SAR Listings on Grants v01r03

1.5 Testing laboratory

Test Site	The Reliability Laboratory of Huawei Technologies Co., Ltd.
Test Location	Zone G1,Huawei Industrial Base, Bantian Industry Area, Longgang District, Shenzhen, Guangdong, 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

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

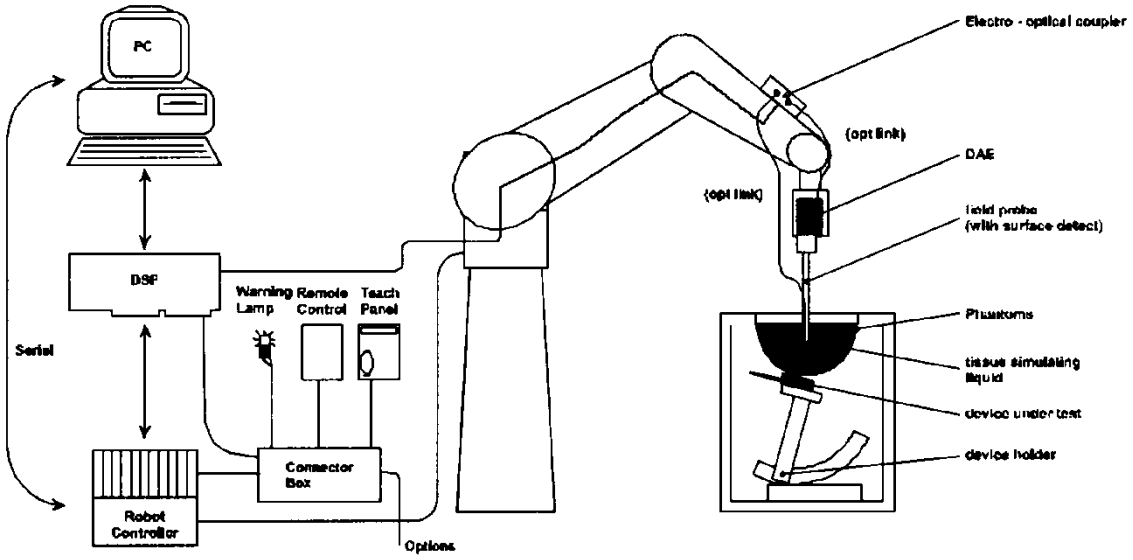
Start Date of test	2015-07-20
End Date of test	2015-09-02

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

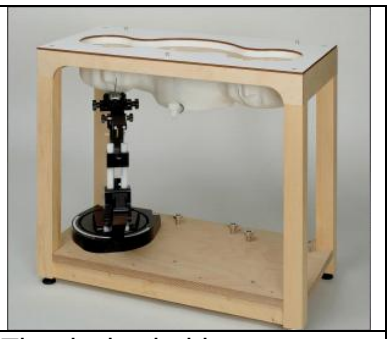
Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Calibration	ISO/IEC 17025 calibration service available.	
Frequency	10 MHz to 4 GHz; Linearity: ± 0.2 dB (30 MHz to 4 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 µW/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

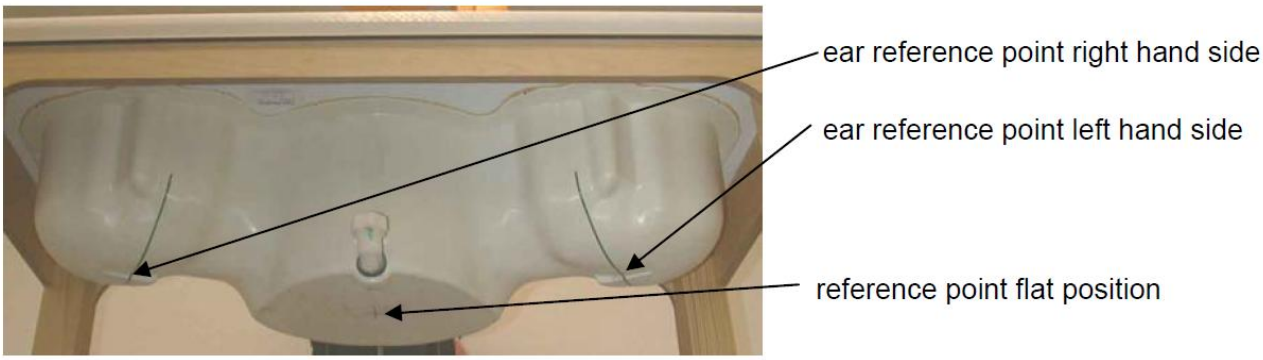
Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Calibration	ISO/IEC 17025 calibration service available.	
Frequency	10 MHz to >6 GHz; Linearity: ± 0.2 dB (30 MHz to 6 GHz)	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic range	10 µW/g to > 100 mW/g; Linearity: ± 0.2 dB(noise:typically<1µW/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: 1mm	
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

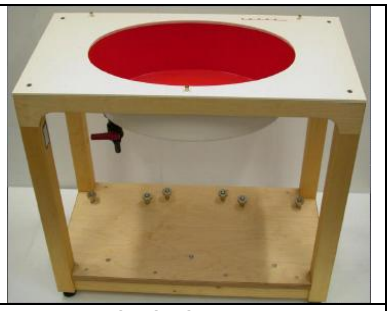
SAM Twin Phantom

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≤εr≤5 at ≤3 GHz,3≤ εr≤4 at >3 GHz and 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 ε =3 and loss tangent σ =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 ±1° 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	2015-04-30	One year
☒	SPEAG	Dosimetric E-Field Probe	EX3DV4	7350	2015-01-08	One year
☒	SPEAG	Dosimetric E-Field Probe	ES3DV3	3168	2014-09-24	One year
☒	SPEAG	750MHz Dipole	D750V3	1044	2014-09-19	Three years
☒	SPEAG	835MHz Dipole	D835V2	4d059	2013-05-02	Three years
☒	SPEAG	1750MHz Dipole	D1750V2	1123	2014-07-08	Three years
☒	SPEAG	1900MHz Dipole	D1900V2	5d143	2014-09-23	Three years
☒	SPEAG	2300MHz Dipole	D2300V2	1016	2014-11-19	Three years
☒	SPEAG	2450MHz Dipole	D2450V2	860	2014-11-19	Three years
☒	SPEAG	2600MHz Dipole	D2600V2	1021	2015-07-24	Three years
☒	SPEAG	5GHz Dipole	D5GHzV2	1155	2015-04-27	Three years
☒	SPEAG	Data acquisition electronics	DAE4	1236	2014-11-13	One year
☒	SPEAG	Data acquisition electronics	DAE4	852	2015-04-27	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
☐	SPEAG	Flat Phantom	ELI 4.0	TP-1038	NCR	NCR
☐	SPEAG	Flat Phantom	ELI 4.0	TP-1111	NCR	NCR
☒	R & S	Universal Radio Communication Tester	CMU 200	113989	2015-05-18	One year
☒	R & S	Universal Radio Communication Tester	CMW 500	126855	2015-07-02	One year
☒	Agilent	Network Analyser	E5071C	MY46213349	2015-02-13	One year
☒	Agilent	Dielectric Probe Kit	85070E	2484	NCR	NCR
☒	Agilent	Signal Generator	N5181A	MY47420989	2015-01-07	One year
☒	MINI-CIRCUITS	Amplifier	ZHL-42W	QA1402001	NCR	NCR
☒	MINI-CIRCUITS	Amplifier	ZVE-8G+	N523101139	NCR	NCR
☒	AR	Directional Coupler	DC7144M1	0423264	2015-03-31	One year
☒	Agilent	Dual Directional Coupler	772D	MY52180173	2015-01-08	One year
☒	R & S	Power Meter	NRP	100740	2015-07-02	One year
☒	R & S	Power Meter Sensor	NRP-Z11	106288	2015-07-02	One year
☒	Agilent	Power Meter	E4417A	MY45101339	2015-01-07	One year
☒	Agilent	Power Meter Sensor	E9321A	MY44420359	2015-01-07	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.

a) There is no physical damage on the dipole;
b) System check with specific dipole is within 10% of calibrated value;
c) The most recent return-loss result, measured at least annually, deviates by no more than 20% from the previous measurement.
d) 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 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 ± 0.1mm). 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 ± 30°.)

- 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(⩽2GHz)，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: Δx_{zoom}, Δy_{zoom}⩽ 2GHz - ⩽8mm, 2-4GHz - ⩽5 mm and 4-6 GHz-⩽4mm; Δz_{zoom} ⩽3GHz - ⩽5 mm, 3-4 GHz- ⩽4mm and 4-6GHz-⩽2mm 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 form in chapter 7.2.

- A Z-axis scan measures the total SAR value at the x-and y-position of the maximum SAR value found during the cube scan. The probe is moved away in z-direction from the bottom of the SAM phantom in 2 mm steps. This measurement shows the continuity of the liquid and can - depending in the field strength – also show the liquid depth. A z-axis scan of the measurement with maximum SAR value is shown in Appendix B.

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

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

3.2 Spatial Peak SAR Evaluation

The spatial peak SAR - value for 1 and 10 g is evaluated after the Cube measurements have been done. The basis of the evaluation are the SAR values measured at the points of the fine cube grid consisting of 5 x 5 x 7 points(with 8mm horizontal resolution) or 7 x 7 x 7 points(with 5mm horizontal resolution) or 8 x 8 x 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 (20x20x20) 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	$Norm_i$, 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:

$$V_i = U_i + U_i^2 \bullet cf/dcp_i$$

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)
	dcp_i	= diode compression point	(DASY parameter)

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

E-field probes: $E_i = (V_i / Norm_i \cdot ConvF)^{1/2}$

H-field probes: $H_i = (V_i)^{1/2} \cdot (a_{i0} + a_{i1}f + a_{i2}f^2)/f$

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):

$$E_{tot} = (E_x^2 + E_Y^2 + E_z^2)^{1/2}$$

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

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

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/cm^3

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.

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

with P_{pwe} = equivalent power density of a plane wave in mW/cm^2
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 of the dielectic parameter are within the tolerances of the specified target values. The measured conductivity and relative permittivity should be within ± 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, 16MΩ+ 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 for 5G(HBBL3500-5800MHz), Manufactured by SPEAG:**

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

☒**Simulating Body Liquid for 5G(MBBL3500-5800MHz),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		Liquid Temp.	Test Date
		εr (+/-5%)	σ (S/m) (+/-5%)	εr	σ (S/m)		
750H	705	42.14 (40.03~44.24)	0.89 (0.85~0.93)	43.51	0.853	21.4°C	2015-07-26
	710	42.11 (40.00~44.21)	0.89 (0.85~0.93)	43.55	0.857		
	750	41.90 (39.81~43.99)	0.89 (0.85~0.93)	42.90	0.892		
750B	705	55.70 (52.92~58.48)	0.96 (0.92~1.008)	55.15	0.922	21.4°C	2015-07-20
	710	55.70 (52.92~58.48)	0.96 (0.92~1.008)	55.09	0.928		
	750	55.50 (52.73~58.27)	0.96 (0.92~1.008)	54.65	0.972		
750B	705	55.70 (52.92~58.48)	0.96 (0.92~1.008)	55.80	0.928	21.4°C	2015-07-25
	710	55.70 (52.92~58.48)	0.96 (0.92~1.008)	55.67	0.935		
	750	55.50 (52.73~58.27)	0.96 (0.92~1.008)	55.42	0.973		
750B	705	55.70 (52.92~58.48)	0.96 (0.92~1.008)	55.13	0.927	21.4°C	2015-08-23
	710	55.70 (52.92~58.48)	0.96 (0.92~1.008)	55.08	0.931		
	750	55.50 (52.73~58.27)	0.96 (0.92~1.008)	54.71	0.972		
835H	825	41.60 (39.52~43.68)	0.90 (0.86~0.95)	41.88	0.881	21.4°C	2015-07-24
	835	41.50 (39.43~43.58)	0.90 (0.86~0.95)	41.78	0.884		
	850	41.50 (39.43~43.58)	0.92 (0.87~0.96)	41.64	0.902		
835H	825	41.60 (39.52~43.68)	0.90 (0.86~0.95)	40.53	0.873	21.4°C	2015-07-28
	835	41.50 (39.43~43.58)	0.90 (0.86~0.95)	40.50	0.879		
	850	41.50 (39.43~43.58)	0.92 (0.87~0.96)	40.34	0.889		
835H	825	41.60 (39.52~43.68)	0.90 (0.86~0.95)	42.73	0.918	21.4°C	2015-08-17
	835	41.50 (39.43~43.58)	0.90 (0.86~0.95)	42.53	0.925		
	850	41.50 (39.43~43.58)	0.92 (0.87~0.96)	42.41	0.941		
835B	825	55.20 (52.44~57.96)	0.97 (0.92~1.02)	55.15	0.957	21.5°C	2015-07-23
	835	55.20 (52.44~57.96)	0.97 (0.92~1.02)	55.03	0.966		
	850	55.20 (52.44~57.96)	0.99 (0.94~1.04)	54.86	0.982		

835B	825	55.20 (52.44~57.96)	0.97 (0.92~1.02)	54.30	0.972	21.5°C	2015-08-19
	835	55.20 (52.44~57.96)	0.97 (0.92~1.02)	54.19	0.982		
	850	55.20 (52.44~57.96)	0.99 (0.94~1.04)	54.01	0.999		
835B	825	55.20 (52.44~57.96)	0.97 (0.92~1.02)	53.33	0.965	21.5°C	2015-08-24
	835	55.20 (52.44~57.96)	0.97 (0.92~1.02)	53.21	0.976		
	850	55.20 (52.44~57.96)	0.99 (0.94~1.04)	53.04	0.993		
835B	825	55.20 (52.44~57.96)	0.97 (0.92~1.02)	54.08	0.959	21.5°C	2015-08-29
	835	55.20 (52.44~57.96)	0.97 (0.92~1.02)	53.97	0.968		
	850	55.20 (52.44~57.96)	0.99 (0.94~1.04)	53.82	0.985		
1750H	1710	40.1 (38.10~42.11)	1.35 (1.28~1.42)	39.23	1.311	21.5°C	2015-07-30
	1730	40.1 (38.10~42.11)	1.36 (1.29~1.43)	39.16	1.338		
	1750	40.1 (38.10~42.11)	1.37 (1.30~1.44)	39.05	1.352		
	1800	40 (38.00~42.00)	1.4 (1.33~1.47)	38.86	1.399		
1750B	1710	53.5 (50.83~56.18)	1.46 (1.39~1.53)	51.13	1.495	21.8°C	2015-07-22
	1730	53.5 (50.83~56.18)	1.48 (1.41~1.55)	51.05	1.512		
	1750	53.4 (50.73~56.07)	1.49 (1.42~1.56)	50.97	1.528		
	1800	53.3 (50.64~55.97)	1.52 (1.44~1.60)	50.81	1.572		
1750B	1710	53.5 (50.83~56.18)	1.46 (1.39~1.53)	51.62	1.502	21.8°C	2015-07-29
	1730	53.5 (50.83~56.18)	1.48 (1.41~1.55)	51.62	1.512		
	1750	53.4 (50.73~56.07)	1.49 (1.42~1.56)	51.54	1.527		
	1800	53.3 (50.64~55.97)	1.52 (1.44~1.60)	51.43	1.580		

1750B	1710	53.5 (50.83~56.18)	1.46 (1.39~1.53)	51.51	1.403	21.8°C	2015-08-28
	1730	53.5 (50.83~56.18)	1.48 (1.41~1.55)	51.44	1.424		
	1750	53.4 (50.73~56.07)	1.49 (1.42~1.56)	51.36	1.444		
	1800	53.3 (50.64~55.97)	1.52 (1.44~1.60)	51.19	1.493		
1900H	1850	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.39	1.352	22.0°C	2015-07-29
	1880	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.30	1.388		
	1900	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.16	1.405		
	1910	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.18	1.416		
1900H	1850	40.00 (38.00~42.00)	1.40 (1.33~1.47)	38.80	1.356	22.0°C	2015-08-01
	1880	40.00 (38.00~42.00)	1.40 (1.33~1.47)	38.71	1.384		
	1900	40.00 (38.00~42.00)	1.40 (1.33~1.47)	38.63	1.400		
	1910	40.00 (38.00~42.00)	1.40 (1.33~1.47)	38.59	1.411		
1900H	1850	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.74	1.391	22.0°C	2015-08-19
	1880	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.61	1.421		
	1900	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.53	1.439		
	1910	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.49	1.448		
1900B	1850	53.30 (50.64~55.97)	1.52 (1.44~1.60)	52.36	1.469	21.0°C	2015-07-21
	1880	53.30 (50.64~55.97)	1.52 (1.44~1.60)	52.28	1.502		
	1900	53.30 (50.64~55.97)	1.52 (1.44~1.60)	52.21	1.521		
	1910	53.30 (50.64~55.97)	1.52 (1.44~1.60)	52.18	1.531		
1900B	1850	53.30 (50.64~55.97)	1.52 (1.44~1.60)	51.83	1.520	21.0°C	2015-07-27
	1880	53.30 (50.64~55.97)	1.52 (1.44~1.60)	51.72	1.551		
	1900	53.30 (50.64~55.97)	1.52 (1.44~1.60)	51.65	1.571		
	1910	53.30 (50.64~55.97)	1.52 (1.44~1.60)	51.63	1.583		

1900B	1850	53.30 (50.64~55.97)	1.52 (1.44~1.60)	52.09	1.487	21.0°C	2015-08-01
	1880	53.30 (50.64~55.97)	1.52 (1.44~1.60)	51.86	1.511		
	1900	53.30 (50.64~55.97)	1.52 (1.44~1.60)	51.83	1.542		
	1910	53.30 (50.64~55.97)	1.52 (1.44~1.60)	51.86	1.562		
1900B	1850	53.30 (50.64~55.97)	1.52 (1.44~1.60)	51.60	1.502	21.0°C	2015-08-24
	1880	53.30 (50.64~55.97)	1.52 (1.44~1.60)	51.51	1.533		
	1900	53.30 (50.64~55.97)	1.52 (1.44~1.60)	51.44	1.552		
	1910	53.30 (50.64~55.97)	1.52 (1.44~1.60)	51.40	1.562		
1900B	1850	53.30 (50.64~55.97)	1.52 (1.44~1.60)	51.63	1.502	21.0°C	2015-09-02
	1880	53.30 (50.64~55.97)	1.52 (1.44~1.60)	51.56	1.536		
	1900	53.30 (50.64~55.97)	1.52 (1.44~1.60)	51.52	1.556		
	1910	53.30 (50.64~55.97)	1.52 (1.44~1.60)	51.44	1.566		
2300H	2300	39.40 (37.43~41.37)	1.67 (1.59~1.75)	38.61	1.686	21.5°C	2015-07-27
	2310	39.44 (37.47~41.41)	1.68 (1.57~1.76)	38.63	1.690		
2300B	2300	52.90 (50.26~55.55)	1.81 (1.72~1.90)	51.95	1.752	21.5°C	2015-07-25
	2310	52.90 (50.26~55.55)	1.81 (1.72~1.90)	51.93	1.765		
2300B	2300	52.90 (50.26~55.55)	1.81 (1.72~1.90)	51.68	1.861	21.5°C	2015-08-27
	2310	52.90 (50.26~55.55)	1.81 (1.72~1.90)	51.63	1.873		
2450H	2410	39.30 (37.34~41.26)	1.76 (1.67~1.85)	38.78	1.817	21.6°C	2015-08-22
	2435	39.20 (37.24~41.16)	1.79 (1.70~1.88)	38.70	1.845		
	2450	39.20 (37.24~41.16)	1.80 (1.71~1.89)	38.65	1.863		
	2460	39.20 (37.24~41.16)	1.81 (1.72~1.90)	38.62	1.874		
2450B	2410	52.80 (50.16~55.44)	1.91 (1.81~2.00)	50.69	1.991	21.0°C	2015-07-26
	2435	52.70 (50.07~55.34)	1.94 (1.84~2.04)	50.60	2.023		
	2450	52.70 (50.07~55.34)	1.95 (1.85~2.05)	50.54	2.043		
	2460	52.70 (50.07~55.34)	1.96 (1.86~2.06)	50.50	2.056		

2450B	2410	52.80 (50.16~55.44)	1.91 (1.81~2.00)	51.65	1.965	21.0°C	2015-08-21
	2435	52.70 (50.07~55.34)	1.94 (1.84~2.04)	51.56	1.993		
	2450	52.70 (50.07~55.34)	1.95 (1.85~2.05)	51.50	2.010		
	2460	52.70 (50.07~55.34)	1.96 (1.86~2.06)	51.46	2.021		
2600H	2510	39.12 (37.16~41.01)	1.86 (1.77~1.96)	38.18	1.873	21.5°C	2015-07-30
	2535	39.1 (37.13~41.04)	1.89 (1.80~1.98)	38.06	1.901		
	2560	39 (37.05~40.95)	1.917 (1.82~2.01)	37.99	1.933		
	2600	39 (37.05~40.95)	1.96 (1.86~2.05)	37.83	1.977		
2600H	2510	39.12 (37.16~41.01)	1.86 (1.77~1.96)	38.10	1.838	21.5°C	2015-08-01
	2535	39.1 (37.13~41.04)	1.89 (1.80~1.98)	38.05	1.874		
	2560	39 (37.05~40.95)	1.917 (1.82~2.01)	37.88	1.902		
	2600	39 (37.05~40.95)	1.96 (1.86~2.05)	37.78	1.948		
2600B	2510	52.62 (49.99~55.25)	2.03 (1.93~2.13)	51.43	2.104	21.5°C	2015-07-28
	2535	52.59 (49.96~55.22)	2.07 (1.97~2.17)	51.36	2.134		
	2560	52.57 (49.94~55.20)	2.09 (1.99~2.19)	51.28	2.165		
	2600	52.5 (49.88~55.13)	2.16 (2.05~2.27)	51.16	2.216		
2600B	2510	52.62 (49.99~55.25)	2.03 (1.93~2.13)	51.19	2.096	21.5°C	2015-07-31
	2535	52.59 (49.96~55.22)	2.07 (1.97~2.17)	51.19	2.128		
	2560	52.57 (49.94~55.20)	2.09 (1.99~2.19)	51.11	2.158		
	2600	52.5 (49.88~55.13)	2.16 (2.05~2.27)	51.01	2.200		
2600B	2510	52.62 (49.99~55.25)	2.03 (1.93~2.13)	50.83	2.098	21.5°C	2015-08-26
	2535	52.59 (49.96~55.22)	2.07 (1.97~2.17)	50.74	2.131		
	2560	52.57 (49.94~55.20)	2.09 (1.99~2.19)	50.70	2.168		
	2600	52.5 (49.88~55.13)	2.16 (2.05~2.27)	50.58	2.217		

2600B	2510	52.62 (49.99~55.25)	2.03 (1.93~2.13)	50.83	2.116	21.5°C	2015-08-28
	2535	52.59 (49.96~55.22)	2.07 (1.97~2.17)	50.78	2.140		
	2560	52.57 (49.94~55.20)	2.09 (1.99~2.19)	50.72	2.176		
	2600	52.5 (49.88~55.13)	2.16 (2.05~2.27)	50.64	2.229		
5G H	5300	36.0 (34.20~37.80)	4.66 (4.43~4.89)	35.03	4.559	21.3°C	2015-08-21
	5600	35.5 (33.73~37.28)	5.07 (4.82~5.32)	34.69	5.117		
	5800	35.3 (33.54~37.07)	5.27 (5.01~5.53)	35.01	5.188		
5G B	5300	49.00 (46.55~51.45)	5.30 (5.04~5.56)	47.18	5.480	21.3°C	2015-08-02
	5600	48.50 (46.08~50.92)	5.77 (5.48~6.05)	46.59	5.904		
	5800	48.20 (45.79~50.61)	6.00 (5.70~6.30)	46.63	6.224		
5G B	5200	49.0 (46.55~51.45)	5.30 (5.03~5.56)	49.97	5.223	21.3°C	2015-08-22
	5300	49.00 (46.55~51.45)	5.30 (5.04~5.56)	48.18	5.472		
	5600	48.50 (46.08~50.92)	5.77 (5.48~6.05)	47.59	5.888		
	5800	48.20 (45.79~50.61)	6.00 (5.70~6.30)	47.63	6.207		
5G B	5300	49.00 (46.55~51.45)	5.30 (5.04~5.56)	48.38	5.413	21.3°C	2015-08-31
	5600	48.50 (46.08~50.92)	5.77 (5.48~6.05)	47.79	5.920		
ε_r= Relative permittivity, σ= Conductivity							

Table 5:Measured Tissue Parameter

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

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

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

4.2 System Check

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

System Check	Target SAR (1W) (+/-10%)		Measured SAR (Normalized to 1W)		Liquid Temp.	Test Date
	1-g (mW/g)	10-g (mW/g)	1-g (mW/g)	10-g (mW/g)		
750MHz Head	8.22 (7.40~9.04)	5.41 (4.87~5.95)	8.40	5.56	21.4°C	2015-07-26
835MHz Head	9.49 (8.54~10.44)	6.18 (5.56~6.80)	9.32	6.12	21.4°C	2015-07-24
835MHz Head	9.49 (8.54~10.44)	6.18 (5.56~6.80)	9.56	6.32	21.4°C	2015-07-28
835MHz Head	9.49 (8.54~10.44)	6.18 (5.56~6.80)	9.80	6.44	21.4°C	2015-08-17
1750MHz Head	35.1 (31.59~38.61)	18.6 (16.74~20.46)	35.52	18.84	21.5°C	2015-07-30
1900MHz Head	40.80 (36.72~44.88)	21.40 (19.26~23.54)	41.20	21.60	22.0°C	2015-07-29
1900MHz Head	40.80 (36.72~44.88)	21.40 (19.26~23.54)	40.40	21.20	22.0°C	2015-08-01
1900MHz Head	40.80 (36.72~44.88)	21.40 (19.26~23.54)	42.00	22.12	22.0°C	2015-08-19
2300MHz Head	50.1 (45.09~55.11)	24.1 (21.69~26.51)	46.40	22.28	21.5°C	2015-07-27
2450MHz Head	52.30 (47.07~57.53)	24.50 (22.05~26.95)	54.40	25.88	21.6°C	2015-08-22
2600MHz Head	57.8 (52.02~63.58)	26.3 (23.67~28.93)	61.20	27.84	21.5°C	2015-07-30
2600MHz Head	57.8 (52.02~63.58)	26.3 (23.67~28.93)	61.60	28.04	21.5°C	2015-08-01
5300MHz Head	83.5 (74.15~91.85)	23.9 (21.51~26.29)	86.90	25.30	21.3°C	2015-08-21
5600MHz Head	81.9 (73.71~90.09)	23.3 (20.97~25.63)	79.30	23.00	21.3°C	2015-08-21
5800MHz Head	78.8 (70.92~80.68)	22.4 (20.16~24.64)	74.30	21.60	21.3°C	2015-08-21
750MHz Body	8.69 (7.82~9.56)	5.76 (4.19~6.33)	8.52	5.68	21.4°C	2015-07-20
750MHz Body	8.69 (7.82~9.56)	5.76 (4.19~6.33)	8.28	5.52	21.4°C	2015-07-25
750MHz Body	8.69 (7.82~9.56)	5.76 (4.19~6.33)	8.88	6.00	21.4°C	2015-08-23
835MHz Body	9.42 (8.48~10.36)	6.19 (5.57~6.80)	9.48	6.24	21.5°C	2015-07-23
835MHz Body	9.42 (8.48~10.36)	6.19 (5.57~6.80)	9.56	6.28	21.5°C	2015-08-19
835MHz Body	9.42 (8.48~10.36)	6.19 (5.57~6.80)	9.44	6.20	21.5°C	2015-08-24
835MHz Body	9.42 (8.48~10.36)	6.19 (5.57~6.80)	9.16	6.04	21.5°C	2015-08-29

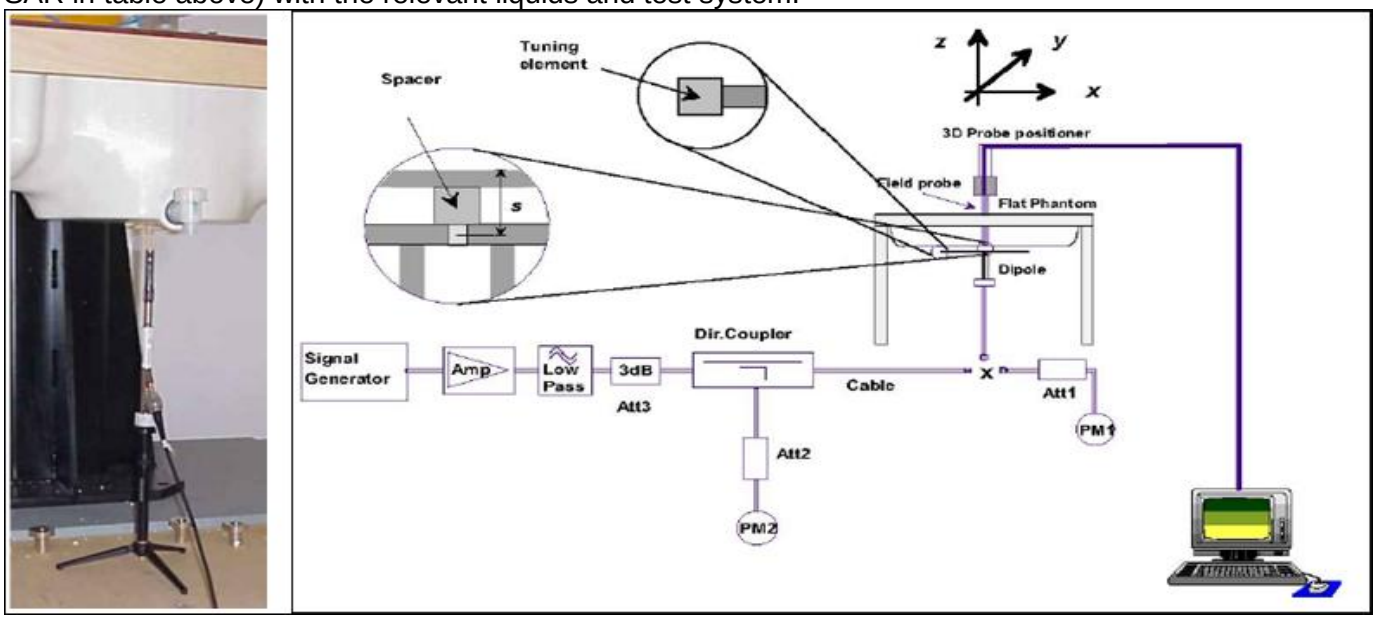
1750MHz Body	36.3 (32.67~39.93)	19.5 (17.55~21.45)	36.96	19.36	21.8°C	2015-07-22
1750MHz Body	36.3 (32.67~39.93)	19.5 (17.55~21.45)	37.56	19.64	21.8°C	2015-07-29
1750MHz Body	36.3 (32.67~39.93)	19.5 (17.55~21.45)	36.56	19.68	21.8°C	2015-08-19
1750MHz Body	36.3 (32.67~39.93)	19.5 (17.55~21.45)	36.16	19.44	21.8°C	2015-08-28
1900MHz Body	40.20 (36.18~44.22)	21.30 (19.17~23.43)	41.20	21.60	21.0°C	2015-07-21
1900MHz Body	40.20 (36.18~44.22)	21.30 (19.17~23.43)	42.00	21.72	21.0°C	2015-07-27
1900MHz Body	40.20 (36.18~44.22)	21.30 (19.17~23.43)	41.20	21.52	21.0°C	2015-08-01
1900MHz Body	40.20 (36.18~44.22)	21.30 (19.17~23.43)	40.80	21.20	21.0°C	2015-08-24
1900MHz Body	40.20 (36.18~44.22)	21.30 (19.17~23.43)	41.60	21.76	21.0°C	2015-09-02
2300MHz Body	49.9 (44.91~54.89)	23.9 (21.51~26.29)	47.20	22.64	21.5°C	2015-07-25
2300MHz Body	49.9 (44.91~54.89)	23.9 (21.51~26.29)	51.20	24.80	21.5°C	2015-08-27
2450MHz Body	51.4 (46.26~56.54)	23.9 (21.51~26.29)	54.40	25.00	21.0°C	2015-07-26
2450MHz Body	51.4 (46.26~56.54)	23.9 (21.51~26.29)	52.40	23.72	21.0°C	2015-08-21
2600MHz Body	57.5 (51.75~63.25)	25.9 (23.31~28.49)	60.80	26.76	21.5°C	2015-07-28
2600MHz Body	57.5 (51.75~63.25)	25.9 (23.31~28.49)	60.80	26.56	21.5°C	2015-07-31
2600MHz Body	57.5 (51.75~63.25)	25.9 (23.31~28.49)	59.60	27.20	21.5°C	2015-08-26
2600MHz Body	57.5 (51.75~63.25)	25.9 (23.31~28.49)	60.40	27.08	21.5°C	2015-08-28
5200MHz Body	74.7 (67.23~82.17)	20.9 (18.81~22.99)	75.60	21.20	21.3°C	2015-08-22
5300MHz Body	75.0 (67.50~82.50)	21.0 (18.90~23.10)	76.20	21.00	21.3°C	2015-08-02
5300MHz Body	75.0 (67.50~82.50)	21.0 (18.90~23.10)	78.20	21.60	21.3°C	2015-08-22
5300MHz Body	75.0 (67.50~82.50)	21.0 (18.90~23.10)	76.30	21.00	21.3°C	2015-08-31
5600MHz Body	77.8 (70.02~85.58)	21.6 (19.44~23.76)	79.80	22.00	21.3°C	2015-08-02
5600MHz Body	77.8 (70.02~85.58)	21.6 (19.44~23.76)	77.10	21.70	21.3°C	2015-08-22
5600MHz Body	77.8 (70.02~85.58)	21.6 (19.44~23.76)	78.40	22.10	21.3°C	2015-08-31
5800MHz Body	76.2 (68.58~83.82)	21.0 (18.9~23.10)	73.70	20.20	21.3°C	2015-08-02
5800MHz Body	76.2 (68.58~83.82)	21.0 (18.9~23.10)	73.50	20.80	21.3°C	2015-08-22

Table 6:System Check Results

4.3 System check Procedure

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

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



5 SAR measurement variability and uncertainty

5.1 SAR measurement variability

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

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

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

The detailed repeated measurement results are shown in Section 7.2.

5.2 SAR measurement uncertainty

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

6 SAR Test Configuration

6.1 3G SAR Test Reduction Procedure

Per KDB941225 D01v03, in the following procedures, the mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

6.2 GSM Test Configuration

SAR tests for GSM850 and GSM1900, a communication link is set up with a base station by air link. Using CMU200 the power lever is set to “5”and “0” in SAR of GSM850 and GSM1900. The tests in the band of GSM850 and GSM1900 are performed in the mode of GPRS/EGPRS function. Since the GPRS class is 10 for this EUT, it has at most 2 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslot is 5. The EGPRS class is 10 for this EUT, it has at most 2 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.

6.3 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 requied in the SAR report. All configurations that are not supported by the handset or cannot be measured due to technical or equipment limitations must be clearly identified.

2) WCDMA

a. Head SAR Measurements

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

b. Body SAR Measurements

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

3) HSDPA

SAR for body exposure configurations is measured according to the “Body SAR Measurements’’ procedures of 3G device. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

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

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

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

Note 1: ΔACK, ΔNACK and ΔCQI = 8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$

Note 2 : CM=1 for β_c/β_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 $\beta_d = 15/15$

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 ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

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

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

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs}(1)	β_{ec}	β_{ed}	β_{ec} (SF)	β_{ed} (code)	CM(2) (dB)	MPR (dB)	AG(4) Index	E-TFCI
1	11/15(3)	15/15(3)	64	11/15(3)	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1}:47/15 β_{ed2}:47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15(4)	15/15(4)	64	15/15(4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ ACK, Δ NACK and Δ CQI = 8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference

Note 3 : For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1,TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$

Note 4 : For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1,TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$

Note 5 : Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g

Note 6: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Table 10:Subtests for UMTS Release 6 HSUPA

UE E-DCH Category	Maximum E-DCH Codes Transmitted	Number of HARQ Processes	E-DCH TTI(ms)	Minimum Speading 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&2SF4	11484	5.76
	4	4	2		20000	2.00
7 (No DPDCH)	4	8	2	2SF2&2SF4	22996	?
	4	4	10		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.

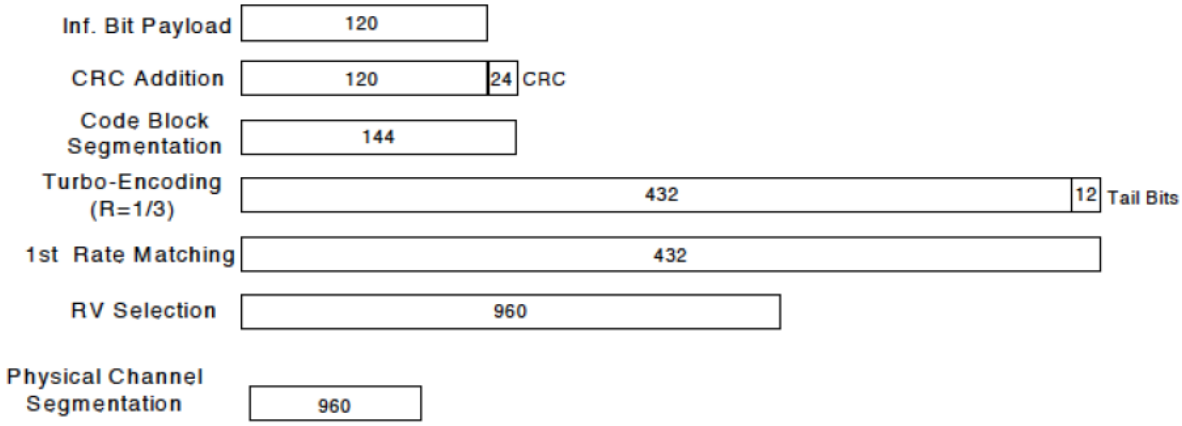


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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

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

Note 1: 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 β_c/β_d= 12/15, β_{hs}/β_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 β_c = 11/15 and β_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.

6.4 CDMA Test Configuration

6.4.1 1x RTT Handsets

1) Output Power Verification

Maximum output power is verified on the high, middle and low channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E. Results for at least steps 3, 4 and 10 of the power measurement procedures are required in the SAR report. Steps 3 and 4 are measured using Loopback Service Option SO55 with power control bits in “All Up” condition. TDSO/SO32 may be used instead of SO55 for step 4. Step 10 is measured using TDSO/SO32 with power control bits in the “Bits Hold” condition (i.e. alternative Up/Down Bits). All power measurements defined in C.S0011/TIA-98-E that are inapplicable to the handset or cannot be measured due to technical or equipment limitations must be clearly identified in the test report.

Test Parameter setup for maximum RF output power according to section 4.4.5 of 3GPP2;

Parameter	Units	Value
I or	dBm/1.23MHz	-104
PilotE c/I or	dB	-7
TrafficE c /I or	dB	-7.4

2) Head SAR

SAR for next to the ear head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55. The 3G SAR test reduction procedure is applied to RC1 with RC3 as the primary mode; otherwise, SAR is required for the channel with maximum measured output in RC1 using the head exposure configuration that results in the highest *reported* SAR in RC3.

3) Body-Worn Accessory SAR

Body-worn accessory SAR is measured in RC3 with the handset configured in TDSO/SO32 to transmit at full rate on FCH only with all other code channels disabled. The body-worn accessory procedures in KDB Publication 447498 are applied. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCHn), with FCH only as the primary mode. Otherwise, SAR is required for multiple code channel configuration (FCH + SCHn), with FCH at full rate and SCH0 enabled at 9600 bps, using the highest *reported* SAR configuration for FCH only. When multiple code channels are enabled, the transmitter output can shift by more than 0.5 dB and may lead to higher SAR drifts and SCH dropouts.

The 3G SAR test reduction procedure is applied to body-worn accessory SAR in RC1 with RC3 as the primary mode.9 Otherwise, SAR is required for RC1, with SO55 and full rate, using the highest *reported* SAR configuration for body-worn accessory exposure in RC3.

Test communication setup meet as followings:

Communication standard between mobile station and base station simulator	3GPP2 C.S0011-B
Radio configuration	RC3(Supporting CDMA 1X)
Spreading Rate	SR1
Data Rate	9600bps
Service Options	SO55(Loopback service)
Service Options	SO32(Test Data service)
Multiplex Options	The mobile station does not support this service

4) Handsets with built-in Ev-Do

For handsets with Ev-Do capabilities, the 3G SAR test reduction procedure is applied to Ev-Do Rev. 0 with 1x RTT RC3 as the primary mode to determine body-worn accessory test requirements. Otherwise, body-worn accessory SAR is required for Rev. 0, at 153.6 kbps, using the highest *reported* SAR configuration for body-worn accessory exposure in RC3.

The 3G SAR test reduction procedure is applied separately to Rev. A and Rev. B, with Rev. 0 as the primary mode to determine body-worn accessory SAR test requirements. When SAR is not required for Rev. 0, the 3G SAR test reduction is applied with 1x RTT RC3 as the primary mode. Otherwise, SAR is required for Rev. A or Rev. B, with a Reverse Data Channel payload size of 4096 bits and a Termination Target of 16 slots defined for Subtype 2 and 3 Physical Layer configurations, using the highest *reported* SAR configuration for body-worn accessory exposure in Rev. 0 or RC3, as appropriate.

A Forward Traffic Channel data rate corresponding to the 2-slot version of 307.2 kbps with ACK Channel transmitting in all slots is configured in the downlink for Rev. 0, Rev. A and Rev. B.

6.4.2 1x Ev-Do Data Devices

1) Output Power Verification

Maximum output power is verified on the high, middle and low channels according to procedures in section 3.1.2.3.4 of 3GPP2 C.S0033-0/TIA-866 for Rev. 0, section 4.3.4 of 3GPP2 C.S0033-A for Rev. A and section 4.3.4 of 3GPP2 C.S0033-C for Rev. B. Maximum output power is measured for Rev. 0 and Rev. A in Subtype 0/1 and Subtype 2 Physical Layer configurations, respectively. For Rev. B, maximum output power is measured according to power back-off requirements using Subtype 3 Physical Layer with “test 2” and “test 3” configurations. Power is measured using “test 2” with two carries in the maximum frequency separation condition and “test 3” for N-adjacent carriers; where N is the maximum number of carriers supported by the device. Both “test 2” and “test 3” configurations are measured with the channels centered within the transmit frequency band. The device operating configurations under TAP/ETAP/MCTAP must be clearly documented in the test report; including power control, code channel and RF channel output power conditions. The measurement results are required in the SAR report with any measurement difficulties and equipment limitations clearly identified.

2) SAR Measurement

SAR is measured using the F/R TAP configurations required for Rev. 0, Rev. A and Rev. B. The AT is tested with a Reverse Data Channel rate of 153.6 kbps in Subtype 0/1 Physical Layer configurations. A Reverse Data Channel payload size of 4096 bits and Termination Target of 16 slots are used for Subtype 2 and 3. FTAP, FETAP and FMCTAP are all configured with a Forward Traffic Channel data rate corresponding to the 2-slot version of 307.2 kbps with ACK Channel transmitting in all slots. AT power control is in “All Bits Up” conditions for the TAP/ETAP/MCTAP.

Body-worn accessory and other body SAR are measured using Subtype 0/1 Physical Layer configurations for Rev. 0. The 3G SAR test reduction procedure is applied to Rev. A, Subtype 2 Physical layer configuration, with Rev. 0 as the primary mode; otherwise, SAR is measured for Rev. A using the highest *reported* SAR configuration for body-worn accessory exposure in Rev. 0.

3) 1x RTT Support

For Ev-Do data devices that also support 1x RTT voice and/or data operations, the 3G SAR test reduction procedure is applied to 1x RTT RC3 and RC1 with Ev-Do Rev. 0, Rev. A and Rev. B as the respective primary modes.16 Otherwise, the ‘Body-Worn Accessory SAR’ procedures in the ‘3GPP2 CDMA 2000 1x Handsets’ section are applied.

4) 1x-Advanced

Maximum output power is verified for 1x-Advanced by applying the 1x RTT power measurement procedures using SO75, with RC 8 in the uplink and RC11 in the downlink. Smart blanking must be disabled. The test device is configured with Forward Power Control Mode = 000 and Reverse Power Control = 400 bps; that is, 400 kHz for both uplink and downlink power control. The power measurement results must be included in the SAR report to satisfy power requirements in KDB Publication 447498 and to qualify for SAR test exclusion or to support the SAR test setup and results.

The 3G SAR test reduction procedure is applied to 1x-Advanced with 1x RTT RC3 as the primary mode. When SAR measurement is required, the 1x-Advanced power measurement configurations are used. The 1x Advanced SAR procedures are applied separately to head, body-worn accessory and other exposure conditions.

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 v02r03. 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 > ½ 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 > ½ 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 v02r03, 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 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

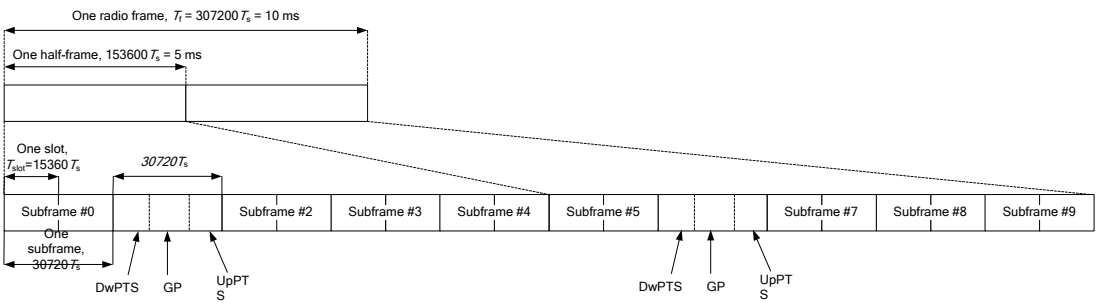


Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS)

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	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Table 4.2-2: Uplink-downlink configurations

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

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:

Duty cycle =(30720Ts*Ups+Uplink Component*Specials)/(307200Ts)

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

Uplink Component=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.

Duty cycle =[(30720Ts*Ups)+ UpPTS *Specials]/(307200Ts)

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 RF signal utilized in SAR measurement has 100% duty cycle and its crest factor is 1. The test procedures in KDB 248227D01v02r01 are applied. (Refer to KDB 248227D01v02r01 for more details)

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 ≤ 0.4W/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 ≤ 0.8W/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.

6.6.2 Initial Test Configuration Procedure

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

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

When the *reported* SAR of the initial test configuration is > 0.8 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 ≤ 1.2 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 ≤ 1.2 W/kg, SAR is not required for that subsequent test configuration.

6.6.4 WiFi 2.4G SAR Test Procedures

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

A) 802.11b DSSS SAR Test Requirements

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

1) When the *reported* SAR of the highest measured maximum output power channel (section 3.1 of of KDB 248227D01v02) for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

2) When the *reported* SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any *reported* SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

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

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied (section 5.3 of of KDB 248227D01v02r01). 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.

6.6.6 MIMO SAR Considerations

Per KDB 248227D01v02, simultaneous transmission provisions in KDB Publication 447498 should be used to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1-g SAR single transmission SAR measurement is <1.6W/kg, no additional SAR measurements for MIMO are required. Alternatively,SAR for MIMO can be measured with all antennas transmitting simultaneously at the specified maximum output power of MIMO operation.

7 SAR Measurement Results

7.1 Conducted power measurements

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

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

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

The signalling modes differ as follows:

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

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

7.1.1 Conducted power measurements of GSM850(Second Antenna)

Full Power:

GSM850		Burst-Averaged output Power (dBm)				Division Factors	Frame-Averaged output Power (dBm)			
		Tune-up	128CH	190CH	251CH		Tune-up	128CH	190CH	251CH
GSM (CS)		31.50	30.69	30.63	30.60	-9.19	22.31	21.50	21.44	21.41
GPRS/ EDGE (GMSK)	1 Tx Slot	33.50	32.89	32.89	32.83	-9.19	24.31	23.70	23.70	23.64
	2 Tx Slots	31.00	30.32	30.24	30.10	-6.13	**24.87**	**24.19**	**24.11**	**23.97**
EDGE (8PSK)	1 Tx Slot	27.00	26.22	26.17	26.23	-9.19	17.81	17.03	16.98	17.04
	2 Tx Slots	25.00	24.34	24.34	24.35	-6.13	18.87	18.21	18.21	18.22

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 timesolts.

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.

Second antenna(Voice) + WiFi Station +Sensor on：

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)	29.50	29.39	29.31	29.23	-9.19	20.31	20.20	20.12	20.04

Table 14: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 timesolts.

Second antenna(Voice) + WiFi Station +Sensor off:

GSM850	Burst-Averaged output Power (dBm)				Division Factors	Frame-Averaged output Power (dBm)			
	Tune-up	128CH	190CH	251CH		Tune-up	128CH	190CH	251CH
GSM (CS)	30.50	30.36	30.25	30.06	-9.19	21.31	21.17	21.06	20.87

Table 15: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 timesolts.

Second antenna + WiFi Hotspot:

GSM850		Burst-Averaged output Power (dBm)				Division Factors	Frame-Averaged output Power (dBm)			
		Tune-up	128CH	190CH	251CH		Tune-up	128CH	190CH	251CH
GPRS/ EDGE (GMSK)	1 Tx Slot	30.00	29.95	29.91	29.86	-9.19	20.81	20.76	20.72	20.67
	2 Tx Slots	27.50	27.34	27.25	27.09	-6.13	**21.37**	**21.21**	**21.12**	**20.96**
EDGE (8PSK)	1 Tx Slot	27.00	26.61	26.43	26.29	-9.19	17.81	17.42	17.24	17.10
	2 Tx Slots	25.00	24.78	24.62	24.51	-6.13	18.87	18.65	18.49	18.38

Table 16: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 timesolts.

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 UMTS Band V(Second Antenna)

Full Power:

UMTS Band V		Tune-up	Conducted Power (dBm)		
			4132CH	4182CH	4233CH
WCDMA	12.2kbps RMC	**23.80**	**22.90**	**22.91**	**23.06**
HSDPA	Subtest 1	22.80	21.87	21.89	21.99
	Subtest 2	22.30	21.91	21.80	21.71
	Subtest 3	21.80	21.39	21.41	21.53
	Subtest 4	21.80	21.39	21.10	21.22
HSUPA	Subtest 1	22.80	20.95	21.02	21.15
	Subtest 2	21.30	20.71	20.74	20.83
	Subtest 3	21.30	20.73	20.76	20.87
	Subtest 4	21.30	21.18	21.22	21.23
	Subtest 5	22.80	21.44	21.02	21.56
DC-HSDPA	Subtest 1	22.80	21.82	21.80	21.99
	Subtest 2	22.30	21.84	21.72	21.71
	Subtest 3	21.80	21.32	21.38	21.48
	Subtest 4	21.80	21.34	21.02	21.14

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 ≤ ¼ 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.

Second antenna(Voice) + WiFi Station +Sensor on:

UMTS Band V		Tune-up	Conducted Power (dBm)		
			4132CH	4182CH	4233CH
WCDMA	12.2kbps RMC	21.00	19.47	19.61	19.71

Table 18: Conducted power measurement results of UMTS Band V

Second antenna(Voice) + WiFi Station +Sensor off:

UMTS Band V		Tune-up	Conducted Power (dBm)		
			4132CH	4182CH	4233CH
WCDMA	12.2kbps RMC	22.00	20.65	20.74	20.66

Table 19: Conducted power measurement results of UMTS Band V

Second antenna + WiFi Hotspot:

UMTS Band V		Tune-up	Conducted Power (dBm)		
			4132CH	4182CH	4233CH
WCDMA	12.2kbps RMC	**21.00**	**20.91**	**20.89**	**20.87**
HSDPA	Subtest 1	20.00	19.92	19.92	19.84
	Subtest 2	19.50	19.43	19.47	19.42
	Subtest 3	19.00	18.92	18.95	18.89
	Subtest 4	19.00	18.89	18.93	18.94
HSUPA	Subtest 1	20.00	19.23	19.39	19.30
	Subtest 2	18.50	18.42	18.43	18.41
	Subtest 3	18.50	18.35	18.38	18.47
	Subtest 4	18.50	18.43	18.32	18.24
	Subtest 5	20.00	19.14	19.60	19.48
DC-HSDPA	Subtest 1	20.00	19.85	19.85	19.78
	Subtest 2	19.50	19.36	19.41	19.36
	Subtest 3	19.00	18.84	18.88	18.81
	Subtest 4	19.00	18.82	18.87	18.88

Table 20: 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 ≤ ¼ 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.

7.1.3 Conducted power measurements of CDMA BC0(Second Antenna)

Full Power:

CDMA BC0		Average Power (dBm)			
		Tune-up	1013CH	384CH	777CH
RC1	SO55 (Loopback)	24.20	23.51	23.50	23.70
RC3	SO55 (Loopback)	24.20	23.42	23.45	23.65
	TDSO32 (FCH+SCH)	24.20	23.49	23.60	23.62
	TDSO32 (FCH)	24.20	23.50	23.61	23.60
1x Advanced	SO75	24.20	23.48	23.50	23.52
Rev 0	FTAP/RTAP	24.20	23.30	23.40	23.65
Rev A	FETAP/RETAP	24.20	23.10	23.25	23.45

Table 21: Conducted power measurement results of CDMA BC0

Note: 1) The conducted power of CDMA BC0 is measured with RMS detector.
2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ 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.

Second antenna(Voice) + WiFi Station +Sensor on：

CDMA BC0		Average Power (dBm)			
		Tune-up	1013CH	384CH	777CH
RC1	SO55 (Loopback)	21.00	19.52	19.56	19.55
RC3	SO55 (Loopback)	21.00	19.51	19.49	19.65
	TDSO32 (FCH+SCH)	21.00	19.54	19.44	19.47
	TDSO32 (FCH)	21.00	19.51	19.45	19.45
1x Advanced	SO75	21.00	19.51	19.48	19.42

Table 22: Conducted power measurement results of CDMA BC0

Note: 1) The conducted power of CDMA BC0 is measured with RMS detector.
2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ 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.

Second antenna(Voice) + WiFi Station +Sensor off:

CDMA BC0		Average Power (dBm)			
		Tune-up	1013CH	384CH	777CH
RC1	SO55 (Loopback)	22.00	20.52	20.55	20.66
RC3	SO55 (Loopback)	22.00	20.53	20.47	20.62
	TDSO32 (FCH+SCH)	22.00	20.51	20.49	20.61
	TDSO32 (FCH)	22.00	20.57	20.51	20.65
1x Advanced	SO75	22.00	20.54	20.49	20.61

Table 23: Conducted power measurement results of CDMA BC0

Note: 1) The conducted power of CDMA BC0 is measured with RMS detector.
2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ 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.

Second antenna + WiFi Hotspot:

CDMA BC0		Average Power (dBm)			
		Tune-up	1013CH	384CH	777CH
RC1	SO55 (Loopback)	21.00	20.25	20.22	20.26
RC3	SO55 (Loopback)	21.00	20.17	20.18	20.21
	TDSO32 (FCH+SCH)	21.00	20.12	20.18	20.22
	TDSO32 (FCH)	21.00	20.08	20.20	20.19
1x Advanced	SO75	21.00	20.22	20.24	20.26
Rev 0	FTAP/RTAP	21.00	20.15	20.17	20.19
Rev A	FETAP/RETAP	21.00	20.22	20.23	20.29

Table 24: Conducted power measurement results of CDMA BC0

Note: 1) The conducted power of CDMA BC0 is measured with RMS detector.
2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ 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 CDMA BC10(Second Antenna)

Full Power:

CDMA BC10		Average Power (dBm)			
		Tune-up	450CH	565CH	670CH
RC1	SO55 (Loopback)	24.20	23.47	23.52	23.52
RC3	SO55 (Loopback)	24.20	23.45	23.49	23.49
	TDSO32 (FCH+SCH)	24.20	23.52	23.50	23.48
	TDSO32 (FCH)	24.20	23.50	23.51	23.49
1x Advanced	SO75	24.20	23.48	23.47	23.48
Rev 0	FTAP/RTAP	24.20	23.40	23.50	23.38
Rev A	FETAP/RETAP	24.20	23.19	23.20	23.21

Table 25: Conducted power measurement results of CDMA BC10

Note: 1) The conducted power of CDMA BC10 is measured with RMS detector.
2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ 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.

Second antenna(Voice) + WiFi Station +Sensor on：

CDMA BC10		Average Power (dBm)			
		Tune-up	450CH	565CH	670CH
RC1	SO55 (Loopback)	21.00	19.34	19.48	19.45
RC3	SO55 (Loopback)	21.00	19.36	19.58	19.43
	TDSO32 (FCH+SCH)	21.00	19.31	19.54	19.47
	TDSO32 (FCH)	21.00	19.28	19.51	19.44
1x Advanced	SO75	21.00	19.40	19.46	19.49

Table 26: Conducted power measurement results of CDMA BC10

Note: 1) The conducted power of CDMA BC 10 is measured with RMS detector.
2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ 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.

Second antenna(Voice) + WiFi Station +Sensor off:

CDMA BC10		Average Power (dBm)			
		Tune-up	450CH	565CH	670CH
RC1	SO55 (Loopback)	22.00	20.39	20.51	20.49
RC3	SO55 (Loopback)	22.00	20.45	20.66	20.47
	TDSO32 (FCH+SCH)	22.00	20.41	20.61	20.51
	TDSO32 (FCH)	22.00	20.36	20.39	20.56
1x Advanced	SO75	22.00	20.61	20.55	20.67

Table 27: Conducted power measurement results of CDMA BC10

Note: 1) The conducted power of CDMA BC10 is measured with RMS detector.
2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ 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.

Second antenna + WiFi Hotspot:

CDMA BC10		Average Power (dBm)			
		Tune-up	450CH	565CH	670CH
RC1	SO55 (Loopback)	21.00	20.12	20.16	20.21
RC3	SO55 (Loopback)	21.00	20.15	20.18	20.20
	TDSO32 (FCH+SCH)	21.00	20.13	20.17	20.22
	TDSO32 (FCH)	21.00	20.11	20.18	20.20
1x Advanced	SO75	21.00	20.13	20.19	20.22
Rev 0	FTAP/RTAP	21.00	20.26	20.25	20.28
Rev A	FETAP/RETAP	21.00	20.27	20.27	20.29

Table 28: Conducted power measurement results of CDMA BC10

Note: 1) The conducted power of CDMA BC10 is measured with RMS detector.
2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ 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 LTE Band V(Second Antenna)

Full Power:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20407CH	Channel 20525CH	Channel 20643CH
1.4MHz	QPSK	1	0	22.70	21.68	21.57	21.68
		1	3	22.70	21.67	21.59	21.63
		1	5	22.70	21.50	21.57	21.62
		3	0	22.70	21.49	21.41	21.56
		3	2	22.70	21.54	21.51	21.64
		3	3	22.70	21.43	21.47	21.54
		6	0	21.70	20.56	20.44	20.54
	16QAM	1	0	21.70	20.71	20.66	20.79
		1	3	21.70	20.99	20.72	20.90
		1	5	21.70	20.69	20.82	20.82
		3	0	21.70	20.58	20.55	20.65
		3	2	21.70	20.60	20.64	20.65
		3	3	21.70	20.50	20.56	20.63
		6	0	20.70	19.69	19.57	19.75
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20415CH	Channel 20525CH	Channel 20635CH
3MHz	QPSK	1	0	22.70	21.56	21.42	21.54
		1	7	22.70	21.54	21.46	21.62
		1	14	22.70	21.45	21.71	21.59
		8	0	21.70	20.49	20.49	20.55
		8	4	21.70	20.60	20.55	20.69
		8	7	21.70	20.55	20.48	20.60
		15	0	21.70	20.51	20.50	20.58
	16QAM	1	0	21.70	20.91	20.83	21.05
		1	7	21.70	20.89	21.01	21.00
		1	14	21.70	20.84	20.87	21.04
		8	0	20.70	19.63	19.52	19.62
		8	4	20.70	19.69	19.59	19.76
		8	7	20.70	19.63	19.55	19.75
		15	0	20.70	19.59	19.51	19.63

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20425CH	20525CH	20625CH
5MHz	QPSK	1	0	22.70	21.73	21.60	21.58
		1	13	22.70	21.65	21.67	21.73
		1	24	22.70	21.54	21.72	21.66
		12	0	21.70	20.50	20.43	20.52
		12	6	21.70	20.47	20.54	20.61
		12	13	21.70	20.45	20.44	20.57
		25	0	21.70	20.54	20.44	20.54
	16QAM	1	0	21.70	20.79	20.77	20.81
		1	13	21.70	20.79	20.79	20.91
		1	24	21.70	20.79	20.73	20.85
		12	0	20.70	19.64	19.52	19.62
		12	6	20.70	19.58	19.61	19.71
		12	13	20.70	19.58	19.54	19.75
		25	0	20.70	19.56	19.44	19.60
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20450CH	20525CH	20600CH
10MHz	QPSK	1	0	22.70	**21.76**	21.54	21.58
		1	25	22.70	21.57	21.52	21.55
		1	49	22.70	21.41	**21.76**	**21.66**
		25	0	21.70	**20.58**	**20.55**	20.53
		25	13	21.70	20.45	20.50	**20.55**
		25	25	21.70	20.39	20.49	20.54
		50	0	21.70	20.54	**20.58**	20.55
	16QAM	1	0	21.70	20.69	20.70	20.74
		1	25	21.70	20.38	20.50	20.47
		1	49	21.70	20.56	20.65	20.71
		25	0	20.70	19.64	19.57	19.50
		25	13	20.70	19.56	19.53	19.58
		25	25	20.70	19.43	19.44	19.59
		50	0	20.70	19.54	19.53	19.49

Table 29: Conducted power measurement results of LTE Band V

Second antenna(Voice) + WiFi station + Sensor on:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20407CH	Channel 20525CH	Channel 20643CH
1.4MHz	QPSK	1	0	21.00	19.82	19.68	19.84
		1	3	21.00	19.86	19.75	19.91
		1	5	21.00	19.70	19.68	19.74
		3	0	21.00	19.54	19.55	19.59
		3	2	21.00	19.63	19.60	19.67
		3	3	21.00	19.51	19.56	19.60
		6	0	21.00	19.58	19.70	19.41
	16QAM	1	0	21.00	19.71	19.56	19.71
		1	3	21.00	19.71	19.62	19.94
		1	5	21.00	19.78	19.56	19.81
		3	0	21.00	19.93	19.64	19.67
		3	2	21.00	20.03	19.88	19.74
		3	3	21.00	19.59	19.55	19.55
		6	0	21.00	19.97	19.50	19.98
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20415CH	Channel 20525CH	Channel 20635CH
3MHz	QPSK	1	0	21.00	19.58	19.49	19.58
		1	7	21.00	19.64	19.59	19.64
		1	14	21.00	19.61	19.62	19.62
		8	0	21.00	19.70	19.64	19.71
		8	4	21.00	19.58	19.39	19.66
		8	7	21.00	19.69	19.51	19.80
		15	0	21.00	19.57	19.57	19.50
	16QAM	1	0	21.00	19.45	19.66	19.76
		1	7	21.00	19.45	19.68	19.50
		1	14	21.00	19.75	19.81	19.74
		8	0	21.00	19.59	19.38	19.63
		8	4	21.00	19.64	19.55	19.57
		8	7	21.00	19.63	19.82	19.70
		15	0	21.00	19.47	19.32	19.54

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20425CH	20525CH	20625CH
5MHz	QPSK	1	0	21.00	19.86	19.76	19.67
		1	13	21.00	19.81	19.76	19.87
		1	24	21.00	19.71	19.67	19.76
		12	0	21.00	19.80	19.71	19.62
		12	6	21.00	19.66	19.80	19.80
		12	13	21.00	19.70	19.62	19.69
		25	0	21.00	19.77	19.82	19.71
	16QAM	1	0	21.00	19.96	19.77	20.03
		1	13	21.00	19.59	19.65	19.95
		1	24	21.00	19.72	19.56	19.78
		12	0	21.00	19.76	19.69	19.54
		12	6	21.00	19.89	19.91	19.89
		12	13	21.00	19.70	19.54	19.67
		25	0	21.00	19.65	19.90	19.57
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20450CH	20525CH	20600CH
10MHz	QPSK	1	0	21.00	19.85	19.66	19.71
		1	25	21.00	19.60	19.62	19.58
		1	49	21.00	19.64	19.75	19.97
		25	0	21.00	20.00	19.67	19.63
		25	13	21.00	19.67	19.75	19.52
		25	25	21.00	19.53	19.79	19.88
		50	0	21.00	19.91	19.68	19.78
	16QAM	1	0	21.00	19.68	19.46	19.91
		1	25	21.00	19.49	19.42	19.53
		1	49	21.00	19.79	19.70	19.90
		25	0	21.00	19.66	19.74	19.62
		25	13	21.00	19.53	19.54	19.41
		25	25	21.00	19.76	19.57	20.07
		50	0	21.00	19.96	19.52	19.69

Table 30: Conducted power measurement results of LTE Band V

Second antenna(Voice) + WiFi station + Sensor off:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20407CH	Channel 20525CH	Channel 20643CH
1.4MHz	QPSK	1	0	22.00	21.04	20.93	21.02
		1	3	22.00	20.99	20.99	21.04
		1	5	22.00	20.93	20.92	20.92
		3	0	22.00	20.81	20.81	20.87
		3	2	22.00	20.90	20.85	20.95
		3	3	22.00	20.77	20.83	20.85
		6	0	21.00	19.91	19.77	19.87
	16QAM	1	0	21.00	20.12	19.88	20.06
		1	3	21.00	20.35	20.22	20.07
		1	5	21.00	20.05	20.16	19.97
		3	0	21.00	19.96	19.83	19.94
		3	2	21.00	20.02	19.95	20.02
		3	3	21.00	19.87	19.76	19.95
		6	0	20.00	19.01	18.94	18.99
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20415CH	Channel 20525CH	Channel 20635CH
3MHz	QPSK	1	0	22.00	20.86	20.73	20.80
		1	7	22.00	20.85	20.96	20.89
		1	14	22.00	20.84	20.82	20.88
		8	0	21.00	19.91	19.82	19.85
		8	4	21.00	19.89	19.86	19.96
		8	7	21.00	19.91	19.78	19.90
		15	0	21.00	19.81	19.79	19.95
	16QAM	1	0	21.00	20.37	20.13	20.33
		1	7	21.00	20.33	20.12	20.39
		1	14	21.00	20.44	20.29	20.30
		8	0	20.00	18.97	18.98	18.94
		8	4	20.00	19.00	18.93	19.03
		8	7	20.00	19.03	18.94	18.99
		15	0	20.00	18.90	18.88	18.98

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20425CH	20525CH	20625CH
5MHz	QPSK	1	0	22.00	20.90	20.88	20.79
		1	13	22.00	21.01	20.99	21.00
		1	24	22.00	20.89	20.87	21.02
		12	0	21.00	19.78	19.66	19.82
		12	6	21.00	19.88	19.80	19.91
		12	13	21.00	19.83	19.72	19.89
		25	0	21.00	19.88	19.81	19.87
	16QAM	1	0	21.00	20.17	20.16	20.10
		1	13	21.00	20.31	20.15	20.29
		1	24	21.00	20.22	19.99	20.22
		12	0	20.00	19.01	18.97	18.88
		12	6	20.00	19.03	18.90	19.00
		12	13	20.00	19.10	19.00	19.03
		25	0	20.00	18.87	18.88	18.87
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20450CH	20525CH	20600CH
10MHz	QPSK	1	0	22.00	21.07	20.94	20.92
		1	25	22.00	20.86	20.93	20.67
		1	49	22.00	20.98	20.72	21.03
		25	0	21.00	19.95	19.89	19.97
		25	13	21.00	19.94	19.83	19.75
		25	25	21.00	19.91	19.75	19.87
		50	0	21.00	19.95	19.94	19.85
	16QAM	1	0	21.00	20.13	20.12	20.11
		1	25	21.00	19.43	19.63	19.56
		1	49	21.00	20.00	19.83	20.11
		25	0	20.00	18.98	18.92	18.87
		25	13	20.00	19.03	18.92	18.84
		25	25	20.00	18.83	18.81	18.90
		50	0	20.00	18.89	18.91	18.90

Table 31: Conducted power measurement results of LTE Band V

Second antenna + WiFi Hotspot:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20407CH	Channel 20525CH	Channel 20643CH
1.4MHz	QPSK	1	0	21.00	19.84	19.72	19.88
		1	3	21.00	19.98	19.76	19.94
		1	5	21.00	19.77	19.75	19.84
		3	0	21.00	19.76	19.55	19.73
		3	2	21.00	19.76	19.63	19.81
		3	3	21.00	19.64	19.58	19.74
		6	0	21.00	19.79	19.68	19.76
	16QAM	1	0	21.00	19.87	20.01	20.02
		1	3	21.00	19.94	20.12	19.94
		1	5	21.00	20.16	20.18	19.94
		3	0	21.00	19.81	19.77	19.82
		3	2	21.00	19.95	19.82	19.92
		3	3	21.00	19.75	19.83	19.78
		6	0	21.00	19.42	19.36	19.39
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 20415CH	Channel 20525CH	Channel 20635CH
3MHz	QPSK	1	0	21.00	19.63	19.51	19.50
		1	7	21.00	19.79	19.66	19.83
		1	14	21.00	19.62	19.63	19.69
		8	0	21.00	19.74	19.80	19.76
		8	4	21.00	19.83	19.77	19.80
		8	7	21.00	19.81	19.75	19.77
		15	0	21.00	19.79	19.71	19.82
	16QAM	1	0	21.00	20.21	20.17	20.23
		1	7	21.00	20.34	20.33	20.32
		1	14	21.00	20.31	20.20	20.24
		8	0	21.00	19.40	19.43	19.41
		8	4	21.00	19.47	19.39	19.40
		8	7	21.00	19.41	19.37	19.41
		15	0	21.00	19.33	19.29	19.36

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20425CH	20525CH	20625CH
5MHz	QPSK	1	0	21.00	19.81	19.73	19.65
		1	13	21.00	19.89	19.84	19.75
		1	24	21.00	19.76	19.68	19.77
		12	0	21.00	19.74	19.70	19.65
		12	6	21.00	19.83	19.75	19.73
		12	13	21.00	19.75	19.68	19.66
		25	0	21.00	19.81	19.72	19.69
	16QAM	1	0	21.00	20.14	20.10	20.03
		1	13	21.00	20.23	20.13	20.13
		1	24	21.00	20.21	19.93	20.02
		12	0	21.00	19.45	19.43	19.33
		12	6	21.00	19.47	19.39	19.35
		12	13	21.00	19.45	19.31	19.33
		25	0	21.00	19.33	19.23	19.22
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					20450CH	20525CH	20600CH
10MHz	QPSK	1	0	21.00	**19.96**	**19.91**	19.71
		1	25	21.00	19.87	19.67	19.58
		1	49	21.00	19.75	19.90	**19.93**
		25	0	21.00	**19.85**	**19.83**	19.81
		25	13	21.00	19.79	19.70	**19.84**
		25	25	21.00	19.77	19.76	19.79
		50	0	21.00	19.90	19.75	19.84
	16QAM	1	0	21.00	19.95	19.96	19.97
		1	25	21.00	19.75	19.65	19.59
		1	49	21.00	20.06	20.03	19.88
		25	0	21.00	19.39	19.31	19.34
		25	13	21.00	19.38	19.32	19.39
		25	25	21.00	19.32	19.30	19.33
		50	0	21.00	19.37	19.25	19.32

Table 32: Conducted power measurement results of LTE Band V

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

Full Power:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 23107CH	Channel 23095CH	Channel 23173CH
1.4MHz	QPSK	1	0	22.70	21.74	21.71	21.84
		1	3	22.70	21.83	21.72	21.84
		1	5	22.70	21.74	21.74	21.66
		3	0	22.70	21.60	21.61	21.71
		3	2	22.70	21.71	21.68	21.82
		3	3	22.70	21.65	21.61	21.71
		6	0	21.70	20.75	20.68	20.65
	16QAM	1	0	21.70	20.90	20.72	21.07
		1	3	21.70	20.93	21.00	21.13
		1	5	21.70	21.03	20.82	21.02
		3	0	21.70	20.72	20.70	20.77
		3	2	21.70	20.85	20.74	20.84
		3	3	21.70	20.77	20.71	20.78
		6	0	20.70	19.91	19.81	19.82
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 23025CH	Channel 23095CH	Channel 23165CH
3MHz	QPSK	1	0	22.70	21.71	21.62	22.00
		1	7	22.70	21.84	21.64	21.92
		1	14	22.70	21.95	21.77	21.94
		8	0	21.70	20.82	20.71	20.78
		8	4	21.70	20.81	20.74	20.85
		8	7	21.70	20.80	20.71	20.72
		15	0	21.70	20.84	20.71	20.73
	16QAM	1	0	21.70	20.99	21.00	20.85
		1	7	21.70	21.09	21.02	20.94
		1	14	21.70	21.01	20.96	20.82
		8	0	20.70	19.86	19.77	19.73
		8	4	20.70	19.86	19.83	19.86
		8	7	20.70	19.83	19.80	19.76
		15	0	20.70	19.83	19.76	19.83

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23035CH	23095CH	23155CH
5MHz	QPSK	1	0	22.70	21.87	21.72	21.99
		1	13	22.70	21.96	21.84	21.94
		1	24	22.70	21.90	21.84	21.88
		12	0	21.70	20.69	20.70	20.84
		12	6	21.70	20.89	20.77	20.81
		12	13	21.70	20.82	20.71	20.73
		25	0	21.70	20.81	20.73	20.76
	16QAM	1	0	21.70	20.86	20.87	20.96
		1	13	21.70	21.01	21.02	20.89
		1	24	21.70	20.92	20.87	20.77
		12	0	20.70	19.77	19.80	19.89
		12	6	20.70	19.95	19.87	19.83
		12	13	20.70	19.91	19.80	19.82
		25	0	20.70	19.80	19.71	19.76
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23060CH	23095CH	23130CH
10MHz	QPSK	1	0	22.70	21.75	21.76	21.74
		1	25	22.70	**21.76**	21.69	21.88
		1	49	22.70	21.68	**22.05**	**22.01**
		25	0	21.70	**20.80**	20.72	20.74
		25	13	21.70	20.74	20.72	20.82
		25	25	21.70	20.71	**20.84**	**20.83**
		50	0	21.70	20.74	**20.77**	20.72
	16QAM	1	0	21.70	20.93	20.93	20.85
		1	25	21.70	20.83	20.59	20.87
		1	49	21.70	21.08	21.06	20.83
		25	0	20.70	19.84	19.76	19.74
		25	13	20.70	19.79	19.80	19.87
		25	25	20.70	19.77	19.86	19.83
		50	0	20.70	19.67	19.75	19.83

Table 33: Conducted power measurement results of LTE Band XII

Second antenna(Voice) + WiFi station + Sensor on:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 23107CH	Channel 23095CH	Channel 23173CH
1.4MHz	QPSK	1	0	21.00	19.58	19.61	19.68
		1	3	21.00	19.68	19.64	19.81
		1	5	21.00	19.54	19.57	19.69
		3	0	21.00	19.54	19.52	19.63
		3	2	21.00	19.46	19.42	19.74
		3	3	21.00	19.41	19.46	19.63
		6	0	21.00	19.59	19.72	19.65
	16QAM	1	0	21.00	19.52	19.55	19.73
		1	3	21.00	19.51	19.73	19.53
		1	5	21.00	19.64	19.75	19.76
		3	0	21.00	19.65	19.61	19.49
		3	2	21.00	19.56	19.66	19.79
		3	3	21.00	19.56	19.57	19.73
		6	0	21.00	19.47	19.75	19.75
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 23025CH	Channel 23095CH	Channel 23165CH
3MHz	QPSK	1	0	21.00	19.52	19.48	19.88
		1	7	21.00	19.64	19.52	19.90
		1	14	21.00	19.71	19.66	19.98
		8	0	21.00	19.56	19.55	20.08
		8	4	21.00	19.50	19.65	19.94
		8	7	21.00	19.55	19.53	19.80
		15	0	21.00	19.36	19.55	19.82
	16QAM	1	0	21.00	19.37	19.36	19.86
		1	7	21.00	19.74	19.54	20.03
		1	14	21.00	19.66	19.77	19.84
		8	0	21.00	19.55	19.67	19.70
		8	4	21.00	19.69	19.43	19.71
		8	7	21.00	19.74	19.85	20.10
		15	0	21.00	19.65	19.66	19.90

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23035CH	23095CH	23155CH
5MHz	QPSK	1	0	21.00	19.66	19.58	19.87
		1	13	21.00	19.76	19.59	19.90
		1	24	21.00	19.78	19.70	19.89
		12	0	21.00	19.58	19.66	19.71
		12	6	21.00	19.82	19.76	20.09
		12	13	21.00	19.90	19.60	19.79
		25	0	21.00	19.63	19.45	19.81
	16QAM	1	0	21.00	19.78	19.56	19.96
		1	13	21.00	19.78	19.55	20.09
		1	24	21.00	19.92	19.83	20.05
		12	0	21.00	19.63	19.61	19.79
		12	6	21.00	19.70	19.62	20.10
		12	13	21.00	19.71	19.69	19.95
		25	0	21.00	19.79	19.40	19.68
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23060CH	23095CH	23130CH
10MHz	QPSK	1	0	21.00	19.75	19.86	19.73
		1	25	21.00	19.66	19.51	19.72
		1	49	21.00	19.62	19.85	19.99
		25	0	21.00	19.71	19.78	19.61
		25	13	21.00	19.61	19.43	19.74
		25	25	21.00	19.64	19.84	20.18
		50	0	21.00	19.90	19.92	19.73
	16QAM	1	0	21.00	19.87	19.72	19.73
		1	25	21.00	19.78	19.61	19.82
		1	49	21.00	19.46	19.89	19.83
		25	0	21.00	19.73	19.89	19.81
		25	13	21.00	19.84	19.36	19.75
		25	25	21.00	19.48	19.90	19.86
		50	0	21.00	19.82	19.78	19.60

Table 34: Conducted power measurement results of LTE Band XII

Second antenna(Voice) + WiFi station + Sensor off:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 23107CH	Channel 23095CH	Channel 23173CH
1.4MHz	QPSK	1	0	22.00	20.65	20.71	20.76
		1	3	22.00	20.60	20.64	20.84
		1	5	22.00	20.59	20.59	20.70
		3	0	22.00	20.55	20.61	20.60
		3	2	22.00	20.60	20.57	20.78
		3	3	22.00	20.54	20.48	20.74
		6	0	21.00	19.56	19.46	19.66
	16QAM	1	0	21.00	19.72	19.73	20.00
		1	3	21.00	19.90	19.79	20.03
		1	5	21.00	19.81	19.77	20.11
		3	0	21.00	19.59	19.65	19.69
		3	2	21.00	19.66	19.58	19.85
		3	3	21.00	19.59	19.57	19.81
		6	0	20.00	18.69	18.62	18.78
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 23025CH	Channel 23095CH	Channel 23165CH
3MHz	QPSK	1	0	22.00	20.64	20.62	20.87
		1	7	22.00	20.68	20.56	20.81
		1	14	22.00	20.74	20.64	20.98
		8	0	21.00	19.61	19.60	19.73
		8	4	21.00	19.71	19.60	19.82
		8	7	21.00	19.70	19.57	19.68
		15	0	21.00	19.67	19.62	19.79
	16QAM	1	0	21.00	19.95	19.93	19.87
		1	7	21.00	20.02	19.93	19.91
		1	14	21.00	19.89	19.91	20.02
		8	0	20.00	18.65	18.70	18.66
		8	4	20.00	18.73	18.66	18.79
		8	7	20.00	18.83	18.62	18.68
		15	0	20.00	18.70	18.67	18.75

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23035CH	23095CH	23155CH
5MHz	QPSK	1	0	22.00	20.80	20.72	20.82
		1	13	22.00	20.85	20.71	20.87
		1	24	22.00	20.87	20.72	20.94
		12	0	21.00	19.66	19.58	19.76
		12	6	21.00	19.74	19.57	19.78
		12	13	21.00	19.62	19.60	19.66
		25	0	21.00	19.71	19.60	19.79
	16QAM	1	0	21.00	19.80	19.78	19.84
		1	13	21.00	19.92	19.90	19.80
		1	24	21.00	19.85	19.70	19.86
		12	0	20.00	18.78	18.71	18.76
		12	6	20.00	18.80	18.67	18.69
		12	13	20.00	18.74	18.69	18.69
		25	0	20.00	18.73	18.56	18.76
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23060CH	23095CH	23130CH
10MHz	QPSK	1	0	22.00	20.74	20.95	20.90
		1	25	22.00	20.68	20.62	20.72
		1	49	22.00	20.66	21.02	21.00
		25	0	21.00	19.70	19.68	19.67
		25	13	21.00	19.62	19.56	19.67
		25	25	21.00	19.56	19.61	19.73
		50	0	21.00	19.68	19.66	19.75
	16QAM	1	0	21.00	19.64	19.84	19.85
		1	25	21.00	19.52	19.39	19.69
		1	49	21.00	19.46	19.77	19.99
		25	0	20.00	18.70	18.65	18.67
		25	13	20.00	18.68	18.64	18.70
		25	25	20.00	18.59	18.62	18.71
		50	0	20.00	18.64	18.63	18.68

Table 35: Conducted power measurement results of LTE Band XII

Second antenna + WiFi Hotspot:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 23107CH	Channel 23095CH	Channel 23173CH
1.4MHz	QPSK	1	0	21.00	19.86	19.96	19.81
		1	3	21.00	19.92	19.97	19.98
		1	5	21.00	19.94	19.89	19.81
		3	0	21.00	19.84	19.81	19.77
		3	2	21.00	19.87	19.89	19.85
		3	3	21.00	19.89	19.88	19.77
		6	0	21.00	19.91	19.79	19.79
	16QAM	1	0	21.00	19.96	20.14	19.94
		1	3	21.00	20.20	20.24	20.37
		1	5	21.00	20.12	20.16	20.24
		3	0	21.00	19.90	19.89	19.78
		3	2	21.00	19.89	19.96	19.95
		3	3	21.00	19.92	19.90	19.91
		6	0	21.00	19.79	19.63	19.62
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 23025CH	Channel 23095CH	Channel 23165CH
3MHz	QPSK	1	0	21.00	19.82	19.88	20.05
		1	7	21.00	20.06	19.92	19.99
		1	14	21.00	20.04	19.93	20.01
		8	0	21.00	19.93	19.87	19.81
		8	4	21.00	19.95	19.87	19.89
		8	7	21.00	19.93	19.86	19.78
		15	0	21.00	19.96	19.93	19.92
	16QAM	1	0	21.00	20.11	20.23	20.08
		1	7	21.00	20.33	20.24	20.14
		1	14	21.00	20.12	20.17	20.16
		8	0	21.00	19.64	19.59	19.57
		8	4	21.00	19.61	19.60	19.62
		8	7	21.00	19.63	19.57	19.56
		15	0	21.00	19.55	19.61	19.65

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23035CH	23095CH	23155CH
5MHz	QPSK	1	0	21.00	19.98	19.94	20.04
		1	13	21.00	20.08	20.07	20.07
		1	24	21.00	19.96	19.97	19.97
		12	0	21.00	19.86	19.75	19.78
		12	6	21.00	19.84	19.87	19.88
		12	13	21.00	19.87	19.88	19.84
		25	0	21.00	19.93	19.86	19.83
	16QAM	1	0	21.00	20.12	19.97	20.02
		1	13	21.00	19.99	20.19	19.98
		1	24	21.00	19.91	20.02	20.13
		12	0	21.00	19.55	19.60	19.58
		12	6	21.00	19.51	19.65	19.61
		12	13	21.00	19.51	19.69	19.59
		25	0	21.00	19.53	19.54	19.53
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23060CH	23095CH	23130CH
10MHz	QPSK	1	0	21.00	19.97	20.00	20.04
		1	25	21.00	19.85	19.90	19.98
		1	49	21.00	20.08	19.92	**20.16**
		25	0	21.00	19.88	19.87	**19.94**
		25	13	21.00	19.83	19.87	19.73
		25	25	21.00	19.89	19.93	19.78
		50	0	21.00	19.87	19.94	19.87
	16QAM	1	0	21.00	19.99	20.02	19.97
		1	25	21.00	19.74	19.70	19.80
		1	49	21.00	19.96	19.92	20.01
		25	0	21.00	19.49	19.46	19.56
		25	13	21.00	19.52	19.62	19.46
		25	25	21.00	19.52	19.59	19.50
		50	0	21.00	19.49	19.58	19.59

Table 36: Conducted power measurement results of LTE Band XII

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

Full Power:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 23205CH	Channel 23230CH	Channel 23255CH
5MHz	QPSK	1	0	22.70	21.32	21.47	21.50
		1	13	22.70	21.60	21.48	21.56
		1	24	22.70	21.54	21.46	21.50
		12	0	21.70	20.41	20.61	20.59
		12	6	21.70	20.57	20.61	20.73
		12	13	21.70	20.67	20.55	20.65
		25	0	21.70	20.65	20.64	20.66
	16QAM	1	0	21.70	20.65	20.94	20.78
		1	13	21.70	21.02	20.77	20.92
		1	24	21.70	20.82	20.79	20.84
		12	0	20.70	19.64	19.88	19.65
		12	6	20.70	19.77	19.74	19.78
		12	13	20.70	19.86	19.68	19.80
		25	0	20.70	19.67	19.65	19.67
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel /	Channel 23230CH	Channel /
10MHz	QPSK	1	0	22.70	/	21.52	/
		1	25	22.70	/	21.53	/
		1	49	22.70	/	21.62	/
		25	0	21.70	/	20.66	/
		25	13	21.70	/	20.66	/
		25	25	21.70	/	20.68	/
		50	0	21.70	/	20.81	/
	16QAM	1	0	21.70	/	20.65	/
		1	25	21.70	/	20.43	/
		1	49	21.70	/	20.53	/
		25	0	20.70	/	19.72	/
		25	13	20.70	/	19.71	/
		25	25	20.70	/	19.70	/
		50	0	20.70	/	19.75	/

Table 37: Conducted power measurement results of LTE Band XIII

Second antenna(Voice) + WiFi station + Sensor on:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23205CH	23230CH	23255CH
5MHz	QPSK	1	0	21.00	19.66	19.66	19.87
		1	13	21.00	19.79	19.87	19.77
		1	24	21.00	19.83	19.71	19.66
		12	0	21.00	19.70	19.47	20.05
		12	6	21.00	19.97	19.79	19.94
		12	13	21.00	19.72	19.76	19.62
		25	0	21.00	19.81	19.61	19.69
	16QAM	1	0	21.00	19.61	19.49	19.91
		1	13	21.00	19.89	20.07	19.91
		1	24	21.00	19.80	19.69	19.75
		12	0	21.00	19.55	19.79	20.00
		12	6	21.00	19.82	20.04	19.66
		12	13	21.00	19.80	19.62	19.57
		25	0	21.00	19.46	19.85	19.67
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					/	23230CH	/
10MHz	QPSK	1	0	21.00	/	19.68	/
		1	25	21.00	/	19.62	/
		1	49	21.00	/	19.69	/
		25	0	21.00	/	19.66	/
		25	13	21.00	/	19.82	/
		25	25	21.00	/	19.52	/
		50	0	21.00	/	19.71	/
	16QAM	1	0	21.00	/	19.80	/
		1	25	21.00	/	19.64	/
		1	49	21.00	/	19.65	/
		25	0	21.00	/	20.00	/
		25	13	21.00	/	19.72	/
		25	25	21.00	/	19.64	/
		50	0	21.00	/	19.87	/

Table 38: Conducted power measurement results of LTE Band XIII

Second antenna(Voice) + WiFi station + Sensor off:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					23205CH	23230CH	23255CH
5MHz	QPSK	1	0	22.00	20.70	20.56	20.76
		1	13	22.00	20.72	20.88	20.82
		1	24	22.00	20.81	20.76	20.78
		12	0	21.00	19.68	19.61	19.67
		12	6	21.00	19.63	19.76	19.66
		12	13	21.00	19.59	19.62	19.62
		25	0	21.00	19.76	19.67	19.61
	16QAM	1	0	21.00	19.84	20.04	19.90
		1	13	21.00	20.06	20.00	19.93
		1	24	21.00	19.94	19.81	19.92
		12	0	20.00	18.83	18.84	18.84
		12	6	20.00	18.65	18.82	18.78
		12	13	20.00	18.80	18.74	18.79
		25	0	20.00	18.82	18.71	18.73
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					/	23230CH	/
10MHz	QPSK	1	0	22.00	/	21.02	/
		1	25	22.00	/	20.73	/
		1	49	22.00	/	20.86	/
		25	0	21.00	/	19.87	/
		25	13	21.00	/	19.78	/
		25	25	21.00	/	19.61	/
		50	0	21.00	/	19.79	/
	16QAM	1	0	21.00	/	19.80	/
		1	25	21.00	/	19.61	/
		1	49	21.00	/	19.58	/
		25	0	20.00	/	18.86	/
		25	13	20.00	/	18.84	/
		25	25	20.00	/	18.74	/
		50	0	20.00	/	18.74	/

Table 39: Conducted power measurement results of LTE Band XIII

Second antenna + WiFi Hotspot:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 23205CH	Channel 23230CH	Channel 23255CH
5MHz	QPSK	1	0	21.00	19.70	19.86	19.92
		1	13	21.00	20.05	19.88	19.94
		1	24	21.00	19.78	19.94	19.92
		12	0	21.00	19.67	19.79	19.83
		12	6	21.00	19.85	19.86	19.87
		12	13	21.00	19.71	19.82	19.79
		25	0	21.00	19.84	19.81	19.76
	16QAM	1	0	21.00	19.78	20.09	20.11
		1	13	21.00	20.27	20.13	20.16
		1	24	21.00	20.17	20.18	20.12
		12	0	21.00	19.54	19.58	19.56
		12	6	21.00	19.60	19.54	19.57
		12	13	21.00	19.55	19.55	19.51
		25	0	21.00	19.53	19.38	19.40
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 23230CH	Channel 23230CH	Channel 23230CH
10MHz	QPSK	1	0	21.00	/	19.89	/
		1	25	21.00	/	19.77	/
		1	49	21.00	/	20.06	/
		25	0	21.00	/	19.95	/
		25	13	21.00	/	19.85	/
		25	25	21.00	/	19.77	/
		50	0	21.00	/	19.94	/
	16QAM	1	0	21.00	/	19.87	/
		1	25	21.00	/	19.77	/
		1	49	21.00	/	19.96	/
		25	0	21.00	/	19.65	/
		25	13	21.00	/	19.51	/
		25	25	21.00	/	19.49	/
		50	0	21.00	/	19.47	/

Table 40: Conducted power measurement results of LTE Band XIII

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

Full Power:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 23755CH	Channel 23790CH	Channel 23825CH
5MHz	QPSK	1	0	22.70	21.46	21.37	21.32
		1	13	22.70	21.43	21.48	21.42
		1	24	22.70	21.51	21.51	21.49
		12	0	21.70	20.38	20.45	20.42
		12	6	21.70	20.39	20.49	20.40
		12	13	21.70	20.30	20.39	20.32
		25	0	21.70	20.40	20.43	20.36
	16QAM	1	0	21.70	20.48	20.59	20.44
		1	13	21.70	20.55	20.72	20.48
		1	24	21.70	20.60	20.52	20.46
		12	0	20.70	19.50	19.54	19.46
		12	6	20.70	19.51	19.56	19.41
		12	13	20.70	19.48	19.50	19.44
		25	0	20.70	19.36	19.43	19.39
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 23780CH	Channel 23790CH	Channel 23800CH
10MHz	QPSK	1	0	22.70	21.54	21.38	21.37
		1	25	22.70	**21.53**	**21.54**	**21.52**
		1	49	22.70	21.52	21.52	21.51
		25	0	21.70	20.34	20.37	20.43
		25	13	21.70	**20.46**	**20.53**	**20.47**
		25	25	21.70	20.45	20.34	20.42
		50	0	21.70	20.41	20.50	20.43
	16QAM	1	0	21.70	20.34	20.40	20.40
		1	25	21.70	20.64	20.54	20.44
		1	49	21.70	20.49	20.37	20.38
		25	0	20.70	19.39	19.41	19.40
		25	13	20.70	19.51	19.57	19.54
		25	25	20.70	19.55	19.38	19.41
		50	0	20.70	19.39	19.52	19.46

Table 41: Conducted power measurement results of LTE Band XVII

Second antenna(Voice) + WiFi station + Sensor on:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 23755CH	Channel 23790CH	Channel 23825CH
5MHz	QPSK	1	0	21.00	19.93	19.67	19.92
		1	13	21.00	19.82	19.80	19.85
		1	24	21.00	19.77	19.77	19.86
		12	0	21.00	19.97	19.62	19.87
		12	6	21.00	19.75	19.68	19.89
		12	13	21.00	19.68	19.70	19.88
		25	0	21.00	20.03	19.54	20.07
	16QAM	1	0	21.00	19.87	19.54	20.10
		1	13	21.00	19.89	19.84	20.02
		1	24	21.00	19.72	19.65	19.67
		12	0	21.00	19.99	19.62	19.93
		12	6	21.00	19.98	19.61	19.91
		12	13	21.00	19.86	19.65	19.76
		25	0	21.00	19.83	19.84	20.09
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 23780CH	Channel 23790CH	Channel 23800CH
10MHz	QPSK	1	0	21.00	19.63	19.68	19.67
		1	25	21.00	19.61	19.56	19.69
		1	49	21.00	19.64	19.62	19.62
		25	0	21.00	19.87	19.49	19.55
		25	13	21.00	19.42	19.40	19.61
		25	25	21.00	20.00	19.91	19.83
		50	0	21.00	19.82	19.81	19.84
	16QAM	1	0	21.00	19.66	19.67	19.78
		1	25	21.00	19.80	19.56	19.52
		1	49	21.00	19.88	19.78	19.92
		25	0	21.00	19.77	19.64	19.67
		25	13	21.00	19.44	19.39	19.72
		25	25	21.00	19.76	19.75	19.78
		50	0	21.00	19.61	19.50	19.81

Table 42: Conducted power measurement results of LTE Band XVII

Second antenna(Voice) + WiFi station + Sensor off:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 23755CH	Channel 23790CH	Channel 23825CH
5MHz	QPSK	1	0	22.00	20.81	20.73	20.75
		1	13	22.00	20.74	20.82	20.89
		1	24	22.00	20.74	20.75	20.95
		12	0	21.00	19.61	19.57	19.62
		12	6	21.00	19.71	19.65	19.78
		12	13	21.00	19.58	19.62	19.73
		25	0	21.00	19.65	19.66	19.66
	16QAM	1	0	21.00	19.82	19.82	19.72
		1	13	21.00	19.79	19.85	19.80
		1	24	21.00	19.77	19.68	19.87
		12	0	20.00	18.73	18.65	18.65
		12	6	20.00	18.78	18.71	18.73
		12	13	20.00	18.69	18.69	18.75
		25	0	20.00	18.66	18.65	18.68
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 23780CH	Channel 23790CH	Channel 23800CH
10MHz	QPSK	1	0	22.00	20.81	20.72	20.61
		1	25	22.00	20.57	20.55	20.69
		1	49	22.00	20.76	21.03	21.06
		25	0	21.00	19.65	19.57	19.65
		25	13	21.00	19.57	19.69	19.65
		25	25	21.00	19.62	19.60	19.66
		50	0	21.00	19.66	19.63	19.76
	16QAM	1	0	21.00	19.76	19.73	19.61
		1	25	21.00	19.40	19.40	19.55
		1	49	21.00	19.72	20.02	19.85
		25	0	20.00	18.66	18.62	18.68
		25	13	20.00	18.66	18.71	18.69
		25	25	20.00	18.57	18.60	18.65
		50	0	20.00	18.63	18.62	18.68

Table 43: Conducted power measurement results of LTE Band XVII

Second antenna + WiFi Hospot:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 23755CH	Channel 23790CH	Channel 23825CH
5MHz	QPSK	1	0	21.00	20.03	20.06	20.09
		1	13	21.00	20.09	20.07	20.07
		1	24	21.00	20.01	20.15	20.01
		12	0	21.00	19.83	19.79	19.87
		12	6	21.00	19.91	19.84	19.88
		12	13	21.00	19.83	19.86	19.91
		25	0	21.00	19.79	19.92	19.91
	16QAM	1	0	21.00	20.02	20.11	19.99
		1	13	21.00	20.19	20.16	20.14
		1	24	21.00	20.09	20.05	19.95
		12	0	21.00	19.67	19.67	19.66
		12	6	21.00	19.69	19.66	19.68
		12	13	21.00	19.65	19.68	19.61
		25	0	21.00	19.52	19.66	19.64
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 23780CH	Channel 23790CH	Channel 23800CH
10MHz	QPSK	1	0	21.00	19.89	20.01	20.03
		1	25	21.00	19.76	19.85	19.96
		1	49	21.00	19.90	19.95	19.86
		25	0	21.00	19.86	19.88	19.90
		25	13	21.00	19.89	19.90	19.91
		25	25	21.00	19.92	19.86	19.89
		50	0	21.00	19.93	19.95	19.96
	16QAM	1	0	21.00	20.00	19.92	20.08
		1	25	21.00	19.76	19.89	19.83
		1	49	21.00	20.11	20.13	19.99
		25	0	21.00	19.60	19.58	19.56
		25	13	21.00	19.65	19.65	19.56
		25	25	21.00	19.63	19.40	19.51
		50	0	21.00	19.61	19.66	19.59

Table 44: Conducted power measurement results of LTE Band XVII

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

Full Power:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 26697CH	Channel 26865CH	Channel 27033CH
1.4MHz	QPSK	1	0	22.70	21.44	21.54	21.39
		1	3	22.70	21.48	21.60	21.49
		1	5	22.70	21.34	21.49	21.33
		3	0	22.70	21.20	21.30	21.22
		3	2	22.70	21.29	21.40	21.32
		3	3	22.70	21.30	21.43	21.28
		6	0	21.70	20.45	20.46	20.29
	16QAM	1	0	21.70	20.44	20.53	20.30
		1	3	21.70	20.53	20.67	20.59
		1	5	21.70	20.59	20.48	20.47
		3	0	21.70	20.30	20.34	20.22
		3	2	21.70	20.31	20.33	20.29
		3	3	21.70	20.34	20.38	20.21
		6	0	20.70	19.51	19.44	19.31
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 26705CH	Channel 26865CH	Channel 27025CH
3MHz	QPSK	1	0	22.70	21.33	21.53	21.30
		1	7	22.70	21.30	21.44	21.21
		1	14	22.70	21.39	21.60	21.28
		8	0	21.70	20.39	20.48	20.31
		8	4	21.70	20.44	20.53	20.28
		8	7	21.70	20.45	20.40	20.23
		15	0	21.70	20.38	20.37	20.27
	16QAM	1	0	21.70	20.66	20.56	20.56
		1	7	21.70	20.55	20.56	20.57
		1	14	21.70	20.53	20.48	20.58
		8	0	20.70	19.38	19.42	19.36
		8	4	20.70	19.40	19.43	19.38
		8	7	20.70	19.43	19.31	19.35
		15	0	20.70	19.32	19.44	19.35

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26715CH	26865CH	27015CH
5MHz	QPSK	1	0	22.70	21.53	21.45	21.40
		1	13	22.70	21.64	21.56	21.38
		1	24	22.70	21.54	21.42	21.27
		12	0	21.70	20.44	20.28	20.19
		12	6	21.70	20.39	20.44	20.29
		12	13	21.70	20.37	20.30	20.25
		25	0	21.70	20.46	20.38	20.30
	16QAM	1	0	21.70	20.42	20.50	20.59
		1	13	21.70	20.63	20.62	20.53
		1	24	21.70	20.52	20.50	20.32
		12	0	20.70	19.43	19.34	19.30
		12	6	20.70	19.39	19.46	19.37
		12	13	20.70	19.44	19.33	19.29
		25	0	20.70	19.42	19.38	19.29
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26750CH	26865CH	26990CH
10MHz	QPSK	1	0	22.70	21.29	21.67	21.36
		1	25	22.70	21.40	21.36	21.25
		1	49	22.70	21.16	21.34	21.16
		25	0	21.70	20.37	20.30	20.31
		25	13	21.70	20.43	20.40	20.37
		25	25	21.70	20.18	20.29	20.21
		50	0	21.70	20.42	20.35	20.39
	16QAM	1	0	21.70	20.67	20.62	20.61
		1	25	21.70	20.61	20.41	20.37
		1	49	21.70	20.40	20.54	20.26
		25	0	20.70	19.37	19.34	19.35
		25	13	20.70	19.47	19.41	19.41
		25	25	20.70	19.18	19.34	19.20
		50	0	20.70	19.23	19.31	19.36

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 26775CH	Channel 26865CH	Channel 26965CH
15MHz	QPSK	1	0	22.70	21.52	**21.46**	21.38
		1	38	22.70	**21.53**	21.34	**21.48**
		1	74	22.70	21.35	21.30	21.28
		36	0	21.70	**20.27**	**20.35**	**20.50**
		36	18	21.70	20.25	20.27	20.36
		36	39	21.70	20.21	20.27	20.26
		75	0	21.70	**20.37**	20.28	20.36
	16QAM	1	0	21.70	20.37	20.33	20.29
		1	38	21.70	20.14	20.34	20.31
		1	74	21.70	20.17	20.16	20.06
		36	0	20.70	19.40	19.25	19.33
		36	18	20.70	19.27	19.31	19.35
		36	39	20.70	19.14	19.30	19.29
		75	0	20.70	19.28	19.36	19.34

Table 45: Conducted power measurement results of LTE Band XXVI

Second antenna(Voice) + WiFi station + Sensor on:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 26697CH	Channel 26865CH	Channel 27033CH
1.4MHz	QPSK	1	0	21.00	19.74	19.77	19.83
		1	3	21.00	19.83	19.84	19.80
		1	5	21.00	19.85	19.72	19.73
		3	0	21.00	19.57	19.61	19.60
		3	2	21.00	19.72	19.71	19.69
		3	3	21.00	19.68	19.62	19.67
		6	0	21.00	19.62	19.58	19.79
	16QAM	1	0	21.00	19.89	19.57	19.64
		1	3	21.00	20.00	20.01	19.69
		1	5	21.00	20.01	19.68	19.65
		3	0	21.00	19.71	19.69	19.76
		3	2	21.00	19.95	19.75	19.82
		3	3	21.00	19.96	19.84	19.64
		6	0	21.00	19.60	19.66	19.99
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 26705CH	Channel 26865CH	Channel 27025CH
3MHz	QPSK	1	0	21.00	19.79	19.88	19.81
		1	7	21.00	19.81	19.84	19.87
		1	14	21.00	19.92	19.96	19.84
		8	0	21.00	19.79	19.92	19.79
		8	4	21.00	19.95	19.78	19.90
		8	7	21.00	19.82	19.77	20.01
		15	0	21.00	19.82	19.82	19.68
	16QAM	1	0	21.00	19.87	19.94	19.91
		1	7	21.00	19.88	19.73	19.91
		1	14	21.00	19.93	19.80	19.72
		8	0	21.00	19.95	20.05	19.87
		8	4	21.00	19.64	19.72	19.95
		8	7	21.00	20.10	20.12	19.86
		15	0	21.00	19.92	20.07	19.78

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26715CH	26865CH	27015CH
5MHz	QPSK	1	0	21.00	19.81	19.85	19.96
		1	13	21.00	19.90	19.91	19.89
		1	24	21.00	19.90	19.83	19.80
		12	0	21.00	19.89	19.67	20.05
		12	6	21.00	19.93	20.03	20.06
		12	13	21.00	20.01	19.98	19.93
		25	0	21.00	19.69	19.94	20.13
	16QAM	1	0	21.00	19.70	19.80	19.82
		1	13	21.00	19.84	20.04	19.90
		1	24	21.00	19.78	19.80	19.81
		12	0	21.00	19.92	19.89	20.05
		12	6	21.00	20.08	20.02	19.78
		12	13	21.00	19.77	19.73	19.86
		25	0	21.00	19.90	19.87	20.00
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26750CH	26865CH	26990CH
10MHz	QPSK	1	0	21.00	20.12	19.83	20.12
		1	25	21.00	19.88	19.81	19.81
		1	49	21.00	19.74	19.83	19.86
		25	0	21.00	20.17	19.68	20.23
		25	13	21.00	19.70	19.68	19.76
		25	25	21.00	19.83	19.66	19.79
		50	0	21.00	20.07	19.80	20.07
	16QAM	1	0	21.00	20.20	19.99	20.01
		1	25	21.00	19.85	19.61	19.69
		1	49	21.00	19.66	19.81	20.04
		25	0	21.00	20.24	19.83	19.93
		25	13	21.00	19.98	19.87	19.90
		25	25	21.00	19.57	19.73	20.01
		50	0	21.00	20.09	19.91	20.16

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 26775CH	Channel 26865CH	Channel 26965CH
15MHz	QPSK	1	0	21.00	20.04	20.00	20.03
		1	38	21.00	19.80	19.77	20.08
		1	74	21.00	19.88	19.96	19.80
		36	0	21.00	20.15	20.08	20.10
		36	18	21.00	19.72	19.76	20.25
		36	39	21.00	19.92	19.92	19.62
		75	0	21.00	19.98	19.87	20.01
	16QAM	1	0	21.00	20.34	20.19	19.90
		1	38	21.00	19.75	19.68	19.95
		1	74	21.00	19.98	19.88	19.76
		36	0	21.00	20.31	20.08	19.86
		36	18	21.00	19.67	19.84	19.92
		36	39	21.00	20.02	20.13	19.62
		75	0	21.00	20.34	20.13	20.14

Table 46: Conducted power measurement results of LTE Band XXVI

Second antenna(Voice) + WiFi station + Sensor off:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 26697CH	Channel 26865CH	Channel 27033CH
1.4MHz	QPSK	1	0	22.00	20.82	20.94	20.79
		1	3	22.00	20.91	20.86	20.84
		1	5	22.00	20.82	20.76	20.76
		3	0	22.00	20.63	20.67	20.65
		3	2	22.00	20.81	20.73	20.74
		3	3	22.00	20.71	20.69	20.66
		6	0	21.00	19.73	19.74	19.72
	16QAM	1	0	21.00	19.97	19.97	19.88
		1	3	21.00	20.21	20.02	20.04
		1	5	21.00	20.08	20.08	20.00
		3	0	21.00	19.72	19.70	19.70
		3	2	21.00	19.85	19.76	19.74
		3	3	21.00	19.79	19.74	19.72
		6	0	20.00	18.93	18.87	18.82
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 26705CH	Channel 26865CH	Channel 27025CH
3MHz	QPSK	1	0	22.00	20.83	20.90	20.80
		1	7	22.00	20.75	20.89	20.86
		1	14	22.00	20.87	20.94	20.80
		8	0	21.00	19.74	19.77	19.82
		8	4	21.00	19.87	19.78	19.77
		8	7	21.00	19.78	19.75	19.72
		15	0	21.00	19.85	19.78	19.79
	16QAM	1	0	21.00	20.03	19.98	20.10
		1	7	21.00	20.05	20.01	20.07
		1	14	21.00	20.02	19.95	20.00
		8	0	20.00	18.77	18.78	18.83
		8	4	20.00	18.89	18.79	18.82
		8	7	20.00	18.89	18.81	18.77
		15	0	20.00	18.85	18.80	18.83

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26715CH	26865CH	27015CH
5MHz	QPSK	1	0	22.00	20.83	20.77	21.02
		1	13	22.00	20.91	20.92	20.86
		1	24	22.00	20.89	20.85	20.79
		12	0	21.00	19.85	19.68	19.74
		12	6	21.00	19.85	19.80	19.82
		12	13	21.00	19.65	19.75	19.71
		25	0	21.00	19.87	19.72	19.83
	16QAM	1	0	21.00	19.98	19.82	20.01
		1	13	21.00	20.08	19.97	20.02
		1	24	21.00	19.95	19.93	19.92
		12	0	20.00	18.91	18.72	18.85
		12	6	20.00	18.91	18.80	18.87
		12	13	20.00	18.79	18.82	18.84
		25	0	20.00	18.80	18.75	18.76
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel	Channel	Channel
					26750CH	26865CH	26990CH
10MHz	QPSK	1	0	22.00	21.02	20.93	20.95
		1	25	22.00	20.85	20.79	20.94
		1	49	22.00	20.75	21.17	20.96
		25	0	21.00	19.92	19.70	19.82
		25	13	21.00	19.88	19.78	19.81
		25	25	21.00	19.73	19.75	19.74
		50	0	21.00	19.94	19.80	19.83
	16QAM	1	0	21.00	20.17	19.99	20.06
		1	25	21.00	19.77	19.88	19.94
		1	49	21.00	19.81	19.86	19.92
		25	0	20.00	18.89	18.68	18.82
		25	13	20.00	18.88	18.79	18.80
		25	25	20.00	18.72	18.75	18.71
		50	0	20.00	18.75	18.77	18.76

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 26775CH	Channel 26865CH	Channel 26965CH
15MHz	QPSK	1	0	22.00	20.99	20.96	21.04
		1	38	22.00	20.87	20.77	20.95
		1	74	22.00	20.84	21.02	20.85
		36	0	21.00	19.76	19.70	19.89
		36	18	21.00	19.82	19.83	19.96
		36	39	21.00	19.73	19.77	19.78
		75	0	21.00	19.80	19.73	19.81
	16QAM	1	0	21.00	19.67	19.65	19.80
		1	38	21.00	19.50	19.49	19.77
		1	74	21.00	19.61	19.67	19.40
		36	0	20.00	18.88	18.62	18.92
		36	18	20.00	18.84	18.81	18.83
		36	39	20.00	18.63	18.80	18.72
		75	0	20.00	18.71	18.75	18.79

Table 47: Conducted power measurement results of LTE Band XXVI

Second antenna + Hotspot:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 26697CH	Channel 26865CH	Channel 27033CH
1.4MHz	QPSK	1	0	21.00	19.92	19.79	19.84
		1	3	21.00	19.84	19.89	19.80
		1	5	21.00	19.80	19.85	19.78
		3	0	21.00	19.69	19.63	19.60
		3	2	21.00	19.71	19.78	19.71
		3	3	21.00	19.67	19.71	19.65
		6	0	21.00	19.76	19.82	19.72
	16QAM	1	0	21.00	19.90	20.04	19.89
		1	3	21.00	19.90	20.03	19.86
		1	5	21.00	20.00	19.99	19.96
		3	0	21.00	19.81	19.77	19.72
		3	2	21.00	19.78	19.88	19.80
		3	3	21.00	19.75	19.85	19.76
		6	0	21.00	19.58	19.66	19.58
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 26705CH	Channel 26865CH	Channel 27025CH
3MHz	QPSK	1	0	21.00	19.92	19.81	19.87
		1	7	21.00	19.88	19.85	19.74
		1	14	21.00	19.86	19.89	19.84
		8	0	21.00	19.77	19.80	19.80
		8	4	21.00	19.75	19.88	19.80
		8	7	21.00	19.74	19.76	19.78
		15	0	21.00	19.70	19.85	19.75
	16QAM	1	0	21.00	20.13	19.99	20.05
		1	7	21.00	20.11	20.05	20.03
		1	14	21.00	19.94	20.00	20.12
		8	0	21.00	19.53	19.56	19.58
		8	4	21.00	19.52	19.64	19.56
		8	7	21.00	19.61	19.58	19.57
		15	0	21.00	19.48	19.64	19.56

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 26715CH	Channel 26865CH	Channel 27015CH
5MHz	QPSK	1	0	21.00	19.93	19.94	19.93
		1	13	21.00	19.87	20.01	19.97
		1	24	21.00	19.83	19.99	19.91
		12	0	21.00	19.69	19.70	19.73
		12	6	21.00	19.71	19.86	19.80
		12	13	21.00	19.63	19.80	19.72
		25	0	21.00	19.81	19.83	19.79
	16QAM	1	0	21.00	19.99	19.86	19.96
		1	13	21.00	20.01	20.05	20.02
		1	24	21.00	19.81	19.94	19.89
		12	0	21.00	19.51	19.47	19.57
		12	6	21.00	19.55	19.64	19.62
		12	13	21.00	19.52	19.63	19.58
		25	0	21.00	19.52	19.58	19.53
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 26750CH	Channel 26865CH	Channel 26990CH
10MHz	QPSK	1	0	21.00	19.98	19.84	19.99
		1	25	21.00	19.78	19.82	19.81
		1	49	21.00	19.71	19.98	19.82
		25	0	21.00	19.78	19.80	19.75
		25	13	21.00	19.79	19.86	19.82
		25	25	21.00	19.72	19.80	19.73
		50	0	21.00	19.90	19.77	19.81
	16QAM	1	0	21.00	19.97	20.01	20.06
		1	25	21.00	19.69	19.86	19.77
		1	49	21.00	19.77	20.10	19.98
		25	0	21.00	19.54	19.53	19.48
		25	13	21.00	19.56	19.60	19.58
		25	25	21.00	19.44	19.58	19.52
		50	0	21.00	19.51	19.46	19.53

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 26775CH	Channel 26865CH	Channel 26965CH
15MHz	QPSK	1	0	s	19.85	19.93	**19.95**
		1	38	21.00	19.64	19.81	19.84
		1	74	21.00	19.82	19.87	19.81
		36	0	21.00	19.69	19.80	19.79
		36	18	21.00	19.70	19.83	**19.86**
		36	39	21.00	19.61	19.66	19.77
		75	0	21.00	19.74	19.68	19.83
	16QAM	1	0	21.00	19.62	19.63	19.68
		1	38	21.00	19.36	19.64	19.57
		1	74	21.00	19.52	19.63	19.50
		36	0	21.00	19.58	19.47	19.49
		36	18	21.00	19.50	19.55	19.49
		36	39	21.00	19.29	19.43	19.45
		75	0	21.00	19.44	19.43	19.54

Table 48: Conducted power measurement results of LTE Band XXVI

7.1.10 Conducted power measurements of GSM850 (Main Antenna)

Full Power:

GSM850		Burst-Averaged output Power (dBm)				Division Factors	Frame-Averaged output Power (dBm)			
		Tune-up	128CH	190CH	251CH		Tune-up	128CH	190CH	251CH
GSM (CS)		33.50	32.72	32.70	32.73	-9.19	24.31	23.53	23.51	23.54
GPRS/ EDGE (GMSK)	1 Tx Slot	33.50	32.70	32.71	32.66	-9.19	24.31	23.51	23.52	23.47
	2 Tx Slots	31.00	29.98	29.93	29.81	-6.13	24.87	23.85	23.80	23.68
EDGE (8PSK)	1 Tx Slot	27.00	25.90	25.90	25.85	-9.19	17.81	16.71	16.71	16.66
	2 Tx Slots	25.00	24.02	24.10	24.07	-6.13	18.87	17.89	17.97	17.94

Table 49: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 timesolts.

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.

Main antenna(Voice) + WiFi station:

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)	32.50	31.65	31.63	31.79	-9.19	23.31	22.46	22.44	22.60

Table 50: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 timesolts.

Main antenna + WiFi Hotspot:

GSM850		Burst-Averaged output Power (dBm)				Division Factors	Frame-Averaged output Power (dBm)			
		Tune-up	128CH	190CH	251CH		Tune-up	128CH	190CH	251CH
GPRS/ EDGE (GMSK)	1 Tx Slot	31.50	30.21	30.34	30.15	-9.19	22.31	21.02	21.15	20.96
	2 Tx Slots	29.00	27.88	27.96	27.82	-6.13	**22.87**	**21.75**	**21.83**	**21.69**
EDGE (8PSK)	1 Tx Slot	27.00	26.48	26.42	26.29	-9.19	17.81	17.29	17.23	17.10
	2 Tx Slots	25.00	24.03	23.95	23.83	-6.13	18.87	17.90	17.82	17.70

Table 51: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 timesolts.

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.

7.1.11 Conducted power measurements of GSM1900 (Main Antenna)

Full Power:

GSM1900		Burst-Averaged output Power (dBm)				Division Factors	Frame-Averaged output Power (dBm)			
		Tune-up	512CH	661CH	810CH		Tune-up	512CH	661CH	810CH
GSM (CS)		31.00	30.97	30.94	30.92	-9.19	21.81	21.78	21.75	21.73
GPRS/ EDGE (GMSK)	1 Tx Slot	31.00	30.95	30.93	30.90	-9.19	21.81	21.76	21.74	21.71
	2 Tx Slots	28.50	27.72	27.55	27.48	-6.13	22.37	21.59	21.42	21.35
EDGE (8PSK)	1 Tx Slot	26.00	25.51	25.39	25.40	-9.19	16.81	16.32	16.20	16.21
	2 Tx Slots	24.00	23.23	23.20	23.19	-6.13	17.87	17.10	17.07	17.06

Table 52: 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 timesolts.

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.

Main antenna(Voice) + WiFi station:

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)	29.00	28.91	28.82	28.77	-9.19	19.81	19.72	19.63	19.58

Table 53: 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 timesolts.

Main antenna + WiFi Hotspot:

GSM1900		Burst-Averaged output Power (dBm)				Division Factors	Frame-Averaged output Power (dBm)			
		Tune-up	512CH	661CH	810CH		Tune-up	512CH	661CH	810CH
GPRS/ EDGE (GMSK)	1 Tx Slot	28.00	27.04	26.95	26.93	-9.19	18.81	17.85	17.76	17.74
	2 Tx Slots	25.50	24.27	24.81	24.73	-6.13	**19.37**	**18.14**	**18.68**	**18.60**
EDGE (8PSK)	1 Tx Slot	26.00	25.63	25.58	25.45	-9.19	16.81	16.44	16.39	16.26
	2 Tx Slots	24.00	23.17	23.13	23.06	-6.13	17.87	17.04	17.00	16.93

Table 54: 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 timesolts.

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.

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

Full Power:

UMTS Band II		Tune-up	Conducted Power (dBm)		
			9262CH	9400CH	9538CH
WCDMA	12.2kbps RMC	23.00	**22.77**	**22.77**	**22.71**
HSDPA	Subtest 1	22.00	21.85	21.80	21.71
	Subtest 2	21.50	21.42	21.35	21.43
	Subtest 3	21.00	20.93	20.89	20.91
	Subtest 4	21.00	20.88	20.89	20.93
HSUPA	Subtest 1	22.00	20.87	20.87	20.80
	Subtest 2	20.50	20.42	20.44	20.39
	Subtest 3	20.50	20.37	20.35	20.34
	Subtest 4	20.50	20.43	20.42	20.36
	Subtest 5	22.00	21.33	21.29	21.23
DC-HSDPA	Subtest 1	22.00	21.78	21.72	21.63
	Subtest 2	21.50	21.36	21.28	21.36
	Subtest 3	21.00	20.86	20.81	20.82
	Subtest 4	21.00	20.81	20.82	20.81

Table 55: 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 ≤ ¼ 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.

Main antenna(Voice) + WiFi station:

UMTS Band II		Tune-up	Conducted Power (dBm)		
			9262CH	9400CH	9538CH
WCDMA	12.2kbps RMC	21.00	**20.42**	**20.48**	**20.52**

Table 56: Conducted power measurement results of UMTS Band II

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

Main antenna + WiFi Hotspot:

UMTS Band II		Tune-up	Conducted Power (dBm)		
			9262CH	9400CH	9538CH
WCDMA	12.2kbps RMC	20.00	**19.80**	**19.85**	**19.84**
HSDPA	Subtest 1	19.00	18.93	18.91	18.84
	Subtest 2	18.50	18.16	18.21	18.17
	Subtest 3	18.00	17.88	17.76	17.81
	Subtest 4	18.00	17.84	17.72	17.83
HSUPA	Subtest 1	19.00	18.75	18.73	18.79
	Subtest 2	17.50	17.12	17.09	17.16
	Subtest 3	17.50	17.14	17.16	17.05
	Subtest 4	17.50	17.21	17.18	17.08
	Subtest 5	19.00	18.63	18.54	18.47
DC-HSDPA	Subtest 1	19.00	18.86	18.82	18.78
	Subtest 2	18.50	18.10	18.13	18.10
	Subtest 3	18.00	17.81	17.69	17.72
	Subtest 4	18.00	17.80	17.63	17.73

Table 57: 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 ≤ ¼ 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.

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

Full Power:

UMTS Band IV		Tune-up	Conducted Power (dBm)		
			1312CH	1413CH	1513CH
WCDMA	12.2kbps RMC	23.00	**22.42**	**22.50**	**22.50**
HSDPA	Subtest 1	22.00	21.49	21.50	21.49
	Subtest 2	21.50	21.31	21.35	21.33
	Subtest 3	21.00	20.63	20.49	20.45
	Subtest 4	21.00	20.64	20.82	20.71
HSUPA	Subtest 1	22.00	20.59	20.60	20.62
	Subtest 2	20.50	20.27	20.24	20.25
	Subtest 3	20.50	20.28	20.26	20.20
	Subtest 4	20.50	20.45	20.44	20.39
	Subtest 5	22.00	20.97	20.89	20.90
DC-HSDPA	Subtest 1	22.00	21.41	21.42	21.41
	Subtest 2	21.50	21.22	21.26	21.28
	Subtest 3	21.00	20.54	20.42	20.37
	Subtest 4	21.00	20.58	20.76	20.66

Table 58: 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 ≤ ¼ 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.

Main antenna(Voice) + WiFi Station:

UMTS Band IV		Tune-up	Conducted Power (dBm)		
			1312CH	1413CH	1513CH
WCDMA	12.2kbps RMC	21.00	**20.74**	**20.83**	**20.81**

Table 59: Conducted power measurement results of UMTS Band IV

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

Main antenna + WiFi Hotspot:

UMTS Band IV		Tune-up	Conducted Power (dBm)		
			1312CH	1413CH	1513CH
WCDMA	12.2kbps RMC	20.00	19.46	19.42	19.37
HSDPA	Subtest 1	19.00	18.33	18.59	18.51
	Subtest 2	18.50	18.24	18.46	18.40
	Subtest 3	18.00	17.63	17.67	17.27
	Subtest 4	18.00	17.86	17.89	17.92
HSUPA	Subtest 1	19.00	18.22	18.01	18.04
	Subtest 2	17.50	17.17	17.24	17.35
	Subtest 3	17.50	17.25	17.28	17.44
	Subtest 4	17.50	17.45	17.40	17.31
	Subtest 5	19.00	18.38	18.05	18.04
DC-HSDPA	Subtest 1	19.00	18.25	18.51	18.41
	Subtest 2	18.50	18.17	18.40	18.32
	Subtest 3	18.00	17.55	17.62	17.22
	Subtest 4	18.00	17.79	17.83	17.82

Table 60: 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 ≤ ¼ 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.

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

Full Power:

UMTS Band V		Tune-up	Conducted Power (dBm)		
			4132CH	4182CH	4233CH
WCDMA	12.2kbps RMC	24.50	**23.52**	**23.66**	**23.64**
HSDPA	Subtest 1	23.50	22.50	22.60	22.59
	Subtest 2	23.00	22.56	22.51	22.34
	Subtest 3	22.50	22.05	21.78	22.14
	Subtest 4	22.50	21.99	21.76	22.14
HSUPA	Subtest 1	23.50	21.64	21.71	21.75
	Subtest 2	22.00	21.37	21.44	21.44
	Subtest 3	22.00	21.37	21.45	21.47
	Subtest 4	22.00	21.83	21.89	21.92
	Subtest 5	23.50	22.09	22.11	22.20
DC-HSDPA	Subtest 1	23.50	22.42	22.52	22.52
	Subtest 2	23.00	22.48	22.52	22.28
	Subtest 3	22.50	21.95	21.71	22.09
	Subtest 4	22.50	21.92	21.70	22.10

Table 61: 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 ≤ ¼ 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.

Main antenna(Voice) + WiFi station:

UMTS Band V		Tune-up	Conducted Power (dBm)		
			4132CH	4182CH	4233CH
WCDMA	12.2kbps RMC	23.50	**22.13**	**22.29**	**22.19**

Table 62: Conducted power measurement results of UMTS Band V

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

Main antenna + WiFi Hotspot:

UMTS Band V		Tune-up	Conducted Power (dBm)		
			4132CH	4182CH	4233CH
WCDMA	12.2kbps RMC	22.50	**22.02**	**22.10**	**22.09**
HSDPA	Subtest 1	21.50	21.06	21.11	21.10
	Subtest 2	21.00	20.93	20.96	20.96
	Subtest 3	20.50	20.48	20.49	20.49
	Subtest 4	20.50	20.07	20.42	20.18
HSUPA	Subtest 1	21.50	20.27	20.46	20.47
	Subtest 2	20.00	19.95	19.97	19.91
	Subtest 3	20.00	19.67	19.66	19.64
	Subtest 4	20.00	19.95	19.89	19.91
	Subtest 5	21.50	20.28	20.27	20.27
DC-HSDPA	Subtest 1	21.50	21.00	21.02	21.02
	Subtest 2	21.00	20.88	20.82	20.88
	Subtest 3	20.50	20.42	20.41	20.42
	Subtest 4	20.50	19.98	20.36	20.11

Table 63: 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 ≤ ¼ 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.

7.1.15 Conducted power measurements of CDMA BC0 (Main Antenna)

Full Power:

CDMA BC0		Average Power (dBm)			
		Tune-up	1013CH	384CH	777CH
RC1	SO55 (Loopback)	25.00	23.98	24.08	24.03
RC3	SO55 (Loopback)	25.00	24.08	24.09	24.10
	TDSO32 (FCH+SCH)	25.00	23.99	24.07	24.12
	TDSO32 (FCH)	25.00	24.00	24.08	24.10
1x Advanced	SO75	25.00	24.02	24.05	24.04
Rev 0	FTAP/RTAP	25.00	24.07	24.00	23.80
Rev A	FETAP/RETAP	25.00	23.72	23.80	23.80

Table 64: Conducted power measurement results of CDMA BC0

Note: 1) The conducted power of CDMA BC0 is measured with RMS detector.

2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ 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.

Main antenna(Voice) + WiFi station:

CDMA BC0		Average Power (dBm)			
		Tune-up	1013CH	384CH	777CH
RC1	SO55 (Loopback)	23.50	23.08	23.15	22.97
RC3	SO55 (Loopback)	23.50	23.18	23.16	23.17
	TDSO32 (FCH+SCH)	23.50	23.09	23.11	23.19
	TDSO32 (FCH)	23.50	23.10	23.19	23.13
1x Advanced	SO75	23.50	23.12	23.03	23.02

Table 65: Conducted power measurement results of CDMA BC0

Note: 1) The conducted power of CDMA BC0 is measured with RMS detector.

2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ 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.

Main antenna + WiFi Hotspot:

CDMA BC0		Average Power (dBm)			
		Tune-up	1013CH	384CH	777CH
RC1	SO55 (Loopback)	22.50	21.52	21.57	21.50
RC3	SO55 (Loopback)	22.50	21.53	21.58	21.50
	TDSO32 (FCH+SCH)	22.50	21.55	21.56	21.52
	TDSO32 (FCH)	22.50	21.56	21.58	21.51
1x Advanced	SO75	22.50	21.52	21.55	54.50
Rev 0	FTAP/RTAP	22.50	21.55	21.65	21.35
Rev A	FETAP/RETAP	22.50	21.30	21.45	21.30

Table 66: Conducted power measurement results of CDMA BC0

Note: 1) The conducted power of CDMA BC0 is measured with RMS detector.

2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ 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.

7.1.16 Conducted power measurements of CDMA BC1 (Main Antenna)

Full Power:

CDMA BC1		Average Power (dBm)			
		Tune-up	25CH	600CH	1175CH
RC1	SO55 (Loopback)	23.70	23.37	23.28	23.25
RC3	SO55 (Loopback)	23.70	23.38	23.28	23.24
	TDSO32 (FCH+SCH)	23.70	23.39	23.29	23.29
	TDSO32 (FCH)	23.70	23.42	23.34	23.28
1x Advanced	SO75	23.70	23.40	23.30	23.26
Rev 0	FTAP/RTAP	23.70	23.42	23.32	23.28
Rev A	FETAP/RETAP	23.70	23.35	23.29	23.24

Table 67: Conducted power measurement results of CDMA BC 1

Note: 1) The conducted power of CDMA BC1 is measured with RMS detector.

2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ 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.

Main antenna(Voice) + WiFi station:

CDMA BC1		Average Power (dBm)			
		Tune-up	25CH	600CH	1175CH
RC1	SO55 (Loopback)	21.00	20.87	20.75	20.55
RC3	SO55 (Loopback)	21.00	20.61	20.82	20.68
	TDSO32 (FCH+SCH)	21.00	20.75	20.85	20.65
	TDSO32 (FCH)	21.00	20.66	20.91	20.65
1x Advanced	SO75	21.00	20.66	20.94	20.70

Table 68: Conducted power measurement results of CDMA BC 1

Note: 1) The conducted power of CDMA BC1 is measured with RMS detector.

2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ 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.

Main antenna + WiFi Hotspot:

CDMA BC1		Average Power (dBm)			
		Tune-up	25CH	600CH	1175CH
RC1	SO55 (Loopback)	20.00	18.60	18.62	18.50
RC3	SO55 (Loopback)	20.00	18.66	18.61	18.46
	TDSO32 (FCH+SCH)	20.00	18.65	18.60	18.52
	TDSO32 (FCH)	20.00	18.70	18.60	18.58
1x Advanced	SO75	20.00	18.68	18.55	18.48
Rev 0	FTAP/RTAP	20.00	18.67	18.66	18.55
Rev A	FETAP/RETAP	20.00	18.49	18.43	18.38

Table 69: Conducted power measurement results of CDMA BC 1

Note: 1) The conducted power of CDMA BC1 is measured with RMS detector.

2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ 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.

7.1.17 Conducted power measurements of CDMA BC10 (Main Antenna)

Full Power:

CDMA BC 10		Average Power (dBm)			
		Tune-up	450CH	565CH	670CH
RC1	SO55 (Loopback)	25.00	24.18	24.24	24.15
RC3	SO55 (Loopback)	25.00	24.15	24.20	24.13
	TDSO32 (FCH+SCH)	25.00	24.08	24.18	24.15
	TDSO32 (FCH)	25.00	24.09	24.15	24.14
1x Advanced	SO75	25.00	24.05	24.12	24.10
Rev 0	FTAP/RTAP	25.00	24.10	24.02	23.94
Rev A	FETAP/RETAP	25.00	24.05	23.74	23.61

Table 70: Conducted power measurement results of CDMA BC10

Note: 1) The conducted power of CDMA BC 10 is measured with RMS detector.

2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ 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.

Main antenna(Voice) + WiFi station:

CDMA BC10		Average Power (dBm)			
		Tune-up	450CH	565CH	670CH
RC1	SO55 (Loopback)	23.50	22.99	23.07	22.99
RC3	SO55 (Loopback)	23.50	22.98	23.05	22.96
	TDSO32 (FCH+SCH)	23.50	22.86	22.98	22.97
	TDSO32 (FCH)	23.50	22.87	22.94	22.94
1x Advanced	SO75	23.50	22.91	22.98	23.01

Table 71: Conducted power measurement results of CDMA BC10

Note: 1) The conducted power of CDMA BC 10 is measured with RMS detector.

2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ 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.

Main antenna + WiFi Hotspot:

CDMA BC 10		Average Power (dBm)			
		Tune-up	450CH	565CH	670CH
RC1	SO55 (Loopback)	22.50	21.53	21.62	21.50
RC3	SO55 (Loopback)	22.50	21.55	21.65	21.51
	TDSO32 (FCH+SCH)	22.50	21.55	21.59	21.58
	TDSO32 (FCH)	22.50	21.59	21.60	21.57
1x Advanced	SO75	22.50	21.55	21.62	21.52
Rev 0	FTAP/RTAP	22.50	21.52	21.45	21.46
Rev A	FETAP/RETAP	22.50	21.33	21.29	21.21

Table 72: Conducted power measurement results of CDMA BC10

Note: 1) The conducted power of CDMA BC10 is measured with RMS detector.

2) Per KDB941225 D01v03, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ 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 LTE Band II (Main Antenna)

Full Power:

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 18607CH	Channel 18900CH	Channel 19193CH
1.4MHz	QPSK	1	0	22.80	22.18	21.87	21.86
		1	3	22.80	21.93	21.84	21.92
		1	5	22.80	21.90	21.85	21.86
		3	0	22.80	21.75	21.58	21.66
		3	2	22.80	21.81	21.71	21.79
		3	3	22.80	21.83	21.72	21.75
		6	0	21.80	20.85	20.72	20.73
	16QAM	1	0	21.80	21.02	20.87	21.09
		1	3	21.80	21.08	20.94	21.21
		1	5	21.80	20.97	20.97	21.20
		3	0	21.80	20.75	20.70	20.80
		3	2	21.80	20.82	20.76	20.87
		3	3	21.80	20.76	20.81	20.85
		6	0	20.80	19.89	19.89	19.93
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 18615CH	Channel 18900CH	Channel 19185CH
3MHz	QPSK	1	0	22.80	22.22	21.78	21.82
		1	7	22.80	21.86	21.78	21.92
		1	14	22.80	21.91	21.84	21.82
		8	0	21.80	20.91	20.87	20.78
		8	4	21.80	20.92	20.81	20.84
		8	7	21.80	20.91	20.80	20.78
		15	0	21.80	20.95	20.77	20.90
	16QAM	1	0	21.80	21.13	20.99	21.10
		1	7	21.80	21.13	20.94	21.07
		1	14	21.80	20.99	20.90	21.04
		8	0	20.80	19.90	19.94	19.78
		8	4	20.80	19.89	19.88	19.83
		8	7	20.80	19.88	19.85	19.86
		15	0	20.80	19.94	19.83	19.92

Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 18625CH	Channel 18900CH	Channel 19175CH
5MHz	QPSK	1	0	22.80	22.25	21.88	21.99
		1	13	22.80	22.09	21.98	22.00
		1	24	22.80	21.96	21.76	21.85
		12	0	21.80	20.94	20.72	20.86
		12	6	21.80	20.93	20.84	20.90
		12	13	21.80	20.88	20.68	20.82
		25	0	21.80	20.93	20.81	20.79
	16QAM	1	0	21.80	21.07	20.95	21.06
		1	13	21.80	21.19	20.99	21.00
		1	24	21.80	20.95	20.82	21.02
		12	0	20.80	19.98	19.91	19.93
		12	6	20.80	20.02	19.86	19.87
		12	13	20.80	20.03	19.83	19.88
		25	0	20.80	19.94	19.87	19.75
Bandwidth	Modulation	RB size	RB offset	Tune-up	Channel 18650CH	Channel 18900CH	Channel 19150CH
10MHz	QPSK	1	0	22.80	22.48	22.52	22.58
		1	25	22.80	21.90	21.82	21.96
		1	49	22.80	22.00	21.81	22.04
		25	0	21.80	21.06	20.87	20.90
		25	13	21.80	20.94	20.81	20.90
		25	25	21.80	20.90	20.68	20.77
		50	0	21.80	20.96	20.80	20.92
	16QAM	1	0	21.80	21.31	21.18	21.21
		1	25	21.80	20.88	20.75	20.82
		1	49	21.80	21.02	20.89	20.82
		25	0	20.80	20.08	19.88	19.93
		25	13	20.80	19.97	19.90	19.96
		25	25	20.80	19.89	19.63	19.78
		50	0	20.80	19.89	19.79	19.94